Curtin Business School
School of Economics and Finance

A Critical Assessment of Pre-Construction Property Development Principles and Process in Queensland, Australia

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature:

Date: 27 July 2009

ABSTRACT

Research evidence suggests that property development is an integrated process revolving around numerous concepts that link distinct phases in the development cycle. This study acquaints the reader with key performance areas that make up the integrated development process. It conducts a literature discourse and empirical assessment of the pre-construction principles and process of commercial property development. The theoretical exploration of the study area establishes a sound secondary data base from which the comparative empirical research is conducted by way of questionnaires issued to and received from a sample of Queensland based property developers. Data obtained from the questionnaires is statistically analysed and explored.

This study also seeks to explore the common principles and characteristics of the property development process as they occur prior to the commencement of construction activities, within the context of commercial property in broadly capitalist terms – i.e. commercial entities seeking profit. The approach taken is to match theory, from the literature on models of the development process, with practice.

The study finds that Queensland based property developers do indeed apply sound pre-construction development principles and process within a structured framework. The findings also concluded that the following three key performance areas identified in the study make up the pre-construction development framework and are equally soundly applied by the property developers.

- Location studies and site selection.
- Market research and property markets.
- Feasibility principles, design development and financial analysis.

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CHAPTER 1

INTRODUCTION, CONTEXT AND SIGNIFICANCE OF THE STUDY

1.1 INTRODUCTION, OBJECTIVES AND CONTEXT OF THE STUDY

The theme of this research study has been inspired by many years of study and "real life" experience in the field of commercial property development. Reasons why some property developments were conceived successfully, whilst others were branded failures, were often contemplated. The answers to many questions were not readily available, hence the demand to research the specific topic.

Research evidence suggests that property development is an integrated process revolving around numerous concepts that link distinct phases in the development cycle. This study, which particularly acquaints the reader with key performance areas that make up the integrated process, conducts a critical literature discourse and empirical assessment of the pre-construction principles and process of commercial property development. The theoretical exploration of the study area establishes a sound secondary data base from which the comparative empirical research is conducted by way of questionnaires issued to and received from a sample of Queensland-based property developers. The economy of Queensland, the third largest in Australia (Annual Economic Report 2007-2008 on the Queensland economy), with its buoyant property development industry, provides the ideal backdrop to conduct the study.

This research programme seeks to examine and critically assess the application of pre-construction property development principles and process in Queensland. In particular, it seeks to explore the common principles and characteristics of the property development process as they occur prior to the commencement of construction activities, within the context of commercial property in broadly capitalist terms – i.e. commercial entities seeking profit.

From the research, results are obtained, conclusions listed and recommendations made. The approach taken is to match theory, from the literature on models of the development process, with practice. The study addresses the fundamental problem whether property developers apply sound property development principles and

process to contribute to increased effectiveness and productivity. Sub-problems identified and explored in such models are the key performance areas and principles that have to be complied with in the pre-construction development process in order to create and unlock intrinsic value - this is: to turn dreams into reality.

The study aims to contribute to the theory of property development, as an interdependent and "complex process that involves multiple drivers, stakeholders and contributions from many academic disciplines" (Fisher, 2005, p. 158).

1.2 SIGNIFICANCE OF THE STUDY

The research makes the following contributions to the practice of property development:

- No formal research with regard to pre-construction property development principles and process practices within companies in Queensland, Australia has previously been undertaken.
- The research could be used by individual property development companies to:
  - Determine which pre-construction development activities are applied within property development companies.
  - Evaluate pre-construction property development principles and process practices to identify shortcomings and determine areas where modern property development principles could be applied effectively.
- It is also anticipated that the results obtained from the research could be of value in the other states and territories of Australia.

1.3 PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS

1.3.1 Background

Peiser and Frej (2003, p. 3) claim that:

> Real Estate development is a multi-faceted business... Developers are the co-ordinators of those activities, converting ideas on paper into real property. They create, imagine, fund, control and orchestrate the process of development from beginning to end. Developers take the greatest risks in the creation or renovation of real estate – and receive the greatest rewards.

Development, thus the development process, is distinct from investment in income-producing properties because it involves much more risk. Typically, developers:

- Are ultimately responsible for any omissions and mistakes - even if someone else is negligent, developers must deal with the consequences.
- Must respond to events as they occur; be ready for the unexpected, be flexible and be prepared to shift strategy quickly.
- Must be able to address citizens' concerns, without compromising the project's economic viability.
- Know that managing the development process requires special talents – not the least of which is common sense.
- Must have a clear vision of what they want to do and provide strong leadership along with that vision.
- Must be able to work with a variety of people: building professionals, including architects, planners, contractors, and consultants; people in the construction trades, tenants and customers; attorneys; bankers, and investors; city officials; city staff members, inspectors, and citizen groups; homeowners associations; and community organisers.
- Have to manage a creative or artistic endeavour – managing the creative process and people can be difficult (Peiser & Frej, 2003, p. 3-4).

Miller and Geltner (2005, p. 507) are of a similar opinion where it is argued that "Real estate development is the riskiest sector within the real estate industry...". Two reasons for this argument are cited in the study. Firstly, property development involves more places where mistakes can be made and secondly, petitioning and winning a change in the zoning or land-use controls can be difficult.

Fisher and Robson (2006, p. 135-161), in an interesting study of the developers of project offices in the United Kingdom, concluded that, although property development is popularly perceived at as a risky business, developers like other entrepreneurs have opportunities to manage the risks they face. The study found that developers were most concerned about market-based risks. Concern about production-orientated risks was lower. It was also concluded that, while developers do manage risk, decisions are generally made on the basis of professional and business experience.

Newell and Steglick (2006, p. 30) from a survey of leading property development developers in Australia, identified the pre-construction phase of the property development process as having the highest overall risk. Pre-construction property development risk factors, rated from highest to lowest, were found to be the following:

- Environmental: heritage, ecology, contamination.
- Approvals: zoning, compliance, conditions, developer contributions.
- Political: lack of support from local community, council, government.
- Experience with type of development, ability to manage development.
- Market: research, location, portfolio diversification.
- Title: land title problems and encumbrances.
- Consultants: design quality, reliability of consultant's report.
- Physical: difficult land form and existing improvements.
- Feasibility: assumptions, financial performance benchmarks, risk analysis.
- Infrastructure: availability of services, water, traffic, social infrastructure (Newell & Steglick, 2006, p. 30).

It can therefore be argued that the entrepreneurial mindset of successful property developers shares the five characteristics common to habitual entrepreneurs in general:

> They passionately seek new opportunities...; They pursue opportunities with enormous discipline...; They pursue only the very best opportunities and avoid exhausting themselves and their organizations by chasing after every option...; They focus on execution – specifically, adaptive execution...; They engage the energies of everyone in their domain... (McGrath & MacMillan, 2000, p. 2-3).

As Miles, Berens and Weis (2000, p. 7) argue, with specific reference to real estate developers "they assemble the needed talents to accomplish their objectives and then assume responsibility for managing individuals to make sure that development potential is realised. They are proactive: they make things happen".

1.3.2 Property development principles and process

> Someone rolled a rock to the entrance of a cave and created an enclosed space for his family – a warmer, more defensible shelter, distinct from the surrounding environment. This can be called the first real estate development (Graaskamp cited in Squirrel, 1997, p. 224).

Graaskamp[1] argues that the real estate development process involves three major groups – a consumer group, a production group and a public infrastructure group. These three major groups are often referred to in all major real estate textbooks examining development. A major limitation shared by all three groups is the fact that each is a cash enterprise that must remain solvent and which must create a surplus over time. Enterprises must continually make assumptions about future social norms, technologies and the direction of complex changes in personal and political conditions. "The degree of error between assumptions and realisations is termed risk" (Graaskamp, cited in Squirrel, 1997, p. 224). The best risk management device for the lead group in a project (the developer) is through research, to ensure that the development product fits as closely as possible the needs of the market (tenant or purchaser), the values of the politically active consumers and the land use ethics of the society (Graaskamp, cited in Squirrel, 1997, p. 224).

Fisher and Collins (1999, p. 1-2) argue that the literature on models of the development process has applied concepts from various disciplines to the question of development – thereby providing a framework of ideas. Fisher and Collins (1999, p. 2) list four important dimensions to the development process for commercial property:

i) Structure.
ii) Actors.
iii) Events.
iv) Site.

Miles et al. (2000, p. 5) claim that although various observers of the development process may delineate the sequence of steps differently, the essence of the steps does not vary significantly. An eight-stage model of real estate development that depicts and describes the steps in detail, is outlined in the study. These stages include coming up with the idea (Stage One); refining it (Stage Two); testing its feasibility (Stage Three); negotiating contracts (Stage Four); making a formal

1 . James Graaskamp, a famous real estate professor and the director of the Real Estate Centre at the University of Wisconsin from 1964 until 1985 (Geltner & Miller, 2001).

commitment (Stage Five); constructing the project (Stage Six); completing and opening it (Stage Seven); and finally, managing the project (Stage Eight). As the thesis is limited to pre-construction development activities, stages six to eight will be disregarded in this study.

Peiser and Frej (2003, p. 18-19) describe the six main stages of developments in detail in their study, namely: feasibility and acquisition, design, financing, construction, marketing and leasing, and operation and management. The predevelopment stage is defined as covering "the period from first identification of the development site to the start of construction" (Peiser & Frej, 2003, p. 18). The study submits that four of the six stages of development – feasibility studies, design, financing and marketing – occur during predevelopment, prior to reaching "The Go-Decision" during the predevelopment phase.

Schmitz and Brett (2001, p. 11) argue that: "the developer's role is to orchestrate the development process to bring the project to completion. Developers are the central actors in the development process." Predevelopment steps, as also listed in this study, include conducting preliminary studies, negotiating sale or other ownership agreements, securing financing, undertaking the approval process, initiating planning and design and starting site work – followed by construction, sales and governance of the completed project. Particular emphasis is placed in this study on the important role of consultants in the development process. The team might include attorneys, planners, market researchers, engineers, geologists, environmental specialists, architects, landscape architects, financiers, contractors and sales managers.

The outcome of property development depends on many social, political, economic and environmental factors, as well as on the involvement of a wide range of public and private actors (Fisher, 2005, p. 2).

McMakon (2007), in a study on every stage of the real estate development process, identified the following key management tools that need to be taken cognisance of and included in the property development process framework:

- The underlying reasons for the global explosion in real estate values
- The property entitlement process

- Analyzing market demand for residential, retail, office, industrial, transient commercial, and multi-use projects
- The fundamentals of both debt and equity financing
- Traditional and modern methods of measuring equity investment returns
- Designing and constructing a project that is market responsive and yet economically feasible
- Marketing and merchandising the project to attract potential buyers or tenants in both active and slow markets
- Results-oriented property management

Similar comparative viewpoints depicting and describing the process and principles involved in property development have also been found in publications such as those by Beeny (2004); Beyard & O'Mara (1999); Bruce-Radcliffe (1996); Brueggeman and Fisher (2005); Cadman and Topping (1995); Cloete (1998a; 1998b); Collier, Collier and Halperin (2002); Forlee (2004); Forlee (2005); Lowies (2004); Moje (2004); Pyhrr, Cooper, Wofford, Kapplin and Lapides (1989); Thomsett (2000); Venter (2003); Waterhouse (1991); Weis (2005); Woodson (2005); Wilkinson and Reed (2008); and Zuckerman and Blevins (2003). A common trend emerged from all these studies: the development process is an integrated process linking distinct phases or components that sequentially provide a blueprint for action and for unlocking real estate value. These, and other viewpoints, will be explored in greater detail in the literature review in Chapters 2 and 3 of this study.

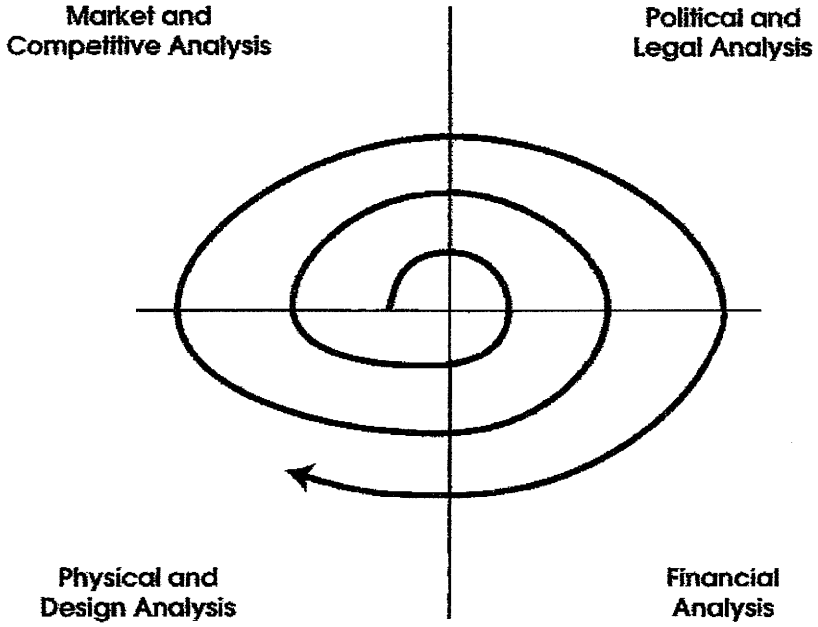
1.3.3 Proposed conceptual and methodological framework

Graaskamp (cited in Geltner & Miller, 2001, p. 774) suggests that "development decision making in the private sector could typically be described by one of three situations":

- A site in search of a use.
- A use in search of a site.
- An investor in search of a real estate opportunity.

As previously argued, the process of development analyses, design and decision making is indisputably highly iterative, as depicted in the following model based on Graaskamp's teaching.

FIGURE 1.1: The Graaskamp model



(**Source:** Iterative, multidisciplinary process of real estate development decision making: the Graaskamp model, Exhibit 29-1 cited in Geltner & Miller, 2001, p. 775.)

A "strategic fit" with the literature – in particular the Graaskamp model and its "updated" version found in Miller and Geltner (2005, p. 515) as depicted in Figure 2.5 in Chapter 2 – became evident during the exploration of common principles and characteristics of key components and performance areas of the development process prior to the commencement of construction. The comprehensive literature review of the subject area in Chapters 2 and 3 will focus on all disciplines and perspectives portrayed in the Graaskamp model. These components include inter alia an exploration of:

- Location studies and site selection.
- Market research and property markets.
- Feasibility principles, design development and financial analysis.

The strategic fit of the study focus with the Graaskamp model is depicted in Table 1.1.

TABLE 1.1: Strategic fit: Graaskamp model with study areas: process of real estate development decision making

GRAASKAMP MODEL	Reference in Table of Contents : Chapter 2	Property development principles and process: Framework of thesis: 'fit' with Graaskamp model
Financial analysis	Chapter 3 Item 3.4	Feasibility principles, design development and financial analysis
Market and competitive analysis (the real estate space market)	Chapter 3 Item 3.2	Location studies and site selection
	Chapter 3 Item 3.3	Market research and property markets
Physical and design analysis (architectural and engineering disciplines)	Chapter 3 Item 3.2	Location studies and site selection
	Chapter 3 Item 3.4	Feasibility principles, design development and financial analysis
Political and legal analysis	Chapter 3 Item 3.2	Location studies and site selection
	Chapter 3 Item 3.4	Feasibility principles, design development and financial analysis

(**Sources:** Graaskamp model cited in Geltner & Miller, 2001, p. 775; Structure and content of this study.)

Each of the development framework dimensions in the model will be examined in detail in the literature review to provide a sound secondary data base from which the comparative, qualitative empirical research will be conducted.

1.4 LIMITATIONS OF THE STUDY

Considering its manageability and level, the study is limited to:

- A literature review and empirical research on key performance areas and principles which form part of the property development process prior to construction activities. It does not explore the marketing, construction and property and asset management activities involved in the property development process.
- The study will not include an exploration of taxation; property valuation practices; site valuation i.e. how much to pay for a site; depreciation schedule compilations; organisational and ownership structures; sources and practices of financing; tender procurement; and contractual procurement documentation and practices during the pre-construction phase. These facets are deemed project and company

specific and of specialised nature, whilst the subject area of this thesis is primarily focused on a generic exploration of pre-construction principles and process, within property development companies.

- Empirical research based on a representative sample of Queensland based property developers who are members of the Queensland Division of the Property Council of Australia. Although the results of the study could be of equal value for application in the other states and territories of Australia, it is limited to the state of Queensland.
- Pre-construction property development principles and process pertaining to commercial property development activities in general. The concept *property development* is often used generically for all types of property development activities, that is:
  - Commercial property developments: retail, offices and industrial.
  - Residential: residential estates, high rise residential developments and the numerous types of residential estate land sub-divisions.
  - Specialised forms of property developments: Rehabilitation and conversions, time sharing schemes, share block schemes, research parks, sport stadiums, hospitals, hotels, recreation centres, retirement villages, public buildings, storage facilities, car parks and aged, health and childcare facilities.

This research will focus on pre-construction activities which will be of greater value to property developers of commercial property and to a lesser extent to the developers of residential and specialised forms of property. The latter categories of property development may, however, benefit equally from the research undertaken for this study.

1.5 STATEMENT OF THE PROBLEM, SUB-PROBLEMS AND HYPOTHESES

1.5.1 The problem

The study addresses the fundamental **problem,** as defined by the following process:

> *Whether Queensland based property developers apply sound pre-construction property development principles and process to contribute to increased effectiveness and productivity.*

1.5.2 The sub-problems

In order to examine and critically assess the study problem, the following sub-problems are formulated and explored.

Sub-problem 1

Which pre-construction property development framework principles are preferable and which key performance areas need to form part of the development framework in order to be successful?

Sub-problem 2

What role does the application of sound location studies and site selection activities play in the pre-construction stage and can they, if diligently and correctly applied, form an important factor in the success of a property development?

Sub-problem 3

To what degree is the application of pre-construction property market research practices applied to contribute to increased effectiveness and productivity?

Sub-problem 4

Do property development companies apply sound pre-construction feasibility principles, design development and financial analysis practices to contribute to effectiveness?

1.5.3 Hypotheses

The following hypotheses, which are to be addressed by way of the empirical research, are stated.

Hypothesis 1

Property development companies apply and adhere to the accepted industry *framework, principles and key performance areas* in pre-construction activities.

Hypothesis 2

Location studies and site selection activities are performed in accordance with accepted practices.

Hypothesis 3

Market research practices, into property markets, are applied diligently to contribute to increased effectiveness and productivity.

Hypothesis 4

Sound pre-construction *feasibility principles, design development and financial analysis practices* are adhered to.

1.6 DATA COLLECTION AND ANALYSIS

This study consists of both a theoretical exploration and qualitative empirical research.

For the theoretical study, secondary data was collected by way of a literature review. This includes material from books, monographs, conference proceedings, reference materials, journal articles, newspapers, magazines, reports, theses and dissertations. This literature review provides the background for the compilation of the questionnaire issued to the sample group.

To conduct the empirical research, a consultation was held with the Queensland division of the Property Council of Australia. A representative sample group of twenty Queensland based property developers was compiled from the seventy one members registered with the Queensland division of the Property Council of Australia in 2005 (Property Council of Australia, 2005).

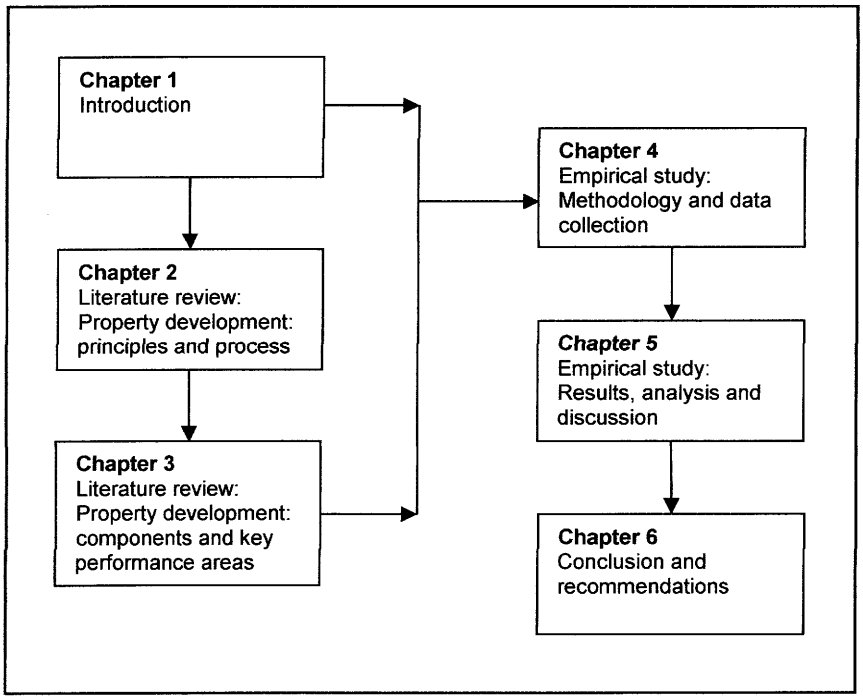
Contact was made with all the participants of whom twelve indicated their initial willingness to participate. Letters of motivation, including participation information, consent forms and Empirical Questionnaire (refer Appendix A), were sent to all participants to obtain formal consent for participation in the study and empirical data. Eleven companies agreed to participate in the research project, returned completed questionnaires and have been included in the study. This list of participants is depicted in Appendix B. This research project has been approved by the Curtin University of Technology Business School Research Ethics Committee. All participant selection and interviews were conducted to comply with university policies regarding confidentiality requirements.

Qualitative data (Levine, Stephan, Krehbiel & Berenson, 2005) was collected by way of a questionnaire sent to and returned by each of the participating property developers. Descriptive categories and codes were applied to each component of the questionnaire and the data and their properties statistically explored. The statistical analyses utilised in this study were mostly descriptive in nature (Hill & Lewicki, 2007). SPSS 16.0 was used for the analyses (SPSS Incorporated, 2007).

This research method allowed for the examination and critical assessment of the application of each principle and component of the property development process, both individually and collectively within the sample group. Each of the development framework dimensions was examined using data from the literature review and the empirical study. This provided a framework to critically assess the study problem and sub-problems.

1.7 FRAMEWORK OF THE STUDY

FIGURE 1.2: Framework of the study



Chapter 1 comprises a description of the content and significance of the study, limitations, statement of the problem, sub-problems, hypotheses, objectives and methodology employed in the study. **Chapter 2** comprises a literature review of property development principles and process and **Chapter 3** a literature review of

location studies and site selections, market research and property markets and feasibility principles, design development and financial analysis.

In **Chapter 4** and **Chapter 5** the empirical study is conducted, based on the literature reviews in **Chapters 2** and **3**. **Chapter 4** describes the empirical study methodology, questionnaire design and the data analysis methods employed to research the study problems and hypotheses. In **Chapter 5** the empirical data is analysed and results obtained are presented, the interpretation of the findings are outlined, followed by a discussion on the implication of the findings and testing of the study hypotheses. **Chapter 6** includes the final conclusions and recommendations. The recommendations may be employed and used for further research or study.

1.8 SUMMARY

Property development is essentially an integrated process revolving around numerous concepts that link distinct phases in the development cycle. Property developers share characteristics common to entrepreneurs in general. Property development principles and process, including key components and performance areas, were explored and defined. A proposed conceptual and methodological framework, representing a "strategic fit" with the literature, was outlined. It concluded that the study of the subject area in the literature review is to focus on and include an exploration of:

- Property development principles and process.
- Location studies and site selection.
- Market research and property markets.
- Feasibility principles, design development and financial analysis.

This provides the sound secondary base from which the qualitative empirical study will be conducted, followed by a description of the limitations and objectives of the study as well as listing the study problem, sub-problems and hypotheses. The study sample group was defined and the data collection and analysis methodology pertaining to the empirical study were outlined, followed by outlining and describing the framework of the study in detail.

The next two chapters (**Chapter 2** and **Chapter 3**) comprise the literature review. The academic exploration and discourse will focus on the pre-construction development

principles and process framework and an exploration of the three components which comprise the framework.

CHAPTER 2

LITERATURE REVIEW

PROPERTY DEVELOPMENT : PRINCIPLES AND PROCESS

2.1 INTRODUCTION

In **Chapter 1**, the subject area of this study was defined as a critical assessment of pre-construction property development principles and process in Queensland, Australia. The chapter outlined the background and significance of the study and the data collection and analysis methodology to be employed, including a definition of the study sample group. The limitations and objectives of the study were also described and the study problem, sub-problems and hypotheses listed.

An abbreviated literature overview of property development principles and process and key performance areas, which form part of the development framework, was also included in **Chapter 1**. In outlining the proposed conceptual and methodological framework for the study, it was found that a "strategic fit" exists with the Graaskamp model pertaining to the process of real estate development decision making (Graaskamp, cited in Miller & Geltner, 2005, p. 515).

It was concluded that, in addition to the study of property development principles and process, the literature review is to focus on and include an academic exploration of location studies and site selection; market research and property markets; feasibility principles, design development and financial analysis employed as components and key performance areas in the pre-construction property development process.

The literature review in **Chapter 2** is therefore structured to explore theoretical models and literature on property development principles and process. This will be followed in **Chapter 3** by a study of the three components and key performance areas listed above, which, is argued, form an integral part of the pre-construction development framework. This will provide the theoretical framework within which the empirical study is to be conducted in **Chapter 4**.

2.2 PROPERTY DEVELOPMENT : PRINCIPLES AND PROCESS

2.2.1 Introduction and role of the developer

Property developers will invariably, at some critical juncture in their careers, come in contact with the practical implementation of the real estate property development process. What then is the *property development process*?

Waterhouse (1991, p. 25) claims that "the real property development process bears a strong resemblance to that of a business plan; in essence, it is a business plan for an endeavour which has the potential to be very profitable or the risk of being very costly".

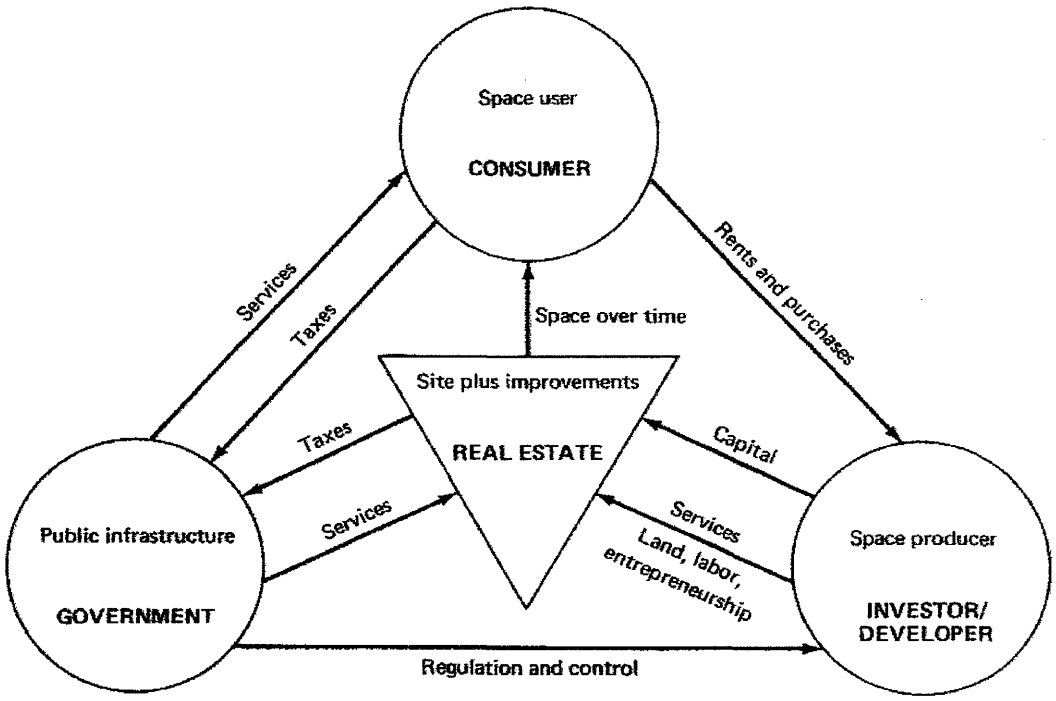
James Graaskamp defines real estate as "space delineated by man, relative to fixed geography, intended to contain an activity for a specific period of time" (Graaskamp, cited in Squirrel, 1997, p. 225) and argues that real estate has, in addition to the three dimensions of space (length, width and height), a fourth dimension of time.

The creation and management of space-time-units is defined as real estate development, which is claimed to be a complex and collective process involving various role players (Graaskamp, cited in Squirrel, 1997).

Graaskamp also argues that "success in converting real estate space into money over time depends on how well the investor operates within the real estate environment. This environment can be depicted as the dynamic relationship between the real estate itself (site plus improvement) and three participant groups: (1) investors-developers, who provide real estate space over time; (2) consumers, who use or consume the space provided; and (3) government, which provides the public infrastructure within which all real estate transactions take place" (Graaskamp, cited in Pyhrr et al., 1989, p. 5).

This relationship is illustrated in Figure 2.1.

FIGURE 2.1: Conceptual model of the real estate investment environment



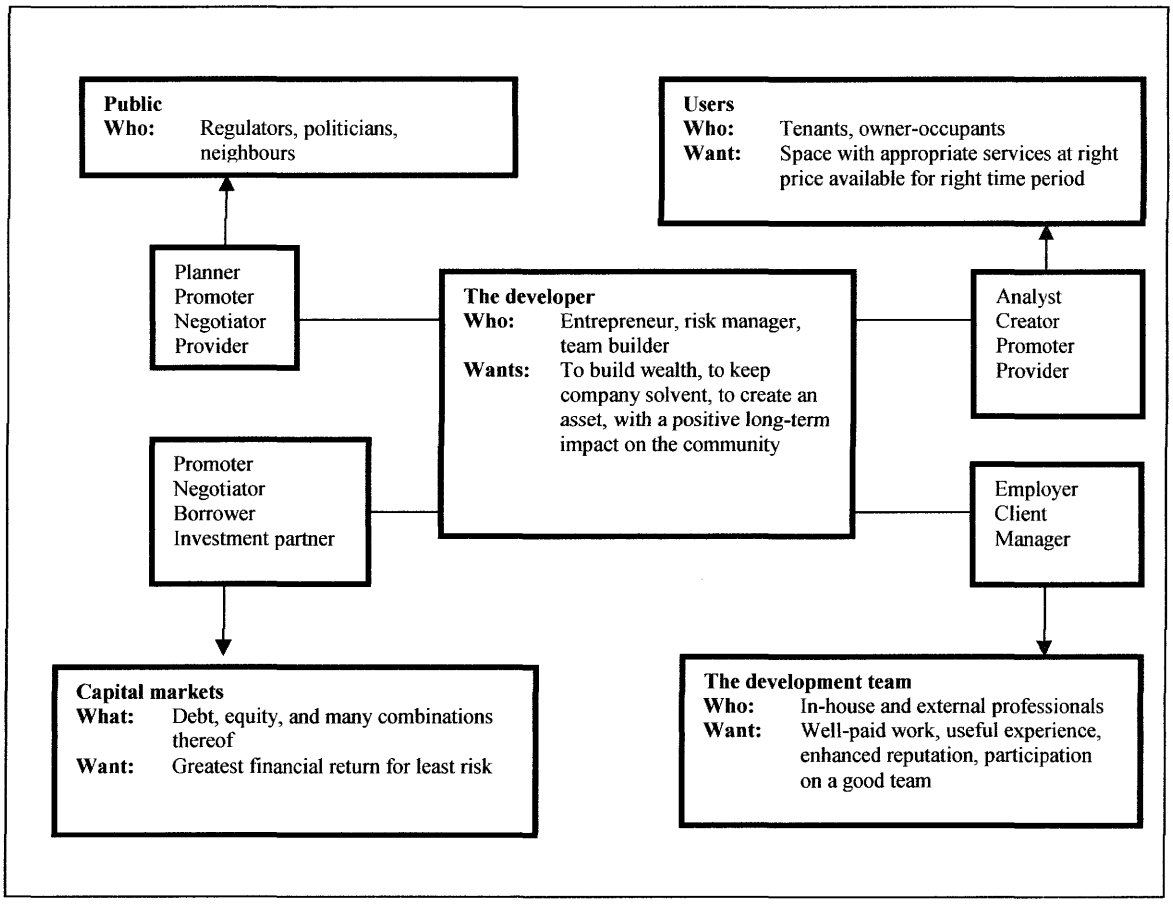
(**Source**: Conceptual model on the real estate investment environment. Exhibit 1-1 cited in Pyhrr et al., 1989, p. 5.)

Cloete (1998a, p. 115) on the other hand claims that "property development is the process directed at the increase in value of an existing property (undeveloped or developed) by the application of resources (material, human and capital)". The emphasis on property development as "a process that moves iteratively from one disciplinary perspective to another" is likewise stated by Geltner and Miller (2001, p. 774).

This argument appears similar to the one found in a study by Miles et al. (2000) in which it is submitted that the developers must "balance an extraordinary number of requirements for completing a project" (Miles et al., 2000 p. 8). The developer's role as "creator, promoter, negotiator, manager, leader, risk manager and investor" is not only dynamic but continuously shifting. The property development process requires the ability to apply multi-dimensional decision making – something that can often only be described, but not taught.

The many balancing roles, that are part of the property development process, are graphically depicted in Figure 2.2

FIGURE 2.2: The developer's many roles



(**Source**: Miles et al., 2000, p. 9. Figure 1-2: The developer's many roles.)

Guy and Henneberry (2002b, p. 5) agree that development is a "complex process which entails the orchestration of finance, materials, labours and expertise by many actors within a wider, social, economic and political environment".

Cadman and Topping (1995, p. 2) state that: "In the case of property development, the product is a change of land use and/or a new or altered building in a process which combines land, labour, materials and finance ... in practice the process is complex."

Similar arguments were found in studies by numerous other authors. Zuckerman and Blevins (2003, p. 1) claim that: "Real estate development is the process of responding to a real estate need in our society by creating and financing a product which satisfies that need. It is a process which involves leadership, market research, marketing, public relations, design and construction, financing and accounting, and property management."

Collier, Collier and Halperin (2002, p. 59) submit that: "Development begins with a vision; an idea coupled with the skills, desires and resources necessary to bring the vision to fruition. The process of development is long and complex."

Harvey and Jowsey (2004, p. 81) state that "the development process may itself be dynamic". It is argued that a property owner who gives his property a face-lift may stimulate his neighbours to do likewise. As a result, demand increases for nearby properties which can be improved, and eventually a whole neighbourhood may be upgraded, a process often referred to as gentrification (Harvey & Jowsey, 2004, p. 81-82).

Forlee (2005, p. 51) is of the opinion that: "Property development is not an exercise that can be completed overnight by the developer. There are a number of stages that have to be completed and details that should be focused on in order to ensure it is successful. A substantial amount of time and money is required to ensure that each stage of the development process is completed successfully."

Miller and Geltner (2005, p. 507) state: "One way to view the process of development and the risk involved is in chronological sequence." It is argued that a property that has been in existence for a while is known as a seasoned property and is not as risky as a new project with its uncertainty of future rents and expenses. New projects involve more uncertainties from inception to completion. Another perspective cited in the study is by examining the role each of the players play in the success of the development process.

The above viewpoints suggest that it is essentially an integrated process revolving around numerous concepts that indisputably link distinct phases in the development cycle. To further explore these concepts, principles and their relationships, which constitute the development framework, an academic discourse and exploration is conducted of:

- Firstly the role which the various project consultants play in ensuring property development success.
- Secondly the various property development frameworks and the key performance areas that make up the integrated process.

As this study is limited to the pre-construction stage of the property development cycle, exchanging viewpoints will be limited to development activities prior to commencement of construction work on site.

2.2.2 Project team consultants

The literature suggests that it is imperative that the property developer in his or her role as development manager and as leader and driver of the development process to completion, puts together a cohesive team of consultants in which each member of the team, from the beginning of their involvement, clearly understands and adheres to his or her responsibilities. The developer, as "conductor" of the "orchestra" requires competent members for his or her "orchestra".

Forlee (2004, p. 50) emphasises the importance of only appointing consultants who are best qualified for the project. They should work or have worked on similar projects, have the support of qualified staff, worked with your organisation previously and understand their capabilities, be referred and have conducted business for a long period of time and should have been part of a selective procurement process. In addition to the above requirements it is also deemed important for project consultants to have sufficient professional indemnity insurance, to be members of their respective professional governing bodies and be willing to provide their services at a competitive market related fee.

Who then are the experts and which services need to be provided?

Gause (1998, p. 20) argues that an office development team consists of two broad groups of specialists: the design/construction group and the real estate services group. The design/construction group can include architects, landscape architects, land planners, engineers and construction contractors. It is argued that they perform tasks ranging from site analysis and planning to building design and construction management. The real estate services group on the other hand can include market consultants, appraisers (valuers), attorneys, leasing agents and marketing and public relations consultants, property managers, title companies and surety companies. Some of the members of this group participate in the development process from start to finish and some perform short-term tasks.

This emphasis on property development professionals, falling into groups, appears to be similar to a study in which Guy and Henneberry (2002b) argue that they fall into three general functional types:

- Market professionals: offer advice on market conditions, act as agents in property transactions and management, assist in market research and undertake valuations.
- Construction professionals: provide skills in the design and management of projects.
- Information and monitoring professionals: evaluate market conditions and assist in providing cost estimates for designs and the planned construction program (Ball, cited in Guy & Henneberry, 2002b, p. 121-122).

De Roos and Kennedy (2005), Roth and Lang (2005) and Woodson (2005) also identify and emphasize the importance of selecting the correct project team members. Forlee (2004, p. 52-61), in a study on Australian property development, claims that the complexity of the development will determine the number of consultants on a team. Studies by Alvis (2007); Gause (1998); Frej (2001); Lindahl (2008); Peiser and Frej (2003); Schmitz (2004); Forlee (2005); the Royal Australian Institute of Architects (2007); Wilkinson and Reed (2008); as well as the author's own industry experience, suggest that project team members are deemed important in the pre-construction development process.

Possible consultants as identified by the above authors that may be involved in a development, include the following:

- Market analyst.
- Environmental consultant.
- Traffic consultant.
- Accessibility consultant.
- Heritage architect.
- Land surveyor.
- Town planners.
- Architect.
- Solicitor.
- Conveyance/settlement agent.

- Accountant/auditor.
- Certifier.
- Quantity surveyor/building estimator.
- Engineers (mechanical, structural, geo-technical, civil, electrical, hydraulics, acoustical, fire).
- Development manager (project manager).
- Property valuer.
- Information technology and telecommunications consultant.
- Lift consultant.
- Energy rating consultant.
- Asbestos and toxic substance consultant.
- Security consultant.
- Property and facilities manager.
- Real estate agents/leasing agent.
- Advertising and marketing agent.
- Public relations consultant.
- Insurance broker.
- Landscape architect.
- Interior designer.
- Finance specialist.

Frej (2001); Schmitz (2004) and Wilkinson and Reed (2008) list and describe the *functions* of various members of the development team:

- Land planners (or site planners): responsible for translating the developer's concept for the project into a site plan.
- Engineers: responsible for site planning, building design and other specialist design and consulting tasks (civil, structural, mechanical, electrical, transportation, soil and geotechnical services).
- Architects: key players responsible for the project's image and design services necessary, from inception to schematic to final designs. They may also assist with the bidding or negotiation process, administration of the agreements and overall project administration and management.
- Landscape architects: produce the master plan for all landscaping and hard surfaces.

- Environmental specialists, archaeologists and historians: provide environmental reviews, identify the regulatory approvals and permits required and prepare environmental impact reports.
- Construction contractors: licensed professionals who construct a project in accordance with plans and specifications.
- Market analysts: undertake research and produce studies addressing the market feasibility of projects.
- Finance specialists: present the proposed project to investors and financial institutions.
- Leasing agents: market the project and conclude lease or sale agreements.
- Marketing and public relations consultants and sale staff: they differentiate the development in the market and sell the product.
- Property managers: must be involved early in the development process to ensure the project is efficiently designed.
- Attorneys (solicitors): provide legal advice throughout the development process.

Peiser and Frej (2003, p. 42) submit that, in addition to the above consulting services required during the development process, the appointment of the following five additional members of the project team is of equal importance:

- Surveyors: determine a property's physical and legal characteristics (existing easements, rights-of-way, and dedications on the site) and prepare a site map.
- Asbestos abatement professionals: manage the risk of asbestos contamination which is hazardous when friable.
- Appraisers (valuers): produce an estimate of a property's value based on standard methodologies. Three methods can be used to complete an appraisal: the income approach; the market approach; and the cost approach.
- Title companies: certify who holds title to the property and guarantee that the property is clear of unexpected mortgage, tax, easement and other liens.
- Surety companies: developers need insurance against consultants' or contractors' failures.

There is no doubt that the selection of the appropriate members of the "development orchestra" will indisputably contribute to a successful property development.

The all important role of the project team and the relationship between the developer and project team, in the development, will be explored in more detail as part of the empirical study in **Chapter 4**.

Having ascertained the role and importance of the project team members, the next aim is to explore and conduct an academic discourse on property development frameworks and the components, key performance area and principles that make up the integrated process.

2.2.3 Property development frameworks and models

This section will explore various property development frameworks as described by Beeny (2004); Cadman and Topping (1995); Cloete (1998a); Collier et al. (2002); Forlee (2005); Frej (2001); Geltner and Miller (2001); Graaskamp (in Miller & Geltner, 2005); Harvey and Jowsey (2004); Ling and Archer (2005); McKenzie and Betts (2006); Miles et al. (2000); Peiser and Frej (2003); Schmitz and Brett (2004); Waterhouse (1991); West (1994); Wilkinson and Reed (2008); Zuckerman and Blevins (2003).

Waterhouse (1991) claims that the development process business plan falls into five sequential, though sometimes overlapping, parts:

- Goals and philosophies

  Developers begin the development process by clearly defining the type of projects they will undertake and the quality of the projects with which they intend to position themselves.

- Market analysis

  The market must be analysed. This includes, amongst other: the supply and demand analysis; absorption and revenue projections; typical location determinants such as access, transportation, utilities, labour, support services, business climate, community facilities and services; capital availability; and site availability. In the final instance there are the numbers. Types of data in a market analysis may include demographics of an area, local construction activity, expansion needs, prospect trends, lost opportunities and niche markets.

- Planning and engineering analysis

  This analysis is intended to determine desired market characteristics as it relates to a particular piece of property. It is intended to result in a development plan which may include land uses, concept designs, project development cost estimates, road and utility considerations, zoning, opportunities and constraints and environmental issues.

- Financial analysis

  The financial analysis for a proposed development is to include allowance for revenues i.e. land sales (or leases), annual increases, governmental infrastructure cost appropriations and grants. Cost categories to be considered include site acquisition, planning and design, infrastructure, financing and soft costs related to project administration, marketing and promotion, insurance, commissions, legal and accounting, property management and annual permit fees.

- Implementation plan

  An implementation plan to convert the dream into reality, is required. It generally relates to project design, marketing strategy, management and operations.

West (1994) appears to have a similar approach to the development process. It is argued that the process links five distinct phases that sequentially provide a "blueprint for action" (West, 1994, p. 2). The five phases are:

- Phase one: Conceptualisation, planning and initiation

  This phase sets out to establish a set of development objectives. It formulates an initial development concept, identifies major opportunities and strengths of the project and addresses each of the principal issues inherent in the development process.

- Phase two: Full project feasibility and business analysis

  Determining a project's viability requires a two-step process. Firstly, assessing the market feasibility of the project, which includes (for the development of a database) delineating the market support area, determining the sources of demand, identifying and assessing the sources for occupancy demand, evaluating the suitability of the site for development and recommending facility sizing and amenities. The second step of phase two is determining the project feasibility and

doing a business analysis. West (1994) emphasises the level of detail necessary when "establishing the project viability" (West, 1994, p. 7). The feasibility analysis can be divided into three sections: i) Project orientation: involves the dissemination of more factors, variables, risks, sensitivities, and calculating of capital cost plan estimates and revenues, and project funding; ii) Investment orientation requires each party involved in the project feasibility and business analysis to reach consensus toward the various sensitivities, debt ratio and return analysis; iii) Executive summary which gives a single-page summation of the analysis.

- Phase three: Commitment

  West (1994, p. 9) claims that the commitment phase should involve the final negotiation of the following items:

  - Land assembly/site acquisition.
  - Agreements from public entities for development and funding assistance.
  - Selection of and agreements to lease with prospective tenants.
  - Development rights for, and if necessary, over the site.
  - Selection of a client representative (project coordinator), architect(s).
  - Engineers, cost engineers and other professional consultants.
  - Refined project costs, both direct and indirect.
  - Agreement among the funding, developing and operating entities.
  - Financing and ownership structure.
  - Environmental and statutory documents.
  - Preliminary development schedules.
  - Marketing strategy.
  - Developed design drawings (preliminary sketch design and developed design documents can count for as much as 60 per cent of the total design effort).
  - A value engineering program maintained throughout the design process.
  - Ensuring that the budget targets are attained and that the most appropriate and efficient design is developed without compromising aesthetics.
  - An overall land use plan (West 1994, p. 9).

Phases one to three conclude the pre-construction phase.

By the time approval to begin construction is confirmed, all contractual documentation should be completed and work on the building site can commence. Phase four:

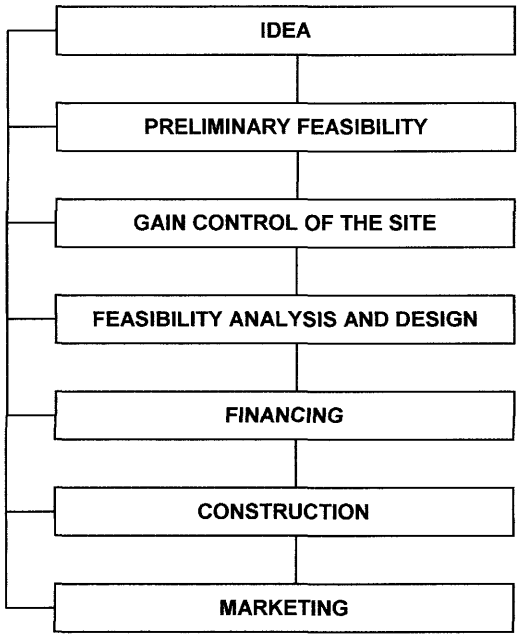
Design and construction and Phase five: Management and operation of the framework (West, 1994) relate to activities which fall outside the limits of this research area and for purposes of this study will not be explored in detail.

Cadman and Topping (1995, p. 2) submit that the development process may be divided into the following work stages:

- Initiation: a parcel of land is identified for a different or more intensive use or demand. The initiative to identify a site may come from the actors in the development process seeking an appropriate site in anticipation of demand or need. Alternatively, the initiative may stem from any actor in the development process identifying a potentially higher value use for an existing site due to change in circumstances.
- Evaluation: includes market research and assessing the financial viability.
- Acquisition: the site is required subject to a legal investigation, ground investigation and procuring finance.
- Design and costing: the design and costing is a continuous process.
- Permissions: change of use (zoning) and building permissions are obtained.
- Commitment: the developer commits to proceed and is liable for substantial financial commitments.
- Implementation: construction works are complete.
- Let/manage/dispose: the investment is let and managed or disposed of.

Cloete (1998a p. 117) illustrates the steps in the development process in the following diagram:

FIGURE 2.3: The development process by Cloete



(**Source**: Cloete, 1998a p. 117, Exhibit 4.2: The development process.)

Cloete (1998a) argues that each step in the process requires constant decision making and that the developer "does not have the luxury of performing each step in isolation: many things are going on at the same time" (Cloete, 1998a, p. 117). These steps are:

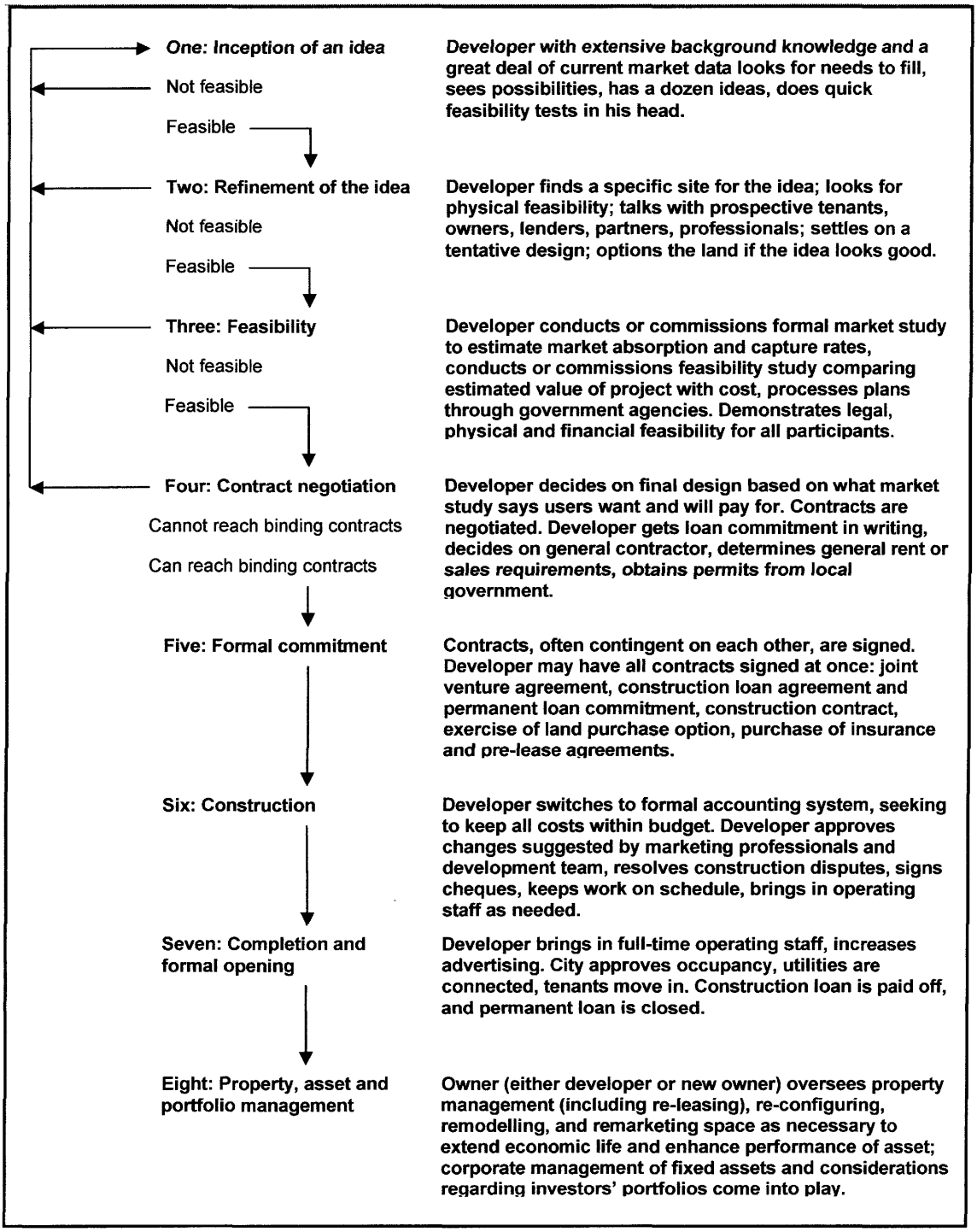
- Idea stage: every property development starts with an idea.
- Preliminary feasibility stage: a "rough-cut" analysis is made whether the project is feasible both financially and on a risk basis.
- Gain control of the site: the developer obtains control of the site albeit by way of procurement or by way of taking out an option.
- Feasibility analysis and design: a detailed feasibility study is undertaken to analyse the legal, site, market and financial aspects.
- Financing stage: financing for the development is procured.
- Construction stage: the project is constructed.
- Marketing stage: the development is either leased or sold.

It was interesting to note the fact that the Miles et al. (2000) *eight-stage model of real estate development,* Peiser and Frej (2003) *six main stages of development* and Schmitz and Brett (2001) *study on predevelopment steps*, as described in **Chapter 1**,

all have one thing in common. The property development process is unquestionably dynamic, integrated and has certain key components and performance areas that have to be completed in a staged and disciplined manner.

In a study by Frej (2001), reference was also made to the Miles et al. (2000) eight-stage model of real estate development. It seems to suggest that closer scrutiny of the eight-stage model will be of benefit to this research. The elements and principles which form part of the eight-stage real estate development model are depicted in Figure 2.4.

FIGURE 2.4: The eight-stage model of real estate development



(**Source:** Miles et al., 2000, p. 6. Figure 1.1: The eight-stage model of real estate development.)

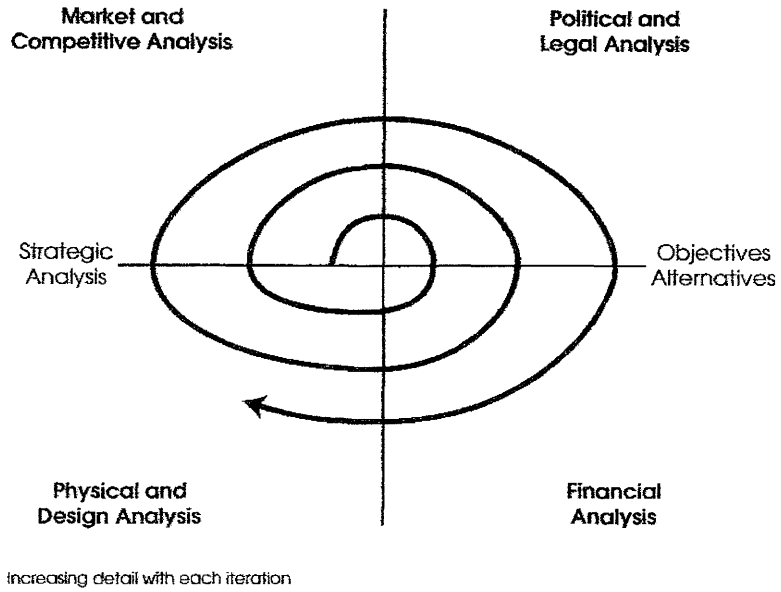
It has been argued that the multi-disciplinary aspect of real estate is nowhere more important than during the property development process. When was reference first made to a model of development reflecting this multi-disciplinary and highly interactive aspect? Geltner and Miller (2001) claim that such a model of development

was perhaps first articulated by James Graaskamp, a famous real estate professor. The model, based on Graaskamp's teachings, is depicted in Figure 1.1 in **Chapter 1**.

It is argued that a development concept "will cycle through analysis from at least four different disciplinary perspectives: *urban economics* (the real estate space market), *architectural/engineering discipline* (physical analysis), *legal/political analysis*, and *financial economics* (the real estate capital asset market), not necessarily in that order (or indeed in any fixed order)" (Geltner & Miller, 2001, p. 774 - 775).

It is interesting to note that Miller and Geltner (2005, p. 514-517) state that the Graaskamp iterative framework, depicted in Figure 1.1, was further developed by Graaskamp along with Barry Stedman and Norm Miller, from the University of Cincinnati, in a study for the Urban Land Institute. This updated version of the Graaskamp model is depicted in Figure 2.5.

FIGURE 2.5: Graaskamp's approach to feasibility analysis



(**Source:** Miller & Geltner, 2005, p. 515. Exhibit 24.2: Graaskamp's approach to feasibility analysis.)

Graaskamp, as cited in Miller and Geltner (2005, p. 515-517), suggests in the "updated" model, the following major components for a thorough study of the property development process:

- Strategic analysis: The goals, objectives, alterations and decision criteria are determined along with a series of go-forward and no-go decision points. The strategic analysis includes an investigation and exploration of all other four components, as depicted in the model. These four components in fact form the core of the strategic analysis and need to be completed prior to the actual capital being committed to the development. The four components are:
  - Market and competitive analysis: Market analysis includes demographic trends, employment trends, cultural and technological trends. Competitive analysis includes looking for sources of failure – who is the competition?
  - Political and legal analysis: This includes a review of all land use building codes and zoning laws at all levels of government that might impact on development.
  - Physical and design analysis: Early physical analysis is generally focused upon the site. This includes soil bearing capacity, slope and drainage, rock formations, contamination, sewer, water, gas, utility and road access and environmental concerns. It also focuses on conceptual designs of the building to be developed to optimise the material use, balancing cost and long-run efficiency. Property and facility managers often contribute during this stage to ensure the building will be both easy to monitor and manage.
  - Financial analysis: Financial analysis includes all inclusive cost estimates of the development project and revenue and operating cost from the market rent surveys. These estimates require some systematic analysis and must satisfy equity and debt capital requirements.

The work of Graaskamp is used in this study as basis to formulate a proposed framework of pre-construction property development principles and process, as depicted in Figure 2.10.

Cognisance is also taken of the broader literature review and findings describing the process and principles involved in property development, such as those by Beeny (2004); Collier et al. (2002); Forlee (2005); Harvey and Jowsey (2004); Ling and Archer (2005); Fisher and Robson (2006); McKenzie and Betts (2006); McMahan (2007); Newell and Steglick (2006); Peiser and Frej (2003) and Zuckerman and Blevins (2003).

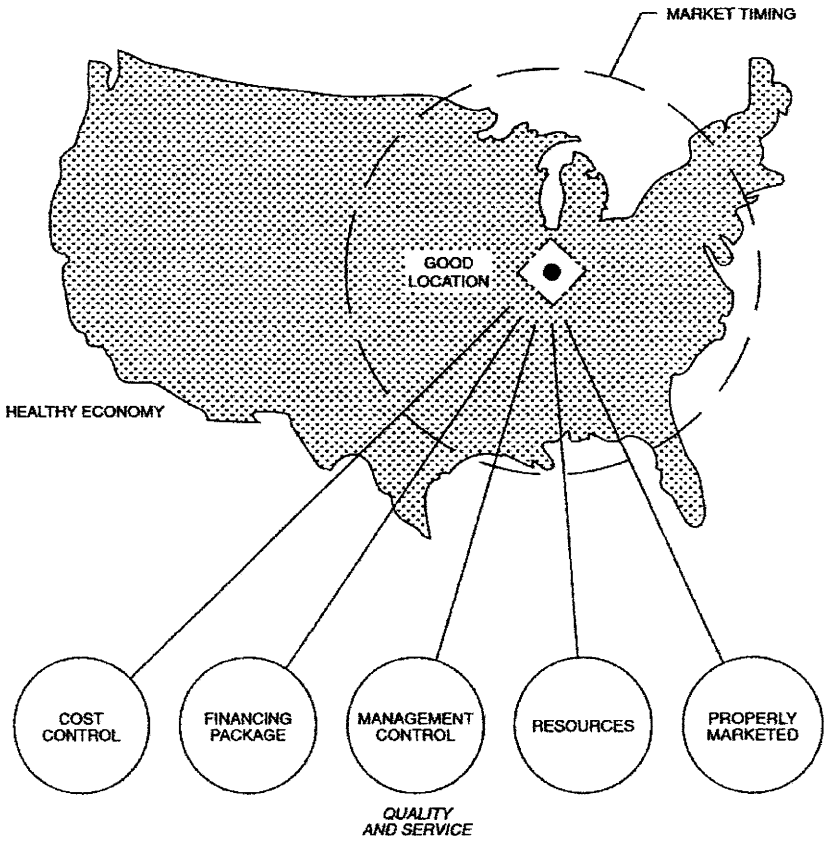
In a study of the development process, Collier et al. (2002) outline a single checklist of pre-construction components:

- The concept: product identification and establishment of development criteria.
- Identify seed capital.
- Assemble internal team: site acquisition, financial analysis, marketing, negotiation.
- Market area identification.
- Location possibilities.
- Feasibility analysis and refinement.
- Marketing study.
- Site analysis: preliminary environmental study, suitability for desired purpose, identifying potential obstacles/opposition.
- Pro-forma: use of market knowledge to estimate cost, potential income and expenses, possible operating profit and project final sales value; estimating value added by development process; ascertaining available financing.
- Risk/reward analysis.
- Land acquisition: optioning the land, securing control.
- Obtain environmental phase 1 report and soil borings analysis on-site.
- Preliminary contacts with possible debt and equity sources.
- Assemble external team: architect, engineer, land planner, landscape architect, surveyor; legal; lining up possible general contractors; signing contracts with major professionals; detailing levels of responsibility; clarifying areas of involvement.
- Design process: site, structures, and specifications.
- Begin formulating marketing/leasing plan.
- Select property manager, sign contingent contract.
- Estimating and preliminary bidding process: ongoing interaction with potential contractors re cost estimates, design suggestions and specifications.
- Regulatory approval process: zoning vs. site plan approval.
- Obtain final construction documents and site plan.
- Release final construction documents to possible contractors.
- Raise equity capital, finalise deal structure and form of ownership entity.
- Debt capital - the construction loan: send out project loan packages, receive term sheets, submit loan applications, expedite required third-party reports, obtain commitment letter.
- Receive preliminary bids, value engineering and final bids.

- Negotiate contractor contract and project schedule.
- Risk/reward analysis: review pro-forma and assumptions therein, assess available debt and equity capital, general contractor contract, make go/no-go decision.
- Sign construction contract.
- Obtain building permit.
- Close on land option, close construction loan, file notice of commencement, give notice to proceed to contractor (Collier et al., 2002, p. 59 - 60).

The question invariably arises – will the application of the checklist items referred to above result in successful developments? Zuckerman and Blevins (2003) argue that many factors play a role to determine successful real estate development. These are depicted in Figure 2.6.

FIGURE 2.6: The components of a successful development



(**Source:** Zuckerman & Blevins, 2003, p. 5. Figure 1-1: The components of a successful development.)

Zuckerman and Blevins (2003) claim that all the factors interact with one another. These factors are briefly described below:

- Location: location is relative to each type of development.
- Planning: successful real estate developments only occur with proper comprehensive planning.
- Market timing: the window of opportunity.
- Financial staying power: the developer must have sufficient financial resources.
- Control of construction costs and schedules: control cost and time.
- Property marketed and targeted: aggressively pursue the target market customer.
- A well-conceived financing package: procure a good financing package to lower the cost of debt and reduce risk.
- Management control: the developer must always retain control.
- A healthy economy: monitor the "health" of the economy.
- The art of compromising: real estate development will always require compromises.
- Quality and service: successful developments and developers excel in quality and service.
- Good old-fashioned luck: luck helps, but with proper planning, success will outdistance failure (Zuckerman & Blevins, 2003, p 6-8).

The "Real estate development procedural matrix program" included as a mega-diagram in the Zuckerman and Blevins (2003, p. 693) comprehensive study on real estate development outlines "the complete real estate development process while relating the various work tasks to the different disciplines of the real estate business (i.e. development, marketing, design and construction, finance and accounting, and property management)." It can be argued that this matrix probably constitutes one of the better examples on property development framework and models.

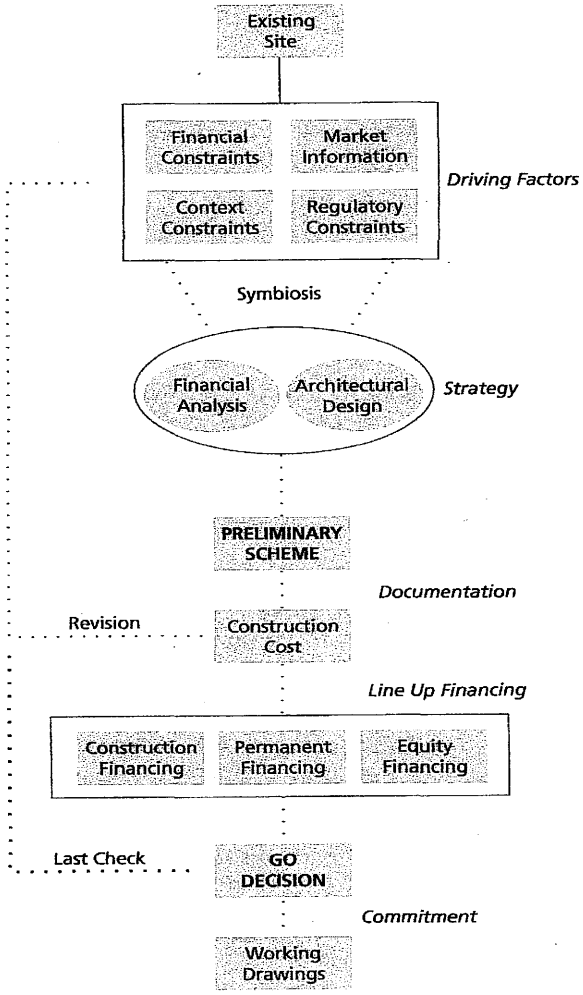
The matrix, as applicable to the pre-construction phase, is depicted in Appendix D: Real estate development procedural matrix .

The six stages of development, outlined by Peiser and Frej (2003) in **Chapter 1,** reiterate the iterative nature of the development process as depicted in Appendix D: Real estate development procedural matrix.

The golden thread found thus far in this literature review and academic exploration on the subject matter continues – property development is fundamentally an ongoing and iterative process which requires multi-dimensional skills from the developer. Beeny (2004) has a similar viewpoint when it is stated that "you must also get each part of the process right if you want to stand any chance of making a profit" (Beeny, 2004, p. 39).

In Figure 2.7 Peiser and Frej (2003, p. 19) summarise one view of the steps common to developing most types of property.

FIGURE 2.7: The go-decision



(**Source**: Peiser & Frej, 2003, p. 19. Figure 1-6: The go-decision.)

It can be argued that the four pre-development stages of development identified in the Peiser and Frej (2003) model, are of significant importance to this study. These are:

- Feasibility studies.
- Design.
- Financing.
- Marketing.

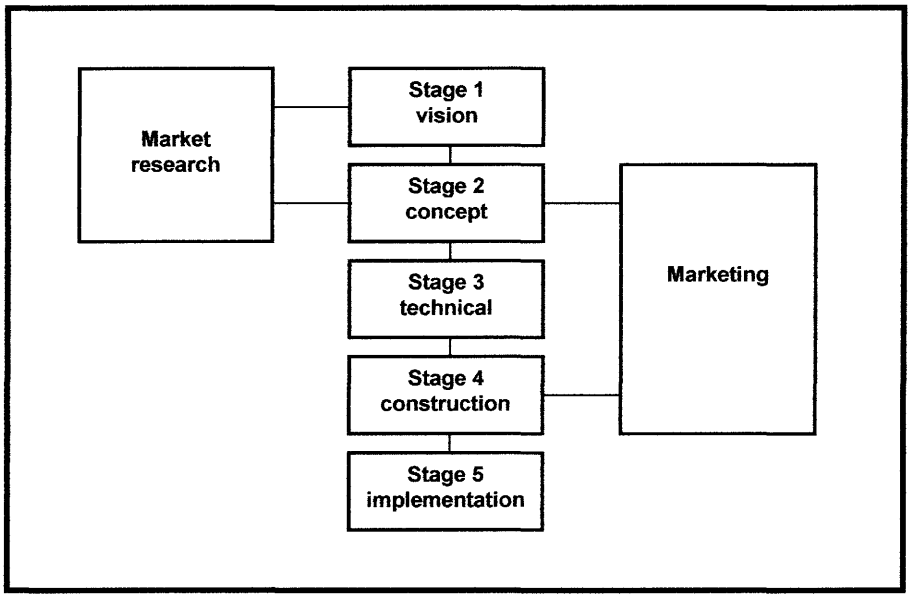
In **Chapter 1** of the study, the developer was defined as an entrepreneur and individual, who Harvey and Jowsey (2004, p. 83) claim "provides the organisation and capital required to make buildings available in anticipation of the requirements of the market in return for profit". Both Harvey and Jowsey (2004, p. 83) and Ling and Archer (2005) argue that the developer needs to perform certain staged functions which reveal not only his problems but also risks involved. These are:

- Recognise the potential for development on a specific parcel of land.
- Assemble the site/establish site control.
- Obtain the necessary planning permission/permits.
- Feasibility analysis and refinement.
- Design.
- Arrange financing.
- Construction.
- Marketing and leasing.
- Operation.

The first five of these stages will particularly apply to the pre-construction stage, although components of the financing, marketing and leasing may also require attention prior to commencement of construction activities.

The staged approach appears to be similar to a study in which Forlee (2005, p. 36) identified five stages in the property development process. The stages are depicted in Figure 2.8:

FIGURE 2.8: Diagram of the development process



(**Source**: Forlee, 2005, p. 36, Figure 4.1: Diagram of the development process.)

- Stage 1 (Vision): the developer has a vision of a development or is offered an opportunity.
- Stage 2 (Concept): market research is undertaken, concept sketch plans produced, preliminary cost estimates and feasibility studies completed, planning approval obtained, financing procured and marketing of the development starts. The pre-construction stage is concluded after Stage 2 when a decision to proceed with the development is made.
- Stage 3 (Technical), Stage 4 (Construction) and Stage 5 (Implementation) included in the study by Forlee (2005), refer to activities after the go-decision has been made, and are as such excluded from the study area.

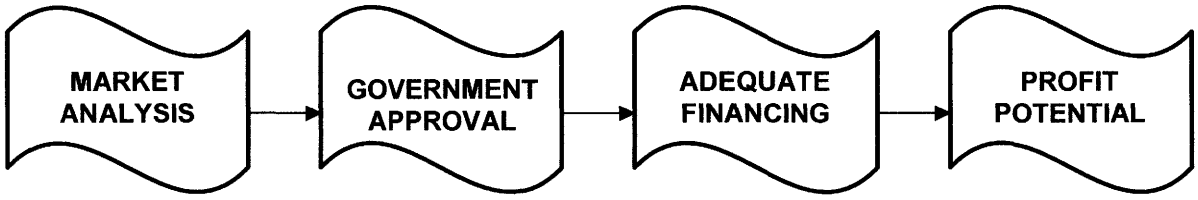
McKenzie and Betts (2006) argue that at least four feasibility study factors should be investigated prior to any development project being approved. The four factors are depicted in Figure 2.9:

- Market analysis: conduct an in-depth market analysis to establish whether adequate buyer or tenant demand exists for the project.
- Government approvals: meet government regulations pertaining to zoning, building codes, density ratios, environmental reports and utility requirements.

- Adequate financing: procure adequate funding for the project, based on projecting the cost of the development and utilising leveraging.
- Profit potential: after analysing the market, estimating the cost and likelihood of government approval, and projecting the cost of financing, developers can estimate the profit potential.

McKenzie and Betts (2006, p. 339) claim that: "When this process is ignored, over-building can occur."

FIGURE 2.9: Feasibility study steps



(**Source**: McKenzie & Betts, 2006, p. 339. Figure 14.1: Feasibility study steps.)

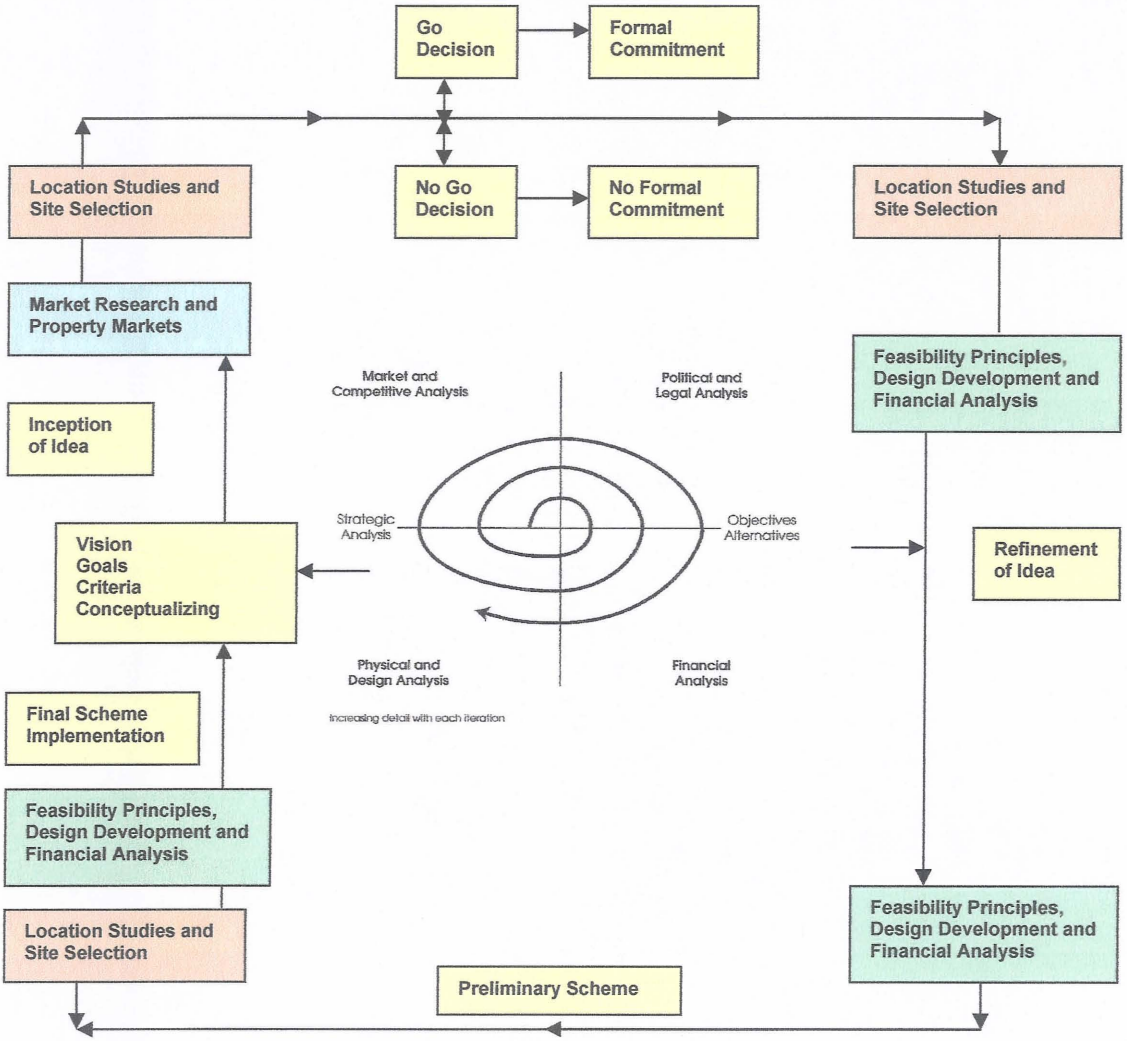
Wilkinson and Reed (2008, p. 3-10) list the following eight main stages the development process may be divided into:

- Initiation: a parcel of land or site is considered suitable for a different use, or demand for a particular use leads to a search for a more suitable site.
- Evaluation: it includes market research and the financial appraisal of the proposal.
- Acquisition: once the decision is made to proceed, the site can be acquired. Prior to this, the following steps do however need to be considered: legal investigation, ground investigation and finance.
- Design and costing: it is an almost continuous process running parallel with the other stages, getting progressively more detailed.
- Permissions: obtaining planning permission from the local planning authority.
- Commitment: when the preliminary work has been completed and evaluated once again, the developer commits to the development.
- Implementation: the development is implemented.
- Let/manage/dispose: although this phase of development often occurs at the later stages, it must be at the forefront of the scheme.

2.2.4 Proposed framework: pre-construction property development principles and process

The above review and analyses of property development frameworks and models suggest that, although the approach to various types of property developments differs slightly, there are also great similarities. In view of this finding and with the aim to develop a generic pre-construction property development framework model for "non-specialised" real estate, the teachings of James Graaskamp and the discussed property development frameworks and models are combined in Figure 2.10. The proposed framework for the pre-construction property development process concludes the exploration of literature on property development frameworks and models in this chapter.

FIGURE 2.10: Proposed framework: pre-construction property development principles and process



(**Sources**: Graaskamp cited in Miller & Geltner, 2005, p. 515; own design based on Beeny, 2004; Cadman, 1995; Cloete, 1998a; Collier et al., 2002; Forlee, 2005; Frej, 2001; Fisher & Robson, 2006; Geltner & Miller, 2001; Harvey & Jowsey, 2004; Ling & Archer, 2005; McKenzie & Betts, 2006; McMahan, 2007; Miles et al., 2000; Newell & Steglick, 2006; Peiser & Frej, 2003; Schmitz & Brett, 2001; Waterhouse, 1991; West, 1994; Wilkinson & Reed, 2008; Zuckerman & Blevins, 2003)

2.3 SUMMARY

In **Chapter 2**, property development: principles and process were explored. The real estate development process was identified as bearing a strong resemblance to that of a business plan. The property development process was also defined as "a complex process that moves iteratively from one disciplinary perspective to another".

The process was found to involve "leadership, market research, marketing, public relations, design and construction, financing and accounting, and property management". The many balancing roles of the developer as "creator, promoter, negotiator, manager, leader, risk manager and investor" during the property development process, were identified. The ability of the developer to apply multi-dimensional decision-making practices also came to the fore during the study. It is also important that the developer as "conductor" of the "orchestra" during the development process, puts together a cohesive and competent team of project professionals as members of the "orchestra". Each member of the project team must, from the beginning of their involvement, clearly understand and adhere to his or her responsibilities. A list was given of project team members deemed important during the pre-construction development process.

Chapter 2 analyses numerous property development frameworks and models. The study identifies distinct stages, components and principles of property development frameworks and models; and reiterates the iterative and dynamic nature of the process. A "strategic fit" with the literature, in particular with the Graaskamp model became evident in the exploration of common principles and components, which occur in the process prior to the commencement of construction activities. The investigation suggests that although the approach to various types of property developments differs slightly, there are also great similarities.

A generic pre-construction property development framework based on the teachings of James Graaskamp, and the property development frameworks and models investigated in **Chapter 2**, is presented. This framework identifies four distinct components which form the core of the strategic analysis decision-making process. These components, condensed into three subject areas for the purposes of this study, need to be investigated and completed, prior to a final decision being made and actual capital being committed to a development. The condensed components are:

- Location studies and site selection.
- Market research and property markets.
- Feasibility principles, design development and financial analysis.

In **Chapter 3** these three components and key performance areas are explored in more detail.

CHAPTER 3
PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS

3.1 INTRODUCTION

In **Chapter 2**, property development: principles and process were explored. A literature review was conducted on the nature and definition of the property development process and the roles of the developer and project team consultants during the pre-construction stage. The study also included an exploration and academic discourse on property development frameworks and models, with specific reference to components and key performance areas that contribute to strategic analysis and decision making. A "strategic fit" with the literature, and in particular with the Graaskamp model, as cited in Miller and Geltner (2005, p. 515), became evident in the study of common components and key performance areas, which occur in the pre-development stage.

A generic pre-construction property development framework, based on the study conducted in **Chapter 2**, was presented. In the framework four distinct components, condensed into three subject areas for the purposes of this study, need to be investigated and completed prior to the "go-decision" being made on a development. The three components, which form the basis of Chapter 3, are:

SECTION 3.2: Location studies and site selection.
SECTION 3.3: Market research and property markets.
SECTION 3.4: Feasibility principles, design development and financial analysis.

3.2 LOCATION STUDIES AND SITE SELECTION

3.2.1 Introduction and perspectives

The age-old adage *location, location, location*, is as valid now as it has ever been. Fisher (2007, p. 51) submits that "Finding good locations is a process of elimination". West (1994) argues that for many years developers have believed that if the location was good, development success would be a given. The cyclical oversupply of commercial office, industrial and retail space at certain stages of the economic cycle does, however, require the "analysis of several factors, only one of which is location" West (1994, p. 5). These include, inter alia, an analysis of the following factors, interrelated circumstances, and the visibility of the site to market-demand generators:

- Location of competitive properties.
- Current and future market expansion patterns.
- Economic growth within the market.
- Regulatory and legal issues.
- Site characteristics.
- Special local conditions.
- Cultural views.
- Trends (West, 1994, p. 5).

The importance of the "space relationships which exist between a site and the whole assemblage of uses and people making up an urban area" (Whipple, 1995, p. 25) appears similar to numerous other studies on location and site selection.

Cadman and Topping (1995) argue that the "acquisition of land is usually the developer's first major commitment to a development project" (Cadman & Topping, 1995, p. 29). The study claims that the first step in finding a development site is to establish a strategy defining the aims, nature and area of research. This is, claimed by Cadman and Topping (1995), generally aligned to the business plan of the company. The importance of local knowledge and the way development projects are financed are similarly outlined in the study.

Fenker (1996, p. 8) defines site evaluation as "the measurement of the relative quality of a parcel of real estate, compared to other pieces of real estate, using all of the objective and subjective information available". Fenker (1996) also defines site

evaluation as a process, not a result. The Fenker (1996, p. 15-18) study also lists four perspectives on site evaluation:

- National/international perspective: the decision to be in a specific city or market comes before any specific site decision.
- Market perspective: this refers to the plan for developing the market in a specific town, city or metropolitan statistical area.
- Trade area perspective: the geographic area that contains 70 to 80 per cent of the customers.
- Site perspective: the decision about a specific site for the development.

Squirrel (1997) identifies three basic elements in the concept of location:

- Convenience: the costs to move persons or goods from the site to other desirable places.
- Favourable exposure: exposure to view, sun and breeze and proximity to other amenities.
- Unfavourable exposure: the degree of exposure the location has to offensive influences.

Zuckerman and Blevins (2003) emphasize the importance of market research which "will provide the developer the essential criteria for the proper selection of the site" (Zuckermann & Blevins, 2003, p. 56). The market research is to include studies which give an understanding about trends of development and demographics.

In a study by Brown (2005) it is claimed that "if the value of location is universally acknowledged, there may be some strong underlying theory that can be presented mathematically" (Brown, 2005, p. 1). The study describes the "bid rent curve". The notion is that land users "bid" to pay rent to land owners based on the efficient use of the land. The highest land values should therefore occur where users are willing to pay to highest rent (Brown, 2005).

Cloete (1994, p. 141) submits that to understand the location of land use properly, the inter-urban relationship between towns and cities in regional context, and the intra-urban relationship between the same and different types of functions and the various location requirements for the different urban land uses, need to be noted.

Christaller's central place model is cited in the Cloete (1994) study. This model appears similar to a study in which Geltner and Miller (2001) discuss the central place theory (CPT) and extension to the model, known as the theory of urban hierarchy, based on the work of August Losch and Walter Christaller (cited in Geltner & Miller, 2001). A similar study on location and reference to order within the city was found in the Whipple (1995) study. How then do these concepts relate to location studies?

In the Geltner and Miller (2001) study, the central place theory developed by Losch, examines the problem of location on a homogeneous "featureless plain" (Geltner & Miller, 2001, p. 49). Agricultural products are produced everywhere but must be marketed at identical points (i.e. the cities) where the population lives, who needs to use the agricultural products to manufacture industrial goods. The greater the scale of industrial production the fewer and further apart are the cities, as large scale manufacturing will take place. The greater the transportation costs, the more numerous and closer together the cities will be (Geltner & Miller, 2001).

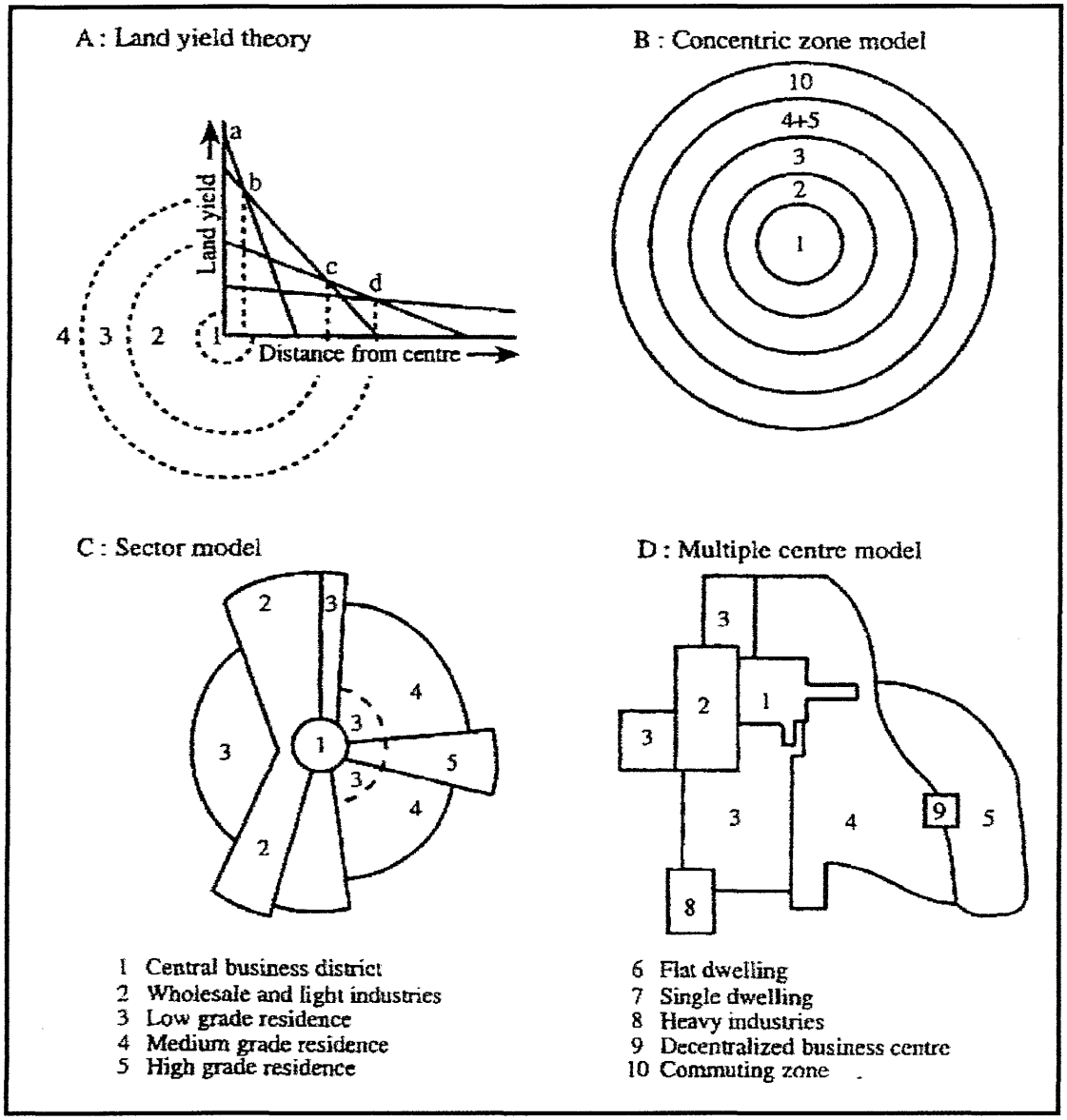
In the Losch model on central space theory "even spacing is what minimizes total transportation costs, given the total number of cities in a region (e.g. given the scale of industrial production)" (Geltner & Miller, 2001, p. 50).

Miller and Geltner (2005) claim that Christaller enriched the Losch model by considering "different types of economic functions or types of production", each characterised by different scale economics and transportation costs. Hence the advent of the urban hierarchy, in which higher-order cities are fewer and further apart than lower-order cities. The study concluded that a "city's hinterland now includes territories served by all the lower-order cities that depend on the higher-order city for the higher-level functions and goods or services" (Miller & Geltner, 2005, p. 51).

Prinsloo and Prinsloo (2004), on the other hand, argue that urban land use models go back many years. The same broad principles developed by Losch and Christaller in understanding how cities operate, are, still applicable.

Studies by Harvey and Jowsey (2004) and Prinsloo and Prinsloo (2004) also give a broad overview of four other different land use models, which are depicted in Figure 3.1.

FIGURE 3.1: Different land use models



(**Source**: Prinsloo & Prinsloo, 2004, p. 85. Exhibit 4.6: Different land use models.)

A : Land yield theory (Von Thünen's land rent theory)

This theory holds the view that there is an indisputable relationship between land use and location with regard to the market. The concentric zones directly around the city are most suitable for the cultivation of horticultural and dairy products, the next zones for agricultural products, and the last zone for meat products. Von Thünen argued that each site, in the urban context therefore, has a particular value (Prinsloo & Prinsloo, 2004, p. 81).

B: Concentric zone model

Although numerous individuals used the concentric zone theory, Prinsloo and Prinsloo (2004, p. 82) focus in their study on the formulation of the EW Burgess version. Burgess claims that the process of urban expansion consists of concentric zones moving out from the central business district in ever-widening circles. In the study, several zones are identified:

Zone 1: Central business district (CBD) – the smallest of the five zones which contains the highest yield for the surface area unit.

Zone 2: Transitional zone – known as the zone with the highest risk of deterioration containing predominantly commercial and industrial functions.

Zone 3: Distinguished from Zone 2 by the presence of better homes and a greater degree of homogeneity.

Zones 4 & 5: Home to wealthier people, businessmen and professionals.

Zone 10: Commuting area 30 to 60 minutes from the central business district consisting of predominately detached dwellings with the male residents working in the city.

C: Homer Hoyt's sector theory

Hoyt's model presents an alternative to the Burgess model, although there were many similarities between the two models. The model has as its premise that the hierarchy of zones forms the basis for continuous filtering, i.e. "there is *an influx of persons from a lower-order area to a higher-order area*. The pattern can be strongly influenced by the so-called constant elite residential neighbourhoods" (Prinsloo & Prinsloo, 2004, p. 83).

D: The multiple centre theory of Ullman and Harris

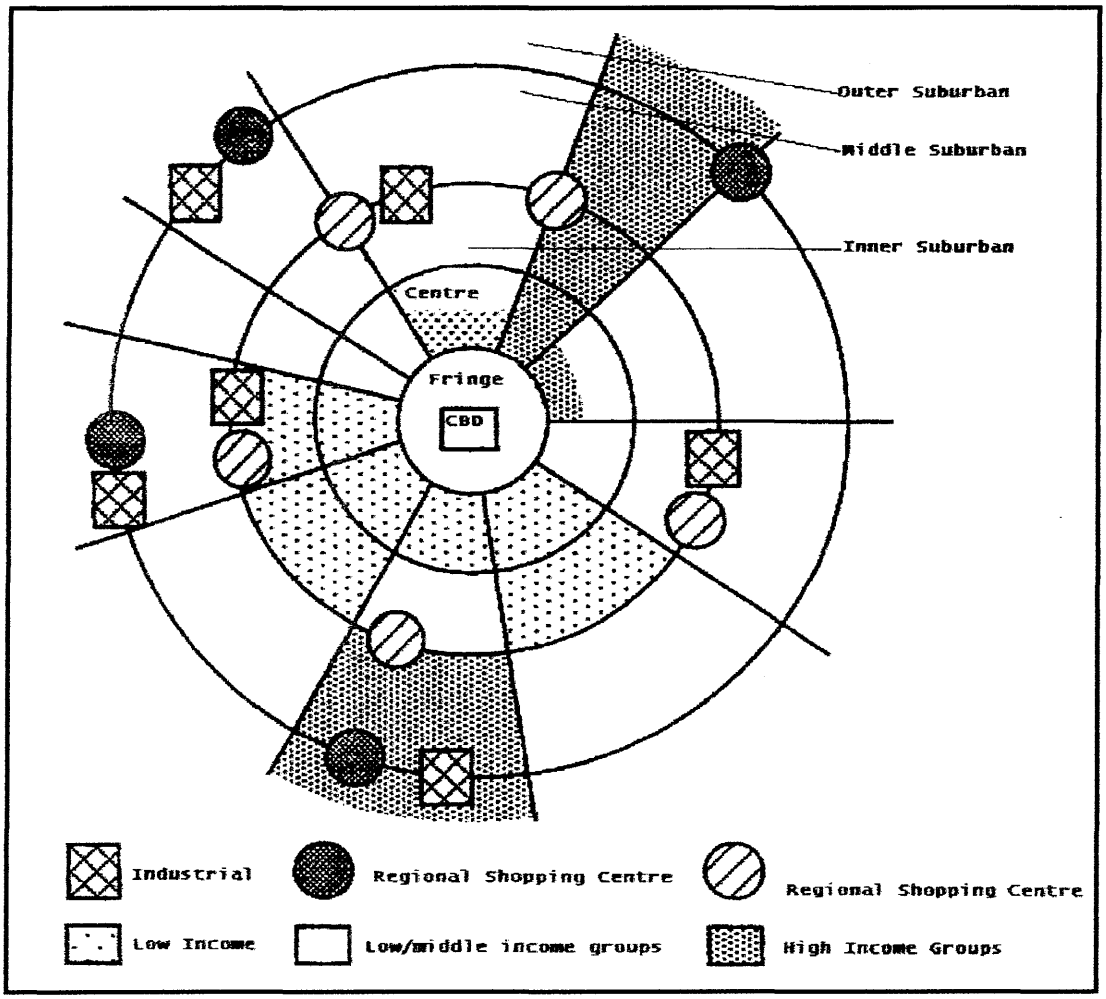
The theory of Ullman and Harris submits that "cities expand around centres of varying size" (Prinsloo & Prinsloo, 2004, p. 84). With this model the so-called sub-cities or separate centres came into being, due to the following:

- *Certain functions require specialised facilities.*
- Some individuals group together by gravitation while others repel each other.
- Certain functions cannot offer the high land values and taxes in certain *urban zones.*

It must also be noted that the three functions complement one another to make up the complexity of urban land use and market (Prinsloo & Prinsloo, 2004).

The above theories suggest that to fully understand location studies and site selection, within the context of the study area of property development, the property developer needs to understand how urban environments function. It can be argued that it is also of the utmost importance to take note of land use patterns in the modern western city of today. Although the central pattern of land use depicted in Figure 3.2 refers to an American city, the model could be of equal value to a modern Australian city.

FIGURE 3.2: Central pattern of urban land use in American cities



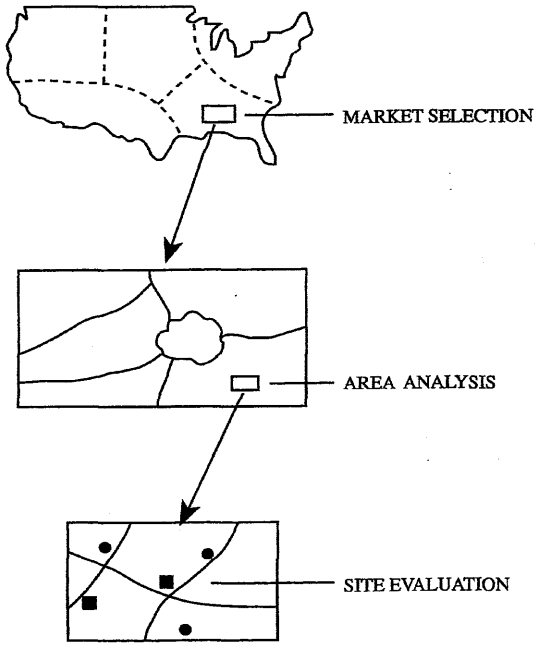
(**Source**: Prinsloo & Prinsloo, 2004, p. 86. Exhibit 4.7: Central pattern of urban land use in American cities.)

In the model the central business district (CBD) consists of a strong vertical office component, large departmental stores, entertainment and recreational areas. The second CBD fringe zones represent deteriorated residential neighbourhoods, warehouse and industrial areas. The third zone contains a mixture of lower, middle and higher socio-economic neighbourhoods. This is followed by a continuation of the internal sector characteristics close to the centre. Industrial and office parks as well as regional centres are generally found in these outer rings (Prinsloo & Prinsloo, 2004, p. 86-87).

What then does this pattern of urban land use mean for exploring the subject area of site location and site selection, within the broader context of the study area? Basically it means that any site or parcel of land "fits" within a broad framework of urban land uses, within a specific geographical area. The property developer, during the pre-construction development process, needs to always take cognisance of this fact, as well as the importance of conducting proper market research.

In a study by Cloete (1998a, p. 160) the importance of location strategy is emphasised. The three broad levels of a location analysis, depicted in Figure 3.3, confirm the premise that location and site selection cannot be done in isolation. It is inextricably linked to all other components within the development framework.

FIGURE 3.3: Three levels of spatial analysis



(**Source**: Gosh & McLafferty, 1987, p. 34 cited in Cloete, 1994, p. 161. Figure 8.15: Three levels of spatial analysis.)

The three levels included in the Cloete (1998a) study are:

- Market selection (macro-level): A broad geographic market is to be analysed. It must be large enough to support product profitability.
- Area analysis (meso-level): This includes the further analysis of a particular city or region within a country. Cloete (1998a) submits that cities and suburbs differ with regard to age, population density, socio-economic status, standard of living, lifestyle, ethnic and racial character of the inhabitants, type of housing, location and attractiveness, and availability of amenities. Climate conditions also need to be considered as well as the role of competition.
- Site development (micro-level): The most important decision is ultimately the selection of a specific location for a development.

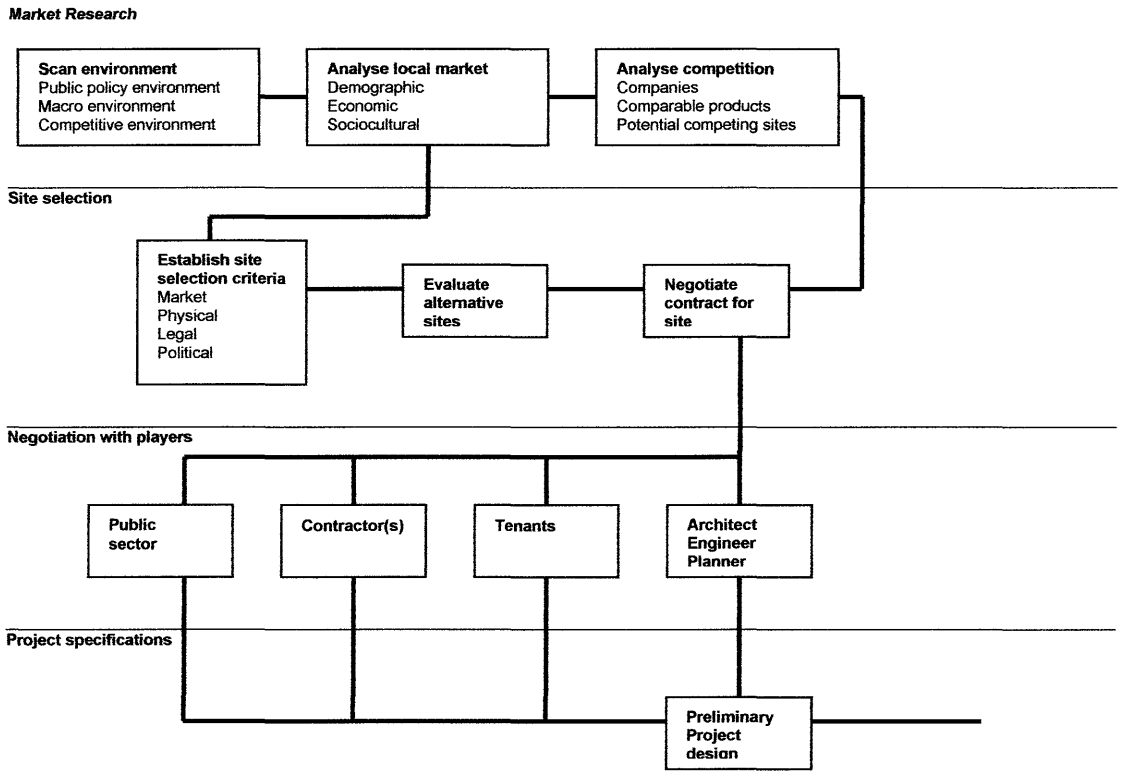
Cloete (1998a) claims that the following four broad components apply:

- Population: a detailed evaluation of population characteristics, spending patterns, transport and specific references needs to be obtained.
- Accessibility and visibility: a good site will always be assessable and preferably visible.
- The role of competition: always evaluate and analyse the competition.
- Costs: all costs associated with the site and development need to be investigated.

The selection of a location in property development is to a certain extent comparable to hunting with a shotgun (macro-level), rifle (meso-level) and rifle with telescopic lens (micro-level). The bigger picture eventually focuses on the target, the site.

The role of site selection, as part of the development framework and activities involved in Stage 2: *Activities involved in refinement of the idea*, is also included in the Miles et al. (2000, p. 6) Eight-stage model of real estate development depicted in Figure 3.4.

FIGURE 3.4: Activities involved in refinement of the idea



(**Source**: Miles et al., 2000, p. 220. Figure 12.1: Activities involved in refinement of the idea.)

Miles et al. (2000, p. 219) submit that, in the process of finding a site and compiling a proposed project, the following tasks must be undertaken simultaneously:

- Scanning the environment for significant forces – possible competitors, government jurisdictions, political power bases.
- Choosing the site.
- Analysing the market, that is, the areas or neighbourhoods within the market that might offer an appropriate site.
- Setting the market, physical, legal, and political criteria for the proposed project.
- Analysing possible sites to identify the site that best satisfies the criteria.
- Determining initial design feasibility.
- Negotiating for the selected site and structuring a contract (usually one that constitutes an option) to secure the site.
- Discussing the project with the elected and appointed officials and city planners to ascertain their interests and any possible constraints on the project.

- Analysing the competition – competing development companies and competing projects – and refining the subject development to maximise its competitive position.
- Continuing to refine financial feasibility – periodically retesting the back-of-the-envelope numbers for financial feasibility and undertaking preliminary projections of the timing of cash flows over the development period, remembering the importance of level two feasibility.
- Controlling risk during idea refinement – testing the design's preliminary feasibility by discussing with engineers, architects, land planners, contractors and/or financial sources a project design that fits the prospective tenant market.

Completion of these tasks culminates in a decision to move the idea to stage three (formal feasibility), rework the idea, or abandon the idea.

The process of refining the idea is complex, not only because so many activities are involved in identifying the right use for the right site, but also because the activities must be carried out simultaneously and interactively (Miles et al., 2000, p. 219). (Figure 3.4 captures this complexity and interrelated process in site selection).

In concluding this introduction and context background to location studies and site selection, the wisdom of James Graaskamp, again becomes prevalent. He suggested that development decision making in the private sector could best be described by two situations: "a site looking for a use, or a use looking for a site" (Graaskamp, cited in Geltner & Miller, 2001, p. 774).

Based on the conclusions drawn from the exchanging viewpoints and perspectives of what constitutes location, site selection and the relationships of land within and between towns and cities, there is no doubt that these concepts all form part of a distinct process within the greater property development framework.

To further explore this process of location studies and site selection, this section conducts research into the following concepts:

- Characteristics of real estate (3.2.2)
- Factors affecting location and site evaluation (3.2.3)

The section will be concluded with the presentation of a proposed performance evaluation framework for the site selection process. It must be noted that the subject of market research, which invariably forms part of location and site selection, is dealt with in more detail in Section 3.3 of this chapter.

3.2.2 Characteristics of real estate

Whipple (1995) and Wilkinson and Reed (2008) claim that, when conducting a study on the nature of real estate, it is common to consider its physical, institutional and economic aspects.

- Physical characteristics include:
  - Land: shape, size, topography, views, exposure to sunlight and winds and the bearing capacity of the soil.
  - Improvements: drainage, filling, trace elements to the soil for example contamination, clearing, levelling and other physical attachments.

- Institutional characteristics refer to the system under which the property is held and other laws which affect the land, for example the way in which it may be used, taxed, easements, resumed or otherwise.

- Economic characteristics include amongst other:
  - Immobility: Firstly the market for the services the property has to offer is derived from a limited geographic area; secondly the income derived from the property is generated from a fixed location, which is inadvertently affected by external forces; and thirdly no two parcels of land can ever be exactly alike, one cannot be superimposed upon the other. This invariably leads to heterogenity.
  - Large economic units: ownership of real estate demands relatively large sums of capital.
  - Durability: land as a site for building, is universally regarded as indestructible while improvements are usually built to last a long time. Ownership decisions concerning the use of land, therefore not only involve large sums of capital invested at a fixed location, but are also long term in nature.
  - Scarcity: a characteristic of land is its finite extent.

- Land by itself is unproductive: to be productive, land requires the application of labour, capital and management (Whipple, 1995).

Ling and Archer (2005, p. 3) submit that "real estate is property" and that the term property refers to anything that can be owned. Ling and Archer (2005) also argue that property can either be:

- Tangible assets: physical things such as land or buildings.
- Intangible assets: non-physical assets such as contractual rights.

In the study by Reed (2007, p. 10) the "legal definition" of real estate includes the following tangible components:

- Land.
- All things that are a natural part of land, such as trees and minerals.
- All things that are attached to land by people such as buildings and site improvements (Reed, 2007, p. 10).

The study further submits that all building attachments, built-in items and "all interests, benefits, and rights inherent in the ownership of physical real estate" are included (Reed, 2007, p. 10). These rights are commonly referred to as the bundle of rights.

In concluding this section on characteristics of real estate, it may be of value to also explore the four interdependent economic factors, which Reed (2007) argues need to be present for a property to have value:

- Utility: The ability of a product to satisfy the need of its client base. In the case of property this could include design features and amenities.
- Scarcity: Useful, desirable land is relatively scarce and should therefore be more valuable. Scarcity with utility in land creates value.
- Desire: It is the purchaser's wish for an item to satisfy needs.
- Effective purchasing power: The value of a property must include an accurate assessment of the market's ability to pay for it (Reed, 2007, p. 26-27).

The interaction between all four factors creates supply and demand.

It is interesting to note that Prinsloo and Prinsloo (2004, p. 49-50) submit that:

- The supply of land is fixed – the total amount of land is fixed.
- In the short term, land use is also fixed – it takes time to rezone and service land.
- A fixed supply means that real estate prices fluctuate with demand.

From the evidence it can be concluded that property and property development schemes have certain specific characteristics, which can either positively or adversely affect its link to the supply and demand cycles of the economy. This confirms the importance of conducting thorough research prior to procuring a site.

The factors and forces that influence location and site evaluation, as well as real property values, are explored in the next section.

3.2.3 Factors affecting location and site evaluation

In a study by Fenker (1996) three components of site evaluation were identified. These are depicted in Figure 3.5 and include "clear objectives, good sources of information, and a systematic approach" (Fenker, 1996, p. 10).

The three components comprise the following:

The objectives of site evaluation include:

- Finding the best available real estate in the market.
- Comparing two potential locations.
- Explaining the source of problems for an existing store.
- Avoiding a mistake or reducing risk in a new location.
- Supporting a scientific real estate evaluation process.

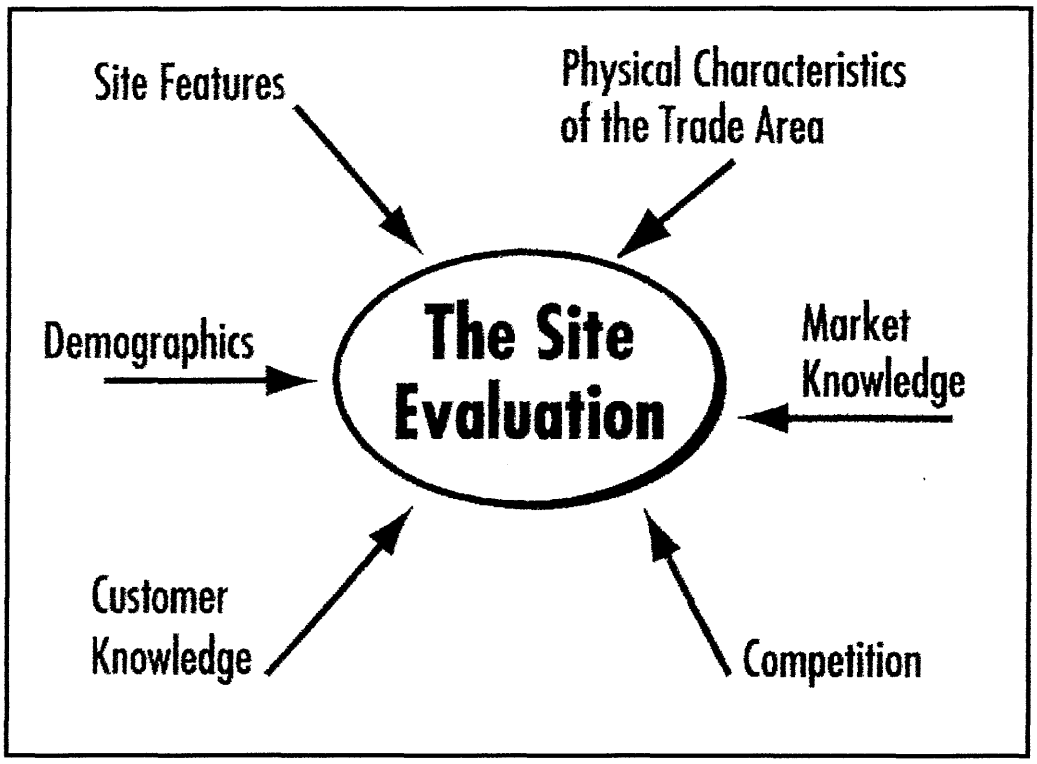
The sources of information used in site evaluation include:

- Demographics.
- Specific site features such as visibility or access.
- Strategic plans or goals.
- Customer information.
- Marketing or advertising support.

The site evaluation process may involve:

- Surveying your customers to identify who they are and how they behave.
- Ordering a demographic report to see where these customers reside.
- Driving the neighbourhood to study business or retail activity.
- Counting traffic or rating competition near the site.
- Evaluating the site's potential visibility and access.
- Looking for barriers or other special features.
- Creating an overall site evaluation report (Fenker, 1996, p. 10).

FIGURE 3.5: Factors that influence the site evaluation



(**Source**: Fenker, 1996, p. 11. Figure 2.1: Factors that influence the site evaluation.)

Squirrel (1997) identifies three basic elements in the concept of location evaluation:

- Convenience: measured in the costs to move persons or goods from the site to other places.
- Favourable exposure: exposure to view, sun, breeze and proximity to other centres.
- Unfavourable exposure: the degree of exposure to offensive influences.

In a comprehensive study on office development, Gause (1998, p. 48) cites the following factors in site evaluation:

- Zoning: legal use of site.
- Physical features: size, soil, topography and hydrology.
- Utilities: water, sewerage, electricity, telecommunications, gas and oil.
- Transportation: linkages and traffic patterns.
- Parking: spaces required by zoning and market.
- Location: proximity to amenities and market perception of location.
- Environmental impact: adverse impacts on the environment.
- Government services: availability and proximity to police and fire service, garbage collection and the impact of fees and property taxes.
- Local attitudes: defensive, neutral and offensive attitudes of the local community to the development on the site.
- Land: cost of land and view or scenic amenity.
- Demand: population growth, income distribution and employment growth.
- Supply: existing and planned supply, competition and amenities offered by competitors.

Beyard and O'Mara (1999) and Collier et al. (2002) claim that a site must exhibit the best possible confirmation of the following characteristics:

- A central location relative to targeted markets.
- Easy access.
- Adaptability.
- High visibility.
- Proper size and shape relative to targeted markets.
- Workable topography.
- Good drainage.
- Minimal complications in the subsoil.
- Available utilities and amenities.
- Compatible surroundings.
- Appropriate zoning.
- Acceptable environmental impact (Beyard & O'Mara, 1999, p. 59).

It is argued that the absence of any of these factors will most likely have a negative influence on the viability and success of a project. In the Collier et al. (2002, p. 78)

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It is argued that the absence of any of these factors will most likely have a negative influence on the viability and success of a project. In the Collier et al. (2002, p. 78)

study it is also claimed that not all factors will apply to all projects – their relative importance may vary for each project.

It is furthermore interesting to find that in a study on the subject area by Frej (2001), the argument is made that, unless a developer already owns or controls a site, a market screening or macroeconomic analysis should be undertaken to identify areas with strong growth. This analysis will be explored in more detail in section 3.3. Frej (2001) also cites the following criteria which should be considered in site selection:

- Site configuration and size: the size, dimensions, shape and ability to subdivide the site.
- Land topography and soils: an analysis of the topography and soil conditions is important in site selection.
- Transportation access: the site must have good access to major transportation routes and amenities.
- Utilities: the availability of sewerage, water, electricity and other services.
- Future expansion capacity: selected sites should provide excess land to accommodate future expansion.
- Public policy: planning and zoning regulations applicable to the site.
- Development impact fees: bulk service charges payable to local government.
- Adjacent uses: adjacent uses to the site should be comparable with the project.
- Amenities/services: the availability of nearby amenities and services.
- Links with other industries: certain industries tend to cluster together (Frej, 2001, p. 26-27).

One of the most comprehensive checklist of factors to be considered when evaluating potential sites was identified in a study by Prinsloo and Prinsloo (2004, p.53). The checklist will indisputably be of value to a property developer in the pre-construction stage and is cited in Figure 3.6.

FIGURE 3.6: Location checklist factors

Population	Accessibility	Competition	Costs
Population size	Pedestrian flow	Existing retail activity:	Purchase price
Age profile	Pedestrian entry routes	Direct competitors	Leasing terms
Household size	Public transport:	Indirect competitors	Site preparation
Income levels	Types	Anchor stores	Building restrictions
Disposable income per capita	Cost	Cumulative attraction	Building costs
Occupation classifications	Ease of use	Compatibility	Development concessions
Main employers	Potential	Existing retail specification:	Rates payable
Economic stability	Car ownership levels	Selling areas	Refurbishment needs
Unemployment levels	Road network:	Turnover estimates	Maintenance costs
Seasonal fluctuations	Conditions	Department/product analysis	Security needs
Housing density	Driving speeds	Trade areas	Staff availability/ rates
Housing age/type	Congestion	Age of outlets	Delivery costs
Neighbourhood classifications	Restrictions	Standard of design	Promotional media/costs
Home ownership levels	Plans	Car parking	Turnover loss – other branches
Building/demolition plans	Parking:	Competitive potential:	
Life-style measures	Capacity	Outlet expansion	
Cultural/ethnic groupings	Convenience	Refurbishment	
Current shopping Patterns	Cost	Vacant sites	
	Potential	Interception	
	Visibility	Repositioning	
	Access for staff	Competitor policy	
	Access for transport and deliveries		

(**Source**: Prinsloo & Prinsloo, 2004, p. 53. Exhibit 3.2: Location checklist factors - mainly for retail development - sourced from McGoldrick, 1990:253.)

In studies by Arsenault, Hamilton, Leeds and Marcil (2005), Beeney (2004), Hosack (2001), Reed (2007), Schwanke (2005) and Wilkinson and Reed (2008), similar factors were identified. Schwanke (2005) in addition, cites the importance of land ownership (availability, assembly requirements) in the site evaluation process. Reed (2007) and Arsenault et al. (2005) on the other hand, cite environmental liabilities (potentially contaminating activities, industries and land uses) and convenience respectively as important factors in the selection of a site. In assessing the factors affecting location and site evaluation, it should also be borne in mind that land:

> ... derives its value from the fact that it is a necessary input, or factor of production. The real estate value of land therefore comes from what is known as derived demand: people are willing to pay for land not because of the value land has in and of itself, but because land is necessary to obtain other things that have consumption or production value" (Geltner & Miller, 2001, p. 64).

A similar argument was found in a study by Harvey and Jowsey (2004, p. 234) who submit that the "price of land, like the prices of other goods, is determined by the interaction and demand of the market". It is also argued in the study that, when assessing the use of land, cognisance must be taken of the following factors.

The site use must be:

- Physically feasible: the physical characteristics of the site itself, i.e. frontage, depth, slopes, low-lying or elevated and founding conditions.
- Economically viable: as much factual information as possible must be gathered and analysed.
- Legally permissible: real rights (registered against the title deed), personal rights and zoning restrictions are to be considered.

In his study on Australian residential property development, Forlee (2005, p. 86-96) identified the following aspects which should be researched, prior to procuring an option or purchasing a site:

- Analysing the location: proximity to schools and education facilities, shopping centres, places of worship, medical services, recreational facilities, transport infrastructure and negative factors need to be considered.
- Analysing physical characteristics: area of the site, usable square metres, topography, type of soil, vegetation, quality of neighbourhood, traffic patterns, storm water, noise levels, availability of services and waste disposal.
- Analysing social characteristics: crime rate, demographic trends and spending habits.
- Analysing governmental controls: local building codes, environmental controls and local government attitudes towards governmental development.
- Analysing economic characteristics: economic information on the state, city and neighbourhood economies, real estate tax rates, cost of services, insurance rates, unemployment rates, new construction activity and available land, local bankruptcy rates and level of housing finance.
- Analysing real estate market trends: rental rates, vacancy levels, recent sales and new construction activity.
- Reviewing legal documentation: the title to the property and all governing authorities (Forlee, 2005, p. 86-96).

The importance of preparing a pre-purchase feasibility report based on the property checklist, schematic layout, potential profit and potential rental returns, prior to making an offer to purchase or procuring an option, is advised by Forlee (2005).

In the Graaskamp model cited in Miller and Geltner (2005, p. 515), as adapted for the study in Figure 2.10, the importance of sound location studies and site selection was also emphasised. Graaskamp argues under the *Political and legal analysis* quadrant of the model, that beyond "contractually securing the site, political and legal analysis includes a review of all land-use controls at local, state, or national level that might impact a development" (Graaskamp, cited in Miller & Geltner, 2005, p. 516). The importance of sound relations with all stake holders, economic inclusion of disenfranchised economic groupings and political sensitivity to diversity, is emphasised in the study.

Graaskamp, cited in Miller and Geltner (2005, p. 517) under the *Physical and design analysis* quadrant, also claims that a great deal of early analysis is focused on the site. Numerous consultants should analyse the soil-bearing capacity, slope and drainage, rock formations, environmental contamination, sewer, water, utility access, road access, vegetation, endangered species, sustainable development and climate. It is interesting to find and evident from the study material, that there exists a high degree of compatibility between the factors that affect site selection. Based on many years of practical experience in the commercial property development industry, the researcher is also of the opinion that cognisance needs to be taken of another factor, which is of equal importance to location and site selection, viz. timing. This premise is supported by Graaskamp cited in Squirrel (1997), Thomsett (2000), Forlee (2005) and Wilkinson and Reed (2008), who discuss the supply and demand cycles, factors that affect timing and the investment cycles in their studies. The researcher metaphorically compares the purchasing of a development site or real estate to farming with cattle - good farmers buy cattle when there is drought (low prices) and sell cattle when the rains are plentiful (high prices). Sound site selection and property development practices must always recognise the signals for rising markets and the signals of a falling market.

3.2.4 Proposed performance evaluation approach framework for site selection

In concluding this section of the study, and based on the evidence in the study material explored above, the researcher has formulated a *Performance evaluation approach framework for site selection*, outlined in Figure 3.7. It can be argued that the framework may be of value to property developers in their continual quest to identify the best location for a development.

FIGURE 3.7: Performance evaluation approach for site selection

Target market
St Lucia, Brisbane

Site name:	XYZ Centre
Town name:	Brisbane
Category:	Shopping centre

	Variable	Sub-variable	Max weight	Comments	Rating 1-10	General comments
1	General node	Main road location	10	Must be on a main road	5	On secondary feeder road.
		Established business / Retail	10	Level and Concentration	7	
	Orientation & proximity	High density residential	10	Density of target profiles	6	Good residential development
		Established retail node	10	Within 1 km of the site	6	ABC etc.
2	Future growth	Business / Residential (Business life cycle)	10	Level of development or potential	6	Business development low
				Stagnation = Low rating		Residential area fair.
3	Visibility of site	To passing vehicles	10	Can you see the site from 200m or more?	6	Visibility fair.
				If no = 5 or less		
4	Competition	Inside trade area location (In terms of site)	4	High level low rating	2	ABC etc.
			6	Within 50 m = low rating	3	
5	Accessibility	Access from main road (Both directions)	10	Ease of access / level of obstruction	7	Good access
				Smooth on-ramp is a bonus, etc		
6	Parking	Availability	5	Not shared with other retail	3	Fair
		Congestion	5	Difficult parking = low rating	4	Good. Street level parking
7	Site detail	Suitable for supermarket	10	According to spec. = high rating	6	Fair convenience site.
		Special construction needed		If yes = low rating (additional cost)		
8	Centre type	Neighbourhood	10	Maximum rating (rate only 1 type)	5	Under 5000m2
		Part of strip	8			
		Under 5000m2	5			
		Over 5000m2	7			
	Demand for space in area (occupancy)	Level of occupancy	10	Low demand in area / building = low rating	6	Fair.
			10		7	Affordable. Cost of building spec?
9	Deterrents	Negatives to operation	10	Any negatives that can hamper the business	6	Lack of line shops. Not an arterial route.
				Limited = high rating		
10	Peak trade	Weekend	6	Prime Period for Supermarket	4	Fair.
		During the week	4		2	Fair.
11	Supermarkets	Within 1 km from site	10	Level = high then rating is high	6	ABC etc.
12	Traffic volume	Vehicles	6	Relative to other nodes (Exposure)	4	Fair. Not high volume traffic.
		Speed passed the site	4	Too fast = low rating	2	Good
13	Complementary facilities	Synergy /Shopping	10	Additional factors that draw people to the site	7	Lack of line shops. Not an arterial route.
14	Overlapping trade with other centres	Direct distance km				
	EVALUATION		180		110	

Poor	0% - 40%
Average	41% - 60%
Good	61% - 74%
Excellent	75% - 100%
	61%

RATING: 61%

(Completed by: J. Cook)

(**Source**: Own design based on Arsenault et al., 2005; Beyard & O'Mara, 1999; Beeny, 2004; Collier et al., 2002; Fenker, 1996; Forlee, 2005; Frej, 2001; Harvey & Jowsey, 2004; Ling & Archer, 2005; Miles et al., 2000; Miller & Geltner, 2005; Prinsloo & Prinsloo, 2004; Reed, 2007; Schwanke, 2003; Squirrel, 1997; Thomsett, 2000; Whipple, 1995.)

3.2.5 Summary

In this first section of Chapter 3, location studies and site selection were explored. It was concluded that although the age-old adage of *location, location, location* is as valid now as it has ever been, success in site selection requires an analysis of numerous other factors, interrelated circumstances and market-demand generators. The importance of "space relationships which exist between a site and the whole assemblage of uses and people making up an urban area" (Whipple, 1995, p.25), was found to be similar to numerous other studies on location and site evaluation.

To understand the location of land-use properly, the inter-urban relationship between towns and cities within a regional context; the intra-urban relationship between the same and different types of functions, as well as the various location requirements for the different urban land uses, need to be noted (Cloete, 1994, p. 141).

Various urban land-use and hierarchy models were investigated. These include Christaller's central place theory; the theory of urban hierarchy based on the work of Losch and Christaller; Von Thünen's land rent theory; the Burgess concentric zone model; Homer Hoyts' sector theory; the multiple centre theory of Ullman and Harris; and the central pattern of urban land-use in a Western city. In these models evidence was found that any site or parcel of land "fits" within a broad framework of urban land uses, within a specific geographical area.

The importance of location strategy and the levels of location analyses were identified in the study. The interrelationships between all the components that make up location and site selection were found to be distinctly interrelated.

Furthermore, characteristics of real estate and the factors affecting location and site evaluation were explored. Land was found to contain specific characteristics such as immobility, durability and scarcity, of which cognisance should be taken (refer to 3.2.2 and 3.2.3 of this study).

The study also found comprehensive lists of factors affecting location as well as site selection checklists and criteria which can be applied in practice. The importance of timing, in addition to location, during the site selection process, was also emphasised.

The section concludes with a presentation of a proposed performance evaluation approach framework for site selection. The latter can be applied in practice by property developers in site selection.

The next section will focus on Market research and property markets, as the second component of the pre-construction property development : principle and development framework, outlined in Figure 2.10 in Chapter 2.

3.3 MARKET RESEARCH AND PROPERTY MARKETS

3.3.1 Introduction and perspectives

The most important ingredient for planning a development strategy is market research. Without positioning a development in the correct market, it can be argued that failure is a foregone conclusion. There is no doubt that a successful property development project always complies, first and foremost, with the demand needs of an appropriate and viable market.

Zuckerman and Blevins (2003, p. 20) submit that without market research, projects will be developed intuitively, resulting in a risky venture. Only when the market and its demands are known, will we be able to have the basis for an effective property development plan.

Miller and Geltner (2005, p. 515) argue that during market analysis, the analyst (or developer) is "looking for sources of success; that is, sources of demand for the concept. Demographic trends, employment trends, cultural and technological trends may be utilized in directly assessing the current or future strength of demand" (Miller & Geltner, 2005, p. 515). What then is meant by market research?

The American Marketing Association, cited in Ghyoot (1996, p. 2), defines *market* research as "the measurement of the extent of the market and the determination of its characteristics", and *marketing* research as "the systematic gathering, recording and analysing of data about problems relating to the marketing of goods and services".

The two definitions show the distinction between market research being a concept limited to the property developers market, and marketing research – a broader term that could include matters such as product design, performance of salespeople and even pricing practices (Ghyoot, 1996, p. 2).

Market research produces, for property developers, the information required to make marketing decisions. This distinction appears similar to the findings of a study by Kahr and Thomsett (2005 p. 2) in which the following definitions are included: "Analysis of local economies: studies the fundamental determinants of the demand for all real estate in the market. Market analysis: studies the demand for and supply

of a particular property type in the market. Marketability analysis: examines a specific development of property to assess its competitive position in the market."

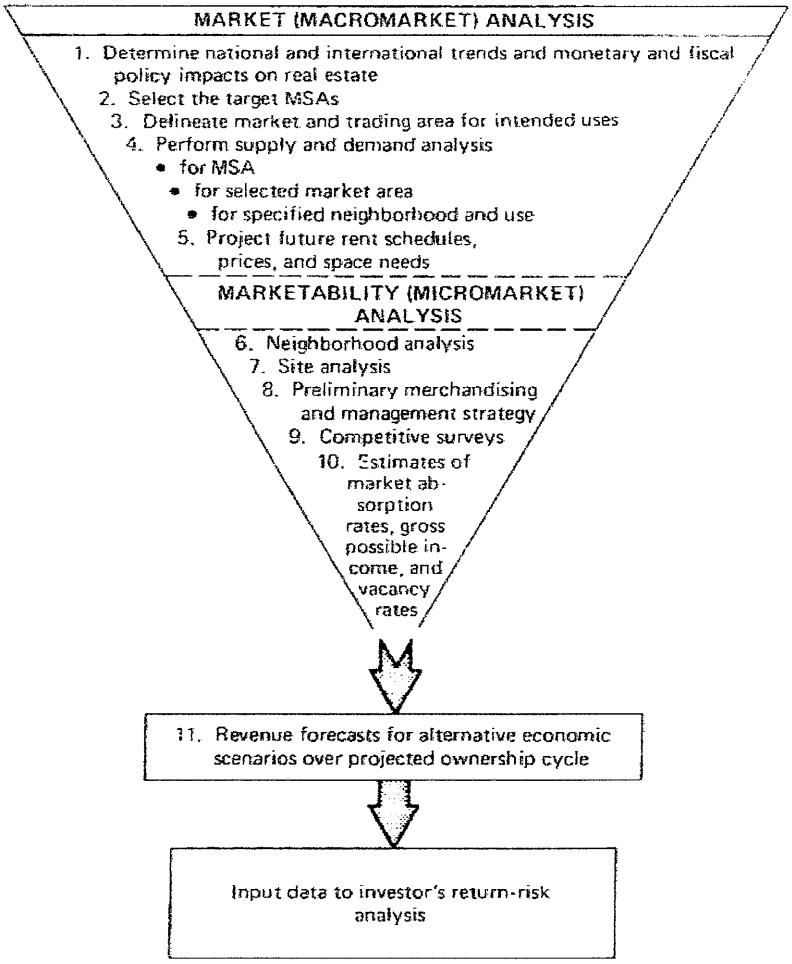
The argument is also made that real estate markets are not efficient markets like the stock market, where pricing occurs every day. A market analysis must be undertaken in order to identify the market for particular real estate development.

On the other hand, Pyhrr et al. (1989) claim that the distinction between market analysis and marketability analysis is often blurred because of "imprecise definitions and use of terminology in the real estate industry" (Pyhrr et al., 1989, p. 408).

Marketability analysis is cited as dealing with a particular property's marketability while market analysis "evaluates aggregate demand and supply factors in a geographic area for the purpose of identifying unmet consumer needs and quantifies the amount of space that will be required to satisfy it" (Pyhrr et al., 1989, p. 408).

It is also argued in the Pyhrr et al. (1989) study that, even with the distinctions above, it is not clear where market analysis ends and marketability analysis begins. It is submitted that market analysis and marketability analysis must be seen as a continuum, with the one flowing into the other. This distinction is depicted in Figure 3.8.

FIGURE 3.8: Conceptual model of the market analysis and marketability analysis process



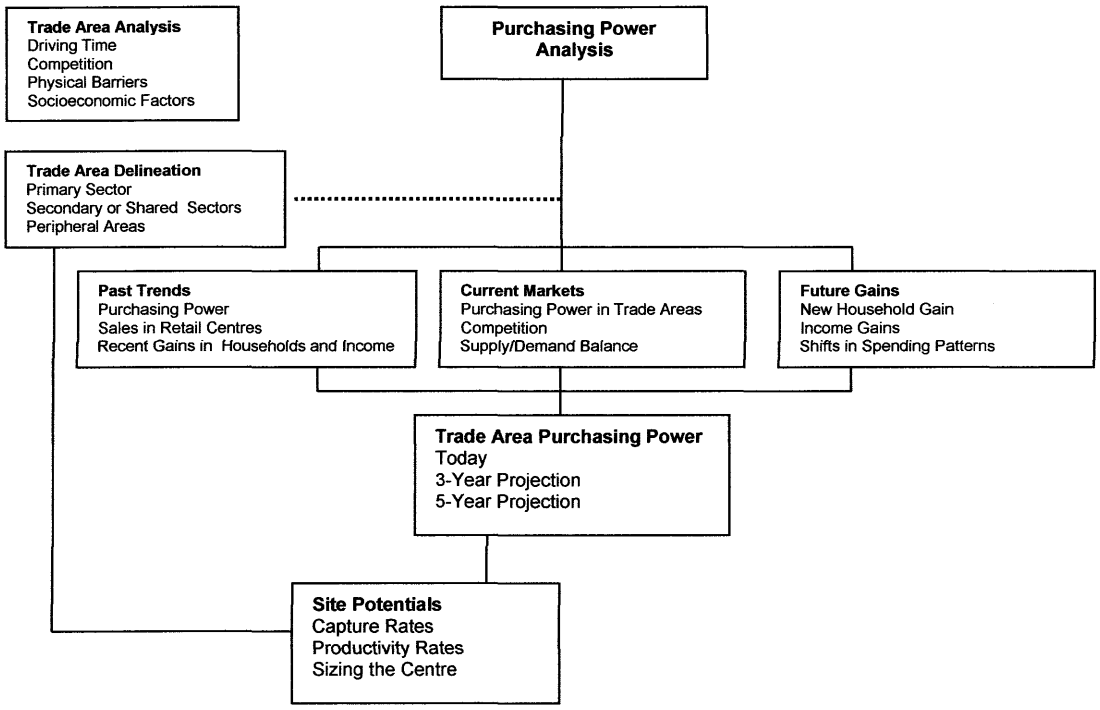
(**Source:** Phyrr et al., 1989 p. 409. Exhibit 12.1 : Conceptual model of the market analysis and marketability analysis process.)

The model above outlines the various steps of market analysis (macro market study) and the marketability analysis (micro market study). As property marketing is excluded from this study, this section will primarily concern itself with a study of the market analysis portion of the model.

Gause (1998, p. 33) emphasises that while people use "the term 'feasibility analysis' to refer to both market analysis and financial feasibility, the two analyses are separate and distinct. ...Together, these analyses are referred to as 'project feasibility analysis'." The market analysis is cited as not only a report that is generated at some critical juncture in the development process – it needs to be continually re-examined and integrated with all other components of the property development process. A similar argument is found in Beyard and O'Mara (1999, p. 39–40), in a study on shopping centre development. It is submitted that a specialist in

the retail field should conduct the market analysis. This argument is strongly supported by the researcher. Market analysis is a specialist field which requires specialist knowledge and experience. In figure 3.9, a process framework regarding market analysis for a retail centre is illustrated. Cognisance must be taken of the fact that, although numerous components of the process overlap, market analysis for a retail development is of a specialist nature with distinct attributes.

FIGURE 3.9: Sales potential for a retail centre: analytical process



(***Source***: *Beyard & O'Mara, 1999, p. 40. Figure 2.1: Sales potential for a retail centre:* analytical process.)

Miles et al. (2000, p. 209-211) argue that, in property development, good ideas flow from specific sources with specific knowledge of the industry and its markets. Property developers need to understand the regulatory and socio-economical environment, and, most importantly, potential clients. The importance of this connection between market research and development ideas is emphasised in the Miles et al. (2000) study. It is suggested that, to limit risk, developers must pay special attention to "assessing their position in the marketplace as well as to the realism of their goals and objectives" (Miles et al., 2000, p. 209). It is argued that structured research "provides the discipline, finds the logic, helps set the criteria and to some extent even prompts the intuition by which people respond creatively to events occurring around them. Most successful real estate developers have at one

time or another engaged in careful, systematic study of specific markets and property types" (Miles et al., 2000, p. 211).

It is also submitted in the Miles et al. (2000) study that:

- The condition of the market is generally assessed in terms of supply and demand for spaces.
- Market forecasts are to be read and discussions held with people familiar with the local and national economies.
- Knowledge about both supply and demand is necessary as background for the generation of ideas.
- Knowledge should begin with a broad, national picture, because financing is generally national (and increasingly international), some tenants are national and some contractors are national.
- Knowledge should also include a regional, local and neighbourhood picture of current conditions.

Miles et al. (2000, p. 211) emphasize that the data must be carefully selected, analysed and placed in a framework that links the proposed project with the market and connects the present with the future. A simple model is illustrated in Figure 3.10.

FIGURE 3.10: Interrelating the two essential dimensions of market studies

	Present	Future

Macro (Market)	**Current and Historical**
	▪ Supply by Broad Segment
	▪ Demand Characteristics
	  ▪ Preferences
	  ▪ Income
	  ▪ Tenant Types
	▪ Absorption and Vacancies
	▪ Rents and Value (cap rates)
		Market Forecasts
		▪ Supply by Segment – Lagged Interaction with Demand
		▪ Demand Characteristics
		  ▪ Employment Growth
		  ▪ Population Growth
		  ▪ Space Needs (derived from employment and population growth)
		▪ Absorption and Vacancies
		▪ Rents and Value (cap rates)

Micro (Individual Property)	**Subject Property and Comparables**
	▪ Unit Size and Quality (features, functions, and benefits)
	▪ Demand Characteristics
	  ▪ Preferences
	  ▪ Income
	  ▪ Tenant Types
	▪ Operating Expenses (adjusted for services provided)
	▪ Absorption and Vacancies
	▪ Rents and Value (cap rates)
		Future Performance of Subject Property
		▪ Prospective Rents
		▪ Operating Expenses
		▪ Absorption and Vacancies
		▪ Net Operating Income
		▪ Market Value
		Goal

Adapted from Dowell Myers and Kenneth Beck, "A Four-Square Design for Relating the Two Essential Dimensions for Real Estate Market Studies," in *Appraisal Market Analysis, and Public Policy in Real Estate: Essays in Honour of James R. Graaskamp,* ed. James R. De Lisle and J. Sa-Aadu (Boston: Kluwer Academic Publishers, 1994), pp. 259-88.

(**Source**: Miles et al., 2000 p. 212. Figure 11.1: Interrelating the two essential dimensions of market studies.)

It is also interesting to note in a study by Guy and Henneberry (2000, p. 2399) that, although researchers in the property sector tend to adopt positivist methodologies, which emphasise the application of rational decision-making techniques by utility – maximisers within a mainstream economics paradigm, the argument is made that research offers a partial view of its subject from a particular perspective and that it is necessary to develop an "understanding of property development processes which combines a sensitivity to the economic and social framing of development strategies with a fine-grain treatment of the locally social responses of property actors" (Guy & Henneberry, 2000, p. 2399).

Schmitz and Brett (2001, p. 7) argue that market analysis is furthermore a crucial part of the initial feasibility study for a project, but does not end there. It continues to play an important role "in shaping the project throughout its development and management phases". Schmitz and Brett (2001, p. 7) also argue that at the earliest stages of development, an analyst will study one or several metropolitan areas for

development potential. This will be followed by an analysis of a specific sub-market, finally seeking out a site that is most appropriate for the development. The market analyst needs to stay abreast of rentals, demand and emerging land planning. Market research in fact "provides the input for analysing marketing opportunities and selecting target markets. Ideally, the development team never stops gathering market intelligence, continually using new information to reposition the project as change occurs" (Schmitz & Brett, 2001, p. 9).

In Graaskamp's approach to feasibility analysis (Graaskamp, cited in Miller & Geltner, 2005, p. 515), the importance of market and competitive analysis is emphasised. Market analysis is defined as the analyst looking for sources of success; that is, sources of demand for the project. These include demographic trends, employment trends, cultural and technological trends, which all may be utilized in assessing the current or future strength of demand. Competitive analysis, on the other hand, is described as where the analyst is looking for sources of failure. This can include an analysis of the current and future competition, quality and control of sites and an analysis of the optimal timing for the development (Graaskamp, cited in Miller & Geltner, 2005, p. 515-516).

Grover (2007, p. 34) describes market research as a data gathering and data analysis process. Real life conclusions are compiled from the latter. "Research helps identify opportunities, customer needs, channels of distribution, and the strengths and weaknesses of the company and its competition. It also identifies pricing strategies and their impact on the market, as well as providing information..." (Grover, 2007, p. 34).

Wilkinson and Reed (2008, p. 259-265) argue that, for a proposed property development, it is important to identify which of the following types of market analyses are most appropriate:

- Economic base analysis: a survey of the industries and businesses that generate employment and income in a community, as well as of the functions of employment.
- Market studies and marketability studies: a macroeconomic market study provides a perspective of supply and demand conditions for a location in a specific geographical area while in a marketability study the study is property specific.

- Investment analysis: the process to determine whether a specific property meets the risk and return requirements of an investor.
- Feasibility analysis: the analysis undertaken to determine whether a proposed property development will fulfil the objectives of a purchaser.

Based on the above, it can be concluded that market research and analysis of property markets play an important role in determining success in property development. It is not only an essential component of the development process, but, similar to the other components and key performance areas of the development framework, continually integrates and interacts during all stages of the property development process.

In order to further explore the subject area, an investigation into the following components is conducted in this section:

- Characteristics of the property markets (Item 3.3.2).
- Market research frameworks and components (Item 3.3.3).
- Sources of property information (Item 3.3.4).

3.3.2 Characteristics of the property market

Whipple (1995, p. 32-33) emphasizes the difference between the stock market and the property market. The stock market is described as a "highly organised institution with specific rules, regulations and procedures." It includes "the regular and reliable reporting of transactions in homogeneous commodities" (Whipple, 1995, p. 32). The real estate market, on the other hand, is:

- As an institution, far less organised.
- Buyers and sellers are spatially separated.
- Results of transactions are difficult to assemble, which makes a study of market preferences and trends equally difficult.
- The registration of transfer documents is complex (Whipple, 1995, p. 33).

Whipple (1995, p. 35) submits that the "market arranges itself into a series of sub-markets linked in a competitive chain of preferences or substitutes."

It is also interesting to note in a paper by Guy and Harris (1997) that the claim is made that the property industry is learning to operate within an emerging international market place which is being shaped by a set of global concerns. These include climatic change, stock market crashes and the disintegration of the familiar "old world order", which are reshaping the perceptions of the safety and security of the world in which we live and work. The property industry is not immune to the influence of these continually changing global "risk factors".

Schmitz and Brett (2001, p. 6) cite four major differences of the real estate market when compared with the market for standard mass-produced products:

- Real estate is highly differentiated – it serves several needs of different space users and is produced in more variable styles and price ranges than most common products. It is above all distinguished by a fixed location.
- Constraints on supply are more variable – supply is generally not controlled by the developer, but by local councils and political entitlements.
- Market data is much less certain – a lack of finely structured data banks, as is the case with the stock market, exists.
- Projects are generally custom tailored and cannot be mass marketed.

Developers therefore have difficulty in creating their products as efficiently and cost effectively as mass produced products.

Cognisance must also be taken of the fact that property development is located within an institutional model of the property market and greater economy. Guy and Henneberry (2002a, p. 21-28) discuss this premise in detail. Institutions are, in the most general sense, the rules, norms and regulations by which a society functions. Market activity, on the other hand, sits within an economic, social, political and legal institutional context. The argument is made that the demand and supply plans that are expressed within markets, are therefore a product of institutional form at macro and micro levels (Guy & Henneberry, 2002a, p. 22).

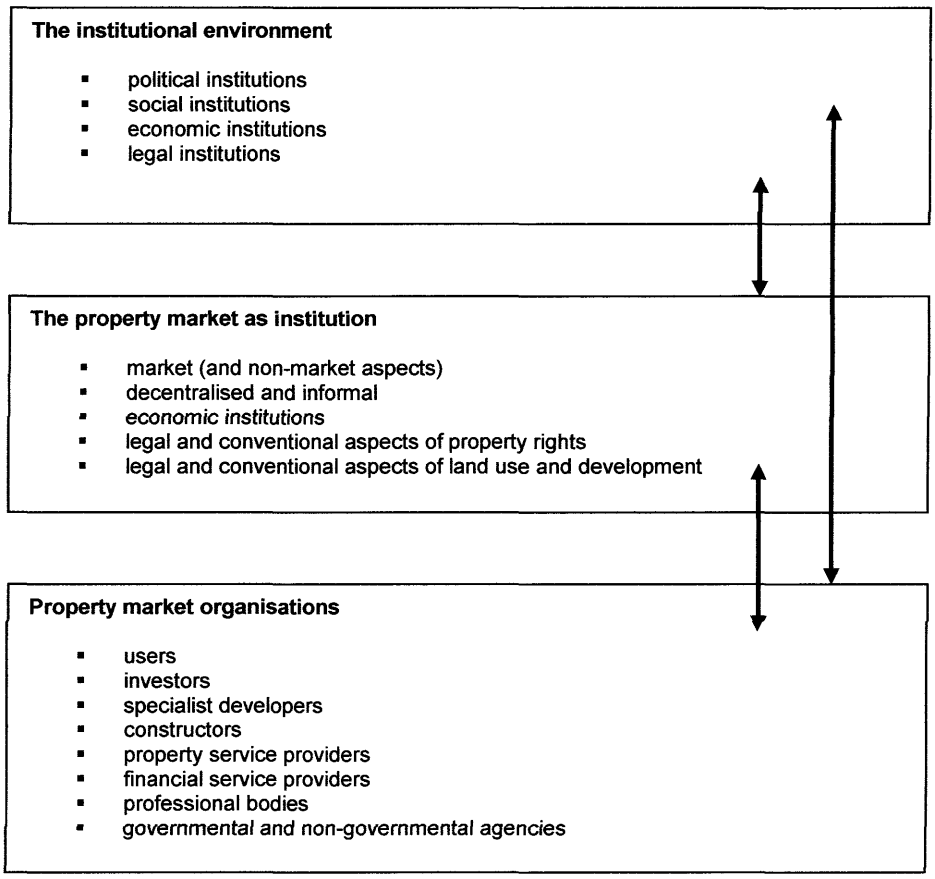
Developers therefore often do not control institutional market forces that, without their doing, adversely affect projects. The researcher is of the opinion that thorough and ongoing market research of the economy, political environment and the property

market and trends, will to a large degree assist in minimising the risk attached to such institutionalised volatility of the economy and markets.

Guy and Henneberry (2002a, p. 22-23) also formulate an analytical framework which deals with broad institutional issues at the following three levels:

- The property market exists within an institutional framework defined by political, social, economic, legal rules and conventions of society.
- The property market is, secondly, itself considered as an institution with a range of characteristics.
- Thirdly, the main organizations that operate in the property market may be considered in the way they operate and the way they change (Guy & Henneberry, 2002a, p. 22). In figure 3.11, these three levels, within which the property market can be located, are depicted.

FIGURE 3.11: The institutional hierarchy of property markets



(**Source**: Guy & Henneberry, 2002a, p. 23). Figure 2.1: The institutional hierarchy of property markets.)

Ling and Archer (2005, p. 15) also identify the uniqueness of the real estate market. It is claimed that the "two primary characteristics of real estate assets are their heterogeneity and immobility. Because of these two factors, the market for buying, selling, and leasing real estate tends to be localised and highly segmented, with highly negotiated transactions and high transaction costs" (Ling & Archer, 2005, p. 15).

When analysing property markets in general, cognisance must always be taken of supply and demand cycles and factors, specifically as they relate to the property markets and in general to the greater economy. This argument is supported by Thomsett (2000, p. 25-26), Cummings (2005, p. 16-17), McKenzie and Betts (2006, p. 18-23), Yardney (2007, p. 104-114) and Anderson (2008, p. 323-332) who emphasize that supply and demand cycles in the property market, like any other market, often repeat in a predictable way, although not always on a predicable schedule. A similar reference to the influence of the inevitable real estate cycles and demand and supply factors, was also submitted by Miller and Geltner (2005 p. 28-33).

It can be concluded that, utilizing the correct timing within property markets for positioning a prospective development, is arguably one of the key success factors all property developers need to consider prior to proceeding with a development. From the above analyses it is evident that property markets have certain unique characteristics, which property developers must always be cognisant of when conducting market research. The question that invariably comes to mind is what market research framework is most suitable and which components should form part of the framework when conducting market research?

3.3.3 Market research frameworks and components

Pyhrr et al. (1989, p. 412) submit that the essential components of any competent market study must include the following:

- An overview of and analysis of national and international economic conditions to determine whether conditions are favourable or at least neutral to proceed with a development.
- A summary of current economic, social, political and demographic trends in the region and targeted urban area.

- A delineation of the market area to identify the geographic boundaries within which the specific tenancies in the development will be competing with one another when satisfying market demand.
- An analysis of potential demand for the facilities included in the development within the market or trade area.
- A report on competitive uses in the market or trading area.
- An analysis of the competition.
- The study is to conclude with a thorough analysis of existing and projected levels of space needs, rents, vacancies, prices and values in the target market area. Implications and market opportunities should specifically be pointed out to the developer (Pyhrr et al., 1989, p. 412).

Wurtzebach, Miles and Cannon (1994, p. 681-690) describe the components of the market study and cite the following items:

- Regional and urban analysis
  - Regional economic activity: determining the impact of the national economy on the region.
  - Economic base analysis: analysing the region as a separate economy.
  - Population analysis and income analysis: exploring population changes and trends as well as average incomes, sources of income, unemployment patterns and new employment opportunities.
  - Transportation networks: studying the impact of transport to the region.
  - Growth and development patterns: analysing the growth potential of the region.

- Neighbourhood analysis
  - Local economic activity: analysis of major employers in the area.
  - Transportation flows: traffic flows in the neighbourhood are important albeit pedestrian, public transportation or private automobile traffic.
  - Neighbourhood competition: analyse competition within the neighbourhood.
  - Future competition: analyse potential future competition and available development sites.
  - Demographic characteristics: analyse the current and future demographic characteristics in the neighbourhood, i.e. age, marital status, sex, household size, income and education levels.

- Site analysis

This includes an analysis of zoning and building codes; utilities; access; size and shape; and topography, as explored in the previous section (Section 3.2 Location studies and site selection).

- Demand analysis

This involves the evaluation of market data gathered in the regional neighbourhood and proximity of the proposed site. The objective is to determine the quantity of space a specific market can absorb, which is expressed by way of an absorption schedule. The study is to include an analysis of the competition as well as demographic and demand trends.

- Supply analysis

Supply analysis examines existing supply and expected future supply. Existing supply is evaluated by an inventory of the market, which should include current rents, vacancy rates, location and amenities available. Future supply is estimated by examining the following areas:

- Vacancy rates and rental levels: indicates future needs.
- Stocks and building activities: indicates future absorption.
- City services: availability of governmental provided utilities.
- Community planning: the attitude and policy of the local town planning department in relation to a specific development.
- Construction cost and financing: rapidly rising construction cost can limit future supply while availability of financing can be a factor in encouraging or discouraging additions to supply (Wurtzebach et al., 1994, p. 681-690).

This emphasis on demand and supply analysis, as part of the greater market analysis framework, is supported by Di Pasquale and Wheaton (1996, p. 159-165) as well as Bowman (2005, p. 82-83) who argue that:

- Demand-induced regional growth – may result in output prices, wages and real estate rents all rising as well as the quantities of output produced employment and availability of real estate. With an elastic supply of regional factors, demand-induced growth will produce large increases in quantities and small increases in prices, wages or rents. With inelastic factor supplies, demand induced growth creates large increases in prices, but less growth in quantities.

- Supply-induced regional growth may result in output prices and wages falling, while the quantity of output produced and employment both rise. The stock of real estate will increase as will rental levels. An elastic demand for a region's products results in a positive shift in labour supply, which in turn generates large increases in output and employment and only slight declines in wages and prices. Increased real estate stock results in real estate rents increasing. With inelastic regional demand, labour absorption is more difficult, wages and prices fall, while output and employment rise. Rises in stock of real estate and rentals are also more modest (Di Pasquale & Wheaton, 1996, p. 150-165).

It is also interesting to note the similarities to the above frameworks and approach to market analysis, found in studies on the subject area for three different types of real estate developments.

Firstly, Gause (1998), in a publication on office development, cites the following market analysis specific components, to be included in market research as part of the greater project feasibility analysis:

- Macroeconomic analysis: market analysis covering multiple metropolitan areas and cities.
- Local market analysis: market analysis covering a single metropolitan area, city, or sub-market.
- Site selection study: market analysis of a site.
- Site-specific market study: market analysis for a chosen site (Gause, 1998, p. 36).

Secondly, Beyard and O'Mara (1999, p. 40-41), Schmitz and Brett (2001, p. 15-24), as well as White and Gray (1996, p. 105-122) discuss in detail the key elements which are typically part of a comprehensive market study suitable for a shopping centre. These include the following:

- An analysis of the economic base in the metropolitan area, showing general characteristics of the market such as overall economic trends, employment trends, projections of economic activity and growth patterns.
- Delineation of primary, secondary and peripheral trade areas and accessibility to them.
- Population data for each trade area, including existing sizes, historic trends and future projections.
- Demographic data for each market segment targeted and information about the resident population in the trade areas, including tourists, office workers and convention and business travellers.
- Population characteristics for each trade area, including the number of households, families and singles, lifestyles, age cohorts, historic trends and future projections.
- Income characteristics for each trade area, including household, family and per capita totals, trends in disposable income, purchasing power and future projections (three years, five years, and ten years).
- Patterns of and trends in expenditures by type of goods and services in the trade areas.
- Location, characteristics and sales of competitive retail centres, by type of centre in the trade areas.
- Availability and absorption of retail space and sales trends by retail category in the trade areas.
- Characteristics and status of proposed and planned retail developments in the trade areas.
- Neighbourhood and site characteristics if a specific site has already been chosen for the centre, or comparisons if multiple sites are under consideration.
- Capture rates, productivity rates and recommended characteristics/anchors/ sizing of the centre or centres, depending on the scenarios being considered.

In addition, a retail analyst usually investigates ancillary indices of market area growth, such as land costs for housing, housing absorption rates, sales tax revenues and bond programs for roads and utility infrastructure (Beyard & O'Mara, 1999, p. 40-41).

Schmitz and Brett (2001, p. 21) also cite race and ethnicity as an important population characteristic. It is argued that developers may want to know about the

racial and ethnic composition of a trade area. Government agencies often also require such information for planning purposes. It must be noted that Beyard (2001, p. 60-67) claims that, in addition to employing the criteria used to evaluate retail projects as outlined above, it is valuable to assess the strategic assessment of a destination opportunity across five dimensions of competitive advantage:

- Distinctiveness: destination developments are often limited in number, iconic in nature and distinctive of nature.
- Drawing power: destination projects are regional attractions and serve a wide geographic base.
- Depth of penetration: destination projects must penetrate the primary market (immediate surrounds) to a depth that far exceeds other projects.
- Duration of visit: destination developments endeavour to integrate both day time and evening itineraries to increase time spent on the premise by consumer.
- Demand period programming: destination developments have the potential advantage of being able to attract particular consumers during times that are non-productive in traditional retail settings.

Thirdly, Frej (2001), in a study on the development of business and industrial parks, cites several criteria that are most relevant to the market screening for potential business and industrial park locations:

- Growth trends: areas with increases in population, employment opportunities and trade are preferred over markets with no growth.
- Development climate: a community's regulatory climate and its attitude can influence a project's appearance and viability.
- Infrastructure: well-developed infrastructure is fundamental to a competitive industrial market.
- Available and affordable land: an adequate and affordable supply of developable land is essential
- Labour: an expanding and well-qualified labour force is a pre-requisite to industrial development.
- Development incentives: the availability of incentives not only indicates a positive attitude toward development but can also contribute to project viability
- Quality of life: factors determining a community's liveability influence a company's ability to attract skilled workers.

- Current leasing activity: locations that are already attracting the types of business targeted for a new industrial development, are preferable (Frej, 2001, p. 24).

From the above, it can be concluded that market research is an important and structured process, consisting of various components. Data of the latter needs to be sourced and analysed by a suitably qualified analyst, and presented to the property developer as part of determining the feasibility of the project during the pre-construction stage.

In concluding this section, the numerous sources for data collection employed in the market research process are explored.

3.3.4 Sources of property information

Schmitz and Brett (2001, p. 23-31) cite the following sources where property information can be obtained to complete the market research:

- Demographic data sources

  Traditionally census statistics provided the base for sourcing data. However, because conditions can change dramatically between census years, alternative data sourcing methods are deemed preferable. These could include:
  - Economic consultants, who use models to describe national, regional and local economic conditions, and then estimate the end project population, households, income and other information required.
  - Demographic data vendors who focus on consumer demographics rather than economic modelling. They also provide estimates and projections of consumer expenditure potential by type of store or by type of merchandise.
- Psychographics: portraying household lifestyles

  Information on age, income, ethnicity and housing tenure may not be adequate to fully portray differences in trade area populations. Education, occupation, the presence or absence of young children, hobbies, recreational pursuits and community involvement can vary widely among residents in a given age and income group. Trade area psychographic consultants provide such information to analysts undertaking the market research.

- Consumer surveys

  Survey research plays an important role in market analysis. It provides the developer with direct information on customers' perspectives. It is advisable to use both surveys and focus groups to increase the accuracy of data collected.

- Quantitative research

  Quantitative research is conducted when it is necessary to predict the target group's behaviour with statistical accuracy. Quantitative surveys can be conducted by mail, on the telephone, through the internet or in person.

  - Mail surveys

    Mail surveys are fairly inexpensive. The biggest drawback of this method is that the respondents may not be representative and it may be that a substantial length of time is required to obtain feedback.

  - Telephone surveys

    Telephone surveys are generally more expensive than mail surveys and responses are higher than mail surveys.

  - Internet surveys

    This source of data collection is relatively inexpensive to administer but, similar to mail surveys, responses may not be representative of the target market.

  - Intercept surveys (in person surveys)

    These are conducted at high traffic locations and can provide a reasonable portrait of, for example, shopping centre customers and their purchasing habits.

  - Qualitative research

    Qualitative research is usually conducted with a small number of respondents and allows perceptions to be probed in depth.

  - Analysing supply

    Schmitz and Brett (2001, p. 28) emphasize that market analysts "must devote considerable attention to supply factors that affect development feasibility. Typically, supply-side analysis considers (1) macro-market conditions (measuring metro-wide or country-wide absorption, vacancy trends, and rent or price growth); (2) local trade area market indicators and construction activity; and (3) characteristics and performance of competitive buildings, both

existing and proposed" (Schmitz & Brett, 2001, p. 28). Brokers, economic consultants, real estate market analysis firms and appraisers are the sources for providing information on (1) above, while items (2) and (3) require field visits and personal or telephone interviews with building owners or managers.

- Mapping the competition

  Market studies are better understood when accompanied by a map that shows the location of the subject property and its competitor, albeit manually or by computer (Schmitz & Brett, 2001, p. 23-30).

Forlee (2005, p. 45-47), in a study on Australian property development, submits the following sources that can be used when gathering information about property:

- Real estate agents.
- Driving through the neighbourhoods.
- Newspapers and magazines.
- Property management companies.
- Property valuers.
- Local associations.
- Market research companies.
- The valuer general's office.
- The internet.

It is also interesting to note that Kahr and Thomsett (2005, p. 12-13) refer to the increasing use of technology when conducting a study of the market area, the starting point of market analysis. It is submitted that today, new technology has expanded the potential of market area analysis. Traditionally analysts have been forced to approximate market areas by using census, postal codes and other means of data sourcing. Emerging geographic information systems (GIS) technology or electronic mapping are liberating analysts and real estate decision makers from relying on arbitrary boundaries, unreliable and outdated data (Kahr &Thomsett, 2005, p. 12-13).

Whatever the source or methodology employed, it is of vital importance that all data gathered is reliable to facilitate effective market research and modelling.

3.3.5 Summary

In this section of Chapter 3, the second component (market research and property markets) was explored. This component forms part of the property development framework, of the property development process, presented in Chapter 2 (Figure 2.10).

It was concluded that market research is one of the important, if not the most important, ingredient used for planning a development strategy. Descriptions and definitions of the subject area by various authors were described and explored. The difference between market research (market analysis) and marketing research (marketability analysis) was identified. Market research was essentially defined as "the systematic gathering, recording and analysing, of data about problems relating to the matters of goods and services" (Ghyoot, 1996, p. 2).

Graaskamp's definition of market analysis is of specific importance to the study. Market analysis is defined as the analyst looking for sources of success; that is, sources of demand for the project (Graaskamp, cited in Miller & Geltner, 2005, p. 515). Marketing research, on the other hand, is a broader term that could include matters such as product design, performance of sales people and even pricing activities (Ghyoot, 1996, p. 2).

It was also ascertained that the distinction between market analysis and marketability analysis is often blurred. Both processes can be seen as a continuum, with the one flowing into the other. The study concluded that market analysis is not only a report that is generated at some critical juncture in the development process – it needs to be continually re-examined and integrated with all other components of the property development process.

The importance of conducting structured market research and the connection between market research and development ideas were emphasized. It is also suggested that, to limit risk, developers must pay special attention to "assessing their position in the market place as well as to the realism of their goals and objectives" (Miles et al., 2000, p. 209).

In market analysis, it was also submitted that the data obtained must be carefully selected, analysed and placed in a framework that links the proposed project with the

market and connects the present with the future. Emphasis is placed on the importance for the developer to develop an understanding of property development processes, and then combine sensitivity to the economic and social development strategies with the sensitive treatment of local members of the community.

This was followed by explaining the characteristics of property markets. Numerous distinctive characteristics were identified and explored in detail. It was also established that the property market exists within an institutional hierarchy and framework on three levels. It became evident from the study that property markets have unique characteristics that property developers need to be cognisant of when conducting market research.

At the core of this section, an exploration of market research frameworks was conducted. It was established that numerous market research frameworks exist in the literature. It was also concluded that market research is an important and structured process, consisting of various components. Data from these components need to be sourced, analysed by a suitably qualified analyst and presented to the property developer as part of determining the feasibility of the project during the pre-construction stage.

This section was concluded by identifying the sources of property information. Various sources and methodologies of data retrieval were explored. The importance of the role that new technology plays in market research and expanding the potential of market area analysis, was investigated. It was argued that this may be done by utilising geographic information systems (GIS) technology and electronic mapping.

The second aim of this chapter has been achieved by this study on market research and property markets (Section 3.3). The next section (Section 3.4) will focus on, *feasibility principles, design development and financial analysis.*

3.4 FEASIBILITY PRINCIPLES, DESIGN DEVELOPMENT AND FINANCIAL ANALYSIS

3.4.1 Introduction and perspectives

In 1970 Professor James Graaskamp wrote his classic *Guide to feasibility analysis* in which he constitutes that "a real estate project is feasible when the real estate

analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources" (Graaskamp, cited in Wurtzebach et al., 1994, p. 668; Miles et al., 2000, p. 338).

Miles et al. (2000, p. 338) argue that each phrase of Graaskamp's long definition is important and submit that:

Firstly: Feasibility never demonstrates certainty – a project is feasible when it is likely to meet its goals.

Secondly: Feasibility is determined by satisfying objectives that must be identified prior to commencement by all participants to the process.

Thirdly: The selected course of action and testing it for fit included in the definition, imply that logistics and in particular timing are important.

Fourthly: The selected course of action is tested for fit in the context of legal and physical constraints.

It is clear from the study by Miles et al. (2000) and the Graaskamp definition of feasibility, that "feasibility goes far beyond the simple idea of value exceeding cost. When the word 'constraints' is pushed into the ethical dimension (as suggested by Graaskamp), then both personal and social ethics as well as formal, legal and physical constraints must also be satisfied" (Miles et al., 2000, p. 338). A similar argument is found in a study by Guy and Henneberry (2002a).

The feasibility study is thus the formal process to determine whether a project is or is not viable, based on more determinants than only money.

Wurtzebach et al. (1994, p. 667) submit that a complete "real estate feasibility analysis" requires a market and economic study undertaken with a clear understanding of the decision environment. This land-use decision environment, and the three groups involved (consumers, government and investor/developer), are outlined in Chapter 2 (Item 2.2.1) and illustrated in Figure 2.1 of this study.

The word "likelihood" in the Graaskamp definition "makes explicit the importance of risk" (Graaskamp, cited in Wurtzebach et al., 1994, p. 678). The feasibility study must, from the beginning, address these risks. Graaskamp also suggests the following six-point framework for a feasibility analysis:

- First, the analysis should begin by clearly stating the objectives of the participants and the enterprise for whom the feasibility study is performed. These will be dominant objectives in the study.
- In the second instance, Graaskamp believes in identifying opportunities in the market that are consistent with the objectives.
- Thirdly he would segment the market to find specific targets.
- Graaskamp's fourth point is to identify both the legal and political constraints on the particular development idea.
- Fifth is a similar identification of aesthetic and ethical constraints.
- Sixth is a listing of physical/technical constraints as well as alternative technical solutions to physical problems. Thus, architecture and engineering come in as solutions to this set of constraints (Graaskamp, cited in Wurtzebach et al., 1994, p. 678).

Graaskamp proposes that all the information contained in the six-point framework be put in a financial synthesis. It is also important to take cognisance of the fact that Graaskamp (cited in Miller & Geltner, 2005, p. 516), in the Physical and design analysis quadrant of the model depicted in Figure 2.1 (Chapter 2 Item 2.2.1), emphasises the importance of:

- Architects using three-dimensional modelling software to test concepts.
- Engineers refining the selected general design and work to optimise the selected materials and system.
- Property and facility managers contributing to a building that will be easy to monitor and manage upon completion (Graaskamp, cited in Miller & Geltner, 2005, p. 517).

Miller and Geltner (2005) claim that developers need to be cognisant of general trends that are evolving in the market during the physical and design analysis stage. These include, amongst other, green design, sustainable development, the impact of terrorism, and market trends in various types of building designs for example, offices, warehouses, retail, residential and specialised buildings.

The study by Graaskamp, cited in Miller and Geltner (2005), also identifies the following two critical time periods of financial analysis:

- Construction and absorption period: a cost estimate for construction based on site costs, site preparation and building costs, along with a budget for the period that ends when the project is fully leased.
- Operational period: a pro-forma revenue projection is used to determine if the final value is likely to exceed the final all inclusive building cost (Miller & Geltner, 2005, p. 517).

Systematic financial analysis is required during both the construction and absorption as well as the operational period. The analysis required will be discussed later in this section.

It was also interesting to find in a study by Eager (1996) on viability and feasibility studies, that an integrated approach to the process is advocated similar to the James Graaskamp philosophy.

Implicit differences between the feasibility and viability studies concerning property development are submitted in the Eager (1996) study. The feasibility study is seen as being a preliminary investigation to ascertain, in the most effective manner, whether a concept or idea is practical or possible. A number of feasibility studies are likely to be completed before the first detailed viability study is undertaken. The latter is seen as a confirming mechanism that identifies performance capacity. "The difference between feasibility and viability studies rests ultimately in the degree of detail" (Eager, 1996, p. 6).

Eager (1996, p. 7) also argues that a broader look at the purpose of a property development suggests that it should be able to:

- Measure or identify risks.
- Gauge performance capacities.
- Identify capital requirements.
- Identify a time frame for development.
- Determine the feasibility.

Cloete (1996) submits that the last phase of the feasibility study is to determine whether a project will satisfy the financial requirements of the developer. Pyhrr et al.

(1989, p. 30-31), further to Eager (1996) and Cloete (1996) above, highlight an indisputable distinction between investment analysis and feasibility analysis:

> Investment analysis, as we define it, deals with the return-risk relationships associated with existing projects. Feasibility analysis generally considers the return-risk relationship in the development and construction of new projects. Both entail far more than the financial analysis of a project, generally involving market, marketability, legal and physical analyses" (Pyhrr et al., 1989, p. 30-31) [own emphasis].

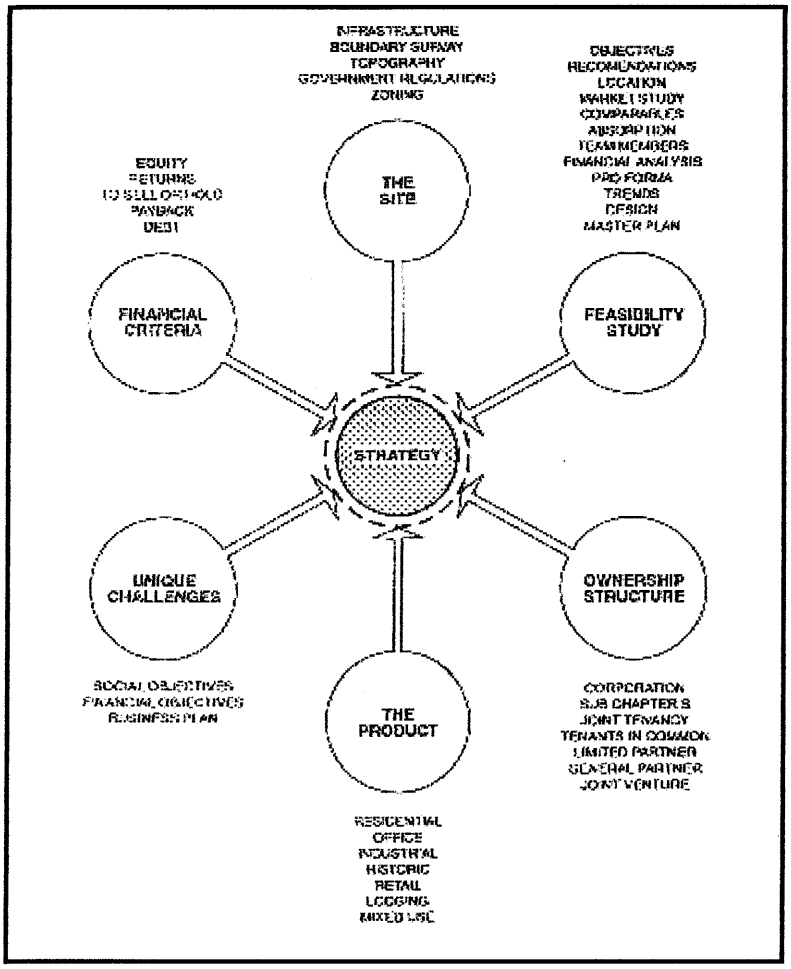
In the study, Pyhrr et al. (1989, p. 40), also submit that "various types of reports are often dumped together under the general term "feasibility study".

In studies on office development (Gause, 1998), shopping centre development (Beyard & O'Mara, 1999) and business park and industrial development (Frej, 2001), it is claimed that the feasibility study consists of two components: market analysis and financial feasibility analysis. Both analyses are referred to as "project feasibility analysis" which serves as a pragmatic tool, in a dynamic environment, for decision making through all phases of the development process (Gause, 1998, p. 33). The argument is also upheld that the market analysis always precedes the financial feasibility analysis.

Gause (1998), Beyard and O'Mara (1999) and Frej (2001) also discuss in detail the role of the "project feasibility study" in the property development process.
Financial analysis is seen to integrate all the expectations that affect a project's revenues and costs – leasing projections and forecasts of construction, financing and operating costs – and tests whether, in combination, they can achieve the financial objectives set for the development. Financial analysis is defined as an iterative process which is, throughout the development period, continually updated to take into account changes in market conditions and other information which may affect the outcome (Gause, 1998, p. 33-34).

This integrated approach in formulating a strategy for a property development, is probably best depicted in Figure 3.12. As can be observed, both the market study and financial analysis, once again, form part of the feasibility study. This is equally true for all the other components which require continuous exploration and research prior to the final strategy being formulated for a project.

FIGURE 3:12 Developing a strategy



(**Source**: Zuckerman & Blevins, 2003, p.22. Figure 2-1: Developing a strategy.)

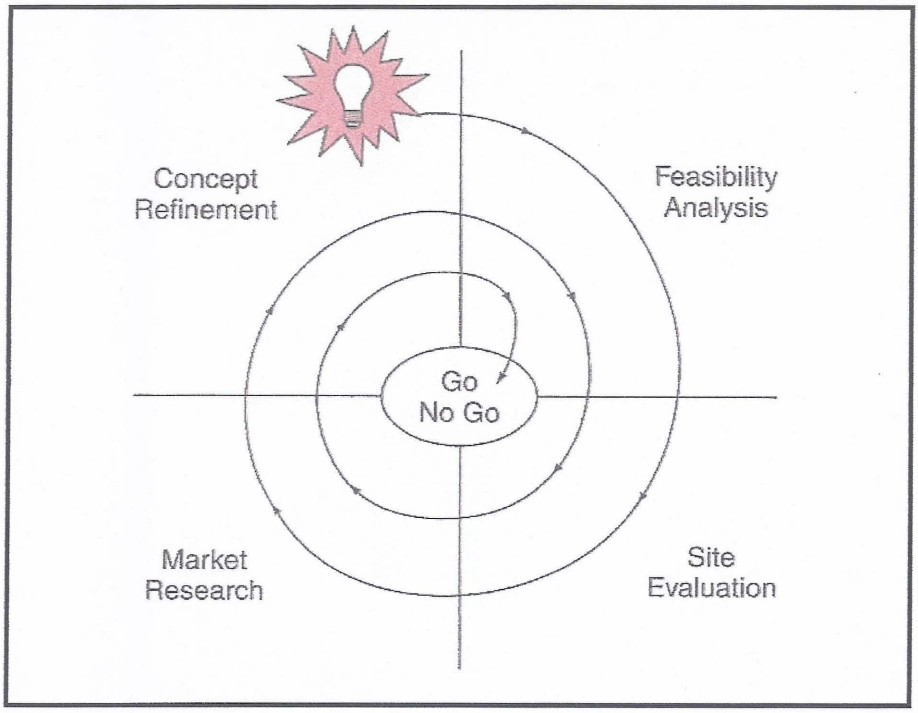
Peiser and Frej (2003) argue that the project feasibility can be determined from several different approaches. A project feasibility study is to consist of and include:

- Market analysis.
- Site selection.
- Regulatory issues.
- Financial feasibility.

The golden thread is present again. All these components are part of a continuous and iterative process of exploration and research. It is also interesting to note that in a study by Ling and Archer (2005), it is argued that a financial feasibility analysis needs to be supported by further market research. The argument is made that even if "a development appears financially feasible, it still depends on the land being free of soil problems, environmental concerns, ecological complications, seismic concerns,

hydrological concerns, and anthropological or historical sensitivities" (Ling & Archer, 2005, p. 648). The feasibility analysis needs to continually be reconsidered. In Figure 3.13 the evolutionary nature of the project planning and feasibility process is depicted.

FIGURE 3:13 The cycle of evolving a project



(**Source**: Ling & Archer, 2005, p. 649. Exhibit 24-1: The cycle of evolving a project. This diagram borrows from one that addresses a broader perspective on development; see David Geltner and Norman G. Miller, *Commercial Real Estate Analysis and Investments* Prentice Hall, Upper Saddle River NJ: 2001.)

This appears similar to a study in which Forlee (2005, p. 65) submits that the following aspects need to be included in the feasibility study:

- The property description.
- A description of the proposed development.
- A market research report.
- The total development cost.
- The development program.
- A complete financial analysis including sensitivity levels.
- A real estate valuation, marketing strategy.
- A final recommendation (Forlee, 2005, p. 65).

Conclusions drawn form a study by Smithers and Philpott (2002) and from the evidence and exchanging viewpoints above, suggest that the feasibility study is more than a financial exercise. It includes amongst other, studies pertaining to:

- Objectives of the investors or developer.
- Site selection.
- Market analysis and feasibility.
- Physical and technical feasibility and constraints during the design development and construction stages.
- Regulatory, political, ethical and legal issues.
- Socio-economic feasibility i.e:
  - Economic feasibility.
  - Environmental impact.
  - Sociological desirability.
- Financial feasibility analysis.

It is a continuous and interactive process with no time limit during the duration of a development. It requires input and cohesive teamwork from numerous specialists in the project team, to be of value to the developer and reduce risk.

In the first two sections of Chapter 3:

- Section 3.2 : Location studies and site selection
- Section 3.3 : Market research and property markets

the issues which influence the first six components listed above, were explored. The remainder of this section will now focus on the financial feasibility analysis, which includes a study into the:

- Structure of the financial feasibility study.
- Development costs.
- Cash flow analysis.
- Financial ratio analysis.
- Risk.

3.4.2 Structure of the financial feasibility study

With a completed market analysis and other detailed reports in hand, the development team is ready to assess the project's financial feasibility. Frej (2001) ably describes the feasibility analysis as "a systematic approach to determining the profitability of a proposed real estate investment. It allows the team to ascertain whether the development will generate enough cash flow to pay the debt service and provide an adequate return to its investors" (Frej, 2001, p. 39).

The structure of and the components that make up the financial feasibility study appear similar in most of the literature on the subject. Bohl (2002, p. 145-147); Cadman and Topping (1995, p. 84-87); Collier et al. (2002, p. 90-119); Forlee (2005, p. 67-71) Frej (2001, p. 39); Geltner and Miller (2001, p. 775-793); Miles et al. (2000, p. 239); Miller and Geltner (2005, p. 517); Peiser and Frej (2003, p. 81-94); Pyhrr et al. (1989, p. 182-183); Venter (2003, p. 258); Wilkinson and Reed (2008, p. 90-106) and Zuckerman and Blevins (2003, p. 290-350) all discuss the composition of the financial feasibility analysis in their respective studies.

What then can be assumed as the "necessary ingredients" that have to be present in the financial feasibility analysis?

Cloete (1996, p. 7) submits that the financial feasibility study consists of the following five steps:

1. Estimate the **total capital outlay** for the project.
2. Estimate the **total net project income.**
3. Do a **cash flow projection** for the development period.
4. Estimate the **profitability** of the project and compare the investor's objectives.
5. Do a **risk analysis** on the proposed project.

It is also interesting to note that Graaskamp, cited in Miller and Geltner (2005, p. 517), refers to the front door and back door techniques of calculating financial feasibility. The front door technique is applied once cost estimates are known, the developer calculates the net income which a property must generate to satisfy the equity and debt requirement of the developer. The back door technique is applied when revenue estimates are known. The developer then calculates the maximum amount of acquisition and construction costs that can be put into the project and

remain viable. As previously mentioned in this section, cognisance also needs to be taken of the two critical time periods of financial analysis and the components included in each stage, i.e. the:

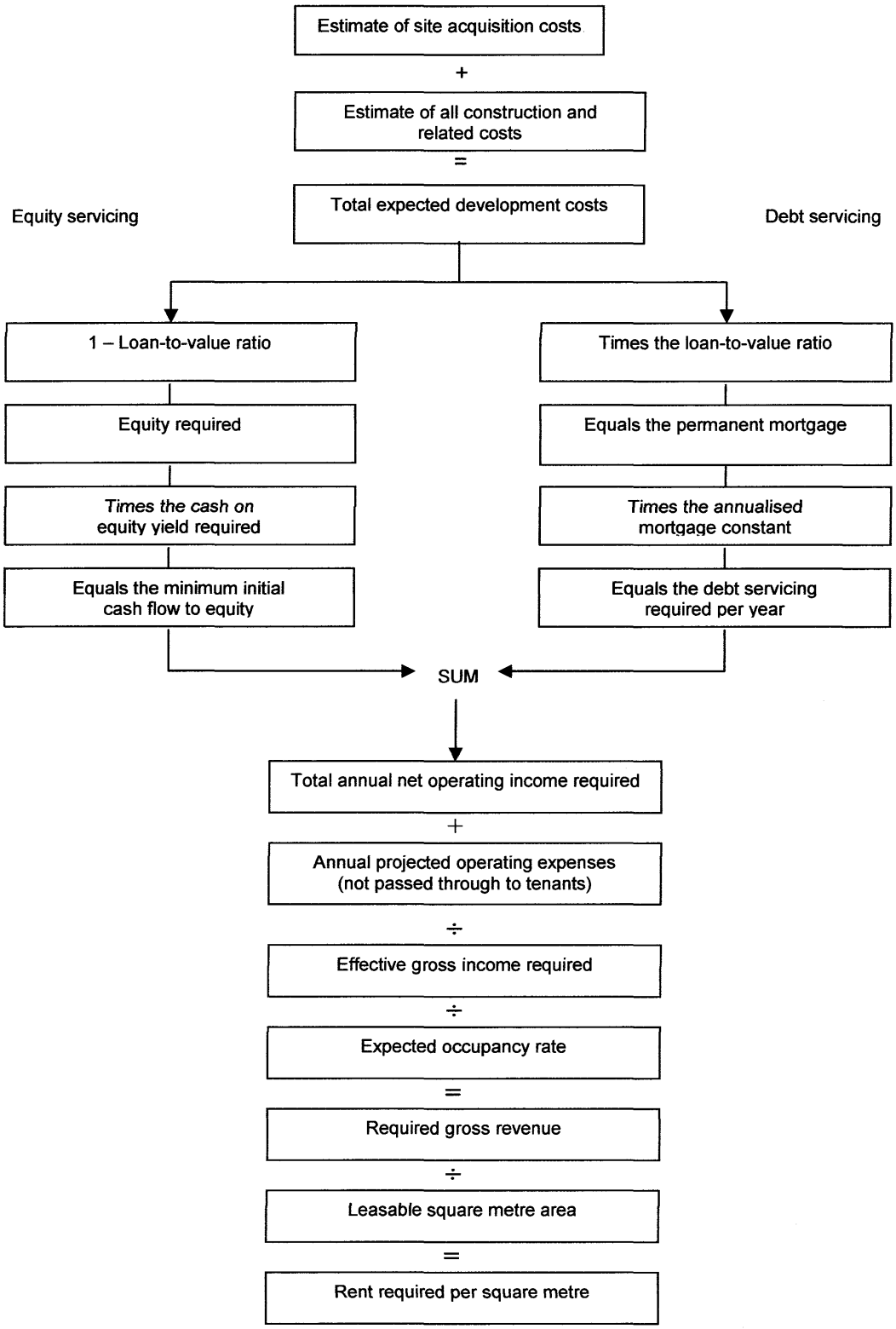
- Construction and absorption period: includes a cost estimate for construction based on site costs, site preparation and building costs, inclusive of a budget for the period that ends when the project is completed and finally let.
- Operational period: a pro-forma revenue projection is used to determine if the final value is likely to exceed the construction cost by an acceptable margin (Miller & Geltner, 2005, p. 517).

Miller and Geltner (2005, p. 517) emphasise that: "Each of these estimates requires some systematic analysis."

In Figure 3.14, the *Front door financial feasibility analysis* is illustrated and in Figure 3.15 the *Back door approach to financial feasibility* and land residual calculation with the lender's perspective.

FIGURE 3:14 Front-door financial feasibility analysis

Steps proceed from top to bottom :

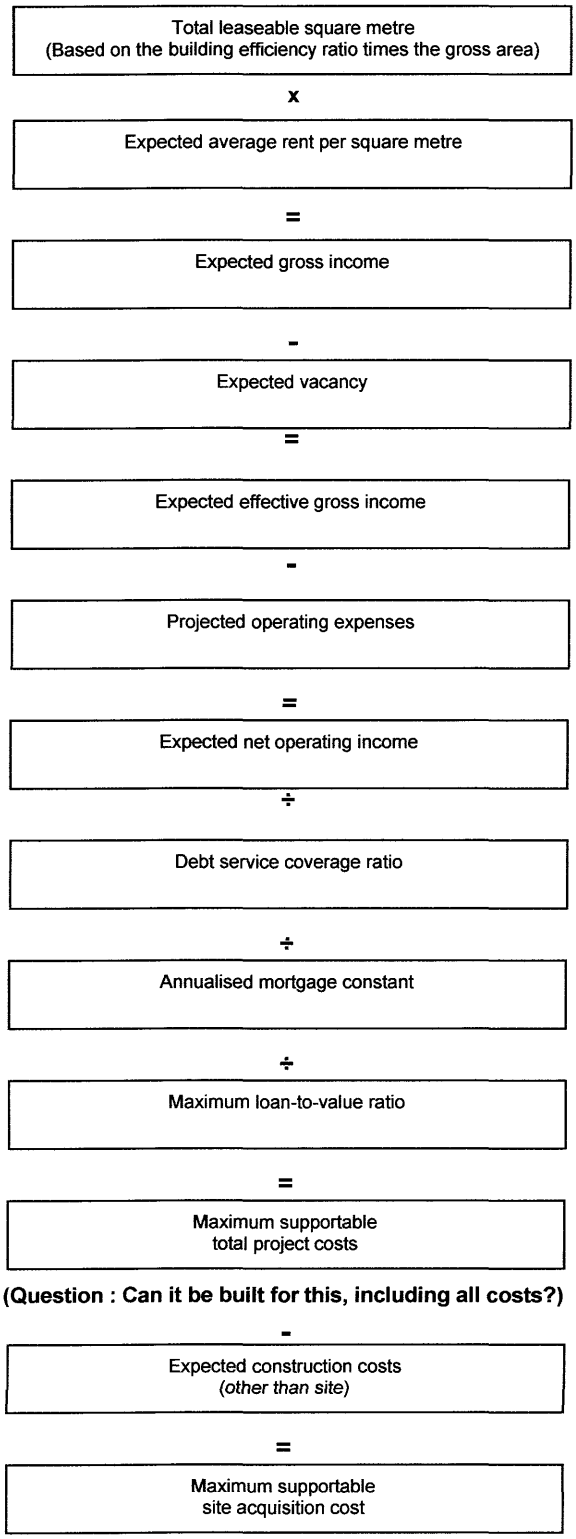


(Question : Is this average required rent per square metre achievable?)

(**Source**: Adapted from Geltner & Miller, 2001, p. 781; Miller & Geltner, 2005, p. 521. Exhibit 24.3: Front door financial feasibility analysis.)

FIGURE 3:15 Back-door approach to financial feasibility and land residual calculation

Steps proceed from top to bottom :



(**Source**: Adapted from Geltner & Miller, 2001, p. 783; Miller & Geltner, 2005, p.523. Exhibit 24.5: Backdoor approach to financial feasibility and land residual calculation with the lender's perspective.)

Although both approaches are commonly used by the developer, the researcher is – from practical experience – of the opinion that the *back door approach* is initially employed as a "desk-top" tool, while the *front door approach* generally requires more detailed input from the project team.

Geltner and Miller (2001, p. 784-785) do, however, also caution against the continued use of both the back-door and front-door approach for financial feasibility analysis. They submit that, although they have the advantage of being simple and easy to understand and do not require financial experience and advanced knowledge or assumptions about the markets, they "do not provide a complete or correct financial evaluation of a development project" (Geltner & Miller, 2001, p. 785).

Geltner and Miller (2001, p. 785) suggest that the developer should consider financial feasibility from a broader perspective – that of financial desirability. The developer, who may be or become a landowner or investor due to the development, must know whether it is optimal to proceed with the development. That is: "Does undertaking the proposed development project now maximise the wealth of the landowner/ developer" (Geltner & Miller, 2001, p. 785)?

Collier et al. (2002, p. 92) argue that the following components form the core of a project pro-forma financial feasibility analysis.

- Forecast operating statement, showing income, expenses and net operating income.
- Forecast project costs, showing land costs, hard construction costs and soft costs.
- Forecast financing: requested loan amount, required equity contribution and final project value (Collier et al., 2002, p. 92).

Which components are then to be included in the financial feasibility analysis to meet market expectation?

Taking cognisance of the above, the following framework is presented on which the exploration of the various financial feasibility analysis components will be based:

Construction and absorption period

3.4.3 Development costs.

Operational period

3.4.4 Cash flow analysis.
3.4.5 Financial ratio analysis.
3.4.5.1 Discounted cash flow analysis (DCF).
3.4.5.2 Key financial ratios and other measurement tools.
3.4.6 Risk.

3.4.3 Development costs

During the construction and absorption period, the development costs are ascertained. West (1993, p. 3-4) and Cloete (1996, p. 8) cite the following elements which should form part of the development cost budget:

- Land and land-related costs.
- Construction and other related costs including contingency and escalation allowances.
- Design consultants' fees and disbursement.
- Development management allowance.
- Tenant inducement and vacancy contingent allowances.
- Project promotion, marketing and commissions.
- Holding charges and financing costs.
- Development margin and other overhead allowances.

Eager (1996) notes that capital costs should not be confused with construction costs. Capital cost essentially includes all costs associated with the delivery of the finished product. Eager (1996, p. 14-15) is of the opinion that capital cost estimates should include:

- Land costs:
  - Purchase price.
  - Commissions.

- Betterment contributions.
- Transfer and legal costs.

- Building costs:
  - Building works.
  - External works.
  - Contingency.
  - Cost escalation provisions.
  - Fees and disbursements.

- Finance and general:
  - General costs.
    - Rates during construction.
    - Leasing commissions.
    - Rental concessions.
    - Revenue stamps.
    - Contract administration.
    - Marketing and promotion costs.
  - Finance costs.
    - Interest on rates.
    - Interest on land.
    - Interest on improvements.
    - Interest on general costs.

Collier et al. (2002), Graaskamp, cited in Miller and Geltner (2005) as well as Miller and Geltner (2005) all refer to the concept of hard and soft costs in the project costs. Hard costs are items directly involved in the erection of the structure while soft costs are everything not directly involved, for example, design, legal and financing costs. Miller and Geltner (2005, p. 518) cite the following soft and hard costs, which form part of the development budget.

- Soft costs:
  - Loan fees and construction interest.
  - Legal fees, soil testing, environmental studies.
  - Land planner fees, architectural fees, engineering fees.
  - Marketing costs, including advertisements.

- Leasing or sales commissions.

- Hard costs:
  - Site preparation costs including land costs, excavation, soil compaction, grading, utilities' installation.
  - Construction costs or shell costs of existing structure if it is a rehabilitation.
  - Permits, contractors' fees, construction management and overhead costs.
  - Materials, labour, equipment rental, tenant finish and developer fees (Miller & Geltner, 2005, p. 518).

Wilkinson and Reed (2008, p. 97-103) list the following components which should be included in development costs:

- Land costs.
- Building costs.
- Professional fees.
- Site investigation fees.
- Planning fees.
- Building regulation fees.
- Funding fees.
- Finance cost/interest.
- Letting agent's fees.
- Promotion costs.
- Sale costs.
- Other development costs.
- Contingency allowance.
- Developer's profit/risk allowance.

The importance of spending sufficient time on the compilation of the development budget is emphasised by Forlee (2005). The budget has to be kept realistic and be continually revisited by members of the project team prior to finalisation, to meet the objectives of the developer. Within an Australian context, Forlee (2005, p. 67-69) provides valuable input on cost items to be included. These are:

- **Land costs**: present value of land, fees, stamp duty, conveyancing fees as well as community rates, water rates and land tax payable during the development period.

Land cost equation:

Land cost = present value of land + stamp duty + conveyancing fees + expenses

- **Construction costs:** construction costs calculated in detail, escalation during the development period, professional fees, disbursements, planning and building approval fees as well as water, electricity and gas connection fees.

Construction cost equation:

Construction cost = professional fees + connection fees + approval fees + building costs

- **Finance costs:** bank fees and charges and the interest on the capital employed, capitalised with the cash flow of the construction program. Allowances must be made for both debt and equity capital – debt capital being borrowed funds, requiring interest repayment allowances and equity capital, being developers' funds, requiring an allowance for opportunity costs.

Finance cost equation:

Finance cost = bank fees and charges + interest on capital

Forlee (2005) also argues that, although goods and service tax (GST), as a recoverable expense, is generally excluded from commercial property development calculation, the effect of the GST should be factored into the development and adjusted for cash flow.

In concluding this section on the development cost, an indicative percentage allocation of development costs is presented. This is based on many years' analyses of commercial property development and personal experience and the researcher is of the opinion that, although of indicative nature only, it may be of assistance in verifying the credibility of the development budget. The allocation is:

• Land costs	12%	(8% - 12%)
• Building costs	45%	(45% - 55%)
• Professional consultants' fees and disbursements	10%	
• Legal costs	5%	
• Government charges	11%	
• Interest costs	5%	
	88%	
• Profit allocations	12%	
	100%	

Whatever the allocation, it must be noted that the development cost budget must include all costs and allowances, from inception to completion of a project.

3.4.4 Cash flow analysis

With the compilation of the development cost budget completed, the financial analysis moves into the operational period. Miller and Geltner (2005, p. 517) define this period as: "... where a pro-forma revenue projection is used to determine if the final value is likely to exceed the construction (site development cost) by a sufficient margin to determine viability." The result ultimately determines whether a project should be continued.

What analysis then is required to be done by the property developer during this period?

This subject area is covered in detail by the studies of Beyard and O'Mara (1999, p. 57-59); Brueggeman and Fisher (2005, p. 295-303); Collier et al. (2002, p. 92-108); Eager (1996, p. 16-23); Fisher (2006, p. 152-163); Forlee (2005, p. 93-104);Frej (2001, p. 42-49); Gause (1998, p. 70-73); Geltner and Miller (2001, p. 780-802); Ling and Archer (2005, p. 218-231); Miller and Geltner (2005, p. 289-296); Reed (2007, p. 429-460); Wilkinson and Reed (2008, p. 90-123) and Zuckerman and Blevins (2003, p. 301-308).

- **Income and expense forecast**

The first step is to compile a pro-forma "Income and expense statement", forecast into the future.

Miller and Geltner (2005, p. 284) submit that this "pro-forma" is an accounting style projection of the operating statement over time. Pro-formas as a rule start with the initial operation of the property after the development stage is completed. It is typically derived on an annual projected basis and may span one year or project information into the future. Miller and Geltner (2005) also argue that most pro-forma forecasts and net operating income run for ten years and estimate cash flow before tax.

A sample of a typical "Multi-year income and expense forecast" is depicted in Table 3.1 The analysis in the sample is based on a six year forecast of income and expenses and the following assumptions are made:

- Market rents are anticipated to increase 3% annually.
- For simplicity in the example, most of the operating expenses are forecast to remain level over the study period, with the exception of the superintendent's salary, which will increase by an average of 5% per year, and the cost of electricity for common areas, which is expected to increase by 7.5% annually.
- Leasing commissions and tenant improvements are included as a variable expense in the multiyear forecast for the building. Leasing commissions are estimated at 3% of rent collections on average, while no tenant improvements are anticipated for the six year study period (Reed, 2007, p. 457).

TABLE 3.1: Income and expense forecast

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Income						
Potential gross income (PGI)	$367,200	$378,216	$389,562	$401,249	$413,286	$425,685
Other income	1,380	1,420	1,465	1,505	1,550	1,600
Vacancy and collection loss	-14,743	-15,129	-15,582	-16,050	-16,531	-17,027
Effective gross income (EGI)	$353,837	$364,507	$375,445	$386,704	$398,305	$410,258
Operating expense (OE)						
Fixed expenses						
Rates and taxes	$18,700	$18,700	$18,700	$18,700	$18,700	$18,700
Insurance	1,880	1,880	1,880	1,880	1,880	1,880
Other	770	770	770	770	770	770
Variable expenses						
Leasing commissions	$10,575	10,890	11,220	11,555	11,900	12,260
Tenant improvements	0	0	0	0	0	0
Management	17,625	18,155	18,700	19,260	19,840	20,435
Site manager	16,800	17,640	18,520	19,450	20,420	21,440
Maintenance/repairs	5,900	5,900	5,900	5,900	5,900	5,900
Electricity	2,200	2,365	2,540	2,735	2,730	3,160
Other utilities	1,000	1,000	1,000	1,000	1,000	1,000
Security	12,500	12,500	12,500	12,500	12,500	12,500
Rubbish removal	540	540	540	540	540	540
Pest control	780	780	780	780	780	780
Admin.	325	325	325	325	325	325
Misc.	325	325	325	325	325	325
Replacement allowance						
Interior fit-out	$3,750	$3,750	$3,750	$3,750	$3,750	$3,750
Exterior painting	1,550	1,550	1,550	1,550	1,550	1,550
Kitchen/toilet	7,150	7,150	7,150	7,150	7,150	7,150
Carpet	8,250	8,250	8,250	8,250	8,250	8,250
HVAC	900	900	900	900	900	900
Total operating expenses	$111,520	$113,370	$115,300	$117,320	$119,210	$121,615
Operating expense ratio	31.52%	31.10%	30.71%	30.34%	29.93%	29.64%
Total expenses per unit	$2,028	$2,061	$2,096	$2,133	$2,167	$2,211
Net operating income (NOI)	$242,317	$251,137	$260,145	$269,384	$279,095	$288,643

(**Source**: Reed, 2007, p. 460. Table 19.5: Income and expense analysis (forecast).)

This income and expense forecast consists of:

- **Potential gross income (PGI)**

Miller and Geltner (2005, p. 290) define potential gross income as the estimated rent that might be collected if 100% of the property is occupied, calculated on an annualised basis. It is generally calculated by multiplying the net lettable areas with the estimated market rentals, obtained from market research.

Reed (2007, p. 445) submits that potential gross income comprises:

- Rent for all space in the property, e.g. contract rent for current leases, market rent for vacant or owner-occupied space, percentage and turnover rent for retail properties.
- Rent from escalation clauses.
- Reimbursement income.
- All other forms of income to the property, e.g. income from services supplied to the tenant such as switchboard service, antenna connections, storage, garage space, and income from coin-operated equipment and parking fees (Reed, 2007, p. 45).

- **Vacancy and collection loss and effective gross income (EGI)**

Collier et al. (2002, p. 92-93), Eager (1996), Ling and Archer (2005, p. 221-222), Miller and Geltner (2005, p. 290), Fisher (2006, p.155-157), Reed (2007, p. 445) as well as Zuckerman and Blevins (2003, p. 302) emphasize the importance of determining the "effective gross income" by allowing a deduction from the potential gross income for vacancy and collection loss.

The vacancy or uncollectible factor is that percentage of the gross potential income which will not be collected, albeit through physical vacancy on completion, or collection loss caused by default of tenants (Miller & Geltner, 2005; Reed, 2007; Zuckerman & Blevins, 2003). Experience has shown that most developers anticipate a vacancy factor of between 3 and 5% in year one (Eager, 1996, p. 18).

The calculation above results in determining the *forecast gross effective income* for the development for the first year after completion of the development.

- **Operating expenses (OE)**

Eager (1996) submits that even if the operating expenses, commonly known as outgoings, are fully recoverable, the costs of running a building must be identified during the pre-construction stage. This is to ensure that the design, quality of finish and material used in the project, have not created an uneconomical building to maintain in the market place. Ling and Archer (2005, p. 222), Miller and Geltner (2005, p. 290-291), Reed (2007, p. 446-453); Zankel (2001, p. 105-106) as well as Zuckerman and Blevins (2003, p. 303-304) distinguish between fixed and variable expenses.

- Fixed expenses are those expenses that are more predictable and tend not to vary with the property occupation levels. They include:
  - Utilities – common area.
  - Real estate taxes.
  - Insurance.
  - Contract services such as lift services, landscaping.

- Variable expenses are those expenses which vary with the occupancy of the property and include:
  - Salaries and wages.
  - Repairs and maintenance.
  - Utilities and maintenance – if landlord paid.
  - General and administrative.
  - Legal and accompanying fees.
  - Management fees.
  - Professional fees.
  - Marketing.
  - Cleaning services.
  - Supplies.
  - Security.
  - Maintenance costs.
  - Deposits and bond.
  - Banking.
  - Reserves and replacements (the sinking fund) (Miller & Geltner, 2005, p. 290-291; Reed, 2007, p. 446-453; Zankel, 2001, p. 105-106; Zuckerman & Blevins, 2003, p. 303-304).

Reed (2007) also argues that a replacement allowance (the latter item under variable expenses above) for each component of the property is to be included. This value is "estimated as the anticipated cost of its replacement pro-rated over its total useful life" (Reed, 2007, p. 452).

Although the above detailed forecast of operating expenses per square metre or unit is by far the most accurate and advisable method to follow, experience has shown that operating expenses are, during the pre-construction stage, generally expressed as a percentage of effective gross income.

Operating expenses / **Effective gross income**	=	**% effective gross income (EGI)**

Miller and Geltner (2005, p. 290) also submit that operating expenses should be based on "historical information, industry benchmarks provided by trade associations ... *local property managers, or a portfolio of similar property*".

Whatever methodology is employed in determining operating expenses during the pre-construction stage, it must be ensured that results obtained are accurate and *market related to the specific type of development.*

- **Net operating income (NOI)**

Once the operating expenses are determined the developer can obtain the net operating income (NOI) for the development (Fisher, 2006, p. 152-153; Ling & Archer, 2005, p. 218; Miller & Geltner, 2005, p. 291; Reed, 2007, p. 454; Zuckerman & Blevins, 2003, p. 304).

Effective gross income (EGI) – operating expenses = net operating income (NOI)

Miller and Geltner (2005, p. 291) submit that the net operating income is the "single-most important estimate for the income approach to value".

- **Before tax cash flow (BTCF)**

To determine the before-tax cash flow (BTCF), the annual mortgage debt service needs to be subtracted from the net operating income.

Net operating income – mortgage debt service = before tax cash flow (BTCF)

Miller and Geltner (2005, p. 291) and Reed (2007, p. 454) define mortgage debt service as the annual sum of all mortgage payments including principal loan and interest loan repayments. The before-tax cash flow value, after the deduction of mortgage debt service, is used in certain capitalisation procedures.

In studies by Collier et al. (2002); Ling and Archer (2005); Miller and Geltner (2005); Reed (2007); Wilkinson and Reed (2008) as well as Zuckerman and Blevins (2003), the calculation and effect of equity dividends, depreciation and other factors, applied to determine after tax cash flow (ATCF), are discussed. As this study excludes an investigation into property financing and taxation, the impact of these factors are not explored.

It must, however, be noted that experience has shown that banking requirements pertaining to debt/equity ratios, the viability of the project and the financial standing and experience of the developer, generally determine the level of mortgage debt financing that can be obtained. As a rule it was found that most lenders would require the net operating income to service the mortgage debt during the first year of operations.

Once the potential gross income (PGI), effective gross income (EGI), operating expenses (OE), net operating expenses (NOI) and before-tax cash flow (BTCF) have been calculated for the first year of operation, future forecasts should be made: as illustrated in Table 3.1. Zuckerman and Blevins (2003) as well as Miller and Geltner (2005) submit that these forecasts should include allowances for free rent during periods of lease renewals, re-tenant fit-outs required, as well as escalations of rent and operating expenses in the future. The role of consumer price increases (CPI), market expectation and interim market rental adjustments must likewise be considered in these forecasts. Experience has shown that forecasts for developments are usually done for a ten year period during the pre-construction stage.

3.4.5 Financial ratio analysis

The financial feasibility of a property development can be measured by the application of numerous ratios calculated from the pro-forma income and expenditure projection above.

What then are these financial ratios that are utilised as decision-making criteria and how are they applied in evaluating the desirability to proceed with a potential development?

An exploration of the literature on the subject area makes interesting reading. Numerous authors cite various ratios that can be used in the financial analysis of the feasibility study.

3.4.5.1 Discounted cash flow analysis (DCF)

Brueggeman and Fisher (2005, p. 303); Cloete (2005, p. 153-166); De Roos and Kennedy (2005, p. 155-157); Gallinelli (2004, p. 165-184); Geltner and Miller (2001, p. 200-202); Lowies (2006, p. 64-67); Peiser and Frej (2003, p. 152-171); Pyhrr et al. (1989, p. 210-239); Reed (2007, p. 503-515); Wang and Wolverton (2002, p. 416-418); Wilkinson and Reed (2008, p.106-114); Zuckermann and Blevins (2003, p. 328-329) all emphasize the importance of utilising the discounted cash flow analysis method when making capital budgeting decisions to evaluate the potential of a development. This includes calculating the:

- Payback period (PB).
- Net present value (NPV).
- Internal rate of return (IRR).
- Modified internal rate of return (MIRR).
- Profitability Index (PI).

Payback period (PB)

Zuckerman and Blevins (2003, p. 326); Lowies (2006, p. 59); and Reed (2007, p. 515-516) define the payback period as the number of years that it takes to recover or return the initial investment.

$$\textbf{Payback period (PB)} = \frac{\textbf{Equity capital outlay}}{\textbf{Net annual equity cash flow}}$$

Present value (PV)

A dollar today is worth more than a dollar in the future primarily due to, in addition to, the loss of interest, the effect of inflation over time on the value of money. Cloete (2005, p. 157) also submits other reasons to include:

- The opportunity cost involved.
- Certainty of payment due to the risk of default in the future.

By completing the development cost budget and income and expense forecast for the first year of operations, the present value is determined.

Future value (FV)

If you invest one dollar today and earn interest you would end up with more than one dollar at the end of the year. A typical example of determining present and future values is illustrated in Table 3.2.

TABLE 3.2: Determining present and future values

PV	=	$100.00	Present value
i	=	20.00%	Interest rate
I	=	PV(i)	Interest rate expressed in dollar terms
FV	=	Future value, or amount at end on n years. Whereas PV is the value at present, FV is the value n years into the future	
n	=	Number of years, or periods, involved	

EQUATION: $FV_1 = PV + I = PV + PV(i) = PV\ (1 + i)$

All that the above says is that the future value at the end of one year is equal to the present value (PV) plus the interest rate on the PV, or multiplied by 1 plus the interest rate

	Amount at beginning of year		*Amount at end of year*	*Interest earned*
Year	**PV_n**	**(1 + i)**	**FV_n**	**I**
1	$100.00	1.20	$120.00	$20.00
2	$120.00	1.20	$144.00	$24.00
3	$144.00	1.20	$172.80	$28.80
4	$172.80	1.20	$207.36	$34.56
5	$207.36	1.20	$248.83	$41.47

This exhibit can be represented by the following equation:

$$FV_n = PV_1\ (1 + i)^n$$

$FV_5 = PV_1\ (1 + 0.2)^5 = \$100.36\ (1 + 0.20)^5 = \$248.83$

And consequently:

$$PV_1 = \frac{FV_5}{(1+0.2)^5} = \frac{\$248.83}{(1+0.20)^5} = \$100.00$$

(**Source**: Adapted from Cloete, 2005, p. 158-159. Exhibit 4.2: Determining present and future values.)

In calculating future cash flows the effect of unequal and equal cash flow streams also needs to be taken into account (Cloete, 2005).

Net present value (NPV) and internal rate of return (IRR)

Reed (2007, p. 510) claims that net present value (NPV) and internal rate of return (IRR) calculations are "two discounted cash flow models widely used to measure investment performance and development decision making criteria".

Cloete (2005, p. 161); Reed (2007, p. 510) and Wilkinson and Reed (2008, p.111) define the difference between net present value (NPV) as simply the difference between the present value of all positive cash inflows and the present value of all negative cash outflows or capital outlays. When the net present value is greater than the net present value of the negative cash flows or capital outlay, an investment is deemed viable. Should the result be negative, the opposite is equally true – do not proceed with the investment.

Gallinelli (2004, p. 180) claims that the internal rate of return (IRR) is probably the rate of return measurement most widely used when making capital budgeting decisions.

3.4.5.2 Key financial ratios and other measurement tools

Pyhrr et al. (1989) describe the internal rate of return (IRR) as "the rate of return that equates the present value of the expected future cash flows to the initial capital invested" (Pyhrr et al. 1989, p. 216). The internal rate of return is also the discount rate that results in a net present value (NPV) of zero.

An illustration of net present value (NPV) and internal rate of return (IRR) calculations is depicted in Table 3.3.

TABLE 3.3: An illustration of NPV and IRR

Discount rate			15%
IRR			20%
Year	Investment cost	Cash inflows	
		Nominal	Present value
0	-$100,000		
1		$13,800	$12,000
2		$20,000	$15,123
3		$28,000	$18,410
4		$28,000	$16,009
5		$28,000	$13,921
6		$28,000	$12,105
7		$28,000	$10,526
8		$28,000	$9,153
9		$28,000	$7,959
10		$28,000	$6,921
TOTAL	-$100,000	$257,800	$122,127
PROFIT ON THE INVESTMENT (the NPV)			$22,127

(**Source**: Adapted from Cloete, 2005, p. 164. Exhibit 4.7: An illustration of NPV and IRR.)

Modified internal rate of return (MIRR)

Pyhrr et al. (1989, p. 220) and Cloete (2005) submit that a weakness in the IRR calculations is the fact that an implicit assumption is made that cash flows are reinvested in the project's own IRR, whereas the modified internal rate of return (MIRR) assumes that cash flows are reinvested at the cost of capital rate. It was also interesting to note in the Zuckerman and Blevins (2003) study that reference is made to a similar calculation method as the financial management rate of return (FMRR). The MIRR method is described as: "... a rate of return model that is similar to the internal rate of return in that it calculates the investor's return based on cash in and the timing of the cash flow out. The basic difference is that the internal rate of return calculates the reinvestment rate at the same rate as the return, while the financial management rate of return calculates reinvestment at a predetermined rate" (Zuckerman & Blevins, 2003, p. 329).

Profitability index (PI)

Cloete (2005, p. 161) and Reed (2007, p. 517) describe the profitability index (PI) as merely the present value of cash inflows divided by the investment cost. It is also referred to as the benefit/cost ratio.

Profitability index (PI) =	**Present value of anticipated investment returns**
	Present value of capital outlay

As taxation is excluded from this study, no reference is made to discounted cash flow calculation models based on after taxable income in property development.

Berges (2004); Collier et al. (2002, p. 105-107); De Roos and Kennedy (2005, p. 148-159); Fisher (2006, p. 153-154); Forlee (2005, p. 100-101); Gause (1998, p. 73-74); Ling and Archer (2005, p. 220-225); Miller and Geltner (2005, p. 296-301); Pyhrr et al. (1989, p. 239-245); Randel (2006, p. 69) as well as Zuckerman and Blevins (2005, p. 325-327) indicate the following key financial ratios and other measurement tools, which may be used to determine the viability of a development. These include:

- **Capitalisation ratio (Cap Rate):** Berges (2004, p.89) submits that the cap rate is an indicator of value that measures the conversion of a single or series of payments into a single value.

Capitalisation rate =	**Net operating income (NOI)**
	Investment cost

This important ratio may also be generally referred to as the return on an asset (ROA).

- **Equity to value ratio:** This is calculated by dividing the equity investment by the projected value of a project.

Equity to value ratio =	**Equity investment**
	Projected value

- **Development yield:** This calculation is used to understand the relationship between projected profits and the total cost of the development.

Development yield =	**Developer's projected profits** / **Total development costs**

- **Value:** The value of a development or property can be estimated by dividing the net operating income by the going market cap rate,that reflects the returns required for similar projects.

- **Debt coverage ratio (DCR):** To assist the lender of mortgage finance to review how much cash flow coverage his loan will have at any time.

Debt coverage ratio (DCR) =	**Net operating income** / **Annual debt service**

- **Loan-to-value ratio (LVR):** To determine the mortgage loan granted as a percentage of the appraised value of the development.

Loan-to-value ratio (LVR) =	**Potential loan amount** / **Appraised value**

- **Break-even cash flow ratio (BER):** Used by a lender to determine at any given time period, the development's break-even point or stabilization.

Break-even point cash flow (BER) =	**Break-even income** / **Gross potential income (GPI)**

- **Operating efficiency ratio (OER):** This ratio is used to determine operating expenses as a percentage of gross income.

Operating efficiency ratio (OER) =	**Total operating expenses** / **Effective gross income (EGI)**

This ratio is also commonly referred to as the expense ratio.

- **Cash on cash return:** Investors require a minimum equity rate of return calculated as follows:

Equity return =	**Before-tax cash flow** / **Equity invested**

This equation is commonly known as the equity dividend rate and can also be calculated for after-tax return on equity.

- **Break-even occupancy (BEO):** Lenders, investors and developers generally require a minimum occupancy break-even in terms of income versus expenses.

Break-even occupancy (BEO) =	**Operating expenses + debt service** / **Potential gross income (PGI)**

- **Gross rent multiplier (GRM):** This measures the relationship between the total investment cost and its potential gross income.

Gross rent multiplier (GRM) =	**Investment cost** / **Potential gross income (PGI)**

- **Effective gross income multiplier (EGIM):** The investment cost divided by the effective gross income.

Effective gross multiplier (EGIM) =	**Investment cost** / **Effective gross income (EGI)**

- **Net income multiplier (NIM):** This is calculated by dividing the investment cost by the net operating income.

Net income multiplier (NIM) =	**Investment cost** / **Net operating income (NOI)**

- **Before-tax cash flow multiplier:** This is calculated by dividing the before-tax cash flow by the equity investment.

Before tax cash flow multiplier =	**Equity investment** / **Before-tax cash flow (BTCF)**

A similar analysis could be done based on after-tax cash flow.

- **Property measurements**

In addition to calculating the numerous ratios above, Zuckerman and Blevins (2003, p. 330-331) also argue that property measurements need to be used to analyse the proposed development and costs. The information so derived could be compared with market related values. These include:

- Cost per square metre of gross building area.
- Cost per square metre of net lettable area.
- Cost per unit (in case of residential).

- **Sensitivity analysis**

Cadman and Topping (1995, p. 107-111), Cloete (2005, p. 287-288), Gause (1998, p. 74-75) and Wilkinson and Reed (2008, p. 120-123) suggest that the developer should also conduct a sensitivity analysis when evaluating a feasibility study for a project. In the Gause (1998) study the importance of monitoring the impact of changing market conditions or project feasibility is emphasised. The sensitivity analysis lets developers evaluate the financial implications of changes in assumptions made during the compilation of the feasibility study – like development

cost increases, rental rate movements, or the pace of lettable area absorption. The latter may result in decreased revenues for a project with dire financial implications.

Pyhrr et al. (1989, p. 255) describe sensitivity analysis as a: "...technique that tests the impact of uncertainties on investment decisions. It is performed by varying the values of the input variables in the basic financial feasibility and DCF models to show how they affect the project value, the ROE, the IRR, the DCR, or other relevant output data" (Pyhrr et al., 1989, p. 255).

Sensitivity analysis allows the development team to assess the financial implication of changes to project specific assumptions (Frej, 2001, p. 46). With the advent of computers, the calculation of *all* the ratios and analyses above, has to a large degree been computerised. This seems to suggest, and it is advisable that, prior to making the final "go-decision", the project feasibility study be continually subjected to rigorous testing by conducting sensitivity analysis and recalculating the numerous decision-making ratios above. Practical "real life" experience over many years as well as market research also indicate that excellent integrated commercial property development software programs are available in the Australian market for use by property developers.

3.4.6 Risk

In concluding feasibility principles, design development and financial analysis, the subject area of development risk will be briefly explored.

The risk management process is defined as "... a series of events conducted with one purpose in mind – to reduce the likelihood that a particular event will happen" (Patton & Ryan, 2007, p. 26).

Risk is one of the key factors influencing property investment decisions. In financial analysis it is the likely variability of future returns from a given asset. The more variable the assumptions made on expected returns, the riskier the property investment. Viruly (1999, p. 27) claims that, of the following five basic factors that can be regarded as important for the property developer to consider, i.e:

- Risk.
- Liquidity.

- Return.
- Manageability.
- Taxation.

... risk is considered the most important.

It is interesting to note in the Viruly (1999) study that a summary of types of risk and risk characteristics is listed. These need to be carefully considered by property developers when deciding on the suitability of a development. They include:

- Business risk: risk due to fluctuations in economic activity and factors affecting the variability of income produced by a property.
- Financial risk: the use of debt financing and risks attached to excessive gearing.
- Liquidity risk: the risk when there is a lack of consistent and continuous buoyancy in the market place.
- Inflation risk: income from the property must increase sufficiently to counter upward trends in inflation.
- Management risk: all properties need to be managed properly.
- Legislative risk: amendments to numerous regulations, taxes, zonings and other restrictions imposed by government can adversely jeopardise property developments.
- Environmental risk: the value of real estate can be affected by changes in the environment or sudden awareness that the existing environment is potentially hazardous (Virully, 1999, p. 30-32).

In addition to the above, Brueggeman and Fisher (2005, p. 357), Brown (2005, p. 101), Cloete (2005, p. 274) and Renton (2000, p. 5) also mention interest rate risk, since changes in interest rates will affect the value of all property investments and can create market volatility.

Graaskamp, cited in Squirrell (1997, p. 235-237) also emphasizes the importance of time as a critical risk element in property development and submits six basic management techniques which can be implemented to improve the business risk situation:

- Improving forecasts through statistical research of the critical facts, variables and assumptions.
- Reducing risk by diversifying investments.
- Shifting risk by utilising insurance.
- Shifting the risk by two-party contract. That is: making use of escalation increase clauses to minimise inflation and interest rate movements.
- Limiting liability by employing the correct organisational structures for a development.

Whatever the management techniques employed, it is imperative that accurate assumptions are made on inflation, real growth, vacancies and recoverable and non-recoverable operating costs and expenses assumptions (West, 1993).

Cadman and Topping (1995, p. 102-103) cite four main variable factors which will most affect the profitability of a development project, namely the effect of movements in:

- Short term interest rates.
- Building costs.
- Rental values.
- Investment yields.

... during the development stage.

Miles et al. (2000, p. 195-198), in addition to the above, list several steps to reduce risk during the pre-construction stage:

- Know yourself – carefully evaluate your own capabilities (financial and intellectual).
- Know your image – be cognisant of public opinion.
- Know your team – determine the quality of all participants in the development process and be selective.
- Coordinate – "the general is the army".
- Keep current – stay current in your reading and networking.
- Behave ethically – personal relationships and ethics are important parts of the development process.

Whatever the levels of risk analysis employed by the developer, albeit: the analysis of key financial ratios, discounted cash flow analysis, other measurements tools, sensitivity analysis or managing and analysing the various risk factors above, it must be done, on a continued basis, not only during the pre-construction stage, but in effect during all stages of the property life cycle.

3.4.7 Summary

In this final section of Chapter 3, the third and most important component; feasibility principles, design development and financial analysis, which form part of the property development framework presented in Chapter 2 (Figure 2.10) was explored. It was concluded that, in addition to numerous definitions of feasibility studies that, feasibility goes far beyond the simple idea of value exceeding cost. When the word "constraints" is pushed into the ethical dimension (as suggested by Graaskamp), then both personal and social ethics as well as formal legal and physical constraints must also be satisfied.

The context, composition and components that make up the feasibility study were furthermore determined, described and explored. Two critical time periods of financial analysis were identified:

- The construction and absorption period that ends when the project is fully leased.
- The operational period, which includes a pro-forma projection.

The importance of systematic framework analysis during both periods was identified. The study into the compilation of a feasibility study indicated that it should also include, in addition to the financial analysis, numerous specialist research studies and investigations into facets of and variables that affect a property development, albeit of strategic, physical, social, economic, legal, environmental, sociological, regulatory, political, ethical, market and financial nature.

The structure of the financial feasibility study was academically explored and it was concluded that it should allow for the inclusion of all costs that make up the total capital outlay of a project. The front door and back door approach to financial feasibility analysis was identified and it was concluded that, although both methods

have value and are commonly used by developers, feasibility studies require more detailed input from the project team.

This was followed by identifying and describing the various components that make up the development costs and presenting an indicative percentage allocation framework for development costs.

A study into cash flow analysis concluded that a "pro-forma revenue projection is used to determine if the final value is likely to exceed the construction (site development) cost by a sufficient margin to determine viability" (Miller & Geltner, 2005, p. 51).

A sample of a typical multi-year income and expense forecast was presented and the following various components identified and explored:

- Potential gross income (PGI).
- Vacancy and collection loss and effective gross income (EGI).
- Operating expenses (OE).
- Net operating income (NOI).
- Before-tax cash flow (BTCF).

The pro-forma revenue projection was followed by a discussion of financial ratio analysis, that is, the financial ratios which may be applied by developers to measure the viability of a development. This included, firstly, a study of capital budgeting techniques, which include:

- Discounted cash flow analysis (DCF) comprising a study of the:
  - Payback period (PB).
  - Present value (PV).
  - Future value (FV) .
  - Net present value (NPV).
  - Internal rate of return (IRR).
  - Modified internal rate of return (MIRR).
  - Profitability index (PI).

Secondly, an exploration was done of key financial ratios and other measurement tools:

- Capitalisation ratio (Cap rate).
- Equity to value ratio.
- Development yield.
- Value.
- Debt coverage ratio (DCR).
- Loan-to-value ratio (LVR).
- Break-even cash flow ratio (BER).
- Operating efficiency ratio (OER).
- Cash-on-cash return.
- Break-even occupancy (BEO).
- Gross rent multiplier (GRM).
- Effective gross income multiplier (EGIM).
- Net income multiplier (NIM).
- Before-tax cash flow multiplier.
- Property measurements.
- Sensitivity analysis.

The section was concluded by an investigation of the types of risk, the effect thereof and counter management techniques to be employed to limit the impact of risk associated with property development. It was determined that the continuous management of development risk components is of extreme importance to ensure project success.

3.5 SUMMARY

In **Chapter 3**, property development: components and key performance areas, a literature review was conducted of the three components which make up the generic pre-construction property development framework presented in Chapter 2 (Figure 2.10).

The three components and key performance areas, which were identified to contribute significantly to strategic analysis and decision making, are:

- Location studies and site selection (Section 3.2).
- Market research and property markets (Section 3.3).
- Feasibility principles, design development and financial analysis (Section 3.4).

The literature review above, in addition to the study in Chapter 2, provides a sound secondary data base from which the qualitative study will be conducted in the next chapter. Chapter 4 describes the sample group, empirical study methodology, questionnaire design and analysis method employed to research the study problems and hypotheses. This will be followed by Chapter 5, in which the empirical data is analysed and results obtained are presented, the interpretation of the findings are outlined, followed by a discussion on the implication of the findings and testing of the study hypotheses.

The study of this thesis will be concluded with Chapter 6, in which conclusions will be drawn and recommendations made.

CHAPTER 4

EMPIRICAL STUDY : METHODOLOGY, DATA COLLECTION AND ANALYSIS

4.1 INTRODUCTION

This study consists of both a theoretical exploration and qualitative empirical research. Having researched and outlined theoretical models and literature on pre-construction property development principles and process in **Chapter 2,** and studied the three components and key performance areas which make up the process in **Chapter 3**, a sound secondary data base was established from which the comparative empirical research is conducted.

In **Chapter 4** attention is now given to the empirical research method used in this study. This chapter describes the sample group population; selection of respondents and data collection; structure of the questionnaire; research procedures and methodology; statistical analysis; possible limitations of the study and concludes with reference to the representation of the response.

4.2 SAMPLE GROUP POPULATION, SELECTION OF RESPONDENTS AND DATA COLLECTION

To conduct the empirical research and determine the sample group, a consultation was held with the Queensland division of the Property Council of Australia. A representative sample group of twenty Queensland based property developers was compiled from the seventy one members registered with the Queensland division of the Property Council of Australia in 2005 (Property Council of Australia, 2005).

The property developers were selected according to the following criteria:

- All property developers had to be located in Queensland.
- All property developers had to be subscribed members of the Queensland division of the Property Council of Australia.
- The sample had to be purely random (Levine et al., 2005).

Contact was made with all the participants of whom twelve indicated their initial willingness to participate. Letters of motivation, including participation information,

consent forms and a Questionnaire (Appendix A), were sent to all participants during January 2008, to obtain formal consent for participation in the study and to obtain empirical data. Eleven companies agreed to participate in the research project, returned completed questionnaires and have been included in the study. The list of participants is depicted in Appendix B.

An analysis of the sample group participants in relation to their membership of the Queensland division of the Property Council of Australia is depicted in Table 4.1.

TABLE 4.1: Study sample group : Property Council of Australia: Queensland based sample group membership category analysis

Membership Category	Description	Queensland Membership: Property Developers		Sample Group: Property Developers		
		No.	Percentage	No.	Percentage	Percentage per Category
Corporate Leader	Member companies of the Leaders Group (by invitation)	5	7.04%	2	2.82%	40.00%
National Member	Businesses owning and/or managing property with a total value of more than $1 billion, or spread over a number of states	1	1.41%	1	1.41%	100.00%
Core Member (state)	Organisations that own, manage, invest in, build, develop and/or finance property. Categories relate to asets owned or under management:					
	Category 4 – between $500 million to $1 billion	0	0.00%	0	0.00%	0.00%
	Category 5 - $200 million to $500 million	0	0.00%	0	0.00%	0.00%
	Category 6 - $100 million to $200 million	7	9.86%	3	4.23%	42.86%
	Category 7 - $25 million to $100 million	11	15.49%	0	0.00%	0.00%
	Category 8 - $5 million to $25 million	22	30.99%	3	4.23%	13.64%
	Category 9 – up to $5 million	19	26.76%	1	1.41%	5.26%
Associate Member	Companies engaged in professions, business or industry directly associated with the commercial property industry. e.g. architects, consultants, suppliers, etc. Category A – company of more than 30 staff Category B – less than 30 staff	6	8.45%	1	1.41%	16.67%
	TOTALS	**71**	**100.00%**	**11**	**15.51%**	

(Source: Property Council of Australia, 2005.)

From the analysis it can be concluded that the sample group participating in this research study is representative of the Queensland based property development industry leadership.

The collection of qualitative and descriptive data (Levine, Stephan, Krehbiel & Berenson, 2005) was done by way of a questionnaire sent to and returned by each of the participating property developers. Descriptive categories and codes were applied to each component of the questionnaire and the data and their properties statistically explored.

Companies listed on the Australian Stock Exchange were also compared with companies that are not listed, with regard to their answers to certain specific questions. Due to sample size considerations, statistical significance of the specific questions were made by qualitative observation.

This research method allowed for the examination and critical assessment of the application of each principle and component of the property development process, both individually and collectively within the sample group. Each of the development framework dimensions was examined using data from the literature review and the empirical study. This provided a framework to critically assess the study problem and sub-problems and test the hypotheses.

4.3 STRUCTURE OF THE QUESTIONNAIRE

4.3.1 Introduction

This research programme seeks to examine and critically assess the application of pre-construction property development principles and process in Queensland. In particular, it seeks to explore the common principles and characteristics of the property development process as they occur prior to the commencement of construction activities. Research results are obtained, conclusions listed and recommendations made. The approach taken is to match theory, from the literature on models of the development process, with practice.

The study addresses the fundamental problem whether property developers apply sound property development principles and process to contribute to increased effectiveness, productivity and profitability. Sub-problems identified and explored in

such models are the key performance areas and principles that have to be complied with in the pre-construction development process in order to create and unlock intrinsic value – this is: to turn dreams into reality.

The questionnaire used to collect qualitative and descriptive empirical data underwent numerous adjustments during the development phase as discussed below.

4.3.2 Questionnaire development process

A preliminary questionnaire was compiled in order to obtain as much information as possible on the application of common principles and characteristics of the property development process, described in **Chapter 2** and **Chapter 3**, as they occur prior to the commencement of construction activities, without making the questionnaire too bulky. This resulted in a set of twenty five questions of five sets each concentrating on property development models, principles and process; location studies and site selection; market research and property markets and feasibility principles, design development and financial analysis, as well as five general questions.

The clarity, layout and coding of the questionnaire (Appendix A) was discussed with a statistician. This was done to ensure that the results obtained in the survey could be processed and analysed in order to meet the study objectives.

Upon completion, the questionnaire was completed by two independent Queensland based property developers outside of the sample group. This was done to ensure that the completion of the questionnaire will not take up too much time when being completed and also served as a trial run to ensure that the questionnaire was user friendly.

4.3.3 Contents of the questionnaire

As mentioned above, the questionnaire (Appendix A) was designed to be as brief as practically possible in view of the amount of information required for the study.

The questionnaire was divided into five sections of five questions each; twenty five questions in total.

The first five questions were general in nature. It determined whether the participant was listed on the Australian Stock Exchange or operated as a private incorporated entity; was also active outside the state of Queensland; was active internationally; determined the seniority and management position of the participant and established the number of years that the participant completing the questionnaire had been involved in the property development industry.

The next four sections of five questions each were designed to obtain information and answers on:

- Which pre-construction property development framework principles are preferable to be applied and which key performance areas need to form part of the pre-construction development framework.
- What role does the application of sound location studies and site selection activities play in the pre-construction stage and can they, if diligently and correctly applied, form an important factor in the success of property development.
- To what degree the application of construction property market research practises are done to contribute to increased effectiveness and productivity.
- Whether property development companies apply sound pre-construction feasibility principles, design development and financial analysis practices to contribute to effectiveness.

The latter questions were derived from and based on the theoretical research outlined in **Chapter 2** and **Chapter 3**.

4.4 STATISTICAL ANALYSIS

The statistical techniques utilised in this study was mostly descriptive in nature (Hill & Lewicki, 2007). SPSS 16.0 was used for the analyses (SPSS Inc, 2007). In order to explore the extent to which property developers in the selected companies make use of certain property development principles, their responses to the questionnaire were analysed primarily by question. For the dichotomous variables (Yes/No; Agree/Disagree) frequencies and percentages for each response option were calculated and reported in tabular and graphical format.

In cases where there were three response options (High/Medium/Low; Always/Sometimes/Never) it was decided to calculate the median and mode as well as report on the frequencies per question. Variables measured on an interval scale (e.g. number of years in business) were analysed using descriptive statistics (mean, standard deviation).

In the case of multiple response options, a multiple response set was created and frequencies and percentages were calculated both for respondents and responses.

In order to compare the significance of the differences between listed and unlisted companies, non-parametric alternatives had to be used due to the size of the sample (Hill & Lewicki, 2007). Mann-Whitney U-tests are appropriate to compare two groups on questions where mean scores were calculated. This technique is appropriate where two or more groups created by a single categorical variable need to be compared on a dependent variable which is regarded as ordinal. In the case where the listed and unlisted companies were compared with regard to their responses on categorical variables, a Chi square test of independence was used. This is an acknowledged technique to compare the association between categorical variables.

The Mann-Whitney *U*-test is a non-parametric alternative to the T-test for larger samples where the assumption of normality can be made. It is used to compare two samples, and it tests the null hypothesis that the different samples in the comparison were drawn from the same distributions or from distributions with the same median. Thus, the interpretation of the Mann-Whitney *U*-test is basically similar to that of the parametric T-test, except that it is based on ranks rather than means.

4.5 LIMITATIONS OF THE STUDY

Considering its manageability and level, the study is limited to:

- A literature review and empirical research on key performance areas and principles, which form part of the property development process prior to construction activities. It does not explore the marketing, construction and property and asset management activities involved in the property development process.
- The study does not include an exploration of taxation; property valuation practices; site valuation; depreciation schedule compilations; organisational and

ownership structures; sources and practices of financing; tender procurement; or contractual procurement documentation and practices during the pre-construction phase. These facets are deemed of a specialised nature, whilst the subject area of this thesis is primarily focused on a generic exploration of pre-construction principles and process.

- Empirical research is based on a representative sample of Queensland based property developers who are members of the Queensland Division of the Property Council of Australia. Although the results of the study could be of equal value for application in the other states and territories of Australia, it is limited to the state of Queensland.
- The study focuses on pre-construction property development principles and process pertaining to commercial property development activities. The concept *property development* is often used generically for all types of property development activities, that is:
  - Commercial property developments: retail, offices and industrial.
  - Residential: residential estates, high rise residential developments and the numerous types of residential estate land sub-divisions.
  - Specialised forms of property developments: rehabilitation and conversions, time sharing schemes, share block schemes, research parks, sport stadiums, hospitals, hotels, recreation centres, retirement villages, public buildings, storage facilities, car parks and aged, health and childcare facilities.

This research will focus on pre-construction activities which will be of greater value to property developers of commercial property and to a lesser extent to the developers of residential and specialised forms of property. The latter categories of property development may, however, benefit equally from the research undertaken for this study.

4.6 REPRESENTATION OF THE RESPONSE

Eleven of the twelve questionnaires issued to the sample group were satisfactorily completed. Furthermore, there is no reason to believe that the questions contained in the questionnaire would cause bias in the answers received, because every single respondent was asked the question in the same manner. The response was therefore considered to be acceptably representative of the study sample group.

4.7 SUMMARY

This chapter covered the method of research followed in the empirical study. Special attention was given to the:

- Sample group population, selection of the respondents and the data collection process employed.
- Structure of the questionnaire with specific reference to the questionnaire development process and contents of the questionnaire.
- Statistical analysis employed in the research.
- Possible limitations of the study.
- Representativity of the response.

In the next chapter, **Chapter 5**, attention is given to the statistical analysis of the data collected, a discussion of the results and testing of the study hypotheses.

CHAPTER 5

EMPIRICAL STUDY : RESULTS ANALYSIS AND DISCUSSION

5.1 INTRODUCTION

Having covered the sample group population selection of respondents, data collection and statistical analysis and research method employed in the study in **Chapter 4**, attention is now given to the statistical analysis of the data collected, as well as the results obtained from the data. Attention is also given to ascertaining the extent and use of the pre-construction property development principles and process theory and frameworks as described in **Chapter 2,** as well as the application of the three key performance areas, identified in the study in **Chapter 2** and described in **Chapter 3**. In addition to statistically analysing the results in this chapter for the sample group as a whole, a comparison is also done and results listed in certain questions between participating companies which are listed on the Australian Stock Exchange and unlisted private incorporated companies.

The results obtained from the empirical research are discussed in relation to the study objectives outlined in Chapter 1 (Item 1.2), study problem (Item 1.5.1) and four sub-problems (Item 1.5.2), the latter which relate directly to Sections B to E of the questionnaire. Based on the information obtained from the questionnaires, observations are made and results interpreted in separate sections for each of the four study sub-problems and study objectives as a whole.

In concluding each section, the results obtained are summarised and each of the four study hypotheses listed in Chapter 1 (Item 1.5.3) tested, based on both the theoretical and empirical research.

5.2 STATISTICAL ANALYSIS OF RESULTS

The statistical research and analysis cover the following topics.

TOPIC	RELATED SUB-PROBLEM	RELATED HYPOTESIS	RELATED TABLES
SECTION A – GENERAL INFORMATION			
1. To determine the nature of the respondent's company and whether the participant is listed on the Australian Stock Exchange or operates as a private incorporated entity.	-	-	Table 5.1 Table 5.2
2. States and territories of Australia in which the participant conducts property development activities.	-	-	Table 5.3
3. To determine if the participant conducts property development activities outside of Australia.	-	-	Table 5.4
4. To determine the seniority and position of the participant within the hierarchy of the company.	-	-	Table 5.5
5. Number of years in the property development industry.	-	-	Table 5.6 Table 5.7
SECTION B – PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS			
6. Identifying and determining the extent of the roles a property developer needs to fulfil during the property development process.	Sub-problem 1	Hypothesis 1	Table 5.8 Table 5.9
7. Identifying consultants utilised during the pre-construction property development process.	Sub-problem 1	Hypothesis 1	Table 5.10
8. To determine the application of a structured framework and phased approach to pre-construction property development activities and go/no-go decision making activities when evaluating opportunities.	Sub-problem 1	Hypothesis 1	-
9. To determine why a structured and phased approach to pre-construction property development activities are not applied.	Sub-problem 1	Hypothesis 1	-
10. To determine and define the application of specific pre-construction property development framework principles and key performance areas in property development activities.	Sub-problem 1	Hypothesis 1	Table 5.11 Table 5.12
SECTION C: PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS: LOCATION STUDIES AND SITE SELECTION			
11. To identify and determine the extent to which specific identification factors are applied and analysed when identifying the preferred location for a property development.	Sub-problem 2	Hypothesis 2	Table 5.13 Table 5.14
12. To determine the application of land use evaluation models in location determination.	Sub-problem 2	Hypothesis 2	Table 5.15
13. To determine support for the view that location and site selection cannot be done in isolation.	Sub-problem 2	Hypothesis 2	Table 5.16

TOPIC	RELATED SUB-PROBLEM	RELATED HYPOTESIS	RELATED TABLES
14. To identify and determine the extent of the application and analysis of site specific evaluation factors that influence site suitability.	Sub-problem 2	Hypothesis 2	Table 5.17 Table 5.18
15. To identify the three most important site evaluation factors that influence site suitability.	Sub-problem 2	Hypothesis 2	Table 5.19
SECTION D: PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS: MARKET RESEARCH AND PROPERTY MARKETS			
16. To determine whether a structured framework approach is applied to market research.	Sub-problem 3	Hypothesis 3	Table 5.20
17. To define the reasons why a structured framework approach is not applied to market research.	Sub-problem 3	Hypothesis 3	-
18. To identify and determine the extent of the application of specific market and marketability analysis factors when conducting market research.	Sub-problem 3	Hypothesis 3	Table 5.21 Table 5.22
19. To determine and define the characteristics of the property market as applied by the participants.	Sub-problem 3	Hypothesis 3	Table 5.23
20. To define and determine the extent of the application of specific sources of property information when conducting market research and analysing the property market.	Sub-problem 3	Hypothesis 3	Table 5.24 Table 5.25
SECTION E: PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS: FEASIBILITY PRINCIPLES, DESIGN DEVELOPMENT AND FINANCIAL ANALYSIS			
21. To determine whether an integrated framework approach to feasibility analysis is applied in determining project viability and formulating a strategy for property development.	Sub-problem 4	Hypothesis 4	-
22. To determine the reasons why an integrated framework approach is not applied in determining project viability.	Sub-problem 4	Hypothesis 4	-
23. To identify and determine the extent to which specific financial feasibility framework factors are analysed and applied.	Sub-problem 4	Hypothesis 4	Table 5.26 Table 5.27
24. To determine the application and analysis of specific components when completing a financial feasibility analysis for a property development.	Sub-problem 4	Hypothesis 4	Table 5.28
25. To determine the extent to which specific discounted cash flow analysis methods and other key financial ratios are applied when conducting financial feasibility studies.	Sub-problem 4	Hypothesis 4	Table 5.29 Table 5.30

5.3 DESCRIPTIVE STATISTICS : RESULTS, DISCUSSION AND TESTING OF HYPOTHESES

5.3.1 SECTION A : GENERAL INFORMATION

5.3.1.1 Results

Question 1

Please indicate whether your company is listed on the Australian Stock Exchange (ASX) or operates as a private incorporated entity.

TABLE 5.1: Respondents listed on the Australian Stock Exchange

Question 1.1: Please indicate whether your company is listed on the Australian Stock Exchange (ASX)

Listed company	Frequency	Percent
Yes	5	45.5
No	6	54.5
Total	**11**	**100.0**

From the table above it appears that 6 of the 11 respondents (54.5%) were not listed while the remaining 5 (45.5%) were.

TABLE 5.2: Respondents which are a private incorporated entity

Question 1.2: Please indicate whether your company operates as a private incorporated entity

Private incorporated entity	Frequency	Percent
Yes	6	54.5
No	5	45.5
Total	**11**	**100.0**

As expected, the inverse of question 1.1 was found here, namely that 6 (54.5%) respondents were private incorporated companies while the remainder were not.

Question 2

Please indicate in which states and territories of Australia or internationally outside of Australia your company conducts property development activities.

TABLE 5.3: States and territories in which companies conduct property developments

Question 2: Please indicate in which states and territories of Australia or internationally outside of Australia your company conducts property development activities.

	Responses	
	N	**Percent of cases**
New South Wales	6	54.5%
Victoria	6	54.5%
Queensland	11	100.0%
Western Australia	4	36.4%
South Australia	3	27.3%
Tasmania	3	27.3%
Australian Capital Territory	3	27.3%
Northern Territory	2	18.2%
Total	**38**	**345.5%**

NOTE: The total number of ***responses*** (N) is greater than the total number of ***respondents***, because some operate in multiple states and territories, which also brings about a total response percentage of 345.5%.

It appears that all respondents operate in Queensland. Just over half of them (54.5%) also operate in New South Wales and Victoria, while 36.4% operate in Western Australia. South Australia, Tasmania and the Australian Capital Territory were chosen by 27.3% respondents each while only 18.2% indicated that they operate in the Northern Territory.

Question 3

Does your company conduct property development activities in other countries outside of Australia?

TABLE 5.4: Respondents operating in other countries outside of Australia

Question 3: Does your company conduct property development activities in other countries outside of Australia?

	Frequency	**Percent**
Yes	7	63.6
No	4	36.4
Total	**11**	**100.0**

A total of 63.6% respondents indicated that they operate in other countries outside of Australia as well.

Question 4

Please indicate your current position within the hierarchy of your company.

TABLE 5.5: Position of respondent in company hierarchy

Question 4: Please indicate your current position within the hierarchy of your company.

	Frequency	Percent
Top management	7	63.6
Middle management	4	36.4
Total	**11**	**100.0**

Results reported show that 7 of the respondents were in top management and 4 in middle management.

Question 5

How long have you been actively involved in a business capacity in the property development industry?

TABLE 5.6: Length of time involved in the property development industry

Question 5: How long have you been actively involved in a business capacity in the property development industry?

Minimum years	Maximum years	Mean
4	40	18.50

Responses to question 5 reveal that respondents have been actively involved in a business capacity in the property development industry for between 4 and 40 years, with an average of 18.50.

TABLE 5.7: Listed/unlisted companies : length of time involved in the property development industry

Question 1: How long have you been actively involved in a business capacity in the property development industry?

Listed companies	Mean	Unlisted companies	Mean
5	18.20	6	18.80

With regard to the length of time that respondents have been actively involved in a business capacity in the property development industry, there does not seem to be a significant difference between listed and unlisted companies. The Mann Whitney test (Hill & Lewicki, 2007), used to compare two groups on questions where mean scores were calculated, would suggest that the difference is not significant (p=0.11) but results suggest that the practical difference is small.

5.3.1.2 Summary

The results in this section can be summarised as follows:

- The majority of the respondents (54.5%) were private incorporated entities while 45.5% were listed on the Australian Stock Exchange.
- All respondents in the sample group conduct property development activities in Queensland with 54.5% also being active in the states of New South Wales and Victoria. Property development activities are conducted in all other states of Australia by at least two of the sample group participants.
- The majority of the respondents (63.6%) indicated that they also operate in countries outside of Australia while the activities of the remaining 36.4% are limited to Australia.
- The majority of respondents who completed the questionnaire were in top management (63.6%) with the remaining 36.4% in middle management.
- The time which respondents who completed the questionnaire were actively involved in the business of property development ranged between 4 and 40 years with an average of 18.50 years. No significant difference between respondents working in listed and unlisted companies were established.

From the above results is it clear that the study sample group, in addition to being statistically representative, include listed and unlisted companies, conduct business in Queensland as well as other states of Australia and internationally and represent experienced senior management within the industry.

5.3.2 SECTION B : PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS

5.3.2.1 Results

Question 6 Property development principles and process

A property developer is often described as the "conductor of an orchestra". In your opinion, how applicable are the following roles a property developer needs to fulfil during the property development process?

TABLE 5.8: Various roles as applied in the work of a property developer

Question 6: A property developer is often described as the "conductor of an orchestra". In your opinion, how applicable are the following roles a property developer needs to fulfil during the property development process?

	Me	Mo	Frequencies		
			Low	Medium	High
Entrepreneur	3	3	**1** (9.1%)	**4** (36.4%)	**6** (54.5%)
Creator	3	3	**1** (9.1%)	**3** (27.3%)	**7** (63.6%)
Promoter	3	3	-	**4** (36.4%)	**7** (63.6%)
Negotiator	3	3	-	**2** (18.2%)	**9** (81.8%)
Manager	3	3	-	**5** (45.5%)	**6** (54.5%)
Leader	3	3	-	**4** (36.4%)	**7** (63.6%)
Risk manager	3	3	-	**2** (18.2%)	**9** (81.8%)
Investor	2	2	**1** (9.1%)	**8** (72.7%)	**2** (18.2%)
People manager	3	3	-	**5** (45.5%)	**6** (53.5%)

N = 11
Me = Median
Mo = Mode

Scores ranged from "Low" (1) to "High" (3), with a higher score indicating higher applicability. Results show that all options received a mean rating of higher than 2, indicating applicability between Medium (2) and High (3). The most applicable roles were deemed to be those of negotiator and risk manager, followed by promoter, creator and leader. The least applicable role was judged to be that of investor, although its rating was still above "medium" on average.

The non-parametric Mann-Whitney test for comparison of two independent samples, that is listed and unlisted companies, confirmed that none of the differences were

statistically significant. The largest absolute difference (0.47) was found with regard to the role of entrepreneur and manager. The direction of differences would suggest that the listed companies tended to see the property developer as less of an entrepreneur than unlisted companies do, while they tended to see his role as more of a manager relative to unlisted companies.

TABLE 5.9: Listed/unlisted companies: various roles as applied in the work of a property developer

Question 6: A property developer is often described as the "conductor of an orchestra". In your opinion, how applicable are the following roles a property developer needs to fulfil during the property development process?

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Low	Medium	High	Me	Mo	Low	Medium	High
Entrepreneur	2	2	1 (20%)	2 (40%)	2 (40%)	3	3	-	2 (33.3%)	4 (66.7%)
Creator	3	3	-	2 (40%)	3 (60%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Promoter	3	3	-	2 (40%)	3 (60%)	3	3	-	2 (33.3%)	4 (66.7%)
Negotiator	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Manager	3	3	-	1 (20%)	4 (80%)	2	2	-	4 (66.7%)	2 (33.3%)
Leader	3	3	-	2 (40%)	3 (60%)	3	3	-	2 (33.3%)	4 (66.7%)
Risk manager	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Investor	2	2	-	4 (80%)	1 (20%)	2	2	1 (16.7%)	4 (66.7%)	1 (16.7%)
People manager	3	3	-	2 (40%)	3 (60%)	2	2	-	3 (50%)	3 (50%)

Me = Median
Mo = Mode

Question 7 Property development process and principles

Indicate below which consultants are utilised by your company during the pre-construction property development process.

Results indicate that all respondents made use of architects, quantity surveyors, town planners and geo-technical engineers. All but one made use of land surveyors and civil engineers. The remainder of the consultants were used to varying degrees by respondents.

TABLE 5.10: Consultants used by respondents

Question 7: Indicate below which consultants are utilised by your company during the pre-construction property development process.

	Responses		
	N	**Percent**	**Percent of cases**
Architect	11	5.4%	100.0%
Quantity survey/building estimator	11	5.4%	100.0%
Town planners	11	5.4%	100.0%
Geo-technical engineer	11	5.4%	100.0%
Civil engineer	10	5.0%	90.9%
Land surveyor	10	5.0%	90.9%
Development manager and/or project manager	9	4.5%	81.8%
Electrical engineer	9	4.5%	81.8%
Mechanical engineer	9	4.5%	81.8%
Property valuer	9	4.5%	81.8%
Environmental consultant	9	4.5%	81.8%
Landscape architect	9	4.5%	81.8%
Solicitor	9	4.5%	81.8%
Structural engineer	8	4.0%	72.7%
Real estate agent	8	4.0%	72.7%
Accountant	8	4.0%	72.7%
Building designers	7	3.5%	63.6%
Leasing agent	7	3.5%	63.6%
Advertising and marketing agent	6	3.0%	54.5%
Building certifier	6	3.0%	54.5%
Property manager	6	3.0%	54.5%
Interior designer	6	3.0%	54.5%
Insurance broker	5	2.5%	45.5%
Finance broker	4	2.0%	36.4%
Conveyance/settlement agent	3	1.5%	27.3%
Other: **Environmental Sustainability Consultant**	1	0.5%	9.1%

Listed and unlisted companies were also compared by using cross tabulation. The detailed statistical results obtained are depicted in Appendix D. Chi square tests of significance could not be utilized in most cases due to cell size considerations (Hill & Lewicki, 2007).

Results indicate that for most questions, responses from listed and unlisted companies were comparable. Small differences were found with regard to the following questions:

Question 7: Indicate below which consultants are utilised by your company during the pre-*construction property development* process	Listed companies use them more than unlisted companies	Unlisted companies use them more than listed companies
Quantity surveyor/building estimator	√	
Mechanical engineer	√	
Land surveyor	√	
Advertising and marketing agent		√
Property manager	√	
Geo-technical engineer	√	
Conveyancer / Settlement agent	√	
Landscape architect	√	
Interior designer	√	
Solicitor		√

NOTE: The number of ***responses*** (N) does not correspond with the total number of ***respondents***, because the question requires multiple responses.

Question 8 Property development principles and process

Does your company apply a structured framework and phased approach to pre-construction property development activities and go/no-go decision-making activities, when evaluating opportunities?

In response to question 8, all respondents indicated that they apply a structured and phased approach to pre-construction development activities. There were thus no differences between listed and unlisted companies.

Question 9 Property development principles and process

If your answer is no to question 8 above; please indicate why you do not apply a structured and phased approach to pre-construction property development activities.

As all respondents, in response to question 8, indicated positively that they apply a structured and phased approach to pre-construction development activities, no data is recorded for this question.

Question 10 Property development principles and process

If your answer is yes to question 8 above; please indicate how often you apply the following pre-construction property development principles and key performance areas in the property development activities of your company.

Respondents indicated the frequency with which they apply a number of pre-construction property development principles and key performance areas. The rating scale ranged from "Always" (3) to "Never" (1) and a mean score per item was calculated.

TABLE 5.11: Frequency with which pre-construction property development principles and key performance areas are applied

Question 10: If your answer is yes to question 8 above; please indicate how often you apply the following pre-construction property development principles and key performance areas in the property development activities of your company.

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Strategic analysis					
Vision	3	3	-	**3** (27.3%)	**8** (72.7%)
Determining goals and philosophies	3	3	-	**3** (27.3%)	**8** (72.7%)
Establishing criteria	3	3	-	**2** (18.2%)	**9** (81.8%)
Conceptualising idea	3	3	**1** (9.1%)	**2** (18.2%)	**8** (72.7%)
Inception of idea	3	3	**1** (9.1%)	**2** (18.2%)	**8** (72.7%)
Market research and property markets					
Market and competitive analysis	3	3	-	**3** (27.3%)	**8** (72.7%)
Location studies and site selection					
Identifying and analysing appropriate locations and development sites	3	3	-	**2** (18.2%)	**9** (81.8%)
Analysing appropriate zonings	3	3	-	**1** (9.1%)	**10** (90.9%)
Procuring control of a development site	3	3	**1** (9.1%)	**2** (18.2%0	**8** (72.7%)
Feasibility principles, design development and financial analysis					
Physical, technical and design analysis	3	3	-	**2** (18.2%)	**9** (81.8%)
Political and legal analysis	3	3	-	**5** (45.5%)	**6** (54.5%)
Verifying objectives and testing alternatives	3	3	-	**5** (45.5%)	**6** (54.5%)
Planning and engineering analysis	3	3	-	**2** (18.2%)	**9** (81.8%)
Testing financial feasibility of idea	3	3	-	**1** (9.1%)	**10** (90.9%)
Refinement of an idea	3	3	-	**3** (27.3%)	**8** (72.7%)
Preliminary scheme	3	3	-	**1** (9.1%)	**10** (90.9%)
Final scheme	3	3	-	**2** (18.2%)	**9** (81.8%)
Implementation plan	3	3	-	**4** (36.4%)	**7** (63.6%)

N = 11
Me = Median
Mo = Mode

Results show that all areas scored higher than 2, which implies that the average frequency of use lies between "Sometimes" (2) and "Always" (3). Inspection of the results reveal that the principles used most by respondents include: Analyzing appropriate zonings; Testing the financial feasibility; and the Preliminary scheme. All

of these had a mean value of 2.91. This was followed by: Establishing criteria; Identifying and analyzing appropriate locations and development sites; Physical, technical and design analyses; planning and engineering analysis; and the final scheme. Principles used the least were: Political and legal analyses; and Verifying objective and testing alternatives, even though for these two the mean score was still above 2.5 on the 3 point scale. In comparing listed and unlisted companies, respondents likewise indicated the frequency with which they apply a number of pre-construction property development principles and key performance areas. Results for listed and unlisted companies respectively are reported below.

TABLE 5.12: Listed / unlisted companies: application of pre-construction property development principles and key performance areas

Question 10: If your answer is yes to question 8 above; please indicate how often you apply the following pre-construction property development principles and key performance areas in the property development activities of your company.

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Sometimes	Always			Never	Sometimes	Always
Strategic analysis										
Vision	3	3	-	**2** (40%)	**3** (60%	3	3	-	**1** (16.7%)	**5** (83.3%)
Determining goals and philosophies	2	2	-	**3** (60%)	**2** (40%)	3	3	-	-	**6** (100%)
Establishing criteria	3	3	-	**1** (20%)	**4** (80%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Conceptualising idea	3	3	-	**1** (20%)	**4** (80%)	3	3	1 (16.7%)	**1** (16.7%)	**4** (66.7%)
Inception of idea	3	3	-	**1** (20%)	**4** (80%)	3	3	1 (16.7%)	**1** (16.7%)	**4** (66.7%)
Market research and property markets										
Market and competitive analysis	3	3	-	**1** (20%)	**4** (80%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Location studies and site selection										
Identifying and analysing appropriate locations and development sites	3	3	-	**1** (20%)	**4** (80%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Analysing appropriate zonings	3	3	-	-	**5** (100%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Procuring control of a development site	3	3	-	**1** (20%)	**4** (80%)	3	3	1 (16.7%)	**1** (16.7%)	**4** (66.7%)
Feasibility principles, design development and financial analysis										
Physical, technical and design analysis	3	3	-	-	**5** (100%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Political and legal analysis	3	3	-	**2** (40%)	**3** (60%)	2.5	2	-	**3** (50%)	**3** (50%)
Verifying objectives and testing alternatives	3	3	-	**1** (20%)	**4** (80%)	2	2	-	**4** (66.7%)	**2** (33.3%)
Planning and engineering analysis	3	3	-	-	**5** (100%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Testing financial feasibility of idea	3	3	-	-	**5** (100%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Refinement of an idea	3	3	-	**1** (20%)	**4** (80%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Preliminary scheme	3	3	-	-	**5** (100%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Final scheme	3	3	-	-	**5** (100%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Implementation plan	3	3	-	-	**5** (100%)	2	2	-	**4** (66.7%0	**2** (33.3%)

Me = Median
Mo = Mode

Results show that listed and unlisted companies had comparable means on most items. The non-parametric Mann-Whitney test suggested that the only meaningful differences were found with regard to questions determining goals and philosophies and the implementation plan. Listed companies determined goals and philosophies to a lesser extent than unlisted companies (p=0.034), while implementation plans are used to a greater extent by listed companies (p=0.029). The other sizeable difference (although not statistically significant) was found with regard to verifying objectives and testing alternatives, with listed companies verifying objectives and testing alternatives to a greater extent than unlisted companies.

5.3.2.2 Summary

The results obtained in this section of the study can be summarized as follows:

- All applicable roles identified in the study which a property developer as "conductor of an orchestra" needs to fulfil, were substantially applied by all respondents in their business activities, albeit within a listed and unlisted company. Results showed the most applicable roles were deemed to be those of negotiator and risk manager, followed by promoter and leader. A comparison of listed and unlisted companies suggest that listed companies tend to see the property developer as less of an entrepreneur and more of a manager.

- Results indicated that the sample group of property developers use all the consultants identified in the study, albeit some to a lesser extent. All respondents made use of architects, quantity surveyors, town planners and geo-technical engineers with all but one using land surveyors and civil engineers. Results also indicated that for a comparison of listed and unlisted companies, the application of consultants were comparable, with only small differences being found.

- The research also determined that all companies apply a structured framework and phased approach to pre-construction and go/no-go decision making activities when evaluating opportunities.

- All pre-construction property development principles and key performance areas identified in the study were adequately applied by participating companies. Results reveal that the three principles used most were: analysing appropriate

zonings; testing financial feasibility of the idea; and the preliminary scheme. The least used principles identified were: political and legal analysis; and verifying objectives and testing alternatives. Results from companies listed compared with that of unlisted companies, indicated that they had comparable results on most items, with the only meaningful differences found pertaining to determining goals and philosophies and implementation plans. Listed companies determined goals and philosophies to a lesser extent than unlisted companies while implementation plans are used to a greater extent by listed companies.

From the empirical research it is clear that participating companies all substantially fulfil the various roles required of a property developer, make use of appropriate consultants, apply a structured framework and phased approach to pre-construction and go/no go activities and adequately apply the property development principles and key performance areas identified in the study.

5.3.2.3 Testing of Hypothesis 1

Hypothesis 1

Property development companies apply and adhere to the accepted industry *framework, principles and key performance areas* in pre-construction activities.

Evidence from the study indicates that Hypothesis 1 is supported.

5.3.3 SECTION C: PROPERTY DEVELOPMENT : COMPONENTS AND KEY PERFORMANCE AREAS: LOCATION STUDIES AND SITE SELECTION

5.3.3.1 Results

Question 11 Location studies and site selection

To what extent does your company apply and analyse the following factors when identifying the preferred location for a property development?

Respondents indicated the frequency with which they apply and analyse a number of factors when identifying the preferred location for a property development. The rating scale ranged from "Always" (3) to "Never" (1) and a mean score per item was calculated.

TABLE 5.13: Application and analyses of factors in identifying the preferred location

Question 11: To what extent does your company apply and analyse the following factors when identifying the preferred location for a property development?

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Market selection					
National/international perspective	2	2	**1** (9.1%)	**5** (45.5%)	**5** (45.5%)
Inter-urban relationship between towns and cities in regional context	2	2	-	**6** (54.5%)	**5** (45.5%)
Intra-urban relationship between the different types of functions and locations for land uses	3	3	**1** (9.1%)	**2** (18.2%)	**8** (72.7%)
Current and future market expansion patterns	3	3	-	-	**11** (100%)
Trends in property development	3	3	-	**2** (18.2%)	**9** (81.8%)
Area analysis					
Economic growth within the market	3	3	-	**1** (9.1%)	**10** (90.9%)
Cultural views on the location	2	2	**4** (36.4%)	**5** (45.5%)	**2** (18.2%)
Location of competitive properties	3	3	-	**4** (36.4%)	**7** (63.6%)
Site evaluation					
Site characteristics	3	3	-	**1** (9.1%)	**10** (90.9%)
Regulatory and legal issues	3	3	-	-	**11** (100%)
Special local conditions	3	3	-	**4** (36.4%)	**7** (63.6%)

N = 11
Me = Median
Mo = Mode

The table above shows that all respondents apply the principles of looking at current and future market expansion patterns as well as regulatory and legal issues. They almost always take into account the economic growth within the market, as well as site characteristics. The principles they use the least are the national/international perspective (Mean = 2.36) and cultural views on the location (Mean = 1.82).

TABLE 5.14: Listed/unlisted companies: frequency with which respondents apply and analyse location identification factors

Question 11: To what extent does your company apply and analyse the following factors when identifying the preferred location for a property development?

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Sometimes	Always			Never	Sometimes	Always
Market selection										
National/international perspective	3	3	-	**2** (40%)	**3** (60%)	2	2	**1** (16.7%)	**3** (50%)	**2** (33.3%)
Inter-urban relationship between towns and cities in regional context	2	2	-	**3** (60%)	**2** (40%)	2.5	2	-	**3** (50%)	**3** (50%)
Intra-urban relationship between the different types of functions and locations for land uses	2	2	**1** (20%)	**2** (40%)	**2** (40%)	3	3	-	-	**6** (100%)
Current and future market expansion patterns	3	3	-	-	**5** (100%)	3	3	-	-	**6** (100%)
Trends in property development	3	3	-	-	**5** (100%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Area analysis										
Economic growth within the market	3	3	-	-	**5** (100%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Cultural views on the location	2	2	**1** (20%)	**4** (80%)	-	1.5	1	**3** (50%)	**1** (16.7%)	**2** (33.3%)
Location of competitive properties	3	3	-	**1** (20%)	**4** (80%)	2.5	2	-	**3** (50%)	**3** (50%)
Site evaluation										
Site characteristics	3	3	-	**1** (20%)	**4** (80%)	3	3	-	-	**6** (100%)
Regulatory and legal issues	3	3	-	-	**5** (100%)	3	3	-	-	**6** (100%)
Special local conditions	2	2	-	**3** (60%)	**2** (40%)	3	3	-	**1** (16.7%)	**5** (83.3%)

Me = Median
Mo = Mode

The table above shows that scores for listed and unlisted companies were mostly comparable. The only statistically significant difference was that unlisted companies apply the principle of the intra-urban relationship between the different types of functions and locations for land uses to a greater extent than listed companies. Other sizeable differences (although not statistically significant) were that listed companies keep the national/international perspective in mind to a greater degree than unlisted companies, but that unlisted companies take greater cognizance of the location of competitive properties.

Question 12 Location studies and site selection

Does your company apply any of the following land use evaluation when deciding upon a preferred location for a property development?

The use of a number of land use evaluation principles were investigated in question 12. These were treated as multiple response sets and results are reported below. These show that only one respondent used three of the principles mentioned, while none of the others used any of the remaining principles.

TABLE 5.15: Use of land evaluation principles

Question 12: Does your company apply any of the following land use evaluation when deciding upon a preferred location for a property development?

		Responses
	N	**Percent of participants**
Christaller central place model	1	9.1%
Land yield theory	1	9.1%
Ullman and Harris multiple centre theory	1	9.1%
Total	**3**	-

As the results showed that, of the eleven participants, only one (9.1%) respondent used three of the principles mentioned, while none of the others used any of the remaining principles. A comparison between listed and unlisted companies would therefore not be meaningful.

Question 13 Location studies and site selection

Does the location selection strategy of your company support the view that location and site selection cannot be done in isolation, but form a coherent whole?

TABLE 5.16: Use of a holistic approach to site selection and location identification

Question13: Does the location selection strategy of your company support the view that location and site selection cannot be done in isolation, but form a coherent whole?

	Frequency	**Percent**
Yes	10	90.9
No	1	9.1
Total	**11**	**100.0**

Question 13 pertained to the use of a holistic approach to site selection and location identification. The vast majority (10) of respondents indicated that they support this view.

Question 14 Location studies and site selection

Indicate how often your company analyses the following site specific evaluation factors that influence the suitability of a specific site, which may contribute to increased effectiveness, productivity and profitability of a development.

This question refers to site specific evaluation factors. The rating scale ranged from "Always" (3) to "Never" (1). Results show that most of the factors are analyzed regularly by the respondent. Factors utilized by all respondents are: Legal documentation; and Physical features. Factors supported by the vast majority of respondents (Mean = 2.82) are: Real Estate Market trends; Parking. Factors considered least are: Amenities and services (Mean = 2.45); Social characteristics (Mean = 2.27); and Links with other industries (Mean = 2.18).

TABLE 5.17: Application of site specific evaluation factors

Question 14: Indicate how often your company analyses the following site specific evaluation factors that influence the suitability of a specific site, which may contribute to increased effectiveness, productivity and profitability of a development.

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Legal documentation	3	3	-	-	**11**(100%)
Social characteristics	2	2	**1** (9.1%)	**6** (54.5%)	**4** (36.4%)
Governmental controls	3	3	-	**3** (27.3%)	**8** (72.7%)
Economic characteristics	3	3	-	**3** (27.3%)	**8** (72.7%)
Real estate market trends	3	3	-	**2** (18.2%)	**9** (81.8%)
Physical features	3	3	-	-	**11** (100%)
Utilities	3	3	-	**3** (27.3%)	**8** (72.7%)
Transportation	3	3	-	**3** (27.3%)	**8** (72.7%)
Parking	3	3	-	**2** (18.2%)	**9** (81.8%)
Location	3	3	-	**3** (27.3%)	**8** (72.7%)
Environmental impact	3	3	-	**5** (45.5%)	**6** (54.5%)
Government services	2	3	**2** (18.2%)	**4** (36.4%)	**5** (45.5%)
Political and local attitudes	3	3	**2** (18.2%)	**2** (18.2%)	**7** (63.6%)
Land	3	3	-	**2** (18.2%)	**9** (81.8%)
Demand	3	3	-	**3** (27.3%)	**8** (72.7%)
Supply	3	3	**1** (9.1%)	**1** (9.1%)	**9** 81.8%)
Development impact fees	3	3	**1** (9.1%)	**3** (27.3%)	**7** (63.6%)
Adjacent uses	3	3	-	**3** (27.3%)	**8** (72.7%)
Amenities/services	2	2	-	**6** (54.5%)	**5** (45.5%)
Links with other industries	2	2	**3** (27.3%)	**3** (27.3%)	**5** (45.5%)

Me = Median
Mo = Mode

TABLE 5.18: Listed/unlisted companies: application of site specific evaluation factors

Question 14: Indicate how often your company analyses the following site specific evaluation factors that influence the suitability of a specific site, which may contribute to increased effectiveness, productivity and profitability of a development.

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency Listed companies			Me	Mo	Frequency Unlisted companies		
			Never	Some-times	Always			Never	Some-times	Always
Legal documentation	3	3	-	-	5 (100%)	3	3	-	-	6 (100%)
Social characteristics	2	2	-	4 (80%)	1 (20%)	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Governmental controls	3	3	-	1 (20%)	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Economic characteristics	3	3	-	2 (40%)	3 (60%)	3	3	-	1 (16.7%)	5 (83.3%)
Real estate market trends	3	3	-	1 (20%)	4 (80%)	3	3	1 (16.7%)	1 (16.7%)	5 (83.3%)
Physical features	3	3	-	-	5 (100%)	3	3	-	-	6 (100%)
Utilities	3	3	-	1 (20%)	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Transportation	3	3	-	2 (40%)	3 (60%)	3	3	-	1 (16.7%)	5 (83.3%)
Parking	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Location	3	3	-	1 (20%)	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Environmental impact	2	2	-	3 (60%0	2 (40%)	3	3	-	2 (33.3%)	4 (66.7%)
Government services	3	3	-	2 (40%)	3 (60%)	2	1	2 (33.3%)	2 (33.3%)	2 (33.3%)
Political and local attitudes	3	3	1 (20%)	-	4 (80%)	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Land	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Demand	3	3	-	1 (20%)	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Supply	3	3	-	-	5 (100%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Development impact fees	3	3	-	1 (20%)	4 (80%)	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Adjacent uses	3	3	-	1 (20%0	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Amenities/services	3	3	-	2 (40%)	3 (60%)	2	2	-	4 (66.7%)	2 (33.3%)
Links with other industries	2	2	1 (20%)	2 (40%)	2 (40%)	2.5	3	2 (33.3%)	1 (16.7%)	3 (50%)

Me = Median
Mo = Mode

No statistically significant differences were found between listed and unlisted companies according to the Mann-Whitney test. As the sample size is very small, the absolute values of the differences were inspected. The largest absolute differences were found with regard to government services, supply, and development impact fees indicating that listed companies tended to analyse site specific evaluation factors pertaining to government services, supply and development impact fees to somewhat greater extent than unlisted companies.

Question 15 Location studies and site selection

If your answer is Always to a minimum of three of the evaluation factors in question 14 above; please indicate which of these three factors you deem to be the most important, in order of preference.

The question requested respondents to indicate an order of preference for the three evaluation factors indicated as "Always" in question 14, deemed to be the most important. Results show that the evaluation factors identified in order of preference, by most of the eleven respondents were: land (cost of land and view or scenic amenity (63.6%); economic characteristic (54.5%) and legal documentation (36.4%). It is, however, interesting to note that of the above three factors, economic factors received the highest individual rating by respondents in site selection.

TABLE 5.19: Order of preference of three evaluation factors

Question 15: If your answer is Always to a minimum of three of the evaluation factors in question 14 above; please indicate which of these three factors you deem to be the most important, in order of preference.

	Frequency	Percent
Land (cost of land and view or scenic amenity)	7	63.6
Economic characteristics	6	54.5
Legal documentation	4	36.4
Real estate market trends	3	27.3
Location	3	27.3
Demand	3	27.3
Supply	3	27.3
Physical features	1	9.1
Utilities	1	9.1
Parking	1	9.1
Environmental impact	1	9.1

5.3.3.2 Summary

The results obtained in this section can be summarised as follows:

- All companies, albeit listed or unlisted, apply and analyse to a substantial and adequate degree, factors determined in the study, when identifying the preferred location for a property development. The factors used most by all companies were regulatory and legal issues, site characteristics, current and future market expansion patterns and trends in property development. The principle used least

is cultural views on the location. Listed companies were found to keep the national/international perspective in mind to a greater degree than unlisted companies. Unlisted companies do, however, take greater cognisance of the location of the competitive properties.

- Only one respondent used three of the eight land use models identified in the study, when deciding upon a preferred location for a property development. None of the other ten participants used any of the eight land use evaluation models identified.
- The vast majority of companies (90.9%) support the view that location and site selection cannot be done in isolation, but form part of a coherent whole.
- Results show that most site specific evaluation factors, which influence the suitability of a specific site, were analysed and used by participating companies. The factors utilised by all companies are legal documentation and physical features while the vast majority support real estate market trends and parking. Factors considered least important are: amenities and services; social characteristics; and links with other industries. No significant differences were found between listed and unlisted companies.
- Results from the respondents who indicated that they always use specific evaluation factors identified the following three factors, which are deemed to be the most important:
    - Land (cost of land and view or scenic amenity).
    - Economic characteristics.
    - Legal documentation.
- It is, however, interesting to note that of the above three factors identified by these companies, economic characteristics received the highest individual rating.

From the above findings it is clear that the vast majority of property development companies support the view that location and site selection cannot be done in isolation but form a coherent whole. The companies also apply and analyse, to a substantial and adequate degree, the location identification and site specific evaluation factors determined in the study. It is, however, apparent that land use evaluation models are utilised to a lesser extent.

5.3.3.3 Testing of Hypothesis 2

Hypothesis 2

Location studies and site selection activities are performed in accordance with accepted practices.

Evidence from the study indicates that Hypothesis 2 is supported.

5.3.4 SECTION D: PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS: MARKET RESEARCH AND PROPERTY MARKETS

5.3.4.1 Results

Question 16 Market research and property markets

Does your company apply a structured framework approach to market research?

This question referred to the application of a structured framework approach to market research. The majority of respondents (9) answered in the affirmative to this question.

TABLE 5.20: Application of a structured framework approach to market research

Question 16: Does your company apply a structured framework approach to market research?

	Frequency	**Percent**
Yes	9	81.8
No	2	18.2
Total	**11**	**100.0**

Although the majority of respondents answered in the affirmative to this question, a comparison of listed and unlisted companies shows that unlisted companies represented the two respondents who do not apply a structured framework approach to market research.

Question 17 Market research and property markets

If your answer is no to question 16 above, please indicate why you do not apply a structured approach to market research.

The two respondents, in reference to question 16, who indicated negatively that they do not apply a structured framework approach to market research, cited the following reasons:

- Research consultants outside the company are utilised for market research on an ad hoc basis.
- The major developments undertaken are pioneering in nature and market researchers are viewed as too conservative of nature to fully comprehend pioneering work and make a positive contribution.

Question 18 Market research and property markets

To what extent does your company apply and analyse the following market and marketability analysis factors when conducting market research?

Question 18 refers to the extent to which respondents apply and analyze a number of market and marketability factors when conducting market research. The rating scale ranged from "Always" (3) to "Never" (1) and a mean score per item was calculated. These are reported below.

Results show that the mean scores lie between 2 and 2.91, thus indicating that the factors are usually applied by the respondents. Closer inspection reveals that the factors applied most frequently are: site analysis (Mean = 2.91); and the selection of the target market (Mean = 2.82). Factors used the least are: determining national and international economic trends (Mean = 2.18); and purchasing power analysis (Mean = 2.18).

TABLE 5.21: Extent to which respondents apply and analyse market and marketability factors

Question 18: To what extent does your company apply and analyse the following market and marketability analysis factors when conducting market research?

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Market analysis (Macro Market)					
Determine national and international economic trends and monetary and fiscal impacts on real estate	2	2	**2** (18.2%)	**5** (45.5%)	**4** (36.4%)
Select the target market	3	3	-	**2** (18.2%)	**9** (81.8%)
Delineate market and trading area for intended use	3	3	-	**3** (27.3%)	**8** (72.7%)
Perform supply and demand analysis	3	3	**2** (18.2%)	**2** (18.2%)	**7** (63.6%)
Project future rent schedules, prices and space needs	3	3	**1** (9.1%)	**3** (27.3%)	**7** (63.6%)
Marketability analysis (Micro Market)					
Regional and urban analysis	2	2	**1** (9.1%)	**9** (81.8%)	**1** (9.1%)
Neighbourhood analysis	2	2	**1** (9.1%)	**5** (45.5%)	**5** (45.5%)
Site analysis	3	3	-	**5** (45.5%)	**6** (54.5%)
Preliminary marketing and management strategy	2	2	-	**6** (54.5%0	**5** (45.5%)
Competitive analysis	3	3	-	**1** (9.1%)	**10** (90.9%)
Regional and urban analysis	3	3	**2** (18.2%)	**2** (18.2%)	**7** (63.6%)
Neighbourhood analysis	3	3	-	**4** (36.4%)	**7** (63.6%)
Estimates of space needs, market absorption rates, gross income, operational costs and vacancy rates	3	3	**1** (9.1%)	**2** (18.2%)	**8** (72.7%)

N = 11
Me = Median
Mo = Mode

Non-parametric tests suggest that none of the differences were statistically significant. Nevertheless, inspection reveals sizeable differences between listed and unlisted groups with regard to determining national and international trends, supply and demand analysis and preliminary marketing and management strategies.

The direction of these suggest that, relative to unlisted companies, listed companies tended to make greater use of national and international trends, supply and demand analysis, and preliminary marketing and management strategies

TABLE 5.22: Listed/unlisted companies: extent to which respondents apply and analyse market and marketability factors

Question 18: To what extent does your company apply and analyse the following market and marketability analysis factors when conducting market research?

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Sometimes	Always			Never	Sometimes	Always
Market analysis (Macro Market)										
Determine national and international economic trends and monetary and fiscal impacts on real estate	3	3	-	**2** (40%)	**3** (60%)	2	2	**2** (33.3%)	**3** (50%)	**1** (16.7%)
Select the target market	3	3	-	-	**5** (100%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Delineate market and trading area for intended use	3	3	-	**2** (40%)	**3** (60%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Perform supply and demand analysis	3	3	-	**1** (20%)	**4** (80%)	2.5	3	**2** (33.3%)	**1** (16.7%)	**3** (50%)
Project future rent schedules, prices and space needs	3	3	-	**2** (40%)	**3** (60%)	3	3	**1** (16.7%)	**1** (16.7%)	**4** (66.7%)
Marketability analysis (Micro Market)										
Regional and urban analysis	2	2	-	**5** (100%)	-	2	2	**1** (16.7%)	**4** (66.7%)	**1** (16.7%)
Neighbourhood analysis	2	2	-	**3** (60%)	**2** (40%)	2.5	3	**1** (16.7%)	**2** (33.3%0	**3** (50%)
Site analysis	3	3	-	**1** (20%)	**4** (80%)	2	2	-	**4** (66.7%)	**2** (33.3%)
Preliminary marketing and management strategy	3	3	-	**2** (40%)	**3** (60%)	2	2	-	**4** (66.7%0	**2** (33.3%)
Competitive analysis	3	3	-	-	**5** (100%)	3	3	-	**1** (16.7%)	**5** (83.3%)
Regional and urban analysis	3	3	-	**1** (20%)	**4** (80%)	2.5	3	2 (33.3%)	**1** (16.7%)	**3** (50%0
Neighbourhood analysis	3	3	-	**2** (40%)	**3** (60%)	3	3	-	**2** (33.3%)	**4** (66.7%)
Estimates of space needs, market absorption rates, gross income, operational costs and vacancy rates	3	3	-	**1** (20%)	**4** (80%)	3	3	1 (16.7%)	**1** (16.7%)	**4** (66.7%)

Me = Median
Mo = Mode

Question 19 Market research and property markets

Do you agree/disagree with the following characteristics of the property market?

Question 19 required respondents to agree or disagree with a number of statements pertaining to the characteristics of the property market. Results are reported below.

TABLE 5.23: Characteristics of the property market: far less organised

Question 19: Do you agree/disagree with the following characteristics of the property market?

Question 19.1: As an institution, it is far less organised

	Frequency	Percent
Agree	6	54.5
Disagree	5	45.5

Question 19.2: Buyers and sellers are spatially separated

Agree	3	27.3
Disagree	8	72.7

Question 19.3: Results of transactions are difficult to assemble, making the study of trends difficult

Agree	6	54.5
Disagree	5	45.5

Question 19.4: Registration of transfer documentation is complex

Agree	4	36.4
Disagree	7	63.6

Question 19.5: The property market is highly differentiated (it serves several needs)

Agree	10	90.9
Disagree	1	9.1

Question 19.6: Constraints on supply are more variable (supply is not controlled by the developer but by councils and political entitlements)

Agree	10	90.9
Disagree	1	9.1

Question 19.7: Market data is less structured and much less certain

Agree	9	81.8
Disagree	2	18.2

Question 19.8: Projects are user specific and cannot be mass marketed

Agree	6	54.5
Disagree	5	45.5

Question 19.9: Market activity is determined by economic, social, political and legal activities and constraints

Agree	10	90.9
Disagree	1	9.1

Question 19.10: The market is determined by supply and demand factors and is as such, cyclical of nature

Agree	11	100.00
Disagree	-	-

- There was an almost even split in opinions in reaction to the statement that the property market is far less organised than other institutions.
- The majority of respondents (8) disagreed with the statement that buyers and sellers are spatially separated.
- Respondents had an almost equal split of opinion in reaction to the statement that results are difficult to assemble, making the study of trends difficult.

- Approximately two thirds of respondents disagreed that the registration of transfer documentation is a complex process.
- Almost all respondents (10) agreed that the property market is highly differentiated.
- Similarly, the vast majority (10) supported the notion that constraints on supply are more variable
- There seems to be general agreement by most respondents that market data is less structured and less certain in this industry.
- Respondents were divided with regard to their agreement with the statement that projects are user specific and cannot be mass marketed.
- There appears to be general agreement that market activity is determined by economic, social, political and legal activities and constraints.
- All respondents agreed that the market is determined by supply and demand factors and is as such, cyclical in nature.

Listed and unlisted companies were also compared using cross tabulation. The detailed statistical results obtained are depicted in Appendix D and reported below.

Results indicate that for most questions, responses from listed and unlisted companies were comparable. Small differences were found with regard to the following questions:

Question 19: **Do you agree/disagree with the following characteristics of the property market?**	**Listed companies agree more than unlisted companies**	**Unlisted companies agree more than listed companies**
Results of transactions are difficult to assemble		√
Registration of transfer documentation is complex	√	

Question 20 Market research and property markets

To what extent are the following sources of property information utilised by your company when conducting market research and analysing the property market?

In this question, respondents were asked about the extent to which they use a number of sources of property information. The rating scale ranged from "Always" (3) to "Never" (1) and a mean score per item was calculated. These are reported below.

TABLE 5.24: Extent to which specific sources of property information is utilised

Question 20: To what extent are the following sources of property information utilised by your company when conducting market research and analysing the property market?

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Demographic data sources	3	3	**2** (18.2%)	**1** (9.1%)	**8** (72.7%)
Psychographics : portraying household lifestyles	1	1	**8** (72.7%)	**2** (18.2%)	**1** (9.1%)
Consumer surveys	2	2	**4** (36.4%)	**5** (45.5%)	**2** (18.2%)
Qualitative research	2	2	**3** (27.3%)	**7** (63.6%)	**1** (9.1%)
Mapping the competition	2	2	**3** (27.3%)	**5** (45.5%)	**3** (27.3%)
Real estate agents	3	3	**2** (18.2%)	**3** (27.3%)	**6** (54.5%)
Driving through the neighbourhoods	2	2	**1** (9.1%)	**6** (54.5%)	**4** (36.4%)
Newspapers and magazines	2	2	**1** (9.1%)	**5** (45.5%)	**5** (45.5%)
Property management companies	2	1	**5** (45.5%)	**5** (45.5%0	**1** (9.1%)
Property valuers	3	3	-	**5** (45.5%)	**6** (54.5%)
Local associations	2	2	**2** (18.2%)	**8** (72.7%)	**1** (9.1%)
Market research companies	2	2	-	**7** (63.6%)	**4** (36.4%)
The valuer general's office	2	2	**3** (27.3%)	**5** (45.5%)	**3** (27.3%)
The internet	2	2	**1** (9.1%)	**7** (63.6%)	**3** (27.3%)

N = 11
Me = Median
Mo = Mode

The mean scores ranged from 1.64 to 2.55, indicating a somewhat lower frequency of use than in other questions using a similar scale. The sources of information used most are: Demographic data sources; and Property Valuers (Mean = 2,55). The sources used least are: Property management companies (Mean =1.64); and Psychographics (Mean = 1.36).

Although none of the differences were found to be statistically significant according to the Mann-Whitney U-test, the most sizeable differences were found with regard to question 1, question 2 and question 9. The direction of the differences suggests that listed companies made more use of demographic data sources, psychographics (even though scores for both groups were low) and property management companies than unlisted companies.

TABLE 5.25: Listed/unlisted companies: extent to which specific sources of property information is utilised

Question 20: To what extent are the following sources of property information utilised by your company when conducting market research and analysing the property market?

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Sometimes	Always			Never	Sometimes	Always
Demographic data sources	3	3	-	-	5 (100%)	2.5	3	2 (33.3%)	1 (17.7%)	3 (50%)
Psychographics : portraying household lifestyles	1	1	3 (60%)	1 (20%)	1 (20%)	1	1	5 (83.3%)	1 (16.7%)	-
Consumer surveys	2	2	-	5 (100%)	-	1	1	4 (66.7%)	-	2 (33.3%)
Qualitative research	2	2	-	5 (100%)	-	1.5	1	3 (50%)	2 (33.3%)	1 (16.7%)
Mapping the competition	2	1	2 (40%)	2 (40%)	1 (20%)	2	2	1 (16.7%)	3 (50%)	2 (33.3%)
Real estate agents	2	2	1 (20%)	2 (40%)	2 (40%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Driving through the neighbourhoods	2	2	-	4 (80%)	1 (20%)	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Newspapers and magazines	2	2	-	3 (60%)	2 (40%)	2.5	3	1 (16.7%)	2 ((33.3%)	3 (50%)
Property management companies	2	2	1 (20%)	3 (60%)	1 (20%)	1	1	4 (66.7%)	2 (33.3%)	-
Property valuers	2	2	-	3 (60%)	2 (40%)	3	3	-	2 (33.3%)	4 (66.7%)
Local associations	2	2	-	5 (100%)	-	2	2	2 (33.3%)	3 (50%)	1 (16.7%)
Market research companies	2	2	-	3 (60%)	2 (40%)	2	2	-	4 (66.7%)	2 (33/3%)
The valuer general's office	2	2	1 (20%)	2 (40%)	2 (40%)	2	2	2 (33.3%)	3 (50%)	1 (16.7%)
The internet	2	2	1 (20%0	3 (60%)	1 (20%)	2	2	-	4 (66.7%)	2 (33.3%)

Me = Median
Mo = Mode

5.3.4.2 Summary

The results obtained can be summarised as follows:

- The majority (81.8%) indicated that their companies apply a structured framework approach to market research. The 18.2% respondents who responded in the negative cited the following two reasons:
    - Independent research consultants are employed on an ad-hoc basis.
    - Developments undertaken are pioneering of nature and market researchers are viewed as too conservative to make a positive contribution.

- Results indicated that the property developers usually and adequately apply and analyse all the market and marketability analysis factors when conducting market research. The factors applied most are site analysis and the selection of the target market respectively with the least applied factors being determining national and international economic trends and purchasing power analysis. A comparison between listed and unlisted companies indicated that no statistically significant differences existed. Inspection did, however, suggest that listed companies tend to make greater use of national and international trends, supply and demand analysis and preliminary marketing and management strategies.

- When identifying characteristics of the property market, the results of the sample group were interesting:
    - There was almost an equal split that:
        - The property market is far less organised than other institutions.
        - Results are difficult to assemble, making the study of trends difficult.
        - Projects are user specific and cannot be mass marketed.
    - The vast majority agreed that:
        - The property market is highly differentiated.
        - Constraints on supply are more variable.
        - Market activity is determined by economic, social, political and legal activities.
        - The market is determined by supply and demand factors and, as such, is cyclical in nature.
    - The majority disagreed that:
        - The registration of transfer documentation is a complex process.
        - Buyers and sellers are spatially separated.

- Results for listed and unlisted companies were comparable with only small differences found. The results obtained in determining the extent to which identified sources of property information are utilised by the respondents, indicated a somewhat lower frequency of use than in other questions using a similar scale. Significant use of all sources was, however, determined. The sources of information used most significantly are demographic data sources, property valuers, newspapers and magazines and market research companies with property management companies and psychographics being utilised least.

From the above results it is apparent that the property development companies, both listed and unlisted, not only apply a structured framework approach to market research, but also adequately analyse all the market and marketability analysis factors identified in the study. Characteristics of the property market are well known and appropriate sources of market information utilised.

5.3.4.3 Testing of Hypothesis 3

Hypothesis 3

Market research practices into property markets are applied diligently to contribute to increased effectiveness and productivity.

Evidence of the study suggests that Hypothesis 3 is supported.

5.3.5 SECTION E: PROPERTY DEVELOPMENT: COMPONENTS AND KEY PERFORMANCE AREAS: FEASIBILITY PRINCIPLES, DESIGN DEVELOPMENT AND FINANCIAL ANALYSIS

5.3.5.1 Results

Question 21 Feasibility principles, design development and financial analysis

Does your company follow an integrated framework approach to feasibility analysis in determining the viability and formulating a strategy for a property development?

All respondents indicated that they follow an integrated framework approach to feasibility analysis in determining the viability and formulating a strategy or a property development. Since all respondents indicated that they follow an integrated framework approach to feasibility analysis in determining the viability and formulating a strategy for a property development, a comparison of listed and unlisted companies was not meaningful.

Question 22 Feasibility principles, design development and financial analysis

If your answer is no to question 21 above, please indicate below why you do not apply a structured approach to the feasibility analysis process.

As all respondents to question 21 indicated positively that they apply an integrated framework approach to feasibility analysis, no data is recorded for this question.

Question 23 Feasibility principles, design development and financial analysis

If your answer is yes to question 21 above, please indicate below the extent to which your company analyses and applies the following financial feasibility framework factors.

TABLE 5.26: Extent to which financial feasibility framework factors are applied

Question 23: If your answer is yes to question 21 above, indicate below the extent to which your company analyses and applies the following financial feasibility framework factors.

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Ownership structure	3	3	-	**4** (36.4%)	**7** (63.6%)
Land-use decision	3	3	-	**2** (18.2%)	**9** (81.8%)
Aesthetic and ethical constraints	3	3	**2** (18.2%)	**2** (18.2%)	**7** (63.6%)
Regulatory, legal and political constraints	3	3	**1** (9.1%)	**2** (18.2%)	**8** (72.7%)
Physical and technical constraints as well as alternative solutions	3	3	-	**1** (9.1%)	**10** (90.9%)
Determining dominant objectives why feasibility study is conducted	3	3	**1** (9.1%)	**3** (27.3%0	**7** (63.6%)
Market analysis and feasibility	3	3	-	**2** (18.2%0	**9** (81.8%)
Socio-political feasibility	2	2	**2** (18.2%)	**6** (54.5%)	**3** (27.3%)
Identifying opportunities which are consistent with above objectives	3	3	-	**2** (18.2%)	**9** (81.8%)
Gauge performance capacities	3	3	-	**5** (45.5%)	**6** (54.5%)
Measure or identify risks	3	3	-	**2** (18.2%)	**9** (81.8%)
Market segmentation to identify specific targets	3	3	-	**4** (36.4%)	**7** (63.6%)
Physical and design analysis of development project	3	3	-	**1** (9.1%)	**10** (90.9%)
Financial feasibility analysis : Construction and absorption period	3	3	**1** (9.1%)	-	**10** (90.9%)
Financial feasibility analysis : Operational period	3		**1** (9.1%)	**1** (9.1%)	**9** (81.8%)
Development programme	3		-	1 (9.1%)	10 (90.9%)

N = 11
Me = Median
Mo = Mode

Respondents were required to indicate on a rating scale from "Always" (3) to "Never" (1) the extent to which their company applies and analyses a number of financial feasibility framework factors. A mean score per item was calculated. Results show that the majority of respondents made use of most of the principles, with mean scores on the scale ranging from 2.09 to 2.91. The factors applied most included:

Physical and technical constraints; Physical and design analyses; and Development programmes (mean = 2.91). Other factors followed within a fairly narrow range of scores, with Socio-Political feasibility being the only factor utilized relatively less frequently (Mean = 2.09).

Listed and unlisted companies were also compared as depicted below.

TABLE 5.27: Listed/unlisted companies: extent to which financial feasibility framework factors are applied

Question 23: If your answer is yes to question 21 above, please indicate below the extent to which your company analyses and applies the following financial feasibility framework factors.

	Listed companies (N=5)					Unlisted companies (N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Some-times	Always			Never	Some-times	Always
Ownership structure	3	3	-	1 (20%)	4 (80%)	2.5	2	-	3 (50%)	3 (50%)
Land-use decision	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Aesthetic and ethical constraints	3	3	1 (20%)	1 (20%)	3 (60%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Regulatory, legal and political constraints	3	3	1 (20%)	-	4 (80%)	3	3	-	2 (33.3%)	4 (66.7%)
Physical and technical constraints as well as alternative solutions	3	3	-	1 (20%)	4 (80%)	3	3	-	-	6 (100%)
Determining dominant objectives why feasibility study is conducted	3	3	-	1 (20%)	4 (80%)	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Market analysis and feasibility	3	3	-	-	5 (100%)	3	3	-	2 (33.3%)	4 (66.7%)
Socio-political feasibility	2	2	-	3 (60%)	2 (40%)	2	2	2 (33.3%)	3 (50%)	1 (16.7%)
Identifying opportunities which are consistent with above objectives	3	3	-	1(20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Gauge performance capacities	2	2	-	3 (60%)	2 (40%)	3	3	-	2 (33.3%)	4 (66.7%)
Measure or identify risks	3	3	-	1 (20%)	4 (80%)	3	3	-	1 (16.7%)	5 (83.3%)
Market segmentation to identify specific targets	3	3	-	1 (20%)	4 (80%)	2.5	2	-	3 (50%)	3 (50%)
Physical and design analysis of development project	3	3	-	-	5 (100%)	3	3	-	1 (16.7%)	5 (83.3%)
Financial feasibility analysis: Construction and absorption period	3	3	-	-	5 (100%)	3	3	1(16.7%)	-	5 (83.3%)
Financial feasibility analysis: Operational period	3	3	-	-	5 (100%)	3	3	1(16.7%)	1 (16.7%)	4 (66.7%)
Development programme	3	3	-	-	5 (100%)	3	3	-	1 (16.7%)	5 (83.3%)

Me = Median
Mo = Mode

Results showed that none of the differences were statistically significant but the most meaningful differences were found with regard to socio-political feasibility and the financial feasibility study during the operational period. These suggest that listed companies apply socio-political feasibility as well as financial feasibility studies during the operational period, to a greater extent than unlisted companies.

Question 24 Feasibility principles, design development and financial analysis

Does your company analyse and include the following components when completing a financial feasibility analysis for a property development?

TABLE 5.28: Number of components used when completing a financial feasibility analysis for a property development

Question 24: Does your company analyse and include the following components when completing a financial feasibility analysis for a property development?

	Responses		
	N	Percent	Percent of Cases
Construction and absorption period:			
Development costs			
Land and land related costs	11	5.7%	100.0%
Construction cost, construction cost increases and related costs	11	5.7%	100.0%
Design consultant's fees and disbursements	11	5.7%	100.0%
Development management allowance	11	5.7%	100.0%
Tenant inducements	9	4.6%	81.8%
Project promotion, marketing and commission	10	5.2%	90.9%
Holding charges and financing costs	10	5.2%	90.9%
Development margin and other overhead allowances	10	5.2%	90.9%
Operational period:			
Cash flow analysis			
Income and expense forecasts	10	5.2%	90.9%
Potential gross income	11	5.7%	100.0%
Vacancy and collection loss on effective gross income (EGI)	10	5.2%	90.9%
Operating expenses (OE)	11	5.7%	100.0%
Net operating income (NOI)	11	5.7%	100.0%
Before tax cash flow (BTCF)	9	4.6%	81.8%
Financial ratio analysis			
Discounted cash flow analysis	9	4.6%	81.8%
Key financial ratios and other measurement tools (for example: capitalisation rate)	11	5.7%	100.0%
Property measurement analysis (for example: rate per square metre)	9	4.6%	81.8%
Sensitivity analysis (for example: vacancy analysis)	10	5.2%	90.9%
Risk analysis (for example: analysing business risk)	10	5.2%	90.9%

In question 24 respondents were asked to indicate whether their companies analyse and include a number of components when completing a financial feasibility analysis for a property development. Results suggest that the majority of respondents analyse and include all of these components when completing a financial feasibility analysis for a property development.

Listed and unlisted companies were also compared using cross tabulation. The detailed statistical results obtained are depicted in Appendix D.

Results suggest that the majority of respondents analyse and include all of the components when completing a financial feasibility analysis for a property development. Differences were therefore negligible, with question 5 (Tenant inducements) the only aspect where unlisted companies indicated that they use it to a lesser extent than listed companies.

Question 25 Feasibility principles, design development and financial analysis
To what extent does your company apply the following discounted cash flow analysis (DCF) methods and other key financial ratios, when conducting financial feasibility studies?

This question pertains to the application of discounted cash flow analysis methods and other financial ratios when conducting financial feasibility analyses. Respondents were required to indicate on a rating scale from "Always" (3) to "Never" (1) the extent to which their company applies these factors. A mean score per item was calculated. These are reported below.

Results show that most principles are used to a fair extent by respondents, with means ranging from 1.64 to 2.82. The principle used with the highest frequency is Internal rate of return (IRR) (mean = 2.82), followed by Development yield (Mean = 2.73). However, a number of principles are used to a lesser extent relative to other questions using this scale. Those used least are: Operating efficiency ratio (OER); Gross rent multiplier (GRM); Effective gross income multiplier (EGIM); and Net income multiplier (NIM) (Mean = 1.64).

TABLE 5.29: Extent to which discounted cash flow analysis methods and other financial ratios are applied

Question 25: To what extent does your company apply the following discounted cash flow analysis (DCF) methods and other key financial ratios, when conducting financial feasibility studies?

	Me	Mo	Frequencies		
			Never	Sometimes	Always
Discounted cash flow analysis (DCF)					
Payback period (PB)	2	2	2 (18.2%)	5 (45.5%)	4 (36.4%)
Net present value (NPV)	3	3	-	4 (36.4%)	7 (63.6%)
Internal rate of return (IRR)	3	3	-	2 (36.4%)	9 (81.8%)
Modified internal rate of return (MIRR)	2	1	4 (36.4%)	3 (27.3%)	4 (36.4%)
Profitability index (PI)	2	1	5 (45.5%)	3 (27.3%)	3 (27.3%)
Key financial ratios					
Capitalisation ratio (Cap rate)	3	3	-	4 (36.4%)	7 (63.6%)
Equity to value ratio	3	3	-	5 (45.5%)	6 (54.5%)
Development yield	3	3	1 (9.1%)	1 (9.1%)	9 (81.8%)
Value determination	2	3	3 (27.3%)	3 (27.3%)	5 (45.5%)
Debt coverage ratio (DCR)	2	2	3 (27.3%)	4 (36.4%)	4 (36.4%)
Loan-to-value ratio (LVR)	3	3	2 (18.2%)	3 (27.3%)	6 (54.5%)
Break-even cash flow ratio (BER)	2	2	3 (27.3%)	5 (45.5%)	3 (27.3%)
Operating efficiency ratio (OER)	2	1	5 (45.5%)	5 (45.5%)	1 (9.1%)
Cash on cash return	2	2	3 (27.3%)	5 (45.5%)	3 (27.3%)
Break-even occupancy (BEO)	2	2	4 (36.4%)	5 (45.5%)	2 (18.2%)
Gross rent multiplier (GRM)	1	1	6 (54.5%)	3 (27.3%)	2 (18.2%)
Effective gross income multiplier (EGIM)	1	1	6 (54.5%)	3 (27.3%)	2 (18.2%)
Net income multiplier (NIM)	1	1	6 (54.5%)	3 (27.3%)	2 (18.2%)
Before tax cash flow multiplier	2	1	5 (45.5%)	3 (27.3%)	3 (27.3%)

N = 11
Me = Median
Mo = Mode

Results show that differences were not statistically significant according to the Mann-Whitney test but given the small sample size, the absolute differences between mean scores were also inspected. These show that sizeable differences were found between listed and unlisted companies with regard to methods: modified internal rate of return; profitability index; value determination; cash on cash return; gross rent multiplier; and efficient gross income multiplier and net income multiplier. In all of these cases, results suggest that listed companies make more use of these methods.

TABLE 5.30: Listed/unlisted companies: extent to which discounted cash flow analysis methods and other financial ratios are applied

Question 25: To what extent does your company apply the following discounted cash flow analysis (DCF) methods and other key financial ratios, when conducting financial feasibility studies?

	Listed companies (N=5)					Unlisted companies(N=6)				
	Me	Mo	Frequency			Me	Mo	Frequency		
			Never	Sometimes	Always			Never	Sometimes	Always
Discounted cash flow analysis (DCF)										
Payback period (PB)	2	2	1 (20%)	3 (60%)	1 (20%	2.5	3	1 (16.7%)	2 (33.3%)	3 (50%)
Net present value (NPV)	3	3	-	1 (20%)	4 (80%)	2.5	2	-	3 (50%)	3 (50%)
Internal rate of return (IRR)	3	3	-	-	5 (100%)	3	3	-	2 (33.3%)	4 (66.7%)
Modified internal rate of return (MIRR)	3	3	1 (20%)	1 (20%)	3 (60%)	1.5	1	3 (50%)	2 (33.3%)	1 (16.7%)
Profitability index (PI)	2	2	1 (20%)	2 (40%)	2 (40%)	1	1	4 (66.7%)	1 (16.7%)	1 (16.7%)
Key financial ratios										
Capitalisation ratio (Cap rate)	3	3	-	1 (20%)	4 (80%)	2.5	2	-	3 (50%)	3 (50%)
Equity to value ratio	2	2	-	3 (60%)	2 (40%)	3	3	-	2 (33.3%)	4 (66.7%)
Development yield	3	3	-	-	5 (100%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Value determination	3	3	-	2 (40%)	3 (60%)	1.5	1	3 (50%)	1 (16.7%)	2 (33.3%)
Debt coverage ratio (DCR)	2	2	1 (20%)	3 (60%)	1 (20%)	2.5	3	2 (33.3%)	1 (16.7%)	3 (50%)
Loan-to-value ratio (LVR)	2	2	1 (20%)	2 (40%)	2 (40%)	3	3	1 (16.7%)	1 (16.7%)	4 (66.7%)
Break-even cash flow ratio (BER)	2	1	2 (40%)	2 (40%)	1 (20%)	2	2	1 (16.7%)	3 (50%)	2 (33.3%)
Operating efficiency ratio (OER)	2	2	2 (40%)	3 (60%)	-	1.5	1	3 (50%)	2 (33.3%)	1 (16.7%)
Cash on cash return	2	2	-	3 (60%)	2 (40%)	1.5	1	3 (50%)	2 (33.3%)	1 (16.7%)
Break-even occupancy (BEO)	2	2	1 (20%)	3 (60%)	1 (20%)	1.5	1	3 (50%)	2 (33.3%)	1 (16.7%)
Gross rent multiplier (GRM)	2	2	1 (20%)	3 (60%)	1 (20%)	1	1	5 (83.3%)	-	1 (16.7%)
Effective gross income multiplier (EGIM)	2	2	1 (20%)	3 (60%)	1 (20%)	1	1	5 (83.3%)	-	1 (16.7%)
Net income multiplier (NIM)	2	2	1 (20%)	3 (60%)	1 (20%)	1	1	5 (83.3%)	-	1 (16.7%)
Before tax cash flow multiplier	2	2	1 (20%)	3 (60%)	1 (20%)	1	1	4 (66.7%)	-	2 (33.3%)

Me = Median
Mo = Mode

5.3.5.2 Summary

The results obtained can be summarised as follows:

- All respondents indicated that they follow an integrated framework approach to feasibility analysis when determining the viability of and formulating a strategy for property development.

- Results showed that the majority of companies apply and analyse most of the financial feasibility framework factors identified in the study. Factors utilised most included physical and design analysis of the project, development programme, financial feasibility analysis, measuring and identifying risks, land-use decision (market and economic study) and market analysis and feasibility studies. The only factor utilised relatively less frequently was the socio-political feasibility study. When comparing listed with unlisted companies, the differences were found to be statistically insignificant.

- The study also found that the vast majority of participating companies analyse and include all components described in the study when completing a financial feasibility analysis for a property development. A comparison between listed and unlisted companies, suggest that the majority also analyse and include all of these components.

- Results obtained on the application of discounted cash flow analysis (DCF) methods and other key financial ratios, showed that most principles are used to a fair extent by companies. The principle with the highest frequency of use is internal rate of return (IRR) followed by the development yield. The two least used principles are the operating efficiency ratio (OER) and gross rent multiplier (GRM). A comparison between listed and unlisted companies showed that differences were not statistically significant.

From the above results it is clear that the majority of the property developers included in this study, not only follow an integrated framework approach to feasibility analysis, but also apply and analyse most of the financial feasibility framework factors identified in the study. The research also found that the vast majority of companies analyse and include all components when completing a financial feasibility analysis

while a fair extent of companies apply discounted cash flow analysis (DCF) methods and other key financial ratios in their business operations.

5.3.5.3 Testing of Hypothesis 4

Hypothesis 4

Sound pre-construction *feasibility principles, design development and financial analysis practices* are adhere to.

Evidence from the study suggests that Hypothesis 4 is supported.

5.4 SUMMARY

In **Chapter 5** attention was given to the analysis of the statistical data obtained from the empirical study. The results are discussed in relation to the study objectives, study problem and four sub-problems identified in **Chapter 1**. Based on the information obtained from the analyses, observations are made and results interpreted. Each of the four study hypotheses are tested, based on both the theoretical and empirical research.

Having analysed the results and tested the hypotheses, the next and final chapter will list and discuss conclusions and make recommendations based on the findings and areas for further research.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This research programme seeks to examine and critically assess the application of pre-construction property development principles and process in Queensland. In particular, it seeks to explore the common principles and characteristics of the property development process as they occur prior to the commencement of construction activities, within the context of commercial property in broadly capitalist terms.

The approach taken is to match theory, from the literature on models of the development process, with practice. This provides a sound secondary basis from which the qualitative descriptive empirical study is conducted.

The study addresses the fundamental problem as defined by the following process: *Whether property developers apply sound property development principles and process to contribute to increased effectiveness and productivity.* Sub-problems identified and explored in such models are the key performance areas and principles that have to be complied with in the pre-construction development process.

Chapter 1 comprises a description of the content and significance of the study, limitations, statement of the problem, sub-problems, hypotheses, objectives and methodology employed in the study.

The next two chapters comprise the literature review. **Chapter 2** *conducts a literature* review of property development principles and process and **Chapter 3** a literature review of location studies and site selection, market research and property markets and feasibility principles, design development and financial analysis.

In **Chapter 4** and **Chapter 5** the empirical study is conducted, based on the literature reviews in **Chapters 2** and **3**. **Chapter 4** describes the empirical study methodology, questionnaire design and analysis method of the data employed to research the study problems and hypotheses. In **Chapter 5** the empirical data is analysed and results obtained are presented, the interpretation of the findings are outlined,

followed by a discussion on the implication of the findings and testing of the study hypotheses. **Chapter 6** includes the final conclusions and recommendations. The recommendations may be employed and used for further research or study.

6.2 CONCLUSIONS

The conclusions reached on the basis of the findings of the empirical research, follow the sequence of the analysis of the data, as set out in **Chapter 5**.

The majority of the participating companies and their representatives, who completed the questionnaire in the study:

- Are private incorporated entities (54,5%) with 45,5% of the participating companies being listed on the Australian Stock Exchange. The significance of this lies therein that further comparative empirical studies were conducted between these two specific groupings within the study sample group.
- All conduct the business of property development within Queensland, being the primary state of the research. Numerous of the companies are also actively involved in other states and territories of Australia as well as internationally.
- Are involved in leadership and top management roles within the property development industry in Queensland, with an average industry experience of 18.50 years.

It can therefore be concluded that the study sample group, in addition to being statistically representative of Queensland based property developers, include both listed and unlisted companies, which conduct business in Queensland, other states and territories of Australia and internationally and represent senior management within the industry.

The significance of this sound empirical sample base is important when conclusions are made in the critical assessment of pre-construction property development principles and process, as applied in the industry within Queensland. These conclusions are set out below.

6.2.1 Property development principles and process

To determine which pre-construction property development framework principles are preferable and which key performance areas need to form part of the development framework, in order to be successful, the study findings concluded that:

- All roles identified during the theoretical study which the property developer, as "conductor of the orchestra", needs to fulfil, were substantially applied by all companies. The roles of negotiator, promoter, leader and creator were identified as the most important. A concern is the fact that listed companies tend to see the property developer as more of a manager than an entrepreneur. The study unquestionably identified property development in essence as an entrepreneurial and creative 'art', which requires likeminded talents to be successful.

- The property developers make use of the various consultants identified in the study, albeit some to a lesser extent. Architects, quantity surveyors, town planners, civil and geo-technical engineers and land surveyors are most commonly used.

- All companies apply a structured framework and phased approach to pre-construction and go/no-go decision making activities when opportunities are evaluated.

- All pre-construction property development principles and key performance areas identified in the study are adequately applied by the participating companies. The most applied principles were analysing the appropriate zoning, testing the financial feasibility and the preliminary scheme.

A further concern identified is that listed companies determine goals and philosophies ("creating the dream") to a lesser extent than unlisted companies. As more emphasis is placed by listed companies on the implementation of plans it is concluded that entrepreneurs will tend to find themselves more at home in unlisted property development companies.

The research has unquestionably concluded that the generic pre-construction property development framework model for "non-specialised" real estate, based on the teachings of James Graaskamp and other property development frameworks and

models, as depicted in **Figure 2.10** in **Chapter 2**, is relevant and can be used by property developers.

The **three** components which form the core of the strategic-analysis pre-construction property development decision making process, identified in the study, were equally found to be applicable. Conclusions in this regard are set out below.

6.2.2 Location studies and site selection

In the research to identify the role the application of sound location studies and site selection activities play in the pre-construction stage, and the role they play in success, it is concluded that:

- All companies apply and analyse, to a substantial degree, the factors to be addressed when identifying the preferred location for a property development. The factors utilised most are regulatory and legal issues, site characteristics, current and future market expansion patterns and trends in property developments. It also appears that listed companies tend to keep the national/international perspective in mind to a greater degree than unlisted companies.

- The vast majority of companies (90.9%) support the view that location and site selection cannot be done in isolation, but form a coherent whole. In spite of the above, it was disappointing to find that only one participant used three of the eight land use evaluation models identified while the remainder used none. It can be argued that the academic nature of these concepts may have contributed to this response.

- Most of the identified site specific evaluation factors, that influence the suitability of a specific site, are analysed and used by the companies. The majority, and in some instances, all companies utilize legal documentation and physical features as well as real estate market trends and parking. Least considered factors included amenities and services, social characteristics and links with other industries. Given the complexities of societies, with the potential for conflict between various ethnic, cultural and religious groupings, it is of concern that the participants deem the influence of social characteristics less important.

- The three site specific site location and evaluation factors found to be the most important by the majority of the eleven participating companies were:
  - Land (cost of land and view of scenic amenity).
  - Economic characteristics.
  - Legal documentation.

From the above it is clear that the study not only identified specific factors and determined the role the application of sound location studies and site selection activities play in the pre-construction property development process, but also concluded that the vast majority of the participant companies support and apply satisfactorily practices in this regard.

6.2.3 Market research and property markets

In defining and determining to what degree the participating companies apply pre-construction property market research practices, interesting conclusions can be made. These are that:

- The majority of companies (81.8%) apply a structured framework approach to market research. It was interesting to find that the companies (18.2%) who responded in the negative cited the following two reasons:
  - Independent research consultants are employed outside the company on an ad-hoc basis.
  - Due to the pioneering nature of projects undertaken, market researchers are deemed to be too conservative to make a positive contribution.

  The writer finds the latter reason of specific interest, as practical experience, over many years in the property development industry, has formulated a similar view. Experience has taught that most consultants performing market research and cost consultancy services are in most cases too conservative and risk averse to make meaningful and independent contributions to the pioneering nature of the property development process.

- The property developers usually and adequately apply and analyse all market and marketability factors identified in the study when conducting market research. The factors applied most are site analysis and the selection of the

target market. It was also interesting to note that listed companies tend to make greater use of meeting the target markets; competitive analysis; demand and supply analysis; site analysis; regional and urban analysis and estimate of space needs, market absorption rates, gross income, operational costs and vacancy rates.

- An educated knowledge level exists within the companies with regards to the characteristics of the property market. The vast majority agreed that the property market is highly differentiated; constraints on supply are more variable; market data is less structured and certain; market activity is determined by economic, social, political, legal activities and supply and demand factors. It was also important to note from the study that the participants disagreed with the notion that the registration of transfer documentation is a complex process and that buyers and sellers are spatially separated.

- It was, however, a concern that, although not of a critical nature, the study concluded that in determining the extent to which the identified sources of property information are utilized, a lower frequency of use, using a similar measuring-scale, was established. A significant and adequate use of all sources by companies were, however, determined with demographic data sources, real estate agents, property valuers, newspapers and magazines, driving through the neighbourhood, and market research companies being utilized most. Property management companies and psychographics were least used by the participants as a source of property information,

It is apparent from the study that the participating companies not only have a clear knowledge and understanding of the market research process as well as the property market in general, but indeed all apply good practice during the pre-construction stage, for the benefit of their companies.

Conclusions made on the last of the **three** key-performance area components, described in **Chapter 3,** are set out below:

6.2.4 Feasibility principles, design development and financial analysis

In determining whether property development companies apply sound pre-construction feasibility principles design development and financial analysis practices, the following conclusions are formulated. It can be concluded that:

- All companies, albeit listed or unlisted, apply an integrated framework approach to feasibility analysis when determining the viability of and formulating a strategy for property developments.

- The majority of companies apply and analyse most of the financial feasibility framework factors deemed important, with project physical and design analysis, the development programme, financial feasibility analysis, risk identification and measurement, market and economic feasibility studies, the factors regarded most important. A concern is the fact that the companies utilise socio-political feasibility studies less frequently. This appears to be consistent with the trend identified in the location and site selection component.

- When completing a financial feasibility analysis for a property development, it is concluded that the vast majority of companies adequately analyse and include all components described in the study.

- It is likewise clear that the companies use and apply discounted cash flow analysis (DCF) methods as well as other key financial ratios, to a fair and adequate extent. It was interesting to note that the principles with the highest frequency utilised by the study group were the internal rate of return (IRR) and the development yield. The two least utilised principles are the operating efficiency ratio (OER) and gross rent multiplier (GRM).

From the above it is clear that the property development companies do apply sound pre-construction feasibility principles, design development and financial analysis practices. From the findings of the study and empirical research, it can be argued that Queensland based property developer do indeed apply sound property development principles and process, which should invariably contribute to increased effectiveness, productivity and profitability.

6.3 RECOMMENDATIONS

The recommendations made, based on the finding of the study, include the following:

- Academic institutions and the industry should ensure that study and courses on the science and importance of entrepreneurship be included in property development education. The complexity of the process requires this. Property developers are, similar to entrepreneurs, "creators of the future" and not merely managers.

- Academic institutions and the industry should ensure that students and practitioners of property development are taught the importance and relevance of social characteristics of target markets, complexity of societies as well as the influence of culture and ethnicity on the property development industry. The era of globalisation with "no boundary states" necessitates this, while a better understanding of the way various societies function, may invariably result in more opportunities becoming prevalent.

- The important and sometimes difficult role of the Australian property valuation industry, in determining the value of a potential development project for procuring mortgage financing, cannot be emphasised enough. Suffice to say that it can be expected of professional valuers to, in all instances conduct their duties and responsibilities in a professional, independent and impartial manner. Whether this is indeed the case, is a subject matter the researcher is of the opinion needs to be explored in greater detail within the academia.

- Professional and academic institutions as well as the industry involved with the training and continuing professional education of consultants in property valuation and market research, must caution students and practitioners against excessive conservatism. Consultants in the property development industry will only remain relevant if professionally independent and well balanced contributions are made to an entrepreneurial and pioneering industry. Lack thereof will result in extinction.

It is up to the academic institutions as well as the professional and industry governing bodies, to ensure that the initial and continuing education of property development practitioners incorporate practical real life situations in academic theory. The emphasis should fall on case studies and projects designed to identify the opportunities and challenges that arise in the interface between theory and practice. This will invariably require further extensive research that involves both academics and practitioners.

Other fields of further research, which fall beyond the scope of this study, but which the writer believes are important, include the following:

- The role and influence of entrepreneurship on the property development industry with specific reference to listed companies.
- The relevance of socio-political characteristics, culture and ethnicity on site selection in the property development industry.

6.4 SUMMARY

Property development makes a significant contribution to the Queensland and well as the Australian property economy. The development process is however inherently risky, given the numerous variables and monetary values involved.

Research evidence also suggests that property development is essentially an integrated process revolving around numerous concepts that link distinct phases in the development cycle. This study, which particularly acquaints the reader with the process framework and key performance areas that make up the integrated process, conducts a critical literature discourse and empirical assessment of the pre-construction principles and process of commercial property development. It seeks to examine and critically assess the application of pre-construction principles in Queensland.

The findings and conclusions determined that the Queensland based property developers do indeed apply sound pre-construction property development principles and process.

The developers apply a structured framework and phased approach to the pre-construction decision making activities. The three core components of the strategic-analysis pre-construction decision-making process:

- Location studies and site selection;
- Market research and property markets; and
- Feasibility principles, design development and financial analysis,

were likewise found to be applied diligently.

This, as well as the insight gained by the writer during this study in the teachings of James Graaskamp, demand that the future be continuously explored. It is trusted that this study has made a contribution towards this future.

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Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

SCHEDULE OF APPENDICES

APPENDIX A

Curtin Business School

Curtin University of Technology

School of Economics
and Finance

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7756/7796
Facsimile +61 8 9266 3026
Web www.cbs.curtin.edu.au

CRICOS Provider Code 00301J

18 January 2008

Dear

PROPERTY DEVELOPMENT RESEARCH

Our previous meeting and/or correspondence regarding the above research refers.

As the theoretical literature review of the study has now been completed, I take pleasure in enclosing herewith the following documentation:

1. Empirical questionnaire
2. Consent form.

We again seek your kind assistance and participation in the research project that I am completing for my Master of Commerce (Property) degree at the Curtin Business School: *The research analyses, the application of pre-construction property development principles and process in Queensland.* In particular the study will focus on common principles of the property development process as they occur prior to the commencement of construction activities.

I am seeking your organization's support to participate in the empirical study by completing the questionnaire, which will be followed by an interview. Kindly complete the questionnaire and indicate your willingness to participate on the consent form. An interview will also be arranged with you in due course. This will be held at a convenient date and time during February/March 2008. The interview should not take more than 30 minutes of your time. The completed questionnaire and consent form could either be returned in the enclosed envelope or, alternatively, it will be collected at the interview.

Please note that this research project has been approved by the Ethics Committee of the Curtin Business School: School of Economics and Finance and as such complies with university policies regarding confidentiality requirements. Your answers to the questions and discussions during the interview will be treated as strictly confidential, along with those of the other participants. Under no circumstances will information be released in a format that allows individuals or businesses to be identified. If you would like further information about these details please contact me and I can arrange for you to discuss details further with the appropriate persons at the university.

Your participation in this research project is greatly appreciated.

Kind regards

DR F.T. PRELLER

CURTIN UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF PROPERTY STUDIES, SCHOOL OF ECONOMICS AND FINANCE
CURTIN BUSINESS SCHOOL

CONSENT FORM

RESEARCH PROJECT : DR F.T. PRELLER

CONSENT FORM IN CONNECTION WITH RESEARCH PROJECT : A CRITICAL ASSESSMENT OF PRE-CONSTRUCTION PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS IN QUEENSLAND, AUSTRALIA

NAME OF COMPANY: .....

LIAISON OFFICER WHICH WILL ACT ON BEHALF OF THE COMPANY AND PROVIDE ASSISTANCE WITH THE STUDY:

NAME: .....

TELEPHONE: .....

I AND MY COMPANY:

- Understand the purpose and procedures of the study
- Have been provided with the participant information sheet and understand the purpose of the study
- Agree for this interview to be recorded and/or notes to be taken
- Understand that the research itself may not benefit me/us
- Understand that my/our involvement is voluntary and I/we can withdraw at any time without prejudice
- Understand that no personal identifying information like my name and address will be used, all company information provided will be treated as confidential and that all information will be securely stored for 7 years before being destroyed
- Have been given the opportunity to ask questions
- Agree that the research gathered for this study may be published, provided names and other information that may verify me/us is not used
- Agree to participate in the study as outlined to me/us

SIGNATURE: .....

DATE: .....

WITNESS SIGNATURE: .....

DATE: .....

Please forward to:

Dr FT Preller
PO Box 1705
MILTON
QLD 4064

Per enclosed envelope
or by Fax to: (07) 3367 1655

Curtin Business School
School of Finance and Economics
Department of Property Studies

A CRITICAL ASSESSMENT OF PRE-CONSTRUCTION PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS IN QUEENSLAND, AUSTRALIA

EMPIRICAL QUESTIONNAIRE

By

Ferdinand Theodorus Preller

To be presented in fulfilment for the degree of
MASTER OF COMMERCE (PROPERTY)
Of
Curtin University of Technology

January 2008

GENERAL REMARKS

- You are hereby cordially requested to answer the following questions on current pre-construction property development principles and process practices within your company.

- The completion of this questionnaire will not take up much time, because at most questions you must simply indicate your answer by drawing a cross (X) over the alternative of your choice. However, please read through each question, together with all the alternatives, before indicating your choice.

- You are given the assurance that any information regarding the activities of your company will at all times be treated as strictly confidential. Names of property development companies will not be linked to any information received, thereby ensuring the greatest measure of confidentiality. Furthermore, no information offered, either by means of the questionnaire or during the interview, will at any time be used to compare individual companies with one another or with other organizations.

- Participating companies, should they request, will receive a research report regarding the findings of this investigation.

- On behalf of the School of Economics and Finance at Curtin University of Technology, we wish to thank you for participating in this research project.

- May I thank you in anticipation of your support. Please return the completed questionnaire by mail in the stamped addressed envelope provided, if possible no later than Monday 31 March 2008. Alternatively, the completed questionnaire can be collected at the personal interview.

- Should any uncertainty arise during the completion of this questionnaire, please do not hesitate to call Dr F.T. Preller on telephone (07) 3367 1611 (BH), 0404 042 635 (M) or (07) 3876 7453 (AH), by email pcnaus@bigpond.com or by facsimile (07) 3367 1655. Similarly, any further enquiries can also be addressed during the personal interview.

THANK YOU FOR YOUR CO-OPERATION

TERMINOLOGY

The following offers a brief explanation of certain terms used throughout the questionnaire.

- **Pre-construction property development principles and process:** Key performance areas and principles which form part of the property development process prior to construction activities. It is those activities included in the period from first identifying the development site to the start of construction.

- **Top management:** That relatively small group of members who control the organization and promote effectiveness, and with whom rests the final authority and responsibility for the execution of management procedures (includes board members, executive directors, managing director and/or chief executive officer).

- **Middle management:** Those persons who are primarily responsible for the implementation of business plans and strategies determined by top management.

- **Operational management:** Those persons whose management task centres around daily office activities. Operational management is involved mostly in short-term planning and implementing the plans of middle management.

SECTION A: GENERAL INFORMATION

NAME OF COMPANY	
INFORMATION OFFERRED BY	
OFFICIAL TITLE	
TELEPHONE	
FAX	
MOBILE	
EMAIL	

INSTRUCTIONS

1. The symbol ⍋ will be used throughout to give supporting information about questions.

2. Unless stated otherwise, please indicate your chosen alternative by means of a cross (X) in the relevant space as indicated in the example below:

Example of a question:

Please indicate your position within one of the levels of management. If your position falls within the category of top management, mark with an (X) in the relevant block as indicated below:

Top management	X
Middle management	2
Operational management	3

1. Please indicate whether your company is listed on the Australian Stock Exchange (ASX) or operates as a private incorporated entity.

	Yes	No
Listed company	1	2
Private incorporated company	1	2
Other entity: Please describe		

2. Please indicate in which states and territories of Australia or internationally outside of Australia your company conducts property development activities.

	Yes	No
New South Wales	1	2
Victoria	1	2
Queensland	1	2
Western Australia	1	2

	Yes	No
South Australia	1	2
Tasmania	1	2
Australian Capital Territory (ACT)	1	2
Northern Territory	1	2

3. Does your company conduct property development activities in other countries outside of Australia?

Yes	No
1	2

4. Please indicate your current position within the hierarchy of your company. (Select only one alternative)

Top management	1
Middle management	2
Operational management	3
Other: Please describe	4

5. How long have you been actively involved in a business capacity in the property development industry?

[ ] Years

SECTION B : PROPERTY DEVELOPMENT PRINCIPLES AND PROCESS

6. A property developer is often described as the "conductor of an orchestra". In your opinion, how applicable are the following roles a property developer needs to fulfil during the property development process?

	High	Medium	Low
Entrepreneur	3	2	1
Creator	3	2	1
Promoter	3	2	1
Negotiator	3	2	1
Manager	3	2	1
Leader	3	2	1
Risk manager	3	2	1
Investor	3	2	1
People manager	3	2	1

7. Indicate below which consultants are utilised by your company during the pre-construction property development process.

	Yes	No
Development manager and/or project manager	1	2
Architect	1	2
Building designers	1	2
Quantity survey/building estimator	1	2

	Yes	No
Town planners	1	2
Structural engineer	1	2
Civil engineer	1	2
Electrical engineer	1	2
Mechanical engineer	1	2
Land surveyor	1	2
Real estate agent	1	2
Property valuer	1	2
Finance broker	1	2
Advertising and marketing agent	1	2
Leasing agent	1	2
Building certifier	1	2
Insurance broker	1	2
Property manager	1	2
Geo-technical engineer	1	2
Environmental consultant	1	2
Conveyance/settlement agent	1	2
Landscape architect	1	2
Interior designer	1	2
Accountant	1	2
Solicitor	1	2
Other: Please describe	1	2

8. Does your company apply a structured framework and phased approach to pre-construction property development activities and go/no-go decision-making activities, when evaluating opportunities?

Yes	No
1	2

9. If your answer is no to question 8 above; please indicate why you do not apply a structured and phased approach to pre-construction property development activities.

10. If your answer is yes to question 8 above; please indicate how often you apply the following pre-construction property development principles and key performance areas in the property development activities of your company.

	Always	Sometimes	Never
Strategic analysis			
· Vision	3	2	1
· Determining goals and philosophies	3	2	1
· Establishing criteria	3	2	1
· Conceptualising idea	3	2	1
· Inception of idea	3	2	1
Market research and property markets			
· Market and competitive analysis	3	2	1
Location studies and site selection			
· Identifying and analysing appropriate locations and development sites	3	2	1
· Analysing appropriate zonings	3	2	1
· Procuring control of a development site	3	2	1
Feasibility principles, design development and financial analysis			
· Physical, technical and design analysis	3	2	1
· Political and legal analysis	3	2	1
· Verifying objectives and testing alternatives	3	2	1
· Planning and engineering analysis	3	2	1
· Testing financial feasibility of idea	3	2	1
· Refinement of an idea	3	2	1
· Preliminary scheme	3	2	1
· Final scheme	3	2	1
· Implementation plan	3	2	1
Formal commitment to proceed			

SECTION C : PROPERTY DEVELOPMENT : COMPONENTS AND KEY PERFORMANCE AREAS : LOCATION STUDIES AND SITE SELECTION

11. To what extent does your company apply and analyse the following factors when identifying the preferred location for a property development?

	Always	Sometimes	Never
Market selection			
· National/international perspective: The decision to be in a specific city, market or country	3	2	1
· Inter-urban relationship between towns and cities in regional context	3	2	1
· Intra-urban relationship between the different types of functions and locations for land uses	3	2	1
· Current and future market expansion patterns	3	2	1
· Trends in property development	3	2	1
Area analysis			
· Economic growth within the market	3	2	1
· Cultural views on the location (ethnic and racial character of the inhabitants)	3	2	1
· Location of competitive properties	3	2	1

	Always	Sometimes	Never
Site evaluation			
· Site characteristics (topography, accessibility, visibility and cost)	3	2	1
· Regulatory and legal issues	3	2	1
· Special local conditions (age, population, density, socio-economic status and standard of living)	3	2	1

12. Does your company apply any of the following land use evaluation when deciding upon a preferred location for a property development?

	Yes	No
Christaller central place model	1	2
Losch central place theory (CPT)	1	2
Theory of urban hierarchy : Losch model enriched by Christaller	1	2
Land yield theory (Von Thunen's land rent theory)	1	2
EW Burgess concentric zone model	1	2
Homer Hoyt's sector model ⮙ Central business district ⮙ Wholesale and light industries ⮙ Low grade residence ⮙ Medium grade residence ⮙ High grade residence	1	2
Ullman and Harris multiple centre theory ⮙ Flat dwelling ⮙ Single dwelling ⮙ Heavy industries ⮙ Decentralised business centre ⮙ Community zone	1	2
Central pattern of urban land use (the modern Australian city)	1	2

13. Does the location selection strategy of your company support the view that location and site selection cannot be done in isolation, but form a coherent whole?

Yes	No
1	2

14. Please indicate how often your company analyses the following site specific evaluation factors that influence the suitability of a specific site, which may contribute to increased effectiveness, productivity and profitability of a development.

	Always	Sometimes	Never
Legal documentation : legal use of the site (zoning), the title to the property and all governing authorities	3	2	1
Social characteristics : crime rate, demographic trends and spending habits	3	2	1
Governmental controls : local building codes, environmental controls and local government attitudes towards governmental development	3	2	1

	Always	Sometimes	Never
Economic characteristics : economic information on the state, city and neighbourhood economies, real estate tax rates, cost of services, insurance rates, unemployment rates, new construction activity and available land, local bankruptcy rates and level of housing finance	3	2	1
Real estate market trends : rental rates, vacancy levels, recent sales and new construction activity	3	2	1
Physical features : size, dimensions, shape, exposure, soil, topography and hydrology	3	2	1
Utilities : water, sewerage, electricity, telecommunications, gas and oil	3	2	1
Transportation : linkages, traffic patterns and accessibility	3	2	1
Parking : spaces required by zoning and market	3	2	1
Location : proximity to amenities, schools, churches, recreation facilities and market perception of location	3	2	1
Environmental impact : adverse impacts on the environment	3	2	1
Government services: availability and proximity to police and fire services, garbage collection and the impact of fees and property taxes	3	2	1
Political and local attitudes : defensive, neutral and offensive attitudes of the local community to the development of the site	3	2	1
Land : cost of land and view or scenic amenity	3	2	1
Demand : population growth, income distribution and employment growth	3	2	1
Supply : existing and planned supply, competition and amenities offered by competitors	3	2	1
Development impact fees : bulk service charges payable to local government	3	2	1
Adjacent uses : adjacent uses to the site should be comparable with the project	3	2	1
Amenities/services : the availability of nearby amenities and services	3	2	1
Links with other industries : certain industries tend to cluster together	3	2	1

15. If your answer is Always to a minimum of three of the evaluation factors in question 14 above; please indicate which of these three factors you deem to be the most important, in order of preference.

Evaluation factor	
1.	1
2.	2
3.	3

4. Not applicable : less than three items were indicated as Always	4

SECTION D : PROPERTY DEVELOPMENT : COMPONENTS AND KEY PERFORMANCE AREAS : MARKET RESEARCH AND PROPERTY MARKETS

16. Does your company apply a structured framework approach to market research?

Yes	No
1	2

17. If your answer is no to question 16 above, please indicate why you do not apply a structured approach to market research.

18. To what extent does your company apply and analyse the following market and marketability analysis factors when conducting market research?

	Always	Sometimes	Never
Market analysis (macro market)			
Determine national and international economic trends and monetary and fiscal impacts on real estate	3	2	1
Select the target market	3	2	1
Delineate market and trading area for intended use	3	2	1
Perform supply and demand analysis	3	2	1
Project future rent schedules, prices and space needs	3	2	1
Purchasing power analysis	3	2	1
Demographic, employment, social, cultural and technological trends	3	2	1
Marketability analysis (micro market)			
Regional and urban analysis	3	2	1
Neighbourhood analysis	3	2	1
Site analysis	3	2	1
Preliminary marketing and management strategy	3	2	1
Competitive analysis	3	2	1

	Always	Sometimes	Never
Estimates of space needs, market absorption rates, gross income, operational costs and vacancy rates	3	2	1

19. Do you agree/disagree with the following characteristics of the property market?

	Agree	Disagree
As an institution, it is far less organised	1	2
Buyers and sellers are spatially separated	1	2
Results of transactions are difficult to assemble, making the study of trends difficult	1	2
Registration of transfer documentation is complex	1	2
The property market is highly differentiated (it serves several needs)	1	2
Constraints on supply are more variable (supply is not controlled by the developer but by councils and political entitlements)	1	2
Market data is less structured and much less certain	1	2
Projects are user specific and cannot be mass marketed	1	2
Market activity is determined by economic, social, political and legal activities and constraints	1	2
The market is determined by supply and demand factors and is as such, cyclical of nature	1	2

20. To what extent are the following sources of property information utilised by your company when conducting market research and analysing the property market?

	Always	Sometimes	Never
Demographic data sources	3	2	1
Psychographics : portraying household lifestyles	3	2	1
Consumer surveys	3	2	1
Quantitative research ⮙ Mail surveys ⮙ Telephone surveys ⮙ Internet surveys ⮙ In person surveys ⮙ Qualitative research conducted with a small number of respondents ⮙ Analysing supply	3	2	1
Mapping the competition	3	2	1
Real estate agents	3	2	1
Driving through the neighbourhoods	3	2	1
Newspapers and magazines	3	2	1
Property management companies	3	2	1
Property valuers	3	2	1
Local associations	3	2	1
Market research companies	3	2	1
The valuer general's office	3	2	1
The internet	3	2	1

SECTION E : PROPERTY DEVELOPMENT : COMPONENTS AND KEY PERFORMANCE AREAS : FEASIBILITY PRINCIPLES, DESIGN DEVELOPMENT AND FINANCIAL ANALYSIS

21. Does your company follow an integrated framework approach to feasibility analysis in determining the viability and formulating a strategy for a property development?

Yes	No
1	2

22. If your answer is no to question 21 above, please indicate below why you do not apply a structured approach to the feasibility analysis process.

23. If your answer is yes to question 21 above, please indicate below the extent to which your company analyses and applies the following financial feasibility framework factors.

	Always	Sometimes	Never
Ownership structure	3	2	1
Land-use decision (market and economic study)	3	2	1
Aesthetic and ethical constraints	3	2	1
Regulatory, legal and political constraints	3	2	1
Physical and technical constraints as well as alternative solutions	3	2	1
Determining dominant objectives why feasibility study is conducted	3	2	1
Market analysis and feasibility	3	2	1
Socio-political feasibility (economic feasibility, environmental impact and sociological desirability)	3	2	1
Identifying opportunities which are consistent with above objectives	3	2	1
Gauge performance capacities	3	2	1
Measure or identify risks	3	2	1
Market segmentation to identify specific targets	3	2	1
Physical and design analysis of development project	3	2	1

	Always	Sometimes	Never
Financial feasibility analysis : Construction and absorption period (budget that ends when the building is fully leased)	3	2	1
Financial feasibility analysis : Operational period (pro-forma leasing and revenue projections)	3	2	1
Development programme	3	2	1

24. Does your company analyse and include the following components when completing a financial feasibility analysis for a property development?

	Yes	No
CONSTRUCTION AND ABSORPTION PERIOD		
Development costs		
· Land and land related costs	1	2
· Construction cost, construction cost increases and related costs	1	2
· Design consultant's fees and disbursements	1	2
· Development management allowance	1	2
· Tenant inducements	1	2
· Project promotion, marketing and commission	1	2
· Holding charges and financing costs	1	2
· Development margin and other overhead allowances	1	2
OPERATIONAL PERIOD		
Cash flow analysis		
· Income and expense forecasts	1	2
· Potential gross income	1	2
· Vacancy and collection loss on effective gross income (EGI)	1	2
· Operating expenses (OE)	1	2
· Net operating income (NOI)	1	2
· Before tax cash flow (BTCF)	1	2
Financial ratio analysis		
· Discounted cash flow analysis	1	2
· Key financial ratios and other measurement tools (for example: capitalisation rate)	1	2
Property measurement analysis (for example: rate per square metre)	1	2
Sensitivity analysis (for example: vacancy analysis)	1	2
Risk analysis (for example: analysing business risk)	1	2

25 To what extent does your company apply the following discounted cash flow analysis (DCF) methods and other key financial ratios, when conducting financial feasibility studies?

	Always	Sometimes	Never
Discounted cash flow analysis (DCF)			
· Payback period (PB)	3	2	1
· Net present value (NPV)	3	2	1
· Internal rate of return (IRR)	3	2	1
· Modified internal rate of return (MIRR)	3	2	1
· Profitability index (PI)	3	2	1
Key financial ratios			
· Capitalisation ratio (Cap rate)	3	2	1
· Equity to value ratio	3	2	1

	Always	Sometimes	Never
· Development yield	3	2	1
· Value determination	3	2	1
· Debt coverage ratio (DCR)	3	2	1
· Loan-to-value ratio (LVR)	3	2	1
· Break-even cash flow ratio (BER)	3	2	1
· Operating efficiency ratio (OER)	3	2	1
· Cash on cash return	3	2	1
· Break-even occupancy (BEO)	3	2	1
· Gross rent multiplier (GRM)	3	2	1
· Effective gross income multiplier (EGIM)	3	2	1
· Net income multiplier (NIM)	3	2	1
· Before tax cash flow multiplier	3	2	1

THANK YOU VERY MUCH FOR YOUR CO-OPERATION.

THE SCHOOL OF ECONOMICS AND FINANCE AT CURTIN UNIVERSITY OF TECNOLOGY WISHES TO EXPRESS ITS SINCERE APPRECIATION FOR YOUR CONTRIBUTION TOWARDS THIS VALUABLE RESEARCH PROJECT REGARDING THE PRACTICE OF PROPERTY DEVELOPMENT.

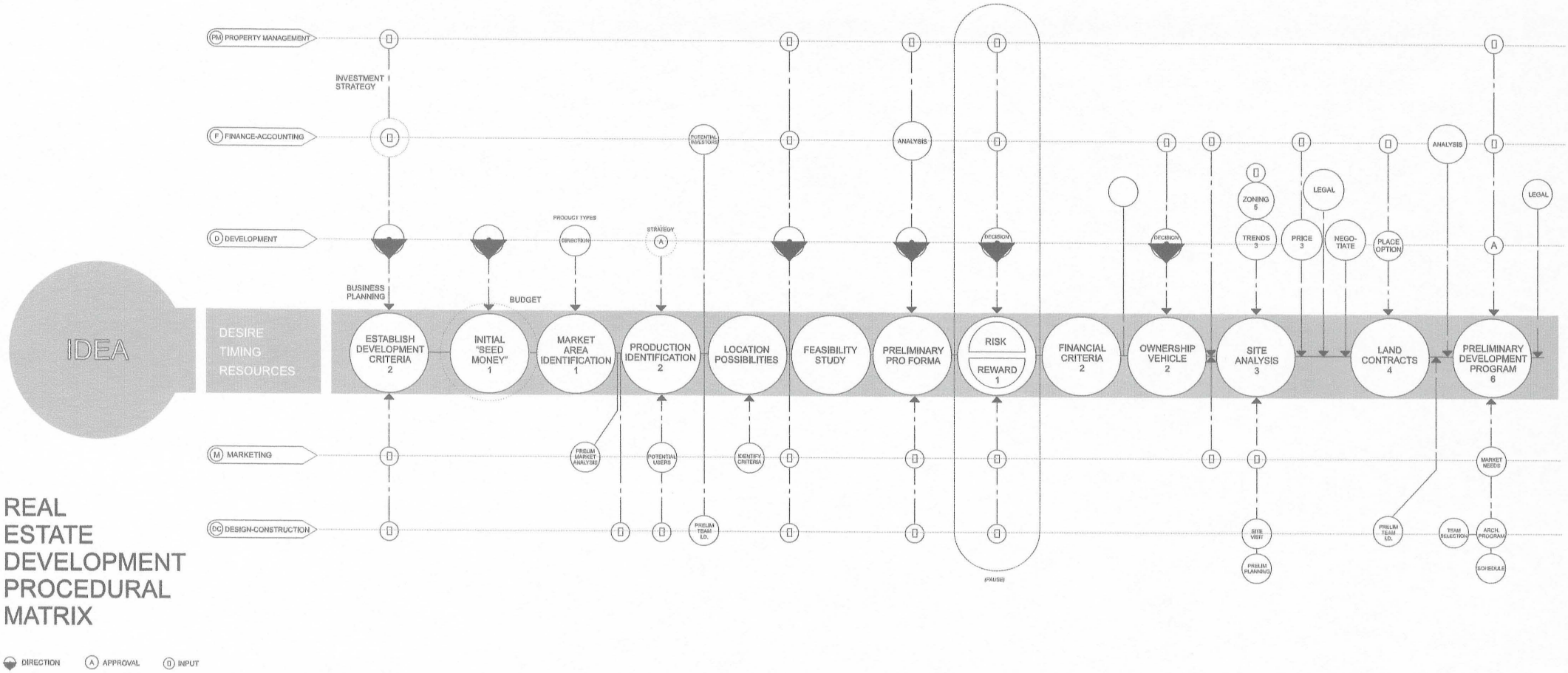
APPENDIX B

APPENDIX B:

NAMES AND ADRESSES OF ELEVEN SELECTED PROPERTY DEVELOPERS INCLUDED IN THE STUDY SAMPLE

No.	Name	Address	Postal Address	Telephone	Fax
1	Australand Holdings Limited	Level 1, 109 Logan Road	PO Box 1365	07 3391 7466	07 3891 1389
		Woolloongabba QLD 4102	Coorparoo QLD 4151		
2	Bledisloe Holdings Pty Ltd	Level 2, 179 Grey Street	GPO Box 665	07 3013 0011	07 3033 0007
		South Brisbane QLD 4101	Brisbane QLD 4001		
3	Brisbane Airport Corporation Pty Ltd	Unit 3, 37 - 39 Quantas Drive	PO Box 61	07 3406 3238	07 3866 3020
		Brisbane Airport QLD 4007	Hamilton QLD 4007	0417 603 518	
4	Centro Properties Group	Qld State Office, Centro Toombul	PO Box 1275	07 3260 4300	07 3260 4350
		1015 Sandgate Road	Toombul QLD 4012	03 8847 0014	
		Toombul QLD 4012		0419 337 006	
5	FKP Limited	Level 5, 120 Edward Street	GPO Box 2447	07 3223 3888	07 3223 3877
		Brisbane QLD 4000	Brisbane QLD 4001		
6	Global Management Corporation (Qld) Pty Ltd	Level 8, 345 Ann Street	PO Box 10604	07 3236 9000	07 3236 9499
		Brisbane QLD 4000	Adelaide St BC QLD 4001		
7	Leighton Properties Pty Ltd	Level 12, Bank of Qld Building	GPO Box 2955	07 3229 8938	07 3220 2273
		259 Queen Street	Brisbane QLD 4001		
		Brisbane QLD 4000			
8	Metroplex Management Pty Ltd	1040 Boundary Road	PO Box 397	07 3879 4999	07 3879 4904
		Richlands QLD 4077	Richlands DC QLD 4077	0412 744 442	
9	Mirvac Group	Level 2	PO Box 5121	07 3859 5813	07 3010 1623
		164 Grey Street	West End		
		South Brisbane QLD 4101	QLD 4101		
10	The Mur Group	Level 5, World Knowledge Centre	PO Box 4167	07 3819 9904	07 3819 9900
	(Springfield Land Corporation)	Education City, Sinnathamby Boulevarde	Springfield QLD 4300		
		Springfield Lakes QLD 4300			
11	Pearson Property Group Pty Ltd	Level 9	GPO Box 270	07 3229 3100	07 3229 9400
		175 Eagle Street	Brisbane QLD 4001		
		Brisbane QLD 4000			

APPENDIX C



REAL ESTATE DEVELOPMENT PROCEDURAL MATRIX

DIRECTION A APPROVAL I INPUT

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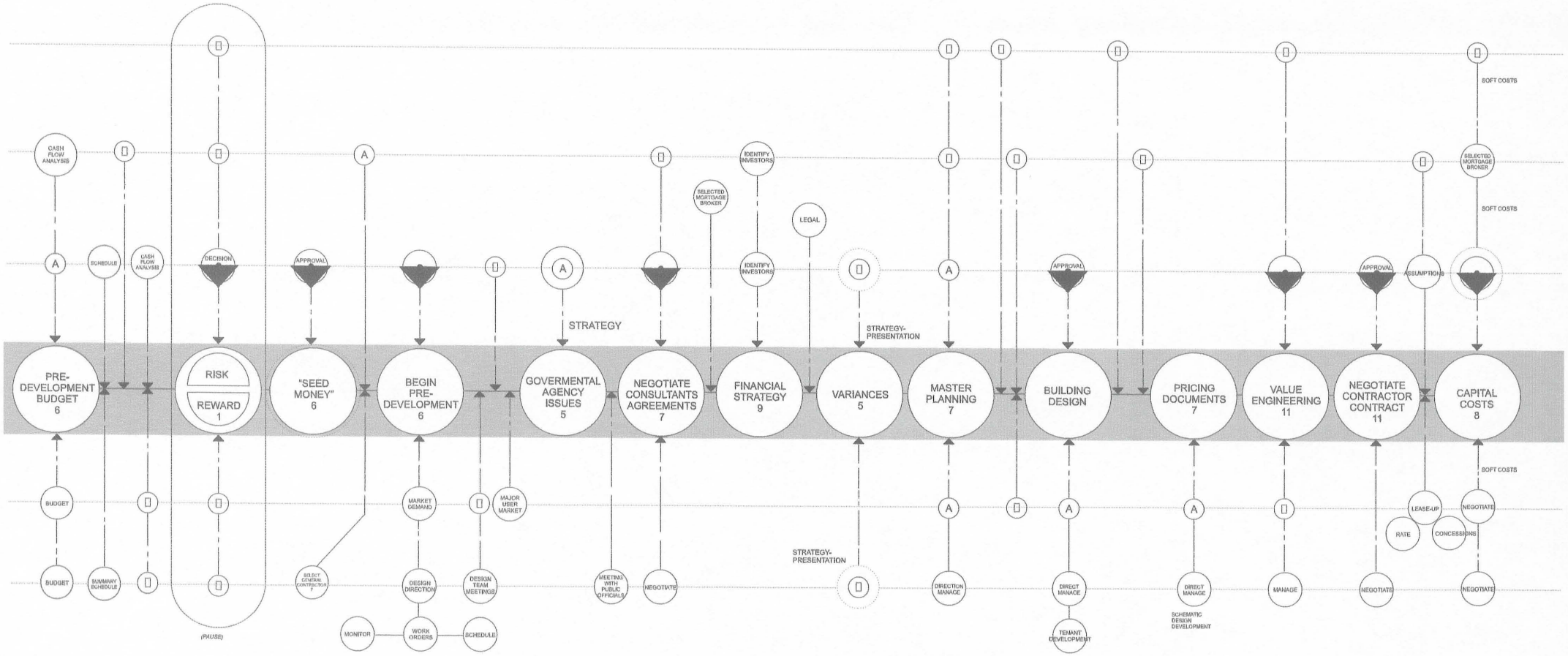

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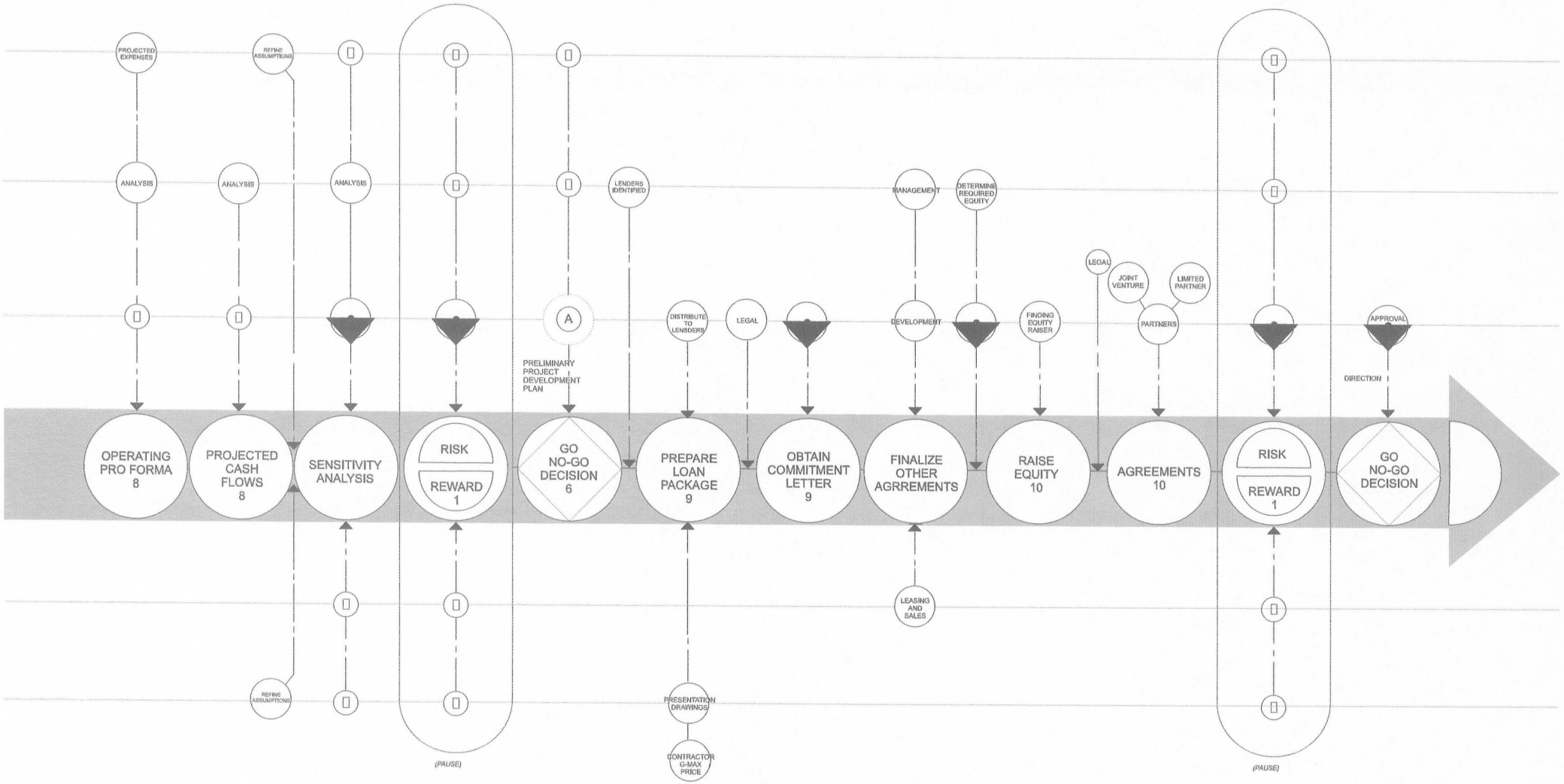
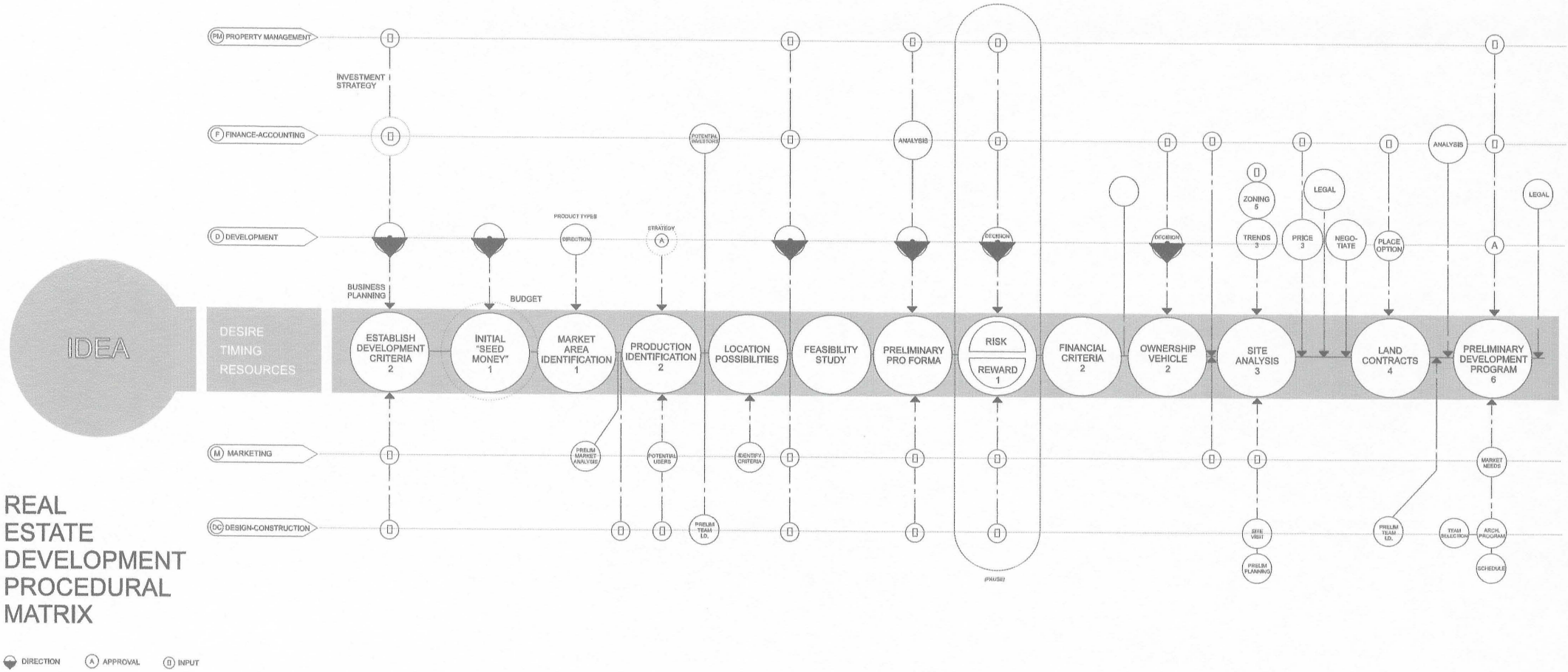

PROJECTED EXPENSES
REFINE ASSUMPTIONS
ANALYSIS
ANALYSIS
ANALYSIS
LENDERS IDENTIFIED
MANAGEMENT
DETERMINE REQUIRED EQUITY
LEGAL
JOINT VENTURE
LIMITED PARTNER
A
DISTRIBUTE TO LENDERS
LEGAL
DEVELOPMENT
FINDING EQUITY RAISER
PARTNERS
APPROVAL
PRELIMINARY PROJECT DEVELOPMENT PLAN
DIRECTION
OPERATING PRO FORMA 8
PROJECTED CASH FLOWS 8
SENSITIVITY ANALYSIS
RISK
REWARD 1
GO NO-GO DECISION 6
PREPARE LOAN PACKAGE 9
OBTAIN COMMITMENT LETTER 9
FINALIZE OTHER AGRREMENTS
RAISE EQUITY 10
AGREEMENTS 10
RISK
REWARD 1
GO NO-GO DECISION
LEASING AND SALES
REFINE ASSUMPTIONS
PRESENTATION DRAWINGS
CONTRACTOR G-MAX PRICE
(PAUSE)
(PAUSE)



REAL ESTATE DEVELOPMENT PROCEDURAL MATRIX

DIRECTION A APPROVAL I INPUT

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APPENDIX D

QUESTION 7

CROSS TABULATION RESULTS: LISTED AND UNLISTED COMPANIES

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_1	Yes	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	No	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_2	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_3	1	Count	4	3	7
		% within Q1_1	80.0%	50.0%	63.6%
	2	Count	1	3	4
		% within Q1_1	20.0%	50.0%	36.4%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_4	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_5	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_6	1	Count	4	4	8
		% within Q1_1	80.0%	66.7%	72.7%
	2	Count	1	2	3
		% within Q1_1	20.0%	33.3%	27.3%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_7	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_8	1	Count	5	4	9
		% within Q1_1	100.0%	66.7%	81.8%
	2	Count	0	2	2
		% within Q1_1	.0%	33.3%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_9	1	Count	5	4	9
		% within Q1_1	100.0%	66.7%	81.8%
	2	Count	0	2	2
		% within Q1_1	.0%	33.3%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_10	1	Count	4	6	10
		% within Q1_1	80.0%	100.0%	90.9%
	2	Count	1	0	1
		% within Q1_1	20.0%	.0%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_11	1	Count	4	4	8
		% within Q1_1	80.0%	66.7%	72.7%
	2	Count	1	2	3
		% within Q1_1	20.0%	33.3%	27.3%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_12	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_13	1	Count	1	3	4
		% within Q1_1	20.0%	50.0%	36.4%
	2	Count	4	3	7
		% within Q1_1	80.0%	50.0%	63.6%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_14	1	Count	3	3	6
		% within Q1_1	60.0%	50.0%	54.5%
	2	Count	2	3	5
		% within Q1_1	40.0%	50.0%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_15	1	Count	3	4	7
		% within Q1_1	60.0%	66.7%	63.6%
	2	Count	2	2	4
		% within Q1_1	40.0%	33.3%	36.4%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_16	1	Count	3	3	6
		% within Q1_1	60.0%	50.0%	54.5%
	2	Count	2	3	5
		% within Q1_1	40.0%	50.0%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_17	1	Count	3	2	5
		% within Q1_1	60.0%	33.3%	45.5%
	2	Count	2	4	6
		% within Q1_1	40.0%	66.7%	54.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_18	1	Count	4	2	6
		% within Q1_1	80.0%	33.3%	54.5%
	2	Count	1	4	5
		% within Q1_1	20.0%	66.7%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_19	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_20	1	Count	5	4	9
		% within Q1_1	100.0%	66.7%	81.8%
	2	Count	0	2	2
		% within Q1_1	.0%	33.3%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_21	1	Count	2	1	3
		% within Q1_1	40.0%	16.7%	27.3%
	2	Count	3	5	8
		% within Q1_1	60.0%	83.3%	72.7%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_22	1	Count	5	4	9
		% within Q1_1	100.0%	66.7%	81.8%
	2	Count	0	2	2
		% within Q1_1	.0%	33.3%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_23	1	Count	3	3	6
		% within Q1_1	60.0%	50.0%	54.5%
	2	Count	2	3	5
		% within Q1_1	40.0%	50.0%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q7_24	1	Count	3	5	8
		% within Q1_1	60.0%	83.3%	72.7%
	2	Count	2	1	3
		% within Q1_1	40.0%	16.7%	27.3%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_25	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q7_26	1	Count	1	0	1
		% within Q1_1	20.0%	.0%	10.0%
	2	Count	4	5	9
		% within Q1_1	80.0%	100.0%	90.0%
	Total	Count	5	5	10
		% within Q1_1	100.0%	100.0%	100.0%

QUESTION 19

CROSS TABULATION RESULTS: LISTED AND UNLISTED COMPANIES

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_1	Agree	Count	2	4	6
		% within Q1_1	40.0%	66.7%	54.5%
	Disagree	Count	3	2	5
		% within Q1_1	60.0%	33.3%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_2	Agree	Count	2	1	3
		% within Q1_1	40.0%	16.7%	27.3%
	Disagree	Count	3	5	8
		% within Q1_1	60.0%	83.3%	72.7%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_3	1	Count	1	5	6
		% within Q1_1	20.0%	83.3%	54.5%
	2	Count	4	1	5
		% within Q1_1	80.0%	16.7%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_4	1	Count	3	1	4
		% within Q1_1	60.0%	16.7%	36.4%
	2	Count	2	5	7
		% within Q1_1	40.0%	83.3%	63.6%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_5	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_6	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_7	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q19_8	1	Count	3	3	6
		% within Q1_1	60.0%	50.0%	54.5%
	2	Count	2	3	5
		% within Q1_1	40.0%	50.0%	45.5%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q19_9	1	Count	4	6	10
		% within Q1_1	80.0%	100.0%	90.9%
	2	Count	1	0	1
		% within Q1_1	20.0%	.0%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q19_10	1	Count	5	5	10
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	5	10
		% within Q1_1	100.0%	100.0%	100.0%

QUESTION 24

CROSS TABULATION RESULTS: LISTED AND UNLISTED COMPANIES

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_1	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_2	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_3	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_4	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_5	1	Count	5	4	9
		% within Q1_1	100.0%	66.7%	81.8%
	2	Count	0	2	2
		% within Q1_1	.0%	33.3%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_6	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_7	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabultion					
			Q1_1		
			Yes	No	Total
Q24_8	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_9	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_10	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_11	1	Count	5	5	10
		% within Q1_1	100.0%	83.3%	90.9%
	2	Count	0	1	1
		% within Q1_1	.0%	16.7%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_12	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_13	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_14	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_15	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_16	1	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation

			Q1_1		
			Yes	No	Total
Q24_17	1	Count	4	5	9
		% within Q1_1	80.0%	83.3%	81.8%
	2	Count	1	1	2
		% within Q1_1	20.0%	16.7%	18.2%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_18	1	Count	4	6	10
		% within Q1_1	80.0%	100.0%	90.9%
	2	Count	1	0	1
		% within Q1_1	20.0%	.0%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%

Cross tabulation					
			Q1_1		
			Yes	No	Total
Q24_19	1	Count	4	6	10
		% within Q1_1	80.0%	100.0%	90.9%
	2	Count	1	0	1
		% within Q1_1	20.0%	.0%	9.1%
	Total	Count	5	6	11
		% within Q1_1	100.0%	100.0%	100.0%