

# **GROWTH IN AUSTRALIAN INDUSTRY AND THE EMPLOYMENT OF ENGINEERS**

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**ENGINEERS  
AUSTRALIA**

## 1. Introduction

There have been many inquiries about how Australia's economic circumstances may impact on the employment of engineers. Unfortunately, there is no straight forward answer to such questions. While on the one hand there are good statistics on industry value added (industry GDP), statistics on the engineering profession are not sufficiently robust to support studies of the demand for and supply of engineers in the many industries that employ engineers. Applying a surrogate measure of the demand for engineers, engineering construction, is also problematic because this data comes out even later than National Accounts data and still conveys messages about circumstances that prevailed last September.

As is often the case, the only recourse is to assemble statistics that are available so that one has something to underscore the judgments that are necessary. In this paper trends in industry value added over the 8 quarters to December 2008 are examined to establish which industries have been most affected by the downturn in Gross Domestic Product (GDP) which has featured in public discussion. These are the latest available GDP data with March quarter results becoming available in mid-April.

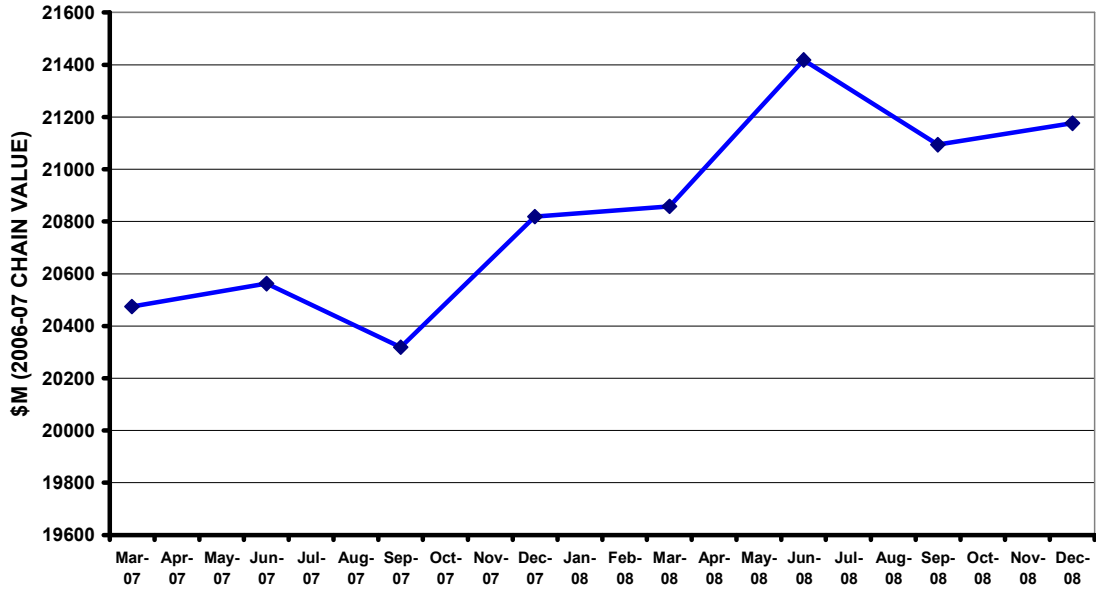
The latest statistics on the aggregate Australian labour force became available in March 2009 but these provide no information on employment by industry. The latest data on employment by industry is for November 2008. Data on the engineering profession is even older and relates to the August 2006 national population census. Clearly drawing inferences from these diverse sources is fraught. However, some data is always better than none providing their limitations are observed. At best, the statistics in this paper are a crude guide and cannot be used to infer precise relationships.

The approach in the paper is to graph industry trends in gross value added in chain value (constant prices), seasonally adjusted form to examine the circumstances of each industry. Each industry's share of GDP is calculated. Gross value added summed across all industries differs from GDP by the value of taxes less subsidies. Each industry's share of total employment is calculated from the November Labour Force survey. Finally, the proportion of the engineering profession employed in each industry is calculated using the data in the Engineering Statistical Handbook.

## 2. MINING

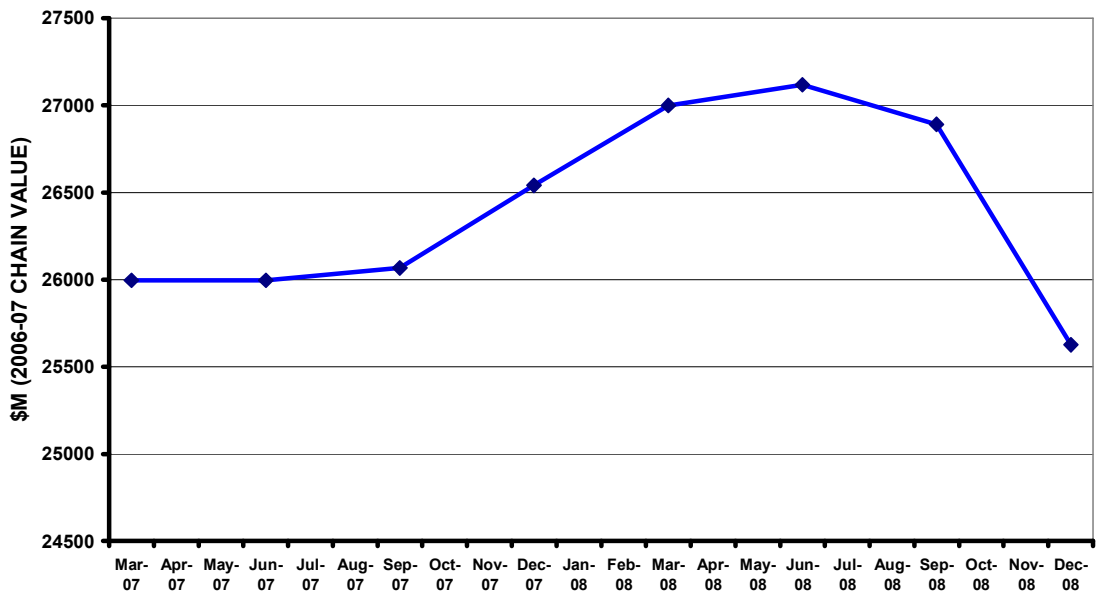
- The mining industry contributed 7.8% to GDP in the December quarter 2008.
- Quarterly gross industry value added increased by 0.4% and by 1.7% in the year December 07 to December 08.
- Long term price contracts are up for renegotiation this month.
- In November 2008 there were 180,300 Australians employed in the mining industry. This was 1.7% of total employment that month.
- In the 2006 Census there were 9,347 engineers employed in mining (6,622 with degrees and 2,725 diplomas). This was 3.7% of the engineering profession.

### GROSS VALUE ADDED IN MINING



## 3. MANUFACTURING

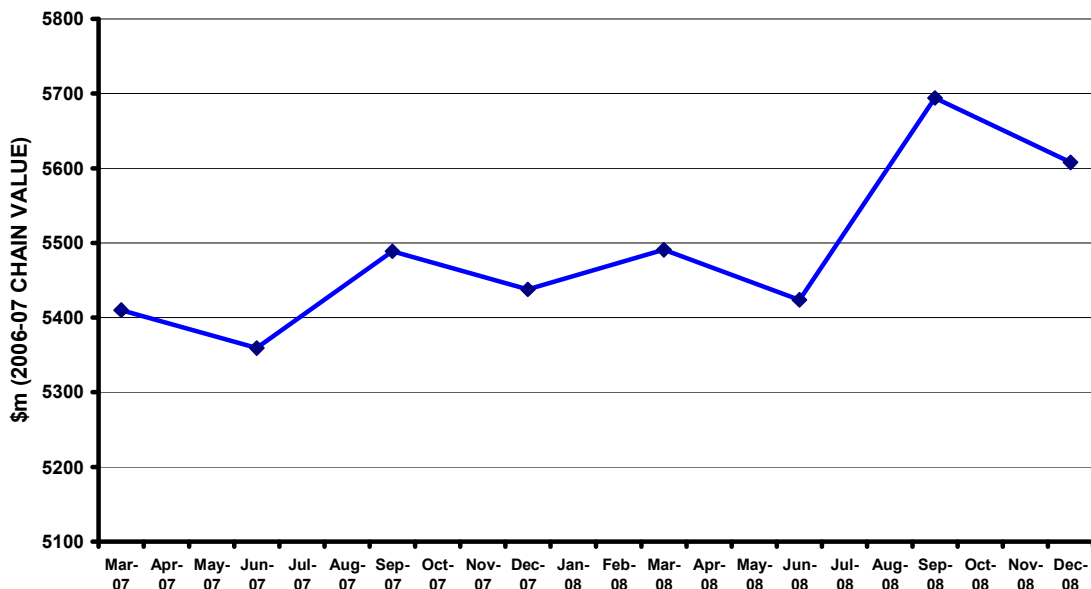
### GROSS VALUE ADDED IN MANUFACTURING



- The manufacturing sector was 9.4% of GDP in December (9.9% in the June quarter when industry gross value added peaked).
- Manufacturing industry gross product fell by 4.7% in the December quarter following a fall of 0.8% in the September quarter. Annual change for the year ending in December 2008 was -3.4%.
- In November 2008, 1,066,900 people were employed in manufacturing industries. This was 10.0% of total employment that month.
- In the 2006 Census, Manufacturing, at 18.8% of the engineering profession, was the second largest employer of engineers (28,411 with degrees and 18,997 with diplomas).

## 4. ELECTRICITY, GAS AND WATER SUPPLY

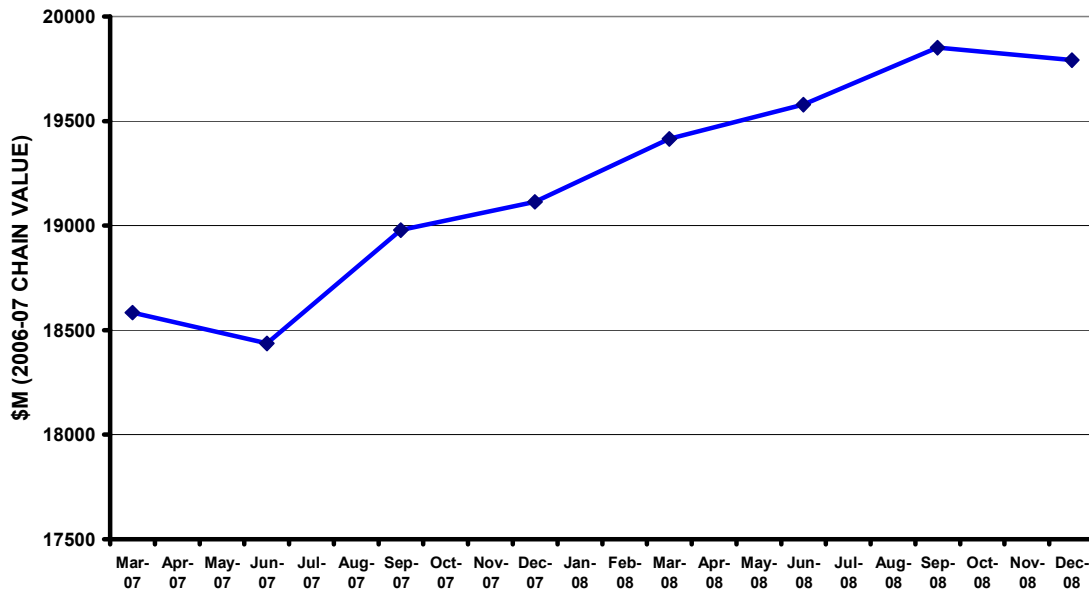
GROSS VALUE ADDED IN ELECTRICITY, GAS AND WATER SUPPLY



- The Electricity, Gas and Water Supply industry accounted for 2.1% of GDP in the December quarter 2008.
- Industry gross value added fell by 1.5% in the December quarter 2008 but grew by 3.1% in the year to December 2008. There has been some volatility in the quarterly figures for this industry.
- In November 2008 there were 108,100 people employed in the Electricity, Gas and Water Supply industries. This was 1.0% of total employment that month.
- In the 2006 Census the industry employed 10,247 engineers, or 4.1% of the engineering profession (6,298 with degrees and 3,949 with diplomas).

## 5. CONSTRUCTION

GROSS VALUE ADDED IN CONSTRUCTION

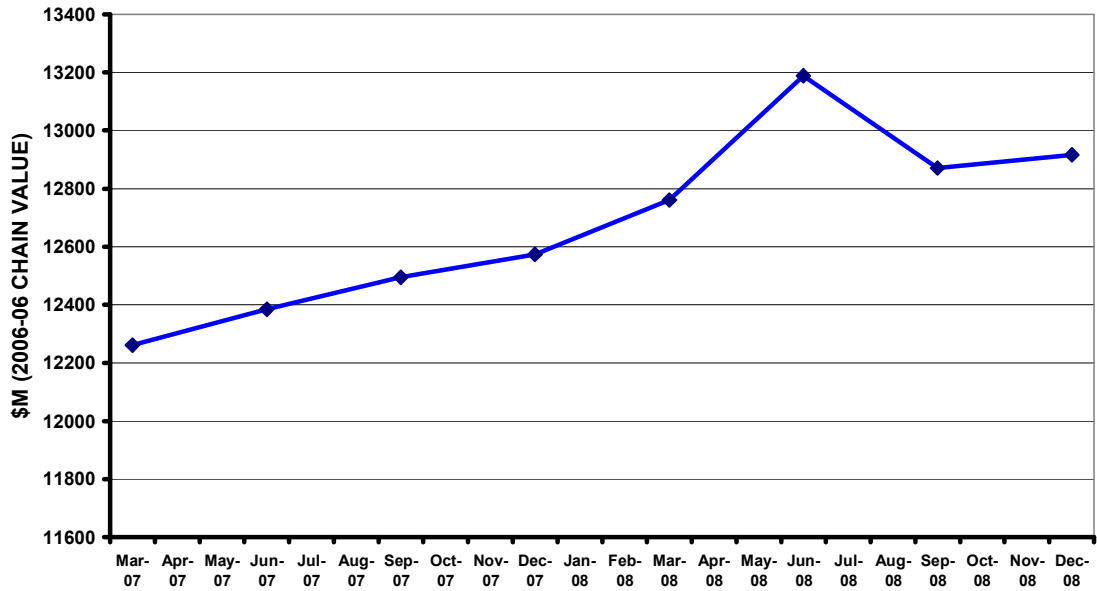


- Construction industry gross value added fell by 0.3% in the December quarter but grew by 3.5% in the year to December 2008. The December fall was less than the 0.8% fall in the June quarter 2007 but its timing is ominous.
- The construction industry was 0.7% of GDP in the December quarter.
- In November 2008, 993,000 people were employed in the construction industry. This was 9.3% of total employment that month.
- In the 2006 Census the construction industry employed 18,348 engineers (10,987 with degrees and 7,361 diplomas), or 7.3% of the engineering profession.

## 7. TRANSPORT AND STORAGE

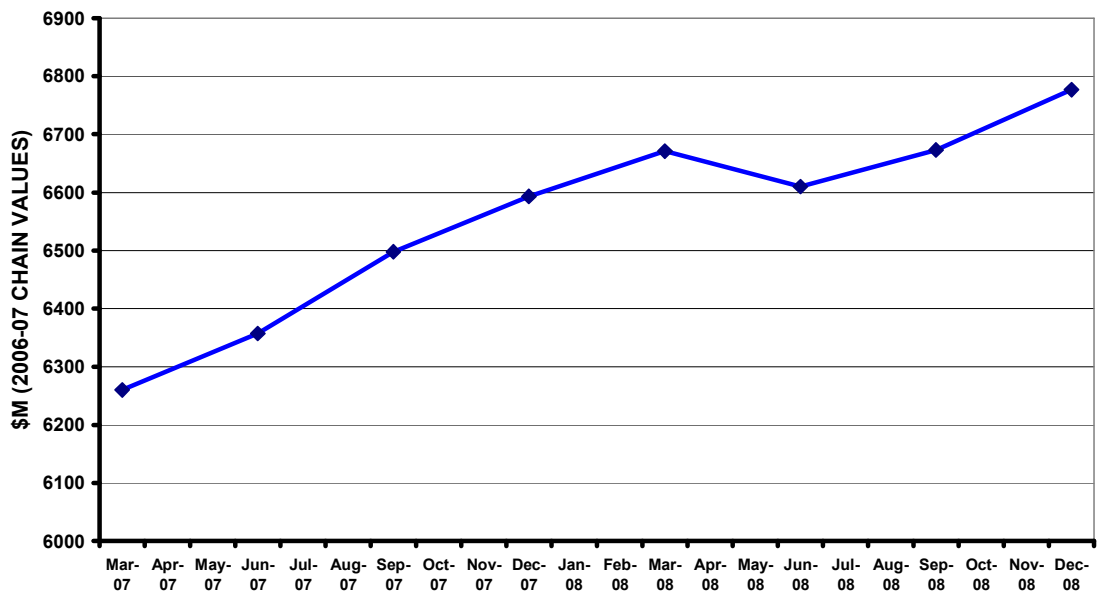
- Transport was 4.8% of GDP in the December quarter 2008.
- December quarter growth was 0.4% and growth in the year ending December was 2.7%. There was a contraction of 2.4% in the September quarter.
- In November 2008, 530,400 people were employed in transport and storage. This was 4.9% of total employment that month.
- In the 2006 Census the Transport and Storage industry employed 14,950 engineers (6,304 degrees and 8,646 diplomas) or 5.9% of the engineering profession.

GROSS VALUE ADDED IN THE TRANSPORT SECTOR



## 8. COMMUNICATIONS

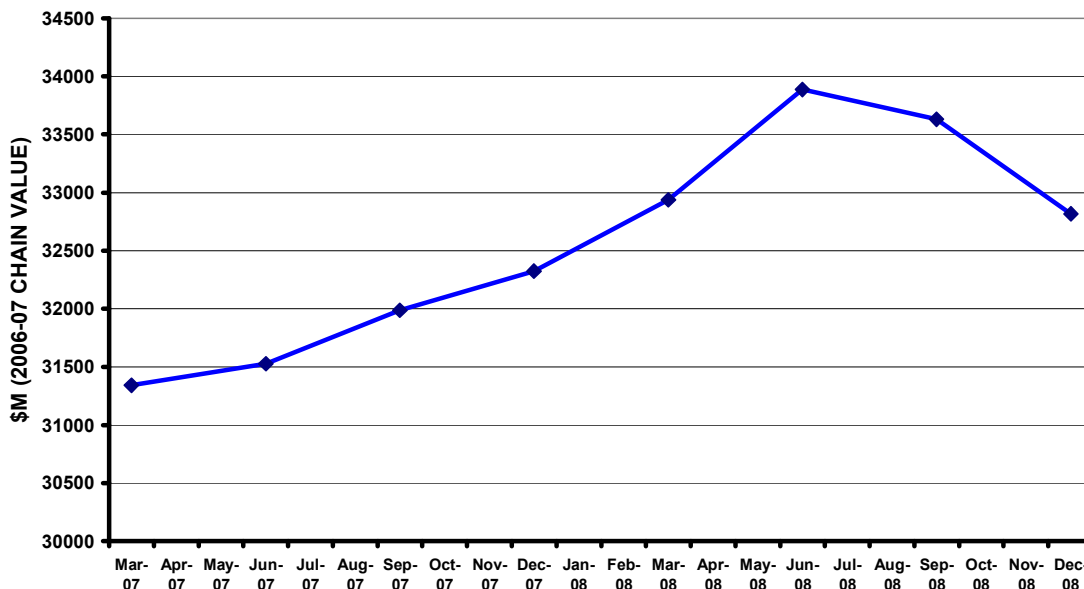
GROSS VALUE ADDED IN COMMUNICATIONS



- The Communications industry contributed 2.5% of GDP in the December quarter 2008.
- December quarter growth was 1.6% and growth for the year ending December was 2.8%. The June quarter 2008 showed a contraction of 0.9%.
- In November 2008 there were 197,300 people employed in the industry. This was 1.8% of total employment that month.
- In the 2006 Census the Communications industry employed 9,632 engineers (5,249 degrees and 4,383 diplomas), or 3.8% of the engineering profession

## 10. PROPERTY AND BUSINESS SERVICES

GROSS VALUE ADDED IN PROPERTY AND BUSINESS SERVICES

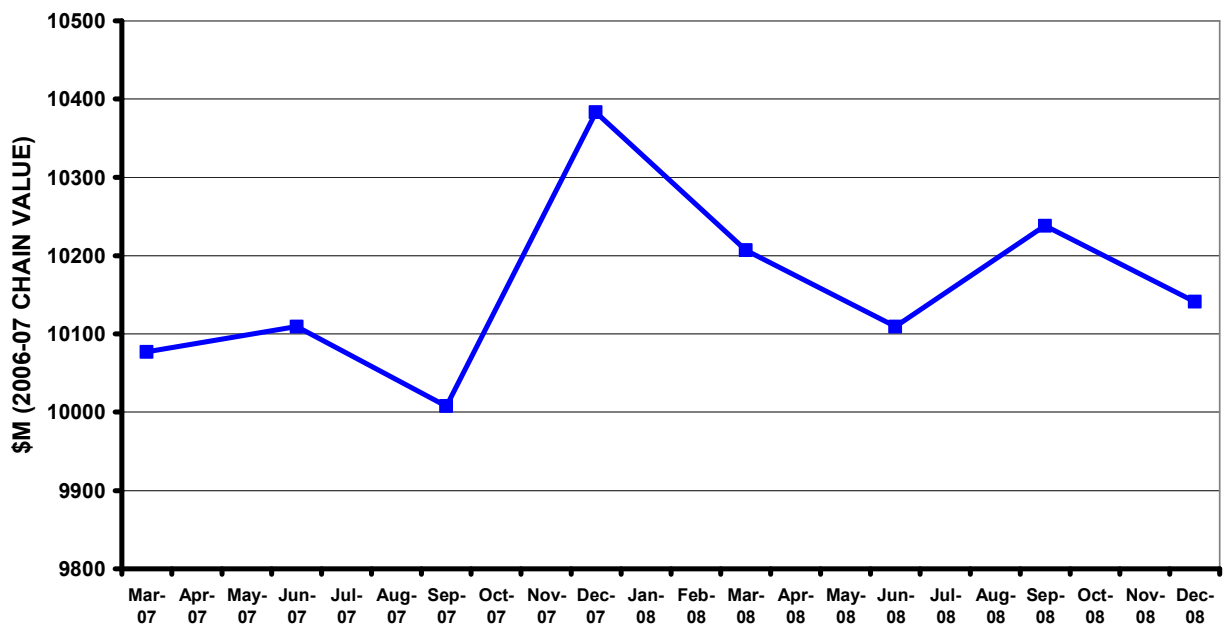


- All engineering consulting businesses are in this industry.
- The industry accounted for 12.1% of GDP in the December quarter.
- The December quarter outcome was a contraction of 2.4% following on from a contraction of 0.8% in the September quarter. But there was 1.5% growth in the year ending December 2008.
- In November 2008, the Property and Business Services industry employed 1,295,600 people. This was 12.1% of total employment that month.
- In the 2006 Census this industry employed 59,238 engineers (44,136 degrees and 15,102 diplomas) and was 23.5% of the engineering profession.

## 11. GOVERNMENT ADMINISTRATION AND DEFENCE

- In the December quarter the industry was 3.7% of GDP. Public sector GDP is primarily the value of wages and salaries paid.
- There was a contraction of 0.9% in the December quarter and a contraction of 2.3% for the year ending December 2008 reflecting the first Rudd budget.
- In November 2008 there were 485,000 people employed in the industry. This was 4.5% of total employment that month.
- In the 2006 Census this industry employed 24,940 engineers (13,821 with degrees and 11,119 with diplomas), or 9.9% of the engineering profession.

**GROSS VALUE ADDED IN GOVERNMENT ADMINISTRATION AND DEFENCE**



## 12. OVERVIEW

The Manufacturing, Finance and Professional and Business Services industries have each experienced contractions. These industries employed 111,858 engineers in 2006. Some elements of the stimulus package will assist activity in engineering services. This Sector and the Finance sector may also benefit from prospective Infrastructure Australia project announcements. Retail trade is an important target in both the December and March stimulus packages. Construction is a key target in the March stimulus package. Mining is vulnerable and depends on overseas factors. While direct employment in mining is not large there are important indirect effects in many other industries and for government revenue.



## 13. ECONOMIC CONDITIONS UPDATE - MARCH 2009

**Purpose:** To provide an update on earlier economics briefs.

**Circumstances highlighted in Earlier Briefs:**

1. The Treasury Mid-year Economic Outlook revised many key figures from the May budget:
  - Real GDP growth in 2008-09 down from 2.75% to 2.0% and in 2009-10 from 3.0% to 2.25% (NB these take into account the stimulus package which was about 1% of GDP. With a propensity to spend of 0.5 this should be 0.5% growth.)
  - Estimates of world economic growth were revised downwards to 3.75% in 2008 and 3.0% in 2009 (down by about 1%).
  - Unemployment is expected to grow to 5.0% by June 2009 and to 5.75% by June 2010.
  - Consumer confidence has fallen dramatically and household financial wealth (a major factor underlying consumer expenditure) has fallen by 16% to end June 2008.
  - Inter-bank lending spreads have increased markedly increasing the cost of credit to businesses and credit availability has tightened significantly. The dramatic fall in the share markets has reduced the scope for capital raising from this source.
  - The tone of Treasury documents has become more down-beat and cautious.
  
2. The Federal Government has announced a raft of measures to stimulate the economy and to stabilise the financial system:
  - The Bank deposit guarantee, guarantees over wholesale funding for authorized deposit-taking institutions, the purchase of \$8 billion in mortgage backed securities from Australian lenders, issue of Commonwealth securities to assist smooth market functioning and various changes to consumer lending practices.
  - A stimulus package of \$10.4 billion (mainly in the form of one-off payments to pensioners but also including increases in first-home buyers' grants) which came into effect in December 2008.
  - \$300 million in infrastructure grants to local councils. All councils will get at least \$100,000 with many to receive more depending on circumstances. All funds will be made available by June 2009 to be spent by December 2009.
  - \$4.7 billion in infrastructure projects (\$1.2 billion for railway projects; \$711 million in road projects brought forward to 2008-09; and \$1.6 billion for critical works in universities and TAFEs). The emphasis in this package appears to be on projects that are ready to start immediately.
  - \$6.2 billion car plan. This has numerous components many of which cover the next decade. The near future impact is difficult to quantify but is likely to be small.
  - \$42 billion stimulus package (cash payments to taxpayers, temporary business tax relief, insulation or solar hot water for 2.7 million houses, 20,000 additional new welfare and defense house and additional expenditure on black spots on roads, railway level crossings and other road repairs) was passed by both houses in mid February.

3. The Reserve Bank has aggressively reduced interest rates. In March 2008 the cash rate was 7.25% and on 4 February 2009, the latest in a series of rate reductions resulted in a cash rate of 3.25%. At its meeting on 7 April the Reserve Bank cut rates by a further 0.25%.
4. The Nation Building Infrastructure package has yet to be announced. This refers to the recommendations expected to flow from the work of Infrastructure Australia and is expected to be announced in March/April.
  - Before the financial turmoil the package was expected to be \$20 billion in cash over 4 years to leverage private sector funding through PPPs, State and Territory infrastructure provision as well as funding for infrastructure from other Federal Government programs.
  - The cash available has fallen with the reductions in expected future budget surpluses. Never-the-less over \$12 billion in cash still appears to be available and the policy strategy to leverage other financial sources is still intact.
  - The Treasurer has admitted that all possible sources of finance are being looked at. Although there is no express confirmation that Infrastructure Bonds will be announced, it is believed they are in the mix being considered.

### **Engineering Construction**

Quarterly real engineering construction (a good indicator of the demand for engineers) has continued to grow (see diagram).

- Earlier briefs referred to the engineering construction pipeline to September 2008 and suggested that even with significant project cancellations the amount of work yet to be done is likely to continue growing.
- The ABS released preliminary estimates of engineering construction work done in the December quarter in the last week of February.
- In trend terms engineering construction in the December quarter increased by 6.7% (compared to 8.1% in the September quarter and 3.2% in the December quarter of 2007).
- Similarly, when measured in seasonally adjusted or unadjusted form engineering construction continued to rise.
- No further information about engineering construction commencements or work yet to be done for the December quarter will be available until 6 April.

## Assessment

Although more time has passed there is little in the way of new official information available to show how the Australian economy is traveling. A critical indicator will become available on 4 March when the December quarter National Accounts will shed light on GDP growth.

As mentioned in earlier briefs, events are occurring very fast and there are numerous news reports of doom and gloom. While facts are available for reports involving particular businesses, and this feeds perceptions, very few up to date facts are available for the economy as a whole.

There is at this stage nothing to change the assessment offered earlier. That is, the Australian economy and Australian institutions are in better shape to weather the crisis than in most other countries. Even though interest rates have been cut substantially, there is room for further cuts if necessary. While the stimulus expenditure announced by the Federal Government are unprecedented, projected budget deficits are manageable shares of GDP and are considerably lower than in other developed countries. The strategy articulated in the mid-year Fiscal Review to return the budget to surplus is entirely plausible and possible providing normal global growth is resumed in 18-24 months.

The preliminary December figures for engineering construction suggests that the demand for engineers remains strong. This could change quickly (see attached diagram) if there are wholesale cancellations of projects underway. But even cancellations of 30-50% mean that activity over the next year could be as high as 2008. The Government has resisted the temptation to use Infrastructure Australia's program in the stimulus effort. These announcements would partially offset credit crisis impacts on the engineering construction pipeline.

In summary, economic conditions are deteriorating quickly in Australia. However, there are sound reasons for believing that Australia could have a softer landing than many other countries. Within the context of the Australian economy there are sound reasons for believing that the labour market prospects for engineers are better than for most other occupations.