

DENSITY & AREA GRAPH FOR SEMI-DETACHED HOUSES

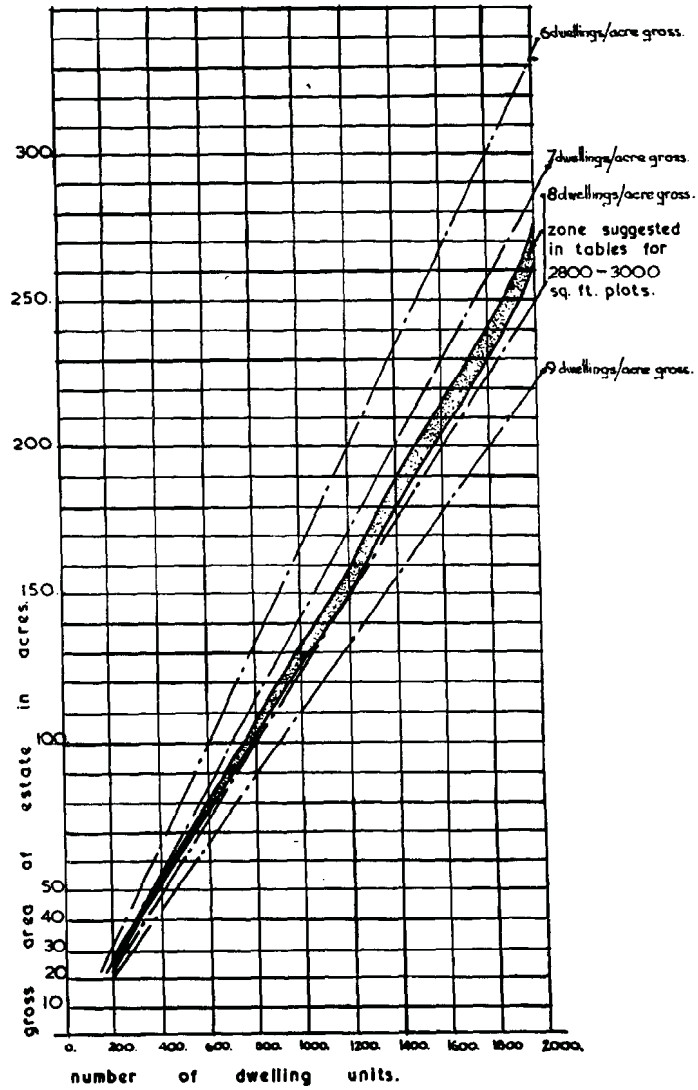


Fig. 33.

DENSITY & AREA GRAPH FOR DETACHED HOUSES.

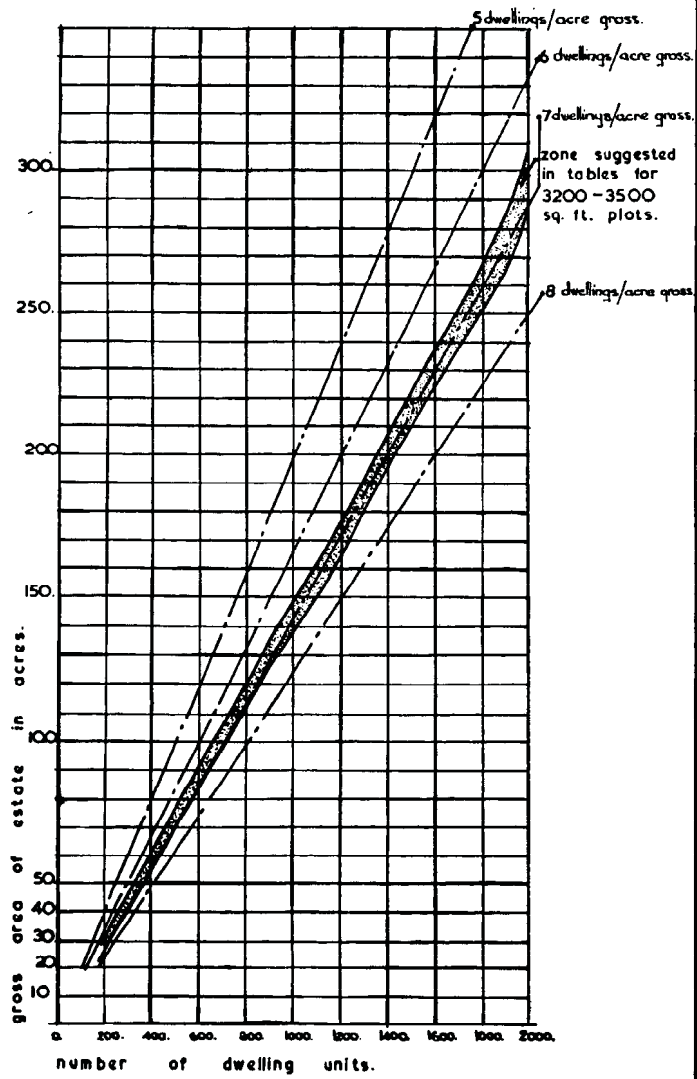


Fig. 34.

TABIE XXXII.

Area of Waste Land.	Gross Density ³⁾ expressed as dwellings/ acre assuming 5 persons/dwelling.									
0% of area waste*	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>7.5</u>	<u>8</u>	<u>8.5</u>	<u>9</u>	<u>10</u>	<u>11</u>
5% - do -	3.8	4.75	5.7	6.65	7.125	7.6	8.08	8.55	9.5	10.45
10% - do -	3.6	4.5	5.4	6.3	6.75	7.2	7.65	8.1	9	9.9
15% - do -	3.4	4.25	5.1	5.95	6.38	6.8	7.22	7.65	8.5	9.35
20% - do -	3.2	4	4.8	5.6	6.0	6.4	6.8	7.2	8	8.8
25% - do -	3.0	3.75	4.5	5.25	5.63	6	6.37	6.75	7.5	8.25
30% - do -	2.8	3.5	4.2	4.90	5.25	5.6	5.95	6.3	7	7.7
35% - do -	2.6	3.25	3.9	4.55	4.80	5.2	5.53	5.85	6.5	7.15
40% - do -	2.4	3	3.6	4.2	4.5	4.8	5.10	5.4	6	6.6
50% - do -	2	2.5	3	3.5	3.75	4	4.25	4.5	5	5.5
60% - do -	1.6	2	2.4	2.8	3.0	3.2	3.4	3.6	4	4.4
70% - do -	1.2	1.5	1.8	2.1	2.25	2.4	2.55	2.7	3	3.3

DEVELOPMENT COSTS AND HIGHER DENSITIES.

Although it is often stated very emphatically that higher densities must bring about more economical layouts, this need not necessarily be the case. The three main items that will determine the economy of any particular layout of a given density will be the cost of the dwelling units, the cost of land and the development or service costs. Unless these are considered together, no true picture can be obtained. As costs vary from district to district and even from locality to locality it is impossible to lay down a hard and fast rule, but a method is explained which has considered Native estate layouts and, beyond slight local variations, indicates very definite trends in the selection of economical densities.

ECONOMICS OF HIGHER DENSITIES.

The economics of higher densities depend upon the following:-

- (a) Cost of dwelling type.
- (b) Land cost.
- (c) Development and service costs.

It / ...

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- (3) GROSS DENSITY is defined as the number of persons per acre for the whole area of site. It is calculated by dividing the estimated total population by the whole area, defined by boundaries, of that portion of the estate under consideration.

* Figures underlined are also Gross Development Densities, since waste land is Nil.

It is obvious that any economics, shown in a housing layout which is sponsored by the government or by a local authority, result in these gains being passed on to the persons housed in the form of lower rentals. The points made must then be studied in detail in producing low cost housing.

(a) Cost of Dwelling Types.

In South Africa the National Building Research Institute is studying ways and means of reducing the costs of Native houses. When these studies reduce the structural strength of a dwelling to such an extent that the walls of a single storey building are designed to withstand only the wind forces and live and dead loads associated with a single storey building, it becomes obvious that any considerations of double storey structures must add to the constructional costs. Space requirements of any type of dwelling are controlled by the minimum standards of accommodation, and consequently the single storey house must provide the same accommodation as a similar unit in a multi-storey dwelling, i.e. there is no possibility of reducing the accommodation as the height of the building increases. The work in progress on design and alternative methods of construction has found that in many cases the traditional methods are over-designed, and these are now being modified so that when a double storey or multi-storey structure is built in future, in order to obtain a sound construction, the cost per net area of useful space will definitely increase when compared to a single storey dwelling. The single storey building in South African Native housing is becoming an efficient structure designed to meet minimum space requirements with a high use factor*.

Double storey buildings must face higher constructional costs and added space (a reduction of use factor) for vertical circulation. In multi-storey buildings the case is even worse, as horizontal circulation and elevators add to increased constructional costs. This means that the single storey building shows certain savings when designed efficiently.

In the field of single storey dwellings further economics can be made by constructing semi-detached and terraced houses. In general terms these economics are achieved by means of the following items:

- (i) communal walls employed between dwelling units;
- (ii) reduced fencing;
- (iii) in certain cases, grouped services such as stand pipe and gully, sewer connector etc.;
- (iv) reduction in plot size.

Figure 35 shows the relationship of gross densities to building types and the resultant gross densities as determined from previous studies.

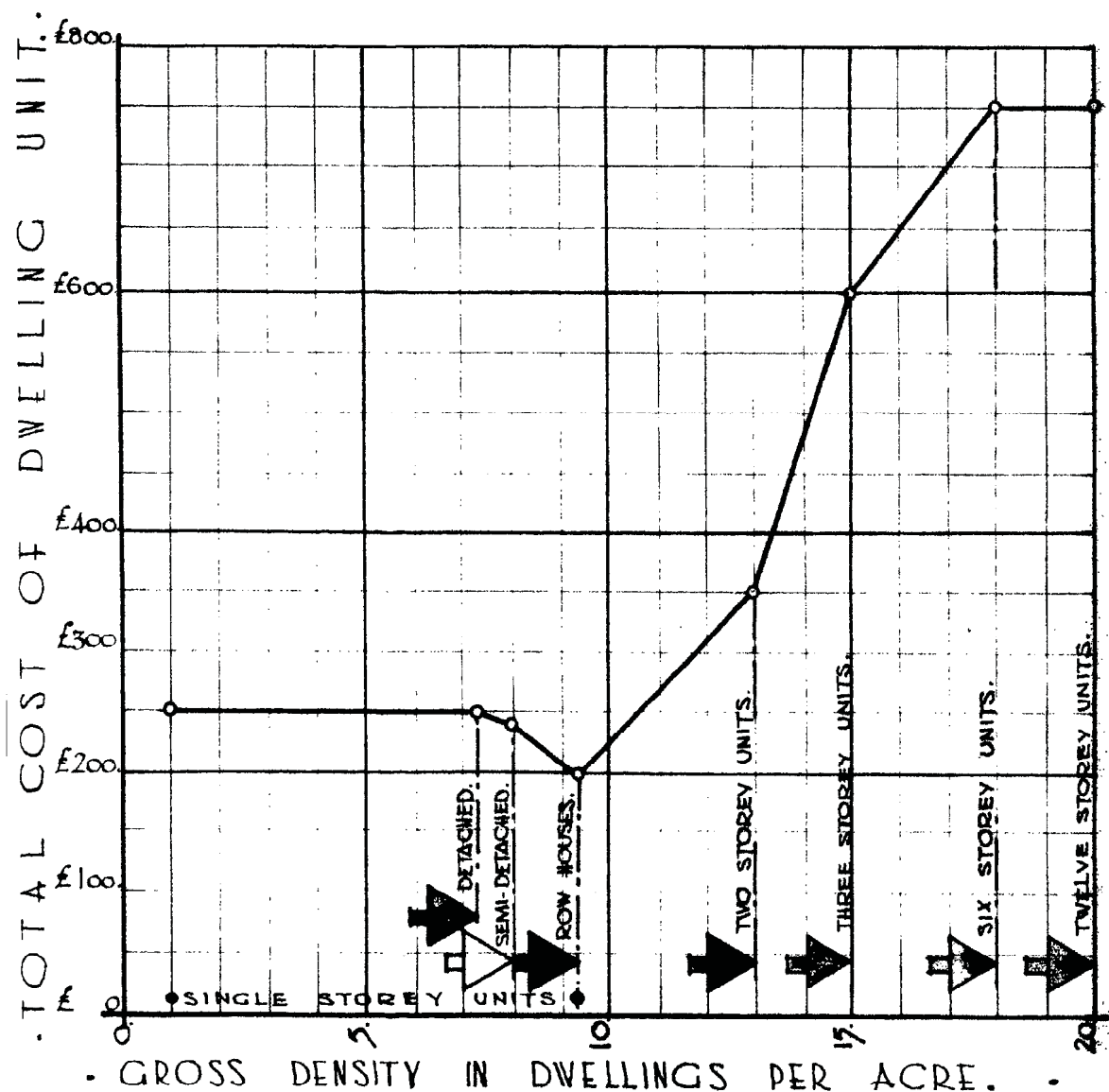
(b) Land Cost.

The land costs are a major consideration in determining density, but it is very necessary to understand that land costs have to be extremely high before they will force the use of multi-storey buildings, as can be seen in Figure 36.

If /

* Use factor is the ratio of useful floor area to the gross area, expressed as a percentage.

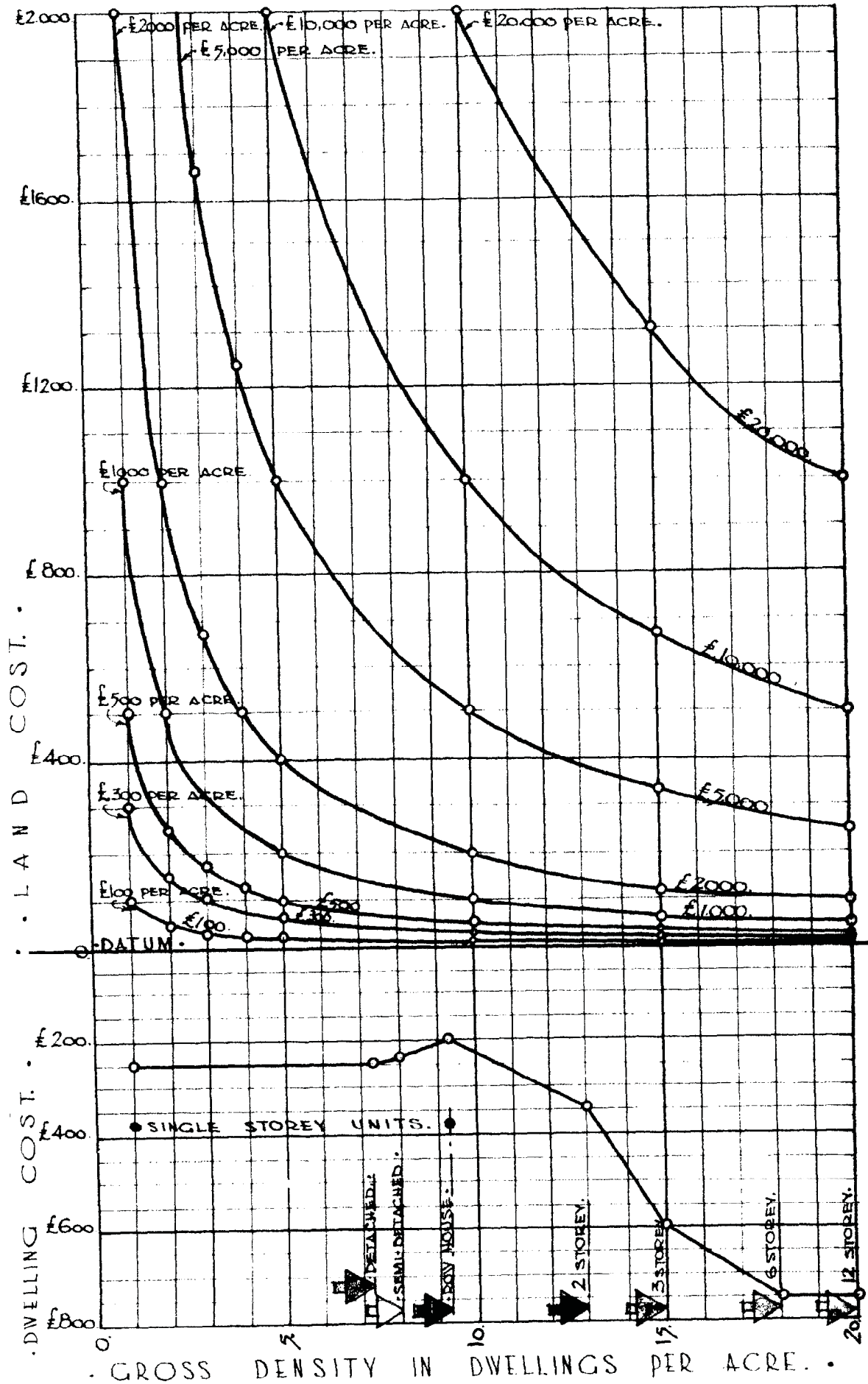
GRAPH 4. BUILDING COSTS RELATED TO GROSS DENSITY.



AREA OF SINGLE STOREY UNIT = 600 SQ. FT. AND IS COSTED AT 8/4 PER SQ. FT. AND ADJUSTED FOR SEMI-DETACHED & ROW HOUSES AS BUILT IN KVA-THEMA, SPRINGS. DOUBLE STOREY & NECESSARY STAIRS @ 10/- PER SQ. FT. THREE STOREY UNITS @ 15/- PER SQ. FT. SIX & TWELVE STOREY UNITS INCLUDING ELEVATORS, PASSAGES AND STAIRS @ £1:0:0 PER SQUARE FEET. THESE COSTS MUST BE ADJUSTED FOR EACH PARTICULAR LOCALITY.

THIS GRAPH IS INVERTED IN THE NEXT GRAPH AND THE VERTICAL SCALE REDUCED.

GRAPH. LAND & BUILDING COSTS.



THE TOTAL COST OF DWELLING & LAND IS PLOTTED TOGETHER ABOVE THE DATUM OF NEXT GRAPH.

If the land costs are considered in relation to density and the form of dwelling dictated by that particular density as computed in the proceeding tables, (see Figure 35) the result will be a graph of the nature shown in Figure 36. This graph shows clearly that land costs must be greater than £5,000 per acre before resort is made to multi-storey structures as a total economic answer.

(c) Development and Service Costs.

Development and service costs are affected by higher densities but topography and soil conditions will dictate various decisions in each particular case. In the upper limits the service costs, however, do not decrease as rapidly as might be expected by increasing densities. This is due to the fact that services are designed to meet demand. By concentrating a given number of dwellings into a smaller area of land, there is no reduction in the road widths, as these are designed to meet traffic flow; sewers, water mains and electric cables still have to meet the same load. The lengths of these services may, however, be considerably reduced. The addition of service and development costs to the economies of densities will result in the graph shown in Figure 37. It must be pointed out that this graph is only for one particular case and that the preparation of these graphs for each particular town and area is essential.

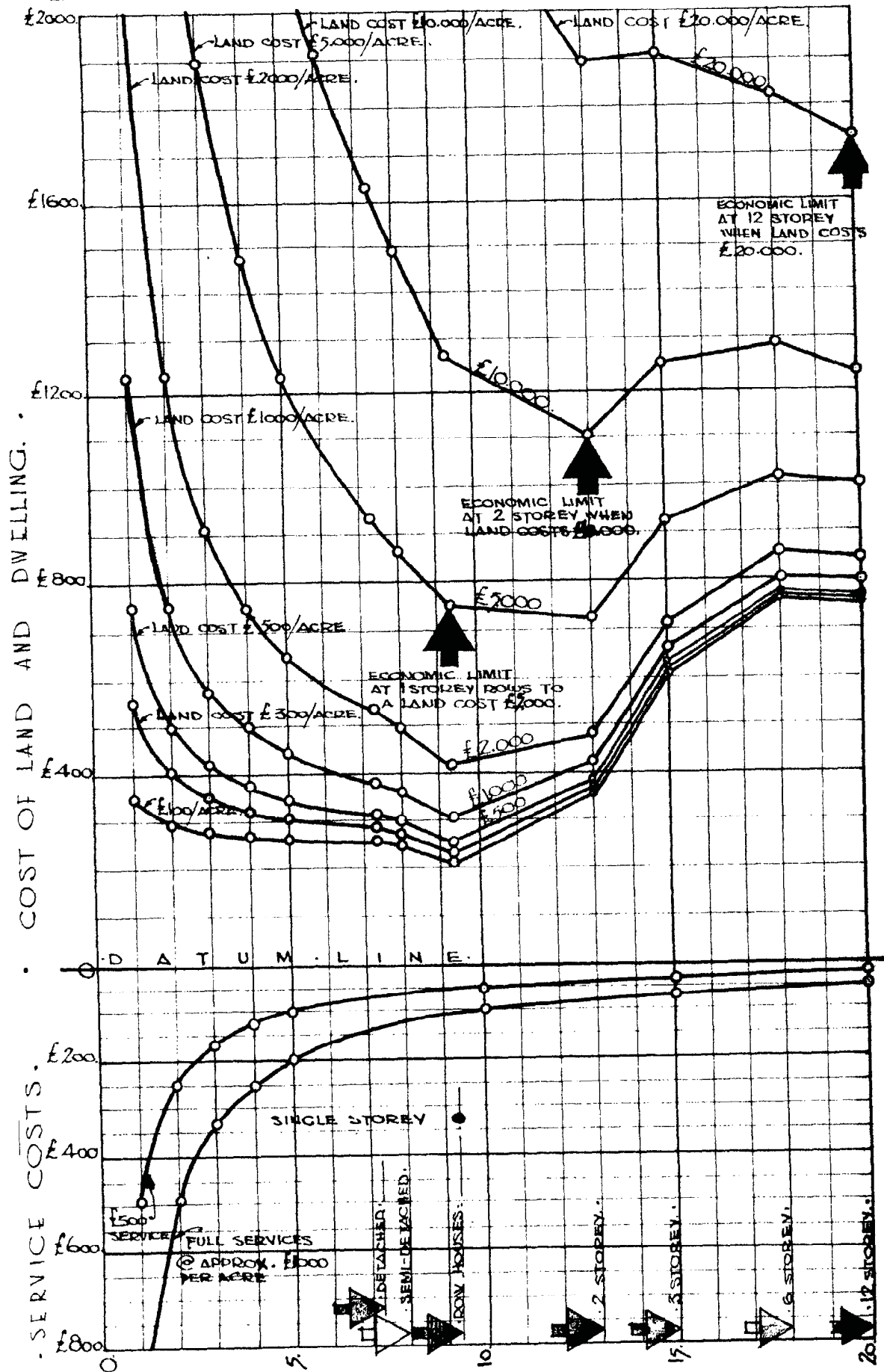
Generally the indications are that where land is cheap single storey development is financially sound, (to a land cost of £5000/acre) but where land is expensive it will pay to increase densities to much higher figures.

As the graphs are based upon low income housing it is essential that these economies are studied very carefully as a means of reducing rentals. The points emerging from the graphs show that the provision of full services, i.e. waterborne sewerage, stormwater, black topped roads, street lighting and water supply, does not bring about a great difference in capital costs when densities increase beyond 7 dwellings/acre gross. There is a very definite dip towards low costs in the curves of the graphs where land is cheap i.e. to about £5,000/acre, at the maximum density, which results from the use of single storey row house development. Lastly, the curves of land and dwelling costs are very steep at low densities, i.e. below 5 dwellings/acre, and then form an economical layer to a gross density of 9 dwellings per acre, rising steeply until the densities demand a six storey flat development.

CONCLUSIONS.

- (1) In general terms, low densities must be avoided, i.e. layouts below a gross density of 5 dwellings/acre, unless the persons housed can afford to pay the resultant rents, rates and taxes.
- (2) When land costs do not exceed £5000/acre the most economical development is a single storey layout.
- (3) Very tall apartment or flat buildings should only be considered when costs of land exceed £30,000/acre.
- (4) These figures only apply to controlled development areas where the authority owns the land and is responsible for all development work, such as encountered in Native housing schemes and the housing of low income groups.

GRAPH . SERVICES, BUILDING & LAND COSTS. .



. GROSS DENSITY IN DWELLINGS PER ACRE. .

. NB. AS LAND COST INCREASES ECONOMICAL LIMIT
MOVES FROM 1 STOREY TO MULTI-STOREY UNITS. .

- (5) These figures are based upon the assumption of family housing and do not include dwellings for single persons who can share bathrooms, and living and kitchen areas, thereby introducing new factors which must be considered in the detailed house plans.
- (6) A close inspection of the curves of the graphs (Figure 37) shows that much can be learnt from the steepness of the curves in respect of the alternative types of dwelling units. Consider the slope of the line where land costs £100/acre; it will be seen that the slope of the curve as it leaves the single storey development is steeper than the line between single storey detached, semi-detached and row houses. This indicates that in a layout where ground costs £100/acre and relief from row houses is sought, it would be economical to use some single storey detached and semi-detached houses, rather than double storey units. In the case of land at £5000/acre the curve beyond single storey row house development grows flatter than before, and this time relief to the scheme would be supplied more economically by the additional use of double storey row houses and maisonettes rather than single storey detached and semi-detached units.
- (7) In selecting a site for a housing estate it often becomes a decision between a site of high cost near to the place of work or a low cost site removed from the place of work. The authority undertaking the development work may prefer the low cost site but it is important that the cost to the inhabitants is known otherwise the scheme may be a complete failure. The graph can assist greatly in establishing which is the best site from the point of view of the inhabitants. The following examples will serve to explain this point.

EXAMPLE I. A decision has to be made on the selection of a site for a Native housing scheme. The first area available is within walking distance of an industrial site but the land cost is £900 per acre whereas the second site is 10 miles removed and is already purchased. The transport cost from the distant site to place of work - the industrial site, is 13/- per month.

Case A. Site within walking distance. Development would be single storey row houses and with reduced road widths would give a gross density of 9 dwellings per acre.

∴ Land cost per unit	=	£100
Dwelling cost	=	£200
Service cost per unit	=	<u>£ 50</u>
Total cost per unit	=	<u>£350</u>

Case B.

Land cost per unit	=	£Nil
Dwelling cost	=	£200
Service cost per unit	=	<u>£ 50</u>

Total cost per unit = £250 - this assumes high density development, and no extra cost of bringing services to the site or transport costs involved in building.

As an economic scheme at $4\frac{1}{2}\%$ repayable over 40 years the following is the cost to the inhabitants:-

Case A.		Case B.	
Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £350; monthly repayment =	£1.11. 6	Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £250; monthly repayment =	£1. 2. 6
Transport cost per month	Nil	Transport cost per month	£ 13. 0
Total monthly cost to inhabitants =	<u>£1.11. 6</u>	Total monthly cost to inhabitants =	<u>£1.15. 6</u>

If the loan was considered as $\frac{3}{4}\%$ sub-economic the resultant monthly cost to the inhabitants would be

Case A = £0.19.0 and case B = £1.8.8.

Therefore, the site with a land cost of £900 per acre is more beneficial to the tenants, either as economic loans or assisted monies.

EXAMPLE II. If the decision had to be made between the same two sites but land cost was £2250 per acre in case A and was already purchased in case B, where the site demanded a 10 mile journey to work then the following would result:-

Case A.

Land cost per unit = £250
 Dwelling cost = £200
 Service cost per unit = £ 50
 Total cost per unit = £500

Case B. is the same as in example I, therefore £250.

Case A / ...

Case A		Case B	
Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £500; monthly repayment =	£2. 5. 3	Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £250; monthly repayment =	£1. 2. 6
Transport cost per month.	Nil	Transport cost per month.	£ 13. 0
Total monthly cost to inhabitants =	<u>£2. 5. 3</u>	Total monthly cost to inhabitants =	<u>£1.15. 6</u>

Therefore, the distant site is more economical to the inhabitants, but if the loans were considered as $\frac{3}{4}\%$ assisted the following would be the case:

Case A		Case B.	
Interest and redemption over 40 years @ $\frac{3}{4}\%$ redeemable @ $3\frac{1}{4}\%$, on £450; monthly repayment = (This is land and dwelling cost)	£0.14.10	Interest and redemption over 40 years @ $\frac{3}{4}\%$ redeemable @ $3\frac{1}{4}\%$, on £200; monthly repayment = (This is land and dwelling cost).	£0. 6. 7
Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £50 = * (Service costs only)	£0. 9. 1	Interest and redemption over 40 years @ $4\frac{1}{2}\%$ with sinking fund, on £50 = * (Service costs only)	£0. 9. 1
Transport cost per month.	Nil	Transport cost per month.	13. 0
Total monthly cost to inhabitants.	<u>£1. 3. 11</u>	Total monthly cost to	<u>£1. 8. 8</u>

In the case of assisted loans being available although the land is costing £2250 per acre, it is more attractive to develop than the site 10 miles removed, from the point of view of the inhabitants, and the local authority is not affected.

The / ...

* Service costs are generally repayable at economic rates.

- (8) The economies of densities in Native housing in South Africa, depend to a large extent upon single storey development. This is upsetting from the point of view of aesthetics, in what may be called monotonous single storey barrack layouts, but it is now left to the planners to introduce imaginative layouts and landscaping to solve this problem. In so far as the future is concerned, a layout of low density presents few problems when redevelopment becomes imperative, either because of overcrowding or because the life of the building is at an end, whereas a high density scheme gives rise to many problems.
- (9) Although the economies of densities point to single storey terraced houses, to adopt this form of dwelling without any consideration of other types must be considered as very dangerous. The social demands must be carefully weighed against the economic considerations, so that the housing area will suit all the demands of its inhabitants.
- (10) No set of standards, however well thought out, will meet the demands of every society; many factors have to be considered and balanced one with the other in order to create a happy solution. The tables discussed in this chapter deal with land uses in relation to non-European housing and can only be regarded as a guide to planning*.

This study is a specialised work and deals with Native housing in South Africa. The figures and tables will require complete revision for European housing as the basis of the work depends upon an average family size of 5 persons.

C H A P T E R III.

CHAPTER III.

MISCELLANEOUS TOWN PLANNING NOTES IN RELATION TO NATIVE HOUSING.

ABSTRACT:

The importance of social surveys in respect of housing schemes is stressed. Such surveys will result in layouts containing a variety of dwelling types of different sizes and with a range of rentals suitable to meet the varied demands of the inhabitants.

Home ownership, amenities, communal facilities and safe and easy access within townships are discussed and certain aspects of improving Native housing such as the headman system, housing managers, self-help building, aesthetics and landscaping are posed as methods possessing possibilities in the future. Stress is made of the fact that houses alone do not necessarily produce a good environment.

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"But it is equally true that place and folk, the variation of topography and climate and the idiosyncrasies of human groups must affect every scientific calculation, every way, practical and artistic, of doing things".

Sir Patric Abercrombie.

In this Chapter many aspects of planning Native housing will be discussed but, as so much research work still has to be done, in numerous cases no conclusions can be drawn. The approach, in the work recorded, is along the lines of family living and the solution has been considered in this light. Each amenity has been related to the family home, i.e. in relation to the husband, his place of work and his free time, the wife in respect of the home, shopping facilities and community centre, and the children in relation to schools, places of entertainment and play and traffic routes. In order to obtain a full picture of a housing estate it is necessary to consider many more aspects than those inspected in Chapters I and II, and some of these will be discussed in this Chapter.

SOCIAL FACTORS OF HIGHER DENSITIES AND HOUSING SCHEMES.

In considering a housing layout at a given density, it is only when the plan has been executed that the success or failure can be judged. In other words it is through the behaviour of the persons housed that the planner can judge the success of decisions made when the plans still lay on the drawing table. With this thought in mind, it is as well to determine from the start, when discussing planning and densities, what man seeks in his home and surroundings.

Generally, the requirements of a housing estate are:-

- (a) A variety of dwelling types and dwelling sizes.
- (b) A range of rentals.
- (c) Ample provision of amenities.
- (d) Safe and easy circulation within the area.
- (e) Provision of ample sunlight and fresh air.
- (f) Easy journeys to place of work.
- (g) The right to own one's house.

SOCIAL SURVEYS:

It is obvious from much of the planning which can be seen in South Africa, that the above requirements have not been met. If the planner is to improve his layouts he will immediately find that he has little or no information available to guide him. In fact, he will find that the demands vary from one area to another. In Native housing in South Africa great variations will be encountered owing to the great changes that are taking place as the Natives become urbanised. A Native born in the urban area has an outlook quite different from that of the rural Native arriving in the urban area for the first time. To the rural Native, the town is full of magic, which either amazes him and makes him afraid or fills him with excitement and an adventurous spirit. Amongst the urban community he is out-of-place and finds himself a real country bumpkin; his reaction is towards a change so that he will become one of the group instead of being an ostracised individual belonging to no society.

The change in a rural Native is very marked; firstly, he changes his clothing, accepting the western dress of the European; secondly, he adopts an attitude of knowing everything and endeavours not to show surprise at witnessing a new miracle of the urban area; lastly, he tends to do those things common to his urban colleagues and commences drinking various concoctions and gambling. The European is often seen laughing at the Native wearing the latest fashions and a pair of spectacles fitted with clear glass - the action behind this is one of tragic urbanisation. The rural native, overawed by the speed and greatness of the modern city, finds himself lonely and almost an outcast; his reaction is to become a member of the town group. In the homes of the urban natives, an unlimited variety of ornaments of low taste can be found, expressing the same materialistic outlook of pride and possession shown during the industrial revolution of Europe in the 19th century. Cheap, brightly coloured vases of bad design are a common feature of Native furnishings, family photographs, and elaborate mass produced furniture all find their way into the home.

"A gradual and general debasement of taste was an inevitable result. To begin with, this debasement took place primarily in the large urban centres, and particularly among people of small means who, thanks to a misdirected instinct of pride, welcomed keenly the opportunity of coming into possession of unlimited ornamental riches by little money. Because of the improved means of communication, however, these ornamental riches were soon spread throughout the land, to town and country, and even to those regions where folk-art still was untouched by the pernicious effects of materialism". This is a description of Europe during the first half of the nineteenth century by Eliel Saarinen in his 'The City, its growth, its decay, its future'.

The factors and understanding of the present urbanisation of the Native population in South Africa demand a great deal of research.

1) "The wholeness of the individual depends upon his association within a whole community. Those who escaped the claims and duties of life in a community did not achieve freedom. They either floated in a void of self-indulgent fantasy or they sank down to the level of animal existence; and they proved this by their capacity for violence, brutality, devilry".

The / ...

1) Lewis Mumford in "The Conditions of Man".

The growing crisis of urbanisation must be faced, and if the planner is to assist he must have a knowledge of what is going on. The knowledge or understanding will develop from social surveys which will lead to social action. Factual information is necessary if a plan is to be conceived as a whole and is to have a sound foundation for future development. Where little is known, as is the case of the urban Native, social surveys must be the first consideration of any planning. The surveys can assist in measuring the extent of urbanisation, in defining the outlook of the people, in guiding the planner when preparing the physical plan, but will not in themselves give the final plan. In the same way, the purely physical or architectural plan ignores the effect which the physical character and layout will have on the social life of the inhabitants. Therefore, it is important that the planner and sociologist work together in preparing the plan. This co-operation will answer the demands of the persons housed in a planned layout, and as defined at the beginning of this Chapter.

(a) (i) Variety of dwelling types.

For any group of people a great variety of dwelling types is required. The young married couples may prefer flats, the families with small children tend to want houses set in their own grounds, old people move to flats and old age homes, and unmarried adults are attracted to boarding establishments and bachelor flats. A pre-determined density, if selected on the high side, may upset the natural distribution of dwelling types. This, then, constitutes the first demand of man, which is related to the determination of density and planning.

Many arguments for and against flats have been recorded in recent years. It is not necessary to enlarge upon these but only to bring to the notice of the planner that certain factors determine the demand for a particular type of dwelling. Flexibility must be allowed for in any layout so that a variety of housing types are provided to meet the demands of the inhabitants.

In 'Living in Flats', published by the Ministry of Housing in England, the position is summed up as follows:

"Our terms of reference do not call upon us to judge which is the better to live in, a house or a flat. If that question were posed to us, our unhesitating answer would be that it depends upon the person or family; for some people a flat has great advantages, whereas others feel the want of a house because of material restrictions which are inherent in living in a flat, however large. There is an infinite variety in people's needs and problems, and we have tried to keep that before us all through our report."

(a) (ii) A variety of dwelling sizes.

From social surveys it is found possible to break up a community into families of various sizes. Then, in terms of minimum standards of accommodation, houses of various sizes will be required to house the families properly. It is obvious that if the proportion of house sizes is such that too many small houses are provided, then the larger families will be overcrowded within some of the dwellings. On the other hand if too many large houses are provided then some of the smaller families will be overhoused. In the first case the health of the family may be affected, in the second, the economics of housing are lost. The social survey will determine the correct proportion of each family size, but in addition

it must be remembered that re-allocation of houses will be necessary if proper occupancy is to be maintained throughout the life of the housing estate. This brings up another important aspect of housing - that of administration and management which will be discussed later.

(b) Range of Rentals.

It is not sufficient to provide a range of rentals in relation to house sizes: in addition, different rentals in relation to a particular dwelling size must be provided. In this way persons in different income groups can find suitable house sizes within their rent paying abilities. Socio-Economic surveys, similar to that undertaken at Springs, will guide the planner in establishing houses of various sizes with a range of rentals suitable to the rent paying ability of all income classes.

In respect of housing for different income groups a further problem which demands a great deal of research is whether the classes should be mixed or separated in a certain neighbourhood. In respect of Native urban housing no information exists and in Kwa-Thema, Springs, both mixed and separate development has been planned with the idea of returning to the houses after a period of occupation in order to determine which arrangement is the most successful.

(c) Ample provision of amenities.

The provision of amenities in a housing scheme will determine the quality of the environment. The higher the density the more important it is to provide the proper and full amenities. Houses alone cannot create a good environment, and it is necessary to provide shops, schools, parks, playing fields, halls, libraries, clinics etc. in order to establish a neighbourhood in which persons can live a full life. From surveys carried out in England and Europe it would appear that the positioning of such amenities within a neighbourhood is most important, otherwise they do not satisfy the inhabitants' demands. The positioning of amenities is generally associated with the route taken to work and the place of work. It appears that if a person takes a certain road to work, and amenities are provided along that road, he will use them in preference to amenities provided elsewhere. A mother taking a small child to school will frequent the shop close to the school, and the local shopping centre which is used is that along the route leading to the centre of town. In terms of population behaviour this means that people do not walk away from the centre of town to their local shopping centre.

In planning Native townships, such considerations require investigation but until positive results are obtained the above will form a useful guide. The dynamics involved in any layout require a much greater understanding if successful planning is to be obtained.

The provision of amenities and their relation to various populations has been fully discussed in Chapter II.

(d) Safe and easy circulation.

In South Africa, safe and easy access within the housing area has, in general, resulted in unimaginative layouts with road widths quite unrelated to the volume of traffic. It is easy to criticise the decisions of earlier planners for not making the streets of Johannesburg's shopping centre wider, but theirs was a task which no one would gladly face today. It must be remembered that their task was that of laying out a new town just before the advent of the motor car. There is, however,

a danger that the pendulum is swinging in the opposite direction, and roads are being planned for traffic volumes far in excess of what can ever be expected.

In designing low cost housing in South Africa, research is definitely required in order to investigate the effects of reducing the width of residential roads. It is essential, in planning such residential areas with reduced road widths, that no road except the planned roads will tend to become through roads. Once the road pattern is such that residential roads lead only to a particular block of dwellings, then, considering the traffic movement within low income housing, the road widths can be determined accordingly.

The practice of separate vehicular and pedestrian access is one which requires a great deal more consideration in Native housing estates. The creation of safe pedestrian access to schools and playing fields is a demand of every parent, and if such pedestrian access could be entirely free of any roads used by vehicles, then the planning would be ideal.

(e) Provision of ample sunlight and fresh air.

This point has been discussed, but it is of interest to note that it is not easy to determine scientifically the spacing between dwellings, which is rather a matter of opinion. In Native housing in South Africa two criteria are considered: Firstly, if a pail closet is present, the minimum depth of plot would be 61'0", made up of 15'0" front garden, 25'0" depth of house, 15'0" from rear of house to closet and 6'0" depth for closet. Secondly, slops are often thrown into the back yard and unless the sun can reach this area it becomes a breeding place for germs.

(f) Easy journey to place of work.

The distance from a man's house to his place of work should be reasonable. In America, many persons connected with housing and town planning argue that so long as the means of transport are fast, comfortable and regular, distance between home and work does not present a problem. On the other hand, in South Africa it must be agreed that for the low income groups transportation costs are a burden to the family, even if transportation were subsidised. From the point of view of efficiency of workers, the service should meet the demand without undue waiting and overcrowding.

(g) The right to own one's house.

The cost of providing houses is too large an item on the nation's savings account to allow inefficiency. The most economical use must be made of materials, labour and finance and this will call for organisation on a large scale. Houses will not become homes if they are regarded purely as financial investments. The home must provide for the rearing of a family and a living place for the parents, but security of ownership is essential. Families who have pride and find security in their homes are more likely to keep them in a state of good repair and even to improve them. To say, however, that every family wishes to own a home would be quite incorrect as many families demand mobility and wish to be free of ownership ties. Ownership of a home, must, however, cost more than tenant occupation unless a lease hold basis is introduced. The main advantage of house-ownership is psychological; it can create a feeling of pride and security but can equally create a financial burden upon a family far

in excess of their economic limitations. The owner finds maintenance, improvements and decoration are all his responsibilities, but in his favour is the fact that they will be carried out to his satisfaction and when he wishes. In addition, his own labours may remedy much without considerable expenditure, and each improvement is adding to his capital asset.

It is obvious that ownership has advantages to a local authority, as houses, well maintained, are a credit to an area and demand little from its building industry and general finances. For those that can afford and desire home-ownership, every encouragement must be offered. Loans should be made available at economic rates and repayment periods be so arranged that the owners can afford the resultant monthly repayments.

In respect of home-ownership to urban Native families, the question of leasehold and freehold is often raised. It is best to understand fully what is meant by these terms. Although leasehold has been common in England it is only seventy years ago that the leaseholder was given the right to purchase the freehold of his dwelling. In South Africa, although Natives in urban areas are only given a 30 years leasehold subject to renewal for a further 30 years, on land, the freehold of property has been given. This makes home-ownership possible and provides for the payment of compensation should the leasehold be removed at the termination of the lease.

In 'The Future of Leasehold' published by PEP Vol. XVIII No. 338, January 28, 1952, the disadvantages of leasehold are all associated with individual control where no provision is made for the welfare of the family but the discussion sees many advantages in leasehold where the landlord is not an individual. "Leasehold is at its best with a public authority, a charitable trust or a private family, which has the desire and the resources to manage an estate as a whole and preserve both communal amenities and individual dwellings."

Freehold of land in South African urban Native communities is best seen in Alexandra Township, Johannesburg and Lady Selborne, Pretoria. In both these cases land values have risen very steeply and streets and other amenities are still lacking. The leasehold example of Atteridgeville, Pretoria, shows definite signs of the improvements which can be gained from such a system.

Controls, which are in the interest of the inhabitants, can be maintained by a system of leasehold and in addition, as the planner of today cannot possibly see 30 years ahead, the leasehold policy may hold very great advantages in the future. The freehold system, once it has allowed decay to set in and slum conditions have become prevalent, has to be overcome by large expenditures of money which often prevents action being taken. The main conclusion to be drawn is that as long as leasehold remains in the hands of local authorities it is the best system, at present, for the development of Native housing estates. Freehold or ownership of dwellings should, however, be freely granted to those who can afford it. Such a system will prevent land speculation and give great benefits to the Natives themselves.

Elizabeth Denby in her book "Europe Rehoused", notes the great importance of towns purchasing cheap land in readiness for housing schemes. She states: "Two things are essential - really informed and sensitive official standards of urban planning and of taste, and adequate protection of the community against land speculation, to ensure that the city itself

benefits from any rise in land values due to its replanning policy, and that 'development' is not merely short-sighted exploitation".

Surely in the case of Native housing the very means of preventing speculation is through leasehold of land. Any benefits must accrue to the Native revenue account and so be returned to the Native community in a further service. It may, in time, be necessary to extend the 30 year leasehold period and at the same time revise the conditions of passing leasehold rights onto others, especially members of a family.

METHODS OF IMPROVING NATIVE HOUSING AND OBTAINING RESULTS.

The requirements of a housing estate having been discussed in some detail, it now remains to discuss administrative and planning possibilities accessible to local authorities in creating successful Native townships.

Administration.

In the new Native Township of Natalspruit, Germiston, a system of wards under headmen has been established. The headmen are responsible for 400 houses, are elected by vote, and receive a remuneration of £3 per month from the local authority. Each headman has a Native clerk who is a paid official of the local authority, and between these two persons the administration is being successfully carried out. The responsibilities of the headmen are very wide and in some cases exceed those of a European councillor, but at all times he is assisted and guided by the nominated clerk who is trained in procedure and has daily contact with the Manager of Non-European Affairs.

The general matters covered by headmen or, as they are sometimes called, 'blockmen', are:

- (a) Preservation of good order among inhabitants. They must act as arbitrators in domestic disputes and endeavour to reach amicable settlements between parties to a dispute, out of court.
- (b) Preserve law and order and assist the Manager of Non-European Affairs and his staff.
- (c) Carry out any specific duties allocated, from time to time, under the provision of any law of the land or any regulation framed thereunder.

This system throws a great deal of the responsibilities of administration upon the Natives themselves. The system is, therefore, to be encouraged as it is through the ability of shouldering responsibilities that good living habits will be developed and inhabitants will acquire a sense of responsibility.

HOUSING MANAGERS.

As this work deals purely with housing, further discussions of administration are not required, but in respect of housing one further matter should be given consideration. The headman's task is primarily concerned with law and order but family or domestic problems of a minor nature are completely overlooked. The planner is very concerned with

with these minor problems and for this reason a system of housing managers is proposed. Any administrator of Native housing estates will soon realise that the inhabitants are not one large community of average sized families earning an average wage, but a complex society of differing income groups, different housing demands and various living habits. In order to obtain a clear picture of this society, it is necessary to have a system of contact so that unknowns become knowns. Housing managers, who can be called practical sociologists, are the persons best suited to carry out this task.

Housing managers in other countries are responsible for the collection of rentals, the general welfare of the inhabitants and the maintenance of property. In America, housing managers form part of the planning team as they can advise the planners of the practical problems met by tenants in respect of the design of dwellings and the layout and provision of services. Once a scheme is built and occupied, they are in daily contact with the inhabitants, forming and guiding tenant associations, advising families in respect of rent problems, etc. Their work includes moving families to smaller dwellings when, through marriage of their children or other circumstances, the family size decreases, assisting newly-weds to find accommodation, and finding more accommodation for families who can either afford more rent or have increased the family size. They protect a family against paying a rental beyond their rent-paying ability, and, of course, protect the estate management from subsidising those who earn an economic wage. From friendly visits, they learn to house families of the same outlook in the same area, and thus prevent neighbourly disputes; they learn the bad points of design such as stoves which are too small to cook the family meal all at one time, passages too narrow to move furniture in, etc. In addition, the families who have lost confidence in themselves through years of living in a slum environment, are found and educated once again in the manner of living a full, happy and responsible life.

In Native housing schemes, the value of housing managers could be unlimited. As the contact would be mostly with the mothers, it would be best to appoint housing manageresses, but these persons must be properly trained and have a character suited to the work. Training as a social worker and qualities of tact, common-sense, judgment and patience are desirable. Contact with the children of the house is all-important and direct daily contact with the Manager of Non-European affairs or his staff is advisable. Records and case histories of families should be kept and advisory board members or headmen should consult with housing manageresses when in doubt. When planning additional houses, the housing manageresses must be consulted and it will be through their experiences that successful plans can be produced.

In the planning of Springs new Native township of Kwa-Thema, some very important details developed in relation to the positioning of the W.C. The first houses built had an outside W.C., positioned about 20'-0" from the kitchen door. A Native woman social worker reported that such an arrangement was not satisfactory in inclement weather and recommended that the W.C. should be positioned internally. The second batch of houses contained the W.C. internally, but the plan was so arranged that the W.C. door was visible from the front door but could be screened by a curtain hung in the living room doorway. The advisory board members objected to this arrangement and requested that the W.C. door be positioned to open externally so that it required the user to leave the kitchen door and walk outside to the W.C. door. Once again the Native

social welfare worker was contacted and she stated that the people, who were accustomed to a dirty communal lavatory, might be associating dirt with all W.C.'s. She recommended that the best solution would be a back porch off which the W.C. and kitchen doors could open. This was taken into consideration, and the third batch of houses have external W.C. doors while the houses in the fourth batch are arranged with a small back porch. The social worker feels the families will soon require all their W.C.'s internally, similar to European houses, and it is now our task to find out which arrangement is correct. This will involve a social survey after at least a year of occupation, but the results of such an investigation are vital from a planning point of view. What is more important is the fact that had a housing manageress been available the problem could have been solved immediately.

In Native housing when families move into new houses they are inclined to bring with them many unnecessary and dirty pieces of junk. They are not advised that fences will be provided and that the junk and rubbish for the construction of fences is therefore unnecessary; also, no one ever assists a new family in such matters as furniture arrangement, running of the new home, how to develop a garden and so forth. Housing manageresses could do a great deal in this simple domestic planning: in addition, advice is needed on where and how to purchase foodstuffs, how to obtain a correct diet, avoid black market prices, and how to cultivate vegetables in their own gardens. The use of clinics, nursery schools, schools and other services can be explained to the household by the housing manageress. Non-co-operative families can be observed and, if necessary, moved from the good families; new arrivals can be educated and introduced to good families instead of being left to discover, often to their own detriment, the wrong way of living. Housing manageresses could also assist in developing vocational training centres and organising useful recreational activities such as boy scouts, Y.M.C.A.'s, boys and girls clubs and other activities which can curb the lawlessness of idle youths. The housing manageress is a vital link in creating the good family.

SELF-HELP BUILDING.

It is obvious that if the Native builds his own home many advantages are gained. The labour is more plentiful and cheaper, the people building for themselves are proud and take great care in their workmanship, ownership is encouraged and greater opportunities are presented. It is important, however, that the economics of building are not overlooked and that materials are not wastefully employed. Whatever system of self-help or self-building is employed, each requires a great deal of pre-planning, organisation and assistance from the European supervisors if efficiency is to be obtained. No system will be better than the next, and it is the belief of the writer that each has its part to play. In certain cases one system may be preferred to another, owing to local circumstances. The self-help or owner builder system of Sweden cannot be completely copied owing to the difficulties encountered in pre-fabrication in South Africa. The Swedish system is based upon pre-fabrication of large sections of the dwelling, leaving only unskilled erection to the owner-builder. In South Africa, the use of timber is expensive and requires care in its use owing to termite attack, while the long distances between urban centres and other factors have made the use of pre-fabricated houses expensive. The alternative methods of building have been studied by the National Building Research Institute and it would appear that for owner builders the only suitable methods of construction are those with brick or block walls. Building in these materials will therefore call :

considerable / ...

considerable skill, and they are not easily adopted to owner-builder schemes. It would appear reasonable to create teams of skilled Native building workers to carry out the work of building homes, but this as such does not mean an owner-builder system. In smaller towns where housing demands are small the system of an owner building his own home, possibly with the help of his neighbours, is possible so that such a system as owner-builders has its value.

The system of building are then:

- (a) Teams of skilled workers building houses under the direction of the technical staff of a local authority. This system has been adopted at Springs and will be discussed later. Its advantages are:
 - (i) the use of Native building workers,
 - (ii) suitability to large scale development,
 - (iii) great reduction of supervising European staff,
 - (iv) efficient use of labour and materials.
- (b) Native contractors who tender for the work and are paid by the owner. This method is suitable for economic housing but requires a great deal of supervision. It would be best suited to smaller contracts not exceeding 100 houses. Its efficiency is less than that of (a) especially in regard to materials. Germiston Municipality is successfully operating this system at a tender price of about £15 per room for contractor's labour. Materials are supplied by the owner who can purchase same at cost from the Municipal store or elsewhere as he wishes. European supervisors inspect all workmanship, plans and materials in respect of the dwelling.
- (c) Self-help as a stage development is the last system. This demands the skill of the owner and his friends who together will supply the labour. As the outlay on materials may be excessive, the house is built in stages, commencing with one room and adding at later dates one, two, three or four rooms until a complete house is built. This system is best suited to small local authorities where labour is scarce and European staff cannot be easily obtained to supervise and train Native building workers. It will also be most suitable to rural areas and Native Reserves. This system lacks the efficiency of (a) and (b) and is the most wasteful in the use of materials. It still demands supervision from a European if it is to be successful and would demand some form of organisation in ordering and supplying of materials.

Each of the abovementioned systems has an application to a particular problem and other systems can be introduced which accept some parts of each. The two main problems are, firstly, the supply of good building materials and, secondly, the provision of good plans and details from which the Native building workers can build. Without these two essentials the results will be a disorderly and unattractive development.

AESTHETICS, LANDSCAPING AND GARDEN DEVELOPMENT.

In a Native township of any size it is inevitable that, unless great care is taken during planning, a monotonous and unattractive layout will result. Standardised plans, which give great economies, and the lack of varying heights of buildings, all result in layouts which lack

excitement and appeal. No focal points are to be found and the general appearance is similar to an army barracks. It is easy to criticise such layouts as are seen in all the large towns and cities of South Africa, but how are the mistakes of the past to be remedied?

Three main approaches require consideration:

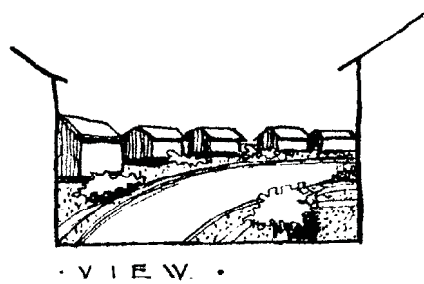
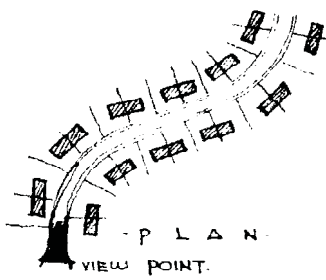
- (a) Grouping of units and more imaginative layouts.
 - (b) Landscape architecture.
 - (c) Garden design.
- (a) In the grouping of dwelling units, a great field of research and experimentation is awaiting exploration by architects and town planners. The plan of a layout shows houses dotted along a road in a particular pattern, but in reality these houses are a solid mass, enclosing and defining spaces. It is important in planning any housing scheme to remember that the flat representations on the drawing board are not just flat patterns when the buildings are erected. What is even worse is the habit of arranging road layouts on paper and then showing various subdivisions upon which someone else will arrange the type plans. If I must criticise anyone, then I look towards the Universities as it is here that the student of planning must be moulded; town planning students must be taught to make models of their layouts and in addition be instructed on how to examine them critically from a three dimensional aspect. The typical paper plan development of South African planning must be changed, but it must be noted that models in themselves mean nothing unless they can be read properly. Too often models are inspected from the point of view of detail and the space forms are completely overlooked. Models viewed from above, giving the bird's eye view, do not give the representation of a man in the street; it is necessary to position the eye low on the model to assess the spaces created to an observer in a street. If photographs are taken of the model at low angles, the three dimensional aspects of the layout will be appreciated immediately on an inspection of the resulting prints. The final point in considerations of space organisation is the production of perspective sketches from eye level; these sketches need not be elaborate rendered drawings but rather a series of small sketches from a variety of viewpoints. Figures 38 and 39 illustrate some of these sketches - reference to the work of Frederick Gibberd²⁾ is most important in this respect.

The object of this work is to create composed street pictures, complete in themselves, each displaying a varied and interesting building group composed about a road. The usual residential road with houses and/or trees and hedges forms straight lines which run on into infinity: the scene is never restful. Focal points must be introduced and, in a housing layout, these can be achieved by curved streets, (these too can become wearisome if repeated too often) by setting buildings back or forward to create enclosures, expressing the few major buildings such as churches, schools and shops as focal points to certain roads, and, finally, by introducing clumps of well

positioned / ...

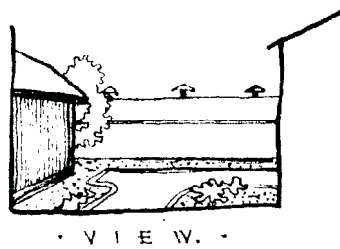
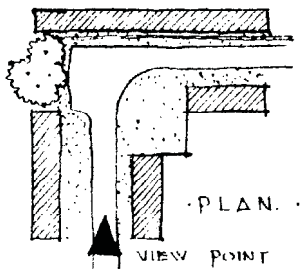
2) "Three dimensional aspects of Housing Layouts" Frederick Gibberd - Journal of the R.I.C.A. August '48 and 'Town Design' by Frederick Gibberd.

THE STREET SCENE. 1.



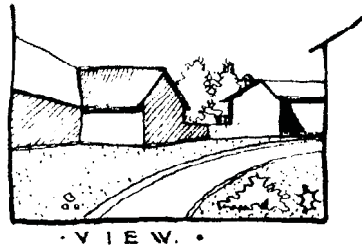
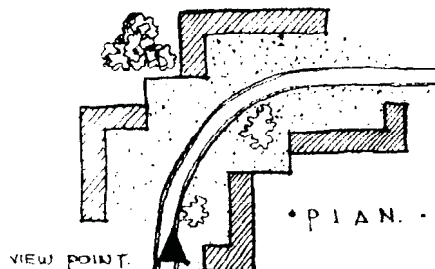
CURVED STREET.

THE CURVED STREET CLOSES VIEW AND LIMITS SPACE. IT LEADS US ON TO NEW SURROUNDINGS, IS INTERESTING, BUT SOON BECOMES WEARISOME IF THE CURVES GO ON TOO LONG.



STOPPED-ROAD.

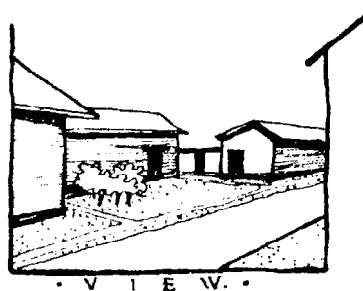
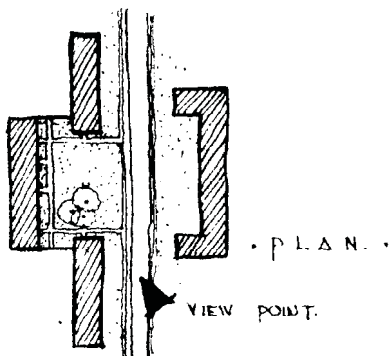
BUILDINGS POSITIONED ACROSS ROAD CAUSING RIGHT ANGULAR TURN. TREES & PLANTINGS CAN SIMILARLY CLOSE OFF VIEW. APPLICATION IS LIMITED & GIVES TRAFFIC DIFFICULTY.



CURVED STOPPED-ROAD.

THIS LAYOUT ALTHOUGH MORE EXPENSIVE, IS VERY INTERESTING AND RESULTS IN AN EXCITING VISUAL SCENE. THE FLOW OF TRAFFIC IS NOW SIMPLE & SMOOTH.

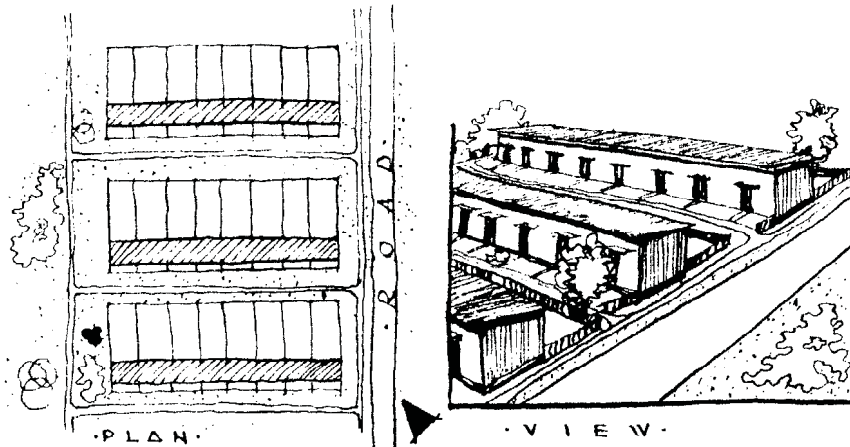
DIFFERING TEXTURES OR COLOURS CAN BE INTRODUCED IN END WALLS.



BUILDINGS SET BACK.

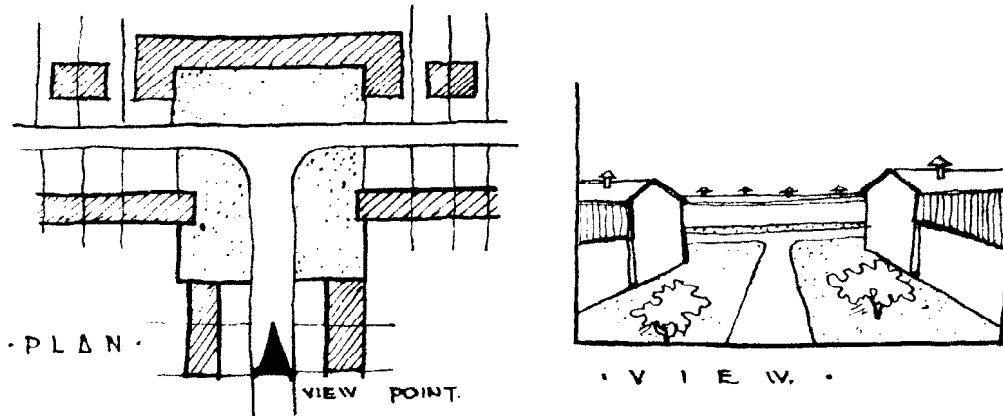
BUILDING & PLOTS MUST BE SET BACK TOGETHER. ENDS OF BUILDINGS REQUIRE ATTENTION & WALLS ARE USED TO SCREEN VIEW OF BACK GARDEN.

THE STREET SCENE..2..



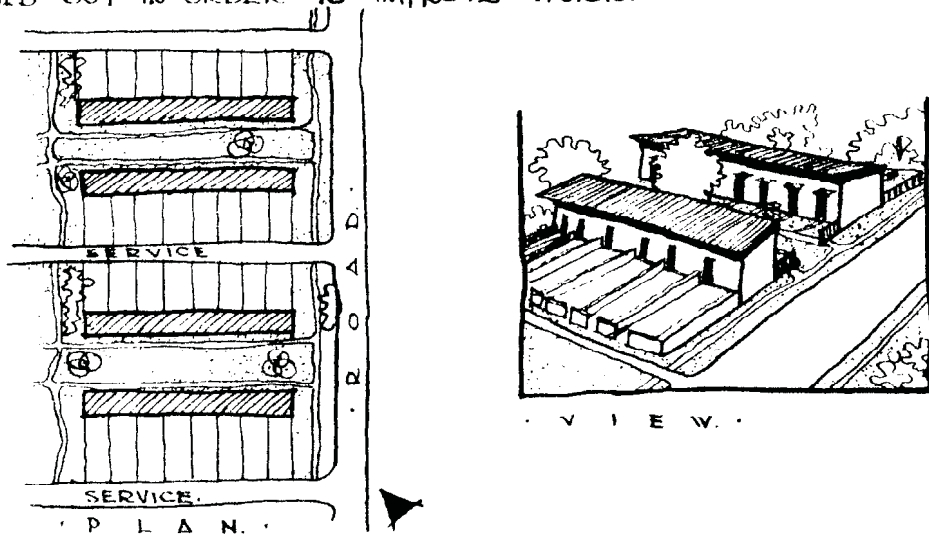
RIGHT-ANGLE PLANNING..

A POPULAR METHOD OF POSITIONING ROW HOUSES.
EACH BLOCK IS ORIENTATED IN SAME DIRECTION.
THE BACK GARDEN IS, HOWEVER, EXPOSED TO ROAD
& MUST BE CONTROLLED OR SCREENED.



T-JUNCTION..

CLOSING OF VIEW WITH SMALL UNIT IS UNSATISFACTORY,
THEREFORE, ROW HOUSE ADOPTED. NOTE HOW REAR
YARDS HAVE BEEN SCREENED OFF BY WALL & JUNCTION
OPENED OUT IN ORDER TO IMPROVE VISION.



RIGHT-ANGLE PLANNING.

SYSTEM OF PLANNING ROW HOUSES USED IN
WITBANK & SPRINGS. DEVELOPED BY AUTHOR
TO OVERCOME REFUSE REMOVAL DIFFICULTIES.
TWO ROWS IN LENGTH MAXIMUM THEN SET-BACK REQUIRED.

positioned trees at vital points or in conjunction with building groups. In the consideration of details, colour schemes and wall textures can give further interest to the street scene. It is, however, impossible to discuss in detail all the important aspects of grouping of buildings in housing estates; it is only necessary to point to this important contribution in planning and creating good environments in which to live.

- (b) Landscape architecture has much to offer the planner of housing estates. Plant forms must be introduced into layouts to create interest, give shade and colour, and form three dimensional spaces. The plant forms must be in harmony with the site and fulfil the needs of man in a simple, orderly layout. The life of the plants must stimulate man to live and breathe in the freedom of Nature (See Figure 40)
- (c) Garden design must be encouraged and the Native taught the value of the outdoor space which surrounds his home. The house and garden must become one space fully integrated. The free planning in the building must be reflected in the landscape and both must be considered as one.

"The landscape architect's part in town planning (and his should be a great role indeed) must be one of service to the site and the people who live on it; until now he has been occupied in dispensing decorative favours instead of providing the basis for a new life in Nature".

CHRISTOPHER TUNNARD in "Gardens in the
Modern Landscape".

The art of landscape design and garden design must be introduced into the Native housing estates not as superficial decoration but as well considered designs which are economical, useful and a joy to behold. (See Figure 41). More detailed considerations of landscape architecture are discussed in the author's thesis submitted to the University of the Witwatersrand for the Degree of Master of Architecture. The title of the thesis is "An Investigation into the Functional and Aesthetic aspects of Garden Architecture".

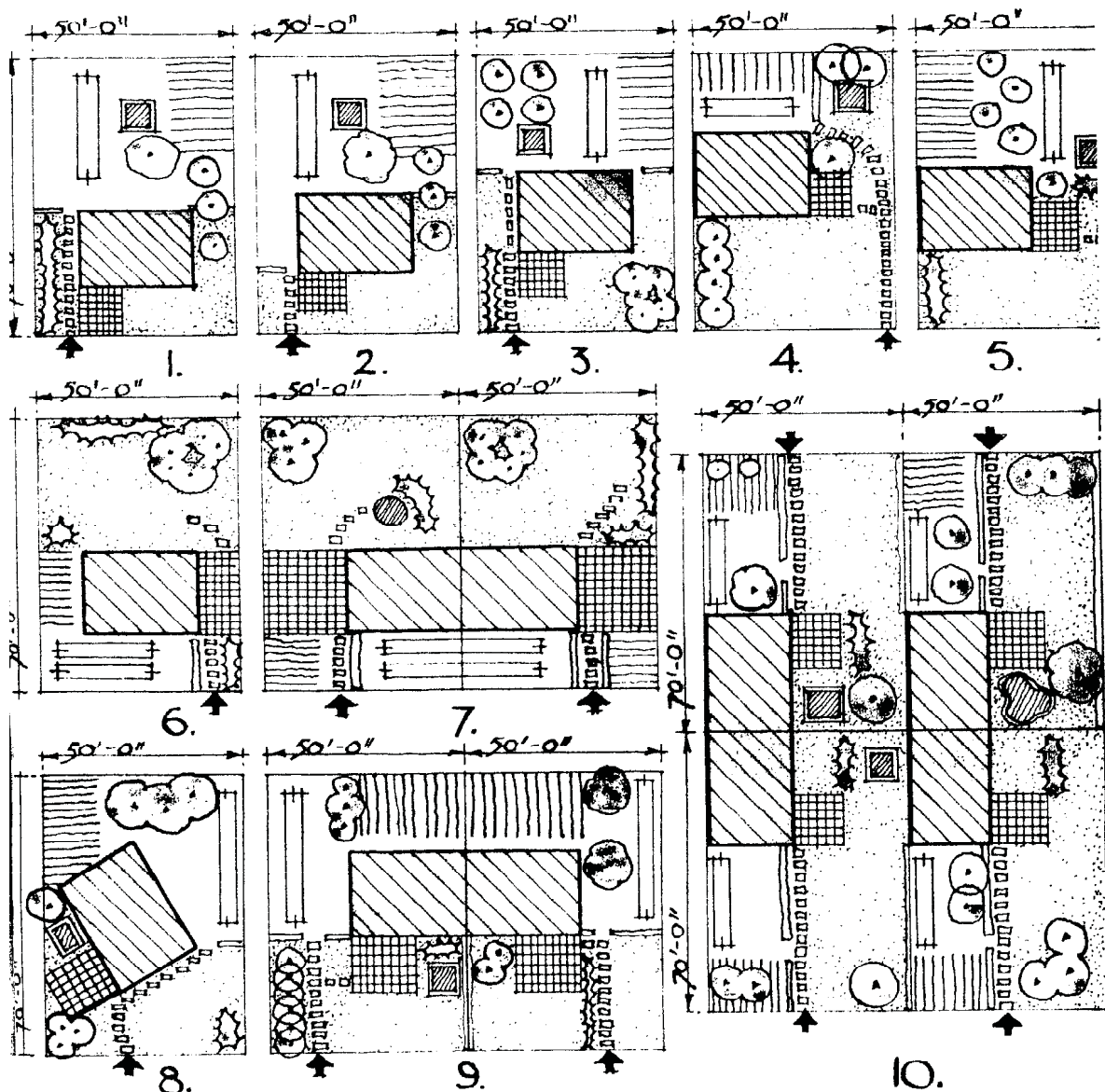
HOUSES ALONE DO NOT CREATE A GOOD ENVIRONMENT.

A well designed house is far from the only desire of a family; the housewife may be contented in her well equipped kitchen, but if she has to travel long and uncomfortable distances to purchase her provisions, her contentment is short-lived. The child that has to traverse dangerous traffic routes on the journey to school or playing field causes the parents great anxiety. Where children are forced to play in the street, because no recreational grounds exist, dissatisfaction arises, and the desire for a better environment is sought. This means that amenities beyond the dwelling are equally as important as the home itself.

The demand for amenities and the space provisions have been discussed in Chapter II but the actual supply and erection of such amenities cannot be left indefinitely to be attended to by the next generation.

As the provision of housing was discussed as a stage development it seems reasonable to assume that amenities can be treated along similar

ANALYSIS OF LAYOUTS OF 50'x70' PLOTS, AS TAPED OUT.



PLANS - Scale: 1" to 40'-0".

1. DETACHED HOUSE WITH SMALL FRONT GARDEN AND LARGE REAR YARD.
2. DETACHED HOUSE WITH AVERAGE 15'-0" DEEP FRONT GARDEN.
3. DETACHED HOUSE WITH 20'-0" FRONT GARDEN AND GOOD REAR YARD - GOOD LAYOUT.
4. BIG FRONT GARDEN CAUSED BY POSITION OF DWELLING ON BOUNDARY.
5. GOOD LAYOUT, GIVING LARGE AREA OF USEFUL SPACE; HOUSE ON BOUNDARY.
6. HOUSE FACING AWAY FROM ROAD OVERCOMING DUST NUISANCE.
7. SEMI-DETACHED HOUSE, FACING AWAY FROM ROAD. GOOD LAYOUT.
8. DIAGONAL POSITIONING OF HOUSE, CAUSING WASTEFUL LAYOUT.
9. SEMI-DETACHED HOUSE FACING ROAD. 20'-0" BUILDING LINE & BIG FRONT GARDEN.
10. SEMI-DETACHED HOUSES AT RIGHT ANGLES TO ROAD. WINDOWS OVERLOOK NEIGHBOUR.

- DWELLING.
- OUTDOOR LIVING.
- VEGETABLES.
- LAWN.
- FRUIT TREES.
- SAND PIT.
- WASHING LINE.

lines. A community centre, school or *ekurh* costing £25,000 is a credit to the area, but if lack of available monies prevents the erection of such structures for a period of years then, during the delay, the inhabitants have nothing. A small structure of £800 may, if properly planned, create the basic unit of the larger and more expensive structure. This low cost unit, although not perfect, will give the inhabitants a centre from which to build their future. Climatic considerations will play an important part in determining whether facilities are indoor or outdoor. I cannot see any objection to an outdoor *ekurh*, which would have a covered altar, place to store chairs and other items, and the whole enclosed by a garden wall. Open air cinemas are nothing new and would be most successful in the Transvaal and Orange Free State. Large shops could develop from small market stalls, which would enable traders to establish themselves, and save money which could finance the building of larger shops at a later date. If monies are available from Kaffir Beer profits or other sources of revenue, the immediate development could be spread over a number of amenities, instead of being concentrated upon one large and imposing structure.

The community hall could be built up in stages from small club rooms 20'0" by 60'0" built at yearly or two-yearly intervals at a cost of £800 and all in accordance with a general plan, until a stage had been reached when the main hall was required. At this stage the expenditure would not involve £25,000 but something in the neighbourhood of £10,000.

At Witbank, the administrative offices have been considered along these lines and in Springs the plans for shops, churches and community halls have all been drawn up along the lines of stage development. There is also the psychological advantage, in that the inhabitants can assist in saving up money from functions in order to establish a building fund and so have a direct stake in any development taking place after the first stage has been carried out.

It is essential that amenities be provided at an early date, but living habits and climatic conditions will determine the actual form and standards of such facilities. Basically, space must first be provided in the layout then ways and means be found for providing the essential amenities.

TOWN PLANNING DATA.

It is obvious that there is as great complexity in the planning of Native townships as is encountered in any town planning scheme. For the student of planning, many major aspects can easily be lost in the consideration of detail and the following points are mentioned to assist those working in this field:

- (a) Grouping of buildings, and the use of various dwelling types especially row or terraced houses, can add interest and variety to the street scene.
- (b) Landscape design must become a major consideration in planning Native townships.
- (c) The provision of amenities is as important as the building of houses, but these need not be luxury structures.

- (d) Attention should be paid to prevailing winds, shelter in gardens, and provision of direct sunlight when siting buildings on the plots.
- (e) In considering any planning, it is essential to pay regard to the development of the area to date, as this will give an indication future requirements.
- (f) The tendency to be too lavish in land used is causing suburban sprawl; this can lead to bad location of dwellings in relation places of work causing unnecessary expenditure on transport and retarding the efficiency of workers.
- (g) Services should be considered at all stages in planning, even if they are not to be provided until later years. "Always plan for services", is a good motto, and will, in the years to come, pay handsome dividends.
- (h) It must be borne in mind at all times that the plan of today forms the pattern of living tomorrow. Children must be fully catered for and flexibility in planning must be allowed. Areas zoned today as open spaces must be regarded by authorities as proclaimed areas and not built upon haphazardly, thus destroying the entire scheme.
- (i) The early purchase of sufficient land cannot be overstressed. A carefully considered purchase of low priced land today may, in the years to come, represent a good investment and an asset to a town.
- (j) In preparing layout plans, the planner must consider the provision of transformer sites, pump stations and the like.
- (k) When sewage disposal sites are incorporated in the scheme, care must be exercised in site selection, bearing in mind the prevailing wind, type of soils, pollution due to effluents, re-use of water etc. In the case of refuse disposal, costs must be carefully analysed to see that central collection and disposal are not too costly when compared with a local system.
- (l) Administration of Native townships should aim firstly at creating good family life and then at passing responsibilities on to the people themselves.
- (m) Local authorities and planners should exercise judgment, technical skill and imagination in producing layout plans. The key to planning is to understand fully the people who will benefit from the scheme; this will require social surveys and a team approach. The planning team suggested should consist of economists, sociologists, engineers, architects and administrators under the leadership of a trained housing specialist who ought to be one of the named professions of the planning team.
- (n) Considering future development and the problems of the next generation, it is easier to demolish and replan single storey development than six storey apartment buildings.
- (o) Without a will to solve a housing problem nothing can be achieved.

- (p) Adult education and the education of children is very important in Native housing. Education leading to homecrafts, good family living and mutual support is very important.
- (q) Constructional costs must be kept low, thereby saving high rentals and allowing more dwellings to be constructed.
- (r) In Native housing schemes, the first object is to supply shelter at minimum cost to the tenant, and the second to create an environment conducive to living a full and happy life, resulting in the development of good citizens for the community of tomorrow.