

[<< go to Part 1: Introduction](#)

## **BUILDING CONSTRUCTION TECHNOLOGY ROADMAP**

Part 2:

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Issues and Influences

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## PART 2:

# Issues and Influences

### Introduction

The home building industry in Australia has traditionally been slow to adopt new methods of construction – the use of fired clay bricks rendered with cement mortar has been a method of construction for hundreds of years. Little has changed in the last 20 years in this regard and it could be assumed that little will change in the next 20 years.

However, as this study shows, there are some rapidly developing issues and influences in Australia which could bring about changes in housing, in the way it is built, in the way it is serviced and managed, in the way the home may be used, and what this means for the built-in features and appliances.

### Social Issues and Influences

There is a wide range of social issues and influences affecting the housing construction industry. Among them:


- The Australian population is aging and the birthrate is declining.
- Marriage is declining and happening later in life, and divorce rates are high and stable.
- Women have entered the workforce in increasing numbers and the number of double income families has risen.
- People are working longer hours and have less leisure time.
- There is an increasing number of casual jobs, with more contracting out and more self-employed amongst the workforce.
- Consumerism is high and credit card debt even higher.
- There is a perception of reduced safety in the wider community, with children and the elderly seen as being particularly at risk. Homes are seen as more vulnerable to break-ins than previously.
- A combination of increasing costs and falling amenity in large cities is driving the shift to quieter, more congenial regional centres for those who can find employment outside of the cities. Despite this, the cities continue to grow, placing increasing pressure on infrastructure.
- With ever-increasing emphasis on higher education and a decline in apprenticeships, there is an emerging shortage of skilled tradesmen.

The influence these factors might have on the style and content of dwellings over the next 20 years could include:

- An increase in the number of low-occupancy, rented, inner city high rise units.
- More single occupancy of dwellings as the occupancy rate per dwelling is dropping.
- Smaller kitchens in new inner-city high-rise home units because of the increase in eating out and home delivery of meals.
- More built-in time saving devices.
- An increased need for aging home owners to be able to reconfigure their dwelling as their needs change. For example, they may need homes that can be maintained more easily, homes with easier access, and increasing connection to the wider community. The aging population may remain longer in their homes rather than move into institutions, and thus require new means of health monitoring and treatment.
- Casual contract workers and those working from home will require increased connectivity and access to cheap broadband.

### Environmental Issues and Influences

- There is heightened community awareness of environmental considerations, an awareness that is promoted further by teaching in schools, with the result that emerging generations are more conscious of sustainability than their predecessors. However, there could be future conflict as rampant consumerism at all levels of society clashes with heightened conservation awareness.
- This study has taken place at a time of quite severe drought and hence there is greater community focus on water conservation. This focus has been particularly enhanced by government water saving regulations, some of which have a direct impact on house design and construction.
- Energy conservation is also an issue – environmentally because of power station greenhouse gas emissions and economically because of the cost of new power infrastructure. Again, new government regulations affect home design in both Sydney and Melbourne.
- Of course, different parts of Australia have different issues. Perth and Adelaide have a chronic long term water shortage, whereas Brisbane, Sydney and Melbourne have limited water storage.



These issues may have the following influences on the style and content of the house of the future:

- Re-use of grey waste water after suitable treatment at a community location or even in the individual home.
- The adoption of more energy saving home design, with better use of sun and shade, of insulating materials and of airflow; the automatic management of energy consumption, and inbuilt energy harvesting from the sun. Appliances will become more energy smart.

## Technology Issues and Influences

The explosive development of information and communication technology, together with such tools as microprocessors and microsensors over the past 20 years is, if anything, accelerating. The availability of broadband gives immediate access to data on an unprecedented scale and speed, leading to both remote and automatic function control and management.

For the home of the future, this could result in a wide range of applications to lighting, heating, cooling and in-house working and entertainment, as well as remote monitoring of health and safety.

Whereas ICT has been with us for some years, there may be other technologies just over the horizon that will have just as much disruptive impact over the next 20 years. Of these developments, those that may become significant are applications of generic nanotechnology and biotechnology across a wide range of materials and uses.

## Summary

Although the building industry has been slow over the years to adopt new technology, significant influences likely to affect the home of 2025 are now emerging.

Firstly, there are the social changes of the aging population and the smaller, working families, which will dictate different housing needs.

Secondly, environmental conservation is becoming a stronger consideration, particularly when mandated by government regulation.

Thirdly, communications, microprocessors, sensors, alternative energy sources and other technology, all of which are becoming cheaper and increasingly accessible, will change the amenity and management of the home of the future.

Finally, such is the pace of technological development that there are almost surely to be new disruptive technologies that will become part of our daily lives over the next 20 years, among these, applications of nanotechnology and biotechnology.

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TECHNOLOGY ROADMAP**

Part 2

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[go to Part 3: Management and Methodology >>](#)