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# **HOME OWNERSHIP AFFORDABILITY MEASUREMENT – A MORE COMPREHENSIVE AND UNBIASED APPROACH**

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## **ABSTRACT**

This paper examines the problems associated with home ownership affordability measurement and proposes a unique model that consumers can use to carry out an independent and comprehensive financial analysis of home ownership costs and the affordability of these costs for their specific circumstances. The main method used to measure home ownership affordability is the benchmark ratio method whereby housing costs should not exceed a benchmark proportion of household income. This approach typically focuses on mortgage costs with other acquisition and operational costs largely ignored or given scant consideration. There is also a lack of data, impartial advice and financial tools available for home purchasers to effectively undertake a comprehensive analysis and risk assessment of affordability based on total potential costs. Reliance is often placed on advice provided by organisations with a vested interest in the process (such as financial institutions). The current sub-prime home mortgage market problems in the United States provide a good example of the problems that this can create. The main purpose of the model is to create greater consumer awareness of the total costs and financial risks involved to facilitate more informed decision making. It is based on an extensive analysis and pricing of operational costs for over 500 existing detached dwellings. The model is based on a 'residual income' approach whereby total costs are converted to an average 'sinking fund' allowance per week and then compared to purchaser weekly 'after-tax' income. The differential is the average disposable weekly income the purchaser will have to meet non-housing cost commitments, needs and wants. Affordability is based on the individual purchaser's assessment of the sufficiency of this non-housing residual income. The model also allows the purchaser to undertake risk simulations and analyses for a range of risk variables such as declines in income and interest rate rises.

**Key Words:** Home Ownership, Housing Affordability Measurement, Life Cycle Costs, Housing Information

## INTRODUCTION

Australia has one of the highest rates of home ownership in the world largely due to government housing policies that have favoured ownership over other tenure forms. Accordingly, home ownership affordability is fundamental to Australian society. This places considerable importance on the methods used to measure home ownership affordability and their ability to provide consumers with the necessary information to evaluate affordability for their specific circumstances.

Many home purchasers are not fully aware of the total potential costs involved. In one of the largest inquiries into home ownership ever commissioned by the Australian Government, the Productivity Commission (2004) highlighted the need for greater consumer awareness of the total costs involved in home ownership, the risks involved and their impact on affordability. Considerable literature has identified a lack of independent cost information and advice on the total costs of home ownership (Christie 2000, McColl 2002, Moloney & Bor 2003, Housing New Zealand 2003, Erskinomics 2003, Productivity Commission 2004, Reserve Bank 2004, Gabriel 2005, et. al.). Information and advice is still predominantly provided by commercial bodies with vested interests in the housing process (such as financial institutions, real estate agents and government departments). Caplin et. al. (2003) also identified problems with the provision of quality independent housing advice and concluded that there is literally no one that can be relied upon for objective guidance. Erskinomics (2003) has found that the home purchase market is very primitive in terms of financial advice compared to other financial asset markets, where there is considerable information and sophisticated financial advice available.

This dearth of independent cost information and financial analysis tools for home purchasers provides the foundation for this study. This spawned the idea of the development of an affordability measurement model that incorporates total home ownership costs that can be used independently by home purchasers to better reflect their specific circumstances and the individual peculiarities of the property intended for purchase. The model will provide purchasers with greater awareness and understanding of the total potential costs involved, particularly with respect to operational costs incurred for maintenance, repairs and improvements. It will also enable them to undertake a detailed financial and risk analysis of their purchase with much greater awareness of the long term cost ramifications. This would also place the purchaser in a more informed position to properly evaluate the “vested interest” advice given by housing service providers.

## CURRENT MEASURES OF AFFORDABILITY

The methods used to measure housing affordability are the main means of providing housing consumers and decision makers with information on housing costs and their affordability. A review of housing literature has shown that the concept of housing affordability is complex and that considerable disagreement exists amongst researchers and policy makers about how to define it. Adding to the problem is that affordability definitions are often twisted to suit the vested interests of policy makers, governments, lobby groups, industry organisations and researchers (Gabriel, et. al. 2005, Quigley and Raphael 2004). A number of methods have been developed to measure housing affordability. For home purchasers, these methods can be broadly categorised as: i) Accessibility/Deposit Gap Methods, ii) Housing Costs – Income Ratio Methods, iii) Residual Income, and iv) Aggregate Economic Indicators/Indexes.

### Accessibility/Deposit Gap Methods

Accessibility to home ownership is the starting point for all home purchasers. If purchasers cannot access home ownership due to financial constraints or other inhibitors then, in the absence of any accessibility assistance, they must use another tenure form to meet their accommodation needs. The main variables used in this form of measurement are house prices, pre-purchase costs, purchaser savings/deposit levels and the purchaser’s maximum borrowing capacity. The variables used vary and depend on the methodology implemented. In essence, they attempt to measure the savings/deposit

required to purchase a home and the ability of the purchaser to secure the necessary mortgage for the purchase. This is often simply seen as the difference between house prices and the maximum borrowing capacity of households, i.e. the gap that needs to be made up by a deposit.

### **Housing Expenditure to Income Ratios**

Housing affordability benchmarks that measure housing costs as a ratio of income have traditionally been the most common method of measuring affordability both within Australia and internationally (Freeman et. al. 1997, Chaplin and Freeman 1999). The conventional benchmark “rule of thumb” is that housing costs should not exceed 25-30 per cent of a household’s income, approximately a quarter of a household’s income (Burke and Ralston 2003). A key study on the housing expenditure to income ratio was carried out by Hulchanski (1995). He found that the 25 per cent benchmark emerged in the 19th century based on the principle of “one week’s pay for one month’s rent” and quickly developed into the most commonly used affordability benchmark measure, and remains so today.

However, Hulchanski argues that the conceptual, theoretical, empirical, methodological and practical problems with the ratio measure have never been resolved and considerable debate still exists in the housing research community about its use. He found that the measure lacks any scientific foundation and is fundamentally based on a “rule of thumb” approach with grossly generalised assumptions about household consumption patterns. The main issues centre on the composition of housing costs (particularly the lack of comprehensive allowance for these costs) and income (particularly in terms of gross versus net income, fluctuations in income and differences in allowances for the varying contributors to household income). The key problem is that the method simply cannot account for the extremely diverse nature of household consumption (Hulchanski 1995). Hancock (1993) contends that the method results in very misleading information for economic policy, housing policies and individual affordability assessment.

### **Residual Income After Housing Costs**

The residual income approach focuses on the relationship between housing costs and living standards by measuring disposable income remaining after housing costs. The measure examines the adequacy of a household’s disposable income left after meeting their housing costs and the household’s capacity to maintain an acceptable standard of living with this income. Whilst the ratio method is seen as a “shelter-first” method with the house and concomitant costs taking priority, this method is seen as “non-shelter first” with lifestyle and non-housing expenditure taking precedence over housing expenditure (Burke and Ralston 2003). Karmel (1998) add that the measure is based on the premise that households should be able to afford both housing and non-housing expenses. Ratio methods largely ignore the adequacy of after-housing income.

Residual measures typically utilise a benchmark approach by measuring the minimum acceptable levels of income required to meet non-housing expenses. The focus is on “after-tax” and “after-housing” disposable income. Unlike ratio methods, residual approaches establish a range of benchmarks that reflect differences in household size and type. Cardew et. al. (2000) found that the residual measure is viewed by many housing researchers as more realistic and appropriate. Ambrose (2005) argues that this measurement approach is more practical for households and meets the criteria of common sense and legal defensibility.

This approach requires the measurement or determination of minimum acceptable standards of living and the minimum level of disposable income to achieve this standard. The measures typically stem from policies involving social welfare, minimum income levels and household budget standards. Burke and Ralston (2003) found that the method has traditionally been used to set rent levels in socialist countries and was influential in establishing rent levels in Australia’s early public housing system. This link to welfare and the focus on minimum acceptable income levels has resulted in the measure being commonly intertwined with measures of poverty.

Difficulties associated with residual measures, particularly in relation to the large number of variables used and the lack of adequate data to support these variables, have seen most housing researchers and policy makers adopt the much simpler ratio method in lieu (Gabriel et. al. 2005). Nevertheless, the residual concept has considerable merit, particularly with respect to the identification of the minimum disposable income required after housing costs to maintain an acceptable standard of living. Whilst it is impossible to develop benchmarks that are applicable for all households, the indicative benchmarks at the very least provide means for individual households to compare their individual circumstances.

There is great potential for this residual approach to be adapted for use by households on an individual basis. This would enable households to examine their after-housing disposable income and make a detailed assessment of whether that income is sufficient for their specific circumstances. A detailed analysis of both housing and non-housing consumption and expenditure patterns would be required. A housing affordability measurement model based on this approach would provide households with a very tangible and clear means of affordability assessment. The key would lie in the comprehensiveness of the model.

### **Affordability Indexes**

Affordability indexes are used to measure trends in housing affordability on a wider macro-economic level. Berry and Hall (2001) contend that these indexes provide very important contributions to housing affordability assessment and are widely referred to in the media and by policy makers. They are based on economic and statistical indicators such as interest rates, income, employment conditions, dwelling prices, rents, mortgage and rent payments. This information is available from a wide range of sources such as the Australian Bureau of Statistics, the Reserve Bank of Australia, the Valuer Generals Department, housing industry associations such as the Real Estate Institute of Australia, financial institutions such as the Commonwealth Bank of Australia and other entities.

The Productivity Commission (2004) found that whilst these indexes are very useful in housing affordability assessment they all have limitations and can only be used as indicative measures and do not adequately cover the ongoing operational costs of home ownership. Additionally, the main providers of these indexes have a vested interest in the home purchase market. The lack of comprehensiveness of these indexes, particularly in terms of total housing costs, is therefore not surprising. This is supported by Gabriel et. al. (2005) who describe current measures as technically arcane and difficult for non-specialists to follow, and that there is a pressing need to improve the standard, quality and comprehensiveness of affordability measures.

## **RESEARCH METHODOLOGY**

The main purpose of this research study was to address current deficiencies in affordability measurement. The first step was to undertake a detailed collection and analysis of data on the costs involved in purchasing and owning an existing detached dwelling in the Sydney Region. These costs are categorised as:

- i) Capital/Acquisition Costs  
Purchase price and 'up-front' costs
- ii) Pre-Purchase Costs  
Conveyancing/legal fees, stamp duty, surveys/inspection fees, council/water rates, services connections, removal/relocation fees and insurances
- iii) Finance Costs  
Establishment fees, legal fees, stamp duty, mortgage insurance, mortgage repayments and fees
- iv) Operational Costs  
Regular (annual) costs such as council rates, water charges, services charges and insurances and intermittent costs for maintenance, repairs, renovations, alterations, additions and fitout

In terms of data collection, data in the first three categories was readily available. However, there is a dearth of data on housing maintenance/repairs/improvements and the data that does exist can be quite subjective. Many studies have been carried out on the life costs of housing but the maintenance/repairs/improvements component has been relatively weak, being largely based on broad-based assumptions or on general statistics as can be found through Australian Bureau of Statistics data. There has been little detailed analysis on the maintenance and repair costs of housing and their impact on affordability. Home improvements go beyond maintenance and repairs and include renovation and alteration and addition work. The scope and cost of this form of work varies enormously and can only be assessed on an individual basis. Accordingly, the focus of the analysis was on the development of maintenance and repair cost data that can be incorporated in housing affordability measurement.

The strategy used to obtain this information/data was to collect and analyse pre-purchase property inspections carried out by a professional inspection firm for prospective home purchasers. These inspections are commonly commissioned by home purchasers prior to the purchase of a property to assess the condition of the dwelling and identify any maintenance and defect problems. The property inspection report helps to protect the purchaser's interest in the property. If problems are identified, the purchaser may be able to negotiate a lower selling price, decide not to proceed with the sale or, at the very least, purchase the property but be more informed about potential problems. These reports provide a wealth of information and data on housing maintenance and rectification requirements. Property inspection data was provided by one of the largest property inspection firms in NSW, Tyrrells Property Inspections. A pilot study was initially carried out based on an analysis of 106 property inspection reports and this was expanded to 505 inspection reports for the main study. This included detailed cost estimates for all maintenance and rectification work.

## **THE AFFORDABILITY MODEL**

The data collected in this analysis was then used in the development of a conceptual software model to measure the affordability of the purchase of a home in the Sydney region. The primary purpose of the model is to create greater awareness amongst home purchasers of the total potential costs involved in their purchase over a specified time frame. The model has been primarily developed for use by potential purchasers of a property so that they can carry out an independent and comprehensive evaluation of potential costs involved. It will also have potential application by financial institutions, financial advisers, government housing authorities and other bodies involved in the provision of housing information/advice.

The affordability model is based on the "Residual Affordability Measurement" technique which identifies the after-housing costs income of a purchaser. The concept of the model is that it will analyse the total potential costs of a purchase over a specified time frame and average that back to an average cost per week. This will then be compared to the purchaser's average net income per week over the same period. The purchaser can then evaluate whether their 'residual' income per week (after allowance for their housing costs) is affordable for their individual circumstances and lifestyle. A Household Expenditure Table has been developed to assist in this evaluation.

The purchaser will also be able to undertake a range of risk simulations to evaluate the impact of changes to their circumstances (such as interest rate and income changes) as well as decisions on operating costs such as maintenance and repair requirements (for example, whether to replace a kitchen or not) and fitout requirements (for example, whether to buy a new lounge set or not). Therefore, the model is very flexible and allows adaptation by the purchaser to better suit their individual circumstances and the specific property intended for purchase. On a more general level, the model will also enable purchasers to more accurately assess their maximum affordable purchase price by making a comprehensive assessment of the total potential costs involved.

The model needed to be capable of measuring and recording the following associated with a purchase:

- i) Purchaser Details
  - Net (After-Tax Income)
  - Non-Housing Expenses and Cost Commitments
  - Funds/savings available to contribute to the purchase (i.e. deposit)
- ii) Property Details
  - Property Characteristics (Location, Age, Type of Construction)
- iii) Potential Costs
  - Capital Costs
    - Purchase price and other capital expenses
  - Pre-Purchase Costs
    - Conveyancing costs, legal fees, inspection reports and the like
  - Finance Costs
    - Finance establishment fees, legal fees, mortgage repayments
  - Operating Costs
    - Council rates, services charges, maintenance and repairs, improvements and fitout
- iv) Individual Adjustment
  - Flexibility to enable purchasers to adjust the costs automatically generated to better suit their individual circumstances and the peculiarities of the actual property
- v) Simulation
  - Enable purchasers to simulate a variety of scenarios such as changes in interest rates and income over the specified period as well as the simulation of decisions on whether or not to carry out maintenance and repairs and other decisions such as fitout requirements.

It was also important that the relationship between these variables be arranged in a format that enables purchasers to accurately, but simply, assess the total potential costs of a purchase and assess the affordability of the purchase in relation to their non-housing expenses and cost commitments. The model will also be able to be used on a more general level by purchasers to assess their maximum affordable purchase price for properties of a particular type, in a particular region and the like. In other words, the model can also be used by potential purchasers who do not have a specific property that they intend to purchase but need to analyse and calculate what their maximum affordable purchase price is. This will enable these purchasers to make more informed decisions and target properties in a more appropriate price range.

The model focuses on establishing the affordability of the potential costs involved in a purchase. This needs to be weighed up against the potential capital gain (or loss) that the purchaser may experience during purchase. For example, a purchaser may purchase a property and find that the costs exceed what they expected and result in financial hardship. However, if during the period of ownership, the property appreciates in value this increase may more than offset the extra costs incurred during ownership. However, this requires assessment of likely capital gains for a property and is considered beyond the scope of this study. The model will, however, make purchasers aware of this and encourage them to make comparisons of costs incurred against potential capital gains. The model will encourage purchasers to seek professional assistance for this.

The objective of the model is to identify the total potential costs that may be incurred by the purchase and enable them to assess whether this is affordable. This creates awareness and provides a solid base for purchasers to make further assessments taking capital gains into consideration.

## **Methodology**

The methodology used to develop the model consisted of four stages:

- i) The provision for purchasers to input their personal details in relation to the property purchase and specific details about the property.

- ii) The input of data collected on home purchase and ownership costs. These variables will be affected by a range of factors such as purchase price, purchaser's saving levels and propensity for maintenance and repairs. The assumptions made and allowances made for each cost component will be detailed in the following sections.
- iii) The development of a Household Expenditure Table to assist purchasers in the assessment of their individual non-housing expenses and cost commitments to determine their disposable income available to cover housing costs.
- iv) The development of the model to calculate total potential costs and average these back to an average cost per week over the specified period and the production of a report detailing the cost breakdown. The model will also be able to calculate the maximum affordable purchase price for the purchaser. The purchaser will also be able to modify/adjust the results produced in each cost category to better reflect their circumstances.

### **Time Period for Analysis**

The next important assumption related to the time frame for the model and whether the concept of discounting for future costs should be introduced. Traditional life cycle costing analyses cover periods ranging anywhere from 2 to 100 years plus. One common approach is to evaluate life cycle costs over the period in which the owner has a financial interest in the property. Discounting of future costs is normally calculated to reflect the time value of money and the difference between present and future values. However, the introduction of discounting and evaluations over long time frames (exceeding ten years) would prove too confusing for the average home purchaser. A fundamental requirement for the model is that it be simple enough to use and understand by the average purchaser. The use of discounting would affect this and would also be likely to be misunderstood by many home purchasers. Discounting also tends to reduce the importance of future costs, which could further mislead purchasers.

The time frame for analysis is also an important issue. Analyses over ten years really do require discounting techniques to be used and also lead to greater uncertainty of results. Therefore, the time period chosen for the model was the first 5 years of ownership but this can be adapted/changed to suit individual purchaser circumstances. The average period of ownership of a home in Australia is approximately 7 years and the early years of ownership are typically the periods where purchasers experience financial hardship. The model is based on establishing the purchaser's requirements over the first five years of ownership. As an example, the maintenance and repair requirements for the property are determined at the outset by the model. The owner then has to decide on the extent of maintenance and repair works that they intend to carry out over the first five years. The owner may decide that they won't carry out certain work (such as replacing the kitchen). A similar assessment would be carried out for other areas, such as fitout costs. These costs are variable and dependent on the purchaser's individual requirements.

The model will then calculate the costs in present value terms for the first five years of ownership. The total sum will represent a sinking fund for the period. This figure is then averaged back to an amount per week that needs to be set aside to meet these costs. The decision to keep costs in present value terms is to make the model simple enough for purchasers to understand. Costs will obviously be affected by inflation and market conditions and income will also be affected likewise. However, incorporated in the model will be assumptions about changes to costs and income over the period of analysis.

Nevertheless, the model will provide purchasers with a tangible approximation of costs that will be accurate enough to determine what their total potential costs might be and the amount necessary to set aside in the form of a sinking fund to meet these costs. Whilst not perfect, the model will enable purchasers to have a much clearer indication of total potential costs and a greater awareness of what they are likely to encounter. The model will also be very flexible and allow purchasers to modify the



data and carry out a range of simulation analyses. For example, the purchaser may analyse defect costs for the roof category. The model will identify from the data set the average and range of roofing rectification costs for this type of property. However, this property may have had the roofing replaced recently or the purchaser may have a different opinion (or advice) in terms of what the rectification costs may be. The purchaser can then adjust the roofing rectification costs accordingly. The most important thing is that the roofing element has been evaluated and a decision made. The data set will provide a benchmark of costs for the purchaser as a guide.

The purchaser can also simulate the effect of carrying out selected maintenance and can also simulate the effect of changes to mortgage interest rates and income.

## Results

The final section of the model details the results of the calculations. A summary of the main results is shown in the front summary section of the model. This summary identifies the mortgage (loan amount) required after calculation of costs involved, total average weekly housing costs for the time period analysed, total average disposable net income (after tax and housing costs) and the percentage of housing costs as a proportion of net income. The total average disposable net income (after housing costs) is then matched against the purchaser's assessment of their total Non Housing Costs and Expenses. This will all equate to a tangible average per week. This will enable the purchaser to identify whether a purchase is affordable or not.

In the rear section of the report, detailed cost reports are provided setting out all the detailed costs for each cost categories for further analysis of the model.

A major advantage of the model is the simulations that the purchaser can carry out and automatically see the net results. Examples of simulations might include:

- adjustment of non-housing expenses and costs to improve maximum purchase price affordability levels (for example, reduce holiday savings allowance or entertainment allowance)
- adjustment of maintenance and repair requirements (for example, not to upgrade kitchen or bathroom)
- adjustment of fitout requirements (for example, deciding not to purchase the new lounge suite)
- adjustment of other costs that may be reduced (for example, using a conveyancing company in lieu of a legal firm)
- adjustment of mortgage interest rates (to measure the effect of potential future interest rate increases on affordability)
- adjustment of income changes (for example, measuring the effect of a decline in income if, say, a couple plans to start a family and will lose part or all of a second income)

All of these simulations can be carried out with the purchaser immediately getting an answer in terms of what their total likely housing costs will be and their average net disposable income after allowance for housing costs. The bottom line, and the true measure of affordability, will be this final figure – the average amount of income left per week after allowance for all potential housing costs. In other words, the amount of “cash left in the hip pocket” to spend on everything else. It is this figure that only individual purchasers can determine whether it is affordable or not. It will also provide purchasers with a budgetary framework for their housing costs and expenses.

As mentioned previously, this all needs to be then compared to the potential capital gain of the property. A purchaser may purchase a property that costs more than they anticipated. This may require them to increase their mortgage by, say, \$50,000 or forego spending money on non-essential areas such as entertainment. However, if the property increases in value by \$200,000 over the period of analysis then the purchaser would have offset this extra cost. Capital gains in owner-occupied properties are not taxed in Australia.

However, this should then be evaluated against the extra stress that the increased mortgage repayments or foregone spending in non-essential areas might have on the purchaser and other members of their household. For example, the impact that greater financial stress may have on a family and the potential ramifications of problems such as divorce are intangibles that perhaps, for many people, are more important than any other criteria. The purchaser might have been better off spending, say, an extra \$20,000 on a better maintained higher quality home and perhaps enjoyed the same or greater capital gains at lower expense. Also, would similar capital gains have been experienced with a property purchased at a lower price?

## **THE HOME OWNERSHIP AFFORDABILITY MODEL (HOMECOST)**

As identified previously, the affordability model has been developed for purchasers of detached dwellings in the Sydney region who intend to live in the premises as owner-occupiers. The model is restricted to this scope but the principles and concepts can be adapted for other housing and purchaser types not only in Australia but around the world. Table 1 provides an example of the model by illustrating the summary results of a hypothetical analysis.

This example uses the details of a hypothetical purchaser to test and evaluate the results produced by the affordability model. The main purchaser details used for the analysis were:

### Purchaser Details:

Status: Couple (dual income)  
Combined Gross Income: \$130,000 per annum (Partner 1 - \$90,000, Partner 2 - \$40,000)  
Savings for Purchase: \$50,000

### Property Details:

Purchase Price: \$400,000  
Location: Central Coast  
Characteristics: 10-20 years old, single storey, 4 bedrooms, brick veneer, concrete slab, plasterboard linings, aluminium framed windows and concrete roof tiles

### Mortgage Details:

Mortgage Type: Standard Credit Foncier Variable Interest Rate Mortgage  
Interest Rate: 7.00 % per annum  
Mortgage Term: 25 years

The overall results of the affordability analysis are shown in Table 1. This provides a snap shot for the purchaser to immediately see the bottom line of their intended purchase – the shortfall or surplus in their average disposal income per week after due allowance for all housing costs and non-housing costs and expenses. This shortfall or surplus represents, in effect, the amount of “cash” that the purchaser will have (or won’t have) in their hip pocket each week.

In the example, the purchaser has a combined annual gross income of \$130,000 with a savings level of \$50,000 and intends to purchase a property for \$400,000 in the Central Coast region of Sydney. This income and savings level is very high compared to average earnings and savings levels whilst the purchase price is slightly above average for the region. Nevertheless, the analysis shows that the purchaser would have a shortfall of \$122 per week (\$6,344 per annum) after allowance for all costs. The savings level of \$50,000 does not represent the deposit level for the purchase. Pre-purchase costs (stamp duty, conveyancing costs, property reports and the like) and finance establishment costs (stamp duty, establishment fees, legal fees, insurance) are up-front expenses required prior to purchase. The full extent of these costs is often not realised by purchasers and need to be deducted from any savings accumulated for the purchase.

# HOMECOST SUMMARY PAGE

Summary	Purchaser Details	Pre-Purchase Costs	Finance Costs	Ownership Costs	Maint/Repair Costs	Fitout Costs	Renovation Costs	Non-Housing Expenditure	Detailed Reports
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## PURCHASER DETAILS

Purchaser/s Name	Bill & Mary Bloggs
Period of Analysis (years)	5
Savings	\$50,000
Total Gross Income (per annum)	\$130,000
Total Gross Income (per week)	\$2,493
Total Net Income (per annum)	\$91,866
Total Net Income (per week)	\$1,762
Loan Period (years)	25
Interest Rate (%)	7.00

## LOAN AMOUNT

A. Purchase Price	\$400,000
B. Savings	\$50,000
C. Pre-Purchase Costs	\$25,210
D. Finance Establishment Costs	\$9,861
E. Deposit on Purchase (B-C-D)	\$14,929
F. Required Loan Amount (A-E)	<b>\$385,071</b>

## TOTAL HOUSING OPERATING COSTS

Average Annual Costs	
A. Finance Costs	\$33,139
B. Annual Ownership Costs	\$6,250
C. Maintenance & Repair Costs	\$4,897
D. Fitout Costs	\$1,170
E. Renovation Costs	\$700
F. <b>Total</b>	<b>\$46,156</b>

## PROPERTY DETAILS

Location	23 Castle Street Utopia NSW 2000
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Purchase Price	\$400,000
Age (years)	10-20 yrs
No. of Storeys	1
No. of Bedrooms	4
Structure	Brick Veneer
Floor	Concrete
Ceiling/Walls	Plasterboard
Windows	Aluminium
Cladding	Brick
Roof	Concrete Tiles
Deck	Concrete

G. Average Cost Per Week (F div by 52 weeks)	\$888
H. Housing Costs - % Net Income	50.4%
I. Housing Costs - % of Gross Income	35.6%
J. Min. Mortgage Repayments - % of Gross Income	25.1%

## AFFORDABILITY ASSESSMENT

Total Net Income (per week)	\$1,762
less	
Average Housing Costs (per week)	\$888
Non-Housing Costs & Expenses (per week)	\$996
<b>SHORTFALL/SURPLUS IN DISPOSABLE INCOME</b>	<b>-\$122</b>

Table 1 - Home Ownership Affordability/MLH

In the example, pre-purchase costs are \$25,210 and finance establishment costs are \$9,861. This erodes the savings level from \$50,000 to \$14,929 which represents the actual deposit on the purchase price. With a purchase price of \$400,000, the model calculates the required mortgage sum at \$385,071. This is a large mortgage representing approximately 96% of the purchase price. The model needs to determine whether the borrower could reasonably borrow this amount and therefore calculates the minimum mortgage repayments as a percentage of gross income (Item J). In this example, the minimum repayments represent 25.1% of the purchasers' gross income. As described in the literature review and in the data analysis, a common benchmark used by home lending institutions is that minimum mortgage repayments should not exceed 30% of gross income. Many institutions will increase this benchmark to 35% and even 40%. The purchaser is well within these borrowing limits. On this 30% benchmark basis, the purchaser could actually borrow as much as \$460,000. Finance costs (mortgage repayments and fees) are based on the current interest rate of 7% for a variable interest rate loan. This leaves the purchaser exposed to potential increases to this rate. The model enables the purchaser to simulate the effect of higher interest rates – this is described later.

The model summarises the total average annual housing operating costs for the property. Finance costs are calculated at \$33,139 and annual ownership costs (rates, telephone/electricity/gas, insurance) at \$6,250. The total costs for maintenance/repair/fitout/renovation over the five year period of analysis are divided by five to approximate annual costs. Maintenance & Repairs cost an average of \$4,897 per annum, Fitout costs \$1,170 and Renovation Costs \$700.

Finance costs are clearly the most significant cost. These costs are very high due to the high sum borrowed and the relatively little amount of equity that the purchaser has in the home (4%). Nevertheless, the other costs are significant and have a major impact on affordability (and particularly if purchasers have borrowed close to or at their maximum borrowing capacity).

Maintenance and repair costs were much lower than the average calculated in the database study. This was due to two reasons. Firstly, the property chosen had property characteristics that reduced potential rectification costs. Secondly, and more importantly, the purchaser could analyse the maintenance/repair requirements and then decide if they would undertake the work and whether they could do the work for a lower cost. They could also evaluate the actual property's condition in relation to average database costs for each defect category and determine whether work was required or not. This is greatly assisted if the purchaser has had a building inspection carried out that identifies specific problems and, particularly, if the inspector is able to give an indication of potential rectification costs. In the example, this is shown as the purchaser makes decisions on each cost category. A conservative approach is taken. The same principle applies with Fitout and Renovation costs. These areas are entirely dependent on individual purchasers' wants, needs and financial capacity. The model provides a framework for the purchaser to make decisions on items/work and their costs. This is another area that can be simulated many times looking at a variety of options. These costs will vary enormously among purchasers. In the example, a conservative approach is taken with these items.

Total average annual housing costs are then calculated at \$46,156. Whilst minimum mortgage repayments account for 25.1% of gross income it is a different story with Total Housing Costs. They account for 35.6% of gross income and 50.4% of net income. A key argument in this study is that affordability measures need to relate to actual income (not gross income). This analysis shows that the purchaser is borrowing well within their maximum borrowing limit yet their total housing costs account for over half of their actual income. These costs are then averaged to an amount per week for comparison with income. Total housing costs equate to \$888 per week and the purchaser's total net income per week is \$1,762. This means that the purchaser has \$874 left on average per week to spend on all non-housing costs and expenses.

The purchaser needs to determine whether this amount is affordable for their individual circumstances. The purchaser can use the Non-Housing Expenditure Table in the model to assist in this calculation. Hypothetical costs were put into this table to represent spending patterns that might be expected of purchasers in this income category. Nevertheless, a conservative approach was taken. This analysis found that the purchaser's non-housing costs and expenses averaged out at \$996 per week. Therefore there is a shortfall of \$122 per week if the purchaser intends to go ahead with the purchase and carry out the works planned and live the lifestyle budgeted for. This assumes that interest rates will not rise and income will not fall – obviously if this occurs the situation worsens.

At this point the purchaser has many options that they can simulate to make the purchase more affordable. They may reduce their non-housing expenditure, forgo fitout items and renovation work, reduce planned maintenance/repair work and reduce their services costs. The main result is that the owner is much more informed about what the potential costs might be and how affordable that might be for their individual circumstances. It also provides a budgetary framework where the purchaser can establish a sinking fund for future costs and also to keep tabs on current expenditure, both housing and non-housing. It can also assist purchasers identify potential additional borrowing requirements. In the above example, \$888 per week for non-housing expenses might be considered very affordable for many purchasers. Some purchasers may find \$500 per week or even less affordable. For others, \$888 may be not enough for their particular lifestyle and household size. It is up to the purchaser to decide what is affordable.

The model will also help purchasers identify the substantial proportion of income that a house can consume and make decisions on what concessions they are willing and able to make to their lifestyle to meet their housing needs. In other words, some may choose a lower priced property and maintain their lifestyle levels, whilst others may purchase a higher priced home and modify their non-housing expenditure and lifestyle. The model enables purchasers to be much more informed when making these kinds of decisions.

## **CONCLUSION**

The Affordability Model is a unique model that represents a significant contribution to new knowledge in housing affordability measurement studies. The model enables individual purchasers to carry out an independent affordability assessment based on a comprehensive analysis of home purchase and ownership costs for the specific property intended for purchase. These costs are then related to the purchaser's specific individual circumstances and preferences in terms of income levels, non-housing cost commitments and expenses, risk attitudes, preferences in relation to home fitout, maintenance, repairs and improvements and general lifestyle considerations. The purchaser is also able to carry out risk simulations to gauge the effect of possible future changes to income levels and mortgage interest rates as well as the cost consequences of decisions in relation to fitting out, maintaining and improving the home. Each analysis or simulation provides the purchaser with an immediate 'bottom line', the residual disposable weekly income available after due allowance for all purchase and ownership costs. No other affordability measure provides this form of in-depth individualised analysis.

A major feature that adds to the uniqueness of this model is that the maintenance and repair component is based on an extensive collection, analysis and pricing of data obtained from pre-purchase property inspections for over five hundred residential properties. Additionally, the principles and methodology developed in this study will have wide application not only in Australia but also internationally.

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