

## Feasibility Studies

Feasibility studies are dynamic and will be subject to many changes during the planning and design stages of a housing project. They reflect the developer's assumptions and knowledge at the time of their preparation. At the pre-feasibility stage assumptions may be no more than intelligent guesswork but a gradual 'hardening of numbers' is achieved as designs proceed through the design stages. Eventually a feasibility study will be supported by detailed pre-construction budgets at the construction working drawings stage and by actual contract sums after the tender or negotiation of construction contracts

A feasibility study should comprise :

1. The development budget
2. Cash flow projection which with minor adjustment is equivalent to a projected Profit & Loss Account.
3. Market research information establishing selling prices, estimates of demand, deposits and installment structures and the developer's estimates on the pace of sales.
4. Risk analyses.

At the various stages of the design process - schematic, design development and finally, construction working drawings, a feasibility study should evaluate the viability of the proposed housing development. After completing contract negotiations or after tenders have been invited and returned, the developer should undertake a final review of the feasibility study, and make the all important milestone decision whether to proceed or abandon the project. This decision may be left to the lending agencies

Much emphasis is placed on the developer's ability to control development costs in line with budgets. However, I believe insufficient emphasis is placed on their ability to sell and deliver housing units and collect sales proceeds within the programmed time-frames. Many schemes have failed because of an increasing interest cost burden directly relating to the collection, rather than the expenditure, of money.

What determines feasibility or viability? In my opinion this is achieved by:

- Establishing a clear understanding of your market and by
- Ensuring affordability

Affordability results when prospective home buyers are able to qualify as borrowers for long-term mortgage loans. In simple terms, monthly incomes must equal, or exceed, 3 to 4 times the monthly mortgage commitment.

I have witnessed many examples of failed housing schemes where the market was determined by development cost and not by the 'market establishing development cost'. The market must always establish development cost and feasibility studies must reflect this.

The majority of housing developments undertaken in Jamaica over the past few years have occurred in the low- to lower-middle income segment of the market. This undoubtedly arose as it is the largest segment of the housing market with substantial unsatisfied demand. However, this segment of the market is no more able to afford the purchase price of homes than say the middle- to upper-middle income market. What has made the difference encouraging developers to concentrate on the lower income market? The availability of long-term mortgage and short-term bridging finance at substantially lower interest rates than prevail in the private capital markets. This 'soft' or 'softer'

financing is being sourced from institutions such as the National Housing Trust and our host, the Jamaica Mortgage Bank

And what impact does this financing have? - it ensures affordability, it increases the ability and numbers of purchasers able to qualify for mortgage loans. And affordability has resulted in the generic term 'affordable housing'. I believe the term 'affordable housing' has resulted more from creative financing and not necessarily because of 'cheap' construction or 'low cost'.

Therefore, I am emphasizing that 'marketability is principally driven by affordability'. Location, aesthetics, size, features, services, all play an important role in buyers' perceptions and must not be ignored, but there is no market, no effective or realistic demand, if that market cannot afford the purchase price or cannot afford to meet the monthly commitments.

It is interesting that recently, a housing developer in the Portmore area announced a reduction in the number of two-bedroom units they were proposing to build, substituting these units with one-bedrooms. I'm certain this decision was driven by affordability and not by the market preferring one-bedrooms

Therefore, as developers be aware of the market you are attempting to satisfy, be cognizant of its income levels and establish realistic selling prices based on affordability.

When your target market has been defined, prepare a pre-feasibility study. A pre-feasibility study will assist in providing a realistic assessment of what can or must be achieved in terms of density, size of units, infrastructure provisions and financing requirements. It should incorporate statutory requirements, as a Planning Enquiry should have been made, and reflect the inputs of the utility companies. It can be completed even before the land has been acquired, i.e., the developer can enter into an option to purchase agreement, and should certainly be completed before architectural and engineering designs are underway.

The pre-feasibility study is a requirement of and a prelude to the design brief and provides the developer with the knowledge and information for instructing the design team as to what can reasonably be afforded for inclusion at this stage. As I've already said, the planning and design stages of a project are dynamic and many changes are likely to occur between the conceptual and schematic stages and the construction or working drawings stage, including the distinct possibility of abandonment.

A pre-feasibility study permits the developer to undertake a number of risk or 'what-if' assessments. For example, what is the impact of phasing the development or the impact of delays? Or increasing costs? The pre-feasibility study will reflect the impact of alternative scenarios on cash flows.

### **PRELIMINARY DESIGNS AND COSTING**

The design brief, which emanates from the pre-feasibility study, should instruct the architect on :

- Site planning including densities. Planning a subdivision is critical and requires careful consideration and in many instances can be the difference between profit and loss of the statutory requirements for amenity areas, building set backs, seeding, road reservations, parking, water storage, sewage disposal etc.
- The projected building or floor area of units including number of bedrooms, bathrooms, patios and parking.
- The scope and price range of finishes and specifications, e.g., floor and wall finishes, types of roof and finish, types of windows and door.
- Details of recreational amenities and scope of hard and soft landscaping.

The pre-feasibility study design brief will assist engineers in defining engineering specifications such as :

1. Road paving.
2. Kerbs and gutters.
3. Electricity supply - above or below ground.

In our generic housing development we now have a pre-feasibility study and design brief with the design team properly instructed by the developer. I would now like to look at the components of the development budget and make a few brief comments based on the observations of many years experience

#### 1. Land Acquisition

- a. Ensure you receive the proper legal advice concerning limitations imposed by restrictive covenants, rights-of-ways etc
- b. Also seek advice on the sub-division and issuing of splinter titles. If strata titles are involved there will be restrictions on the ability to phase a development.
- c. Future ownership of roads and services - are these to be retained by the developer, handed over to future purchasers or to the local authorities? What are the legal implications and the mechanics?
- d. Boundary and topographical surveys are essential. I have seen numerous examples of developers unwilling to commission and pay for topographical surveys only to incur substantial cost over-runs because infra structure works have been poorly planned. For example, sewage disposal by gravity is less expensive than lift stations. Constructing a road around a hill is cheaper than going through it!
- e. Please instruct surveyors to identify major trees and existing landscaping worth retaining. These have value and will increase marketability.
- f. Agree with the civil & structural engineer whether soils investigations are needed. Do not skimp on the number of boreholes - you may regret it later. I have.
- g. Most important - walk the site and get a 'feel' for it. Are there security or noise problems which must be addressed? Visit the site during a heavy rainfall. How does it drain? Are there gully courses which have been filled? These may cause foundation problems.

#### 2. Professional Fees

- a. A developer needs professional advice and you get what you pay for. Increasing the input or quality of your professional team, which may add fees equivalent to say 3% of construction cost will have an impact of approx. 2% on selling price. I would rather reduce my profit margin by this amount and proceed with greater confidence and less risk.
- b. How many developers retain the services of a landscape architect ? For the equivalent of say 2% of selling price a developer may receive 4% in value in terms of sales promotion and marketability.

#### 3. Infrastructure or Siteworks

- a. This is an area of the development budget most likely to incur cost over-runs. Don't unreasonably short change the necessary inputs such as the topographical survey.
- b. Understand the design and budgetary implications of statutory requirements and the provision of utilities. JPS may charge a fee for bringing their high voltage supply to the site but a substantial element will be refundable, usually after 3 years. What do you budget? Based on your approval, the Parish Council may take over the roads and other public areas but impose a maintenance cess, usually for a one year period. Is this budgeted? I know of housing schemes and subdivisions where Parish Councils have refused to take over and accept responsibility for roads as they complain they were not constructed according to their specifications. Now years and even decades later these roads are in a deplorable condition with the disputes still unresolved.

#### 4. Building Construction

- a. In my experience, and as a rule of thumb, building construction should not exceed 55% of selling price. If it does then the project has an increased risk of not being viable. Alternatively, the developer may be prepared to accept a reduction in their profit margin, which also increases their risk factor as the margin will be eroded faster by cost over-runs.

b. In Jamaica, and I'm sure in many other countries, we believe a construction 'system' exists which will substantially reduce construction costs and is the panacea towards achieving 'affordable' housing. I don't believe in this. But I am negating the importance of 'systems' construction. Quite the opposite.

If you accept the reasonableness of my estimate that in a typical housing development construction cost should not exceed 55% of selling price, and I can provide a percentage build-up of selling price, the structural component of the building construction cost probably amounts to approximately 40%.

Therefore, the typical 'system', which affects the method of building the structure, directly impacts less than 30% of typical selling price, i.e, roughly 40% of 55%. Controlling the cost of the structure, equivalent to 30% of selling price, is important and not to be ignored but it is not the solution to affordable housing.

Good management is. 'Systems' construction, in my opinion, enhances opportunities for efficiency and effective management. Some 'systems' allow the contractor to undertake a substantial element of their construction input in 'factory-type' environments where supervision, inventory management, cost control, scheduling, adherence to specifications and quality control are better managed.

However, if these elements of good management can be and are transferred to the construction site then there is no reason why 'traditional' construction cannot be as efficient and less susceptible to cost over-runs and delays.

'Systems' construction has an important role to play but is not appropriate for all types of development. Invariably, cost over-runs and delays can be traced back to poor management, including :

The poor quality of information provided the contractor - lack of detail on drawings or in specifications causing procurement delays and claims. 'Systems' construction has the advantage of requiring all information to be available up-front prior to production commencing and allows no, or minimal, change thereafter. This is a big plus and enforces discipline on professionals. Ineffective supervision resulting in non-productive labour and loss and wastage of materials.

The necessity to re-do construction works as poor quality workmanship is not identified early enough.

Inability to adequately schedule the various elements of the construction process and properly resource these elements. I will discuss this in a few minutes.

c. The developer's decision to tender or negotiate the construction contract should be made early in the design stage. With negotiation, it is advantageous for the contractor to join the project team and provide their 'value engineering' input into the design process. However, competitive tendering ensures transparency and should provide the assurance that the best possible price has been obtained.

d. Ensure designs and specifications are complete. As previously mentioned, this is the probable cause of the majority of contractor's claims for extensions of time with compensation.

e. The developer must decide which form of construction contract is appropriate. Increasingly, my office does not use the local JCC form of contract preferring to use one of the forms developed by the American Institute of Architects. Special Conditions of Contract must be drafted to adapt the forms to local conditions.

f. In today's relatively low inflation environment, clauses permitting escalations in the construction contract sum can be limited. With contract sums stated in Jamaican dollars, we generally write contract conditions accepting fluctuations in labour costs and cost adjustments arising from exchange rate changes to be passed on to the owner or developer.

## 5. Landscaping

a. No comment other than I wish more attention was paid to both hard and soft landscaping and a

recognition of its advantages

## 6. Financing Costs

- a. Legal fees and costs on loan security documentation must be budgeted.
- b. Also, commitment fees and interest costs on loans. Understand the terms and conditions contained in commitment letters and loan agreements received from financial institutions. Some will have cost implications.
- c. Understand the implications of the Real Estate (Dealers & Developers) Act. The use of purchasers' deposits is restricted by Law with cash flow implications.
- d. Interest charges. I raise a big red flag. There are so many risks and pitfalls which can cause substantial increases in interest costs. These have the potential to reduce or eliminate a developer's profit margin. Some are:

The cost of delays in completing construction works and achieving Practical Completion which are irrecoverable from liquidated damages imposed on the contractor.

Inability to sell units within the time-frame contemplated.

Delays in collecting sales proceeds - it is essential to monitor the mortgage lending agencies and their and your attorneys-at-law. Also monitor the effectiveness of the Registrar of Titles in registering Transfers and mortgage loans. Never forget that the delays of third-parties increase interest costs.

Cash flow projections are very important. They will reflect a project's phasing and the implications of this phasing. Some infrastructure costs may be impossible to phase such as the cost of a sewage treatment plant. The cash flow will reflect the developer's estimate of units to be sold over a defined period. The developer's equity input will be reflected on the cash flow projection with most financial institutions insisting on equity funding being expended before loan financing can be drawn down. Some institutions will only fund 'hard' costs.

## 7. Developer's Overheads.

- a. Property taxes on the land prior to purchasers assuming responsibility
- b. Cost of statutory approvals.
- c. Insurances not carried by contractors. All Risks insurance on unsold units after Practical Completion has been granted or on units where legal possession has not been delivered to.
- d. Security costs incurred by the developer.

## 8. Selling Expenses

- a. Advertising and promotion.
- b. Commissions paid to real estate brokers.
- c. Legal fees for preparing sales agreements.
- d. Legal fees and costs on Transfers including Stamp Duties, Registration Fees and Transfer Tax.

## 9. Developer's Profit Margin

- a. The most flexible of all elements of the development budget and the only element likely to decrease and not increase.
- b. Factors which influence the amount of the developer's profit margin are: Strength of the housing market - buyers' or sellers' market.

The amount of the developer's equity contribution.

Influence exerted by financing institutions such as the NHT and JMB

c. I would expect margins in the 8% to 12% range, calculated on total development cost. These percentages do not reflect Return on Investment as an 8% margin on total development cost may equal a Return on Equity Invested of 40% or more per annum.

d. Do not begrudge the developer their profit margin. There are few business ventures so fraught with risk and uncertainty. The successful developer will reduce their exposure to risk and uncertainty to a minimum and will frequently update their development budgets, cash flow projections and feasibility studies to reflect the most recent and current conditions.

#### 10. Selling Price

a. The elements of the development budget at 1 to 9 discussed above equal selling price. Selling price in the main is inflexible and can only be increased if allowed by the developer's sales agreement. If demand is strong and a scheme is phased, later phases may permit selling prices to be increased. But the opposite may also prevail, causing a reduction in selling prices or the abandonment of later phases.

### **CONSTRUCTION SCHEDULING**

My business is project and construction management and one of the most useful tools we have is computer software which facilitates scheduling or programming.

It is surprising how few developers or contractors avail themselves of the opportunities afforded by the use of this software. Drawing a line across a time scale for a small number of tasks, creating a Bar or Gantt Chart, means little. We now develop schedules with thousand of tasks all of which are programmed with predecessor or successor linkages. Critical tasks are identified allowing us to concentrate on those areas most likely to delay construction. We try and avoid delays by investigating alternative scheduling.

A major advantage of construction scheduling is that it forces the developer, contractor or construction manager to 'think a project through' in detail. Apart from identifying critical paths, which are likely to change as schedules are updated, milestone dates are identified which may be incorporated into construction contracts. For example, completing an early phase of construction by a milestone date may be a pre-condition for being awarded later phases of construction.

We partially resource these construction schedules. Programming tasks on paper is easy and completing a contract on time can be achieved by artificially shortening durations. But are the resources available to complete these tasks within the shortened time-frames contemplated.

My experience shows that the most critical resources to identify are equipment, skilled trades and procurement requirements.

We have worked on projects where resourced construction schedules have identified:

i. In Dominica - the contractor had insufficient concrete batching equipment on site to meet their concrete requirements.

ii. A contractor had insufficient back-hoes on site to excavate building foundations in keeping with their programme. This critical activity would have delayed Practical Completion.

iii. Inadequate numbers of carpenters, masons, steel men, tilers, painters - to achieve the desired programme.

iv. Procurement delays caused by the failure of the developer's project team to detail or specify materials because they failed to anticipate availability, importation requirements, customs delays and

delivery to site.

The construction schedule must be periodically updated with completion percentages incorporated. Computer software permits the tracking of progress with uncompleted tasks rescheduled to automatically commence immediately after the update, but still recognizing and retaining their linkages. Delays in construction schedules usually compress trades, particularly finishing trades, within shorter time-frames. This is referred to as the 'stacking of trades' and requires their numbers to be identified and sourced.

A detailed construction schedule assists contractors, construction managers, architects and engineers to evaluate claims for extensions of time and also claims for acceleration and stacking of trades. It is ironic that many contractors have become increasingly sophisticated in developing and submitting claims but have not yet adopted the sophisticated tools to assist and enhance their management techniques.