

Deloitte Access Economics

The NSW Economy in 2031-32

The role of infrastructure, driving forces
and forecasts

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Infrastructure NSW
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Deloitte.

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Nature of forecasts in this report

The forecasts contained in this report bring together a range of state and regional level forecasts from NSW Government agencies. The modelling undertaken by Deloitte Access Economics builds on these forecasts to allow for sensitivity and scenario analysis but relies on underlying forecasts from NSW government agencies.

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Glossary

Acronym	
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACMA	Australian Communications and Media Authority
AEMC	Australian Energy Markets Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ANZSIC	Australian and New Zealand Standard Industrial Classification
CBA	Cost Benefit Analysis
CDE	Constant Differences of Elasticities
CES	Constant Elasticity of Substitution
CGE	Computable General Equilibrium
CRESH	Constant Ratios of Elasticities of Substitution, Homothetic
DAE	Deloitte Access Economics
DRET	Department of Resources, Energy and Tourism
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GSP	Gross State Product
ICT	Information and Communications Technology
IGR	Inter-generational Report
INSW	Infrastructure NSW
IT	Information Technology
ITS	Intelligent Transportation Systems
IV	Instrumental Variable
MCA	Multicriteria Analysis
NBN	National Broadband Network
NHSC	National Housing Supply Council
NSW	New South Wales
OECD	Organisation for Economic Cooperation and Development
SIS	State Infrastructure Strategy
TRESIS	Transport and Environmental Strategy Impact Simulator
US	United States of America

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1 Introduction

1.1 Background

Infrastructure NSW (INSW) has engaged Deloitte Access Economics to prepare a baseline model of the NSW economy to 2031-32. The first step of this process was to identify assumptions being incorporated into current Government thinking and develop a common set of assumptions across agencies. In addition to testing the assumptions behind the modelling, we asked Government agencies to share data and internal reports on current thinking on key topics such as mining opportunities and infrastructure bottlenecks. Key assumptions have been sourced from the NSW Treasury Intergenerational Report and NSW Budget Paper 6.

While the broad themes of the 2020 foresighting project remain relevant, a number of the key policies and assumptions underpinning the modelling have changed since the previous report was published. Additionally, the computable general equilibrium (CGE) model has been updated to a more recent database – the model is now more current. This has had important implications for the forecasts of the mining sector as well as the relativities between some service sectors in the model.

INSW is seeking to use this baseline model as a starting point to compare how different drivers (particularly infrastructure investments and technology changes) might affect the NSW economy. That is, INSW is seeking to identify the key long term economic drivers of infrastructure supply and demand and then translate these drivers into infrastructure responses. INSW is seeking to ensure that the infrastructure investments identified should support (or help create) competitive advantages in NSW and help boost productivity.

This issues paper proposes some key economic drivers which will affect the NSW economy over the coming decades and then considers various potential infrastructure responses to these drivers. The following analysis of specific economic drivers is framed against a broader economic background, particularly Australia's lacklustre productivity performance over the last few years.

Lower productivity manifests itself as lower wages growth, reduced international competitiveness and increasing private and public budgetary pressures. If Australia's productivity growth could be increased above the long-run average the economy would be bigger, living standards would be higher and fiscal pressure from the ageing of the population would be reduced (Australian Government, 2010).

The assets which enable productive activity in the NSW economy, our infrastructure, are also under strain. On the demand side the largest strain comes from large increases in population, explored further below. On the supply side, both public and private funding sources have become more scarce in recent years. In private markets there has been a sharp increase in debt funding costs, with spreads on BBB rated bonds more than doubling from their 2007 level (Black, Brassil, & Hack, 2010) while state and federal government budgets have faced extreme strain, particularly with the full effect of the Global Financial Crisis now being felt in the world's sovereign debt markets (ABS, 2011c).

Overall, NSW is at an important point for infrastructure investment, where underlying factors (such as population) are increasing demand in the face of increasing difficulty in supplying new infrastructure.

1.2 This report

The focus of this report is to briefly present the results from a baseline model of the NSW economy, forecast through to 2031-32. The modelling results are primarily an update from those presented in the Access Economics report “The NSW economy in 2020 – a foresighting study”, which was prepared for the NSW Innovation Council in August 2010.

Since the previous report, the baseline model has been updated with a more recent database. Commodity prices have increased and this has been reflected in mining taking an increased share of output in the NSW economy. The carbon price, to become effective in 2013, has also been included in the analysis, and is broadly consistent with NSW Treasury guidelines. This has implications for the shares of value added produced by the manufacturing and mining industries when compared to the previous report (which did not include a carbon price in the baseline). The results have also been disaggregated into a number of regions to highlight differing economic drivers and trajectories as well as allowing for future consideration of different infrastructure options.

The analysis has primarily been undertaken to draw together a range of assumptions about future economic conditions (such as population growth, productivity improvements and GSP growth) from across the NSW government into a single framework. These results are to form the baseline around which different scenarios, created through different infrastructure investment decisions, can be considered. These infrastructure options and their impact on forecasts will be developed over the coming months.

2 Snapshot of the NSW economy

- | | | | |
|-------------------|---------------------|--------------------------|-------------------|
| Population | Labour force | Unemployment rate | Employment |
| 7.2 million | 3.8 million | 5.1% | 3.6 million |
- Economic composition**
 2010-11 estimate: Services: 75%, Industry: 23%, Agriculture: 2%
 2031-32 estimate: Services: 77%, Industry: 21%, Agriculture: 2%
- Top five exports:
 - Coal;
 - Travel and education services;
 - Non-ferrous metals;
 - Professional consulting services;
 - Medicinal and pharmaceutical products

2.1 Key forecasts

Table 2.1: Key indicators

	2010-11	2031-32
Gross state product (\$ billions; 2010 prices)	419.9 [#]	730.9
Previous GSP estimate	438.5 [*]	
Population (millions)	7.2	9.2
GSP per capita (\$000)	58	80
Employment (jobs; millions)	3.6	4.4

[#] ABS 5220.0, November 2011.

^{*} This figure is an initial estimate developed in late 2011, before availability of ABS data

Source: NSW Treasury, Deloitte Access Economics, ABS

2.2 Key indicators

- The NSW economy is projected to grow by over 70% over the next two decades.
- The number of employed workers in NSW is expected to increase from around 3.6 million in 2010-11 to about 4.4 million in 2031-32.
- The State's population will increase from around 7.2 million in 2010-11 to approximately 9.2 million in 2031-32.
- The economy will become more services based, with a shift away from agriculture and industry.
- Overall, construction is around 6.8% of value add in the NSW economy in 2010-11; this is expected to increase around 7.4% by 2031-32.

A summary of these statistics is provided at Appendix A. This summary includes a breakdown within the Sydney Metropolitan area which has been developed based on a geographical distribution of population within Sydney from the Bureau of Transport Statistics.

3 The role of infrastructure in the economy

Infrastructure has an important role to play in determining the performance of the economy. A substantial proportion of activity in NSW depends on our transport, energy, water, and telecommunications networks. Infrastructure also affects the key drivers of economic growth in the long term.

The link between infrastructure and economic growth has long been recognised by economists and policy makers:

“Well targeted investment in physical infrastructure can increase productivity by both increasing the capital stock and improving the efficiency of other factors of production.”

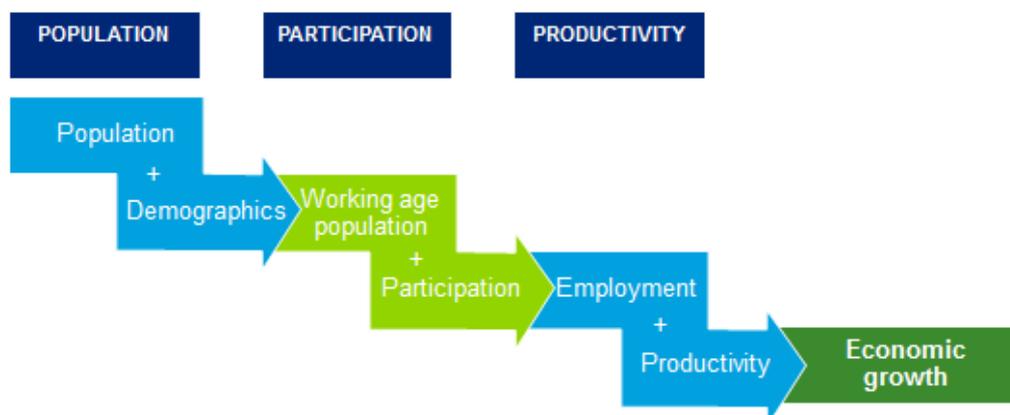
(Treasury, 2008b)

CGE modelling can help articulate the link between infrastructure and economic activity – by taking infrastructure policies and assessing how they might affect key economic outcomes such as GSP growth, regional economic growth, employment and industry structure.

A useful way of understanding how infrastructure projects will affect long-term economic growth in NSW is via the three “Ps”: population, participation and productivity. As the diagram below explains:

- Population growth, and the demographic structure of the population, determine the size of the future working age population;
- The size of the future working age population combined with expected participation rates will determine the number of persons employed in the NSW economy; and
- Growth in the number of persons employed and growth in productivity ultimately determine the rate at which the NSW economy will grow in the future.

Figure 3.1: The three Ps and economic activity



4 Driving forces of infrastructure demand

Before modelling the NSW economy, we have considered the driving forces that are likely to shape the state's economy over the coming decades. This section, therefore, explores the influence of the following forces on the NSW economy:

- population dynamics;
- congestion and housing;
- the growth in China and other emerging economies;
- climate change and carbon pricing; and
- the digital economy.

By influencing the dynamics of the NSW economy, these driving forces will affect the type and location of infrastructure that is required. For example, growth of the digital economy may reduce the need for physical travel to work, and would result in a need for less road infrastructure and more telecommunications infrastructure. Another example is the ageing population which will require a mix of increased supply of hospitals and related services in regional areas for those who migrate within the state and a reconfiguration of infrastructure supply in established suburbs.

Consideration of these driving forces also allows for a fuller picture to be gained of the forces driving the baseline modelling as well as the uncertainties that could be explored in policy analysis.

4.1 Population growth and ageing

The shifting demographics of NSW, both in terms of population growth and ageing, is one of the most fundamental long term economic drivers for the state. Changes in population will have significant effects on increasing congestion (which in itself forces the economy in certain directions) as well as housing (one of the key sectors in the economy).

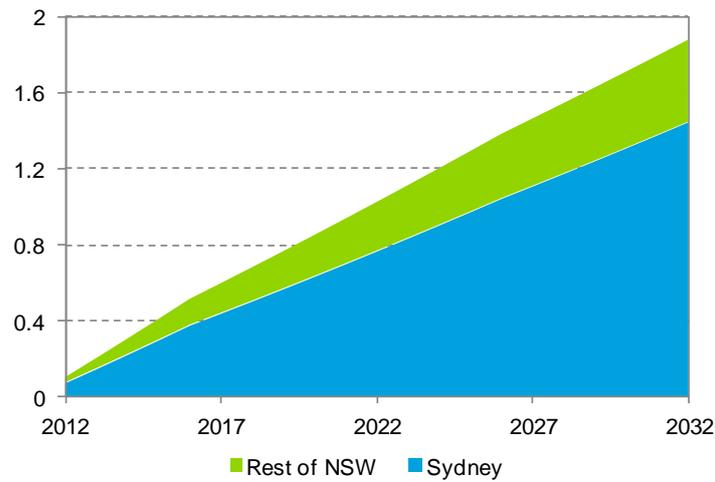
The factors of both population growth and the ageing population will continue to dominate NSW's population dynamics over the coming decades with population growth possibly being the more important factor for infrastructure investment decisions.

Since 2000-01 Australia's population has increased by around 3.1 million (which is over 380,000 people per year). This has been the highest level of growth in Australia's history and, with population growth rates since 2008 averaging around 1.8% a year; it has also been the highest rate of population increase since the early 1970s (ABS, 2008). However, population growth in NSW (being around 1% a year) has been below the national average due to relatively high net interstate migration losses (ABS, 2011a). Despite this, NSW's population has still increased by around 700,000 since 2000-01 (ABS, 2011a).

4.1.1 Baseline forecast

Population growth rates for NSW's regions have been projected by the Department of Planning based on the NSW Government's intergenerational report. These projections suggest an average population growth rate of around 1.1% a year for NSW and 1.3% for Sydney from 2011-12 to 2031-32. This brings the expected population to 9.2 million in NSW and 6.1 million in Sydney, annual increases of around 88,000 in NSW and 68,000 in Sydney, (Department of Planning, 2011).

Chart 4.1: Additional NSW population (millions)



Source: (Department of Planning, 2011)

4.1.2 Changes since the NSW Metropolitan Plan

These population increases can be compared to those forecast in the NSW Metropolitan Plan. The population increases in the Metropolitan Plan were also forecast by the Department of Planning but were made before those outlined above. The forecasts in the Metropolitan Plan indicated a population of around 6 million by 2036, an increase of around 1.7 million. The slight increase since this last forecast is due to higher assumed migration levels as discussed in section 5.2.

Increases in population along the south and north coast are also important to consider. Population forecasts for these areas are discussed in section 5.2. In terms of infrastructure demand, increasing the population along the north and south coast will reduce demand for transport within the metro region but will increase the need for efficient transport connections to the metro area.

A second major significant change to economic prosperity and growth factors is the ageing of the population. The ageing of the population is a function of both the mid-20th Century baby boom and steady increases in life expectancy, particularly for older people. The Australian Government's Intergenerational Report indicates that life expectancy for Australians is currently around 80 years for men and 84 years for women and that life expectancy is expected to increase over the coming decades (Australian Government, 2010).

Some of the effects of an ageing population will, however, be offset by increases in the workforce participation by older Australians. This increase may be driven by a combination of a healthier aged population and the need for greater financial assets to fund a longer retirement.

Overall, the ageing of the population can be seen in changes in the aged dependency ratio (those over 65 compared to those within working age). The aged dependency ratio in NSW is expected to increase from 20.9% in 2010-11 to around 35.0% by 2031-32 (NSW Treasury, 2011).

Population growth affects all areas of infrastructure demand while an ageing population raises issues of housing stock and changes in the profile of demand for goods and services.

4.2 Congestion and housing

Congestion is not a fundamental economic driver; rather, it is a sign of mismatches between past planning and infrastructure decisions and population increases. These mismatches create congestion which can have serious effects on economic activity and reduce the desirability of living in Sydney and NSW. The economic effects of congestion include reduced productivity for road transport (the higher costs then flow on through the economy), lost leisure time for individuals and distortion of housing, work and transport decisions. In a dynamic sense, congestion also affects the desirability of Sydney overall and so makes it difficult to attract and retain highly skilled, mobile workers.

The relationship between traffic and congestion on Sydney's roads has been estimated in Deloitte Access Economics (2011a). That analysis relied on the TRESIS model, developed at the Institute of Transport and Logistics Studies at the University of Sydney. Based on a projected increase in road journeys of around 15% by 2025, the analysis estimated that congestion costs would increase by around 84 million hours (or 32%).

The relationship between congestion and vehicle journeys was also estimated to be non-linear: as journeys increase, congestion costs increase by more and more. This suggests that, at some point in the future, congestion costs are likely to increase to a point where road transport becomes untenable.

The potential for increased congestion costs are also evident in figures such as vehicle ownership and traffic speeds, as shown in Table 4.1

Table 4.1: Summary of traffic volume measures, NSW

	2003	2004	2005	2006	2007	2008	2009
Vehicles (per 1000 population)	474	485	492	498	504	506	507
Change in traffic volume (%)	2.2	1.4	0.2	1.0	-0.2	0.8	0.1
Travel speed, AM peak (km/h)	34	34	31	32	30	30	31
Travel speed, PM peak (km/h)	41	41	41	42	41	43	43

Source: (ABS, 2011d)

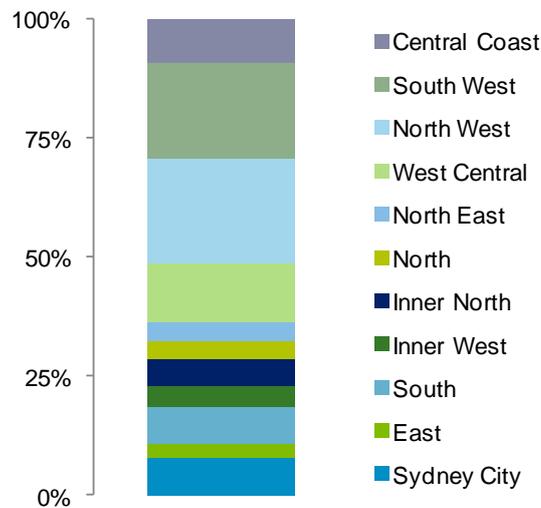
This data suggests that the number of vehicles per person has been increasing along with slight increases in traffic volumes. This has led to a decrease in AM peak travel speeds. The decrease in AM peak travel speeds is more significant than the improvement in PM peak travel speeds as the AM peak tends to be the larger peak of the day, as there is less flexibility in work arrival times when compared to work departure times.

Over the coming decades, another important influence on congestion will be the ability of workers to telecommute. Telecommuting could significantly reduce congestion costs as the number of journeys, especially at peak times, could be reduced. Teleworking can work to offset demand for

transport created by population increases. Data indicates that currently around 6.5% of Australians have a teleworking arrangement. If the proportion in Sydney was to reach 12%, an Australian Government target, then we estimate this could reduce travel time by around 20 million hours a year (Deloitte Access Economics, 2011b).

The Metropolitan Plan for Sydney 2036 indicates a target of increasing dwellings by 769,000 by 2036 (NSW Government, 2010). But the recent increase in fertility (ABS 2012a) and housing demand suggests that an increase in dwellings in excess of this may be needed in the next 20 years. This overall target was also broken down by geographical region:

Chart 4.2: Geographical distribution of Metropolitan Plan housing targets



Source: (NSW Government, 2010)

The National Housing Supply Council (NHSC) has similar expectations for growth in housing with a forecast of between around 663,000 and 962,000 extra households in NSW from 2009 to 2029 (National Housing Supply Council, 2010). This increase reflects both the higher population in NSW as well as a continued decrease in household size.

Housing and planning also interacts with population ageing, an older population is likely to have different housing requirements to a younger population. In the case where older people move out of Sydney and into regional areas, particularly the north coast, this could create particular demands for infrastructure (such as hospitals and retirement villages). This will also tend to free up a large amount of housing in Sydney, particularly larger family houses. This release of housing will go some way to meet the demand that will be created by increased rates of population growth and continued reduction in household size.

In the case where older people decide to remain in the family home or relocate nearby, issues are raised around how to provide adequate infrastructure and services related to health, community support and transport. This scenario would also have implications for the supply of larger residential properties in established areas and the spatial distribution of other government services including education.

4.3 The two speed economy

Australia's two speed economy is fundamentally being caused by economic development in emerging economies. This development has created increased demand for inputs to industrial production (particularly iron and coal) which has benefited mineral exports. Increased demand for Australian minerals has not only drawn real economic resources into these industries but has also increased the value of the Australian dollar. This creates pressures in other industries, which must cope with higher input costs and a deterioration of international competitiveness.

The two speed economy, has also seen an increase in demand and prices for some Australian agricultural products (Hogan & Morris, 2010). Increased demand from the emerging economies in Asia is also resulting in rapidly increasing demand for services in tourism, finance and education, which will bring new opportunities for NSW businesses over coming years. This raises questions of the ability of our infrastructure to enable capture of this increased demand as well as issues of substitution by developing nations away from services currently provided by Australia and into domestic production of services.

4.3.3 The role of emerging economies

Over the past 30 years the geographical centre of global economic activity has been shifting towards Asia (Quah, 2011). This has been driven by fast paced economic development in east and south east Asia. Arising from this, there have been significant changes in Australia's main export and import partners, with countries in Asia now playing a much larger role in Australia's trade relationships.

Over the last ten years, the role of China has dominated global growth. Since 2000, Chinese GDP per person has grown at an average rate of around 9.2% a year, in real terms, which means that wealth per person would be expected to double in size about every 8 years. This could be compared to Australia, a relatively successful developed country, which has seen real GDP per capita grow at around 2.3% a year over the same period, implying a doubling time of around 32 years.

There are still other countries in Asia which, although they have been developing strongly, still have a long way to go in terms of economic development. Primary among these is India but also countries like Indonesia and Vietnam have large populations and are achieving high rates of economic growth.

Overall, development in emerging economies has driven a significant increase in volumes traded through Australia's ports. Since 2000-01 the containerised volume being traded through ports operated by Sydney Ports Corporation has increased by around 6.4% a year, on average (Ports Australia, 2011), while NSW GSP has increased by only around 0.9% a year on average (ABS, 2011b). That is, for every million dollars of GSP in 2000-01 there were around 3 TEUs moved through Sydney's Ports while by 2010-11 this had increased to 4.8 TEUs.

This growing importance of trade with countries near Australia has, of course, been driven by patterns with individual trading partners. Australia's trade tends to be concentrated on a small number of markets, trade with our top five partners accounts for around 50% of total trade over the past 20 years. Changes in the pattern of trade with these top five partners are therefore important in determining the composition of Australia's trade.

As our trading partners develop, they demand different exports from us and supply different imports to us. For example, Australian exports to China in 1990 tended to be relatively low value food and fibre products. On the import side, imports tended to be dominated by clothes and other products

produced from textiles. In this sense Australia was tending to export the material for clothes production and import the finished goods. By 2010, the pattern of trade between Australia and China had completely changed. Iron ore and wool remain in the top five exports but the role for iron ore increased dramatically and it had been joined by coal. This reflects the industrialisation of China over the past 20 years and the strong demand for steel that goes along with that. Other inputs to industrial production, petroleum products and copper, have also entered the top five. An even greater change occurred in imports where, by 2010, the top five import categories were all information technology and electronics related.

Over the next 20 years the development of our trading partners will likely mean that demand for Australia's mineral exports increases in line with continued industrialisation in China and other developing countries such as India and Vietnam (Australian Government, 2011).

In terms of direct infrastructure effects, the continued presence of emerging markets mean a continued increase in the sheer volume of goods that must be moved through NSW's ports, the need to distribute goods efficiently within our cities and a potential shift in the mix of bulk and containerised freight. Indirectly, emerging markets will also continue to foster the two-speed economy in Australia and so will have further effects, discussed below.

4.3.4 Influence on industry structure

The two-speed economy is likely to be mostly felt in terms of the state's sectoral composition. Higher prices and increased demand for energy and industrial commodities will constrain growth in other trade-exposed sectors (such as parts of agriculture, manufacturing and tourism). The underlying causes are a stronger than normal exchange rate and greater competition for labour and capital resources.

The presence of an increased exchange rate and strong competition in labour and capital markets is generally known as the "Dutch Disease". The classic formulation of the Dutch Disease involves an expansion in the mining sector of a particular country which then draws away economic resources from other industries, potentially leading to the long term decline of these other industries.

An example of increased infrastructure pressure resulting from the positive side of the two speed economy is in the black coal sector, which is mostly transported by rail. NSW accounts for 40 per cent of Australia's black coal production facilities, and production is expected to rise over coming years (DRET, 2011b). Rail and port capacity as well as natural disasters have held back production in recent years. While the Port of Newcastle is a key link in the supply chain, over the past few years, the Hunter Valley Coal Chain Coordinator has gone a long way towards ensuring more efficient operations along the entire supply chain and getting the most out of existing infrastructure.

In the medium term, it is unclear whether the net effects of the two speed economy will be positive or negative for NSW. The potential benefits for NSW in terms of energy, tourism, education and financial exports are strong but with a number of factors affecting the state's overall economic performance (particularly relative to other Australian states):

- Tourism: losing share of international travellers, but China has already overtaken Japanese market for visitor numbers. Main implication is for transport: airport capacity and regional roads.
- Agriculture: rising incomes in China and India will drive per capita daily food intake. Increasing pressure on road transport and for higher-productivity vehicles.
- Manufacturing: is expected to decline in relative terms, but imported goods will still put pressure on existing transport networks.

A possible result of these sectoral changes is further growth in service-focused industries.

Over the longer run, however, the pressures of the two speed economy will likely shift as developing nations in Asia begin to demand services such as education and tourism. This increased demand will likely see a reverse of the short run trends (where tourism and education were particularly affected) as the positive influence of demand increases swamp the negative influences of foreign exchange appreciation. At the same time, substitution of Australian produced services for domestic services may lead to declines in some other service sectors.

Considering regional NSW, the two speed economy, particularly the emergence of Asian markets will have significant effects on the agriculture sector. Some of the key factors influencing prospects for agriculture include:

- Global food prices, which the OECD forecasts will continue rising, will encourage the expansion of NSW Agriculture (OECD, 2011). Some sectors have fared better than others: improvements in prices for wool, beef, sugar and wheat have been higher than for wine grapes and some horticultural industries.
- Rising incomes in key Asian markets, with China and India driving per capita daily food intake higher. Over coming years, livestock industries will experience strong growth because when incomes rise in developing countries their diet will increase more in meat (protein) and sugar, compared with grains.

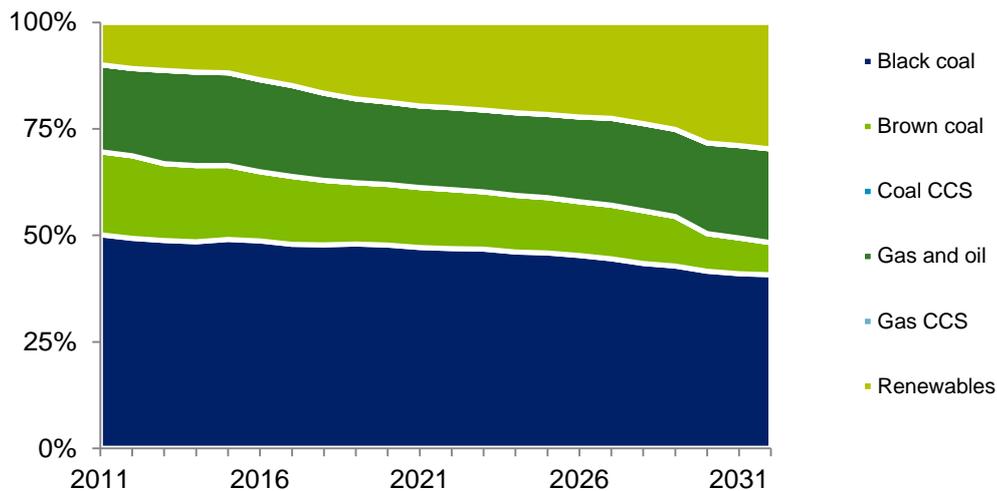
This growth in demand for certain agricultural goods will potentially increase pressure on road transport and increased demand for road access for higher-productivity vehicles as well as a relative shift away from bulk freight towards containerised and refrigerated transport.

4.4 Climate change and carbon pricing

Recent modelling released by the Australian Government Treasury suggests that NSW is likely to be among the more adversely affected states following the introduction of carbon pricing (a likely reduction in GSP of around 1% below a base case scenario by 2031-32) (Treasury, 2011). Although there is uncertainty about the impacts of climate change and carbon pricing, there are a number of clear implications for NSW:

- Carbon pricing means reduced competitiveness of coal as an electricity source, with greater use of gas in the future and hence an increased need for gas supplies (DRET, 2011a);
- There will be increased pressure for new electricity generation capacity, with a question of how much is located in NSW compared with elsewhere in the National Electricity Market (AEMO, 2011); and
- Carbon capture and storage is likely to play a role in the long run in meeting electricity demand and this has implications for the location of gas storage (Treasury, 2008a).

Chart 4.3: Australian electricity generation mix (2011-2032)



Source: (Treasury, 2011)

Carbon pricing will also have a range of industry and infrastructure impacts on the NSW economy. Some sectors (such as forestry and rail transport and broadband infrastructure) will benefit from the introduction of carbon constraints while others (such as metals refining and road transport) will be adversely affected (Treasury, 2011).

4.4.4 Water

The main factor affecting the Murray-Darling Basin, agriculture west of the Great Dividing Range, and overall regional economic and population growth in coming years will be decisions over water entitlements and allowances. That is, changes in the allocation of water rights in the Murray-Darling Basin largely reflect historical over-allocation. Changes in water allocations will result in an overall reduction in the quantity of irrigation water available to NSW's farmers.

In the decades ahead, climate change may also begin to have impacts on the availability of water. There will be reduced and more variable water supplies for agriculture both in the Murray-Darling Basin and along the coast.

To minimise the potential impact of reduced water supplies it will be important that productivity improvements in irrigation areas are pursued. This could involve efficiency-enhancing investments in water delivery infrastructure, which also aim to improve environmental flows, as well as fostering new businesses in water management (Roberts, Mitchell, & Douglas, 2006).

The effects of climate change, particularly when combined with population growth in some regional centres also raise critical questions for the security of town water supplies in regional NSW. Improvements in urban water supply necessary to account for population growth and reduced water availability will need to incorporate both increases in the capacity to supply town water (through improvements in water collection) and the ability to transport town water through renewing and maintaining town water infrastructure.

4.5 Digital Economy

The digital economy and information and communications technology (ICT) have a somewhat unique role to play among the drivers considered so far:

- Development of the digital economy will require ICT infrastructure investment in its own right.
- The digital economy will drive changes in demand for infrastructure, such as reducing demand for transport and increasing needs for smart infrastructure.
- The digital economy will affect industry structures and competitiveness throughout the economy.

For example, Australia is currently investing in the NBN, which will create a significant piece of physical infrastructure. This infrastructure investment will create a multitude of flow on effects in other industries: improved ability to telework will affect demand for travel, potentially reducing congestion, telehealth will allow for reduced investment in physical hospital infrastructure and better machine to machine communications may allow for improved maintenance of other significant built infrastructure (such as bridges and pipelines).

The Australian economy is now at an inflection point in the shift towards a digital economy. A combination of trends are now converging which will drive a major behavioural change. For example, after some years of anticipated change to retail, we are now seeing extensive reshaping of who the major retailers are and how they deliver their product. The key converging trends are greater broadband capacity through the National Broadband Network and mobile technologies (4G and WIFI), more convenient devices such as smart phones and tablets, and the growth of effective online platforms for conducting business.

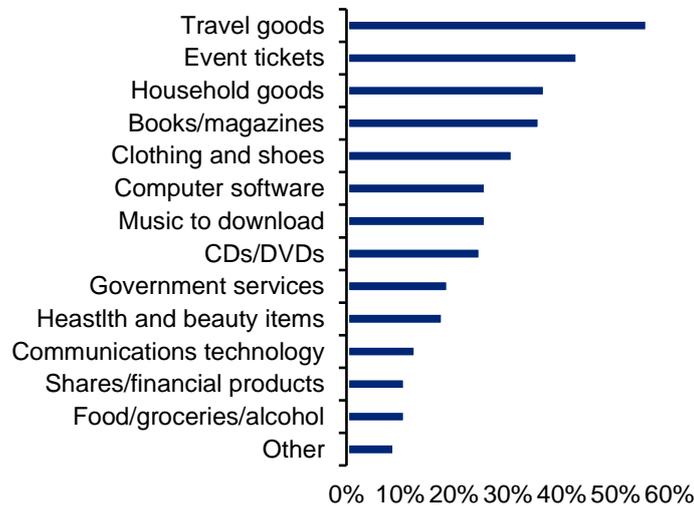
Growth in the digital economy is being led by individuals, as consumers and employees, changing their approaches to work and leisure. This ground up change will have implications for business and government service delivery.

4.5.3 Retail

An example of a sector that will be strongly affected by developments in ICT is retail trade, particularly through the impacts of information and communications technology on online retailing vs. bricks and mortar shops. Australia has been slower to adopt online retailing compared with some overseas countries like the United Kingdom and United States (Frost and Sullivan, 2010).

As online retailing expands, it will constrain the growth of traditional shopping centres and main street shopping districts. This will have differing impacts on specific retailers. Chart 3.4 shows that online retail purchases are highest for goods that do not require freighting – accommodation and event tickets. The backbone of shopping centres, food and groceries retailing, remain the lowest proportion of goods purchased online. As online retailing grows, a greater proportion of shopping centre retailers will have a service component that is less able to be sold online – such as hairdressers, salons and cafes.

Changes in retail will have consequences for transport networks. Although there will not be a reduction in demand for freight, goods will increasingly be transported from warehouses to consumers rather than to shopping centres. However, if shopping centres can transform from being goods distribution centres to more recreation based centres then the burden on their surrounding transport networks will continue.

Chart 4.4: Goods and services purchased online in Australia in the last six months

Source: (ACMA, 2010)

Online retailing will place additional burdens on broadband infrastructure. The widespread adoption of smart phones and increased demand for mobile data will put additional pressure on mobile infrastructure at shopping centres. As online retailing becomes more sophisticated, with virtual stores and dressing rooms with high definition video, this will increase demand for fixed broadband infrastructure.

4.5.4 Smart infrastructure

One of the major trends affecting the infrastructure sector in coming demand will be smart infrastructure that is enabled with machine-to-machine digital technologies.

Smart energy grids will potentially be a large future driver of efficiency gains in the electricity network, transforming the way electricity is used and delivered. These grids will enable the real-time use of information throughout the grid and potentially significant reductions in losses through the system. Smart electricity meters will also be part of developments.

Intelligent Transportation Systems (ITS) technologies encompass a range of information technologies that can be integrated into transportation system infrastructure. ITS technologies have the potential to address a range of transport issues and can help in improving safety, improving efficiency, improving competitiveness and reducing environmental impacts of transport. In particular, technologies such as diagnostic traffic tools can help to improve the efficiency of traffic flows and save time and money.

Smart networks can also provide real-time public transport information, to improve their operations and performance. This can encourage the shift towards the use of public transport, reducing congestion and environmental impacts. There is scope to provide the consumer with information about times based on congestion levels rather than timetable estimates.

4.5.5 Other trends in the digital economy

Digital technologies will also affect business organisation. Work will be transformed by the eventual growth of teleworking, where there is a government target of 12 % of workers by 2020 (NBN, nd). This may have significant impacts on transport within and between cities.

Additional demand for ICT infrastructure will be driven by growth in the use of mobile communications, video-based applications, and the Cloud:

- Mobile communications: existing applications have been gradually migrating to mobile devices (such as smart phones and tablets) and this will be further supported by new location-based services. For example, by 2015, mobile data demand is expected to reach around one third the size of fixed data demand (Cisco, nd).
- Video: households will take-up entertainment options from smart TVs, and in longer term, video will provide more education and health applications. Video takes up a very large amount of internet traffic and is expected to take up around 81% of consumer internet traffic by 2015 (Cisco, nd).
- Cloud: will have impacts on individuals and business. Individuals will expect to be able to connect anywhere and anytime. For business, the Cloud offers an alternative to the traditional IT department and services; with on-demand IT allowing greater flexibility in how businesses engage with the digital economy.

Fixed broadband infrastructure will mainly be delivered by NBN Co, with the network scheduled to be rolled out by 2020.

5 The NSW economy in 2031-32

NSW Treasury's IGR GSP forecasts were used as an input into the baseline model update. These forecasts were then adjusted to account for climate change policy – the modelling results below are inclusive of a carbon price. As such, the rate of growth in NSW GSP in the baseline model is marginally lower than NSW Treasury's forecast. Between 2010-11 and 2031-32 NSW real GSP is forecast to grow from \$420 billion (in 2010-11 prices) to just over \$730 billion (in 2010-11 prices).

5.1 Gross State Product

NSW Treasury projections for real GSP from the latest Intergenerational Report suggest that the NSW economy will grow by an average annual rate of approximately 2.4% to 2031-32.

This forecast is below the NSW 20 year average growth rate (2.8%) and the national average growth rate (3.2%). These differences are primarily a function of (i) workforce growth and (ii) productivity.

- Much of the variance between historical growth for NSW and these forecasts can be attributed to differences in workforce growth (due to changes in population and participation rates).
- The gap in economic growth between NSW and Australia from 2000-01 to 2007-08 can be attributed to differences in both population growth and productivity.

The NSW Treasury projections do not account for a number of factors including higher than expected mineral export prices, a higher Australian dollar and carbon policy. The modelling results below take these factors into account and so they differ slightly from the overall estimates of NSW Treasury.

Table 5.1: Real GSP – NSW

	2010-11*	2019-20	2031-32
Real GSP (\$ billion)	419.9	541.7	730.9
Ten year average annual growth (%)	2.1	2.9	2.5

Note: * represents actual figure

Source: ABS cat no 5220.0; NSW Treasury, 2011, DAE modelling results

5.2 Population

Population projections from the Department of Planning have been used in this baseline model. These population projections were developed by the Department of Planning to match the NSW Treasury's intergenerational report, which has formed the basis of the modelling in this report. In the time since the development of the intergenerational report and the modelling for this report, the Bureau of Transport Statistics and the Department of Planning have updated their population forecasts.

The NSW population is expected to grow at an average annual rate of 1.1% (similar to the last 30 years), rising from 7.2 million people in 2010-11 to 9.2 million people in 2031-32.

State level forecasts are based on the assumption that there will be 180,000 net migrants to Australia each year, of which 30% will settle in NSW. The ageing of the population will continue to dominate demographic trends, with the ratio of people aged 65 and over to those between 15 and 64 expected to increase from 20.9% in 2010-11 to 34.2% in 2031-32. With the baby boomer population having reached retirement age in 2011, there is expected to be 18 years of increased growth in the aged dependency ratio.

Table 5.2: Population projections

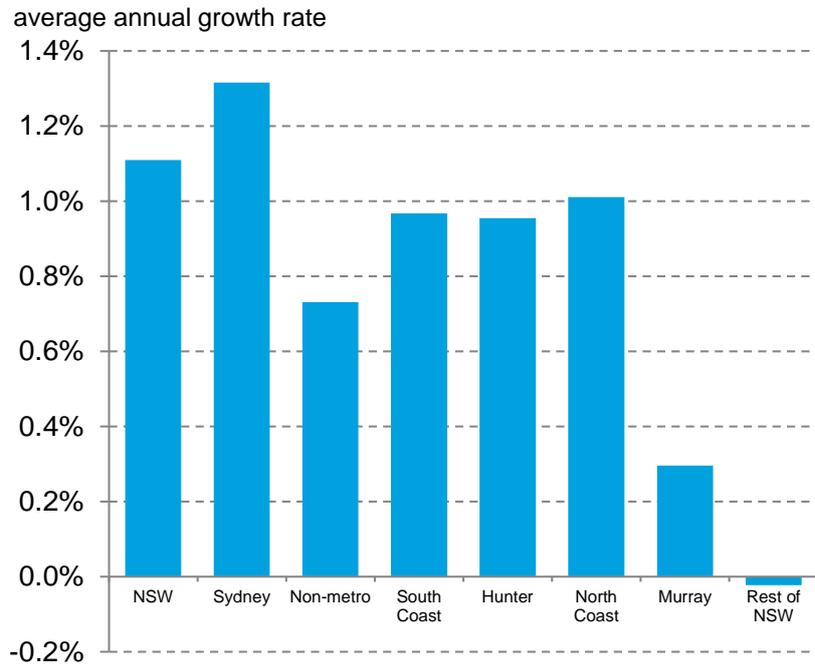
(000s)	2010-11	2015-16	2025-26	2031-32	Growth	Average annual growth
NSW	7,197	7,808	8,678	9,174	27%	1.1%
Sydney	4,558	5,007	5,674	6,077	33%	1.3%
Non-metro	2,638	2,801	3,004	3,097	17%	0.7%
South Coast	653	703	773	807	24%	1.0%
Hunter	648	697	765	799	23%	1.0%
North Coast	555	600	663	693	25%	1.0%
Murray	276	286	293	294	7%	0.3%
Rest of NSW	505	515	510	502	-1%	0.0%

Source: Department of Planning and Infrastructure, 2010

A summary of these statistics is provided at Appendix A. This summary includes a breakdown within the Sydney Metropolitan area which has been developed based on a geographical distribution of population within Sydney from the Bureau of Transport Statistics.

These projections indicate that Sydney is expected to experience the highest level of population growth in NSW and is expected to increase in size by 33% between 2010-11 and 2031-32 (average growth across the state of 27%). The average annual growth rate for Sydney, as shown in Chart 3.1 is greater than the overall growth expected in NSW as a whole due to lower growth in the non-metropolitan regions, particularly the Murray and remote areas of NSW (within 'rest of NSW'). Coastal NSW and the Hunter region are expected to experience population growth higher than the non-metropolitan NSW average.

Chart 5.1: Average annual population growth rate, 2010-11 to 2031-32



Source: Department of Planning and Infrastructure, 2010

5.3 Productivity and employment

Productivity is a crucial driver of economic growth. Over the period to 2031-32, productivity is expected to increase across the state. Continued influences on productivity will be the remaining effects of microeconomic reform, capacity constraints in parts of the labour market and infrastructure, and the effects of business investment, particularly in mining, as projects become operational.

Table 5.3: State labour productivity index

	2010-11*	2019-20	2031-32
Index (2005-06 = 100)	102.6	120.0	142.8
Average annual growth (%)	1.7	1.6	1.6

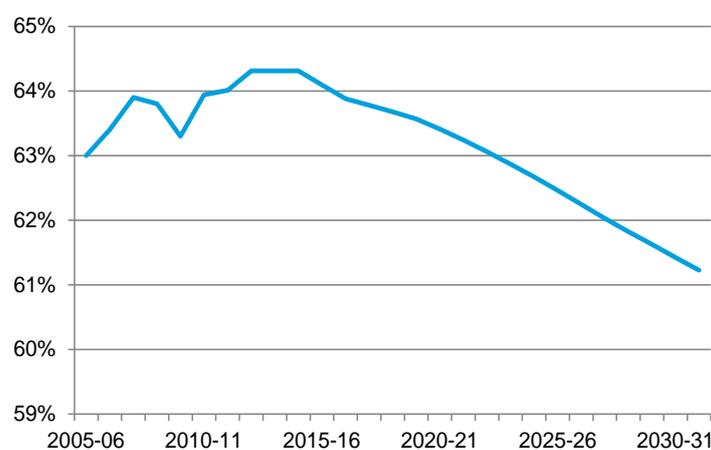
Note: * represents actual figure

Source: ABS cat no 5220.0; ABS cat no 6291.0.55.001; NSW Treasury, 2011

As part of the Intergeneration Report, NSW Treasury has projected labour force participation in NSW to peak at 64.3% in 2014-15 and steadily fall through the projection period (Chart 4.2). This is driven by demographic trends – namely the ageing of the population.

Combining the declining participation rate with constant migration implies NSW Treasury foresees workforce and employment growth lagging behind population growth.

Chart 5.2: Labour force participation rate - NSW



Source: NSW Treasury, 2011

Between 2010-11 and 2031-32 the level of employment in NSW is expected to grow at an average annual rate of 0.9%, from 3.6 million workers to 4.4 million workers. These employment projections are based on the NSW Treasury's intergenerational report, which has formed the basis of the modelling in this report. In the time since the development of the intergenerational report and the modelling for this report, the Bureau of Transport Statistics and the Department of Planning have updated their employment forecasts.

Table 5.4: Employment level (millions)– NSW

	2010-11*	2019-20	2031-32
NSW	3.6	4.0	4.4
Sydney	2.3	2.6	2.8
Non-metro	1.3	1.4	1.6
South Coast	0.2	0.3	0.3
Hunter	0.3	0.3	0.4
North Coast	0.2	0.2	0.3
Murray	0.1	0.1	0.2
Rest of NSW	0.4	0.4	0.4
NSW 10 year average annual growth (%)	1.7	1.1	0.7

Note: * represents actual figure

Source: NSW Treasury, 2011

5.4 Gross Regional Product

The differences in GRP across the regions reflect (i) differences in population growth and (ii) the differential impact of the carbon price given each region's industry composition. For example, population in metro NSW is expected to grow at an average annual rate of 1.3% (compared to the state average of 1.1%) and the region is comparatively less exposed to a carbon price than non-metro NSW (which has a heavy reliance on mining and manufacturing).

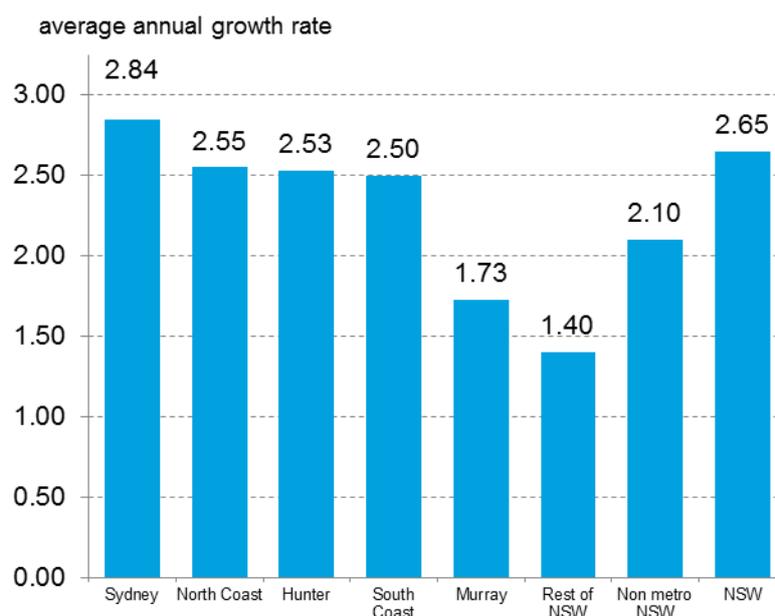
The introduction of the carbon price, effective from 2013, is expected to result in a dip in production, with the greatest shock felt in the Hunter region. All regions are still modelled to experience positive economic growth but at a level lower than historical averages. This initial shock is expected to dissipate in the following years, although the recovery is not expected to be significant enough to return the economy to the level of production that would have been in the absence of the carbon price.

Following the shock, the growth rate of GRP in all regions is anticipated to be slightly lower than pre-carbon price levels; this reflects a combination of the effects of carbon pricing and the natural pattern expected in a mature economy.

5.4.1 Average annual GRP growth

The coastal regions of NSW are expected to grow more strongly than inland areas in terms of GRP over the coming twenty years. Sydney, for example, is expected to grow by an average of around 2.8% a year (compared to the state average of around 2.6% a year). The lower than average growth in inland regions is largely a result of lower than average population growth. As shown in the following section, these two factors tend to balance out to result in fairly similar GRP per capita growth throughout the state.

Chart 5.3: Average annual GRP growth, 2010-11 to 2031-32



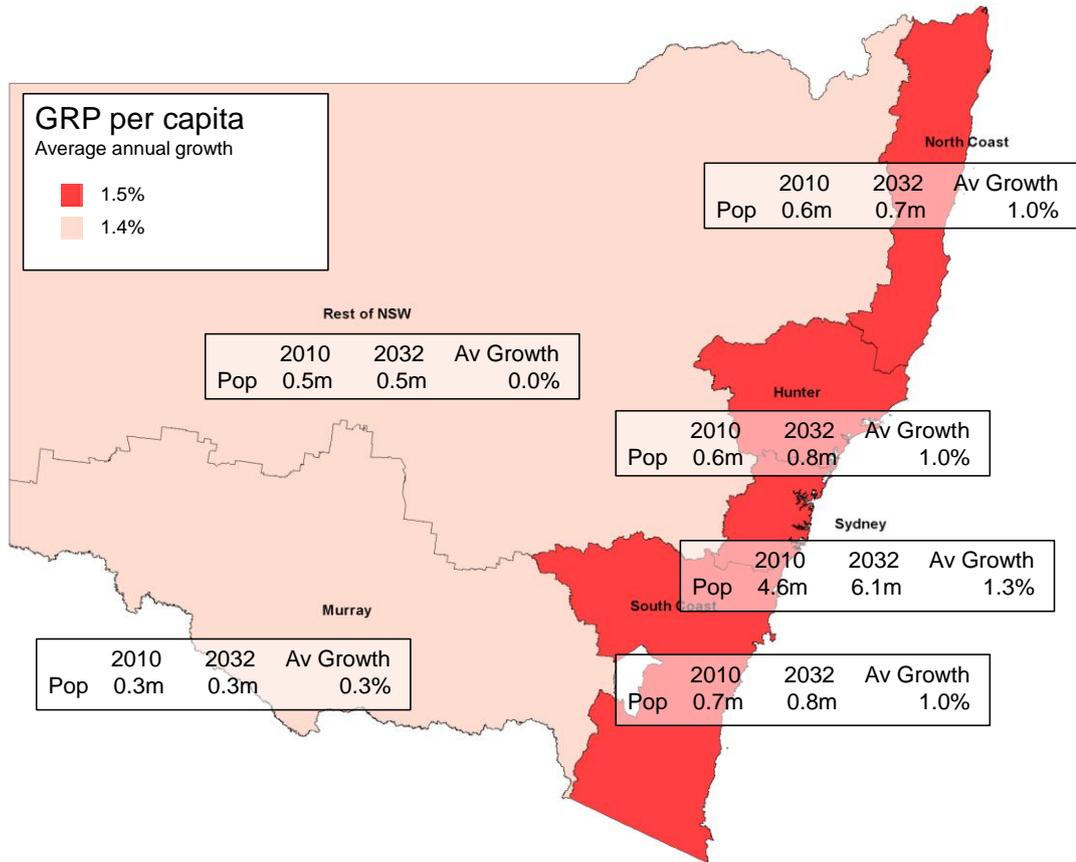
Source: Deloitte Access Economics analysis based on Department of Planning and Infrastructure, 2010 and NSW Treasury, 2011

5.4.2 GRP per capita

Growth in GRP per capita is usually reported as a broad measure of living standards. Figure 5.1 illustrates average annual growth in GRP per capita across the regions in NSW, highlighting that the coastal regions of NSW will experience similar growth in GRP per capita of around 1.5%.

West of the divide, Murray and rest of NSW are expected to experience both low population growth and low GRP per capita growth, culminating in relatively lower annual growth in GRP per capita of 1.4%.

Figure 5.1: Average annual growth in GRP per capita by region

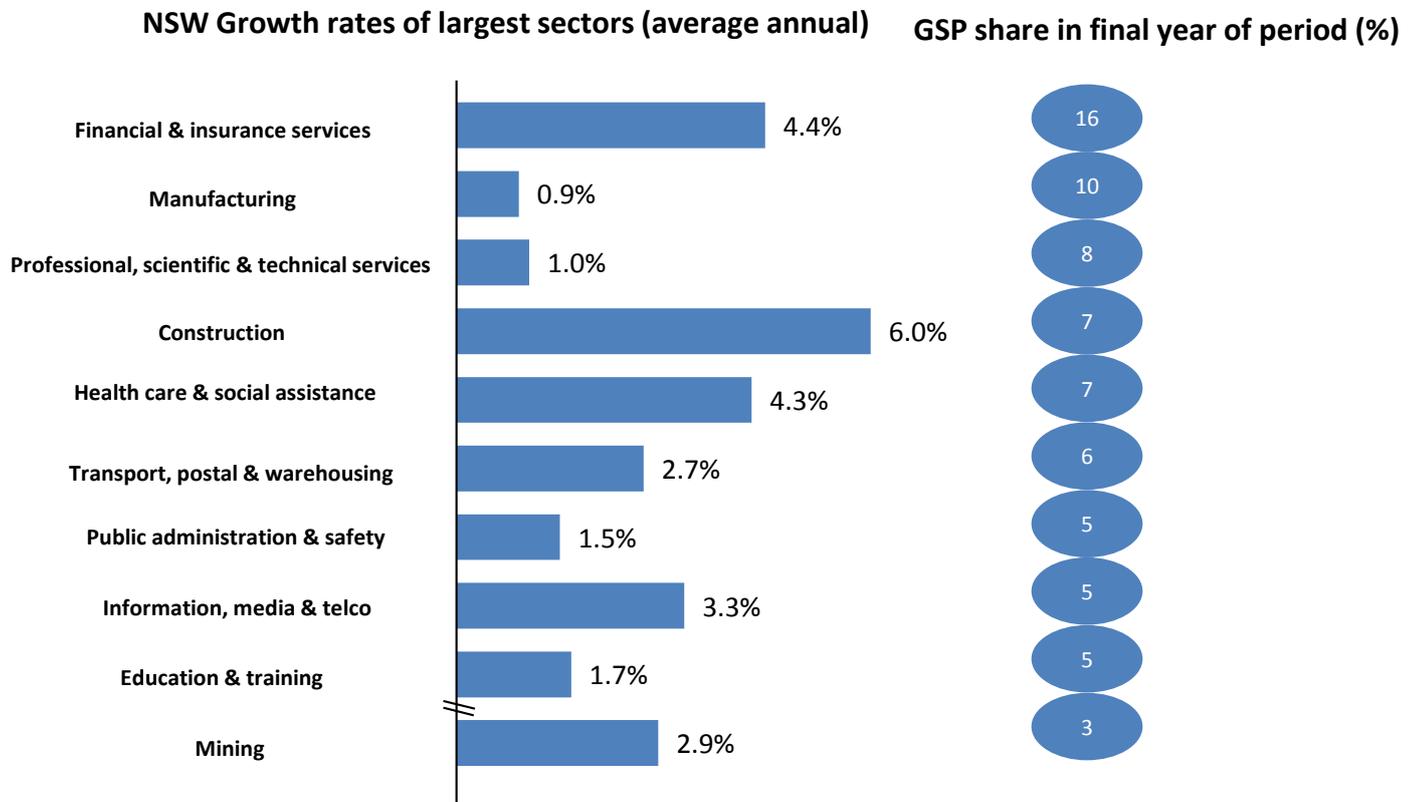


Source: Deloitte Access Economics analysis based on NSW Department of Planning and Infrastructure, 2010

6 NSW's regions and industries in 2031-32

The industry structure of selected sectors in the NSW economy between 2000-01 and 2010-11 is illustrated below. Comprising the largest share of the NSW economy at the end of this period, the finance and insurance industry grew at an average annual rate of 4.4%. Other service based industries – including professional, scientific and technical services, health care and social assistance and education – have also experienced strong growth over this period. Growth in construction was driven by strong demand from the mining sector over this period.

Chart 6.1: GSP growth rates of selected sectors, 2001-2011



Source: ABS cat. no 5220.0.

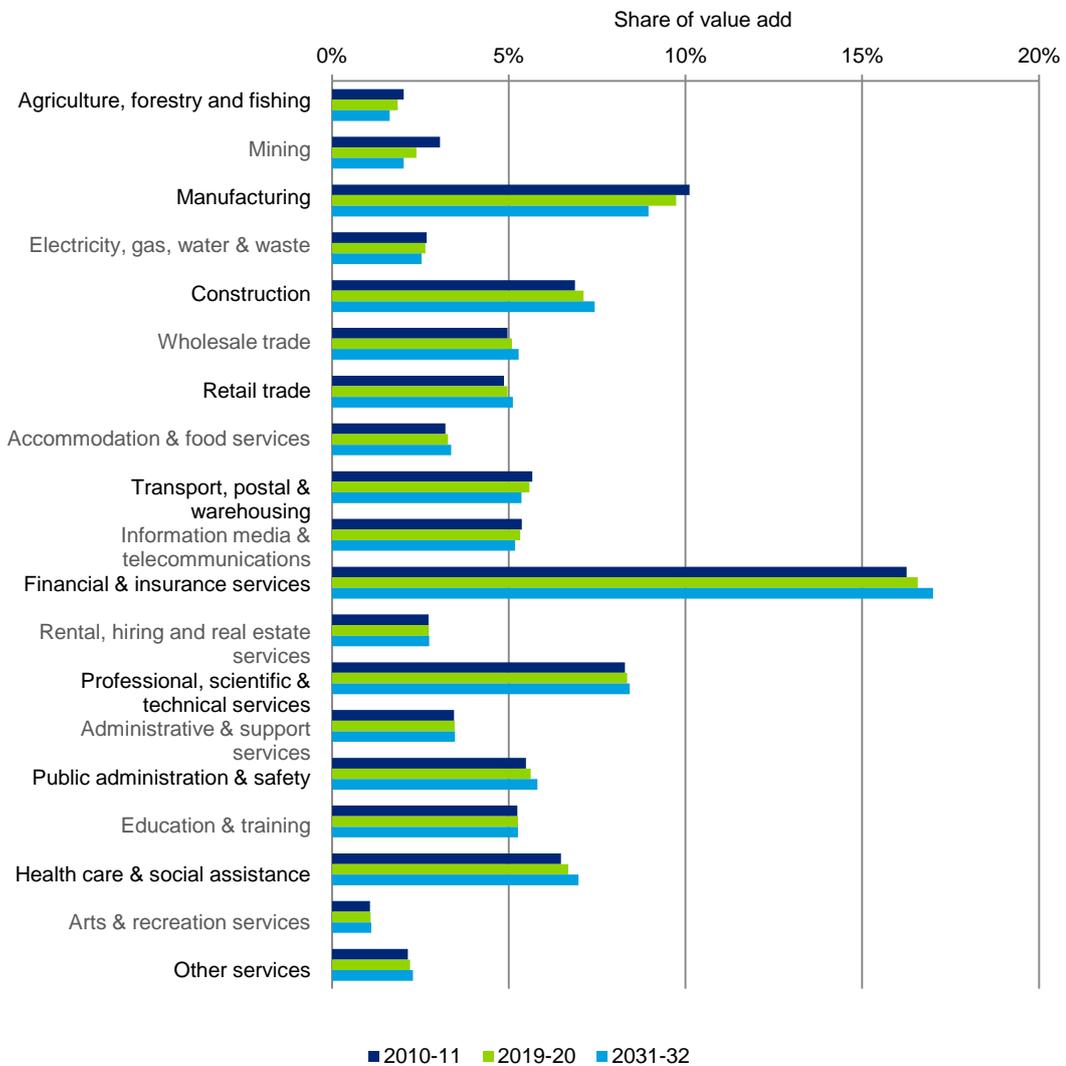
6.1 NSW

The modest growth forecast for the NSW economy is expected to be driven by growth in the mining industry (to 2019-20), advancements in technology (information media and telecommunications) and health care. Other service industries are also expected to increase as a share of the economy.

Continuing the downward trend of the last decade, manufacturing is expected to decline as a share of the state's economy over the next 20 years, as will agriculture, forestry and fishing.

Finance and insurance is expected to remain the largest industry (by share of value add) in 2031-32.

Chart 6.2: Industry structure – NSW



Source: ABS cat. no. 5220.0, Deloitte Access Economics

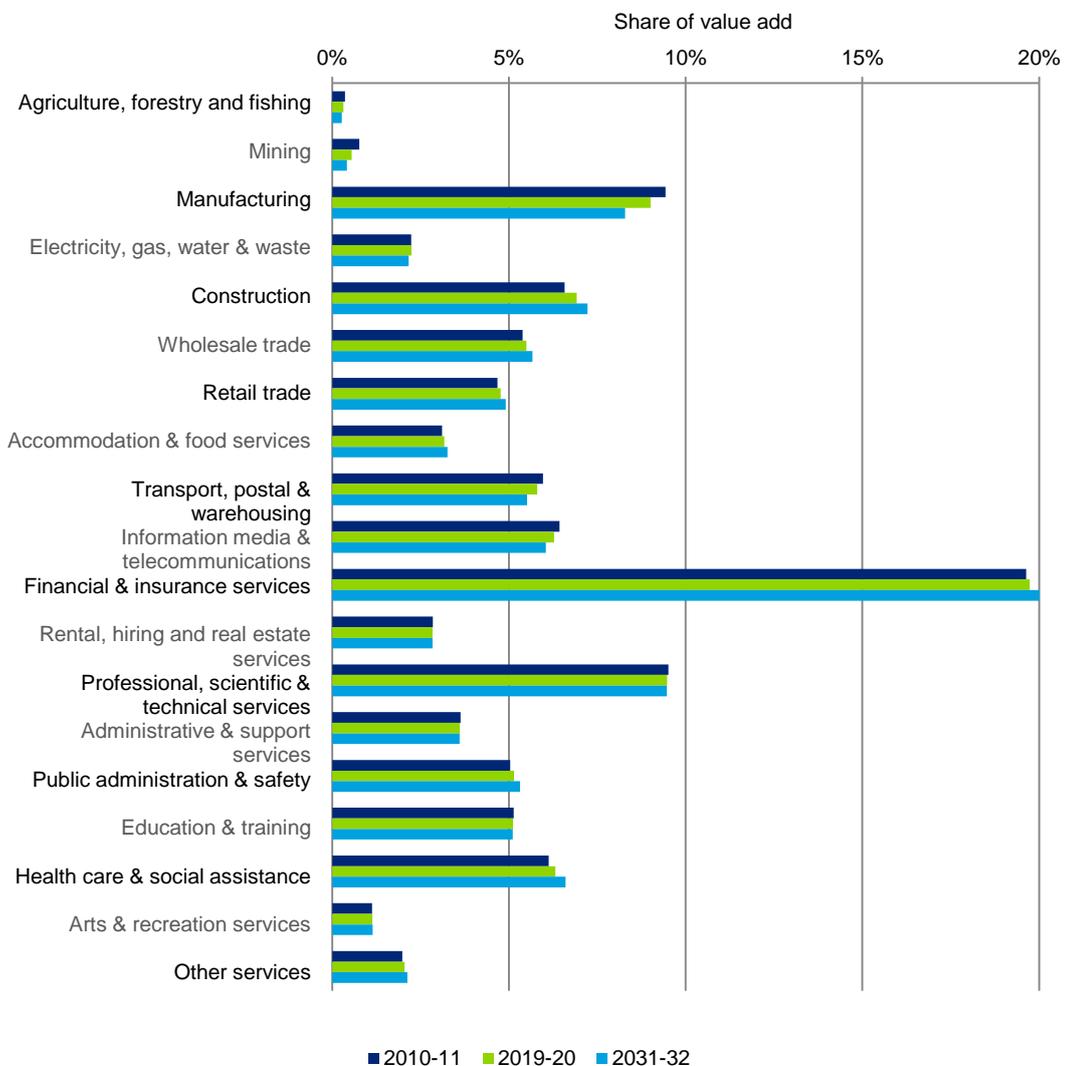
6.2 Metro NSW

The split between metro and non-metro NSW is largely determined by the regional population projections provided by NSW Department of Planning. It is assumed that the differences in growth rates between the regions reflects higher incomes and population growth in the cities and the negative impact of reduced water on non-metropolitan NSW over the coming decades.

Metro NSW's industry structure is expected to continue to be dominated by Sydney's financial industry and professional, scientific and technical services. Manufacturing in metro NSW is expected to remain on a downward trend.

Mining and agriculture comprise a much smaller share of metro NSW's economy than the state as a whole.

Chart 6.3: Industry Structure - Metro NSW



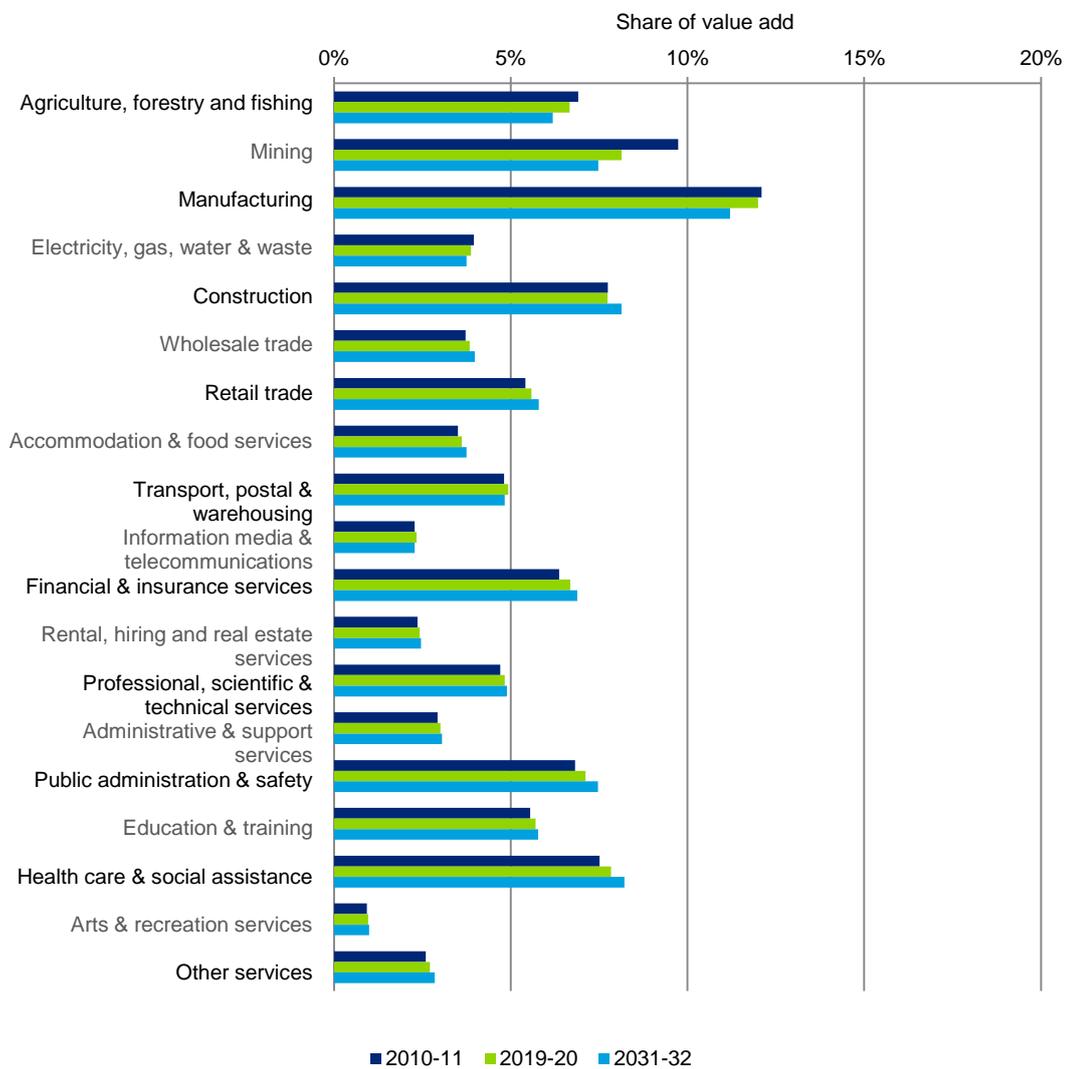
Source: ABS cat. no. 5220.0, Deloitte Access Economics

6.3 Non Metro NSW

In contrast to metro NSW, non-metro NSW is expected to benefit from expansion of the mining sector over the coming decades. Strong growth will also be experienced in health care and social assistance.

Manufacturing is expected to continue to decline as a share of the region's economy.

Chart 6.4: Industry structure - Non Metro NSW



Source: ABS cat. no. 5220.0, Deloitte Access Economics

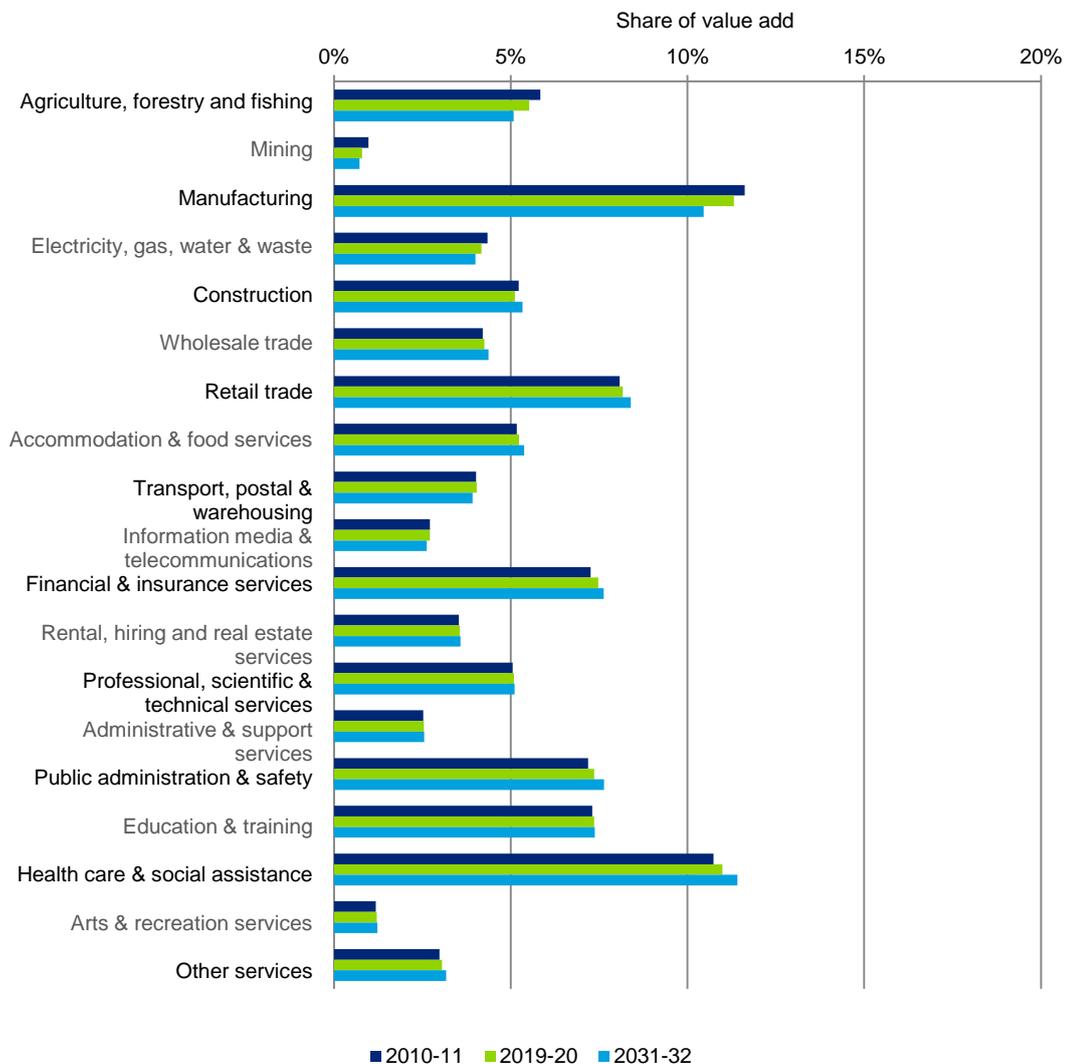
6.4 Subregions

The disaggregation of non-metro NSW modelling to the sub-regions is based on (i) differences in population (and population growth) and (ii) differences in industry structure in 2010-11.

6.4.1 North Coast

The North Coast's economy will continue to be dominated by manufacturing, although this is expected to decline as a share of the region's economy. Consistent with the demographic profile of the North Coast, health care and social assistance will increase as a share of industry value add over the coming decades.

Chart 6.5: Industry structure – North Coast

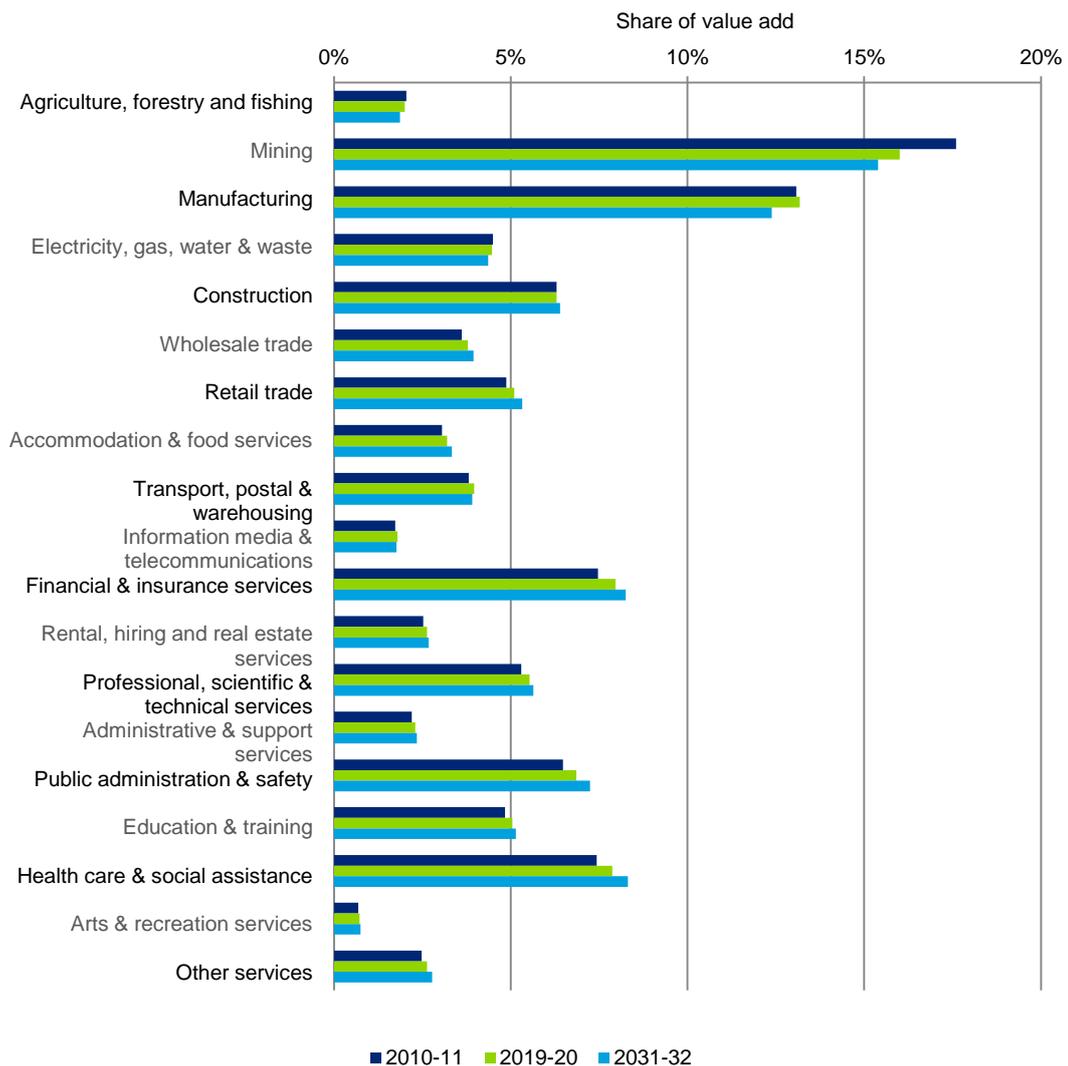


Source: ABS cat. no. 5220.0, Deloitte Access Economics

6.4.2 Hunter

Over the next 20 years, economic growth in the Hunter region will be boosted by the fortunes of the mining sector in the Upper Hunter. Consistent with the rest of non-metro NSW, manufacturing will decline as a share of the region's economy.

Chart 6.6: Industry structure - Hunter

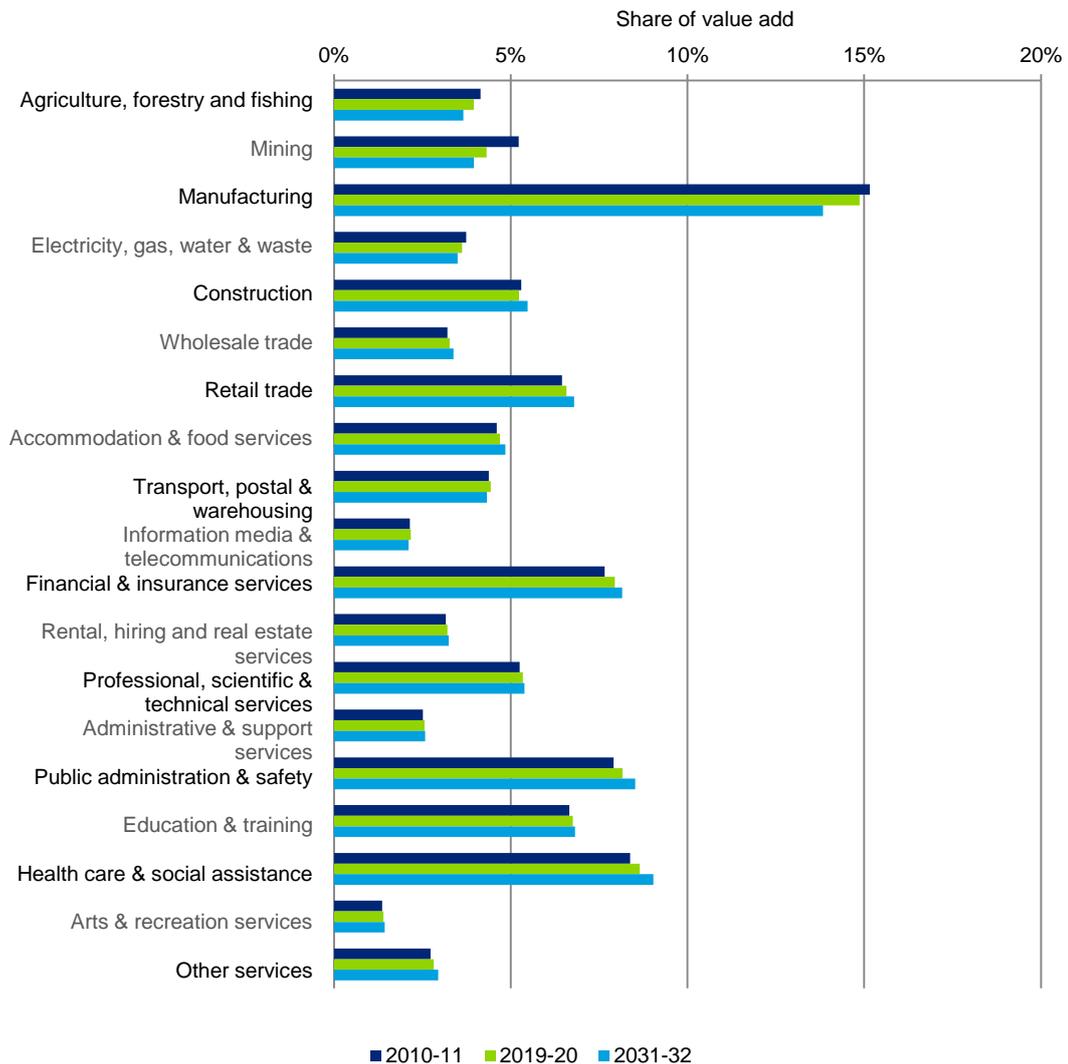


Source: ABS cat. no. 5220.0, Deloitte Access Economics

6.4.3 South Coast including Illawarra

Manufacturing in the South Coast (including the Illawarra) will remain the region's major industry; despite an expected decline in share of industry value add. Similar to the North Coast region, the age profile of the South Coast will see the region's health care and social assistance industry expand as a share of the economy.

Chart 6.7: Industry structure – South Coast including Illawarra

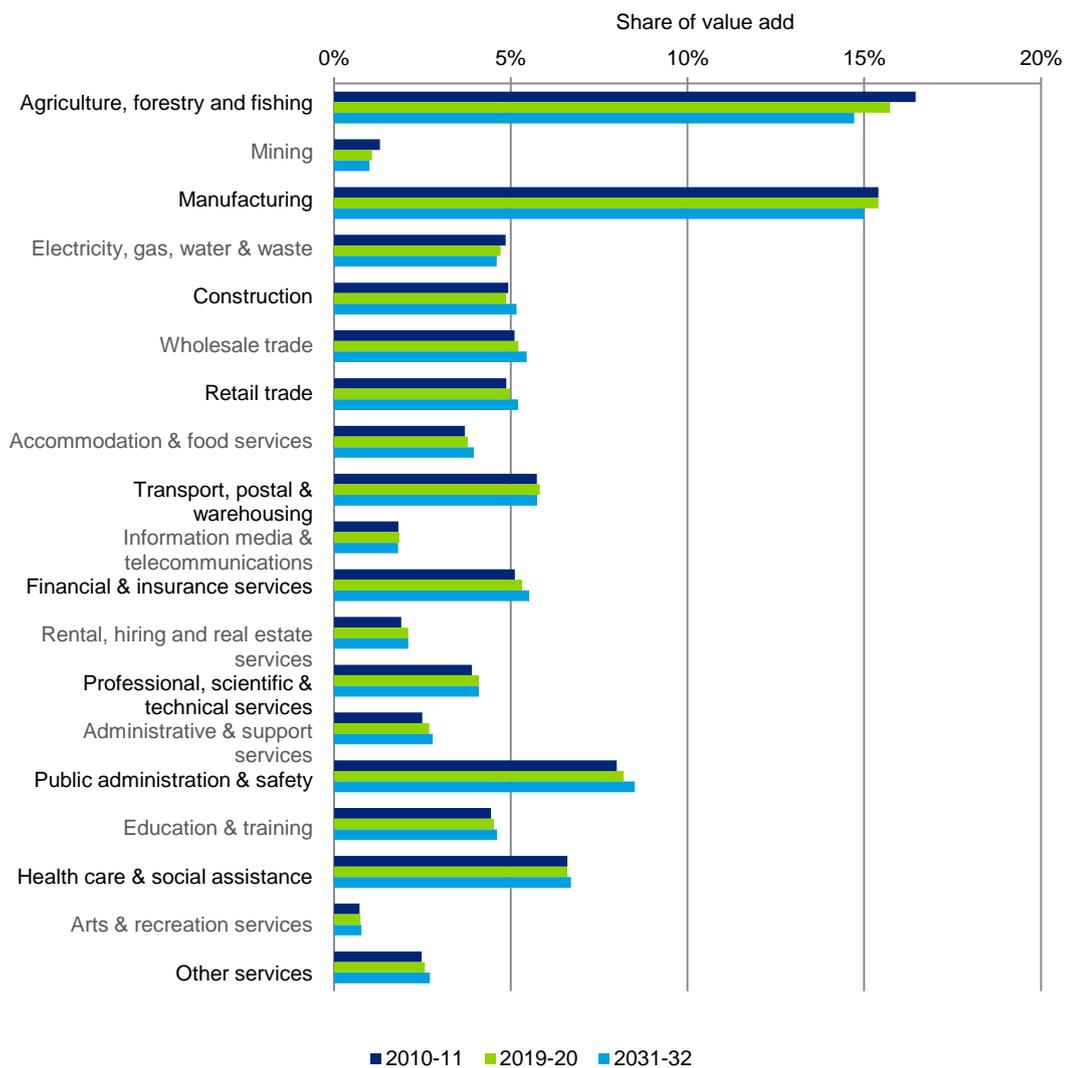


Source: ABS cat. no. 5220.0, Deloitte Access Economics

6.4.4 Murray

The decline in the manufacturing industry's share of regional industry value add is also reflected in the Murray region. Of the four sub-regions analysed, the Murray region has the greatest share of its industry value add derived from agriculture. However, this too is expected to decline in the upcoming 20 years, related to the impacts of water restrictions and the carbon price. Industries anticipating growth include health care and social assistance and public administration and safety.

Chart 6.8: Industry structure - Murray

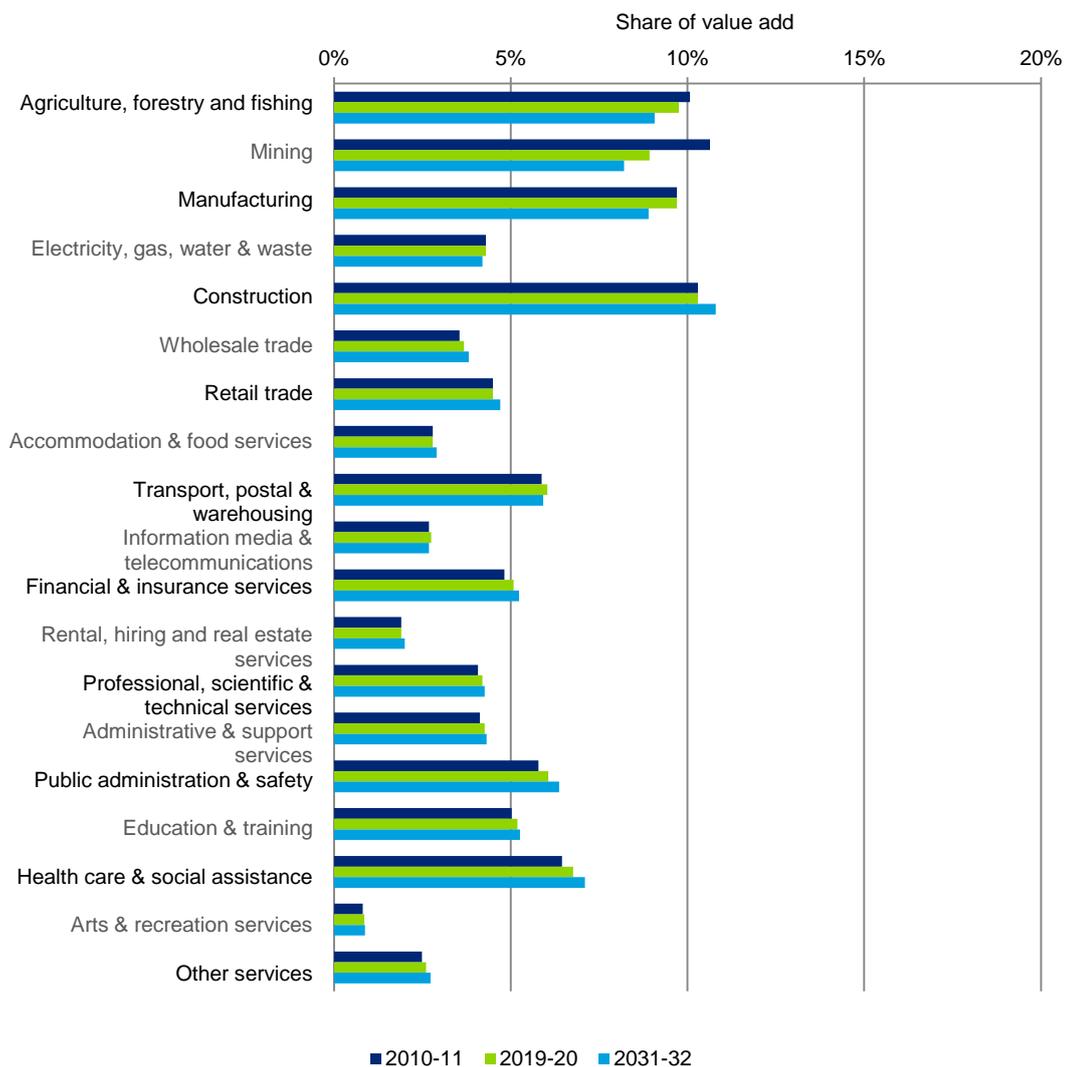


Source: ABS cat. no. 5220.0, Deloitte Access Economics

6.4.5 Rest of NSW

The Rest of NSW region encompasses all of NSW excluding the sub-regions discussed above. Construction, mining, agriculture and manufacturing comprise the largest share of industry value add; however, this industry structure differs across the state (e.g. mining and construction in the Gunnedah Basin).

Chart 6.9: Industry structure – Rest of NSW



Source: ABS cat. no. 5220.0, Deloitte Access Economics

7 Sensitivity testing

The NSW economy baseline forecasts are subject to a number of uncertainties. In the short term, factors such as the current state of global financial markets and the timing of the business cycle will have implications for economic growth and productivity over the next five years. Over a longer period, more persistent trends – such as demographic change, developments in technology and the sustainability of demand from China – will also alter the shape of the NSW economy.

7.1 Historical ranges of variables

For the purposes of modelling medium to long-term infrastructure requirements, the baseline model ignores cyclical influences. However, in saying that, it is important to identify the factors expected to affect the baseline to determine whether the baseline model's growth path assumes a medium trajectory and how this trajectory corresponds with historical economic growth.

To gauge the extent of the uncertainty surrounding the baseline projections, two approaches have been considered:

- analysis of the range of uncertainty around the major drivers of economic growth identified above. Section 5.1 explores uncertainties around the finance sector to demonstrate how an industry sector could expand or contract over time; and
- understanding how the forecasts compare to variation in past.

The following reflects the latter approach.

Table 7.1 presents a summary of the historical and forecast growth rates of key NSW economy variables. This comparison provides a useful overview of how the NSW economy has performed across key measures and determinants of economic growth and provides context for the sensitivity analysis below.

Table 7.1: Average growth rates of key NSW economy variables (% per annum)

(per cent)	Decade average			
	1991-92 to 2000-01	2001-02 to 2010-11	2011-12 to 2020-21	2021-22 to 2031-32
Nominal GSP	5.3	5.8	5.2	4.8
Real GSP	3.6	2.3	2.7	2.5
Productivity	2.3	1.0	1.6	1.6
Population	1.1	1.0	1.1	1.0
Labour force	1.2	1.6	1.1	0.8
Employment	1.4	1.7	1.1	0.8
Participation	0.0	0.3	-0.6	-0.3
GSP per capita	2.5	1.1	1.6	1.3

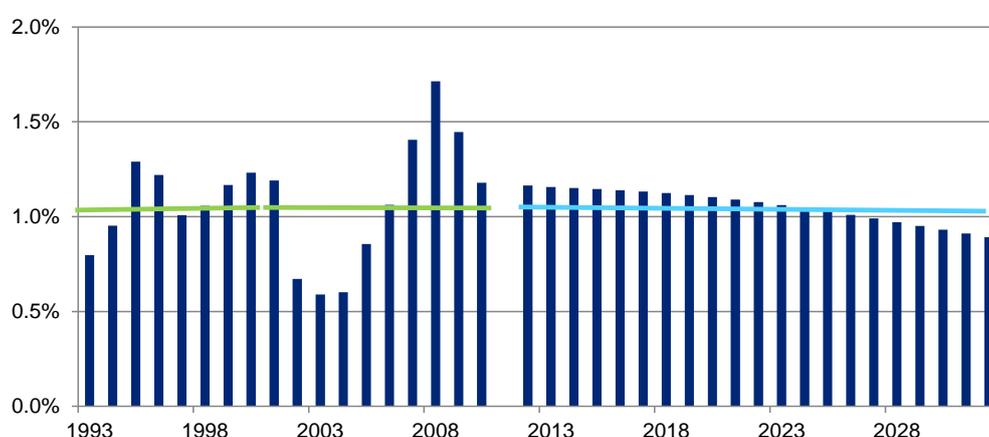
Source: NSW Treasury, 2011 and DAE estimates

7.1.1 Population

Growth in the NSW population is a significant driver of economic growth over the forecast period. The last 20 years has seen the NSW population grow at an average annual rate of 1.1% (see Chart 6.1). While the average growth expected over the next 20 years is expected to be similar over the forecast period, this masks the steady decline in growth expected over the projection period consistent with lower net migration and the rise in the dependency ratio.

The historical range on population growth (ignoring cyclical fluctuation) suggests that over the forecast period population growth could reasonably range from 0.75% to 1.25% average annual growth.

Chart 7.1: Historic and forecast population growth forecasts



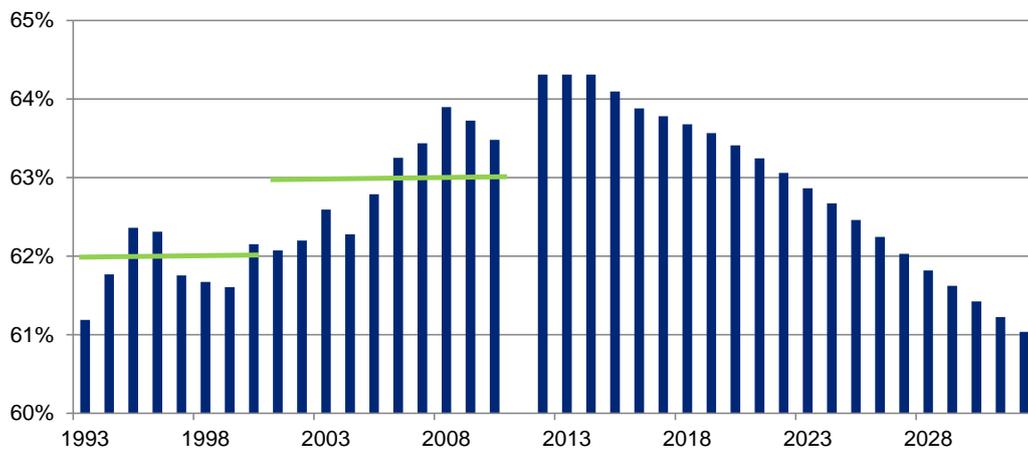
Note: green lines represent historical averages, while the blue line represents the forecast average

Source: ABS cat. no. 3101.0, NSW Treasury, 2011

7.1.2 Participation

Labour force participation rates in NSW provide a key indicator of future economic growth. As Chart 6.2 illustrates, the baseline model assumes that participation rates peak early in the forecast period and decline steadily over the next 20 years. This pattern is driven by the main demographic trend facing the NSW labour force – population ageing. Even after factoring in an expected rise in workforce participation among the elderly, economic growth is projected to be negatively affected by the ageing workforce over the forecast period. This will also reduce economic growth.

The historical range on participation rates suggests that participation rates over the forecast period could lie between 62.5% and 63.5%. However, the effect of population ageing has not been as critical in the past; as such, over the latter half of the forecast period it is expected participation rates could range between 61% and 62%.

Chart 7.2: Historic and forecast participation rate forecasts

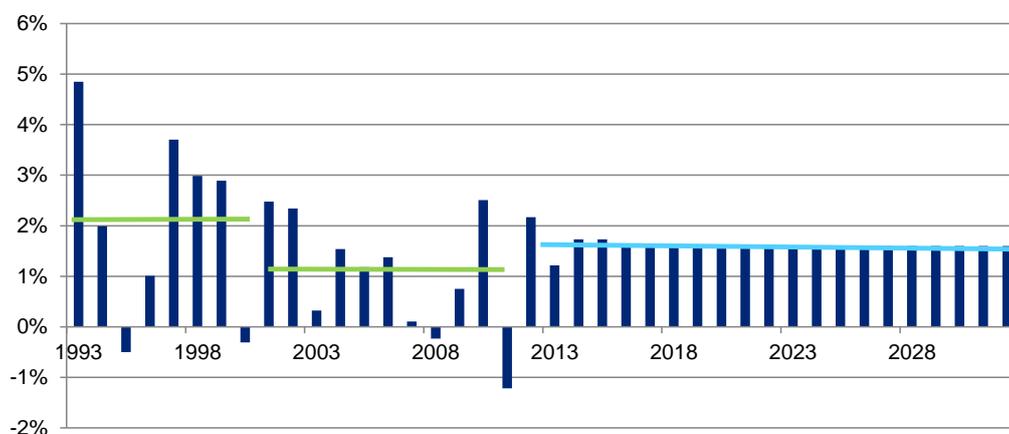
Note: green lines represent historical averages, no average forecast line provided due to declining trend

Source: ABS cat. no 6202.0, NSW Treasury, 2011

7.1.3 Productivity

Finally, the baseline model assumes a rate of growth in labour productivity higher than that seen in the last 10 years, but below growth between 1993 and 2001. The accelerated labour productivity growth of the early 1990s has been attributed to the microeconomic reforms which began in the 1980s. This projection for labour productivity is based on the Commonwealth Treasury's 2010 Intergenerational Report.

Labour productivity growth has ranged, on average, between 1% and 2% over previous cycles. This range could be reasonably assumed to continue over the forecast period.

Chart 7.3: Historic and forecast labour productivity forecasts

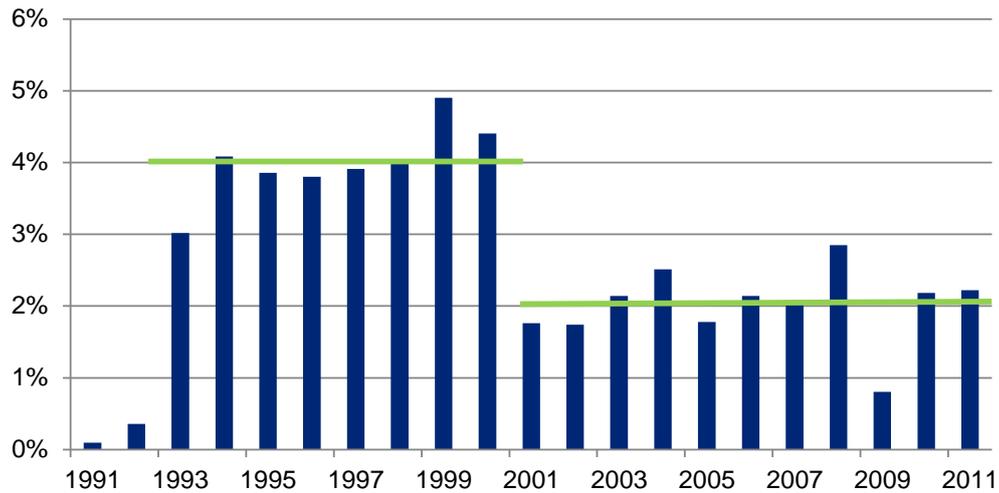
Note: green lines represent historical averages, while the blue line represents the forecast average

Source: ABS cat. no. 5220.0, ABS cat. no 6202.0, NSW Treasury, 2011

7.2 Sensitivity of forecasts

Over the last 20 years NSW real GSP growth has experienced two distinct periods – between 1993 and 2000 the NSW economy grew at an average annual rate of approximately 4% while during 2001 to 2011 average annual growth was approximately 2%.

Chart 7.4: Historical GSP growth



Note: green lines represent historical averages

Source: ABS cat. no. 5220.0

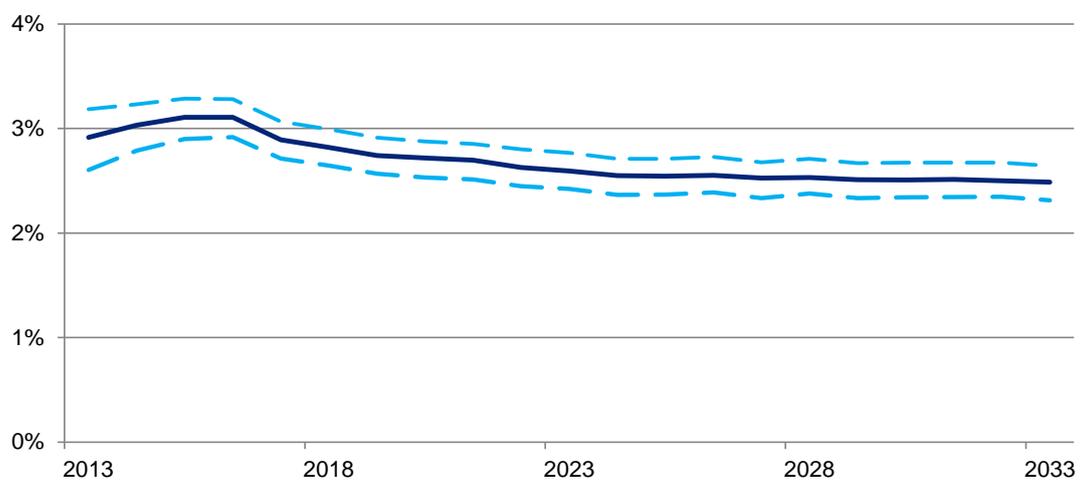
The sections below demonstrate the expected range in GSP growth forecasts under different productivity and population/participation scenarios. The purpose of this analysis is to illustrate the likely sensitivities around GSP growth over the forecast period.

7.2.1 Productivity

The chart below illustrates the range in GSP growth in NSW over the forecast period assuming a high and low productivity scenario. The baseline forecasts are based on productivity growth of 1.6% while the high scenario assumes 1.8% and the low scenario assumes 1.4% (consistent with NSW Treasury's IGR sensitivity analysis). This range is relatively narrow in comparison to historical productivity growth (see Table 7.1).

The productivity scenarios result in a range of approximately ± 0.2 percentage points around GSP growth.

Chart 7.5: Sensitivity of GSP forecasts to productivity scenarios



Note: blue dotted lines represent the range on the forecast

Source: Deloitte Access Economics modelling based on NSW government forecasts

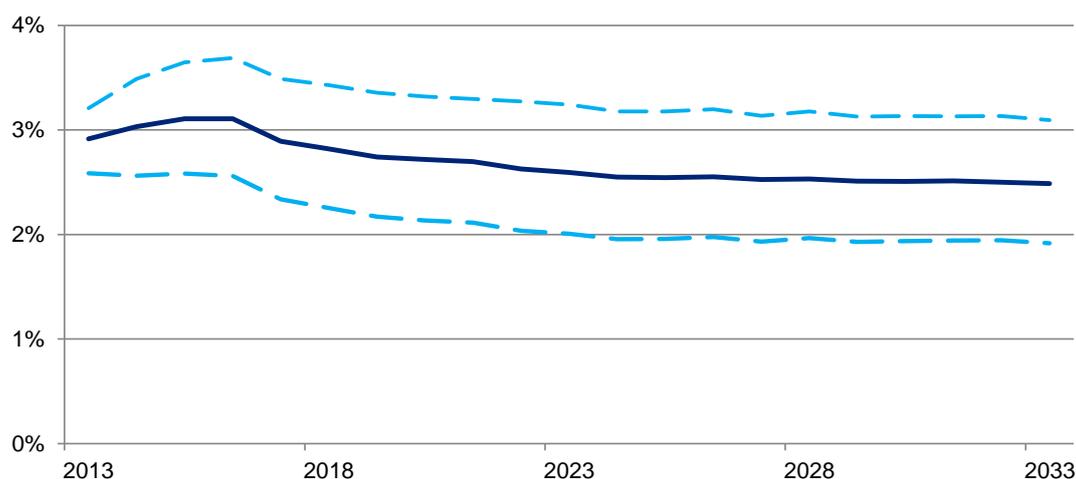
7.2.2 Population and participation

The population scenario is based on the historical range in NSW population growth – the baseline is modelled assuming approximately 1.1% average annual growth, while the high population growth scenario assumes 1.7% and the low population growth scenario assumes 0.6%. The participation scenario is based on the Commonwealth Treasury’s IGR sensitivity analysis around labour force participation rates – the baseline assumes approximately 63% participation rate while the high scenario assumes 3.1 percentage point increase and the low scenario assumes 3.6 percentage point decrease.

As the chart illustrates, this will result in a sizeable impact on GSP growth over the forecast period. The addition to/reduction in workers (via population and participation increases/decreases) results in a range of approximately ± 0.7 percentage points around GSP growth.

However, GSP per capita is a more representative measure of living standards. Growth in population will counteract some of the growth in GSP, with the overall impact in the range of ± 0.1 percentage points of GSP per capita.

Chart 7.6: Sensitivity of GSP forecasts to population and participation scenarios



Note: blue dotted lines represent the range on the forecast

Source: Deloitte Access Economics modelling based on NSW government forecasts

Comparing the two sensitivities, the range for GSP growth for the productivity sensitivity is far smaller than the range for the population and participation sensitivity. This solely reflects the assumed ranges of variability put into the model. For productivity, as discussed, the variability considered in the NSW IGR isn’t truly representative of the potential decade to decade variability in productivity that has been experienced. The range for productivity also does not take into account the potential effect that better infrastructure investments could have on productivity. In contrast, the range considered for population and participation likely reflects the higher end of what could be expected given historical variability.

A final consideration is that, in practice, we are unlikely to see changes in population and participation independently of changes in productivity. Different demographic profiles for immigrants will have different effects on productivity; immigration of prime working age individuals will tend to increase productivity. It is likely that these two sensitivities would, in fact, work together, with higher population and participation also leading to increased productivity, ultimately leading to a compounding effect.

7.3 The finance sector

The following discussion explores the resilience of one of NSW's largest industries: finance. The purpose of this review is to demonstrate, in detail, how an industry sector could expand or contract over time.

Within the ANZSIC classification, the finance and insurance industry consists of:

- the finance subdivision;
 - made up of the central bank, banks, other depository corporations (credit unions, building societies, cash management trusts and registered financial corporations), central borrowing authorities, securitisers, public unit trusts excluding property trusts, public development authorities, investment companies, common funds, cooperative housing societies, public housing schemes and other financial corporations.
- the insurance and superannuation funds subdivision; and
 - made up of pension funds, life insurance corporations, friendly societies and non-life insurance corporations.
- the auxiliary finance and insurance services subdivision
 - units providing auxiliary financial services, such as fund managers, brokers, dealers and financial consultants

The table below disaggregates the finance and insurance industry using employment numbers from the 2006 Census. As a share of total employment, the banking sector comprises the largest proportion of the finance and insurance industry, followed by auxiliary finance and investment services.

Table 7.2: Share of employment in finance sub-sectors

Industry	Share of employment nationally	Share of employment in Sydney
Finance	7.6%	6.9%
Banking	33.8%	37.4%
Non-depository financing and financial asset investing	5.9%	4.8%
Insurance	17.1%	18.0%
Superannuation	1.5%	1.8%
Auxiliary finance and investment services	32.2%	29.2%
Financial and insurance services nfd	2.0%	2.0%

Source: ABS 2006 Census of Population and Housing

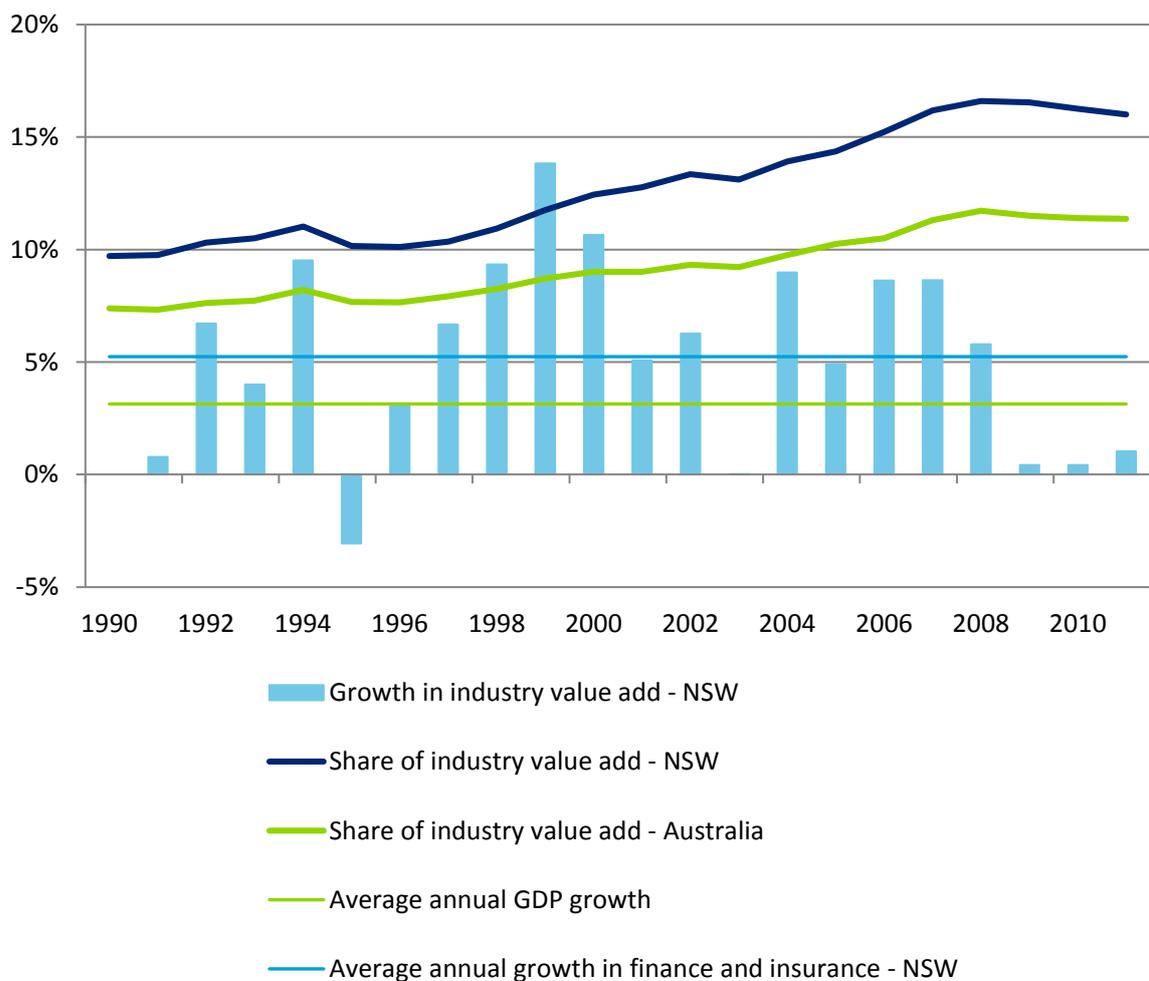
7.3.1 Trends in the finance sector

The Australian finance and insurance industry is predominantly directed towards providing services to the domestic market. As the largest industry in the NSW economy (in terms of value add) it is important to understand how the industry has grown in the past, what factors have driven this growth and whether this trend will correct over coming years.

Over the 10 years to 2008, the finance and insurance industry rapidly increased its share of the NSW economy from 10.8% to 16.6% as expanding household wealth, funds under management and economic activity increased demand for financial products and services.

The chart below illustrates the relationship between average annual growth of the NSW finance and insurance industry and average annual growth in GDP. Over the 20 year period, the NSW finance industry grew at an average rate of 5.2% while over the same period the national economy grew at an average rate of 3.1%.

Chart 7.7: Finance and insurance



Source: ABS cat no 5220.0; ABS cat no 5204.0

7.3.2 Pressures on the finance sector

A number of key factors are expected to shape the finance and insurance industry and its share of the economy over coming decades. Whether the industry continues previous growth trends, remains at current levels or declines as a share of the economy will depend on these countervailing forces.

- Growth in the superannuation industry will be reinforced by the ageing population.
- There will be a growing need for financial advice as individuals are increasingly facing more financial risks themselves.
- Specialisation within the industry will result in more outsourcing of financial functions that support the finance industry.
- Sydney is a national financial hub, and has potential for increasing presence in the Asia Pacific region (this has important implications for foreign banks in Australia who can market specialised financial products to emerging Asia).

These factors will consolidate previous growth trends in the finance and insurance industry and are expected to continue to add to the growth of the industry going forward.

On the other hand:

- the financial crisis resulted in some failures and a consolidation of the industry, culminating in a small decline in its share of the NSW (and national) economy in recent years;
- less debt creation and a more cautious approach to financial innovation will only be marginally offset by the requirement to devote more resources to compliance; and
- the combination of a high Australian dollar (and other costs) as well as improvements in ICT may result in pressure for offshoring investment banking and back-office functions of banks. However, this is an ongoing process and cannot be done easily in all instances.

The global financial market will remain under pressure for the next few years; however, over the medium to long-term the fundamental drivers of the finance and insurance industry will continue to boost demand for this sector. The shape of the sector will ultimately be determined by these countervailing forces.

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Appendix A: Analysis for the Sydney Metro area

The tables below provide a brief summary of the results outlined in section 5. The breakdown within Sydney is based on population location forecasts developed by the Bureau of Transport Statistics. These forecasts were adjusted based on more recent population statistics for the Sydney Metropolitan area. The geographic breakdown developed by the Bureau of Transport Statistics has been applied to the overall CGE modelling results for the Sydney Metropolitan area and potential GRP for each region has then been estimated based on existing income information. The sub-Sydney breakdown has not been modelled within the CGE framework.

Table A.1: Summary of forecasts and estimated breakdown within Sydney (levels)

		Sydney (Central)*	Sydney (Greater)*	Sydney (Metro)	Regions	Total
Population	2010	1.3	3.3	4.6	2.6	7.2
	2032	1.7	4.4	6.1	3.1	9.2
	Growth rate	1.3%	1.3%	1.3%	0.7%	1.1%
Jobs	2010-11	1.0	1.3	2.3	1.3	3.6
	2031-32	1.2	1.6	2.8	1.5	4.4
	Growth rate	0.87%	1.05%	0.97%	0.86%	0.93%
GRP/GSP	2010-11	173.0	139.9	312.9	107.0	419.9
	2031-32	312.5	252.8	565.3	165.6	730.9

Note: * Sydney Central and Greater figures are estimated outside the CGE model

Table A.2: Summary of forecasts and estimated breakdown within Sydney (shares)

		Sydney (Central)*	Sydney (Greater)*	Sydney (Metro)	Regions	Total
Population	2010	17%	46%	63%	37%	100%
	2032	18%	48%	66%	34%	100%
Jobs	2010-11	28%	36%	64%	36%	100%
	2031-32	28%	37%	65%	35%	100%
GRP/GSP	2010-11	41%	34%	75%	25%	100%
	2031-32	43%	34%	77%	23%	100%

Note: * Sydney Central and Greater figures are estimated outside the CGE model

Source: Deloitte Access Economics estimates

Limitation of our work

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