

A Feasibility Analysis of Parcel B-4-24 Development Project in
Huaihua City, China

Xinyi Lu

A Thesis

Submitted in partial fulfillment of the
Requirements for the degree of

Master of Urban Planning

University of Washington

2016

Committee:

George Rolfe

Daniel Abramson

Program Authorized to Offer Degree:
Department of Urban Design and Planning

© Copyright 2016

Xinyi Lu

University of Washington

Abstract

A Feasibility Analysis of Parcel B-4-24 Development Project in
Huaihua City, China

Xinyi Lu

Chair of the Supervisory Committee:

Professor George Rolfe

Department of Urban Design and Planning

This study examines the potential feasibility of the proposed development for the Parcel B-4-24 in Huaihua City, Hunan Province, China. This study reviews and compares academic real estate development principles, previous feasibility studies, and recent feasibility case studies for the United States and China. The feasibility analysis process and financial model are designed based on literature reviews and are altered according to local data and source availability, as well as the client's requests. The comparison with literature reviews and feasibility study results is made to discuss the difference between the actual practicing feasibility analysis and the literature review's suggestion. The feasibility analysis of this study indicates a potential estimated profit margin of 16%, which was reported to the client who made the decision that this project should move forward.

The client is Shan He Real Estate (SHRE), a local development company of Huaihua City, China. This study was initially assigned as a professional project to conduct a feasibility analysis on the development proposal, which later evolved as a thesis that combines the work of academic literature review and practical feasibility analysis. This study also contributes an English-Chinese Glossary on Real Estate Development Issues and Concepts for related cross- culture studies (see Appendix J).

Table of Contents

Introduction	1
The Client	1
The Feasibility Study	8
Chapter 1 Literature Review	12
Literature Research	12
Feasibility Study in China.....	28
Literature Review Summary	34
Chapter 2 Report to the Client	40
Executive Summary	40
Project Overview	41
Feasibility Analysis.....	48
Chapter 3 Lessons Learned.....	58
Literature Review vs. Feasibility Study	58
The Client’s Feedback.....	59
Implications for Practice	60
Appendices	62
Bibliography	82
Endnotes.....	84

List of Figures

FIGURE 1 - THE CONCEPTUAL SITE PLAN PROPOSED BY THE CLIENT	2
FIGURE 2 - THE LANDMARK COMPLEX OF THE YUHUAYUAN PROJECT.....	3
FIGURE 3 - LAND DEVELOPMENT PLANNING PROCESS	16
FIGURE 4 - GOING IN CAP RATE	23
FIGURE 5 - THE GOING OUT CAP RATE.....	24
FIGURE 6 - THE GROSS DEVELOPMENT PROFIT CALCULATION	25
FIGURE 7 - THE SWOT ANALYSIS MATRIX OF THE SHIJI YINJIAN REAL ESTATE DEVELOPMENT PROJECT	29
FIGURE 8 - AN EARLY STAGE FEASIBILITY ANALYSIS.....	36
FIGURE 9 - THE ORIGINAL SKETCH PLAN FROM THE PROPERTY OWNER.....	48
FIGURE 10 - THE UPDATED SKETCH PLAN FROM THE CLIENT	51

List of Tables

TABLE 1 - THE AREA OF THE PARCEL	43
TABLE 2 - PRO FORMA ANALYSIS OF SKETCH PLAN A	49
TABLE 3 - PRO FORMA ANALYSIS HIGHLIGHTED PROJECTIONS IN RMB AND USD (SKETCH PLAN A)	50
TABLE 4 - PRO FORMA ANALYSIS OF SKETCH PLAN B	53
TABLE 5 - PRO FORMA ANALYSIS HIGHLIGHTED PROJECTIONS IN RMB AND USD (SKETCH PLAN B)	54
TABLE 6 - SENSITIVITIES OF PROJECT COST PRO FORMA	57

List of Appendences

APPENDIX A THE MARKETING RENDERINGS OF SHRE YUHUAYUAN PROJECT	62
APPENDIX B THE MAJOR CATEGORIES OF COST PRO FORMA	63
APPENDIX C THE MAJOR CATEGORIES OF INCOME PRO FORMA.....	64
APPENDIX D COMPARABLE SALES METHOD	65
APPENDIX E THE LOCATION OF HUAIHUA CITY IN HUNAN PROVINCE AND CHINA.....	66
APPENDIX F THE MASTER PLAN OF HUAIHUA CITY (2010 – 2030)	66
APPENDIX G THE SITE PHOTOS.....	68
APPENDIX H THE SENSITIVITIES OF ASSESSED PROJECT VALUE	69
APPENDIX I THE ORIGINAL SITE MAP (PARCEL B-4-24).....	70
APPENDIX J GLOSSARY	71

Introduction

The Client

This feasibility analysis is assigned by the client Mr. Wu, Tao, who is the owner and current Executive Director of the Shan He (Mountain & River, Chinese: 山河) Real Estate (SHRE) of Huaihua City, Hunan Province, China. The SHRE is a local developing company established in 2012, which has recently delivered its very first project in its portfolio at the end of 2015, known as the Yuhuayuan (Imperial Garden, Chinese: 御花园) Project in the neighbor county.

The Proposed Project

The subject site of the proposed project for this study is a land parcel located in the City of Huaihua, China, which has been recently rezoned for commercial and mixed-use in a residential-dominated area. The local Subdistric Office has claimed that a hotel related commercial project according to its market analysis and the community's economic need. The parcel is approximately 1.7 acres with a 1.80 Floor Area Ratio (FAR). The client proposed a conceptual development site plan based on the owner's original draft site plan for this parcel, as shown in the Figure 1. The client is looking forward to a feasibility analysis that estimates the profit of the proposed project and quantifies the potential risks at this early stage of development. This feasibility analysis would also serve as negotiation leverage in the land acquisition process.



Figure 1 - The Conceptual Site Plan Proposed by the Client

The Firm's Background

As a local development company, SHRE has built its reputation through the Yuhuayuan (Imperial Garden, Chinese: 御花园) Project in the Xinhuang Autonomous County. The Yuhuayuan Project is a USD \$30 million 424-units commercial and residential mixed high-rise development project located in the nearby County of Xinhuang. The project consists seven 7-floor mid-rise condominium complexes plus a 26-floor mixed-use complex building. The Figure 1 is the design rendering of the 26-floor landmark complex building of the Yuhuayuan Project, the #4 building complex. See Appendix A for the marketing rendering of the whole project.

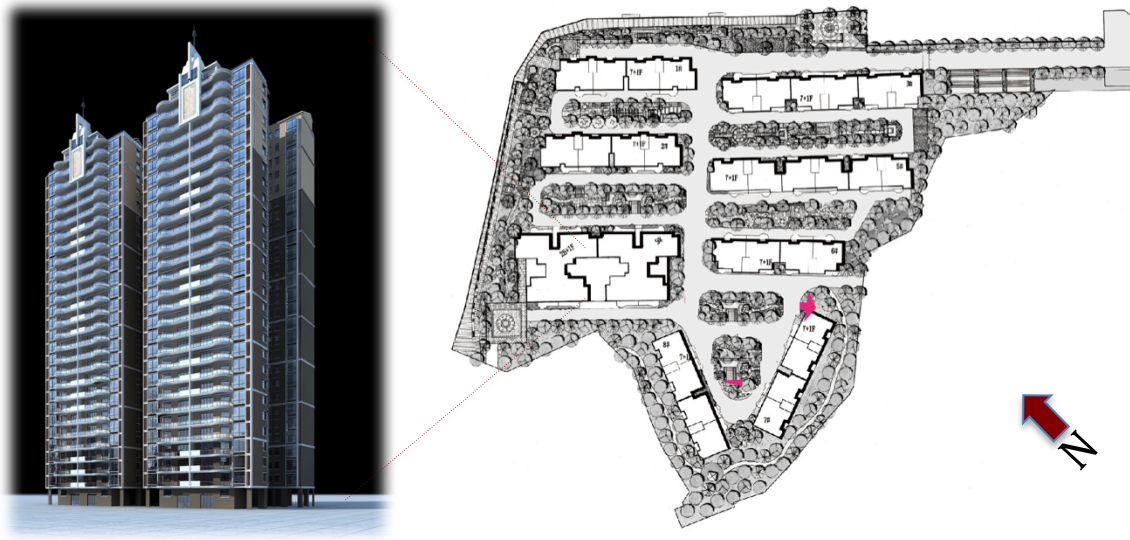


Figure 2 - The Landmark Complex of the Yuhayuan Project

The SHRE is one of the local developers established and flourished in the current booming Chinese real estate market. The family-tree-like structure of the company's committee membership constrains its fate to the professionalism of the owner's background, education experience and decision-making theory. Such family owned and controlled development firms are very common and dominate Huaihua's local real estate market. As the core of the real estate industry generator of Huaihua City, they are highly efficient in decision-making, but not always precise. The success of a development relies on the individual company's performance.

For instance, the purchase decision of land acquisition could be made in one day without data or analysis support, but the support of the firm leader's own experiences, gut feelings, or merely negotiating with family and friends. Sometimes, the family members and friends they negotiated are usually the committee members to the leadership, which further allows high efficiency of the

decision-making process possible. If the decision were made directly from the committee chair and owner without any data or analysis support, it might make dictatorship as a byproduct of the efficiency. The possible “righteous” decisions contribute to the entrepreneurship’s high efficiency growth in a so-far-so-good manner.

However, previously, at the proposal stage of SHRE’s Yuhuayuan Project, the client once was facing the choice of choosing to build quickly with all uniformly 7-floor mid-rise complexes; or to build to the maximum FAR with a 26-floor high-rise residential complex as shows in Figure 1. The client chose the latter option, which ended up with more than six months’ delay in delivery that embraced the national recession upon its completion. The decision was made by the client and his family (committee), motivated by the idea of building the tallest tower in town without proper market analysis and data support. The high-rise does contribute an estimate \$10 million capital value on the pro forma, however, this value was very costly in transferring into profit. The unexpected extra construct and financing costs have eliminated a great portion of the profit. Lucky enough, it finally survived from the default by refinancing and take-out loan.

Local Real Estate Market

Huaihua is a prefectural level city with a regional population of about 500 million,¹ as the one of the most remote municipalities in the Hunan Province. Located in a relative remote and less competitive market, the local real estate developers' decisions have a dominating effect on the product types and the supply side of the local real estate marketplace, as well as the related employment job creation. Since the real estate project takes great resources to have the product produced, such as time, money, materials, and labor force. The remote nature of the market condition makes mega real estate competitors outside the range of its reach. While in the local market, only very limited firms would be capable to gather such strength to perform this professionalism.

This situation is being changed in recent years due to the improvements in the transportation infrastructure such as the completion of the highways networks and the high-speed-railways. Nationwide mega development firms have joined the local market already, such as Biguiyuan (Country Garden, Chinese: 碧桂园) joined in 2012, and Henda Real Estate (Chinese: 恒大地产) joined in 2015. But, whoever the developer is, the construction part of the real estate market is still one of the largest job creator as most construction company would contract temporary worker as labor force.

¹ Huaihua Tongji Nianjian [Huaihua Yearbook], 2015.

Initiation of the Study

The firm delivered the Yuhuayuan project in the November 2015. Regardless the macro recession (the GDP growth rate has slowed down to 6.9 percent from previously 8 percent) of the Chinese real estate market since earlier 2015, the client is still thinking about conducting another project. Even before finishing the Yunhuayuan Project, the client has already started seeking for potential sites. The Parcel B-4-24 Proposal is among one of the firm's candidate development sites. The client is looking forward to a smaller-scale project that can park and transfer the company's capital gain while enriching the firm's portfolio before moving into larger-scale projects.

By the February of 2016, the firm has a current liquid asset of approximately \$5 million, and another \$5 million would be available in about six months, while the rest \$10 million would be available in no more than 24 months. The client assumes if the Parcel B-4-24 Proposal could be delivered and sold in 24 months, the firm would then be able to gather approximately \$20 million fund for its next potential project, a 100-unit single family residential proposal.

According to the client, that the contractor estimates the construction would take no more than 18 months, while the total project cost would be around \$15 million. So, the client is positive about the timeline of the proposal.¹ Also, the client has decided to incorporate a hotel development in this commercial mixed-use proposal. Because of his previous networking reveals that a hotel development

¹ But the entitlement process is uncertain due to the current rezoning in the neighborhood, which will be discussed in the feasibility analysis of Chapter 3.

as a pioneer project in this neighborhood would help the project gain public as well as government support. This might indicate that the firm and the client himself has maintained a good networking with the local subdistrict office as well as the municipal urban planning bureau. Thus the feasibility analysis of this study assumes the mixed-use proposal with hotel development as the highest and best use of the site for analyzing purpose.

The analysis is based on two sketch site plan provided by the client. Due to the client's previous capital-loss experiences in involved in decision made without data nor scientific analysis support, the client himself is especially looking forward to professional analysis and suggestions, who shows a great interest in academic research and rational study with full respect, henceforth initiated this feasibility study.

The Feasibility Study

Initial Problem

Academically, the development begins with the land acquisition tasks,¹ and establishing site control is the entry ticket to development.² However in practice, the client as a developer must determine if the development of the subject property (in this case a land parcel) would at least provide an opportunity to create enough value to cover the total project cost before the purchase of the property. The client wonders if a feasibility study at this early stage of development would be able to support his decision-making on whether the proposal should move forward.

Structure of this Study

Firstly, this feasibility study reviews the previous academic researches and case studies on how to conduct a feasibility analysis, the importance of feasibility analysis, and the financial models that applied in the feasibility analysis. Because the proposed project is located in China, the literature review also includes studies on the previous Chinese academic feasibility works, in order to figure out the differences in academic feasibility analysis between the United States and China.

Secondly, this study conducts a financially measurable feasibility analysis by analyzing the pro forma projections of the proposal based on the original owner's sketch site plan as well as the client's updated version. Other feasibility

constraints are quantified into financially measurable terms for analyzing purpose, such as the developer team's abilities, resources, and temperament (physical, human, and financial) to accomplish the required tasks as well as the wherewithal to bear the risks associated with these tasks.³ The proposal's project value, cost, and profit are estimated individually based on those two different sketch site plans.

Thirdly, this study sums up the lessons learned as implications for practice regarding to real estate developers at early stage of development decision-making. The implications are concluded based on the literature review in both countries' academic area, as well as the author's observations from the practicing real estate by conducting this feasibility analysis.

Specifically, the objectives of this feasibility study are:

- a) Figuring out what the current zoning regulated by the government would allow to be built on this site, which should be determined from the sketch plan.
- b) Figuring out what the profit the proposal might be able to produce based on the pro forma analysis, which should also converting all the other non-financially constraints in to financially measurable terms for feasibility analysis and sensitive tests.
- c) Presenting the analysis and potential findings to the client for his feedback, based on which the client is supposed to make decision on whether this proposed project should move forward.

- d) Conducting and comparing the feasibility analysis regarding to literature reviews, which might serve as this study's implications on practice.

Assumptions

The assumption of this study is that the feasibility analysis would support the developer's decision-making at the early stage of the development. As this study assumes that the academic research would indicate a proper way of conducting the feasibility analysis for real estate practice. And based on scientific and rational analyzing of data, the feasibility analysis would support the developer's decision-making on whether this proposal should move forward. However, development may still occur even when the analyzed conditions don't appear to warrant it, primarily might because of irrational decision (gut feeling & experience), undercover policy incentives and/or specific development requirements for particular space.

Limitations

This study is limited to 1) the lack of an open local market data source for analysis, due to the immaturity of the Chinese Real Estate database, especially local database; 2) the lack of literature studies on feasibility analysis about early stage of development, in both United States and China; 3) the tradition of developer's making decisions based on experiences other than scientific and

¹ Will be discussed in the Chapter 2 Literature Review.

rational analyzing of data, and /or the difference between the academic feasibility analysis and the real estate practice, as well as the academic and practice differences between United States and China.ⁱ

This study is further limited by the fact that the client might make the decision regarding whole portfolio of the firm, while this study is assigned to analyzing the feasibility of this specific site only. The feasibility of this proposal development and its associated decision-making might be influenced by the other projects within the firm. Thus the feasibility of this proposal might be determined by the client's own specific knowledge and energy on asset management, project phasing, financing, and risk mitigation in a firm-widely sense.

This study was originally initiated as a professional project in the November of 2015, which continuously evolved as a thesis since the February of 2016. While the feasibility analysis in this study is based on the information provided by the client till then, in order to serve as a support for the client's decision-making on the development proposal of a candidate site. The feasibility analysis was officially reported to the client on the April 20, 2016, while the client has made the decision that the project should move forward. There is no attempt in this study to analyze and address the feasibility issues involved thereafter.

ⁱ Will be discussed in the following Client Introduction section.

Chapter 1 Literature Review

Literature Research

Feasibility Analysis Definition

The literature research body of this study reviews the previous studies on feasibility analysis. This literature research includes reviews on publishes on feasibility studies in the United States and China, which also reviews research papers and case studies on academic topics as well as practicing issues. Typically, feasibility analysis occurs in the early stage of real estate development process, which usually conducted by the developer.

As one of the primary scholars in the real estate study, James Graaskamp (1973) explains the concept of feasibility analysis in his *A Guide to Feasibility Analysis, Chapter I*, that the process of real estate is a process of achieving a good fit of a real estate project, which the feasibility analysis implies the satisfaction of the objectives that might be neutralized by the physical and/or financial incongruities, the irritants, or unpredictable forces.⁴ In the Chapter I, Graaskamp specified the definition of the term “feasibility” in his study, quoted as below:

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.⁵

Graaskamp emphasizes that the “client’s objectives” are the unique and the major function of a real estate development process, that matters the how

corrective the statement of the problem might be. While he indicates that the “likelihood” in his definition implies the unpredictable character of risks a real estate development would face and the feasibility analysis would be dealing with.

As one of the earliest and most frequently quoted sources on real estate feasibility analysis topic, Graaskamp introduces the framework of objectives that should be identified and examined in a feasibility analysis, which is quoted below:

1. *Objectives of the parties at interest and for who the feasibility study is done.*
 - a. *Strategic objectives and priorities.*
 - b. *Acceptable tactical alternatives.*
2. *Market trends and opportunity areas.*
 - a. *Aggregate data on local population, employment, income, etc.*
 - b. *National economic and political policies affecting incentive, timing, risk, etc.*

...
3. *Alternative merchandising targets or market segments.*
 - a. *Special micro-markets with space needs.*
 - b. *Product and price specifications.*

...
4. *Legal-political constraints and alternatives.*
 - a. *Regulatory constraints on the parties at interest.*
 - b. *Regulatory controls on site and space development.*
 - c. *Exogenous political structure and influencing alternatives available.*
5. *Esthetic-ethical constraints and alternatives.*
 - a. *Project relationship to immediate community.*
 - b. *Project obligations to space users.*
 - c. *Prime contractor-subcontractor relationships.*
 - d. *Client obligations to his preferred personal commitment pattern.*
6. *Physical-technical constraints and alternatives.*
 - a. *Space user requirements as to location and improvements*

...
7. *Financial constraints and alternatives.*
 - a. *Time line or assumed calendar of events for financial assumptions.*
 - b. *Capital budget required and sources.*

...

Role of Developer

The importance of the role of the developer has been well noted by David Ling (2013) in his *Real Estate Principles A Value Approach, Chapter 22*, that the role of developer to the development process is central, as if the quarterbacks of football teams who put everything in motion. According to Ling, the importance of a real estate developer is quoted below:

Although constrained by available resources and regulations, their decisions still have a dominating effect on what kind of real estate is available in the marketplace; what jobs are available in construction, architecture, and other related fields; and what real estate investment opportunities are available to the capital markets. Their central and visible role in the process of creating society's structures makes them both a lightning rod for social anxieties and a glamorous form of entrepreneurship.⁷

Real Estate Development Process

As the continual reconfiguration of the built environment to meet the society's needs,⁸ the real estate development process needs to meet objectives of the involved parties. The importance of feasibility analysis in a real estate development varies accordingly. There are both public and private participants involving in real estate development activities. The definition of a developer would refer to different development types associated with different development goals. A private developer may pursue the highest per capital

return when developing a project, while a public participant may concern more about the public benefits.

According to George Rolfe's (2010) unpublished *Introduction to Real Estate Process* at Runstad Center for Real Estate Study, University of Washington, that a typical development process consists eight non-linearly stages:⁹

1. Land Control (also known as land acquisition)
2. Project Feasibility
3. Project Design and Engineering
4. Obtaining permits/entitlement
5. Financing
6. Construction
7. Marketing
8. Project Operation and Disposition (Property Management)

George comments in the Introduction that not all of these steps will have the same importance, nor will they necessarily be done in the same sequence on every project, but they must all be addressed in order to create successful real estate projects.¹⁰

The sequences of a real estate development process vary from project to project, so as the feasibility analysis to the stage of the development process. It is the developer, or the client of the feasibility analysis that decide when and how the feasibility analysis should be conducted.

Role of Feasibility Analysis

Vincent Barrett's (1988)¹¹ *How to Conduct and Analyze Real Estate Market and Feasibility Studies* is one of the frequently quoted resources for introduction to real estate feasibility analysis.

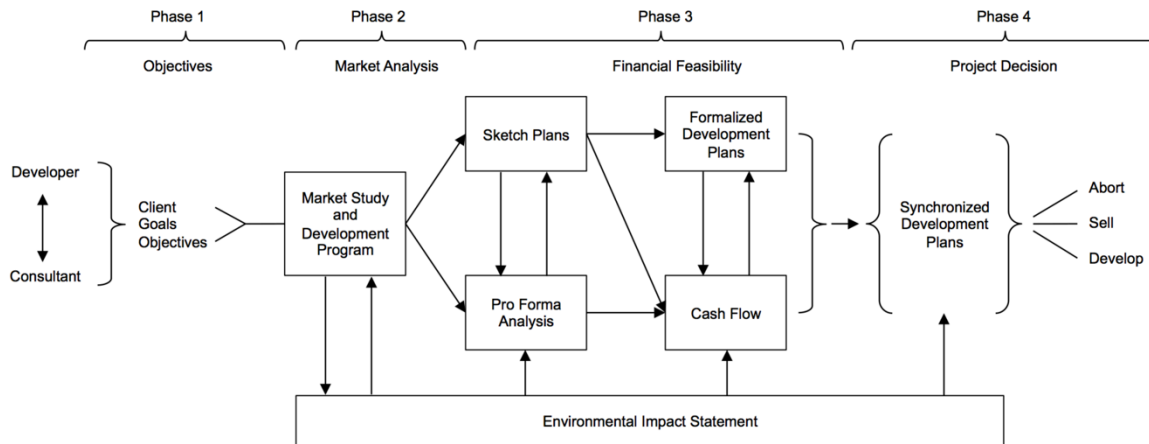


Figure 3 - Land Development Planning Process

Figure 3 is a schematic presentation of the planning process and details the various steps involved quoted from Vincent Barrett's (1988)¹² *How to Conduct and Analyze Real Estate Market and Feasibility Studies, Chapter 1*. In this development planning process, Barrett (1988) refers feasibility analysis as the study about whether the proposed project can make profit.¹³ Barrett's feasibility study process starts with the sketch plan and pro forma analysis, then modeling the project by the cash flow analysis, and finally develops the formal development plan.¹⁴ Barrett emphasizes the importance of feasibility analysis by demonstrating in his study that "the market analysis, site planning, and economic feasibility studies are the key components of the planning process and are applicable to any scale and mix of real estate development".¹⁵

According to Barrett, a sketch plan is generally a to scale rendering, of the anticipated physical layout of the project. The sketch plan should be laid out in accordance with the development program established in the market study. At early stage of feasibility analysis, the sketch plan may have a huge impact on the financial feasibility of the project. Since property design is an important aspect that affects both the cost and revenues. Once the project is properly sketched, the developmental cost estimate may be made. By this method, a rough estimate of total project costs may be determined and serve as an input to the pro forma analysis.¹⁶ See Appendix C, D for main categories that make up a pro forma.

Barrett explains that the pro forma analysis is a static analysis generally incorporating rough cost and revenue estimates; it may or may not include financing variables.¹⁷ On the other hand, the cash flow model is a dynamic program. The timing of the cash flow model is a dynamic considered while incorporating all financial variables and generally in discounted dollars.¹⁸ Barrett further noted the importance of feasibility analysis to the development by indicating that the project decision should be made based on the final development plan from the feasibility study, quoted as below:

Once the final development plan has been completed, the developer, with the consultant's advice, must decide on the future of the project. There are three basic alternatives: 1) abort the project, 2) sell the plans along with the site, or 3) move ahead with the approval process, financing, and physical development of the site.¹⁹

Typical Feasibility Study Process

In order to develop buildings on any parcel of land, a site, it is important to define objectives for the development process.²⁰ What types of and how many buildings, who might be potential users and what would they be willing to pay for the right to use those buildings, can financing be arranged on acceptable terms, can required approvals be obtained in a timely manner, and what are the costs likely to be relative to the amount of value created.²¹ These are all questions that are part of program definition and feasibility analysis and must be answered to the satisfaction of the developer in order to have a feasible project.²²

Since one central objective of real estate development is to create more value than the project costs, answering these questions becomes focused on the issue of feasibility analysis. Because these questions are being asked before any actual buildings or users exist for a given site, answers to them are based on estimates of or assumptions about future events. Feasibility analysis is the procedure used to convince key persons involved in the development process that it is worth the effort to construct buildings on a parcel of land, to develop a given site.²³

George Rolfe (1998) introduces the two different types of feasibility analysis, the “front door” feasibility analysis and the “back door” feasibility analysis, in this unpublished study *Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process*, at the Runstad Center for Real Estate Study, University of Washington. The “front door analysis”ⁱ of feasibility and was

ⁱ The “Front Door” feasibility analysis refers to a developer starts with a site in mind, and first use a Cost Pro forma to analyze the capital costs of developing that site. Once these costs have been estimated, the developer uses an Income Pro forma to look at the market for that type of space and estimates the rents or sales price that can be charged. Using rents or prices to estimate total project value upon completion, the developer can compare the costs to develop the space against the value created. Assuming the created

typical of development up through the 1970's, when the costs of production were the critical factors that determined project feasibility. However, due to the cost of construction can be effectively managed to meet allowable requirements, the "back door analysis"¹ of feasibility is almost universally used today.²⁴

The "front door" feasibility analysis approach requires a developer to gain site control and construct a project for less total project cost than their competitor, seriously relying on the strong enough market to produce a feasible project. Back to that period of time, the contractor was able to contribute a great deal of value through careful management of site construction activities. But when nowadays the marketing and financing would have more potential for creating value than construction, the "back door analysis" makes it easier and quicker to arrive at feasible assumptions in the market environment of today.²⁵ One thing in common is that both of two approaches are based on the Income Pro forma.

The Role of Pro Forma

As the basic tools used to analyze feasibility questions, a pro forma is an accounting style projection of the operating statement over time.²⁶ A pro forma can be generalized and abbreviated or provided in great detail. Typically a pro forma is derived on an annual projection basis.²⁷ Norman Miller et al (2005) in the

value is sufficiently high to warrant taking the risks, the developer will proceed with the next step in the development process (Rolfe, 1998).

¹ The "Back Door" feasibility analysis refers to a developer starts with an assumption of a user for the completed project, i.e. either a renter or a buyer, they first use an Income Pro forma to estimate the value created by market rents or the price a user is willing to pay. Once the value has been estimated, the developer can define a required profit margin and/or equity amount sufficient to compensate for development risks. Value - Profit tells the developer the allowable costs for construction of the project. The developer then uses a Cost Pro forma to determine whether a suitable project can be designed and constructed with sufficient quality to compete in the marketplace (Rolfe, 1998).

Real Estate Principles for the New Economy introduces the steps in developing the simplified operating statement or pro forma as:²⁸

- Step 1: Estimate Potential Gross Income
- Step 2: Subtract Estimated Vacancy
- Step 3: Add other Income
- Step 4: Subtract Operating Expenses
- Step 5: Subtract Debt Services
- Step 6: Add the Mortgage Principal Repaid to BTCF
- Step 7: Subtract Depreciation
- Step 8: Subtract the Amortization of Points, Leasing Commissions, and Tenant Improvements (TIs)

George Rolfe (1998) introduces in detail the role of pro forma in his unpublished study the *Program Definition and Feasibility Analysis: An Introduction to Project Development* at the Runstad Center for Real Estate Study, University of Washington. The object of creating pro forma is to provide a framework for comparing the estimated cost of developing a project (Cost Pro forma, see Appendix B for major categories that make up a cost pro forma) with the estimated value of the completed project (Income Pro forma, see Appendix C for major categories of data necessarily for Income Pro forma).²⁹ By definition, pro forma estimates at one point in time, while development takes place over a period of time, two more dynamic analytical tool models are necessary to accurately determine project feasibility:³⁰

- A Sources and Uses Model (S/U)
- An Income and Expense Model (I/E)

ⁱ S/U Model enables a developer to analyze estimated capital costs as they might occur over the time period required to produce the project (Rolfe, 1998).

The Feasibility Analysis

The Mixed-use Development Handbook (ULI, 1987) introduces about that the feasibility analysis can range from a relatively simple pro forma analysis (an income statement for the real estate project that shows capital costs, operating revenues and expenses, and return on investment for a single year at stabilized operations) to a complex analysis of cash flows and internal rates of return (IRR, frequently for 5, 10, or 15 years). A feasibility analysis must involve a model that can respond to change.³¹

At the early stage of the development, a calculating financial modeling analysis is not textbook-required. As Poorvu (1999) mentions in *the Real Estate Game* that One of the most important tasks in the early stages of the real estate game is managing your time effectively. This is made much easier by an approach that is referred to as back-of-the-envelope analysis. In many cases, back-of-the-envelope analysis (using historical and pro forma numbers) is all you need to assess a particular real estate opportunity.³² So as Linneman (2013) suggests in the Development Feasibility Analysis Chapter of His *Real Estate Finance and Investments: Risks and Opportunities*:

“Before you begin the arduous task of modeling the detailed cash flows for a development project, you should always perform a simple financial feasibility analysis. If the development does not work based upon this simple analysis, I promise you that it will not work any better after hours, days, and weeks of arduously modeling rows

³¹ I/E Model enables an analysis of estimated operating income and expenses over the time period the developer anticipates owning the project. An I/E also is useful for looking at tax considerations and changes in appreciation over the same time frame (Rolfe, 1998).

and columns. If the simple analysis suggests it could work, then create a detailed spreadsheet, and begin your in depth market analysis.”³³

The Cost and Value Component

A fundamental principle of owning and developing real estate is that projects need to be worth more than they cost to create (Value - Cost = Profit).³⁴ Project cost is a vital component of the financial feasibility analysis. The cost information must be reasonably reliable to conduct the financial feasibility analysis, and the developer may need to order cost estimates on some aspects of the project.³⁵

Peter Linneman’s *Real Estate Finance and Investments: Risks and Opportunities Edition 3.1* is a great source introducing and explaining the cost and value component of the feasibility analysis. Linneman (2013) indicates in his *Real Estate Finance and Investments: Risks and Opportunities, Chapter 8*, that the main cost categories incurred during the development phase are land, hard costs, and soft costs.³⁶ The land cost is the price you pay to purchase the development site. The largest hard cost is the constructions cost and related, such as materials and labor. Soft costs area broadly defined as indirect costs such as legal fees, development overhead, and the cost of money.³⁷ The largest soft costs are generally architects, engineers, and interest costs.³⁸

Aforementioned, establishing site control is the most fundamental step of the development process, because the land cost matters the most at the early stage of the feasibility analysis. If the developer is in his haste to take advantage of the “can’t miss great opportunity”, he might submit a higher bid, ending up with

overpaying and raising the development cost.³⁹ Regardless of the landowner’s asking price or competing bids, one must always carefully calculate what he can afford to pay for a development site a function of the market environment and his require expected return.⁴⁰ See also Appendix B for major categories that make up a cost pro forma.

Success development is true value creation.⁴¹ Once the cost is estimated, the value should also be determined in order to forecast the profit (Value - Cost = Profit). In the same chapter, Linneman introduces a quantified methodology to estimate the value of the project by introducing the mathematics approach, and project the profit margin based on it. The rule of thumb for a developer is “build to a 10” and “sell to an 8”,⁴² which elaborated as build to the Cape Rate of 10 and sell at the Cap Rate of 8.

Return on Cost	=	$\frac{\text{Project Stabilized NOI}}{\text{Projected All in Costs}}$
Build to a 10	=	$\frac{\$1 \text{ Million}}{\$10 \text{ Million}}$

Figure 4 - Going In Cap Rate

As illustrated in Figure 4, “build to an X” means that projected Net Operating Income (NOI)ⁱ for the property upon stabilizationⁱ divided by the expected total

ⁱ The capitalization rate, often just called the cap rate, is the ratio of Net Operating Income (NOI) to property asset value.

ⁱⁱ Net Operating Income (NOI) is simply the annual income generated by an income-producing property after taking into account all income collected from operations, and deducting all expenses incurred from operations.

development cost equals X percent. So “build to a 10” means that the stabilized annual NOI return is 10% of the total development cost. When build to a 10, if the projected stabilized NOI was \$1 Million, the total project should equal to \$10 Million. Also known as going in at the cap rate of 10.⁴³

Sell to an X	=	$\frac{\text{Project Stabilized NOI}}{\text{Projected Sale Price}}$
		\$1 Million
Sell to an 8	=	\$12.5 Million

Figure 5 - The Going Out Cap Rate

The Figure 5 is a “sell to an X” equation. To “sell to an X” means that stabilized NOI divided by the project sales price upon stabilization is X percent. When the \$1 Million stabilized NOI project is sold for \$12.5 Million, the cap rate is 8%, or the going out at the cap rate of 8.⁴⁴

In Linneman’s example, the developer expects a \$2.5 million value creation from the development, that is the difference between the \$10 million in projected development costs and the \$12.5 million expected sales price.⁴⁵

The “build to” and “sell to” calculations are critical calculations for a developer. While you will utilize detailed spreadsheets to summarize projected revenues and costs, these “build to” and “sell to” calculations effectively summarized the

ⁱ Also know as stabilized occupancy, when the occupancy levels reached by a new property after the initial lease-up period, and that are reasonably expected to continue into the future with the proper marketing, management, and maintenance. A good stabilized occupancy rate is in excess of 90 or 95 percent.

developer's assessment of value creation potential. These calculations will almost always yield the same results as complex net present value spreadsheet calculations.⁴⁶

$$\begin{aligned} \text{Expected development profit margin} &= (\text{Expected cap rate on cost} / \text{Expected cap rate on sale}) - 1 \\ &= (\text{Expected value at sale} / \text{Expected cost}) - 1 = (\text{Expected going in cap rate} / \text{Expected cost}) - 1 \\ &= (10/8) - 1 = 0.25 = 25\% \end{aligned}$$

Figure 6 - The Gross Development Profit Calculation

The Figure 6 is the gross development profit calculation.⁴⁷ The \$2.5 million expected value creation on the \$10 million in projected costs in the example, which means that the developer expected a gross development profit margin of 25% for the project. The opportunity to achieve a meaningful profit margin is why developers accept the risks of development.⁴⁸

Expected gross profit margins for development projects are typically 15-25%.⁴⁹ The developer's assessments of risk and opportunity are critical in deciding whether to develop.⁵⁰ If value is negative, then the developer must decide whether a revised plan might be feasible. If not, he will abandon the project, allowing any option on the land to elapse.⁵¹

See also Appendix C for The Major Categories of Income Pro Forma. See Appendix D for how to determine the value by the comparable method.

The Sensitivities and Due Diligence

There are innumerable permutations on risk categories that could be used to categorize the causes of risks, such as economic risks, liquidity risks, political-legal and environmental risks, business and management risks, and financing risks.⁵² For the sake of feasibility analysis, a project has to be more than financially feasible, for a feasibility study, there are many other sensitive concerns known as miscellaneous and/or due diligence. Comparing to financial risks, not all other risks involving the development could be easily quantified to be financially measureable, but they should be taken into consideration.

Linneman (2013) claims that the personality of the developer, the development experience and expertise possessed, the investment criteria, the developer's comfort with specific types of risks, sources of capital, and how well one can cope with many problems that will occur during the development process, determine whether him will undertake a development. Linneman emphasizes that in fact these considerations are far more important than the expected returns, as if lacking the ability to resolve the many headaches that arise during development, the pro forma profit will quickly disappear.⁵³

Even if a development appears financially feasible, it still depends on the land being free of soil problems, environmental concerns, ecological complications, seismic concerns, hydrological concern, or anthropological or historical sensitivities.⁵⁴ Thus a developer commonly turns to an environmental consultant, a geologist, or other scientific experts at this point. The consultants will examine the site for underlying structural concerns, for any evidence of toxicity, wetlands,

and sensitive wildlife habitat that may be protected. In the US, local regulatory agencies increasingly require this assessment in the form of an environmental impact statement (EIS)ⁱ or environmental impact report (EIR)ⁱⁱ before issuing the , necessary development permits.³⁵

ⁱ An environmental impact statement (EIS), under United States environmental law, is a document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment". Source: The National Environmental Policy Act of 1969, as amended, 42 USC Sections 4321-4347 (enacted 1970-01-01) from Council on Environmental Quality NEPA net.

ⁱⁱ Several U.S. state governments require that a document similar to an EIS be submitted to the state for certain actions. For example, in California, an Environmental Impact Report (EIR) must be submitted to the state for certain actions, as described in the California Environmental Quality Act (CEQA). Source: Wikipedia.

Feasibility Study in China

In China, real estate development feasibility analysis has been commonly adopted as a methodology that analyzing the economical possibility, technology probability, and physical adaptability of a proposed real estate project.⁵⁶ The academic studies and discussions on feasibility analysis dates back to early 1990s. In an early feasibility analysis study by Tang Yu-ming et al (1995), which probes the feasibility of the project in the way of the sources and use of the fund and analyses its benefits and risks. This feasibility analysis quantifies the measurement by adopting the financial analysis. The feasibility analysis was conducted in the contents quoted below:

1. *Introduction to the Project*
2. *Financial Sources and Uses*
3. *Project Profit Analysis*
4. *Sensitivity Analysis*
5. *Conclusion and Suggestion*⁵⁷

The financial analysis of this study is conducted by a financial model. The project profit is measured by Internal Return Ratio (IRR, leveraged and unleveraged) by analyzing the Pro Forma and Cash Flow. The Sensitivity Test is based on market conditions and assumptions. The financial model and feasibility analysis is based on the sketch project plan. Tang's feasibility analysis context is consistent with the reviewed Vincent Barrett's (1988) introduction on how to conduct a feasibility analysis in the previous literature study. However, the data source is omitted in the article.

In another report by Lu Chang-hua (2011), the feasibility analysis is based on the SWOT analysis rather than traditional quantitative analysis technique such as financial modeling. The SWOT analysis is the abbreviation for Strength, Weakness, Opportunity, and Threat analysis. Lu's this report is especially different from the reviewed United States literature studies, since it does not quantify the terms in the feasibility analysis, which seems to be more vulnerable to basis, and the descriptions are difficult to measure and determine the feasibility of the specific project in a monetary sense.

The SWOT analysis matrix of this study is translated and quoted below:³⁸

<p style="text-align: center;">Strength (S)</p> <ul style="list-style-type: none"> • Accord with the related national industrial policy requirements • Accord with the local policy and development plan • Advantages from geographic location • Complete set of supporting infrastructure 	<p style="text-align: center;">Weakness (W)</p> <ul style="list-style-type: none"> • High development cost • Poor V-level water quality • Noise and air pollution as nuisances in surrounding area • "Eight Control Regulations on House Prices" makes the potential customers straddle
<p style="text-align: center;">Opportunity (O)</p> <ul style="list-style-type: none"> • Real Estate is at its peak time • Qingzhou City is ascending in its urbanization process • Residents is still in need for a better residential environment • Qingzhou City is rich in labor poor 	<p style="text-align: center;">Threat (T)</p> <ul style="list-style-type: none"> • House price is unsteady • Sameness in financing • Design might be obsolete to customers • Risks in marketing

Figure 7 - The SWOT Analysis Matrix of the Shiji Yinjian Real Estate Development Project

As shows in the cited SWOT Analysis Matrix in Figure 7, Lu's feasibility analysis has more emphasis on the generalized market conditions and economic policies. Very limited quantitative data are provided and analyzed in Lu's feasibility analysis. However, it is reasonable to assume that not all the United States counterparts would conduct feasibility analysis in a quantified manner. Lu's study challenges the quantitative feasibility analysis. Further explicit research on qualified feasibility studies might be valuable to this type of non-quantified feasibility analysis. But the assigned feasibility analysis on the Parcel B-4-24 is initiated with a financial feasible consideration, thus the literature review is more focused on the quantified feasibility studies. Assuming Lu's report to be scientific, rational and systematic, it reveals a possibility of conducting feasibility through qualified methodology regarding to market, planning and economic constraints that are difficult to quantify.

Liang Changyu's (2001) introduces the function of feasibility analysis in China is a frequently quoted source in defining the main functions of feasibility analysis, which 1) support the decision-making of the proposed project; 2) support the loan application to the bank; 3) support the entitlement process; 4) and support the construction phasing and preparation; 5) referred to support the post-construction evaluation. In this study, Liang also discusses about the requirements in order to conduct a reliable feasibility analysis. The requirements are quoted below:

1. *Ensure the authenticity and scientific of the feasibility analysis;*
2. *Ensure the properly of the involved participants;*
3. *Ensure the analyzing contents and results to meet the standards.*⁵⁹

Liang mentions that the feasibility analysis could serve as an important study before the actual investment activity happens. This is different than some of the reviewed United States literature researches which introduce that the feasibility analysis is usually conducted after the land acquisition in a typical development process.ⁱ Liang discusses that a proper decision made based on a precise feasibility analysis prior to the investment of the project would help avoid potential default, and mitigate potential risks, as well as provide a relatively reliable construction plan. Since alternative plan might cause significantly increase in financing and management costs with associated risks. Liang also emphasized that with the support of new technology such as computer science, the data processed in the feasibility analysis would become more automatic, efficient, standardized, systematic and reliable. The foreseen of application in new technology in Liang's study is a supplement to the previous American literature review.

As to the problems exists in the real estate development feasibility analysis, Tang Zuo-ming et al (2006) discuss that there are near-sighted-like problems exist in the development and management of the current real estate projects, such as lack of study in the market conditions, enthusiasm in pursuing conceptual speculation other than the quality of the products. The main problems for feasibility analysis in China are summarized as: 1) lacking in theoretical guidance;ⁱⁱ 2) developers relies on experience more than analysis; 3) lack of

ⁱ Refers to George Rolfe's (2010) unpublished *Introduction to Real Estate Process* at Runstad Center for Real Estate Study, University of Washington. Reviewed in previous literature research section.

ⁱⁱ According to Tang et al (2006), the current guidance for conducting feasibly analysis is the Fangdichan Xiangmu Jingji Pingjia Banfa [*Real Estate Development Project Economic Evaluation Method*], which was made based on normal industry construction standard, but as the real estate development is different from the industrial construction, in practice, analysts find it difficult to adopt directly from the Evaluation Method.

preciseness in market positioning; 4) prejudiced by first impressions; 5) lack of risk forecasting and references; 6) lack of knowledge in the products and customers; and 7) lack of attention in plan optimization.⁶⁰ The problems revealed in Tang's study should be paid extra attention when conducting feasibility analysis in China.

Zhao Zhen-tao (2011), a graduate student from the Construction Management and Real Estate College of Chongqing University, conducts the feasibility analysis based on a more comprehensive and revised mythology in his study that the feasibility study of developing yacht related real estate project in Chongqing is based on 1) quantitatively analyzing the consumers' higher vacation demand, the high-end element for the real estate business; 2) comparing the development of yacht real estate at home and abroad; and 3) studying the actual development of Chongqing, including but not limits to its market condition and economic policies.⁶¹ However, the audience information is omitted in this paper, it is unclear to whom is study is reported to, which could be the city's government, the developer, or both.

Real Estate Graduate Education in China

Many Chinese universities is offering graduate level education in real estate study. According to the course catalog, Chongqing University offers a variety courses in real estate discipline, such as real estate economics, real estate

ⁱ According to the author, the risks include economic risk, political risk, policy risk, market risk, financing risk, management risk, entrepreneurship risk, and etc.

appraisal, real estate project management, real estate risk management, and etc.ⁱ Like Chongqing University, Tsinghua University offers a graduate degree under its Department of Construction Management, with the direction in Real Estate Finance, Real Estate Investment & Development, Real Estate Capital Market, and Real Estate Entrepreneur Strategy.ⁱⁱ

Tongji University also offers a graduate degree in its School of Economics and Management (Chinese: 经管学院) under the Department of Construction Management and Real Estate (Chinese: 建设管理与房地产系) with the discipline in Land Market and Development, Land Economy and Planning, Real Estate Investment and Planning, Real Estate Policy Analysis and Assessment.ⁱⁱⁱ However, there is no syllabus level information accessible on their program website. It is difficult to directly identify the specific course plan has covered feasibility analysis in the course catalog of those schools. But graduate students such as Zhao (2011) are publishing on feasibility analysis,^{iv} it is reasonable to assume that such analysis has been incorporated in the academic education of real estate study in China.

ⁱ Program Introduction Webpage: <http://www.cmre.cqu.edu.cn/about/?154.html>

ⁱⁱ Program Introduction Webpage: <http://www.tsinghua.edu.cn/publish/cm/6611/index.html>

ⁱⁱⁱ Program Introduction Webpage: http://sem.tongji.edu.cn/semen/?page_id=6625

^{iv} Refers to Zhou's (2011) study reviewed in previous section.

Literature Review Summary

The importance of the feasibility analysis is critical and fully noted in most development related academic publishes, such as *James Graaskamp's A Guide to Feasibility Analysis* (1973), *William Poorvu's The Real Estate Game: the Intelligent guide to Decision-making and Investment* (1999), *Mike Miles' Real Estate Development Principles and Process* (2007), *David Ling's Real Estate Principles A Value Approach* (2013), and *Peter Linneman's Real Estate Finance and Investments: Risks and Opportunities* (2013). In those publishes, the feasibility analysis is usually introduced as an important stage of the whole development process. For efficiency, the timeline of the classic development stages process is not necessarily linearly and could be conducted simultaneously or overlapped accordingly.

The role of developer to the development process is central, as if they are the quarterbacks of football teams. The developer is the one who put everything in motion. As Ling (2013) illustrates that though constrained by available resources and regulations, their decisions still have a dominating effect on what kind of real estate is available in the marketplace; what jobs are available in construction, architecture, and other related fields; and what real estate investment opportunities are available to the capital markets. Their central and visible role in the process of creating society's structures makes them both a lightning rod for social anxieties and a glamorous for of entrepreneurship.⁶

The role of developer to the feasibility analysis is even more vital. The feasibility of a project is not only financially but also physically and psychologically. The

professionalism, education, experiences, the expertise against risks/challenges, sources of capital, skill set of leadership, and stabilized mental/physical performance, determine whether him could undertake a development. While the universal formula $\text{Profit} = \text{Value} - \text{Cost}$ could test the very basic financial feasibility of the developer's proposal; the success of development can be determined by so many other constrains (planning regulations, community voices, soil problems, environmental concerns, ecological complications, seismic concerns, hydrological concern, or anthropological or historical sensitivities, and etc.), not all of those constrains could be easily estimated as contingency costs in the financial part.

Regarding to the financial feasibility analysis, the pro forma analysis is the most basic methodology. The pro forma is framed for analysis the feasibility of a project at a point of time supported by specific given data. Usually, a to-scale sketch plan would layout the cost of the total project, thus serve as the input of the pro forma. The pro forma analysis could be extended by the cash flow analysis to project the longer-term feasibility of a development.

However, at some very early stage of a development, before modeling the detailed cash flows for a development project, one should always perform a simple financial feasibility analysis. Since if the back-of-envelop analysis (using historical and pro forma numbers) screens out that there is no opportunity, it is unlikely that the more time consuming detailed methodology would be very promising. At this early stage of development, managing time efficiently is more important than analyzing perfectly precisely in detail.

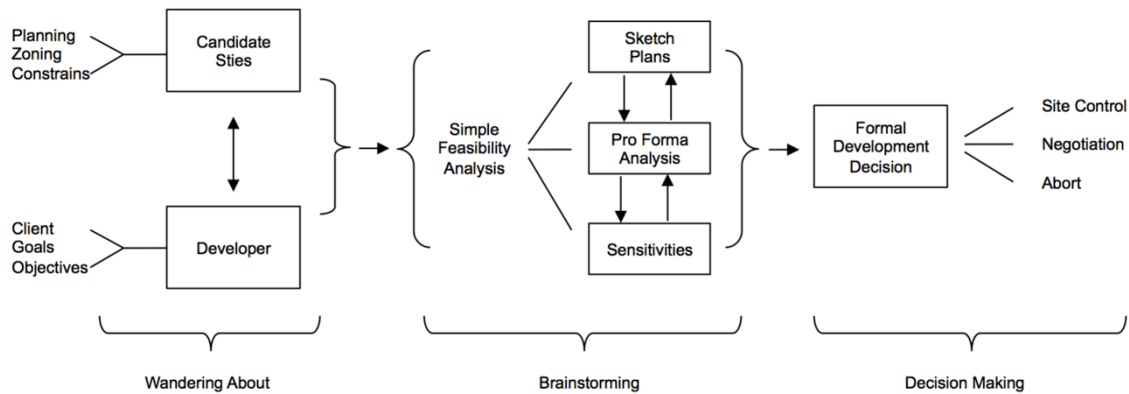


Figure 8 - An Early Stage Feasibility Analysis

According to previous literature review, a simple feasibility analysis process at the early stage of development is summarized and designed. Figure 6 is showing the process of a simple early stage feasibility analysis. The feasibility analysis is summarized into three phases: the Wandering-about phase, the Brainstorming Phase, and the Decision-making Phase.

Since land cost is the most significant cost before construction (either by purchasing or financing), when a development is still at the stage of land acquisition, a simplified feasibility study is very necessary for screening out potential proposals that might not work. Any piece of land is defined by its geological location, size, shape, leverage, and etc. Its physical conditions are also measurable, such as surface improvements, underneath easements, soil type, environmental concerns, and etc. What is more, the regulatory constraints such as planning regulations and zoning codes would narrow down the uses of a land parcel to very specific ones. Those constraints are more solid and can be determined by the site touring, and literature reviewing.

In the wandering about phase, usually a developer firstly identifies a site and then determines a specific plan for the site. Some developers already have a development plan and he would still need to figure out the right piece of land to fit in the plan. This is sort of like the blind date for singles; while the rule of thumb is not marrying with the land at the first glance.

Once the site, or one of the candidate sites is selected, the developer would move on to the brainstorming phase and draft a sketch plan for pro forma analysis and sensitivity test. Experienced developers usually work on more than one proposal simultaneously for efficiency. In the brainstorming phase, the pro forma analysis and sensitivities might have influence on each other and as well on the alternatives of sketch plans. This phase is quantitative and rational. It will be efficient to have designer and engineers on board at this stage. The more accurate the data the developer can gather in the pro forma, the more experienced the developer in dealing with challenges and risk management, the more likely that he will carry out a more feasible plan and a successful development.

The decision making on whether this proposal should move on will be made accordingly. If the feasibility analysis signals positive, the next stage would be acquiring the site control or land acquisition. Otherwise, the developer should either abort the current proposal or re-analyze it. However, development may still occur even when apparently none conditions would warrant it. This may primarily due to irrational decision, strong policy incentives and /or specific development on particular space.

The literature review on United States academic studies suggests that a typical feasibility analysis examines: “1) Objectives of the parties at interest and for who the feasibility study is done. 2) Market trends and opportunity areas. 3) Alternative merchandising targets or market segments. 4) Legal-political constraints and alternatives. 5) Esthetic-ethical constraints and alternatives. 6) Physical-technical constraints and alternatives. 7) Financial constraints and alternatives (Graaskamp, 1973).”

Although there is no course catalog showing that graduate level schools are teaching feasibility analysis in their real estate programs. Related literature review indicates that Chinese real estate graduate students have worked on articles with issues on feasibility analysis topics.

By comparing the reviewed feasibility literature studies in China, the structural design and context of the feasibility analysis shares similarities as what is typically suggested in the United States.ⁱ However, as the Chinese scholar indicates, feasibility study in China serves more specific functions, as supportive documents for the decision-making of the development proposal, the loan application for the project, and the entitlement process (Liang, 2001). Another literature reviewed on a case study in China shows the possibility of conducting feasibility analysis based on SWOT analysis without support of traditional quantitative analysis methodology.ⁱⁱ But this study has an obviously more emphasis on regulatory and political feasibility studies. There are major problems exist in feasibility analysis in China revealed by Tang et al (2006), such

ⁱ Refers to reviews on Tang’s (1995) study.

ⁱⁱ Refers to reviews on Lu’s (2011) study.

as the lack of theoretical guidance, developers rely on experience more than scientific analysis. Thus conducting feasibility analysis in China should pay extra attention on those issues, and preferably seeking theoretical guidance based on reviewed United States literature studies.

Chapter 2 Report to the Client

Executive Summary

This feasibility analysis of this study is assigned by the client to support his development decision-making at the early stage of land acquisition. Literature studies are reviewed in United States and China as academic guidance on conducting this feasibility analysis. The feasibility analyzing process and financial model are designed based on literature reviews and are altered according to local data availability, collectible sources, and other constraints as well as client's requests. The pro forma analysis evaluates the project value, while all the constraints and due diligence are considered and converted as monetary costs at the top of the hard cost to quantify the total project cost. The sensitivity test is based on optimistic, neutral, and pessimistic scenarios according to the client. The feasibility of the proposed project is financially measured by the profit margin. The objectives outline in the flowing feasibility analysis are:

1. Figuring out planning and zoning regulations that would allow to be built on the site, and other constraints according to the two different sketch site plans.
2. Conducting the financial model to project profit margin of the proposal, by figuring out and converting all the per unit price/cost accordingly.
3. Presenting the analysis and potential findings to the client to support his decision-making on whether this proposed project should move forward.
4. Comparing the feasibility analysis regarding to literature reviews, concluding this study's implications on practice.

Project Overview

Location

The proposed site is located in the City of Huaihua, Hunan Province, China (see Appendix E for the City of Huaihua’s location in China), as showed in Map 1 and Map 2. Huaihua is a prefecture-level city with a total regional population of 5.25 million (2015)ⁱ. The municipal population is 374,400 (2015)ⁱⁱ. The site is two blocks east away from the newly built City Hall, known as the new “heart of the city”.

Map 1 - The Satellite View of the Site



Source: Google Earth Image, 2016

ⁱ Huaihua Statistical Yearbook 2015, p11.

ⁱⁱ Huaihua Statistical Yearbook 2015, p52.

Map 2 - The Site Boundaries



Source: Google Earth Image, 2016

The site is approximately a triangle in shape with its longest side adjacent to an arterial road (Zidong Road, Chinese: 紫东路). The site is surrounded (and attached at some points of boundaries) by an old residential working-unit (Danwei, Chinese: 单位) neighborhood on both south and east. There is no improvement on the site, a newly developed high-rise mix-use complex on the west boundary of the property, that shares the same north-south easement connected to the arterial road. The neighborhood has a population of around 6,000 residents, most of them are current and retired workers of the state owned Huaihua Cotton Mills (Huaihua Shachang, Chinese: 怀化纱厂). The two-block-

west-away area is a newly re-zoned office area that has over 1,500 employees, which are mainly governmental (municipal/state) employees.

Zoning and Planning Regulations

The land parcel of this site has been re-zoned from residential use to commercial and mixed-use recently (2015). See Appendix F for the latest version of full land use map from the Master Plan of Huaihua, amended in 2011. See Appendix G for land use zoning codes of Huaihua.ⁱ

The land is approximately 75,000 square foot, or 1.7 acres in size. The Floor Area Ratio (FAR) is 1.80, which would allow approximately 135,000 buildable areas.

Detailed information is as summarized in Table 1.

Table 1 - The Area of the Parcel

Unit	Square Meter	Square Foot	Acre
Area	6,969.54	75,019.50	1.72
FAR	1.80	1.80	-
Buildable Area	12,545.17	135,035.11	-

The land parcel used to serve as the Cotton Mill residential area’s open space, and the committee of the Cotton Mill has decided to sell this piece of land at the year of 2015. The asking price was RMB ¥1,200,000 land basis plus ¥350,000 compensation per Chinese acreⁱⁱ (approximately USD \$1.4 million per acre, or \$2.5 million in total). The committee has previously sketched a site plan but has

ⁱ In China, land use zoning codes are regulated by the central government of China other than local municipal governments.

ⁱⁱ One Chinese acre equals 666 square meters, or 0.165 acre.

given up on the idea of developing the site by themselves. They were originally preferably looking for partners cooperating in developing the site, and were also open to the idea of selling the parcel. They are confident that the land value has been underestimated, due to its perfect location and recent up zoning.

The Client's Needs

The client's primary objective of this study is to determine the feasibility of the potential project proposal of the Parcel B-4-24 as candidate site at the early stage of development. The client is still a starting-up developing company in the local real estate market. As a newly established firm, the client admitted that the firm has recruited experienced developing team but relative inexperienced leadership.

The client's family make their fortune originally from the car dealership business, and they have just recently delivered their first real estate project, the Yuhuayuan Project. According to the client, the firm had to sacrifice a significant portion of the profit in order to mitigate the risks they have encountered before finishing that project, which considered as an expensive "lesson learned".

Otherwise, the firm should have gained more financial flexibility in the current land acquisition process.

According to the client, the high-end residential development has been in high demand for over decades, but the definition of high-end has changed from traditional high-rises multi-family condominiums developments to smaller-scale,

mid-rises town houses, or attached single families.ⁱ Learned from the capital-loss experience discussed in the firm's previous project, the client's firm is currently focusing on smaller-scale project. One of the other candidate sites on SHRE's proposal list is a suburbia single-family (duplex) housing project.

However, in the nation's wholesale rush toward a gleaming urban future,⁶³ the client is also alert to the ideology of modernism that the increasing car traffic separates the uses of the urban space and restrains the development of vivid urban life.⁶⁴ The client is visionary and a fan of the human dimension conception and believes that it would help re-construct the traditional Chinese networking relationship structure in modern urban life.

Since the client believes that competition in developing of high-end real estate products are still rare in the local market, the client is positive that their products will be in high demand.ⁱⁱ The client defines the company as a locally high-end real estate developer. The leadership of firm believes that they have knowledge of what is the local middle-upper classes need, and what type of product is missing in the local real estate marketplace.

The client indicates that both the public and government is looking forward to a hotel development according to his networking with the local sub-district office and the municipal urban planning bureau. That is the revealed theory that supports the idea of introducing a hotel complex in the proposal. Since there is no specific zoning code regulate against hotel development on this site, so the

ⁱ Single -family housing development is prohibited by central government regulations for land use efficiency, so most of "single-family-like" developments are actually made up by attached duplex units.

ⁱⁱ Formal market analysis information not provided by the client.

hotel-anchored mixed-use is assumed as the highest and best use on this site for analyzing purpose.

Thinking out of the box, the client has been longed for oversea experiences. The client believes that China is experiencing the pain of transforming that many other countries have already experienced. The proposed project on the candidate site is a pioneering transformative urban renewal project after the fever of urban-industrialization period of China. The studies of new regionalism, the spatial turn, and urbanization of suburbia in the US could serve good experiences for developments in China. Since in the US, a radical shift is taking place in the nature of the urbanization process, from the familiar metropolitan model to regional urbanization.⁶ What more handy for the Chinese developers, the American urban form and built environments layouts could serve a visible model for the non-academic-background participants.

A very specific goal of feasibility study is to test the feasibility of the proposed project on the candidate site. The feasibility analysis process is designed and conducted according to previous literature review. By applying the financial model of pro forma analysis, sensitivity tests, the profit margin of the proposed project shall be quantified and determined. The result of this feasibility study should be reported to the client for formal decision-making on whether this project should move on. This feasibility study should structure guidelines for the client's decision-making as well as flexibility of the firm-wide development strategy.

According to the client, the firm has a liquid asset of approximately \$5 million by the February of 2016, and another \$5 million would be ready in about six months, while the rest \$10 million would be available in about 24 months. While the contractor estimates that the construction would take no more than 18 months, while the total project cost would be around \$15 million. The client assumes if the Parcel B-4-24 Proposal could be phased and delivered in a 24-month timeframe, the firm would then be able to gather approximately \$20 million fund for its next 100-unit single family residential proposal.

Feasibility Analysis

Sketch Plan and Pro Forma Analysis

Sketch Plan A

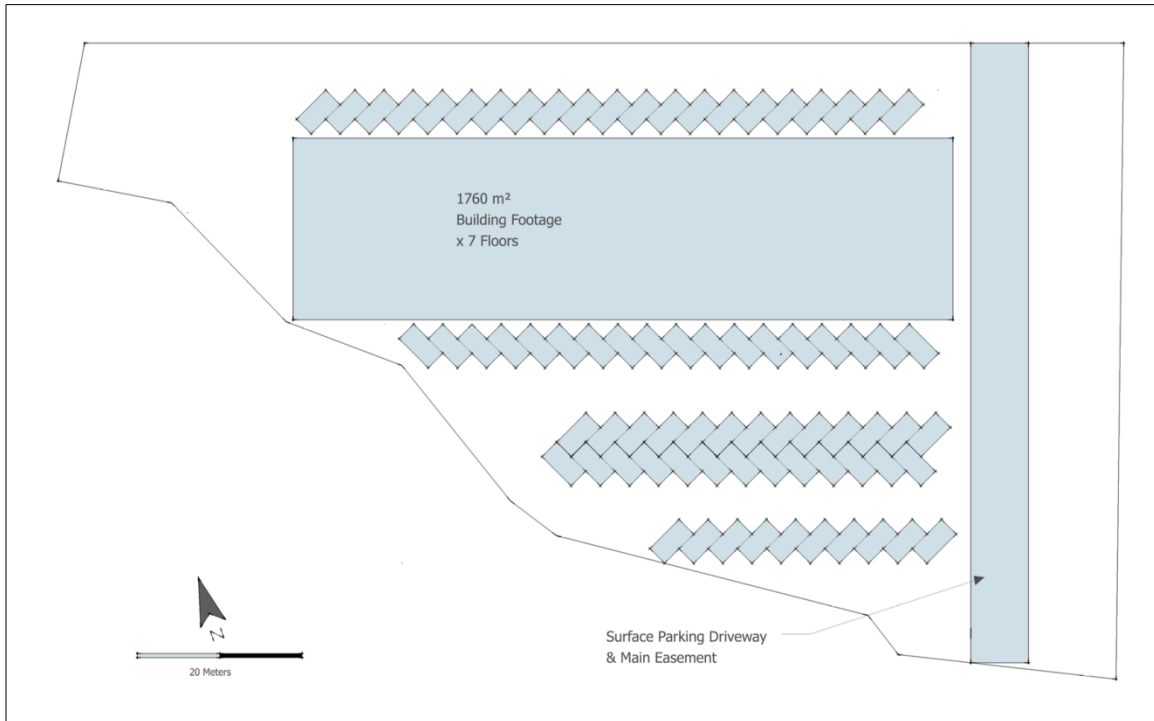


Figure 9 - The Original Sketch Plan From the Property Owner

The Figure 9 is a sketch plan offered by the current owner of the site. Due to the triangular nature of the site's shape, the owner plans to build a 7-floor hotel building with commercial use on the ground floor and second floor. The building footprint is 1760 square meters (approximately 18,944 square feet, 66 by 223 feet). The owner also plans about 70 surface parking spaces connected by a driveway to the arterial road on the east side of the building. The owner intends to build and manage the asset for a holding period of 10 years.

Table 2 - Pro Forma Analysis of Sketch Plan A

INCOME PRO FORMA		Amount	Unit		Rent/Cost	Unit	Subtotals	TOTALS
GROSS INCOME								¥ 12,390,400
	Hotel Space 3rd - 7th FL	8,800	m ²	@	¥ 1,000	Yr	¥ 8,800,000.00	
	Commercial Space 1st FL	1,760	m ²	@	¥ 1,200	Yr	¥ 2,112,000.00	
	Commercial Space 2nd FL	1,760	m ²	@	¥ 840	Yr	¥ 1,478,400.00	
Less Vacancy/Credit Loss								(¥ 3,879,040)
	Hotel Space 3rd - 7th FL	40%					(¥ 3,520,000)	
	Commercial Space 1st FL	10%					(¥ 211,200)	
	Commercial Space 2nd FL	10%					(¥ 147,840)	
Less Operating Expenses								(¥ 1,474,456)
	Hotel Space 3rd - 7th FL	¥ 8,800	m ²	@	¥ 50		(¥ 440,000)	
	Commercial Space 1st FL	¥ 1,760	m ²	@	¥ 60		(¥ 105,600)	
	Commercial Space 2nd FL	¥ 1,760	m ²	@	¥ 42		(¥ 73,920)	
	Parking	76			¥ 50		(¥ 3,800)	
	Management	¥ 8,511,360			10%		(¥ 851,136)	
NET OPERATING INCOME								¥ 7,036,904
TAKE OUT LOAN AMOUNT								
Debt Service Check								
	NOI	¥ 7,036,904						
	Debt Cover Ratio	1.25						
	Available to DS	¥ 5,629,523						
	Loan Term	20	Yr					
	Interest Rate	5.00%						
	Loan Constant	.07919						
	Trial Loan Amount						¥ 71,084,605	
Loan to Value Check								
	NOI	¥ 7,036,904						
	Cap Rate	NA					No Cap Rate Available, Value Approach	
	Assess Value	¥ 77,440,000						
	Loan to Value	70%						
	Trail Loan Amount						¥ 54,208,000	
Loan Amount								¥ 54,208,000
COST PRO FORMA								¥ 63,749,171
Total Project Cost								
	Land Cost	6,970	m ²		¥ 2,327		¥ 16,220,401	
	Site Prepration	6,970	m ²		¥ 200.00		¥ 1,393,908	
	Design & Engineering	6,970	m ²		¥ 300.00		¥ 2,090,862	
	Construction Fixed Cost	12,320	m ²		¥ 2,500		¥ 30,800,000	
	Tenant Improvements	12,320	m ²		¥ 500		¥ 6,160,000	
	Tax & Administration Fee	12,320	m ²		¥ 200		¥ 2,464,000	
	Contingency	¥ 30,800,000			10%		¥ 3,080,000	
	Financing & Management	¥ 30,800,000			5%		¥ 1,540,000	
PROJECT VALUE ASSESSMENT		Amount	Unit		Assess Value		Subtotals	TOTALS
Spaces								¥ 77,440,000
	Hotel Space 3rd - 7th FL	8,800	m ²	@	¥ 4,000		¥ 35,200,000	
	Commercial Space 1st FL	1,760	m ²	@	¥ 18,000		¥ 31,680,000	
	Commercial Space 2nd FL	1,760	m ²	@	¥ 6,000		¥ 10,560,000	
							Equity Required	¥ 9,541,171
							Profit	¥ 13,690,829
							Profit Margin	21%
							Value / m ²	¥ 1,964
							Value / m ² Built	¥ 1,111

The Table 2 is the pro forma analysis of Sketch Plan A. The estimated rental price, construction costs, associated data is provided by the client, which is gathered from the local brokers, developers, bankers and related database.

According to the pro forma analysis, the NOI is projected to be RMB ¥7 million (approximately USD\$1 million), the total project cost mounted to be about ¥64 million (USD\$10 million). The Going In Cap Rate is 11. Due to lack of Cap Rate information, the project’s total value is assessed through the value approach. Each category of the project’s products is appraised according to available average market price. Thus, the total project’s vale is assessed to be RMB ¥77 million (USD\$12 million). The equity required is RMB ¥9.5 million (USD\$ 1.5 million), while the profit is about RMB ¥14 million (USD\$ 2.1 million) with a profit margin of 21%.

The highlighted detailed information is summarized below in Table 3.

Table 3 - Pro Forma Analysis Highlighted Projections in RMB and USD (Sketch Plan A)

	RMB	USD
NOI	¥7,036,904	\$1,082,601
Loan Amount	¥54,208,000	\$8,339,692
Total Project Cost	¥63,749,171	\$9,807,565
Equity Required	¥9,541,171	\$1,467,872
Assessed Project Value	¥77,440,000	\$11,913,846
Profit	¥13,690,829	\$2,106,281
Profit Margin	21%	21%

Sketch Plan B

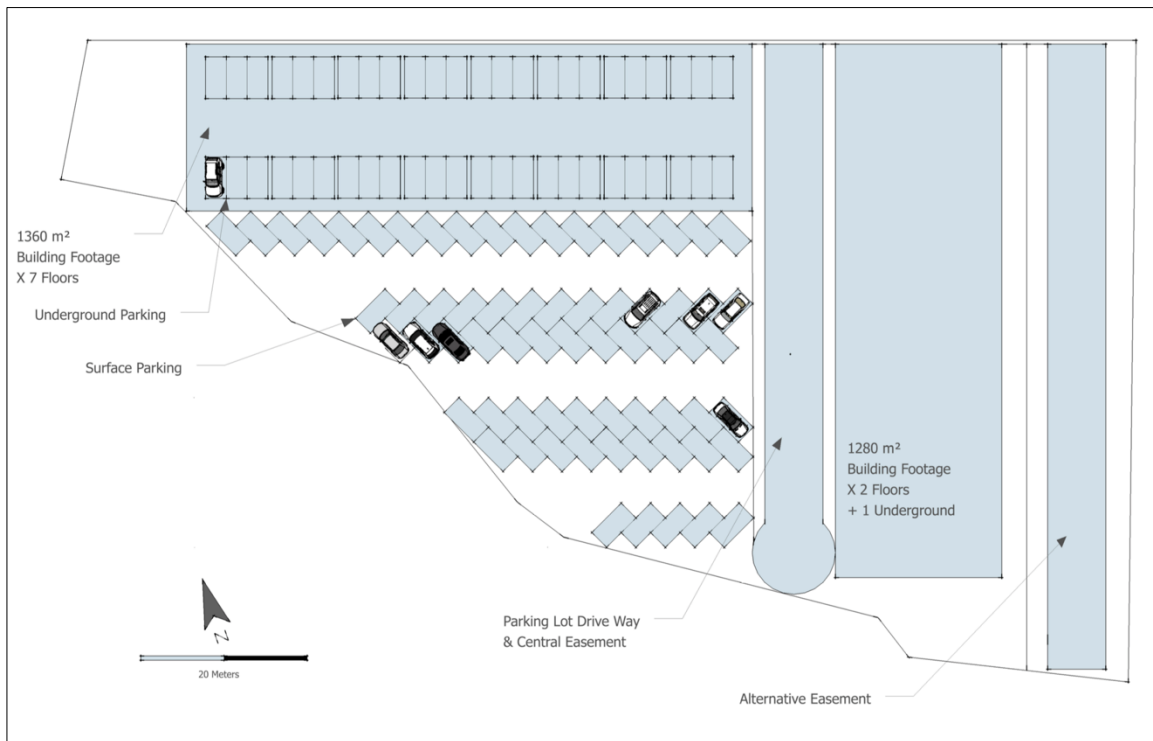


Figure 10 - The Updated Sketch Plan From the Client

The Figure 10 is the sketch plan B, which is an updated site plan by the client based on the original copy, refined by the design department of SHRE. Instead of proposing one single building, the client's sketch is proposing two buildings on the site to increase the ground level leasable areas. According to the client, by applying more design features on the 10 feet high slope, the "underground" portion would be looked like ground level space. The hotel component is a 7-floor building with footprint of 1360 square meters (approximately 14,639 square feet, 66 by 223 feet). The underground level is proposed to be an underground garage gated for hotel's use. The first floor and second floor is proposed as commercial use.

The building on the east part of the site is a 2-floor commercial only building with one floor of underground level also proposed for commercial use. This building's footprint is 1280 square meters (approximately 13,778 square meters, 66 by 210 feet). There are 70 surface parking spots designated and connect by an easement to the arterial road. There is another easement proposed on the east boundary of the site, which would provide extra on street parking.

The land adjacent the south boundary of the site is still actively function as the open space for the neighborhood, the client is trying to propose a landscape project alongside the south boundary for the to merge with the neighborhoods open space. The client would like to offer this portion of the project for public use. The west side boundary is fenced by a 6 feet wall to avoid trespassing. The east side has been attached by unpermitted constructions of the neighboring residents. The proposal of the alternative easement might require demolishing those attached constructions. See Appendix H for described site conditions from site photos.

The Table 4 is the pro forma analysis of Sketch Plan B. The estimated rental price, construction costs, associated data is provided by the client, which is gathered from the local brokers, developers, bankers and related database. Due to the high-end definition of the developer, the fixed construction per unit has significantly increased under this scenario, so as the associated tenant improvements. However, other than large increase in the cost component, the income projection has also been amplified because of higher marketing prices.

According to the pro forma analysis, the NOI is projected to be RMB ¥12.9 million (approximately USD\$2 million), the total project cost is estimated to be about ¥105 million (USD\$16 million). In this projection, the project's total value is also assessed through the value approach. Each category of the project's products is appraised according the available average market price. The total project's vale is assessed to be RMB ¥123 million (USD\$19 million). The equity required is RMB ¥19 million (USD\$ 3 million), while the profit is about RMB ¥17 million (USD\$ 2.6 million) with a profit margin of 16%.

The highlighted detail projected feature is summarized below in table 5.

Table 5 - Pro Forma Analysis Highlighted Projections in RMB and USD (Sketch Plan B)

	RMB	USD
NOI	¥12,883,180	\$1,982,028
Loan Amount	¥86,100,000	\$13,246,154
Total Project Cost	¥105,719,556	\$16,264,547
Equity Required	¥19,619,556	\$3,018,393
Assessed Project Value	¥123,000,000	\$18,923,077
Profit	¥17,280,444	\$2,658,530
Profit Margin	16%	16%

Sensitivities

The financial feasibility shows that both site plan shows positive profit, especially the original sketch plan (Sketch Plan A) shows even a higher profit margin than the client's revised plan. The client's plan (Sketch Plan B) projects only a half million increase in the profit part, even the total project cost and require equity have been doubled. However, the feasibility of a project is not determined only by the financial modeling test.

The original owner of the site realizes his incapability of leading a development project like this, and thus calls for joint venture or resale of the property. The increasing competitors in the hotel market make the inexperienced owner feels vulnerable and hesitate to develop this hotel project. Lacking in sources of funds, short in credits to bankers, makes the owner's financial foundation even fragile. Also, lacking of marketing experience would not promise a good sell when the vacancy rate of hotel is already 40% to 50% nationwide.¹ Last but not the least, the local government is looking forward to a more pioneering project rather than a single hotel development, in order to awake the revitalizing plan of the neighborhood. All those reasons made the owner abort his original plan, even the pro forma analysis projects a 21% profit margin according to this analysis.

The client is more confident than the owner in the terms discussed. According to the firm's Articles of Association, the company is targeting the high-end but not merely luxury local real estate market. Their quality of high-end has a more down-to-earth and human-scale definition as described in the introduction of the

¹ Source: Chinese Hotel Market Report, 2015, <http://finance.sina.com.cn/stock/t/2016-01-06/doc-ifxneep3795186.shtml>

client and the client's needs, which might be more welcomed in the current market trend. First of all, the idea of making use of the slope to transfer the underground portion of the building to a ground level alike contributes more leasable area. Secondly, the landscape proposal by sharing the boundary with the open space would gain more local political support. Thirdly, the commercial-only component derives certain commercial uses from the hotel uses, which enhance qualities of different uses with less interference. However, the proposal of the alternative easement would interfere with the current attached constructions by the neighboring residents. This would take tons of negotiations to make it happen. And the project is also subjected to a potential environmental impact report.

For the sake of financially measurable, the uncertainties of sensitivities are converted as quantitative factors inputs that would affect the outputs of the feasibility analysis. Three scenarios are developed to determine the sensitivities, they are the optimistic, neutral, and pessimistic scenarios.

For instance, as shown in Table 6, the optimistic scenario is indicating a confident developer that believing the construction cost is manageable to a significantly lower rate, and trust that contingency of the project is avoidable which applies only 1% contingency cost to the construction. On the top of that, in the optimistic assumption, the land owner was selling the land in a hasty, so the developer also got a good deal in the land acquisition. In sum, the total project cost reduces from the neutral 150 million to the optimistic 82 million. However, in most realistic cases, the sensitivities are pessimistic. Also as shown in the lower part of Figure 11, the pessimistic scenario amplifies the cost projection to 123 million. This

might because of over bid in the land acquisition, which ends up with a higher purchased land price. Or there might be something unwanted underneath the soil that makes up a more expensive site preparation cost, so as more costs in design and engineering. A huge delay due to policy change, extreme climate, or tourism attack might result in a 20% contingency cost. The market price of real estate products is also subjected to changes consistently. See Appendix I for the sensitivities of the projected value.

Table 6 - Sensitivities of Project Cost Pro Forma

COST PRO FORMA SENSITIVITIES				
Optimistic Scenario				
Total Project Cost	Amount	Unit	Price/unit	
Land Cost	6,970	m ²	¥ 2,000	¥ 13,939,080
Land Prepration	6,970	m ²	¥ 100.00	¥ 696,954
Design & Engineering	6,970	m ²	¥ 500.00	¥ 3,484,770
Construction Fixed Cost	14,720	m ²	¥ 3,000	¥ 44,160,000
Tenant Improvements	14,720	m ²	¥ 1,000	¥ 14,720,000
Tax & Adminstration Fee	14,720	m ²	¥ 200	¥ 2,944,000
Contingency	¥ 44,160,000		1%	¥ 441,600
Financing & Management	¥ 44,160,000		5%	¥ 2,208,000
			Sub Total	¥ 82,594,404
Neutral Scenario				
Total Project Cost	Amount	Unit	Price/unit	
Land Cost	6,970	m ²	¥ 2,327	¥ 16,220,401
Land Prepration	6,970	m ²	¥ 250	¥ 1,742,385
Design & Engineering	6,970	m ²	¥ 500	¥ 3,484,770
Construction Fixed Cost	14,720	m ²	¥ 3,500	¥ 51,520,000
Tenant Improvements	14,720	m ²	¥ 1,500	¥ 22,080,000
Tax & Adminstration Fee	14,720	m ²	¥ 200	¥ 2,944,000
Contingency	¥ 51,520,000		10%	¥ 5,152,000
Financing & Management	¥ 51,520,000		5%	¥ 2,576,000
			Sub Total	¥ 105,719,556
Pessimistic Scenario				
Total Project Cost	Amount	Unit	Price/unit	
Land Cost	6,970	m ²	¥ 2,500	¥ 17,423,850
Land Prepration	6,970	m ²	¥ 500	¥ 3,484,770
Design & Engineering	6,970	m ²	¥ 800	¥ 5,575,632
Construction Fixed Cost	14,720	m ²	¥ 3,500	¥ 51,520,000
Tenant Improvements	14,720	m ²	¥ 2,000	¥ 29,440,000
Tax & Adminstration Fee	14,720	m ²	¥ 200	¥ 2,944,000
Contingency	¥ 51,520,000		20%	¥ 10,304,000
Financing & Management	¥ 51,520,000		5%	¥ 2,576,000
			Sub Total	¥ 123,268,252

Chapter 3 Lessons Learned

Literature Review vs. Feasibility Study

Comparing the feasibility study to the literature review, the most obvious lessons learned is actual analysis of project feasibility would be determined before assembling the site control. Since at this early stage of development, the client's need is to determine whether or not they purchase this piece of land. At this stage, the top priority for the client is to run a preliminary pro forma test according to the product he wants to produce with this land.

The academic feasibility analysis suggests the developer draft a to-scale sketch plan for pro forma analysis. However, not all the developers would be able or be patient enough to detail a plan that provides sufficient information in the financial model for quantified analysis, especially at the early stage of the development. In this case, the quantified program in the feasibility analysis serves efficiently in screening out improper designs and proposals.

The market trend is difficult to project, which indicates that the data input might be not always reliable. Contradictorily, a reliable feasibility analysis is supposed to be built on a reliable market analysis. A more solid market analysis platform is missing in this case and perhaps some other Chinese local real estate market for better understanding of the market. Thus, the developers are tending to rely more on their own experiences instead of trusting "unreliable" quantitative analysis. The miscellaneous risks tested in sensitivity analysis are very difficult to quantify. The assumptions of qualified constraints converted into quantified terms could be imprecise.

The Client's Feedback

The literature review, feasibility study, and the analysis process have been reported to the client through conference meetings, phone calls, as well as report. Regarding the feasibility of the project, the client's response is positive that the parcel is worthy purchasing and the project should be move forward. According to the client, his is only looking forward to a potential return of around 10%, or even lower as long as the project phasing would work out within 24 months, when he could be able to gather all the resources for his next larger-scale residential proposal. The client is delightful to know that this proposal would have a potential in producing profit margin of 16%.

Currently, the client is involved in a renewal project of another hotel development, and is already joint-ventured a 200-unit residential project, as well as proposing another 100 high-end countryside single-family (attached single-family duplex) development. The properly allocation of the available USD \$10 million capital remains the main concern of the client.

The client himself, concerns about the possibility of developing more than one project simultaneously, which requires specific knowledge and energy on asset management, project phasing, financing, and risk mitigation. In response to my feasibility analysis, the client realizes that the risk mitigation in a larger scale is the least uncovered part of the feasibility analysis. The client claims that it is necessary to conduct a more detailed, longer-term feasibility analysis, together with the other proposals in a firm-widely manner, in order to figure out and determine how this project should be developed.

Implications for Practice

The literature review on United States academic studies suggests that a typical feasibility analysis serves to help the developer determine the feasibility of a project in the analytical dimension of physically, financially, legally, and etc.

While the literature review in China indicates that a feasibility analysis serves more specifically as practical supportive documents for the decision-making of the development proposal, the loan application for the project, the entitlement process, etc.

Also, the culture-political-economical difference between United States and China, both academically and practically, might have an impact on the carrying out of the feasibility analysis rationally, systemically, and quantitatively.

According to the client's specific request, the primary objective of this study is to determine the feasibility of the proposed project for the client's the purchase of the land property. As the preliminary Pro Forma shows, the financial feasibility is promising a profit margin of 16% with coverable source. Thus the client gains more confidence in moving the project forward, other than relies merely on experience and gut feeling. The formal land acquisition process begins in June 2016.

The other lesson learned in this feasibility study is that the quantified financial analysis is efficient in projecting the financial feasibility of the proposed project, and screening out improper proposals at the early stage of the development. However, the associated risks that might eliminate the feasibility of the project

are very difficult to quantify, not only in the project scale, but also in a firm-wide scale. A more comprehensive financial model might be essential for analyzing the more detailed aspects of the project's feasibility in further stage of development.

Appendices

Appendix A The Marketing Renderings of SHRE Yuhuayuan Project



Appendix B The Major Categories of Cost Pro Forma

The major categories which make up a cost pro forma are the same for any development project. Details within these major categories vary from project to project. Each developer, lender, and/or investor will have slightly different ways to categorize costs. In the past it was nearly universal to divide costs into

- Hard costs which usually included land and construction costs.
- Soft costs which included all other costs of development.

Within this two-part division of costs there was often confusion about how to account for items such as tenant improvements, sales tax, interest charges, and development permits. This confusion has led to a slightly more detailed categorization of costs which will be used in this course:

- Land costs which include all costs of acquiring control of a site for the period of time necessary to develop and operate buildings on it.
- Construction costs which include site improvements, buildings, and interior additions/modifications for tenant improvements.
- Services and Fee costs which include sales taxes, architect/engineer fees, developers overhead, legal/accounting, leasing/sales costs, and development permit fees.
- Financing costs which include loan fees and interest charges.
- Contingent costs which include reserves for unidentified future costs such as construction cost overruns, additional interest charges, extra services, etc.
- The sum of these plus an estimate of profit is the cost basis for estimating the value of the completed project at the point in time when all construction is completed and the building is fully occupied with users.

If the building has been recently constructed and occupied, all that is required is to determine what it actually cost to develop that project at that point in time. A pro forma is the tool used to do this analysis. The determination of cost is primarily one of following accounting procedures for allocating capital versus operating costs. However, if the project to be appraised has been completed for some time it has begun to depreciate or “wear out”. It is more difficult to determine an appropriate capital cost estimate, and two additional concepts must be considered.

Replacement cost is based on the economic concept of estimating capital costs to produce a project capable of accommodating uses similar or comparable to those accommodated by the subject project. As long as users are assumed to be indifferent to most aspects of detail within a project, replacement cost is appropriate. Reproduction cost is based on a physical replica of the subject property. For instance, if one is appraising an historical building containing 10,000 square feet of usable office space, the replacement cost approach would estimate the cost to produce 10,000 square feet of “modern” building in a comparable location. The reproduction cost approach would estimate the cost of reproducing the original historic building complete with materials and details.

Neither cost approach is currently used to estimate value. Obviously, the reproduction approach will yield a higher estimated cost than will the replacement approach, but neither accurately reflects the market value of a project. Purchasers are indifferent to the actual cost of producing an item for sale and are only interested in value in comparison to other items available for purchase. Thus the price for a given project tends to be driven down to the lowest common denominator available in the marketplace. Replacement cost estimates are included in a professional appraisal because the canon of professional ethics for appraisers says it must be included.¹

¹ Source: Rolfe, George, Program Definition and Feasibility Analysis, An Introduction to Project Development, unpublished, Department of urban Design and Planning, University of Washington, 1998.

Appendix C The Major Categories of Income Pro Forma

The categories of data necessary to estimate the value of a completed and occupied building using the Income Method are:

- Gross Rent Roll: estimated gross revenue if all available space was rented over the period during which the building is held for investment.
- Vacancies/Credit Loss: estimates of lost revenue from rents not collected over the investment period.
- Operating Expenses: estimates of how inflation will affect costs for maintaining the building in rentable condition.
- Estimated Tax Consequences from owning the building over the investment period.
- Net proceeds from the sale of the building at end of the investment period.

The appraiser providing an independent, professional estimate of value could stop at a determination of cash flow derived from the first three categories. If these are estimated for one point in time, the resulting income will be capitalized. If there are a series of annual estimates over time, the resulting income stream will be discounted to a present value. Either procedure will yield an estimate of value.

If the same procedure is being done by a developer or investor for their own internal decision making use, all five categories should be used to derive estimated cash flows, tax consequences, and future appreciation. By knowing the circumstance of the individual investor/developer, the number of assumptions necessary to make reasonable projections is much more manageable. An independent appraiser seldom has access to the tax information peculiar to a given investor, which makes the more detailed estimate of value using all five categories of data more difficult for the appraiser.¹

¹ Source: Rolfe, George, Program Definition and Feasibility Analysis, An Introduction to Project Development, unpublished, Department of urban Design and Planning, University of Washington, 1998.

Appendix D Comparable Sales Method

The most accurate determination of value is what a willing buyer will pay a willing seller for a given project. The Comparable Sale Method is based on the idea that within a given marketplace, the value of different buildings can be compared one to another. Therefore, what one building sells for is an indication of what all other comparable buildings would sell for at the same point in time.

There are a number of characteristics about the comparable building and its sale that is necessary to reasonably estimate the value of a given real estate project by comparing it to existing sales. For the sale of a “comparable” building these include:

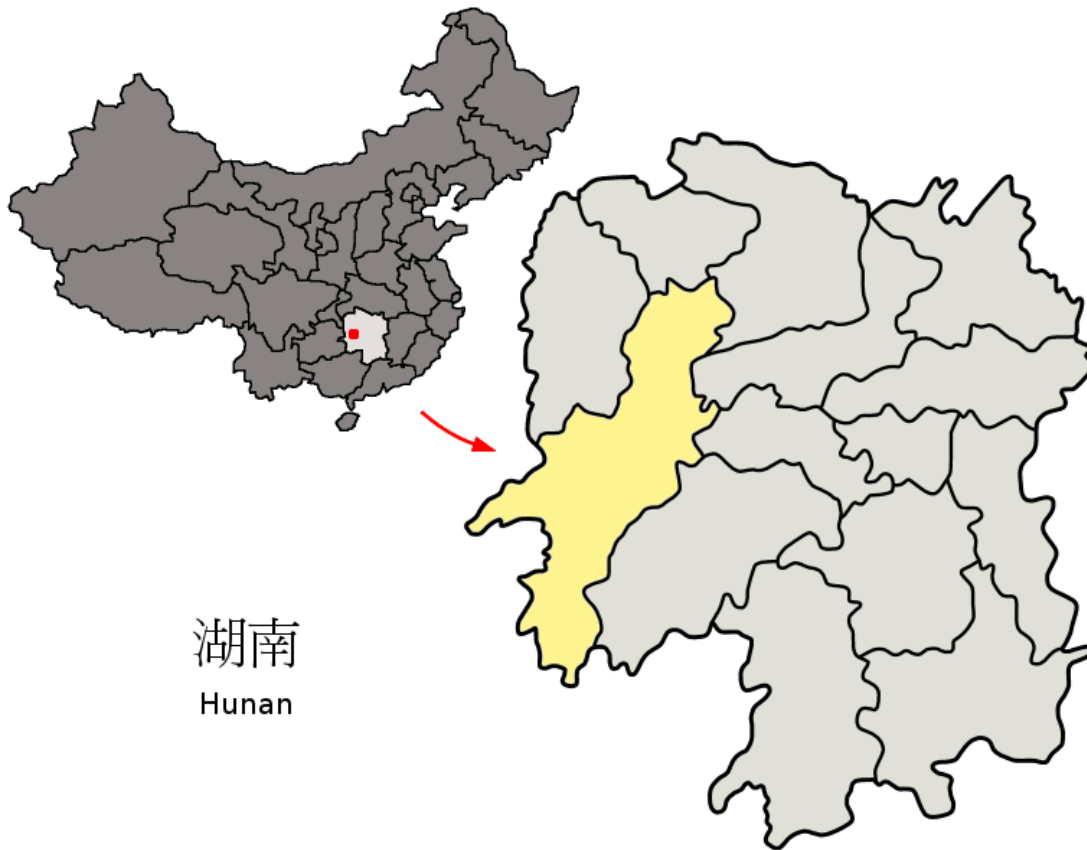
- Terms and conditions of sale used for comparison.
- The amount of money paid and when it is paid.
- When occupancy of the purchased building took place.
- Other considerations such as repairs to be made by the seller, future obligations for debt or taxes assumed by the buyer, etc.
- Characteristics of the comparable building.
- Location and access.
- Size, use, and quality of space.
- Age and existing condition of the building.
- General and immediate surroundings.
- External factors such as availability of utilities, views, etc.
- When the sale took place
- The date of sale relative to current date.
- General and specific economic conditions prevalent at the date of sale used for comparison.
- Changes in economic conditions between the date of sale and now.

Data must be collected for a number of different “comparable” sales. Not only must all these data be collected and analyzed in order to make a reasonable estimate of value, but judgments must be made regarding how differences in characteristics between “comparable” sales and the subject property will affect its value. This procedure is the essence of the professional service, in which the independent appraiser is paid a fee to collect and interpret these data and render an opinion of estimated value.

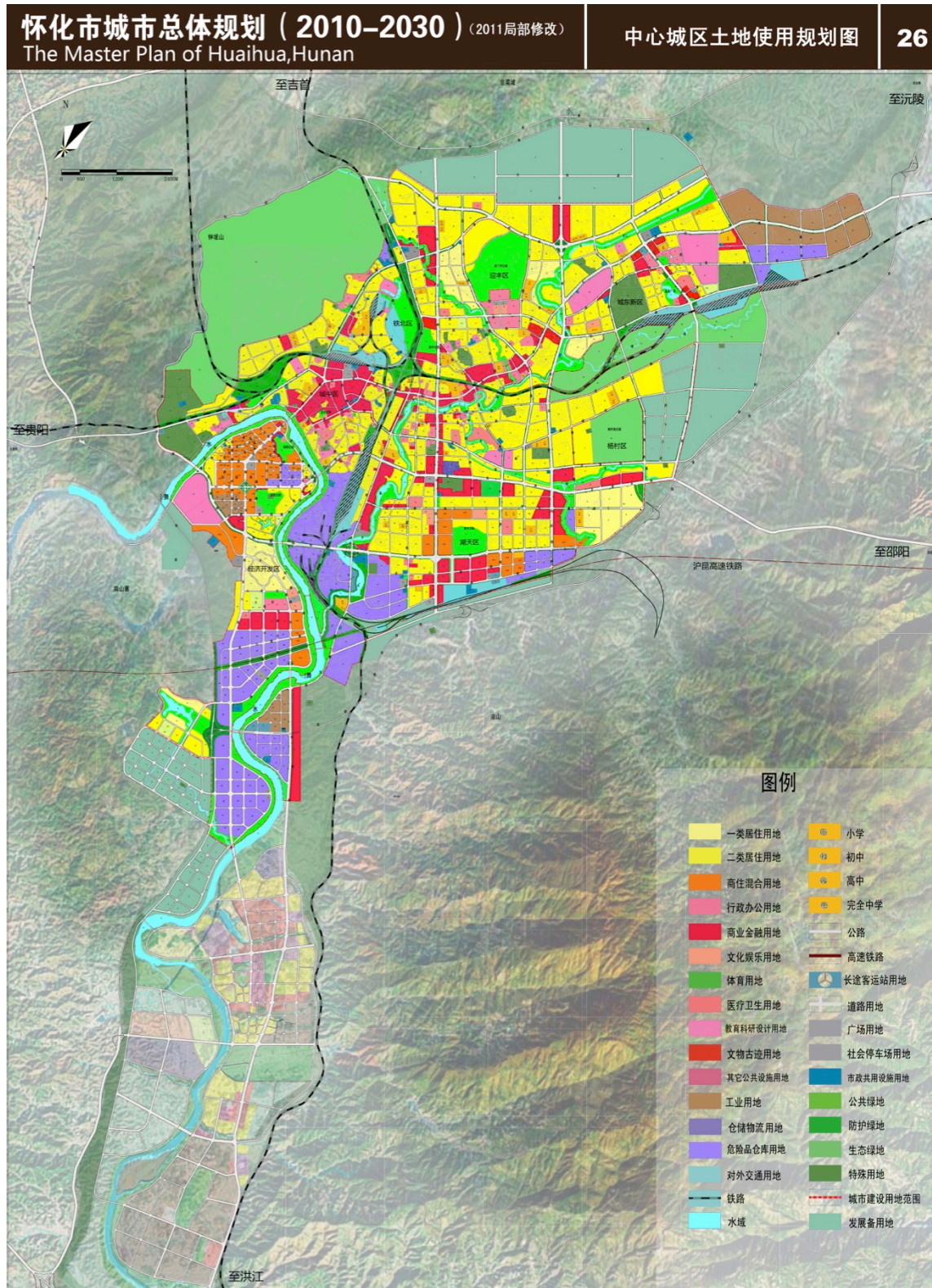
Except in the case of single houses built for sale, this procedure for estimating value of a completed and occupied building is of much more use to an appraiser than it is for the internal use of the developer or investor. This is due partly to the difficulty in obtaining and maintaining current data on the sale of comparable buildings, and partly to the fact that the developer has very little control over the factors that affect prices paid for other buildings. Therefore, developers have little interest in spending time and effort to obtain data perceived to be of relatively little use to them. On the other hand, this is the service for which professional appraisers have, traditionally, been paid a fee to perform.⁴

⁴ Source: Rolfe, George, Program Definition and Feasibility Analysis, An Introduction to Project Development, unpublished, Department of urban Design and Planning, University of Washington, 1998.

Appendix E The Location of Huaihua City in Hunan Province and China



¹ Image Source: [https://fi.wikipedia.org/wiki/Huaihua#/media/File:Location_of_Huaihua_Prefecture_within_Hunan_\(China\).png](https://fi.wikipedia.org/wiki/Huaihua#/media/File:Location_of_Huaihua_Prefecture_within_Hunan_(China).png)



¹ Source: The Master Plan of Huaihua, Amended 2011, The Department of Urban Planning, City of Huaihua.

Appendix G The Site Photos



1. The west boundary, easement and wall, looking southwest.

2. The east boundary, looking southwest, showing the attached improvements by the neighboring residents.

3. The corner of the northeast boundary, looking south.

4. The southwest adjacent open space, looking north.ⁱ

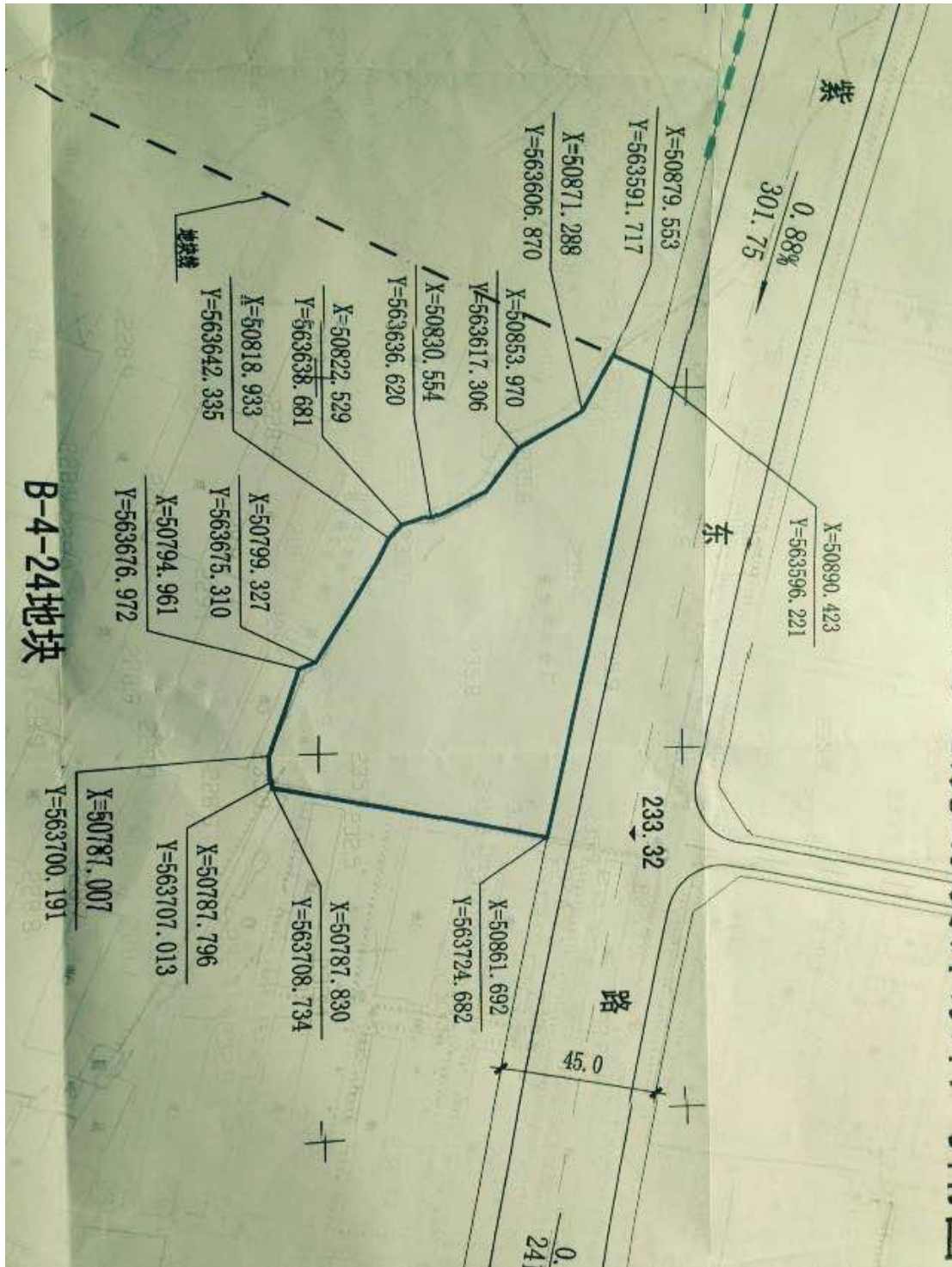
ⁱ All photos were taken by the author in 2016.

Appendix H The Sensitivities of Assessed Project Value

Scenario	Area (m ²)	Percentage Change	Assessed Value / m ²																	
			2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020						
Optimistic Scenario		0%																		
Hotel Space 3rd - 7th FL	6,800	¥ 4,500	¥ 4,500	¥ 4,725	¥ 4,961	¥ 5,209	¥ 5,470	¥ 5,743												
Commercial Space 1st FL	2,640	¥ 20,000	¥ 20,000	¥ 21,000	¥ 22,050	¥ 23,153	¥ 24,310	¥ 25,526												
Commercial Space 2nd FL	2,640	¥ 8,000	¥ 8,000	¥ 8,400	¥ 8,820	¥ 9,261	¥ 9,724	¥ 10,210												
Commercial Underground	2,640	¥ 7,000	¥ 7,000	¥ 7,350	¥ 7,718	¥ 8,103	¥ 8,509	¥ 8,934												
			¥ 123,000,000	¥ 129,150,000	¥ 135,607,500	¥ 142,387,875	¥ 149,507,269	¥ 156,982,632												
Neutral Scenario		0%																		
Hotel Space 3rd - 7th FL	6,800	¥ 4,500	¥ 4,500	¥ 4,725	¥ 4,961	¥ 5,209	¥ 5,478	¥ 5,743												
Commercial Space 1st FL	2,640	¥ 20,000	¥ 20,000	¥ 21,000	¥ 22,050	¥ 23,153	¥ 24,310	¥ 25,526												
Commercial Space 2nd FL	2,640	¥ 8,000	¥ 8,000	¥ 8,400	¥ 8,820	¥ 9,261	¥ 9,724	¥ 10,190												
Commercial Underground	2,640	¥ 7,000	¥ 7,000	¥ 7,350	¥ 7,718	¥ 8,093	¥ 8,468	¥ 8,843												
			¥ 123,000,000	¥ 129,150,000	¥ 135,607,500	¥ 142,387,875	¥ 149,507,269	¥ 156,982,632												
Pessimistic Scenario		0%																		
Hotel Space 3rd - 7th FL	6,800	¥ 4,500	¥ 4,500	¥ 4,275	¥ 4,061	¥ 3,858	¥ 3,665	¥ 3,482												
Commercial Space 1st FL	2,640	¥ 20,000	¥ 20,000	¥ 19,000	¥ 18,050	¥ 17,148	¥ 16,290	¥ 15,476												
Commercial Space 2nd FL	2,640	¥ 8,000	¥ 8,000	¥ 7,600	¥ 7,220	¥ 6,859	¥ 6,516	¥ 6,190												
Commercial Underground	2,640	¥ 7,000	¥ 7,000	¥ 6,650	¥ 6,318	¥ 6,002	¥ 5,702	¥ 5,416												
			¥ 123,000,000	¥ 116,850,000	¥ 111,007,500	¥ 105,457,125	¥ 100,184,269	¥ 95,175,055												

ⁱ Assessed value projected based on client's recommendation.

Appendix I The Original Site Map (Parcel B-4-24)



¹ Original image provided by SHRE.

Appendix J Glossary

The Independent Study of Glossary begins on the next page.

English – Chinese Glossary and Reflection on Real Estate Development Issues and Concepts

Category: Urban Planning & Land Use

Term	English	Chinese	Comments	English Source	Chinese Source
Apartment	A room or group of rooms in a building that is rented or leased to a tenant and constitutes a self-contained dwelling unit. Called a flat in Great Britain. See Also Cooperative Apartment.	公寓 - 建筑物内出租与住户的一间或一套居住单元。带有独立厨房、浴室等设备。在英国称为套房。参见“合作公寓”。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangfeng, DC-Beijing, 1987.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangfeng, DC-Beijing, 1987.
Comprehensive Planning	1. In the United States, a formal approach to urban planning which, as a guide for governmental policies and action, includes preparation of general plans and land use, provision of public facilities and services, human and natural resources utilization, and environmental needs; identification of area needs; surveys of historic structures; development of action plans and programming of capital improvements and other expenditures; coordination of all plans and activities; and recommendation of regulatory measures in support of plans and activities. Zoning is based on both comprehensive planning and on local government policies and is implemented at the city or county level. 2. In China, urban planning at the comprehensive level. Comprehensive planning includes designating the function of a city, its size limit and development orientation, as well as the general disposition of all lines of development and overall consideration of the environment for development. Planning at this level also includes determination of relevant norms and indices, as well as programming of long- and short-term goals with procedures and measures for implementation. See also Detailed Planning, Master Plan, Urban Planning.	总体规划 - 1.在美国，指城市规划的一种正式做法，作为政府政策和行动的一种指导。内容包括土地使用，公共服务设施的设置，人力和自然资源的利用，环境要求等的全面规划，以及区内各种要求的确定；历史建筑的调查；实施计划的开展与资金和其他开支的计划；各项规划和行动的协调；为实现规划和行动所提出的协调措施。根据总体规划和地方的政策制定用地区划，由市县一级执行。 2.在中国，指综合性的城市规划，是确定一个城市的综合性质的，规模，发展方向以及制订城市中各类建设的总体布局 and 全面环境安排的城市规划。总体规划还包括制定规划定额指标，制定城市远、近期目标及其实施步骤和措施等工作。参见“详细规划”，“规划总图”，“城市规划”。		ibid., p61-62.	ibid., p61-62.
Condominium	In the United States, an estate in real property consisting of an individual ownership in a residential, commercial, or industrial unit, and an undivided but proportional interest in common areas. The term most frequently refers to an individually owned living unit, usually in a multi-unit building. Areas such as open spaces, recreation facilities, and hallways are commonly owned and can be used by all residents, who must usually pay a monthly fee for maintenance.	住户自有公寓 - 在美国，指一栋居住，商业或工业建筑内一套私有的房产。共用部分则按比例共有。此词多指居住单元为私人所有的多单元住宅楼。绿地、娱乐设施、楼梯等本公共所有，住户均可使用，每月需付维护费用。		ibid., p63	ibid., p63
Cooperative (apartment)	A multi-unit dwelling where title to the building and land are vested in a corporation or trust and each tenant-owner holds a block of stock in the corporation or a certificate of beneficial interest in the trust together with a proprietary lease for a particular apartment in the building. All owners are jointly and severally liable for debts.	合作公寓 - 土地和建筑由某个集团所持有的多户居住单元。每个租客/业主持有集团的部分股份或是通过签订租约享有某间公寓的使用权。所有业主个别并连带承担债务责任。	中文或称合作式公寓或者合建公寓	Glossary for Selected Real Estate Terms (2014), Rusad Center of Real Estate Study, Unpublished, University of Washington	Wikipedia
Detailed Planning	In China, planning of an urban area to be developed toward short-term goals with respect to the disposition of buildings and structures, public utilities, and green spaces. Detailed planning defines a course for physical implementation of comprehensive planning, and in turn provides the basis for architectural designs, including the selection of technical-economic indices, definition of space treatment requirements in architecture, and determination of coordinates of the construction sites and building locations and levels. The result of detailed planning is a detailed plan.	详细规划 - 在中国，按城市总体规划的要求，对城市局部地区近期需要建设的房屋建筑、市政工程、园林绿化等作出具体布置的规划，为建筑设计提供依据。内容包括：选定技术经济指标，提出建筑艺术处理要求，确定各项用地的控制性坐标与标高。规划成果称控制性详细规划。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangfeng, DC-Beijing, 1987, p100.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangfeng, DC-Beijing, 1987, p100.
Development Right	The right to build on, above, or beneath a property, subject to local zoning, building codes, etc.	开发权 - 在地产上、上方空间、或者地下开发建设的权利，受制于地方的规划、建筑法案的约束。		Glossary for Selected Real Estate Terms (2014), Rusad Center of Real Estate Study, Unpublished, University of Washington	ibid., p100.

Due Diligence	Refer to the duty of the underwriter, or seller, to ensure that the offering statement or prospectus does not misstate or omit material information. Commonly accepted steps taken to identify risks when investing other people's capital.	审慎调查 - 指借款方或卖家的义务，须保证提议中的条款与内容没有歧义与疏漏。通常被认为是投资他人的资产的商业行为中用于甄别风险的必要步骤。	Ibid.	Wikipedia
Easement	In the system of common law, the acquired right of one landowner to the use or enjoyment of another landowner's land. The use is specific and involves benefit without profit to the landowner, such as laying a sewer, putting up electric power lines, or crossing adjacent property to gain access.	地役权（通行权、通过权） - 在习惯法中，指一地地主获得使用另一地地主的土地的权利。这种权利仅限于某些不妨碍地主经济利益的方面，例如铺设下水道，架设电线或穿过相邻地产以出入等。	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p110.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p110.
Floor Area Ratio (FAR)	An index expressing the total permitted floor area of a building as a multiple of the area of a building as a multiple of the area of the lot, used for regulating building bulk, e.g., a ratio of 2.0 indicates that the permissible floor area of a building is twice the total land area.	容积率（建筑面积比） - 指空置建筑体积的指标，即将允许的总建筑面积以用地面积的倍数表示。例如2.0的容积率表示在该地块上可以建两倍于土地面积的建筑面积。	Ibid., 127.	Ibid., 127.
Highest and Best Use	In the United States, an appraisal concept used to determine which of several uses of a particular piece of land will permit maximum development and prove most profitable in the foreseeable future.	最佳用途 - 在美国，一种估价用的概念。用以确定一块土地的几种用途中，哪一种在可预见的将来会取得最大发展，并获利最多。	Ibid., p141.	Ibid., p141.
Land Parcel	In the United States, a continuous plot of land of any size in the possession of one owner. For the purpose of subdivision development, land is parceled out into individual building plots or large parcels of land, as shown on a plot layout.	地块 - 在美国，指一个地产主所有，大小不同而统一使用的互相连接的一片土地，为了满足土地再划分后建设的需要，可将其划成若干块建筑用地，或划成几大块，以用地布置图表示。	Ibid., p170.	Ibid., p170.
Land Use	Or Land Use Plan in the United States, a plan for future development of a community or similar jurisdiction showing the size and location of areas to be used for residential, commercial, industrial, public, and other purposes. The land use plan often serves as the basis for specific zoning decisions.	土地利用（规划） - 在美国，指对一个社区或类似范围内日后的发展所作的规划图，其中标明用于居住区，商业区，工业区公共活动区或其他用途的土地的大小和位置。土地利用规划图常是确定具体区划的基础。	Ibid., p173.	Ibid., p173.
Infrastructure	Systems of physical structures on or under the ground to provide services, access, or convenience in urban areas, that is, roads, water, and sewer lines, curbs and gutters, telephone and electric lines, and so forth. The term infrastructure is sometimes also broadly applied to both physical and social infrastructural, including social services and facilities which area an integral part of life in an urban community, e.g., transportation and communication system, shopping facilities, housing, schools, and recreation facilities.	基础设施 - 指城市地区中在地面上或地下提供服务，通道或便利的实体结构，如道路，给排水管道，路边石和边沟，电话与电力线路等。本词有时也泛指物质及社会性的基础结构。包括城市社区生活中的一些组成部分，如运输与通讯系统，购物设施，住房，学校和娱乐设施等。	Ibid., p162.	Ibid., p162.
Master Plan	A comprehensive document showing the general long-range physical design proposed for development of an entire community, or area, including maps, illustrations, and tables. The plan is the result of the formal process of comprehensive planning and may also be called a comprehensive plan. See also Comprehensive Planning.	总体规划（规划总图） - 指为整个社区或地区开发所作的远期实体设计的综合性文件，包括地图，图形和表格。规划总图是正规化的总体规划过程中的产物，又可称为“总体规划图”。参见“总体规划”。	Ibid., p184.	Ibid., p184.
Mixed-use Development	In the United States, land use projects that are carefully coordinated according to a master plan. Mixed-use developments vary in size and area characterized by multifunction buildings (e.g., shopping malls, hotels, and apartments), a compact configuration of components, and intensive use of urban land. Such developments frequently revitalize deteriorating downtown areas of large cities.	多用途建设 - 在美国，指根据规划总图精心协调的一地多用计划。多用途建设的规模和大小各异；以建造多功能综合楼为其特征（如购物商场，旅馆和公寓等），各组成部分之间结构紧密，城市土地利用率高。此种建设形式往往用来复兴大城市中衰弱的闹市区。	Ibid., p188.	Ibid., p188.
Multi-family	Or multi-family housing, residential structures designed to house more than one family. Multi-family structures have only one exterior entrance for a number of units, as opposed to townhouses, which have separate exterior entrances for each unit.	多户住房 - 为多户居住所设计的居住建筑，由一个出入口通向各居住单元。不同于各单元有单独出入口的联立式住宅。	Ibid., p192.	Ibid., p192.

Ownership	The holding of rights or interests in real estate which entitle the owner to all the benefits (cash flow, tax consequences, appreciation, and use) of ownership.	所有权 持有房产或者营收的权利，所有权保证房产所有者享有所有权利（现金流，税务结果，增值，使用）。	In China, the land is state owned, the developer is only entitled for the development, who makes profit by transferring the ownership of the specific unit not the land.	Glossary for Selected Real Estate Terms (2014), Research Center of Real Estate Study, Unpublished, University of Washington	Real Right Law of the People's Republic of China 《中华人民共和国物权法》
Single Family	Or Detached House, a single-family house that stands apart from others and is surrounded by land on all sides. Also called single-family detached house.	独立式住宅 - 周围均有空地的独立住宅，一般与其他建筑不相连。	在中国土地所有权为国有，开发商仅通过获得开发权并通过转让房屋使用权获利。	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p99.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p99.
Site Planning	The design and preparation of plans, specifications, and construction details for a land parcel under development, taking into consideration such details as placement of facilities, grading, drainage, utilities, roads, walkways, parking, planting, construction details, and so forth.	建设场地规划 - 为某一地块的建设所准备的设计和平面布置图，说明书及工程细节，包括对设施的位置，标高，排水，市政设施，道路，人行道，停车场，绿化等细节的考虑。		Ibid., p260	Ibid., p260
Title	Legal documents proving ownership of land or property by a particular individual or organization.	产权证 - 指证明某一个人或组织对土地或产业拥有所有权的法律性文件。		Glossary for Selected Real Estate Terms (2014), Research Center of Real Estate Study, Unpublished, University of Washington	Ibid., 280
Urban Planning	A detailed method or process that seeks to guide the design and development of the built environment, anticipating growth and managing resources to accommodate that growth. Traditional planning concentrated on the physical characteristics of the urban region. Modern planning, however, attempts to understand the effects of diverse economic, social, and environmental factors on changing land use patterns and to develop plans that reflect this continual interaction. In the United States, comprehensive planning and preparation of a master plan are key elements in urban planning. In China, urban planning usually consists of comprehensive planning and detailed planning. In some large and medium-sized cities, an intermediate category city district planning, is added between the two.	城市规划 - 指预测城市的发展并管理各项资源以适应其发展的具体方法或过程，传统的城市规划多注意城市地区的实体特征。现代城市规划研究各种经济、社会和环境因素对土地使用模式的变化所产生的影响，并制定能反应这种连续相互作用的规划。在美国，总体规划总图是城市规划中的关键组成部分。在中国，城市规划通常包括总体规划 and 详细规划两个阶段，在某些大城市，在两段之间增加城市分区规划。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p292.	Ibid., p292
Zoning	Adoption of municipal ordinances that specify permissible land uses for designated urban districts, as well as exceptions to those uses and procedures for amendment and appeal. The purpose of zoning is to control and direct the use and development of property. Regulations may limit the use of land and buildings, the height and bulk of buildings, the proportion of a lot which buildings may cover, and the density of population of a given area.	区划 - 指一种城市法令，其中除因修正和申诉而允许例外用途外，对每个市区的土地都规定具体的允许用途。其目的在于控制及引导房地产的使用和开发。规定中可对土地和建筑物的使用，建筑物的高度和体积，建筑物的占地面积和某一地区的人口密度等作出限制。		Ibid., p302	Ibid., p302

Category: Real Estate and Finance					
Term	Explanation	Translation	Comments	English Source	Chinese Source
Amortization	The gradual reduction of a monetary debt obligation, such as a note, by systematic payments of the principal and current interest at stated periods for a specified time, such that all principal and interest will be paid at the term of note.	分期偿还 - 分期偿还贷款方式，如同偿还账单，在规定的还款期内，有系统的按期偿还本金与利息以便在还款期结束时付清贷款。	中文或称摊销、分期摊销	Glossary for Selected Real Estate Terms (2014), Rural Center of Real Estate Study, Unpublished, University of Washington	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangjiong, DC-Beijing, 1987.
Annual Percentage Rate (APR)	The effective annual interest rate. Truth in lending legislation requires loan instruments and advertising show the interest cost to the borrower in the form of an annual rate, as distinguished from the nominal or contract rate. The APR is usually higher than the nominal interest rate because fees and discounts (points) are amortized over the term of a loan.	年度百分率 - 有效的年度利率。由贷方制定的以年度百分比形式表现的对于借方的借款成本，区别于名义利率或协议利率。年度百分率通常比名义利率高，因为各种费用以及折算点都已经分摊计算在还款期中。	中文或称年利率	ibid	Wikipedia
Appraisal	An estimate or opinion of the value of something; a conclusion resulting from the analysis of facts. The three generally accepted approaches to appraising real estate value are: 1) Comparison with known sales of similar properties; 2) Reproduction costs less depreciation, and 3) Capitalization of the estimated Net Operating Income.	资产评估 - 对于某项资产价值的估值或意见，是基于事实分析的结论。公认有三种资产评估方式：1) 与已知近似资产销售做对比，2) 再造成本减去资产折旧，3) 根据估计经营净收入来计算资产的资本化值。		ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangjiong, DC-Beijing, 1987. p11.
Appreciation	An increase in the value of currency, goods, or property, usually attributable to changes in economic circumstances. An increase in the value of property usually results from a combination of inflation, higher demand, and increased accessibility, as opposed to increases in value attributable to improvements of the property.	增值 - 房地产的增值往往是通货膨胀，需求增加以及交通条件改善的结果，而非改选房地产本身所引起的价值增加。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangjiong, DC-Beijing, 1987. p11.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Wangjiong, DC-Beijing, 1987. p11.
Asset	Any property, owned by an entity, that has value; an Asset may be financial, e.g., cash or bonds; or physical e.g., real or personal property.	资产 - 任何由实体所拥有的具有货币价值的财产。资产可以是财务上的如现金与债券，或者是实体的地产和私有财产。		Glossary for Selected Real Estate Terms (2014), Rural Center of Real Estate Study, Unpublished, University of Washington	ibid. p17.
Break-even	1) Amount of revenue, often expressed in terms of a percentage of total revenue or occupancy, required to cover operating expense, and debt service, in rental property; 2) The point at which all invested capital has been recovered from a given investment.	盈亏平衡 (收支平衡) - 1) 租赁地产的营业值，通常以百分比的形式来表现的总体营业收入或者入住率，在满足足够支付所有的运营开销和偿还债务时。2) 在这个时间节点，所有投资刚好全部收回。	当产品的销售或产量恰好抵销各项成本，既无利润又无损失时，即为收支平衡点。美国房地产业的收支平衡点是指商业或居住用房地产的租金收入与全部开支及应偿债务相等时的租金总额。	ibid	ibid. p28
Bridge Financing	Short-term financing between 1) the termination of one loan and the commencement of another, or 2) the acquisition of a property and the improvement or rehabilitation that will make it eligible for takeout financing.	过桥贷款 - 短期贷款 - 适用于1) 上一贷款结束，下一贷款开始之间的，2) 地产收购用于开发使其有资格获得长期贷款之前。	中文或称过桥融资，短期贷款 (in term loan)，缺口贷款 (gap loan)	ibid	http://bank.baidu.com/ik?url=70E2ZnaVseY43u95wv3JynQYNAW4MAYvHMhgnjW7o_J1D8t.8GHN87AwKJk0bl.0ulPeyrqpJRYkSse
Capitalization	The value of property indicated by considering Net Operating Income and reasonable percentage of return anticipated on an investment. (Equals N.O.I. divided by the anticipated rate of return or Capitalization Rate).	资本化 - 由营业净收入与合理投资盈利为考虑基础的资产价值。(等于营业净收入除以资本化率)		ibid	WikimBAlb
Capitalization Rate	The rate of return (interest) which is considered a reasonable, risk adjusted rate of return on an investment.	资本化率 - 基于合理化的，风险修正后的某项投资的盈利率 (利润率)。	Cap Rate, 中文或称现值估计率，资本报酬率	ibid	Wikipedia
Capture Rate	The estimated percentage of the total potential market for a type of property, e.g., office or retail space, single-family homes, that is forecast to be absorbed by proposed facilities over a given period of time.	捕获率 - 在特定时间段内，市场上某类商业活动量 (办公、零售场所、住宅单元) 中预计能被计划项目所占得的比例。		ibid	Wikipedia

Cash Flow	The net revenue from an investment; determined after deducting from the gross revenue all operating expenses and required loan payments.	现金流 - 某一投资的净营收，由总的营业收入减去所有经营开销成本以及债务成本之后的现金流量。	中文或称现金流量	Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987. p41.
Cash on Cash	The ratio of annual cash flow to the total equity invested. 1) Unleveraged Cash on Cash would be Net Operating Income divided by Total Capital Costs. 2) Leveraged Cash on Cash would be Cash Flow divided by Equity.	现金投资回报率 - 年度现金流与总投资成本的比值。1) 无杠杆的现金回报率是经营净收入除以总投资。2) 杠杆现金回报率是现金流除以股本。	Leveraged, 财务杠杆, 有负债融资; Unleveraged, 无无负债融资	Ibid.	WikimBALib
Certificate of Occupancy	Legally written authorization issued by a public official that allows a structure to be inhabited upon satisfactory completion of construction.	注册入住 - 由公共管理部门合法授权的，允许某建筑在完工后允许入住的情况。	在美国，由政府机关签发，证明建筑物全部或部分与有关规范相符，业主或租户可按规定用途使用的文件。或称符合使用证明书，使用许可证。	Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987. p47
Commercial Property	Real estate used for business purposes, e.g., office, retail stores, warehouses, or industrial buildings. Apartment properties are a special case of commercial property but are most often referred to as "multi family" property.	商业地产 - 用于商业（租赁）的不动产，例如办公、零售商铺、仓库、工业建筑。公寓楼是特殊的商业地产，通常称作多户住宅地产。		Ibid.	Wikipedia
Commitment	A promise or contract by the lender stating the terms and conditions under which a loan will be made.	承诺（书）- 由借方提出的有条件的借款承诺或者协议。		Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987. p56
Common Area	The total area within a property that is not designed for sale or rental, but is available for common use by all owners, tenants, or their invitees, e.g., parking and its appurtenances, malls, sidewalks, landscaped areas, recreation areas, public toilets, truck and service facilities, hallways, elevators, and stairs.	公共区域 - 某不动产内设计用途为非出售或者出租，但是可供业主、租客或客人使用的公共区域，例如停车场及其附属物、商场、人行道、地面景观、休闲区、公共厕所、货车以及服务车辆设备，门厅、电梯、楼道等。	中文或称公共区域、公摊面积	Ibid.	Wikipedia
Comparables	A shortened term for similar property sales, rentals, or operating expenses used for comparison in the appraisal valuation process.	可比房地产 - 在地产评估中用作与评估对象对比的，在销售、出租、经营成本上做参考的对比地产对象。		Ibid.	WikimBALib
Construction Loan	Financing arranged for the construction of real estate, which is generally short-term, variable rate, and repaid with the proceeds from take out financing.	建筑贷款 - 房产项目的建设用贷款，通常为短期，通常由结算时的抵充贷款来偿还。		Ibid.	Ibid.
Contingency	In the United States, an amount included in the budget of a project to cover unforeseen costs of labor or materials, or changes in work plan.	不可预见费 - 在美国指工程预算中所包括的一笔款项，用来支付无法预料的人工或材料的费用；也包括因工程计划变更而需要支付的费用。	中文或称意外开支	Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987. p80.
Contract	An agreement between two or more entities that represents their consideration to do or not to do a particular thing; where real property is concerned, a dated, written, signed statement between two or more competent entities who agree to perform or not to perform a legal act, for legal consideration, within a specified time.	合同 - 双方或者多方之间达成的履行与否某项特定义务的协议；房产项目合同是有双方或者多方约定，签署日期，注明条款、签字确认的，具有法律约束力与时效性的文件。	中文或称承包合同，房地产行业常指的 contractor 一般即为建筑承包方	Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987. p80.
Corporation	In the United States, a legal entity consisting of employers and employees organized privately to pursue business activities of a particular type or types.	公司 - 在美国，指由雇主及雇员组成的一种私营具有法人资格的实体，从事一种或几种商业活动。	中文或称集团，法人，社团，团体	Ibid.	Ibid., p84
Cost	Capital expenditures necessary to create an Asset--money, goods, services, etc. Capital costs are typically one-time, non-recurring costs.	成本 - 建造一个不动产所需要花费的资本——包括资金、商品、服务等。资本成本通常为一次性，非重复的成本。	中文或称资本成本	Ibid.	WikimBALib

Credit Loss	Amount of rent lost due to a tenant with a lease failing to pay rent when due.	信用损失 - 因租客到期未能交付租金而造成的租金收入上的损失。		Ibid	Ibid
Credit Report	A report on the credit standing of a prospective borrower, which is used by lenders in underwriting loans.	信用报告 - 对于借款方信用状况的报告，给借款方提供贷款时用作参考。		Ibid	Ibid
Debt Service Cover Ratio (DSCR)	The ratio of Net Operating Income to annual Debt Service (DSCR = NOI/DS).	偿债备付率 - 经营净收入除以年度还本付息额所得的比值。		Ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p90.
Debt/Equity Ratio	The ratio between borrowed capital and equity capital, i.e., the ratio between the amount owed to lenders and the capital account of shareholders or partners.	债务股本比 - 所借资本与所持股本的比例，例如所欠借方的借款额与股东或合伙人所持资产的比例。	中文也称负债股权比率	Ibid	WikimBALib
Debt Service	The cost of servicing the repayment of a loan including principal and interest.	还本付息 - 定期用于偿还贷款或抵押中本金和利息之和的开支。		Ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p90.
Deed	A written instrument which, when properly executed, acknowledged, and delivered, conveys the title to real estate from one owner to another.	契约 - 一种书面文书，当正确执行，获得承认并送达时，即将房产的所有权由一方转让至另一方。	动词形式为立契转让	Ibid	Wikipedia
Default	The failure to fulfill a contractual obligation as identified in a legally executed contract.	违约 - 未能履行具有法律效力的协议文书中规定的义务。		Ibid	Ibid
Depreciation	Loss of value in real property brought about by age, physical deterioration, functional, and/or economic obsolescence. Broadly, a loss in value from any cause. Depreciation is a non-cash loss used in calculating income taxes.	折旧 - 资产因年龄老旧、物理损坏、功能性或经济性过时而导致的价值损失。或者广义上的任何原因导致的贬值。在计算所得税时，折旧是非现金损失。		Ibid	WikimBALib
Equity	The financial value which an owner has in real estate over and above liens (especially mortgages) against it. Also the cost of acquiring the rights of ownership.	股本 - 所有人所持有的对其房地产留置权的价值。同时也指获得该所有权成本。		Ibid	Ibid
Equity/Debt Ratio	The ratio of the equity capital invested in a property to the amount of debt incurred on that property.	股本负债比 - 投入某地产的资本与负债的比率。		Ibid	Ibid
Equity Participation	A method of financing where the lender most often takes a percentage of the cash flow (or other equity interest) in return for financing the project.	参股 - 融资渠道的一种，借款方通常以分得一定比例的现金流作为回报（或其它资本利息）来对项目进行融资的行为。	中文或称资本参与	Ibid	Ibid
Fixed-rate Mortgage	A conventional mortgage with an interest rate that does not vary over the term of the loan.	固定利率抵押 - 按照约定达成的固定利润抵押，汇率在还贷期间不变。		Ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p126.
Floating Rate	A variable interest rate charged for the use of borrowed money; set at a specific percentage above a fluctuating base rate. (Historically, the prime rate offered by major commercial banks, but today more typically the LIBOR, ie London Inter-bank Offer Rate or the current yield on US Treasury instruments of a similar duration).	浮动利率 - 利率变动的贷款类型；设置为高于一个基准浮动利率的百分比。（历史上基准利率由主要商业银行提供，但是如今通常使用LIBOR基准，伦敦同行拆借利率，或是当期美国国债收益率（基准利率）。		Ibid	WikimBALib
General Partner	Any entity or individual Partner a partnership who has full management responsibility and assumes liability for all partnership debt.	普通合伙人 - 任意个体或合伙人，享有管理权力，并对企业债务承担连带责任。		Ibid	Ibid
Gross Revenue	The total revenue from property before any Vacancy, Credit Losses or Operating Expenses are deducted.	收入总额 - 在除去空置率，信用损失和管理成本之前的收入总额。		Ibid	Ibid
Ground Lease	An agreement for use or occupancy of land in exchange for rent or other payments over the term of the lease.	土地租约 - 通过缴纳租金或者其他类似费用来换取土地使用权的协议。		Ibid	Ibid

Interest Rate	"Rent" charged for the use (lending) of capital over a specific period of time, usually expressed as a percentage of the amount used (loaned). If no time frame is specified, it is assumed to be a rate per year.	利率 - 在特定时间段内使用 (借用) 资金的“租金”，通常为所借资金的百分比值。如果没有特别说明适用时间，该百分比值通常是按年利率。		Ibid	Ibid
Interim Financing	A temporary or short-term loan that is usually secured by a mortgage and generally paid off from the proceeds of take-out financing.	短期贷款 - 临时或短期贷款，通常由抵押担保，并通常由抵押贷款偿还。		Ibid	Ibid
Internal Rate of Return (IRR)	A measure of investment performance; the rate of return on capital that is generated at a discount rate such that the net present value of all cash flows equal zero, assuming all cash flows are reinvested at the discount rate.	内部收益率 - 衡量投资的标准；基于现金流现值被设为零的贴现率计算而来的回报率，假设所有的现金流都再次以该贴现率再投资回项目。		Ibid	Ibid
Invested Capital	The original capital, or equity, invested in an enterprise plus any accumulated profits that are not returned to the investor but remain invested.	投入资本 - 投入在企业中的原始资本，或股本，加上所有并未分红并继续保留投资的累积收益。		Ibid	Ibid
Joint Venture	A combination of two or more entities that join together to undertake a specific project over a specific time frame	联营体 - 两家或者以上的企业，为了在某个特定时间段完成某个特定的项目而联合经营。		Ibid	Ibid
Lease	A contract between lessor (owner) and lessee (tenant), stating the rent, terms, use, and length of time for which a property is rented.	租约 - 房东与租客之间的协议，用于约定房产的租金、时间、用途、时长。	中文或称租赁协议，租约是具有法律效力性的文件。	Ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p174.
Leverage	The effect of borrowed funds upon the rate of return for an equity investment. Can be either positive or negative depending on the effect upon the rate of return.	杠杆 (借贷经营) - 借款对于股本投资回报率的影响。可以为正值也可以为负值，根据其对应回报率的影响而定。	中文或称举债经营	Ibid	WIKIBALib
Limited Partnership	A special form of partnership composed of one or more general partners, jointly and severally responsible for conducting business, and one or more limited partners, contributing capital to the partnership and who are not liable for the debts of the partnership beyond the funds so contributed so long as they do not participate in management of partnership business.	有限合伙 - 一种由一个或多个普通合伙人组成的合伙形式，对于经营负有各自并连带责任；一个或者多个有限合伙人，为合伙经营贡献资本，但并不参与经营管理，故不对合伙人关系之外的债务负责。		Ibid	Ibid
Liquid Assets	Assets that can be immediately converted into cash and are immediately available to pay debts.	流动资产 - 可以立即折现的资产，可即刻用来偿还债务。		Ibid	Ibid
Loan Commitment	A written promise from a lender to loan a specified sum at a certain rate of interest; usually a fee is paid for this commitment, which is good for a specific period of time. (See Commitment)	贷款承诺 (书) - 由借方出具的书面保证，用以保证以某利率出借某额度的贷款；通常需要支付一定费用来保证该承诺的时效。		Ibid	Ibid
Loan-to-Value Ratio	The ratio of a loan to the value of the property securing the loan; usually expressed as a percentage. (L/V = LA / V)	贷款与价值比率 - 贷款与用于担保该贷款的资产价值的比率，通常用百分比表示。	在美国，这种比值是影响贷款利率的因素之一，比值越大，利率越高。	Ibid	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p177.
Loan Term	The amount of time specified in the Note, at the end of which the loan must be paid off.	贷款期限 - 贷款申明中明确指示的时间期限，贷款须在时间截止前还清。		Ibid	WIKIBALib
Maintainance Expense	Expenditures made for the purpose of keeping a property in condition to perform its function efficiently; does not extend the useful life of the property or increase its tax basis.	维护开销 - 为了保证房产的正常功能而用于维护的开销，并不能够延长房产的使用寿命或者增加其计税标准。		Ibid	Ibid
Market Analysis	Research conducted to determine the characteristics and number of potential purchasers of a product or products within a given area, e.g., housing market analysis.	市场分析 - 对某种产品的特性及其在一定地区内可能有多少买主所作的分析研究，如住房市场分析。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p182.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p182.

Market Value	As defined by the courts, the highest price estimated, in terms of money, which a property will bring if exposed for sale in the open market, allowing reasonable time to find a purchaser with knowledge of the property's use potential and acting without duress.	市场价值 - 由法庭裁定，用现金衡量的最高估计价值，房产在公开出售时可以出示，允许合理的时间来寻找对该资产的潜在用途有了解的买家而不受斜坡。				Glossary for Selected Real Estate Terms (2014), Rusad Center of Real Estate Study, Unpublished, University of Washington	WikimBAlib
Net Operating Income (NOI)	The actual or anticipated net revenue remaining after deducting all Operating Expenses from Effective Gross Revenue, but before deducting mortgage Debt Service and Depreciation.	经营净收入 - 实际的或期望的净收入，由有效总收入减去所有的经营开销，但却不减去抵押贷款的还本付息额以及折旧。					ibid
Occupancy Rate	Relationship between the amount of space rented in a property and the Gross Leasable Area. OR = Area Rented / Gross Leasable Area.	入住率 - 房产中已出租空间与可租用空间的关系。计算方式：入住率 = 已租空间 / 总可租空间。	也称住房占有率				ibid
Operating Expenses	Recurring expenditures necessary to maintain real property in a condition to continue the production of Effective Gross Revenue.	经营费用 - 为了保证房产的正常状况，以便能够持续产生盈利而需要持续支出的费用。					ibid
Partnership	A business organization composed of two or more individuals, who have contracted to own and/or operate some business asset and who act jointly, but for liability and tax purposes are treated as individuals.	合伙经营 - 由两个以上个体组成的商业组织，其中有通过协议来持有并经营组织资产的合伙人，或者联合经营，但法律责任以及税务关系区分对待。					ibid
Permanent Loan (Take-out Loan)	A long-term amortizing loan, usually at a fixed rate of interest, and used to purchase and operate a completed structure or to repay an interim or construction loan.	永久贷款 (抵充贷款) - 长期抵押贷款，通常为固定利率，用来购买并经营完工的房产或支付临时贷款或建造贷款。					ibid
Present Value	The value of a future payment or series of future payments discounted at some market rate to the present time.	现值 - 未来支付额或是一系列支付额根据现在市场率折算而成的现值。					ibid
Pre-tax Cash Flow	Income remaining from net operating income after debt service is paid, but before ordinary income tax on cash flow is calculated.	税前现金流 - 经营净收入减去还本付息额之后的收入余额，但是未计算所得税。					ibid
Principal	The amount of capital originally invested, reduced by any payments received over and above current interest.	本金 - 最初投资的资金，除了现有利息之外，因还款而减少。					ibid
Profit	The amount by which the net proceeds of a transaction exceed its cost.	利润 - 交易中超过成本的部分。					ibid
Pro Forma	According to form; 1) a tool for projecting the financial implications of making specific management decisions; 2) a way of projecting future performance of a given capital asset based on assumptions about future operating and capital markets.	估价单 - 字面意思是根据表格上的信息；1) 用于预估财务问题来做针对性管理决定的工具；2) 用于根据未来经营和市场状况来预估未来资本资产表现情况的方式。					Wikipedia
Real Estate	1. The land with its permanent structures, infrastructure, natural resources such as water and minerals, and any rights or interests in rights accented with ownership of the land. Also called real property in a legal context. 2. The area of business concerned with land and property sales and purchase transactions.	房地产 - 1.指土地及其上部的永久性建筑物，以及基础设施诸如水和矿藏等自然资源。还包括与土地所有权有关的任何权利或者利益。在法律上称不动产。					ibid
Real Estate Investment Trust (REIT)	A financial vehicle that allows small investors to purchase stock in a corporation and yet be protected from the double taxation that is levied against an ordinary corporation or trust. REITs are designed to facilitate investment in real estate assets similar to the way a mutual fund facilitates investment in stock and bond assets.	房地产投资信托基金 - 允许小额投资者购买集团股份并被免于如普通集团或是信托公司那样重复征收税的金融媒介。房地产信托基金和共有基金一样通过股票和有价证券来吸引针对不动产的投资。					WikimBAlib
Rent	An amount paid for the use of land, improvements, or capital goods for a specified period of time.	租金 - 在一定时间内使用土地、建筑或资产商品所付的资金。					ibid
Rentable Area	The amount of space on which the rent is based; calculations often vary according to local practice.	可租用面积 - 可以用来出租收取租金的面积；计算时根据当地习惯操作会有不同。					ibid
Take-out Commitment	A lender's commitment to provide long-term, fixed rate financing when a building or other improvement on real estate is completed.	抵充 (贷款) 承诺 - 当不动产建造完工时，借款方对提供长期固定利率的承诺。					ibid

Taxable Income	For income-producing property, net operating income before replacement reserves minus depreciation and interest on debt.	应纳税收入 - 对于盈利型不动产，包含普救性维修成本的经营净收入减去折旧和债务中的利息部分。		Ibid.	Ibid.
Tenant Improvements	1) Fixed improvements to the land or structures installed for the benefit of a tenant or lessee. 2) The original installation of finished, tenant space in a construction project; subject to periodic change for succeeding tenants.	租户改善 - 租户改善 - 1) 为了租客而改造土地或者建筑；2) 在建设期间，为了租户空间预先提供的特定改造；适用于随时间而更换的租客。		Ibid.	Ibid.
Vacancy Rate	The proportion of unoccupied houses or apartment units compared to the total number of existing units.	空置率 - 指无人居住的住宅或公寓在住房单元总数中所占的百分比。	或指空置待租的空间、办公室、零售、酒店等	Ibid.	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p297.
Vacancy and Credit Loss	An allowance for reductions in gross revenue (GR) attributable to vacancies, tenant turnover, and nonpayment of rent by lessees. See Credit Loss.	空置与信贷损失 - 总收入中因空置、租客搬迁、到期未付租金而产生的折扣。		Ibid.	Wikimbal.jp
Value	The present worth of future benefits that accrue to real property ownership 1) an estimate of the present worth of an asset if sold in an arms-length transaction 2) the price available within a market place at any given time.	价值 - 累加于不动产所有权之上未来利益的现有价值。1) 现有资产将在独立交易中出售的估计价格；2) 特定时间内市场上可提供的价格。	An arms-length transaction; a transaction in which the buyers and sellers of a product act independently and have no relationship to each other. 独立交易	Ibid.	Ibid.

Category: Specific Chinese Terms					
Term	Explanation	Translation	Comments	English Source	Chinese Source
Autonomous Region	In China, an administrative area of a minority nationality, corresponding to a province, such as the Xizang (Tibet) Autonomous Region where most of the population is Tibetan, and the Guangxi Zhuang Autonomous Region where the population consists mostly of the Zhuang people. The Constitution of China stipulates that the administrative hierarchy is 1)autonomous region, 2)autonomous prefecture, and 3) autonomous county.	自治区 - 中国由少数民族自治的地方，相当于省一级的行政区域单位。例如以藏族为主的西藏自治区，以壮族为主的广西壮族自治区。中国宪法规定自治区的行政建制为三级：自治区、自治州和自治县。		English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p19	English-Chinese Glossary of Terms in Housing, Urban Planning and Construction Management, Washington, DC-Beijing, 1987, p19
City Planning and Administration Bureau	In China, a government agency below the mayoral level which is responsible for making up, implementing, and administering the urban plan.	城市规划管理局 - 在中国指主管城市规划的编制、实施与管理的部门，隶属于市政府的领导。		Ibid., p51	Ibid., p51
Construction Organization	In China, the organization which performs the actual building work for projects. Often refer to in contracts as the second party.	施工队伍 - 在中国，指实际承担工程施工的单位，在工程合同中通称乙方。		Ibid., p76	Ibid., p76
Construction Team	In China, the basic labor unit in a construction enterprise, with direct responsibility for executing the work processes involved in construction. The construction team is a work organization but not an administrative entity. The unit may be a specialized team, organized to perform a specific function and consisting of workers who practice the same trade, with a certain proportion of ordinary laborers to assist. In contrast, the mixed team is composed of a variety of workers possessing the different skills required to complete the construction work.	施工队 - 中国建筑企业内直接组织施工的基层劳动组织。有两种组织形式：即由同一工种工人配以一定数量的普通工组成的专业施工队；由完成建筑工程所需要的各工种的工人混合组成的混合施工队。	For the U.S. equivalent, see also the Construction Crew. 在美国详见对应词汇“施工队伍”	Ibid., p78	Ibid., p78
District	Part of a city having its own specific character, resulting from agglomerated elements which define a certain economic, social, and administrative unity. In China, a city comprises several districts, which in turn encompass a number of subdistricts. The administrative authority of a district government is called a district government and is under the jurisdiction of the municipal government. The administrative body of the subdistrict is called the subdistrict office.	区 - 指城市内具有不同特征的地域范围，在社会、经济和行政上形成一个整体。在中国，城市由若干个区组成，市区设区政府，由市政府领导。市区由若干街道组成，街道管理机构称街道办事处。		Ibid., p105	Ibid., p105
Municipality	In China, a city empowered by the State Council to maintain its own government and organizational system, with jurisdiction within a designated region. Certain major cities, i.e., Beijing, Shanghai, and Tianjing, are centrally administrated municipalities that report directly to the central government. Provincially administered municipalities, including provincial capitals, are under the authority of the provincial government.	市 - 在中国，经国务院批准设立市建制，并划定其管辖地区的城市。市分直辖市和省直辖市两种，特大城市如北京、上海和天津由中央政府直接管辖。省辖市包括省会，由省级政府直接管辖。	In the United States, the term generally applies to a local government, regardless of size, which is characterized by the state to govern itself. 在美国，市是由州政府确定，具有行政权的地方政府。其规模大小各有不同。	Ibid., p194	Ibid., p194
Province	In China, the highest level local administrative subdivision, with its own government. The provinces report to the central government.	省 - 在中国，中央政府下属的地方最高一级行政区域单位，设有政府。		Ibid., p228	Ibid., p228
Subdistrict Office	In China, the grassroots unit of government administrative in a subdivision of the city district. The subdistrict office is the agency of the city district government responsible for directing the neighborhood committees and overseeing neighborhood industry and public affairs.	街道办事处 - 在中国，指街区范围内的基层政府机构，是区政府下属的办事单位，领导所属街区内的委员会，主办街道工作，处理公众事务。		Ibid., p272	Ibid., p272

Bibliography

- Rolfe, George, *Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process*, Department of urban Design and Planning, University of Washington, 1998, Revised Sept 2010
- Rolfe, George, *Program Definition and Feasibility Analysis, An Introduction to Project Development*, Department of urban Design and Planning, University of Washington, 1998
- Grasskamp, A James, *A Guide to Feasibility Analysis, Third Printing*, Society of Real Estate Appraisers, Inc., Chicago, IL, 1973
- Barrett, G. Vincent, et al., *How to Conduct and Analyze Real Estate Market and Feasibility Studies, 2nd Edition*, Van Nostrand Reinhold, New York, NY, 1988
- Miles, Mike et al, *Real Estate Development Principles and Process, 4th Edition*, Urban Land Institute, Washington, DC, 2007
- Ling, David et al, *Real Estate Principles A Value Approach, 4th Edition*, McGraw-Hill Companies, Inc, New York, NY, 2013
- Poorou, William J., et al, *The Real Estate Game: the Intelligent guide to Decision-making and Investment*, The Free Press, New York, NY, 1999
- Miller, Norma et al, *Real Estate Principles for the New Economy*, South-Western Thomson, Mason, OH, 2005.
- Linneman, Peter, *Real Estate Finance and Investments: Risks and Opportunities, Edition 3.1*, The Linneman Associates, Philadelphia, PA, 2013
- Kohlhepp, Daniel, *The Real Estate Development Matrix, Presented at The American Real Estate Society Meetings St. Petersburg, Florida April 21, 2012*
- Adrienne Schmitz, *Residential development handbook*, Urban Land Institute, 2004 Rachele L Levitt, *Mixed-use development handbook*, Urban Land Institute, 2003
- Stephen P. Peca, *Real estate development and investment a comprehensive approach*, 2009
- Robert, Berman, *Development feasibility: an assessment of traditional neighborhood development*, 1993
- Tang, Yu-ming, Zhu, Bin-hua, *Fangdichan Kaifa Xiangmu de Kexingxing Yanjiu [A Study of the Feasibility of a Real Estate Development Project]*, Suzhou Chengjianhuanbao Xueyuan Bao [Suzhou Institute of Urban Construction and Environmental Protection], Vol. 8, No. 4, 1995.
- Lu, Changhua, *Jiyu SWOT Fenxi de Shiji Yinjian Fangdichan Xiangmu Kaifa Kexingxing Fenxi [the Feasibility Analysis Based on SWOT Analysis for Shiji Yinjian Real Estate Development Project]*, Zhongguo Zhengquan Qihuo [Securities & Futures of China], 2011(03).
- Liang, Chang-yu, *Lun Kexingxing Yanjiu Zai Fangdichan Kaifa Zhong de Zuoyong [Discuss on the Functions of Feasibility Analysis in Real Estate Development]*, Shenyang Jianzhu Gongcheng Xueyuanbao (Shehui Kexue Ban) [Journal of Shenyang Arch. And Civ. Eng. Univ. (Social Science)], Vol. 3, No.2, 2001.

Tang, Zuo-ming, Zhang, Zhi-hua, Fangdichan Xiangmu Touzi Kexingxing Fenxi Cunzai Wenti Ji Jiejue Duice [Study on Current Real Estate Investment Feasibility Analysis, Existing Problems and Solutions], Beijing Fangdichan [Beijing Real Estate], 2006(05).

Zhao Zhentao Ye Kunhui, Chongqing Fazhan Youting Dichan de Kexingxing Fenxi yu Jiben Gouxiang [The Feasibility Analysis of Chongqing's Yacht Real Estate Development and the Basic Conception], Zhongguo Fangdichan [China Real Estate], 2011(08).

Christopher F. Meyer, A site planning and feasibility analysis of the Hathaway parcel

Colin J. Morgan, Preserving retail affordability in Seattle's Little Saigon the impact of policy on financial feasibility, advised by Jan Whittington, 2012

Gehl, Jan, Cities for People, Island Press, Washington, DC, 2010

Soja, Edward, My Los Angeles, From Urban Restructuring to Regional Urbanization, University of California Press, Berkeley and Los Angeles, CA, 2014

Campanella, Thomas, The Concrete Dragon, China's Urban Revolution and What it Means for the World, Princeton Architectural Press, New York, NY, 2008

Zhou, Zhen, Fangdichan Kaifa Xiangmu de Kexingxing Fenxi Xianzhuang de Tantaoyu [Study on Current Status of Real Estate Development Feasibility Analysis], Xian Dai Chan Ye Jing Ji [Modern Economic Information], 2014(06).

United States of America Department of Housing and Urban Development (HUD), People's Republic of China Ministry of Urban and Rural Construction and Environmental Protection (MURCEP), English-Chinese Glossary of Terms in Housing, Urban Planning, and Construction Management, Washington, DC – Beijing, 1987.

Endnotes

¹ Kohlhepp, Daniel, The Real Estate Development Matrix, Presented at The American Real Estate Society Meetings St. Petersburg, Florida April 21, 2012, p11.

² Ling, David et al, Real Estate Principles A Value Approach, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p608.

³ Kohlhepp, Daniel, The Real Estate Development Matrix, Presented at The American Real Estate Society Meetings St. Petersburg, Florida April 21, 2012, p11-12.

⁴ Graasskamp, A James, A Guide to Feasibility Analysis, Third Printing, Society of Real Estate Appraisers, Inc., Chicago, IL, 1973, p2-10.

⁵ Ibid, p4.

⁶ Ibid, p5-6.

⁷ Ling, David et al, Real Estate Principles A Value Approach, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p606.

⁸ Miles, Mike et al, Real Estate Development Principles and Process, 4th Edition, Urban Land Institute, Washington, DC, 2007, p1.

⁹ Rolfe, George, Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process, unpublished, Runstad of Real Estate Study, University of Washington, 1998, Revised in Sept 2010, p8.

¹⁰ Ibid.

¹¹ Barrett, G. Vincent, et al., How to Conduct and Analyze Real Estate Market and Feasibility Studies, 2nd Edition, Van Nostrand Reinhold, New York, NY, 1988, p6.

¹² Ibid.

¹³ Ibid, p16.

¹⁴ Ibid, p16-22.

¹⁵ Ibid, p5.

¹⁶ Ibid, p16-22.

¹⁷ Ibid, p18.

¹⁸ Ibid, p18.

¹⁹ Barrett, G. Vincent, et al., How to Conduct and Analyze Real Estate Market and Feasibility Studies, 2nd Edition, Van Nostrand Reinhold, New York, NY, 1988, p22.

²⁰ Rolfe, George, Program Definition and Feasibility Analysis, An Introduction to Project Development, unpublished, Runstad of Real Estate Study, University of Washington, 1998, p2.

²¹ Ibid.

²² Ibid.

²³ Rolfe, George, Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process, unpublished, Runstad of Real Estate Study, University of Washington, 1998, Revised Sept 2010, p2.

²⁴ Ibid, p7.

²⁵ Ibid, p7-8.

²⁶ Miller, Norma et al, Real Estate Principles for the New Economy, South-Western Thomson, Mason, OH, 2005, p289.

²⁷ Ibid, p332.

²⁸ Ibid, p291-292.

²⁹ Rolfe, George, Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process, unpublished, Runstad of Real Estate Study, University of Washington, 1998, Revised Sept 2010, p2.

³⁰ Ibid.

³¹ Urban Development/Mixed-Use Council, the Urban Land Institute, Washington, DC, 1987, p99.

³² Poorvu, William J., et al, The Real Estate Game: the Intelligent guide to Decision-making and Investment, The Free Press, New York, NY, 1999, P13.

³³ Linneman, Peter, Real Estate Finance and Investments: Risks and Opportunities, Edition 3.1, Linneman Associates, Philadelphia, PA, 2013, P164.

³⁴ Rolfe, George, Basic Concepts of Real Estate Development, An Introduction to the Real Estate Development Process, unpublished, Runstad of Real Estate Study, University of Washington, 1998, Revised Sept 2010, p2.

³⁵ Ling, David et al, Real Estate Principles A Value Approach, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p609.

³⁶ Linneman, Peter, Real Estate Finance and Investments: Risks and Opportunities, Edition 3.1, Linneman Associates, Philadelphia, PA, 2013, P155.

³⁷ Ibid.

³⁸ Ibid, P155-156.

³⁹ Ibid, P168.

⁴⁰ Ibid, P168-170.

⁴¹ Ibid, P160.

⁴² Ibid.

⁴³ Ibid, P161.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid, P161.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ling, David et al, Real Estate Principles A Value Approach, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p609-610.

⁵² Miller, Norma et al, Real Estate Principles for the New Economy, South-Western Thomson, Mason, OH, 2005, p332.

⁵³ Linneman, Peter, Real Estate Finance and Investments: Risks and Opportunities, Edition 3.1, Linneman Associates, Philadelphia, PA, 2013, P161-162.

⁵⁴ Ling, David et al, Real Estate Principles A Value Approach, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p609.

⁵⁵ Ibid, p609-610.

⁵⁶ Zhou, Zhen, Fangdichan Kaifa Xiangmu de Kexingxing Fenxi Xianzhuang de Tantaoyan [Study on Current Status of Real Estate Development Feasibility Analysis], Xian Dai Chan Ye Jing Ji [Modern Economic Information], 2014(06).

⁵⁷ Tang, Yu-ming, Zhu, Bin-hua, Fangdichan Kaifa Xiangmu de Kexingxing Yanjiu [A Study of the Feasibility of a Real Estate Development Project], Suzhou Chengjianhuanbao Xueyuan Bao [Suzhou Institute of Urban Construction and Environmental Protection], Vol. 8, No. 4, 1995.

⁵⁸ Lu, Changhua, Jiyu SWOT Fenxi de Shiji Yinjian Fangdichan Xiangmu Kaifa Kexingxing Fenxi [the Feasibility Analysis Based on SWOT Analysis for Shiji Yinjian Real Estate Development Project], Zhongguo Zhengquan Qihuo [Securities & Futures of China], 2011(03).

⁵⁹ Liang, Chang-yu, Lun Kexingxing Yanjiu Zai Fangdichan Kaifa Zhong de Zuoyong [Discuss on the Functions of Feasibility Analysis in Real Estate Development], Shenyang Jianzhu Gongcheng Xueyuanbao (Shehui Kexue Ban) [Journal of Shenyang Arch. And Civ. Eng. Univ. (Social Science)], Vol. 3, No.2, 2001.

⁶⁰ Tang, Zuo-ming, Zhang, Zhi-hua, Fangdichan Xiangmu Touzi Kexingxing Fenxi Cunzai Wenti Ji Jiejue Duice [Study on Current Real Estate Investment Feasibility Analysis, Existing Problems and Solutions], Beijing Fangdichan [Beijing Real Estate], 2006(05).

⁶¹ Zhao Zhentao Ye Kunhui, Chongqing Fazhan Youting Dichan de Kexingxing Fenxi yu Jiben Gouxiang [The Feasibility Analysis of Chongqing's Yacht Real Estate Development and the Basic Conception], Zhongguo Fangdichan [China Real Estate], 2011(08).

⁶² Ling, David et al, *Real Estate Principles A Value Approach*, 4th Edition, McGraw-Hill Companies, Inc, New York, NY, 2013, p606.

⁶³ Campanella, Thomas, *The Concrete Dragon, China's Urban Revolution and What it Means for the World*, Princeton Architectural Press, New York, NY, 2008, p104.

⁶⁴ Gehl, Jan, *Cities for People*, Island Press, Washington, DC, 2010, p3.

⁶⁵ Soja, Edward, *My Los Angeles, From Urban Restructuring to Regional Urbanization*, University of California Press, Berkeley and Los Angeles, CA, 2014.