

INTEGRATION OF ROAD PLANNING AND LAND USE PLANNING, AUSTRALIAN EXPERIENCE

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Abstract

The incremental change and gradual deterioration of road capacity and transport efficiency is a common problem faced by road authorities, world wide. One of the effective approaches to address this problem is the integration of road planning and land use planning. Land use planning measures relevant to road planning will be discussed in this paper including their implementation aspects. The experience of integrating land use planning and road planning in Australia will be discussed with particular reference to the State of Queensland.

Queensland recently introduced an Act of Parliament which facilitates the effective integration of land use planning and road planning. This Act contains legal mechanisms to implement effective land use measures beneficial to roads. The main focus of this paper is to discuss the Integrated Planning Act 1997 on its usefulness in integrating road planning and land use planning.

1.0 INTRODUCTION

Roads are the back bone of a civilised society. They facilitate the efficient movement of people and goods. Roads constitute a valuable resource as well as a major public investment. It is essential to operate them safely and efficiently.

Developments are engines of growth, driving economies of countries. They generate traffic and therefore, roads and developments are inextricably linked. There is a cycle of land development and road development, one feeding the other, leading to the intensification of activity along a road. However, unguided and unabated development, particularly along major road corridors, can act as a deterrent to economic growth, often creating disastrous consequences. These include traffic congestion, delays, accidents and other associated problems, which cause substantial revenue losses, thus acting as barriers to economic growth. The deterioration of proper functioning of roads occur gradually, almost naturally and is caused by a large number of separate decisions in the private and public sectors made on developments with little comprehensive guidance.

Construction of new roads or rehabilitating existing roads, taken in isolation, may not be the answer to these problems in many cases unless there is an acute shortage of road space. Within a few years, such new constructions or rehabilitation may attract more traffic, accelerating developments along these roads and activating a vicious cycle. A better approach to this dilemma is to control developments in such a way that their impacts on selected traffic routes are minimal. This is possible through proper siting of developments and controlling their accesses to important traffic routes. Land use planning is the tool to achieve this goal.

Traffic congestion and other associated problems can be tolerated up to an extent, on some roads such as minor collectors and local roads, which are usually low in the functional hierarchy of roads. In fact, moderate traffic congestion on local roads is sometimes encouraged. Therefore, the land use measures discussed in this paper generally apply to arterial roads and other major traffic routes. However, they can be applied, with suitable modifications, to other important roads. Freeways and expressways usually do not require these measures as they generally do not provide individual access to developments.

2.0 BENEFITS

Allowing uncontrolled developments along major road corridors can create disastrous consequences. These include: decrease in roadway capacity; increase in traffic congestion and delays; increase in road accidents; decrease in productivity and loss of economic opportunities; increase in transport time and cost; increase in energy consumption, vehicular emissions and reduction of air quality; functional obsolescence of roadways; diminished value of the public investment; reduction in abutting property values; sub optimal economic activity and reduction in economic validity of private investment in abutting property; disharmony between urban design and transport objectives; and perceived conflict between the transportation corridor and the livability and functionality of the community through which it passes.

These can have a damaging effect on the economic growth of countries, especially in the developing world. Implementation of land use planning measures can reduce these consequences, through the integration of road planning and land use planning.

3.0 LAND USE PLANNING

Integrated approach to land use planning will benefit roads by contributing to:

- reduce the number of conflict points on roads through imposing minimum driveway spacing and corner clearance spacing; and encouraging frontage roads, service roads, shared pathways etc.
- reduce the amount of kerbside parking by ensuring development sites have sufficient parking within their own premises; and planning parking opportunities elsewhere.
- reduce the number of over sized/ over weight vehicles on roads not suitable for such purposes by locating developments which require constant use of such vehicles away from sensitive road corridors.
- preserve the roadcapacity and reduce traffic congestion on major road corridors by carefully siting developments to increase the circulation of traffic within local areas thus reducing trips on major road corridors; siting developments to facilitate enhanced public transport, cycling and walking; reducing the number of conflict points on roads; and reducing the amount of kerbside parking.
- reduce speed variations and the number of stops by controlling driveway locations and spacing, and intersection spacing; and reducing the amount of kerbside parking.
- reduce pedestrian traffic on major road corridors by carefully locating pedestrian traffic generating developments away from major road corridors.
- improve safety on major road corridors by reducing traffic congestion; reducing pedestrian traffic; and locating incompatible developments away from 'hazardous goods routes'.
- reduce energy consumption and air pollution by reducing speed variations and number of stops; and reducing traffic congestion.

- reduce adverse impacts of vehicular traffic on road users and adjacent land owners by locating incompatible developments away from sensitive road corridors; and enforcing adjacent developers to take preventive measures to reduce adverse impacts on their developments.
- enhance amenity of sites adjoining traffic routes by reducing traffic congestion; and beautifying adjacent lands.

3.1 Land Use Planning Measures

Land use planning can be applied to improve the functioning of major road corridors in several ways. This can be used to screen and select appropriate developments, compatible with the functioning of roads, to be located near major road corridors or change the location of proposed developments in such a way to have minimum impacts on adjoining roads. At the same time, land use planning can impose conditions on those developments which are required to be located adjoining major road corridors, requiring modifications to reduce impacts due to these roads. An example of the latter is to request for structural modifications to reduce noise impacts to buildings adjoining major traffic routes.

Land use planning measures that can be applied to screen and select incompatible developments and change locations of developments to improve the functioning of major road corridors can be broadly divided into local planning and regional planning measures.

Local planning measures are generally confined to local areas. They are usually focused on limiting the number of conflicts points on major road corridors. They include subdivision control and driveway control.

Subdivision control includes the following: eliminate or restrict flag lots; lot size and road frontage control; interconnecting parking across lots through shared driveways and cross driveways; and restricting the number of driveways per lot.

Driveway controls relevant to land use planning include: restrictions on driveway spacing including corner clearance spacing; use of service roads/ frontage roads; and providing access through roads low in access categorisation.

On the other hand, the main focus on regional land use planning measures applicable to road planning is to locate developments in such a way to have minimal adverse impacts on the road network. In addition, these can help to locate incompatible developments away from major road corridors. These measures are applicable to large areas such as regions. Mixed use zoning, multiple-use sites and the location of housing close to activity centres are such examples.

For more information on land use planning measures including world's best practices, the reader is referred to the paper on 'Easing Traffic Congestion through Land Use Planning' by the author ⁴ (pages 594-601).

4.0 WORLD PRACTICES

It is unfortunate that adequate attention to integrate road planning and land use planning has not been given in many countries, particularly in the developing world. Combining this with many other shortcomings, these countries face severe transportation related problems mentioned earlier. Even in developed countries, established land use practices are not uniformly applied and cover

only some areas. For instance, this lack of uniform control has permitted the establishment of undesirable precedents in the United States ¹.

There are several impediments to prevent effective implementation of land use measures relevant to roads. They include: lack of political resolve; an aggressive desire to encourage and promote development; lack of 'whole-of-government' perspective in State agencies and local governments; pressure from developers; lack of cooperation between road authorities and local governments; lack of coordination mechanisms between State agencies and local governments; non availability of sufficient practical guidelines; disinterest among some urban/town planners on some land use planning techniques; and increasing property owners' rights either real or perceived. These are more prevalent in the developing world.

5.0 AUSTRALIAN EXPERIENCE

Traffic congestion and other related problems are common to Australia as well, but to a lesser degree compared to many other countries. Cox and Meyrick ⁸ (*page 47*) reported estimates of the cost of congestion in Australian cities to be in the order of Aus\$ 5 billion (approximately \$ 2.75 billion) per annum.

Australia uses extensive land use management techniques to ease traffic congestion. The ways in which these practices are adopted vary within individual States of Australia. Australian experience is discussed here with particular reference to practices in the State of Queensland.

Land use planning measures have been in existence in Australia over a long period, mainly for arterial access management. Current practice reflects its origins, which owe as much to British land use planning influences as to highway and traffic engineering. The models to predict the impacts of land-use changes on transport networks, based on growth in private vehicle ownership and demand for travel have been used in all major Australian cities and towns and forms the backbone of land use/ transport planning today ¹¹ (*page 3*). Skills and experience in the art of managing the negative impacts of traffic on the amenity of adjacent land are commonly found in Australia among traffic professionals rather than land use planners and urban designers ² (*page 142*).

The policies and implementation procedures with respect to land use planning differ within Australian cities. In general, there is a common understanding of the care needed in defining the level and nature of vehicular access to sites abutting arterial roads. Most commonly, rules and procedures involving State transport bodies relate only to higher-order arterial roads. Development control processes are generally used in Australia to implement land use measures beneficial to roads. To varying degrees, road authorities are typically referral authorities (meaning that development applications are referred to them to check their requirements have been accommodated). Decisions on site development, access and supporting street works are typically made by local governments with varying degree of involvement by State road authorities.

On major road corridors, the frequency of access points is typically managed by the use of service (frontage) roads. These roads have been common treatments in arterial roads since the 1950s, but in the past twenty years or so developers have preferred to turn sites away from the arterial to face onto local streets. Also common in areas developed over the past two decades is the orientation of sites, buildings and their access away from arterial roads and onto local streets. These "back-up" lots usually present a continuous fenced or walled boundary to the arterial, most often with a 10m or more "access control strip" (usually provided by the developer) to provide roadside landscaping ² (*page 142*).

Australian Government initiated the 'Building Better Cities Program' between 1992 and 1996 to improve integration between the government, local communities and the private sector in the planning and implementation of urban and regional infrastructure projects. A wide range of projects were funded in all States with the aim of achieving practical results within a relatively short time frame.

A joint initiative named as AMCORD (Australian Model Code for Residential Development) was started in 1987 between the three levels of government (Commonwealth, State and Local) and the housing development industry (Joint Venture for More Affordable Housing) to improve integration between public agencies and the development industry and to promote innovative approaches to the planning, design and development of residential areas. A resource document was published in 1995. This focused on the practical application of principles in integrating land use, transport and the environment in residential areas. This is now being widely used throughout Australia.

5.1 Queensland Practices

Queensland is one of the States in Australia leading in integrating road planning and land use planning. Queensland has about 174,000 km of public roads, out of which about 34,000 km are State-controlled roads and about 140,000 km are local government roads ¹⁰ (page 22). The State-controlled road network is under the jurisdiction of the State road authority, the Queensland Department of Main Roads.

Queensland has an extensive program aimed at developing regional plans for key growth areas around the State. Examples of regional plans include:

- SEQ 2001 Regional Framework for Growth Management for the South East Queensland
- Wide Bay 2020 Regional Growth Management Framework for the Wide Bay region
- FNQ 2010 for Far North Queensland
- TTSP for Townsville - Thuringowa area

These plans generally include land use planning measures, particularly regional planning measures, beneficial to the transport network.

Queensland Department of Transport along with Queensland Department of Main Roads, Queensland Department of Communication, Information, Local Government, Planning and Sport and the Local Government Association of Queensland recently took an initiative to undertake a study on integration of transport, land use and urban design techniques and published (first edition in February 1998) a document named '*Shaping Up*'. This document contains guidelines and best practice notes to integrate transport, land use and urban design techniques to reduce traffic congestion and to reduce car travel. Although this is predominantly related to public transport, cycling and walking, it also provides guidelines to regional land use planning. Plans for locating high vehicular traffic and pedestrian traffic generating developments to reduce the use of car travel is one important area addressed in this document. One of the best practice initiatives recommended in the document is the usage of transport and land use models to predict the number and types of trips for different land use strategies ⁹ (page 11). The 'Queensland Street, Design Guidelines for subdivisional streetworks' is another publication widely used in planning Queensland streets. This was produced by the Institution of Municipal Engineering Australia, Queensland Division in 1993.

A close cooperation between State road authorities and local governments is a prerequisite to implement effective land use measures beneficial to roads. There is a close cooperation between the Department of Main Roads and local governments in Queensland for mutual benefit. Whilst the Department of Main Roads requires cooperation of local governments to provide an efficient and

safe road network, local governments depend on the Department to assist in promoting regional development, particularly in providing employment in rural areas. In addition to the cordial relationship existing between these organisations, they also have the following protocols:

- A protocol establishing “*Roles and Responsibilities of State and Local Government in the Queensland Planning System*” was formalised between the State of Queensland and the Local Government Association of Queensland Inc (LGAQ) in 1993.
- A protocol for Guiding the Dealings Between Main Roads and Local governments ⁷.

With the introduction of the Integrated Planning Act (IPA) the relationship between the Department of Main Roads and local governments was further reinforced. The new legislation encourages local governments to work closely with State agencies in developing their respective local government areas. This Act provides an effective legal framework to integrate road planning and land use planning. Similar legislation would be useful to countries which require some mechanisms to improve the coordination between State road authorities and local governments to implement land use measures beneficial to their roads. Therefore, the Integrated Planning Act will be discussed in some detail, particularly focusing attention on aspects related to integrating road planning and land use planning.

6.0 INTEGRATED PLANNING ACT

The Integrated Planning Act (IPA) was introduced in Queensland in 1998 to create a planning, development assessment and dispute resolution regime to deliver better outcomes for the Queensland community, particularly in relation to ecological sustainability. Those responsible for developing this Act have sought to go back to first principles and understand what will be required if the legislation is to perform well in the world of the 21st century ¹² (page 200).

According to this Act, ecological sustainability is meant as a balance that integrates: protection of ecological processes and natural systems; economic development; and maintenance of the cultural, economic, physical and social well being of people and communities.

Provision of road infrastructure is an activity related to the economic development. In addition, traffic congestion and related safety problems and economic losses significantly affect the well-being of people and communities. Therefore, this Act creates a legal environment to deal with land use planning issues related to the provision of road infrastructure in order to provide a safe and efficient road network for Queensland.

Tom Pyne, President of the Local Government Association of Queensland has stated: “*Queensland’s Local Government Association welcomes the introduction of the Integrated Planning Act as “visionary” legislation. It will wipe out our proverbial bucket - loads of red tape while preserving and enhancing the community’s involvement in planning and development*”⁶.

The following mechanisms are being used by the Act to integrate planning: planning schemes; benchmark development sequencing plans; designation; State planning policies; and regional planning advisory committees.

These mechanisms are discussed below with the focus on how they facilitate the integration of land use planning and road planning.

6.1 Planning Schemes

Planning Schemes are forward looking instruments establishing policy to guide changes to the way land, buildings and structures are used and developed within the relevant local government area. While planning schemes are local government instruments, the Act facilitates and encourages the use of planning schemes as a tool to integrate, resolve, express and coordinate relevant regional and State level policy, particularly infrastructure policies and intentions. The Act requires local governments to ensure State interests are not adversely affected before public consultation on the scheme proceeds and again before the scheme is finally adopted by the local government and commenced into operation.

The Integrated Planning Act specifically refers to providing infrastructure in a coordinated, efficient and orderly way as a means of advancing the Act's purpose ⁵ [section 1.2.3.(1) (d)]. Social and physical infrastructure proposals, by all providers, need to be considered with, and be an integral part of, determining the location, nature and scale of new uses and their associated works. In this way, infrastructure can be provided cost effectively where and when it is needed to maximise benefits.

The Department of Main Roads uses this opportunity to identify land use planning measures relevant to the provision of road infrastructure and encourages local governments to incorporate these measures in local government planning schemes. There are several ways of incorporating Departments' interests in planning schemes. They are discussed below.

The Integrated Planning Act requires planning schemes to achieve outcomes. Therefore, statements of 'Desired Environmental Outcomes' and specific development standards or criteria to achieve relevant outcomes need to be included with code provisions applicable to required developments. Each 'Desired Environmental Outcome' needs to be supported by measures which facilitate its achievement, and performance indicators to assess their achievement.

The Department of Main Roads uses the above provisions to specify standards and other requirements for road infrastructure to ensure the following:

- developments which have the potential to adversely affect the operations of roads are undertaken in such a way to reduce potential impacts.
- developments which have the potential to get adversely affected due to operations on roads are to be undertaken in such a way to reduce such impacts.
- local/ regional area planning is to be undertaken in such a way to improve the safety, transport efficiency and functioning of the road network.

Main Roads' staff work closely with local government staff from the drafting stage up to the implementation stage of planning schemes to ensure that appropriate land use measures are incorporated and implemented.

6.2 Other mechanisms for integrated planning under IPA

In addition to planning schemes, the Integrated Planning Act uses instruments such as designation, State planning policies and regional planning advisory committees for integrated planning. Designation enables road authorities (i.e. the Department of Main Roads or local governments) to foreshadow an intention to use land for future road corridors. This mechanism is useful not only to identify future road corridors, but also to regulate development adjacent to demarcated corridors in such a way to reduce the impact of developments of future road corridors.

Under this Act, State planning policies (i.e. the policies made by State authorities about matters of State interest) with respect to the provision of road infrastructure can be given legal status through planning schemes. This enables road authorities to make State planning policies relevant to the provision on road infrastructure and incorporate them in local government planning schemes. As yet a State planning policy for roads has not been prepared.

The Act also provides a framework for appointing regional planning advisory committees to play a significant role in regional land use planning by coordinating local, State and Commonwealth intentions and planning activities.

6.3 Mechanism to ensure the implementation of land use planning measures

A key element of the Integrated Planning Act is the 'Integrated Development Assessment System'. This is a mechanism to make the development assessment process simpler, faster, fairer and more transparent. The 'Integrated Development Assessment System' has been recognised as one of the most fundamental reforms in development assessment processes in the history of Australian public administration⁹. In fact, this Act has repealed over 5000 pages of process related legislation from the Queensland legislature¹² (*page 200*). While this system is designed around the needs of the applicant and the community, it also provides opportunity for State agencies to protect State interests. The policies and codes developed related to land use planning measures can effectively be utilised under this system to regulate developments for greater transport efficiency. Development applications under the system should comply with related policies and codes established by State agencies.

The interests of the Department of Main Roads can be incorporated into the 'Integrated Development Assessment System' through several mechanisms including the following:

- The Department of Main Roads can act as a concurrence agency (a State agency that has legal power to direct that an application be refused) and can refuse a development application if the Department is satisfied the development does not comply with its laws and policies, and compliance can not be achieved by imposing conditions.
- if Main Roads has contributed to incorporate 'Desired Environmental Outcomes', measures and codes with respect to its activities in the planning scheme, the assessment manager (the entity administering the development application) should consider those during the assessment of impact assessable developments.
- In addition, the assessment manager should consider any State planning policies not identified in the planning scheme.

In most cases, the assessment manager is the relevant local authority.

6.4 Current Situation

As at December 2000, four local governments have adopted planning schemes with several others at the drafting stage. With each of these planning schemes, the Department of Main Roads has consistently improved its initiatives to integrate road planning and land use planning. The 'Desired Environmental Outcomes', planning scheme policies, performance criteria and measures, and codes now incorporate many land use measures and other relevant practices. They include the following: necessity to identify a functional road hierarchy; necessity to reduce ribbon development; driveway controls including desirable spacing; parking measures and guidelines; road frontage and lot size guidelines; and noise amelioration measures.

In addition, adequate attention is being paid to move incompatible developments away from major road corridors.

On the whole, the Department of Main Roads is fast improving its knowledge and experience on land use measures beneficial to roads and these are being used to improve the transport efficiency of the State-controlled road network thus reducing traffic congestion and other associated problems.

7.0 CONCLUSIONS

Roads which are meant to benefit mankind, today play an opposite role in many countries, obstructing their social and economic growth. Traffic congestion and related problems cause significant revenue losses to these countries, in addition to social and environmental damage. Although these are complex problems for which no easy and direct solutions are available, it is generally accepted that effective land use measures through integration of road planning and land use planning can reduce the incidence of such problems.

One of the major obstacles in implementing land use measures beneficial to roads is the difficulty in achieving effective coordination between State road authorities and local governments. The recently introduced Integrated Planning Act in Queensland, Australia is an example which demonstrates how a legal framework facilitates effective integration of road planning and land use planning. Similar legislature, if adopted, would contribute to reduce traffic related problems, enabling many developing countries to accelerate their march towards economic prosperity.

8.0 DISCLAIMER

The viewpoints expressed in this paper are those of the author only and they do not represent the views of the Department of Main Roads or the Queensland State Government.

9.0 REFERENCES

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