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Queensland Infrastructure Investment Update

2016

Engineers Australia Infrastructure in Queensland Report 2016

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Infrastructure Investment Update 2016

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a sustainable world.*

Key points

In 2005 Engineers Australia conducted an assessment of Queensland's infrastructure and created an Infrastructure Report Card (IRC). The report found that the state's infrastructure at that time was only slightly better than adequate, leaving plenty of room for improvement.

In response to these findings, the public sector carried out construction projects totalling \$39,271.9 million between 2005 and 2015. Infrastructure projects were also completed by the private sector but these are more difficult to evaluate as a large proportion were built in support of specific resources projects and accessibility to that infrastructure by business and the community in general is limited.

While access to the infrastructure is limited, its development still makes a significant and valuable contribution to the Queensland economy by helping to improve the productivity of the resources sector. Public sector infrastructure is typically widely accessible to business and the community and it is this wider accessibility that enables public sector infrastructure to play such a critical role in enhancing productivity and fuelling economic growth.

In the five years leading to the 2010 IRC, the amount of infrastructure projects completed in Queensland showed a large increase over historical levels. This was exactly the response the 2005 IRC was looking for but, as the state's population and economy increased by 12.4 per cent and 8.6 per cent respectively in the same period, the pressure on infrastructure services was still found to be high. Consequently, the 2010 IRC assessment still showed Queensland's infrastructure to be only slightly better than adequate, with major changes necessary.

Engineers Australia supports infrastructure development because it 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 and 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 proactive 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 we believe that, unlike other consumer and business products, just-in-time logistics do not work for infrastructure; it turns into a barrier to productivity growth rather than an enabler. Too often infrastructure provision has been reactionary.

This 2015 report examines what has changed in Queensland infrastructure since the 2010 IRC. The analysis is based on Australian Bureau of Statistics

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(ABS) statistics on engineering construction which are reliable indicators of infrastructure development and construction completed on other engineering assets. Though not ideal statistics, they are the best and only reliable ones available. Responsibility for improved infrastructure information and statistics lies with government infrastructure agencies at all levels. Engineers Australia has argued for better and more comprehensive infrastructure information as an integral part of greater transparency and community engagement so that existing infrastructure is better utilised and to inform more coherent decisions to proceed with new infrastructure projects.

PUBLIC VS PRIVATE

Public sector infrastructure completed between 2010 and 2015 was \$37.6 billion, plus a significant but somewhat unknown contribution from the private sector (as mentioned above). Annual public sector infrastructure completions peaked in 2008-09 and have declined each year thereafter. In 2014-15, the number of completed projects was 35.8 per cent less than in 2008-9 and the rate of decline is accelerating.

Private sector infrastructure completions peaked later, in 2012-13, but the subsequent decline has been particularly rapid. This reflects the connection with the end of the resources boom. The number of new public sector infrastructure projects has been falling since 2006, despite increases to the state's population and economy, and unfinished work in the construction system has experienced a dramatic fall reflecting fewer commencements.

While we don't have the same specific data on what is happening in the private sector as we do with the public sector, we do know where the efforts are being concentrated. Almost all engineering construction projects in the resources and heavy industry sectors are funded by the private sector, for example the development of oil and gas fields, and are usually accompanied by large scale construction of infrastructure necessary to support these facilities. Reaching a high of \$28.2 billion in real terms in 2013-14, this private sector engineering construction was over four and a half times larger than private sector infrastructure construction and over four times larger than public sector infrastructure construction that same year.

The scale of this work had correspondingly large impacts on the skilled labour force and helped offset the reduction in public sector investment during this time. In the year following the peak, private sector construction in resources and heavy industry fell sharply and continued to decline in subsequent years; 2014-15 saw the lowest levels in the last 12 years. This indicates that the Queensland resources construction boom is well and truly over.

AN UNCERTAIN FUTURE

Future economic growth and improvements in the standard of living in Queensland depend on productivity growth in a diversified economy. With the shift from construction to production phase, the resources and heavy industry sector will undoubtedly make an important contribution, but growth figures for 2014-15 show that this is not enough.

The infrastructure situation in Queensland looks bleak. All three elements of the infrastructure pipeline—commencements, completions and unfinished construction—are in decline. While there is some uncompleted work in the system, this is rapidly being completed. Very soon, future construction will depend on commencements which have been falling for four years. Even if there are projects currently in the planning/design stages it will take some time for construction work on them to make any difference to observed trends. In the meantime infrastructure pressures persist and economic decline continues. This analysis suggests that the 2010 rating of Queensland infrastructure as adequate must be at serious risk.

Engineers Australia recommends that governments take steps to reverse the alarming deterioration in public sector infrastructure construction as a priority. Public sector completions have fallen each year since 2008-09 and, more importantly, new project commencements have been falling since 2006-07. Engineers Australia believes these results suggest that Queensland public infrastructure has deteriorated since 2010. The buoyant private resources sector shielded the Queensland economy for much of this period but it too has now experience construction falls during the past two years and infrastructure constructed to support resources projects does not alleviate pressures on generally accessible infrastructure in cities and regional centres. Last year these results combined to produce a fall in the state's standard of living which must be reversed.

Introduction

The recent economic policy environment in Queensland has been one of austerity initiated by the previous Government, but seemingly continued by the present one. There has been extensive discussion of the importance of infrastructure to the state's future and the need for action. But the perennial problem is finding objective information to inform such discussion. Even organisations like the Productivity Commission in its recent report on public infrastructure¹ experienced difficulties and resorted to a patchwork of available statistics. In Queensland, a particular problem has been differentiating between construction, including on infrastructure, in support of the resources sector which has experienced an extraordinary boom and infrastructure 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 and base decisions about future infrastructure projects on assessments of this material. However, no jurisdiction does this. Similarly, rigorous quantitative benefit/cost assessments of new project proposals is still an uncertain business and too many project decisions are based primarily on political considerations. Over the past decade there have been institutional improvements but not enough to satisfy the Productivity Commission and well short of the recommendations made by Engineers Australia in its Infrastructure Report Cards (IRC)². In Queensland, Building Queensland has been formed to assess infrastructure projects valued over \$100 million and to assist assessment of projects valued between \$50 and \$100 million. At this stage it is too early to assess the effectiveness of this change.

Against this background this report aims to put contemporary developments in Queensland into perspective by examining changes in ABS statistics on engineering construction. These statistics provide reliable and objective measures for on-the-ground progress on infrastructure projects, how much work remains in the system still to be completed, and the likely consequences of new project approvals. Trends in these variables can be compared to assessments made in the 2010 IRC to inform views about the present status of infrastructure.

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The state of infrastructure in Queensland

OUR APPROACH AND RESEARCH DATA

Infrastructure has been very topical in Queensland and there has been some institutional change over the years. A perennial problem when it comes to infrastructure is objective information. In its recent report on public infrastructure, the Productivity Commission experienced difficulties and resorted to a patchwork of available statistics. We're still lacking contemporary information about the status of existing infrastructure, how well it is delivering services and whether or not the flow of services is keeping up with population and economic growth. Reliance on rigorous quantitative assessments of new project proposals remains an uncertain business, and remnants of the common 'statues and edifices' approach can still be found.

This report puts contemporary developments in Queensland into perspective by looking at 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.

These statistics relate to additions to the infrastructure stock through work completed on new infrastructure assets. Maintenance on existing infrastructure assets is not included but additions are. The ABS protocols differentiate the statistics from financial figures that appear in budgets and news accounts. As these protocols are applied consistently over time, the resulting trends are reliable indicators of infrastructure changes.

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. Historically, governments primarily developed Australia's infrastructure with nearly all work undertaken by public sector agencies. Gradually, more and more work was

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.

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 trends in public sector engineering construction.

In this report we use the Infrastructure Australia definition of economic infrastructure. This 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. The Infrastructure

¹ Productivity Commission, Public Infrastructure Inquiry Report, No 71, May 2014, www.pc.gov.au
² See <https://www.engineersaustralia.org.au/infrastructure-report-card>

Australia definition is used in its advice to government and while alternative definitions are viable for other applications, this report has a similar audience.

Changes in engineering construction on resources sector facilities, heavy industry and uncategorised activities are also briefly examined to establish a basis for judging the connection between so-called resources-related activity and changes in conventional infrastructure. In all asset classes examined, the trends in public and private sector activity are compared, but it is important to bear in mind that private sector infrastructure development is divided between generally accessible infrastructure that can be used by all businesses and the community in general and infrastructure intended to service specific resources projects. The latter infrastructure is geographically located to assist servicing the resource project, often in locations where general access to infrastructure is not feasible; for example, a railway line from a remote coal mine to port is essential to realise the value of coal exports but has little relevance to transport congestion in cities. 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, the best measures of infrastructure development are public sector trends with qualitative assessments of private sector trends as a supplement.

All statistics have been deflated and are expressed in constant 2012-13 prices.

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Queensland: the state in context

This report is set against the background of the 25 years 1990-91 to 2014-15. This period saw Queensland's real Gross Domestic Product (GDP) increase by 168 per cent from \$112.0 billion in June 1991 to \$300.3 billion in June 2015. The state's population increased by 101 per cent, from 2.96 million to 5.94 million. The standard of living, as measured by real GDP per person, increased from real \$38,254 per person to \$63,209 per person. How these changes occurred over time and how they compare to Australia as a whole is examined in Table 1. The intervals in this Table broadly relates to the timing of Engineers Australia's infrastructure report cards.

In June 1991, Queensland's real gross product was 14.7 per cent of real national gross product and its population was 18.5 per cent of the national population. The result was that the state's standard of living was 13.4 per cent lower than the national average: \$38,254 per person compared to \$44,155 per person. Over the long term, average economic growth in Queensland was considerably higher than national growth so that by June 2015 the Queensland economy accounted for 18.5 per cent economy. Long term average population growth and improvement in the standard of living were also higher in the state than nationally.

However, focusing on long term trends disguises the serious deterioration in the Queensland economy in recent years. Since the 2010 Engineers Australia IRC in 2010, average economic growth in Queensland has lagged national growth and furthermore has slowed to the point that Queensland's real GDP grew by just 0.5 per cent in 2014-15. National economic growth also slowed, but at 2.5 per cent was five times state growth. Over time Queensland's population growth has also slowed from being much higher than national growth to below national growth last year. These changes have manifested in slower improvements in the standard of living to the point where last year that state GDP per person fell by 0.8 per cent.

The missing ingredient is productivity growth. Typically, population growth leads to an expansion in the economy but not necessarily an increase in GDP per person. Productivity growth is essential to ensure growth in GDP per person. Comparing Queensland and the national economy, it is evident that new policies are needed in two areas: first to stimulate economic growth and, second to ensure that there is sufficient productivity growth to reverse the decline in the state's standard of living. Infrastructure development and technological change are key ingredients in both situations.

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

Location	Queensland			Australia			
	Period	GDP	GDP/Person	Population	GDP	GDP/Person	Population
	1990-91 to 2014-15	4.2	2.1	2.0	3.2	1.9	1.3
	2005-06 to 2014-15	3.1	1.1	2.0	2.8	1.1	1.7
	2010-11 to 2014-15	2.4	0.7	1.7	2.6	1.1	1.6
	2014-15	0.5	-0.8	1.3	2.5	0.8	1.4

Growth is not evenly distributed in the state. To illustrate this point consider population growth. Projections of the future are always fraught, but within well-known limitations the ABS has prepared projections of Australia's future population in states and territories and in each capital city³. These projections suggest that by 2030, well within the lives of many current infrastructure assets, Queensland's population will increase by 30.6 per cent to 6.35 million. However, despite the fact that Queensland has more large cities than other jurisdictions, the pattern of population growth is expected to be strongly skewed towards metropolitan Brisbane where the population is expected to increase by 42.0 per cent to 3.32 million compared to 27.7 per cent to 3.21 million in the rest of the state. This skew illustrates the pressures on the capacity of existing infrastructure and the importance of a coherent program to develop infrastructure throughout the state.

THE SOUTH EAST QUEENSLAND EXPERIENCE

South East Queensland has been one of Australia's fastest growing regions for two decades. Its infrastructure, like the rest of Australia, is well recognised as inadequate despite predictable growth.

A regional strategic plan was legislated in 2005 (SEQRP) to be reviewed every five years. A subordinate South East Queensland Infrastructure Plan & Program (SEQIPP) was then developed to give effect to SEQRP.

SEQIPP was updated annually up to 2009/10 and provided publicly accessible advice on proposed projects and timelines. SEQIPP eventually lost credibility, however, when \$134 billion worth of projects it identified were not funded and so not implemented. Meanwhile, between 2007 and 2010, previously unplanned water grid infrastructure was rushed in as a frantic 'band-aid' solution with

higher costs and poorer service and financed by cannibalising budgets previously allocated for other planned infrastructure projects.

After 2010, SEQIPP was discontinued in favour of a state-wide regionalisation planning process, which was much less specific. In Nov 2011, a high-level Queensland Infrastructure Plan (QIP) was released but not implemented before a change in Government which then developed a 'Queensland Plan' between 2013 and 2015 through a public consultation process. However, that 'Queensland Plan' was more a series of aspirational vision statements and did not have the same planning rigour as the earlier SEQRP & SEQIPP processes.

Consequently, Queensland has now had no publicly available effective infrastructure planning framework for more than six years. This absence continues to have a significant adverse impact on the community, the infrastructure industry and levels of confidence in economic growth.

Queensland has now had no publicly available effective infrastructure planning framework for more than six years.

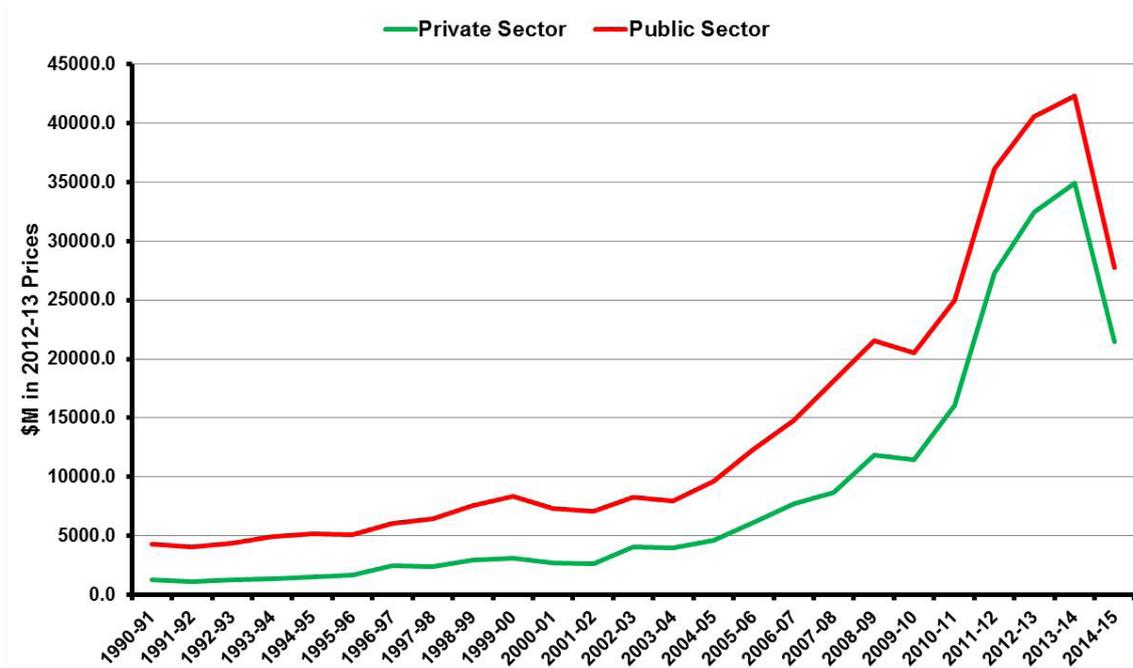
Trends in engineering construction

In 1990-91, 69.7 per cent of Queensland engineering construction was undertaken by the public sector which completed \$3.0 billion of work compared to \$1.3 billion by the private sector. Figure 1 shows that during the next 10 years growth was fairly modest followed by a period of strong growth with the majority coming from the private sector. Private sector engineering construction peaked at an extraordinary \$35.0 billion in 2013-14. The scale and timing of private sector construction overshadowed the fact that public sector engineering construction peaked five years earlier at \$9.7 billion in 2008-09. Private sector construction collapsed by 38.6 per cent in 2014-15 and public sector construction continued to contract with an overall outcome of \$27.8 billion.

How much of the activity illustrated in Figure 1 falls within our definition of infrastructure? The answer

is illustrated for the public sector in Figure 2. This diagram differentiates between engineering construction on infrastructure and engineering construction on recreation, the resources sector, the heavy industry sector and other engineering construction. Public sector engineering construction is primarily infrastructure. Most of the gap between the infrastructure and total engineering construction trends is accounted for by engineering construction on recreational facilities. In 1990-91 this accounted for 64.4 per cent of the gap, in 2010-11 it accounted for 87.1 per cent, and in 2014-15 it accounted for 63.3 per cent. Detailed statistics for public sector engineering construction on the various types of infrastructure assets are shown in Table 2. A later Table gives details for non-infrastructure components.

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

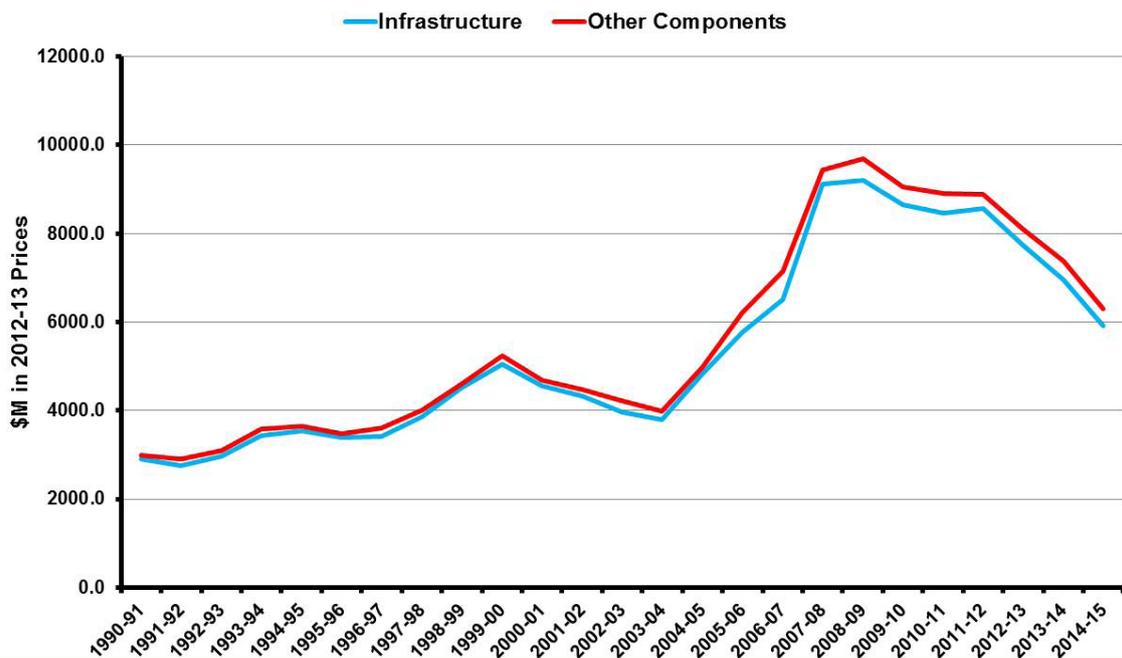


The private sector equivalent to Figure 2 is Figure 3. There is a pronounced difference between the trends in Figure 3 primarily attributable to private sector engineering construction on resources sector facilities. In 1990-91, private sector engineering construction on infrastructure was \$0.7 billion and total engineering construction was \$1.3 billion; the gap between the two was \$0.6 billion, 68.0 per cent of which was in resources and heavy industry sectors. At its peak in 2013-14, the private sector completed \$6.1 billion in infrastructure and \$35.0 billion in total engineering construction. The gap that year was \$28.8 billion, 97.8 per cent of which was in the resources and heavy industry sectors.

Private sector engineering construction on infrastructure facilities that are specifically needed to support resources sector facilities are included in private sector infrastructure statistics.

Most of the gap between the infrastructure and total engineering construction trends is accounted for by engineering construction on recreational facilities.

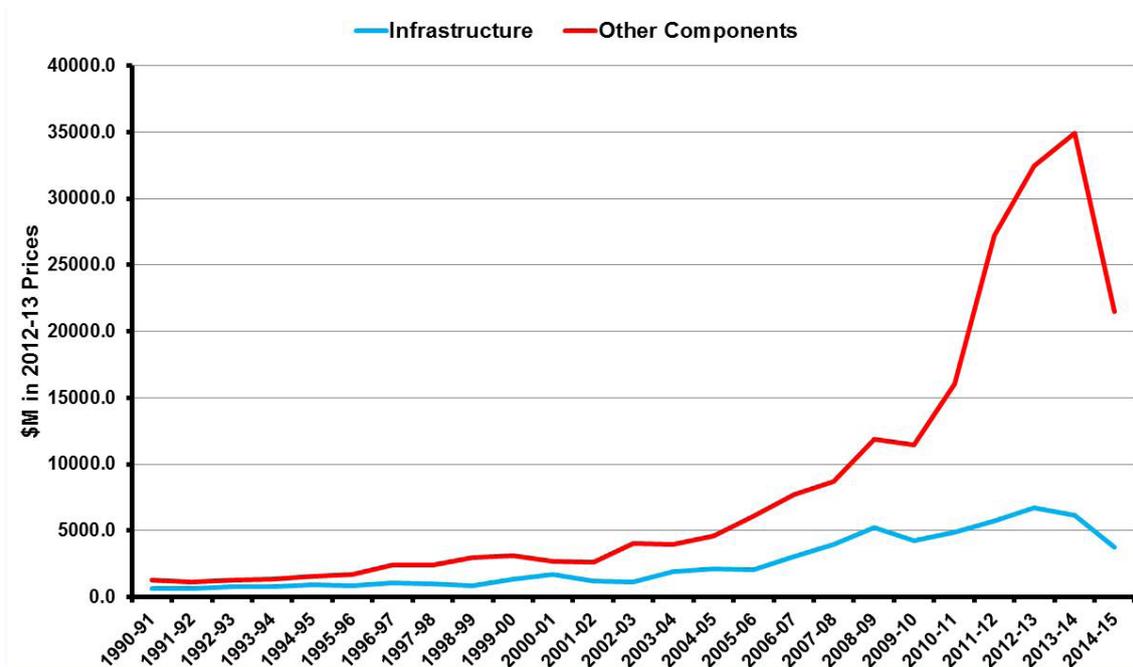
FIGURE 2: TRENDS IN THE MAIN COMPONENTS OF PUBLIC SECTOR ENGINEERING CONSTRUCTION, QUEENSLAND, 1990-91 TO 2014-15



Thus, construction of a coal mine is included in engineering construction on the resources sector, but construction of the rail line to haul coal from mine to port and the construction of the port facilities 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 provides infrastructure services to a restricted range of activities which distinguishes it from more generally accessible infrastructure provided by the public sector. 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.

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



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

Year	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
1990-91	957.8	213.3	664.7	402.9	660.8	2899.6
1991-92	830.3	251.5	744.6	395.7	544.3	2766.5
1992-93	1039.4	270.5	762.7	358.4	539.1	2970.1
1993-94	1078.9	648.2	746.7	276.5	689.2	3439.4
1994-95	1056.0	752.3	600.8	300.8	828.0	3537.9
1995-96	1190.5	459.4	435.6	386.5	930.1	3402.0
1996-97	1142.5	599.5	352.0	348.7	980.0	3422.7
1997-98	1335.6	492.1	483.0	417.5	1132.9	3861.1
1998-99	1775.6	669.4	523.9	353.1	1199.8	4521.7
1999-00	1822.7	496.8	792.0	471.6	1464.0	5047.1
2000-01	1510.8	430.5	1251.1	427.2	937.0	4556.7
2001-02	1192.9	477.7	1236.4	497.6	924.2	4328.9
2002-03	1226.0	421.4	1045.8	471.5	799.8	3964.5
2003-04	1117.2	374.0	1047.2	613.6	634.6	3786.7
2004-05	1283.5	491.7	1526.9	794.3	735.4	4831.8
2005-06	1530.1	510.3	2146.1	575.1	1005.9	5767.6
2006-07	1981.5	882.1	2161.0	1152.4	334.4	6511.5
2007-08	2373.1	1276.7	1853.0	3617.1	2.4	9122.4
2008-09	3440.7	1591.1	1997.9	2172.6	6.3	9208.6
2009-10	3384.2	1497.0	2027.1	1719.5	34.0	8661.8
2010-11	3170.4	1419.1	1826.5	1982.8	71.5	8470.3
2011-12	4516.2	672.6	1885.0	1412.1	71.6	8557.5
2012-13	3650.0	473.6	1984.1	1465.0	169.2	7741.9
2013-14	3187.8	496.8	1809.8	1284.4	187.1	6966.0
2014-15	2285.7	809.8	1804.7	774.5	235.3	5909.9

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

Year	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
1990-91	449.9	27.9	49.0	127.7	1.9	656.4
1991-92	482.6	48.0	19.8	67.4	0.4	618.2
1992-93	571.3	10.0	107.2	71.7	18.0	778.1
1993-94	612.7	15.3	50.2	80.0	4.7	762.8
1994-95	688.8	39.6	97.0	84.2	12.4	922.1
1995-96	517.7	47.8	195.9	38.6	16.8	816.7
1996-97	567.6	86.3	242.3	71.3	63.1	1030.6
1997-98	488.2	122.3	301.3	93.0	11.4	1016.2
1998-99	442.5	68.9	234.3	83.1	12.7	841.6
1999-00	707.6	183.7	264.4	102.6	116.6	1375.0
2000-01	456.9	101.3	656.3	254.5	195.2	1664.3
2001-02	525.2	57.2	488.9	123.3	29.1	1223.6
2002-03	871.4	95.0	48.3	102.3	37.9	1154.9
2003-04	1351.4	84.5	163.9	174.6	119.9	1894.4
2004-05	1462.3	187.2	187.9	134.3	144.5	2116.3
2005-06	1301.1	160.1	259.9	206.6	153.3	2081.0
2006-07	1654.1	179.1	297.6	202.4	701.3	3034.6
2007-08	1691.6	153.7	936.1	290.5	914.3	3986.1
2008-09	2795.8	92.6	1288.6	432.2	658.2	5267.4
2009-10	2467.8	45.8	797.5	341.2	555.5	4207.9
2010-11	2055.0	396.7	905.4	870.8	684.2	4912.1
2011-12	1875.9	881.9	1366.4	832.0	799.6	5755.8
2012-13	1282.9	995.6	2724.0	874.7	831.6	6708.8
2013-14	1096.2	751.3	2768.6	629.3	901.3	6146.6
2014-15	897.2	594.4	837.0	601.7	789.9	3720.2

Asset growth rates

It is important to understand how specific asset classes are growing over these time periods. When Engineers Australia last assessed Queensland's infrastructure, public sector engineering construction was \$8.5 billion and had already been falling for two years and private sector infrastructure construction was \$4.9 billion. The relative sector shares were 63.3 per cent public and 36.7 per cent private. By 2014-15, public sector infrastructure construction had fallen by 30.2 per cent to \$5.9 billion and private sector infrastructure construction increased to a peak of \$6.7 billion in 2012-13 before experiencing two years of falls to \$3.7 billion in 2014-15. Overall, there was 28.0 per cent less infrastructure construction in 2014-15 than in 2010.

Overall, there was 28.0 per cent less infrastructure construction in 2014-15 than in 2010.

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

Period	Roads	Bridges etc	Electricity & Pipes	Water & Sewerage	Telecommunications	Infrastructure
Private Sector						
1990-91 to 2014-15	6.6	54.5	50.5	17.6	75.3	10.6
2005-06 to 2014-15	-1.8	74.9	36.3	24.6	39.0	9.0
2010-11 to 2014-15	-18.0	171.2	19.1	24.7	8.0	0.5
2014-15	-18.2	-20.9	-69.8	-4.4	-12.4	-39.5
Public Sector						
1990-91 to 2014-15	5.5	12.2	6.5	10.7	32.7	3.8
2005-06 to 2014-15	8.8	12.1	2.6	16.4	74.9	3.1
2010-11 to 2014-15	-4.8	-3.9	-2.1	-12.4	56.6	-7.2
2014-15	-28.3	63.0	-0.3	-39.7	25.8	-15.2
Both Sectors Combined						
1990-91 to 2014-15	5.0	11.8	8.9	10.1	3.4	5.1
2005-06 to 2014-15	4.1	9.6	7.5	16.7	3.2	4.7
2010-11 to 2014-15	-10.0	-0.9	3.1	-5.0	12.3	-4.8
2014-15	-25.7	12.5	-42.3	-28.1	-5.8	-26.6

TABLE 5: SUMMARY OF AVERAGE ANNUAL GROWTH RATES, REMAINING COMPONENTS, ENGINEERING CONSTRUCTION, QUEENSLAND

Period	Infrastructure	Resources & Heavy Industry	Recreation & Other	Total Non-infrastructure	Total Engineering Construction
Private Sector					
1990-91 to 2014-15	10.6	24.6	9.0	20.9	14.9
2005-06 to 2014-15	9.0	29.4	8.6	26.7	20.2
2010-11 to 2014-15	0.5	29.4	14.0	28.1	19.7
2014-15	-39.5	-40.0	32.3	-38.4	-38.6
Public Sector					
1990-91 to 2014-15	3.8	99.6	14.5	21.2	3.9
2005-06 to 2014-15	3.1	99.7	11.9	24.1	3.4
2010-11 to 2014-15	-7.2	32.0	4.0	0.6	-6.9
2014-15	-15.2	-0.9	-6.5	-4.6	-14.6
Both Sectors Combined					
1990-91 to 2014-15	5.1	24.3	8.5	20.0	9.3
2005-06 to 2014-15	4.7	29.7	8.5	26.4	13.4
2010-11 to 2014-15	-4.8	28.8	10.1	26.8	9.8
2014-15	-26.6	-39.8	20.9	-37.9	-34.4

The rate of economic growth has slowed dramatically while the rate of population growth has remained steady.

These results highlight the importance of considering the background economic and population growth shown in Table 1. Annual infrastructure completed peaked two years after the 2010 IRC assessment and has been falling since. Yet the rate of economic growth has slowed dramatically while the rate of population growth has remained steady.

Roads

Road construction is the most important area of Queensland infrastructure development accounting for 39.6 per cent of the State's infrastructure construction. In 1990-91, Queensland completed \$1.4 billion in engineering construction on roads. Until about 2001-02, annual road construction in Queensland grew at a modest pace to \$1.7 billion. From then on, Figure 4 shows that road construction grew with two prominent peaks in 2008-09 and in 2011-12.

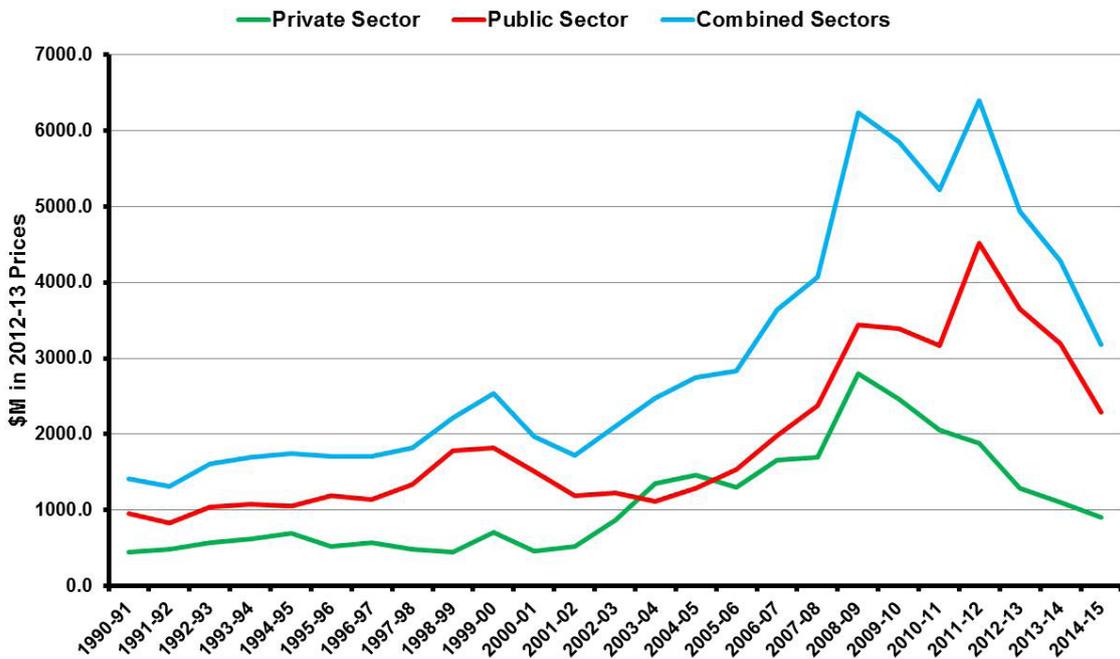
Public sector road construction peaked at \$4.5 billion in 2011-12, the year after the last Queensland IRC. This was 52.8 per cent of public sector infrastructure construction that year. In each year since, public sector road construction has fallen with average annual falls of 4.8 per cent per year with a fall of 28.3 per cent in 2014-15 to \$2.3 billion, just short of the level in 2007-08.

The twin peaks in overall road construction were due to a much earlier construction peak in the private sector that occurred in 2008-09 when the sector's road construction was \$2.8 billion. Since then private sector construction has fallen each year and in 2014-15 was \$0.9 billion.

Since the last IRC in 2010, overall road construction in Queensland has fallen by an average 10.0 per cent per year with a 25.7 per cent fall in work completed in 2014-15. The IRC assessment was that Queensland's roads were less than adequate. The construction record since 2010 and the economic and population growth experienced does not engender confidence.

Road construction has been a federal Government priority since the election in 2013. However, this is not reflected in Queensland figures.

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



Bridges, Railways and Harbours

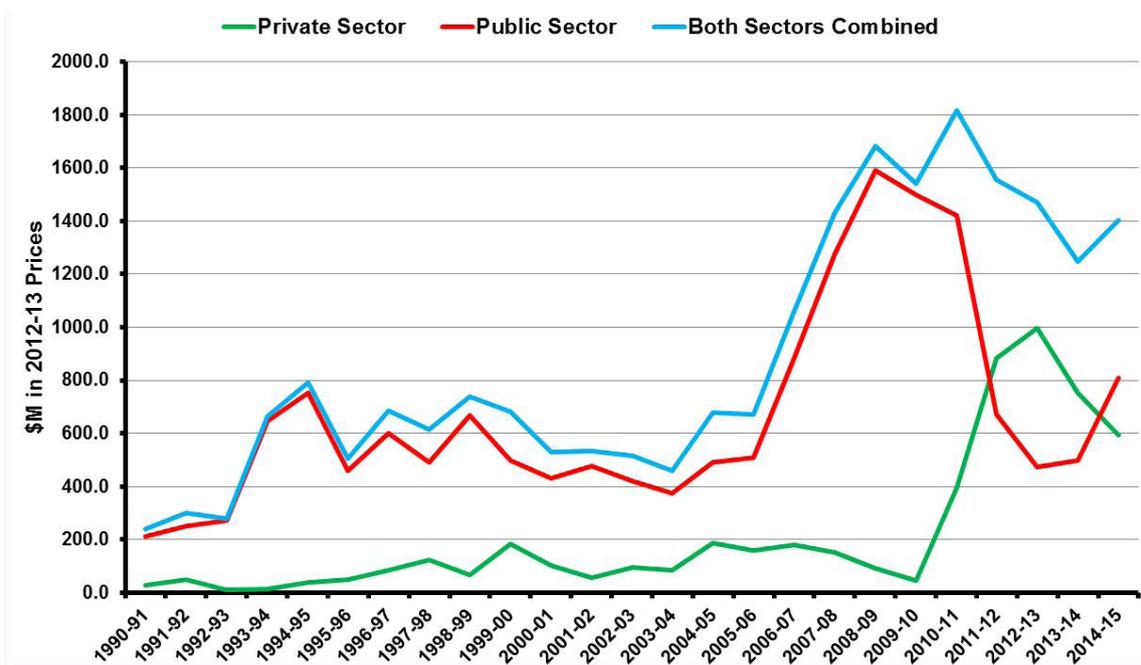
An unfortunate aspect of the ABS Engineering Construction Survey is that state and territory statistics for infrastructure asset classes are not available for individual classes. To avoid encountering standard error problems some asset classes are aggregated. The first of these is bridges, railways and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

In the past two years, construction has recovered to \$0.8 billion in 2014-15.

Figure 5 represents the trends in the following types of engineering infrastructure, expressed 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.

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



In 1990-91, engineering construction completed on bridges, railways and harbours in Queensland was \$241.2 million in constant 2012-13 prices and most was constructed by the public sector. This work accounted for 6.8 per cent of the state's infrastructure that year. As is evident from Figure 5, there was a brief surge in construction in the early 1990s followed by a slow downwards trend until about 2003-04. From the following year construction accelerated rapidly.

Initially the growth surge was due to an increase in public sector construction which increased from \$0.4 billion in 2003-04 to a peak of \$1.6 billion in 2008-09. Construction levels remained fairly high for three years, but then plummeted to \$0.5 billion in 2012-13. In the past two years, construction has recovered to \$0.8 billion in 2014-15.

Construction by the private sector continued to grow fairly slowly long after the upsurge in public sector work. In 2010-11, private sector construction surged strongly reaching a peak of \$1.0 billion in 2012-13, but has since fallen to be \$0.6 billion in 2014-15.

The surge in public sector construction was already on the wane at the time of the last IRC. Assets completed at this time were unlikely to have been assessed in the IRC. Similarly, the recent construction resurgence in construction included extensions to the Brisbane to Gold Coast railway and some resource freight lines. In all likelihood the upsurge in private sector construction was mainly due to the Gold Coast light rail project.

As is evident from Figure 5, there was a brief surge in construction in the early 1990s followed by a slow downwards trend until about 2003-04.

Electricity Generation and Transmission and Pipelines

At the national level, separate engineering construction statistics are available for the electricity and pipeline sectors. At the state level these statistics are aggregated. Electricity statistics include power stations, sub-stations, hydro-electric generating plants and associated work and transmission and distribution lines. In Queensland, the electricity sector remains largely government owned with some private sector developments. The pipelines sector includes oil and gas pipelines, urban gas mains and pipelines used in the manufacturing sector. The majority of these assets occur in the private sector.

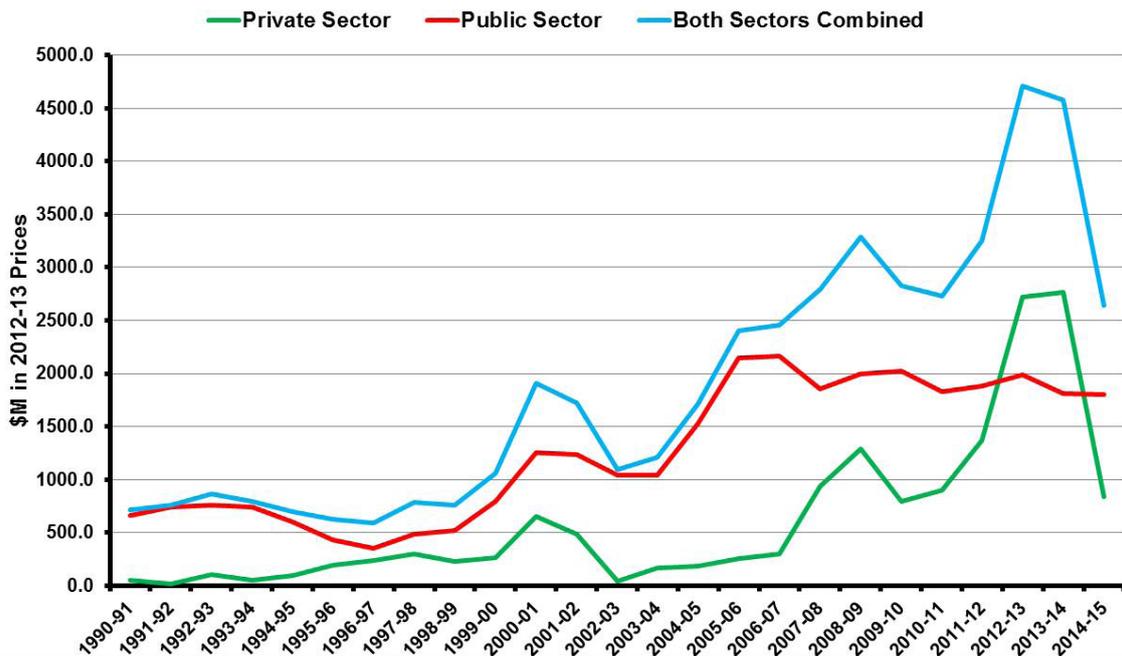
In 1990-91, Queensland engineering construction in the electricity and pipeline sectors was \$0.7 billion and accounted for 20.1 per cent of the State's infrastructure construction. Over 93 per cent was undertaken by the public sector. Figure

6 shows that there was a surge in construction between 1999 and 2003, followed by a brief lull and then a rapid acceleration in construction to a peak of \$4.7 billion in 2012-13. There has since been a rapid fall off in construction levels.

The evidence here is a solid basis for optimism about the status of gas infrastructure.

Public sector construction in this category is most likely confined to the electricity sector. In 1990-91, public sector construction was \$0.7 billion in real terms and trended downwards until 1997-98 when it was \$4.4 billion. From then there

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



was a period of strong growth in construction reaching a peak of \$2.2 billion in 2006-07. In the decade since then annual construction has plateaued with a slow downwards trend in recent years. Much of the electricity construction spike related to upgrading of electricity transmission facilities. Dealing with emissions from fossil fuel plants in light of the Paris agreement has not yet been addressed. Controversy has surrounded this upgrade, not just in Queensland but also in other states with critics complaining of unnecessary “gold plating”, a perverse outcome resulting from very high permissible asset returns allowed by the regulator. Much of the large rise in electricity prices immediately after the spike has been attributed to this event. Queensland electricity assets were assessed as adequate in 2010, and the nature of construction since then and its fall during the past two years back to pre-2010 levels are unconvincing.

Private sector engineering construction in this category is most likely to have been pipeline construction related to the resources sector. Before the millennium, private sector construction was comparatively low with short bursts of higher construction levels. From about 2006 there was a pronounced acceleration in annual construction from \$0.3 billion in 2005-06 to a peak of \$2.8 billion in 2013-14. In 2014-15, construction fell by almost 70 per cent to \$0.8 billion.

In the 2010 IRC, the gas sector was assessed as a little better than average. In the five years since average annual growth in construction has been 19.1 per cent despite the fall in construction last year. The evidence here is a solid basis for optimism about the status of gas infrastructure.

Much of the electricity construction spike related to upgrading of electricity transmission facilities.

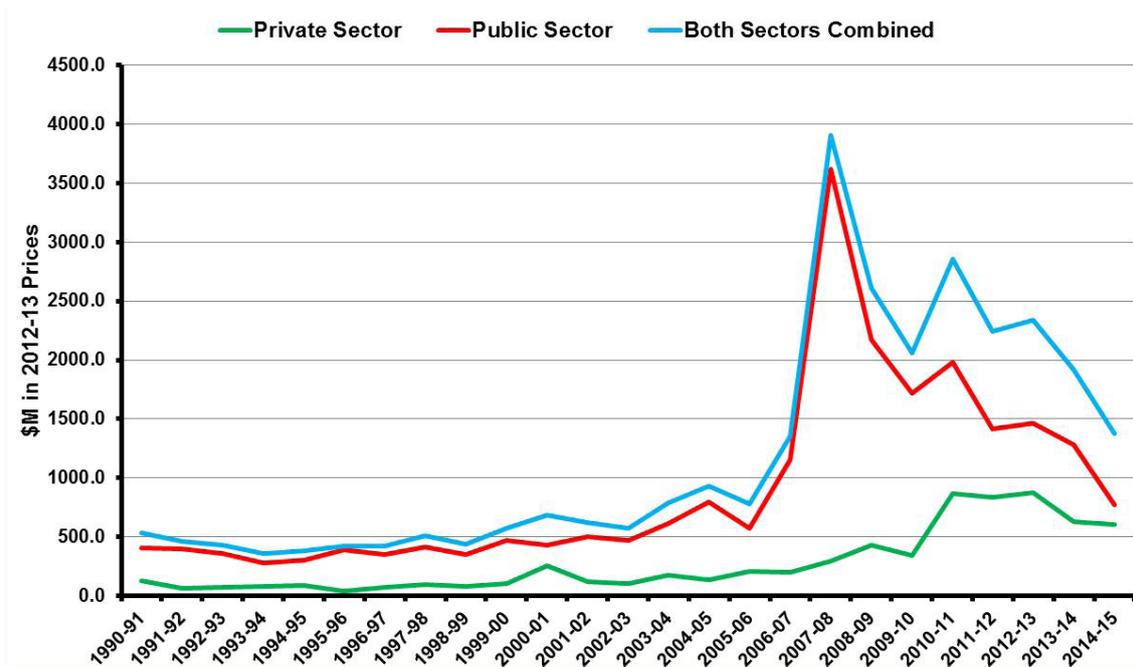
Water and Sewerage

In 1990-91, Queensland engineering construction on water and sewerage was \$530.7 million in real terms and accounted for 14.9 per cent of the state's infrastructure construction. Construction was dominated by the public sector which undertook 75.9 per cent of the work completed. Annual construction on water and sewerage assets remained at about this level through to 2003-04 when a slow upwards trend emerged for four years. In 2006-07 annual construction began to accelerate as Queensland Government plans to construct a water grid was implemented. Construction peaked in 2007-08 at \$3.9 billion of which over 92 per cent was by the public sector.

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 includes dams, weirs and reservoirs, embankments for water diversion, water pipelines, mains and treatment plants, prevention and erosion, aqueducts and water conduits and systems conveying water to residences, commercial and industrial establishments.
- Sewerage and drainage includes sanitary and storm sewers, sewerage treatment plants and storm water drains and drainage systems.

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



These trends show that the dominant influence on the overall construction trend was public sector construction. Since its peak this has fallen in most years so that by 2014-15 public sector construction was back to its 2005-06 level at \$0.8 billion. The entire period since 2010 has been characterised by falling public sector construction averaging 12.4 per cent per year.

Private sector construction on water and sewerage facilities continued slow growth well past the point when public sector construction accelerated. Between 2009-10 and 2010-11 there was a sudden increase in private sector construction which plateau for the next three years. In the past two years private sector construction has fallen and in 2014-15 was \$0.6 billion.

The 2010 IRC assessed the Queensland water sector as better than adequate overall. This assessment took account of the large surge in construction shown in Figure 7. Since 2010 overall construction of water and sewerage facilities has contracted by an average 5.0 per cent per years with a fall of 28.1 per cent in 2014-15. Future assessments need to balance this contraction against pressures from a growing population and climate change.

The entire period since 2010 has been characterised by falling public sector construction.

Telecommunications

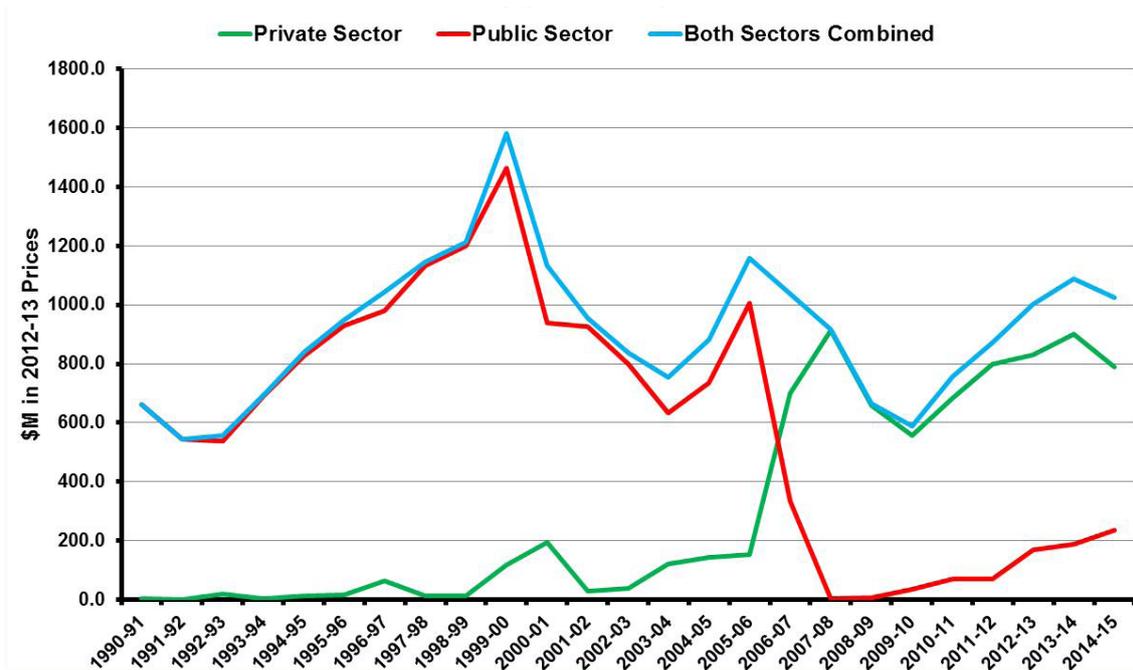
During the early years covered by this review, telecommunications facilities were predominantly in public ownership. Commonwealth telecommunications agencies began a process of merger and corporatisation in 1989 and in 1995 the name “Telstra” was adopted for Australian domestic business. Privatisation began in 1997 and 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 and this is clearly evident in Figure 8.

In some respect the trends in Figure 8 are deceptive, giving the impression of wide swings. While there are a number of sizable variations what took place in the middle of last decade was a switch between public and private ownership. Overall there has been a consistently high level of engineering construction in this area.

In 1990-91, it was \$0.7 billion in real terms and accounted for 18.6 per cent of the state’s infrastructure construction that year. In several years engineering construction exceeded \$1 billion and reached as high as \$1.6 billion in 1999-00, but despite the decision to construct the National Broadband Network (NBN) there is no obvious clear cut trend in construction over time.

Telecommunications construction in Queensland fell in the years leading up to the 2010 IRC when Engineers Australia assessed the status of infrastructure to be better than average. Since 2010 annual construction levels have increased but despite the controversy surrounding the cost of the NBN, there is no discernible difference between recent construction levels and those in the past. Any realistic reassessment of telecommunications depends on substantial completion of the NBN and this is still some time away.

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



Infrastructure overview

In 2005, Engineers Australia assessed Queensland infrastructure as slightly better than adequate but in need of major changes. The public sector response was cumulative infrastructure construction completed of \$39.3 billion between 2005-06 and 2009-10. The corresponding private sector infrastructure build is more difficult to evaluate because a large proportion of it was built in support of specific resources projects and accessibility to that infrastructure by business and the community in general is limited. Resources infrastructure enhances the productivity of the resources sector and makes a valuable contribution to the Queensland economy through this channel. In contrast, public sector infrastructure is widely accessible to business and the community and it is this wider accessibility that enables public sector infrastructure to play such a critical role in enhancing productivity and economic growth.

The Queensland cumulative public sector infrastructure completed in the five years leading to the 2010 IRC, was a large increase over historical levels and was the type of response the 2005 IRC was looking for. However, at the same time the state's population increased by 12.4 per cent and its economy grew by 8.6 per cent, both factors increasing demand pressure on infrastructure services. These pressures were reflected in an unchanged 2010 IRC assessment: slightly better than adequate, but still in need of major changes.

Long term economic and population growth in Queensland have been above the national average. Both growth rates have slowed nationally and in the state since 2010. In the case of population, despite the slowdown Queensland's population is still growing faster than the national population. However, economic growth in Queensland has slowed substantially. In 2014-15, the Queensland economy grew by just 0.5 per cent in real terms compared to 2.5 per cent for Australia. None-the-less, over the five years since the 2010 IRC, the state's population is 8.6 per cent larger and its economy is 12.6 per cent larger in real terms.

Public sector infrastructure completed between 2010-11 and 2014-15 was cumulative \$37.6 billion. To this we need to add the private sector's contribution but with the caveat discussed above. More importantly, annual public sector infrastructure completions peaked in 2008-09 and have fallen each year since. Completions in 2014-15 were down 35.8 per cent from the peak and the rate of decline has been accelerating. Private sector infrastructure completions peaked later, in 2012-13, but the subsequent fall has been particularly rapid reflecting the connection to the end of the resources boom.

These trends are not compatible with improved infrastructure in Queensland since 2010. The resources boom in Queensland brought with it many benefits with spill overs throughout the state. However, when contemplating future infrastructure development, infrastructure authorities should consider the juxtaposition of this focus with the fall in real state gross product per person in Queensland in 2014-15.

These trends are not compatible with improved infrastructure in Queensland since 2010.

Non-infrastructure elements of engineering construction

For completeness this section considers what has happened in elements of engineering construction that fall outside our definition of infrastructure. As mentioned earlier, it is debatable whether recreational facilities should be included in infrastructure or not. Whatever one's view about its inclusion construction in this area is important and warrants separate consideration. In Queensland the resources boom has had extraordinary impact and

has at times dwarfed other elements of engineering construction. In addition the infrastructure necessary to support resources projects has had considerable impact on private sector infrastructure outcomes. Tables 6 and 7 set out annual statistics for these elements of engineering construction in a form compatible with earlier Tables and allow ready comparison to infrastructure construction.

TABLE 6: NON-INFRASTRUCTURE ELEMENTS OF PUBLIC ENGINEERING CONSTRUCTION, QUEENSLAND 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	2899.6	30.8	55.6	86.4	2986.1
1991-92	2766.5	29.1	118.1	147.2	2913.7
1992-93	2970.1	55.9	70.8	126.8	3096.9
1993-94	3439.4	81.8	53.8	135.5	3574.9
1994-95	3537.9	47.2	57.1	104.3	3642.3
1995-96	3402.0	13.9	52.1	65.9	3468.0
1996-97	3422.7	112.4	73.8	186.2	3608.9
1997-98	3861.1	86.9	66.8	153.7	4014.8
1998-99	4521.7	1.5	77.7	79.3	4601.0
1999-00	5047.1	3.6	192.5	196.2	5243.3
2000-01	4556.7	18.4	106.3	124.8	4681.5
2001-02	4328.9	17.1	139.3	156.4	4485.3
2002-03	3964.5	36.8	211.8	248.6	4213.2
2003-04	3786.7	10.5	194.7	205.2	3991.9
2004-05	4831.8	31.8	112.4	144.2	4975.9
2005-06	5767.6	297.5	147.9	445.4	6213.0
2006-07	6511.5	477.4	165.6	643.1	7154.5
2007-08	9122.4	177.3	144.2	321.4	9443.8
2008-09	9208.6	242.1	246.9	489.0	9697.6
2009-10	8661.8	163.4	238.9	402.3	9064.1
2010-11	8470.3	56.2	379.9	436.1	8906.4
2011-12	8557.5	27.0	305.6	332.6	8890.1
2012-13	7741.9	80.0	281.3	361.3	8103.2
2013-14	6966.0	145.9	267.1	413.0	7379.0
2014-15	5909.9	144.5	249.7	394.2	6304.2

RESOURCES AND HEAVY INDUSTRY

Consider the resources and heavy industry sectors first. From the Tables and Figure 9 we observe that almost all the engineering construction in these sectors is by the private sector. In 1990-91, private sector construction was \$435.9 million and public sector construction was \$30.8 million. The combined sector total was already 36.0 per cent of the state's engineering construction.

To about 2004-05 engineering construction grew by an average annual 20.5 per cent to \$2.0 billion. From 2005-06 construction accelerated in an extraordinary way. In the five years to 2009-10, annual growth averaged 30.6 per cent per year even though this period covered the GFC. In the subsequent four years to the peak in 2013-14, the average annual increase in construction was 45.9 per cent with \$28.3 billion in construction

TABLE 7: NON-INFRASTRUCTURE ELEMENTS OF PRIVATE ENGINEERING CONSTRUCTION, QUEENSLAND 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	656.4	435.9	205.1	641.0	1297.4
1991-92	618.2	396.3	121.6	517.8	1136.0
1992-93	778.1	360.6	133.2	493.7	1271.9
1993-94	762.8	410.6	144.4	555.0	1317.8
1994-95	922.1	459.0	166.7	625.7	1547.8
1995-96	816.7	663.3	183.2	846.5	1663.3
1996-97	1030.6	1099.7	304.6	1404.2	2434.8
1997-98	1016.2	1127.6	269.8	1397.4	2413.7
1998-99	841.6	1877.9	242.9	2120.7	2962.4
1999-00	1375.0	1448.0	286.1	1734.1	3109.0
2000-01	1664.3	656.5	352.9	1009.4	2673.7
2001-02	1223.6	977.3	398.2	1375.5	2599.1
2002-03	1154.9	2405.2	494.4	2899.7	4054.6
2003-04	1894.4	1573.2	481.1	2054.3	3948.7
2004-05	2116.3	1989.5	520.9	2510.3	4626.6
2005-06	2081.0	3306.4	719.0	4025.4	6106.4
2006-07	3034.6	4116.0	527.3	4643.3	7677.9
2007-08	3986.1	4279.3	425.0	4704.2	8690.3
2008-09	5267.4	6023.2	590.5	6613.7	11881.1
2009-10	4207.9	6711.1	501.0	7212.1	11420.0
2010-11	4912.1	10558.8	608.2	11167.0	16079.2
2011-12	5755.8	20738.5	745.9	21484.3	27240.1
2012-13	6708.8	25243.2	516.1	25759.4	32468.1
2013-14	6146.6	28163.4	641.8	28805.2	34951.8
2014-15	3720.2	16903.5	848.7	17752.2	21472.4

completed. This was 47 per cent of national engineering construction in the resources and heavy industry sectors and well over twice as much as Queensland’s infrastructure construction the same year, even including the infrastructure built specifically to support resources projects.

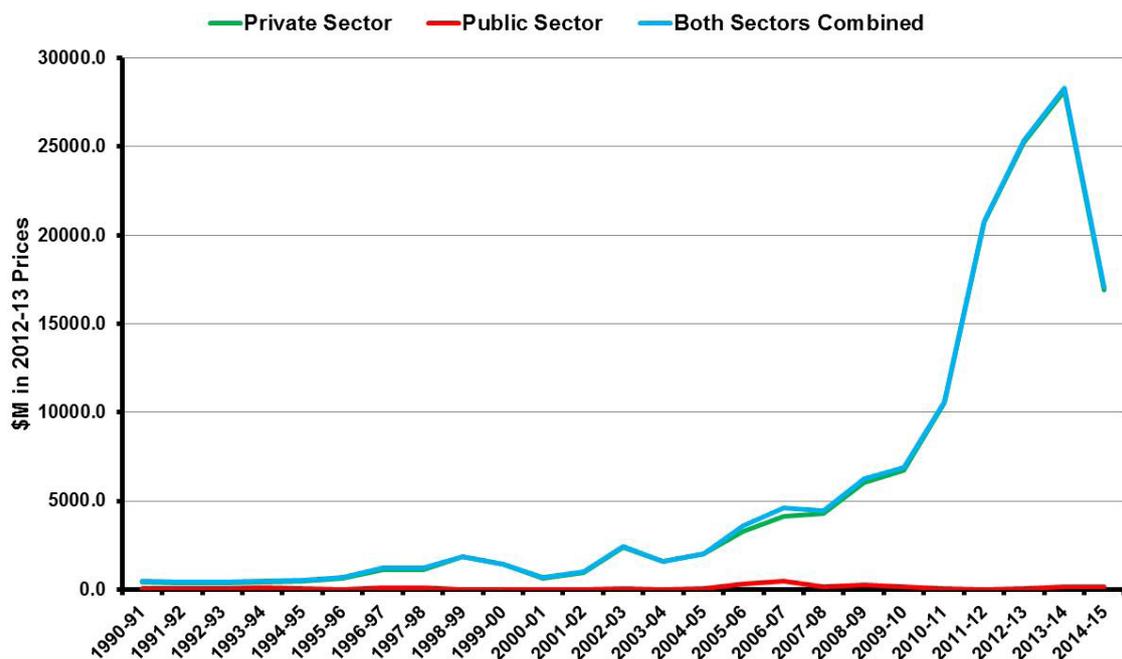
In 2014-15, Queensland engineering construction in the resources and heavy industry sectors fell by 39.8 per cent to \$17.0 billion and, despite this fall, the construction completed was still twice as high as the state’s infrastructure construction. The sudden end to the resources construction boom in Queensland is expected to continue. Pipeline statistics discussed further below show that construction underway but not yet finished in the sector has also fallen abruptly over the past few years. In 2014-15, unfinished construction was still \$48.9 billion representing about 2.87 years of work at the present rate of completion. But there is a serious risk that some projects may not be

completed because of low commodity prices. The impression that the boom is over is also evident in new project commencements which were \$2.7 billion representing 0.16 years of work at the present rate of completions.

RECREATION AND OTHER

Both the public and private sectors are involved in engineering construction of recreational facilities and both sectors have some construction that does not readily fall into other categories. The construction involved is significant in normal circumstances but appears deceptively small given the state’s recent experience. In 1990-91 it was \$466.7 million or 10.9 per cent of engineering construction, but by 2014-15 it had grown to \$1.1 billion but its share of construction fell to 4.0 per cent due to the extraordinary expansion in resources. Figure 10 illustrates the trends over the past 25 years.

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

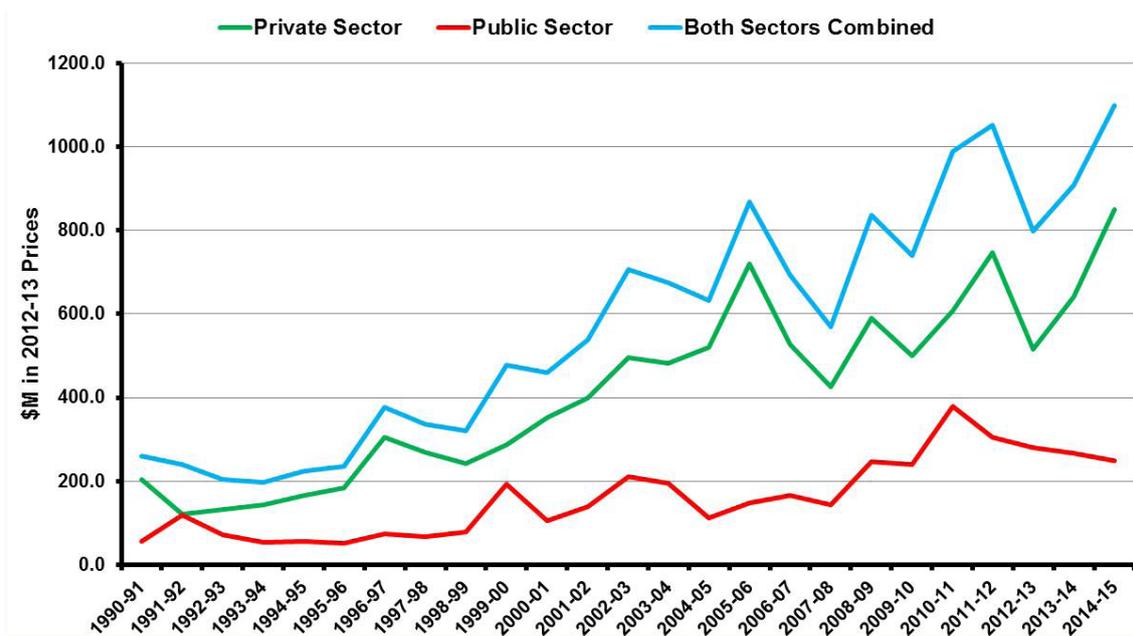


Public sector engineering construction on recreation and other was \$55.6 million in 1990-91, about 1.9 per cent of public sector engineering construction. Long term growth averaged 14.5 per cent with increases in most years and peaking in 2010-11 at \$3799 million. Construction levels have fallen each year since and in 2014-15 had fallen to \$249.7 million, 4.0 per cent of public sector construction.

In 1990-91, private sector engineering construction was considerably higher than in the public sector with an outcome of \$205.1 million or 15.8 per cent of the sector's engineering construction. Long term growth averaged 14.5 per cent per year and progress had see-saw rather than regular increases. Unlike many other areas of construction growth has continued and in 2014-15 resulted in an outcome of \$848.7 million, a credible 4.0 per cent of the sectors construction given the extraordinary figures recorded for resources and heavy industry.

The sudden end to the resources construction boom in Queensland is expected to continue.

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



Looking forward

While this review of infrastructure and engineering construction may paint a fairly pessimistic picture, it is just part of the story. This is largely because the statistics examined measure infrastructure and engineering construction work completed each year, without considering projects that are ongoing. Infrastructure projects by their very nature have long gestation periods.

It's simply not feasible to delve into project gestation, but there are statistics that tell us how much uncompleted work is still in the construction system, as well as statistics on new work in progress. This reduces the knowledge gap to stages of project development prior to the actual commencement of work.

The underlying assumption is that once started projects proceed through to completion. While this may not always be the case—some projects are moth-balled before completion—there is no way to identify this effect other than to note that uncompleted work will not register in completion statistics.

The future of infrastructure and engineering construction completed depends on how much uncompleted work there is in the system and on how much work is just starting up.

We use the benchmark of the amount of work completed in the last year to gauge how much uncompleted work there is in the system and how much work has commenced. At an aggregate level the trends involved are shown in Figure 11. The blue line is infrastructure completed in Queensland by the public and private sectors combined. It repeats the information in Figure 1 and is what the preceding discussion was about. Consistent with that discussion, completions of infrastructure has fallen for the past two years.

The red line in Figure 11 is infrastructure construction underway that has not been completed. This may include cost variations during construction. At 30 June 2015, there was \$15.1 billion of uncompleted infrastructure in construction in Queensland representing 1.57 years of work at the present rate of completions.

The green line in Figure 11 is the trend for new infrastructure commencements. Queensland infrastructure commencements have been falling since 2006-07 except for a single year of increase in 2008-09. In 2014-15, infrastructure commencements were \$7.4 billion representing 0.76 years of work at the present rate of completions. Combining construction yet to complete and commencements, there is about 2.33 years of work in the system at the present rate of completions.

In the public sector, infrastructure construction has been in decline since 2007-08.

Figure 12 shows that in the public sector, infrastructure construction has been in decline since 2007-08. Last year there was \$11.1 billion in infrastructure construction yet to be completed representing 1.87 years of work at the present rate of public sector completion. New commencements were \$4.7 billion representing 0.80 years of work. Combining the two suggests there is 2.67 years of construction in the system at the present rate of completion.

Figure 13 shows that private sector infrastructure continued at high levels for several years after the fall in public sector construction began. There was \$4.0 billion in uncompleted construction in the system representing 1.08 years of work at the present rate of private sector completions. Like the public sector, new commencements were low at \$2.6 billion and represented 0.70 years of work at the present rate of completions. Combined, the suggestion is there is about 1.78 years of work at the present rate of sector completions.

FIGURE 12: THE INFRASTRUCTURE PIPELINE IN QUEENSLAND, PUBLIC AND PRIVATE SECTORS COMBINED

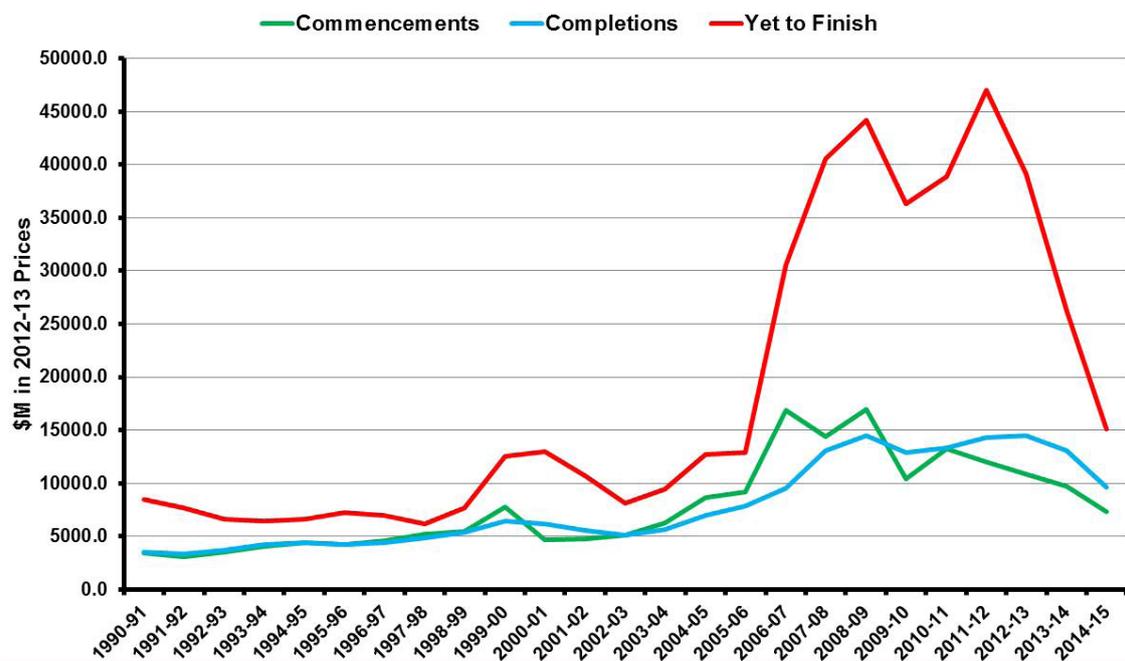
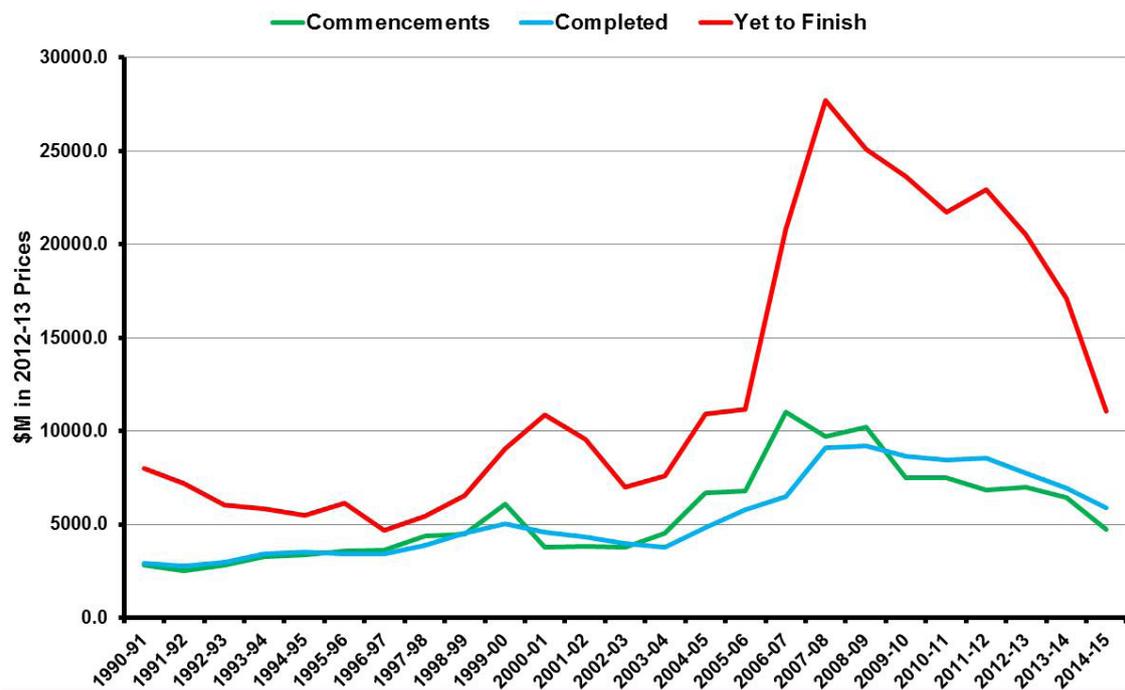


FIGURE 12: THE PUBLIC SECTOR INFRASTRUCTURE PIPELINE, QUEENSLAND



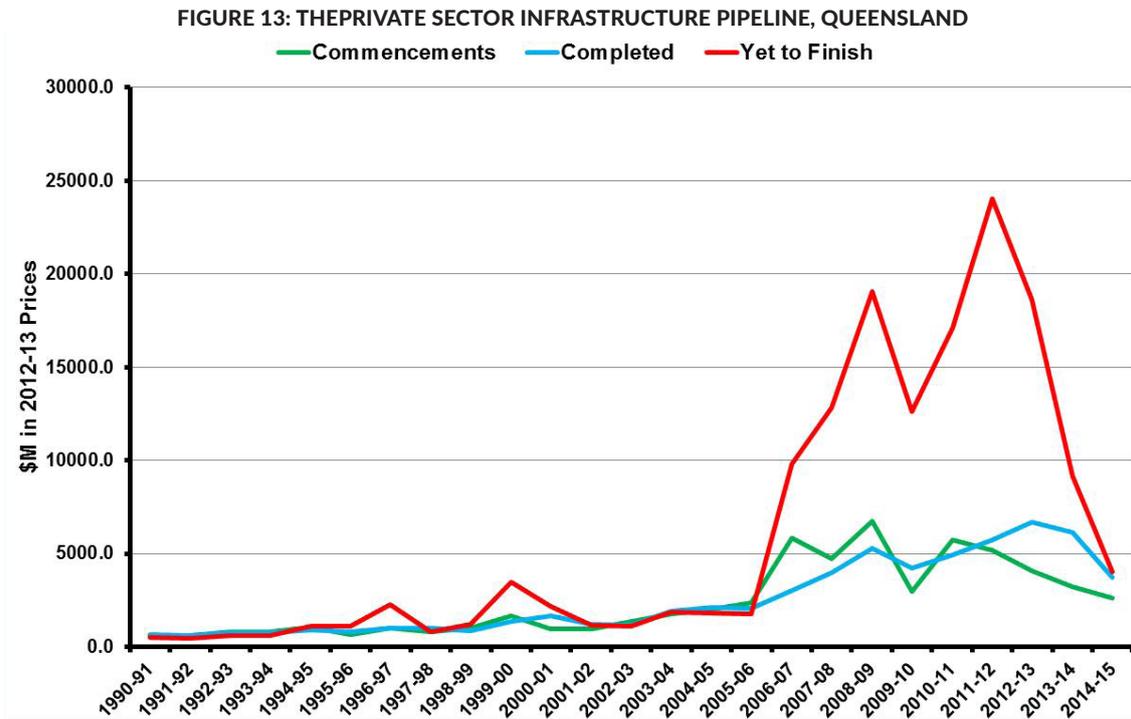


TABLE 8: OVERVIEW OF LAST YEAR CHANGES, INFRASTRUCTURE PIPELINE, QUEENSLAND

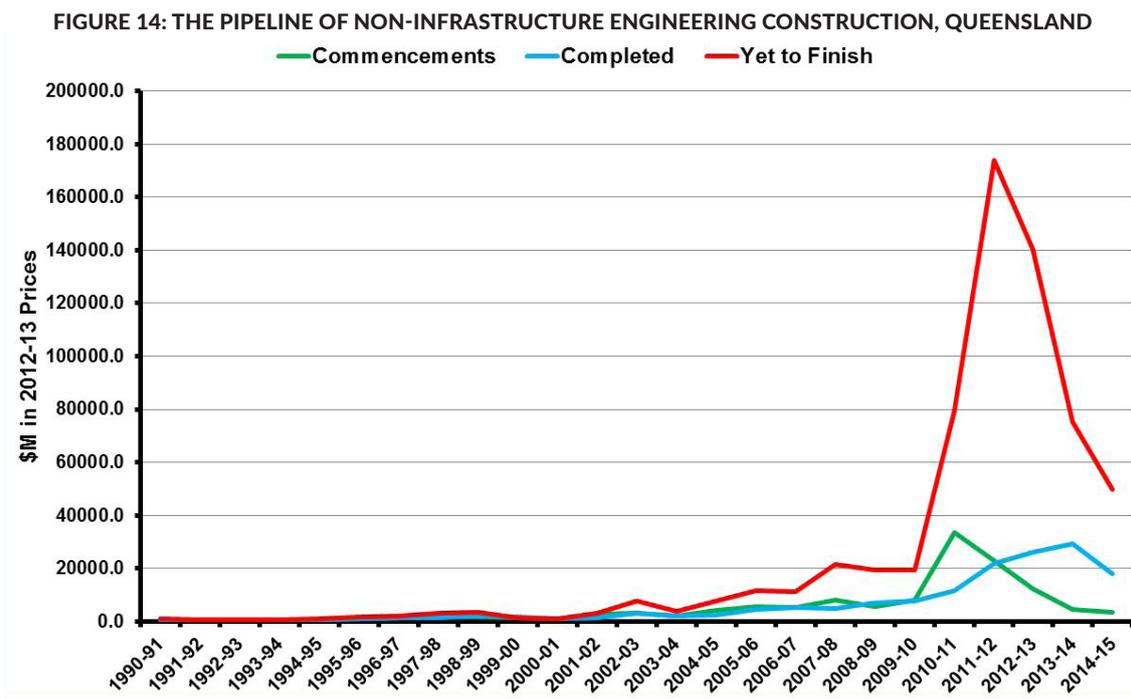
Asset Class	Commencements	Completions	Yet to Finish
Roads	↓	↓	↓
Bridges etc	↓	↑	↓
Electricity etc	↓	↓	↓
Water and Sewerage	↓	↓	↓
Telecommunications	↑	↓	↓
Infrastructure	↓	↓	↓

The direction of change for the components of infrastructure are summarised in Table 8. As mentioned earlier, construction completions increased in only one infrastructure component. For construction yet to finish, there were no components where increases were recorded. In respect to new commencements, the only increase recorded was in telecommunications which represented just 8.5 per cent of infrastructure completed in 2014-15.

Finally, Figure 14 shows the trends in non-infrastructure components of engineering construction, mainly the resource and heavy industry sectors

and recreation. These trends show how the resources boom has rapidly come to an end in Queensland. Completions fell sharply last year, having been buoyed for several years by high levels of uncompleted construction work in the system. However, as the diagram shows, the amount of uncompleted work has rapidly fallen but, at the end of 2014-15, there was still 2.75 years of construction outstanding at the present rate of completion. This work is not being replaced by new commencements which have been falling for four years and last year almost dried up with just 0.2 years of construction at the present rate of completions.

Private sector infrastructure continued at high levels for several years after the fall in public sector construction began.



Conclusion

The infrastructure situation in Queensland looks troubled. All three elements of the infrastructure pipeline, construction completed, new work commenced and unfinished construction in the system, are in decline. While there is some uncompleted work in the system, this is rapidly being completed. Very soon, future construction will depend on commencements which have been falling for four years. Even if there are projects currently in the planning/design stages it will take some time for construction work on them to make any difference to observed trends. In the meantime infrastructure pressures persist and economic decline continues. This analysis suggests that Queensland's 'adequate' rating for infrastructure in 2010 must be at serious risk.

The infrastructure situation in Queensland is not helped by the rapid end of the resources construction boom. Here there is also a serious risk associated with the fall in Australia's commodity prices changing the economics of many resources projects. Most projects were based on commodity prices considerably higher than currently prevailing. The consensus is that some prices have further to fall and most prices are unlikely to increase much in the foreseeable future. The consequence is that if low prices persist for any length of time some projects may not be completed.

The infrastructure situation in Queensland is not helped by the rapid end of the resources construction boom.



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