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### Market research in standard setting

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One of the problems faced by development professionals in the field of housing is the degree of politicization in the field of standards. Plot sizes, the question of road access and sanitation have all been surrounded by political taboos which have resulted, in many cases, in immutable standards. Meanwhile, the cost of adhering to the standards is rising and the incomes to pay for them are relatively declining so that an ever reducing percentage of the population can afford to use a so-called minimum standard solution.

One of the reason for inflexibility is a lack of information on the subject of alternatives and the financial consequences of changing standards. For this reason USAID and UNCHS (Habitat) offered to undertake studies in Botswana - a country facing the highest rate of urbanisation in Africa - so that the standards to be adopted in forthcoming development could be made more responsive to the needs of the public. In addition it was hoped that the studies would help the Government to prepare comprehensive design guidelines for civil engineers working on housing projects, as it had been noted that a wide variety of micro-design practices had developed and that significant savings could be made if better design practices were used. The advantage of Botswana's situation in this respect was that the mode of development - as in most Southern African countries - is very homogeneous: single houses on their own plots.

The studies were divided into two parts: an analysis of the use of land, and its economic consequences; and an analysis of the engineering aspects.

The findings of these studies are quite interesting.

#### Plots

The studies showed that reducing the plot sizes from the current plot size of 450sq.m to 300sq.m while keeping servicing

levels the same would reduce the costs by 43%. If the current servicing levels (VIP latrines, shared water taps and gravel roads) were changed to include sewers and paved roads, the 300sq.m plot would still be 25% less than a 450sq.m plot. (This calculation does not include the additional cost of building toilet facilities in the house, or the increased bills the house-holder would meet for water and sewerage. If these are included the 450sq.m plot with a VIP remains cheaper).

The use of small plots would save 30% in land, and 35% of the cost, and would result in a net density of 18 plots per hectare. If the minimum plot size were reduced to 200sq.m, but a range of plot sizes above this were retained, and road reserve widths slightly reduced, the cost per plot would be reduced a further 14% and net density increased to 20 plots per hectare.

#### Design Matters

Square plots will cost 25% more than those with a depth of twice the frontage, and 43% more than those with a depth of three times the frontage (areas being constant in each case). Long blocks are cheaper than short blocks: it will cost about 50% less to service a layout of blocks 75 metres long as compared to 180 metres. Road widths also have a major impact on cost. Layouts with collector streets with a road reserve of 25 metres and access streets of 15 metres wide will be 17% more expensive to service than those with 15 metres collectors and 8 metres access roads without including the cost of the road building itself. Other recommendations are that roads should have development on both sides, and that where possible they should be loops or cul-de-sac.

The consultants also deal with matters such as reducing survey costs by aligning plot boundaries systematically, handling the layouts of plots on corners, and efficient subdivision of odd-shaped areas. They make recommendations to reduce costs at the planning stage by minimising the need for manholes, and locating the stays

required for electrical reticulation in such a way that no useable land is lost.

### Roads

Taking into account Botswana's soil conditions, which are favourable for road construction, the consultants recommend that for a cul-de-sac with a projected vehicle ownership of less than 5, an unimproved earth access is sufficient. For between 5-10 vehicles engineered earth should be used, and for 11-30 vehicles a gravel road constructed to normal standards.

Major economies can be obtained if the roads are not built until construction of the houses has been substantially complete as construction traffic imposes a significant design load on roads which would otherwise not be required.

### Stormwater Drainage

V drains should be used where drainage flows are light. Where stormwater drains have to cross a road this should be on a surface "splash", not the usual culvert, provided the invert levels permit. Where required, pipe culverts should be designed to take the maximum flow predicted in a two year period.

### Water

The main reticulation pipes should run through the middle of the block in a 3m wayleave and not be designed for fire fighting.

### Sewerage

Where sewerage is to be provided, the first 4-6 properties at the head of sewer may be connected to a 100mm pipe, and the remainder should be 150mm. Houses should drain directly into a sewer using a Y junctions, with a rodding eye facility at the head of the drain. The pipes would be in the mid-block position, in a 3m wayleave.

### Electricity and Street Lighting

Few low income families can currently afford electricity. However the consultants recommend that costs can be reduced if street lighting, electrical reticulation and telephones are run on the same poles at a spacing of 50-60m.

Unfortunately this type of study, which is for consumption primarily by the civil service, requires something else before it is useful.

Its major recommendations cannot be acted upon without politicians' support, and, if experience is anything to go by, politicians have a natural fear of being seen to "lower" standards. The problem is to convince politicians that the current standards do not necessarily reflect the needs of their electorate and that there is a need for more flexibility.

Unfortunately, to do this is difficult. For example, a reasonable supposition is that there are certain benefits to be realised by reducing plot sizes. In Botswana, as in most other countries of the region, the cost at which housing is paid for by low income residents does not include the market price for the land, (although sometimes the historical cost of land acquisition is included at prices that are so low as to be insignificant). If it were to have been included the public would rapidly perceive that there is a trade-off between large plots and the standard of servicing. As it is, a reduction in the size of a plot may not result in reduced costs equivalent to the true saving. In such circumstances the public may, indeed, view the act as an arbitrary reduction in standards which they feel it is their right to enjoy.

This is a hypothetical argument, and it is one that often arises in Ministry conference rooms, but is never resolved. We know it is only too easy for populist leaders to campaign against such changes, but what do the actual customers think? The conventional political question is put in terms of wants, and it gets the predictable response. Yes, we want a plot of the usual size, we want road access, we want electricity, we want separate toilets, etc etc. It is hard to imagine the question being answered any other way. Unfortunately this is not the way that people actually behave: as we know when it comes to what they can consume it is effective demand that counts, and politicians are not equipped to determine effective demand.

It is, indeed, a difficult subject. There are so many variables in the housing equation. They are principally the size of the plot, the standard of servicing to it, the size of the house, the standard of servicing in the house, and the standard of finish.

Within each of these variables there is an infinite variety of sub-variables each of which has cost implications which can affect effective demand. Under consideration, therefore, is not a matter

which can be resolved by a politician in a mass meeting, or even in face to face interviews. It is something that requires highly informed market research. To the best of our knowledge such market research has never been done, whether in Botswana or elsewhere. If it has we would be very glad to compare notes with those who have done it.

When the standards studies referred to above had been completed we suggested to the Government that they should be supplemented by such market research, and, at the time of writing the field work has just been completed. The methodology used has been developed in small scale applications over a number of years, but has never before been used on such a wide scale. It consists, briefly, of a kit with a limited number of variables from which the consumer can choose a housing package that suits his or her means. The variables are limited to five plot sizes, as many rooms are required but limited to three room sizes, two standards of finish, five bathroom alternatives, and a limited range of different access standards. There are also options to have internal electricity and/or security lighting in the street.

There are many ways to put such alternatives to the customer. One is a simple questionnaire, one is to show drawings of the alternatives, one is the use of models, and finally there is the computer model. We have tried them all. With the current sophistication of integrated cost/design packages it would be possible to develop a computer program to present the consumer with three dimensional representations of any alternative that he or she might propose. Unfortunately we do not have the skills or hardware to apply such programs in a field situation. The other alternative with a computer is a program that provides costs without any visual representation of the product: this works well with technical people, but baffles and confuses the public.

The best way seems to be to simplify the choices within certain limits and present these in model form, and this is the methodology used in the survey that has recently been undertaken.

The interviewer carries with him a wooden "briefcase" containing the kit of parts. These include scale representations of plots as well as individual rooms that can be assembled on the plot in the form of a house. Each item selected has a

corresponding cost which the interviewers have on their forms.

The subjects for the interview were a subsample from an earlier survey which established approximate incomes and provided other socio-economic information. The first objective in the survey was to establish the respondent's ceiling for monthly housing expenditure if he or she were to be given the opportunity to obtain a new house or plot. Following this the respondent chose the type of solution that he or she considered suitable or desirable, following which the interviewer was able to provide a fairly accurate statement of how much the solution will cost. The form on which he recorded the respondents choice has a monthly cost of each item on it, so the total may be obtained by simple addition. The costs are derived from capital costs that are paid off at the prevailing interest rate and term. To these are added monthly charges for utilities, and a percentage is added for Rates (property tax).

The first choice will always cost more than the respondent can afford, usually far more. There follows a period of cut-backs until a satisfactory package has been chosen. Usually there are over three iterations, so the whole process can take up to an hour. It is essential to allow as much time as this, because difficult choices have to be made, which require real thought.

There are two questions to be asked about this process. The first is whether the responses are real, i.e. ones that the person would stick with over the long term. The experience from other, much more limited surveys, suggests that we can have a high degree of confidence in the results, and that once a respondent has understood the trade-offs between the alternatives he or she is likely to be able to make up his or her mind with a fair degree of certainty.

The second question to be answered is whether the response by individual respondents is different from that which would be given on their behalf by politicians. The answer to this is almost certainly positive: results so far suggest that people are much more willing to change the standard of, for example plot size and access more than politicians expect.

However, they do so in order to gain some other benefits, as there is, self-evidently, no point in reducing one's

consumption of a good or service unless one will save or receive an alternative benefit.

It is too early to know just how different the standards to emerge from the survey will be from the prevailing ones, or how homogeneous the responses will be. However, we can be sure that they will not mirror the standards currently prevailing as these only offer one solution in terms of plot size and servicing in each project. The only variable currently available to the residents is the size and design of the house (which is usually built by small contractor on the plot provided). But whether there will be a wide range of demands, which might, for example, reflect different family sizes or different degrees of urban acculturation from within the same income groups remains to be seen.

Whatever the results we feel confident that the methodology will prove useful. Although the survey is fairly slow and can therefore only be conducted on a limited scale, its importance is in bringing out both the value of consumer research in housing and the potential benefit to Governments who can thereby be spurred to make standards more flexible in both public and private projects. In so doing they allow the beneficiaries to choose solutions which reflect their own needs, which may not be met by the current package. In so doing they effectively make the project more affordable, and enhance the possibilities of good cost recovery.

#### REFERENCES

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