

A REPORT CARD ON THE NATION'S INFRASTRUCTURE



INVESTIGATING THE HEALTH OF AUSTRALIA'S
WATER SYSTEMS, ROADS, RAILWAYS AND BRIDGES.

THE INSTITUTION OF ENGINEERS, AUSTRALIA AND GHD PTY LTD

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message from the
PRESIDENT



1. Message from the President of the Institution of Engineers, Australia

The Institution of Engineers, Australia (IEAust) is the peak professional body representing Australia's engineers. Many of its [65,000] members are actively involved in the provision, management and maintenance of Australia's infrastructure. Infrastructure is important because it involves the mechanisms by which our energy, water, transport and telecommunications systems operate. Disruptions to these services have direct and often immediate impact on economic and community well being. For some years IEAust has highlighted a number of issues concerning the state of Australia's infrastructure and the mechanisms for determining the most considered allocation over such an enormous land mass. It has expressed its concerns to Government, industry and the profession itself. Pre-eminent amongst these issues are:

- Overall reduction in capital and recurrent spending on infrastructure with implications for proper maintenance of existing assets.
- Lack of planning and co-ordination of infrastructure provision, particularly on a national level.
- Lack of consolidated, consistent, comparative and up to date information on infrastructure assets.
- The massive shift in the engineering workforce from the public to the private sector with implications for corporate knowledge loss in utilities.

In response, IEAust has proposed the following actions:

- Establishing a National Infrastructure Advisory Council with public and private sector representatives to facilitate the efficient and equitable provision of national infrastructure. It would achieve this through:
 - the development of long-term strategies and defined research projects.
 - clarifying and facilitating the new roles of the public and private sectors in infrastructure provision and maintenance.
 - implementing effective asset management including obtaining adequate data to establish benchmarks for deciding on capital and recurrent expenditure.
 - giving full consideration to community service obligations and environmental issues to ensure balanced decision making.
- The Commonwealth, State and Territory Governments should consolidate existing public sector expertise within their respective jurisdictions into single departments having government-wide responsibility for infrastructure and where appropriate, regional development.

The objectives of this document are to:

- highlight the issues;
- encourage debate; and
- initiate action.

thus seeking to arrest the deterioration of Australia's infrastructure.

Ian Pedersen FIEAust CPEng
National President
Institution of Engineers, Australia
November 1999

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2. Overview

In recent years there has been a considerable amount of discussion concerning the provision of infrastructure in Australia. Many commentators have raised concern with the level of spending, while others have raised the issue of efficient use of economic resources and the need for overall co-ordination and planning. Concerns have also been raised about social and environmental impacts and intergenerational equity, the disparities between rural and city areas and between categories of infrastructure, eg road and rail.

Corporatisation of Government Trading Enterprises (GTEs) have resulted in greater emphasis on rate of return for capital investment, often to the detriment of recurrent (maintenance) spending. Many GTEs have also been under considerable pressure to maximise financial return to their shareholders (State Treasuries) resulting in a reduction of spending.

National Competition Policy has initiated significant structural reforms in regulation, contestability, competitiveness and pricing resulting in major changes to infrastructure provision and management.

In 1998 three events — Auckland's Power Failure, Sydney's Water Health Scare and Melbourne's Longford Gas Explosion dramatically demonstrated the 'essential service' nature of infrastructure and raised the level of debate to the front pages of the popular press.

For some time, IEAust has voiced its concerns and has urged Australian Governments to take action which acknowledges that new responses are required to manage our infrastructure assets. A key recommendation is the establishment of a National Infrastructure Advisory Council.

“The single major issue which constrains the effective assessment and realisation of major infrastructure projects and programs in Australia is the lack of any widely accepted national planning mechanisms. Some economists and politicians even question the need for planning, preferring to cling to the faith that, somehow or other, market forces will generate the desired outcomes. Sadly, we have yet to achieve any consensus on processes and structures by which the national interest can be given its due weight in infrastructure development”.(Ref 1)

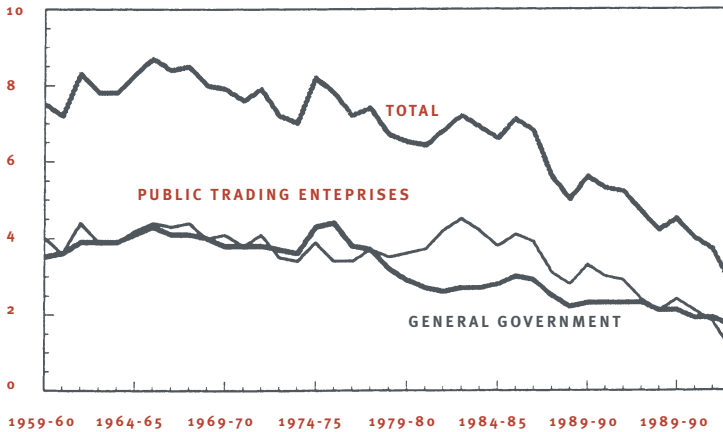
It is necessary to clearly define infrastructure since this has a significant affect on data and bench marking. IEAust has adopted the definition of “*public infrastructure*” utilised by the Economic Planning and Advisory Council (EPAC) which defined infrastructure as: “*comprising transport and communications facilities, and production and transmission facilities for electricity, gas and water*”.(Ref 2)

Is our infrastructure adequate?

There is no simple answer, although there are a number of points to be considered. McAuley (Ref 3) analyses some of these.

- There is evidence of infrastructure improvement (eg Pacific Highway in NSW) although this is inconsistent and often sector and regionally biased (eg poor telecommunications and data transmission in rural areas compared to cities).
- There has been a significant decline in public sector capital expenditure. The chart above shows a decline in public sector capital expenditure from around 8% GDP to around 2% GDP over 40 years. Although the need for such expenditure and the validity of such measures is often criticised. EPAC commented that:

Public Sector Capital Expenditure PERCENTAGE OF GDP



“Changes in Australia’s demographic structure and significant improvements in the efficiency with which we manage our infrastructure are but two factors which highlight the superficial nature of an aggregate spending argument”. (Ref.2)

There is clear evidence of the need for increased spending in certain sectors.

- Lindfield analysed requirements for transport, water and sewerage in Sydney, Melbourne and South East Queensland and concluded:

“with exception of water/sewerage in Melbourne and roads in Brisbane all required yearly expenditures on urban infrastructure over the next ten years in excess of 50 per cent of current public capital spending”. (Ref 4).

- ALGA in its submission to Federal Road Funding Inquiry stated *“The total expenditure needed for Local Roads in 1995/96 was estimated at \$3.1 billion or nearly 50% more than currently being allocated”. (Ref 5)*
- The Rail Projects Taskforce has recommended the expenditure of an additional \$470M by June 2002 just to bring national track up to an acceptable standard. (Ref 6).

The role of the private sector

Private sector investment is to some degree filling the gap in infrastructure spending, but it is very selective. The high financial returns necessary have led to a dominance of investment in projects such as metropolitan tollways or water sewerage schemes which rely on “user pays”.

Overall the last 10 years has seen a significant change in the balance of funding. The private sector has funded a number of major projects (eg Melbourne City Link) and taken over public enterprises (eg. Victorian Electricity and Railways) *“there is now some \$70 billion of privately owned public infrastructure in Australia, just from privatisations, and other \$15 billion of private investment in new projects. The first category ranges from power stations and distribution networks to ports, airports, rail freight and gas transmission and distribution systems. The second includes water plants, toll roads, rail, gas pipelines, power plants, prisons and hospitals”.* (Ref. 7)

Private involvement in projects such as public transport systems, regional highways and lower capacity telecommunications has been minimal and requires favourable taxation treatment or subsidy to attract the private sector.

Private–public partnerships will need to continue to be strategically fostered. In its submission to the Inquiry into Infrastructure and Regional Development, the Department of Transport and Regional Services concluded that, *“the principal problem with private sector funding of regional infrastructure proposals remains commercial viability. The underlying reality is that projects with limited commercial viability, including many in regional Australia, struggle to attract private investors. Given this situation, arguments can be made for closer public–private partnerships to ensure the provision of regional infrastructure. Our tax system currently makes such partnership highly problematic”.* (Ref. 8)

A co-ordinated and planned approach

There is a need for overall co-ordination and planning to ensure that competing projects and sectors are properly evaluated.

The Rail Projects Taskforce recommended the development of a National Transport Strategy *“that will secure a seamless domestic transport system embracing road, rail, sea and air transport”*. (Ref 6)

It is important in assessing the level of infrastructure spending to ensure that money is appropriately spent. EPAC recommended that target of *“good projects efficiently delivered”* and recommend that *“Getting the right projects means avoiding over or under provision of infrastructure. This requires sound investment evaluation. It also means taking into account the social and environmental effects of such investment when choosing projects and allowing them to proceed”*. (Ref: 2)

This is a common view expressed by many commentators, some of whom have cautioned against a too rigid economic rationalist approach through National Competition Policy.

In its submission to the Inquiry into Infrastructure and the Development of Australia’s Regional areas, the National Farmers Federation commented that *“this inquiry needs to make a detailed examination of whether current competition policy is forcing too narrow a definition of costs and cost recovery and overlooking broader economic benefits, thus shutting off investment in rural infrastructure.”* (Ref: 9)

The Rail Projects Taskforce recommended that *“external benefits and costs of transport options be evaluated from a national perspective and in a transparent and consistent manner. These external benefits and costs to include those associated with accidents, congestion, pollution, greenhouse gas emissions, noise, reductions in the need for other infrastructure, and impacts on industrial development, employment and regional development”*. (Ref 6)

A common problem for Governments is establishing need and priority. For example, the NSW Ministry of Urban Infrastructure Management (Ref 10) has identified three major criteria *“to assess the merits of an infrastructure project. They should:*

- *meet a clear social need*
- *be consistent with existing government policies and requirements*

- *produce more benefits than costs”*

In addition infrastructure projects must fit within four key Government policy initiatives

- *“integrating **environmental protection** into all activities*
- *encouraging **economic development and employment growth***
- *achieving greater **social justice** for all members of the community and creating liveable cities*
- *delivering more **financially responsible** programs that reduce public debt and unfunded liabilities”*

In a recent survey of rural communities in NSW, (Ref 11) the following infrastructure needs were ranked highest.

- Regional roads — funding, disrepair, backlog;
- Telecommunications — network capacity, call rates; access/coverage; and
- Water and Sewerage — water quality, technology upgrades, funding.

The need for better data

One of the shortcomings is the lack of timely, consistent and complete data. The lack of data and bench marking undermines the robustness of decisions.

The Victorian Local Government is 1998 Infrastructure Study identified significant deficiencies in data. This related to information on existing assets and surveys and analysis to determine needs. *“Councils were unable to distinguish between capital spending that was designed to renew existing services, upgrade or improve existing services, or extend services to a greater volume of rate payers”.* (Ref 12)

Over the last five years the Australian urban water industry has significantly improved its database and the National Competition Council has endorsed the Water Services Association of Australia facts yearbook as meeting its bench marking requirements.

Unfortunately, this only concerns its 19 member organisations and generally only urban areas. (Ref 13)

The Australian road transport sector has a well developed performance measurement system although this covers the major agencies only. A recent review has commented that the system “*is well ahead of systems in most other countries*” but recommended improvements to the system “*to move towards a more performance influenced management system*” (Ref 14).

There is very little consolidated and consistent data available for Local Government assets.



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ON THE NATION'S INFRASTRUCTURE



The
Institution
of Engineers,
Australia



MANAGEMENT
ENGINEERING
ENVIRONMENT

Investigating the Health of Australia's Water Systems,
Roads, Railways and Bridges.

Graded by GHD pty ltd. Commissioned by The Institution of Engineers, Australia

A = Excellent, B = Good, C = Adequate, D = Poor, F = Inadequate

A REPORT CARD ON THE NATION'S INFRASTRUCTURE



Subject	Grade	Comments
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National Roads	C	National roads vary in quality from good to poor. Investment has been very selective (eg Pacific Highway vs New England Highway). Overall they can be rated as average.
State Roads	C-	State roads are of variable quality. Private sector investment has concentrated on major urban roads, but Government has not matched this in rural areas nor for minor roads. Urban traffic congestion is a major problem (\$13 billion cost in 1995). In general they can be rated as average to poor.
Local Roads	D	Because of the age profile and condition of local roads, they can be rated at no better than poor. Suburban roads suffer excessive traffic and congestion. Rural roads lack funding.
Bridges	D	Major deficiencies in State and Local road bridges. Will be exacerbated by increased mass limits. There are still timber bridges of variable quality on important roads.
Railways	D-	Considerable variation exists in the standard of infrastructure ranging from A+ to F-. A significant amount of Australia's rail infrastructure can be considered F- (eg Melbourne to Sydney to Brisbane corridor). Without substantial upgrading in the intercapital services, Australia will not benefit from rail's potential.
Water	C-	Ageing infrastructure is a major problem as many assets are 50 to 100 years old. Water resources are limited and excessive irrigation has led to severe degradation of inland rivers. The conservation and availability of water more generally will become a critical issue.
Sewerage	D-	Ageing infrastructure is a major problem as many assets are 50 to 100 years old. Sewage treatment and disposal often does not meet community and environmental standards.
Management and Planning	D	Varies considerably with each Government. Very poor planning between infrastructure sectors at national level. Some States have established management groups to co-ordinate planning and expenditure. Very poor co-ordination between local governments, but good within individual Council areas.
Benchmarking	D	Some sectors have good data and are now undertaking analysis (eg urban water and sewerage). Overall needs more co-ordinated approach and more rigorous implementation. Objective should be to establish benchmarks against national and international criteria such as Austroads' criteria for road transport.

The gradings represent an average over a number of criteria, including adequacy, need, funding, condition, performance, and social and environmental issues. They are based on an assessment using the information drawn from the extensive reports listed in the Report and the engineering knowledge and experience of the author. NOTE: These results are similar to a scorecard project in the USA in 1998. The American Society of Civil Engineers issued a national report card for America's Infrastructure, in which the highest grade reported was C-

Selected
Infrastructure
SECTORS



4. Selected Infrastructure Sectors



4.1 Roads

4.1.1 Overview

Roads are provided for cars and buses for the transport of people; light commercial vehicles and trucks are provided for the transfer of goods; roads additionally provide access for pedestrians and bicyclists.

Roads are constructed and maintained primarily by government — federal, state and local. Roads are also provided by the private sector. The roads provided by the private sector are mainly sub-divisional roads and toll-roads. The maintenance of private sector sub-divisional roads is transferred to government following construction; the maintenance of toll roads is carried out by the private sector for the duration of the concession.

On the positive side, roads are a great amenity to people, with most having access to the road system and a vehicle to use on this system. Roads provide most passenger travel in urban areas. The use of rail public transport has fallen from a high of 40 per cent of total urban passenger transport in 1945 to around 4 per cent in 1995, and the trend is likely to continue. Almost all the growth came from cars and other road vehicles (*Ref 15*). Roads have played a major role in the opening up of Australia to the economic activities of the mining, agricultural, tourism and manufacturing industries. The development of motorisation in Australia since 1950 has also displayed strong social equity characteristics, with most of the growth in private travel in recent decades coming from women, who have provided some 76% of the growth since 1985.

On the negative side the increase in motorisation has meant that traffic numbers in urban areas are significantly higher, with a resultant loss of amenity. Air and noise pollution are also

significantly higher. Accidents and fatalities have dramatic impacts on all sections of the community. Road congestion in urban areas is a significant problem. If current trends continue the cost of congestion could triple to \$30 billion per year by 2015 (*Ref 15*).

4.1.2 General Statistics

The Australian Road Network

The total road length in Australia has remained constant at around 800,000 Km since 1945. Over this period there has been a decrease in the unformed length of road by about 300,000 Km and an associated increase in the length of paved roads.

Value of Assets

Preliminary assessment of road asset values for 1995, for national and state highways, place the value at \$92 billion of which \$27 billion is land value. There is no consolidated data for local roads, however the Victorian Infrastructure Study (*Ref 12*) estimated the replacement cost of Victoria's local roads, bridges and footpaths (excluding land) as \$14.9 billion. The equivalent NSW estimate by the NSW Department of Local Government is \$22.6 billion.

Road Expenditures

Commonwealth, State and local government road expenditures in 1996–97 were \$1.6 billion, \$2.8 billion and \$1.8 billion, respectively, a total of \$6.2 billion (*Ref 16*). Of this amount approximately 60% was spent on maintenance, and 40% on asset extension / improvement.

4.1.3 Relevant Issues

The most relevant issues facing the management of roads systems are:

1. Congestion, Amenity, Efficiency

There are too many cars on our urban roads. Delays resulting from traffic congestion are a part of our modern way of life. It is

estimated that the cost of traffic congestion on the roads in Australian cities will triple to \$30 billion in the next 15 years. Congestion means that our journeys take too long, we use too much fuel and air pollution is higher than it should be. Congestion on roads means loss of amenity to all sectors of the community.

The efficiency of freight movements in urban areas is low because of the congestion and because of the absence of a continuous network of primary roads to accommodate the heavier articulated trucks. In particular there is a deficiency in the provision of urban ring roads.

Transport from the suburbs to the city is no longer the primary transport requirement; inter suburban travel for work and studies necessitates road transport. Increasing the use of public transport is desirable but not necessarily achievable.

2. Quality and Design

The national highway system is deficient.

“Take the terror drive from Gundagai to Albury on the winding two lane road known as the ‘Hume Highway’, connecting two cities of three million people” (Ref 3).

Although there has been considered improvement of some major highways (eg Pacific and Hume) there is still significant upgrading to be completed and some such as the Newell require major works.

Rural roads have particular problems. Most rural roads were built around the same time and road bases are reaching the end of their lives simultaneously. Bridges tend to be timber and are also reaching the end of their lives. Larger vehicles are using the roads amplifying the damage to the pavement and road bases.

Additional expenditure is needed to correct these problems.

Road design and quality contribute to the accident rate. Consideration should be given to diverting funds away from areas of satisfactory performance, such as pavement condition, towards road components that increase rural road safety, sealing of road shoulders and the provision of road delineators for night time driving.

3. Accidents, Fatalities, Health.

Accidents and fatalities are still a major concern despite substantial efforts by Commonwealth and State Governments. Efforts must continue to reduce the frequency and severity of accidents. Road accidents and fatalities could be significantly reduced by the greater provision of divided highways and controlled entrance freeways.

There have been significant improvements in air quality in recent decades, but the effects of motor vehicles on air quality in our major capital cities is still considered to be a problem by many in the community. Concerns arise from the effects of particulates and oxides of nitrogen on health in particular.

Motorisation has led to a sedentary life style and a greater risk of diseases to the human circulation system. Bicycling is an excellent exercise, however, too few provisions are made for bicyclists. In recent times there have been a number of new projects which are seeking to proactively address this issue. The Castle Hill “Bikeways Pilot” project is a collaborative project that unites Baulkham Hills Shire Council, State Government agencies, local and state cycling groups, business and industry, to champion the introduction of a comprehensive integrated cycle network in Castle Hill by the year 2000.

4. Income, Funding and Resource Allocation.

There has been considerable Government funding of roads in recent years and considerable debate as to whether such funding is warranted or insufficient. There are many valid arguments for increased funding of other transport sectors particularly rail and public transport. However whether this should be at the expense of roads is unclear. John Cox in the recent Austroads Publication “Roads in the Community, Part 1, Are they doing there job?” commented thus:

“The very small rise in the capital stocks of roads in recent decades, which has been due to declining investment levels and increasing expenditures on road maintenance, is a major concern because of the effect of road capital stocks on national

productivity. Although there is some doubt on the exact magnitude of this effect, there is no doubt that better roads lower vehicle operating costs, wages and accidents and therefore reduce the internal costs of business". (Ref 17).

Government Funding

"The public budgetary environment is not supportive of infrastructure investment. Basically, welfare and entitlement programs have tended to crowd out other aspects of public expenditure, including infrastructure" (Ref 3).

The total amount of road-related expenditure by the Commonwealth, State, territory and local government in 1996 – 97 was \$6.2 billion. Revenue collected from petrol tax and vehicle registration, \$13.9 billion, substantially exceeded the cost of construction and maintenance of roads. Because of the excess of income over expenditure, it could be argued that expenditures should be increased. However, the Bureau of Transport and Communications Economics is of the view that there should not be any direct linkage between the two; revenue collected should be paid into consolidated revenue accounts and allocated as seen appropriate by government. (Ref 16).

Many organisations dispute this view. The Australian Local Government Associations (Ref 5) pointed out the significant shortfall in funding and concluded that *"The total expenditure needed for Local Roads in 1995/96 was estimated at \$3.1 billion or nearly 50% more than currently allocated"*.

and contended that

"the shortfall of \$1 billion should attract increased Commonwealth funding from the Federal Fuel Excise particularly as only 15% of the revenue is currently returned to the community for roads"

and that

"the fuel excise returned to roads should increase from the current 7 cents per litre sold at the petrol pump to at least 14 cents per litre, providing Local Government with another \$350 million for roads"

Not only are there substantial differences between revenue and expenditure, there are very substantial cross-subsidies between city cars and light commercials, and trucks. Heavy vehicles contribute up to several thousand times more road damage per kilometre as do cars and light commercials — as reflected in road maintenance costs; cars and light commercials collectively contribute by far the greatest proportion of petrol tax and registration revenue. On local roads, where grain carriers, coalmines and loggers use these roads, and the businesses benefiting are not significant local rate payers, the cost of significant additional damage resulting may not be recovered by local government.

It is also argued that current ratepayers are only paying about half their average consumption of assets, giving rise to serious inter-generational problems. (Ref 12). Conversely, EPAC advises governments to be wary of arguments for substantial increases in aggregate spending on infrastructure (Ref 2). EPAC sees that there is clearly a need to better allocate our investment dollar and to focus on good projects efficiently delivered. To this end, recognition of the social and environmental impacts are crucial if the community is to invest in the right projects.

Private Funding

“Private sector guidelines should specify that the choice between public and private provision will be based on which party can provide infrastructure most efficiently(in the broad welfare sense) rather than on the need to minimise the financial burden on governments. This in turn implies that governments should allocate risk to the party best able to bear it, and not seek to automatically shift as much risk to the private sector”. (Ref 2)

There has been a long term decline in infrastructure spending by government. This spending has not been fully replaced by the private sector, and this is seen as market failure. A number of factors are seen as contributing to this market failure.

One area of concern in unregulated markets is risk management (if the risk is borne by the private sector there will be a risk

premium to be paid throughout the life of the project). Allocating risk to the party best able to bear it is essential to efficient private sector involvement and a high priority for policy improvement.

Private funding is allocated to roads which will generate the most revenue, rather than to the project that is most required. Tolls on these roads distort the use of the road leading to economic inefficiencies. There is a need to ensure that good projects are chosen and are efficiently delivered.

When considering the use of private-sector funding for infrastructure, due care must be paid to ensuring that the correct balance is achieved between new asset acquisition and renewal.

Asset Management

The techniques of “whole of life” management of road assets are well developed and understood and a number of models have been developed which enable a logical approach to balancing maintenance, upgrade and renewal decisions. However, the implementation of strategic asset management is variable and local roads, particular in rural areas suffer from insufficient allocation of funds.

The Victorian Infrastructure Study (*Ref 12*) has examined these issues for local Government. Roads were identified as a major asset (approximately 50% of total asset value) and significantly required the greatest future renewal expenditure.

The Study concluded that although *“the amount of money needed to maintain existing infrastructure would not change significantly over the next 10 years, the following 20 years will require significantly increased spending”*.

The Study’s recommendations emphasise:

- *“the recognition that asset management is a corporate, not a technical responsibility;*
- *the need for good information;*
- *the need for comprehensive asset management planning*
- *the need for community involvement in establishing service standards;*
- *the need for rigour in financial assessments; and*

- *the need for performance measurement of asset management.*”

This issue was also recognised in the ALGA submission (*Ref 5*) which commented that urban Council’s considered they were spending 65–75% of what was needed for routine maintenance of sealed roads and rural Council’s 50–70%. Unsealed roads ranged between 45–85%.

4.1.4 Consequences of the Issues not being Addressed

Failure to address these issues will have the following consequences:

1. The cost of congestion could triple to \$30 billion per year.
2. The efficiency of freight movements in urban areas will fall further.
3. Environmental damage will continue at an increasing rate.
4. Accidents and fatalities will not decrease.
5. Public amenity will not be improved.
6. Growth will not reach potential levels.

4.1.5 Future Directions

The Australian road transport system is reaching maturity, with growth rates of the sealed road network, road expenditure and vehicle travel / capita declining. There is a pronounced slowing of the growth in private travel as the percentage of people who have driving licences reaches maturity in an ageing population. Notwithstanding, the Bureau of Transport and Communications economics estimates that \$16.8 billion will be required for non-urban sections of the National Highway System from 2000 to 2020, with \$2.6 billion of this amount warranted immediately (*Ref 18*).

It is projected that commercial road travel associated with economic activities will come to the fore in the next 50 years. There will be a rise in the number of heavy vehicles in urban areas, and there will be a high growth rate of light commercial vehicle travel associated with the rapid growth of service industries in urban areas. The pollution emission characteristics of light commercial vehicles are worse than cars, and they tend to

operate in inner city areas. There will be the potential for increased pollution from this source.

- There will be a need for stricter emission standards for light commercial vehicles.
- there will be need to have a much more differentiated hierarchical road system to separate cars, commercial vehicles and trucks.
- because our primary road system has been built for commuter traffic, there is a need to construct ring roads.
- there is a need to improve the overall quality of the urban transport system.

To meet these needs we must ensure that the urban road users meet the total cost of their use of the road system, and that the needed capital investments are made in a hierarchical system of urban roads.

It is also important that the recommendations of the Federal Road Funding Inquiry — Planning not Patching (*Ref 19*) be implemented, particularly those related to funding, asset management and prioritisation.



4.2 Bridges

In recent years there has been considerable debate concerning the issue of higher mass limits on trucks with consequent impact on bridges. Legislation, supported by the States, was passed in July 1999 increasing mass limits. This followed the National Road Transport Commission Mass Limits Review in 1996 which showed that an additional 3 tonnes gave a NPV of \$1.38 billion (*Ref 17*).

The States have undertaken extensive investigation of bridges in order to make applications for funding. There is, however, considerable difference in identified need. The Australian Financial Review (October 22, 1999) has reported that NSW has requested \$700 million for bridge upgrade funding and ACT \$15 million. The Federal Government has allocated \$20 million, nationwide.

IEAust has been unable to obtain copies of State and Federal submissions on bridges and thus has been unable to review and comment on the state of bridge infrastructure.

Suffice to say that in Planning not Patching, (Ref 19) the Standing Committee stated:

“Deficiencies in bridge infrastructure are emerging as a major weak link in Australia’s road network. Inadequate bridge infrastructure imposes constraints on the social and economic development of Australia. The proposed introduction of increased mass limits for heavy vehicles will exacerbate the problem but it is not the primary cause of deficiencies in the bridge stock. Issues including age, design, and the construction of bridge stock contribute significantly to deficiencies in bridges. As bridges are an integral part of the road system, all three tiers of government need to develop a program to address bridge infrastructure deficiencies.”

Based on the AFR article the issues remain unresolved.



4.3 Rail

4.3.1 Overview

The Australian Rail industry has undergone major change in recent years. State based systems are being transformed into a private/public structure which distinguishes ownership, operation and regulation.

Today, the rail industry in Australia is a very diverse industry. It is no longer just the government owned railways and is much more than the commuter trains seen in the major cities.

The majority of companies trading in the rail industry are in the private sector and are profitable enterprises trading in highly competitive domestic and international markets. (Ref 20)

Currently there are 20 rail freight operators (5 Government owned) and 18 rail passenger operators (5 Government owned). Of the 20 freight operators 10 can be considered as major

operators (carry more than 10Mtpa). Five of the rail passenger operators can be considered as major operators (carry more than 25,000 passengers per annum) (Ref 21).

Significant structural change is occurring.

In NSW, the Rail Access Corporation (RAC) manages rail infrastructure, facilitates operator access to the network and outsources track maintenance and construction.

In Victoria, the Public Transport Corporation's metropolitan and country operations have been franchised to private companies.

In Western Australia and Queensland, the rail systems remain vertically integrated, profitable, government owned business enterprises with responsibility for their entire operations. However the Western Australian Government intends to privatise Westrail in the near future.

In northwest WA, private, vertically integrated railways haul iron ore from mine to port on some of the world's longest, heaviest and most efficient trains. Other vertically integrated private railways operate in SA and Tasmania.

Why do we need a rail industry?

The rail industry is a significant contributor to the Australian economy.

Australia's extensive rail system serves intercapital markets and many important economic regions. Railways are essential to the nation's economy as they form an integral part of the distribution process for intercapital freight and a range of regional produce and bulk export commodities. (Ref 22)

Compared to other transport modes railways offer significant safety, efficiency and environmental advantages.

Investment Needs

In recent years there has been a significant imbalance of funding for railways. "Between 1975 and 1997 the Federal Government spent \$33 billion on roads and \$1.8 billion on rail" (Ref 23). The

Neville Inquiry Report “Tracking Australia” (Ref 24) commented as follows:

“There are strong reasons for increasing investment in public use rail infrastructure. In addition to the obvious benefits of maintaining a diversified national transport system, there are the benefits of more effective and efficient use of the nation’s rail assets, generating economic benefits for rail users and the wider community.

Less positively, there are the potential costs of losing those assets. Without urgent and substantial investment in this infrastructure, major sections of the national rail network are likely to become irretrievable within ten years. In this context, the rationale for increased investment in rail infrastructure has to be about averting the potentially enormous costs of diminished or defunct rail services between major cities on the eastern seaboard, including increased road construction and maintenance, and the negative externalities associated with large and growing volumes of road traffic”.

Tracking Australia has recommended an additional investment of \$750 million for national track upgrading over the next three years and \$2 billion for investment in rail infrastructure of national significance over the next ten years. The Rail Projects Taskforce has reviewed these estimates and recommended a minimum \$470 million investment by June 2002. (Ref 6)

4.3.2 General Statistics

The Australian Rail Network

The Australian Railway Association describes the rail network as follows:

Australia’s state rail systems comprises 34,530km of track, while private rail operators have 6,073km of track including 4,150km of sugar cane railways in Queensland. The mainline rail system comprises the 6,922km standard gauge interstate network plus the 1,600 km narrow gauge link between Brisbane and Cairns.

The rail industry also includes the 240km tram network in Melbourne, the 14km tram system in Adelaide, the 3.6 km light rail system in Sydney, the 8.5km skitube from Jindabyne to Mt Kosciuszko and the 3.6km Sydney Monorail. (Ref 20)

The majority of the rail network dates from the turn of the century although there has been significant new development, particularly in mining areas such as the Pilbara, in 1960s and 70s. There has also been significant upgrade and renewal in some areas e.g. Queensland electrification and track upgrade. Rolling stock is generally being progressively upgraded and replaced.

4.3.3 Relevant issues

The most pressing issues facing the rail industry are:

1. Rail Infrastructure

The quality of Australia's rail infrastructure varies dramatically, ranging from the Pilbara region iron ore rail network (considered to be in accordance with world's best practice) to the 'steam age' track alignments that exist between Melbourne–Sydney–Brisbane.

In particular it is Australia's mainline interstate track that is in urgent need of improvement and, without immediate capital investment, will continue to deteriorate to the point that inter capital rail operations will become 'irretrievable'. (Ref 25)

Case Study:

The recent Main Line Upgrade of the Brisbane to Cairns link was carried out by Queensland Rail at a cost of \$590 million. The upgrade involved extensive curve easing, installation of heavier rail and concrete sleepers, replacement of timber bridges and improved signalling and communication systems.

The upgrade has increased locomotive and wagon productivity by 30–40% and decreased maintenance costs by 20–30%.

In addition between Brisbane and Rockhampton the following productivity gains have been realised:

- Freight — transit times reduced from 15 to 12 hours, gross loads increased from 760 to 1200 t/train.
- Passenger — transit times reduced from 14 to 9.5 hours (further reduced to 7 hours with the recent introduction of tilt trains)

The Melbourne to Sydney mainline, for example, (one of the most viable transport corridors in the country) has sections without constant signalling, inadequate passing loops, alignments dating from the last century, bridges requiring urgent refurbishment and load restrictions between Shepparton and Wodonga which significantly diminish the economic viability of the corridor. (Ref 6)

Substantial upgrading of the rail infrastructure system will:

- improve current freight and passenger operations
- reduce the cost of providing these services
- allow rail to recapture some of its lost market share
- enable the potential benefits of new rollingstock to be realised
- allow further productivity gains to be realised

Laird (Ref 26) has highlighted the need for additional investment and referenced the history of recent reports:

- A 1995 National Transport Planning Taskforce report noted that “About \$3 billion of investment is estimated to be warranted over the next 20 years” to bring national interstate track towards American standards and remove physical “speed weight” restrictions that adversely impact on reliability, transit times, plus train operating and track maintenance costs.
- At a 1997 “Rail Summit”, the Australian Transport Council (comprising Australia’s transport ministers) agreed to the need for harmonisation of State regulations affecting rail safety and operational procedures, and, the need to upgrade interstate mainlines.
- Tracking Australia’s 1998 recommendation of an immediate additional investment of \$750 million over next three years and a further \$2 billion after 2001.
- The 1999 Draft Report of the Productivity Commission “... that there is inadequate investment in rail infrastructure” (particularly on interstate mainlines).
- Revitalising Rail (1999) highlighted substandard national track, along with the lack of an integrated national transport strategy, as major barriers to improved rail performance.

2. Rail safety standards and operational procedures

There still exists in Australia a variety of rail safety standards and operational procedures between the states. This 'legacy from the past' is due to the fact that railways in Australia developed prior to Federation and hence each state was responsible for its own rail infrastructure and operations.

This has resulted in the current situation where rail operators are faced with:

24 different safeworking systems (most of which require differing and/or outdated equipment for their operation) and nine different radio systems on scores of frequencies in operation across the national network. (Ref 25)

These various standards and procedures have an adverse effect on both freight and passenger interstate services.

There is an immediate need for funding to be made available such that uniform standards and procedures can be formulated and adopted for the rail industry.

In general there are three types of standard relevant to the rail industry. They are Railway Safety Management Standards, National Codes of Practice and Railway Hardware Standards. Further development and/or review of all three is required.

3. Passenger Business

Australia's railways play an important role in providing passenger services, particularly in urban areas. Australia's urban and commuter railways generate significant social and environmental benefits by providing an efficient mass transport alternative to cars, thereby helping to reduce road congestion and accidents, fossil fuel consumption and greenhouse gas emissions, particularly in urban areas.

In 1996–97, 456 million passenger journeys were made using urban rail services while 12.4 million non urban passenger services were made. (Ref 20)

There are a number of significant rail projects currently being investigated by the public and private sectors:

- Sydney to Canberra High Speed Rail Link — with possible extension to Melbourne
- Brisbane Light Rail
- Sydney Light Rail extensions
- Bondi Rail Link
- Extension of tilt train services to Cairns
- Upgrading and extensions to the Melbourne tram system
- Parramatta to Chatswood Rail Link
- Extension of Perth's rail system to Mandurah
- High Speed rail links Wollongong to Sydney to Newcastle
- Alice Springs to Darwin rail link
- Inland 'Steel Mississippi' rail link — Melbourne to Darwin

Private industry is supporting / financing many of the above listed projects. It is imperative that the Federal and State governments provide as much support as possible to ensure those projects which are viable are realised.

4. Rail Freight

Australia's rail systems haul approximately one third of the total freight carried by rail, road and sea measured as net tonne kilometres.

There is significant opportunity to increase rail freight haulage with resultant significant economic and environmental benefits. In some sectors Australia leads the way in bulk freight haulage with the Pilbara iron ore railways being cited in the world's best.

National Rail has promoted the adoption of a National Freight Plan (*Ref 27*) and identified a number of critical issues including:

- Improved Sydney freight access
- Double stack clearances for Melbourne to Adelaide
- Defining and addressing performance standards, quality and safety issues
- An integrated approach to projects/programs

The recent privatisation of Victorian freight railways is expected to revitalise rail freight in Victoria.

Western Australia is getting ready to privatise its freight operations.

Revitalising Rail (*Ref 6*) recommended that priority be given to Government funding of better track between the major cities to make freight and passenger operations more viable.

There has been considerable debate about the competing merits of rail and road freight and the current disparities in funding and fuel excise. IE Aust in its submission to the Senate Select Committee on a New Tax System (*Ref 28*) recommended:

- *“Rail freight should attract an exemption from the diesel fuel excise, or at least, a differential excise in its favour with respect to road.”*
- *“For freight, rail is the preferred sustainable option and for long haul any differential fuel excise should enable and maintain this option.”*
- *“The new tax system should actively seek to encourage and facilitate the upgrade of the mainline interstate rail track in Australia.”*

5. Asset management improvements

To be able to deliver required services and to effectively control the cost of those services the rail industry needs to manage the assets through their life cycle. It is necessary to take a long term view of the management in line with the long term nature of the business and the assets.

4.3.4 Consequences of the issues not being addressed

The consequences of the above issues not being adequately addressed is that Australian rail industry will become inefficient and ultimately not viable.

The impact of this can be summarised as follows:

1. Economic

- non profitable operating practises will be exacerbated
- substantial increase in Community Service Obligations and hence cost to Federal and State Governments
- retard economic growth of the country
- significant reduction in service levels leading to loss of market share and subsequent additional service costs

2. Environmental

- increase greenhouse emissions
- increase use of fossil fuels
- increase damage to highways
- reduction in safety on both our rail and road systems

3. Social

- loss of jobs
- reduction in perceived quality of life

4.3.5 Rail Infrastructure Report Card

In deriving the Report Card contained in Section 3 it has been recognised that performance varies across a number of criteria so

the Report Card Grade is an average. As an example, the following gradings have been derived for Rail Infrastructure by Dr Phillip Laird who is National Chairman of the Railway Technical Society of Australasia.

The standard of rail systems in Australia varies considerably from infrastructure and operations that can be considered as World's Best Practice (A+) to Steam Age Alignments (F-) as indicated in the following examples:

Pilbara Region (WA) — the iron ore trains operating in the Pilbara Region of Western Australia are the most efficient freight trains in the world and are now hauling over 150 million tonnes per annum. The high efficiency is due in part to world class track which has the characteristics of good alignment, excellent formation, sleepers and rail capable of high axle loads and efficient track speeds.

Rating: A+

Central Queensland coal train operations using 25 kV AC electric traction over good quality track is now hauling over 90 million tonnes per annum and is considered at or near World's Best Practise. There is scope for further track upgrading to ease the ruling gradients from 1 in 80 to 1 in 100 in the Blackwater system which will allow the use of heavier trains currently in use in the Goonyella system.

Rating: A-

Hunter Valley diesel electric rail operations in NSW now haul over 60 million tonnes per annum with good efficiency. There is scope to ease the ruling gradients at Whittingham Bank from about 1 in 80 to 1 in 100.

Rating: B+

Queensland Rail's Brisbane to Cairns \$590 Million Mainline Upgrade Project has significantly improved axle loadings, increases loads and reduced transit times. However further realignment is required to realise the full benefit of the proposed resleepering programme between Rockhampton and Townsville.

Rating: B-

Adelaide to Melbourne — double stack container operations not possible due to severe clearance problems, tight horizontal curves and steep gradients (especially in the Adelaide Hills area) impact on transit times.

Rating: E

Melbourne to Sydney to Brisbane — poor track condition, steam age alignments severely impact on operations and make the running of a rail operation almost non viable.

Rating: F-

4.3.6 Future directions

“For too long rail has been the weak link in Australia’s transport system and is rapidly falling behind in its ability to meet Australia’s needs”. (Ref 6)

The efficiency of a nation’s transport system is a critical determinant of the living standards and the quality of life of its people.

An efficient and viable rail system is vital to ensure Australia can compete in the global economic community and survive the forthcoming millennium.

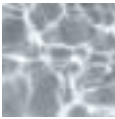
It is therefore essential that the Federal and State Governments of Australia change from being non committed to the rail industry and start actively supporting the progressive upgrading and improvement of our rail industry.

Governments have started this change with financial support to projects such as Sydney Light Rail, Alice Springs to Darwin Rail Link and the Brisbane Light Rail. However the real challenge for our Governments is to support the upgrading of track infrastructure which is now considered inefficient and non viable. (eg: Adelaide to Melbourne to Sydney to Brisbane corridors)

The following recommendations have been sourced from ‘Revitalising Rail’ (Ref: 6) and are considered essential if rail is to have a significant role in Australia’s future development and prosperity:

Commonwealth Government to :

- establish a National Sustainable Transport Strategy
- develop a framework for assessing the allocation of rail/road funding
- establish and fund a National Rail Authority
- develop a framework for private and public sector investment
- commit to funding the upgrading of Australia's rail infrastructure
- restructure /expand current Infrastructure Borrowing Tax Offset Scheme and other business taxation laws
- accepts the risks they are better placed to manage
- remove the existing advantage government operators have over the private sector
- establish a national approach to regulations and standards



4.4 Water and Sewerage

4.4.1 Overview

Water and sewerage services are fundamental elements of a developed society. The reliable supply of clean water and disposal of sewage have significantly reduced disease and underpinned our modern society. The fundamental importance of water was dramatically demonstrated during Sydney's Water Health Scare in 1998.

In many parts of Australia water is a scarce resource and its mismanagement has led to deterioration of many of our inland rivers.

The treatment and disposal of sewage is a continuing problem and the community no longer accepts disposal of partially treated effluent into rivers and oceans.

In recent years the water industry has undergone significant change in ownership, funding, regulations and standards.

Ownership

Australian infrastructure owners include urban water authorities (metropolitan and non-metropolitan), regional water authorities (for irrigation or water supply), local government authorities and large industrial water users (own treatment and disposal); and a number of privatised schemes.

There are 19 major urban water authorities in Australia. There are a number of smaller regional and local urban authorities and in NSW, Queensland and Tasmania there are local government managed water businesses outside Sydney and Newcastle. Irrigation businesses based on large water catchments exist in Victoria, NSW, Queensland and South Australia.

Corporatisation has occurred for larger urban authorities, with operating licenses issued by the state governments.

There has been some privatised “build own operate (and transfer) schemes” for delivery of services eg. treatment plants, developed by the larger businesses.

Funding

In Australia, funding of system costs is by “user pays” tariffs for the larger urban water authorities. These tariffs are set with government and/or regulator involvement to ensure consistency and suitability for the services offered.

Authorities are now expected to fund all activities from income. Expenditure includes new capital works, renewals and rehabilitation and maintenance and operational expenditure. Schemes are in place within most larger authorities to obtain urban developer contributions to support system extension costs.

For smaller authorities funding is still a mix of valuation based rates and user pays charges although the trend is to user pays alone.

Government (both state and federal) funding is being phased out.

Studies have shown that government (federal and state) outlays on capital spending by water businesses has reduced from .3% of GDP in 1986/87 to .15% of GDP in 1996/97.

4.4.2 General Statistics

Value of Assets

- Water systems. This can be separated into water supply and irrigation systems. The water supply systems include catchment, treatment and distribution. Irrigation systems include catchment and distribution functions. Replacement value of water supply systems is currently estimated at \$44 billion across Australia. Irrigation systems are valued at \$10 billion.
- Sewerage systems. Are currently valued for replacement at \$37 billion.

Age of Assets

Australian water and sewerage assets are a combination of old to very old assets in the inner areas of major cities and moderate aged assets constructed after World War 2. The continued development of these systems to support urban growth will have the effect of reducing the average age of assets but will mean that businesses need to recognise future liabilities in terms of replacement of these assets.

- Water systems range up to 150 years
 - Dams up to 150 years, average 40 years
 - Transfer mains up to 150 years, average 40 years
 - Reticulation average 40 years
 - Treatment average 30 years
 - Irrigation channels up to 100 years
- Sewerage systems up to 120 years
 - Transfer mains up to 100 years, average 50 years
 - Reticulation average 35 years
 - Treatment average 35 years

The need for planned renewal/and maintenance of these assets is self evident as the age of assets will soon (with a 10 year planning horizon) average 50 years.

Annual Maintenance Expenditure

Water systems annual maintenance expenditure is estimated to be \$170 million Australia wide.

Sewerage systems annual maintenance expenditure is estimated to be \$100 million.

These figures are about .3% to .4% of capital value of the assets.

Growth in maintenance expenditure based on recent trends will only be in line with increasing asset bases. Little provision appears to be made for changes in maintenance as assets age, although businesses are expecting to extend the lives of assets and defer capital expenditure.

Upgrade Costs

Expenditure by the 19 largest water businesses in Australia on renewal, replacement and upgrade of infrastructure is approximately \$250 million per annum. This ranges from 0.1% to 2.1% of replacement value depending on the business (*Ref 13*).

Total Capital Expenditure

The estimated capital expenditure required by the water industry in Australia over the next 4 years is \$1.3 billion for water supply works and \$1.8 billion for sewerage works.

Water and wastewater treatment is the single biggest expenditure grouping. For all Australian water businesses the estimated capital expenditure is \$800 million over the next 4 years on water treatment and \$1.5 billion over the next 4 years on sewage treatment. This incorporates new works, renewals, rehabilitation and upgrades.

Lindfield has analysed the capital investment requirements for water and sewerage (*Ref 4*).

Over the next twenty years it is estimated that necessary water supply and sewerage capital expenditure in South East Queensland, Sydney and Melbourne will amount to \$12.6 billion. This area is the most populated in Australia with currently around 9 million persons.

For this area alone in the next ten years it is estimated that there will be a deficit in funding from current sources amounting to \$2 billion. Water businesses will have to develop other funding approaches or consider pricing changes.

The issues for the authorities serving the east coast population centres are comparable for the other water supply and sewerage businesses in Australia.

4.4.3 Relevant Issues

The most significant issues facing businesses managing water supply and sewerage systems are:

1. Ageing infrastructure.

The development of water supply and sewerage systems has been accelerated since World War 2 and especially in the 1960's when the impact of urban growth after World War 2 demanded improved services. But basic systems have been in existence since the late 19th century, especially in the major cities. The newer systems are generally an extension of these old systems and rely heavily on their continued operation. This means there is a good proportion of assets over 50 years old and some are nearing or have exceeded 100 years of age. The water industry must deal with the continued need for these assets yet recognise that some elements will require replacement simply because the original asset was not designed for an exceptional life.

2. Limitations on funding for new and replacement works.

The change in emphasis by governments over recent years has been to encourage user pays principles and at the same time reduce or eliminate government funding of necessary capital works. This has required water businesses to self-fund works and

look for other methods of developing infrastructure such as private sector BOOT Schemes. At the same time water companies are being told to justify their pricing of services and are under government influence to limit prices and variations. This makes funding of necessary works difficult and, combined with the continued ageing of assets nearing replacement, the continuation of current levels of service a difficult prospect.

3. Asset management improvements.

To be able to deliver required services and to effectively control the cost of those services water businesses need to manage the assets through their life cycle. It is necessary to take a long term view of the management in line with the long term nature of the business and the assets. More and more business are developing asset management systems to assist with the long term management.

4. Changing environmental expectations.

While all water businesses are required to meet environmental standards for operating the systems, there is a need to understand the expected changes in those standards in the future to ensure delivery of services at an appropriate cost. The environmental expectations must be a combination of community needs, environment needs and business capability to deliver services within such constraints.

5. Changing expectations of customers.

The customers are the reason for the existence of the businesses and the continued acceptance of the businesses in terms of service delivery achievement. Customer needs are more and more being recognised in business objectives of the water industry. However there is a need to ensure the involvement of the customers in the levels of service development to clearly establish agreed levels of service. Current issues for customers are reliability, quality of drinking water affecting health standards and wastewater discharge quality.

6. Competitive environment.

The water industry has yet to experience deregulation as has occurred in the electricity and gas industries. However already some of the larger companies are corporatised and having to meet regulatory requirements in obtaining approval to operate. The industry will need to continue to develop benchmarking and to act on those findings to ensure continued operation. The establishment of contestable customers in electricity and gas retailing is a distinct possibility for the water industry.

7. Regulatory involvement in performance.

The increased interest shown by the regulators in each state to water operations and pricing of services is a major step to bringing all water businesses under the regulatory umbrella. Water businesses must improve performance both in terms of product eg. water quality and cost of that product.

8. Cost of service.

The ability of businesses to control costs is a major issue even now and will become more critical with time. The issues preceding this one are a sound justification for effective cost control. Water businesses are setting limits on maintenance and operating budgets yet are expecting to extend lives of assets and provide for new additions.

9. Availability of water sources and increased demand.

The arid nature of Australia means that the establishment and availability of water sources to support continued growth is limited. Water businesses must ensure full and effective use of current resources before others are sought. This means reuse opportunities that may have historically been uneconomic may in future be revisited and found acceptable given all implications.

4.4.4 Consequences of the Issues not being addressed

1. Environmental damage.

Impact on ecosystems through poor management of water systems has been shown to be dramatic and unacceptable elsewhere in the world. The general condition of the environment affected by water businesses in Australia is better than in developed countries overseas but is not good. Further degradation will occur if water and sewerage systems are not managed properly and any attempts to improve the environment will be fruitless.

2. Economic impact.

Failure to effectively manage the assets, including water stored, could have significant implications for the long term economic performance of regions and Australia as a whole.

3. Unacceptable levels of service.

If water businesses do not improve management systems or do not develop agreed levels of service the expectation is that the service levels delivered will be unacceptable. The recent water quality problems in Sydney with cryptosporidium has highlighted the need for water businesses to ensure risks of such problems are minimised and the event, if it should occur, is managed effectively. The secondary impact is that the business will come under competitive pressure.

4. Unacceptable costs for service.

Government drivers for reform in the water industry are focused on reducing the cost of services. Failure to fully implement the necessary changes or to manage the assets effectively will result in unacceptable costs. This will put further pressure on businesses.

5. Impact on individuals as customers.

Poor performance by the water businesses will impact directly on customers in terms of quality of services and cost of services.

Failure to manage the assets could lead to physical failure of the assets and development of life threatening situations.

At the asset level water supply and sewerage businesses need to understand the likely failure modes of their assets to be able to address day to day and long term management issues. The failure modes expected for water and sewerage assets are:

- Physical deterioration
- Reliability
- Cost of service
- Performance

4.4.5 Management and Regulation

The corporatised businesses have taken the opportunity to outsource non-core activities such as maintenance, design and construction. Emphasis is on management of service providers in these areas.

For planning, asset management and operations activities the businesses have generally retained these services in house. This is in recognition of the ongoing nature of these activities versus the possibilities of competitive pricing available with contracts for the non-core activities.

The smaller water businesses, generally in local government ownership are still either using internal resources or a mixture of internal and external resources for maintenance. The progress towards outsourcing is slow and driven in part by local economic impacts.

National standards and guidelines are available for drinking water quality. State based standards are applicable to wastewater discharge.

Design and construction standards are available nationally. The larger authorities apply their own interpretation of these standards for local conditions.

Safety standards for dams and associated structures are used to monitor and manage these structures.

Regulators are already involved with assessing the performance of the larger authorities for benchmarking purposes and are seeking to be involved in price determinations.

4.4.6 Future Directions

As well as the issues for long term management of the water and sewerage businesses discussed earlier there are implicit directions being taken in service industries in Australia that will or may already impact on the businesses.

1. Regulators more deeply involved. As discussed earlier state-based regulators are expressing interest in the larger water businesses because of their corporatised nature. In Victoria the Office of the Regulator- General issues operating licenses for the retail distribution water businesses. The state regulators will more and more influence the provision of water supply and sewerage services with a view to price minimisation but maintenance or improvement in service standards.
2. Privatisation of businesses. The privatisation trends evident in the gas and electricity businesses and trends overseas in water industries may eventually be translated to the water industry in Australia. Either outright sale or concession rights may be seen as possible changes in the industry.
3. Outsourcing of non-core activities accelerated. While the larger water businesses have essentially completed the outsourcing of non-core activities, the smaller businesses will be under pressure to achieve the same outcomes. There may need to be consideration of smart packaging to achieve the best results for smaller businesses.

4.4.7 Bench marking and Data Reliability

In undertaking this report it has been evident that data covering all water businesses in Australia is not centralised and is sectionalised into groups of like businesses. For example the Water Services Australia Association covers specific information about its member water authorities while data on local

government water businesses in Queensland is only found with reference to state based records.

The historical parochial nature of the water industry has possibly led to a lack of national focus for industry assessment. Even within states the approaches to water management have been different between major metropolitan businesses and non-metropolitan businesses.

Benchmarking for industry purposes is therefore limited to grouped businesses.

The report card seeks to determine whether the levels of expenditure currently being made for new works, renewal of existing works or maintenance of existing assets is appropriate, excessive or insufficient. The lack of coordinated information across the water industry means it is not possible to make such determinations with any confidence. While we can state the expectation for future expenditures we are not able to draw conclusions as to the extent of expenditure and the required trend for such expenditure.

Observations with individual businesses suggests an increasing shortfall in expenditures as businesses are forced to reduce budgets in line with government and customers demands. The outcomes of the current rates of expenditure will only be determined some time in the future and only then will we know if it has been enough.

A clear business objective for some water authorities is that management of the assets requires effective management for the current and future customers. It would be prudent if this objective was industry wide.

It is recommended that systems be developed to give a national perspective to the performance of the water industry.

future

DIRECTIONS



5. Future Directions

The provision of adequate infrastructure is essential to maintain the standard of living that Australians enjoy. Our economic well-being, our health, and our standing in the world are all driven by our ability to promote, develop and operate world-class infrastructure. Creation of the existing infrastructure in Australia has been possible only through a consistent national investment over many years at around twice the current rate of expenditure. Failure to make adequate provision for operating and maintaining that infrastructure, and for ensuring its continuing development and expansion to meet emerging challenges and opportunities, has the potential to, within a relatively short period, reduce our international competitiveness and our quality of life.

A persistent bias towards present-day consumption spending rather than long-term investment has been evident at all levels in Australia, and must be addressed by governments. Demand management, and improved efficiency in resource allocation, will have an important role. However, the present levels of infrastructure funding, from both private and public sector sources, must be raised if the standard of living is to be maintained. There is no practical option but to recognise partnerships between the public and private sector as an essential feature of future infrastructure development and operation. Action should be taken by government at all levels to identify future community needs, set broad priorities for the

investment of public funds, put in place effective planning and regulatory systems to remove unnecessary barriers to infrastructure development, and foster long-term partnerships between the public and private sectors.

All Australian governments should promote and underwrite a National Infrastructure Advisory Council (NIAC), with expertise from the public and private sectors, to facilitate the efficient and equitable provision of national infrastructure by both public and private sector stakeholders. The National Infrastructure Advisory Council should undertake as one of its first tasks, a national review of the existing and likely future requirement for public and private investment in infrastructure. (see Appendix 1 for full details)

Industry should work together to explore innovative program delivery methods and technologies, identify and adopt best practice in project definition and risk assessment, and enhance its capacity to interface with the community and to deliver projects more effectively and efficiently.

Appendix 1

National Infrastructure Advisory Council

Membership

The Council will require:

- broad public and private sector representation;
- direct lines of communication with community interests;
- authority to operate across legal and geographical boundaries;
- a commitment to objective assessment based on clear national criteria;
- transparent methodologies to assess the benefits and costs of proposals;
- the capacity to invite public submissions and conduct public hearings; and
- an open process of information formulation and dissemination.

The Council should comprise representatives from the private and public sector, from the professions, and from each level of government, with expertise in such fields as engineering, public administration, urban and regional planning, strategic planning environmental management, social impact, commerce, and law.

Government involvement will be essential to mobilise the regulatory power to achieve national goals and to provide a reservoir of knowledge of the social and technical context in which new proposals must be placed. Private sector involvement reflects the fact that many, perhaps most, new infrastructure proposals will originate in that sector and that technical, managerial and financial skills and associated decision-making capacities will increasingly be concentrated there.

Terms of Reference

The Council will facilitate the efficient and equitable provision of national infrastructure by both public and private sector stakeholders, and encourage longer-term planning for its sustainable development and operation. The Council will consult

with all interested parties, and will advise and report through the Council of Australian Governments to Commonwealth and State Government Ministers responsible for infrastructure on such matters as:

- strategic development, best practice and standards;
- the state of infrastructure and future infrastructure needs;
- national infrastructure accounting standards and data collection;
- the deployment of new engineering technologies;
- best practice principles in infrastructure provision and management;
- relationships and interaction between different forms of infrastructure;
- the application of the principles of ecologically sustainable development;
- research on the promotion, provision, operation and maintenance of infrastructure;
- the type and quality of information that providers should make available to the public;
- coordination of infrastructure planning and assessment across all levels of government;
- the establishment of guidelines for effective infrastructure procurement; and
- cross-jurisdictional issues and impacts.

Recommended Work Program

Key functions should include:

- undertaking comprehensive analyses of the influence of infrastructure on the social and economic development of Australia, having regard to externalities, value capture, social benefit, and industry protocols, and with a view to recommending an appropriate balance between different types and scales of infrastructure projects, between the provision of new and enhanced infrastructure and the maintenance of existing infrastructure, and between economic and social infrastructure;
- recommending improved mechanisms for defining project boundaries, and establishing the key environmental parameters

at an early stage, and avoiding creeping compromise during the project implementation phase.

- supporting, and recommending guidelines for, partnerships between the public and private sectors wherever such partnerships represent the most appropriate mechanisms for delivering, operating and rehabilitating public infrastructure;
- improving public support for private infrastructure projects by promoting consistent national action to strengthen the quality and credibility of environmental impact assessments and environmental impact statements and recommending effective mechanisms for transparency and accountability in project design, delivery and operation;
- developing and defining true measures of the wealth generating significance of the minerals and resources industries to ensure that these industries can share infrastructure funds on the basis of competitive priority, and that approval processes for infrastructure associated with the minerals and resources industries are appropriately streamlined;
- monitoring the technical and management expertise required by the infrastructure industry and promoting collaboration between government, universities and the industry in implementing the recommendations set out in the Review of Engineering Education undertaken by the Institution of Engineers, Australia, and in the report of the National Tertiary Education Task Force established by the Minerals Council of Australia; and
- monitoring research and development on the delivery, operation and rehabilitation of infrastructure and making recommendations to the relevant authorities to ensure that these are given appropriate priority and that resource allocations are commensurate with their importance.

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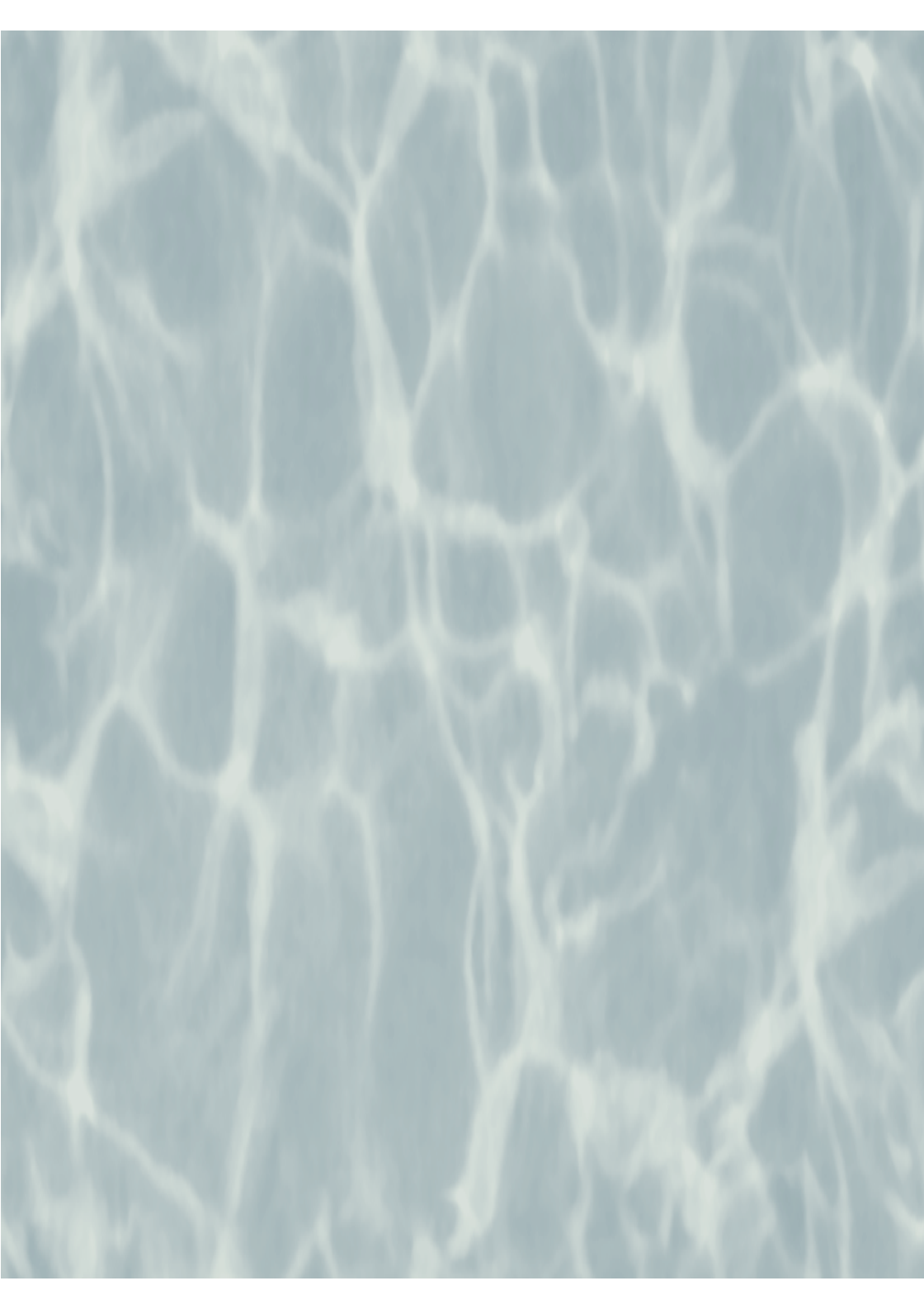
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