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Urban Structure and Change in Brisbane: Exploring Locations for Property Price Premiums

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Abstract

Understanding the dynamics of price premiums is important for property developers, Valuers and investors. This paper assumes two types premium are relevant. First a premium based on current neighbourhood quality and second one based on the conjectured future evolution of neighbourhood quality. Premium neighbourhood quality fundamentals are geospatial. However, neighbourhood information price premiums can become divorced from these geospatial drivers. Property market players may nevertheless use change in urban structure as an indicators of information premium location. We clarify the premium concept and suggest indicators of current and future quality derived from the gentrification literature. Using Census data from metropolitan Brisbane, we first isolate current quality premiums or 'dress circle' suburbs and then analyse selected suburbs which underwent structural change from 1991 to 2001. Although we found evidence that urban structural change may provide information to indicate the location of evolving price premiums, current urban structure is the dominant determinant of prices.

Keywords

Premium, information, risk, urban structure, structural change, symbolic analysts

Introduction

Over the past five years a combination of short, long term and institutional factors have conspired to fuel the property boom in Australia [1, 2]. In such circumstances price premiums are often paid for residential property. For example an extract from recent developer web publicity states: "it is little wonder that all the premium apartments are selling fast". The same web page goes on to justify price premiums on the basis of unique architectural design and neighbourhood characteristics. The

neighbourhood being advertised is extolled through statements such as “Step out to the hub of James Street 's active contemporary life"[3].

Outline of the Research

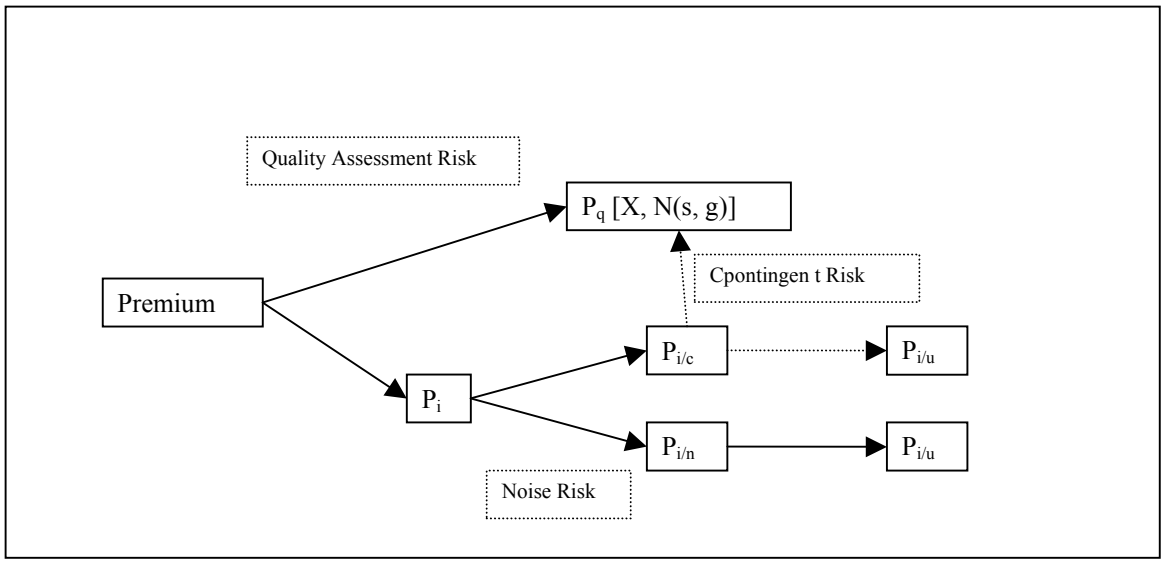
First we clarify what we mean by a property price premium and dissect a neighbourhood price premium into its current and future components. We then derive a conceptual framework from the literature to sort possible information sources about past neighbourhood changes which may be used by some housing market participants in an attempt to mitigate price premium information risk. Operationalizing the indicators using data from the Brisbane metropolitan area, we conduct a number of analyses of urban structure and structural changes, including regressions and map representations, to illustrate how the concept of evolving neighbourhood premiums might manifest itself.

Neighbourhood information premiums

Neighbourhood is a multidimensional concept and limiting the definition to one dimension is often misleading but we can consider a neighbourhood as a housing submarkets or locations where homes are considered close substitues. Neighourhoods can also be defined by having similar housing and social characteristics or sharing a cohesive sense of identity or simply by small areal units [4]. While town plans, archetectural analysis and factorial social ecolgy give insights to a neighbourhood’s current morphology, history shows that neighbourhoods change. Grigsby (1987) drew attention to the various factors causing neighbourhood change and pointed out that "neighbourhood decline is an absolute negative change in an area's physical and social quality[5, p41]. By analaogy then a neighbourhood residential property price

premium (RPPP) is "the increase in expenditures one is willing to pay to live in one location over what it would cost in another inferior location for the housing of the same quality" [6]. Other references to RPPP are relatively sparse [7-9] although there is an extensive marketing literature on the topic of general price premiums [10-13]. The nub of the property premium problem is assessing both current and future neighbourhood "quality". Since property must be seen as both an investment and consumption good, the assessment of future micro-spatial fundamentals is risky. As shown in Figure 1 below, risk occurs at two main levels; first in assessing current quality (Pq) and second in judging future quality evolution – neighbourhood information risk (Pi). While both risks require evaluating data about a neighbourhood, we can simplify analysis somewhat for the purpose of this project. Information risk requires filtering out noise from information – noise risk (Pi/n) and judging the extent to which stochastic events or contingencies such as infrastructure upgrades are likely to be realised - contingent risk (Pi/c). Depending on future outcomes, evolving neighbourhood information premiums may therefore become quality justified (Pi/q) or remain unjustified (Pi/u).

Figure 1: Simplified Conceptualisation of the Rsiks involved in Price Premium Evolution

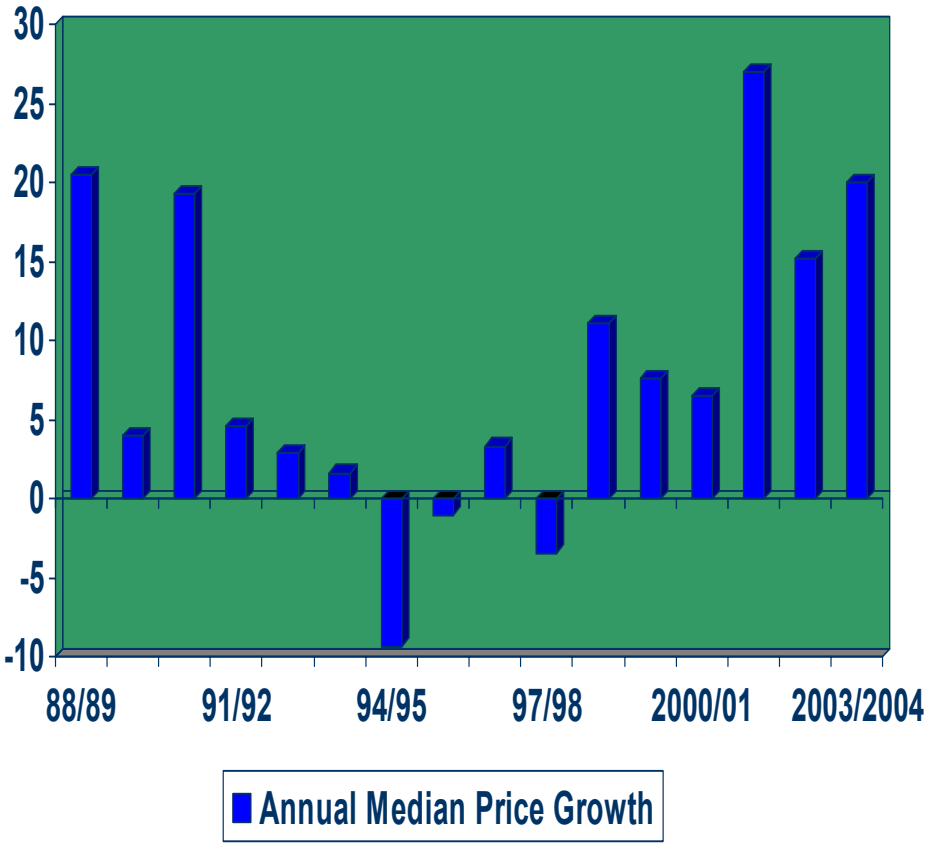


This is an adaptation of business categories of risk to property. In business acquisition risks identified include environmental, strategic fit, operational linkages, corporate cultural fit. With property the locus of control of risk is mainly in the external environmental[14]. External environmental information flows can trigger the emergence of new price premium locations (contingent risk) and sustain premiums during bubble sequences of a property market cycle (noise risk). Property market players may use indicators of urban structural change to mitigate these information risks. Consequently the dynamics of housing price premiums may be related to change in urban structure. Changes of in urban structure have been studied in the gentrification or revitalisation literature. In this paper, we adopt the gentrification conceptual framework to generate indicators of urban structure and structural change which may be used by property investors to mitigate the risks associated with neighbourhood information premiums. We then use a variety of techniques to analyse how these indicators empirically segment the Brisbane housing market in order to identify possible evolving information premium locations.

Context of Study

The study employs aggregate ABS data from the Brisbane metropolitan area. Figure 2 suggests the current price inflation emerged in the Brisbane housing market during 2000 and is likely to diminish during 2004.

Figure 2: Brisbane House Price Evolution using REIQ publicised median suburb prices.



Conceptualisation of Neighbourhood Premium Evolution

While different typologies of gentrification exist, there are essentially three dimensions to the process which are listed below:

- "a transformation of the physical environment, via building work"
- "re-settlement … of persons with a putatively shared culture and lifestyle" [15],
- "an economic re-ordering of property values" [16].

A detailed historical analysis of price changes in Brisbane between 1975 and 1996, confirmed the importance of social variables as a price drivers and the increasing differentiation resulting from income differences [17]. Although more complex analysis is possible [18], we base our analysis on this tripartite hierarchy or "social,

physical and economic change" [19]. Neighbourhood current and future quality is linked to urban form, economic vibrancy and social structure or indicators of status [20-23]. In established "dress circle" suburbs, price premiums are justified by current quality. However, changes in the three hierarchies of structure may be used to anticipate the future evolution of neighbourhood quality.

Other literature reveals three distinct typologies of neighbourhood change occurred in Brisbane, ranging from classical gentrification involving gradual refurbishment by "yuppies", to urban concentration and developer led modes of evolution[24]. Investors are likely to anticipate higher returns in revitalising or gentrifying locations and consequently pay an evolution premium for properties in these locations. These emerging price premiums may precede physical upgrading, especially in a booming housing market. Investors and developers adopt a number of strategies to mitigate uncertainty in anticipation. For example they may use past volatility in prices as a proxy for risk [14], reducing premiums in suburbs where prices have been volatile[25]. Investors may also attempt to reduce information risk by supplementing past price growth data with parallel information on past neighbourhood quality changes. Examples of such information include the level of new refurbishment activity and the in-migration of high income earners such as symbolic analysts or people whose jobs involve the analysis of data [26]. However, as was pointed out by Hume over two hundred years ago, future evolution may not mirror past changes [27]. Indeed, in a residential property context, much of the locus of control for future evolution risk is with planners and developers (insiders), who are better informed about the location and timing of future infrastructure upgrades. Nevertheless, lacking this inside information, other property players may base their investment decisions to

a greater or lesser extent on information about past urban structural change. As the property market evolves, locations which have changed may attract additional speculative "noisy" investment.

Methodology and Variable Selection

Using the gentrification conceptual framework outlined above and established methodologies of urban research [28], we first analyse urban structure to identify "dress circle" suburbs using a variety of techniques, including map visualisation, regressions and discriminant analysis. Second we identify locations which underwent significant structural change between 1991 -2001. Table 1 shows some of the variables selected with their justification.

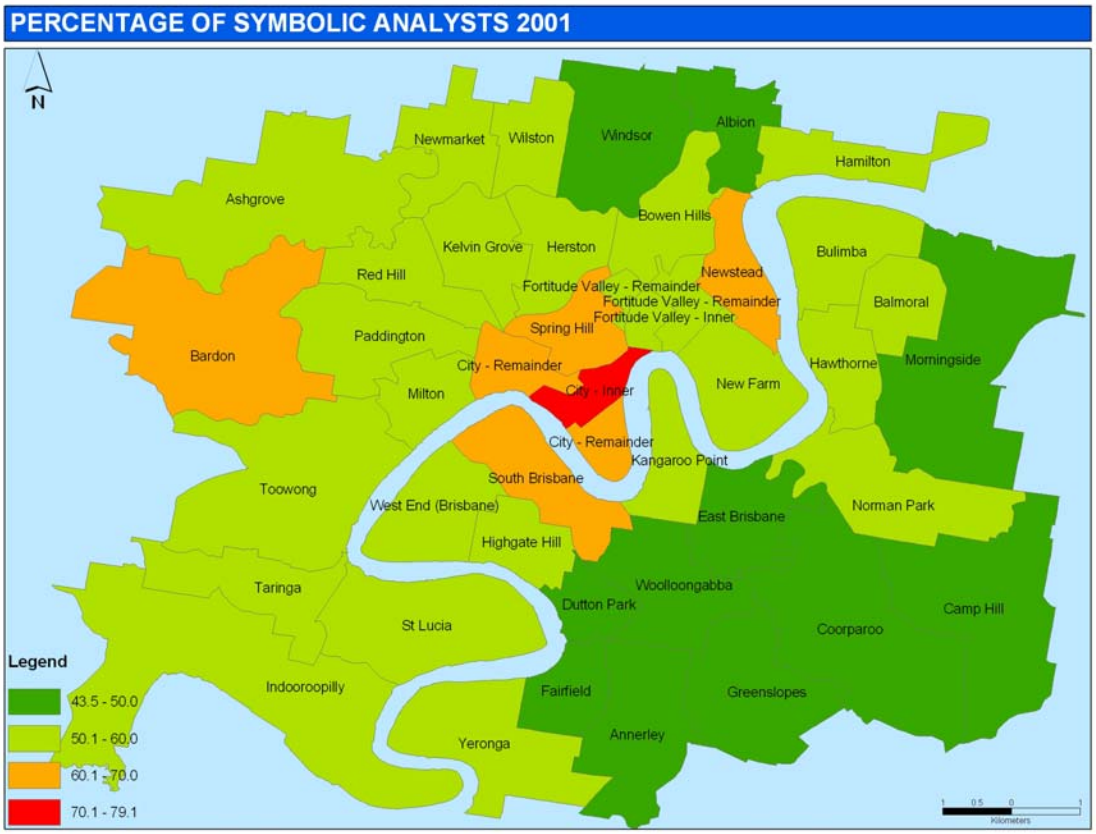
Table 1: Variables and their justification used to determine current neighbourhood quality or urban structure

Domain	Variable	Explanation for selection or data limitations
Physical structure	% OF DWELLINGS RENTED	Increase in rented accommodation signals increased popularity with young employed or alternatively disinvestment.
	KM	Distance to CBD
	INDUSTRIAL	Presence of absence of industrial blight
	ACRE	Acreage properties in suburb
	WATER	Suburb adjacent to Brisbane River
	ARTS	Presence of cultural attraction or major events within suburb
	CORE, INNER, MIDDLE OR FRINGE SUBURB	This captures accessibility, although the relative complexity of satellite employment and retail centres as well as topography and transport bottlenecks is ignored.
Social structure	% OF SYMBOLIC ANALYSTS	Symbolic analysts include managers and professionals – essentially problem solvers.
	% OF RENTERS	An increase in renter population is indicative of investment interest over time.
Economic Vibrancy	% OF HIGH INCOME	Only 2001 data available.
	% >5YEARS	Residents stay on average five years or more
	% OF DWELLING APPROVALS	Refurbishment is economic activity proxy.
	SUBURB MEDIAN DWELLING PRICE	Based on REIQ publicised data.

Results: Structure 2001

The 2001 urban structure is dominated by income differential as an indicator of current neighbourhood quality. The initial cause of income clustering may be ecological amenities such as river and bay side or Mount Cootha views. Newly developed suburbs also enjoy structural quality premiums. Figure 3 below illustrates the social geographical segmentation of the Brisbane housing market in 2001.

Figure 3: Socioeconomic structure in 2001, revealing clustering of symbolic analysts in the city centre and "dress circle" suburbs adjacent to environmental assets such as Bardon near Mount Cootha and Newstead on the Brisbane River.



Further analysis of current structure was carried out using a variety of statistical techniques. First, the median suburb property price was regressed against a variety of neighbourhood amenity, access, and environmental quality (urban form) as well as social and economic variables. Two base regressions were run: the first using only 2001 census data supplemented, in the second, by map-based categorical data. The regressions highlighted the importance of industrial blight or its proxies in depressing property values in the Brisbane metropolitan area. Some specifications, using 2003 median suburb prices as the dependent variable, generated results with adjusted R^2 of 0.79. This essentially means that approximately three quarters suburb price variation

can be explained by the model variables. As is shown in Table 2 below, significant explanatory variables with p values less than 0.05 or less than a 5% probability of happening by chance included:

- ☐ urban form such as KM, ACRE, INDUSTRIAL, WATER, ARTS (presence of a cultural attraction),
- ☐ Social structure such as COUPLENOKIDS, or 23-34YEARS
- ☐ Lack of economic vibrancy >5YEARS (residents stayed longer on average than five years).

Table 2: Summary Regression Statistics

N=150	Regression Summary for Dependent Variable: PQ42003 (R1) R= .88730019 R²= .78730162 Adjusted R²= .75432513 F(20,129)=23.875 p<0.0000 Std.Error of estimate: 47868.					
	Beta	Std.Err. of Beta	B	Std.Err. of B	t(129)	p-level
Intercept			362443.4	124060.7	2.92150	0.004114
QLD	0.088205	0.047162	35749.1	19114.6	1.87025	0.063715
DELAPIDATED	-0.002355	0.044584	-805.6	15252.9	-0.05282	0.957961
ACRE	0.151554	0.049612	55958.4	18318.2	3.05479	0.002737
INDUSTRIAL	-0.129034	0.045005	-41399.3	14439.5	-2.86708	0.004840
WATER	0.110708	0.047817	26011.6	11235.0	2.31523	0.022179
RAILCAT	0.087645	0.049374	17173.9	9674.8	1.77511	0.078238
SHOPS	-0.000277	0.045850	-53.3	8827.1	-0.00604	0.995187
ARTS	0.110289	0.051984	32667.0	15397.5	2.12158	0.035786
KM	-0.350430	0.067517	-5455.8	1051.2	-5.19023	0.000001
OTHERDWELLING	-0.007363	0.042552	-275.1	1589.7	-0.17305	0.862885
FULLYOWN	0.071378	0.088807	704.7	876.8	0.80374	0.423024
>5YEARS	-0.384819	0.116298	-1571.3	474.9	-3.30891	0.001214
VIBRANTSTUDIES	0.137880	0.131941	4011.6	3838.8	1.04502	0.297970
COUPLESNOKIDS	0.146929	0.069344	1926.0	909.0	2.11885	0.036020
25-34YEARS	-0.336246	0.096055	-7388.3	2110.6	-3.50057	0.000638

A limitation of the regressions was that neither the significant variables nor their coefficients were stable when the models were varied slightly. However we used other analysis techniques to gain an insight into the relative impact of urban structure and structural change on house prices.

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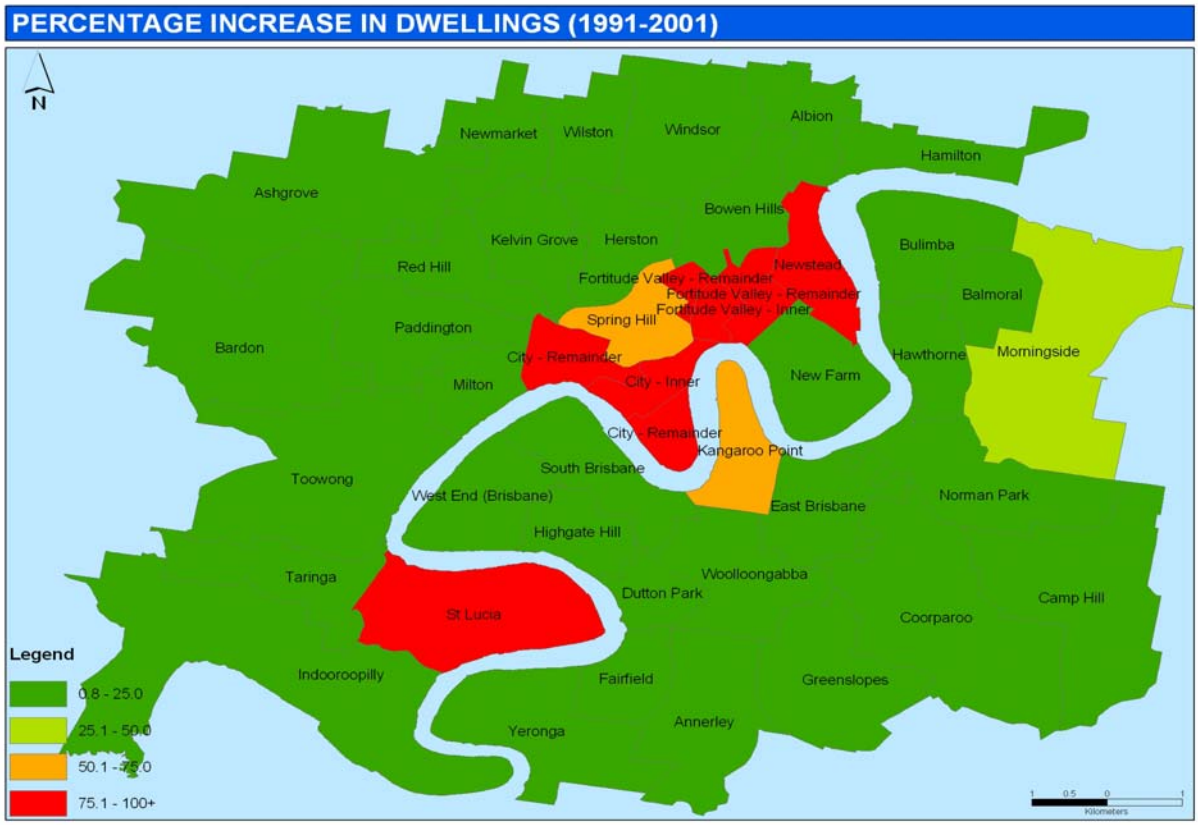
Results: Structural Changes, 1991-2001

Brisbane has seen extensive population growth over the past ten years and this has resulted in substantial building activity as is shown in Figure 4 below.

Figure 4: Change in urban form hierarchy – growth in number of dwellings



Source: 2001 ABS Census data

The government urban renewal and consolidation policies have significantly affected residential density within the Brisbane CBD and Inner North Eastern Suburbs. In 1991 the Urban Renewal Task Force (URTF) was initiated by the Brisbane City Council, which aimed to promote population growth in the inner city area. Over 300 hectares including the suburbs, Fortitude Valley, Newstead, Tenerife and New Farm

have so far been redeveloped with primarily focus on residential (see Figure 4). In the period between 2000 and 2004, during the recent property market boom, there were significant changes in inner city housing market structure. This is evident by the conversion of inner city 'infill' (high-rise apartment in Riverside) or underutilised space (warehousing in New Farm) and industrial lands to residential developments in West End. The rapid increase of the development of waterfront apartments in Riverside, New Farm and South Bank has significantly affected price premiums in the Brisbane inner city housing markets. Macro-structural influences affect the dynamics of property price premiums directly but also indirectly through the evolution of micro-behaviour. Inner city revitalisation has resulted in inducing back affluent and young residents (Yuppies or Dinks) who formed part of the out-migration to new residential areas on the outer suburbs.

The University of Queensland has also had a significant impact on the urban landscape, presumably as a result of speculative investment. In St Lucia itself, there has been substantial conversion activity of old Queenslander or detached houses to modern style units. Housing density in adjacent Taringa has more than doubled in over the ten year period as investors capitalise on perceived opportunities in the foreign student rental market. It appears that investors have also consolidated lots in Dutton Park and Woolongabba in anticipation of the planned "Green Bridge" is built linking this suburb to the University.

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Conclusion

Property premiums are paid if location quality is currently higher (dress circle suburbs) or anticipated to improve. Information costs make an assessment of future quality particularly difficult. Investors may use indicators of past urban structural change in an, often misguided, attempt to reduce information risk. Consequently information premiums may be paid where urban structure has "improved". We have focused in this study on locations likely to reveal such information price premiums. To this end we first isolated "dress circle" suburbs with high current incomes from this study. These quality premium suburbs benefit from positive ecological externalities such as water or Mount Cootha views or are screened from the dampening effect on values of industrial blight. Next we highlighted likely information premium locations. Investors perceive potential for higher returns in locations where urban change has occurred in tenure status, housing density and approvals. These evolving information premium suburbs tend to be core and inner suburbs with dynamic, status rental markets.

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