



FINAL REPORT

Taxation of the housing sector

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Summary

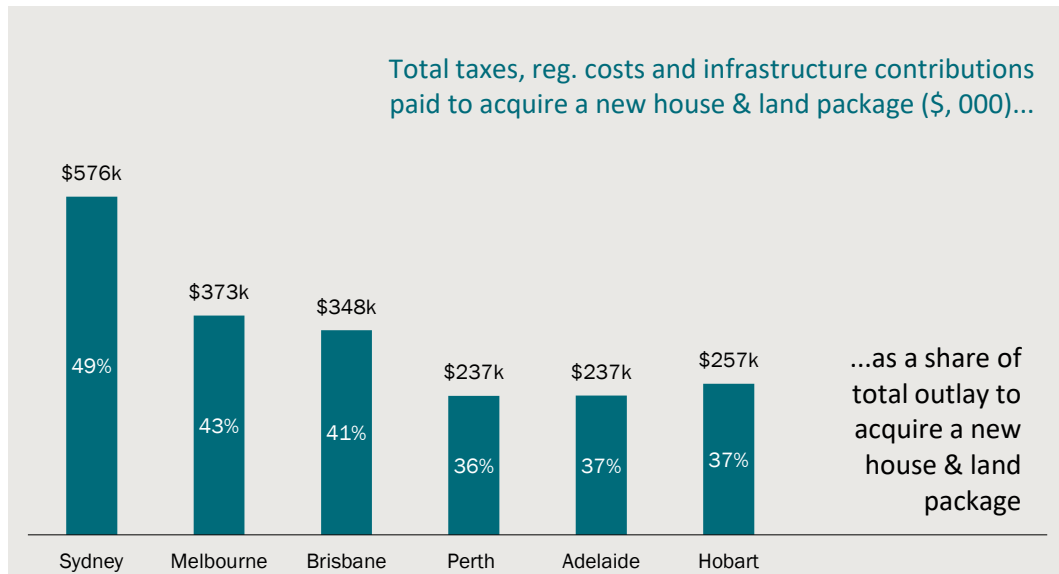
Taxes and regulatory costs add substantially to the cost of housing

- The total outlay made to acquire a new home includes: resource costs (the processes, materials and work that go into creating it), statutory taxes (GST, income taxes, stamp duties, etc.), regulatory costs (cost increases that are created when government policies restrict the supply of land and housing relative to demand), and infrastructure charges (the price charged for government services or infrastructure).
- In 2023–24, in Sydney, we estimate that of the total outlay made to acquire a new house & land package in a Greenfield estate (about \$1 182 000), 49 per cent (around \$576 000) is made up of regulatory costs, statutory taxes and infrastructure charges (which are respectively: 24 per cent, 19 per cent and 5 per cent of the outlay).
- In other cities, as a share of the total outlay, we estimate the regulatory costs, statutory taxes and infrastructure charges are Melbourne: 43 per cent, Brisbane: 41 per cent, Perth: 36 per cent, Adelaide: 37 per cent, and Hobart: 37 per cent. See Chart 1.
- For new apartments in Infill developments, as a share of the total outlay, we estimate the regulatory costs, statutory taxes and excessive charges are Sydney: 38 per cent, Melbourne: 32 per cent, Brisbane: 34 per cent, Perth: 30 per cent, Adelaide: 31 per cent, and Hobart: 33 per cent. See Chart 2.

Regulatory costs on land are driving differences across cities

- We estimate the regulatory costs created by the system of zoning and associated development controls are more substantial in Sydney Greenfield development than in other cities, and higher in Greenfield development than in apartment development. This is the biggest factor driving differences in our results.

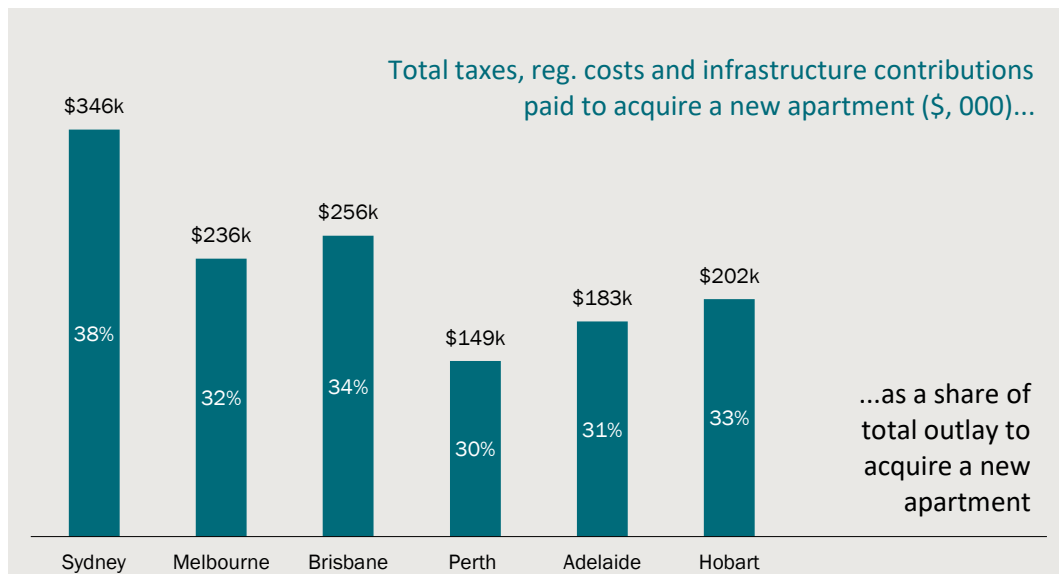
1 Statutory taxes, regulatory costs and infrastructure charges for greenfield houses



Note: Estimates are for 2023/24.

Data source: The CIE

2 Statutory taxes, regulatory costs and infrastructure charges for infill apartments



Note: Estimates are for 2023/24.

Data source: The CIE

1 Introduction

The Housing Industry Association (HIA Ltd) has commissioned The CIE to perform a bottom-up investigation of the magnitude of statutory taxes and regulatory costs in housing costs.

This project is an update to past analyses by The CIE for HIA estimating these costs in 2010/11 and 2016/17.

Most of this report is devoted to measuring the statutory taxes and regulatory costs in *new* homes (that is: new house & land packages and new apartments). But, as new housing and existing housing are substitutes, statutory taxes and regulatory costs that are imposed on new houses will, over time, also cause the price of existing housing to rise, which we discuss.

In addition to the bottom up analysis, we also provide a comparison of taxes paid by different industries to illustrate the relative burden in the case of the housing industry. Part of this analysis also includes model simulations to illustrate the incidence of housing cost increases.

This report

This report is structured as follows.

- **The remainder of this chapter** sets out the broad economic framework we adopt when considering the impact of taxes and regulation on the cost of housing.
- **Chapter 2** provides an overview of our bottom up analysis.
- **Chapter 3** sets out our assumptions about the development process which provides a framework for gathering information and setting out the impacts of taxes and regulatory effects along the development process.
- **Chapter 4** presents the results of our financial analysis where we do a bottom-up calculation for the outlay homebuyers make to acquire a new house & land package and a new apartment.
- **Chapter 5** presents a cross-check on our high-level results.
- **Chapter 6** presents our economic analysis where we split the total outlay into resource costs, regulatory costs, statutory taxes and infrastructure charges.
- **Chapter 7** presents a model-based analysis of the incidence — who actually pays — the tax.

This project synthesises a very large amount of publicly available data and other evidence and presents this in an accessible and coherent framework. The goal is not to perform a cost-benefit analysis on any individual driver of housing costs or government policy.

Costs identified in this report should be compared to any benefits created by the underlying policies.

Framework for new housing

Chart 1.1 shows our broad framework for considering the drivers of prices and costs for new housing.

The demand curve for new housing captures willingness of Australians to pay for new housing, driven by their preferences, the size of the economy (which determines the income of residents) and population. The demand curve is downward sloping because an increase in demand tends to push the price of housing up and/or the quantity traded up. Government policy influences demand for housing (for example, government can influence the size of the population via immigration policy settings). Consideration of these policies is beyond the scope of this paper. Therefore, we essentially treat demand for housing as fixed.

There is one statutory tax we consider – stamp duties on conveyances – that is levied on consumers. In our framework, stamp duty causes a difference between transfer price of the new house & land package or new apartment (labelled P-transfer) and the total outlay the purchaser must actually make to acquire the new house & land package or new apartment (labelled P-outlay). The total outlay equals the transfer price plus the stamp duty plus other transfer costs.

The supply curve for new housing captures the resource costs incurred by housing developers and builders to create and provide new housing. The supply curve is upward sloping because if resource costs increase, this tends to cause the price of housing to increase.

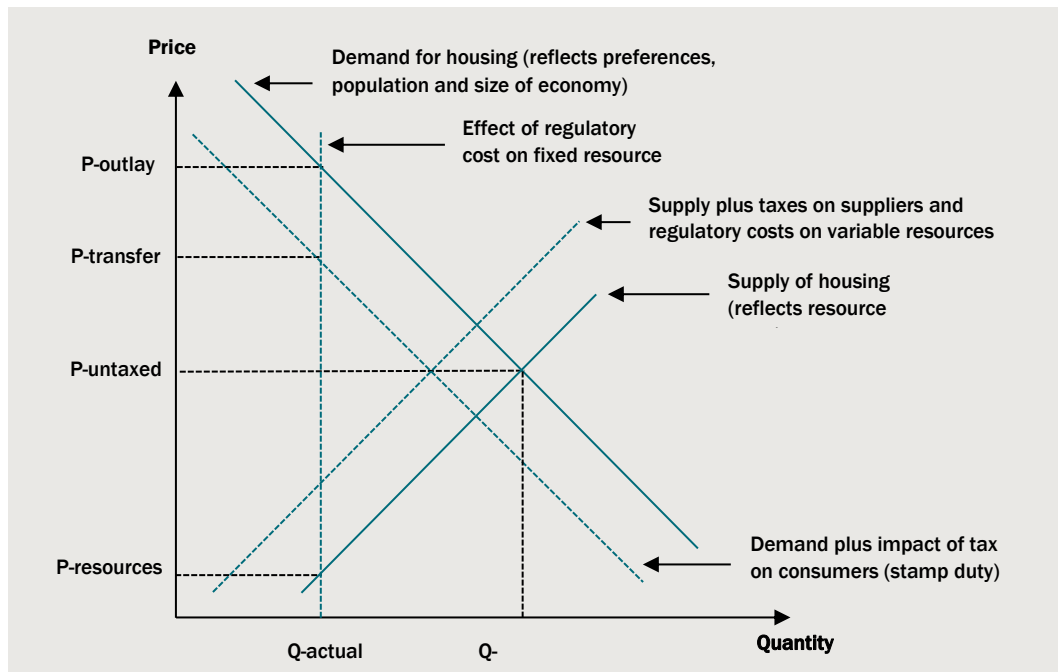
Governments levy various statutory taxes (and other revenue raising measures) on the supply of housing. These taxes include GST on new dwelling construction, income taxes levied on workers who provide labour to housing development, etc. In effect, these taxes add to the cost incurred to supply housing. Governments can also impose regulatory costs on variable resources. For example, if developers are forced to hold land for an unreasonably long period of time while they wait for appropriate approvals to commence development, this adds to their costs to finance the land holding (interest costs on debt). These statutory taxes on supply and regulatory costs on variable resources, in effect, add to the cost of supplying each new house. We capture these costs with a new supply curve, shifted up to reflect higher costs (see Chart 1.1). We present data, evidence and estimates on these costs in this paper.

Governments can also impose regulatory costs on land, the fixed resource in the supply of new housing. In this paper, we present data, evidence and estimates on these costs. In essence, the system of zoning and associated controls on land use and development, at any single point in time, acts like quota or upper limit on the amount of housing that can actually be supplied. If this quota is not adjusted appropriately, and demand runs ahead of it, this results in consumers competing for an inadequate amount of housing, which pushes up its price. The upper limit on the supply of housing at any given time, caused by

the system of zoning and associated land and development controls, is captured with a vertical line in Figure 1.1, which sets an effective upper limit on the housing that can be supplied at Q_{actual} .

If the government policies that we consider in this paper (statutory taxes, other revenue raising measures and regulatory costs), were not enacted the price of new housing and quantity traded would be P_{untaxed} and Q_{untaxed} , respectively. As a result of the statutory taxes and regulatory costs created by the government, the quantity traded for new housing falls from Q_{untaxed} to Q_{actual} . The total (average) outlay made by purchasers of new housing is P_{outlay} . The cost of the resources used to create and provide new houses is $P_{\text{resources}}$ (on average). In Chapter 6 we use our calculated results to add numbers to this diagram.

1.1 Framework for considering the drivers of prices and costs of new house & land packages and new apartments



Data source: The CIE

Interpreting the components of housing costs

Resource costs are the activities undertaken and the materials used to create and provide the new home. The developer's job is to source and coordinate these resources. Resource costs include a fair developer margin.

If a purchaser pays for more 'resource costs' they obtain a home that is larger, or is higher quality, etc. The beneficiary of resource costs is therefore the purchaser.

Statutory taxes and other revenue raising measures the government levies/imposes on the development process raise revenue that funds government operations and public services. If the government decides to increase these measures, this will cause the total

outlay made by the new homebuyer to increase. The new homebuyer does not receive a larger or a higher quality home because of this increase in the outlay. Rather, it results in an increase in funding for government operations and public services; which the new homebuyer may benefit from.

Regulatory costs are other government measures which increase costs in the development process, but which do not create more revenue for the government. For example, developers require various approvals from the government to proceed with new developments. Consultations with HIA suggest developers can face delays which are unreasonable in the government-controlled processes that generate these approvals. As developers generally use debt to finance land purchases, these unreasonable delays add to the interest costs they incur, which are passed on to new homebuyers via a commensurate increase in the transfer price the developer charges for the new home.

Again, the new homebuyer does not receive a better or a larger home if they are forced to pay for more regulatory costs. The government does not directly benefit either, as the measures do not explicitly raise revenue. In fact, the main beneficiaries of regulatory costs are existing home owners. This is because new homes and existing homes (to some extent) are substitute products. If the government creates a policy that imposes regulatory costs on the creation and provision of new homes, this will cause the price of these new homes to increase; it will also cause the price of existing homes to increase, as buyers who can no longer afford a new home will try to acquire an existing home, and their demand will push up the price of existing homes.

In principle, infrastructure charges can be split into two components:

- a fair component, reflecting resource costs of infrastructure for which there is a close nexus between the development and infrastructure demand, and
- an excessive component, which is the remainder of the contribution.

In this report, we have not sought to split infrastructure charges into a fair and an excessive component. This is because:

- It is not possible to accurately identify at a city-wide level what a fair level of infrastructure charges is, which would require detailed assessment of specific DCPs.
- The economics of infrastructure contributions is complex, and it has become overly simplistic to simply characterise them as fair or excessive. There are multiple types of impacts arising from contributions (box 1.2), and whether contributions are efficient depends on a range of factors. Even where there is an appropriate nexus between development and planned infrastructure, infrastructure contributions still have a role as a revenue-raising instrument.

Recognising this complexity, we present infrastructure charges separately from other cost categories so the extent to which the cost of infrastructure is being borne by housing developers and buyers can be understood.

1.2 The impacts of infrastructure charges

The CIE (2020)¹ identified four main types of impacts arising from developer contributions (i.e. infrastructure charges):

- 1 Incentives for developers to undertake more efficient development because contributions force developers to internalise costs of infrastructure that would otherwise be borne by others
- 2 The level of efficiency of infrastructure contributions in comparison to other funding mechanisms for infrastructure, including allocative efficiency and administration and compliance costs
- 3 The role of infrastructure contributions in ensuring that efficient infrastructure is put in place to enable development to occur
- 4 The role of infrastructure contributions in altering the political economy of planning approval and support or opposition to development.

Source: CIE, based on The CIE (2020) *Evaluation of infrastructure contributions reform in New South Wales*, Chapter 2, available at: <https://www.productivity.nsw.gov.au/sites/default/files/2020-12/Evaluation%20of%20Infrastructure%20Contributions%20Reform%20in%20NSW.pdf>

¹ The CIE, 2020, *Evaluation of infrastructure contributions reform in New South Wales*, Chapter 2, available at: <https://www.productivity.nsw.gov.au/sites/default/files/2020-12/Evaluation%20of%20Infrastructure%20Contributions%20Reform%20in%20NSW.pdf>

2 *Methodology for the bottom up analysis*

This chapter lays the groundwork for the bottom up analysis of housing costs by setting out the broad methodology by which the results are derived.

The Appendices (Appendix A for house & land packages, Appendix B for new infill apartments, Appendix C for income taxes) and Chapter 6 (for the price of raw land) provides detailed data sources, assumptions and explanations.

Strategy

We are trying to estimate and understand all the components in the total outlay a homebuyer makes to acquire a new home. We consider, separately, a new house & land package in a Greenfield estate, or a new apartment in an infill development. We consider 7 cities: Sydney, Melbourne, Brisbane, Perth, Adelaide, Hobart and Canberra. We conduct our analysis for the financial year 2023–24.

The creation and provision of a new house & land package in a Greenfield estate involves two processes: first, the developer buys raw land zoned for residential development, seeks and gains relevant approvals for subdivision, develops the land into blocks which are ready for the construction of a dwelling, and then sells this developed block to the homebuyer. Second, the homebuyer commissions a builder to construct a dwelling. After paying stamp duties and other transaction costs on the developed block of a land and new dwelling, the homebuyer owns a new house & land package.

We treat the creation and provision of a new apartment (in an infill development) as a single project undertaken by a developer. The developer buys raw land, seeks and gains relevant approvals, develops the land, commissions the construction of a construction building and incurs management costs for the whole project. The developer then sells a complete, new apartment to the homebuyer who owns this apartment after they have paid stamp duty and other transaction costs.

To calculate the stamp duty, we use applicable rates. We do not incorporate any discounts that are available to first homebuyers, to keep our results and analysis as simple as possible.

The transfer price paid by the homebuyer to the developer (and/or builder) is the sum of relevant costs, including a margin. The total outlay made by the homebuyer to acquire the new home is the transfer price (total costs), plus transaction costs.

We use a 3-step process to analyse the outlay made by the purchaser, as follows.

Description of each step

Step 1: calculate the total outlay made to acquire new housing (financial analysis)

New house & land packages

For new house & land packages, there is no publicly available data on ‘average’ sale prices. Therefore, we make our own estimate, by doing the following:

- 1 We identify and understand the separate steps, including their components, that are undertaken in the development process to create and provide a new house & land package.
- 2 We source, compile and synthesise publicly available data that allows us to estimate the costs of each step and component in the creation of a new house & land package. We add insights from past consultations with HIA and assumptions where necessary. All data sources, insights from consultations and assumptions are explained in Appendices A and B.
- 3 We estimate the representative transfer price for a new house & land package by summing together the estimated cost of each component. The total outlay made to purchase the package is the cost of a developed block of land plus the cost of the dwelling plus transaction costs.

$$\begin{aligned}
 & \textit{Total outlay required to acquire a new dwelling} \\
 & = \textit{Cost of a block of developed land} + \textit{Construction cost} \\
 & + \textit{transaction costs}
 \end{aligned}$$

Note, because our estimates are not derived from averaging multiple observations for these costs, we do not call our estimates the ‘average outlay’ made to acquire a new house & land package. However, to estimate each cost we use average data: median cost for a developed block, average size of new houses, average construction cost, including an adjustment for economies of scale in Greenfield blocks. Therefore, while our estimates are not a calculated averages in the strict sense, they do provide an estimate for the central outlay made to acquire a new house & land package. We call our estimates ‘representative’.

New apartments

UDIA publish data on the median transfer price of new apartments in each city.² From this end-point we work backwards to measure the cost of each component. The total outlay is the transfer price plus transaction costs.

² Note that this relates to the price of apartments. Construction cost estimates are not obtained from UDIA, with estimates from Rawlinson’s, Rider Levitt Bucknall and ABS used instead (see appendix B).

This report

The results of step 1 are contained in Chapters 3 and 4 of this report.

Step 2: cross check our result for new house & land packages

Because our estimate for the representative transfer price for new house & land packages is derived by summing separate estimates for individual components, it is necessary to cross-check our estimate for the total against data for advertised prices on real-estate websites.

As a result of our initial cross-checks, we adjust our original assumptions to ensure our estimates broadly align with advertised prices. This cross-check is outlined in Chapter 0 of this report.

This cross-check is not necessary for new apartments, because we use reported data from UDIA on the median price of new apartments.

Step 3: identify resource costs, statutory taxes, regulatory costs and infrastructure charges (economic analysis)

For each component of each estimate of the outlay made to acquire a new house & land package and a new apartment, we identify whether the component is a resource cost, a statutory tax (or another government revenue raising measure such as an infrastructure charge) or a regulatory cost.

For many components this is straight-forward. For example, the land tax the developer pays during land development, the GST charged on various costs, and stamp duties are statutory taxes. Further, we assume that reported construction costs are resource costs.

We have not sought to split infrastructure charges into fair and excessive components for two reasons:

- difficulty defining the fair and excessive components: there are multiple motivations for imposing infrastructure charges, such as incentivising a more efficient pattern of development, raising revenue, and to ensure that efficient infrastructure is put in place to enable development to occur.
- difficulties establishing the magnitude of resource cost at a city-wide level: infrastructure contributions have been subject the greater scrutiny over time to assess their appropriateness, which requires detailed assessment of the specific Development Contribution Plan (DCP) for a growth area.

Instead, we report infrastructure charges in total as a separate cost category.

One component, the purchase price of raw land zoned for residential use requires a complicated allocation into a resource cost and regulatory cost. This is discussed in Chapter 6.

Finally, it is necessary to remove income taxes levied on underlying resources, which are statutory taxes. For example, calculated 'construction costs' include the cost of the income tax levied on the workers engaged by the builder. We make a final calculation to

separate out income taxes in resource costs, so these can be allocated to statutory taxes. This is described in Appendix C.

Note that our cost estimates for apartments in Canberra do not include the Lease Variation Charge (LVC), a form of betterment tax levied on the increased value of land in the ACT. The LVC is a tax on the added value of land due to improvements to development rights in a crown lease, such as increasing the number of residential dwellings allowed.³ We have not estimated this component because it depends on the value of land before and after modification of the lease, which can vary significantly.

We capture cascading costs

An important feature of the various components of the outlay required to buy a new home is their inter-dependency. For example, the land tax that is levied on developers during the development process is a statutory tax. This land tax is levied on the price the developer pays for the unimproved value of the block of raw land, which (we find) includes a component that is a regulatory cost. Therefore, the regulatory cost implicit in the raw land value causes the statutory tax to be larger. This is sometimes called the ‘cascading effect’ of imposed taxes.

The model we have used for our analysis allows us to track and estimate these cascading effects. For some components, this requires us to use iteration, which is explained (see Chapter 6).

Within regulatory costs, we identify:

- 1 Regulatory costs on variable resources (which is the effect of delays in the approval process on developer finance costs, plus the effect of uncertainty in the approval process on developer margin)
- 2 Regulatory costs on the fixed resource land. We present evidence this is created by the system of zoning and associated land use and development controls.

Regulatory costs on variable resources are essentially inefficiencies in the planning system. Apart from directly adding to developer finance costs, these costs impact the GST collected on development and (via their impact on the final transfer price), the stamp duty paid by the purchaser. Because these effects on GST and stamp duty are relatively straightforward, and because governments periodically try to improve the processes where the underlying inefficiencies exist, we report the additional GST and stamp duty created within ‘regulatory costs on variable resources’, so the full impact of these costs can be understood.

Regulatory costs on land (the fixed resource) inflate the price the developer pays for raw land and therefore most statutory taxes that follow. It is calculated via iteration (see Chapter 6). Measuring all these cascading effects is more complicated. It is desirable to avoid this complication, because understanding this regulatory cost and the evidence that suggests it is created by the system of planning and associated land use and developed

³ See: <https://www.planning.act.gov.au/community/buy/leasing-and-titles/crown-leases/changes-to-a-crown-lease/lease-variation-charge>

controls is also complicated. Therefore, we simply report this regulatory cost as a stand-alone item (regulatory cost on the fixed resource), and do not calculate its cascading effects on land tax, rates, GST, stamp duty, etc.

3 *Assumptions about the development process*

Process that results in the creation of a new house & land package

The process that results in the creation and provision of a new house & land package, including key sub-components, is described in Table 3.1. Note that land settlement is assumed to occur after design and planning, rezoning, and DA preparation.⁴

Further explanation of some details is provided in Appendix A.

3.1 The provision and creation of a new house & land package

Step	Start	End	Time (Sydney Greenfield)
Exchange of contracts for land purchase	Developer exchanges contracts to purchase a large parcel/parcels of raw land that is zoned for residential use on the city fringe	-	-
Design and Planning	Starts after the exchange of contracts for the purchase of land. Includes rezoning.	Preparation and lodgement of DA.	12 months
Land settlement and DA preparation	Developer settles on land purchase While developer waits for DA to be granted, he/she incurs interest on land purchase costs	Local council grants relevant development applications. Land now consists of individual blocks ready for development	15 months (necessary time of 8 months, plus delay of 7 months) ^{a, b}
Land development	Developer pays development charges to local council and state government (covers roads, public space, etc.) Developer incurs land preparation costs and other development costs	Individual blocks are ready for the construction of a dwelling Buyer of new house & land purchases a block	4 months (necessary time)
Development application and building application	Buyer of new house & land package applies for development application and building application	Relevant authorities issue approvals	
Construction	Buyer of new house & land package commissions builder to construct dwelling	Construction is complete	6.2 months ^c (necessary time)
Transaction costs	Buyer of new house & land package pays stamp duty on developed block and new dwelling	Buyer of new house & land package takes ownership of completed project	Costs occur as they arise

^a See discussion in this chapter of 'necessary time' and 'delay'

^c In Savills (2024), the typical land purchase finance period for Sydney is shown to be 7 months and the extended timeline of (intended to show a worst-case scenario) is 18 months. We have chosen a period closer to the extended timeframe based on consultations with HIA, and assuming that settlement sometimes occurs earlier (i.e. during design or rezoning stages).

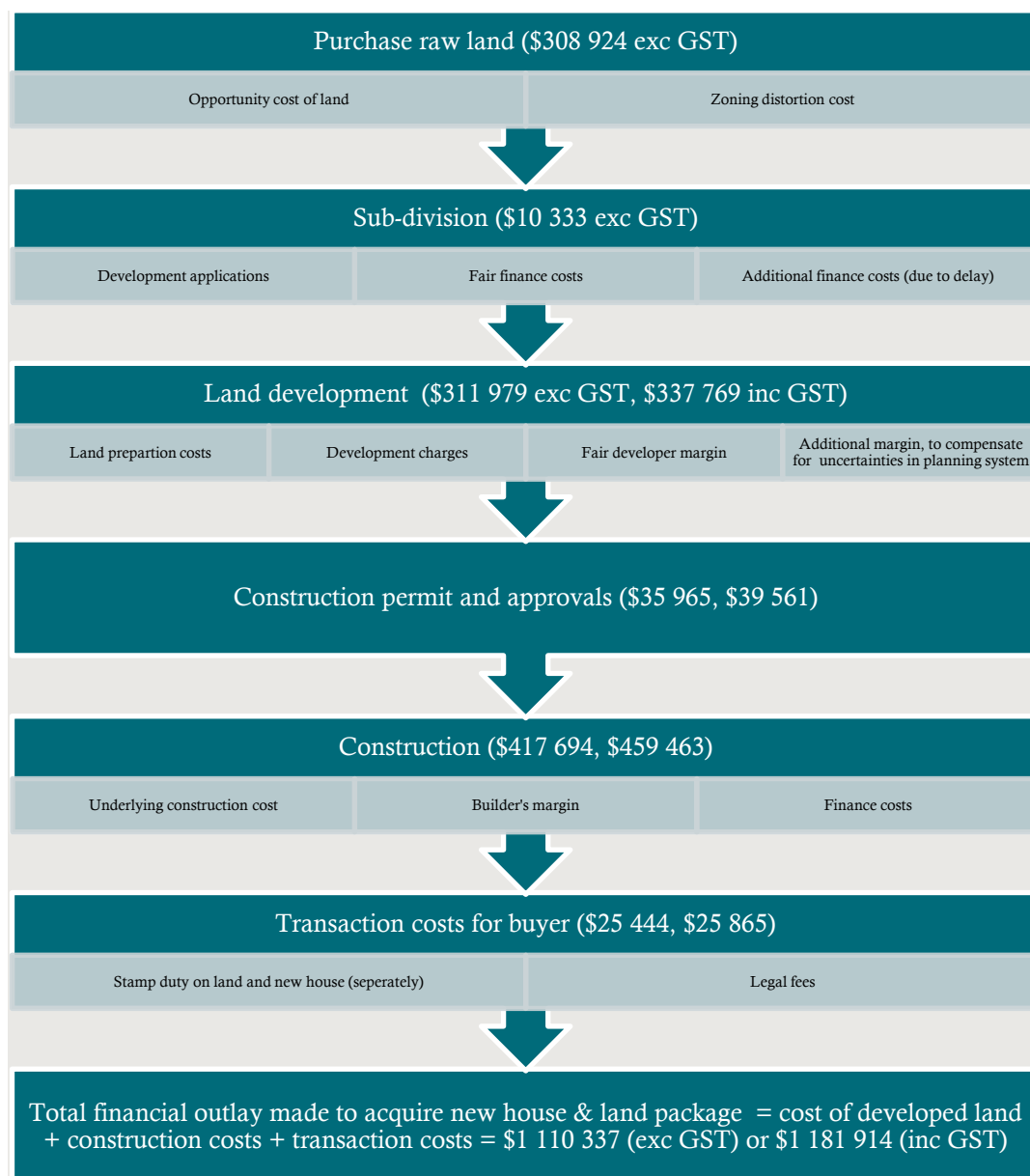
⁴ This is consistent with the typical timeline of greenfield development in Savills (2024) *Release the Pressure* report. Figure 15 in Savills (2024) shows land settlement occurring after 'design and planning', and figure 16 shows it occurring after Rezoning & DCP and DA preparation.

^c This is based on the average time from commencement to completion of house construction from ABS *Building Activity, Australia* for June 2024 (available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/latest-release#data-downloads>) minus the assumed time taken for land development (4 months).

Source: Consultations with HIA, The CIE

Figure 3.2 sets out these steps, and includes their cost, which match Table 4.3 (below).

3.2 The development process and its components



Note: Costs including GST are not 110 per cent of costs excluding GST because not all components are GST applicable, as explained in Appendix A.

Data source: The CIE

Process that results in the creation of a new apartment

In the process that results in the creation of a new apartment we do not assume a distinction between land development and construction. Rather we assume the developer purchases the raw land, seeks and obtains approval, develops the land and constructs the apartment block as a single project. At the end of this project, the buyer of the new apartment purchases a complete apartment. The result is an extra layer of costs: project management costs, which are incurred by the developer, and are added to the outlay made by the purchaser. The buyer of the new apartment pays stamp duty once, on the total price of the new apartment.

Assumptions for timing

It is necessary to make assumptions about the time taken in each step of the development process as these time periods drive the interest costs of the developer and builder (who use debt to finance costs), which are components that add to the total outlay made by the buyer of new house & land package and new apartment.

The first large holding costs associated with development arise upon land settlement, Hence, this is the period from which we start measuring holding costs and making timing assumptions in this report. This means the duration of the design and planning period does not affect costs in this report.

Within our calculations, the most important timing assumption we make is for the period of time for the granting of a development approval (the period of time between (1) the developer buying the raw land zoned for residential use and the submission of a development approval, and (2) the granting of this approval, which allows the developer to develop the land).

Public policy discussion implies that delays in the planning and approvals process can increase this period of time. Two examples of this discussion are as follows.

- 1 Garner, for the Planning Institute of Australia, notes: '*Not only do unnecessary delays in the development assessment process result in sometimes substantial delays in bringing land and housing to the market, but particularly in areas of high growth it can lead to higher development costs.*'⁵
- 2 The Productivity Commissions notes there are 'delays' in the process of land supply caused by: rezoning/planning scheme amendment, structure planning and dealing with community concerns.⁶

Of course, the vast majority of community members reasonably expect that new development is subject to some kind of administrative process, where developers are required to convince the relevant authorities that their particular development has merit

⁵ Garner G O 2008, *The Impact of Planning Delays & Other Holding Costs on Housing Affordability*, Refereed submission to PIA QLD State conference, pg. 15 (see: <https://www.planning.org.au/documents/item/1199>, accessed April 2019)

⁶ Productivity Commission 2011, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*, pg. XXX (i.e. page 30 of the summary).

and aligns with reasonable community expectations. This process (where developers have to seek and receive approval for their development) requires some non-zero period of time. Therefore, for this project, we split the period of time for the granting of a development approval into two parts:

- 1 An initial period of time that the relevant authority requires to subject the development application to a level of scrutiny that is necessary, and which is consistent with reasonable community expectations. In Table 3.3 (below), we call this the ‘necessary’ component of the time taken for the development approval. Because this time period is necessary, the interest cost that accrues to the developer during this period is a resource cost.
- 2 An additional period of time that the relevant authority takes to grant the development approval, which is unnecessary, and which is additional to the period of time that is required to meet reasonable community expectations. We call this component of the time taken for the development approval an ‘unreasonable delay’. Because this time period is not a necessary part of the development process, and because it created by government policies and decisions (in this case the ‘decision’ is to unreasonably delay the development approval) the interest cost that accrues during this period is a regulatory cost.

There is no widely accepted data on the time period it takes to approve largescale Greenfield and infill development, nor on the component of this that reflects an unreasonable delay. Therefore, it is necessary for us to make a judgement. For this judgement, we undertook consultations and arrived at the data in Table 3.3 for greenfield and table 3.4 for infill. Note, given the goal of this project is to pull together all available data and estimates on different parts of the development process, and present them in a coherent framework, the goal for individual timing assumptions is not to make a ‘perfect’ assumption. Rather, it is merely to make a plausible or reasonable assumption that is not inconsistent with the available public policy discussion.

3.3 Greenfield development: time taken for each step

Phase		Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
		Months	Months	Months	Months	Months	Months	Months
DA for subdivision	Necessary	8	8	8	8	8	8	8
	Delay	7	4	4	4	4	4	4
Land dev.	Necessary	4	4	4	4	4	4	4
House construction ^a	Necessary	6.2	5.4	4.2	11.6	8.1	5.8	7.9
Total time		25.2	21.4	20.2	27.6	24.1	21.8	23.9

^a This is based on the average time from commencement to completion of house construction from ABS *Building Activity, Australia* for June 2024 (available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/latest-release#data-downloads>) minus the assumed time taken for land development (4 months).

Source: CIE consultations

3.4 Infill development: time taken for each step

Phase		Sydney	Melbourne	Brisbane	All other cities
		Months	Months	Months	Months
DA for building	Necessary	7	7	7	7
	Unreasonable Delay	9	5	5	5
Land development	Necessary	4	4	4	4
Apartment construction ^a	Necessary	27.8	22.9	17.9	23.8
Total time		47.8	38.9	33.9	39.8

^a This is based on the average time from commencement to completion of apartment construction from ABS *Building Activity, Australia* for June 2024 (available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/latest-release#data-downloads>) minus the assumed time taken for land development (4 months). Note that data from ABS is only available for NSW, Victoria and Queensland, and for other cities we have used the average across these states.

Source: CIE consultations

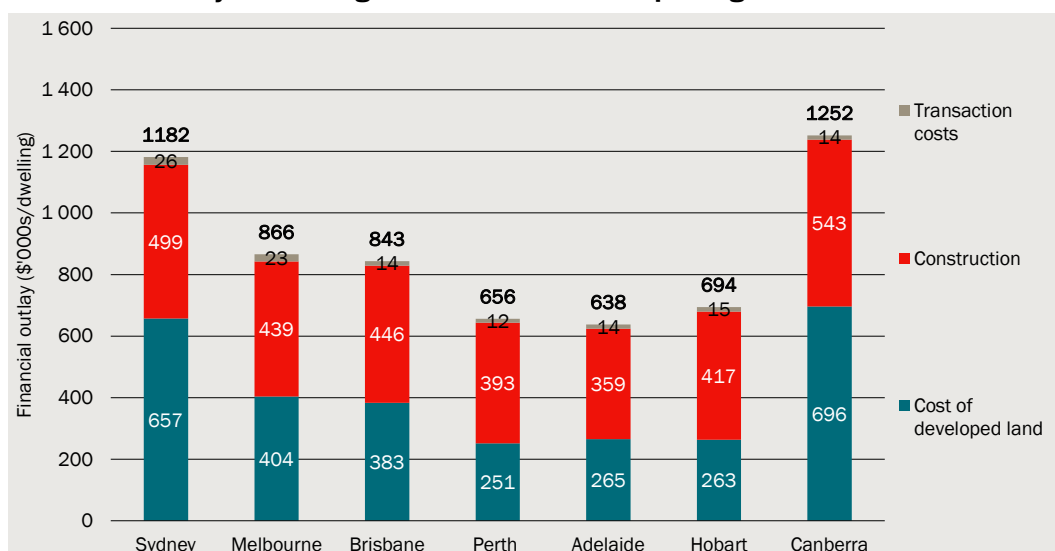
More details are provided Appendices A and B.

4 Detailed results for financial analysis

New house & land package in a Greenfield estate

In 2023-24, we estimate the representative outlay made by a homebuyer to acquire a new house & land package in a Greenfield estate is around: \$1.2 million in Sydney and Canberra, \$850 000 in Melbourne and Brisbane, and \$650 000 in other Australian cities. This is the sum of the cost of developed land, construction costs and transaction costs (see Chart 4.1). Detailed data is provided in Table 4.3 and Appendix A.

4.1 Total outlay for a new greenfield house & land package



Data source: The CIE

4.2 Components of outlay for a new greenfield house & land package

Category	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house
Cost of developed land	657 025	403 850	383 350	251 125	265 475	262 715	695 975
Construction	499 024	439 019	445 617	392 582	358 872	416 643	542 858
Transaction costs	25 865	22 717	14 099	12 358	13 700	14 955	13 532
Total	1 181 914	865 585	843 066	656 065	638 047	694 313	1 252 365

Source: The CIE

4.3 Detailed estimates of costs for a new greenfield house and land package

Component	Cost Class	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
		\$/house	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house
Raw land purchase								
Opportunity cost of raw land	Resources	65 323	33 271	37 666	21 978	26 394	19 780	78 454
Residual in raw land price	Reg. cost	227 657	129 777	104 103	45 067	49 503	73 142	303 943
Stamp duty on land purchase	Stat. tax	15 944	10 398	7 957	3 364	4 113	4 133	17 361
Sub-division								
DA: sub-division	Resources	90	16	278	47	1	0	0
Consultant fees	Resources	8 272	6 411	6 893	6 996	6 411	6 996	6 996
Council rates during development	Stat. tax	162	141	155	111	79	189	644
Land tax during development	Stat. tax	1 809	1 281	1 008	335	493	446	1 599
Land development								
Development charges	Inf. charge	64 330	27 007	41 554	25 541	26 328	6 302	10 084
NBN costs	Resources	1 400	1 400	1 400	1 400	1 400	1 400	1 400
Land preparation costs	Resources	74 848	78 578	73 803	75 186	74 385	75 360	75 360
Water charge during development	Resources	2 177	2 292	2 110	1 001	2 292	324	3 438
Developer Sales cost	Resources	9 615	5 910	5 610	3 675	3 885	3 845	10 185
Developer Marketing costs	Resources	6 410	3 940	3 740	2 450	2 590	2 563	6 790
Finance charge: land holding	Resources	21 884	12 471	10 932	5 497	6 110	7 260	27 844
Finance charge: land holding	Reg. cost	20 365	6 550	5 741	2 887	3 209	3 813	14 623
Finance charge: development	Resources	4 835	3 699	4 010	3 460	3 507	2 807	3 091
Developer's margin (necessary)	Resources	77 433	48 599	46 242	30 100	31 848	31 392	84 005
Developer's margin (uncertainty)	Reg. cost	28 681	13 569	12 814	8 172	8 677	8 682	24 110

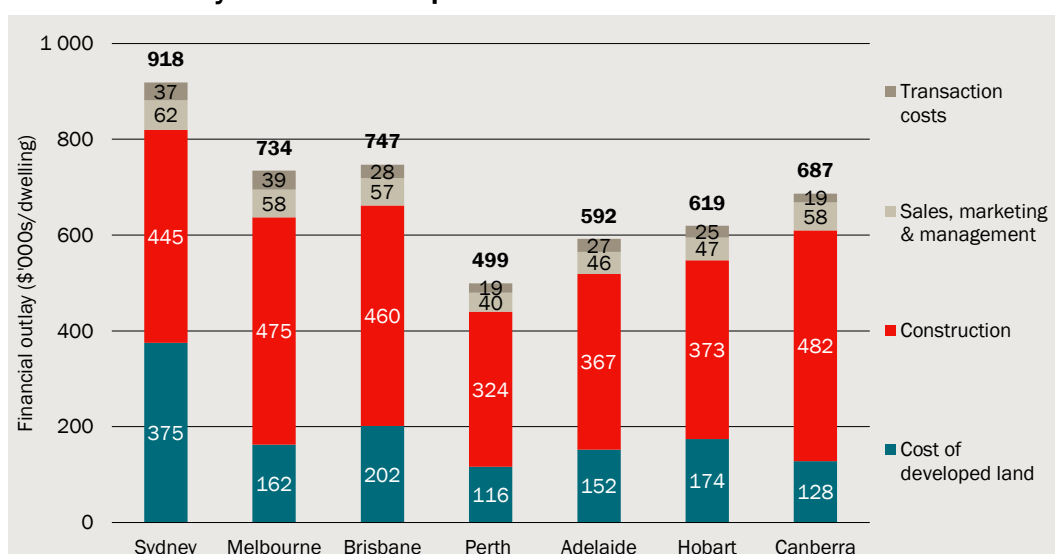
Component	Cost Class	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
		\$/house	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house
Total cost of developed land (ex GST)	Sub-total	631 235	385 310	366 016	237 269	251 223	248 435	669 928
Construction								
Approvals, reports, and insurances	Resources	39 561	17 450	44 938	14 134	21 174	17 466	37 614
Underlying construction cost	Resources	364 536	336 968	318 130	298 813	267 706	318 723	400 045
Builder sales & marketing	Resources	11 065	9 734	9 881	8 705	7 957	9 238	12 037
Builder's finance cost	Resources	7 967	6 734	5 515	10 216	6 989	6 646	10 309
Builder's margin	Resources	30 530	28 221	26 643	25 026	22 420	26 693	33 504
Total construction costs (ex GST)	Sub-total	453 658	399 108	405 107	356 893	326 247	378 766	493 507
GST								
GST in dev. land (necessary)	Stat. tax	20 885	16 529	15 479	12 750	13 064	13 031	22 174
GST in dev. land (necessary)	Stat. tax	4 905	2 012	1 856	1 106	1 189	1 249	3 873
GST in dev. land (delays & uncert.)	Reg. cost	44 259	38 937	39 523	34 819	31 829	36 953	48 147
GST in construction cost (necessary)	Stat. tax	1 106	973	988	870	796	924	1 204
GST in transfer price (necessary)	Sub-total	65 145	55 466	55 001	47 569	44 893	49 984	70 321
GST in transfer price (delays & u.)	Sub-total	6 011	2 985	2 844	1 976	1 984	2 173	5 077
Final transfer price								
Total cost (inc. GST) ^a	Sub-total	1 156 049	842 869	828 967	643 707	624 347	679 358	1 238 833
Stamp duty (necessary)	Stat. tax	19 806	19 773	11 360	9 780	11 062	11 919	9 190
Stamp duty (delays & uncert.)	Reg. cost	1 426	628	422	262	322	256	1 562
Professional fee for transaction	Resources	4 212	2 106	2 106	2 106	2 106	2 527	2 527
GST in professional fee	Stat. tax	421	211	211	211	211	253	253
Total outlay	Grand total	1 181 914	865 585	843 066	656 065	638 047	694 313	1 252 365

^a Total cost including GST is equivalent to the total transfer or advertised price of the package. Note: components labelled as 'resources' include income taxes. We remove income taxes and add them to statutory taxes, see Appendix C. Source: The CIE

New apartment in an Infill development

In 2023-24, we estimate the representative outlay made by a purchaser to acquire a new apartment: over \$900 000 in Sydney, around \$740 000 in Melbourne and Brisbane, and as low as \$500 000 in Perth. This is the sum of the cost of developed land, construction costs, sales & marketing costs and transaction costs (see Chart 4.4). Detailed data is provided in Appendix B.

4.4 Total outlay for a new infill apartment



Note: Results for Canberra do not include the Lease Variation Charge.

Data source: The CIE.

4.5 Components of total outlay for a new infill apartment

Category	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Cost of developed land	374 972	162 387	201 615	116 386	152 088	174 043	128 260
Construction	445 028	474 613	460 385	323 614	366 912	373 457	481 740
Sales, marketing, mgt.	61 503	58 161	57 307	39 874	45 798	47 178	58 041
Transaction costs	36 916	39 293	27 907	19 322	27 407	24 785	18 727
Total	918 419	734 454	747 214	499 197	592 206	619 463	686 768

Note: Results for Canberra do not include the Lease Variation Charge.

Source: The CIE

4.6 Detailed estimates of costs for a new infill apartment

Component	Cost Class	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
		\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Raw land purchase								
Opportunity cost of raw land	Resources	110 536	51 219	53 402	34 998	52 105	110 536	51 219
Residual in raw land price	Reg. cost	73 944	0	4 072	0	1 544	73 944	0
Stamp duty on land purchase	Stat. tax	9 808	2 929	2 915	1 625	2 827	9 808	2 929
Sub-division								
DA: construction	Resources	31	25	252	143	15	31	25
Consultant fees	Resources	36 631	24 521	23 597	25 000	27 437	36 631	24 521
Council rates during development	Stat. tax	102	44	63	58	56	102	44
Land tax during development	Stat. tax	941	163	239	54	200	941	163
Land development								
Development charges	Inf. charge	23 243	28 673	57 106	12 091	17 552	23 243	28 673
NBN costs	Resources	1 200	1 200	1 200	1 200	1 200	1 200	1 200
Land preparation costs	Resources	7 759	7 759	7 759	7 759	7 759	7 759	7 759
Water charge during development	Resources	324	3 438	481	1 907	656	324	3 438
Finance charge: land holding	Resources	13 672	4 659	4 987	3 656	4 969	13 672	4 659
Finance charge: land holding	Reg. cost	18 774	3 495	3 742	2 744	3 728	18 774	3 495
Finance charge: development	Resources	1 122	1 379	2 233	771	916	1 122	1 379
Developer's margin (necessary)	Resources	44 253	19 964	25 082	14 142	18 574	44 253	19 964
Developer's margin (uncertainty)	Reg. cost	17 428	5 419	6 572	3 940	5 197	17 428	5 419
Total cost of developed land (ex GST)	Sub-total	359 767	154 887	193 703	110 086	144 734	359 767	154 887
Construction								
Underlying construction cost	Resources	349 227	376 651	369 366	256 284	290 573	349 227	376 651
Builder's finance cost	Resources	26 096	23 271	18 231	16 447	18 648	26 096	23 271

Component	Cost Class	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
		\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Builder's margin	Resources	29 248	31 545	30 934	21 464	24 336	29 248	31 545
Total construction costs (ex GST)	Sub-total	404 571	431 467	418 532	294 195	333 557	404 571	431 467
Management and marketing costs								
Project management costs	Resources	12 137	12 944	12 556	8 826	10 007	12 137	12 944
Developer's margin on management	Resources	20 835	22 221	21 554	15 151	17 178	20 835	22 221
Sales agent costs	Resources	12 300	9 555	9 930	6 600	7 785	12 300	9 555
Marketing costs	Resources	8 200	6 370	6 620	4 400	5 190	8 200	6 370
Developer's finance cost during marketing	Resources	2 439	1 784	1 437	1 272	1 475	2 439	1 784
Total marketing costs	Sub-total	55 911	52 873	52 097	36 249	41 635	55 911	52 873
GST								
Total cost (ex GST)	Sub-total	820 250	639 227	664 332	440 530	519 926	820 250	639 227
GST in dev. land cost (necessary)	Stat. tax	11 584	6 608	6 881	5 631	6 461	11 584	6 608
GST in dev. land cost (delays & uncert.)	Reg cost	3 620	891	1 031	668	892	3 620	891
GST in construction cost (necessary)	Stat. tax	40 457	43 147	41 853	29 419	33 356	40 457	43 147
GST in marketing costs	Stat. tax	5 591	5 287	5 210	3 625	4 163	5 591	5 287
GST in transfer price (necessary)	Sub-total	57 632	55 042	53 944	38 676	43 980	57 632	55 042
GST in transfer price (delays & uncert.)	Sub-total	3 620	891	1 031	668	892	3 620	891
Final transfer price								
Total cost (incl GST) ^a	Sub-total	881 503	695 161	719 307	479 874	564 798	881 503	695 161
Stamp duty on transfer	Stat. tax	32 611	36 191	24 883	16 460	24 354	32 611	36 191
Stamp duty on transfer (delays & uncert.)	Reg cost	1 792	588	511	349	540	1 792	588
Professional fee for transaction	Resources	2 285	2 285	2 285	2 285	2 285	2 285	2 285
GST in professional fee	Stat. tax	228	228	228	228	228	228	228
Total outlay	Grand-total	918 419	734 454	747 214	499 197	592 206	918 419	734 454

^a Total cost including GST is equivalent to the total transfer or advertised price of the new house & land package. Note: components labelled as 'resources' include income taxes. We remove income taxes and add them to statutory taxes, see Appendix C Source: The CIE.

5 *Cross-check of result for new house & land package*

We compare our estimates for the transfer price for a new house & land package (the total outlay less transaction costs) with advertised prices, to ensure they are reasonable and calibrate our assumptions if needed.

New house and land package in Greenfield estate

Data about advertising prices

We have collated data about the advertised price of new house and land packages in each state from listings on realestate.com.au, which has a section with ‘house and land’ packages only for each state.⁷ Listings can be filtered by state, suburb (by not capital city except for Hobart), and the number of bedrooms, bathrooms and car spaces. Listings can also be sorted by recency, but not filtered by listing data. Sold listings for house and land packages are not separately identifiable.⁸

Listings could not be exported, and so were extracted through a semi-manual process. Hence, the number of listings extracted was limited for practical reasons to 200 except in Tasmania and ACT. Of these 200 listings, a small number for each state did not have an advertised price, and so were not included. For Tasmania, we were able to filter for only listings from Hobart, for which there were 94 listings with prices. For ACT, only 11 listings were available.

For each listing, land area was also extracted if available.

The collated data is summarised in table 4.1, and the distribution of sale prices is shown in chart 4.2. NSW and Queensland have relatively wide ranges of prices, while other cities are more concentrated around the median.

Our objective in this report is to estimate, among other things, the transfer price of a *representative* greenfield house in each capital city. The data collated for prices of greenfield house and land packages below may be unrepresentative of this for the following reasons:

- Listings could not be filtered to include only dwellings in each capital city, and will include regional areas with new house and land packages (such as in the Hunter Region of NSW). Prices in these areas are lower than in Sydney greenfield areas, and

⁷ See <https://www.realestate.com.au/house-and-land-packages/>

⁸ Sold listings can be filtered by property type, which doesn’t include ‘house and land’. The property types available include house, townhouse, apartment and unit, villa, retirement living, land, acreage, rural, and block of units.

so the advertised price of house and land packages will be a downwardly biased estimate for states with significant greenfield development in non-capital city areas. A high-level check of addresses for Sydney listings we included indicates around one third relate to non-Sydney regions in NSW.

- We rely on listed prices only, since sold prices are not available.
 - Where a listing states ‘offers above \$1 million’, for example, we use \$1 million as the estimated sale price, which will lead to listing prices likely being lower than final sale prices.
 - On the other hand, listing prices may represent a starting point for negotiation between buyers and sellers, and buyers may on average negotiate lower prices. This will tend to make listing prices an overestimate of sale price.
- We extracted listings data in January 2025. Listings were sorted by recency rather than price or suburb because this sorting is most likely to yield a relatively random sample of listings if the first 200 results are selected. However, there may be seasonality in the types of properties (and average listing prices) affecting this sample.

For these reasons, the results of this cross-check should be used as an approximate indicator of prices rather than precise data points.

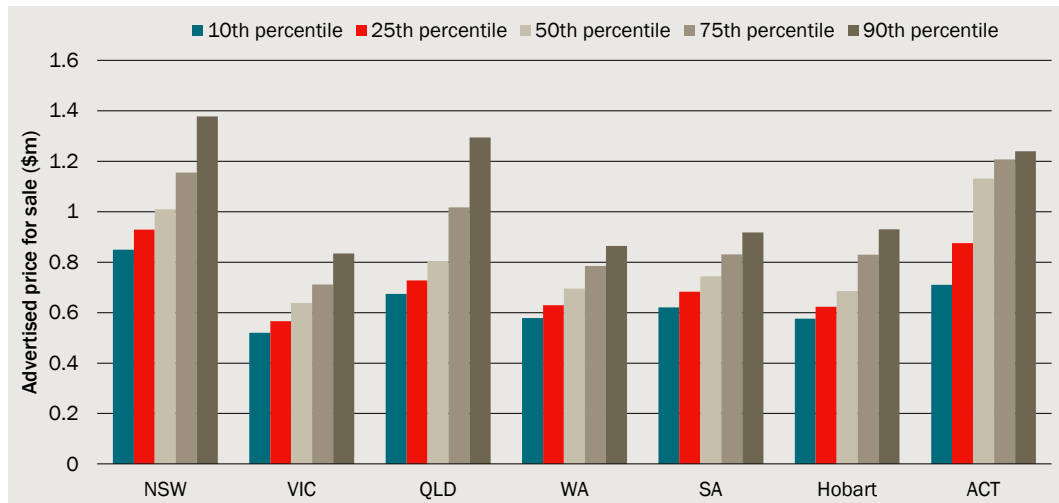
Data about land size appeared relatively low quality, given the unusual concentration of land area at 422 metres squared. Some listings have been populated with generic information not specific to the property. We only use this data to estimate the average size of greenfield blocks in Hobart, for which there is not an alternative data source.

5.1 Greenfield house and land packages data from realestate.com.au

	Units	NSW	VIC	QLD	WA	SA	Hobart	ACT
Observations	No.	190	194	187	200	199	94	11
Sale price								
Median	\$000s	1 010	638	805	695	744	685	1 131
Mean	\$000s	1 061	659	921	720	763	735	1 047
Land area								
Median	m2	422	422	422	422	422	323	422
Mean	m2	442	375	398	319	387	350	306

Source: Collated by CIE from realestate.com.au.

5.2 Distribution of house and land sale prices by state/city



Source: Collated by CIE from realestate.com.au.

Comparing advertised prices to our model calculations

We compare advertised prices from realestate.com.au to our modelled estimates of final transfer prices, and use this to decide between alternative sources for estimates of construction costs.

Construction costs are a key input to our modelled estimate of final transfer prices. Three sources of data are available (see Appendix A for further detail):

- Rawlinson's Construction Cost Guide,
- Riders Digest 2024 published by Rider Levitt Bucknall, and
- ABS *Building Activity, Australia* estimates of construction costs.

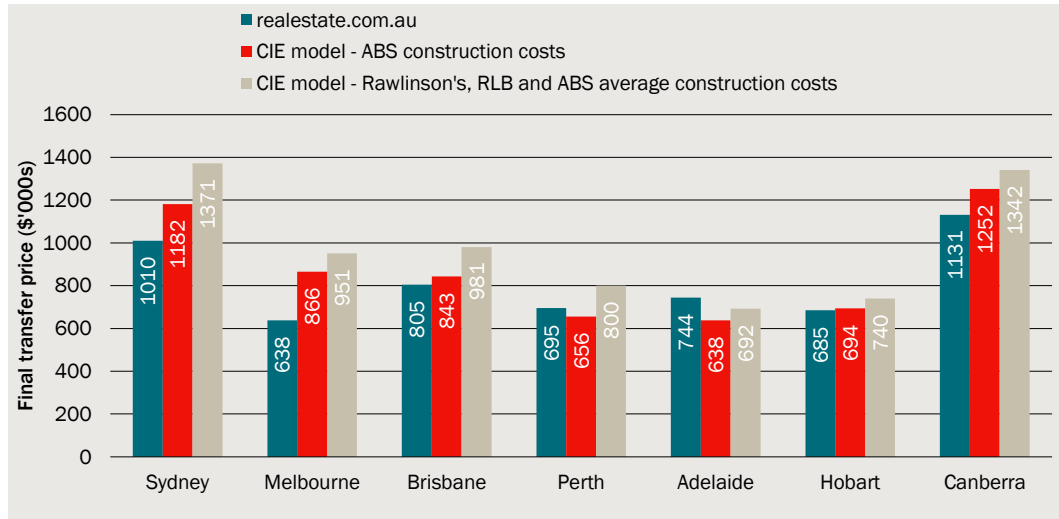
We also calculate a 'CIE average' series, which is the average across the data series available for each city (Hobart only has data from Rawlinson's).

Chart 4.3 compares the median listing price from realestate.com.au to two estimates of transfer prices from our model, which use ABS data only and the CIE average series respectively.

Estimates of construction costs from these sources are relatively different, which may be associated with significant cost escalation in recent years, or differences in the costing approach taken by each. Rawlinson's and Rider Levitt Bucknall provide estimated unit costs for hypothetical dwellings with specified finishes, while ABS provides actual data about average cost of recently constructed dwellings. The ABS estimate is lower than the other sources, with quite a significant gap in Sydney and Brisbane in particular.

There is a closer match between advertised and modelled prices if we use ABS construction costs rather than the average across the three sources. Adelaide is an exception, with our modelled estimates being below advertised prices regardless of the choice of inputs.

5.3 Comparison of advertised and modelled prices for greenfield houses



Source: CIE.

Based on this cross-check, we choose to use the ABS construction cost data as the only source for estimated construction costs, except for Hobart for which data is only available from Rawlinson's.

New apartment in Infill development

As our starting point for a new apartment is an estimate of the average transfer price in 2023 (from UDIA 2024 data), it is not necessary to perform a cross-check on the apartment calculations.

6 *Economic interpretation of financial results*

Chapter 4 presents our bottom-up estimate for the total outlay required to obtain a new house & land package and a new apartment. Here we go through each component and identify the resource costs, regulatory costs, statutory taxes and infrastructure charges and report the key results. Appendices A and B provide more details on how each component is treated.

New house & land package in a Greenfield estate

The total outlay new homebuyers make to acquire a new house & land package in Greenfield estate in 2023-24 was estimated in Chapter 4.

Across the 7 cities, the share of the outlay that reflects statutory taxes is broadly similar (chart 6.1). A substantial share of these statutory taxes is income tax levied on variable resources and GST. These taxes are collected by the Federal Government, via systems/rates that do not vary across states. (Further, GST is not collected on raw land sales, which means higher raw land prices in Sydney do not impact GST collections). Some state-based taxes such as land tax do not vary substantially in their effective rates across states. This explains why statutory taxes, when measured as a share of the total outlay, do not vary greatly across cities.

Across the 7 cities, there is substantial variation in share of the outlay that reflects regulatory costs, with the highest shares being in Sydney and Canberra and the lowest in Hobart.

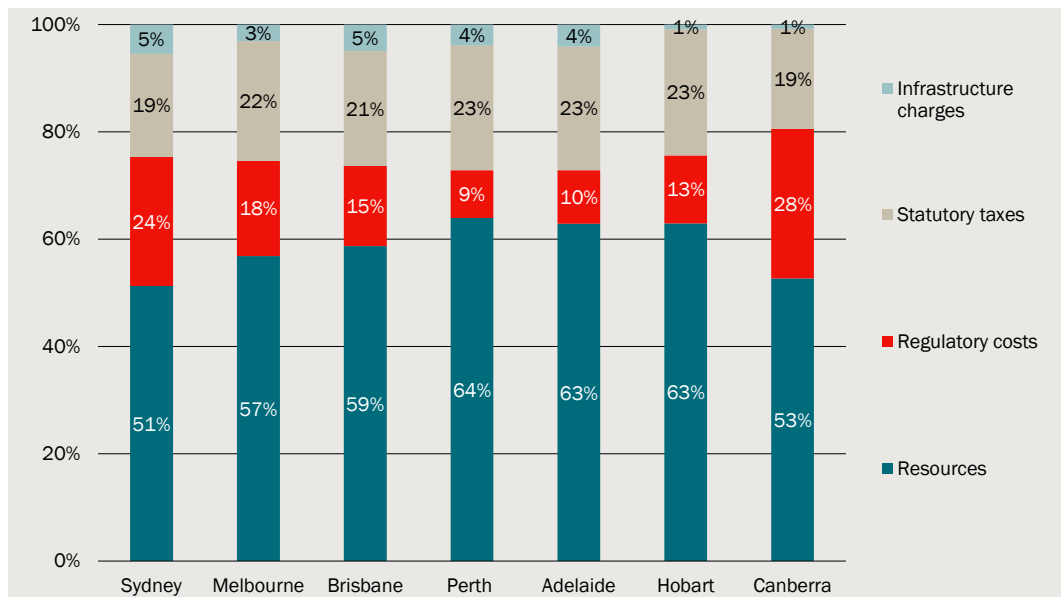
Within regulatory costs, the largest cost is the regulatory cost on land (the fixed resource), created by the system of zoning and associated development and land use controls. Chapter 6 presents detailed discussion on the calculation and interpretation of this component. As set out there, we find this regulatory cost is driven by the system of zoning and associated land use and development controls. Importantly:

- This regulatory cost is a function of both the system of zoning and associated land use and development controls and changes in demand. It does not imply that (for example) the system of zoning and associated land use and development controls in Perth is superior to the system in Sydney. The result implies that Perth's system has been more responsive to the changes in demand that Perth has experienced, and Sydney's system has been less responsive to the changes in demand that Sydney has experienced.
- As set out in Chapter 1, this paper does not provide a cost-benefit analysis on any individual policy, including the system of zoning and associated land use and development controls. Our results provide an estimate of the extra costs new

homebuyers face because of this system. These costs should be carefully compared to any benefits the system creates.

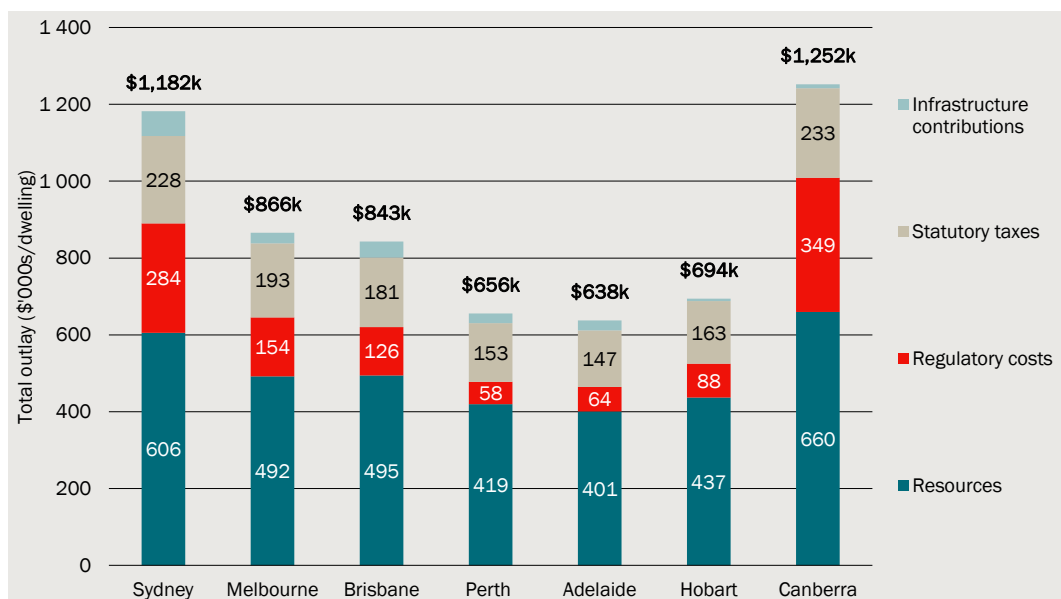
Across the 5 cities, there is some variation in the share of the outlay that reflects resource costs. It is lowest in Sydney (54 per cent) and highest in Perth (69 per cent). Mostly, this reflects variation in the other components (high regulatory costs in Sydney reduce resource costs as a share of the total outlay). There is also some variation in underlying resource costs, which is detailed in Appendix A.

6.1 Shares of total outlay for a new greenfield house & land package



Data source: The CIE

6.2 Total outlay for a new greenfield house & land package



Data source: The CIE

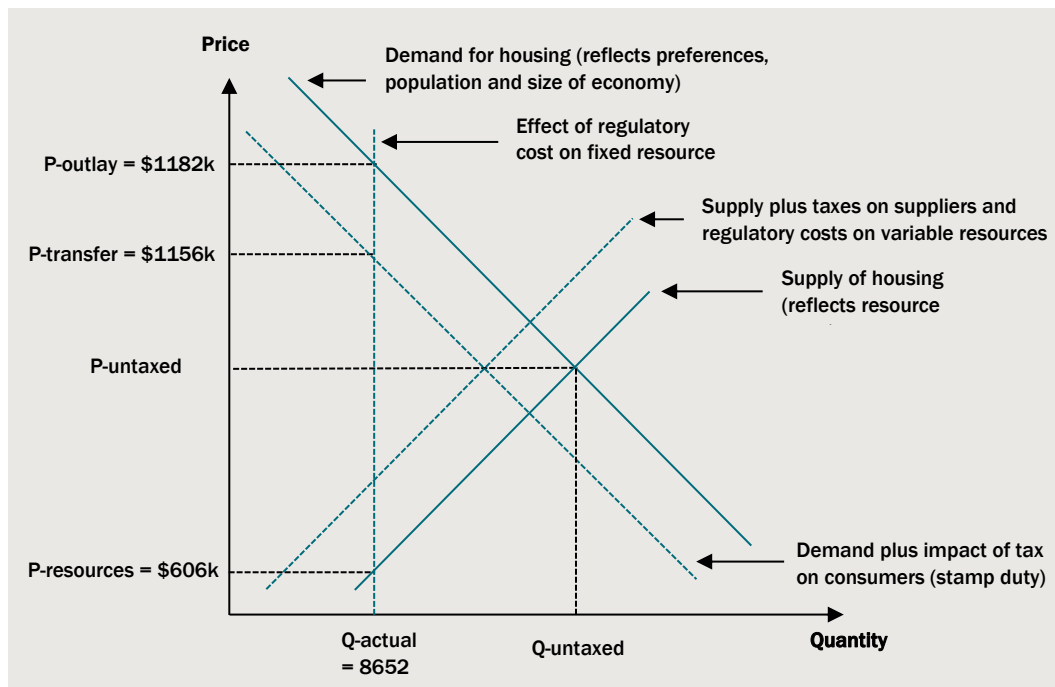
6.3 Components of total outlay for a new greenfield house & land package

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house	\$/house
Land (fixed resources)	65 323	33 271	37 666	21 978	26 394	19 780	78 454
Variable resources	540 463	458 921	457 052	397 368	374 581	417 227	581 359
Reg cost of fixed res.	227 657	129 777	104 103	45 067	49 503	73 142	303 943
Reg cost on variable res.	56 483	23 732	21 821	13 297	14 192	14 924	45 373
Statutory taxes	227 659	192 877	180 869	152 812	147 048	162 937	233 151
Infrastructure charges	64 330	27 007	41 554	25 541	26 328	6 302	10 084
Total outlay	1 181 914	865 585	843 065	656 065	638 047	694 311	1 252 362

Source: The CIE

If our specified demand and supply framework (see Chapter 1), in Sydney, in 2023–24, we find estimate P-outlay is around \$1 182 000 (the outlay the buyer makes to acquire a representative new house & land package), P-transfer is around \$1 156 000 (the advertised price of the package), P-resources is around \$606 000 (the cost of the resources used to create the package). In 2023, UDIA (2024) data suggest there were around 8 652 developed blocks sold.⁹ This gives us an approximate for Q-actual (it is approximate as we are estimating completed packages, not simply developed lots).

6.4 Market for new house & land packages (Sydney)



Data source: CIE.

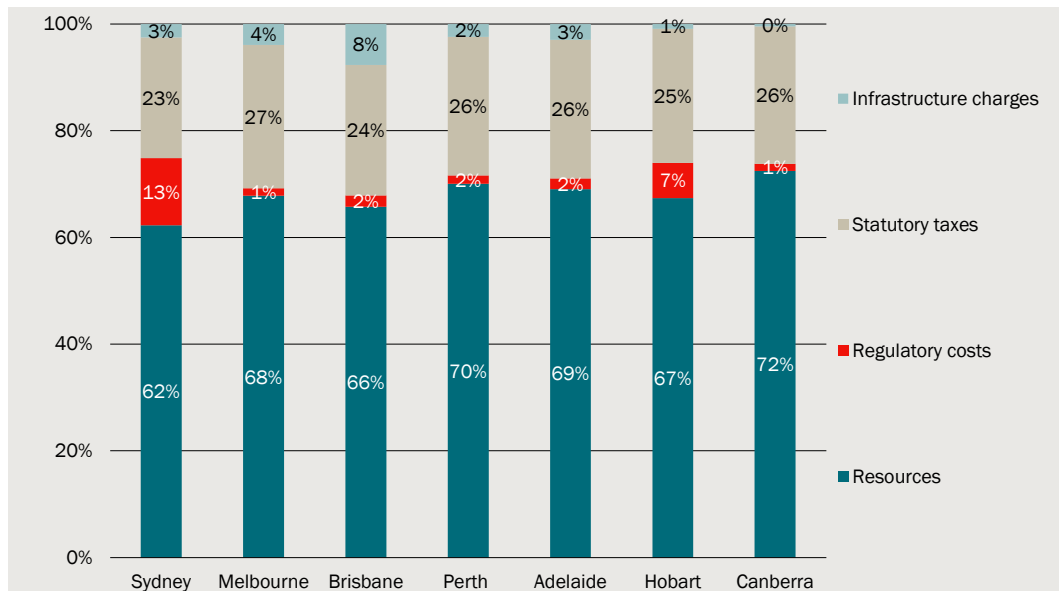
⁹ UDIA, 2024, *UDIA State of the Land 2024*, p.6, available at: https://udia.com.au/wp-content/uploads/2024/03/UDIA-State-of-the-Land-Report-2024_.pdf

New apartments in infill development

In each of the 5 cities, resource costs make up a larger share of the total outlay that homebuyers make to obtain a new apartment, compared to new house & land packages. This reflects lower estimated shares for regulatory costs, which is mostly driven by lower regulatory costs on the land used for new infill developments (compared to the land used for Greenfield developments). This implies that in cities, the systems of zoning and associated land use and development controls have been more responsive to changes in demand for apartments than they have been for changes in demand for house & land packages.

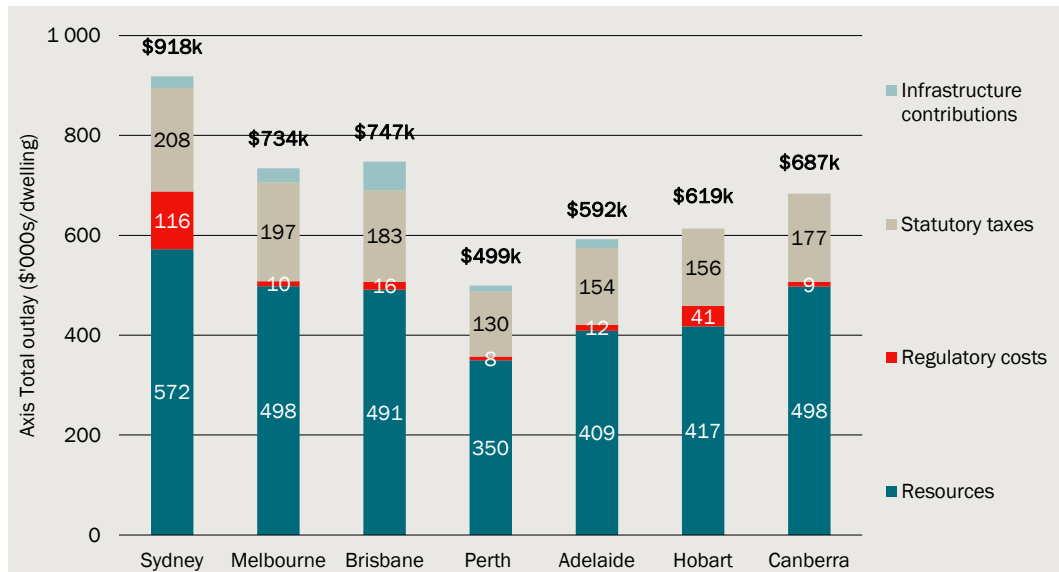
Sydney still has the lowest share for resource costs, reflecting its highest share for regulatory costs.

6.5 Shares of total outlay for a new infill apartment



Data source: The CIE

6.6 Total outlay for a new infill apartment



Note: Results for Canberra do not include the Lease Variation Charge.

Data source: The CIE

6.7 Components of total outlay for a new infill apartment

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Fixed resources	110 536	51 219	53 402	34 998	52 105	50 939	49 326
Variable resources	461 547	446 760	437 766	314 852	356 877	366 387	448 244
Reg cost of fixed res.	73 944	0	4 072	0	1 544	28 317	0
Reg cost on variable res.	41 614	10 395	11 855	7 701	10 357	12 616	9 152
Statutory	207 533	197 407	183 012	129 554	153 771	155 530	176 892
Infrastructure charges	23 243	28 673	57 106	12 091	17 552	5 672	3 151
Total outlay	918 418	734 453	747 213	499 196	592 205	619 462	686 765

Note: Results for Canberra do not include the Lease Variation Charge.

Source: The CIE

7 *Who pays the tax*

Who pays any given tax on housing (that is, the incidence of the tax or who really bears the tax) depends on the characteristics of demand and supply for new and existing homes. If demand is relatively tighter (less elastic) than supply, consumers are likely to pay the majority of the tax. If the opposite is true, producers and land holders are likely to pay a higher proportion of the tax. This is explained in more technical terms in appendix D.

Characteristics of demand and supply

At a theoretical level, it is widely held that in the housing market demand is relatively less elastic while supply is more elastic. While this may not be the practical case in the short run, in the longer term this is due to the fact that shelter is a necessity of life. In other words, there is a relatively rigid demand for housing in the longer term. On the other hand, the supply of housing is more flexible, especially in the long run. Construction workers, materials and machinery could be used to build residential dwellings instead of other types of infrastructure. Existing large blocks of land can be subdivided, or larger number of stories can be built (requiring less land for given dwelling space). Moreover, agricultural and other land could be turned into residential blocks fairly easily, especially in Australia, in the absence of artificial barriers.

The supply of land is likely to be considered less flexible than the supply of materials, workers, capital and machinery. Nonetheless, the raw cost of land is a small proportion of the overall cost of a house at around. This diminishes the effect of land on the overall flexibility of supply as is further explained in Appendix D.

Table 7.1 summarises the derived demand and supply elasticities for two sectors – the construction of new dwellings which we have named ‘Construction’ and existing dwellings which we have named ‘Dwellings’. The elasticities are derived from various simulations with the CIE-REGIONS model and vary depending on the scenario simulated.

7.1 Derived demand and supply elasticities for housing

	Demand	Supply
Construction of dwellings	-0.26~-0.61	6.37~8.77
Ownership of dwellings	-0.59~-1.15	1.43~2.50

Source: CIE-REGIONS model simulations

Two observations may be made from table 7.1. First, the supply elasticities are higher than the demand elasticities for goods and services in both the construction and dwelling

sectors. This confirms the discussion presented earlier and implies that consumers and users bear more of the taxes which fall on the construction and/or dwelling sectors.

Second, the supply elasticities of construction are consistently higher than those of dwellings. This is simply because the construction sector produces new housing while the dwelling sector is related to the whole stock of housing, new and established. It is relatively easier to increase the building of new houses, but more difficult to increase whole housing stock at the same rate.

Measuring the benefit of tax cuts to industry and households

Several simulations were carried out using the CIE-REGIONS model to quantify the effects of various tax cuts:

- Simulation A: reducing state payroll tax on the construction sector by \$500 million;
- Simulation B: reducing stamp duties and other taxes on capital in the construction sector by \$500 million; and
- Simulation C: reducing stamp duties and other taxes on capital in the dwellings sector by \$500.

The impacts of these tax cuts on sector price and production are reported in table 7.2. They are presented in the form of percentage changes relative to pre-tax cut levels.¹⁰

7.2 Changes in price and quantity of construction and dwelling of tax cut by \$500 million

	Change in construction			Change in dwellings		
	Consumer price	Producer price	Quantity	Consumer price	Producer price	Quantity
	%	%	%	%	%	%
Tax cut in construction sector						
A: state payroll tax	-0.15	0.01~0.01	0.06	-0.10	0.01~0.02	0.03
B: Stamp duty/other capital tax	-0.12	0.01~0.01	0.05	-0.10	0.02~0.04	0.06
Tax cut in dwellings sector						
C: Stamp duty/other capital tax	-0.03~-0.05	~0.01	0.03	-0.12	0.03~0.05	0.07

Source: CIE-REGIONS model simulations

Both consumers (buyers) and producers (sellers) benefit from the tax cuts which reduce the deadweight loss. How they share that benefit is set out in table 7.3 and further explained in Appendix D.

¹⁰ A higher percentage change in dwellings quantity than in construction quantity does not necessarily mean higher output in absolute terms because in the model database, total output of construction is higher than the output of dwellings which is the annual value of services provided by the housing stock. For example, in Simulation B, construction supply increases by 0.12 per cent, which is equivalent to about \$355 million in absolute term, while the 0.14 per cent increase in dwellings supply is equivalent to \$274 million.

7.3 Benefits to consumers and producers of a \$500 million tax cut

	Construction		Dwellings		Overall in housing	
	Gain to consumers	Gain to producers	Gain to consumers	Gain to producers	Gain to consumers	Gain to producers
	\$m	\$m	\$m	\$m	\$m	\$m
A	645	28~38	318	70~123	963	28~38
B	538	26~36	311	66~116	849	26~36
C	120~210	17~23	366	42~73	486~576	17~23

Source: CIE estimates based on CIE-REGIONS model simulations

Cutting payroll tax by \$500 million in the construction sector (as modelled in Simulation A) leads to a reduction in product cost. It shifts the supply curve further out, leading to lower prices being paid by house buyers and higher after-tax prices received by the producers. As discussed above and further explained with more detail in Appendix D, because demand is less elastic than supply, the fall in consumer price of 0.15 per cent is much larger than the rise in producer price at 0.01 per cent. The lower consumer price boosts the demand for new housing, and at the same time the higher producer price provides incentive for producers to supply more to meet the higher demand of 0.06 per cent.

With greater reductions in consumer price, the buyers enjoy most of the gain from the tax cut, amounting to \$645 million measured by the additional consumer surplus (see table 7.3). Because the producer price rises only marginally, the sellers gain between \$28 million and \$38 million, measured by the additional producer surplus.

When the lower price of construction products (that is new housing and renovations) feeds into the dwellings sector, the price of services provided by new and existing houses falls by 0.10 per cent accordingly. Lower prices in turn increase demand by 0.1 to 0.2 per cent. Because the taxes are multiplicative of production costs, lower input prices lead to a lower tax impost on the suppliers of the dwelling services. As a result, the producer price rises by 0.01 to 0.02 per cent, providing the incentive to producers to supply more to meet the higher demand.

The situation in the dwellings sector is similar to the situation in the construction sector in that consumers gain more than producers due to the greater reduction in consumer price (see tables 7.2 and 7.3). However, with consumers gaining \$963 million and suppliers gaining between \$26 million and \$36 million, the proportion of consumer surplus to producer surplus is not as large as in the construction sector. This is because the supply of existing dwellings is less elastic than the supply of new housing while the demand is more elastic for existing dwellings than for new housing.

The impacts of Simulations B and C are similar in their direction of impact, but the magnitude of change varies.

Two observations may be made from table 7.3. First, in all scenarios the overall economic benefit is higher than the \$500 million tax cut. This is due to lower taxes, which means reduced market distortions and hence the elimination of some portion of the pre-existing deadweight losses. The extra benefit above the \$500 million tax cuts represents the reduction in deadweight losses.

- The lower tax that benefits buyers and suppliers causes increases in both the demand for, and supply of, housing which results in an expansion of the sector.
- Increased activity in housing attracts consumer spending power and supplier investment away from other sectors resulting in reduction in activity in other sectors which is not included in table 7.3.

The second and more important observation is that most of the benefits accrue to households. This is because prior to the tax cuts, it is the households that bear more tax burden than the producers, which is in turn due to the fact that the demand for housing is less elastic than the supply.

A Detailed sources, assumptions and calculations for Greenfield analysis

Cost of developed land

We assume the block that is eventually bought by the new homebuyer is one block within a development of 100 and allocate costs by pro-rata. This makes a difference for taxes like land tax, stamp duty on the purchase of raw land, etc.

Starting point: the total cost for a block of developed land

Estimates of the median price and size for a block of developed land in a Greenfield development in 2023 are taken from UDIA (2024) for all cities except Hobart.¹¹ Consistent with our analysis in 2019, we take this data as the total cost of a block of developed land, ready for the construction of a dwelling. The data includes GST, which is not charged on the sale of raw land (but is levied on other costs).

The cost of developed lots in Hobart is not available from UDIA (2024). Hence, we have calculated it based on an estimate of the sale price of house and land packages minus the cost of construction (including the builder's margin) (table A.2). The median sale price and land area of house and land packages has been collected from realestate.com.au, and we have taken an average across 90 listings collated in January 2025 (see chapter 0). To convert this to a 2023/24 value, we divide by the relative price of houses in December 2024 (the most recent observation of the House Price Index from Proptrack) compared to 2023/24. The construction cost we assume is based on ABS as discussed in Chapter 5 and under the 'construction costs' heading later in this appendix.

Our methodology is described in detail in chapter 2. From here we estimate all the components of the cost of raw land (including GST).

A.1 Median price and size for developed Greenfield blocks (2023)

Measure	Units	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
Median price	\$ inc GST	641 000	394 000	374 000	245 000	259 000	256 307	679 000
Median size of developed blocks	m2	426	353	421	375	426	323	483

Source: UDIA 2024

¹¹ UDIA 2024 *State of the land Report*

A.2 Calculation of price of developed lots for Hobart

Measure	Units	Hobart
Sale price of house and land packages - Jan 2025	\$ inc GST	685 000
Ratio of house prices in Hobart between Dec-2025 and 2023/24	Per cent	101.8
Sale price of house and land packages - 2023/24	\$ inc GST	672 950
Construction cost	\$ inc GST	416 643
Price of developed lots (i.e. sale price of house and land package minus construction cost)	\$ inc GST	256 307

Source: Realestate.com.au house and land package listings collated by the CIE, Protrack House Price Index, CIE estimate of construction costs for houses based on ABS (discussed later in this appendix).

Opportunity cost of raw land

The CIE (2024) estimates the value of agricultural land across each greenfield market of Sydney, which has a weighted average of \$153.3 per square metre in 2023, with a further loading of 70 per cent to account for the value of improvements (e.g. buildings) on land acquired for greenfield development.¹² Further, land acquisition costs for greenfield markets of Sydney were extrapolated to estimate values for other states based on the relative price of serviced greenfield lots from UDIA or our own calculation for Hobart (table A.1 above). We assume that the value of improvements is constant across states.

We combine these estimates of the unit value of farmland and buildings with UDIA estimates of the size of greenfield blocks use this to calculate the opportunity cost of land used for Greenfield development (table A.3). See Chapter 6 for more discussion.

A.3 Opportunity cost of a Greenfield block (2023)

Measure	Units	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
Price of developed lots relative to Sydney	\$/m ²	1.00	0.61	0.58	0.38	0.40	0.40	1.06
Unit value of farmland on the city fringe	\$/m ²	153	94	89	59	62	52	162
Size of a Greenfield block	m ²	426	353	421	375	426	323	483
Opportunity cost – land value	\$	65 323	33 271	37 666	21 978	26 394	16 854	78 454
Opportunity cost – improvements value	\$	45 726	23 290	26 366	15 385	18 476	11 798	54 918

Note: The opportunity cost of a Greenfield block is its value if it was used for farming (its alternative use)

Source: The CIE (2024) based on analysis of NSW Valuer-General land value and sales data, UDIA (2024), CIE.

¹² The CIE, 2024, *Cost and feasibility estimates for supplying new residential dwellings in New South Wales*, pp.40-41, available at: https://www.productivity.nsw.gov.au/sites/default/files/2024-11/2024114_CIE-report-Cost-and-feasibility-estimates-for-supplying-residential-dwellings.pdf.pdf

Residual in raw land price due to zoning

This calculation is explained in Chapter 6.

Stamp duty on raw land (statutory tax)

The value of raw land purchased by the developer is the opportunity cost of each block plus the residual in each block multiplied by 100 blocks. The developer pays stamp duty on the value of the raw land. We then apportion this to the block we are considering, by dividing by 100. Note even where state governments offer concessions on stamp duty to first homebuyers of new homes, stamp duty still increases the amount they must pay for a new home, because developers must pay stamp duty to acquire raw land. Table A.4 shows the cost of stamp duty on raw land purchased that we calculate. Stamp duty rates depend on the value of the property, but in all cities for a development of 100 lots, the top value threshold is applicable. Table A.5 shows these rates for stamp duty.

A.4 Stamp duty on raw land purchased

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
Land price	29 297 910	16 304 771	14 176 901	6 704 568	7 589 712	9 292 120	38 239 612
Stamp duty per lot	15 944	10 398	7 957	3 364	4 113	4 133	17 361

Source: Key assumption for stamp duties are taken from State Government Revenue Office websites

A.5 Key assumptions made for stamp duty calculations

Market	Stamp duty calculation for top value threshold
Sydney	\$47 295 plus 5.5 per cent of the dutiable value more than \$1 168 000 ^a
Melbourne	\$110 000 plus 6.5 per cent of the dutiable value more than \$2 million
Brisbane	\$38 025 plus 5.75 per cent of the dutiable value more than \$1 million
Perth	\$28 453 plus 5.15 per cent of the dutiable value more than \$725 000
Adelaide	\$21 330 plus 5.50 per cent of the dutiable value more than \$500 000
Hobart	\$27 810 plus 4.50 per cent of the dutiable value more than \$725 000
Canberra	\$66 057 plus 4.54 per cent of the dutiable value more than \$1 455 000

Note: In each case the 'dutiable value' is assumed to be raw land cost. All rates shown are those applicable in 2023/24.

Source links: NSW: <https://www.revenue.nsw.gov.au/taxes-duties-levies-royalties/transfer-duty> VIC <https://www.sro.vic.gov.au/rates-taxes-duties-and-levies/general-land-transfer-duty-property-current-rates> QLD <https://qro.qld.gov.au/duties/transfer-duty/calculate/rates/> WA: <https://www.wa.gov.au/organisation/departments-of-finance/transfer-duty-assessment> SA: <https://www.revenuesa.sa.gov.au/stamp-duty-land/rate-of-stamp-duty> TAS: <https://www.tro.tas.gov.au/Calculator/Duty> ACT: https://www.revenue.act.gov.au/duties/conveyance-duty?result_1060955_result_page=2

Consultant fees

Consultant fees include environmental, planning and engineering analyses prepared as part of the development. We treat these as resource costs. We assume these costs are incurred before the approval is made, or as part of the development approval process.

For Sydney, Melbourne, Brisbane and Adelaide, we take estimates developed through consultations with HIA in 2011 and grow them forward with the national WPI for professional services (which grew by 37.8 per cent between 2010-11 and 2023–24). For other cities, we assume consultant fees are equal to the average across Sydney, Melbourne, Brisbane and Adelaide.¹³

A.6 Consultant fees for Greenfield development (per block, 2023–24)

Time period	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
2010/11 estimate	6 000	4 650	5 000	5 075	4 650	5 075	5 075
Escalated to 2023/24	8 272	6 411	6 893	6 996	6 411	6 996	6 996

Source: CIE.

Development application fee

The developer must submit a development approval to have the raw land subdivided into Greenfield blocks, and for other permissions, for the development to proceed. The development cannot proceed until after the local council (or other relevant authority) grants its ‘approval’ for this.

Development approval fees must be paid to make this submission.

Councils incur some level of resource costs to grant these approvals (the labour hours required to grant approval, etc.). We hence assume these are resource costs. The level of resource costs that is appropriate is uncertain, and there is significant variation in costs across cities. For example, Brisbane has a fee that is more than triple the next highest city (Sydney) and therefore may exceed resource costs. However, given the small magnitude of this cost and lack of evidence about the actual resource costs involved, we conservatively assume it is entirely resource costs.

We have checked development application fees for four councils (Liverpool and Penrith in Sydney, and Melton and Wyndham in Melbourne), and find they have changed broadly in line with inflation since 2016-17. Hence, we have simply escalated development application fees assumed in The CIE (2019) *The Taxation of Housing* report in line with inflation between 2016-17 and 2023–24 (table A.7). We assume for Hobart and Canberra (which were not included in The CIE (2019) *The Taxation of Housing* report, that development application fees are equal to the average across other cities.

¹³ The cost of consultant fees in Perth was \$20 000 in 2010/11, and this value was used in 2016/17 with escalation. This is significantly higher than all other cities. We have not been able to validate this estimate with any other sources, with other studies such as Urbis (2011) indicating that professional fees are relatively similar between Perth and other cities (see Urbis, 2011, p.28, available at: <https://treasury.gov.au/sites/default/files/2019-03/nhsc-residential-cost-analysis-urbis.pdf>).

A.7 Development application fees (per block) 2023–24

Year	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
2016-17	72	13	220	37	1	68	68
2023–24 escalated	90	16	278	47	1	86	86

Note: We have omitted fees associated with developer-led rezonings, since we expect most developments occur on land rezoned by state governments. For example, Liverpool City Council charges a fee of \$132 600 for large scale (>\$20m) rezoning request where additional studies are required to justify alignment with strategic planning.

Source: Relevant local government websites; The CIE estimates

The time required to grant these approvals is important. As noted in Table 3.3, in consultation with HIA, we assume the council takes some months of reasonable time to consider this application, but also some period of unreasonable delay. As the developer has used debt to finance his/her purchase of the raw land, stamp duty and development application fee, this unreasonable delay adds to the cost of the development (via additional interest costs on the debt), and this is passed onto the homebuyer. This is discussed further in developer finance cost.

We assume the developer receives approval for the subdivision. They now proceed to the 'land development phase' where they develop the land.

Land tax charged on raw land during land development phase

While the developer holds the raw land, and waits for subdivision to be approved, we assume income from raw land offsets land tax and council rates, such that the developer incurs no net additional cost that adds to the total financial outlay eventually charged to the homebuyer.

Once subdivision is approved, the developer enters the land development phase. During the land development phase, the developer stops earning income from the raw land. He/she pays annual land tax during this phase, which is levied on the unimproved value of the land. We assume the unimproved value of the land is the raw land price. As there is no offsetting income from the land, this land tax adds to developer costs and thus to the outlay made by the homebuyer. We work out a monthly rate and apply this to the period of months noted in Table 3.3.

A.8 Land tax rates for highest value threshold

Market	Key assumption
Sydney	\$88 036 plus 2 cents for each \$1 more than \$6 571 000
Melbourne	\$31 650 plus 2.65 cents for each \$1 more than \$3 000 000
Brisbane	\$187 500 plus 2.75 cents for each \$1 more than \$10 000 000
Perth	\$186 550 plus 2.67 cents for each \$1 more than \$11 000 000
Adelaide	\$25 685 plus 2.4 cents for each \$1 more than \$2 500 000
Hobart	\$1 850 plus 1.5 cents for each \$1 more than \$500 000
Canberra	\$23 100 plus 1.26 cents for each \$1 more than \$2 000 000

Note: In each case the 'dutiab value' is assumed to be raw land cost. Values shown are those applicable for 2023–24 or 2023.

Source: Key assumption for stamp duties are taken from State Government Revenue Office websites

A.9 Monthly rate of land tax paid on raw land during development (per block)

Measure	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Monthly rate	452	320	252	84	123	111	400

Source: Derived from the total value of raw land and rates on state revenue offices, divided by 12 to get an annual rate

Council rates charged on raw land during land development phase

While the developer holds raw land, and waits for subdivision to be approved, we assume income from raw land offsets land tax and council rates, such that the developer incurs no net additional cost that adds to the total financial outlay eventually charged to the new homebuyer.

Once subdivision is approved, the developer enters the land development phase. During the land development phase, the developer pays council rates. Council rates are levied to provide services (like residential garbage collection), that the developer does not receive while the land is being developed. Therefore, we treat them as a statutory revenue raising measure. Council rates are levied using a 'rate-in-rate' levied on the unimproved value of the land. We assume the unimproved value of the land is raw land price. We calculate a monthly rate for council rates based on the total value of the parcel of land and apportion this to each block. We work out a monthly rate and apply this to the period of months noted in Table 3.3.

The council rates per month are the average for each city of the 'rate-in-rates' sourced from websites of a sample of councils (table A.10), applied to the total value of the Greenfield parcel, divided by 12 months.

A.10 Assumptions and sources for council rates

City and council	Rate-in-rates
	\$/ \$
Sydney	
Penrith	0.0023432
Liverpool (including environmental levy)	0.0009713
Melbourne	
Casey	0.0021637
Melton	0.0033119
Hume	0.0023285
Brisbane	
Logan	0.003279
Perth	

City and council	Rate-in-rates
	\$/ \$
Mandurah	0.0049605
Adelaide	
Salisbury	0.003109
Hobart	
Hobart	0.006113
Canberra	
ACT	0.005056

Note: For ACT, the rate shown is that for the top value threshold for residential land.

Source: Council websites.

A.11 Council rates per month for each Greenfield block

Measure	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Monthly rate	40	35	39	28	20	47	161

Source: Council websites

Infrastructure charges

Infrastructure charges, also referred to as developer contributions, are paid by the developer to local governments (in all states) to connect to services (such water and sewerage) and for the provision of local roads and community facilities (the nature and extent of these facilities varies across states). In Victoria and NSW, the state governments also levy infrastructure charges for the provision of higher-level infrastructure for Greenfield areas. We calculate the total infrastructure charge in 2023-24 by estimating and adding together the local and state components. Table A.12 provides more details of data sources and calculations.

Where charges are levied in terms of dollars per net developable hectare, we have converted from \$/hectare to \$/dwelling based on land area per dwelling from table A.3 (sourced from UDIA, 2024), and added a 42 per cent mark-up for infrastructure land such as local roads (The CIE, 2023).¹⁴

¹⁴ The CIE, 2023, *Economic, social and environmental impacts of alternative urban development scenarios for Victoria*, p.298, available at: <https://assets.infrastructurevictoria.com.au/assets/Resources/Centre-for-International-Economics-Economic-social-and-environmental-impacts-of-alternative-urban-development-scenarios-for-Victoria.pdf>

A.12 Greenfield infrastructure charges by capital city

City	Approach	Local	State, Biodiversity and water
		\$/lot	\$/lot
Sydney	Estimates collated in the CIE (2024) ^a , which includes state infrastructure contributions, a \$5000 biodiversity contribution and water infrastructure contributions.	38 367	25 823
Melbourne	Local infrastructure contributions collated in table A.13 from greenfield Development Contributions Plans (DCPs). State charge is the average of the 2023/24 Growth Area Infrastructure Charge (GAIC) ^b across Type A, B and C land [which depends on when land was added as an urban growth area],	20 769	6 238
Brisbane	Collated from Development Charges and Offset Plans (DCOPs) for greenfield priority development areas (table A.14). Two DCOPs for identified that apply to greenfield areas of Brisbane, with remaining 12 being infill areas or outside Brisbane	41 554	0
Perth	Collated from the two greenfield DCPs we have been able to identify (table A.15).	25 541	0
Adelaide	Estimate from The CIE (2019), which was based on the charges levied by Salisbury City Council, and included charges for car parking, street tree contribution, stormwater contribution, and open space contribution equal to \$19 691 in 2016/17 dollars, which we have escalated using the Road and Bridge Construction PPI from ABS.	26 328	0
Hobart	Estimated by Acil Allen (2018), ^c which we have escalated	6 302	0
Canberra	using the Road and Bridge Construction PPI from ABS.	10 084	0

^a The CIE, 2024, *Cost and feasibility estimates for supplying new residential dwellings in New South Wales*, table 6.

^b <https://www.sro.vic.gov.au/historical-rates-gaic>

^c Acil Allen, 2018, *Taxes and Charges on New Housing*, report to The Residential Development Council, Figure 4.3 (which does not have valued labels so we have transcribed values from the chart), available at:

<https://www.infrastructure.gov.au/sites/default/files/submissions/tind-property-council-attachment.pdf>

Source: As noted, and CIE.

A.13 Melbourne greenfield infrastructure charges

Area	Development contributions levies	Community infrastructure contribution	Total
	\$/lot	\$/lot	\$/lot
Melton North	7 111	1 150	8 261
Wyndham North	11 729	1 150	12 879
Cardinia	20 356	1 150	21 506
Officer	39 282	1 150	40 432
Average	19 619	1 150	20 769

Source: Melton North DCP (<https://vpa-web.s3.amazonaws.com/wp-content/uploads/2023/12/Melton-North-DCP-May-2010-Amended-December-2023-VC249.pdf>), Wyndham West DCP (<https://vpa-web.s3.amazonaws.com/wp-content/uploads/2023/12/Wyndham-West-DCP-April-2014-Amended-December-2023-VC249.pdf>), Cardinia and Officer DCPs (https://www.cardinia.vic.gov.au/info/93/planning/629/development_contribution_plans_dcps#section-2-current-dcp-psp-levies), CIE.

A.14 Brisbane greenfield infrastructure charges

Area	Charge per lot
	\$/lot
Fitzgibbon	31 936
Greater Flagstone	51 172
Average	41 554

Source: Fitzgibbon: (Table 3, dwelling house with 3 or more bedrooms https://www.edq.qld.gov.au/__data/assets/pdf_file/0028/94519/Updated-Fitzgibbon-DCOP-EDQ-Template.pdf) Greater Flagstone (Table 2 https://www.edq.qld.gov.au/__data/assets/pdf_file/0020/94520/Updated-Greater-Flagstone-DCOP-EDQ-Template.pdf), and CIE.

A.15 Perth greenfield infrastructure charges

Area	Cost per lot
	\$/lot
Anstey Keane	24 284
Wungong Urban Water	26 798
Average	25 541

Source: Anstey Keane (<https://www.armadale.wa.gov.au/anstey-keane-dcp-no-4-contribution-due-estimate-calculator>), Wungong Urban Water (page 88 <https://developmentwa.com.au/DevelopmentWA--Wungong-Urban-Water-Project-Area-Development-Contribution-Plan.pdf>), CIE.

In previous iterations of this analysis for HIA, we split infrastructure charges into two components:

- a fair component, reflecting resource costs of infrastructure for which there is a close nexus between the development and infrastructure demand, and
- an excessive component, which is the remainder of the contribution.

In this report, we have not sought to split infrastructure charges into a fair and an excessive component. There are two main reasons for this:

- As the magnitude of infrastructure contributions has increased, the degree of scrutiny applied to their magnitude has also risen. Hence, it is not possible to accurately identify at a city-wide level what a fair level of infrastructure charges is, which would require detailed assessment of specific DCPs.
 - In NSW, the Independent Pricing and Regulatory Tribunal (IPART) assesses contributions plans that propose contributions above \$30 000 per lot in greenfield areas or \$20 000 per lot in other areas. IPART's assessment verifies that, among other requirements, the plan establishes a nexus between the expected types of development in an area and demand for public amenities or services to meet development-related infrastructure demand.¹⁵ Processes such as this will result in fairer contributions.

¹⁵ NSW Department of Planning and Environment, 2019, *Practice Note: Local Infrastructure Contributions*, p.8, available at: <https://www.ipart.nsw.gov.au/sites/default/files/documents/local-infrastructure-contributions-practice-note-january-2018.pdf>

- Increased scrutiny means that infrastructure charges in Sydney, for example, are excessive, may no longer be excessive. However, it highlights that assessing whether infrastructure contributions are excessive or not likely requires detailed assessment of a particular DCP.
- The economics of infrastructure contributions is complex, and it has become overly simplistic to simply characterise them as fair or excessive. There are multiple types of impacts arising from contributions (box A.16), and whether contributions are efficient depends on a range of factors. Even where there is an appropriate nexus between development and planned infrastructure, infrastructure contributions still have a role as a revenue-raising instrument.

A.16 The impacts of infrastructure charges

The CIE (2020)¹⁶ identified four main types of impacts arising from developer contributions (i.e. infrastructure charges):

- 3 Incentives for developers to undertake more efficient development because contributions force developers to internalise costs of infrastructure that would otherwise be borne by others
- 4 The level of efficiency of infrastructure contributions in comparison to other funding mechanisms for infrastructure, including allocative efficiency and administration and compliance costs
- 5 The role of infrastructure contributions in ensuring that efficient infrastructure is put in place to enable development to occur
- 6 The role of infrastructure contributions in altering the political economy of planning approval and support or opposition to development.

Source: CIE, based on The CIE (2020) *Evaluation of infrastructure contributions reform in New South Wales*, Chapter 2, available at: <https://www.productivity.nsw.gov.au/sites/default/files/2020-12/Evaluation%20of%20Infrastructure%20Contributions%20Reform%20in%20NSW.pdf>

We conclude that there is not a good basis to determine a fair and excessive component of charges, and that simply separately identifying the amount of charges is preferable.

NBN costs

Using data from nbn.com.au, we estimate total NBN charge of \$1 400 per Greenfield property: \$300 one-time user contribution, \$600 Deployment, plus we assume \$500 for backhaul (50 per cent of \$1 000 plus \$0 in excess of \$1 000). We assume this is a resource cost.

¹⁶ The CIE, 2020, *Evaluation of infrastructure contributions reform in New South Wales*, Chapter 2, available at: <https://www.productivity.nsw.gov.au/sites/default/files/2020-12/Evaluation%20of%20Infrastructure%20Contributions%20Reform%20in%20NSW.pdf>

Land preparation cost: general

Land preparation costs includes levelling land, remediation of soil, and associated costs. We assume these are resource costs.

We developed estimates of land preparation costs in 2011 via consultations with HIA. We take these estimates and grow these forward to 2023-24 with the average of growth in the PPI for road & bridge construction and the PPI for housing construction.

A.17 Greenfield land preparation costs

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	lot	lot	lot	lot	lot	lot	lot
2010/11	48 235	50 639	47 561	48 453	47 936	48 565	48 565
2023/24	74 848	78 578	73 803	75 186	74 385	75 360	75 360

Source: CIE consultations and calculation

Water charge

The water charge is developer's water costs during development. We developed estimates of water costs in 2011 via consultations with HIA. We take these 2011 estimates in each city and grow these in-line with the unmetered charge for Sydney water (2010-11 to 2023-24). For Hobart and Canberra we take the average cost across other cities.

A.18 Greenfield water usage charge

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Water usage	1 759	1 851	1 704	808	1 851	1 874	1 874

Source: CIE consultations and calculation.

Developer marketing and sales costs

We assume developer sales cost and the developer marketing cost is 1.5 per cent and 1.0 per cent of the price of the developed block of land, based on consultations with HIA.

A.19 Greenfield developer sales and marketing costs

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Sales cost	6 639	5 841	5 928	5 223	4 774	5 543	7 222
Marketing cost	4 426	3 894	3 952	3 482	3 183	3 695	4 815

Source: CIE consultations and calculation

Finance charge

As noted the developer funds the purchase of raw land and development costs with debt. The costs associated with this funding (interest payments) are passed onto the new homebuyer via finance charges. There are two finance charges in land development costs.

- Firstly, the finance charge on the raw land and purchase cost while the developer awaits approval for rezoning and subdivision. The principle for this interest is the purchase price of the raw land, the stamp duty on the raw land, consultant fees and development application fees. The time period for this interest calculation is:
 - the time taken for subdivision to be granted, which includes a ‘fair’ period (which is a resource cost) and a ‘unreasonable delay’ period (which is a regulatory cost, see Table 3.3)
 - plus the land development period, as interest is incurred until the developer sells the block to the homebuyer, see Table 3.3.
- Secondly there is the finance charge during land development. The principle for this is all remaining development costs: council rates and land taxes during development, development charges, land development costs, NBN costs, water charges, sales and marketing costs. Table 3.3 notes the time period for this charge. We assume this period is fair (this second finance charge is a resource cost).

In 2011 in consultations with HIA we assumed an interest rate for developers on development costs of 7 per cent. We assume an interest rate of 9.9 per cent for the holding period, which is consistent with the interest rate assumed in The CIE (2024).¹⁷ This rate combines:

- The average interest rate on medium business variable rate loans, based on the average rates for new loans funded in each year, and¹⁸
- A premium of 3.8 per cent to reflect the higher rates charged on developer finance, which was chosen based on consultation with a development finance professional.

It is necessary to use iteration for the finance charge during subdivision as it is driven by the raw land value, which is estimated as a residual.

A.20 Finance charge on development costs

Finance charge component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Subdivision (fair)	21 884	12 471	10 932	5 497	6 110	7 260	27 844

¹⁷ The CIE (2024) *Cost and feasibility estimates for supplying new residential dwellings in New South Wales*, see table 2.1 and pp.50-51 for details, available at: https://www.productivity.nsw.gov.au/sites/default/files/2024-11/2024114_CIE-report-Cost-and-feasibility-estimates-for-supplying-residential-dwellings.pdf.pdf

¹⁸ Data about this rate is available from the Reserve Bank of Australia in the Business lending rates – F7 table, available at: <https://www.rba.gov.au/statistics/tables/xls/f07hist.xlsx?v=2024-07-23-23-26-06>. The specific series we used is named ‘Lending rates; Business finance; New loans funded in the month; Medium business; Variable-rate’

Finance charge component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Subdivision (delays)	20 365	6 550	5 741	2 887	3 209	3 813	14 623
Development	4 835	3 699	4 010	3 460	3 507	2 807	3 091

Source: CIE calculation

Developer margin

Our starting point for developer margin is the profit rate (margin before tax, divided by costs which is estimated to be revenue less profit before tax) for the ‘Development segment’ of the Lendlease Corporation (a listed Australian property company). Their average profit rate over the past 10 financial years is 20.3 per cent.

In 2011, in consultations with HIA, we assumed the rate of margin for the developer was a percentage point higher in Sydney than it was in other cities. Following this assumption, we assume the margin rate on top of development costs is 20.8 per cent in Sydney, and 19.8 per cent in other cities.

As noted, UDIA report the price of developed block of land. In Sydney, we calculate developers’ margin by multiplying this reported number by [20.8 per cent divided by 1 plus 20.8 per cent] to get margin over costs. In other cities the 20.8 per cent is replaced with 19.8 per cent.

Land developers earn relatively high rates of margin because the business of land development is subject to relatively large amounts of uncertainty. Much of this uncertainty is driven by factors outside the planning system: population growth and other patterns in housing demand and consumer preferences. But some of the uncertainty that developers face is created by the planning system. In 2011 PC noted:

“The regulation and agencies involved in planning, zoning and development assessments constitute one of the most complex regulatory regimes in Australia. The regulatory system is not like most other regimes which have a clearer delineation between policy making, regulation writing and administration. Because some important policy issues are not fully resolved during strategic and structure planning, de facto policy making occurring during development assessment and rezoning where significant discretion is exercised... These different and complex planning systems [across Australia] are difficult for businesses and citizens to navigate. They lack transparency, create uncertainty for users and regulators and impose significant compliance burdens...”¹⁹

In 2024, the NSW Productivity and Equality Commission identified a range of frictions in the development process such as bottlenecks in development assessment and non-planning approvals required by state agencies or councils.²⁰ The Commission stated that

¹⁹ PC 2011, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments* pp XXVI-XXVII

²⁰ NSW Productivity and Equality commission, 2024, *Review of housing supply challenges and policy options for New South Wales*, final report, pp.45-46, available at: https://www.productivity.nsw.gov.au/sites/default/files/2024-11/20241114_NSW-PEC-report-Review-of-housing-supply-challenges-and-policy-options-for-New-South-Wales.pdf

frictions in the process raise uncertainty about costs and feasibility, and may increase the required rates of return for new development.

In 2011, in consultations with HIA, we assumed that 5 percentage points of the developer's margin rate in Sydney and 4 percentage points of the developer's margin rate elsewhere reflects uncertainty created by planning system that is unreasonable. From consultations with HIA for this report, we retain these views. Our assumptions for margin rates are set out in Table A.21. The data in the table should be interpreted as follows.

- Land development is subject to a great deal of real uncertainty, driven by uncertainty over population growth, uncertainty over changes in consumer preferences and uncertainties created by the planning system. This uncertainty imposes a real resource cost on developers. In compensation for this real cost, developers charge a margin rate of 15.8 per cent over costs. This margin is a resource cost in land development. This margin rate is higher than the margin rate in other industries because land developer is subject to more uncertainty than other activities.
- Noting discussion provided by the PC, and in consultation with HIA, we assume the planning system also creates some uncertainty that is not reasonable. As compensation for this additional uncertainty, developers increase their margin rates. In Sydney, unreasonable uncertainty is estimated to add 5 percentage points to the developer's margin rate. Elsewhere, it adds 4 percentage points to margin. This additional margin is a regulatory cost.

The figures in Table A.21 are, of course, estimates. An obvious question is: how one distinguishes between 'reasonable uncertainty' in the planning system and the resource costs this creates, against 'unreasonable uncertainty' in the planning system and the regulatory cost this creates. The most basic distinction is probably necessity. Most people would view allowing developers to proceed with any project they please as unreasonable; therefore, a planning system with some uncertainty is necessary, as it means developers must convince relevant authorities their particular project has merit. Negotiating a reasonable planning system would entail reasonable resource costs for developers. The question is: does the planning system go beyond this basic level of necessity, and create unreasonable uncertainty? Our assumptions imply that it does.

A.21 Margin rates for Greenfield development

Margin component	Sydney	All other cities
	Per cent	Per cent
Total rate	20.8	19.8
Uncertainty premium	5.0	4.0
Fair margin rate (i.e. total minus premium)	15.8	15.8

Source: CIE assumption from HIA consultations

A.22 Margins for Greenfield development

Margin component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Fair (resource cost)	77 433	48 599	46 242	30 100	31 848	31 392	84 005
Caused by unreasonable uncertainty in planning system (regulatory cost)	28 681	13 569	12 814	8 172	8 677	8 682	24 110

Source: The CIE

GST in land development costs

GST equals 10 per cent multiplied by all development costs above, excluding raw land cost (opportunity cost of land plus zoning distortion). It is necessary to use iteration to estimate GST, as the regulatory cost in land is estimated with iteration.

Construction costs

Approvals in construction process

HIA has provided estimates of the cost of approvals required during the construction process. We do not assume these approvals create any unreasonable delays.

A.23 Approvals required during the construction process

Component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Development approval - building	4 164	2 200	7 057	1 654	1 565	2 522	6 696
Building approval	16 313	5 030	7 831	4 371	5 907	7 700	17 720
Insurances	13 500	3 300	5 750	2 046	2 455	6 400	6 467
Specialised reports	5 584	6 920	24 300	6 063	11 247	844	6 731
Total	39 561	17 450	44 938	14 134	21 174	17 466	37 614

Source: HIA

Construction costs

Three sources of data about construction costs are available:

- Rawlinson's Construction Cost Guide, current as at 31 December 2022²¹

²¹ Estimates from Rawlinson's Construction Cost Guide have been collated by HIA and provided to The CIE. The estimates provided are for an individual house with a medium standard finish and brick veneer. The average of low and high estimates of this cost for each city are used.

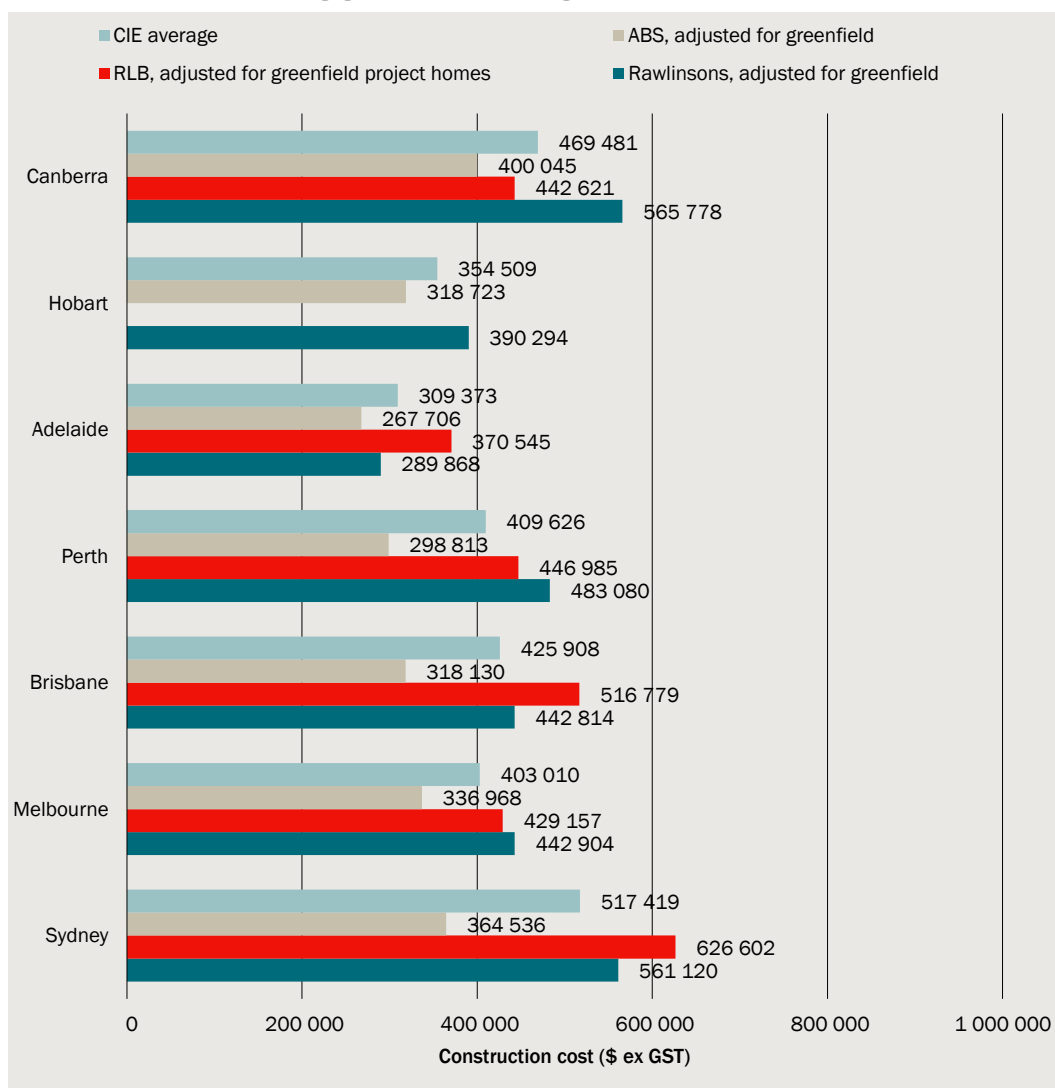
- Riders Digest 2024 published by Rider Levitt Bucknall,²² which we have adjusted to be representative of project-built homes rather than custom homes,²³ and
- ABS *Building Activity, Australia* estimates of construction costs for 2022/23.²⁴

All three sources exclude GST, and include builders' margins. Estimates from Rawlinson's and Riders Digest are unit costs per metre-squared of floor area, and have been converted to estimates of total cost based on ABS estimates of average floor area for houses in 2022-23.²⁵ We convert the estimates from Rawlinson's and ABS to 2023/24 values based on the increase in the Producer Price Index for output of the residential house construction sector.²⁶ We also adjust all estimates to reflect that the average value of building approvals for detached dwellings in NSW is 88.5 per cent as high in greenfield areas compared to the rest of the state.²⁷

Chart A.24 shows each of these estimates, and a separate 'CIE average' series, which is the average across the data series available for each city. Note that data for Hobart is not available from Rider's Digest.

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- 22 These are available from Rider Levitt Bucknall at <https://www.rlb.com/oceania/insight/australia-riders-digest-2024/>. We use the average of the low and high estimates for the unit cost of custom-built single dwellings.
- 23 We apply an estimate of the cost difference between project-built and custom homes derived by comparing the cost estimates of similar type homes (construction material, levels, bedrooms) that are a shelf design versus a unique design, as reported by BMT Quantity Surveyors Construction Cost estimates, available at <https://www.bmtqs.com.au/construction-cost-table>
- 24 Australian Bureau of Statistics, 2024, *Building Activity, Australia*, December 2023, available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/dec-2023/Building%20Activity%20Average%20Cost.xlsx>
- 25 Australian Bureau of Statistics, 2024, *Building Activity, Australia*, December 2023, available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/dec-2023/Building%20Activity%20Average%20Floor%20Area.xlsx>. Slightly more recent data is available about average floor size for approved detached dwellings in March 2024, however we have used the 2022-23 data to be consistent with the time period for total costs obtained from ABS *Building Activity, Australia*.
- 26 Australian Bureau of Statistics, 2024, *Producer Price Indexes, Australia*, Table 17 'Output of the Construction industries, subdivision and class index numbers, available at: <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/producer-price-indexes-australia/sep-2024/6427017.xlsx>
- 27 This is the ratio of the average value of building approvals in each greenfield LGA of NSW compared to the average across the entire state. The value of building approvals is an average across 2019/20 to 2022/23. For example, the average value of building approvals in Penrith LGA is \$337 784 across these years, compared to a statewide average of \$407 212. The value of building approvals by LGA is obtained from the ABS *Building Approvals, Australia* publication (available at <https://www.abs.gov.au/statistics/industry/building-and-construction/building-approvals-australia>)

A.24 Cost of constructing greenfield dwellings



Data source: ABS, RLB, Rawlinson's and CIE.

Builders' finance costs

From on consultations with HIA, we assume builders fund 50 per cent of construction costs with debt. Further, builders are able to use a draw down facility which (in effect), reduces the interest bill in half.

We assume that the interest rate is 9.9 per cent during the construction and marketing period, consistent with the interest rate we assume is paid by developers.

A.25 Builder's finance cost per dwelling (Greenfield, 2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$ ex GST	\$ ex GST	\$ ex GST	\$ ex GST	\$ ex GST	\$ ex GST	\$ ex GST
Builders finance cost	7 967	6 734	5 515	10 216	6 989	6 646	10 309

Source: CIE Calculations

Builder sales and marketing

We assume that builders incur sales and marketing costs of 1.5 per cent and 1.0 per cent of construction costs, respectively. This is consistent with our assumptions in the 2016/17 analysis, which were based on consultation with HIA.

GST

GST is charged on all components in construction: approvals, underlying construction cost, builder's margin and finance charge.

Total cost of new house & land package

The total cost of the new house & land package (cost of developed block of land plus construction costs) is equivalent to the advertised price of the new house & land package.

A.26 Final transfer price of new Greenfield house and land package

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
Costs (ex GST)	1 084 893	784 417	771 122	594 162	577 470	627 201	1 163 435
GST	71 156	58 451	57 845	49 545	46 877	52 157	75 398
Total costs	1 156 049	842 869	828 967	643 707	624 347	679 358	1 238 833

Source: CIE calculations

Transaction costs and total outlay

Stamp duty thresholds have been collated from State Government revenue websites, and we estimate the amount of stamp duty on the final transaction price per lot. We do not include concessions available to first homebuyers.

A.27 Total stamp duty

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
Stamp duty on developed block	15 944	10 398	7 957	3 364	4 113	4 133	17 361
Stamp duty on completed house	21 232	20 400	11 782	10 041	11 384	12 175	10 752
Total	37 176	30 798	19 739	13 405	15 496	16 308	28 113

Source: CIE calculations

Professional fees in the transaction costs are conveyancing costs. In 2011 assumptions for these costs were developed in consultation with HIA. We use the professional services WPI to grow these assumptions forward to 2023-24.

A.28 Professional fees in transaction costs

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$ inc GST	\$ inc GST	\$ inc GST	\$ inc GST	\$ inc GST	\$ inc GST	\$ inc GST
Stamp duty	4 633	2 317	2 317	2 317	2 317	2 780	2 780

Source: CIE calculations

GST is levied on professional fees.

The total outlay is the transfer price plus transaction costs.

A.29 Total outlay made to secure a new greenfield house & land package

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
Total outlay	1 181 914	865 585	843 066	656 065	638 047	694 313	1 252 365

Source: CIE calculations

Full impact of regulatory cost on variable resources

Regulatory cost on variable resources directly cause the developer's finance cost during subdivision and developer margin on land development to be larger (see Tables A.30 and A.31).

A.30 Developer finance cost during land subdivision

Finance charge component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Necessary	21 884	12 471	10 932	5 497	6 110	7 260	27 844
Due to delay or regulatory costs	20 365	6 550	5 741	2 887	3 209	3 813	14 623
Total finance charge	42 249	19 021	16 673	8 384	9 318	11 072	42 467

Source: CIE calculations

A.31 Developer margin on land development

Margin component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot
Fair	77 433	48 599	46 242	30 100	31 848	31 392	84 005
Due to uncertainty/regulatory costs	28 681	13 569	12 814	8 172	8 677	8 682	24 110
Total developer margin	106 114	62 168	59 056	38 273	40 525	40 075	108 115

Source: CIE calculations

Before a final price for the developed block is determined, GST is levied on land development costs (including developer finance cost and developer margin) and added to development costs. Therefore, the regulatory costs on variable resources cause the GST implicit in the price of developed land to increase and the price of developed land to increase. This increase in price of developed land, via its effect on the final transfer price of the property, causes the stamp duty eventually paid by the new homebuyer to increase. Table A.32 shows these indirect effects of regulatory costs.

A.32 Government revenue raising measures

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot		
Where the effect of regulatory costs on variable resources has been removed							
GST	65 566	55 676	55 212	47 779	45 103	50 236	70 574
Stamp duty	35 750	30 171	19 317	13 144	15 174	16 052	26 551
The effect of regulatory costs on variable resources							
GST	6 011	2 985	2 844	1 976	1 984	2 173	5 077
Stamp duty	1 426	628	422	262	322	256	1 562
Total							
GST	71 577	58 662	58 056	49 756	47 088	52 410	75 651
Stamp duty	37 176	30 798	19 739	13 405	15 496	16 308	28 113

Source: CIE calculations

A.33 Transfer price and total outlay

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/lot	\$/lot	\$/lot	\$/lot	\$/lot		
Where the effect of regulatory costs on variable resources has been removed							
Total costs	1 039 859	764 107	751 760	580 372	563 937	611 692	1 128 999
Total outlay	1 129 443	841 662	820 438	640 037	622 208	676 375	1 211 290
Where the effect of regulatory costs on variable resources has been included							
Total costs	1 084 893	784 417	771 122	594 162	577 470	627 201	1 163 435
Total outlay	1 181 914	865 585	843 066	656 065	638 047	694 313	1 252 365

Source: CIE calculations

B Detailed sources, assumptions and analysis for Infill analysis

Costs vary considerably across non-house dwellings. (For example, as noted below, taller apartment buildings with elevators are more expensive to build than townhouses and buildings with walk-up flats). To minimise the extent to which this variation clouds our analysis, we focus on *apartments* and attempt to exclude (as far as possible) townhouses.

Starting point: final transfer price

UDIA (2024) publish data in the *State of the Land* publication on median transfers prices for new apartments in 2023. UDIA (2024) do not include Hobart, so we instead use the 2023/24 median value of transfers of attached dwellings in Hobart from the ABS *Total value of dwellings* publication.²⁸

B.1 Transfer price of newly built apartments

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Final transfer price	820 000	637 000	662 000	440 000	519 000	547 500	610 000

Note: UDIA present data for calendar years, so we have used data for 2023 (the most recent available) as indicative of 2023/24.

Source: UDIA (2017); CIE calculation

We start with this total and then estimate data on each component. This includes using iteration to estimate the raw land cost.

Data on the cost of developed land

In Greenfield developments, we started with data on the cost of developed land. We estimate the resource cost of land and other land development costs and derived a residual (an unexplained component of the total cost of developed land), which we interpreted as the regulatory cost imposed on land. It was necessary to use iteration as some other components of the total cost of developed land flow from the resource cost of land. This is described in Chapters 2, Chapter 6 and Appendix A.

²⁸ ABS, 2024, *Total value of dwellings*, Table 2. Median price and number of transfers (capital city and rest of state), available at: <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/total-value-dwellings/sep-quarter-2024/643202.xlsx>

Our approach for new apartments in infill developments is essentially the same, though different in the details.

We have data on the final transfer price of new apartments. We subtract estimates of land development costs, construction costs, marketing costs, etc. and derive the total cost of raw land as a residual. (It is necessary to use some iteration, because other components with the total price of an apartment are a function from the cost of raw land).

We do not provide detailed steps of this process, as it is essentially like the process for Greenfield. Here we just provide the key results and some discussion.

Data on the price of raw land

The first step in the development process is the developer purchasing raw land, zoned for high density residential use.

From the final transfer price, we subtract estimates of other costs to derive an estimate of the total price of raw land as a residual. This requires some iteration as some other costs (stamp duty on raw land, developer finance costs in development, developer margin on development, GST in developed land, etc.) are a function of the raw land cost. Table B.2 shows our final estimate for the raw land price, per apartment. The estimate for the raw land price per apartment for new apartments is significantly higher in Sydney, which is consistent with significantly higher sale prices of new apartments (e.g. \$820 000 in Sydney compared to \$637 000 in Melbourne) despite relatively similar construction costs (e.g. Sydney has a lower construction cost for apartments than Melbourne, see chart B.16).

B.2 Raw land cost for new apartments

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Raw land cost	184 480	51 219	57 474	34 998	53 649	79 256	49 326

Source: CIE assumption.

Data on the opportunity cost of land

For land used for new apartments (land zoned for ‘high density’ residential), we assume the alternative use of the land is low density residential land (that is, land for detached houses).

Jenner and Tulip (2020) estimated the unit cost of land for detached houses by estimating the average price of detached houses in each local government area (LGA) of Sydney, Melbourne and Brisbane, dividing this by the average land area, and then weighting each LGA by the number of apartment approvals to estimate an average.²⁹ We have escalated

²⁹ Jenner, K, and Tulip, P, 2020, *The Apartment Shortage*, RDP 2020-04, Table 4, p.18, available at: <https://www.rba.gov.au/publications/rdp/2020/pdf/rdp2020-04.pdf>

these estimates to 2023/24 using the Proptrack Home Price Index (HPI)³⁰, and estimated values for Perth, Adelaide, Hobart and Canberra based on the median price of established house transfers³¹ relative to the average for Sydney, Melbourne and Brisbane (table B.3).

B.3 Opportunity cost of land used for apartments

City	Cost of land for detached houses (weighted)		ABS median price of established house transfers	Opportunity cost of land
	2018	2023/24	2023/24	2023/24
	\$/m2	\$/m2	Index	\$/unit
Sydney	4 033	5 527	1 375	110 536
Melbourne	4 045	4 845	840	53 300
Brisbane	1 763	2 811	800	53 402
Perth	Not available	2 711	620	45 182
Adelaide	Not available	3 126	715	52 105
Hobart	Not available	3 056	699	50 939
Canberra	Not available	4 307	985	71 781
Average (Sydney, Melbourne, Brisbane) used to extrapolate to other cities	3 280	4 394	1 005	

Source: Jenner and Tulip (2020), ABS *Total Value of Dwellings*, PropTrack HPI, CIE.

The total cost of land is derived by subtracting estimates of land development costs, construction costs, marketing costs, etc. from the final transfer price of new apartments. In the case of Melbourne, Perth and Canberra, the opportunity cost of land exceeds this estimate of value. Hence, we cap the opportunity cost of land at this total value, and for those cities estimate that there is zero regulatory cost of zoning.

B.4 Components of the cost of land for infill apartments

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Opportunity cost	110 536	51 219	53 402	34 998	52 105	50 939	49 326
Regulatory cost of zoning	73 944	0	4 072	0	1 544	28 317	0
Total cost of land	184 480	51 219	57 474	34 998	53 649	79 256	49 326

Source: The CIE assumptions and calculations

³⁰ Proptrack, 2024, *PropTrack Home Price Index*, Houses series for each capital city, December 2024 available at: <https://www.proptrack.com.au/home-price-index/>

³¹ ABS, 2024, *Total value of dwellings*, Table 2. Median price and number of transfers (capital city and rest of state), available at: <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/total-value-dwellings/sep-quarter-2024/643202.xlsx>

Data on stamp duty

We assume each individual apartment is part of a development of 50 and use this to calculate total stamp duty on land purchase, before dividing by 50 to get a per apartment amount. The rates for calculating stamp duty are provided in appendix A.

B.5 Stamp duty on raw land purchase (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Stamp duty	9 808	2 929	2 915	1 625	2 827	3 470	2 239

Source: The CIE calculation

Consultant fees

Consultant fees include environmental, planning and engineering analyses prepared as part of the development. We treat these as resource costs. We assume these costs are incurred before the approval is made, or as part of the development approval process.

For Sydney, Melbourne, Brisbane and Perth, we take estimates developed through consultations with HIA in 2011 and grow them forward with the national WPI for professional services (which grew by 37.8 per cent between 2010-11 and 2023-24). For other cities, we assume consultant fees are equal to the average across Sydney, Melbourne, Brisbane and Perth.³²

B.6 Consultant fees for infill development (per block, 2023-24)

Time period	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$	\$	\$	\$	\$	\$	\$
2010/11 estimate	26 571	17 787	17 117	18 134	19 902	19 902	19 902
Escalated to 2023/24	36 631	24 521	23 597	25 000	27 437	27 437	27 437

Source: CIE.

Data on development approval fee

Like Greenfield developments, the developer must apply to have their development approved (see discussion in Appendix A). We assume the new apartment is one apartment in a development of 50 and estimate the following development approval fees. We have relied on estimates we collated for individual councils reported in The CIE (2019),³³ and escalated these in line with the CPI.

³² The cost of consultant fees in Adelaide was \$7009 in 2010/11, and this value was used in 2016/17 with escalation. This is significantly lower than all other cities. We have not been able to validate this estimate with any other sources, with other studies such as Urbis (2011) indicating that professional fees are relatively similar between Adelaide and other cities (see Urbis, 2011, p.16, available at: <https://treasury.gov.au/sites/default/files/2019-03/nhsc-residential-cost-analysis-urbis.pdf>).

³³ The CIE, 2019, *Taxation of the housing sector*, Final research report, 12 August 2019.

B.7 Development approval fees (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
2016-17	31	25	252	143	15	93	93
2023-24	39	32	319	181	19	118	118

Source: As noted; The CIE calculation

The developer receives approval to proceed with the development and enters the land development phase.

Data on council rates

While the developer holds the raw land, and waits for approval, we assume income from raw land offsets interest payments, land tax and council rates, such that the developer incurs no net additional cost that adds to the total financial outlay eventually charged to the new homebuyer.

Once approval is received, the developer enters the land development phase. During the land development phase, the developer pays council rates. Council rates are levied to provide services (like residential garbage collection), that the developer does not receive while the land is vacant. Therefore, we treat them as a statutory revenue raising tax. We assume the new apartment is one in a development of 50. We calculate the total rates for the land requisite for 50 apartments and apportion one 50th to our apartment (we follow this procedure for stamp duty, above, and land tax below). We calculate a monthly rate for council rates based on the total value of the rezoned parcel of land. For simplicity and given their small magnitude, we assume the same rate-in-rates for infill apartments as for greenfield houses.

Council rates are levied on the unimproved value of land, which we assume to be the price of the raw land.

B.8 Total council rates throughout the development of an apartment (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Total rates (per apartment)	102	44	63	58	56	161	83

Source: Rockdale City Council (Sydney), Melbourne City Council, Brisbane City Council, Perth City Council and City of Adelaide Council; CIE Calculation

Data on land tax

We assume each individual apartment is part of a development of 50 and use this to calculate total land tax per year, divide this by 50 (to get rates per apartment), divide this by 12 to get a monthly rate, and then multiply by the timing noted in Table 3.4 to get total rates over duration of land development period. Land tax rates are obtained from state government revenue websites, and shown in Appendix A.

Land tax is levied on the unimproved value of land, which we assume to be the price of the raw land.

B.9 Land tax (\$ per apartment, monthly rate)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/month	\$/month	\$/month	\$/month	\$/month	\$/month	\$/month
Monthly land tax	235	41	60	13	50	90	48

Source: CIE assumptions; state government revenue offices

B.10 Land tax (\$ per apartment)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Land tax per dwelling	941	163	239	54	200	359	193

Source: CIE assumptions; state government revenue offices

Infrastructure charges

Infrastructure charges, also referred to as developer contributions, are paid by the developer to local governments (in all states) to connect to services (such water and sewerage) for the provision of local roads and community facilities (the nature and extent of these facilities varies across states). Estimated infrastructure charges are shown in table B.11.

B.11 Infill infrastructure charges by capital city

City	Approach	Local	State, Biodiversity and water
		\$/lot	\$/lot
Sydney	Estimates collated in the CIE (2024) ^a	11 175	12 068
Melbourne	Average of Fishermans Bend DCP ^b (\$34 635/dwelling) and Fishermans Bend DCP ^c (\$22 710 including Development Infrastructure Levy and Community Infrastructure Levy) charges.	28 673	0
Brisbane	Estimate from The CIE (2019), which was which was collated from a selection of infill councils (such as Bowen Hills, QLD and Scarborough, WA), which we have escalated using the Road and Bridge Construction PPI from ABS.	57 106	0
Perth		12 091	0
Adelaide		17 552	0
Hobart	Estimated by Acil Allen (2018), ^d which we have escalated using the Road and Bridge Construction PPI from ABS.	5 672	0
Canberra		3 151	0

^a The CIE, 2024, *Cost and feasibility estimates for supplying new residential dwellings in New South Wales*, table 6.

^b <https://engage.vic.gov.au/fishermans-bend-urban-renewal-area-development-contributions-plan>

^c Table 1 <https://vpa-web.s3.amazonaws.com/wp-content/uploads/2021/09/Arden-Precinct-Draft-Development-Contributions-Plan-August-2021.pdf>

^d Figure 5.3, available at: <https://www.infrastructure.gov.au/sites/default/files/submissions/tind-property-council-attachment.pdf>

Source: As noted, and CIE.

NBN costs

Using data from nbn.com.au, we estimate total NBN charge of \$1 200 per Infill property: \$300 one-time user contribution, \$400 Deployment, plus we assume \$500 for backhaul (50 per cent of \$1 000 plus \$0 more than \$1 000). We assume these costs are variable resource costs. We assume this is a resource cost.

Land preparation cost

Land preparation costs includes levelling land, remediation of land, and associated costs. We take the cost from consultations with HIA in 2011 (\$5000) and escalate this to 2023/24 with the Producer Price Index for inputs to housing construction, which implies a cost of \$8959 per apartment. We assume these are resource costs.

Water charge during development

The developer incurs water costs during development. We take cost estimates from consultations with HIA in 2011 and grow these in-line with the unmetered charge for Sydney Water. We estimate costs for Hobart and Canberra by taking an average across other cities. We assume these are resource costs.

B.12 Water usage charge (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Water charge	324	3438	481	1907	656	1 361	1 361

Source: CIE consultations and calculation

Finance charge

The developer finances land purchase costs with debt. The creates a finance charge, reflecting the resulting interest costs, which is passed on the new homebuyer. The period over which the interest accrues is the time taken for development approval. This period has some months of fair time, and some months of unreasonable delay (see Table 3.4). The finance charge includes a resource cost and a regulatory cost which correspond to these two periods (fair and delay). For full discussion, including assumptions, see Appendix A.

B.13 Finance charge on land purchase costs (2023-24)

Component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Fair	13 672	4 659	4 987	3 656	4 969	6 522	4 677
Due to delays	18 774	3 495	3 742	2 744	3 728	4 893	3 509

Source: CIE calculation

The developer finances land development costs with debt. For full discussion, including assumptions, see Appendix A.

B.14 Finance charge on land development costs (2023-24)

Component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Fair	1 122	1 379	2 233	771	916	552	459

Source: CIE calculation

Developer margin

The developer earns a margin on development, including a component that is a ‘resource cost’ (compensation for the riskiness that is inherent in property development) plus a ‘regulatory cost’ (compensation for the additional riskiness that stems from unreasonable uncertainty in the development process). The margin rates on this development are noted in Table B.15. See Appendix A for a full explanation of how these rates are derived and applied.

B.15 Developer margin rates for infill development

Margin component	Sydney	All other cities
	Per cent	Per cent
Total rate	20.8	19.8
Uncertainty premium	5.0	4.0
Fair margin rate (i.e. total minus premium)	15.8	15.8

Source: CIE assumption from HIA consultations

GST in land development costs

GST equals 10 per cent multiplied by all development costs above, excluding raw land cost (opportunity cost of land plus zoning distortion).

Construction costs

As with greenfield houses, there are three sources of cost data for infill apartments:

- Rawlinson’s Construction Cost Guide, current as at 31 December 2022³⁴
- Riders Digest 2024 published by Rider Levitt Bucknall,³⁵ and
- ABS *Building Activity, Australia* estimates of construction costs for 2022/23.³⁶

³⁴ Estimates from Rawlinson’s Construction Cost Guide have been collated by HIA and provided to The CIE. The estimates provided are for a multi-storey apartment of a high standard finish. The average of low and high estimates of this cost for each city are used.

³⁵ These are available from Rider Levitt Bucknall at <https://www.rlb.com/oceania/insight/australia-riders-digest-2024/>. We use the average of the low and high estimates for the unit cost of custom-built single dwellings.

³⁶ Australian Bureau of Statistics, 2024, *Building Activity, Australia*, December 2023, available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/dec-2023/Building%20Activity%20Average%20Cost.xlsx>

All three sources exclude GST, and include builders' margins. Estimates from Rawlinson's and Riders Digest are unit costs per metre-squared of floor area, and have been converted to estimates of total cost based on ABS estimates of average floor area for houses in 2022-23.³⁷ We convert the estimates from Rawlinson's and ABS to 2023/24 values based on the increase in the Producer Price Index for output of the residential house construction sector.³⁸

Chart A.24 shows each of these estimates, and a separate 'CIE average' series, which is the average across the data series available for each city. For Hobart, for which no estimates are available, we take an average across all cities of the 'CIE average' series.

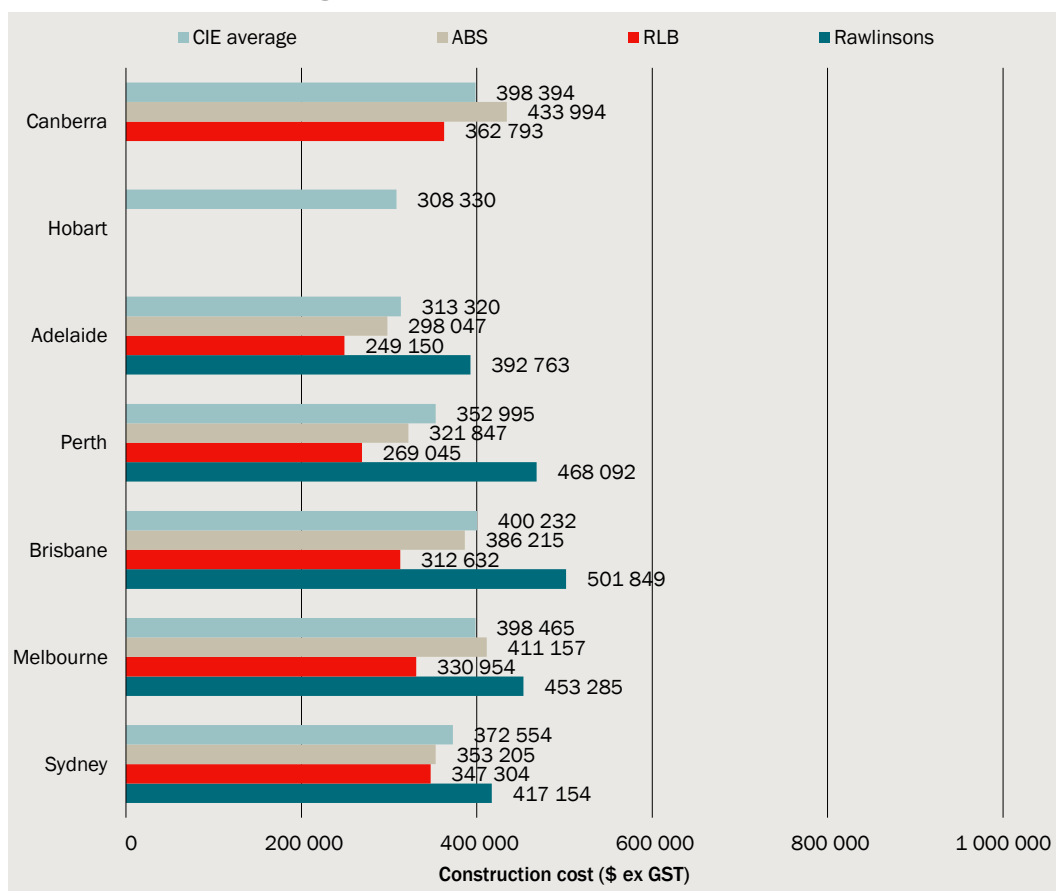
Estimates from Rawlinsons are notably higher than the other sources, which may be associated with the costing being for a high-standard finish.

Note that we have used the average construction cost across the three sources of construction cost data available. This is different from our approach to greenfield houses, which use ABS data only as explained in chapter 0. Using the average across sources is preferable, except where there is evidence to the contrary as is the case for greenfield but not for apartments. Further, the ABS estimate is relatively close to the average for all cities, and so using ABS data only would make relatively little difference compared to using the average.

³⁷ Australian Bureau of Statistics, 2024, *Building Activity, Australia*, December 2023, available at: <https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/dec-2023/Building%20Activity%20Average%20Floor%20Area.xlsx>. Slightly more recent data is available about average floor size for approved detached dwellings in March 2024, however we have used the 2022-23 data to be consistent with the time period for total costs obtained from ABS *Building Activity, Australia*. Floor area data for new apartments is only available from ABS for Sydney, Melbourne, Brisbane and an Australia-wide average. To estimate the size of new apartments in other cities, we have multiplied the average new apartment size for Australia provided by ABS by the relative size of new houses in each city compared to the Australia-wide average.

³⁸ Australian Bureau of Statistics, 2024, *Producer Price Indexes, Australia*, Table 17 'Output of the Construction industries, subdivision and class index numbers, available at: <https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/producer-price-indexes-australia/sep-2024/6427017.xlsx>

B.16 Cost of constructing infill apartments



Data source: ABS, RLB, Rawlinson's and CIE.

Finance cost is also calculated in similar manner to Greenfield. We assume an interest rate of 9.9 per cent, that 50 per cent of construction costs are financed with debt and that there are no costs associated with approvals at the construction stage for infill (all of this is completed at the development stage). The builder's margin is assumed to be the same as for greenfield houses, which is 8.38 per cent.³⁹

B.17 Infill construction cost components (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Underlying construction cost	349 227	376 651	369 366	256 284	290 573	295 756	381 511
Builders margin	29 248	31 545	30 934	21 464	24 336	24 770	31 952
Builder's finance cost	26 096	23 271	18 231	16 447	18 648	18 980	24 484

Note: These figures exclude GST.

Source: CIE.

GST is added to all these components (table B.18).

³⁹ See ABS Cat 5676 Table 22, available at:

<https://www.abs.gov.au/statistics/economy/business-indicators/business-indicators-australia/sep-2024/56760022.xlsx>

B.18 Infill construction costs with addition of GST (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Construction costs (ex GST)	404 571	431 467	418 532	294 195	333 557	339 506	437 946
GST	40 457	43 147	41 853	29 419	33 356	33 951	43 795
Total construction costs	445 028	474 613	460 385	323 614	366 912	373 457	481 740

Source: CIE.

Management and marketing costs

Project management, margin and sales and marketing costs include the following (table B.19)

- We assume that the developer, to manage the construction project, incurs costs equivalent to 3 per cent of total construction costs excluding GST. This assumption is consistent with our assumptions in The CIE (2019), which were based on consultations with HIA.
- The developer earns a margin on construction costs and his/her project managements costs. We assume this margin rate is 5 per cent (that is, the riskiness in land development that drives the relatively high rate of profitability is not present in construction).
- Following consultations with HIA, sales agent costs (1.5 per cent) and general marketing costs (1 per cent) are estimated as a share of the estimated sales price. As these are components of the transfer price, iteration is used to ensure accuracy.
- Leverage varies significantly across apartment developers (Jenner and Tulip, 2020).⁴⁰ In the absence of data about average leverage, and consistent with our assumptions for greenfield house construction, we assume 50 per cent of management costs are financed with debt. Further, debt is financed via a draw-down facility that has the effect of reducing interest costs by half. The principle of the debt is all management costs, excluding manager's margin. As discussed, we assume an interest rate of 9.9 per cent for the developer.
- GST is charged on all management and marketing costs

B.19 Management and marketing costs (2023-24)

Component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Management cost	12 137	12 944	12 556	8 826	10 007	10 185	13 138
Developer margin	20 835	22 221	21 554	15 151	17 178	17 485	22 554
Sales cost	12 300	9 555	9 930	6 600	7 785	8 213	9 150
Marketing cost	8 200	6 370	6 620	4 400	5 190	5 475	6 100

⁴⁰ Jenner, K. and Tulip, P., 2020, *The Apartment Shortage*, Research Discussion Paper RDP 2020-04, p.12, available at: <https://www.rba.gov.au/publications/rdp/2020/pdf/rdp2020-04.pdf>

Component	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Finance cost	2 439	1 784	1 437	1 272	1 475	1 532	1 822
Total (ex GST)	55 911	52 873	52 097	36 249	41 635	42 889	52 764
GST	5 591	5 287	5 210	3 625	4 163	4 289	5 276
Total (inc. GST)	61 503	58 161	57 307	39 874	45 798	47 178	58 041

Source: The CIE

Final transfer price

The final transfer price of the new infill apartment house and land package is the development, construction and management-marketing costs (excluding GST) plus total GST across all three stages.

B.20 Final transfer price of infill apartments (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Costs (ex GST)	820 250	639 227	664 332	440 530	519 926	548 337	612 081
GST	61 253	55 934	54 975	39 344	44 872	46 341	55 960
Final transfer price	881 503	695 161	719 307	479 874	564 798	594 678	668 041

Source: CIE.

Transaction costs and total outlay

Two types of transaction costs are included (table B.21):

- Stamp duty is estimated from State Government revenue websites.
- The professional fees in the transfer costs (including legal fees) are resource costs. We take the 2011 values (developed with consultations with HIA) and grow forward with the PPI for professional services.

B.21 Total outlay to acquire a new infill apartment (2023-24)

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit	\$/unit
Transfer price	881 503	695 161	719 307	479 874	564 798	594 678	668 041
Stamp duty on transfer	34 403	36 780	25 394	16 809	24 894	22 271	16 213
Professional fees in transfer	2 285	2 285	2 285	2 285	2 285	2 285	2 285
GST on professional fees	228	228	228	228	228	228	228
Total outlay	918 419	734 454	747 214	499 197	592 206	619 463	686 768

Source: CIE.

The full impact of regulatory costs on variable resources

The indirect impact of regulatory costs on GST and stamp duty, and therefore on the total outlay to acquire a new home is like Greenfield (see Appendix A).

C Treatment of income taxes

A key part of the statutory taxes within government revenue raising measures is income taxes levied on resources (wages paid to workers, margin of owners of capital, etc.).

The ‘resource costs’ noted in Appendix A and B implicitly include income taxes collected on the income of these resources. We calculate income taxes in 5 steps.

- 1 We assume income taxes are only levied on variable resources (not on the resource value of land). This is because for this calculation we rely on ABS Input-Output table data, which does not include a land component.
- 2 We calculate variable resources (which implicitly include income taxes) as follows. In this equation ‘variable resources’ includes income taxes, which have not yet been added to government revenue raising measures. The definitions are consistent with the data presented in chapter 4 (financial results) and as discussed in Appendix A and B.

Variable resources (including income taxes)

$$= \text{Total outlay made to acquire new home} - \text{resource cost of land} \\ - \text{regulatory costs} - \text{government revenue raising measures}]$$

- 3 We split variable resources (including income taxes) into components, with the rates shown in Table C.1.
- 4 To calculate income tax, we use the average tax rates noted in Table C.2, derived from the widely respected CIE-REGIONS model.
- 5 The final step is to remove the calculated income tax from variable resources and add it government revenue raising measures.

C.1 Components of gross variable resources, share of total

	Share
	Per cent
Labour component	46
Capital component	34
Imported components	18
Additional net generic taxes	2

Note: Data taken from ABS Input-Output table 2021-22. Data are labelled ‘Primary input content’ (total requirements) per \$100 of final use by industry. We use data for the ‘residential building construction industry’

Source: ABS Input-Output Tables 2021-2

C.2 Tax rates on variable resource inputs

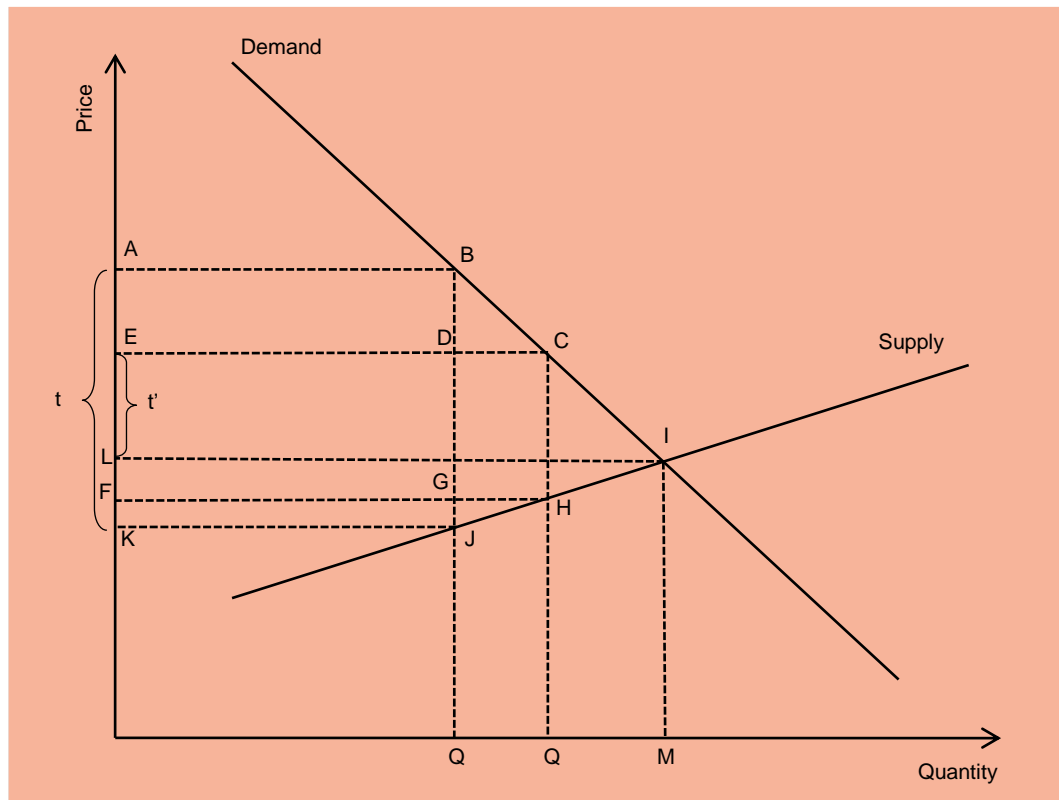
	Rate
	Per cent
Tax rate on labour inputs	22
Tax rate on capital inputs	18
Tax rate on imports	3

Source: CIE-REGIONS model

D Economics of taxation burden

Chart D.1 illustrates the tax incidence in a simple demand and supply framework. If there is no tax or subsidy, the market would be in equilibrium with price at L and quantity at M .

D.1 Demand, supply and tax incidence



Data source: CIE illustration

A tax at the rate of t will create a wedge of that amount between the price paid by the consumers ($P_D = A > L$) and the price received by the producers ($P_S = K < L$). The difference between consumer (producer) price and the original price level defines the incidence of the tax by consumer (producer). In the total tax of t , AL is borne by consumers and LK by producers. With higher consumer price, the demand falls to Q . Meanwhile, with lower producer price, the supply falls by the same amount.

With higher price and lower demand, consumers lose the consumer surplus by the area $ABIL$; and with lower price and production, producers lose the producer surplus by the area $IJKL$. The government gains tax revenue of $ABJK$. The deadweight loss is therefore the triangle BIJ .

The incidence of tax is determined by the relative slope of demand and supply curves, that is, the demand and supply elasticities. Consumers will have to bear more tax burden than producers if demand is more inelastic than supply. This is the case shown in chart D.1. With a more elastic supply function producers can relatively easily adjust their production, leading to larger change in quantity relative to change in price. On the other hand, with more inelastic demand, consumers more or less have to stick with certain amount of demand, resulting in larger change in price relative to change in quantity.

By contrast, more elastic demand than supply would put more tax burden on producers because consumers in this case are relatively easy to adjust their demand than producers adjust their production.

The incidence of taxation also implies the share of benefit following tax cuts. If consumers (producers) bear more tax burden, then a tax cut would see consumer (producer) grasp more of the benefits. As shown in chart D.1, with tax cuts from t to t' , demand would go up from Q to Q' , and the consumer price falls to E while the producer price up to F . The gain to consumers is the change in consumer surplus represented by area $ABCE$, and the gain to producers is the change in producer surplus represented by area $FHJK$. In this particular case where demand is more inelastic, consumers gains more than producers following the tax cut.

Incidence of housing taxation

In the housing market, it is widely held that demand is relatively less elastic while supply is more elastic. This is due to the fact that everyone needs a shelter to live every day. In other words, there is a rigid demand for housing. On the other hand, supply of housing is much more flexible, especially in the long run. Construction workers, materials and machinery could be used to build other types of infrastructure. Agricultural and other land could be turned into residential blocks fairly easily, especially in Australia.

It follows that consumers, that is, house buyers would end up bear most of the taxes discussed previously. We try to quantify the incidence using the CIE-REGIONS model.

As a general equilibrium model, the demand and supply relationship is much more complex than the one in chart D.1. First of all, the housing market is represented by two sectors — construction and ownership of dwellings. The products of construction sector, that is, new houses, enter into the dwellings sector as fixed capital information. It is this housing capital that provides households with shelter service flows.

Furthermore, the housing market is linked to other good and service markets. Changes in the housing market will have impact on other markets, and vice versa. These impacts affect both demand and supply. For example, higher demand for housing in principal would depress other demands given certain amount of the income or budget. However, to fulfil the increase in demand, there will be more building activities, which in turn lead to higher demand for other materials and primary factors. The higher demand for primary factors means higher income to households, which will further boost demand.

As a result, the derived demand and supply response from CIE-REGIONS modelling is a composite one reflecting all the underlying forces. It is therefore necessary to isolate the

price and quantity relationship as hard as possible when deriving the demand and supply elasticities. It could be done through careful formulation of shocks and selection of simulation results. For example, cutting payroll tax in construction sector by \$500 million would lead to a fall of 0.23 per cent in price and a rise of 0.12 per cent in production of the sector. The tax cuts enable the construction sector provide products in lower costs. In other words, the supply curve of the sector shifts out. On the other hand, the demand curve for construction products more or less stays the same.⁴¹ This means that the observed changes in price and quantity could be interpreted as moves along the demand curve, implying the observed demand elasticity be of about -0.52 (= 0.12/-0.23).

Another example is higher demand for dwellings due to a taste change. A one per cent rise in demand leads to a rise of 0.71 per cent in price. It could be interpreted as a shift in the demand curve. The observed changes are moves along the supply curve. It therefore implies the supply elasticity of dwellings be of about 1.41 (= 1/0.71).

Table D.2 summarises the derived demand and supply elasticities from various simulations with the CIE-REGIONS model. The elasticities vary depending on the closure and shocks implemented.

D.2 Derived demand and supply elasticities

	Demand	Supply
Construction of dwellings	-0.26 ~ -0.61	6.37 ~ 8.77
Ownership of dwellings	-0.59 ~ -1.15	1.43 ~ 2.50

Source: CIE-REGIONS simulations

Nevertheless, two observations may be made from table D.2. First, supply elasticities are higher than demand elasticities for goods and services of the construction and dwelling sectors. This confirms the discussion presented earlier and implies that consumers and users bear more of taxes in construction and/or dwelling sectors.

Second, the supply elasticities of construction are consistently higher than those of dwellings. This is simply because the construction sector produces new housing while the dwelling sector is related to the whole stock of housing, new and established. It is relatively easier to increase the building of new houses, but more difficult to increase the whole housing stock at the same proportion.

Supply elasticity of land

The CIE-REGIONS model does not separate land from other capitals in the construction sector.

Suppose inverse supply functions of the land and building are of linear form:

$$P_L = a + bQ$$

$$P_B = c + dQ$$

⁴¹ Of course in a general equilibrium framework, the demand curve would move as well because of the income and substitution effects caused by the tax cut, but those would be in second order.

The supply elasticities of land and building are:

$$e_L = (dQ/dP_L)/(Q/P_L) = P_L/b/Q$$

$$e_B = (dQ/dP_B)/(Q/P_B) = P_B/d/Q$$

The inverse supply function of final housing is the addition of the above two supply functions:

$$P = P_B + P_L = (a + c) + (b + d)Q$$

And the supply elasticity of final housing is

$$e = (dQ/dP)/(Q/P) = P/(b + d)/Q = (b e_L + d e_B)/(b + d)$$

Land cost accounts for about 10 per cent of the housing cost. This implies that the price of land and the price of building construction have a 1 to 9 ratio. This in turn suggests that $b/d = 1/9$ approximately. Therefore, the above supply elasticity of final housing can be written as

$$e = 0.1e_L + 0.9e_B$$

With the land supply elasticity being as low as 0.1, the supply elasticity of building would be between 7.07 and 9.73 so that the supply elasticity of housing construction falls between the ranges reported in table D.2.

Measuring the benefit of tax cuts to industry and households

Several simulations were carried out using the CIE-REGIONS model to quantify the benefits of various tax cuts:

- Simulation A: reducing state payroll tax on construction sector by \$500 million;
- Simulation B: reducing state capital tax on construction sector by \$500 million; and
- Simulation C: reducing state capital on dwellings sector by \$500 million.

The impacts of these tax cuts on sectoral price and production are reported in table D.3. They are presented in the form of percentage changes relative to pre-tax cut levels.

D.3 Changes in price and quantity of construction and dwelling of tax cut by \$500 million

	Change in construction			Change in dwellings		
	Consumer price	Producer price	Quantity	Consumer price	Producer price	Quantity
	%	%	%	%	%	%
Tax cut in construction sector						
A: state payroll tax	-0.15	0.01~0.01	0.06	-0.10	0.01~0.02	0.03
B: Stamp duty/other capital tax	-0.12	0.01~0.01	0.05	-0.10	0.02~0.04	0.06
Tax cut in dwellings sector						
C: Stamp duty/other capital tax	-0.03~-0.05	~0.01	0.03	-0.12	0.03~0.05	0.07

Source: CIE-REGIONS model simulations

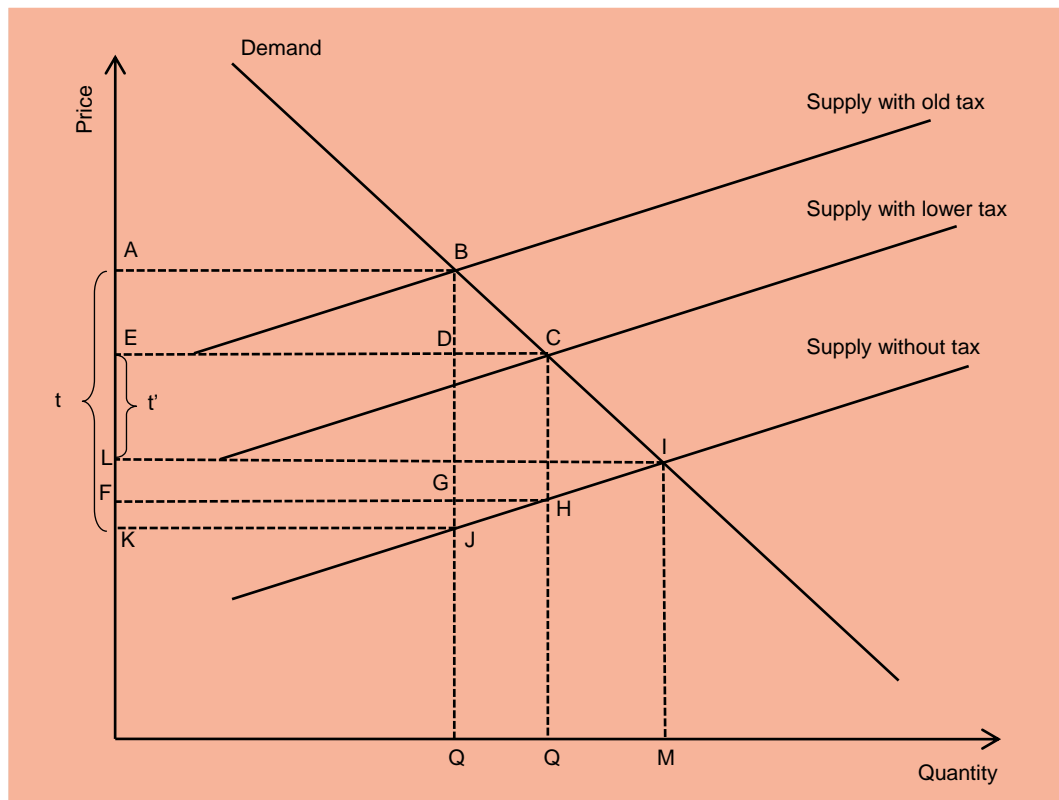
As discussed above, these tax cuts essentially lower the marginal cost of production in relevant sector, and the observed changes in price and quantity can be interpreted as moving along the demand curve.

Chart B.10 illustrates the impact of a tax cut which affects the supply curve. This chart is essentially a reproduction of chart D.1 with new supply curves added, namely supply curves with old tax with lower tax. The gains to consumers or users are measured by the trapezoid $ABCE$ which is the change in consumer surplus. It can be shown that the gains can be calculated as

$$-(1+q/2)pV_0$$

where p and q are percentage changes in price and quantity, respectively, and V_0 is the sales value before tax cut.

D.4 Impact of a tax cut affecting supply curve



Data source: CIE illustration

The gains to producers can be measured by the trapezoid $FHJK$, which is the change in producer surplus. It can be shown that the gains are

$$(1+q/2)qV_0/es$$

where e_s is the supply elasticity.

As shown in table D.3, lower cost of construction resulted from tax cuts in the sector feeds into the dwelling sector, lowering the price of dwellings as well. This means that the supply curve of dwellings shifts out while the demand curve stays the same. The changes

in the dwellings market are similar to the changes in the construction market, and thus the gains to households and producers can be measured in the same way as discussed above.

It should be noted that the consumer of construction products (i.e. buyers of new housing) are the producers of the dwelling services. As a result, the gains to consumer of construction products and the gains to producers of dwellings services should be counted only once when calculating the overall benefits.

The cut in capital tax in the dwellings sector works in a similar way as illustrated by chart D.4, that is, a shift of the supply curve with the demand curve unchanged.

Table D.5 summarises the estimated benefits to consumers and producers of the three tax cuts.

D.5 Benefits to consumers and producers of a \$500 million tax cut

	Construction		Dwellings		Overall in housing	
	Gain to consumers	Gain to producers	Gain to consumers	Gain to producers	Gain to consumers	Gain to producers
	\$m	\$m	\$m	\$m	\$m	\$m
A	645	28~38	318	70~123	963	28~38
B	538	26~36	311	66~116	849	26~36
C	120~210	17~23	366	42~73	486~576	17~23

Source: CIE estimates based on CIE-REGIONS model simulations

Two observations may be made from the table. First, the overall benefit is higher than the value of tax cuts of \$500 million. This is because with lower tax, the distortion is smaller, so is the deadweight loss. The extra benefit above the \$500 million tax cuts represents the reduction in deadweight loss.

Second, most of the benefits accrue to households. This is because they bear more tax burden than producers before the tax cut, which is in turn due to the fact that demand for housing is less elastic than the supply.



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