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28 August 2025

Angela Moody
Productivity Commissioner
Queensland Productivity Commission

Dear Angela

RE: HIA feedback on the Interim Report - Productivity of the Construction Industry

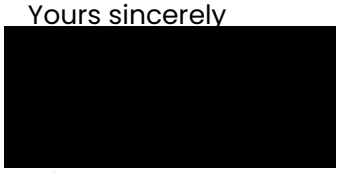
The Housing Industry Association (HIA) supports the findings and recommendations of the Queensland Productivity Commission's interim report. We believe that by adopting these recommendations, and strengthening them with additional targeted actions, the final report can provide a foundation for meaningful and lasting reform that reduces regulatory overreach, lifts productivity benefits the entire housing sector, aspiring new homeowners and boosts the Queensland economy.

Never have we heard from so many builders and developers retiring or 'leaving the industry' due to what could only be described as reform fatigue and a feeling that so many aspects of regulation are stacked against them, people who are simply trying to operate sustainable and successful businesses.

The housing industry's ability to deliver new homes and meet rising demand fundamentally depends on access to sites that have not only been identified as suitable for development, but sites that in fact can be developed in a timely manner and on a commercially viable basis. It is therefore encouraging that the interim report correctly highlights the substantial limitations that current land use planning and approval processes impose on the industry, which in turn is contributing to the declining affordability of new homes.

To assist the Commission in developing the final report, HIA has provided further information, including short-term suggestions and feedback on broader reforms needed to improve productivity in the housing sector and deliver more homes. HIA welcomes the opportunity to assist the Queensland Productivity Commission in understanding the ongoing issues faced by Queensland's construction industry.

Yours sincerely



Michael Roberts
Executive Director
HOUSING INDUSTRY ASSOCIATION LIMITED

Recommendation	Further Information & Examples	HIA Feedback
Preliminary Recommendation 5 – Design of Planning Regulation		
Commission an independent review to remove inconsistencies between the Planning Act and Building Act..	**<u>Further information</u>** HIA notes some of the key issues relating to the Planning Act and Building Act include: 1. Inconsistent views by councils on how to define development and what type of application is required; 2. Significant variations to design requirements and conflicts with the intent of the NCC in planning schemes; 3. The *Planning Regulation 2017* supports duplication of assessments by local government; and 4. Due to the above, there is an extremely complex process to determine if a single house on residential land requires local government approval. **<u>Examples</u>** 1. Refer to **Appendix 1 – Table 1** for a list of councils defining construction of a secondary dwelling differently. This issue of inconsistent interpretations frequently occurs on 'knock down re-builds', house extensions and enclosing balconies on apartments. 2. The complexity in design requirements to build a detached house on residential land is staggering. • Refer to **Appendix 1 - Table 2** for examples of the significant variation in design rules via planning schemes. Noosa Plan 2020 sets 95 different	HIA supports this recommendation and suggests the following: **<u>Short-Term</u>** • The Queensland Government should provide industry wide guidance with examples on how to define common forms of residential development under the current legislation. • The State Interest Review process should include a Queensland Government department reviewing new planning schemes to ensure building assessment provisions are not unlawfully included in draft planning schemes. • It is worth mentioning that Schedule 6, Part 2, Division 2, Section 2 of the Planning Regulation 2017 already seeks to prohibit a planning scheme from making a Material Change of Use for a Dwelling House assessable development, a fact that everyone involved appears to ignore. **<u>Broader reform</u>** Due to competing stakeholder interests, HIA recommends that the QPC clearly defines the purpose and scope of any future review. In HIA's view, the review should aim to: • Simplify and clarify the definition of "development" under the Planning Act; • Align terminology between both the Building and Planning Acts;

	requirements (AOs) for a dwelling house in the Low Density Residential Zone. • Refer to **Appendix 1 – Table 3** for some examples of provisions in planning schemes which conflict with the NCC. 3. Refer to **Appendix 1** for examples of the duplication caused by the current referral triggers under the *Planning Regulation 2017*. It is noted that exceeding site cover on a small lot in Brisbane (a single non-compliance) triggers three different referrals. 4. Please refer to **Appendix 1 – Figure 1** for a Dwelling House Assessment Flowchart provided by Sunshine Coast Council which highlights the overly complicated assessment process which varies in each local government area due to different planning scheme provisions and inconsistent interpretations of the Planning Act.	• Eliminate duplicative assessment triggers under Schedule 9 of the Planning Regulation; • Restrict the use of 'Amenity & Aesthetics' Referrals; • Clarify and simplify the process for determining the assessment manager for all development types; • Implement a state-wide mandatory code for detached houses and duplexes, enabling streamlined approval (as accepted development) in specific circumstances, as has occurred in other states; • Standardise currency periods across both Acts and referral forms utilised by local governments; • Establish uniform rules for overlays including assessment triggers and code benchmarks (acceptable outcomes); and • Require cost-benefit analysis for any proposed variations to the state-wide requirements.
Ensure the requirements in local government planning schemes are consistent with the Queensland Development Code, including variations due to climatic or other conditions.	The suggestion by some stakeholders that planning schemes need to vary the NCC or QDC for climatic reasons is incorrect, as the NCC already addresses this through eight (8) different climate zones and mandatory energy assessments at building approval stage. In fact, the NatHERS assessment tool divides Australia into 69 separate climate zones. This rigorous assessment process ensures homes are designed to suit local conditions, considering factors such as shading, ventilation, insulation, glazing, external material and colours to manage heat island effects, thermal comfort and overall energy efficiency. Supporting information and examples are provided in **Appendix 1**.	HIA supports this recommendation and suggests the following: **<u>Short-Term</u>** The existing legislation includes provisions to prohibit building assessment provisions from being included in planning schemes unlawfully. The Queensland Government should clarify inappropriate provisions and identify these during state interest reviews of draft planning schemes. **<u>Broader reform</u>** The review of the Building Act and Planning Act should consider what is appropriate for planning schemes to regulate and remove any duplication of NCC and QDC requirements.

Require that any variations from the Queensland Development Code in local and state government planning schemes have demonstrated net benefits to the community..	**Further information** Planning Schemes continue to specify a significant number of design variations for dwelling houses based on subjective benefits to the community regarding local character or amenity. This creates unnecessary complexity and often additional costs without measurable improvements in housing outcomes. **Examples** Some examples of the significant variations in planning schemes (predominantly based on local character or amenity benefits) include: • Noosa Shire Plan 2020 – 95 variations/requirements for a new house in the low density residential zone; and • Moreton Bay Planning Scheme 2016 – 59 variations/requirements for a new house in the general residential (suburban precinct) zone. Refer to **Appendix 1 – Table 2** for further examples.	HIA supports this recommendation and believes a cost-benefit analysis process should be implemented prior to councils or state governments varying the NCC or QDC (state-wide design requirements for housing). HIA notes a recurring issue occurring with cost-benefit analysis commissioned by the Australian Building Codes Board (ABCB) is that updates to the NCC have been implemented by ministers even where a cost benefit analysis found the policy was likely to impose a net cost on society. Decisions to proceed with changes despite net costs appear to be justified by broader unquantifiable societal benefits.
Amend the Planning Act to standardize zoning types across all local plans	**Further information** While the Planning Act makes some attempt to standardised the zoning utilized in planning schemes, titled '*regulated requirements',* there is no consistency to the densities, setbacks, building heights or design requirements in each zone. This becomes more complicated when local plans or neighbourhood plans set unique requirements that under the legislation override zone codes.	HIA supports this recommendation.

	Example A Medium Density Residential Zone under the Sunshine Coast and Gold Coast Planning Schemes can limit maximum building height to 3 storeys. In Brisbane, a Medium Density Residential Zone typically permits building up to a maximum height of 5 storeys, unless varied by a neighbourhood plan. There is currently very little certainty associated with the zoning of a property at a particular residential density. This issue is exacerbated by the application of overlays for maximum building heights, residential densities and environmental constraints which can further restrict housing outcomes anticipated by a particular zoning and likely forming part of council's assumptions of latent housing supply. Given the complexity of secondary provisions, zoning is no longer the source of truth when it comes to identifying what can be built on a parcel of land.	
Continue to progress standardised siting and design requirements for detached housing, secondary dwellings and smaller townhouse and apartments buildings	**Further information** Standardised designs need to be mandatory, override planning schemes and linked to streamlined assessment pathways to be beneficial for industry. HIA has provided a detailed response to this issue in **Appendix 1,** noting the shortfalls of the proposed Queensland Housing Code which is not proposed to be mandatory, or apply to Priority Development Areas, or resolve any of the complexity associated with hundreds of Plans of Development (PODs) and different planning scheme provisions in effect across Queensland.	HIA supports this recommendation and suggests that the QPC should provide greater detail on the operation of standardised requirements given the Queensland Government's past reliance on voluntary design rules or model codes that do not resolve industry issues. **Detached Housing – Queensland Housing Code** • The proposed Queensland Housing Code should be mandatory across all local government areas and Priority Development Areas (PDAs); • Compliance with the Queensland Housing Code should be associated with a streamlined approval process (i.e. any design compliant with the provisions of the Queensland Housing Code on residential land without

	<u>Examples</u> Refer to **Appendix 1 – Table 4** for a list of some PODs in operation which adds to the complexity of assessing new housing. In relation to townhouses, duplexes and apartments, HIA has provided examples of planning scheme requirements restricting greater housing diversity. Please refer to **Appendix 1 – Table 5** for details.	relevant overlays should be prohibited from assessment or referral to local government); • The Queensland Housing Code should apply to secondary dwellings as this type of housing is part of the definition of a dwelling house; and • The Queensland Housing Code should be simplified based on industry feedback to reflect the commonly constructed dwelling house in Queensland. Over an extensive period of time, HIA members developed an example state-wide housing code for detached housing (**see Appendix 3**). Queensland remains one of the few states without a mandatory state-wide detached housing code, given reforms in NSW, WA, Victoria, and South Australia. **<u>Other Housing Types – Gentle Density</u>** • Introduce a mandatory state-wide Gentle Density Code that overrides local planning schemes; and • Link compliance with a Gentle Density Code to a streamlined approval process (accepted development), similar to the NSW Pattern Book. A model code for Gentle Density created by HIA during the review of SEQ Regional Plan is included in **Appendix 4.**

Ensure that state and local government overlays are consistently applied across planning schemes	**<u>Further information and examples</u>** HIA confirms the key issues associated with overlays include the following: 1. A significant number of overlays and sub-categories, adding to the complexity of assessments which vary in each LGA – • *Brisbane City Plan 2014* has 26 overlays; and • Those overlays have 130 sub-categories often with different mapped features to review. 2. Inconsistent triggers for assessment leading to confusion for professionals and the community. For example, in the Flood Overlay (overland flow path sub-category or similar): • *Brisbane City Plan 2014* permits 20sqm of building work to an existing house without assessment; • *Ipswich City Plan 2025* permits 50sqm of additional gross floor area without assessment; • *Logan Planning Scheme 2015* triggers assessment of any building work in a high-flow area. 3. Inconsistent assessment benchmarks in overlay codes for the consistent hazards which should have a region wide approach. For example, in the Flood Overlay: • *Brisbane City Plan 2014* requires that access or a driveway is not inundated by the 10% AEP flood; • *Ipswich City Plan 2025* requires access and egress to be subject to no more than a low flood hazard in accordance with specified levels; • *Logan Planning Scheme 2015* requires flood-free access to a premise that contains essential goods (commercial property); and	HIA supports this recommendation. It should be emphasised that previous attempts to bring greater certainty to some planning scheme requirements such as overlays through model codes or non-statutory guidance have been unsuccessful, including the Model Code for Neighbourhood Design and Example Assessment Benchmarks for Bushfire. HIA suggests the Queensland Government has ultimately failed in its role to oversee and regulate planning scheme overlays.

	• The Draft Sunshine Coast Planning Scheme requires access to a dwelling house from the road network during the 39% AEP flood event. 4. A complex and time-consuming process to update overlays to reflect post-development outcomes. Updating overlays requires a formal planning scheme amendment to change mapping based on bushfire or flood risk being resolved through development works. There are numerous examples where issues identified within an overlay are addressed through the assessment of a subdivision application but triggers further applications for the construction of homes because the overlay map has not been updated.	
Preliminary Recommendation 6 – Infrastructure Charging		
The Queensland Government should commission an independent review of the infrastructure charging regime…	**<u>Further Information and examples</u>** There are several misconceptions about the infrastructure charges framework in Queensland which are clarified below: • Levied charges are only a contribution to trunk infrastructure - The levied charge applies to trunk infrastructure benefiting the wider community. Internal infrastructure (roads, water, sewer, electricity, stormwater) is developer-funded; • Developer charges are not intended to cover total costs of trunk infrastructure – Other funding (rates, state/federal grants, treasury financing) supports trunk infrastructure; • The capped amount (titled *'prescribed amount'* under Planning Act) is indexed annually – Maximum charges a council can levy rise with the ABS Producer Price Index. Recent increases: 4.29% (2022/23) and 6.29% (2023/24);	HIA notes that a substantial review of Queensland's infrastructure charges regime occurred in 2011. Any future review should focus on further restricting which infrastructure projects can be funded through developer contributions by ensuring a clear nexus to new homebuyers in the relevant suburb. For instance, Brisbane's Local Government Infrastructure Plan identifies an embellishment cost of $132.3 million for the Kangaroo Point Green Bridge, despite the possibility that new homebuyers in suburbs such as Pallara may never use this infrastructure. The 2011 Taskforce Report established principles for capping council charges on new developments, all of which remain relevant: **1. Certainty** – Developers require predictable charges to assess project feasibility.

	• The legislation permits charges beyond the capped amount – Development outside Priority Infrastructure Areas, ahead of the LGIP timing, or in PDAs often incurs additional charges; • Developer contributions are a small revenue source – Brisbane City Council in 2023/24: $137.8M (4.5% of $3.07B total revenue; • There is disputed evidence of funding shortfalls – Published council registers since 2020 shows significant unspent revenue in some LGAs; • Current taxation system unfairly burdens new homes – Taxes and charges can add ~41% to the cost of new homes (e.g. $348,500 on an $850,000 new house and land package in Pallara, compared to only $88,350 on a $2M established home in Clayfield). Refer to **Appendix 6** for greater details on taxes and statutory charges.	2. **Transparency and accountability** – Stakeholders must understand what charges fund and where they are allocated. 3. **Equity and reasonableness** – New residents should not bear costs for infrastructure that also benefits existing communities. 4. **Simplicity and consistency** – Charges should be uniform and straightforward to calculate. 5. **Efficiency and economic impact** – Research confirms developer charges increase housing costs and constrain housing supply. Please refer to **Appendix 5** for further information on infrastructure charges.
Preliminary Recommendation 7 – Planning and Development Approval Processes		
To streamline high priority development assessments, the Queensland Government should provide a streamlined alternative development assessment pathway for significant developments…	**<u>Further information and Examples</u>** HIA notes several programs utilising independent planning professionals have been successful including: • Logan City Council – RiskSmart Program; and • Newcastle City Council – Accelerate Development Approval Initiative. Newcastle City Council have confirmed since the introduction of their 'Accelerated DA System': • Over 400 DAs determined with an averaging processing time of 6.5 days. The average assessment time for a DA in NSW is currently 102 days (**Source:** NSW Council League Table);	HIA supports this recommendation.

	• Since adoption of this accelerated system the normal DA timeframe assessed by Newcastle City Council has been reduced by 40 days given efficiencies in staff resourcing. The above programs have been predominantly focused on smaller or low-risk developments and only partially involve independent planning professionals as councils remain the assessment manager or deciding authority. When private building certification was introduced, it sped up the process from months to weeks, with no measurable decline in quality. Implementing greater use of independent planning professionals could result in similar benefits.	
Preliminary Recommendation 8 – Planning and Development Approval Processes		
To improve approval processes, the Queensland Government should: • ***Review the Building Act and Planning..*** • ***Require local governments to publish their performance information...*** • ***Require a suitable entity to consolidate and publish their performance information, including approval outcomes..***	**<u>Further information and Examples</u>** The use of a state-wide planning portal (similar to PlanSA) for all council areas could bring efficiency and greater consistency to several aspects of the development process including: • State-wide application and approval tracking; • A consolidated location for planning, utility provider and general property information; • Housing and land supply reporting which covers all 7 key stages of the development process; • Frequent reporting on councils results against key performance indicators (similar to NSW Council League Table); and • Overview and management of development conditions through a database (similar to NSW's Standard conditions of development consent).	HIA supports this recommendation.

Preliminary Recommendation 9 – Zoning Regulation and Land Supply		
To increase the supply of housing and improve housing construction productivity and affordability, the Queensland Government should introduce measures to ease zoning restrictions in well-located areas…	**<u>Further information and Examples</u>** HIA notes the following restricting new housing in well-located areas: • The low density residential zone is estimated to apply to 70% to 75% of all residential land in most Queensland planning schemes. Minimum lot sizes in this zone have had minimal change in the past 50 years and continue to prevent infill subdivision. Consideration should be given to mandating minimum lot sizes across Queensland in this zone to 300sqm to permit greater infill subdivision and permitting duplexes on 600sqm allotments (Refer to **Appendix 7** for further information); • Where adopted, the low-medium density residential zone is estimated at 10% to 12% of all residential land in Queensland planning schemes. This zoning should be greatly expanded and supported by a state-wide gentle density code or pattern book for 'as of right' approvals (similar is being progressively implemented in other jurisdictions such as NSW).	HIA supports this recommendation.
Preliminary Recommendation 10 – Zoning Regulation and Land Supply		
To ensure that local governments have sufficient incentives to deliver new housing supply in well-located areas, the Queensland Government should set annual targets for the supply of construction-ready land and for the construction of new housing for each local	**<u>Further information</u>** The *ShapingSEQ 2023* sets housing targets for every SEQ local government area which is further broken down into targets for different housing types. While HIA is supportive of strategies to increase housing density, there are concerns that in an attempt to meet the targets Local Government's are zoning properties for high or medium rise apartments in locations that will never be developed for higher densities because they are not commercially viable for this type of housing.	HIA supports this recommendation and notes any financial incentive offered to local governments due to achieving targets should be based on dwelling completions and not dwelling approvals to ensure that planning approvals closely consider the commercial viability of new projects.

government area..	HIA suggests the regional planning process and the zoning of properties requires a market sounding procedure to ensure new homes can be delivered by industry. There is also a concern from HIA that planning strategies are unrealistically expecting a dramatic shift from detached housing to apartments contrary to consumer preference. **Example** For example, *ShapingSEQ 2023* targets only 11% of new housing growth in Brisbane is achieved via detached houses. Recent building approvals (2024/25) from the ABS details that 42.7% of new dwellings in Brisbane are detached houses. In HIA's view, these unrealistic targets can lead to inappropriate zoning practices such as allocating 25ha of land to medium rise apartments in Park Ridge, despite apartments not being viable in this suburb. More concerningly, many councils will refuse to support more viable forms of housing such as low-rise townhouses in these locations due to a higher density zoning applying to the property.	
Preliminary Recommendation 11 – Impacts arising from NCC 2022		
Unless it is demonstrated through consultation that energy efficiency and accessibility standards made as part of NCC 2022 provide a net benefit to the Queensland community…	**Further information and examples** HIA notes a key issue with Regulatory Impact Analysis has been decision makers proceeding with changes despite a net cost to society which can often be justified based on an unquantifiable future societal benefit. For example, this occurred on the following NCC changes: • BCA 2010 – Increase to minimum energy efficiency stringency;	HIA supports this recommendation and suggests all Regulatory Impact Analysis or other Cost-Benefit Analysis conducted by the Queensland Government should be transparent and publicly accessible.

	• NCC 2019 – Introduction of mandatory sprinklers for Class 2 and 3 residential buildings of a certain building height; and • NCC 2022 – Introduction of liveable housing provisions and increase to energy efficiency stringency.	
Preliminary Recommendation 12 – Future Regulatory Changes to Building Codes		
The Queensland Government should: • ***only adopt future NCC changes in Queensland codes where these have been through robust regulatory impact analysis to demonstrate they provide net benefits to the community…***	**<u>Further information</u>** There are concerns regarding the transparency of Regulatory Impact Analysis or Cost-Benefit Analysis conducted by the Queensland Government as HIA understands analysis was completed on the proposed Queensland Housing Code but never made publicly available. HIA is of the view that the Queensland Government should work in partnership with industry to ensure the content of a Regulatory Impact Analysis reflects current industry practices and identified costs can be validated.	HIA supports this recommendation.
Request for Information – QBCC Performance		
The Commission would like to understand if the metrics the QBCC reports against appropriately measure its performance, and if not, what other metrics would help to make performance outcomes more transparent…	**<u>Further information</u>** HIA notes that the QBCC's current reporting is too generic and cannot be measured against the objectives of each scheme. **<u>Example</u>** The QBCC should publish more comprehensive data to demonstrate its effectiveness. Currently, quarterly reports only show processing times for licence applications but not how many are approved or refused. Without this, it is impossible to assess the efficiency and fairness of the licensing system. For instance, a high rejection rate could	HIA recommends additional reporting should consider the following: • Measuring the impact of the MFR scheme – for example, whether the MFR regime has led to a measurable reduction in contractor insolvencies. This would provide an evidence base for the effectiveness of the regulatory framework; • Breakdown of QBCC complaints and insurance payouts by financial value – for example, reporting the number and proportion of claims and payouts under $50,000,

	indicate: • Education issues – applicants are unaware of requirements; • Procedural issues – unclear forms or guidance; • Staff Training issues – incorrect decisions later overturned on review. Publishing this data would improve transparency, reveal trends, and identify problem areas for targeted improvements.	$100,000, $150,000, etc. This would highlight the scale of consumer claims and whether the scheme is effectively targeting the areas of greatest consumer risk; • Tracking internal review outcomes – reporting the number of decisions overturned or varied upon internal review. This would provide a measure of the accuracy and efficiency of frontline decision-making and highlight areas where training or process improvements may be required; • Cases where a decision is overturned upon internal review - which will provide evidence of the efficiency of the front-line decision makers; and • Reporting on the outcomes of decisions made through QCAT.
Request for Information – Threshold for Insurable Works		
The Commission is seeking further information on the threshold for insurable works under the Queensland Home Warranty Scheme, including: • ***the potential benefits and risks of increasing the threshold (including the impact on insurance claims and dispute resolution provisions)*** • ***whether the threshold should be indexed annually…***	**<u>Further information</u>** To HIA's understanding the current threshold for insurable works has not increased since its inception. This is despite a significant escalation in construction costs. Raising the threshold to at least $20,000 would align Queensland closer to NSW, VIC and WA, reduce regulatory burden, and lower costs for consumers on minor works while supporting small builders operating on tight margins. HIA acknowledges there may be a need for some works to be exempt. The threshold should be reviewed every 3–5 years and adjusted based on construction cost movements rather than general inflation, as costs can rise independently of CPI due to factors like material shortages and regulatory changes. Implementing this adjustment alongside broader HWIS review recommendations would improve the scheme's	HIA recommends the threshold for insurable works is increased to at least $20,000.

	fairness, productivity, and sustainability while addressing long-standing industry concerns.	
Request for Information – Deposit Caps		
The Commission is interested in feedback on the current deposit caps for domestic building contracts in Queensland…	**<u>Further information</u>** Raising the deposit limit to 10% for contracts over $20,000 would align Queensland with New South Wales, where this approach has existed for a decade without negative effects. The change would more accurately reflect the increase in the price of preliminary costs builders are exposed to, improve builder cash flow, provide flexibility to offer lower deposits if desired, and maintain consumer protections through existing progress payment rules. With deposit limits unchanged for many years and the industry under financial pressure, this reform is timely and necessary. Separately, the insurance premium should be decoupled from the deposit and allowed as a preliminary cost before contract signing. This ensures the deposit is fully available for upfront project expenses and clarifies that the builder pays the premium on behalf of the client, this proposed reform was already recommended in previous QBCC reviews.	HIA recommends the following: • Increasing the maximum deposit to 10% for building contracts over $20,000, aligning with NSW where this has applied for a decade without negative impacts; and • Allow insurance premiums to be paid separately and upfront, ensuring deposits fully cover project start-up costs as recommended by the QBCC Home Warranty Insurance Scheme review.
Preliminary Recommendation 14 – Trust Account Framework		
To reduce regulatory burden on the construction industry, the pause on further rollout of Queensland's trust account framework should remain in effect until the Queensland Government undertakes commensurate	**<u>Further information and examples</u>** HIA has consistently expressed concerns regarding the potential ramifications of implementing the project trust accounts regime within the construction industry, particularly with the intended low threshold of $1 million. HIA maintains its stance that the introduction of the trust account regime will exacerbate the financial fragility already prevalent within the industry and further strain the	HIA supports this recommendation.

regulatory impact analysis of the framework in line with the Better Regulation Policy.	financial resources of construction businesses. Feedback to HIA strongly indicated that at the lower thresholds builders would simply seek to avoid the work, further hindering the ability to deliver on housing targets. It is understood that the Project Trust Account framework has applied to several building contracts where the builder went into voluntary administration including: • St Hilliers Contracting Pty Ltd; • PBS Building (Qld) Pty Ltd; and • GCB Constructions (Qld) Pty Ltd. Given reported concerns of subcontractors not being paid for all work on these projects, HIA would question the effectiveness of the Project Trust Account Framework.	
Preliminary Recommendation 15 – Modern Methods of Construction		
To remove unnecessary regulatory barriers to the adoption of modern methods of construction (MMC), the Queensland Government should progress commitments under the revitalised National Competition Policy…	**Further information** In 2022, HIA commissioned Swinburne University of Technology to investigate the barriers to off-site construction focusing on prefabricated and modular buildings. A copy of this research is provided in **Appendix 8**. Since this time, HIA notes that the Federal Government has tasked the ABCB to work with states and territories to deliver a National Voluntary Certification Scheme for Manufacturers of MMC. While the Voluntary Certification Scheme will assist with addressing some regulatory barriers in the building certification process, it will not address the significant barriers associated with planning schemes and local government procedures.	HIA supports this recommendation.

Preliminary Recommendation 20 – Removing Barriers to Labour Mobility		
Unless it can be rigorously demonstrated that Queensland's specific occupational licensing requirements deliver greater net benefits to the community..	**<u>Further information</u>** The skills shortage facing Australia's construction industry is significant. HIA estimates that an additional 83,000 trade contractors are required in the housing sector to meet the National Housing Accord targets. A copy of the associated report is provided in **Appendix 9**. Queensland needs to join other jurisdictions by participating in the Automatic Mutual Recognition of occupational licenses which would assist in attracting skilled workers to Queensland.	HIA supports this recommendation.
Request for Information – Taxes on Foreign Investment		
The Commission is seeking further information from stakeholders on: • ***the extent to which Queensland's foreign investor taxes are likely to impede housing construction and innovation*** • ***whether the recently announced changes to streamline the granting of ex gratia relief will address stakeholder concerns...***	**<u>Further information</u>** Foreign institutional capital does not create housing demand; it creates housing supply. Taxing this capital reduces the supply of homes being built, even as migration continues to surge and create demand. HIA estimates that more than 1 in 10 new homes are built by companies which are at least 50% owned by foreign investors. The number of building companies with this level of foreign ownership is expected to increase. HIA's Stamp Duty Watch Report (see **Appendix 10**) finds that the average stamp duty bill on a median-priced home has now reached $31,210 nationally, a record high and a 55 per cent increase since 2019. In Queensland, the stamp duty burden has nearly tripled. As such, foreign investors can pay up to four and half times the amount paid by local investors this remains a significant barrier to new housing investment.	HIA recommends: • Abolishing stamp duty surcharges and land tax surcharges on foreign investors; • Adopting tax-neutral investment rules to encourage institutional participation; • Reviewing the effectiveness of investor surcharges annually; and • Providing long-term certainty to restore investor confidence.

Preliminary Recommendation 21 – Utility Connections		
Any requirements or conditions applied by utility providers should align, as far as practicable, with existing agreed standards. ***Where they do not align, the utility provider should offer clear, transparent, and evidence based justifications for any differing requirements imposed.***	**Further information** The adopted procedures and requirements of utility providers for new developments are routinely amended with limited consultation with industry and often implemented without a cost benefit analysis, with little to no options available to challenge changes once introduced. **Examples** The poor communication and lack of review processes for utility providers is emphasised by the following: • In 2024, HIA was advised by members that Energy Queensland had ceased granting individual power connections to freehold terrace houses due to a suspected issue of power leakage between connected dwellings. Approximately 18 months later, following significant industry lobbying and following a review by an independent consultant, Energy Queensland confirmed the risk of power leakage between terrace houses was negligible. This issue emerged despite terrace houses being constructed across the country and individually connected to power for nearly two decades without any reported issue. • In 2025, without any consultation, HIA has been advised that Energy Queensland have begun requesting that easements are registered on new allotments in proximity of pad-mounted transformers. This severe restriction on new residential land appears to have been implemented without any proper regulatory analysis.	HIA supports this recommendation and emphasises the need for a structured approach to implementing significant changes to utility provider procedures and requirements. Of consideration should be: • A regulatory impact analysis for potential impacts on industry and consumers; • Industry consultation allowing stakeholders to provide feedback before changes are finalised; and • A scheduled implementation date to proposed changes with transitional arrangements to maintain certainty and confidence on pre-committed projects.

Appendix 1 – Supporting information for Recommendation 5

Review of the Building Act & Planning Act

HIA supports Preliminary Recommendation 5 and provides the following information to assist with the Commission's understanding of the key issues relating to the *Building Act 1975* and *Planning Act 2016*.

Some of the key issues relating to the interplay between the Planning and Building Act include the following:

1. Inconsistent views by council on how to define development/ material change of use;
2. Significant variations to design and construction requirements through planning schemes;
3. The Planning Regulation supports duplication of assessments by local governments; and
4. Due to the culmination of the above, there is an extremely complex process to determine if a single house on residential land requires local government approval.

1. Inconsistent views by regulators on how to define development

While consistent definitions of development apply to the entire state under the Planning Act 2016 and the explanatory notes for the Planning Bill 2015 put significant effort on clarifying the application of these definitions to proposed development, there remains inconsistent views by each council on how they define common forms of residential development.

The definition of development is important as it establishes what type of application is required, the assessment pathway, timeframes, appeal rights, the assessment manager and often what overlays can impose additional requirements under a local government planning scheme. Inconsistency on how to define simple forms of residential development can lead to lengthy disputes between consultants and council officers prior to an application being considered properly made.

Example: What should be a relatively routine and well understood proposals such as knock-down & re-build of a house, or extensions to an existing house, or enclosing a balcony on a unit, or building a secondary dwelling is being defined and assessed inconsistently across Queensland.

For example, Table 1 details how some local governments are currently defining the construction of a secondary dwelling.

Local Government Area	Type of Development	
	Building Work	Material Change of Use
Brisbane	✓	
Moreton Bay	✓	
Gold Coast		✓
Sunshine Coast		✓
Scenic Rim		✓
Logan		✓
Noosa	✓	

Table 1: *Defining a secondary dwelling across select LGAs*

The concept of a material change of use was introduced into the Queensland planning framework in 1997. However, HIA suggests that it has not effectively served homeowners or the industry well, given that it remains the subject of ongoing debate among professionals nearly three decades later.

2. Significant variations to design requirements through planning schemes

While some stakeholders have noted it is necessary to vary the Queensland Development Code (QDC MP1.1 and MP1.2) for climatic considerations, this is incorrect and does not align with the core issue being experienced in practice.

The National Construction Code (NCC) includes a rigorous assessment process to ensure all new buildings are designed to respond appropriately to Australia's diverse climatic conditions. The NCC defines eight (8) distinct climate zones, and depending on a property's location, orientation, and the proposed building design and materials, a range of tailored measures must be implemented. These requirements are verified through an energy assessment at the building approval stage to confirm that each home meets climate-responsive standards.

Typical factors assessed as part of this process include:

- The size of roof eaves and the need for vertical shading devices;
- Orientation of living areas;
- Restrictions on the colour and materials for roofing and external walls ;
- Design features that promote cross and stack ventilation;
- Restrictions on window sizes and configurations relative to floor area;
- Minimum insulation requirements for ceiling, wall and floor areas; and
- The use of high-performance glazing to reduce solar heat gain.

In HIA's view, many strategic planners either overlook or misunderstand this part of the building approval process, in an attempt for councils to justify further controls over the design and siting of new buildings.

The core issue occurring in practice is that through planning scheme provisions, councils are imposing significant variations to QDC and NCC which are predominantly based on subjective or unquantifiable benefits such as maintaining visual amenity or local character.

Examples of significant variation: Some examples of the significant variations to the QDC and NCC occurring through planning scheme is provided in Table 2 below. The majority of the identified requirements in these council codes relate to unique design and siting provisions for houses and very little variations can be loosely tied to climate or safety concerns.

Planning Instrument	Planning Scheme Code	Variations to QDC
Draft Sunshine Coast Planning Scheme	Dwelling House (Small Lot) Code	51 requirements for accepted development
Moreton Bay Planning Scheme 2016	Dwelling House Code	59 requirements for accepted development
Brisbane City Plan 2014	Dwelling House (Small Lot) Code	26 requirements for accepted development
Toowoomba Regional Planning Scheme	Small Lot Housing Design Code	30 requirements for accepted development
Noosa Plan 2020	Low Density Housing Code and Low Density Residential Zone Code	95 requirements for accepted development

Table 2: *Example of significant variations through planning schemes*

The variations referenced above are only related to individual design codes. Certifiers and planners need to also review other planning scheme requirements such as overlay codes or individual plans of development (PODs) on subdivision approvals to check if further variations apply.

Examples of conflicting requirements: Concerningly some of the requirements being specified under planning schemes directly conflict or inadvertently change the intent of the NCC as detailed in Table 3 (below).

Planning Instrument	Planning Scheme Requirement	NCC Requirement
Draft Sunshine Coast Plan	The Transport and Parking Planning Scheme Policy (Table 5.40) specifies apartments with more than 10 dwellings – install 1 EV charger for every 10 car parking spaces.	EV pre-provisioning of all car parking spaces in an apartment building (Class 2 building).
Cairns Plan 2016	The Hillslope Overlay specifies dark coloured roofs and external walls	Climate Zone 1 requirements seek lighter coloured roofs and walls limiting maximum solar absorptance (SA) to 0.45.
Brisbane City Plan 2014, Sunshine Coast Planning Scheme 2014 & Cairns Plan 2016	The Bushfire Overlay Code specifies a range of mitigation strategies for Class 4, 5, 6, 7 and 8 Buildings including: • Maximum bushfire attack levels; • Nominating minimum clearances from vegetation; • Provisions about the size of water tanks or tank fittings.	The NCC and associated Australian Standard (AS3959) purposely excludes Class 4, 5, 6, 7 & 8 Buildings from bushfire mitigation measures.
Moreton Bay Planning Scheme 2016	The Flood Overlay Code specifies the minimum floor level for Class 10 buildings in flood hazard areas is at the Defined Flood Level.	The NCC and ABCB – Construction of Buildings in Flood Hazard Areas purposely permits Class 10 buildings to have a floor level up to 1m below the Defined Flood Level.

Table 3: *Example of conflicts with NCC through planning schemes*

HIA is concerned that the State Interest Review process for new planning schemes does not appear to include oversight by any Queensland Government department to prevent unlawful duplication or variation of the QDC or NCC through planning schemes.

3. The Planning Regulation supports duplication of assessment by local governments

Schedule 9 of the *Planning Regulation 2017* includes several referrals to council which can apply to building work applications where a private building certifier is the assessment manager. Through planning schemes or a resolution, council has the ability to trigger referral for a broad range of design related matters at their discretion.

The common referrals being utilised by councils include the following:

- Schedule 9, Division 2, Table 1 – Amenity & Aesthetics;
- Schedule 9, Division 2, Table 3 – Design & Siting; and
- Schedule 9, Division 2, Table 8 – Building work for particular Class 1 buildings relating to a MCU.

There is a significant amount of duplication through the above referrals which often will trigger multiple assessments for the same identified non-compliance.

Example: For example, a new dwelling house which exceeds 50% site cover on a 400sqm allotment in Brisbane results in a single non-compliance with the Dwelling House (Small Lot) Code but triggers three different referrals under the Planning Regulation including:

- Amenity & Aesthetics;
- Design & Siting; and
- Building work for a particular Class 1 building relating to a MCU.

Of substantial concern is that there is no statutory limitation on council's ability to apply the Amenity and Aesthetics Referral which is at a councils' discretion that development may have adverse effects on the amenity or character of the locality.

Example: For instance, Gold Coast City Council requires an Amenity and Aesthetics Referral for any dwelling house with more than a single kitchen, even though it is generally not possible to visually determine if a dwelling contains two kitchens from the streetscape.

4. Extremely complex process to determine if a house on residential land requires approval

Example: The complexity in approval processes is emphasised by the dwelling house assessment flowchart provided by Sunshine Coast Council (see Figure 1).

It is not uncommon for a council to form the opinion that due to the structure of their planning scheme and the overarching legislation, that multiple permits are triggered to construct a dwelling house. As detailed in Figure 1 (next page), there can be situations where simply constructing a house on residential land requires all/or a combination of the following:

- A material change of use permit;
- A building work permit for planning scheme requirements;
- An operational works permit for filling and excavation if separated from the proposed house;
- A concurrence agency referral to council; and
- Potentially a modification of the subdivision approval that created the allotment if a building envelope was approved.

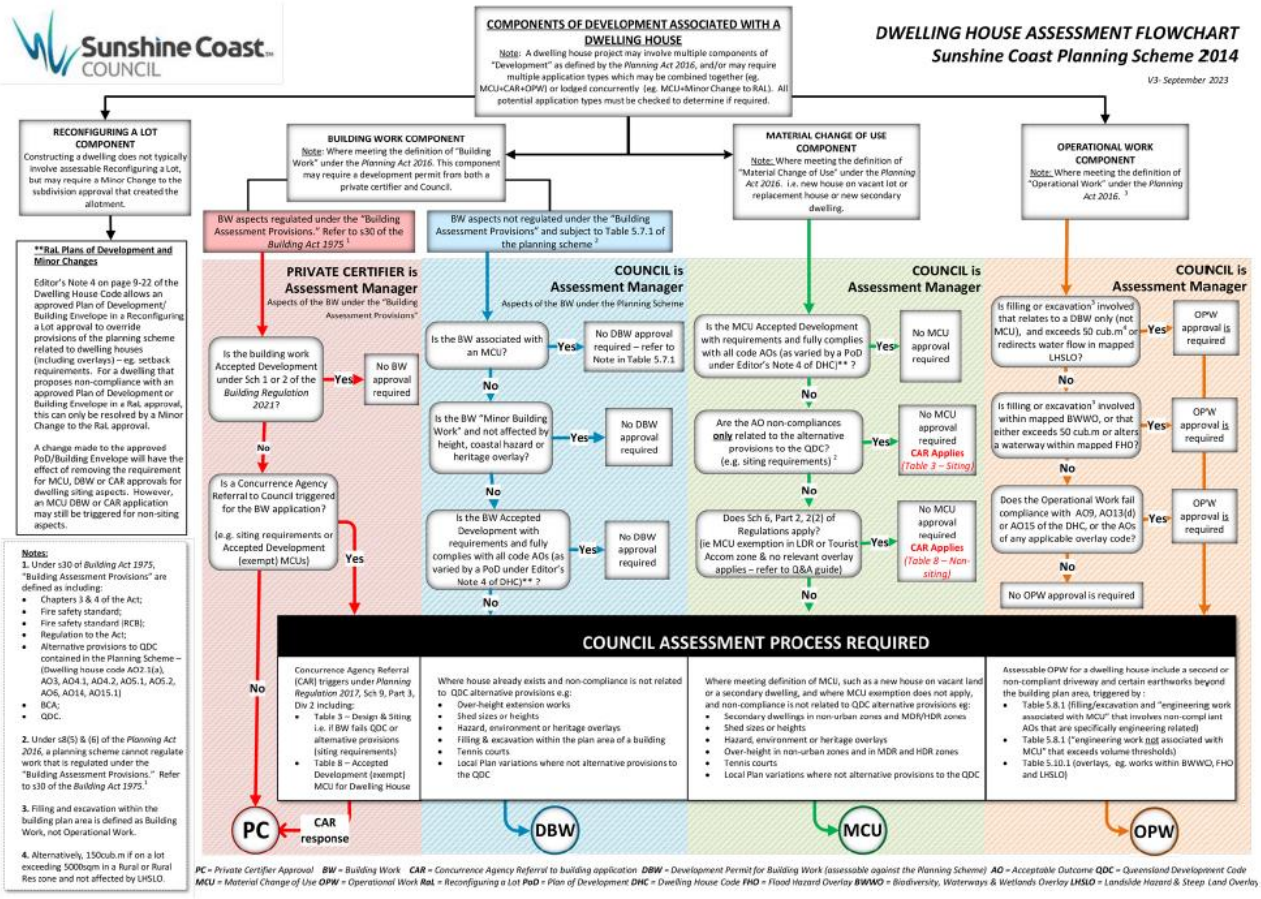


Figure 1: *Dwelling House Assessment Flowchart – Sunshine Coast Planning Scheme 2014*

Certifiers and planners need to carry out this assessment process on each proposed development and the outcomes and requirements that apply vary greatly across each local government area.

HIA emphasises that this convoluted assessment process only resolves what permits are required for the overall design and siting of a dwelling house and that additional local government and utility provider permits can apply prior to and during commencing construction, some common examples include:

- Driveway construction permits under local laws or planning schemes;
- Street tree removal permits under local laws or planning schemes;
- Partial road closure permits when delivery trucks or concrete hose pumps temporarily cross a footpath;
- A construction work zone permit for unloading of materials or placing a skip bins on a verge;
- Plumbing connections and inspection; and
- Building near or over sewer infrastructure from utility providers;
- Building near or over stormwater infrastructure from local government.

All the above permits necessitate fees and charges from local governments or utility providers which are passed onto homebuyers.

Recommendations: HIA suggests the following short-term initiatives and broader reforms relating to the Building Act and Planning Act:

- **Short-Term:**

    - The Queensland Government should provide industry wide guidance with examples of how to define development under the current legislation;

    - The State Interest Review process must include a Queensland Government department reviewing new planning schemes to ensure building assessment provisions are not unlawfully varied or included in proposed planning schemes.

- **Broader Reform:** HIA supports the QPC's recommendation for an independent review of the *Planning Act* and *Building Act*. HIA believes it would be beneficial for the QPC to clearly define the purpose and scope of this review, given the wide range of stakeholders with competing interests.

  HIA suggests the review of the legislation should aim to:

    - Simplify and remove the ambiguity in the definitions of development under the Planning Act;
    - Ensure consistent terminology is used across the Building Act and Planning Act;
    - Remove the duplication of assessments and limit the ability for local governments to trigger referral under Schedule 9 of the Planning Act;
    - Clarify and simplify the assessment manager for all types of development;
    - Introduce a state-wide mandatory code for the design of detached houses and duplexes with streamlined approval processes (as accepted development) in certain circumstances;
    - Establish consistent currency periods for development approvals;
    - Introduce consistent rules for overlays including triggers for assessment and assessment benchmarks;
    - Introduce a cost-benefit analysis process to any proposed variation of the state-wide requirements; and
    - Standardise forms that local governments require when assessing referrals.

Progressing standardised designs for detached housing and townhouses

HIA supports Preliminary Recommendation 5 in relation to progressing standardised designs for detached housing, secondary dwellings, townhouses and apartment buildings. It is emphasised that any standardised designs need to be mandatory or an overriding component of the legislation and also associated with streamlined approval pathways to be beneficial.

Standardised designs for dwelling Houses – Draft Queensland Housing Code

In relation to detached housing, the industry has been advised by the government that the Queensland Housing Code will not be mandatory, allowing each council to create their own dwelling house codes. This completely removes any benefit of developing the code in the first place and simply repeats the current situation with QDC MP1.1 and MP1.2, not resulting in genuine benefits in productivity.

The proposed Queensland Housing Code will also not apply in Priority Development Areas (PDA) where a significant volume of detached house construction occurs in Queensland each year. Industry

would benefit from a 'single source of truth', being a design code which brings certainty for industry and homeowners that a design is supported across the entirety of residential land in Queensland.

To add to the complexity of design requirements for houses, most developers have adopted a practice of requesting that councils approve unique plans of development (PODs) on new subdivisions to establish different design and siting requirements for new housing estates. This has largely been done to overrule the outdated provisions within the QDC but also to skirt around the complex provisions within a planning scheme.

The use of PODs in greenfield communities has become prevalent as planning scheme continue to specify setbacks which do not enable the construction of the preferred affordable house design (single storey, double garage, four bedrooms) on a small lot. For example –

- Logan City Council – Specify a 10m road boundary setback for a dwelling house in the Emerging Community Zone;

- Moreton Bay Regional Council – Specify a 5m rear boundary setback for a dwelling house on most lots in the General Residential (Next Generation Precinct) Zone.

To avoid triggering design approvals for each individual allotment, developers will seek to create their own PODs or request bulk siting relaxation approvals. It is not uncommon for these PODs to vary in each stage of a new development which means hundreds of different design and siting requirements apply across the state which either completely or in most cases partly vary an aspect of the planning scheme or QDC MP1.1 or MP1.2.

Ironically, many Local Government's will strongly defend their right to develop boutiques provisions within their planning schemes which they argue better reflect their local jurisdictions, but at the same time happily approve a POD as part of a subdivision that overrides those same provisions.

Example of significant variation through PODs: Table 4 provides examples of PODs that override elements of the planning schemes as well as QDC MP1.1 and MP1.2. This list is indicative rather than exhaustive, highlighting the common occurrence of PODs imposing varying requirements even in the same suburb.

Brisbane		
Bridgeman Downs – Ashton Grove	Ferny Grove – Outlook Estate	Mackenzie – Oak Street
Bridgement Downs – The Hideaway	Fig Tree Pocket – Serene Place	Moggill – The Sanctuary
Brighton – Brighton Landing	Fitzgibbon – Fitzgibbon Chase	Oxley – Douglas Street
Carindale – Astenbrook	Gaythorne – Botanic	Oxley – Park Vue
Carindale - Hilltop	Gumdale – Nichols Street	Pallara – Broadbent Road
Carseldine – Carseldine Chase	Heathwood – Heathwood Ave	Rochedale – Arise
Carseldine – Limestone Park	Heathwood – Parkwood	Rochedale – Gardner Road
Carseldine – Somerset	Heathwood – River Quarter	Rochedale – Rochedale Estates
Doolandella – Forest Park	Inala – Eugenia Street	The Gap – Kilbowie Rise
Doolandella – Outlook on Forest	Inala – Richlands Tafe	The Gap – Vinter Place
Doolandella - Treeline	Kuraby – Pioneer Valley	Upper Kedron – Parksedge
Durack – The Village	Mackenzie – Mackenzie Gardens	Wakerley – Baychester
Gold Coast		
Biggera Waters – Harbour Quays	Hope Island – Cova	Pimpama – Pacific Cove
Carrara – Aqua Vista	Jacobs Well – Calypso Bay	Pimpama – Ridgeline
Carrara – Boonaroo Views	Kingsholme – Montego Hills	Pimpama – The Meadows
Coomera – Big Sky	Maudsland – Huntington Downs	Pimpama – Watersun Rise
Coomera – Coomera Springs	Maudsland – Huntington Rise	Reedy Creek – Kingsmore

Coomera – Coomera Waters	Ormeau – Jacobs Ridge	Reedy Creek – The Observatory
Coomera – Ferndale	Ormeau – Ormeau Ridge	Upper Coomera – Coomera Retreat
Coomera – Genesis	Ormeau – Stewarts Road	Upper Coomera – Highland Reserve
Elanora – Palm Beach Heights	Oxenford – Park Central	Upper Coomera – Riverstone Crossing
Gilston – Banksia Ridge	Pacific Pines – Pacific Pines	Upper Coomera – Stone Creek
Gilston – Gilston Green	Pimpama – Acadia Woods	Varsity Lakes – Varsity Lakes
Gilston – Longhill Parks	Pimpama – Gainsborough Greens	Willow Vale – Waverley Park
Ipswich		
Augustine Heights – Augustine Heights	Chuwar – Rivendell	Pine Mountain – Crestwood
Augustine Heights – Brentford Rise	Chuwar – Stanton Park	Raceview – Parklands
Augustine Heights – Parkway Green	Deebing Heights – Deebing Gardens	Redbank Plains – Cedar View
Augustine Heights – The Springs	Deebing Heiights – Sovereign Pocket	Redbank Plains – Edens Crossing
Bellbird Park – Brentford Forest	Goodna – Cunningham Rise	Redbank Plains – Fernbrook Bridge
Bellbird Park – Brentwood Rise	Karalee – Park Village	Ripley – Providence
Black Soil – Blue Star Park	Leichardt – Heritage Links	Silkstone – Thompson Street
Chuwar – Dan Street	North Booval – Riverwoods	Springfield – Springfield Lakes
Moreton Bay		
Banksia Beach – Dux Creek	Everton Hills – Creekside	Morayfield – Allyra
Banksia Beach – Pacific Harbour	Ferny Hills – Woolshed	Morayfield – Anderson Grove
Bongaree – Bribie Lakes	Griffin – Freshwater	Murrumba Downs – Castle Hill
Burpengary – North Harbour	Griffin – Griffin Heights	Murrumba Downs – Murrumba Rise
Burpengary – The Village	Griffin – Griffin Quest	Murrumba Downs -Northquarter
Caboolture – Central Lakes	Joyner – Riva Estata	Murrumba Downs – Pine River Cove
Caboolture – The Reserve	Kallangur – Bridgeway	Narangba – Forest Rise
Cashmere – Hacker Road	Kallangur – Glenwood	Narangba – Narangba Heights
Dakabin – Alma Heights	Mango Hill – Capestone	Narangba – Panorama
Dakabin – Alma Park Road	Mango Hill – Crest	Narangba – Stone Ridge
Dakabin – Essencia	Mango Hill – Halpine Lakes	North Lakes – Bridgehaven North
Dakabin – Hughes Road East	Mango Hill – Mariana Court	Samford – Samford Skies
Dayboro – Homestead Court	Mango Hill – Park Vista	Warner – Warner Lakes
Redland		
Capalaba – Era	Mount Cotton – Treeline	Thornlands – Kinross
Mount Cotton – Cotton Ridge	Mount Nathan – Nathanvale	Thornlands – Langdon Chase
Sunshine Coast		
Birtinya – Under Kawana Masterplan	Caloundra – Pelican Waters	Little Mountain – Ivadale Lakes
Bli Bli – Cutters Ridge	Caloundra West - Bells Reach	Maroochydore – Sunshine Cove
Caloundra – Bellvista	Forest Glen – Forest Pines	Mountain Creek – Brightwater
Caloundra – Creekwood	Kawana – Oceanside	Palmview – Palmview Forest

Table 4: *Plan of Developments (PODs) setting unique rules for detached housing*

When HIA undertook economic analysis of the productivity loss attached to Queensland not having a mandatory state-wide code for detached housing, the value of lost productivity was conservatively valued at $195 million per annum. A copy of this analysis has been attached to this response (see **Appendix 2**).

Standardised designs for townhouse and apartments

HIA has longed called for the introduction of standardised designs for townhouses and apartments. Since 2016, there has a been significant decline in the number of attached dwellings being constructed in Queensland.

While the SEQ Regional Plan identifies a 'missing middle' and assumes that a significant portion of future dwelling growth will be accommodate via alternative housing types or 'gentle density' such as terrace homes, duplexes and townhouses, this necessary outcome is not reflected in local government planning policy. In fact, the reality is the opposite outcome is occurring with a definite aversion to alternative housing types evident in many council planning schemes.

From 2013 to 2016, on average over 3,000 semi-detached dwellings per year were constructed in Brisbane City Council. Following amendments to the planning scheme in 2024/2025 only 630 building approvals were issued for semi-detached dwellings in Brisbane (see Figure 2 below).

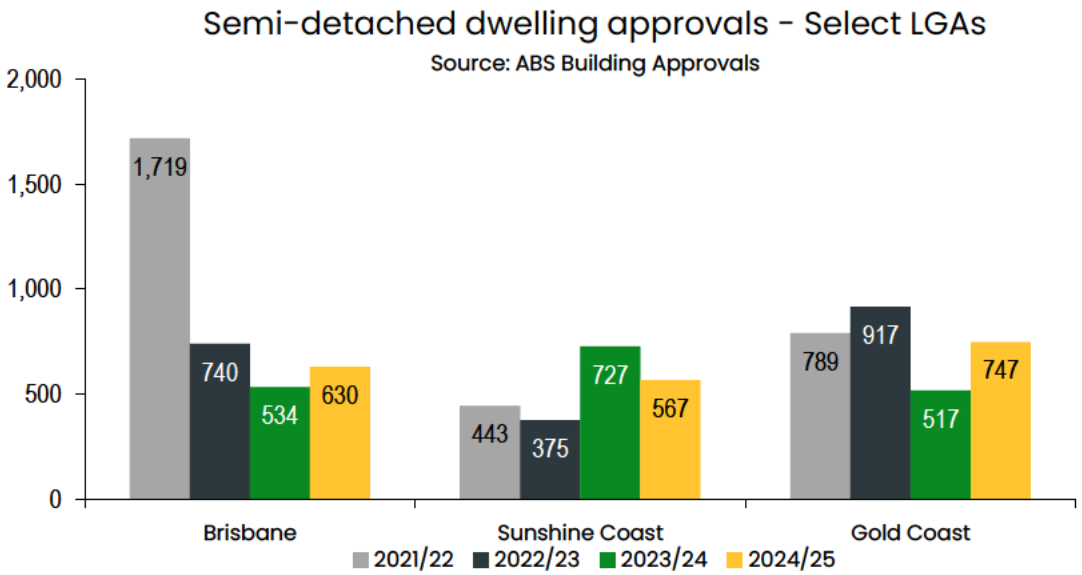


Figure 2: *Building Approvals for Missing Middle remains near historic lows*

Local government planning schemes have been continually amended in favour of requiring larger allotments with increased setback requirements to accommodate standard detached dwellings supposedly based on addressing community concerns regarding perceived impacts on neighbourhood character and streetscape, protecting backyards, car parking and landscaping.

Examples: Amendments to planning schemes throughout Queensland have hindered the commercial viability of providing alternative and affordable housing types. Some notable recent examples include:

Local Government Area	Drescription of Change	Amendment Reference
Brisbane City Council	Banned townhouses in the Low Density Residential Zone.	Amendment Package H (V19.00/2020)
Brisbane City Council	Increasing car parking, landscaping and private open space requirements for multiple dwellings.	Amendment Package J (v17.00/2019) & Amendment Package E (v20.00/2020)
Brisbane City Council	Increased minimum lot size in the Bridgeman Downs Neighbourhood Plan ranging from 500sqm to 700sqm.	Amendment Package O (v28.00/2023)
Moreton Bay City Council	In the General Residential (Next Generation Precinct) Zone, increasing the rear boundary setback for dwelling houses to 5m for lots of greater than 25m. Introducing minimum lot size restrictions for secondary dwellings.	'Better Housing Amendment' – Planning Scheme Policies Amendment No. 2.

Logan City Council	Increasing minimum lot size by 50sqm in the Low Density Residential (Suburban Precinct) Zone and reducing the density permitted for Dual Occupancies on corner lots in select zones. Introducing a minimum lot size requirement to the Low Density Residential (Small Lot Precinct) Zone. Restricting the number of allotments with a smaller frontage.	'Housing & Lot Diversity Amendment' – Major Amendment No. 3.
Redland City Council	Proposed amendments to reduce the permitted site cover and increase minimum setbacks in the Medium Density Residential Zone Code.	'Medium Density Residential Zone Code Review' (04/20 – Major Amendment) **Not yet adopted**
Gold Coast City Council	While only partly adopted – Several proposed changes sought to: • Rezone some Medium Density Residential Zone to Low-Medium Density Residential Zone; • Introduction of Impact Assessment when exceeding site cover in some circumstances; • Increasing landscaping and setbacks for apartment buildings.	Major Update 2 & 3 Amendment Package (v10) **Partly adopted**

***Table 5**: Recent council planning scheme amendments preventing housing diversity*

Recommendations: HIA suggests the following in the relation to standardised design codes in Queensland:

Detached Housing – Queensland Housing Code

- The proposed Queensland Housing Code should be mandatory across all local governments and Priority Development Areas, meaning it overrides planning schemes;

- Compliance with the Queensland Housing Code should be associated with a streamlined approval process (i.e. any design compliant with the provisions of the Queensland Housing Code on residential land without relevant overlays should be prohibited from assessment or referral to local government);

- The Queensland Housing Code should apply to secondary dwellings as this type of housing is part of the definition of a dwelling house; and

- The Queensland Housing Code should be simplified based on industry feedback to reflect the commonly constructed dwelling house in Queensland. Over an extensive period of time, HIA developed an example state-wide detached housing code which has been attached to this response (**see Appendix 3**).

Disappointingly, Queensland remains one of the few states in Australia without a mandatory state-wide detached housing code given:

- New South Wales – Exempt and Complying Development;
- Western Australia – Streamline WA;
- Victoria – Small Lot Housing Code; and
- South Australia – Planning and Design Code.

Other Types of Housing – Gentle Density

- The Queensland Government should introduce a state-wide for 'Gentle Density' which is mandatory and overrides planning scheme provisions; and

- Compliance with the state-wide code should be associated with a streamlined approval process (accepted development) not dissimilar to the NSW Pattern Book. HIA developed a model code for Gentle Density based on member feedback and recently constructed developments, which is provided in **Appendix 4**.

Appendix 2 – HIA Economics – The cost of not having a statewide house code

HIA ECONOMICS

Cost of not having a State-Wide Housing Code in Queensland

Background

In absence of a single state-wide code for detached housing every new build and renovation project requires any or all of the property owner, the designer, the builder and the certifier to assess the proposed project against the requirements and constraints of:

- Local government planning schemes;
- Approved plans of development;
- Conditions on the approval of subdivisions;
- Some state government constraints e.g. transport corridors;
- Queensland Development Code; and
- Developers' covenant.

These assessments all add to the cost of gaining an approval and can also add to the cost of construction. In many cases all of these instruments need to be assessed to cover off on all of the aspects of the proposed home, adding further to the complexity and cost.

An estimate of these costs is made below: the list is not exhaustive and attempts to measure orders of magnitude given the difficulties with obtaining precise costings.

The estimates assume 20,000 detached home approvals and 60,000 approvals for renovations in Queensland each year. Certifiers have estimated that about half of these 80,000 applications need some level of local government planning approval.

1. Cost of establishing development constraints and the potential need for a planning application

While zoning information is readily available on most council websites, information about conditions on subdivision development approvals and plans of development are more difficult to find, or even determine if they exist, especially on older subdivisions.

Councils will provide reports on these constraints but at a significant cost and with weeks delay. Such a planning report from council would typically cost $500 – $1,000 and take 4 - 6 weeks to prepare.

Not all detached home projects or renovations would need a detailed investigation like this, but every project would need some level of assessment by a designer, builder or certifier, in the first instance to consider whether a planning application is needed.

- A conservative estimate of this initial level of assessment costs $100 per job or $8 million across the industry

If 20% of the half of all homes during this initial assessment determines that a planning application is needed purchase a report (averaging $750) from a local government

- The cost to homeowners would be $6 million

For the other 80% of the half that do not purchase a local government report it is assumed that they spend an equivalent amount undertaking their own assessment of the development constraints

- The cost would be $24 million

For those undertaking a new detached build and assuming a $210,000 land value for a delay of 5 weeks at 5% the cost to each homeowner for the delay would be $1,010.

- So the delay cost for all homebuyers needing these searches would be $ 2 million

For those who undertake their own enquiries the delay is assumed to be one week making

- The cost of the delay $1.6 million.

In total search costs to the home buying community are around $40 million.

2. Cost of developing different plans for different local government areas

Among the twenty or so high growth councils in Queensland, no two have the same code for the construction of a detached home. If plans of development and subdivision conditions are added to this mix there could easily be more than 500 variations of development constraints for a detached home across Queensland. It is estimated that there are at least 300 separate and active plans of development South-East Queensland alone: for renovations locating old plans of development and subdivision conditions there would be many more.

Display home builders estimate that the cost of amending a standard plan to meet the requirements and constraints of a particular lot can be $1,000. Many display home builders have well over 50 standard designs but assuming the average display builder has 30 different standard designs that there are 30 of these builders in Queensland, and that they need five models of each design to meet the requirements of different councils, and each re-design costs $1,000 to undertake.

- The cost on this basis is $4.5 million for display builders only.

The larger builders account for about 20% of the Queensland detached home market, so even if the additional design costs for the other 80% of homes was only $200 per home.

- The cost across the industry would be $3.2 million.

There would also be costs associated with the cost of making mistakes: the wrong version of a design being built in a particular local council area.

- So in total additional design costs could easily be $8 million. With plans being redeveloped on average on a four yearly cycle then the cost would average out at $2 million a year.

3. Homes as displayed may not be able to be built in all local areas leading to sales confusion, redrawing of plans, disappointed customers as additional costs are faced or a different home needing to be selected.

This impact is difficult to quantify without knowing how often this problem arises, but when it does the cost could be significant. Even if it occurred in only 1% of cases and cost $5,000 each to remedy

- The total cost would be $4 million a year.

4. Costs associated with planning applications that can be triggered

It has been estimated that a half of all detached home and renovation projects trigger some kind of development application.

When a planning application is triggered, the applicant and their designer will be required to prepared additional documentation for submission to council. In addition to the cost of preparing this documentation there are the additional costs for council application fees and the costs associated with the extension of the approval timeframes.

a. *Council fees*
Typical development application fees for a home or renovation approval would be $1,200 with half of all jobs needing this approval.

- The total cost each year would be $48 million.

b. *Planning reports*
Development applications to council need an associated planning report that covers all of the constraints on the site and how the applicant addresses those issues; these reports are not required for a building approval. A low level planning report would typically cost $1,800 to prepare, so for the estimated 40,000 new homes and renovations that need a report

- The total cost each year would be $72 million.

c. *Delay costs*
A typical code assessable application would add at least 10 weeks of delay. The cost of the delay time would fall mainly on the homeowner as they have paid for land on which they cannot build. Again, assuming a conservative $210,000 land value for 10 weeks at 5% the cost to the homeowner would be $2,020. It is assumed that there are no delay costs for renovations.

Even with a state-wide housing code a proportion of new homes would still trigger a planning application if they did not meet the requirements of the state-wide code. If say 5% of applications were in this category, then planning applications would not cause the 10 week delay for 9,000 homes.

- So the cost to the community from planning delays would be $19 million.

5. Inconsistency leading to uncertainty and risk on planning and design outcomes

The risk of triggering a planning application would encourage some homeowners and developers to adopt conservative approaches to housing design, stifling innovation and market responsiveness. The cost of this conservatism is difficult to quantify.

The spreading of innovation housing solutions is slowed by the many council planning codes that need to be changed before these new solutions can be adopted across the state. A state-wide code would mean that only one code would need to be changed. Again, the benefits from this speed-to-market are hard to quantify.

6. Costs to local government

a) Developing their unique codes

A council could spend $2 million on staff and/or consultants developing their own version of a housing code and a further $0.5 million per year maintaining and updating that code. If twenty of the higher growth councils adopt their own housing code in this way, the total cost to the community would be a minimum of $10m a year.

b) Administering the planning applications that are triggered

There is an administrative cost associated with opening, assessing and deciding each of the planning applications that are made for a detached home each year that could otherwise be approved via a building application only. It is assumed that the fees charged by council above would cover council's costs.

c) Managing constituent expectations in an uncertain environment

General inquiries from rate-payers about interpreting council-specific housing codes and managing associated complaints would be a cost to council that could potentially be avoided if there was a state-wide housing code. However these costs are difficult to estimate.

d) Wasting planning expertise on low level planning applications

These costs are also difficult to estimate but would include the cost of enforcing complex codes when complaints are made of alleged non-compliance.

7. Costs associated with disputes and appeals

The complexity and inconsistency among the council housing codes generates mistakes by applicants and council staff which will result in disputes and appeals to the Dispute Resolution Committees or the courts. These will be expensive matters for both applicants and council. Each dispute would cost the applicant a minimum of $1,000 with a similar figure for the council.

So with a minimum of $2,000 per dispute the cost for say 500 disputes that go to the Disputes Committees alone would be a minimum of $1 million. The cost of disputes going to the courts would be considerably higher and there would also be costs for those disputes that were resolved prior to a formal procedure.

8. Costs associated with disputes and appeals

Councils imposing their own building requirements as part of the housing codes and development approval conditions can add unnecessarily to the cost of housing, notwithstanding the council arguments about local circumstances. The requirement for recycled water plumbing in some areas where recycled water is not available is one example. Councils specifying building material and design features can also add to costs (without even a rudimentary cost-benefit assessment of the requirements).

Conclusion

The absence of a mandated state-wide housing code is at least $150-200m each year in direct costs and considerable additional indirect costs as summarised below.

1	Cost of establishing development constraints and the potential need for a planning application	
2	Builders need to develop different plans for different local government areas	$2m
3	Homes as displayed may not be able to be built in all local areas leading to sales confusion, redrawing of plans, disappointed customers as additional costs are faced or a different home needing to be selected.	$4m
4	Costs associated with planning applications that can be triggered	$139m
5	Inconsistency leading to uncertainty and risk on planning and design outcomes and slow adoption of innovation as changes to many codes are required	? Severe societal cost not quantifiable by HIA
6	Costs to local government	
a.	Developing their unique codes	a. =$10m
b.	Administering the planning applications that are triggered	b., c., d. = ? (Severe administration cost to council not quantifiable by HIA)
c.	Managing constituent expectations in an uncertain environment	
d.	Wasting planning expertise on low level planning applications	
7	Costs associated with disputes and appeals	$1m
8	Costs associated with building-related conditions	? Severe financial cost for homeowner not easily quantifiable
	Total	***Minimum $195m per annum***

Appendix 3 – HIA's Example Statewide House Code

Queensland Housing Code

Purpose

To provide consistent standards across Queensland for good residential design that promotes the efficient use of a *lot*, provides an acceptable amenity to residents, facilitates off street parking and minimises regulatory delays and costs associated with gaining development approval.

Application

This Code applies to new building work for a single *detached dwelling*, a *secondary dwelling* and associated buildings and structures on lots in a *residential zone* including *community title* lots having only one *detached dwelling* on a lot.

The Code overrides all design and siting provisions applying to the land, including:

- Preliminary approvals issued pursuant to s 3.1.6 of the *Integrated Planning Act 1997*;
- Preliminary approvals issued pursuant to s 242 of the *Sustainable Planning Act 2009*;
- Variation approvals issued pursuant to s 61 of the *Planning Act 2016*;
- Conditions included in any development approval attached to the land pursuant to s 3.5.28 of the Integrated Planning Act 1997;
- Conditions included in any development approval attached to the land pursuant to s 245 of the Sustainable Planning Act 2009;
- Conditions included in any development approval attached to the land pursuant to s 73 of the Planning Act 2016;
- *PDA development approvals issued under the Economic Development Act 2012.*

Italicised words within the body of the text are defined in the Dictionary.

Referral Agency

The Local Government is a concurrence agency as prescribed in Schedule 9, Part 3, Division 2, Table 3 – Design and Siting of the *Planning Regulation 2017*.

Associated Requirements

Compliance with this standard may not be the only requirement. Planning schemes overlays, local laws, and State Acts may impose additional requirements.

Referenced Standards

National Construction Code.

Australian Standards AS 2890.1:2004 Parking facilities – Off-street car parking.

Queensland Development Code NMP 1.1 Driveways.

PRIMARY AND SECONDARY ROAD FRONTAGE

<table>
<tr><th>Performance Criteria</th><th>Acceptable Solution</th></tr>
<tr><td>P1
A building is setback from the road frontage to:
a) maximise the use of the lot; and
b) contribute positively to the existing or intended streetscape of the area.</td><td>A1
The minimum setback of a building from a road complies with Table 1 and the following provisions:

TABLE 1

<table>
<tr><td></td><td colspan="4">Lot width (metres)</td></tr>
<tr><td></td><td>≤ 7.5</td><td>7.5 ≤ 10</td><td>10 ≤ 16</td><td>> 16</td></tr>
<tr><td colspan="5">Primary road frontage</td></tr>
<tr><td>Building</td><td>2.0</td><td>2.5</td><td>3.0</td><td>4.5</td></tr>
<tr><td>Garage door</td><td colspan="4">5.5[1]</td></tr>
<tr><td colspan="5">Secondary road frontage</td></tr>
<tr><td>Building</td><td>1.0</td><td>1.5</td><td>1.5</td><td>1.5</td></tr>
<tr><td>Garage door</td><td>1.0[1]</td><td>1.5</td><td>1.5</td><td>1.5</td></tr>
</table>
Note 1: The minimum setback of the garage door is the same setback as the building where the natural ground between the road frontage and the dwelling has a slope greater than 1 in 4.

AND

Where the lot area is less than 450 m² and the garage door faces the road frontage, the garage door must be recessed at least 1.0 m from either:
a. an upper storey or balcony where the building is more than one storey; or
b. an eave of a single storey building over the elevation facing the road frontage; or
c. a wall of the building having an area in elevation to the street of at least 6 m².

Note: A combination of a and b may be used where the building is one and two storeys.</td></tr>
</table>

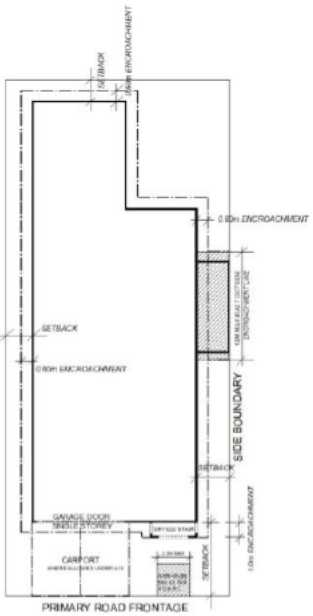


FIGURE A
SINGLE STOREY

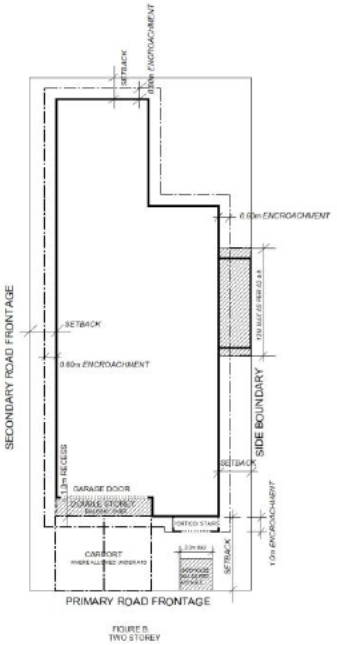
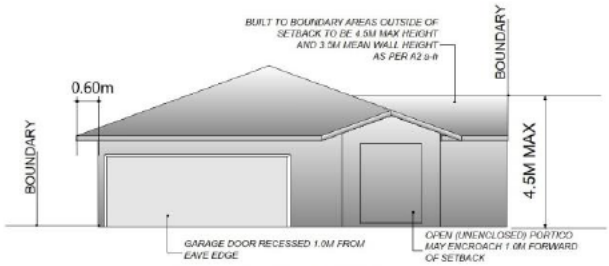


FIGURE B
TWO STOREY

SIDE AND REAR BOUNDARY SETBACK

Performance Criteria	Acceptable Solution
P2 A building is setback from the *side boundary* and/or *rear boundary* of a lot to: a) maximise the use of the *lot*; and b) lessen any impact on the amenity and privacy of residents on adjoining properties.	A2 The minimum setback of a building from a *side boundary* and/or *rear boundary* complies with Table 2 and the following provisions: **TABLE 2** **_Lot width_ and _lot_ area** / **_Building height_**: **≤ 4.5 m** | **4.5 ≤ 8.5 m** **≤ 15 m and < 450 m²**: 1.0 m | 1.0 m **≤ 15 m and ≥ 450 m²**: 1.0 m | 1.5 m **> 15 m and < 450 m²**: 1.0 m | 1.0 m **> 15 m and ≥ 450 m²**: 1.5 m | 2.0 m OR A *matching wall* is set back no more than 25 mm from a boundary where the adjoining building is also set back no more than 25 mm from the same boundary and is built at the same time; AND A building may be built closer that the minimum setback prescribed in Table 2 where: a. the *lot* area, excluding any accessway to a *battle-axe lot* is less than 1,000 m²; and b. the total length of all buildings within the minimum *setback* along any one boundary is not more than 12 m; and c. the maximum wall height within the minimum *setback* is 4.5 m; and d. the *mean height* within the minimum *setback* is 3.5 m; and e. the roof over that part of the building within the minimum setback is contained within an envelope measured at 25 degrees perpendicular to the boundary from the maximum allowable wall height; and f. the building or is no closer than 1.0 m to a *required window* of a *habitable room* of an adjoining building.

	 PRIMARY ROAD ELEVATION

ENCROACHMENTS

Performance Criteria	Acceptable Solution
P4 Encroachments on the *primary road frontage* and *secondary road frontage setback* contribute positively to the existing or intended streetscape of the area. Encroachments on the *side boundary* and *rear boundary setback* lessen the impact on the amenity and privacy of residents on adjoining properties.	A4 Eaves, window hoods, wall trimmings, hot water systems, electrical switchboards, meters and the like may encroach into the prescribed frontage, side and rear setbacks by up to 0.6 m; AND Unroofed stairs and required landings may encroach into the *frontage*, side and/or rear *setbacks* by 1.0 m; AND An open portico including eaves, may encroach onto the *primary road frontage* setback by 1 m; AND Gutters may encroach into the prescribed frontage, side and rear setbacks provided they are less than 150 mm in width. Note: Encroachments must be wholly contained within the lot.

SITE COVER

Performance Criteria	Acceptable Solution
P5 Development results in a *site cover* that provides adequate private open space for recreation, service facilities and landscaping.	**A5** The maximum *site cover* of a *building* must comply with Table 3 and the following provisions: **TABLE 3** **Lot Area** **≤ 300 m²** | **300 m² ≤ 450 m²** | **450 m² ≤ 600 m²** | **> 600 m²** **Site Cover** | 80 % | 70 % | 60 % | 50 % AND Where the *lot* area is less than 450 m², the site cover within the area measured 4.5 m from the *rear boundary* is no more than 50 %.

HEIGHT

Performance Criteria	Acceptable Solution
P6 *Building height*: a. is consistent with the height of *dwellings* intended or prevailing in the area; and b. permits adequate sunlight to *dwellings* and private open space in adjoining premises.	**A6** A *dwelling* has a maximum *height* of 8.5 m above *natural ground* at minimum side and rear boundary setbacks as prescribed in Table 2, increasing at no more than 30 degrees to a maximum *building height* of 9.5 m above *natural ground*; OR A *dwelling* on a *lot* with a *slope* greater than 15 % has a maximum *height* of 8 .5 m above *natural ground* at minimum side and rear boundary setbacks as prescribed in Table 2, increasing at no more than 30° to a maximum *building height* of 10 m above *natural ground*; AND An *outbuilding* has a maximum *building height* of 4.5 m and *mean height* of 3.5 m above *natural ground*.

PRIVACY ON LOTS 450 m² OR LESS

Performance Criteria	Acceptable Solution
P7 Development minimises direct overlooking between *dwellings*.	**A7** Where a window to a *habitable room* with a finished floor level more than 1 m above *natural ground* has: a. a sill less than 1.5 m from the floor; and b. is within 3 m of a wall of an existing *dwelling*, the following privacy measures are required: i the window incorporates fixed obscure glazing below 1.5 above floor level; or ii the view from the window is obscured by at least 50 %. Where an external deck has: a. a finished floor level more than 1 m above *natural ground* level; and b. is within 3 m of a wall of an existing dwelling on an adjoining *lot*; the deck has an external screen that obscures 50 % of the sight line to the other dwelling.

PRIVATE OPEN SPACE ON LOTS 450 m² OR LESS

Performance Criteria	Acceptable Solution
P8 Development includes private open space that has usable proportions.	**A8** A *detached dwelling* is to be provided with an area of uncovered private open space which has: a. a minimum dimension of 2 m; and b. a minimum area of 16 m²; and c. is directly accessible from a *habitable room*. Note: Direct access to private open space can be via a roofed outdoor area.

CAR PARKING AND ACCESS

Performance Criteria	Acceptable Solution
P9 Sufficient car parking is provided on site for residents. Car parking spaces are accessible and of an appropriate size.	**A9** One car parking space is provided per *dwelling*; AND Car parking space dimensions and the location of a driveway are in accordance with Australian Standards AS 2890.1:2004 *Parking facilities – Off-street car parking*; AND Driveways are constructed in accordance with the Queensland Development Code NMP 1.1 Driveways except for the location of a driveway.

ANCILLARY STRUCTURES

Performance Criteria	Acceptable Solution
Primary and Secondary Road *Frontage*	
P10 Structures visible from the *primary road frontage* and *secondary road frontage* are consistent with and complement the streetscape.	**A10** For a *carport*, the minimum *primary road frontage* and *secondary road frontage* setback is 0 m where: a. the aggregate perimeter dimension of walls, solid screens, and supports located within the setback does not exceed 15% of the total perimeter dimension (along the line of supports) of that part of the carport within the same setback; and b. there is no alternative on-site location for a carport that will allow vehicular access having a minimum width of 2.5 m; AND Where the lot area is less than 450 m^2 the width of the *carport* facing and visible from the *road* is the lesser of 6m or 50 % of the street frontage. For a screen, fence, water tank, retaining wall or a combination thereof, the minimum setback is 0 m if not more than 2 m in height. For a roofed gatehouse or arch the minimum setback to any street *frontage* is 0 m if: a. a maximum roofed area of 4 m^2; and b. not more than a 2 m wide elevation to the street; and c. not more than 3 m in height.
Side and Rear Boundary	
P11 A structure built on a lot boundary is of a domestic scale which minimises impact on amenity on *dwellings* and private open space on adjoining premises.	**A11** The minimum setback is 0 m where: a. the structure is not more than 2.4 m high within the prescribed boundary setback and used for ornamental or horticultural purposes only and not used for recreational purposes eg deck or patio; or b. a rainwater tank including and supporting structure such as a stand and is not more than 2.4 m high within the prescribed boundary setback; or c. a screen, fence, retaining wall or a combination thereof, if not more than 2 m in height within the prescribed boundary setback.

SWIMMING POOL

Performance Criteria	Acceptable Solution
Primary and Secondary Frontage	
P12 The swimming pool is setback from the primary and secondary road *frontage* to minimise splashing of pedestrians.	**A12** For a swimming pool, the minimum setback is: a. 1 m; or b. less than 1 m where there is a solid wall or fence at least 1.8 m high measured on the inside of the fence.
Side and Rear Boundary	
P13 The swimming pool is setback from the *frontage* to minimise splashing into the adjoining premises.	**A13** For a swimming pool, the minimum setback is: a. 1 m; or b. less than 1 m where there is a solid wall or fence at least 1.8 m high measured on the inside of the fence.

DICTIONARY

Acceptable solution has the same meaning as "Deemed-to-Satisfy Solution" in the Building Code of Australia – Volume 2.

Balcony means any external platform, attached to and accessed from a building and 1 metre or more above *natural ground*.

Battle-axe lot means a lot that has access to a road via an accessway.

Building has the same meaning as in the *Building Act 1975*.

Building height means the vertical distance between *natural ground* and the highest point of the building at that location, but not including any antennae, chimneys, flues or the like. Refer also to *mean height*.

Carport means a carport with:

(a) two sides or more open, and a side is also considered open where the roof covering adjacent to that side is not less than 500mm from another building or a side or rear allotment boundary; and

(b) not less than one-third of its perimeter open.

Community Title refers to title created by subdivision of land by way of a standard format plan of a community title scheme given under the provisions of the *Body Corporate and Community Management Act 1997* (BCCM Act).

Detached dwelling means either one *dwelling* or one *dwelling* and a *secondary dwelling* on a *lot*.

Dwelling means a Class 1 building as defined in the Building Code of Australia – Volume 2 that:

(a) is used, or capable of being used, as a self-contained residence; and
(b) may contain a *garage* that is under the same roof structure as the dwelling; and
(b) contains:

(i) food preparation facilities; and

(ii) a bath or shower; and

(iii) a toilet; and

(iv) a wash basin; and

(v) facilities for washing clothes.

Frontage means the road alignment of a *lot*.

Garage means an enclosed Class 10a building as defined in the Building Code of Australia – Volume 2, providing covered vehicular parking.

Habitable room has the same meaning as in the Building Code of Australia – Volume 2.

Lot has the same meaning as the *Planning Act 2016*.

Lot width means either the dimension parallel to the *road* boundary or where the lot has an irregular shape, the average width of the lot, not including any accessway of a battle-axe lot.

Matching wall means a wall which is offset in length and height no more than 25 % from an adjoining wall.

Mean height means the vertical height worked out by dividing –

(a) the total elevational area of that part of the building within the minimum setback facing the boundary; by

(b) the horizontal length of the building or structure facing the boundary.

Refer also to *building height*.

Natural ground, for a lot, means

(a) the ground level of the lot on the day the first plan of survey showing the lot was registered; or

(b) if the ground level on the day mentioned in paragraph (a) is not known, the natural ground surface as determined by the building certifier.

Outbuilding means a Class 10a building as defined in the Building Code of Australia – Volume 2, that is detached from but ancillary to a dwelling on the same *lot* and is limited to non-habitable buildings for the purpose of a shed, *garage* and *carport*.

Performance criteria has the same meaning as "Performance Requirement" in the Building Code of Australia – Volume 2.

Primary road frontage means the frontage most commonly addressed by other buildings in the street or if unclear, frontage to the road nominated by the property address.

Rear boundary means the boundary opposite the *primary road frontage* which adjoins another residential lot where not a *side boundary*.

Side boundary means the boundary adjacent to the *primary road frontage* which adjoins another residential lot.

Required window means the minimum area of a window required by the Building Code of Australia – Volume 2 to provide natural light to a habitable room.

Residential zone means a lot:

a) designated in a planning instrument defined in the *Planning Act 2016*;
b) subject to a preliminary approval issued pursuant to s 3.1.6 of the *Integrated Planning Act 1997*;
c) subject to a preliminary approval issued pursuant to s 242 of the *Sustainable Planning Act 2009*;
d) subject to a *variation approval* issued pursuant to the *Planning Act 2016*; and
e) subject to a PDA development approval under the *Economic Development Act 2012*.

where the primary purpose is to provide for a single *dwelling* on a *lot*.

Road means –

(a) an area of land dedicated to public use as a road; or

(b) an area open to, or used by, the public and developed for, or has, as 1 of its main uses, the driving or riding of motor vehicles; and

(c) does not include a pedestrian or bicycle path.

Secondary dwelling means a *dwelling*, whether attached or detached, on the same lot having an area of 80 m^2. The area is measured from the outside of external walls and the centre of any common walls of the building, but not including an area used for parking one car or an unenclosed *balcony*.

Secondary road frontage means a road *frontage* of a lot that is not the *primary road frontage* and includes *frontage* to a park.

Setback means:

a) for a building or structure other than a swimming pool, the shortest distance measured horizontally from the wall of a building or structure to the vertical projection of the boundary of the lot.

b) for a swimming pool, the shortest distance measured horizontally from the water's edge to the vertical projection of a boundary of the lot

Side boundary means the boundary adjacent to the *primary road frontage* which adjoins another residential property.

Site cover means the proportion of *lot* covered by buildings and structures roofed with impervious materials calculated to the walls of buildings and 0.65 m inside the line of the roof over an open covered area and expressed as a percentage of the *lot* area. The term does not include:

a) any structure or part thereof included in a landscaped open space area such as a gazebo or shade structure.
b) basement car parking areas located wholly below ground level.

Slope means the gradient of the natural ground of a lot measured across a 20m x 20m area over the building location, or where the lot is less than 20m wide – 20m x width of lot.

Structure has the same meaning as in the Building Act 1975.

Window has the same meaning as in the Building Code of Australia.

Appendix 4 – HIA's Example Model Code for Gentle Density

Gentle Density Model Code

(Note: Highlighting indicates amended required to existing legislation or a new document is required)

Purpose

To provide consistent standards across Queensland for low rise multi-residential development by improving housing choice, providing acceptable amenity to residents and neighbouring properties, facilitating off street parking and minimising regulatory delays and costs associated with gaining development approval.

Application

This Code applies to development (building work, material change of use and the reconfiguration of a lot) for a *dual occupancy*, *multiple dwelling* and associated buildings and structures for properties in the following *residential zones:*

- Low Density Residential Zone;
- General Residential Zone; and
- Low-Medium Density Residential Zone.

The Code overrides all design and siting provisions applying to the land, including:

- Applicable requirements of the local categorising instrument (planning scheme);
- Preliminary approvals issued pursuant to s 242 of the *Sustainable Planning Act 2009*;
- Variation approvals issued pursuant to s 61 of the *Planning Act 2016*;
- Conditions included in any development approval attached to the land pursuant to s 245 of the Sustainable Planning Act 2009;
- Conditions included in any development approval attached to the land pursuant to s 73 of the Planning Act 2016.

Italicised words within the body of the text are defined in the Dictionary.

Assessment Manager

Compliance with the identified requirements is prohibited from assessment under a local categorising instrument in accordance with Schedule 6, Part 6, Division 1 of the *Planning Regulation 2017*.

Non-compliance with the identified requirements is assessable development and Local Government is the assessment manager as prescribed in Schedule 8, Table 5 and Schedule 10, Part 22, Division 1, Table 1 – Assessable development in accordance with the Gentle Density Model Code of the *Planning Regulation 2017*.

Associated Requirements

Compliance with this standard may not be the only requirement. Planning scheme overlays not identified in this Code, local laws, and State Acts may impose additional requirements. A set of standard conditions applies to each typology which are to be imposed as conditions of a building approval by a building certifier.

Referenced Standards

National Construction Code.

Australian Standards AS 2890.1:2004 Parking facilities – Off-street car parking.

Queensland Development Code NMP 1.1 Driveways.

DUAL OCCUPANCY/ DUPLEX

PRELMINARY INFORMATION ON THIS TYPOLOGY

Figure 1 – Example Perspective of a Dual Occupancy/Duplex (Attached)

General Description

A Dual Occupancy or Duplex refers to two (2) dwellings on a single allotment. This typology can be provided in an attached or detached form. Dwellings can be arranged to both face the street (side by side), designed for only a single dwelling to address the road frontage (front & rear) or designed on corner lots to face separate road frontages.

This building type is most commonly arranged so that both dwellings are within a single community title scheme under the *Body Corporate and Community Management Act 1997*. However, due to the small nature of the development further subdivision to create freehold land is often completed.

Land Use Definition

In accordance with the *Planning Regulation 2017*, a Dual Occupancy means a residential use of premises involving two (2) dwellings (whether attached or detached) on a single lot.

Suitable Locations, Densities and Design Overview

This typology is commonly supported in the Low Density Residential Zone and General Residential Zone on properties 600m^2 or greater, which results in a maximum dwelling density of 1 dwelling per 300m^2 of site area. On corner lots a lesser site area and greater density is permitted.

3 storey development is expected in the Low-Medium Density Residential Zone and on well-located properties in the Low Density Residential Zone or General Residential Zone. These well-located properties are often within 400m walking distance of a *centre zone* and *high-frequency public transport stop*.

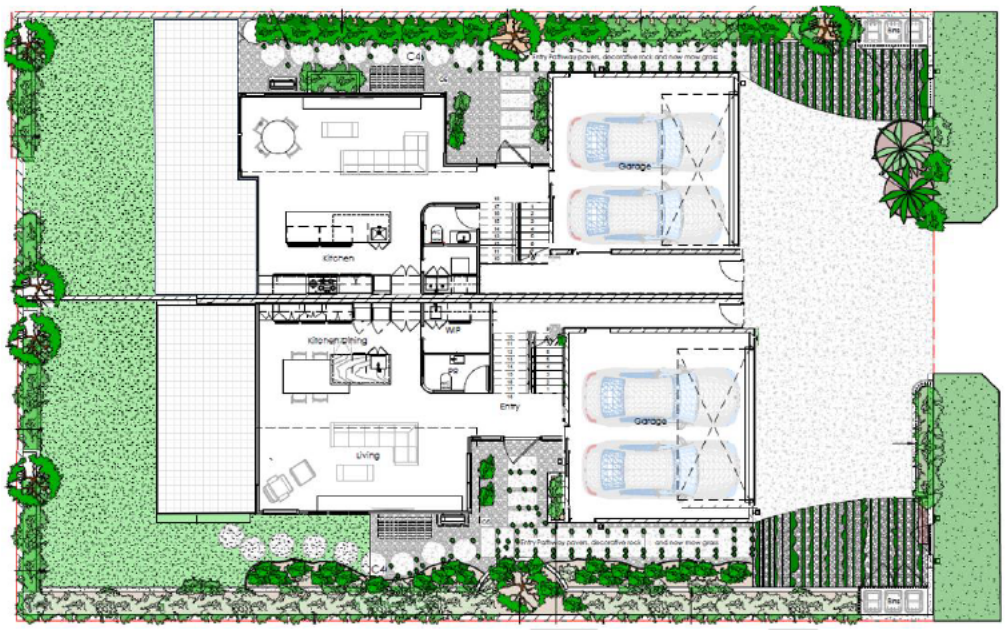


Figure 2 – Example Ground Level Site Plan for a Dual Occupancy/Duplex (Attached)

Please refer to the Gentle Density Model Code – Design Guidelines for greater details.

ASSESSMENT BENCHMARKS FOR A DUAL OCCUPANCY/DUPLEX

MINIMUM SITE REQUIREMENTS

Performance Outcome	Acceptable Outcome
PO1 Development has a site area and frontage width that is sufficient to: a. Accommodate the scale and form of dual occupancy buildings considering site features; b. Not adversely impact on the amenity or privacy of adjoining residents; c. Achieve safe and convenient vehicle access to the site and on-site parking/vehicle manoeuvring.	**AO1** Development minimum site area meets the following requirements: a. 600m^2 in the Low Density Residential Zone or General Residential Zone; or b. 500m^2 on corner allotments in the Low Density Residential or General Residential Zone; or c. 400m^2 in the Low-Medium Density Residential Zone; or d. If a lesser minimum site area requirement applies to the premises under the applicable planning scheme, compliant with the site requirements specified for a dual occupancy under that planning scheme.

BUILDING HEIGHT

Performance Outcome	Acceptable Outcome
AO2 *Building height*: a. is consistent with the height of *dwellings* intended or prevailing in the area; and b. permits adequate sunlight to *dwellings* and private open space in adjoining premises.	**AO2** Development has a maximum building height of 9.5m above natural ground level.

SETBACKS - PRIMARY AND SECONDARY ROAD FRONTAGE

Performance Outcome	Acceptable Outcome
AO3 A building is *setback* from the road *frontage* to: a. Contribute positively to the existing or intended streetscape of the area; b. Enable space for visitor car parking on a driveway; c. Delineate between private and public space.	**AO3** The minimum *setback* of a building from a *road* complies with Table 1 and the following provisions: **TABLE 1** ***Primary road frontage*** | ***Setback [2] (metres)*** *Building* | 4 *Garage door* | 5.5 [1] ***Secondary road frontage*** *Building* | 3 *Garage door* | 5.5 [1] Note 1: The minimum *setback* of the garage door is the same setback as the building where the natural ground between the road *frontage* and the *dwelling* has a slope greater than 1 in 4. Note 2: Setbacks are measured to walls.

SETBACKS - SIDE AND REAR BOUNDARIES

Performance Outcome	Acceptable Outcome
PO4 A building is setback from the *side boundary* and/or *rear boundary* of a lot to: a. maximise the use of the *lot*; and b. minimise impacts on the amenity and privacy of residents on adjoining properties.	**AO4** The minimum setback of a building from a *side boundary* and/or *rear boundary* complies with Table 2 and the following provisions: **TABLE 2** ***Rear Setback*** ***Building height (metres)*** [1] / **Setback** [3] **(metres)** ≤4.5 / 3 >4.5 / 4.5 ***Side Setback*** [2] ***Building height (metres)*** / **Setback (metres)** ≤4.5 / 1 >4.5 / 1.5 * Note 1: Building height is based on natural ground level as defined in Definitions of this Code. * Note 2: Side boundary setback requirements do not apply to internal boundaries between proposed dwellings if involving the reconfiguration of a lot. * Note 3: Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access. OR A *matching wall* is setback no more than 25 mm from a boundary where the adjoining building is also set back no more than 25 mm from the same boundary and is built at the same time; AND A building may be built closer that the minimum side setback prescribed in Table 2 if involving a *non-habitable space* and complying with the following: a. the total length of all buildings within the minimum *setback* along any one boundary is not more than 15 m; and b. the maximum wall height closer than the minimum *setback* in Table 2 is 4.5 m; and c. the *mean height* closer than the minimum *setback* in Table 2 is 3.5 m; and d. the roof over that part of the building within the minimum setback is

contained within an envelope measured at 25 degrees perpendicular to the boundary from the maximum allowable wall height; and

e. the building or is no closer than 1.0 m to a *required window* of a *habitable room* of an adjoining building.

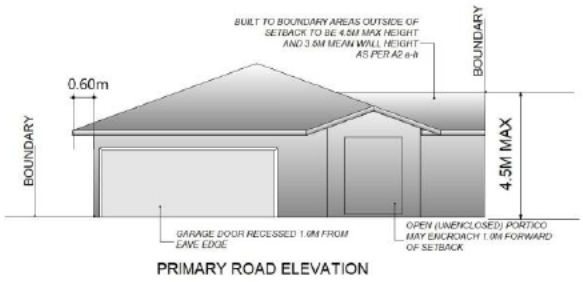


***Figure 1**: Example elevation of built to boundary walls*

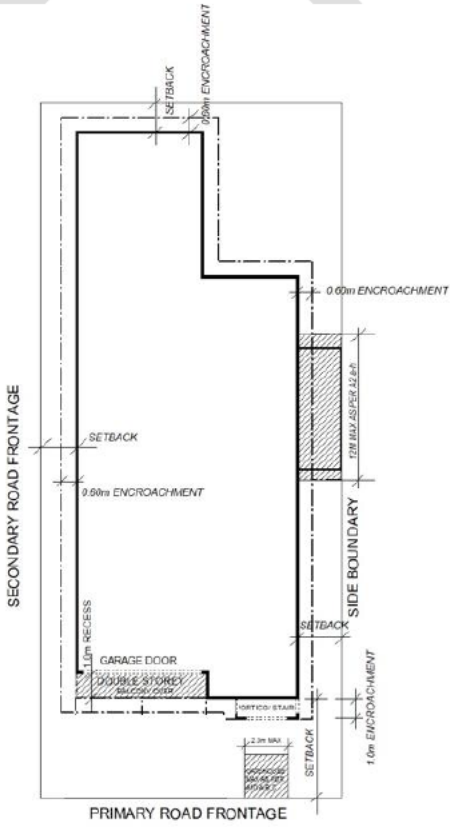


***Figure 2**: Site plan of setbacks*

SETBACKS - ANCILLARY STRUCTURES (PERMITTED ENCROACHMENTS)

Performance Outcome	Acceptable Outcome
PO5 Encroachments on the *primary road frontage* and *secondary road frontage setback* contribute positively to the existing or intended streetscape of the area. Encroachments on the *side boundary* and *rear boundary setback* lessen the impact on the amenity and privacy of residents on adjoining properties.	**AO5** Window hoods, wall trimmings, electrical switchboards, meters and the like may encroach into the prescribed frontage, side and rear setbacks by up to 0.6 m; AND Unroofed stairs and required landings may encroach into the *frontage*, side and/or rear *setbacks* by 1.0 m; AND An open portico including eaves, may encroach onto the *primary road frontage* setback by 1 m; AND For a roofed gatehouse or arch the minimum setback to any street *frontage* is 0 m if: a. a maximum roofed area of 4 m^2; and b. not more than a 2 m wide elevation to the street; and c. not more than 3 m in height. Note: Encroachments must be wholly contained within the lot. Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access. Eaves, rainwater fixtures (gutters) and hot water systems are also excluded from setback requirements. Any hot water system or air conditioning unit must be screened from public view.

SITE COVER

Performance Outcome	Acceptable Outcome
PO6 Development results in a *site cover* that provides adequate private open space for recreation, service facilities and landscaping.	**AO6** The maximum *site cover* of a *building* must comply with Table 3 and the following provisions: **TABLE 3** **Site Area** **≤ 500 m²** / **> 500 m²** **Site Cover**: 60 % / 55 %

PRIVATE OPEN SPACE

Performance Outcome	Acceptable Outcome
PO7 Development includes private open space that is functional for residents and enables passive recreation.	**AO7** A *dwelling* is to be provided with an area of private open space that complies with Table 4 and the following provisions: **TABLE 4** **Site Area** **≤ 400 m²** / **> 400 m²** **Area (sqm)**: 15 / 25 AND a. a minimum dimension of 2 m; and b. is directly accessible from a *habitable room**. * Note: Direct access to private open space can be via a roofed outdoor area. Private open space can be provided via a combination of upper levels balconies, decks and ground level courtyards.

LANDSCAPING

Performance Outcome	Acceptable Outcome
PO8 Development provides landscaping that: a. present an integrate landscape, neighbourhood and streetscape character; b. positively contributes to the amenity and subtropical climate of Queensland; c. reduce the appearance of building bulk and soften hardstand areas from adjoining properties or the streetscape.	**AO8** The following landscaping is provided: a. a minimum 2 m wide strip along front and rear boundaries[1] which can be co-located with private open space; b. a minimum 1 m wide landscaping for a side boundary excluding areas for built to boundary walls, vehicle parking/manoeuvring, services or building maintenance; and c. a minimum 1.5 m x 1.5 m area for each *dwelling* which enables the establishment of a small tree[2]. * Note 1: The minimum landscape strip is only required in locations not required for a driveway crossover, vehicle manoeuvring, pedestrian access, a swimming pool or other building services. * Note 2: AO8 (c.) does not apply if it is determined by a RPEQ structural engineer that the provision of a tree is likely to cause structural damage based on the building setbacks.

CAR PARKING AND ACCESS

Performance Outcome	Acceptable Outcome
PO9 Sufficient car parking is provided on site for residents. Car parking spaces are accessible and of an appropriate size.	**AO9** One car parking space is provided per *dwelling*; AND One visitor car parking space is provided per *dwelling* which can be provided in the setback to garage door (on the driveway wholly within the site); AND Car parking space dimensions and the location of a driveway are in accordance with Australian Standards AS 2890.1:2004 *Parking facilities – Off-street car parking*; AND Driveways are constructed in accordance with the Queensland Development Code NMP 1.1 Driveways except for the location of a driveway. Note: Local law requirements may apply to the construction of a crossover.

PRIVACY / SCREENING

Performance Outcome	Acceptable Outcome
PO10 Development minimises direct overlooking between *dwellings*.	**PO10** Where a window to a *habitable room* with a finished floor level more than 1 m above *natural ground* has: a. a sill less than 1.5 m from the floor; and b. is within 3 m of a habitable window of an existing *dwelling*, the following privacy measures are required: i the window incorporates fixed obscure glazing below 1.5 above floor level; or ii the view from the window is obscured by at least 50 %. Where an external deck/balcony has: a. a finished floor level more than 1 m above *natural ground* level; and b. is within 3 m of a habitable window of an existing dwelling on an adjoining *lot*; c. the deck has an external screen that obscures 50 % of the sight line to the other habitable window.

DESIGN

Performance Outcome	Acceptable Outcome
PO11 Buildings are designed to: a. Enable casual surveillance of the street or private spaces; b. Each dwelling provides an attractive address and makes a positive contribution to the character of the locality.	**AO11** A *habitable room* or balcony/deck is orientated to the streetscape or internal driveway to support Crime Prevention Through Environmental Design (CPTED); AND Each *dwelling* incorporates building materials and design features in with the *Gentle Density Model Code – Design Guidelines*.

EARTHWORKS

Performance Outcome	Acceptable Outcome
PO12 Any earthworks associated with development: a. Minimises adverse impacts on the streetscape; b. Does not negatively impact upon the privacy or amenity of surrounding properties; c. Provides safe and efficient access for vehicles and pedestrians sloping land	**AO12** The extent of fill does not involve a total change of more than 1 m relative to the *natural ground* level at any point*. * Note: Proposed earthworks not incidental to required building work may require a separate operational works approval under an applicable planning scheme. AO13 does not apply to cut (excavation).

CIVIL ENGINEERING / BUILDING SERVICES

Performance Outcome	Acceptable Outcome
PO13 Development is: a. Provided with a stormwater management solution which does not negatively impact on adjoining properties; b. Ensures dwellings are connected to essential infrastructure and services; c. Development works and connections to infrastructure and services are undertaken in accordance with accepted engineering standards and completed prior to commencement of use.	**AO13** Each *dwelling* is connected to the reticulated water supply, sewerage and telecommunications and has an electricity supply; AND Stormwater is: a. piped to kerb and channel; OR b. connected directly into Council's pipe stormwater infrastructure network; OR c. connected into an inter-allotment drainage easement; AND All connections to *infrastructure* and services are in accordance with the requirements of the relevant infrastructure entity; AND All development works are certified by a Registered Professional Engineer Queensland (RPEQ) prior to commencement of use. AND Water and electricity is sub-metered for subordinate dwellings.

REFUSE STORAGE

Performance Outcome	Acceptable Outcome
PO14 Development is provided with adequate areas for the storage of refuse bins which enables convenient use for residents.	**AO14** Each dwelling is provided with sufficient space to accommodate a minimum of 2 wheelie bins (600mm x 600mm per wheelie bin)*; AND A separate or shared space accommodating the above refuse storage area may be provided. * Note: Refuse bin location to be screened from public view by landscaping, structure or in a garage.

TOWNHOUSES (ORIENTATED TO SIDE BOUNDARY DRIVEWAY)

PRELMINARY INFORMATION ON THIS TYPOLOGY

Figure 3 – Example Perspective of a Townhouse (Orientated to Side Boundary Driveway)

General Description

Townhouses or a Multiple Dwelling refers to three (3) or more dwellings on a single allotment. Townhouses (orientated to the side boundary driveway) refers to the dwellings being orientated to an internal driveway located on a side property boundary.

This building type is most commonly arranged so that all dwellings are within a single community title scheme under the *Body Corporate and Community Management Act 1997*. Further subdivision can be completed with easements registered on the driveway and visitor car parking to establish access and maintenance obligations.

Land Use Definition

In accordance with the *Planning Regulation 2017*, a Townhouse falls into the broader definition of a Multiple Dwelling which means a residential use of premises involving three (3) or more dwellings (whether attached or detached) on a single lot.

Suitable Locations, Densities and Design Overview

This typology is supported across the entire Low-Medium Density Residential Zone or in the Low Density Residential Zone or General Residential Zone where within 400m walking distance of a *centre zone* and a *high-frequency public transport stop*. On these well-located properties in the Low Density Residential Zone or General Residential Zone, a density restriction applies of 1 dwelling per 300m^2 of site area.

While a maximum building height of 3 storeys and 9.5m above natural ground level is envisaged, the setback provisions ensure a sensitive transition to adjoining properties, noting no built to boundary walls are permitted for this typology.

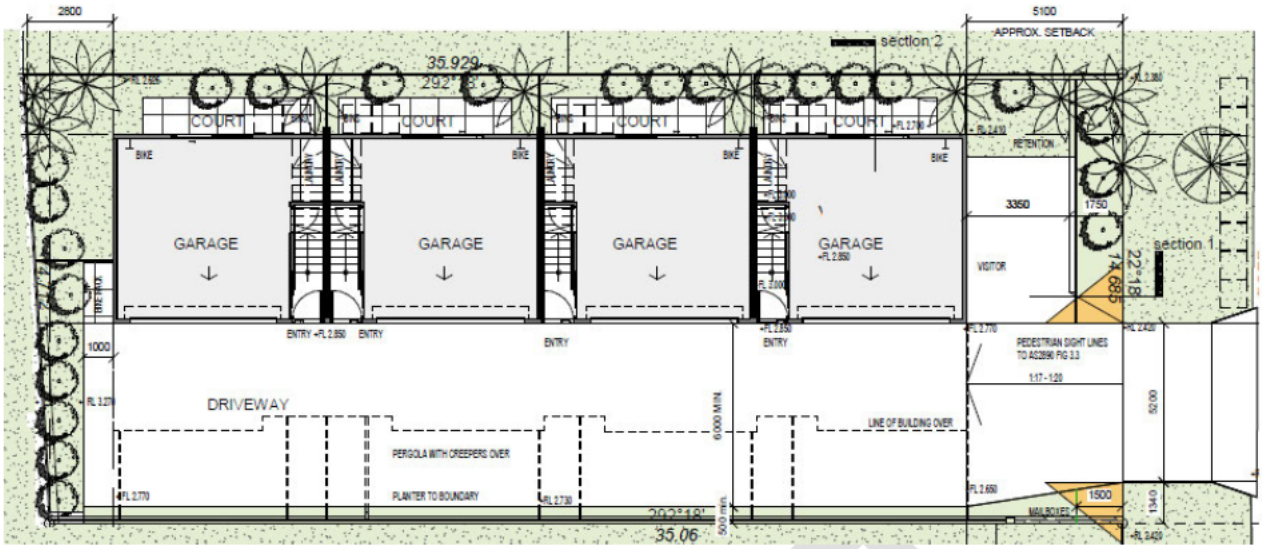


Figure 4 – Example Ground Level Site Plan of Townhouse (Orientated to Driveway on Side Boundary)

Please refer to the Gentle Density Model Code – Design Guidelines for greater details.

ASSESSMENT BENCHMARKS FOR TOWNHOUSES (ORIENTATED TO SIDE DRIVEWAY)

MINIMUM SITE REQUIREMENTS

Performance Outcome	Acceptable Outcome
PO1 Development has a site area and frontage width that is sufficient to: a. Accommodate the scale and form of a multiple dwelling considering site features; b. Not adversely impact on the amenity or privacy of adjoining residents; c. Achieve safe and convenient vehicle access to the site and on-site parking/vehicle manoeuvring.	**AO1** Development minimum site area meets the following requirements: a. 900m^2 in the Low Density Residential Zone or General Residential Zone where within 400m walking distance of a *Centre Zone* and a *High-Frequency Public Transport Stop*; b. 500m^2 in the Low-Medium Density Residential Zone; OR c. If a lesser minimum site area requirement applies to the premises under the applicable planning scheme, compliant with the site requirements specified for a multiple dwelling under that planning scheme.

DENSITY

Performance Outcome	Acceptable Outcome
AO2 Development in the Low Density Residential Zone or General Residential Zone aligns with the intended intensity and form of the existing neighbourhood.	**AO2** Development complies with the following requirements: a. In the Low Density Residential Zone or General Residential Zone results in a density of no greater than 1 dwelling per 300m^2 of site area; OR b. If in the Low Density Residential Zone or General Residential Zone and a greater density applies to the premises under the applicable planning scheme, compliant with the density requirements specified for a multiple dwelling under that planning scheme; OR c. No density requirement applies in the Low-Medium Density Residential Zone.

BUILDING HEIGHT

Performance Outcome	Acceptable Outcome
AO3 *Building height*: a. is consistent with the height of *dwellings* intended or prevailing in the area; and b. permits adequate sunlight to *dwellings* and private open space in adjoining premises.	**AO3** Development has a maximum building height of 9.5m above natural ground level.

SETBACKS - PRIMARY AND SECONDARY ROAD FRONTAGE

Performance Outcome	Acceptable Outcome
AO4 A building is *setback* from the road *frontage* to: a. Contribute positively to the existing or intended streetscape of the area; b. Enable space for visitor car parking at the front of development; c. Delineate between private and public space.	**AO4** The minimum *setback* of a building from a *road* complies with Table 5 and the following provisions: **TABLE 5** ***Primary road frontage*** — ***Setback (metres)*** *Wall or Balcony* — 5 ***Secondary road frontage*** *Wall or Balcony* — 3

SETBACKS - SIDE AND REAR BOUNDARIES

Performance Outcome	Acceptable Outcome
PO5 A building is setback from the *side boundary* and/or *rear boundary* of a lot to: c. maximise the use of the *lot*; and d. minimise impacts on the amenity and privacy of residents on adjoining properties.	**AO5** The minimum setback of a building from a *side boundary* and/or *rear boundary* complies with Table 6 and the following provisions: **TABLE 6**

Rear Setback	
Building height (metres) [1]	**Setback** [3] **(metres)**
≤4.5	2
>4.5	2.5
Side Setback [2]	
Building height (metres)	**Setback (metres)**
≤4.5	1.5
>4.5	2.5

* Note 1: Building height is based on natural ground level as defined in Definitions of this Code.

* Note 2: Side boundary setback requirements do not apply to internal boundaries between proposed dwellings if involving the reconfiguration of a lot.

* Note 3: Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access.

SETBACKS - ANCILLARY STRUCTURES (PERMITTED ENCROACHMENTS)

Performance Outcome	Acceptable Outcome
PO6 Encroachments on the *primary road frontage* and *secondary road frontage setback* contribute positively to the existing or intended streetscape of the area. Encroachments on the *side boundary* and *rear boundary setback* lessen the impact on the amenity and privacy of residents on adjoining properties.	**AO6** window hoods, wall trimmings, electrical switchboards, meters and the like may encroach into the prescribed frontage, side and rear setbacks by up to 0.6 m; AND Unroofed stairs and required landings may encroach into the *frontage*, side and/or rear *setbacks* by 1.0 m; AND An open portico including eaves, may encroach onto the *primary road frontage* setback by 1 m; AND For a roofed gatehouse or arch the minimum setback to any street *frontage* is 0 m if: a. a maximum roofed area of 4 m^2; and b. not more than a 2 m wide elevation to the street; and c. not more than 3 m in height. Note: Encroachments must be wholly contained within the lot. Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access. Eaves, rainwater fixtures (gutters) and hot water systems are also excluded from setback requirements. Any hot water system or air conditioning unit must be screened from public view.

SITE COVER

Performance Outcome	Acceptable Outcome
PO7 Development results in a *site cover* that provides adequate private open space for recreation, service facilities and landscaping.	**AO7** The maximum *site cover* of a *building* is 60%*. * Note: A greater site cover is permitted if involving the reconfiguration of a lot to create freehold land for the proposed dwelling.

PRIVATE OPEN SPACE

Performance Outcome	Acceptable Outcome
PO8 Development includes private open space that is functional for residents and enables passive recreation.	**AO8** A *dwelling* is to be provided with an area of private open space which is a minimum of 15sqm; AND a. a minimum dimension of 2 m; and b. is directly accessible from a *habitable room**. * Note: Direct access to private open space can be via a roofed outdoor area. Private open space can be provided via a combination of upper levels balconies, decks and ground level courtyards.

COMMUNAL OPEN SPACE

Performance Outcome	Acceptable Outcome
PO9 Development consisting of 10 or more *dwellings* provide communal open space that is functional and enables passive recreation.	**AO9** Development consisting of 10 or more *dwellings* provides communal open space which is a minimum of 5% of site area; AND a. a minimum dimension of 3 m; and b. accessible for all residents

LANDSCAPING

Performance Outcome	Acceptable Outcome
PO10 Development provides landscaping that: a. present an integrate landscape, neighbourhood and streetscape character; b. positively contributes to the amenity and subtropical climate of Queensland; c. reduce the appearance of building bulk and soften hardstand areas from adjoining properties or the streetscape.	**AO10** The following landscaping is provided: a. a minimum 2 m wide strip [1] along front and rear boundaries; b. a minimum 1 m wide landscaping for a side boundary; c. a minimum 1.5 m x 1.5 m area for each *dwelling* which enables the establishment of a small tree [2]. * Note 1: The minimum landscape strip is only required in locations not required for a driveway crossover, vehicle manoeuvring, pedestrian access, a swimming pool or other building services. * Note 2: AO10 (c.) does not apply if it is determined by a RPEQ structural engineer that the provision of a tree is likely to cause structural damage based on building setbacks.

CAR PARKING AND ACCESS

Performance Outcome	Acceptable Outcome
PO11 Sufficient car parking is provided on site for residents. Car parking spaces are accessible and of an appropriate size.	**AO11** One resident car parking space is provided for each 1 or 2 bedroom *dwelling*; OR Two resident car parking spaces is provided for each 3 or more bedroom *dwelling*. AND One visitor car parking space is provided per five dwellings which must be provided in the road boundary setback area. AND Car parking space dimensions and the location of a driveway are in accordance with Australian Standards AS 2890.1:2004 *Parking facilities – Off-street car parking*; AND Driveways are constructed in accordance with the Queensland Development Code NMP 1.1 Driveways except for the location of a driveway and width. The minimum width of a driveway is 5.5m; AND A crossover meets the requirements for a multiple dwelling in the planning scheme applicable to the premises*. * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Local law requirements or a operational works application may apply to the construction of a crossover.

DESIGN

Performance Outcome	Acceptable Outcome
PO12 Buildings are designed to: a. Enable casual surveillance of the street or private spaces; b. Each dwelling provides an attractive address and makes a positive contribution to the character of the locality.	**AO12** A *habitable room* or balcony/deck is orientated to the streetscape or internal driveway; AND Each *dwelling* incorporates building materials and design features in with the *Gentle Density Model Code – Design Guidelines*.

PRIVACY / SCREENING

Performance Outcome	Acceptable Outcome
PO13 Development minimises direct overlooking between *dwellings*.	**PO13** Where a window to a *habitable room* with a finished floor level more than 1 m above *natural ground* has: a. a sill less than 1.5 m from the floor; and b. is within 3 m of a wall of an existing *dwelling*, the following privacy measures are required: i the window incorporates fixed obscure glazing below 1.5 above floor level; or ii the view from the window is obscured by at least 50 %. Where an external deck/balcony has: d. a finished floor level more than 1 m above *natural ground* level; and e. is within 3 m of a wall of an existing dwelling on an adjoining *lot*; f. the deck has an external screen that obscures 50 % of the sight line to the other dwelling.

EARTHWORKS

Performance Outcome	Acceptable Outcome
PO14 Any earthworks associated with development: a. Minimises adverse impacts on the streetscape; b. Does not negatively impact upon the privacy or amenity of surrounding properties; c. Provides safe and efficient access for vehicles and pedestrians sloping land	**AO14** The extent of fill does not involve a total change of more than 1 m relative to the *natural ground* level at any point.* * Note: Proposed earthworks not incidental to required building work may require a separate operational works approval under an applicable planning scheme. AO14 does not apply to cut (excavation).

REFUSE STORAGE & COLLECTION

Performance Outcome	Acceptable Outcome
PO15 Development is provided with: a. Adequate areas for the storage of refuse bins which enables convenient use for residents; b. Enables safe collection of refuse bins which minimises impacts on adjoining properties and the efficiency of the road network.	**AO15** Development provides refuse storage areas which comply with Table 7 and the following provisions: **TABLE 7** ***Number of Bedrooms*** / ***Storage (Litres)*** *1 or 2 bedroom dwelling* — 100L for general waste, 60L for recycling *3 or more bedroom dwelling* — 120L for general waste, 60L for recycling AND Kerbside collection is suitable for wheelie bins provided sufficient space is available on the frontage (600mm x 600mm per bin). OR On-site refuse collection with a reverse manoeuvre is suitable from a *minor road* subject to an unobstructed standing area for the Refuse Collection Vehicle being nominated (minimum standing areas is 3 m wide by 10.5 m length with a 3.6 m height clearance) OR

	On a *major road,* refuse collection is provided in accordance with the recommendations of a RPEQ Traffic Engineer to limit impacts on the efficiency of the road network. * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Local law requirements may apply

TOWNHOUSES (ORIENTATED TO STREET OR MODULATED)

PRELMINARY INFORMATION ON THIS TYPOLOGY

Figure 4 – Example Perspective of a Townhouse (Orientated to Street or Modulated*)*

General Description

Townhouses or a Multiple Dwelling refers to three (3) or more dwellings on a single allotment. Townhouses (orientated to the street or modulated) refers to the dwellings being orientated to the road frontage or modulated so that there is a central break between buildings.

This building type is most commonly arranged so that all dwellings are within a single community title scheme under the *Body Corporate and Community Management Act 1997*. However, due to the small nature of the development further subdivision to create freehold land may be completed with easements registered over the driveway for vehicle access and maintenance rights.

Land Use Definition

In accordance with the *Planning Regulation 2017*, a Townhouse falls into the broader definition of a Multiple Dwelling which means a residential use of premises involving three (3) or more dwellings (whether attached or detached) on a single lot.

Suitable Locations, Densities and Design Overview

This typology is supported across the entire Low-Medium Density Residential Zone or in the Low Density Residential Zone or General Residential Zone where within 400m walking distance of a *centre zone* and a *high-frequency public transport stop*. On these well-located properties in the Low Density Residential Zone or General Residential Zone, a density restriction applies of 1 dwelling per 300m^2 of site area.

3 storeys development is expected in the Low-Medium Density Residential Zone. In the Low Density Residential Zone or General Residential Zone, a maximum building height of 2 storeys and 9.5m above natural ground level is expected unless a greater building height applies under an applicable council planning scheme. The design intent permits built to boundary walls for non-habitable spaces on side boundaries to enable suitable vehicle manoeuvring.

Figure 5 – Example Ground Level Site Plan of Townhouse (Orientated to Street/Modulated)

ASSESSMENT BENCHMARKS FOR TOWNHOUSES (ORIENTATED TO STREET)

MINIMUM SITE REQUIREMENTS

Performance Outcome	Acceptable Outcome
PO1 Development has a site area and frontage width that is sufficient to: a. Accommodate the scale and form of a multiple dwelling considering site features; b. Not adversely impact on the amenity or privacy of adjoining residents; c. Achieve safe and convenient vehicle access to the site and on-site parking/vehicle manoeuvring.	**AO1** Development minimum site area and frontage width meets the following requirements: a. 1,200m² in the Low Density Residential Zone or General Residential Zone; or b. 900m² in the Low Density Residential Zone or General Residential Zone where within 400m walking distance of a *Centre Zone* and a *High-Frequency Public Transport Stop*; or c. 500m² in the Low-Medium Density Residential Zone.

BUILDING HEIGHT

Performance Outcome	Acceptable Outcome
AO2 *Building height*: a. is consistent with the height of *dwellings* intended or prevailing in the area; and b. permits adequate sunlight to *dwellings* and private open space in adjoining premises.	**AO2** Development has a maximum building height of: a. 9.5m above natural ground level; OR b. If a greater building height applies to the premises under the applicable planning scheme, the maximum building height under that planning scheme.

DENSITY

Performance Outcome	Acceptable Outcome
AO3 Development in the Low Density Residential Zone or General Residential Zone aligns with the intended intensity and form of the existing neighbourhood.	**AO3** Development complies with the following requirements: a. In the Low Density Residential Zone or General Residential Zone results in a density of no greater than 1 dwelling per 300m^2 of site area; OR b. If in the Low Density Residential Zone or General Residential Zone and a greater density applies to the premises under the applicable planning scheme, compliant with the density requirements specified for a multiple dwelling under that planning scheme; OR c. No density requirement applies in the Low-Medium Density Residential Zone.

SETBACKS - PRIMARY AND SECONDARY ROAD FRONTAGE

Performance Outcome	Acceptable Outcome
AO4 A building is *setback* from the road *frontage* to: a. Contribute positively to the existing or intended streetscape of the area; b. Enable space for visitor car parking at the front of development; c. Delineate between private and public space.	**AO4** The minimum *setback* of a building from a *road* complies with Table 8 and the following provisions: **TABLE 8** ***Primary road frontage*** — ***Setback (metres)*** *Wall* — 5 *Balcony* — 4 ***Secondary road frontage*** *Wall* — 4 *Balcony* — 3

SETBACKS - SIDE AND REAR BOUNDARIES

Performance Outcome	Acceptable Outcome
PO5 A building is setback from the *side boundary* and/or *rear boundary* of a lot to: a. maximise the use of the *lot*; and b. minimise impacts on the amenity and privacy of residents on adjoining properties.	**AO5** The minimum setback of a building from a *side boundary* and/or *rear boundary* complies with Table 9 and the following provisions: **TABLE 9** ***Rear Setback*** ***Building height [1] (metres)*** — **Setback [3] (metres)** ≤4.5 — 4 >4.5 — 5 ***Side Setback [2]*** ***Building height (metres)*** — **Setback (metres)** ≤4.5 — 1.5 >4.5 — 2 OR

	A *matching wall* is set back no more than 25 mm from a boundary where the adjoining building is also set back no more than 25 mm from the same boundary and is built at the same time; AND A building may be built closer that the minimum side setback prescribed in Table 9 if involving a *non-habitable space* and complying with the following: a. the total length of all buildings within the minimum *setback* along any one boundary is not more than 15 m; and b. the maximum wall height closer than the minimum *setback* in Table 2 is 4.5 m; and c. the *mean height* closer than the minimum *setback* in Table 2 is 3.5 m; and d. the roof over that part of the building within the minimum setback is contained within an envelope measured at 25 degrees perpendicular to the boundary from the maximum allowable wall height; and e. the building or is no closer than 1.0 m to a *required window* of a *habitable room* of an adjoining building. * Note 1: Building height is based on natural ground level as defined in Definitions of this Code. * Note 2: Side boundary setback requirements do not apply to internal boundaries between proposed dwellings if involving the reconfiguration of a lot. * Note 3: Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access.

SETBACKS - ANCILLARY STRUCTURES (PERMITTED ENCROACHMENTS)

Performance Outcome	Acceptable Outcome
PO6 Encroachments on the *primary road frontage* and *secondary road frontage setback* contribute positively to the existing or intended streetscape of the area. Encroachments on the *side boundary* and *rear boundary setback* lessen the impact on the amenity and privacy of residents on adjoining properties.	**AO6** Window hoods, wall trimmings, electrical switchboards, meters and the like may encroach into the prescribed frontage, side and rear setbacks by up to 0.6 m; AND Unroofed stairs and required landings may encroach into the *frontage*, side and/or rear *setbacks* by 1.0 m; AND An open portico including eaves, may encroach onto the *primary road frontage* setback by 1 m;

	AND For a roofed gatehouse or arch the minimum setback to any street *frontage* is 0 m if: d. a maximum roofed area of 4 m^2; and e. not more than a 2 m wide elevation to the street; and f. not more than 3 m in height. Note: Encroachments must be wholly contained within the lot. Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access. Eaves, rainwater fixtures (gutters) and hot water systems are also excluded from setback requirements. Any hot water system or air conditioning unit must be screened from public view.

SITE COVER

Performance Outcome	Acceptable Outcome
PO6 Development results in a *site cover* that provides adequate private open space for recreation, service facilities and landscaping.	**AO6** The maximum *site cover* of a *building* is 60%*. * Note: A greater site cover is permitted if involving the reconfiguration of a lot to create freehold land for the proposed dwellings.

PRIVATE OPEN SPACE

Performance Outcome	Acceptable Outcome
PO7 Development includes private open space that is functional for residents and enables passive recreation.	**AO7** A *dwelling* is to be provided with an area of private open space which is a minimum of 25sqm; AND c. a minimum dimension of 2 m; and d. is directly accessible from a *habitable room**. * Note: Direct access to private open space can be via a roofed outdoor area. Private open space can be provided via a combination of upper levels balconies, decks and ground level courtyards.

COMMUNAL OPEN SPACE

Performance Outcome	Acceptable Outcome
PO8 Development consisting of 10 or more *dwellings* provide communal open space that is functional and enables passive recreation.	**AO8** Development consisting of 10 or more *dwellings* provides communal open space which is a minimum of 5% of site area; AND a. a minimum dimension of 3 m; and b. accessible for all residents.

LANDSCAPING

Performance Outcome	Acceptable Outcome
PO9 Development provides landscaping that: d. present an integrate landscape, neighbourhood and streetscape character; e. positively contributes to the amenity and subtropical climate of Queensland; f. reduce the appearance of building bulk and soften hardstand areas from adjoining properties or the streetscape.	**AO9** The following landscaping is provided: a. a minimum 2 m wide strip along front and rear boundaries[1]; b. a minimum 1 m wide landscaping for a side boundary; c. a minimum 1.5 m x 1.5 m area for each *dwelling* which enables the establishment of a small tree[2]. * Note 1: The minimum landscape strip is only required in locations not required for a driveway crossover, vehicle manoeuvring, pedestrian access, a swimming pool or other building services. * Note 2: AO9 (c.) does not apply if it is determined by a RPEQ structural engineer that the provision of a tree is likely to structural damage based on the setbacks of the buildings.

CAR PARKING AND ACCESS

Performance Outcome	Acceptable Outcome
PO10 Sufficient car parking is provided on site for residents. Car parking spaces are accessible and of an appropriate size.	**AO10** One resident car parking space is provided for each 1 or 2 bedroom *dwelling*; OR Two resident car parking spaces is provided for each 3 or more bedroom *dwelling*. AND One visitor car parking space is provided per five dwellings which must be provided in the road boundary setback area. AND Car parking space dimensions and the location of a driveway are in accordance with Australian Standards AS 2890.1:2004 *Parking facilities – Off-street car parking*; AND Driveways are constructed in accordance with the Queensland Development Code NMP 1.1 Driveways except for the location of a driveway. AND A crossover meets the requirements for a multiple dwelling in the planning scheme applicable to the premises*. * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Local law requirements or a operational works application may apply to the construction of a crossover.

PRIVACY / SCREENING

Performance Outcome	Acceptable Outcome
PO11 Development minimises direct overlooking between *dwellings*.	**PO11** Where a window to a *habitable room* with a finished floor level more than 1 m above *natural ground* has: a. a sill less than 1.5 m from the floor; and b. is within 3 m of a habitable window of an existing *dwelling*, the following privacy measures are required: i the window incorporates fixed obscure glazing below 1.5 above floor level; or ii the view from the window is obscured by at least 50 %. Where an external deck/balcony has: a. a finished floor level more than 1 m above *natural ground* level; and b. is within 3 m of a habitable window of an existing dwelling on an adjoining *lot*; c. the deck has an external screen that obscures 50 % of the sight line to an adjoining habitable window.

DESIGN

Performance Outcome	Acceptable Outcome
PO12 Buildings are designed to: a. Enable casual surveillance of the street or private spaces; b. Each dwelling provides an attractive address and makes a positive contribution to the character of the locality.	**AO12** A *habitable room* or balcony/deck is orientated to the streetscape; AND Each *dwelling* incorporates building materials and design features in with the *Gentle Density Model Code – Design Guidelines*.

EARTHWORKS

Performance Outcome	Acceptable Outcome
PO13 Any earthworks associated with development: a. Minimises adverse impacts on the streetscape; b. Does not negatively impact upon the privacy or amenity of surrounding properties; c. Provides safe and efficient access for vehicles and pedestrians sloping land	**AO13** The extent of fill does not involve a total change of more than 1 m relative to the *natural ground* level at any point.* * Note: Proposed earthworks not incidental to required building work may require a separate operational works approval under an applicable planning scheme. AO13 does not apply to cut (excavation).

REFUSE STORAGE & COLLECTION

<table>
<tr><th>Performance Outcome</th><th>Acceptable Outcome</th></tr>
<tr><td>PO14
Development is provided with:

a. Adequate areas for the storage of refuse bins which enables convenient use for residents;

b. Enables safe collection of refuse bins which minimises impacts on adjoining properties and the efficiency of the road network.</td><td>AO14
Development provides refuse storage areas which comply with Table 10 and the following provisions:

TABLE 10
<table><tr><th>Number of Bedrooms</th><th>Storage (Litres)</th></tr><tr><td>1 or 2 bedroom dwelling</td><td>100L for general waste
60L for recycling</td></tr><tr><td>3 or more bedroom dwelling</td><td>120L for general waste
60L for recycling</td></tr></table>
AND

Kerbside collection is suitable for wheelie bins provided sufficient space is available on the frontage (600mm x 600mm per bin).

OR

On-site refuse collection with a reverse manoeuvre is suitable from a minor road subject to an unobstructed standing area for the Refuse Collection Vehicle being nominated (minimum standing areas is 3 m wide by 10.5 m length with a 3.6 m height clearance)

OR

On a major road, refuse collection is provided in accordance with the recommendations of a RPEQ Traffic Engineer to limit impacts on the efficiency of the road network.

* Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Refuse storage to screened from public view.</td></tr>
</table>

TERRACE HOMES (REAR LANE ACCESS OR DIRECT STREET ACCESS)

PRELMINARY INFORMATION ON THIS TYPOLOGY

Figure 6 – Example Perspective of a Terrace Homes

General Description

Terrace Homes refers to three (3) or more dwellings on a single allotment or on individual allotments. Terrace Homes are designed so that all dwellings have direct frontage to a *road*. In some circumstances a rear laneway is utilised for vehicle access. It is common for this type of development to be provided on corner allotments.

This typology is typically further subdivided to provide freehold land for each terrace home.

Land Use Definition

In accordance with the *Planning Regulation 2017*, a Terrace Home falls into the broader definition of a *Multiple Dwelling* which means a residential use of premises involving three (3) or more dwellings (whether attached or detached) on a single lot.

Suitable Locations, Densities and Design Overview

This typology is supported across the Low-Medium Density Residential Zone, the Low Density Residential Zone and General Residential Zone. In the Low Density Residential Zone or General Residential Zone, a density restriction applies of 1 dwelling per 300m^2 of site area.

A maximum building height of 3 storeys and 9.5m above natural ground level is supported in the Low-Medium Density Residential Zone. In the Low Density Residential Zone or General Residential Zone, a maximum building height of 2 storeys and 9.5m above natural ground level is supported unless a greater building height applies under an applicable council planning scheme. The design intent permits built to boundary walls for non-habitable spaces on side boundaries to enable suitable vehicle manoeuvring.

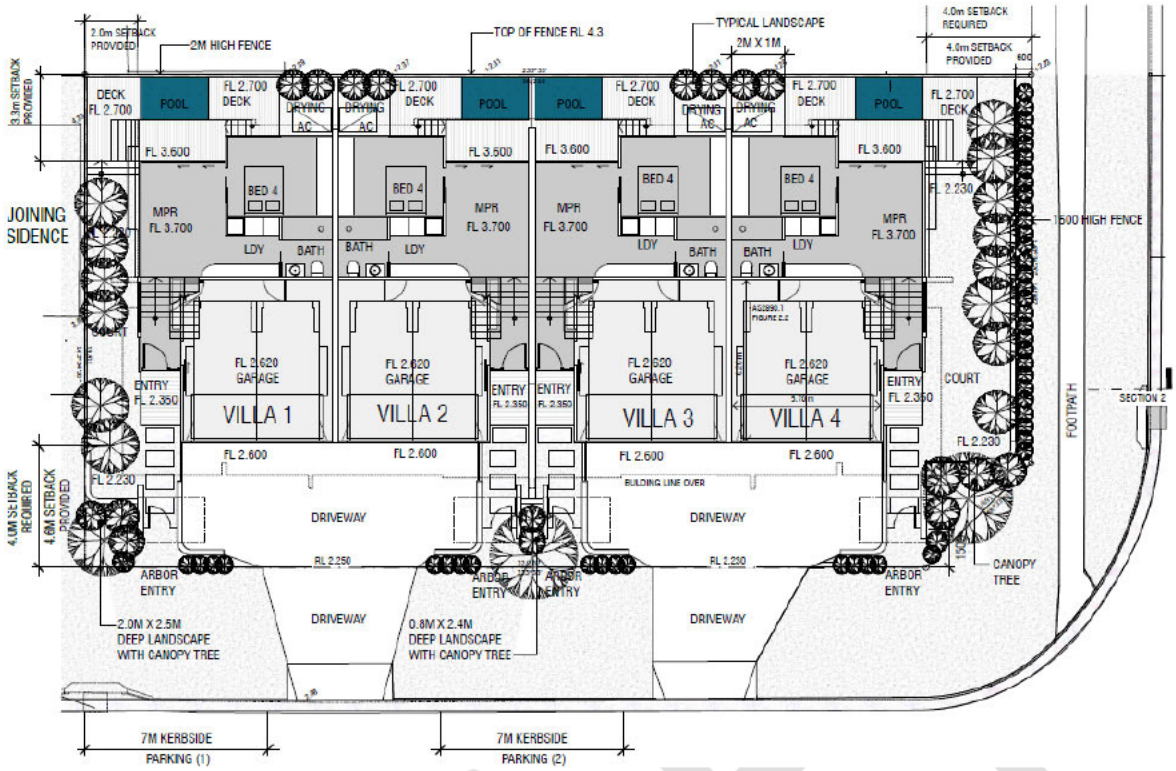


Figure 7 – Example Ground Level Site Plan of Terrace Homes

ASSESSMENT BENCHMARKS FOR TERRACE HOMES

MINIMUM SITE REQUIREMENTS

Performance Outcome	Acceptable Outcome
PO1 Development has a site area and frontage width that is sufficient to: a. Accommodate the scale and form of a multiple dwelling considering site features; b. Not adversely impact on the amenity or privacy of adjoining residents; c. Achieve safe and convenient vehicle access to the site and on-site parking/vehicle manoeuvring.	**AO1** Development minimum site area and frontage width meets the following requirements: a. 900m² in the Low Density Residential Zone or General Residential Zone; b. 500m² in the Low-Medium Density Residential Zone OR c. If a lesser minimum site area requirement applies to the premises under the applicable planning scheme, compliant with the site requirements specified for a multiple dwelling under that planning scheme.

BUILDING HEIGHT

Performance Outcome	Acceptable Outcome
AO2 *Building height*: a. is consistent with the height of *dwellings* intended or prevailing in the area; and b. permits adequate sunlight to *dwellings* and private open space in adjoining premises.	**AO2** Development has a maximum building height of: a. 9.5m above natural ground level; OR b. If a greater building height applies to the premises under the applicable planning scheme, the maximum building height under the applicable planning scheme.

DENSITY

Performance Outcome	Acceptable Outcome
AO3 Development in the Low Density Residential Zone or General Residential Zone aligns with the intended intensity and form of the existing neighbourhood.	**AO3** Development complies with the following requirements: a. In the Low Density Residential Zone or General Residential Zone results in a density of no greater than 1 dwelling per 300m^2 of site area; OR b. If in the Low Density Residential Zone or General Residential Zone and a greater density applies to the premises under the applicable planning scheme, compliant with the density requirements specified for a multiple dwelling under that planning scheme; OR c. No density requirement applies in the Low-Medium Density Residential Zone.

SETBACKS - PRIMARY AND SECONDARY ROAD FRONTAGE

Performance Outcome	Acceptable Outcome
AO3 A building is *setback* from the road *frontage* to: d. Contribute positively to the existing or intended streetscape of the area; e. Enable space for visitor car parking on a driveway; f. Delineate between private and public space.	**AO3** The minimum *setback* of a building from a *road* complies with Table 11 and the following provisions: **TABLE 11** ***Primary road frontage*** / ***Setback (metres)*** *Building* / 3 *Garage door* / 5.5[1] ***Secondary road frontage*** *Building* / 2 *Garage door* / 5.5[1] * Note 1: The minimum *setback* of the garage door is the same setback as the building where the natural ground between the road *frontage* and the *dwelling* has a slope greater than 1 in 4. The setback to garage door permits visitor car parking.

SETBACKS - SIDE AND REAR BOUNDARIES

Performance Outcome	Acceptable Outcome
PO4 A building is setback from the *side boundary* and/or *rear boundary* of a lot to: e. maximise the use of the *lot*; and f. minimise impacts on the amenity and privacy of residents on adjoining properties.	**AO4** The minimum setback of a building from a *side boundary* and/or *rear boundary* complies with Table 12 and the following provisions: **TABLE 12** ***Rear Setback*** ***Building height (metres)*** [1] / **Setback (metres)** ≤4.5 / 3 >4.5 / 4.5 ***Side Setback*** [2, 3] ***Building height (metres)*** / **Setback (metres)** ≤4.5 / 1 >4.5 / 1.5

Setback to a Proposed Laneway	
≤4.5	0.5
>4.5	0.5

* Note 1: Building height is based on natural ground level as defined in Definitions of this Code.

* Note 2: Side boundary setback requirements do not apply to internal boundaries between proposed dwellings if involving the reconfiguration of a lot.

* Note 3: Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access.

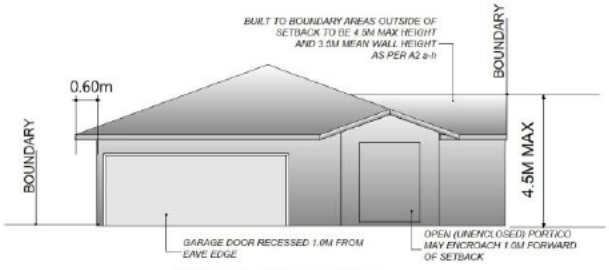
OR

A *matching wall* is set back no more than 25 mm from a boundary where the adjoining building is also set back no more than 25 mm from the same boundary and is built at the same time;

AND

A building may be built closer that the minimum side setback prescribed in Table 12 if involving a *non-habitable space* and complying with the following:

a. the total length of all buildings within the minimum *setback* along any one boundary is not more than 15 m; and
b. the maximum wall height closer than the minimum *setback* in Table 2 is 4.5 m; and
c. the *mean height* closer than the minimum *setback* in Table 2 is 3.5 m; and
d. the roof over that part of the building within the minimum setback is contained within an envelope measured at 25 degrees perpendicular to the boundary from the maximum allowable wall height; and
e. the building or is no closer than 1.0 m to a *required window* of a *habitable room* of an adjoining building.



PRIMARY ROAD ELEVATION

SETBACKS - ANCILLARY STRUCTURES (PERMITTED ENCROACHMENTS)

Performance Outcome	Acceptable Outcome
PO5 Encroachments on the *primary road frontage* and *secondary road frontage setback* contribute positively to the existing or intended streetscape of the area. Encroachments on the *side boundary* and *rear boundary setback* lessen the impact on the amenity and privacy of residents on adjoining properties.	**AO5** Window hoods, wall trimmings, electrical switchboards, meters and the like may encroach into the prescribed frontage, side and rear setbacks by up to 0.6 m; AND Unroofed stairs and required landings may encroach into the *frontage*, side and/or rear *setbacks* by 1.0 m; AND An open portico including eaves, may encroach onto the *primary road frontage* setback by 1 m; AND For a roofed gatehouse or arch the minimum setback to any street *frontage* is 0 m if: a. a maximum roofed area of 4 m^2; and b. not more than a 2 m wide elevation to the street; and c. not more than 3 m in height. Note: Encroachments must be wholly contained within the lot. Setbacks are measured to walls. Not the outermost projection of the building. Greater setbacks may apply for fire safety such as 900mm to an adjoining building for fire separation or 750mm clearance on either side boundary for emergency access. Eaves, rainwater fixtures (gutters) and hot water systems are also excluded from setback requirements. Any hot water system or air conditioning unit must be screened from public view.

SITE COVER

Performance Outcome	Acceptable Outcome
PO6 Development results in a *site cover* that provides adequate private open space for recreation, service facilities and landscaping.	**AO6** The maximum *site cover* of a *building* is 60%*. * Note: A greater site cover is permitted if involving the reconfiguration of a lot to create freehold land for the proposed dwellings.

PRIVATE OPEN SPACE

Performance Outcome	Acceptable Outcome
PO7 Development includes private open space that is functional for residents and enables passive recreation.	**AO7** A *dwelling* is to be provided with an area of private open space which is a minimum of 25sqm; AND a. a minimum dimension of 2 m; and b. is directly accessible from a *habitable room**. * Note: Direct access to private open space can be via a roofed outdoor area. Private open space can be provided via a combination of upper levels balconies, decks and ground level courtyards.

LANDSCAPING

Performance Outcome	Acceptable Outcome
PO9 Development provides landscaping that: g. present an integrate landscape, neighbourhood and streetscape character; h. positively contributes to the amenity and subtropical climate of Queensland; i. reduce the appearance of building bulk and soften hardstand areas from adjoining properties or the streetscape.	**AO9** The following landscaping is provided: a. a minimum 2 m wide strip along front and rear boundaries[1]; b. a minimum 1 m wide landscaping for a side boundary; c. a minimum 1.5 m x 1.5 m area for each *dwelling* which enables the establishment of a small tree [2]. *Note 1: The minimum landscape strip is only required in locations not required for a driveway crossover, vehicle manoeuvring, pedestrian access, a swimming pool or other building services. *Note 2: AO9 (c.) does not apply if it is determined by a RPEQ structural engineer that the provision of a tree is likely to cause structural damage based on the setbacks of the buildings.

CAR PARKING AND ACCESS

Performance Outcome	Acceptable Outcome
PO10 Sufficient car parking is provided on site for residents. Car parking spaces are accessible and of an appropriate size.	**AO10** One resident car parking space is provided for each 1 or 2 bedroom *dwelling*; OR Two resident car parking spaces is provided for each 3 or more bedroom *dwelling*. AND One visitor car parking space is provided per five dwellings which must be provided in the road boundary setback area. AND Car parking space dimensions and the location of a driveway are in accordance with Australian Standards AS 2890.1:2004 *Parking facilities – Off-street car parking*; AND Driveways are constructed in accordance with the Queensland Development Code NMP 1.1 Driveways except for the location of a driveway. AND A crossover meets the requirements for a multiple dwelling in the planning scheme applicable to the premises*. * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Local law requirements or a operational works application may apply to the construction of a crossover.

PRIVACY / SCREENING

Performance Outcome	Acceptable Outcome
PO11 Development minimises direct overlooking between *dwellings*.	**PO11** Where a window to a *habitable room* with a finished floor level more than 1 m above *natural ground* has: a. a sill less than 1.5 m from the floor; and b. is within 3 m of a habitable window of an existing *dwelling*, the following privacy measures are required: i the window incorporates fixed obscure glazing below 1.5 above floor level; or ii the view from the window is obscured by at least 50 %. Where an external deck/balcony has: a. a finished floor level more than 1 m above *natural ground* level; and b. is within 3 m of a habitable window of an existing dwelling on an adjoining *lot*; c. the deck has an external screen that obscures 50 % of the sight line to an adjoining habitable window.

DESIGN

Performance Outcome	Acceptable Outcome
PO12 Buildings are designed to: c. Enable casual surveillance of the street or private spaces; d. Each dwelling provides an attractive address and makes a positive contribution to the character of the locality.	**AO12** A *habitable room* or balcony/deck is orientated to the streetscape; AND Each *dwelling* incorporates building materials and design features in with the *Gentle Density Model Code – Design Guidelines*.

EARTHWORKS

Performance Outcome	Acceptable Outcome
PO13 Any earthworks associated with development: d. Minimises adverse impacts on the streetscape; e. Does not negatively impact upon the privacy or amenity of surrounding properties; f. Provides safe and efficient access for vehicles and pedestrians sloping land	**AO13** The extent of fill does not involve a total change of more than 1 m relative to the *natural ground* level at any point.* * Note: Proposed earthworks not incidental to required building work may require a separate operational works approval under an applicable planning scheme. AO13 does not apply to cut (excavation).

REFUSE STORAGE & COLLECTION

<table>
<tr><th>Performance Outcome</th><th>Acceptable Outcome</th></tr>
<tr><td>PO14
Development is provided with:

c. Adequate areas for the storage of refuse bins which enables convenient use for residents;

d. Enables safe collection of refuse bins which minimises impacts on adjoining properties and the efficiency of the road network.</td><td>AO14
Development provides refuse storage areas which comply with Table 13 and the following provisions:

TABLE 13
<table><tr><th>Number of Bedrooms</th><th>Storage (Litres)</th></tr><tr><td>1 or 2 bedroom dwelling</td><td>100L for general waste
60L for recycling</td></tr><tr><td>3 or more bedroom dwelling</td><td>120L for general waste
60L for recycling</td></tr></table>
AND

Kerbside collection is suitable for wheelie bins provided sufficient space is available on the frontage (600mm x 600mm per bin).

OR

On-site refuse collection with a reverse manoeuvre is suitable from a minor road subject to an unobstructed standing area for the Refuse Collection Vehicle being nominated (minimum standing areas is 3 m wide by 10.5 m length with a 3.6 m height clearance)

OR

On a major road, refuse collection is provided in accordance with the recommendations of a RPEQ Traffic Engineer to limit impacts on the efficiency of the road network.

* Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Traffic Engineer. Refuse storage to be screened from public view.</td></tr>
</table>

DEVELOPMENT IN PARTICULAR OVERLAYS UNDER A PLANNING SCHEME

In accordance with Schedule 6, Part 6, Division 1 of the *Planning Regulation* 2017, compliance with the identified requirements is prohibited from assessment under a local categorising instrument which includes the following overlays or those of a similar nature:

- Flood overlay;
- Bushfire overlay; and
- Traditional building character overlay not involving assessable demolition.

Non-compliance with the identified requirements is assessable development and Local Government is the assessment manager as prescribed in Schedule 8, Table 5 and Schedule 10, Part 22, Division 1, Table 1 – Assessable development in accordance with the Gentle Density Model Code of the *Planning Regulation 2017*.

ASSESSMENT BENCHMARKS FOR DEVELOPMENT IN THE FLOOD OVERLAY

FLOOD PLANNING LEVEL

Performance Outcome	Acceptable Outcome
PO1 Development is located and designed to: a. Minimise the risk to people from flood hazard; b. Achieve acceptable flood immunity; c. Minimise property impacts from a flood event up to and including the declared flood level; d. Minimise recovery time and rebuilding costs during flood events.	**AO1** Development complies with: a. The flood planning level and minimum floor levels that local government has declared under Section 8 of the *Building Regulation 2021* or requirements specified under an applicable planning scheme; b. A Registered Professional Engineer Queensland (RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding. * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Engineer.

OVERLAND FLOW PATH

Performance Outcome	Acceptable Outcome
PO2 Development is located and designed to: a. Minimise the risk to people from flood hazard; b. Achieve acceptable flood immunity; c. Minimise property impacts from a flood event up to and including the declared flood level; d. Minimise recovery time and rebuilding costs during flood events.	**AO2** Development is only located in an overland flow path identified in Local Government planning scheme mapping if: a. A Registered Professional Engineer Queensland (RPEQ) with expertise in undertaking flood studies certifies that: i. The development design, siting and any mitigation measures (undercroft) will ensure the development is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the identified flood planning level; ii. The risk to people is managed to an accepted level; iii. Impacts on existing flow paths and adjoining properties will be acceptable (including during construction). * Note: The following requirements may be demonstrated through a report or statement provided by a RPEQ Engineer.

ASSESSMENT BENCHMARKS FOR DEVELOPMENT IN THE BUSHFIRE OVERLAY

BUSHFIRE ATTACK LEVEL OR BUSHFIRE MANAGEMENT PLAN

Performance Outcome	Acceptable Outcome
PO1 Development: a. Minimises the bushfire hazard; b. Maximises the protection of life from bushfire; c. Address the bushfire hazard determined by a bushfire hazard assessment; d. Development is in accordance with the recommendations and assessment of a bushfire expert.	**AO1** Development is designed and sited in compliance with: a. A bushfire hazard assessment and bushfire management plan which is: i. Undertaken by a suitably qualified person with technical expertise in the field of bushfire hazard identification and mitigation; ii. Determines the relevant *bushfire attack level* for that part of the site in which development is proposed; iii. Identifies the location of hazardous vegetation that poses a bushfire risk. OR b. Development achieves a *bushfire attack level* that is less than or equal to BAL-29.

ASSESSMENT BENCHMARKS FOR DEVELOPMENT IN A CHARACTER AREA

Performance Outcome	Acceptable Outcome
PO1 Development has a building form which complements the traditional building form and traditional elements, detailing and materials of residential buildings constructed in 1946 or earlier nearby in the street.	**AO1** Development does not involve any demolition which is assessable development under a planning scheme; AND Development provides a roof form which is a combination of pyramids, hops or gables with a minimum pitch of 15 degrees; AND Development incorporates a lightweight balcony or deck orientated to the streetscape with vertical timber look balustrading; AND Development utilises a combination of lightweight materials including timber and tin look roofing, cladding and if masonry is used it is rendered or painted to define the upper and lower levels.

DEVELOPMENT INVOLVING THE RECONFIGURATION OF A LOT

In accordance with Schedule 10, Part 22, Division 1, Table 2 – Reconfiguration of a Lot in accordance with the Gentle Density Model Code of the *Planning Regulation 2017*, the reconfiguration of a lot associated with existing or proposed development under the Gentle Density Model Code is Code Assessable and assessable against the following assessment benchmarks.

ASSESSMENT BENCHMARKS FOR THE RECONFIGURATION OF A LOT

Performance Outcome	Acceptable Outcome
PO1 Development does not result in: a. The use of a premises being impaired or made unlawful; b. Dependent activities of a use being separated by titling; c. The functioning of the proposed or existing land use being compromised.	**AO1** The proposed size and configuration of allotments matches the existing or proposed built form considering driveways and private open space areas; AND Suitable easements are proposed and notated on plans to ensure that appropriate access and maintenance rights are provided to future residents. * Note: Reconfiguration of an existing or proposed land use does not material change of the nature of the existing or proposed land use.

DEFINITIONS

Acceptable outcome has the same meaning as "Deemed-to-Satisfy Solution" in the Building Code of Australia – Volume 2.

Balcony means any external platform, attached to and accessed from a building and 1 metre or more above *natural ground*.

Building has the same meaning as in the *Building Act 1975*.

Building height means the vertical distance between *natural ground* and the highest point of the building at that location, but not including any antennae, chimneys, flues or the like. Refer also to *mean height*.

Carport means a carport with:

(a) two sides or more open, and a side is also considered open where the roof covering adjacent to that side is not less than 500mm from another building or a side or rear allotment boundary; and

(b) not less than one-third of its perimeter open.

Centre Zone has the same meaning as the *Planning Regulation 2017* and also includes the following zones designated under a planning scheme:

(a) Neighbourhood centre zone;
(b) Local centre zone;
(c) District centre zone;
(d) Major centre zone; and
(e) Principal centre zone.

Community Title refers to title created by subdivision of land by way of a standard format plan of a community title scheme given under the provisions of the *Body Corporate and Community Management Act 1997* (BCCM Act).

Detached dwelling means either one *dwelling* or one *dwelling* and a *secondary dwelling* on a *lot*.

Dwelling means a Class 1 building as defined in the Building Code of Australia – Volume 2 that:

(a) is used, or capable of being used, as a self-contained residence; and
(b) may contain a *garage* that is under the same roof structure as the dwelling; and

(b) contains:

(i) food preparation facilities; and

(ii) a bath or shower; and

(iii) a toilet; and

(iv) a wash basin; and

(v) facilities for washing clothes.

Frontage means the road alignment of a *lot*.

Garage means an enclosed Class 10a building as defined in the Building Code of Australia – Volume 2, providing covered vehicular parking.

General Residential Zone has the same meaning as the *Planning Regulation 2017*.

Habitable room has the same meaning as in the Building Code of Australia – Volume 2.

High-frequency public transport stop any bus or train station stop which has services every fifteen minutes or less during peak service times (8:00am to 10:00am or 4:00pm to 6:00pm).

Infrastructure means the relevant water, energy generation, telecommunications, stormwater and sewerage systems to support development.

fLot has the same meaning as the *Planning Act 2016*.

Lot width means either the dimension parallel to the *road* boundary or where the lot has an irregular shape, the average width of the lot, not including any accessway of a battle-axe lot.

Low Density Residential Zone has the same meaning as the *Planning Regulation 2017*.

Low-Medium Density Residential Zone has the same meaning as the *Planning Regulation 2017*.

Major Road *means* a road that is an arterial road, suburban road, district or has a similar nature under a planning scheme.

Matching wall means a wall which is offset in length and height no more than 25 % from an adjoining wall.

Mean height means the vertical height worked out by dividing –

(a) the total elevational area of that part of the building within the minimum setback facing the boundary; by

(b) the horizontal length of the building or structure facing the boundary.

Refer also to *building height*.

Minor Road *means* a road that is a neighbourhood road, local road or has a similar nature under a planning scheme.

Natural ground, for a lot, means:

(a) the ground level of the lot on the day the first plan of survey showing the lot was registered; or

(b) if the ground level on the day mentioned in paragraph (a) is not known, the natural ground surface as determined by a licensed surveyor.

Outbuilding means a Class 10a building as defined in the Building Code of Australia – Volume 2, that is detached from but ancillary to a dwelling on the same *lot* and is limited to non-habitable buildings for the purpose of a shed, *garage* and *carport*.

Performance outcome has the same meaning as "Performance Requirement" in the Building Code of Australia – Volume 2.

Premises has the same meaning as the *Planning Act 2016*.

Primary road frontage means the frontage most commonly addressed by other buildings in the street or if unclear, frontage to the road nominated by the property address.

Rear boundary means the boundary opposite the *primary road frontage* which adjoins another residential lot where not a *side boundary*.

Required window means the minimum area of a window required by the Building Code of Australia – Volume 2 to provide natural light to a habitable room.

Residential zone means a lot:

a) designated in a planning instrument defined in the *Planning Act 2016*;
b) subject to a preliminary approval issued pursuant to s 3.1.6 of the *Integrated Planning Act 1997*;
c) subject to a preliminary approval issued pursuant to s 242 of the *Sustainable Planning Act 2009*;
d) subject to a *variation approval* issued pursuant to the *Planning Act 2016*; and
e) subject to a PDA development approval under the *Economic Development Act 2012*.

Road means –

(a) an area of land dedicated to public use as a road; or

(b) an area open to, or used by, the public and developed for, or has, as 1 of its main uses, the driving or riding of motor vehicles; and

(c) does not include a pedestrian or bicycle path.

Secondary dwelling means a *dwelling*, whether attached or detached, on the same lot having an area of 80 m^2. The area is measured from the outside of external walls and the centre of any common walls of the building, but not including an area used for parking one car or an unenclosed *balcony*.

Secondary road frontage means a road *frontage* of a lot that is not the *primary road frontage* and includes *frontage* to a park.

Setback means:

a) for a building or structure other than a swimming pool, the shortest distance measured horizontally from the wall of a building or structure to the vertical projection of the boundary of the lot; and

b) for a swimming pool, the shortest distance measured horizontally from the water's edge to the vertical projection of a boundary of the lot. Setback excludes rainwater fittings (gutters) and eaves.

Side boundary means the boundary adjacent to the *primary road frontage* which adjoins another residential property.

Site cover means the proportion of *lot* covered by buildings and structures roofed with impervious materials calculated to the walls of buildings and expressed as a percentage of the *lot* area. The term does not include:

a) any structure or part thereof included in a landscaped open space area such as a gazebo or shade structure.
b) basement car parking areas located wholly below ground level.

Slope means the gradient of the natural ground of a lot measured across a 20m x 20m area over the building location, or where the lot is less than 20m wide – 20m x width of lot.

Storey has the same meaning as the *Planning Act 2016*.

Structure has the same meaning as in the Building Act 1975.

Walking Distance means the distance between two places, measured from reasonable pedestrian access points and along roads with verge, off-road pathways or other reasonable pedestrian connections. Crossing minor roads perpendicularly is considered reasonable.

Window has the same meaning as in the Building Code of Australia.

Appendix 5 – Supporting information for Recommendation 6

Misconceptions about Queensland's infrastructure charges framework

Some parts of the infrastructure charges framework can be complex and several misconceptions about developer charges have arisen including:

- ***Developer charges pay for all the infrastructure in a project –*** Charges levied by a local government are a contribution towards 'trunk' infrastructure networks. Trunk infrastructure is any infrastructure that has a wider community benefit outside of the immediate users of a development. If a developer provides trunk infrastructure there is process to obtain reimbursement for providing this infrastructure which is a fair outcome given the wider community benefit.

  All other infrastructure for a development that does not have a wider community benefit and only benefits immediate residents (e.g. internal roads, sewerage, water & stormwater) is paid for by developers (non-trunk infrastructure) during the construction of the development. This cost is ultimately reflected in the final price of new housing.

- ***Developer charges should cover the entire cost of infrastructure –*** Developer charges were introduced in an attempt to have equitable contribution towards 'trunk' infrastructure. Other sources of funding are available to local governments for the maintenance and construction of new infrastructure which should be relied upon including:
  - Rates;
  - Funding through state and national grants and funding programs; and
  - Financing options through the treasury.

- ***The cap on Infrastructure charges has not increased –*** The maximum infrastructure charge is indexed in accordance with the Producer Price Index for roads and bridge construction derived from the ABS.

  Indexation occurs annually and this has been explained to local government via a factsheet since 2016. In terms of recent indexation, previous years has resulted in:

  - 2022/2023 – 4.29% increase; and
  - 2023/2024 – 6.29% increase.

  If councils have not levied greater charges as permitted under the legislation, than this is due to mismanagement of their Infrastructure Charges Resolution or a misunderstanding of their powers under the legislation.

- ***All developer charges are capped –*** In practice, developers are subject to charges beyond the capped amount which is permitted in the following circumstances:

  - Extra Charges outside of a Priority Infrastructure Area – Under existing legislation Councils can impose costs beyond the cap for development outside of a priority infrastructure area. This occurs via extra payment conditions or infrastructure agreements. This is an issue for industry as costs only become known late in the assessment process;

  - Extra Payment Conditions inside a Priority Infrastructure Area – The existing legislation permits a council to levy extra payment conditions when development will generate

greater demand than anticipated by an LGIP or will require new trunk infrastructure earlier than identified in an LGIP.

- Priority Development Areas – A significant amount of development is occurring in PDAs which do not have capped charges.

- ***Developer charges are a significant source of local government revenue*** **–** Based on recent annual budgets, developer infrastructure contributions represent a small proportion of total revenue for local governments. For example, Brisbane City Council's latest budget (2023/2024) details that income from developer contributions is estimated at $137,858,000 ($137.8 million).

  The total income for Brisbane City Council from all sources is $3,070,126,000 ($3.07 billion). As such, developer contributions represent a small percentage (4.49%) of Council's total income.

  Revenue from public transport is a significantly greater income source for Brisbane City Council at $396,316,000 ($396 million).

- ***There is evidence of a significant shortfall in developer charges collected vs council expenditure on infrastructure*** **–** Since 2020, the Queensland Government has required local governments to publish on their website a register of infrastructure charges including revenue and expenditure. Based on this information, it appears most major SEQ councils have significant unspent revenue. As such, there is no evidence in these registers of insufficient funding.

- ***Explaining how taxes on new housing are inequitable*** **–** Infrastructure charges make up part of the growing list of regulatory taxes and charges on new housing. Previous researched commissioned by HIA details that taxes and charges on new housing equates to 33% of the total cost of a new house and land package.

  For example, in a new growth area like Logan Reserve this would equate to around $280,500 on a $850,000 house and land package. This is significantly greater than the taxes imposed on established homes. In comparison, the government taxes and charges on an established home such as a $2,000,000 home in Clayfield is $88,350 to $90,000 (transfer duty fee, noting building and pest and conveyancing searches are common but not mandatory).

Council	Year	Total Income	Income from Charges (cash only*)	Percentage of Income
Brisbane	23/24	$3,070,126,000	$137,858,000	4.49%
Gold Coast	23/24	$2,033,800,000	$97,500,000	4.79%
Logan	23/24	$1,006,866,000	$97,220,000	9.65%
Moreton Bay	23/24	$845,894,000	$47,000,000	5.55%

*Excludes contributions that are non-cash/assets

Source: HIA compiled from 2023/24 – Council published budgets

Table 6: *Review of infrastructure charges in select Local Government Budgets*

Council	Year	Charges collected	Charges offset	Charges revenue spent	Charges refunded	Unspent Revenue
Logan	21/22	$86,237,000	$31,561,000	$21,263,000	$1,878,000	$31,535,000
Redland	22/23	$14,532,321	$533,944	$13,526,181	$144,746	$1,150,901
Ipswich	22/23	$47,230,000	$1,032,000	$25,411,000	$1,821,000	$23,640,000
Moreton	22/23	$44,703,000	$1,314,000	$36,819,000	$263,000	$7,621,000
Total						**$63,946,901**

Source: HIA compiled from 2022/23 – Council published infrastructure charges registers

Table 7: *Review of select council's infrastructure charges registers*

Appendix 6 – CIE Report on Taxation of the Housing Sector

FOR PUBLIC RELEASE

Taxation of the housing sector

Prepared for
Housing Industry Association Ltd

3 March 2025

THE CENTRE FOR INTERNATIONAL ECONOMICS
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BOXES, CHARTS AND TABLES

Summary

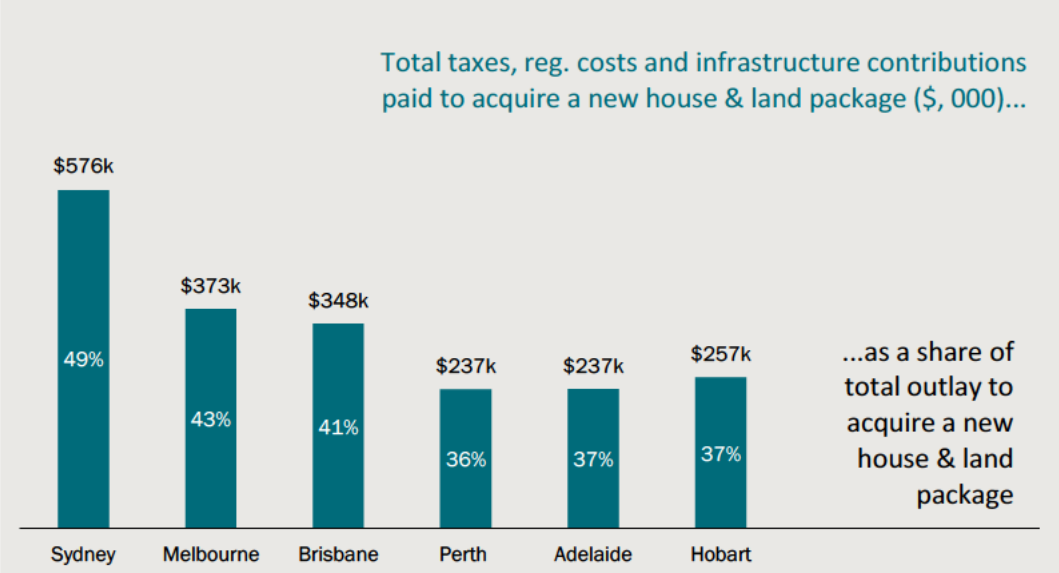
Taxes and regulatory costs add substantially to the cost of housing

- 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.

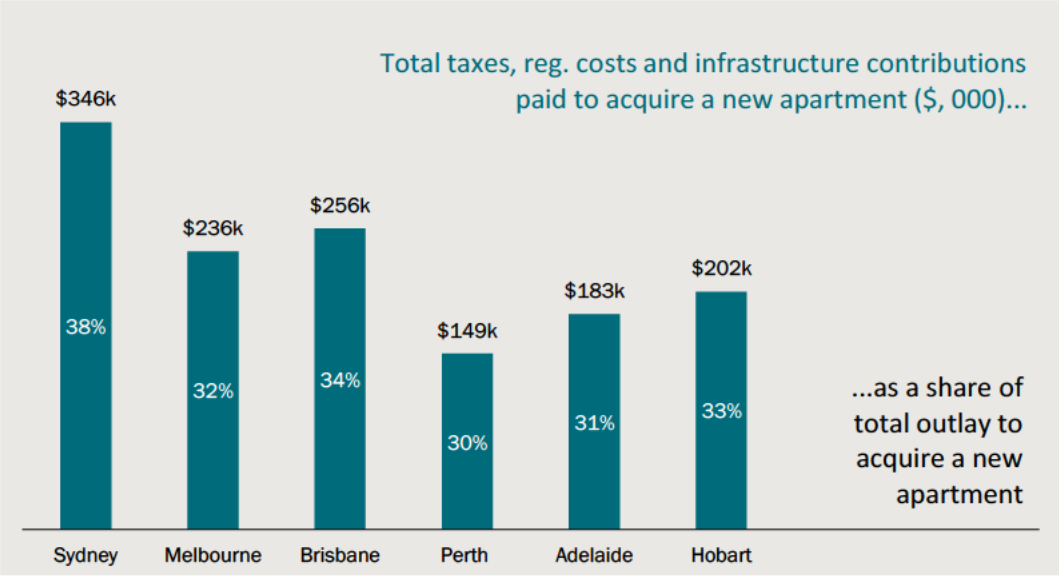
1 Statutory taxes, regulatory costs and infrastructure charges: greenfield



Note: Estimates are for 2023/24.

Data source: The CIE

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



Note: Estimates are for 2023/24.

Data source: The CIE

1 Introduction and approach

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.

This short report presents the main results from our analysis, and our methodology at a high level. Detailed information about assumptions, calculations, and data sources is contained in the full report.

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.

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.

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 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.

We also 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.

Methodology for the bottom up analysis

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

- Step 1: calculate the total outlay made to acquire new housing (financial analysis).
  - For new house & land packages, there is no publicly available data on 'average' sale prices. Therefore, we 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 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.

  - UDIA publish data on the median transfer price of new apartments in each city.[1] From this end-point we work backwards to measure the cost of each component. 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 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.
  - One component, the purchase price of raw land zoned for residential use requires a complicated allocation into a resource cost and regulatory cost.
  - We also 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 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.

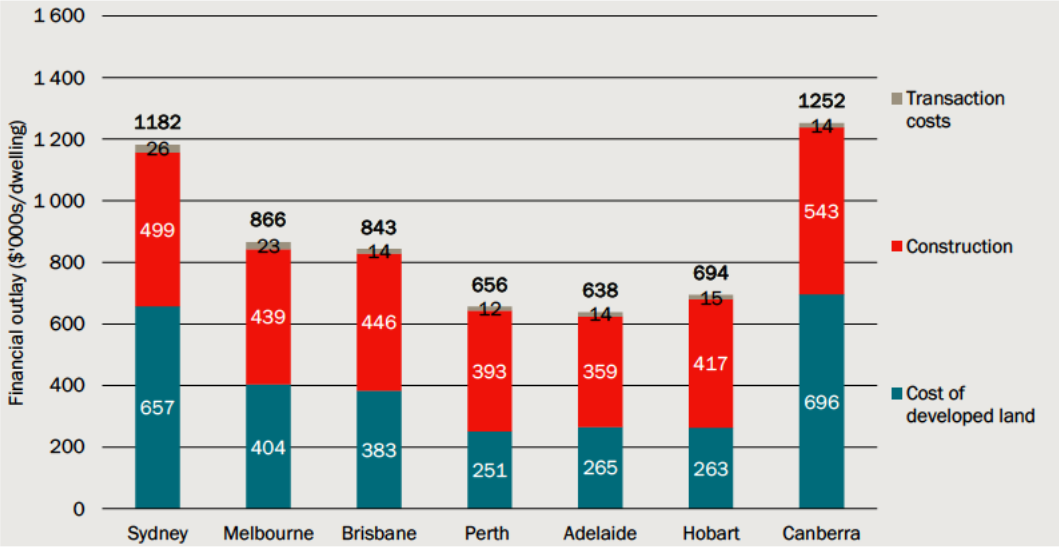
1 Note that this relates to the price of apartments. Construction cost estimates are not obtained from UDIA, with estimates used from Rawlinson's, Rider Levitt Bucknall and ABS.

2 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 2.1).

2.1 Total outlay for a new greenfield house & land package



Data source: The CIE

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

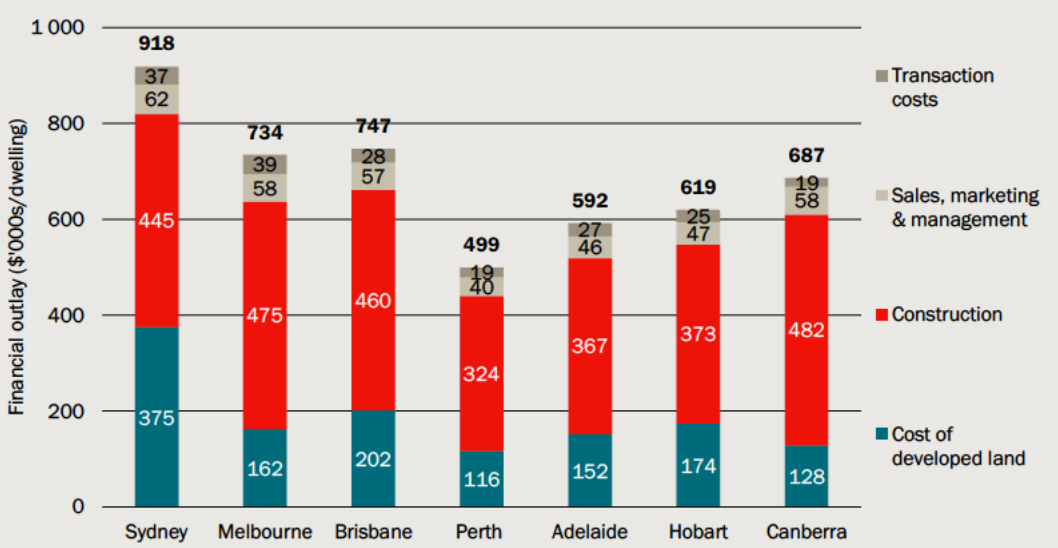
Category	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	$/house	$/house	$/house	$/house	$/house	$/house	$/house
Cost of developed land	657 025	403 850	383 350	251 125	265 475	262 715	695 975
Construction	499 024	439 019	445 617	392 582	358 872	416 643	542 858
Transaction costs	25 865	22 717	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

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 2.3).

2.3 Total outlay for a new infill apartment



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

Data source: The CIE.

2.4 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

3 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.

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.

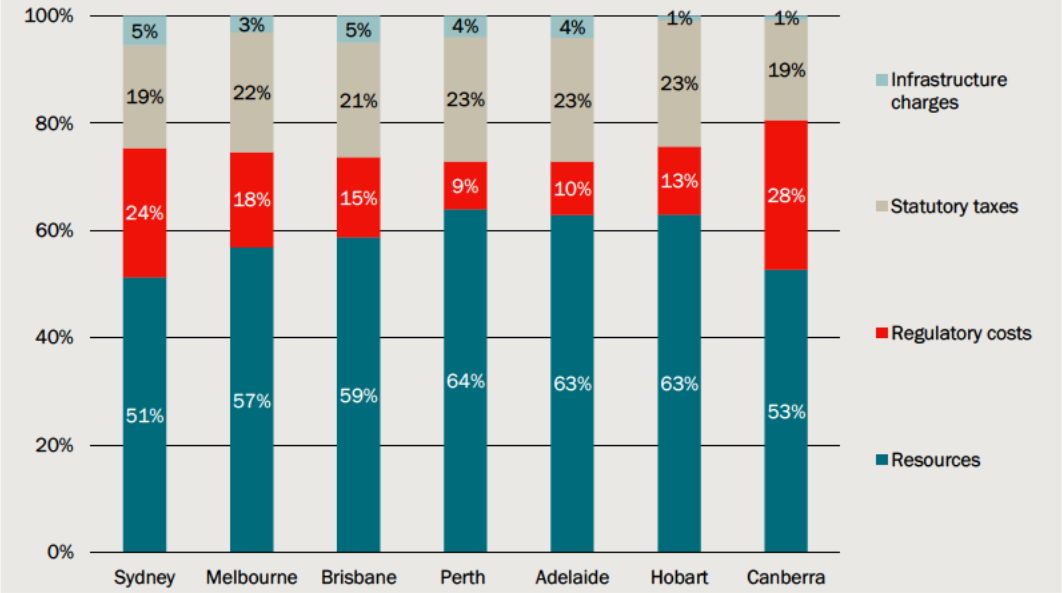
Across the 7 cities, the share of the outlay that reflects statutory taxes is broadly similar (chart 3.1). A substantial share of these statutory taxes is income tax levied on variable resources and GST. These taxes are collected by the Federal Government, via systems/rates that do not vary across states. 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. We find this regulatory cost is driven by the system of zoning and associated land use and development controls. This regulatory cost is a function of both the system of zoning and associated land use and development controls and changes in demand. The result implies that Perth's system has been more responsive to changes in demand that Perth has experienced, and Sydney's system has been less responsive to changes that Sydney has experienced.

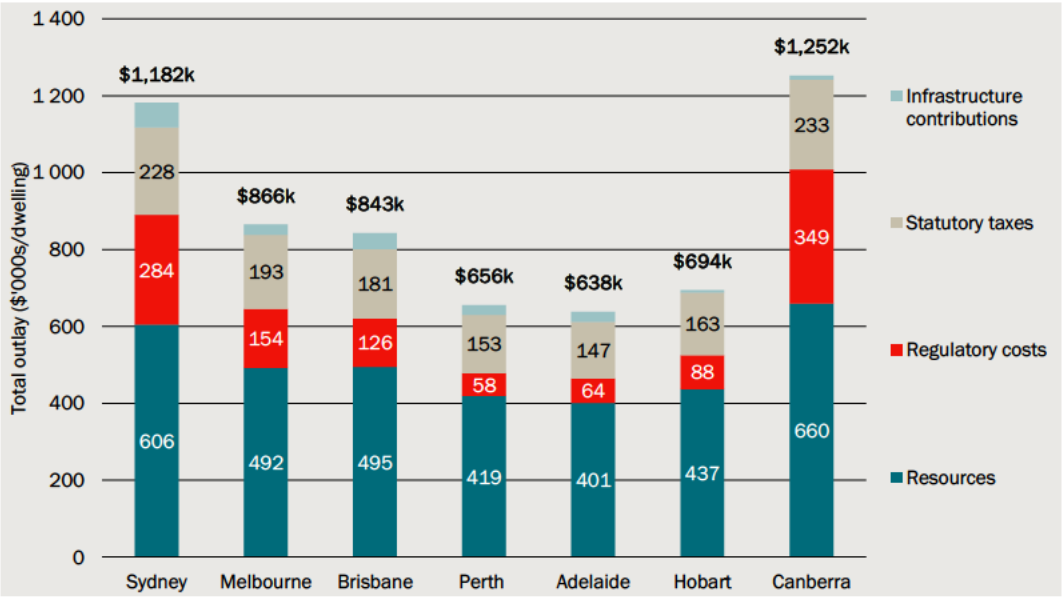
Across the 7 cities, there is some variation in the share of the outlay that reflects resource costs. It is lowest in Sydney (54 per cent) and highest in Perth (69 per cent). Mostly, this reflects variation in the other components (high regulatory costs in Sydney reduce resource costs as a share of the total outlay).

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



Data source: The CIE

3.2 Total outlay for a new greenfield house & land package



Data source: The CIE

3.3 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

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra
	$/house	$/house	$/house	$/house	$/house	$/house	$/house
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**

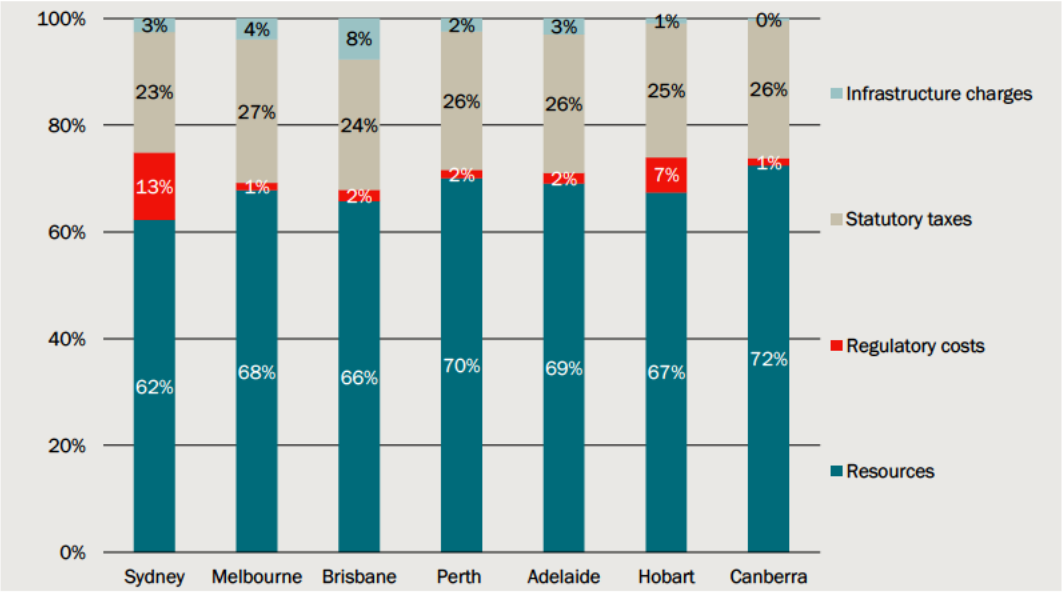
Source: The CIE

New apartments in infill development

In each of the 7 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.

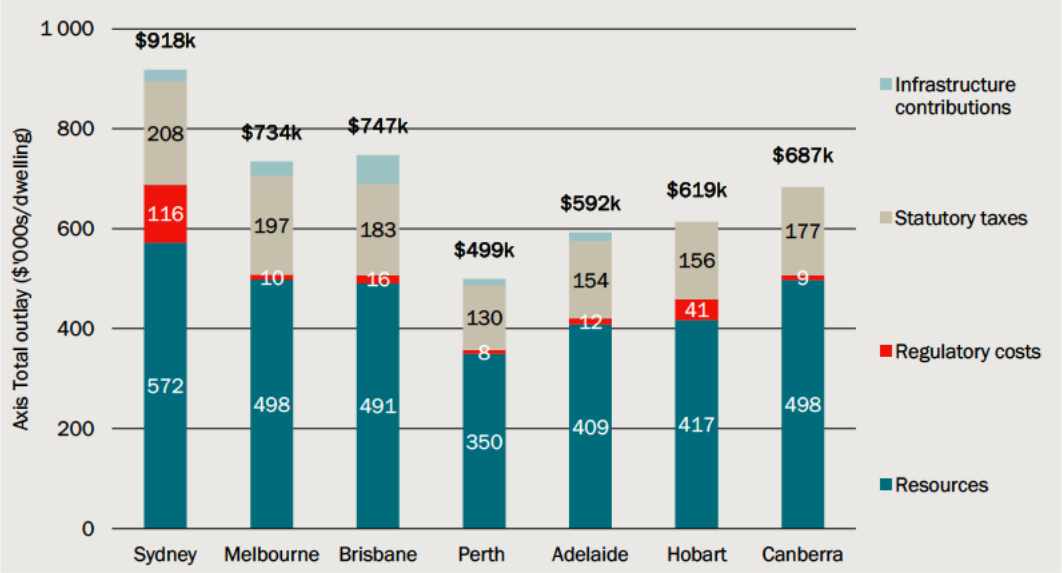
Sydney still has the lowest share for resource costs, reflecting its highest share for regulatory costs.

3.4 Shares of total outlay for a new infill apartment



Data source: The CIE

3.5 Total outlay for a new infill apartment



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

Data source: The CIE

3.6 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

4 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.

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. For example, construction workers, materials and machinery could be used to build residential dwellings instead of other types of infrastructure.

The supply of land is likely to be considered less flexible than the supply of materials, workers, capital and machinery.

Table 4.1 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.

4.1 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 4.1:

- the supply elasticities are higher than the demand elasticities for goods and services in both the construction and dwelling sectors, confirming the discussion presented earlier and implying that consumers and users bear more of the taxes which fall on the construction and/or dwelling sectors, and
- the supply elasticities of construction are higher than those of dwellings, because it is easier to increase the building of new houses, but more difficult to increase whole dwelling stock at the same rate.

Measuring the benefit of tax cuts to industry and households

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

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

The impacts of these tax cuts on sector price and production are reported in table 4.2. they are presented in the form of percentage changes relative to pre-tax cut levels.[2]

4.2 Changes in price and quantity of construction and dwellings due to tax cut

	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 4.3.

4.3 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

2 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.

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, 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 4.3). 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 4.2 and 4.3). 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 4.3. 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 4.3.

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.

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Appendix 7 – Minimum Lot Size Requirements

PLANNING REFORM TO UNLOCK MORE HOUSING AND IMPROVE AFFORDABILITY

Overdue planning reform will reduce the cost new homes by up to $250,000 and unlocking up to 300,000 new well-located houses across South-East Queensland

The Challenge

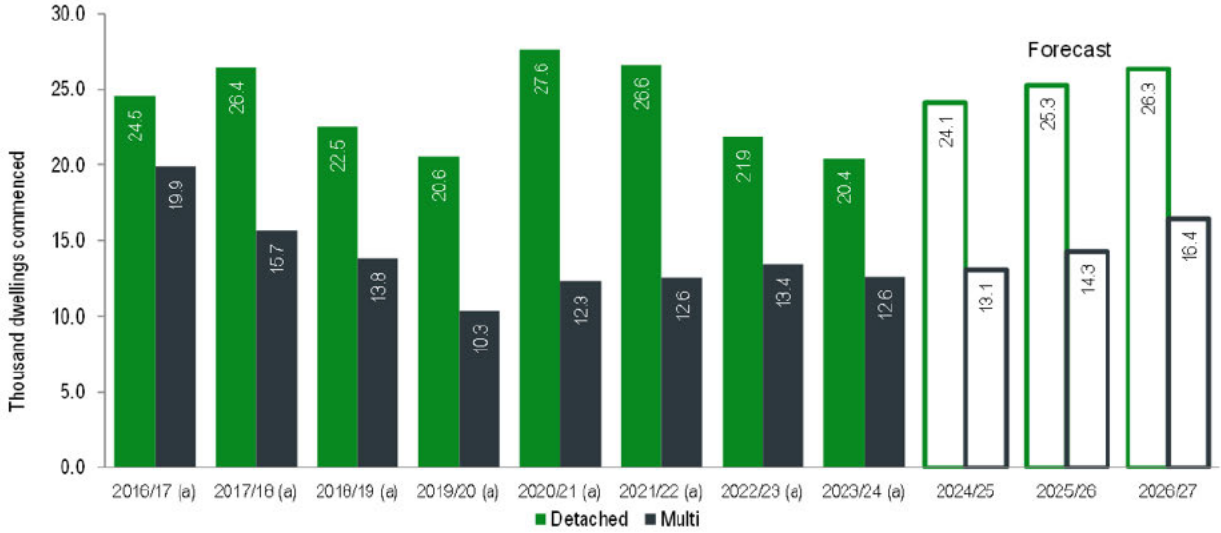
South-East Queensland (SEQ) continues to be one of Australia's fastest growing regions. During the COVID-19 pandemic, this growth was driven by interstate migration at record levels. Population growth is forecasted to remain high consequence of overseas migration and an overall focus on SEQ for employment and lifestyle opportunities in the lead up the 2032 Brisbane Olympics.

While population growth is considered great for economic development and government revenue, it places considerable strain on the housing market. Since 2020, Brisbane property prices have increased by 65 per cent, almost double that of any other Australian capital city [1]. There is also considerable pressure on the rental market with the vacancy rate remaining near record lows at 1% across the State [2]. As such, affordable housing options are increasing difficult to secure in South-East Queensland.

Home Building Targets

Despite an increased focus on increasing the supply of new homes and some well-intended initiatives, Queensland continues to build new homes at a rate well below historic averages and significantly less than the target identified by the Queensland Government, which is building 1,000,000 new homes by 2044.

This target equates to an estimated 50,000 new homes being constructed in Queensland each year to meet the demand for housing and put downward pressure on affordability. Building 50,000 per annum is no easy feat and has only been achieved two times in Queensland's history. Unfortunately, economists are consistent in their view that Queensland will not achieve this number of new homes without government intervention.



Only twice in Queensland's history have 50,000 homes or greater been built in a year. The current forecast is well short of this target and intervention is needed to unlock more homes.

[1] Queensland Council of Social Services. (2024). *Breaking Ground Report*. Queensland Council of Social Service.

[2] The Real Estate Institute of Queensland's (REIQ). (2024). *Residential Vacancy Rate Report – Q4 2024.* REIQ.

OVERDUE PLANNING REFORM FOR NEW WELL-LOCATED HOMES

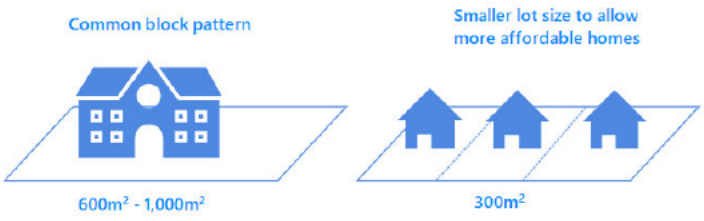
The opportunity to increase housing supply and cost saving for homebuyers is immense. New planning schemes must support 300m² across the Low Density Residential Zone

The Opportunity

While subdivision is often thought of as large greenfield master planned communities, there is a significant opportunity to increase infill development through subdivision.

A simple reduction to the minimum lot size and frontage referenced in planning schemes across SEQ will have significant benefits including:

- Help to achieve the density requirements and goals for infill development in the ShapingSEQ 2023 Regional Plan;
- Increase housing supply in established areas by unlocking up to 350,000 new homes in South-East Queensland;
- Allow new houses to provided in a timely manner which is not dependent on Local Government constructing expensive trunk infrastructure;
- Enable smaller allotments and houses which facilitates downsizing for older residents or reduces the cost of entry level housing for first homebuyers with potential savings of up to $250,000;
- Unlock new homes in these established low density residential areas creates more walkable neighbourhoods and will often provide new residents with improve accessibility to public transport, services and employment.



Current minimum lot size requirements

LGA	Zoning	Current Provision	Required Change
Brisbane	Low Density Residential	400m²	- 100m²
		300m² where within 200m of a centre zone with more than 2,000m² of site area	No change required
Sunshine Coast	Low Density Residential	600m² if slope ≤15%	- 300m²
		1,000m² if slope >15% and ≤20%	- 700m²
		1,500m² if slope is >20%	- 1,200m²
Gold Coast	Low Density Residential	600m²	- 300m²
Logan	Low Density Residential (Suburban Precinct)	400m²	- 100m²
Moreton Bay	General Residential (Suburban Precinct & Coastal Precinct)	600m²	- 300m²
Redland	Low Density Residential (No Precinct)	400m²	- 100m²
	Low Density Residential (Large Lot Precinct)	2,000m²	-1,700m²
	Low Density Residential (Park Residential Precinct)	6,000m²	- 5,700m²
Toowoomba	Low Density Residential	500m²	- 200m²
Ipswich	Low Density Residential	666m² (density requirement)	- 366m²

Table 1: Minimum Lot Size in SEQ

QUEENSLAND CANNOT AFFORD MORE OF THE SAME OLD THINKING IN OUR PLANNING SCHEMES

There are many misconceptions about subdivision and infill development. However, international case studies confirm the benefits to housing supply and affordability

Misconceptions about minimum lot size

A commonly held apprehension to permitting smaller allotment size under planning schemes is that this will enable all properties within a street to be subdivided. Ultimately, resulting in a density or character not envisaged in low density residential areas.

This concern remains inaccurate as there are many factors that determine if subdivision is a viable development outcome for a property including:

- Lawful point of discharge for stormwater – Local Government's require stormwater to be appropriate directly to the kerb and channel of the street or stormwater system. As such, only properties that can achieve a topographical fall towards the street or connection to suitable stormwater infrastructure can be subdivided;

- Additional property constraints – Other planning scheme restrictions such as flooding, heritage or traditional building character prevent the subdivision or construction of an additional house; and

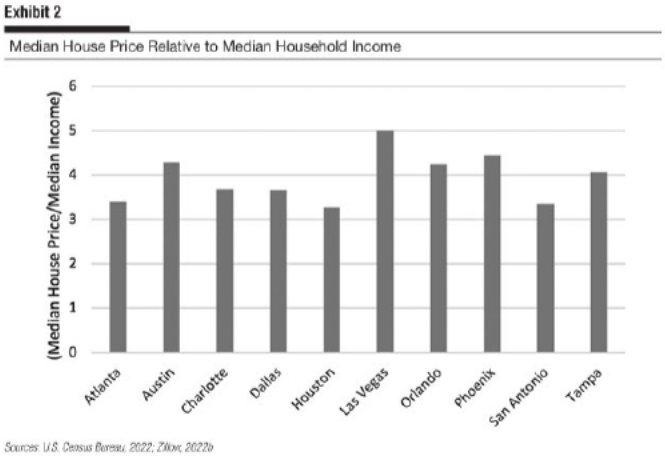
- Value of existing structures – In most circumstances where a property has an existing building or structures of high construction value, subdivision is not economical as subdivision to create smaller lots requires partial or complete demolition.

International Research

South-East Queensland is not alone in the challenge of expanse areas of each jurisdiction being restricted to single houses on larger allotments. For decades, many parts of the United States have been investigating and now implementing minimum lot size reduction.

There is now a compelling level of research which confirms that minimum lot size reduction will lead to increase housing supply and in turn improved levels of affordability.

For example, in 2013 Houston in Texas significantly increased the areas suitable for small allotments. Many researchers have now concluded that stricter minimum lot size requirements create less affordable housing. Those cities with the lowest minimum lot size, Houston and San Antonio, have the highest level of affordability. Conversely, Austin and Dallas are considered the least affordable and have the highest minimum lot size. [4]



International research confirms cities with smaller lot sizes are more affordable

[4] Bonura, J. (2024). *Unlocking affordability: The impact of lot size regulations on housing costs*. Texas Public Policy Foundation.

LAND IS THE MOST EXPENSIVE COMPONENT OF HOUSING AND SIZES IN SEQ HAVE STAGNATED

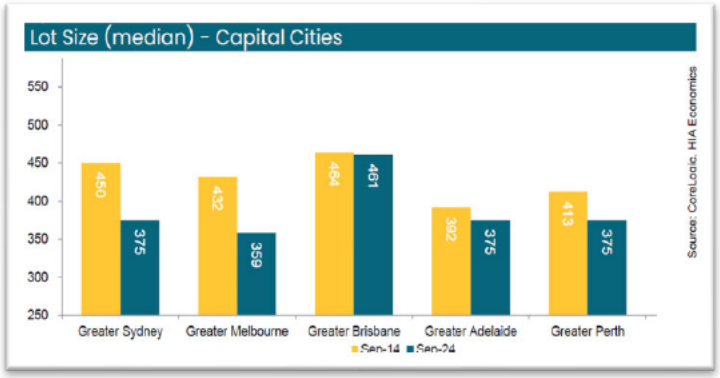
Reducing minimum lot sizes in low density residential areas will unlock well-located homes close to existing services, employment and infrastructure

Shortage of Land – Driving Prices

Since its inception in 2018, the Queensland Government's Land Supply and Development Monitoring (LSDM) Report had confirmed that most major local government areas in SEQ are well below the benchmark set by the Regional Plan of 4 years supply of uncompleted lot approvals.

Largely driven by scarcity, the price of land in SEQ continues to increase at an alarming rate. In the past year alone, the price of land in the Greater Brisbane region has increased by 21.2% [3].

The high cost of land is not limited to the Greater Brisbane area. The Gold Coast and Sunshine Coast are in the Top 10 most expensive regional markets in Australia, recently recording a cost per square metre of $1,969 and $813 respectively.



Unlike other regions, the median lot size in the Greater Brisbane region has stagnated since 2014

Planning Schemes stuck in the past

The history of our suburbs and the size of land is tied to planning controls. In 1885, the *Undue Subdivision of Land Prevention Act* specified a minimum lot size of 16 perches (404m²) across Queensland.

The vast majority of local government areas have been allocated to the Low Density Residential Zone which is unpinned by a philosophy of larger allotments and standalone houses.

Despite the significant shortage of housing and the need to build more homes, these low density residential areas have seen minimal change in the past 50 years. To this day, minimum lots sizes for these areas still range between 400m² - 2,000m² (see **Table 1**)

The existing block pattern of our suburbs consists predominantly of lots that are between 600m² and 755m². As such, very limited infill subdivision is possible.

Low Density Residential Zoning or similar in nature is allocated to vast parts of each LGA

[3] Housing Industry Association (HIA) & Corelogic. (2024). *HIA-Corelogic residential land report - September 2024.*

Appendix 8 – Regulatory barriers associated with prefabricated and modular construction

Regulatory barriers associated with prefabricated and modular construction

Final Report

October 2022

Preface and acknowledgement

Swinburne University of Technology (SUT) has undertaken this research and development work investigating regulatory barriers for off-site construction focusing on prefabricated and modular buildings.

The project is commissioned by the Housing Industry Association (HIA) on behalf of the Advanced Manufacturing Growth Centre's Prefab Innovation Hub. HIA is the project sponsor. This work forms part of a series of projects being supported by the Advanced Manufacturing Growth Centre (AMGC) Prefab Innovation Hub.

The project aims to develop a report that identifies and analyses the regulatory barriers for off-site construction. The project is conducted in two phases.

The **first phase** involved developing a Briefing Paper to provide background information and key issues identified by the project team. This was shared with stakeholders which were consulted to provide their opinions and experience.

The **second phase** of the project involved reviewing and examining the findings from the consultation, including an industry survey, and literature on overseas arrangements to identify regulatory barriers across the spectrum of the construction process. From these recommendations for further work and/or responses to the identified regulatory barriers have been developed.

An interim report was prepared and circulated to stakeholders outlining themes and suggested responses with further work and consultation done to complete this Final Report.

The project team included:

Prof. Emad Gad (SUT)
Prof. Shan Kumar (SUT)
Prof. Lam Pham (SUT)
Dr. Jessey Lee (SUT)
Dr. Anita Amirsardari (SUT)
Simon Croft (HIA)
Kristin Brookfield (HIA)
Melissa Adler (HIA)

Executive summary

This project focused on the regulatory barriers that prevent greater take-up of prefabricated (prefab) and modular construction. It sought to identify those barriers in the Australian context and made recommendations to overcome them.

The project has been initiated by Housing Industry Association (HIA) and carried out by Swinburne University of Technology (SUT). It is part of a series of projects supported by the Advanced Manufacturing Growth Centre (AMGC) Prefab Innovation Hub which commenced in 2019 to support Australia's manufacturing and building and construction industry harness the potential benefits of prefabrication.

The investigation included review of overseas practice, including countries where prefabricated and modular construction has gained greater momentum such as Japan and Sweden and countries where this form of construction is developing, including Canada, Singapore, United Kingdom, United States of America and New Zealand.

Consultation with various stakeholders were undertaken in the form of online surveys and written submissions, one-on-one/group interviews and meetings to gain a better understanding of the Australian practice and the challenges that are faced by the industry.

The general finding was that regulatory ambiguities for prefab and modular construction cause uncertainties for all involved parties that in turn prevent greater take-up of this form of construction.

The quality of the off-site construction products needs to be assured since on-site inspection can be challenging or unable to be fully verified in-situ for complex prefab and modular units. Certification of the factory outputs can be a means to increase the confidence of all practitioners.

But even before a project can start, there are barriers in the design rules, approvals processes and financing arrangements, particularly for housing, that can make the use of prefabrication more difficult, if not impossible.

These barriers are clearly impeding the productivity benefits that industry and governments understand and expect to flow from the prefabricated building sector.

This project finds that there are several initiatives governments can take to assist the industry and these are listed in the Recommendations.

Some of the technical recommendations can be addressed via a new section in the National Construction Code (NCC), or a separate protocol or standards published that could be recognised by the NCC, to clarify many ambiguities in the technical construction requirements, when compared to on-site construction methods.

The Recommendations outline the regulatory steps that could be taken to address these barriers and support the prefabricated building and construction sector meeting the expectations of the industry, governments and consumers.

Recommendations for planning system reform

Recommendation 1: That planning requirements for prefabrication and modular housing be:

(a) amended to use standardised terms for off-site constructed buildings (e.g., manufactured home, movable home, relocatable home, kit homes, manufactured home estate) and align with associated terms to be incorporated into the NCC and state and territory building regulations;

(b) amended to explicitly recognise prefabrication, modular and tiny homes as acceptable forms of housing;

(c) planning or housing codes apply excessive design requirements for modular and prefabricated homes and changes be identified that can better align these codes with lightweight construction and smaller housing designs; and

(d) that a definition of a 'tiny house on wheels parking space' be established and that local governments amend local planning scheme requirements to permit such parking spaces on any land where residential buildings are permitted.

Recommendations for building and construction

Recommendation 2: That prefabrication and modular construction be explicitly recognised as regulatory acceptable construction practice and a standardisation of relevant terms and definitions be established for use in Australian building codes, standards or technical requirements.

Recommendation 3: That the Australian Building Codes Board (ABCB) establish a project to identify ways to provide prescriptive and performance requirements into the National Construction Code (NCC) to support the orderly use and approval of prefabrication and modular construction, especially for Class 1 buildings.

Recommendation 4: That Standards Australia develop a work program to:

(a) review and modify the relevant construction standards, particularly NCC referenced standards, for their adequacy to address prefabricated and modular construction; and

(b) develop a new suite of Australian Standards specifically for prefabricated and modular construction to provide industry with a set of deemed to satisfy (DTS) construction solutions.

Recommendation 5: That the current Australian product conformity infrastructure be reviewed for its ability to cope with new prefab and modular products that need testing, individually and as a whole, as the basis for their acceptance in building approvals.

Recommendation 6: That a manufacturer certification scheme be developed to suit the specific needs of the prefab and modular building industry.

Chain of responsibility, financial and contractual requirements

Recommendation 7: That the supply chain roles and responsibilities are made clear with prefab and modular construction in mind and implemented in practice.

Recommendation 8: That a building industry taskforce is set up to further investigate and address barriers associated with contracts, progress payments, licencing, mandatory stage inspections and insurance.

Education and government support

Recommendation 9: That the industry is upskilled by setting up specialist courses for prefab and modular construction.

Recommendation 10: That the Australian government provide incentives and support by encouraging increased use of prefab and modular construction in their procurement specifications.

Table of Contents

1. Introduction

1.1 Background

Australia's building codes and standards, along with the regulatory systems that apply to zoning land and approving the construction of buildings, are founded on the traditional (conventionally) methods of constructing buildings and the building products, practices and systems that have existed for many decades.

As a result, they introduce challenges with regulatory acceptance and approvals with respect to off-site construction methods, including prefabricated (prefab) and modular construction, that are creating impediments to the cost effective and timely delivery of buildings.

This can result in inconsistent outcomes for industry and consumers, with the potential for non-approval. This can also result in manufacturers and suppliers being hesitant to bring new products and systems to market given the inconsistency and uncertainty.

The regulatory system for building practitioners is already very complex to navigate for conventional construction and it is even more of a complex web for prefab and modular construction.

In addition, the regulatory requirements for small scale residential construction and financing by home buyers also fail to recognise alternative construction methods (such as prefab and modular construction) and contract arrangements making finance for new homes difficult.

Given the likelihood of a steady increase in demand for fast-tracked building construction, a vast number of construction projects including housing, will move to off-site and modular or systems-based construction methods over the next 5, 10 and 20 years.

It is critical that there is a clear understanding of the regulatory barriers that exist today for prefab and modular construction and potential solutions are identified now to allow Australia to create a regulatory framework that support and promotes the effective use of these building technologies.

'Australia's regulatory systems need to be updated and revised to remove the unnecessary barriers and enable greater uptake and recognition of the suitability and effectiveness of prefabricated and modular construction and facilitate an appropriate and streamlined process for the necessary approvals.'

1.2 Australian research

Multiple initiatives have taken place to assist with the progress of the use of prefabricated and modular construction in Australia which has seen increasing demand over the last decade.

In June 2019, Karen Andrews, the then Minister for Industry, Science and Technology, announced the Advanced Manufacturing Growth Centre (AMGC) Prefab Innovation Hub to support Australia's manufacturing and building and construction industry harness the opportunity this sector offers.

The AMGC first undertook a feasibility study for a manufactured building hub for the prefabricated building industry. Arising from that study, the Hub was established as a structured set of research projects aimed at the development and implementation of the following outcomes:

- support links between the construction and manufacturing sectors to enable businesses to benefit from advanced manufacturing processes;
- support new technologies and innovations enabling the transformation of the industry to provide smarter, more affordable and more sustainable construction solutions for Australians; and
- grow the manufactured buildings eco-system to improve business capability to incorporate advanced technologies and processes within industry.

HIA's project forms part of a series of projects being supported by the Prefab Innovation Hub.

The Prefab Innovation Hub is supported by a Steering Committee comprised of a broad range of experts with representatives from industry, academia and research organisations, including HIA and Prefab Australia (prefabAUS).

Some of the other initiatives which have taken place to assist with the development of off-site construction, include:

- prefabAUS: the peak body for Australia's prefabricated building industry, formed in 2012 (prefabAUS, 2021).
- The Australian Research Council (ARC) Training Centre for Advanced Manufacturing of Prefabricated Housing (CAMP.H): administered by the University of Melbourne(The University of Melbourne).
- Sustainable Built Environment National Research Centre (SBEnrc): formed in 2010 acts as a research broker between industry, government and research organisations to provide support to the built environment industry(Sustainable Built Environment National Research Centre (SBEnrc)).
- Modular Construction Codes Board (MCCB): published the first handbook for the design of modular structures in Australia in 2017 (Modular Construction Codes Board (MCCB), 2017).

Much of the research from the above initiatives and other researchers have focused on general barriers or constraints for the uptake of off-site manufacturing.

While it has been identified that regulatory systems for buildings in Australia require attention to address prefab and modular construction, a consolidated and specific research approach has not occurred to date.

1.3 Project description

1.3.1 Objective and scope

The objective of this project is to identify regulatory issues that need to be addressed and potential opportunities to facilitate the use of prefab and modular construction in Australia.

The project examines regulatory barriers for residential buildings (single dwellings) and low to mid-rise buildings (multiple dwellings).

The aspects of the regulatory requirements which are explored include:

- planning and building approvals;
- building codes and standards;
- testing and certification; and
- practitioner licencing, stage inspections and contractual requirements;

Temporary structures or other temporary or short-term accommodation buildings are not within the scope of this project.

1.3.2 Methodology

The project has been completed in two phases.

Phase 1

The first phase of the project included literature review of overseas practice and consultation with stakeholders in the form of a survey, interviews and meetings. In preparation for the consultation, a Briefing Paper was prepared for the stakeholders to provide background information and key issues that had been identified by the project team.

Phase 2

The second phase of the project has involved reviewing and examining the findings from the consultation and literature review to clearly identify the regulatory barriers and to provide recommendations and implementation considerations for further work. The findings of the project are presented this Final Report.

2. What is prefabricated and modular construction?

Prefab and modular construction is the common term that has been adopted in Australia to refer to off-site construction, generally meaning a method of construction of buildings with components that have been fabricated off-site or away from the building location.

It is different to the conventional on-site construction method, sometimes referred to as stick-built, where all or most of the building work is conducted sequentially on-site.

Off-site construction of a house

On-site construction of a house

Figure 1: Examples of off-site and on-site construction of houses during construction

Many other terms are used to describe off-site construction method, including off-site manufacturing (OSM) and design for manufacture and assembly (DfMA). Similarly, different terms have been adopted to refer to buildings with prefabricated or modular construction methods, including prefab or modular buildings and pre-manufactured homes.

For the purpose of this report the terms **prefab and modular construction** will be predominantly used. The regulatory barriers examined are applicable to construction types such as *tiny homes*, 3D printed homes, bathroom and kitchen pods and multiple purpose/function building elements. However, it is likely that different and more nuanced solutions would be needed to different types of modular and prefabricated construction.

It is noted that this report predominantly aims to address the regulatory challenges associated with 2D and 3D prefabricated products which have enclosed structures with one or more elements associated with fire, thermal, acoustic, and weatherproofing, and/or with one or more mechanical, electrical, plumbing, or other systems.

Open 2D and 3D prefabricated products such as timber or steel trusses and frames which contain elements that can be visually inspected on site and precast concrete components are generally well managed by the industry and are supported by current Australian standards.

It should be noted that while prefab and modular construction may seem like a new construction method, there are records suggesting that it has been around for more than two centuries. The process of off-site construction has significantly transformed since then into an innovative form of construction today.

Figure 2: A house being moved by using horses in San Francisco, 1908 (Desroches, 2018)

2.1 Type and levels of prefabrication

Classification can be used to determine the type and level of prefabrication (i.e., the extent of off-site construction work) as shown in Figure 3.

There are three basic types of prefabricated components:

- **Simple linear components (1D prefab):** most components in construction involve some form of prefabrication for ease of on-site erection, for example steel beams and columns manufactured to be easily bolted on site.
- **Panelised components (2D prefab):** assemblies of components designed for ease of transport and erection. Panelised systems vary from basic system design to serve a specific purpose such as structural panels for roofs, walls and floors, internal/external cladding system to complete panel systems to serve multi-purpose.
- **Modular components (3D prefab):** this term is often reserved for pre-assembled three-dimensional products varying from single utility units such as bathroom pods or prefab classrooms to a full residential unit (an apartment or a house).

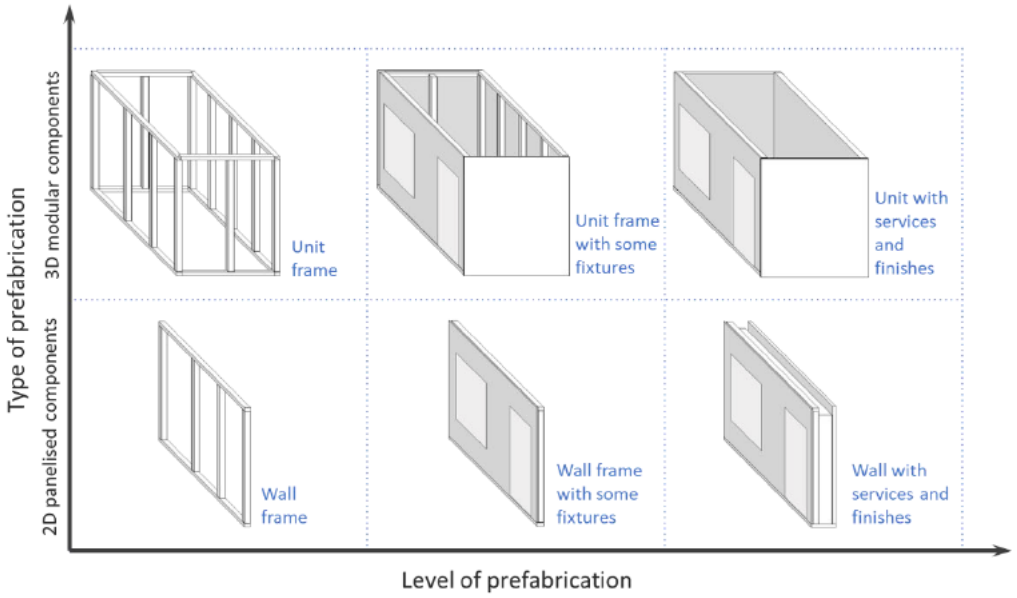


Figure 3: Type and level of prefabrication

From regulatory perspective, a definition or classification enables appropriate and effective measures necessary for each class of products to achieve compliance and quality assurance.

This report will predominantly focus on prefabricated components which are enclosed and service multiple functions. Therefore, this report does not directly address open frames, trusses or precast concrete panels, which are generally well established and supported by current Australian standards. Further discussion is provided in Section 5.2.1.

Furthermore, the classification in terms of the source of fabrication may also be important. Products that are manufactured overseas face another layer of regulatory barriers associated with imports, in addition to the building control measures for locally product building products which is already difficult to navigate.

'Therefore, the need for clear set of agreed definitions is critical in developing specific regulatory triggers or tailored building or planning systems and standards requirements.'

2.2 Construction process

The critical stages for the construction of a building with modular and prefab components and the corresponding approval requirement is shown in Figure 4.

The different stages of construction may include regulatory and non-regulatory requirements. While this study aims to focus on regulatory barriers, some issues which are not considered directly as regulatory will also be discussed.

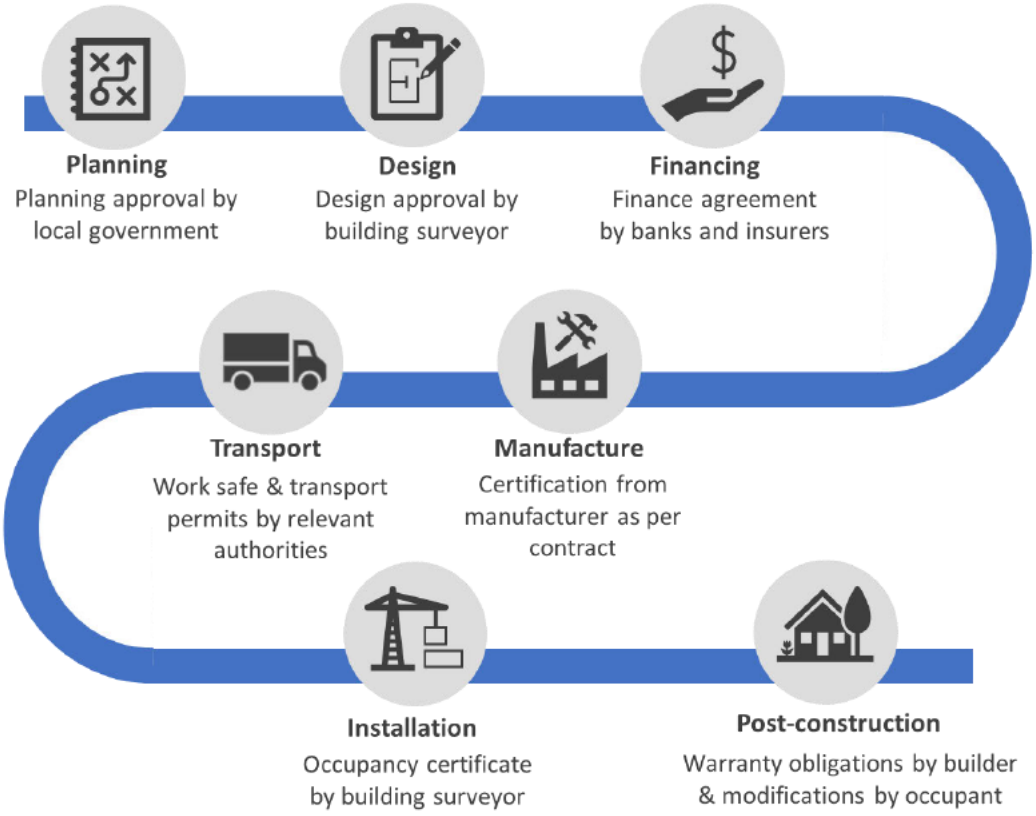


Figure 4: Overview of the construction process for prefab and modular buildings

2.3 Benefits and advantages

The are many benefits and advantages that prefab and modular construction can provide, some of the key benefits are shown below.

Figure 5: The benefits of prefab and modular construction

3. Overview of overseas practice

Prefabricated housing has gained great momentum in some countries such as Japan and Scandinavian and Northern European countries, with fluctuating popularity in other countries such as the United States and United Kingdom since post war period (Bertram et al., 2019).

For most countries the modular industry is still largely regulated by the same codes as conventional construction. However, significant work has been conducted to improve the compliance and quality assurance (QA) of prefabricated and modular products and construction process. Some of these measures includes:

- Third-party certification of factories, products and processes which often involves surveillance and inspections;
- Manufacture/supplier declaration (also referred to as self-certification) and quality control procedures;
- Development of standards and guidelines for prefabricated buildings;
- Product identification and traceability systems; and
- Schemes to provide assurance to consumers and lenders.

The following sections provides an overview of off-site construction in countries which have a varying level of off-site manufactured buildings, namely: Japan, Sweden, Canada, Singapore, United Kingdom, United States of America, and New Zealand, and what learnings from the practices in these countries can be adopted in Australia.

3.1 Japan

Japan is considered as one of the world-leaders in prefabricated and modular housing. Approximately 15% of new construction is modular and it has the largest volumetric modular company in the world, Sekisui Heim.

The development of manufactured homes started in the 1960s and 1970s due to high demand for housing for which conventional construction was unable to meet (Friedman, 2021). Initially, prefabrication and modular construction was developed to speed up construction and increase affordability of houses.

However, since the 1970s Japan changed its focus to superior quality and now volumetric houses are approximately 8% more expensive than conventionally built houses (Modular Building Institute, 2019).

Quality assurance and guarantee is typically provided by large companies with strong reputations. Japanese companies take great care to develop houses with high level of durability, advanced features, warranties and post-occupation care (Manley & Widén, 2019).

It is common for manufacturers to demonstrate the reliability of their products through earthquake, fire and water resistance tests at publicly-available laboratories (Manley & Widén, 2019).

In addition, advanced features in relation to air quality, sound insulation, thermal insulation and envelope seal are provided as a standard. Manufacturers typically fix defects without additional costs to consumers and follow the “Home Guarantee System” and “After Sales and Maintenance Service System” strategies introduced in the 1960s, to provide services such as upgrades, renovations, and re-customization (Linner & Bock, 2012).

In addition to manufacture quality control systems, third-party certification is also necessary. The Minister of Land, Infrastructure, Transport and Tourism (MLITT) established the housing performance labelling system and certifies private companies to conduct assessments to issue performance evaluation of houses (Chang-Richards et al., 2019). Prefabricated buildings come with a standard 20-year warranty which includes after sales service provisions (SBEnrc, 2017).

Many Japanese companies have sought to replicate their construction methods in Australia but ultimately have elected to follow ‘the Australian way’ due to the inability to navigate our complex regulatory environment.

3.2 Sweden

Sweden, similar to Japan, is also considered to be a leader in prefabricated and modular buildings due to its high rate of adoption compared with other countries. However, success is related to a highly-skilled workforce that has valued research, training and understanding of new systems instead of technological advances and automation (Manley & Widén, 2019).

Leading firms initially started with providing single-family homes and now predominantly focus on affordable multi-unit housing (Modular Building Institute, 2019).

Sweden's volumetric modular construction is governed by conventional building codes (Modular Building Institute, 2019). It has a national type approval system for assessment and verification of construction products with requirements in the Swedish building regulations.

Type approvals are provided for products which are not covered by harmonised standards and European Technical Assessments (ETAs) (Boverket, 2021). As part of the validity of the approval, the manufacturing process is inspected regularly by a third-party (Research Institute of Sweden (RISE)).

The study conducted by Chang-Richards et al. (2019) demonstrated that self-certification (supplier declaration) is the primary mechanism used for quality assurance.

This is then followed by third-party inspection and certification of factory production process and factory facilities/capacity. The high-quality focus seems to be a norm due to the high uptake of prefabrication in the housing sector and hence requires less regulatory interventions.

3.3 Canada

Modular construction has gained popularity in Canada since end of World War II with the booming of Canada's population and economy. It is approximated that in the last decade, factory built residential houses compose of 8-16% of the total single family housing market (Norman & Bray, 2020).

The Canadian Standards Association (CSA) has developed three standards which are directly related to prefabricated and modular buildings:

- CSA A277-16 (R2021): Procedure for Certification of Prefabricated Buildings, Modules, and panels
  This standard provides the procedure for certifying buildings, and partially or fully enclosed modules and panels for buildings of any occupancy. It provides requirements for certification of the factory quality program and the prefabricated product, auditing of the factory quality program; and in-factory inspection of the prefabricated product.
- CSA Z240 MH Series-16 (R2021): Manufactured Homes
  This standard provides general requirements for manufactured homes, including technical requirements, and requirements on quality control, markings, and provision of printed instructions.
- CSA Z240.10.1:19: Site preparation, foundation, and installation of buildings
  This standard provides requirements related to building installation, including: site preparation, permanent foundations, anchorages to resist overturning and pier toppling due to wind, connection of modules, and skirting.

In addition, prefab and modular buildings must comply with province and territory building code requirements and additional certifications are used to quantify other aspects of the modular buildings including energy efficiency and sustainability (BC Housing, 2014).

The manufacturer is responsible for implementing quality control procedures to ensure compliance with necessary performance requirements. Furthermore, factory surveillance inspections are conducted by a third-party to assess manufacturer quality control procedures and to ensure the building complies with all necessary performance requirements (Chang-Richards et al., 2019). A summary of the quality assurance and compliance procedure in accordance with CSA A277 is shown in Figure 6.

Figure 6: Approval process in accordance with CSA A277, adapted from Chown (2015).

3.4 Singapore

The government in Singapore is encouraging construction companies to use construction methods which require reduced labour such as modular construction through implementing various schemes and incentives (Shang et al., 2020).

The Singaporean Building and Construction Authority (BCA) has developed an acceptance framework for modular construction, referred to as prefabricated prefinished volumetric construction (PPVC), on mandated development sites (BCA, 2022). It consists of two parts:

(i) Acceptance by the Building Innovation Panel (BIP); and
(ii) Accreditation by PPVC Manufacturer Accreditation Scheme (MAS).

An overview of the process involved for acceptance by BIP is shown in Figure 7. The suppliers and manufacturers need to ensure that their PPVC systems meet the building code performance requirements and submit an application to BIP. BIP seeks suitable regulatory authorities to provide feedback about the application.

If accepted, In Principle Acceptance letters are issued to the supplier/manufacturer and are listed on the BCA's website. Additional accreditations are also required via the Precaster's Accreditation Scheme for PPV shell production and PPVC Manufacturer Accreditation Scheme for fitting out works.

The PPCV MAS is managed by the Singapore Concrete Institute and the Structural Steel Society of Singapore. The scheme ensures quality assurance and control in the production of PPVC and sets the process for manufactures to produce high quality PPVC systems.

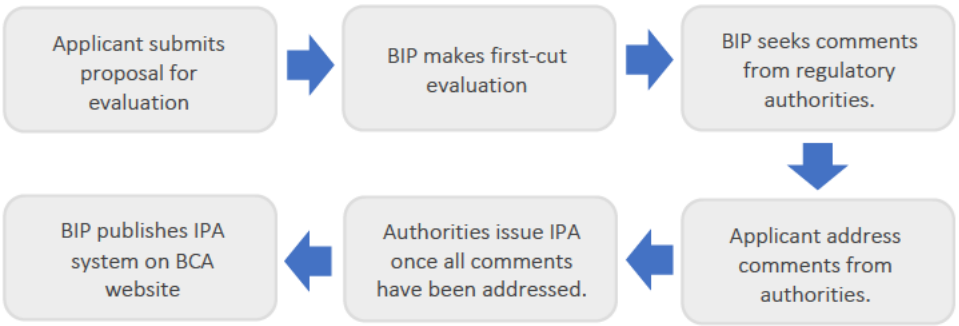


Figure 7: Building Innovation Panel PPVC acceptance process (adapted from BCA (2022))

3.5 United Kingdom

Modular construction became popular in the UK during post-war period in the 60s due to high demand for housing, however its popularity reduced with decrease in demand and collapse of the Ronan Point apartment tower in London in 1968 raising concerns about the safety of prefabricated housing (Bertram et al., 2019).

Currently, the UK is again seeing more prefab and modular projects. In 2013 the Build Offsite Property Assurance Scheme (BOPAS) was launched to encourage off-site construction.

BOPAS is a risk-based evaluation which provides assurance to funders, lenders and purchasers that buildings constructed using non-traditional methods and materials will last for at least 60 years (BOPAS, 2021)

The relationship between UK regulations and standards is shown in Figure 8. The British Board of Agrément (BBA) is the UK body which issues certificates for construction products against various schemes (e.g., BBA Agrément, European Technical Assessment, CE marking) to demonstrate fitness of purpose of the product and compliance with various building regulations. During the validity of the certifications manufacturers may be audited to ensure adequate quality management systems and repeated testing may be required (Chang-Richards et al., 2019).

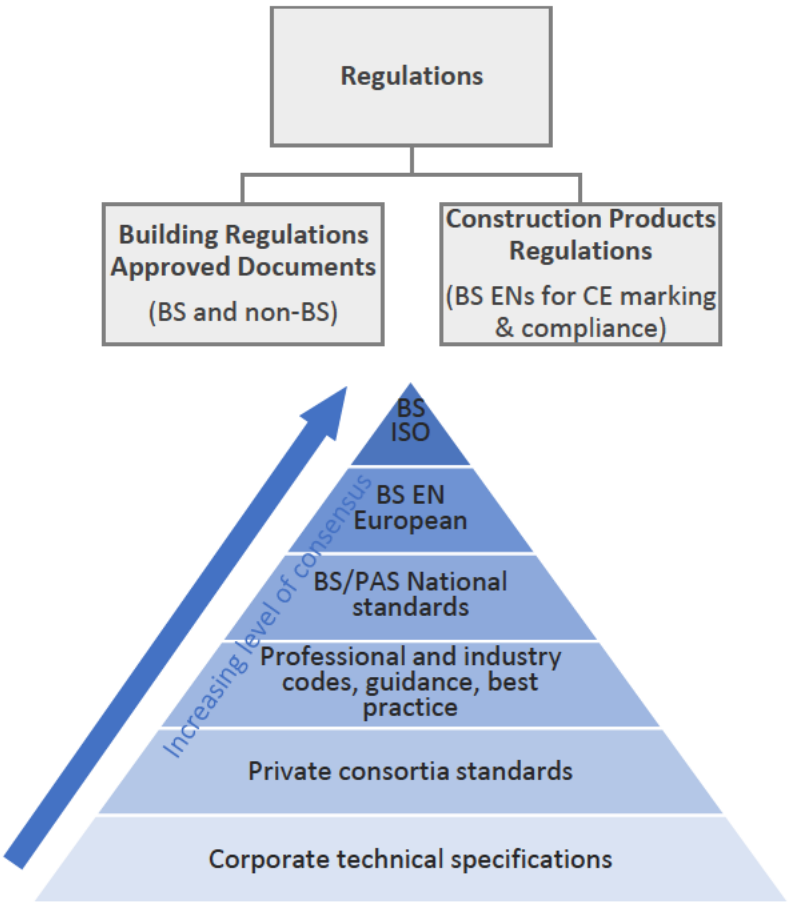


Figure 8: Relationship between standards and regulations and level of consensus for different standards and specifications, adapted from BSI (n.d.)

In general, the UK modular industry is regulated by the same codes as conventional construction (Modular Building Institute, 2019). A recent study was undertaken by the British Standards Institution (BSI) to examine how existing standards need to be updated and the development of new standards to meet industry requirements for off-site construction (BSI, n.d.).

It was identified that while there are some standards (international, European, British and industry) that are used for the design and construction of off-site buildings, they tend to be out of date or limited in scope. The study identified four broad aspects that need to be addressed:

- Design: A standardised procedure is necessary to assist with this phase and to take into consideration aspects which are unique to off-site construction, including: types of off-site systems, transportation and installation, the extent of disclosure of intellectual property (IP), demonstration of compliance at different stages, and considerations about maintenance and repair.
- Accuracy and tolerances: Updating standards addressing tolerances as currently they do not consider improvements in manufacturing accuracy, increased measurements and surveying equipment capabilities.
- Integration and connections: A method to deal with the difficulty in integrating different materials, systems, and/or modules from different suppliers into a common building.
- Technology and knowledge sharing: Developing consistent set of standards and use of terminologies.

3.6 United States of America

Currently, the United States of America has a relatively low uptake of modular construction, however, it is expected to grow within the next decade (Bertram et al., 2019).

In the U.S., there is a clear separation between the *manufactured housing industry* and *modular industry*.

The *manufactured housing industry* includes manufactured homes which are built at a manufacturing factory and transported in one or more sections on a permanent chassis to ensure transportability.

Manufactured homes are regulated federally and are constructed in accordance with the code which is administered by the U.S. Department of Housing and Urban Development, referred to as the HUD code (United States Department of Housing and Urban Development, n.d).

The *modular industry* is primarily regulated at a state or provincial level. Typically, most states have an administrative agency/office which oversees the industry and sets out the requirements.

While the requirements vary between states, they generally included requirements about the inspection process in the factory, quality control issues, the process for submitting, reviewing and approving building plans (Modular Building Institute, 2022).

The U.S. does not have a modular code, although, there are a series of administrative rules and regulations, and for some cases there are guidelines and standards. Overall, the construction of the building is regulated by the same codes as conventional construction. Typically, there is a state-adopted version of the International Building Code (IBC).

The IBC does not directly deal with modular buildings. The Modular Building Institute (MBI) is working with the International Code Council (ICC) to develop guidelines and standards, including recently published standards (Modular Building Institute, 2022):

- ICC/MBI 1200-2021 Standard for Off-site Construction: Planning, Design, Fabrication and Assembly: it includes provisions about planning and preparation requirements such as: the role of the architect/modular manufacturer/construction manager/general contractor, location of plant versus construction site, and material procurement and lead times.
- ICC/MBI 1205-2021 Standard for Off-site Construction: Inspection and Regulatory Compliance: it includes provisions about the inspection, approval and regulatory compliance of off-site residential and commercial construction components as well as their assembly and completion at the final building site.

3.7 New Zealand

New Zealand, similar to Australia, is also looking to expand its prefabricated housing market and is facing similar challenges. BRANZ has initiated research to investigate how to improve the NZ compliance and assurance frameworks for manufactured buildings (Chang-Richards et al., 2019).

The study highlighted the importance of establishing a chain of custody across the supply chain where all stakeholders (e.g., designers, manufacturers, suppliers, builders, and building consent authorities) take their due diligence. Clear regulation is required to define the responsibilities of importers and manufacturers/suppliers to assure the performance of imported products.

It is the responsibility of the manufacturers and suppliers to provide evidence that the product is fit for purpose. Like Australia, third-party certification (e.g., CodeMark, BRANZ and ISO) is voluntary in New Zealand and therefore there is lack of incentive for manufacturers to get costly certifications.

In 2010, the Ministry of Business, Innovation and Employment (MBIE) introduced a national multi-purpose approval, known as Multiproof, to streamline the consent process for standardised designs and enhance the compliance process for prefabricated buildings with the Building Code.

However, the research undertaken by Chang-Richards et al. (2019) showed that industry professionals suggested that the approach required more flexibility and efficiency.

Recently, the New Zealand Government has introduced the *Building (Building Products and Methods, Modular Components, and Other Matters) Amendment Act 2021*, which will be effective from 7 September 2022 (New Zealand Government, 2022a).

The change to the Act includes a voluntary manufacturer certification scheme for modular component manufacturers (MCM) (New Zealand Government, 2021, 2022b).

The new scheme (shown in Figure 9), involves assessment and certification of the entire prefabricated construction process from design, manufacture, assembly, transportation and installation on-site.

Third party inspection, audits and post-certification surveillance will be undertaken to ensure certified manufacturers are producing modular components that meet the requirements of the New Zealand Building Code.

The certified and registered manufacturers will be allowed to issue a manufacturer certificate for a component detailing its compliance with the building code and other relevant specifications. Building consent authorities must accept a certified modular component by a certified and registered modular component manufacturer.

The scheme is intended to benefit manufacturers by providing streamline consenting process and less inspection requirements.

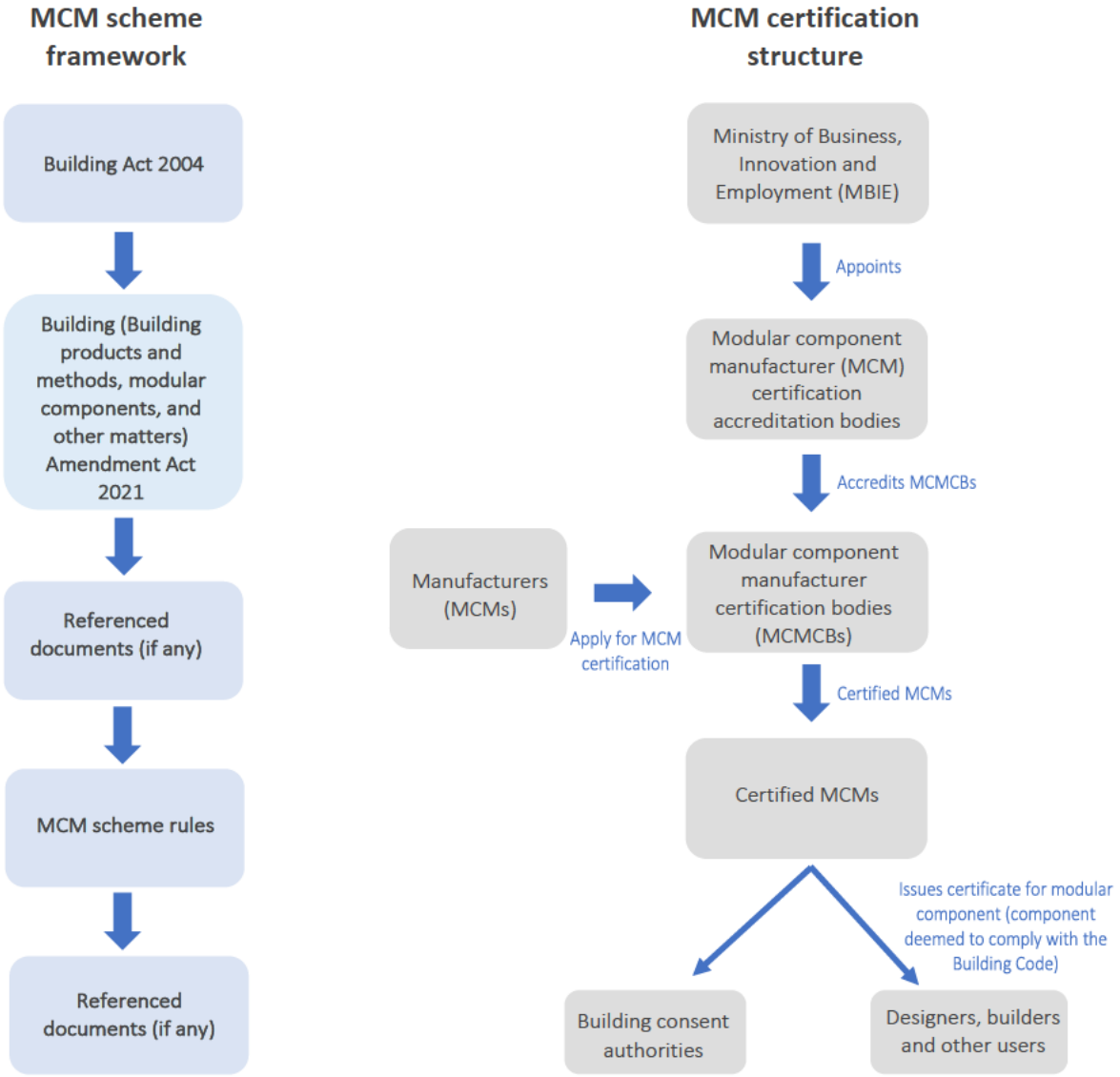


Figure 9: New Zealand system for managing modular component manufacturer certification, adapted from New Zealand Government (2022b, 2022c)

3.8 Learnings for Australia

The review of overseas practice has demonstrated that each country has their own methodology to assist with the development of prefabricated and modular construction. Some countries seem to have better established regulatory system and building codes and standards while others rely on general industry practice for conventional construction.

Some of the key learnings from international practice which are relevant for Australia and may assist in the uptake of prefabricated and modular construction are discussed below.

Third-party certification for manufacturers

The recent scheme which has been introduced in New Zealand to certify manufacturers to produce modular components by assessing the overall process is an effective method of streamlining the consent process while not compromising the compliance process may be relevant to the Australian experience.

Similar processes are also adopted in countries which are leaders in prefab and modular construction, such as Japan, Sweden and Canada.

While these countries tend to rely on supplier declaration to ensure high quality and compliant products, they are reinforced with third-party inspections and certifications of factory processes and facilities. A similar process in Australia can be adopted for manufacturers in Australia and oversees.

Third-party certification for products

A comprehensive system for third-party certification of construction products is critical for the progress of prefab and modular construction. This is particularly the case for innovative products for which the demonstration of compliance with performance requirements is not straightforward as current standards and guidelines are not applicable.

A type of approval process is often necessary in these circumstance prior to the process becoming standardised. A national system is necessary to provide this support to avoid the use of non-compliant products and delays during approvals process.

Japan deals with innovative solutions by having multiple publicly available laboratories which can demonstrate compliance for various performance requirements via undertaking tests.

Sweden has addressed this issue through the Research Institute of Sweden (RISE) and organisation which performs industry research and testing and evaluation.

A similar solution as to that of RISE in Sweden is likely to be suitable for Australia.

Development of codes and standards

Development of codes and standards are important in setting out the minimum requirements to meet performance requirements and ensure a level playing field for all. In most countries, the construction of prefab and modular buildings is regulated by the same codes as conventional.

Some countries, such as the UK, have identified that while there are some standards that are used for the design and construction of off-site construction, further specific and up-to-date standards are required which take into account specific aspects that make off-site construction different to conventional construction.

Some countries have also recently published standards specifically for off-site construction such as Canada and the United States. Codes and standards specific for prefabricated and modular construction will also be beneficial for the Australian construction industry.

To help with the development of these standards, existing international standards should be reviewed in detail.

Schemes to provide assurance to consumers and lenders

The reliability of construction products is critical, and there is naturally more hesitancy to use innovative products as it is associated with increased risk.

Therefore, schemes which provide guarantee systems and maintenance services are particularly useful in gaining the trust of consumers as demonstrated in Japan.

Furthermore, schemes are necessary to provide assurance to lenders, such as the risk-based evaluation Build Offsite Property Assurance Scheme (BOPAS) introduced in the UK.

Similar types of schemes can be introduced in Australia to encourage the greater uptake of off-site construction.

4.Stakeholder consultation

Consultation with various stakeholders has been undertaken in the form of online surveys and written submissions, one-on-one/group interviews and meetings.

A total of 286 participants completed the online survey and individual discussions with more than 20 participants have been undertaken.

The meetings have included discussions with various government bodies and code/standard representatives, including:

- The Australian Buildings Code Board (ABCB);
- The National Association of Testing Authorities (NATA);
- Standards Australia; and
- The NSW Office of the Building Commissioner.

All invited participants were provided a Briefing Paper which provided background information and identified key issues and questions related to prefab and modular construction which had been identified by the project team.

The stakeholders that have been consulted to provide their opinions and experiences include:

- Builders (main contractors) involved in installing/assembling prefab/modular buildings;
- Design engineers and architects;
- Prefab/modular manufacturers and suppliers;
- Sub-contractors (e.g., mechanical, electrical, or plumbing service works);
- Building surveyors, inspectors and local authorities;
- Government bodies and code/standard representatives
- Industry associations; and
- Researchers.

4.1 Surveys

Participants were invited to provide feedback via completing an online survey or providing written submission in response to the Briefing Paper. In total, 286 participants completed the survey. All written answers to questions were optional.

The survey had 28 questions in total. The survey questions and a summary of the responses are provided in Appendix A. A summary of the type of organisation or work that the participants associated themselves with is shown in Figure 10.

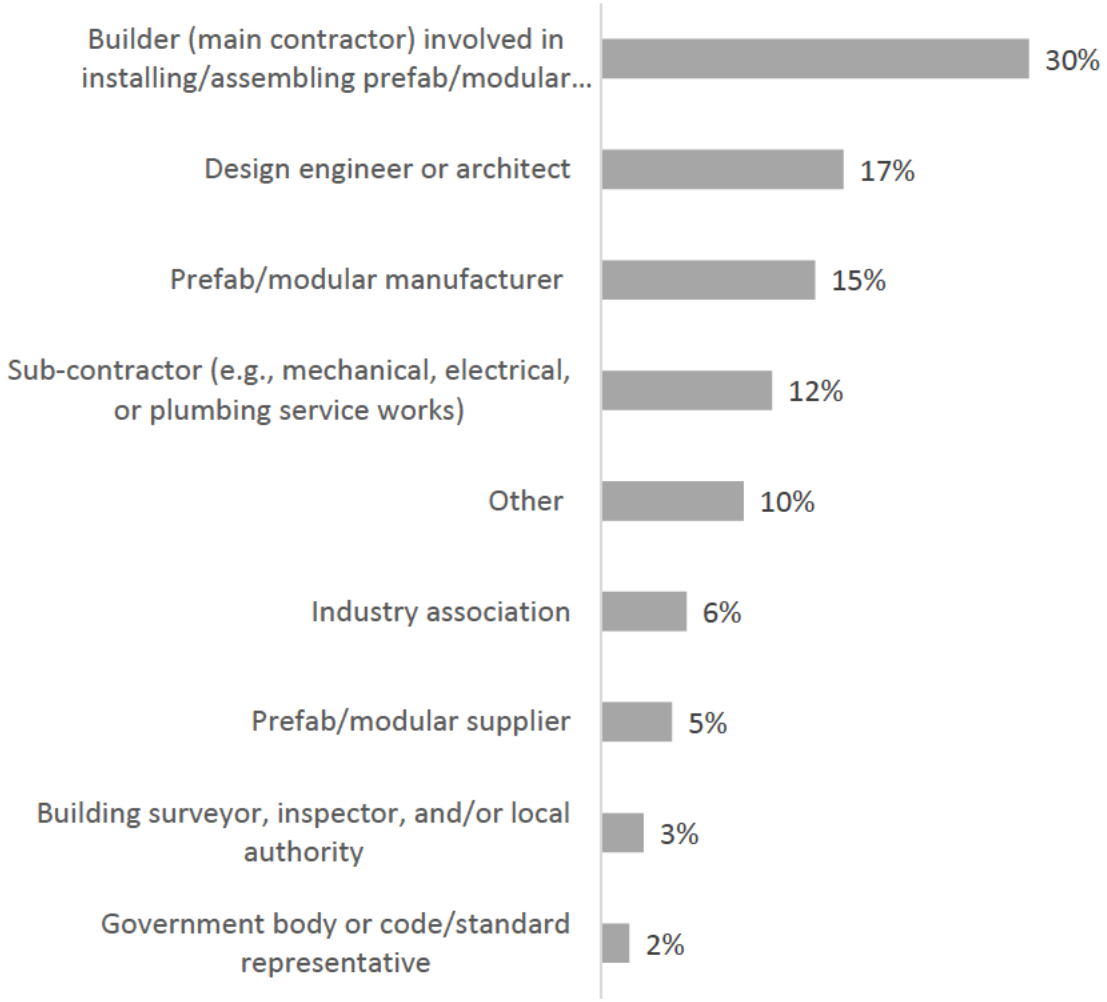


Figure 10: Participants involved in the survey

4.2 Interviews and meetings

Semi-structured interviews and meetings have been undertaken with discussion related to:

- The scopes and limitations of planning and building regulations on off-site construction particularly in residential construction;
- The differences in planning and building approval processes for on-site and off-site construction; and
- Suggestions on what changes are needed in this space (if any).

In total 17 interviews and meetings have been conducted with 23 participants. A summary of the participants is shown in Figure 11. The selection of the participants was based on their type of expertise and familiarity with off-site construction. The aim was to include various stakeholders involved in the supply chain.

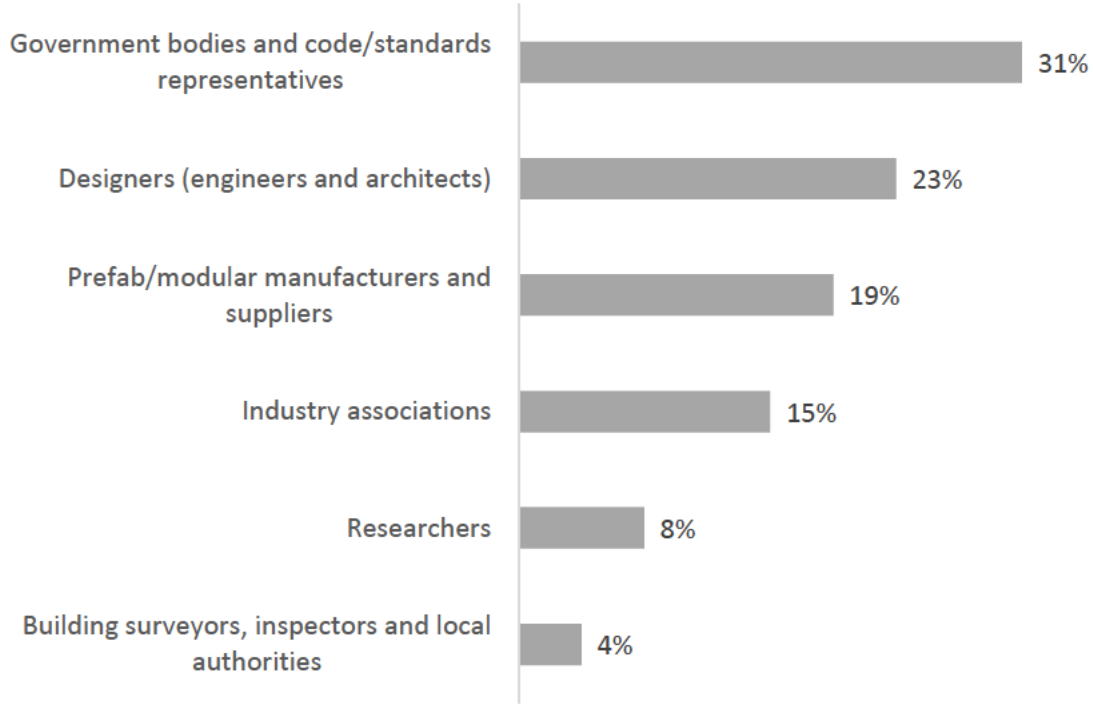


Figure 11: Participants involved in the interview and meetings

4.3 Overview of responses

In general, it was observed from the online surveys, interviews/meetings, and written submissions, that there is a need to improve existing planning and building regulations to help with the uptake of prefab and modular construction. This was clearly evident in the survey response shown in Figure 12, with 68% of participants agreeing that some form of change or improvement is necessary for planning and building codes and Australian Standards.

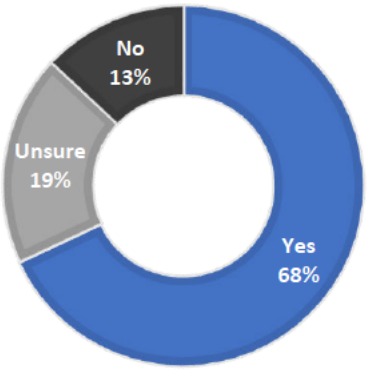


Figure 12: Survey response to "Do you think any improvements/changes need to be made to existing planning and building codes and Australian Standards to assist with the uptake of prefab and modular buildings?"

Different regulatory barriers and related issues were identified by the participants as hinderances for the uptake of prefab and modular construction. These have been summarised under seven key issues which are provided below:

(i) Definitions
(ii) Town planning
(iii) Design guidelines
(iv) Compliance and quality control
(v) Chain of responsibility
(vi) Finance
(vii) Incentive, familiarity and experience

Each of the above are discussed in detail in the following subsections. It is noted that more detailed responses to all the survey questions are provided in Appendix A.

4.3.1 Definitions and recognition

The general feedback from all participants was that there is a need for proper recognition of off-site construction as a method of construction and clarification of definitions and consistent use of terms.

Clarification of terms are required for both the type of prefab, that is for example if dealing with 2D panels or 3D volumetric modules, and the level of prefab, which describes the extent of prefabrication including if structural elements are open or enclosed (i.e., hidden) and what other components are included such as mechanical, electrical, plumbing, and finishes.

The importance of definitions especially for the level of prefabrication was observed in response to the survey question asking if we should promote the use of a fixed set of definitions based on the level of prefabrication for technical and regulatory use, with 67% of participants agreeing that this is necessary, see Figure 13.

It is noted that in prefabricated components for which the structural members are not enclosed (such as trusses and frames), there are no regulatory barriers, especially if a deemed-to-satisfy (DTS) solution applies.

The regulatory environment starts to struggle with enclosed components (e.g., wall panel or floor cassette) where it is not possible to see and examine all the necessary components. This is also when certification becomes difficult as it is unclear how the component has been manufactured.

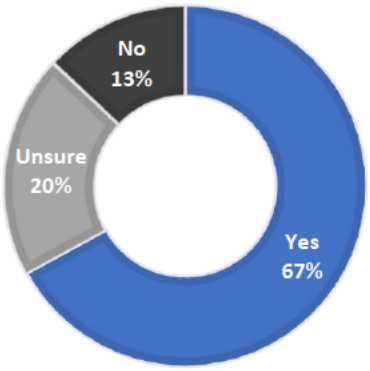


Figure 13: Survey response to "Do you think we should promote the use of a fixed set of definitions based on level of prefabrication for technical and regulatory use?"

4.3.2 Town planning

Generally, a mixed response was observed about town planning issues. Some participants noted that there were no additional barriers or challenges in relation to prefabricated and modular buildings whereas others raised concerns. Some participants stated that the state and council are hesitant to provide approvals for new concepts which can cause very long delays.

It was also noted that both off-site and on-site construction face similar challenges when the final resolution to achieve sign-off is prolonged.

However, for on-site construction, this issue can usually be resolved through the building approval documentation stage while the site preparation works are in progress.

Whereas, for off-site construction, the delays become a significant issue as site preparation and construction of building/building components take place simultaneously.

The other issue that was raised was around the numerous terms used for off-site constructed buildings (e.g., manufactured home, movable home, relocatable home, temporary structures, kit homes, manufactured home estate) and confusion about when the NCC applies and lack of consistencies between states and territories.

4.3.3 Design guidelines and standards

Many participants noted that the NCC and most design standards have been written with on-site construction in mind and therefore it is difficult to apply all of the current requirements for off-site construction.

Some participants noted that there is a need for a comprehensive and user-friendly document to provide guidance for prefab and modular construction and to ensure that it is acknowledged by NCC as a reference document.

The following are examples for which a prescriptive form of guidance is needed:

- Loads to be considered for transportation (temporary loads);
- How to maintain rigidity of components during lifting and transportation;
- Precision and tolerance requirements; and
- Connection and integration requirements, describing how the prefab/modular component connects to each other and to the rest of the building.

It was discussed that guidance may be necessary for each construction material (e.g., concrete, timber, and steel) and composite materials. It was also noted that some materials are covered better than others, e.g., precast concrete.

Overall, guidance may be provided based on the building class (low rise versus mid- and high-rise buildings), the type of prefabrication (2D and 3D), and the level of prefabrication (i.e., component with exposed structural elements such as a truss or wall frame versus a component with structural elements and services and finishes).

Furthermore, in general, it was noted that the Handbook by the Modular Construction Codes Board (MCCB) provides good general information about modular buildings, however, more specific and detailed guidance is necessary.

This was also reflected in the response to the Survey Question concerning the level of support provided by the Handbook, shown in Figure 14. 71% of participants responded either as neutral or not enough support is provided by the handbook. Many participants also noted that they were not familiar with the Handbook.

Another issue that was raised was about repairs and maintenance post-construction. Repair work for a prefab/modular constructed building may be different from on-site, for example, a critical wall component or connection may not be easily replaced or modified.

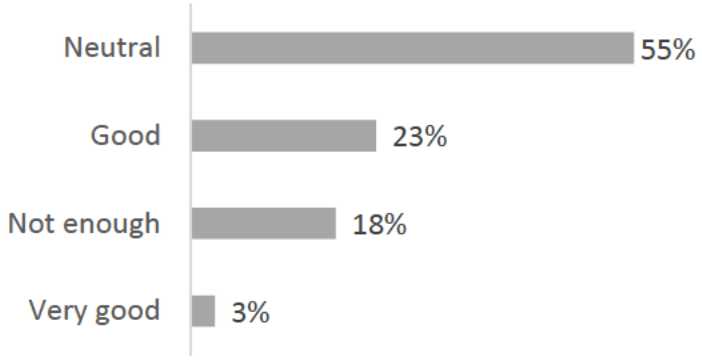


Figure 14: Survey response to 'What level of support does the Handbook for modular structures by the Modular Construction Codes Board provide?'

4.3.4 Compliance and quality control

Compliance and quality control were one of the key themes that were discussed in the interviews and questioned in the survey. To some extent, a mixed response was observed about compliance challenges for prefab/modular construction.

This was also apparent in the survey question which asked about the effectiveness of the current method to demonstrate conformity and quality control, shown in Figure 15. Around 61% of the participants responded as neutral, 20% as good/very good, and 18% as bad/very bad.

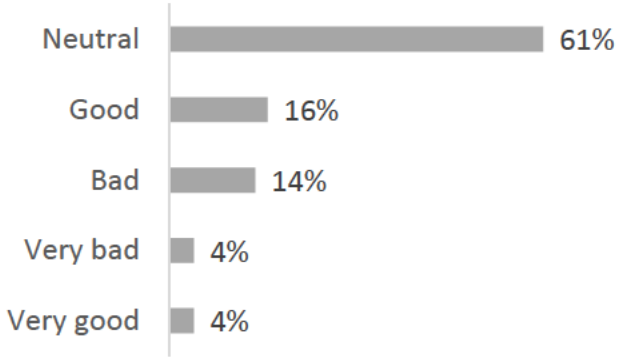


Figure 15: Survey response to "How effective do you think the current method to demonstrate conformity and quality is?"

The mixed response highlights the need for guidance and a standardised process as some seem to be facing limited challenges while others are facing great barriers. Furthermore, in general, it was noted by the majority that the regulations have been written for on-site construction.

In particular, the approval process and the role of the inspector are based on on-site activities, e.g., for on-site construction inspection is required on completion of framing work. There is a need to clearly define the approval process for off-site construction based on different levels of prefabrication.

It was noted that currently, the approval of a complex building product is done at the end after the product has been manufactured and installed on-site. Hence, after the building has been constructed, it is possible to have issues with compliance approval. Therefore, manufacturers and builders are reluctant to uptake modular construction due to the increased risk.

In addition, the challenges related to performance solutions were also highlighted, and currently, the process applies to a specific job. It was suggested that two forms of performance solutions are necessary:

(i) One-off approval for a specific job, this should be relatively simple since the risk is lower,

(ii) Generic approval which is not limited to a specific job/site, has a higher risk, and hence the process is likely to be more stringent than 'one-off' approvals.

Furthermore, it was noted that currently there is no guidance on quality control, this is a general problem for all construction products and is not yet addressed in the NCC. Quality control systems must cover compliance with all the necessary performance requirements for each component of a system.

It was discussed by some that it is preferable and practical to have a process such that the source of the product does not matter (i.e., overseas products can follow the same procedure).

Currently, there are also different rules in different states and territories which also mean that a product that is accepted in one state (e.g., Victoria) may not be accepted in another (e.g., Western Australia).

Nevertheless, it was noted that it is important that the process for compliance is not too complex or expensive. Some participants expressed concerns that currently, the cost of compliance is too high.

It was also highlighted that good documentation of products used in buildings, including prefab/modular components is critical. It is necessary to know exactly what has been included in a building, especially for future changes and demolition.

4.3.5 Chain of responsibility

In the interviews and meetings, it was highlighted that there is a need to clearly define the responsibilities of the supply chain with prefab/modular construction in mind, which in turn will assist with understanding the regulatory requirements.

This was also observed in the survey, with 48% stating the role and responsibilities of stakeholders are not clear for prefab and 30% stating that they were unsure (see Figure 16).

It was suggested that the supply chain responsibilities need to be spread across all those involved including the manufacturer and builder.

Some participants stated that currently if something goes wrong with a building most of the responsibility lies with the engineer, building surveyor, and certified electrician/plumber.

For example, under the licensing regime, the electrician/plumber who is undertaking the installation/connection is responsible to approve the final product and is, therefore, reluctant to do so with prefabricated products. It is noted that while the product can have a Watermark, these are typically componentry and it does not mean the system is okay or fit-for-purpose.

In contrast, some participants noted that there are not facing any issues, particularly for residential construction where the plumbing and electrical systems are all 'plug and play' and certification is provided by the plumber/electrician by checking on-site after installation.

Issues were also raised about post-construction such as problems associated with repairs and maintenance and warranty conditions. It is unclear how these issues are to be handled.

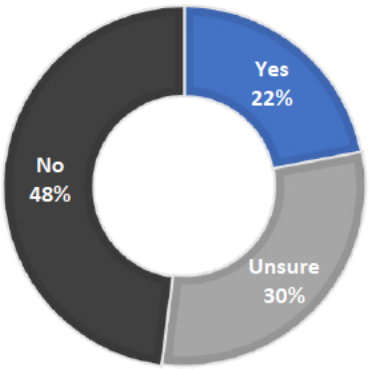


Figure 16: Survey response to "Do you think the responsibilities and roles of stakeholders in the supply chain for prefab are clear?"

4.3.6 Finance, deposits and stage payments

The issue of finance for the manufacturer (builder) consistently came up during the consultation even though it is not directly related to regulations. It has been highlighted to be one of the main barriers to prefab/modular construction. It includes challenges associated with obtaining bank guarantees and high premiums for insurance.

Furthermore, for high-level prefabricated products, most of the work is done off-site, and therefore the current method for finance loans for houses is based on a series of progress payments after inspection of key stages (e.g., excavation for foundations, foundation construction, frame, and truss installation, and completion) which are not suitable for this method of construction.

A new approach is necessary for when inspections of work done need to take place and how payments need to be managed.

Currently, only large companies can handle the financial risk associated, including short-term risk related to cash flow and long-term risk of something going wrong and needing insurance cover. For customers, they require the majority of their finance upfront rather than through progress payments.

4.3.7 Incentive, familiarity and experience

The consultation revealed that, in general, there seems to be very little incentive for the uptake of off-site construction. This is both due to insufficient awareness of the potential benefits as well as lack of demand in Australia.

In addition, since most large builders have not taken up prefab and modular construction, this form of construction is not very accessible, and consumers are not well informed.

It was also highlighted that the industry at this stage is not necessarily capable of dealing with modular construction due to insufficient technical knowledge and support, and a clear understanding of how to achieve compliance and quality assurance.

Participants noted that government support and incentives are required to encourage the development of prefab/modular construction. Also, educational campaigns are necessary to inform people of the potential advantages of off-site construction.

A consistent view emerged that a key area where prefab and modular housing, and construction more generally, can provide great support, is post disasters such as bushfires and floods. This is primarily due to the speed of construction and the reduced demand for on-site labour at a time when labour is stretched to its limits.

Furthermore, it is necessary to upskill and educate the industry so that there is greater familiarity with prefab and modular construction. It is noted that this is subject to a separate project through the Prefab Innovation Hub.

4.4 Learnings from the stakeholder consultation

The consultation with stakeholders has helped to identify the regulatory barriers and related issues that are faced by the various stakeholders in the supply chain for prefab and modular construction. The key learnings are summarised below.

Clarification of the planning regulations for prefab and modular construction

There is a need to review and clarify the planning requirements for prefab and modular construction of buildings, particularly housing. There currently seems to be inconsistencies between states and territories an ambiguity about when the NCC applies for an off-site constructed building.

Improvements to building and construction regulations for prefab and modular construction

The key areas related to building and construction regulation which require development are provided below:

(i) Recognition and definitions of terms: Currently, there is no formal recognition of off-site construction as a construction method and there are no uniform set of terms that are used for regulatory purposes. In particular, there is a need to define the type and level of prefabrication as it effects the type of approval process that needs to be implemented.

In general, there no real challenges faced by open prefabricated components, where all elements can be inspected on-site. The challenges arise with enclosed prefabricated components which are typically serving more than two functions, for example structural, fire, acoustic, and/or weatherproofing, and when the component incorporates mechanical, electrical or plumbing systems.

(ii) Expansion of the NCC and design standards: The NCC and most design standards have been written with on-site construction in mind and therefore they are not always suitable or adequate for prefabricated construction. There are design and construction aspects of off-site construction that are different to on-site construction and these need to be dealt with through comprehensive and user-friendly design provisions.

(iii) Development and clarification of compliance and quality assurance pathways: There is currently inconsistencies between the challenges faced by the industry for demonstrating compliance and quality control measures. There is confusion around what is necessary to demonstrate compliance, especially for enclosed prefabricated components.

Performance solution methods are currently inadequate or inefficient to deal with prefabricated products as they are typically applicable for specific jobs. Also, there are challenges since there are different regulatory requirements between state and territories. There is a clear need for a standardised process for the approval process and ensuring that the process is not too expensive or time consuming.

Clarification of the roles and responsibilities for the supply chain involved in prefab and modular construction

The role and responsibilities of the supply chain is not clear, especially as the prefabricated component transitions from being a product developed off-site to on-site building work and a consumer good, being a home.

It was highlighted that it is necessary that the supply chain responsibilities are spread across all those that are involved, and that the final responsibility should not just lie with the building specialist who conducts the on-site installation or inspection.

Modifications to existing finance systems suitable for prefab and modular construction

A key challenge for prefab and modular construction is the challenges associated with finance, in particular obtaining bank guarantees and high premiums for insurance.

The stage payment method adopted for on-site construction are not suitable for off-site construction as a significant amount of work and cost required is for off-site work. A new system for finance is necessary which is suitable for off-site construction.

Upskilling the industry and providing incentives for prefab and modular construction

Overall, the industry does not have adequate familiarity or experience with off-site construction and the benefits that it can provide to some projects. There is a need for government incentives and support in terms of financial and educational aspects to assist the industry with the uptake of prefab and modular construction.

5. Australian practice and examination of findings

Residential construction, and all other forms of building construction, is subject to a raft of regulations and controls based on the planning and building administrative frameworks. The Australian Constitution gives the states and territories the responsibility for regulating the planning and building activities as shown in Figure 17.

Hence, Australia has eight different systems, however they share many similarities including the adoption of the National Construction Code (NCC) as the primary technical standard for building and plumbing work.

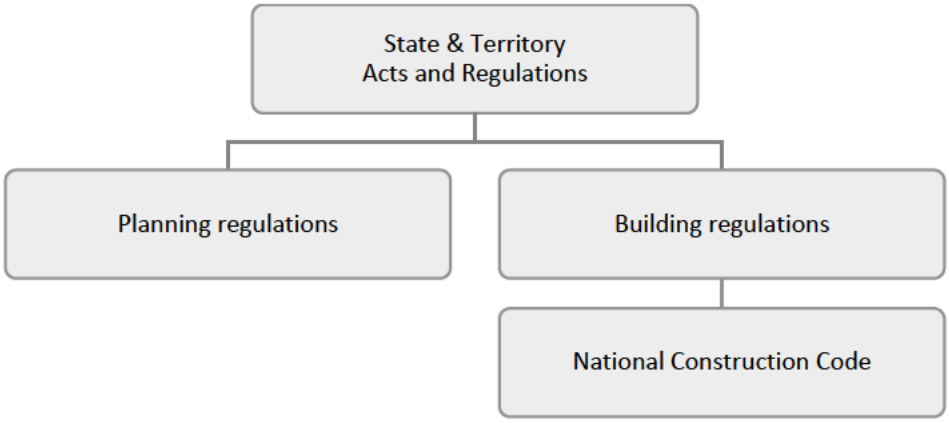


Figure 17: The Australian planning and building regulatory framework

This section provides an overview of the critical aspects of the Australian planning and building regulatory framework and related systems (including financial and contractual liabilities), highlighting the barriers related to prefab and modular construction and recommendations to overcome the barriers. The following aspects are examined:

- Planning requirements;
- Building and construction requirements;
- Chain of responsibility, financial and contractual requirements; and
- Education and government support.

5.1 Planning requirements

5.1.1 Introduction

The use of prefabrication in building, particularly in housing, has been occurring for several decades. In general terms, prefabrication related to components, or construction modules, is not a matter than planning systems will generally take regard of.

Commercial and industrial building use a significant amount of prefabrication and modular components based on modern engineering and design construction techniques. Where this occurs, the building system, rather than the planning system, is the key barrier to further productivity benefits.

However, prefabrication and modular construction in relation to housing, faces a very different circumstance.

The planning system operates primarily to manage the use of land. In simple terms, the planning system dictates where and what type of buildings can be constructed, while the building system dictates how buildings are construction to ensure their health, safety and amenity.

In Australia, the planning system is regulated by state governments and planning approvals are generally the remit of local governments. Local governments are authorised to develop planning schemes and codes that direct the type of buildings permitted and the design of those buildings.

With respect to housing, this means that local governments are the primary regulatory authority in most states and territories. Of note for this project, there are currently no consistent planning approval requirements for prefabricated and modular residential buildings, especially single homes.

Planning authorities effectively 'hedge their bets' based on the location of the home. Often in regional or rural settings, recognition of a prefabricated home is straightforward, while metropolitan councils are conflicted as to whether a home should be defined under legislation for manufactured homes and caravan parks, or whether it can and should be defined as a home, in the traditional sense of the term.

The planning system has remained in the past. Legislation that was traditionally created to manage genuine manufactured home estates and caravan parks is now part of the problem, rather than the solution for prefabricated homes used in traditional housing settings.

Legislation that was traditionally created for housing, has become overloaded and crafted on the basis of home being built on-site, using a range of building materials and having a scale that suits a 'streetscape' or a 'design code'.

While there are many forms of prefabricated homes that need to be considered, this report finds that all forms are being pigeon holed into an outdated regulatory framework.

Substantial reform and increased productivity in housing delivery will only come when genuine attention is paid to rebalancing the planning system.

5.1.2 When is a house not a house?

For many decades, prefabrication or modular forms of housing, were the domain of caravan parks. But time have moved on and modular forms of housing are now a much more common choice by home buyers seeking to choose an affordable option or seeking to harness the benefits of faster construction of a home.

As outlined the use of prefabricated elements in the construction of a home is less often impeded by the planning system, where those elements are used to deliver a home that looks like a modern single family home.

However, when a home is constructed as a modular home, issues can arise. The first of these is simply whether the building is, or can, meet the definition of a home.

Our research found that there tends to be a hesitancy in local government when faced with the choice of defining a modular home as a home, simply due to the alternative construction methods use. It is also likely that this response is in part due to a preference for modern homes to be a particular shape and style of construction.

Industry feedback found that a consistent response from local government to the construction of a modular home on a parcel of land zoned for residential use was that the home would need to meet a raft of design codes requirements, along with the later construction requirements for a building approval, and that the home would not be suitable.

Others experienced the view that a modular home is only permitted to be constructed in a manufactured home estate of some type, or in a more rural setting, and not within a suburban setting.

'There is clearly a need for guidance and standardisation in the approach taken by local governments when considering the use of modular or prefabricated homes in traditional residential locations.'

5.1.3 Design codes

Perhaps the reason in part for the hesitancy of local governments to accept modular homes as an acceptable option in traditional locations is the extent of control now sought through planning design codes or housing codes.

Lead in part by land developers seeking to create a bespoke and unique streetscape in new suburbs and estates, local governments over the last two decades have moved to a position that standard design rules should be established which set out extensive architectural design requirements for new housing in all forms.

Traditionally, these housing codes were limited to building envelope controls to appropriately manage the scale of new housing and offer a reasonable level of protection from neighbouring homes in respect to overlooking and overshadowing.

Covenants were also used by land developers to set a standard with respect to minimum home size, external building materials and fencing.

Today, these codes and covenants go far beyond the building envelope. Housing codes now set minimum standards that can dictate the external building materials have a mix of at least three different products, that there must be a combination of lightweight and masonry, dictate the colour

palette to be used, mandate particular types of fixtures such as solar hot water or solar panels, dictate requirements for undercover parking, driveways and landscaping.

Whilst these requirements may be seen as delivering a modern, attractive new home product, they compete against the ideals of affordability and compact living. Outcomes that modular construction can excel at.

While reducing the many design obligations in these codes would assist in improving the affordability of all new homes, the recommendation of this report is that space be made to guide and support the construction of a modular home, or a tiny home, in our existing and future suburbs.

This could be achieved through the recognition of these housing forms in housing codes and aligning a set of practical requirements to these homes.

5.1.4 The tiny home

The 'tiny home' is the modern day equivalent of the manufactured home.

The issues outlined above in relation to definitions and design codes apply to the approach taken by local governments where a person may seek to use a tiny home as their primary residence.

However, a more common experience is the concept of using a tiny home as a secondary dwelling on an existing residential property.

As occurs for a primary residence, utilising a 'tiny home' as a second home on one parcel of land is generally defined in the planning system as a secondary dwelling. Other terms such as granny flat, ancillary dwelling, dual occupancy and the like, may also be the relevant planning term, depending on the state and the local government.

The planning system has traditionally set out controls for secondary dwellings, whatever form they take. There is no contention that a tiny home being used as a secondary dwelling should not require some form of consent.

However, the issue arising from this research focuses on the approach currently taken by the planning system to a 'tiny house on wheels'.

In the absence of a tiny house definition, a tiny house (where it is moveable) is commonly deemed as a caravan by most local councils throughout Australia, which has placed them outside the local planning system.

A tiny house on wheels has emerged as a housing choice to address affordability across the spectrum of home seekers. Singles, first home buyers, and increasingly single women aged over 50 are seeing this option as an affordable and practical housing solution.

The regulatory barriers for a 'tiny home on wheels' arise from questions around permanency of the home. Commonly these homes are designed to be self-sufficient, off-grid for power, requiring a water connection for potable supply, and often using composting toilets. and are able to be moved off site. This is particularly relevant where the tiny house occupier parks their tiny house on land owned by another person.

Given the connection to a trailer and the mobility of 'tiny homes on wheels', they are commonly viewed as caravans. This means that the local government rules for caravans in residential properties generally apply. These limit the number of days a caravan can be occupied.

The barriers that need to be addressed are traditional land use matters. Where can a 'tiny home on wheels' be placed? How long can a 'tiny home on wheels' remain in-situ and if permitted, what rules should apply?

A tiny house by its very nature will be limited in size – meaning there is little purpose in creating traditional planning controls about the house itself. The regulatory question is where can someone place a 'tiny house on wheels' and for how long?

A tiny house by its very nature will be limited in size and the permanence of the structure would suggest that planning controls for a tiny house are outside the intent of a land use system. The regulatory question is where can someone place a 'tiny house on wheels' and what conditions the occupation of the tiny house should abide by?

Secondary questions exist around the arrangements a land owner can legally make to allow a 'tiny house on wheels' to be located on their property.

The findings of this research bring forward the views of the Australian Tiny House Association (ATHA). ATHA are promoting the need for the planning system to establish a defined land use as a 'tiny house parking space'. ATHA are promoting the need for a regulatory pathway to gain approval for a 'tiny house parking space'.

This approach offers a planning solution whereby a home owner that has sufficient vacant area on their property and suitable access to allow a tiny home to park, can gain a approval from a local government for a 'tiny home parking space'.

The rules for such a space would consider the impact of the location on the adjoining properties and streetscape along with the manner in which the tiny home would connect to the services and utilities on the property.

Once an approval is granted, a property owner can then proceed to make private arrangements with tiny home owners to park their home in the designated and approved space. No further approvals should be required by the owner of the tiny home.

There should be no limits on the time a tiny home can remain in-situ so long as it remains compliant with the parking space approval.

This approach also offers a practical solution for additional short term housing in areas where itinerant workforces operate, such as agricultural or tourist towns.

Recommendations for planning system reform

Recommendation 1: That planning requirements for prefabrication and modular housing be:

(a) amended to use standardised terms for off-site constructed buildings (e.g., manufactured home, movable home, relocatable home, kit homes, manufactured home estate) and align with terms for inclusion in the NCC;

(b) amended to explicitly recognised prefabrication, modular and tiny homes as acceptable forms of housing; and

(c) reviewed to identify where planning or housing codes apply excessive design requirements for modular and prefabricated homes and changes be identified that can better align these codes with lightweight construction and smaller housing designs

(d) That a definition of a 'tiny house on wheels parking space' be established and that local governments amend local planning scheme requirements to permit such parking spaces on any land where residential buildings are permitted.

5.2 Building and construction requirements

5.2.1 Building and construction approval process

Critically, prefab and modular building design is no different to conventionally built houses. However, the design and construction stages are managed very differently when prefabrication and modular construction is used, which can lead to variations in the approval process.

Comparison of the key stages between the conventional construction of a house and a house with high level of prefabricated modular components is shown in Table 1.

Table 1 is based on generalised best practice in Australia (standardised across the type of construction and materials as well as across the state and territories), however, it is not always easily achieved or followed.

In general, the regulations for building and construction have been written for on-site construction. There is no clear recognition of prefab and modular construction as a form of construction (i.e., off-site construction) which causes approval authorities concerns about the safety and suitability of these buildings constructed using this method.

The building approval process is not clear, especially in terms of the role of the inspector, i.e. building surveyor, if aspects of the building product or building cannot be examined on-site.

In particular, there are confusions about what and when components are considered as a *product* and as building work and the necessary approval process to ensure that once all the components are installed on-site, the building complies with the NCC requirements and it is fit-for-purpose.

This is particularly the case for prefabricated products, where components associated with the structure, fire, thermal, acoustic and weatherproofing, can be hidden or not easily assessed on-site.

There are also challenges when the prefabricated components consist of mechanical, electrical, and plumbing (MEP) systems.

Under the licensing regimes, the specialist tradesperson installing MEP systems, such as the electrician or plumber is responsible for approving the final installed product.

These specialists can be reluctant to install and approve prefabricated components which cannot be visually inspected on-site to examine their suitability.

While there is some support to assist with the approval of these prefabricated products (such as WaterMark), they are typically componentry and therefore do not ensure that the installed product within a system is fit for purpose.

Overall, there appears to be inconsistencies in the industry and the level of challenges and barriers experienced during the approval process. This is partially due to the extent of prefabrication, the building type (e.g. residential and commercial) and the experience and familiarity of the stakeholders involved, especially building consent authorities such as building surveyors and local councils.

'There is clearly a need for guidance for a standardised process for the approval process of prefab and modular buildings to ensure a level playing field for all.'

Table 1: Critical stages and approval requirements for off-site and on-site construction of a house

	Prefab and modular construction	On-site construction
Pre-construction phase	**Planning and conceptual design** Development/planning approval – approval to develop the land in a particular way. Submitted by builder/developer on behalf of the owner and typically granted by local council. Early engagement of the modular manufacturer.	**Planning and conceptual design** Development/planning approval – approval to develop the land in a particular way. Submitted by builder/developer on behalf of the owner and typically granted by local council.
	Finance Finance approval or bank guarantee obtained by the owner/builder. Staged payments based on on-site construction not suitable and need to enter contractual agreement.	**Finance** Finance approval or bank guarantee from the lender applied by the owner/developer. Typically, staged payments are provided for key stages of on-site construction.
	Detailed design Building approval – approval that the proposed building complies with relevant building regulations, including compliance with the NCC performance requirements. Completed by builder/designer and approved by relevant authority (e.g., building surveyor).	**Detailed design** Building approval – approval that the proposed building complies with relevant building regulations, including compliance with the NCC performance requirements. Completed by builder/designer and approved by relevant authority (e.g., building surveyor).
Construction phase	**Site prep and foundation** Includes underground connections made such as plumbing, electrical and stormwater systems.	**Site prep and foundation** Includes underground connections made such as plumbing, electrical and stormwater systems.
	Manufacture of modules (off-site) Modules includes framing and other components such as internal services (e.g., MEP work), weatherproofing, insulation, cladding, fixtures and finishes. Manufacturer responsible for implementing quality assurance procedures and obtaining necessary product certifications. Inspection of completed modules by an authorised inspector/supervisor reporting to the building surveyor.	**Transportation of materials and elements to site** Materials and elements transported and stored on-site with necessary measures to protect against the weather.
	Transportation and storage of modules on-site Temporary works engineer employed by the builder, responsible for obtaining approval for transportation, including heavy vehicle requirements. Project engineer representing the builder, responsible for obtaining approval for storage of modules on site.	**Frame construction (on-site)** Construction of walls and roof trusses. Builder is responsible for ensuring this stage is inspected by authorised inspector/building surveyor before progressing to next stage.
	Lifting and installation of modules Project engineer representing the builder, to inspect modules prior to installation and during installation. Temporary works engineer representing the builder, responsible for temporary works, lifting, and work safe requirements. Installation or connection of modules with MEP components by licensed tradesperson.	**Locking-up/enclosing the house** Installation of external cladding, including roof, floor and walls, and installation of weatherproofing, insulation, and MEP work by licenced tradesperson.
	Exterior and interior finishes Installation of exterior and interior finishes with product certification as necessary.	**Fixing and fit-off** Installation of internal fixings and finishes, including waterproofing of wet areas, wall plasters, internal doors, cabinetry, benchtops, and final fit-off for MEP work. This stage requires inspection from authorised inspector/building surveyor for approval.
	Completion of building works Occupancy permit or certificate of final inspection. Approved by the authorised inspector/building surveyor.	**Completion of building works** Occupancy permit or certificate of final inspection. Approved by the authorised inspector/building surveyor.
Post-construction	**Occupancy period** Maintenance period and building warranty/guarantee provided by the builder.	**Occupancy period** Maintenance period and building warranty/guarantee provided by the builder.

A clear first step of developing a standardised process for approval is clarification of terms that are used in prefab and modular construction. The regulatory definitions need to be logically constructed to be effective and the terms need to fit in with current regulatory terminology without creating complications.

Some proposed key terms for preliminary consideration are provided below which are based on international practice and the feedback received during the stakeholder consultation. Furthermore, the complexity of the approval process is often related to the type and level of prefabrication.

Therefore, as an example a more detailed breakdown of the type and level of prefabrication is provided in Table 2 which can be utilised from a regulatory perspective to differentiate the approval process necessary and the level of risk associated with prefabricated products. Examples of prefabricated products are shown in Figure 18.

It is noted that this report predominantly aims to address the regulatory challenges associated with 2D and 3D prefabricated products which have enclosed structures with one or more elements associated with fire, thermal, acoustic, and weatherproofing, and/or with one or more mechanical, electrical, plumbing, or other systems.

Open 2D and 3D prefabricated products such as timber or steel trusses and frames which contain elements that can be visually inspected on site and precast concrete components are generally well established and supported by current Australian standards.

Preliminary proposal of definition of terms

Buildings: results from construction operation that has the provision of shelter for its occupants or contents as one of its main purposes (adapted from ISO 6707-1). The term can also be used in singular form as an adjective to distinguish from other kinds of civil engineering construction.

Building works: on-site construction works performed by **builders** to create **buildings.**

Builders: entities responsible for **building works.**

Prefabricated and modular manufacturers: entities responsible for manufacturing prefabricated products, including modular components.

Prefabricated product: a product that is manufactured (in whole or in parts) at a site/s where the product is not intended to be installed and is intended to be transported to another site for installation. It is not relevant if the site for installation is unknown at the time of manufacture and if some assembly work is required on-site (adapted from New Zealand Government (2022a)).

1D (linear) prefabricated product: is a prefabricated linear open or enclosed structural component. It is intended to be used as, or contribute to the structural performance of beams or columns in a building.

2D (planar) prefabricated product: is a prefabricated open frame or a truss, or an enclosed fame or panel, with or without elements associated with fire, thermal, acoustic, and weatherproofing, and mechanical, electrical, plumbing or other systems. It is intended to be used as, or contribute to the structural performance of the roof, floor, or wall of a building (adapted from New Zealand Government (2022a)).

3D (volumetric) prefabricated product: is a prefabricated volumetric structure that consists of one or more 2D prefabricated products, and is intended to be used as, or contribute to the structural performance of two or more of any of the roof, floors, or walls of a building (adapted from New Zealand Government (2022a)).

Whole building prefabricated product: is a whole building that is a prefabricated product, where the term *whole building* excludes site work, such as foundations and connections to services (adapted from New Zealand Government (2022a)).

Modular component: is a prefabricated product, and can include 1D, 2D, 3D, and whole building prefabricated products. This term is typically used for 3D and whole building prefabricated products.

Table 2: Preliminary proposal for defining the type and level of prefabrication for regulatory purposes.

Type of prefabrication	Level of prefabrication
Type 1: 1D (linear) prefabricated product	Level 1: Open simple linear components.
	Level 2: Enclosed simple linear components.
Type 2: 2D (planar) prefabricated product	Level 1: Open frame or truss
	Level 2: Enclosed frame or panel with or without one or more elements associated with the fire, thermal, acoustic, and weatherproofing.
	Level 3: Enclosed frame or panel as described in Level 2 and with one or more mechanical, electrical, or other systems.
Type 3: 3D (volumetric) prefabricated product	Level 1: Open frame or truss.
	Level 2: Enclosed structure with or without one or more elements associated with the fire, thermal, acoustic, and weatherproofing.
	Level 3: Enclosed frame or panel as described in Level 2 and with one or more mechanical, electrical, plumbing, or other systems.
Type 4: Prefabricated whole buildings	Level 1: The whole building is prefabricated and consists of Type 2 and/or 3 prefabricated products.

Notes:
1. *Open* means that all elements of the prefabricated component can be visually inspected on site.
2. *Whole building* excludes site work such as foundations and connections to services.

1D prefabricated open beams

Photograph from HEB Construction

1D prefabricated enclosed beams

Photograph from Wright Quarry Products

2D prefabricated open frame

Photograph from Trusses Plus

2D prefabricated enclosed wall

Photograph from KNAPP Connectors

3D prefabricated open frame

Photograph from FRAMECAD

3D prefabricated enclosed frame

Photograph from SurePods

Prefabricated whole buildings

Photograph from Clayton

Figure 18: Examples of different type and levels of prefabricated products

The second key step for developing a standardised process for approval process is developing guidelines or a protocol which addresses the demonstration of compliance at various stages of construction, including third-party assessment and certification requirements and the necessary audits, inspection and surveillance for prefab and modular construction.

These need to consider various activities, including design, site preparation, manufacture, transport, installation, maintenance and repair.

The requirements for prefab and modular construction could be written into a protocol or standard that is referenced in the NCC. This would be an effective regulatory tool to manage technical issues that are difficult to include under the current format of the NCC.

A similar approach was used to describe the process for evaluation of building energy consumption when the process was under development and is still being used to describe requirements for software for the design of roof trusses.

An NCC referenced document would particularly assist the use of prefab and modular construction for Class 1 buildings (low-rise residential buildings) since they predominantly rely on deemed-to-satisfy provisions for regulatory acceptance.

The approval process is highly reliant on the building codes and standards and an effective system for the evaluation and certification of building products for intended use, which are discussed in more detail in Section 5.2.2 and Section 5.2.3, respectively.

Recommendations for building and construction requirements: approval process

Recommendation 2: That prefabrication and modular construction be explicitly recognised as regulatory acceptable construction practice and a standardisation of relevant terms and definitions be established for use in Australian building codes, standards or technical requirements.

Recommendation 3: That the Australian Building Codes Board (ABCB) establish a project to identify ways to provide prescriptive and performance requirements into the National Construction Code (NCC) to support the orderly use and approval of prefabrication and modular construction, especially for Class 1 buildings.

5.2.2 Building codes and standards

The planning and building administrative framework in each state and territory calls up the NCC to set the technical standards for the design and construction of buildings in Australia.

The NCC is developed and maintained by the Australian Building Codes Board (ABCB) on behalf of the Australian Government and each state and territory. Each state and territory may have variations to the NCC provisions.

The NCC provides the minimum required level for the safety, health, amenity, accessibility and sustainability for buildings. It mainly applies to the design and construction of new buildings, plumbing and drainage systems in new and existing buildings, and for some cases it can apply to structures associated with buildings and new building work or new plumbing and drainage work in existing buildings.

The NCC is a performance-based building and plumbing code, meaning the mandatory requirements of the NCC are the Performance Requirements and compliance can be achieved in following the prescriptive Deemed-to-Satisfy Provisions (DTS) or in developing a Performance Solution that can allow for innovative solutions.

Under the DTS pathway the NCC calls up a range of relevant standards (Australian Standards and others) which set benchmarks for the material, design and construction requirements, for example:

- AS 1684 for timber residential construction and AS 1720 for timber structures;
- AS 2870 for residential slabs and footings and AS 3600 for concrete structures design;
- AS 3740 waterproofing of wet areas and AS 4671.1 and 4671.2 for water proofing membrane above ground area;
- AS 4100 for steel design and AS 4600 for cold-form steel design; and
- AS 4773 for masonry for small buildings and AS 3700 for masonry design.

Whilst a builder and designer could adapt or apply these Australian Standards, or the principles contained within them to a particular construction type, they have generally not taken into account or specifically been drafted with off-site and modular and prefab construction in mind.

Similarly, the DTS Provisions of the NCC are written with conventional construction in mind and for products to be generally serving a specific purpose to satisfy the NCC rather than a full wall or roof system for example encompassing numerous parts required for NCC compliance.

This leaves builders, designers and manufacturers either trying to make the product fit into the NCC DTS Provisions, developing a Performance Solution specific for the building or some form of a hybrid solution.

This results in inconsistent approaches, uncertainty in approvals and hesitancy to stick with the tried and tested as opposed to bringing new and innovative solutions to market.

The issues are particularly more challenging for high-level prefab components (complete panel or modular unit). A high-level prefab product will require multiple aspects of performance to be evaluated, for example a complete wall panel will have to satisfy structural requirements, fire requirements, acoustic requirements, water proofing requirements (if external).

There is a need for comprehensive standards which address aspects of design which are unique for prefabricated and modular buildings. Currently, some specific standards have or are in the process of being developed overseas. In Australia, the only specific handbook for modular construction is the one developed by the Modular Construction Codes Board (MCCB).

While this handbook provides useful general information, more specific and detailed standards are necessary. For example, detailed information is necessary for the following:

- Consideration of temporary loads especially during transportation and lifting and how to maintain the rigidity of components;
- Precision and tolerance requirements, these are typically higher than those for conventional construction;
- Transportation of prefab components to site including lifting without any damage to the component and the surrounding environment.
- Installation, connection and integration of components with the rest of the building;
- Demonstration of compliance during the different stages of construction;
- Quality management system to consistently produce prefab components in accordance with specifications;
- The extent of disclosure of intellectual property (IP), this is critical for compliance process during construction and repairs/changes need to be made to the building post-construction; and
- Considerations related to repair and maintenance.

Recommendations for building and construction requirements – building codes and standards

Recommendation 4: That Standards Australia develop a work program to –

(a) review and modify the relevant construction standards, particularly NCC referenced standards, for their adequacy to address prefabricated and modular construction; and

(b) develop a new suite of Australian Standards specifically for prefabricated and modular construction to provide industry with a set of deemed to satisfy (DTS) construction solutions.

5.2.3 Building product conformity infrastructure

In conjunction with the detailed design and construction requirements of the NCC and Australian Standards, a core component is requirements for building product conformity, which includes product testing, certification, approval, and surveillance.

The NCC contains building product conformity requirements under the 'evidence of suitability provisions' which lists product evidentiary requirements and ways for which a material, product, design or form a construction to demonstrate compliance with the NCC (Australian Building Codes Board (ABCB), 2019a, 2019b). Under these provisions the NCC provides a number of ways to demonstrate compliance, these are:

(i) A CodeMark certificate of conformity,

(ii) A certificate of accreditation under a state government certification scheme (where one exists),

(iii) A test report by an accredited testing laboratory, for example accreditation from the National Association of Testing Authorities (NATA),

(iv) A certificate or report by a professional engineer or other appropriately qualified body, including a certificate issued by a certification body accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) – this includes industry schemes such as ACRS and EWPAA schemes,

(v) Another form of documentary evidence such a Product Technical Statement or Technical Appraisal.

Many of the Australian standards referenced in the NCC contain testing requirements for products to show compliance with that standard.

Whilst this framework exists and could apply to singular modular elements or full systems there are shortcomings.

The CodeMark Australia Scheme is a building product certification scheme owned by the Commonwealth of Australia and administered by the ABCB. It is a non-mandatory scheme where conformity assessment bodies (CABs) accredited by JAS-ANZ are responsible for assessing the product conformity against the performance requirements in the NCC.

The capability of the CodeMark system to cope with growing demands of innovative building products is a concern due to insufficient technical expertise and testing facilities.

The evaluation of the performance of prefabricated products is challenging in terms of determining what performance requirements need to be assessed and how to demonstrate conformance when the requirements are qualitative.

Currently, the applicant seeking a CodeMark certification selects the provisions of the NCC which are assessed for conformance and therefore all requirements are not necessarily assessed to ensure that the product is fit for purpose. (Note – it is recognised that the building approval authority is responsible for confirming whether such a certification meets all of the relevant requirements under the NCC.)

Also, NATA and JAS-ANZ will generally accredit a testing laboratories or certification bodies to issue certificates or reports against a scope of accreditation to specific Australian Standards. Some requirements and accreditation systems are state specific and hence a product approved in one state or territory is not necessarily accepted in the other.

Furthermore, the way the NCC and Australian Standards have been designed generally requiring testing or approval against specific tests, say for fire or acoustics, of individual components rather than a complete assembly.

Meaning a product requires multiple tests to show the full suite of NCC compliance rather than holistic performance of the completed element test across all the relevant standards.

Similarly, given the NCC and Australian Standards are written generically, many of the modular and prefab construction products and systems differ greatly from manufacturer to manufacturer, so a single standard or specification may need to be developed specifically to that product which is not an approach used elsewhere.

The issues that are faced by the current Australian conformity system often result in very slow, challenging, and expensive approval process for innovative products including high level prefab products, thus resulting in a determent from going down this path.

There is a clear need to improve and develop the building product conformity system in Australia. It is important to note that some of the critical issues that have been discussed are not just unique to prefab and modular components but are issues that generally apply to construction products.

Some of the following suggestions may help to improve the current product conformity issues:

- Developing the building product conformity system such that it is capable of efficiently dealing with products within Australia (acceptance by all states and territories) and overseas. And consider having separate approval system for products which are specific for a single job/site and for products that are not specific for a job/site. The latter typically have higher risk associated with them and are likely to require more stringent approval process.
- Introducing manufacturer certification, similar to the modular component manufacturers (MCM) certification scheme introduced in New Zealand, where the manufacturer is certified to produce prefab and modular components based on assessment of the overall process that the manufacturer is responsible for including, design of the product to ensure compliance with building code requirements, transportation and installation.

Recommendations for building and construction requirements – building product conformity

Recommendation 5: That the current Australian product conformity infrastructure be reviewed for its ability to cope with new prefab and modular products that need testing, individually and as a whole, as the basis for their acceptance in building approvals.

Recommendation 6: That a manufacturer certification scheme be developed to suit the specific needs of the prefab and modular building industry.

5.3 Chain of responsibility, financial and contractual requirements

5.3.1 Chain of responsibility

Clarity about the responsibilities of the stakeholders in the supply chain is critical for all construction work, including off-site construction, as there is a transition from building product to building work.

Currently, the supply chain responsibility is predominantly handled within contracts as states and territories have limited regulations for buildings products. Generally, building products are not covered by consumer product laws and are therefore not controlled under the Australian Consumer Law.

A new home fully constructed off-site is generally not recognised by state and territory home building laws as a building, but as a building product until it comes to site and installed on site and then becomes building work.

In 2017, Queensland introduced the Building Construction (Non-conforming Building Products – Chain of Responsibility and Other Matters) Amendment Act 2017, which provides legislation about the duties of the stakeholders in the chain of responsibility, including those who design, manufacture, import, supply and install building products.

A key aspect of introducing the duties has been to ensure building products are suitable and safe for their intended use and the required information about the product is made available along the supply chain.

The Australian Building Codes Board also provides a description of the role and responsibility of the stakeholders in the supply chain on their website (ABCB, n.d.). A brief summary of the key stakeholders is provided below:

- **Manufacturers (includes prefab and modular manufacturers)**

  Are responsible for knowing the requirements of the compliance and conformance of their product and the evidence required to demonstrate compliance (such as testing, assurance, and certification) and to know how potential customers should and should not use their products.

- **Suppliers (importers, wholesalers, distributors and retailers)**

  Are responsible for ensuring that the building products supplied do not breach trade or consumer laws or industry-specific requirements for safety or performance. Building products, when necessary, must have the requirements to demonstrate safety and suitability before they can be lawfully sold.

- **Architects, designers, engineers and other specialists**

  Are responsible for ensuring that they understand and specify the performance requirements of buildings, including building products. Designers must design buildings in accordance with the NCC and other appropriate state requirements.

- **Approval authorities (e.g., building surveyor)**

  Are responsible for ensuring that plans, specifications, and critical aspects of construction comply with Codes, standards and laws. Approval authorities are state and territory registered practitioners. They can also be involved in inspecting buildings and construction work and need to be able to identify when protects are not fit for purpose or used incorrectly.

- **Developers, builders, and other specialist tradespersons**

  Are responsible for on-site construction and installation work. Developers and state and territory registered builders (main contractor) are responsible for ensuring the building and building product performance meets relevant regulatory requirements alongside contractual requirements with the client they are building the house for.

  They need to ensure that all building work and building products have the necessary certificates for demonstrating compliance and approval and provide this documentation to the building owner at completion of the building work.

  Other specialist tradespersons (or subcontractors) are responsible for on-site construction and installation work which is outside of the expertise of the builder (e.g., mechanical service workers, electricians and plumbers). Specialist tradesperson are also state and territory registered practitioners.

The roles and responsibilities of key stakeholders is applicable to conventional forms of construction and off-site construction. However, the above responsibilities are not necessarily practiced fully, especially when prefabricated and modular construction is involved. This is due to numerous reasons, including:

- Minimal surveillance and policing system in Australia to ensure stakeholders follow expected industry practice.
- Inadequate product conformity system which is not capable of providing a complete evaluation of products to identify when the products should and should not be used.
- Insufficient familiarity and experience of industry professionals to deal with innovative products, including high level prefabricated products

In addition, as discussed earlier, a challenge with prefabricated and modular buildings is the clarification of what is considered a *product* and *building work* and the necessary approval process to ensure that once all the components are installed on-site, the building complies with the NCC requirements and it is fit-for-purpose is not as clear cut as it is for conventional construction.

It is important that the supply chain responsibilities are clearly defined with prefab and modular construction mind. This is critical for understanding the requirements for the approval process and to address issues that may arise during or post-construction.

It's been identified that there are in general three options for the approval process of prefab and modular construction which in-turn effects the roles and responsibilities of the stakeholders in the supply chain (see Figure 19):

(i) Regulating the final product which has been completed off-site

This will involve certifying the product after it has been manufactured off-site for its intended use in a building on-site.

This process involves alternative requirements to have qualified and registered professionals during manufacturing process, however the product in the end must be certified by an independent third-party.

This is similar to the current approach that is followed under the *NCC evidence of suitability provisions* when for example a CodeMark certificate of conformity is obtained for a product to demonstrate compliance with the NCC.

(ii) Regulating the construction work that is done off-site

This can involve certifying the manufacturer of prefab and modular construction products, where there are requirements for the manufacturer to have staff with required competency training, and where necessary, qualified and registered professionals.

Furthermore, necessary surveillance can be undertaken by the approval authorities post certification. This option is similar to the process that is followed for on-site construction work. It will be necessary to ensure that the building product produced off-site is suitable for its intended use once installed on-site.

(iii) Hybrid approach

This will involve a hybrid approach between regulating the construction work that is done off-site (i) and where necessary to have certification of products (ii) for the final product that is produced by the manufacturer.

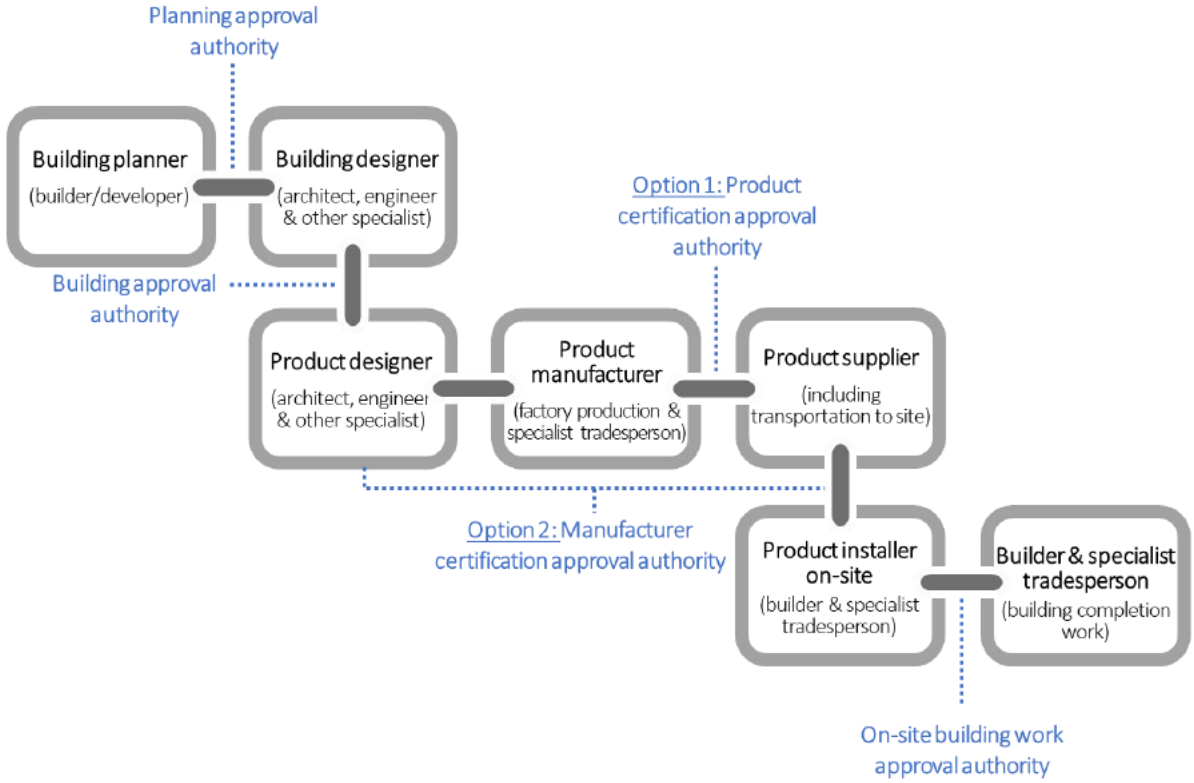


Figure 19: Chain of responsibility showing two options for approval of prefab products

Recommendations for supply chain responsibilities

Recommendation 7: That the supply chain roles and responsibilities are made clear with prefab and modular construction in mind and implemented in practice.

5.3.2 Financial and contractual issues

Building a home is subject to a raft of consumer laws that impact the contractual arrangement between a builder and a home buyer. These laws broadly assume a home is built on-site and that stages of progress are reached to allow partial payment to a builder.

A prefab or modular home built wholly off-site is treated as a manufactured product with different payment regimes in place, either deposit at the start and full payment at end or full payment before work starts.

Neither of these arrangements suit home lending arrangements in the traditional sense. In most jurisdictions, these same consumer laws will only apply once the work is captured by domestic or residential building law, i.e., most off-site work is not captured and therefore not regulated by these arrangements.

This offers both challenges and flexibility depending on the circumstances of the parties involved.

For example, limits on deposits that apply when carrying out home building work on site will not apply to the manufacture of prefabricated building components allowing the manufacturer more flexibility to charge for the works being carried out.

Recommendations for financial and contractual issues

Recommendation 8: That a building industry taskforce is set up to further investigate and address barriers associated with contracts, progress payments, licencing, mandatory stage inspections and insurance.

5.4 Education and government support

The uptake of prefab and modular construction in Australia is relatively low compared to some overseas countries and key reason for this appears to be that there is very little incentive and the system remains complex to navigate, making many steer back towards traditional construction methods for housing.

This appears to be related to insufficient familiarity of building professionals with this form of construction and a lack of awareness of the benefits it can provide for certain projects.

There is clearly a need for educational programs in Australia to upskill the building certification industry with technical knowledge required for prefab and modular construction and when and it can effectively be implemented for building construction including housing.

It is also noted that there is currently very little demand in Australia, that is, not many clients are seeking prefab or modular construction. This is partially due to lack of familiarity with this form of construction and the perceived increased risk.

Prefab and modular construction has the potential to support the society in various forms such as providing affordable housing and quick construction of houses which can be used to support communities for post-disasters such as floods and bushfires.

Government supports and incentives, including certain percentage of government tenders requiring prefab and modular construction where suitable, can be an excellent way to help increase the demand for off-site construction. This will in-turn increase the level of familiarity as more building professionals will be exposed to this form of construction.

In addition, schemes which provide guarantee and assurance to lenders, such as Build Offsite Property Assurance Scheme (BOPAS) introduced in the UK, can assist with the perceived risk of off-site construction

Recommendations for education and government support

Recommendation 9: That the industry is upskilled by setting up specialist courses for prefab and modular construction.

Recommendation 10: That the Australian governments provide incentives and support by encouraging increased use of prefab and modular construction in their procurement specifications.

6. Summary of recommendations and implementation considerations

This section provides a summary of recommendations that have resulted from this study. Implementation considerations have also been provided for regulatory matters which is within the scope of this project.

The goal is to facilitate the passage of any prefab and modular housing proposal through the necessary regulatory requirements and to remove any regulatory barriers.

The implementation activities should be on a national basis as building products are free to travel interstate. The only national regulatory vehicle is the National Construction Code and its referenced documents, such as Australian Standards.

The ABCB also produces mandatory protocols and non-mandatory handbooks and guides. These are also national documents and all can play a role in effectively reducing the regulatory barriers for prefab and modular construction in Australia.

Recommendations for planning system reform

Recommendation 1: That planning requirements for prefabrication and modular housing be:

(a) amended to use standardised terms for off-site constructed buildings (e.g., manufactured home, movable home, relocatable home, kit homes, manufactured home estate) and align with terms for inclusion in the NCC;

(b) amended to explicitly recognised prefabrication, modular and tiny homes as acceptable forms of housing; and

(c) reviewed to identify where planning or housing codes apply excessive design requirements for modular and prefabricated homes and changes be identified that can better align these codes with lightweight construction and smaller housing designs

(d) That a definition of a 'tiny house on wheels parking space' be established and that local governments amend local planning scheme requirements to permit such parking spaces on any land where residential buildings are permitted.

Planning schemes need to be reviewed and amended to have consistent definitions for different types off-site constructed buildings, and to acknowledge prefabricated, modular and tiny homes as the lack of formal regulatory recognition has been identified as a major barrier to the acceptance and approval of this form of construction.

This is the major cause for the perception of increased risks for all parties in this form of construction.

Recommendations for building and construction

Recommendation 2: That prefabrication and modular construction be explicitly recognised as regulatory acceptable construction practice and a standardisation of relevant terms and definitions be established for use in Australian building codes, standards or technical requirements.

The lack of formal regulatory recognition has been identified as a major barrier to the development of this form of construction. On-site construction was a traditionally defining characteristic of the building industry as distinct from the manufacturing industry.

The building regulatory system was largely constructed on this basis. This is the major cause for the perception of increased risks for all parties in this form of construction.

Furthermore, clarification of terms and definitions is necessary for regulatory process for different prefab and modular products.

In particular, definitions are necessary to describe the level of prefabrication (e.g., if structural elements are open or enclosed (i.e., hidden) and what other components are included such as mechanical, electrical, plumbing, and finishes) and the type of prefab (2D panels or 3D volumetric units).

This will assist with clarification of regulatory process for different prefab and modular products.

To implement this recommendation, prefab and modular construction should be explicitly referred to in the NCC. This could be in the form of:

(i) a new Section G of the NCC for prefab and modular construction,
(ii) a separate protocol on prefab and modular construction published by ABCB and referred to in the NCC, or
(iii) an ABCB handbook or guide on prefab and modular construction.

These measures are not mutually exclusive, and all could be used to address different aspects of the problem.

Recommendation 3: That the Australian Building Codes Board (ABCB) establish a project to identify ways to provide prescriptive and performance requirements into the National Construction Code (NCC) to support the orderly use and approval of prefabrication and modular construction, especially for Class 1 buildings.

The National Construction Code (NCC) is Australia's primary set of technical design and construction requirements for buildings. The NCC has traditionally been drafted for convention construction and construction methods.

Whilst the NCC is a performance-based code, meaning the NCC presently can enable the use of innovative forms of construction via development of Performance Solutions to meet the code. However, this pathway is variable in potential acceptance and presents challenges for manufacturers in bringing new products and systems to market and can be costly and time consuming.

Furthermore, the NCC's Performance Requirements are generally drafted in qualitative language meaning it is very difficult and can result in significant inconsistency in what a product or system may need to meet to satisfy the approval body for the project.

This recommendation seeks for the ABCB who produces and maintains the NCC, to establish a project on their work program to review the NCC provisions in how they would apply to modular

and prefabricated construction and to develop new DTS Provisions and Performance Requirements specifically for modular and prefabricated construction to support their orderly use and approval of prefabrication and modular construction for Class 1 buildings.

This recommendation is of particular importance to low-rise residential construction that rely on DTS provisions for its regulatory acceptance.

This recommendation should be referred to ABCB for further consideration. It could also be considered as follow-up action from Recommendation 2.

Recommendation 4: That Standards Australia develop a work program to:

(a) review and modify the relevant construction standards particularly NCC referenced standards for their adequacy to cope with Prefabricated and Modular construction; and

(b) develop a new suite of Australian Standards specifically for Prefabricated and Modular construction to provide industry with DTS construction solutions.

It is necessary to undertake a review and modify the relevant construction standards particularly the NCC referenced standards for their adequacy to cope with prefabricated and modular construction.

This may include work that is required to be performed, supervised, and/or signed off by licensed practitioners. This recommendation is of importance to low-rise residential construction that rely on DTS provisions for its regulatory acceptance.

This recommendation is for Standards Australia to consider as it is a key component of Australia conformance infrastructure.

Recommendation 5: That the current Australian product conformity infrastructure be reviewed for its ability to cope with new prefab and modular products that need testing, individually and as a whole, as the basis for their acceptance in building approvals.

This includes review of CodeMark and the National Association of Testing Authorities (NATA) for conducting tests and providing certifications for innovative products, including prefab and modular components.

The specific need of prefab and modular is to have a compliance and quality assurance system to ensure the products from off-site fabrication can be installed on-site with appropriate safeguards. A similar solution as to the Research Institute of Sweden (RISE) is likely to be suitable for Australia when dealing with products that cannot be assessed according to existing standards.

Recommendation 6: That a manufacturer certification scheme be developed to suit the specific needs of the prefab and modular building industry.

There is a need to ensure that products from off-site manufacturing are consistently used in accordance with their design specifications. A specified voluntary scheme (like the Bill that is to be implemented in New Zealand to allow a new voluntary manufacturer certification scheme for modular component manufacturers) has been suggested as an effective way forward. The building surveyor/certifier still has the final check of the product on-site.

This is the specific need of the prefab and modular industry that the current Australian conformity system cannot cope. Other industries have set up specific certification schemes to suit their needs and the prefab and modular industry could do the same.

Supply chain, financial and contractual requirements

Recommendation 7: That the supply chain roles and responsibilities are made clear with prefab and modular construction in mind and implemented in practice.

Recommendation 8: That a building industry taskforce is set up to further investigate and address barriers associated with contracts, progress payments, licencing, mandatory stage inspections and insurance.

While this is not within the brief of this project, a range of related regulatory and quasi regulatory barriers have also been identified that this taskforce could be tasked with:

(i) Reviewing state & territory building laws and develop a new tailored progress payment arrangement for building contracts for modular and prefab construction to act alongside the progress payment arrangement for conventional construction

(ii) Reviewing and state & territory building laws and develop a new tailored arrangement for staged building inspections throughout the construction process, for those states with mandatory construction stage inspections in place, for modular and prefab construction taking account of differences and to act alongside on arrangements for conventional construction.

(iii) State and territory licencing requirements particularly those states with trade contractor licencing have been developed to reflect works carried out for conventional construction. State & territory licencing laws should be reviewed and expand the existing classes of licences for those parties working on modular and prefab construction.

Other related non-regulatory but barriers to use and acceptance of modular and prefab construction nonetheless includes difficulties to obtain a bank guarantee if it is prefab & modular construction higher insurance premium for prefab and modular design and construction.

The taskforce should look at what other improvements could be made to address these matters.

Education and government support

Recommendation 9: That the industry is upskilled by setting up specialist courses for prefab and modular construction.

This will serve the dual purpose of:

(i) Improving national capability; and

(ii) Increasing awareness among building surveyors/certifiers, engineers, architects, and builders for this form of construction.

Recommendation 10: That the Australian governments provide incentives and support by encouraging increased use of prefab and modular construction in their procurement specifications.

Government incentives and schemes with provide schemes which provide guarantee and assurance to lenders, such as Build Offsite Property Assurance Scheme (BOPAS) introduced in the UK, can assist with the uptake of off-site constructions.

The benefits of such policy include:

(i) Providing manufacturers with more projects to recover their initial setup cost;

(ii) More builders will transform their practice to be able to participate, and

(iii) More research and development activities in innovation and smart technologies.

Concluding remarks

It is critical that the Australian government, along with state and territory governments, move quickly to recognise prefab and modular construction as an appropriate form of construction in Australia and as a viable solution for solving the affordability of residential buildings.

It is clear that definitions lead outcomes, and in the case of prefab and modular construction, conflicting definitions are leading to much of the confusion for industry and governments. Making change here is possibly the 'quick win' that could be achieved, with the subsequent benefits potentially very long lived.

Apart from reference to other organisations such as Standards Australia for further consideration, the most feasible immediate follow-up action is to produce a guideline or a protocol for prefab and modular construction to be referenced in the National Construction Code.

The protocol will clarify factors to be considered to satisfy regulatory requirements for prefabrication and modular construction. This would be an appropriate response to Recommendations 2 and 3, and would provide the necessary regulatory basis for Recommendations 4, 5 and 6.

This protocol should be drafted by an industry committee headed by an appropriate industry body such as HIA and submitted to ABCB for reference in the National Construction Code.

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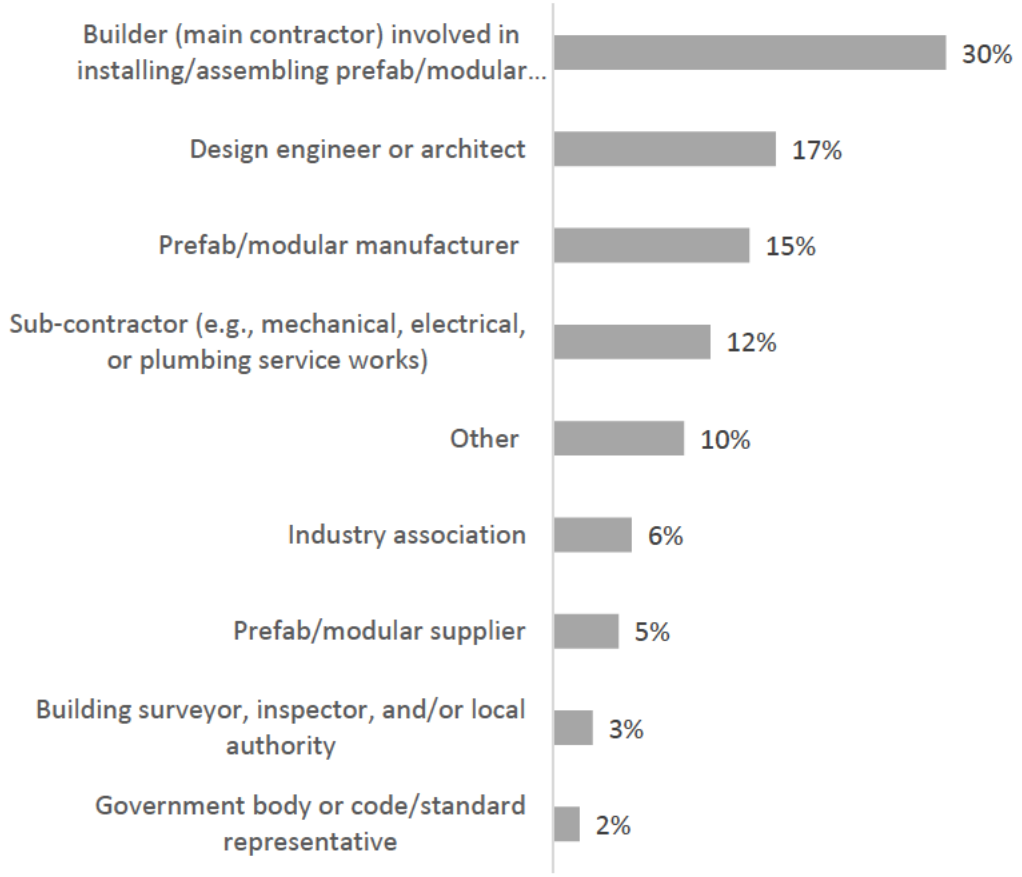
Appendix A: Summary of responses to survey questions

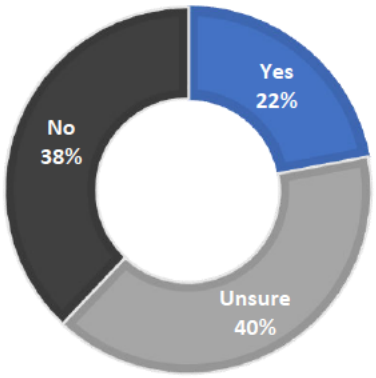
1. **Which type of organisation/work do you associate yourself with?** (You can select one or more options)



'Other' included:

- Academic
- Builder of non-prefab
- Carpenter
- Construction manager
- Contract administrator
- Customer
- Developer
- Draft person
- Energy efficiency consultant
- Estimator
- Precast concrete manufacture and erection industry
- Town planner

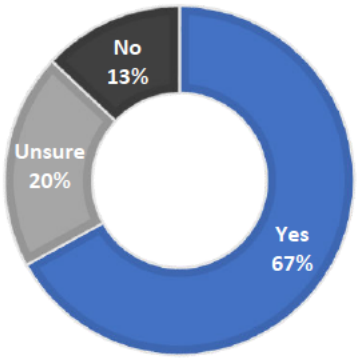
2. **In relation to prefab and modular construction, do you have preferred terms to be used for regulatory purposes**? (Yes, No, Neutral) If yes, please explain.



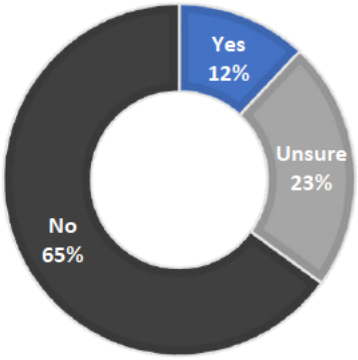
Participants responded that it would be good to use terms with clear and accurate definitions that are applied to all Government regulations. The terms should take into account the level of prefabrication, for example, prefabricated concrete wall panels versus prefabricated homes that are delivered to the site ready to plumb, with electrical connection, and ready to go. Some participants also highlighted that the terms should also consider the delivery, quality assurance process, and efficiency. It was also highlighted that the terminology used distinguishes between 2D and 3D volumetric components. It was noted that prefab is used in reference to off-site manufactured panels, systems, and components whereas modular is the term used for volumetric construction. Some respondents also noted the difference between prefab, panelise, and modular, where prefab is commonly used for wall frames & roof trusses, panelised is used for wall panels (open/closed) or floor/roof cassettes, and modular is used as volumetric modular.

The terms in relation to the type of off-site constructed buildings were also discussed. Namely, the different terms available in Queensland and New South Wales. It was noted that in QLD, the term "Modular Building" is used which is deemed as a Class 1a Single Dwelling house for the Planning Act and does not affect the use of the building for compliance purposes. However, in NSW from the NSW Home Building Act 1989, the available terms are "Kit-home" or "Manufactured home" which do not accurately define the product that some manufacturers are producing. For example, a manufacturer can provide a dwelling house constructed in a factory, separated into modules, shipped, and re-assembled on the chosen site. These manufacturers believe that NSW does not obtain a current definition for this type of building work and hence creates difficulty in obtaining compliance for what should be considered as a dwelling house.

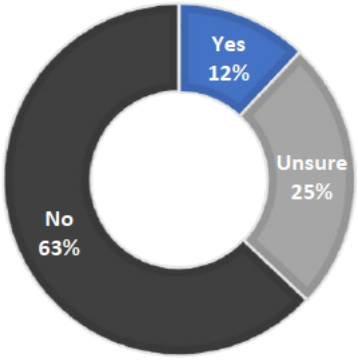
3. Do you think we should promote the use of a fixed set of definitions based on the level of prefabrication for technical and regulatory use? (Yes, No, Neutral)



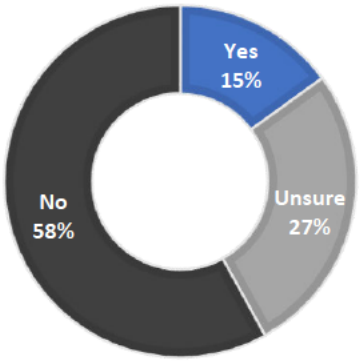
4. Are you aware of any research on regulatory issues in Australia as a barrier to the development of the prefab industry? (Yes, No, Neutral) If yes, please explain.



5. Are you aware of any regulations from any country specifically designed for the prefab industry that could be introduced in Australia? (Yes, No, Neutral) If yes, please explain.



6. **Are you aware of any schemes from any country that facilitate the prefab industry and could be introduced in Australia?** (Yes, No, Neutral) If yes, please explain.

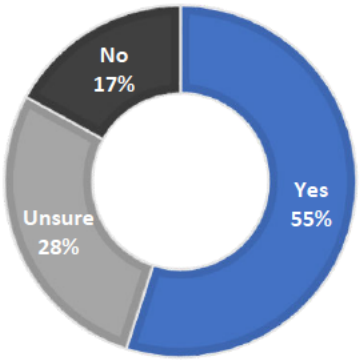


Participants highlighted a few countries/regions with schemes that may be suitable for Australia, including the UK, Europe (specifically some noted Germany, Northern Europe, all of Europe), the USA, Canada, and Vietnam. In particular, the schemes available in the UK were discussed, including the Modern Methods Construction (MMC) bill. It was highlighted that the UK Government has introduced new specifications/criteria which prefer builders of government construction projects that adopt modular/prefab design in their buildings. The Australian Government should consider increasing incentives/funding to promote extensive investment in technology in this area but needs to tackle the building code changes that are necessary to improve the efficiency and practicality of modular construction.

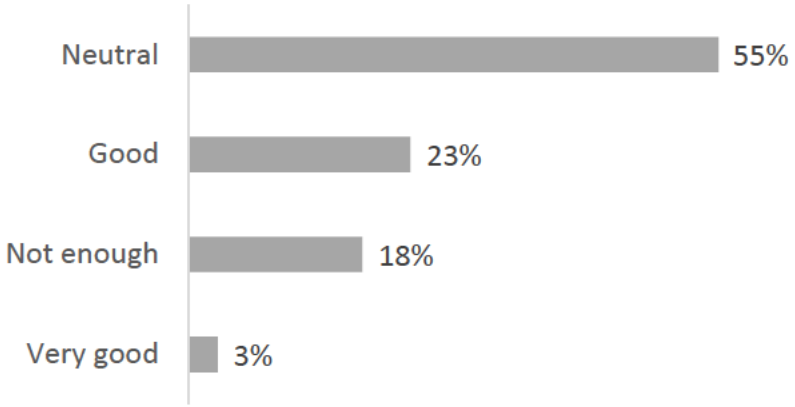
Furthermore, for finance, it was suggested that the work that Offsite New Zealand has done for negotiation with Westpac is a good example for Australia.

It was also noted that some South American countries have seen modular design and construction methods used in conjunction with economic schemes. The housing infrastructure is partially resolved with technical details that allow the buildings to be easily developed in the future.

7. **In lieu of changing or making new regulations – is better use of current regulations and more guidance and supporting tools the answer?** (Yes, No, Neutral)

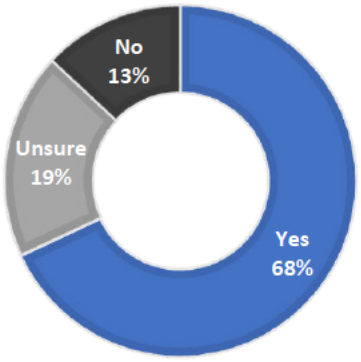


8. **What level of support does the Handbook for modular structures by the Modular Construction Codes Board provide?** (Very Good, Good, Neutral, Not enough) Please explain your rating.



In general, it was noted that the Handbook by the MCCB provides good general information about modular buildings, however, it was noted that it could be expanded. It was highlighted that details are required to address planning barriers and risk-averse culture in Australian urban growth. Furthermore, the Handbook could be improved by cross-referencing to or correlating with the NCC, as well as providing case studies with respect to the application of the NCC to modular construction. Furthermore, many respondents noted that they were not familiar with the code.

9. **Do you think any improvements/changes need to be made to existing planning and building codes and Australian Standards to assist with the uptake of prefab and modular buildings?** (Yes, No, Neutral)



The following questions are in relation to the regulatory acceptance process:

10. **In your opinion, what are the key differences in regulatory compliance between on-site and off-site construction and do you think there are 'grey' areas that require clarification?**

    The following key points were raised about the key differences in regulatory compliance between on-site and off-site construction:

    - **Planning issues.** Participants highlighted their challenges with local town planning, especially as every state and council is not willing to approve any new concepts promptly whereupon delays exhaust enthusiasm to giving up.
    - **Inspection and approval process**. For a closed panel system, it is not possible to complete a framing inspection on site. It is also difficult to complete in the factory because generally, only one panel will be under construction at any point in time. Similarly, an inspection of services is difficult when they are hidden in walls, etc, and becomes more challenging when the product is built in a different local authority to the site where it's going to be installed. It was noted that if the mandatory stage inspections can be satisfactorily undertaken both within the pre-fabrication process and on-site, the regulatory framework can remain similar and compliance with the same building codes for prefab and on-site construction can be achieved.

      Some also note that modular projects currently appear to get around traditional legislation and that specific legislation is required to rectify this issue. It was suggested that a new type of inspector is required during construction that can certify each as-built building (engineers and certifiers) in the factory and then re-certify once on site.
    - **Demonstration of compliance**. This is especially a concern for higher-level prefabricated products. It was noted that there is insufficient detail and testing of products coming to the market. Some modular home manufacturers highlighted that they do not seek any exemptions to the current codes and that there should be little, if any difference, in the final product performance. Regulatory compliance for off-site construction is challenging when it comes to innovation as some stakeholders do not know how to deal with the different construction methods. Other participants suggested that the difference between off-site and on-site is minimal, especially if the off-site construction works are certified in line with engineer detailing or Australian Standards.
    - **Benefits of energy efficiency not completely realised**. Nature of energy efficiency compliance, smaller homes have smaller energy usage and the potential to be fully off-grid. The standard JV3 and DTS methods of assessment may not fully appreciate the nature of these homes being more energy-efficient.

    Furthermore, the challenges associated with finance were raised. Current progress payments are suitable for on-site construction work. It is difficult to get funding when there is no physical asset on-site.

    The following specific points were raised in terms of design:

    - Fire compartments are difficult to achieve.
    - All buildings should be built to the highest wind loading to allow relocation without constraint.

- Challenges with clearance heights, the natural ground level (NGL) to the first structural member is difficult to achieve NCC compliance.

The following recommendations/suggestions were also provided:

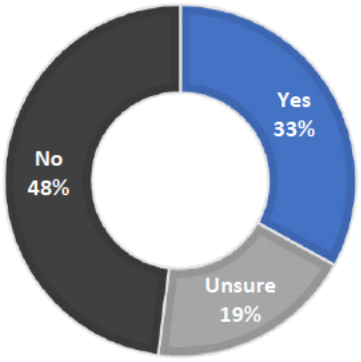
- Better use of BIM CAD tools for virtual inspections and compliance photos/processes in the factory are options to improve quality assurance.
- A separate section needs to be introduced with Safety in Design requirements since most of the construction work is done in a factory environment.
- Essential to maintain 3rd party certification including for on-site work.
- Certification of the end product will need to be more comprehensive as compliance and checking off-site prior to transportation is not an option.
- Suggestion to have a NCC volume 4 for modular construction, and that one code not numerous standards would be easier to deal with.
- Off-site construction needs to follow a manufactured product approach. Typically, the quality of the product is higher because built in a factory-type environment. For on-site construction, the quality is highly variable depending on the day and personnel involved. The level of supervision also seems to be lower for on-site.

11. **How long does the regulatory acceptance process take for prefab/modular buildings and how does this compare with conventional buildings?**

A mixed response was observed for this question. Some participants stated that there was little or no difference between on-site and off-site homes in terms of compliance time and the number of hurdles. Whereas, other participants noted that the process is significantly longer for off-site construction. A participant noted that it can be nearly three times as long due to town planning issues caused by inexperience and fear to approve this kind of work, and that it is not unusual to wait two years and go to arbitration. Some also noted that both off-site and on-site face similar challenges when the final resolution to achieve sign off is protracted. However, in on-site construction this issue can usually be resolved through the building approval documentation stage whiles the site preparation works are in progress. Whereas, for off-site construction, since these construction activities are concurrent rather than in a linear sequence, the delays become an issue.

Specifically, it was noted that in NSW, the regulatory compliance framework does not support modular buildings under the provisions of the State Environment Planning Policies (SEPP). Therefore, the Local Government local environmental plans (LEP)/development control plans (DCP) provisions are sought for compliance where most Local Government (LG) provisions do not include the term 'Modular Building' and therefore fall into a 'Miscellaneous' category of a 'Section 68' assessment. This can cause a myriad of issues that relate to the permissible use of Modular Buildings within the LG area and the inability for a specific framework to be assessed against. It was noted that without these mechanisms, builders/designers are finding it hard to properly plan and design a complaint dwelling for both clients and contracts. It was suggested that a specific SEPP statute is passed for modular/prefab homes to assist with regulatory compliance of modular houses.

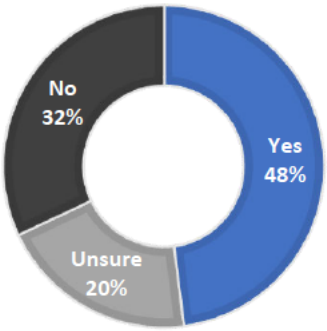
12. **Have you had experiences with projects using modular or prefab construction that have been unnecessarily hindered by planning or building regulation**? (Yes, No, Neutral). If yes, please explain your answer.



The participants that answered 'yes' to this question noted the following issues with planning and building regulations:

- Development of a suitable fire resistance level (FRL) performance solution for Type A construction.
- Concerns with having the installation determined as temporary and not needing fire hydrants installed throughout the development as it was argued that the buildings were hard-wired, connected to sewer/water, and welded to the foundation, thus making it permanent.
- Concerns with different types of external finishing systems. For Victoria, it was noted that there is a lot of focus on external facades which increases the project cost.
- Approval panel not familiar with the modular process. Some participants noted that they build in a lot of remote areas and some councils need more information to gain an understanding that it is not a caravan, however, this is usually easily navigated through to approval.
- Due to the speed of construction, the local government was too slow in approvals.
- Specific issue in NSW was raised again that the regulatory compliance framework does not support modular buildings under the provisions of the SEPP. Therefore, the Local Government LEP/ DCP provisions are sought for compliance where most LG provisions do not include the term Modular Building and therefore fall into a Miscellaneous category of a "Section 68" assessment.

13. **Do you think factory sign-off could be used as a solution, including factories not located in Australia?** (Yes, No, Neutral)



14. **How do you think the regulatory acceptance process can be improved for prefab/modular buildings?**

The following improvements were suggested by the participants:

- **Planning.** To change planning provisions that allow developers to put 'no prefab' caveats on estates.
- **Building code and standards.** Some participants noted that they would like the development of new codes and standards that are specifically for prefab and modular constructions. Many of the standards are developed internally at significant cost, it would be great to see the industry cover off-site considerations in terms of areas outside of on-site construction. An example is transport, whilst there are standards for transport it is not readily known how to apply these to off-site construction, many transport operators are not aware of how to determine the best practice for moving large custom elements.

  It was also highlighted that whilst a regulatory environment such as the NCC is performance-based, it still does not sufficiently recognise the project delivery methodology and provide for acceptable alternative pathways to achieve a performance outcome. This results in frequent site-specific custom solutions and the inherent cost of development. In contrast, some participants stated that modular dwelling houses can still comply with all deem-to-satisfy provisions of the NCC and that there are no issues to address.
- **Certification and approvals.** Some suggested that the factor should provide a certificate of compliance while others stated that certifiers should attend the factory to provide approval prior to transportation. It was also noted that an introduction of a regulatory mechanism where the manufacturers can attain accreditation of standardised prefab/modular systems as meeting a range of NCC requirements could be useful.

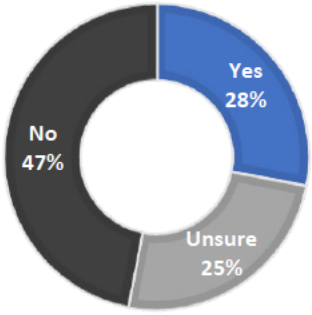
  Furthermore, bulk compliance based on audits and 'product testing' post-construction was also suggested. It was noted that predominantly these are production line manufactured buildings and they should have an updated regulatory process to better suit this type of manufacturing.

  Concerning imported products, it was highlighted that a greater level of scrutiny is required for inferior prefabricated buildings.

- **Finance**. It was noted that the government needs to amend the contracts Act to support builders financially so that they do not have to fund projects upfront.
- **Education.** Regulators to become more familiar with off-site construction. Furthermore, changing the generally negative perceptions of off-site construction and educating people about the advantages.

The following questions are in relation to building codes and standards:

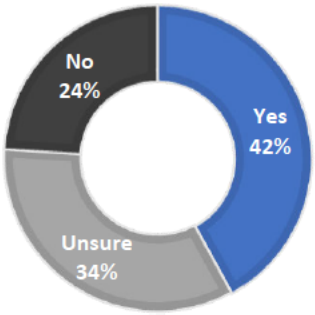
15. **Do you think that current planning and building codes are difficult to apply for prefab and modular buildings?** (Yes, No, Neutral). If yes, please explain your answer.



The following responses were provided for the participants who agreed that current planning and building codes are difficult to apply for prefab/modular buildings:

- Difficult with planning, especially the NSW problem as stated previously.
- Difficult to show compliance even though the system performs better than the traditional method.
- Harder to achieve energy star rating due to floor disconnected from the ground.
- They have become too difficult to apply to building in general, the regulatory system needs to be reviewed for efficiency and suitability for purpose.
- They are hard because the BCA is hard. It keeps people safe and should not be watered down.

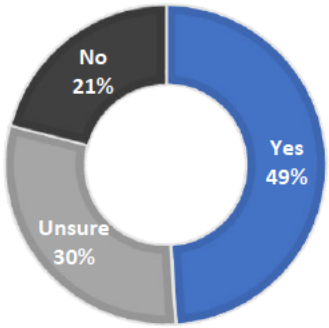
16. **Do any improvements or changes need to be made to existing Australian Standards or should there be specific Australian Standards developed for modular and prefab construction?** (Yes, No, Neutral). If yes, please explain your answer.



The following responses were provided for the participants who agreed that changes need to be made to existing Australian Standards for modular and prefab construction:

- A code for modular construction would make approvals easier.
- A specific Australian Standard would help to show the industry has a national acceptance level. It was also noted that the standards need to be updated to keep up with technology.
- Consideration of renovations.
- Allow for international suppliers.
- There need to be real compliance verifications throughout the building process, using independent personnel.

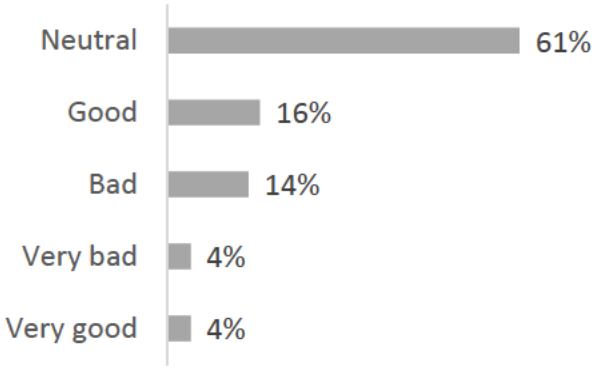
17. **Should the NCC have a dedicated Section dealing with prefab and modular buildings or should this be left to Performance Solutions?** (Yes, No, Neutral).



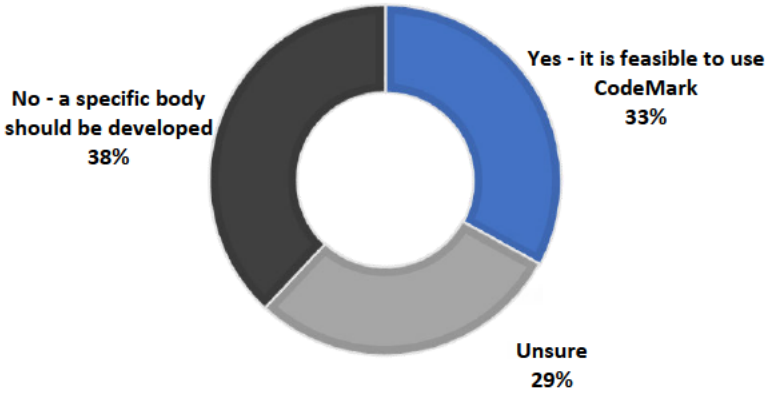
18. **What method do you use, or do you think is used, to demonstrate conformity and quality assurance? (e.g., self-certification, third-party independent product certification, factory and production certifications, traceability measures such as product identification methods).**

A mixed response was observed for this question. Some participants noted that all forms of demonstration of conformity and quality assurance (the examples provided in the question) are necessary, while others note specific ones, including a combination of self and third-party certification, factory and production certifications, independent audits, internal factory quality assurance processes and certifications by qualified engineers.

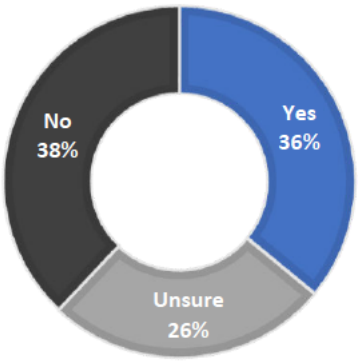
19. **How effective do you think the current method to demonstrate conformity and quality is**? (Very good, good, neutral, bad, very bad)



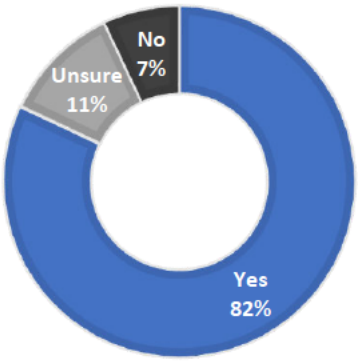
20. **Do you think it is feasible to use CodeMark for evaluating prefab/modular products or should a specific body be setup to perform the task for better efficiency**? (Yes – it is feasible to use CodeMark. No – a specific body should be developed, Neutral)



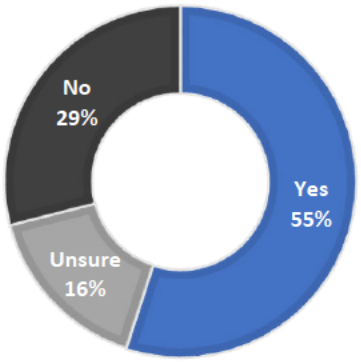
21. **Do you think compliance should be left to developing performance-based solutions?** (Yes, No, Neutral)



22. **Do you think we need on-site validation as a means of certification as a fully assembled structure?** (Yes, No, Neutral)

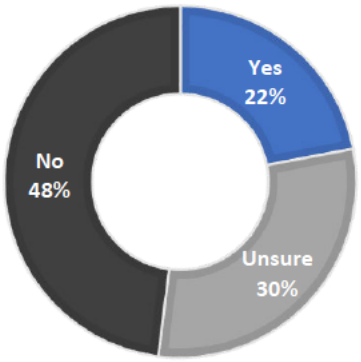


23. **Would development of prototypes for testing and certification be a means to overcome certification and testing issues?** (Yes, No, Neutral)



The following questions are in relation to chain of custody:

24. **Do you think the responsibilities and roles of stakeholders in the supply chain for prefab is clear?** (Yes, No, Neutral)

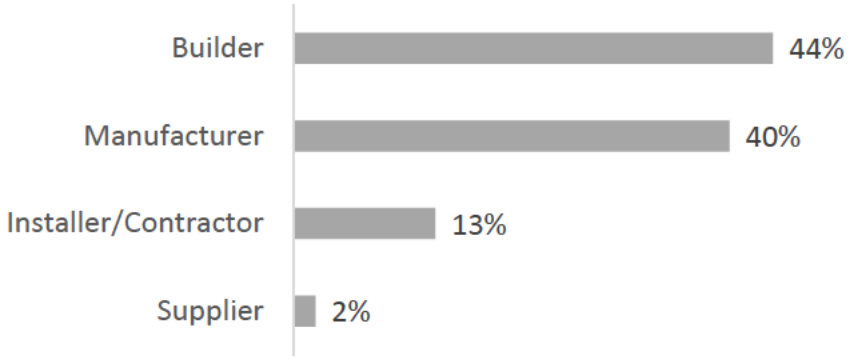


25. **Who do you think is responsible for ensuring the quality of the final product?**

A mixed response was provided for this question. Notably, many stated that they expected the builder/head contractor or the manufacturer to be responsible for the final product, while others noted that the responsible party is dependent on the type of damage observed. Other responses were also provided, including:

- All parties involved in the delivery from the manufacturer to the end-user.
- All stakeholders associated with the building industry including government bodies.
- Both the builder/installer and the factory.
- Builder if same as manufacturer, otherwise manufacturer. The manufacturer needs to identify ways to sign off or certify components.
- Whoever caused the defect must take responsibility.
- Manufacturer, transporter, and installer.
- Building surveyors and engineers

26. Who do you think is responsible for defects (Builder, Manufacturer, Supplier, Installer/Contractor)



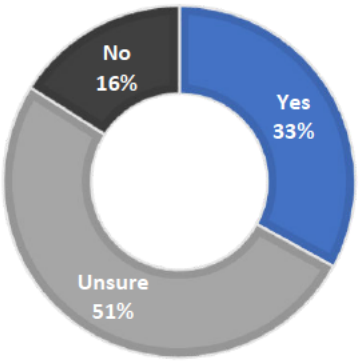
Final general questions:

27. In terms of motivation, opportunity and capability, in your opinion what is the main factor that is holding us back?

The following responses were provided:

- Government town planning rules (e.g., planning rules that limit multi tiny houses estates).
- Finance and payment schedules.
- Very expensive insurance.
- High initial start-up or set-up cost for manufacturing facilities.
- Costs associated with transportation.
- Unclear regulation and compliance pathways.
- Attitudes and understanding of the off-site industry, it is a method of building houses.
- Builders not supporting innovation.
- Architects not supporting of off-site construction because feel that they are not as involved or required for the design of buildings, as well as fewer variations allowed once the design is finalised.
- Education within the industry. Fundamentally the requirements for buildings exist in existing legislation and regulation, and the onus is on the industry to comply. There seems to be motivation to bypass building requirements purely because it is hard to accommodate within the manufacturing process.
- Difficulty in obtaining approvals due to non-experienced building surveyors/certifiers.
- Road transport restrictions limit design options and make it harder to comply.
- Builders' acknowledgment that they need to be accountable for the product that they deliver. It needs to be backed up by real insurance policies, that cover the consumer should the builder not deliver upon the quality. Each builder needs to have a star rating applied based on valid claims made by the consumer.
- Scale, not necessarily enough demand for off-site constructed buildings.
- Vested too heavily on Australian manufacturers.

28. **Do you think there are any other regulatory barriers that should be investigated?** (Yes, No, Neutral) If yes, please explain.



The following responses were provided:

- Approvers aren't up to speed with new technology.
- Contracts Act needs to be changed.
- Nobody regulates the builders now.
- Non-compliant products such as imported modular buildings that do not comply with our current Australian Standards.
- Progress payments.
- Government support.
- Transportation and logistics.
- Finance (security of payments), title & ownership.
- Sustainably including life cycle costing. Ability to achieve zero emissions buildings.
- Long term testing (at least 10 years) before a product is brought to market.
- Standard forms of construction contracts might be able to be modified to create a modular-specific contract, with emphasis on the design hold points.

Appendix 9 – HIA's All Hands on Deck Report

All Hands on Deck

HIA's plan to build the workforce to house all Australians

October 2024

Contents

Executive Summary

Trade shortages loom as a major threat to the Housing Accord's target of building 1.2 million homes over the next five years. The target equates to an average of 240,000 homes per annum and Australia has only come close to this level of home building on two occasions in the past. The first was in a single year at the peak of the apartment boom of the mid-2010s (232,000 in 2016), and the second was for a single year at the peak of the COVID era cycle (228,000 in 2021).

Adding 240,000 homes per year would be close to meeting the nation's annual demand for new homes and would take pressure off housing costs. However, the question remains whether this level can be reached, and whether it can be sustained without widespread delays, longer build times and without excessive growth in construction costs.

One of most critical questions is whether the industry has the workforce capacity to deliver this number of homes? Unfortunately, we don't.

It is estimated that there are around 277,827 skilled trades workers in the residential building industry spread across the industry's twelve key trade occupations.

The key trade occupations needed to build homes include carpenters, electricians, plumbers, painters, bricklayers, cabinetmakers, plasterers, tilers, concreters, roof tilers, floor finishers, and glaziers.

This workforce completed around 173,000 homes in 2023, during which time industry surveys continually revealed shortages of skilled trades workers even at this much lower volume of home building.

Achieving the level of new home building activity needed to build 1.2 million homes over five years (240,000 homes per annum) equates to a 39 per cent increase from the 2023 level.

To enable the level of home building required to meet the Accord's target without creating acute labour shortages, HIA conservatively estimated that the trades workforce in residential building would need to increase by at least 30 per cent.

A 30 per cent increase in the workforce across these occupations equates to over 83,000 additional trades workers!

Building our domestic workforce always the priority

There are around 114,000 apprentices currently in training across the twelve key trades for residential building. This number is down slightly from the peak in apprentice numbers which occurred following the Boosting Apprentice Commencements program that operated during the period affected by the COVID pandemic.

Creating training opportunities for Australian residents should be the preferred workforce development strategy for policy makers. In recognition of this, housing supply was made a priority within the National Skills Agreement. However, training the number of workers required in the next five years would mean nearly doubling the number of apprentices in training.

Doubliing the number of apprentices in training is an implausible proposition. Firstly, there would need to be a huge jump in number of workers willing to take up training in these occupations within the time frame of the Housing Accord. Secondly, there would need to be a commensurate increase in number of employers willing to take on apprentices. Thirdly, the capacity of the VET sector would need to increase rapidly to accommodate the increased student numbers.

Lastly, there is the issue of timing. It typically takes a year or more before apprentices become productive workers, four years to complete their qualification, and even longer to become fully proficient in their trade. Skilled trades workers will be required throughout the full five-year window of the Accord's target, not just in the latter stages.

Skilled migration has a key role to play

Skilled migration is the other lever in the Government's control to address the skill shortages. While the Federal Government included funding to accelerate visa processing for skilled trades workers in this year's Budget, numbers arriving with the skills we need remain inadequate.

Data from the Department of Home Affairs shows that there are just 3,644 workers on temporary skill shortage visas currently in Australia working in these key trade occupations. This equates to only 0.8 per cent of the workforce in these trade occupations. This is small in comparison to other industries and only a share of these migrant workers is likely to be working in residential building.

Different solutions needed for different trade occupations

It is important to recognise that each trade occupation faces its own challenges in growing the workforce. Some trade occupations have more difficulty growing the workforce than others.

Indeed, the workforce in some trade occupations have declined significantly over recent years, while others have managed modest growth.

The big three occupations (carpentry, electrical, and plumbing) account for around 65 per cent of the workforce in the top twelve trade occupations, yet apprentices in these occupations account for around 83 per cent of construction trade apprentices.

Painters, tilers, plasterers, and roof tilers provide a contrast to the big three. Workers in these four occupations account for around 17 per cent of the trade workforce, yet apprentices in these occupations make up just 6 per cent of construction trade apprentices. Apprentices in training account for less than 10 per cent of the workforce in each of these occupations.

Whilst there is demonstrated shortages across all trade categories, what these findings show is that there is a need to consider different solutions for different trade groups and targeted programs to each trade cohort.

An ageing workforce

The aging of the workforce is a problem in some key trades. In these trades, a lack of new entrants over the years has provided a situation where older workers now account for a disproportionately large share of the workforce. Some trade occupations have been topped up by greater numbers of migrant workers, but this is not a long term solution.

The occupations most effected by an aging workforce are bricklaying, floor finishing and plastering. In each of these three occupations, the number of workers declined over the ten years between the 2011 and 2021 national census, and the number of workers in these occupations aged under 25 also declined over this period.

A range of solutions needed

A range of policy responses will be required if the workforce of skilled trades is to grow to a level that will enable the level of home building targeted by the Housing Accord.

It is likely too late to fully eliminate labour constraints as a barrier to achieving the Housing Accord's target of building 1.2 million homes over the next five years. Nevertheless, it is important that governments take action to ensure that this barrier is reduced as quickly as possible.

The housing shortage that is driving up housing costs for Australian households can only be reduced through the efficient delivery of new housing in greater quantities than has been achieved in the past. The workforce of housing industry must grow if this is to occur.

Summary of recommendations

More construction trades workers needed

- The Federal Government partner with industry to deliver a large scale promotion campaign on the benefits of taking up a role in the residential building industry highlighting the job and career opportunities.
- Undertake targeted programs for mature aged workers, women and workers from culturally and linguistically diverse backgrounds to promote construction trade careers and provide appropriate financial and mentoring support that enable these workers to succeed.

Boosting the number of apprentices in training

- Increase and make a long-term commitment to a stable arrangement of apprentice and employer subsidies to encourage more employers to take on apprentices and to support apprentices through their apprenticeships.
- Invest in industry-based mentoring programs to provide support for apprentices that is relevant to their careers and support for employers that is relevant to their business.
- Ensure that financial incentives for apprentices do not interact to erode the benefit of wage progression throughout the apprenticeship.
- Provide apprentices with a $1,000 tool bonus program starter kit and a $500 supplement per year of the apprenticeship.

The aging trades workforce

- Provide additional resources for Jobs and Skills Councils to develop comprehensive workforce development campaigns specific to each of the construction trade occupations facing the greatest challenges due to an aging of the workforce. These occupations include bricklayers, plasterers, floor finishers, tilers, glaziers and cabinet makers.
- Campaigns should provide industry based mentoring for new entrants, additional support for experienced trades workers to train new entrants, and support for older workers transitioning out of trade careers to remain in the industry.

Making better use of the skilled migration system

- Support industry to expand recruitment programs in overseas markets.
- Streamline immigration pathways for workers in construction trade occupations.
- Support industry to develop programs to upskill migrant workers in local industry practices to boost industry’s confidence in the skilled migration system.
- Develop a construction trade contractor visa that enables skilled migrants to operate as trade contractors.
- Enable overseas students to undertake apprenticeships in construction trades.
- Provide clear pathways to permanent residency for temporary workers in construction trade occupations.

Introduction

Building 1.2 million homes over the next five years will require a considerable increase in the number of skilled trades workers in the residential building industry. It is feasible that the housing industry will require more than 83,000 additional trades workers across the industry's twelve most important trade occupations to achieve this level of construction.

Building 1.2 million homes over five years equates to an average of 240,000 homes per annum. This is a higher level of home building than has ever been achieved in Australia in the past. Furthermore, at the mid-point of 2024 the residential building industry is operating at level that is likely to deliver only 160,000 homes in the current financial year. Reaching the Housing Accord's target will require a level of output that is 50 per cent above the current level.

Australia has come close to reaching an annual total of 240,000 new homes on two occasions in the past. The first was in 2016 at the height of the apartment construction boom in the east coast capital cities (234,000 homes commenced), and the second was in 2021 when the Home Builder incentive scheme and low interest rates stimulated nationwide demand (primarily for detached houses).

During both of these periods there was considerable disruption to the industry due to shortages of skilled labour. The inability of builders to have the required skilled trades workers onsite when scheduled resulted in delays achieving project milestones and rising project costs.

The cost of labour shortages is shouldered by both businesses and home buyers. The community also bears a cost, as higher construction costs ultimately result in fewer homes being built to meet the needs of a growing population which puts pressure on rental and home purchase prices.

The trades workforce available to the residential building industry can be increased through several avenues: firstly, by ensuring that there are training opportunities for people looking to begin a career in the industry; secondly, through skilled migration; and thirdly, by attracting workers from other industries or segments of the construction industry.

This report presents an analysis of the sources of growth for the workforce in the key trade occupations required for residential building and presents an estimate of the number of additional workers in each key trade that would enable the housing industry's output to reach the Housing Accord's target level without causing undue disruption to build times or construction costs.

More construction trades workers needed

It is estimated that there are currently 277,827 skilled trades workers in the residential building industry working in the industry's twelve key trade occupations. These occupations include Carpenter, Electrician, Plumber, Painter, Bricklayer, Cabinetmaker, Plasterer, Tiler, Concreter, Roof Tiler, Floor Finisher, and Glazier.

This workforce completed around 173,000 homes in 2023, during which industry surveys consistently reported shortages of skilled trades workers across the key occupations. Achieving the average annual level of new home completions needed to build 1.2 million homes over five years (240,000 homes per annum) equates to a 39 per cent increase from the 2023 level.

To enable the level of home building required to meet the Accord's target without worsening labour shortages, it is conservatively estimated that the trades workforce in residential building would need to increase by at least 30 per cent.

The table below presents estimates of trades workforce in each key trade occupation currently working in residential building and the additional workers that would be required by a 30 per cent increase.

	Current number of workers	Additional workers required
Carpenter	73,399	22,020
Electrician	57,723	17,317
Plumber	39,663	11,899
Painter	26,774	8,032
Bricklayer	15,059	4,518
Cabinetmaker	14,693	4,408
Plasterer	11,826	3,548
Tiler	11,405	3,421
Concreter	10,421	3,126
Roof Tiler	6,384	1,915
Floor Finisher	6,016	1,805
Glazier	4,465	1,339
Total	**277,827**	**83,348**

Source: HIA

It is estimated that the residential building industry will need an additional 83,348 more workers in the top 12 construction trades to achieve meet demand for new home building under the Housing Accord.

This estimate represents the net increase in the workforce that will be required. The number of new additions to the workforce will need to be even greater than this to offset the number of workers leaving the industry through retirement or career change.

Achieving an increase of this magnitude seems implausible as it would require significant reprioritisation of policy objectives. This would be through substantially increasing the number of workers in training, enabling a considerably larger number of migrants with trade skills to work in Australia, and by delaying projects in other segments of the construction industry to free up existing workers.

There must be a concerted effort to attract more workers into the residential building industry. The magnitude of the task ahead was given recognition in early 2024 when the Skills and Workforce Ministerial Council agreed to make housing supply a priority under the National Skills Agreement.

Recommendations:

- The Federal Government partner with industry to deliver a large scale promotion campaign on the benefits of taking up a role in the residential building industry highlighting the job and career opportunities.
- Undertake targeted programs for mature aged workers, women and workers from culturally and linguistically diverse backgrounds to promote construction trade careers and provide appropriate financial and mentoring support that enable these workers to succeed.

20 years of the HIA Trades Availability Index

HIA's quarterly industry survey has tracked the availability of trades workers for twenty years. During this time there have been very few periods where a surplus of trades has been recorded.

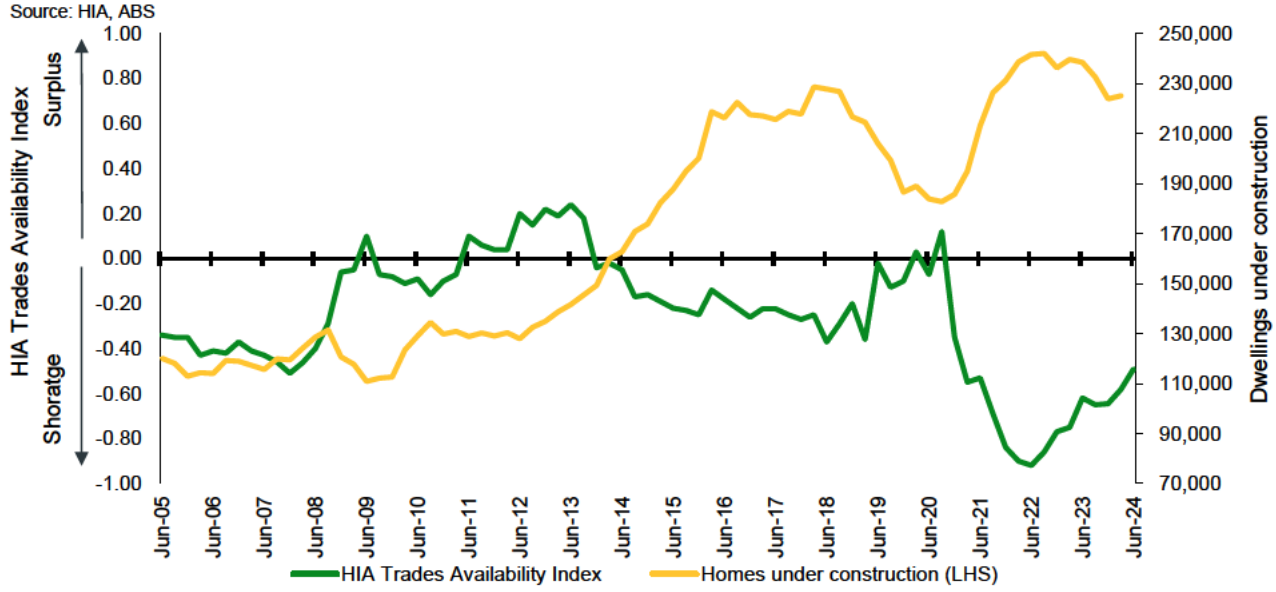
The survey results are sued to create an index which quantifies the extent to which the availability of trades workers deviates from balance. An index reading of zero indicates that trades is neither in shortage or surplus, a negative index level indicates a shortage of trades workers, and a positive index level indicates a surplus. An index level further away from zero indicates a more severe shortage/ surplus).

A surplus of trades workers has only been recorded in 13 of the 80 quarterly surveys. Two of these quarters were during 2020 in the early stages of the COVID pandemic and the remainder were during the post-global financial crisis industry downturn between 2012 and 2013 when the annual number of new homes built dropped below 144,000.

There is a robust relationship between the Trades Availability Index and the number of dwellings under construction. The long run relationship implies that shortages of trades workers emerge when there are greater than 160,000 homes under construction.

Trades availability and dwellings under construction

Source: HIA, ABS



HIA's quarterly survey of trades availability has also enabled the calculation of sub-indices tracking trade worker availability in each key trade. The indexes tracking availability of workers in each trade highlight the differing degrees of shortages across each occupation.

The table below shows the number of quarters in which HIA's Trades Availability Survey has identified a labour shortage in each occupation across the 80 quarterly surveys conducted over the last 20 years.

Trade occupation	Quarters in shortage
Bricklaying	78
Ceramic Tiling	77
Roofing	71
Carpentry	65
Plastering	63
Painting	60
Site Preparation	59
Joinery	57
Plumbing	57
Landscaping	51
Electrical	48

Source: HIA

Over the last 20 years, bricklayers have been in the most acute shortage, followed closely by tilers and roofers. The index tracking the availability of bricklayers has reported surplus availability in only two of the 80 surveys conducted over the last 20 years, these occurred during the second half of 2012.

A surplus of tilers has been recorded in just three surveys in the last 20 years while a surplus of roofers has been recorded on nine occasions. The last time that a surplus of tilers was recorded was during the March quarter of 2013, while the last surplus of roofers was recorded in the June quarter of 2013.

At the other end of the spectrum, the index tracking availability of electricians has recorded the most frequent surpluses, followed by landscapers, and plumbers. Surplus availability of electricians has been recorded in 32 of the 80 surveys undertaken over the last 20 years, 29 times for landscapers and 23 times for plumbers.

While trades availability has been gradually improving since late 2022, all trades remain in shortage. This provides for a run of 15 consecutive quarters where all trades have been in shortage. This is the longest enduring period of trades shortages in the index's 20 year history.

Construction trades workers in residential building

The construction industry in Australia undertakes a broad range of construction projects, however, residential building accounts for the largest share of industry activity.

National accounts show that construction work for residential building accounted for 51 per cent of Australia's total expenditure on construction over the last five years, with engineering construction work accounting for 26 per cent and work on non-residential buildings accounting for the remaining 23 per cent.

The amount and relative share of construction work undertaken in each segment of the industry change with economic cycles. The skills of many construction trade workers are transferable across a wide range of construction projects.

The degree of transferability of trade skills across each industry segment varies across the trade occupations. For example, the skillset of electricians is in demand across all segments of the construction industry, in contrast demand for roof tilers is almost exclusively in residential building.

Transferability enables skilled workers to move throughout the industry as the sources of demand for skilled workers change.

Each segment of the industry competes to attract the workforce required throughout industry cycles. Competition for skilled trade workers is most acute when all segments of construction are increasing or achieving high levels of output.

Trades workers are engaged in work in a range of ways which differ throughout the industry. Some workers are employed by construction contracting businesses, while others operate as self-employed independent contractors.

Workers engaged by construction contracting businesses typically work on larger value construction projects which are more characteristic of engineering construction, commercial building construction, and can include apartment buildings. It is more common for trades workers in the housing industry to operate as independent contractors.

The number of skilled trades workers in the industry is largely inelastic in response to short term fluctuations in demand throughout economic cycles. The unresponsiveness of supply is due to the time required to train workers, while use of the skilled migration system to fill skills shortages has been minimal.

The labour market for skilled trades workers is competitive. Businesses in the residential building industry are competing with businesses in other segments of the construction industry to attract the trades workers they require. Competition to attract workers is more intense when the aggregate demand for skilled trades workers is increasing.

This is likely to be the situation over the years ahead. The significant pipeline of public sector construction activity set to be underway at the same time as Government seeks to increase the volume of home building to meet the targets set in the Housing Accord will result in a greater aggregate demand for trades workers.

The extent to which governments (federal and state/territory) are actively working to accommodate higher levels of home building over the next five years through improved sequencing of construction projects is difficult to evaluate. However, decisions makers will need to prioritise housing supply if the Accord's target is to be achieved.

Boosting the number of apprentices in training

There are around 114,000 apprentices currently in training across the twelve key trades for residential building. This number is down slightly from the peak in apprentice numbers which occurred following the Boosting Apprentice Commencements program that operated during the period affected by the COVID pandemic.

Creating training opportunities for Australian residents should be the preferred workforce development strategy for policy makers. In recognition of this, housing supply was made a priority within the National Skills Agreement. However, the sheer number of workers required to meet the Housing Accord's target is unlikely to be achieved by training new workers alone.

Firstly, it is unclear whether there are enough workers willing to take up training in these occupations within the time frame of the Housing Accord. Secondly, there would need to be a commensurate number of employers willing to create an employment opportunity for a greater number of apprentices. Thirdly, the VET sector is unlikely to have the ability to scale up the sector's capacity to accommodate an increase in student numbers of this scale.

While additional workers are required across all key trade occupations in residential building, there are a range of challenges in attracting and training new workers in each occupation.

	Apprenitces in training	Apprentice share of workforce
Electrician	41,537	32.4%
Carpenter	35,111	33.5%
Plumber	21,086	27.6%
Cabinetmaker	4,966	22.0%
Painter	3,036	7.4%
Bricklayer	2,306	13.8%
Plasterer	1,662	9.1%
Tiler	1,417	8.1%
Glazier	1,086	12.6%
Floor Finisher	913	11.4%
Roof Tiler	550	8.6%
Concreter	499	1.7%
Total	**114,169**	**23.9%**

Source: HIA

The big three occupations (carpentry, electrical, and plumbing) account for around 65 per cent of the workforce in the top twelve trade occupations, yet apprentices in these occupations account for around 83 per cent of construction trade apprentices. Furthermore, the number of workers in training in each of these occupations account for around a third of the total work force in each.

This suggests that attracting workers to these occupations and providing training opportunities may be less problematic than in other construction trade occupations albeit there is still demonstrated shortages across these trades that will only become more pronounced in the years to come.

It is possible that electrical and plumbing qualifications hold greater appeal to due to the close nexus between the qualification and the requirements of licencing authorities. Licencing requirements creates an additional barrier to entry into these occupations and contributes to a perception that these are qualifications more valuable or more desirable to attain.

The carpentry qualification may also hold strong appeal as it provides foundational skills for workers in the construction industry, the occupation encompasses a wide range of specialisations, and a carpentry apprenticeship is a common entry pathway for those who wish to undertake further study to facilitate career progression, including becoming a licenced builder.

Painters, tilers, plasterers, bricklayers and roof tilers provide a contrast to the big three. Workers in these five occupations account for around 17 per cent of the trades workforce, yet apprentices in these occupations make up just 6 per cent of construction trade apprentices. Apprentices in training account for less than 10 per cent of the workforce in each of these occupations.

The disparity in apprentice participation across the key residential building trades suggests that occupation specific factors may be playing a significant role in apprentice participation rates. Identifying and addressing

the occupation specific barriers to apprentice participation in trades with low participation may be beneficial boosting the workforce capacity in these key occupations.

The apprenticeship training model has broad support within the industry, however, the experience of engaging with the apprenticeship system is a source of frustration for many participants including apprentices, employers and VET providers.

It is acknowledged that a review of the Australian Apprenticeship Incentive System has recently been undertaken. It will be very important that any reforms arising from the review result in a system which is more attractive to prospective apprentices and employers.

Recommendations

- Increase and make a long-term commitment to a stable arrangement of apprentice and employer subsidies to encourage more employers to take on apprentices and to support apprentices through their apprenticeships.
- Invest in industry-based mentoring programs to provide support for apprentices that is relevant to their careers and support for employers that is relevant to their business.
- Ensure that financial incentives for apprentices do not interact to erode the benefit of wage progression throughout the apprenticeship.
- Provide apprentices with a $1,000 tool bonus program starter kit and a $500 supplement per year of the apprenticeship.

The aging trades workforce

The workforce in several construction trade occupations have an older age profile, whereby older workers make up a greater share of the occupation's workforce. In these occupations, retirements over the years ahead are likely to account for a larger share of the workforce. A large number of workers exiting the industry will offset a large share of the new entrants. This dynamic will make achieving a net growth in the workforce more challenging.

The occupations most effected by an aging workforce are bricklaying, floor finishing and plastering. In each of these three occupations, the number of workers declined over the ten years between the 2011 and 2021 national census, and the number of workers in these occupations aged under 25 also declined over this period.

Plasterers:

- The workforce of plasterers declined by 11 per cent between the 2011 and 2021 census,
- The number of plasters aged under 25 declined by 40 per cent over the decade;
- Young workers in plastering declined from a 19 per cent share of the workforce in 2011 to just 13 per cent in 2021.

Bricklayers:

- The workforce of bricklayers declined be 13 per cent over the decade to 2021;
- The number of bricklayers aged under 25 declined by 34 per cent over the decade;
- Young bricklayers accounted for just 16 per cent of the workforce in 2021, down from 21 per cent in 2011.

Floor Finishers:

- The number floor finishers declined by 8 per cent between 2011 and 2021;
- The number of floor finishes aged under 25 declined by 22 per cent over this time frame;
- The share of floor finishers who are aged under 25 declined from 17 per cent in 2011 to 14 per cent in 2021.

A second group of trade occupations are also facing challenges, although they are less at risk than the three mentioned above. These occupations achieved growth in the workforce over the decade but saw the number of younger workers decline. This group includes glaziers, tilers, cabinet makers and painters.

The number of glaziers aged under 25 declined by 16 per cent, the number of young tilers declined by 13 per cent, the number of young cabinet makers declined by 11 per cent and the number of young painters declined by 8 per cent.

Despite the decline in younger workers entering the glazing, painting and tiling trade over the decade to 2021 the total number of workers in these occupations increased. Immigration data suggests that these occupations attracted a proportionately greater share of migrant workers in trade occupations. Tiling stands out amongst these occupations as a large number of migrant workers contributed to a 21 per cent increase in the workforce between 2011 and 2021.

Demographic developments in the workforce of carpenters, electricians and plumbers present a distinct contrast to those mentioned above. The plumbing workforce grew by 20 per cent between 2011 and 2021, including a 17 per cent increase in the workforce aged under 25.

The carpentry workforce increased by 15 per cent in decade to 2021 including a 21 per cent increase in workers aged under 25. The number of electricians increased by 19 per cent between the 2011 and 2021 census, although the workforce aged under 25 increased by a more modest 3 per cent.

While these three trades recorded a reasonably strong increase in numbers, the share of the workforce aged under 25 in each occupation still posted a small decline over the decade.

The aging workforce presents a significant challenge for the construction industry. Having too few younger workers entering the industry risks a hollowing out of the workforce in these key occupations when older workers exit the industry.

The decline in the share of workers aged under 25 over the last decade was evident across all key trade occupations, which suggests that all trade occupations are at risk of hollowing out. However, the fact that the total number of plasterers, bricklayers and floor finishers declined over the last decade suggests that the workforce has already began hollowing out.

Recommendations

- Provide additional resources for Jobs and Skills Councils to develop comprehensive workforce development campaigns specific to each of the construction trade occupations facing the greatest challenges due to an aging of the workforce. These occupations include bricklayers, plasterers, floor finishers, tilers, glaziers and cabinet makers.
- Campaigns should provide industry based mentoring for new entrants, additional support for experienced trades workers to train new entrants, and support for older workers transitioning out of trade careers to remain in the industry.

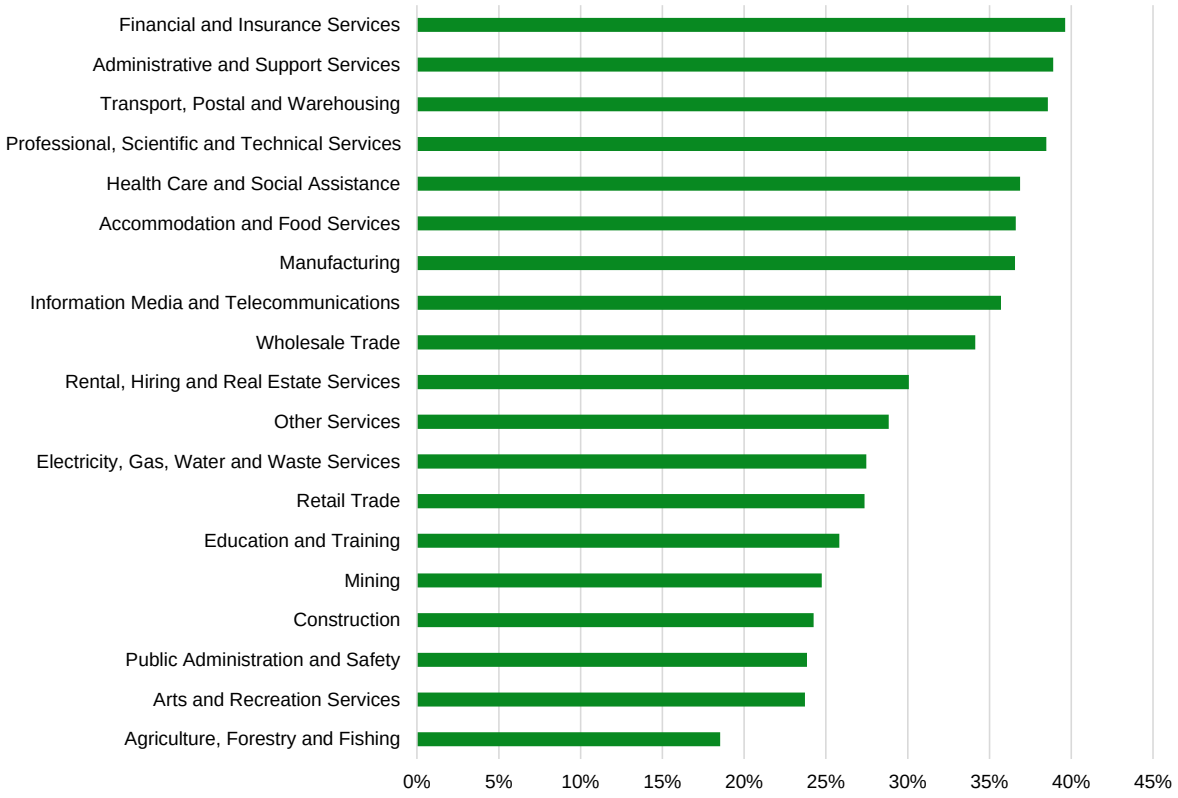
Making better use of the skilled migration system

The migration system makes it more difficult for people in trade occupations to migrate to Australia when compared to other occupations. Consequently, many businesses in the building industry do not consider skilled migration to be a viable way to address skill shortages.

Census data shows that only 24.2 per cent of workers in the Australian construction industry are migrants, this ranks 16th out of the Australia's 19 major industry sectors. The construction industry is well short of the national average of 32 per cent. The finance and insurance services sector has Australia's largest share of migrant workers at 39.6 per cent.

This outcome reflects a bias within the migration system which favours workers with tertiary qualifications over trade qualifications. In context of the role that the shortage of skilled trade workers has played in supplying too few homes to meet the needs of the population it is appropriate to evaluate whether these policy settings are appropriate.

Share of Industry Workforce Who Migrated to Australia
Source: ABS, HIA



Migrant workforce

The construction industry has not attracted a proportionate share of the migrant workers who come to Australia. The construction industry accounts for 9 per cent of Australia's total workforce, yet only 6.4 per cent of those who migrated to Australia over the last decade are working in the industry. This 2.6 percentage point gap ranks as third largest amongst the 19 major industry sectors, only the public administration and education and training sectors have a lower share of migrant workers.

According to the latest Census around 13 per cent of Australia's workforce are non-citizens but the share in the construction industry falls short of the average. Only 11 per cent of the construction workforce are non-citizens, and only 10 per cent of workers in the 12 most important trade occupations for residential building are non-citizens.

The workforce of the accommodation and food services sector has the largest share of workers who are non-citizens with 22 per cent, followed by the administrative and support services workforce with 20 per cent. The public administration and safety sector and education and training sector have the lowest share of non-citizens in their workforce with 5.3 per cent and 8.6 per cent, respectively.

Share of industry workforce who are non-citizens	
Accommodation and Food Services	21.7%
Administrative and Support Services	20.4%
Transport, Postal and Warehousing	16.8%
Manufacturing	15.2%
Professional, Scientific and Technical Services	15.1%
Wholesale Trade	13.7%
Financial and Insurance Services	13.4%
Health Care and Social Assistance	13.4%
Information Media and Telecommunications	12.8%
Other Services	12.3%
Retail Trade	12.1%
Rental, Hiring and Real Estate Services	11.3%
Construction	11.2%
Agriculture, Forestry and Fishing	11.1%
Mining	10.0%
Electricity, Gas, Water and Waste Services	9.8%
Arts and Recreation Services	9.5%
Education and Training	8.6%
Public Administration and Safety	5.3%

Source: HIA, ABS Census 2021

Temporary Skill Shortage visa holders

Workers in the 12 key trades required for residential building accounted for just 3.6 per cent of Temporary Skill Shortage (TSS) visas granted in the year to June 2024. Furthermore, it is important to note that these workers are working across commercial and other types of construction, not exclusively residential.

The temporary skilled worker visa system was designed to be a demand-driven system that enabled industry to address short term labour shortages when they arise, operating on the assumption that long term labour needs will be met through training of local workers. Despite the persistent shortage of workers and inadequate number of workers being trained, there are still very few construction trades workers on temporary skilled worker visas in Australia.

The number of construction trades workers coming into Australia on TSS visas is very low in comparison to other industries. For example, chefs accounted for 4.4 per cent of TSS visas granted to over this period and cooks accounted for a further 1.3 per cent of TSS visas granted. The number of TSS visas granted chefs alone is considerably larger than the combined total of all TSS visas granted to workers in all the key trade occupations required for residential building.

The migrant construction trades workers on TSS visas account for a very small share of the industry's workforce. Visas granted over 2023-24 financial year equate to just 0.4 per cent of workers in the key trades required for residential building. In contrast, visas granted for Chefs and Cooks in this period equate to around 1.5 per cent of the workforce in those occupations. The construction industry would need six times the number of TSS visas granted for workers in the key residential trades to reach the same share of the workforce as chefs and cooks.

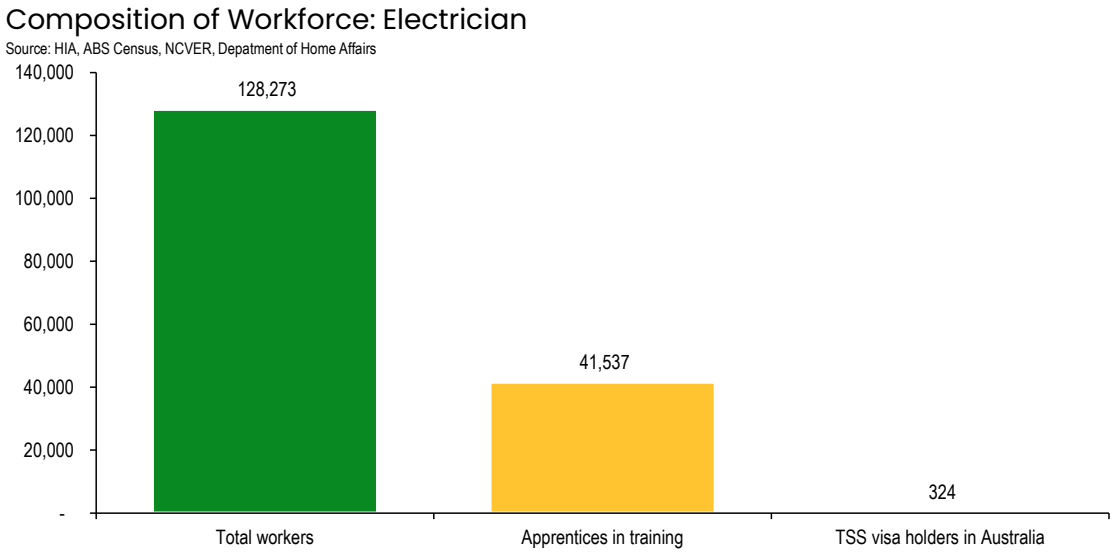
Within the key construction trade occupations, some have higher rates of skilled migration while others have very little. The lowest rate of TSS visa holders is in electrical and plumbing, where local licencing requirements present additional barriers for migrant workers. At the other end of the spectrum, glaziers painters and tilers have a higher proportion of TSS visa holders. It is noteworthy that painters and tilers are also the occupations with relatively low numbers of apprentices in training.

Australia is competing in global market to attract skilled workers to fill labour shortages and boost national productivity. With many countries facing shortages of skilled trades workers, employers are confronted with a challenging environment when going to market to recruit workers to Australia.

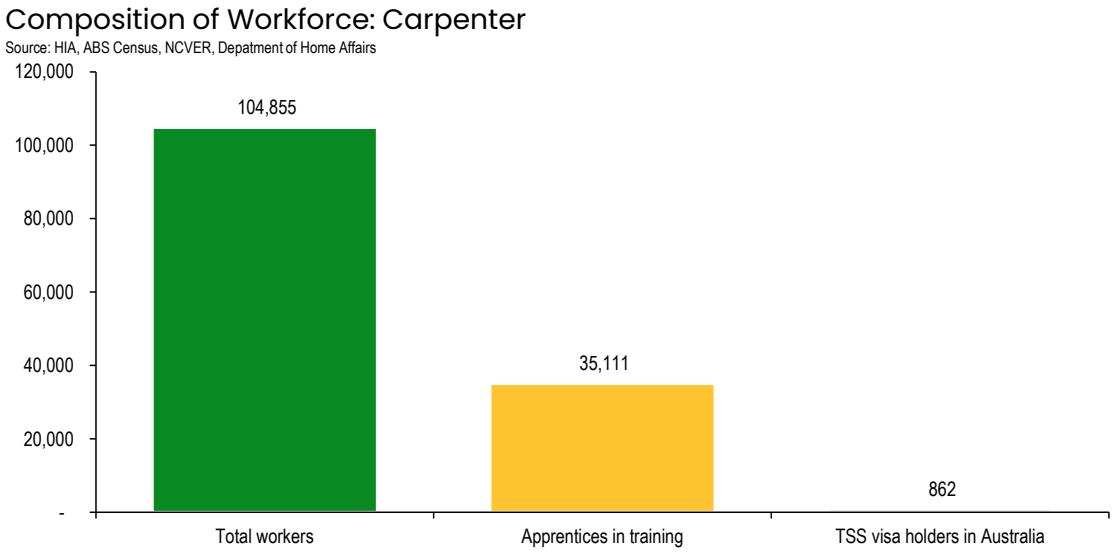
Recommendations:

- Support industry to expand recruitment programs in overseas markets.
- Streamline immigration pathways for workers in construction trade occupations.
- Support industry to develop programs to upskill migrant workers in local industry practices to boost industry's confidence in the skilled migration system
- Develop a construction trade contractor visa that enables skilled migrants to operate as trade contractors.
- Enable overseas students to undertake apprenticeships in construction trades.
- Provide clear pathways to permanent residency for temporary workers in construction trade occupations.

Summarising the composition of the trades workforce



- Electricians have the largest workforce within the key construction trades and achieved one of the highest rates of growth between the 2011 and 2021 census (equivalent to 1.8 per cent per annum).
- The workforce aged under 25 grew by 3 per cent over the 2011-2021 decade, while still positive this is considerably smaller than growth in younger workers in the plumbing and carpentry trades.
- Apprentice electricians account for the second largest share of the workforce compared with other trades.
- There are very few electricians with Temporary Skill Shortage visas in Australia, the lowest uptake of skilled migration across the key construction trades.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 17,317 electricians.

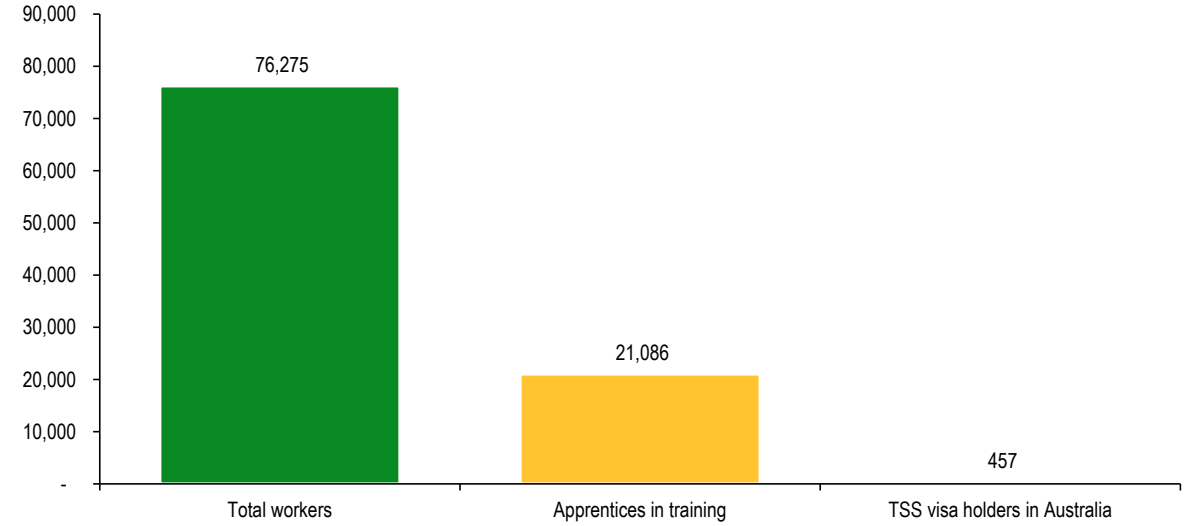


- Carpenters (including joiners) are the second largest trade occupation, and the workforce achieved relatively strong growth of 15 per cent over the last decade (1.4 per cent per annum).
- The workforce of carpenters aged under 25 grew by 12 percent over the decade. While this was reasonably strong growth it still resulted in the under 25 cohort accounting for a smaller share of the workforce.
- Carpentry apprentices account for a larger share of the workforce than in any of the other key construction trades.

- Migrant carpenters account for the largest number of Temporary Skill Shortage visa holders in the key construction trades (862), however this is a very small share of the carpentry workforce.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 22,020 carpenters.

Composition of Workforce: Plumber

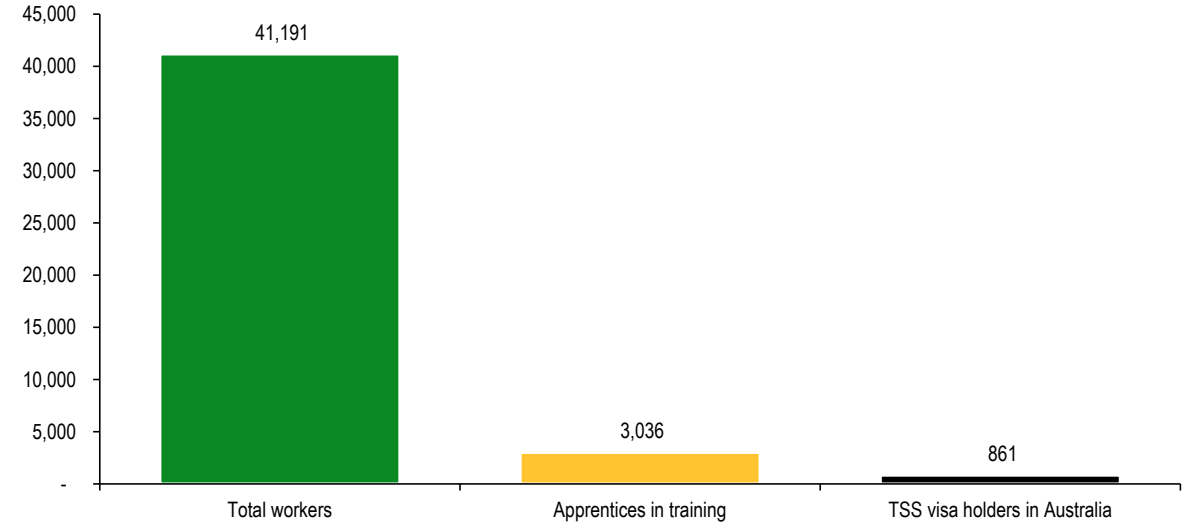
Source: HIA, ABS Census, NCVER, Depatment of Home Affairs



- The workforce of plumbers achieved the second strongest growth between the 2011 and 2021 census, equivalent to annual growth of 1.8 per cent.
- The workforce of plumbers aged under 25 recoded growth of 17 per cent over the 2011-2021 decade, which was the strongest growth across the 12 key trades.
- Apprentice plumbers account for the third highest share of the occupation's workforce, ranking behind carpentry and electricians.
- There are only 457 migrant plumbers on Temporary Skill Shortage visas in Australia, which is a very small share of the workforce.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 11,899 plumbers.

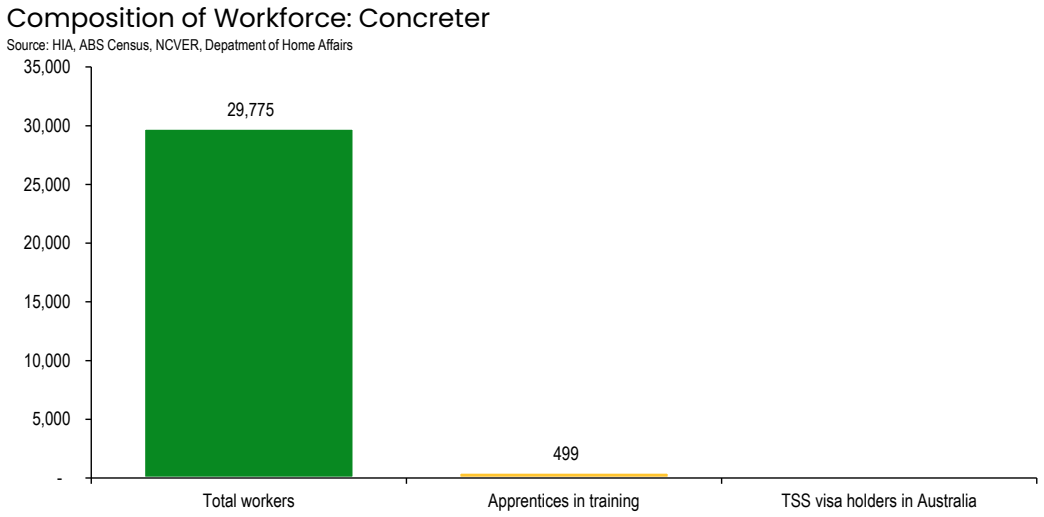
Composition of Workforce: Painter

Source: HIA, ABS Census, NCVER, Depatment of Home Affairs

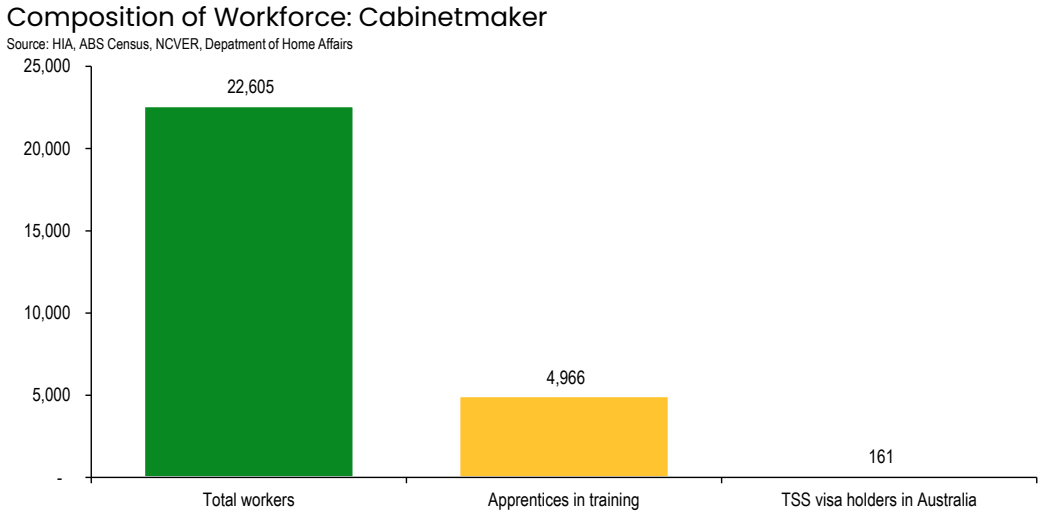


- The workforce of painters grew modestly over the decade between the 2011 and 2021 censuses, with 3 per cent growth over the decade which is equivalent to only 0.4 per cent per year.

- The number of painters aged under 25 declined by 8 per cent over the 2011-2021 decade, and accordingly the younger cohort account for a smaller share of the occupation's workforce.
- There are very few apprentices undertaking apprenticeships in painting trades. Painting apprentices account for the smallest share of the occupation's workforce when compared to the other key trades.
- Painters on Temporary Skill Shortage visas account for the second largest share of the workforce when compared to other trades.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 8,032 painters.



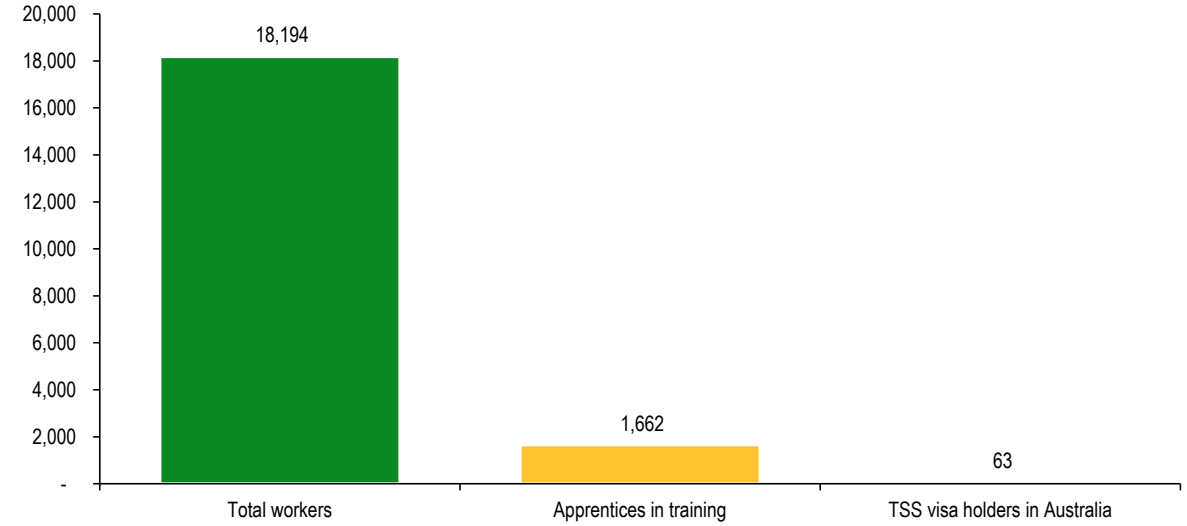
- The workforce of concreters recorded reasonably strong growth of 12 per cent between 2011 and 2021. This included the under 25 cohort growing by 10 per cent.
- The concreting occupation is unique amongst the other key trades in this report as it is not included in the ANZSCO classification system at skill level three alongside other key trades, rather it is included at skill level five alongside labouring occupations. This classification impacts arrangements for funding of training and eligibility for skilled migration.
- Given that concreting is not classified as a trade occupation there are very few apprentices undertaking a qualification specific to concreting. It is likely that apprentices working in concreting are undertaking the carpentry qualification which includes training in formwork.
- The concreting occupation has not been on the list of occupations eligible for Temporary Skill Shortage visas.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 3,126 concreters.



- The workforce of cabinetmakers grew modestly over decade from 2011 to 2021, with growth of 5 per cent across the decade equivalent to 0.5 per cent per year. However, the number of workers aged under 25 in this occupation declined by 11 per cent during this ten year period.
- The nature of a cabinetmaking apprenticeship differs to most other occupations covered in this report as much of the work is undertaken in a manufacturing environment rather than onsite.
- Relative to the size of the workforce of cabinetmakers, the number of apprentices in training is reasonably strong. Apprentice participation in cabinetmaking ranks fourth behind carpentry, electricians and plumbers.
- The number of migrant workers on Temporary Skill Shortage visas in this occupation relative to the size the workforce is above the average for the trades covered in this report.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 4,408 cabinetmakers.

Composition of Workforce: Plasterer

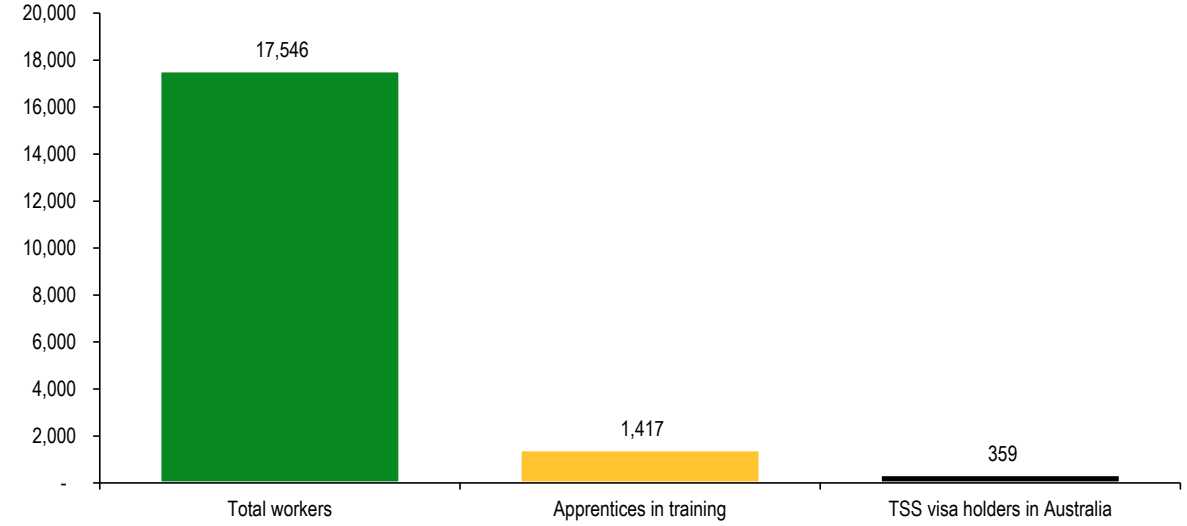
Source: HIA, ABS Census, NCVER, Depatment of Home Affairs



- The workforce of plasterers declined by 11 per cent between the 2011 and 2021 census. Critically, this decline included a 40 per cent decline in the number of plasterers aged under 25.
- The number of apprentices in training is very low relative to the size of the workforce in this occupation.
- The number of Temporary Skill Shortage visa holders working as plasterers is very low relative to the size of the workforce in this occupation.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 3,584 plasterers.

Composition of Workforce: Tiler

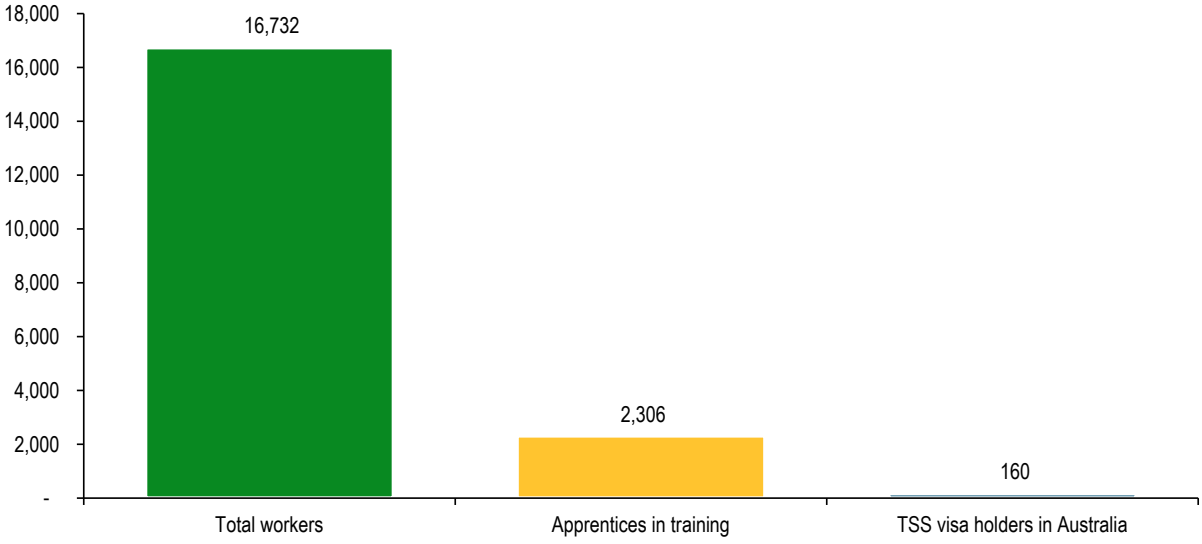
Source: HIA, ABS Census, NCVER, Depatment of Home Affairs



- The workforce of tilers recorded the strongest growth between 2011 and 2021 when compared to the other trade occupations covered in this report. This growth was driven by a particularly large increase in migrants working in this occupation, of which only a small share are TSS visa holders.
- The workforce of tilers grew by 21 per cent over the decade to 2021, equivalent to annual growth of 1.9 per cent.
- Despite strong growth in the workforce overall, the number of workers aged under 25 declined by 13 per cent over this 10 year period.
- The number of apprentice tilers is very low compared to the size of the workforce, ranking as the second lowest share when compared to the other key occupations.
- While still a small percentage of the workforce, the number of tilers on TSS visas is relatively high compared to the other trade occupations in this report.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 3,421 tilers.

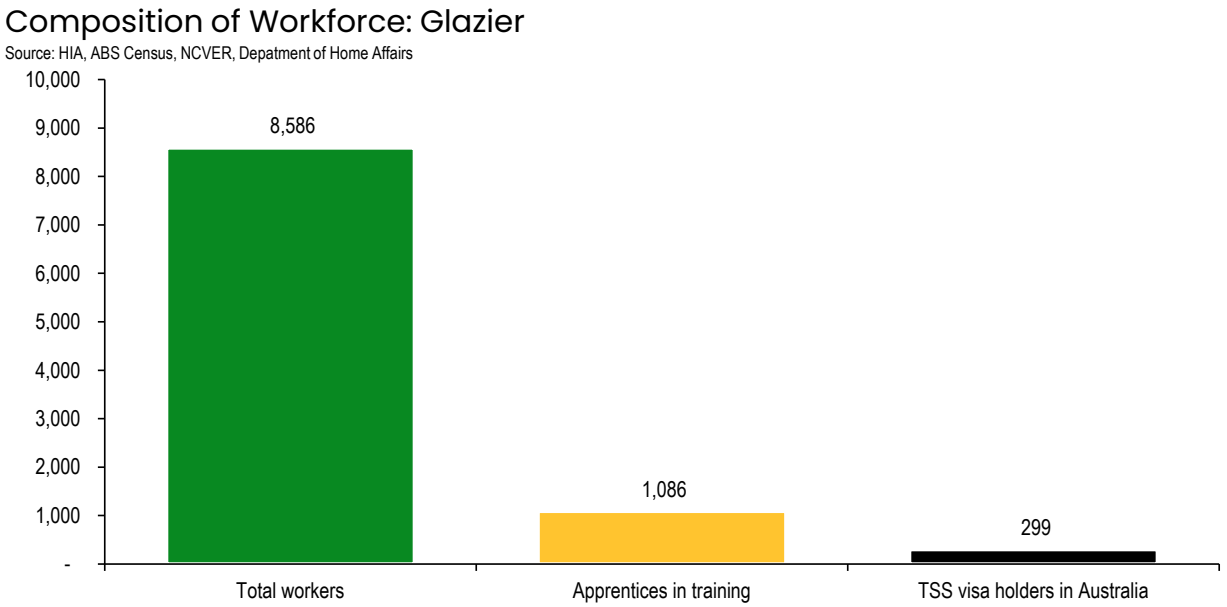
Composition of Workforce: Bricklayer

Source: HIA, ABS Census, NCVER, Depatment of Home Affairs

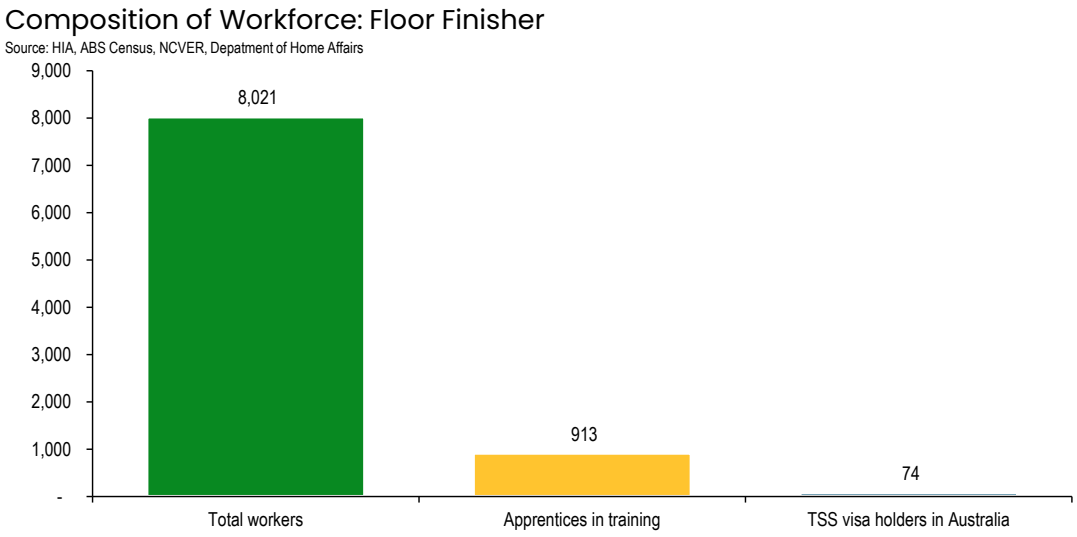


- The workforce of bricklayers recorded a decline of 13 per cent between 2011 and 2021, the largest decline of all occupations in this report.
- It is concerning that the decline in the workforce was driven by a substantial 34 per cent decline in the number of bricklayers aged under 25.

- The absence of younger workers has driven up the average age of the bricklayer workforce. The share of bricklayers aged over 50 increased from 25 per cent in 2011 to 28 per cent in 2021.
- There are a small number of migrant bricklayers in Australia on TSS visas. The number of TSS visa holders relative to the size of the local bricklayer workforce is slightly higher than some of the other occupations in this report.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 4,518 bricklayers.

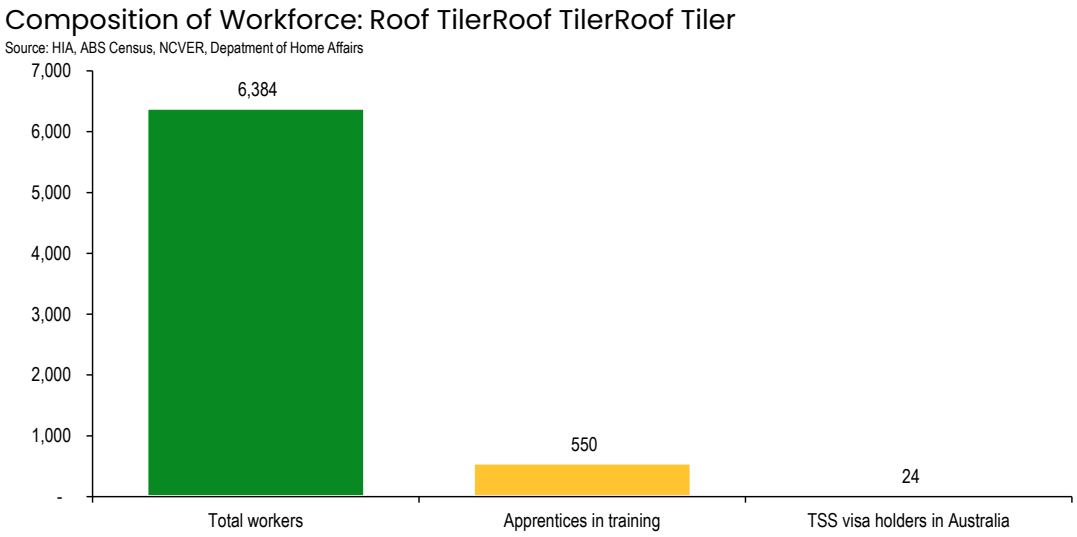


- Relative to the size of the domestic workforce of glaziers, this occupation has the largest share of TSS visa holders.
- The workforce of glaziers grew modestly over the decade to 2021, with an increase of 5 per cent over this period.
- Despite growth in the total workforce of glaziers, the number of workers aged under 25 declined by 16 per cent of this 10 year period.
- The share of the workforce aged under 25 declined from 20 per cent in 2011 to just 15 per cent in 2021.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 1,339 glaziers.



- Between 2011 and 2021 the number of floor finishers declined by 8 per cent, this was the third poorest performing occupation amongst the twelve trades covered in this report.

- The decline in the workforce over the decade to 2021 included a 22 per cent decline in the workforce aged under 25.
- There are a small number of migrant workers on TSS visas working as floor finishers, which relative to the size of the workforce is on par with the average across the trades covered in this report.
- Relative to the size of the floor finisher workforce, the number of apprentices in training is quite small.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 1,805 floor finishers.



- While the workforce of roof tilers is small in comparison to the other trade occupations on this list, the vast majority of work done by this workforce is in residential building.
- The workforce of roof tilers grew by just 2 per cent over the decade to 2021, equivalent to growth of just 0.2 per cent per annum.
- The workforce of roof tilers has the youngest age profile across the occupations covered in this report with 28.3 per cent of workers aged under 25 (narrowly ahead of carpenters with 27.7). The physical nature of work and agility required to perform this occupation results in workers leaving at a younger age than other trades.
- Despite the younger age profile, the workforce of roof tilers aged under 25 declined very slightly (-0.2 per cent) over the ten year period to 2021.
- Relative to the size of the workforce of roof tilers in training is small, ranking fourth smallest of the trades covered by this report.
- There are very few skilled migrants with TSS visas working as roof tilers.
- This report identifies that to achieve the Housing Accord target there needs to be an additional 1,915 roof tilers.

About the Housing Industry Association

The Housing Industry Association (HIA) is Australia's only national industry association representing the interests of the residential building industry.

As the voice of the residential building industry, HIA represents a membership of 60,000 across Australia. Our members are involved in delivering on average more than 170,000 new homes each year through the construction of new housing estates, detached homes, low & medium-density housing developments, apartment buildings and completing renovations on Australia's 10 million existing homes.

HIA members comprise a diverse mix of companies, including large builders delivering thousands of new homes a year through to small and medium home builders delivering one or more custom built homes a year, building product manufacturers and suppliers, and businesses providing professional and allied services.

The residential building industry is one of Australia's most dynamic, innovative and efficient service industries and is a key driver of the Australian economy. The residential building industry has a wide reach into the manufacturing, supply and retail sectors.

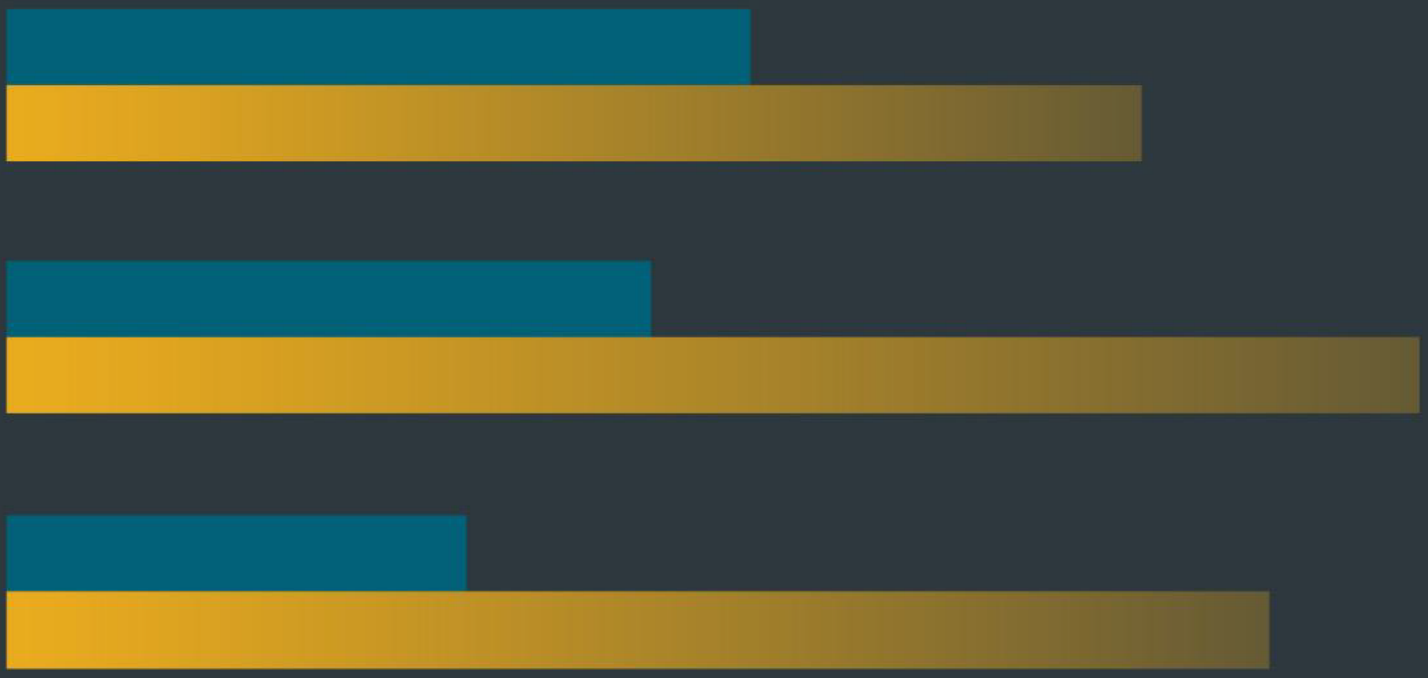
Contributing over $100 billion per annum and accounting for 5.8 per cent of Gross Domestic Product, the residential building industry employs over one million people, representing tens of thousands of small businesses and over 200,000 sub-contractors reliant on the industry for their livelihood.

The association operates offices in 22 centres around the nation providing a wide range of advocacy, business support services and products for members, including legal, technical, planning, workplace health and safety and business compliance advice, along with training services, contracts and stationery, industry awards for excellence, and member only discounts on goods and services.

You're in good hands

If you would like to know more about HIA
contact us on 1300 650 620 or visit hia.com.au

Appendix 10 – HIA's Stamp Duty Watch Report



HIA Stamp Duty Watch

The latest developments in stamp duty on home purchases

Winter 2025

FOREIGN CAPITAL CENTRAL TO BUILDING 1.2 MILLION HOMES

This edition of HIA Stamp Duty Watch brings together two perspectives on Australia's housing crisis. The first is a special focus on the role of foreign capital in housing supply, highlighting how contradictory government policies have constrained investment just as housing demand has surged. The second revisits the core issue of stamp duty's rising burden on Australian households, updating key figures on cost, rate, and impact.

Part 1: Foreign Capital and Australia's Housing Shortfall

The report examinations the harmful disconnect between federal migration policy and state-level taxation of foreign capital. While the Australian Government has increased net overseas migration, state governments have simultaneously escalated stamp duty and land tax surcharges on foreign investors, particularly in New South Wales, Victoria, and Queensland.

Since 2015, these tax surcharges have substantially raised the cost of investing in new home construction, particularly apartments and greenfield estates, with foreign investors in NSW now paying over $160,000 in stamp duty, land tax and foreign investment fees on a typical new dwelling. These measures have halved multi-unit housing commencements and severely weakened the supply pipeline.

The report stresses a crucial distinction between foreign residents, who are temporary migrants that occupy housing, versus foreign investors, who are institutions that build housing but do not reside in Australia. The failure to distinguish between these groups has led to policy choices that reduce housing supply without a corresponding reduction in demand. This is a core contradiction at the heart of Australia's affordability crisis.

The report draws on international guidance, including IMF recommendations, to argue that Australia's surcharges are no longer justified. They were introduced during a period of rapid capital inflows that has since passed and now act as a deterrent to institutional investment. A suite of policy reforms is recommended, including abolishing these surcharges, aligning migration and housing policy, and restoring investor confidence through regulatory certainty.

Part 2: The Stamp Duty Burden in 2025

The second half of the report updates HIA's long-standing analysis of stamp duty's cost to homebuyers. In May 2025, the typical stamp duty bill hit a record $31,210 nationally, an increase of 55 per cent since 2019. Queensland experienced the fastest growth at nearly 190 per cent, driven by strong home price increases that pushed buyers into higher tax brackets.

Victoria continues to impose the highest duty in dollar terms at $38,810, while also charging the most punitive rate, which is 5.3 per cent of a home's value. At the other end, Queensland and the ACT levy the lowest proportional burdens at 2.7 and 2.8 per cent respectively.

The report highlights how stamp duty inflates mortgage costs, especially during periods of rising interest rates. In 2025, the additional loan repayments needed to cover stamp duty total $70,000 over the life of a typical loan, nearly double the burden in 2019. These added costs force buyers to reduce their housing aspirations, sacrifice location and amenity, or take on more debt.

Taken together, both parts of the report argue that Australia's tax system actively undermines the goal of increasing housing supply. It does so both by penalising investors who build and by overburdening buyers who purchase.

The dollar cost of Stamp Duty

Nationally, the typical stamp duty bill for the median priced property in May 2025 was $31,210, based on an average across the states and territories, weighted by transaction volumes. The national stamp duty bill surpassed $30,000 for the first time in 2024.

Stamp duty bills have increased dramatically since 2019, up by 55.4 per cent. This is roughly consistent with the 48.1 per cent increase in dwelling prices over the same period, on the back of structural changes in housing demand, home building constraints, record population growth, recovering household incomes and now falling interest rates.

Queensland has seen, by far, the fastest rate of increase in stamp duty bills, up almost three-fold (+188.7 per cent) since 2019 to $21,220, now very close to losing its status as the lowest-stamp duty state in the country. This reflects the significant impact of higher dwelling prices pushing people into higher stamp duty tax brackets over time, with Queensland now having the third highest dwelling prices in the country behind New South Wales and the Australian Capital Territory.

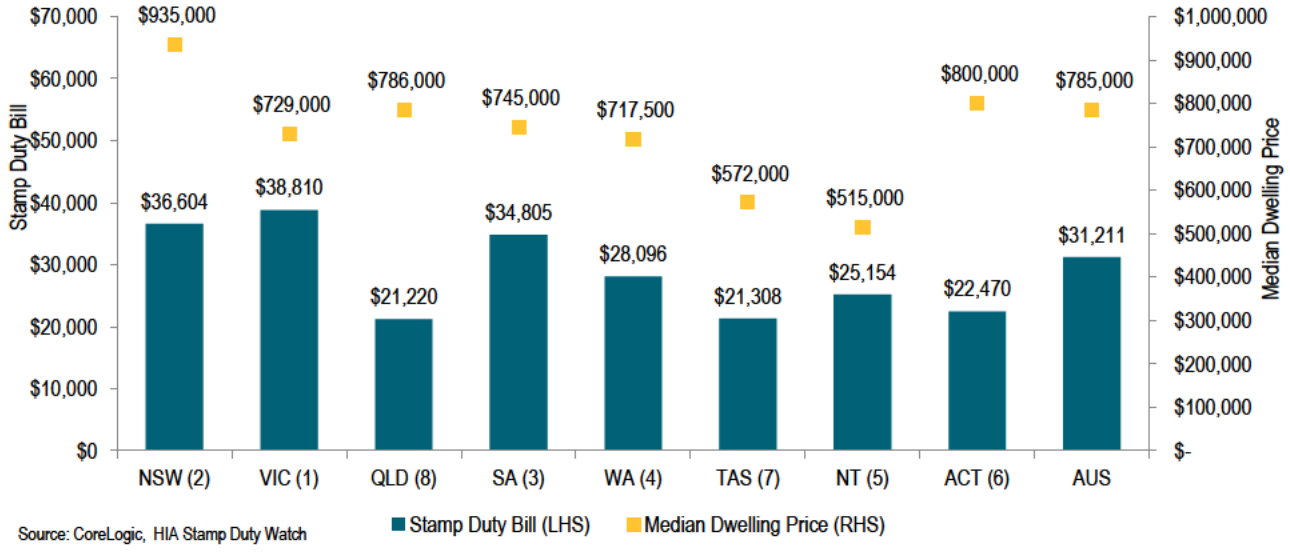
South Australia and Western Australia have seen their stamp duty bills double since 2019 (+108.7 per cent to $34,805 and +99.8 per cent to $28,100 respectively), with South Australia's bill in particular rapidly approaching that of Victoria ($38,810) and New South Wales ($36,600). Dwelling prices in South Australia have even overtaken those in Victoria, with Western Australia not far behind, while New South Wales remains by far the most unaffordable market. Victoria, however, continues to have the highest stamp duty bill in the nation, as a result of the highest rate of the tax.

The Australian Capital Territory's bill ($22,470) has fallen in the last few years as part of its transition away from stamp duty and may soon boast the lowest stamp duty bill in the country despite the second highest dwelling prices in the country.

Tasmania has very nearly the lowest stamp duty bill in the country, at $21,310 and relatively stable over the last few years. The stamp duty bill in the Northern Territory has picked up again on the back of resurgent dwelling prices, reaching a near record high of $25,150.

In each state, stamp duty is estimated for the 'median buyer' of the 'median dwelling'. It is assumed the median buyer is an owner-occupier, is not a first homebuyer and is buying an established dwelling.

Stamp Duty Bill and Median Prices for Owner Occupiers (Non-FHB), May 2025

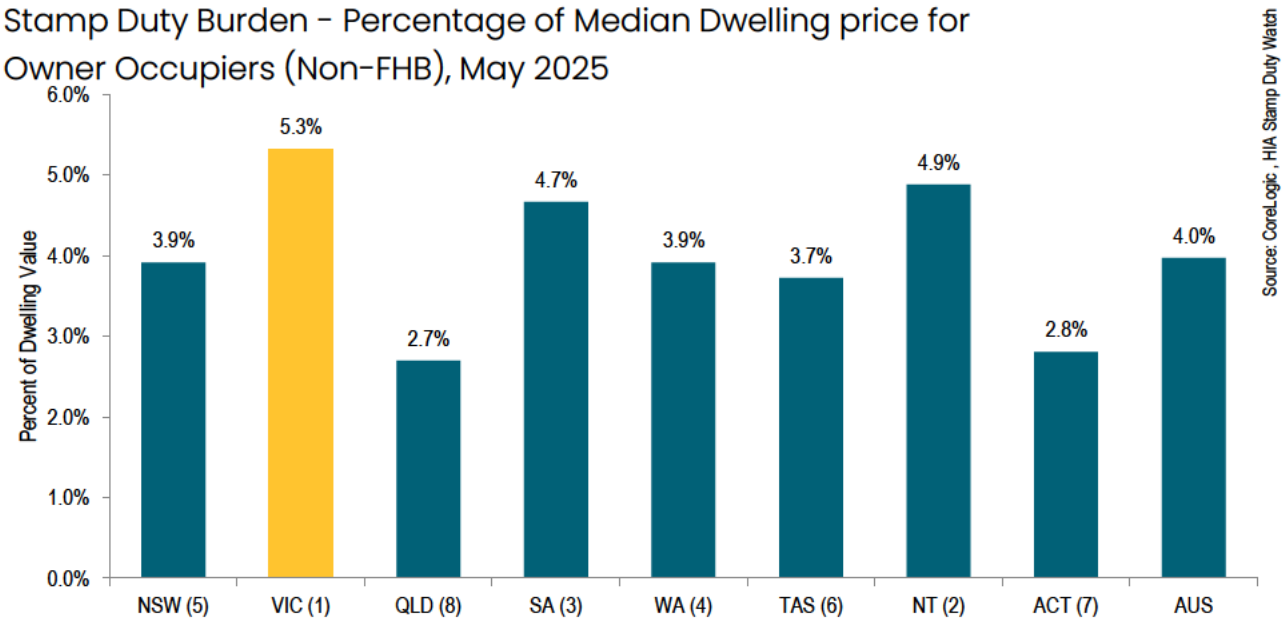


Source: CoreLogic, HIA Stamp Duty Watch

The Rate of Stamp Duty

The chart below compares the size of the typical stamp duty bill relative to the median dwelling price across the states and territories. This allows for a better comparison between the jurisdictions.

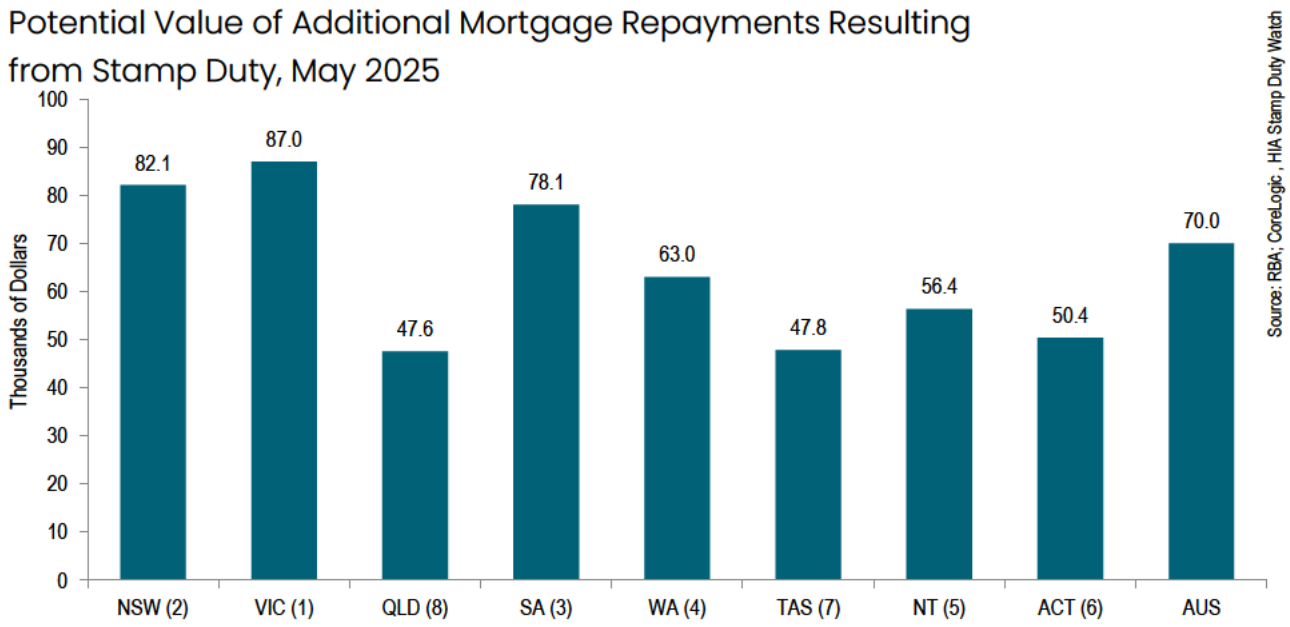
- The rate at which stamp duty is charged is most punitive in Victoria. The stamp duty is equivalent to 5.3 per cent of the property's value in Victoria.
- The Northern Territory and South Australia have the second and third most punitive rates of stamp duty: 4.9 per cent and 4.7 per cent respectively.
- New South Wales, Western Australia and Tasmania all have rates just under the national average.
- Queensland and the Australian Capital Territory have the least punitive rates of duty. Stamp duty on the median property is equivalent to 2.7 and 2.8 per cent of the median dwelling price, respectively.



The impact on households

The chart below summarises the total value of additional home loan payments a homebuyer would incur, because of borrowing more to cover stamp duty. It assumes a 30-year home loan, and an interest rate of 6.55 per cent.[1]

- This value across Australia amounted to $70,000, compared to $36,260 at the same point in 2019. In addition to surging dwelling prices, this increase was driven by the RBA, with the assumed interest rate increasing from 4.68 per cent to 7.07 per cent over the same period, only falling to the latest 6.55 per cent with this year's two rate cuts from the RBA.
- Victoria, New South Wales and South Australia are the standout states with respect to this burden, at $87,000, $82,100 and $78,100, respectively.
- If stamp duty were not levied, homebuyers would have the choice of buying the same home with less debt, as they could put down a larger deposit. Therefore, stamp duty potentially causes homebuyers to take on more debt. Put another way: some homebuyers are likely borrowing more to cover the cost of stamp duty.
- Where homebuyers are not borrowing more to cover the cost of stamp duty, this means they are purchasing a less expensive home than they could if stamp duty was not levied. These homebuyers are effectively covering the cost of stamp duty by forgoing a back garden, reducing the space of their home environment, increasing their commute to work, and/or reducing their proximity to friends and family.



[1] RBA statistics on lending rates for housing loan

SPECIAL TOPIC

A central driver of deteriorating affordability in Australia is the imposition of restrictions on capital investment in home building in the face of rapid population growth.

The lack of coordination across tiers of governments has seen the Australian government increase demand for housing from migration, while at the same time state governments have sought to penalise migrants and institutions from bringing capital to build new homes.

From 2015, state governments taxed the flow of foreign capital destined to build new homes, predominantly apartments in capital cities. These restrictions included punitive rates of stamp duty and land tax surcharges and were introduced to raise revenue and to signal concern over growing student and migrant populations who were perceived to be increasing housing demand. These taxes on capital were increased further in New South Wales and Queensland in 2024.

At the same time, the Australian government increased net overseas migration, including international students and permanent and long term arrivals. This further increased demand for new housing, particularly for inner-city apartments.

These policy settings which penalise supply-side investment while simultaneously stimulating demand, have created a structural imbalance at the core of Australia's housing crisis. This is one of the most damaging policy contradictions in the modern history of housing in Australia.

This report is structured around four foundational facts:

1. **Foreign investors have been prohibited from purchasing established homes in Australia since 1975, with good reason.**
2. **Foreign capital is essential for increasing the supply of new homes in Australia.**
3. **Demand for homes is created when a visa is issued. The decision by an international student to either rent or buy a home does not affect total demand for housing.**
4. **When you tax something, you get less of it.**

There are also several additional unintended consequences arising from this mismatch between state and Australian government policies.

Regulatory and Tax Measures

Since 2015 state governments have introduced increasingly punitive stamp duty and land tax surcharges on foreign investors. While framed as demand-side controls, these measures fundamentally misunderstood the economic role of foreign capital in housing supply.

Examples of State Foreigner Surcharges:

- **Victoria** was the first to introduce foreign investor surcharges, including a 3 per cent stamp duty surcharge in 2015, which has progressively been increased to 8 per cent, and a land tax surcharge introduced in 2016 at 0.5 per cent, progressively increased to 4 per cent.
- **New South Wales**: introduced a 4 per cent stamp duty surcharge in 2016, progressively increased to 9 per cent by 2024; and a land tax surcharge increased in 2016 at 0.75 per cent, progressively increased to 5 per cent.
- **Queensland**: Stamp duty surcharge introduced in 2016 at 3 per cent, progressively increased to 8 per cent; land tax surcharge introduced in 2017 at 1.5 per cent, progressively increased to 3 per cent.
- **South Australia and Western Australia** have stamp duty surcharge currently sitting at 7 per cent, introduced in 2017 and 2019 respectively.
- **Tasmania** has a stamp duty surcharge, introduced in 2018 at 3 per cent, progressively increased to 8 per cent; and a land tax surcharge introduced in 2022 at 2 per cent.
- **The Australian Capital Territory** has a land tax surcharge of 0.75 per cent, introduced in 2018.

Adding in fees from the Foreign Investment Review Board, in practical terms, these surcharges translate into

- **Over $160,000** in taxes and fees on a typical new dwelling in New South Wales
- **Over $130,000** in Victoria
- **Compared to $20,000-$40,000** for domestic investors on the same properties

The impact has been stark: **Multi-unit housing commencements** have halved since 2016. There are other factors impacting this outcome. But foreign capital is highly liquid and it has moved to other, more accepting economies.

These surcharges removed a crucial financing source for new home building, without any impact on demand for housing.

Misguided Policy Focus

Australian housing policy debates often confuse foreign residents (temporary visa holders) with foreign investors. The former includes international students, backpackers and temporary skilled workers, who are individuals that occupy housing in Australia. The latter, foreign institutional investors, finance the construction of new housing, especially apartment towers, but do not reside in Australia.

Temporary residents' housing choices are already highly restricted by the Australian government.

- They can purchase **only one** established dwelling as a principal residence
- They must **sell the dwelling** upon visa expiry or departure
- They must pay **FIRB fees** (at least $14,700 per property)
- They incur additional punitive rates of stamp duty.

Foreign investors, by contrast:

- Are prohibited from purchasing established dwellings
- Can only purchase **new** dwellings or **vacant land for construction**
- Cannot rent, live in, or buy established dwellings.

A key point to remember is that **demand for homes arises when a visa is issued, not when a person chooses to rent or buy**.

Whether an international student rents or buys, their presence adds one household to demand. Banning foreign investment in housing does not stop this demand from growing; it only limits the ability to supply new dwellings. More importantly, institutional investors do not add to demand for homes, they only increase the supply.

"Foreigners Are Taking All the Homes"

During the 2025 Federal Election campaign, both major parties pledged to ban foreign investors from buying Australian homes. The problem with this policy statement is that foreign investors have been prohibited from buying established homes for more than 40 years. A second prohibition, though it sounds appealing, is pointless as it shifts the focus of policymakers away from the harm they are causing to housing supply.

Foreign investors have been prohibited from buying established dwellings since the **Foreign Acquisitions and Takeovers Act 1975** was introduced. This longstanding policy is based on a sound principle: Australia's housing stock should serve Australian residents. As Prime Minister Gough Whitlam said during the 1974 Federal Election campaign:

> *"The national estate belongs to all Australians … it must be preserved for the benefit of all Australians."*

Since Whitlam, foreign capital has only ever been permitted to fund **new construction**. Temporary visa holders, such as students, may buy an existing dwelling only to live in it and must sell when they leave Australia. **The Foreign Investment Review Board** reports that fewer than 2,000 established homes are purchased by foreigners annually, out of over **500,000** transactions nationally. These purchases are matched by equivalent sales from departing foreign residents.

The Unintended Consequences of Poor Policy Design

Foreign institutional capital, which is supplied by global banks, pension funds, and property developers, is essential to housing supply, especially large-scale apartment projects and master-planned greenfield estates.

These actors:

- Do **not live** in the dwellings they fund or build
- Do **not increase** local demand
- Would **finance** (and have previously financed) tens of thousands of homes for Australian buyers and renters every year if not for punitive tax surcharges

Their contributions include:

- **Apartment Construction:** Most towers cannot be financed without 100 per cent pre-sales
- **Greenfield Development:** International investors have the capital and expertise to work with local councils to resolve planning, rezoning, and infrastructure delivery, which takes decades
- **Counter-Cyclical Investment**: Foreign capital can provide continuity during downturns when local investors retreat

Productivity Gains

One in ten detached homes in Australia is built by a company with an overseas parent. These global builders bring advanced technologies, efficiencies, and capital reserves that improve sector productivity.

Current policies risk deterring these businesses from investing in Australia. Increased fees and regulatory uncertainty are already driving capital elsewhere.

There is a risk that continuing to penalise foreign investment in home building will ward off these potential productivity .

IMF Commentary

The **International Monetary Fund (IMF)** has weighed in on Australia's use of foreign investor surcharges. Its guidance notes that:

- Capital flow measures may be used **temporarily** during periods of rapid capital inflows
- They should be phased out once market pressure subsides
- They must not replace long-term **supply-side reform**
- They should **not discriminate** between domestic and foreign investors

Australia fails on each count:

- The foreign investment surge ended (collapsed) years ago and yet the surcharges persist
- Supply constraints remain unresolved
- The surcharges explicitly discriminate between domestic and foreign investors

The IMF specifically criticised **South Australia's** foreign investor surcharge for being **pre-emptive**, as it was introduced before any demand surge.

The IMF instead recommends:

- Planning reform
- Infrastructure investment
- Nationally consistent housing targets
- Incentives to align state policy with national goals

Policy Recommendations

1. **Abolish Stamp Duty and Land Tax Surcharges on Foreign Investors**
    - Prioritise reform in New South Wales, Victoria and Queensland
2. **Adopt Tax-Neutral Investment Rules**
    - Use tools that do not discriminate between foreign and domestic buyers
3. **Attract Foreign Capital in Build-to-Rent and Greenfield Development**
    - Incentivise institutional investment in housing via FIRB fast-tracking
4. **Reset National Housing Policy**
    - Align migration targets, visa issuance, and housing supply
5. **Review Effectiveness of Investor Surcharges Annually**
    - Report on revenue and supply outcomes
6. **Restore Long-Term Investor Confidence**
    - Provide regulatory stability and transparent investment guidelines

Conclusion

Australia cannot build 1.2 million new homes in five years while taxing the capital that is necessary to build those homes. Foreign capital has been miscast as a threat, when it is a lifeline to housing supply. Foreign capital, as opposed to international students, increases housing supply without any increase in demand.

The combination of surging migration and stagnant home building that is constrained by poor policy design has left Australia in a housing deficit. Reversing the foreign capital exodus is not only a rational economic choice, it is also essential to delivering the homes Australians need.

You're in good hands

If you would like to know more about HIA Economics
contact us on 02 6245 1393 or visit hia.com.au/economics