

Research matters

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Understanding the Dynamics of Industrial Land

Industrial land is a major source of development activity in metropolitan Melbourne. The supply of and demand for this land is monitored through the Urban Development Program (UDP).

There are a number of processes occurring within the stock of industrial land. To aid understanding of the complexity of changes, Spatial Analysis and Research (SAR) has developed a conceptual framework that describes the processes that the industrial land database measures (see diagram).

Firstly, the total amount of industrial land changes over time. This change occurs when pieces of land are zoned from industrial to other uses, such as residential, or when land is zoned from other uses to industrial (see *Research Matters* 53).

The second process is the take-up, or consumption, of land. This is where land is

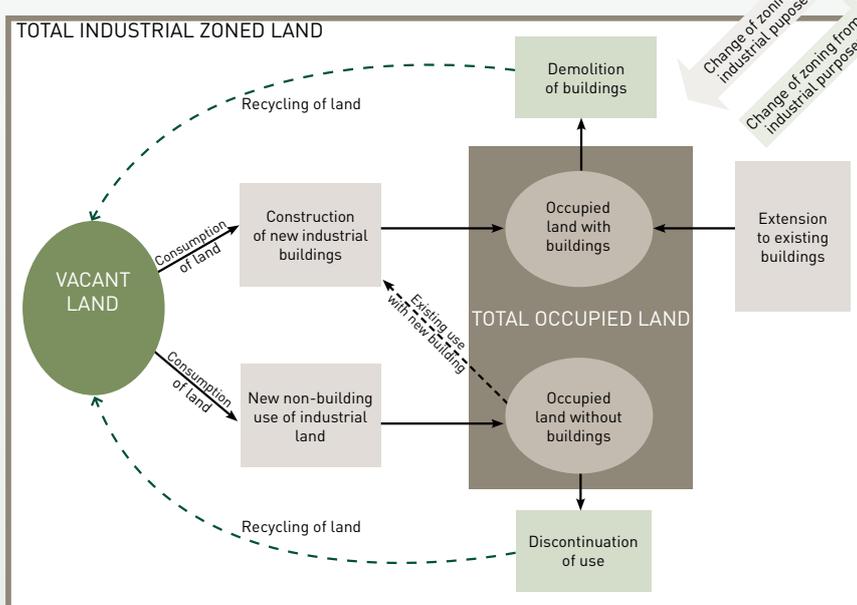
converted from vacant stock to occupied land. It occurs when land begins to be used for some industrial purpose such as a car park, container storage, or has a building erected on it.

The third process is more complex as it describes the recycling of industrial land. As the economy changes, uses of land that are no longer economically viable may also change. Recycling occurs in two steps. Firstly, buildings are demolished or the use is removed and the land becomes vacant and returns to the stock of vacant land. We call this negative consumption. Secondly, the vacant land is then reused for a new industrial use. This commonly occurs with large, former factories that are demolished and reused for a number of smaller uses such as factories, workshops and warehouses.

The last process relates to how industrial buildings change. Within six nodes of significant industrial activity we monitor both land and building activity. We do this by collecting building footprints data. That is, drawing the perimeter of buildings in a Geographic Information System (see *Research Matters* 34). These building footprints can change over time by being extended, demolished or having new buildings added to a site. This year SAR has extended the industrial building footprints data collection to cover metropolitan Melbourne and Greater Geelong. SAR intends to develop a time-series for this data.

Industrial land is vital for the future of the Victorian economy. Understanding and communicating the complexity of its dynamics helps government, councils and the private sector make evidence-based decisions about current and future needs of land use.

Conceptual framework of industrial land database



How much does housing cost?

Problems and pitfalls of housing price measurement

Not a week goes by without a report in the media on house prices from one organisation or another. Understanding housing prices is clearly a vital component of housing policy and research, and there are many sources of housing price data. To make sense of this data, it is important to take into account a number of considerations, as well as understand that there are problems with measuring housing prices and change over time.

The first consideration is the wide variation in the median prices reported. The table below compares the quarterly 2009 median price of houses in Melbourne reported by three major sources: the Valuer-General, Real Estate Institute of Victoria (REIV) and the Australian Property Monitors (APM).

	Valuer-General	REIV	APM
Mar-09	\$375,000	\$410,000	\$433,063
Jun-09	\$400,000	\$441,000	\$452,187
Sep-09	\$425,000	\$470,000	\$474,959
Dec-09	\$480,000	\$540,500	\$504,966

The figures shown above differ because each organisation uses a different methodology when measuring the quarterly median price of houses in Melbourne.

REIV median prices tend to be higher because they do not take into account all house sales – only the results of auctions and sales from REIV members are included. These results are inclined to be for higher value properties in the inner and middle areas of Melbourne.

APM, on the other hand, uses a variety of sources including auctions, government and semi-government agencies, real estate advertising, real estate agents and their own additional research. This means that they are able to take into account a wider range of sales than the REIV.

However, only the Valuer-General takes into account all property sales derived from the data on all settled sales. Accordingly, Spatial Analysis and Research uses this dataset as it is the most comprehensive and accurate.

Given that the Valuer-General data is the most accurate, one may wonder why it is not used by everyone. The reason is that the very strength of the Valuer-General data – that it is based on all settled sales – means that it can be months before all sales are reported and a median calculated from any given quarter. In a time of rising prices, many prefer to opt for less precise but more immediate data sources such as those produced by REIV.

The second issue to take into account arises when trying to measure changes in housing prices over time.

This is because sales in one period measure different sales to a subsequent period. This is illustrated in the hypothetical example below of 13 houses in a street. In the first quarter there were three sales of relatively cheap properties (shown by shading). In the subsequent quarter there are three sales of relatively expensive properties. It appears that house

values have increased by 30 per cent even though the values of the houses have not changed.

This is less of an issue for large samples such as metropolitan prices. However, at certain times it may appear that house prices are growing slower or faster than they may otherwise be. An example of house prices appearing to grow more slowly was during 2009 in Melbourne when there were relatively fewer sales of more expensive dwellings and more sales of cheaper dwellings than previously.

Quarter 1		Quarter 2	
House	Value	House	Value
House 1	\$255,000	House 1	\$255,000
House 2	\$285,000	House 2	\$285,000
House 3	\$290,000	House 3	\$290,000
House 4	\$335,000	House 4	\$335,000
House 5	\$350,000	House 5	\$350,000
House 6	\$395,000	House 6	\$395,000
House 7	\$455,000	House 7	\$455,000
House 8	\$520,000	House 8	\$520,000
House 9	\$680,000	House 9	\$680,000
House 10	\$695,000	House 10	\$695,000
House 11	\$710,000	House 11	\$710,000
House 12	\$720,000	House 12	\$720,000
House 13	\$730,000	House 13	\$730,000

Median sale price = \$350,000

Median sale price = \$455,000

Some sources of housing price change attempt to take into account the problem of the composition of sales by examining the repeat sales of the same dwellings over time. Others stratify sales by suburb to produce an index, such as is done by the Australian Bureau of Statistics.

The last issue in relation to reported housing prices is the problem of accounting for the change in the quality of dwellings. Even in the case of using repeat sales, errors will arise due to changes (usually improvements) in dwelling quality. For example, say we looked at the repeat sales of a terrace house in an inner suburb of Melbourne. It may have sold for a relatively cheap price in the mid 1980s and a very high price in 2010. However, in the meantime the house went from being very run-down to a luxurious dwelling with an extra bedroom and the latest appliances. Its increase in price is partly attributable to the change in quality. A solution to this problem is to use statistical techniques such as hedonic regression – which assumes that a dwelling can be considered in terms of its separated components such as number of bedrooms, size and facilities. This technique requires a very good source of data about the attributes of dwellings sold, which is often not available. However, RP Data produce a hedonic house price index.

Therefore, when considering housing prices – especially over time and for small areas such as suburbs – one should consider what sales are being measured, be aware of the issues of compositional change and quality, and not place too much store in changes over short periods of time.

The changing shape of Melbourne

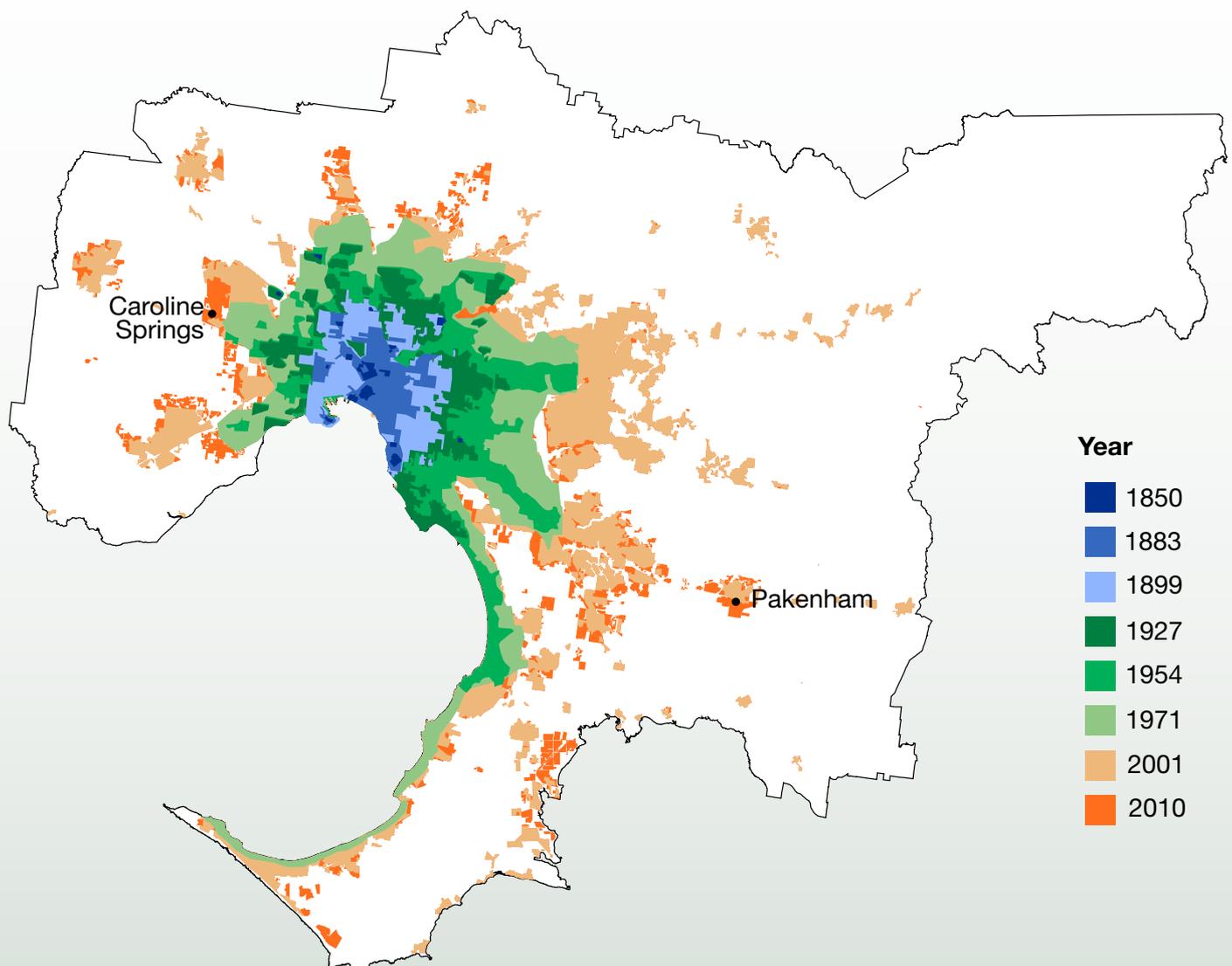
Unique topographical features strongly influence past patterns of development in cities. Look at how the harbour, the ocean and the mountain ranges have led to Sydney developing in different ways to Melbourne despite similar populations, histories and cultures. Furthermore, past patterns of development have a strong impact on the present and future. Melbourne's public transport commuters use infrastructure mostly built well before living memory.

While there are differences in the patterns of development, Melbourne shares some common characteristics with other Australian capitals that stand them apart from European and many North American cities. For Australian cities, the main period of expansion has been over the last 60 years. Melbourne's population has tripled and its urban area has quadrupled. This era has been marked by an almost uninterrupted period of rising prosperity and mobility. Wealth and technology facilitated the separate house on its own block with rising levels of car ownership. Internationally

speaking we have a comparatively low population density which has its well-debated advantages and disadvantages.

But another striking feature of Melbourne is its development bias to the south and east. The current development front in Caroline Springs is approximately 20 kilometres west of the city. By comparison the development front in the east around Pakenham is almost three times further out. At the last census, nearly three quarters of Melbourne's population lived east of a line running north south through the city. The reasons cited for this bias are many. The 1971 Melbourne Metropolitan Board of Works metropolitan plan referred to eastern suburbs' comparatively milder temperatures, higher rainfall and lighter soils. Other authors refer to how swamps west of the city – where Docklands now stands – posed a barrier to development. Subsequently, this early bias of development was reinforced through sectoral internal migration of populations.

Melbourne's Urban Growth 1850–2010



But the balance of Melbourne's development is now changing. Development to the east has, over time, become more constrained by barriers, some natural, some planned, such as the Dandenong Ranges, the upper Yarra Valley and rich agricultural land in the Westernport catchment. Meanwhile, the western suburbs are changing. Inner city gentrification has pushed across the Yarra into Yarraville, Seddon and adjacent suburbs which are cheaper than their eastern equivalents but still close to the resurgent city. The western suburbs have two of Melbourne's growth areas: Melton and Wyndham. These two local government areas are both in the top ten fastest growing municipalities in Australia. As more of the economy becomes reliant on the movement of goods and services, access to

major transport infrastructure such as the port, the airport, the interstate highways and the standard gauge railway becomes increasingly important. Opening in 1999, the Western Ring Road helped gel the western suburbs like never before. In short, Melbourne's western suburbs are attracting a greater share of development.

Planned improvements to infrastructure will underpin further growth. Victoria in Future 2008 (VIF2008) projects that the six western municipalities will increase their share of Melbourne's population from 16 per cent in 2006 to 20 per cent by 2026. To do so, VIF2008 projects that they will attract 27 per cent of total metropolitan population growth.

Lake Boga Report Wins Award

In previous editions of *Research Matters* we have highlighted the research report *The Drying Lake: Lake Boga's experience of change and uncertainty*. On Friday 15 October this project was awarded a Planning Institute of Australia Excellence Award in the category of Planning Scholarship Research and Teaching. Congratulations to those involved in the project including the four authors: Elissa Waters, Fiona McKenzie, Christabel McCarthy and Sam Pendergast.

The judges' report stated, 'this very well presented report brings planning and community development together, drawing on a variety of academic disciplines, using both quantitative and qualitative research methods. While sophisticated and nuanced, it is also accessible to all... The report records how through discussion and the building of trust, some common understandings were reached between the planner and the planned. With common understandings reached, government planners and community groups at Lake Boga have the opportunity to move forward together in tackling climate change. The beauty of this report is the model's adaptability – it is applicable to other parts of Victoria and beyond, not least coastlines affected by sea level rises and peri-urban areas affected by bushfire'.

The research report is available online through the Spatial Analysis and Research website. Hard copies are available on request at spatialanalysis.research@dpcd.vic.gov.au



Elissa Waters accepts the Planning Institute of Australia award on behalf of the Department of Planning and Community Development.

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