

**FEASIBILITY STUDY FOR MIXED-USE PROJECTS:
A CASE EXAMPLE ABROAD**

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

**KARMA KULLANIMLI PROJELERDE FİZİBİLİTE ÇALIŞMASI:
YURT DIŞINDAN BİR UYGULAMA ÖRNEĞİ**

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FOREWORD

I would like to express my gratitude and thanks to my family for their all kind of support and I must express my deepest thanks to my husband Ömer Hacısalıhoğlu for his invaluable aid and encouragement.

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This thesis is dedicated to my five months old son Altan.

June 2009

Lale Hacısalıhoğlu

Real Estate Development

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LIST OF ABBREVIATIONS

CBD	: Central Business District
CF_t	: Net cash flow generated by the property in period t
DCF	: Discounted Cash Flow
E	: East
E_{o/r}	: Expected average return per period
FV	: Future Value
FZ	: Free Zone
GBA	:Gross Building Area
GDP	:Gross Domestic Product
GNI	:Gross National Income
ha	: Hectar
HVAC	: Heating Ventilation Air Conditioning
ICSC	: International Council of Shopping Centers
IMF	: International Monetary Fund
IRR	: Internal Rate of Return
km	: Kilometer
m	: Meter
m²	: Square meters
MICE	: Meetings Incentives Conferencing and Exhibitions
N	: North
N	: Number of periods between present and future time
n.a.	: Not announced
NOI	: Net Operating Income
NPV	: Net Present Value
PGI	: Potential Gross Income
PV	: Present Value
R_p	: Risk premium
SE	: Southeast
SID	: Djibouti Real Estate Company
sq km	: Square kilometers
sqm	: Square meter
T	: The terminal period
U.S.	: United States
UAE	: United Arab Emirates
USD	: Unites States Dollar
W	: West

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LIST OF SYMBOLS

\$	:United States Dollar
r	:Simple Interest or Discount Rate
r_f	:Risk Free Rate

FEASIBILITY STUDY FOR MIXED-USE PROJECTS: A CASE EXAMPLE ABROAD

SUMMARY

Real estate development is the continual reconfiguration of the built environment to meet society's needs. It is a complicated process involving participation of professionals from different disciplines, and a business, like other businesses, which generates income and regular cash flow.

Due to their large scale and component integration, mixed-use development is the most complex type of real estate. Consequently, feasibility studies are essential for the success of mixed-use developments.

Real estate feasibility is the formal demonstration of a proposed project's viability. Although it does not guarantee a project's success, it leads to a go/no go decision. For decision making in complex and large investments such as mixed-use real estate developments such a study is required.

A typical real estate feasibility study begins with comprehensive market research. Input for financial feasibility, target consumers, their preferences and habits are all obtained from this market analysis. Site evaluation, cost estimation and preliminary design are other components of a feasibility study.

In this thesis, a systematic approach for making a feasibility study for mixed-use projects is established, beginning with an explanation of real estate developments and then mixed-use developments. Then each step of the proposed approach is applied to a case study abroad.

This case example shows us how a feasibility study effects investment decision, the proposed project and the importance of carefully applying all the steps of it.

KARMA KULLANIMLI PROJELERDE FİZİBİLİTE ÇALIŞMASI: YURTDIŞINDAN BİR UYGULAMA ÖRNEĞİ

ÖZET

Gayrimenkul geliştirme yaşadığımız çevrenin toplumun ihtiyaçlarına göre sürekli yenilenmesidir. Farklı disiplinlerden uzmanları bir araya getiren karmaşık bir yapıdır ve tıpkı diğer işler gibi gelir getiren ve düzenli nakit akışı sağlayan bir iştir.

Karma kullanımlı yapılar, büyük ölçekli olmaları ve farklı fonksiyonların etkileşmesi sebebiyle gayrimenkul tipleri içerisindeki en karmaşık yapılardır. Bu sebeple, karma kullanımlı projelerin başarıya ulaşmaları için fizibilite çalışması yapmak çok önemlidir.

Gayrimenkul fizibilitesi, geliştirilmesi düşünülen bir projenin yapılabilirliğini gösteren bir çalışmadır. Her ne kadar projenin başarılı olacağı garantisini vermese de çalışmaya devam edip etmeme konusunda fikir verir. Karma kullanımlı yapılar örneğinde olduğu gibi karmaşık ve büyük ölçekli yatırımlarda da karar alma aşamasında bu tip bir çalışma yapmak gerekmektedir.

Tipik bir fizibilite çalışması detaylı bir pazar araştırmasıyla başlar. Finansal analiz için gerekli olan veriler, hedef müşteri kitlesi ve bunların alışkanlık ve tercihleri bu pazar araştırması sonucuna göre bulunur. Arazinin incelenmesi, maliyet tahmini ve ön taslaklar bu çalışmanın diğer kısımlarını oluşturmaktadır.

Bu tezde, öncelikle gayrimenkul ve sonra karma kullanımlı projelerin tanımı yapılmış, sonra karma kullanımlı projelerin fizibilite çalışmasında uygulanacak bir sistem geliştirilmiştir. Daha sonra, geliştirilen bu sistem yurtdışında bir örnekte uygulanmıştır.

Bu uygulama, bir fizibilite çalışmasının yatırım kararını ve öngörülen projeyi nasıl etkilediğini ve çalışmanın her bir adımının titizlikle uygulanmasının önemini göstermektedir.

I. INTRODUCTION

1.1. Subject of the Study

The subject of this study is the formation of a systematic approach for feasibility studies of mixed-use developments. This approach is applied to a case example abroad.

The study begins with a comprehensive definition of real estate development, mixed-use developments and continues with a feasibility study covering the following major topics:

- Real estate development
- Mixed-use projects
- Feasibility study
- Market analysis
- Site evaluation
- Development plan of mixed-use projects
- Cost estimation
- Financial analysis

The study continues in parallel with the application of the methodology to a case, a mixed-use development project in Djibouti, Africa.

1.2. Aim of the Study

Real Estate Development is a complex process which involves risks and uncertainty. It is more than a series of numbers gleaned from the marketplace; it involves entrepreneurial energy and creativity as well. The feasibility study is an important management tool providing multiple forms of risk control over several subsequent stages of the development process. [2]

The mixing of different land uses - residential, commercial, retail, entertainment, cultural - in one relatively discrete area has been prevalent in human settlements ranging from small villages to large cities. The concept of mixed-use urban areas was born in the ancient towns and cities of Greece and China, developed into the tightly compacted and walled cities of medieval Europe, and finally became the delightful mix of buildings and uses we see today in vibrant cities such as London, Paris, Cairo, Tokyo and Beijing. [6]

Achieving success in mixed-use projects is not easy. Mixed-use development is complex and does not lend itself to the formulaic approach of many single use projects. Each project and situation is different, and the development concept and outcome vary dramatically, depending on the particular site, market, developer, urban designer and financing. Uses must be marketable in their own right, phased at the right time, and work together synergistically to create a whole that is greater than the sum of its parts. [6]

This means mixed-use development real estate feasibility studies are extremely important. Nevertheless, there are very limited books and academic studies dealing with mixed-use developments and the feasibility studies of mixed-use projects. This study aims to define a systematic approach to real estate feasibility studies for mixed-use projects and apply this approach to a case example.

1.3. Method of the Study

In the second and third chapters, the terms, definitions, explanations relating to real estate development, its stages, feasibility study and steps in this study are explained. International and national literature is researched and a systematic approach is developed.

In the fourth chapter, this approach is applied to a case, a mixed-use development in Djibouti, a country in East Africa.

2. REAL ESTATE DEVELOPMENT

Real Estate Development is the process of responding to a real estate need in the society by creating and financing a product which satisfies that need. [1]

- It is a complicated process basically involving participation of disciplines such as; market research, marketing, law, public relations, design, construction, finance, accounting, property management.
- It is a multidisciplinary process basically involving participation of professions such as; market analysts and consultants, brokers, title companies, mortgage brokers, bankers, lenders, engineers, architects, contractors, environmental consultants, land planners, landscape architects, appraisers, surety companies, public relations firms, advertising agencies, property managers, lawyers.
- It is a business which works with the physical features and forms of environment and can be created in land, water or air. [1]
- It is a business which responds to the changes of technology, socio-economics, demographics, architecture, laws, entertainment, recreation and manufacturing. [1]
- It is like other businesses supposed to generate income and regular cash flow.
- It is art, besides being a business, with features such as; creative, complex, partly instinctive and partly logical.

2.1. Stages of Real Estate Development

Real Estate Development is a creative and complicated process and understanding the stages of Real Estate Development is fundamental for being successful in this business. [3] Figure 2.1 summarizes these stages.

These stages may be grouped under five categories and summarized as below:

- Planning and initiating phase: Project objectives and major development issues are defined, development team is established and preliminary concept is determined.

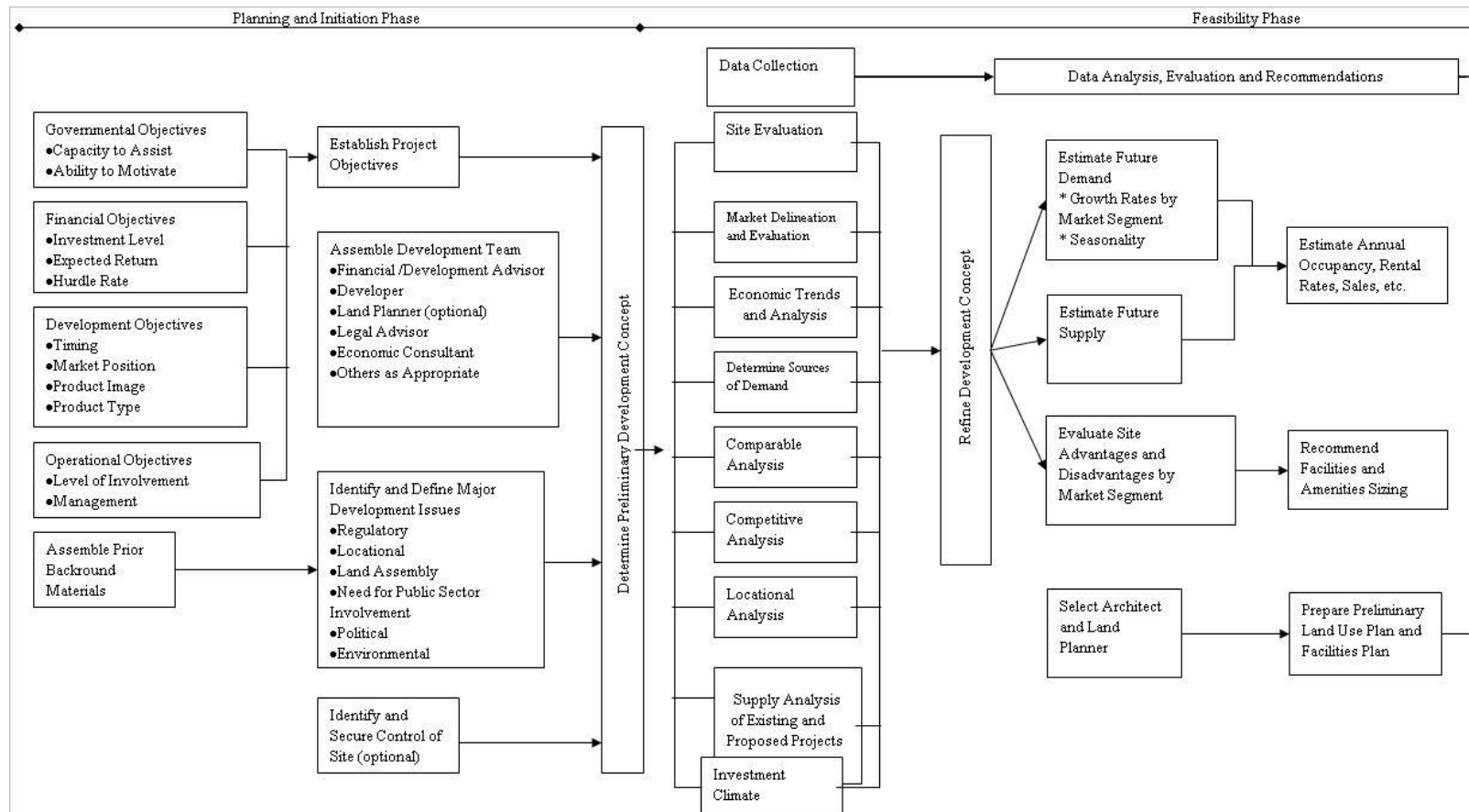


Figure 2.1: Stages of Real Estate Development [3]

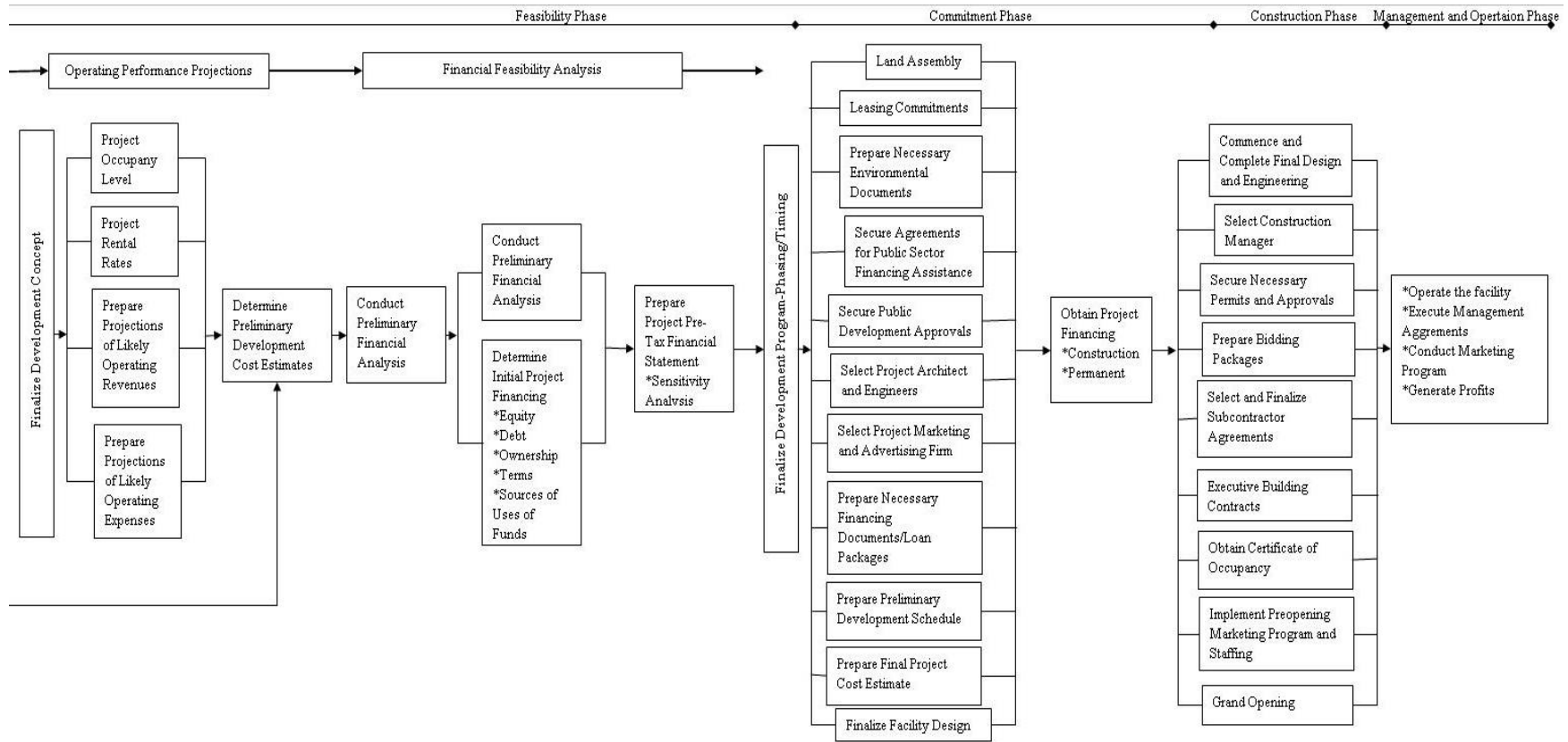


Figure 2.1: (continued) Stages of Real Estate Development [3]

- Feasibility phase: Market analysis and projections relating to project performance is conducted, site is evaluated, development concept is finalized, cost estimations and financial analysis are performed.
- Commitment phase: Final design and cost estimations are conducted, project team is established and financing is obtained.
- Construction phase: Design is completed, contractors are selected, necessary permits and approvals are secured, construction is completed and ready for operation.
- Management and operation phase: The facility is operated and managed, profit is generated.

As seen from the figure, some steps occur simultaneously while some take place sequentially. Each step depends on the preceding one and certain items must be completed before proceeding to the next step. But it should also be noted that the sequence of steps and even the steps themselves may change frequently in the development process.

Understanding these steps is important in go/no-go decision and also efficiency. For instance, obtaining detailed working drawings before a market feasibility study is completed is a waste of money and time. Furthermore if the market is not as healthy as expected a no-go decision may be given at any stage of the process.

2.2. Types of Real Estate

Real estate developments may be grouped in accordance with their purpose of usage as below:

- Residential Developments
- Retail Developments
- Commercial Developments
- Specially Used Developments
- Mixed-use Developments

2.3. Mixed-use Developments

Mixed-use projects are developments which combine two or more types of revenue producing real estate developments. Mixed-use projects may be either low rise suburban projects or high rise, high density urban projects. Mixed-use projects were created to satisfy a convenience and marketing demand using valuable property for its highest and best use. [1] For instance, to have a hotel function provides advantage for office visitors while creating a demand for the hotel itself. The synergy created between the components creates vitality for the mixed-use development and generally combining different functions in one single project is superior to each single development.

Mixed-use developments are characterized by [6]:

- three or more significant revenue-producing uses (such as retail/entertainment, office, residential, hotel, and /or civic/cultural/recreation) that in well planned projects are mutually supporting;
- significant physical and functional integration of project components (and thus a relatively close-knit and intensive use of land), including uninterrupted pedestrian connections, and
- development in conformance with a coherent plan (that frequently stipulates the type and scale of uses, permitted densities and related items).

Integrated shared parking is a key component, improving land-use efficiencies and reducing cost. Pedestrian circulation and orientation are critical elements in the planning process, because without them, the project will not work as a whole and will not achieve the desired synergies and sense of place that are the hallmarks of mixed-use developments. This second criteria distinguishes mixed-use developments from other real estate projects that may include three or more significant revenue producing uses but do not fully integrate them such as business parks or master planned communities. [7]

Physical configuration of mixed-use developments can be categorized into three groups as below:

- **Mixed-use Towers:** These are single, high rise, high density towers. Functions are layered vertically. Mostly located in downtown. They have striking physical

profile and create land marks so helpful in marketing the development but have a disadvantage of creating less public outdoor space.

- **Integrated Multi-tower Structures:** These structures architecturally connect individual buildings and towers in one multi-component development. Common building may be an atrium, a shopping centre or underground parking area. Mostly found in downtown central business district (CBD) or high density suburban downtowns.
- **Mixed-use Town Centers, Urban Villages and Districts:** This type of mixed-use projects is made up of variety of individual buildings around streets, parks or squares and seems like an urban district more than a single project. Mostly developed outside downtowns. Mixed-use town centers, urban villages and districts are clearly the direction that most mixed-use designs are moving today. They also offer greater flexibility for timing and phasing projects, important factors in improving feasibility and reducing risk. [6]

Below are some examples of mixed-use developments from Turkey and abroad. Figure 2.2 is an example for mixed-use tower, including residences, a hotel, shopping arcade, offices, spa fitness, conference rooms and parking facilities. Figure 2.3 is an example for integrated multi-tower structure, including shopping center, residences, offices and parking facilities and Figure 2.4 is an example for town center and urban village organized around a retail main street including apartments, a hotel, a cinema and retail stores.



Figure 2.2: Süzer Plaza, Istanbul



Figure 2.3: Akmerkez, Istanbul, Turkey



Figure 2.4: Phillips Place, Charlotte, U.S.A.

3. FEASIBILITY STUDY FOR REAL ESTATE DEVELOPMENTS

A feasibility study is a preliminary study undertaken to determine and document a project's viability or the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives. The results of this study leads to go/no-go decision. If a project is seen to be feasible from the results of the study, the next logical step is to proceed with it. [12]

To accept a project's feasibility it needs to be [10];

- Physically feasible
- Financially feasible
- Legally feasible.

Figure 3.1 presents feasibility of a project.

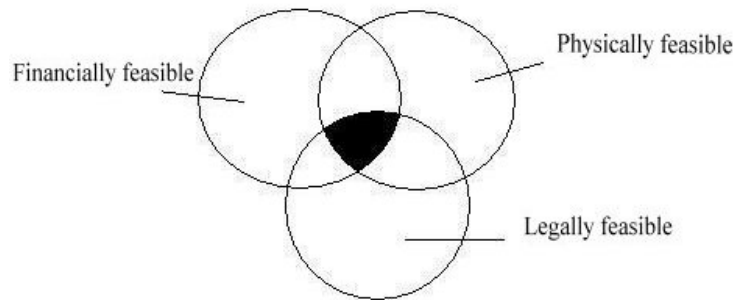


Figure 3.1: Feasibility of a Project [10]

“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.”¹[2]

This long definition very well explains the situation:

- Feasibility never demonstrates certainty.
- Objectives must be defined before initiating the study.

¹ Graaskamp, James A., A Rational Approach to Feasibility Analysis

- It is not basically whether an idea might work but whether it is likely to work in a specific time frame and with all the legal and physical limitations.

In section 2.1, figure 2.1 explains the activities encompassed in a typical Real Estate Feasibility study. These activities may be summarized mainly as below:

- Market analysis (market research)
- Site analysis and regulatory approvals
- Preliminary land use plan and facilities plan
- Development cost estimations
- Financial feasibility

These activities may be performed sequentially but more often simultaneously. As the analysis of feasibility study progresses, a go/no-go decision is taken at any time, undertaking the risk of money and time spent for the feasibility analysis and up to date costs including the cost of tying up the land. Though the aim of feasibility study is to secure financing and prevent any undesirable surprises in later stages it should always be noted that feasibility study does not guarantee the success of the project.

Feasibility study is done to assist the developer in decision making and completed before commitment phase. Analyst conducting this study should review the information supplied by the developer and make recommendations based on his/her market study. Following is a general feasibility study outline; the developer may tailor this outline in accordance with his/her needs:

- I. Cover Letter (Scope of Work)
- II. Table of Contents
- III. Developer's Objectives and Constraints
- IV. Property Description
 - a. Identification of the property
 - b. Legal Description
 - c. Neighborhood Properties
 - d. Current Zoning

- e. Topography

- f. Maps

V. Overview of the City/Country

- a. Demographics

- b. Employment Trends

- c. Purchasing Power

VI. Overview of Subject Area

- a. Demographics

- b. Employment Trends

- c. Purchasing Power

- d. Neighborhood Analysis

- e. Proximity to Residential/Commercial Real Estate Development Projects

- f. Transportation

- g. Religious/Educational/Municipal Institutions

- h. Recreational

VII. Legal, political, environmental constraints

- a. Legal Feasibility

- b. Political Feasibility

- c. Environmental Feasibility

VIII. Comparables (for each product type, i.e. residential, commercial)

- a. Product Types

- b. Name of Property

- c. Location

- d. Year Built

- e. Ownership

- f. Management Company

- g. Marketing Company
- h. Land Area
- i. Density (units/ land area)
- j. Building Information (architectural style and properties)
- k. Unit mix (number of units)
- l. Gross/Net/Leasable Area
- m. Amenities
- n. Resident/Tenant profile (demographic, economic etc.)
- o. Occupancy/absorption situation
- p. Rent/sale per square meter
- q. Lease term
- r. Commissions
- s. Picture, brochure etc.
- t. Location map

IX. Financial Analysis

- a. Development cost estimations
- b. Cash-flow analysis (ten-year forecasts)
- c. Sensitivity analysis

X. Marketing Strategy

- a. Sales/Rental Strategy
- b. Theme
- c. Public Relations/Advertising/Promotion

XI. Development Team

XII. Qualifications of the Analyst

3.1. Feasibility Study for Mixed-use Projects

Mixed-use projects are complex developments for being more than sum of several functions. The analyst must evaluate each use individually and understand the synergies created-both positive and negative. [7] Once the market analysis is completed, alternative development programs need to be outlined for the mix and scale of uses, timing and phasing, and land assembly. Then financial feasibility is determined for each development program by estimating development costs, operating costs, revenues, and long term cash flow. [6]

3.2. Market Analysis (Market Research)

Once, I was asked, “If you were given \$20,000,000, as a real estate developer to do with as you pleased, what would you do?” After careful thought and in an ideal world, I responded that I would spend the first \$1,000,000 on market research so that I would know the markets better than my competitor. Then I would spend another \$1,000,000 on assembling the very best development and marketing team. Then I would use the remaining \$18,000,000 as equity to pursue that which I learned from my marketing research to develop as many properties possible. [1]

Above paragraph is a very good example that attracts attention to the importance of market research. Market analysis forms the basis for decisions regarding location and site, size, design, quality, features, target audience, pricing strategies and so on. Only with a good market research the developer can know when, where, what, how, for whom to develop. Otherwise it is likely to miss the opportunities, lead to inefficient use of resources and even lose money.

Real estate market analysis is the identification and study of demand and supply, usually for a particular product.

Market analysis is usually performed as part of a feasibility study. [7]

Results derived from market analysis form the basis for the cash flow portion of feasibility study.

Regardless of the type of development being examined, every market study addresses there basic questions:

1. Will there be users to rent or buy the proposed project?
2. How quickly and at what rent or price will the proposed project be absorbed in the market?

3. How might the project be planned or marketed to make it more competitive in its market?

In a typical market analysis, first a market area is defined then the market itself. Market area is the geographic location where demand comes from and where competitors are located. Market refers to the product and product refers to the property type in real estate. Each property type is segmented into smaller markets. For example hotels can be categorized as business hotels, vacation hotels...etc. Narrowly defining the market segment helps to fine-tune the analysis. Then, demand and supply analysis are conducted.

Demand analysis is the difficult part of market analysis because beside the current demand data compiling through research, the analyst should also make projections for the features of the product such as architecture, pricing, services etc. to better fit the future demand.

Demand analysis considers the following data:

- Population, households and demographic characteristics;
- Income, affordability and purchasing power;
- Employment by industry or occupation;
- Migration and commuting patterns;
- Other factors, depending on the type of real estate development being studied.

Supply analysis considers the following data:

- Inventory of existing space or units;
- Vacancy rates and characteristics of vacant stock;
- Recent absorption of space, including types of tenants or buyers;
- Projects under construction and proposed;
- Market rents or sale prices and how they differ across locations and by quality of product.
- Features, functions and advantages of existing and proposed projects.
- Lease or sale terms and concessions (free rent, bonus features, tenant improvement allowances, etc.)

Mixed-use projects are complex for the market analyst because the analyst should analyze the interaction between components beside each component itself. In the following part details for analyzing most common mixed-use components are presented individually and then their interaction in mixed-use developments.

3.2.1. Residential project

A residential market analysis primarily should seek answers to below questions:

- Who is the target market?
- What is the appropriate price or rent range for the target market?
- What types and sizes of homes are suitable for the target market?
- What amenities and features should be provided to appeal to this market?
- What are absorption or lease-up and market capture rates?

3.2.1.1. Market area

Residential projects mostly draw its market from the local community. Analysis begins with study of regional setting then narrows to county or municipality to fine tune. A rule of thumb is that between 50 percent and 75 percent of the buyers and renters in a new development come from the local community [7], but there are many exceptions to this rule. The size and location of the market area depends on the proposed project and the community; ranging from single neighborhood to the entire metropolitan area. For example in a developing metropolitan city, market area extents to neighborhood communities, or for a second home project residents might be drawn from outside the local area.

3.2.1.2. Product types

- Single family detached houses, townhouses, multifamily units.
- For sale and rental properties.
- Condominium and cooperative ownership.
- Modular and manufactured construction.
- Mobile homes.
- Residences and seasonal or second homes.

- Master planned communities, new towns, infill divisions.
- Seniors' communities.

3.2.1.3. Demand analysis

Demographic and economic factors are the basis for analyzing and projecting the demand for residential projects:

- Population: Population growth is the primary factor because it is people who buys or rents houses.
- Household: Size and age of households gives the potential for housing needs and characteristics of housing.
- Employment: As the employment increases in a place, population increases and so the demand for housing.
- Income: Household income is important criteria for assessing pricing strategy.

3.2.1.4. Supply analysis

Analyzing competitive projects forms the supply side of residential market analysis.

Current housing stock is determined through a survey of currently selling projects and future stock is determined through final plan approvals and relevant zonings.

From the competitive projects, below information is gathered:

- The number of units sold/leased.
- Absorption rate.
- Vacancy rate for rented products.
- Price/rent per square meter.
- Features, amenities and other nonquantifiable characteristics.
- Buyer/renter profile.
- Consumer preferences.
- Expected opening dates for the projects under the pipeline.

3.2.1.5. Data source

For current housing stock, visiting project area and talking staff is the most efficient way to get data. For the ones under the pipeline, data is gathered through state planning departments. Census bureau is a major data source for demographic data and also for the housing stock. Other data sources are local real estate brokerage firms, bureau of labor, state agencies, local government or municipalities and private data vendors.

3.2.2. Retail projects

Measuring market potential and determining the exact location, size, type, concept and tenant composition of a retail project is the primary subject of retail market analysis.

3.2.2.1. Market area

Retail projects do not generate new business or create new buying power [7], they can only attract customers from existing business or fulfill a demand that has not been met or capture the increase in purchasing power resulting from demographic factors. Hence, the extent of the area where demand is created has great importance. Market area is not determined just by distance but also by driving time, natural barriers and accessibility. Market areas are generally divided into two or three categories depending on their attractiveness and customer influence:

1. Primary Trade Area:

This is the geographical area where the retail project attracts almost 70-80% of all its regular customers. In other words, it is the area extends nearly from 2 kilometers to 20 kilometers of distance or 5 to 30 minutes of driving time depending on the type of shopping center.

2. Secondary Trade Area:

This is the area where the center attracts almost 15-20% of all its customers. It takes place nearly 5 to 12 kilometers beyond the primary area. Secondary trade area is highly affected by the retail type and similar centers nearby so the extent of it depends on the distance as well as competitors.

3. Tertiary or Fringe Trade Area:

This is the broadest area from which customers may be drawn. It may extend from 25 kilometers to even 80 kilometers or with a driving distance of almost 1 hour or more. This area is considered for large outlet centers or centers which provide the things such as special merchandise, attractive ambiance or easy accessibility. Tourists or other travelers are also evaluated in the tertiary trade area.

3.2.2.2. Product types

Table 3.1 shows the types of retail products classified by ICSC (International Council of Shopping Centers)-U.S.

Table 3.1: ICSC Shopping Center Definitions (*Source:* ICSC)

Type of Shopping Center	Concept	Square Feet
MALLS		
Regional Center	General Merchandise	400,000-800,000
Superregional Center	Similar to regional center but has more variety and assortment	800,000-
OPEN AIR CENTERS		
Neighborhood Center	Convenience	30,000-150,000
Community Center	General Merchandise	100,000-350,000
Lifestyle Center	Upscale national chain specialty stores, dining and entertainment in outdoor setting	150,000-500,000
Power Center	Category Dominant anchors; few small tenants	250,000-600,000
Theme/Festival Center	Leisure; tourist oriented; retail and service	80,000-250,000
Outlet Center	Manufacturer's outlet stores	50,000-400,000

3.2.2.3. Demand analysis

Retail market study is not just a quantitative study but mostly a qualitative exercise and needs own judgment of the analyst. Below elements are evaluated in demand analysis. These are important in defining the type and composition of retail:

- Number of households, being singles or families, ages, child ownership and projection of these.
- Income levels, purchase power and projections.
- Employment type and projection; being blue-collar or professionals.
- Expenditure patterns and trends by type of goods.
- Demographic and economic data for other than local community: Tourists, workers, business travelers etc.
- Situation of anchor tenants; who they are, their expectations and needs.

3.2.2.4. Supply analysis

Below elements are evaluated in supply analysis [7]:

- Location, characteristics and sales figures of competitive retail centers, by type of center.
- Retail space availability, absorption and sales trends by retail categories.
- Characteristics and status of proposed and planned retail developments in the trade areas, as well as availability of other vacant, zoned sites that could likely become competitive retail development.
- Estimated market share and sales per square meter.

3.2.2.5. Data source

Statistical Institute is major data source for demographic data. Special data vendors are of great importance in analyzing supply data. Other possible sources are chamber of commerce, business journals and newspapers.

3.2.3. Office projects

Market analysis of commercial products requires understanding the local business environment. Which industries are expanding and by how much? Which nodes and locations are desirable for particular industries and types of business activities? What are the specific space needs (amount, type and price) of new and expanding business?

3.2.3.1. Market area

Market area for office projects is less subjective than residential and retail projects. It is mostly the location of competitive products and extension is based on some factors such as; proximity to competitive offices, facilities and mass transit, commute times from residential areas and physical and psychological barriers.

3.2.3.2. Product types

Office projects may be categorized into several factors depending on following criteria:

- Classification in accordance with the quality, age, facilities, lease rates and tenant profile leads to basically three classes; Class A, B, C and Class A being the best class.
- Location of the offices leads to three types of offices: Offices located in Central Business District (CBDs) are generally service firms. Secondary offices are generally located in the center but not in CBD, but around other centers such as universities and hospitals. Third group of offices are generally located in suburban and they create their own centers.
- There are three office types according to sizes: High rise (16-more than 16), mid-rise (4-15 floors) and low-rise (1-3 floors)
- Office may be owned by the tenant which is called “owner/user building” or may be built specifically by a tenant “built-to-suit” or may be constructed for unknown tenants “spec” building.

3.2.3.3. Demand analysis

Estimation of office space is the primary concern of demand analysis. Below are steps for conducting this analysis:

- Demand is generated by office using jobs. So, primarily it is classified and organized the local economy into sector and industries identifying major office user industries.
- Employment and profitability trends and current space use and needs are examined in these sectors.
- Statistical data of average space per worker is obtained. This data varies by industry and market area.
- Forecasts for employment and the need for space are developed.
- Office space demand is calculated by multiplying total number of office workers with average space per worker and adding up common areas.
- Absorption and replacement analysis are also important in understanding the strength and stability of the market. “Net absorption” is the change in occupied office space over a specified time period. “Replacement” is the amount of space that becomes leased or committed in a specified time period.

3.2.3.4. Supply analysis

Defining existing space, likely future additions and vacancy rates are primary concerns of supply analysis. Below are elements for conducting this analysis:

- To understand the supply situation, competitive products in the market area are classified in accordance with their types. This is also important in understanding the tenant preferences.
- Vacancy rates in these buildings are analyzed. The analyst should note information such as: What types of buildings have high vacancies? Is the rate falling or moving up? Are vacancies spread out through the market?
- Tenants are analyzed: Which firms are they? What are their preferences?
- Lease rates and terms are analyzed.

- Vacant lands are noted in the market. The analyst should find out zoning, selling price and what is under construction or pipeline in that vacant land parcel.

3.2.3.5. Data sources

Data of employment and business establishments may be obtained from Statistical Institutes. Real Estate brokerage firms and private data vendor firms maintain database of office buildings, rents, prices and vacancy rates of them. Other data sources might be local governments or economic development authorities, research firms, newspapers, business magazines.

3.2.4. Hotel projects

3.2.4.1. Market area

Market area for hotels is distinctly different for demand and supply analysis whereas it is same or very similar for other real estate products. Hotel demand is not generated by the hotel itself, in most cases, but by local businesses, convention facilities, tourist attractions and other draws that bring travelers to a location. [7] Whereas supply comes from nearby. For instance, a beach resort competes with similarly priced hotels along the same beachfront but patrons might be drawn from nearby cities or even from several different countries.

3.2.4.2. Product types

- Economy and Budget: Designed for the user who just wants a basic safe and comfortable room for sleeping at a reasonable price.
- Convention: Designed with the amenities like meeting facilities, travel services, large lobbies and multiple food facilities.
- Business: Designed to meet the needs of the business traveler with amenities like meeting rooms, secretarial services and travel services. Compared with convention hotels, they provide less public space and less food facilities.
- Vacation and Resort: Designed for the requirements of vacationers.
- Extended Stay: This type may be called “all suite” concept of lodging. Designed with more than a sleeping area, i.e. a separate living area.

3.2.4.3. Demand analysis

Affordable room rates, customers' choices and behavior, services and design are the main concern of demand analysis. In order to understand this, the analyst needs to understand market segments and demand generating factors.

Market segments are defined in terms of purpose of trip, seasonality, length of stay, price sensitivity, the nature of the facilities and amenities required and the number of rooms required. These segments basically may be grouped as commercial, leisure and other kind of stays.

In commercial purpose of trip, location is the primary criteria. Hotels in downtown, near to business centers and airports are mostly preferred. Length of stay is approximately one to two days from Monday to Thursday. Seasonality and price sensitivity is limited. Business facilities are required.

Leisure travelers travel mostly with their families and occupy double or higher rooms. Their typical stay varies but mostly one week. Seasonality and price sensitivity is high. Recreational facilities and amenities are required.

Demand is generated mainly by population growth, commercial and recreational development, improvement in transportation network.

Furthermore, following are good indicators to understand the market potential and people's spending behavior:

- Employment characteristics of a location
- Office and industrial space
- Income
- Retail sales
- Airport activities
- Hotel operating statistics
- Travel expenditure statistics
- Supply of new hotels

3.2.4.4. Supply analysis

Following elements are analyzed in competitive products for supply analysis:

- Number of rooms and size
- Average room rates and occupancy ratios
- Location
- Orientation (market segment)
- Affiliation (independent or chain)
- Features and Amenities

3.2.4.5. Data sources

Government agencies, statistical institute, chamber of commerce are major data sources. Other sources are, tour operators, tourism firms, hotel consultants, private data vendors, business journals, airport statistics and traffic counts.

3.2.5. Mixed-use projects

Market analysis for mixed-use projects starts with analyzing each component individually as if they are going to be independently located and built. The research then refined to reflect the interaction between these components and the synergy created among them. The matrix in Table 3.2 identifies the interrelations between markets for different types of development that are typically found in mixed-use projects.

There is a strong relationship between residential development and office employment and retail. The analyst needs to consider whether people will be attracted to living in the mixed-use development by the option of office employment in the same complex, and vice versa, and whether they will concentrate their convenience-retail expenditures within the complex. [7]

Office components have strong synergy with hotels, bars, restaurants. Most offices have visitors from outside the town and it is good to find nearby lodging facility. So, the analyst should interview with potential office tenants to understand the type of visitors they are expecting. Entertainment components like bars and restaurants are

Table 3.2: Matrix Grid for Mixed-use Development [6]

Primary Use Components	Health Care	Marina	Entertainment: Sport	Entertainment: Theaters	Entertainment: Bars & Restaurants	Retail: Comparison	Retail: Specialty	Retail: Convenience	Hotel	Offices	Residential
Residential	□	●	×	×	□	□	□	●	×	●	
Offices	□	—	□	—	●	□	□	□	●		●
Hotel	□	□	●	□	●	□	●	□		●	×
Retail: Convenience	—	●	□	□	□	□	×		□	□	●
Retail: Specialty Stores	—	●	□	●	●	●		×	●	□	□
Retail: Comparison	—	□	□	●	●		●	□	□	□	□
Entertainment: Bars & Restaurants	—	●	●	●		●	●	□	●	●	□
Entertainment: Theaters	—	—	□		●	●	●	□	□	—	×
Entertainment: Sports	□	□		□	●	□	□	□	●	□	×
Marina	—		□	—	●	□	●	●	□	—	●
Health Care		—	□	—	—	□	—	—	□	□	□
Level of Market Synergy in Mixed-use Developments ● Strong □ Weak or Uncertain — Neutral, Absence of Synergy × Potential Market Conflict											

also desirable components because employees and employers are potential clients for such amenities.

Most mixed-use developments include retail component either a small convenient based shopping center or a super regional shopping center. It is the primary public space and defining the character of the development. But it is the most difficult part of development as the potential for retail can not be determined until other components of mixed-use development are clarified.

A good well known hotel can enhance the project's image so improving overall marketability of the project. A hotel attracts people mostly for retail and entertainment and sport facilities depending on its type. Hotel has also a strong relationship with office component, but the analyst should note that enough demand for hotel may not be created by offices. The analyst should also consider the type of hotel when analyzing its effect on retail because, for instance, business travelers do not spend much time to shop whereas conference attendees, tourists and vacationers do.

In addition to office, retail, residential and hotel uses, several special categories of uses can be part of mixed-use developments such as entertainment and cultural, marina, health care, and non-revenue-generating uses.

One of the objectives of mixed-use developments is that they want to create activity throughout the whole day and night and weekends as well. Entertainment and cultural facilities such as theater, museum, cinema, concert hall, restaurant and bars serve this objective and they are key ingredients in many mixed-use developments. [6] Cultural facilities give a strong image of quality and attract more diversified people to the development. Entertainment facilities like bars and restaurants have great interrelations with retail uses.

Many urban waterfronts are shifting away from industrial uses to mixed uses; cities are looking to commercial and recreational uses to fill these underused areas. An appropriately located marina can contribute to a wide range of market synergies with other uses in a mixed-use development. [7]

Healthcare facilities can also create a good synergy with residential and office uses.

Non-revenue-generating uses such as a library do not generate revenue but creates an activity in the development and so enhance the revenue of overall project. [7]

3.3. Site Evaluation

The answer for a question of, “a site for a need? Or a need for a site?” depends on the developer’s development strategy and assets. But for both circumstances market research is the key to a successful development. In order to determine the most appropriate product type for a specified site for its “highest and best use” the developer should conduct a good market research. For a specified use, market study of regional or local areas which gives an understanding of trends and demographics will lead to find the most suitable site area.

As physical feasibility is one of the determinants of project’s overall feasibility, in a feasibility report, once the decision has been made to develop in a particular area, the analyst evaluates the potential site and makes recommendations on this site based on the criteria defined below:

3.3.1. Location

The oldest cliché in the real estate business is that what matters is: *location, location, location*. [8] Location refers to accessibility and visibility in real estate and they are the key criteria for the value of site and the intended development. This is extremely important for some types of developments. Some retail developments rely heavily on sight lines from surrounding streets. Some office developments market well not only because of their proximity to freeways but their profile on the skyline. Mixed-use projects usually have excellent access and good exposure. [6] To outdistance the competition, the developer’s site must be equal or better than others within the marketplace. Tenants will often make their final decision based on visibility and ease of access. [1]

Proximity to some support services such as retail centers, educational and cultural facilities, residential developments, recreational facilities etc. may have positive affect on the development or lack of these may signify to a niche in the market. Mixed-use projects are likely to generate considerable auto and pedestrian traffic; sites should be proximate to existing travel patterns and numerous access points. [6]

Adjacent land has also effect on the subject site. Present and possible future plans for the neighborhood should be reviewed carefully. Any inconvenience, of which some are listed below, may adversely affect the marketability of the development [1]:

- Appearance, odor and noise
- Overhead power lines
- Cemetery
- Landfill
- Railroads, freeways, expressways
- Airport glide paths
- Sewer and water plants
- Manufacturing plants
- Quality of surrounding

Traffic patterns should also be evaluated when considering accessibility of the site; a heavy traffic may not be desired for some users. This evaluation may be conducted with a traffic engineer.

3.3.2. Size and shape

The parcel size and configuration should meet the need for the development. For specified uses minimum size of land parcels will be required. Mixed-use projects generally have several features in common, so sites need to be substantially large or allow high density construction. Shape of site is also important; it should allow the designer to allocate best configuration in optimum use.

3.3.3. Planning guidelines, regulations and constraints

The land should have the required zoning or have the probability of being rezoned. But attention should be paid that rezoning process may take long time, sometimes several years depending on the community.

Also it should be noted that parcel size is a function of zoning classification, i.e. open space, parking area and density is determined by planning guidelines where the size of the parcel is an important criteria for evaluation.

Mixed-use projects need higher densities or larger site areas. For instance, in downtown locations, mixed-use towers often have 20 to 30 stories or more. So, zoning should allow such density for mixed-use projects.

3.3.4. Climatic and natural influences

Understanding the nature of site and climatic conditions is extremely important in estimating the site improvement costs. Even, this is important in deciding physical feasibility of the development. Soil conditions, underground water, surface water, mines, topographic conditions should all be reviewed. In a typical feasibility study this is generally done by site visit and obtaining due diligence reports.

3.3.5. Utilities (infrastructure)

The site should have availability of the utilities such as gas, electricity, water, sewer, telephone and so on. Or the cost of access to these services must be taken into account when estimating the development costs.

3.3.6. Environmental

Current and past uses of the site should be reviewed. Environmental assessment studies should be conducted to determine the presence of toxic wastes which may prohibit development or increase the cost of site improvement costs.

3.4. Development Program (Development Plan) and Preliminary Design

Once market and site analysis are completed a development plan should be prepared where mix and scales of uses, the configuration and massing of the project and the timing and phasing is specified. [6]

Development plans and preliminary design are prepared and cost estimations and financial feasibility of this plan is tested.

3.4.1. Mix and scale of uses

The mix and scale of uses are defined taking into consideration the market analysis, physical and legal constraints and developer's objectives.

A cornerstone use and complementary uses and scale of these uses such as housing units, office or retail leasable areas or hotel rooms are defined.

3.4.2. Project configuration and scale of mass

Following determination of mix and scale of uses, an initial plan and configuration is developed that masses each use on the site. Here precise designs and sizes are not required but doing so will essentially test the program for a physical fit. [6]

3.4.3. Timing and phasing

Mixed-use projects involve different land use markets on considerably large site areas. If timing is not well presumed in the beginning then profit may disappear. Phasing may allow minimizing risks by building reasonable sizes that the market can absorb.

3.4.4. Preliminary design

If an idea's viability is established then preliminary drawings are prepared. These drawings show exterior elevations and specify rentable square meters or salable units, parking, type of HVAC systems and the like. [2]

3.5. Cost Estimation

The most important objective of the developer is to minimize risk by minimizing assumptions and projecting the income and development costs of the project. [1] So, cost estimation is an important part of feasibility study and starts with preliminary cost estimation at the beginning, then detailed cost estimation when the site is selected, due-diligence is underway and the theme, concept and components, i.e. the preliminary design of the project appears.

A typical cost estimate might include the following cost items:

- Land costs
- Site development costs
- Design fees
- Construction costs
- Permitting costs
- Financing costs
- Marketing costs

- Preopening operation costs
- Legal fees
- Accounting costs
- Field inspection costs
- Overhead
- Contingencies
- Development fees

Each cost item need to be confirmed by market data, land cost may be based on contracts and construction cost and site development costs need to be confirmed by cost estimation services or prospective contractors. [2]

Site development costs including infrastructure is the most difficult part of estimation due to lack of information at feasibility phase.

Construction cost includes building works, contractor's fee and profit. Building works may be grouped under below categories in order to determine building cost items:

- Foundations, including excavation and slab on grade.
- Substructures
- Superstructure: floors, roofs and stairs
- Exterior closure: walls, windows and doors
- Roofing
- Interior construction: partitions, floors, ceilings and decorating
- Conveying: elevators, escalators
- Mechanical: heating, ventilation, air condition, plumbing and controls
- Electrical: service, power and lighting
- General conditions
- Special construction: fittings, furniture and equipment
- Site work: excavation, trenching, roadways and parking areas.

In order to estimate the construction cost the estimator may refer to several sources defined as below [2, 9]:

- Past experience or cost figures taken from jobs of similar construction.
- Published costs for similar building types.
- Historical costs with appropriate mark-ups.
- Standard industry cost guides

3.6. Financial Feasibility

In financial feasibility, the aim of the analyst is to figure out the project's value, whether it exceeds the expected costs and how much start-up capital is needed. A project is said to be feasible when that value exceeds all the projected costs of the development. [2]

Data gathered through market analysis is used as input to calculate the net operating income over a specified time frame and then the value for the project is found by using discounted cash flow analysis.

In the following parts, brief explanation of financial tools to make this exercise and the methodology of financial feasibility is defined:

3.6.1. Time value of money and discounted cash flow

Time value of money is very important in real estate investment decisions. 1 dollar in future is not same as 1 dollar today due to its productivity of capital, risk and inflation. The general formula for calculating present and future value of money is as below:

$$PV = FV / (1+r)^N \quad (3.1)$$

PV=Present Value

FV=Future Value

r=simple interest or discount rate or expected return or opportunity cost of capital per period

N=Number of periods between present and future time

DCF (Discounted Cash Flow) is a widely used method in determining the value of real estate. This method accounts for the timing of cash flows and the associated costs of money. For investment appraisal purposes, all benefits and costs estimated for future years must be converted to present values or annual values to account for the time value of money. Converting these cash amounts to equivalent values (generally called discounting) is performed by applying discount formulas. [15]

The general formula is as below:

$$V = CF_1 / (1 + E_{O[r]}) + CF_2 / (1 + E_{O[r]})^2 + \dots + CF_T / (1 + E_{O[r]})^T \quad (3.2)$$

V=Present value of the property

CF_t=Net cash flow generated by the property in period t

E_{O[r]}=Expected average return per period or the opportunity cost of capital.

T=the terminal period

3.6.2. Discount rate (r)

Discount rate is the opportunity cost of capital or required return of the investment.

Discount rate is found by considering the capital markets, including the likely total returns and risks offered by other types of investments competing for the investor's dollar. [8]

$$r = r_f + RP \quad (3.3)$$

r=discount rate

r_f=risk free rate

RP=risk premium

3.6.3. Internal rate of return (IRR)

One of the most widely used real estate investment decision rules is IRR.

"IRR" (internal rate of return) is that single rate that discounts all the net cash flows obtained from the investment to a present value equal to what you paid for the investment at the beginning.

In other words: The internal rate of return is that rate of interest which, when used to discount a project's cash flows, will reduce the net present value to zero.

The general formula is as below:

$$PV = CF_1 / (1 + IRR) + CF_2 / (1 + IRR)^2 + \dots + CF_N / (1 + IRR)^N \quad (3.4)$$

PV = Amount invested in year 0

CF_t = Net cash flow in year t

N = year

IRR can not be calculated algebraically but only with trial and error. Computers and calculators do this automatically.

3.6.4. Net present value (NPV)

Beyond IRR, NPV is also a widely used real estate investment decision rule.

“NPV” (net present value) of an investment project is defined as the present dollar value of what is being obtained (the benefit) minus the present dollar value of what is being given up (the cost). [8]

$$NPV = PV (\text{Developed Property}) - PV (\text{Development Cost}) \quad (3.5)$$

3.6.5. Cash flow proforma

Construction cost estimations, sale and rent rates, prices and all other income and cost items relating to the development are shown in cash flow proforma. Financial situation of the development including cash deficit and project performance can be investigated in cash flow proforma.

There are two types of cash flow proforma; operating and development:

Operating proforma refers to cash flows that result from normal operation of the property as the property is held as an investment. Development cash flow includes proceeds and costs of the project.

Below are typical line items in an operating cash flow proforma, before tax-level:

Potential Gross Income = (Rent * m^2) = PGI

- Vacancy Allowance = - (vac.rate) * (PGI) = -v

+ Other Income = (eg, parking, laundry) = +OI

Effective Gross Income	EGI
-Operating Expenses =	-OE
Net Operating Income =	NOI
-Capital Improvement Expenditures =	-CI
Property Before-tax Cash Flow =	PBTCF
Plus Reversion (last year & yrs of partial sales only):	
Property Value at time of sale =	V
-Selling Expenses = -(eg, broker)=	-SE
Property Before-tax Cash Flow =	PBTCF

Operating expenses include, Property Taxes, Property Insurance, Security, Management, Maintenance & Repairs, Utilities

Capital expenditures include, tenant build-outs or improvement expenditures, leasing commissions to brokers, major repairs, replacement of major equipment, major remodeling of building, expansion of rentable area.

Reversion (resale value) is calculated by dividing the NOI of the year that followed last year by cap rate which is obtained from the market.

Development proforma includes hard and soft costs of the project and money that flows into the developer. [1].

Hard costs are:

- Site prep costs including: land costs, excavation, soil compaction, grading, utilities installation.
- Permits.

- Contractors' fees.
- Construction management and overhead costs.
- Materials
- Labor
- Equipment rental
- Tenant finish
- Developer fees

Soft Costs are:

- Loan fees.
- Construction interest.
- Legal fees.
- Soil testing.
- Environmental studies.
- Land planner fees.
- Architectural fees.
- Engineering fees.
- Marketing costs including advertisements.
- Leasing or sales commissions.

3.6.6. Risk and uncertainty

In evaluating a project's feasibility the analyst makes a set of assumptions both on the development costs and on income which are believed to have a high expectation of occurring. But real situation is full of risks and uncertainties and in investment decisions these risks and uncertainties need to be evaluated. Description of risk and uncertainty and most common investment evaluation techniques in these situations is given as below:

Risk is the situation when the analyst can obtain good estimates of the probability of future conditions and the economic effect of these conditions. Choosing the shortest

payback period, increasing risk premium in discount rate and expected value analysis are some methods in treating risk.

Uncertainty is the situation when the analyst wishes to include the effect of different futures in his or her evaluation but finds it impossible to predict the likelihood of each future. Sensitivity analysis is most common method in treating uncertainty.

3.6.7. Sensitivity analysis

Sensitivity analysis is used to determine how the optimal solution is affected by changes, within specified ranges, in the values of the project economic parameters.

It is carried out by identifying a project variable and giving that variable limits within which it is likely to vary and is very useful for identifying the variables to which the project is sensitive and those to which it is not sensitive but at a certain point will become so. [15]

4. CASE STUDY

In this part of the thesis, feasibility study for a mixed-use project in abroad is made in accordance with the methodology given above.

A mixed-use development comprising commercial, residential, retail and tourism components is intended to be developed on a land in Djibouti which is a small country located in the eastern part of Africa. The purpose of this project is developing a profitable investment as well as creating a land mark effect in Djibouti. In the following parts of the thesis, feasibility study including market analysis, site analysis, development plan, cost estimation and financial feasibility of this prospective investment is undertaken.

In this case study, below information, analysis and recommendations provided:

- Land use, the mix, allocation and location of project components;
- Type and quantity of each component within the development and the supporting market studies, financial analysis and sensitivity analysis;
- Capital investment costs

The study starts with analyzing the country and then the real estate market in the target market area. Market study reveals target consumers, pricing and sell and lease strategy. Then subject site is evaluated and recommendations on the mix, land use and preliminary design are made in conjunction with the market analysis. Finally, cost estimation and financial feasibility is made with the data gathered through market study.

4.1. Country Outlook

4.1.1. Overview

Republic of Djibouti is a 22,020 sq km country in east Africa, bordered by Eritrea (N), Ethiopia (W, S), Somalia (SE), and the Gulf of Aden (E). The country occupies a strategic geographic location at the mouth of the Red Sea and serves as an

important trans-shipment location for goods entering and leaving the east African countries. Figure 4.1 presents the location of country on map.

The country is a stony desert and economically underdeveloped. Nomadic animal-herding is the main occupation. Most of the country's revenue is generated by the port of Djibouti and the country's free-trade zone status. Hides, cattle, and coffee trans-shipped from Ethiopia are the major exports. Industries include shipbuilding and repair and food processing.



Figure 4.1: Djibouti Map

4.1.2. Politics

The country has been politically stable over the last decade and is considered to be the safest country in the region since 2000. The political stability is expected to continue as the ruling party has won the latest parliamentary elections held earlier this year. The French has a strong military and technical presence in Djibouti. The United States has also established a base in this strategically located nation in 2002. The present leadership favors close ties to France but also has strong ties with the US.

4.1.3. Demographics

The population is around ~800,000 with 60% *Issa* (of Somali origin) and 35% *Afar* (of Ethiopian origin). Both are Muslim, and by tradition both are nomads who roam with their herds, without taking notice of political boundaries. The rest is largely other Somali tribes, Arabs, and Ethiopian refugees. The minorities encompass Frenchmen, Italians, Arabs, Ethiopians, etc.

Over two-thirds of the country's residents live in the capital, also called Djibouti.

43% of the population is in the 0-14 age group; 53% in the 15-64 age group; and ~4% are over 64 years of age. The official languages of the country are French and Arabic. The literacy rate is a low 68%. According to 2003 statistics 78% of the men and 58% of the women are literate.

94% of the population is Muslims while Christians account for the balance. Table 4.1 demonstrates the demographic figures between 2000 and 2006.

Table 4.1: Demographic Figures in Djibouti (*Source:* World Development Indicators Database, April 2007)

	2000	2004	2005	2006
Population, total	714,600	779,102	793,100	805,700
Population growth (annual %)	3.0	2.0	1.8	2.6
Life expectancy at birth, total (years)	52.5	..	53.4	..
Fertility rate, total (births per woman)	5.3	..	4.7	..
Mortality rate, infant (per 1,000 live births)	97.0		88.0	..
Mortality rate, under-5 (per 1,000)	147.0	..	133.0	..
Primary school completion rate, total (% of relevant age group)	29.3	34	31.8	..
School enrolment, primary (% gross)	33.4	39	40.1	..
School enrolment, secondary (% gross)	14.4	22	23.9	..
School enrolment, tertiary (% gross)	0.3	2	2.3	..
Ratio of girls to boys in primary and secondary education (%)	71.0	75	75.6	..

4.1.4. Economy

The economy is based on service activities connected with the country's strategic location and status as a free trade zone in the Horn of Africa. Without natural resources and industry the country is a net importer of every commodity ranging from foodstuff to machinery and equipment. The main export partners are Somalia, Ethiopia and Yemen. Exports to Ethiopia constitute re-export of goods imported to Djibouti. Services rendered to the foreign military bases and to shipping companies generate substantial revenue amounting to almost two third of the export income of the country.

Import volume more than doubled since 2000 due to increasing population and the investments in the country. Import volume is 40% more than export volume and this creates a significant trade deficit that has reached almost to one third of GDP in 2007. Djibouti's import partners are Saudi Arabia, India, China and Ethiopia.

Djibouti provides services as both a transit port for the region and an international transshipment and refueling centre. Imports and exports from landlocked neighbor Ethiopia represent 85% of port activity at Djibouti's container terminal.

Djibouti has few natural resources and little industry limited to construction, dairy and beverage and water bottling. The nation is, therefore, heavily dependent on foreign assistance to help support its balance of payments and to finance development projects. An unemployment rate of nearly 50% is a major problem with 42% of the urban population and 83% of the rural population unemployed. Inflation is not a concern, due to the fixed tie of the Djiboutian franc to the US dollar, but the artificially high value of the Djiboutian franc adversely affects Djibouti's balance of payments. One US dollar has been equal to 175-178 Djibouti Franks over the last decade.

Agricultural activity accounts for only 3-4% of GDP, industry for 16-17% and the services sector that includes tourism, transportation and telecommunication 80%.

The key economic indicators are presented in Table 4.2.

Table 4.2: GNI and GDP Figures for Djibouti (*Sources:* World Development Indicators Database, April 2007, IMF Country Report, March 2004, Djibouti Ministry of Finance Economic Information Bulletins, Djibouti Central Bank 2006 Annual Report)

	GNI, current million	at \$	GNI per capita \$	GDP, current million	at \$	GDP Growth, at constant prices%	Inflation, %
2000	n.a.		n.a.	553		0.7	2.4
2001	571		780	572		2.0	1.8
2002	593		790	596		2.6	0.7
2003	677		880	628		3.2	1.8
2004	752		970	666		3.8	3.1
2005	803		1,010	709		3.2	3.5
2006	857		1,060	770		4.9	3.5
2007e	n.a.		n.a.	801		n.a.	2.5*
* 2007 1 st half							

4.1.5. Manpower availability

The available manpower is either highly educated or with very little or no education. This situation creates bottlenecks in sourcing clerks, accountants, assistants, etc. Majority of the well-educated population works for the government.

There is deficiency in some professions, such as engineering, similar to the deficiency observed in doctors. For instance there are 10 civil engineers in the whole country.

The low level of education and the addiction to khat limits the availability of the local workforce. The government, aware of this problem, allows companies to employ foreign workers up to 70% of their total number of employees; i.e. 30% of their work force has to be locals.

4.2. Real Estate Market Analysis

4.2.1. Residential market

4.2.1.1. Supply

Mass supply of housing is made available by the public Djibouti Real Estate Company (SID) and by the private developers. The public developer SID implements social housing projects and to date has been able to provide around 3,000 dwelling units.

The private developers are few in number, with Nakheel and Inmaa, the two Dubai companies, leading. Residential supply is shown in Table 4.3.

Table 4.3: Residential Supply

Developer	Country	Project Description
SID	local	Wadajir II project: 75 villas Wadajir III project: 29 villas of 265 sqm and 66 apartments of 62-115 sqm behind the Stadium. Hodane II project: 1,000 dwelling units, 95 apartments of 112 sqm in Hodane.
Nakheel, subsidiary of Dubai World	Dubai	Residential and commercial (office and retail) development in Haramousse on two 100,000 sqm and 110,000 sqm plots including 500 furnished and unfurnished apartments and 100 villas.
Inmaa, subsidiary of Lootah Group	Dubai	Residential and commercial development in Haramousse on 495,000 sqm land including 168 villas, 130 twin villas, 1036 apartments and studios, a shopping centre, a sports club

Unit sale prices range from 600 \$/sqm to 1200 \$/sqm and unit rents 500\$ to 2000 \$ for the private housing.

4.2.1.2. Demand

SID claims that the city of Djibouti houses 70,000 dwelling units and the annual demand for new units and for replacement stands at 2,000. In addition to demand in quantitative terms, demand for quality and demand for residential units tailored to the needs of the different customer segments is apparent. The city is a business centre with its bulk and container ports, free zone and ever growing transit trade. Foreign businessmen, foreign employees of the companies in the country and their families are in need of housing units. Single foreign businessmen and employees need small, furnished and maintained apartments while married ones prefer larger apartments and villas in good neighborhoods.

4.2.2. Hotel market

4.2.2.1. Supply

There are a small number of first-class hotels in Djibouti, but outside of Djibouti city accommodation is very limited. Table 4.4 shows the supply for lodging.

Table 4.4: Hotels 2008 (*Source:* National Office of Tourism, Djibouti Chamber of Commerce)

Star	Double Room Rate (\$/night)	Hotels	No of Rooms
5 star	370-540*	Djibouti Palace Kempinski	177
4 star	200-340*	Djibouti Sheraton	175
3 star	111*	Hotel Residence De Léurope	24
	118	Hotel La Siesta	34
	85*	Hotel Menelik	24
	109	Hotel Plein Ciel Djibouti	43
	104*	Hotel Alia	20
	96*	Residence Bellevue	30
2 star	71*	Hotel Ali Sabieh	27
	45	Hotel De Djibouti	19
	32	Palace Hotel	20
	34	Dar Es Salam	16
	42	Horseed	12
* Breakfast included			

4.2.2.2. Demand

Kempinski has become an attraction point in Djibouti city, with weddings taking place in the ball room and all high ranking civil servants including the President and the Prime Minister frequently visiting the hotel. The occupancy rate of the hotel has increased from 10-15% in its first six months to an average of 50% in the last six months, claims the sales manager.

The official statistics on number of room nights indicate an average occupancy rate of 35-40%.

Target groups for hotel business are the businessmen from Ethiopia, Kenya, Egypt, Yemen and Dubai staying for 2-3 nights; Emirates' nationals who would prefer Djibouti for their weekend escapes; and delegates of the MICE (Meetings Incentives Conferencing and Exhibitions) tourism. Total number of tourist arrivals stand at 30,250 in 2005 and 39,500 in 2006.

4.2.3. Office market

4.2.3.1. Supply

The city of Djibouti does not house modern and good quality offices. There are small offices in old buildings in the city centre, all occupied. The companies that need offices refurbish villas or apartments into offices.

The monthly rent of an office in the city centre is \$18-20/sqm. Such a level in other parts of the world is usually observed in business centers where modern offices are located.

Jafza, the operator of the Djibouti Free Zone, have built 64 offices in the zone in the second phase of the FZ development. These are 26-sqm small offices targeting service companies, branch offices of traders, representations, etc. that usually have 2-3 employees. All offices are equipped with telephone and internet cabling and ACs. The monthly rent stands at \$25/sqm and the residents have to pay an additional monthly fee of \$148 for operation and maintenance services. This fee adds another \$5-6/sqm to the rent.

4.2.3.2. Demand

The new container port in Doraleh that will be completed by the end of 2008 and the three free zones planned by the Dubai World are indications that new companies will be established and/or coming into Djibouti to benefit from the expanding business volume. Increasing economic activity will have a multiplier effect on other sectors such as banking, construction contracting, local transportation, advertising, printing and publishing, and many others. For instance, three foreign banks originating from Yemen, Malaysia and Switzerland were established in 2006-2007. Two more from Kuwait and Yemen and one international bank have already applied to Djibouti Central Bank and are currently in the establishment stage. Several construction contractors and subcontractors including Turkish companies have already established themselves in the country.

Therefore it will not be wrong to assume that around 100-150 new companies; small, medium and/or large will establish themselves in Djibouti every year and will need offices.

4.2.4. Retail market

4.2.4.1. Supply

Retail sector is limited to numerous small shops selling limited number of foodstuff most of which are imported. Retail supply figures are shown in Table 4.5 below.

Table 4.5: Retail Outlets 2008 (*Source:* Ministry of Finance, Official Reports and Statistics, Djibouti Chamber of Commerce)

Retail Activity	Total No of Outlets
Supermarket	5
Mini market	10-12
Grocery and green grocer	many
Bakery	25-30
Patisserie	7-8
Butchers with cold storage	7-8
Boutique	20-25
Small ready wear shops	20-25
Fabric	~25
Household textiles	4-5
Shoes and slippers	~10
Jewellery	~20
Perfume, cosmetics and body care	~10
Bookshop and stationery	~10
Optician	4-5

4.2.4.2. Demand

The city does not have shopping centers and it is difficult to say that there is a shopping street or square. The shops are scattered in the city centre and one has to know this geography to be able to purchase the items he/she is looking for. The goods on offer are also limited. High income groups travel abroad to shop for clothing, shoes, house textile, etc.

4.2.5. Leisure market

4.2.5.1. Supply

Djibouti city does not offer pass time activities to its residents except for some 120 restaurants, cafeterias and fast food outlets. Within these 120 outlets there are not any international fast food or restaurant chains. The locals say that they go to the islands nearby in their leisure time. The swimming pools and fitness centers are in the two big hotels, Sheraton and Kempinski. There are two amusement parks targeting children. In summary, leisure facilities are seriously limited.

4.2.5.2. Demand

The pass time facilities are limited to restaurants and cafes. There are virtually no culture, leisure or sports facilities.

Bowling and billiard are on offer in only two outlets and are in high demand. Leisure facilities are extremely needed for young population of the country where 43% of the population is in the 0-14 age group.

The absence of cinemas is regarded as a cultural and recreational deficiency. Local and foreign businessmen and expatriates complain on absence of sports facilities such as tennis courts and fitness and sports facilities.

4.2.6. Results of market analysis

The potential client base is envisaged to comprise foreign and local businessmen and/or companies; families of the businessmen and company executives; and local high income groups such as high ranking government officers, professionals in private practice, etc. Foreign businessmen, executives and companies will be the leading clients for condos, serviced flats and the hotel. Apartments should be targeting the local wealthy people.

Majority of the foreign businessmen, executives and companies will be nationals of the countries in the region. This is based on the finding that almost two thirds of the foreign companies currently active and/or planning to invest are from countries in the region, i.e. East and South Africa (Eritrea, Ethiopia, Somalia, Kenya and South Africa) and Arab Peninsula (UAE, Bahrain, Yemen, Qatar, Saudi Arabia, etc.). Companies from western nations are around 20% of the total number of foreign companies.

Pricing is foreseen as shown in the below Table 4.6

Table 4.6: Pricing

Component	Djibouti rate	Project launch rates	Similar Products in Istanbul
Office	Comparable products not available. Lease rates FZ: \$25/sqm City centre: ~\$20/sqm	Sales: \$2,750/sqm Lease: \$30/sqm	Sales: \$2,500-8,000 per sqm Lease: \$20-60 per sqm
4-star Hotel	Sheraton: \$200-340 double, breakfast included	Average rate: \$175 double, breakfast included	\$250-350 double, breakfast included
Condos	Comparable products not available.	Sales: \$2,750/sqm	\$3,500-6,500 per sqm
Serviced Flats	Kempinski's prospective products, but rates not determined.	Sales: \$2,850/sqm	\$5,000-10,000 per sqm
Residences	\$1,100-1,200/sqm sales \$120-150/sqm lease	Sales: \$3,000/sqm	\$4,000-7,000 per sqm
Retail	Comparable products not available. Lease rate for a small grocery in city centre: \$14-15/sqm	Average Lease: \$45/sqm Shops: \$65/sqm Supermarket: \$10/sqm Department store: \$20/sqm	Shops: \$80-200/sqm
Leisure, Culture and Sports & Small marina	Comparable products not available. Lease rate for a small cafe in city centre: \$20-25/sqm	Lease: \$30/sqm	Average Lease: \$15-40 per sqm

4.3. Site Evaluation

Subject site is a 30 ha land located in the sea as seen in Figure 4.2. and Figure 4.3



Figure 4.2: Subject Site on Map



Figure 4.3: Subject Site

4.3.1. Planning guidelines, regulations and constraints

The official authorities of Republic of Djibouti have let free all regulations and constraints of planning procedures for this specific investment.

4.3.2. Accessibility

The site as seen in Figure 4.4 is both accessible from the Route de Venice on the land side and from the sea. In order to provide access from both directions of Route de Venice, a service road between the two roundabouts is suggested as seen in the second map below

Although the site is next to the Fishery, no access has been planned from that side due to security reasons.



Figure 4.4: Accessibility

4.3.3. Visibility

The visibility of the prospective development will be excellent, both from sea and the city, as there is no high rise building in Djibouti. Figure 4.5 shows the visibility of the site.



Figure 4.5: Visibility

4.3.4. Location relative to competing projects

There are three potential sites, which are marked in Figure 4.6 below, near the subject site:

1. The 11 hectares site to the other side of the fishery, which is allocated to a hotel development.
2. The 22 hectares second lagoon, nearer to the site, which is going to be reclaimed for 'financial centre' project. The project will also include a national library and a mosque.

The financial centre project should not be considered as a competing but as a complementary development as businessmen and professionals working there are likely to make use of the hotel and residential, retail and the leisure facilities

3. The 35 hectares Corniche Project around the first lagoon. There will be a promenade and some café's and restaurants. This project can be partly competing with our leisure activities. It will potentially be targeting the middle classes and not the high end.

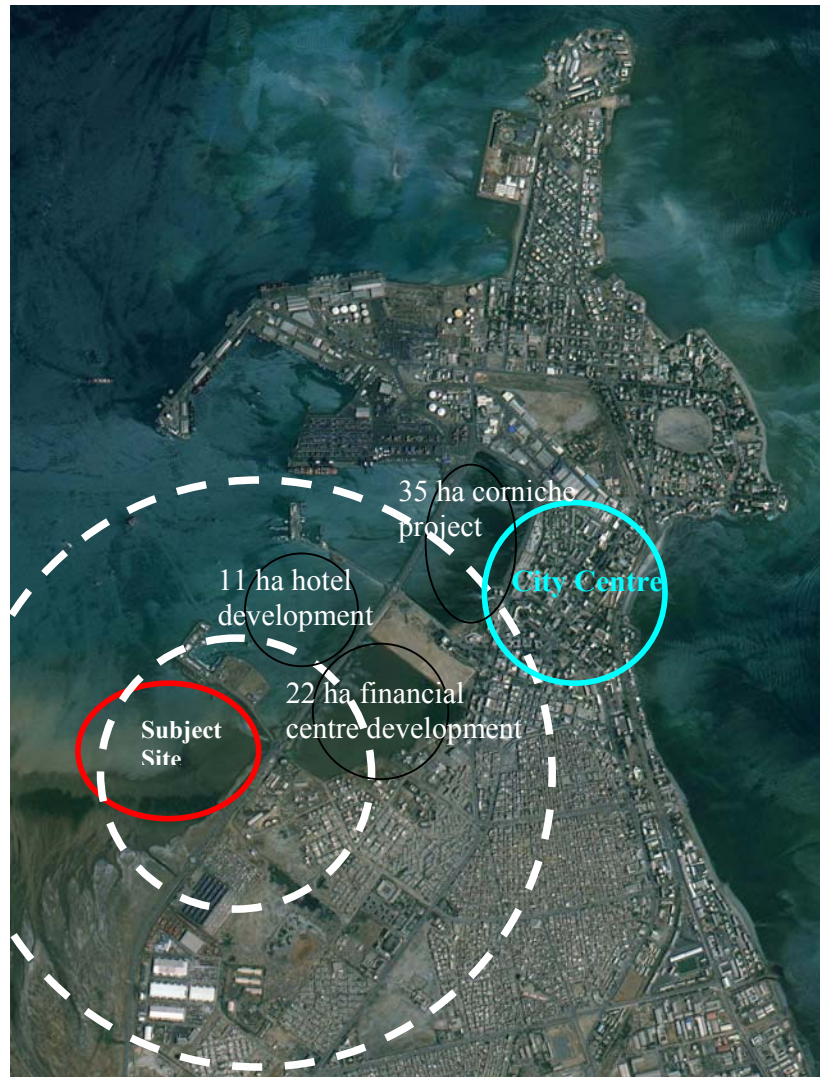


Figure 4.6: Competing Projects

4.3.5. Obvious climatic and natural influences and implications

One important point to note here is the natural influence of the floods of Ambouli River, particularly the effects of these on the sea bed, i.e. the soil structure of the site

4.3.6. Proximity and access

The 5 minutes (350 m) and 10 minutes (700 m) walking distances are marked on the map in Figure 3.6 above. It shows that the land is in easy reach from the city centre. The airport is also very close and within a ~10 km, 10-15 minutes drive.

4.3.7. Infrastructure

The potable water is insufficient in Djibouti city.

There is a sewage system in the area but it is blocked in certain streets due to Route de Venice road construction. Some streets are connected to the storm water network which carries the wastes directly to the sea.

The existing storm water network is not very efficient due to flatness of the city and the adverse effect of the floods.

There is also shortage of electric supply. However, projects are underway to tackle this problem.

4.4. Development Program

Relying on the data compiled through real estate market research and site analysis, a development program is prepared for the subject site, where mix and scale of uses, land allocation and phasing is determined.

4.4.1. Mix and scale of uses

Twin towers are planned for the offices; one will be constructed in phase I and second in phase II. Second tower in phase I is allocated for hotel component which also comprises condominiums and serviced flats. Phase II residences are planned to be 10 storey blocks consisting of 5 blocks. Retail and leisure components are also planned in phase I and II.

Mix and Scale of Uses and corresponding areas foreseen for the project in Phase I and Phase II are seen below in Table 4.7

4.4.2. Project configuration

The land use decisions for the project components are shown in Figure 4.7. Land allocated for retail, office, hotel, residential, leisure and sports, landscape, parking, technical service, water elements and marina are illustrated in this figure.

Table 4.7: Mix and Scale of Uses

	Phase I			Phase II			Total
Components	Constr. sqm	Sizes sqm	No of Units	Constr. sqm	Sizes sqm	No of Units	Constr. sqm
Offices	25,000	150-800	40-50	20,000	150-800	40-50	45,000
Hotel 4*	20,000	50-80	200	15,000	50-80	150	35,000
Condominiums and Serviced Flats	25,000	80-120	150-200				25,000
Residences				25,000	150-300	90-100	25,000
Retail-shop	6,500	100-250	40-50	1,000	100-250	8-10	7500
Retail- supermarket	3,500	2,500	1				3500
Retail- department store				4,000	4,000	1	4000
Leisure, Sports and Culture	5,000			1,000			6,000
Small marina	2,500						2,500
Total Facilities	87,500			66,000			153,500

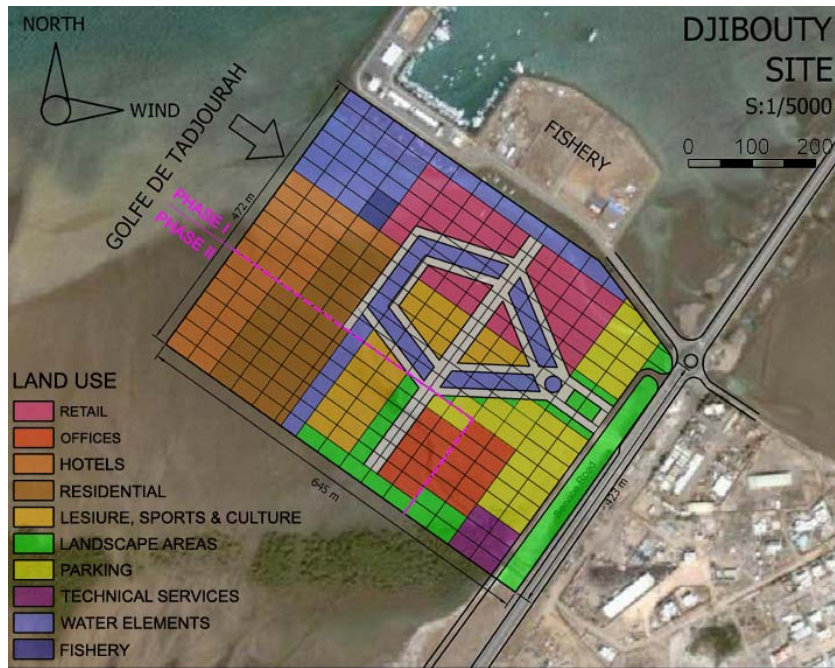


Figure 4.7: Land Allocation

4.4.3. Timing and phasing

The phasing of the land use is illustrated below in Figure 4.8. Two thirds of the land will be developed in the first phase of the project while the balance will be utilized in the second phase.



Figure 4.8: Phasing

Sales and lease rhythm is foreseen as shown in Table 4.8 and Table 4.9.

Table 4.8: Sales Rhythm

Facilities	Year 1	Year 2	Year 3	Year 4	Year 5
Offices, Phase I	30%	40%	20%	10%	
Condominiums, Serviced Flats, Phase I	30%	30%	40%		
Residences, Phase II		10%	30%	40%	20%

Table 4.9: Lease Rhythm

Facilities	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Offices			80%	85%	90%	90%	95%	96%	97%
Retail, Phase I	80%	85%	90%	90%	95%	96%	97%	98%	98%
Retail, Phase II			85%	90%	90%	90%	95%	96%	97%
Leisure and Small marina, Phase I	80%	90%	95%	96%	97%	98%	98%	98%	98%
Leisure and Small marina, Phase I			80%	90%	95%	98%	98%	98%	98%

4.4.4. Preliminary design

Preliminary design drawings have not been prepared at this stage but the conceptual section shown in Figure 4.9 below illustrates some features of the concept.

Features and amenities of the components will be basically as follows:

The first one of the twin towers shall be ‘A’ class office for sale, shell and core. The second office tower is planned to target the rental market, fully finished.

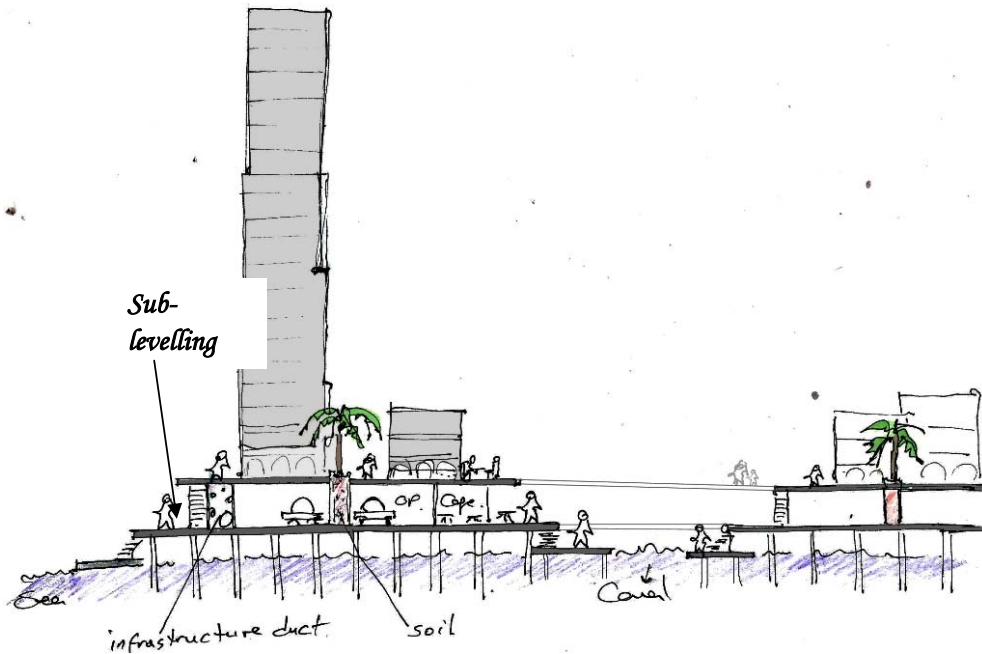


Figure 4.9: Conceptual Section

Phase I hotel will be a 30-storey building where 13-14 storeys will be allocated to the hotel and the remaining 16-17 storeys will comprise condos and serviced flats. The amenities should comprise a beach, fitness room, swimming pool, SPA, restaurant-bar, night club and a business centre.

In Phase II, 120-125 standard rooms and 25-30 suits of different configurations could be an extension to the existing hotel, or a small new, purely business hotel, no amenities other than a business centre.

As the project is aimed to be primarily targeting the business world, condominiums and serviced flats will be developed within the 30-storey tower in the first phase. After creating a prestigious location in Phase I, Phase II development will comprise 8-10 storey high blocks, arranged around a landscaped garden, with each comprising 20-25 luxury apartments.

It is aimed to create an outdoor, high street shopping ambiance, in the shade of arcades, and starting with a supermarket, along one main alley loop with an ambitious piazza in the middle. Outdoor café's and food shops are located in the main piazza around an attractive water feature.

First phase of the development will comprise the cultural facilities, leisure facilities such as the bowling and the billiard, an Olympic swimming pool and tennis and basketball courts. Cinemas and the auditorium should be located in one building and managed together. The auditorium will need to be equipped with sufficient high-tech audio-visual lighting and equipment. The second phase is planned to have two more tennis courts, a multipurpose playground, i.e. basketball and volleyball and a fitness and aerobics facility. The reserve area shall be kept for future needs. It could be an indoor tennis court if needed.

Section of the site where the sea is deep is planned to be allocated to sailing and fishing activities. The hotel next door may also use this facility. The premises will comprise a café, a restaurant-bar, an administrative office and a warehouse for marine equipment. A total of 2,500 sqm construction is envisaged on an area of 25,000 sqm. This site may later be used for developing a marina.

4.5. Cost Estimation

Total cost of buildings is 175 million dollars of which 100 million is calculated for the first phase and the remaining for the second phase. Common area costs including site improvement, infrastructure and parking area accounts for a sum of 80 million dollars. Total construction cost is 255 million dollars. Construction period is assumed to be for 2 years for each phase. Estimated unit cost for each building is shown in Table 4.10.

Table 4.10: Construction Cost

BUILDING WORKS							
Components	Phase I			Phase II			Total Cost (USD)
	GBA (m ²)	Unit Cost (USD/m ²)	Total Cost (USD)	GBA (m ²)	Unit Cost (USD/m ²)	Total Cost (USD)	
Offices	25.000	900	22.500.000	20.000	1.200	24.000.000	46.500.000
Hotel 4*	20.000	1.600	32.000.000	15.000	1.500	22.500.000	54.500.000
Residential	25.000	1.100	27.500.000	25.000	1.000	25.000.000	52.500.000
Retail	10.000	700	7.000.000	5.000	600	3.000.000	10.000.000
Leisure and Small Marina	7.500	1.400	10.500.000	1.000	1.100	1.100.000	11.600.000
TOTAL	87.500	1.137	99.500.000	66.000	1.145	75.600.000	175.100.000
COMMON WORKS							
Cost Items			Total Cost (USD)				
Site Improvement			50.000.000				
Infrastructure			30.000.000				
Parking Area			250.000				
TOTAL			80.250.000				

4.6. Financial Feasibility

Financial models are given in Appendix A. IRR and NPV values are found individually for each of the component and also for the mixed-use development. NPV is found at 5% and 10% discount rates respectively to compare the risk premium effect. Leisure component has the least IRR with a value of 12%, and residential the highest with 124%. Residential can be said the most profitable component for the mixed-use development. The consolidated IRR is 23% and NPV of the development at 5% discount rate is 173 million dollars.

Total development cost is 296 million dollars of which construction cost makes 255 million dollars, land purchase for 1,8 million dollars and the remaining goes for the soft costs.

Land is devoted by Djibouti government for a development which will have a landmark effect, so in financial model a comparable cost of 6\$ per sqm is calculated. Land improvement and infrastructure costs are shared to the components by their construction area proportional. Tax is exempted for this development. Other cost assumptions are as below:

- Architecture&Engineering: 4,5% of hard costs
- Project Management:5% of hard costs
- Marketing:1,5% of hard costs
- Legal&Accounting:1,5% of hard costs
- Contingency:%10 of soft costs

Sales and lease prices and rhythm used in the financial model are given in Section 4.4.3

4.7. Sensitivity Analysis

The sensitivity analysis was carried out for 5%, 10% and 15% decrease in the investment cost and the revenues of the project and 5%, 10%, 15%, 20% and 25% increase in these. The results revealed that the project is slightly more sensitive to changes in the revenue generation as against changes in the investment cost as seen from the Figure 4.10 below. However, drastic decrease of revenues is not anticipated

as the estimates in the analysis are based on lowest possible prices/rates/rents for individual components.

The changes in the investment cost do not generate different results for the respective investment scenarios; in all cases the IRR is equally affected.

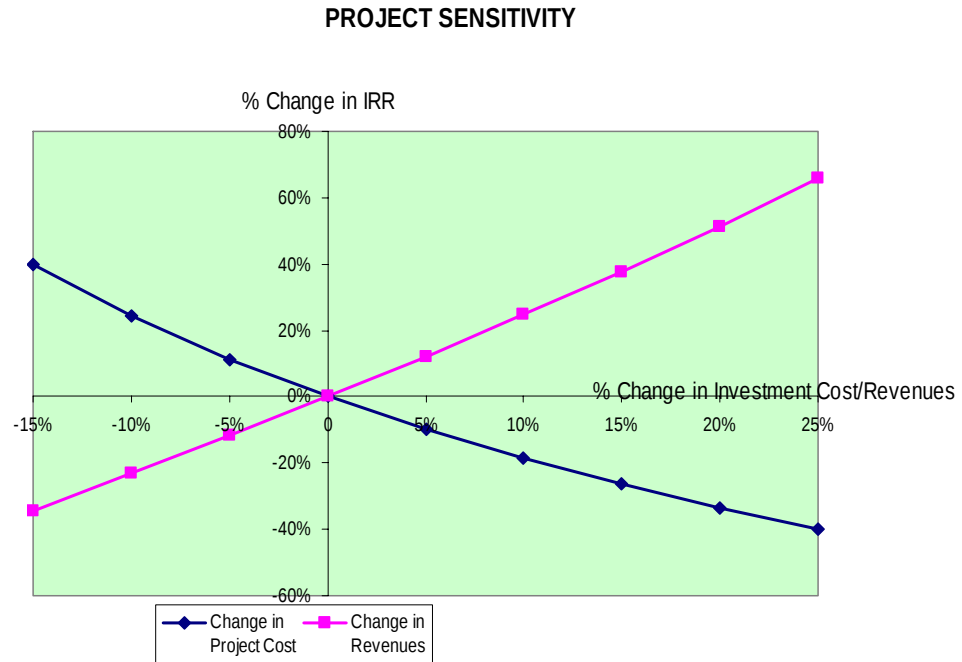


Figure 4.10: Sensitivity Analysis

4.8. Conclusion

- The proposed project is feasible according to the financial feasibility conducted with the data gathered through market analysis.
- Demand is substantial for all segments of real estate while supply is very limited. Therefore a mixed-use development seems viable.
- The proposed project will be pioneer and have a landmark effect in Djibouti. It will contribute a lot to the sociocultural and socio economic environment of the country.

5. CONCLUSION

A business like other business, real estate development is an asset with limited liquidity relative to other investments and aims to generate regular cash flow. Real estate requires high investment risk which means the successful management of this risk and related uncertainties. Substantial investment projects require large amounts of capital.

Moreover, real estate development is a complex business, not simply in terms of building and leasing property but in terms of managing and motivating multi-disciplinary teams and professionals.

The development process also undertakes a significant role in the transition and development of cities, effecting planning schemes and population distribution and consequently the sociological landscape of these cities.

Developing mixed-use projects is more difficult and complex than single use projects. Mixed-use projects have a greater financial and environmental scale, so failure or success have greater consequences when compared to a single development. As mixed-use projects consist of one single entity more than the sum of their various components, the success and failure of even one component affects the overall success of the subject property.

When all these are taken into account, the importance of decision making in mixed-use developments can be better understood. In order to make proper investment decision the developer relies on a sound and comprehensive feasibility study. In doing so the developer conducts research, gathers information and makes analysis and projections.

It should always be kept in mind that feasibility studies do not guarantee the success of a project but rather offer important insight. A feasibility study is the demonstration of a proposed project's viability.

The central subject of this thesis is the relevance of feasibility studies for mixed-use real estate projects. Methodology is explained and applied to a case study.

The case example shows us how a feasibility study effects investment decision making. Design, land allocation, finances of the proposed development is subject to the results of a feasibility study conducted at the beginning of the development procedure.

This case study also shows us the importance of carefully applying all the steps of a typical feasibility study to developments in order to plan a prospective development. Projects can be designed and implemented with success anywhere in the world, providing good market research is conducted and the necessary projections are made according to this research. Following these steps gurantees a higher level of success even if the project is developed abroad or in a setting which is unfamiliar to the developer.

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APPENDICES

APPENDIX A.1 : IRR and NPV Values

Table A.1 IRR and NPV Values for Consolidated Mixed-Use Development

MIXED-USED, CONSOLIDATED											
YEAR	0	1	2	3	4	5	6	7	8	9	10
DEVELOPMENT COSTS											
Retail	\$1,357,688,62	\$9,220,482,14	\$4,970,234,38	\$3,324,375,00	\$2,121,600,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Office	\$3,722,794,44	\$25,248,080,36	\$16,883,437,50	\$18,570,000,00	\$16,972,800,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Hotel	\$3,640,259,17	\$26,349,714,29	\$22,710,390,63	\$15,904,687,50	\$15,912,000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Residential	\$3,728,891,75	\$27,444,955,36	\$20,457,421,88	\$21,015,625,00	\$17,680,000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Leisure and marina	\$1,238,675,16	\$9,222,080,36	\$6,933,109,38	\$884,562,50	\$777,920,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
TOTAL	\$13,688,309,14	\$97,485,312,50	\$71,954,593,75	\$59,699,250,00	\$53,464,320,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
REVENUES											
Retail	\$0,00	\$0,00	\$0,00	\$3,420,000,00	\$3,737,025,00	\$5,991,543,00	\$6,278,631,17	\$6,697,043,13	\$6,937,705,03	\$7,313,474,65	\$54,898,072,31
Office	\$0,00	\$16,500,000,00	\$23,100,000,00	\$12,127,500,00	\$6,366,937,50	\$5,209,600,00	\$5,684,120,00	\$6,180,890,40	\$6,348,173,11	\$6,882,722,88	\$52,074,478,87
Hotel	\$0,00	\$0,00	\$0,00	\$7,154,000,00	\$9,210,775,00	\$17,087,277,90	\$21,022,699,18	\$24,172,380,93	\$27,492,123,15	\$29,119,200,17	\$136,631,604,49
Residential	\$0,00	\$22,875,000,00	\$31,250,000,00	\$55,981,250,00	\$31,568,750,00	\$17,167,343,75	\$1,250,000,00	\$1,250,000,00	\$1,250,000,00	\$1,250,000,00	\$1,250,000,00
Leisure and marina	\$0,00	\$0,00	\$0,00	\$1,755,000,00	\$2,029,050,00	\$2,448,418,88	\$2,572,096,79	\$2,684,593,64	\$2,794,809,36	\$2,873,030,89	\$27,956,377,45
TOTAL	\$0,00	\$39,375,000,00	\$54,350,000,00	\$80,437,750,00	\$52,912,537,50	\$47,904,183,53	\$36,807,547,13	\$40,984,908,10	\$44,822,810,65	\$47,438,428,59	\$272,810,533,11
OPERATING EXPENSES											
Retail	\$0,00	\$0,00	\$0,00	\$324,000,00	\$354,577,50	\$569,341,80	\$597,488,12	\$638,204,31	\$662,045,50	\$698,834,96	\$727,271,99
Office	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$467,200,00	\$511,292,00	\$557,609,04	\$574,337,31	\$624,432,29	\$649,935,42
Hotel	\$0,00	\$0,00	\$0,00	\$3,577,000,00	\$4,605,387,50	\$8,543,638,95	\$10,511,349,59	\$12,086,190,46	\$13,746,061,58	\$14,559,600,09	\$15,409,579,45
Residential	\$0,00	\$300,000,00	\$600,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00	\$1,000,000,00
Leisure and marina	\$0,00	\$0,00	\$0,00	\$324,000,00	\$375,435,00	\$431,101,28	\$451,410,81	\$471,031,18	\$490,796,38	\$505,520,27	\$520,685,88
TOTAL	\$0,00	\$300,000,00	\$600,000,00	\$5,225,000,00	\$6,335,400,00	\$11,011,282,03	\$13,071,540,51	\$14,753,035,00	\$16,473,240,77	\$17,388,387,61	\$18,307,472,74
PROPERTY BEFORE TAX CASH FLOW	-\$13,688,309,14	-\$58,410,312,50	-\$18,204,593,75	\$15,513,500,00	-\$6,887,182,50	\$36,892,901,50	\$23,736,006,62	\$26,231,873,10	\$28,349,569,89	\$30,050,040,99	\$254,503,060,37
IRR on investment	23%										
NPV @ 5% discount rate	\$173,303,258,90										
NPV @ 10% discount rate	\$89,978,361,87										

Table A.2 IRR and NPV Values for Retail Component

RETAIL COMPONENT												
Property Inputs:												
	Phase I	Phase II										
Initial Market Rent	\$540.00	\$573.00										
Mkt Rent Gro Rate= GLA	3.00%	3.00%	Architecture&Engineering									
Average Vacancy	7.500 m2	3.750 m2	Project Management									
Reversion Cap=	8%	8%	Marketing									
Other Income	15.00%		Legal & Accounting									
Management, maintenance		\$30.00	Tax									
Operating Expenses	\$30.00		Contingency									
Security&Management	5.00%	5.00%	10.0%									
Maintenance&Repairs&	5.00%	5.00%	of hard costs									
			of hard costs									
			of hard costs									
			of hard costs									
			NA									
			of soft costs									
Year:	0	1	2	3	4	5	6	7	8	9	10	
Land Acquisition Cost	\$175,895.77											
Soft Costs	\$1,181,792.86	\$625,625.00	\$420,234.38	\$268,125.00	\$171,600.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Architecture/Engineering	\$386,768.57	\$204,750.00	\$137,531.25	\$87,750.00	\$0.00							
Project Management	\$429,742.86	\$227,500.00	\$152,812.50	\$97,500.00	\$97,500.00							
Marketing	\$128,922.86	\$68,250.00	\$45,843.75	\$29,250.00	\$29,250.00							
Legal/accounting	\$128,922.86	\$68,250.00	\$45,843.75	\$29,250.00	\$29,250.00							
Contingency	\$107,435.71	\$56,875.00	\$38,203.13	\$24,375.00	\$15,600.00							
Hard Costs		\$8,594,857.14	\$4,550,000.00	\$3,056,250.00	\$1,950,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Construction Costs		\$2,450,000.00	\$4,550,000.00	\$1,050,000.00	\$1,950,000.00							
Land Improvement Cost		\$6,144,857.14		\$2,006,250.00								
Total Development Cost	\$1,357,688.62	\$9,220,482.14	\$4,970,234.38	\$3,324,375.00	\$2,121,600.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Year:	0	1	2	3	4	5	6	7	8	9	10	11
PGI				\$4,050,000.00	\$4,171,500.00	\$4,296,645.00	\$4,425,544.35	\$4,558,310.68	\$4,695,060.00	\$4,835,911.80	\$4,980,989.15	\$5,130,418.83
Occupancy				80%	85%	90%	90%	95%	96%	97%	98%	98%
Vacancy Allow				\$810,000.00	\$625,725.00	\$429,664.50	\$442,554.44	\$227,915.53	\$187,802.40	\$145,077.35	\$99,619.78	\$102,608.38
Leased Area				6.000 m2	6.375 m2	6.750 m2	7.125 m2	7.125 m2	7.200 m2	7.275 m2	7.350 m2	7.350 m2
EGI				\$3,240,000.00	\$3,545,775.00	\$3,866,980.50	\$3,982,989.92	\$4,330,395.15	\$4,507,257.60	\$4,690,834.45	\$4,881,369.37	\$5,027,810.45
Other Income				\$180,000.00	\$191,250.00	\$202,500.00	\$202,500.00	\$213,750.00	\$216,000.00	\$218,250.00	\$220,500.00	\$220,500.00
Management, maintenance fee				\$180,000.00	\$191,250.00	\$202,500.00	\$202,500.00	\$213,750.00	\$216,000.00	\$218,250.00	\$220,500.00	\$220,500.00
OE				\$324,000.00	\$354,577.50	\$386,698.05	\$398,298.99	\$433,039.51	\$450,725.76	\$469,083.44	\$488,136.94	\$502,781.05
Security&Management				\$162,000.00	\$177,288.75	\$193,349.03	\$199,149.50	\$216,519.76	\$225,362.88	\$234,541.72	\$244,068.47	\$251,390.52
Maintenance&Repairs&Utilities				\$162,000.00	\$177,288.75	\$193,349.03	\$199,149.50	\$216,519.76	\$225,362.88	\$234,541.72	\$244,068.47	\$251,390.52
PGI						\$2,148,750.00	\$2,213,212.50	\$2,279,608.88	\$2,347,997.14	\$2,418,437.06	\$2,490,990.17	\$2,565,719.87
Occupancy						85%	90%	90%	90%	95%	96%	97%
Vacancy Allow						\$322,312.50	\$221,321.25	\$227,960.89	\$234,799.71	\$120,921.85	\$99,639.61	\$76,971.60
Leased Area						3.188 m2	3.375 m2	3.375 m2	3.375 m2	3.563 m2	3.600 m2	3.638 m2
EGI						\$1,826,437.50	\$1,991,891.25	\$2,051,647.99	\$2,113,197.43	\$2,297,515.20	\$2,391,350.56	\$2,488,748.28
Other Income						\$95,625.00	\$101,250.00	\$101,250.00	\$101,250.00	\$106,875.00	\$108,000.00	\$109,125.00
Management, maintenance fee						\$95,625.00	\$101,250.00	\$101,250.00	\$101,250.00	\$106,875.00	\$108,000.00	\$109,125.00
OE						\$182,643.75	\$199,189.13	\$205,164.80	\$211,319.74	\$229,135.52	\$239,135.06	\$248,874.83
Security&Management						\$91,321.88	\$99,594.56	\$102,582.40	\$105,659.87	\$114,875.76	\$119,567.53	\$124,437.41
Maintenance&Repairs&Utilities						\$91,321.88	\$99,594.56	\$102,582.40	\$105,659.87	\$114,875.76	\$119,567.53	\$124,437.41
NOI		\$0.00	\$0.00	\$3,096,000.00	\$3,382,447.50	\$5,422,201.20	\$5,681,143.05	\$6,058,838.82	\$6,275,659.53	\$6,614,639.68	\$6,873,947.94	\$7,094,527.86
Reversion												\$47,296,852.37
PBTCF	(\$1,357,688.62)	(\$9,220,482.14)	(\$4,970,234.38)	(\$228,375.00)	\$1,260,847.50	\$5,422,201.20	\$5,681,143.05	\$6,058,838.82	\$6,275,659.53	\$6,614,639.68	\$54,170,800.31	
IRR on Property	26%											
NPV @ 5%	\$38,813,440.10											
NPV @ 10%	\$21,038,963.85											

Table A.3 IRR and NPV Values for Office Component

OFFICE COMPONENT											
Property Inputs:											
	Phase I	Phase II									
Initial Market Rent		\$365,00									
Mkt Rent Gro Rate=		3,00%									
GLA		16.000 m2									
Unit Sales Price (\$/m2)	\$2.750,00										
Total Sales Area	20.000 m2										
Sales Price Growth	5,00%										
Average Vacancy	10%										
Reversion Cap=		15,00%									
Other Income											
Management, maintenance fee		\$42,00	\$/leased area/year								
Operating Expenses											
Security&Management		5,00%	@EGI								
Maintenance&Repairs&Utilities		5,00%	@EGI								
Year:	0	1	2	3	4	5	6	7	8	9	10
Land Acquisition Cost	\$527.687,30										
Soft Costs	\$3.195.107,14	\$2.010.937,50	\$2.258.437,50	\$2.145.000,00	\$1.372.800,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Architecture/Engineering	\$1.045.671,43	\$658.125,00	\$739.125,00	\$702.000,00	\$0,00						
Project Management	\$1.161.857,14	\$731.250,00	\$821.250,00	\$780.000,00	\$780.000,00						
Marketing	\$348.557,14	\$219.375,00	\$246.375,00	\$234.000,00	\$234.000,00						
Legal/accounting	\$348.557,14	\$219.375,00	\$246.375,00	\$234.000,00	\$234.000,00						
Contingency	\$290.464,29	\$182.812,50	\$205.312,50	\$195.000,00	\$124.800,00						
Hard Costs		\$23.237.142,86	\$14.625.000,00	\$16.425.000,00	\$15.600.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Construction Costs		\$7.875.000,00	\$14.625.000,00	\$8.400.000,00	\$15.600.000,00						
Land Improvement Cost		\$15.362.142,86		\$8.025.000,00							
Total Development Costs	\$3.722.794,44	\$25.248.080,36	\$16.883.437,50	\$18.570.000,00	\$16.972.800,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Year:	0	1	2	3	4	5	6	7	8	9	10
Phase I											
Sales		30,00%	40,00%	20,00%	10%						
Sales Price, \$/sqm		\$2.750,00	\$2.887,50	\$3.031,88	\$3.183,47						
Sales Revenue		\$16.500.000,00	\$23.100.000,00	\$12.127.500,00	\$6.366.937,50						
Phase II											
PGI						\$5.840.000,00	\$6.015.200,00	\$6.195.656,00	\$6.381.525,68	\$6.572.971,45	\$6.770.160,59
Occupancy						80%	85%	90%	90%	95%	96%
Vacancy Allow						\$1.168.000,00	\$902.280,00	\$619.565,60	\$638.152,57	\$328.648,57	\$270.806,42
Leased Area						12.800 m2	13.600 m2	14.400 m2	14.400 m2	15.200 m2	15.360 m2
EGI						\$4.672.000,00	\$5.112.920,00	\$5.576.090,40	\$5.743.373,11	\$6.244.322,88	\$6.499.354,17
Other Income						\$537.600,00	\$571.200,00	\$604.800,00	\$604.800,00	\$638.400,00	\$645.120,00
Management, maintenance fee						\$537.600,00	\$571.200,00	\$604.800,00	\$604.800,00	\$638.400,00	\$645.120,00
OE						\$467.200,00	\$511.292,00	\$557.609,04	\$574.337,31	\$624.432,29	\$649.935,42
Security&Management						\$233.600,00	\$255.646,00	\$278.804,52	\$287.168,66	\$312.216,14	\$324.967,71
Maintenance&Repairs&Utilities						\$233.600,00	\$255.646,00	\$278.804,52	\$287.168,66	\$312.216,14	\$324.967,71
NOI		\$0,00	\$0,00	\$0,00	\$0,00	\$4.742.400,00	\$5.172.828,00	\$5.623.281,36	\$5.773.835,80	\$6.258.290,59	\$6.494.538,75
Reversion											\$44.930.004,70
Total Revenue	\$0,00	\$16.500.000,00	\$23.100.000,00	\$12.127.500,00	\$6.366.937,50	\$4.742.400,00	\$5.172.828,00	\$5.623.281,36	\$5.773.835,80	\$6.258.290,59	\$51.424.543,45
PBTCF	(\$3.722.794,44)	(\$8.748.080,36)	\$6.216.562,50	(\$6.442.500,00)	(\$10.605.862,50)	\$4.742.400,00	\$5.172.828,00	\$5.623.281,36	\$5.773.835,80	\$6.258.290,59	\$51.424.543,45
IRR on Property	21%										
NPV @ 5%	\$28.931.505,09										
NPV @ 10%	\$13.910.940,82										

Table A.4 IRR and NPV Values for Hotel Component

HOTEL COMPONENT													
Property Inputs:													
	Phase 1	Phase 2											
Daily Room Rate	\$175.00	\$186.00											
Room rate Growth=	3,00%	3,00%											
No of Rooms	200	150											
Annual #rooms sold	73000	54750											
Average vacancy	32%	35%											
Reversion Cap=	15,00%												
Other Income													
Beverage-Restaurant	35,00%	@EGI											
Other	5,00%	@EGI											
Operating Expenses													
Room Expenses	15,00%	@EGI											
Beverage-Restaurant	35,00%	@EGI											
Management Costs	15,00%	@EGI											
Maintenance&Repairs&Utilities	5,00%	@EGI											
Capital Improvement Expenditures													
Major Repairs													
Year:	0	1	2	3	4	5	6	7	8	9	10		
Land Acquisition Cost	\$410.423,45												
Soft Costs	\$3.229.835,71	\$2.860.000,00	\$1.910.390,63	\$2.010.937,50	\$1.287.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Architecture/Engineering	\$1.057.037,14	\$936.000,00	\$625.218,75	\$658.125,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Project Management	\$1.174.485,71	\$1.040.000,00	\$694.687,50	\$731.250,00	\$731.250,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Marketing	\$352.345,71	\$312.000,00	\$208.406,25	\$219.375,00	\$219.375,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Legal/accounting	\$352.345,71	\$312.000,00	\$208.406,25	\$219.375,00	\$219.375,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Contingency	\$293.621,43	\$260.000,00	\$173.671,88	\$182.812,50	\$117.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Hard Costs		\$23.489.714,29	\$20.800.000,00	\$13.893.750,00	\$14.625.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Construction Costs		\$11.200.000,00	\$20.800.000,00	7.875.000	14.625.000								
Land Improvement Cost		\$12.289.714,29		\$6.018.750,00									
Total Development Costs	\$3.640.259,17	\$26.349.714,29	\$22.710.390,63	\$15.904.687,50	\$15.912.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Year:	0	1	2	3	4	5	6	7	8	9	10		
PGI													
Occupancy				\$12.775.000,00	\$13.158.250,00	\$13.552.997,50	\$13.959.587,43	\$14.378.375,05	\$14.809.726,30	\$15.254.018,09	\$15.711.638,63	\$16.182.987,79	
Vacancy Allow				40,00%	50,00%	60,00%	70,00%	75,00%	80,00%	80,00%	80,00%	80,00%	
EGI				\$7.665.000,00	\$6.579.125,00	\$5.421.199,00	\$4.187.876,23	\$3.594.593,76	\$2.961.945,26	\$3.050.803,62	\$3.142.327,73	\$3.236.597,56	
Other Income				\$5.110.000,00	\$6.579.125,00	\$8.131.798,50	\$9.771.711,20	\$10.783.781,29	\$11.847.781,04	\$12.203.214,47	\$12.569.310,90	\$12.946.390,23	
Beverage-Restaurant				\$2.044.000,00	\$2.631.650,00	\$3.252.719,40	\$3.908.684,48	\$4.313.512,51	\$4.739.112,42	\$4.881.285,79	\$5.027.724,36	\$5.178.556,09	
Other				\$1.788.500,00	\$2.302.693,75	\$2.846.129,48	\$3.420.098,92	\$3.774.323,45	\$4.146.723,36	\$4.271.125,06	\$4.399.258,82	\$4.531.236,58	
OE				\$255.500,00	\$328.956,25	\$406.589,93	\$488.585,56	\$539.189,06	\$592.389,05	\$610.160,72	\$628.465,55	\$647.319,51	
Room Expenses				\$3.577.000,00	\$4.605.387,50	\$5.692.258,95	\$6.840.197,84	\$7.548.646,90	\$8.293.446,73	\$8.542.250,13	\$8.798.517,63	\$9.062.473,16	
Beverage-Restaurant				\$766.500,00	\$986.868,75	\$1.219.769,78	\$1.465.756,68	\$1.617.567,19	\$1.777.167,16	\$1.830.482,17	\$1.885.396,64	\$1.941.958,53	
Management Costs				\$1.788.500,00	\$2.302.693,75	\$2.846.129,48	\$3.420.098,92	\$3.774.323,45	\$4.146.723,36	\$4.271.125,06	\$4.399.258,82	\$4.531.236,58	
Maintenance&Repairs&Utilities				\$766.500,00	\$986.868,75	\$1.219.769,78	\$1.465.756,68	\$1.617.567,19	\$1.777.167,16	\$1.830.482,17	\$1.885.396,64	\$1.941.958,53	
Phase II				\$255.500,00	\$328.956,25	\$406.589,93	\$488.585,56	\$539.189,06	\$592.389,05	\$610.160,72	\$628.465,55	\$647.319,51	
PGI													
Occupancy						\$10.183.500,00	\$10.489.005,00	\$10.803.675,15	\$11.127.785,40	\$11.461.618,97	\$11.805.467,54	\$12.159.631,56	
Vacancy Allow						40,00%	50,00%	60,00%	70,00%	75,00%	80,00%	80,00%	
EGI						\$6.110.100,00	\$5.244.502,50	\$4.321.470,06	\$3.338.335,62	\$2.865.404,74	\$2.361.093,51	\$2.431.926,31	
Other Income						\$4.073.400,00	\$5.244.502,50	\$6.482.205,09	\$7.789.449,78	\$8.596.214,22	\$9.444.374,03	\$9.727.705,25	
Beverage-Restaurant						\$1.629.360,00	\$2.097.801,00	\$2.592.882,04	\$3.115.779,91	\$3.438.485,69	\$3.777.749,61	\$3.891.082,10	
Other						\$1.425.690,00	\$1.835.575,88	\$2.268.771,78	\$2.726.307,42	\$3.008.674,98	\$3.305.530,91	\$3.404.696,84	
OE						\$203.670,00	\$262.225,13	\$324.110,25	\$389.472,49	\$429.810,71	\$472.218,70	\$486.385,26	
Room Expenses						\$2.851.380,00	\$3.671.151,75	\$4.537.543,56	\$5.452.614,85	\$6.017.349,96	\$6.611.061,82	\$6.809.393,67	
Beverage-Restaurant						\$611.010,00	\$786.675,38	\$972.330,76	\$1.168.417,47	\$1.289.432,13	\$1.416.656,10	\$1.459.155,79	
Management Costs						\$1.425.690,00	\$1.835.575,88	\$2.268.771,78	\$2.726.307,42	\$3.008.674,98	\$3.305.530,91	\$3.404.696,84	
Maintenance&Repairs&Utilities						\$611.010,00	\$786.675,38	\$972.330,76	\$1.168.417,47	\$1.289.432,13	\$1.416.656,10	\$1.459.155,79	
NOI						\$203.670,00	\$262.225,13	\$324.110,25	\$389.472,49	\$429.810,71	\$472.218,70	\$486.385,26	
CI				\$0,00	\$3.577.000,00	\$4.605.387,50	\$8.543.638,95	\$10.511.349,59	\$12.086.190,46	\$13.746.061,58	\$14.559.600,09	\$15.409.579,45	\$15.871.866,84
Major Repairs				\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00
Reversion													
PBTCTF													
IRR on Property	13%												
NPV @ 5%	\$44.715.180,85												
NPV @ 10%	\$12.196.455,49												

Table A.5 IRR and NPV Values for Residential Component

[illegible]

Table A.6 IRR and NPV Values for Leisure Component

LEISURE COMPONENT												
Property Inputs:												
	Phase I	Phase II										
Initial Market Rent	\$360,00	\$382,00										
Mkt Rent Gro Rate=	3,00%	3,00%				Architecture&Engineering	4,5%	of hard costs				
GLA	5.625 m2	750 m2				Project Management	5,0%	of hard costs				
Average Vacancy	6%	6%				Marketing	1,5%	of hard costs				
Reversion Cap=	10,00%					Legal & Accounting	1,5%	of hard costs				
Other Income						Tax	NA					
Management, maintenance fee	\$30,00	\$30,00	\$/leased/year			Contingency	10,0%	of soft costs				
Operating Expenses												
Management Costs	15,00%	5,00%	@EGI									
Maintenance&Repairs&Utilities	5,00%	5,00%	@EGI									
Year:	0	1	2	3	4	5	6	7	8	9	10	
Land Acquisition Cost	\$99.674,27											
Soft Costs	\$1.139.000,89	\$938.437,50	\$108.109,38	\$98.312,50	\$62.920,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	
Architecture/Engineering	\$372.763,93	\$307.125,00	\$35.381,25	\$32.175,00	\$0,00							
Project Management	\$414.182,14	\$341.250,00	\$39.312,50	\$35.750,00	\$35.750,00							
Marketing	\$124.254,64	\$102.375,00	\$11.793,75	\$10.725,00	\$10.725,00							
Legal/accounting	\$124.254,64	\$102.375,00	\$11.793,75	\$10.725,00	\$10.725,00							
Contingency	\$103.545,54	\$85.312,50	\$9.828,13	\$8.937,50	\$5.720,00							
Hard Costs		\$8.283.642,86	\$6.825.000,00	\$786.250,00	\$715.000,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	
Construction Costs		\$3.675.000,00	\$6.825.000,00	\$385.000,00	\$715.000,00							
Land Improvement Cost		\$4.608.642,86		\$401.250,00								
Total Development Costs	\$1.238.675,16	\$9.222.080,36	\$6.933.109,38	\$884.562,50	\$777.920,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	\$0,00	
Year:	0	1	2	3	4	5	6	7	8	9	10	
PGI				\$2.025.000,00	\$2.085.750,00	\$2.148.322,50	\$2.212.772,18	\$2.279.155,34	\$2.347.530,00	\$2.417.955,90	\$2.490.494,58	\$2.565.209,41
Occupancy				80%	90%	95%	96%	97%	98%	98%	98%	98%
Vacancy Allow				\$405.000,00	\$208.575,00	\$107.416,13	\$88.510,89	\$68.374,66	\$46.950,60	\$48.359,12	\$49.809,89	\$51.304,19
Leased Area				4.500 m2	5.063 m2	5.344 m2	5.400 m2	5.456 m2	5.513 m2	5.513 m2	5.513 m2	5.513 m2
EGI				\$1.620.000,00	\$1.877.175,00	\$2.040.906,38	\$2.124.261,29	\$2.210.780,68	\$2.300.579,40	\$2.369.596,78	\$2.440.684,69	\$2.513.905,23
Other Income				\$135.000,00	\$151.875,00	\$160.312,50	\$162.000,00	\$163.687,50	\$165.375,00	\$165.375,00	\$165.375,00	\$165.375,00
Management, maintenance fee				\$135.000,00	\$151.875,00	\$160.312,50	\$162.000,00	\$163.687,50	\$165.375,00	\$165.375,00	\$165.375,00	\$165.375,00
OE				\$324.000,00	\$375.435,00	\$408.181,28	\$424.852,26	\$442.156,14	\$460.115,88	\$473.919,36	\$488.136,94	\$502.781,05
Security&Management				\$243.000,00	\$281.576,25	\$306.135,96	\$318.639,19	\$331.617,10	\$345.086,91	\$355.439,52	\$366.102,70	\$377.085,78
Maintenance&Repairs&Utilities				\$81.000,00	\$93.858,75	\$102.045,32	\$106.213,06	\$110.539,03	\$115.028,97	\$118.479,84	\$122.034,23	\$125.695,26
PGI						\$286.500,00	\$295.095,00	\$303.947,85	\$313.066,29	\$322.458,27	\$332.132,02	\$342.095,98
Occupancy						80%	90%	95%	98%	98%	98%	98%
Vacancy Allow						\$57.300,00	\$29.509,50	\$15.197,39	\$6.261,33	\$6.449,17	\$6.642,64	\$6.841,92
Leased Area						600 m2	675 m2	713 m2	735 m2	735 m2	735 m2	735 m2
EGI						\$229.200,00	\$265.585,50	\$288.750,46	\$306.804,96	\$316.009,11	\$325.489,38	\$335.254,06
Other Income						\$18.000,00	\$20.250,00	\$21.375,00	\$22.050,00	\$22.050,00	\$22.050,00	\$22.050,00
Management, maintenance fee						\$18.000,00	\$20.250,00	\$21.375,00	\$22.050,00	\$22.050,00	\$22.050,00	\$22.050,00
OE						\$22.920,00	\$26.558,55	\$28.875,05	\$30.680,50	\$31.600,91	\$32.548,94	\$33.525,41
Security&Management						\$11.460,00	\$13.279,28	\$14.437,52	\$15.340,25	\$15.800,46	\$16.274,47	\$16.762,70
Maintenance&Repairs&Utilities						\$11.460,00	\$13.279,28	\$14.437,52	\$15.340,25	\$15.800,46	\$16.274,47	\$16.762,70
NOI		\$0,00	\$0,00	\$1.431.000,00	\$1.653.615,00	\$2.017.317,60	\$2.120.685,98	\$2.213.562,46	\$2.304.012,98	\$2.367.510,62	\$2.432.913,19	\$2.500.277,84
Reversion											\$25.002.778,38	
PBTCF	(\$1.238.675,16)	(\$9.222.080,36)	(\$6.933.109,38)	\$546.437,50	\$875.695,00	\$2.017.317,60	\$2.120.685,98	\$2.213.562,46	\$2.304.012,98	\$2.367.510,62	\$27.435.691,57	
IRR on Property	12%											
NPV @ 5%	\$9.092.641,21											
NPV @ 10%	\$1.725.952,25											

CURRICULUM VITAE

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