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South Australia Infrastructure Investment Update

2016

Engineers Australia South Australia Infrastructure Investment Update 2016

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Infrastructure Investment Update 2016

Engineers Australia is the trusted voice of the engineering profession.

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Key points

In 2005, Engineers Australia assessed South Australian infrastructure as adequate but in need of major changes to be fit for purpose. In the subsequent five years, there was a 60 per cent increase in cumulative public sector infrastructure work completed and a significant increase in the development of privatised generally accessible infrastructure. As a result, the 2010 infrastructure assessment was marginally better than adequate, but still in need of major changes.

South Australian economic growth has been below national growth for the past 25 years and this relationship has continued even though national economic growth has slowed in recent years. The state's population growth has also been lower than national growth, but the gap between the two almost disappeared in 2014-15. The difference between economic and population growth in South Australia was sufficient for there to be growth in the state's standard of living, but this growth has been half equivalent national growth. Now that there is little difference between state and national population growth, further improvements in South Australia's standard of living will be dependent on economic growth.

Engineers Australia believes infrastructure development is a crucial enabler of productivity and economic growth. We know that productivity growth has been responsible for almost all historical improvements in Australia's living standards and the Australian Treasury, among other reputable authorities, expect this to continue in the future. Unless Australia becomes more productive, living standards will stagnate or, more likely, fall as the population ages. Engineers Australia believes that all states and territories must put proactively policies in place to support economic growth in this area, rather than the current system that often provides infrastructure as a reaction to an event. With this in mind, while just in time management is common in consumer logistics, its application to infrastructure means that it can turn into a barrier to productivity growth rather than an enabler for productivity growth. Too often infrastructure provision has been reactionary.

This report examines the changes to South Australian infrastructure since the 2010 Engineers Australia Infrastructure Report Card (IRC). The analysis is based on Australian Bureau of Statistics (ABS) statistics on engineering construction which are reliable indicators of infrastructure development and construction completed on other engineering assets. While the statistics aren't ideal, they are the most reliable ones available.

Engineers Australia believes infrastructure development is a crucial enabler of productivity and economic growth.

Government infrastructure agencies, at all levels, are responsible for improved infrastructure information and statistics. Engineers Australia has argued that better and more comprehensive infrastructure information is an integral part of greater transparency and community engagement. This would allow existing infrastructure to be better utilised and for more coherent decisions to proceed with new infrastructure projects.

Since the 2010 IRC, public sector infrastructure has followed a roller-coaster trend. It initially increased then fell sharply; sharp enough that the average annual growth over the five-year period was strongly negative. In 2014-15 all infrastructure elements, including the public sector total (with the exception of telecommunications), recorded falling construction levels. Private sector infrastructure development followed a similar pattern. Yet, in the public sector, cumulative infrastructure construction during the five years

since 2010 was 40 per cent higher than in the five years leading to the 2010 assessment. Although the same could not be said about private sector infrastructure construction, this was comparatively strong in privatised asset classes. In the meantime, pressures for additional infrastructure services continue to build.

Public sector infrastructure pipeline trends are not reassuring. All three elements of the infrastructure pipeline—commencements, completions and unfinished work—have experienced large falls. There was a glimmer of hope in private sector infrastructure: although both constructions completed and unfinished work in the construction system fell, new commencements increased. On balance, cumulative infrastructure in the five years after 2010 was 41 per cent higher than in the previous five years. Overall, these results suggest that South Australia's infrastructure situation has improved but confidence in this assessment is weakened by the downwards trends in most components of the respective infrastructure pipelines.

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Introduction

Engineers Australia has drawn attention to problems with South Australian infrastructure in its Infrastructure Report Cards (IRC), the first of which was released in 2005, then updated in 2010.

While there have been many worthwhile infrastructure projects completed in the past decade, Engineers Australia is far from convinced that governments have adequately dealt with the problems identified. This position was recently supported by the Productivity Commission, which was highly critical of present infrastructure planning and governance arrangements[1].

During 2014-15, Australia's labour productivity and multi-factor productivity increased by 1.3 per cent and 0.3 per cent respectively. Both measures were lower than in 2013-14[2]. In 2013-14, Australia's multi-factor productivity growth was 0.4 per cent compared to an average of 0.8 per cent per year between 1973-74 and 2013-14. In 2014-15, nine of the 16 market sector industries recorded increases in multi-factor productivity and seven recorded falls. These results have important implications for maintenance and growth in Australia's standard of living, a connection emphasised by the Productivity Commission in its report on public infrastructure.

Engineers Australia's last assessment of the status of South Australia's infrastructure was in 2010. The assessment at the time was that the state's infrastructure was marginally better than adequate to cope with current and future requirements. Under Engineers Australia's rating scale, the state scored 'C+' compared to 'C' in 2005. In the five years to June 2015, the state economy expanded by 7.2 per cent in real terms and its population increased by 4.5 per cent. These changes show that more infrastructure services were required simply to maintain the status quo. The key question is whether the status quo is good enough. When productivity growth is low and infrastructure is just adequate, are the pre-conditions for improved standards of living in place?

While there have been many infrastructure improvements in the past decade, Engineers Australia is far from convinced that governments have adequately dealt with the problems identified.

1 Productivity Commission, Public Infrastructure Inquiry Report, No 71, May 2014, www.pc.gov.au
2 ABS, Estimates of Industry Multifactor Productivity, 2014-15, Cat No 5260.0.55.002, 4 December 2015, www.abs.gov.au and Productivity Commission, Productivity Update, July 2015, www.pc.gov.au

The state of infrastructure in South Australia

OUR APPROACH AND RESEARCH DATA

South Australian economic growth has lagged national growth since 1990 and continues to slow. On average since 1990-91, South Australian real gross product has increased by 2.4 per cent per year, which is 25 per cent less than the national average growth rate of 3.2 per cent. Slowing economic growth is a feature of both the state and the national economies, but the slowdown has been greater in South Australia to the extent that the gap between the two is now 36 per cent. That's 1.6 per cent per year compared to 2.5 per cent per year nationally. This report focuses on one of the key reasons for this situation, the role of infrastructure development.

This sector has experienced an extraordinary boom and infrastructure is necessary to sustain economic and productivity growth in the wider community.

The South Australian Department of Planning, Transport and Infrastructure has issued extensive documentation describing infrastructure strategies and priorities[3]. These documents also report on implementation progress. But like many government infrastructure agencies, these reports contain little objective information to inform discussion of the state's infrastructure. Even the Productivity Commission's recent report on Public Infrastructure struggled with the lack of information and resorted to a patchwork of available statistics. Differentiating between construction, including on infrastructure in support of the resources sector, has been a particular problem. This sector has experienced an extraordinary boom and infrastructure is necessary to sustain economic and productivity growth in the wider community.

Ideally, governments should provide transparent and objective reports on the status and condition of infrastructure. Any decisions about future infrastructure projects should be based on assessments of this material. However, no jurisdiction does this. Similarly, rigorous quantitative benefit cost assessments of new project proposals are still not widely applied and too many project decisions are based primarily on political considerations. While there have been institutional improvements over the past decade, it's not enough to satisfy the Productivity Commission and falls well short of the recommendations made by Engineers Australia in its IRC[4].

This report puts contemporary developments in South Australia into perspective by looking at Australian Bureau of Statistics (ABS) data on engineering construction. This data provides reliable and objective measures for:

- On-the-ground progress of infrastructure projects
- How much engineering construction has been completed
- What remains in the system
- What new work has commenced.

Changes since 2010, the year of the last Engineers Australia infrastructure assessment, are compared to the long-term trends, and developments in the most recent year. The period examined is from June 1991 to June 2015.

Given the lack of detailed information about South Australian infrastructure, our research relies on an analysis of trends in engineering construction statistics produced by the ABS[5]. These statistics relate to additions to the infrastructure stock

3 See www.infrastructure.sa.gov.au
4 See https://www.engineersaustralia.org.au/infrastructure-report-card
5 ABS, Engineering Construction, Australia, Cat No 8762.0, electronic releases, www.abs.gov.au

through work completed on new infrastructure assets. Protocols used by the ABS differentiate the statistics from financial figures that appear in budgets and news accounts but, because these protocols are applied consistently over time, the resulting trends are reliable indicators of infrastructure changes.

Historically, governments primarily developed Australia's infrastructure with nearly all work undertaken by public sector agencies. Gradually, more and more work was contracted to private sector businesses for implementation. There is now increasing private sector involvement in the development, ownership and delivery of infrastructure services through new financial arrangements. Some governments have chosen to privatise certain infrastructure assets along with the ongoing responsibility for new investment in these infrastructure assets. These developments mean that it is no longer sufficient to monitor public sector trends alone; the private sector's contributions should also be monitored.

In this report we use the Infrastructure Australia definition of economic infrastructure, which includes roads, bridges, railways, harbours, the electricity sector, the water and sewerage sector and telecommunications assets. It is debateable whether or not recreational facilities should also be included, but in this report they are not. Changes in engineering construction on resources sector facilities, heavy industry and construction that does not neatly fit into other categories are also briefly examined to establish a basis for judging the connection between so-called resources related activity and changes in conventional infrastructure. The trends in public and private sector activity are compared in all asset classes examined; **all statistics have been deflated and are expressed in constant 2012-13 prices.**

Unfortunately, ABS statistics do not delineate between cities in each state, so this report will analyse the state of South Australia as a whole.

Also the statistics do not delineate the infrastructure connecting cities and supporting specific economic projects. This means private sector engineering construction designed to service mines, gas and oil wells, and other resources facilities are compounded with statistics relating to private sector engineering construction on more conventional infrastructure. In states where this type of private sector activity is high, as is the case in South Australia, the best measures of infrastructure development are public sector trends supplemented with qualitative assessments of private sector trends. We will also take into account the extent of private sector investment in specific purpose infrastructure.

Slowing economic growth is a feature of both the state and the national economies, but the slowdown has been greater in South Australia to the extent that the gap between the two is now 36 per cent.

South Australia: the state in context

South Australia's real Gross Domestic Product (GDP) increased by 74.9 per cent from $56.34 billion in June 1991 to $98.54 billion in June 2015. The state's population increased by 17.6 per cent, from 1.45 million to 1.70 million and the standard of living, as measured by real GDP per person, increased from real $39,156 per person to $58,253 per person. Table 1 looks at how these changes occurred and how they compare to Australia as a whole. The timeframe of 2005-06 to 2014-15 shown in the table corresponds with the first IRC, while 2010-11 is the period since the last IRC.

In June 1991, South Australia's real gross product was 7.4 per cent of real national gross product and its population was 8.4 per cent of the national population. The state's standard of living was 11.3 per cent lower than the national average; $39,156 per person compared to $44,155 per person. National economic growth has been higher than the state's over the long-term and as a result South Australia's share of GDP fell to 6.1 per cent. Similarly, lower population growth meant that the South Australian share of Australia's population fell to 7.1 per cent. Despite these results, the relationship between GDP and population was such that the standard of living has continued to increase and was $58,253 per person in 2014-15, 15.1 per cent lower than the national figure of $68,609 per person.

The South Australian economy has not performed as well as the national economy for a long time. However, what's more concerning is the nationwide slowdown in economic growth is more acute in South Australia. A likely factor is productivity growth. The intergenerational reports demonstrate the critical connection between productivity growth and growth in GDP per person.

Comparing South Australia and the national economy, it's clear that new policies are needed in two areas:

1) To stimulate economic growth.

2) To generate sufficient productivity growth to lift the state's standard of living.

Infrastructure development and technological change are key ingredients to these objectives.

Growth is not unevenly distributed throughout the state and, while projections of the future are always fraught, the ABS has prepared projections of Australia's future population in states and territories, and for each capital city[6]. These projections suggest that by 2030, well within the lives of many current infrastructure assets, South Australia's population will increase by 14.6 per cent to 1.96 million. However, most of the growth will occur in Adelaide where the population is expected to grow by 17.2 per cent to 1.55 million, compared to just 5.3 per cent population growth in the balance of the state. This skew shows the uneven pressures on infrastructure and the importance of communicating these differences to state-wide communities.

TABLE 1: USEFUL GROWTH BENCHMARK STATISTICS (AVERAGE ANNUAL %)

Location	South Australia			Australia		
Period	GDP	GDP/Person	Population	GDP	GDP/Person	Population
1990-91 to 2014-15	2.4	1.7	0.7	3.2	1.9	1.3
2005-06 to 2014-15	2.0	1.0	1.0	2.8	1.1	1.7
2010-11 to 2014-15	1.4	0.5	0.9	2.6	1.1	1.6
2014-15	1.6	0.7	0.9	2.5	0.8	1.4

6 ABS, Population Projections, Australia, 2012 to 2101, November 2013, Cat No 3222.0, www.abs.gov.au

Engineers Australia's Principles for Infrastructure Development

Engineers Australia is committed to the view that infrastructure is the essential enabler of Australian productivity growth, vital to preserve Australia's current standard of living.

To be effective, infrastructure must be fit for purpose, and the flow of infrastructure services needs to move ahead of population growth and economic growth. It should also use the best available technology to manage existing infrastructure assets and to develop new ones.

Any new infrastructure development should encompass the following principles:

- *Infrastructure must be managed to advance socio-economic goals, not political ones.*
- *Infrastructure planning without land use planning is inappropriate.*
- *Infrastructure planning is not optional – it is an integral role of government.*
- *The private sector is a key player, which means infrastructure is not the exclusive preserve of governments.*
- *Infrastructure must be managed sustainability and over its full expected life.*
- *Infrastructure governance must be rigorous and removed from political agenda.*
- *ICT enabled infrastructure delivers more value for money, especially in coordinated system.*
- *Short-term acquisition practices should be discarded in favour of whole of life considerations.*

Trends in engineering construction

In 1990-91, the public sector undertook 62.1 per cent of South Australia's engineering construction with $997.6 million of work completed compared to $610 million by the private sector (both figures expressed in real terms). Figure 1 shows that for the first seven to eight years of the period growth was fairly slow. From about 1997 onwards, there was steady growth culminating in peak construction of $5.8 billion in 2012-13.

Public sector engineering construction varied somewhat from year to year, but until 2007-08 there was no discernible upwards or downwards trend compared to the base year. There was a rapid increase in public sector construction from 2008-09 onwards, which peaked at $2.9 billion in 2012-13. Since then, annual construction has abruptly fallen and in 2014-15 was back to $1.5 billion.

Private sector engineering construction began to increase much earlier, from about 1997-98, and peaked at the same time as public sector construction. It produced a similar amount of work to the value of $2.8 billion. There have been two years of slower construction since, but the reductions have not been as severe as what took place in the public sector. By 2014-15 $2.6 billion worth of work was completed. Figure 1 compares the divide between the public and private sectors for infrastructure and other elements of engineering construction. Figure 2 illustrates this divide for the public sector alone, and Figure 3 for the private sector. The pronounced difference between the trends in Figure 3 can be primarily attributed to private sector engineering construction on resources and heavy industry facilities.

Public sector engineering construction is mostly infrastructure. The small gap between the infrastructure and total engineering construction is nearly all engineering construction on recreational facilities. In 1990-91 this accounted for 91.5 per

FIGURE 1: CUMULATIVE PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15

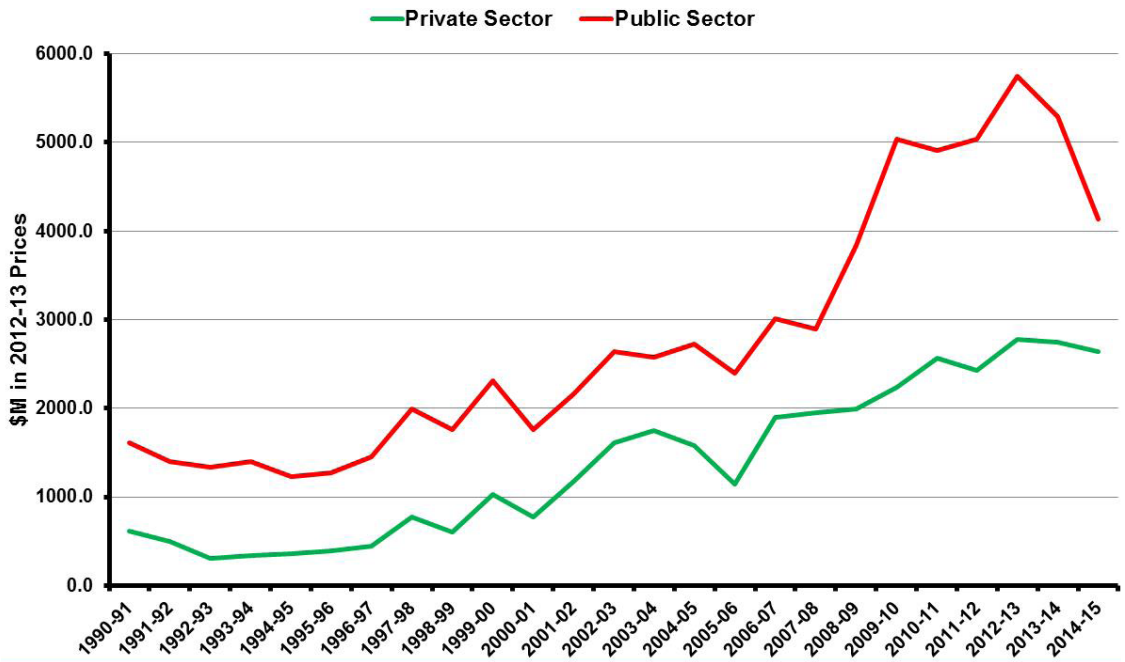


FIGURE 2: TRENDS IN THE MAIN COMPONENTS OF PUBLIC SECTOR ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15

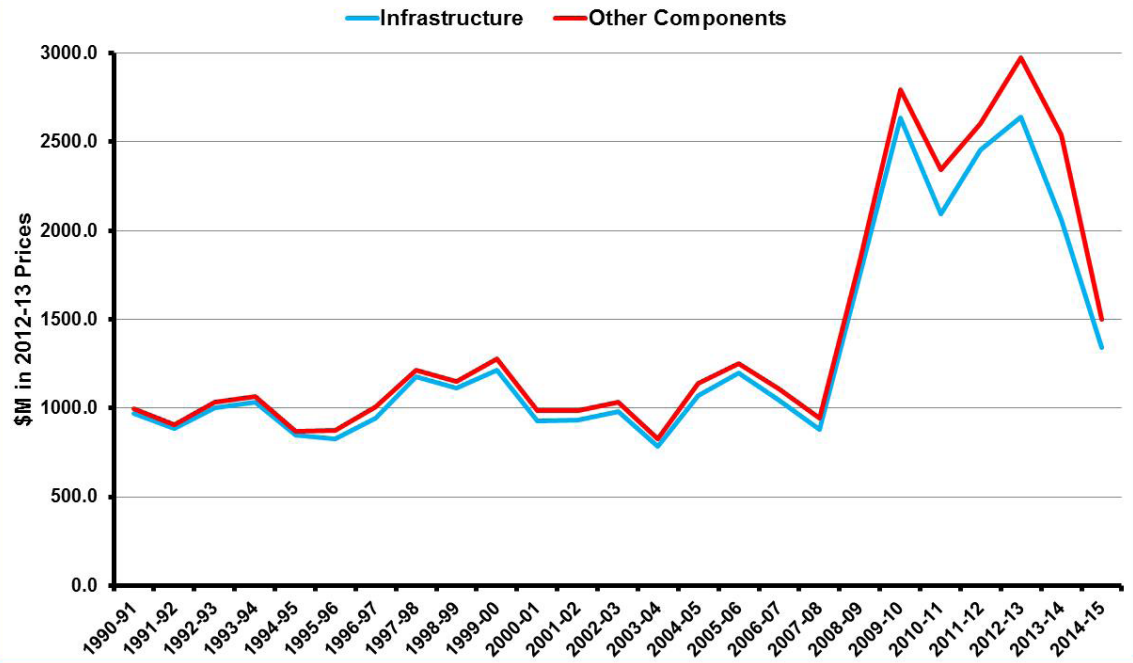
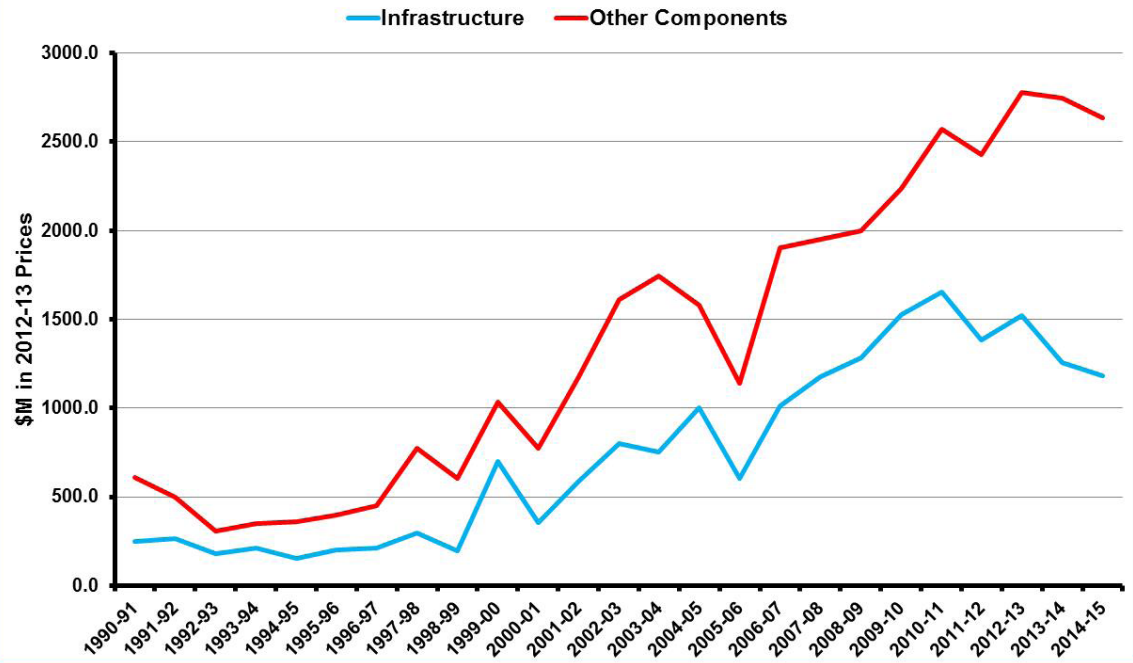


FIGURE 3: TRENDS IN THE MAIN COMPONENTS OF PRIVATE SECTOR ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15



cent of the gap; in 2010-11 it accounted for 99.7 per cent and by 2014-15 it accounted for 99.9 per cent. Table 2 shows detailed statistics for public sector engineering construction on the various types of infrastructure assets.

In 1990-91, private sector engineering construction on infrastructure was $251.8 million in real terms and total engineering construction was $610.0 million. The gap between the two was $358.2 million, 86.3 per cent of which was in the resources sector and heavy industry. The private sector completed $1.5 billion in infrastructure and $2.8 billion in total engineering construction at its peak in 2012-13. The gap between the two was $1.5 billion, 82.5 per cent of which was in resources and heavy industry.

Where private engineering construction on infrastructure facilities was specifically needed to support the resources sector facilities, it has been included in the infrastructure tally. This means construction of a coal mine, for example, is included in engineering construction on the resources sector, but construction of the rail line that transports coal from mine to port and the port facilities construction are included in the appropriate infrastructure asset category in Table 3.

Although the mine-related infrastructure is essential and contributes to overall economic growth, this type of infrastructure's accessibility to services provided differentiates it from more conventional infrastructure. Infrastructure specifically built to

TABLE 2: PUBLIC SECTOR ENGINEERING CONSTRUCTION ON INFRASTRUCTURE, SOUTH AUSTRALIA, 1990-91 TO 2014-15, $M IN 2012-13 PRICES

Year	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
1990-91	246.6	57.1	137.4	188.0	341.4	970.5
1991-92	280.3	31.1	139.2	176.5	256.3	883.4
1992-93	421.9	29.0	151.0	173.0	226.7	1001.6
1993-94	455.5	30.4	148.9	194.5	206.2	1035.4
1994-95	293.6	30.5	116.6	126.4	283.1	850.2
1995-96	380.4	17.8	97.7	111.8	221.2	828.9
1996-97	508.0	63.9	127.8	123.3	122.3	945.3
1997-98	534.6	143.9	218.8	178.9	100.7	1177.0
1998-99	477.3	111.0	171.4	218.3	134.8	1112.7
1999-00	523.6	99.2	114.7	137.9	336.7	1212.1
2000-01	487.2	19.9	6.7	124.7	289.7	928.2
2001-02	457.8	10.6	2.0	108.7	351.6	930.7
2002-03	464.3	3.2	75.5	115.8	323.0	981.8
2003-04	369.7	12.7	81.0	168.2	154.5	786.1
2004-05	507.0	30.6	179.8	114.8	240.9	1073.1
2005-06	436.4	138.4	229.6	130.5	262.1	1197.1
2006-07	441.8	231.0	142.3	98.2	133.1	1046.4
2007-08	535.4	156.4	72.2	112.8	4.4	881.2
2008-09	955.2	170.0	96.8	529.8	4.6	1756.3
2009-10	790.2	473.9	134.5	1227.3	11.2	2637.2
2010-11	911.1	340.0	272.4	548.3	19.9	2091.7
2011-12	923.9	510.4	249.5	746.8	25.4	2456.1
2012-13	1044.0	594.5	228.5	734.2	41.6	2642.9
2013-14	918.8	318.7	135.4	608.3	83.8	2065.0
2014-15	664.7	52.7	133.5	325.5	162.9	1339.3

service a mine is typically accessible to mine owners because it is located where the infrastructure service is required. Conventional infrastructure, on the other hand, is generally accessible by the community as a whole because it is typically located where businesses operate and people live. In other words, infrastructure spill-overs from the resources boom overstate private sector infrastructure statistics.

Infrastructure spill overs from the resources boom overstate private sector infrastructure statistics.

TABLE 3: PRIVATE SECTOR ENGINEERING CONSTRUCTION ON INFRASTRUCTURE, SOUTH AUSTRALIA, 1990-91 TO 2014-15, $M IN 2012-13 PRICES

Year	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
1990-91	166.2	12.2	53.2	19.4	0.8	251.8
1991-92	99.3	8.1	144.1	12.0	0.5	264.1
1992-93	91.9	1.0	65.6	13.0	11.1	182.6
1993-94	113.7	1.8	58.5	13.7	24.4	212.2
1994-95	76.5	4.0	37.1	21.4	13.8	152.8
1995-96	65.1	5.9	107.4	18.7	3.9	200.9
1996-97	76.9	16.3	103.2	14.2	1.1	211.7
1997-98	89.4	23.8	151.8	32.1	1.4	298.6
1998-99	97.3	17.2	57.3	22.1	0.9	194.8
1999-00	100.6	10.9	566.1	9.9	12.6	700.2
2000-01	60.7	13.9	227.1	38.6	16.1	356.4
2001-02	108.9	15.8	375.4	29.9	59.9	589.9
2002-03	132.7	15.7	586.6	27.5	37.5	800.0
2003-04	167.8	43.5	431.5	44.3	67.0	754.1
2004-05	208.9	29.6	679.6	22.9	61.6	1002.6
2005-06	132.9	44.8	318.8	35.5	74.5	606.5
2006-07	167.2	21.4	613.6	32.4	176.2	1010.8
2007-08	294.6	49.0	457.4	87.0	287.9	1175.9
2008-09	254.8	39.2	690.9	63.3	233.3	1281.6
2009-10	249.8	21.5	1025.2	31.5	201.0	1528.9
2010-11	293.4	13.0	887.9	37.3	421.1	1652.8
2011-12	179.8	100.9	741.9	87.4	275.5	1385.5
2012-13	170.4	232.3	829.7	24.4	265.5	1522.2
2013-14	148.4	63.8	724.3	22.0	300.2	1258.7
2014-15	299.1	35.3	466.1	55.2	328.6	1184.3

Asset growth rates

It is important to understand how specific asset classes are growing over these time periods.

In 1990-91, South Australia completed $1.2 billion in infrastructure and $385.3 million in non-infrastructure engineering construction, totalling $1.6 billion in engineering construction. By 2014-15, these figures reached $2.5 billion, $1.7 billion and $4.1 billion respectively. The long-term average growth rate for infrastructure construction has been 5.3 per cent per year. The long-term average growth rate for non-infrastructure construction has been 10.0 per cent per year, and the long-term average growth rate for all engineering construction has been 5.5 per cent per year.

Tables 4 and 5 show these average growth rates, along with the average growth rates for the components of these aggregates. Thus, Table 4 shows the growth rates for different classes of infrastructure assets and Table 5 adds the growth rates for non-infrastructure elements of engineering construction. The tables separately report average growth rates for the public and private sectors, as well as the two sectors combined.

The time periods used to calculate growth rates broadly line up with the lead-up periods to the Engineers Australia IRC assessments. The first row in each table panel gives the long-term average growth rates. The second row gives the average growth rates for the 15 years leading to the 2005 IRC assessment, and the third row gives the average growth rates for the five years between the 2005 and 2010 IRC assessments. Average growth rates for the five years since the 2010 IRC and for last year are reported in the last two rows of each panel.

Tables 4 and 2 combined show that public sector infrastructure construction at the time of the 2010

TABLE 4: SUMMARY OF AVERAGE ANNUAL GROWTH RATES, INFRASTRUCTURE COMPONENTS, SOUTH AUSTRALIA, PRIVATE & PUBLIC SECTORS

Period	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
Private Sector						
1990-91 to 2014-15	8.3	49.2	52.8	27.7	29.3	16.4
2005-06 to 2014-15	11.2	71.1	4.7	35.9	28.2	5.0
2010-11 to 2014-15	12.4	129.7	-13.3	44.3	18.8	-4.3
2014-15	101.6	-44.7	-35.7	150.6	9.5	-5.9
Public Sector						
1990-91 to 2014-15	7.0	40.9	5.8	17.4	19.6	4.5
2005-06 to 2014-15	6.0	48.3	5.7	42.1	37.5	8.0
2010-11 to 2014-15	-2.0	-18.3	8.7	-16.9	73.0	-10.5
2014-15	-27.7	-83.5	-1.4	-46.5	94.5	-35.1
Both Sectors Combined						
1990-91 to 2014-15	5.5	25.9	16.2	12.1	8.5	5.3
2005-06 to 2014-15	5.0	31.1	1.1	28.5	9.9	4.2
2010-11 to 2014-15	-0.9	-10.2	-11.4	-15.3	26.2	-8.7
2014-15	-9.7	-77.0	-30.3	-39.6	28.0	-24.1

IRC was $2.1 billion in real terms and has decreased by an average 10.5 per cent since. In 2014-15, it dropped a massive 35.1 per cent. Table 4 shows the growth rates for road and other infrastructure assets that contribute to these results and Table 5 adds in the non-infrastructure components. Averaging out figures over five years simplifies the outcome, which is more complex in Table 2 due to construction increasing in 2010-11, before a sharp fall. A comprehensive picture of South Australia's changes in engineering construction can be established by using these tables in conjunction with the graphs in the following sections.

High levels of variability impact the continuity of engineering work and that has important implications for engineering careers.

The report now looks at changes in asset classes in more detail. The discussion is based on the statistics in Tables 2 and 3 and the growth rates in Tables 4 and 5. One of the characteristics of the statistics is that annual variability increases as we disaggregate. This is not a statistical quirk, but an outcome of public and private sector decision-making in respect to engineering construction. It means there is more year-to-year change in state statistics compared to national equivalents, and more year-to-year movement in different asset classes within a state than in state aggregates. While presenting obvious difficulties for analysis (for example, combined growth rates may not always be the weighted averages of sector rates), there is a more practical issue for engineers here. High levels of variability impact the continuity of engineering work and that has important implications for engineering careers.

TABLE 5: SUMMARY OF AVERAGE ANNUAL GROWTH RATES, REMAINING COMPONENTS, ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15

Period	Infrastructure	Resources & Heavy Industry	Recreation & Other	Total Non-infrastructure	Total Engineering Construction
Private Sector					
1990-91 to 2014-15	16.4	14.4	18.5	11.1	10.1
1990-91 to 2005-06	20.3	8.1	17.4	9.4	9.3
2005-06 to 2009-10	14.4	8.1	17.4	7.5	11.2
2010-11 to 2014-15	-4.3	20.1	17.8	15.9	3.7
2014-15	-5.9	-6.6	24.5	-2.3	-4.0
Public Sector					
1990-91 to 2014-15	4.5	44.8	20.1	18.8	4.8
1990-91 to 2005-06	2.7	59.6	14.4	12.9	2.8
2005-06 to 2009-10	26.5	-44.9	24.5	24.0	26.0
2010-11 to 2014-15	-10.5	81.0	24.0	24.3	-9.3
2014-15	-35.1	-98.5	-66.2	-66.4	-41.0
Both Sectors Combined					
1990-91 to 2014-15	5.3	13.8	16.4	10.0	5.5
1990-91 to 2005-06	4.7	12.0	14.4	7.4	4.1
2005-06 to 2009-10	17.2	8.0	19.5	9.0	14.7
2010-11 to 2014-15	-8.7	20.1	14.8	15.1	-3.1
2014-15	-24.1	-6.8	-38.9	-17.9	-21.8

Roads

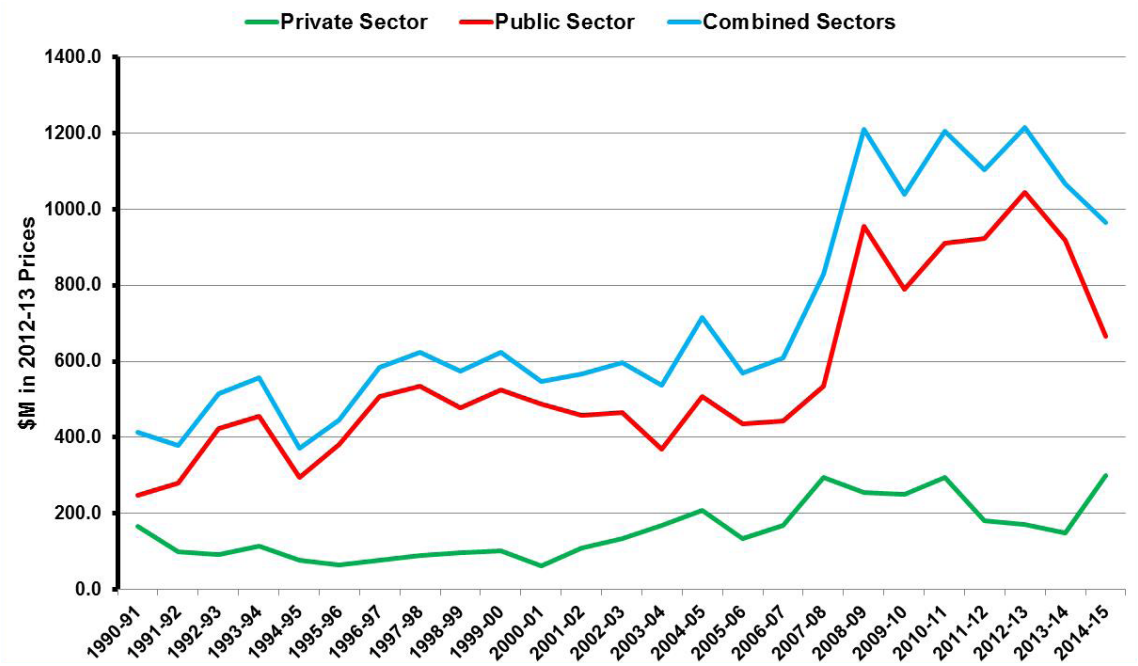
Figure 4 expresses the trends in private and public sector engineering construction on roads, highways and subdivisions in constant 2012-13 prices and also covers:

- Parking areas
- Cycle paths
- Airport runways
- Pedestrian and vehicle overpasses
- Traffic lights
- Roundabouts
- Associated road drainage works
- Street and highway lighting
- Road resurfacing
- Kerning and guttering
- Road tunnels.

In 1990-91, South Australia completed $412.8 million (in real terms) of road construction. This was 33.8 per cent of South Australian infrastructure construction which was slightly below the corresponding national share of 35.2 per cent. Road construction was the most important area of South Australian infrastructure development. Long-term average growth in road construction has been 5.5 per cent per year. However, Figure 4 shows that growth in road construction was far more modest before 2005-06 and was largely influenced by public sector road construction growth.

In 2005-06, South Australian road construction completed was $569.3 million, three quarters of which was by the public sector. Average annual growth since 1990-91 was 4.0 per cent per year; 6.3 per cent per year in the public sector and 3.4 per cent per year in the private sector. The 2005 IRC assessed South Australian roads as 'C-', not quite adequate.

FIGURE 4: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION ON ROADS, SOUTH AUSTRALIA, 1990-91 TO 2014-15



Between 2005-06 and 2009-10, road construction increased from $569.3 million in real terms to $1 billion, with average annual construction growth increasing to 10.9 per cent per year. In 2009-10, the proportion of public sector road construction remained much the same as in 2005. The surge in construction did not result in an IRC upgrade and the additional construction reflects the pressures from economic and population growth on the road system, particularly on local roads that were assessed as inadequate.

Road construction increased to $1.2 billion in 2010-11 and plateaued at about this level for the next two years. However, road construction fell sharply in the two years following and 2014-15 was $963.9 million in real terms. However, population and economic pressures continued unabated.

The continuation of high road construction for two years after 2010 is an argument for an improved infrastructure rating, but the strength of the argument is weakened by three subsequent years of lower construction. On balance, the 2010 rating is unchanged. Road construction has been a federal Government priority since the election in 2013, but this is not reflected in South Australian figures.

The continuation of high road construction for two years after 2010 is an argument for an improved infrastructure rating, but the strength of the argument is weakened by three subsequent years of lower construction.

Bridges, Railways and Harbours

An unfortunate aspect of the ABS Engineering Construction Survey is that state and territory statistics for infrastructure asset classes are not available for individual classes. Some asset classes are therefore aggregated to avoid encountering standard error problems. The first of these is bridges, railways and harbours.

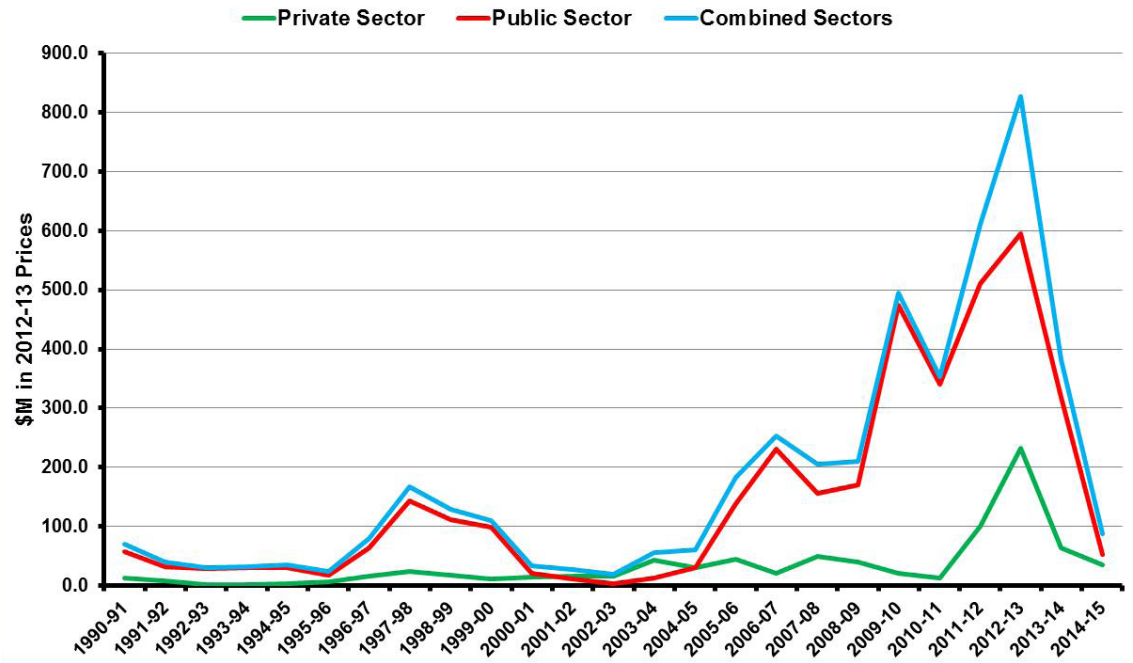
Figure 5 represents the following types of engineering infrastructure, expressed in in constant 2012-13 prices:

- **Bridges:** that support roads, railways, causeways and elevated highways.
- **Railways**: tracklaying, overhead power lines and signals, platforms, tramways, tunnels for underground railways and fuel hoppers.
- **Harbours**: boat and yacht basins, breakwaters, retaining walls, docks and piers, terminals, wharves, dredging works and marinas.

In 1990-91, engineering construction completed on bridges, railways and harbours in South Australia was $69.3 million in constant 2012-13 prices and 82.3 per cent was constructed by the public sector. This work accounted for 5.7 per cent of the state's infrastructure that year. Figure 5 shows that apart from a three-year surge in construction between 1997-98 and 1999-00, construction in this group of assets remained well below $100 million until about 2004-05. In that year, construction completed was still just $60.2 million in real terms, below the level in 1990-91.

The following year saw the beginning of a growth surge, which peaked at $826.7 million in 2012-13. Construction more than halved the following year and fell even further in 2014-15. Most of the change was due to public sector construction, but there was also a brief surge in private sector construction.

FIGURE 5: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION ON BRIDGES, RAILWAYS AND HARBOURS, SOUTH AUSTRALIA, 1990-91 TO 2014-15



This surge was well underway in 2010 when South Australian rail infrastructure was assessed as 'C' adequate but requiring major changes, and ports were assessed as 'B-' good but requiring minor changes. Three of the five years since 2010 recorded growth in construction, but these projects came to an end in 2013-14 and 2014-15. The South Australian rail revitalisation program accounted for a large part of the surge in construction, which included:

- Extensive track upgrades
- New stations
- New tracks
- Electrification of the Seaford, Tonsley and Blair lines.

Construction at the Techport Australia facility and the redevelopment of some of the state's regulated ports accounts for the recent private sector surge.

Given the amalgamation of statistics, forming judgements about the three elements of infrastructure involved in this category is difficult. The rail revitalisation program was substantial and could be sufficient to warrant reconsideration of the 'C' assessment in 2010 and there is no reason to suppose the 2010 ports assessment should be downgraded.

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Electricity Generation and Transmission and Pipelines

At the national level, separate engineering construction statistics are available for the electricity and pipeline sectors. However, these statistics are aggregated at state level. Electricity statistics include:

- Power stations
- Sub-stations
- Hydro-electric generating plants
- Associated work for chimneys and towers
- Transmission and distribution lines.

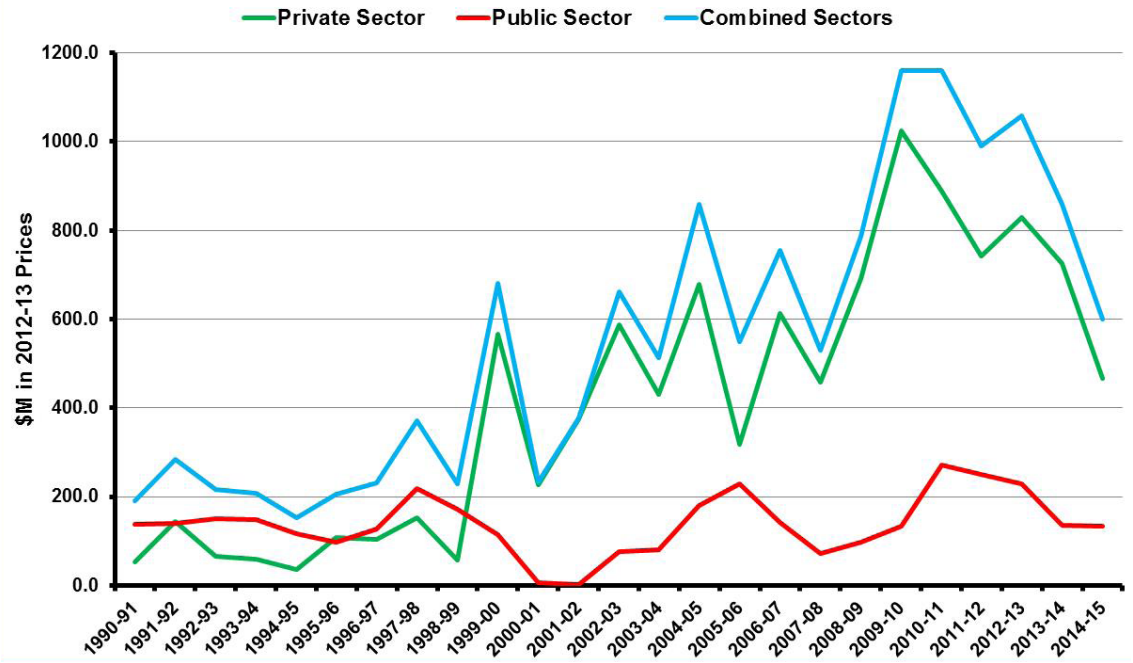
In South Australia, the electricity sector has been substantially privatised with some public sector developments. Pipelines include:

- Oil and gas pipelines
- Urban supply mains for gas
- Pipelines for refined petroleum products, chemicals and foodstuffs.

The majority of these assets also occur in the private sector.

In 1990-91, South Australia's engineering construction in the electricity and pipeline sectors was $190.6 million in real terms and accounted for 15.6 per cent of the state's infrastructure construction that year. More than 72 per cent was undertaken by the public sector. Figure 6 shows that construction levels remained subdued until about 1998-99. With asset privatisation, public sector construction remained comparatively low while private sector construction increased substantially. The graph shows annual construction experienced large year-on-year changes, but was generally growing. This culminated in a peak of $1.2 billion in 2009-10; 88.4 per cent by the private sector. This level was 27.8 per cent of the state's infrastructure construction that year. Construction plateaued in 2010-11, but a sharply falling trend was established the following year. In 2014-15, construction was back to $599.6 million in real terms, less than the level realised in 1999-00.

FIGURE 6: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION IN THE ELECTRICITY AND PIPELINE SECTORS, SOUTH AUSTRALIA, 1990-91 TO 2014-15



The South Australian electricity sector is highly diversified and has a more active renewables component than any other jurisdiction. The state has already exceeded a 33 per cent renewables target and has set a fresh target of 50 per cent by 2025. Wind makes up 49 per cent of national installed wind capacity and it generated 43 per cent of the state's electricity requirements in July 2014. Since the 2010 IRC, substantial wind generation has been constructed. This includes wind farms at Clements Gap, Hallett Hill, Mount Millar, Waterloo and Snowtown. Over one in four houses in South Australia have roof-top solar and this, combined with wind generation, produced several days in 2015 where 100 per cent of electricity was from renewable sources[7]. There was also substantial investment in transmission and distribution facilities, as was the case in other jurisdictions in the National Electricity Market. South Australia's extensive gas transmission network is part of the inter-connected system linking all eastern jurisdictions. Since the last IRC, the network was strengthened when the QLD-SA-NSW link (QSN Link) project connected the Cooper Basin to Queensland.

The South Australian electricity sector is highly diversified and has a more active renewables component than any other jurisdiction. The state has already exceeded a 33 per cent renewables target and has set a fresh target of 50 per cent by 2025.

7 See www.reneweconomy.com.au

Water and Sewerage

In 1990-91, South Australian engineering construction on water and sewerage was $207.4 million in real terms and accounted for 17.0 per cent of the state's infrastructure construction. Construction was dominated by the public sector, which undertook 90.6 per cent of the work completed. Figure 7 shows that annual construction on water and sewerage assets experienced a slow downwards trend about 2007-08, with occasional higher construction years. While there was some increase in private sector construction during this time, the dominance of the public sector persisted.

Figure 7 shows trends in water storage and supply, sewerage and drainage construction over the last 25 years at 2012-13 constant prices. This infrastructure includes:

Water storage and supply

- Dams, weirs and reservoirs
- Embankments for water diversion
- Water pipelines, mains and treatment plants
- Prevention and erosion
- Aqueducts and water conduits
- Systems conveying water to residences, commercial and industrial establishments.

Sewerage and drainage

- Sanitary and storm sewers
- Sewerage treatment plants
- Storm water drains and drainage systems.

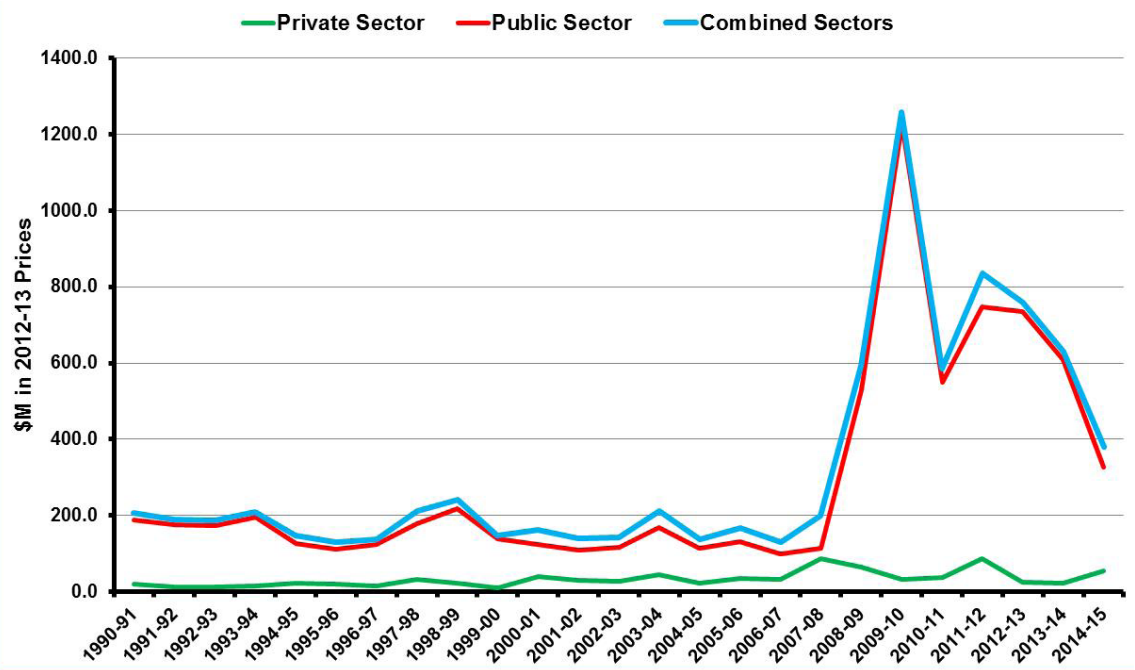
The spike in water and sewerage construction after 2007-08 is primarily explained by the construction of the Adelaide desalination plant and associated facilities. When first announced, this plant was projected to provide 50 per cent of Adelaide's potable water. However, this size was doubled in 2009 thanks to substantial Commonwealth funding and became the largest infrastructure project ever undertaken by South Australia. The desalination plant was formally opened in 2013. Figure 7 shows the impact this large project had. Other projects undertaken at the same time included the private irrigation infrastructure program, the South Australian integrated pipelines project and a range of projects that were part of the Living Murray program.

As Figure 7 shows, the volume of construction associated with these undertakings has fallen almost as quickly as the initial increase. By 2014-15, construction on water and sewerage facilities had fallen to $380.8 million and was approaching construction levels similar to before 2007-08.

The 2010 IRC assessed South Australian water and sewerage infrastructure as 'C+', better than adequate with potable water and wastewater facilities rated higher, and stormwater and irrigation rated lower. The impact of the desalination plant and the Living Murray projects are pronounced and are compatible with an improved assessment.

While there was some increase in private sector construction during this time, the dominance of the public sector persisted.

FIGURE 7: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION IN THE WATER SUPPLY & SEWERAGE SECTORS, SOUTH AUSTRALIA, 1990-91 TO 2014-15



The impact of the desalination plant and the Living Murray projects are pronounced and are compatible with an improved assessment.

Telecommunications

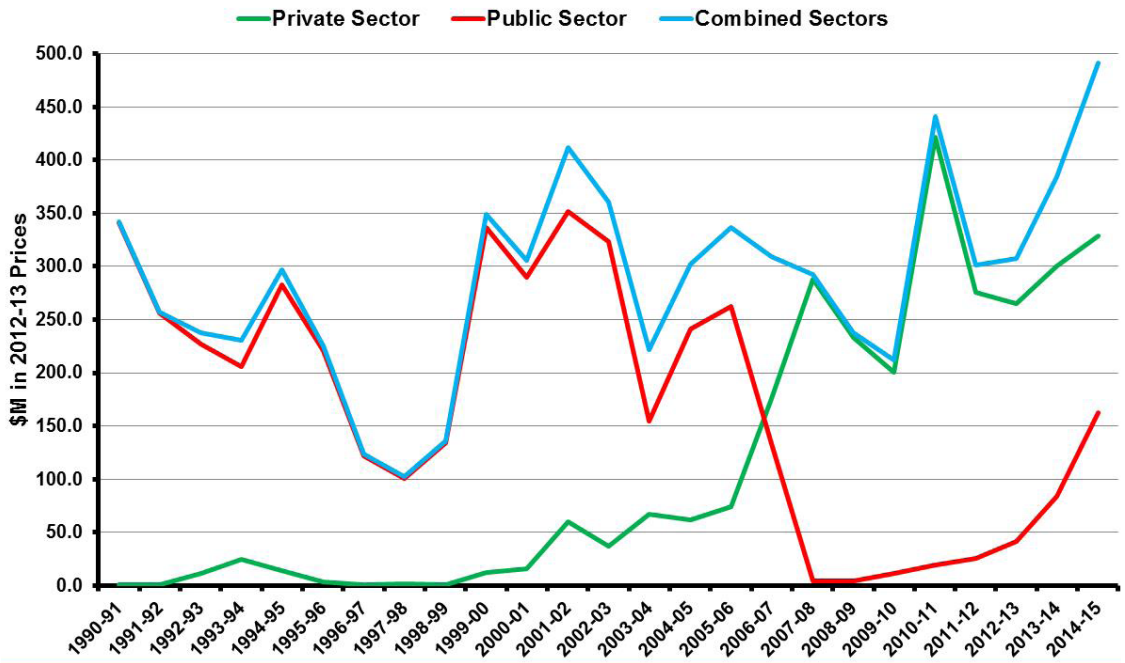
Over the past 25 years, the balance of public and private sector telecommunications has changed, largely due to the privatisation of Telstra. Privatisation was completed in 2007 with the transfer of the final tranche of Commonwealth shares to the Future Fund. These events had profound implications for the balance between public and private components of engineering construction on telecommunications facilities, as shown in Figure 8.

In 1990-91, South Australian telecommunications construction was $342.3 million in real terms and accounted for 28.0 per cent of the state's infrastructure construction that year. Prior to full privatisation of the industry, construction levels ranged from a low of $102.2 million in 1997-98, to a high of $411.5 million in 2001-02. More recently in 2010-11, construction valued at $441.0 million was completed and in 2014-15 a further $491.0 million was completed. This increase in public sector construction can be attributed to the rollout of the NBN.

In 2010, South Australian telecommunications infrastructure was assessed as adequate. Given the similarity between recent and earlier trends and the upsurge in NBN construction, there appears to be little reason to change this assessment until the NBN is substantially completed.

Given the similarity between recent and earlier trends and the upsurge in NBN construction, there appears to be little reason to change this assessment until the NBN is substantially completed.

FIGURE 8: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION ON TELECOMMUNICATIONS, SOUTH AUSTRALIA, 1990-91 TO 2014-15



Non-infrastructure elements of engineering construction

This report considers what has happened to elements of engineering construction that fall outside our definition of infrastructure. As previously mentioned, it's debatable whether recreational facilities should be included. But regardless, construction in this area is important and warrants separate consideration. In South Australia, the resources boom has not had the impact seen in Queensland and Western Australia, but has significantly increased the state's engineering construction. Tables 6 and 7 set out annual statistics for engineering construction on resources, heavy industry, and recreational facilities.

RESOURCES AND HEAVY INDUSTRY

The tables and Figure 9 show that almost all the engineering construction in the resources and heavy industry sectors is by the private sector. In 1990-91, construction on the resources and heavy industry sectors was $311.3 million in real terms, which was 19.4 per cent of the state's engineering construction.

Initially, construction levels fell to about $200 million per year and did not increase until the turn of the millennium. While construction was higher in some years, the trend up until 2009-10 did not show consistent growth. This emerged the following year and continued through to 2013-14. Construction fell by 6.8 per cent in 2014-15, however the average annual increase for the period 2010-11 to 2014-15 was 20.1 per cent per year. This strong growth meant that construction peaked at $1.3 billion in 2013-14, 24.3 per cent of the state's engineering construction that year. This added 38.7 per cent to infrastructure construction. In 2014-15, construction in this category was still $1.2 billion.

In South Australia, the resources boom has not had the impact seen in Queensland and Western Australia, but has significantly increased the state's engineering construction.

TABLE 6: NON-INFRASTRUCTURE ELEMENTS OF PUBLIC ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15, $MM IN 2012-13 PRICES

Year	Infrastructure	Resources & Heavy Industry	Recreation & Other	Total Non-infrastructure	Total Engineering Construction
1990-91	970.5	2.3	24.8	27.1	997.6
1991-92	883.4	0.2	20.7	21.0	904.3
1992-93	1001.6	0.7	29.1	29.8	1031.4
1993-94	1035.4	1.0	31.9	32.9	1068.3
1994-95	850.2	0.8	18.7	19.5	869.7
1995-96	828.9	2.7	42.2	44.9	873.8
1996-97	945.3	26.0	34.8	60.9	1006.2
1997-98	1177.0	15.7	23.5	39.1	1216.1
1998-99	1112.7	13.3	22.8	36.1	1148.8
1999-00	1212.1	11.3	54.4	65.7	1277.8
2000-01	928.2	1.1	54.7	55.8	984.0
2001-02	930.7	0.2	57.7	57.9	988.6
2002-03	981.8	0.0	50.9	50.9	1032.7
2003-04	786.1	0.0	41.9	41.9	828.0
2004-05	1073.1	0.0	66.5	66.5	1139.6
2005-06	1197.1	4.0	51.2	55.2	1252.3
2006-07	1046.4	1.4	61.0	62.4	1108.8
2007-08	881.2	0.0	63.2	63.2	944.4
2008-09	1756.3	1.0	79.2	80.2	1836.6
2009-10	2637.2	0.4	156.6	157.0	2794.1
2010-11	2091.7	3.4	248.4	251.8	2343.4
2011-12	2456.1	0.3	147.1	147.3	2603.4
2012-13	2642.9	0.0	332.5	332.5	2975.4
2013-14	2065.0	2.9	473.3	476.2	2541.2
2014-15	1339.3	0.0	159.7	159.8	1499.1

Recreation and other

Both the public and private sectors are involved in engineering construction of recreational facilities and both sectors have 'other' construction that does not readily fall into other categories. The construction involved has shown strong growth and reached its peak in 2013-14, at 12.8 per cent of the state's engineering construction. In 1990-91, construction on recreational facilities was $74.0 million in real terms, or 4.6 per cent of engineering construction. By 2014-15, construction was $413.4 million, having peaked at $677.1 million the previous year. Figure 10 shows the trends over the past 25 years.

Public sector engineering construction on recreation and other was $24.8 million in 1990-91, about 2.5 per cent of public sector engineering construction. Long-term growth averaged over 20 per cent and peaked in 2003-14 at $3473.3 million, which was 18.6 per cent of public sector engineering construction. This high share gives some idea of the impact of the fall to $159.8 million in 2014-15.

In 1990-91, private sector engineering construction accounted for almost double the public sector contribution, with an outcome of $49.2 million or 8.1 per cent of private engineering construction. Long-term growth was almost as high as in the public sector and averaged 18.5 per cent per year. Construction peaked in 2012-13 and abruptly fell the following year. In 2014-15, construction on recreational facilities was $253.6 million, almost 10 per cent of private engineering construction.

The construction involved has shown strong growth and reached its peak in 2013-14, at 12.8 per cent of the state's engineering construction.

TABLE 7: NON-INFRASTRUCTURE ELEMENTS OF PRIVATE ENGINEERING CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15, $M IN 2012-13 PRICES

Year	Infrastructure	Resources & Heavy Industry	Recreation & Other	Total Non-infrastructure	Total Engineering Construction
1990-91	251.8	309.0	49.2	358.2	610.0
1991-92	264.1	218.5	16.5	235.0	499.1
1992-93	182.6	107.2	17.2	124.4	307.0
1993-94	212.2	117.1	18.3	135.5	347.6
1994-95	152.8	179.0	28.0	207.0	359.8
1995-96	200.9	131.2	66.2	197.5	398.4
1996-97	211.7	166.7	71.5	238.3	450.0
1997-98	298.6	356.0	119.2	475.2	773.8
1998-99	194.8	337.8	73.8	411.7	606.4
1999-00	700.2	161.1	170.1	331.2	1031.4
2000-01	356.4	283.6	133.4	416.9	773.3
2001-02	589.9	461.8	125.7	587.5	1177.4
2002-03	800.0	693.0	116.5	809.6	1609.6
2003-04	754.1	848.9	143.7	992.6	1746.7
2004-05	1002.6	464.3	114.1	578.4	1581.0
2005-06	606.5	414.0	120.8	534.8	1141.4
2006-07	1010.8	785.1	106.1	891.2	1902.0
2007-08	1175.9	674.6	99.7	774.3	1950.2
2008-09	1281.6	625.3	91.8	717.1	1998.7
2009-10	1528.9	519.9	190.0	709.9	2238.8
2010-11	1652.8	786.7	129.3	915.9	2568.7
2011-12	1385.5	896.3	148.3	1044.6	2430.1
2012-13	1522.2	928.5	325.3	1253.9	2776.1
2013-14	1258.7	1283.5	203.8	1487.3	2746.0
2014-15	1184.3	1198.8	253.6	1452.4	2636.8

FIGURE 9: PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION IN THE RESOURCES AND HEAVY INDUSTRY SECTORS, SOUTH AUSTRALIA, 1990-91 TO 2014-15

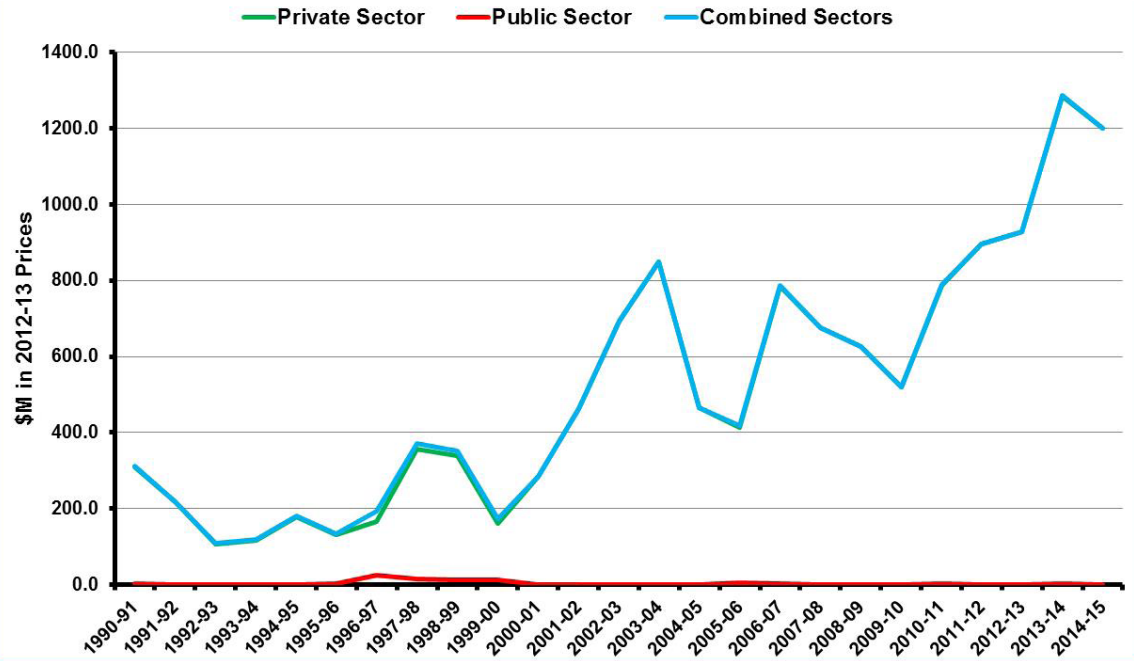
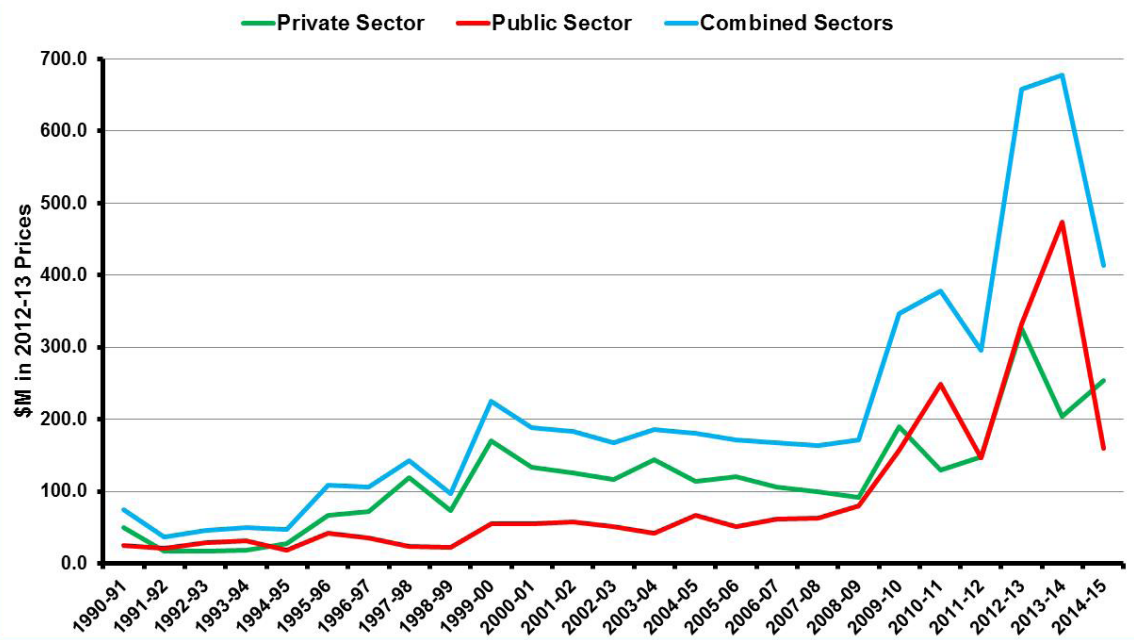


FIGURE 10: TRENDS IN PRIVATE AND PUBLIC SECTOR ENGINEERING CONSTRUCTION ON RECREATIONAL FACILITIES AND 'OTHER' CONSTRUCTION, SOUTH AUSTRALIA, 1990-91 TO 2014-15



Looking forward

This report shows that levels of construction have fallen rapidly in the past two years, with increased construction in only one asset class, telecommunications. Private sector involvement in generally accessible infrastructure has also increased. But the true extent of this is difficult to gauge because the private sector has constructed some infrastructure specifically to service resource projects, not for general use. When the two sectors are combined, infrastructure construction and total engineering construction have both fallen in the past two years.

While this report focuses on completed infrastructure and engineering construction work, these projects by their nature have long construction periods and often change. The full picture requires an understanding of the total of incomplete work and work in progress. Also, new work is constantly commencing and therefore adds to unfinished construction. This refers to the three elements—commencements, completions and construction yet to finish—as the infrastructure pipeline.

Work completed in the last year is used as the benchmark to gauge the total of both uncompleted and ongoing work in the system. Figure 11 shows the aggregate trends for the infrastructure pipeline. The blue line is infrastructure completed in South Australia by the public and private sectors combined, which repeats the trend in Figure 1. The red line in Figure 11 is the value of infrastructure construction underway, but is incomplete. This may include cost variations during construction. At 30 June 2015, there was $2.7 billion of uncompleted infrastructure in construction in South Australia, representing 1.07 years of work at the present rate of completions.

The green line in Figure 11 is the trend for new infrastructure commencements. Like work completed, it is measured in constant 2012-13 prices. South Australian infrastructure commencements fell in both 2013-14 and 2014-15 and reached $2.4 billion in 2014-15, representing 0.94 years of work at the present rate of completions.

So, construction yet to complete and commencements combined account for about 2.01 years of infrastructure work in the system at the present rate of completions.

Figures 12 and 13 divide the South Australian infrastructure pipeline into public and private sector components. The public sector pipeline shows commencements and completions have been in decline for three years. Last year new commencements were low at $1.1 billion, representing 0.84 years of work at the present rate of completions. There was $1.8 billion in infrastructure construction yet to be completed. This represents 1.27 years of work at the present rate of completion. Combining the two suggests there is 2.11 years of construction in the public sector infrastructure system at the present rate of completion.

The public sector pipeline shows commencements and completions have been in decline for three years.

In the private sector, completions fell, unfinished work stabilised after a large fall but commencements experienced an increase. There was $991.4 million in uncompleted infrastructure construction in the system, representing 0.84 years of work at the present rate of private sector completions. Unlike the public sector, new commencements increased and were $1.2 billion, representing 1.04 years of work at the present rate of completions. Combined, there is about 1.88 years of infrastructure work at the present rate of sector completions.

Table 8 summarises the direction of change for the components of infrastructure in 2014-15. Construction completions increased in only one infrastructure component. For construction yet to finish, there were no components where increases were recorded. However, uncompleted work was steady for roads. In respect to new commencements, both electricity and pipelines and telecommunications recorded increases, while remaining elements and the total of uncompleted work fell in 2014-15.

In non-infrastructure engineering construction, the comparatively high 2013-14 level of commencements was more or less repeated in 2014-15. This came to $1.7 billion in real terms, or 1.03 years of work at the 2014-15 level of completions. Unfinished work in the construction system increased from $3.6 billion in 2013-14 to

In the private sector, completions fell, unfinished work stabilised after a large fall but commencements experienced an increase.

FIGURE 11: THE INFRASTRUCTURE PIPELINE IN SOUTH AUSTRALIA, PUBLIC AND PRIVATE SECTORS COMBINED

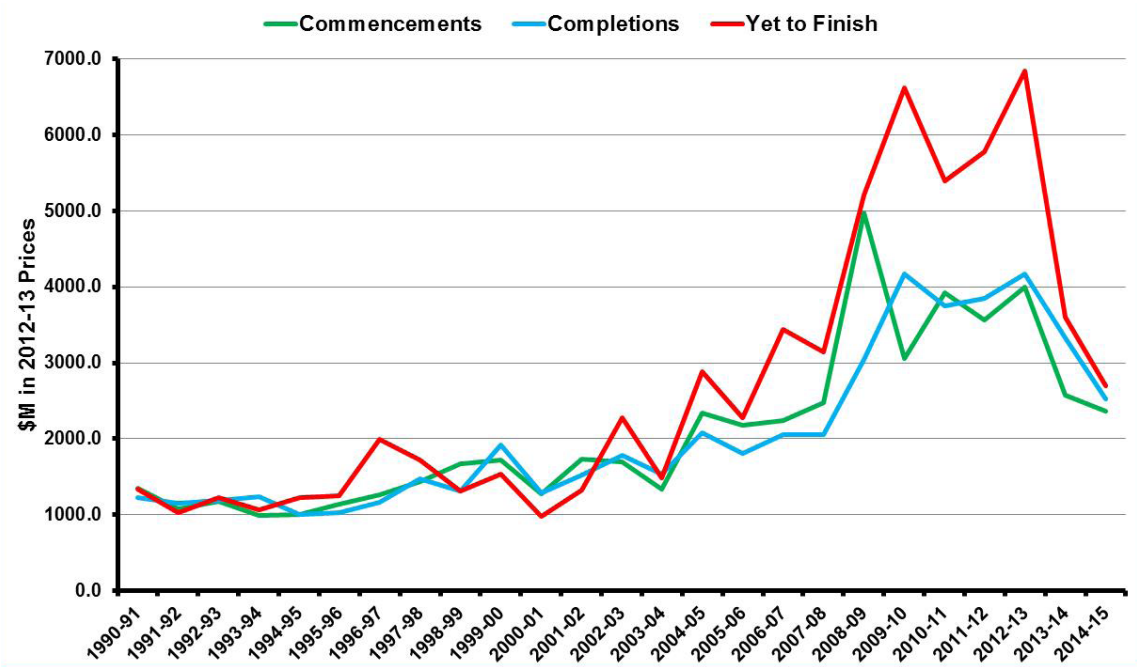


FIGURE 12: THE PUBLIC SECTOR INFRASTRUCTURE PIPELINE, SOUTH AUSTRALIA

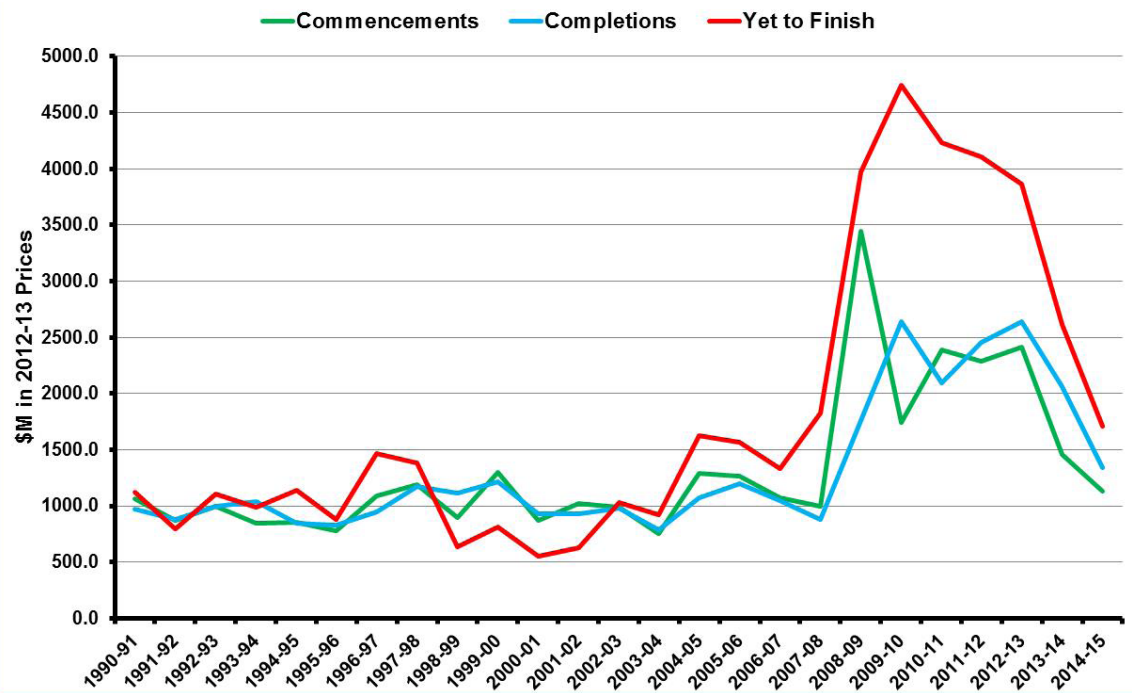
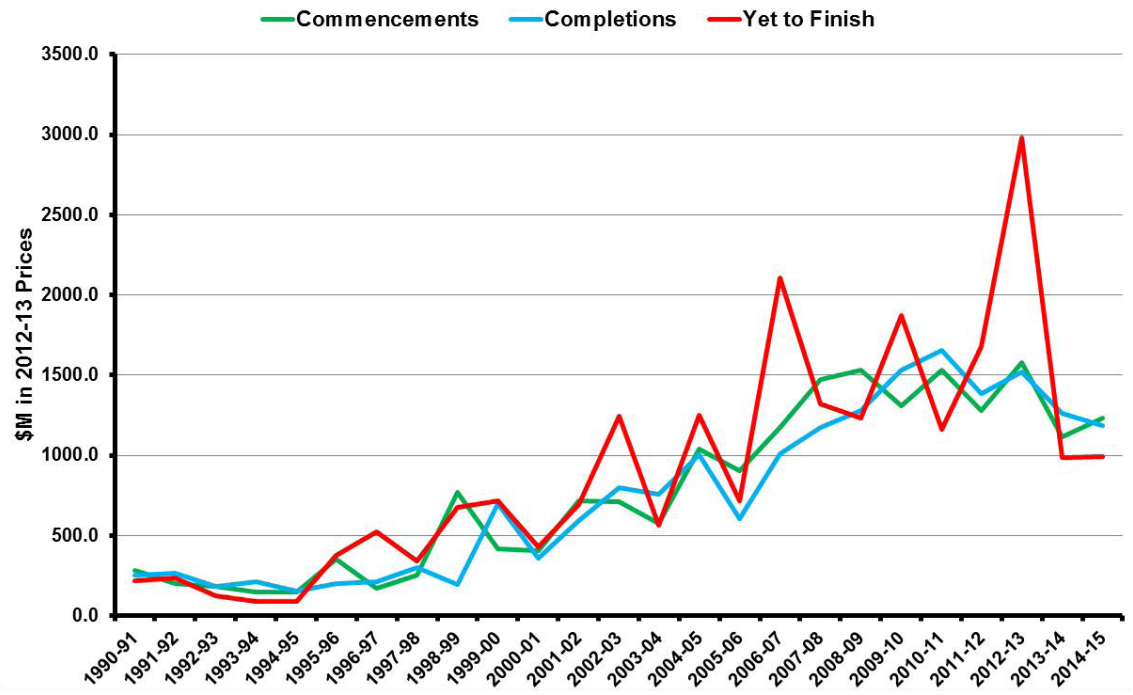


FIGURE 13: THE PRIVATE SECTOR INFRASTRUCTURE PIPELINE, SOUTH AUSTRALIA



$4.7 billion in 2014-15, which is 3.91 years of work at the 2014-15 level of completions. Combined, non-infrastructure new commencements and unfinished work in the construction system represent 3.91 years of work at the 2014-15 level of completions. Even though the level of non-infrastructure construction completed fell in 2014-15, this result suggests that completion levels in the next couple of years are likely to be similar to 2014-15.

The early 2016 uncertainties about the future of commodities prices is the main risk to non-infrastructure components of engineering construction. Typically, the economics of resource projects assume a medium- to long-term price for the target commodities. Occasional short-term price fluctuations below this level are unlikely to change the future course of projects. But if commodity prices persistently fall below assumed values, or project owners are unable or unwilling to weather periods of low prices, projects could be moth-balled before completion.

Even though the level of non-infrastructure construction completed fell in 2014-15, this result suggests that completion levels in the next couple of years are likely to be similar to 2014-15.

TABLE 8: OVERVIEW OF LAST YEAR CHANGES, INFRASTRUCTURE PIPELINE, SOUTH AUSTRALIA

Asset Class	Commencements	Completions	Yet to Finish
Roads	↓	↓	≡
Bridges etc	↓	↓	↓
Electricity etc	↑	↓	↓
Water and Sewerage	↓	↓	↓
Telecommunications	↑	↑	↓
Infrastructure	↓	↓	↓

Conclusion

South Australian infrastructure was last assessed in 2010, when the peak in public sector infrastructure construction had passed and the private sector construction would continue to climb for the next two years. The IRC's conclusion was "SA's infrastructure is mostly rated as only adequate, meaning that major changes are required to enable infrastructure to be fit for its current and anticipated future purposes. There has been little improvement in most sectors over the past five years. The ratings for the state reflect that its infrastructure is stressed. In metropolitan areas, this is evident from traffic congestion and public transport inadequacies. In regional areas, it is evident in road quality and inadequate broadband availability."[8]

Cumulative public sector infrastructure construction valued at $7.5 billion occurred between 2005 and 2010. So what has changed? Three areas that were criticised in 2010—roads, public transport and ports—saw high levels of construction continue on for some years after 2010. In the case of roads, this continued for up to four years, followed by a fall in 2014-15. This fall began for railways and ports in 2013-14. Developments in electricity and pipelines have been mostly positive. Water and sewerage appear to have undergone improvements. Adelaide's water supplies are assured and irrigation and other River Murray projects have improved regional supplies, but little has changed with respect to telecommunications.

Overall, since the 2010 IRC, real cumulative public sector infrastructure development was $10.6 billion to the end of 2014-15, which is a 40.9 per cent increase. This, in part, supports an economy that is 7.2 per cent larger in real terms and a population that is 4.5 per cent larger. Add to this, changes in generally accessible infrastructure in private ownership, even though these are difficult to separate from private sector infrastructure built in support of resource projects with limited access. Overall, these results suggest that South Australia's infrastructure situation has improved but confidence in this assessment is weakened by the downwards trends in most components of the respective infrastructure pipelines.

Overall, these results suggest that South Australia's infrastructure situation has improved but confidence in this assessment is weakened by the downwards trends in most components of the respective infrastructure pipelines.

8 Engineers Australia, Infrastructure Report Card 2010, South Australia, 2010, p6, www.engineersaustralia.org.au

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