

1 BUILDING OPTIONS

Prefabricated Homes

These are homes fabricated in a factory complete with all fixtures and fittings, transported to site on a large vehicle, then craned into place.

Advantages:

- Extremely Affordable
- Fastest Construction time

Disadvantages:

- Not designed to suit your site
- The design does not take into account factors such as orientation to the sun, views and neighbours, topography etc,
- Limited width of building due to transportation constraints
- Can usually only be built on level or near level sites
- Many are considered ugly and have low resale value
- Limited opportunity to customise or alter the design

Project Homes

These are homes designed to be built in large numbers from a range of Off the shelf designs.

Advantages:

- Very Affordable
- Good value for money

Disadvantages:

- Not designed to suit your site
- The design does not take into account factors such as orientation to the sun, views and neighbours, topography etc,
- Can usually only be built on level or near level sites
- Many are considered excessive and wasteful of materials and energy
- Limited opportunity to customise or alter the design

Custom Architect Designed Homes

This is the best but usually the most expensive way to build. The main reasons that architect designed homes are more expensive than prefabricated or project homes are because the design is unique and therefore materials cannot be purchased in bulk. Also architects generally design using more glass, larger spans and longer lasting materials.

Advantages:

- Custom designed to meets individual needs
- Designed to optimise the sites natural attributes, such as orientation, breezes, views, privacy, trees, topography etc.
- Unlimited choice of styles, materials, aesthetics and sustainability
- Generally well built with excellent attention to detail
- Enhanced resale value, generally 10% higher than alternatives
- Can be alterations and additions to existing homes

Disadvantages:

- Generally more expensive than prefabricated or project homes
- Generally a longer design time

What is the approximate cost of the various Building Options per square metre?

| | |
|-----------------|---------------------------------|
| \$1200 - \$2000 | Prefabricated Homes |
| \$1500 - \$2500 | Project Homes |
| \$2500 - \$4000 | Custom Architect Designed homes |

2 ISSUES AFFECTING THE COST OF BUILDING

Slope of the site

The steeper the slope, the more it costs to build on it. This is because foundations and supporting structures are more complex. Excavation and the need for retaining walls increases and drainage issues arise. As buildings step down a slope, the area of external walls increases.

Ease of access

Poor access makes materials handling more difficult and time consuming. Some isolated sites such as those only accessible by water increase the cost of materials and labour dramatically.

Ground or foundation conditions

Poor foundations may require additional engineering to support a structure. Sandy or clay soils can require deep concrete piles to achieve adequate support.

Demolition and clearing the site

In some cases demolition and clearing the site can be as much as 10% of a new home. Site contamination issues such as asbestos removal can add to the building cost significantly.

Excavation

Excavation is costly and time consuming and often requires shoring up or underpinning of adjacent foundations. Rock excavation can be very expensive and associated drainage issues also add to the cost.

Availability of services

Some isolated sites do not have easy access to services such as water, electricity, sewerage, stormwater systems and gas etc. Provision of these services remotely, can be very expensive. In less isolated areas the distance from mains can also be an issue.

Council or Government requirements

Planning and development controls can affect the cost of a project significantly. Regulations often vary from state to state and from council to council. Examples include: requirements for parking, geotechnical issues, sewerage, stormwater detention and bush fire provisions.

Economic Conditions and Competition

When the building industry is busy, the cost of labour goes up and affects the overall building cost. Similarly, when the industry is slow, competition drives the costs down.

Suburb and Location

Building work generally costs more in the city than in rural areas. This is due to the lower cost of living in rural areas. The cost of building in expensive suburbs is even higher. This is often because expectations of quality and service are greater in expensive suburbs.

3 DESIGN STRATEGIES TO MINIMISE COST

Geometry and planning

Simple geometry with minimal re-entrant angles minimises external wall length while maximising area. Similarly simple roof geometry minimises junctions and materials. Planning to reduce circulation space can maximise the usable area of a home and minimise wasted space.

Single or two storeys

Single storey construction is always cheaper than two storeys because of the cost of scaffolding and transporting materials. Floors above ground are always more expensive than floors on ground because of the extra beams and support required. Above ground slabs require considerably more reinforcement and form working than slabs on ground.

Simplicity and Repetition

The use of simple structural elements repeated throughout a project can reduce the overall cost as design and set-out need only be done once. Duplicating elements can reduce costs because fabrication can be done in bulk.

Economies of Scale

As in other industries, the larger the order, the lower the cost. Generally medium to large construction projects are more economical, per sqm, than smaller ones. This is largely because of the high set-up cost of construction projects.

New or existing work

Building new is always cheaper than alterations and additions because of the rectification work involved and because of the unknown complications in retaining existing work.

Number and type of trades

Each new trade involved in a building project will add cost directly and require additional coordination from the builder. A good way to reduce cost of building is to reduce the number of building trades.

Choice of materials

The choice of materials can affect the building cost dramatically. The range of costs of building materials serving the same purposes varies considerably. Consider for example the following approximate cost for roofing materials:

| | |
|---------------|--|
| \$40 per sqm | Concrete tile roof (Boral) |
| \$50 per sqm | Terra Cotta tile roof (Boral) |
| \$55 per sqm | Colorbond metal roof (Universal Roofing) |
| \$100 per sqm | Charcoal slate roof (FA Mitchell &Co) |
| \$135 per sqm | Ceramic slate roof (FA Mitchell &Co) |
| \$150 per sqm | Canadian purple slate roof (FA Mitchell &Co) |
| \$250 per sqm | Zinc roofing (Rhinezinc) |
| \$350 per sqm | Copper roof (Copperform) |

Natural Thermal Design

Good orientation, use of thermal mass, shading of openings, cross ventilation etc. should always be utilised to maximise the comfort of occupants. The use of this natural or passive thermal design can reduce the need for expensive reverse cycle air conditioning, which not only uses valuable space, but is costly to install and operate.

Number of amenity areas

Kitchens, laundries and bathrooms are more expensive to fit-out than other rooms because of the intensive use of plumbing, electrical and gas services as well as intensive use of fixtures, fittings, wet area treatment, tiling and joinery items. A good way to reduce cost is to minimise the number of amenity areas.

Amalgamating services

Locating bathrooms kitchens and laundry's etc adjacent or above each other, can reduce the cost of providing services (particularly plumbing) as the length of concealed pipe work and conduit is reduced. Similarly amalgamating several services in the same trench or duct can reduce costs.

Low cost building systems

Generally the cheapest building system is the traditional method because the skills and materials are readily available; however, building systems that reduce the use of materials and or save in construction time can provide a significant savings. The only risk is that the longevity of new systems cannot always be verified.

Low cost materials

Materials that are low in cost more often than not look cheap, however, the appearance of low cost materials can be enhanced by the way it is subdivided, detailed and finished. A good way to reduce cost is to use low cost materials where they are not visible, or where the performance of the material is not critical.

Standard dimensions

Many building products come in standard dimensions. Designing with this in mind can reduce cutting and wastage. Fabricated components such as aluminium windows and doors come in standard sizes. Standard sizes are always cheaper than custom made sizes.

Prefabrication

Fabricating items in a factory is always faster and cheaper than on site. This is because there is not always a good supply of shelter, materials, specialised machinery and labour on site. The extent of prefabrication can range from individual components, right up to a totally prefabricated home.

Speed of Construction

A building construction method that is faster not only utilises labour more efficiently but also reduces the daily on-site costs such as building foreman, fencing, scaffolding, site services, insurances etc.

Variations

Whilst it may be undesirable to avoid all variations, they should be minimised if you want to reduce the cost. Variations to a building contract not only amount to the cost of altering the work, but attract an additional percentage cost to cover builder's site attendance and coordination. Variations may also extend the construction time.

Consultants

The timely appointment of consultants such as surveyors, structural and hydraulic engineers etc. is important in ensuring that all avenues of cost reduction are addressed at the earliest stage. Coordination of the consultant's documents is also critical to the accuracy of tendering.

Accuracy of Documents

The completeness and proper coordination of contract documents, including consultant's documents, can be an important factor in the cost of construction because it can affect the accuracy of tendering and the likelihood of changes to the design or variations to the building contract.

Choice of builder

The choice of builder can affect the building cost considerably. Generally, a builder is only as good as the tradespeople he subcontracts. A low cost builder will usually employ low cost tradespeople therefore quality and workmanship will suffer. Obtaining an Owner Builder's License and superintending subcontractors yourself can save a considerable amount of money but will increase the risks of costly mistakes and construction time over runs.