Guide to Road Transport Planning
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Summary
The Austroads Guide to Road Transport Planning develops a map of jurisdictional road transport planning processes with particular focus at the road route and link level; and a best practice framework against which current road transport planning practice in Australasia may be assessed. Consultation with relevant government authorities (including surveys of all government agencies with a stake in road transport planning), and a review of relevant literature from Australia and overseas underpin the development of this Guide. Transport planning approaches and processes for roads vary widely across jurisdictions within countries as well as across countries and is probably more of an art than a science. This Guide discusses elements of good transport planning, current trends in transport planning, and best-practice principles (e.g. land-use and transport planning integration, multi-modal planning and public consultation processes) required to achieve environmentally and socially sustainable transport solutions. It examines significant recent changes and a number of developments both internationally and in Australasia towards strengthening the existing legal and institutional road transport planning framework.

Keywords
Road transport planning, planning at the road route and link level, principles for road transport planning, benchmarking best practice

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- Main Roads Western Australia
- Department for Transport, Energy and Infrastructure South Australia
- Department of Infrastructure, Energy and Resources Tasmania
- Department of Planning and Infrastructure Northern Territory
- Department of Territory and Municipal Services Australian Capital Territory
- Department of Infrastructure, Transport, Regional Development and Local Government
- Australian Local Government Association
- New Zealand Transport Agency.

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1 INTRODUCTION

The Austroads Guide to Road Transport Planning reviews current developments in transport planning in Australasia, and identifies issues and areas that should be considered in planning for road route and link infrastructure. Consultation with relevant government authorities (including surveys of all government agencies with a stake in road transport planning), and a review of relevant literature from Australia and overseas underpin the development of this Guide. The Guide raises key policy issues which underlie current transport planning thinking at the national and state/territory levels and considers the following areas:

- planning processes that are consistent with government policy and community and industry expectations
- interface between planning and operations within road agencies at the national and state/territory levels
- principles for road transport planning adopted for urban and rural areas at the different levels of the network, in particular, road-route and link-level planning.

The Guide provides an introduction to transport planning and identifies the critical elements necessary for good transport planning. It also examines current road transport planning processes and guidelines within jurisdictions, existing challenges, and trends for good transport planning. The emphasis is on the principles and elements of road transport planning starting with a broad summary of transport network and corridor planning, which is mostly dealt with in the Australian Transport Council (ATC) National Guidelines for Transport System Management (ATC 2006a through ATC 2006e). The ATC Guidelines cover all modes and particularly land transport corridors and networks (see Section 3 for more detail on the ATC National Guidelines).

The main body of the Guide sets out the concepts of road route and link planning (with their site specific initiatives) and focuses on the planning principles and practice used in planning for road routes and links. The overall aim in developing this Guide is to assess how the current state of transport planning for roads in Australasia compares to best-practice, when planning is practised at a road route and link level.

Road routes and their links are key components of efficient transport corridors and networks. They normally combine with rail routes to form important inter-urban corridors and in metropolitan centres to form key urban corridors (e.g. port and airport links), or road only routes over parts of urban area networks. The aim of this Guide is to address the concepts of route and link planning with a focus on road transport. Road route planning can provide an additional level of detail to assist the practitioner when considering a particular project or program, and provides an essential connection between the corridor planning process and project appraisal.

1.1 Relationship to ATC National Guidelines

As indicated in the preceding section, the ATC National Guidelines provide an important context for this Austroads Guide to Road Transport Planning. They provide high level guidelines for transport planning (i.e. all transport modes) at network and corridor level from a ‘top-down’ perspective. The Austroads Guide to Road Transport Planning provides guidance for road transport planning practitioners, specifically at a road route and link level, in terms of a ‘bottom-up’ approach that is focused on issues of land-use and transport planning integration and the interface between state and local government planning processes.

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1 The four mostly ‘nested’ levels of a transport system hierarchy, that is, network—corridor/area—route—link are expected to apply to both rural and urban parts of the transport system.
The ATC National Guidelines therefore have the status of *guidelines* for transport planning for Australian jurisdictions, having been compiled and agreed to by all jurisdictions in a working group environment and subsequently endorsed by the Conference of Australian Governments (COAG). In addition to providing the context for the Austroads *Guide to Road Transport Planning*, the ATC National Guidelines also provide a ‘departure point’ or ‘starting point’ for the former.

### 1.2 A Frame of Reference for other Austroads Guides

The Austroads *Guide to Road Transport Planning* (this Guide) is developed for the first time to provide a frame of reference regarding road planning principles and processes for other Austroads Guides, such as Guide to Asset Management, Guide to Road Safety and Guide to Traffic Management, amongst others (see Figure 1.1). This Guide can be defined as a source of road transport planning principles and current processes that may be useful to practitioners when dealing with specific planning issues (e.g. planning for specific initiatives regarding traffic and safety projects). These may include community and stakeholder consultation, legal and administrative jurisdiction processes/constraints and land-use considerations. Therefore, this Guide cannot be prescriptive in how road route and link planning should be done, but is intended as a reference point for the other Guides.

![Figure 1.1: Role of Guide to Road Transport Planning as a frame of reference for other Austroads guides](source: ARRB Group Ltd)

*Figure 1.1: Role of Guide to Road Transport Planning as a frame of reference for other Austroads guides*
1.3 A Definition of Transport Planning

Road transport planning can be defined as a key component of the overall transport planning processes normally required for configuring of the whole transport system. Transport planning is a multi-disciplinary activity involving transport management professionals (including transport planners, traffic engineers and economists) as well as urban/non-urban planners. Planning is often expected to provide a dynamic coordination of many dimensions of policy, social and economic activity acting within a closed system of feedback mechanisms and iterative processes, simultaneously linking planners and their processes to the responses of industry and the community. Houghton et al. (2003) in *Planning for Freight in Urban Areas* outline the types of tasks that these teams will be required to undertake. Although the particular focus in Houghton et al. is on freight and freight travel these tasks are generic to all travel movements and include:

- evaluating proposals for new road infrastructure facilities, including identifying needs in infrastructure improvements/upgrades and inter-modal facilities improvements
- development of network and corridor strategies/studies
- designating urban and non urban road freight routes and restrictions
- identifying and analysing inter-modal connections to national highways/main arterials for urban goods movement
- identifying impacts of changing modal share for commodities
- identifying appropriate policy or operational responses to anticipated (or predicted) changes in the origin to destination demands for products
- setting of performance indicators e.g. modal transfer achievements, emissions reductions
- reviewing heavy vehicle size and weight regulations
- transport/traffic modelling exercises to estimate freight and other traffic generation from development proposals
- generating interest and participation from the private sector in transport planning.

The UK Transport Planning Society (see www.tps.org.uk) view on transport planning is as follows:

Transport planning is about preparing, assessing and implementing policies, plans and projects. These are designed to improve and manage our transport systems. There is a need for transport planning on a local, regional and national level. It can involve understanding the linkages between transport and the future shape of our towns and cities. It is also about changing people’s attitudes towards travel to encouraging use of alternatives to the private car (Transport Planning Society, 2006).

The description of transport planning outlined above reflects a shift of transport policy from primarily planning for roads (private car oriented policy) to the need for planning more for other modes such as public transport and non-motorised modes, as well as increased integration with land-use planning. Transport planning has also been argued as needing to be ‘comprehensive’ in terms of the requirements and factors that it considers and is reflective of Travel Demand Management (TDM) objectives (VTPI, 2006). Funding has tended to be more readily available for capital projects and road improvements, as opposed to funding for other types of transportation facilities, e.g. public transport. Planning has therefore tended to follow this direction (VTPI, 2006).
Goulias in Goulias (ed) (2003) argues that:

...30 years later, policy debates continue to depict a very grim picture of the private car’s role in creating the problems we face in major cities... To counter this, many new policies and strategies are needed to provide transportation services while mitigating and minimizing the negative consequences of a car-centred transportation service provision. This is particularly important when we cast transportation services in terms of sustainable development and mobility.

These shifts in transport priorities and policy direction have resulted in changes to road transport planning and will continue to do so.

1.4 Structure of the Guide to Road Transport Planning

Section 2 of the Guide identifies key elements of good transport planning and forms a framework on which the principles and practices of planning road routes and links in Australasia are based.

Section 3 presents a summary introduction of the planning principles and practices described in the ATC Guidelines (ATC 2006a,b) about the higher levels of the transport planning hierarchy (e.g. whole of government objectives, transport system objectives, multi-modal transport network planning and transport corridor planning).

Section 4 examines the development of the principles and practices of planning road routes and links in Australasia that aim to maximise the effectiveness of road transport in harmony with the broader transport system objectives. An extensive survey of road transport planning (particularly on planning at road route and link levels) was conducted seeking information from state and local planning authorities in Australia, as well as regional and local authorities in New Zealand. The aim of the survey was to understand and document the current practice of road transport planning, and help provide a basis to compare these results against best-practice. Survey responses from each agency in a jurisdiction, which has an involvement in road transport planning, were tabulated and synthesised following each question in the survey questionnaire to produce an overall statement of road transport planning for each jurisdiction in a consistent format. Information contained in these summary statements was in turn used to ‘map’ each jurisdiction’s current practice in road transport planning.

Finally in Section 5, a ‘template’ of best-practice principles is developed from information collected from an extensive domestic and international literature review and the findings of the survey of jurisdictions. A benchmarking of current practice of road transport planning in each jurisdiction in Australasia with best-practice is then presented in this Section. Section 5 is completed by a summary of the key findings regarding the current state of road transport planning in Australasia and what should be done to improve this situation.

The main body of the Guide is complemented by a series of commentaries (referred to throughout the text) providing useful details of key concepts introduced in the body of this Guide, and Appendix A and B containing background data and other relevant information regarding the survey if jurisdictions.
2 ELEMENTS OF GOOD TRANSPORT PLANNING

2.1 The Role of Transport Planning

The transport system is an important component of a country’s infrastructure. Transport infrastructure is part of the physical structure of the landscape that influences patterns of growth and the form of development, and provides an opportunity for the movement of people and goods through time and space.

Transport planning is a critical stage in the assessment of infrastructure proposals. According to Houghton et al. (2003), it is necessary in:

- improving accessibility, mobility, transport choice and social equity
- supporting economic and regional development
- ensuring that efficient (and effective) land-use decisions are made
- improving road safety, social and environmental quality and fostering sustainability of infrastructure and the environment
- shaping patterns of development that support communities and neighbourhoods.

Transport planning must therefore be seen in the context of the broader evaluation framework for transport decision-making. Figure 1.2 illustrates the evaluation framework that is normally applied to transport projects.

Efficient and effective road assets are fundamental components for the economic function of cities, linking producers and consumers, and workers and employers. According to BTRE, as quoted in a recent report undertaken for the National Transport Commission (NTC 2006), Australia’s land freight transport task is forecast to double from 2000 to 2020, placing significant demands on road and other transport assets. The key influencing factors for these projections are expected increases in resource demand for minerals and agricultural production, and the substitution and growth of imports as both consumer goods and raw material inputs. There is growing evidence that the community would like the costs of economic growth to be taken into account, whilst ensuring that it is benefiting the broader community. Striking the right balance between the economic, social and environmental values of actions is the essence of satisfying ‘triple-bottom line’ objectives and encouraging sustainable development.

The underlying principles of transport planning aim to produce an efficient movement of people and goods, in an environment where the economy, industry and community interact in a dynamic style that improves quality of life. Planning decisions made about transport systems influence wider spheres of community life by facilitating accessibility to (e.g. employment and essential services) and mobility by (e.g. reducing the cost of doing business or socially interacting). In addition, many stakeholder groups have a high degree of influence on and interaction in the processes related to planning decision-making. This web of interaction and influence makes planning of the transport system a challenging and complex task. Individual or localised transport activities and networks should therefore be planned with a strong understanding of the wider relevant planning context. Well developed processes that integrate and balance community/stakeholder, land-use, transport and environmental planning objectives would be required to achieve efficient solutions consistent with community expectations.

An assessment framework that takes account of these requirements and must be taken account of in terms of the transport planning process is shown in Commentary 1.
2.2 Strategic Planning and Policy Framework

A strategic planning and policy framework is a prerequisite for sound road transport planning. The Austroads *Principles for Strategic Planning* (Austroads 1998) contains the following definition of strategic planning:

> Strategic planning is a continuous and systematic process where people make decisions about intended future outcomes, how outcomes are to be accomplished, and how success is to be measured and evaluated.

Austroads (1998) contains 10 principles of strategic planning that are put forward as the ‘fundamentals of strategic planning’, and can be applied to any strategic planning for roads at any level. These are reproduced in Commentary 2 (Table C2 1), together with some ‘key imperatives’ identified as being important for their successful implementation.

Austroads (1998) also makes the point that the principles are not intended to be followed in sequence, but need to be thought about, applied and incorporated into the planning process from the start of this (planning or related) process. The Austroads strategic planning approach also involves a Strategic Planning Process, set out in Commentary 2 (see Figure C2 1).
The Institution of Highways and Transportation (IHT) has also set out a detailed, 26-step, Transportation Strategy Development Process (see Chapter 3, Figure 1.12 in IHT 1997), which moves from the high-level strategy formulation level to strategy implementation and monitoring/review level. IHT (1997) also provides an overview of transport policy formulation in the United Kingdom at national, regional and local levels. Each of these levels of transport policy involves particular activities and the UK experience sets out the objectives of planning at each of these levels (IHT 1997):

- National - overall guidance, principles and objectives for the transport system, national-level standards (e.g. vehicle emissions or fuel quality standards).
- Regional - integration of transport and related activities, particularly land-use and transport planning together with wider regional (e.g. economic development) objectives, development of national planning policy at a regional level and setting the context for development of urban transportation strategies.
- Local - implementation of urban transportation strategies in the context of a framework for land-use and transport planning at a local level and local transportation plans. A key component linked to the development plans is the capital requirements (transport or roads) program, which is used by the authority to apply for funding capital projects. An integrated transport system approach is fundamental to this process.

The objectives at regional and local level are especially relevant to the Austroads Guide to Road Transport Planning. Key to the policy framework in terms of which local road transport planning take place is the vision statement to which the local authority wishes to work towards and IHT (1997, Ch. 3) provides examples of these.

In terms of transport planning, two general approaches can be identified (IHT 1997):

- Objectives-led approach – objectives for the local transport system are specified, preferably by elected decision makers in the local authority and often after public consultation. These objectives are used to identify problems, in terms of the degree to which current or future conditions may fail to meet the objectives. Objectives may be more abstract (e.g. improving accessibility) or specific (e.g. traffic from any suburb must not take more than an hour to reach the city).
- Problem-orientated approach – defines problems and uses data on current or future predicted conditions to identify when and where these problems may potentially occur. In terms of this approach, the objectives are assumed to be implicit in the specified problems and the problems so identified are used to develop overall objectives for the local transport system.

Route and link transport planning then occurs in the context outlined above. In addition to the higher-level objectives outlined, targets in line with the objectives can also be specified (either quantitatively or more generally) making it easier to determine the extent to which the objectives are being met (e.g. 80% of households must live within 500 m of a bus stop by 2010). The targets must therefore be incorporated into route and link planning.

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2 Although the UK experience as outlined may be rather dated it has not changed in terms of strong central, regional and local linkages and can be argued to be quite different from that of planning in Australia, which is characterised by a high level of state-local involvement, it nevertheless provides an important example of planning linkages between levels of government and the use of land-use transport planning discussed in more detail later.

3 The importance of a strategic and policy framework has been emphasised when planning for transport infrastructure at a national level downwards (see ECMT 2004 for European experience).

4 IHT (1997) identifies a set of possible higher level objectives, including: accessibility, economic efficiency, economic regeneration, environmental protection, equity, financial, safety and sustainability.
Examples in Australasia of a strategic planning framework that ‘cascades’ down from high level strategy and legislation to lower level road transport planning include the New Zealand Transport Strategy, 2002. This strategy outlines high level objectives (e.g. integration, accessibility, safety, sustainability), which provide the framework for the formulation of Regional Land Transport Strategies (by Regional Councils) and then specific road and other transport projects for Road Controlling Authorities (RCAs). These are used to compile the Transit NZ (now the NZ Transport Agency) Roading Programme and Territorial and Local Authority (TLA) Long Term Council Community Plan (LTCCP). The New Zealand transport planning process in its development is underpinned by key pieces of legislation, namely the Resource Management Act 1991, Local Government Act 2002 and Land Transport Management Act (LTMA) 2003 (LTNZ 2007). The need for integrated transport planning in terms of alignment between these documents is explained in detail in the Transit NZ Planning Policy Manual (Ch. 2.3), as well as the Transit National State Highway Strategy (see Figure 1.3 reproduced here from Transit NZ 2007a, Figure 1), which involves regional state highway strategies and forecasts. This process would culminate in route and link level road transport planning for the prioritised projects. These examples are also explained in the survey of road transport planning in jurisdictions in Australasia undertaken for this project (see Section 4).

Source: Transit NZ (2007a)

**Figure 1.3: NZ Transport Agency strategic planning process**

The strategy process outlined in Figure 1.3 enables the NZ Transport Agency to prioritise project proposals (i.e. routes and links) for funding in terms of:

- contribution of the scheme to achieving the National State Highway Strategy
- degree of consistency with land-use in the area
- efficiency of the project (benefits compared with investment required)
- traffic volume and expected growth
The Austroads Guide to Project Evaluation (see Austroads 2005a and next section) describes the planning process in terms of levels of planning, from strategic to operational (including project evaluation, implementation and feedback processes) as set out in Figure 1.4:

**2.3 Role of Project Evaluation**

Evaluation of the projects arising from the road transport planning process is critical and must occur as rigorously and objectively as possible. The ATC National Guidelines set out when and in what form project evaluation occurs in the overall transport planning process, and this is illustrated in Figure 1.5 (see Section 3 of this Guide for more detail on the ATC National Guidelines):
As can be seen from Figure 1.5, project appraisal (or project evaluation) occurs as Phase 5 of the process after the System Planning phase (Phase 3) the latter being where road route and link transport planning occurs (explained in more detail in Section 3) and comprises a process involving a Strategic Merit Test→Rapid BCA→Detailed BCA before moving through to the implementation and post-completion evaluation of the projects implemented.
The Austroads Guide to Project Evaluation (see Austroads 2005a) is also an important handbook for the transport practitioner because it deals with the road project evaluation process in its entirety and assembles knowledge on project evaluation methods, parameters and tools provided as a resource for planners and decision-makers. The Guide consists of guidelines, explanatory text and procedures in eight parts as follows:

- Part 6: Distributional (equity) effects (Austroads 2005f).
- Part 7: Post-completion evaluation (Austroads 2005g).
- Part 8: Examples (Austroads 2006).

The parts of the Austroads Guide to Project Evaluation and their relationship to the overall project evaluation process are set out in Figure 1.6.

![Figure 1.6: Project evaluation process](source: Austroads (2005a).)
2.4 Stakeholder Requirements

Over recent years, greater emphasis has been placed on community and stakeholder consultation within transport decision-making frameworks. This follows recognition that in the past there existed significant gaps in knowledge and information systems concerning community concerns and expectations about the road system (Tsolakis and Thoresen 1998). Without such processes, transport infrastructure projects may be unable to meet these expectations, and may not adequately serve the transport needs within a region (Xu 2001; DfT 2006).

Notwithstanding this recognition, the challenge for decision-makers is to ensure that the needs of the community and stakeholders are accommodated within planning frameworks. This includes the consideration of a wide range of community and stakeholder viewpoints and requirements relating to road use, capital investment and asset management, and the interconnection of these with expectations relating to quality of life developments such as public health, employment, social justice, and the environment.

A key component in developing and managing community and stakeholder requirements is to identify and understand the groups that are likely to be affected. Each individual or group is unique, and its make-up and operation will depend on several factors such as the driving forces, the agencies’ internal goals, the geographic scale, the timeframe required for decision-making, the availability of budget and resources, and the political climate (Tetra Tech 2003). Before engaging stakeholders, each of these factors should be considered to assess the most appropriate way to proceed.

The ability for decision-makers to communicate with the community and stakeholders is a fundamental component of meeting their requirements. Engaging and communicating with the community provides a process where the views, opinions, concerns and reactions of the community representatives or stakeholders are sought (Xu 2001). This can provide a path for governments to build consensus and agreement with the community and stakeholders.

Community and stakeholder consultation is therefore a fundamental component of the process used by governments and road designers and builders to plan transport infrastructure and transport services, and to assess their associated impacts on community activities, land-use patterns, and social and environmental impacts. The Eddington Transport Study, a major investigation of the relationship between transport and productivity and economic performance conducted for the UK Department for Transport, emphasised the importance of consultation as early in the process as possible and recommended that DfT:

Encourage best-practice consultation requiring scheme promoters to consult with the local community and interested parties at an early stage of individual scheme development, so that promoters are adequately prepared for issues likely to arise, and applications can proceed efficiently through the inquiry stage (DfT 2006, p. 352).

Often the extent to which the community and stakeholders are engaged varies from one case to the next and according to the circumstance, and a range of communication strategies can be adopted (ATC 2006c). Hence, there are varying degrees of community participation within a given process and different levels are appropriate for different situations and interests (Austroads 2005f). A range of levels of community participation is described in Figure 1.7.
Local groups or organisations are offered funds, advice or other support to develop their own agendas within guidelines.

Encouraging additional options and ideas, and providing opportunities for joint decision-making.

Not only do different interests decide together on what is best, they form a partnership to carry it out.

Offering some options, listening to feedback, but not allowing new ideas.

Telling people what is planned.

Source: Austroads (2005f)

**Figure 1.7: Levels of community participation**

When planning a communication strategy for a road/transport infrastructure program, a number of other aspects which may impact on the effectiveness of the generic strategy, should be covered. These include cost, resources (facilities and personnel), and planning times.

An example of stakeholder (concerned agencies and general public) consultation is that of New Zealand. Consultation on transportation projects in New Zealand is required by legislation, that is the Land Transport Management Act 2003 (requiring consultation through involvement of other agencies in the formulation of Regional Land Transport Strategies and with the general public), as well as the Local Government Act 2002 (requiring consultation with the general public on the projects proposed in the LTCCP); and Resource Management Act 1991 (requiring consultation with the general public).

### 2.4.1 Cost

When considering an appropriate stakeholder communication strategy, the ability to fund it should be estimated. Within the decision-making process, it is noteworthy that some techniques are more cost intensive than others. The cost of a desired communication approach should therefore be considered in line with the cost allocation set aside for the project/program.

### 2.4.2 Resources

The success of meeting stakeholder requirements is dependent on the skills, integrity and commitment of transport officials who liaise with stakeholders (Austroads 2005f). Options are often considered for whether there are sufficient resources available for the collection, analysis and reporting of data within the preferred communication approach.

Decision-makers should also acknowledge that not only do the resources for conducting and selecting a participatory approach need to be assessed prior to commencing a consultation process, but the resources of the stakeholders also need to be considered. For example, financial assistance may be required for individuals or groups in order for them to participate in the consultation process (Austroads 2005f). Similarly, considerations should be given to the risk that stakeholders may over-commit time and resources, which may affect the overall outcome of a program.
2.4.3 Planning Times

In order to meet stakeholder requirements, the community consultation process should ideally commence as early in the planning process as permissible in order to identify and develop an understanding of the objectives and major issues, and communicate these within an agreed framework. This acts to ensure that the consultation process is as effective as possible and can assist in minimising the risks of costly remedies and negative outcomes further down the track e.g. failing to meet stakeholder requirements at the end of a process.

Although the community and stakeholders need not be involved at every stage of a program’s planning process, consultation should continue between the decision-maker and stakeholders at critical stages of the planning process (ATC 2006b). The timing of when and at what stage in a planning process to communicate with the community and stakeholders should be considered. Engaging stakeholders too early may unduly influence the planning process. ATC (2006b) notes that there is a risk that exposing underdeveloped policy positions to a broader audience merely raises expectations rather than aiding convergence to supported positions.

The significance of the community/stakeholder consultation process is also emphasised in the Context Sensitive Solutions (CSS) approach as discussed in Commentary 3. A key principle of CSS is that of ‘balanced’ decision-making. The idea of ‘balanced’ refers to the need for transport planning to reflect community input and consider the impacts of projects on natural and human environments. The need for a balanced approach, including balanced stakeholder input, is explained further in the following section.

2.4.4 Need for Balanced Stakeholder Input

There is a need in the road transport planning process for planners to ensure that the role and input of stakeholders is balanced (ATC 2006e) and this holds for planning at route and link level as well. The ATC National Guidelines (ATC 2006e) refer to the case of stakeholders (or groups thereof) who may be better organised, have access to better resources or be more adept at influencing the process (e.g. being familiar with the requirements of the planning process and being able to use legal means to challenge the process). Benefits may then accrue to a small group of stakeholders while the costs are borne by a wider group or society as a whole, with total costs being greater than the benefits. The reverse is also true, with costs accruing to a group within society and benefits being more widespread, with the benefits exceeding the costs of the project or initiative. If decisions favour small groups of stakeholders at the expense of society as a whole, society is worse off.

These issues arise in the form of the NIMBY (not in my backyard) problem, e.g. in the case of a road that imposes externality costs on those living along the route while the benefits of the road accrue more widely to society as a whole (road users using the route but not live near it) as well as society that uses the route to transport goods for its economic benefit. Planners need therefore to take these conflicts in planning into account to ensure that they obtain the most balanced input from all stakeholders and be aware of the impacts of the project (and groups affected) and plan accordingly at all levels.

2.4.5 Importance of Good Data

In addition to meeting stakeholder requirements and ensuring that adequate consideration has been given to cost, resources and planning milestones, another important factor necessary for good transport planning is the access to sufficient and accurate data.

The ability to obtain good data is highly relevant for developing and maintaining any transport planning framework. The National Guidelines provide a list of data needs as follows (see ATC 2006e for further detail on these issues):
population in regions, current and projected
- economic activity in regions (current and projected) and disaggregated by industry
- transport infrastructure
- vehicle numbers and traffic composition
- performance measures
- flows of passengers and freight by mode and origin-destination (current and forecast)
- access to and from the corridor using origin-destination data
- terminals: inter-modal and modal
- bridges: location, length, width
- environmental and heritage considerations
- safety related issues
- role of the corridor in national and state economies and broader transport network
- social factors
- Australian government, state, local and private sector plans and priorities
- existing and proposed projects and policies.

Achieving a successful linkage between operations data and transport planning is a fundamental component of providing information in order to make effective decisions. On May 4, 2005, the Operations Data for Planning Applications: Identifying Needs, Opportunities, and Best-practices Peer Exchange was held in Washington, D.C. The aim of this meeting was to identify opportunities to improve the linkages between transportation planning and operations, and in April 2006 a summary of this exchange was provided in the Transportation Research Circular, Transportation Research Board (TRB 2006). As part of this peer exchange, a series of questions were proposed for each participant as follows:

1. How are you using operations data in the context of transportation planning?
2. What are your data needs from operations for use in the planning process?
3. What methods do you use to obtain data from operations for use in transportation planning?
4. What factors caused you to begin using operations data for transportation planning?
5. What benefits have you found in the use of operations data for transportation planning?
6. What challenges have you faced when using operations data (archiving, data quality, etc.)?
7. What advantages or new opportunities have you realised from the use of operations data?
8. In the future, what other operations data do you think could be used in planning and how could they be used? What are the obstacles to the use of these additional operations data?
9. What are the obstacles to the use of operations data across the planning profession?
10. What activities would help encourage the use of operations data in the planning profession?

In response to these questions, a series of steps were developed to provide a link between operations data and transport planning. These steps are reproduced from TRB (2006) and presented in Table 1.1.
A key barrier that has been identified at the state and federal government level is the degree of compatibility between different data sources. It is acknowledged that data will vary widely between regions, types of data, quality of data. In addition, the planning issues, analysis tools and projects will vary between states and territories. The use of data in transport planning therefore should recognise that it is not a ‘one-size-fits-all’ proposition (TRB 2006). Progress is currently being made within the Standing Committee on Transport and its member agencies to investigate this issue further (e.g. the National Transport Data Framework (NTDF)). The NTDF recognised that ‘a major issue is the lack of coherent transport data required…’ (ATC 2006b).

Other factors requiring consideration in improving the interrelationship between ‘good data’ and planning are:

- The ability for agencies to provide data as a means of communicating the role of transportation agencies to the public and decision-makers in a timely manner.
- Ability for transport agencies to successfully develop partnerships with other departments for mutually beneficial operational strategies (where relevant) (TRB 2006).
- Providing avenues to apply data in transport planning for both urban and rural areas. Including information on accessibility and mobility, traveller information systems, economic development partnerships, and social and environmental sustainability.
- Consideration of ownership of operations hardware and data. This may not typically fall under planning offices, complicating the ability to exchange information and ensure infrastructure optimisation (TRB 2006).

Good data availability and robust analysis of these data will support a robust process of evidence-based planning and will ensure that decision-making regarding the planning process cannot be weakened or biased. Evidence-based planning will have the potential to promote transparency and proper accountability in the planning process and maximise the benefits for all key stakeholders and the wider community.
Table 1.1: Key steps for linking data and transport planning

<table>
<thead>
<tr>
<th>Key steps</th>
<th>Why are these steps important?</th>
<th>Initial ideas for implementing the steps</th>
</tr>
</thead>
</table>
| Make a case for the benefits of using operations data for planning applications. | ▪ Collecting and analysing operations data are resource intensive.  
  ▪ Many agencies are “getting by” with existing data so there is limited motivation to change. | ▪ The benefits of using operations data in transportation applications  
  ▪ Planning should be shared with all potential partners. Peer exchange participants identified the following benefits:  
    ▪ Optimisation of maintenance and operations activities  
    ▪ Travel demand forecasting model validation  
    ▪ Managing congestion on mega projects  
    ▪ Emergency preparedness  
    ▪ Air quality non-attainment  
    ▪ Performance measurement  
    ▪ Congestion relief, solving the “insolvable” problems to capacity restrictions and high cost  
    ▪ Traveler information  
    ▪ Data collection safety  
    ▪ Expanding understanding of traffic conditions (e.g., non-recurring congestion) |
| Develop the relationship between operations staff and planning staff.     | ▪ Operations and planning typically reside in separate agency ‘silos’. Therefore, the two groups are faced with different priorities and concerns (e.g., short term versus long-term planning horizons).  
  ▪ Limited interaction between operations and planners typically occurs.  
  ▪ Cultural change will happen only through early and ongoing collaboration. | ▪ Create a task force or project team composed of planners, operators, and data experts. These can evolve from existing committees or be formed from multi-stakeholder workshops.  
  ▪ Use available seed money to start building relationships and help form the taskforces identified above.  
  ▪ Define each agency–office role.  
  ▪ Identify the varying needs and similarities between operations and planning offices. |
| Address data issues.                                                      | ▪ Data quality, coverage, and compatibility issues still exist.  
  ▪ Data that are not perceived to be reliable will undermine efforts to use information in any planning decisions.  
  ▪ Software tools to handle large amounts of operations data are lacking. | ▪ Continue to improve the quality, coverage, and compatibility of existing data collection efforts.  
  ▪ Explore new data partnerships:  
    ▪ Universities have performed data archiving, quality checks, and analysis for transportation agencies. To ensure success, university work must be carefully focused and directed at the needs of the agency.  
    ▪ Private sector has begun collecting and selling operations data. Similar to the universities, the relationship between the private and public sector must be clearly outlined.  
    ▪ Evaluate new data sources (e.g. remote imaging).  
    ▪ Develop new software tools to meet archiving, analysis, and data compatibility issues. |
| Identify a champion within the agency or within the decision-making body. | ▪ Collecting and analyzing operations data are time-consuming and resource intensive, so require longer-term management support. | ▪ Identify a potential agency to facilitate and guide process. |
| Start small.                                                              | ▪ Establishing an operations data program can be a long-term process, so don’t wait for the ideal system to begin collecting data. | ▪ Begin with, for example, traffic count and speed data. |

Source: TRB (2006, Table 2).
2.5 Current Trends in Planning

Transport planning is a concept that has evolved considerably in recent years, largely due to the shift towards embracing a truly sustainable framework incorporating economic, social and environmental perspectives and priorities. Both private and public sectors have steered away from the traditional focus on only financial objectives for the former and emphasis on economic objectives for the latter. Dimensions of social and environmental accountability have been gaining support in reporting project performance. A ‘triple-bottom-line’ (TBL) approach\(^5\) (i.e. financial-environmental-social) to decision-making has been increasingly promoted, which incorporates a framework for measuring and reporting corporate performance in a way that is more orientated towards community values and seeks to minimise negative externalities and create economic, social and environmental value (Elkington 1997 in Tsolakis et al. 2003).

What this means is that whereas in the past transport planning would have focused largely on aspects such as:

- safety – accidents involving fatalities, injuries and property damage
- efficiency – optimal allocation of resources in moving people and goods through the transport system
- access – provision of technologies and services enabling users to reach and use social and economic opportunities
- comfort – travel without unnecessary discomfort due to noise and other factors,

it has become mandatory (and in many cases legally imperative) to include issues such as environmental pollution impacts in the transport planning process (Goulias in Goulias ed 2003).

2.5.1 Integrated Transport Planning

The concept of integrated transport planning has emerged as a framework to more closely define the broader term of transport planning. According to the Integrated Transport Planning Framework for Queensland, integrated transport planning is defined as:

… a process to identify current and future access needs – for people, places, goods and services – and inform decision makers on ways to manage the transport system and land-use to best address these needs. It aims to do this in a way that sustains economic growth, conserves the environment and supports the quality of life of current and future generations (Queensland Government 2003, p.1).

Integration takes place across disciplines and across levels of government and responsibility. Figure 1.8 illustrates horizontal and vertical integration of types and levels of planning. Vertically, planning decision-making is influenced by different levels of knowledge, policy and priorities. Directions set by national bodies guide the responses of jurisdictions and modal groups towards the achievement of national level objectives. Likewise, the needs of modal groups and lower order planning inform and influence decisions made at the national level.

Horizontally, transport planning will be at its most effective if it is integrated with other types of planning. Planning in sectors such as health, education and regional development should be considered to ensure decisions complement rather than conflict with each other. Consistent land-use planning decisions also need to be made across regions and jurisdictions.

\(^5\) The TBL approach is explained in more detail in Commentary 4.
Figure 1.8: Integrated planning

Figure 1.8 illustrates top-down or bottom-up vertical integration processes. Transport projects are rarely generated in this simplistic manner and transport decision-making is not a straightforward process. Transport proposals and projects are subject to difficulties such as discontinuity, uncertainties, ‘wild-cards’ and time-lags (TRB 2008a). For example:

- Decisions on projects may be delayed or sped up for political reasons or issues of funding. If projects are delayed, this may mean studies or evaluations conducted for the project become out of date. If projects are sped up, planning may be rushed and a comprehensive consideration of alternatives may be neglected.

- High profile or politically attractive projects may be granted funding over low profile improvements, such as rail track renewal or signal improvements (Industry Commission 1994).

- Reliance on the prevailing political climate for funding may prevent projects from being implemented as quickly as they convey net benefits.

This framework therefore recognises sustainability, integration and development of effective partnerships across governments, industry and with stakeholders as foundations of successful integrated transport planning (Queensland Government 2003). Integrated transport planning can also be applied in many circumstances from a strategic through to a detailed planning level.
In the US, horizontal integration of transport planning approaches and activities across regions (states) and vertical integration (down through all levels of government to local level) has become an issue generating much discussion (TRB 2008a). A concerted effort has been made to document transport planning practices, issues and innovations across states in the US given the large number of states and the resulting plethora of transport planning approaches. One issue of this complexity has been that of the need for vertical integration of transport planning activities down to the local level, but also the need for consistency in approaches across states. In addition to the need for horizontal and vertical consistency in approaches, TRB (2008a) addresses the changes that may occur to transport planning when regional funding becomes more readily available for projects, i.e. the types of projects funded by states change and along with that the type of transport planning required also changes.

The principle of integrated planning has a longstanding history of use already across jurisdictions in Australia, and may be considered to be ambiguous in application. Therefore consistency in the use of this principle across a number of settings is required, and should be considered by all jurisdictions.

An account of the interactions and influences on transport decision-making in Australia is provided in more detail in Commentary 5.

In the case of New Zealand is experience in integrated transport planning, the Transit NZ Planning Policy Manual is a good example with its Integrated Planning Policy in terms of which the organisation (involved in route and link planning of state highways in New Zealand) aims to integrate transport planning in the following ways (Transit NZ 2007b):

- undertaking long-term multi-modal planning in partnership with local authorities, transport providers, utility companies, developers and local communities
- adopting a context-sensitive approach to planning, designing and managing the state highway network within the wider transport system, through the categorisation of state highways
- maximising benefits from existing investment in state highways by improving their efficiency and maintaining their strategic function
- accounting for the transport needs of growth identified in statutory planning documents, together with the wider transport needs of a growing economy, in the development of the State Highways Forecast
- designing and delivering new and improved state highways that contribute to sustainable outcomes while being prudent and affordable
- addressing local planning issues that involve state highways in a proactive and timely manner.

2.5.2 Multi-modal Planning

Multi-modal transportation planning is a multi-faceted approach that considers all modes/options. This concept:

...recognises the fact that efficient movement of goods and people is accomplished through a system of transportation resources and that the concerns and needs of all users of the system should be considered (See Delaware Valley Regional Planning Commission 2006).

Variations in transport planning approaches across jurisdictions in Australasia are also documented in this Austroads Guide to Road Transport Planning and the lessons learned provide directions for the Guide.
ATC (2006c) defines multi-modal planning as that which involves network linkages with the full range of transport modes such as road, rail, maritime and air, while also taking into consideration the importance of transport corridors through urban areas, and their related impacts. Whilst the national land transport network focuses on long distance road and rail facilities, any developments beyond the land transport corridor, such as maritime transport, could have significant bearing on investment decisions for that corridor. In an urban transport network the modal emphasis will be different as the multi-modal options are often fewer, but there are more inter-modal opportunities such as public transport, cycling and walking (ATC 2006d).

It is the whole-of-system approach of multi-modal planning that by its very nature involves the inclusion of a range of planning tools such as: integrated transport planning, land-use planning, urban planning, travel demand management mechanisms (both regulatory and non-regulatory), ITS solutions, network solutions, access management, and inter-modal facilities. It heralds a major shift in the focus within transport planning towards more sustainable and strategic transport planning, whilst at the same time, aiming to minimise costs to the community. By looking at the entire transport task, across multiple corridors and regions and taking into consideration the inter-relationships between modes and the many competing demands between freight and private travel a better planning solution for all users can be achieved.

A significant amount of material exists on planning for specific transport modes, especially given that they use the same infrastructure. Some key references for specific modes are set out in the sections below.

**Freight**

Given the increasing number of heavy goods vehicles (ABS 2007) and the increased freight task and traffic volumes forecast in the future, including urban freight traffic (NTC 2006 and BTRE 2007), planning for freight traffic has become more important in the Australasian context. The importance of trends in global freight issues, freight commodity flows and comprehensive freight databases for transport planning is emphasised in ITE (1999). Planning for the needs of freight has also become a legal requirement in terms of federal legislation in the US (NCHRP 2007 and VTRC 2008).

In terms of land-use and transport models mentioned elsewhere in this Guide (see Section 2.5.6), it must be noted that only a minority (e.g. MEPLAN and TRANUS) incorporate a detailed freight modelling capacity (NCHRP 1999). A lack of freight data and planning at a network and corridor level will impose limitations on planning for freight at a route and link level.

The integration of freight into the transport planning process is addressed in NCHRP (2007). This reference provides guidance for freight planning, programming and project development activities, corresponding to one of the four identified phases of the transport planning process. These are reproduced in Table 1.2.
Table 1.2: Integration of freight planning into the transport planning process

<table>
<thead>
<tr>
<th>Planning process phase</th>
<th>Corresponding freight planning, programming &amp; project development activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs identification strategies</td>
<td>▪ Developing a Freight &amp; Industry Profile</td>
</tr>
<tr>
<td></td>
<td>▪ Engaging the Private Sector in Needs Identification Process</td>
</tr>
<tr>
<td></td>
<td>▪ Conducting a Hotspot or Bottleneck Analysis</td>
</tr>
<tr>
<td>Plan development strategies</td>
<td>▪ Identifying Corridors and Facilities of Statewide or Regional Significance</td>
</tr>
<tr>
<td></td>
<td>▪ Developing Freight Performance Measures</td>
</tr>
<tr>
<td></td>
<td>▪ Linking Freight &amp; Land-use Planning</td>
</tr>
<tr>
<td>Programming strategies</td>
<td>▪ Developing Freight-Specific Evaluation Criteria</td>
</tr>
<tr>
<td></td>
<td>▪ Evaluating Economic &amp; Other Public Benefits of Freight Improvement Projects</td>
</tr>
<tr>
<td></td>
<td>▪ Using Alternative Funding &amp; Financing Approaches</td>
</tr>
<tr>
<td>Project development strategies</td>
<td>▪ Addressing NEPA Requirements within Freight Projects</td>
</tr>
<tr>
<td></td>
<td>▪ Incorporating Context-Sensitive Solutions (CSS) into Freight Projects</td>
</tr>
</tbody>
</table>


Each of the activities in Table 1.2 is dealt with in detail in NCHRP (2007) in terms of the following elements:

- **Overview** – a brief description of the strategy and its importance.
- **Key steps** – specific steps necessary to accomplish the activity.
- **Data needs and other supporting resources** – refers to the types of freight data needed to conduct the activity. In addition, other supporting resources, such as training opportunities or other guidebooks are listed. Specific details and availability of these data and supporting resources are described in detail in a specially developed Freight Resource Tool Box.
- **Case study examples** – The guidance provided is supported with case study vignettes from actual practices of states and Metropolitan Planning Organisations (MPO). These case study examples demonstrate how freight planning and programming concepts are being used in the field. Fully developed best-practice case studies are also provided in the Freight Resource Tool Box.
- **Strategies to link to the traditional process** – One of the keys to a successful, continuous freight planning program is to link it to the existing transportation planning and programming process. Guidance is provided on specific strategies to link the freight planning activity described with the traditional transportation planning, and programming process. Consistently employing these strategies will allow a traditional transportation planning and programming process to evolve into one that fully incorporates freight issues, allowing agencies to plan, program, and implement transportation improvements more comprehensively.

AASHTO (2003) surveyed a number of states in the US in terms of freight planning practices and has captured freight planning components and criteria to determine best-practice freight planning (as opposed to an ideal freight planning process by any particular state), as set out in Table 1.3 below:
Table 1.3: Freight planning categories and criteria to determine success of best-practice freight planning

<table>
<thead>
<tr>
<th>Planning Category</th>
<th>Criteria to Determine Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-range planning process</td>
<td>▪ Freight studies are completed and results are incorporated into general transportation planning process</td>
</tr>
<tr>
<td></td>
<td>▪ Freight improvement projects are identified</td>
</tr>
<tr>
<td></td>
<td>▪ Freight issues are included in long-range plans</td>
</tr>
<tr>
<td></td>
<td>▪ Study results in the identification of new policy, legislation, or funding programs</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>▪ Freight issues are handled by a single division/section</td>
</tr>
<tr>
<td></td>
<td>▪ Organizational structure resulted in more efficient consideration of freight issues across modes</td>
</tr>
<tr>
<td>Data &amp; analytical tools</td>
<td>▪ Commodity flow/state freight profiles are developed</td>
</tr>
<tr>
<td></td>
<td>▪ Freight models or other analytical tools are developed</td>
</tr>
<tr>
<td></td>
<td>▪ Tools and profiles are utilized during general transportation planning process</td>
</tr>
<tr>
<td>Private sector participation</td>
<td>▪ Private sector advisory group has been formed and meets regularly</td>
</tr>
<tr>
<td></td>
<td>▪ Private sector stakeholders eligible to submit project ideas for consideration, either through advisory group or independently and have identified specific freight improvement projects</td>
</tr>
<tr>
<td>Multi-jurisdictional coordination</td>
<td>▪ State is an active participant in multi-jurisdictional coalitions and has been involved in completion of a regional freight plan or study</td>
</tr>
<tr>
<td></td>
<td>▪ Co-ordination resulted in identification or programming of regional freight priorities or improvement projects</td>
</tr>
</tbody>
</table>


The changing nature of the freight task must also be incorporated into transport planning. The increasing importance of urban and light freight poses specific challenges in the urban context where the increasing number of light commercial vehicles will compete with private cars for road space, especially in the CBD environment. This has resulted in the rise of ‘city logistics’ as an area of research, explained in detail in, for example, Thompson and Taniguchi (2001), and is aimed at providing a systems approach to addressing the difficult and complex problems that arise in the urban freight context.

The objective of ‘city logistics’ is therefore to optimise logistics systems within an urban area by taking account of the costs and benefits of logistics schemes to the public as well as the private sector. It therefore aims to balance the private sector objectives of say freight shippers in terms of minimising freight costs as well as the public sector objectives of addressing externalities such as traffic congestion and environmental impacts such as noise or air emissions. ‘city logistics’ therefore provides a framework for the integration of the plans of both regional and local authorities and private sector freight and logistics operators, e.g. in areas as basic as loading zones for commercial vehicles.
Public transport

Planning for public transport and including provision for it in the transport planning process has also become more important, given the emphasis on sustainability. In the Victorian Transport Policy Institute (VTPI) TDM Encyclopedia\(^7\) transit oriented development (TOD) (or public transport oriented development) is identified as a key element, together with non-motorised modes in reducing dependency on private car transportation (VTPI 2006). In terms of Australasian documentation, the Victorian Department of Infrastructure (DOI) has published its own Public Transport Guidelines for Land-use Development (DOI 2007), which aim to assist in planning for the public transport requirements of land-use developments, including the public transport requirements of activity centres\(^8\) and subdivisions. The DOI public transport guidelines also set out the design principles and performance requirements for bus, tram and train transport, including bus and tram priority measures.

Non-motorised (cycling and walking)

Although cycling and walking are discussed in this Guide, ITE (1999) points out that these are separate modes in their own right and must therefore be planned for accordingly. However, they are grouped together as ‘alternative modes’ in order to allow for a choice of modes and a reasonable balance to the transport system, as ITE (1999) goes on to explain:

> In many cases, creating a reasonable balance means more than simply installing sidewalks or designated bicycle facilities. For the pedestrian, it means increased attention to factors that have – in the past – been beyond the domain of responsibility for engineers. It means making streetscape improvements – an area in which engineers are not typically trained, but must now become more proficient in with the assistance of planners, landscape architects and urban designers (p. 601).

In terms of compiling a route improvement plan, there are several key issues in planning for cycling facilities for example, although these are also applicable to pedestrian facilities:

- **Travel demand** – an estimate of latent demand for cycling (and walking) should be undertaken to determine locations for cycling and walking facilities so that they can serve the greatest need.
- **Existing conditions and suitability analysis** – conditions (including traffic, safety) on potentially suitable roads are assessed to assist in the location of cycling and pedestrian facilities, including an overall assessment and assessment of issues at specific locations.
- **Public consultation and political support** – public consultation is important and development of cycling and walking facilities should involve local community groups, and cycling and walking advocate groups and residents as early as possible, so that they can provide input to the planning process from the beginning.
- **Route continuity and directness** – successful cycling and pedestrian networks consist of continuous routes providing direct access to facilities and destinations for the community.
- **Cost-effectiveness** – cycling and walking facilities can be provided more cost-effectively by planning and making provision for these facilities as part of larger initiatives.

VTPI (2006) contains a significant amount of material on non-motorised planning and outlines the benefits and costs of planning for non-motorised modes, including:

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\(^7\) Travel demand management (TDM) and its direct implications for traffic is also dealt with in more detail in the Austroads Guide to Traffic Management, Part 4 (Network Management).

\(^8\) For more detail on planning for transport and traffic requirements of activity centres, see the Austroads Guide to Traffic Management Part 7 (Traffic Management in Activity Centres) and ITE (1999).
• **Mobility** – non-motorised modes are more affordable and they provide road users with a level of mobility, especially for short distance trips.

• **TDM benefits** – shifting to non-motorised modes reduces external costs of using private car transport and direct costs to the road user.

• **Land-use impacts** – non-motorised transport supports ‘smart growth’ development objectives, improving the liveability of urban areas.

VTPI goes on to present a set of guidelines for non-motorised planning, particularly pedestrian planning. Other resources for practitioners in the area of pedestrian transport include a set of ‘evolving best-practices’ and a database of papers on walking facilities contained in Walk 21 (see www.walk21.com). NCHRP (2006) includes a list of cost components that would normally be required for cycling facilities, together with a description and an interactive cost database of these. The report also outlines a method for estimating and forecasting the demand for cycling. A list of benefits of cycling facilities is also provided: mobility (identification of appropriate actions to increase mobility can be obtained through stated preference surveys), health benefits of increased cycling and walking, benefits of reduced private car travel in terms of reduced fuel usage and emissions, safety benefits of soundly planned cycling facilities and how cycling and walking adds to the ‘liveability’ of the environment. Finally, a methodology is put forward for undertaking a benefit cost analysis of cycling facilities and how these identified benefits and costs may be estimated.

In terms of Australasian experience, Austroads has a set of Guidelines to providing facilities for both pedestrians (Austroads 1995) and for cycling (Austroads 1999). In terms of Australasian experience, the Victorian Planning Provisions (clauses 18.03 & 12.08) deal specifically with cycling transport, providing for planning for cycle facilities in new urban developments and these must be in line with Austroads Guidelines for Cycling Facilities (Austroads 1999). Meanwhile, Queensland Transport has also produced its own Bicycle Facilities Guidelines following the developments in Austroads (1999).

### 2.5.3 Sustainable Transport Planning

In recent decades there has been a significant shift towards embracing a truly sustainable framework incorporating financial/ economic, social and environmental perspectives and priorities. The community expects a certain level of economic efficiency, social cohesion, a sound and fair welfare system, adequate health and education services and a healthy natural environment. Over time, these priorities have evolved and as a result of changing perspectives, both societies and governments have sought to deliver reform in all of these key areas in recent years. The ‘triple-bottom-line’ approach has been a significant driving force in influencing these changing priorities of the community and stakeholders. For example, the community has championed the demand for greater emphasis from political and private sector organisations on issues such as air pollution, the greenhouse effect, noise pollution, barrier effects, and damage to heritage sites, which are all associated with the provision and management of transport assets.

This is a significant trend in transport planning, where the priorities of communities of interest and stakeholders play a role in influencing government decision-making processes. The need to incorporate environmental impacts into transport planning is now a key requirement and current practice (NCHRP 2005b; ITE 1999). This includes the need to incorporate the impacts of climate change in planning for infrastructure e.g. the case of New Zealand where the 2004 Resource Management (Energy and Climate Change) Amendment Act provides that Transit NZ (now NZ Transport Agency) must include possible climate change impacts in its road planning, design, construction and maintenance activities (TRB 2008b).

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9 Both of these documents form part of the Austroads Guide to Traffic Engineering Practice, due to be replaced by the Austroads Guide to Traffic Management, Guide to Road Design and Guide to Road Safety.

10 See also the Austroads Guide to Traffic Management Part 4 (Network Management) for guidance on the implications of sustainability for traffic management.
2.5.4 Planning for Urban Areas

Historically, urban transport planning has been a much more complex and dynamic activity than planning of inter-capital and rural networks. The influence of architecture and civil engineering in the 19th Century to codify both rational and stylistic approaches to solving city problems through physical design made the process of urban planning more defined. Nowadays, urban planning has come to include economic development planning, community social planning and environmental planning as well as more general land-use planning. Successful urban planning encompasses an understanding that influences land-use/transport interaction particularly in urban areas, multi-modal/inter-modal solutions, managing transport demand, making more from the existing infrastructure, utilising non-infrastructure solutions (e.g. ITS), and making the most of regulation and policy. Therefore, the greatest challenges for governments are considered to occur in urban areas and provincial cities. A key issue is that of urban congestion management, which involves a range of responses as set out in the COAG Review of Urban Congestion Trends, Impacts and Solutions (COAG 2006). However, these are also the areas where the greatest opportunities exist to apply contemporary innovative solutions.

Urban congestion management

Traffic congestion is a major issue in urban centres and is prevalent in various major cities of Australasia and will, therefore, need to be addressed in the road transport planning process. The COAG Review of Urban Congestion Trends, Impacts and Solutions sets out several measures and responses that can be used by road authorities to address this issue, including both supply-side measures (e.g. capacity enhancement), and demand-side responses (e.g. travel demand management measures). These measures and responses are as follows:

- Road supply management – road space allocation (high occupancy vehicle or HOV lanes), capacity enhancement, active management (including Intelligent Transport Systems or ITS based solutions) and access management (see below for more detail).
- Freight management – regulations dealing with access, capacity and standards; supply chain logistics and infrastructure development.
- Travel demand management – non-price measures (e.g. travel plans, telecommuting) and price measures (e.g. road use charging such as area, cordon and link-based charges; route charging such as variable tolls, high occupancy toll or HOT lanes; and parking levies).
- Alternative passenger transport – public transport and non-motorised transport (walking and cycling).
- Urban land-use planning – transit oriented development focussing on mixed use and public transport and access/land-use strategies for major projects.

Intelligent transport systems

More recently urban planners have been required to come up with innovative solutions to manage the demand for greater travel particularly by the private car. Such solutions to rapid rises in vehicle travel are beginning to include ITS which encompass a wide range of communications and information technologies. These include traffic cameras, ramp meters, dynamic message signs and monitoring centres that promise to increase the efficiency, safety and capacity of existing transportation infrastructure (see Sundeen 2003).
ITS can be used for diverse needs, ranging from controlling the flow of traffic, detecting emergencies on highways, and warning drivers of impending danger, to improving freight security, routing on-demand travel services and efficiently checking registration documents for commercial vehicles. ITS technologies range in size and scope from a single ramp meter, dynamic message sign or transponder to an entire traffic management centre or networks of computers and software (Litman 2005).

**Access management**

Litman (2005) describes access management as a term used by transportation professionals for the coordination between roadway design and land-use to improve transportation, and is a process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity and speed. Access management involves the changing of land-use planning and roadway design practices to limit the number of intersections on arterials and highways, constructing medians to control turning movements, encouraging clustered developments, creating more pedestrian-orientated street designs, improved connectivity, and road space reallocation to encourage efficiency. Although access management is used primarily to improve motor vehicle traffic flow, it can also support travel demand management measures by integrating transportation and land-use planning, and by improving transportation options. It can also help convert vehicle orientated strip development into more accessible land-use patterns that are better suited to walking, cycling and public transport.

Cutr (1998) describes 10 strategies to assist access management:

1. Lay the foundations for access management in your local comprehensive plan.
2. Limit the number of driveways per lot (generally one per parcel).
3. Locate driveways away from intersections.
4. Connect parking lots and consolidate driveways (so vehicles can travel between parcels without re-entering an arterial).
5. Provide residential access through neighbourhood streets (residential driveways should generally not connect directly to arterials).
6. Increase minimum lot frontage on major streets (minimum lot sizes on major arterials should be larger than on minor streets).
7. Promote a connected street system (avoid street networks that force all local traffic onto arterials).
8. Encourage internal access to out-parcels (i.e. locations in shopping centres located on arterial streets).
9. Regulate the location, spacing and design of driveways.
10. Co-ordinate with the relevant level of government, and department.

Access management has the potential to have a variety of impacts on vehicle travel, and the demand for it. It may reduce vehicle travel if it results in higher density and has the potential to increase efficiency for freight traffic through urban areas (Cutr 1998).
Inter-modal facilities

Inter-modal facilities describe the freight based multi-modal transfer hubs that exist in most major capital cities in Australia. With both the freight task and passenger travel expected to strongly increase in the next decade inter-modal facilities will become even more necessary. Inter-modal facilities allow for the more efficient transfer of goods between the many competing and complementary modes that currently carry goods around the country, namely heavy trucks, light trucks, ships and trains, and are usually located close to either a major freight rail hub or a port. In particular, the emphasis is now turning to urban freight and the pressures that are experienced in congestion and bottlenecks in the freight logistics system. The expected strong increase in the freight task will mean that an efficiently functioning inter-modal freight facility is paramount to decreasing bottlenecks and blockages in the supply chain.

Planning for urban freight needs to consider the whole freight task since the interrelationships between major urban areas and other regional and rural locations are strong. Planning for freight in urban areas will be a multi-disciplinary activity involving transport management professionals (including transport planners and traffic engineers) as well as urban planners. The urban freight planning process will also need to consider the role of rail in the urban freight task. The provision of new rail technologies and in some cases, reinstating rail sidings at manufacturing sites, will enable more freight to be moved to ports on rail. This would enable a shift of cross-metropolitan container movements from road to rail. The impacts of urban freight and the increases in freight activities within urban areas are, however, driving a need for change. Increases in freight activity present a problem in two parts for planning. The first part is planning for the use of larger and heavier vehicles in the urban environment in undertaking the freight task. The second is the increasing numbers of light commercial vehicles (LCVs) undertaking urban freight movements (Houghton et al. 2003).

2.5.5 Collaborative Planning

Collaborative planning involves planning in close collaboration with industry, the community and stakeholders. It has emerged out of the desire of these groups to have a say in the way they live and the way their local areas function. Where a government planning department plans for the physical future of the entire jurisdiction and fails to involve the community it will most affect, it can lead to complaints, concerns and ineffective use of time and resources in the planning process.

Some common characteristics of this problem also include:

- the inability of planning offices to work collaboratively with other organisations doing community development and human service delivery work at the neighbourhood scale
- an emphasis in many public planning departments on the physical realm of land-use and capital improvements, to the exclusion of other often non-physical interests affecting quality of life and amenity (human services, education, crime prevention, and economic development) (www.planning.org/casey/summary.htm).
Whilst the term ‘collaborative planning’ may not be consistent at the national, state/territory and local level, the concept of adopting a thorough consultation process with key stakeholders and the community is increasing in emphasis. For example, the ATC National Guidelines (ATC 2006e) recognise that stakeholder expectations and values are diverse and include economic progress, environment/sustainability, equity/social cohesion, security and safety. The ATC National Guidelines therefore make the connection between community values and transport objectives, and ensures that community expectations are considered at all phases of the transport system management framework. Also, state jurisdictions have placed substantial effort into achieving more effective transport planning and collaborative planning. For example, over the last decade, the Queensland Department of Main Roads (QDMR) has reached ‘concurrence of powers’ in local government town planning and land-use approvals, particularly at the legislative level. This aids in seeking transport efficient solutions, whereby industries and residents are informed of the transport decision-making process. Hence collaborative planning provides an educating role with the aim of adopting transport efficient sustainable solutions amongst all groups involved.

Collaborative planning at the freight task level has a slightly different connotation. The process known as collaborative planning, forecasting, and replenishment (CPFR) is a detailed analysis of supply chain management concepts. A number of programs and methods make up the current replenishment processes that have existed in the industry over the past two decades including classic re-order point min/max systems, quick response (QR), manufacturing resources planning (MRP), efficient consumer response (ECR), productions sales and inventory (PSI), just in time (JIT), just in time II (JIT II), vendor managed inventory (VMI), distribution resources planning (DRP) and jointly managed inventory (JMI). CPFR is a jointly managed inventory process method of managing inventory and replenishment throughout the supply chain process.

The CPFR technique involves supply chain members sharing information in real time over the Internet, enhancing the collaborative dialogue between retailers and vendors. The process allows long- and short-term planning to happen instantaneously, as information is shared regarding forecasts, shipping and production, point-of-sale data, and order generation (logistics.about.com/library/weekly/aa113001.htm).

### 2.5.6 Land-use Planning

Land-use planning is strongly linked to the above planning concepts. It encompasses the regulation of both the overall pattern of settlement and the location and functional aspects of new development and redevelopment, development controls or building permits. Land-use policies potentially influence people’s choices of places to live and work and also how far they travel to those places (ECMT 1995).

**Land-use planning** is defined in LTNZ (2007) as including …the process of managing change in the built and natural environments at different spatial scales to secure sustainable outcomes for communities. It includes both spatial elements, such as the physical design and layout of neighborhoods, cities and regions, as well as strategic considerations that take account of social, economic, cultural and environmental factors. (p.16)

**Transport planning** is defined in LTNZ (2007) as …involving the management and operation of systems and networks designed to facilitate the movement of people and goods from one place to another. It covers multi-modal, motorised and non-motorised movement by road, rail, water and air. (p.16)

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11 Land-use planning is used interchangeably with such terms as town planning, urban planning, regional planning and urban design (LTNZ 2007).
In recent years, land-use planning techniques and tools have been used to control the overuse of the private car, and without accurate pricing signals in the economy these techniques may represent an alternative way of reducing congestion, air pollution and losses of urban amenity in urbanised areas. Land-use planning has increasingly been integrated into the planning for urban areas and in particular transport planning and the integration of the two is regarded as an important means to achieving the objective of sustainable transport systems through a multi-disciplinary approach to planning (LTNZ 2007).

Integration of land-use and transport planning

The Transit NZ Planning Policy Manual explains integrated land-use and transport planning and the two-way relationship between them as follows (Transit NZ 2007b):

Transport and land-use are closely related. Land-use activities produce and attract trips and the location and design of different land-use forms determines the distances people travel and the viability of public transport, cycling and walking facilities. Patterns of development that reduce journey distances tend to provide greater travel choice …

Equally, the availability of transport infrastructure and services can influence land-use. For example, transport infrastructure such as a state highway intersection can stimulate the demand for new development and create growth pressures in areas where urban expansion is not planned for. (p. 10).

Commentary 6 provides a summary of the land-use impacts of road investments and policies, as well as the impacts of land-use on travel demand and road investments.

The ATC National Charter of Integrated Land-use and Transport Planning (ATC 2003) aims to achieve the following:

- Integrated and inclusive processes – focusing on the planning process that is integrated within and between all levels of government.
- Linked investment decisions – focusing on developing an urban and regional form that includes concentration of goods and services provision around hubs with transport linkages between these hubs.
- Increasing accessibility through widening choices in transport modes and reducing vehicle demand and impacts – focusing on moving people not vehicles with land-use decisions supporting public transport and other sustainable transport modes.
- Making better use of existing and future infrastructure and urban land – focusing on developing regional and urban structures that make better use of the existing transport infrastructure and urban land with reduced dependence on motorised transport.
- Protecting and enhancing transport corridors – focusing on protecting and enhancing the transport corridors with their associated land-uses.
- Creating places and living areas where transport and land-use management support the achievement of quality of life outcomes – focusing on integrated planning with the aim of achieving a balance between providing access and mobility and the creation of a sense of place where vehicle traffic does not dominate.
- Opportunities for access in the short- and long-term – creation of a more inclusive society through integrated planning of urban and rural communities.
- Safer and healthier communities – achievement of safe access to preferred destinations especially for pedestrians and cyclists and healthier environments through reduced exposure to noise and air pollution.
recognising the needs of regional and remote communities – provision of efficient, accessible and sustainable transport infrastructure to meet the needs of these communities.

In terms of international experience, the National Co-operative Highway Research Program Report 423A (NCHRP 1999) *Land-use impacts of Transportation: A Guidebook*, argues that accessibility is the key to the land-use-transport relationship. The land-use-transport relationship can be ‘...conceptualised as an interaction of the supply and demand for accessibility’ (NCHRP 1999, p. 12). The supply side is concerned with the physical aspects of land-use and transportation while the demand side refers to the preferences of individuals and firms. In terms of the land-use-transport relationship in the urban context depicted in Figure 1.9 the demand for transport is derived from the urban activity system12. However, in turn the transport system itself influences land development and choice of location through the accessibility to land and activities (Miller in Goulas (ed) 2003).

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12 The terms land-use, urban activity system and urban form are used interchangeably in Miller (2003).
The urban activity system depicted in Figure 1.9 changes because of developments in the following sequential elements: land-use (mix of residential and commercial land-use), location choice (decisions by firms and households as to where to locate), scheduling of activities (participation of households in activities according to their personal requirements/preferences), and the commercial exchange of goods and services by households and firms in the production process. Each of the components of the urban activity system operates continuously and at the same time, but according to different time frames (land development decisions being long-term in nature, activity decisions being shorter term). The transport system runs in parallel to the land-use decision system and comprises the long run supply-side provision of infrastructure (e.g. roads) and services, as well as the myriad day to day travel patterns of people and goods (freight, public transit and non-motorised mode travel). Household car ownership decision-making is a separate element because of the importance it plays in the land-use and transport interaction. Car ownership influences travel behaviour in terms of mode choice, destination choice, and trip generation rates, as well as residential and employment location choices. Car ownership is a supply-side element that can complement other modes (e.g. through park and ride facilities) but more often ends up competing with public transport. The level of car ownership and provision of facilities for other modes then affects the demand for travel by firms and households, impacting in turn upon traffic flows.


Figure 1.9: Urban transportation - land-use interaction
Land-use and transport interaction as shown in Figure 1.9 then occurs in the following ways:

- the urban activity system drives the transport system on a daily basis in terms of travel demand
- transport system performance influences this daily activity scheduling process by defining such factors as times, costs and reliability of travelling from one location to another by different transport modes, in turn influencing the choice of activity location (e.g. shopping at a suburban mall with plentiful, free parking versus in the CBD with less parking available), and activity timing (shopping during work hours to avoid congestion)
- the accessibility provided by the transport system (e.g. publicly through provision of infrastructure, or public transport, or privately through car ownership) to land and activities in turn influences land development and location choice.

How people travel and how goods and services are moved are vital questions in the overall land-use planning nexus. In general land-use planning is at a higher hierarchical level than urban planning and transportation planning because it is ultimately the strategic policy for land-use and transport planning for any one area.

The role of urban sprawl and its effect on car use is an important component of the land-use/urban form-transport planning relationship. In response, the land-use concept of ‘new urbanism’ or ‘smart growth’ has emerged, including compact residential areas, mixed land-use forms, improvements in urban design (increased planning for non-motorised modes and public transit) resulting in residential and employment areas that are conducive to these types of activities (Krizek in Goulias (ed) 2003). The idea is that these changes will lead to reduced private car usage and its associated impacts.

In formulating this type of transport planning, a thorough understanding of travel behaviour is required in terms of the magnitude and direction of causality between urban form and travel. Krizek (2003) identifies a number of research areas, including an enhanced understanding of the role of preferences versus urban form in travel behaviour (the need to separate the influences of user preferences and those of urban form and not confuse the two); household decision-making (the changing nature and composition of households and their short-term and long-term decisions), and how best to target specific households (understand the ways in which different households will respond to different land-use and transport policies).

The importance of land-use and transport planning at the metropolitan level has resulted in a number of attempts at modelling these relationships and has resulted in a number of land-use models, including: MEPLAN, TRANUS, METROSIM, HLFM+, ITLUP (encompassing sub-models DRAM/EMPAL) and more recently UrbanSim (Waddell et al. 2007). These models are also explained in detail in NCHRP (1999) and also in BTE (1998), the latter setting out the shifts in components of an integrated land-use and transport model. While the models are predominantly intended for use at a metropolitan level, the number of variables/factors provides a useful indication of the range of variables/factors that may influence road transport planning at a route and link level (Figure 1.10).

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13 BTE (1998) identifies the basic components of an integrated land-use and transport model [featuring the work of Lowry (1964) and de la Barra (1989) in BTE (1998)] as: residential and employment locations, accessibility, potential travel demand, trip generation, mode choice, route choice, generalised cost and consumer surplus. BTE (1998) also explains the development of land-use and transport modelling from the conventional four step trip generation to the two-way integrated land-use and transport planning approach (the latter also dealt with in detail in NCHRP 2005).
The ideal land-use and transport model is explained in NCHRP (2005a) and its components are shown in Figure 1.11. The ideal land-use and transport model presented in NCHRP (2005a) therefore includes markets for land development, residential housing, commercial floor space, and employment. The model’s demand and supply functions are well defined and equilibrium is established through price signals. The demographics of the model are endogenous to ensure that the population characteristics are representative over time and are at a level of detail to complement the behavioural relationships in the housing and transportation models. Regional economic impacts are also endogenously modelled so that the interrelationships between urban consumption and production on the one hand and land and transport market outcomes on the other are accounted for. The travel demand component is activity-based to provide a level of disaggregation to ensure that policy instruments can be adequately formulated. Finally, the vehicle ownership decision is explicitly modelled and linked to the travel demand component.

Source: Waddell et al. (2007)

**Figure 1.10: UrbanSim model structure and data flow**
The state of land-use and transport planning practice in Australia has been examined in DOTARS (2006c). The report surveyed the state of land-use and transport planning practice, especially relating to AusLink urban national corridors across jurisdictions in Australia and its conclusions are summarised as follows:

- Although a level of *convergence exists in the planning processes* applied by states and territories across Australia, variations do occur reflecting local governance and history. States and territories plan and manage their national corridors within the context of their relevant metropolitan priorities, while the Commonwealth is focussed on their operation in the context of AusLink.

- A high degree of commonality exists in the *strategic directions and actions* applied by states and territories to manage urban corridors. The level of congestion experienced in a city influences the strength with which elements of these strategic directions and actions are applied. Although it is not evident from the review of formal documents, discussions suggested that there are at times differences in the interpretation of strategies by agencies.

- A substantial amount of variation exists between jurisdictions in terms of *implementation arrangements* as opposed to policy frameworks. This reflects governance processes within jurisdictions and the differences in importance given to integrated planning and implementation at senior bureaucratic and political levels.

- *Legal frameworks* vary across jurisdictions. All states have planning legislation under which a metropolitan plan may be developed. A number of implementation models are used across jurisdictions, while a number of approaches are used to specify the obligations of local government and developers to act consistently with high level plans.
The study also identified the following major themes arising from the interviews, relating to the planning and delivery process:

- co-ordination and governance
- strategic planning
- budgetary and financial
- implementation.

Each of these themes is discussed in detail in DOTARS (2006c). It must be emphasised that the survey related to AusLink urban national corridors and did not explicitly address route and link planning for state and local road networks. The focus of the project was the level of congestion on AusLink urban national corridors given changes in land-use and the resulting impact on travel demand and in turn traffic growth on these corridors, as well as the effect in turn this traffic growth and congestion has on land-use in these corridors. Although some level of traffic congestion in the urban context will occur, it can be mitigated with integrated land-use and transport planning.

### 2.5.7 Community Service Obligations: Efficiency versus Equity

Not all roads can be justified on purely economic efficiency grounds. Certain low volume roads provide communities with basic access and therefore play a social role and can be justified on equity grounds. The community service obligations (CSO) notion recognises this issue and holds that there is an obligation to provide roads on equity grounds as a community service. Moreover, the ATC National Guidelines (ATC 2006e) make the point that the conventional economic evaluation process requires some adjustment in order to assess the efficiency-equity trade-off across analyses in a systematic, uniform and consistent manner across projects:

> Leaving the efficiency–equity trade-off to be determined on an ad-hoc, initiative-by-initiative basis is likely to lead to outcomes that are inconsistent across decisions and across regions. In the Transport System Management Framework …detailed in the Guidelines, the impacts of each appraised initiative are presented in a comprehensive Business Case.

> …Efficiency and equity are considered in every decision. Equity considerations can be incorporated in policy decisions by specifying required infrastructure standards. More systematic options involve funding shares, weightings and a combined approach’. (ATC 2006e, p. 18).

In other words, equity can be incorporated into decision-making by specifying the standards to which roads must be constructed and maintained (so that basic access or equity roads are provided, and to a stipulated minimum standard), as well as through the allocation of funding (to ensure that low volume roads receive some funding which would not be the case on purely economic efficiency grounds), and assignment of distributional weightings (so that equity is weighted appropriately)\(^{14}\). Road route and link transport planning therefore needs to incorporate the efficiency-equity trade-off when evaluating projects and planning for roads, especially at the route and link level.

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\(^{14}\) Part 6 of the Austroads Guide to Project Evaluation (Austroads 2005f) provides a detailed discussion, methods and tools for the practitioner to better understand and manage the distributional (equity) impacts of road projects.
2.6 How Transport Planning Frameworks Adapt to Change

Planning frameworks have been changing over time in response to the myriad influences and pressures that developing society’s experience. History has shown the many transitions that have ensued from major turning points in the ways in which societies live and work. Cities have changed their formation over time to match the needs of the wider transport task and the capacity of the overall network, and inherently the planning frameworks have also changed to meet the changing demands for infrastructure and capacity. Those cities with radial road and rail networks permit straightforward access to the centre, while grid cities, linear cities and those with hybrid designs all have varying advantages. In addition to the physical configuration of the network, there have been considerable changes in the use of the network and in the land-use forms adjacent to that network. The city is continuously evolving and adapting to the changing patterns of use. Sustainable urban development will be focussed on the city as this is where most people now live and are projected to remain and where most economic activity will take place.

The question of how planning frameworks can change over time lies at the heart of good policy. Without the ongoing review, evaluation and monitoring of planning schemes and systems in place to manage transport, there is the danger of the transport task being driven by demand alone rather than a controlled and strategic planning framework that seeks to manage demand sustainably. One of the main complexities in managing the transport task effectively and therefore sustainably is the need for strategic plans to be both fluid and adaptable to the many pressures and decisions that are made outside the control of transport authorities.

Moreover, the three layers of government that all have influence on and management of, particular parts of the transport network make for a complicated task. One of the difficulties of making effective, sustainable transport policy is the need for transport objectives that are truly whole-of-government and multi-government in nature. Policies that are implemented in a local government context have the potential to influence the demand scenario and the capacity of both state and national government roads and highways. It is important for transport policies to be planned and then implemented not in isolation, but collaboratively between all levels of government and relevant stakeholders.

2.7 Challenges for Road Transport Planning

Key challenges for road transport planning are briefly summarised in this section. It is acknowledged that due to the complex and interrelated nature of transport planning, there are many other areas that could be addressed in the appraisal, implementation and evaluation stages of a project or program development.

Transport planning has come a long way from the days of massive highway programs and frontier roads to assist the development of new land. In most developed countries, the national and state based road programs have been successful in supplying cities and towns with large expanses of roadways to enable people to live and work where they choose. However, the opportunities for continuing to build roads at the same pace have considerably diminished in recent times. Although most developed countries are reaching or have already reached near saturation point of space available for more roads and there is evidence of a rise in congestion on roads, there are now a number of external forces that are inhibiting the continued unabated growth in roadways, freight and private vehicle travel.
The challenges for transport planning into the future will be centred on the issues of sustainability more generally, and specifically full-cost pricing, equity of access and transport choice. These are issues that have been at the forefront of transport planning for some time, and are likely to remain so. However, with the increasing price of transport fuel and the community’s increased awareness of externalities such as noise pollution, air pollution and greenhouse gas emissions associated with transport, these issues will become ever more important in a policy and planning context.

Other challenges relating to transport planning lie in the difficulty of working within planning processes that are often iterative and sometimes piecemeal in nature, and progress in a non-linear, inconsistent manner. As new information becomes available, or new priorities come to light, planning processes are continually being changed, up-dated and amended and this makes for a conflict-ridden environment that is not always easy to work within. The challenge for governments is to enhance the planning process so that the iterative and piecemeal nature is refined towards a clearly defined planning scheme that can consider all the necessary conflicts and limitations to the process that currently exist. This also provides an opportunity for jurisdictions to consider the planning frameworks adopted within other state departments and nationally, and ensure that planning processes are up to date and reflect best practice as far as possible.

The ATC National Guidelines (ATC 2006b) emphasise that the aim of the Transport System Management Framework is to facilitate the achievement of high level transport system objectives, which in turn reflect whole-of-government objectives and community values. Through the movement from one level of analysis to another, objectives provide a link between each phase. Like any planning process there is a certain amount of trading-off of conflicting objectives for the various agendas involved. In transport planning this is no less so, yet the trade-offs can be more complex because transport plays such a vital role in the overall success and liveability of cities, and more generally in peoples’ daily lives.

Sustainability and economic efficiency are key objectives that have been commonly traded-off in the past. However, current practice is to recognise these as completely as possible within transport planning processes, for example, by closely considering transport externalities and by estimating the impact these have on infrastructure decisions and investments. Economically, environmentally and socially sustainable investments are increasingly sought by decision-makers and affected communities.

Complexities of the planning process also include the expectations of stakeholders and users of the transport system. Successful management of stakeholders’ conflicts and sometimes unrealistic expectations in regards to transport planning is an art in itself. It requires an appreciation of the amount of information that is provided to enable stakeholders to make an informed view of the wider impacts of transport planning and the life-cycle consequences of new transport developments. More inclusive consultation goes some way to ameliorating the conflicting demands and expectations of stakeholders. However, education is the key to changing peoples’ expectations. Additionally, appropriate pricing signals are required to inform users of the true cost for the society as a whole of their transport choices, not just their private costs. Education about why transport planning needs to promote efficiency within certain constraints and also encouraging sustainable outcomes is critical. This can play a significant role in managing stakeholder expectations and potential conflicts within planning processes.
A key challenge for road transport planning practitioners is from a common approach to the integration of land-use and transport planning and the modelling of these complex relationships, given the changes that have occurred in this area over time, with a shift in urban transport modelling from the traditional four step transport models\(^{15}\) to behavioural demand models to linked and then integrated land-use-transport (i.e. spatial/zonal) models to an activity-based approach (BTE 1998). The relationships inherent in these models have gone from the ‘unidirectional’ causal flow (in the case of the four step transport model) to the two-way relationships assumed for the integrated land-use-transport planning approach.

Other challenges for transport planning are those associated with addressing the complexities of different budget constraints, how these are dealt with and how a practitioner can choose between different alternatives (within strategic and project planning phases). The UK DfT’s New Approaches to Appraisal (DfT 2005) is, for example, an innovative way of dealing with conflicting objectives, constrained budgets and overlapping agendas. This sometimes involves putting benefit cost analysis (BCA) findings into some context when benefit/cost items such as amenity, and liveability cannot be easily quantified and equity considerations require extended BCA methodologies to evaluate.

Another issue is that of dealing with the impacts of stand-alone projects (frequently a result of development projects introduced by developers in terms of a commercial opportunity) which sometimes emerge outside the formal transport planning process. VTRC (2008) contains a special methodology developed for assessing these unplanned, stand-alone, or even ‘left field’ projects. They need to be quickly assessed and considered into the formal planning process; since they have not previously featured in it, they have emerged at relatively short notice, and are such that they cannot be easily assessed against an existing policy framework.

### 2.8 Principles for Planning in Urban and Rural Areas

At present, there are few planning guidelines that have been separated for urban and rural areas at the national, state/territory and local government level. It is in the urban areas where governments are facing greatest pressures but it is also here that they have greatest opportunities for deriving benefit through improved application of processes at their disposal e.g. demand management, integrating land-use, inter-modal facilities, access management, ITS solutions, network solutions etc. All agencies are stretched in finding sustainable solutions to environmental, social and cultural issues in urban areas. This means that governments must increase investment of time and resources into researching these areas further.

There are many forums in which the differences between rural and urban issues have been debated, no less so in a planning context when considering the varied transport issues faced by both urban and rural communities. The most obvious differences are those related to access and affordability. The accessibility of one place over all other places can be thought of as being a function of the attractiveness of the other places, and of the costs of getting to them. Any change in the network that affects the costs that residents at one location incur to reach other points in the network, or any changes in land-use affecting the distribution of population or economic activity will impact accessibility (ATC 2006d).

Accessibility is also a measure of the costs of providing goods and services to a region that is either considered remote or rural or for a highly congested urban location. This issue pervades not only the aspects of transport access, but also access to education, medical and health services, consumer products and leisure and entertainment:

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\(^{15}\) The conventional four step trip generation model comprising trip generation, trip distribution, modal split and trip assignment, see BTE (1998), IHT (1997), ITE (1999) and NCHRP (2005a) for more detailed explanation of this type of model as well as for land-use and transport integration models.
Rural areas are different from urban areas in their socioeconomic conditions, the status and prevalence of health and human services-related conditions, the availability and characteristics of services and social supports, and the social and cultural factors that can affect the quality, availability, use, and cost of needed services (American Office of the Assistant Secretary for Policy and Evaluation 2004).

Transportation planning needs to take into consideration the many barriers to access that currently exist for rural communities, while also taking into consideration the different facets of barriers to access that currently exist for urban dwellers (Pucher and Renne 2004). However, access is not the only facet of transport planning that needs to be considered, when looking at the obvious differences in principles of planning required between urban and rural areas. Other issues include questions of the impacts across the whole network and region (whether urban or rural), of any transport planning policy, and what may be the long-term strategic consequences of planning actions taken on liveability and longevity of locations. It is those impacts and how best to deal with them, that differentiate the planning process and principles between urban and rural areas. It is not a one-size-fits-all exercise.

Perhaps even more important than the differences in planning for either strictly rural or urban areas are the pressures faced by the outer-urban interface, which promotes and maintains livelihoods in both urban and rural areas. Activities in both areas rely upon it for flows of labour, finance, market produce, communication and access to the natural resources. Natural resources are often located within areas of the outer-urban interface, supplying both urban and rural areas with necessary resources. However, when a supply is used or degraded, the effect is felt most heavily by those who rely upon it the most. Alternative sources may only be found a great distance away, using both time and money for travel and transport and it is vital that the planning environment accurately reflects these differences and pressures.

For urban locations, as additional vehicles make use of the road and congestion increases, the costs to society become higher, and increase more rapidly, than the costs to individual road users, particularly in urban areas. However, unlike the increased private costs that are paid directly by road users themselves, the increased costs of congestion incurred by society as a whole are not normally covered by the road users who have caused them. Congestion therefore needs to be properly priced because leaving road users to simply queue for access to the road network is wasteful of society’s resources (Naudé et al. 2006; VCEC 2006).
3 INTRODUCTION TO THE ATC NATIONAL GUIDELINES FOR TRANSPORT SYSTEM MANAGEMENT

3.1 Introduction

This section provides an overview of the Australian Transport Council (ATC) National Guidelines for Transport System Management (the National Guidelines) to determine their content regarding road transport planning in general and for road route and link transport planning in particular.

The ATC National Guidelines consist of the following five volumes:

- Volume 3: Appraisal of Initiatives – guide to appraisal of transport initiatives.
- Volume 4: Urban Transport – supplementary material on urban transport, including urban transport modelling and appraisal of public transport initiatives.
- Volume 5: Background Material – detailed supporting material.

The National Guidelines therefore deal with a number of issues that are important in road route and link planning, e.g. transport modelling and transport project appraisal, as well as issues that are relevant for road transport planning at other levels, e.g. network/area and corridor.

3.2 Overview of the National Guidelines Transport System Management Framework

The aim of the National Guidelines is to provide ‘a consistent framework and processes, methods and tools to assist and guide transport planning and decision-making across Australia’. The need for the Guidelines was identified by the Standing Committee on Transport (SCOT) in 2003 and they were then developed on the basis of this requirement.

The Guidelines’ focus is on land transport, including road, rail and multi-modal transport (including non-motorised modes). The Guidelines are also aimed at non-urban as well as urban situations and provide a framework in which transport planning can occur in the context of overarching transport strategies.

Transport planning is dealt with in the National Guidelines (Volume 1: Introduction to the Guidelines & Framework and more detail is provided in Volume 2: Strategic Transport Planning and Development) in the context of the Transport Systems Management Framework. This forms part of its Phase 3: System Planning, illustrated in Figure 1.12.
The transport system management framework outlined in Figure 1.12 incorporates transport planning in Phase 3: Systems Planning. However, in terms of the overall process, the framework firstly involves the setting of objectives (in terms of government and the transport system) in Phase 1, as well as the setting of performance indicators and targets. This is followed in Phase 2 by setting out the overarching policy choices that must provide the policy environment for the rest of the process.

Phase 3: Systems planning involves the formulation of multi-modal network, corridor/area strategies and route and link plans. The systems planning phase is therefore the phase in which transport planning is undertaken. The systems planning phase is then followed by Phase 4 which covers the identification of transportation and infrastructure initiatives. The initiatives are then subjected to an appraisal process in Phase 5 involving a high-level strategic merit test, then rapid appraisal and then detailed appraisal for those most promising projects. Finally, business cases are prepared for the most eligible projects that emerge from this process. This enables Phase 6 to be undertaken, involving the Prioritisation and development of a program of initiatives. Phase 7: Program delivery is an implementation phase for the selected initiatives. Finally, Phase 8 consists of a performance review in which the strategies, plans and programmed initiatives are assessed in terms of the actual versus desired outcomes and effectiveness.
3.3 Systems Planning

Phase 3: Systems Planning is shown in Figure 1.13:

![Figure 1.13: ATC National Guidelines Systems Planning framework](source: ATC (2006b))

A key issue arising out of the Systems Planning approach explained in detail in Volume 2 of the National Guidelines is the ‘stepwise’ nature of the process. System planning begins with multi-modal network planning involving the definition of these multi-modal networks (comprising corridors, routes and links) and a clear understanding of their various functions (Step 1). Thereafter, a set of objectives, performance indicators and targets for the network are developed, which is also used to guide the analysis at corridor/area, as well as route and link planning levels (Steps 2 and 3). The top-down approach is aimed at ensuring that these corridor/area strategies and route and link plans reflect and support the objectives set at a network level strategy. Higher level transport system objectives formulated at earlier stages are used to set objectives for and guide transport planning at route and link levels. Multi-modal network strategies are not location-specific; corridor/area planning and route and link plans are location specific.
Economic analysis (including demand analysis) leads to the development of strategies to achieve network objectives and performance targets. This stage of the process may also involve the development of affordable, multi-modal intervention benchmarks. The next step in the process is corridor/area planning which again involves economic analysis and the development of corridor/area strategies. This phase involves the determination of objectives, performance indicators and targets for individual corridors and areas (Step 1). Step 2 of the corridor/area planning phase involves the development of multi-modal corridor/area strategies to achieve identified objectives and targets for the corridor/area. Finally, the result of the corridor/area planning phase (Step 3) is the identification and definition of transport routes and links, in order to facilitate potential future development. The corridor/area planning phase would have identified all known/existing routes and links containing transport infrastructure and where these are planned but not yet constructed they would at least be identified, defined and protected. This stage of the system planning process recognises that detailed route and link plans are still to be undertaken. That is part of the next phase of the process. The development of network and corridor/area level strategies provides a strategic framework for the development of route and link plans.

This leads directly to the development of route/link plans for these identified routes and links. In terms of the definitions of routes and links in the National Guidelines, they relate to one mode (‘mono-modal’, in this case road) as opposed to networks and corridors which are multi-modal. Route planning occurs for an entire road route between two points or a segment of a route (links).

### 3.4 Definition of Routes and Links

#### 3.4.1 Levels of Transport Planning

The key issue put forward in the National Guidelines (Volume 1: Introduction to the Guidelines and Framework and Volume 2: Strategic Transport Planning and Development) is that the framework identifies four levels of planning based on five transport system elements, as shown in Figure 1.14.

![Figure 1.14: Levels of transport planning](source: ATC (2006b))

Inadequate consideration of broader network requirements and impacts is a common deficiency in project evaluation. It is important to consider more than just the effect a project may have on the immediate links and intersections. Attention should also be given to the interactions that produce a well functioning, integrated transport system as a whole. Transport infrastructure needs and deficiencies need to be explored at the network, corridor/area, route and link levels. All five transport system elements as illustrated in Figure 1.14 are defined in the ATC National Guidelines (ATC 2006b) as follows:
Network level

The transport network provides for major transport movements across a region or city, including freight movements, on-road public transport and car users travelling for business, shopping, social and other purposes. A network incorporates all of the routes that provide inter-connected pathways between multiple locations for similar traffic. Networks can be multi-modal or uni-modal. A multi-modal network typically comprises several uni-modal networks. Examples include:

- The National Land Transport Network (AusLink, multi-modal). Comprises the national highway network and the interstate mainline rail network, and serves longer-distance traffic of national significance.
- The Intrastate Transport Network (multi-modal). Comprises the rural arterial road network and rural intrastate rail network, and serves longer-distance non-urban traffic within a state/territory.
- The Urban Transport Network (multi-modal). Includes, for example, the urban arterial road network, public transport network and cycling network. It would normally serve traffic within a city.

Corridor/area level

Corridor - A corridor comprises the parallel/competing modal routes between two locations (e.g. road and rail routes between two capital cities). A corridor is multi-modal where more than one mode operates, and is uni-modal where only a single mode operates (e.g. in many rural areas). Corridors can be inter-capital, inter-regional, or embedded into an urban network and include a system of interfaces, which provide access to the linear part of the corridor for the surrounding local networks (see also Commentary 7, Figure C7 1).

Area - An area consists of a defined geographic space and all the transport routes within it. An area focus, rather than a corridor focus, is often required in urban planning to best account for the highly complex interactions (intersecting routes and dispersed population, activities, trip origins and trip destinations) in urban settings (see also Commentary 7, Figure C7 2).

Route level

A route is a physical pathway connecting two locations for a particular mode. Transport services are operated along these pathways. In land transport, the pathway consists of a continuous length of infrastructure. Shipping lanes and air routes are delineated by operating or regulatory/administrative practices rather than by infrastructure. The route concept is the basis for the definitions of the other elements (see also Commentary 7, Figure C7 3).

Link level

A link is a homogeneous segment of a route. An inter-modal facility, where people or freight is transferred from one mode to another, is also categorised as a link. Links are often discussed in terms of what is required to make the network more efficient.

Route and link planning

While the National Guidelines stipulate that route and link planning are not dealt with specifically in the guidelines, and that planning for roads at these levels will be dealt with by Austroads, it does set out some guiding principles for route and link planning (Volume 2: Strategic Transport Planning and Development of the National Guidelines, see ATC 2006b) that can be applied to roads:

- Route and link planning should be undertaken in the context of corridor and area strategies. Corridor and area strategies provide a strategic framework route and link planning and include the identification of routes and links.
• Route planning should consider alignment options – in the case of a new route, route planning will involve assessment of alignment options and detailed planning for the preferred alignment, including land purchase requirements/implications.

• Link plans should typically cover 15-20 years – they will therefore contain interim performance targets aimed at bringing the link to a minimum appropriate performance level within that planning timeframe.

• Link plans should contain a statement of intent, broadly indicating expectations about the future functions of the link and likely initiatives – this includes link-specific performance indicators and targets, together with strategies and investment priorities reflecting local needs that also fit the corridor or area strategy and route plans.

• Link plans are not as complex as route plans (or corridor/area strategies) unless there are major/contentious issues – where the size or complexity of the corridor/area warrants it, specific route and link plans may be required to give effect to these strategies.

• Transport initiatives and projects take place directly on links – where possible, link plans should provide a basis for the planning and design of transport projects/initiatives.

• Priority links should be nominated for urgent attention due to funding limitations – links receive funding in line with their priority ranking.

An important factor is that network and corridor/area planning take place at a higher level of the planning process than route and link planning. The former involves the development of strategies whereas the latter involves the development of plans. Similarly, route plans are also more complex than link plans. The final test of the process is whether the route and link plans have given effect to the corridor/area and network strategies and in turn to achieving the objectives set for the network at the start of the planning process.

The system planning process therefore involves a number of feedback loops through these steps. This enables the performance of the system to be assessed through the indicators identified at the beginning of the process and is aimed at determining whether the stated objectives of the network and corridor/area strategies have been met. It is also an ‘iterative’ process involving checks and possible changes to the network and corridor/area level strategies once the route and link plans have been completed.

3.5 Cross Cutting Components in the System Planning Process

There are several activities that occur at all stages of the system planning process. Stakeholder engagement, identification of challenges and analysis of options occur at all stages of the system planning process, but in terms of Volume 2 (Strategic Transport Planning and Development), require greater detail at route and link level. Options analysis at route and link levels would also involve the integration of land-use and transport planning at these levels. Options analysis at route and link level would also involve consideration of regulatory and policy measures and technology measures. Demand analysis, deficiency assessment and economic assessments would all occur as part of network assessments and corridor/area studies and would provide the necessary analytical basis for the formulation of route and link plans. Information and data compiled for the network assessments and corridor/area studies (population, economic activity, traffic composition, origin-destination and environmental and social data) would also be used as input to route and link plans, with more detail required for specific routes and links.
3.5.1 Specification of Initiatives and Interrelationships between them

In terms of the corridor studies and identification of transport initiatives along routes within the corridor, the National Guidelines stipulate that initiatives must be assessed in terms of whether they are independent of one another, complementary, or substitutes and the relationships between the initiatives along the routes. These would also be important issues to consider in terms of the route and link plans.

3.5.2 Development of a Program of Initiatives

Once a set of initiatives have been specified, evaluated and prioritised, a program can be developed. Factors that influence the development of the program are: funding requirements and availability, timing of initiatives for corridor and network studies, how initiatives can be bundled together as opportunities arise to improve the overall performance of the route.

3.5.3 Use of Route and Link Plans throughout the Transport System Management Process

Route and link plans are used as inputs to various stages of the transport system management process, as outlined earlier, e.g. the strategic merit test and the rapid appraisal, together with higher level plans and strategies, e.g. the network strategies and corridor/area plans.

3.5.4 Performance Review

As part of the performance review (Phase 8 of the Transport System Management Framework), the contribution of transport initiatives to achieving targeted objectives can be assessed, in conjunction with a progress review of linked objectives at link, route, corridor/area and network levels.

3.5.5 Post-completion Evaluation

After reviews at the initiative and program levels, route and link outcomes are reviewed in terms of their performance targets and objectives, as are corridor/area and network outcomes, (reviews occurring at each of these levels). Corridor/area and network reviews are interrogated in terms of whether the right network was identified and whether the corridors included the right routes and links.

3.6 Implications of the National Guidelines for Transport Planning in Australia

In terms of implications, the National Guidelines:

- Provide a strategic framework for transport planning to occur, namely the system planning phase of the Transport Systems Management Framework.
- Provide linkages and a strategic context to all levels of transport planning, in terms of network, corridor and area strategies as well as route and link transport plans that give effect to these higher-level strategies, indicating an integrated process.
- Indicate that route plans are more complex than link plans, with a hierarchy of route plans leading to link plans.
- Make the point that route and link plans use data collected and used at higher stages of the transport planning process, i.e. at network strategy and corridor/area planning levels.
- State that link plans will lead to planning and design of transport projects/initiatives and assessment of programs of initiatives.
• Have been endorsed by states and territories and would therefore be expected to be implemented by transport planning authorities in these jurisdictions. This also has implications for their use by local (city/district) transport authorities.

• Are not prescriptive in terms of transport planning as a whole and route and link transport planning in particular, leaving transport planning at the lower levels to more specialist contexts/requirements.

• Are multi-modal, focusing on all land transport modes, including non-motorised transport, so are not only road and private car-oriented.

• Aim to provide a consistent framework for transport in a non-urban (rural) as well as urban context, the latter being a key issue for transport planning in jurisdictions in Australia. The implication is they would therefore have to assist transport planning for AusLink as well as state/local transport planning.

• Underline the importance of stakeholder consultation throughout the framework and in turn the transport planning process.

• Aim to include a broad set of issues in transport planning practice, including integration of land-use and transport planning and environmental issues.
4 SURVEY OF ROAD TRANSPORT PLANNING IN AUSTRALIA AND NEW ZEALAND

4.1 Background to the Survey of Road Transport Planning

A key component in the development of this Guide was a survey of road transport planning process and practice in all jurisdictions across Australia and key road transport planning authorities in New Zealand.

The survey of road transport planning was conducted across all relevant jurisdictions and agencies within jurisdictions that have an involvement with land-use and transport planning. Information was sought (particularly on planning at road route and link level) from state and local planning authorities in Australia, as well as regional and local authorities in New Zealand.

The aim of the survey was to better understand and also document the current practice of road transport planning at the state/territory and local government level. The survey sought government stakeholder views on existing road transport planning processes (including policy and practice guidelines) especially at the road route and link planning level. Relevant road transport planning legislation was also identified during the survey process. Survey responses obtained from each individual agency were assessed and subsequently synthesised into overall jurisdiction summaries of road transport planning accounts (see Section 4.4 and Appendix B) which, in turn, provided a basis of comparison against ‘best practice’ principles for road transport planning (see Section 5).

As the government structures in New Zealand and Australia are different, the survey questionnaire (presented in Appendix A) was adapted to provide separate versions for New Zealand, and similarly for selected local government associations in Australia. The New Zealand survey made reference to the regional councils and road controlling agencies and a two tier government system. Similarly, for Australian local government, the survey was adapted to seek a broader understanding of how road transport planning is undertaken across local governments, with particular emphasis to road route and link planning.

Given the large number and complexity of local governments in Australia, an initial approach was made to survey the Australian Local Government Association (ALGA) as the national body representing local governments. However, ALGA recommended that responses be sought from jurisdictional local government associations for better representation. A small sample consisting of the Western Australia Local Government Association and the Local Government Association of Queensland was chosen in light of resource constraints. These two LGAs were contacted to participate in the survey and to provide a description of road transport planning at the local level, recognising that all councils may implement different planning processes and procedures16.

4.2 Survey Methodology

The survey process was completed in two stages as follows:

- **Stage 1**
  Pilot survey for Victoria.
- **Stage 2**
  Survey of all other Australian jurisdictions, New Zealand and local government.

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16 This extension of the survey and any further analysis of local councils Australia-wide was outside the scope of the study commissioned to develop this Guide. However, during the pilot stage of the survey (Stage 1), in discussions with the Austroads Transport Planning and Project Evaluation Panel members the importance of local government input was recognised.
Stage 1 comprised a series of pilot surveys in Victoria to test the context, terminology and structure of the survey questionnaire. These surveys were conducted by face-to-face interviews between ARRB Group and key officers within VicRoads, the Victorian Department of Infrastructure, and the Department of Sustainability and Environment in July 2007. Following the formation of the new Victorian Department of Planning and Community Development in late 2007, a separate survey was also conducted of this Department as part of Stage 2\(^\text{17}\). As part of the pilot survey process, feedback on the survey content and questionnaire structure was sought from the interviewees to enable fine-tuning of these survey instruments. As part of Stage 1, extensive consultation was also conducted with the Austroads Transport Planning and Project Evaluation Panel members, to obtain agreement regarding the survey process and the questionnaire structure and their consistent application to all the Stage 2 survey participants.

The Stage 2 surveys were completed by conducting face-to-face interviews between ARRB Group officers and selected transport departments and agencies in Queensland, New South Wales and Western Australia. Interviews in Tasmania, Northern Territory, South Australia, Australian Capital Territory, selected local government associations and New Zealand were conducted via teleconference/videoconference sessions or by seeking written responses. Table 1.4 shows the departments and agencies selected for participation in the survey and type of interview undertaken. It shows that 24 departments and agencies were contacted and approximately 40 officers from these departments and agencies participated across Australia and New Zealand.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Department/Agency</th>
<th>Type of interview</th>
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<tbody>
<tr>
<td>Tasmania</td>
<td>Dept of Infrastructure, Energy and Resources</td>
<td>Videoconference</td>
</tr>
<tr>
<td>Victoria</td>
<td>Department of Infrastructure</td>
<td>Face-to-face</td>
</tr>
<tr>
<td></td>
<td>Department of Sustainability and Environment</td>
<td>Face-to-face</td>
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<tr>
<td></td>
<td>Department of Planning and Community Development</td>
<td>Written response</td>
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<tr>
<td></td>
<td>VicRoads</td>
<td>Face-to-face</td>
</tr>
<tr>
<td>NSW</td>
<td>Roads and Traffic Authority</td>
<td>Face-to-face</td>
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<td></td>
<td>Department of Planning</td>
<td>Face-to-face</td>
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<td></td>
<td>NSW Centre for Transport Planning and Product Development</td>
<td>Face-to-face</td>
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<tr>
<td>Queensland</td>
<td>Department of Main Roads</td>
<td>Face-to-face</td>
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<td></td>
<td>Queensland Transport</td>
<td>Written response</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Department of Planning and Infrastructure</td>
<td>Teleconference</td>
</tr>
<tr>
<td>South Australia</td>
<td>Department for Transport, Energy and Infrastructure</td>
<td>Written response</td>
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<tr>
<td>Western Australia</td>
<td>Main Roads Western Australia</td>
<td>Face-to-face</td>
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<tr>
<td></td>
<td>Department for Planning and Infrastructure</td>
<td>Face-to-face</td>
</tr>
<tr>
<td>ACT</td>
<td>Planning and Land Authority</td>
<td>Teleconference</td>
</tr>
<tr>
<td>Local Government</td>
<td>Western Australian Local Government Association</td>
<td>Written response</td>
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<tr>
<td></td>
<td>Local Government Association of Queensland</td>
<td>Written response</td>
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<tr>
<td>New Zealand</td>
<td>Transit NZ</td>
<td>Written response</td>
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<td></td>
<td>Land Transport NZ</td>
<td>Written response</td>
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<td></td>
<td>Auckland Regional Council</td>
<td>Teleconference</td>
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<td></td>
<td>Waitakere City Council</td>
<td>Written response</td>
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<td></td>
<td>Wellington City Council</td>
<td>Written response</td>
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<td></td>
<td>LGNZ</td>
<td>Written response</td>
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<tr>
<td></td>
<td>Greater Wellington Regional Council</td>
<td>Written response</td>
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</table>

\(^{17}\) A written response from Department of Planning and Community Development was sought, following the change in planning functions to this Department from Department of Sustainability and Environment.
The interview surveys were undertaken using the questionnaire as the basis for a discussion between the ARRB project team and the relevant departments/agencies. Appropriate interview techniques were applied ranging from face-to-face interviews, teleconference/videoconference interview, or e-mailed questionnaires seeking written responses (see Appendix A). The survey questionnaire was divided into four sections (sets of questions) as follows:

- current practice in road transport planning
- current practice in Guidelines documentation
- degree of development of road route and link planning
- relationships with other departments/agencies and levels of government.

On completion of the survey process Australia-wide and in New Zealand, the responses were written-up by the ARRB interviewer (for face-to-face and teleconference interviews) according to the consistent format presented in the questionnaire and the responses that were provided for each question. These response write-ups were then returned to the interviewee for comment and sign-off.

4.3 Synthesis of Road Transport Planning in Australia and New Zealand

The survey responses from all participating departments/agencies were completed and verified by the responders using an iterative survey process that enabled clarifications to be made and a final sign-off step. These responses were analysed and the results were synthesised into consolidated summaries for each jurisdiction. These consolidated summaries were formulated into an account of road transport planning for each question in the survey.

The process used to synthesise survey responses, and the subsequent ‘mapping’ of consolidated summaries for each jurisdiction into a series of road transport planning statements (findings) to benchmark against ‘best practice’, are illustrated in Figure 1.15. Survey responses were supplemented by additional information and a number of case studies obtained via extensive literature reviews.
4.3.1 Synthesis Methodology

In order to progress the mapping of road transport planning and undertake the comparison of survey results with ‘best practice’ (see Section 5), it was necessary to synthesise the survey results into a consistent format.

The synthesis process involved a number of steps to develop an understanding of road transport planning for each jurisdiction. These include:

- tabulating the survey responses for each department and question respectively.
- synthesising these responses into a statement of road transport planning for each jurisdiction (see Table 1.5)
- tabulating the jurisdictional responses for each question separately (see Table 1.6).

As indicated in Table 1.1, where multiple agency interviews have been conducted for a jurisdiction, the results were summarised in an overall jurisdiction consolidated summary. This process ensured consistency and continuity between the survey interviews and the write-up of the survey responses for each organisation.
Table 1.5: Synthesis of Individual Agency Responses in Jurisdiction i

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<thead>
<tr>
<th>Issue/question</th>
<th>Jurisdiction i agency 1</th>
<th>Jurisdiction i agency 2</th>
<th>Jurisdiction i agency 3</th>
<th>State of Road Transport planning in jurisdiction i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement in route &amp; link road transport planning</td>
<td>Comment/Statement of RTP</td>
<td>Comment/Statement of RTP</td>
<td>Comment/Statement of RTP</td>
<td>Summary</td>
</tr>
<tr>
<td>Role and responsibility for road transport planning, including route/link level, etc.</td>
<td>Comment/Statement of RTP</td>
<td>Comment/Statement of RTP</td>
<td>Comment/Statement of RTP</td>
<td>Summary</td>
</tr>
</tbody>
</table>

1 Denotes i = 1 to 10 jurisdictions as presented in Table 4.1 above.

Table 1.6 indicates the format followed to report the information obtained for each jurisdiction by synthesising individual agency responses (and additional information – see Figure 1.15) for each of the questions asked during the survey process. This then provided a basis for the mapping and best practice phase’s development (see Section 4.4, Appendix B and Section 5). An overview of how the different phases of the process followed are interlinked is outlined in Figure 1.15.

Table 1.6: Synthesis of Road Transport Planning in Jurisdiction

<table>
<thead>
<tr>
<th>Jurisdiction i</th>
<th>Issue/question (e.g. Involvement in route and link road transport planning)</th>
<th>Reported results of synthesis process (as per summaries shown in a tabular form in section 4.4 below)</th>
</tr>
</thead>
</table>

4.4 Synthesis of Survey Results of Road Transport Planning

The findings of the survey of road transport planning for each of the issues addressed in the survey are summarised in this section. In addition to the summarised findings of the survey contained in this section, a more detailed synthesis of responses to each issue in the questionnaire for each jurisdiction is also presented in a matrix form in Appendix B.

4.4.1 Current Practice in Road Transport Planning

State road authorities in Australia are responsible for road route and link transport planning for state roads (in addition to network and corridor planning on these networks), while local authorities are responsible for route and link planning on local road networks. State planning agencies are responsible for planning generally at a regional level, including land-use planning and economic planning, as well as the integration of transport planning with economic and land-use planning at a high level. In some cases, e.g. Queensland, a state transport authority (Queensland Transport) is responsible for the integration of land-use and transport planning and for corridor planning at a strategic government level. In the case of Tasmania, there is currently no state-wide planning agency, so road and transport planning is undertaken by the state level entity (Department of Infrastructure, Energy and Resources). In New Zealand, Road Controlling Authorities (Territorial and Local Authorities and the NZ Transport Agency) are responsible for road route and link transport planning on local roads and national highways respectively, while regional councils are responsible for the formulation of Regional Land Transport Strategies and corridor planning arising out of these strategies.
Legislation exists across all jurisdictions, however it varies significantly in terms of objectives and very little relates specifically to road route and link transport planning as such. The issues covered in such legislation include (to varying extents): consultation (stakeholder agencies and the general public), environmental protection (e.g. New South Wales Environmental Planning and Assessment Act 1979), and integration of land-use and transport planning (e.g. Queensland Integrated Planning Act 1997). However, Victoria does have a comprehensive set of planning provisions underpinned by legislation (Planning and Environment Act 1987) that are used to guide transport planning.

New Zealand also has legislation that relates directly to the transport planning process and the roles and responsibilities of agencies in that process, for example, a Land Transport Management Act (2003) that requires Regional Land Transport Strategies to be compiled on which corridor planning is based. Furthermore, a Resource Management Act (1991) sets out a statutory framework for land-use planning. The Local Government Act (2002) requires LTCCPs in which local authorities set out road infrastructure plans and on which road route and link transport planning on local roads is based. NZ Transport Agency also sets out its plans in the form of its State Highway Program, which is the basis for route and link road transport planning on the State Highway network in New Zealand.

Road transport planning in a number of jurisdictions aims to be multi-modal (not just road or car based but including public transport and non-motorised modes), as well as integrating land-use and transport planning. For example, multi-modal planning occurs in Queensland (a Queensland Transport function) and Western Australia (Department for Planning and Infrastructure). Integrated land-use and transport planning underlies much road transport planning in New South Wales and Victoria. Factors important for multi-modal transport planning include the following:

- acknowledging that there is a range of tools that can attain whole of transport outcomes (Queensland)
- focusing on the movement of people not vehicles (New South Wales)
- planning for public transport as an essential mode for addressing issues such as traffic congestion and private car travel
- planning for freight in both urban (e.g. Queensland) and rural (Western Australia) contexts
- planning for all modes including public transport and non-motorised modes (e.g. New Zealand).

A range of road transport planning documents are obtained from jurisdictions. In terms of road transport planning processes, that of New Zealand is most clear in terms of requirements and roles of agencies (e.g. from regional land transport strategies leading to corridor strategies to road programs put forward by road authorities and implementation) and backed up by legislation (e.g. Land Transport Management Act 2003). In other jurisdictions, the road transport planning process is not laid out as directly and varies from case to case.
4.4.2 Current Practice in Guidelines Documentation

A range of road transport planning guidelines is used across jurisdictions. In the case of Queensland, Queensland Department of Main Roads (QDMR) have the Road Planning and Design Manual, while in New South Wales the Roads and Traffic Authority (RTA) and Department of Planning (DoP) have developed the Planning Guidelines for Walking and Cycling. VicRoads also uses its own Route and Link Planning Guidelines. Extensive use is also made across jurisdictions of Austroads Guidelines. Jurisdictions in Australia also indicated an awareness and use of the ATC National Guidelines for Transport System Management in transport planning practice, especially at the network and corridor level. In New Zealand, Road Transport Planning Guidelines do not exist, but guidelines are available for specific activities, e.g. Cycle Network Guidelines and Pedestrian Design Guidelines.

All jurisdictions indicated that there has been a shift in emphasis of the road transport planning process from a focus on roads and private car transport to a multi-modal approach that includes integration of land-use and transport planning, as well as public transport and non-motorised modes.

The guidelines identified are used for road transport planning at the network, corridor, and more specifically, for planning at the route and link levels as is the case in Queensland, New South Wales, South Australia and Tasmania.

4.4.3 Degree of Development in Route and Link Planning

Road route and link transport planning is generally undertaken by state road authorities, including the NZ Transport Agency in the case of the state highway network, and local authorities for local roads in New Zealand. Route and link planning processes vary significantly across jurisdictions, with variation not only in terms of guidelines used, but also in the processes themselves, sequence of activities, and level and extent of involvement of stakeholder agencies and the public.

The approach to guidelines for urban and rural road route and link transport planning also varies across jurisdictions. In some cases, notably New South Wales, Victoria and South Australia, no difference is assumed in the overall road route and link transport planning approach and process between urban and rural areas. However, it is recognised in a number of jurisdictions, e.g. Tasmania and Northern Territory, that road route and link transport planning in the urban context is more data-intensive and more concerned with traffic issues (e.g. urban form, freight, public transport, non-motorised modes), than would be the case in rural areas.

Formal feedback loops vary across jurisdictions, with gaps in the formal feedback of information between the levels of road network, especially from links and routes upwards (e.g. link→route→corridor). However, this feedback does occur from project to project and between authorities. Feedback communication processes from stakeholders and from the public (including road users) also vary significantly across jurisdictions.

Most jurisdictions use some form of integrated land-use and transport tool/model (e.g. SATURN), and traffic assignment models (e.g. EMME2), as well as micro-simulation models (e.g. Paramics), for traffic analysis and planning.

Very little post-completion evaluation is undertaken across jurisdictions as a matter of formal policy, but it does occur for specific (major) projects (e.g. NSW RTA), and some jurisdictions are taking steps to adopt some form of regular post-completion evaluation policy (e.g. Tasmania).
Data availability for road transport planning varies across jurisdictions, especially for planning at a route and link level. All jurisdictions acknowledged the importance of comprehensive data, particularly when planning at these levels. However, a number of jurisdictions emphasised the lack of data for road transport planning (e.g. ACT and Victoria) and several indicated that data on road user travel behaviour and traffic origin-destination data was one of the most pressing needs (e.g. Tasmania). Others also indicated a lack of freight data (e.g. WA, Tasmania). Data collection difficulties and the cost involved (in collecting data to maintain models) were identified as major issues and reasons for the lack of data.

### 4.4.4 Relationships with other Levels of Government

A high level of cooperation between departments and agencies within the same jurisdiction (e.g. in areas of land-use policy) and with other jurisdictions as stakeholders is recognised as essential (e.g. Queensland and South Australia). This cooperation between agencies takes the form of officer participation on working groups and is on the whole inclusive across jurisdictions. However, it is most formally developed in New Zealand, where the road transport planning process (and stakeholder agency participation therein) is underpinned by legislation.

In most jurisdictions there is some form of integration and relationship between road transport planning documents and processes used in the jurisdiction and other government strategy and planning documents. For example, planning in Queensland is aimed at being in line with the South East Queensland Infrastructure Plan and Program, and in South Australia, all planning is aimed to be in accordance with the South Australia Strategic Plan. Jurisdictions also selectively attempt to ensure consistency of their planning process and documentation with the ATC National Guidelines (e.g. Western Australia).
5 BENCHMARKING TO BEST PRACTICE OF ROAD TRANSPORT PLANNING FOR EACH JURISDICTION IN AUSTRALASIA

This section identifies ‘best practice’ principles for road transport planning that can be applied to the results of the survey of road transport planning so that the state of road transport planning across Australasia can be further clarified. This is undertaken by developing the following three steps:

1. Identifying best practice principles of road transport planning based on evidence arising from an extensive review of international and Australasian experience performed to assist with the development of this Guide.
2. Setting out a framework for best practice comprising the principles identified.
3. Mapping of the results of the survey of road transport planning against the principles identified and then set out in the framework for each jurisdiction.

A summary statement is developed for each jurisdiction regarding each of the best practice principles identified to provide an assessment of how road transport planning processes and procedures in a jurisdiction may ‘map’ up to best practice. The section concludes with a set of key findings about major constraints, gaps, and possible improvements, which may be required to provide guidance to the road transport planning practitioner when also dealing at the road route and link planning level.

5.1 Best Practice Principles for Road Transport Planning: Evidence

The eleven principles selected to describe best practice for road transport planning are discussed below. Also, the evidence obtained by reviewing the international and Australasian literature for each of the best practice principles for road transport planning, i.e. why these principles have been selected as best practice, is briefly discussed.

5.1.1 Strategic Planning and Policy Framework

An appropriate strategic planning and policy framework was found to be the key starting point for transport planning and the overarching frame of reference for route and link level road transport planning. Evidence for this included the Austroads Principles for Strategic Planning (Austroads 1998), the ATC National Guidelines Framework for Transport System Management (ATC 2006a), and the Transit NZ National State Highway Strategy Framework (Transit 2007a). Internationally, a strategic and policy framework has also been shown to be crucial for route and link road transport planning (IHT 1997). This has also been the experience in Europe, where planning for transport infrastructure beginning at a national level and cascading downwards, requires a coherent strategic and policy framework (ECMT 2004).
5.1.2 Legal and Institutional Basis

Legislation underpins the planning process in that country down from the New Zealand Transport Strategy 2002, through to the Land Transport Management Act 2003. This Act requires Regional Land Transport Strategies be completed by regional councils and consultation be undertaken on them involving all stakeholders (including involvement of local government in their compilation). This is further supported by the Resource Management Act 1991 and Local Government Act 2002 that require consultation at regional and local levels. The institutional arrangements in New Zealand were also found to enhance road transport planning with their roles and responsibilities clearly identified and prescribed by legislation and each level of government playing a role and also linking with the others. This was also borne out in the survey of road transport planning in jurisdictions.

5.1.3 Government Processes: Coordination, Integration and Levels of Responsibility

The importance of clarity around the roles and responsibilities of regional/state governments and local governments in road transport planning became apparent in the survey of road transport planning in jurisdictions. For example, in the case of New Zealand, there is a high degree of clarity regarding regional councils’ obligations in terms of corridor planning as are the NZ Transport Agency and TLA responsibilities for route and link planning, while in Australia, clarity about state and local government responsibility for road route and link planning was found to vary to some extent and was not as clearly defined in terms of legislation. Integration between levels of government was also shown to be a key issue in the survey. For example, the importance of integration features in the Queensland Integrated Planning Framework (Queensland Government 2003), as well as in the results of the survey of road transport planning. Guide in all jurisdictions. Vertical integration was shown to be very important in terms of integrated transport planning as applied from the top strategic level down to the detailed planning level, which includes route and link planning. The need for integrated transport planning through levels of government (federal-state-local) and the need for consistency in transport planning approaches across states has generated much discussion in the US (TRB 2008a). The survey of jurisdictions also found that vertical integration in the area of transport planning was required.

5.1.4 Community and Stakeholder Consultation

Consultation was identified in the review of international literature and the survey of road transport planning as a key issue for best practice road transport planning. Evidence for this includes New Zealand where consultation involving government agencies and the public is required by legislation, specifically the Land Transport Management Act 2003 and Local Government Act 2002. Consultation was identified in significant references, e.g. the Eddington Transport Study (DfT 2006), IHT (1997) and Xu (2001). The need for consultation with both agencies and the public was emphasised, as was the need to consult with the public as early on in the planning process as possible. The emphasis on consultation follows recognition that in the past there existed significant gaps in knowledge and information systems concerning community concerns and expectations about the road system (Tsolakis and Thoresen 1998). Without such processes, transport infrastructure projects may be unable to meet these expectations, and may not adequately serve the transport needs within a region (Xu 2001).
5.1.5 Integrated Land-use and Transport Planning

The review of international literature showed an extensive amount of material exists that supports an increased level of integration between land-use planning and transport planning. It also indicates that an acknowledgement of the two-way relationship between them is required together with an increased emphasis on this area as an emerging area within transport planning. This has not been addressed as well in the traditional approach to transport planning. The survey of road transport planning also highlighted a need for strengthening the link between land-use and transport planning. Key references that provide evidence of this need for integration of land-use and transport planning include LTNZ (2007), Transit NZ (2007b), NCHRP (1999) and Miller (2003).

5.1.6 Demand-based Transport Planning

Demand-based road transport planning implies that a range of user-oriented issues must be given a greater emphasis, as it is increasingly realised that a shift away from a primarily supply-side approach to road transport planning is required (Miller in Goulias ed. 2003). Demand-based transport planning has arisen because of the importance of multi-modal transport planning, including the need to plan for the requirements of a range of transport modes. Also there is a need for a shift to more effective land-use and transport planning integration, including the demand for travel (trips generated) for both passenger and freight by different land-use forms (e.g. residential land-use and densities, as well as industrial/sectoral land-use) (NCHRP 2005b; Waddell et al. 2007). The importance of a demand-based approach to road transport planning is apparent from the literature review performed (domestic and international literature) as well as the survey of jurisdictions.

5.1.7 Sustainability and Environmental Implications

Transport planning must consider the broad issue of sustainability and more specifically that of the environmental impacts of transport projects because of their impact on the society, in a broader context than the users of the facilities. Environmental effects of road transport projects are beginning to receive a great deal of attention in the planning process and key references have confirmed this in the literature review, e.g. NCHRP (2005b), ITE (1999), IHT (1997) and more recently the ATC National Guidelines (ATC 2006c).

5.1.8 Multi-modal Road Transport Planning Requirements

A multi-modal approach to road transport planning is necessary given the number of transport modes using infrastructure, and this need has come more to the fore in the literature. Planning for the requirements of a number of transport modes in a multi-modal approach (ATC 2006b) and involves: public transport (VTPI 2006), non-motorised modes (cycling and walking) in ITE (1999) and freight (NCHRP 2007). This differs from the approach in the past, which would have focused on primarily planning for private car transport mobility.

5.1.9 Importance of Transport Models/Tools and Data

The importance of transport models and their requirements for good data is magnified when planning for roads at the route and link level, because of the need for specific transport modelling at this level of the road network. The material reviewed for the purposes of this Guide has indicated the importance of: sound data (ATC 2006b) and the need to invest in it; compatibility of data between models and levels of government (TRB 2006), the need for and investment required for transport modelling to generate meaningful simulations of transport scenarios (NCHRP 1999), and the continuing development of modelling, ranging from the conventional four step trip generation model to integrated land-use and transport modelling (Miller in Goulias ed. 2003).
5.1.10 Funding (Budget) Considerations

Budget considerations have a direct impact on the level of detail and nature of transport planning, especially at the route and link level, and open the way for solutions other than those focused on just increasing infrastructure capacity. For example, solutions provided via better public transport systems and congestion management initiatives (see Goulias 2003 in this regard). Road authorities are continually under funding pressure when competing with other equally pressing needs such as investment in health and education. Tight, reduced and indeed variable budgets for roads down to the route and link level, mean that road transport planning must be aligned with continuing funding limitations and variations. This issue, in the context of the US experience of regional (state) and local level funding, was discussed in detail in TRB (2008a). Broadening the road transport planning process to allow for alternative transport solutions (e.g. congestion pricing, improved public transport services, non-motorised modes infrastructure and services, improved modal integration) arises not only due to the need to deal with environmental imperatives, but also as a result of these budgetary pressures.

5.1.11 Implementation, monitoring and feedback mechanisms

The importance of monitoring the implementation of feedback mechanisms and linkages between levels of government is apparent from the ATC (2006a) Guidelines where the Transport System Management Framework has a number of feedback loops. The System Planning Process in the ATC Guidelines includes network, corridor, route and link planning and therefore involves a number of feedback loops through planning at each of these levels. This enables the performance of the system to be assessed through the indicators identified at the beginning of the process and is aimed at determining whether the stated objectives of the network and corridor/area strategies have been met. It is also an iterative process involving checks and possible changes to the network and corridor/area level strategies once the route and link plans have been completed.

5.2 Best Practice Principles Framework

Figure 1.16 illustrates the principles for best practice road transport planning identified through the review of planning experience in Australia and abroad. These principles are used to ‘map’ the results of the survey of road transport planning, that is attempt to determine how route and link level road transport planning occurs in each of the jurisdictions relative to each of these principles.

The best practice principles range from those linked to ‘whole of government objectives and processes’ (e.g. strategic planning, legal and institutional arrangements and government processes) to ‘key drivers of transport planning’ (e.g. role of demand in planning, models/tools and good data and planning for multi-modal road transport).
**Whole of government objectives and processes:**

- Strategic Planning & Policy Framework
- Legal & Institutional basis
- Government processes: Coordination, integration and levels of responsibility
- Community and stakeholder consultation ‘Sustainability’ and environment
- Integrated land-use-transport planning

**Key drivers of transport planning:**

- Demand-based transport planning
- ‘Sustainability’ and environment
- Multi-modal road transport planning
- Importance of transport models/tools and data
- Funding (budget) considerations
- Implementation, monitoring and feedback mechanisms

Source: ARRB Group Ltd.

**Figure 1.16: An illustration of the recommended best practice principles for road transport planning**

Current-practice statements for each jurisdiction are derived from the results of the survey of road transport planning, summarised in Section 4.4, and presented in detail in Appendix B. These statements are developed to correspond to each of the best practice principles identified and are presented in a matrix form in Section 5.3.
## 5.3 Best Practice Mapping

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Principle 1: Strategic planning &amp; policy framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>Provided through QDMR, e.g. SEQRP &amp; SEQIPP</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Provided through Office of Transport, Transport Planning &amp; Strategy section, e.g. ACT Sustainable Transport Plan, National Capital Plan, Spatial Plan</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Provided through DoP, e.g. Metropolitan Strategy</td>
</tr>
<tr>
<td>Victoria</td>
<td>Provided by DSE and DOI strategic initiatives such as ‘Melbourne 2030’ and ‘Meeting our Transport Challenges’</td>
</tr>
<tr>
<td>South Australia</td>
<td>Provided by Planning SA, e.g. South Australia Strategic Plan, Planning Strategy</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Provided by DPI, e.g. TravelSmart 2010, Network City, Metropolitan Transport Study</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Provided by DPI, e.g. NT TravelSmart</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Provided by DIER, e.g. Transport Policy, Transport Plan for regions</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Provided by Ministry of Transport, e.g. New Zealand Transport Strategy and Regional Councils, e.g. Regional Land Transport Strategies (required by Land Transport Management Act 2003)</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 2: Legal &amp; institutional basis</td>
</tr>
<tr>
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</tr>
<tr>
<td>Queensland</td>
<td>The legislation in Queensland is not specific on route &amp; link level transport planning processes as such, but relates to general requirements for all categories/levels of roads. It goes some way to integrating land-use and transport planning activities and provides for co-ordination of transport activities. Institutional arrangements for road transport planning between QT and QDMR and local governments work well in terms of their understanding of their role in planning, although that is not a legislated process as such.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Legislation is not specific on route &amp; link level road transport planning processes, but would apply to planning requirements with respect to roads generally. It does not deal specifically with land-use and transport planning integration. Institutional basis is provided by simplified requirements and arrangements, Office of Transport (Transport Planning &amp; Strategy) and Roads ACT, although these institutional arrangements are not legislated.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The existing legislation is not focused on route/link level road transport planning as such, dealing with general requirements for road activities and functions and requirements of projects re: environmental impacts. The legislation does not provide for land-use and transport planning activities, consultation regarding projects at route/link level, or co-ordination across levels of government. Institutional basis is provided by DoP with respect to planning and environmental impact of road projects. RTA is the state road authority responsible for designated (state) roads functions. However, institutional arrangements re planning functions for roads at these levels and processes are not legislated.</td>
</tr>
<tr>
<td>Victoria</td>
<td>The road transport planning environment in Victoria is complex. Victorian legislation sets out broad guidance around planning to minimise environmental impacts, but the Victorian Planning Provisions (VPP) provide more detailed, specific guidance especially for detailed road transport planning (while not focusing specifically on route and link levels as such). Planning therefore occurs with reference to the framework set by the VPP, but adherence to the principles such as integrated land-use and transport planning, is not legislated as such. Institutional arrangements for road transport planning in Victoria are characterised by a number of entities responsible for road transport planning at various levels, including legislation.</td>
</tr>
<tr>
<td>South Australia</td>
<td>No legislation exists in SA specifically covering road transport planning as such, e.g. in terms of powers and responsibilities. Also, the legislation does not reflect key issues, e.g. land-use and transport planning, consultation, multi-modal transport planning. Institutional arrangements (specific responsibility for road transport planning) are not covered in the legislation. However, the institutions exist in the form of DTEI and local government to undertake route/link level road transport planning, although their roles, responsibilities and the way in which they undertake road transport planning are open to interpretation.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Legislation in WA provides for the co-ordination of strategic level land-use-transport planning, but does not provide specifically for integrated land-use and transport planning at route/link level. Issues such as the inclusion of multi-modal planning are also not set out. The institutional arrangements are limited to MRWA and local government and their roles, responsibilities and implementation of transport planning practices are not provided for in legislation. This could make it difficult to follow an integrated land-use and transport planning approach without formal linkages to departments such as those involved in planning and the environment.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 2: Legal &amp; institutional basis</td>
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<tr>
<td>Northern Territory</td>
<td>The legislative basis for road transport planning provides for strategic land-use-transport planning along key transport corridors, but this does not extend to cover routes and links specifically. Nor does it provide for a process of road transport planning, modes that must be planned for, co-ordination to be undertaken, nor for consultation to be undertaken. The institutional environment for road transport planning is also limited in terms of the number of entities that need to be involved.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Legislation in Tasmania does not deal with land-use and transport planning at a detailed level, neither does the legislation provide for multi-modal transport planning. Also, co-ordination of transport planning at these levels across and between levels of government is not dealt with in the legislation, nor is there a requirement for an identified consultation process. The institutional environment does not include a planning agency as such, while co-operation and co-ordination between DIER and local governments varies from case to case.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Legislation in NZ regarding transport planning is clear in terms of setting out the roles and responsibilities for planning at a strategic level as well as for corridors, routes and links. Consultation requirements are also clearly identified. Institutional arrangements and responsibilities for road transport planning are identified, e.g. regional councils at a strategic level and the NZ Transport Agency and TLAs for their specific networks. There is a strong link between legislation and institutional arrangements.</td>
</tr>
</tbody>
</table>
### Principle 3: Government processes: Coordination, integration and levels of responsibility

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>Road transport planning is facilitated by government processes in Queensland, with co-ordination and responsibility defined between levels of government, although not prescribed by legislation.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>ACT has an accepted road transport planning process that facilitates co-ordination and integration amongst the government entities responsible for transport planning. This is enhanced by the complementary responsibilities of the entities involved.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Co-ordination between the entities involved in road transport planning presents challenges given their separation of functions. A flexible approach to transport planning, although required given the lack of specific legislation, is likely to vary according to projects, agencies and practitioners involved. Integration of transport planning activities is dependent upon the will and intent of the government entities and so could vary, given that it is not grounded in legislation.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Co-ordination of transport planning across the sheer number of entities involved in road transport planning in Victoria poses challenges for co-ordination, which is likely to vary across projects, especially at a route and link level. Understanding and practice of integration of road transport planning therefore becomes open to variation across the agencies and levels of government involved, even with the guidance at a practical level provided by the legislation.</td>
</tr>
<tr>
<td>South Australia</td>
<td>With road transport planning in SA undertaken by one entity at state level, co-ordination and integration could be argued to be simpler, but it still has to occur with local government. The risk is also that it is narrow, not taking into account the requirements of other departments and levels of government, given that the legislation does not provide for co-ordination and integration.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>While the arrangement of planning activities is aligned with levels of government, co-ordination between levels of government takes place by mutual agreement, and is not required by legislation. Integration in planning between levels of government is not required by legislation and is therefore dependent upon intergovernmental relationships and arrangements.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Co-ordination of transport planning takes place across the various sections of the same organisation due to formal arrangements. However, the integration of planning activities with other functions and departments, e.g. economic and land-use planning will be difficult if these are not formally made an integral part of the planning process, in terms of legislation.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Co-ordination between DIER and local authorities varies from planning scheme to scheme, and is not legislated, but dependent upon agreement between levels of government. Effort is made from both levels of government to integrate transport planning where schemes involve state-local road networks, but the fact that the planning process is not included in specific legislation and there is no overall planning function within the state government means the process is liable to vary between projects.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>The road transport planning process and co-ordination and integration with levels of government is closely determined by legislation. Co-ordination of transport planning involves all levels of government concerned or impacted upon, including safety and funding aspects. Integration of transport plans occurs throughout the planning process when all agencies and entities concerned are involved in the planning process.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 4: Community and stakeholder consultation</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td><strong>Queensland</strong></td>
<td>Legislation provides for consultation in general for road projects, not specifically for all projects on all categories of roads as such, e.g. route and link level planning. Consultation occurs on a project basis as required within the broader formal process. The QDMR Environmental Accountability statement includes an undertaking to consult on projects with an environmental and heritage impact. Consultation with stakeholder agencies occurs through the process, consultation with general public occurs to obtain their input on proposed projects. Unclear whether it occurs for all route and link level projects.</td>
</tr>
<tr>
<td><strong>Australian Capital Territory (ACT)</strong></td>
<td>Consultation with stakeholder agencies occurs on specific projects. However, there is no formal requirement for consultation to occur on road transport projects at route and link level, and how often, e.g. beginning of the planning process. Legislation does require consultation generally. Feedback on project proposals by the public occurs on a project basis, but process and level of consultation varies. It is unclear whether it occurs on route and link level projects across all agencies and throughout the process (including the starting point).</td>
</tr>
<tr>
<td><strong>New South Wales</strong></td>
<td>Legislation provides for consultation generally and it occurs on major road projects, with stakeholder agencies (e.g. working groups) and the general public as the projects come up. Consultation occurs on both a strategic level and on a project level, depending on the lead agency. However, it is unclear whether it occurs on all route and link level projects across all agencies throughout the process (including the starting point).</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td>Consultation occurs with both stakeholder agencies and authorities, as well as with general public on major road projects as part of a formal process (e.g. through working groups), but it is unclear whether it occurs at route and link level in all cases. Moreover, consultation is not required by specific legislation, but occurs through involvement of the numerous agencies in the Victorian road transport planning process, as well as through objectives set out in VPPs.</td>
</tr>
<tr>
<td><strong>South Australia</strong></td>
<td>Consultation with stakeholder agencies and the general public occurs as the need arises on projects. It is unclear the extent of consultation on road transport planning occurring at the route and link level. Consultation is not required in terms of legislation at this level.</td>
</tr>
<tr>
<td><strong>Western Australia</strong></td>
<td>The need for consultation with stakeholder agencies and the general public is acknowledged as essential and consultation generally occurs on a case by case basis. However, it is not a legislated requirement, although a template is used to guide officers through the process.</td>
</tr>
<tr>
<td><strong>Northern Territory</strong></td>
<td>Consultation is provided for on major road projects if requested by the Minister. Consultation occurs on road projects generally, but it is unclear to what extent and whether it occurs for route and link level projects specifically.</td>
</tr>
<tr>
<td><strong>Tasmania</strong></td>
<td>Consultation occurs on major road programs and projects with stakeholder agencies and the public, but it is unclear whether it occurs on projects at route and link level. Does not occur at the beginning of the process (currently not required), but there is a recognition that it needs to do so.</td>
</tr>
<tr>
<td><strong>New Zealand</strong></td>
<td>Consultation with stakeholder agencies and the public is required in terms of national legislation for projects and programs at all levels. The road transport planning process from strategic to project level includes stakeholder agencies and levels of government from the outset as well as the public, through development of the plans and programs.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 5: Integrated land-use and transport planning</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Queensland</td>
<td>Integrated land-use and transport planning is a stated objective for planning documents, and is a principle contained in policy and strategy documents and guidelines for transport planning. Regional Land-use Plans are the basis upon which Integrated Transport Plans are developed. Local governments play a major role in land-use planning with state guidance provided by the Office of Urban Management. Actual level of integrated land-use and transport planning is unclear, especially at route and link level. Legislation provides for integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Integration of land-use and transport planning occurs with reference to growth area planning, although the state of integration at a route and link level is unclear. Occurs in line with ATC National Guidelines, although the extent of it at route and link level is unclear. No legal requirement exists for road transport planning to include integrated land-use and transport planning.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Integration of land-use and transport planning is a key principle in the strategy and policy framework and transport planning process (including developed guidelines), for example, the DoP Metropolitan Strategy. Land-use planning is a key input to the road transport planning process, with input from stakeholder planning agencies. In terms of the RTA, land-use is considered the main driver in developing transport plans. The extent to which this occurs at route and link level is unclear. No legal requirement exists for road transport planning to include integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Integrated land-use and transport planning is a key principle in the Victorian road transport planning approach, given the number of stakeholder agencies involved in the planning process in the state. Integrated land-use and transport planning is an objective included in the strategic framework and VPPs. Legislation provides to some extent for integrated land-use and transport planning.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Extent of integrated land-use and transport planning is unclear, especially at the route and link level. Higher level land-use planning objectives are taken into account by road transport planning agencies, but whether this occurs at the same intensity all the time is unclear. No legal requirement for road transport planning to include integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Road transport planning occurs in the broader context of land-use planning. The extent of integration of land-use and transport planning at all levels of government and also at route and link level is unclear. Legislation provides to some extent for integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Land-use planning provides the broad context for road transport planning at state and local levels, but it is unclear what influence this has at a route and link level and to what extent it is integrated. No legal requirement for road transport planning to include integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Integrated land-use and transport planning occurs to varying extents depending upon the extent of the scheme/project and therefore level of state-local involvement/jurisdiction. Legislation provides, to a limited extent, for land-use planning.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Integrated land-use and transport planning is a strategic requirement and principle that must be incorporated into the road transport planning process by RCAs. Extent of actual integration at route and link varies across jurisdictions. Legislation provides, to some extent, for integrated land-use and transport planning.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 6: Demand-based transport planning</td>
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</tr>
<tr>
<td>Queensland</td>
<td>Forecasting demand for road transport occurs taking into account land-use planning, as well as trip generation and assignment. Planning for provision of infrastructure to meet the demand is therefore a key factor in road transport planning. Actual level of demand assessment at route and link level is unclear, as is the extent of knowledge of the demand drivers of transport across road user groups and modes.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Land-use and economic planning are recognised as key demand factors for road transport planning at a strategic level. Actual level of demand assessment at route and link level is unclear, as is the extent of knowledge of the demand drivers of transport across road user groups and modes.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Demand-based approach to road transport planning is followed, with an emphasis on moving people not just vehicles, enabling planning to occur for a number of modes. A key element is in terms of changes to economic drivers (e.g. incomes) and resulting changes in demand for transport (vehicle ownership, trip patterns).</td>
</tr>
<tr>
<td>Victoria</td>
<td>It is recognised that a key element of road transport at a route and link level is transport demand data and modelling. The aim is to consider transport demand issues upfront in the road transport planning process, and to plan for all modes accordingly. The extent of detailed knowledge of road user demand drivers is not clear, but is likely to become more important to address issues such as congestion and environmental externalities.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Road transport planning is demand driven in terms of stated alignment with the ATC National Guidelines, although the extent of actual knowledge of road user demand drivers for planning at route and link levels is unclear.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Demand based approach to road transport planning is incorporated into road transport planning in terms of planning for a number of modes, but the actual extent of knowledge and use of road user demand drivers at a route and link level is unclear.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Recognition of the implications of demand for road transport planning and the importance of planning for all modes exists, but the extent of actual detailed knowledge of road user demand drivers at a route and link level is unclear.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>There is recognition that road transport planning needs to be more demand based and demand-side issues are already taken into account in transport planning, e.g. in terms of modelling the demand for transport. However, detailed knowledge of road user demand drivers needs to be improved.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Demand-based transport planning is accepted at all levels of government, but the actual extent of detailed knowledge of road user demand drivers varies across jurisdictions.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 7: Sustainability and environment</td>
</tr>
<tr>
<td>------------------------------</td>
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</tr>
<tr>
<td>Queensland</td>
<td>Environmental impact statements are undertaken for major road projects. In terms of its environmental accountability statement, QDMR undertakes to include assessment of road projects in terms of environmental and heritage impacts and to consult with the public on these issues. It is not clear whether environmental impacts are taken into account in road transport planning at a route and link level in all cases.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Environmental impacts of transport and other projects must be taken into account as required by legislation. It is not clear whether environmental impacts are taken into account in road transport planning at a route and link level in all cases.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Legislation (Environmental Planning and Assessment Act 2005) sets out the environmental requirements for the assessment of major infrastructure projects in NSW. The extent to which environmental impacts are assessed at route and link level in all cases is unclear.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Legislation provides that environmental impacts are to be taken into account with major infrastructure projects generally. It is not clear whether environmental impacts are accounted for in road transport planning at route and link level in all cases. For major projects, the Minister for Planning may require that an environment effects statement (EES) be undertaken on the planning scheme for major projects.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Environmental assessments are undertaken for major projects, including co-operation with Environmental Protection Authority (EPA) to develop environmental management strategies for the specific major project. NTC guidelines are also used as a frame of reference for assessing environmental impacts of road projects. However, it is not clear whether environmental impacts are assessed for road projects in all cases and at a route and link level.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Environmental assessments are undertaken on major road projects. Sustainability principles are being incorporated into transport planning guidelines. It is not clear whether environmental impacts are accounted for in road transport planning at route and link level in all cases.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Environmental assessments are undertaken for major road projects in the state. It is not clear whether environmental impacts are accounted for in road transport planning at route and link level in all cases.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Environmental impacts of road projects are included in impact assessment studies of major road projects. DIER Conservation Sites Program identifies particular sites that are environmentally sensitive so that transport projects planned minimise the impact on these sites.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Environmental impacts of transportation and other projects must be assessed as required in terms of legislation. Environmental assessments are performed on major transport projects, while BCA of road projects undertaken by RCAs can include estimation of Greenhouse Gas (GHG) emissions (e.g. in terms of CO₂e), while guidelines on the evaluation of environmental impacts are also contained in the Transit NZ Economic Evaluation Manual (EEM). Legislation stipulates that climate change impacts must also be included in planning for State Highway road infrastructure.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 8: Multi-modal road transport planning</td>
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<tr>
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<tr>
<td>Queensland</td>
<td>Multi-modal planning is a key function of QT. A multi-modal approach is the basis for integrated transport plans. Road transport planning at route and link level also needs to be multi-modal, although the extent to which this occurs in all cases across all jurisdictions is unclear. Legislation provides, to some extent, for multi-modal planning as such.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Multi-modal transport is considered in the road transport planning process, although the extent to which this occurs at route and link level in all cases is unclear. No legislative requirement for multi-modal planning as such exists.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The aim of the Centre for Transport Planning and Product Development (CTPPD) is to provide a multi-modal approach and to coordinate with the DoP for the development of actions under the Metropolitan Strategy. Guidelines exist for planning for transport modes, e.g. cycling.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Within Department of Planning and Community Development (DPCD), transport/modal integration is the key to Transit Cities programs. Most projects involve reconfiguration of facilities to accommodate a mix of modes. Guidelines are also published for planning for different modes, e.g. public transport. DOI and VicRoads recognise multi-modal solutions to be important and there is a need for it to play more of a role e.g. road/rail/public transport. Legislation provides, to some extent, for multi-modal planning as such.</td>
</tr>
<tr>
<td>South Australia</td>
<td>A multi-modal approach is followed with respect to road transport planning and this function occurs within a single department, DTEI. Use is made in multi-modal planning of Austroads guides to planning for a range of transport modes as well as ATC National Guidelines. No legislative requirement for multi-modal planning as such.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>DPI adopts a multi-modal approach at an early stage in the transport planning process, focusing on transport solutions that incorporate more than a single mode. Road transport planning is therefore addressed in the broader context of multi-modal transport planning and land-use planning e.g. freight, public transport, rail &amp; road. However, there is no legislative requirement for multi-modal planning as such.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Extent of multi-modal planning at route and link level is unclear. No legislative requirement exists for multi-modal planning as such.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Multi-modal planning by DIER occurs at a network and corridor level, with detailed technical planning for all modes at a route and link level by DIER and local governments. Austroads guidelines are also used to plan for a range of transport modes. No legislative requirement exists for multi-modal planning as such.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Strategic level multi-modal corridor &amp; route planning is undertaken by regional councils with collaboration of all agencies to produce a Regional Land Transport Strategy (RLTS). Below that, multi-modal road transport planning is undertaken by RCAs for routes and links on their respective networks. LTNZ guidelines for specific transport modes are also used for multi-modal transport planning. Legislation provides, to some extent, for multi-modal planning as such.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 9: Importance of transport models/tools and data</td>
</tr>
<tr>
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</tr>
<tr>
<td>Queensland</td>
<td>A range of transport models are used throughout various levels of road transport planning, including strategic land-use and transport planning models (Brisbane Strategic Transport Model, EMME2), microsimulation models (e.g. for links), as well as for project evaluation. However, the extent of linkages and data sharing between the models, as well as compatibility between levels of government is not clear. Availability of good quality data is an acknowledged issue.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Strategic land-use transport modelling capability provided by EMME2, e.g. for route level planning. Microsimulation models used for link level planning. Availability of good data is an acknowledged issue.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Extensive modelling capability: strategic land-use and transport modelling capability, including EMME2, as well as microsimulation models at link level. Availability of detailed freight data is an issue, as is the availability of resources to synthesise and aggregate data, especially in the case of different data platforms.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Co-operative approach to transport models is followed, given responsibilities of transport agencies and road authorities, including strategic land-use and transport models (e.g. MITM &amp; FMM), going down to link level. Detailed data set to support modelling capability. Availability of good data is an issue, e.g. for land-use and transport planning.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Modelling capability includes a strategic transport model (MASTEM), primarily for use at a network and corridor level, but can be used to support route and link level analysis, e.g. traffic volume data. Availability of OD traffic data is an issue.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>MRWA strategic transport model, Regional Operations Model (ROM) is aimed at network and corridor level analysis, below which traffic simulation models are used as required, e.g. EMME2, SIDRA, Saturn. The ROM operates on a TRIPS/Cube platform. Microsimulation is undertaken using Paramics. Acknowledged data issues include freight and traffic data.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>The SATURN transport model forms the basis for modelling of urban road network. Information on environmental and heritage sites and issues is required as an input to the modelling process.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Asset management involves use of HDM-4, above the planning function per se. Strategic land-use and transport models involve the use of EMME2, while traffic analysis and simulation involves PARAMICS, SYNCHRO and SIDRA analysis. Data availability is not a major issue for Tasmania, the exception being that of passenger OD data in urban areas.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Strategic land-use and transport models are used at a regional level by regional councils in evaluating options for the RLTS, while EMME2 and SATURN are used for analysis at route and link level, together with traffic simulation models. Data availability is an issue, especially geotechnical data.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 10: Funding (budget) considerations</td>
</tr>
<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td>Queensland</td>
<td>Budgetary considerations and government budgeting processes are similar across jurisdictions and affect planning in broadly similar ways. Thus, one summary statement is provided for this principle for all jurisdictions.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Funding was not mentioned specifically as a determinant of the level and nature of planning, probably because it was not included as such in the survey of road transport planning in jurisdictions. However, funding was indicated as a factor influencing asset management strategies, i.e. the treatment and maintenance of ageing infrastructure and therefore by implication the level of planning required for new road projects. Budget constraints and those associated with the government budgeting processes tend to influence road transport planning. In particular, planning at the road route and link level where land-use pressures, multi-modal development considerations and other community and stakeholder demands tend to complicate investment priorities, intensify regulation practices and associated cost thus increasing pressures on available and forecast funds.</td>
</tr>
<tr>
<td>New South Wales</td>
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<td>Victoria</td>
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<td>South Australia</td>
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<td>Western Australia</td>
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<tr>
<td>Northern Territory</td>
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<tr>
<td>Tasmania</td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>Transport planning remains strongly influenced by funding arrangements and the conflicts associated with the traditional approach to construct and maintain existing road assets as opposed to planning for broader environmentally and socially sustainable transport solutions.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Principle 11: Implementation, monitoring and feedback mechanisms</td>
</tr>
<tr>
<td>------------------------------</td>
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</tr>
<tr>
<td>Queensland</td>
<td>Limited amount of monitoring and feedback on projects after implementation. Post-completion evaluation assessment undertaken and varies from authority to authority, although this is changing. No formal requirement or agreed process for these activities exists (e.g. KPIs).</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Once implemented, there is limited and varied monitoring and feedback involved on projects, and very little post-completion evaluation as such. No formal requirement or agreed process for these activities exists (e.g. KPIs).</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Very little post-completion evaluation undertaken, although some monitoring and feedback occurs through general surveys (household travel surveys) but not on specific projects (e.g. routes, links) or programs. No formal requirement or agreed process for these activities exists (e.g. KPIs).</td>
</tr>
<tr>
<td>Victoria</td>
<td>Limited monitoring and feedback on projects is undertaken following implementation of projects. Generally very little post-completion evaluation is also undertaken on projects. Where they exist, KPIs are of a general nature. No formal requirement or agreed process for these activities exists across agencies and between levels of government.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Post-implementation review is included in project management guidelines and there is acknowledgement of the feedback component of the System Planning Framework of the ATC National Guidelines. However, very little monitoring and feedback currently occurs with respect to specific projects. No formal requirement or agreed process for these activities exists across agencies and between levels of government.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Limited post-completion evaluation is undertaken across jurisdictions, although MRWA does some survey work after major projects are completed. Monitoring and feedback mechanisms do not exist for specific projects. No formal requirement or agreed process for these activities exists across agencies and between levels of government. MRWA has identified the need for post-project evaluation.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Very limited post-completion evaluation is undertaken, with no formal monitoring and feedback mechanisms in place. Limited monitoring and feedback is attributed to the rural nature of the network where distance is an issue.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Post-completion evaluation is undertaken at a project level. DIER is aiming to undertake post-completion evaluation at a network level from 2007. No formal feedback and monitoring approaches and mechanisms exist across levels of government, however.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Some limited post-completion evaluation occurs, e.g. undertaken by LTNZ and then NZ Transport Agency. Monitoring and feedback on projects is limited and varies across state and local level, although regional and local authorities have formulated KPIs (including those relating to roads and transport) to assess ratepayer satisfaction with these key services.</td>
</tr>
</tbody>
</table>
5.4 State of Road Transport Planning in Australasia

This Guide has been prepared to identify and discuss key elements of road transport planning with particular emphasis on road route and link infrastructure in Australasia. It complements the ATC (2006b) National Guidelines System Planning framework by examining the interface between the top-down nature of strategic planning and the bottom-up influence mostly determining planning at the route and link level. The current practice road transport planning framework is identified via an extensive survey of jurisdictions and their associated departments/agencies, and it is ‘mapped’ against a set of best practice principles derived from an extensive review of the international and Australasian literature.

The ATC National Guidelines System Planning framework is illustrated in Figure 1.13 (reproduced from ATC 2006b) and is represented in a series of top-down levels of transport planning ending at the route and link level. This Guide focuses on route and link level planning, taking up from where the ATC National Guidelines as a whole stop. Figure 1.17 is drawn to resemble a ‘clip-on’ to Figure 1.13 that illustrates the detail involved in planning at the route and link level. The clip-on section includes elements of the best practice principles, as well as the importance of feedback mechanisms that enable the road transport planning process to not only be top-down (route→link), but also bottom-up (feedback loop, so that, link planning informs not only route but also corridor plans and objectives).

Planning at route and link level is a key ‘barometer’ of how well top-down plans and objectives are identified and developed. It is at the forefront and strongly influenced by three very important best practice principles: increasing need for land-use and transport planning integration; balanced multi-modal development; and greater demand-based planning. These three elements have always been important, but over recent times, have been gaining urgency by the growing environmental and social impacts of road networks and motor vehicle use. The jurisdiction survey results acknowledge serious efforts made to recognise the importance of these key principles in planning, but authorities are also aware of a number of serious legal and institutional constraints which impede implementation.

All agencies interviewed noted that route and link level planning is undertaken, however the degrees of this can differ according to the particular agency interviewed. Planning functions are allocated across a range of different organisations and sometimes parts of the same organisation. However, most jurisdictions have noted that road transport planning at the route and link level should be integrated with land-use and other aspects of the transport system. The survey results and the international experience, show that the traditional approach to planning at the route and link level is not conducive to promoting environmentally and socially sustainable transport outcomes. Current planning practice appears to be lenient, mostly not backed by consistent legislation, and influenced by political developments. However, notably New Zealand and a number of Australian jurisdictions have taken serious steps towards developing procedures and guidelines aimed at improving aspects of the current practice. Nevertheless, there is a lot more that is needed when planning at route and link level in terms of processes and mechanisms that help to pursue common policy objectives, which support environmentally and socially sustainable transport solutions.

The ATC National Guidelines (2006a through 2006e) are a good example in the direction of a more integrated approach to transport planning. However, they have been developed to initially support the AusLink (national) land transport network and they mostly deal with a top-down approach to planning the higher more strategic levels of the network. This Austroads Guide is another example in the same direction, which complements the ATC Guidelines by examining the requirements for improved route and link level planning. These two examples are fresh approaches as practitioners endeavour to overcome deficiencies in existing legal and institutional structures. However, they are only small steps towards what would be required to deliver consistent transport outcomes for the country.
Figure 1.17: ‘Clip-on’ to ATC National Guidelines System Planning framework for route and link planning

The role and importance of legislation in the road transport planning process was highlighted in the survey of jurisdictions, where it became apparent that it was necessary to ensure that road transport planning takes place to a level of detail and in a form consistent across jurisdictions and specific aspects, e.g. stakeholder and community consultation. Otherwise, road transport planning especially at route and link level is bound to vary across authorities in the same jurisdiction.
Stakeholder and community consultation was also acknowledged to be important, and does occur in some form across all jurisdictions. However, it was not clear to what extent it occurs as part of the route and link level planning process. It was apparent that consultation practices vary substantially across jurisdictions in terms of how and when they occur. There was a feeling that consultation needs to be a legislated requirement to ensure that it takes place and to ensure consistency across jurisdictions and projects. It needs to occur as early in the planning process as possible, and needs to be ‘bottom-up’ in terms of occurring with road users and the public affected by the route/link road projects. However, there are barriers to effective community consultation which constrain the important role the community can play in land-use and transport planning decisions at the route and link level. More innovative approaches and techniques are needed to allow effective community input in route and link level transport planning decisions.

In terms of road route and link level planning, practitioners should therefore note the following:

- Evidence-based planning - this means that route and link level planning must occur taking into account the evidence, situation or needs of road transport on the routes and links comprising the networks and corridors because this will determine what ‘solutions’ or route and link level plans are actually formulated.

- Route and link level road transport planning must be, or at least start, as bottom-up planning that occurs at a level of detail that not only enables rigorous analysis for that level of planning, but also properly feeds into higher levels of planning following the sequence of link→route→corridor→network.

- Route and link level planning would also be used to feedback results of planning at these levels to inform network and corridor planning, as well as to provide a test for higher level road transport planning and the associated national policy framework. A supportive national policy framework is of great importance in providing guidance to route and link level planning practitioners. However, it is equally important for this framework to effectively ‘learn’ from the bottom-up nature of route and link level transport planning (i.e. land-use and transport planning integration, multi-modal road transport planning, and demand-based planning principles).

- Key components of road route and link planning enabling practitioners to formulate route and link plans include: stakeholder (government agencies and public) consultation that occurs throughout the planning process starting from the beginning of the process in order for it to be bottom-up planning recognising user needs, demand analysis, need for integration of land-use and transport planning and data requirements and analysis.

- Continuing to work within the existing legal and institutional planning framework presents major challenges and would require serious strengthening of current processes and procedures (e.g. much more effective application of most or all of the identified best practice principles). However, there are opportunities for making road transport planning more consistent both horizontally (across jurisdictions) and vertically (from national level objectives to local government level) by strengthening (and introducing new) legislative and institutional requirements of planning.

- Benchmarking best practice principles by regularly reviewing the effectiveness of current processes and procedures, developing innovative public consultation techniques, linking transport funding arrangements with requirements for land-use and transport planning integration, reducing the number of transport departments/agencies/groups within governments and increasing coordination of planning entities, and strengthening feedback mechanisms for monitoring implementation of plans and auditing of project/program performance.
REFERENCES

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APPENDIX A  SURVEY QUESTIONNAIRE

A.1  Introduction

Austroads engaged ARRB Group Ltd to develop a Guide to Road Transport Planning. The purpose of the Guide will be to assist road authorities and transport practitioners with road transport planning with particular emphasis on planning at road route and link levels.

The 2nd Edition of the Australian Transport Council (ATC) National Guidelines for Transport System Management in Australia (ATCG) indicated that specific road and rail based guidelines should be prepared to assist planning practitioners within each mode to undertake planning at the route and link level. This project aims to compliment the ATCG by providing information which has not been covered by the National Guidelines.

The ATCG distinguish between four levels of planning which are integrated into the Transport System Management Framework:

- Network
- Corridor/Area
- Route
- Link.

The ATCG provided Guidelines for the first two levels; this Austroads project is designed to examine the last two levels (i.e. road based planning at route and link levels). Attachment 1 provides a brief summary of the levels of the transport system planning levels.

The distinction between modal 'route and link planning', and broader multi-modal 'network/corridor/area planning', is explained further in the ATCG.

This Austroads project has already produced a general 'Introduction to Transport Planning for Roads'. The next phase of the project is to undertake a survey of road and transport planning authorities in Australasia. The data collection process will be via a short interview with ARRB staff.

A.2  Background

Road transport planning is a multi-disciplinary activity involving transport management professionals (including transport planners, traffic engineers and economists) as well as urban and regional land-use planners.

Road transport planning in Australasia is undertaken across jurisdictions using a range of processes, guidelines and legislation developed to suit particular requirements and situations. This project acknowledges that levels of government have their own documentation relating to road transport planning. This includes the ATCG which has been recently endorsed by COAG - in which each Australian jurisdiction has agreed to implement the broad principles as part of the planning and management of their transport related policies. Therefore, it is intended that this ‘Guide to Road Transport Planning’ (aimed at providing broad guidance and options to assist practitioners), be developed as a ‘Guide’ rather than a set of prescriptive ‘Guidelines’.
This project also acknowledges that road transport planning and other processes such as multi-modal transport planning, and land-use planning, are not separate functions where one drives the other. The project considers these as integrated components critical to the overall transport system. Additionally, where road transport planning occurs it is necessary to consider overarching demand management and policy issues.

In the context of this survey, information will be sought particularly on planning at road route and link levels. A route is defined as a physical pathway connecting two locations for a particular mode. Transport services are operated along these pathways. In land transport, the pathway consists of a continuous length of infrastructure (ATC 2006). Route planning also involves consideration of road type classification (e.g. an M-road, A, B, or C-road class), planning for alignment options of a road route, and specific initiatives (e.g. land-use, safety, amenity and environmental constraints). A link is defined as a homogenous segment of a route. An inter-modal facility, where people or freight is transferred from one mode to another, is also categorised as a link (ATC 2006).

A.3 Purpose of Consultation

The aim of this interview survey is to understand and document the current practice of road transport planning at the State/Territory and Local Government/Authority level (in the broader context of transport planning). The survey seeks government stakeholder views on the current road transport planning processes (including guidelines) especially for road routes and links. It is also intended that relevant legislation be identified.

The results of the survey of road transport planning for road routes and links across jurisdictions will then be ‘mapped’ in terms of their key components and compared to ‘best practice’ to determine possible gaps between them. These findings will be used to assist in the compilation of the Austroads Guide to Road Transport Planning.

A.4 Interviews

It is intended that the interview ‘surveys’ be conducted using the attached set of questions as the basis for a discussion between the ARRB project team and the relevant departments/agencies. It is envisaged that the interviews would take no-longer than 90 minutes to complete.
A.5 Questions Asked

1. Current practice in road transport planning

1.1. To ensure relevance of the questions asked could you please provide an indication of your area of interest e.g. is it at the route and link level?

1.2. Does your Department/Agency have a formal responsibility or lead role in road transport planning? If so, what are these roles/responsibilities?

1.3. Is there relevant (overarching) legislation which your Department/Agency administers/adheres to relating to road transport planning? If so, what specific acts and regulations are relevant? Are some instruments more relevant than others?

1.4. How is road transport planning addressed in the broader context of multi-modal transport planning, land-use planning and other broad policy objectives?

1.5. What do you consider are the key factors involved in a) broad multi-modal transport planning, and b) road transport planning? E.g. integrated planning, intermodal co-ordination, growth area planning, providing sustainable transport networks, and improving social, environmental and equity aspects of the physical road network?

1.6. Are there any relevant road transport planning documents outlining policy and procedures available within your organisation? If so, would you mind if we contacted you at a later stage for this material?

1.7. What road transport planning approaches/processes are covered, e.g. key elements (major headings)?

2. Current practice in Guidelines documentation

2.1. Does your Department/Agency produce and maintain guidelines or other documents to guide officers in the practice of road transport planning? If so, what are these (title, date produced, last updated)?

2.2. How developed are these Guidelines, processes or planning approaches e.g. draft or approved Guidelines?

2.3. In developing these Guidelines is the emphasis only on roads, or all transport modes considered?

2.4. If you are aware of the ATCG, what is the degree of involvement (detail) in planning, within your Guidelines, at each of the following levels of the transport system (as per the ATCG):

— Network
— Corridor/Area
— Route
— Link.
Attachment 1 below provides a brief summary of the levels of the transport system planning levels.

3. **Degree of development of Road Route and Link Planning**

3.1. Is your Department involved in road route and link planning?

3.2. How is planning for arterial (major) road routes and links dealt with e.g. what processes/guidelines are you aware of?

3.3. Are there different guidelines for dealing with road route and link planning at the urban and rural levels?

3.4. Are there any formal feedback loops between road route and link levels of transport planning, for relevant agencies and/or the community e.g. public consultation?

3.5. Does your organisation conduct modelling and/or strategic analysis within a road transport planning process? Which models are used?

3.6. How is ageing and maintenance of infrastructure taken into account within your organisation? How is the maintenance and upkeep of existing roads undertaken within the road planning process?

3.7. Is a post-completion evaluation (e.g. a review of the outcomes of the project/initiative and whether the initial aims have been met) undertaken and published after major road projects are completed?

3.8. Are there any data constraints on the analysis that can be carried out for development of the road transport system e.g. for road route and link planning and/or other levels of planning? If so, what are the major data constraints? How are these dealt with?

4. **Relationships with other Departments/Agencies and levels of Government**

4.1. What is the level of co-operation required with other Departments/Agencies (including local government) to successfully meet current statutory planning regulations/procedures (either for all levels of road transport planning and specifically for road route and link planning)?

4.2. How do your Departmental planning documents relate to other broader government planning documents?

THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THIS PROJECT
Attachment 1


Referring to the ATC National Guidelines (2006), each level is briefly defined below:

- Network - Collection of routes that provide interconnected pathways between multiple locations for similar traffics.
- Corridor - The parallel or competing modal routes between two locations (e.g. road and rail between two capital cities).
- Area - Defined geographic space and all the transport routes within it.
- Route - A physical pathway connecting two locations for a particular mode. Transport services are operated along these pathways.
- Link - A homogenous segment of a route.

### B.1 Current Practice in Road Transport Planning

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>1.1 and 1.2 Involvement, roles and responsibilities for route and link road transport planning (questions combined due to similarity of responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>Queensland Department of Main Roads (QDMR) is the agency most directly involved in road route and link planning, while Queensland Transport (QT) is involved in integrating land-use and transport planning for all modes, including aspects of this integration as they affect road route and link planning. Local government has statutory responsibility for route and link planning for local urban roads.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Within the Office of Transport, the Transport Planning and Strategy section is involved in route and corridor planning, while Roads ACT takes a lead role in link planning.</td>
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</table>
| New South Wales         | The RTA has a lead role in road transport planning at a route & link level for the state road network. The RTA's Strategic Network Planning Branch, within the Network Management Directorate of the RTA (NM) is responsible for route planning. The RTA's regional offices carry out corridor and route strategic planning within the overall planning strategies and policies provided by NM. The Department of Planning (DoP) is not involved in road route and link planning, and has two main roles related to road transport planning:  
  - providing guidance on strategic planning  
  - assessment of major road projects. DoP has roles both before and after the actual detailed design of roads. Strategic planning is undertaken prior to the design stage, while impact assessment occurs after the development of concepts and also after the more detailed design stage. The role of the Centre for Transport Planning and Product Development (CTPPD) is to provide advice to the RTA and bus and rail agencies. The CTPPD of the Ministry of Transport (MoT) is focused on network and corridor planning, and aims at ensuring that what happens with respect to route and link planning is consistent with higher level planning. |
<p>| Victoria                | DOI and VicRoads have a formal responsibility/lead role in transport planning and are involved in projects that require network, corridor, route and link planning. DOI provides a leadership role in strategic planning for transport in Victoria, as well as in the integration, development and management of transport, freight and logistics and major infrastructure projects and the safety and security of critical infrastructure. DOI is involved in the route and link planning process, in terms of considering planning issues at a multi-modal transport network level, rather than planning at a narrow single mode level. VicRoads' main responsibility is for arterial roads (including route and link development). VicRoads therefore has a lead role in road transport planning at a route and link level for the state road network. DOI aims to promote efficient and integrated transport services across different modes while managing road and freight traffic growth, in order to address the needs of the travelling public and industry. The Department of Sustainability and Environment (DSE) is Victoria's lead government agency for sustainable management of water resources, climate change, bushfires, public land, forests and ecosystems. Victoria's built environment function, including land-use planning and urban growth, is now the responsibility of the Department of Planning and Community Development (DPCD). DSE and DPCD provide a critical role in integrating transport and land-use planning functions and consider route and link planning in this capacity; they also influence development in transport policy across government (i.e. Melbourne 2030 and Transit Cities’ Projects) where urban revitalisation/renewal occurs around modal integration. |</p>
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>1.1 and 1.2 Involvement, roles and responsibilities for route and link road transport planning (questions combined due to similarity of responses)</th>
</tr>
</thead>
</table>
| South Australia        | In SA, all government transport activities are consolidated in one single department, namely the Department for Transport, Energy & Infrastructure (DTEI). This is different to states such as NSW, VIC, QLD and WA where separate road and transport agencies exist.  
DTEI has a lead role in transport planning and undertakes road development planning at the network, corridor/area, route and link level. This includes responsibility for road planning for state arterial roads and roads on the national land transport network (on behalf of DOTARS) in SA. It is also responsible for planning of ‘outback roads’, i.e. local roads in the unincorporated areas in the north of the state. It does not have responsibilities for local roads in local government areas.  
DTEI strongly emphasises the position approved by COAG that the ATC (2006) guidelines form the framework and basis for multi-modal transport planning in Australia. SA is in the process of implementing the ATC Guidelines. |
| Western Australia      | Department for Planning and Infrastructure (DPI) fulfils a regional road planning function, focusing on primary and regional roads - local road network planning is undertaken as part of the structure planning process.  
DPI is lead planning agency, while MRWA has greater role in regional road planning in conjunction with DPI. However, DPI and the WA Premier and Cabinet (WAPC) Department have overall responsibility. There is a memorandum of understanding between DPI and MRWA.  
MRWA has a formal role in network, corridor, route and link planning levels of road transport planning, in particular, to review statutory referrals and development applications. DPI carries out alignment and corridor studies which are eventually taken to the Metropolitan Region Scheme amendment stage.  
MRWA is also involved in strategic road (long-term), operations/development planning (short to medium term) and freight route planning (heavy vehicle operations). |
| Northern Territory     | Within NT’s Department of Planning and Infrastructure (DPI) structure there are infrastructure and public works functions, planning components such as land-use planning, transport groups (covering all transport modes such as aviation, marine and public transport). As a result, integrated transport planning exists at a formal level, where a number of functions are part of the one operating division.  
A primary role exists where DPI is responsible for all road development from the strategic planning, through to transport planning and modelling, network area planning, route planning, and link planning, developing and scoping of projects and setting standards, which are then handed to a delivery agency (which is DPI’s construction agency) to deliver the design and construction activity. |
| Tasmania               | Tasmania Department of Infrastructure, Energy & Resources (DIER) is responsible for planning for state roads in Tasmania at all levels of roads and modes, starting off with regional plans, corridor and area studies, down to route and link level planning, including at the intersection level where necessary. |
| New Zealand            | Road Controlling Authorities (RCAs), Territorial and Local Authorities (TLAs) and the NZ Transport Agency are responsible for road transport planning at route and link level for their respective road networks in New Zealand. TLAs are involved in route and link transport planning for local roads, while NZ Transport Agency is involved in route and link planning for State Highways. Regional councils are involved in corridor and route planning in NZ at a strategic level through the formulation of Regional Land Transport Strategies. |
### Overarching legislation relating to road transport planning

| Responding Jurisdiction | Integrated Planning Act 1997 – establishes QT’s role in land-use planning.  
Transport Infrastructure Act 1994 – specifically relates to building road, rail, air & maritime infrastructure.  
Local Government Act 1993 – local government responsibility.  
Queensland Integrated Planning Act 1997 – establishes QT’s role in land-use planning.  
Transport Infrastructure Act 1994 – specifically relates to building road, rail, air & maritime infrastructure.  
Local Government Act 1993 – local government responsibility.  
Environmental Planning and Assessment Act 1979 – provides for the assessment of major infrastructure projects.  
Some state transport agencies in NSW are able to undertake their own review of environmental factors and, if there are no potentially significant impacts, can proceed without approval from DoP.  
New South Wales DOI considers legislation covering land-use issues, such as the Planning and Environment Act, and Planning Scheme Provisions – Victoria Planning Provisions (VPP).  
Development Contribution Plans are important for growth area planning.  
VicRoads administers/adheres to the:  
• Road Management Act, provides definitions of roads at the arterial and local level, and gazetted roads  
• Road Management Plan, identifies plans for local roads.  
VicRoads also adheres to legislation covering land-use issues, such as the Planning and Environment Act, Environment Protection Act and the Heritage Act.  
Within DSE, planning policies are directed to land-use and development, as circumscribed by the Planning and Environment Act 1987.  
DPCD is responsible for the Planning Scheme Provisions – Victoria Planning Provisions (VPP). In particular Clause 56 Residential Subdivision provides coverage of integrated transport planning including road location and design at the neighbourhood level, residential sub-divisions for planning schemes. It also provides detail around route levels e.g. policies relating to access to roads. Clause 12 provides coverage of Melbourne 2030 within the VPP. Clause 18 covers broad state-wide transport planning.  
Victoria DOI considers legislation covering land-use issues, such as the Planning and Environment Act, and Planning Scheme Provisions – Victoria Planning Provisions (VPP). In particular Clause 56 Residential Subdivision provides coverage of integrated transport planning including road location and design at the neighbourhood level, residential sub-divisions for planning schemes. It also provides detail around route levels e.g. policies relating to access to roads. Clause 12 provides coverage of Melbourne 2030 within the VPP. Clause 18 covers broad state-wide transport planning.  
South Australia The Highways Act, the Road Traffic Act and the Passenger Transport Act are key acts administered by DTEI and provide the legislative underpinnings for its transport planning operations. Other acts relating to transport planning include the Land Acquisition Act, and the Metropolitan Adelaide Road Widening Act.  
Western Australia MRWA adheres to the Main Roads Act 1930, which is road-based. MRWA also has the power to acquire land for agreed projects (although the extent to which this applies may vary depending on whether this is voluntary or resumption in terms of Public Works Act 1902. MRWA also adheres to other legislation relating to land-use planning, and Environmental and Aboriginal Heritage.  
The planning legislation DPI adheres to is the Planning and Development Act 2005 and the Metropolitan Region Scheme legislation, which are effectively land-use based in comparison to the Main Roads Act 1930 which is road-based.  
Northern Territory The Roads Act provides management responsibilities for roads and powers for land issues and declaring roads open, which is an acquisition power. It involves care and management of the road, such as requirements for the road network covered under this legislation.
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<th>Responding Jurisdiction</th>
<th>1.3 Overarching legislation relating to road transport planning — contd.</th>
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<tr>
<td><strong>Tasmania</strong></td>
<td>There are no statutory obligations that compel other government agencies/authorities (e.g. local government) to obtain approval, involve or consult with DIER when undertaking these activities, while there is no legal obligation for DIER to be consulted or its approval to be obtained regarding activities that may impact on the DIER road network, e.g. in the case of an adjoining road. Roads and Jetties Act 1935. Land-use Planning and Approvals Act 1993. Traffic Act 1925 basis of numerous regulations for traffic control, not planning as such. Tasmania does not have a state-level department responsible for planning as such, unlike other states. Responsibility for planning has been devolved to local councils in terms of the Land-use Planning and Approvals Act 1993.</td>
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<tr>
<td><strong>New Zealand</strong></td>
<td>The Land Transport Management Act (LTMA) 2003 gives effect to the New Zealand Transport Strategy of 2002. LTMA sets out the roles and requirements of RCAs in integrating land-use and transport planning, requirements and processes for local authorities to obtain funding for road construction and maintenance through formulation of land transport programs, which in turn must be in line with key objectives set out in the New Zealand Transport Strategy (NZTS). LTMA requires regional councils to formulate Regional Land Transport Strategies (RLTS). Resource Management Act (RMA) 1991 – sets out statutory framework for land-use planning in NZ. The RMA also requires that each region produce a regional policy statement (RPS) to address the main resource management issues of the region. regional land transport strategies are required to be ‘not inconsistent with’ RPSs. The RMA also requires regional and local authorities to formulate regional and district plans (important guide for route and link transport planning at local level).</td>
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### 1.4 Multi-modal transport planning, land-use planning and other broad policy objectives

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<tr>
<td><strong>Queensland</strong></td>
<td>Multi-modal planning is a key function of QT, specifically the Transport Planning Branch. QDMR uses the Road System Manager which provides guidance on high level government outcomes, performance measurement and project management. The Transport System Management (TSM) guidelines provide advice on how to go about transport planning. The SEQRP (South East Queensland Regional Plan) is the statutory regional plan that mandates development areas. It is supplemented by the SEQ Infrastructure Program (SEQIPP) up to 2026. Regional land-use plans are the basis upon which integrated transport plans are developed. Integrated transport plans take a multi-modal approach to transport planning. Local Governments play a major role in land-use planning with state guidance provided by the Office of Urban Management. The priority infrastructure planning (PIP) process is linked to the State’s Integrated Planning Act. The PIP process is intended to secure funding for road infrastructure.</td>
</tr>
<tr>
<td><strong>Australian Capital Territory (ACT)</strong></td>
<td>Multi-modal transport is considered in the broader road transport planning process.</td>
</tr>
</tbody>
</table>
| **New South Wales**     | The DoP Metropolitan Strategy, has as a key principle, that of integrating transport and land-use planning. Two related principles are:  
- managing travel demand – recognising that not all demand can be satisfied by transport infrastructure  
- promoting sustainable transport.  
In terms of the RTA, land-use is considered the main driver in developing transport plans, with constant liaison between agencies.  
The aim of the CTPPD is to provide a multi-modal approach and to coordinate with the DoP for the development of actions under the Metropolitan Strategy. |
| **Victoria**            | Integrated land-use planning is considered the main driver in developing transport plans, with constant liaison between agencies. A key issue is the lack of nexus between land-use and transport planning in existing documentation. It is not a case of one driving the other; it is rather a two-way relationship.  
In terms of land-use and transport planning, DOI and VicRoads recognise multi-modal solutions to be important and there is a need for these to play more of a role, e.g. road/rail/public transport modes as they apply to freight and passenger transport.  
It is important for transport planning to recognise the wider trends in the economy and society e.g. rail freight movement vs. road freight travel and cost effectiveness; coordination and interaction of freight generating industries and government; trends in production; understanding of where the industries are moving (origin and destination) and how industries are growing; adapting to new transport demands; and recognition of industries’ individual needs e.g. minerals, mining, and the agriculture sectors interactions within a multi-modal network (inter-modal linkages from road/rail to ports). A good example of this is the M2030 strategy which acts as a strategic framework for transport planning in Victoria. In terms of DPCD responsibilities, state policy is implemented by local policy e.g. Clause 56 of the VPP in the case of a residential sub-division sets the states objectives and standards at the detailed level.  
There is a changing emphasis in transport planning in recent times. This includes consideration of growth area objectives and development plan overlays.  
Within DPCD, transport/modal integration is the key to Transit Cities programs. Most projects involve reconfiguration of aged modal exchanges e.g. bus/rail/tram/taxi/’kiss and ride’ facilities at public transport interchanges/cycling facilities, etc. |
| **South Australia**     | Road planning is undertaken through the Road Transport Policy and Planning Directorate of the Policy and Planning Division.  
Road planning is driven by broader land-use and access objectives/strategies, primarily outlined in South Australia’s Strategic Plan and the SA Planning Strategy. SA’s Strategic Plan identifies specific targets for the transport system, as well as broader targets to which transport contributes (e.g. level of exports). The Planning Strategy is a statutory document which primarily influences development plans within local government. Road transport planning within DTEI supports these documents by way of ensuring improvements accord with/contribute to the objectives/targets. More specifically, future land developments (e.g. residential & industrial) are factored into the identification of potential road improvements.  
Key constraints/opportunities within the road transport system also influence land-use planning at both the state and local government level.  
Multi-modal planning is undertaken within the single organisation, DTEI. |

_Austroads 2009_
### Responding Jurisdiction

| **Western Australia** | DPI adopts a multi-modal approach at an early stage in the transport planning process. Solutions that incorporate more than a single mode are investigated. At the strategic road network and corridor planning levels, combined land-use, network and public transport scenarios are considered and analysed, and the transport networks required to accommodate future transport demand. Additionally, within MRWA, road transport planning is addressed in the broader context of multi-modal transport planning and land-use planning e.g. freight, public transport, rail & road. Collaboration and engagement exists with DPI, PTA and LG and community engagement as part of the planning process. |
| **Northern Territory** | Land-use planning is a function of DPI. As a result of the structure of the department, each division is aligned with land-use planning frameworks at a localised level. The land-use planning documentation produced by the NT Planning Agencies provides background transport planning information, where appropriate, and recognises that the Territory is a relatively small jurisdiction. As a result, there is less of a need for high level modelling; however, a transport model exists for Darwin that was established in 1974 using the UTS system. Transport modelling has since migrated to TRANPLAN and external consultants are required to run this model. It is run on a periodic basis taking into account current land-use planning, employment, ABS data, population changes and uses a base model for forward projections. This sets the context for network level planning. It is noted that modelling information is not publicly available and available for internal use only. |
| **Tasmania** | In terms of policy and planning, DIER has a draft Transport Policy, and is in the process of developing a Transport Plan. There are three Regional Transport Plans for Tasmania, specifically: Northern, Southern and Cradle Coast Plan. DIER also has a road hierarchy of the Tasmanian road network consisting of five levels. There is also an AusLink corridor study available in draft form. In terms of land-use planning, if DIER wants its plans incorporated into Local Area Planning Schemes, the department must argue that before the Resource Planning Development Commission, which will then take a decision on whether to include components such as a road hierarchy in a planning scheme. DIER also has a Road and Rail Assets Schedule (focused on asset protection) which also goes into planning schemes and that is also in the process of being redeveloped. The road transport planning process in Tasmania is summarised as follows: DIER compiles Regional Transport Plans → DIER then compiles network plans (including identification of network priorities to be addressed in a multi-modal approach) → DIER then undertakes corridor studies involving the full range of planning activities, e.g. public consultation & consultants on specific issues & projects. A key distinction is that network and corridor planning considers issues and problems and prioritises them, whereas route and link planning considers technical solutions. |
| **New Zealand** | Strategic level multi-modal corridor & route planning is undertaken by regional councils with collaboration of all agencies to produce RLTS. Land-use – transport planning is taken into account in preparing the RLTS as required by RMA (RPS). The NZ Transport Agency & TLAs then compile a list of projects for the State Highway (SH) program & Long Term Council Community Plans (LTCCPs) for submission to the NZ Transport Agency Board & TLAs respectively. Programs are multi-modal, take into account land-use planning at local level. Detailed route & link planning is undertaken by the RCAs once their program of works is approved. TLAs are responsible for design & construction of bus/rail interchanges, bus stops, bus priority, pedestrian & cycling infrastructure. |
### 1.5 Key factors involved in multi-modal planning and road transport planning

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<tr>
<th>Responding Jurisdiction</th>
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| Queensland              | QT has developed a document for Integrated Land-use & Transport Planning. The Transport System Management guidelines have an emphasis on multi-modal land transport planning.  
Key factors identified for multi-modal transport planning include: acknowledging that there is a range of tools to achieve transport outcomes, starting with land-use decisions and ending with regulatory tools, e.g. road use legislation – axle load limits. Also, there is a range of fairly well understood linkages between land-use, trip generation, trip assignment and resultant transport demand.  
Key factors identified for road transport planning include: forecasting demand and providing infrastructure to meet the demand.  
This depends on where the planning is taking place, i.e. rural, regional or urban setting. Generally, the more urban the setting the more important broad multi-modal transport planning is to address the whole transport task. In rural and regional areas there are other drivers such as freight movement. |
| Australian Capital Territory (ACT) | Involves integrated planning, growth area planning, sustainable/social/economic planning. |
| New South Wales         | Key factors identified by DoP in multi-modal planning and road transport planning include:  
- Evaluating public transport provision in the context of the strategic planning goals.  
- Focus on moving people, not moving vehicles, by adopting measures such as bus priority schemes; reallocation of road space more efficiently e.g. removing parking.  
Key factors identified by RTA include:  
- Implications of changing preferences for long distance travel, the increased need for freight trips on roads.  
- Other factors include societal changes related to increased wealth and the resultant increased car ownership and the consideration of sustainable outcomes including reduction in pollution levels.  
Key factors identified by CTPPD include:  
- Reducing road congestion and facilitating the increased population planned as part of policies for urban consolidation and development of growth centres in the fringes of the metropolitan area. |
Responding Jurisdiction | 1.5 Key factors involved in multi-modal planning and road transport planning — contd.
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**Victoria**

Key factors identified by DOI include:
- Analysing the network holistically rather than specifically e.g. a shift towards assessing the entire network wide effects, whereby the responsibility does not end at the route or link.
- Effective public transport planning is essential to address issues such as car travel from inner city to city.
- A fundamental component of effective route and link planning is to understand demand and travel patterns better.

Key factors identified by VicRoads include:
- Consideration of long-term planning horizons at the urban and rural level e.g. 25-30 year infrastructure and growth area planning horizons and commitments as set out in 'Meeting our Transport Challenges' strategy.

Key factors in road transport planning identified by DSE include:
- Consideration of social equity, transport choices and greenhouse gas emissions (as part of an EES).
- Growth area planning is receiving higher government commitment e.g. establishment of the Growth Area Authority. It was considered that authorities are on the cusp of rethinking how they look at route planning and the allocation of space along routes.
- When transport planning occurs it needs to consider demand management issues up front. It is not just a provision of a road network or a link, but the range of functions that the link can provide e.g. access to public transport, provision of on-road public transport services and provision for non-motorised transport.
- It is important to emphasise social and equity aspects of the physical road network, including the equity of access.

Key factors identified by DPCD include:
- Shift from new growth area planning to addressing problems caused by ageing infrastructure/poor modal integration which no longer matches the needs/aspirations of towns/suburbs.
- Transport planning needs to be part of integrated solution to improve vibrancy of urban areas.
- To achieve a holistic vision for a precinct/town centre an urban design framework which considers treatment of roads, pedestrian movement, safety, activated spaces, public open spaces, connectivity, way finding/signage, etc., is essential.

Emerging trends identified by VicRoads include:
- Congestion, greenhouse gas emissions, public transport linkages.
- Exploration of fuel and oil technologies, prospects to export brown coal, and the effects these have on new transport demands in the future.
Responding Jurisdiction | 1.5 Key factors involved in multi-modal planning and road transport planning — contd.
--- | ---
South Australia | Road transport planning; DTEI is aligning its processes to accord with the ATC (2006) Guidelines. Objectives guiding road transport planning decisions are identified in SA’s Strategic Plan. More specifically, the key factors that influence road planning include:
  - improving safety
  - increasing the use of public transport
  - enhancing the efficiency and access for the movement of freight
  - maintaining the asset
  - keeping pace with growing urban congestion levels
  - integrating road planning across three government levels
  - influencing land development to be compatible with the road system.

Western Australia | In terms of multi-modal planning, freight is an important factor in road transport planning in WA. In particular, the regional centres/areas require a different approach to multi-modal planning.
DPI has policies relating to multi-modal planning. Metropolitan strategies contain specific objectives and provide direction for transport planning. Planning for all modes is firmly entrenched in policy.
MRWA recognises all factors identified in the question and has an understanding of key drivers, government/strategic policy and objectives, reliable data analysis, performance requirements, collaboration with transport partners, consideration and assessment of infrastructure and non-infrastructure options.

Northern Territory | By maintaining a high level of interface with the Planning Division of DPI, effective control of key issues is achieved. Additionally, much of the land in the urban context is crown controlled and is therefore managed directly in terms of the network and the turn-off of extra residential land.
Another unique feature of the Territory is that only one planning authority exists, which is the NT Government. There are no council planning powers in the Territory, hence the NT Government holds all planning powers and although the Development Consent Authority (DCA) in each council jurisdiction has local representation by way of councillors, they represent an independent view of the application. Hence, the DCA is territory (state) level controlled, rather than local government controlled.
An issue in terms of planning that needs to be brought into link, route, corridor and network planning is the early recognition of other modes of transport such as walking, cycling and public transport. If these are not considered early, it is very difficult to retrofit later in the process. It is more efficient to consider them as part of integration in the early stages of planning. Whilst the Austroads Guide to Road Transport Planning being developed has an emphasis on roads, it is important for the document to recognise the importance of these other elements of transport, and the major role they have in the road system.

Tasmania | A key factor for DIER is having a policy framework within which the department can work and a clear direction in terms of where the department wants to go in terms of modes. Key factors include interstate freight as distinct from urban areas where modal choices exist (interstate freight has not caught up to urban public transport systems in terms of modal choices).
In terms of inter-modal transport, the issue is less about technical aspects and more about policy and planning functions. DIER does not currently undertake rail planning as such. The department may undertake more planning for rail, as ownership shifts from the private to the public sector.
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>1.5 Key factors involved in multi-modal planning and road transport planning — contd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>Multi-modal road transport planning is a key feature in New Zealand, taking into account the requirements of freight, public transport, pedestrians, cyclists as well as private cars. Environmental impacts are also taken into account. Input from all stakeholder agencies occurs in the formulation of regional strategies at route level, and consultation with stakeholders &amp; public is also a key factor in the acceptance of programs and therefore in detailed route &amp; link level transport planning. The consultation requirement is legislated in terms of the Resource Management Act 1991 and the Local Government Act 2002.</td>
</tr>
</tbody>
</table>
### 1.6 Relevant road transport planning documents

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>Queensland</th>
<th>Australian Capital Territory (ACT)</th>
<th>New South Wales</th>
<th>Victoria</th>
</tr>
</thead>
</table>
| QDMR is the major source of transport planning documents used in Queensland. The key transport planning documents used by QDMR include Transport System Management Guidelines (TSMG) and Road System Manager (RSM), both high level transport planning documents. QDMR also has a Pre-Construction Manual and Road Corridor Planning Manual – two documents that are currently under review. AusLink Corridor Planning Guidelines are also used for road transport planning in Queensland. Roads Connecting Queenslanders (RCQ) – a document outlining the Department’s strategic plan is also relevant at a strategic level. QDMR also has numerous in-house technical documents to support road transport planning, including a Road Planning & Design Manual (providing guidelines on all transportation facilities) and OnQ (a project management process). Department of Local Government Priority Infrastructure Plan (PIP) Guidelines. Queensland Road Alliance which is focused more on road investment and regionally collaborative planning. | The most relevant document is the ACT Sustainable Transport Plan (2004). Other relevant documents include the National Capital Plan, Territory Plan, supported by the Land Act. In 2004, the Spatial Plan (which reviews & complements the Territory Plan) was introduced and is also used in road transport planning. | In terms of the NSW DoP, there are three levels of strategic land-use and transport planning reflected in three main documents:  
- State Plan – a whole of government approach.  
- Metropolitan Strategy – for Sydney, for the next 25 years, developed by DoP.  
- A set of ‘mini metro’ strategies for the 10 sub-regions in Sydney, each containing actions customised for each sub-region, developed by DoP. As a Metropolitan Strategy action, the DoP is currently developing urban design guidelines dealing with the impacts of locating high density land-use activities adjacent to busy roads. Amended land-use and transport guidelines are being developed by RTA for the strategic (corridor and route) level, with less emphasis on the link level. | Relevant road transport planning documents common to the departments surveyed include:  
- Melbourne 2030 and review of Melbourne 2030 (defines growth areas, transit cities developments, activity centres, provides definitions of the transport network and considers both transport and land-use planning as non-linear and integrated components.  
- Meeting our Transport Challenges (outlines transport commitments and the influences of policy development across and within government).  
- Growing Victoria Together.  
- Corporate plans for different agencies.  
- Growth area planning frameworks – includes arterial roads to support development.  
- Linking regional plans e.g. planning for regional Victoria and links to regional activity centres through coordinated procedures.  
- AusLink Corridor Strategies.  
- Local government involvement in growth area planning e.g. planning permits, infrastructure required with the State Development Contribution Plan.  
- Road Declaration Guidelines – available on the VicRoads website. |
<table>
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<tr>
<th>Responding Jurisdiction</th>
<th>1.6 Relevant road transport planning documents — contd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Australia</td>
<td>DTEI has an internal project management process (including proformas and checklists) that guide the initiation, planning, implementation and handover of specific infrastructure improvements. The planning phase covers the concept planning process for specific projects at the link/individual location level. DTEI is in the process of aligning its project management system with the ATC (2006) Guidelines.</td>
</tr>
</tbody>
</table>
| Western Australia      | The following road transport planning documentation and processes exist:  
|                        |   - Liveable Neighbourhoods - provides policies, procedures and guidelines on district and local level road planning.  
|                        |   - MRWA standards e.g. inter-regional routes.  
|                        | Additionally, MRWA documents include the Road Network Planning Process (Draft) which includes network, route and development planning. Network Operations Planning Framework (Draft), with a focus on short to medium term solutions which optimise the use of the existing road network. |
| Northern Territory     | Whilst it was noted that there are few planning documents, there are some policies in existence relating to the provision of cycle facilities and the Strategic Freight Network. DPI has various policies particularly for development control. Sample briefs are also used to guide planning projects. The experience of officers is also important. |
| Tasmania               | Covered in discussion of previous questions. |
| New Zealand            | The New Zealand Transport Strategy 2002 determines transport strategy at a central level, aiming at a safe, efficient, integrated transport system. A document entitled ‘Implementing the NZTS’ is being produced, scheduled for completion June 2008.  
|                        | Transit NZ (now the NZ Transport Agency) has produced a National State Highway Strategy (NSHS). LTNZ has produced a Planning Policy Manual (PPM) and other plans, strategies and manuals, e.g. Urban Design Manual/Protocol.  
|                        | The NZ Transport Agency PPM sets out guidelines for road transport planning for the NZ Transport Agency projects.  
|                        | The NZ Transport Agency NSHS strategic framework process going down to route and link level planning is important.  
|                        | The Land Transport New Zealand (LTNZ) Economic Evaluation Manual (EEM) sets out guidelines for economic evaluation of road projects, e.g. BCA, evaluation of environmental externalities. LTNZ also produces Urban Design Protocols & Travel Demand Management (TDM) Guidelines.  
|                        | The Regional Land Transport Strategy (RLTS) documents produced by regional councils provide a framework for strategic level road transport planning. |
### 1.7 Road transport planning approaches/processes covered

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>Description</th>
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</table>
| Queensland                   | The Road Transport Planning Process in Queensland involves:  
  - **Outcome areas (4)** for transport on a state-wide basis (focusing on efficiency, safety, access & environment); which lead to:  
    1. Elements identified (37) (focusing on enhancement or management preservation & operations), funding is allocated on a component level, rather than a district level.  
    2. A 5 year (short-term) plan and a 20 year (long-term) plan based on the four outcome areas are developed, forming the basis of the Roads Implementation Program (RIP) with funding allocated to specific road projects. |
| Australian Capital Territory (ACT) | The Sustainable Transport Plan (2004) sets a strategic direction & policy framework to achieve a more sustainable transport system for the ACT over the next 25 years.                                                      |
| New South Wales              | There are no specific road planning documents identified by DoP. DoP has a suite of documents, termed the Integrated Land-use and Transport (ILUT) policy planning package, which is designed to provide guidance to local government.  
  - Current RTA documents provide guidance but are not designed to limit the government to specific project implementation. A degree of flexibility is needed to accommodate unexpected land-use or societal changes and to facilitate land-use development decisions by the private sector which may be in the public interest.  
  - For the CTPPD, the key documents are the State Plan and Urban Transport Statement (UTS) and further guidelines will be developed after this. |
| Victoria                     | Both DOI and VicRoads adopt a three staged project review process (strategic fit, options assessment and business case development). Documentation and presentation requirements are met through the Project Review Committee (PRC) process. |
| South Australia             | The planning phase of the project management process for major infrastructure projects covers the steps of risk management, value management, planning processes, planning estimate, project definition review, and statutory approvals. |
| Western Australia            | Not Available                                                                                                                                                                                                |
| Northern Territory           | See response to Question 2.2.                                                                                                                                                                                |
| Tasmania                     | Covered in discussion of previous questions.                                                                                                                                                                  |
| New Zealand                  | Regional councils compile Regional Land Transport Strategies at a corridor & route level together with LTNZ, the NZ Transport Agency & TLAs. Regional councils then co-ordinate the formulation of a Land Transport Programme for the region consisting of identified road and other transport projects to be submitted (as part of the National Land Transport Programme) to LTNZ (including the former Transfund) for funding. Certain projects proposed by TLAs would also be included in their respective Long Term Council Community Plans (LTCCPs) for public consultation and approval of these projects and their portion of funding. The RCAs then undertake detailed road transport planning at route and link level for their respective networks (in addition to implementation, i.e. securing funding and constructing these networks). Transport planning (from formulation of an RLTS to more detailed corridor, route and link level plans) involves all stakeholders, namely: regional councils, RCAs (the NZ Transport Agency & TLAs) and LTNZ in terms of safety and funding aspects. |
## B.2 Current Practice in Guidelines Documentation

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>2.1 Availability of road transport planning guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>QDMR road transport planning guidelines include the Road Planning &amp; Design Manual. QT has a policy on land-use &amp; transport. Generally local governments follow state guidelines if available. Priority Infrastructure Plans (PIP) Guidelines are also available.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>At the route level, there are no specific guidelines which detail the steps to be taken in the planning process. Studies are undertaken &amp; the policy framework helps to establish parameters and goals.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>DoP does not have specific road design guidelines. DoP has prepared Planning Guidelines for Walking &amp; Cycling, jointly with the RTA. The RTA Network Management Directorate is currently developing guidelines for network &amp; corridor levels of road planning, due to be finalised by the end of 2007. The CTPPD is currently developing project assessment guidelines for all transport modes. The Centre may also adopt the ATC National Guidelines.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Guidelines exist for use within DOI and VicRoads in preparing road projects (and other infrastructure projects) and capital planning provisions. These comprise the Capital Planning Review Guidelines, and the Guidelines for Cost Benefit Analysis (practitioners guide). These are both consistent with the ATC National Guidelines. In addition to these documents, a Strategic Planning Tool Kit (ongoing document), Transport Modelling Tool Kit, and Road Conservation Plans are available within VicRoads for practitioners. DPCD is responsible for Precinct Structure Planning Guidelines which provide local councils, developers and infrastructure providers with clear directions for the planning and designing of new neighbourhoods to meet the challenges of creating sustainable liveable communities. These guidelines include coverage of strategic planning for precincts within growth areas. It also integrates land-use components and shows how the spatial layout of land-use influences and interacts with travel demand needs. This provides a good example of an integrated approach. DPCD has not developed road transport planning guidelines.</td>
</tr>
<tr>
<td>South Australia</td>
<td>DTEI is in the process of adopting and implementing the transport system management framework in the ATC (2006) Guidelines. At this stage, and apart from relevant Austroads guidelines on strategic planning and national guidelines like the National Land-use and Transport Guidelines, agency specific road transport planning guidelines do not exist. The project management process identified above is currently being used to guide the concept level planning (i.e. identification of improvement schemes) for individual links/locations.</td>
</tr>
</tbody>
</table>
| Western Australia             | MRWA has produced a draft guideline on road transport planning processes (2000) that is currently being updated to incorporate sustainability principles. DPI applies the following road transport planning documentation and processes:  
  - Austroads guidelines (very similar for urban & rural environments).  
  - Internal design & drafting guidelines on how to produce drawings.  
  - Developing internal design guidelines for consultants that specify the design documentation required for carriageway plans and land requirements – a type of generic brief. |
### Responding Jurisdiction

#### 2.1 Availability of road transport planning guidelines — contd.

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>Documents issued by DPI and emerging from the land-use planning process or specific studies:</th>
</tr>
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</table>
| **Northern Territory**  | - The NT Planning scheme is a recently published document available on the DPI website ([www.nt.gov.au/lands/planning/scheme/index.shtml](http://www.nt.gov.au/lands/planning/scheme/index.shtml)). This includes attached reference documents for centres such as Alice Springs and the Darwin Land-use Structure Plan 1990, which was produced by the land-use branch to display the shape of Darwin’s future and this has become a base planning document. These documents include details of road networks at the higher level.  
- The integrated planning document is currently under review.  

The Planning Statement 1987 was a proposal for development of the arterial road network in the future. The implementation of this network is based on monitoring of traffic and growth. DPI also has a sophisticated traffic count program across Darwin. |
| **Tasmania**            | - Tasmania is different from other jurisdictions in that it is responsible for road transport planning at all levels, from network, and corridor down to route and link levels, down to individual development applications.  
- The DIER road hierarchy contains standards for different categories of roads. Also, DIER uses a range of Austroads guidelines, e.g. Traffic Engineering Guidelines for route and link planning.  
- DIER has also developed its BCA procedures in line with AusLink guidelines. DIER has also developed a Framework for Undertaking Traffic Impact Assessments specifically developed for Tasmanian conditions. |
<p>| <strong>New Zealand</strong>         | - Specific road (route &amp; link) transport planning guidelines are not available generally, but guidelines do exist for specific activities and vary to some extent across agencies &amp; TLAs. They include guidelines on geometric standards, urban design, land-use and transport (e.g. freight). LTNZ has also issued specific guidelines for different modes, e.g. Cycle Network Guidelines, Draft Pedestrian Design Guidelines. TLAs also have Asset Management Plans (include criteria &amp; standards for construction &amp; maintenance of city’s transportation assets) &amp; Codes of Practice for specific activities (e.g. for street layout). Regional councils also have land-use &amp; urban design guidelines for various modes, e.g. Greater Wellington Regional Council Passenger Transport Supportive Land-use and Urban Design Guidelines. |</p>
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>2.2 Degree of detail within these guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>The QDMR Road Planning &amp; Design Manual is used by practitioners in the department to undertake planning at route &amp; link level. Supporting QDMR documentation includes standards &amp; guidelines, as well as resources on the QDMR intranet. QT has internal policy documents to support its land-use – transport planning policy.</td>
</tr>
</tbody>
</table>
| Australian Capital Territory (ACT) | See Question 2.1. No specific guidelines are used, but the ACT road transport planning process involves: taking into account relevant transport policy document, considering relevant route & link alignments, route integration, taking fully multi-modal perspectives, then economic, environmental and social factors. The process is consistent with Part 3 of the ATC National Guidelines and involves:  
  - Strategic land-use – transport models.  
  - Identification of corridors.  
  - Definition of objectives for the corridor, as well as refining transport demand forecasting.  
  - Options development & assessment.  
  - Stakeholder consultation.  
  - Recommendation of preferred options. |
| New South Wales                 | The actions in the Urban Transport Statement (UTS) are the responsibility of the MoT and its major aims are to improve road network efficiency and increase mode share of public transport. RTA regions will carry out the corridor and route level road network planning. Link level planning will be developed as part of route planning. The CTPPD guidelines are at a very early stage and will relate to all transport modes. It is intended that they be consistent with the ATC Guidelines. |
| Victoria                        | The DOI Capital Project Review Guidelines have been recently reviewed as well as the Guidelines for Cost Benefit Analysis (practitioners guide). The Guidelines for CBA have been reviewed to make them more user friendly and to ensure consistency with the ATC National Guidelines.  
  Within VicRoads, other related internal guidelines include:  
  - Cycling and Walking Guidelines  
  - Public Transport Guidelines  
  Additionally, VPP practice notes are available relating to ‘Using the access and mobility management provisions of Clause 56’. These notes set out the standards of the system and draws individuals to technical guidance which is available in supporting documentation. |
<p>| South Australia                | DTEI applies the Project Management Guidelines, and draws on the Austroads and ATC Guidelines. |</p>
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>2.2 Degree of detail within these guidelines — contd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Australia</td>
<td>In terms of the four levels of road transport planning (network, corridor, route and link), MRWA is/has been involved in network level planning in terms of demand analysis, corridor planning approvals, and route planning. MRWA regards the network planning phase as important for route and link planning. DPI has been involved in the development of and refers to the ATC National Guidelines. Additionally, within DPI, guidelines are formalised, however are not developed in detail. There are some established formal mechanisms and processes that are followed, especially at the level of route alignment planning (e.g. brown fields). Brown fields development entails working with the community and managing their expectations about how many options are to be developed. DPI attempts to ensure, particularly for the major arterial networks, that engineering standards are not compromised while ensuring impacts are minimised. DPI is involved in planning for public transport priority (fits into Austroads guidelines) and traffic engineering (modelling) work that is done to complement road planning. There are some well-established Public Transport Authority (PTA) guidelines in existence relating to public transit rail planning.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Existing documentation is regarded as being site specific. The Planning Statement 1987 is a key example of summarising planning information for the project. It was aimed to be a public consumption document, rather than an internal technical document, and deals with technical issues in a common language context. Network and corridor interlinked planning cascades from one level to the next. A key issue in cascading from network to link level planning is to recognise that this effect also occurs from link back to the network level. At times this is omitted. Whilst a vision of the network may exist, it is necessary to return to this analysis to ensure that it is still relevant e.g. the employment location has changed. Planning is fluid and constantly changing.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Local councils in Tasmania do not have their own guidelines for road transport planning. They usually follow Austroads standards &amp; guidelines. Generally, LGAs will defer to DIER in respect of site-specific developments, although that does not happen in all cases. Route &amp; link level planning involves consultation with local councils, to ensure what DIER is aiming for fits with local developments. For route level planning (protecting the corridor), the Planning Scheme Amendment process is used at the local level.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>A significant amount of detail is available in New Zealand Guidelines.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>2.3 Emphasis on roads, other modes</td>
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<tr>
<td>Queensland</td>
<td>QDMR plans for all modes that make use of its road networks in terms of a multi-modal approach to transport planning, in line with guidelines. QT focuses on land-use and transport outcomes for all modes. Priority Infrastructure Plans (PIP) – all modes. Road Alliance – roads.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>All modes are considered in this process.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>All modes are considered in the DoP documents, although there is some focus on specific modes. The Metropolitan Strategy and UTS cover all modes. The RTA guidelines will be focused on roads but will specifically recognise the importance of other modes.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Emphasis in road transport planning guidelines has shifted from roads only to consider all modes (e.g. a multi-modal approach). VPP Clause 56 provides policies relating to access to main roads and access standards with VicRoads.</td>
</tr>
<tr>
<td>South Australia</td>
<td>The ATC Guidelines framework is in the process of being implemented, which focuses on multi-modal planning. The Project Management Guidelines have been developed to cover organisational change projects, system projects, regulatory change projects, and minor and major infrastructure projects.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>A multi-modal approach is considered in the draft Guidelines on Road Transport Planning Processes (2000). A multi-modal approach is considered through the ATC Guidelines. In MRWA the focus is primarily on roads, in the broader integrated transport context.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>NT DPI covers planning for all transport modes such as aviation, marine, public transport.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>DIER’s primary responsibility has been on roads (all modes), but it will soon assume responsibility for rail from the private sector.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Emphasis in road transport planning Guidelines has shifted from ‘roads only’ to consider all modes in road transport planning.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>2.4 Level of application of guidelines</td>
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</tr>
<tr>
<td>Queensland</td>
<td>The Road System Manager (RSM) framework does not use the same breakdown/levels of road networks used in the TSM Guidelines as such. However, QDMR is responsible for road transport planning at all levels, from network to route &amp; link. Local governments are mainly involved at the route/link level. Queensland Transport (QT) has responsibility for undertaking high level network studies and generally takes a more multi-modal approach. Local governments will have input into QDMR corridor studies when that department undertakes assessments of its road network. Transport is an important component of Local Area Plans that are developed as part of the Statutory planning process.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Not addressed</td>
</tr>
<tr>
<td>New South Wales</td>
<td>DoP is involved at the network &amp; corridor levels, which set the context for the route &amp; link level planning. The MoT has recently prepared a strategic appraisal framework for transport projects for NSW, based on the ATC Guidelines. The role of the DoP is seen as ensuring that the overall strategic objectives are set at the outset. This assists in assessing major projects e.g. the F3 to M2/M7 roadway link. The RTA guidelines will be aimed at network, corridor and also route &amp; link level for the state road network. The CTPPD guidelines will be aimed particularly at network &amp; corridor, as well as route &amp; link level.</td>
</tr>
<tr>
<td>Victoria</td>
<td>DOI applies a consistent three staged project review process comprising strategic fit, options assessment and business case development (in accordance with the Capital Project Review Guidelines and Guidelines for CBA). VicRoads also meets these documentation and presentation requirements through the Project Review Committee (PRC) process. DOI and VicRoads consider planning at all levels of the transport system management framework e.g. network, corridor/area, route and link levels. DPCD is involved in each level of the transport system management framework in a land-use context.</td>
</tr>
<tr>
<td>South Australia</td>
<td>DTEI is involved at the network, corridor/area, route and link levels of planning. As noted in Question 2.1, specific modal guidelines do not exist in DTEI.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Within MRWA, the draft Guidelines on Road Transport Planning Processes (2000) is not widely distributed. DPI also notes that guidelines are formalised, but not well developed.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Existing documentation is regarded as being site specific.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Guidelines (e.g. Austroads) used at route and link level.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>The NZ Transport Agency guidelines apply to all levels of road (network --&gt; route/link), while TLA guidelines apply to route/links on their networks.</td>
</tr>
</tbody>
</table>
### B.3 Degree of Development in Route and Link Planning

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>3.1 Involvement in route and link planning for roads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Queensland</strong></td>
<td>QDMR is responsible for road transport planning down to route and link level on the state road network. Local authorities are responsible for route &amp; link planning on local road networks. QT is responsible for strategic planning for all modes, including its requirements for the state road network. In Queensland Road Alliance terminology a route is a link &amp; a link is a segment. Local government main involvement is through Queensland Transport studies, Priority Infrastructure Plans (PIPs) &amp; Road Alliance Investment Strategies.</td>
</tr>
<tr>
<td><strong>Australian Capital Territory (ACT)</strong></td>
<td>The Transport Planning &amp; Strategy Department is involved in route planning and Roads ACT is responsible for link planning. Both departments are now under the jurisdiction of the Office of Transport within the Department of Territory &amp; Municipal Services.</td>
</tr>
<tr>
<td><strong>New South Wales</strong></td>
<td>DoP is not involved in road route and link planning but has involvement in the approval of all major infrastructure projects. RTA NM &amp; regional offices are all involved in road route planning. The total network in the rural area has been divided into self-contained, well defined links for the purposes of route planning. The Centre is involved in road route &amp; link planning, e.g. the M4 extension, which is a large scale project requiring significant state investment.</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td>VicRoads is involved in detailed route and link planning. DOI is involved in route and link planning. The CBA Guidelines mainly covers network and corridor planning. DPCD are involved in route and link planning from the perspective of integrated land-use planning. This integrated approach is critical to planning and shows the changing emphasis in planning.</td>
</tr>
<tr>
<td><strong>South Australia</strong></td>
<td>DTEI undertakes planning for all state arterial roads and local roads in unincorporated areas. Both route and link planning is undertaken.</td>
</tr>
<tr>
<td><strong>Western Australia</strong></td>
<td>DPI has a formal role in all four levels including route planning. DPI is lead agency with significant involvement by MRWA and other transport agencies. MRWA has a greater role in regional road planning, and has significant interest in all four levels. Within MRWA, the draft Guidelines on Road Transport Planning Processes (2000) that is currently being updated also covers:</td>
</tr>
<tr>
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<td>- road/strategic analysis (network)</td>
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<td>- route planning</td>
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<td></td>
<td>- route development (staged approach, ultimate plan)</td>
</tr>
<tr>
<td><strong>Northern Territory</strong></td>
<td>Formal processes for route and link planning are not available. It is important to note that every route has a different set of criteria. The development of the Austroads Guide to Road Transport Planning should capture a list of key issues that need to be considered e.g. asking the question of, is ‘x’ an issue for a particular route? This requires identification of all the factors that may be relevant such as environmental, sacred site issues, heritage issues, social issues in terms of access requirements and levels of access which people have expectations about, the need to service industry, different demands to commuters or social issues in terms of the network, and engineering elements such as the design, physical construction of various locations, management of intersections. Progressing from route to link levels of planning, requires consideration of local access issues, signalised intersection design issues, and identification of how intersections link to the arterial networks.</td>
</tr>
<tr>
<td><strong>Tasmania</strong></td>
<td>DIER uses traffic modelling to establish basic requirements to match the demand on the routes involved. Outside of urban areas, a major driver in undertaking route planning is the number of accesses fronting developments that is causing friction in terms of safety. A major driver is not so much sheer traffic volumes but establishing highway requirements to ensure safe &amp; efficient transport corridors.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.1 Involvement in route and link planning for roads</td>
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<tr>
<td>New Zealand</td>
<td>The NZ Transport Agency is involved in route &amp; link planning for the State Highway network across all jurisdictions. Regional councils are involved in strategic planning for routes. TLAs are involved in detailed route &amp; link planning.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.2 How route &amp; link planning is dealt with, processes &amp; guidelines</td>
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<tr>
<td>Queensland</td>
<td>AusLink, QDMR and local road networks are planned down to a route and link level involving all stakeholder agencies. Local government is involved with (route) link &amp; link (segment) planning through QT studies, Road Alliance road development process.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Arterial link planning must be consistent with all higher level ACT plans and policy documents mentioned previously. Studies are then undertaken to derive greater detail for road &amp; link planning.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The RTA covers route &amp; link planning in line with its guidelines.</td>
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</tbody>
</table>
| Victoria                    | VicRoads covers route & link planning in line with its internal guidelines e.g.  
  - Route and Link Planning Guidelines.  
  - Arterial Road Protocol – includes new growth areas and development of state roads, which is important for route and link planning.  
  - Developing Road Consultation Management plans.  
  - Route Management Plans – six published plans under AusLink.  
  - Internally there are route management plans (unpublished and are to be updated).  
Meeting our Transport Challenges sets out long-term commitments which can direct route and link planning in the future. Within DSE/DPCD route planning is increasingly being integrated with the surrounding land-use and community aspects, including recognition of the sharing of road routes between modes and services. |
| South Australia             | As per Question 1.6: DTEI has an internal project management process (including proformas and checklists) that guide the initiation, planning, implementation and handover of specific infrastructure improvements. The planning phase covers the concept planning process for specific projects at the link/individual location level. DTEI is in the process of aligning its project management system with the ATC (2006) Guidelines. |
| Western Australia           | Within DPI, established formal mechanisms and processes are in place that are followed, especially at the level of route alignment planning. MRWA notes that route road planning should be adequately addressed. Planning on arterial roads is dealt with in a similar way to other roads. Main Roads is responsible for main roads and highways and as such has a key role in relation to these, DPI is responsible for distributors. |
| Northern Territory          | No formalised guidelines on route and link planning are available. A key issue is the timing of each individual element of development, and dealing with environmental issues as the project is delivered.                                                                                                                                                        |
| Tasmania                    | Guidelines for conducting a planning study that DIER did have are now out of date. The department has an experienced core of personnel who undertake planning functions. DIER aims to address all government requirements for planning in the transport sector, as well as legislative requirements, environmental & social aspects and taking account of policies such as noise policy or policy on agricultural land, amongst others. One of the main activities of DIER’s route planning functions is to ensure they come up with solutions that are compatible with the department’s requirements. |
| New Zealand                 | Route & link planning occurs after strategic planning for routes occurs. The guidelines used will include those relating to traffic engineering, road design standards, etc, in line with traffic forecasts.                                                                                                                                 |
### Responding Jurisdiction 3.3 Guidelines for urban & rural route/link planning

### Queensland
- The QDMR Road Planning & Design Manual indicates that when planning at a route & link level in rural settings, a relatively ‘simple’ approach can be taken – i.e. there are fewer factors that need consideration in comparison with urban settings.
- Statements of Intent (SOI) have been developed by QDMR for most state-controlled road links in the state. These SOI outline the future planning vision for the road. SOI are refined through link strategy planning into works required on road links in 5, 10 year & longer term packages.
- Urban councils are normally part of Priority Infrastructure Plans (PIP) process. Rural councils follow the Road Alliance process.

### Australian Capital Territory (ACT)
- Not applicable

### New South Wales
- There are no different guidelines for urban and rural planning. The difference in approach relates to the scale of a proposed development.
  - When completed, the RTA guidelines will cover both rural & urban road route planning. Pilot road route planning studies are underway for both urban & rural routes. RTA road planning is at a more strategic level; hence most of its work is carried out at the route level. These guidelines (due for completion end 2007) separately deal with road route planning for the greater Sydney metropolitan area & the rural areas of the state.

### Victoria
- There are no different guidelines for urban and rural planning. The difference in approach relates to the scale of a proposed development.

### South Australia
- The project management guidelines are broad and do not relate specifically to urban and rural areas.

### Western Australia
- In terms of road transport planning outside the metropolitan area, Main Roads has a greater role in terms of road planning in regional centres rather than rural areas.
- In MRWA, the documentation for dealing with road route and link levels in both urban and rural locations is broadly the same. In DPI, a different set of processes are followed for urban and rural planning, particularly in terms of engaging the community/stakeholders. For rural environments best practice standards and guidelines are adopted, and solutions are often uni-modal. For more constrained urban environments, retrofitting is often required and solutions are multi-modal.

### Northern Territory
- Different issues exist for urban and rural environments e.g. urban areas have heavier traffic volumes; hence the planning drivers of urban networks are different and are influenced by the locations of employment and population. As a result, network planning has a higher interface with land-use planning.
  - By contrast, rural planning tends to be point-to-point access rather than access along the route. The more remote a particular area, the more planning tends to be point-to-point, and relates largely to destinations (e.g. tourist destinations) rather than people travelling the route. Therefore in a rural context, there are different planning issues to be considered.
  - When justifying an urban project within DPI, benefit cost analysis is used, whereas for rural/remote projects, it is not as readily applied (social/equity justification principles are considered instead). As the cost of a road has a cost premium against it, there are difficulties in obtaining a benefit/cost ratio of one or more on a road that is built for community access alone. Different considerations therefore exist between the urban and rural context.

### Responding Jurisdiction 3.3 Guidelines for urban & rural route/link planning – contd.

### Tasmania
- In terms of the differences between urban and rural planning for routes and links, urban areas are much more data-intensive and more concerned with traffic issues. In the rural context, obtaining data and getting behind the issues is more important. Route planning is therefore mainly about environmental and social issues, as opposed to traffic issues.
- Tasmania does not have major urban state road networks. In Hobart, there are only four state declared roads.

### New Zealand
- Road transport planning is undertaken for urban & rural cities & districts within a region. Transit PPM provides for urban & rural situations, while TLAs do not all have guidelines for both urban & rural road transport planning as such, although some have a District Plan that refers to road planning in urban & rural situations. TLAs also have codes of practice that can be applied to both urban & rural situations.
### Feedback loops between levels of transport and with stakeholders & public

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>Details</th>
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<tbody>
<tr>
<td><strong>Queensland</strong></td>
<td>In terms of QDMR's project management, a four stage process has been developed: concept, development, implementation &amp; finalisation. The level of consultation is determined on a project by project basis, based on the merits of the project and its impact on the community. The concept stage is where the most consultation with affected parties (stakeholders) is carried out. It is generally based on a number of different alternative options. This process is complex, taking up to 2-3 years. At the implementation stage of the project, any interaction with the public is more about information, advising them about the project and informing them about associated traffic management measures. Feedback loops are part of the Priority Infrastructure Plans (PIP) process.</td>
</tr>
<tr>
<td><strong>Australian Capital Territory (ACT)</strong></td>
<td>There is no formal feedback process. However, there is notable consultation during the process to harmonise practices and goals.</td>
</tr>
<tr>
<td><strong>New South Wales</strong></td>
<td>There is ongoing liaison between the various transport agencies and the DoP through working groups and committees. At the strategic level, before &amp; after the technical design of road infrastructure, DoP is involved in the public consultation process. In the case where the RTA is the proponent of a road proposal, it would take the lead in the public consultation process. Consultation with stakeholder agencies would also occur. While there are no formal feedback loops between road route and link levels, the RTA is generally focused on the level of road route planning, with the links forming sections of the routes. Under the Environmental Planning and Assessment Act, requirements for EIS evaluation and consultation with stakeholders would generally be required for road infrastructure improvements at the link level.</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td>There is ongoing liaison between the transport agencies and planning agencies through:  - Public consultation processes.  - Stakeholder engagement in planning for Melbourne’s growth areas e.g. creation of the Smart Growth Communities with broad stakeholder representation.  - VPP Clause 56 prepared with a stakeholder reference group, backed up by technical working groups.  - Consultation between departments/agencies and all levels of government.  - Community information sessions.</td>
</tr>
<tr>
<td><strong>South Australia</strong></td>
<td>The project management process incorporates steps of review to ensure that schemes are being developed that are consistent with broader objectives.</td>
</tr>
<tr>
<td><strong>Western Australia</strong></td>
<td>Within the planning process consultation (on a case-by-case basis) is essential particularly with the community, stakeholders, state government agencies and local government. Effective consultation at officer level is essential to prevent issues developing at higher levels. MRWA has a consultation strategy template and a generic template available from the Citizens and Civic Group. The formulation of working/steering groups and public consultation plays a key role. DPI notes that there is established practice rather than a formal feedback loop. For example, working groups are established on a project-by-project basis and these are dissolved once the project is completed/implemented. Stakeholders are involved at the appropriate stage.</td>
</tr>
<tr>
<td><strong>Northern Territory</strong></td>
<td>See Question 2.2.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.4 Feedback loops between levels of transport and with stakeholders &amp; public — contd.</td>
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<tr>
<td>Tasmania</td>
<td>Consultation includes dealing with the public, other government departments &amp; transport operators.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>The RLTS involves input from stakeholders (the NZ Transport Agency, LTNZ, TLAs) in line with the LTMA 2003. The NZ Transport Agency consults with stakeholders on its roading program. Consultation with the public on TLA’s LTCCP is required in line with RMA 1991 &amp; LGA 2002. The consultation &amp; associated submissions process allows for alterations to be made to the roading programs in line with feedback received.</td>
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<tr>
<td>Responding Jurisdiction</td>
<td>3.5 Modelling approaches applied</td>
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<tr>
<td><strong>Queensland</strong></td>
<td>QDMR uses the Omnitrans model developed by Veitch Lister to carry out scenario testing. Other multi-modal models such as the Brisbane Strategic Transport Model (BSTM) &amp; EMME2 also exist and are used by consultants on QDMR projects. Microsimulation models are used at a level below the BSTM. Also, models are used at an inter-regional level, e.g. Ozipass. QM uses EMME2 &amp; CUBE models to test land-use and transport scenarios. Major urban councils use economic &amp; triple-bottom-line analysis for major projects. The Road Alliance has developed a project prioritisation methodology to develop five year works program. Major urban councils use integrated traffic models as inputs into Priority Infrastructure Plans (PIP) process.</td>
</tr>
<tr>
<td><strong>Australian Capital Territory (ACT)</strong></td>
<td>ACT uses the EMME2 transport model. This is a strategic land-use and transport model. A base year is established for analysis purposes, and future years are aligned with ABS Census data. This is used for network, corridor &amp; route planning. Link planning involves further detailed (micro analysis) work, e.g. traffic analysis. This work is typically outsourced to consultants.</td>
</tr>
<tr>
<td><strong>New South Wales</strong></td>
<td>From May 2007, the Transport &amp; Population Data Centre [TPDC] was split, with the population component remaining at DoP and the renamed Transport Data Centre relocated to the MoT. The Sydney Strategic Travel Model (SSTM) based on land-use and population data is the major strategic level model used. Modelling is carried out for both major development proposals &amp; to cost improvements. If a major development proposal is referred to the RTA for comment by either DoP or the Premier’s Department, the impact of this will be assessed by RTA. There is extensive modelling capability within the RTA including EMME2, intersection modelling &amp; microsimulation modelling.</td>
</tr>
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</table>
| **Victoria**                    | A co-operative approach is taken in applying modeling approaches between DOI, VicRoads and DSE. The following models are applied between VicRoads and DOI:  
  - MITM DOI Model  
  - Freight Movement Model  
Other DOI/VicRoads models include:  
  - Microsimulation Models  
  - DOI VISTA Survey (similar to VATS)  
  - ABS Census Data (e.g. Journey to Work (1996))  
  - SCATS Data – this has modelling applications for congestion management, and data is more accessible for modelling purposes. Screenline counts are also available.  
  - Zenith-Veitch Lister transport model.  
DSE provides base data to DOI e.g. population projections, employment projections and underlying data for the MITM. DSE also performs analysis of Census and Journey to Work data e.g. origin/destination movements by transport modes, and a range of population projections under different scenarios. |
| **South Australia**             | DTEI has recently developed a new travel demand model: MASTEM (Metropolitan Adelaide Strategic Transport Evaluation Model). It is a comprehensive, multi-modal model suite based on the Cube Voyager transport software package and provides estimates of private and commercial vehicle and public transport demand along with the demand for walking and cycling for the Adelaide metropolitan area. This modelling is used in particular to undertake network and corridor level planning, but is also used to identify future traffic volumes for use within route and link level planning. |
### Responding Jurisdiction 3.5 Modelling approaches applied — contd.

| Western Australia | Within MRWA and DPI the following models are used to aid analysis:  
|                  | - MRWA Regional Operations Model (ROM), a strategic level model, is operated on a TRIPS/Cube platform. Microsimulation modelling undertaken using Paramics.  
|                  | - SIDRA, EMME2, Saturn etc. as required.  
|                  | MRWA models also include:  
|                  |  - Mandurah to Dunsborough model  
|                  |  - Multi criteria analysis (MCA) framework.  
|                  | DPI models also include:  
|                  |  - DPI STEM – strategic level model  
|                  |  - TRIPS (transport model)  
|                  |  - Paramics microsimulation model.  
| Northern Territory | The Saturn transport model is used for the CBD and is applied to analyse local traffic issues within a town centre. One input into this is the transportation modelling information at the network level e.g. inputs of traffic volumes into the system. Saturn type modelling is then used to assess the distribution. This is run by consultants every few years based on the rate of change and redevelopment in the city.  
| Tasmania | The asset management component of DIER uses HDM-4. HDM-4 is used to maximise the value of the maintenance budget, the asset management task carries on independently of the planning function. Other tools/models used are:  
|                  |  - EMME2 transport model (for the urban network)  
|                  |  - PARAMICS microsimulation model  
|                  |  - SYNCHRO/SIDRA ANALYSIS – intersection analysis.  
|                  | Local authorities benefit from the DIER modelling activities and are involved through consultation and do not always have their own models.  
| New Zealand | The NZ Transport Agency uses integrated land-use and transport packages including, Tracks, EMME2, and Cube transport models. Assignment (traffic) models include: SATURN, TRANSYT. Intersection models include: SIDRA, & Microsimulation models such as PARAMICS & AIMSUM. Regional councils have regional transport models, based on EMME2, essentially four step trip generation models, and have also developed their own strategic land-use and transport models, e.g. Auckland Regional Transport Model. TLA s use several traffic models including: TRIPS, SATURN, NETANAL, TRANSYT & SIDRA.  
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<tr>
<th>Responding Jurisdiction</th>
<th>3.6 Treatment of ageing and maintenance of infrastructure funding</th>
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<tbody>
<tr>
<td>Queensland</td>
<td>In QDMR, maintenance of infrastructure is identified, funded and undertaken at an ‘element’ level, i.e. according to the elements identified under each of the statewide planning process outcome areas. Road condition modelling is carried out to develop a works program of maintenance. A significant amount of infrastructure is aged and requires substantial maintenance investment. Major urban councils operate PMS systems which provide long-term funding projections. Smaller councils use inputs from staff and historical records.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>A strategic Asset Management Plan (AMP) is in place. The AMP outlines the different maintenance practices that need to be carried out for each road hierarchy. Budget implications &amp; funding are linked to the requirements set out in this plan.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The RTA Asset Strategy Branch’s task is to assess the whole of life maintenance requirements of the roads under the control of the RTA. A recent reorganisation of the RTA will bring together the functions of asset maintenance, road network planning &amp; development and capital works. One of the functions of CTPPD is to provide advice to government on the management of current infrastructure. The Department of Planning is not involved in the treatment &amp; maintenance of ageing infrastructure.</td>
</tr>
<tr>
<td>Victoria</td>
<td>VicRoads undertakes maintenance of cultural heritage bridges and overlays, and the levels at which they are fit for purpose for future transport planning developments. DPCD considers ageing infrastructure (modal interchanges rather than roads) to be a high priority for state government/councils interested in urban renewal/revitalisation.</td>
</tr>
</tbody>
</table>
| South Australia        | Annual road maintenance planning is normally undertaken separately from network functional planning. Total road reconstruction (as opposed to pavement rehabilitation) is rarely driven by pavement needs alone and is primarily driven by the need for functional requirements. Maintenance needs and standards are managed within road asset maintenance categories (a road maintenance hierarchy). Basic maintenance activities of a routine, cyclical nature are undertaken to set targets of intervention levels and response times that vary depending on the level of road hierarchy. Analysis of preventative maintenance works (reseals) and rehabilitation works are managed within a pavement management system (PMS). The PMS uses a whole of life approach to:  
  - allocate available funding across the road hierarchy (to the Regions via road hierarchy) within which resealing and rehabilitation programs are developed by the Regions.  
  - analyse funding requirements to achieve desired long-term maintenance standards to support maintenance funding bids. |
| Western Australia      | DPI and MRWA noted that maintenance/ageing is not considered at the planning stage. It may be part of the asset management process (outside of road transport planning). It may also be taken into account at the decision-making stage via a BCA. DPI and MRWA noted that maintenance/ageing is not considered at the planning stage. It is part of the asset management planning process which deals primarily with the condition and configuration of the road network. It may also be taken into account at the decision-making stage via a BCA. MRWA has its own business rules about their forward program of works (at 4 & 10 year periods). |
### Responding Jurisdiction

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<tr>
<th>Northern Territory</th>
<th>3.6 Treatment of ageing and maintenance of infrastructure funding — contd.</th>
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<tr>
<td></td>
<td>This is of importance in terms of projected demands and budgets.</td>
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<td>As NT possesses one of the newest networks in Australia, it has not had</td>
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<td>as many challenges as other jurisdictions with more heavily trafficked</td>
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<td>older networks.</td>
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<td></td>
<td>Whole-of-life in terms of project assessments is also important.</td>
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<td>When considering a project up front, the whole-of-life issues should be</td>
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<td>accounted for in the solution, not just the immediate result.</td>
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<td>The maintenance and upkeep of the existing road program applies dTIMS as</td>
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<td>a deterioration assessment tool, and uses the road condition information</td>
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<td>collected on NT’s major network. This provides outputs on potential</td>
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<td></td>
<td>demands for the future on NT’s network, which is then used as an input</td>
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<td>into the maintenance programs and pavement strength and replacement</td>
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<td></td>
<td>programs.</td>
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| Tasmania            | Regarding ageing and maintenance of infrastructure issues, DIER has its   |
|                     | own road maintenance and upgrading program based on the age of the        |
|                     | infrastructure and traffic it carries. However, this will be influenced   |
|                     | far more in the future by growth in the forestry road freight task and    |
|                     | that of container traffic.                                               |

| New Zealand         | Asset management plans (AMPs) are required from all RCAs and considered  |
|                     | by LTNZ to assess funding applications. AMPs compiled by RCAs contain    |
|                     | assessments of ageing infrastructure & deal with maintenance requirements|
|                     | of relevant road networks. Network performance is also monitored (using  |
|                     | RAMM & dTIMS).                                                          |
|                     | AMPs include consideration of network demand, LOS, risk analysis,        |
|                     | deterioration modelling to decide on extended use of existing           |
|                     | infrastructure. Maintenance intervention strategies are also an expected |
|                     | output from the planning process.                                        |
### Responding Jurisdiction

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<tr>
<th>Jurisdiction</th>
<th>3.7 Level of post-completion evaluation undertaken</th>
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<tbody>
<tr>
<td>Queensland</td>
<td>In the four stage project management process, the last stage is finalisation (post-project analysis) – not widely undertaken in the past. Some major urban councils undertake post-completion evaluations.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Once planning, designing and construction is completed, there is no effectiveness feedback involved. Very little post-completion evaluation is undertaken. Road safety implementations or black spot treatments receive post-completion evaluations.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The Department of Planning does not specifically undertake post-completion evaluation, but does monitor mode use and other transport trends at a strategic level through the household travel survey for example. Recent evaluation of NSW transport infrastructure projects has been carried out by the NSW Audit Office, not the Department of Planning. The RTA carries out some specific post-completion evaluation. It also runs workshops internally for senior staff to provide informal and formal feedback and share project specific experiences.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Consideration of the frequency and whether post-completion evaluation is undertaken is an important issue. Many projects do not undertake this phase of the project evaluation, and it is considered that more emphasis is required in this area. Within DPCD, an audit process for M2030 is currently being undertaken. Similarly, an update of the Victorian Greenhouse Strategy has occurred. Additionally, an evaluation of the success of policy initiatives is normally undertaken within DSE processes and within the Planning Provisions format, it enables updates over time to be included to the relevant sections. Post-completion evaluation includes identifying the key trends, how data/external environmental factors have changed, and how drivers have changed and need to be identified to inform strategic level documents. DPCD notes that post-completion evaluation is undertaken to some extent – key indicators are reported against.</td>
</tr>
<tr>
<td>South Australia</td>
<td>The project management guidelines incorporate a post implementation review within the handover phase of the process. Full ex-post evaluation is also required under phase 8 of the ATC (2006) Guidelines 8-phase framework.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Post-completion evaluations are not routinely published and are not established practice at the planning level, although they may occur for particular protects where a high level of investment is required. The current government has, however, had an active interest (at the state level) in the performance of certain road projects. In MRWA post-completion evaluation occurs with before and after travel surveys undertaken for major road projects. MRWA has identified the need for post-project evaluation. Other case-by-case examples of outcome monitoring exist e.g. the SCOT Urban Congestion Working Group. Outcome monitoring can be problematic because planning horizons are long (recognising that network planning is based on a 25-30 year view of demand). Projects are, however, built in stages to manage safety and congestion issues.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.7 Level of post-completion evaluation undertaken — contd.</td>
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</tr>
<tr>
<td>Northern Territory</td>
<td>This has not been undertaken to a great degree. However there are some potential projects in the future that will attract post-completion evaluation assessment. It is therefore not undertaken in a formal sense due to the nature of the projects e.g. many of which are rural projects requiring a social/equity justification rather than a benefit-cost justification. Hence it is more difficult to then compare to the evaluation process because there is not a benefit-cost to begin with.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Post-completion evaluation is undertaken at a project level. DIER is aiming to undertake post-completion evaluation at a network level from 2007.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>LTNZ undertakes technical &amp; procedural audits of projects. As an RCA, the NZ Transport Agency also undertakes minimal post-completion safety audits. Some larger TLAs and regional councils have developed processes for auditing projects, e.g. Greater Wellington. Regional councils do not undertake post-completion evaluations.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.8 Data availability and constraints</td>
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<tr>
<td>Queensland</td>
<td>QDMR currently has limited data available on the structural integrity &amp; life of pavements. Freight OD modelling is an ongoing issue. Lack of data is always a major issue. The Road Alliance is promoting collection of uniform data sets and is providing the Road Alliance Hub to collect &amp; collate data statewide.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>Detailed, quality data are not available for road transport planning purposes. Data on travel behaviour patterns would be useful, but are not available.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Data used in the Department of Planning's Sydney Strategic Travel Model (SSTM) comes from household travel surveys. An area where a shortage of data exists is that of data on freight movements. Freight is not modelled in detail in the Sydney Strategic Travel Model. As far as the RTA is concerned, the main issue is not a dearth of data but the available resources to synthesise data, especially when there are different data platforms. The aggregation of data which is needed for route planning purposes is an issue. The RTA is currently addressing a data shortage related to freight transport, including origin and destination data. The modelling undertaken by the Transport Data Centre (TDC) is known to have difficulties with public transport modelling components.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Data collection is a vital component of good planning. Planning processes are focused on design, however to get to the design it is necessary to know the demand and land-use issues. Land-use plans are extremely important for route and link planning – the data requirements need to be well understood. DOIs, VicRoads and DSE all rely on Census data. In DOI, 2006 Journey to Work data is built into DOI’s modelling capacity. VATTS and VISTA (Victorian Integrated Survey of Travel and Activity) is applied. Main issues in maintaining data integrity include cost of replicating, and misinterpretation/misuse of values, the availability of data for modelling, transport planning and addressing current gaps (e.g. freight data). The frequency and availability of data is an important issue i.e. data distribution on a yearly basis. Other issues relating to the development of road transport plans and guidelines are resource constraints and availability of expertise e.g. the need to ensure that procedures are documented and transferred effectively between multiple staff members. Additionally, developing procedures which are consistent across levels of government is a key issue.</td>
</tr>
<tr>
<td>South Australia</td>
<td>Within the metropolitan area, data relating to the physical characteristics of the roads is relatively comprehensive. DTEI also undertakes regular traffic count surveys. These surveys are, however, somewhat limited due to funding constraints. The difficulty/inability to undertake origin/destination surveys is an ongoing limitation. The MASTEM model is very effective at predicting future traffic volumes. In regional SA, data on the physical characteristics of roads and traffic volumes is also relatively comprehensive. Currently there is no model available to predict future traffic volumes on rural roads.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>3.8 Data availability and constraints — contd.</td>
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</tbody>
</table>
| **Western Australia**    | There are limitations because planning is long-term and dependent on modelling forecasts e.g. analysing future intersection volumes, future freight volumes and impact of fuel price. The key issue is the way in which models are structured. Some data availability and constraints exist in the areas of:  
  - traffic volume data is not always up to date  
  - poor level of accuracy of environmental mapping as well as the need for more definitive maps  
  - data quickly goes out of date  
  - lack of information about freight movements, in terms of volume and where and what commodities are moved  
  - cannot access a lot of information due to commercial sensitivity  
  - lack of information about the location of services and lack of communication about planned road projects and how this might be impacted by utility projects and related expectations.  
  There are generally constraints in terms of availability and reliability of traffic data, particularly freight data, reliable mapping data etc. Traffic data constraints usually dealt with through short-term surveys and/or modelling on case by case basis.  
  Another limitation is that trends have changed. Typically in the planning for roads, future predictions are based on historical activity. Planning has been undertaken in a climate where cars have been affordable, oil abundant and with high levels of personal mobility. There are now new challenges e.g. climate change, peak oil demand and uncertainty about the impact of these. |
| **Northern Territory**   | The major constraint is the accuracy of data available, which can depend on the density of the development e.g. more data exists for urban environments compared to remote areas. There is a general lack of historical information, but this is considered to be an issue across jurisdictions. Additionally, the consistency of data is also an issue e.g. data collected 5 to 30 years ago is not as accurate as data collected today and technology of collecting/capturing data has changed over time.  
  A significant constraint for route and link planning exists in obtaining data relating to environment, heritage and sacred sites particularly in large remote areas where information and research regarding, for example, a particular species, is scarce. However, because these elements may arise on a database they are considered to be an issue for the region.  
  While DPI is advanced in addressing and understanding sacred site issues and accesses this information as necessary, it is considered to remain as a data constraint.  
  The largest data constraint is considered to be not the ‘hard data’ (e.g. geotechnical traffic data), but environmental restrictions that determine where a particular route is initially located within road planning. This can impact on route and link selection. |
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>3.8 Data availability and constraints — contd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasmania</td>
<td>Tasmania has reasonably good levels of data when compared to other states, with the exception of passenger OD data for urban areas. Tasmania is however ahead in terms of environmental data and freight demand data. Council road data is also patchy in terms of urban areas, while state road data is good. DIER is particularly focused on putting together projections for its network and has also examined BTRE projections for the AusLink network. DIER wants to work out which is the most reliable source of projections and how to enhance them for its own purposes (passenger &amp; freight). One area where data is scarce is in the area of freight transport costs – competitiveness impact of rail, sensitivity of various sectors to changes in freight rates and the need to understand the economics of the transport industry. Another issue that DIER would like to improve upon is that of data on the economic structure of the industry, employment in different sub-sectors of the industry, value addition activities &amp; the contribution to GSP. DIER would like to address these issues (e.g. demand for transport by the economy) and has been using IO-type models through organisations such as Monash University. It would now like more information on economic sub-sector level. DIER would also like to increase its use of economic modelling, e.g. CGE modelling, as a means of assessing the economic impact of road decisions. Route &amp; link level planning also requires additional data, e.g. safety data, road condition data. When DIER does route &amp; link planning it spends a third of the budget on data collection, e.g. property boundary, environmental, geometric &amp; hydrological conditions.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>For the NZ Transport Agency, standard traffic counting programs are maintained by RCAs. Travel behaviour data is limited, as are household travel survey data due to the expense involved. Limited sample national rolling survey is being undertaken. For major urban area transport model updates, further household &amp; roadside interview surveys are undertaken. The issue of data availability at a regional level is significant, especially the case of geotechnical data, which can significantly affect cost estimates. TLA's require traffic count data to feed their local modelling systems. There is generally good data available from a variety of sources including regional council surveys &amp; specific major transportation projects.</td>
</tr>
</tbody>
</table>
## B.4 Relationships with Other Levels of Government

<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>4.1 Level of co-operation with other organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland</td>
<td>A very high level of co-operation is essential and occurs between departments/agencies, i.e. QDMR, DOTARS, QT &amp; Department of Planning &amp; Infrastructure. Co-operation amongst agencies is formalised as part of the Priority Infrastructure Plans (PIP) process, voluntary as part of the Road Alliance process. A good relationship exists between QDMR &amp; local governments in the area of planning.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>A high level of co-operation with the department responsible for land planning is very important, in this case with the ACT Planning &amp; Land Authority. Co-operation with the National Capital Authority is also of high significance. ACT roads must comply with Commonwealth planning guidelines from the National Capital Authority (NCA), even if only for a specific designated area. The NCA is responsible for a sub-area within the ACT called the Parliamentary Triangle. In addition to this, the NCA has the planning and works approval for the areas defined as ‘designated area’ under the National Capital Plan and reflected in the Territory Plan. NCA’s approval is mandatory prior to any works within the designated area.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>At the officer level there is a high level of cooperation between agencies, which expedites cooperation between those involved in inter-agency working groups. This would no doubt have been facilitated by the state-directed movement of transport and planning officers in the last few months between the DoP, MoT and the Centre for Transport Planning and Product Development at MoT, with each of these organisations having specific responsibilities related to transport under the NSW State Plan and the UTS. There is a very high level of cooperation between the various levels of government in the state overall, including local government. This will include the CTPPD as the Centre progresses.</td>
</tr>
</tbody>
</table>
| Victoria                | DOI obtains population forecasts from DSE as well as the land release program. DOI works closely with VicRoads on related projects within the portfolio, including cooperation with DSE and other authorities such as:  
  - Growth Areas Authority – provides a coordinated approach to planning in growth areas.  
  - Office of the Coordinator General – coordinates growth areas across all Agencies.  
DPCP also has a wide consultative agenda – consult with VicRoads, VicTrack, bus operators, councils, community (plans for public comment), private investment community, etc. Within DSE an integrated transport planning approach and consideration of wider issues is critical between agencies. Other departments approach DSE for a specific policy need, e.g. bus routes, are required to coordinate and link in with existing routes and with interchange points at activity centres. DSE works with central agencies e.g. the creation of the Office of Climate Change within Department of Premier and Cabinet.  
A Planning and Transport Coordination Committee exists between DSE and DOI that ensures commitment to an integrated outcome.  
In terms of linkages with local government councils, within the planning system there is not a high level of contact with the road engineers within local government. The MAV look at best practice management practice within councils – DSE does not become involved at this level.  
For local government, a planning system is based around a template which all councils are required to use, namely the VPP. This ensures a level of consistency across the state. Under the Planning and Environment Act, local government is required to implement the VPP.  
In relation to public transport there is a form of referral on certain types of development and permits e.g. industrial developments over a certain size are referred to DOI to assess in relation to the development & bus routes. |
<table>
<thead>
<tr>
<th>Responding Jurisdiction</th>
<th>4.1 Level of co-operation with other organisations — contd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Australia</td>
<td>There is a high degree of interaction with the Federal Department of Transport and Regional Services in regards to planning for the AusLink network at the corridor, route and link levels. DTEI undertakes consultation with local government when undertaking link level planning on the arterial road system. DTEI also assists local government in the development of road transport plans for the local roads in their areas (i.e. at the network level).</td>
</tr>
<tr>
<td>Western Australia</td>
<td>It is important to have agreement with MRWA and PTA prior to the statutory planning stage e.g. Metropolitan Region Scheme, Town Planning Scheme (particularly at the technical level). In terms of community consultation, agreement is required firstly in terms of agreeing that conceptually something needs to occur, and secondly on specific alignments. Communication with local government e.g. in the context of brown fields planning, is also important. Strong commitment and co-operation of key stakeholders including LG, PTA, DPI is essential to achieve effective, integrated and sustainable outcomes for the state road network and the higher order local road network.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>A high level of interface between planning agencies of the department exists. DPI has established a local roads alliance with local government – Local Government Association of Northern Territory (LGANT). The road authority and LGANT have established a formal alliance, the intention being to ensure cooperative development of issues that are mutually important e.g. submissions to the Commonwealth regarding funding. DPI also works with local councils on a regular basis e.g. formal group meetings about issues that impact on road networks (where they interact). Ongoing meetings also exist with other agencies such as Tourism NT which is part of the Department of Business, Economic &amp; Regional Development. Regular meetings are conducted with these agencies to determine key issues emerging (particularly in remote/rural areas). This has a heavy influence on link planning such as project development and particular elements of development. At the link level it is necessary to identify these key and emerging issues that are driving programs, whereas route planning is often determined in advance.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Co-operation with local authorities is good. The regional planning process has been very successful in opening up two-way communication between DIER &amp; local authorities. The communication process enables LGAs to understand what DIER’s reasons are and what the competing demands (projects) are. The arrangements for regional groupings imply that local authorities are able to discuss and decide priorities amongst themselves.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Level of co-operation between agencies varies across the country, but in main centres is very high, probably due to it being a legislated requirement, e.g. development of RLTS. This includes the NZ Transport Agency, LTNZ, regional councils &amp; TLAs.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>4.2 Relationship of road transport planning documents to other broader government planning documents</td>
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<tr>
<td>Queensland</td>
<td>In terms of QDMR, the SEQIPP document has brought agencies together in a collaborative approach, to implement plans identified in the SEQIPP. Integrated Regional Transport Plans have been developed by the Department of Infrastructure &amp; Planning to support regional growth management (land-use) and to guide local government planning instruments. Interrelationships between documents are an important component of the Priority Infrastructure Plans (PIP) process.</td>
</tr>
<tr>
<td>Australian Capital Territory (ACT)</td>
<td>ACT planning documents are reasonably integrated, including a Canberra Plan, under which there is a social, spatial and economy plan. Under the Spatial Plan is the ACT Sustainable Transport Plan. There is not a high degree of correlation of ACT documents with ATC Guidelines, but the ATC Guidelines are used and taken into account.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>The Urban Transport Statement has been developed in the portfolio of the Premier and Cabinet, with the Ministry of Transport as the nominated lead agency to implement and deliver. The RTA’s road network planning is consistent with the Metropolitan Strategy, the NSW State Plan and the Urban Transport Statement. These strategic planning documents are the basis of the RTA’s corridor strategies. The State Plan, the UTS &amp; the Metro Strategy each provide guidance for broad government involvement in transport planning in NSW. The Ministry of Transport sets an annual plan, an internal ‘results &amp; services plan’, which is an important tool for setting priorities and ensuring cooperation between transport agencies.</td>
</tr>
<tr>
<td>Victoria</td>
<td>Planning and transport projects cannot be undertaken independently. VicRoads conduct reviews and programs in conjunction with other departments such as the Victorian Department of Infrastructure and at the local government level. DOI and DSE are represented on a number of advisory committees e.g. the Victorian road based Public Transport Advisory Committee, local government, a range of community groups and public transport providers, and consider the principles of the ATC National Guidelines.</td>
</tr>
<tr>
<td>South Australia</td>
<td>In South Australia, all planning is guided by South Australia’s Strategic Plan (SASP), the state government’s lead document on the objectives and targets for the whole of the state. Transport planning is guided by the SASP, but also the SA Planning Strategy, the State’s strategy for land-use and physical planning and development. Other key strategies further set the scene for planning, including the government’s population policy (which aims to achieve a state population of two million people by 2050), and the Industrial Land Strategy. Transport planning, and complementary road transport planning, occurs to support those higher levels policies and strategies. Major infrastructure initiatives required to achieve the SASP targets are identified in the Strategic Infrastructure Plan for SA.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Consideration is given to other inter-governmental documents such as the ATC National Guidelines for Transport System Management in Australia. Generally MRWA planning documents are consistent with broader documents of DPI/WAPC.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>A cascade effect exists where the NT Government issues documents which set the strategic objectives for government. Below these are individual documents developed over time e.g. the Tourism Development Plan that has been published as well as other documents from other departments. Currently, a road plan publication does not exist and this is currently being revisited by the NT Government, as well as continuing consideration of strategic issues such as public transport.</td>
</tr>
<tr>
<td>Responding Jurisdiction</td>
<td>4.2 Relationship of road transport planning documents to other broader government planning documents — contd.</td>
</tr>
<tr>
<td>-------------------------</td>
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</tr>
<tr>
<td><strong>Tasmania</strong></td>
<td>The overall strategic objectives for Tasmania are set out in the Tasmania Together document (published by Premier &amp; Cabinet), setting out objectives for the state, each of which has a transport component.</td>
</tr>
<tr>
<td><strong>New Zealand</strong></td>
<td>A clear link exists from New Zealand Transport Strategy (NZTS) to lower level strategy &amp; planning documents. NZTS provides overall policy context, with planning documents emanating from this through legislation, e.g. the NZ Transport Agency National State Highway Strategy (NSHS) has a strategic framework for transport down to route &amp; link level, regional councils’ RLTS &amp; the Transit Planning Policy Manual (PPM). Planning activities of RCAs (e.g. Transit Roading Program, TLA LTCCPs &amp; consultation for these) occur in line with requirements of the Land Transport Management Act 2003, Resource Management Act 1991 &amp; Local Government Act 2002.</td>
</tr>
</tbody>
</table>
COMMENTARY 1 COMPONENTS OF AN ASSESSMENT FRAMEWORK

This commentary highlights the fact that transport planning is not a single process involving one consistent methodology or framework. It involves many complex facets each of which influence and overlap each other. For instance, transport planning can comprise integrated transport planning, intelligent transport systems, access management, inter-modal facilities, multi-modal planning, collaborative planning, land-use planning or sustainable planning. Within a particular project or program analysis, one or all of these may be relevant and have to be considered.

Figure C1 1 summarises the key components of an assessment framework and a series of key issues that may have to be considered in such an assessment process.
Key issues:
- Problems should be defined in terms of existing and the anticipated future situation. Long time-scale of transport planning can mean that fundamental assumptions can become invalid.
- Problems should not be framed in terms of a solution - there is often a temptation to jump to possible solutions before the problems are defined, or to assume that there could be only one solution to a problem.
- Problems should be stated as specifically as possible.
- Problems should be stated in a way that is understandable to the public and elected officials.
  - agencies should seek to obtain as much agreement on the problems as possible, early in the study. For controversial studies, approval of the problem statement by the elected decision-makers may be advisable.

Key issues:
- Transport plans and projects must address society’s objectives.
- Objectives should be translated into agreed indicators that measure the extent to which transport plans or projects achieve set objectives. There should be no bias in the indicators or their units of measurement.
- Objectives setting needs to consider all stakeholders.
- Objectives need to be organised into a logical structure - within a clear hierarchy from the national, regional and local scales.
  - the use of value management in developing project objectives with the stakeholders/community
  - undertake an assessment of the strategic fit of the proposal.

Key issues:
- Appraisal needs to examine modal and infrastructure and non-infrastructure alternatives.
  - There should be willingness to critically review existing long standing schemes that may no longer perform well in the current sustainable transport agenda.
  - there should be involvement of stakeholders in the generation of alternatives.

Key issues:
- Prioritise options in accordance with social, economic and environmental criteria.

Key issues:
- The extent to which objectives are achieved should be at the heart of the appraisal exercise.
- Ranking of like investment proposals once strategic fit has been established.

Key issues:
- Assumptions and uncertainties should be documented.
- Clear audit scales should be provided. It should be possible to track how information has been used in the appraisal.
- The process of comparing and selecting preferred alternative transport strategies and measures should not mask trade-offs.

Stakeholders
- Involvement of stakeholders during the appraisal process rather than at the end.


Figure C1 1: Components of an assessment framework
COMMENTARY 2  STRATEGIC PLANNING PROCESS AND PRINCIPLES

The principles for strategic planning as set out in Austroads (1998) and their key imperatives are contained in Table C2.1.

<table>
<thead>
<tr>
<th>Strategic Principle</th>
<th>Key ‘imperatives’</th>
</tr>
</thead>
</table>
| **Focus on outcomes**, rather than on the outputs normally delivered by an organisation | Distinguish clearly between inputs, outputs & outcomes  
Properly define agreed outcomes  
Allow outcomes to emerge from the process |
| **Tailor the process to the problem**, taking into account its nature and complexity, political and community imperatives, and the availability of resources and time | Tailor scale of strategic planning process to resources available  
Enter point to strategic planning process varies because the process is iterative, not linear  
Be clear on planning horizon: strategic planning ≠ long-term planning |
| **Generate possible futures**, with a view to identifying the kind of future we would like to move towards | Vision of the future as we would like it to be  
Be explicit about values & assumptions  
Stick to futures that are attainable  
Strategic planning is not about predicting or projections of the future |
| **Consider the full range of means** available to achieve intended outcomes | Organisations deliver outputs not outcomes  
Separate ends from means  
Ensure integration of planning & service delivery |
| **Consider all stakeholders**, including organisations whose activities impinge on achieving the outcomes, and all who have an interest in the fulfilment of the outcomes | Look outside boundaries to consider all stakeholders  
Aim for collective learning & ownership of the process  
Be aware of different kinds of stakeholders and their needs  
Plan for ‘proxy stakeholders’ who may be affected in the future |
| **Reveal the choices** to be made in the light of the anticipated consequences of the options considered | Understand the strategic choices & their consequences  
Work through trade-offs & deal with tensions between outcomes |
| **Use ‘iterations’** – review, and if necessary modify, the results of earlier stages of the planning process in the light of the feedback from subsequent stages | Continually review assumptions  
‘Freeze’ iterations at some point to draw up a strategic plan  
Use ‘what if’ assumptions to explore options & consequences |
| **Decide when to commit** to important strategic choices, and avoid prematurely closing off options | Be clear on the timeframe for commitments to strategic choices  
Acknowledge the risks & imperatives of ‘locking in’ strategic choices  
Avoid ‘regrettable’ decisions by making decisions when they need to be made using best available information |
| **Support transparency and accountability**, so that it is clear how, why and by whom decisions are made, and how and to whom responsibilities and accountabilities for implementation are allocated | Transparency, responsibility & accountability is required to ensure that a strategic plan is a framework for action  
Be clear on actions required for strategic plans & their feasibility |
| **Monitor the strategies and actions** by measuring their effectiveness in achieving the desired outcomes | Provide for monitoring & feedback on strategies  
Ensure performance measurement through quantitative & qualitative terms  
Strategic planning does not end with a strategic plan |

Source: adapted from Austroads (1998)
The strategic planning process as put forward in Austroads (1998) is illustrated in Figure C2.1.

**Element 1: Context scan**
Output: Project plan & background paper

**Element 2: Values & visions**
Output: Vision(s) for the future

**Element 3: Objectives & outcomes**
Output: Documentation of agreed directions & objectives

**Element 4: Strategies**
Output: Progressively shorter list of elements & options

**Element 5: Assessment criteria**
Output: Set of agreed criteria suitable for use in the assessment process

**Element 6: Assessment**
Output: Presentation of assessment for each assessment package

**Element 7: Strategic choice (Evaluation)**
Output: Report on outcome of strategic choice exercise

**Element 8: Action plan**
Output: Tabulation of actions with responsibilities, timing, resources, consultation, etc

**Element 9: Implementation**
Output: Works, services, policies, regulations, fees & charges, guidelines, education, research, communication, training, enforcement, advocacy, etc

**Element 10: Monitoring & review**
Output: Review of assumptions, values, objectives, strategies, & other aspects of the strategy planning process to date

*Figure C2.1: Strategic planning process (outputs of each phase in brackets)*
COMMENTARY 3 CONTEXT SENSITIVE SOLUTIONS (CSS) APPROACH IN THE TRANSPORT PLANNING PROCESS

The context sensitive solutions (CSS) approach is defined by the Federal Highway Administration (FHWA 2006) as:

…a collaborative, interdisciplinary, approach that involves all stakeholders in developing a transportation facility that complements its physical setting and preserves scenic, aesthetic, and historic and environmental resources while maintaining safety and mobility. (www.fhwa.dot.gov/context/what.cfm)

C3.1 What does CSS Involve?

The CSS approach in the transport planning process involves the integration of land-use, transport and infrastructure needs of communities and stakeholders. A core principle of CSS is that of balanced decision-making meaning transport planning must reflect community input and consider the impacts of projects on natural and human environments.

This means the application of CSS principles are in addition to the objectives that are normally part of the transport planning process, e.g. safety considerations, provision of facilities for non-motorised transport modes, economic development, preservation of aesthetic and heritage characteristics of streets and areas, public transit accessibility and minimisation of environmental impacts of road projects (FHWA 2006). The idea behind the inclusion of CSS principles in the transport planning process is that it will help to identify issues that may be of significance to the community and allow for consensus on issues and projects that are part of the transport planning process. Early inclusion of CSS principles in the transport planning process is also argued to offer such benefits as facilitating the implementation of projects and thereby reducing the cost of projects.

C3.2 Effectively Reflecting CSS Principles in the Transport Planning Process

Incorporating CSS principles in the transport planning process involves partnerships that ideally result in consensus with the community’s views on transport. The transport planning process would normally involve stakeholders such as state-level departments of transport (as in the US) public transport operators, special interest groups and local transport planning partners. However, the inclusion of CSS principles would mean the inclusion of local land-use stakeholders, appropriate levels of government and agencies, adequate representation of community groups and representation of all modes of transport.

C3.3 Techniques for Application of CSS Principles in Transport Planning

Possible techniques that may be used to apply CSS in the transport planning process include:

Community context audit – is performed early in the transport planning process and is aimed at taking account of the community’s objectives in terms of heritage, development plans and preferences and incorporating them into the planning process.

Scenario planning – provides a framework for assessing transport planning in the context of various eventualities, e.g. economic growth, environment, land-use.
Efficient transport decision-making processes (ETDM) – as practised by various states in the U.S., used to link land-use, transport and environmental resource planning.

Geographic information systems (GIS) based decision-making tools – can be used to compare results of different scenarios, as well as assist location of relevant facilities and features, e.g. archaeological sites, wetlands.

C3.4 Issues and Challenges in Incorporating CSS in Transport Planning Processes

The issues and challenges involved in adopting a CSS approach in the transport planning process include the following:

- determining the level of public involvement necessary
- providing an objective assessment of costs and benefits of each alternative, including stakeholder agreement on evaluation criteria (reflecting community, environmental and transport objectives)
- ensuring adequate documentation of the transport planning process
- reconciling stakeholder objectives with revenue available
- common understanding, acceptance and application of CSS.
COMMENTARY 4  TRIPLE-BOTTOM-LINE

In setting assessment criteria for project evaluation it is useful to consider the criteria under three categories, i.e., economic (financial), social and environmental. ‘Triple-bottom-line’ has become a commonly used phrase to describe these categories (Tsolakis et al. 2003).

Triple-bottom-line (TBL) as a concept emerged from the private sector where public awareness and interest in social and environmental issues, demand for transparency, ethical investment funds and more rigorous legislation have had an impact on the way companies operate. In the private sector the three bottom line dimensions typically refer to financial, social and environmental implications. The terminology is different in the public sector with the ‘financial bottom line’ replaced by the ‘economic bottom line’. This can cause some confusion in the public sector because economic evaluations may include some environmental and social aspects. For example, increased public safety may be considered both an economic and a social outcome.

A well designed economic evaluation should consider all key quantitative and qualitative impacts of projects. Benefit cost analysis (BCA) is the technique most commonly used to undertake economic evaluation. Multi-criteria analysis (MCA) is also used where project performance is not measured in single monetary values but on the basis of performance against multiple assessment criteria. These criteria may include qualitative measures of social or environmental impacts. Transport agencies are also required to complete specific social impact assessments and environmental impact assessments under legislative requirements. These evaluations will often complement BCA and MCA evaluations of projects.

TBL is more of a philosophy that influences the planning stages of project evaluation rather than a new approach or methodology. As such the TBL concept is discussed in more detail in Tsolakis et al. (2003). People attempting to develop triple-bottom-line evaluation frameworks (tools) should note the similarities to existing evaluation methods, in particular, MCA. However, TBL developments may be a catalyst for improving the practices of BCA and better relating BCA and associated MCA principles in project evaluation applications. TBL will help most by imposing consistency in the reporting of project performance.

An additional uncertainty created by the TBL concept relates to the definition(s) of the ‘social’ bottom line that commonly mixes the economic impacts of projects on the community with the distributional impacts of projects. While the former are part of a BCA or MCA process and have an objective of maximising the efficiency of project investments, the latter are concerned with equity impacts (winners and losers of projects). A different set of principles/procedures and tools would be required to simulate equity trade-offs of projects. As presented in Part 6 of the Austroads Guide to Project Evaluation (Austroads 2005f) these tools would help the decision-maker to consider distributional effects of projects as part of the project evaluation process by comparing sets of efficiency outcomes of projects with social trade-offs.

C4.1 Assessment Criteria for Sustainable Development

Sustainability ideas need to be incorporated in transport planning to the best possible extent. This can be achieved if sustainability criteria and performance indicators are taken into consideration in individual projects. Sustainability criteria for the transport sector are generally derived from principles for sustainable development that agencies have agreed to in their strategic plans and policies.
Some possible sustainability criteria and indicators are provided in Table C4.1. As an example, we can consider one criterion which is important for promoting transport sustainability – liveability or promoting sustainable communities. Possible indicators for this criterion include: urban density and amenity (e.g. residential density, percentage urban green space or degree of population exposure to various levels of traffic noise); housing affordability and diversity of choice; public transport use and accessibility.

Table C4.1: Sustainability themes and performance indicators (as used in national state of the environment reporting)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Issue</th>
<th>Categories</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Community</td>
<td>Urban design and amenity</td>
<td>• Residential density</td>
<td>• Total resident population/area of land within residential zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mixed land-use ratio</td>
<td>• % of neighbourhoods which support mixed land-uses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Urban green space</td>
<td>• Area of urban land devoted to green space relative to total urban area: public accessible and non-publicly accessible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rural to urban conversion</td>
<td>• Area of land previously declared as rural converted to urban uses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Noise</td>
<td>• % Population exposure to various levels of traffic noise</td>
</tr>
<tr>
<td>Liveability</td>
<td></td>
<td>• Affordability</td>
<td>• House price to income ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Diversity of choice</td>
<td>• Ranges of lot sizes</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td>• For both passenger and freight movements:</td>
<td>• Mega joules fuel consumed/passenger km or tonne/km</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fuel consumption per transport output</td>
<td>• travel time, travel distance for each mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport mode and trip purpose (travel demand)</td>
<td>• Costs of congestion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport system</td>
<td>• No. of trips made and by type of public transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public transport use and accessibility</td>
<td>• Frequency distribution of access distances to public transport stops</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td>• Transport safety</td>
<td>• Economic costs of road accidents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air quality</td>
<td>• Refer to air quality indicators below</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Access to health services</td>
<td>• Average per person expenditure on health services</td>
</tr>
<tr>
<td>Atmosphere</td>
<td></td>
<td>• Urban air quality</td>
<td>• Exceedance of National Environmental Protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Measure air quality standards for: carbon monoxide, photochemical smog, lead, nitrogen dioxide, sulphur dioxide and particulate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Enhanced greenhouse effect</td>
<td>• Annual greenhouse gas emissions</td>
</tr>
<tr>
<td>Sustainable Environment</td>
<td></td>
<td>• Consumption</td>
<td>• Municipal water use per person; daily and total annual use</td>
</tr>
<tr>
<td>Environmental Integrity</td>
<td></td>
<td></td>
<td>• Total annual water usage by domestic, industrial, commercial and rural sectors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quality</td>
<td>• Drinking water quality measured against Australian guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Type and level of contaminants in stormwater discharges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Total vegetated stream length</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Location and number of point source coastal discharges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Exceedances of marine and estuarine water quality guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Total volume and % of treated waste water disposed to oceans, inland waters, land and re-use and identifying relative sources of discharges where possible</td>
</tr>
<tr>
<td>Theme</td>
<td>Issue</td>
<td>Categories</td>
<td>Indicators</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Threatening processes</td>
<td>Total area of native vegetation cleared</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loss of biodiversity</td>
<td>Monitoring of introduced species</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conservation/ management</td>
<td>Area and condition of native species and aquatic habitats by type</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No., extent and classification of areas of marine, estuarine and inland protected areas</td>
<td></td>
</tr>
<tr>
<td>Waste management</td>
<td>Solid waste generation and disposal</td>
<td>Amount of solid waste generated per annum measured by:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>quantity and % disposed to landfill or incinerated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid waste recovery</td>
<td>Quantity and % recovered from waste (reused, recycled and reprocessed) by sector</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Energy use</td>
<td>Quantity of energy used in total and as a % of GDP (for each sector) or per capita industry:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Renewable and non-renewable sources</td>
<td>services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>households</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>energy conversion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amount of energy from each source (renewable and non renewable) for each sector</td>
<td></td>
</tr>
<tr>
<td>Community attitudes and actions</td>
<td>Level of environmental concern</td>
<td>Indicators of environmental concern, support for policy initiatives and individuals actions</td>
<td></td>
</tr>
</tbody>
</table>

| Source: Compiled and adapted from ANZECC (2000) |
TRANSPORT PLANNING PLANNING COMMENTARY 5

Influences on Decision-Making Processes

Transport decision-making occurs at Commonwealth, state and local levels of government. Each jurisdiction is responsible for managing different aspects of the transport system and undertakes strategic and operational planning for its areas of responsibility. Strategic planning is a continuous and systematic process where people make decisions about intended future outcomes, how outcomes are to be accomplished and how success is to be measured and evaluated (Austroads 1998).

The strategic planning process defines broad outcomes of the transport system such as efficiency, safety and sustainability. These objectives are shaped by stakeholder and community expectations. Government then puts in place policies and plans to achieve these desired outcomes. The end products of the strategic planning process are generally policies and strategies rather than specific projects or actions. These policies and strategies are implemented at the operational level, guided by the stated outcomes of the strategic planning process.

Transport policy – covers a wide range of initiatives. Most states have high level transport policy documents containing transport strategies for areas such as road safety, network management, freight, modal policies (e.g. specific plans for rail or airport expansion) and inter-modal strategies (e.g. park and ride schemes). Multi-modal strategies arise from integrated planning where the need to use multi-modal travel options has been recognised as a means to make the transport system more efficient and sustainable.

Land-use policy – provides direction for the fair, orderly, economic and sustainable use and development of land. Land-use policy sets directions for authorities responsible for urban planning (e.g. state and local governments). Instruments of implementation for planning policy include: zoning, codes and regulations, and taxation policy and charges.

Access regulation policy – the government can set policy to regulate access to essential facilities such as rail tracks, ports and airports. The rationale for access regulation is that where a facility provider also operates in a competitive upstream or downstream market, there may be an incentive for the incumbent to restrict competitors’ access to the facility, or provide access only under onerous terms and conditions. Access regulation seeks to promote competition by addressing the perceived imbalance between the bargaining position of the facility provider and parties seeking access.

Environmental policies and standards – by setting environmental policies and standards, agencies set a framework of requirements for developing transport policy and strategy, and implementation work. With the emergence of sustainability ideas, practitioners are recognising that environmental policies cannot be considered in a vacuum, but need to be integrated with social and community goals. Key principles include the precautionary principle, inter-generational equity, ecological integrity and long-term economic performance (Austroads 2005a).

Tomlinson (2001) states that transport decision-making:

- is a highly political process and is not within the domain of a single organisation
- does not and cannot happen in isolation (from stakeholders or non-transport goals)
- requires effective stakeholder involvement to be successful.

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18 An inter-modal journey is defined here as one type of transport activity spanning more than a single mode of transport (i.e. a multi-modal journey).
This commentary explores the interactions and influences on transport decision-making in Australia. All Australian governments have a pervasive and complex involvement in transport (Industry Commission 1994). It focuses on the national and state/territory tiers of governments, as this is where the majority of the interactions between transport departments or road agencies and the political decision-making process occur.

C5.1 Influences on Federal Government

The federal government develops policies, strategies and outcomes for Australia, and works together with the states/territories through forums (such as the Australian Transport Council) to set national transport strategies and objectives. Decision-making is a collaborative and interactive process between the federal government and the states/territories. There are many influences on federal government decision-making. Figure C5 1 illustrates some of the key stakeholders including the community, transport industry, other political parties and lobby groups. Within government, the Minister for Transport interacts between the Cabinet, and the transport department. Whilst it is recognised that community expectations and industry (and other stakeholders) will exert strong influences over agencies and governments, it is also important for agencies and governments to form partnerships and act collaboratively with these external bodies of influence. Figure C5 1 acknowledges the importance for agencies to recognise their role in influencing community and industry expectations and actions, in response to demands from industry and community forces, media influence on public opinion and international obligations.

Federal Government

Source: ARRB Group Ltd

Figure C5 1: Influences on federal government
C5.2 Influences on State/Territory Governments

State/territory departments of transport (or their equivalents) provide policy advice, and administer transport policy and programs. They are influenced by national initiatives, state priorities, legislation and agency programs. In partnership with local governments and other service providers, the state/territory government plays a major role in the planning, delivery, management and regulation of transport.

Many sources and stakeholders influence the state/territory government decision-making processes. Figure C5 2 illustrates these influences. Within government, the Minister interacts between the Cabinet, the transport department and road agency (note that in some states and the territories, the transport department and the road agency are the same body).

Decision-makers within transport departments and road agencies advise the Minister for Transport on relevant technical and policy issues. The Minister will also have their own advisers on politically sensitive issues. In the other direction, decisions of the Cabinet and other official groups influence the directions of the Minister, who in turn influences the work carried out by the transport department or road agency.

State/territory governments also face external pressures similar to those on the Federal government. Influences which affect the whole of government are industry, community expectations and the media. Local government needs influence transport departments and road agencies. Other political parties and lobby groups are particularly focused on influencing the State government Cabinet and Minister.

![Diagram illustrating influences on state governments]

Source: ARRB Group Ltd.

Figure C5 2: Influences on state governments
C5.3  Interface between Levels of Government

Federal and state/territory governments interact through a number of bodies, as illustrated in Figure C5.3. For example, State and Federal Cabinet Ministers interact through the Council of Australian Governments (COAG).

The national transport body, the Australian Transport Council (ATC), is comprised of transport Ministers from the Federal, State and Territory governments. ATC provides leadership, defines priorities and sets strategic directions for the national transport system. It also provides a coordinated and integrated response on major transport and road policy issues. The Standing Committee on Transport (SCOT)\(^\text{19}\) and the National Transport Commission (NTC) provide ATC with advice on a range of policy and technical matters.

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\(^{19}\) The Standing Committee on Transport (SCOT) includes a number of technical groups such as the Guidelines Implementation Committee, National Transport Data Framework Steering Committee and the Urban Congestion Management Working Group.

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Source: ARRB Group Ltd.

Figure C5.3: Interface between federal and state government
C5.4 What these Interactions Mean for the Practitioner

The transport practitioner working on project development and evaluation should be aware of why and how projects came about to be able to develop the best solutions. A practitioner who is unaware of the strategic vision/outcomes that led to the project idea will not be able to successfully make an informed assessment of the project they are faced with.

The planning practitioner uses direction, knowledge and priorities from other levels of planning to inform decision-making, so that specific localised planning contributes to achieving higher-order planning and priorities (Queensland Government 2003).

The specific needs and priorities of local areas must also inform and influence higher-order planning and priorities. Practitioners also need to be aware of the uncertainties and difficulties of project decision-making as the process is normally not straightforward.

C5.5 Stakeholders and the Competing Demands on the Transport System

The transport network needs to cater for the competing demands of the movement of people (cars, public transport, cycles and foot) and the movement of goods. The transport network, particularly the road network, also closely interacts with abutting development, such as shops, offices, factories, houses and open space (VicRoads 2002). It is important to understand these competing demands to find a good range of solutions to transport problems. Other groups, such as police, emergency services and automobile clubs also have an interest in the operation of the network. Table C5.1 illustrates some of the competing desires that may be encountered in transport planning.

<table>
<thead>
<tr>
<th>The desire for:</th>
<th>Can conflict with:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable housing provided through low-density development</td>
<td>The desire for good accessibility and good environmental outcomes.</td>
</tr>
<tr>
<td>The desire for efficient freight movement and economic growth</td>
<td>The desire for quiet streets, residential amenity and the use of major freight routes for commuter travel</td>
</tr>
<tr>
<td>The desire for high levels of accessibility, transport infrastructure and services</td>
<td>Peoples’ willingness to pay for this and their willingness to accept changes to the character of their community.</td>
</tr>
</tbody>
</table>


C5.5.1 The Community

As noted in Section 2.2, the community has expectations of the transport system. People have a desire for improved liveability and accessibility within their communities. The concerns of community groups may encourage a project to be implemented because of an immediate area problem. The decisions people make on where and how to live and work also have an influence on the transport system and the infrastructure that is provided for transport services.

Social acceptability, as perceived directly and indirectly by various social groups, needs to be addressed in the development of any transport proposal. Note that ‘the community’ is not one stakeholder group that shares a unanimous viewpoint on any community issue. Rather, the community is made up of many points of views (communities of interest) that are likely to contrast and conflict to some degree and are subject to change over time (Tsolakis and Thoresen 1998).

People also want transparent and open decision-making processes in which they can be involved. It can be beneficial for practitioners to gain knowledge about the community and for people to gain an understanding of the constraints and competing needs on the transport system.
Community concerns regarding the transport system are likely to include:

- transport services severing community access to other areas, goods and services
- a safe and secure transport network
- ease of accessibility and mobility
- preservation of biodiversity and open space
- concerns about the impacts of noise and air pollution and congestion
- needs of transport users besides cars (bikes, pedestrians, public transport).

C5.5.2 Private Sector/Industry

The transport task is influenced by the decisions of a range of private sector groups such as:

- Private sector infrastructure providers: the private sector may provide (build, own and/or operate) road and rail infrastructure, and other system infrastructure such as warehouses or interchanges. Private sector involvement in infrastructure projects may allow certain worthwhile projects to proceed which are unable to be completely funded by governments.
- Private service entities: public transport and taxi operators, airlines, parking providers and freight companies all make decisions that influence the operation of the transport system.
- Land developers and the construction industry: a developer’s decision on the location, type and scale of property development can have significant impacts on the transport system.

The needs of industry are also an important consideration for transport planning. Industry expects an effective, efficient interconnected transport and logistics system to support economic growth and competition, now and in the future. A strong economy is also of high importance to government at all levels. The characteristics of the transport system (travel times, cost, and reliability) impact on industry competitiveness. Regions (nationally and globally) with a better transport system may benefit from increases in investment, economic activity, jobs and revenue.

Industry is also interested in supporting economic growth through the connection of people to goods and services. The transport system connects people to places of employment, education and training and creates jobs in infrastructure delivery and transport services (Queensland Government 2003).

C5.5.3 Local Government

Local government has a number of transport responsibilities including:

- ensuring accessibility and mobility within their jurisdiction
- the construction, funding, design and management of local roads
- land-use planning and regulation
- providing some specialised local public transport
- shaping transport options by measures such as control of parking
- providing transport related infrastructure such as car parking areas and bus/rail interchanges
- interaction with other government spheres on land-use and transport planning.

Local governments also have an important involvement and influence on the policies and programs of state/territory road authorities.
C5.5.4 Media

The media can have considerable influence on transport planning and decision-making processes. It can influence public opinion on issues – which can be a positive or negative consequence for government. If a good relationship is developed with the media, the media can assist to develop public support for a strategy/or project and create a forum for public discourse on a matter. This can also be very useful in the development of strategic plans and the setting of goals and objectives. The media can be the tool of community and lobby groups to voice opinions on issues or on project proposals. A project that develops bad stakeholder relations is likely to find backlash through the media that could have serious implications for a project, through lack of public acceptance, misinformation and project delays.
COMMENTARY 6  LAND-USE AND TRANSPORT PLANNING RELATIONSHIPS

The land-use and transport planning relationship is two-way, with possible impacts outlined in Table C6 1.

<table>
<thead>
<tr>
<th>Action</th>
<th>Land-use elasticity</th>
<th>Land-use impact</th>
<th>Mitigating factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>New infrastructure &amp; facilities</td>
<td>High</td>
<td>Redistribution of metropolitan growth to highway corridors</td>
<td>Local and regional economic conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decentralisation of population and employment</td>
<td>Degree of impact on regional accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased land values and concentration of development around interchanges</td>
<td>Congestion levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Local land-use policies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIMBY attitude</td>
</tr>
<tr>
<td>Additional lanes &amp; intersections</td>
<td>High</td>
<td>As above, but to a lesser degree</td>
<td>As above</td>
</tr>
<tr>
<td>Automated highway systems</td>
<td>High</td>
<td>Decentralisation of population &amp; employment</td>
<td>Magnitude of change in travel speeds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased land values &amp; concentration of development at nodes &amp; terminals</td>
<td>Extensiveness of system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possibly new towns</td>
<td>Cost of use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Local land-use policies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIMBY attitude</td>
</tr>
<tr>
<td>System management</td>
<td>Low</td>
<td>None likely</td>
<td>Congestion levels</td>
</tr>
<tr>
<td>Congestion charging</td>
<td>High</td>
<td>Unknown</td>
<td>Local &amp; regional economic conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible shift of population and employment towards more accessible locations</td>
<td>Magnitude and spatial extent of pricing policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible shift of population &amp; employment to outlying areas</td>
<td>Level of congestion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Availability of alternative modes and routes</td>
</tr>
<tr>
<td>Safety improvements</td>
<td>Low</td>
<td>None likely</td>
<td>Effects on capacity and accessibility</td>
</tr>
</tbody>
</table>

Source: Adapted from NCHRP 1999.
<table>
<thead>
<tr>
<th>Action</th>
<th>Travel demand elasticity</th>
<th>Travel demand impacts</th>
<th>Mitigating factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact development</td>
<td>High</td>
<td>Reduced motorised travel, Increased public transport use, Increased non-motorised travel, Shorter trips</td>
<td>Relative distribution of population &amp; employment, Actual density of development, Metropolitan development patterns, Public transport availability &amp; level of service</td>
</tr>
<tr>
<td>Dispersed development</td>
<td>High</td>
<td>Increased vehicle kilometres travelled (VKT), Decreased use of public transport and non-motorised modes, Increased travel speeds, Trip chaining</td>
<td>Metropolitan development patterns, Public transport availability and level of service, Parking pricing &amp; management, Road pricing</td>
</tr>
<tr>
<td>Transit (public transport) – oriented development (TOD)</td>
<td>Moderate</td>
<td>Reduced motorised travel, Increased public transport use, Increased non-motorised travel, Shorter trips</td>
<td>Relative location of public transport facilities within metropolitan area, Density &amp; other characteristics of TOD</td>
</tr>
<tr>
<td>Employment – housing balance</td>
<td>Low to moderate</td>
<td>Reduced VKT</td>
<td>Zoning restrictions, Importance of non-employment factors on location, Match between income – housing costs</td>
</tr>
</tbody>
</table>

Source: Adapted from NCHRP 1999.
COMMENTARY 7  DEFINITION OF KEY TRANSPORT SYSTEM ELEMENTS: NETWORKS, AREAS, CORRIDORS, ROUTES AND LINKS

Section 3 of the Guide provides an overview of how key transport system elements are dealt with in the National Guidelines (ATC 2006b). This commentary complements this overview and also illustrates some of the definitions used to describe these transport system elements, in particular, route and link elements.

C7.1 Routes and Links in the Non-urban (Interstate and Intrastate) Context

Route planning in the interstate or non-urban context (corridor level), is explained in ATC (2006), which is reproduced as Figure C7.1.

Figure C7.1 shows a non-urban (interstate or intrastate) corridor between two cities A and B (these could be capital cities or major regional cities). There is a smaller (possibly regional) city R within the corridor and another centre, C. The corridor consists of two uni-modal routes, namely Route 1 (road route between A and B) and Route 2 (rail route between A and B). In terms of AusLink network planning, these routes (and corridor) could be part of the National Land Transport Network. If they were regional centres, they would be part of the state’s network. The figure also shows that corridors are multi-modal and corridor planning is undertaken for all modes and routes within the corridor. Detailed route planning is then undertaken for each of the routes comprising the corridor, (e.g. road route and rail route between cities A and B). Road route 1 could also be broken down into road links A-C, C-R and R-B. Detailed link planning will therefore also occur for these road links.

C7.2 Routes and Links in the Urban Context

Whereas corridors may be more appropriate in the non-urban context because the transport routes are long and continuous between major regional and capital centres, the concept of areas is considered in the National Guidelines to be more applicable to the urban context. Areas in an urban situation would therefore contain a number of population centres with multiple origins and destinations and numerous intersecting routes. This makes for a more complex transport analysis than would be the case with non-urban settings. An example of an area approach to planning in the urban context is sketched in Figure C7.2 that is reproduced here from the ATC (2006b). This Figure illustrates a metropolitan area ‘U’ with various sub-areas each of which contain a number of routes and links (see sub-area 1). Figure C7.3 shows the road and rail routes and links in more detail. Road routes in the sub-area 1 east-west corridor include Road 1 and Road 2 routes, while Rail 1 denotes a rail route. The road routes in the north-south corridor are Roads 3, 4 and 5. Each of the routes has a number of links, for example, where Roads 1 and 2 intersect with Roads 3, 4 and 5. Road 1 (links a-b and b-c) and Road 2 (g-h and h-i) are shown.

20 These definitions of networks, corridors, routes and links are found in Box 2, Part 1: Introduction to the Guidelines and Framework of the National Guidelines (ATC 2006a).
Figure C7 1: Routes in the interstate (non-urban context)
More specifically, the routes in sub-area 1 above can be examined in more detail as illustrated in Figure C7 3, which is reproduced from ATC (2006b).
An Austroads (2005a) study preceding the development of the ATC (2006) Guidelines also noted that planning at the link level must consider the needs of the wider transport network and how changes made on the link level affect the wider network. It also noted that strategic network planning must consider the effects on smaller scale networks and corridors.

For example, it is necessary to consider issues such as:

- Are there any other planned projects that will have an effect on this project, or vice versa? Benefits from a road duplication project may be greatly diminished if another major arterial is to be upgraded within close proximity.
- Will changes at one location cause adverse effects at other locations (such as increased congestion)? Care must be taken not to shift problems to another part of the network.
- Changing the characteristics of a road may have a significant impact on neighbouring development and land-use. For example, building freeways may divert significant volumes of traffic away from arterial roads with abutting retail development thereby affecting exposure of traders whereas, increasing the capacity of a road with abutting retail areas may encourage higher speed travel through the area to the detriment of the retail sector.
The development of one modal link in a corridor may affect the number of trips on another modal link. This effect may be positive or negative, but needs to be understood.

Planning at each transport system level considers demand (land-use, population, economic and social activities) and supply (infrastructure) factors relevant to the level.

Initiatives can also span various levels. For example, an initiative could occur within a link (e.g. adding a road turning bay or rail crossing loop), across the whole link(s) (e.g. a road passing lane), or across an entire route (e.g. road duplication or rail signal upgrading between Melbourne and Sydney).

A transport system for one or many jurisdictions comprises the relevant transport networks, user sub-system, regulatory and management sub-system, transport operating environment, and physical and social environments.