

25 February 2009

# Australian Conservation Foundation Submission to the Standing Committee on Rural and Regional Affairs and Transport

## Inquiry into the investment of Commonwealth and State funds in public passenger transport infrastructure and services

### Introduction

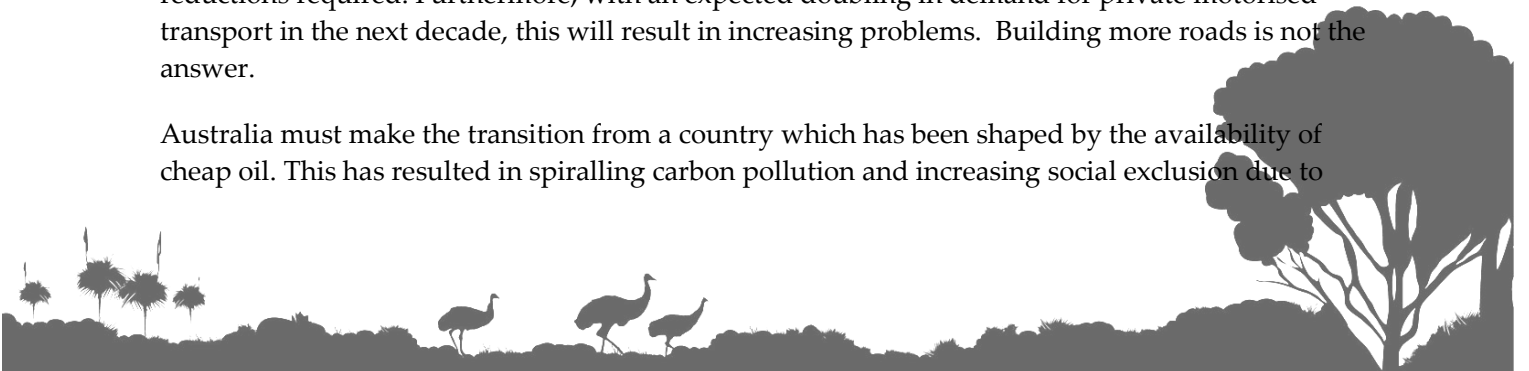
ACF welcomes the opportunity to provide a submission to this inquiry. This submission focuses on a number of the terms of reference for this inquiry including:

1. Assessment of the benefits of public passenger transport, including integration with bicycle and pedestrian initiatives.
2. Role of Commonwealth Government mechanisms that either discourage or encourage public, passenger transport.
3. Measures by which the Commonwealth Government could facilitate improvements in public passenger transport services and infrastructure
4. Best practice international examples of public passenger transport services and infrastructure
5. Options for Commonwealth funding for public funding for public passenger transport services and infrastructure.

Australia is at a critical crossroad: we face significant transport and social equity challenges due to rising levels of carbon pollution and depleting oil supplies. A future Australia will be sustainable and more socially inclusive. This would mean that all Australians have affordable access to jobs and services – not just for those who drive. This urgently requires the creation of a sustainable transport system in which public and active transport – walking and cycling - become real options for all Australians.

Emissions from road transport were 30 per cent higher in 2007 than in 1990 and even with the implementation of abatement measures these emissions are projected to be 67 per cent higher in 2020 than 1990 levels.<sup>i</sup> This direction is manifestly inconsistent with the scale of carbon pollution reductions required. Furthermore, with an expected doubling in demand for private motorised transport in the next decade, this will result in increasing problems. Building more roads is not the answer.

Australia must make the transition from a country which has been shaped by the availability of cheap oil. This has resulted in spiralling carbon pollution and increasing social exclusion due to



rising oil prices and lack of access to good public and active transport options. We must create a future which is more equitable and environmentally sustainable for all Australians.

An example of spending large sums on infrastructure which is not the best use of available funds is that of the recommendation by the Eddington report for Melbourne to build an 18km long East-West road tunnel and a 17 km long metro rail tunnel which together would cost \$17.5b. This proposal failed to consider an integrated whole of Melbourne long term transport plan. The road tunnel will become a stranded asset as the impact of peak oil deepens and the cost of petrol rises. Australia is an oil price taker and our imports are increasing - they are predicted to reach 66% of total consumption within six years – they are already over half.

Modal shift to public transport is already happening. People will use public transport if it available, convenient and efficient. If the tunnel projects go ahead they will take money away from improving public transport especially to the outer suburbs which are poorly serviced. This will result in the disadvantaged being isolated in remote suburbs far from jobs and services. The report also failed in its greenhouse assumptions by not including the embodied energy of the infrastructure assets in its calculations. Using rail results in about half the greenhouse gas emissions per passenger kilometre travelled compared to cars even when the trains are powered by coal- fired electricity.

**There is a strong economic, social and environmental case for national investment in sustainable transport options.**

Reducing the total greenhouse gas emissions of the car fleet through improved fuel efficiencies and smaller cars can help slow carbon pollution but the expected doubling in demand for private motorised transport in the next ten years will result in increasing problems which cannot be solved by building more roads.

**1. There are clear multiple benefits which arise from investment in better public and active transport options:**

- reduced congestion;
- reduced traffic accidents and fatalities;
- reduced health problems which arise from increasing inactivity;
- less land lost to roads and parking which reduces loss of agricultural lands close to urban centres and saves habitat for our native flora and fauna;
- fewer resources used in providing road infrastructure;
- funds able to be spent on other tasks;
- reduced pollution of the air and water;
- less social isolation for people trapped in remote suburbs with poor public transport links
- rebuilding the loss of community that comes with excessive car use; and
- reducing our high levels of oil vulnerability.

**1.1 Road congestion costs the Australian economy billions each year**

Road congestion costs in 2006 were estimated at \$21 billion.<sup>ii</sup>

The Bureau of Transport and Regional Economics (BTRE) estimated the cost of congestion in Australia was \$12.8 billion in 1996 and projected that these costs would rise to \$29.7 billion by 2015.<sup>iii</sup>

Better public and active transport options will limit growth in both road traffic and congestion. This will in turn provide substantial economic, social and environmental benefits to Australia.

### **1.2 Road vehicle crashes cost Australians more than \$18 billion per year**

Road vehicle accidents are crippling Australia. In 2007, road crashes conservatively cost over \$18 billion<sup>iv</sup> and there were over 1600 road fatalities<sup>v</sup>, 18,000 seriously injured in car accidents and over 12,000 in serious motor cycle accidents<sup>vi</sup>.

These accidents are not only of great cost to the economy but of immeasurable cost to individuals and their families.

### **1.3 The health of the nation is declining and costing us dearly**

Physical inactivity is estimated to cost the Australian community around \$10 billion per year in direct health care costs.<sup>vii</sup> Thirty three per cent of car journeys taken in Australian cities are less than three kilometres.<sup>viii</sup> Encouraging active transport for short journeys is an evidenced based, cost effective method of making substantial cuts to the obesity and diabetes epidemic.<sup>ix</sup>

In 2005, toxic air pollution from cars alone resulted in health costs of some \$2 billion.<sup>x</sup> If public transport patronage increased by 45 per cent, there would be a 28 per cent decrease in photochemical smog.<sup>xi</sup>

People who live in sprawling suburbs are more likely to drive their cars and have higher body mass indexes. The likelihood that people are overweight, obese, have inadequate physical activity and spend no time walking is statistically significant for people living in areas of urban sprawl. Transit oriented developments - urban areas which have identified centres, greater mixed use, less sprawl and streets with greater connectivity - are more likely to promote walkability and physical activity.<sup>xii</sup>

A focus on improving sustainable transport options, including public and active transport, would provide health benefits due to greater levels of activity and reductions in noise<sup>xiii</sup>, air pollution and accidents.

It makes economic sense to spend money on public transport and cycling infrastructure, to avoid the costs of air pollution, road accidents and sedentary lifestyle problems such as obesity.

### **1.4 Roads and parking account for one third of urban land use<sup>xiv</sup>**

A suburban train effectively keeps 800 cars stretching 5 km off the road. A train line that can transport 20,000 people per hour uses 2.5 hectares of land per kilometre whereas a freeway transporting up to 5000 people per hour uses 10 hectares of land per kilometre.<sup>xv</sup> To transport the equivalent number of people in cars, we would need four freeways with 40 hectares used per kilometre.

This land can be better used for agriculture or habitat for wildlife.

### **1.5 Improving public transport infrastructure will reduce dependency on oil. Petrol costs are rising: it is the disadvantaged who pay the most and those who are unable to drive may become trapped in isolated suburbs far from jobs and services**

Despite fluctuating oil prices, the global trend for this commodity is up<sup>xvi</sup>. The International Energy Agency recently stated unequivocally that "while market imbalances will feed volatility, the era of cheap oil is over"<sup>xvii</sup>. Peak oil, where half the oil reserves have been used and it becomes increasingly expensive to extract remaining supplies, has already been reached in Australia and our reliance on imports is increasing. Geoscience Australia has estimated that we will be importing at least 66 per cent of our oil needs by 2015.<sup>xviii</sup>

Public transport infrastructure is lacking in the rapidly developing outer urban areas of most of Australia's large cities. Vulnerability to oil prices and mortgages is on the increase<sup>xxix</sup> – more people are struggling to make ends meet, and as oil prices inexorably rise<sup>xxx</sup> there is increasing risk of social exclusion. Inadequate public transport forces car dependency and any savings gained through cheaper housing are lost in travel costs for pursuing employment, education opportunities and services.<sup>xxxi</sup>

The burden of rising transport and fuel costs is shared unevenly between Australian households. Higher fuel prices have the greatest impact on people with modest or below average incomes. In 2003-4, the average Australian household spent 16 per cent of their weekly goods and services budget on transport. Almost a quarter of this transport spend was on motor vehicle fuel.<sup>xxii</sup>

As the effects of peak oil deepen, fuel prices will continue to rise and the percentage of the weekly budget for fuel will increase. The impacts will also be felt in rising food prices and the costs of any commodity which is transported by road.

### **1.6 Road building is the most expensive option per passenger kilometre travelled**

Road building costs can range from \$3,860 -13,250 per passenger kilometre travelled for 4 -lane dual carriageways whereas two track railways can cost about \$2, 830 per passenger kilometre travelled, neither includes land costs.<sup>xxiii</sup>

### **1.7 Investment in public transport results in more funds being available for other tasks**

Good public transport is an investment in the future – strong rail cities are wealthier than weak rail cities. Strong rail cities have lower congestion costs, lower per capita traffic fatalities, consumer transport expenditures, public transport operating costs and higher public transport service cost recovery.<sup>xxiv</sup> Public transport-based cities spend around 5-8 per cent of their wealth on transport services, but in heavily car based cities this is 12- 15 per cent due to the inherent efficiency of public transport.<sup>xxv</sup>

Investing in public transport is a better use of money and provides a service more economically than roads.

### **1.8 Reducing car ownership would result in wealthier families**

Calculations show that “by eliminating one car from a typical household over a working life, \$750,000 in extra superannuation could be accrued”.<sup>xxvi</sup>

Investing in better public and active transport options better enables families to provide for their retirement.

### **1.9 Public transport uses fewer resources for infrastructure, vehicles and fuel than cars and results in lower levels of pollution**

Even when coal provides the electricity, trains emit half of the carbon pollution of cars per passenger kilometre.<sup>xxvii</sup> Yarra Trams in Melbourne has powered trams with wind energy showcasing an example of environmentally friendly public transport. <sup>xxviii</sup>

Reducing road traffic will improve water quality too – one third of water pollution in one of Australia's most polluted rivers in an industrial area is due to road run off alone.<sup>xxix</sup>

Transport is Australia's third largest source of carbon pollution providing 14 per cent of total emissions. It is the fastest growing sector and accounts for about 34 per cent of household greenhouse gas emissions.<sup>xxx</sup> Road transport (cars, trucks, light commercial, buses) accounts for about 90 per cent of total transport emissions.

Emissions from road transport were 30 per cent higher in 2007 than in 1990 and even with the implementation of abatement measures these emissions are projected to be 67 per cent higher in 2020 than 1990 levels.<sup>xxxii</sup> This direction is manifestly inconsistent with the scale of carbon pollution reductions required.

## **2. Commonwealth Government mechanisms that discourage public passenger transport**

### **2.1 The Fringe Benefits Tax for car leasing arrangements cost \$1490 million in 2007-8 in subsidies**

The Fringe Benefits Tax (FBT) encourages excessive car use, with subsequent increases in carbon pollution, loss of government revenue and congestion. There are two distinct sources of inefficiencies in the current statutory formula method:

1. Its general concessionary nature which favours motor vehicles over other forms of transport; and
2. The distorting incentive to drive more than would otherwise be the case.

The perverse impact is illustrated by the fact that although company and government cars comprise 16.5 per cent of all car sales in Australia, they account for 40 per cent of peak hour traffic. Subsidies such as these are in direct conflict with our need to reduce carbon pollution. The tax and transport system needs to better align with social, environmental and economic policy objectives, including approaches that proactively encourage sustainable transport choice.

### **2.2 The funding arrangements for *Auslink* encourage road building to the detriment of the provision of rail infrastructure.**

The current Commonwealth government has recommitted substantial funds to a long established pattern of road building at the expense of rail. In the years 2004-9 the Commonwealth's land transport fund, *Auslink*, has allocated an estimated \$14 billion to road projects and \$1.2 billion on rail projects – a spending ration of 12: 1 for road versus rail.<sup>xxxiii</sup> People in outer suburbs with inadequate rail services rely on their cars. Those who do not drive are disadvantaged. Brisbane City Council draft Transport Plan 2006-26 (p31) states that it is important to “provide new public transport services to emerging communities early in their development” and to “promote alternative forms of transport”.

### **2.3 Building more roads results in a phenomenon called “induced traffic growth”**

Building more roads initially reduces congestion but soon encourages more cars onto the roads. As a result, congestion, carbon and toxic air pollution will get worse.<sup>xxxiii</sup> Preference for driving means that public transport, when available, is not utilised as much as is could be and there is a reluctance to improve public transport services at the expense of roads.

## **3. Measures by which the Commonwealth Government could facilitate improvement on public passenger transport services and infrastructure**

### **3.1 Containing urban sprawl will help make public transport services more viable and help limit demand for travel**

Residents of inner suburban Sydney use a car for less than half their trips but in outer Sydney a car is need for almost 80 per cent of trips. Each trip in the outer suburbs is more than twice as far as inner suburban trips. People in outer suburbs are becoming more car dependent with daily vehicle

kilometres travelled (VKTs) increasing by almost 23 per cent over a decade to 2001 while those in inner suburbs declined by 10%.<sup>xxxiv</sup>

Planning must ensure that cities do not become dysfunctional as their total width sprawls beyond one hour in travel time<sup>xxxv</sup>. Limits must be set on city boundaries to ensure that agricultural land is retained for growing food, with the additional benefit of reducing unnecessary food transport.

It is essential that Transit Oriented Development (TOD ) is encouraged. TOD aims to integrate sustainable transport and land use planning, making it easier to reduce car use by making them preferred sites for living and working. An additional benefit is the increased sense of community which can diminish in car dependent suburbs.<sup>xxxvi</sup> In 'greenfield' developments, roads need to have greater connectivity to reduce walking and cycling distances rather than building circuitous roads with frequent dead ends that necessitate car use.

#### **4. Some best practice international examples of public passenger transport services and infrastructure**

##### **4.1 Amsterdam and Copenhagen are excellent models for increasing bicycle usage and Paris has an enviable bike hire system.**

Australian bike ownership is among the highest in the world, but usage remains very low by international standards.<sup>xxxvii</sup> The high rate of bicycle ownership in Australia represents a very strong underlying desire to cycle. The supply of bicycle friendly infrastructure has failed to meet this demand and this explains the low rate of bicycle usage as a mode of transport. To increase bicycle usage rates it is essential to provide a road environment that supports cycling and to integrate cycle use with public transport systems. It is important to improve cycling infrastructure with safer, dedicated bike lanes separated from other traffic that are considered safe for children. Secure storage at both ends of a journey is also needed. Cycle centres (end-of-trip facilities) provide safe bicycle parking, as well as change rooms, showers lockers and services required by cyclists, such as repair workshops. Brisbane is the first city to establish a cycle centre and demand is booming. Ten bicycles can park in the space of one car and converting some public car spaces to cycle parking with adequate lighting and security will encourage more people to leave the car at home.

Bike hire systems can provide low cost, pollution free access around town. The *Velib* system in Paris has 20,000 bikes at 1450 locations with 370 km of bike lanes, offering the first half hour of use at no cost. Brisbane is planning such a system<sup>xxxviii</sup> and is appropriate for all major cities in Australia.

##### **4.2 Curitiba in Brazil is a world leader in the provision of bus rapid transit systems**

An excellent model of rapid bus transit systems<sup>xxxix</sup> operates successfully in Curitiba, Brazil and has been adopted by many cities including in the U.S.. Brisbane's South East Busway has been developed along these lines and it carries more people than seven lanes of vehicle traffic.<sup>xl</sup> There has been a 45 per cent increase in patronage on major services through increased travel opportunities, reduced travel times in peak periods and safe, comfortable and secure stations.

## 5. Options for Commonwealth funding for public funding for public passenger transport services and infrastructure

- **Fund the development of bus transit systems on dedicated roads** – this is a useful transition strategy to achieve rapid results while additional longer term solutions are planned and implemented.
- **Invest in extending the reach of rail systems:** provide rail lines to unserved developing areas and improve existing network capacity
- **Make cycling a part of the system** – ensure that new multi-housing developments provide cycle storage, provide dedicated cycle paths and bike centres where riders can store their bikes and have a shower at destinations
- **Introduce low cost measures to increase patronage on existing public transport** such as more park and ride facilities at low usage railway stations, increase secure bike parking at main town centres – 10 bikes can park in the space of one car, and plan these in conjunction with bike repair shops. Increase bicycle route access to ‘park and ride’ in each city and convert 1 per cent of car park and ride each year. This will rapidly increase bike parking with little impost on car parking.
- **Introduce a bike hire system in all major cities** to encourage active means to accomplish short trips and reduce congestion. These hire systems provide opportunities for changing the way we enjoy our cities.
- **Provide additional rail freight capacity** directly from ports to key distribution centres away from the city.
- Fund adequate **public transport links for high visitation venues** such as sporting facilities and universities – the University of NSW has more than 46,000 students and staff – equivalent to a small town.
- Ensure adequate **feeder services** to link with rail centres eg trams, mini-buses
- **Integrate bus timetables with rail** and provide real time information on bus and train movements. Development of local government plans for transport and transit oriented development
- Enable development of local government plans for transport and transit oriented development to assist in the provision of cost effective, efficient solutions at the local level.

Modern Australia has been shaped by the availability of cheap fuel for motor vehicles. The phenomenon of peak oil means that petrol costs are rising and we must reduce our dependency on increasingly expensive oil imports. The provision of improved public and active transport through improved train, bus, tram and bicycle infrastructure is an excellent way to reduce this dependency.

However, as outlined above, this spending has multiple benefits beyond the weaning of Australia from its dependency on oil. **The economic, social and environmental benefits far outweigh the investment necessary to achieve the necessary improvements.**

### Recommendations

The Commonwealth Government must realign its transport budget to focus on improving public and active transport infrastructure rather than spending vast sums on unnecessary roads and it must remove the perverse subsidies of the Fringe Benefit Tax for cars.

ACF is asking that Australia rebalances the transport budget allocating two thirds of the money to public transport and one third to roads. This is not an ambitious target; it is in line with many

countries where two thirds of major capital investment is made in public transport and one third in road investment.<sup>xii</sup>

Spending must begin at once. This will enable the rapid implementation of solutions such as bus rapid transit and bicycle infrastructure. Improvements to railways must also commence given their longer implementation phases. At the same time Government planning instruments must focus on the redesign of our cities to contain urban sprawl and to encourage Transit Oriented Development.

Only then will Australia become more sustainable in its provision of transport services and provide functional cities with a greater sense of community and a reduction in social exclusion for those who are unable to drive.

**For more information, please contact**

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*The Australian Conservation Foundation is committed to achieve a healthy environment for all Australians. We work with the community, business and government to protect, restore and sustain our environment.*

*[www.acfonline.org.au](http://www.acfonline.org.au)*

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<sup>i</sup> Department of Climate Change (2008) *Transport Sector Greenhouse Gas Emissions Projections 2007*, Commonwealth of Australia, Canberra; online at

<http://www.climatechange.gov.au/projections/pubs/transport2007.pdf>

<sup>ii</sup> Bus Industry Confederation (2007) *Moving People a National Priority* available at [www.ozbus.asn.au](http://www.ozbus.asn.au). The Bureau of Transport and Regional Economics (BTRE) estimated the cost of congestion in Australia was \$12.8 billion in 1996 and projected that these costs would rise to \$29.7 billion by 2015

<sup>iii</sup> Cosgrove, D *Estimating urban traffic and congestion cost trends for Australian cities: Working paper 71* p 135-42 Bureau Transport & Regional Economics. Online at <http://www.btre.gov.au/publications/56/Files/wp71.pdf>

<sup>iv</sup> <http://www.infrastructure.gov.au/roads/safety/>

<sup>v</sup> Australian Government (2007) *Road Deaths Australia, 2007, Statistical Summary* Dept Infrastructure, Transport, Regional Development and Local Government

<sup>vi</sup> Berry, J & Harrison, J. (2008) *“Serious Injury due to land transport accidents – Australia 2005-6”* at [http://www.infrastructure.gov.au/roads/safety/publications/2008/pdf/Ann\\_Stats\\_2007.pdf](http://www.infrastructure.gov.au/roads/safety/publications/2008/pdf/Ann_Stats_2007.pdf)

<sup>vii</sup> Stevenson J, Baume A, Armstrong T, Smith B & Bellew B (2000) *The costs of illness attributable to physical inactivity in Australia* Commonwealth Department of Health and Aged Care

<sup>viii</sup> House of Representatives Standing Committee on Environment and Heritage (2005) *Sustainable Cities* The Parliament of the Commonwealth of Australia, Canberra

<sup>ix</sup> World Health Organisation (2006) *Promoting Physical Activity for Health: a framework for action in the WHO European Region*, WHO European Conference on Counteracting Obesity: Diet & physical activity for health, Istanbul, Turkey, 15 – 17 Nov, at [http://www.euro.who.int/Document/NUT/Instanbul\\_conf\\_edoc10.pdf](http://www.euro.who.int/Document/NUT/Instanbul_conf_edoc10.pdf) and Pucher J., Buehler R( 2008) *Making cycling irresistible: Lessons from the Netherlands, Denmark and Germany*, Transport Reviews, V.28



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- <sup>x</sup> Bureau of Transport and Regional Economics, Working Paper: *Health impacts of transport emissions in Australia* (2005), at: [www.btre.gov.au/docs/workingpapers/wp63/wp63.pdf](http://www.btre.gov.au/docs/workingpapers/wp63/wp63.pdf)
- <sup>xi</sup> CSIRO Reshaping Cities for a More Sustainable Future Online at <http://www.csiro.au/science/ReshapingCities.html>
- <sup>xii</sup> Garden FL & Jalaludin BB (2008) Impact of urban sprawl on overweight, obesity and physical activity in Sydney, Australia *Journal of Urban Health: Bulletin of the New York Academy of Medicine* Published on line 4 Dec 08.
- <sup>xiii</sup> OECD (2000) *Environmentally Sustainable Transport: futures, strategies and best practice* Synthesis Report from International OECD est! Conference, Vienna p 25: road transport noise is the major source of external acoustic noise in urban areas. It affects people's well being at lower levels, and at higher levels is detrimental to health.
- <sup>xiv</sup> Australasian Railway Association Inc (2000)
- <sup>xv</sup> Australasian Railway Association Inc (2000)
- <sup>xvi</sup> CSIRO (2008) *Fuel for thought: The future of transport fuels*, Future Fuels Forum, CSIRO, Commonwealth of Australia, Canberra, at <http://www.csiro.au/science/FutureFuelsForum.html>
- <sup>xvii</sup> International Energy Agency Executive Director Nobuo Tanaka, quote in IEA's World Energy Outlook 2008 Media Release, 12 November 2008.
- <sup>xviii</sup> Geoscience Australia (2002) *Oil and Gas Resources of Australia 2001*
- <sup>xix</sup> Dodson, Jago & Sipe, Neil (2008) *Unsettling Suburbia: The New Landscape of Oil and Mortgage Vulnerability in Australian Cities*, Urban Research Program, Research Paper 17, August
- <sup>xx</sup> Geoscience Australia (2002) *Oil and Gas Resources of Australia 2001* Self sufficiency for oil in 2007 was 54 per cent ([www.aspo-australia.org.au](http://www.aspo-australia.org.au)) and it is estimated we will be importing 66 per cent of our oil needs by 2015 - Geoscience Australia (2002) *Oil and Gas Resources of Australia 2001*
- <sup>xxi</sup> Currie, G& Senbergs, Z (2007) *Exploring forced car ownership in metropolitan Melbourne*, Institute of Transport Studies, Monash University, Melbourne
- <sup>xxii</sup> Australian Bureau of Statistics (2007) *Report 4102.0 Australian Social Trends, 2006* Online at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts>
- <sup>xxiii</sup> The 6.6 km Alstonville, NSW bypass will cost \$102 m; the 12.4km Ballina, NSW bypass will cost \$660m and each could carry 4000 people per hour; the 15km Mandurah, WA rail line cost \$850m and could carry 20,000 passengers per hour. See <http://www.auslink.gov.au/projects/ProjectSearch.aspx>
- <sup>xxiv</sup> Kenworthy J (2008) An international review of the significance of rail in developing more sustainable urban transport systems in higher income cities *World Transport Policy & Practice* V 4 No 2 pp 21-37
- <sup>xxv</sup> Newman, P & Kenworthy, J "Greening Urban Transportation" in O'Meara (2007) *State of the World 2007 'Our Urban Future'* Worldwatch Institute, Norton Publishers, Washington DC

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xxviii Yarra Trams at [http://www.yarratrams.com.au/desktopdefault.aspx/tabid-39/44\\_read-1331](http://www.yarratrams.com.au/desktopdefault.aspx/tabid-39/44_read-1331)

xxix Healthy Rivers Commission (2001) *Independent Inquiry into the Georges River - Botany Bay System Final Report*. Healthy Rivers Commission of NSW, Sydney at [www.planning.nsw.gov.au/programservices/pdf/georges-bb\\_final.pdf](http://www.planning.nsw.gov.au/programservices/pdf/georges-bb_final.pdf)

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xxxi Department of Climate Change (2008) *Transport Sector Greenhouse Gas Emissions Projections 2007*, Commonwealth of Australia, Canberra; at <http://www.climatechange.gov.au/projections/pubs/transport2007.pdf>

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xxxiv Dodson, Jago & Sipe, Neil (2008) *Unsettling Suburbia: The New Landscape of Oil and Mortgage Vulnerability in Australian Cities*, Urban Research Program, Research Paper 17, August

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xxxvi Newman, P & Kenworthy, J “Greening Urban Transportation” in O’Meara (2007) *State of the World 2007 ‘Our Urban Future’* Worldwatch Institute, Norton Publishers, Washington DC

xxxvii In Copenhagen 36 % of commuter trips are by bike and 90% of people own a bike – Nelson, A. & Scholar, V. (2007) *Liveable Copenhagen: the design of a bicycle city* University of Washington, Seattle at [http://www.sightline.org/research/sprawl/res\\_pubs/Livable\\_Copenhagen\\_reduced.pdf](http://www.sightline.org/research/sprawl/res_pubs/Livable_Copenhagen_reduced.pdf) In Sydney in 2005 bicycle trips accounted for 1 % of trips per day whereas 42 % of households owned at least one bike RTA (2008) *Cycling in Sydney: Bicycle ownership and use* [http://www.rta.nsw.gov.au/usingroads/downloads/cyclinginsydney\\_bicycleownershipanduse.pdf](http://www.rta.nsw.gov.au/usingroads/downloads/cyclinginsydney_bicycleownershipanduse.pdf)

Also, in Melbourne in 1997-99, 1.2% of all trips were made by bike and every second household owning at least one bike see VicRoads (2004) *Cycling in Melbourne: Bicycle ownership, use and demographics 1997-1999* at <http://www.vicroads.vic.gov.au/NR/rdonlyres/D2C6ECD4-186C-4A89-891D-AA45EF7F658B/0/CyclingInMelb2.pdf>

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<sup>xxxviii</sup> Elks, S ( May 19, 2008) *Bike hire scheme to make Brisbane a dinkum Paris* the Australian Newspaper at <http://www.theaustralian.news.com.au/story/0,25197,23720208-5006786,00.html>

<sup>xxxix</sup> See Bus Rapid Transport at [www.ozebus.asn.au](http://www.ozebus.asn.au)

<sup>xl</sup> Brisbane City Council draft Transport Plan 2006-2026

<sup>xli</sup> Jean-Christophe Hugonnard, *“What Can We Learn From the Global Perspective?”*, GHD Executive Forum - Thursday 8 May 2008, Senior Executive Vice President, Asia Pacific Director, SYSTRA