

A Review of Transport Project Appraisal in NSW Australia

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Abstract

Transport project appraisal centred on Cost Benefit Analysis has a history that dates back over forty years in Australia. From tentative beginnings in the 1960's and 70s, through a period of relative stability in the 1980s and 90s, the basic approach has largely remained unchanged to the present day. Where change has occurred, it has been in how the decision making process has included CBA: from standalone documents, to chapters of Environmental Impact Statements to sections in Business Case submissions.

This paper looks at some of major changes that have occurred over the last 40 years, the guidelines and frameworks that have been developed and the current place that cost benefit appraisal has in the transport decision making process both at a State and Federal level.

Dedication:

This paper is dedicated to Paul Mees, Associate Professor at RMIT University, Melbourne. Paul was a passionate advocate of public transport, who made many memorable presentations at ATRF. Paul died too soon on 19th June 2013.

1. Introduction

Australia is a federal country with national and state governments. The Australian Constitution allocates certain powers and responsibilities to the federal government with remaining responsibilities retained by the six states of Australia which have their own individual constitutions. The third tier is local (shire, town or city) government of elected councils. All three tiers have some influence on the planning, regulation and provision of transport. In terms of the appraisal of land transport projects in NSW, the subject of this review, State government has had by far the biggest role.

Section 2 provides a brief history of the development of transport appraisal practices in leading up to the current situation then section 3 looks at how transport is funded in NSW as a basis for understanding how funding submissions 'work' at the State and Federal levels. Section 4 looks at the transport planning process in NSW and how goals, targets and actions influence the selection of preferred transport projects. Section 5 looks at the frameworks, guidelines, handbooks and manuals that have been developed to appraise transport projects. Section 6 discusses some of the key recent developments in project appraisal and Section 7 draws some conclusions and pointers for the future.

2. A Brief history of transport appraisal in NSW/Australia

The first formal applications of economic Cost Benefit Analysis in Australia were in the early 1960s by the Commonwealth Bureau of Agricultural Economics to evaluate some larger irrigation projects using methods first developed and applied in the USA.

The first evaluation guide "*Investment Analysis*" was issued in 1966 by the Commonwealth Government as a supplement to the Commonwealth Treasury Information Bulletin. In 1967, an Occasional Publication of the Economic Society of Australia and New Zealand "*An Introduction to Cost Benefit Analysis*" was released citing an array of articles and textbooks but no specific transport appraisal advice was provided.

The 1970s was a high point for the development of economic appraisal techniques in Australia largely because the Vernon Royal Commission of Inquiry into the economy after the 1961 Credit Squeeze crisis recommended its application.

In 1972, the Whitlam government enacted the States Grants (Urban Public Transport) Act in which Canberra gave a two thirds capital grants to all States' projects which had completed cost benefit studies to a standard prescribed by the (then) Bureau of Transport Economics (BTE). Thus funding assistance was provided in return for studies in areas the Commonwealth government approved. Moreover, there was a States Grants (Transport Planning and Research) Act 1973 to assist States and pay for consultants to gather background information to do the necessary studies. Also during this period, an appraisal system was developed by the Commonwealth Bureau of Roads to assess Commonwealth grants to individual States following the breaking of "*the nexus*" between fuel tax receipts and federal grants for road projects.

Reports on all the assisted projects were published in reports of the BTE in the 1970s. In 1972, an economic appraisal of 24 public transport investment proposals across the state capitals was published, BTE (1972). Projects included rail track amplification, rail electrification, new rail lines, busways, bus/car interchanges, bus and train fleet renewal, a tram route proposal and a ferry proposal. Over the 24 projects, the BCR averaged 2.2 ranging from 0.8 for a tram route to 7 for a Busway. New rail lines averaged 2.1 and amplified rail lines 4.7.

In terms of method, which makes a useful comparison with current appraisals, benefits to existing public transport (PT) users were distinguished from benefits to new PT users. Two categories of new PT were defined: Trips 'converted' from car and totally new or 'generated' users. For existing and generated users, benefits from time savings were valued at 60cents per hour. When converted to 2012 dollars using the consumer price index, the in-vehicle time savings were worth \$5.67/hr (walking and waiting time were valued at twice this rate) which is around half the 2011 RailCorp value (\$11.62/hr), Douglas & Karpouzis (2011). The benefit to generated users was calculated at half this rate. For converted car users, the benefit was calculated as the generalised cost of using car minus PT (with the same value of time used for car as for PT users).

The benefit to remaining road users was calculated as the avoided cost of providing additional road capacity. No externality cost savings were included because of the lack of suitable parameters.

Patronage response was forecast using a simple formula $P = (0.3r+0.15)T$ where P was the percentage change in PT patronage, r was the ratio of car to public transport trips and T was the percentage reduction in PT time.

Petrol taxes were removed and the evaluation was undertaken in resource costs. Benefits and costs were estimated over 20 years with a residual value (based on the net benefit stream over years 20 to 50 entered in the final year) and discounted at 7% per year.

Table 1 shows the results for the amplification and electrification of the Illawarra line. The BCR of 4.9 would an unbelievable result undertaken today.

Table 1: Cost Benefit Analysis of Illawarra Track Amplification & Electrification

All costs and benefits in 1972 prices discounted at 7%

Benefit / Cost	\$million	Percent
Operational Cost Savings	5.4	13%
User Benefit - Existing Rail Users	13.5	33%
User Benefit - Generated	0.3	1%
User Benefit - Converted Road User	7.7	19%
Remaining Road User Benefit	3.4	8%
Residual Benefit	10.7	26%
Total Benefit	41.0	100%
Total Cost	8.3	
Benefit Cost Ratio	4.94	

For road appraisals, the methods of 'engineering economy' were the basis of each state's submission: an approach that emphasised highway design, speeds and the discounting of present and future values of costs and benefits, Wright and Paquette (1987).

The National Association of State Road Authorities and the Australian Road Research Board (ARRB) began to promote the development of technique in national conferences and research publications but State Treasury involvement remained relatively minor.

In NSW, the Water Resources Commission and Electricity Commissions were the first agencies to undertake economic appraisals and develop appraisal manuals in the 1970-80s. In 1988, the Capital Works Committee of the NSW Cabinet (CWC) decreed that the economic and financial evaluation of new capital works was mandatory for projects costing over \$5 million. In the same year, the NSW Government circulated "Guidelines on Economic Appraisal of Assets" which described cost benefit analysis and cost-effectiveness in a general way. The only stipulation was to use a discount rate of 7% (based on the social

opportunity cost of capital) to discount future cost and benefit streams with 4% and 10% used as sensitivity tests. These rates have remained in force as at March 2013.

To promote good practice, NSW Treasury instigated workshops and established an accredited list of agencies and consultants able to perform evaluations (subsequently discontinued). Government agencies were encouraged to develop economic evaluations.

In the early 1990s, NSW Treasury & the Department of Public Works introduced the Total Asset Management Process (TAM). The process required departments and agencies to undertake a set of studies for capital projects greater than \$1m. Studies included a Value Management (VM) study (a structured approach to sifting through options) a demand management assessment, an economic & financial evaluation, a risk management and a post-completion review.

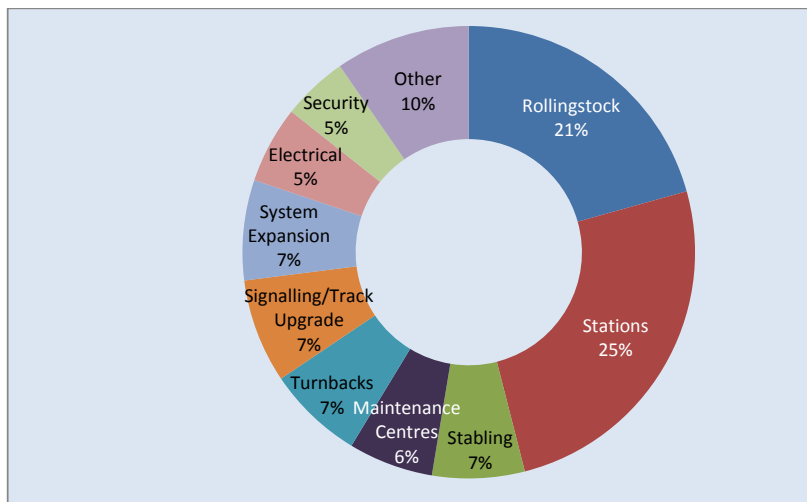
For rail projects, most effort was devoted to VM studies and the CBA evaluation. Risk management studies, and demand management assessments tended to be short statements incorporated into the CBA report. Few if any post-completion reviews were undertaken.

Individual NSW Government agencies were encouraged to develop their own evaluation manuals. Manuals were first developed for the Water and Health portfolios then in 1990 the Roads and Traffic Authority (RTA) developed the first transport evaluation manual utilising parameters and engineering design practices set out in Austroads user cost reports. The RTA manual focussed on Cost Benefit Analysis since *“it is the most common appraisal method for road and bridge investments”* (page 1-1). Sections on cost effectiveness analysis and Multiple Criteria Analysis (MCA) were also provided.

In 1993, the State Rail Authority (SRA) of NSW produced an evaluation manual for rail capital projects. The manual provided the basis for evaluating projects. Typically, 25 projects were evaluated per year totaling 363 over the period 1994-2008. Around two thirds were done in-house and one third by consultants. The capital value of the projects ranged from small projects costing around \$1 million to large scale projects costing over a billion dollars. The typical benefit cost ratio was around 1.6 (which compares with an average 2.2 for the 24 projects in the 1972 BTE capital cities study).

An analysis of evaluated projects, taken from Douglas Economics (2013), is presented in Figure 1.

Figure 1: Sydney Rail Evaluation Classification 1994-2008



Less than one half of projects affected patronage; a fifth were rolling stock evaluations that looked at design, refurbishment or replacement options and a quarter were station

evaluations (layout, easy access (mainly lifts) and refurbishment). Less than a tenth of the projects were system expansions that looked at new or amplifications of existing lines. However for these projects, the capital costs were much higher and the resultant BCR much lower than the 4.9 ratio estimated for the Illawarra line in 1972 by BTE.

Nationally, Austroads published its first Cost Benefit Appraisal 'manual' to evaluate road investments in 1996. It was by today's standards, a short manual (57 pages). The stated aim was to provide guidelines for performing benefit cost analysis (BCA) that could be used by all Australasian road transport and traffic authorities at all levels of government. In so doing, the manual aimed to provide "clear and comprehensive guidelines for nationally consistent BCA". The manual did not include detailed speed-flow engineering formulae or list parameter values such as vehicle operating costs, values of travel time and accident costs but instead referenced publications produced by Austroads and other agencies.

In 2008, Infrastructure Australia (IA) was established by the Australian Government as a statutory body and headed by Chairman Sir Rod Eddington. IA reports to the Australian Minister for Infrastructure and Transport and, through the Minister and Prime Minister. IA advises the Minister on projects and has developed a framework for States, Territories and others to submit proposals for federal funding.

A similarly named but unrelated agency was created in 2011 called Infrastructure NSW (INSW). This agency was charged with, amongst other things, preparing five and twenty year infrastructure plans to review and evaluate proposed major infrastructure projects by government agencies or the private sector.

3. Transport funding

3.1 Road project capital and recurrent funding

Road funding is provided by federal, state and local governments. The Australian Government contributes funding to the states for the key inter-capital road corridor and provides funds directly to the 152 local councils of NSW who manage local roads. Transport for NSW (TfNSW) provides annual funding support to councils for the management of regional roads.

In 2010/11, \$4.7 billion was spent operating, maintaining and investing in the NSW road network. Road users paid around 70% of the costs through a combination of road user charges, motor vehicle taxation (MVT) and tolls on State-owned motorways, TfNSW (2012). The other 30% was funded via local councils, NSW State Government and the Commonwealth Government.

NSW pays far more in fuel excise duty to the Commonwealth Government than it receives back in transport grants. In 2011/12, the Australian Government collected \$13.2 billion from excise duty on petrol and diesel (revenue primarily related to road use) but returned only \$4.3 billion back to the States in road infrastructure funding. Of this total, NSW received \$1.3 billion compared to excise tax share of \$4.3 billion calculated on a population basis.

Combining capital and maintenance spending on roads over the four years 2010/11 to 2014/15, the NSW Government estimates that the annual expenditure on roads would be around \$4.6 billion with the Commonwealth providing \$1.3 billion in grant funding.

Roughly the same amount is spent on recurrent expenditure (operating costs and maintenance) and capital spend (investment in new or upgraded infrastructure) based on the Transport for NSW (TfNSW) four year projection for 2011/12 - 2015/16. A total of \$7.1 billion (53%) on capital and \$6.3 billion (47%) on recurrent expenditure is forecast.

NSW transport spending is predominately intra state (88%) with only 12% federally funded largely through the Nation Building Program with virtually no federal funding of recurrent NSW transport expenditure (e.g. public transport subsidies), Table 2.

Table 2: NSW Transport Funding 2010/11- 2014/2015

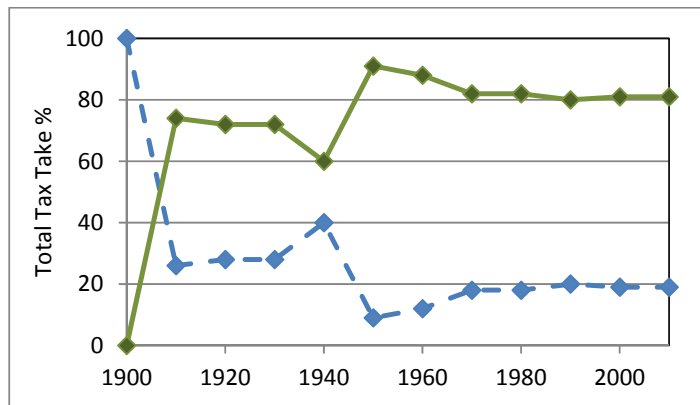
	Annual \$ billion			Percent		
	NSW	Federal	Total	NSW	Federal	Total
Recurrent	6.2	0.1	6.3	98%	2%	100%
Capital	5.6	1.4	7.1	80%	20%	100%
Total	11.8	1.6	13.4	88%	12%	100%

Source: 2012 NSW Long Term Transport Master Plan

Looking into the future, a concern expressed by TfNSW in the Long Term Transport Master Plan (LTTMP) is that the current level of road funding will not be sufficient to upgrade and maintain the road network. NSW will therefore need to compete for Australian Government funding with outcomes influenced by relative judgements about national and state priorities, as well as the quality of submissions and political factors.

The imbalance in fuel excise and commonwealth grants is part of a wider ‘vertical fiscal imbalance’ debate, NSW Government (2011). Gradually, Australian states have lost tax ‘independence’. In 1900, before Federation in 1901, the Australian states collected all tax revenues but with Federation the take fell to 28% by 1910 and in 2010 was just under 20% as shown Figure 2. Today, the states argue that the federal government has access to the largest and most efficient taxes leaving the states with only small and inefficient taxes.

Figure 2: Trend in Federal and State Tax Take



Sources: Matthews and Jay (1997) Subsequent years ABS 5506.0

An avenue for States and Territories suggested by the Henry tax review, Henry (2010) would be to make greater use of land based taxation which has clear links with transport provision. However, with the exception of the ACT, no jurisdictions have so far moved to increase or make better use of land taxation collection.

3.2 Rail project capital and recurrent funding

There is no Commonwealth Government operating subsidy support for public transport. Three-quarters of public transport revenue support is paid by the NSW Government with one quarter of the operating costs of bus, rail and ferry service paid through fares.

The operating cost ratio is lower for rail at 22% than for bus and compares relatively poorly with other Australian states (25% to 45%) and internationally (60% to 80%) based on figures

in the TfNSW LTTMP. For 2009/10 the public subsidy for rail amounted to \$2.1 billion which equates to \$780 for every household in NSW.

Transport fares for rail, bus and ferry services are regulated by the Independent Pricing and Regulatory Tribunal (IPART) of NSW. Each year, a submission is made to increase fares, generally at the rate of inflation. IPART reviews the submission and makes a recommendation to the Expenditure Review Committee (ERC) of the NSW Cabinet.

Operating costs especially for rail have increased faster than inflation over recent years. As a result, the gap between operating costs and revenue has widened requiring greater annual subsidy support. In 2008, IPART commissioned Charles River and Associates (CRA) to undertake a research study to determine the optimal subsidy level for Sydney passenger rail services, CRA (2008). Their study took an economic cost – benefit approach including consumer surplus; road congestion; rail capital and operating costs; and other externalities. CRA concluded that an optimal welfare outcome would require a 21% increase in the average fare prevailing in 2005/06 with the fare increase reducing patronage by 7% but also reducing the government operating subsidy by 11%. This study provided IPART with an economic justification for seeking rail fare increases above the rate of inflation.

In 2011, with the creation of TfNSW, the responsibility for setting fares and timetables moved from RailCorp to TfNSW. On the cost side, TfNSW has assessed franchising ferries and reforming train operations in a bid to slow the increase in operating costs.

3.3. Applications for Commonwealth funding

At the national level, the Commonwealth Department of Infrastructure and Transport (DoIT) administers transport funding. For larger projects over \$100 million, Infrastructure Australia (IA) may provide advice to the Minister. The convention is that IA is the principal adviser on projects over \$100 million, although DoIT also provides advice on these projects. For this purpose, IA has developed evaluation guidelines and an application framework and process. Projects may be developed nationally or at state level and there are examples of both types of projects being approved for funding.

Since 2008, the DoIT has been responsible for administering the 'National Building' program. The program covers construction and maintenance of the national road and rail network, 'roads to recovery' (local roads), road accident 'black spot' remedial work, heavy vehicle safety and productivity, off-network projects (road, rail and intermodal terminals not in the national network) and boom gates for rail crossings.

Over the four year period 2009/10 to 2013/14, \$37 billion was programmed for transport across the States plus \$1 billion in community infrastructure (including \$41 million in cycle way provision see section 6.8). NSW received \$12 billion one third of the total spend and in proportion to its population. Of the \$12 billion, one fifth \$2.6 billion was for rail freight projects (\$1.3 billion via the Australian Rail Track Corporation (ARTC)) and \$9.4 billion (80%) for road projects (\$5 billion on highway investment, \$1.1 billion through local road grants and \$2.2 through the Building Australia Fund).

In terms of evaluation, larger schemes costing over \$100 million require a formal business case evaluation in accordance with an IA framework. The Northern Sydney Freight Corridor is an example of a project that has been developed by NSW state agencies and successfully submitted to IA for funding. Smaller schemes will usually require documentation to DoIT.

NSW state agencies have been unsuccessful to date in obtaining any funding approval from IA for any urban public transport infrastructure project except for the Parramatta to Epping extension of the Epping to Chatswood Rail Link, for which substantial project construction funding (\$2.1 billion out of a total estimated cost of \$2.6 billion) was approved by IA following a hastily submitted funding application in early 2011, but following a change in the NSW government in March 2011, the incoming state government decided it no longer wished to proceed with the project.

3.4 Infrastructure Australia assessment framework

As part of its advice to governments, Infrastructure Australia (IA) assesses submissions from the private and public sector for inclusion on its Infrastructure Priority List. Submissions can be reform or investment initiatives. To assess submissions, IA has developed a 'reform and investment framework' which sets out the information expectations and assessment process. Submissions are required to be succinct not exceeding 30 pages in length excluding the economic appraisal, IA (2012).

The framework is used to develop an infrastructure priority list. The list includes projects at different stages of development: (1) early stage; (2) real potential; (3) threshold and (4) 'ready to proceed'.

The framework has three criteria: (1) *Strategic alignment* goals aligned with state plans and support IA's strategic priorities; (2) *Problem definition* - well understood problem that is demonstrated to constrain goal achievement (3) *Solution development* - comprehensive set of options considered and the preferred option demonstrated to generate economic benefit and can be successfully delivered.

The framework lists seven national strategic priorities that proposals must align to: expanding productivity capacity, increasing productivity, diversifying economic capabilities, building on Australia's global competitive advantage, developing cities and regions, reducing greenhouse emissions and improving social equity and quality of life. Additionally, proposals must align with state goals.

As a proposal advances from 'Early Stage' to 'Ready to Proceed' the focus shifts from strategic alignment and problem evaluation to selecting the right solution. For projects at 'threshold or ready to proceed', a detailed cost benefit analysis and deliverability assessment is required to demonstrate (1) that economic benefits exceed costs, as measured by a robust benefit cost ratio (BCR), (2) need for non government funding has been fully explored for all or part of the investment, including user pays; (3) cost estimates and risk assessments provide assurance that the project can be delivered within budget and risks managed; and (4) specific technical requirements for a project of that nature been considered and the design is optimized.

In terms of the CBA analysis, a 'rapid' CBA should provide confidence that the preferred option provides the greatest benefits and that those benefits are likely to justify implementation. The detailed CBA needs to present results in a required template with an attached report detailing the methodology, parameter values, assumptions and algorithms.

The IA framework specifies key parameters that should be used and notes that where these parameters differ from State or Territory guidelines, outcomes using IA's parameters should be provided in addition to any recognized alternative approach. These include discount rates of 4%, 7% and 10% (real), 30 year period, residual value calculated using straight line depreciation; For other parameters, IA encourages the use of 'best practice and standard parameter values'.

The appraisal allows for non monetized impacts (visual/landscape, social amenity e.g. park lands, social cohesion and heritage/cultural) to be appended using a seven point scale ranging from highly detrimental to highly beneficial. Finally, IA does not encourage the use of computable general equilibrium macro econometric models and will not consider "CGE benefits as additive or complimentary to cost benefit analysis benefits".

4. Transport project planning in NSW

4.1 Transport for NSW

Planning of passenger transport in NSW was centralised in 2011 with the creation of a ‘*super ministry*’, Transport for NSW (TfNSW). Under the changes, higher order planning functions for passenger rail (heavy and light rail), bus (State Transit and private), ferry and road management were transferred to TfNSW. As well as transport planning, TfNSW now has responsibility for transport coordination, transport policy; transport services; transport infrastructure; freight and marine pollution response.

The public road network in NSW is managed by several government agencies. The 152 councils across NSW are the designated road authorities for local roads. The Roads and Maritime Services (RMS), which is within the TfNSW cluster, exercises the power of a road authority on state roads and freeways and is responsible for improving road safety, vehicle registration and driver licensing, assessing network conditions and planning future operations.

RailCorp owns and maintains the metropolitan rail network and operates rail services in metropolitan Sydney (CityRail) and the longer distance services (CountryLink). Light rail is operated by Metro Transport Sydney but with the assets purchased by the State Government in 2012.

The State Transit Authority is responsible for operating Sydney Buses, Newcastle Buses & Ferries and Western Sydney Buses (Liverpool Parramatta Transitway). Since July 2012, Sydney ferries have been privately operated under contract but with vessel ownership, fares and timetables remaining with the NSW Government.

Up until 2013, the three main ports of NSW were owned and operated by the NSW Government. In April 2013, Port Botany and Port Kembla were acquired by the NSW Ports Consortium on a 99 year lease for \$5 billion (with the net proceeds of \$4 billion invested in the NSW Government infrastructure fund), Treasury NSW (2012) leaving the Port of Newcastle in Government ownership. Airports are either privately owned eg Kingsford Smith Sydney or owned by local councils (eg Newcastle). NSW regulation applies only to route-operator allocation and does not cover air safety/security which is federally regulated.

The Australian Rail Track Corporation (ARTC), an Australian government owned corporation manages the national interstate rail network and is responsible for ensuring efficient rail freight transport across Australia. In NSW, ARTC manages the Hunter Valley (largely coal operations) and Interstate freight rail network under lease from the NSW Government and provides network access to privately owned freight train operators. ARTC also manages and develops the interstate freight network, assessing projects primarily on a commercial basis by comparing infrastructure costs against projected access charges.

4.2 Reforms in the NSW planning process

In NSW, transport projects including both public and privately funded projects have been initiated by government transport and planning authorities.

The transport ministry and planning ministry in NSW have produced a series of strategic planning documents over the past 20 years. These strategic planning documents identify the conceptual details and broad alignments of future road and rail “corridor” transport projects. Further details of the specific route alignments, preliminary financial and economic feasibility studies and preliminary environmental appraisals (which may include multi criteria and triple bottom line type planning assessments) are then undertaken. These documents which are frequently known as “options reports” are primarily undertaken on a technical expert basis

and rarely include public consultations, and many of these studies remain confidential government documents.

The preliminary appraisal process is largely internal within government whereby agreement in principle within the NSW Treasury for the funding of the capital works cost and any land acquisition costs of projects is achieved at the Gateway Review stage (see further details in Section 6 of this paper) and treasury funding is allocated in the forward estimates over a 5 or even a 10 year future timeframe for larger projects.

With agreement secured for the NSW Treasury funding, the government transport planning authority can proceed to apply for environmental approval for construction of the project. This process is controlled by the NSW Planning Ministry (Department of Planning and Infrastructure) where the Director General is responsible for specifying so called 'Director General's Requirements' (DGR's) for the Environmental Impact Statement. Typically, an EIS is required for projects deemed to have a significant environmental impact whilst a less demanding report can be prepared for projects with lesser environmental impact. Normally a major planning or engineering consultancy firm is commissioned to prepare an EIS including concept designs of the project route with sufficient engineering detail for the project environmental and property acquisition impacts to be identified.

These Environmental Assessment reports, which are usually publicly exhibited for 28-to 40 days, represent the main opportunity for public consultation to occur as all public submissions are required to be considered in the planning assessment report which ultimately forms the basis of the approval for the project. Many community and public interest groups are critical of this aspect of the public consultation process as the public input is considered by many to be taking place after all the critical details of the route alignment (and station locations for rail projects) have been determined.

The planning approvals process in NSW was formalised under the EP & A Act in 1979. This Act provided, under Part 4 and Part 5, for transport and other major infrastructure projects to be assessed and approved either by the Department of Planning (Part 4) or the relevant government infrastructure authority for the project (Part 5). However any project deemed to be of State significance was able to have its planning approval (including conditions) personally authorised by the Minister for Planning under Part 3 of the Act.

In 2005, the role of the Minister for Planning in approving major projects was formalised under a new Part 3A of the Act which was further reinforced in 2007 by a new State Environmental Planning Policy (SEPP) which was introduced defining Infrastructure Projects.

This additional legislation had the effect of widening the range and type of development projects that could be personally approved by the Minister for Planning. Increased public concern led to Part 3A of the Act being repealed in 2011, following a change in the NSW Government. The Part 3A provisions of the Act were replaced by two new assessment categories of State Significant Development (SSD) and State Significant Infrastructure (SSI) to permit major projects to continue to be assessed and their approval determined by either the Department of Planning and the Minister or a Planning Assessment Commission (PAC).

Under Part 3A of the Act, several major transport projects around Sydney were able to be approved by the Planning Minister between 2006 and 2010 including the South West Rail Link (SWRL) and the North West Rail Link (NWRL). These two rail extensions which serve existing and new urban areas in South Western and North Western Sydney were classified

as critical infrastructure and were able to be assessed and approved in concept form, in August 2007 and May 2008 respectively.

The concept form “*Environmental Assessment Reports*” for both these major transport projects only provided a basic level of detail of the route alignment and also excluded any formal economic “*Cost Benefit Analysis*”. For both these projects, the project need and justification was based on a broad range of socio economic and public interest benefits and criteria. These were most clearly articulated in the NWRL report as: servicing a growing population in the new urban areas; meeting employment needs in the new urban areas; providing public transport services to the new urban areas; and reducing transport congestion and travel times.

Both the SWRL and NRWL projects were considered by the NSW Government to have no feasible alternative capable of meeting these needs and also in reducing car dependence, which would otherwise have adverse social, environmental and economic impacts in the new urban areas. After more detailed environmental assessment reports and public exhibitions, the civil construction works for the SWRL and NWRL were approved in 2010 and 2012 respectively.

In April 2013, a White Paper outlining reforms to the NSW planning system was released. Major transport projects, identified in government approved strategic plans will be called Public Priority Infrastructure and will have a more ‘streamlined process’ from planning to delivery. The private sector will be invited to participate in planning, delivery and operations under a new ‘contestability’ approach. Another provision is for the Independent Pricing and Regulatory Tribunal (IPART) to prepare costs for infrastructure as well as reviewing infrastructure plans.

4.3 NSW infrastructure and transport strategies

Infrastructure NSW (INSW) was created in 2011 with the statutory objective to “*secure the efficient, effective, economic and timely planning of infrastructure that is required for the economic and social well-being of the community*” and was charged with the task of preparing five and twenty year infrastructure plans to review and the evaluation of proposed major infrastructure projects by either NSW government agencies or by the private sector.

INSW presented its first 20 year State Infrastructure Strategy in September 2012. The strategy included 70 investment proposals covering transport health, water, energy and social infrastructure. The methodological approach was largely qualitative without any detailed cost-benefit analysis of individual proposals. The only quantitative analysis undertaken was Computable General Equilibrium modelling of the whole package which ironically is a method not supported by Infrastructure Australia.

Three months after the INSW State Infrastructure Strategy (SIS) was released, TfNSW released its Long Term Transport Master Plan (LTTMP) in December 2012. It is a lengthy 420 page document that presents an overall framework to guide detailed transport plans, policy decisions, reforms and funding decisions over a twenty year period. It is worth commenting that when the SIS and the LTTMP were released, there was no equivalent land-use or broader metropolitan strategy in place. A draft metropolitan strategy was not released until March 2013. This delay has led various parties to question the effectiveness of efforts aimed at promoting integration of land use and transport planning in NSW.

The plan was drawn up based on ‘*a review of evidence, expert opinion and public consultation*’. Eight objectives were developed to be used “*as a guide to assessing the best available options for building a world-class transport system for NSW over the next two decades*” with section 11 listing five assessment criteria: (i) customer benefits; (ii) capacity of the system to meet growing demand and changing expectations; (ii) reliability and resilience

of the system; (iv) efficiency taking into account the initial investment cost and whole-of-life costs and (v) achievability of the plan, taking into account risk and impacts. The Plan states that decisions will be based on *“solid evidence beginning with analysis of land use, objective assessment techniques and close monitoring of the effectiveness of initiatives”* with CBA mandated for projects and programs costing over \$10 million.

5. Economic appraisal manuals and guidelines

5.1 Australian economic appraisal guidelines

For smaller projects funded by DoIT there is no formal process or CBA evaluation procedure. General guidelines for Commonwealth agencies for project appraisal are outlined in the CBA Handbook released by the Department of Finance but there is no stipulated discount rate or required specification of benefits and costs such as resource or market prices, length of evaluation period etc. As the title would suggest, the Handbook recommends CBA for option evaluation over Cost Effectiveness and Multiple Criteria Analysis.

The Handbook does consider that the “aggregating character” of cost-benefit process can be obscuring” and recommends constructing a distributional incidence table to identify winners and losers but is less convinced by applying weighting systems since *“judgments entailed in the approach are almost always most appropriately made by government at the political level”*.

In terms of discount rate, the Handbook recommends that it should generally reflect the opportunity cost of capital (SOC) rather than a time preference or consumer rate of discount. The Handbook does not recommend an actual discount rate because *“the appropriate discount rate may vary from one year to the next, and is under continuous review. Nor is it possible to be prescriptive about project-specific discount rates because they will vary not only from one year to the next but also from project to project”*(p68). This view contrasts with the discount rate in NSW Treasury Guidelines that has remained at 7% real since 1989.

Austroads first published a CBA manual in 1996 and from then onwards the manual has been developed to include parameter values. A three-stage evaluation process is recommended with the first stage involving a strategic alignment assessment against broader strategies, policies and plans. The second stage involves a rapid assessment of the cost effectiveness of proposed options based on preliminary modelling and cost estimates and an initial assessment against project purpose and other assessment criteria. The third stage requires a detailed Business Case in which detailed modelling and evaluation including a risk assessment is undertaken.

The National Guidelines for Transport System Management provide parameter values as well as other general guidance regarding the appraisal of passenger and freight projects. However, there is a reasonable argument that the guidelines have not been widely used up to 2013 despite being endorsed by the Australian Transport Council (subsequently replaced by the Standing Committee on Transport and Infrastructure).

5.2 NSW road evaluation manual

The NSW Roads and Traffic Authority manual is similar to the Austroads manual utilizing the user cost database and engineering procedures developed by ARRB. General guidance is provided but for most projects undertaken by the Roads and Maritime Services (the successor to the RTA), computer software evaluation packages are used.

The manual includes vehicle operating costs, values of time and environmental costs. The manual focuses on estimating the benefits to existing road users with less guidance on induced or diverted demand (reflected in an absence of accident and externality cost parameters for rail).

A section on toll road evaluation is included but the manual notes that “calculating the total cost of the project and/or the contribution of the private sector to the project can be omitted in economic evaluations. What is relevant is the community cost to use this infrastructure and the benefits and costs that will follow. The Government input is the relevant cost. The price paid for use of the toll road (toll) is also relevant and normally represents the majority of the community cost of the project.”

5.3 NSW RailCorp capital projects evaluation manual

The latest version of the RailCorp economic evaluation manual was issued in December 2011. The manual does not include any parameter values to calculate operating and maintenance costs or estimate user benefit. A suite of parameter values are maintained by RailCorp that may be provided on request.

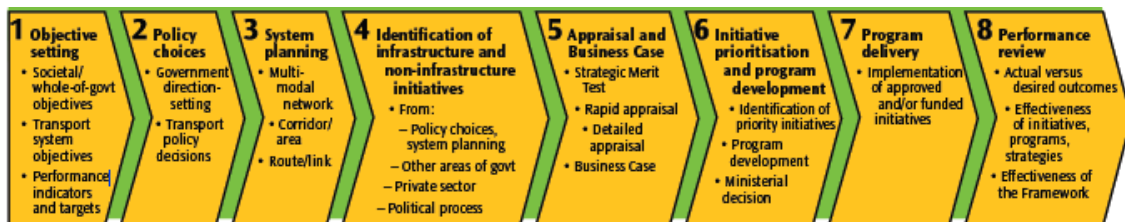
A distinction with the Australian road appraisal manuals is in the values of time and the weighting of different time components. To update these values each year, an index based on the NSW wage index and CPI has been developed, Douglas and Karpouzis (2011).

Emphasis is given in the RailCorp manual to generated demand. Typically, two thirds of project economic benefits are derived from ticket revenue and reduced car use with associated decongestion, accidents and reduced pollution costs and the remaining one third of benefits are derived from existing rail users. To forecast generated demand, RailCorp has developed a suite of elasticities undertaken in the mid 1990s and updated in 2006/8. Large scale surveys were also undertaken to estimate WTP values for service reliability, passenger security, information, ‘at station’ and ‘on train’ crowding, train and station quality. .

RailCorp usually undertakes a financial appraisal as well as an economic appraisal. In fact, two financial evaluations have been undertaken: one in constant real dollars (effectively an economic appraisal but excluding user and externality benefit) and one in nominal dollars to forecast cash-flows and funding requirements. The nominal evaluation has typically allowed for 3% inflation and 4% labour cost escalation with a discount rate of 10.21 assumed (1.07 x 1.03). In terms of reporting, the nominal financial evaluation results have usually been appended to the economic evaluation without commentary.

5.4 ATC NGTSM Guidelines

National Guidelines for Transport System Management (NGTSM) was produced for the Australia Transport Council (ATC) by the Guidelines Assessment Methodology Working Group with the first edition released in 2003 covering road, rail and intermodal transport. The second edition, released three years later in 2006, extends to 5 volumes including a volume on urban transport and presents an eight stage evaluation framework.



A 3-level appraisal process with corresponding business case development has been recommended:

- (1) Strategic Merit Test (Strategic Business Case) in which all proposed initiatives are evaluated
- (2) Rapid appraisal (Outline or Preliminary Business Case) of a filtered list of options

- (3) Detailed Appraisal (Full Business Case) of short-listed options to determine the best initiative(s)

The ATC guidelines cover demand and cost estimation techniques as well as evaluation. A set of recommended cost, benefit and externality parameters are included. The values have been based largely on a review of Australasian and overseas literature. For user benefit, the values of time, time multipliers and quality values reflect the averaging of 'Willingness to Pay' Stated Preference surveys. The Guidelines have been endorsed by all Australian jurisdictions. However, apart from providing 'default' parameter values, the guidelines have not been widely used.

In 2012, a project to update the Australian Transport Council (ATC) National Guidelines for Transport System Management in Australia (NGTSM) commenced. Amongst other aims, the study seeks to enhance the multi-model perspective, provide guidance on WEBS, incorporate the Austroads *"Guide to Project Evaluation"* and *"Guide to Road Transport Planning"* and increase the 'harmonisation' with other guidelines including Infrastructure Australia's submission framework, GHD (2012).

5.5 TfNSW Principles and Guidelines for Economic Appraisal

TfNSW released *"Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives"* (PGEATII) in March 2013. The manual brings together the RTA road evaluation manual and the RailCorp rail evaluation manual (see above).

The aims for PGEATII are to *"provide a consistent evaluation framework"* and *"improve resource allocation by ensuring that the strategic alignment and value for money assessment have been consistently determined across the transport cluster"*.

The document discusses general principles and provides guidelines and some structured methodologies (embedded Excel spreadsheets) for prototype transport projects such as the provision of bicycle facilities.

The manual also makes some recommendations that include the adoption of a common value of time for rail and road projects (see section 6.2) in NSW; basing evaluations on resource cost rather than market prices and treating road tolls as transfer payments and not as resource costs.

6. Recent developments in economic appraisal techniques

Drawing from the material presented in previous sections, two significant developments are Treasury gateway business case reviews and the centralisation of transport planning. Some comments are then made on toll road and cycleway evaluations.

6.1 Gateway reviews

In 2004, NSW introduced the UK Treasury 'Gateway Process' to provide greater assurance regarding as to whether investment proposals were warranted, strategic options were appropriate, and agencies had the capability and capacity to manage and deliver the project.

The experience of George Karpouzis (RailCorp chief economist up to 2010) was that the emphasis of gateway reviews was on engineering issues. Cost/benefit questioning was usually limited to concerns regarding recurrent costs. Scrutiny of the scope and measurement of benefits was much less and there was a general misunderstanding about the difference between financial and economic evaluations.

IN terms of the outcome of gateway reviews, the INSW State Infrastructure Strategy (page 27) argued that *"a number of major projects that have been selected have either been delayed or cancelled – notably the Sydney metro, a \$400 million bill for taxpayers for nothing"*

at all. The underlying failures leading to these outcomes have been poor planning and project selection rather than an inability to deliver”.

There are also concerns regarding the escalating cost of business cases, retrospective advocacy and ‘one-way’ directional process of the gateway process.

An example of business case cost escalation is the North West Rail Link. In 2006, the economic appraisal of six route/mode options by Douglas Economics for the Department of Planning cost \$150,000 (excluding a peer review by Booz Allen Hamilton). By 2012, the business case evaluation of the North West Link by Ernst and Young, originally budgeted at \$1.4 million, had cost \$4.1 million, Daily Telegraph (2013).

In terms of process, some Business Cases have not been completed and some not even started before Government has announced that the project is going to proceed. The most recent example is WestConnex. This \$10 billion road project was included in the INSW 2012 Infrastructure Strategy before any Cost Benefit Analysis was done. The project was then included in the TfNSW Long Term Transport Master Plan (LTTMP) released shortly after with the comment that the *“Sydney Motorways Project Office has been established and planning has commenced on WestConnex”* (p13), and that WestConnex will be *“progressively delivered in a series of stages over the next decade”* (p137). However, it was only on January 16th 2013, that the forthcoming development of a Business Case for WestConnex was announced.

The final concern is the ‘one way’ progression of business cases. Returning to the North West Rail Link (NWRL) example, the 2006 economic evaluation concluded that a heavy rail costing \$1.9 billion produced the highest BCR of 1.4. A cheaper bus Transitway costing \$600 million and a \$1.4 billion Light Rail option were rejected largely on the grounds of enforced interchange which contributed to lower BCRs of 1.08 and 0.85 respectively. By November 2011, the TfNSW submission to IA saw costs quadruple to \$8 billion and the service changed to single deck metro style trains with a forced interchange at Chatswood, TfNSW (2011).

Despite these major changes, the cheaper Transitway and LRT options were not revised nor the choice of corridor. Former RailCorp Planning Manager Dr Dick Day, the ‘architect’ of the CastleHill - Chatswood line and overseer of the 2006 evaluation commented *“the adverse impact on the very large number of passengers forced to interchange makes the minister’s decision to support the metro alternative without detailed public discussion truly heroic”* Day (2012). Recent survey based estimates of the perceived cost of transferring between trains for Sydney public transport users are relevant to the debate. For rail users, the cost of a transfer would be the same as adding eight minutes to the train time and this excludes the connection time. For bus users, the ‘pure’ transfer penalty was 50% higher at 12.5 minutes, Douglas and Jones (2013).

In terms of corridor, one alternative alignment considered in the 2006 evaluation was a bus Transitway (labelled TW7) from the Hills Centre to Parramatta, see Figure 3.

The bus transitway option (TW 7) had a capital plus land cost of \$760 million in 2005 dollars (one third that of the heavy rail link to Epping HR2) and produced a BCR of 1.09 compared to 1.4 for the rail link, Douglas Economics (2006).

Given similar numbers of people commuting from north-western Sydney to Parramatta CBD as to North Sydney and Sydney CBD; the fourfold cost increase from building the rail line ‘in tunnel’ for nearly the whole 21 kms instead of 9 kms in the 2006 evaluation; the enforced interchange; and, rail capacity issues through the Sydney CBD it surely would have been sensible to have revisited the economic question of linking to the ‘second city’ of Parramatta via a Transitway or LRT. The avoidance of these types of ‘higher order’ questions, given the limited funds for big transport projects that shape the metropolitan landscape, illustrates one of the core weaknesses in the current transport planning decision making process in NSW.

Figure 3: 2006 NW Transport Link Evaluation Options



6.2 Centralisation of transport planning in NSW

The centralisation of the transport planning function has meant that a single agency, Transport NSW (TfNSW) is responsible for planning and procuring road, rail and ferry services. It is too early to tell whether centralisation will produce better outcomes. On the one hand, centralisation allows road and rail planning to be integrated but on the other it distances planning from the 'grass roots' operations and maintenance where ideas often originate. Much depends on the quality of the professional relationships between the central planning agencies and the transport operators. Historically, these relationships could have been stronger. There is also a concern that cost control will weaken with only one agency procuring services. Including Infrastructure NSW and potentially IPART (as proposed in the White Paper) in reviewing infrastructure costs may help to avoid the cost escalation that has beset projects like the NWRL. For ports and airports, an opposite trend of asset divestment has occurred with the proceeds invested in an NSW infrastructure fund.

In terms of appraisal, centralisation has presented the opportunity to develop a 'consistent' appraisal technique. PGEATII represents a first step in this process with the amalgamation of the rail and road manuals. An important recommendation is the adoption of the same values of time for road and public transport investment (\$13.76/hr for private travel and \$44/hr for business travel). The private value is based on the 1997 Austroads 40% Average Wage Rate value but has been calculated using NSW wage statistics rather than Australia as a whole (with 'equity' implications for submissions to the Australian Government) and is argued to be a resource cost value because it is referenced to wages.

However unlike the original 1997 Austroads study where the 40% value applied to all time components (e.g. waiting time) TfNSW recommends weighting car access time by 1.2, walking access by 1.5 and waiting time by 1.5. Thus as an example, walking to a rail station would be valued at \$20.64 per hour compared to \$13.76 per hour walking all the way to work.

By contrast, RailCorp based its values of travel time and service quality on large scale Willingness to Pay surveys of its passengers. The most recent 2010/11 survey estimated a value of \$11.24 per hour (including GST) which is 80% of the 40% Austroads wage rate assumption. The replacement of this value with the 40% wage rate assumption will increase the value of rail time savings for rail projects by 20%. In terms of forecasting rail patronage response to service level changes, RailCorp's method has used WTP values in combination

with a set of estimated demand elasticities to forecast patronage response. The higher harmonised value will need to be applied with care to avoid over-estimating patronage response.

The move to a single equity value has the potential to introduce significant allocative bias into the appraisal process. Nash in 2010 sums up the problem succinctly: *“the British approach, again like many others, attempts to allow for equity considerations by using common values of time, risk of accidents and environmental amenity regardless of income. This might have been reasonable at a time when appraisal was mainly applied to road schemes which were paid for by the government but gave time savings to users, but now that appraisal is often applied to schemes which trade-off time savings against money cost (e.g. whether to replace buses with higher priced light rail services, whether to reduce road congestion by means of road pricing), it may be highly misleading. It would be quite possible for the appraisal to conclude that the scheme was desirable on the basis of a standard value of time, when according to the actual values of the users it was not (or vice versa).”* (Nash, 2010, p. 9)

Another related issue is the difference between behavioural parameters used in patronage forecasting and equity-economic parameters used in appraisals. As with the definition of what 'business case' actually means, the difference between behavioural and equity/economic is an area of considerable confusion.

The Bureau of Transport Statistics, which is within the TfNSW portfolio is developing a Public Transport Project Model to forecast demand for major transport projects including Light Rail and the NWRL. Mode choice is forecast incrementally to the Base Case which is calibrated on observation surveys and behavioural demand parameters (such as the value of time). For appraisal purposes, it has been suggested that the behavioural parameters are replaced with economic parameters which introduces the 'Nash' problems in reconciling the patronage forecasts with the user benefit measure.

There is a way forward which can accommodate both camps. It is to base values of time and other parameters on WTP surveys but to standardise the values for income. In this way, the income effect can be established but the parameters can still reflect the perceived differences in quality between buses, Light Rail and trains, Douglas and Jones (2013).

6.3 Toll road economic and financial forecasting

A special case subset of road infrastructure projects is the major urban toll way project, for which the two most recent projects in Sydney (Cross City and Lane Cove) and Brisbane (CLEM 7 and Airport Link) have been constructed on the basis of traffic forecasts that have proved highly optimistic causing projects to fail financially within the first year of opening. It is worth noting that the projects were privately financed thus the NSW and Queensland governments and Brisbane City Council have not themselves lost financially. Also the public has benefitted to some extent from their introduction.

The cumulative impact of these financial disasters is that the private sector has become far less willing to take on patronage risk. Private proponents have become extremely wary of committing debt, let alone equity, and are usually looking to government to fund projects through availability charges. This suggests that governments will need to be far more disciplined about their project planning and patronage assessments than evidenced in the aforementioned projects.

The appraisal of these projects has largely been financial, undertaken by private sector agencies independent of Government. They have also been largely confidential appraisals with the behavioural parameters (such as the values of time) governing the diversion from other roads remaining undisclosed.

It has been argued that a contributory reason for the over forecasting of patronage has been the "shortness" of the toll road. Hensher for example has argued that the time savings were too high because of *‘a failure in the market research to recognise that a high percent of time*

was spent on free roads not toll roads', see Douglas Economics (2013). However, CLEM7 and Airport Link are adjoining links and when put together they form a system similar to Melbourne CityLink (where patronage forecasts were better). All four projects have now passed the 'ramp-up' period and put bluntly, the patronage forecasts were simply too optimistic.

Not only has patronage been over forecast but costs have been underestimated. Project proponents and the forecasting community in general have seriously underestimated the capital cost of extensive tunnelling and the implications of the much high cost for the level of toll needed to self-finance the project. It is no accident that the four tollway projects that have gone 'belly up' are all 'in tunnel' where the cost of construction is roughly 10-15 times that for an equivalent surface road. Infrastructure Australia has commented in its reports to COAG that six lane tunnel projects were costing around \$600 million per kilometre and some recent projects now look to be costing even more than that.

6.4 Cycling and walking infrastructure projects

Cycling has a relatively low use in Australia at around 2% of trips compared with 10-20% in some other 'western countries', Infrastructure Australia (2009), and is even lower in NSW (0.8% for commuting trips around half the national share of 1.6% in 2006). However where dedicated cycle lanes have been introduced such as the Sydney Harbour Bridge, strong growth has been recorded, RTA (2011).

IA (op cit) noted that *"one of the barriers to creating better cycling infrastructure, cited by many countries, is that cycling and walking remain marginal in transport policy discussions and that national budgetary allocations usually reflect this status. Australia is no exception in this regard"*. In terms of evaluation, IA notes that *"further work is required to ensure that the assessment of benefits is sufficiently robust to meet the requirements of Infrastructure Australia's methodology and the Building Australia Fund criteria"*. In this regard, a Brisbane City Council submission *"Investing in Cycleways"* to IA noted that that, *"transport modelling has largely ignored cycling and consequently benefit cost ratio studies do not have a long history of analysing cycling"*.

In NSW in 2012, the RMS published guidelines to help agencies prepare bicycling plans, RMS (2012). Included in the document is a Cost Benefit Appraisal model and an 'embedded' Excel analysis tool.

The guidelines include parameter values to calculate the net economic benefit of additional cycling trips. Noteworthy is the assumption that cycleways will not generate time savings which is based on the premise that cycling is slower than driving or public transport journeys and will involve a net cost in travel time. However, health related benefits are included at 105 cents per additional kilometre cycled (offset by 54 cents of increased accident risk for on road cycling and 27 cents for off-road cycling).

In July 2013, the Australian Government released a ministerial statement on *"Walking, riding and access to public transport"* recognising the broad range of benefits that getting more people using 'active modes' promotes: increased capacity and reduced congestion in the overall transport network; reduced environmental impacts, improved public health and reduced healthcare costs; and, improved community wellbeing and social cohesion, DoIT (2013). The statement reports a Queensland Government study that estimated a community benefit of \$14.30 for each person cycling and 20 minutes to work and back and \$8.48 for each person walking.

In terms of evaluation, the statement acknowledges a lack of accurate data on cycle use that hampers the comparison of performance with other OECD countries. The statement also expresses the Australian Government's interest in working with states and territories to improve the monitoring and evaluation of investment.

6.5 Wider Economic Benefits

During the 1990s, major urban rail projects, for example the Sydney Airport Rail Link by Denis Johnson and Associates (1994), often included benefits from projects encouraging 'brown field' rather than peripheral 'green field' development.

From 2008 onwards, larger NSW rail projects factored conventional benefits (time savings, road decongestion and externalities) upwards by 10% to 20% to allow for Wider Economic Benefits (WEBs). WEBs originated in the UK where conventional benefits were unable to justify an underground tunnel to link the Paddington station in the west of London with Liverpool Street station in the east. Rod Eddington, former British Airways chairman, was appointed by the UK Prime Minister Tony Blair in 2006 to produce a report on Britain's transport needs. The report argued that *"good transport systems support the productivity of urban areas supporting deep and productive labour markets, and allowing businesses to reap the benefits of agglomeration...Correspondingly, transport policies offer some remarkable economic returns with many schemes offering benefits several times their costs, even once environmental costs have been factored in"*, Eddington (2006).

Infrastructure Australia, headed by Rod Eddington is the only agency in Australia that has developed a detailed framework for funding submissions. Ironically it has not accepted 'WEB factoring' unless *'detailed analysis has been undertaken'* such as for the Cross River Rail in Brisbane and work by the Victorian Government on Melbourne Metro.

Indeed, it is conceivable that dividing rather than multiplying benefits may be the correct factoring approach for some schemes given their flow-on capacity and negative environmental impacts on the one hand and their withering effects on peripheral areas on the other.

A 'refresher' course on 'Hotelling' economics (Hotelling, 1929) and a return to the regional economics of the 1970s is overdue. The new generation of planners need educating that their role may be to work against the market and promote a more economically efficient spatial distribution of activity across metropolitan areas and regions rather than reinforce a market driven polarisation of development.

7. Summary and Conclusions

Transport project appraisal in Australia centred on Cost Benefit Analysis dates back to the 1960s. From tentative beginnings, through a period of relative stability in the 1980s and 90s, the core approach has largely remained unchanged. Where change has occurred it has been in terms of firstly the scope of benefits considered and secondly when CBA has been undertaken in the decision making process.

CBA remains the favoured evaluation technique and it has been at its most useful in assisting management in making changes to project scope on medium sized projects. It has been of little use in developing long term plans or influencing decisions on large scale projects. Recent large projects have been announced as 'happening' by Government before CBAs have been completed or as in some recent examples even started. For these projects, CBA has become an exercise in retrospective justification with all the ensuing biases and cynicism that such a process entails.

The increasing cost of urban road and rail projects from 'tunnelled solutions' has made CBA justification next to impossible. Whilst costs have increased exponentially, project benefits have only increased in line with inflation. To get projects to 'stack up', patronage and revenue forecasts have been inflated as in recent toll road forecasts. For rail projects, conventional benefits have been factored for 'wider economic benefits' stemming from the alleged and largely unprovable benefits from 'agglomerated' economic activity.

Rather than inflate project benefits, it may instead be wiser to recast the problem at a higher planning level. Then, instead of myopically focussing economic activity on already congested

urban cores, options that diversify growth to comparatively under-utilised and in some cases withering second order centres would come to the fore.

In parallel with the focussing of urban transport solutions on urban centres has been a centralisation of the transport planning and procurement function in NSW under a single umbrella organisation; Transport for NSW (TfNSW). TfNSW has sought to introduce a 'consistent' framework for transport system user benefits calculation with common values of travel time for bus, rail and car travellers. Although justifiable in terms of social equity, the adoption of common time values for all travellers moves evaluations away from 'willingness to pay' principles and in doing so creates potentially incorrect and economically misleading transport solutions. A review of this change needs immediate reconsideration. The benefits as well as costs should reflect the transport projects being evaluated and this could still be done whilst allowing for income standardisation.

It has been noted in this review that in NSW and within the Commonwealth Government agencies, the economic appraisal and planning (e.g. environmental assessment) phases for major transport projects are becoming increasingly divorced and it is time now to consider recombining project level economic appraisals as a core component of project environmental approvals, including full economic valuations, where this is currently technically feasible, of the social and environmental impacts of projects.

Finally, a trend that needs to be applauded is the increased promotion of walking and cycling as active modes for urban transport and the desire for greater data collection to facilitate evaluation and funding applications for walking and cycleway infrastructure.

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