



Engineering Construction in Australia

2009/10 – 2023/24

“Australia’s civil construction market continues to expand in 2009/10 despite the impact of the global financial crisis, thanks to new public infrastructure spending and resilience in mining and heavy industry activity. While some softening in total activity is expected, the medium to long term prospects are more robust, led by another round of energy and minerals-related investment, major public investment in rail and telecommunications and, eventually, a normalisation in private infrastructure financing. Growth will be constrained, however, as capacity issues quickly re-emerge.”



INFRASTRUCTURE AND MINING

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1. INTRODUCTION

1.1 Outline of the report

This is BIS Shrapnel's eighteenth major forecasting report on the engineering construction sector in Australia. Our first study, titled *Civil Engineering Construction in Australia: 1985 to 1989*, provided the most comprehensive analysis of the sector ever attempted in Australia. Importantly, the 1985 study established an unparalleled database of engineering construction activity stretching back to the early 1970's, which we continue to maintain. The database is unique in that it covers work done by the public sector's own labour force, which has historically accounted for around half of all engineering construction undertaken in Australia. Prior to 1986/87, this information was not collected by the Australian Bureau of Statistics.

This database now contains 36 years of historical data (back to 1973/74). In this report, forecasts are presented annually for five years (to 2013/14) and for a further ten years in the form of two five year averages (2014/15–2018/19 and 2019/20–2023/24). Data and forecasts are presented on a state-by-state basis for all sectors of the industry. The sectors are:

- roads, highways and subdivisions (including airport runways),
- bridges,
- railways,
- harbours,
- water storage and supply,
- sewerage and drainage,
- electricity generation, transmission and supply,
- pipelines,
- recreation,
- telecommunications,
- mining and heavy industry, and
- other

The state and sectoral breakdowns are further disaggregated into ownership (private and public) and by sector performing the work (private contract or by public sector day labour).

In this report, all data and forecasts are in **constant 2007/08 prices**. Measurement in constant prices, or *real* terms, allows us to ascertain trends in the **volume** of work done, rather than just measuring the value (current prices). Note that implicit price deflators are found in Appendix B.

In addition to this main report, we produce two other reports, which look in greater detail at two important sub-sectors. ***Mining and Heavy Industry Construction Supplement, 2009/10 to 2023/24*** provides a further breakdown of the 'mining and heavy industry' category into five sub-categories:

- oil, gas and other hydrocarbons,
- bauxite, alumina and aluminium,

- coal and coal handling,
- other minerals, and
- other heavy industry

Road Construction in Australia 2009 to 2024, contains a breakdown of the roads, highways and subdivisions sector, which is unique to us. We have put together an historical data series starting in 1973/74, plus detailed forecasts covering:

- rural highways and arterials (incorporating the former National Highways System),
- urban highways and arterials,
- private toll roads,
- local government roads,
- private subdivision roads, and
- Airport runways and private access roads.

Our unique long time series of data has allowed us to develop a thorough understanding of the underlying influences on each sector, including both short-term cyclical effects and longer-term trends. This understanding helps in answering the crucial questions:

- What is happening in the engineering construction sector now?
- Why is it happening?
- What are the fundamental drivers of engineering construction activity?
- Based on the outlook for these drivers, what are the prospects for each sector?
- What developments might influence these prospects?

The forecasts in this report are the result of extensive analysis and research into each sector of engineering construction. This research includes surveying major government departments, public sector authorities and private sector organisations to ascertain trends in investment, priorities and the possible impact of expenditure constraints. We also consult various published project lists and maintain our own database of projects.

Our initial analysis, based on identifying individual projects and programs, is reviewed and revised in accordance with our understanding of the macroeconomic environment, the workings of the investment cycle and likely developments in public finances. Our forecasts are the result of this combination of '**bottom-up**' analysis (examining project lists and investment plans of organisations) and '**top-down**' analysis (considering the broad underlying drivers of construction in each sector).

The **first section** of this report (Chapters 1 to 3) provides a broad overview of engineering construction and how it is measured (Chapter 1), followed by a discussion of the anatomy of the construction investment cycle, identifying those factors which influence both public sector and private sector investment in engineering construction (Chapter 2). Chapter 3 explicitly details the macroeconomic environment on which the engineering construction forecasts are based.

The **second section** (Chapters 4 to 11) details the prospects by state, at the sectoral and ownership levels. Given that many subscribers' operations are organised along state lines, the state sections are designed to be 'stand-alone' documents, with their own project lists provided.

The **third section** (Chapter 12) provides detailed tables of historical and forecasts for each of the 12 engineering construction sectors by state. Each sector has three tables: one each for privately and publicly funded activity and one for total activity.

1.2 Structure of the engineering construction sector

Engineering construction activity in Australia was historically predominantly funded by the public sector. However, a strong, consistent increase in the private sector funded share since the mid-1990s, and especially in the last six years, has seen work funded by the private sector surpass work funded by the public sector since 2002/03. This has been accelerated by the effective privatisation of Telstra (affecting data from 2006/07). While the global economic downturn has seen a peaking of private sector funded work, we still see private funded work well exceeding its public sector counterpart for the foreseeable future.

In 2008/09, work done for the public sector (by its own labour force or on a private contract basis) accounted for 37% of the value of engineering construction work done. Private sector expenditure contributed the other 63%. The proportion funded by the private sector has risen steadily since the early 1990s, but has surged since 2000/01 (when it was just 37%).

It should be noted that the largest segment of private sector activity is *mining and heavy industry* (which includes mines, oil platforms, minerals processing facilities and other heavy industrial facilities). When mining and heavy industry is excluded, leaving the 'infrastructure' categories, work funded by the public sector accounts for 55% of work, and private sector funded work 45%.

In terms of who performs the work, the split is widening in favour of outsourced work versus 'in-house' labour forces. For many years, this has been driven by the strong growth in work funded by the private sector, rather than by increased outsourcing in the public sector. However, in 2008/09, very strong growth in public sector financed work drove a relatively larger increase in outsourcing, with the public sector (for the first time) contracting out more than half (53%) of the work it funded. Total work done by the private sector was valued at nearly \$63 billion in 2008/09 (in current prices), 82% of the total value of engineering construction.

**Table 1.1: Structure of the Engineering Construction Sector
2008/09, Current Prices**

	For the Public Sector		For the Private Sector		Total	
	\$m	% of Total EC	\$m	% of Total EC	\$m	% of Total EC
Work performed by:						
Private Contract	14361	19	48316	63	62677	82
Own Labour Force	13357	18	-	-	13357	18
Total	27718	37	48316	63	76034	100

Note: in this report we do not separate work done by private sector own labour forces from private contract work. We present this data simply in terms of work done by the private sector

BIS Shrapnel obtains from the Australian Bureau of Statistics (ABS) data which divides engineering construction into 12 categories. For 'Mining and Heavy Industry', we also obtain more detailed data for 5 sub-segments. See our report ***Mining and Heavy Industry Construction Supplement, 2009/10 to 2023/24*** for more information on mining and minerals processing sub-sectors.

The largest expenditure category is **Mining and Heavy Industry**, which accounted for 34% of the total value of engineering construction work done in 2008/09. **Roads, Highways and Subdivisions** contributed 21% of total engineering construction. **Electricity Generation, Transmission and Supply** is the next largest category, accounting for 15% of activity. The proportion of work done in the **Water Storage and Supply** segment fell slightly to 6% of all work done in 2008/09, but remains well above the 3% on average in the preceding decade. **Telecommunications** has been a major segment for many years and accounted for 5% of engineering construction in 2008/09, down slightly on its share in previous years. **Railways** activity also accounted for around 5% of all engineering construction in 2008/09.

With the effective privatisation of Telstra (and hence nearly the entire remaining public **Telecommunications** segment) in 2006/07, the share of publicly funded work spent on roads and other segments has risen dramatically. The largest proportion of public expenditure is **Roads, Highways and Subdivisions** (36%), followed by **Electricity** (23%), and **Water Storage and Supply** (14%).

Private sector funded work is concentrated in the **Mining and Heavy Industry** category with work done valued at \$25.2 billion in 2008/09 (in constant 2007/08 prices) representing 53% of total private sector expenditure. **Roads, Highways and Subdivision** was worth \$6.1 billion in 2008/09, representing 13% of total private expenditure. **Telecommunications** represented 8% of all privately funded activity, while **Electricity** (11%) is also a major determinant of private sector work levels, following complete privatisation in Victoria and South Australia and increasing private investment in new power stations in many states.

1.3 Notes on the data, tables and charts

Data sources

The categories and sectors used in the database for this report are based on those classifications used in the ABS publication, "Engineering Construction Activity, Australia" (ECA), catalogue No. 8762.0. Data for the period 1986/87 onwards come from this publication. Note however that from the June Quarter 2002 onwards, the ABS only provides limited sectoral information in this publication. This decision is due to concerns about the high level of statistical sampling errors in previously published detailed data. BIS Shrapnel continues to receive the full sectoral breakdowns however, under special terms and we do our best to ensure that the data we provide to our clients in this publication is as accurate as possible.

For the years prior to 1986/87, a comprehensive data set is not available from the ABS. We have used the ABS publication "Construction (other than Building) Activity, Australia (COTB), catalogue No. 8761.0, to derive data for private sector work, and work done by contract for the public sector. There is no ABS data for this period covering work done by the public sector's own workforce (public day labour). BIS Shrapnel has compiled its own database on total public sector engineering construction expenditure from Commonwealth and State Government Budget Papers, annual reports of public authorities and from other ABS publications, including "Standardised Local Government Finance Statistics", catalogue No. 1212.0. Work done by public day labour was then derived by subtracting work done by private contract for the public sector from the total public sector work done data compiled by BIS Shrapnel.

The coverage of the ECA publication differs significantly from the old COTB publication:

- The most obvious difference is that the ECA includes construction undertaken by public sector day labour
- The COTB only included prime contracts performed by the private sector valued at \$100,000 or over, while the ECA includes contracts of below \$100,000
- Speculative and own account work undertaken by the private sector (i.e. work done 'in-house' by private sector companies, including mining companies) is included in the ECA, but was not in the COTB

As the COTB did not include private sector 'in-house' work or contracts under \$100,000, the COTB underestimated the work done by the private sector for the private sector between 1973/74 and 1985/86. Accordingly, we have scaled up 'private sector' data in these years, based on ABS data in its "Construction Activity at Constant Prices, Australia", catalogue number. 8782.0. This makes all historical data consistent with the more recent ECA data.

Table 1.2: Footnotes for Specific Sectors

<i>Private Sector</i>	Note that <i>in house</i> work undertaken by the private sector is included under the heading <i>Private Contract For Private Sector</i> in the tables.
<i>Bridges</i>	Prior to 1986/87, work done on bridges by public sector day labour (affecting Total Public Sector and Total Engineering Construction) is not available. It is instead included in <i>Roads, highways and subdivisions</i> or <i>Railways</i> .
<i>Sewerage and Drainage</i>	For the years 1973/74 and 1974/75, work performed by private contract on "sewer systems" is included in <i>Water Storage and Supply</i> .
<i>Recreation</i>	This category did not exist as a separate sector prior to 1986/87. Before 1986/87, most recreation engineering construction was in the "Other" sector.
<i>Other</i>	Prior to 1986/87, this sector included most of the categories of construction now found in <i>Recreation</i> (stadiums, playing fields, landscaping, etc), plus canals (now found in <i>Harbours</i> or <i>Water Storage & Supply</i>), water treatment plants (<i>Water Storage and Supply</i>), sewerage treatment plants (<i>Sewerage and Drainage</i>), and road traffic control systems, traffic lights and tunnels (<i>Roads, Highways and Subdivisions</i>).

1.4 The forecasting methodology

Our forecasts derive from the combination of 'bottom-up' and 'top-down' approaches.

The bottom-up method involves analysing the capital programs of government departments and public authorities and private sector investment plans project-by-project, sector-by-sector. To this end we conduct an extensive survey of public authorities, government departments and private companies, and examine published project listings, monitor reported project information and maintain our own database of projects. From this process, we derive forecasts which are essentially **aggregations** (which also include an allowance for the volume of minor projects).

One disadvantage here is that it can never be concluded with certainty when a large project will start. Also, we do not have a complete list of projects which will possibly go ahead in the next five years. To help subscribers, we have included our assumptions of the commencement date, construction period and total capital value (which includes equipment and building construction costs) of many of the **major** projects. Another area of uncertainty is the proportion of the total

value of a project which should be attributed to engineering construction. Our assumptions are based on a historical analysis of capital expenditures within different sectors.

To counter these above problems we have tempered our forecasts with a 'top-down' approach, so that they are consistent both with historical levels of investment and with our assumptions of the economic environment, public capital expenditure cycle and private investment cycle.

**Table 11.3: Australian Capital Territory
Value of Work Done
Private Contract for Public Sector
Constant 2007/08 Prices (\$Million)**

Year Ended June	Roads, highways and subdivisions	Bridges	Railways	Harbours	Water storage and supply	Sewerage and drainage	Electricity generation, transmission and supply	Pipelines	Recreation	Telecommunications	Total mining and heavy industry	Other	Total
1990	87.0	6.1	0.0	0.0	0.8	2.7	1.5	2.5	7.1	0.0	1.8	0.3	109.8
1991	47.1	1.4	0.0	0.0	7.8	5.5	0.2	0.0	9.1	0.0	0.0	0.3	71.5
1992	50.2	8.3	0.0	0.0	0.9	3.6	0.8	0.0	6.8	0.0	0.0	0.0	70.6
1993	59.0	0.6	0.0	0.0	10.1	1.7	2.2	0.3	5.7	0.3	0.0	0.0	79.8
1994	46.6	0.0	0.0	0.0	9.6	1.1	0.0	0.0	3.1	0.4	0.0	0.0	60.8
1995	40.5	1.4	0.0	0.0	7.9	6.9	0.0	0.3	5.3	0.0	0.0	0.0	62.4
1996	39.4	0.1	0.0	0.0	2.4	0.5	0.0	0.1	8.2	0.0	0.0	0.0	50.8
1997	29.5	0.0	0.0	0.0	0.1	0.2	0.1	0.0	6.5	0.0	0.0	0.0	36.4
1998	34.2	0.0	0.0	0.0	1.5	3.2	0.3	0.0	14.5	0.0	-0.1	1.0	54.8
1999	31.1	0.0	0.0	0.0	3.8	3.9	0.0	0.1	4.6	0.0	0.0	0.0	43.5
2000	39.4	0.0	0.0	0.0	8.8	3.6	0.2	0.0	46.9	7.3	0.0	0.0	106.1
2001	44.5	1.0	0.0	0.0	1.9	2.2	0.0	0.0	32.6	30.3	0.0	1.2	113.9
2002	42.1	2.7	0.0	0.0	11.3	7.2	0.0	0.0	11.6	3.0	0.0	0.0	77.9
2003	64.3	2.8	0.0	0.0	13.4	13.0	0.7	0.0	23.4	1.2	0.0	0.0	118.8
2004	59.3	0.5	0.0	0.0	47.7	9.7	0.0	0.1	2.8	0.0	0.0	0.1	120.2
2005	56.0	0.2	0.0	1.5	44.8	9.7	0.2	0.0	0.9	0.0	0.0	0.0	113.5
2006	54.8	0.3	0.2	14.2	15.7	6.5	1.3	0.2	7.9	0.9	0.0	0.1	102.3
2007	61.3	9.1	0.0	15.4	11.9	11.8	0.0	0.3	2.4	0.3	0.0	0.0	114.4
2008	28.3	4.4	4.3	14.5	33.9	20.9	0.0	0.0	2.0	2.7	0.0	0.0	111.0
2009	31.1	0.4	0.0	6.9	44.5	51.4	0.0	0.0	10.1	0.8	0.0	0.0	145.2
Forecasts													
2010	87.7	5.3	0.0	3.0	126.8	31.0	0.0	0.0	8.0	1.0	0.0	1.0	263.8
2011	117.6	6.8	0.0	1.0	199.4	19.8	0.0	0.0	4.0	2.0	0.0	0.0	350.6
2012	73.8	7.6	0.0	0.0	152.9	13.4	0.0	0.0	3.0	1.0	0.0	0.0	251.5
2013	38.0	1.9	0.0	0.0	53.2	10.6	0.0	0.0	3.5	2.0	0.0	0.0	109.3
2014	25.6	1.5	0.0	0.0	29.0	13.6	0.0	0.0	5.0	3.0	0.0	0.0	77.7
ANNUAL PERCENTAGE CHANGE													
2000	26.6	-	-	-	129.4	-7.5	-	-99.6	913.8	-	-	-179.1	144.0
2001	13.1	-	-	-	-78.4	-37.1	-88.0	-277.4	-30.5	315.1	-	-9028.3	7.3
2002	-5.5	161.7	-	-	494.2	220.2	-309.5	-	-64.4	-90.0	-	-	-31.6
2003	52.8	6.5	-	-	18.1	80.9	-1478.4	-	101.6	-61.6	-	-	52.5
2004	-7.9	-82.3	-	-	296.6	-25.2	-	-	-88.0	-	-	-	-1.2
2005	-5.4	-51.0	-	-	-6.1	0.2	-	-	-69.4	-	-	-	-5.6
2006	-2.3	40.2	-	821.9	-65.0	-33.0	451.5	-	828.8	-	-	-	-9.8
2007	12.0	2538.6	680.8	-	8.0	81.0	-24.1	43.0	-69.4	-	-	-	11.8
2008	-53.8	-52.3	138.2	-5.6	184.8	76.9	-	-	-18.2	774.4	-	-	-3.0
2009	10.0	-90.9	-	-52.3	31.5	145.9	-	-	408.1	-70.7	-	-	30.9
Forecasts													
2010	181.7	1243.2	-	-56.7	184.9	-39.7	-	-	-20.8	25.4	-	-	81.6
2011	34.1	27.3	-	-66.7	57.3	-35.9	-	-	-50.0	100.0	-	-	32.9
2012	-37.3	11.4	-	-	-23.3	-32.7	-	-	-25.0	-50.0	-	-	-28.3
2013	-48.5	-74.4	-	-	-65.2	-20.3	-	-	16.7	100.0	-	-	-56.5
2014	-32.5	-25.0	-	-	-45.5	27.3	-	-	42.9	50.0	-	-	-28.9
5 YEAR AVERAGES													
1995-1999	34.9	0.3	0.0	0.0	3.2	2.9	0.1	0.1	7.8	0.0	0.0	0.2	49.6
2000-2004	49.9	1.4	0.0	0.0	16.6	7.1	0.2	0.0	23.5	8.4	0.0	0.3	107.4
2005-2009	46.3	2.9	1.3	10.5	30.1	20.1	0.3	0.1	4.7	0.9	0.0	0.0	117.3
Forecasts													
2010-2014	68.5	4.6	0.0	0.8	112.3	17.7	0.0	0.0	4.7	1.8	0.0	0.2	210.6
2015-2019	71.3	2.9	0.0	0.0	28.6	21.8	0.2	0.0	5.1	1.8	0.0	0.0	131.7
2020-2024	82.0	6.0	0.0	2.0	40.0	17.0	1.0	0.1	6.0	3.5	0.0	0.0	157.6



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