

ASSESSING THE IMPORTANCE OF PROPERTY DEVELOPMENT RISK FACTORS

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ABSTRACT

Property development makes a significant contribution to the Australian property industry and economy. However, property development is inherently risky, with a number of risks evident throughout the property development process. From a survey of leading property developers in Australia, the importance of 34 property development risk factors is assessed. The most important property development risk factors identified were environmental risk, time delay risk and land cost risk.

Keywords: Property development, risk factors, property development stages, environmental risk, time delay risk, land cost risk

INTRODUCTION

The property development industry includes a wide range of organisations and individuals involved in developing and operating property to meet the housing, employment and social needs of communities (UDIA, 2003). Importantly, property development makes a significant contribution to the Australian property industry and economy, with Table 1 profiling the contributions of the NSW and Queensland property development sectors¹ (Ernst & Young, 2002, 2003).

In 2001-02, the NSW property development sector had a total annual turnover of \$36.1 billion, directly generating \$16.6 billion in added value and employing over 181,000 staff. The property development sector contributes 7% to the NSW economy (gross state product), being the 5th largest sector contribution, only exceeded by manufacturing (12%), ownership of dwellings (11%), property and business services (10%), and finance and insurance (9%). Similarly, the property development sector contributes 6% to NSW employment, being the 6th largest sector employer. When the flow-on effect into other sectors of the NSW economy is factored in, the total added value contribution to the NSW economy by the property development sector is \$33.0 billion and employment for over 444,000 (Ernst & Young, 2003).

¹ Reports are only prepared for NSW and Queensland sectors

Table 1 : Property development sector profile in Australia : 2001-02

NSW profile

- Total property development sector turnover : \$36.1 billion
- Contribution by NSW to Australian property development sector turnover : 34%
- Direct added value to NSW economy (GSP) : \$16.6 billion
- Contribution to NSW economy (GSP) : 7% (5th largest sector contribution)
- Directly employs over 181,000 (full-time equivalents); over \$5.9 billion in wages
- Contribution to NSW employment : 6% (6th largest sector contribution)
- Flow-on contribution : \$16.4 billion in added value and 262,000 jobs
- Total NSW property development sector contribution : \$33.0 billion in added value, employing 444,000

Queensland profile

- Total property development sector turnover : \$25.5B
- Contribution by Queensland to Australian property development sector turnover : 19%
- Direct added value to Queensland economy (GSP) : \$7.8 billion
- Contribution to Queensland economy (GSP) : 7% (4th largest sector contribution)
- Directly employs over 116,000 (full-time equivalents)
- Contribution to Queensland employment : 8% (5th largest sector contribution)
- Total Queensland property development sector contribution : \$18.6 billion in added value, employing 220,000

Australian profile

- Total property development sector turnover : \$106 billion
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Source: Extracted from Ernst & Young (2002, 2003)

Similar significant contributions (see Table 1) are also seen from the property development sector in Queensland (Ernst & Young, 2002). With NSW contributing approximately 34% to Australian turnover, the annual turnover of the Australian property development sector is over \$106 billion (Ernst & Young, 2003).

Table 2 presents the performance analysis at December 2004 for the listed property development sector compared to the other major asset classes (UBS, 2005). The property development sector is clearly more volatile (annual risk = 15.6%) than the LPT sector (7.2%) and the stockmarket (9.1%). Strong risk-adjusted performance is seen from a number of property developers (eg: Sunland, Village World and FKP), but high levels of volatility are also evident in this individual property developer performance. The potential significant risk-adjusted performance contribution by property development to LPTs via the stapled securities structure has also been identified (Tan, 2004).

Overall, property development is inherently risky, with high barriers to entry reflecting the cyclic and capital intensive nature of the sector, and the typically slow payback period. This sees a number of risks evident throughout the property development process and the need for effective risk management strategies for successful property developments. Given the significance of the property development sector in Australia and internationally, it is important to identify the various property development risks and the importance of these risk factors in the property development process. As such, this paper presents the results of a survey of leading property developers in Australia to assess the importance of specific property development risk factors in the property development process.

PROPERTY DEVELOPMENT RISK

All aspects of property investment risk have received extensive coverage for many years; this includes the risk-reduction effects of property in a portfolio, portfolio risk reduction via property diversification, risk premiums for property sectors and the impact of valuation-smoothing on property risk (Booth et al, 2002). However, it has been recognised for many years that research into property development risk is limited (Whipple, 1988); particularly given the role of the property cycle and its strategic implications for property and property development (Pyhrr et al, 1999).

Table 2 : Property developer and related sector performance : Dec. 2004¹

Sector	Market cap (\$B)	Average annual total return			Annual ² risk	Sharpe ^{2,3} index
		1Y	3Y	5Y		
Property development	\$9.68B	42.2%	7.9%	NA	15.6%	0.17 (4)
Lend Lease	\$5.28B	37.5%	3.5%	-6.6%	25.7%	-0.07
Australand	\$1.53B	23.4%	9.2%	14.6%	14.3%	0.28
FKP	\$0.68B	52.4%	67.3%	36.2%	41.0%	1.51
AV Jennings	\$0.33B	-13.3%	30.4%	41.3%	32.5%	0.77
Sunland	\$0.40B	74.9%	70.9%	34.7%	34.5%	1.90
Village Life	\$0.33B	87.7%	NA	NA	NA	NA
Village World	\$0.17B	38.5%	48.7%	23.8%	24.3%	1.79
LPTs	\$75.30B	32.2%	17.2%	16.9%	7.2%	1.65 (1)
Stockland	\$7.73B	22.9%	19.1%	22.4%	12.3%	1.13
Mirvac	\$3.99B	21.9%	16.0%	17.2%	10.3%	1.05
Multiplex	\$3.24B	42.2%	NA	NA	NA	NA
Shares	\$847.89B	27.6%	10.7%	9.2%	9.1%	0.61 (2)
Bonds	NA	6.7%	5.9%	6.8%	3.0%	0.21 (3)
Cash	NA	5.6%	5.1%	5.4%	0.1%	-1.19 (5)

1. Westfield is not included in performance analysis due to stapling of Westfield Holdings, Westfield Trust and Westfield America Trust in 2004.

2. Risk measures based on 3-year monthly returns. Risk is calculated as the standard deviation of monthly returns over this three-year period.

3. Ranking based on risk-adjusted performance for major asset classes is given in brackets.

Source: Authors' compilation from UBS (2005)

With the chronological stages in the property development process being broadly identified (eg: Cadman and Topping, 1995; Miles et al, 2000), most approaches concentrate on measuring property development risk, rather than identifying or prioritising key risk elements in the property development process. These approaches largely concentrate on feasibility analysis and cashflow analysis (eg: Byrne, 1996; Cadman and Topping, 1995), with only limited attention given to property development risk management (eg: Cadman and Topping, 1995; Miles et al, 2000). A broad classification of property development risk into four categories (commercial, construction, land, social) and 21 sub-categories has also been developed (Dullisear, 2001). Other studies have largely concentrated on specific aspects of property development risk such as development financing risk (Markham, 2001) and interest rate risk (Cameron, 1990). Property development risk is only briefly addressed in the API's Professional Practice Standards via guidance note 6.2 (feasibility studies) and guidance note 6.6 (property development management) (API, 2004).

Overall, property development risk has received limited coverage. This area of property development risk management has taken on increased significance recently as leading property developers in Australia have recognised the need to further strengthen their risk management controls to maintain their discipline in bidding for work and to execute projects successfully. The following sections of this paper address this key issue in property development by assessing the importance of a range of property development risk factors based on a survey of the leading property developers in Australia.

METHODOLOGY

Selection of property developers

While the property development industry involves a large number of small, unlisted property developers accounting for 95% of the sector's turnover (Ernst & Young, 2003), the low level of publicly available data (eg: annual reports, financial statements) sees sufficient and reliable data on these unlisted property developers as not being available. As such, the listed property development sector was utilised for this study, representing the large property developers in Australia, as well as being a sector having high levels of disclosure and transparency.

The property developers selected were ASX-listed companies with their predominant activities being property development, rather than property investment or construction. The 24 listed property developers selected (see Table 3) had a total market capitalisation of \$13.57 billion at June 2003, representing 90% coverage of the property development sector on the Australian stockmarket, as well as representing 5% of the total Australian property development turnover. These property developers were further classified by size on the basis of annual turnover as:

- large property developer (>\$100 million): scale of operation includes multiple developments, predominantly multi-stage or national and multi-property sector; 10 selected
- medium property developer (\$20 million - \$100 million): scale of operation includes multiple developments, largely state-based and one property sector; 6 selected
- small property developer (<\$20 million): scale of operation includes single development or several small developments; 8 selected,

with Table 3 listing the various property developers selected. Residential property development was the major activity of most of these selected property developers, with residential development accounting for 71% of Australian property development gross output (Ernst & Young, 2003).

Survey construction

After reviewing the available literature on property development risk (see previous section), 34 property development risk factors were identified throughout the chronological stages in the property development process; namely:

- pre-construction stage: 10 risk factors
- contract negotiation stage: 4 risk factors
- formal commitment stage: 3 risk factors
- construction stage: 8 risk factors
- post-construction (completion) stage: 9 risk factors.

Respondents were asked to rate each property development risk factor on a 5-point scale ranging from 1 = low risk to 5 = high risk. Respondents also identified specific risk management strategies employed by their company in mitigating each specific property development risk factor².

² *The survey section on the property development risk management strategies was addressed via open-ended questions. As such, it is not possible to identify the exact percentage of respondents who utilised a specific property development risk management strategy.*

Table 3 : List of property developers surveyed

Property developer	Turnover¹ (\$M)	Market cap.² (\$M)
Large property developers : >\$100M turnover		
Australand	1158	839
AV Jennings	466	353
Central Equity	221	144
Delfin	NA	NA
Devine	379	42
FKP	198	344
Mirvac	1027	3038
Sunland	206	110
Villa World	216	129
Westfield	967	8253
Medium property developers : \$20M-\$100M turnover		
Canberra Investment	60	45
Cedar Woods Properties	26	48
Finbar International	22	24
Kimberley Securities	35	9
Raptis Group	100	17
United Overseas Australia	79	21
Small property developers : <\$20M turnover		
AHC	5	9
Axiom Properties	7	2
Balmoral	1	10
Folkestone	13	17
Port Bouvard	29 ³	53
Metroland Australia	9	13
Payce Consolidated	16	43
Phileo Australia	8	10
Total	\$5.25B	\$13.57B

1. Annual turnover for 2001-02

2. Market capitalisation at June 2003

3. Exceeds threshold turnover in year, but significantly below in previous years

The mail surveys were distributed in May 2003 to the 24 property developers shown in Table 3. Surveys were sent to senior executives in each property development company who were familiar with all aspects of the property development process in their organisation. As all survey respondents were actively involved in residential property development, this was reflected in the residential property development sector being the focus for the respondents' risk factor assessments in this survey.

SURVEY RESPONDENT PROFILE

Of the 24 listed property developers initially selected, four declined to participate, giving an effective sample of 20 property developers. Eight property developers responded to the survey, giving a 40% response rate which was considered adequate. The respondents' annual turnover was in excess of \$2 billion, representing approximately 40% of the turnover for the listed property development companies in Australia. By scale of operations, respondents were large property developers (4), medium property developers (1) and small property developers (3).

All respondents indicated their organisation had formal processes for assessing property development risk before making a decision to proceed with a new development project. 100% of respondent's organisations also assessed individual property development risks before commencing a property development, as well as identifying specific risk management strategies for the property development.

62.5% of respondents indicated that specific property development risk management strategies had been practiced by their organisation for more than ten years, with the remainder having these risk management strategies for an average of four years. No respondents outsourced any aspect of the property development risk assessment, although none used the Australian standard on general risk management (SA/SNZ, 1999).

A range of risk analysis techniques were used by the respondents, including:

- preparing a financial feasibility model : 100%
- analysing the project using predetermined financial performance benchmarks : 100%
- calculating IRR : 87.5%
- preparing a sensitivity analysis : 87.5%
- preparing a DCF model : 75%
- preparing probability models : 37.5%
- preparing risk simulations : 25%,

further confirming the use of the standard techniques in property development risk analysis, as well as the more sophisticated property development risk analysis tools.

ASSESSING PROPERTY DEVELOPMENT RISK FACTORS

The following sections assess the importance of the various property development risk factors across the five chronological phases in the property development process.

Pre-construction risk

Table 4 presents the pre-construction property development risk ratings. Given the uncertainty in the pre-construction phase and some factors being out of the developer's control, respondents considered this phase of the property development process to have the highest overall risk. Environmental risk (4.25) was seen as the highest risk factor in the pre-construction phase, as well as being the highest risk in the entire property development process. Approval risk (3.63) was seen as the fifth most important risk factor overall. In total, five of the top ten risk factors in the overall property development process were in the pre-construction phase.

Table 4 : Pre-construction property development risk ratings

Risk factor	Average risk rating
Environmental : heritage, ecology, contamination	4.25
Approvals: zoning, compliance, conditions, developer contributions	3.63
Political : lack of support from local community, council, government	3.50
Experience with type of development, ability to manage development	3.50
Market : research, location, portfolio diversification	3.38
Title : land title problems and encumbrances	2.88
Consultants : design quality, reliability of consultant's report	2.88
Physical : difficult land form and existing improvements	2.75
Feasibility : assumptions, financial performance benchmarks, risk analysis	2.75
Infrastructure : availability of services, water, traffic, social infrastructure	2.50
Average pre-construction risk rating	3.20

The importance and high risk of the pre-construction phase is reflected in a large number of risk management strategies being employed in this phase, with 32 specific strategies identified as being employed by the respondents; these include:

- environmental risk: engaging expert consultants, analysing cost impacts before committing, making contracts conditional on resolving issues
- approvals risk: confirm pre-DA if extra approvals are needed, confirm basis of contributions, purchase conditional on rezoning, active liaison with Council
- political risk: work with community, be seen to have tried to address concerns, make legal contracts conditional for contentious developments
- experience risk: only deal with experienced developers and builders, investigate track record of successful developments, avoid one-off developments
- market risk: critically evaluate location, factor deficiencies into land price
- feasibility risk: disciplined approach, reject projects which are marginal and/or do not meet benchmarks.

Contract negotiation risk

The contract negotiation property development risk ratings are given in Table 5. This phase was seen by respondents as having the second highest overall risk, with land cost risk (3.88) and acquisition terms risk (3.75) being seen as the 3rd and 4th most important risk factors in the overall property development process. Specific strategies employed by the respondents include:

- land cost risk: negotiating price which provides for adequate contingencies
- acquisition terms risk: negotiate adjustment mechanisms for price and/or conditions
- building contract risk: negotiate fixed price contract, ensure architectural documentation is complete and buildable, use in-house estimating and construction management
- financial risk: use corporate funding facilities instead of property-specific funding facility.

Table 5 : Contract negotiation property development risk ratings

Risk factor	Average risk rating
Land cost (allowing for reasonable profit margin)	3.88
Acquisition terms (fair, provide flexibility)	3.75
Building contract terms (allow control of costs)	2.63
Financial terms (not onerous)	2.50
Average contract negotiation risk rating	3.19

Formal commitment risk

Table 6 presents the formal commitment property development risk ratings by the respondents. Whilst considered an important phase in the property development process, no specific risk factors in the formal commitment phase figured in the top ten risk factors overall. Risk management strategies (8) largely focused on adequate insurance being in place for both the developer and third parties, as well as not proceeding until all documentation has been executed.

Table 6 : Formal commitment property development risk ratings

Risk factor	Average risk rating
Scope and adequacy of insurance coverage	3.14
All legal documentation executed	3.13
Binding pre-commitments to lease and/or purchase	3.00
Average formal commitment risk rating	3.09

Construction risk

The construction property development risk ratings are shown in Table 7. Specific risk factors in this phase were seen by respondents to be highly important in the overall property development process; namely time delay risk (2nd), cost increase risk (5th) and engineering risk (7th). Of the thirteen risk management strategies utilised by the respondents, the main strategies were:

- time delay risk: adequate insurance cover, penalty to builder
- cost increase risk: fixed price building contract
- solvency risk: step in rights to allow appointment of replacement
- project management risk: use in-house project manager
- experience risk: check past performance of builder regarding project completion on time and on budget
- environmental risk: establish site environmental management plan.

Table 7 : Construction property development risk ratings

Risk factor	Average risk rating
Time delays ; weather, force majeure, strikes	4.14
Cost increases and unanticipated variations	3.63
Engineering problems (unexpected, poor design)	3.50
Solvency of builder	3.00
Quality of project management	2.86
Builder's experience in similar projects	2.75
Environmental (dust, noise, surface water etc. during construction)	2.75
Non-payment of sub-contractors	2.00
Average construction risk rating	3.08

Post-construction risk

Table 8 presents the post-construction property development risk ratings by the respondents. The post-construction phase was seen as the least risky phase in the overall property development process, with only delivery timing risk (10th) being seen as a top priority risk factor. Risk management strategies in the post-construction phase (11) include revise prices to meet market, provide incentives, contingency marketing plan, pre-sale and pre-leasing strategy, and use of corporate branding.

Table 8 : Post-construction property development risk ratings

Risk factor	Average risk rating
Timing of delivering development (cycle risk)	3.38
Changes in market value and capitalisation rates	3.00
Unfavourable changes in demand and supply	2.88
Leases/sales pre-commitments fail to complete	2.50
Project commerce materially alters	2.43
Incorrect branding and image, market positioning image	2.38
Changes in interest rates, time cost of money	2.25
Financial : leverage, debt service, solvency, default, repayment	2.13
Political/economic : tax, inflation, regulations, laws	1.88
Average post-construction risk rating	2.53

Overall, Table 9 presents the top ten property development risk factors identified by respondents. Clearly pre-construction, contract negotiation and construction risk dominate this priority risk schedule. Of the 84 risk management strategies identified as being utilised throughout the property development process, the key strategies to mitigate property development risk were:

- in-house management of critical processes
- quality assurance procedures
- contractually allocating risk to other parties.

Table 9 : Top 10 property development risk factors

Risk factor	Average risk rating
1st : Environmental risk	4.25
2nd : Time delay risk	4.14
3rd : Land cost risk	3.88
4th : Acquisition terms risk	3.75
5th : Approvals risk	3.63
5th : Cost increases risk	3.63
7th : Political risk	3.50
7th : Experience risk	3.50
7th : Engineering risk	3.50
10th : Market risk	3.38
10th : Delivery timing risk	3.38

Impact of scale of operation

To assess the impact of the scale of operation of property development on these property development risk ratings, Table 10 presents the risk ratings for the five stages of the property development process for large, medium and small scale property developers. Whilst, overall, respondents perceive the average risk level decreases as the stages of the property development process advance, clear differences are seen between the different scales of operation of property development. The larger property developers placed a higher overall importance on the risk factors, with medium-sized property developers placing more importance on risk in the formal commitment, construction and post-construction phases. This reflects their concerns in the implementation and delivery phases of the property development process and where their risk management strategies are potentially weakest.

Table 10: Impact of scale of operation of property development on risk ratings

Stage of development	Total	Average risk ratings		
		Large	Medium	Small
Pre-construction	3.20	3.60	2.70	2.83
Contract negotiation	3.19	3.50	3.75	2.58
Formal commitment	3.09	3.00	2.33	3.44
Construction	3.08	3.17	2.75	2.96
Post –construction	2.53	2.28	2.00	2.96
Average risk rating	2.98	3.08	2.62	2.92

PROPERTY DEVELOPMENT IMPLICATIONS

Property development is inherently risky, with a number of risks evident throughout the property development process. This sees property developers using a range of sophisticated quantitative and qualitative procedures to assess the various elements of property development risk.

Based on a survey of leading property developers in Australia, this study has identified and prioritised the key property development risks as identified by the leading property developers in Australia. The most important risk factors were environmental risk, time delay risk and land cost risk, with the pre-construction phase being seen as having the highest overall risk level in the property development process. Developers were seen to be using a wide range of risk management strategies throughout the development process, with the key strategies to mitigate property development risk being in-house management of critical processes, quality assurance procedures and contractually allocating risk to other parties.

Overall, this study has added to the critical understanding of the risk management process in property development. Increased awareness and understanding of this complex process will see a more formal and rigorous assessment of risk recognition and the risk management planning needed at all stages of property development to mitigate these risks.

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