

# MIXED-USE PROJECT DEVELOPMENT PROCESS: FEATURES, PITFALLS AND COMPARISONS WITH SINGLE-USE PROJECTS

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**ABSTRACT :** In many urban cities, mixed-use development is becoming increasingly essential for the creation of an attractive and sustainable environment that promotes economic vitality, social equity and environmental quality. Due to the differences in scale, scope and intent, certain aspects within the project delivery process of mixed-use are not the same as “conventional” single-use projects. The objective of this paper is to highlight these aspects. Two cases in Southeast Asia serve to illustrate the uniqueness and challenges of mixed-use. In conclusion, the differences between mixed-use and single-use are evident in terms of the diversity of team members, the necessity of multiple market analyses, and a multi-layer (versus single-source) financing structure. Finally, issues concerning ownership tangles, land assembly, planning and application procedures, investment criteria of institutions have been identified as major pitfalls.

*Keywords : Feasibility study; Financing; Mixed-use development; Planning*

## 1. INTRODUCTION

In today’s urban and suburban development, mixed-use development schemes are often promoted as essential towards the creation and preservation of an attractive and sustainable living environment. Designers and developers attribute the motivation behind such development schemes to the public’s desire for a community [1]. In urban areas, the infill tends to be vertical, with retail, office, and residential stacked to maximize density. In suburban areas, broader and horizontal developments in the form of town centers and traditional neighborhood developments are flourishing. The propensity towards adopting either a vertical or a horizon scheme also differs geographically.

According to Bell [2], mixed-use development is gaining importance due to three primary reasons:

- More public policies are pointing developers in that direction: developers can gain an economic edge at the city level by taking advantage of existing infrastructures and increasing densities.
- There is a market demand for it: there are more and more indications that people feel a sense of vibrancy and community when they live in a mixed-use development.
- People living in mixed-use developments have a definite transportation advantage: it saves on time if one works near where he/she lives and has nearby access to amenities facilities.

When contemporary planners and designers speak of mixed-use, they often do not advocate a jumble of uses. The proponents of contemporary mixed-use promote either a planned community, or suggest what the Urban Land

Institute calls “multiuse projects” (several uses within one or more buildings) in inner core areas. Put simply, the name of the game has to be synergy – all uses must function smoothly on an independent basis and in conjunction with each other.

Mixed-use development cannot be created or conserved without special efforts from the participants involved in the project development. Currently, those parties involved in this type of projects – developers, investors, designers, constructors and tenants, commonly find mixed-use development more problematic and riskier than conventional single-use projects. This perception is largely reasonable. A proper understanding of the role, practice and concern of individual parties is essential towards successful realization of initially expected benefits. For engineering and construction professionals, the increasing demand for integrated efforts among project team members and frequent emphasis on life cycle planning both add to the necessity to understand the differences between mixed-use and single-use developments.

Rightfully, a complete discussion on this topic should be structured along five phases: project initiation; feasibility studies and financing; planning and design; construction; marketing and operational management. Due to limitation of space, only the first three phases are addressed in more detail. Theoretical aspects are associated or compared with the actual happenings in two selected cases – the Kuala Lumpur City Centre in Malaysia and the Suntec City in Singapore. Practical information of the two cases was collected through interviews with personnel who were once involved in these projects, in conjunction with secondary data obtained from Internet websites and news articles.

## 2. BACKGROUND OF CASE STUDIES

### 2.1 Kuala Lumpur City Centre (KLCC), Malaysia

KLCC is a master-planned, mixed-use development occupying 40.5 hectares of prime land in the middle of Malaysia's capital city. The major landmark of the project – the PETRONAS Twin Towers, serves as the primary anchor of the development. The success of KLCC was seen from the outset to be of national interest. The owner and developer – KLCC Holdings Berhad (whose largest shareholder is PETRONAS, the national petroleum company), was responsible for the development and is currently still coordinating new projects undertaken directly or in joint venture with others. The total area of KLCC will eventually be some 1.67 million m<sup>2</sup>. The development projects completed as of mid-2005 include the PETRONAS Twin Towers, the Kuala Lumpur Convention Centre, Suria KLCC (a shopping centre), two office towers, a 643-room five-star hotel, a district cooling centre and a 20-hectare public park providing an ideal recreational venue.

The total cost of developing the twin towers and its associated infrastructure alone was Ringgit Malaysia (RM) 2.8 billion. This excludes the cost of Suria KLCC and the other buildings involved. The financing methods used were primarily traditional ones. Initial site clearance and the start of infrastructure development were funded by shareholders' equity. Project finance and working capital were drawn from financial institutions in the form of loans. The twin towers were refinanced after completion. The new facility consisted of a mix of mortgage-backed end-finance along with short, medium, and long-term bonds secured against PETRONAS's long-term lease commitment.

KLCC is managed by a wholly owned subsidiary of the developer. Property management is divided into several divisions to attend to various needs and uses. Numerous third-party contractors provide maintenance and management services. The largest of these is the operator of the 30,000-ton chilled water plant (the District Cooling Centre), which combines natural gas-driven cogeneration equipment with various forms of steam turbine-driven chillers and electric chillers. A building control system provides central management and monitoring for air conditioning control, lighting control, electrical and chilled water status monitoring, and energy management services.

### 2.2 Suntec City, Singapore

A mixed-use project on an 11.7-hectare site, this mega development project comprises five blocks of office space, (including one 18-storey and four 45-storey office towers), the largest international exhibition and convention centre in Southeast Asia, Singapore's largest shopping and entertainment centre, a landmark fountain and other amenities. Designed to be a "city within city", Suntec City's overall objective was to integrate various development components into a logical city centre that also connects and relates to adjacent developments and to the larger Central Business District (CBD) of Singapore. The development site is connected by both internal roads and perimeter highways.

Pedestrians can reach the site from the nearby subway station, link bridges, and underpasses to adjoining developments. Inspired by traditional Eastern symbolism, the design blends elements from the ancient Chinese art of placement (otherwise known as "*feng shui*").

Suntec City was funded entirely by a consortium whose eleven shareholders are among Asia's most successful entrepreneurs. The development began with a vision to create a futuristic city to meet the challenges of an international metropolis and to serve as a premier Singapore landmark. The mixed-use complex occupies a 99-year leasehold acquired by bid from the Singapore government's Urban Redevelopment Authority for S\$208 million. Three of the office towers were being sold under strata title ownership.

Even after the project was completed in 1997, promotions are continually scheduled at the mall. It is also used as a tourism hub. A fully computerised building automation and energy management system ensures efficiency in the operation and maintenance of the building systems, which include fire protection and security systems.

### 2.3 Comments and Observations

The KLCC development is clearly impressive and proved to be a successful mixed-use development project. The effort made to achieve the end result of the initial phase of the development was massive. The project served a purpose greater than a typical mixed-use, high-rise development – perhaps with an element of national ambition to make a mark on the world map. One could argue that whatever the additional cost born by the developer – beyond what perhaps would not be spent by a "traditional" private developer – has to be chalked up to attain the greater good of the city and the country. Most of all, aside from the high standards it has established for the real estate development community in the city along with the premium values it has been able to command, KLCC has also been a boon to nearby residential and commercial properties. Put differently, even if the project itself may not generate comparable returns compared to "safer" conventional projects, it does generate some spillover benefits for adjacent properties due to its landmark characteristics. Thus, from the viewpoint of the government and the public as a whole, some of the benefits recouped are indirect and cannot be quantified on paper.

In the case of Suntec City, the key to the success proved to be teamwork. Many different entities from several countries were involved with the project, including investors, architects, general contractors, owners, tenants, managers, design and project consultants, and government agencies. In order to achieve a smooth completion of the project, extensive legal agreements were required. As proven, a unique and high-quality project increases value, and value supports price. Nowadays, Suntec City has become one of the most valuable office buildings in Singapore.

## 3. PROJECT INITIATION

Success in mixed-use development, more so than in most

other types of development, requires a capable and diverse development team. According to research conducted by the Royal Institute of Chartered Surveyors [3], it is important for the development team not just to include a right mix of development skills, but also to engage all of that experience in the project early in the design phase so that the result is a strong mix of variety, vitality and visual interests. Depending on the scope and nature of the project, an architectural firm or a planning firm forms the core of the design team, with specialists added to the group as appropriate. Specialists are important even for a single-use project, but in a mixed-use development they are more critical, because it is very difficult to find one firm capable of handling the detailed design of all the various elements of the project. Especially in projects with numerous freestanding components, it is common to have one planner/designer to develop a general concept and land use plan and other separate architects to design individual buildings. It is also necessary to include market analysts, contractors, financial analysts, financial institutions, and property managers as early as possible in the team.

In the case of the KLCC project, an international architectural competition was held and eight of the world's leading architects presented their design concepts. Cesar Pelli & Associates Architects was selected to design the project's first phase, including the PETRONAS headquarters, its adjacent tower and a shopping center that was attached to the office towers. In this project, the developer had also set up an entire local architecture practice to advance the work from a local standpoint as well as to facilitate transfer of knowledge and technology during the development process.

As for the Suntec City project, the challenge of translating the vision for Suntec City into reality was delegated to a team of international consultants, who worked closely with a group of Singapore managers. The collaboration of renowned American architects I.M. Pei & Partners and Tsao & McKown of New York on the master plan enabled the team to win the Urban Redevelopment Authority (URA) tender. Tsao & McKown, as the design architect, worked closely with the local architects – DP Architects, on working drawings and authority approvals.

These two projects show that the mix of development team members plays an important part during the initial stage of a mixed-use project development. They also demonstrate that the local architects still play a critical role even when international renowned firms are engaged. The former would assist in getting local approvals and infusing local elements and flavors into the design concept. More than just providing state-of-the-art design concepts, the latter would bring prestige and marketing value to the project.

The location of any development site fundamentally affects the nature and success of the development. Most development approaches can be divided initially into two categories: the search for a use for a site, or the search for a site for a use. Mixed-use development, however, is not as simple, and both approaches can often play a role within the same project. A development entity, for example, might be predisposed to developing a mixed-use project, identifying a

suitable site for such a development, but be uncertain about the exact mix of uses. Thus, the initial assessment must be followed by a second analysis to determine what specific uses should be included through a thorough market analysis for each contemplated use.

In the case of the KLCC project, the irregularly shaped site had been identified by the developer based on the fact that the site is bordered by a major commercial belt to the north and the west as well as a predominantly residential belt to the south and the east. Such mix of commercial and residential surroundings blends with the initiative of the project. As for the Suntec City project, the site identified by the developer is located within the Marina Centre Central Business District of Singapore. Suntec City is built on reclaimed land adjacent to two large existing mixed-use developments that include eight office towers, three shopping malls, and five hotels. The site is L-shaped, with the nearly equal legs connected at a central point. This shape encourages the creation of a continuous district and also creates an extensive boundary with its neighbors.

#### **4. FEASIBILITY STUDIES AND FINANCING**

Once a site has been identified, concerns typically begin to center on assessing multiple market potentials. The process involves the use of statistical analysis and field research to determine supply and demand within specific market areas. The market studies must also consider the market synergy resulting from a combination of complementary uses in a single development. After the market analysis is complete, the developer would decide what portion of an unfulfilled or totally new market the proposed development could actually capture. The developer can also determine where the cornerstone of the project is derived from. Next, the timing, phasing, and land allocation are considered under the development implementation program and strategies [4].

Although the PETRONAS Twin Towers often steal the limelight in terms of publicity, Suria KLCC, a highly successful shopping center, was purposely planned and constructed at the same time as the twin towers. This facility features 338 department stores, shops, restaurants, and entertainment outlets within its net leasable area. In this case, Suria KLCC had been clearly identified by the project developer as the cornerstone of the project as it helps to draw significant numbers of people to the development.

However, there are other projects that might not have clear cornerstone uses but instead a careful balance of uses. In such cases, the problem becomes more difficult because the developer must address numerous conflicting objectives. For example, there is no clear single cornerstone in the Suntec City project. As a one-stop center in a prime business location, the development provides services ranging from postal, banking, telecommunications, travel, medical, shopping, dining, and entertainment. The balance of these uses was designed as an amenity for the built-in customer base in the Suntec City's office tower, which constitute of a total working population of 30,000 people.

Because mixed-use development usually takes a long period of time for pre-development planning and construction, the possibility that the overall economic climate would change is greatly increased. In addition, mixed-use development is involved in different land use markets with its own cycles apart from the overall economy. Hence, it is wiser for the developers to minimize their risk by implementing project phasing. In the Suntec City project, ground breaking took place in 1989 and the project was launched in three phases over the period from 1994 to 1997. Similarly, the KLCC project is meant to be constructed in phases over many years. The master plan shows a total of 22 separately titled development parcels surrounding the park. At least seven parcels either have been developed or are under construction as of 2005.

Perhaps the most difficult element of implementing a successful mixed-use project is securing adequate and appropriate financing. Different uses demand different sets of development and management skills, pose unique risks, and require distinct investment parameters – all of which add layers of complexity to underwriting and investing. Moreover, most mixed-use projects, particularly those in expensive locations, require public subsidies, which have their own investment criteria. Consequently, mixed-use developers must assemble a mix of equity, conventional debt, and subsidy funding that is consistent with the mission and performance [5].

An international joint venture had been formed in Suntec City – the project was partly funded by a consortium whose 11 shareholders are among Asia's most successful entrepreneurs. Joint venturing with financial institutions is also an ideal method of arranging financing for project development. In some cases, a joint venture is created between developers specializing in different project components, for example, between a hotel operator and an office or retail developer.

At certain times during the business cycle, it may be advantageous to create a joint venture between the developer and major tenant in the mixed-use development that wants to have the building associated as part of its corporate identity. This is evident in the KLCC project as KLCC Holdings formed a joint venture partnership in which PETRONAS would become a major shareholder and an anchor tenant of the development. Another approach to joint venture involves bringing the developer together with the landowner. The developer avoids having to acquire the land, and the equity in the land assists in financing the project.

Some developers prefer to retain all of the equity in their project. Situations arise, however, in which it is better to have 50% of a completed project than 100% of one that cannot be built. The developer may sell part of his equity in several ways: a land sale-leaseback, outright sale of a portion of the project, or formation of an equity syndication or Real Estate Investment Trust (REIT). In the case of the KLCC project, each separate development within KLCC is responsible for discerning and meeting its own financing needs. To date, construction and end-finance facilities have been predominantly by way of equity finance and traditional

bank borrowings. KLCC's agreement with each respective development partner mandates a maximum 60:40 debt-to-equity ratio in which any cost overrun is paid for through advances from shareholders. As for the case of Suntec City, the total development cost of S\$2.3 billion was funded with an undisclosed shareholder equity contribution and approximately S\$1.5 billion in debt, with the balance being funded from the sale of office space (both Towers One and Two were sold out prior to construction completion). The debt had been fully paid off from sales in 1998.

## 5. PLANNING AND DESIGN

A preferred plan and design would need to react to both internal and external factors. Compared to most conventional single-use projects, mixed-use developments require considerably more complex designs, not only good architecture but also urban planning considerations. Physical outlook, image, the interrelationship of elements, and the project's relationship to the surrounding environment are crucial to the economic success of mixed-use development. In addition, the approach adopted by the development team may be influenced by other factors. These include: (1) size of the scheme; (2) location and setting; (3) architectural "fashion"; (4) the requirements and attitudes of investors, occupiers and their advisers; (5) other planning requirements and public opinion. While factors (1), (2) and (3) are generally within a developer's control in many conventional single-use projects, this may not be the case for mixed-use, especially when unique public policies are dictating the development initiatives.

Although the planning and design of the KLCC project was a success one, it was not entirely trouble-free either. The architect's brief for the twin towers involved requirements to reflect a Malaysian identity, but at that time there were no relevant projects in the country that could easily be translated into a vernacular high-rise design. It was after researching the Islamic heritage that the architect proposed the geometric pattern composed of two rotated and superimposed squares with small, rounded infills. Like the exterior design, the entrance design of the towers was also inspired by the country's cultural heritage, incorporating contemporary Malaysian motifs adapted from traditional handicrafts such as timber carvings.

Similarly, the planning and design of Suntec City were in fact governed by special intentions. Buildings and features are arranged in a configuration that was inspired by traditional Eastern symbolism and ancient Chinese art of placement. In its entirety, Suntec City resembles a left "hand" – the convention centre represents the "wrist", the 18-storey office block is the "thumb", and the four 45-storey office towers depict the "fingers". The "palm" is cradling a "ring" that is represented by a fountain. With its cascading water flowing inward, it is said to represent the retention of wealth and bring prosperity to tenants and visitors alike. All these features, which may seem trivial or superstitious to some, prove to be symbolic in the eyes of the owners.

## 6. COMPARISON BETWEEN SINGLE-USE AND MIXED-USE DEVELOPMENTS

Some of the key differences between mixed-use and single-use development processes are summarized in Table 1, which also include issues from the two other phases that are not discussed here in detail due to the limitation of space. It is evident that some of these differences could affect the functioning of the role of many parties, including design and engineering professionals. For example, while a Design-

Build contractor may position itself as the single party responsible for both design and construction in a single-use project, the contractual arrangement of a mixed-use project could be more segmented, especially when there are separate parcels within the same project. Consequently, the aforesaid contractor may need to work closely with other consultants/contractors and would have less flexibility in controlling its own scope of the work.

**Table 1.** Comparison of Main Features between Mixed-use and Single-use Projects

Phases of Development Process	Mixed-Use Development	Single-Use Development
Project Initiation	<ul style="list-style-type: none"> <li>▪ Experienced and diverse project development team</li> <li>▪ Involvement of public sector agencies crucial</li> <li>▪ Both financial and non-financial development objectives must be well defined</li> <li>▪ Analyzing multiple markets / development potential and evaluating the overall market synergy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Single experienced architect/project manager acting as project team leader</li> <li>▪ Relatively minor/routine involvement of public sector agencies</li> <li>▪ Common and obvious development objectives</li> <li>▪ Analyzing only a specific market potential; there is little concern on synergy since it is meant for single-use</li> </ul>
Feasibility Studies and Financing	<ul style="list-style-type: none"> <li>▪ Necessity to define alternative development programs and strategies</li> <li>▪ Complex feasibility analysis to define and optimize the development programs</li> <li>▪ Necessity to securing large, multi-layer financial commitment and structuring financial arrangements</li> </ul>	<ul style="list-style-type: none"> <li>▪ Independent development program and strategy</li> <li>▪ Simple pro-forma analysis and economic modeling</li> <li>▪ Single source of financing is possible and financial arrangement is straightforward between project owner and bank</li> </ul>
Planning and Design	<ul style="list-style-type: none"> <li>▪ Complex planning and design issues involving urban considerations</li> <li>▪ Creation of interrelationships among design elements and also between project and the surrounding environment</li> <li>▪ Significant involvement of specialists</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conventional architectural and structural design process</li> <li>▪ Urban considerations play a more limited role in overall project planning and design</li> <li>▪ Involvement of specialists is less profound due to simplicity of design</li> </ul>
Construction	<ul style="list-style-type: none"> <li>▪ Multiple contractors working in different parcels/phases; interfacing is critical</li> <li>▪ Interaction with more specialists/designers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Usually single contractor who has sole control of planning and coordination of site works</li> <li>▪ Fewer number of architects/design engineers</li> </ul>
Marketing and Operational Management	<ul style="list-style-type: none"> <li>▪ More varied and innovative approaches on marketing strategies for numerous uses</li> <li>▪ Long term promotion is necessary to continue building interests among general public</li> <li>▪ Centralized control management systems for multiple uses</li> <li>▪ Management agreements with various owners of the project's different components are complicated</li> </ul>	<ul style="list-style-type: none"> <li>▪ Marketing approaches targeting specific use only</li> <li>▪ More effort on promotion before project completion and relatively less thereafter</li> <li>▪ Single responsibility for property management agency</li> <li>▪ Relationship between project developer and property owner would come to an end when the project has been sold out</li> </ul>

## 7. PITFALLS OF MIXED-USE DEVELOPMENTS AND RECOMMENDATIONS TO OVERCOME

### 7.1 Ownership Tangles

Mixed-use development often involves multiple owners whose priorities regarding design, governance, and changes in use or ownership can be in conflict both during development and after the project is complete. Reactive

resolutions are time consuming, costly, and potentially fatal to the project. Although a mixed-use project could have only one project developer, it would still need to be structured for many different property owners. It is necessary to organize project and legal documentations for future changes based on each use. Extra efforts are required upfront, but this is ultimately the most cost-effective strategy.

Shared physical boundaries, as well as various common

building systems and amenities, make different components dependent on one another for completion. In the long run, it usually is better to create distinct systems, wherever possible, to avoid reliance on another owner. Nevertheless, even with distinct systems, it is desirable to have a single party that handles one-stop development and management for all phases of the development. This would reduce coordination time and multiple ownership complexities associated with having too many parties executing the master plan [6].

### 7.2 Land Assembly

To create a credible and viable mixed-use development site, land assembly can be a very formidable task. Bell [7] highlighted that site selection is the foremost problem of mixed-use development because large parcels of land must be assembled. While successful mixed-use projects require the coordination of many actors, local governments occupy the best position to create and sustain the larger vision and to assist with critical aspects of the development process such as land assembly, entitlement, and investment in key infrastructure facilities and other amenities. Stronger local authority action in assembling sites, possibly using compulsory purchase powers, would facilitate mixed-use development schemes. When a public-private agreement exists between the developer(s), the builder(s), and the local government, the parties would be more willing to make their commitments to ensure success of the project.

### 7.3 Planning Application and Procedures

The lengthy planning application and decision-making process in mixed-use development often discourages developers from considering such schemes. The key to any mixed-use development is creating consensus among local residents, neighboring property owners, government agencies and the developer. In order to make things go as smoothly as possible, it is recommended to lay the political groundwork through community outreach efforts. In addition, gaining the support of local government and creating clear lines of communication with government agencies can substantially shorten the entitlement process. This point is clearly demonstrated in the KLCC project. In view of the massive and fast-track development program that the project developer KLCC Holdings had undertaken, the Kuala Lumpur City Government decided to assist the project by providing dedicated building plan inspection staff and facilities to expedite approvals. Without such close interactions between the design team and the relevant statutory bodies, initial phases of the project almost certainly would not have been completed as quickly as they were.

### 7.4 Institutional Investors' Criteria

Institutional investors are sometimes reluctant to invest in mixed-use schemes because they are perceived to offer poor long-term investment prospects, and are typically not large enough to generate the scale of profit sought by this type of investors. However, some developers have successfully attracted investors by structuring multiple investment opportunities into their projects for investors with different levels of investment horizons and return expectations. A project, for example, may offer modest returns to investors

in the first few years, when the project faces its greatest uncertainty, and increasing returns to middle and long-term investors as the property appreciates in value.

## 8. CONCLUSIONS

Mixed-use development is complicated, costly and risky. The continued emergence of mixed-use projects as a powerful community development tool will ultimately require all parties involved to continue learning about and refining their approach to these projects. Successful implementation of a mixed-use project requires a carefully assembled development team that possesses strong management, development and design experience. It is most useful to involve the local government as a partner in the process, as they play an active role in developing local urbanization plans, providing necessary infrastructure, and even altering the public's perception of market conditions in the area. Financing mixed-use projects is more complicated. This is exacerbated by the fact that traditional means of financing (bank loans) could come at a higher cost due to the perception of higher risks. As such, the development team needs to structure the project creatively to provide investment opportunities for a range of investors. The responsibility is on the team to demonstrate that the project is creating value in the community beyond its short-term market performance and will prove its worth in the market place over time.

Some common pitfalls and drawbacks that create barriers to the realization of mixed-use development have also been identified. However, the events in the two case studies suggest that these barriers can be overcome – with good determination, proper planning and design, co-operation, flexibility, imagination and good timing. It is important to realize that mixed-use is more of a development culture, rather than simply being another technical planning aspect. Ultimately, it is the mixed-use outcome (a richly textured environment comprising a mixture of life activities) rather than the mixed-use output (a discrete development incorporating a mix of uses) that underpins the success of a mixed-use development project.

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