

Housing Affordability Policy and Measures

Volume 1 Review of Literature and Choice of An Affordability Measure for Inner Brisbane and Beyond

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1.0 NAHC Foreword

Currently, Australians are facing a housing affordability crisis.

In recent times many people across Government, industry and community sectors have shared an increasing sense of lack of direction and purpose in terms of national housing policy and this seemed to be coupled by inertia and uncertainty at a State level. George Earl (2015 NAHC Annual Report)

In terms of size, quality, amenity and environmental health, Australia is amongst the best-housed nations in the world. However, Australia has a deep and sustained affordability problem that is amongst the worst in the developed world. In relation to the provision of affordable and diverse housing, there is apparently a failure to provide certainty and direction so that all parties to the process: developers, consultants, the community, government staff, and politicians; can have a common understanding of what constitutes a balanced, reasonable and certain outcome, and what benefits the community can reasonably expect.

This uncertainty can have a major impact on investment, development activities and local communities, preventing economic and social opportunities to be maximised within the limits of the local environment. In addition, lack of understanding can create a community resistance to change.

There is a gap in current research regarding the “modern” housing affordability dilemma. Targeted analysis of current measures of housing affordability and their relationship to household income and expenditure will help to provide an informed evidence-based policy that takes into modern household circumstances. In the absence of this, positions are taken on all sides based on self-interest and political positioning.

This research project focuses on relevant literature of national and international examples of planning for affordable housing policy, with a focus on household- and neighbourhood-specific characteristics and explores the impact and variation between inner city and suburban affordability measures.

2.0 Executive Summary

Affordable housing is a human right¹. Yet, providing decent, safe and affordable housing is proving one of the hardest policy challenges of our time.

Through a limited review of the literature on housing affordability, this report debates facets of housing affordability discourse in terms of an appropriate measure of housing affordability that supports policy development, considering variations between inner city and suburban locations. Specifically, in this project we are asking:

“What measure of housing affordability is the most appropriate? and What policy approach is needed to support identified affordable housing variations?”

This research project focuses on relevant literature of national and international examples of planning for affordable housing policy, with a focus on household- and neighbourhood-specific characteristics and explores the impact and variation between inner city and suburban affordability measures.

Household characteristics are examined on an Australia-wide and Queensland-wide basis, Brisbane level as well as at a neighbourhood level. To capture the neighbourhood level, this report examines a sample that has similar characteristics to the 4101 postcodes, which comprises West End, South Brisbane and Highgate Hill. This postcode has been chosen to juxtapose the housing affordability equation of inner urban living compared to outer urban (suburban) living. This will help ensure that a range of perspectives is considered in critiquing measures of housing affordability, considering spatial issues as part of the housing affordability equation.

The Research on affordability to date has predominantly focussed on:

- Purchase affordability
 - Whether a household can borrow enough funds to purchase a house.
- Repayment affordability
 - The burden imposed on a household of repaying the mortgage.
- Income affordability
 - The ratio of house prices to income.

Consequently, housing affordability measures and related policy responses have historically focussed on the income ratio model of affordability or the residual income model of affordability. However, as the debate between ratio income and residual income cannot be resolved easily new concepts of affordability have also arisen, with development in new methodologies such as the value-at-risk (VAR) approach through to affordability indices such as the ratio of lifetime income to house price.

Additionally, recent research has incorporated an even more holistic measure of affordability to encompass wellbeing indicators in recognition of the flow-on effects of housing stress to related services and benefits e.g. health, education, community cohesion.

In this report, literature on these and other housing affordability measures are explored and an analysis of the effectiveness of the subsequent policy responses are provided.

3.0 The Housing Affordability Challenge

Housing affordability generally refers to the relationships between income and housing costs (e.g. mortgage and rental costs, rates) and is a relationship that allows the household to afford its other essential needsⁱⁱ.

To understand the affordability problem, it is necessary to examine the flow-on effects of unaffordable housing, some of which has historically been encapsulated in the term “housing stress”. In effect, a household under housing stress is one that finds housing costs encroaching on funds needed for other household essentialsⁱⁱⁱ.

Policy-makers typically seek to measure housing affordability to evaluate the effectiveness of their housing assistance and other direct housing policies. However, housing affordability outcomes are also linked to policies that *affect* household incomes (e.g. income support and taxation) and other household expenditures (e.g. policies that provide concessions on major expenditures such as electricity), as well as other life cycle factors for different households.

Housing affordability is an important contemporary issue that has been affected by recent house price booms and suspected bubbles and has resulted in numerous research and policy reports into first home ownership as well as housing affordability. It is therefore critical that policy makers understand issues of meaning and measurement associated with measuring housing affordability.

The next section of the report provides a brief review of current literature on housing affordability measures to illustrate that different types of outcomes can be associated with different measures, and to help determine an appropriate measure for future policy application.

4.0 Housing Affordability Measures and Policy Responses

The implications of using different types of affordability measures are significant and need to be explicitly considered in the development of policy if affordable housing outcomes are to be improved. Measures of housing demand are required to account for both current living needs as well as life cycle changes, while at the same time account for the capacity of rental households to save sufficient deposit to access homeownership.

4.1 Defining housing affordability

To measure housing affordability, the search invariably starts with the question of definition: ***“What is housing affordability?”***

The short answer is that there is no single standard definition of affordable housing among both Australian and International policymakers, which is understandable from the perspective that practical definitions of what constitutes affordable housing are usually specific to the policy and program context in which they are used. From another perspective, conceptualising and measuring affordability is as complex as understanding the causal factors of the housing affordability problem itself. A review by O’Neill in 2008 reiterated that the term ‘affordable housing’ describes housing that assists lower income households in obtaining and paying for appropriate housing without experiencing undue financial hardship as found by Milligan et al. 2004, however, in recent years, the term ‘affordable housing’ has been used as an alternative to terms such as ‘public’, ‘social’ or ‘low cost’ housing (Gabriel et al 2005, p6) which has invariably narrowed the focus of research on housing affordability. Consequently, some of the conceptual and measurement problems stem from this narrow focus of understanding the housing affordability problem. To illustrate the scope of potential housing affordability conceptualisation,

- “housing affordability could be understood as the continuing costs of a mortgage or rents relative to income”; or
- “could relate to problems of accessing affordable housing (e.g., first home ownership)”; or
- “of not being able to afford housing costs after meeting other expenditures”; or
- “a problem of too low an income or too high a housing price”.

Research on a measure that is applicable to modern household circumstances, housing affordability can also be analysed in terms of the experience of different household types;

“that is, through the employment, transport, health, and other consumption trade-offs that must be made by singles, sole parents and couples with children as they adapt their circumstances to high housing costs and/or low income (Gabriel et al 2005, p37)”.

Work on a contemporary definition of what is meant by affordable housing in Australia was advanced under the policy development process for the ***“Framework for National Action on Affordable***

Housing". Australian housing, planning and local government ministers agreed upon the following definition to assist state and local government planning agencies in the task of promoting and monitoring the supply of affordable housing:

"Affordable housing is housing that is appropriate for the needs of a range of low to moderate income households and priced so that low and moderate incomes are able to meet their other essential basic living costs"

(PRWG 2006 in Milligan et al 2007, p26)

A high-level scan of literature on housing affordability definitions indicates that housing affordability is a complex term and the literature has increasingly sought to incorporate more than simply the relationship between direct housing costs (mortgages and rents) and household income.

The Reserve Bank of Australia (RBA) noted that there are several things people might have in mind when they use the term 'affordability': Affordability measures will differ depending upon whether we are talking about owners or renters and on whether we are interested in some specific market segment, such as first home buyers or low-income households. Thus, affordability may be better examined based on 'repayment', 'purchase' and 'rental' affordability. For owner-occupiers, perceptions of affordability will depend on many things including price, household income, the cost and availability of finance and a whole host of factors affecting the needs and aspirations of the buyer. A complete definition should include the financial impact of housing on households through mortgage or rental payments, maintenance costs, running costs (energy, water and rates for example) and commuting costs.

Affordable living, on the other hand, is a term commonly used to encompass additional costs related to housing consumption. Consequently, increasing concerns over rising levels of homelessness, housing costs, mortgage defaults and foreclosures, trap of 'negative equity' experienced by households, declining neighbourhoods, and over-heated housing markets have concertedly pushed housing affordability into the centre of housing policy discourse since the early 1990s.

Stone et al. (2011) suggest that housing affordability is a concept based on the relationship between people and their houses; affordability is not an inherent characteristic of the house itself. It cannot be measured based on house price alone, since an affordable house will be different for every person. Thus, it is advisable that the methodology for measuring affordability should sufficiently take to account all the human variables that such a relational concept implies.

Another helpful definition of housing affordability was offered by MacLennan and Williams (1990) as being *"concerned with securing some given standard of housing (or different standard) at a price or a rent which does not impose, in the eye of some third party (usually the government) an unreasonable burden on household incomes."* Bramley (1990) further specified that *"households should be able to occupy housing that meets well established (social housing) norms of adequacy (given household type and size) at a net rent which leaves them enough income to live on without falling below some poverty standard."* As observed by Hancock (1993) these two definitions are concerned with

standards of housing consumption and more importantly, they capture the notion of opportunity cost, which they regarded as the essence of housing affordability i.e., what must be foregone to obtain housing and whether that which is foregone is reasonable or excessive in some sense.

Generally, these definitions tend to invoke, with different levels of emphasis some or all the following three issues (King, 1994);

- standards of socially acceptable housing,
- housing cost and
- quality of life

Within these contexts, adequacy of shelter and residual income are considered the core components of the definition of housing affordability. Such definitions inherently involve value judgments about not only the quality and merit attributes of housing but also about the relationship between housing expenditure and housing income and acceptance of the view that housing should represent no more than a given element within that income.

Broadly speaking, housing affordability measures can be grouped into 'shelter first' and 'non-shelter first' measures. The shelter first approach is most common and relates the housing costs of a person or household to their income in percentage terms. In Australia, the longest established benchmarks are those where, for public or private tenants, 25 or 30 per cent of income is paid on rent by those in the lowest two income quintiles. An alternative approach assumes that other expenditure items have first claim on the budget, and housing cost should come out of the remainder. The principle of measurement is that the necessary expenditure for all other items is identified, and what is left over is how much is available for rent.

The most commonly used 'non-shelter first' method of affordability is the Henderson poverty line. *Poverty Lines: Australia* is a quarterly report, published by Melbourne Institute of Applied Economic and Social Research, University of Melbourne, based on the Henderson Poverty Lines as defined in the 1973 Commonwealth Commission of Inquiry into Poverty. It is standard reference material for those concerned with social welfare policy in Australia. Minimum income levels required to avoid a situation of poverty are presented for a range of family sizes and circumstances. The updated poverty lines consider changes in the average income level of all Australians, reflecting the idea that poverty is relative. Each issue includes a table indicating changes in the purchasing power of the poverty lines and a table comparing welfare payment levels with poverty lines for various family types.

A second type of approach is a budget standard method. Until recently there has been no budget standard in Australia to evaluate the effects of housing affordability against, hence the use by default of the Henderson poverty line has been applied. In 1998, an indicative budget standard for Australia was developed by the Social Policy Research Centre (SPRC), enabling comparison of each of the different measures. Given increased concern about housing affordability in general in Australia, it is important to understand the implications of the use of different affordability measures, as well as what these measures mean in real terms for low income households. By comparing different measurement

approaches, this research can ascertain whether, despite housing assistance, households would still experience difficulties paying their rent and meeting the costs of living.

4.2 Measures of Housing Affordability

Following is a detailed review of a few housing affordability measures, such as;

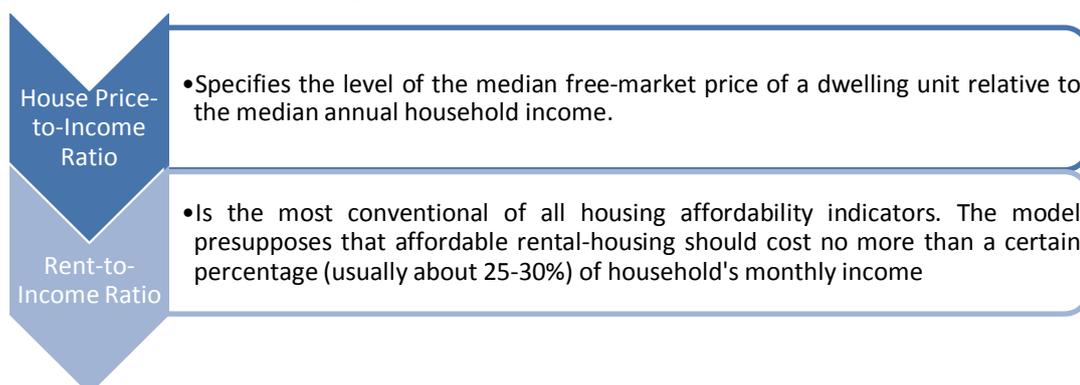
- the residual income method;
- housing cost approach;
- quality adjusted approach

4.2.1 Housing Cost Approach or Ratio Approach

The “*Housing Cost Approach*”, also popularly referred to as the housing expenditure-to-income approach, is a common measure of housing affordability. The origin of this approach can be traced to the early 20th century in North America, when mortgage lenders began to use it and later decades when private landlords adopted it as part of their assessment and selection criteria. This approach simply looks at housing affordability as the measure of the ratio between what households pay for their housing and what they earn. A ‘rule of thumb’ standard of no more than 25% - 30% of household monthly income being spent as monthly housing cost is deemed appropriate and affordable.

In Australia, the ratio approach is perhaps one of the most readily recognised measures of housing affordability, in part because of its regular use in media discussions on housing affordability as well as its deceptive simplicity. The ratio approach was used in the Australian government’s 1991/92 National Housing Strategy, which recommended that 30 per cent of income be adopted as a measure for the maximum level of housing commitments for households in the bottom 40 per cent of the income distribution. This income based ratio (‘the 30/40 rule’) has become the widely-adopted yardstick to define and measure housing affordability. Yet, as shown below, many measures of housing affordability remain in existence, with definitional problems still largely unresolved.

There are two variations of this ratio namely house price to income ratio (ownership affordability) and rent to income ratio (rental affordability).



4.2.2 Budget standard Method

The *Budget Standard Method* Represents ‘what is needed, in a particular place at a particular point in time, to achieve a specific standard of living’ The budget standard approach is derived from: An examination of ABS Household Expenditure Survey to establish a weighting measure and cost of items in a household expenditure budget. A combination of the normative judgements of researchers and focus group discussions to establish the amount needed by different household formations to meet basic housing and non-housing costs.

4.2.3 Residual Income Method

The *Residual Income Method* for measuring housing affordability is a more recent development, particularly by researchers at the Australian Housing and Urban Research Institute (AHURI) (Henman and Jones 2012; Burke et al. 2011), and calculates affordability—as the name suggests—according to what is left, after other necessary household expenditure. If there is insufficient residual income left for housing costs, then a household is considered to have an affordability problem. This method considers information about taxation and household expenditures (in addition to income and housing costs).

Using the residual income method often shows evidence of affordability stress, particularly among households on lower incomes and lower rates of stress among higher income earners.

The method provides a better understanding of housing market dynamics. For example, it shows that low income families (i.e., those below income of \$40 000) in Brisbane are now completely out of the first home purchase market, and moderate income families (\$40 000 to \$80 000) can only purchase in very spatially constrained markets, such as the outer suburbs.

The residual income method can consider issues of income adequacy for different household types. For example, using the method reveals that there is a degree of housing affordability stress among public housing residents (when the income ratio method indicates that all public housing residents live in affordable housing). It is also found to be useful for testing the adequacy of income eligibility rules for programs such as the National Rental Affordability Scheme.

4.2.4 Quality Adjusted Approach

The *Quality Adjusted Approach* to housing affordability is also essentially concerned with the quality of housing and its appropriateness to the households living in it (King, 1994 and Karmel, 1995). In studying housing cost within an area, it is common to compare houses of similar conditions and amenities, size, numbers of bedrooms, location etc. It is also known that households looking for or moving to new housing are forced to make trade-offs between what they desire and what they can afford to pay (especially if they are of limited income). This could at times lead to high ratio associated with households with strong taste for housing. To address this limitation of expenditure-to-income ratio (the inability to discern cases of high ratio), Lerman and Reeder (1987) developed the quality-based housing affordability measure. The measure was developed based on the cost of appropriate

(decent, safe and sanitary) housing as available in the housing market using a hedonic market cost (rents) rather than actual rents.

The quality-based measure attempts to distinguish households that have too little income to rent minimally adequate but decent safe housing for less than the specified (30%) of income from households whose income is adequate to bear such costs. Thus, in attempting to quantify those that have quality-based affordability problems, the magnitude of those that have been misclassified as having or not having affordability problems using other affordability ratio could be determined and examined. This approach implies the income levels that distinguish households capable of maintaining an adequate standard of living from those that cannot, thus it could be viewed as an alternative to poverty income threshold.

4.2.5 Composite Approach

There are also a range of Composite Approaches to measuring housing affordability. A composite approach aims to provide a more holistic conceptualisation of housing affordability in the context of broader household circumstances. A more integrated approach to using different housing affordability measures suggests a better platform in housing affordability research and policy considerations.

Chapin et al. suggested a combined approach of using both the expenditure to income ratio and the residual income methods based on a recognition that each measure provides different beneficial perspective to the fundamental interplay between rents, incomes, and housing allowances. However, these sources noted the consequent difficulty of interpreting the two measures together. In recognising the complementary strengths of both measures, (Freeman and Whitehead, 1995) suggested that residual income is better at comparing housing affordability situations of two household types whilst the expenditure-to-income ratio is better in comparing the affordability of one household type across different areas and over time.

Bramley in 2005 suggested that both income ratios and residual income “criteria are relevant and should ideally be combined” to move forward in the housing affordability debate. He suggested that a household situation should be deemed as “unaffordable” if “they both face a ratio of housing cost to income above certain norms and face a ratio of residual income to household requirements which is below a certain other norm.” Very few studies have so far attempted to combine multiple affordability indicators in a complementary manner to explore housing affordability issues.

The work of Bogdon and Can (1997) and Thalmann (1999, 2003) agree that although the expenditure-to-income ratio is conceptually flawed in terms of determining the ability of households to pay for housing, if used in conjunction with other affordability measures, it could provide a very useful starting point for examining housing affordability problems. They employed the ratio along with housing stock measures and a rental housing affordability mismatch ratio to develop measures of spatial distribution of affordability problems for low-income households in the US. Thalmann (1999) combined the three affordability indicators of rent-to-income ratio, quality based measures and housing consumption measures to study rental housing affordability in Switzerland. In a recent study (2003), he replaced the rent-to-income ratio with the residual income method and computed it along

with quality-based measure and housing consumption measure to identify and quantify those over-consuming and over-paying for housing services in his study area.

4.2.6 Housing Index Approach

Building on the composite approach, is a *Housing Index Approach* which brings together a range of variables to describe housing affordability. For example, the *Housing Industry Association/Commonwealth Bank of Australia Housing Affordability Index* (HIA/CBA) computes the ratio of household disposable income as reported by the Australian Bureau of Statistics to the income needed to qualify for a mortgage on a median dwelling, as calculated from a census of all dwellings financed by the Commonwealth Bank of Australia and assuming a 20 per cent deposit and the prevailing interest rate for a 25-year mortgage loan. The benefit of an index approach is that it can still be utilised in a simple way e.g. an index level of 2.5. However, the index inherently incorporates a more complex and holistic measure of variables related to housing affordability in the context of broader household circumstances.

4.3 Summary of measures

In Summary, we have reviewed some of the common measures of housing affordability, to simplify this review we have compiled a table (Table 1 below) which indicates the advantages and disadvantages of selected housing affordability measures.

Overall, the trend in the research has been a move toward a more integrated definition of housing affordability, with a move away from a “single variable” measure to more composite and index-based measures. Taking the recent trends in housing affordability we have in section 5 of this report discussed approaches that may be best suited to this investigation of housing affordability in Brisbane (both the inner city and suburbs).

Table 1 : Outline of advantages and disadvantages of selected housing affordability measures

References	Affordability definition/ Method	Variables used
Ratio methods		
Feins and Lane, 1981; Gliderbloom, 1985; and Hulchanski, 1995	<p>Housing Cost Approach</p> <p>A 'rule of thumb' standard of no more than 25% - 30% of household monthly income being spent as monthly housing cost is deemed appropriate and affordable</p> <p>a) house price to income ratio (ownership affordability)</p> <p>b) rent to income ratio (rental affordability)</p> <p>Advantages</p> <p>Depends on few variables that are readily available over time Easy to explain to non-experts</p> <p>Limited subjective assumptions about individual's consumption</p> <p>Limitations</p> <p>No clear rationale behind affordability benchmarks</p> <p>A single measure is applied across all tenures, locations and household types</p> <p>Assumes all families and individuals have the same ability to pay, and does not consider non-housing costs</p> <p>Does not consider issues of housing quality and over-crowding</p>	<p>House price</p> <p>Monthly gross income</p> <p>Monthly rent</p>
<p>Housing Association/Commonwealth Bank of Australia Housing Affordability Index (HIA/CBA)</p>	<p>Housing Industry Association/Commonwealth Bank of Australia Housing Affordability Index (HIA/CBA)</p> <p>Computes the ratio of household disposable income as reported by the Australian Bureau of Statistics to the income needed to qualify for a mortgage on a median dwelling, as calculated from a census of all dwellings financed by the Commonwealth Bank and assuming a 20% down payment and the prevailing interest rate for a 25-year mortgage loan.</p>	<p>House price</p> <p>Housing loan interest rate</p> <p>Income</p>

$$I_t = \left(\frac{Y_t}{Y_t^*} \right) \times 100$$

$$I_t = \frac{HIA}{CBA} \text{ Affordability index}$$

$$Y_t = \text{Average full time earnings of an individual}$$

$$Y_t^* = \text{Qualifying income}$$

Stone et al. 2001;
Saunders et al. 1998;
Henman and Jones 2012;
Burke et al. 2011

Residual Income Model
Looks at the non-housing costs. What's left over (the residual) is how much you can afford to spend on housing without sacrificing other necessary payments

Household size
Geographic location
Transportation
Non-housing related expenses

Advantages
Provides information that is more accurate for different household types than ratio measures.

Saunders (2004) contends that the main advantage of a budget standard is that the judgements and assumptions that inform it are explicit.

It also has utility for small area needs analysis, but not for Australia- wide research because of variations in housing cost that can be attributed to locational factors.

It is useful for examining both low and moderate- income households' expenditure patterns.

Limitations

Depend on subjective judgements as to what counts as necessary household expenditure:

Rely on a wider range of variables than ratio measures, which are not always readily available (e.g. data on non-housing costs);

Are complex and time-consuming.

Data limited at state level and when disaggregated is too small

The Social Policy Research Centre (SPRC) at the University of New South Wales, Saunders et al., 1998. Burke and Ralston, 2003.

Budget standard Method

Basic housing costs
Basic non-housing costs

Represents 'what is needed, in a particular place at a particular point in time; in order to achieve a specific standard of living' The budget standard approach is derived from: An examination of ABS Household Expenditure Survey to establish a weighting measure and cost of items in a household expenditure budget; A combination of the normative judgements of researchers and focus group discussions to establish the amount needed by different household formations to meet basic housing and non-housing costs

Established by the Commission of Inquiry into Poverty (chaired by Ronald Henderson) in 1974

The Henderson poverty line

Income
Housing costs

Identifies the level of income necessary to maintain a minimum standard of living. As the poverty line is based on estimates of housing and non-housing expenditure items, it is possible to show poverty rates before and after the onset of housing costs. In determining housing-related poverty, two types of lines are used: an estimate of income including an allowance for housing costs (before-housing poverty line) and an estimate not including housing costs (after- housing poverty line).

Limitations

The housing costs provision is based on average housing expenditure without regards to differences in tenure.

No low-income cut-off is specified, so those moderates to high-income households who overspend on housing are also considered at risk of having unaffordable housing.

Yates , 2007	<p>Accessibility Index Measures the size of the deposit ("deposit gap") required to purchase a home. That is the median dwelling price and average borrowing capacity as a percentage of a household's disposable income- a larger deposit gap reflects relatively more unaffordable housing</p> <p>Comparing house prices to consumer prices Under this approach, house prices are compared to growth in the overall consumer price index (CPI) and where house price growth exceeds CPI growth, housing is considered to be increasingly unaffordable</p>	<p>Median house price Average borrowing capacity Household's disposable income</p> <p>CPI as the bench-mark</p>
Quality Adjusted Approach		
<p>King, 1994 and Karmel, 1995.</p> <p>Bogdon and Can, 1993</p>	<p>Quality Adjusted Approach Housing affordability is also essentially concerned with the quality of housing and its appropriateness to the households living in it. In studying housing cost within an area, it is common to compare houses of similar conditions. It is also known that households looking for or moving to new housing are forced to make trade-offs between what they actually desire and what they can afford to pay (especially if they are of limited income). Compute number of households for which 30% would not cover cost of housing</p>	<p>Access to amenities Size Numbers of bedrooms Location Housing costs</p>
Composite Approach		
<p>MacLennan and Williams, 1990; Whitehead, 1991; Boelhouwer and VanderHeijden, 1992; Linneman and Megbolugbe, 1992; Lefebvre, 1993; Bramley, 1994; Freeman, et al, 1997; Katz et al. 2003; King, 1994.</p> <p>MacLennan and Williams, 1990; Bramley, 1990 and Hancock, 1993</p>	<p>A complete affordability definition should include the financial impact of housing on households through mortgage or rental payments, maintenance costs, running costs (energy, water and rates for example) and commuting costs. Affordable living is a term commonly used to encompass additional costs related to housing consumption. Further, a complete measure of housing affordability should also encompass the less tangible outcomes of housing choice such as the way housing and neighbourhood quality affect overall household wellbeing.</p>	<p>Mortgage or rental payments, maintenance costs, running costs (energy, water and rates for example) and commuting costs. Standard of living, neighbourhood quality What has to be foregone in order to obtain housing</p>

<p>Reserve Bank of Australia (RBA) report by Dr Malcolm Edey, Assistant Governor, Financial System, Reserve Bank of Australia, Hansard, 2 October 2014, pp. 1-2</p>	<p>Affordability measures will differ depending upon whether we are talking about owners or renters and also on whether we are interested in some specific market segment, such as first homebuyers or low-income households.</p>	<p>First home buyers Income level- including price, Household income, The cost and availability of finance</p>
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<p>Department of Social Services (DSS) Submission 198, p. 6.</p>	<p>As DSS noted, this is in large measure due to the concept of 'affordability' being influenced by a number of complex and interacting factors.</p>	<p>The price of housing; the financial capacity of owner-occupiers and renters; the ability of owner-occupiers and investors to access credit; and the cost of that credit; and the supply of suitable housing stock and rental accommodation.</p>
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<p>Honorary Associate Professor Judith Yates, University of Sydney's Senior Visiting Fellow Proof Committee Hansard, 10 November 2014, p. 36.</p>	<p>No clear-cut definitions on what we should be expected to pay for housing; there are no clear-cut standards about how much housing is appropriate for each of us and at what point we should be able to have the right to live independently; there are no clear-cut definitions of where this housing should be located; and there are no clear-cut definitions of how much households should pay for, for example, transport costs to get from where they live to where they work.</p>	<p>Externalities: Cost saving on transport, living styles</p>
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5.0 A Suitable Method of Measuring Housing Affordability

The literature on measures of housing affordability has to here shown that a range of methods are in use, for different purposes. Consequently, this research project will use the literature to guide the construction of a measure of housing affordability.

The purpose of the project is focussed on driving more affordable housing options through better policy direction. However, this projects aim is to develop affordability measures across the spectrum of housing incomes and composition.

An opening observation is that, commonly used benchmark measures may disguise the extent of housing stress in Australia with substantial proportions of low-income public and private renters not having enough money to meet the cost of living after paying rent, and this situation appears to be increasing. The popularity of broad or aggregate measures in debates regarding housing affordability in Australia shouldn't disguise the limitations and weaknesses in relying on such simplistic and undifferentiated indicators. Confining the measurement of affordability either to single indicator, or to a broad aggregate measure over the whole of the state can be misleading in a number of respects and of limited value when seeking to identify those who may be under genuine financial pressure from high housing costs.

One of the key limitations with existing measures of housing affordability is that they do not adequately represent the circumstances faced by many families who struggle to gain entry to the housing market. Affordability measures generally focus on the 'typical' (median or average) household and the typical (median) property, and tend not to account for variations in the price and type of property that first home buyers and those on low to moderate incomes would demand relative to those on higher incomes. Neither do such measures typically recognise the spatial differentiation of house price gradients across suburbs within larger sub-regional markets, giving rise to clusters of potentially affordable housing to lower income households in areas with higher property value.

A commitment of more than 30 per cent of household income to mortgage or rental costs has become the common benchmark to differentiate those with a 'significant' housing cost burden. However, this measure has been criticised as a 'one size fits all' approach that fails to recognise the particular circumstances of households when assessing affordability. Households may pay less than 30 per cent and still have significant housing affordability issues, depending on their individual characteristics and commitments, and there are certainly households who are comfortably able to pay more than 30 per cent.

When discussing housing affordability, the literature also emphasises the need to consider the potential impact of high housing costs on household formation. Examples include young adults living at home who are unable to leave because they don't have sufficient income for a place of their own; young couples who want to move in together but lack the deposit to purchase a house or the income to sustain rental payments; or an individual who is prevented from moving to a location with significant employment opportunities by a lack of affordable accommodation. Many existing households have been forced to make housing trade-offs, particularly in terms of location, perhaps moving out of their

existing communities to more affordable locations on the urban periphery. These locations may reduce mortgage or rental payments but attract additional commuting costs and, given such housing is generally larger in size, significant running costs. Trade-offs are often made in terms of neighbourhood quality with cheaper areas lacking many of the amenities households desire. Other households may have made trade-offs in terms of housing quality allowing them to keep down mortgage or rental costs but perhaps resulting in a lower quality of life. For this report we take a more nuanced look at the question of affordable housing from the perspective of individuals and families in South Brisbane – and not just the ‘typical’ family.

Overall, the literature analysis suggests a holistic paradigm is needed to guide the measure of housing affordability that takes into account the life cycle needs, whole-of-household needs, the short-term and long-term approach to housing access versus housing consumption, links to wellbeing, and including a special focus on rental affordability.

The definition of unaffordable itself of “not within one’s means” suggests a way forward, that is, a joint response. Housing affordability can no longer be seen as solely the domain of housing ministers and housing policy makers. We know the flow on effects of housing stress impact health, education, social security, environment, employment, transport and many other policy portfolios.

Research has shown that housing affordability policy needs to be considered via a multi-dimensional approach, integrated with other key policy and programs. Joined-up housing policy recognises the need for both household-based and place-based initiatives to support affordable housing and enhance the living environments in which many live. This approach incorporates access to education; employment; infrastructure such as public transport, roads, fast internet; recreation; health; community support and all other facets of an acceptable standard of living.

In summary, this targeted review of literature has found that a multi-dimensional framework is needed for measuring housing affordability that is connected to broader policy responses for people and places. Housing needs to be a central component of all policy frameworks to better understand the interactions of housing and other policy portfolios. This project will now seek to determine the variables that will comprise a multi-dimensional index of housing affordability.

In addition, to developing a multi-dimensional index of housing affordability, the following areas of further research are also proposed:

- Create constant quality rent indices and constant income indices to: examine changes in rents and incomes of criterion housing and households; and explore possible differences in the implicit prices paid for housing and neighbourhood quality among racial and ethnic groups.
- Explore alternative definitions of minimally adequate housing, based on housing and neighbourhood quality, and changes in the supply of such housing.
- Develop agreed upon methods to add some portion of the costs of trade-offs made to lower gross rents into housing costs when calculating affordability problems, including transportation costs and housing and neighbourhood quality costs

- Combine information from multiple datasets by using improved methods for imputing values in one based on values in another.
- Add or improve questions on housing costs and incomes in existing household and housing unit surveys.

6.0 Where to From Here?

The next phase of this project will be testing our preferred model of housing affordability (index model) on selected populations. This will be done for several types of populations.

Using the Household, Income and Labour Dynamics in Australia (HILDA) survey data, to examine the income and expenditure on housing of different types of Australian households, including the levels of financial stress and wellbeing. The important distinguishing feature of the HILDA survey is that it has interviewed substantially the same households (9,835) and individuals (25,391) every year since 2001, thereby allowing researchers to see how their social, economic, and financial circumstances have changed over time^{iv}. The HILDA survey is population weighted to be representative of the Australian population.

A proxy sample for the 4101-postcode population has been built from the HILDA data, based on information such as the demographic, household and community information.

7.0 Profiling 4101: Methods and Procedure

This project uses quantitative research methods to develop appropriate aggregate measures of housing affordability and apply such measures at a national, state, city and inner urban neighbourhood level. The study is essentially concerned with micro levels analyses that focus on households. Availability and accessibility to a detailed recent HILDA survey database (WAVE 14) was a major key component that facilitated this study. West End, South Brisbane and Highgate Hill areas were studied in the QLD 4101 postcode. The scope of the survey covered the following topics, namely; demography, education, employment and travel time to work, homeownership, household expenditure, assets and saving, and household income schedule. The QLD 4101 household sample of about 1640 persons were drawn and used in the study analyses.

The following procedures were followed sequentially to analyse acquired data and develop the Aggregate index to measure the housing affordability in QLD 4101 postcode.

- Identification of Initial Variables
- Preliminary Data Exploration
- Generation of Secondary Variables

- Generation of Key Affordability Indices
- Generation of the Aggregate Housing Affordability

7.1 Identification of Initial Variables

The choice of a dwelling has a number of implications for housing costs, not only direct costs of rent or a mortgage but also running costs associated with the dwelling (utility bills etc.), commuting and travel costs associated with the location and maintenance costs for those purchasing. While dwelling choice may minimize direct costs, in some cases the related costs may outweigh any potential savings on rent or the mortgage, therefore we have examined housing choice factors; what drives choice and the trade-offs households make when selecting a house or unit.

Table 2: Identification of initial variables

Decision-making factors in housing choice*	Measured by
Affordability	Rent usual payments \$ per month Take out mortgage or loan to help pay for home Have the original home loans on this property ever be refinanced Has household completely paid off home loans Mortgage usual repayments \$ per month Minimum repayment of home loans Current employment status
Home Ownership	Own, rent or live rent Who does this household rent from Involved in a rent/buy agreement Year purchased current home Price of home when purchased Approximate value of home today
Financial support	Whether or not a household can qualify for a mortgage
Location (e.g. Travel time to work, easy access to public transport)	Time saved on travelling thereby increased efficiency Access to public transport
Living status	Gross income band of household for last financial year Disposable income Number of people in this private dwelling who are not members of this household Income, employability, age, gender, home ownership Average people per household, frequency of holidays
Neighborhood characteristics	Access to amenities and services Schools, Universities, workplace, restaurants
Cost saving on other factors	Cost saving on owning a private vehicle Cost saving on public transport vs. walking Cost saving on food Cost saving on health care
Demographic factors:	Retired completely from the workforce Current marital status Main reason for moving Country of birth

Note: * QLD average is set as the benchmark

8.0 Profile of Postcode 4101 (West End, South Brisbane, Highgate Hill)

8.1 Why the Focus on an Inner Urban Neighbourhood?

When reviewing data analysis, the devil is in the detail, as too are opportunities for innovation. When undertaking data analysis relating to housing affordability it is important to examine the factors at several levels and in this project, will be comparing national to state data to capital city to neighbourhood areas. The neighbourhood chosen for this project, as the area of comparison is the West End, Highgate Hill, South Brisbane neighbourhood (the 4101 neighbourhood).

The South East Queensland Regional Plan (SEQRP) 2009-2031 projected a population increase of Brisbane residents from 991,000 in 2006 to 1,270,000 by 2031(Chatwin et al). To promote more compact development the SEQRP 2009-2031 set local government areas a target of increasing the proportion of additional dwellings constructed through new development or redevelopment in existing urban areas to 50 per cent by 2031. For the Brisbane, local government area this means an increase of 156,000 new dwellings will be required. With the rapid and predicted population growth rate in Brisbane and greater SEQ, housing affordability and availability of infrastructure to support this growth have become key issues for many inner city communities (Connor, 2011).

For a number of reasons, providing more residences within a five kilometre radius of the Brisbane CBD has been proposed to have a number of benefits, e.g. sustainable lifestyles for commuters, and less pressure on road infrastructure. However, accommodating population growth in the inner five kilometres is still a major challenge (Brisbane City Council (BCC) produced proposals for the area within the framework of the South Brisbane Riverside Neighbourhood Plan (SBRNP).

8.2 History of the 4101 Community

There are many significant historical events that have contributed to shaping the societal culture of West End and surrounding areas. Originally named Kurilpa, meaning 'place of water rats', the Brisbane River peninsula was later divided into suburbs and assigned names, with West End being renamed in honour of London's West End (Chatwin et al. 2011). The First Residents Prior to European settlement in Brisbane, Indigenous tribes inhabited the southern peninsula which is comprised of West End, Highgate Hill and South Brisbane. The peninsula consisted of two dominant Aboriginal tribes, the Jagera and Turrbal, who roamed the area which is now referred to as Kurilpa Point (Chatwin et al. 2011). Aboriginal people still retain traditional linkages to this area that include sites of special significance such as Kurilpa Point and the nearby Musgrave Park (Heywood 2011). During European settlement in the 1800s, Aboriginal peoples were increasingly marginalised on their own lands. First peoples had, since the early 1850s, been the targets of a curfew which was enforced after 4pm and on Sundays. The major demarcation south of the river operated along Vulture and Boundary streets in West End (Kidd 2000). The area was largely segregated from European

settlement until 1874, when the Victoria Bridge was constructed to permanently link the north and south banks of the Brisbane River (Chatwin et al. 2011). This painful and hurtful legacy is still largely unreconciled and even now, some community members are calling for a name change from “Boundary Street” to “Boundless Street”.

The 4101 community has historically been multicultural. It has been called home by Aboriginal peoples, early European settlers, Asian migrants and Greek populations. It was this originally diverse mix that has attracted many other complementary cultures to the area, emphasising its role as a multicultural community today. West End attracts not only migrants, but also tourists from local, national and international destinations, many people believe that West End has a cosmopolitan character unmatched anywhere else in Queensland (Heywood 2011). In the early 1900s, industrial plants began to flourish along Stanley Street and Montague Road, which were later accompanied by the Cultural Centre in the 1970s followed swiftly by construction of the Queensland Art Gallery (1982), Queensland Performing Arts Centre (QPAC), Queensland Museum (1986), the State Library of Queensland and the Gallery of Modern Art (GOMA). The cultural centres of the 1980s was timely to support the 18 million people who came to World Expo '88, changing Queensland, and Brisbane on the world stage, which has been growing in prominence including hosting the G20 in 2015. Importantly, this unique and culturally diverse history of the area that is still embraced by the community today. The sense of community cohesion and significance offer what is perhaps a priceless element to living in this inner urban neighbourhood.

8.3 First Peoples Population

The First people’s population of Brisbane City is 1.4%, Inner North Brisbane 0.9% and Inner South Brisbane 1.7% (Connor, 2011), which had decreased from 2.3% in West End and from 2.0% in Highgate Hill since 2001. The First Peoples population remains significant in the 4101 community. The specific needs of the First Peoples population, their significant past and continued association with the report area is an important consideration in the provision of culturally appropriate social services and urban planning processes.

8.4 Flooding in 4101 Community Area

Brisbane is a city situated on a low-lying floodplain that has suffered three major floods (February 1893, January 1974, and January 2011) since colonisation. As well as being at an increased risk of flooding the South Brisbane Peninsula experiences tidal flooding and overland flow (see Figure 14). Overland flooding is the excess run-off during high rainfall events that travels overland following low-lying, natural drainage paths.

While Brisbane’s inner five kilometres is only 6 per cent of the area of Brisbane it is home to one quarter of Brisbane’s population. In 2008-09, the largest increase in population density in Brisbane

occurred in the SLA of West End, which increased from 3,700 to 4,100 people per sq. km, an increase of 340 people per sq. km.¹² With the Inner Brisbane population projected to increase by over 40,000 people to around 140,000 by 2031, and as land supplies in the CBD and Inner North East are exhausted, growth will be increasingly concentrated in the Inner South (composed of the SLAs of Dutton Park, Highgate Hill, South Brisbane and West End).

8.5 Social Cohesion

Many in the 4101-postcode area—comprising West End, Highgate Hill and South Brisbane—pride themselves on ensuring their community maintains its diversity, community sustainability, acknowledging traditional owners and values, and balancing those imperatives within the urban planning process.

However, the 4101-neighbourhood area is not unique in having a strong interest in being involved in community planning and the preference for “grassroots” driven, progressive policy frameworks to ensure long-term social cohesion while balancing urban renewal and growth.

The multifaceted nature of the concept of sustainability amalgamates social, environmental and economic matters. Social cohesion supports the capacity of a community to provide for the safety, care, health, education, leisure, and creative expression of its members in a stable reliable and ongoing manner. The following definition of social sustainability was developed by the Greater Vancouver Regional District:

For a community to function and be sustainable, the basic needs of its residents must be met. A socially sustainable community must have the ability to maintain and build on its own resources and have the resiliency to prevent and/or address problems in the future. There are two types or levels of resources in the community that are available to build social sustainability - individual or human capacity, and social or community capacity. Individual or human capacity refers to the attributes and resources that individuals can contribute to their own well-being and to the well-being of the community. Such resources include education, skills, health, values and leadership. Social or community capacity is defined as the relationships, networks and norms that facilitate collective action taken to improve upon quality of life and to ensure that such improvements are sustainable. To be effective and sustainable, both these individual and community resources need to be developed and used within the context of four guiding principles - equity, social inclusion and interaction, security, and adaptability. (Definition developed by Rick Gates/Mario Lee, City of Vancouver, 2002)

8.6 The 4101 Community Infrastructure

A 2011 report commissioned by the West End Community House recommended a platform for sustainable community development strategies including:

- Advancing an asset-based approach to community development by identifying and mobilising existing community capacities and assets (social, economic, physical)

- Identifying and mapping the needs and assets of future populations for the planning and provision of relevant social services
- Development of local government leadership to assist integrating existing and evolving communities with community organisations taking into account areas of advantage and disadvantage
- Moving away from consultation as the preferred form of community engagement to involving community organisations in the developing and planning processes of urban renewal
- Developing a social investment strategy to support community cohesion and enhance liveability for current and new community members.

If this research project is to focus on the holistic components of the housing affordability story in an inner urban community, then the social, economic and community services and resources that are in the community are an integral part of the analysis of housing affordability. For the 4101 community, a vast infrastructure base includes:

- Education
- Cultural facilities
- Transport hub
- Dining and leisure
- Seniors
- General Community Space
- Library
- Health care
- Sport and Recreation
- Social Services.

Consequently, retaining connectivity between services over the life course is a critical concept support housing affordability.

For example, the 2011 West End Community House report recommended that for:

- Schools and education: To increase the capacity, provision and range of education facilities, including primary, secondary and 'life skills' institutions;
- Disadvantaged and low socio-economic groups: To retain, improve and provide additional services for identified needs groups, particularly the elderly and mentally and physically disabled, and increase the capacity of existing social support groups and networks.
- Indigenous and ethnic services: To retain, improve and increase access to and functions of social services for the Indigenous and ethnic population in the report area.
- Public interaction and amenities: To provide improved public amenities to service social and community areas.
- Childcare and family services: To improve family situations by providing adequate welfare, childcare and family support services.
- Emergency Services and Health Care: To support the future population with adequate medical and health services and retain and improve access to emergency services.

In terms of education, inner urban areas often house significant schooling, particularly high school, facilities. In the 4101 community, Brisbane State High School (BSHS) is the only state government operated high school in the 4101 community and therefore provides an essential service for the area. However, increasing population density has a significant impact on the resources and support network of the school which over the long-term may have a negative impact on BSHS, as a result of the finite level of resources available.

In summary, the literature on housing affordability and the search for a valid, appropriate measure of affordability for a modern household in Australia, Queensland, Brisbane and inner urban community has highlighted that a multi-faceted measurement is needed.

9.0 Exploring New Housing Affordability Indices and Implications

Using the data-sets detailed in Volume 2 of this project report we have developed possible implications relating to variances of affordability measures for both Inner Brisbane and Beyond, while at the same time have provided a brief set of policy implications associated with inner Brisbane housing development and consequential affordability.

Before developing a possible new set of housing affordability indices, it is worthwhile summarising several the key variance between Inner Brisbane and Beyond (suburbs)

Category	City	Suburbs
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A&TSI Community	Approx. 68% lower than in the suburbs	
Median Age of population	Approx. 10% lower than in the suburbs	
Population over 65		Approx. 30% higher than in the City
Household in a marriage relationship		Approx. 37% higher than in the City
Household in a de facto relationship	Approx. 30% higher than in the suburbs	
Average no. Children per household		Approx. 10% higher than in the City
Highest Level of education being "Secondary School"		Approx. 55% higher than in the City
Highest Level of education being "Tertiary/University"	Approx. 3 times higher than in the suburbs	
Average people per household		Approx. 15% higher than in the City
Median income per household	Approx. 6% higher than in the suburbs	
Households in dwelling with 2 beds or less	Approx. 3 times higher than in the suburbs (61%)	
Median Rent	Approx. 10% higher than in the suburbs	
Median Mortgage	Approx. 20% higher than in the suburbs	
Home ownership maintenance costs		Approx. 7 times higher than in the city
Average Vehicle Ownership		Approx. 35% higher than in the City
Car ownership costs (Purchase and Running)		Approx. 28% higher than in the City
Car Insurances etc.		Approx. 20% higher than in the City
Health and wellbeing (health insurance)		Approx. 5% of that spent by city dwellers
Other medical Expenses		Approx. 13% higher than in the City
Expenditure on groceries		Approx. 33% higher than in the City
Expenditure on education, phone, internet and general expenses		Approx. 40% higher than in the City
Eating out	Approx. 20% higher than in the suburbs	
Tenure rental	Approx. 67% higher than in the suburbs	
Employment type (professional and managerial)	Approx. 2 times higher than in the suburbs	
Travel to work by walking/bike and public transport	Approx. 3 times higher than in the suburbs	

Based on the data contained in Volume 2 of this report and the observations provided above the potential variance between the various tenures (ownership and rental) using adjusted annualized median data of outgoing measured against net household income

The following table indicates the data used to establish the adjusted affordability ratios for the city and beyond.

City Index		Suburb Index			
Based on Annualized Median					
	Rental	Ownership	Rental	Ownership	
	\$K	\$K	\$K	\$K	\$K
Income	95.2	95.2	89.8	89.8	
Tax	12.9	12.9	9.6	9.6	
Net Income	82.3	82.3	80.2	80.2	
Accommodation Costs	15.7	13.2	10.7	14.1	
Ratio	19.1%	16%	13%	18%	
Other costs (variance categories only)					
Groceries	7.9	7.9	10.5	10.5	
Meals Eaten Out	2.6	2.6	2.1	2.1	
Motor Vehicle (fuel)	1.6	1.6	2	2	
Motor Vehicle (maintainance)	0.5	0.5	0.6	0.6	
Motor Vehicle (insurance)	1	1	1.2	1.2	
Home repairs and maintenance	0	0.03	0	0.2	
Wellbeing (Insurance)	0.5	0.5	0.02	0.02	
Wellbeing (Doctors & Medicines)	0.5	0.5	0.53	0.53	
Utility costs(power, water, phones etc)	2.8	2.8	3.06	3.06	
Total Other costs where there is a variance	17.4	17.43	20.01	20.21	
Ratio to net income	21.1%	21.2%	25.0%	25.2%	
Net ratio of outgoings	40%	37%	38%	43%	
Potential additional impacts					
Car Ownership (AAA)	1.1	1.1	1.8	1.8	
Cost Per Year/car	9.8	9.8	9.8	9.8	
Cost allowed for	3.1	3.1	3.8	3.8	
Net cost	6.7	6.7	6	6	
Ajusted car ownership	7.37	7.37	10.8	10.8	
Transport to work	0.8	0.8	2.9	2.9	
Total of other potential impacts	8.17	8.17	13.7	13.7	
Net ratio of other potential impacts	9.93%	9.93%	#####	#####	
Net ratio	50.1%	47.1%	55.4%	59.9%	

In summary, the analysis indicates that taking a holistic view that both as a renter and an owner the overall cost of living is significantly greater in the regions outside the city, as can be observed below:

Tenure	City	Beyond	Variance
Rental Tenure occupation & living costs	50.1%	55.4%	10.58%
Ownership Tenure occupation & living costs	47.1	59.9	27.00%

This analysis it must be stated has used several additional assumptions to the data sets in Volume 2 as that data-set excluded allowances for gross car ownership and as can be noted there's is a substantial variance in the medium rate of car ownership in the city verses beyond (city medial ownership 1.1 car verses 1.8 cars in the beyond data). The allow for this the report by the AAA into average car ownership costs were used, adjusted for car ownership data in the Volume 2 data-set.

The additional adjustment made to the volume 2 data-set was associated with public transport costs for households, and again it can be observed in the data that a significant ratio of workers either

walked or cycled to work. The adjustment to the analysis used the data from the Australian Governments Living Cost report.

Based on the data and analysis it would indicate that higher levels of accommodation costs in the city should not be treated in the same way as the boarder suburban community.

Additionally, given the variance in household compositions between Inner Brisbane and Beyond (suburbs) several initiatives could be adopted to provide higher levels of housing affordability, thereby attracting household compositions more associated with the suburbs to relocate to the city (families).

These initiatives are associated with;

- Car ownership and usage, as indicated previously, the suburbs have approximately 1/3 more cars per dwelling than the city, additionally city dwellers are almost three (3) times more likely to either walk, cycle or use public transport to go to work or other destinations (schools) than those in the suburbs.
- There are several value and cost differences associated with higher density living (city verses the suburbs). These differences could be referred to as “vertical living infrastructure” such as lifts and sophisticated fire systems (sprinklers systems). Additionally, as home owners there is no compensation of the ownership or maintenance of these items of vertical living infrastructure.

The following provides some guidance to the potential cost savings of changing the current planning codes associated with car parking and financing of vertical infrastructure, and the impact on housing affordability.

Car Parking

Value and cost benefit of every car space saved			
Car parking station	Approx. Value \$50,000	Based on a 25-year mortgage @5.5% PA the payment would be about \$4,000 PA	An improvement of approx. 4.5% in housing affordability, using suburbs median income
Basement car parking	Approx. Value \$100,000	Based on a 25-year mortgage @5.5% PA the payment would be about \$8,000 PA	An improvement of approx. 8.9% in housing affordability, using suburbs median income

The following vertical infrastructure initiative is that the ownership is held by a tax paying entity, who has responsibility for the maintenance and payment of any body corporate charges. This entity then leases the vertical infrastructure to the home owner. The fee has been calculated on an after-tax IRR of 5.5%

Lift

	One Bed Apartment 60 m2	Two Bed Apartment 90 m2	Three Bed Apartment 130 m2
Value	\$6,000	\$9,000	\$12,000
Traditional Mortgage based on 25 years and 5.5% PA	Approx. \$450 PA	Approx. \$650 PA	Approx. \$900 PA
Using the entity as outlined	Approx. \$230 PA	Approx. \$350 PA	Approx. \$480 PA
Cost saving PA	Approx. \$220 PA	Approx. \$300 PA	Approx. \$420 PA

Fire Systems

	One Bed Apartment 60 m2	Two Bed Apartment 90 m2	Three Bed Apartment 130 m2
Value	\$8,000	\$12,000	\$16,000
Traditional Mortgage based on 25 years and 5.5% PA	Approx. \$600 PA	Approx. \$900 PA	Approx. \$1,200 PA
Using the entity as outlined	Approx. \$290 PA	Approx. \$430 PA	Approx. \$580 PA
Cost saving PA	Approx. \$380 PA	Approx. \$470 PA	Approx. \$780 PA

As can be observed significant direct improvements can be made to city living affordability by the adoption of the above initiatives linked to car parking requirement changes (as high as **10.3%** using casement car parking a three bedroom apartment), but there are additional yet to be researched externality benefits associated with a greater degree of inner city living, such as;

- Wellbeing brought about by an increased level of physical activity associated with either walking or cycling to work and other destinations
- The reduced level of car omissions associated lower levels of car usage
- Higher degree of economic activity associated with less time being spend in travelling to work.

ⁱ UN Declaration of Human Rights, Article 25

ⁱⁱ Thomas, V. (2012) "Understanding Housing Affordability", University of Adelaide.

ⁱⁱⁱ Thomas, V. (2012) "Understanding Housing Affordability", University of Adelaide

^{iv} Wilkins, R. (2015) The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 12, Melbourne Institute of Applied Economic and Social Research, Melbourne.