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1951
South African Architectural Institute
http://hdl.handle.net/10539/22923
South African Architectural Record; Journal of the Cape, Natal, Orange Free State and Transvaal Provincial Institutes of South African Architects and the Chapter of South African Quantity Surveyors. 1951 36:1-12 p1-281

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SOUTH AFRICAN ARCHITECTURAL RECORD

THE JOURNAL OF THE CAPE, NATAL, ORANGE FREE STATE AND TRANSVAAL PROVINCIAL INSTITUTES OF SOUTH AFRICAN ARCHITECTS AND THE CHAPTER OF SOUTH AFRICAN QUANTITY SURVEYORS

THE 6 - JUN 1951 LIBRARY STELLENBOSCH

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VOLUME 36

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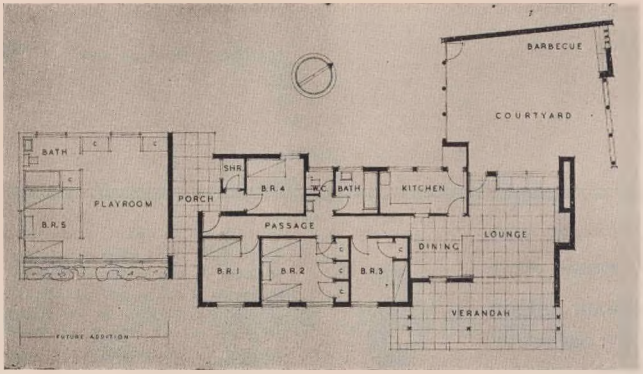
BUSINESS MANAGEMENT: G. J. McHARRY (PTY.), LTD., 43, BECKETT'S BUILDINGS, JOHANNESBURG, P.O. BOX 1409. 'PHONE 33-7505



Photos: Ballance Studios, Durban.



A WEEK-END COTTAGE AT CLANSTHAL, SOUTH COAST, NATAL

HAMLIN AND PARK ROSS, ARCHITECTS, DURBAN.

With a setting of approximately an acre of well-wooded level ground on the coast line and overlooking the sea, the architects have produced a charming and unselfconscious solution for a week-end cottage for a couple with two small children.

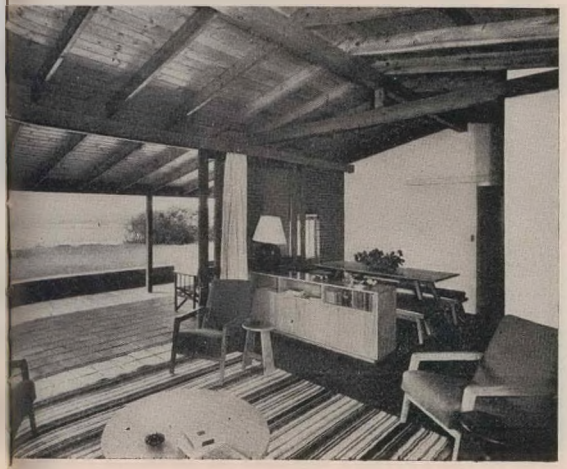
With its simple form and the exploitation of the qualities of timber and brick the building reflects the atmosphere of informality and relaxation; and while it was designed for economy in planning and construction it forms an adequate and attractive background for seaside living and entertaining.

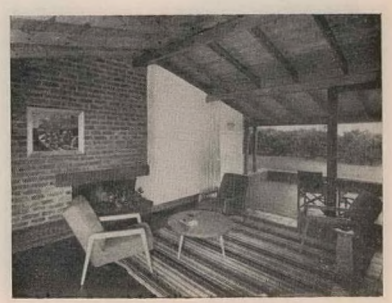
The plan was based on a 2ft. 6in. module, adopted for the spacing of the rafters which are all exposed, there being no ceiling. The roofing is shingle on spruce boarding and asphaltic sheeting. Walls are 9in. brickwork bagged both sides, floors are quarry tile in the lounge and on the verandah with Mastipane elsewhere. Gutters and flushings are copper.

The cottage cost approximately £3,200 to erect in 1949.



ABOVE: General view of the lounge from the dining recess, door to kitchen at left. BELOW, LEFT: The view over the sea from the lounge with dining recess at right. BELOW, RIGHT: The fireplace wall.









ABOVE: A view across the spacious verandah with the lounge in the background. The wide sliding glass doors permit a free circulation between the interior and the exterior, making the lounge almost a part of the outdoor living space. RIGHT: The built-in bunks in the third bedroom. All rooms have been orientated east with generous views towards the sea. BELOW: The charm of the natural setting has been preserved and is reflected in the textured brick chimney stack and rustic split pole screen to the barbecue court.





Architect's Perspective drawing of the New Church Group.

Norman Downie, A.R.I.B.A., M.I.A., Architect

ARCHITECTURAL COMPETITION

FOR THE NEW CHURCH GROUP FOR ALL SAINTS CHURCH, SOMERSET WEST, CAPE PROVINCE

Précis of Assessors, Report and Award

Forty-eight copies of the Conditions of Competition were sent out, and twenty-four complete schemes were submitted.

We made a detailed analysis of each scheme, paying particular attention to

(1) the general lay-out
(2) the planning and architectural quality of the Church
(3) the planning and architectural quality of the Hall
(4) the planning and architectural quality of the Rectory and subsidiary buildings
(5) the suitability of the links between the buildings
(6) the initial unity of the scheme if only Church and Rectory are built
(7) the suitability of finishes
(8) economy of maintenance
(9) costs.

Under all these headings, taken separately and together, we find that scheme No. 3 is more satisfactory than any other scheme submitted. This scheme is a remarkable piece of work and reaches a very high standard of design.

We would particularly call attention to the enclosed court to the west of the Church, as an external extension of the Church itself, and to the dignified approach, which may serve at one time as an extension to the Church and at another time as an open-air extension to the Parish Hall.

The Church has a generous and sheltered entrance. The Sanctuary is spacious. The problem of accommodating 100 additional persons on special occasions has been admirably

solved by grouping a baptistery and side chapel and be allowing generous aisles. The Church is excellent acoustically. Daylighting through variously glazed windows is imaginatively and soundly treated and a dignified scheme of artificial lighting suggested.

The Hall is well placed, has well-proportioned entrances, a generous stage and an economically arranged dressing-room suite on lower ground floor, and is so proportioned that it can be used for badminton; and it opens out onto a broad terrace for use during social functions.

The Rectory is excellently related to the offices of the Church and the disposition of its rooms appropriate and economical; at the same time it achieves a really domestic character. Its plan (as indeed the whole scheme) is flexible enough to enable detailed rearrangements to be made without upsetting the quality of the whole.

The Curate's Lodging is so placed that it can readily be omitted without weakening in any way the composition of the whole group; moreover, when needed, it can be added without expensive alterations.

An important factor in this scheme is that it links all together with a minimum of covered ways, which in some schemes submitted are extensive and costly—and sometimes ugly.

Finishings throughout are simple, of good quality, dignified and moreover present a number of alternative possibilities for the selection of the Council in consultation with the architect. Little periodic redecoration is required and maintenance generally is reduced to a reasonable minimum.

We have carefully checked the figures of cost submitted by the authors of this scheme and find them sound, indeed more generous than strict accuracy demands. The estimated total of £33,087 includes all the items demanded and excludes only those of an additional character, such as sculpture, which may be desirable but are not essential to the scheme.

There is no other scheme submitted which is so complete an answer to the many problems as Scheme No. 3.

The report was signed by the assessors:

PROFESSOR L. W. THORNTON WHITE
E. MARSHALL WOOD, A.R.I.B.A.
J. SOUTTAR.

THE AWARD

The award having been decided by the assessors, the promoters opened the sealed envelopes to disclose the following result of the competition:

First Premium of £200 to *Scheme No. 3*
(Norman Downie, A.R.I.B.A., M.I.A.
assisted by Mrs. Peggy Downie, A.R.I.B.A.

Second Premium of £150 to *Scheme No. 1*
Gabor Tallo, M.I.A.
Angela Komlosy, M.I.A.

Third Premium of £75 to *Scheme No. 15*
Robert Nixon, Cert. Arch. M.I.A.
Matthys Taute, M.C., A.R.I.B.A., A.A.Hon.Dip.,M.I.A

The Assessors further commended the schemes submitted by:
John Perry, No. 5,
and
H. A. P. Kent, A.R.I.B.A., A.M.T.P.I., M.I.A. No. 20.

FIRST PREMIATED DESIGN: Author's Report

FOREWORD.

The conditions of an architectural competition are by their very nature a little impersonal.

The Competitors present this solution as a basic framework or "scheme" on which their interpretation of detail requirements has been worked out as far as it is possible without the personal contact with the Promoters.

A high degree of flexibility has been retained throughout the designs and modifications could be made as required to almost any section without affecting the basic design as a whole.

LAYOUT

Generally:

From an architectural point of view the functions of the Church Group can be conveniently divided into two parts—

1. the reception and gathering of the general public for
   (a) services in the Church, and
   (b) the social gatherings in the Hall
   and
2. the individual relationships between the Rector and his parishioners which may be concerned with the
   (a) purely personal problems of the parishioner, or
   (b) the business administrations of the Church.

These two main functions have been provided for by the planning of the two courtyards—

1. the forecourt at the West End for general assembly, and
2. the courtyard and ambulatory at the East End for the individual approach.

Both courtyards are overlooked and dominated by the main mass of the Church itself. One gives access to the Church and the Church Hall, and the other to the Clergy Entrance, the Rector's Study and the Curate's Lodgings.

At the same time this method of planning allows the Church to stand free from the other buildings and provides important views of the Church as the centre of the group from all approaches.

The need to provide motor vehicle access to both these courtyards has prevented the second group from being linked round a secluded cloister in the traditional manner. The provision of the enclosed and sunken garden to the North of the

Church has been made to compensate in some way for this change.

Oak Street is the most used approach to the site and both entrances have been taken from this street. Pedestrian entrances to the Church and Church Hall are also provided in Andries Pretorius Street.

The Rectory:

The third important factor governing the layout is the need to provide satisfactory surroundings to the Rectory. The Rectory garden is planned to the North of the house and provides an outlook unrestricted and unaffected by the other buildings in the group. The garden itself is divided into a smaller intimate and private section near the house and a larger area to the West.

The Hall:

The Hall, while visually linked and grouped with the Church is yet separated and put into the background by the long retaining wall and change in level. The entrance from Andries Pretorius Street allows the Hall to be used as a completely independent unit when required.

Levels:

The fall across the site — at first sight insignificant — is sufficient *either* to cause problems in the stepping of buildings or covered ways or to be turned to advantage by a deliberate change of level at the right point.

The Designers propose to terrace the ground to the West of the Church to provide a level forecourt bounded on the North side by the long retaining wall and forming the raised terrace site for the Hall. This change of level is continued to provide an enclosed and "sunken" garden immediately to the North of the Church.

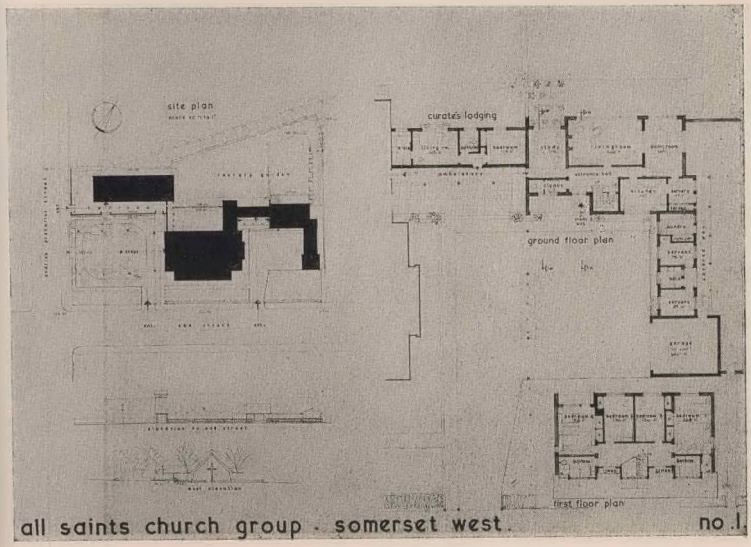
At the other end of the site the floor level of the Rectory has been fixed half way between that of the Church and the Hall and a certain amount of reducing of levels in the Rectory garden is proposed together with the building up of the bank along the irrigation canal.

Planting:

The Designers propose that the gum trees along the Northern boundary should be retained and should be continued round the end of the Hall. The pittosporum hedge along Oak Street should be retained so far as the entrance to the Church forecourt, and at this place is replaced by the new boundary wall to the forecourt.

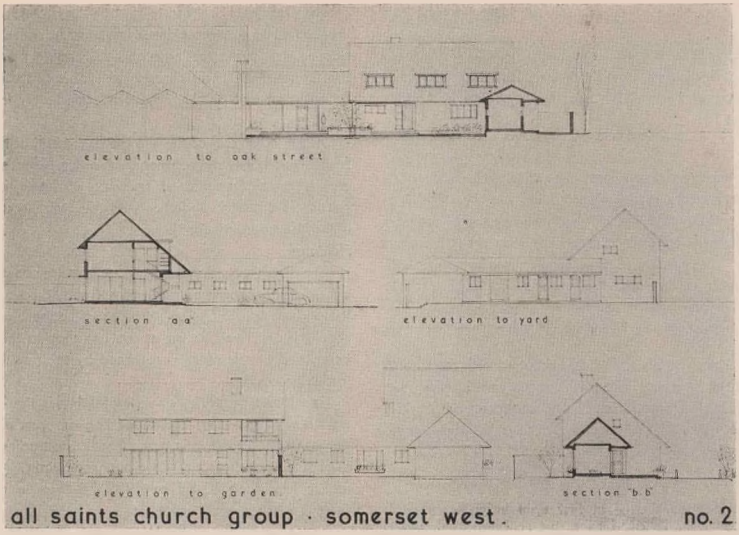
The major proposal for new planting is the double row of oak trees at the West End suggesting an open air extension of the nave and creating in a small way the traditional Cape approach of oak trees and low bounding walls. (The Designers realise how long it will take for the trees to mature — but some one has to plant oak trees!)

The greater part of the West forecourt is paved and gravelled, the Eastern verge is grassed and hydrangeas along the retaining wall would complete the main planting scheme.



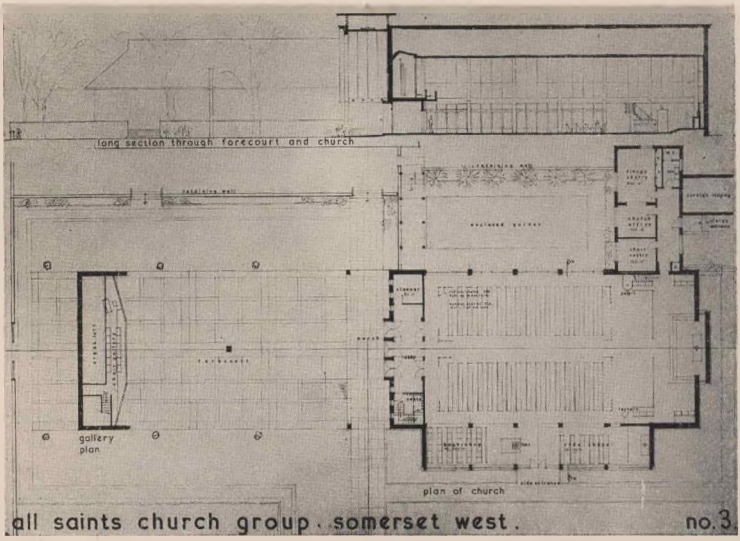
FIRST PREMIATED DESIGN

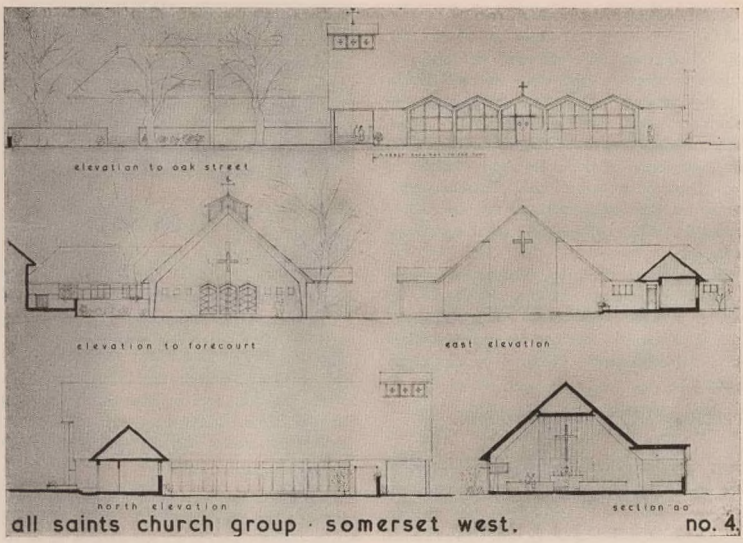
LAYOUT AND RECTORY



FIRST PREMIATED DESIGN

RECTORY AND CHURCH BUILDING

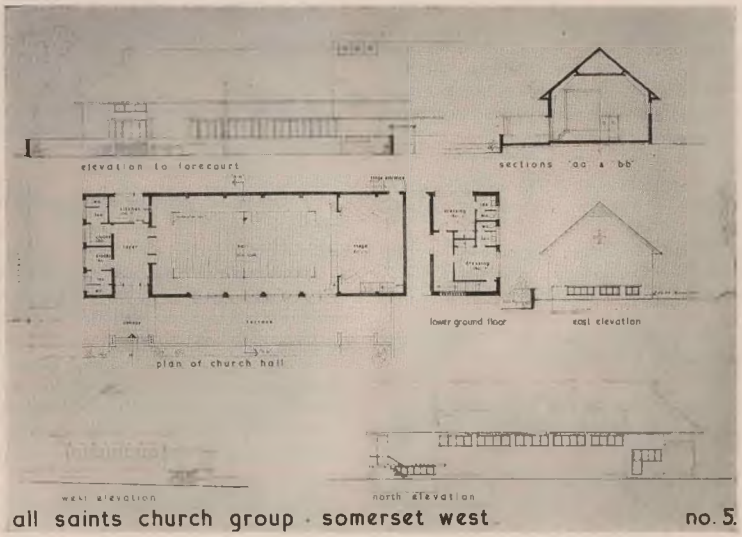




all saints church group · somerset west. no. 4.

FIRST PREMIATED DESIGN

CHURCH BUILDING AND CHURCH HALL



all saints church group · somerset west no. 5.

CONSTRUCTION AND CHARACTER

Generally:

" . . . that the buildings should be finished in materials which weather naturally and improve in appearance with age" " . . . to avoid materials which require frequent attention or re-decoration to maintain their character and appearance."

The available materials which will fulfil the above requirements are: for walls—brick or stone, for roofs—shingles or slates (ruling out copper on grounds of cost.) To obtain maximum durability for the two roofing materials the pitch should be not less than 30°. This automatically sets a key to the character of the group.

The Designers propose to use a face brick as the external wall facing for all three buildings and to use shingles as the roofing material at a general pitch of 40°. R.C. frames are proposed for the large spans as they can easily provide large open floor spaces and lofty ceilings. Details of the construction are described later.

THE RECTORY AND CURATE'S LODGING.

Aspect:

The Designers considered that the formal and functional grouping of the buildings, and the advantage of control over the immediate outlook from the principal rooms were together more important than providing an East of North aspect. The aspect of the garden front as designed is approximately 20° West of North and the Dining Room and Bedroom 1. receive Easterly light in addition.

Sun Control:

Sun control for the first floor windows is simply arranged with the projection of the eaves. Sun control for the large Living Room windows is provided for with a permanent cantilevered tube steel frame to which coloured canvas strips can be clipped during the summer while the bare framework allows the winter sun to penetrate into the rooms.

Planning Details:

The withdrawal of the external wall of the study adds to the privacy of the room and the screen wall and suggested planting increase this effect.

The linking of the Study, Curate's Lodging and Clergy Entrance to the Church centralises all the "administrative offices" and provides covered access to the Church well sheltered from the weather.

The covered way at the back of the servants' quarters provides a sheltered connection to the garage from the house.

Structure:

Eleven inch cavity loadbearing brick walls, reinforced concrete beams and floor slabs and normal timbered roof construction.

Finishes:

Buff coloured face brick walls, teak window surrounds with aluminium casements, painted soffits and fascias, shingle roof finish. Copper roofing to dormers. The lower pitch roof over the servants' quarters etc. is lined with a bituminous felt.

Internally walls are two coat plaster, ceilings flush gypsum plaster, ground floor generally strip flooring on joists, first floor wood block on screed, bathrooms, kitchen etc. corcaleumtype floor. Flush doors — veneered to the Hall Rooms and painted elsewhere, with architraves and linings to match.

Servants' quarters — all finishes simplified.

THE CHURCH.

Approach:

One of the functions of the Church is to provide a gathering place for the Parish and consequently the approaches and space around the Church assume a special significance. The forecourt is paved partly with rolled gravel and crushed stone chippings and partly with artificial stone paving laid in a pattern which continues the main lines of the Church. The open frame forming the West End continues the enclosing shape right into the open and as the oak trees reach maturity the branches will continue this arching over the whole length of the courtyard.

The West End:

The use of the open frame crowned by the belfry to form the West End provides two main axes and thus resolves the problem set by the major approach path being along the "side" road to the South of the Church.

The Cross:

The Cross — the sign of the Church — is most impressive as a free standing element and has been set on the East-West axis of the forecourt. It would be constructed in reinforced concrete with a selected stone aggregate.

Processional Way:

The forecourt provides a full processional way from the side porch bounding the forecourt and returning along the centre path to the West End.

Open Air Service:

The forecourt also holds out good possibilities for open air services.

Vehicle Approach:

There is ample room for receiving and manoeuvring a full cortege of cars. In bad weather it is possible to pull off the normal road and to use the West End as a porte cochere.

Gardening Upkeep:

The general design of the forecourt provides for easy maintenance — the central paved area requiring little upkeep, the grassed area being restricted to the margin between the Church and Oak Street and the suggested planting being mainly hydrangeas along the retaining wall and the oak trees.

Seating:

" . . . or are the 100 extra seats to be provided by some temporary congestion of the gangways etc.?" Answer: "The latter."

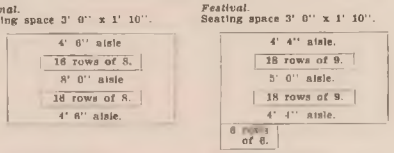
The problem set — 250 normal seating capacity with an allowance for 100 additional festival seats — is not an easy one to solve satisfactorily.

The solution offered is based on the following assumptions:—

1. space for additional seating will be empty on normal occasions and should not be conspicuous by its emptiness or uselessness but should be capable of assimilation into the normal functioning of the Church.

2. as no provision is to be made in the estimate for seating other than the Church permanent seating and the 200 Hall seats it is assumed that the extra seats will be taken from the Hall.

The solution offered is given diagrammatically below:—



Total seating 256. Total seating 380.

(See drawing No. 3 for scale drawing.)

It is proposed that the pews for the Church and the chairs for the Hall should be designed to be similar in character and material so that the additional seating will blend in with the permanent seating. The Designers propose that pews be used in the Church owing to their lower first cost, lower maintenance cost and greater flexibility in seating arrangements.

The 36 seats provided in the "baptistry" are permanent seats in as much as it would be useful to have some seats permanently in this position for use—

(a) for baptismal services,

(b) additional seating to the side chapel,

(c) as a children's corner,

(d) for an unforeseen overflow from the Church proper.

The Entrance Porch:

The outer doors to the Entrance Lobby are doubled — the outer doors being solid doors that can be fixed in the open position, and the inner doors are glazed swing doors. These will provide full lighting to the Lobby when required, and the fanlights will give sufficient light for normal purposes.

Cloakrooms:

The merits of a scheme which would provide for a sheltered access to the Hall to allow the Hall Cloakrooms to be used from the Church were examined, and it was decided that, if required, small cloakrooms could be more easily provided in the space marked "Cleaner" and the Cleaner be provided for elsewhere.

Daylighting:

It is realised that opinions as to the degree of daylighting required in the Church must vary widely. The scheme provides for glazing along the South wall as shown with translucent (non-transparent) glass from five feet above ground level — (it should be remembered that the hedge is retained along the boundary), and for glazing with clear glass down to floor level along the North looking into the enclosed garden. The two centre panels are shown with doors that open back through 180° and can be fixed in the open position. The eaves projection and a horizontal louvre at door head height control the sun penetration.

The last two bays forming the Sanctuary are without glazing and the Sanctuary light is provided entirely by the tall windows on each side of the wall forming the reredos to the altar. The unseen return wall is mirrored and will reflect sunlight back on to the reredos which will also be in full daylight. This should make the reredos the brightest surface in the Church and thus the natural focus of attention.

Acoustics:

The Church is an auditorium and the consideration of the acoustic qualities is of first importance. The conflict between economic necessity and desirable (acoustically) volumes and heights has to be resolved. The need to reduce the areas of expensive facing material in the walls has produced comparatively low eaves levels and curtailed the area of flat ceiling in the sections. The tendency of the section to throw all ceiling reflections back towards a common centre has been avoided by "killing' the reflection over the upper two-thirds of the inclined side panels

The sources of sound are located at both ends of the Church and the central seating area. The flat ceiling is required to give a good distribution of sound from all these positions.

Both the end walls would be covered by an absorbent giving a coefficient (at 500 cps.) of the order of 0.8 units. The remainder of the walling is lime plaster. The flat ceiling is panelled with plywood on framing, and the inclined planes plastered — the upper two-thirds with acoustic plaster and the lower third with hard plaster. The floor is wood block over the nave and stone paving over the Sanctuary. The distribution of sound is shown in the diagrams and the reverberation times — desirable and actual are given below:—

Volume 90,000 cu. ft. — desirable reverberation time for choral music 1.6 secs. ∓ This figure would be rather long for speech but speakers in Churches normally make allowance for this.

Calculated "t" with a congregation of 100 is 1.7 secs. and with a full Church of 375 people is 1.25 secs.

Construction:

It is proposed that the frames be precast three pinned reinforced concrete arches cast on the site off fair faced shuttering. The roof slabs over the side chapels would be cast in situ reinforced concrete slabs and edge beams with framed columns in the outer wall. Beams over the window openings in the North wall would also be in cast in situ concrete. The gallery would be formed with an R.C. slab over the Lobby and cantilevered a short distance into the Church.

Roofing throughout would be of shingles on battens—light rafters supported on steel purlins over the main roof, and battens fixed to the slabs over the side chapels. Valleys and gutters would be of copper. Over the side chapels the rainwater would be taken away from the copper gutters down copper pipes buried in the columns.

Walls generally would be in face brick as described before. The end gable walls would be built as encasing walls and the side walls to the side chapels as panels walls between frames.

Windows would be of aluminium in teak frames.

Internal Finishes:

These are generally described above under "Acoustics."

Furniture:

General considerations re seating were given under "Seating" earlier. No detail consideration has been given to the furniture, altars, pulpit, lectern or font at this stage. An allowance for their cost has been made in the estimate.

Artificial Light:

It is proposed that the main source of lighting should be from concealed fittings using the inclined ceiling planes as reflectors.

Belfry:

It is proposed that the Belfry would be of light metal construction with louvres in the front and back and pierced metal panels in the sides.

THE CHURCH HALL

. . . primarily for speaking, but . . . also for music, simple dramatic production . . . cinematograph shows . . . among other uses for dances and badminton."

The Shape of the Hall:

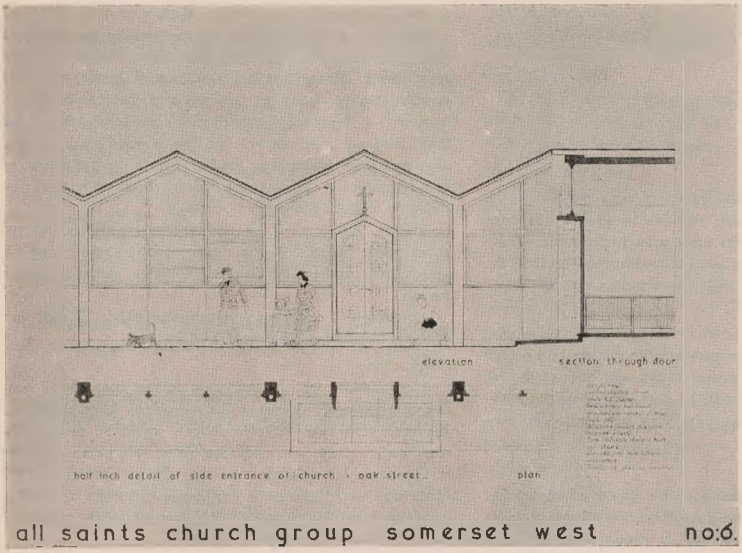
A hall to seat 200 people on an economic basis is hardly large enough for a badminton court with full margins. As designed the removal of a temporary forestage will give a clear space of 57' x 30' which will give room for normal badminton (championships courts require a space of 64' x 28').

Dramatic production also makes some minimum demands — it is considered that 30' 0" is the minimum workable width for the stage, 20' 0" the minimum depth and 12' 0" the minimum height for proscenium opening, giving an overall height requirement of some 20' 0". Twenty feet will also give a reasonable height for the badminton court (championships requiring 25' 0" over the net).

All other uses will work in within the limits fixed for the above two special cases. Normal seating being comfortably arranged in seventeen rows of twelve.

General Planning:

On the question of whether to link the Hall to the Church in plan it was decided that on balance that complete separation was an advantage. The Hall can be an *income producing building* and it will have a wider range of use, both in "time"



FIRST PREMIATED DESIGN

and in "purpose," if it is completely separate, i.e., uses can overlap without interference one with the other.

Entrances:

Normal vehicle approach to the Hall is from the Church Forecourt and the projecting canopy gives full protection from the North West between car and door.

The entrance from Andries Pretorius Street is provided for use should the Hall be sub-let for any purpose unconnected with the Church functions.

An outside entrance has been arranged for the Kitchen and the approach to the stage door along the North side of the Hall.

Acoustics:

The general problem is similar to the Church. The Volume is 32,000 cu. ft. giving a desirable reverberation time of 0.8 $\mp$ secs. for speech and music. With lime plaster on the walls, absorbent on the rear wall, absorbent on the inclined ceiling planes and plywood panelling on the flat ceiling, suspended floor over hall and stage, the actual reverberation times calculated are — Audience 200 people "t" = 0.78 secs: Audience 100 people "t" = 0.95 secs.

Construction:

The construction is generally the same as the Church — precast frames, facing brick external walls, single roof finish, teak frames with aluminium casements.

Ventilation:

Ventilation would be provided by a simple extract system in the roof space.

Black Out:

Black out over windows would be arranged with counterbalanced sliding "sash" type shutters.

SECOND PREMIATED DESIGN: Author's Report

GENERAL APPROACH TO THE PROBLEM

The three main buildings of the group have been placed on the site so as to emphasise clearly and, at the same time, to combine into a whole the Church, the Parish Hall and the Rectory. These three elements are so placed that three garden areas are created — a garden for the Parish as a whole, a sacred garden or cloister and the private garden of the Rectory. The planning of these sections of the garden is such that they reflect the functions of the three buildings.

The first garden, bounded on two sides by the roads, is envisaged as a meeting place for the Parishioners in all their parochial activities, whether for a Service, a bazaar or a function at the Parish Hall; thus this serves as almost a vestibule for both the Church and the Hall.

The second garden, combining all elements of the scheme, is bounded by the East wall of the Church, the end of the Parish Hall, the garden wall of the Rectory and, on the fourth side, by trees. This is intended to be a cloistered or sacred garden to be used as an out-door Chapel. It can also be utilised for such purposes as Sunday School, Confirmation classes, Nativity Plays or just Contemplation. The carved wooden Crucifix placed against the East Wall of the Church, its reflection caught in a pool beneath it, binds together the peace and beauty of a garden and God.

The third garden is the private garden of the Rectory.

THE BUILDINGS

THE CHURCH

As the most important building in the group this dominates the others by its height and volume. It is linked to the Parish Hall by the Subsidiary Offices.

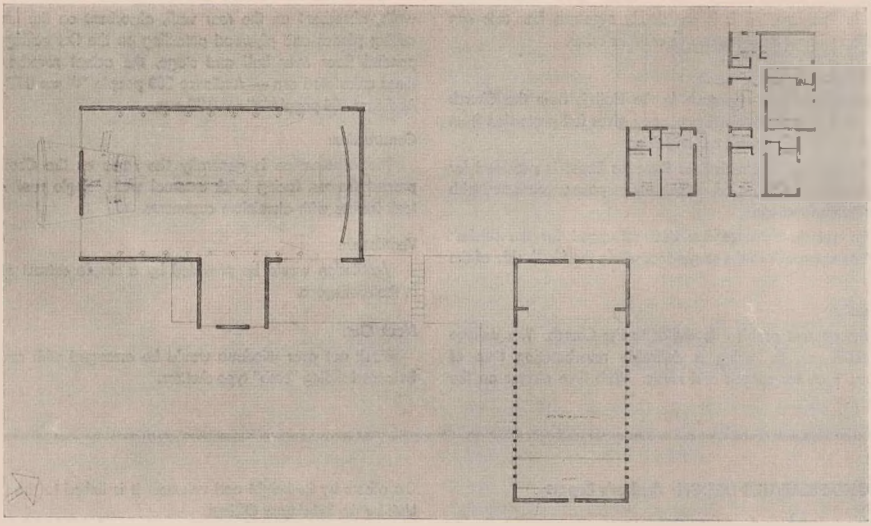
The first outside impression of the Church is of the Roof, all enveloping and protecting the building through its resemblance to outspread wings — the apex thrusting forward to give shelter to the bell.

The approach is from the West from Andries Pretorius Street. This approach has been chosen mainly because of the orientation of the Church — though this is not strictly required, it was thought preferable because of ancient tradition — and because the approach from a quieter street gives more dignity to the Church.

Entering along a semi-circular drive or footpath one sees ahead a concave screen wall, beyond which, on either side, are two glass panels stretching from floor to roof. These offer a glimpse of the interior seen through foliage grown in flower boxes at the base of these panels on the inside. The purpose of this glimpse of the interior is the subconscious draw of the outsider to the inside, while the concave screen represents the conscious and definite act of entering.

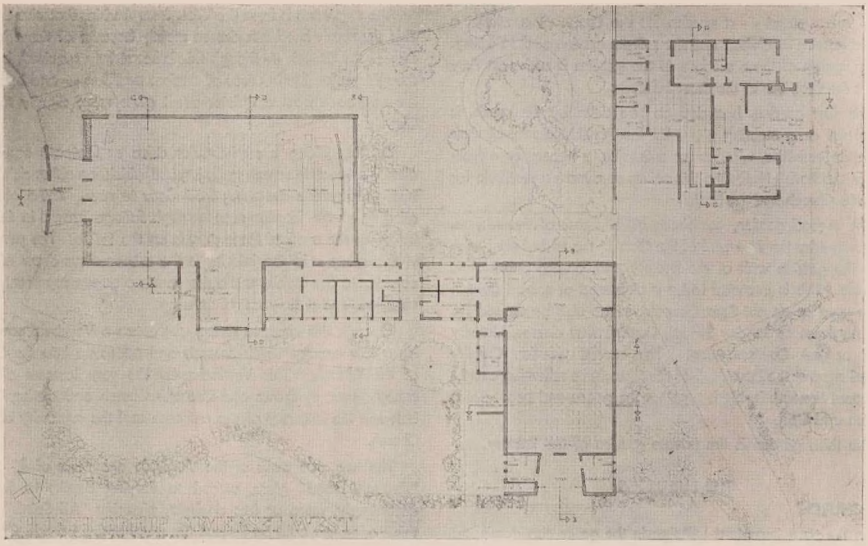
Through this concave screen one enters a Vestibule covered by a low canopy which extends and opens up into the body of the Church. This Vestibule, by the very lowness of the canopy over it, draws one into the Church and distinguishes between the intimacy of the entrance and the solemnity of the Church.

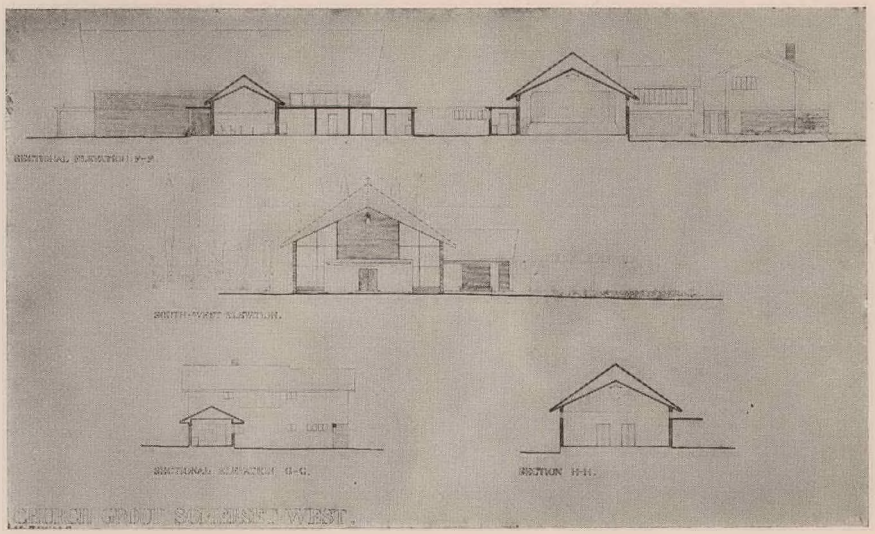
The two side walls of the Vestibule are made of $\frac{3}{4}$" thick "through tinted" glass, etched to varying depths to let in, accordingly, more or less daylight, picturing "All Saints". In this Vestibule would be housed the usual notice boards, Church



SECOND PREMIATED DESIGN

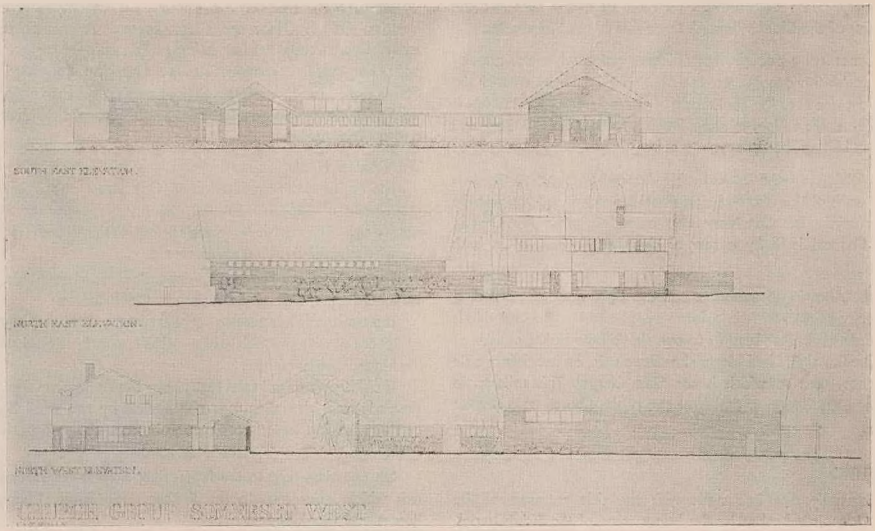
PLANS OF THE NEW CHURCH GROUP

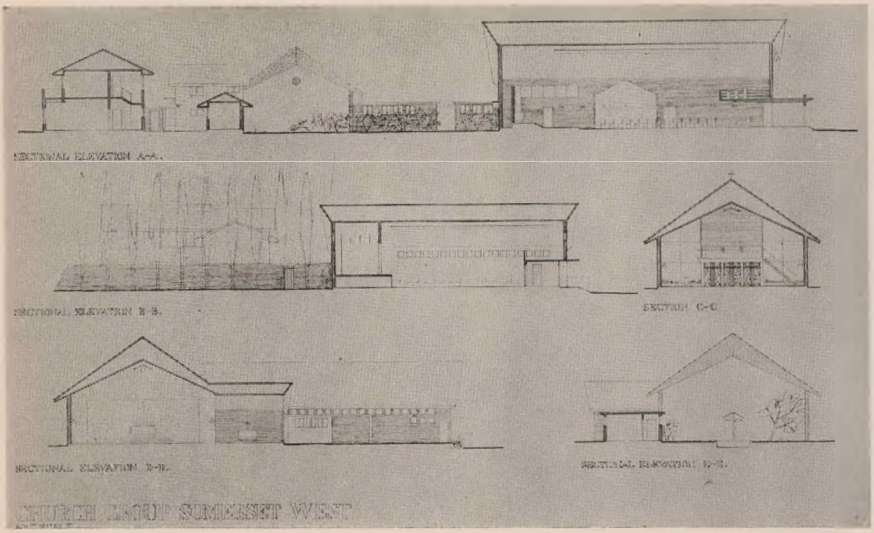




SECOND PREMIATED DESIGN

ELEVATIONS AND SECTIONS OF THE NEW CHURCH GROUP





SECOND PREMIATED DESIGN

Offatory, hymn books, etc. . . . From here one sees into the interior of the Church through three sets of wrot iron gates.

On entering through these filegree gates, while still remaining under the canopy, on the right, but in the volume of the Church, one sees the Font made of carved stone. On the left is a free-standing flight of stairs leading to the Choir Gallery and Organ Loft on the canopy.

Walking up the central aisle flanked with pews, the two side walls of the Church being unbroken stone, one reaches the Sanctuary. The Sanctuary step extends accross the Church. The Chancel is lit by a row of clerestorey windows on both sides.

The Altar is set against a concave light wood, freestanding screen, against which is a large copper cross. Beyond this is the East wall, dark blue in colour, the infinite background.

On the right, half down the Church, is the subsidiary side entrance, next to which is the Side Chapel. This reflects, in essence, the design of the West end of the Church on a smaller scale.

THE LINK

Externally, the link starts with the side entrance of the Church — it is broken by the larger mass of the Side Chapel, which is, itself, part of the Church. It continues with the Vestries, Church Office and Cloak Rooms. At this point the actual Church ends, the link being broken only by a short Pergola, but the link continues to the Changing Rooms of the Parish Hall. The link returns at right angles to hug the side of the Parish Hall — this contains the small Kitchen, side entrance and a bicycle shed.

THE PARISH HALL

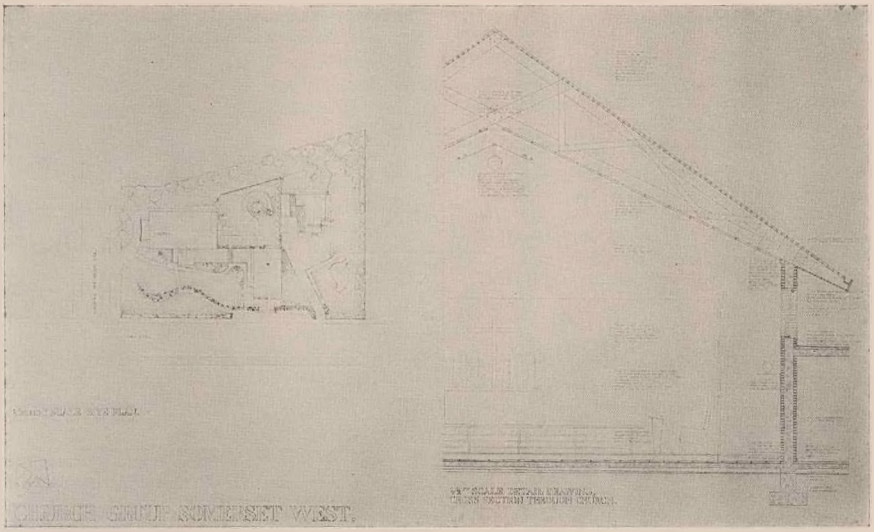
The Parish Hall is entered from Oak Street, this being the main point of approach for the majority of people for social gatherings. The roof is the same as that of the Church, though the whole building is on a smaller scale.

The walls of the Foyer splay inwards directing one into the Hall. On either side of the Foyer are Cloak Rooms.

The Hall itself has seating for 250 people, arranged in rows of 15 each, with two side aisles. Chairs can be stored under the Stage when not in use.

The Stage is raised four feet above the Auditorium floor as the floor does not rake. It is approached by two small flights of stairs leading to the apron stage in front of the Proscenium Arch.

On one side, next to the Proscenium Arch is the secondary exit which leads also to the Kitchen, Side Stage, Changing Rooms and Cloak Rooms.



SECOND PREMIATED DESIGN LAYOUT AND DETAIL SECTION

There are clerestorey windows on both sides of the Hall, giving cross ventilation. These can be blacked out when required by a system of dark blinds. A couple of extract fans would be installed as additional ventilation.

A flight of stairs leads from the outside to a gallery above the Cloak Rooms and Foyer which can be used, inter alia, as an Orchestra Gallery, Children's Gallery or for Non-Europeans.

The Easternmost wall of the Hall extends across the site enclosing the sacred garden on the one side and the Rectory premises, on the other.

THE RECTORY

The entrance to the Rectory site is from Oak Street. A drive leads to a turning circle onto which opens the double garage. Above this, approached by a separate flight of stairs, is the Curate's lodging. The Rector's Office is entered directly from this drive.

A pathway leads from the turning circle to the main entrance of the house. Entering the house, one has a spacious hall, coat depository and Cloak Room at the foot of the stairs.

The Lounge is entered through double doors. It faces North-East, has a stone fireplace, big picture window and glass doors leading to a covered stoep. On the stoep is an open fireplace for use on cool summer evenings.

The Dining Room is entered from the Hall. It also has access to the Stoep and faces North-West.

A lobby leads from the Dining Room to the Pantry and Kitchen. The Kitchen is large, having room for a central table, if desired, in addition to the wall fittings.

The outside door of the Kitchen leads to a paved Kitchen yard, off which are the Servants' Rooms and bathroom and a laundry. The vegetable garden can also be reached from this yard.

Upstairs are two double bedrooms facing North-East, with built-in wardrobes. These rooms open onto a covered terrace. Next to these rooms are a bathroom plus a W.C. and a separate W.C. Two single bedrooms, again with built-in wardrobes, a bathroom without W.C. and a storage and linen room complete the upstairs accommodation.

THE CURATE'S LODGING.

This, placed over the garage, consists of a Hallway, a Kitchenette and a Living Room, from which leads the Bedroom, which has built-in wardrobes. The bathroom leads from the bedroom via a ventilation lobby with linen cupboard.

The whole of this is designed to be built at any time, as it rests on the flat concrete slab of the garage.

SITING OF THE RECTORY.

It should be emphasised that the Rectory has been placed in this position because it faces North-East and the delightful view of the Hottentot Holland Mountains, and because the site here is at its widest, giving the Rectory ample garden, which includes, in the one corner, the very decorative group of Gum Trees.

THIRD PREMIATED DESIGN

LAYOUT

The Church, being the most important unit in the group, has been so placed that it dominates the other buildings and can be seen and approached from both streets.

The Rectory and Hall are closely linked to the Church by means of a covered way which forms part of the two garden courts. This arrangement achieves simple and direct links between buildings; exclusion of street noises from important rooms; easy access to all parts of the group; correct aspect to all principal rooms; pleasant prospect from Church and main rooms of Rectory; and a sense of dignified yet informal spaciousness.

CHURCH

Planning: A simple and direct plan closely related to its surroundings with the interior visually linked to the quiet garden on the north side by means of large clear glass panels. Blank walls face both streets in order to avoid noise penetration. Plan and section are so proportioned as to create an impression of spaciousness and simplicity with natural lighting fully exploited to lay emphasis on the high altar.

Acoustics have been carefully considered, the volume per seat being approximately 300 cubic feet and T with a two-thirds audience will approximate to 3 seconds without much adjustment.

The north windows have been angled to assist the preacher; avoid the west sun; and eliminate glare in the direction of the pulpit. The flexibility of the plan allows optimum use of space for all occasions.

Motor access is by means of an open paved courtyard without gates for ease of handling cars.

Construction: Reinforced concrete frame with cavity wall infilling, the external skin covering the structure to ensure maximum waterproofing. External walls faced with rustic blue bricks. Internal walls covered with $\frac{1}{4}$" Red Tola plywood panelling except in the sanctuary which is faced in rustic blue bricks. Flooring to be of Rhodesian Teak wood blocks laid on concrete. Ceilings to be in Celotex suspended from trusses, partly absorbent and party reflecting according to accoustical requirements. Windows and doors to be stock steel units externally and hollow core flush doors internally. The roof is covered with copper sheathing on Malthoid and boarding carried on light steel trusses. Fittings and furniture in Philippine mahogany. Electric light fittings, indirect, in copper.

RECTORY

Planning: The Rectory has deliberately been placed well back on the site to ensure maximum privacy. All main rooms face north east, since not only is this the best prospect but also a very good aspect as it results in full protection from the north westerly rain wind.

The Drawing Room and Dining Room although forming a single volume are separated on plan by a change of floor level.

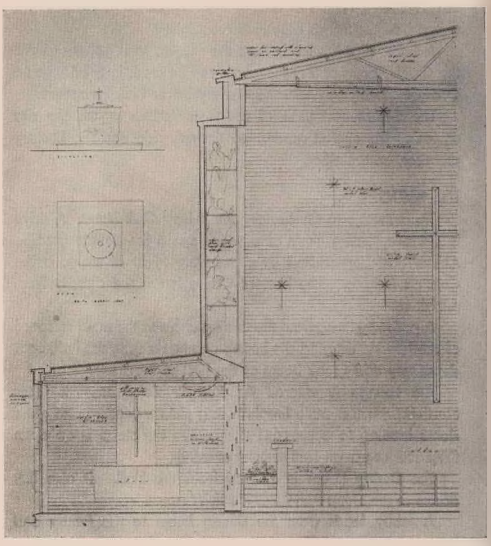
Access from the Rectory to Church, Church Hall, and garage, is direct and under cover, both for the Rector and the Curate.

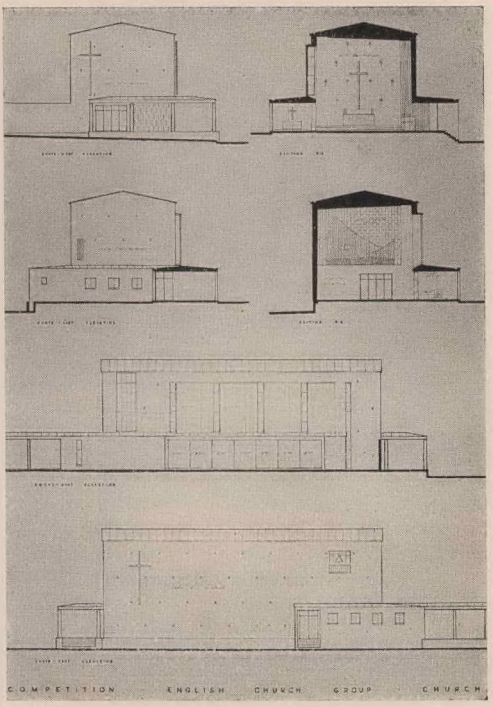
The Curates flat is conveniently close to the Rector's study and opens on to its own private garden, which in turn, links with the service yard of the Church Hall. This ensures ease of supervision of activities in the Hall and refuse disposal.

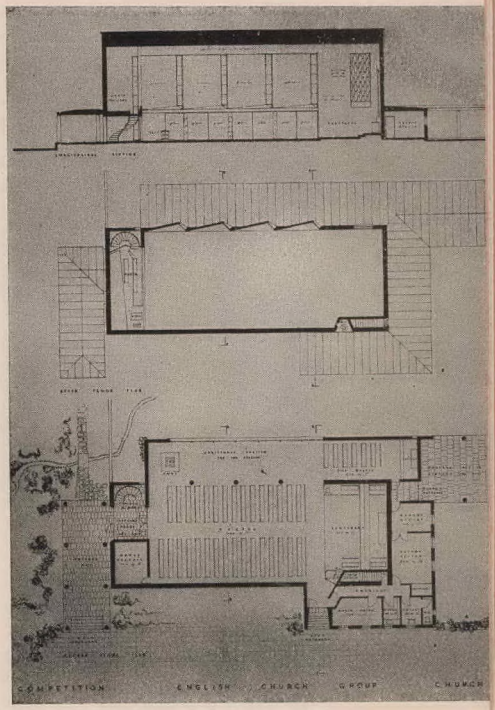
Construction: Cavity wall construction faced externally with rustic blue bricks and internally with fine stipple plaster. Floors to be of Rhodesian Teak wood blocks laid on concrete with Kentile in Kitchen and Bathrooms. Ceilings to be fibreboard skimmed with Cretestone. Roof to be in copper on malthoid and boarding carried on timber trusses. Windows in stock steel units and doors in hollow core flush faced. Cupboards in bedrooms to be framed up in Oregon with laminated board doors. Dining Room fittings and staircase to be in Philippine mahogany. Indirect electric lighting to all principal rooms.

CHURCH HALL

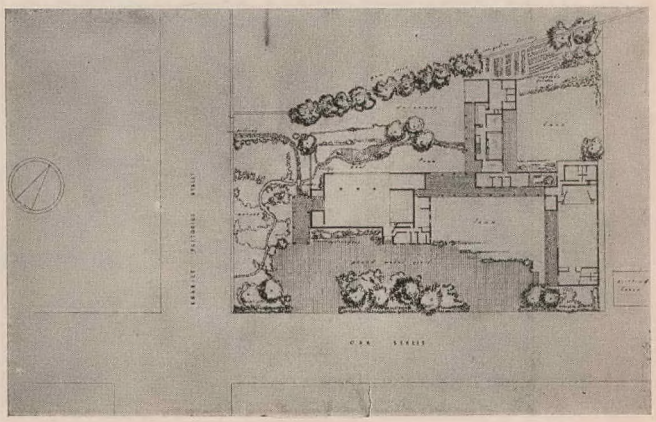
Planning: The Hall is so placed that it is available for public use as a separate unit without causing disturbance to either Church or Rectory. Large sliding doors give easy access to the partially enclosed courtyard thereby permitting full use of indoor and outdoor space for such occasions as fetes, bazaars etc. The Kitchen is so placed that it can serve refreshments to the Hall and courtyard with equal facility.



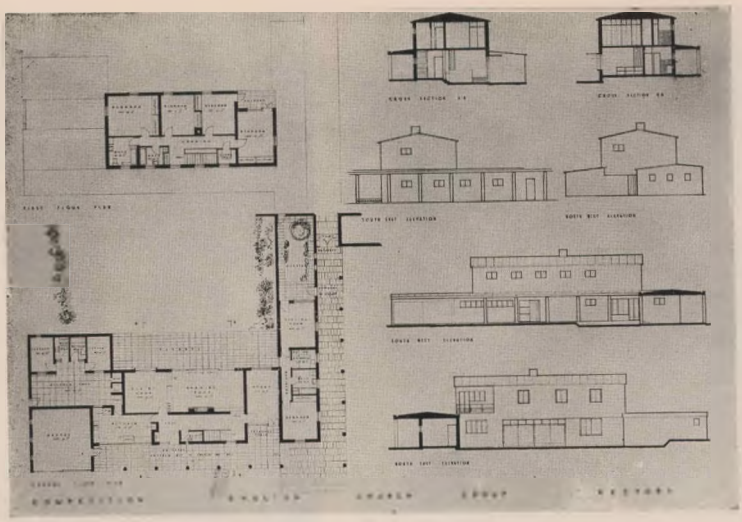




THIRD PREMIATED DESIGN

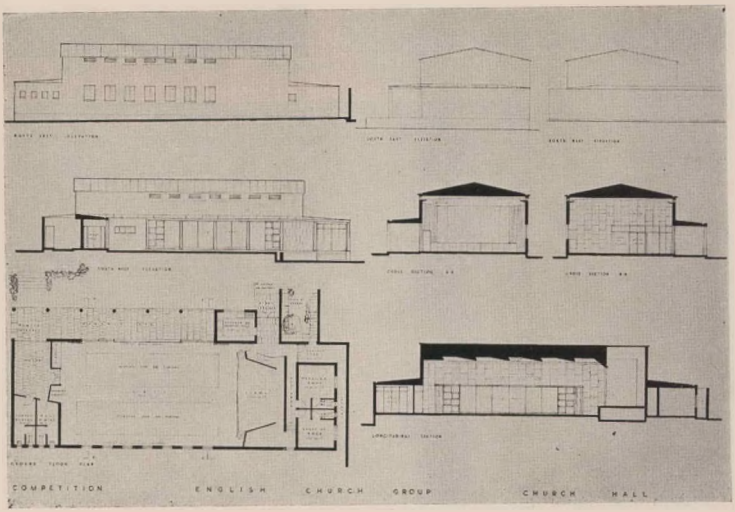


ABOVE: Plans, sections and elevations of the Church Building. RIGHT: The layout of the Group. OPPOSITE: Detail section.



THIRD PREMIATED DESIGN

THE RECTORY AND CHURCH HALL



The Hall is planned with its long axis approximately north — south in order to ensure even natural lighting from side walls for badminton and other games.

Adequate ventilation is achieved without mechanical aid by allowing vitiated air free egress through large louvred vents concealed behind a lighting trough at ceiling level.

Black-out during daylight is by means of heavy curtains over the sliding glass doors and vertical louvred shutters on the internal face of the east windows. When not in use, these shutters slide down behind the wall panelling.

Side walls of stage and ceiling are arranged to assist the speakers, and the back wall covered with absorbent material for the same purpose.

Construction: Reinforced concrete frame with cavity wall infilling faced externally with rustic blue bricks. Internal walls faced with ¼" Okume plywood panelling except back wall which is covered with absorbent celotex. Suspended Oregon strip flooring. Ceilings to be in fibreboard. Roof to be covered with copper on Malthoid and boarding carried on light steel trusses. Doors to be stock steel units and windows also. Electric lighting to be indirect from side walls at ceiling level.

GENERAL

As much use as possible has been made of the natural features of the site including trees, water, levels etc.

An attempt has been made to achieve the simplest possible use of plan space without sacrificing good proportions.

The elevations are simply handled relying for effect on good three dimensional proportions, and surface texture and colour of materials rather than extraneous and expensive decoration.

OBITUARY

GEORGE ALEXANDER STEWART

Mr. Stewart passed away peacefully on the 26th December, 1950, at his home in Johannesburg. Born in Fifeshire, Scotland, 72 years ago, he received his early training there in civil engineering as a pupil of W. D. Sang, of Kirkaldy. Until 1908 when he came to South Africa to take charge of the Pietermaritzburg Water Scheme he practised his profession in Scotland. He was the resident engineer on the Bloemfontein Water Works in 1903 and in 1904 became Acting City Engineer, and until 1908 when he was appointed City and Electrical Engineer for Bloemfontein he carried out further engineering projects in the Free State and in Pietermaritzburg. When he resigned his post in Bloemfontein in 1920 he was retained as consultant on all works in progress. He superintended the design and construction of the Vaal River Barrage Gate as a director of Messrs. Blaine and Company.

Twenty-six years ago he started his own consulting practice and was responsible for the construction of many of the largest municipal water sewerage and hydro-electric schemes in the Union and Rhodesia. In everything relating to the undertakings he was regarded as one of the greatest authorities and his advice was eagerly sought by civil bodies throughout the sub-continent.

Apart from his active interest in "Caledonianism" he was a Member of the Institution of Civil Engineers, the South African Institute of Engineers, the South African Association of Civil Engineers and the Natal Institute of Engineers. In 1927 he joined the Institute of South African Architects and although his interests lay mainly in the field of civil engineering he remained a member until his death. He also became a Member of the Chapter of South African Quantity Surveyors in 1928.

He is survived by his widow, a son, Mr. John Stewart, and a daughter, Mrs. Felix Oliver, both of Johannesburg, to all of whom we extend our sincere sympathy in their bereavement.

A NEW NATIVE TOWNSHIP FOR WITBANK

By A. R. HECTOR, Town Engineer, Witbank Municipality.

D. M. CALDERWOOD, Senior Research Officer, National Building Research Institute.

ABSTRACT. This scheme, which forms part of the density research project for South Africa, attained a gross density of 5.3 dwellings per acre and kept service costs down to a minimum; it is the product of teamwork which is so essential to planning.

As a result of the rapid suburban sprawl at present taking place in the larger urban areas of South Africa, the recommendations of the Research Committees on Minimum Standards of Accommodation, and the need to study the unseen service costs in estate layouts, the National Building Research Institute, has commenced work on the problem of increasing densities.

The importance of providing a good environment and adequate amenities, became obvious as the density was increased and the need for developing practical schemes on an experimental basis appeared the most satisfactory way of producing conclusive findings to these problems. The process of experimental layouts considered was one whereby density was increased gradually, stage by stage, until the maximum, at minimum development costs, was obtained.

The Witbank new Native township is the first of these experimental layouts. At a meeting held in September, 1949, the Town Engineer of Witbank approached the National Building Research Institute to assist in increasing the densities in a proposed Native township within the Municipal area. The area, some 290 acres in extent, had been planned by the Witbank Municipality in accordance with the space provisions of the report on 'Estate Planning' by a sub-committee of the Research Committee on Minimum Standards of Accommodation. The plan had been submitted to the National Housing and Planning Commission for approval, who had expressed the opinion that the density of 3.9 dwellings/acre was too low. They therefore recommended that the National Building Research Institute should be contacted and asked to ascertain whether it would be possible to increase the gross density* to at least the 5 dwellings/acre, suggested in the abovementioned report.

During discussions with the Town Engineer it was decided to treat the problem purely as a current one within the financial limits of Native housing, and not to consider any buildings of two storeys or more because of lack of knowledge, both as regards the costs of such buildings and the attitude towards them of the persons to be housed. The township was to contain family units only, no provision for single quarters being made at this stage. This decision was made after studying the results of the social survey carried out in the existing Native township. The necessity of providing space for all necessary amenities was emphasisized by the Town Engineer, who also stated that tree planting and development of green areas within the township must be a major consideration.

PROBLEM SET:

The problem was to develop an area of approximately 290 acres in extent, as an estate layout at a gross density of at least 5 dwellings/acre, providing for all necessary amenities in the best manner possible and using only single storey dwelling units, which must conform to the costs of present-day Native housing. All surveying and design of services, viz. sewerage, stormwater, water, roads and electricity, were to be carried out by the Witbank Municipality working in co-operation with the National Building Research Institute.

The solution was therefore to be the work of a team consisting of the Town Engineer and his staff, the Location Superintendent, the Director of Parks and Estates, the technical staff of the National Housing and Planning Commission and the architectural staff of the National Building Research Institute. During the design stages, the National Building Research Institute would lead the work, whereas during construction the Town Engineer would assume control.

SURVEY OF SITE:

The site slopes down to a stream, which forms its northern and western boundaries and has a good sunny aspect and a view over the existing location. There is a small bluegum plantation in the south-east corner, and a road, leading to the existing location in the north, cuts through the site. The north bank of the river is badly eroded, owing to the Natives keeping animals in this area, which is most unsuitable for the purpose

In general, the site may be classified as an ideal site: its location is suitable in relation to places of work, both existing and future; the soil in general is good for foundations and water supply, waterborne sewerage and electricity are accessible to he site.

THE SOCIAL SURVEY:

The Witbank Municipality carried out a sample social survey in the existing location to ascertain what was required in respect of house sizes, population to be housed, etc. The following

* *Gross density* is the number of dwelling units per acre of total neighbourhood land and is obtained by dividing the total number of dwelling units by the total area of the site in acres.

RIGHT: View across the site of the new township looking towards the existing location across the stream. Soil erosion is seriously affecting the north bank. BELOW: View looking along the existing road, which will pass through the new township, towards the Bluegum plantation.





information was received from a sample survey of 779 families:

Average income per family—£6 8 8 p.m.
202 families consisting of 3 or less persons.
255 families consisting of 3 to 5 persons.
322 families consisting of 6 or more persons.

These figures give a very clear indication of the large families which have to be housed.

The total number of lodgers amounted to 684 persons, consisting of 190 male adults, 210 female adults and 284 children. The means of transport reflected a total of 330 cycles, 4 motor lorries and 6 motor cars. The stock held by the persons visited, amounted to 122 cows, 58 oxen, 58 sheep or goats, 13 pigs, 63 horses or mules and 181 dogs. It is obvious from these figures that in such an area the provision of good roads is hardly as important as that of good grazing areas for the stock, although both need consideration. The Town Engineer himself undertook to study the problem of providing grazing lands, lest the same conditions of soil erosion should develop in the new area.

Due to its close proximity, the existing location will serve the new area in regard to beer hall, hospital services and cemetery, so that the problem is purely one of providing a residential area with schools, shops, administrative buildings, churches and market place.

The new area would need to provide about 1,500 houses to satisfy the overcrowding of the existing location.

THE PLAN:

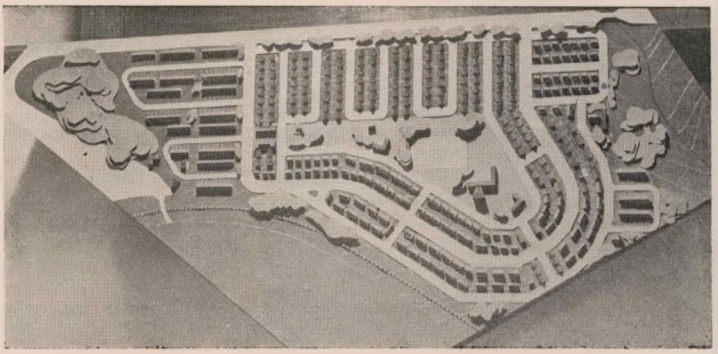
1. *Zoning.* The area was zoned into three housing groups or residential units, consisting roughly of 500 dwellings each, or 2,500 persons, which number is sufficient to support a junior school. Each residential unit is to be developed about an open space, which will contain the school, nursery school and church sites. These open spaces were to be the lungs of the scheme and were so arranged that no dwelling would be very far removed from a green area.

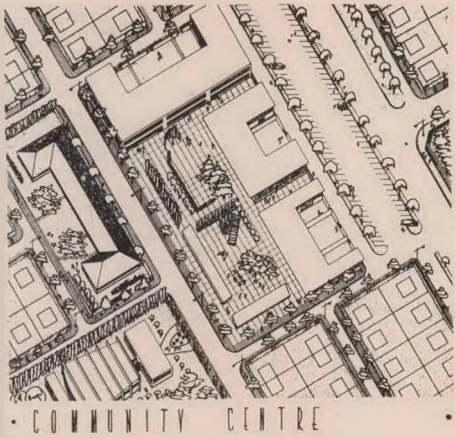
A civic centre, comprising shops, administrative sites, community hall and market place, is positioned centrally to the three residential units and is so planned on the existing road as to enable easy delivery of goods to the area, without having to cut into the residential areas. As the Native people do not possess refrigerators and storage space for food is limited, two further shopping areas are provided, one in the eastern section and one in the western section, so that every dwelling is in easy reach of a store. The shopping areas are all provided with an open area in the front of the stores, where people can gather and converse during shopping hours.

In the area lying at the side of the National Road into Witbank, a good screen was essential to keep the area quiet. The existing plantation in the south-east corner was retained for this purpose, and further west the area is zoned as park, and will be planted out with trees and shrubs. The area along the stream, being too low-lying and unsuitable for building purposes, is also zoned as parkland



MODEL OF THE EASTERN SECTION OF THE TOWNSHIP DEVELOPED EARLY IN THE DESIGN STAGE





THE COMMUNITY CENTRE, including market place, shops, administrative offices and community hall.

This zoning has caused the scheme to develop with central lungs surrounded by houses, which in turn are enclosed in a green belt.

2. *House types.* Five types of houses have been selected and their numbers have been related to the requirements noted in the social survey. In all 334 two-roomed, semi-detached houses, 222 three-roomed, semi-detached houses, 138 three-roomed, experimental terraced houses, 660 three-roomed, detached houses and 156 four-roomed detached houses, have been planned, forming a total of 1,510 dwellings. The types are all considered as economical from the constructional point of view, and maintenance costs ought to be very low, as walls are all built in selected stock brick using rat-trap bond type external walls and 3" brick-on-edge internal partition walls.

The gross density thus obtained was 5.3 dwellings/acre.

3. *Layout.* During the design period, the eastern section was developed first. (See photograph of model). The short 'U-loop' blocks were however found to be too uneconomical, and had to be replaced as shown in the general layout. It was interesting to find that these 'U-loop' blocks only become economical when the block measures more than 900'0" in length.

Considering the general layout, it will be seen how the existing road through the area has been treated in a formal style. The superintendent's house is enclosed in the trees of the existing plantation, with an outlook over the sports area containing tennis courts and bowling green. Further along the road, service roads are provided to separate residential and through traffic. At the civic centre, parking areas are provided and all shops are accessible from a service road in their rear. Traffic, where possible, is kept to the perimeter of the residential areas so as to keep the dwellings free from any form of through traffic.

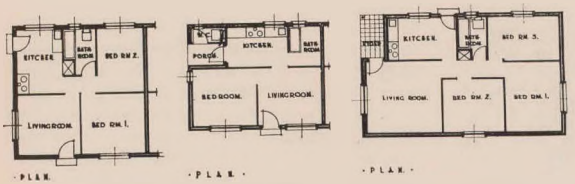
Experimental terraced houses have been positioned north of the existing plantation. These are developed with 25' wide service roads at the rear of the houses, and a communal open space which provides pedestrian access to the front of dwellings. It is intended to construct one section first and lay out the open space in hardy grass with scattered trees and shrubs. The area will be observed, and, if successful, the remaining area will be completed on these lines. The basic reason for this experiment is that terraced houses show considerable economies which are so vital to this type of work. The savings are affected in the dual partition walls between dwellings and the fencing about dwellings while the narrow frontages present economies in land and services. Close observation must be kept once these houses are occupied, so that further developments along these lines may be considered.

The use of land can be readily seen from the following table:—

Allocation:	Area in Acres:	Percentages:
1,510 residential plots	106.70	37.6
3 primary schools	16.15	5.67
Shops and market	4.0	1.31
Community centre	1.14	0.42
Parks	68.97	24.22
Sport	3.051	2.04
Roads	69.646	24.52
Churches	3.051	1.1
Ablution Blocks	1.998	0.75
Administration	2.06	0.73
Existing cemetery	0.4	0.1
Nursery schools	2.8	0.97
Pump station	0.448	0.16
Transformer sites	0.25	0.07
Car park	0.982	0.34
Totals	284.5	100.0

The interesting figures are those of parks at 24.22% and roads at 24.52%. In the first case the area devoted to parkland is generous, so that although the density has been increased, the open space is still well looked after. In the second case it seems that, considering the quantity of traffic, this figure is one that needs careful consideration in future schemes. From analysis of several Native townships, it appears that the area devoted to roads in any scheme ranges from 25% to over 30%, and in many cases these roads are just dust traps or soil eroded gullies after a few years of use. All these observations point to investigating the possibility of planning the rows of houses at right angles to the roads, and having communal refuse bins provided at the ends of each block of houses. Waterborne sewerage is however essential if such layouts are to be attempted. The scheme would provide for pedestrian access only





HOUSE TYPES

to the dwellings, and the limitation of such layouts would be the length of block in relation to comfortable walking distances.

4. *Aesthetic considerations.* In a layout of this nature where all the buildings are of the same height, viz. single storey, monotony is difficult to overcome and it is necessary to look to landscaping for assistance in creating aesthetic appeal. Confidence in landscaping is all-important [2]; it does not constitute the camouflage, it is an art and should be used in the manner of art. Landscaping creates and should stimulate the senses of the observer to the point of undergoing a thrilling experience.

Garrett Eckbo in his book 'Landscape for Living' states: "To the extent that this problem of complete space organisation and co-ordination is not dominated as much by questions of specific functions, structural necessities and economics as is architecture and engineering design, the landscape development is a more purely plastic and aesthetic problem, requiring greater concentration on questions of pure form and material, and approaching somewhat closer to painting and sculpture in the freedom of its form concepts."

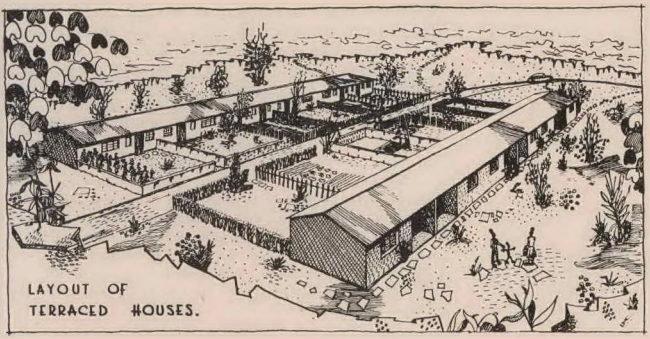
In this layout, landscaping has been kept in mind throughout the design, and opportunities have been provided for it in all parts of the scheme.

Studies are at present being undertaken to consider the siting of buildings, as here too monotony can be avoided [3]. These studies consist of small scale models which will be constructed as each phase of the work proceeds. These models have proved to be the only successful way of presenting the problems and thereby solving them.

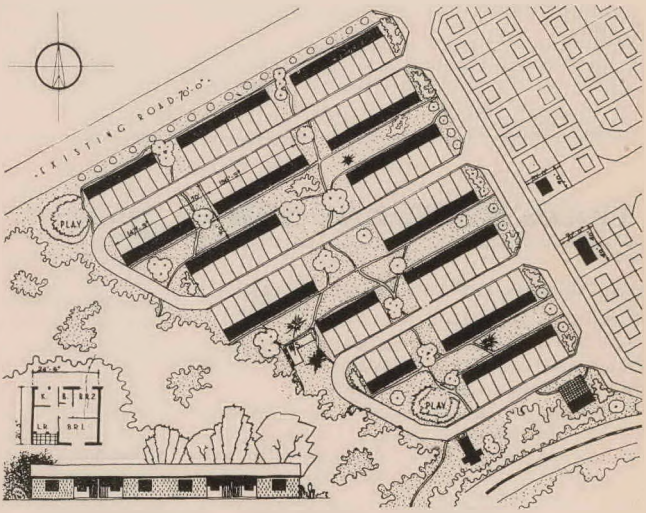
5. *Services.* The whole scheme has been considered from all points of view, and as the working team was aiming at one goal, namely the success of the scheme, no aspect has been omitted or suppressed. The consideration of services was investigated in every detail and the location of every manhole was considered from the economic and planning point of view. In fact, a completely new type of construction is visualised in the manholes to be used, in order to allow for rapid construction and savings in cost. The team at no time dictated a set policy, and when differences of opinion were encountered the issue was solved by visiting the site and carefully surveying the area under consideration so that the best solution could be found. The scheme is therefore one complete whole, designed in every respect to produce what the team believes to be the best results within the limitations of the scheme.

The following table gives the estimated costs of the scheme as fully developed.

Item:	Total cost:	cost per unit:
Land costs	£4,000	£2 13 0
Housing costs including all development costs on site i.e. fencing, etc.	391,820	272 8 7
Water reticulation	16,729	12 3 9
Sewerage reticulation	40,225	29 6 1
Roads	31,271	22 15 7
Stormwater	4,329	3 3 1
Landscaping and playing fields	6,887	5 0 4
Buildings	44,624	31 0 7
Electricity	12,072	8 16 0
Total	£551,957	£387 7 0



Perspective drawing of a group of the experimental terraced houses illustrating the nature of layout development it is desired to encourage.



LAYOUT PLAN of the portion of the township developed with the 138 three-roomed experimental terraced houses.

EXPERIMENTAL TERRACED HOUSES

As can be seen, the amount spent on housing amounts to 70% of the total cost of development. The amount allowed for buildings includes the ablution blocks, clinic, superintendent's cottage, administrative block, nursery schools and community centre. The ablution blocks are small structures, consisting of concrete wash tubs which have a constant supply of hot water. These blocks are only used for washing clothes, as each house is provided with cold water supply, stove and bath to meet conditions of personal cleanliness.

The houses have been planned for waterborne sewerage, water supply and electricity which is believed to be required in the Witbank scheme. The roads are being graded and consolidated with ash and clinker except along the existing road and in the civic centre where black top is being laid.

The team felt that the cost of £78.17.6 per dwelling unit for full services of this nature was a very big achievement.

CONCLUSIONS:

The scheme has achieved a gross density of 5.3 dwellings/acre and at the same time retains the open character and pleasant environment so necessary [4].

The team has now commenced the second stage of its work as the constructional work started on the 1st December, 1950.

REFERENCES:

1] *Frederick J. Adams* Head of the Department of City and Regional Planning in the School of Architecture and Planning at the Massachusetts Institute of Technology. "Planning in a democracy involves effective citizen participation. The planner is only one of many technicians. Broadly speaking, he is no more important than members of a planning commission or city council, or the head of a line department. A comprehensive plan is not the creation of a master mind but is essentially a collabortive effort."

"What is needed is teamwork—teamwork betweeen and within professional groups and between such groups and the public at large."

2] *Garrett Eckbo*, an American Landscape Architect. "People feel a need for bigger lots because they have no secure control of anything beyond their lot. With guaranteed neighbourhood open space, community facilities, and stability, we probably wouldn't feel the need for so much private space. Most of us can't develop or maintain a half-acre lot as our private public park. But it is insulation —a greenbelt—between home and an unplanned, unpredictable, chaotic world, and until we have some guarantee of controlled neighbourhood planning in which we have democratic participation, we will doubtless continue moving to suburban half acres and rural acres—that is, the relative few of us who can afford it."

3] *Le Corbusier*. "The exterior is always an interior. To sum up, in architectural ensembles, the elements of the site itself come into play by virtue of their cubic volume, their density and the quality of the materials of which they are composed, bringing sensations which are very definite and very varied (wood, marble, a tree, grass, blue horizons, near or distant sea, sky). The elements of the site rise up like walls panoplied in the power of their cubic co-efficient. stratification, material, etc., like the walls of a room. Walls in relation to light, light and shade, sadness, gaiety, or serenity, etc. Our compositions must be formed of these elements."

4] *Lewis Mumford* in his work 'Conditions of Man.' "It is not enough for us to do all that is possible: we must do that which seems impossible. Our first need is not for organisation but for orientation: a change in direction and attitude. We must bring to every activity and every plan a new criterion of judgment: we must ask how far it seekes to further the processes of life-fulfilment and how much respect it pays to the needs of the whole personality."

TRADE NOTES AND NEWS

HUNT, LEUCHARS AND HEPBURN, LTD. — 1850-1950

The history of the firm Hunt, Leuchars and Hepburn, the three pioneers whose enterprise and foresight made possible this well-known organisation is told in the book issued to commemorial to the public work of J. W. Leuchars.

The narrative covers the expansion of the small establishment set up by John Hunt in Durban in the year 1850, when he arrived at the age of twenty-four, to the large concern it has expanded to today. John Hunt took his nephew, J. W. Leuchars into the business in 1877, and five years later Andrew Hepburn, John Hunt's son-in-law, joined the firm.

The firm was extremely interested in improving the Durban Harbour, and initiated a move to increase the Port to a size commensurate to the trade it handled. The Maydon Wharf, bearing the name of the minister responsible for Railways and Harbours, was eventually opened in 1906, and was a fitting memorial to the public work of J. W. Leuchars.

In 1893 the firm opened a branch in Johannesburg and immediately developed the gum and wattle industry to satisfy the needs of the Witwatersrand as well as their own direct interest in timber growing.

The firm was closely associated with the Dundee Coal Company, the Premier Brick Company, the Natal Chemical Syndicate and the Lion Match Factory, but particularly they concentrated on timber, hardware and builders' supplies and became the largest industry of its kind in Southern Africa with branches throughout the Union and Portuguese East Africa.

The book is illustrated with interesting sketches and contains a pictorial section of the Company's establishment throughout the country.

U.T.

Journal of the SA Architectural Institute

PUBLISHER:

University of the Witwatersrand, Johannesburg

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