IMPLICATIONS, CHALLENGES AND RISKS

Major project work is
recovering now
but, subject to funding and feasibility, may fall back again in coming years

Sustaining growth in the Queensland economy requires putting into place plans and policies that will encourage and sustain both private and public investment in the state over the long term

Meeting the infrastructure challenge ahead will also mean budgeting for larger increases in the maintenance to sustain the existing capital stock

Around two-thirds of the currently unfunded pipeline of work over the next two years needs to be funded just to sustain 2017/18 levels of major project activity in those years

Breaking the underspend pattern on planned infrastructure investment which in 2016/17 amounted to

$1 billion

The availability of funding for sustainable productive infrastructure investment should not derail investment itself – exploring innovative funding mechanisms remain critical to the outlook for the pipeline and the Queensland economy

IMPLICATIONS, CHALLENGES AND RISKS

Figure 32 compares last year's Major Projects Pipeline five-year outlook to the present forecast (note 2016/17 is now historical rather than forecast). As per the 2017 Major Projects Pipeline, we include all major engineering construction projects above $50 million (previous Reports only considered projects above $100 million in value).[7] Several key points are worth emphasising:

- As forecast in the previous Report, major project work fell again in 2016/17. While the decline was small, 2016/17 represented the trough in major project work in the State.
- The total value of projects in the 2018 pipeline is $39.9 billion, compared to $39.1 billion in the 2017 pipeline. However, the value of funded work in the pipeline is only $23.7 billion, with both public and private projects still awaiting funding commitments.

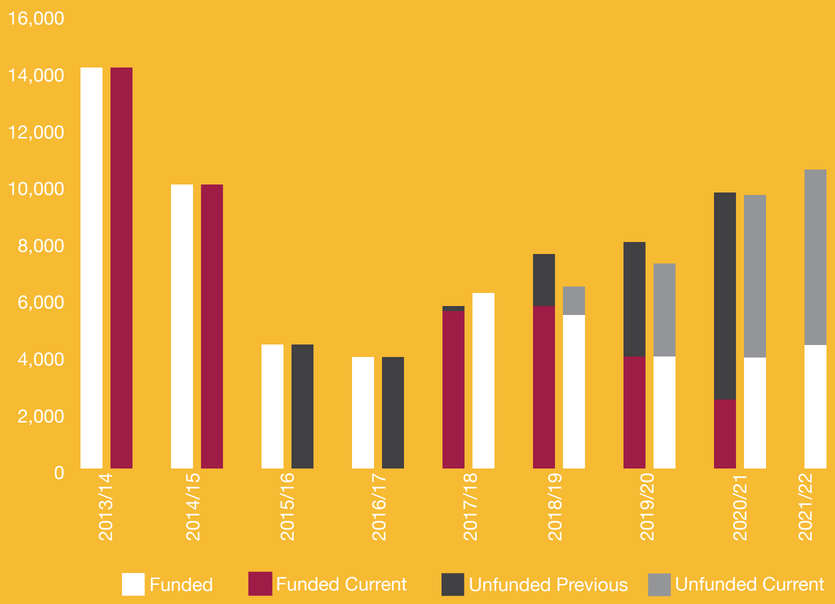
> Sustaining positive conditions for private and public investment from here will be important in keeping major project work on an upward trajectory

- Major project activity is now rising from the 2016/17 trough – but the main challenge will be keeping activity at sustainable levels into the future. 2017/18 represents a better year for major project activity, both in terms of comparison to activity the previous year, and against the expectation for 2017/18 in last year's Report. Keeping this momentum going in subsequent years is the key message from the pipeline. Despite funding commitments for Cross River Rail and Inland Rail, many other projects remain unfunded from both the public and private sectors. Meanwhile, some sectors such as roads, electricity and telecommunications simply do not have enough projects – funded or unfunded – to prevent declining levels of work in future.
- New public and private investment – including projects in the Major Projects Pipeline – is having a broader, stimulatory effect on the Queensland economy. From a position of falling State Final Demand (SFD) and weak employment growth over 2014/15 and 2015/16, SFD grew 2.6% through 2016/17, with public investment (+4.1%) and positive growth in private investment (+1.2%) for the first time since 2012/13 the key drivers. Annual employment growth has recovered to around 4% — the strongest rate since 2006/07.
- Public and private sector investment is driving the current recovery in major project work. New public investment is currently centred on roads and telecommunications (the NBN), but is anticipated to broaden into rail and water projects in coming years. By contrast, privately funded major project work is focused on electricity, airport upgrades and resource-related projects. Sustaining positive conditions for public and private investment from here will be important in keeping major project work on an upward trajectory.
- Queensland still lags New South Wales and Victoria in terms of funding and delivering infrastructure investment. As New South Wales and Victoria further ramp up infrastructure investment over the remainder of this decade, challenges are likely to re-emerge in procuring construction services. To minimise risks of project delays, failures and rising construction costs, Queensland needs to apply a longer-term approach to planning for capacity and capability in the construction industry. Such a plan should cover future workforce requirements and skills, as well as planning for required construction materials andmeeting critical transport and logistics challenges as major projects reach the construction phase.

7 In providing a more consistent comparison with last year's outlook we have also revised down previous optimistic forecasts for upstream oil and gas sustaining capital expenditures, and also removed the new Townsville Stadium development, which is more correctly classified as a non-residential building project.

Figure 32

Major Project Work Done Forecast: 2018 versus 2017



2016/2017 represented the trough in major project work in the State but the challenge will be keeping activity at a sustainable level into the future given how much of the pipeline is currently unfunded

Implications and Challenges

The key finding of this Report is that major project work is recovering now but, subject to funding and feasibility, may fall back again in coming years. Major project activity – mirroring the broader Queensland economy – has been through a rollercoaster over the past decade. However, the 2017/18 year has seen a 58% recovery in major project work from the trough in 2016/17. Maintaining this momentum is the core challenge facing the state, requiring a range of initiatives to improve levels of funding for infrastructure, ensure capability and capacity to manage a growing pipeline and, fundamentally, provide positive conditions and frameworks that support the economy's growth engines: public and private investment.

While it is sometimes convenient to slate economic success or failure to particular governments, politicians and policies, the volatile performance of the major projects market in Queensland and the broader Queensland economy can perhaps be more accurately put down to the impact of large, long investment cycles – with both the public and private sectors playing important roles.[8]

Queensland was already experiencing strong, balanced growth prior to the 2000s resources boom, with State Final Demand (SFD) growth averaging 7% per annum over the five years to 2005/06. Renewed business confidence following the global economic downturn in the early 2000s, a recovery in housing following the introduction of the GST, accelerating population growth (boosting both consumer spending and housing activity) and a low Australian dollar supercharged private investment during this time.

93%

of unlikely projects are privately funded

8 Investment in economics represents the addition to capital stock or productive capacity. It mostly consists of the construction of buildings and structures and purchases of plant and equipment, but also includes growth in livestock, minerals exploration and intellectual property. This is a very different meaning from finance, where investment refers to the purchase or creation of an asset with the expectation of generating financial returns.

Amrun Export Facility

With investment and major project work now positive, so too is growth in the Queensland economy...

By contrast, public investment took a back seat during first half of the 2000s, following very strong growth by delivering Year 2000 infrastructure projects the previous decade. While the Queensland economy rumbled along without growth in public investment – and particularly public infrastructure investment – its absence inevitably led to the emergence of infrastructure gaps, constraints and bottlenecks later in the 2000s, particularly given Queensland's rate of economic growth, the strong global economy (and particularly the emergence of China and its demand for metals and minerals), as well as robust increases in population.

As the need for greater infrastructure investment became increasingly apparent, the challenge was how this would be funded and financed.

This funding challenge would be solved in two ways. Firstly, the introduction of the GST combined with steeply increasing company profits and stamp duties eventually provided governments at the State and Commonwealth level with greater revenues that could be put towards infrastructure investment – although there was a significant delay between the improvement in underlying government finances and new investment. Between 2004/05 and 2007/08, public investment in Queensland doubled in value (from around $10 billion per annum to $20 billion) and SFD growth oscillated between 7-8% per annum.

But the second, and arguably more significant development, was the second phase of the resources investment boom following the global financial crisis (GFC) in 2008 – and very much driven by GFC-related stimulus policies around the world, and particularly China.

For Queensland, the second phase of the resources boom between 2008/09 and 2012/13 ushered in a new wave of gas (particularly LNG), coal and related infrastructure investment spanning pipelines, jetties and harbours, railways, electricity, water and roads. Total privately funded engineering construction activity more than tripled between 2008/09 to a peak of $39.2 billion by 2012/13, and much of this was reflected in the strong profile of major project work at the time, as evidenced in this Report. The strong economic boost provided by the resources boom also helped sustain government revenues and funding for public investment projects that had also been boosted in the wake of the GFC. While the GFC saw Queensland SFD decline slightly in 2009/10, it simply surged again over the following two years, peaking at over 9% growth in 2011/12 alone.

Between 2012/13 and 2015/16, both public and private investment in Queensland collapsed, driving sharp falls in major project work. While the resources investment bust was the main contributor, its impact was amplified by a significant reduction in public investment over the same period.

In turn, falling major project work impacted heavily on the Queensland economy, and especially those businesses operated by Queensland construction contractors and suppliers. Double digit declines in investment over 2014/15 and 2015/16 (despite the strong pickup in housing) were the primary architect of shrinking Queensland SFD and relatively sluggish growth in employment and incomes. Over this period, the state of Queensland was effectively in a historically deep demand recession, despite accelerating mining exports keeping overall economic growth (as measured by GSP) mildly positive.

Given this history, the positive growth in both public and private investment in Queensland through 2016/17 is welcome news. Major project work still eased over 2016/17, but has lifted in 2017/18, and so too has growth in the broader economy. Importantly, this year's Pipeline shows there are many projects coming through which, if funded, could drive further growth in investment, employment and economic growth in coming years. Finding sustainable mechanisms for funding these projects remains the challenge.

... but Queensland still has a substantial growth challenge ahead

While investment is finally turning around in Queensland, the outlook for growth in investment, employment and the broader economy is not exactly spectacular. Rather than the high growth rates experienced during much of the 1990s and 2000s, economic growth (as captured by Gross State Product or GSP) is expected to average around 2.8% per annum through the next five years, with SFD growth averaging a slightly better 3.3% per annum.

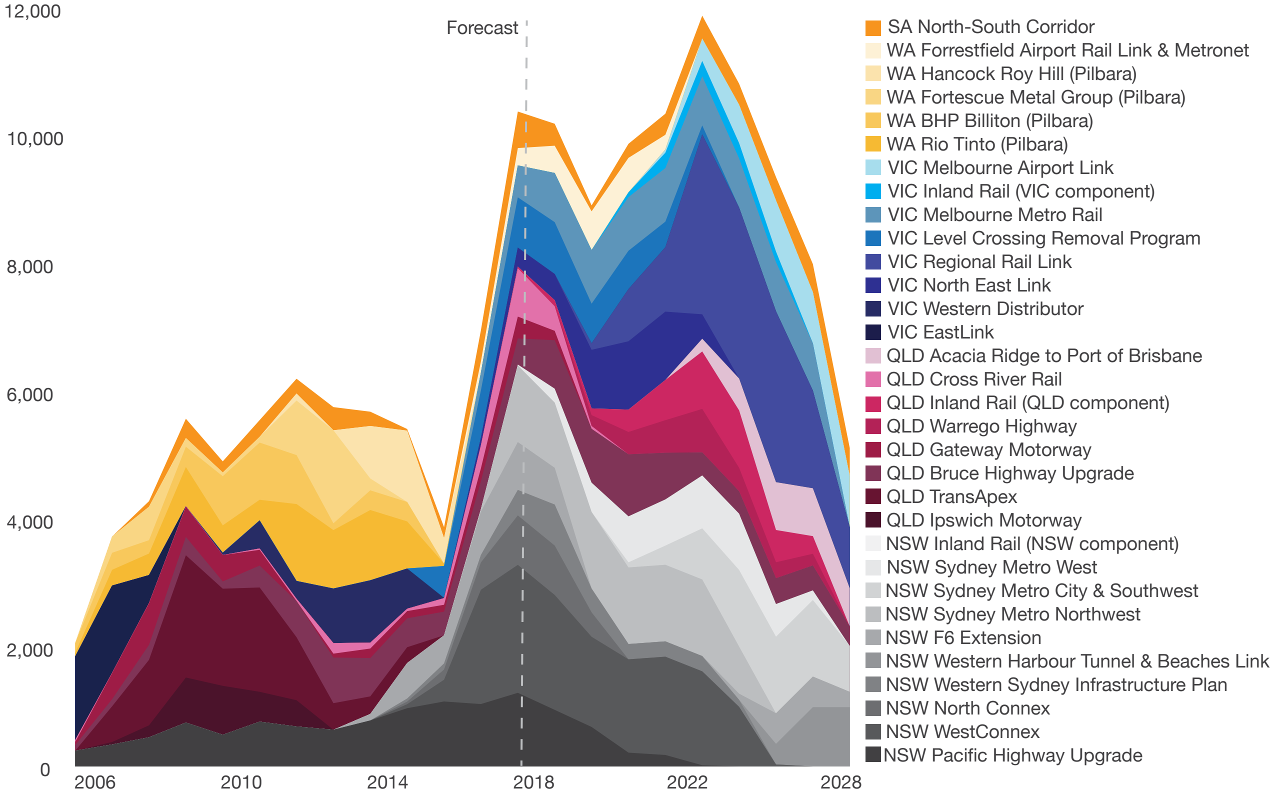
Whereas Queensland used to significantly outperform the Australian economy, the next five years only sees very marginal outperformance overall.

Key challenges facing Queensland major project work, investment, and the broader state economy include:

- **Imminent downturn in residential investment**. Thus far, the transition (at the national and state level) to more balanced economic growth has been assisted by new residential investment, in turn spurred by the lower Australian dollar and loose monetary policy from the Reserve Bank. However, there is only so much lower interest rates can do to spur private investment, particularly if sectors are already oversupplied, demand growth is weak and there is a general lack in business confidence. The residential building boom is near the peak at a national level, and is now falling back in Queensland. We expect residential investment to undergo a substantial correction in the short term while future demand will be impacted by an "oversupplied" housing market (particularly in the Brisbane area where the high density apartment boom was the most intense), high house prices, rising household debt, tighter lending restrictions and foreign capital controls, and weak income growth.
- **Funding and financing major project activity remains a critical issue**. Queensland is currently relying heavily on new Commonwealth and private sector funding to drive the upswing in major project work. Through the remainder of the decade, the majority of proposed major project work remains unfunded, presenting risks to the sustainability of the project pipeline, while the magnitude of the increases may not be enough to alleviate existing and emerging infrastructure deficits. While the Queensland Government has recently announced full funding for the $5.4 billion Cross River Rail project as its largest single infrastructure initiative, there are still challenges regarding the extent to which the State Government can fund broader infrastructure plans and programs across the state given its high level of debt, combined with the potential for weaker revenue growth from royalties and stamp duties if commodity and house prices cool.
- **Competing for scarcer construction resources as Queensland gradually turns the infrastructure taps on again**. New South Wales and Victoria, particularly, have taken full advantage of excess capacity which emerged in the national major projects industry in the wake of the downturn in resources investment in recent years (as well as public investment, nationally). With public investment finance supercharged by long-term asset leases, these two states have embarked on a massive program of infrastructure investment which still has many years left to run (Figure 33), absorbing capacity effectively idled in Queensland and Western Australia. Consequently, the national major projects market – and demand for skills and construction materials – has tightened considerably over the past year, and this is evidenced by rising prices for construction work as captured by known price indices such as the Road and Bridge Price Index and the Engineering Construction Implicit Price Deflator (Figure 34). Recent data shows that prices for construction work are now rising at the fastest rate since the end of the resources boom. If Queensland is to realise growth in major projects work as outlined in this Report, it will need to address a range of challenges across procurement to minimise risks to construction industry capacity and capability.

Figure 33

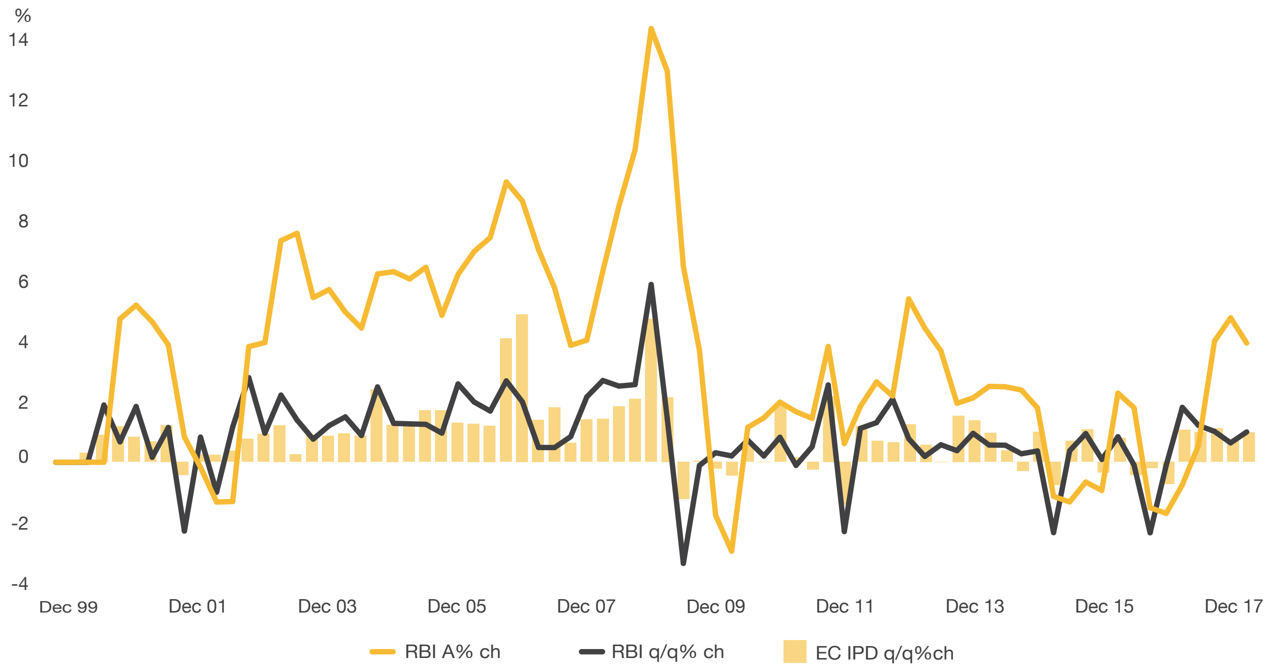
Work Done on Major Transport Projects (above $2 Billion)



Source: BIS Oxford Economics

Figure 34

Growth in Construction Price Indices - Queensland



Source: BIS Oxford Economics, ABS Data

— **Breaking the underspend pattern on planned infrastructure investment**. Even with 100% funding secured (including rising cost escalation), major projects can still be affected by underspending compared to what was planned in Budgets. As highlighted in the previous Pipeline report, there continues to be differences in planned public investment (measured as 'purchases of non-financial assets' in various Budgets) and actual spending outcomes. The 2016/17 State Budget, for example, planned for $8.3 billion in such investment, which the subsequent Mid Year Fiscal and Economic Review (MYFER) confirmed to be $7.3 billion – around a $1 billion shortfall. While the 2017/18 spend is projected to be on the rise, it will still be $1.5 billion below that projected in the 2016/17 Budget and marginally lower than that planned in the 2017/18 Budget. The better news is that projected spend here is forecast to rise significantly over the next few years, but realising this outcome means breaking the pattern of underspend which accrued over successive Budgets between 2012/13 and 2016/17 (Figure 35).

— **Managing the assets already in place**. Tight government finances can often make it challenging to provide adequate sustaining capital and maintenance to the public assets – across transport and utilities – that are already in place, particularly when building new projects offers greater political visibility and prestige. However, meeting the infrastructure challenge ahead will also mean budgeting for larger increases in maintenance to sustain the existing capital stock.

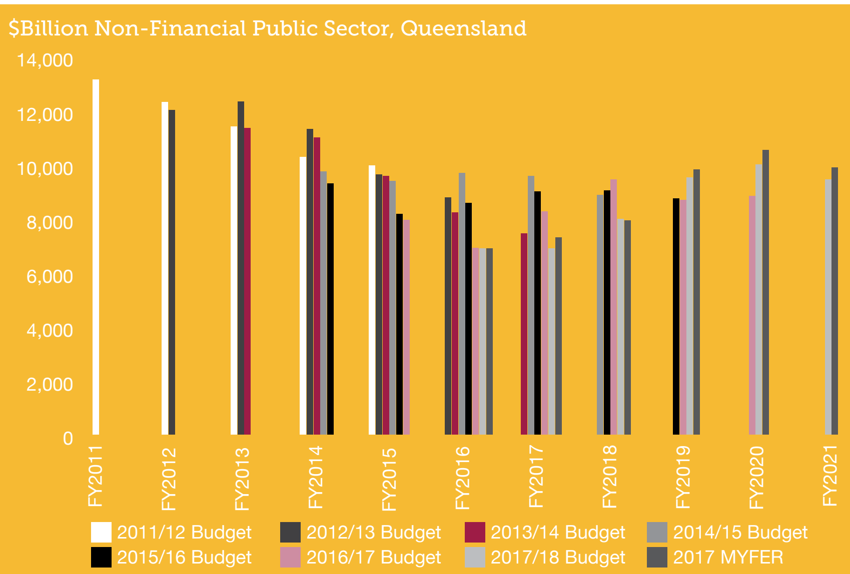
The 2017/18 Budget refers to a $38 billion infrastructure program over four years to 2020/21, a figure drawn from gross investment data. In net terms, allowing for the fact that depreciating infrastructure needs to be refurbished or replaced, infrastructure expenditure is substantially lower and, after peaking in 2018/19, declines again over the remainder of the forward estimates. Under the 2017 MYFER, net acquisitions of non-financial assets are expected to be just $3.1 billion by 2020/21, compared to over $8 billion during the peak years at the turn of the previous decade. This is at least an improvement on the 2016/17 Budget, which provided $2.2 billion in net public investment by 2019/20.

— **Relatively weak population growth in Queensland expected compared to the 'boom years'**. Population growth has slowed sharply in Queensland in recent years, from typically 2–3% per annum during much of the 1990s and 2000s, to between 1.3–1.7% in recent years. This, in turn, reflects the lagged impact of weaker economic activity and job opportunities in the state relative to other regions of Australia (e.g. New South Wales and Victoria) as well as the rest of the world. As economic conditions improve in Queensland vis-à-vis the rest of Australia and globally, an acceleration in population growth is expected, but it is not projected to return to the pace previously set. That said, weaker population growth is coming from a higher base, so this still translates to approximately 80,000–90,000 persons a year that need to be accommodated, which is roughly the level experienced in the early to mid-2000s, but lower than during the boom years.

— **Exposure to global developments and the Australian dollar**. Queensland's increasing integration into the global economy also presents challenges and opportunities for Queensland businesses and the broader economy. Since the 2017 Report, there continues to be substantial risks to global growth, although the underlying global growth story remains positive and beneficial to the Queensland economy. Moves to rationalise China's coal and steel industries amid concerns over the sustainability of Chinese economic growth, further interest rate increases in the United States and their impacts on currencies and asset prices, and recent moves in the US and China to implement trade sanctions all represent a clear and present danger to the Queensland economy.

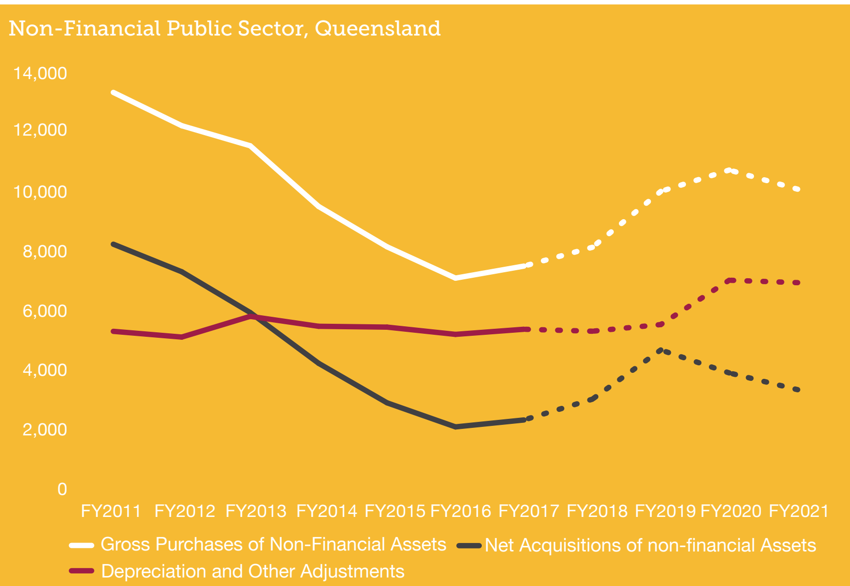
Against this, the Australian dollar will continue to act as a stabiliser and 'X factor' for the Queensland economy. The associated rise in the Australian dollar during the resources boom drove a structural change away from dollar-exposed industries and thereby weakened the rest of the state economy. Now, following the investment bust, the lower Australian dollar is reversing that structural change away from mining industries and regions and rebuilding activity in dollar-exposed and services regions such as tourism, agriculture, manufacturing, education and other exports. Irrespective of the benefits or otherwise of currency fluctuation, being exposed to trade exposed industries will inevitably open Queensland's economy to challenges.

Figure 35 – Purchases of Non-Financial Assets



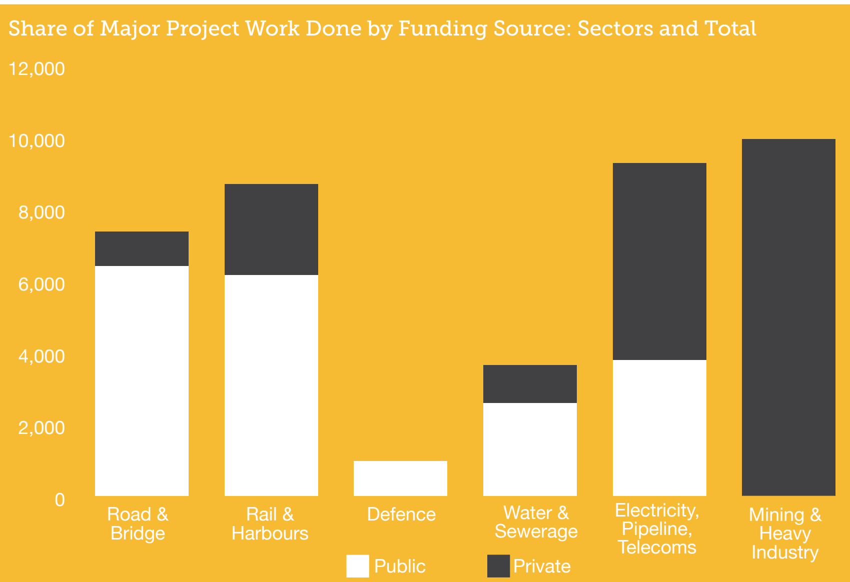
Source: Queensland Budget Papers, Various

Figure 36 – Purchases of Non-Financial Assets



Source: Queensland Budget Papers, Various

Figure 37



Overall, sustaining growth in the Queensland economy requires putting into place plans and policies that will encourage and sustain both public and private investment in the state over the long-term

Queensland's long-term economic strategy should concentrate on leveraging from (or improving) core (or potential) strengths. For Queensland, this includes its vast natural resource wealth, its close proximity to Australia's largest trading partners, its iconic Australian tourism destinations and enviable lifestyle benefits. State Government strategy should continue to focus on boosting programs to create more jobs and attract businesses and enable Queensland's economy to transition to be more balanced, innovative and productive.

Sustainable growth in public investment will be important. While the share of public sector investment in total engineering construction is lower in Queensland than in other states such as Victoria and New South Wales due to higher private sector funded mining-related activities, publicly funded projects play a major role in driving the State's economic growth. The challenge remains achieving these longer-term economic goals under a tighter budgetary environment through well thought out policies that provides sustainable funding for public investment whilst encouraging collaborative private investment. Sustained investment in productive infrastructure will remain a critical component of a broader economic strategy of Queensland to ensure cities and regional centres offer competitive benefits and help keep cost of living (and cost of business) pressures contained.

It also means investing in critical infrastructure for new growth regions – which are benefiting from the lower post-boom Australian dollar – to 'crowd in' private business investment decisions.

According to the Pipeline, the public sector will continue to play a significant role in funding and developing many categories of infrastructure over the coming five years, particularly in roads and bridges, railways, and water and sewerage. Over the next five years, public sector funded major project work (whether currently funded or not) makes up 50% of the total Pipeline, but the share is much higher in non-mining segments of activity.

The availability of funding for sustainable productive infrastructure investment should not derail investment itself – exploring innovative funding mechanisms remain critical to the outlook for the Pipeline and the Queensland economy

Despite its weakened post-boom financial position, the Queensland Government still has other, important funding levers available to it. Crucially, asset recycling has not been used to the same degree in Queensland as it has in other states and this remains a potential source of finance for future infrastructure projects, so long as there is effective post-sale regulation of privatised assets to ensure prices remain competitive. Introducing tolling on major roads (possibly in the form of, or introducing time-of-use tolling to manage peak demands) or more fundamental reform such as a broad-based road user charge, could also help fund future infrastructure projects – as well as potentially pushing out the timing for reinvesting in crowded roads networks.

And there are other funding options too, as detailed in last year's Report, including expanding the number of City Deals (bringing all levels of government to the table for a region), value capture, and implementing genuine tax and expenditure reforms.

Queensland has been able to extract greater value from the Commonwealth Government in recent years in helping to fund major public sector projects. Furthermore, the prospects of a tight Federal election ahead will no doubt see many promises of further Commonwealth funding assistance for Queensland infrastructure in coming months, particularly if there is evidence that these projects are productive and have a positive net benefit under rigorous analysis. At the time of writing, the Federal Opposition has already promised over $2 billion in funding for the Cross River Rail project, which would allow the State Government some flexibility to accelerate other major projects in the Pipeline. While it is wise, politically, for Queensland to maximise benefits in this way, at the end of the day it is no substitute for real tax and expenditure reform that can offer sustainable, lasting funding streams for infrastructure investment.

Interestingly, the Pipeline does provide some indication of the level of new funding commitments required to keep annual activity on major projects on an upward trajectory (or at least to keep it from falling back towards recent lows). According to the Pipeline, a further $681 million in activity on major projects is required on top of currently funded work to sustain 2017/18 levels of activity into 2018/19. By 2019/20, this additional funding requirement grows to $2.04 billion. The challenge is that there is only $909 million in unfunded major project work in the pipeline in 2018/19 and $3.06 billion in unfunded work in 2019/20. In other words, around two-thirds of the currently unfunded pipeline of work over the next two years needs to be funded just to sustain 2017/18 levels of major project activity in those years. Failing that, new projects may need to be found and funded to help reduce this gap.

According to the Pipeline, the following (currently unfunded) public sector projects are due to commence in the next two years. Decisions to fund, or accelerate, the development of these projects will likely assist in sustaining current levels of major project work over the next two years:

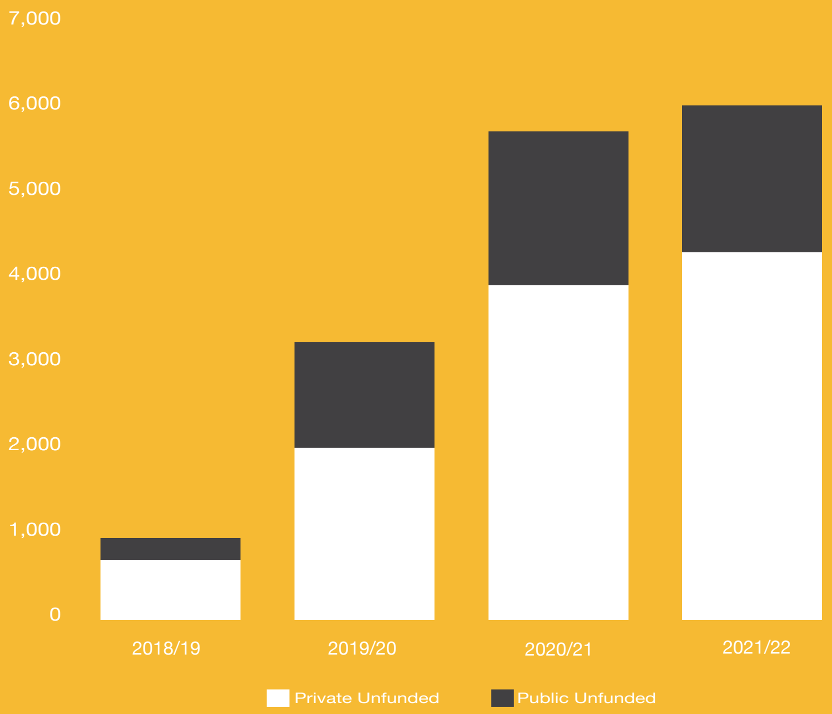
According to the pipeline the following public sector projects are capable of sustaining levels of major project activity if ways can be found to resolve their funding impasse and advance their procurement to take advantage of current market capacity in Queensland:

M1 Varsity Lakes to Tugan
Beerurrum to Nambour Rail Upgrade
Gold Coast Light Rail Stage 3
Paradise Dam Spillway Improvement
Townsville Port Expansion Project

There is also an opportunity to accelerate the delivery of projects which are close to being 'shovel ready' such as those Bruce Highway projects that fall within the "announced" category (ie Section D of Conroy to Curra). Conversely, if these projects slip they could well find themselves caught up in the competition for resource in the inevitable up-cycle to come.

Figure 38

Future Unfunded Work Done Profile: Public versus Private Sector



Encouraging currently unfunded private sector projects to proceed will be vital to avoid a future slump in major project work as the bulk of currently unfunded activity in the Pipeline is related to private sector projects

Harnessing new private investment will also be critical

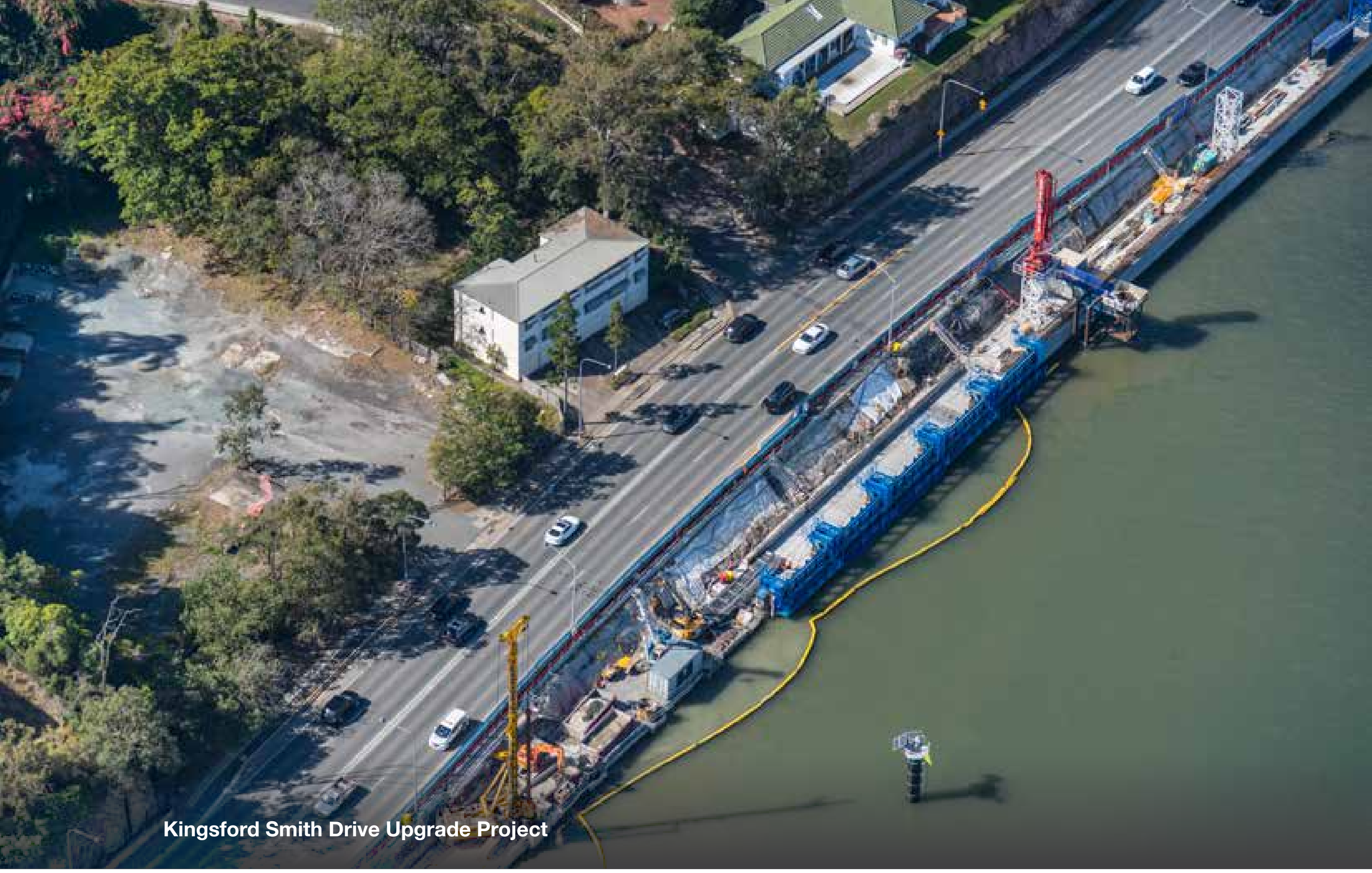
While public infrastructure investment is very important, it is not an end in itself. A core aim of public infrastructure investment – and Queensland's broader economic strategy – should be to attract businesses and people back to the State by encouraging private investment. From a Pipeline view, also, encouraging currently unfunded private sector projects will be vital to avoiding a slump in major project work in the coming years. As shown in Figure 38 above, the bulk of currently unfunded activity, year by year, is actually related to private sector projects.

Therefore, avoiding a future slump in major project work means governments either doing whatever possible to provide the right conditions for these projects to proceed (while recognising that there may also be broader constraints, such as the state of global commodity markets) or being prepared to develop and fund other productive public infrastructure projects.

The public sector only makes up a very small part of the total Queensland economy (around 26 per cent in expenditure terms), however, and this is not expected to change substantially in the future. Consequently, achieving long-term economic goals will depend crucially on how the public sector can develop policies to stimulate private decisions on where to invest and live. Beyond public investment itself, State and Federal Governments should also be looking at ways to encourage the return of private investment (by far the bigger part of the investment 'pie') and re-establish the positive growth mindset.

While supporting market-led proposals is an important plank here, the overall record of success for getting these projects to the construction phase is not strong. Meanwhile, the Northern Australia Infrastructure Facility (NAIF) was also supposed to encourage private sector projects but no projects have yet materialised.

Boosting private sector investment can also be achieved through good public investment choices which 'crowd in' private investment (e.g. building better transport links which encourage broad regional investment by the private sector, or investing in lower cost energy to attract industry and other business). Perhaps more importantly, governments should also set clearer messages about future policy to give the private sector confidence to invest. Unfortunately, the record here has not been consistent, with arguments over energy policy, mining, financing, and tax and spend policies likely to have had a deleterious impact on business confidence.



Kingsford Smith Drive Upgrade Project

Finally, given the importance of the major projects construction industry in building new infrastructure assets, there is also a particular need to ensure that the industry has the capacity and capability to deliver

This means:

- it has the appropriate level of skills now and is developing the skills required for the future,
- it has affordable access to construction materials and other key inputs,
- its services are procured in a way which provides true long-term value for asset owners and asset users, rather than simply aiming to minimise costs.

Meeting emerging capacity and capability challenges

This Report shows that, subject to funding, major project activity could rise in Queensland over the next few years. Another key challenge here is that Queensland will be re-entering a major projects market which has become significantly tighter given demands from the large infrastructure programs being rolled out by other states (New South Wales and Victoria in particular – as per Figure 33). The sheer size and scale of the infrastructure construction task is likely to create potential risks to the capacity and capability of industry to deliver, and is already having an impact on construction costs (Figure 34). In this context, capacity refers to the quantity of resources available.

Capability means the ability and quality of those resources (including workforce skills and business capability) to achieve maximum project benefits. Capacity and capability can be affected by several factors including logistical (having reliable access to essential inputs (skills and materials) by producers)), technological (the ability to use an optimal combination of inputs to produce outputs) and institutional (full participation by industry in tenders and legacy programs).[9]

9 BIS Oxford Economics (2017) NSW Construction Delivery Assessment: Capacity and Capability, North Sydney, NSW.

For Queensland, these challenges should be very familiar, given the capacity and capability challenges experienced by the State's construction industry during the resources boom. The pressures of the boom introduced "transformational" thinking and solutions to meet extremely tight development and construction timeframes, including the increased use of Fly In Fly Out (FIFO) workforces and construction camps, regional development initiatives to service key construction hotspots, the offshoring of significant volumes of engineering, design and fabrication work, and the intensive use of prefabrication and modularisation particularly in the LNG construction market. Having been trialled during the resources boom, these approaches are expected to remain a part of the construction industry's "response kit" to future investment and construction cycles.

Resource boom solutions enabled a lot of construction activity to be delivered in a short space of time, but did not prevent significant increases in construction costs. In part, this was because the resources boom coincided with a tremendous investment cycle globally, affecting prices for key imported inputs such as steel and oil products. However, much was also self-inflicted with strong demand pressure also brought to bear on local supplies of skills and materials. In retrospect, pursuing aggressive increases in public infrastructure investment in Queensland (following several years of weakness) to coincide with the demands of the resources investment boom, likely affected the timeliness and value-for-money delivery of state infrastructure projects.

While industry generally has a high confidence in meeting the challenge ahead – particularly if they are given long lead times to address these challenges in the form of a clear, industry-wide long-term project pipeline as shown in this Report – much will also depend on getting industry settings and engagement right and putting policies in place so that construction is delivered in a timely and 'value for money' way.

The lessons from the resources boom are clear:

— Develop a clear and credible long-term pipeline of major projects – both publicly and privately funded – so that industry can transform and invest in capacity and skills. This remains a core aim of the Report.
— Provide room in the procurement process for innovation and industry investment in capacity and capability. Allow the construction industry to use their knowledge and skills to come up with innovative solutions that boost productivity. Furthermore, the procurement model adopted should allow for an optimal sharing of risks to those parties who are most able to deal with them. Industry needs to be part of the new investment culture, but it is less likely to participate in major projects – let alone invest in expanding capacity and capability – if it wears a disproportionate share of risks (and consequently unsustainably low industry margins).
— Be aware of other demands on the industry, whether in the private sector, regionally, interstate or across different levels of government – and be prepared to retain flexibility in the pipeline to avoid excessive pressures on key materials and labour inputs.
— Effectively plan for and manage the regional nature of major project work. While South East Queensland will continue to be a regional hotspot for activity, the strongest growth in activity will be in other regions, particularly Northern Queensland. Ensuring essential skills and access to construction materials will be vital for these regions.

If these challenges are managed well, not only will infrastructure projects be delivered on time, but also on budget and to a high quality, providing long-term value for money. Getting it wrong will likely result in project delays, potential project and business failures (including costly litigation, rectification works as well as social costs) and, overall, higher industry cost escalation. While cost escalation was not an issue in Queensland when major project activity was much lower, recent data shows it is accelerating once again at the fastest pace since the resources boom.

The availability of funding for sustainable productive infrastructure investment should not derail investment itself – exploring innovative funding mechanisms remain critical for the outlook of the pipeline and the Queensland economy

Recent research on capacity and capability risks in New South Wales prepared by BIS Oxford Economics for Infrastructure NSW indicate that there are currently challenges at every phase of construction. It is highly likely that Queensland (amongst other states) will be facing similar issues:[10]

- **Pre-construction risks**: significant pressure has been placed on the procuring agencies in the public sector, resulting in a substantial recruitment drive to take skills from the private sector, limiting their own capability to respond. Furthermore, the form of procurement and risk allocation models used can heavily impact on resources required for this stage.
- **Construction risks**: industry has reported risks surrounding the availability of core 'onsite' construction skills, particularly foremen and site managers as well as crucial infrastructure trades and professions ranging from onsite engineers to form workers, tunnellers and mechanical and electrical trades as well as the availability and cost of materials, with the greatest challenge likely to be in sourcing natural sand for use in cement. Transport and logistical risks are also highly significant, with the heavy concentration of work targeted in the metropolitan region necessitating even more intensive use of the urban road network to haul construction materials from primary sources, distribution and manufacturing locations to construction sites, as well as managing the removal of spoil. Finally, and most topically, the risk of working around existing utilities continues to be a major challenge particularly in brown field locations.
- **Operations and maintenance risks**: procurement models, such as Integrated Project Delivery, which provide scope for industry innovation in design, the use of high quality materials and new processes or products are likely to impact on the ultimate operations and maintenance requirements of the built asset. Ideally, the procurement model chosen incentivises both government agencies and contractors to choose approaches which minimise 'life cycle' costs of the asset (including operations and maintenance) rather than focusing just on the cost of construction itself. In other words, "value for money" should be a long-run, not a short-run, concept.

To minimise risks of project delays, failures and rising construction costs, Queensland needs to apply a longer-term approach to planning for capacity and capability in the construction industry

10 Ibid, pp119-125.