Preliminary urban land use planning

Robert H. Harris Jr.
PRELIMINARY URBAN LAND USE PLANNING

An independent research project submitted in partial fulfillment of the requirements for the MBA degree

by

ROBERT H. HARRIS, JR.

Executive MBA, Class of 1986
University of Richmond

January 10, 1986
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ABSTRACT

The purpose of this report is to create a primer of basic real estate development principles and practices pertaining to preliminary urban land use planning. The report is directed toward the decision maker who is oftentimes not a sophisticated real estate professional. Normally, the decision maker is the owner of the property or a small developer who selects the land use based upon his limited experience.

A methodology is developed for performing a preliminary site plan analysis, and rules of thumb for development are embodied in a use compatibility analysis to aid the decision maker in selecting the feasible alternatives to be tested by market analysis and financial analysis. An overview of market analysis and financial analysis is presented with the idea that a professional should be employed at this stage to verify the decision maker's alternative selection.

Finally, there is a discussion of the development process and the various professionals employed in the process. It is anticipated that this paper will help the decision maker formulate better plans for development which in turn should reduce his cost and increase his probability of success.
A case study involving an actual tract of raw land is included as a real life example of the detailed development team process. All steps are followed, and a best use decision is made for the site.
INTRODUCTION

Four perspectives of real estate analysis and decision making are:

1. An investor seeking an investment in real estate.
2. A real estate investment seeking an investor or buyer.
3. A use in search of a location.
4. A location in search of a use.

This paper will focus on the last of these perspectives. What is the highest and best use of raw land? What is the logical sequence that should be followed to arrive at an answer to this question? Which land use will maximize the return to the owner of the land?

Several factors make the question of how to use a piece of land the most complicated real estate decision. First, the large number of available alternatives makes selecting the best use a complex problem. Second, the real estate market is inefficient due to the heterogeneity of the product. Finally, real estate is a dynamic market. An appropriate decision today might be inappropriate tomorrow because predicting the future competition for a particular use is difficult.

The complexity of selecting the best use for a site
is not understood by many land owners and developers. Intuition and personal preference often weigh heavily in the decision-making process. Many alternatives are never considered, or worse, the wrong alternative is chosen. Many real estate failures are the result of a "knee-jerk" decision made by an entrepreneur because he saw a "good-looking project" in another city.

To increase the probability of a project's success, a developer needs to understand two major areas: the project development team process and the feasibility study.
PROJECT DEVELOPMENT TEAM

The site development team is a composite of many different professionals. The team can have many configurations, but a typical project team will be comprised of the following:

- land developer/land owner
- landscape architect/land planner
- site engineer
- soils engineer
- lending institution
- marketing consultant
- real estate agent
- architect

The roles played by each member vary slightly from project to project; however, the following definitions are typical ones for each member.

The land developer/land owner is usually the hub of the wheel that ties the project together. The level of sophistication varies from the seasoned veteran to the little old lady who inherited some land. It is the role of the developer or the land owner, however, to start the process and either appoint one of the other members as his agent to manage the project or to manage the process himself. Generally, the first step is to hire a land planner.

The landscape architect/land planner usually does the preliminary site analysis and land planning. The original
land plan takes the form of "bubble" diagrams on sketch paper showing several different use alternatives for the site.

The **site engineer** is hired to do topographical and boundary survey work. A site plan showing the topography, boundaries, sewer and water lines, and utility easements is then given to the landscape architect to aid him in his land planning. The site engineer can also provide site work estimates to aid in the financial analysis.

Later the site engineer will detail the sewer and water lines, drainage plans, and grading plans that are to be followed by the sitework contractor.

A **soils engineer** is used to do soils testing. Samples of the site's soils are tested to see if any undercutting is required in order to support the buildings planned for the site. The soils engineer will determine the extent of any rock excavation that might be required.

A **lending institution** has someone on its staff who has some impact on projects of any size. The lender must also hire an independent appraiser who will verify the amount of any loan requested by the developer.

The **marketing consultant**'s role may be filled by an independent consultant, by a real estate appraisal firm, or by the real estate agent. The role of the marketing
consultant is to provide a market analysis to be used in the financial analysis.

The marketing consultant is especially helpful in cases where rezoning is required. For example, a statement of need analysis showing that the use is required by the surrounding community could make a valid case for rezoning.

The real estate agent is usually the leasing agent or in some cases the sales agent. His input can be helpful in avoiding errors he has observed in previous land plans. For example, a real estate agent should be knowledgeable about bay widths in the unloading areas of a shopping center. He can recommend the addition or deletion of garages in a townhouse project based on the past requirements and wishes of buyers. While his input is valuable, it should not take the place of market research to decide key issues of land use.

The architect takes the footprint given to him by the land planner and creates the vertical building structure. Oftentimes, the architect is the last member of the team involved in the project. Before the architect starts work, a firm set of guidelines should be developed which tells the architect as much detailed information as possible. An architectural program specifying such information as the number of bathrooms needed, storage area sizes, column
spacing for merchandise display, bay widths, electrical outlet requirements, and typical furnishings should aid the architect in his drawings.

Through an understanding of the entire development process, the developer can carry out his responsibility of coordinating the work of the entire development team.
SITE DEVELOPMENT PROCESS

Land planning is done in stages or phases. The three stages of land plan development are the preliminary phase, the development phase, and the working drawing phase. The development phase and the working drawing phase are those in which the ideas outlined by the development team are put into hard line drawings to be followed by the sitework and building contractors. Any competent land planner and architect can produce satisfactory working drawings. The key to successful development, however, lies in the preliminary land planning phase.

Phase I Preliminary Land Planning

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Action Required</th>
<th>Action By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hire site engineer</td>
<td>Developer</td>
</tr>
<tr>
<td>2.</td>
<td>Prepare plat and topographical survey of site</td>
<td>Site engineer</td>
</tr>
<tr>
<td>3.</td>
<td>Obtain aerial photographs showing 1 mile radius around site</td>
<td>Developer</td>
</tr>
<tr>
<td></td>
<td>Obtain zoning, utility and traffic information from the municipal planning department</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtain census tract data from the library for tracts within three miles of the site.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Prepare a site analysis form (Exhibit A)</td>
<td>Developer</td>
</tr>
<tr>
<td>5.</td>
<td>Prepare a use compatibility analysis form (Exhibit B)</td>
<td>Developer</td>
</tr>
<tr>
<td>6.</td>
<td>Form a hypothesis for the general land use category, i.e. residential, retail, office, industrial, or other.</td>
<td>Developer</td>
</tr>
<tr>
<td>7.</td>
<td>Hire a land planner</td>
<td>Developer</td>
</tr>
</tbody>
</table>
8. Prepare preliminary land use plans showing natural attributes and problems of the site. Confirm the use hypothesis.

Land planner

9. Hire a marketing consultant

Developer

10. Prepare a market analysis. Confirm the use hypothesis.

Marketing consultant

11. Contact lender and real estate agent.

Developer

12. Hold a development team meeting: land developer, land planner, marketing consultant, real estate agent, lending institution. Brainstorm session is to determine project specifics, i.e. no. of stories, no. of square feet, phasing, timing, architectural type, etc.

Team

13. Prepare a feasibility study. Confirm the use hypothesis.

Marketing consultant

The preparation of development drawings is expensive; therefore, a market analysis and a feasibility analysis should be completed before continuing to Phase II.

Phase II Development Planning

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prepare site plan development drawings showing: parking, setbacks, screening, building footprint.</td>
</tr>
<tr>
<td>2.</td>
<td>Apply for zoning</td>
</tr>
<tr>
<td>3.</td>
<td>Receive zoning approval</td>
</tr>
<tr>
<td>4.</td>
<td>Hire architect</td>
</tr>
<tr>
<td>5.</td>
<td>Write architectural program</td>
</tr>
<tr>
<td>6.</td>
<td>Complete building plan development drawings</td>
</tr>
<tr>
<td>7.</td>
<td>Hold development team meeting to approve development plans</td>
</tr>
</tbody>
</table>
After development drawings have been completed, it is customary to involve the lending institution, the marketing consultant, the real estate agent, and the architect. If a major tenant is to be involved, it is time to get their input also. Every member of the team should approve the development drawings before working drawings begin.

### Phase III Working Drawings

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Action Required</th>
<th>Action By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prepare final working drawings for building</td>
<td>Architect</td>
</tr>
<tr>
<td>2.</td>
<td>Prepare final working drawings for sitework</td>
<td>Site engineer</td>
</tr>
<tr>
<td>3.</td>
<td>Send drawings to bank for appraisal Send drawings to sitework contractor Send drawings to building contractor</td>
<td>Developer</td>
</tr>
<tr>
<td>4.</td>
<td>Obtain bids from sitework contractor and building contractor</td>
<td>Developer</td>
</tr>
<tr>
<td>5.</td>
<td>Start preleasing or sales promotion</td>
<td>Real estate agent</td>
</tr>
<tr>
<td>6.</td>
<td>Make loan application</td>
<td>Developer</td>
</tr>
<tr>
<td>7.</td>
<td>Obtain appraisal and make loan application</td>
<td>Lender</td>
</tr>
<tr>
<td>8.</td>
<td>Confirm feasibility study with actual financing and construction commitments</td>
<td>Developer</td>
</tr>
<tr>
<td>9.</td>
<td>Break ground</td>
<td>Developer</td>
</tr>
</tbody>
</table>
FEASIBILITY STUDY

The developer's success is determined by his ability to perform in two areas. First, he must be able to coordinate a team of experts toward a common goal. Secondly, he must be able to initialize an idea for the project and then decide on the form of the final product. The development of an idea into a final land use decision is a process of forming a hypothesis and then proving it or disproving it through the use of a feasibility study.

A feasibility study looks at the entire development process. It combines the market study with the cost of development. It examines the development cost, time element, equity requirements, financing, zoning, and site characteristics. It is a total package that lays out the details of the project based upon a specific use. The feasibility study includes four levels of analysis. These are:

1. Location analysis
2. Use compatibility analysis
3. Market analysis
4. Financial analysis

The location analysis takes into account the specific attributes of the site. Information about the size, shape, topography, and zoning for the particular site are gathered and categorized. The use compatibility analysis narrows the list of potential alternatives available.
The market analysis estimates the market gap for each alternative use. The uses with the widest gaps and with the ability to pay the highest prices for the land are likely to be selected. The market analysis further narrows the list of alternatives available.

The financial analysis compares each remaining alternative according to specific criteria. The use that has the highest value, that is compatible with the site and the market analysis, and that meets the needs and desires of the owner or land developer is the highest and best feasible use.
LOCATION ANALYSIS

The process of determining the best use for a site is inductive. It must begin with the specifics of the site, not the market. (Grissom, 1984). The physical attributes of the property are the most constraining because they are the least changeable. Six basic resources for site information are:

1. On-site tour: This should be the first step in site analysis to get an idea of the lay of the land. Pictures should be taken.
2. Site topographic survey: This should be obtained from a local engineer.
3. Aerial photographs: These can be obtained from the municipality, or services are usually available. Contact local airport. The photograph should be large enough to show a three mile radius of the site and should be less than six months old.
4. Municipal planning department: Contact for zoning information.
5. Municipal engineering department: Contact for utility and future plans on roads.
6. Census tract data: This may be obtained from public library. See 1980 Census of Population and Housing, U.S. Department of Commerce, Bureau of the Census.

On-site tour

1. Vacant or improved: Note any improvements that may have to be demolished. For example, old barns, fences, even trash piles are costly to remove.
2. Vegetation: Note size and type of trees. Wooded land is favorable for residential use but unfavorable for commercial and industrial development.
3. **Rock outcropping**: This could portend the need for detailed soil analysis. Rock is detrimental to site grading, drainage, and utilities.

4. **Drainage problems**: Low lying land must be undercut, and suitable material must be brought in. Bringing in fill from off-site can be extremely expensive.

5. **Noise level**: Obtain a general impression of the noise at the site.

6. **Quality of the surrounding neighborhoods**: In what phase of the life cycle are they?

**Site topographic survey**

1. **Topography**: What is the percentage of slope across the site? Is the site above or below the road surface?

2. **Size and dimensions of the site**: Record the acreage, width, and depth of the site. Also what is the road frontage?

3. **Easements**: Are there any easements which could prevent full use of the site?

**Municipal planning department**

**Zoning**: What is the present zoning and is any new zoning planned by the municipality of the site? What are the chances of getting the zoning changed? Have the surrounding neighbors been opposed to zoning changes lately?

**Municipal engineering department**

1. **Accessibility**: Where will any new curb cuts be allowed? Are there any traffic signals planned?

2. **Soil quality**: Many engineering departments have soil reports for the area. Does soil drain well;
is there rock present; what is the soil bearing capacity?

3. Traffic: What is the traffic count on the access roads adjacent to the property?

4. Utilities: Where is the closest sewer and water? What does it cost to extend utilities to the site?

5. Requirements for development: Are any deceleration lanes going to be required for the site?

Census tract data for the surrounding neighborhoods:

1. Number of persons per household.

2. Mean income per household.

Aerial photograph

1. Population within 1, 2, and 3 mile radius: This should be obtained by counting the number of houses and multiplying this times the number of persons per household to yield population figures.

2. Record distances from site to other uses: See Site Analysis Form for a list of the pertinent uses. A city map might also be helpful here.

The following form is presented to aid in organizing information gathered during the site analysis.
EXHIBIT A

SITE ANALYSIS FORM

1. Vacant or improved

2. Vegetation

3. Rock outcroppings

4. Drainage Problems

5. Noise

6. Quality of Surrounding Neighborhoods

7. Topography: _______ drop per 100'
   Ft. above road _______ ft. below road _______
   Side to side slope _______ Front to Back _______

8. Size: Ft. Road frontage _______ Depth of site _______

9. Easements:

10. Zoning: Present: __________ Proposed __________
    Probability of up zoning _______

11. Accessibility

12. Soils: Rock present_________ Soil bearing _______
    Percolation ________________

13. Traffic: Cars per day main road _______________
    Cars per day side road __________

14. Utilities: Water
    Sewer
    Gas
    Power
    Railraod

15. Off site improvements required.
EXHIBIT A (continued)

16. Population:
   _______Houses w/i 1 mile radius X ___ persons/house = ___
   _______Houses w/i 2 mile radius X ___ " " = ___
   _______Houses w/i 3 mile radius X ___ " " = ___

17. Mean average income within 1 mile radius _________

18. Distance from site to:
   Elementary school ______ miles ______ minutes
   Middle School ______
   High School ______
   Grocery Store ______
   Convenience Store ______
   Department Store ______
   Downtown Bus. Dist. ______
   Airport ______
   Restaurant ______
   Interstate ______
   Fire Station ______

19. Adjacent Uses: Present Proposed
    __________________________   __________________________
    __________________________   __________________________
    __________________________   __________________________
    __________________________   __________________________
    __________________________   __________________________
    __________________________   __________________________

20. Real Estate Tax
USE COMPATIBILITY ANALYSIS

After a thorough site analysis, the information gathered can be tabulated as shown on Exhibit B - the Use Compatibility Analysis Form. This form can be used like a filter to sift out the possible alternative uses that are compatible with the site. There are five major use categories:

--residential
--apartment
--retail
--office
--industrial

Under each use category is a listing of the major criteria that are important in choosing that use. Each use category has two additional columns. One is a maximum rating for each criterion. The ratings are based on the knowledge gained through research of each major use category. The idea is similar to a method used by Larry Smith and Company, Inc. to predict the success of regional shopping centers. (McKeever, p. 311).

To use the form, score each criteria for each use using the maximum rating as a guide. For example, if the site had a land cost of $20,000 per acre, the score under residential use would be 0, but the score under office use would be 5.
In order for a use to be selected as a possible alternative, it should have a total score of at least 70. (Maximum rating total is 100 for each use category.) If none of the use categories scores at least a 70, perhaps development should be delayed or a non-conventional use should be explored.
## Exhibit B  Use Compatibility Analysis

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Site Analysis</th>
<th>Residential Requirements Score</th>
<th>Apartment Use Requirements Score</th>
<th>Retail Use Requirements Score</th>
<th>Office Use Requirements Score</th>
<th>Industrial Use Requirements Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoning</td>
<td>Residential</td>
<td>5</td>
<td>Multifamily 15</td>
<td>Retail 5</td>
<td>Office 10</td>
<td>Industrial 20</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Good 5</td>
<td>Good 5</td>
<td>Excellent 5</td>
<td>Good 5</td>
<td>Good 5</td>
<td>Good 5</td>
</tr>
<tr>
<td>Topography</td>
<td>20% max 5</td>
<td>35% max 5</td>
<td>10% max 5</td>
<td>10% max 5</td>
<td>5% max 5</td>
<td>5% max 5</td>
</tr>
<tr>
<td>Traffic Volume</td>
<td></td>
<td>15,000CPD 10</td>
<td>15,000CPD 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 1 mi radius</td>
<td></td>
<td>6,000 35</td>
<td>6,000 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 2 mi radius</td>
<td></td>
<td>12,000 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 3 mi radius</td>
<td></td>
<td>20,000 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acreage</td>
<td>1 - 40 AC 5</td>
<td>10-40 AC 5</td>
<td>1-80 AC 5</td>
<td>1-10AC 5</td>
<td>5-100AC 5</td>
<td></td>
</tr>
<tr>
<td>Road Frontage</td>
<td></td>
<td>YES 10</td>
<td>YES 10</td>
<td>YES 10</td>
<td>YES 10</td>
<td></td>
</tr>
<tr>
<td>Corner Site</td>
<td></td>
<td>YES 5</td>
<td>YES 5</td>
<td>YES 5</td>
<td>YES 5</td>
<td></td>
</tr>
<tr>
<td>Utilities Present</td>
<td>YES 5</td>
<td>YES 10</td>
<td>YES 5</td>
<td>YES 5</td>
<td>YES 5</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td></td>
<td>5% Vacancy 5</td>
<td>WEAK 5</td>
<td>5% Vacancy 10</td>
<td>Govt aid 20</td>
<td></td>
</tr>
<tr>
<td>Neighbor Compatibility</td>
<td></td>
<td>YES 10</td>
<td>YES 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance To:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>2 1/2 mi. 10</td>
<td>2 1/2mi. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience Store</td>
<td>3/4 mi. 10</td>
<td>3/4 mi. 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grocery Store</td>
<td>2 mi. 10</td>
<td>1 mi. 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department Store</td>
<td>4 mi. 5</td>
<td>4 mi. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downtown/Employment</td>
<td>30 min. 10</td>
<td>20 min. 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airport</td>
<td>15 min. 5</td>
<td>40 min. 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurant</td>
<td>1/2 mi. 10</td>
<td>10 min. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate</td>
<td>1 mi. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Station</td>
<td>2 miles 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rail Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Score**

- Residential: [Total]
- Apartment: [Total]
- Retail: [Total]
- Office: [Total]
- Industrial: [Total]

**Notes:**

- Scoring methodology varies by parameter.
- Scores are subject to change based on site-specific conditions.
- Additional factors may include environmental considerations and market trends.

**Access:**

- Good 5
- Excellent 10
- WEAK 5
- 5% Vacancy 10
- Govt aid 20

**Distance:**

- 2 miles 5
- 20 min. 10
- 15 min. 5
- 40 min. 10
- 1 mi. 5
- On Site 5
MARKET ANALYSIS

The third phase in the process is market analysis which involves reducing market data to factors that are relevant to a specific site and the specific possible land uses that fit the site. (Grissom, 1994). The market analysis should follow a thorough site analysis which sets out the physical limitations of the site. The knowledge in the site analysis is then filtered through the use compatibility analysis to produce the best possible alternatives. After the best alternatives are selected, a market study can be targeted toward these specific uses. The information gathered can be tailored to the compatible uses.

A professional marketing consultant should be hired to perform the market study unless the developer has expertise in this field. A thorough discussion of a marketing analysis is beyond the scope of this report.

An outline of information to be gathered for each use is as follows: (Freedman, p.355).

A. Housing Marketing Analysis Outline

1. Get a total number for building permits for the last five years.

2. Determine the population growth during the last five years.

3. Obtain population growth projection for the next five years.
4. Derive the median value of the houses in the area from housing census. Note the contract rent, occupancy, year built, and condition.

5. Complete a competition analysis:
   a. Types of housing being developed
   b. Price ranges of competition
   c. Economic characteristics of buyers
   d. Areas of new growth

6. Compare the surrounding neighborhoods with the general housing in the city.

7. Create a product positioning map using price range as the horizontal axis and lot size as the vertical axis. Plot competition (both existing and future) on the map. Look for possible market gaps.

8. From market gaps, select appropriate lot size, house style, and price ranges.

9. Estimate buyer income level from mortgage data.


11. Compare annual sales forecast including a buyer profile and amenities expected.

B. Apartment Market Analysis Outline

1. Obtain rent levels for apartments by size and quality.

2. Record occupancy levels for apartments by size and quality.
3. Observe recent trends in apartment construction. Note type of building and size of unit.

4. Create a product positioning map using rental cost as the horizontal axis and number of bedrooms as the vertical axis. Plot competition (both existing and future). Look for market gaps.

5. Select an appropriate rental range and apartment size.

6. Estimate the number of renters using income levels.

7. Estimate annual absorption rate using an estimated capture rate.

8. Compile rentals expected.

C. Retail and Service Market Analysis Outline

1. Using a new aerial photograph, outline a tentative trading area, usually 1, 2, and 3 mile concentric circles. (McKeever, p. 290).

2. Inventory possible competition in the trading area denoting it with colored dots. Physically count the number of households within the trading area.

3. Consult census data and tabulate the number of persons per household and income per capita.

4. Contact key tenants.

(For a more detailed market discussion of Market Analysis, see McKeever, pp. 287 - 297.)

D. Office Market Analysis Outline

"The best market analysis for an office building is a signed lease." (Dave Whittaker, 1985).
1. Survey existing office buildings. Find inventory of available space and rent levels.

2. Classify existing office space by type and quality.
   - **Class A** - high visibility, high quality building materials, landscaping, good architectural style. Less than ten years old.
   - **Class B** - visible, but off main road. Good quality materials, usually residential architectural styling. Less than ten years old.
   - **Class C** - frame structure. Low visibility, one story, boxy, amateurish detailing, low exterior maintenance.

3. Create a product positioning map with the rent per square foot on the horizontal axis and the class of office on the vertical axis for favorable office space. Look for possible market gaps.

4. From market gaps select target market based upon rent per square foot and class of office needed.

5. Project future demand based upon:
   a. estimate of future employment growth
   b. space required due to obsolescence of old space

6. Segment market to determine percentage of market that falls into the selected target market.

7. Estimate capture rate.

8. Estimate the number of square feet of office space that can be consumed at the site.

**NOTE:** Don't neglect offices required for services in residential areas. For example, banks, insurance companies, real estate agents, doctors, and dentists require space in
outlying areas close to customer base. These services and professionals become a hybrid market between the retail and the office space market.

E. Industrial Market Analysis Outline

1. Gather historic employment data and employment projections.

2. List major industries in the SMSA, and from this compile a list of the types of industries suitable for the community.

3. On a map of the area, denote the amount of land available and the location of the industrial land. Don't neglect zoned land/planned industrial districts, and even unzoned land that may be suitable for development because of rail access and flat topography.

4. Gather land sales price information for other sites.

5. Create a product positioning map using the acreages available for sale (lot sizes) and sales price to see if any market gaps exist.

6. Select target market, i.e. large industry paying $30,000 per acre or small plant needing only two acres but willing to pay $50,000 per acre.

7. Estimate annual absorption for the target market selected showing general lot sizes and price per acre.

8. Make a list of types of potential tenants.

NOTE: Don't overlook the competition of local governments that can offer special tax incentives for businesses to locate in their industrial parks.
F. Hotel - Motel Market Analysis Outline

1. Make an inventory of accommodations in the area. Record rental rates.

2. Ascertain the general occupancy levels.

3. List generators of business travel in the vicinity:
   a. industrial plants
   b. government facilities
   c. general office complexes
   d. don't neglect pleasure travelers, if appropriate

4. Create a product positioning map with rental charges on the horizontal axis and types of accommodations on the vertical axis. Determine market gaps.

5. Select target market. Denote type of accommodation and rental range.

6. Estimate number of additional rooms of this type needed by the area.

7. Estimate capture rate.

8. Estimate number of rooms required at the site.

After a thorough market analysis is completed, it is suggested that a review session be held to fine tune the marketing information. The review session should include the following:

land developer
land planner
leasing or sales agent
major lender
The product of this meeting should be a detailed program for the site. For example, if the use were to be for apartments, then the program would include:

- the number of stories
- townhouses or flats
- number of bedrooms or mix of units
- parking
- phasing, etc.

The information could then be used to perform a financial analysis for the project.
FINANCIAL ANALYSIS

The goal of financial analysis is to determine the feasibility of the project. The developer should determine via a marketing study the supply of space required and the price the market will bear for the space provided. Then he should work backwards to determine the capital budget and the amount that can be paid for the land. This is known as the back door approach or debt cover ratio approach. Many projects have failed because project design specifications have determined the cost to the consumer rather than designing a project to meet consumers' needs. (Grasskamp, 1981).

A simple example of the back door approach is shown on Exhibit C.
EXHIBIT C

EXAMPLE: DEBT COVER RATIO APPROACH FOR INCOME PROPERTIES

ASSUME:

1. Market study indicates: A gross leasable area of 27,000
   Market rental rate $9.25/S.F. GLA
   (Total building = 27,200 Gla X 1.17 = 32,000 S.F.)
2. 5% Vacancy rate
3. Operating expenses = $2.50/S.F. or $80,000
4. Real estate taxes = $1.00/S.F. or $32,000
5. Replacements fund = $1,000/year
6. Debt coverage rate required by lender 1.2
7. Loan at 11 1/2% for 20 yrs. (Debt service constant .127968)
8. 6% Cash dividend to equity partners
9. Typical building cost $27.80/S.F.

---

Cash Disbursements

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross rent potential (27,200 Gla @ $9.25)</td>
<td>$251,600</td>
</tr>
<tr>
<td>Less: Vacancy loss (5% X $251,600)</td>
<td>12,600</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>80,000</td>
</tr>
<tr>
<td>Real estate taxes</td>
<td>32,000</td>
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<tr>
<td>Replacements</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>125,600</strong></td>
</tr>
</tbody>
</table>

Cash available for debt payment = $126,000

Less: Maximum debt payment ÷ cash available debt cover ratio = 105,000

($126,000/ 1.2)

Cash available for equity investors = 21,000

Capital Budget

Justified Mortgage Loan = Debt payment / Constant = 820,000

($105,000/ .127968)

Justified Equity investment = Cash Available / Dividend rate = 350,000

($21,000/ .06)

Total Capital Budget = $1,170,500

Less: Building costs = 889,600
(32,000 X $27.80/S.F.)

Available for land = $280,900
SUMMARY

Preliminary site analysis is a blend of properly managing a team of professionals and developing reliable detailed estimates of marketing and financial data. Success depends upon the developer or his agents' ability to master the art of managing and forecasting.

Planning and forecasting should follow an orderly sequence. Site analysis should always come first because the physical characteristics of the site are the most constraining. Once a hypothetical land use has been postulated, then marketing analysis should confirm the decision. If not, then a new hypothesis should be formed and that particular market should be analyzed. Financial analysis should then be used to be sure that the land use meets the investor's and the lender's objectives.

Selecting the team members is another key to the project's success. A professional that can bring creative solutions to problems, who can finish his work in the time required, and who can remain sensitive to budget constraints must be sought out by the developer. The team members must be compatible. There must also be respect for the talents of the other
professionals and for the objectives of the developer.

The developer or his agent is the key stone that holds the process together. The following case study will illustrate the process and the analysis procedures by exploring an actual site.
Doctor Pidgeon, a prominent surgeon, hired Robert Sabre of Sabre Real Estate Consultants to aid him in deciding what to do with a piece of land that had been left to him in his great uncle's will. Pidgeon had been offered $60,000 for the ten acre tract, but he wanted to know if the property would be worth more if he developed it himself. Sabre was to decide what the land use should be, what improvements should be made, and finally, what the residual land value would be.

Sabre proceeded with preliminary land use planning after obtaining the following brief description of the site from Pidgeon.

The property is a rectangular site of about ten acres that lie at the northeast corner of the intersection of Adkins Road and Stroud Road. It has approximately 600 linear feet of frontage on Adkins Road and is 800 feet deep. The land immediately surrounding the site is undeveloped. Stroud Road is a dirt road which serves as access for ten lower class families that reside behind
Adkins Road is a fairly well-traveled secondary road that serves as a collector for several medium-sized middle class subdivisions.

The land had been zoned by Pidgeon's great uncle to a general business zoning classification. A one acre parcel on the southeast corner of the site had been sold to a convenience food store which has been operating there for two years.

On January 2, 1986, Sabre hired J.K. Timid Engineering Company to do a topographical survey of the site and to reset any boundary corners that were missing. He also requested a tree location for six very large oak trees that surround an old home site. Sabre also requested that the engineer planimeter the site to get the exact acreage.

Sabre then visited the county planning office where he met with Bill Poole, the Assistant County Planner. Poole showed Sabre the county zoning maps for the site (Figure 1). The site was surrounded by agriculturally zoned land, but across Adkins Road the land had all been zoned R-1 residential.

Sabre asked Poole if the property could be up-zoned and if there were any restrictions on the property. Poole
stated that up-zoning would be very difficult because of the surrounding residential neighborhoods. The building setbacks were 30 feet front and rear. The parking setback was 15 feet from the two roads. Screening would be required for any trash yards because of the residential neighborhoods around the site. Poole guessed that the surrounding land now zoned agricultural would be rezoned residential within three years.

Next, Sabre visited Jim Banks in the county transportation department. Jim looked up the state highway department traffic counts that had been made in December, 1984. Southbound on Adkins Road, there were 1921 cars per day, and there were 1655 cars northbound. Banks also stated that there were no immediate plans to improve either Adkins Road or Stroud Road.

Mike Brown, the Assistant County Engineer in the utilities department, told Sabre a 16" water line and a 24" sewer line were located along the front of the property in Adkins Road.

To obtain demographic information, Sabre went to the county library. On a census map he drew two concentric circles - one with a 2 mile radius from the site and one with a 3 mile radius from the site. He then
recorded the identification number of the census tracts within each circle. Next, he made copies of the census information for each tract from the 1980 Census of Population and Housing, U.S. Department of Commerce, Bureau of the Census. He also purchased a booklet from the county titled "The Residential Development Report 1984." The booklet gave information that updated the 1980 Census. It listed the units in place and lots available by subdivision. It also stated the census tract in which the subdivisions were located.

Sabre wanted a very close approximation of the population within a one mile radius; therefore, he hired Steve McDorman to make an aerial photograph of the area around the site.

By mid-January, Sabre had received his topographic survey (Figure 2) and his aerial photograph. His next step was to tour the site so that he could correlate what he saw on the ground to the photograph and the survey. After the site tour, he was ready to prepare his location analysis (Figure 4).

The majority of the information was readily available to him, but he had to calculate his population projections. First, he drew a 1 mile radius
THIS PROPERTY IS NOT WITHIN A HUD DEFINED FLOOD HAZARD AREA.
<table>
<thead>
<tr>
<th>Subdivision</th>
<th>% in 3 mi</th>
<th>Lots Recorded</th>
<th>Est. No. of Units Jan 1986</th>
<th>No of Units in 2 mi: 1986</th>
<th>% in 2 mi</th>
<th>No of Units in 2 mi: 1986</th>
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<td>210</td>
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<tr>
<td>24th St</td>
<td>100%</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100%</td>
<td>100</td>
</tr>
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<td>151</td>
<td>151</td>
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<tr>
<td>24th St</td>
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<td>24th St</td>
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<td>524</td>
<td>470</td>
<td>470</td>
<td>50%</td>
<td>235</td>
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</tbody>
</table>

Total: 5900
Total: 2997

*Within 1 mile radius*
EXHIBIT A

PIDGEON PROPERTY

SITE ANALYSIS FORM

1. Vacant or improved - VACANT EXCEPT FOR 1 ACRE OUT PARCEL ON NORTHEAST CORNER

2. Vegetation - SMALL CORKS & PINE

3. Rock outcroppings - NONE

4. Drainage Problems - FAIRLY LOW AREA DOWN MIDDLE OF SITE

5. Noise - QUIET ON SECONDARY STREET RESIDENTIAL NEIGHBORHOOD

6. Quality of Surrounding Neighborhoods - < 10 YRS OLD, MIDDLE CLASS

7. Topography: 2½" drop per 100'
   Ft. above road ___ ft. below road ___
   Side to side slope ________ Front to Back ________

8. Size: Ft. Road frontage 600' DEP Prov of site 800'

9. Easements: NONE

    Probability of up zoning: 10 %

11. Accessibility: GOOD

12. Soils: Rock present: SIENNE 6' DOWN Soil bearing 3000 Lb/sf
    Percolation: SEWER, PRESENT

13. Traffic: Cars per day main road: 3800
    Cars per day side road: 10

14. Utilities: Water 16" WATER LINE
    Sewer 24" SEWER LINE
    Gas: NOT AVAILABLE
    Power: ON SITE
    Railroad: NOT AVAILABLE

15. Off site improvements required: NONE
EXHIBIT A (continued)

16. Population:

\[
\begin{align*}
\text{Houses w/i 1 mile radius} & \times 3.21 \text{ persons/house} = 403; \\
\text{Houses w/i 2 mile radius} & \times 3.21 \text{ " } = 962; \\
\text{Houses w/i 3 mile radius} & \times 3.21 \text{ " } = 189;
\end{align*}
\]

17. Mean average income within 1 mile radius \#27,577 (1980)

18. Distance from site to:

<table>
<thead>
<tr>
<th>Location</th>
<th>Miles</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary school</td>
<td>1/2</td>
<td>3</td>
</tr>
<tr>
<td>Middle School</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>High School</td>
<td>2 1/2</td>
<td>10</td>
</tr>
<tr>
<td>Grocery Store</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Convenience Store</td>
<td>0</td>
<td>-</td>
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<tr>
<td>Department Store</td>
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<td>8</td>
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<tr>
<td>Downtown Bus. Dist.</td>
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<td>30</td>
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<tr>
<td>Airport</td>
<td>20</td>
<td>45</td>
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<tr>
<td>Restaurant</td>
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<td>8</td>
</tr>
<tr>
<td>Interstate</td>
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<td>15</td>
</tr>
<tr>
<td>Fire Station</td>
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<td>8</td>
</tr>
<tr>
<td>Golf Course</td>
<td>1</td>
<td>5</td>
</tr>
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</table>

19. Adjacent Uses: Present Proposed

RESIDENTIAL

Agricultural

RESIDENTIAL

20. Real Estate Tax \#0.98/\#100 of Appraised Value

Assessments Run About 95% of Appraised Value
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Site Analysis</th>
<th>Residential Use Requirements</th>
<th>Score</th>
<th>Apartment Use Requirements</th>
<th>Score</th>
<th>Retail Use Requirements</th>
<th>Score</th>
<th>Office Use Requirements</th>
<th>Score</th>
<th>Industrial Use Requirements</th>
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<tbody>
<tr>
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<td>15</td>
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<td>5</td>
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<td>Good</td>
<td>5</td>
<td>Excellent</td>
<td>5</td>
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<td>5</td>
<td>35% max</td>
<td>5</td>
<td>10% max</td>
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<td>Traffic Volume</td>
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<td>Residential</td>
<td>15,000</td>
<td>Office</td>
<td>6,000</td>
<td>12,000</td>
<td>20,000</td>
<td>5% Vacancy</td>
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<td>Population 1 mi radius</td>
<td>4,000</td>
<td>Residential</td>
<td>6,000</td>
<td>Office</td>
<td>6,000</td>
<td>12,000</td>
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<td>5% Vacancy</td>
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<td>Office</td>
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<td>10/10</td>
<td>2.1/2 mi</td>
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<td>10/10</td>
<td>3/4 mi</td>
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<td>Grocery Store</td>
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<td>10/10</td>
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<td>Rail Line</td>
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</tbody>
</table>

**Figure 5**

Exhibit B: Use Compatibility Analysis
on his aerial photograph and physically counted the dwellings he found there. He then used his census information to calculate the population within a 2 and 3 mile radius of the site (Figure 3). After completing his location analysis, he entered the information on a use compatibility analysis form (Figure 5). The scores for each of the major use categories were:

- Residential Use 90
- Apartment Use 65
- Retail Use 67
- Office Use 66
- Industrial Use 45

This information left Richard in a dilemma. The site would be fine for residential use, but his per acreage yield would be much lower than that for retail or office use. The site was already zoned B-1 which provided for retail or professional offices (See Figure 6 "Chesterfield County Zoning Ordinance," pp. 31 - 33); however, both of these uses had marginal use compatibility scores. Even though the site has a good population within a 1 mile radius, Adkins Road traffic volume is very low, and the site is not visible from the more highly traveled Reams Road. In order for retail or office land use to be successful on the site, the use would have to be one that provided a convenient service.
Section 15-4 Uses allowed by Special Exception subject to the provisions of Section 27-5.

(a) Same as specified for R-40 District.

(b) Individual mobile homes for a period not to exceed two years. At the expiration of the two year period a new application may be made for a new Special Exception. The Board of Zoning Appeals may take action on such application without prior notice being published in a newspaper on the date the Board will act on such application and no notice to adjoining landowners shall be required unless directed by the Board of Zoning Appeals.

(c) Billboard signs subject to Section 24.2-5.

Section 15-5 Required conditions:

(1) Percentage of lot coverage. Same as specified for R-15 District.

(2) Front yard. Same as specified for R-15 District.

(3) Side yard. Same as specified for R-15 District.

(4) Corner side yard. Same as specified for R-15 District.

(5) Rear yard. Same as specified for R-15 District.

ARTICLE 16 (RESERVED)

ARTICLE 17 B-1 CONVENIENCE BUSINESS DISTRICT

Section 17-1 Uses permitted.

Within any B-1 District, no building structure, or premises shall be used or arranged or designed to be used in any part except for one or more of the following uses:

(1) Any permitted use as regulated in the R-40 District except dwellings; provided, however, that any dwellings legally existing in this District at the time of adoption of the Ordinance of any amendment hereto shall not be subject to the restrictions or non-conforming uses contained herein. (1/23/74)

(2) Antique shop

(3) Appliance store

(4) Art school, gallery or museum

(5) Artist material and supply store

(6) Bakery goods

(7) Bank

(8) Barber shop

(9) Beauty shop

(10) Bicycle sales and rental

(11) Book or stationery store
(12) Brokerage
(13) Camera store
(14) Candy store
(15) Catering establishment
(16) Cleaning, pressing and laundry
(17) Clothes store
(18) Curio or gift shop
(19) Drug store
(20) Dry goods store
(21) Dairy products store
(22) Delicatessen
(23) Dress shop
(24) Florist shop, greenhouse, nursery
(25) Frozen food locker and sales
(26) Furniture store
(27) Governmental offices
(28) Grocery store
(29) Hardware store
(30) Hobby store
(31) Hospitals, rest, nursing, convalescent homes
(32) Jewelry store
(33) Laundromats and coin operated dry cleaning
(34) Libraries
(35) Locksmith
(36) Meat market
(37) Medical facility or clinic
(38) Messenger or telegraph service
(39) Museums
(40) Musical instrument sales
(41) Newspaper or magazine sales
(42) Nursery schools, child or day care centers and kindergartens
(43) Offices, business and professional
(44) Office supply store
(45) Optometrists sales and services
(46) Paint and wallpaper sales
(47) Pet shops
(48) Post office
(49) Photography studio
(50) Pharmacy
(51) Radio and television broadcasting studios and offices exclusive of towers
(52) Radio, television and other home entertainment sales and service
(53) Restaurants, not including drive-in establishments
(54) Savings and loan associations
(55) Self-service laundry establishments
(56) Sewing machine sales, instruction, and service
(57) Specialty shops
(58) Sporting goods sales
(59) Shoe repair shop
(60) Tailoring and dressmaking shops
(61) Taxidermy
(62) Telephone booth
Telephone exchanges
Toy store
Variety store
One mobile home for an owner or operator of a business being conducted on the premises subject to a mobile home permit from the Board of Supervisors (6/13/73).
Travel arranging and transportation ticket services (1/23/74)

Section 17-2 Accessory uses allowed.

(1) Accessory uses allowed and as regulated in the R-40 District, unless previously allowed in Section 17-1. (1/23/74)

(2) Other accessory uses, not otherwise prohibited, customarily accessory and incidental to any permitted use.

(3) Signs as regulated in Section 24.2.

(4) One dwelling unit for an owner or operator of the business being conducted on the premises.

Section 17-3 Uses allowed by Conditional Use subject to the provisions of Section 28-2.

(1) Any conditional use as allowed in the R-40 District, unless previously allowed in Section 17-1. (1/23/74)

(2) Jails, prisons, road camps.

(3) Commercial automobile parking (1/23/74)

Section 17-4 Uses allowed by Special Exceptions subject to the provisions of 27-5.

(1) Any special exception allowed in the R-40 District, unless previously allowed in Section 17-1. (1/23/74)

Section 17-5 Required conditions.

(1) In any "B-1" Business District the parking, driveway, and loading facilities shall be at least fifteen feet from any established street right-of-way lines, and the buildings and structures at least thirty (30) feet from such lines, except on rights-of-way of eighty (80) feet or greater the buildings and structures need be set back only twenty-five (25) feet. (See Section 24-7)

(2) Individual stores and shops shall not exceed 12,000 square feet of gross floor area.

(3) Goods may be produced for retail sale on the premises provided not more than five persons are engaged in such production.

(4) All uses, including storage, shall be conducted entirely within an enclosed building, except for parking, loading or unloading facilities.
for the area and one that could still attract customers
even though the site lacked high visibility. Of the
uses allowed by the county, Sabre decided to further
investigate the following:

- antique shop
- barber shop
- catering establishment
- dry cleaning service
- nursing home
- coin operated dry cleaning
- day care center
- television repair shop
- medical clinic
- kennel
- professional offices

The uses could be categorized as stand alone uses
and uses that would work well in a small convenience
shopping center. The stand alone uses were the nursing
home, the medical clinic, the kennel, the day care
center, and the professional offices.

On January 20, Sabre met with Gary Flowers, a local
landscape architect. He gave Gary all the topographic
maps and told him to prepare 6 site studies.

**Study No. 1 - Residential Use:** Plan as many 70' wide
lots on the site as possible.

**Study No. 2 - Convenience Shopping:** Plan for a small
convenience center of about 6000 square feet placed along Adkins Road in the form of a strip. Show a kennel operation on the rear of the property.

**Study No. 3 - Elderly Care:** Plan a small elderly care facility of 24,000 square feet in a campus style; all one level with a 3000 square feet medical clinic that could serve the elderly as well as the surrounding community.

**Study No. 4 - Day Care Facility:** Plan a day care facility with a 4 acre playground at the front of this site and a kennel operation at the back of the site with a good buffer between the two operations.

**Study No. 5 - Mixed Uses:** A mixed use site plan using Flowers' creativity for placement and mix of facilities.

Sabre's next step was to gather additional information for the day care center, the elderly care facility, and the kennel. He contacted Sandra Day with Children's Playschool, Karl Nine with Pet Resorts, Inc., and Diane Delong with Retirement World.

Sandra Day was not encouraging. She stated that it takes a highly visible site with good access for a day care facility. Government regulations keep the fees fairly high, and she didn't believe that the market surrounding the Adkins Road site would support a day care facility.

Karl Nine was also discouraging. Kennel operations are either Mom and Pop operations out in the country, or
they are very professionally run operations appealing to the upper class. The Adkins Road site was in a lower middle class neighborhood and was difficult to get to from the more affluent neighborhoods.

Diane Delong had a positive response to the idea of a retirement center. The Retirement World operation was very expensive, and she got a lot of calls from older people who could not afford a first class retirement facility. The quiet location and the residential setting were also positive factors. Diane had a good marketing study prepared for the local area that she would be glad to share with Richard.

Sabre decided to prepare a market analysis for the retirement home use. The approach he used was similar to the approach used for the apartment market analysis. From the study loaned to him by Ms. Delong, he was able to see the sales prices and rent levels for the other retirement homes in the area. Information on occupancy levels and trends in building types and unit sizes were included. There was also a competition survey which listed all units contemplated for the next 12 months. Richard used the information to create a product positioning map (Figure 7). On the horizontal axis he plotted the monthly cost, and on the vertical axis he plotted
FIGURE 7  MARKET POSITION OF RETIREMENT HOMES IN THE RICHMOND AREA
Richard confirmed his hypothesis. A market gap existed in the area for a retirement facility with lower cost smaller units built on one level. He also saw that most of the present retirement centers were located in high noise areas close to busy streets. The Adkins Road site was very residential and quiet. He was ready for a presentation to the development team.

He called a meeting for February 10 among Gary Flowers, landscape architect; Dr. Pidgeon, owner of the property; Bob Booker, a local banker; Ralph B. Spender, a real estate broker; and himself. The group agreed with Sabre that there was an opportunity for a retirement center in a more rural setting, but they cautioned that a full feasibility study would need to be done to see if the project was financially sound.

Over the next two weeks, Sabre prepared a detailed feasibility study. (Figures 8 and 9). The study showed that the residual land cost would be $100,000. This was higher than the $60,000 Pidgeon had been offered for the raw land so Sabre called Flowers and told him to proceed with more detailed site plan development drawings.
FIGURE 8  A FINANCIAL FEASIBILITY ANALYSIS FOR:

PIDGEON HILL RETIREMENT HOMES

I. ASSUMPTIONS

1. Building Form: Apartments - 32 one story units built in fourplexes. Units to be 800 SF, 2 bedrooms, 1½ bath, kitchen, great room. Rent to be $600 per month per unit.

Medical Facility - 3000 Sf GLA, 1 level. Rent to be $9.25/SF.

2. Parking: Paved parking, 2 per unit and 10 spaces for medical facility. Total 74.

3. Vacancy Rate: 5%.

4. Operating Expenses: $3.00/SF/Year or $85,000.

5. Real Estate Taxes: $32,000/Year.

6. Replacement Fund: $2,000/Year.

7. Financing: 70% loan to value. 11½% for 20 years. Debt service constant = .127968. Debt cover rate 1.2.

8. Equity Financing: 6% cash on cash return each year.

9. Building Cost: (See Figure 9).
II. ANNUAL CASH FLOW PROFORMA

Rent Revenues:

- Apartment Units (32 X $600 X 12) 230,400
- Medical Facility 3000 SF X 9.25 27,750

Subtotal 258,150

Less: Vacancy Loss (5%) (12,907)

Total Rent Revenues $245,242

Expenses:

- Operating Expenses 85,800
- Real Estate Taxes 32,000
- Replacement Fund 2,000

Total Expenses 119,800

Cash Available for Debt Payment 125,442

Maximum Mortgage Payment ($125,442 / 1.2) 104,535

Cash Available for Equity Investors $20,907
III. CAPITAL BUDGET DERIVATION

Maximum Mortgage Loan

Maximum Mortgage Payment $104,535

\[ \frac{\text{Debt Service Constant}}{\text{Justified Mortgage Amount}} = 0.12798 \]

Justified Mortgage Amount $816,807

Maximum Equity Investment

Cash Available for Equity Investors 20,907

\[ \frac{\text{Dividend Rate (6%)}}{\text{Justified Equity Investment}} = 0.06 \]

Justified Equity Investment 348,450

Total Capital Budget $1,165,257

NOTE: This represents a mortgage with a 70% loan to value.
## IV. RESIDUAL LAND VALUE COMPUTATION

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<td><strong>Less: Development Costs</strong></td>
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**TOTAL DEVELOPMENT COST**  
$1,065,200

**AVAILABLE FOR LAND**  
$100,057
FIGURE 9.
BUILDING COST ESTIMATE

BUDGET ESTIMATE FOR: Pidgeon Hill Retirement Homes

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<td>PLAN NO. 1</td>
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<td>SALES COMMISSION --</td>
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Sabre had earned his fee. He had completed a location analysis which laid out the limitations of the site. He had gone through a use compatibility analysis to see what major land uses were appropriate. He had used a professionally prepared market analysis to confirm his hypothesis, and then he had completed a feasibility study to obtain the residual land value. He had coordinated the other members of the team and managed the process to properly complete the preliminary land use planning phase of the project. Ground will be broken in April.
BIBLIOGRAPHY


