

WHAT WE HOUGHT WOULD KILL US

CASE STUDY 2: THE EVOLUTION OF PERTH'S PASSENGER RAIL

JUNE 2011



*Promoting
& enabling
change*

Research Report: ‘What we thought would kill us’

Case Study 2: The Evolution of Perth’s Passenger Rail

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SECTION 1

Introduction

“Perth’s public rail system is an example of Western Australian leadership and foresight”

1. Introduction

This report is the second in the ‘What we thought would kill us’ series being undertaken by the Committee for Perth. The purpose of the series is to examine controversial development and infrastructure projects in Perth and scrutinize the outcomes that they have achieved. The series aims to provide valuable insight into undertaking and enabling major development in Perth.

This report examines three defining events in the history of Perth’s passenger transport system: the electrification of the Perth to Fremantle Rail line; the development and operation of the Northern Suburbs Rapid Transit system; and the development of Perth’s new metro rail – the South West Rail line.

It is a story of reluctant success, controversy and caution.

Perth’s public rail system is an example of Western Australian leadership and foresight. It shows that as a community we can also be visionary and set the Australian benchmark for best practice. It also demonstrates that the people of Perth are willing to embrace public transport where an efficient and reliable service is offered.

However controversy has dogged and defined the development of Perth’s rail system since 1979 when the government of the day announced the closure of the Perth – Fremantle railway and has continued to hinder projects, to varying degrees, through to the delivery of the south-west rail line.

Controversy continues to feature in discussion on public transport planning in Perth today – as we face issues of capacity - just 20 years after the first major investments were made in the rail system. With longer peak hour periods bringing increasing congestion and a bus system that is reaching its limit in some areas, Perth could face an uncertain future in terms of moving its people between places of work, education, recreation and home.

As a result there is a need, more than ever, for us to learn from the lessons of the past and develop another positive chapter in Perth’s rail story as part of the development of the public transport network, by embracing opportunities to expand the system and taking advantage of options such as light rail, which have strong community and business support.

Perth’s rail story highlights a number of key issues of transportation planning in Perth:

- Perth's public loves rail. They have been instrumental in driving the retention and extension of the passenger rail system and have used metropolitan passenger railways in numbers which continuously exceeded planning predictions and expectations.
- Investment in new rail takes political courage – particularly given that the planning and delivery timeframes are much longer than four year election cycles - however there is no evidence that any state government has been damaged at the polls for rail investment.
- While the delivery and benefits of mass transit are often long term, governments that have committed to major transit projects are remembered for their foresight.
- Transportation planners have a history of underestimating the potential and the take up of rail in Perth which has led to failures to adequately predict and cater for the long term needs of the service. There has also been a tendency to favour investment in bus over rail based on short term cost benefits.
- While bus transportation carries more passengers in total, rail carries more passengers per service kilometre (4.15 compared to 1.43 passengers per service kilometre for bus) at a lower average cost (\$0.41 per passenger kilometre compared with an average \$0.76 per passenger kilometre for bus). This indicates that rail is both more efficient and effective for mass public transportation, even in a lower density environment – something which is supported by data from around the world.
- Perth is a growing metropolis and congestion is worsening which brings with it increased economic, environmental and social costs. With the population projected to double over the next 40 years, congestion problems will reach crisis point without significant investment in the transportation system. Rail investment is costly – but the costs of congestion, inaccessibility and poor liveability are much higher.
- Light rail is shaping up as an integral part of Perth's future rail solution. Light rail provides opportunities to connect our existing bus and rail transit systems and combines the benefits of flexibility and mass transit efficiency.
- There has been a history of public transportation being a political issue in Perth with past state Labor governments being historically more proactive in investing in and delivering major upgrades and extensions of the rail network than Liberal governments. However today's Liberal government has announced a commitment to investigate light rail options in Perth and there is a need to ensure that any commitment to light rail development is delivered despite political cycles.
- Transit corridors in Perth have delivered some land use value benefits, with, according to the Australian Property Institute, a value premium of approximately 15-35% for land centred on and immediately around stations, and some density benefits, however these have been limited. As Perth grows there will be many opportunities to accommodate medium and higher density development along both existing and potential future rail and light rail routes, and history indicates that these opportunities will need to be actively pursued through the public and private sectors.



SECTION 2

The History and Controversy of
Perth's Passenger Rail

“Perth grew around the rail and tramways, spreading out on an east-west axis, with commercial nodes and pockets of higher density housing dotted along its route”

2. The History and Controversy of Perth's Passenger Rail

2.1 Early rail integration

The electrification of the Fremantle, Midland and Armadale lines, the development of the Northern Suburbs Transit line and the construction of the South West Rail line are all part of a long term project which has seen the resurrection of the passenger rail system in Perth.

During the 1970s the passenger rail system, running with diesel engines, had been allowed to decline, with minimal investment over the preceding decades. The system consisted of only three lines, the Armadale, Fremantle and Midland lines which provided a relatively uncomfortable and out of date service and, as a result, attracted minimal patronage. The Fremantle line was also shared by freight rail traffic, limiting service efficiency (University of Melbourne, 2010).

The lack of investment in the rail system was a by-product of Perth's post war love affair with the private car. Planning for a new era of growing car ownership led to low density suburban development, which sprawled out into fringe areas without thought to the need to encourage walking and cycling; provide access to facilities and services; or enable public transport use. The focus of the era was on the convenience of the private car and there was a prevailing view that public transport use would be limited to people who did not have access to a car.

However Perth was not always this way. The Fremantle-Guilford Railway began the Swan River Colony's commitment to urban rail. This was followed by an extension of the railway system to Armadale and the further growth of the passenger transport system through the introduction of electric trams in the late 1890s, when they were the latest in modern technology (Perth Electric Tramway Society, 2011).

Perth grew around the rail and tramways, spreading out on an east-west axis, with commercial nodes and pockets of higher density housing dotted along its route. The rail and tram system provided the impetus for the development of some of our most celebrated local centres and suburban areas which remain among the best examples of transit oriented development in the region.

Public transport remained central to planning for Perth until the 1960s.

In 1955 Stephenson and Mr JA (Alistair) Hepburn, the Town Planning Commissioner, released the Plan for the Metropolitan Region, Perth and Fremantle, 1955 (known as the *Stephenson-Hepburn Report 1955*).

It was a detailed publication which examined life in Perth and suggested how the city might be developed for a projected metropolitan population of 1,400,000 by the end of the century (Barker M, 2007). This proved to be a highly reliable forecast: at the turn of the century Perth had a population of approximately 1,300,000.

The Stephenson-Hepburn Plan proposed a road network to cope with 400% more traffic than there was in 1955 and recommended the construction of eight new highways with a total length of about 85 miles. However the plan also allowed for the extension of suburban rail systems, particularly given that the tram system was, by then, substantially lost (Barker M, 2007).

The plan reflected that the car was the popular and growing means of transport at the time and its emphasis was on the need to have a modern road system supported by an effective rail system. However, in implementation no new rail lines were developed and the new suburbs to the north and south of the city were dependant on the provision of bus services as the only alternative to private cars.

As a result, the Metropolitan Improvement Fund, which was established to enable the implementation of the plan, was used to purchase most of the land for the new highways but not for new rail corridors. Therefore, despite the development of a high quality integrated strategic plan which was highly accurate and had great foresight, the focus of transportation planning for Perth shifted toward the modern American model which favoured planning roads and freeways to enable effective movement of cars and providing buses to meet public transport needs.

It is therefore not surprising that by the late 1970s Perth's suburban lifestyle was highly automobile dependent; the tram system had closed and the suburban rail system was suffering from decreasing patronage under a lack of investment.

2.2 Closure of Fremantle to Perth Line

In 1970, the Perth Regional Transport Study was undertaken to determine Perth's transport needs during the 20 year period to 1989. The study identified a series of transportation alternatives and evaluated the costs and benefits of each. The final report recommended the removal of existing passenger rail lines and replacing them with buses running in the rail reserves.

A sequel to the report, prepared in 1972, came to the same conclusions as the original study. These findings were supported by the subsequent Bureau of Transport Economics in the 1973 Perth Fremantle Corridor Study; the 1974 Perth Central City Railway Feasibility Study; and the 1978 report Rail and Bus Policies for the Fremantle Corridor.

The government of the day under Premier Sir Charles Court accepted that at least the Fremantle line should be closed and replaced by buses, which it did in September 1979.

The rail closure was justified on the basis that it was needed in order to provide best service (through buses) for least cost, while still enabling an alternative to the private car and only making use of rail where justified by patronage (Minister for Transport, 1979).

The then Minister for Transport's Bus and Rail Policy for Perth cited factors such as declining patronage; a lack of growth potential; the need for capital cost savings and operating cost savings; potential for increased efficiency in energy usage and road planning benefits as reasons for closing the passenger rail line. It also promoted the advantage of removing freight rail traffic from the passenger rail system (Minister for Transport, 1979).

The Government's preferred road corridor and bus-way option was also promoted as having local amenity advantages over other schemes – including noise reduction, improved safety and a better local environment (to be achieved by separating the main highway from houses by frontage roads) (Minister for Transport, 1979). This was a common and popular road and urban planning technique at the time.

The rail closure ignited a community campaign to bring back passenger rail to the Perth – Fremantle corridor and incited debate on upgrading and extending the rail system.

High profile professional associations such as the Australian Planning Institute opposed the rail closure and called for the decision to be reversed. Fremantle City Council also opposed the closure and made representations to the State Government on the issue along with other local authorities situated on the rail route.

A small community group of concerned citizens and experts called Friends of the Railway (FOR) formed to oppose the rail closure.

FOR gained wide public support and organised a petition calling for a reversal of the decision and a reassessment of transportation priorities for the metropolitan region (FOR, 1979). They developed a comprehensive attack on the government's policy and decision making process and publically questioned the government's transportation policy that:

- alleged the lack of ongoing investment in the Perth to Fremantle rail system was the catalyst for the system's decline;
- claimed that patronage levels had been underestimated and that the capital and operating costs of maintaining the rail service had been grossly overstated by the government;
- asserted that there was considerable potential for an increase in the patronage of the Perth-Fremantle line; and
- identified issues of energy vulnerability and the potential for a shortfall in oil supplies to highlight the need for energy efficient public transport and in particular the provision and electrification of passenger railways.

FOR strongly questioned the approach of developing Perth as an automobile city at a time when public transport strategies around the world were under large scale review due to the increased cost of motoring and the environmental and social costs of congestion, noise and air pollution.

They proposed an alternative transportation policy for Perth which involved retaining and upgrading the Perth to Fremantle passenger rail service and the entire passenger rail network including:

- undertaking a campaign to improve patronage of the rail service and improve use of the corridors' transportation resources by integrating bus and rail at key stations;
- improving facilities for parking cars and bicycles at stations;
- removing the fare charged for bicycles;
- publicising rail and improving fare collection;
- the electrification of all three rail lines within 5 years;
- shifting the freight rail line; and
- increasing population density along stations and introducing an integrated transport system of bicycle ways, bus priority lanes and pool incentives as well as the upgraded train service to increase patronage (FOR, 1979).

As a recommended long-term policy, FOR suggested the extension of the rail line through the north-western corridor to Joondalup and enabling increased densities along the route as well as extending the system to Rockingham.

In 1982, the Director General of Transport released a new transport policy, Transport 2000: A Perth Study, which consolidated the view that planning for Perth should focus on providing for private cars with the role of the public transport system limited to enabling commuter traffic into the city centre and providing for people without access to a motor vehicle.

It was believed that the existing and planned road system would be able to withstand projected growth in traffic with the exception of the Narrows Bridge. Bus transit was recommended to alleviate congestion on the Narrows Bridge as well as provide public transport to the northern and southern corridors. The report found that electrification of the remaining railways was not economically viable (Knox, 1982).

The release of the 1982 study indicated that the government was firmly committed to the eventual closure of the railways and the development of a public transport system based entirely on buses and, as a result, community controversy heightened. The issue became a major focus of the local media resulting in the future of the public transport system becoming a major focus of the

1983 election.

While the government held fast to their decision, the then opposition announced they would support the re-opening of the railway if elected (Newman P, 2011).

The election was held in early 1983 and a large swing saw the incumbent government defeated. The rail service was reopened by the newly elected government on 29 July 1983 with much fanfare as public transport patronage in the corridor returned. Studies were commissioned to examine the potential to electrify the passenger rail system (Westrail, 1984).

2.3 Electrification of the Rail System

Following the re-opening of the Fremantle line, the condition of the passenger rail system needed to be addressed. The Westrail annual report for 1984 estimated that during 1983/84 the suburban rail passenger service carried an estimated eight million passengers, compared to 6.6 million in the preceding year when the Perth-Fremantle line was not in operation (Westrail, 1984).

The government created an inquiry into the electrification of the suburban rail system. This inquiry reported to government in June 1985, recommending that the system be electrified without delay on the basis that the cost of maintenance would be lower and that there was already a need for 75% of the existing rolling stock to be replaced (Co-ordinator General of Transport, 1985).

In late 1985, a \$200 million project was awarded to Asea-Walker and Westrail respectively for rail car construction and electrical work and track upgrading on the Fremantle, Armadale and Midland rail lines.

Once this major upgrade to the public transport system was announced, debate immediately turned towards the need for a transit system to serve Perth's northern corridor which was increasingly plagued by peak hour congestion on the Mitchell Freeway. In 1986 the government announced a study into the most appropriate form of rapid transit for the growing northern corridor (Northern Suburbs Transit System, 2009).

2.4 Rapid Transit for the Northern Suburbs

As previously outlined, despite initial provision for rail corridors in the Stephenson-Hepburn Report, Perth's northern suburbs were developed with a high quality road system, but without provision for rail transit.

However, by the 1980's the freeway serving the corridor was becoming congested at peak hour and the community was dissatisfied with the bus service (Newman P, 2011).

The government initiated studies to determine the most appropriate transit service for the northern corridor.

The first study was undertaken in September 1988 and concluded that a rapid transit system for the north-western corridor whether it be a bus based or rail based system was economically justified and had wide public support. The consultants' preferred option was for a bus-based system to be located within the median of Mitchell Freeway (DOT, 1989).

During the course of the study, two other major decisions were made about Perth's existing transportation corridors including the 1988 Cabinet approval of the electrification of the existing suburban rail network and approval of the Kwinana Freeway Exclusive Bus Lane, which was to provide for an improved bus transit service for the southern corridor.

This only left the growing northern corridor without a public transit spine. Pressure increased on the government for a solution with the public calling for the solution to be rail and strongly lobbying government for a passenger rail service. At one stage the Member for Whitfords was receiving 200 letters a day supporting passenger rail (Newman P, 1991).

Acknowledging the public mood, the government announced that a review panel would be formed to provide a strategic overview of Perth's public transport system; an integrated perspective on recent

public transport planning decisions; review strategies adopted by other cities in solving their transport problems and review the consultants' analysis of rapid transit options for Perth's northern suburbs (DOT, 1989).

In 1988 the review panel presented its findings to the Minister for Transport and suggested that:

- a window of opportunity existed for the completion of basic rail infrastructure.
- as the city continued to grow, completion of rail transit spines was seen as essential.
- the best rapid transit option for the northern suburbs would involve a rail trunk line service with integrated feeder/distributor services.
- rail provided the best quality, most efficient service.
- projected patronage was adequate to justify service.
- considerable economies of scale would be achievable in integrating construction of the northern suburbs railway with existing suburban rail.
- the line would enhance the efficiency of the rail service as a whole.
- bus feeder services could be directed across the corridor.
- a rail based service would achieve operating cost savings compared to a bus based system. These cost savings would be offset against any initial capital cost disadvantage.
- a railway would provide opportunities for more intensive urban development in the vicinity of rail stations and may enhance development opportunities at other points along the route.
- private developers may provide infrastructure or contribute to the financing of the railway in return for benefits conferred by accessibility to the rail system (DOT, 1989).

As a result of the Review Panel's report and recommendations, Cabinet on 12 December 1988 gave approval, in principle, for an electrified railway line to serve the northern suburbs. The Perth Urban Rail Electrification Steering Committee was asked to prepare a master plan for the railway.

Enabling legislation for the railway option was passed by Parliament on 15 January 1989.

Objectives for the project included:

- reducing operating costs for the public transport operator;
- converting car drivers to public transport users, thereby increasing public transport use;
- maximising patronage and reducing road traffic levels;
- providing improved levels of service and satisfaction to public transport users;
- encouraging higher density nodal development around railway stations in the northern suburbs in order to reduce urban sprawl (McDougall and Piotrowski, 1994).

In determining the required capacity of the railway, the Steering Committee based its decision making on projections that the population of the corridor would be generally stable or slowly declining in areas south of Wanneroo. The Steering Committee also considered that the variability of the population growth rate in the region would have relatively small effects on rail passenger demand although it would increase the share of central city employment taken by residents in the corridor. It was not expected that there would be significant increases in passenger rail volumes until Perth was a much bigger city.

More rapid growth in passenger numbers was expected to come from growth of the corridor itself to well beyond Joondalup and Burns Beach Road. This was predicted to increase passenger demand but not as strongly as if the growth was located immediately adjacent to the rail stations.

It was forecast that the trains would carry nearly 13,000 inbound passengers during the weekday morning peak two hours in 2001. Of these 13,000 nearly 12,000 would be on trains south of Scarborough Beach Road.

It was also predicted that patronage beyond 2001 would be affected by continuing population growth; employment; car ownership; and costs of public and private transport. The future use of rail was expected to be strongly influenced by the level of employment in central Perth as the primary destination.

The Steering Committee recognised that the main planning issue imposed by patronage increase was the extent to which rail capacity can be expanded and the adequacy of stations if more intensive land uses are developed in their vicinity.

The northern suburbs rail line was completed in 1993, with twin track from Perth to Currambine and eight stations, five of which are major bus/train interchanges, and six of which are park and ride based (University of Melbourne, 2010).

The capital cost for the system was \$277 million in 1993 (\$440 million in 2010 figures) for the entire infrastructure and the railcar fleet of 22 two-car rail sets. This was higher than initial estimations detailed in 1988, although the scope of the project increased substantially (railway was extended; station designs embellished and railcar specifications upgraded).

Westrail's 1994 Annual Report states that first year passenger numbers on the Perth to Joonalup line were significantly higher than planning predictions (Westrail, 1994).

2.5 South West Corridor's New MetroRail

In conjunction with the 1989 election and passage of legislation on the Northern Suburbs Transit System, the government announced in February 1989 that it was committed to examining the possibilities for extending the railway to the South West.

However, once again the first studies and proposals developed in the early 1990s for a mass transit mode for the southern corridor again heavily favoured buses.

This was partially due to the recent construction of a bus-way down the Kwinana Freeway which had delivered some positive benefit to the southern suburbs. However once again there was a high level of public support for rail and support from within government which resulted in the government's acceptance of the need for a rail route from Perth to Mandurah (Martinovich, 2007).

In December 1994, the Metropolitan Region Scheme was amended to include the original route for the Mandurah Railway, via Kenwick and in July 1995, the government announced the new line to Mandurah (via Kenwick) and committed to complete the line from Kenwick to Jandakot by 2005 (Department of Transport, 2000).

In April 1997, the same government approved funding for the South West Metropolitan Railway Master Plan, which was completed in April 2000.

The initial Master Plan aimed to provide a fast, regular, comfortable, safe and attractive electric passenger train service for the south west, comparable in both convenience and cost with the private car (Department of Transport, 2000).

The service was proposed to have as few stations as possible so the train could run at 130kph (maximum speed) however the route was not universally supported. The train was proposed to run down the freeway from Mandurah to the edge of the Perth suburban area and then follow the existing freight line, towards the Armadale line, adding time to the journey and making it less competitive in comparison to the private car.

However the 2001 state election saw a change of government, and a new Minister for Planning and Infrastructure who focussed on developing a more direct route for the new rail service.

This resulted in a second master plan being prepared with an amended route to enable a direct passage to Perth across the Narrows Bridge and through the centre of the city. This masterplan aimed to increase journey speed, reduce infrastructure requirements and increase patronage.

However the amended route was not without controversy. The route required the rail line to come through the front end of the city and tunnel under the city to link into the Northern Suburban Rail line and this was not wholly supported by the City of Perth at the time due to concerns that the rail line would be unsightly.

At the same time an anti-rail group began to vocalise concerns that the tunnel under the city was impossible to construct as it was through soft sand. However these issues were resolved and the opposition faded (Newman P, 2011).

The contracts for packages of work began to be let in late 2003 and construction began in February 2004.

Intense media scrutiny began and each step of completion was marked with considerable public interest, especially when the tunnel under the city was completed ahead of schedule.

In early 2005 another State Government election was held and an anti-rail group ran a media campaign claiming that the rail line was a waste of public funds and that there was no need for a commuter rail service from Mandurah to Perth which they said would only serve a small number of Mandurah residents (The West Australian, 2005).

However the government was re-elected and held fast to its plans. The southern suburbs railway opened in December 2007 and has been an overwhelming success, with passenger numbers far exceeding predictions from the outset.

The line delivered 11 new railway stations in the first phase. During the construction phase there was considerable development activity within the corridor, evidence that the railway acted as a catalyst for new development within the transit corridor, and many property developers chose to promote access to the railway as a key feature in the marketing of their development (Curtis C, 2008).

Routing the rail line through the city also proved to be a major catalyst for redevelopment in the city centre, being a major driver for proposals such as the Perth Waterfront and Northbridge Link.

Trains



SECTION 3

Light Rail - The Next Chapter for Perth?

“It is evident that new, integrated land use and transportation initiatives are required to address the need to house Perth’s increasing population”

3. Light Rail – The Next Rail Chapter for Perth?

Despite the success of Perth’s rail transformation to date, the upgrade and expansion of the rail system has coincided with a period of rapid population growth in the metropolitan region. In the early 1980s, when Perth’s rail transformation began, Perth had a population of approximately 900,000. Today the metropolitan population is estimated to be close to 1.7 million – nearly double.

This means that even though public transportation patronage has been improved, congestion has worsened. It is evident that new, integrated land use and transportation initiatives are required to address the need to house Perth’s increasing population in a sustainable manner and ensure that the liveability of the city is retained – a major component of which is enabling a high level of accessibility by public and private transportation.

The state government’s recently released land use strategy, *Directions 2031*, recognises this need and Perth is currently awaiting the release of a new transportation strategy which will provide the strategic direction to address these issues.

In December 2010 the Premier announced that light rail should be developed in Perth in the next decade. This announcement has been applauded by the public and business communities and could be the next major positive step in Perth’s rail transformation.

Opportunities for light rail in Perth have been touted for the last three decades for routes which range from Perth’s north-eastern suburbs; to south-western centres such as Rockingham; to inner city links; to a system linking Perth’s major university campuses. However the Premier’s announcement was the first time that any government has publically supported the development of new light rail in Perth for more than 50 years.

Light rail has exceptional capacity for mass transit and is suitable for ‘retro-fitting’ in cities due to its characteristics of combining the flexibility of buses with the benefits of a fixed transport system (like rail). There are numerous recent examples of light rail being successfully developed in cities around the world, such as Dublin, Seattle, Portland and Calgary and there are opportunities for Perth to learn from their success.



SECTION 4

Key Issues, Opportunities and Challenges

“Perth’s rail story demonstrates that investment in rail is and always has been a cost effective solution for public transportation in Perth”

4. Key Issues, Opportunities and Challenges – What have we learnt?

The history of our passenger rail system and opportunities for future public transportation highlight a number of key issues which we can learn from in planning for public transportation in Perth in the future. These are discussed below.

Issue	What can we learn?
Perth’s public has been the champion of rail investment	Investment in passenger rail has never been strongly opposed by Perth’s public, quite the opposite – Perth’s community has championed rail. They have demanded it and they have used it in numbers which continue to exceed predictions. The catalyst for Perth’s rail transformation was the closure of the Perth-Fremantle passenger rail line however similar public activism could be generated as the costs of congestion increase and the rail system fails to meet Perth’s growing transportation needs. This is already starting to happen. Perth’s population has grown faster than was predicted in the late 1980s and 1990s and the city’s larger population expects high quality public transit more than ever before. This is reflected in the fact that many of Perth’s advocacy and peak industry groups and local authorities are already actively advocating for improved rail or light rail services in the region. Further public dissatisfaction with problems of congestion and poor public transport service is likely to result in increased advocacy and community activism on this issue, particularly if the long awaited transportation strategy for Perth continues to be delayed – or if it fails to meet public expectations. The history of the passenger rail system in Perth therefore serves to caution governments of all persuasions about inadequate investment in rail, because it is an issue that the Perth public care about, and one on which elections can be won or lost.

Issue	What can we learn?
Increasing congestion in Perth	Despite the investment in passenger rail that has occurred over recent decades, there is clearly a need for additional improvements to the public transportation network in Perth to address issues of population growth and worsening congestion. Perth's population has nearly doubled since the initial controversy that resulted in investment in the rail system. Therefore, while the system has greatly improved, Perth's transportation needs have grown exponentially and our transportation needs today are greater than they have ever been before. Road congestion is becoming the primary transportation problem in Perth. This is due to a number of key factors including population growth (much of which has been focussed in outer lying areas); a reduction in persons per dwelling; increased percentage and number of single occupant vehicles as the primary mode of transport; growth in car ownership outstripping population growth; and continued low overall percentage share of alternative forms of transport (Kleyweg, 2007). Congestion has negative impacts that we are all familiar with – and would rather live without, including increased travel time and cost, decreased amenity, increased pollution, decreased economic efficiency and reduced liveability in the city. There are also significant economic effects. The Bureau of Infrastructure, Transport and Regional Economics estimates that the cost of congestion in Australian capital cities was \$9.4 billion in 2005 and will rise to \$20.4 billion in 2020. In Perth, the cost is expected to increase from \$0.9 billion in 2005 to an estimated \$2.1 billion in 2020 (Engineers Australia, 2010). And there are productivity impacts. The State of Australian Cities 2010 report said the movement of goods in Australian capital cities would increase 70% between 2003 and 2020 and in 2005 the Council of Australian Governments predicted that vehicle kilometres travelled in Perth would increase by 40% in the period from 2005 to 2020 to reach 20.6 billion. This was based on predictions which included a 23% increase in population to 2021; a forecast doubling in container freight to 2015 and a quadrupling by 2030; and growth in traffic tasks in the vicinity of the airport due to the redevelopment of the domestic and international terminals and non-aviation developments. This is happening already. Since 2005 Perth's population has already grown by an estimated 20% and, according to Perth Airport, air travel from Perth's airports has doubled in the last ten years from 5,220,840 in 2000-2001 to 10,463,800 in 2010 (Department of Infrastructure and Transport, 2010). As a result we can possibly already expect that the cost of congestion in Perth is pushing up towards the \$2 billion mark. The increase in congestion is reflected in the rising travel time of journeys in Perth. Main Roads WA figures show that on some of the most congested routes, drivers now spend up to 70% more time in their cars driving to work in the mornings than in the early 1990s (Engineers Australia, 2010). This highlights the fact that there will be a need for continuous expansion and upgrade of passenger transportation in order to maintain pace with the city's growth. The Engineers Australia 2010 Infrastructure Report Card identifies a specific need for mass transit to Perth's north-eastern suburbs, and given Perth's continuing northern expansion this should be addressed as part of the state's transportation plan.

Issue	What can we learn?
Rail is not cost effective in Perth	Perth's rail story demonstrates that investment in rail is and always has been a cost effective solution for public transportation in Perth. There were 56.4 million urban rail passenger boardings in 2009/2010 on the five current passenger rail lines. This increased 57.5% since the introduction of the south-west transit line alone (from 35.8 million boardings in 2006/07). The investment in rail to achieve this has included: • \$124 – 200 million (1986 prices) \$280 - \$450 million (2010 prices) on electrification of Fremantle, Midland and Armadale lines (Hoare JF, 1986) • \$277 million (1993 prices) \$440 million (2010 prices) for development of the northern transit line; and • \$1.6 billion approx. for the southern suburbs railway (PTA, 2011). When it is considered that the cost of congestion in Perth is estimated to be over \$1 billion per annum, and could be heading towards \$2 billion, our investment in rail to date appears highly cost-effective.
Perth's urban form does not support rapid transit	One of the major hindrances to the development of passenger rail in Perth has been the belief among transportation planners that rail will not work in lower density cities. However Perth's rail story has proven that rail can be delivered in existing very low density urban environments with long urban corridors. The northern suburbs and southern railways are both examples of new thinking to enable the development of public transportation that responds to the local conditions by adapting the traditional model of mass transit - which achieved mass through penetration into high urban densities - to a low density model of bringing the masses to the railway stations from surrounding areas by bus and car. This has provided a new model for rail which has become a touchstone for the industry nationally (Waldock R, 2007).
Buses are more effective, flexible and cost effective in a low density environment	The history of public transportation in Perth has shown that rail is more effective for mass transit than bus. Public transit use in all corridors has increased exponentially following the development and upgrade of rail transit. This can mainly be attributed to the superior quality of service that can be provided by rail transit over bus transit. Rail is generally faster, more regular, reliable and comfortable while waiting and while riding compared to bus services. This is supported by Public Transportation Authority figures which indicate that trains are significantly more reliable than buses (96% of arrivals within 4 minutes of scheduled time versus 85.5% for bus) and report 92% train customer satisfaction compared to 82% customer satisfaction with bus services (PTA, 2007/08). In 2009/10, Perth's bus system operated 305 standard timetabled bus routes and 398 school routes. On a typical weekday this involved operating 11,261 standard and 398 school service trips. Accessible buses are always used on 112 of the standard routes. A bus service frequency of 20 minutes or better is provided all day on most major corridors, with higher frequencies in peak periods. In 2010 there were 74.8 million boardings on the system (PTA, 2010). The electrified suburban train system operated more than 1045 services on an average weekday, and more than 6640 weekly services on a system covering 173.1km of track with 70 stations on five lines, and a fleet of 222 railcars. The train network consists of the Joondalup Line (33.2km), the

Issue	What can we learn?
	Fremantle Line (19km), the Midland Line (16km), the Armadale/Thornlie Line (30.5km and a 3km spur line to Thornlie) and the Mandurah Line (71.4km) (PTA, 2010). There were approximately 56 million boardings on the passenger rail system in 2010. While bus transportation carries more passengers in total, rail carries more passengers per service kilometre (4.15 compared to 1.43 passengers per service kilometre for bus) at a lower average cost (\$0.41 per passenger kilometre compared with an average \$0.76 per passenger kilometre for bus). This indicates that rail is both more efficient and effective for mass public transportation, even in a lower density environment – something which is supported by data from around the world. Therefore while bus transit is and should be an important part of Perth's integrated public transport network, it is evident that investment in rail has potential to make very substantial impacts on mass public transportation ridership along specific routes. These opportunities will only increase as residential densities increase in parts of Perth – highlighting the need for more integrated planning of land use and transportation opportunities.
Perth's population are entrenched car users/ Perth's population has a disregard for public transport	The car dependence of Perth has long been used as a reason for land use and transportation planners to focus their attention on planning for the automobile and to underestimate the potential of public transportation. However, Perth's experience has proven that improvements in public transit service lead to increases in patronage that far exceed expectations and predications. It is therefore evident that we have a strong tendency to underestimate the potential of public transit, the public support for transit and the willingness of the community to shift mode from the car if a high quality alternative is available. This suggests that Perth's love affair with the car could be practical more than emotional. People use their cars for many trips because there is no viable or comparable alternative. When a good public transport alternative is offered, the community will use it.
There is no potential for growth in rail patronage	Perth's rail experience indicates that there is very significant potential for patronage growth in rail – however growth is highly dependent on the level and quality of service. Failure to invest in the rail system in the 1970s saw the system, and patronage, rapidly decline. However investment in electrifying and extending the system achieved massive growth in passenger numbers – clearly showing that providing and maintaining high quality service are keys to future patronage.
Underestimating patronage and failure to 'future-proof' our passenger rail	There is a history of underestimating patronage on Perth's passenger rail lines. Patronage on both the northern suburbs and south-west lines has far exceeded expectations and infrastructure struggled to cope with demand within a short period after opening. This appears to be due to both underestimating demand and higher than expected population growth. The Mandurah and Joondalup lines are already reaching their current service capacities during peak hours, as are their car parks; and while new railcars have recently been added to address capacity constraints this was a 'knee – jerk' reaction to negative media attention regarding overcrowding on the northern line, rather than a planned response to meet growth in demand.

Issue	What can we learn?
	There is a need to ensure that future public transportation networks in Perth are planned to meet current needs as well as 'future-proofed' to enable the system to cope with patronage which exceeds expectation and future growth. Growth in patronage should be tracked to enable continuous investment and improvement before the system reaches capacity and avoid overcrowding or the inability of the system to meet demand.
Rail can facilitate high density development around stations	Opportunities for Transit Oriented Development (TOD) were cited as one of the primary benefits of rail development when extensions to the system were proposed in the 1980s. There have been attempts to maximise this opportunity through planning policy as well as (where possible) design to integrate urban form with rail stations (which was attempted at Joondalup). The 1988 'Development Control Policy 1.6 Development around Metropolitan Railways Stations' required that all planning applications on land adjacent to metropolitan railways stations support rail use and access by providing for higher density (transit oriented) residential development (Curtis C, 2008). This was a forward thinking policy, however other than the award winning Subiaco redevelopment, which is the development example in Perth which best meets traditional TOD principles (higher residential densities around stations; surrounding commercial development; and the inclusion of public places such as plazas squares and parks); it has been slow to take effect, especially through traditional development processes (Curtis C, 2008). The development of the Subiaco precinct was achieved through the establishment of the Subiaco Redevelopment Authority and was reliant on heavy public institutional and financial support. The development of Joondalup was also heavily reliant on government funding, however it was not planned on TOD principles and its success as a transit oriented development has been limited (Holling and Mackenzie, 2007). Beyond the Subiaco redevelopment, some of the better examples of TOD in Perth remain traditional local centres along the Fremantle and Midland train lines such as Maylands and Mosman Park which, while currently underdeveloped, have opportunities for improvement (Holling and Mackenzie, 2007). The development of TOD along the northern suburbs rail line has been limited by both the location of the rail line within the freeway reserve and the nature of surrounding low density residential areas, which were already substantially built before the railway line was developed. The design of railway stations as transit interchanges and park and ride stations has not been conducive to the densification of the surrounding urban area – due to the fact that they were designed to maximise speed and compete with the car rather than providing for walk-on patronage. The new south-west rail to Mandurah provided an opportunity to improve on the delivery of TOD along the new line. Construction of the new rail line did result in considerable development activity along the corridor - evidence that the railway has acted as a catalyst for new development (Curtis C, 2008). However it also posed both challenges and opportunities in regard to delivering TOD because while the new railway primarily sits within the freeway reserve some also sits within its own reserve. This presented opportunities to experiment with the TOD model and the approach taken with the line has been to take the northern suburbs model at

Issue	What can we learn?
	some stations (designing stations as transit interchanges taking advantage of the high speed of the rail system) while attempting to develop more traditional TOD, based on walkable catchments at other stations. For example, the station at Bull Creek focuses on transit interchange alone while Cockburn Central has attempted to develop a centre based on TOD principles around the freeway reserve. The Wellard station precinct is the most developed example of integration based around walk-on patronage (C Curtis, 2008). It is still too early in the development phase to gauge whether these TOD approaches have been successful however the rail experience in Perth has shown that the delivery of TOD within a low density urban setting is challenging (i.e. there is some inherent conflict between designing urban rail to meet low density urban conditions and then attempting to facilitate higher density urban development around them).
Positive impact on property value around railway stations	Associated with the potential for TOD has been the expectation that provision of rail will have a positive benefit of increasing property values around railway stations. According to the API railway stations do deliver positive benefits of enhanced accessibility which with the balance of other market parameters, increases the value and desirability of land in the immediate localities. Of course transportation infrastructure is not the only factor raising property values. Population and employment growth, commercial productivity, income levels, good quality public and private services, parks and reserves and many other factors all contribute to the value of individual sites all of which can translate into higher land values. However the API does consider that property values around railway stations have increased, and while it is difficult to quantify the direct increase attributable to railway stations alone, the Institute estimates a premium of 15% to 35% for land centred on or immediately adjacent to the railway station is applicable. This increase and sphere of influence decreases as land radiates out from the station.
Negative vs positive impacts on Perth city centre	The routing of the Perth-Mandurah rail line through the city centre has been a major success and served as a catalyst for major redevelopment, and redevelopment proposals in Perth's central area, including the Perth Waterfront Project and the Northbridge Link.
Investment in public transit is highly political	The history of Perth's passenger rail system highlights the political nature of passenger rail investment in Perth. In the 1970s and 1980s the then Liberal government favoured investment in road and bus-ways over rail, a position which they maintained despite community resistance. The Labor opposition capitalised on this to support the retention of passenger rail and win the 1983 state election, instigating two and a half decades of rail investment in the city by successive governments. It is evident that, over this period, public support and expectations for high quality public transit in Perth have increased. It is expected that the issue of public transportation and particularly rail investment will continue to be a political issue in Perth however with the high level of public support for rail investment, as well as the clear need for

Issue	What can we learn?
	improved public transport in Perth, today, more than ever there is a need for public transit investment to achieve bipartisan support.



SECTION 5

Conclusions & Recommendations

**“Perth’s public has demonstrated,
with their feet and at the ballot box,
that they support rail investment”**

5. Conclusions and Recommendations

There is no doubt that Perth’s recent history of investment in passenger rail has had a vastly positive impact on Perth and has saved it from what would have been an uncertain future.

Investment in our passenger rail system came at a fortuitous time and has enabled the region to cater for the very substantial population growth we have experienced over the past five to ten years. However this investment was not just initiated through the vision and foresight of our state and city leaders – it was demanded by the community. Perth’s public has demonstrated, with their feet and at the ballot box, that they support rail investment, and there is evidence that community expectations are growing, particularly as congestion, and the costs of congestion in the region worsen.

The history of Perth’s passenger rail system highlights the highly political nature of passenger rail investment decisions in the region however it also demonstrates that the community benefits of rail investment and the potential cost of lack of investment are so great that they require and demand bipartisan support.

However, the story of Perth’s rail transformation has been well documented and has received national and international attention. This highlights that, while the long term delivery and benefits of rail may not fit well with the short term nature of our political system, state governments that commit to and deliver major public transit projects are remembered for their vision.

Despite this, it is recognised that investment in rail is costly and requires long term planning and investment. Actual delivery and realisation of benefit also stretches well beyond political cycles meaning that commitment to rail projects requires true political strength, vision and leadership.

The majority of controversy surrounding rail investment in Perth in the past has been associated with its cost – i.e. it has been claimed that investment in rail is a waste of money; that it will be a financial disaster; and that bus is a more cost effective option and more suited to our urban form.

However the investment in passenger rail in Perth to date has been overwhelmingly positive, resulting in increases in public transit use that has far exceeded predictions. Given the high level of public support for rail in Perth and the growing costs and frustrations with congestion in the region, the ultimate question for future rail investment in Perth is not ‘can we afford to do it?’ but ‘can we afford not to?’

Perth's population has nearly doubled since the initial controversy over the closure of the Perth – Fremantle line which ultimately resulted in investment in the rail system. Therefore, while the system has greatly improved over this period, Perth's transportation needs have grown exponentially and our transportation system today is under more stress than ever before.

With the population projected to double again by 2050 the city is once more at a historical crossroads and decisions need to be made to meet our current and future transport needs.

Recommendations

In light of the issues outlined above, it is recommended that:

1. State and local politicians capitalise on the community's support for rail in Perth by supporting the planning and investment in new rail infrastructure to meet Perth's future needs. This includes the expansion of Perth's rail (heavy and/or light) network as well as the improvement of the city's existing passenger rail system. Given the high and ever increasing cost of congestion in Perth, predicted population growth, and growing community expectations, it is evident that if a vision for future rail in the city is not initiated by its political leaders, the public and business community are likely to demand it.
2. Political or public criticism of well conceived and planned rail development should not be a reason to abandon the project – history suggests that where there is criticism of rail investment in Perth there is a much greater majority who strongly support and are users of it.
3. Needs have been identified for additional mass transit to Perth's north eastern corridor as well as to provide high quality radial public transportation linkages within Perth's inner and middle suburbs and key infrastructure assets. These opportunities should be addressed in future transport strategies for the region.
4. There is a need for increased integration in land use and transportation planning to ensure that opportunities for new mass transit routes are maximised.
5. Rail investment does have potential to be a catalyst for land use change including the higher density transit oriented development nodes however the delivery of opportunities for TOD should not be left to private market mechanisms alone. Delivering high quality TOD in Perth will also require state government investment and leadership through the redevelopment authority model.
6. It is essential that future public transportation in Perth is adequately planned and future proofed to ensure that it meets the city's medium and long term needs and that there is a plan for continuous investment and improvement to respond to higher than expected growth and/ or patronage.
7. Perth has an opportunity to continue to be a city-leader in the provision of new public transportation in Australia. Perth's rail transformation in the 1980s and 1990s set the benchmark for other Australian cities, but they are fast catching up and even overtaking Perth through their own public transport revolutions. Perth has established itself as a public transportation leader particularly in developing new public transit models to meet the city's needs – and there is an opportunity for the city to retain and expand on this reputation.
8. Perth has a history of light rail, and light rail opportunities have been touted in Perth for decades. Recent population growth and associated transportation impacts in the city, future growth which is predicted to take the city to a population of more than 3.5 million, and the need and greater acceptance of medium and higher density housing product mean that Perth has reached a time in its history where these opportunities can and should be realised.



APPENDIX 1

Acknowledgements

“It is essential that future public transportation in Perth is adequately planned and future proofed”

Appendix 1: Acknowledgements

Committee for Perth members

Research work commissioned by the Committee for Perth is funded entirely through the contribution of our members. Our Foundation members are:



A full list of Committee for Perth members is available at www.committeeforperth.com.au.

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Researcher Profile



This research has been prepared Gemma Davis, a consultant for the Committee for Perth. Gemma has an Honours degree in Urban and Regional Planning and has over ten years experience in research, strategic planning, policy development and urban planning.

This has included the preparation of strategic planning documents for government agencies in Australia and the Republic of Ireland in her role as a Senior Planner for Environment Resource Management Ltd (ERM); the preparation of development applications and social and environmental impact assessments of proposed housing and industrial developments in her role as Senior Planner for ERM and Senior Planner with Tom Phillips + Associates (Republic of Ireland); undertaking research, preparing policy and managing production of member services in her role as Manager of Research and Policy for the Urban Development Institute of Australia (WA); and preparing strategic planning and policy documents for Queenstown Lakes District Council (New Zealand) in her role as Senior Policy Analyst.



APPENDIX 2

References

“Perth has a history of light rail,
and light rail opportunities have
been touted in Perth for decades”

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Committee for Perth
Office 7, 996 Hay St
Perth WA 6000
T: (08) 9481 5699
F: (08) 9481 7738

Postal:
PO Box 7117
Cloisters Square
Perth WA 6859
www.committeeforperth.com.au

