

# What might reduce delays in the completion of suburban houses?

**WORK QUALITY ISSUES AND THE INABILITY OF BUILDERS TO HANDLE INCREASINGLY COMPLEX SUBCONTRACTING ARRANGEMENTS LEAD TO BUILDING DELAYS FOR SUBURBAN HOUSES. BETTER TRAINING AND QUALITY CONTROL AND USING HOUSING ASSISTANCE TO LEVERAGE INNOVATION MIGHT HELP REDUCE DELAYS.**

## KEY POINTS

- Housing affordability is affected by the efficiency of new housing production. Increased production can be affected by delays in completion of new housing during cycles of increased demand.
- The housing production sector is characterised by a high degree of process specialisation. In recent years there has been greater scope for customisation, leading to a diversity of product offerings. This has led to an increase in the number of subcontracts per dwelling, increasing the overall complexity and potential for delay.
- The quality of work is an issue. When building supervisors refuse to pass work at the three statutory inspections, the necessary rework results in delays that are transmitted through the system.
- Modelling shows that construction management scheduling is subject to inefficiencies, regardless of how sophisticated the scheduling system is. The effects of time delays are magnified when the builder is managing a portfolio of houses at one time.

*This bulletin is based on research conducted by **Professor Tony Dalton, Professor Ralph Horne, Dr Joe Hurley, Dr Ehsan Gharaie and Professor Ron Wakefield** at the AHURI Research Centre—RMIT University. The project examined the extent to which the labour market imposed constraints on the residential construction industry.*

- Capital-intensive off-site production is unlikely to replace labour-intensive on-site production. Nevertheless, policy-makers might look at ways that current housing programs (like the first home ownership grant) might leverage innovation to reduce completion times, and explore ways that wasteful rework might be reduced through better training, technology and practices that increase quality control.

## CONTEXT

A key issue facing Australian households is housing affordability, which is linked to housing supply. The level of housing production in Australia, measured as a share of national income, is broadly in line with that of other industrialised countries. This project examined how issues relating to the structure and conduct of the industry might constrain increasing housing production.

## RESEARCH METHOD

The research comprised a literature review; interviews with builders, trades people and other industry participants; and focus groups with experienced residential builders and senior industry participants.

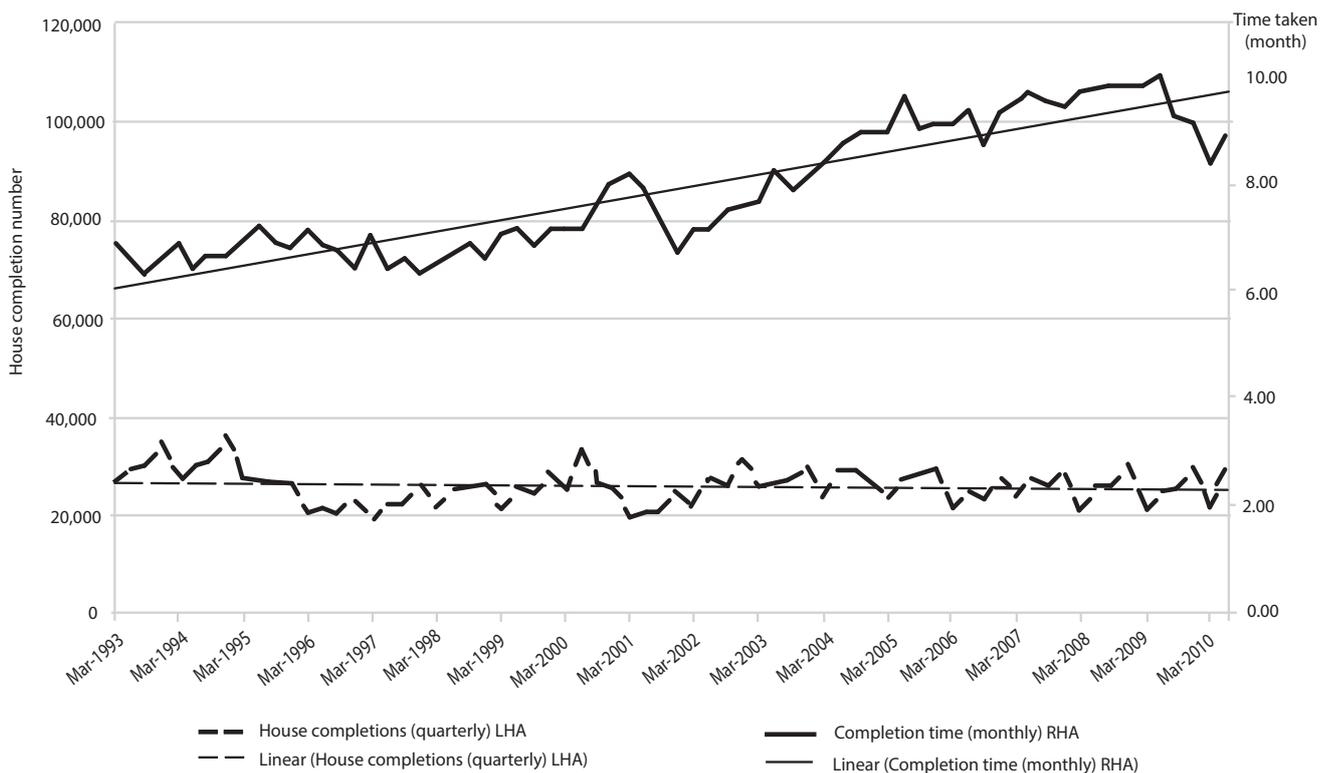
Modelling was used to simulate aspects of the housing production system used by volume builders to examine issues of production management and the effects of periodic resource constraints.

## KEY FINDINGS

### *Trend for longer completion times*

During the period 1993–2010 there was a marginal decline in quarterly completions of houses from approximately 27 000 to 25 000. During this same period, the average completion time has increased from approximately six to ten months (Figure 1). One factor that partially helps to explain this is the increase in house size, but this doesn't fully explain the increase in building time.

**FIGURE 1: HOUSE COMPLETION NUMBERS AND TIME TAKEN 1993–2010**



## ***Industry contracting***

The Australian house building industry is dominated by small businesses which are linked through an extensive web of contracting arrangements. Typically there will be between 90–100 contracts for each house.

A building company supervisor sequences the contractors and subcontractors who provide products and services on-site and typically supervises between 10 and 15 houses at a time. These houses will be in different locations within a region and at different stages of construction. Subcontracting arrangements can slow down the process of building houses if one of the parties is slow to deliver.

## ***Causes of longer construction times***

Three features of contemporary suburban houses have contributed to the increase in build times:

- House production has become more complex through design, especially of facades, customisation and growth in the total number of contracts. This has resulted in extended and more complicated schedules.
- The contract system is extensive, and timely completion depends on accurate scheduling by supervisors and on-time on-site supply of labour and materials. Delays in one or a few contracts are transmitted through the production process. Some supervisors struggle with this coordination work.
- The quality of work is an issue recognised by many builders. When building supervisors refuse to pass work, the necessary rework results in delays that are transmitted through the system.

## ***The scheduling process is inefficient***

Modelling shows that construction management scheduling is subject to inefficiencies regardless of how rigorous or sophisticated the scheduling system is. Scheduling practices are limited in terms of revising building schedules when there are changes in project delivery. As such, there are questions about the effectiveness of such systems and the costs for the companies and purchasers.

Modelling also revealed the effects of time delays due to material or labour delays. These effects are magnified with the building of a portfolio of houses. At times of relatively high demand, the systems used are unable to cope, resulting in extensive delays.

## **POLICY IMPLICATIONS**

Often policy discussion about the future of suburban house building has simply assumed that movement towards off-site manufacturing is a way of dealing with scheduling delays and inefficiencies. However, due to the structural features of a highly cyclical industry, the prospects for systematic movement from labour-intensive on-site production to capital-intensive off-site production are limited. The impetus for a widespread uptake of manufactured product occurs in cyclical phases and wanes when demand reduces.

Two modest policy initiatives are proposed:

- Look at ways training and quality management systems can be introduced to reduce the rate of re-work.
- Review programs designed to stimulate demand for new housing, including first home owner grants and 'affordable' housing programs such as National Rental Affordability Scheme (NRAS), and use them to encourage product, process and organisational innovation leading to reductions in completion times.

## **FURTHER INFORMATION**

This bulletin is based on AHURI project 30643, *Australian suburban house building*.

Reports from this project can be found on the AHURI website: [www.ahuri.edu.au](http://www.ahuri.edu.au) or by contacting AHURI Limited on +61 3 9660 2300.

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