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PROGRESS IN RAIL REFORM
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Introduction

I made a personal presentation tothe October 1998 Perth hearings on this topic supporting a submission byBruce Robinson on behalf of the Bicycle Federation of Australia. My topicwas the imminent peaking ofworld oil supplies, the limited scope for alternative transport fuels andthe central relevance of future fuel supplies to transport in general,urban transport in particular and the part that bicycles could playintegrated with other personaltransport modes.

I left with the Commissioners a copy of my themepaper, *Climaxing Oil: How Will Transport Adapt?,*to be presented to the Chartered Institute of Transport'sNational Symposium in November 1998. This paper, together with the Symposium Statement ofOutcomes and a Symposium Postscript, have since been published by theInstitute of Science and Technology Policy at Murdoch University. A copyaccompanies this submission and is to be read as a part of it (Fleay 99).

The submission is an independent one and willaddress a number of broad strategic issues in a global context as theyapply to transport in general; but with a focus on rail. Most of theseissues have an Australia wide relevance, some are specific to Western Australia. Itis assumed that strategies for transport reformare looking at least 30 years ahead, the normal life of most fixedtransport infrastructure.

From this background some comments will be made onurban passenger transport and the role of rail versus road drawing upon therecently published book *Sustainability and Cities*by Newman and Kenworthy, in which these internationally renowned authors argue that reducing cardependence in favour of rail public transport is the key to improving theeconomic and energy efficiency of cities, their social fabric andsustainability.

Some comments on rail versus road for medium tolong haul freight transport will be made. Transport needs for southernrural Australia must take account of the acute threat to future agricultural production from salinisation arising from clearing the land for agriculture,especially in Western Australia. Future cereal production is under threaton a significant scale, both from salinisation and the dependence of cropproduction on petroleum fuels. A radical transformation of agricultureis imminent and transport planning and development nust beintegrated with it.

But first some comments on the key role ofgovernment leadership will be made in the context of a critique of the prevailing neo-classical economic paradigmand its offspring, Competition Policy.

Transport and Economic Prospects

Western Australian planningstrategies are embodied in the *State Planning Strategy*to 2029*,* a statutory documentfinalised in December 1997 under the auspices of the WA Planning Commission. The Transport Dept. is preparing transportstrategies within this framework. A Metropolitan Transport Strategy hasbeen finalised and within that framework in turn a strategy for bicycles. PerthMetropolitan Freight Transport Strategy is nearing completion and astrategy for walking as a transport mode is being drafted. A transportstrategy for the south west of the state has been completed.

The State Planning Strategy drew upon twoscenarios for Perth and Western Australia prepared earlier by theDept. of Commerce and Trade. These were"business-as-usual" as a continuation of the resource development orientated pattern of thelast 35 years and a higher "quantum growth" one based on the 1990's highgrowth in Asia continuing.

There are now powerful reasons to question therealism of these scenarios. I am not aware of other governments inAustralia having such planning strategies, buttheir behaviour and that of business reflects similar expectations. Economic prospects willbe addressed in the context of the

following significant developments sincemid-1997 that all challenge the realism of these growth scenarios:

- The collapse of Asian growthafter 35 years, its background and prospects.
- The consequences generallyand for transport of the decline of oil commencing during the next decade.The future prospects for the next 10 years are maturing rapidly and have become much clearer andmore certain since 1997, now being discussed in serious newspapers and journals.
- The likely rapiddeterioration in Australia's balance of payments to 2010 and beyonddue to rapidly increasing oil imports and possible reduced motor vehicleproduction in Australia due to mergers and structural changes occurring inthe international motor manufacturing industry. Given the car dependenceof our cities the prospects for increased vehicle imports exists.
- The greater understanding ofthe extent and severity of the salinity problems in the Western Australianwheatbelt, the scale of the remedial actionneeded and the drasticconsequences for cereal production. This impacts on future Perth-ruralfreight movement. The draft State Salinity Action Plan and other forumsare relevant. Investigation and direct evidence is revealing that the sameproblem exists in the rest of southern Australia, the Murray/Darling Basin and parts of SouthAustralia. A reduction in food exports is likely in themedium term.
- Declining rainfall in the South West and itsimplications for further growth of Perth, theSouth West and for agriculture. The Water Corporation has already reduced the yield of Perth's watersources by 17% this year due to climate change and has embarked upon a$3-400 million works program to 2003 to rectify the deficiency.

The answers to these questions have a majorbearing on all transport andcannot be ignored in any consideration of rail reform

Asia's Meltdown

A 35 year Asian economic boomclimaxed in the 1990's and collapsed in 1997. Australia was part of that boom as a supplier ofminerals and farm produce. In that period Australia became the world'slargest exporter of coal, iron ore, alumina and mineral sands, the second largest producer of gold and a significant supplier ofnickel, copper and silver-lead-zinc, mostly to Asia. We werea part of the boom, especially in Western Australia.

What is the background to this meltdown?

This analysis draws heavily on a book,*Beyond Meltdown: the Global Battle for Sustained Growth*(Brain 1999). Dr Brain's analysis is within the broad framework of neo-classicaleconomic theory, but interpreted through the historical, cultural and political context of the various national players. Hisapproach leads him to be highly critical of the "pure'" academicapplication of neo-classical theory and its ahistorical framework dominantin Australia since 1970. The strength of his analysis is its realistic description of the dynamicsof world economic development this century and how it has led to thepresent crisis, its likely outcome and what Australia's response should be. Some of his prescriptions are heresy within the prevailing paradigm whichhe sees as the source of many of Australia's problems..

From my perspective he wrongly accepts economic growth as bothpossible in the 21st century and desirable, indeed he accepts it as theprime focus for economic strategies everywhere. He does not recognise the significant gross distortions that arise fromusing Gross Domestic Product (GDP) as a measure of economic benefit, northe environmental and resource constraints that now limit the scope foreconomic growth and which set the boundaries for future development. He does not recognise the deficienciesof classical economics with regard to energy as outlined in Fleay (1999),nor the key role of oil in the Asian growth "miracle" (Fleay 1999, p. 46).However, these criticisms, important a they are, do not detract from the merit of his book.

Dr Brain maintains this has been the American century and thatmanufacturing was and still is the key industry sector. In the period 1900to 1930 the US displaced Great Britain as the dominant economic power,especially after 1920 when it pioneered the transition from direct steam power to electric drive in manufacturing andbegan the shift to oil, especially in transport. There was a dramatic increase in productivity and GDP. The integrated ecology, economics andenergy approach gives direct support to this observation from a GDPperspective, see Fleay (1999), p. 7. Furthermore, the US more than any other nation was endowed withan abundant mix of key high quality energy and other resources allfavourably located with respect to each other, a critical and indispensablecondition for the USA's rise to economic, political and military dominance, according to Walter Youngquist(Youngquist 1997, pp. 104-112).

Other developed countries ever since have attempted to "catch up" with US productivelevels, a struggle in which government intervention has always played acentral role and which has been the prime focus of 20th century history.Germany then Japan were the first contenders, a challenge that led to two world wars as both these countriesembarked on unsuccessful military conquest to capture both the resourcebase and population (ie. market size) needed to emulate the USA. 100million people died in these two titanic struggles. The first world war intensified the imbalancebetween Europe and the USA which helped lead to the second world war.

The US boom collapsed in 1929 partly due to a speculative investmentboom, partly due to manufacturing productivecapacity exceeding the market. This led tomassivefailures of the US banking system that intensified the 1930's depressionwhich was only ended with the outbreak of WorldWar II.

Dr Brain maintains the prevailing libertarian neo-classical economicdoctrine says sustained economic growth will occur when governments do notactively participate in economic development,free competition prevails and market forces are allowed free reign. There is afurther important implicit assumption that such a system tends toequilibrium, ie. stability prevails and instability is rare, conditions forgrowth are optimised. He says the reverse is the case. It is very difficult to achievesustainable growth. The assumption of equilibrium also marginalises therole of creativity, the driving force of 20th century economic development.Creativity is an equilibrium disturbing activity essential to competitivecompetition. He lists, in order of difficulty,six conditions that must be met simultaneously for sustained growth tooccur, such as happened in the USA from 1900 to 1930. These are:

- The existence of an adequatesupply of appropriate investment opportunities at an acceptable level ofrisk. Managing and minimising risk is essential
- External trade, equitybetween imports and exports - no trade deficits.
- The financing of enterprises - borrowings mustnot be excessive, risk managed.
- Internal demand - equalitybetween the demand for and the supply of goods and services to ensure thatinstalled capacity is fully utilised..
- The structure of industry - capacity bottlenecks must beavoided or eliminated, including balanced development ofinfrastructure.
- Human capital - educational levels, aptitudes, workforceskills must be at a sufficient level.

The major difficulty is maintaining appropriateinvestment opportunities at an acceptable low risk level, particularly whenchallenging the dominant economic powers. These investments must be at thecutting edge of technology. Technological innovations to achieve acompetitive advantage has driven economic development during the twentiethcentury. A sustained and active strategic input bygovernment is required to support innovation and counter intrinsicentropic tendencies. Once one of the conditions fails and growth slows,positive feedback tends to amplify the slow down. Examples of conditionsprompting failure are:

- World economic outlook (egrise in oil price)
- Inappropriate domestic policies - or lack thereof.
- Friction over income distribution.
- Uncorrected domestic structural imbalances (financialexcesses).
- Changes in structuralcompetition from national resource depletion or technology change.
- Loss of industry competitiveness due to emergence of newtechnologies or a new foreign dominant competitor.

New strategies enabled other nations to finallybegin catching up with the USA between 1950 and 1985, but also because ofconscious transfer of technology to Europe and Japan by the USA under ColdWar conditions which helped undermine US economic dominance in the medium term. 1950 to1970 saw oil displace coal as the dominant fuel and the penetration ofelectricity in to every facet of life. Extraordinarily cheap Middle Eastoil from giant discoveries from 1930' to 1960 was a vitalinput that powered this period of stable growth everywhere.

Countries have used various development modelsaccording to their historical, cultural and political circumstances in anattempt to ameliorate or break through the risk management constraint tohigh growth. Dr Brain says these models are:

- The infant industry model,eg Australia to 1970, tariff protection etc. Now an obsolete model nolonger viable due to growth of the global economy.
- The corporatist state model,eg Japan, South Korea and Taiwan - the latter made successful use of keygovernment owned enterprises and a high standard for traditional public servants in key areas.

- The communist model of totalgovernment ownership, eg USSR, China. An extreme form of the corporatiststate model. China is now becoming more like the corporatist statemodel.
- The socialist model,intermediate between the communist and corporate state models, eg India andsome Asian and African countries.
- The crony capitalist model,eg Thailand, Indonesia, Malaysia.
- The social market model, Europe, the European Community.
- The knowledge industry model, the latest model, USA from theearly 1980's.

During the 1970's, and especially during the1980's, the corporatist state model seemed invincible. The early 20thcentury industrial model was developed toperfection. It was widely assumed that Japan would becomethe dominant economic superpower early in the next century. However,during the 1980's the USA developed a knowledge industry structure whichhad the risk-management advantages of the corporatist state without itsinflexibility and vulnerability to corruption. The US government funded military-industrial complex and NASA arethe principaltechnological power-house driving the knowledge industry model bypioneering expensive innovations and facilitating there application tomanufacturing. The end of the Cold War helped the USA by reducing the burden of military expenditure and leading tothe transfer of significant numbers of highly skilled technologists fromadvanced military to domestic industry tasks..

The culture of the USA provides a more favourable environment for thedecentralised decision making characteristic of the knowledge industrymodel compared to the cultures of Japan and other Asian "tigers". In the1990's the USA began to outstrip Japan in export growth. Dr Brain claims the knowledge industry model is the mostsignificant development since the earlier model pioneered by the USA at thebeginning of this century and poses a crisis for the older models.

He says this development was a competitive disaster for Japan and thosecountries dependent on it, a fundamental reason for the Asian meltdown inaddition to the growth of corruption intrinsic to these Asian models.. Hesays economic recovery in Asia will take well into the middle of next decade and could be longer. Recoveryrequires such a fundamental culture change that it won't occur overnight.High Asian growth rates belong to the past. Indonesia may welldisintegrate as a nation.

He also discusses in some detail theinter-relatedness of these developments with financial deregulation andeconomic globalisation.

Some economists see signs of Asian recovery bottoming out, but the currentstock exchange recovery is limited to a very narrow range of companies andthe massive debt overhang for the majority is not resolved, a key barrierto permanentrevival (Australian Financial Review 1999).

The Asian recovery will merge into the era when global oil production peaksnext decade which will profoundly alter the outcome, a factor Dr Brain isnot aware of. See the discussion below. He gives insufficient attentionto the severe environmental and resource constraints closing in on Asian countries current ambitions. Abusiness-as-usual recovery is not possible in the medium term.

He sees knowledge industries centred on a fewglobal cities, with Sydney possibly one. The WAState Planning Strategy's "quantum growth" model aspires for Perth to besuch a global city.

However, he also sees polarisation into a few wealthy global cities and alarge number of poorer ones, and even the same pattern within globalcities. Only a few will participate. This is a major threat to"sustainable growth" under this model and he advocates the need for policies in both the USA and Australia to reduce thewealth polarisation that is occurring.

From 1970 growing globalisation forced Australiato progressively abandon the infant industry model. The policy eliteembraced monetarism and becameincreasingly reliant on its parent, American neo-liberalism, an ideologythe US preached but did not always practice. The change was stronglysupported by pastoral and mining interests who claimed they could underpincontinuing prosperity. It was "pure" neo-classical economicsimported by academics, a model honed to perfection in the USA that advantages the hegemonic power, according to Dr Brain. Alsotechnological development was becoming far more important, favouringeconomies of scale and Australia was a small market.

Reducing tariffs, deregulating, privatising, reducing the role ofgovernment, creating a "level playing field", letting market forceswork, reducing tariffs and a relatively passive role for government was the strategy. The resulthas been de-industrialisation and a loss of manufacturing industry.Deregulated financial markets in the 1980's in the absence of compensatinggovernment

initiatives and industry policies, led to unproductivespeculation, casinos and property booms, rising debt and unemployment, notinvestment in leading edge industrial development. John Button's policy for the car industry was aconspicuous exception.

The outcome was heavy capital intensive investment in mineral and energydevelopment that employs few people and where commodity prices have had along and sustained fall in real prices. Australia is the only developedcountry whose GDP per capita did not improve relative to the USA , unlike most other developing countries inAsia and elsewhere whose governments actively pursued appropriateinterventionist policies. The prevailing ethos is against dynamic and sustained input bygovernment to develop industry policy and give leadership, the key to thesuccess of other countries and essential for countries like Australia.

Dr Brain sees the only way forward for Australia as the rejection ofAmerican-imported neo-liberalism's disregard for the role of government anda return to the indigenous liberal tradition which expects much ofgovernment The pragmatic use of governments was how Australia overcame its disadvantages in the nineteenth and earlytwentieth centuries. He says a century ago Australia's disadvantages werelong distances and small scale and that the tyranny of distance has been conquered but the diseconomyof small scale remains.

He does not realise that the peaking of conventional oil (see below) meansthe reversal of this pattern next century, an increase in the tyranny ofdistance and a growing economy of small scale, not only for Australia butfor the world. His does not understand that the new knowledgebased development model as he describes it is dependent on abundant cheaptransport that is dependent on abundant cheap oil for its development,therefore has a limited future. But we urgently need knowledge baseddevelopment of a different kind.

The growth vision of the *StatePlanning Strategy* is seriously flawed as it is based onromanticised utopian fantasies of economic growth that have overtones of acargo cult mentality. The same visions are also in part driving rail reform.

Oil Production Climaxes Next Decade

Note: one barrel equals 160litres.

The comments here are additionalto those in Fleay (1999), incorporate comment on developments to datein 1999 and summarise the essence of thepresent situation and theprospects for next decade.

Conventional oil production in the world outside the Persian Gulf is goingto peak around 2001, now a certainty as the focus for upstream oildevelopment shifts to the Persian Gulf as explained below. World oilproduction will peak between 2007 and 2013 with economic and political events being the major factors determiningthe latter date as much as the progress of oil depletion or debate on thesize of the remaining oil endowment . This viewpoint was accepted in March1998 by the G8 Country Energy Ministers on advice from the InternationalEnergy Agency (IEA). However, the IEA is still under the illusion that non-conventional oil (mainly tarsands and shale oil) can painlessly bridge the gap to 2030. See Fleay(1999).

The price of oil is governed mainly by commoditytraders perceptions of the balance between supply and demand about one yearahead. Few tradersare aware of the impending peaking of oil. However, exploration anddevelopment to meet demand in the middle of next decade needs to start now,there is a 5-7 year time lag between commencing exploration and new fields reaching full production.

The Persian Gulf producers have 60% of the world's remaining oil butproduce only 30% of annual production. Furthermore, their production costsand the cost of finding and developing new supply are both one-third toone-fifth of that in the rest of the world - much of Saudi Arabian oil costs less than US$2 per barrel to produce.In the short term little exploration is needed in these countries, it is amatter of developing already discovered oil and gas and carrying out abacklog of refurbishment investment on existing wells.

Since 1979 oil production as well as petroleumexploration and development has been concentrated in the expensivenon-Persian Gulf world for political reasons. Cheap Persian Gulf producersoperateat the margin, the reverse of what economic theory says should happen. Thepolitical motive to avoid dependence on these country's oil has dominateduntil now.

This strategy of the major consuming countriesworked because of the enormous supply surplus that developed in the early1980's (about one-third of production capacity in 1984), mostlyconcentrated in Persian Gulf and Organisation of Petroleum Exporting Countries (OPEC), especially SaudiArabia. Oil consumption fell from 1979 to 1986 then rose again with mostsupply

increase obtained by turning on shut-down oil wells in the Middle East, especially from 1990 when Iraqi production was "removed" from themarket. High 1970's oil prices collapsed in 1986.

Since 1986 the finances of Gulf countries have deteriorated, the Arabbillions have gone. Major oil companies have also been put through thefinancial ringer. Cost cutting has dissipated their capacity to explorefor oil and gas while new discoveries are in ever smaller fields in more expensive locations like deep wateroffshore, where most of the new but limited opportunities exist. Turning on shut down oil wells from 1986 compensated for this high costoil and attrition of the industry's capacity to explore for and develop newoil and gas fields.

By 1995-6 few shut-down oil wells were left to turn on, and these aremostly in the Persian Gulf, eg Iraq. Consumption growth rate was nearly 3%in 1997, the highest since the 1970's and higher still in Asia. Oil fromthe Persian Gulf powered a decade of growth in the Asian "tiger economies " of South Korea, Thailand,Indonesia and Malaysia. China began importing oil in 1994. Suddenly thelevel of new oil field development needed to double and treble to meetconsumption if these high growth rates continuedand tocompensate for the increasing number of declining oil fields expectedoutside the Persian Gulf.

But the debilitated service industry did not havethe capacity to do this nor could this capacity be increased in areasonable time frame at an affordable cost. By 1996 the offshore serviceindustry was fully committed in the critical equipment and skilled staff areas. By December 1997nearly all non-Persian Gulf exploration and development was offshore. Theprice of oil rose to US$24/barrel. Hire rates for offshore drilling rigssky-rocketed.

Then the Asian crisis hit consumption late in 1997, it barelyincreased in 1998 and oil prices began to fall as the magnitude of thecrisis became apparent. By December 1998 oil prices hadfallen to US$9-10 per barrel, equalling in real terms the lowest ever reached in the industry'shistory. The International Monetary Fund bailed out Russia in August 1998when foreign exchange earnings from oil slumped. Russia has notrecovered.

At this price oil was at or below the productioncost for much heavy oil (Venezuela, Canada, Mexico), Canadian tar sands,Mobil oil production, some deep water offshore wells and the 450,000 USstripper wells that produce on average 2.2 bbls per day each (350 litres). 25% of US crudeoil production was at risk of shutting down with employmentand political consequences. The US consumes 19 m.bbls per day, imports 10.5, produces 2 m.bbls per dayfrom natural gas liquids and 6.5 m.bbls per day as crude oil.To import replacement oil could severely tax facilities at ports and inland oil refineries may havehad difficulty obtaining oil due to lack of pipeline capacity from theseports - pipelines from declining oil fields service theserefineries! Accountancy firm Arthur Andersen is reported as saying that Mobiloil production costs were US$11.50 per barrel,higher than the oil price over the northern winter (Oil & Gas Journal 1999and Fleay 1999)

The low prices threatened OPEC country politicalstability. Major oil companies merged (BP-AMOCO-ARCO and Mobil-Exxon),slashed exploration and development budgets, accelerated cost cutting and further attrition of exploration anddevelopment capacity.

In March 1999, after being seared by such ascorching blowtorch, sufficient discipline seems to have occurred followingan OPEC meeting for these countries, Mexico and Norway to limitproduction. Prices have risen to US$16-17 per barrelduring April. Probably with active US and oil company support as well.But for how long? If China and Japan devalue their currency and/or the USeconomy slows, as many commentators predict, it would lead to reduced oil consumption - even a fall. Would the oil cartel weaken and prices fall again? Whatmight the consequences be? Dr Brain's analysis of the Asian meltdown isrelevant here.

The Russian oil industry is in a decrepit state -billions of dollars need spending on it urgently and outside funds andexpertise are needed. The present state of that country ispreventing this from happening (Petroleum Review 1999) A steep fall in oil production could occur before 2005 if thisrefurbishment is not carried out, according to the International EnergyAgency in a report to G8 Energy Minister's in March 1998. Russia'spolitical and economic problems would be aggravated and 2 million barrels per day of oil exports to Eastern Europe cut off andit is questionable whether adequate delivery systems (ie pipelines) existto supply oil from alternative sources. Former Soviet Union oilproduction peaked in 1989 at 12 m.bbls per day and has since fallento 7 m.bbls per day. About half the fall isdue to field decline, half due to a fall in consumption from10 to 5 m.bbls per day, a consequence of depressed economic conditions.

Sheikh Yamani announced in October 1998 SaudiArabia's intention to keep oil prices below US$18 perbarrel to capture high cost production elsewhere anddiscourage high cost petroleum development in the rest of the world. Furthermore, he said byinviting major companies to make "expressions of interest" for petroleuminvestment in these countries they can capture

investment in explorationand new capacity development as well. The major companies are focused on returning to the Middle East, notmarginal Australian development.

The major companies are currently negotiatingagreements with Persian Gulf countries, but firmly on those countries terms(West Australian 1999). Suddenly investment in expensive oil and gas development elsewhere in the world hasassumed a much higher risk, such as on the North West Shelfin WA and inthe Timor Sea. BHP Petroleum is selling its Timor Sea assets, Shell hashanded over its Australian exploration to Woodside. Exploration budgetsare being cut everywhere.

This situation, mediated by low oil prices, could continue for severalyears given the present fragile state of the world economy, a widely heldview in oil industry circles. Economics is overtaking politics for oil. It is inevitable that the Persian Gulf countriesshare of world production will increase from its present 30% to 45-50% by 2010 and representing perhaps a 60% output increase, providedpolitical and economic perturbations do not become too extreme.

Meanwhile the major oil companies operations elsewhere will contract aswill the industry's capacity to explore. There will be fewer companies in2010. Only a few majors are likely to be invited back to the Persian Gulf,one of the reasons for the spate of mergers. As Colin Campbell says,"when the prospects for discovery diminish they can only eat eachother".

US and European petroleum industry journals now openly publish articles byColin Campbell and Jean Laherrere that describe the coming oil peaks andthe character of the decline phase (eg Petroleum Economist 9/1997 to6/1998, Laherrere 1999). The tone ofthe journalist's articles skirt around the issue obliquely. They are allwaiting for someone else to say bluntly what is happening. Perhaps over the next 12 months, when the deals between Persian Gulfcountries and oil companies are revealed, the news will break. It willbecome too difficult to deny what is obvious.

It is all in a very fragile state.

By 2030 world conventional oil production will most likely be some 60%of present levels, this estimate is written into the physical performanceof existing oil wells which will become the prime determinant of productionlevels once the peak is reached. There will be additionalnon-conventional oil production. However, theeconomics ofits production will always severely limit the scale of production and its capacity tosupport the transport and agricultural systemswe currently have.

Australia

The Australian GeologicalSurvey Organisation (AGSO) has published its June 1998 estimates for Australian oil and condensateproduction to 2010 (AGSO 1999). Together with business-as-usual estimatesfor consumption these show Australian net crude oil imports to be about 40 million barrels in 1999 increasing in 2010 to 200 million barrels outof an estimated 340 million barrels total consumption (Fleay 1999). Eventssince June 1998 described above suggest the AGSO's estimates for 2010 maybe on the optimistic side. Companies are slashing exploration anddevelopment budgets.

At April 1999 exchange rates (~62.5cAust to US$1)and oil prices of $US15.50 perbarrel these figures represent an import bill of $1000 million in 1999,increasing to $8500 million in 2010 if oil prices increased to US$26, justabove the December 1997 price. Oil prices in the early 1980's reachedUS$60-70 at present day prices. But who knows what the exchange rate will be in 2010.

Clearly business will not be "as usual".

It is highly likely that by 2030Australian crude oil production will have ceased with a poor chance forimports from the Middle East, but we will have some natural gas liquids andnatural gas. It is getting a bit late to discover the giant fields Australianeeds to change these forecasts, nor are weimmune to events in the rest of the world. The least explored area in theTimor Sea is an expensive location forpetroleum development as it has moderately deep to deep water remote fromshore bases. Companies are pulling out until the political situation inIndonesia stabilises which couldtake years.

Australia needs to urgently plan for the shift ofland freight transport to natural gas as a fuel. As yet rail operatorshave given it scant attention.

The Federal government's tax reform meausres asthey will affect fuel and vehicle prices give the wrong signals on oilconsumption and the need to shift much of land freight from disel to gas, favour car travel in cities and disadvantage publictransport (Australia Institute 1998).

Australia's Balance of Payments

Oil imports contribution to adeteriorating balance of payments to 2010 have been discussed above.

The international car manufacturing industry isundergoing major restructuring. Before the Asian financialcrisis it faced a massive excess production capacity, In 1996 it produced 50 million vehicles but had the capacity to make 68 million and this wasexpected to expand to 80 million around 2000 (Economist 1997).Mergers and alliances are the order of the day and it is expected that thenumber of companies will be reduced from 17 to 10 or 11 over the next yearor two (Economist 1999). Three developments are driving therestructuring:

- Over-capacity, partly aconsequence of expansion in Asia under the crony capitalism and corporatestate growth models , especially in South Korea.
- The impact of newmanufacturing technology arising out of the knowledge industry model thatis giving a competitive advantage to economies of scale and those companiesat the forefront of this innovation.
- The development of hybrid petrol-electric drive vehiclespossibly leading to full electric drive using fuel cells to convert fueldirectly to electricity (hydrogen, methanol,natural gas?). These developments have the potential to halve fuel consumption.

The latter innovations were first prompted by thegrowing concerns over exhaust emissions, air pollution and greenhouse gasconsiderations, to reduce emissions by dramatically improving fuelefficiency. However, it is not clear whether fuel cells can use petrol. It is likely that companies have stepped up these programs as the coming decline of oil hasbecome more openly discussed over the last 18 months. Toyota already has ahybrid petrol-electric car on the market.

Companies that have merged so far, or have an alliance, includeChrysler-Mercedes Benz, Toyota-General Motors, Ford with Mazda and Volvo,Nissan-Renault and BMW-Rover. Some smaller companies may close altogether. Introducing such dramatic technologicalchanges has high risks and requires a massive investment that only thebiggest companies can undertake.

This raises the question of the future ofAustralian car manufacturing over the next 10 years. Is there a place forit in the new electric drive revolution? If not, and there is a significant contraction of the industry, what does this meanfor increased vehicle imports and the balance of trade? Mitsubishi is thesmallest manufacturer and is not a large one in Japan. If this happenedAustralia would be forced to cut imports generally, including cars, to reduce trade deficits. What wouldthat mean for the level of imports through ports and related rail and roadfreight transport? What are the implications for our car dependent cities?

Further investigation of this issue and its transport implications is warranted.

The salinity problems arising in southern Australia's cereal croppingfarm lands could also adversely impact on export income in the medium term.

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Salinisation of agricultural land

Southern Australia

A revised draft WASalinity Action Plan (SAP) to 2030 was released for public comment inDecember 1998. It addresses the salinity issue from Geraldton to the southcoast. The notes below are based on information in SAP unless indicated otherwise.

The region has a very flat topography, slightly uplifted on thewestern margin so that it tends to function as a large poorly drainedevaporation basin. 75% of Australia's salinised farm land is in WesternAustralia.

Before land clearing for agriculture only 1% ofrainfall in the main drier parts of the wheatbelt discharged as stream flowto the ocean, the rest was nearly all transpired by the original openwoodland, a small amount infiltrated to mostly deep ground water tables. Streamflow wasnegligible and intermittent, mostly fresh from shallow infiltration of raininto rivers which in turn seeped again into the soil washing accumulated salt below tree root zones. The ground water is mostly in complex multipleunconfined, perched and confined aquifers. The deep rooted perennialwoodlands were uniquely adapted to this combination of climate, topography,leached and nutrient impoverished soils.

Consequently salt fall in the rain (someof the highest inthe world) has been left behind over tens of thousands of years as vastaccumulations of salt below the root zone.Clearing of the land and substituting lowtranspiring annual cereals and pastures hassubstantially reduced evapo-transpiration andincreased ground water recharge by up to two orders of magnitude and increased streamflow. Therising ground water is mobilising the stored salt. A brief background isdescribed in Fleay (1999).

Salinisation threatens the 19 million hectares ofland in WA's wheatbelt. 9.5% has already been lost to farm production and 22.5% or more could become saline over the next few decades in the absenceof effective counter measures to first halt, then reverse the rising watertables. 36%

of the divertible surface water in thesouth west suitable as potable water or for irrigation has now becomebrackish or saline. A further 16% has become of marginal quality. Theland should never have been cleared.

More than $54 million has been spent on salinity management andresearch and the scientists in WA , and increasingly thefarmers, are becoming the worldleaders in dry land salinisation management.

Salinisation occurs unevenly over the landscape,low lying land being at the greatest risk, often the most productivefarmland.

Rising salt is also damaging buildings andcommunity facilities in some towns (eg Merredin) and shortening the life ofroads and rail track as soil and building material strength is affected. ARRBTransport Research in 1997 indicated that a considerable percentage of theState road network was currently affected or potentially at risk fromrising water tables and salinity.

There is a high unrecognised social costassociated with the problem adding to the considerable stressesthese communitiesare under from other causes.

The solution requires managing ground andsurface water. Significant restoration of deep rooted perennial vegetationis required together with a marginal role for some crops and pastures that have corresponding transpiration characteristics, eg lucerne. The enormous scale of the revegetation required affects the economic viabilityof cereal cropping and the revegetation required must include commercialtree crops, deep-rooted perennial grasses and herbs if success is to beachieved.

A radical restructure of agriculture in thewheatbelt is necessary and has already begun. TheWA government has announced a $3 billion contribution over 30years to SAP which anticipates thatland holders will make an even larger commitment. The Landcare movementhas taken firm hold in rural Western Australia and is rapidly out growingits initial framework.

SAP (p. 11) says the consensus among scientists is that 20% of thelandscape must be revegetated with high water use systems in strategiclocations as a minimum requirement.

However, Tom Hatton, leader of CSIRO's Sustainable Catchment Management Program in WA, says atleast 80% of the land must be revegetated based on recent research about tobe published by CSIRO (Hatton 1999). The research models ground waterbehaviour under various vegetation regimes using recent data obtained from measuring the transpiration performance of a variety of tree species. The modellingshowed this degree of revegetation was required to lower water tablessufficiently to dry out low lying land and it would take more than 100years. Any lesser coverage would lead to excessive salt accumulation under the new trees eventuallykilling them. Land has already been lost to salt and more isinevitable, the likely ultimate area is uncertain.

Clearly the very future of cereal and canolaproduction in the WA wheatbelt is at stake,even pastoral pursuits. There is the added problem of adapting to anagriculture not dependent on petroleum fuels, an issue yet to be integrated with actionto combat salinity. A significant reduction of cerealcropping is inevitable.We face either the demise of much of rural Western Australia or its urgentradical transformation to different agricultural products and practices.

The transformation will take thebest part of next century and the availability of petroleum fuels isindispensable to the initial stages over the next three to four decades.This task must have first call on our remaining petroleum fuels.

Similar dry landsalinisation is emerging in South Australia and the Murray-Darling Basin,among other problems such as eutrophication ofstreams. Tom Hatton says recent research, drawing on work in WesternAustralia, now recognises essentially the same problem exists needingsimilar solutions, viz revegetation of the land by deep rooted vegetationperhaps on a similar scale to Western Australia. The problem is apparently taking longer to develop due to the differenttopography and drainage patterns and will require its own uniquerange of responses. Again the fate of a large portion of Australia's foodproduction is at stake.

Salinity in the Murray River isincreasing at an accelerating rate. Mostof South Australia's irrigation and public water supply comes from theMurray River and is under threat in the medium to long term.

A book on the subject is in press and a CSIROreport is awaiting release (Hatton 1999).

This massive crisis obviously has profoundimplications for transport in rural areas in general and for rail inparticular. The grain crop is mostly railed to ports for export and is animportant source of export income. Neither the WA State Planning Strategy, Transport WA strategy documents,Main Roads Department forward plans nor public policy in other states and the

Commonwealth recognise the magnitude ofthe problem, its potential implications for transport generally and indeed forthe future of Australia and the population implications.

The validity of 30year planning documents that assume a "business-as-usual" growth scenario must clearlybe questioned.

Declining Rainfall in the South West of WA

The Water Corporation (WC) in WAhas announced a $275 million project to pipe water to Perth from StirlingDam on the Harvey River 140 km south of the CBD. Stirling Dam is to besupplemented by water pumped 16 kmfrom Harris Dam further south on a tributary of the Collie River. This damwas constructed 10 years ago for public water supply to Great Southernfarms and towns to replace the supply from Wellington Dam on the mainCollie River which had become too brackish for public supply. Selective buying back offarms on the Collie River and planting trees is slowly halting the salinityincrease and the river should become fresh again. Most water fromWellington Dam is used for irrigation.

The Public Environmental Review(PER) for the Harvey Stirling project says it is being built because ofclimate change (Water Corporation 1999).

Since 1974 persistent low rainfall has reducedstream flow into Perth's dams to 60% of the long term average since 1911.The 25 year drought has forced the WC to reduce the expected yield from itssurface and ground water sources from 297 to 247 GL per year, a 17%reduction. The Harvey-Stirling Scheme meets two-thirds of the short-fallby 2003, the remainder will be met from new ground water development in theWanneroo area north of Perth.

Perth's water supply is an integrated system of surface and groundwater sources that supplies the Metropolitan Area, Mandurah to the south,farms and towns in the central wheatbelt and mining centres from Kalgoorlieto Norseman, nearly 80% ofthe State's population. The greatest rainfall decline has been in the highrainfall zone where the dams are located and where the salinity risk isleast. The percentage decline in rainfall increases from north tosouth.

If the rainfall decline persists the PERsays the yield from existing water sources could undergo further declineand the previously expected yield from prospective new sources would alsobe reduced, forcing the WC to go even further south to supply water for the city atpresent levels of service. The impact of declining rainfall on water yieldfrom dams is greatest in the north (Mundaring Weir near Perth) than in the south (Dandalup and Harvey River systems).

All public parks, a large part of household gardenwatering, horticulture irrigation and some industrial water comes fromprivate ground water bores which in total supply more water than the publicsupply system. The samecoastal plain ground water supports anextensive and a diverse system ofwetlands that are under stress.

In April the CSIRO's Division of Atmospheric Research (DAR) publicised a paper on rainfall variation throughout Australiathis century (West Australian 1999a, Hennessy et. al 1999). While the restof Australia has been getting wetter since 1910, winters in the south westof WA have been getting drier because the system of cold fronts that bring rain each year has moved farthersouth. There has been a 25% drop in winter rainfall this century, but asmall increase in summer rainfall. The rest of Australia, except Tasmania, has been getting slightly wetter.

An author of the paper, Kevin Hennessy, said "that the path followedby a lot of cold fronts is moving farther south over a long period and we know why, but not how." He said the shift could be related to globalwarming or just a natural long-term variability in global climate. "If thefronts moved a farther five degrees south, which is about 500km farthersouth, they might miss the whole of South-West WA" (West Australian 1999a).

Many scenarios for the global enhanced greenhouseeffect show a cooling trend for the south west of WA. Is this the firstmanifestation? In 1996 the Climate Impact Group in CSIRO's Division ofAtmosphericResearch published a range of plausible climate scenarios for 2030attributable to the enhanced greenhouse effect (CSIRO 1996). A summary ofthe conclusions is given below .

- These scenarios suggest thatrainfall from May to October in the SW of WA could vary in the range -8% to+2% relative to 1990 rainfall depending on the assumptions made in each ofthe scenarios.
- These rainfall changes in the scenarios apply to broad areas.Significantly larger or smaller changes could apply in locations wheretopography strongly controls rainfall patterns. (eg the Darling Scarp wherethe dams are located)
- These simulations ofrainfall change for Australia are particularly sensitive to oceanicprocesses.

- Future rainfall overAustralia may be affected by local changes in ocean circulation, changes inlarge-scale atmospheric circulation due to increasing sulphate aerosols in Asia and changes in El Nino.
- Some models can now crudelysimulate El Nino related climate variability.
- **Levels ofsoil moisture and run-off can be verysensitive to changes in rainfall and evapo-transpiration and will be important for water resources, agriculture andbiodiversity.**

L**ong term variations in generalocean circulation could also be responsible and as yet we know very littleabout this phenomenon. There is more likely to be an interaction betweenboth.**

There are important implications for agriculturein the south west, for biodiversity, south west forests and for waterresource managers faced with falling water yields. The rainfall decline sofar has been least in the drier agricultural areas.

It challenges the pattern of urbandevelopment in Perth and the high garden water consuming urban sprawl thatgoes with it.Private and public supply use already diverts an extremely high percentageof the Perth regions water resources, even as historically assessed onhigher rainfall patterns.

There are significant consequencesfor transport and land use.

Again it challenges the veracity of the business-as-usual populationprojection of two million people for Perth by 2030, and the even higher onefor the "quantum growth" scenario. This scenario envisages a global citywhich features Perth as a pleasant sand safe place to live. Not if it is desiccated.

Growth scenarios - Conclusions

From mid-1999 the growth scenariosof the State Planning Strategy in hindsight look even more like utopianfantasies.

The Asian boom has ended and the future isunclear. The future of oil, the characteristics of its imminent declineand the implications for Australia and the worldare becoming more sharply focussed as a near term event. A full recognitionof the consequences of clearing of land for southern Australian agricultureis emerging in the WA Salinity Action Plan and in recent research.

Declining rainfall inthe south west of WA has finally had dramatic consequences for Perth'swater future, a time of reckoning hasarrived. All these factors together have the potential to impact adverselyon Australia's balance of trade, hence capacity to import goods fromoverseas with important transport consequences for shipping, ports and their connectingland transport systems.

The realism of a two million population projectionfor Perth by 2029 must be questioned in these circumstances. The city hasgrown strongly for over 100 years , but it is not inevitable that it will continue to doso. The emerging water and agricultural constraints, as well as declining oil, strongly suggest that it won't and certainly that such growth is highlyundesirable.

Resources must go into healing theenvironmental damage in the wheatbelt ratherthan in to growth.

The draft Perth Metropolitan Freight TransportStrategy says the major component of freight in Perth is constructionmaterials followed by waste and rubbish. An end to growth wouldsignificantly reduce the first. The inevitable shift to thrift in the use of resources asoil declines willforce reduction of the second. Projections of high traffic growth through Fremantle andKwinana ports also look very questionable beyond the short term.

An alternative more realisticlower growth scenario for Perth is needed that takes these issues intoaccount.

Our food production, mostly fromsouthern Australia, feeds some 60-80 million people. Nearly half of ourwheat comes from Western Australia. What population can Australia supportby the middle of next centuryif we manage to successfully transformagriculture to cope with salinity and declining oil - and whatpopulation if we do not succeed? Answers to these questions are needed before we canproperly embark on transport reform.

Australia needs a long term transport strategyrelated to a sober and realistic assessment of the size population thiscountry can support. It is not high and many are saying it is less than ourcurrent population.

Rail Reform

General

It is correct to consider rail reformin the context of the four distinct sectors of urban passenger, bulkfreight, non-urban passenger and non-bulk freight. The latter two havelost out to road alternatives. The Draft Report gives a good outline of the history and sources of the problemsrail now faces.

However, whether it is wise in the long term toseparate ownership of track from rolling stock and operations is far lessclear. At present this is being driven by the dictates of statutoryCompetition Policy, pressure groups with axes to grind and a belief that if you create a competitive marketthat somehow the most efficient outcome will follow.

Some of the longer term issues of sustaining highoperational safety standards and ensuring that track owners maintain anddevelop their assets are latent problems that could prove just as serious as present ones after two or three decades. Professionals in the waterindustry are concerned about this issue where BOOT schemes have beenintroduced and the loss of long term informal knowledge of the system characteristics withcontracting out of maintenance. There may bean over-reaction to current problems.

Transport reform is seen by business and governments as a key factorin improving the competitive position of Australia in world markets. Theproblems of rail reform are graphic evidence of Dr Brain's thesis that theconditions needed forsustainable growth (leaving aside for the moment the question of whetherthis is desirable or even possible in the 21st century) are difficult toachieve and require sustained effort and leadership by government. Theprevailing neo-classical economic philosophy gets in the road of government playing this roleeffectively.

The central issue facing transport is future fuelsupply an issue the industry, government and community has yet toconfront, but they will certainly do so duringthe next decade. I have discussed this issue at length in Fleay (1999) and some key pointspertinent to rail reform are outlined below.

- The age of oil willessentially be over by 2050 and natural gas will most likely have beenfading for about 20 years. Oil supply will start to decline exponentially by 2010, Australian oil from 1999.
- Transport consumes about 60% of world oil supply and there isnot available nor in sight fuels that can replace conventional oil for transport as we know it either inquantity or economic performance.
- Consequently the real costof transport is going to increase and a decline in its scale and scope isinevitable next century.
- It follows that contraction of the global economy will takeplace and long distance trade will diminish in favour of more localproduction.
- Economic growth, as presently defined, will come to an end.However, economic development will continue.
- Industrial agriculture, anoutcome of the petroleum era, will undergo a radical transformation towardsan era "beyond petroleum", in Australia also adapting to the uniquefeatures of the local environment.
- World population will peakand start to decline sooner than we think, hopefully in a planned andorganised humane way.
- Work must proceed down a labour intensive way as oil declines.Energy has taken over labour power for 200 years and provided the means toincrease productivity.

World energy production per capita increased at2.12% per year from 1850 to 1945 when coal was the dominant fuel and 3.54%per year from 1945 to 1973 when oil displaced coal. However from 1979 energy production has only kept pace with population, a plateau has beenreached. Per capita energy production may well begin to decline nextdecade (Duncan 1999).

Urban rail

The Draft Report documents the increasein car dependence in our cities since 1972 andthe decline in public transport. There hasbeen a corresponding increase in urban fuel consumption. Nearly 60% of total kilometrestravelled is in capital cities and there has been a big increase in lightcommercial vehicles. Two-thirds of fuel consumption is by passengervehicles.

All capital cities are suffering from acute roadcongestion, traffic noise and air pollution, despite massive roadexpenditure both as private tollways in Sydney and Melbourne andas publicly funded road works in all cities. There has been andstill is strong opposition to continued promotion of car travel in ourcities.

Newman and Kenworthy from the Institute of Scienceand Technology Policy at Murdoch University have researched and writtenextensively on cities generally and their transport problems, comparing car dependent cities with ones having a strong focuson public transport, particularly rail transit. Their latest book,*Sustainability and Cities: Overcoming AutomobileDependence,* investigates these issues exhaustively from a very broad base, including the issue ofimminent oil depletion (Newman & Kenworthy 1999).

Their book summarises an investigation of 38city's transport systems from 1960 to 1980 published in 1989, updated to1990 with data from an additional 16 cities (Moscow and Berlin included inthe 1989 bookwere dropped in the update). The update included Asian cities. Newman &Kenworthy have also completed a similar study for the World Bank on 37cities. The essence of their conclusions relevant to rail reform are:

- Energy use per capita inprivate passenger travel is inversely proportional to urban density(persons per hectare) by a factor of six to one.
- There was a strong correlation between urban density and thepriority of transit over roads and car orientation.
- Significantly more personswalked or road bicycles to work in cities with high urban density.
- Mobility is not necessarilyrelated to city wealth. Data suggests that cities with high wealth areassociated with lower mobility (ie transit rather than car orientated).
- Car orientated cities spenta higher proportion of their wealth on journeys to work.
- Car orientated cities spenta far higher proportion of their wealth on passenger transportation. Therange was under 5% for wealthy Asian cities to 8% in European cities and12-13% for car basedUS and Australian cities. Perth was the highest at 17%, the classic caseof urban sprawl.
- Low density cities spentmore of their wealth on passenger transportation than high densitycities.
- Kilometres travelled percapita in car oriented cities is high and increasing, more than offsettingany gains in higher speeds, fuel efficiency and lower exhaust emission fromfreeway travel.
- Fare box return covers a much higher proportion of transitcosts in transit orientated cities than in car based ones.
- Greenhouse gas emissions andother air pollutants per capita are higher in car orientated cities.
- Energy consumption intransit orientated cities (electricity) is about half that in carorientated cities (petrol).

Other service costs associated with carorientation are higher, water and sewerage, road accidents andenvironmental resources. Car orientated cities eat up land for roads,parking places and low density sprawl. Scarce fertile agricultural land is often consumed. It is a disaster to be pooror unemployed displaced to the urban fringes with poor public transport.You need a car to look for and get to work and cannot afford one. There isthe potential for greater informal social interaction in high density transit orientatedcities, more opportunity for community development.

Maintenance of extensive roads in car based citieswill become a chronic economic burden.

Cities that have a car orientation, as inAustralia, will be at a severe competitive disadvantage in the 21stcentury, even without considering oil depletion. Taking the latter intoaccount they could face disaster unless there is an urgent change of direction.

The freeways and motorways constructed inAustralian cities over the last decade are the most disastrousinfrastructure investmentswe have ever made. Had the funds been invested in developing transitorientated public transport along with complementary changes in land use,appropriate integration of land and transport planning, we would be in a much stronger economic position and far better able to cope with thestresses of the 21st century and the decline of oil.

For Australia there is the added need to divertremaining petroleum fuels to the overwhelming task of ruralreconstruction.

The prime problem with urban rail transit is notthe need for introducing competition, but a recognition of its central rolein urban affairs ahead of roads. That requires a systems communityapproach not a tinkering at the edges with the aim of getting competitivemarkets. The process of commercialisation of government utilities hasinvolved separating out the costs of community service obligations as acharge against government. That is, to be commercial is not to have community obligations! Whata devastating statement! It is saying that in markets

community has novalue! As George Soros says: "You can have a market economy but you cannothave a market society".

If a competitive environment is introduced totransit, as is proposed in Melbourne, it is unlikely to achieve muchwithout this change of thinking at government, business and communitylevels.

The WA government has just announced a $900million proposal for 69 km of electric transit rail connecting theexisiting Armadale line at Kenwick to Rockingham and Mandurah to becompleted by 2007. It also has a $1000 millionmajor road works program for the same region that the rail proposal iscapable of making largely redundant. Most of the rail route at thenorthern end is in the wrong place to divert commuter traffic from cars!And much of the road program is tocomplete the Kwinana Freeway to Mandurah, including duplicating the NarrowsBridge at the southern edge of the CBD, substantially increasing trafficcongestion where it is already chronic.

Those whom the gods would destroy they first sendmad!

Rail Freight

These comments will not relate toPilbara iron ore railways or those transporting coal in NSW and Queensland.Non-bulk rail freight will not be discussed. These issues are important,but time is running short.

I confirm support for standardising interstaterail operations, a major impediment to rail freight achieving its rightfulplace in Australian transport.

The WA government proposes to privatise Westrail'sfreight operations which these days is almost entirely bulk freight, wheat,alumina, iron ore and caustic soda are the main items. The precise details of the government's proposals have yet to be announced.However, media reports say the prime candidate as buyer/contractor is aWisconsin based railway in the USA that has track through the principalgrain growing regions in that country.

The WA Farmers' Federation is opposed to this saleto such a company. There is often fierce competition between US andAustralian wheat growers for markets and the WAFF thinks it insane to givea railway from their competitors territory a potential stranglehold over their wheat transport. I mustagree and therefore oppose the sale of Westrail's freight operations.Furthermore, given the salinity problem that exists and its implications,no right minded company would buy Westrail's wheat freight operations. What is the future market going tobe?

This raises broader issues about privatisation ofgovernment owned utilities in general where this means primarily or overtime their acquisition of vital economic and communityinfrastructure byforeign owned companies. Telstra, electric utilities, water utilities and some transport comes tomind. There is an important loss of sovereignty. Dr Brain's comments arerelevant here for countries like Australia vis a vis the dominant economicpowers.

Long distance freight transport byrail is some four to five times more energy efficient than by road(eg Melbourne-Perth) and the track far lessvulnerable to damage than are roads (Mason 1997) Furthermore, a fully laden truck causes 7000-9000 more damage to roads thandoes a car. These factors will become very sharply focused as oil supply declines,starting next decade for Australia. The latter is already acontentious issue in regard to road user fees for trucks. This suggests a virtual cessation of much of currentinterstate road freight a greater focus on use of rail forfreight generally and a trend towards lighter trucks for shorterhauls.

Will we be able to afford next century maintainingboth a road and rail link across the Nullarbor? Which should it be?

Some $3000 million is being spent on makingPacific Highway from Newcastle to Brisbane a dual carriage highway. Wouldthese funds have been better spent upgrading the railway (dual tracking?)and electrifying it (coal Powered, not oil). there would then be an electric rail fromRockhampton to Wollongong and Lithgow and close to almost one third ofAustralia's population.

Australian railways all need to start seriouslylooking at programs to convert their diesel locomotives to natural gas, theonly fuel we can rely on from about 2010.

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APPENDIX

A brief discussion of some of thephilosophical concepts behind economic theory are warranted for you tounderstand my thinking patterns.

1. The core of economic theory studies thebehaviour of individual independent buyers and sellers operating in themarket place. There is no place here for communities, organisations orsocial groups, it is as if they do not exist. What does not exist has no value in the market place, as demonstrated bythe separation out of community service obligations from governmentutilities when these were corporatised and made "commercial' - governmenttook on financial responsibility for CSO"s. This is not to say that CSO's aren't an important andcontentious issue

2. The States and Commonwealth all have umbrellalegislation that sets the standard and states definitions tobe common to all legislation,generally under the name of Interpretation Acts. All of these Acts have a definition of "person'that goes something like this;

"Person" means a natural person, a body corporateand a body unincoporate....

That is, a person and an organisation areidentical unless legislation specifically says otherwise. This is amonstrous distortion of reality that t has no place in legislation. It needs to be seen as complementary tothe issue raised in para. 1 above.

All corporate and unincorporated bodies havecommunity and environmental responsibilities, it cannot be otherwise.

3. Brian Toohey's book *TumblingDice*, a critique of neo-classical economic theory wasreviewed by Arthur Gibbs in the Australian Rationalist. He quotes BrianToohey: " So long as he doesn't get caught, rational economic man has no regard forlaws, and still less for social conventions, moral principles or thefeelings of others. there is no natural urge towards cooperative endeavour, no sense of community, no tribal loyalty.Given half a chance he would steal coins from a beggar."

The comment of Peter Wiles, an eminent British economist sums it upsuccinctly: "There are very few such people and we have a word for them:psychopaths."

4. Competition Policy is embodied in the TradePractices legislation. As I understand it competition embodying the valuesof the market place as derived from economic theory is placed as supremeabove all other values. States and organisations had the opportunity to propose where exceptions couldbe embodied in legislation, confirming the primacy of competition.Furthermore, appeals against Competition Council decisions are to the Minister who can only determine these on the basis ofcompetition principles

This in effect says the market stands aboveeverything else. It is saying that markets stand above the environment andnature in which it is embedded. another gross distortion of reality.

I can only repeat George Soros' words: "You canhave a market economy, but you cannot have a market society.

No wonder we have escalating social andenvironmental problems.