



Appendix A3

BIS Shrapnel Report “Outlook for Land Values in South Australia”, January 2008

Outlook for Land Values in South Australia

January 2008

**Prepared by BIS Shrapnel for
ElectraNet**

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BIS Shrapnel’s wide range of reports draws on the company’s two core competencies: market research and forecasting. No other firm in Australia enjoys our pre-eminent reputation in both of these complementary fields of research.

Our reports provide reliable, in-depth information on industries and markets, as well as thorough analysis of economic drivers and clearly explained forecasts.

Formed in 1964, BIS Shrapnel has built extensive expertise across a broad spectrum of industry sectors and geographic regions, and has developed a large portfolio of research methodologies, all of which we continue to expand.

This particular report was compiled by Dr Frank Gelber who is a Director and Chief Economist of BIS Shrapnel and Dr Kishti Sen who works as an Economist.

THE ARGUMENT

BIS Shrapnel was initially asked by ElectraNet in May 2007 to provide an expert opinion on their estimate of the likely land value escalation for South Australia over its forthcoming regulatory control period, i.e. from 2008-2013. ElectraNet based its estimate of land value escalation on the experience so far this decade.

In reviewing the escalation considered by ElectraNet, BIS Shrapnel's response was that ElectraNet's estimate was reasonable given that:

- the experience this decade represented an initial recovery from the depressed period of the decade of the 1990s when property markets, property prices and land prices were responding to, and recovering from, the excesses of the preceding boom which peaked in 1989, and
- the South Australian economy, and hence demand for property, property prices and land values were likely to be strong over the forecast period.¹

In their review for the Australian Energy Regulator, Sinclair Knight Merz (SKM) argue that the full historical series of ABS land value data (which extends back to 1989) should be taken into account in predicting future land value rises. SKM noted that ElectraNet's sub-set of the full sample forms part of a 'significant boom period' in the growth of land and property values throughout Australia. Moreover, they comment that there is a possibility of a correction at some stage during ElectraNet's revenue control period. Hence, the growth rates in land values observed over the recent past may not be replicated into the next short to medium term. As such, SKM considered a longer time period to constitute a more representative sample for calculating future land value increases.

In this report we respond formally to ElectraNet's request for an expert opinion on their estimate of likely land value escalation. We provide a view on the likely land escalation rates for a five year period commencing in 2008 and comment on the SKM review. The intention is to outline the underlying reasons for our initial response to ElectraNet in May 2007.

BIS Shrapnel's basic argument is as follows:

- the depressed land prices of the 1990s were a reaction to the preceding boom;
- the recovery in land values this decade reflects initial recovery in property prices;
- BIS Shrapnel's forecast for the 2008-2013 period is for strong economic growth leading to strong property demand and prices, which, in turn, will drive an escalation of land values of similar order of magnitude to the growth so far this decade, i.e., as per ElectraNet's assumption; and
- the use of the 1990s decade data would unreasonably bias the likely escalation downwards as it reflects depressed conditions which are extremely unlikely to be repeated in the 2008-2013 period.

¹ ElectraNet subsequently included its estimate of land value escalation in their Revenue Proposal which was submitted to the Australian Energy Regulator at the end of May 2007.

Land value escalations vary significantly through different phases of a property cycle. Unfortunately, the ABS data since 1989 does not represent a full cycle. As mentioned previously, the 1980s property boom peaked in 1989 and led to a major downturn in property markets which lasted through the whole of the 1990s decade. We are only now seeing the initial recovery in property prices. This upswing phase of this long cycle is not complete. In fact, given the robust economic outlook for South Australia (see Appendix on Economic Outlook), we envisage strong demand for property through 2008 to 2013 leading to increases in property prices and hence land prices.

How do we know 1989 was the peak of a strong cycle?

Given the lack of land price data before 1989, we can use property value data to calibrate the historical timing and magnitudes of cycles in property markets. This data is set out in the accompanying Appendix. In summary:

- the commercial property boom of the 1980s saw A-Grade property values rise in real terms by 77 per cent between 1980 and 1989, then fall by 44 per cent over the period to 1998 followed by a period of stagnation, with significant recovery only coming post 2003. In mid-2007, real values were still 23 per cent below the 1980s peak,
- Industrial property values did not rise by as much in the 1980s. They experienced a collapse of similar magnitude in the 1990s bust, but recovered earlier and more strongly,
- the residential property cycle was more muted, but the whole of the 1990s period was flat. Again, this decade represents a recovery for residential property prices from the depressed period of the previous decade, and
- Rural land prices were also weak through the 1990s before recovering this decade.

How does that relate to Land Values?

To understand the formation of land values through a cycle, we draw on the relationship between property values, land values and “residual land values” (the difference between property values and development costs) through the property cycle. We then deduce the likely growth rates in land prices for South Australia going forward.

In an upswing, land values are driven by the price developers are willing to pay for development sites as they compete for available land; hence, the importance of residual land values. Given that construction costs are less volatile through the cycle, residual land values fluctuate by much more than property prices. Land values tend to exceed residual land values as they also contain an element of option for future development.

Residual land values can fall dramatically in a downturn. Indeed, they can sometimes go negative. However, land values are often sticky downwards with landowners holding land rather than selling at much reduced prices, so that residual land values often fall by much more than land values. That opens up a differential between the two.

The other side of the coin is that, through the first part of an upswing, residual land values recover for some time before they cut the deficit and start to drive up land values. When property markets recover, residual land values rise steeply while land values initially remain constant. Often land values only start to rise when the residual land values rise sufficiently to close the gap with land values, thereby cutting the deficit to nearly zero. This is when developers buy land and position into markets.

Land values continue to rise (with the residual land values) through the upswing to the next peak in the property cycle, ending up higher than residual land values.

Looking Forward we expect strong economic growth

Looking forward, the South Australian economy will be strong. That means strong demand for property. Given that supply has been moderate, this would drive rises in rents and property prices leading to increases in residual land values and hence strong growth in land values. This is also true for residential property where, despite concerns about affordability, construction below underlying demand is increasing the deficiency of residential stock, leading to rent rises and setting the scene for an upswing.

Given the buoyant outlook for property markets, an historical average from 1989 which includes a decade of depressed property markets is not a reasonable predictor of prices between 2008 and 2013. Our view is that the South Australian economy, about to be boosted by major investment projects, is firmly on the upturn phase of its cycle and, consequently, land values will continue to rise and track the property cycle.

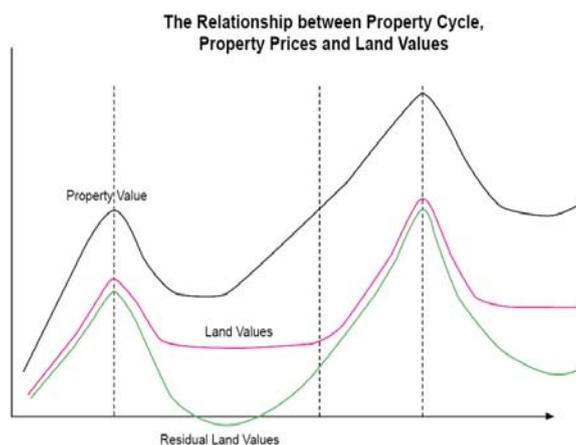
BIS Shrapnel, therefore, predicts that future rises in land values to 2013 will be of the order of magnitude of increases over the past seven years (as postulated by ElectraNet). While we cannot rule out the possibility of a property downturn, we regard it as unlikely. To the contrary, it is more likely that the South Australian economy and property markets will be stronger over the next five years than in the last five. The average of increases observed for the past 17 years (as suggested by SKM) includes a decade of depressed property values and land values. Accordingly, using it will, we believe, significantly understate the escalation of land values over the 2008 to 2013 period. Indeed, there is a significant risk that land price escalation will be higher than over the first part of this decade.

Appendix A

EXPLANATION OF PROPOSITIONS

Property Values, Residual Land Values & Land Values through the Property Cycle.

Property markets are cyclical. Property price, land value and residual land value movements are closely related through the property cycle. These relationships are illustrated in the accompanying expository chart.



In an upswing, land values are driven by the price developers are willing to pay for development sites as they compete for available land. Hence the importance of residual land values - the price that developers are willing to pay based on development feasibilities, roughly property prices less full costs allowing for finance costs and developers margins. Given that construction costs are less volatile through the cycle, residual land values fluctuate by much more than property prices. Land values tend to exceed residual land values as they also contain an element of option for future development.

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values. When property markets recover, residual land values rise steeply while land values initially remain constant. Often land values only start to rise when the residual land values rise sufficiently to come close to merging with the land values, thereby cutting the deficit to nearly zero. This is when developers buy land and position into markets.

Land values continue to rise (with the residual land values) through the upswing to the next peak in the property cycle, ending up higher than residual land values.

Benchmarks in the formation of South Australian property & land prices are as follows:

- 1989 was the peak of the extraordinary 1980s commercial boom experienced in most Australian cities, Adelaide included;
- the trough of the subsequent downturn in property prices came in the middle or late 1990s, depending on the market, but the gap between land values and residual land values remained large;
- residual land values rose to levels starting to affect land values early this decade; and
- to date there are no signs of any diminution of land value increases.

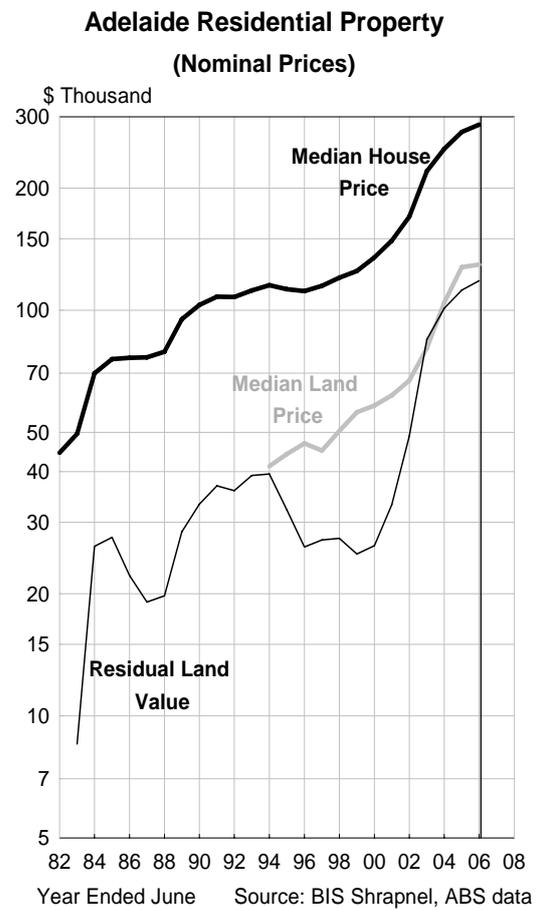
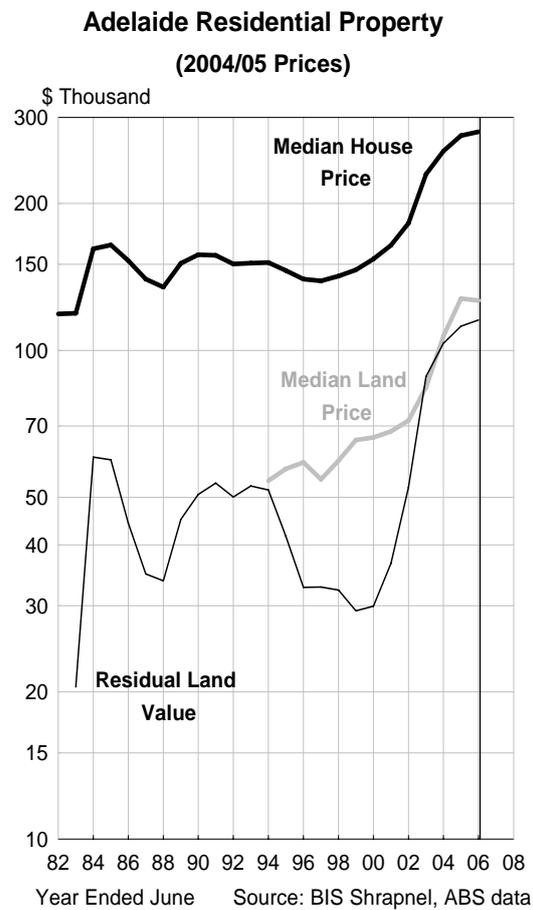
Indeed, our forecast is that property prices, residual land values and land prices will continue to rise through the forecast period.

... as shown in the Residential Property example.

We have estimated an index of residual land values for Adelaide residential property. The results are shown in the accompanying chart and table.

Empirical evidence of the relationships between land values and residual land values for South Australian residential property market is strong. Land prices through the latter half of the 1990s remained flat and this was largely due to the property downturn experienced through most of the decade. Residual land values, on the other hand, fell quite sharply from \$51,800 in 1994 to \$29,300 in 1999 (see chart below).

The different amplitudes in the swings in property values and residual land values are also evident in the chart. During the upswings of the mid and then late-1980s, residual land values rose sharply as a result of strong property demand. Similarly, residual land values fell quite dramatically with downturns of the late 1980s and late 1990s. The fall in residual land values towards the end of last decade was much greater than the decline in property values over the same period.



As property markets recovered at the start of this decade, residual land values rose dramatically, closing the gap on land values and, eventually leading to increases in land prices. The movements in Adelaide house prices, residual land values and land values are tabulated below.²

² The Adelaide median land price data has been sourced from BIS Shrapnel’s 2007-2010 Residential Property Prospects Report.

Adelaide Residential Property (\$'000)
(2005 Constant Prices)

Year ended June	Median House Price	Residual Land Value	Adelaide Median Land Price
1982	118.8	-	-
1983	119.1	20.5	-
1984	161.5	60.5	-
1985	164.3	59.7	-
1986	152.7	44.3	-
1987	139.9	34.9	-
1988	134.8	33.8	-
1989	150.7	45.1	-
1990	156.9	50.7	-
1991	156.6	53.5	-
1992	150.3	50.1	-
1993	150.9	52.8	-
1994	151.3	51.8	54.1
1995	145.7	41.7	57.2
1996	140.0	32.8	59.0
1997	138.8	32.8	54.5
1998	141.9	32.3	59.5
1999	146.1	29.3	65.6
2000	153.9	29.9	66.3
2001	164.1	36.7	68.2
2002	182.1	52.4	71.9
2003	229.5	88.4	84.1
2004	255.8	103.4	106.8
2005	275.0	112.1	127.7
2006	280.1	115.4	126.5

Residential construction in South Australia is currently below the underlying demand thereby adding year by year to the deficiency of residential stock.³ While recovery in construction and property is currently being suppressed by rising interest rates and threats of further rises, the market is setting up for a subsequent surge in activity.

Over the next six years, housing prices will rise significantly despite concerns about interest rate rises. This will be driven by the deficiency of stock and the need for increased construction. Essentially the current period represents a pause in activity before the next upswing starts.

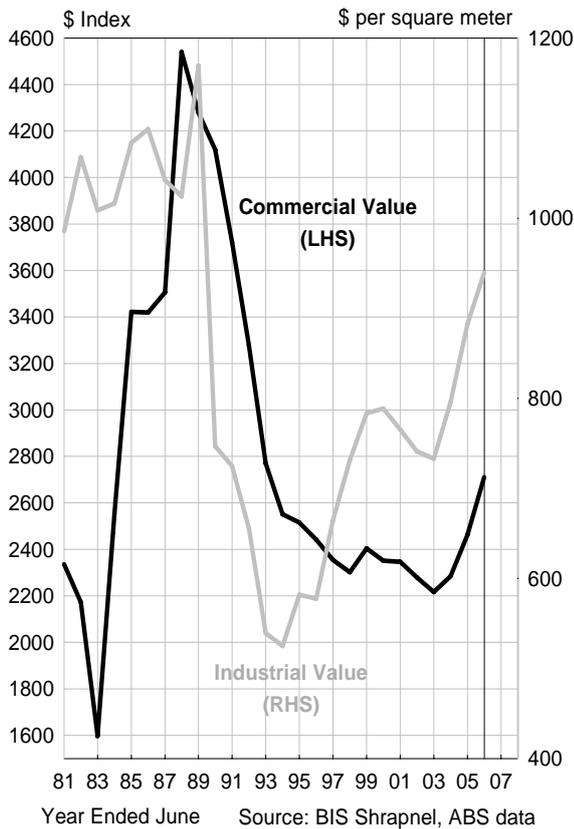
³ Estimates are in BIS Shrapnel's Building Industry Prospects, Building in Australia and Residential Property Prospects Reports.

...commercial property on same cycle

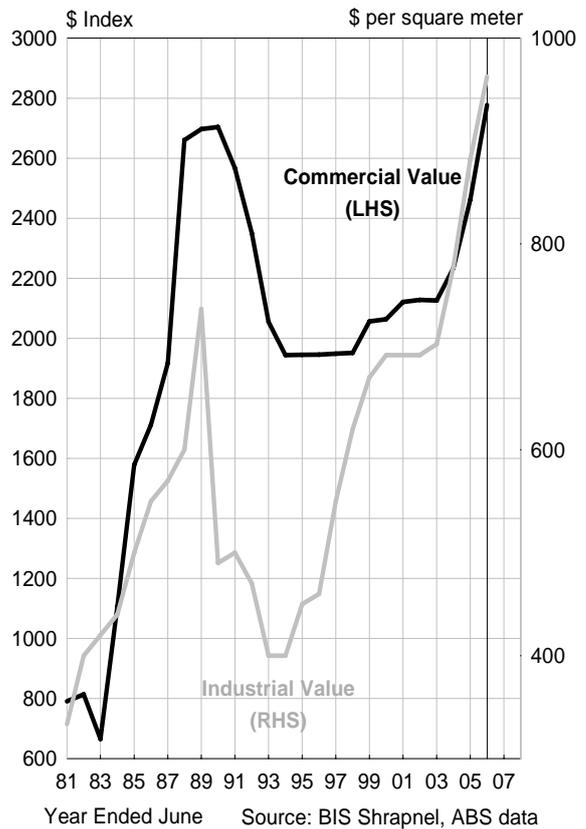
The falling commercial property values in the first half of the 1990s decade were the result of the overbuilding during the boom of the 1980s exacerbated by the subsequent economic downturn (see chart below).⁴ The CBD vacancy rates rose from 2 per cent in the mid-1980s to 19 per cent in 1994. This was followed by a long period of stagnation in property values. Rents and prices were not high enough to underwrite financial feasibility, i.e., residual land values were substantially below land values.

Since 2003, with improvement in the economy allowing absorption of excess stock, vacancy rates have fallen below 8 per cent and commercial property values have started to rise. The underlying rise in property values means that financial feasibilities are only now being underwritten. The prospect of further rises in property prices means increases in residual land values leading to increases in land values.

Adelaide Commercial and Industrial Property (2004/05 Prices)



Adelaide Commercial and Industrial Property (Nominal Prices)



⁴ As documented in BIS Shrapnel’s Commercial Property Prospects and Adelaide Reports.

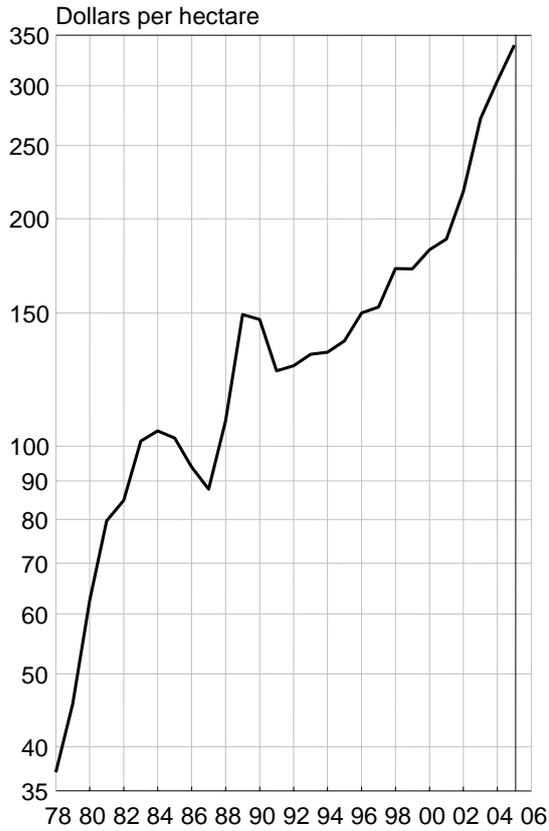
Rural land values, too, show a similar timing

Data from the Australian Bureau of Agricultural and Resource Economics plus BIS Shrapnel's own estimates show that rural land value per hectare increased by an annual average of 22 per cent over the three years to 2005 (see Chart below).

We expect rural land values to continue to grow strongly over the next five years despite the long drought. As people look for lifestyle changes (hobby farmers) and given the mining boom predicted for South Australia, rural land values are expected to increase substantially over the forecast period. In particular, the Roxby Downs Township will experience exponential growth rates in land values stimulated by expansion of mining activity. Its population is expected to double, putting pressure on housing and leading to a substantial escalation in land values, i.e., much greater than the State averages. Additionally, due to the relative proximity of the Olympic Dam expansion, many Upper and Mid North and Upper Yorke Peninsula towns and regions are experiencing unprecedented growth rates as many workers choose to locate remotely from and commute to the Olympic Dam site.

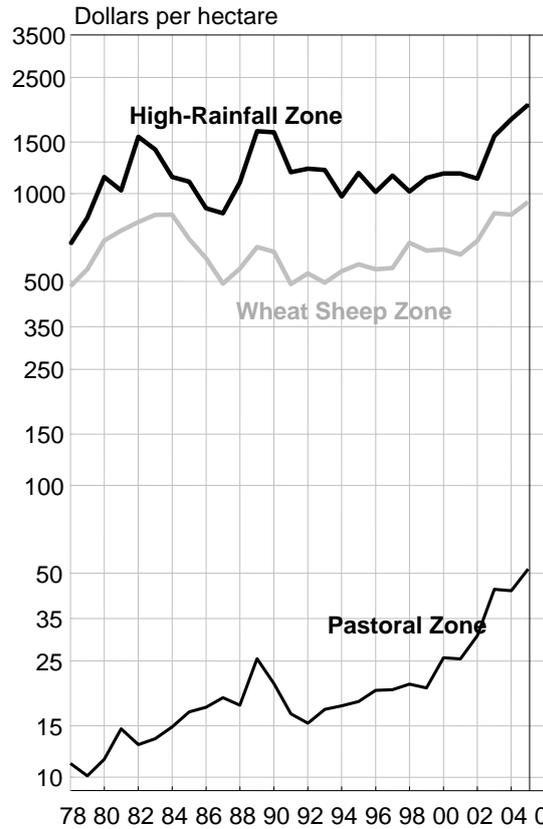
This has also been the experience in other minerals driven regions such as Bowen in Queensland and Karratha in Western Australia, and is likely to be the case in other regional areas across South Australia that are experiencing growth associated with mining and infrastructure investment.

**Land Prices (Nominal prices)
Broadacre Farms**



Year Ended June Source: BIS Shrapnel, ABS data

**Land Prices (Real - 2003/04 prices)
Broadacre Farms**



Year Ended June Source: BIS Shrapnel, ABS data

Looking ahead, we expect strong economic growth ...

Having experienced a pause in the last few years, the South Australian economy has already started to strengthen. Looking forward, the economy will be driven by activity associated with the frigate project and a mining investment boom which will lead to a near doubling of engineering construction activity over the next five years. The strength of engineering construction will underpin economic growth. Essentially, the upswing in activity over the past five years will be driven to a higher plane in 2007/08 with expenditure predicted to reach \$3.0 billion.⁵ This represents an increase of approximately 30 per cent over the current high of \$2.3 billion. Activity is then likely to remain robust on the back of the Penola Pulp Mill construction, and the commencements of several infrastructure projects associated with the Olympic Dam expansion. Once the on-site mine expansion begins in 2010/11, real work done will be propelled to a fresh peak of \$3.9 billion dollars in 2012/13, stimulating economic activity throughout the State.

In this environment, given the boom in investment, you would have to ask why there would be a weakening in the economy and/or property markets.

...driven by engineering construction activity

The exponential growth in engineering construction activity is expected to level off and be on a downward drift in the second half of next decade. However, expenditures associated with the mine expansion, strength in electricity generation projects, particularly geothermal energy, and investments in providing water security for Adelaide will sustain strong construction activity right through the five years to 2016/17. Real work done is forecast to average \$3.3 billion per annum during this period.

Given the positive outlook for construction activity, the South Australian economy as a whole is expected to bounce back in 2007/08 – with Gross State Product (GSP) forecast to increase by 4.9 per cent – after severe drought cut GSP growth to 0.8 per cent in 2006/07. Growth is then expected to weaken slightly in 2008/09 before rebounding to a forecast 2.8 per cent in 2009/10 and strengthening to 5.3 per cent in 2010/11. This rebound is expected to be led by strong growth in business investment, with a pick up in dwelling and public investment also contributing. A lower Australian dollar projected at the end of the decade– coupled with new capacity coming on stream from mining, manufacturing and defence-related investment – will also underpin stronger export growth. While an easing in output (GSP) growth is expected over the subsequent two years, State Final Demand is expected to remain strong over 2009/10 to 2012/13, underpinned by solid investment. In turn, this strong phase of investment will be a key driver of healthy employment growth over this period – averaging over 2 per cent p.a. (compared to the long term growth rate of 1.1 per cent p.a.).

⁵ The engineering construction forecasts will be published in BIS Shrapnel's 2007-2022 Engineering Construction Report due to be released in January 2008.

Strength in Property Markets will be sustained

Accordingly, the outlook for all property markets in South Australia is extremely robust. Demand for property will be strong and this will simply be a natural flow-on from the positive economic environment for the State for the next decade, particularly in the first half of the decade. In addition, Adelaide is a relatively affordable city and this should result in greater demand for residential property leading to rises in property prices.

...and that means continued strong growth in land values

The strong economic environment predicted for South Australia will translate into strong demand for both residential and non-residential property in the State. The land value growth rates of the decade so far are the result of the initial upswing in property markets. The estimate for the last two years reflects strong property market conditions. We expect that upswing to continue through the forecast period, driving sustained growth in property prices, residual land values and hence land values. Accordingly, the average of the land value escalation seen for the past seven years is a conservative predictor of future land value rises.

The flat land prices of the 1990s decade relate to a property downturn and have no relevance to what will be a strong market over the next six years. A historical average since 1989 cannot be considered as reasonable given that it includes a period of significant downturn in the property market, something that is highly unlikely to occur for South Australia at any time within the five year forecast period. In none of the property sectors is there any hint of oversupply. Given strong demand, you would need to ask why there would be any downturn in property markets. On the contrary, our forecast is that the strength of the South Australian economy and property markets will continue to underpin strong rises in property and land values. If anything, land values will accelerate as the property upswing matures.

Accordingly, we regard ElectraNet's assumption that land prices will increase at around the rate of the first part of this decade as conservative. Our expectation is that they will increase by more.

Appendix B

SOUTH AUSTRALIA – OUTLOOK FOR ECONOMY

Economic outlook for South Australia

The South Australian economy is expected to bounce back in 2007/08 – with Gross State Product (GSP) forecast to increase 4.9 per cent – after severe drought cut GSP growth to 0.8 per cent in 2006/07. Growth is then expected to weaken slightly in 2008/09 before growth rebounds to a forecast 2.8 per cent in 2009/10 before strengthening to 5.3 per cent in 2010/11. This rebound is expected to be led by strong growth in business investment, with a pick up in dwelling and public investment also contributing. The lower Australian dollar projected over 2008/09 and 2009/2010 – coupled with new capacity coming on-stream from mining, manufacturing and defence-related investment – will also underpin stronger export growth. While an easing in output (GSP) growth is expected over the following two years, State Final Demand (i.e. state consumption and capital expenditure by the private and public sectors) is expected to remain strong over 2009/10 to 2012/13, underpinned by solid investment. In turn, this strong phase of investment will be a key driver of healthy employment growth over this period – averaging over 2 per cent p.a. (compared to the long term growth rate of 1.1 per cent p.a.).

Over the next six years to 2012/13, annual GSP growth is forecast to average 3.2 per cent, while employment growth is forecast to average 1.5 per cent per annum (compared to 2.0 per cent p.a. over the five years to 2006/07). Over the five years to 2017/18, GSP growth is projected to average 3.0 per cent, with employment growth slowing back to its long term average of 1.1 per cent per annum.

GSP and Employment - South Australia

Year Ended June	Forecasts										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Gross State Product	1.4	4.3	1.2	2.4	0.8	4.9	2.3	2.8	5.3	2.2	2.9
Employment											
– Employment Growth (Yr Avg)	3.0	1.8	1.4	2.0	1.7	2.7	0.0	1.4	2.8	2.0	0.3
– Unemployment Rate (May) (%)	6.3	6.1	5.6	4.9	nf						

nf: not forecast

Source: BIS Shrapnel, ABS Data

Outlook for construction and manufacturing sectors

Prospects for capital expenditure by sector

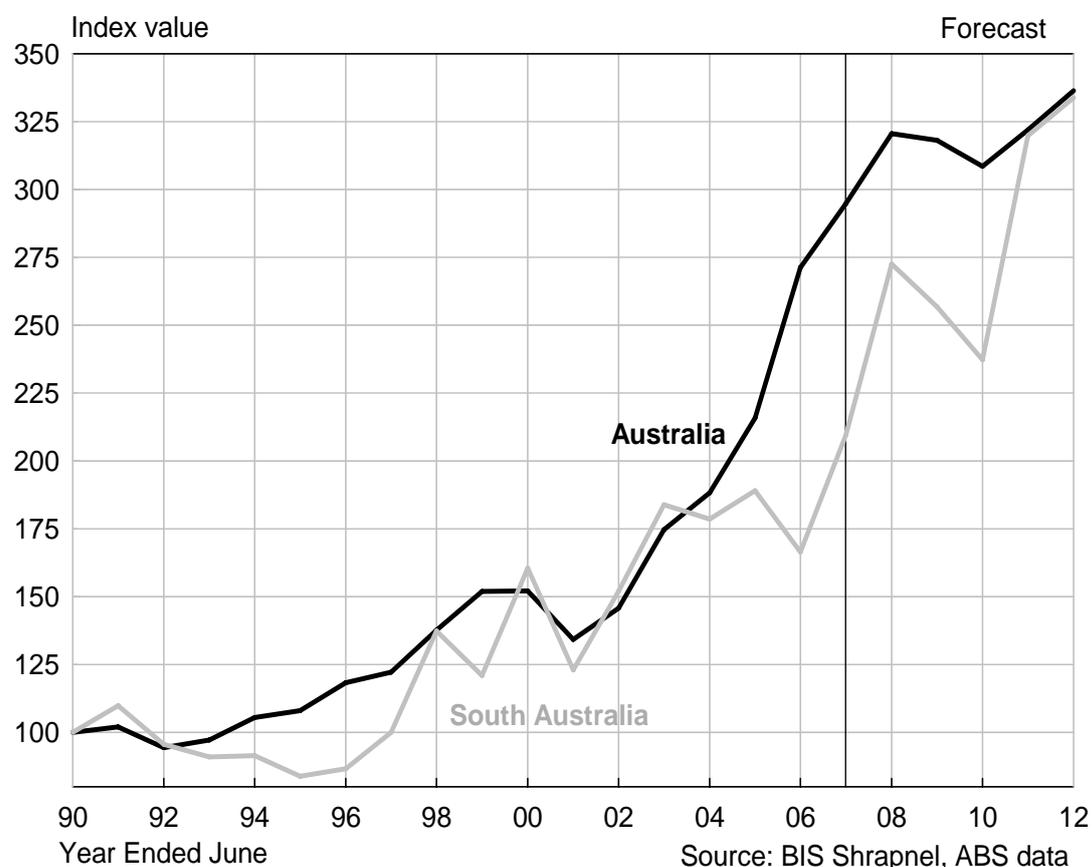
BIS Shrapnel regularly provides specific forecasts of engineering construction, building, activity (both dwelling and non-residential buildings) and mining investment by State. While the outlook varies by sector, the overall picture is for sustained high levels of capital expenditure in the mining, construction and manufacturing sectors to 2012/13.

Our forecasts indicate that South Australia is on the cusp of another strong phase of growth in engineering construction activity (see chart below). Looming capacity constraints in port, electricity and manufacturing infrastructure are expected to play a significant role in sustaining high levels of activity over the next five years, as will continued healthy levels of public sector spending, particularly on roads and bridges, following the weakness of 2003/04. Importantly, as with Queensland and Western Australia, South Australia is well-placed to take advantage of the next leg in the resources investment boom, with the next expansion at Olympic Dam and several other more minor works expected to commence in the next few years.

We are forecasting total engineering construction activity to break new ground over the next decade. A wave of new projects slated to commence across most sectors, along with a ramping up of some big roads, electricity and minerals projects, will drive the rebound in engineering construction during this time. Essentially, the upswing in activity, seen for the past five years, will be driven to a higher plane in 2007/08 with expenditure predicted to reach \$3.0 billion. This represents an increase of approximately 30 per cent over the current high of \$2.3 billion. Activity is then likely to remain robust on the back of the Penola Pulp Mill construction and with commencements of several infrastructure projects associated with the Olympic Dam expansion.

Once the on-site mine expansion begins in 2010/11, real work done will be propelled to a fresh peak of \$3.7 billion dollars in 2011/12. The exponential growth in activity is expected to level off and be on a downward drift in the second half of the decade.

**Total Engineering Construction
Australia and South Australia
Index Value: 1990 = 100**



Mining and Heavy Industry

Heavy industry engineering construction activity (mainly mining and heavy industrial manufacturing related structures) fell for a second consecutive year in 2005/06 to \$319 million. Despite activity being halved from its peak in 2003/04, it remained at a level nearly double that which was experienced through the 1990s. OneSteel’s \$355 million “Project Magnet” development and the \$70 million Mindarie mineral sands project by Australian Zircon provided the bulk of the work in 2005/06 and are expected to be completed in 2006/07. Activity is expected to grow strongly from here however, with work done expected to double over the next two years alone, driven by:

- Oxiana’s \$1 billion Prominent Hill copper/gold project, which commenced construction in the September quarter 2006 and will provide a solid base of work in 2006/07 and 2007/08 equating to around \$900 million in direct engineering construction work,
- The commencement of a new zircon project in the Eucla Basin by Iluka Resources in 2007/08, based on positive exploration and technical studies in 2005, for which we have allocated around \$250 million in total project value,

- A wave of small to medium size copper, zinc and uranium projects slated to commence construction over 2007/08 and 2008/09, and
- The commencement of the \$1.5 billion Penola Pulp Mill project which aims to produce up to one million tonnes of woodchips by 2008/09.

We expect activity to fall in 2008/09 as most of the major projects mentioned above wind down to completion. However, 2008/09 represents merely a calming before the storm. Dominating our forecasts of engineering construction activity in South Australia from 2010/11 is the proposed \$17 billion expansion of BHP Billiton's Olympic Dam copper/uranium/gold mine. Not only will this project boost heavy industry work done, but related infrastructure needs for the project will also provide a boost to construction in other engineering segments including electricity, rail, roads, water and gas pipelines.

Given favourable technical reports and the robust outlook for mineral prices, our forecasts assume that the Olympic Dam expansion goes ahead in 2010/11, with production coming on stream from 2014/15. Whilst we are forecasting the expansion to commence in 2010/11, the bulk of work done is expected to come through in 2009/10 and 2010/11. The total project cost has been revised up from \$6.5 billion to \$17 billion. We have allocated \$15 billion of the total project cost to on-site mining works, with the remaining \$2 billion as other infrastructure, both on and off-site, including:

- up to \$150 million for a 90 kilometre railway from Pimba to Olympic Dam,
- up to \$900 million for water supplies (in the form of a desalination plant and a pipeline link to the Murray River or from a bore in the Great Artesian Basin),
- \$400 million for electricity generation (likely to be gas-fired),
- around \$90 million for associated gas pipelines, and
- a further \$160 million for electricity, port and road upgrades.

In recent years, the ABS has been allocating a greater proportion of heavy industry projects as engineering construction. Consequently, we expect that around 50 per cent of the \$15 billion mining project cost will be allocated as engineering construction over the four years to 2014/15. However, there is the possibility that this proportion and/or the total project cost could end up even higher than this. It is important to note that given the size of this project, any changes to the timing and/or cost will greatly affect the levels of total engineering construction activity over the forecast period.

The Olympic Dam expansion should see mining and heavy industry work done peak in 2011/12 and maintain this level in 2012/13. We are of the view that the capital investment associated with the mine expansion will be staggered, essentially guaranteeing a long stretch of strong engineering construction activity for the State. Thus, the strong engineering construction activity forecast for South Australia over the next decade is likely to continue through the early 2020s. Naturally, the unprecedented surge in activity cannot be sustained and some moderation in real work done is expected.

The average activity for 2017/18-2021/22 is forecast at \$2.8 billion per annum, lower than the annual average of \$3.1 billion of work done predicted for 2007/08-2011/12 but higher than the any historical average. This suggests that South Australia is poised to 'break free' from the shackles of being a poor-cousin to the bigger states and enjoy a long period of economic prosperity on the back of substantial boost in engineering construction activity.

Water Storage and Supply, Sewerage and Draining and Pipelines

Real work done in the water storage and supply sector will be aggressive over the medium term. The South Australian Government has announced a \$1.2 billion water security plan for the State which includes the construction of a desalination plant for Adelaide and a \$700 million investment to upgrade the Mount Bold Reservoir. The latter is expected to be spread over a number of years with the majority of the work realised towards the end of the next decade. The construction of a desalination plant looks inevitable with some scope for a joint public-private partnership likely. Private firm Carnegie Corporation is exploring opportunities for investing in a desalination plant (to be powered by wave energy) in South Australia. BHP Billiton is planning to spend \$900 million on a desalination plant (\$500 million) and 330km pipeline (\$400 million) from the River Murray.

Overall, we forecast water engineering construction activity to peak in 2010/11, and be sustained at relatively higher levels over the following decade. Meanwhile, sewerage and drainage construction will be higher, on average, over the next five years. This is despite lower levels of housing activity (compared to the 2004 – 2006 period), which tends to reduce the level of water and sewerage reticulation activity. Pipelines activity (predominantly for gas) will also be subdued over the next five years.

Electricity Generation, Transmission and Supply

Following a doubling of electricity construction work done over 2004/05 (making electricity, if only temporarily, the largest subcategory of engineering construction work in the State), activity fell back to \$403 million in 2005/06 before bouncing back to \$564 million in 2006/07. We expect electricity activity to rise significantly over the medium term as to above \$600 million as some big new projects commence. Wind farm construction once again will be the major driver of activity. Major projects during this period include the ramping up of work on the \$300 million second stage of the Lake Bonney wind farm, followed by the commencements of the \$235 million Hallett wind farm and the first stage of the Barunga wind farm worth \$200 million. We anticipate another rise in electricity engineering construction in the first half of the decade to coincide with the power requirements of the Olympic Dam expansion.

Electricity construction will also be boosted by higher levels of activity related to the upgrading and replacing of transmission and sub-station infrastructure. These higher levels form a significant portion of the increased electricity engineering construction expected over the next decade. In part, they are a response to underinvestment in electricity infrastructure in South Australia during the 1990s, with a portion of the higher levels representing a 'catch-up' on asset replacement and renewal, in order to improve reliability and augment the system.

We expect a healthy level of activity to persist in the decade to 2020/21, as upgrades and work on traditional electricity sources continues to be supplemented by activity on wind and geothermal energy.

Other Construction, Manufacturing and Defence-Related Sectors

New dwelling building activities is forecast to pick-up and remain strong to meet greater demands of a growing economy. Moderate to strong growth in alterations and additions activity is also predicted. Meanwhile, non-residential building activity is forecast to decline slightly over 2007/08 to 2009/10, before recovering from 2010/11.

Manufacturing investment – apart from the large projects discussed in the heavy industry section – is currently suffering from the effects of the high A\$ on industry profitability and from problems in the motor vehicle sector. However, we expect manufacturing investment to improve from 2008/09 as a result of the fall in the dollar boosting competitiveness and improved rural conditions which should boost investment in the food and beverages sector.

But the most significant impetus to increased capital expenditure in the manufacturing sector is the awarding of the \$8 billion air warfare destroyer (AWD) contract to South Australia. Already, around \$300 million is being spent on shipbuilding and related infrastructure at Techport, where the destroyers will be built. Other companies will also be investing in upgraded systems and infrastructure as contracts are awarded, both for the AWD and other large defence contracts.

Other defence-related projects over the next few years include a \$500 million project to accommodate a 1200-strong mechanised army battalion, an \$80 million project involving the construction of ground support facilities at the Edinburgh RAAF airbase and a \$51 million stage redevelopment of Edinburgh airbase.

Prospects for output and employment by sector

The overall outlook for the mining, construction and manufacturing sectors in South Australia is extremely robust over the medium to long term. Construction output is forecast to surge in 2009/10 and remain at the projected historically high levels over the following two years, before falling back over 2014/15 and 2015/16. Although construction at the \$17 billion Olympic Dam expansion provides the biggest boost to construction activity over the 2009 to 2015 period, the recovery in dwelling and non-dwelling building also contribute to the higher overall construction levels.

Employment in the construction sector also pushes up to high levels over this period.

Mining sector employment has almost tripled over the past five years, while output growth has declined, largely due to lower grades and problems at Olympic Dam and falling oil and gas production. Over this period, there have been higher levels of mining investment (also boosting employment levels in the sector) and we now expect strong growth in mining output as this past (and high current levels of) mining investment come on-stream. Employment will increase further over the next two years (although at a modest rate) as production ramps up at these mines – including the Middleback iron ore mines related to Project Magnet, Mindarie mineral sands project, Prominent Hill, Honeymoon, Angas Zinc and Kanmantoo Mines. Employment is

expected to receive another boost around 2010/11 as construction on Olympic Dam expansion begins (although most of the contractor construction workforce is categorised to the construction sector), and then again over 2013/14 and 2014/15 as the operational phase of Olympic Dam ramps up.

Output in the electricity, gas and water sectors is forecast to average around 2 per cent per annum over the next five years, with the stronger output expected for 2007/08 related to higher demand from three major industrial users – OneSteel, Port Pirie and Olympic Dam. Higher production is anticipated at the three facilities as current short term problems are fixed and as pellet production from Project Magnet comes onstream. Meanwhile, employment growth is forecast to steadily increase over the next five years, by around 2 per cent per annum. A significant portion of the increased workforce in the utilities sector is related to:

- capital expenditure, network upgrades and maintenance expenditure is projected to be at much higher levels, on average, over the next five years (and following five years), compared to the past five years, and particularly the 1990s. Indeed, the higher levels of long term programs to upgrade networks and increase maintenance are part of a ‘catch-up’ phase of upgrading and maintenance after relatively low levels of expenditure in these areas during the 1990s.
- an increasing desire to increase engineering construction and design and maintenance capabilities and skills within the utilities sector, which has been given added impetus from the escalation in contractor costs over recent years.

BIS Shrapnel is forecasting an improved performance from the manufacturing sector over the next decade. The Food, Beverages and Tobacco (FBT) sub-sector (which accounts for around one-quarter of total Manufacturing gross value added) is estimated to have been seriously impacted by the severe drought in 2006/07, especially affecting the key wine sector. However, we expect the FBT sub-sector to lead the bounce-back in production in 2007/08, and maintain good growth over the next decade – drought notwithstanding. Meanwhile, building materials manufacturers will follow the building and construction cycle. The Metal Products manufacturing sub-sector will also be influenced by the construction cycle (especially the non-dwelling construction segment both for South Australia and Australia), and be boosted by new capacity coming on-stream at Whyalla and Olympic Dam.

The expected decline in the Australian dollar over 2008 and 2009 will help improve competitiveness in export markets and against imports, and provide a boost to the overall manufacturing sector over 2008/09 and 2009/10. At the same time, we expect the \$8 billion Air Warfare Destroyer contract to provide a substantial boost to manufacturing, especially from 2009/10 and 2010/11 when the operational (ship construction) phase ramps up. The state government estimated in August 2006 that over the 10 year life of the AWD project, it will make a direct impact of \$574 million with another \$609 million in spin-off benefits. They estimated that this will create 3,000 jobs, 1,700 directly attributable to the project and 1,300 jobs from the flow-on effects. More recent estimates from the state government (March, 2007) put the contribution from the AWD project at 4,000 direct and indirect jobs created.

Furthermore, a new report from the SA Centre for Economic Studies forecast 2,700 new jobs in the defence-related sector by 2010.

The direct impacts will be predominantly in the Machinery and Equipment manufacturing (M & EM) sub-sector – the largest manufacturing sub-sector in South Australia – and these positive impacts should more than outweigh ongoing problems in the significant motor vehicle segment in M & EM.

As South Australia builds its capabilities in defence-related manufacturing, it is also likely to win at least one of the multi-million contracts to be decided in coming years – the \$3.5 billion land 121 replacement field vehicles, the \$1.5 billion Air 7000 Maritime Patrol and the \$1 billion satellite communications project. Indeed, the SA government has a ‘State Defence Sector Plan’ which aims to increase the number of defence related jobs in SA from 16,000 to 28,000 by 2013 and double the economic contribution at the State’s defence sector to \$2 billion in the same time frame. Overall, the combined boost from the lower A\$ and AWD contract (plus potentially more defence contracts) means that manufacturing output and employment is forecast to grow strongly over 2009/10 and 2010/11.