Renewing the Compact City

Appendix B – Market Feasibility Methods

Contents

Strata Renewal Feasibility Modelling Method

There are three principal components to estimating the feasibility of development. First, establish the buyout cost of the land and current development. Second, estimate the cost of development based on multiple building quality and type scenarios. Third, estimate the likely sale proceeds for each development scenario based on the current sales values of similar land parcels in the area.

The cost and sale metrics each contain apartment value inputs as either buyout cost or sale proceeds. These values have been based on the sale records for the calendar year 2013 and stratified according to age of block, SA2 location and SA3 location. Figure 1 shows the distribution of sales figures by registration date of the strata scheme. Four broad age bands were identified: 1961-1969, 1970-1994, 1995-2010 and 2010-2013.

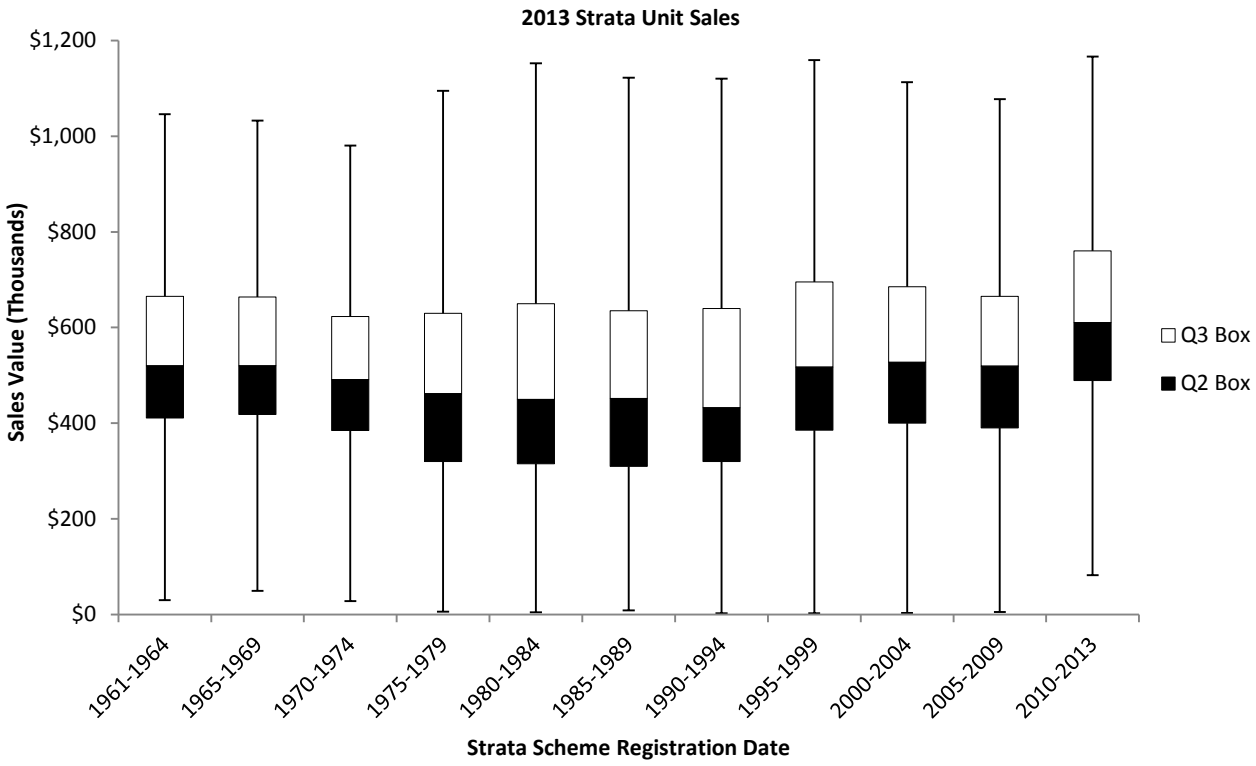

Figure 1 Distribution of strata unit sales by strata scheme registration date for calendar year 2013

SA3s with fewer than 30 sale records have been excluded from the analysis. Likewise when there are fewer than 30 sales records in the relevant strata scheme age band for each SA2, the percentile values for that age band for the SA3 are used. In a small number of cases, there were fewer than 30 records for a particular age band in the corresponding SA3. In those cases, the values for all age categories within the SA2 are then used.

The unit of analysis for testing feasibility will be based on the cadastral parcels. This allows for the input of buyout costs of existing development based on the known size and age of schemes and land area values, to establish floor space ratios and feasible scenarios.

In combining development costs and sale proceeds, we are able to establish the number of units that would need to be produced in the redevelopment of a given plot of land in order for it to be financially feasible. The

outcome then is to produce an estimate of the floor space ratio and building height that would be required to produce a feasible development scenario.

In reality there are going to be particular planning constraints which will impact on the practical possibility of delivering a particular scenario. However rather than feed this in as an upfront constraint on the feasibility modelling, it enables some commentary to be made on the type of planning environment that would be needed to establish a financial case for redevelopment. At this point a comparison can be made between the output floor space ratios and the existing planning framework to determine the likelihood of a redevelopment scenario being approved. In cases where very high floor space ratios are produced, it is unlikely redevelopment could occur.

Costs

Buyout Cost

Buyout cost will be based on sales records for units within an SA2 zone. Each of the sale transactions will be paired with the age of the strata block we obtained from LPI property titles. Price ranges will be established based on block age with the median prices used as a proxy for the cost per unit within a given strata block of a given age. The buyout cost will then be the number of units multiplied by the median value for the SA2. Stamp duties will also be payable by a developer at the time of purchasing the existing units, and is calculated using the individual unit price rather than the sum value of the whole block.

$$Buyout\ (b) = (median\ SA2\ sale\ price\ \times number\ existing\ units) + stamp\ duty$$

As described above, if there are fewer than 30 sale records for a particular age band in the SA2, then the percentile values for that age band at SA3 level area used.

Stamp duties are calculated based on the following table sourced from the Office of State Revenue.

Table 1 Stamp duties rates (sourced: http://www.osr.nsw.gov.au/taxes/transfer-land/about)

Value of the property subject to the transaction	Rate of duty
$0 - $14,000	$1.25 for every $100 or part of the value
$14,001 - $30,000	$175 plus 1.5% of the value exceeds $14,000
$30,001 - $80,000	$415 plus 1.75% of the value exceeds $30,000
$80,001 - $300,000	$1,290 plus 3.5% of the value exceeds $80,000
$300,001 - $1m	$8,990 plus 4.50% of the value exceeds $300,000
Over $1m	$40,490 plus 5.5% of the value exceeds $1,000,000
Over $3m	$150,490 plus 7% of the value exceeds $3,000,000

Development Cost

Development cost will be based on a number of scenarios of types of buildings and quality of buildings being constructed. The two broad scenarios will consider building walk-up type flats and high rise development. Within each of these building types will be three sub-categories based on quality of the build – basic, medium and high. Each quality will therefore imply different construction costs and different apartment sizes.

This part will feed into sale proceeds as they will determine a price appropriate for the area i.e. basic, medium or high.

Construction cost per unit is based on the Rawlinsons Construction Cost Guide 2014 and uses the average price per area in each quality and type category. The walk-up flat costs are based on the 'Multi Unit – Low Density' apartment classification while the high rise flat costs are based on the 'Multi-Unit – High Density' apartment classification and are summarised in Table 2. The total unit price is based on the unit floor areas listed in Table 3.

Table 2 Construction Costs 2013 (Rawlinsons, 2014)

Development Cost Per Unit	Basic	Medium	High
2 bed walk-up - $/sqm	$1,730	$1,883	$2,337
2 bed flat (high rise) - $/sqm	$2,015	$2,163	$2,685
Balcony - $/sqm	$675	$718	$845
2 bed walk-up – UNIT COST	**$145,150**	**$180,958**	**$308,325**
2 bed flat (high rise) – UNIT COST	**$167,950**	**$206,158**	**$350,085**

In estimating the cost per unit, an appropriate unit size needs to be estimated. The sizes listed in Table 3 have been based on the SEPP 65 design guidelines for two unit apartments. There are various apartment configurations listed in SEPP 65 that result in different floor area outcomes, and the smallest example is taken to reflect a 'Basic' construction, while the largest example is taken to reflect a 'High' standard finish. In any redevelopment scenario there is likely to be a range of apartment sizes from studio to three bedrooms, however this model assumes an average of 2 bedroom units across the development.

Table 3 Unit floor areas

Floor Space Per Unit	Basic	Medium	High
2 bed walk-up	80 m^2	90 m^2	120 m^2
2 bed flat (high rise)	80 m^2	90 m^2	120 m^2
Balcony - AREA	10m^2	16m^2	33m^2

The costs will also assume 50% on cost for development costs and 20% profit margin on top of both buyout and development costs. Developers are also required to pay GST on the sale proceeds of each new unit. Total costs can be summarised by the following formula:

$$Costs = 1.2 \times \left[Buyout\ (b) + 1.5 \times \left(Units(x) \times Construction\ Cost(c)\right) + (GST\ payable)\right]$$

Where:

$$GST\ payable = \ sale\ proceeds - \left(\frac{sale\ proceeds}{1.1}\right)$$

Sale Proceeds

Sale proceeds will be based on different percentile values for new units (sales of units in 2013 registered after 2010) within the SA2, multiplied by the number of units being built. The following formula summarises this relationship:

$$Sale\ Proceeds = Price\ (a) \times Units\ (x)$$

Different percentiles in the new building age bands will be used based on quality of building being constructed. High standard finish units are assumed to achieve a sale price around the 75th percentile of sales of buildings registered between 2010 and 2013. Medium standard finish units are assumed to achieve a sale price around the 50th percentile of sales of buildings registered between 2010 and 2013. Low standard finish units are assumed to achieve a sale price around the 25th percentile of sales of buildings registered between 2010 and 2013.

Feasibility

The broad measure of feasibility will be based on the assumption that any particular redevelopment will become feasible when the potential sale proceeds exceed the costs (which include a 20% profit margin). The formulas below encapsulate this.

A development becomes feasible when:

$$Sale\ Proceeds\ \geq Costs$$

By substituting in the relationships from the cost and sale proceed sections above, the relationship is as follows:

$$Price\ (a) \times Units\ (x) \geq 1.2 \times \left[Buyout\ (b) + 1.5 \times \left(Units(x) \times Construction\ Cost(c)\right) + \left(Price\ (a)\ \times Units\ (x) - \left(\frac{Price\ (a) \times Units\ (x)}{1.1}\right)\right)\right]$$

Or, simplified:

$$ax = 1.2\left(b + 1.5(cx) + \left(ax - \left(\frac{ax}{1.1}\right)\right)\right)$$

The sale proceeds and cost of development both vary according to the number of units being constructed, which in reality would be based on what the planning framework would permit to be developed on the site. The approach taken here is to establish the number of units that would need to be built on any given site for the sale proceeds to exceed costs. This can be done by rearranging the above equation:

$$x = \frac{1.2b}{\left(\frac{0.98a}{1.1}\right) - 1.8c}$$

where $x > 0$

By inputting all the known cost and sale values, we are able to estimate the number of units required to reach the 20% profit margin requirement for developers.

Built Form Outcome

The above analysis produces a unit number output that indicates the point at which a redevelopment scenario would become feasible. The next component of the analysis is to estimate the building form outcome in floor space ratio and building height terms, to given an indication of the likelihood of any particular scenario occurring within the broad metropolitan planning frameworks.

Floor Space Ratio

Floor space ratios can then be calculated based on the number of units required under a feasible scenario, with the nominal apartment size based on build quality and development type and the land area of each cadastral parcel. Balcony areas are not included in floor space ratio calculations. Table 2 outlines the floor areas used according to unit quality. There would likely be a mix of unit sizes in any given building with some being lesser or greater than the floor areas listed in Table 3. For this model, we are assuming an average of 2 bed unit sizes across the development.

Building Height

An estimate of building height (stories) can be generated using the SEPP65 design guidelines for floor space ratio. In designing a building, there will be a range of open space, and set back requirements that affect the potential site coverage of the building footprint. This can vary by location with parcels of land in inner city zones able to cover larger proportions of lot. The development controls encourage councils to set FSR at 80% of the building envelope to account for areas that contribute to various services but not FSR. A footprint area of 35% is suggested as desirable to increase light and ventilation to buildings, and allow for open space and external balconies. The footprint proportion also takes into consideration the various setbacks and site coverage requirements. Using these guidelines, a relationship between land area, plot ratio and building height can be established.

$$Building\ height\ (h) = \frac{\left(\frac{Floor\ Space\ Ratio(p) \times Area(a)}{0.8}\right)}{(Area(a) \times 0.35)}$$

Or

$$h = \frac{p}{0.28}$$

Traffic Light Outcome

The next stage of the feasibility process is to make a judgement on the potential for redevelopment scenarios to occur under the existing planning framework. Permissible building heights and floor space ratios can vary considerably across the city, however given we are modelling areas of existing strata titled housing (excluding schemes of 2 or fewer units), it can be assumed the new multi-unit housing on the same site would be permitted under the existing planning framework.

The Rawlinsons Construction Cost Guide for walk-up flats is based on a maximum of 3 stories and most areas permit a minimum of 3 stories to be built, which equates to a FSR of about 1:1. So any walk-up flat scenario that generates an outcome near 3 stories would be considered viable without any special zoning in place to allow for higher buildings or FSR. Those that are over but near three stories are considered a possibility as there may be some scope to push the limits of building envelopes, which would enable a reduction in the building height relative to FSR. As described above, the model assumes a site coverage of

35% which allows considerable scope to increase FSR without a corresponding increase in building height, particularly in inner areas.

Anything above 4 stories has been categorised as 'high rise' based on the Rawlinsons 'Multi Unit – High Density' classification of constructions costs as these building types are likely to include elevators and other expensive equipment which don't form part of walk-up flat costings.

Table 4 divides the range of floor space ratios into four categories based on what is considered either:

1. Yes - Permissible;
2. Maybe - Potentially permissible depending on variations in some of the constraints included in the FSR and Building Height calculations, such as increasing the building footprint from 35% up to a maximum of 80%;
3. No - Not likely due to the very high FSR and therefore building heights returned as a result of the initial costs analysis; or
4. N/A - When the construction costs per unit are higher than the potential sale price at that price point within the area, then the feasibility formula will return a negative value. This indicates that regardless of buyout cost and underlying planning restrictions, it would not be possible reach a viable redevelopment scenario.

Table 4 Floor Space Ratios

		Yes	Maybe	No
Walk Up Flat	FSR	Up to 1:1	Between 1:1 and 2:1	Above 2:1
	Height (stories)	3	3-4	N/A*
High Rise Flat	FSR	Up to 2.5:1	Between 2.5:1 and 3.5:1	Above 3.5:1
	Height (stories)	Up to 8	8-13	Above 13

* It would cease to be a walk up flat if FSR reached 2:1 even if site coverage approached 100% as it would require a building of 4 or more stories, This would place it in Rawlinsons Construction Cost category of 'High Rise' because of the additional costs of building over four stories.

Affordability Scenarios

The above analysis does not attempt to critique the current relative affordability of the Sydney housing market and is based on an assessment of its functional operation now. This next part of the analysis attempts to intervene in this process by changing some of the assumptions around the pricing of housing in relation to incomes of occupants in each area. In this way, the model attempts to link redevelopment possibilities with desirable affordability characteristics. The one cost part of the model that does not shift relates to construction costs, which in practice will be the same under all scenarios. That is, the cost of materials and labour to actually construct a building would likely be the same.

There are two parts to modelling the affordable redevelopment scenarios. The first part involves establishing a price point for the sale of new residential strata that would be affordable to residents in a given area of the city. The second part involves adjusting some of the cost assumptions in the feasibility model as a potential outcome of some form of intervention into the land and development market.

Affordable sale values (Affordable Scenario 1)

The above analysis presumes a purchase price based on the current land market within the SA2 or SA3, but these values do not necessarily represent affordable house prices. In order to estimate break even yields for the redevelopment of existing strata schemes under an affordable redevelopment scenario, an alternative

sale price for new units was input into the model. The affordable sale value was based on the median incomes of households within a given SA2 from the 2011 Census and indexed to 2013 based on CPI.

To estimate the sale value, a total loan value was estimated based on the following assumptions:

- 40% of the median weekly household income contributing to a mortgage repayment
- Interest rate of 5.3%
- Loan term of 30 years

10% of the loan value was then added to represent a deposit value for the purchase of the property. The output value then presents an affordable repayment scenario for households on a median income. The feasibility model was then rerun using this value as Price (a).

Affordable Redevelopment (Affordable Scenario 2)

The second stage of the affordability analysis aimed to adjust the redevelopment cost to reflect different objectives of the redevelopment process. The standard feasibility model assumes that redevelopment is occurring through an entirely private land market and the intention of each of the redevelopments would be to return a profit of at least 20% to the redevelopment entity. If alternative housing providers were able to enter in the market either as part of a Government building programme or as a community housing provider, the profit motivations may differ. Return on investment is likely to occur over a longer period, and as such the 20% profit assumption need not apply.

The second part of the affordability analysis removes the 20% profit margin requirement from the redevelopment cost scenarios, which has the effect of dropping both the actual development cost, and the buyout cost of the original building. This is due to the 20% factor sitting across the total cost of redevelopment, which includes buyout and construction.

Limitations

There are a number of assumptions that underpin this analysis which may alter the outcome and can be broadly split into (i) technical or practical limitations, and (ii) conceptual limitations.

Practical/technical

This analysis is based on median sale values for both old and redeveloped units, which makes no allowance for the particular configuration of dwelling sizes in each block of flats. Any existing and new development will likely have substantially different configurations of apartment sizes, which will affect buyout costs, development costs and sale values. 2 bedroom apartments are taken as an average to estimate the cost of developments.

Many older blocks have more lots registered on a strata plan than there are actual dwellings, such as where a garage is a lot separate from the dwelling lot. In these cases, the buyout cost is based on the total number of units multiplied by the median sale value and is likely to overestimate costs.

There are likely substantial price differentials in a given SA2 based on particular geographic features such as harbour or ocean views. The median values will disguise the premium associated with these types which will affect buyout costs. However this effect will equally be applied to potential sale value, which again will underestimate the notional sale price of a new unit in that location and therefore underestimate the notional viability of a redevelopment. The net affect will be to cancel out some of the localised geographic differences.

Similarly there are likely to be a variety of qualitative differences between blocks of flats that will substantially affect prices. There is no way of systematically capturing building condition variables to feed into the relative cost of each existing dwelling. However in cases where buildings are in poor condition then the model will likely over-estimate buyout costs and therefore understate development potential.

Conceptual Limitations

Within the construction cost component is an additional 50% 'on cost' which represents the fees and charges of actually doing the development in the form of consultant fees, holding cost, financing costs and application fees. This figure however cannot account for the myriad of local specific uncertainties which may be faced at any or all stages in the development process, from design through to final sales.

Underlying proposition of this model is of a renewal process that will operate through the private sector. This means that it does not take into account the possibility of renewal occurring within a different political and economic context. For example, there are many examples of renewal activity that has been actively pursued or mediated by government agencies which has fundamentally altered the economies of delivering these projects. In these scenarios, there will likely be implications financial implications that will affect the notional feasibility of renewal. This is both a limitation and strength of the model, in that it cannot account for different policy directions and the myriad of implications this may have, however it does allow for a more direct critique of market driven renewal processes.

One of the key assumptions that sits across this analysis is that it does not make an assessment of the origins of the relative affordability of the current housing market within and across different zones of the city. Other research and practical experience has clearly identified parts of the city that are well beyond the price range of large segments of the population, leading to increasingly polarised socio-economic spatial arrangements within Australian cities. In this way, it does not necessarily attempt to critique or disrupt the prevailing spatial disadvantages that exist across Sydney or make an assessment of policy that may alter some of the financial assumptions within the model.

That said, in using current market conditions coupled with median wage rates in a given area, making an assessment of 'affordability' in one way represents a model of change that does not rely on gentrification as the core driver of substantial reinvestment into the built environment. In other words, it does not rely on the existing population effectively being displaced by higher income earners due to a substantial upward revalorisation of the built environment as the mechanism through which redevelopment becomes 'viable'.

Finally, the model makes no assessment of the likelihood of being able to sell the new dwellings should they be built. However, using current sale values does imply that similar dwellings have been sold in a given area at that price point and one could assume that others would also sell if available. If dwellings were constructed at any scale, this may have implications for price and sale potential, and is not considered in this analysis. Similarly, the affordability analysis works on the assumption that if people can afford to purchase relative to their income, then there ought to be few limitations on the capacity to sell housing at those price points if available.

References

Rawlinsons 2014, *Rawlinson's Australian construction handbook*, Rawlinsons Publishing, Perth.