MGMT220
Fundamentals of Business Analytics

Assignment #3
Data Tables/ Scenarios & Optimisation

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Task 1 – Randwick vs Inner Ring Suburbs

We are looking at buying one non-strata, knocking it down, and building multiple strata units (e.g. Townhouses or units) to sell. We need to look at 3 variables to estimate the profitability of the exercise. The number of apartments (assuming maximum allowed is 8), construction cost rate of current selling price (between 40% and 60%) and change in strata pricing (e.g. selling price within a year).

With current market conditions showing further drops in Strata prices likely, our analysis is based off a further 20% fall. Construct percentage costs for comparisons between Inner Ring suburbs are assumed at 40% of the current strata unit selling price.

Negative Net Profit in Randwick for more than 50% of scenarios

Analysing Randwick, we see that we need to be building at least 6 apartments to return any form of profit at reasonable construct costs, that is up to 40% of estimated current selling prices.

Randwick Net Profit

Construction Cost Rate	- 1,054,000	2	3	4	5	6	7	8
20%	-$ 1,054,000	-$ 517,000	$ 20,000	$ 557,000	$ 1,094,000	$ 1,631,000	$ 2,168,000	
25%	-$ 1,143,500	-$ 651,250	-$ 159,000	$ 333,250	$ 825,500	$ 1,317,750	$ 1,810,000	
30%	-$ 1,233,000	-$ 785,500	-$ 338,000	$ 109,500	$ 557,000	$ 1,004,500	$ 1,452,000	
35%	-$ 1,322,500	-$ 919,750	-$ 517,000	-$ 114,250	$ 288,500	$ 691,250	$ 1,094,000	
40%	-$ 1,412,000	-$ 1,054,000	-$ 696,000	-$ 338,000	$ 20,000	$ 378,000	$ 736,000	
45%	-$ 1,501,500	-$ 1,188,250	-$ 875,000	-$ 561,750	-$ 248,500	$ 64,750	$ 378,000	
50%	-$ 1,591,000	-$ 1,322,500	-$ 1,054,000	-$ 785,500	-$ 517,000	-$ 248,500	$ 20,000	
55%	-$ 1,680,500	-$ 1,456,750	-$ 1,233,000	-$ 1,009,250	-$ 785,500	-$ 561,750	-$ 338,000	
60%	-$ 1,770,000	-$ 1,591,000	-$ 1,412,000	-$ 1,233,000	-$ 1,054,000	-$ 875,000	-$ 696,000	

Number of Apartments

For a minimum ROI of >=10%, situation becomes more bleak

When looking at ROI (where >=10% is consider a minimum return that we need), this confirms our analysis above. That is we need to build at least 6 apartments and hold construction costs to 30% – 40%.

Randwick ROI

Construction Cost Rate	-20%	2	3	4	5	6	7	8
20%	-42%	-19%	1%	18%	34%	48%	61%	
25%	-44%	-23%	-5%	10%	24%	36%	46%	
30%	-46%	-27%	-11%	3%	15%	25%	34%	
35%	-48%	-30%	-15%	-3%	7%	16%	24%	
40%	-50%	-33%	-20%	-9%	0%	8%	15%	
45%	-51%	-36%	-23%	-14%	-5%	1%	7%	
50%	-53%	-38%	-27%	-18%	-11%	-5%	0%	
55%	-54%	-40%	-30%	-22%	-15%	-10%	-6%	
60%	-55%	-43%	-33%	-26%	-20%	-15%	-11%	

Number of Apartments

Botany Bay, Sydney and Marrickville are shown to be safer investment areas

When comparing Randwick to other Inner Ring suburbs, it does not stack up as a sensible investment proposition, when compared to suburbs such as Botany Bay, Marrickville and Sydney. With these 3 suburbs we have a higher margin of safety to allow for selling prices falling and construction costs rising. Our required ROI of at least 10% is met by building at least 6 strata units.

Inner Ring ROI at 40% Construction Cost Rate

Suburbs	-20%	2	3	4	5	6	7	8
	Ashfield	-48%	-31%	-17%	-6%	3%	11%	17%
	Botany Bay	-38%	-20%	-6%	5%	14%	22%	28%
	Lane Cove	-57%	-42%	-29%	-19%	-10%	-2%	5%
	Leichhardt	-46%	-29%	-15%	-4%	5%	13%	19%
	Marrickville	-41%	-23%	-9%	2%	11%	19%	25%
	Mosman	-61%	-47%	-35%	-24%	-16%	-8%	-1%
	North Sydney	-48%	-31%	-18%	-7%	3%	10%	17%
	Randwick	-50%	-33%	-20%	-9%	0%	8%	15%
	Sydney	-38%	-20%	-5%	6%	15%	22%	28%
	Waverley	-55%	-40%	-27%	-16%	-7%	0%	7%
	Woollahra	-54%	-38%	-25%	-15%	-6%	2%	9%

Number of Apartments

For worse case scenario, only Sydney and Botany Bay meet the >=10% ROI

Let's now assume a worse case scenario, where selling prices are off by 20% from current levels, and construction costs increase from 40% to 50% (due to an oversupply of Strata units and a shortage of skilled tradesmen).

The chance of making our 10% ROI is very slim given this situation, and we can see that we would need to build at least 8 apartments to make a 10% ROI (only at Botany Bay and Sydney). Everywhere else we will be losing money or making a very small profit.

Inner Ring ROI at 50% Construction Cost Rate

Suburbs	-27%	2	3	4	5	6	7	8
	Ashfield	-51%	-36%	-25%	-16%	-9%	-3%	2%
	Botany Bay	-43%	-27%	-16%	-7%	0%	6%	10%
	Lane Cove	-59%	-46%	-35%	-26%	-19%	-13%	-8%
	Leichhardt	-49%	-35%	-23%	-14%	-7%	-1%	4%
	Marrickville	-45%	-30%	-18%	-10%	-3%	3%	8%
	Mosman	-63%	-50%	-40%	-31%	-24%	-18%	-12%
	North Sydney	-51%	-37%	-25%	-16%	-9%	-3%	2%
	Randwick	-53%	-38%	-27%	-18%	-11%	-5%	0%
	Sydney	-43%	-27%	-15%	-7%	0%	6%	11%
	Waverley	-58%	-44%	-33%	-24%	-17%	-11%	-6%
	Woollahra	-57%	-43%	-32%	-23%	-15%	-9%	-4%

Number of Apartments

There are better and safer places than Randwick in Inner Ring

Based on the above analysis, we can see that there are safer places than Randwick in the Inner Ring (e.g. Botany Bay, Sydney and Marrickville).

Task 2 – Randwick vs Sydney vs Botany Bay

Given the scenario of purchasing 12 adjacent non-strata houses, we need to calculate what combination of apartments and floors provides the greatest Net Profit and ROI. We shall initially assume that costs will be at the lowest predicted level to give us the best chance to produce profit. Additionally we will compare Randwick to the best 2 performing suburbs from Task 1 report to see if we are better investing there under this scenario.

To optimise the ROI and Net Profit, we have used an Evolutionary model with input parameters of number apartments and number of floors. This finds the optimum combination by comparing the best output to other scenarios as the parameters are changed.

At lowest percentage costs, Randwick is a money sinkhole

Based on this given scenario, we can see Randwick underperforms given the best case scenario. This suggests that we should not investigate Randwick any further, as if it can't produce a profit in the best case scenario, it would be highly unlikely to produce a profit a profit under a worst case scenario. All we would be doing is throwing money away.

Randwick		Sydney		Botany Bay	
Suburb Choice	Randwick	**Suburb Choice**	Sydney	**Suburb Choice**	Botany Bay
Non-Strata Prices	2,128,000	**Non-Strata Prices**	1,570,000	**Non-Strata Prices**	1,450,000
Current Strata Prices	895,000	**Current Strata Prices**	880,000	**Current Strata Prices**	805,000
Selling Strata Prices	895,000	**Selling Strata Prices**	880,000	**Selling Strata Prices**	805,000
Num Houses	12	**Num Houses**	12	**Num Houses**	12
Non-Strata Purhase Price	25,536,000	**Non-Strata Purhase Price**	18,840,000	**Non-Strata Purhase Price**	17,400,000
Strata % Construt Costs	40%	**Strata % Construt Costs**	40%	**Strata % Construt Costs**	40%
Street Upgrade %	30%	**Street Upgrade %**	30%	**Street Upgrade %**	30%
Council Fees ++%	45%	**Council Fees ++%**	45%	**Council Fees ++%**	45%
Total Street + Floor Costs	19,152,000	**Total Street + Floor Costs**	14,130,000	**Total Street + Floor Costs**	13,050,000
Cost Individual Floor	358,000	**Cost Individual Floor**	352,000	**Cost Individual Floor**	322,000
Construction Costs <=2 Floors	17,900,000	**Construction Costs <=2 Floors**	17,600,000	**Construction Costs <=2 Floors**	16,100,000
Construction Costs >2 Floors	27,968,750	**Construction Costs >2 Floors**	27,500,000	**Construction Costs >2 Floors**	25,156,250
Total Construction Costs	45,868,750	**Total Construction Costs**	45,100,000	**Total Construction Costs**	41,256,250
Number of Apartments	25	**Number of Apartments**	25	**Number of Apartments**	25
Total Number of Floors	4	**Total Number of Floors**	4	**Total Number of Floors**	4
Number of Floors >2	2	**Number of Floors >2**	2	**Number of Floors >2**	2
Additional Cost per Floor	25%	**Additional Cost per Floor**	25%	**Additional Cost per Floor**	25%
Total Costs	90,556,750	**Total Costs**	78,070,000	**Total Costs**	71,706,250
Total Sell	89,500,000	**Total Sell**	88,000,000	**Total Sell**	80,500,000
Net Profit	-1,056,750	**Net Profit**	9,930,000	**Net Profit**	8,793,750
R.O.I	-1%	**R.O.I**	11%	**R.O.I**	11%

Based on expected 10% drop in Strata prices, ROI falls below preferred 10% cap

As the economic situation deteriorates, the chance of making a decent ROI decreases significantly. While we can still make money, any additional costs or reduction in selling prices will put our investment at risk.

Sydney		Botany Bay	
Suburb Choice	Sydney	**Suburb Choice**	Botany Bay
Non-Strata Prices	1,570,000	**Non-Strata Prices**	1,450,000
Current Strata Prices	880,000	**Current Strata Prices**	805,000
Selling Strata Prices	792,000	**Selling Strata Prices**	724,500
Num Houses	12	**Num Houses**	12
Non-Strata Purhase Price	18,840,000	**Non-Strata Purhase Price**	17,400,000
Strata % Construt Costs	40%	**Strata % Construt Costs**	40%
Street Upgrade %	30%	**Street Upgrade %**	30%
Council Fees ++%	45%	**Council Fees ++%**	45%
Total Street + Floor Costs	14,130,000	**Total Street + Floor Costs**	13,050,000
Cost Individual Floor	352,000	**Cost Individual Floor**	322,000
Construction Costs <=2 Floors	17,600,000	**Construction Costs <=2 Floors**	16,100,000
Construction Costs >2 Floors	27,500,000	**Construction Costs >2 Floors**	25,156,250
Total Construction Costs	45,100,000	**Total Construction Costs**	41,256,250
Number of Apartments	25	**Number of Apartments**	25
Total Number of Floors	4	**Total Number of Floors**	4
Number of Floors >2	2	**Number of Floors >2**	2
Additional Cost per Floor	25%	**Additional Cost per Floor**	25%
Total Costs	78,070,000	**Total Costs**	71,706,250
Total Sell	79,200,000	**Total Sell**	72,450,000
Net Profit	1,130,000	**Net Profit**	743,750
R.O.I	1%	**R.O.I**	1%

When the economic situation deteriorates investment opportunity not profitable

By only increasing strata construction costs by an additional 10%, we go from making a profit to being in the red. Any other unforeseen additional costs would cause us to lose money.

Sydney		Botany Bay	
Suburb Choice	Sydney	**Suburb Choice**	Botany Bay
Non-Strata Prices	1,570,000	**Non-Strata Prices**	1,450,000
Current Strata Prices	880,000	**Current Strata Prices**	805,000
Selling Strata Prices	792,000	**Selling Strata Prices**	724,500
Num Houses	12	**Num Houses**	12
Non-Strata Purhase Price	18,840,000	**Non-Strata Purhase Price**	17,400,000
Strata % Construt Costs	50%	**Strata % Construt Costs**	50%
Street Upgrade %	30%	**Street Upgrade %**	30%
Council Fees ++%	30%	**Council Fees ++%**	30%
Total Street + Floor Costs	11,304,000	**Total Street + Floor Costs**	10,440,000
Cost Individual Floor	440,000	**Cost Individual Floor**	402,500
Construction Costs <=2 Floors	22,000,000	**Construction Costs <=2 Floors**	20,125,000
Construction Costs >2 Floors	13,750,000	**Construction Costs >2 Floors**	12,578,125
Total Construction Costs	35,750,000	**Total Construction Costs**	32,703,125
Number of Apartments	25	**Number of Apartments**	25
Total Number of Floors	3	**Total Number of Floors**	3
Number of Floors >2	1	**Number of Floors >2**	1
Additional Cost per Floor	25%	**Additional Cost per Floor**	25%
Total Costs	65,894,000	**Total Costs**	60,543,125
Total Sell	59,400,000	**Total Sell**	54,337,500
Net Profit	-6,494,000	**Net Profit**	-6,205,625
R.O.I	-11%	**R.O.I**	-11%

Stick to what we do best, it's not worth the risk!

Our best advice is to continue developing on 1 or 2 non strata then tackling a large scaled development. Instead of putting all our eggs into one development, we would suggest multiple smaller developments to spread the risk.