SECURING INVESTMENT
IN AUSTRALIA'S FUTURE

Managing the Economic Transition

Business Council of Australia

About this publication

The Business Council of Australia (BCA) brings together the chief executives of more than 100 of Australia's leading companies, whose vision is for Australia to be the best place in the world in which to live, learn, work and do business.

This paper, titled *Securing Investment in Australia's Future: Managing the Economic Transition*, is accompanied by a report by the BCA titled *Securing Investment in Australia's Future: Report of the Project Costs Task Force*. Both publications draw on background research prepared for the BCA by Deloitte Access Economics titled *Investment and GDP Profile Study*. For copies of the three publications, visit www.bca.com.au

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Key points

- Australian policymakers and businesses need to recognise the transition occurring in our economy as resources investment declines and take steps to manage it well if we are to maintain GDP growth.
- Australia's investment project pipeline is now declining from unprecedented highs, falling from an estimated $921 billion to $877 billion over the past twelve months. Importantly the component of the pipeline most associated with future activity, projects 'under consideration', at $159 billion is 30 per cent lower than one year ago, and 43 per cent lower than two years ago.
- The investment pipeline comprises of:
  - projects that are considered 'definite' – around $408 billion of projects 'under construction' and a further $60 billion in projects that are 'committed'. This is a record amount
  - projects that are 'at risk' – around $159 billion of projects are 'under consideration' and $250 billion of projects are at very early stages of development and classed as 'possible'.
- Rising costs and an uncertain global outlook increase the risk that uncommitted projects will not proceed. Investor caution is highlighted by a government finding that in the past twelve months around $150 billion of resources projects have either been delayed, cancelled or have had reassessed development plans.
- The risks to the economy of major projects not proceeding include:
  - lost economic benefits from the investments through lost export income or lost opportunities to lift productivity in the case of public infrastructure projects. Modelling shows that GDP would be $125 billion higher by 2023 under a 'high' resources investment versus a 'low' resources investment scenario
  - lost construction activity, especially where this is not replaced with other sources of economic growth. The real and cumulative decline in the Engineering Construction sector is already expected to be $39 billion over the next three years. This will be higher if more projects are lost
  - the lost flow through effects for other sectors of the economy. One in ten workers in Australia is either directly or indirectly servicing resource extraction or investment. Key sectors affected are transport, wholesale, construction and business services.
- The task ahead is to 'manage the transition' from an economy driven strongly by resources investments currently underway towards securing remaining investment in the pipeline and facilitating new sources of growth. Three key challenges lie ahead:
  - secure what's in the investment pipeline at lower costs
  - aim to secure the commencement of viable prospective projects that are not yet committed
  - facilitate new sources of growth and bring on the next wave of investment, including high quality public infrastructure projects.
- To do this we need to improve the competitive environment in Australia and reduce project costs by **ensuring Australia has access to skilled labour** and **improving project management** skills and the capacity of managers to make productivity enhancing decisions, **improve the efficiency of Australia's project approvals processes** and **implement a better workplace relations system** more conducive to good project performance and productivity growth.
- We also need to **work now to plan and deliver high quality infrastructure projects** that will enable private and public infrastructure spending to remain over 4 per cent GDP, or a forecast $767 billion of new investment over the decade. This will enable skilled labour to be deployed onto new projects, deliver long term benefits to communities and make a significant contribution to productivity and GDP including by supporting the growth in net exports.
- Doing these things well will also help to support growth in other areas of the economy that can offset any decline in investments, such as housing investment and growth in net exports.

- Government and industry bear responsibility for taking actions that will constrain the costs of delivering major projects and restore Australia's competitiveness, and to bring on the next wave of investment. Proposed actions are listed below. The full set of recommendations from the BCA Project Costs Task Force are in Attachment 1.

Actions companies and industry can take

- Companies, all of which are subject to market forces, are taking steps to reduce the cost of delivering major projects and to lift construction productivity.
- The resources sector, with construction companies, should take steps to support the development of centres of excellence to capture the engineering and project management lessons from the first phase of the resources boom. This could be done in partnership with the John Grill Centre for Project Leadership at the University of Sydney.
- The focus of such a partnership should be on:
  - better oversight and governance over project plans and schedules to correct for optimism bias and narrow considerations of risk
  - collaborative engagement with internal and external stakeholders including government, the workforce and the broader community
  - leadership practices that communicate strategy effectively and develop the specialist skills and capabilities of individual project team members.
- Develop best practice approaches for community engagement around major projects that have significant impacts on communities and implement processes to undertake this engagement, including:
  - engagement early (including during feasibility phase)
  - community liaison groups
  - provision of information including on project impacts and how the community will be involved in the project
  - identification of the lasting positive legacy for communities.

Actions governments can take to grow Australia's competitiveness

- All governments need to recognise the challenges Australia faces in delivering major projects and prioritise policy action that will reduce the costs of delivering projects and lift project productivity.
- The Commonwealth and state governments need to work together to better monitor the forward investment pipeline for the whole economy and capture data on the costs of delivering public infrastructure projects in order to better identify cost drivers. Such a task could be overseen by the Bureau of Infrastructure, Transport and Regional Economics, and would be complementary to the role of the BREE in collecting resources and energy related data.
- The Commonwealth government should ensure project proponents have access to the skilled workforce that is needed to deliver major projects competitively. This means ensuring Australia remains open to skilled migration to meet peaks in demand, taking steps to remove barriers to labour mobility, support the education and training system to improve the skills of the labour force and supporting industry to train their workforce.
- All levels of government need to be guided in reforming their development assessment and approvals processes by the recommendations in the Productivity Commission's draft report on benchmarking Australia's major project approvals processes. Industry needs to constructively engage with governments to assist in this task.
- The Commonwealth should negotiate bilateral agreements under the Environment Protection and Biodiversity Conservation Act to accredit state government environmental approvals, initially for low-risk, low-impact projects in environmentally well understood areas.

- The Commonwealth should accelerate strategic environmental assessments in areas where major developments and projects are likely to occur. These assessments should provide for subsequent developments to be deemed complying developments having been tested against a set of criteria established in the strategic assessment.
- The Commonwealth government should ensure workplace relations arrangements allow businesses to grow, innovate and manage their workforce and capital while also providing workers a fair income in conditions of freedom, equity and safety. This should be done in a way that allows more direct engagement between employers and employees to drive productivity improvements at the firm level.
- State governments need to work with industry to implement effective regional planning to help alleviate the cost impact of constructing major projects in a remote environment.
- State governments should establish special development authorities for regional growth areas to expedite land approvals and the development of social and economic infrastructure.
- Regional development plans around major resource projects should be carried out by state governments, including provision of housing and economic and social infrastructure. Special development zones should be established to expedite approvals of land use.
- Australia's governments should continually aim to set internationally competitive tax regimes and credible policy making processes that reduce uncertainty for investors and creates an environment conducive to making long term investments in major capital projects.

Actions to foster investment in high quality infrastructure

- State and federal governments should prioritise long term strategic planning of our cities and regions and identify the critical infrastructure projects needed for a growing economy.
- Infrastructure Australia should enhance its role to identify new infrastructure projects of national significance, in addition to receiving proposals from the states. The types of projects that might be identified could be projects that cross state borders, or projects that are in regional areas that would substantially lift national output. Infrastructure Australia could also use its independence to argue for consideration and development of high value infrastructure projects that might be politically sensitive.
- State governments should produce regular 15-year infrastructure plans that provide a pipeline for private investment, linked to their fiscal strategies. The plans should include both fully funded projects for the first five years as well as commitments for project investments through the outer years. These plans should be legislated.
- Governments should expand opportunities for private sector to put forward ideas for new infrastructure projects through specific processes for considering unsolicited proposals. The New South Wales process is a good template.
- Governments should set up dedicated infrastructure funds for facilitating investment. These infrastructure funds should be the repository for infrastructure funding generated from budget allocations, asset sales and/or borrowing. They should have clear rules that spending should only be allocated to projects that have been subjected to cost benefit analysis and which arise from a long term strategic plan.
- New funding sources for infrastructure should be unlocked by governments selling their infrastructure businesses to the private sector and recycling that money into new investments.
- The federal government should consider lifting its expenditure on infrastructure investment of $24 billion over five years, including borrowing to do so, subject to funds being allocated to Infrastructure Australia approved projects.

1. Introduction

Sustainable economic growth in Australia relies on a steady pipeline of well delivered investment projects that will build our productive capacity and increase income and living standards.

We have been fortunate to have experienced a substantial rise in resources and infrastructure investment in recent years. This has also been a key driver of economic output and employment.

Australia's project pipeline is now declining from past peaks. As the construction phase of the resources boom peaks, this report considers the implications for the next phase of economic growth in Australia.

It looks at the measures governments and industry should take now to:

- secure the delivery of over $460 billion in projects currently underway or committed, at lower cost
- bring forward viable projects in the pipeline worth an estimated $159 billion that are currently 'under consideration' and a further $250 billion in 'possible' projects
- bring on the next wave of investment in nationally significant public infrastructure projects that are either at the early stages of planning or not yet on the drawing board
- facilitate other sources of growth in the economy.

To do this we need to lift Australia's competitiveness for undertaking major investment projects by reducing avoidable costs and lifting productivity on projects including through:

- improving project management skills and remove the barriers to projects managers making decisions that lift productivity
- reduce the regulatory burden on projects, in particular from project approvals processes
- improve the workplace relations system.

Furthermore, we need to make sure our public infrastructure systems are working to provide a steady pipeline of high quality, well planned and funded infrastructure projects for private investment.

The recommended actions to help 'manage the transition' in the economy in Section 5 of this report are designed for companies, industry and governments.

This paper comes twelve months after the Business Council of Australia's (BCA) *Pipeline or Pipe Dream? Securing Australia's Investment Future* study which highlighted the increasingly important role that investment in major capital projects – resource projects, infrastructure projects and major commercial projects – is playing in the Australian economy.

The *Pipeline or Pipe Dream* study warned that Australia was becoming a high cost environment to deliver these major projects and urged action to constrain escalating costs of capital projects, improve productivity and for governments and industry to take steps to restore our competitiveness.

This latest report is part of a subsequent body of work undertaken as part of the BCA's *Action Plan for Enduring Prosperity* that takes a fresh look at Australia's investment challenges and opportunities and summarises and explores in more depth the reasons for Australia's cost and competitiveness issues. Its key findings draw from more recent research including:

- a background report prepared for the BCA by Deloitte Access Economics (Deloitte) on the outlook for investment and GDP growth in Australia as well as data from Deloitte's subscription products the *Business Outlook* and the *Investment Monitor*
- the final report of the *BCA Project Costs Task Force*, which is also being released along with this paper. The BCA project costs task force was chaired by BCA President Tony Shepherd and met between September 2012 and July 2013.

The looming 'peak' in investment activity is underlined by the decline in the forward project pipeline. Australia's economy-wide investment pipeline – constituting resources, infrastructure, industrial and major building projects – has declined by 5 per cent from an estimated $921 billion to $877 billion over the past twelve months. The fall would have been steeper were it not for an increase in the estimated cost of many of the listed projects.

The value of projects currently underway is over $408 billion – an all time record. A further $60 billion in committed projects are about to commence. This work will help sustain activity.

But it is the declining value of projects 'under consideration' – the next wave of investment – that highlights a looming gap in economic activity. Projects under consideration are now only $159 billion; this is $113 billion or 43 per cent lower than at the same time two years ago. Another $250 billion in projects is listed as 'possible' but these are much less developed. Furthermore there is uncertainty over a number of projects currently in the planning stage. Investor caution is highlighted by $150 billion in resources projects being deferred, revised or cancelled over the past six months.

The decline in resources investment is projected to directly impact on GDP through a fall in real private engineering construction spending from $98 billion to $80 billion over the next three years, or a cumulative $39 billion.

Furthermore, the slowdown in resources investment will have wider structural ramifications for the economy. Around one in ten workers in Australia is estimated by the Reserve Bank of Australia (RBA) to be employed in servicing resource extraction and investment. Of these workers, one third is directly involved in resource extraction, while two thirds are involved in providing business inputs from business services, construction services, manufacturing, transport and other services.

Increasing infrastructure investment will prevent a larger decline in activity, but only if a sufficient set of high quality projects can be planned and funded.

Other sources of growth such as housing investment and net exports will need to lift as well.

Part of Australia's response to this challenge must be to manage the costs of delivering and operating major capital projects to give us the best chance of securing projects that remain on the drawing board. Improving our competitiveness will also raise the prospects of new projects being planned and developed. Lifting our competitiveness will require governments, industry and businesses to recognise the problems, define them clearly and take actions.

The BCA's project costs task force examined these issues in depth and found that in general project costs were being driven by a combination of skills shortages and inadequate project management; poor government project approvals process and the way in which workplace agreements are negotiated.

To summarise there are two key challenges for policymakers and industry if we are to successfully transition our economy through the peak in the resources investment boom.

- **Firstly, we should aim to improve the competitive environment in Australia** to give us the best chance to secure over $159 billion of investment 'under consideration' and $250 billion in 'possible' projects and to encourage new projects. This will help produce a mild rather than steep decline in investment overall and help ensure a smooth transition to other sources of growth. In addition, as Deloitte's analysis shows, resource investment is worth pursuing as it delivers high growth dividends over the long term. GDP in 2023 would be $125 billion larger in the 'high' investment scenario than the 'low' scenario.
- **Secondly, we need to work now to plan and deliver high quality infrastructure projects** that will enable infrastructure spending to remain over 4 per cent GDP, or a forecast $767 billion of new investment over the decade. Doing so will allow skilled labour to be deployed onto new projects, deliver long term benefits to communities and make a significant contribution to productivity and GDP. Policy settings should recognise that infrastructure spending is forecast to be 60 per cent from private sources and 40 per cent from public sources.

A full set of specific recommendations supporting these aims is laid out in Section 4 and in Attachment 1 which includes the full set of recommendations from the BCA project costs task force.

What do we need to do?

- Deliver over $400 billion in investment projects underway on time and on budget.
- Make sure the bulk of the $60 billion in committed projects and estimated $159 billion in projects 'under consideration' are delivered and help to drive continuing economic growth.
- Encourage the development of new export-generating capital projects and new high quality public and private infrastructure projects – some already on the estimated $250 billion 'possible' list and many not yet even under development.
- Encourage other sources of growth including housing and non-residential building construction and fully realising the export potential from the investments entering the production phase.
- Improve project management capabilities over the long term.
- Ensure policy settings will encourage long term investment in the Australian economy.

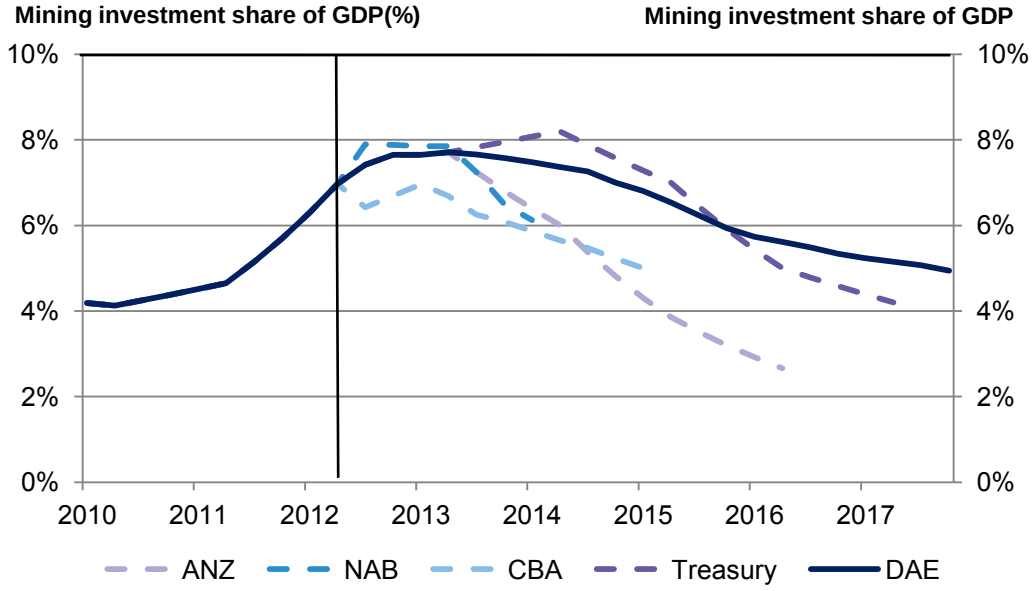
2. A challenging outlook for investment and growth

The decline in resources investment will affect growth

Investment in major capital projects, driven by resources investment, is set to peak in the year ahead. The key questions for the Australian economy is how rapidly mining investment will fall, what the wider impacts on jobs, and government and business revenue will be and what can and should be done to foster growth in other areas of the economy.

There is general agreement among Australia's leading economic forecasters that Australia's unprecedented boom in resources investment is coming to an end. Resources investment is forecast to peak around 8 per cent of GDP in 2013–14 and from there will either plateau or fall sharply.

Figure 1: Forecasts for mining investment



Source: Deloitte Access Economics, Investment and GDP profile study, 2013

There are a range of views on the gradient of the decline in mining investment. The major banks (ANZ, NAB, CBA) typically see mining investment as a share of GDP peaking around 2013 before declining rapidly over the next couple of years. For example, ANZ projects that investment as a share of GDP will decline from close to 8 per cent in 2013 to below 3 per cent in 2016.

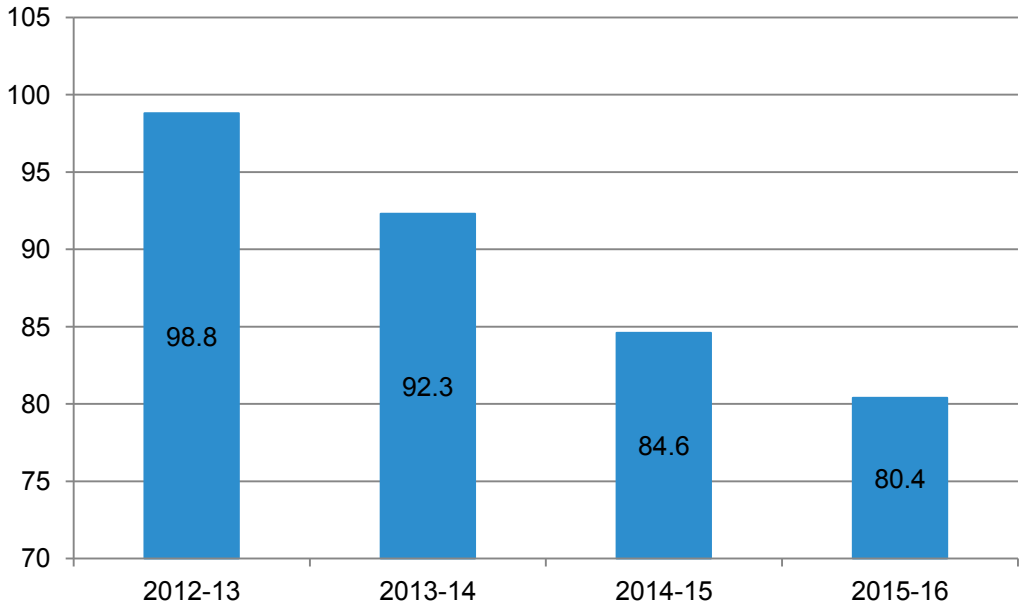
In contrast, the Treasury and Deloitte see the peak occurring closer to 2014 and suggest a more moderate rate of decline from there.

The differences in the forecasts are driven by different assumptions around:

- **the outlook for global commodity prices and Australia's terms of trade**
- **the time profile of capital expenditure in major projects currently underway**
- **the likelihood of projects proceeding that are currently in planning.**

The potential gap in GDP is best reflected in the anticipated decline in the contribution that the engineering construction sector will make over the next three years from $98 billion in 2012–13 to $80 billion in 2015–16 (Deloitte) – a cumulative reduction in real output of $39 billion.

Figure 2: Projected contribution to GDP from private engineering construction (real, $bn)

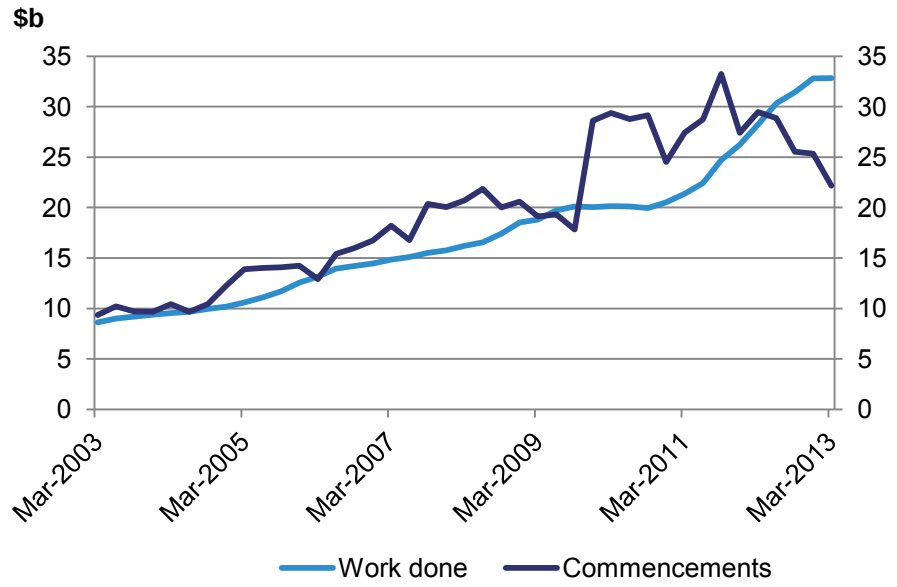


Source: Deloitte Access Economics, *Business Outlook*, available by subscription.

The growth in the engineering construction sector over recent years is due to the 'value of work commenced' running well above the level of commencements for the past year. To highlight this, in the most recent March quarter 2013 (using a 4 quarter average) the level of work done was running at more than $10 billion above the level of new commencements.

The level of work done is almost 50 per cent higher than the level of new commencements. Indeed, the current ratio of work done to commencements (1.5 to 1) is clearly the highest on record (going back to 1987). This gap serves to highlight just how rapidly the pipeline of work yet to be done could fall away.

Figure 3: Quarterly engineering construction activity (real, 4 quarter average)



Source: ABS.

A more detailed picture of the status of the individual projects that will determine aggregate investment is provided from analysis by both Deloitte and the Bureau of Resources and Energy Economics (BREE).

Deloitte's *Investment Monitor* is an economy-wide database of investment projects with an estimated value over $20 million that are either underway or in planning. It estimates Australia's major project pipeline has declined from $921 billion in June 2012 to $877 billion in June 2013, a fall of $44 billion (around 5 per cent).

The current pipeline is made up of:

- $407.6 billion of projects 'under construction'
- $60.5 billion of projects that are 'committed' (but not yet commenced)
- $159 billion of projects that are 'under consideration'
- $250 billion that are 'possible'.

Table 1: Investment Monitor – top projects by category

Under construction	Committed	Under consideration	Possible
• Gorgon $52b • NBN Co $44b • Icthys $34b • Wheatstone $29b • APLNG $24.7b • Curtis LNG $19.6b • Gladstone LNG $19b • Prelude FLNG $12b • Barangaroo $6b • Vic regional rail link $5.3b	• Waratah Coal $8.3b • North west rail link $8.3b • East west link $8b • Hancock Alpha Coal $6.9b • F3-M2 link $3b • GW Flank $2.5b • Extension Hill $2b	• Arrow Energy LNG $20b • West Connex $10b • Adani coal project $7.1b • GVK coal mine $4.2b • FMG Solomon $4b • Gladstone nickel project $3.6b • Aurizon Pilbara rail $3.5b • Balmoral South iron ore $3.3b	• Project iron boomerang $45b • Woodside sunrise $13b • Port of Hastings $12b • Scarborough FLNG $10b • Gorgon 4th train $10b • Dudgeon point port $10b • Aquila iron ore $7.4b
• Total $408b	• Total $60b	• Total $159b	• Total $250b

Source: Deloitte Access Economics, *Investment Monitor*, available by subscription.

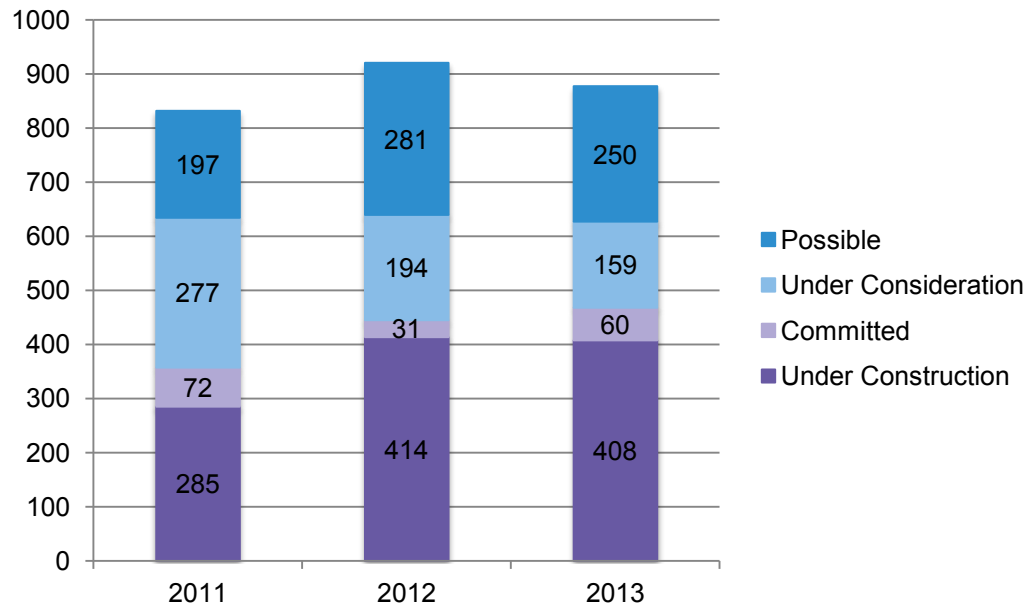
As would be expected given the peak in investment we are experiencing, the value of definite projects (committed or under construction) is now the highest on record.

However it is decline in the forward outlook for projects that are classed as 'under consideration' that reveals the shrinking nature of Australia's investment pipeline with the value of those projects now only $159 billion. By comparison the value of project 'under consideration' was:

- $277 billion in June 2011 – i.e. $118 billion (or 43 per cent) higher than today
- $194 billion in June 2012 – i.e. $83 billion (or 30 per cent) higher than today.

Figure 2 reveals how the ratio of definite to planned projects in the pipeline has changed quite substantially over just the past two years.

Figure 4: Major investment project pipeline ($b)



Source: Deloitte Access Economics *Investment Monitor*, June 2013

Furthermore, analysis by BREE reveals there is a large question mark over many of Australia's prospective resources projects.

The BREE database of resources-related projects finds 'in the past twelve months around $150 billion of projects have either been delayed, cancelled or have had reassessed development plans' (see Table 1). BREE also estimates the number of committed projects fell from 87 to 73 over the past six months.[1]

Table 2: Feasibility stage projects reassessed, delayed or cancelled in past 12 months (energy and resources projects)

Project	Company	Estimated value ($b)
Browse LNG	Woodside	36
Outer Harbour	BHP Billiton	30
Olympic Dam Expansion	BHP Billiton	20
Sunrise LNG	Woodside	12
Abbot Point T4-9	NQBP and partners	11
West Pilbara Iron Ore	Aquila Resources	7.4
Wandoan Coal Mine	Xstrata	6.0
Kooragang Island Coal Terminal 4	PWCS	5.0
Anketell Point Port	Fortescue / Aquila	4.0
Cape Lambert Magnetite projects	MCC Mining	3.7
Southdown Magnetite Project	Grange Resources	2.9
Yarwun Coal Terminal	Metro Coal	2.2
Mount Pleasant Coal Mine	Rio Tinto	2.0
Weld Range Iron Ore Project	Sinosteel Midwest	2.0
Balaclava Island Coal Terminal	Xstrata	1.5
Fisherman's Landing LNG	LNG Limited	1.1
Surat Basin Rail	Aurizon / Xstrata	1.0
Wilkie Creek Coal Mine	Peabody Energy	1.0
Total		**149**

Source: Bureau of Resources and Energy Economics, April 2013.

Both Deloitte and BREE point out that the total value of their respective pipelines is being held up by higher costs being attributed to existing projects rather than new projects being added.

Both also make the positive point that there remains the possibility of securing many of the doubtful projects in the pipeline if the right economic and policy conditions are in place.

The reasons for the decline in the pipeline

There are a range of factors contributing to the decline in the prospective investment coming out of the investment pipeline – only some of these can be remedied by the actions of governments and industry:

1. *Some abnormally large projects coming to completion*: The current investment pipeline is buoyed by a small number of mega-projects, particularly LNG projects. Together these LNG projects are worth over $200 billion. The size and quantity of these projects being developed concurrently is something of an anomaly and is unlikely to be repeated. Consequently, as these projects finish there is unlikely to be projects of the same scale to replace them. There is little that policy makers can or should do to correct for this.

2. *Costs and competitiveness issues*: Increases in the unit costs (both labour and capital) associated with major projects without corresponding increases in productivity gains is undermining their viability and their competitiveness compared to international alternatives. In some cases companies are deciding to defer or revisit investment decisions or park their plans in Australia and invest overseas where costs are cheaper (see Exhibit 1). These matters have been extensively considered by a BCA project costs task force and are discussed at greater length in Section 3 below with policy recommendations also provided in Section 4. This is an area where actions by governments and industry can make a difference.
3. *Price and demand fluctuations*: Fluctuations in the demand for, and price of, global commodities creates greater uncertainty around the viability of investments. These factors are driven by global markets and are largely uncontrollable.
4. *Slowdown in new, funded public infrastructure projects*: Looking forward, there are risks to maintaining an adequate level of publicly funded infrastructure projects. Government budgets are constrained and the alternative funding option of user pays has not been fully embraced. Australia's project planning and prioritisation systems can be better designed to deliver a rolling pipeline of high quality public infrastructure projects that demonstrate strong returns on their investment through cost-benefit analysis. The provision of public infrastructure is a controllable factor and policy recommendations are provided in Section 4 below. It should also be noted that much of Australia's wider infrastructure is planned and delivered today by private and public businesses responding to market and regulatory settings. In these cases, the quality of regulations that impact on investment returns can impact on the amount of investment.

Exhibit 1: Companies investing offshore:

In September 2012, fertilizer manufacturer Incitec Pivot announced that it had suspended its feasibility study on the development of an ammonium nitrate manufacturing complex at its Kooragang Island Site in Newcastle, New South Wales. In doing so it deferred its decision on whether or not to proceed with the development for at least two years, reflecting the "anticipated reduction in demand for ammonium nitrate and the high cost of construction in Australia".

A little over six months later, Incitec Pivot announced it would construct an US$850 million, world scale 800,000 metric tonne per annum ammonia manufacturing plant in Louisiana, US – an investment decision based on the US sites "competitively-priced energy, labour productivity and responsive regulatory environment".

Source: Incitec Pivot Ltd statements dated 17 April 2013 and 27 September 2012.

Flow through effects

The decline in the construction phase of the mining boom will most directly impact on the economy via a decline in engineering construction and a shift in employment patterns, with a relative decline in construction sector activity in Western Australia and Queensland.

There is a potential for the employment impact within certain business and employment sectors tightly connected to resources investment to be very large, especially given the high employment required during construction and markedly lower numbers required during operation. It should also be noted that where large capital projects are highly import intensive or employ large numbers of temporary foreign workers then the end of the construction phase will not have such a large impact domestically.

Other areas of the economy are expected to grow to keep GDP growth near or at trend, but this cannot be assumed and will require a positive economic and policy environment.

For the purpose of this paper the BCA has taken medium term forecasts for economic growth from a background research paper commissioned from Deloitte as well as information sourced from

Deloitte's *Investment Monitor* and *Business Outlook* publications (available by subscription). Table 3 summarises the main elements of these projections.

Table 3: Sources of growth 2012–13 to 2015–16 (projections, real $A)

Sector	Deloitte forecast	BCA comment
Engineering construction (private)	$98.0b in 2012–13, declining to $80.4b in 2015–16	Reflects the decline in resources investment as current mega projects are completed. **Not guaranteed if the decline in spending is greater**
Housing construction	$70.9b in 2012–13, rising to $90.2b in 2015–16	This forecast assumes growth in housing spending of 8 per cent for three consecutive years Other forecasters, such as Treasury, BIS Shrapnel and the HIA are less optimistic. While low interest rates and population growth will continue to drive demand, there remains a question over whether this will be sufficient to drive 8 per cent growth. **Not guaranteed**
Non-residential construction	Remains flat at around $40b over next three years	Reflects high vacancy rates in capital cities and relatively weak overall outlook for white collar employment. In line with forecasts of others, such as BIS Shrapnel, that see little growth in non-residential going in the short term. **Likely**
Infrastructure spending	Assumes spending on economic infrastructure will remain at least 4% of GDP over the decade – equating to $767b total spending. (Approx. 60% is private and 40% public)	This estimate arises from an analysis of the strength of the project pipeline in the early years. Over the rest of the decade it will rely on sustained strong private investment and effective planning and funding of public infrastructure projects. (Note: this category overlaps engineering construction and government investment) **Spending is needed but not guaranteed**
Net exports	$19.6b in 2012–13, rising to $53.1b in 2015–16	Growth in exports will rise substantially as capacity comes online following significant investment in capital e.g. BREE estimates iron ore exports increase from 533Mt in 2012–13 to 610Mt in 2013–14, or 14.4%) **Likely**
Consumption	Private: $797b in 2012–13 $858b in 2015–16 Public: $261b in 2012–13 $282b in 2015–16	Assumes average annual growth of 2.5% per annum in total consumption. An expected decline in the A$, low consumer confidence, and the household savings rate remaining high suggest that private consumption is likely to remain restrained. Public consumption will be constrained by fiscal consolidation. **Likely**
Government investment	$61.8b in 2012–13 rising to $64.9b in 2015–16	This includes both direct investment and investment by public enterprises. There may be a need to lift public investment in infrastructure as highlighted by this report **Likely**
GDP	Annual growth at the lower bound of trend (3% or less)	Given the analysis above even this moderate rate of growth over the next three years is at risk The government has revised down growth in 2013–14 to 2.5%; returning to 3% in the years after. **Not guaranteed**

Source: Deloitte Access Economics report to BCA and *Business Outlook*, available by subscription.

Impact on growth

As a result of the decline in resources investment Deloitte sees GDP growth will be below trend for the next three years (i.e. below 3 per cent per annum over 2012–13, 2013–14 and 2014–15).

The most affected sector will be construction, and in particular, engineering construction. Deloitte estimates that engineering construction grew strongly and contributed over 40 per cent of GDP growth (not the level) over the expansion years of 2009–10 to 2012–13. Now that investment is peaking Deloitte expects engineering construction to subtract 14 per cent from GDP growth over the next three years.

In real terms, the contribution of private engineering construction to GDP will decrease from $98.8 billion in 2012–13 to $80.4 billion in 2015–6. Over three years this equates to a cumulative fall in real output from that sector of $39.1 billion.

Deloitte forecasts infrastructure spending to remain strong to help offset the impact of resources sector on engineering construction. The assumption that this offsetting activity will occur depends on there being a positive economic and policy environment and is not assured.

Deloitte's broader set of forecasts for the economy over the next few years are that:

- Resource investment will decline from almost 8 per cent of GDP today to 5.5 per cent of GDP by 2016 and then fall below 4 per cent of GDP beyond 2023.
- Infrastructure will remain at least at the current high levels of 4 per cent of GDP over the decade, peaking at 4.7 per cent of GDP in 2017. This will result in accumulated spending of $767 billion over ten years. Deloitte's forecast is based on an assumption that a sufficient amount of high quality projects will be identified to justify this spending, but this is not assured.
- Growth in other sectors will partly offset the resources decline – aided in part by the release of labour from the resources sector, and adjustments in interest rates and exchange rates. Deloitte forecasts that:
  - housing investment will grow at over 8 per cent a year, with more of the growth coming from housing alterations (renovations) rather than new housing starts (note the Treasury forecast is for spending growth of 5 to 5.5 per cent)
  - consumption is not likely to grow strongly due to continuing deleveraging by households and the declining $A which will lead to higher prices for goods and services
  - net exports will increase slowly initially as exports from recent mining investments grow and imports associated with lower resource investment decline, but will then grow considerably though the latter half of the decade as most projects enter the operational phase
  - there is little prospect of an uplift in manufacturing investment.

The flow through effect from the fall in resources investment to the wider economy could be significant as illustrated in recent analysis by the RBA.[2] It found that the 'resource economy' (resources production, investment and related services) accounted for around 18 per cent of output in the economy in 2011–12, with 6.5 per cent of this coming from industries that provide inputs to resource extraction and investment, such as business services, construction, transport and manufacturing. The RBA also finds that these secondary activities are significantly more labour intensive than resource extraction, accounting for an estimated 6.75 per cent of total employment in 2011–12, compared with 3.75 per cent for the resource extraction sector

The importance of the resource economy to those other sectors was highlighted by the findings that:

- for the business services sector, 9 per cent of industry gross value add in 2010–11 was linked to resources activity
- for construction, 16 per cent
- for manufacturing, 16 per cent
- for transport, postal and warehousing, 15.25 per cent

Alternative sources of growth – infrastructure, net exports and housing

To mitigate the effects on the economy, both Deloitte, and academics such as Bob Gregory and Warwick McKibbin, conclude that infrastructure investment can play a critical role in offsetting some of the gap created by declining mining investment.

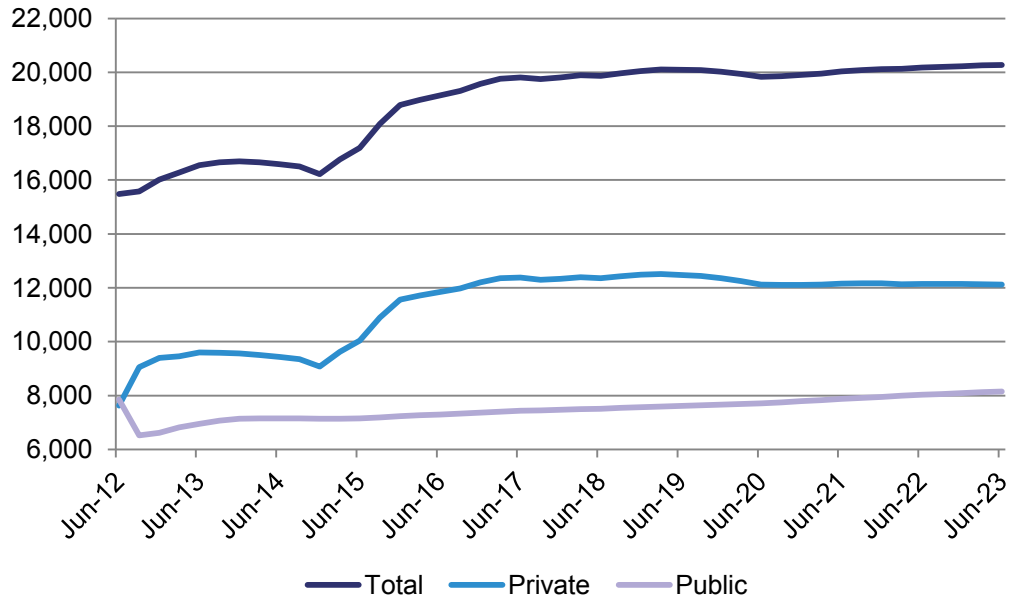
In particular, infrastructure investment can make use of the skill-sets and experience of workers employed on mining projects.

The long term benefits of high quality infrastructure investment will be:

- higher economic growth from the net benefits from infrastructure investment – high quality projects deliver up to $1.30 in benefits for every $1.00 invested according to the OECD
- infrastructure provision can support higher national productivity and export growth, for instance by lifting the capacity of our freight networks and by developing our international gateways
- increased workforce participation through making it easier for workers to travel to and from places of employment
- improvements to quality of life through better roads and public transport within and between our cities, the provision of adequate and affordable water, communications and energy services to support a growing population and economy and better service delivery in our fast growing regions
- the benefits of growth can be experienced by the community enabling greater support for the growth that Australia needs to lift living standards and invest in stronger communities and the environment.

Deloitte projects that real spending on economic infrastructure will total $767 billion over the next ten years – this estimate arises from an assessment of a strong project pipeline over the next few years that will then follow on through the rest of the decade. Real quarterly spending will steadily rise from around $15 billion to over $20 billion. See Figure 5.

Figure 5: Projected real spending on economic infrastructure (quarterly, $m)



Source: Deloitte Access Economics.

Infrastructure spending is forecast to be 60 per cent from private sources and 40 per cent from public sources (direct government spending and by public enterprises).

However, future infrastructure investment should not be taken for granted and will require concerted action to design, fund and deliver these projects. Nor should it be undertaken simply for the sake of it. Infrastructure investment should contribute to increased productivity and should enhance future growth prospects.

- For those public infrastructure projects that are primarily developed within governments, work is required to develop a strong, ongoing pipeline of quality projects that fit this criteria. Importantly these projects need to be funded, whether by governments or directly by users. The role of Infrastructure Australia will be important for planning and prioritising nationally significant infrastructure projects via the national project priority list (currently with over $80 billion in projects).
- For infrastructure projects that are primarily developed by private and public infrastructure businesses – increasingly the bulk of infrastructure investment in Australia – regulatory and taxation settings need to be conducive to infrastructure planning and investment. This includes regulations and taxes that impact on infrastructure provision and use and on the risk-adjusted return on investment and the ability to recover efficient costs.

Net exports should also be a strong contributor to growth. As the capacity developed as a result of the investment boom comes online, exports can be expected to lift. Downward pressure on the Australian dollar may further assist export oriented businesses. Deloitte forecasts that Australian net exports will rise in the future, but this rise will take time to be realised. They see net exports contributing around 4 per cent of GDP by 2020, rising to over 7 per cent by 2025 – by historical standards this will be a large component of GDP.

Other areas of investment, such as the non-residential building sector are unlikely to sufficiently offset the decline in mining investment. While approvals have risen over the past two years, they remain below their peak prior to the global financial crisis.

Deloitte's forecasts for housing investment are above those of some other forecasters. Treasury forecasts that housing investment will grow by 5 per cent in 2013–14 and 5.5 per cent in 2014–15. HIA forecasts that dwelling starts will fall by 2 per cent in 2013–14 and grow by 4 per cent in 2014–15. All these estimates suggest that dwelling investment will be an important source of new growth but will be unlikely to be in a position to significantly offset the decline in resources investment.

Consumption is not likely to revisit the strong levels of the past decade. Household saving rates jumped back up to around 10 per cent of household income following the global financial crisis, well above the very low levels of savings seen in the early 2000s. Given this, it is difficult to see that consumption would be likely to be a strong contributor to growth in the short term.

Managing the transition from construction phase to the operation phase

A key consideration for governments and industry is how the shift from construction to operation phase on major projects will affect output, jobs and regional economies.

The resources boom has a number of distinct phases. The first phase is an increase in the terms of trade, the second is an increase in investment and the third stage involves a significant increase in the level of exports.

At present Australia is placed in the second phase of this resources boom, and engaged heavily in constructing major projects.

The increase in investment requires considerable labour and capital to develop new, and to expand existing, facilities. This stage creates and sustains a considerable amount of jobs through construction. The RBA estimated that construction activity associated with the resource economy was responsible for 1.5 per cent of all employment, or around 170,000 people.[3] However, once built these facilities typically require far fewer workers once they shift to the operational (export) phase.

The magnitude of this difference varies greatly by industry and project type. The following project estimates are by BREE.

The major LNG projects in particular, which are responsible for a substantial part of the pipeline, require large numbers of workers during construction but far fewer during operation. For example:

- the Gorgon LNG project will employ around 10,000 workers during the construction phase, but only 3,500 during operations (2.9 to 1)
- the Australia Pacific LNG project will employ around 6,000 workers during the construction phase, but only 1,000 during operations (6 to 1).

Other projects, such as mines, have smoother employment profiles, for example:

- the Atlas Iron Ridley Magnetite Project is estimated to employ around 1,100 workers during construction and 750 workers during operations (1.5 to 1).

There are a small number of projects with higher employment in their operations phase than their construction phase, but projects with these employment profiles are rare, for example:

- the Moura Link – Aldoga Rail project is estimated to employ 350 workers during construction and 550 workers during operations (1 to 1.6).

For those major resources and energy projects that BREE has employment estimates for both construction and operation phases the average ratio is 2.4 employees in the construction phase for every one employee in the operations phase. This serves to highlight the impact of the transition from the construction phase to the operations phase for the investment boom.

To design, develop and construct these projects we have developed a workforce with project related skills that has developed considerable experience. Many of these skills should be able to be transferred elsewhere, so long as other project opportunities in the resources or infrastructure sectors emerge in Australia.

Despite the drop in employment associated with a number of individual projects moving to the operation phase, DEEWR is still forecasting employment growth in both mining (4.3 per cent) and construction (10.1 per cent) over the five year period between November 2012 and November 2017.[4]

Regional impacts

Australia's investment pipeline remains heavily skewed towards regional areas and towards two states in particular – Western Australia and Queensland (see Table 2).

The growth in investment in regional areas has contributed to substantial population growth. Minerals Council of Australia[5] found that the resident population (i.e. not including long distance commuters) in mining regions grew by 1.5 per cent p.a. between 2006 and 2011 as compared to all of regional Australia which grew at 0.8 per cent p.a. (Australia as a whole grew by 1.5 per cent p.a.).

Regions that grew their populations particularly strongly over this period included the Pilbara (WA) which grew by 7.3 per cent p.a. between 2006 and 2011 and the Central West (WA) region which grew by 6.7 per cent over the same period. More moderate growth was seen in Queensland, with regions like North-West Queensland growing by 1.1 per cent p.a.

The transition from construction to operation may have a strong impact on regional communities such as these, which have seen an influx of population and economic activity during the construction period.

While some regional areas expect many of the workers to stay in the communities, there will also be many instances of employees (particularly those employed on 457 visas who may leave Australia in pursuit of new opportunities) leaving the community.

As workers leave these communities it will reduce demand for goods and services, which should place downward pressure on prices for both commodities and assets. However, it may also reduce the economic size of these communities, making some businesses less viable and reducing economies of scale.

The distribution of investment activity across Australia is also heavily skewed towards Queensland and Western Australia. Together these two states alone are responsible for 56 per cent of the total investment pipeline and 58 per cent of projects that are currently under construction. In contrast to this, the two largest states, New South Wales and Victoria have only 19 per cent of the pipeline of projects despite accounting for 57 per cent of the Australian population.

Should the future pipeline adopt a focus on infrastructure investments, many of these would be expected to take place in New South Wales and Victoria.

This may lead to many people needing to make adjustments to their living and working arrangements given the construction workforce is currently predominantly located in the resource rich states of Western Australia and Queensland. On the other hand this shift in activity might better suit workers who are currently working on a fly in fly out basis.

Table 4: Investment pipeline by state (possible, under consideration, committed and under construction)

	$ billion	Share
New South Wales	98	11%
Victoria	67	8%
Queensland	239	27%
South Australia	31	4%
Western Australia	248	28%
Tasmania	6	1%
Northern Territory	66	8%
ACT	4	0%
Unallocated	118	13%
Total	**877**	**100%**

Source: Deloitte Access Economics *Investment Monitor*, available by subscription.

Opportunities lost from cancelled projects

Reflecting on the views of both Deloitte and BREE, there are a number of projects currently 'under consideration' which could yet be secured if the conditions for investment are favourable. We should be doing all we can to make sure that these projects are not being deferred or rejected due to factors that are within our control, whether as policymakers or companies.

Deferred or cancelled resources projects have a significant cost to the economy in terms of jobs, exports and tax revenues foregone.

As an example, in its advice to market about not proceeding with the Browse LNG project Woodside noted that 'the development would not deliver the required commercial returns to support a positive final investment decision'. This project would have created around 8,000 jobs during the construction phase and around 700 jobs during the estimated 40 years of operation (not counting additional jobs in transportation, maintenance and minor capital projects).

Key challenges for economic policy

The analysis points to the need for governments and industry to fully recognise the economic implications of the slowdown in resources investment and the need to stimulate other sources of growth. To some extent there will be natural adjustments occurring in the economy and the labour and capital currently deployed to resources investment will move into other sectors.

However this may not be smooth adjustment. Just as Australia faced structural adjustment challenges to support the resources investment boom, so it will face challenges as resources investment declines. These challenges will occur across industry sectors and across geographic regions.

Two key findings emerge for policymakers and industry from the analysis of Australia's forward investment pipeline and the implications for employment and growth:

- We should aim to **improve the competitive environment in Australia** to give us the best chance to secure resources investment in the planning phase and encourage new projects, producing a mild rather than steep decline in resources investment – because most of the output is exported, there are high growth dividends long term from resource investment (see the results of modelling by Deloitte below). Improving our competitiveness generally will also facilitate the shift to new sources of economic growth in infrastructure, housing net exports and other areas of the economy.
- We need to work now to **plan and deliver high quality infrastructure projects** that will constitute a forecast $767 billion of infrastructure spending over the decade, make a significant contribution to GDP and employment and deliver long term benefits to communities and towards lifting productivity.

Getting these right will have significant effects on GDP and employment and national income. The remainder of this report looks in greater depth at the challenges for lifting project competitiveness that were assessed by the BCA Project Costs Task Force (Section 3). We then propose a set of actions for governments and industry to take to best manage this transition in section 4. These actions form part of an overall policy agenda for Australia's long term growth that has been released as the BCA's *Economic Action Plan for Enduring Prosperity*.

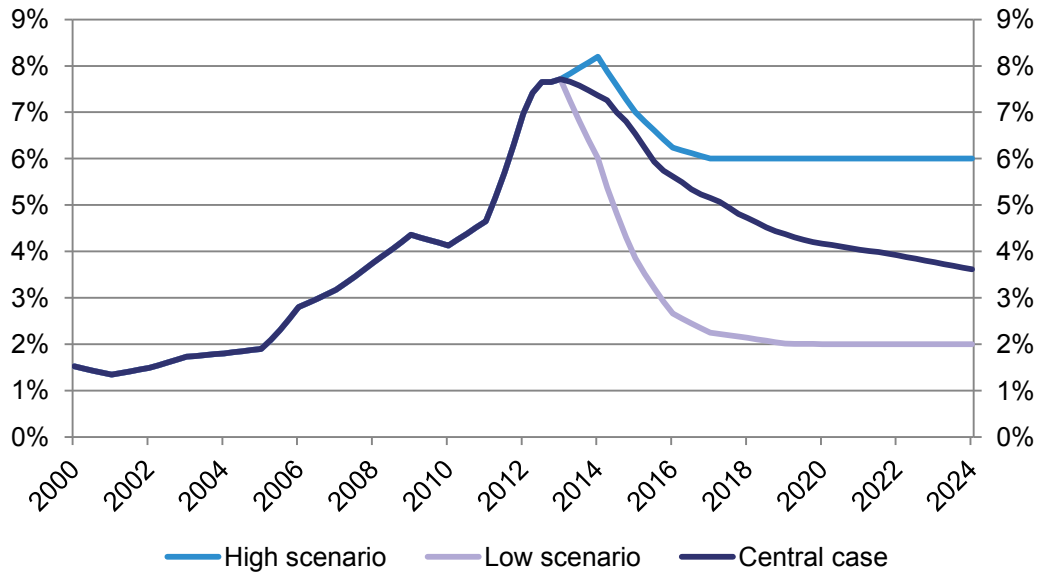
What's at stake? Modelling the benefits of higher resources investment

The Deloitte report includes an analysis of the GDP implications of the different scenarios for future resources investment in Australia. It shows how resources investment – which results in output that is mostly exported – is high yielding in the long term and that we should be making every effort to secure current and planned resources investments in the pipeline.

Figure 1 shows three scenarios for resource investment. Under all three scenarios resource investment as a share of the economy declines, but the slope of the gradient is different:

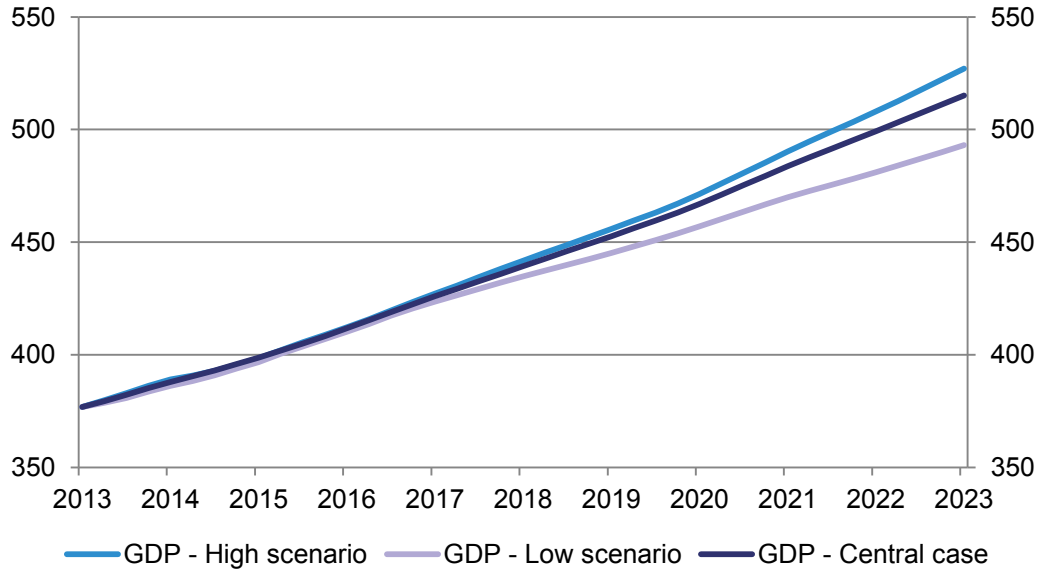
- high investment scenario – takes the Treasury forecast in the early years and then maintains resources investment at 6 per cent of GDP through the decade[6]
- central case – takes Deloitte's forecasts of a gradual decline leading to resource investment falling below 4 per cent of GDP by end of the decade
- low case – is based on the lowest of the major banks forecasts (ANZ) with resource investment reaching 2 per cent of GDP by 2016.

Figure 6: Deloitte Access Economics mining investment scenarios (%of GDP)



Source: Deloitte Access Economics.

Figure 7: GDP implications of the mining investment scenarios ($b, real)



Source: Deloitte Access Economics

After five years, the lower investment scenario contributes $15 billion less in terms of GDP to the economy, relative to the central case. In contrast, were the high case to be realised this would add $8 billion relative to the central case.

These changes to GDP also have employment impacts. After five years, employment is 15,000 higher under the high case, relative to the central case. In contrast, under the low case, employment is 28,000 lower than the central case.

More importantly, a key result is that the benefits from higher resources investment continue to grow over time.

- By 2023 the low scenario is $83 billion less in terms of GDP relative to the central case. The high scenario contributes $43 billion more in terms of GDP relative to the central case by 2023.
- By 2023, employment under the low case is 19,000 less relative to the central case and 56,000 less relative to the high case.

These differences are substantial and highlight the benefits that can be gained from securing and delivering the major resources projects currently in the investment pipeline. The next section looks at cost and competitiveness issues for investments in major projects in Australia and areas that policymakers and companies can address to help secure investment opportunities.

3. Addressing the high costs of Australian projects

Australia must work to constrain the escalating costs of delivering capital projects. This is critical to effectively delivering projects currently underway, securing those large capital projects that are approaching final investment decisions and setting Australia as a world leader in project management in the future. Our ability to constrain costs will determine how steep the decline in resource related investment is over the coming years and how rapidly other projects can be bought on line.

The BCA formed the project costs task force in September 2012 to develop a better understanding of why Australia is a high cost country for delivering major capital projects, and what industry and government can do to constrain costs.

Project costs

The 2012 *Pipeline or Pipe Dream* study warned that Australia was becoming a high cost environment to deliver these major projects, citing research that found resources projects are over 40 per cent more expensive to deliver in Australia than in the United States Gulf Coast, a common benchmark used in the industry to reflect best practice (see Table 5).

Clearly, Australia needs to ensure it attains labour productivity gains on its major projects to support current wage settings, which are high by world standards.

Additionally, the report said Australian resource projects are generally costed on the basis of labour productivity being 35 per cent less than in the US Gulf Coast. Megaprojects worldwide are found to have a 60 per cent failure rate in terms of cost or time overruns. Projects are taking too long, there are major productivity problems and labour shortfalls.

Table 5: Summary of Australian project cost performance (without location adjustment)

Project type	Average cost compared to US Gulf Coast
Sustaining capital projects	40% higher
Iron ore and coal developments	38% higher
Large complex processing projects (for example, downstream components of LNG projects)	50% higher

Source: Internal report for the Business Council of Australia by Independent Project Analysis, 2012. Note: Sustaining capital projects: Examples of sustaining capital projects are major capital upgrades to petrochemical facilities. Iron ore and coal developments: To produce a benchmark estimate of the cost of delivering projects which may not have actually been constructed in the US Gulf Coast (USGC), such as coal mines, Independent Project Analysis converts factor costs to those that would be experienced in the USGC, such as USGC engineering, project management, materials, major equipment and construction labour components, if such a project had been constructed in that region. The Independent Project Analysis database consists of 713 Australian projects primarily in the oil, gas and mining industries and over 16,000 projects worldwide. The projects range from less than $1 million to over $10 billion. Calculations assumed $1AUD =$1USD.

Away from the resources sector, estimating the growth in the cost of delivering commercial and infrastructure projects and how Australian projects compare to those overseas is difficult due to data limitations. However, research commissioned by the BCA indicates that commercial construction costs in Australia are higher than in the UK and some parts of the US. Similarly, the same research suggests that the cost of constructing roads is higher in Australia than in the UK.

These findings are consistent with an analysis undertaken by a BCA member company for this report of the cost escalation from 2006 to 2012 of delivering one kilometre of a major carriageway, such as a major freeway or tollway.

The analysis found that it costs 143 per cent more per carriage way kilometre to deliver in 2012. This escalation means that a road:

- that took 27 months to complete in 2006 would now take 36 months
- that a cost of $4.6 million per carriageway km in 2006 would now cost $11 million
- that an average requirement of 57 staff per month 2006 would now be 86 staff.

Drivers of costs

The task force endorsed the general findings from these earlier pieces of research and found that the key drivers of labour costs and unsatisfactory productivity performance on resources projects include:

- problems with **planning, design, scheduling and procurement** – partially caused by overly optimistic project scheduling, scarcity of suitably qualified and experienced project managers and engineers and other key occupations, which at times led to inadequate project execution
- **unpredictable and unnecessarily complex and prolonged government regulatory processes** and decisions – which compounded any pre-existing problems in the construction phase. The conditions placed on projects arising from these processes also significantly impact on the project delivery phase
- the **workplace relations system** which:
  - enables unions to use the agreement negotiating process to ramp up high terms and conditions as project proponents are having to meet deadlines at critical stages in the project start-up and delivery
  - limits the capacity to achieve productivity offsets to balance wage levels
  - enables unions to prevent project proponents from using contractors and other arrangements to manage workforce numbers and deployment through the different stages of a project in line with workforce demands.

Planning, design, scheduling and procurement

The high demand environment placed significant pressures on the labour market for project managers, engineers and skilled construction labour. This contributed to driving unit labour costs on resource projects to very high levels and strained the execution of project management.

These shortages have been particularly acute in the engineering and project management related professions, accordingly the cost of securing the services of these professionals has become very high. Engineers in West Australia have charge out rates of ranges from A$160 up to A$220 dollars per hour on major projects like Gorgon, Ichthys and Wheatstone. For example, data made available to the BCA shows that a lead engineer hired for a mega project under a 457 visa would cost a company $523,192 per year (total costs to the employer including overheads) whereas the equivalent local hire (if available) would cost $349,312.

These rates are around 30–50 per cent higher than the standard Engineering rates in Houston for US Gulf Coast Projects.

Related to the skills shortages and the high demand environment, resource companies noted that project planning and engineering was at times inadequate. The upshot is that Australian oil and gas companies, in particular, had to employ more engineering and project management people to correct for early mistakes. This led to more reworks in the construction phase, which partly explains why construction labour costs have been higher in Australia than elsewhere.

For example, data from a company involved in an onshore gas development seems to confirm that inadequate project management practices are partly to blame for higher indirect costs (and subsequent escalation in construction costs). This company estimates that Australia uses many more engineers to plan and execute the same scope of work compared to the US. They estimate that it would typically take six total Drilling & Completions (D&C) engineers and managers to support six onshore drilling rigs that drill and complete 100 wells per year on multiple-well pads with simultaneous operations (complex planning and operations) in the US. In Australia, it takes close to 30 total D&C managers and engineers to support six drilling rigs that drill and complete 95 wells per year, most of them being operated in less complex environments.

Engaging successfully with the region and community that will host major projects, can also reduce costs and assist with project delivery. This should be seen as a key aspect of project management. While many communities embrace the economic and social development opportunities of the investment boom, there are instances where a lack of community support for major projects is working against the delivery of current and future projects.

Government and business both have a role in successful community engagement and should work to develop best practice guidelines for community engagement around major projects that have significant impacts on communities. These effects will be mitigated somewhat by the slowdown in the resources boom lessening the competition for skilled labour and capital. But there are many lessons to be learnt from recent experience that should help to improve performance on future projects, especially should the conditions for another sudden rise in investment occur again in future.

Unpredictable and unnecessarily complex and prolonged government regulatory processes

Inefficient government approvals processes particularly those relating to environmental and planning approvals at the state and commonwealth levels of government, have a major impact on the cost of delivering resource projects. As noted above, delays and uncertainties in the pre-construction phase of projects, whether they be caused by government approvals or design challenges, can subsequently impact on construction costs as changes to scope and construction schedules occur.

A recent draft Productivity Report that benchmarked Commonwealth, state and territory approvals process for major projects found that cost of delaying an average-sized Australian oil and gas extraction project, valued at $17 billion by one year could range from $300 million – $1.3 billion depending on the assumptions made. The centre of this range corresponds to a reduction in net present value of around 9 per cent for the project, which would materially impact on a prospective final investment decision, potentially jeopardising the viability of the project.

A specific example of the costs caused by an inefficient approvals process is the National Offshore Petroleum Safety and Environmental Management Agency's (NOPSEMA) approach to conducting its assessments. Advice from members is that NOPSEMA's use of a 'sampling' approach to conducting assessments – where a proponent's environmental plan is sampled to determine is efficacy – is not sufficiently supported by guidance on what information is required in environmental plans.

The lack of adequate guidance means that the sampling process becomes iterative, which increases the costs of finalising an environmental plan. Advice from members indicates that, since NOPSEMA has been established (replacing state based regulators) the cost to prepare an environmental plan and supporting documents has increased from less than $100,000 per well prior to NOPSEMA to $450,000–$750,000, depending on the complexity and risk of the individual project proposal.

The costs of delays are far larger than the direct cost of preparing plans. For example, the cost of holding a non-operational offshore drilling rig (including ancillary services) can be as higher as $1 million per day. The long term risk is that operators of rigs will go elsewhere if delays become endemic to the Australian industry.

The Australian Petroleum Production and Exploration Association reported in great detail the source and cost of duplication in the off shore oil and gas industry in its report *Cutting Green Tape: Streamlining Major Oil and Gas Project Environmental Approvals Processes in Australia*.[7]

An additional example can be drawn from an oil and gas operator, who in 2012 was required to obtain approvals to undertake a seismic survey of a gas field in the north west of Western Australia. This activity potentially triggered compliance with four separate pieces of legislation administered by four different government agencies at both the state (WA Department of Mines and Petroleum and the WA Environmental Protection Agency) and Commonwealth level (NOPSEMA and the Department of Sustainability Environment Water Population and Communities (SEWPaC)). The Department of Mines and Petroleum (DMP) referred the activity to the Environmental Protection Agency, who deemed that no assessment under the Environmental Protection Act (WA) was required. Three separate submissions were prepared, which, while covering similar information, required different formats and assessment processes. Approval conditions and reporting and compliance measures for the activity were applied by both SEWPaC and DMP. The operator has successfully conducted a number of seismic surveys over the last two decades, and the activity was eventually approved by all authorities.

Given the experience of the operators and of the government departments in respectively conducting and assessing these kinds of activities, it is the view of the BCA that there is scope for removing the current double handling (or in the case cited above, quadruple handling) within and between governments.

Duplication between governments can also occur when applying conditions to project approvals. The BCA has previously cited the example of one BCA member company that completed an environmental assessment process that took more than two years, involved more than 4,000 meetings, briefings and presentations across interest groups, and resulted in a 12,000 page report. When approved, more than 1,500 conditions – 1,200 from the state and 300 from the Commonwealth – were imposed. These conditions have a further 8,000 sub-conditions attached to them. This form of duplication is potentially very much more costly than duplication in the assessment phase of environmental projects, as conditions must be applied and adhered to for the life of a project.

The practical manifestation of an uncertain and inefficient regulatory process was shown when Metgasco and Dart Energy – coal seam gas producers announced That they would close down Australian operations in response to regulatory uncertainty. Dart Energy's 2 April 2013 media release notes of,[8] "a decision to suspend field operations in Australia until there is clarity and certainty around State and Federal policies to support the industry".

The implications of this decision were spelled out by Dart Energy: "the consequence is that investment is leaving the country, field operations are being suspended, Australian jobs are being lost, and the impending energy crisis in New South Wales is not being addressed, and indeed, will only get worse. This is in direct contrast to the UK, where the government is actively seeking to support the responsible development of unconventional gas resources."

The workplace relations system

The current workplace relations system enables unions to use the agreement negotiating process to ramp up high terms and conditions as project proponents are having to meet deadlines at critical stages in the project start-up and delivery. It also limits the capacity to achieve productivity offsets to balance wage levels, partly by enabling unions to prevent project proponents from using contractors and other arrangements to manage workforce numbers and deployment through the different stages of a project in line with workforce demands.

For the resources sector, it has exacerbated the challenges of operating in remote environments.

Greenfields agreements

The issues concerning greenfields agreements have been well canvassed in submissions to the review of the Fair Work Act. In their submission, BHP Billiton illustrated the challenges of negotiating greenfields agreements and the impacts on project delivery. BHP Billiton is a co-venturer with Esso Australia in a long standing oil and gas production venture in Bass Strait. The Kipper-Tuna and Turrum projects are current major expansion projects in this joint venture. The operator faced the difficulty that the projects require the building and then deployment of expensive and special purpose vessels and facilities, sourced outside Australia, which then had inflexible sailing schedules to Australia, easily discernible to Australian construction unions. The deployment of many other vessels and operations turned on this. The Australian construction unions took advantage of this situation to hold out for unreasonable demands for wages and the employment of favoured individuals, banking on the operator ultimately having no practical alternative but to submit.

BHP noted that this unbalanced situation which is causing huge cost blowouts and great damage to industry around Australia.

Productivity improvements to offset labour costs

Australia is a high wage country – the way to ensure this can continue is to ensure labour productivity gains major projects support current wage settings, which are high by world standard.

For example, one company that provided data for this study estimated that total labour rates (e.g. accommodation for FIFO workers) on remote Australian projects are around three times what you would see in the US Gulf Coast, but labour productivity performance is such that 80 per cent additional time was required for the equivalent amount of work i.e. Australian labour productivity is 55 per cent of US Gulf Coast productivity.

This is not just a problem for the resources sector – Australian labour rates (skilled and unskilled) for commercial construction projects are now higher than those in the UK and parts of the US, and approaching those of New York (see Table 6), which is regarded as one of the most expensive cities in which to undertake construction project.[9]

Table 6: Labour rates

Labour rate (AUD/hr)	Australian EBA	Australia sub-contractor	UK	Houston straight time	New York straight time
Labourer	75	38	21.9	24.2	89.5
Plumber	95	68	53.1	41.1	148.4
Carpenter	82	57	50.9	40.0	115.8
Electrician	95	68	53.1	36.8	133.7
HVAC fitter	85	64	51.8	41.1	197.9
Foreman	150	100	68.9	50.5	156.8

Source: Turner and Townsend

Table 6 shows hourly charge out rates for Australia, the UK and US (converted to Australian dollars at current exchange rates) for trades that are commonly used in commercial construction. Charge out rates are the prices charged by the head contractor or sub-contractor, rather than the take home wage of the worker. The rates include the base wage, taxes and benefits as well as overheads (plant, admin, etc.) and profit margins.

A large part of the differential between the Australian and UK or Houston rates can be explained by the appreciation of the Australian dollar – which makes Australia rates appear higher when US and UK rates are expressed in Australian dollars. However, Australian Enterprise Bargaining Agreement (EBA) labour rates would still be 50 per cent higher than those in the UK were the Australian dollar to return to its average for the last decade.

Several factors potentially help explain the differences in cost between the EBA and non-EBA categories. Subcontractors with EBA labour working with Tier 1 contractors are often highly specialised, and carry high overheads, training costs, and provide transport, plant and equipment. Furthermore the market may be undersupplied with suitably qualified tradespersons, with high competition from the resources sector which causes charge out rates and wages to increase.

However, the differential between the Australian EBA and non-EBA wage rates particularly for less skilled trades may indicate that Australia's workplace relations system plays a significant part in driving costs – as evidenced by the fact that EBA ordinary time charge out rate for a labour is about 98 per cent higher than for a non-EBA subcontractor.

Labour productivity must be higher for those covered by an EBA in order to sustain such a large differential between those contractors not on an EBA, but the workplace relations system restricts project managers ability to drive labour productivity improvements.

The impact of the enterprise bargaining agreements on labour productivity and costs

While the impact on costs is difficult to quantify, it is becoming increasingly clear the ability of project managers to drive improvements in labour productivity is being reduced under the current workplace relations framework. The view of the task force is that this has had a material impact on costs.

Specific examples of provisions that the ability of project managers to drive labour productivity can be derived from EBAs covering electrical trades in Victoria.[10] Examples of provisions that require union consultation or agreement – rather than agreement via direct engagement between employers and employees – that restrict efforts to lift productivity include :

- varying cycle, hours of work and start/finish times
- rosters and varying shift arrangements
- individual flexibility arrangements – generally
- apprentice ratios
- engagement of contractors.

They potentially prevent employers from introducing changes to production, program, organisation, structure, or technology in order to lift productivity.

Provisions that require agreement between management and unions – rather than employers and employees – such as these lead to compromise, delay, and deals concerning unrelated matters. Similarly, provisions that require '*consultation'* quickly lead to industrial disputation if agreement cannot be reached – and are thus functionally equivalent to an '*agree*' clause.

It is difficult to quantify the cost impact of such clauses, other than to say that projects in Victoria, where these types of onerous agreements apply more widely, can cost 20 to 50 per cent more, according to one company involved in numerous commercial and industrial projects around Australia. The task force considers that for these issues, there should be a requirement to inform (within reasonable time) rather than *consult* or *agree* with unions.

4. Actions to restore our competitiveness and get investment flowing

This report has highlighted key challenges for Australia as the resources investment boom peaks in coming years:

- we should aim to **improve the competitive environment in Australia** to give us the best chance to secure resources and infrastructure investment in the planning phase and to encourage new projects and new sources of growth
- we need to work now to **plan and deliver high quality infrastructure projects** that will constitute a forecast $767 billion of infrastructure spending over the decade.

Australia's governments, industries and companies need to take action now to:

- secure the effective delivery of $408 billion of projects already underway and $60 billion of committed projects by reducing the cost of delivery
- bring home the next wave of new viable investment on the drawing board – $159 billion in projects under consideration and longer term a further $250 billion in 'possible' projects
- ensure Australia maintains strong levels of spending on public infrastructure projects with private investment as part of an estimated $767 billion in infrastructure spending over the next ten years
- implement policies to reduce the costs of projects
- implement policies to reduce other barriers to projects being delivered effectively
- improve our competitiveness so that other sectors of growth can emerge e.g. net exports and housing.

A number of reports, including this one, have now identified concrete policy actions that can be taken to restore Australia's competitiveness. What is needed now is for all stakeholders to agree on concrete steps to restore our competitiveness.

Actions governments can take

Steps to restore Australia's competitiveness

- All governments need to recognise the challenges Australia faces in delivering major projects and prioritise policy action that will reduce the costs of delivering projects and lift project productivity.
- The Commonwealth and state governments need to work together to better monitor the forward investment pipeline for the whole economy and capture data on the costs of delivering public infrastructure projects in order to better identify cost drivers. Such a task could be overseen by the Bureau of Infrastructure, Transport and Regional Economics, and would be complementary to the role of the BREE in collecting resources and energy related data.
- The Commonwealth government should ensure project proponents have access to the skilled workforce that is needed to deliver major projects competitively. This means ensuring Australia remains open to skilled migration to meet peaks in demand, taking steps to remove barriers to labour mobility, support the education and training system to improve the skills of the labour force and supporting industry to train their workforce.
- All levels of government need to be guided in reforming their development assessment and approvals processes by the recommendations in the Productivity Commission's draft report on benchmarking Australia's major project approvals processes. Industry needs to constructively engage with governments to assist in this task.
- The Commonwealth should negotiate bilateral agreements under the Environment Protection and Biodiversity Conservation Act to accredit state government environmental approvals, initially for low-risk, low-impact projects in environmentally well understood areas.
- The Commonwealth should accelerate strategic environmental assessments in areas where major developments and projects are likely to occur. These assessments should provide for subsequent developments to be deemed complying developments having been tested against a set of criteria established in the strategic assessment.
- The Commonwealth government should ensure workplace relations arrangements allow businesses to grow, innovate and manage their workforce and capital while also providing workers a fair income in conditions of freedom, equity and safety. This should be done in a way that allows more direct engagement between employers and employees to drive productivity improvements at the firm level.
- State governments need to work with industry to implement effective regional planning to help alleviate the cost impact of constructing major projects in a remote environment.

- State governments should establish special development authorities for regional growth areas to expedite land approvals and the development of social and economic infrastructure.
- Regional development plans around major resource projects should be carried out by state governments, including provision of housing and economic and social infrastructure. Special development zones should be established to expedite approvals of land use.
- Australia's governments should continually aim to set internationally competitive tax regimes and credible policy making processes that reduce uncertainty for investors and creates an environment conducive to making long term investments in major capital projects.

Steps to foster investment in high quality infrastructure

- State and federal governments should prioritise long term strategic planning of our cities and regions and identify the critical infrastructure projects needed for a growing economy.
- Infrastructure Australia should enhance its role to identify new infrastructure projects of national significance, in addition to receiving proposals from the states. The types of projects that might be identified could be projects that cross state borders, or projects that are in regional areas that would substantially lift national output. Infrastructure Australia could also use its independence to argue for consideration and development of high value infrastructure projects that might be politically sensitive.
- State governments should produce regular 15-year infrastructure plans that provide a pipeline for private investment, linked to their fiscal strategies. The plans should include both fully funded projects for the first five years as well as commitments for project investments through the outer years. These plans should be legislated.
- Governments should expand opportunities for private sector to put forward ideas for new infrastructure projects through specific processes for considering unsolicited proposals. The New South Wales process is a good template.
- Governments should set up dedicated infrastructure funds for facilitating investment. These infrastructure funds should be the repository for infrastructure funding generated from budget allocations, asset sales and/or borrowing. They should have clear rules that spending should only be allocated to projects that have been subjected to cost benefit analysis and which arise from a long term strategic plan.
- New funding sources for infrastructure should be unlocked by governments selling their infrastructure businesses to the private sector and recycling that money into new investments.
- The federal government should consider lifting its expenditure on infrastructure investment of $24 billion over five years, including borrowing to do so, subject to funds being allocated to Infrastructure Australia approved projects.

Actions companies and industry can take

- The resources sector, with construction companies, should take steps to support the development of centres of excellence to capture the engineering and project management lessons from the first phase of the resources boom. This could be done in partnership with the John Grill Centre for Project Leadership at the University of Sydney.
- The focus of such a partnership should be on:
  - better oversight and governance over project plans and schedules to correct for optimism bias and narrow considerations of risk
  - collaborative engagement with internal and external stakeholders including government, the workforce and the broader community
  - leadership practices that communicate strategy effectively and develop the specialist skills and capabilities of individual project team members.

- Develop best practice approaches for community engagement around major projects that have significant impacts on communities and implement processes to undertake this engagement, including:
  - engagement early (including during feasibility phase)
  - community liaison groups
  - provision of information including on project impacts and how the community will be involved in the project
  - identification of the lasting positive legacy for communities.

Attachment 1 includes the full set of recommendations from the BCA project costs task force.

Notes

1. BREE, *Resources and Energy Major Projects*, April 2013, p.1.
2. Reserve Bank of Australia, *Industry Dimensions of the Resources Boom: An Input-Output Analysis*, February 2013.
3. Reserve Bank of Australia, *Industry Dimensions of the Resources Boom: An Input-Output Analysis*, February 2013.
4. DEEWR, Industry Projections 2013.
5. Minerals Council of Australia, *Analysis of the Changing Demographic Profile of Australia's Mining Communities*, February.
6. Note that the Treasury forecasts pre-date the updates provided on 2 August 2013.
7. Australian Petroleum Production and Exploration Association *Cutting Green Tape: Streamlining Major Oil and Gas Project Environmental Approvals Processes in Australia* 2013.
8. Dart Energy, http://www.dartgas.com/page/Australasia/Australia/.
9. Turner and Townsend, *International Construction Cost Comparisons*, 2013.
10. EBA's have been made between the ETU and Globe Tech, Silcar, Expert Data, VIP, NCI, Fredon and through a pattern agreement which includes Transfield, Stowe, Nilsen, ODG, BMC, Elecraft and Watters.

Attachment 1: Recommendations and directions for change

With investment set to play an increasing role in our economy Australia needs to get its regulatory, workplace and skills settings right in order to avoid *big boom* and *big bust* cycles. The goal needs to be to get Australia's local workforce that has worked on the most recent boom on to a well managed next wave of projects – securing the knowledge learned from the most recent boom. To do this Australia's regulatory environment must be stable and effective and our cost competitiveness, compared to the rest of the world, must be improved.

Four key areas were identified for reform in order to reduce Australian costs to remain globally competitive:

1. improving access to a skilled workforce
2. improving government approvals processes
3. a workplace relations environment that is focussed on productivity
4. alleviating impacts of remoteness.

In each area, there are actions that can be taken at the industry level – by relevant companies acting collaboratively – and at each level of government. As noted earlier in the report, individual companies will also be able to identify a number of actions that will reduce costs and improve productivity.

Improving access to a skilled workforce

Findings

The capital project investment boom has led to unprecedented demand for project managers, engineers and other skilled professionals, as well as skilled trades.

To meet this demand companies have had to rely on overseas professionals and trades people, and professionals who previously had no direct experience in the mining and oil and gas sectors.

Demand for these skills has inflated the cost of labour. And efforts to train professionals from other sectors may have contributed to poor indirect productivity and increased costs in the construction phase.

A flexible, cost effective skilled migration program will remain an essential element in meeting peaks in demand for skill labour.

Reforms

Australia must ensure its migration and immigration settings allow companies to meet the cyclical demands for labour generated by mega projects. This demand for labour cannot be met by increased domestic training or retraining alone – attempts to develop a domestic workforce to handle an investment peak would be economically inefficient and socially irresponsible as it would result in poor skills utilisation and underemployment in times of more moderate demand. It is more efficient and economical to bring in skilled workers and manager to meet peak demand and them return them when demand falls to a level which can be met by local supply.

A flexible and efficient temporary skilled migration program must be put in place.

Notwithstanding that there will remain a need for skilled temporary migration, the size and nature of the investment pipeline means that Australia must train more quality project, managers, planners and engineers.

Industry, governments and unions all have a role in this regard:

1. The Commonwealth and state governments need to work together to better measure the forward investment pipeline and capture data on the costs of delivering public infrastructure projects. Such a task could be overseen by the Bureau of Infrastructure, Transport and

Regional Economics, and would be complementary to the role of the Bureau of Resource and Energy Economic in collecting resources and energy related data.

2. The construction and resources sectors should take steps to support the development of centres of excellence to capture the engineering and project management lessons from the first phase of the resources boom. This could be done in partnership with the John Grill Centre for Project Leadership at the University of Sydney. The focus should be on:
   - 2.1 better oversight and governance over project plans and schedules to correct for optimism bias and narrow considerations of risk
   - 2.2 collaborative engagement with internal and external stakeholders including government, the workforce and the broader community
   - 2.3 leadership practices that communicate strategy effectively and develop the specialist skills and capabilities of individual project team members.
3. The Commonwealth Government should implement the National Science, Technology, Engineering and Mathematics (STEM) Strategy called for by the Chief Scientist of Australia. This will enable a whole-of-government approach to coordinating STEM policies, prioritising public investment and adopting an incentive structure that encourages growth in business investment.
4. All governments and relevant agencies should use future workforce estimates to better target training and migration programs to alleviate skills shortages.

Improving government approvals processes

Findings

1. The planning and environmental approvals processes associated with major capital projects has increased costs, delays and uncertainty. This has materially impacted on the cost competitiveness of Australian capital projects and has caused the deferment of investment at the cost of jobs and productivity. The direction of recent government reforms concerning environmental approvals has been to further increase the costs to business with no improvement in environmental outcomes.

Reforms

The efficiency and effectiveness of environmental regulation in Australia can be improved without cost to the environment by shifting the Commonwealth Government's role away from assessing and approving individual projects to one of strategic and regional assessment/management and systems stewardship.

2. The quality of regulation making should be lifted by making the preparation of Regulation Impact Statements a statutory requirement for all new regulations with a significant impact, with exemptions strictly limited to issues of national security and emergency.

Environmental regulation

3. The Commonwealth should negotiate bilateral agreements under the Environment Protection and Biodiversity Conservation Act to accredit state government environmental approvals, initially for low-risk, low-impact projects in environmentally well understood areas.
4. The EPBC Act should be amended to remove the 'water resources' trigger as this directly duplicates existing processes for no environmental gain.
5. The Commonwealth should accelerate strategic environmental assessments in areas where major developments and projects are likely to occur. These assessments should provide for subsequent developments to be deemed complying developments having been tested against a set of criteria established in the strategic assessment.

Major project approvals

6. COAG should reform development assessment systems by removing duplication between the Commonwealth and states (including through bilateral agreements for states to approve proposals under the Environment Protection and Biodiversity Conservation Act, initially for low-risk, low-impact proposals in environmentally well-understood areas), establish single-approvals authorities and move to deemed approvals for complying developments.
7. The federal government should make productivity payments conditional on states agreeing to reform their development assessment and approval processes to make greater use of zoning and complying development, consistent with long-term integrated strategic plans. It should systematically measure the cost of multiple regulatory approvals processes on individual projects and report publicly.
8. State governments should adopt improved best practice arrangements for assessment of major economic, infrastructure and resource projects. This includes a single agency to deal with major project approvals and removing the concurrence powers of other state government agencies.
9. State governments should:
    - 9.1 undertake regional planning (as well as capital city planning) and in collaboration with the Commonwealth and local governments, where appropriate, to identify major land uses and associated infrastructure requirements
    - 9.2 use planning instruments which allow all policy matters to be brought forward into rezoning decisions, and which provide for subsequent developments to be deemed complying development and tested against a set of performance standards
    - 9.3 reserve areas for designated activity as part of strategic planning and where possible deem permissible activity as complying, for example, resources exploration.

A workplace relations environment that is focussed on productivity

Findings

Workplace relations laws have resulted in greenfields projects being delayed and costs driven up without commensurate improvements in labour productivity. Further, the Fair Work Act has resulted in a differential between the cost of labour under union EBAs and non-union subcontractors that cannot be sustained without improvements in labour productivity.

The scope of matters that can be included in EBAs has reduced project managers ability to take decisions to lift productivity and manage costs. This has reduced the flexibility required to deliver projects on time and within budget.

Reforms

The Fair Work Act should be reformed to create the institutional, policy and regulatory environment in which businesses can respond effectively to competitive pressures. These settings will largely apply across the economy. Settings will need to foster productivity through:

- supporting direct engagement between employers and employees at the enterprise level
- creating an environment that reduces unnecessary uncertainty and risk
- giving managers full discretion over management issues
- creating incentives for collaboration and minimising industrial conflict
- delivering fair remuneration outcomes that reward effort
- promoting healthy and safe workplaces.

1. Specifically, the Fair Work Act should be amended to:
   1.1 ensure good faith bargaining and provides access to employer-only greenfield agreements
   1.2 reduce the scope for adverse actions with the aim of removing opportunities for vexatious claims
   1.3 limit access to protected action where there has been unreasonable or capricious use of access to protected action
   1.4 make illegal clauses which exclude the engagement of contractors or labour hire companies
   1.5 modify the 'better overall outcome test' to provide for a broadening of scope of what is included in the test
   1.6 improve the capacity for the use of individual flexibility agreements
   1.7 modify clauses in relation to majority support determinations to ensure they are on the basis of secret ballot, open to both employers and employee bargaining representatives and provide for ballots during protracted bargaining periods.
2. There should be no return to compulsory arbitration – the Fair Work Act should include capacity for the head contractor facing excessive demands to seek the review of the proposed agreement by the Fair Work Commission against a set of criteria including the relevant award, national employment standards and better off overall test. Subject to the agreement meeting these criteria the commission should then have the power to issue a greenfields determination for the duration of the project.
3. Any provisions relating to rights of entry should be redrafted to reflect the arrangements that were previously in place ie: a union has a right to enter a workplace where:
   3.1 the union is covered by an enterprise agreement that covers the site or be attempting to reach one
   3.2 the union can demonstrate that it has members on that site
   3.3 those members have requested the union's presence.
4. The building and construction sector benefited from the previous regulatory environment prior to the abolition of the Australian Building and Construction Commission (ABCC). The benefits of this regulatory environment need to be restored by reintroducing the ABCC.
5. The Productivity Commission should be tasked to conduct a wide-ranging inquiry into the best form for modern workplace relations regulation in order to improve competitiveness and productivity without compromising worker pay and conditions. An interim report making recommendations on the most pressing workplace relations issues should be provided within three months.
6. The Commonwealth should ensure that the same behavioural standards apply to all parties in each workplace negotiation – employers, employees, managers and unions by inviting the ACTU to consider developing a voluntary code of conduct for its members.

Alleviating impacts of remoteness

Findings

The remote environment in which many major capital projects are being constructed increase the cost base and exacerbate other drivers of cost – such as a shortage of skilled professionals. While only limited policy options are available to governments in this regard, there are measures that could be pursued:

Reforms

All governments need to ensure their development policies and infrastructure priorities support the 'normalisation', to the greatest extent possible, of the economic and social infrastructure of remote regions that will experience sustained capital investment

1. State governments should establish special development authorities for regional growth areas to expedite land approvals and the development of social and economic infrastructure.
2. Regional development plans around major resource projects should be carried out by state governments, including provision of housing and economic and social infrastructure. Special development zones should be established to expedite approvals of land use.
3. All governments should support efforts to increase geographic mobility by:
    - 3.1 nationally recognising trade licences regardless of the jurisdiction in which they are obtained
    - 3.2 reducing or removing transactional taxes on property transfer (house sale) in favour of less distortionary tax bases
    - 3.3 working towards a common school starting age and national curriculum
    - 3.4 maintaining policy settings that minimise costs to employers who have staff on fly-in/fly-out work arrangement
4. The Commonwealth and states should review the efficiency and suitability of current transport links from ports through to major capital projects in remote regions.
5. Commonwealth and state governments must make improving the efficiency of ports and airports a priority.

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