Deloitte Access Economics

A Federal Incentives Model for Housing Supply

Property Council of Australia

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Contents

Executive Summary

With housing costs comprising a large part of the average household's expenditure, housing affordability is a significant issue for policy-makers. Rising prices in our larger cities, particularly Melbourne and Sydney, have recently made affordability a more acute issue.

House prices are influenced by a range of factors on both the demand and supply side. There is evidence that supply has not kept up with demand in recent years, leading to a supply gap that has placed upward pressure on prices. In 2012 the former National Housing Supply Council estimated cumulative shortfall over the period 2001-2011 had reached 228,000 dwellings, and forecast this to increase to around 670,000 by 2031.

The responsiveness of supply is itself influenced by the planning system in which construction activity operates. While several reforms have improved the planning process in parts, there is room for further improvement.

In Australia the instruments for planning are primarily the responsibility of the State and Territory Governments. These governments have regularly adjusted planning policies to achieve a range of objectives. The Commonwealth has also developed housing and planning policies. Commonwealth Rent Assistance and the National Affordable Housing Agreement are two such examples. Further, successive governments have released housing and cities initiatives to address economic, community and environmental goals.

In addition to the social and community benefits, the economic dividends resulting from effective planning frameworks may be large. Cities are rightly being acknowledged as the engines of productivity and unlocking their potential could drive future economic growth.

Estimates in this report show that the potential gains from improving housing planning could be around $3 billion a year. These benefits could flow from labour market outcomes, including increased participation and improved job matching, reduced congestion and higher productivity in the construction sector. Of course the extent to which these benefits can be realised depends on the success of reforms. But equally it shows what is at stake. To put this in perspective, the $3 billion is approximately equal to what Deloitte Access Economics recently estimated could be the benefit from abolishing non-residential stamp duties (the least efficient tax currently raised at any level of government) nation-wide.

The Commonwealth can play a role in helping achieve these benefits, despite the direct control of planning being held by the States and Territories. By coordinating action and collecting nationwide housing data, the Commonwealth can provide a platform through which meaningful and measurable gains can be made.

The National Competition Policy (NCP) reforms of the late 1990s provide a good example of the Commonwealth driving a reform agenda across the States. Under these reforms the Commonwealth provided incentive payments to the States and Territories subject to them making observable one-off reforms aimed at enhancing competition. The Intergovernmental Agreement on Federal Financial Relations provides another example, recommending the increased use of financial incentives in stimulating reform, and measuring progress against stated goals in order to improve accountability.

The Property Council of Australia commissioned Deloitte Access Economics to investigate whether an NCP style federal incentives model could be applied to stimulate improved housing outcomes, and what the benefits from an effective model could be. A workshop was held in December 2015, comprising leaders in housing and planning policy across the three levels of government, academia and the private sectors. This workshop, and other research, revealed broad support for the initiative, while recognising the unique challenges that effective planning policy faces.

Some aspects of an NCP style federal incentives model would translate well to housing. This includes the ability of financial incentives to stimulate policy actions at the State level, the need to measure performance against agreed targets, and the linking of benefits flowing to the Commonwealth, for example through increased income tax revenues, to the payments. Indeed, in the Government's response to the recent Competition Policy Review it indicated that it saw Commonwealth payments to the States for housing reforms as a feasible commitment to achieve reforms in this field.

But other aspects of the NCP will need to be adjusted for the housing context. This includes the regulatory, rather than competition, aspect of housing policy, the more diverse outcomes from effective housing policy (which includes a mix of social and economic outcomes) and the need for ongoing and possibly evolving monitoring of progress. These mean that a concrete link between observable economic outcomes and the payments that are made will be more difficult to reach than they were in the original NCP model.

The framework is also complicated by the three levels of Government involved. Local Governments play an important role in planning and should be included in the financial payments in order to ensure their buy-in. There are existing pathways through which funding can be directed from the Federal Government to Local Governments via the States.

Financial incentive payments can be strong motivators of reform. It will be important, however, that the model is structured such that payments are only made when real progress can be demonstrated, including early in the process when strategic metropolitan plans are developed to allow progress to be measured over time. The threat of missing out on Federal payments is what will drive the action from the States and Territories.

The basis of determining the metrics against which incentive payments could be awarded should involve consultation between Commonwealth and State Governments. Starting points for that discussion could involve performance metrics for:

- Strategic state plans that include housing targets;
- The translation of these strategic objectives into statutory planning frameworks, with more streamlined planning systems that provide state and local agencies with the tools required to deliver on housing targets in a timely and efficient manner, so that housing can be delivered at lower cost;
- The nature of the housing targets themselves, including the type, number, location and the relative affordability of the housing supply; and
- Other important features of housing, such as density and access to infrastructure.

Broadly, the data that is currently available for assessing housing and planning policies at the State level focuses on inputs rather than housing outcomes and is insufficient for the purposes of the incentives model.

An institution should therefore be established to collect this data from the States and report on a regular basis. This would be similar to the former National Housing Supply Council but have a broader remit reflecting the diversity of outcomes to be reported on. The institution could sit within a Commonwealth agency, and should be linked to the Government's broader Cities agenda. The institution could then make recommendations to a body that would decide on and administer the payments to the States and Territories. The proposed Australian Council for Competition Policy, which would have responsibility for incentives payments in other policy areas, may be an appropriate institution for this role.

Five steps to implementing a financial incentives framework:

1. **Set targets.** Identify and agree on performance metrics with the States. States already collect data relating to their planning systems and these could be standardised and reported to a dedicated housing policy body (see 2 below). The metrics chosen will depend on the reform initiatives agreed, but could consist of housing targets by relative affordability, and the development of metro plans with specified targets and measures of the system's efficiency. Targets and metrics need not be identical across States. Some States will face location-specific issues and should be given sufficient flexibility to choose targets and metrics appropriate to their situation. However, this should not be open-ended.

2. **Make someone responsible.** This report suggests establishing a housing institution which could sit within a Commonwealth agency, with a broader role than the National Housing Supply Council, to collate consistent data on housing. The proposed Australian Council for Competition Policy, with responsibility for incentive payments, could receive recommendations and input from this institution, and ultimately decide on issuing payments.

3. **Model the benefits.** Economic modelling that estimates the impact of State housing outcomes on Commonwealth revenues will inform the size of benefits achievable through reform, and where these benefits accrue.

4. **Link payments to action – upfront and ongoing.** Metro plans could form the basis of up-front payments at the commencement of the incentives framework. Ongoing payments should be based on realised performance against metrics. The creation of plans alone should not be sufficient grounds for receiving ongoing payments, but may be sufficient to attract a start-up incentive payment.

5. **State Governments to lead, but involve Local Governments.** While policy reform will ultimately be driven by the States, Local Governments will be a key part of the process and they should qualify for incentive payments for participation and achievement of objectives.

Deloitte Access Economics

1 Introduction

The Property Council of Australia commissioned Deloitte Access Economics to investigate the potential for a federal incentives model to address issues around planning and housing supply in the States. Such an incentives model would be similar in principle to that adopted under the National Competition Policy (NCP) reforms of the late 1990s and early 2000s in which the Commonwealth made payments to the States for measurable progress against certain reforms recommended by the Hilmer Review.

The issues around planning and housing supply are naturally different to those that the Hilmer Review sought to address, both in terms of the policies adopted and the flow of benefits created. However, the principle that incentives payments can be an effective mechanism for generating reform momentum is the common thread between those reforms and potential reforms to housing. This report investigates possible frameworks for implementing payments, how payments could be tied to measurable outcomes, and what reform options the States could look to pursue.

The current housing and policy environment means this work comes at an opportune time. There has been increasing attention paid to the importance of cities at the Federal level, and February 2016 saw the appointment of a new Assistant Minister to the Prime Minister for Cities and Digital Transformation. Housing markets in the large capital cities have also seen a period of rapid growth in prices, reducing affordability. Looking back further, housing demand has outstripped supply for much of the last decade, placing further pressure on prices and affordability. Ensuring that housing markets, throughout the whole development process, function effectively and efficiently is therefore important in increasing the supply of housing, and the right type of housing, to meet demand.

This report is informed in part by a workshop hosted by Deloitte Access Economics in December 2015. The workshop comprised attendees from Commonwealth and NSW State Government agencies, Local Government, academics and industry. The focus of the workshop was on making an incentives framework workable by: identifying current issues with the planning process, outlining performance measures that could be used to measure progress and on which to base payments, and discussing broad questions of governance and the administering of payments.

The remainder of the report is set out as follows:

- Section 2 provides background on housing supply and affordability in Australia, and the use of incentives payments in the NCP reforms;
- Section 3 provides modelling results that indicate the indicative economic gains that could be received through improving planning and housing supply policy;
- Sections 4 and 5 identify the policies available to State Governments to influence housing supply and affordability, and the metrics through which progress can be assessed; and
- Section 6 outlines pragmatic considerations for an incentives model, including how the size of payments could be determined and potential governance frameworks.

2 Background

Policy settings that impact the property market can have a large influence on the wellbeing of Australians. The property sector and related markets are large employers of Australian workers and a key destination for capital investment. In 2015, the AEC Group report for the Property Council *Economic Significance of the Property Industry to the Australian Economy* found that the property sector directly contributed to 11.5% of Australia's GDP, representing around $182 billion in 2013-14. The report also found that the sector directly employed almost 1.2 million full-time equivalent employees (11.8% of the total labour force) in 2013-14.

Property is the largest asset held by the majority of Australian households and repayments account for a significant proportion of household expenditure. In addition to direct residential property ownership, more than 14 million Australians have a financial stake in the commercial property sector through their superannuation funds. The location, quality and type of housing also has implications for where and how Australians live, the jobs which they have access to, and the quality of life they are able to lead. Put simply, housing matters.

With housing-related costs comprising a large part of the average household's expenditure, housing affordability is a topic that is of natural concern for policy-makers. Rising prices in our larger cities, particularly Melbourne and Sydney, have recently meant that 'housing stress' has become a more acute issue. Housing affordability has a wide range of causes, both on the demand and supply side of the market. Only some of these causes can be strongly influenced by governments, with other factors such as macroeconomic conditions or physical geography being significant contributors to affordability but generally not able to be influenced by policy-makers.

Efforts to improve affordability have typically focused on the supply side of the market, and in particular on the planning system. In Australia it is the States and Territories that have primary control over planning, with some aspects devolved to Local Governments under various planning and assessment Acts.

Successive reforms in all States and Territories over the last decade have sought to improve planning outcomes, with a focus on reducing the compliance costs associated with development applications. This has led to states implementing changes aimed at streamlining planning decisions, such as standardised planning instruments and categories of codified development. Most recently, the Property Council's 2015 *Development Assessment Report Card* highlights several States and Territories that have progressed on various planning reform initiatives over the past few years. These include:

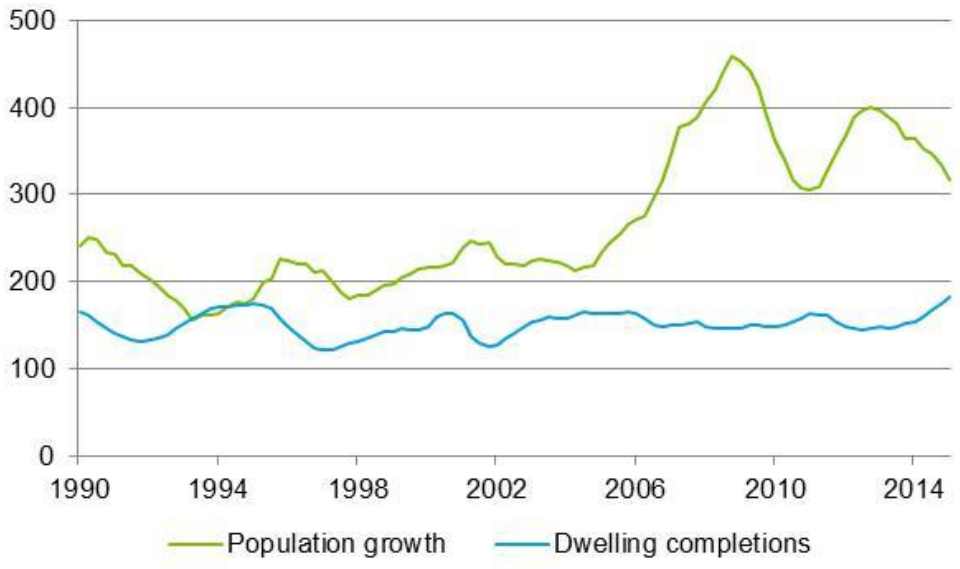
- The Northern Territory's introduction of a Planning Commission to provide independent planning advice and progress strategic plans;
- The West Australian Planning Commission playing an increasingly noticeable role in overseeing the implementation of state planning strategy;
- Victoria's Metropolitan Planning Authority and its accompanying metropolitan strategy; and

- South Australia's efforts in promoting inner city development through Renewal SA and its new Inner Metropolitan Development Assessment Committee.

Overall, however, the efficiency of planning systems is difficult to assess due to the lack of a single metric, or set of metrics, relative to the broad set of outcomes that planning may seek to achieve. Most definitions of efficiency focus on whether underlying demand is being met by new supply. However, this is often supplemented by other requirements that focus on the type and quality of new supply. For example, in a recent Australian Housing and Urban Research Institute (AHURI) publication, the standard supply-demand definition was augmented by the statement that '*An efficient and responsive housing market should support sustainable urban growth, labour mobility, social inclusion and community wellbeing*'.[1] While there is likely to be little argument about the benefits of these goals, measuring whether, and what part of, a planning system contributes to these outcomes can be difficult.

Prior to being abolished in 2014, the National Housing Supply Council was tasked with measuring the dwelling supply gap across Australia. In its final *Key Indicators* report in mid-2012 it estimated that the cumulative shortage over the period 2001-2011 had reached 228,000 dwellings, and forecast this to increase to around 370,000 dwellings by 2016, and 670,000 by 2031. This gap grew most quickly over the period following 2006 when relatively sharp and prolonged increases in population were not met by corresponding supply side responses (Chart 2.1 below). More recently, this gap has narrowed as the rate of population growth has slowed somewhat, accompanied by a slight rise in dwelling completions over the past couple of years.

Chart 2.1: Population growth and dwelling completions, 1990 - 2015 ('000s)



Source: Australian Bureau of Statistics, catalogue numbers 3101.0 and 8752.0

[1] Australian Housing and Urban Research Institute. (2015). *Housing markets, economic productivity, and risk: international evidence and policy implications for Australia*, page 47. [online] Available at: http://www.ahuri.edu.au/research/final-reports/254.

This slight increase in dwelling completions over recent years suggests that housing supply is beginning to respond to the high demand generated by population growth and an extended period of low interest rates. Nonetheless, the period of under-supply over the years of prolonged population growth following 2006 suggests that there are inefficiencies in planning systems across Australia that are preventing relatively quick supply side responses to demand shifts. While there is some international research in this area, there is little or no research on supply responsiveness in Australia.[2]

Supply responsiveness will also have implications for housing affordability in Australia. While affordability is a function of economic variables on both the supply and demand side of the market, the ability for supply to respond efficiently to changes in demand will determine to some extent whether periods of demand growth are met through increased prices alone, or corresponding increases in supply which will have a dampening impact on prices. Much of the reform to planning in recent years has focused on streamlining decisions in order to increase this responsiveness without removing the community interest aspects of planning.

The following section briefly reviews the recent experience with housing affordability in Australia.

2.2 Housing affordability in Australia

The house price-to-income ratio in Australia increased steadily throughout the 1990s and early 2000s, and has remained at these historically high levels in the decade since (notwithstanding a couple of dips following the global financial crisis and subsequent economic slowdowns).[3] IMF research suggests that the house price-to-income ratio in Australia is currently higher than the global average.[4]

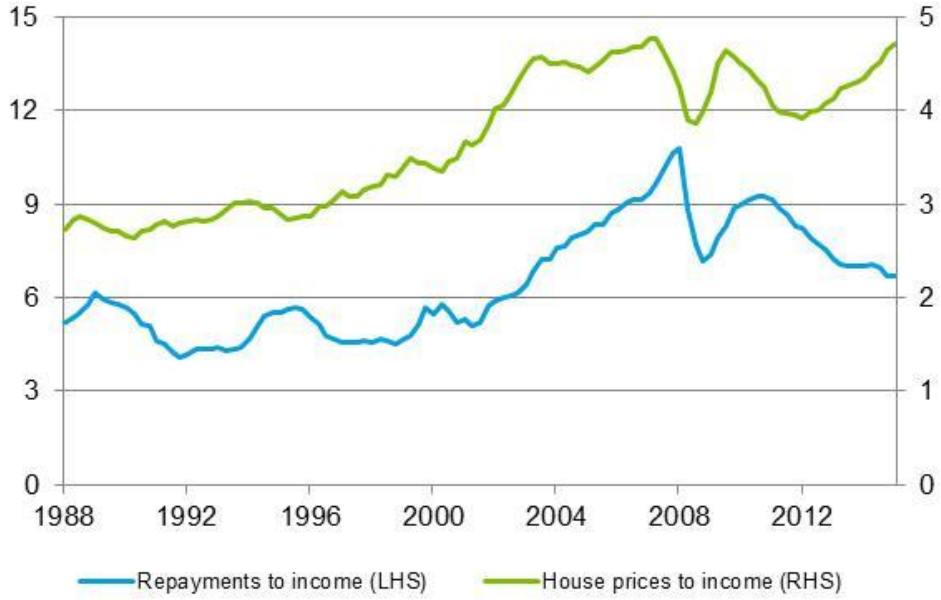
However, as a measure of housing affordability, house price-to-income ratios can be incomplete since they do not account for debt servicing costs associated with a housing mortgage. For example, mortgage interest rates were considerably higher in the 1980s as compared with the rates observed over recent years. Over the period up to, and soon after, the global financial crisis the house price and repayment to income ratios followed each other relatively closely. However, the sharp falls in interest rates following the crisis have led to a diversion of the two affordability measures. Despite this, house prices have risen to a degree that low interest rates cannot offset, meaning that housing affordability remains an issue for many Australians.

[2] This is a currently active research area in the country, with AHURI undertaking a current research program looking into, among other things, the responsiveness of supply to market conditions.

[3] Reserve Bank of Australia. (2014). *Submission to the Inquiry into Affordable Housing*. [online] Available at: http://www.rba.gov.au/publications/submissions/housing-and-housing-finance/inquiry-affordable-housing.

[4] International Monetary Fund. (2015). *Global Housing Watch*. [online] Available at: https://www.imf.org/external/research/housing/.

Chart 2.2: House price and repayment to income ratios, 1990 - 2015[5]



Source: ABS (catalogue numbers 6416.0 and 5206.0), Reserve Bank of Australia (statistical table E2)

Another measure of housing affordability that factors in these debt servicing costs is the share of households experiencing 'mortgage stress', which is commonly defined as households paying more than 30% of household income on mortgage repayments (this is sometimes amended to focus only on those households in the lowest 40% of incomes).

The 2011 Census found that the number of Australian households in mortgage stress had increased by around 18% since 2006, and that almost half of all low-to-moderate income homeowners with a mortgage are in mortgage stress – a rate three times higher than the average across Australia.[6]

This suggests that, even with mortgage interest rates being relatively low at present, housing affordability is still a significant issue for low-to-moderate income households. In addition, the stock of social housing available to those in greatest need of affordable housing options has declined as a share of the overall number of Australian dwellings, from 4.9% in 2006 to 4.6% in 2011.[7]

Housing affordability has implications not only for home ownership in Australia, but also for renters. The 2009 Henry Review noted that higher house prices have the effect of reducing rental affordability, as rents need to increase in order for investors to maintain their rental yield. The 2015 Senate Inquiry into housing affordability *Out of reach? The Australian housing affordability challenge* reported that rising rents and a shortage of affordable rental options have had a particularly large impact on low-income households, especially those in Australian capital cities. This effect has been compounded by the fact that a

[5] Note: the repayment-to-income ratio is reported as a percentage. That is, in 2017 housing interest payments accounted for around 7% of household incomes.

[6] Australian Housing and Urban Research Institute. (2015). *How long do households suffer mortgage stress?*

[7] Australian Institute of Health and Welfare. (2013). *Housing assistance in Australia 2013*. [online] Available at: http://www.aihw.gov.au/publication-detail/?id=60129545054.

growing number of tenants are renting for longer terms, as unaffordable house prices have reduced the ability of low-income households to access home ownership.

Specific causes of affordability are likely to be varied. On the demand side it could reflect the housing preferences of the Australian population. This includes, for example:

- Changes in consumer preferences towards larger or better quality homes;
- Households using housing for intergenerational asset transfer, with older households using the equity in their homes to assist their children; and
- Tax and welfare advantages to dedicating discretionary income to housing incentivise purchases of housing, both as an owner-occupier and as an investment.

Nevertheless, for all the strong demand for housing supply has not responded as one might expect. There are a number of potential causes of falling housing affordability in Australia. One is the availability of land for development as residential housing and, relatedly, the planning and development processes and charges associated with land supply.

Issues of land supply, land-use planning and approval processes and infrastructure cost recovery were assessed by the Housing Supply and Affordability Reform (HSAR) Working Party in 2010, which found that:

> *"There are a number of regulatory impediments that may prevent land from being allocated to its highest value use… governments should focus on ensuring planning policy settings do not unduly constrain the market's capacity to provide the type of dwellings that people want to live in at the locations where they want to live."*[8]

These sentiments were echoed by participants at the workshop held as part of this work. When asked whether insufficient land supply was reducing affordability, participants argued that there was generally not a shortage of land as such. Instead, it was argued that there are challenges associated with developing the available land into a viable housing product that meets the requirements of potential homebuyers. For example, with respect to greenfield areas, in many cases the available land is not serviced with infrastructure and is therefore not easily developable for sale. With regards to prospective infill developments, the available land may be incorrectly zoned, and the need to rezone the land can cause significant delays in the development process.

In addition, workshop participants highlighted that the process of taking land through the purchase, development, construction and sale process represented a cost equation (that includes government taxes and charges) and that other components of this equation were driving higher housing costs. In particular, both explicit and implicit costs of the planning system were seen to be adding unnecessarily to the cost equation.

Aside from land supply and planning, there are of course many other factors that could influence housing affordability. The macroeconomic environment – including policy settings such as interest rates, and general economic conditions such as unemployment and consumer confidence – can play a role in determining the level and growth of house prices. Taxation policy, including taxes on capital gains and property transfers (stamp duties), can also affect property market activity and prices.

[8] Council of Australian Governments. (2010). *Housing Supply and Affordability Reform Working Party - Final Report*.

Finally, housing affordability can be considered as a function of broader parameters than simply price and interest rates. The affordability of a dwelling can depend on its proximity to employment, public transport and other amenities. Building well located dwellings that grant occupants the opportunities to participate in society can be as important as the price of the property.

2.3 Planning frameworks and state responsibilities

Planning responsibilities in Australia are split between various functions at the three levels of government: Federal, State and Territory, and Local Governments. Australia is reasonably unique in devolving planning responsibilities to the States, with the Federal Government having relatively little direct influence on planning regulations. The table below sets out the responsibilities of each level of government.

Table 2.2: Planning Responsibilities in Australia

Federal Government	Funding social housing programs
	Commonwealth rental assistance
	Funding significant infrastructure projects
	Migration policy settings
State/Territory Governments	Planning frameworks (law and strategic plans)
	Funding and administering housing assistance programs
	The supply and management of public housing
	Urban infrastructure, including associated charges and levies
Local/Territory Governments	Land use zoning and controls
	Assessing development proposals
	Local infrastructure and associated developer charges

Source: Deloitte Access Economics

All levels of governments can influence housing and affordability through other levers, including tax settings (principally the land and property taxes set by State and Local Governments) and macroeconomic settings.

Under Australia's federal system, the States have the legislative and governance responsibility for how land is managed in their jurisdictions, exercised primarily in their respective planning and assessment Acts and instruments. However, the States also delegate some important responsibilities for land use and management to Local Government as part of this legislative framework. All States have specific legislation for constituting Local Governments providing the powers under which local authorities exercise local decisions over land and development.[9]

[9] Although in specific cases and applications, local council decisions can be appealed to State courts.

Largely within the States' respective Local Government acts, councils are constituted as democratic independent institutions[10] with publicly elected officials presiding over a local body. In recent times, individual States have sought to reform Local Government arrangements, for example in response to concerns over the exercise of local planning decisions. In some cases, such changes have involved State governments removing actual planning and development consent powers from local councils whether on an overall basis or on specific project proposals themselves. In others, State governments have implemented independent bodies such as panels or advisory committees to make development assessment decisions.

In other cases, the States have looked to amalgamate or alter Local Government boundaries to reflect demographic change. This was the case in Victoria in the early 1990s and more recently in Queensland. The NSW government's Fit For The Future reforms are also characteristic of this approach.[11] The ability of State Governments to impose their statutory responsibility over Local Government is a clear demonstration of the fundamental role that States continue to retain with respect to land use planning and development.

Despite a rather limited direct role in planning, the Commonwealth has over time taken an active interest in planning issues. It has been involved in planning policy at the national level through its role in the Council of Australian Governments, and both Coalition and Labor Governments have created policy documents and portfolios which have expressed views on the state of planning policy and reforms.

For example, the 2011 National Urban Policy released by the then Labor Government set out the Commonwealth's proposed role in '*establishing national principles and priorities to guide States and Territories in the development of strategic planning systems to ensure our cities become more productive, sustainable and liveable*' and in '*articulating how the Australian Government will coordinate its own policies, investment and activities in cities*'.[12]

More recently the current Coalition Government has signalled its interest in planning and urban policy through its appointment of an Assistant Minister to the Prime Minister for Cities and Digital Transformation. Indeed, in the Government's response to the recent Competition Policy Review it indicated that it saw Commonwealth payments to the States for housing reforms as a feasible commitment to achieve reforms in this field.

The Commonwealth has also added to housing and planning policy through various reviews. A comprehensive review of planning was undertaken by the Productivity Commission when it investigated the performance of planning arrangements in 2011. The

[10] In some cases, specifically appointed administrators may preside over a local authority. In other examples, certain planning and land use decisions are jointly managed by both State and local bodies, such as the Sydney City Planning Commission.

[11] NSW Government. (2015). *Stronger councils for Sydney and regional NSW*. [online] Available at: https://www.nsw.gov.au/media-releases-premier/stronger-councils-sydney-and-regional-nsw.

[12] Infrastructure Australia. (2011). *Our Cities, Our Future — A National Urban Policy for a productive, sustainable and liveable future*. [online] Available at: http://infrastructureaustralia.gov.au/policy-publications/publications/Our-Cities-Our-Future-2011.aspx.

enquiry report concluded that there was room for improvement, stating among other things that:[13]

- Planning systems suffer from 'objectives overload';
- The ability of local councils to deliver timely decisions depends on resourcing, but also on the clarity of state planning laws and regulations and strategic city plans; and
- States differ significantly in the time taken to make planning decisions, to release urban land and in provisions to involve communities in planning decisions.

The report provided a range of performance metrics for the planning system, similar to those that could be used to measure progress under a Commonwealth incentives framework, and demonstrated both the commonalities and differences in performance across states. It also nominated a number of performance comparisons and benchmarks under a range of groupings which, when combined, can provide an indication of the overall performance of the planning system within each State and Territory. These included metrics relating to: [14]

- **The supply of land**, such as the overall time taken to complete developments, indicative times taken to complete various stages in the land supply process (e.g. rezoning or application approval) and the amount of vacant land zoned residential;
- **Infrastructure**, such as the level of integration between planning and infrastructure (e.g. through detailed infrastructure plans and committed funding and delivery timeframes) and the size of infrastructure charges;
- **Business compliance costs**, such as development assessment approval timeframes and the fees associated with development applications;
- **Competition and retail markets**, such as the number of activity centres within a particular area and the number of zones or other layers of development controls;
- **Governance and accountability**, such as the number of local councils, total planning expenditure and staffing at these councils and the availability of appeals mechanisms (e.g. third party appeals);
- **Community involvement**, such as the extent to which community participation and engagement took place in relation to planning issues and the share of the community that consider their governments are effective in planning; and
- **State and Territory referrals**, such as the number of matters, actions and activities that require the referral of a development application to a specialist government agency.

A sample of such measures are included in the table below. They are drawn from different stages in the development process and reflect comments from the workshop that while land supply itself is not seen to be a significant cause of falling affordability, the way in which land is converted to dwellings through the various stages of the development process can have a significant impact on cost and the responsiveness of supply to market conditions.

[13] Productivity Commission. (2011). *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*. [online] Available at: http://www.pc.gov.au/inquiries/completed/regulation-benchmarking-planning/report.

[14] Ibid.

Table 2.3: A sample of planning performance metrics from PC (2011)

	NSW	VIC	QLD	WA	SA
Median time for DA approval (days)	41	73	38	na	na
Elapsed time for land subdivision (months)	up to 119	30-60 plus	14-172	36-120	24-133
Infrastructure charge per dwelling ($)	37,300	11,000	27,000	20,000	3,693

Source: Productivity Commission (2011)[15]

2.4 The National Competition Policy reforms and incentives structures

In 1992 the Prime Minister announced an independent inquiry into a national competition policy. Known as the Hilmer Committee, after its chairperson Frederick Hilmer, the inquiry would look into a wide scope of potential reforms, addressing policy areas administered across different levels of government. The committee reported in 1993 making recommendations across six policy areas:

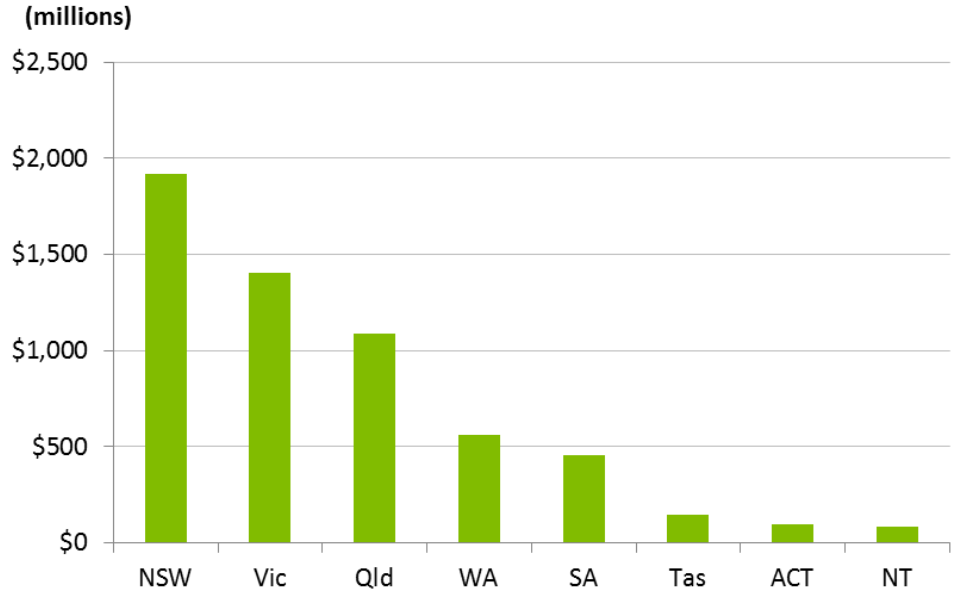
- Extension of the reach of the Trade Practices Act 1974 to unincorporated businesses and State and Territory government businesses;
- Extension of price surveillance to State and Territory businesses to deal with circumstances where other competition policy reforms had proven inadequate;
- Application of competitive neutrality principles so government businesses do not enjoy a competitive advantage over their private sector competitors simply as a result of public sector ownership;
- Restructuring of public sector monopoly businesses;
- Review of all legislation that restricts competition; and
- Provision for third party access to nationally significant infrastructure.

In 1995 the Council of Australian Governments (COAG) came to three intergovernmental agreements, laying out a nationally-coordinated microeconomic reform program known as the National Competition Policy (NCP), aligned with the recommendations of the Hilmer Committee. These agreements outlined a timetable in which all reviews and reforms were to be completed by 2000. COAG subsequently agreed to extend the timeframe for completion of the reform program until 2005.

Given much of the benefit of the reforms would accrue to the Commonwealth in the form of additional tax revenue, an essential component of the NCP program was payments to the States and Territories for completion of implementing the agreed reforms. The principle behind these payments was that the benefits of reform should be shared across all levels of government. A total of $5.7 billion was allocated for payments from 1997-98 to 2005-06 (see Chart 2.3).

[15] Productivity Commission. (2011). *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*.

Chart 2.3 Competition payments, 1997-98 to 2005-06



Source: Productivity Commission (2005)[16]

Reform progress was assessed by the National Competition Council (NCC), which made recommedations to the Federal Treasurer on whether the States and Territories had met their reform commitments, and hence whether full NCP payments should be made. On the success of these payments in stimulating reform, the NCC noted in their submission to the Productivity Commission on the Review of National Competition Policy Arrangements that:

> *"Reform would have been far slower and less comprehensive without competition payments. These payments (now at around $800 million per year) may not be large relative to State and Territory budgets, but nonetheless represent a significant source of incremental funds."*[17]

In deciding whether a penalty should be applied due to a failure to implement reforms, the NCC takes into account the significance of the compliance breach, the State or Territory government's overall commitment to NCP implementation, as well as any impact the breach in compliance may have on other States' and Territories' reform efforts.

The first significant payment penalties occurred in 2003-04, where penalties totalled approximately $180 million or around 24% of payments allocated for the year. The largest share of these penalties accrued to Queensland, Western Australia and New South Wales. Penalties in 2004-05 totalled a further $140 million, with Queensland, Western Australia and New South Wales again making up the largest share, accounting for over 90% of the penalties.

[16] Productivity Commission. (2005). *Review of National Competition Policy Arrangements*. [online] Available at: http://www.pc.gov.au/inquiries/completed/national-competition-policy/report.

[17] National Competition Council, 15 December 2005, Media release. [online] Available at: http://ncc.gov.au/images/uploads/AST7PR-001.pdf

3 The potential benefits of reform

Increasing attention is being paid to the connection between planning outcomes and economic growth and productivity. Indeed, many of the planning reforms progressed in recent years have identified the growth rationale as a key motivator for reform. Housing supply outcomes can influence the real economy in a variety of ways:

- By determining where people live, housing outcomes can influence the matching of labour to jobs. Poor housing outcomes lead to employees being located away from job opportunities, or those opportunities to which they are best matched. They can also reduce labour mobility.
- Planning can impact access to transport, leading to increased commuting times (and therefore potentially reduce hours worked) and congestion.
- The speed and uncertainty of planning decisions can affect the productivity of the development and construction sector, both by changing where and what development occurs, and the time-to-market for housing developments.
- More broadly, planning outcomes can affect wellbeing through a variety of channels, including local amenity, community connectedness and access to vital products and services.

This report attempts to shed light on the magnitude of benefits that may be available from improving planning outcomes. To do so, it takes a subset of the benefits identified above and places realistic indicative values on the benefits that may be received through successful planning reforms. The results are therefore 'order of magnitude' type estimates, with actual benefits being potentially either lower or higher than the estimated amount depending on scope, composition and implementation quality of reforms.

A higher level of housing construction only provides an economic benefit insofar as it improves economic welfare. Two broad benefit categories are estimated in this section, capturing the main types of benefits identified in the research literature:

- A reduction of holding costs to the construction sector – holding costs are costs that arise due to longer planning processes, such as fees to lawyers and consultants that are incurred as part of the approvals process in a development application (e.g. producing specialised reports, fulfilling requests for additional information, accommodating delays in assessment, appealing planning decisions). Holding costs also include larger interest payments from the longer holding period and the rates, charges and taxes that are payable on land that is held up in the planning process. This is not to say that all reductions in planning assessment times represent a net gain, but instead that where processes can be streamlined without reducing the quality of decision making, there are real economic gains to be achieved from doing so.
- Labour productivity gains – which may be realised through a range of mechanisms, including reduced commuting times, improved job matching, and increased labour mobility. A significant literature has linked inner-city urban density to labour productivity and this is the approach followed in this section.

The following sections review the research in these areas and present the modelling approach and results.

3.1 The benefits from getting planning right

3.1.1 Holding costs for the development and construction sector

Unclear planning regulations impose costs on the development process by introducing uncertainty into the ultimate size of holding costs involved in a development. The costs of uncertainty arise from the time taken for applications to be processed, and include any expenditure on lawyers or planning and design consultants needed as part of the process of lodging a development application and getting it approved. Indeed, council processes may influence whether or not a developer will choose to undertake activity in particular local government areas. This imposes the cost of lost economic development, however, such a cost is difficult to observe.

Statements from property developers surveyed by AHURI in 2009 show that if processes are uncertain, developers may choose to avoid development in particular councils.[18] Grimes and Mitchell (2014) also demonstrate that holding costs are considered in feasibility studies undertaken by developers.[19] However, Garner (2010) shows that there is no standard approach in calculating holding costs due to them not always being immediately apparent.[20]

Holding costs do not include the costs of complying with physical planning regulations, for example environmental or heritage requirements, however, surveyed developers have indicated physical requirements are less troublesome than uncertain processes, and indeed physical planning requirements such as amenities or environmental considerations may be considered a selling point.[21].

There are two ways of quantifying the cost of uncertain holding costs, and both give roughly the same magnitude of effects. The first is a top-down approach which involves looking at the difference in risk premiums between low and high uncertainty environments. This quantifies uncertainty as the additional profit needed to assure developers of the viability of a project, and includes their calculation of the expected expenditure on holding costs and lawyers or consultants needed to appeal any council rejections. One report quantifies this premium at $17,000 - $27,000 per dwelling in Australia.[22]

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[18] Australian Housing and Urban Research Institute. (2009). *Counting the costs: planning requirements, infrastructure contributions, and residential development in Australia*. [online] Available at: http://www.ahuri.edu.au/research/final-reports/140.

[19] Grimes, A. and Mitchell, I. (2014). *Impacts of Planning Rules, Regulations, Uncertainty and Delay on Residential Property Development*. [online] Available at: https://www.beehive.govt.nz/sites/all/files/2_The_Impacts_of_Planning_Rules_Regulations_Uncertainty_and_Delay_on_Residential_Property_Development.pdf.

[20] Garner, G. (2010). Approaches for Calculation of Holding Costs in the Context of Greenfield Residential Development. In: *16th Pacific Rim Real Estate Society Conference*. [online] Available at: http://www.prres.net/papers/Garner_Approaches_Calculation_Holding_Costs_Greenfield_Developments.pdf.

[21] Australian Housing and Urban Research Institute. (2009), above n 18.

[22] Centre for International Economics. (2011). *Taxation of the Housing Sector*. [online] Available at: https://hia.com.au/~/media/HIA%20Website/Files/Media%20Centre/policy%20developments/CIE%20Tax%20Report.ashx.

The second approach is bottom-up, and involves looking at the costs imposed by planning delays. The Queensland Department of Infrastructure and Planning estimates delays add $15,000 - $20,000 to the development cost of a single dwelling.[23] Garner (2008) points to a similar range, presenting a model based on a scenario for a development project in south-east Queensland, with a base holding period of 18 months for acquiring the necessary planning and building consents (including development assessment approval).[24] This is in line with the holding time found by Grimes and Mitchell in their study for New Zealand.[25] Their model posits holding costs of around $15,000, and that reducing the holding period by 6 months to 12 months reduces holding costs to $9,600 per dwelling (a reduction of $5,400).

The Centre for International Economics (CIE) estimates that in Australia, average planning delay costs are roughly $7,000, where the average waiting time *in excess of what is the minimal expected* is 6 months; this implies that a cut in waiting time of 6 months would reduce costs by $7,000.[26] It should be noted that the magnitude of delays can differ based on the type of development, with different timeframes often arising between greenfield and infill developments, as well as differences based on the State in which the development is proposed. The CIE report notes that "unnecessary" delays – i.e. those in excess of the minimal expected – can range between 4 and 9 months depending on the location and type of development (Table 3.1).

Table 3.1: Length of unnecessary planning delays

Type of Development	Sydney	Melbourne	Brisbane
Greenfield	7 months	4 months	4 months
Infill	9 months	5 months	5 months

Source: Centre for International Economics (2011)

Based on a consideration of the sources, approaches and results described above in relation to the existing literature on planning delays and holding costs – both in Australia and other countries – we model the economic benefit of a reduction in waiting times of 6 months from a baseline case of 18 months is in the vicinity of $6,000 per dwelling. While the modelling does not depict the impact of any specific policy change, and we note that there may be variations for specific project examples based on location and type of development, the parameters selected represent a reasonable and consistent indicator for examining what aggregate economy-wide benefits could eventuate from housing and planning reform in Australia.

The holding costs modelling relates to delays in the assessment of planning and building consents for housing developments, including the development assessment approvals

[23] Queensland Department of Infrastructure and Planning. (2007). *Queensland Housing Affordability Strategy*. [online] Available at: http://www.dilgp.qld.gov.au/resources/publication/housing_affordability_strategy_updated210608.pdf.

[24] Garner, G. (2008). The Impact of Planning Delays & Other Holding Costs on Housing Affordability. In: *"Looking Forward Outback" - PIA QLD State Conference*. [online] Available at: http://www.planning.org.au/documents/item/1199.

[25] Grimes, A. and Mitchell, I. (2014). *Impacts of Planning Rules, Regulations, Uncertainty and Delay on Residential Property Development*.

[26] Centre for International Economics. (2011). above n 22.

process. There are a number of other delays that can arise in the course of transforming raw land into residential housing that can be taken to the market. For example, the Productivity Commission noted that a number of delays are associated with land supply processes (that occur before development approvals processes), highlighting rezoning and structure planning as particular causes of delays and extended timeframes, with these processes taking up to 6 years due to the complexity and absence of statutory time limits in most jurisdictions.[27]

3.1.2 Impacts to the profile of urban regions in Australia

Both State Government and local council planning regulations may influence population density by decisions around land release and the approval of medium and high density development. Such increased population density, particularly in urban areas and industrial clusters, has been shown to lead to agglomeration economies, or productivity gains from people and firms being located near to one another.

This may occur through a number of mechanisms. Glaeser (2010) points out that these are all ultimately from transport cost savings, which allow for the more efficient exchange of goods, movement of people, and transfer of ideas.[28] The close proximity of suppliers and producers leads to reduced production costs, labour is cheaper due to reduced travel costs, and ideas and knowledge are exchanged due to increased face-to-face contact. Puga (2010) adds that the sharing of facilities with fixed costs (such as roads and water infrastructure) reduces their cost per user.[29]

A US study by Abel et al. (2010) finds that the doubling of density increases labour productivity by 2 to 4 percent, and that this tends to be amplified in areas with a higher stock of human capital.[30] Such density improves the matching of labour to appropriate employment, by expanding the size of the labour for the same area. Higher density is also known to be associated with higher wages (Elke, 2015; Glaeser & Maré, 1994).[31] In a meta-analysis of the literature, Puga (2010) shows that Abel's results are broadly robust across countries.

[27] Productivity Commission. (2011). *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*.

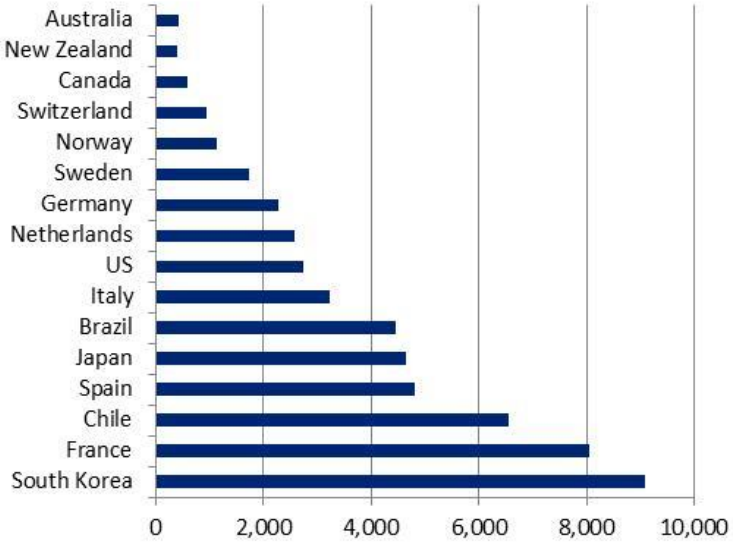
[28] Glaeser, E. (2010). *Agglomeration economics*. Chicago: University of Chicago Press.

[29] Puga, D. (2010). The magnitude and causes of agglomeration economies. *Journal of Regional Science*, 50(1), pp.203-219.

[30] Abel, J. R., Dey, I., & Gabe, T. M. (2010). Productivity and the Density of Human Capital (Staff Report No. 440). New York: Federal Reserve Bank of New York.

[31] Oberfichtner, M., Hirsch, B. and Jahn, E. (2015). The urban wage premium in imperfect labour markets. *ZBW - Deutsche Zentralbibliothek für Wirtschaftswissenschaften, Leibniz-Informationszentrum Wirtschaft*. [online] Available at: http://hdl.handle.net/10419/113003; Glaeser, E. L., & Maré, D. C. (1994). Cities and Skills (NBER Working Paper Series No. 4728). Growth (Lakeland).

Chart 3.1: Urban population density (people per km^2)



Source: Reserve Bank of Australia, United Nations

Chart 3.1 shows the urban population density (the population density for cities of 100,000 or greater) of Australia along with comparable nations. Given that the densities elsewhere are many times larger than Australia, a modest increase in urban population density in Australia should be achievable. An urban population density uplift of 10% was chosen for modelling purposes, as this would bring Australia's urban density in line with that of New Zealand, but still much lower than comparable countries such as the US and Canada.

Increased density may lead to additional benefit not modelled here. In particular, there may be significant environmental benefits to improving density through brownfield development. A US study found that the heightened density reduces the required cost of infrastructure investment, reduces air pollution through saved vehicle miles, and improves water quality through reduced runoff. Additionally, one hectare of brownfield development is estimated to conserve 4.5 hectares of greenfield development.[32] With regards to the size of these benefits, an Australian review found that although brownfield development may cost more – the economic, social and environmental benefits far outweighed the additional cost.[33]

Increased density may also impose some costs on the community, particularly to established residents who may perceive a reduction in the amenity or quality of life in the local area. Localised congestion may also result from an increasingly built up urban environment, if the appropriate investments in infrastructure are not made. This resistance may create political risks, particularly where the benefits from density are not well communicated to the community.

[32] Paull, E. (2008). *The Environmental and Economic Impacts of Brownfields Redevelopment*. [online] Northeast Midwest Institute. Available at: http://www.nemw.org/wp-content/uploads/2015/06/2008-Environ-Econ-Impacts-Brownfield-Redev.pdf.

[33] Biddle, T., Bertoia, T., Greaves, S. and Stopher, P. (2006). The Costs of Infill versus Greenfield Development - A Review of Recent Literature. In: *29th Australiasian Transport Research Forum*. [online] Available at: http://atrf.info/papers/2006/2006_Biddle_Bertoia_Greaves_Stopher.pdf.

3.2 How large might the benefits be?

This section takes the micro-level impacts from section 3.1 and explains how they have been modelled as sector-wide productivity shocks to the Australian economy. These impacts can be estimated in a broad sense using a computable general equilibrium (CGE) model.

3.2.1 Potential benefits from process efficiencies

There are a number of cost estimates from the literature on planning reforms, as discussed in the previous section. The figure of $6,000 per dwelling was taken to be a conservative, reasonable benchmark of costs per dwelling based on a modest reduction in processing times. To understand this in the context of the Australian economy overall, this figure was taken across the 198,650 dwelling starts in 2014 based on ABS data, generating a sector-wide cost estimate of $1.19 billion in 2014.

According to the ABS, the new dwelling construction sector was $47.36 billion in that year, hence the planning process inefficiency costs were equivalent to 2.5% of sector output. Removing these costs is equivalent to a productivity gain in the sector. This cost reduction would be passed on to the users of residential construction, particularly households, increasing household spending on other items and flowing through to the rest of the economy.

Box 3.1: Deloitte Access Economics Regional General Equilibrium Model

Once the incremental productivity gains are established for each year of the modelling period, this is used as an input to a model of the Australian economy, in this case the Deloitte Access Economics in-house Regional CGE model (known as DAE-RGEM). CGE models provide a fully integrated framework for analysing policies and initiatives impacting the macroeconomy. They are regarded by government and their central agencies as the preferred tool of analysis for these types of impact studies. This is because they allow for crowding out (or displacement) effects where there are supply constraints, for example in the labour market given the low levels of unemployed labour in Australia.

Essentially, the CGE model contains a complex system of underlying economic relationships between the various agents (for example, households, producers, investors and government). The model formulas are solved simultaneously until ultimately the prevailing market equilibrium is reached for each forecast year. The model projects changes in macroeconomic aggregates such as gross domestic product (GDP), employment, investment and private consumption. The trigger for these changes is a specific modeller-defined set of economic 'shocks', tailor-made to investigate the particular policy area of interest (in this case, the impact of efficiencies to labour and the residential construction sector in particular.

To quantify the potential flow-on effects to the economy, this impact is simulated in the CGE model. Within the model, this shock is modelled as a 2.5% productivity shock to the new residential construction sector, from the 2017-2018 financial year onward.

This modelling indicates that, under these assumptions, **improvements to planning processes that reduce holding costs may increase GDP in the vicinity of $1.5 billion annually, and increase full time equivalent employment by around 1,600 workers.**

3.2.2 Potential benefits from increased urban infill and density

As summarised in Section 3.1.2, the economic literature has identified a range of potential impacts of agglomeration on the overall economy. In particular, Abel et al (2010) found that output per worker was higher in metropolitan areas of the US that had higher levels of population density, even after accounting for higher human capital.[34] The elasticity of labour productivity with respect to population density was around 0.04, dependent on particular specifications. Using this estimated parameter, the labour productivity impacts of an increase in urban density can be modelled.

As shown in Chart 3.1, Australia's major urban areashave the lowest average densities of comparable countries.[35] A 10% increase in this figure would move Australia to a similar level as New Zealand. ABS Census data was used to understand the share of the workforce that are located in urban areas – this is around 57%, after adjusting for differentials in wages. Hence, if 57% of the labour force experienced a 10% increase in population density, the 0.04 figure can be used to estimate that there would be a 0.23% increase in productivity for the manufacturing and services industries, as primary industries such as mining and agriculture are less affected by urban agglomeration economies.

Even an incremental increase in labour productivity has a large impact on the economy, as it reduces the cost of production in labour intensive industries and increases the use of capital and land, as complementary factors of production. According to standard models of the macroeconomy, where factors are paid their marginal product, the increase in productivity would result in real wages growth.

As for the construction-specific analysis, the economy-impacts of an increase in density was simulated using the DAE-RGEM model of the Australian (and global) economy. The modelling indicates that housing supply reforms that lead to **greater urban density could lead to productivity improvements in the order of $1.4 billion annually, and increase full time equivalent employment by around 1,500 workers**. These benefits could be realised through improved labour market outcomes, with workers being better matched to jobs, and through improved use of transport systems. Changes in the density profile of Australian cities will take a number of years to fully adjust as a result of policy change. This is in contrast to the relatively short lead time of construction industry benefits.

3.3 Summary of the potential benefits

The potential gains modelled from the indicative planning reform impacts here amount to around $3 billion of benefits annually, and the creation of around 3000 full-time equivalent

[34] Abel, J. R., Dey, I., & Gabe, T. M. (2010). Productivity and the Density of Human Capital (Staff Report No. 440). New York: Federal Reserve Bank of New York.

[35] Source: Australian Bureau of Statistics. (2011). *Census of Population and Housing*. [online] Available at: http://www.abs.gov.au/census. A major urban area is defined as an urban area with a population of 100,000 or more.

workers. This is broadly equivalent to the economic impacts of removing stamp duties on conveyances of non-residential properties, which were generally found to be one of the most inefficient taxes in *The Economic Impact of Stamp Duty: Three reform options* report, recently released by Deloitte Access Economics.

That these relatively conservative impacts can have the same broad magnitude as the potential benefits from major tax reform demonstrates the potential gains from improvements in the planning system. However, the actual benefits realised will naturally depend on the quality of reform and the time period over which the impacts are considered. With Australia's major cities estimated to approximately double in size by 2060, the benefits from getting planning right could be much larger than those modelled here.

In the shorter term, ensuring that housing supply is sufficiently responsive to changes in underlying demand will potentially lead to benefits through increased affordability. While the impacts of affordability itself are difficult to capture in an economic model (as it is primarily a transfer of wealth from current home-owners to first home buyers) it can have significant social welfare implications.

More broadly, the main reasons for pursuing planning reforms may be non-economic. The important social and equity implications of more affordable and well-located housing are likely to outweigh the pure economic motivations for reform. However, the scenarios modelled here demonstrate that these gains may still be significant. Further, the real economic benefits potentially created by housing supply and planning reforms can form a basis for financial incentive payments from the Commonwealth to the States. This idea is pursued further in the following sections.

4 The roles of State and Local Governments

Over time, a myriad of reviews and studies have focused on the land release and development approval aspects of the planning system and in particular the need to improve it by 'de-risking' the planning process. Measures that have been suggested include:

- Support for up front 'gateway' style approval arrangements (focusing on reducing overlap and duplication in assessment);
- Improved governance and transparency in decision making (helping to clarify objectives and reduce uncertainty); and
- Improved goal setting and strategic planning (assisting to identify potential zones of investment and land use).

At the core of the planning system is the fact that decisions around how land is used, and for what purposes, remain the responsibility of the States. Although the Commonwealth can influence decisions on how its own land is used (for example, on its defence lands), Commonwealth land use involvement is limited.[36] As a result, Commonwealth involvement in land use has tended to be reserved to introducing the appropriate incentives for the States to manage their own systems more effectively or by support for infrastructure projects (as a ballast to changed land use).

In the mid-1980s, for example, the Commonwealth assisted the States to improve local area planning through funding support for Integrated Local Area Plans. The current agenda from the Commonwealth to improve decision making around cities and urban zones shares characteristics of this approach.

Navigating the planning system and, in particular, the respective roles and responsibilities of State and Local Government remains a challenge for policy-makers seeking to improve the efficiency of land supply. Although, cases for change built on efficiency and effectiveness are readily available, policy makers have traditionally struggled with their implementation. Specific state government measures that have sought to streamline approval systems unilaterally have met resistance from affected councils buttressing against sovereignty concerns and the need to satisfy local public interests.

In contrast, attempts by local authorities to manage competing objectives under statutory rules can often lead to criticism for adding red tape and causing delays. Too often, the combination of tightly held private property rights with democratic mandates can make the task of policy reform insurmountable.

The goal of this report is not to recommend particular policies or approaches to improve planning, but rather to identify an incentives framework that could stimulate reform at the

[36] The Commonwealth can also affect decision making on land as a result of its environmental powers, provided as they are on the basis of international treaties.

state level. Nonetheless, the next two sub-sections identify particular issues raised at the workshop, and in other research, that will likely need to be addressed in any successful reform package. The final sub-section discusses the extent to which individual policies may need to be specified in an incentives framework.

4.1 The importance of strategic plans

A number of government reviews and industry reports have previously sought to examine planning systems across Australia, including the Productivity Commission's *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments* inquiry in 2011, as well as the Property Council's *Development Assessment Report Card* report in 2015. These reports have typically highlighted the importance of aligning objectives across State and Local administrations, in order to provide a clear path forward to improving land use decision making. For example, in 2011 the Productivity Commission noted that:

> "*The success of local councils in delivering timely, consistent decisions depends on their resources as well as their processes. It is also influenced by the regulatory environment created by state governments — in particular the clarity of strategic city plans, the coherence of planning laws and regulations, and how well these guide the creation of local level plans and the assessment of development applications.*"[37]

The *Development Assessment Report Card* also recognises the importance of strategic planning and reform at the State and Territory level in addressing housing affordability, highlighting jurisdictions such as NT, WA and Victoria for their progress in implementing strategic plans and metropolitan strategies (though progress in some other jurisdictions was not as advanced). In addition, strategic planning of major cities in Australia – including integration of town planning and infrastructure planning – has previously been nominated by COAG's Local Government and Planning Ministers' Council as a key area for delivering reform in improving the housing development process and the planning system.[38]

This point on the importance of strategic plans was also noted by participants at the workshop held as part of this work. A number of participants indicated a belief that a lack of clarity and direction in state strategic plans were causing excessive assessment effort at the Local Government level as councils sought to meet their, sometimes unclear, requirements.

Participants opined that strategic plans were typically light on specific details that would assist councils in understanding how particular land was to be developed. This was seen to place the risk of assessment back onto councils who were left to interpret how a development was to be assessed, for example, when subject to multiple overlays. Clearer strategic plans at the state level can help to address such uncertainties, though in addition

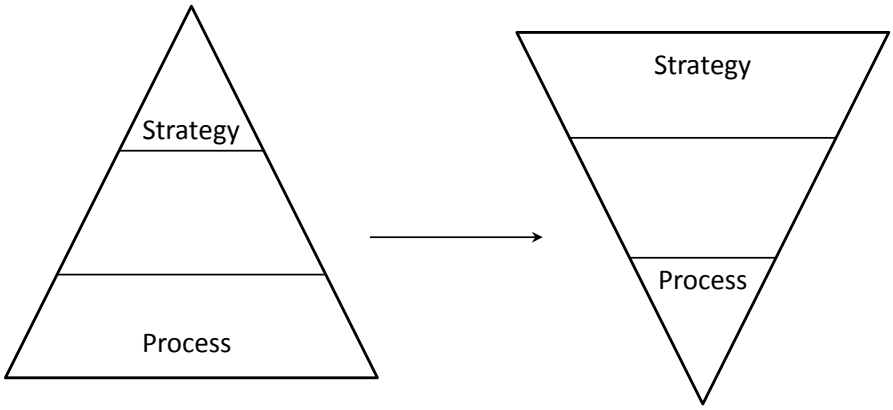
[37] Puga, D. (2010). The magnitude and causes of agglomeration economies. *Journal of Regional Science*, 50(1), pp.203-219.

[38] South Australian Government Department of Planning and Local Government. (2009). *Looking forward: the COAG agenda and planning reform*. [online] Available at: http://www.planning.org.au/documents/item/1418.

to this, Local Governments should also be encouraged not to create additional levels of complexity on the grounds of local circumstances or other location-specific reasons.

As a simple visual representation of this concept, the planning and assessment effort was represented as a triangle, with states currently undertaking only a small amount of high level strategic development of the planning system, and the bulk of work being undertaken by councils left to interpret this strategic plan and how it applies to an individual application. Some participants advocated inverting this triangle through the state taking on more responsibility in the strategic plan to set out in more detail how land is to be used, state level planning goals and targets, and the application and intent of planning overlays.

Figure 4.1: Inverting the triangle of planning accountability



Source: Deloitte Access Economics

Providing greater clarity in strategic plans for land use and ensuring that plans are transparent and interpretable by local authorities would clearly assist land supply management. Making this workable will require processes that promote co-operation across levels of government and that value the settlement of shared objectives.

Given their primacy in setting the overall land and housing supply framework, the States can look to improve co-ordination and objective sharing with local authorities by absorbing greater risk (and regulatory cost) of their housing supply plans. Similarly, policy makers have long been interested in the economically efficient allocation of risk – that is, that risk should fall on the party that can best manage its burden at the lowest cost (including process of adjudication and litigation).

In the case of housing supply, this potentially means that the States can look to absorb some of the risk of the regulatory imposts (such as the environmental, amenity and transport studies) of their housing supply plans in exchange for greater co-operation for implementation from Local Government. Applying such a 'mutual obligation' style framework would also have the benefit of reducing potential frictions in communities or at least the tensions that may arise from efforts to add to housing supply to existing settled communities.

In addition, an increased focus on strategic plans and the planning system at the state level can enable more community engagement in relation to broader city- or region-wide outcomes. Up-front and meaningful community engagement should be conducted as part

of the process in creating a state-level plan, as this can assist in addressing the risk of community opposition to increased housing density before the development assessment stage. Liaising with the community can help to provide greater clarity for local residents and ensure that their views are suitably represented in implementing a state-wide strategic plan.

Effective consultation in the early strategic planning phases of the development chain can also mitigate the risk of community resistance to higher density proposals, permitting a wider urban focus to housing supply rather than debates around individual sites and private property entitlements.

4.2 State planning policies in a Commonwealth incentives framework

The above section has identified some areas under State control that future reforms could seek to address. However, an incentives framework need not specify the policies that States should pursue in order to receive payments. Instead, the framework could be effectively limited to providing the impetus and canvass for reform to take place, with the States themselves selecting and driving individual reforms.

A framework will need to specify how policy reform by the States will be linked to payments. There are three broad approaches to policy selection:

- **A prescriptive approach** – under which specific policies are prescribed for States by the Commonwealth, with incentives only distributed to those States which undertake the prescribed action;
- **A metrics-focused approach** – under which States are individually responsible for reform with minimal Commonwealth involvement, with payments based on agreed metrics being met; and
- **A mixed approach** – a 'middle way' between the prescriptive and metrics-focused approaches with the Commonwealth and States coordinating on policy reform options; for example through States submitting reform plans, which are subsequently agreed on with a central body at the Commonwealth level, along with performance targets and metrics.

An overly prescriptive approach is unlikely to be beneficial in the case of housing supply and planning reform. First, solutions are not sufficiently clear that a central agency would achieve greater success than State-driven reform, and indeed the Commonwealth is not well placed to make specific recommendations with respect to State planning matters. Second, solutions are likely to be to some extent State-specific, with centrally prescribed goals unlikely to be appropriate for all States. Finally, prescribed goals are unlikely to receive buy-in at the State level, which may not see the targets as appropriate or achievable.

Hence, either a mixed or 'metrics-focused' approach would be preferred. The exact role of a central body to administer the payments, and associated collection and reporting of data against process are discussed in the next two sections.

4.3 Incentivising Local Government

Equally important as establishing the appropriate framework between the Commonwealth and States will be establishing arrangements that accommodate Local Government as well. This observation reflects the nature of the planning system itself where regulatory impacts can manifest at the local level. Further, in the absence of local co-operation and collaboration, successful reform in planning systems can be diluted or at least be much more difficult to successfully achieve.

In the past, the Commonwealth has supported Local Government in improving local planning systems through integrated planning. Under the former Building Better Cities program, the Commonwealth supported Local Governments through the funding of integrated planning instruments, designed to provide "one stop shops" for development applications. Through the funding of infrastructure and urban renewal programs (such as the affordable housing programs); the Commonwealth has collaborated with local authorities in improving the availability and quality of social and affordable housing stock.

Currently, the Commonwealth applies a number of overarching frameworks through which Local Government is provided financial assistance. Under the Roads to Recovery program (RRP), the Commonwealth allocates direct assistance to local councils for road funding with Section 87 of the *National Land Transport Act 2014* (Commonwealth) providing the mechanism through which the Minister for Transport makes the financial allocation directly to local authorities.

Conversely, under the *Local Government (Financial Assistance) Act 1995* (Commonwealth) the Federal Government provides financial assistance to the States for the purposes of improving the financial capacity of their Local Governments. Financial Assistance Grants are allocated in the first instance to the States who, in turn, distribute these allocations under their own respective Local Government Grants Commission processes. The Act provides the Minister the ability to develop national guidelines for the disbursement of Financial Assistance Grants after consultation with the States and Local Government representatives.

Both the Financial Assistance Grants and RRP provide two distinct approaches through which the Commonwealth currently supports Local Government. Under Financial Assistance Grants, support is provided through the States and is then disbursed to Local Governments according to agreed national principles. In contrast, under the RRP, assistance is paid directly to local authorities through a Ministerial declaration.

These two approaches provide models through which Local Government can be incentivised to improve planning regulation in a broader NCP style framework. One option is for Local Government to be incentivised and rewarded directly from the Commonwealth. This approach would be consistent with the RRP and the earlier Building Better Cities grant based model. Alternatively, utilising the national guidelines principles available through the Financial Assistance Grants process, local authorities that engage in reform jointly with the States, could be rewarded for their initiatives in the State's Local Government grants distribution process. Irrespective of the approach adopted, ensuring that Local Government is included in the framework and that local reform is incentivised correctly will be integral to future success.

5 Metrics for measuring success

A workable incentives framework will necessarily require progress made at the state level to be measured against pre-agreed metrics. The role of such metrics is two-fold:

- They would form a basis for identifying whether states are meeting their requirements to qualify for payments – any reliable indicator of progress against goals could be used for this purpose; and
- They could be used to measure the size of benefits created, and therefore inform the quantum of incentives payments – some metrics will lend themselves more easily to quantification of financial benefits.

This requires determining a set of metrics upon which each jurisdiction (at the state and local level) can be assessed, and the monitoring and collection of measurement data. Three broad types of metrics could be chosen:

- **Outcomes targets** – based on 'end-goal' objectives of reform (such as measures of housing affordability or home ownership);
- **Output targets** – based on observed outcomes in residential property markets in each state; and
- **Input targets** – focusing on the processes involved in producing planning and assessment outcomes, rather than residential outcomes themselves. Existing metrics, such as processing times, are typically inputs-based.

More broadly, metrics could include any measurable output from State governments that may influence housing supply and affordability outcomes. This could be linked directly to policy itself, for example through the inception and implementation of strategic plans, metro plans and related targets (such as housing supply targets). Indeed, these types of outputs have the advantage of being targeted to state- or location-specific issues. Nonetheless, they are not metrics taken at a 'snapshot' in time, and any payments based on plans should involve both the implementation and measurement of progress against stated targets over time.

The appropriate metrics will depend on the focus of the Commonwealth's framework. Should the focus be more narrowly on housing supply and affordability, metrics that capture this directly would be preferred. This would lead to a framework based on measurement of housing completions, ideally by price-point, and similar housing supply measures – which could be useful in encouraging flexibility in planning systems and design requirements to deliver affordable housing. Broader targets with more of a 'city' focus could expand the range of metrics to focus on those that may capture liveability or labour market outcomes. This could include metrics such as average commute times or proximity to infrastructure and community services.

A number of considerations should be taken into account when deciding which metrics could be most suitable for measuring success on improving housing affordability and land supply. This includes the type of metrics to use with respect to whether they should be based on inputs or outputs, and the extent to which metrics should differ depending on different locations or types of housing. These considerations are discussed below.

5.1 Output and input metrics

If the goal of reform is to increase housing affordability, supply or rates of home ownership then the first best approach is to measure these directly and base payments on the contribution of newly implemented policies that address these outcomes directly. The difficulty in any outcomes-based approach is that it is typically difficult to tie policy decisions (which are inputs to the final market outcome) to final outcomes.

This is particularly the case in housing markets where market outcomes are a function of macroeconomic policy settings and exogenous economic forces (such as the international economy), underlying geography of a city, income growth rates, or changing consumer preferences for quality, amenity and lifestyle, none of which can be controlled by the States. This may mean in particular that metrics directly targeting housing affordability (that is, based on the direct measurement of prices relative to incomes and repayment costs) may be poor proxies for the links between government policy and housing outcomes, even where affordability is the end goal.

Governments can impact housing affordability through housing policy and the planning system. However, the links between housing supply, planning and affordability can be complex and the direct impact of housing policy and planning on affordability is often difficult to discern. For example, an improved planning system is likely to result in an increase in the level and suitability of housing supply and this will have positive impacts on housing access and affordability in the long run. While in the short term, the impact on house prices could be difficult to observe, over time this will lead to a planning system that facilitates the supply of more and better located housing and with lower transaction costs, thereby improving affordability compared to a system without the benefit of planning reform.

One particular benefit associated with planning reform is that it can improve the ability of the planning system to respond to market forces. Reducing unnecessary frictions, processes or bottlenecks can create a system that responds faster and more efficiently to changes in supply and demand in the housing market. This increased responsiveness can help to smooth out the peaks associated with house prices that are caused by demand and supply pressures in the market, which is likely to be beneficial for housing affordability more broadly.

Given the complicated interactions between housing supply, planning reform and affordability outcomes, this section only considers output and input metrics which present more realistic and workable targets for the States. Broadly, there are two notions of efficiency against which the planning system can be evaluated, with input and output metrics appealing more directly to one than the other:

- Process efficiency – a planning system will lead to a more efficient outcome when it results in faster planning decisions, but not change in the decisions made. That is, with no change in the actual planning outcomes, but lower cost in reaching these outcomes, the planning system will result in a more efficient use of resources;
- Land use efficiency – where a planning system leads to an improved use of land from the perspective of the community, however measured, relative to the status quo.

Input metrics that focus on approval times or the use of codification are more appropriate measures of the former. They seek to reduce the regulatory burden of the planning system without jeopardising its effective working. Output metrics target land use efficiency, assessing whether land use achieves stated goals, which may relate to effective responsiveness to population trends, city design or affordability concerns.

5.1.1 Output metrics

Measures that are based on outputs examine the results of policy activity. They are typically measures of housing supply activity that are both readily measurable, and indeed commonly reported within the industry; house prices, dwelling completions and the like. While not as general as outcomes metrics, they continue to measure market outcomes rather than the policy inputs to these outcomes.

More general metrics could also be developed as part of an outputs approach. For example the development and implementation of a metropolitan plan incorporating land use, infrastructure, and other supply measures could itself form a high-level output against which payments could be based. This was one recommendation from Professor Brian Howe's report *Australian Cities in Transition – Governance challenges for investing in better places* (2011), discussed in more detail below in reference to governance issues.

Because outputs measure actual housing outcomes, they can be influenced by a range of factors not directly controlled through government policy. This raises the prospect of payments being made to jurisdictions in the absence of any actual reform to the land supply system, or alternatively jurisdictions that have implemented significant reforms could be under-paid if external market conditions turn against them. This means that any output metrics that are used to assess incentive payments need to be able to be directly linked to jurisdictions' policy actions.

Some examples of possible output metrics relating to land supply and housing affordability are listed below in Table 5.1.

Table 5.1: Examples of output metrics

Output metric	What is being measured
Development of metro plan incorporating land use, infrastructure, transport etc.	The existence, implementation and quality of the plan, as well as the availability of local planning instruments that have sufficient housing supply capacity within them
Median house price	The cost of the average housing unit
Median house price to median income ratio	The proportion of earnings applied to housing acquisition
Median house price by locality	The distribution profile of average housing units
Number of serviceable land lots	The stock of released land with service capacity for subdivision
Dwellings approved for construction	The number of dwellings approved for construction, including the number of new dwellings deemed to be 'affordable'
Dwellings under construction	The number of dwellings under construction

Output metric	What is being measured
Ratio of in globo land costs to pre-sale cost	The costs of development beyond raw land, including development charges and levies

5.1.2 Input metrics

Measures that are based on inputs look to apply metrics to a given intermediate process that, prima facie, would contribute to an improved outcome. In the case of land supply, housing affordability and the associated development processes, the extended pipeline of activity required to bring a house to market allows for the creation of input metrics that unpack key milestones in the pipeline.

For example, to assess the efficiency of the land supply system, input measures such as the time elapsed from rezoning to subdivision or between lodgement of subdivision to approval may be used. Alternatively, more specific input measures such as the extent to which applications are considered under codes or through independent assessment may be applied.

The advantage of input metrics is that incentive payments can be directly attributed to the improvements in the process measured. These measures can also be easily collected and reported by the jurisdictions. The disadvantage of such an approach is that the incentive payments may target processes or activities that are marginal to the broader goals of improving land supply and housing affordability, or that the focus on performing to the measure itself may distract from any broader goal to improve the planning system overall.

Some examples of possible input metrics relating to land supply and housing affordability are listed below in Table 5.2.

Table 5.2: Examples of input metrics

Input metric	What is being measured
Time elapsed from land release to serviceable lot production	The time taken to supply land from initial rezoning to first lot in production
Time elapsed from subdivision development application to subdivision development approval	The time taken for a subdivision application to be assessed and determined for approval
Development applications considered under codes	The number of development applications considered under codes
Development applications considered under independent hearing and assessment	The number of applications determined under independent assessment
Days to approval exceeding any statutory “stop clock”	The number of days to approval exceeding statutory minimum or under “stop clock” regulations
Development applications lodged online	The number of development applications lodged using online platforms
Ratio of raw land costs to pre-sale cost	The costs of development beyond raw land

5.2 Using different metrics for different areas

Once the types of metrics have been decided on, another issue when implementing an incentives framework for addressing housing affordability and land supply is considering whether different performance targets under the chosen metrics should be used for different areas. This could be based on location or on the type of land and housing that is being built.

In particular, greenfield releases and infill developments have significantly different characteristics and could therefore require different sets of performance targets when jurisdictions are being assessed on either input or output metrics. Differing regulatory, institutional and cost settings exist for each of these types of developments, and measures that are satisfactory in one circumstance may therefore not be appropriate in the other.

For example, the time taken to rezone land for residential use or the time elapsed from zoning approval to the actual lot sale would vary in greenfield areas where local community constraints are modest, compared to established infill areas where environmental and transport constraints may add friction and costs. Similarly, the time taken to assess an application in a greenfield zone is typically less than for infill developments, as longstanding community interests are generally less developed than those in built up areas where the protection of individual property rights and entitlements may become introduced into planning decisions.

If a greater proportion of Australia's future housing developments are infill, it will be imperative that the regulation of these more complex and higher-cost processes is streamlined if housing is to be more affordable.

Additionally, consideration needs to be given to whether allowances need to be introduced to allow for national priorities, or to ensure that reforms that have already been planned for in particular areas are not disturbed by the introduction of a new incentives framework. In the case of the former, concerns over housing affordability and land supply may be more acute in particular regions and localities within each state, suggesting that targeting conditions in these areas would generate the greatest return. A national framework would therefore need to consider whether it is appropriate to maintain the same performance targets in jurisdictions dealing with less acute affordability issues.

Metrics could also be state-specific under an incentives framework, recognising that planning solutions may differ by state. While some metrics, such as overall dwelling shortages (such as formally reported by the NHSC) are likely to be a useful metric for all states, other indicators relating to, for example, public transport usage or dwelling price-points may be state-specific and interact with existing state policies.

Overall 'dashboards' of metrics could be agreed between the Commonwealth and the States, reflecting both national and state-specific metrics. Data measurement, collection and reporting would form part of any agreement, as would the framework for tying payments to the specific metrics chosen.

5.3 Available data and a way forward

Measurement of planning outcomes, particularly against a wider range of appropriate metrics, is a data-intensive exercise. Like a growing range of public sector agencies, Local Governments are currently required to report on various performance metrics including process and service related efficiency metrics. This includes measures such as approval times, number of applications assessed and number of applications assessed by councillors.

However, beyond these relatively narrow input metrics there are limited existing data sources on which to base metrics for an incentives framework. Housing affordability statistics are readily available, however, as discussed above these tend not to be the best metrics for assessing the impact of government policy. Data more closely related to the housing market, such as approvals and completions, are also readily available. However, more tailored data on completions by pricing point or forecast and existing supply shortages is not available.

Indeed, in reviewing the current state of data for measuring planning performance, AHURI (2012) concluded that '*the evidentiary framework for measuring planning performance across a range of objectives and goals, including those relating to housing, remains limited*'. It further states that:

> *"Our preliminary efforts indicate that existing sources of information are not sufficient to undertake even simple quantitative analyses of planning performance and or relationships between particular planning approaches and housing market outcomes in NSW. Our review of Australian data sources and panel deliberations suggest similar limitations exist across the Australian jurisdictions"*[39]

Given the increasing focus on planning and the broader agenda around cities and the built environment, improved data reporting of key performance metrics would have use far beyond an incentives framework and should be a priority across jurisdictions. This shift in emphasis towards broader planning objectives should also facilitate the collection of an equally broad suite of metrics that incorporate information on housing, productivity and liveability outcomes, each of which may form part of an incentives framework.

A broader collection of data is possible. For example, the UK earlier this decade collected data from local governments for a three year period under the National Indicator Set. This included planning related measures such as net increment to the housing stock, the gross number of affordable homes and the supply of ready to develop housing sites. Some of these indicators were continued in the 'Single Data List' which local governments were required to report on.

In Australia a similar, and expanded, list of metrics could be developed based on data from the three levels of government and reported at fixed time intervals through a central agency. This agency may be the same tasked with administering the incentives framework outlined in this report, but its remit may include informing housing policy more broadly.

[39] *Australian Housing and Urban Research Institute. (2012). Quantifying planning system performance and Australia's housing reform agenda: an Investigative Panel*, page 1.

The basis of determining the metrics against which incentive payments could be awarded should involve consultation between Commonwealth and State Governments. Agreement across the different levels of government is necessary to ensure that all jurisdictions are on-board with the design of performance targets within the incentives framework, and that the selected metrics are consistent with the priorities of the governments involved with respect to planning reform and housing policy. As the individual performance metrics to be used in an incentives framework will depend on the nature of these priorities, it is difficult to be prescriptive in recommending the exact metrics to be used prior to this Commonwealth-State consultation process.

Notwithstanding this, it is clear that the selected metrics must incentivise reform and policy change that facilitates a more efficient delivery of housing supply within each jurisdiction, in a way that enables governments to be held accountable towards the nominated targets. In this context, we suggest four key areas that can be used as starting points for discussion as Commonwealth and State Governments work towards establishing the appropriate performance targets:

- Strategic state plans that includes housing targets;
- The translation of these strategic objectives into statutory planning frameworks, with more streamlined planning systems that provide state and local agencies with the tools required to deliver on housing targets in a timely and efficient manner, so that housing can be delivered at lower cost;
- The nature of the housing targets themselves, including the type, number, location and the relative affordability of the housing supply; and
- Other important features of housing, such as density and access to infrastructure and services.

No single metric will adequately capture the complexity and scope of 'good' planning outcomes, even when more narrowly defined to reflect housing supply and affordability. Instead, a range of metrics across these four areas – including both output and input metrics – will be required to sufficiently 'triangulate' the effects of government policy on housing market outcomes, separating the macroeconomic noise that is inevitable in output metrics while providing the focus that is not achievable from input metrics alone.

Using multiple metrics for performance monitoring naturally presents its own difficulties. Metrics will, either explicitly or implicitly, need to be weighed against each other to derive an overall performance. This is not a problem unique to an incentives framework, with policies and agencies frequently being evaluated against multiple criteria. For instance, the Property Council's *Development Assessment Report Card* is one example of a framework that scores the States against ten 'leading practice principles'.

A similar scorecard could be developed for each State at the commencement of the framework, potentially with weighting of the metrics determined in collaboration with each State to reflect the focus of reforms and current perceived problems. An annual scorecard comparing the States across consistent metrics could be created to provide comparability and establish best practice outcomes.

6 An incentives model for housing supply

In coordinating government policy action to address land supply and housing affordability issues across Australia, an incentives model that draws on elements of the National Competition Policy framework could provide a useful impetus. This would see a role for the Commonwealth Government in providing incentives for state and local jurisdictions to improve on land supply and housing affordability processes and outcomes.

There are several reasons as to why this type of Commonwealth involvement could be necessary in improving land supply and housing affordability across Australia, despite most of the policy levers and data on progress being held at the State and Local Government level.

First, housing supply directly relates to a number of issues relevant at the Commonwealth level, such as migration, population growth, infrastructure and economic growth.

Second, the efficiency of the planning systems in Australia is a national economic issue. Many housing developments are delivered by businesses that operate across jurisdictional boundaries, so reducing complexity becomes important.

Third, the benefits associated with improved housing affordability with respect to increased GDP growth and tax revenue collections are likely to be primarily realised at the federal rather than the state or local level. In contrast, many of the changes to be implemented and the costs to be incurred will fall on State and Local Governments. As such, an incentives framework represents a means to rebalance the flow of benefits.

And finally, the Federation is rarely negotiated, with major reforms over recent years only in 2001 (upon the release of the GST) and 2008 (with the Intergovernmental Agreement on Federal Financial Relations). As the political agenda continues to evolve in 2016, this could provide a good opportunity to coordinate intergovernmental policy action to improve land supply and housing affordability in Australia.

The focus on urban policy and a cities agenda at the Commonwealth level will also open up the discussion on some of the fundamental political challenges associated with the issues of housing supply and investing in urban place, including governance issues and the complex division of powers in Australia's federal system.[40]

COAG has previously identified housing affordability as a pressing issue in Australia, recognising the importance of improving affordability and access to safe and sustainable housing. There is already a National Partnership agreement on Social Housing, as well as a National Affordable Housing Agreement administered by COAG. While housing affordability

[40] Howe, B. (2011). *Australian cities in transition - governance challenges for investing in better places*. [online] Published in The Smith Institute, *Investing in better places: international perspectives*. Available at: http://suma.org/img/uploads/documents/Investing%20in%20Better%20Places%20.pdf.

has been on the COAG agenda for some time, housing market outcomes have not seen significant improvement over this period. In this context, a more complete framework represents an opportunity to take coordinated policy action in a way that could have a more material effect on housing affordability outcomes, as well as elevating the subjects of housing affordability and land supply and raising the issues in the public debate.

In this context, the NCP is a useful model to consider in implementing an incentives framework for addressing housing supply and affordability. Several key features of the NCP can be applied to the creation of an incentive payments model relating to housing supply and planning reform, including the need for Commonwealth-State government cooperation, the potential for measuring performance, and the idea of sharing the revenue dividend from higher economic growth through financial incentive payments.

However, it will be important that these relevant elements of the NCP model are adapted to fit a housing purpose and to consider the features of planning reform, which are areas that are more about regulatory reform than simply enhancing competitive pressures, that require ongoing monitoring, and that involve complex interactions with other social and economic objectives.

This section discusses some of the key principles and issues that can be drawn from the NCP and other intergovernmental agreements in providing new impetus for reform on housing supply and affordability, and proposes a suitable governance framework for an incentives model to address housing supply.

6.1 Principles underpinning an incentives framework

An incentives model for intergovernmental coordination on land supply and housing affordability requires a clear framework that connects progress on a well-defined set of metrics to any incentives that are paid to each jurisdiction. A clear set of principles underpinning the framework is required to ensure that both the jurisdictions and the wider community understand how progress is measured and how payments are allocated, and that all parties are on board with the implementation of the framework.

In creating a set of principles appropriate for an intergovernmental framework that seeks to coordinate policy action on land supply and housing affordability issues, it is useful to reflect on the six core principles underlying the Intergovernmental Agreement (IGA) on Federal Financial Relations, which aimed to support reforms in a broad range of areas across Australia. These six core principles were:

- Governance that supports collaborative federalism;
- Rigorous focus on the achievement of mutually agreed outcomes;
- Clearly defined roles and responsibilities;
- Fair and sustainable financial arrangements;
- Stronger use of financial incentives; and
- Performance reporting which enhances accountability.

Importantly, the IGA principles were applicable not only in areas of economic importance, but also in relation to social policy and outcomes. For example, the use of financial incentives being tied to performance targets and reporting in the areas of health and education was one feature of the IGA framework.

In the context of addressing land supply and housing affordability issues, these broad principles could be tailored to focus more on relevant issues such as state strategic plans, land zoning and development processes. Nonetheless, the themes of accountability, performance, reporting and transparency should be the key foundations on which the set of principles should be based. The implementation of an incentives framework, subsequent policy action by each jurisdiction and the distribution of incentives following reform progress should all adhere to these principles.

The importance of maintaining an accountable and transparent framework with a strong set of underlying principles can be seen in Australia's experience with the IGA. An assessment of the reform progress achieved through the IGA framework, conducted by Deloitte Access Economics (2013), found that while there was general support for the framework and its principles, implementation of the reform agenda moved away from the IGA philosophy over time.[41] The substantial departures from the IGA framework and principles meant that it played a limited role in driving reform forward.

One of the key principles for ensuring that any intergovernmental framework is focused on delivering results – in this case, in improving land supply and housing affordability – is the rigorous focus on the achievement of mutually agreed outcomes. However, as discussed in previous sections, in a system with incentives payments based on a set of performance metrics it can be difficult to determine the extent to which policy changes have contributed to addressing or improving these final outcomes directly – particularly in the case of the housing market, where market outcomes are influenced by a variety of different economic and social factors.

As such, the most suitable performance metrics in an incentives framework are likely to be a combination of metrics that relate to inputs and outputs that can be directly linked to policy activity while also measuring housing market outcomes. Consistent with the principles, these metrics should be mutually agreed on between the Commonwealth and States and Territories, and then be a focus for achieving in the future. The use of these metrics should also be tied to the underlying principles of performance reporting to enhance accountability and a strong use of financial incentives. That is, jurisdictions should report on their progress in relation to these metrics at a regular frequency, and financial incentives should be provided on the basis of this progress.

6.2 Designing an incentives model

6.2.1 Measuring the flow of benefits

As a start in justifying the development of an incentives framework and grounding the payments it entails, the Productivity Commission or other central economics agency could be charged with modelling the effect that improved land supply and housing affordability

[41] Deloitte Access Economics. (2013), *Assessment of progress under the COAG Reform Agenda*.

could have on productivity and GDP in the Australian economy, and the extent to which this would impact upon tax revenue collections at each level of government. In addition to providing a quantitative foundation on which to base the structure of an incentives framework, this could also assist in elevating the discussion on the broader benefits to economic growth associated with improving housing affordability.

Identifying how benefits and costs flow to different tiers of government is also an important component of designing an incentives model. This is because the costs and benefits of reform can be shared disproportionately across different levels of government, and incentive payments are intended to encourage reform by aligning these costs and benefits across jurisdictions.

The table below provides an example list of the broader benefits and costs associated with improving land supply and housing affordability in Australia, as well as matching these benefits and costs to the tiers of government where they may fall. Consideration of these factors will be important in determining a framework on how to best distribute incentive payments to encourage reform.

Table 6.1: Example benefits and costs accruing to different tiers of government

	Federal	State	Local
Benefits			
GDP growth and income tax revenue	✓✓		
GST revenue uplift		✓	
Other property taxes		✓	✓
Planning efficiency		✓	✓
Labour force participation and supply	✓	✓	
Liveability	✓	✓	✓
Costs			
Infrastructure	✓	✓	✓
Political risk in implementing planning reform (e.g. for high density)		✓	✓

While the many revenue benefits of productivity and GDP growth accrue to the Federal Government level through income taxes, State and Local Governments also deliver on their own objectives from improving planning processes, land supply and housing affordability. State and Local Governments also receive revenue benefits from other taxes and charges such as stamp duty, GST and council rates, improved efficiency in the planning system, and the direct economic contribution to the state and local economy associated with increased construction activity.

For example, in South Australia, the State Government is working towards improving the state's framework for long-term planning, with the *Planning, Development and Infrastructure Bill 2015* including a new State Planning Commission and joint planning arrangements to allow for regional cooperation between councils, state government and communities. The regulatory impact statement conducted on this package of planning reforms estimates that the net economic benefit to the South Australian economy over 20

years will be $2.3 billion, with benefits accruing to a number of stakeholders including businesses, councils and individual applicants for development approval.

Given that State and Local Governments do benefit in their own right from planning reform and improving housing supply and affordability, the relative benefits and costs across the different tiers of government should be quantified as part of the process for agreeing upon the incentives payment framework. The determination of incentive payments from the Commonwealth to State and Local Governments should take into consideration these intrinsic benefits associated with reform and policy action. This will ensure that payments are appropriately sized, to the extent that Commonwealth-provided financial incentives might be required to provide additional motivation for reform or to address timing issues in the realisation of benefits.

6.2.2 Considerations for setting incentives

6.2.2.1 Should incentives be financial?

Different tiers of government can achieve coordinated policy action in response to various types of incentives, including financial and political incentives. While a variety of different incentives are possible, previous experience and liaison with key stakeholders at the workshop suggests that financial incentives provided to jurisdictions by the Commonwealth are likely to be the most effective type of incentive for motivating reform on land supply and housing affordability across the different tiers of government.

This is consistent with the Australian experience from the National Competition Policy, with the Productivity Commission (2005) finding that '*the provision of financial incentives to the States and Territories, allowing them to share directly in the fiscal dividend from meeting their agreed reform commitments, has also played a critical role in keeping the reform progress on track*'.[42] It was found that even small reductions in incentive payments for non-compliance with NCP commitments were sufficient to encourage reform. In that sense, payments were not wholly based on estimates of economic benefits, and were instead used to stimulate action rather than recompense benefits. Also, as discussed above, the use of financial incentives was one of the six core principles of the 2008 IGA on Federal Financial Relations.

Financial incentives have also been used to motivate broader reforms surrounding planning and urban development in other countries around the world. For example, in the United Kingdom, the City Deals model was initiated in 2012, providing a new approach to infrastructure priority-setting, funding and financing.

The UK City Deals model allows partner cities who pledge to boost productivity, employment and economic growth to receive "earn-back", a share of the growth dividend associated with the faster economic development (e.g. through the additional tax revenue generated from this growth), based on metrics such as employment, housing construction and emissions reductions targets. These "earn-back" financial incentives are analogous to the competition payments made under the NCP model, and can be used by cities to finance

[42] Productivity Commission. (2005). *Review of National Competition Policy Arrangements*. [online] Available at: http://www.pc.gov.au/inquiries/completed/national-competition-policy/report.

new priority infrastructure projects or to amortise existing debt obligations faster.[43] The Australian Assistant Minister for Cities recently announced that the City Deals model could be adapted for use in Australia, as a central part of the Prime Minister's cities agenda.[44]

In addition to using financial incentives, infrastructure provision can also provide an incentive to drive coordinated policy action on land supply and housing affordability in Australia. For example, tying federal government infrastructure expenditure or service provision within a particular jurisdiction to that jurisdiction's reform progress could also be an effective mechanism for motivating policy action. This could also assist governments in coordinating investment in urban infrastructure and social development, which is crucial to improving liveability and economic growth but historically has been difficult to achieve.[45] In addition, investment in infrastructure as part of an incentive framework can be used as a catalyst for unlocking housing developments that otherwise would not have occurred, realising additional benefits.

It would also be possible to use the National Affordable Housing Agreement (NAHA) as a vehicle for facilitating the provision of incentives across different tiers of government. The NAHA is an existing COAG agreement that aims to take a whole-of-government approach to tackling housing affordability issues in Australia. Under an incentives framework, this option could see the housing assistance payments made to each State and Territory under the NAHA contingent upon progress made within the jurisdictions on housing and planning reform.

It is important that Local Governments are a part of any intergovernmental incentives framework for addressing land supply and housing affordability in Australia. The framework for coordination could see the Commonwealth providing States and Territories with financial and/or infrastructure-related incentives based on a set of performance metrics, with state governments then holding councils accountable for implementing changes relevant at the Local Government level. This could involve States and Territories creating a local government fund to, for example, provide funding for infrastructure expenditure and services provision in council areas that perform highly.

The inclusion of Local Government in the incentives framework is important in improving land supply. Addressing housing affordability requires a holistic reform process, and Local Governments play a significant role in the implementation and execution of planning policy. As discussed previously, there are mechanisms that can enable the Commonwealth Government to provide financial payments to Local Governments. This includes federal funding provided through the Financial Assistance Grant programme, in which grants are paid in quarterly instalments to State and Territory Governments for distribution to Local Governments through the Local Government Grant Commission established in each State. The provision of financial incentives to Local Government in the context of addressing

[43] Property Council of Australia and KPMG. (2014). *Introducing UK City Deals: A smart approach to supercharging economic growth and productivity*.

[44] Dole, N. (2016). *UK city model to be adapted for Australia under Turnbull's plan*. [online] ABC News. Available at: http://www.abc.net.au/news/2016-03-25/uk-city-model-to-be-adapted-for-australia/7276252.

[45] Howe, B. (2011). *Australian cities in transition - governance challenges for investing in better places*. [online] Published in The Smith Institute, *Investing in better places: international perspectives*. Available at: http://suma.org/img/uploads/documents/Investing%20in%20Better%20Places%20.pdf.

housing supply and affordability could operate through a similar mechanism, with the payment of grants tied to progress in implementing changes.

The size and ongoing nature of payments directed to Local Governments would depend on the obligations placed on them under the framework. In particular, where specific and ongoing process outcomes are placed upon councils this could be the trigger for ongoing payments, potentially differentiated by Local Government depending on their relative performance. These payments would reflect in part the additional resources that may be needed for performance targets to be met. Imposing targets which Local Governments are responsible for, in the absence of payments, may jeopardise the implementation of the framework. However, it is also important to recognise that Local Governments are also likely to receive direct benefits from reform, including increased rates revenue, investment and economic activity.

Reforms that simplify the planning system, for example through clarifying strategic plans would reduce the burden on local governments. While small initial payments directed to Local Governments may still be beneficial overall, sizeable ongoing payments would be less justified.

6.2.2.2 Timing of incentives payments

The timeframes that could be required for implementing genuine reforms relating to housing affordability and land supply could be relatively long term across both State and Local Governments. This is particularly the case if incentives are paid on the basis of the outputs or outcomes resulting from policy action within a particular jurisdiction, as it could take some time for any changes to have an impact.

As such, consideration needs to be given to the timing of incentives payments to be made under the framework. This is because the impact of financial incentives or incentives relating to infrastructure provision in motivating policy action is likely to weaken if they are not expected to be paid to jurisdictions until some years into the future. Timing is a particularly relevant issue in relation to infrastructure investment (either direct delivery or financial assistance), as significant infrastructure backlogs exist in many Australian cities, particularly in growth areas. An initial 'sign-on' payment to jurisdictions who agree to abide by the framework and implement reforms to improve housing affordability and land supply could assist in providing governments with an upfront incentive to participate in the coordinated drive for reform.

This initial payment could, for example, be conditional on governments submitting a plan of action on the reforms they intend to implement to address the issues of housing affordability and land supply; how they intend to work with Local Governments within their jurisdictions; self-defined performance targets and weightings; and other relevant components of a holistic strategic plan.

Subsequent financial or other incentives could then be paid based on each jurisdiction's performance relative to the plan, which could also be updated as progress is made over time. As the performance targets described within each state or territory's plan need not be identical across jurisdictions, such a framework also allows for some flexibility for different jurisdictions to set performance metrics that more directly target location-specific issues.

These upfront payments could also provide the Federal Government with a way to address issues around first-mover disadvantage where existing progress on land supply and housing affordability limit the ability for future rewards to be received.

In this context, one component of the payment could, for example, be provided to States and Territories on the basis of existing performance such as reforms that have already been undertaken that have delivered upon agreed outcomes, should the jurisdiction also agree to sign up to implementing further reforms in a forward-looking strategic plan for addressing housing supply and affordability. The size and nature of these payments would need to be assessed by an independent body to ensure that they accurately reflect current progress while also encouraging jurisdictions to continue to work towards planning reform – the establishment of such an authority is discussed in further detail in the following section.

6.3 Governance structure

As set out, there are two core functions that will need to be performed centrally in administering the framework:

- Overseeing the development of the financial incentives framework and determining eligibility for payments; and
- The detail of establishing performance targets and collection of data allowing benchmarking and monitoring against the framework and state plans.

These two functions are conceptually quite different, both in the skillsets required, the interaction required with the States and the size of the task. As a result, there is no necessary reason for them to be undertaken by the one institution.

The measurement and collection of data could be undertaken by a relatively small section within an existing agency, as was formerly the case with the NHSC within Treasury. This section could be tasked with a broader reporting agenda than that narrowly required for the incentives framework, with the broader cities agenda currently underway and subsequent policy associated with this agenda, also likely to be data-dependent.

There is currently little in the way of useful and centrally collected data to inform housing and planning policy. Providing this data is one key way in which the Commonwealth can contribute to planning and housing policy. Along these lines a recent study by the AHURI (2015) reported that:

> *'There is no steady stream of information [on housing trends and outcomes] across local entities, much less state entities. There's a lack of detail. There is a lack of transparency.'*[46]

Data on land supply and housing affordability processes and outcomes need to be accurate, reliable, adequate in coverage and provided on a consistent basis in order to review the progress of and inform decision making on different jurisdictions. The availability of such

[46] Australian Housing and Urban Research Institute. (2015). *Housing markets, economic productivity, and risk: international evidence and policy implications for Australia*. [online] Available at: http://www.ahuri.edu.au/research/final-reports/254.

data would allow the independent authority to benchmark each jurisdiction's performance against best practice and assess progress over time with respect to particular metrics. In determining the data requirements necessary for making decisions relating to incentives payments, the independent authority could look to broader indicators of data quality such as the ABS's Data Quality Framework in order to guide jurisdictions on the necessary characteristics of any data to be provided.[47]

The ABS Data Quality Framework (DQF)

The ABS DQF provides standards for assessing and reporting on the quality of data and statistical information. Seven dimensions of quality are included as part of the ABS's Data Quality Framework:

- Institutional environment
- Relevance
- Timeliness
- Accuracy
- Coherence
- Interpretability
- Accessibility

The ABS DQF is designed for use by data users and providers in different settings, including government agencies and independent research agencies. For example, it was used to assess the quality of performance indicator data linked to a number of National Agreements in key policy areas signed by COAG in 2008.

The function of agreeing and establishing performance targets with the States is a separate exercise and one that is best placed within existing frameworks that will facilitate this collaboration. The body coordinating these functions would also be responsible for reporting on progress against goals and determining the eligibility of states for receiving payments (as well as determining the size of these payments). Such an independent arbitrator would play a similar role as the National Competition Council, which was the body that assessed the distribution of costs and benefits across levels of government and recommended competition payments from the Commonwealth to the States and Territories under the original NCP framework.

Whichever institution, or institutions, are tasked with these functions, a **clear and transparent** governance structure is particularly important to ensure that the correct stakeholder is held accountable for progress against the framework. Intergovernmental policy coordination can lead to a blurring of the traditional lines of government roles and responsibilities at the various tiers of government, particularly given the complicated division of powers in Australia's federal system. A strong governance framework can help to ensure that the roles and responsibilities of each party are clear at the outset.

[47] Australian Bureau of Statistics. (2016). *1520.0 - ABS Data Quality Framework, May 2009*.

The importance of governance in addressing the issues of housing affordability, urban policy and the liveability of cities through the Australian political system was highlighted in Professor Brian Howe's report *Australian Cities in Transition – Governance challenges for investing in better places* (2011). In particular, the report noted that:

> *"Making strategic choices, as well as implementing changes that might often need to be sustained over decades, [are] essentially a matter of governance… Australia's system of government is not especially conducive to providing the kind of leadership that will deal successfully with resolving so vexed a problem as our future city development."*[48]

These responsibilities of setting performance metrics and overseeing the eligibility of states for receiving payments could be part of the remit of the proposed Australian Council for Competition Policy (ACCP). In 2015, the Competition Policy Review recommended that a new national competition body – the ACCP – should be established with the mandate to drive the implementation of the government's competition policy agenda (Recommendation 43). It was also recommended that this independent body could be tasked with reporting on the progress of State and Territory Governments in assessing planning and zoning rules against the public interest test, such that these rules should not restrict competition unless the benefits to the community as a whole in doing so outweigh the costs (Recommendation 9).

In its response to the Review, the Government stated that it "*supports the need for a body to oversee progress on competition reform and will discuss its design, role and mandate with the States and Territories*". It was also supportive of encouraging States and Territories to consider competition principles in the objectives of planning and zoning rules.

It is therefore possible that a remit for monitoring states' progress and coordinating incentives payments as part of addressing housing affordability and supply issues could sit within the responsibilities of the ACCP, if or when such a new national competition authority should be established. The mandate for this body in forwarding a competition policy and reform agenda through a structure where all jurisdictions are represented and where incentive payments could be a key operating lever, and the already nominated inclusion of planning and zoning issues, make this a possible vehicle for administering the incentives framework for housing supply.

While the ACCP will oversee a range of different areas in addition to housing and planning, reform in this area could represent a particular work program within the organisation's responsibilities. Specific housing sector expertise would be provided by the data-gathering body discussed above passing its findings and advice directly to the ACCP, which would inform the ability of the ACCP to monitor state progress and make incentives payments. In addition, including housing affordability, planning reform and land supply within the remit of the ACCP could allow for political coordination in a multilateral or cross-departmental context, where linkages between housing policy and other areas might exist.

[48] Howe, B. (2011). *Australian cities in transition - governance challenges for investing in better places*. [online] Published in The Smith Institute, *Investing in better places: international perspectives*. Available at: http://suma.org/img/uploads/documents/Investing%20in%20Better%20Places%20.pdf.

6.4 An outline of a framework

A Commonwealth incentives framework model for housing supply provides a meaningful approach to stimulating action on housing supply reform by State and Local Governments. Similar frameworks, such as that used in implementing the National Competition Policy reforms, have been shown to be successful in generating policy action from the States in previous cases of reform. Nonetheless, incentive payments themselves do not provide policy solutions, and planning reform has proved difficult in the past.

This report has outlined a number of key steps that should be undertaken on the path to implementing an incentives model for coordinating policy action on housing supply and affordability. This includes the necessity for setting performance targets as a basis upon which incentives payments can be made; the establishment of an institution to collect accurate and consistent data on housing metrics, to be provided to the proposed ACCP as an input to determining payments; the modelling of economic benefits associated with reform and where these benefits accrue; the use of upfront payments based on state metro plans to ensure initial buy-in of state policymakers; and the involvement of Local Government given their important role in the planning system.

Should the Commonwealth proceed with an incentives framework, the following page identifies five key features for its design based on the analysis above.

Five steps to implementing a financial incentives framework:

1. **Set targets.** Identify and agree on performance metrics with the States. States already collect data relating to their planning systems and these could be standardised and reported to a dedicated housing policy body (see 2 below). The metrics chosen will depend on the reform initiatives agreed, but could consist of housing targets by relative affordability, and the development of metro plans with specified targets and measures of the system's efficiency. Targets and metrics need not be identical across States. Some States will face location-specific issues and should be given sufficient flexibility to choose targets and metrics appropriate to their situation. However, this should not be open-ended.

2. **Make someone responsible.** This report suggests establishing a housing institution which could sit within a Commonwealth agency, with a broader role than the National Housing Supply Council, to collate consistent data on housing. Data collection processes and reporting should be transparent, with annual reports on each state's performance against relevant metrics, allowing for an assessment of state progress and improvements in planning systems. The proposed Australian Council for Competition Policy, with responsibility for incentive payments, could receive recommendations and input from this institution, and ultimately decide on issuing payments.

3. **Model the benefits.** Economic modelling that estimates the size of linkages between state housing outcomes and Commonwealth revenues will be needed to inform the size of benefits achievable through reform, and where these benefits accrue.

4. **Link payments to action – upfront and ongoing.** Metro plans could form the basis of up-front payments at the commencement of the incentives framework. Ongoing payments should be based on realised performance against metrics. The creation of plans alone should not be sufficient grounds for receiving payments, and should instead only be used to commence the payments process.

5. **State Governments to lead, but involve Local Governments.** While policy reform will ultimately need to be driven by the States, Local Governments will be a key part of the process and they should receive some incentive payments for participation and achievement of objectives.

Appendix A – Modelling Approach

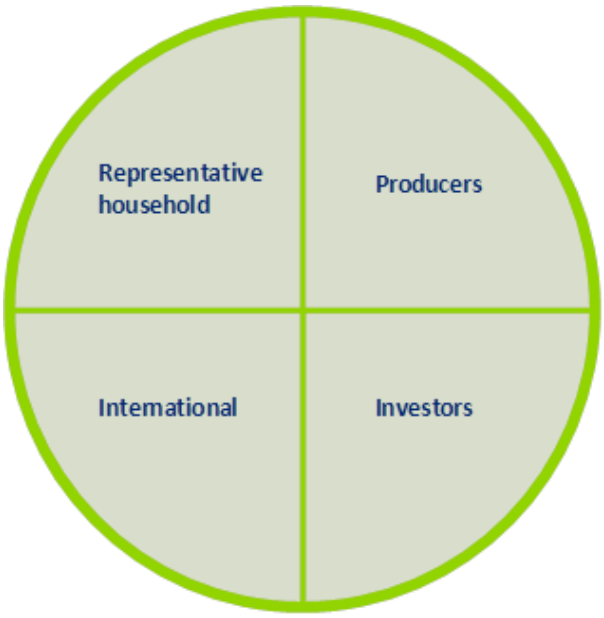
The economic modelling in this report is based on Deloitte Access Economics' in-house computable general equilibrium (CGE) model. CGE models are whole-of-economy models that are ideally suited to measuring the impact of productivity shocks to whole industries or factors of production such as labour.

The Deloitte Access Economics – Regional General Equilibrium Model (DAE-RGEM) is a large scale, dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy. The model allows policy analysis in a single, robust, integrated economic framework. This model projects changes in macroeconomic aggregates such as GDP, employment, export volumes, investment and private consumption. At the sectoral level, detailed results such as output, exports, imports and employment are also produced.

The model is based upon a set of key underlying relationships between the various components of the model, each which represent a different group of agents in the economy. These relationships are solved simultaneously, and so there is no logical start or end point for describing how the model actually works.

Figure A.1 shows the key components of the model for an individual region. The components include a representative household, producers, investors and international (or linkages with the other regions in the model, including other Australian states and foreign regions). Below is a description of each component of the model and key linkages between components. Some additional, somewhat technical, detail is also provided.

Figure A.1: Key components of DAE-RGEM



DAE-RGEM is based on a substantial body of accepted microeconomic theory. Key assumptions underpinning the model are:

- The model contains a 'regional consumer' that receives all income from factor payments (labour, capital, land and natural resources), taxes and net foreign income from borrowing (lending).
- Income is allocated across household consumption, government consumption and savings so as to maximise a Cobb-Douglas (C-D) utility function.
- Household consumption for composite goods is determined by minimising expenditure via a CDE (Constant Differences of Elasticities) expenditure function. For most regions, households can source consumption goods only from domestic and imported sources. In the Australian regions, households can also source goods from interstate. In all cases, the choice of commodities by source is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption for composite goods, and goods from different sources (domestic, imported and interstate), is determined by maximising utility via a C-D utility function.
- All savings generated in each region are used to purchase bonds whose price movements reflect movements in the price of creating capital.
- Producers supply goods by combining aggregate intermediate inputs and primary factors in fixed proportions (the Leontief assumption). Composite intermediate inputs are also combined in fixed proportions, whereas individual primary factors are combined using a CES production function.
- Producers are cost minimisers, and in doing so, choose between domestic, imported and interstate intermediate inputs via a CRESH production function.
- The supply of labour is positively influenced by movements in the real wage rate governed by an elasticity of supply.
- Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. A global investor ranks countries as investment destinations based on two factors: global investment and rates of return in a given region compared with global rates of return. Once the aggregate investment has been determined for Australia, aggregate investment in each Australian sub-region is determined by an Australian investor based on: Australian investment and rates of return in a given sub-region compared with the national rate of return.
- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.
- Prices are determined via market-clearing conditions that require sectoral output (supply) to equal the amount sold (demand) to final users (households and government), intermediate users (firms and investors), foreigners (international exports), and other Australian regions (interstate exports).
- For internationally-traded goods (imports and exports), the Armington assumption is applied whereby the same goods produced in different countries are treated as imperfect substitutes. But, in relative terms, imported goods from different regions are treated as closer substitutes than domestically-produced goods and imported composites. Goods traded interstate within the Australian regions are assumed to be closer substitutes again.

- The model accounts for greenhouse gas emissions from fossil fuel combustion. Taxes can be applied to emissions, which are converted to good-specific sales taxes that impact on demand. Emission quotas can be set by region and these can be traded, at a value equal to the carbon tax avoided, where a region's emissions fall below or exceed their quota.

Households

Each region in the model has a so-called representative household that receives and spends all income. The representative household allocates income across three different expenditure areas: private household consumption; government consumption; and savings.

Going clockwise around Figure A.1, the representative household interacts with producers in two ways. First, in allocating expenditure across household and government consumption, this sustains demand for production. Second, the representative household owns and receives all income from factor payments (labour, capital, land and natural resources) as well as net taxes. Factors of production are used by producers as inputs into production along with intermediate inputs. The level of production, as well as supply of factors, determines the amount of income generated in each region.

The representative household's relationship with investors is through the supply of investable funds – savings. The relationship between the representative household and the international sector is twofold. First, importers compete with domestic producers in consumption markets. Second, other regions in the model can lend (borrow) money from each other.

- The representative household allocates income across three different expenditure areas – private household consumption; government consumption; and savings – to maximise a Cobb-Douglas utility function.
- Private household consumption on composite goods is determined by minimising a CDE (Constant Differences of Elasticities) expenditure function. Private household consumption on composite goods from different sources is determined is determined by a CRESH (Constant Ratios of Elasticities Substitution, Homothetic) utility function.
- Government consumption on composite goods, and composite goods from different sources, is determined by maximising a Cobb-Douglas utility function.
- All savings generated in each region is used to purchase bonds whose price movements reflect movements in the price of generating capital.

Producers

Apart from selling goods and services to households and government, producers sell products to each other (intermediate usage) and to investors. Intermediate usage is where one producer supplies inputs to another's production. For example, coal producers supply inputs to the electricity sector.

Capital is an input into production. Investors react to the conditions facing producers in a region to determine the amount of investment. Generally, increases in production are accompanied by increased investment. In addition, the production of machinery, construction of buildings and the like that forms the basis of a region's capital stock, is undertaken by producers. In other words, investment demand adds to household and

government expenditure from the representative household, to determine the demand for goods and services in a region.

Producers interact with international markets in two main ways. First, they compete with producers in overseas regions for export markets, as well as in their own region. Second, they use inputs from overseas in their production.

- Sectoral output equals the amount demanded by consumers (households and government) and intermediate users (firms and investors) as well as exports.
- Intermediate inputs are assumed to be combined in fixed proportions at the composite level. As mentioned above, the exception to this is the electricity sector that is able to substitute different technologies (brown coal, black coal, oil, gas, hydropower and other renewables) using the 'technology bundle' approach developed by ABARE (1996).
- To minimise costs, producers substitute between domestic and imported intermediate inputs is governed by the Armington assumption as well as between primary factors of production (through a CES aggregator). Substitution between skilled and unskilled labour is also allowed (again via a CES function).
- The supply of labour is positively influenced by movements in the wage rate governed by an elasticity of supply (assumed to be 0.2). This implies that changes influencing the demand for labour, positively or negatively, will impact both the level of employment and the wage rate. This is a typical labour market specification for a dynamic model such as DAE-RGEM. There are other labour market 'settings' that can be used. First, the labour market could take on long-run characteristics with aggregate employment being fixed and any changes to labour demand changes being absorbed through movements in the wage rate. Second, the labour market could take on short-run characteristics with fixed wages and flexible employment levels.

Investors

Investment takes place in a global market and allows for different regions to have different rates of return that reflect different risk profiles and policy impediments to investment. The global investor ranks countries as investment destination based on two factors: current economic growth and rates of return in a given region compared with global rates of return.

- Once aggregate investment is determined in each region, the regional investor constructs capital goods by combining composite investment goods in fixed proportions, and minimises costs by choosing between domestic, imported and interstate sources for these goods via a CRESH production function.

International

Each of the components outlined above operate, simultaneously, in each region of the model. That is, for any simulation the model forecasts changes to trade and investment flows within, and between, regions subject to optimising behaviour by producers, consumers and investors. Of course, this implies some global conditions that must be met, such as global exports and global imports, are the same and that global debt repayment equals global debt receipts each year.

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