Chapter Eight

Financial And Management Considerations

8.1

Financial Considerations

8.1.1 Life Cycle Costing (LCC)

The life cycle cost of a house is defined as the total cost of that asset over its operating life, including initial construction costs and subsequent maintenance and running costs. Life Cycle Costing (LCC) is particularly relevant to RSLs since houses are durable assets for which the maintenance and running costs are considerable.

LCC can be used in two ways:

- RSLs are required to use LCC as an integral part of their financial planning[1]. Specifically, LCC is used to provide guidance on the size of the sinking fund that will be needed to cover future repairs and maintenance of their stock
- LCC also has a use in assessing the wider value of housing investment. LCC may reveal that higher capital investment at the outset will reduce maintenance and running costs, and that the latter savings will outweigh the initially higher capital costs[2]. This broader cost benefit approach is known as whole life costing.

8.1.2 Life cycle comparisons

The simplest way to evaluate different expenditure options is the payback method. Two examples are given in Box 8.1. In the case of the sunspaces the payback period is so long that the extra expenditure would not be worthwhile. In the case of the extra wall insulation, it may well be advantageous to spend the extra money given the relatively short payback period. A definitive judgement cannot be made, however, because the payback method takes no account of inflation or interest rates.

[1] Scottish Homes (1992); SFHA (1997)
[2] Flanagan and Norman (1983)

Box 8.1 Payback calculations

Figures relate to six flats in one tenement close

Extra capital cost of thickened wall insulation	= £675
Annual energy cost saving	= £75
Simple payback period	= 9 years
Extra cost for sun spaces	= £65,000
Annual energy cost saving	= £450
Simple payback period	= 144 years

A major complication in using LCC lies in the comparison of costs. Capital costs are incurred at the initial acquisition stage and maintenance and running costs at varying points during the subsequent use of the building. Since these costs are incurred at different times they cannot be treated in the same way, "money today" not being the same as "money tomorrow". Future costs have to be discounted back to the present (or year zero of the investment period) so that like is being compared with like. Two approaches can be used equivalent to the two uses of LCC described above:

- choose a discount rate which will indicate the amount of money that will be required for future major repairs and maintenance. This will be the real rate of interest (the difference between the market rate of interest and the inflation rate for the construction industry) and is used by most RSLs in sinking fund calculations
- adopt a wider view and assess the value of present investment in terms of the opportunity costs of that investment. In the public sector, the Treasury recommends 8 per cent for investment appraisal purposes[3]. It can be argued that investment by an RSL is low risk and therefore 8 per cent is too high. A more appropriate rate might be that offered on low risk investments such as long term government stock. High rates of interest favour short term investment, low rates favour longer term investment.

Box 8.2

The commonly used formula for discounting future costs back to the present is:

$$S_0 = S_n/(1+r)^n$$

where: S_0 = the present value, i.e. the value of a sum of money at year zero

S_n = the value of a sum at year n (e.g. after year 10)

r = discount rate

n = the number of years

[3] H M Treasury (1991)

8.1.3 Whole life costing and environmental considerations

Sustainability is concerned with taking a long term rather than a short term view, and hence whole life costing is a useful tool for the financial evaluation of projects which are designed according to sustainability principles. Whole life costing for this purpose will differ from the LCC used for sinking fund calculation in the following ways:

- initially more expensive components are not precluded since over the lifetime of the dwelling they may be cheaper
- all replacement components are costed, not just the first (the justification for including only the first replacement for sinking fund calculations is that tenants should not be expected to contribute to expenditure from which they may not benefit)
- costs incurred by tenants are measured in addition to the housing association's costs
- the discount rate used will reflect opportunity costs of the investment rather than the inflation rate for the construction industry.

Research commissioned by Scottish Homes[4] compared the environmental burden and whole life costs over a 60 year period of an existing Scottish housing association development (the Control) with those produced by an equivalent development built according to a higher environmental specification (Ecotype 1). Not only was the environmental burden of Ecotype 1 smaller, but the whole life costs were lower also. The whole life costs of the two specifications are shown in Table 8.1 using two discount rates (the Treasury recommended rate of 8 per cent and the rate on long term government stock at the time of the research).

The following should be noted:

- Ecotype 1 has slightly higher capital costs
- even with the higher discount rate, Ecotype 1 has lower repair, management and maintenance, and running costs
- Ecotype 1 has lower whole life costs
- the occupier benefits in terms of lower running costs (heating only in this case)

[4] Ecologica Ltd (1996)

Table 8.1 Life cycle costings of control and eco-type 1

Cost Item	Control 1(£)	Eco-Type 1(£)	Eco-Type Saving over Control	
			£	%
3.88% discount rate				
Construction cost	39,167	39,602	-435	-1.1
Major repairs cost	5,221	4,556	665	12.7
Running cost	9,306	6,010	3,296	35.4
Management and maintenance cost	9,694	6,721	2,973	30.7
Whole-life cost	63,388	56,889	6,499	10.3
8.00% discount rate				
Construction cost	39,167	39,602	-435	-1.1
Major repairs cost	1,714	1,463	251	14.6
Running cost	4,101	2,649	1,452	35.4
Management and maintenance cost	4,272	2,962	1,310	30.7
Whole-life cost	49,254	46,676	2,578	5.2

Note: the major repairs costs are restricted to those building elements where the specification differs between the two dwelling types. This means that the costs exclude the replacement of common items such as sanitary fittings, kitchen equipment and electrical installations

This research and the experience of RSLs which have built to a higher environmental standard has shown that the most effective way, both physically and financially, to improve environmental performance is to increase the insulation in dwellings (see Box 8.3 which gives the costings for a recent development). This applies to both new build and rehabilitation. It is the simplest of the various mechanisms for increasing energy efficiency and is also the cheapest. Super-insulated houses can be built within indicative costs by making cost savings in other areas. Building at more than indicative costs can be justified in the long term, however, because the small extra cost incurred by the enhanced insulation is more than offset by the long term savings.

Box 8.3	Extra costs of higher environmental specification
Development	Tenement rehabilitation 12 units with high environmental specification (passive stack ventilation; extra insulation; "green" materials; sunspaces; condensing boilers)
Total costs	£626,000
Total cost of environmental enhancements	£118,000
Cost of extra insulation	£3,500

8.1.3 Policy implications

Taking the long term view, building to a high environmental specification not only reduces environmental impact but can also be more cost effective. The long term cost reductions are derived from:

- use of more durable materials and components
- reduced maintenance costs because dwellings are heated more effectively and hence suffer from less condensation and dampness
- lower heating bills for tenants.

There are strong arguments therefore why RSLs might commit themselves to extra capital expenditure to achieve enhanced environmental performance. If this has to be funded by borrowing rather than grant, there will be pressure to raise rents. However:

- because long term repairs and maintenance costs are lower, less money will be required in the sinking fund and this has a downward effect on rents
- occupiers' heating costs will be lower and this will potentially reduce the effects on their household budgets of higher rents. Some of the costs of the environmental enhancements may therefore be met from higher rents without disadvantaging tenants. Real increases in energy prices will strengthen this argument.

8.2 Management Considerations

The advantages of higher environmental specification are real but not automatic; their achievement requires careful management. In particular, RSLs will need to:

- provide education for tenants in the use of energy efficient dwellings
- modify procurement to take account of sustainability considerations.

8.2.1 Educating the Occupier

High thermal efficiency dwellings require much less heating than conventional Scottish dwellings, and to achieve maximum efficiency heating systems need to be operated in particular ways. Most new occupiers will have lived previously in dwellings with significantly lower energy efficiency and will be unfamiliar with the features of their new home.

In particular they may:

- keep heating on longer than needed and open windows to dissipate unwanted heat. This loses much of the potential energy saving
- use the energy efficiency for heat gain rather than cost savings. Where their previous dwelling was too expensive to heat to a comfortable level, this must be considered a legitimate choice. By using their new home differently, however, they should be able achieve acceptable comfort levels and also benefit from lower heating bills
- use their homes in inefficient ways thereby reducing energy efficiency e.g. putting carpets in sunspaces.

Prior to moving in, occupiers should be shown how their new home is different and given training in how to use it to best effect. This is particularly important where innovative systems have been installed (such as solar panels for hot water).

8.2.2 Procurement

Although environmentally friendly construction is becoming more widespread, it is still the exception rather than the rule in Scotland and the number of architects, contractors and consultants who have the necessary expertise and experience is limited. Housing providers should consider changes to their procurement procedures to ensure that they secure the required expertise. Innovation in housing may be incompatible with design and build as a procurement route for example. Scottish Homes has provided detailed practical advice on balancing quality and price in the procurement process[5] and this should be followed where a higher environmental specification is required.

For their project at Turner Crescent, Methil (see Case Study No. 2) Kingdom Housing Association used a competitive tendering procurement procedure which required contractors to demonstrate both an expertise in and an enthusiasm for sustainable building. The following steps were involved:

- the Association's approved contractors list was used and 45 were invited to express an interest in the project
- the 20 contractors who responded positively were asked to complete a schedule designed to assess their awareness of environmental issues and expertise in environment friendly construction. This included a request to see their Environmental Policy Statement (if any), their knowledge of

[5] Scottish Homes (1998d)

environmental building practices, and their awareness of wider sustainability issues such as local employment impacts and community involvement

- a short list of seven was then established on the basis of the schedule returns and these were interviewed.