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Darwin: A Gateway to Asia?

Implications of the Adelaide-Darwin Railway and Port of Darwin Developments for Australian Trade

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Director's Note

Welcome to the seventh issue of *Economic Issues,* a series published by the South Australian Centre for Economic Studies as part of its Corporate Membership Program. The scope of *Economic Issues* is intended to be broad, limited only to topical, applied economic issues of relevance to South Australia and Australia. Within this scope, the intention is to focus on key economic issues — public policy issues, economic trends, economic events — and present an authoritative, expert analysis which contributes to both public understanding and public debate. Papers will be published on a continuing basis, as topics present themselves and as resources allow.

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Michael O'Neil
Director
SA Centre for Economic Studies
March 2004

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Overview

Much fanfare greeted the launch of the AustralAsia railway in January this year. The $1.3bn railway, which links southern Australia and Darwin, Australia's northern most city, was first planned more than a century ago. But it is only now that the last 1,430km from Alice Springs to Darwin is complete. The railway offers immediately better transport for freight to Darwin and the Northern Territory. And with the complimentary development of a new container port in Darwin, there is the promise of a land bridge route for trade with Asia and beyond from southern Australia.

The AustralAsia project is a path breaking development in terms of the extent to which private sector investment and operation have been harnessed. Government financial support is certainly significant, but the extent of private sector financing under build own operate and transfer conditions is unprecedented in the history of railways in Australia.

Yet the project has stirred some controversy. There are those who laud it as a great nation-building endeavour. Others are sceptical of its commercial potential especially as an alternative route for international trade.

Advocates say the land bridge route can be quicker and more cost effective than the existing international shipping routes to and from southeastern ports, especially Adelaide and Melbourne, around the eastern and western coasts of Australia. But its development is without a doubt a challenging task. The Port of Darwin and the AustralAsia Railway must attract more shipping services if they are to woo companies to export and import reliably to and from a variety of markets and producers at low cost. But to do this they first need sufficiently large volumes in hand to be able to secure the visits of container lines. It is a classic "chicken and egg" problem.

Domestic freight is a different story. A switch to rail is already evident as there are immediate cost and time benefits for South Australian and other southern suppliers over the truck haulage of the past. And domestic demand in Darwin and the Northern Territory should grow strongly in coming years, driven by resources, construction and infrastructure, and defence projects and tourism. South Australia is a major supplier to the Northern Territory and so could find that the railway helps integrate further the two region's economies.

Varying attitudes towards the railway and the concept of Darwin as a gateway to Asia perhaps reflect different views towards development in northern Australia. Many in Australia's dominant south eastern states continue to see the Northern Territory as a remote frontier and Darwin as a last outpost. Yet the railway and other projects underway and planned point to the Northern Territory and Darwin becoming more economically dynamic and sophisticated over the next decade. And this may well provide opportunities for new commercial and other relationships with Asia.

1. Nation building or folly?

... Adelaide to Darwin, an alternative import-export corridor ...

The vision of Australia's northern most city of Darwin as a trade gateway to Asia and beyond is being promoted by governments, developers and operators[1] as a result of the start in January 2004 of the Adelaide to Darwin railway. The standard gauge AustralAsia railway, connecting the existing Adelaide to Alice Springs line with a 1,420km new segment to Darwin, combined with a new container port in Darwin and adjacent business park, offers an alternative import-export corridor through the middle of the continent to southern Australia. Advocates say the new "land bridge" route can be quicker and more cost effective than the existing international shipping routes to and from southeastern ports around the eastern and western coasts of Australia.

The completion of the Darwin Alice Springs line, more than a century after it was first proposed, means that all of Australia's mainland capital cities are now connected by standard gauge railway. It is possible now for freight and passengers to move to and from Darwin by rail from Adelaide and Melbourne in the south, Sydney and Brisbane in the east and Perth to the west.

But significant international goods trade flows to and from Darwin are unlikely to develop quickly. And it is important to note that this has been factored into railway planning. It is domestic market demand, that is, flows of goods to Darwin and the Northern Territory market via the railway, which underpins the economic viability of the development. Investors expect rail to quickly replace road haulage.

Darwin as an Asia Trade Gateway?

Project finance was determined only on the basis of shipments of goods for the domestic market. International goods trade business, including containerised and possibly bulk mineral and livestock exports, is a longer-term proposition. More immediate may be benefits from international tourism with the railway journey through the centre of the continent attracting foreign as well as local visitors to Darwin and Adelaide.

The railway, built and operated by the private sector in partnership with the South Australian, Northern Territory and Commonwealth Governments, is an historic development. Final completion of the north south line is seen by many as in the spirit of the great nation building projects of earlier times. Yet others are sceptical about the benefits of the development.

In response to this debate, this paper examines the railway and Darwin port developments and their implications for Australian trade.

2. A century old agenda

... long term vision to open up trade with Asia ...

More than a century ago, notables in South Australia - then responsible for the administration of the Northern Territory - extolled the idea of a railway to Darwin as a means of unlocking trade opportunity with Asia. In 1878, the governor of South Australia, Sir William Jervois, declared that by connecting south and east Australia with the northern coast, the railway would stimulate commerce with "Java, Siam, India, China" as well as shorten "communications with Europe and America."[2] The governor then turned the first sod in Port Augusta of what was to be the first stage of the line. Eleven years later, in 1891, the line, financed by the colonial government, reached Oodnadatta.

But no further progress was made because of lack of funds from the heavily indebted South Australian government and the lack of pressing need for extension north. Nevertheless, prominent supporters of the railway to Darwin remained. One arguing the case for the railway as a means of fostering commerce with Asia was J. Langdon Parsons, minister for the Northern Territory in the South Australian government and government resident in Darwin. In 1901 he told the Royal Geographical Society in Adelaide that the Australian continent belonged to Asia. "Australasia was South Asia."[3]

Responsibility for the railway shifted to the Commonwealth government in 1910 when South Australia transferred administration of the Northern Territory to the Commonwealth. The Commonwealth acquired the Port Augusta to Oodnadatta railway and undertook to complete the transcontinental line although it did not commit to any date under the legislation providing for the transfer, the 1910 Acceptance Act. The line was taken as far as Alice Springs in 1929, which remained the railhead for the rest of the century. In 1980, the earlier route from Tarcoola,

subject to flooding, was replaced with a new standard gauge line to Alice Springs.

3. Rejuvenation: AustralAsia Railway

Pursuit of the final half of the railway from Alice Springs to Darwin languished until the 1980s and 90s. Darwin was served by road from Alice Springs by the Stuart Highway, sealed during World War II. Upgrading the road, rather then construction of the rail line, was the usual position of the Commonwealth government despite lobbying from the Northern Territory for completion of the line.

In 1995, the Northern Territory government signed a memorandum of understanding with the South Australian government to jointly pursue the project. In 1997, they established the AustralAsia Railway Corporation to oversee the completion of the line by the private sector, supported in part with public finance, as a build own operate project with transfer of assets to the Northern Territory and South Australian governments after 50 years.

The decision to turn to the private sector is important. Historically, Australian governments assumed that railways had to be built and operated by the public sector. But the late 1980s and 90s saw fundamental change to government infrastructure policy as public sector monopolies in energy, telecommunications and transport were liberalised and privatised to various degrees at state and Commonwealth levels. Arguably the Alice Springs Darwin link would not have been completed if private sector investment had not been harnessed in this manner. Governments would have been very unlikely to finance the entire project *(see Box 1: Railway reform in Australia)*

... path breaking development, a true national railway system ...

Box 1: Railway reform in Australia

The AustralAsia railway development is one of the major results of railway reform by Commonwealth and state governments in the last decade.

Since the early 1990s, they have sought to improve freight and passenger railways allowing the private sector to play a much greater role in what had been an almost entirely government owned and operated industry.

The AustralAsia railway, developed primarily through private sector investment and now operated by the private sector, is the most striking outcome of the new policy. No other railway of this scale has been built by the private sector in Australia. Two short lines serving Sydney and Melbourne airport have been built, and a line from Melbourne to Brisbane built and operated by the private sector is contemplated. The private sector also operates services on the already built long distance interstate railways.

The AustralAsia rail project is a path breaking development as it features predominant private sector financing and construction of a new long distance railway as well as private sector operation of services.

Box 1 (continued): Railway reform in Australia

Historically, Australia's railways have almost all been the province of the states and the Commonwealth with public owned companies or authorities responsible for track and services. The exception has been lines operated by mining companies dedicated to bulk transport of their output

But fundamentally new approaches to railways were embraced after 1991 in response to inefficiencies of the existing systems, and government resistance to further subsidising operations as they stood, especially given competing demands for funds for other uses.

To improve railways, governments have in some cases privatised operations while retaining ownership of rail track and associate infrastructure. In other cases government continues to provide services but operating entities have been made to run along commercial lines. Third party access has also been introduced, as in other infrastructure sectors. This allows one or more other operators to provide services on a line where there is already an operator in order to encourage competitive conditions.

A true national railway system from the hitherto state focused systems is evolving through standardisation of the gauge in June 1995 between mainland capital cities with connecting lines to Whyalla, Port Kembla, Newcastle and Alice Springs. Total track runs to 9,690km with the completion of the Darwin link in September 2003. In 1998, the Commonwealth established the Australian Rail Track Corporation as a commercial entity to mange access and infrastructure on the interstate rail network.

In 1999, the Asia Pacific Transport Consortium (APTC), a partnership of Australian, United States and United Kingdom companies (see below) was selected from a short list of three groups to build and operate the project. More than 30 consortia had expressed interest in the project.[4]

... financial arrangements to secure construction.

The APTC achieved financial closure in April 2001 with funding from private and government sources. The private sector provided $730 million, of which $239 million is equity and the rest debt finance. Government provided an initial $477 million including $150 million from South Australia, $165 million from the Northern Territory and $165 million from the Commonwealth. In January 2001, another $79 million in stand by funding was provided by the three governments on commercial terms.

Construction began in July 2001. The $1.3 billion 1,420km segment from Alice Springs to Darwin was completed in September 2003, within budget and five months ahead of schedule. Significant economic benefits resulted from the construction process. South Australian and Northern Territory companies gained more than $1 billion worth of contracts. Lengthy negotiations were carried out with Aboriginal owners to acquire land for the railway's path. As well as $8.4 million compensation to the owners, the Northern and Central Land Councils became equity partners in APTC.

The first freight trains ran from Adelaide to Darwin in January 2004 and the first passenger train in February. The total distance from Adelaide to Darwin is 3,000km. The one-way trip time is 43 hours.

APTC has a 50-year lease for the new segment as well as a 50-year lease for the old 830 km segment from Tarcoola to Alice Springs. The Commonwealth, through the Australian Rail Track Corporation, transferred the Tarcoola line to APTC at nominal rent. APTC also has a 50-year lease for container port facilities in Darwin.

APTC partners include:

- Australian RailroadGroup, a venture between Australia's Westfarmers (50 per cent) and US freight operator, Genesee & Wyoming (50 per cent);
- John Holland, a subsidiary of Australia's Leighton Holdings;
- Macmahon Holdings of Australia;
- Braclay Mowlem of the UK;
- Kellog Brown & Root, a subsidiary of Halliburton of the US;
- National Asset Management;
- Colonial First State Investments; and
- Northern and Central Land Councils.

The consortium established ADRail to construct and maintain the railway.

FreightLink was established as the operating company for freight operations including both rail and port operations in Darwin.

... third party access for freight, tourism and new ventures.

APTC is obligated under third party access provisions in trade practices law to allow other operators to use the railway infrastructure at appropriate fees. The passenger Ghan service, run by the Great Southern Railway[5], operates under these conditions. It would be possible, for example, for a mining company to run its own bulk freight operations on the AustralAsia railway.

4. Freightlink: What's offered

Freightlink acts as a wholesale provider of transport freight services from rail terminal to rail terminal and, in the case of international shipments, onto and from the Darwin port. Freightlink contracts with freight forwarders, which, in turn retail their services to end customers. It also deals directly with large-scale customers.

FreightLink uses Pacific National's existing terminals at Adelaide and Alice Springs. Pacific National, a joint venture between Australian transport companies Toll and Patrick, also operates Freightlink's terminals in Tennant Creek, Katherine and Darwin.

Initially there are five freight services in each direction each week, increasing to six as customer demand increases. Each freight train is able to handle 250 double-stacked containers.[6]

FreightLink has contracted P&O to operate the container port terminal at Darwin.

5. At the railhead: Darwin East Arm Port and Business Park

... new deepwater container port, business park and transport hub ...

The railway terminates at the new deepwater container port under development at the East Arm in Darwin Harbour, a 1,000 sq km^2 body of water, more than double the area of Sydney Harbour. There is direct rail to ship access and terminal yard at the port for temporary holding of containers. A short distance inland is the railway's domestic freight terminal.

The shift of commercial facilities to the East Arm, apart from cruise ship and navy vessel docking, from the old port at the foot of Darwin city means there are no land constraints for expansion. The East Arm west of the Darwin city peninsular is an extensive "green fields" site. There are few, if any, land constraints for expansion. Forty hectares are reserved initially for development of a business park adjoining the East Arm Port and domestic freight terminal. This Darwin Business Park offers land for storage, distribution and freight forwarding. The first major commitment to the park has been made by leading Australian transport and logistics company, Toll, which has built a $17 million consolidation and distribution warehouse for the domestic market.

The port with a 14-metre depth at low tide is able to handle the larger container vessels now operating to and from Australia, although not the very largest vessels now in international container shipping. There is sufficient depth without dredging deeper channels for the port to handle what are known as Panamax or third generation container vessels with capacity of up to 3,000 twenty-foot equivalent container units. (TEU)[7] (*Box 3 – International container shipping and port trends)*

The first $200 million stage of the port development provides a 754 metre common user continuous berth. Freightlink has priority access to 200 metre of the wharf. There is one crane with provision for two more. The Port's master plan includes 1.5 km of continuous berth space and extension of the container storage yard and rail sidings. Bulk handling facilities may also be developed depending on demand.

... logistics as a source of competitive advantage.

Box 2: Logistics and the changing character of Australia's transport sector

Logistics – all the complex sets of activities needed for moving inputs for production and outputs to consumers – is a crucial element in the competitiveness of companies in modern economies.

Efficient supply chains of inputs and outputs mean that firms can cut costs. Resources are not lost through the need to hold large quantities of input components in storage before production, and finished goods are not standing idle in inventory, but moved quickly out of production to sale. This "just in time" approach, made famous by the major Japanese manufacturers in the 1970s and 80s, is today the norm from mines to supermarkets. Woolworths boasts that 97 per cent of stocks arrive at its Australian stores within an hour of the set delivery time.[8]

Efficient supply can achieve price premiums. For example, the rapid delivery of fresh fruit and vegetables, meat and fish to markets results in higher prices for freshness. Speedy delivery also means a longer shelf life for the goods and so more revenue from the longer period of sale.

The role of logistics has become more important for company success – and offered greater possibilities for companies – as a result of "globalisation," that is, the increasing integration of local economies through more rapid and low cost transport, information/computer/telecommunications technologies, and government deregulation/liberalisation policies

Firms and consumers can rely on efficient supply of raw materials, semi finished components and final goods from both near and far as a result of complex and rapid supply chains. Modern logistics makes possible the globalisation of a company's production processes across countries based on their respective economic strengths and costs. Companies which in the past might have been limited by small domestic markets have more opportunity to export to larger foreign markets. Rapid transport and electronic information systems enable companies to manage complex and distant supply chains.

... automotive suppliers and implications for South Australia ...

The production and distribution of motor vehicles at Holdens in South Australia is an example. Holdens assembly plant at Elizabeth, north of Adelaide, received 1.6 billion components in 2003, ranging from supply from Europe and North America and Asia to supply from the Adelaide region and from eastern Australia. About 40 per cent of components are from outside of Australia. They are shipped to Melbourne and then sent to Adelaide by rail and road. Complete vehicles are distributed from Adelaide to the rest of Australia and exported from the Port of Adelaide to the Middle East, South Africa, Brazil, the US, and this year the UK. Seventy five per cent by value of Holden's inventory is on the seawater at any one time with Holden taking ownership of parts in transit. Transport cost reduction can mean savings of millions of dollars.[9]

Logistics is more than just transport, although the role of transport – road, rail and air - is obviously most important. The Australian Government's Bureau of Transport and Regional Economics sees logistics as a series of interdependent activities performed by firms from various industries. Also, not only is it simply movements of inputs for production and outputs for sale. Logistics also concerns reverse flows such as product returns and also waste disposal and recycling.

"Logistics services…include activities undertaken in-house by the users of the services, for example, storage or inventory control and management at a manufacturer's plant, and the operations of external service providers. Logistics services comprise physical activities for example transport and storage as well as non physical activities for example supply chain design, procurement, selection of contractors, freight rate negotiations."[10]

Box 2 (continued):
Logistics and the changing character of Australia's transport sector

The Bureau estimates that at least nine per cent of Australia's Gross Domestic Product can be attributed to logistics activities, a conservative figure taking into account the difficulty of putting figures on logistics activities within non freight industry companies such as in manufacturing and mining. "Logistics activities support the operation of all other industries and are therefore an indispensable component of economic activity."[11]

Just as there is increasing emphasis on logistics among producers, wholesales and retailers so too is the transport sector offering more sophisticated services. Transport companies often style themselves as all encompassing logistics companies. They offer not only services across different modes – rail, road and shipping – and warehousing, but also are able to develop and manage complete logistics supply chains, domestic and international, for companies. In the past, companies limited themselves to particular transport industries or segments. But technological, market, and regulatory factors have transformed the sector. Increasing containerisation of freight, along with information technology, makes it easier to operate across transport modes and offer door-to-door services. Governments have removed regulatory restrictions. And customers are outsourcing more logistics activities that in the past were undertaken in house.

From a fragmented sector made up of many small firms, Australia's transport sector today is characterised by larger companies, often integrated across different industry segments, providing an array of services as a result of acquisition and merger. The larger companies are internationally oriented and several have significant foreign operations. Among these are Toll, TNT, Mayne Nickless, Brambles, FreightCorp, Patrick and Linfox.

6. Paying the banks: the domestic freight market

The economic viability of the AustralAsia railway depends primarily on transport of general freight and fuel for the domestic market in Darwin and the Northern Territory. Financing of the project was based on projections of domestic freight loads. International freight flows, including containerised freight and possibly bulk minerals and livestock, are anticipated by railway's equity investors and governments. But they were not included in these projections because of their much more uncertain nature in terms of scale and period of time required for their development.

As one banker describes the financing, "the banks have sensibly not taken a bullish view of the available market, and as such the debt size, and debt structure, is conservative and robust."[12] Project economics do though benefit from the extent of government support. Government financing is predominantly grants or deeply subordinated funds. This, combined with consortium equity, reduces the reliance on private sector debt financing. Gearing is not only low, debt is also relatively short term. The repayment period for the debt is 15 years from the time of construction set against

the 50 year operating concessions, APTC partners will enjoy a long period when returns to their investment will not be diluted by debt repayments,

Banks were also comforted by the concession provided to APTC at generous terms by the Commonwealth of the existing Tarcoola to Alice Springs railway. This meant the project automatically gained the existing rail traffic to Alice Springs to support repayment in addition to the expected shift of road hauled transport to the railway. "The actual length of track…built is less than 50 per cent of that over which operations will repay senior debt, and the senior debt is only 37 per cent of the cost to build that less-than-50 per cent length of rail. This is a far cry from the usual aggressive gearing normally associated with infrastructure projects."[13]

... initial market is general freight for the domestic market ...

The railway's initial market is general freight and fuel that has been hauled by rail (terminating at Alice Springs), and road from the southern states to Darwin and main towns, Katherine and Tennant Creek, along the Stuart Highway. The rail transit time between Adelaide and Darwin is 43 hours, while road haulage is 54 to 66 hours. The banks' financing model suggests that a market share around 45 per cent or a little less will be a breakeven point to repay senior debt within 12 years of operation.

Railway operator, Freightlink, anticipates gaining quickly 350,000 tonnes a year of general freight and fuel currently transported along this central corridor. As the operator of the existing Tarcoola to Alice Springs railway, formerly operated by the Commonwealth government's National Rail Corporation, Freightlink immediately gained the existing freight traffic that is already sent by rail to Alice Springs. In the past, about half of the freight on the Adelaide to Darwin corridor has been first railed to Alice Springs and then hauled by road to Darwin and towns in between. Freightlink raised freight prices between Adelaide and Alice Springs after its services began. The company was criticised by the trucking industry, but said it could not sustain the old prices.[14]

Freightlink also believes it can attract a switching of freight from other routes entering the Northern Territory by road from Queensland and Western Australia to the central rail corridor.

As at March 2004, Freightlink had contracts for 120,000 tonnes per year with Northern Territory Freight Services, a subsidiary of Scott's Group, a South Australian company, and for 50,000 tonnes per year with the Victorian based FCL Interstate Transport Services, a refrigerated container specialist. Freightlink targets 800,000 tonnes per year of freight by the end of the first three to four years of operation.

The railway's proponents point to the growth of container traffic over rail to Perth as evidence of rail's advantage over road for long distance transport. Eighty per cent of freight from the eastern states and South Australia is sent to Western Australia by rail.

7. Longer term business: Northern Territory's economic prospects

... while still small in size, continued strong growth prospects ...

Longer term, railway operations should benefit from expected good economic growth in the Northern Territory. Consultants, Access Economics, projects Northern Territory's economy to grow by an average of four per cent per year for the decade from 2003-04 compared to an Australian average of three per cent per year.[15] Demand assessments do need, however, to take into account the small size of the Northern Territory economy, which makes up just 1.2 per cent of the total Australian economy. Total population is only 200,000, of which 70,000 live in Darwin, and 26,000 in Alice Springs. (*Table 1*)

Table 1
Economic Forecasts for the Northern Territory

	Real GSP		Employment		Population	
Year	$m	% change	('000)	% change	('000)	% change
2002-03	8,974		98.3		197.3	
2003-04	9,280	3.5	98.5	0.3	200.3	1.5
2004-05	9,855	6.1	103.5	5.0	202.6	1.1
2005-06	10,325	4.8	105.0	1.5	204.9	1.2
2006-07	10,503	1.7	102.8	-2.1	204.0	-0.5
2007-08	10,938	4.1	103.7	0.9	204.9	0.5
2008-09	11,489	5.0	105.9	2.1	207.3	1.1
2009-10	11,998	4.4	107.4	1.4	209.6	1.1
2010-11	12,489	4.1	108.6	1.2	212.0	1.1
2011-12	12,966	3.8	110.2	1.5	214.3	1.1
2012-13	13,433	3.6	111.7	1.4	216.5	1.1
10 yr av		4.1		1.3		0.9

Source: Access Economics.

Northern Territory's economic growth should be propelled by expansion of the petroleum and mining industries; infrastructure projects; housing and commercial building construction; and tourism. The agricultural base, predominantly cattle, including significant livestock export, will continue to make an important contribution. Horticultural crops may become significant exports to southern and foreign markets. Seafood exports may also grow.

... possible growth in defence and surveillance ...

The public sector also has become more important in the local economy in recent years as a result of the location of more of Australia's military forces to Darwin and Katherine. Mooted is the possibility of a US military base in Darwin.

Major resources projects in construction, planned and proposed include:

- Bayu Undan liquefied natural gas (LNG) facility now under construction for Conoco Phillips of the US at Wickham Point in Darwin Harbour. The one train 3 million tonnes per year (mn t/yr) facility is to begin operation in 2006 taking gas from the offshore Bayu Undan field 500 km north west of Darwin in the joint zone in the Timor Sea between Australia and East Timor for liquefaction and export to Japan. The facility could be expanded over the longer term depending on relationships between ConocoPhillips and other offshore major operators, Woodside and Santos of Australia and Shell. Although the Bayu Undan field has only enough reserves for a single train output over 20 years, there is abundant gas elsewhere in the Timor and Arafura Seas. The Wickham Point facility has government planning approval for capacity expansion to 10mn t/yr.
- Alcan bauxite and alumina mine expansion at the Gove Peninsular 700 km east of Darwin. As at March 2004, Alcan, a Canadian company, is carrying out a feasibility study with final decision as to whether to proceed with the $1.5 billion project to be made by the Alcan Board in mid 2004. Refinery expansion from 1.85mn t/yr to 3.5mn t/yr is proposed. The facility would switch from present use of oil to natural gas from the Woodside operated offshore Blacktip field in the Bonaparte Gulf 250 km west of Darwin. Gas would be piped 1,000 km across the north of the Northern Territory to Gove. The gas supply development would cost $1 billion, half of which would be for upstream field facilities and the other half for what is being called the Trans Territory Pipeline.

... very extensive and large scale resource and construction projects underway and proposed ...

- Several other petroleum projects are proposed in addition to the Santos operated Blacktip field above. Prominent are the Woodside operated Greater Sunrise gas fields, 500 km north west of Darwin, 20 per cent of which falls in the Joint Zone between Australia and East Timor, and Santos operated Evans Shoals fields, 300 north of Darwin. Various schemes have been put forward for Greater Sunrise, ranging from a floating LNG facility, independent of the Wickham Point plant, to an onshore pipeline for possible liquefaction for export, local use, and further pipeline supply to southern Australian markets. The government wants gas piped onshore for possible liquefaction and also to underpin resources processing plants, such as aluminium smelting and methanol production. Development of Greater Sunrise may be hampered though by dispute between East Timor and Australia over final maritime boundaries between the two. East Timor argues the present joint zone boundaries are only temporary pending resolution of its claim for a final maritime boundary, which would include all of Greater Sunrise. Currently, the East Timorese government is not prepared for Greater Sunrise development to go ahead while border discussions continue unlike the case for Bayu Undan. At Evans Shoals, Australian company, Methanol Australia, proposes a floating methanol production facility.[16]

- A new mine to maintain uranium oxide production in the Alligator Rivers region 250 km east of Darwin may be developed by Energy Resources of Australia, a subsidiary of the Anglo Australian Rio Tinto. ERA, operates the existing Ranger mine, within the Kakadu National Park, a World Heritage Site. Along with Roxby Downs in South Australia, Ranger is the only operating uranium mine in Australia. ERA wants to develop the very large deposit at the Jabiluka mine, also within Kakadu. This will require Commonwealth and Northern Territory government approvals and is likely to be a politically controversial matter given environmentalists' opposition to uranium mining, especially in the Kakadu region.
- Other new mining projects underway include gold mines by Peko and Giants Reef Mining at Tennant Creek; planned gold mining by Newmont and garnet sand mining by Olympia Resources in central Australia: proposed expansion of the McArthur River zinc mine near Borroloola, 400 km south east of Darwin, operated by Xstrata of Switzerland; and GEMCO's manganese mine at Groote Eylandt, 500km east of Darwin. Notable also is diamond exploration by majors, De Beers, Rio Tinto and BHP Billiton.

Whether major resources projects go ahead or not may have a disproportionate impact on the economy, given its small size, as noted above. Creating a broader economic base then is an important objective for the Northern Territory.

Manufacturing is a very small part of the economy, although it did benefit from supply contracts for the AustralAsia railway. The Northern Territory Government wants to encourage the sector through development of resources processing, taking advantage of gas in the Timor and Arafura Seas as an energy source. The tropical northern area also has abundant water supply. Land to host heavy industry is reserved at Glyde Point, north of Darwin where there would be a port facility and rail links. Darwin may become a more attractive site for manufacturing as a result of better international and domestic transport. The railway and port developments should improve supply chains for input components and distribution of products.

... major urban construction and beautification projects underway ...

The major urban construction project underway is redevelopment of the old Darwin harbour precinct. As a result of the re location of commercial port business to the East Arm port, the 25 hectare area, owned by the Northern Territory government, is being fashioned into a convention, entertainment and residential centre. The $600 million Darwin City Waterfront project includes a 1,500-seat convention and exhibition centre. The government has committed $100mn towards the centre. As at March 2004, the government had short listed three groups to carry out the project and finance the rest of the development. The bidders are preparing master plans for the entire site. Civil engineering is to begin in the second half of 2004. Contract negotiations are to be completed in the

second half of 2004. Construction of the commercial and residential buildings is to start in early 2005.

The AustralAsia railway, and the East Arm container port and Darwin Business Park developments, will also contribute to economic growth to the extent that they stimulate freight and logistics hub in Darwin. The railway may also help bring about mining projects that otherwise may not occur because of lower priced bulk rail transport becoming available. The railway should also encourage tourism as is already evidenced by high demand for tickets on the initial passengers services. Freightlink estimates the railway will result in an additional 30,000 domestic and international tourists a year in the Northern Territory.

The Northern Territory is heavily reliant on goods transported from the southern states so there are also benefits for local consumers and producers to the extent that the railway reduces the real price over time of transported goods.

8. High hopes: international goods trade

... time to develop shipping links and international trade flows ...

The goal of making the AustralAsia railway and Darwin a transport corridor and gateway to Asia and beyond for international exports and imports will be a long-term endeavour. No one involved in the rail and port developments thinks otherwise. Major international trade flows may take a decade or more to develop.

The plan for container freight trade features the AustralAsia railway providing a "land bridge" between international shipping and southern Australian producers and markets. In this model, the combination of cross continent rail and the East Arm port at Darwin would enable quicker and more cost effective shipment than the present shipping routes for containerised imports and exports to southern Australia around the western and eastern coasts.

There are precedents elsewhere in the world for the proposed land bridge. The most successful of these is the rail shipment of goods across the United States linking Asia Pacific shipping with Atlantic and European shipping. The continental rail link overcomes the problem of restricted passage of vessels through the Panama Canal. Not only are delays caused by the amount of shipping moving through the Canal. The Canal is also too narrow and shallow for passage of the increasingly larger container vessels used on long distance routes.

Bulk minerals and livestock freighted by train for export from the East Arm port are also targeted by Freightlink.The following looks at the strengths and weaknesses of the Darwin port and railway corridor for international trade and what might be needed for success.

Containerised freight - Australia plays a relatively small role in international container shipping trade due to the scale of its manufacturing exports and imports and geographical location away from the major shipping crossroads. In 2001, 2.2 million TEUs were shipped in and out of Australia, compared with 11 million in South East Asia, 10.7 million in China, 19 million in the United States and 19.5 million in Northern Europe. Bulk shipping is a different story with Australia being one of the world's largest exporters of grain, coal, iron ore and other minerals. Australia's somewhat limited container trade volume means that shipping services are not as frequent or to as many direct destinations as is the case for countries and ports where throughput is much higher. (*Box 3 – International container shipping and port trends and Table &7*).

The large majority of Australia's containerised imports and exports currently are handled by the ports of Melbourne and Sydney. Of the 2.2 million traded TEUs, that is, excluding domestic container flows and transhipment containers, 1.8 million enter or leave Sydney, and Melbourne. These ports are part of Australia's major transport hubs, acting not only for customers and producers in their vicinities but also for those in smaller cities and towns further away through road, rail and shipping connections. A large volume of South Australia's containerised exports and imports are transported by train and rail to and from the Port of Melbourne. *(Tables 2, 3 &4)*

Table 2
Container Vessel Calls at Australian Ports
(International and Domestic Trade), 2002-03

Australian Port	Number of Calls
Melbourne Port Corporation	1,090
Sydney Ports Corporation	1,079
Port of Brisbane Corporation	796
Port Adelaide (Flinders Ports)	222
Fremantle	520
Burnie Port Corporation	417
Port of Devonport Corporation	299
Port of Launceston Pty Ltd	258
Darwin Port Corporation	80
Other	242
Total	5,003

Source: Association of Australian Ports and Marine Authorities.

Table 3
Australian Containerised Shipping Trade
(International, Transhipment and Domestic), 2003-04 (TEUs)

	Imports			Exports			Total		
	Full	**Empty**	**Total**	**Full**	**Empty**	**Total**	**Full**	**Empty**	**Total**
Melbourne Port Corp	696,937	105,030	801,967	569,247	224,186	793,433	1,266,184	329,216	1,595,400
Sydney Port Corp	586,899	14,140	601,039	293,777	265,931	559,708	880,676	280,071	1,160,747
Port of Brisbane Corp	222,856	64,282	287,138	192,666	90,452	283,118	415,522	154,734	570,256
Fremantle Port Authority	185,943	37,324	223,267	152,946	55,511	208,457	338,889	92,835	431,724
Cairns Port Authority	9,900	13,200	23,100	98,430	498	98,928	108,330	13,698	122,028
Port Adelaide (Flinders)	40,769	25,161	65,930	73,929	12,304	86,233	114,698	37,465	152,163
Port of Devonport Corp	70,321	9,908	80,229	50,750	19,006	69,756	121,071	28,914	149,985
Burnie Port Corp	47,240	23,100	70,340	68,478	15,004	83,482	115,718	38,104	153,822
Port of Launceston Corp	16,342	15,230	31,572	33,747	5,185	38,932	50,089	20,415	70,504
Townsville Port Authority	4,065	5,335	9,400	7,972	399	8,371	12,037	5,734	17,771
Newcastle Port Corp	747	3,473	4,220	6,873	1,444	8,317	7,620	4,917	12,537
Gladstone Port Authority	6	2,722	2,728	3,148	0	3,148	3,154	2,722	5,876
Darwin Port Corp	3,002	745	3,747	833	2,265	3,098	3,835	3,010	6,845
Rockhampton Port Authority	2,572	0	2,572	221	0	221	2,793	0	2,793
Port Kembla Port Corp	139	15	154	729	0	729	868	15	883
Port Hedland Port Authority	629	0	629	0	629	629	629	629	1,258
Hobart Ports Corp	422	0	422	301	0	301	723	0	723
Broome Port Authority	346	8	354	36	280	316	382	288	670
Port Pirie (Flinders)	33	96	129	221	0	221	254	96	350
Total	**1,889,168**	**319,769**	**2,208,937**	**1,554,304**	**693,094**	**2,247,398**	**3,443,472**	**1,012,863**	**4,456,335**

Source: Association of Australian Ports and Marine Authorities.

Table 4
International Container shipping services to and from the Port of Adelaide

Australia Asia Alliance (AAA) – South East Asia Frequency: Weekly Members/Agents: OOCL, MOL, Pacific Asia Express, PIL, Asia World Shipping, ZIM, C Piesse & Co.MISC Ports of call: Port Klang – Singapore – Jakarta – Fremantle – Melbourne – Adelaide – Fremantle – Port Klang Feeder services to other South East Asia, South Asia, North East Asia, Middle East, and Europe ports
Australia Asia Express (AAX) – South East Asia Frequency: Weekly Members/Agents: P&O NedLloyd, ANL Containerline, NYK Line, APL, Djakarta Lloyd Ports of call: Port Klang – Singapore – Fremantle – Brisbane – Sydney – Melbourne – Adelaide – Port Klang Feeder services to other South East Asia, South Asia, North East Asia, Middle East, East Africa, North America, and Europe ports
Australasia Line (from Port Pirie) (AAL) – South East Asia Frequency: Every 16 days Member/Agents: Horizon Shipping Service – AAL Ports of call: Surabaya – Brisbane – Newcastle – Melbourne – Port Pirie – Hobart – Port Kembla – Newcastle – Jakarta – Singapore – Port Klang – Sriracha - Singapore
Mediterranean Shipping Company (MSC) – Pacific, South East Asia, Europe Frequency: Weekly Member/Agents: MSC Ports of call: Tauranga – Lyttleton – Sydney – Melbourne – Adelaide - Fremantle (connecting Durban) – Singapore – Jeddah - La Spezia – Antwerp – Felixstowe - Rouen and LeHavre. Feeder services via Antwerp to Rotterdam, Hamburg and Bremerhaven; Relay services via Durban to the US and South America
Project Asia Service (PAS) – North East Asia Frequency: Every 17 days Member/Agents: Horizon Shipping Agencies – PAS Ports of call: Hong Kong – Kaohsiung – Busan – Mill P1 – Kobe – Yokohama – Shanghai – Brisbane – Newcastle – Melbourne – Adelaide – Hobart – Port Kembla – Newcastle – Hong Kong
Westabout Services – North America, Pacific, Europe Frequency: Weekly Member/Agents: P&O NedLloyd, Columbus Line, Contship Containerline, CMA/CGM, Hapag Lloyd, ANZDL, Marfret, ANL Containerlines Ports of call: New York – Norfolk – Savannah – Manzanillo – Papeete – Norfolk – Auckland – Sydney – Melbourne – Adelaide – Fremantle – Singapore – Jeddah – Damietta – Marsazlokk - La Spezia – Zeebrugge – Tilbury – Hamburg – Rotterdam – Dunkirk - Le Havre. Feeder services to other Europe ports

Source: Flinders Ports.

Using the railway to the port of Darwin and exploiting its proximity to Asian ports could gain time advantage for Adelaide and Melbourne companies. (*Table 5*). Melbourne/Victorian exporters and importers would send and receive containers via railway to and from Adelaide and Darwin. For Sydney/New South Wales trade, the rail link to the corridor for local exporters and importers appears too distant for any advantage for them to be gained by switching routes. But it would be attractive for any South Australian companies importing or exporting through Sydney.

Table 5
Comparison of transit times (Days)

	Adelaide			Melbourne		
	Existing Shipping transit time	**Land bridge Transit time**	**Minimum saving**	**Shipping transit time**	**Land bridge transit time**	**Minimum saving**
Export (To)						
Jakarta	13	6	7	14	7	7
Singapore	9	7	2	13	8	5
Hong Kong	17	8	9	17	9	8
Yokohama	15	9	6	12	10	2
Import (From)						
Jakarta	12	6	6	14	7	7
Singapore	9	7	2	11	8	3
Hong Kong	18	8	10	15	9	6
Yokohama	19	10	9	17	11	6

Source: Office of Territory Development, Northern Territory Government.

The geographical advantages of the Darwin rail corridor could be reinforced by difficulties major southern port hubs may face in coping with demand growth. The Commonwealth Government's Bureau of Transport and Regional Economics projects Australian containerised imports and exports to increase at an average rate of five per cent from 2001-02 to 2010-11 to 3.8 million containers from 2.2 million in 2000-01. Melbourne and Sydney ports may be unable to efficiently handle increasing volumes because of limited capacity on the rail and road feeders to the ports. Shipping Australia, the association of Australian ship owners, warned in March that Sydney faced a transport crisis within two or three years because its roads and railway lines would struggle to handle "the torrents of containers" pouring off ever larger ships.[17]

The problem of congestion is one reason for criticism of the AustralAsia railway as its detractors argue that the Commonwealth funds would have been better served improving rail in the eastern states where demand is heaviest. In December 2003, the Commonwealth defused this argument with plans to invest $870 million over five years to upgrade the east coast railway system.

But while geography may confer potential time saving advantage on the AustralAsia railway-Darwin port corridor, this does not make the route instantly superior to existing routes. The present supply chains offer importers and exporters benefits in terms of freight charges, shipping service frequency and scope, and established reliability, although, as noted above, these may be eroded by congestion.

Economies of scale result from the larger number of visits by large container ships and higher volume road and rail links to the ports. *(Table 2)* This can mean lower freight charges per container unit than can be offered by the infant Darwin corridor. The major ports also gain time advantages as a result of the much larger number of calls by more

shipping lines. There are frequent direct connections to a large number of other ports. The major ports also have more frequent railway and road transport connections. All this gives importers and exporters greater flexibility to match their production, stock and distribution schedules to container vessel arrivals and departures.

For example, should there be a delay in dispatching goods for export from the factory, resulting in a missed shipment to say Singapore, then another shipping service may be available soon after. But for an exporter or importer using the Darwin corridor as it stands now, missed shipping would result in much longer delay given the few sailings per month between Darwin and Singapore.

... competitive advantage needs to be established combining time savings, lower charges and world class logistics ...

The existing port hubs have the advantage of being part of proven supply chains. If all is working well, how readily will an importer or exporter shift to the Darwin corridor even if there are time saving advantages and lower freight charges? Reliability may outweigh cost savings if uncertainties surround a new supply chain. For example, where manufacturers, such as motor vehicle companies, only keep relatively small inventories at production sites covering perhaps only a week of production, interruptions to the finely tuned supply chains could be disastrous. On the other hand, more rapid transit times translate into savings of million of dollars a year for companies importing large quantities of components. *(Box 2 - Logistics and the changing character of Australia's transport sector).*

Currently, there are two shipping services connecting Darwin to Singapore operated by the UK based Swires Group. Northern Territory company, Perkins Shipping, also runs a service to Dili in East Timor and one to Singapore via Dili. Swires added one service late in 2003. Swires provides four sailings a month to Singapore, one of which calls also at Surabaya and Jakarta in Indonesia and Port Klang in Malaysia. (*Table 6*).

Table 6
International container/general cargo shipping services to and from Darwin

New Guinea Pacific Line – Swires Shipping Frequency: Every 14 days Ports of call: Brisbane – Auckland – Tauranga – Sydney – Newcastle – Brisbane – Gladstone – Townsville – Darwin - Benete Bay – Surabaya – Jakarta - Port Klang – Singapore - Papua New Guinea - Solomon Islands - New Zealand - Brisbane.
Northern Territory Express – Swires Shipping Frequency: Every 15 days Ports of call: Singapore - Benete Bay – Darwin – Dili - Singapore. Feeder services to Jakarta and Port Klang
Perkins Shipping Frequency: Every 14 days Ports of call: Singapore – Dili – Darwin – Singapore
Perkins Shipping Frequency: Weekly Ports of call: Darwin – Dili - Darwin

Source: Port of Darwin Corporation.

... importance of direct services to China ...

In order to foster containerised freight trade through Darwin, the challenge then is to attract more shipping services connecting Darwin to South East Asian and North East Asian ports. China is an especially important target given China's dramatic economic growth, reflected in increasing trade with Australia. A great gain for Darwin and the AustralAsia railway would be securing direct shipping services to China, through Hong Kong, Shenzen or Shanghai. This would almost certainly entice South Australian importers and exporters as the Port of Adelaide only receives one direct call every 17 days by a shipping service connecting to Hong Kong via Australian eastern coast ports. A China service would likely connect to other major North East Asian ports, either directly, or through feeder services from Hong Kong or elsewhere. (*Table 4*).

In South East Asia, Singapore continues to be by far the most important transhipment hub port with connections to ports in South East Asia, South Asia, Europe, North East Asia and North America. Another direct connection that may be worth pursuing is to Malaysia's new Tanjung Pelapas port in Johore state at the tip of the Malay peninsular on the Malacca Strait opposite Singapore island. This port has grown quickly as a competitor to Singapore for transhipment cargoes as well as for Malaysian trade. (*Box 3 – International container shipping and port trends*). Another emerging large deepwater port is Thailand's Laem Chabang, southeast of Bangkok on the Gulf of Thailand. This was established in 1991 to reduce congestion at the Port of Bangkok and may develop as a hub port serving Vietnam and Cambodia. Direct links with Indonesian ports such as Jakarta's Tangjung Priok and Surabaya's Tangjung Perak, the two most important ports serving Java, Indonesia's most heavily populated and urbanised and industrialised island, may also be valuable. At present, much of the trade between Adelaide and Melbourne and Java is transhipped via Singapore.

Box 3: International container shipping and port trends

The ever-larger container vessels now plying the major sea-lanes are a key factor determining how international shipping and ports around the world must operate.

Vessels are becoming larger in response to both growth of sea borne trade, especially in the Asia Pacific region, and the increasing types of freight being containerised, such as grain, rice, and salt, formerly handled in bulks. The largest container capacity has increased from 3,000 Twenty-foot container equivalent units (TEUs) in the 1980s to 4,500-5,000 in the mid 1990s to 6,000 and larger today. Vessels of 8,000 TEUs and more are envisaged.

Given the high capital costs of these large container vessels, operators cannot afford to have them docked for too long since costs continue to be incurred regardless. Nor can they afford to have them sailing under full capacity. The large vessels therefore dock at a small number of major ports where they can quickly as possible load and unload large volumes.

Box 3 (continued): International container shipping and port trends

In turn this encourages concentration of a country's and a region's major container trade flows at a few ports. Land based transport and shipping supply chains from other smaller ports connect to these major hubs. In some cases, the major role of a port may be to act as a transhipment point for other ports, collecting and dispatching smaller volumes of container freight.

Hub ports reduce the complexity of shipping services. If there are five ports in Asia and five ports in Australia all having direct calls to each port there would be 25 individual shipping services to and from each pair of ports. But if there is one hub transhipment port for the ten ports, then there only needs to be ten individual shipping services between each of the ports and the hub port. Larger container vessels reinforce the attractiveness of hub and feeder systems by requiring greater economies of scale.

Singapore is one of the best examples of a maritime hub with transhipment freight from other ports, including Australia's, making up 90 per cent of its port throughput. In 2003, Singapore handled a record 18.1mn TEUs. Nearly 50 per cent of the transhipment traffic in South East Asia is through Singapore. Container ships connect Singapore to 700 destinations via 130 shipping lines. Every week, about 20 ships depart for Europe, 30 for Japan and 15 for North America. About 100 feeder vessels distribute cargo and consolidate cargo from regional ports.

Increasing vessel size also places demands on existing and aspiring hub ports. They must have deep-water channels, large span gantry cranes, terminal areas able to handle large volumes of containers, and efficient handling and customs procedures. The ports must be part of efficient logistics and transport chains to producers and consumers in their hinterlands and/or to other ports. Geographical location may be critical as in the case of Singapore, where its deepwater port is at the junction of shipping routes between Europe, South Asia, and East Asia, Australia and the Americas.

The economics of larger scale container vessels have also driven change among the shipping lines. In order to ensure that vessel capacity is fully used, the lines have gone into alliance with each other or alternatively sought to achieve greater economies of scale though mergers and take overs. The top 20 lines manage about 60 per cent of the world's container capacity with the top three, Maersk Sealand of Denmark, P&O NedLloyd of Netherlands-UK and Evergreen of Taiwan commanding 20 per cent.

Port terminal operators are also commonly expanding from their home bases to invest in and operate terminals elsewhere. This is due both to the liberalisation of port operations, encouraging in some cases public owned port operators to look further afield, and in other cases allowing foreign private sector investment and operation in formerly public monopoly operations. Leading terminal operators in Asia are Hong Kong's Hutchinson Ports, the Port of Singapore Authority Corporation, and P&O Ports. Not uncommon is investment by shipping lines in port terminals.

Competition between ports for hub status within countries or regions can be fierce.

Box 3 (continued): International container shipping and port trends

Established hub ports with volume, scale, transport links and logistics systems in place have powerful advantages. But these are not necessarily fixed as Malaysia's Tangjung Pelapas container port at Johore at the tip of the Malay Peninsular facing Singapore Island shows. The port, which opened in 2000, is competing successfully with Singapore, attracting the world's largest container shipping operator, Maersk-Sealand to shift from Singapore. Maersk was offered lower charges, dedicated terminals, and a 30 per cent stake in the port.

Feeder ports also can become destinations for the larger vessels of major shipping lines when growth in their hinterlands increases the volume of throughput to the point that the major shipping lines then find it economic to make direct calls. Transhipment of cargoes does incur extra costs through unloading and loading and shippers always prefer direct calls. So if the cost of a direct call through increased volumes of trade improves to the point where it is less than the transhipment cost, then a container line should re route its services. And with the advent of direct calls by the larger vessels, so the former feeder port may also provide transhipment services for other ports. This is the case in China with ports at Shenzen in the south and Shanghai in the centre rising at the expense of Hong Kong and its long established container facilities.

Darwin as a transhipment port for goods to and from ports in eastern Indonesia, East Timor and New Guinea and the western Pacific, and connecting in turn to Singapore and also the large Australian ports is another possibility. This of course does not preclude trade via the railway land bridge. Both could reinforce each other.

... imports rather than exports may be the initial key.

But attracting more shipping calls is hardly a simple matter. It requires import or export volumes of reasonable scale in order to justify the calls. Once these volumes are in place to anchor shipping services, it would then be possible to offer services for those importing or exporting small quantities competitive with present supply chains. Imports, rather than exports, may be the initial key. For example, motor vehicle manufacturers in South Australia, Holden and Mitsubishi, import significant quantities of components from Asia, which are shipped to Melbourne and then sent by road or rail to Adelaide. *(Box 2 - Logistics and the changing character of Australia's transport sector)*

Further investment in port facilities will be needed. For example, at present there is only one crane at the East Arm port. A second crane would help ease fears among shipping companies, freight forwarders and customers of costly delay because of breakdown of the single crane. Overall, Darwin and the supporting rail service will need to gain a reputation for reliability and rapid cargo turnaround times.

Table 6
Major container ports in Asia Pacific by throughput
2001 (million TEU)

Hong Kong	China	17.83
Singapore	Singapore	15.57
Pusan	South Korea	8.07
Kaohsiung	Taiwan	7.54
Shanghai	China	6.34
Los Angeles	United States	5.18
Shenzen	China	5.04
Long Beach	United States	4.46
Port Klang	Malaysia	3.76
Tokyo	Japan	2.80
Manila	Philippines	2.80
Qingdao	China	2.64
Yokohama	Japan	2.40
Laem Chabang	Thailand	2.34
Tanjung Priok (Jakarta)	Indonesia	2.22
Kobe	Japan	2.10
Tangjung Pelapas	Malaysia	2.00
Melbourne	Australia	1.29
Sydney	Australia	0.99
Bangkok	Thailand	1.07
Tanjung Perak (Surabaya)	Indonesia	0.87

Source: Containerisation International, ISL, Drewry Shipping Consultants, The Shipping Times (Singapore), Maritime Asia, Salomon Smith Barney.

Bulk and livestock exports **-** Bulk shipment could result from mine development near the railway route. The railway could make more economical mining projects that otherwise would have had to rely on long distance road transport. Live cattle are already a major export from the Northern Territory. Cattle are taken to port on road trains. Some question though whether additional loading and unloading of cattle from road to rail would be attractive. Shipping for bulk and livestock exports is a far simpler matter to secure than that for containerised exports. Vessels are dedicated for the trade between producer and customer, unlike container shipping which makes calls on different ports for a variety of exporters and importers. Further Investment would be needed for bulk handling facilities in Darwin.

9. Tourism

Initial tourist demand for the Ghan service between Darwin and Adelaide is strong. The Ghan is presently running one passenger service a week from Adelaide to Darwin and return with scheduled stopovers at Tennant Creek and Katherine. Railway operators forecast an additional 30,000 domestic and international visitors to the Northern Territory choosing to travel by rail. Some question though whether this will be sustained. The train cost is significantly more expensive than plane. But if demand continues to be strong, this may also bring benefit through increased airline services to Darwin and Adelaide. Especially if a large proportion is foreign tourists, this could encourage much needed expansion of

international carriers serving Adelaide and Darwin. For example, visitors attracted to the train journey are likely to only make one way journeys, that is, arriving by plane either in Darwin or Adelaide for example to begin the train trip and then returning home by plane from Adelaide or Darwin.[18]

10. Impact on South Australia

South Australian suppliers should benefit from the railway as it provides more efficient access to growing demand in Darwin and the Northern Territory. The railway may also encourage eastern states suppliers to shift distribution points to South Australia. The railway could serve to integrate more closely the South Australian and Northern Territory economies. The East Arm container port could become an important gateway for South Australian exporters and importers. South Australia would benefit from expanded tourism as a result of the railway, as noted above.

But development of the land bridge route may threaten the Port of Adelaide, where almost all of the state's container traffic is handled. This has been run by the private sector Flinders Ports, along with six other ports in South Australia, since November 2001. Flinders Ports is investing $400 million in redevelopment of the Port of Adelaide at Outer Harbor to improve its container handling for larger vessels by deepening the channel to 14 metres and expanding storage facilities as well as its bulk operations. Four cranes operate at the container terminal.

11. Work in train

... Darwin can become an important gateway for Australian international trade with Asia ...

Enthusiasm for the AustralAsia railway has varied considerably around Australia. Not surprisingly, business and government in Darwin and the Northern Territory are among its strongest supporters. With the addition of the East Arm port and business park developments in Darwin, they believe Darwin can become an important gateway for Australian international trade with Asia.

Elsewhere in Australia, there is scepticism about the potential of Darwin and the AustralAsia railway to provide a cost effective land bridge for containerised trade flows to and from southern Australia. Part of this no doubt is due to some fear of competition as well as assessment of the real obstacles.

Development of a viable land bridge to and from Asia does face a classic "chicken and egg" problem. The challenge for the Port of Darwin and the AustralAsia Railway is to attract more shipping services if they are to woo companies to export and import reliably to and from a variety of markets and producers at low cost. But to do this they first need sufficiently large volumes in hand to be able to secure the visits of container lines.

Domestic freight is a different story. A switch to rail is already evident as there are immediate benefits for southern suppliers over the truck haulage of the past. There are clear cost and time advantages shipping by rail rather than road. And the domestic demand in Darwin and the Northern Territory should grow strongly in coming years, driven by resources, construction and infrastructure, and defence projects, and tourism.

There has also been criticism of public funding support for the project, with argument that money could be better spent elsewhere. Eastern states interests argued that their railways, facing the country's heaviest traffic were more in need of Commonwealth funding than construction of the Alice Springs to Darwin railway. Government funding and support are significant. But if they have encouraged the much larger private sector investment that would otherwise not have happened, and, in so doing brought about a project that fosters longer term economic development, then the public funds are justified. The extent of private sector investment in the project under build, own, operate and transfer conditions is certainly unprecedented in Australia's railway history. Another reason for Commonwealth funding is the value of the railway to support deployment of major elements of Australia's military forces in the Northern Territory.

... the vision of a railway link is now the reality. New challenges over the next decade ...

Attitudes towards the railway and the concept of Darwin as a gateway to Asia perhaps reflect different views about development in northern Australia. Many in Australia's dominant southeastern states continue to see the Northern Territory as a remote frontier and Darwin as a last outpost. Yet the railway and other projects underway and planned point to the Northern Territory and Darwin becoming more economically dynamic and sophisticated over the next decade. And this may well provide opportunities for new commercial and other relationships with Asia. As Australian writer, Ross Terrill, a Harvard based China expert, says: "We cannot extend our role in Asia until our north is dotted with cities, railways, natural gas pipelines and world-class holiday resorts."[19]

References

Access Economics (2003), "Economic Outlook for the Northern Territory", Report for the Northern Territory Government, November.

Asia Pacific Business Intelligence (2003), "The Maritime Industry in Asia Pacific", Singapore, (www.abi-network.com)

Booze Allen & Hamilton (1999), "Economic Evaluation of Darwin Alice Springs Railway for the Northern Territory Department of Transport and Works", Melbourne, October.

Bureau of Transport and Regional Economics (2002), "Australia's Seabourne Containerised Freight – Forecasts to 2010-11", Working Paper No 50, Canberra, August (www.btre.gov.au).

_____ (2001), "Logistics in Australia", Working Paper No 49, Canberra, October (www.btre.gov.au).

Chia Lin Sien, Mark Goh, & Jose Tongzon (2003), "Southeast Asian Regional Port Development", Institute of South East Asian Studies, Singapore.

Global Freight Connect Conference, Northern Territory Government, Darwin, February 9-10, 2004. (www.freightconnect.nt.gov.au)

Jacques, Jason (2001), "Steel Snowy Steals the Show," in Asia Pacific Review, Project Finance International, Thompson Financial, London, July.

Productivity Commission (1999), "Progress in Rail Reform", Inquiry Report No. 6, Canberra (www.pc.gov.au).

Reynolds, Henry (2003), *North of Capricorn*, Allen & Unwin, Sydney.

Terrill, Ross (2000), *The Australians*, Chapter 9, "Asia's Doorstep", Doubleday, Sydney.

End Notes

[1] Research, including interviews with various private sector companies, associations and government agencies, was carried out in Adelaide, Darwin and Singapore for this paper from November 2003 to March 2004.

[2] AustralAsia Railway Corporation, Annual Report, 2001, p. 14.

[3] Henry Reynolds, North of Capricorn, Allen & Unwin, Sydney, 2003, p. 191.

[4] The other short listed bidders were the Southern Cross consortium, including Bouygues and Tavaux du Sud-Ouest of France, Australia's Henry Walker, the Australian Transport Network including Wisconsin Central of the US, and a Brunei financial institution, and Australia's Macquarie Bank, and the Northlink group including Australia's Thiess Contractors, the Commonwealth government's National Rail Corp., the Commonwealth Bank of Australia, and Perkins Shipping, a Northern Territory company.

[5] The Great Southern Railway (GSR) also runs the Indian Pacific (Sydney-Perth) passenger service and the Overland (Adelaide-Melbourne) service. GSR acquired the services from the Commonwealth government's Australian National Railways in 1997. Partners in GSR include the UK's Serco and GB Railways, RailAmerica, and Australia's Macquarie Bank, Legal & General Financial, and G13 Ltd.

[6] A Freightlink train leaves Adelaide at approximately 2300 hours on Mondays, Tuesdays, Wednesdays and Fridays and 1700 on Saturday, arriving Darwin at 1730 on Wednesdays, Thursdays, Friday and Sundays with Monday arrival at 0930. A Freightlink train leaves Darwin at 1000 each day except Wednesdays and Sundays and arrive in Adelaide 43hours later at approximately 0700.

[7] TEU or twenty foot equivalent unit is the standard measurement of size length in the container shipping industry. Although containers are available in a variety of sizes, capacity is typically calculated in TEUs.

[8] Freight Trends and Challenges for the Retail Sector, Michael Luscombe, General Manager, Supply Chain, Woolworths, presentation at the Global Freight Connect conference, Northern Territory Government, Darwin, February 9-10, 2004.

[9] Holden and its logistics challenges within the Asia Pacific region, Alexander Kachellek, Director OTA, Holden Ltd, presentation at the Global Freight Connect conference, Northern Territory Government, Darwin, February 9-10, 2004.

[10] Bureau of Transport and Regional Economics, Commonwealth Government, Logistics in Australia, Working Paper No 49, Canberra, October 2001, chapter 2

[11] Ibid, chapter 4.

[12] Jason Jacques, associate director of RBS Australia, "Steel Snowy Steals the Show," in Asia Pacific Review, Project Finance International, Thompson Financial, London, July 2001 p42; also Booz Allen & Hamilton, Economic Evaluation of Darwin Alice Springs Railway, for the Northern Territory Department of Transport and Works, Melbourne, October 1999.

[13] Jacques, op cit p41.

[14] ABC News Online, January 23, 2004; www.abc.net.au/news/australia/nt/alice/200401/s1030823.htm

[15] Access Economics, Economic Outlook for the Northern Territory, Report for the Northern Territory Government, November 2003.

[16] Further detail in earlier centre issues paper, Andrew Symon, Timor Sea Natural Gas Development: Still in Embryo, SA Centre for Economic Studies, Adelaide, August 2001; www.adelaide.edu.au/saces/publications/issuespapers.html

[17] "Import boom threatens to swamp Sydney traffic," Shipping Australia Limited, press release, 3 March 2003. www.shipppingaustralia.org.au; "We're facing a situation where trucks will be queuing up from Port Botany to the fringes of the CBD and lines of ships will be waiting offshore as they already are off Newcastle."

End Notes (continued)

[18] Darwin may be able to attract services from among the array of budget international airlines now emerging in South East Asia. Given that it is only a few hours from Indonesia's Bali and the neighbouring island of Lombok, major tourist destinations, it could be attractive for the new budget airlines, such as the Malaysian based Air Asia, or Singapore's ValuAir and Tiger Air, to be launched this year, to add a connecting service to Darwin. Darwin would fall well within the three to four hour radius of budget airline flights from Bali.

[19] Ross Terrill, The Australians, Doubleday, Sydney, 2000, p. 5.