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Decision making on transport network planning and the impact on community, economy and the environment

Jayantha Withanaarachchi[a*],Sujeeva Setunge[a]

[a]*RMIT, Melbourne, Australia*

Abstract

Decision making on transport network planning have an impact on society, economy, environment, travel patterns, reliability and performance of transport networks. Transport corridors provide for all modes of transport and also contribute towards economic growth and community prosperity.

The paper presents the analysis of a case study to illustrate a typical transport planning process which in this case has spanned over a period of 40 years. The study captures different stages of the planning process and identifies the gaps. It is noted that whilst the area is known to be prone to disasters, no consideration has been given to the transport infrastructure performance during a disaster.

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*Corresponding author. *Email address*: jayanthaw@geelongcity.vic.gov.au

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1. Introduction

In most countries the road and transport infrastructure is considered a national priority. Transportation helps shape an area's economic health and quality of life. Not only does the transportation system provide for the mobility of people and goods, it also influences patterns of growth and economic activity by providing access to land. The performance of the system affects public policy concerns like air quality, environmental resource consumption, social equity, land use, urban growth, economic development, safety, and security (The Transportation Planning Process, 2007).Transport system upgrades or additional network improvements are needed to provide for urban

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expansion. Transport planning and coordination should be considered at all levels of government (national, state and local) and at international level. Transportation planning plays a fundamental role in the state, region or community's vision for its future (The Transportation Planning Process, 2007). Freeways and Highways provide a high level connection between major urban and rural cities with high posted travel speeds of between 100 km/h to 110 km/h. These transport corridors can accommodate traffic volumes of more than 25,000 vehicles a day in one direction. The medium level transport corridors provide for connectivity between town and activity centres. Road networks play an important role by connecting cities, townships and countries providing services such as gas, water, sewerage, electricity, telecommunication and fibre optic cables. Berdica (2002) stated that the road transportation system is one of our most important lifelines. Transport networks comprise of roadways, waterways, railways and airports. Jenelius and Mattsson (2006) stated that "reliable transport services are necessary for a well-functioning labour market that allows the employees to commute in an efficient way". Transport network reliability is important and defined "as the ability of the transport system to provide the expected level of service quality, upon which users have organised their activities (Improving Reliability on Surface Transport Networks, 2010).The transport system is designed to cater to the community needs and provide accessibility to goods and services and also provide "escape routes" during disasters. The travel pattern of movement in a network may change dramatically after a disaster, due to people evacuating an area or people entering an area to render assistance (Nicholson & Du 1997). Transport networks needs to be improved as well as new networks needs to be planned and constructed to cater to the growing urban population growth and to improve social status of people. Economies in developed countries depend heavily upon their transport systems. These dependencies are likely to increase due to the trend towards just-in-time production methods, which involve reducing the space and investment associated with storage and reliance on fast and reliable transportation system (Nicholson & Du 1997). Australia has always been a strongly motorised country and internationally has been ranked third in car ownership levels per capita since the 1950's. An average of 71% of people above 15 years of age use a car as either a driver or passenger every day (ABS 1996c) and this rises to 80% of both males and females in the 25 to 55 years age group (Roads in the Community, 1997). And most of the increased travel by cars during the last two decades has been due to an increase in car ownership. Car ownership has closely followed increases in GDP/capita over the full period from 1971 to 1995(Roads in the Community, 1997). Australia's population has grown by three million in the past decade (State of Australian Cities 2011).Transport movements and type of vehicles combinations and available road space for vehicles plus transport infrastructure dictates all the conditions, such as environmental pollution due to air pollution or road safety or travel times and reliability. The Council of Australian Government report has estimated that economic costs due to congestion in the city of Sydney is $3.5 billion in 2005 and will rise to $7.8 billion in 2020 (Transport Problems Facing Large Cities, 2008). The major externality costs were found to be congestion ($4.9 billion), accidents ($1.4 billion), environmental pollution ($1.3 billion) and road damage ($0.7 billion). The focus of all cost recovery studies, road damage, was found to be the least important when pricing to internalise all social costs, being only 9% o of total external costs. It is, however, the most important cost in rural areas (Roads in the Community (1997).Dwelling prices in Melbourne were reduced by 5 to l0%, or $7,000 to $10,000, when existing noise levels were in the ranges of 63-68 dBA and > 68 dBA respectively (Roads in the Community (1997).

2. Transport Corridor Planning

Transportation corridors are key component of transport infrastructure. Priemus et al (2003) stated that corridors are considered as "bundles of infrastructure that link two or more urban areas. These can be highways (sometimes via different routes), rail links (high-speed trains, intercity lines, local trains or trams), separate bus lanes, cycle paths, canals, short-sea connections and air connections". Corridors provide a more direct connection between the movement of people and goods and State-significant economic activity (Carr et al, 2010). The low level transport corridors provide direct connectivity to activity centres such as, schools, places of work, shops and other amenities which are used on a daily basis. And these segments experience high pedestrian activities and high congestion levels and low through travel speeds most of the day. Managing road networks and transport infrastructure is a very complex exercise. Roads in the Community (1997), states 'The road system has been managed predominantly for political purposes during Australia's history'. The main Commonwealth objectives have been to open up rural areas, provide for the defence of remote areas and achieve national integration through the linking of capital cities. The

main State objectives have been on regional development and focusing of their State's economic activity on to their major capital cities and ports'. Funding for transport infrastructure has been a contentious issue for a long time, when it comes to who is responsible for paying for it. The planners consider the alignment of the transport corridor, spacing of connections, access to properties, number of lanes, what types of transport will be catered for and proposed travel speeds. An important characteristic of this initial step in the process is that individual corridors are likely to be identified and proceed into more detailed analysis at different times (thereby creating a challenge in later steps where priorities among corridors are to be determined (Carr et al, 2010). The project control for the transport corridor should consider the function of the corridor, what benefits it provides and assess against triple bottom line. It is expected that the function of the transport corridor to change along its length and geographical context. Between Major and regional cities it provides for connectivity and freight movements. Between activity centres, it would be high connectivity and local traffic mix with pedestrian and cycling. In transport corridor planning, the plans should integrate land use development and multi-modal network planning. Transport corridor planning need to address the future demands on the network due to land use developments, change in travel patterns and freight movements and also identify new network improvements by identify future infrastructure demands and improvements. New corridor links needs to be identified through corridor planning and to provide for existing gaps in the network. Decisions made at planning stages impact on the resilience of transport infrastructure as well as community resilience during a disaster. Lay (2005), states that "Transport planning is a relatively new component of transport policy". Roads in the Community (1997), identifies that the Australian road system is the responsibility of all levels of government. Transport planning aims to address issues such as congestion management, sustainable transport, transport modes and freight, economic growth, environmental protection and safety to communities. The roads cater to the present transport demands and get recommended for improvements through political influences. Transport has been at the origin of the economic development of many countries (Vreeker. R., & Nijkamp P., 2005). The reason for vehicle increases on roads during the last century is mainly due to transportation and land use planning practices which reinforced the cycle of increased automobile dependency and sprawl (Litman. T.2010). It is also identified that the relationship between land use, transport demand and supply is dynamic and complicated and the outcome rests partly on assumptions and policies that transport planning has little chance of validating"(Bjornland 1994). Transportation and land use decisions affect each other and are mainly focused on identifying and planning for the accessibility needs of people and freight within liveable and sustainable communities. Transport management and transport infrastructure planning require skill, and transport flow modeling has rapidly increased in complexity (Bjornland 1994). Each of these land use activities has its own movement characteristics associated with it. This demand for movement has a specific purpose - such as work, business, shopping, education, recreation and social travel - and takes the form of trips, characterised by direction (origin and destination), time (peak, off-peak), duration (travel time), mode choice (private vehicle, public transport, walking, cycling), route choice and cost of travel(Westerman. Hans. L.1998).Transport planning therefore takes into account the desirable social, environmental, economic outcomes and develops strategies to achieve those outcomes within planning frameworks (Litman. T.2011). And another definition of transport planning is the process of understanding the relationship between the transport system (and the elements within it) and the economic, social and physical environment in which it operates. The process involves: establishing desired outcomes and priorities; assessing opportunities and limitations for action; identifying the short and long-term consequences of alternative choices and how they will satisfy community goals and objectives; and presenting the information to decision-makers in an understandable and useful form and land is used for a variety of purposes, such as housing, offices, shops, industries, warehouses, schools and other activities (Westerman. H, 1998). Therefore it is identified that transport planning has an impact of the society, economy and the environment. Transport corridors provide high level connection between major urban and regional cities and provide for different transport modes, freight logistics and medium to low level connectivity for sustainable transport, such as for public transport and bicycle linkages and access to activity centres, employment centres and peri-urban residential living. Corridors provide a more direct connection between the movement of people and goods and state-significant economic activity (Carr. et al 2010). Transportation planning, despite its deficiencies, will remain a comprehensive modelling tool. At its best, it can demonstrate in a consistent manner the interrelationship between transport volumes by the various transport modes and the most influential transport generating and distributing factors (Bjornland 1994).

3 Case Study: Geelong Ring Road Planning and Construction

Fig. 1. Geelong Locality Map

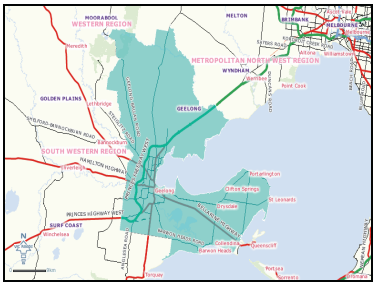

Fig. 2.Road Network in Geelong

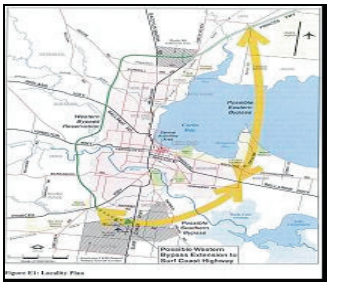

Fig. 3. Proposed Full Ring Road

(Sources: www.forecast2.id.com.au , http://maps.vicroads.vic.gov.au/Website/declared/viewer.htm & VicRoads (2002), Page ii)

Geelong is located just 75 kilometres southwest of Melbourne and the municipality covers an area of 1,245km^2 (Figure 1), which includes country, coastal and suburban regions. The Australian Bureau of Statistics (ABS) 2011 Census, the population that year was 215,151 persons, with a forecast of 302,362 by 2031(Victoria in Future, 2012).

- ***Road Network*** The City of Greater Geelong has a well developed network of arterial and local roads and is currently a motor vehicle oriented city, with 1392 km of urban roads and 674 km of rural roads. The City and its major roads are shown in Figure 2. The Princes Highway transport corridor passes through Geelong in a north south direction and La Trobe Terrace and Belmont bypass routes were developed in the 1970's, providing new access to the Central Activities Area (CAA). The Geelong Ring Road now allows traffic to travel straight from Princes Freeway South to Waurn Ponds, bypassing the Geelong Central Activities Area and City centre. For this case study I have selected key studies that were used to identify the Geelong Ring Road and the impacts and decision making scenarios. The Geelong Ring Road (Alternative 3) is completed to Waurn Ponds and when fully completed, will provide a Ring Road around Geelong (Figure 3). The process for freeway design and construction in Geelong started in 1969 and its first section (Alternative 3) was constructed and opened to the public in 2009.

4.0 Transport Framework Assessment

Transport planning and decision making takes into consideration many areas which have a direct relationship to transport. Figure 4 shows a typical evaluation framework for transport decision making.

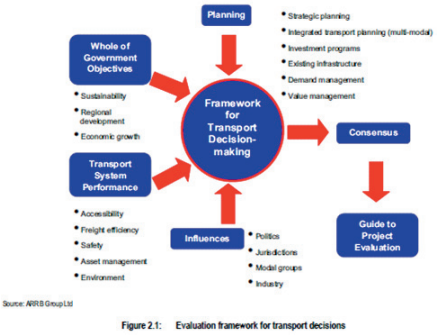

Fig. 4: Evaluation Framework for Transport Decisions (Source: Guide to Transport Planning, Page 6)

5. Geelong Transport Planning - Screening of Initial Alternatives

Identify the Study Area and Identify Purpose and needs Assessment

Wilbur Smith (1973), study identified the study area was chosen according to the built up and likely urban

development area's within the time frames of 1971-1991.The main objectives of the study were to carry out a study of the Geelong road system in order to analyse the road movements, with a view to ensuring that adequate provision was made for movement by road in and through Geelong in the period 1971-1991. Wilbur Smith (1973) identified that at that present time, due to expected high population rise, employment and income rates the car ownership and usage would increase. And that the average number of week-day trips would increase from 254,000 in 1970 to 534,000 in 1991, an increase of 110%. The final decision was that the existing road network would be inadequate to the needs of 1991. Population to increase from 117,213 (1970) to 187,750 (1991), a 60 % increase. The Wilbur Smith (1973), study identified the following three alternatives (Figures: 6, 7 &8). Alternative three was selected as the **Western Freeway**.

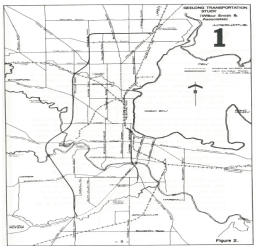

Fig.5. Alternative 1

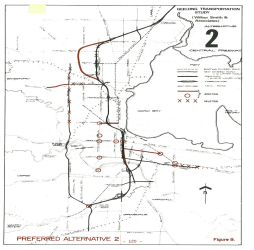

Fig.6. Alternative 2

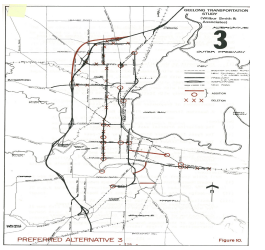

Fig.7 Alternative 3

- **Data Use and Estimates of study one Wilbur Smith (1973)**

Stated that population, employment and income rises by 1991. And week-day trips within the study area would increase from 254,000 (1970) to 534,000 in 1991 (110% increase). The average Trip Lengths to increase from 8.7 minutes (1970) to 9.8 minutes (1991). Population growth estimated at 117,213 (1970) to 187,750 (1991). This study recommended Alternative 2, the Central Freeway Scheme (from a traffic engineering perspective). The Geelong Regional Planning Authority did not accept the report until environmental and social implications of the proposed alternative approaches has been studied in detail. In 1974, the second study by John Paterson, (1975), was initiated to conduct an Environmental and Social benefits and costs study.

- **Reasoning and Study Outcomes of the second study by John Paterson, (1975)**

Consultants reviewed the first study of Wilbur Smith (1973) and selected Alternative 3 as the preferred option and stated the following reasons: Alternative 1 option is not adequate for the predicted traffic needs of Geelong in the early 1990's. Alternative 3 option provides the most traffic benefits and reduces physical impact, allows for adaptation to changing circumstances and that there are risks involved in committing to Alternative 2, offers the best strategy to get support of Geelong people, The adverse affects of Alternative 2 (695 dwelling to be demolished) is more serious than Alternative 3 (509 dwelling to be demolished), Urban Planning supports Alternative 3, it will have less visual impact on the visual and physical character of Geelong, for efficiency and adaptability the alternative 3 is preferable to allow for regional growth.

- **Data Analysis and Study Findings of John Paterson report, (1975)**

The main aim of this study was to make a 'balanced assessment' of the implications for Geelong due to the three proposed alternatives. The study observed that household numbers will increase from 34,606 (1970) to 57,800 (1991), cars per 1000 persons will increase from 313 (1970) to 453 (1991) and cars per household to increase from 1.06 (1970) to 1.47 (1991). The two car ownership rates in Geelong (36%) were higher than Melbourne Statistics (35%). The expected population growth was 270,749 persons in 2031compared to 221,017 persons in 2011.

- **Social Impact assessment of John Paterson report, (1975)**

This study identified the 'Community Social Impact' through two surveys (300 household interviews and an 1100 survey). The surveys showed that residents are affected by the proposed Central Freeway voted for the Alternative1 (approximately 65%) and that residents accepted the demolition of dwellings under 'special circumstances' (30%) and preferred comprehensive planning (45%). Residents highest priority was to 'reduce noise and air pollution'

(rating of 10), efficient and safe for traffic (rating of 9), and keep through traffic off local streets (rating of 8). The lowest priority was 'to provide good bus service' (rating of 1).

- **Decision Making**

The John Paterson (1975) represented a significant shift from previous practices in Australian Transportation Planning; by actively seeking the involvement of the local community to ensure that their thinking and conclusions adequately reflect the values and preferences of Geelong, which was called as 'modified technocratic'. Two social surveys were carried out in order to ascertain the public needs and impacts due to the three proposed alternatives and identify community characteristics and attitudes. The study concluded by that **alternative 3** minimises social and environmental costs associated with traffic growth, road planning and that strategy is consistent with community preference. The main reasons for the decisions were as follows: The study stated that the Western Bypass is the long term solution that would provide a satisfactory transport solution and minimise impact of traffic on local roads and aligns with Community approval. This Alignment will reduce the social impact on housing, neighbourhoods and on visual and physical characteristics of Geelong. The Geelong Regional Planning Authority accepted the report and was placed for public exhibition in 1977. After public consultation, it was accepted and incorporated into "Geelong Regional Planning Scheme" as an "amendment No.21". This was gazetted on the 9th of July 1990 as "Proposed Freeway Reservation". When it was gazetted, it became to responsibility of Country Roads Board (now VicRoads) to provide compensation for land acquisition.

5.1 Alternatives Identified for detailed evaluation

VicRoads (1989), study mainly concentrated on Geelong Central Business Area. This study used public community input through surveys (delivered 13,500 questionnaires and received 3560 (26% response rate)). The technical surveys identified traffic volumes in the Central Business Area of Geelong, which showed traffic volumes (vehicles per day), intersection traffic signal performances, calculated the degree of saturation (volume / capacity ratios) and showed that some intersections were at or almost at the upper end of saturation. VicRoads (1991), the main purpose of this study was to provide an Estimate, staging and timing of the outer ring road and develop a scheme to distribute traffic. This study identified that travel speeds will drop from 47.1 Kmh (2001) to 45.7 Kmh (2011), congestion in La Trobe Terrace to be greater than 0.8 (degree of saturation), identified 'Armstrong Creek' as a growth area and Geelong City area will experience high congestion levels if outer ring road is not built. VicRoads (1997), study was commissioned in 1997, six years after the previous study. This study identified that the bypass would improve access to Geelong Port and increase productivity. VicRoads (2002), study identified the need for and feasibility of each of the elements of the proposed total ring road and what additional studies and investigations are needed. Study identified three sections to complete the ring road (western bypass, southern bypass and eastern bypass as shown on figure 3). The analysis of the alternatives 1, 2 & 3 were grouped and named as 'Western Bypass' option. Alternative 3 was compared against Eastern & Southern Bypasses. Further study identified that Geelong region has a total population of 224,000 (2002) at rate of 1.1 percent per year. This study used the triple bottom line assessments to identify the (Environmental, Social and Economic) benefits and impacts. Identified that western bypass would improve accessibility, connectivity to other arterials and key activity centres. VicRoads (2002), stated identified the transport economic performance assessment of the proposed bypasses and estimated the benefits and costs to determine 'Benefit Cost Ratios' (BCRs) and 'Net Present Values' (NPVs) for the western ring road options. The report identified that a BCR of 1 and an NPV of $0 would mean that the total long-term transport benefits would be equal to the total costs. And ideally, a BCR should exceed 1 and the NPV should be positive for a project to be considered economically worthwhile. VicRoads (2002), estimated cost of the western bypass was estimated between $ 270 million - $ 375 million, with a Net Present Value of $430 -$ 937 million and a Benefit Cost Ratio of 2.5 -5.5. The BCRs indicate that the western bypass rank well ahead of the Eastern Bypass options in terms of their transport economic performance. The study also identified that the BCR value ranks well for the western ring road.

5.2 Implementation Plan

- **Decision Making -** The Steering Committee of VicRoads (2002) study recommended that the Government should commit to the development of the Western Bypass to Princes Highway at Waurn Ponds, commencing from the north and progressing southward in stages to match the emerging traffic demand along the route. And also to extend ring road link from western bypass to the surf coast highway (section4). The Geelong bypass was proposed as a four-lane freeway extending for approximately 23 kilometres (km) along Geelong's western outskirts from the Princes Freeway at Corio to the Princes Highway at Waurn Ponds (VicRoads, Road Safety Report, 2005).

- **Political Decision Making** - The Minister for Planning requested that a "Project Environmental Protection Strategy" (PEPS) study will ensure the effective management of environmental impacts of Section 1 of the Geelong Bypass, between the Princes Highway at Corio and the Midland Highway at Bell Post Hill. In 2002, The Minister for Transport on 11 October 2002, recommended the Western Bypass.

5.3 Detailed Evaluation

- **Air Quality and Noise -** The VicRoads (2004a) study identified the 'Air Quality' investigation considered the relationship between the traffic volumes (including the composition of heavy vehicles) and the impact that they will have on the local air quality and found that the predicted peak concentrations of all contaminants, including "worst case" conditions in the model, are lower than the SEPP intervention level and future air quality conditions will be within the acceptable limits. John Paterson (1975), stated that Alternatives 1 & 3 offer the best long-term protection against traffic noise problems.

- **Benefits** - The VicRoads (2004a), identified that the western bypass would remove through traffic, including freight, from Geelong's existing roads, support Geelong's role as a regional transport hub, road freight gateway, tourist gateway and as a regional centre for several satellite townships and provide the only viable project in transport economic terms within an acceptable level of investment risk. Western bypass would improve connectivity between the largest number of principal roads and highways that radiate out from Geelong and deliver a road that reduces accident rates, travel times and costs for freight and road users undertaking urban, regional and national trips. Council identified the Armstrong Creek and Mt Duneed area as the location for future urban growth which lies to the south of the freeway. The Armstrong Creek Urban Growth Plan will apply to a physical area of 4,300 hectares to accommodate up to 70,000 people.

- **Road Safety and Benefits to Society -** Current accident information details 13 fatalities and a further 638 casualty crashes on the Princes Highway between Corio and Waurn Ponds over the past 5 years to 2003. The predicted mean crash rate for a new freeway such as Geelong Bypass would be 13.8 casualty crashes per 100 million vehicle-kilometres. The study indicated that there should be safety measures included into the freeway construction (VicRoads, 2004a). A total of 167 casualty accidents (6 fatal, 37 serious, 124 other injury) were recorded on the Princes Highway between Aberdeen Street and Cochranes Road for the 5 year period 01 July 1999 to 30 June 2004. This report stated that, 'The key roads in the adjoining road network had a total of 106 casualty accidents (1 fatal, 30 serious, 75 other injury) for the same period Calculation of existing accident rates on the Princes Highway showed that it has an average accident rate of 44.82 casualty accidents per 108 vehicle kilometres. This is significantly higher than the default accident rate for a divided urban arterial road which is 25.8 casualty accidents per 108 vehicle kilometres. This highlights the low road safety performance of the Princes Highway relative to similar road types in Victoria' (VicRoads, Road Safety Report, 2005). The identified benefits ranged from, improve accessibility and amenity for people living in the Geelong Region, reduce freight and other traffic movements in the centre of Geelong, particularly along La Trobe Terrace, reduce noise, pollution and traffic in residential areas, encourage tourism to the Surf Coast and south-western Victoria, improve road safety and reduce travel times and improve road freight efficiency. The Geelong Ring Road (GRR) is a freeway-standard road extending 23 kilometres along Geelong's western outskirts from the Princes Freeway at Corio to Princes Highway at Waurn Ponds. Drivers will be able to avoid up to 29 sets of traffic lights, with a travel time of less than 15 minutes compared with the current 25 -

60 minute trip through Geelong.

• **Findings -** The case study offered a typical transport planning process adopted for a major transport corridor development. The prcoess allowed comparison of the elements identified with typical evaluation framework for transport corridor planning decision making (Figure 4) and was compared with observed practices (Table 1) to identify major gaps in plannig decisions.

Table 1: Evaluation of Study considerations

	Planning							Whole of Government Objectives			Transport System Performance						Triple Bottom Line Assesment			Influences					Project Evaluation
	Strategic Planning	Integrated Transport Planning	Investment Programs	Existing Infrastructure	Demand Management	Value Management	Land Use Development	Sustainability	Regional Development	Economic Growth	Accessibility	Road Network	Freight Efficiency	Traffic Analysis	Road Safety	Asset Management	Environment Impact	Social Impact	Economic Impact	Politics	Jurisdiction	Modal Groups	Community	Industry	
Study 1	√			√	√		√		√		√	√		√						√		√			
Study 2	√	√	√	√					√			√		√			√	√	√	√		√	√		
Study 3		√	√						√	√	√	√													
Study 4	√	√								√	√	√			√										
Study 5	√			√							√	√								√					
Study 6	√								√	√		√						√		√					
Study 7	√						√			√							√								
Study 8	√						√			√	√								√						
Study 9	√		√				√			√	√	√													√
Study 10	√		√	√			√				√						√	√							√
Study 11	√	√	√						√								√								
Study 12	√																√	√		√					
Study 13	√						√	√							√		√	√	√						
Study 14	√	√	√							√	√	√					√								
Study 15	√	√	√				√								√		√								
Study 16	√						√								√										
Study 17	√						√								√			√							
Study 18	√										√	√						√							
Study 19	√													√			√	√							
Study 20			√						√	√	√	√								√					
Study 21	√											√		√			√	√	√						
Study 22							√		√		√	√						√	√				√		

6.0 Financial Planning

The financial evaluation started with the first study in 1970's, the Wilbur Smith (1973)**,** stated that the capital costs for alternatives 2 & 3 amounts to $86 million (1975 $ values).This represents a saving of about $6million in each case (Wilbur Smith, 1973**,**Page 62). Then in 2002, VicRoads 2002 Study estimated cost of the Western Bypass to be between $$270 m - $ 375 m, with a Net Present Value of $430 -$ 937 million and a Benefit Cost Ratio of 2.5 -5.5.
The planning for the Bypass has proceeded on the basis that the new Bypass road will be a four lane divided freeway, estimated to cost $380 - $430M, which is capable of being upgraded to a six lane divided freeway. The Victorian Government is committed to building Geelong Bypass between the Corio Interchange and the Princes Highway and has confirmed an allocation of $190M in the May 2004 State budget. In 2005 May 30, Media release by the Victorian State Government stated the Australian Government has committed $186 million as part of the AusLink Transport Plan. Victorian Government providing the remaining $194 million required to fund the project.
In November 2004, The Victorian Government committed $190 million and the Federal Government commits $186 million as part of the AusLink Land Transport Program. In January 2005, Geelong bypass is proposed as a freeway standard road extending approximately 23 km from Princes freeway at Corio to the Princes highway at Waurn Ponds. An estimated 25000 vehicles per day will use bypass when it's completed upto Waurn ponds. In November 2005 section one construction was awarded for $134.8 million and completed in December 2008.Section two (4.5 km) construction work commenced in 2006 and completed in 2008 for a cost of $47.2 million. Section 3 commenced work in 2007 and completed in 2009 for a cost of $108.3 million. Section 4 has commenced work and it's in three segments, 4A ($62.5 million) / 4B ($65 million) & 4C (to be finalised) and the section 4A construction commenced in 2009.

Conclusion

The paper presented a case study to highlight the importance of decision making in transport corridor planning. The inter-relationship of transport systems and economic processes has been extremely dynamic (Roads in the Community (1997). As shown in the case study to identify the need for a freeway alignment and for its full construction has taken almost 40 years. This is a very long time frame in regards to change of governments and economic conditions. Analysis of case studies indicate that there are many gaps which need to be addressed at transport planning and land use planning levels to minimise risk to community and environment. Constraints identified due to limitations to available transport study data, high urban sprawl and land for transport corridors and the ultimate decision lies with the politicians. The road system has been managed predominantly for political purposes during Australia's history (Roads in the Community (1997). Table 1, shows the 'parameters' used in the reports to identify issues, make decisions and conclusions. Key ones are as follows, Value management, Freight efficiency wasn't considered at all, Asset management and long term performance of infrastructure hasn't been considered at all during the decision making, Jurisdiction – or the impact of this network on other parts of the country hasn't been considered, Effect of the new corridor on regional industry hasn't been examined at all, A major gap identified is that evacuation during a disaster hasn't been considered at any stage of the decision making process. One of the major areas of study that didn't take place during these planning was the risk assessment to the community due to disasters. During the past 40 years, many large scale disasters have taken places that have impacted many countries. Good transport planning at the correct timing, will provide for growths in freight, new roadways, car travel, increasing price of transport fuel, increasing community awareness to disaster evacuation needs and community safety and amenity. As a key transport planning parameter, in future research reports, there should be a section allocated to 'identify risks associated due to disasters'. Strong leaders are required to carry out strategic transport planning that would protect people, contribute towards economic growth and environmental protection.

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