

**Architecture for the Visually Impaired: design of a Society for the Blind**

Kate Walden

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Kate Walden

A dissertation submitted to the School of Architecture, University of KwaZulu-Natal,  
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# declaration

Declaration

I hereby declare that this dissertation is my own unaided work. It is being submitted to the School of Architecture, Planning and Housing, University of KwaZulu-Natal, Durban, for the degree of Master in Architecture, and has not been submitted before for any degree or examination at any other University.

*Walden -*

**Signed by me on this 21<sup>st</sup> day of January 2008.**

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This dissertation documents the research involved in determining an appropriate response for the design of a building which serves to provide tools for empowerment and independence for blind and partially sighted people.

Primary and secondary data collection methods are used. Secondary data collection forms the majority of information gathered focusing on precedent and case studies. The studies investigate how buildings are currently occupied, discussing the differences between buildings that have been specifically designed for the visually impaired and those that have not. Analysis observes the problems that exist and what solutions have been proposed to overcome these.

Design criteria can focus on detail design exclusively; however the building in its entirety can be custom-designed to meet the needs of the visually impaired user. This dissertation explores architecture as a sensory experience, highlighting findings that can be used when designing buildings specifically for visually impaired users. The visually impaired rely heavily on their senses enabling them to interpret their surroundings. This research includes an exploration into the use of the senses within the built environment and how we as sighted designers can understand, interpret and contribute to a visually impaired person's experience of the built environment.

The research concludes on an appropriate response to designing for visually impaired people. Conclusions are drawn and a design brief for a facility for a Society for the Blind derived.

**Visually Impaired** : reduced vision so severe as to constitute a handicap. This is a collective term used to describe all conditions of impaired vision, including total blindness as well as partial sight

**Blind** : inability to see with the physical eyes, without sight

**Partially Sighted** : with residual vision

**Legal Blindness (Legally Blind)** : a person is considered "legally blind" when their visual acuity is 20/200 or less in the better eye. A person who is legally blind is eligible for disability benefits and recognised as having a handicap

**Kinaesthesia** : the perception of the bodies position and movement, the sensation accompanying the movement of muscles



This dissertation documents the research involved in determining an appropriate response to the design of a building for the use of blind and partially sighted people.

Design considerations and criteria can focus on detail design exclusively; however the building in its entirety can be custom-designed to meet the needs of the visually impaired user. This dissertation will use this idea as its focus and explore the factors to be considered for the successful design of a building in which to house the facilities of a Society for the Blind in Durban, South Africa.

This dissertation will explore architecture as a sensory experience, highlighting findings that can be used when designing buildings specifically for visually impaired users. The visually impaired rely heavily on their senses enabling them to interpret their surroundings. This research includes an exploration into the use of the senses within the built environment and how we as sighted designers can understand, interpret and contribute to a visually impaired person's experience of the built environment. This investigation will consider how architects can address all the senses through the use of architectural design and detailing in order to enable a visually impaired person to accurately comprehend their environment and gain enjoyment from it.

Britain and the USA are at the forefront of barrier-free design implementation. The intention is to establish where South Africa's cultural and physical needs differentiate

from those of Britain and America and provide a document that will provide guidelines appropriate to the South African context.

The study will investigate how buildings are currently occupied, discussing the differences between buildings that have been specifically designed for the visually impaired and those that have not. Comparisons and contrasts between buildings in South Africa and developed countries will be analysed in order to observe the problems that exist and what solutions have been proposed to overcome these in the past.

This dissertation will investigate the nature of the built environment and interpret which aspects impact upon the visually impaired both to their detriment, and conversely, to their improved quality of life. The intention is to explore the ways in which designers can make a significant contribution to the quality of life of the visually impaired user in their mobility, independence, self determination and overall enjoyment of the building. The research will also study how the building effects and influences the rehabilitation process of integrating the users into society and the wider environment.

# chapter one : research background

Chapter 1 : Research Background

## **Introduction**

A society for the Blind is an organised group of persons associated together because of a common goal of aiding, supporting and educating people with visual impairments.

The KwaZulu-Natal Society for the Blind was formed in 1919 by John Edward Palmer and assists blind and partially sighted people throughout KwaZulu-Natal. It is a Non-Profit organisation which services the needs of visually impaired people in the areas of rehabilitation, education, formal and informal employment, accommodation and recreation.

The aim of an organisation such as this is to provide a support network for the visually impaired person and to provide them with the tools for dealing with their impairment. The purpose is to empower them so that they can lead independent lives through the provision of education, training and employment services. The overall goal is to improve the quality of life of visually impaired people.

## **Existing Facilities**

The organisation provides facilities within the establishment which include a resource centre, training facilities, administration and a residential facility.

Rehabilitation and instruction is provided for visually impaired people so that they can cope with the different challenges of the built environment in order to become independent and mobile in their daily lives. Training is offered, where life skills such as Braille, computer use, weaving and carpentry are available. These skills serve to

empower people giving them an opportunity to earn an income. This organisation also provides information and knowledge to visually impaired people regarding their handicap. Counselling through social services is also available. Low vision assessment is offered and assistive devices, for example magnifiers or talking clocks, are also available.

A society by nature has people visiting for temporary periods. Even residents only reside for six months at a time whilst completing the weaving or carpentry course and are then released to be effective within their community.

A need exists for institutions such as these within society. This is not an attempt to isolate visually impaired people but rather an opportunity to provide a place where expertise, knowledge and assistance for visually impaired people is available providing them with tools to deal with their impairment on a day-to-day basis.

### **Research Problems**

The visually impaired rely on all their senses to enable them to interpret their surroundings; space should therefore be a continuous sensory experience. This research explores the use of the senses within the built environment and how sighted designers can contribute to a visually impaired person's experience of a building. Visually impaired people use location and direction clues from a variety of aural, tactile, olfactory and kinaesthetic senses. Textures, acoustics and scents contribute to the makeup of the built environment providing necessary markers and messages to the visually impaired and therefore need to be incorporated as conscious elements of architectural design. The research investigates how designers have incorporated

these elements into architecture in the past and draws conclusions on successful ways in which to implement such elements into future designs.

Jose R. Bernardo, in his paper *Architecture for Blind Persons*, identifies the controversy that exists between those who believe a 'mothering' environment is appropriate and those who believe a 'hostile' environment is better suited. (Bernardo: 1970, 262) Some believe that an environment which is custom-designed is 'mothering' and hinders visually impaired peoples' development as they do not learn to cope with environments which are not specifically tailored to their needs. Others believe that a 'hostile' environment disregards the needs of the user and sends out the message that the visually impaired users' needs are not significant. This research explores both ideas and concludes with an appropriate design approach.

### **Key questions**

Key questions include:

- What problems are associated with conventional design methods for the visually impaired user?
- What advantages can custom-built buildings offer to the blind user?
- What 'conceptual' elements are required and how can these be incorporated into a building designed for visually impaired users? (Routes, layout & volumes)
- What 'detailed' elements are required to stimulate the sensory perceptions and need to be incorporated into a building designed for visually impaired users? (Acoustic, smell, light levels, surfaces & materials)

- What criteria can be analysed to establish the process for selecting an appropriate site for the building typology that has emerged from this research?

### **Working Hypothesis**

What specific design considerations and criteria need to be addressed in the design of a building for the Society for the Blind in a suburban context in Durban in order to maximise the potential and success of the structure for the end user.

### **Aims and Objectives**

This dissertation will investigate the nature of the built environment and interpret which aspects impact upon the visually impaired both to their detriment and conversely, to their improved quality of life.

The research will also study how designers can address all the senses through the use of architectural design in order to enable a visually impaired person to accurately comprehend their environment and gain enjoyment from it.

### **Conclusions**

A building for the Society for the Blind must accommodate the needs of the Society and provide appropriate facilities that enable the continuation of assistance and education for visually impaired people.

This research's intention is to explore the ways in which designers can make a significant contribution to the quality of life of the visually impaired user in their mobility, independence, self determination and their overall enjoyment of the built environment.

# chapter two : research methodology

Chapter 2 : Research Methodology



## **Introduction**

The research methodology employed in this dissertation comprises of two parts, namely; primary research - obtained through analysing data gathered through interviews and case studies, and secondary research - by examining literature and drawing conclusions. Due to the nature of the topic the research is qualitative not quantitative.

## **Primary Research**

Primary research involves obtaining qualitative data. Qualitative data was gathered through a series of structured interviews with professionals who are involved in the care of visually impaired people. Professional's knowledge, expertise and past experiences rather than preferences or data collection gathered from quantitative analysis was required. Due to the explorative nature of the topic, structured interviews are more effective. Structured and informal interviews with visually impaired individuals helped to attain valuable insight and understanding into the needs of blind and partially sighted people. Furthermore from these interviews the sensory opportunities available in architectural design were explored to portray an environment easily understood and enjoyed by visually impaired users. Structured interviews with those engaged in community issues helped in developing an overall understanding of the needs of the community. These interviews provided understanding of the role, ethos and philosophy of blind societies. They also provided practical insight into the functional requirements and needs for the day-to-day operations of a society for the blind.

Interviewees include:

- Merle Brown - General Manager of KwaZulu-Natal Society for the Blind, Durban
- Rosh Subrayen - Head Of Department Rehabilitation at KwaZulu-Natal Society for the Blind, Durban
- Desmond Frank - Principal of Arthur Blaxall School, Pietermaritzburg
- Mrs Moosa - Teacher at Arthur Blaxall School who is blind, Pietermaritzburg
- Anonymous partially sighted person- Head Coordinator of the disability unit at a tertiary institution, Durban
- Norma Bosse - Manager of John Edward Palmer Residence

Furthermore, primary research involved case studies which took the form of visiting, critically evaluating and photographing facilities that are utilised for blind and partially sighted users. The relevant authorities of these facilities were interviewed and the working drawings were obtained and analysed. The focus area of the research was the KwaZulu-Natal region. These case studies include:

- **KwaZulu-Natal Society for the Blind, Durban**
- **Arthur Blaxall School, Pietermaritzburg**
- **John Edward Palmer Residence, Durban**

### **Secondary Research**

The secondary research forms the foundation for the research in architectural design specifically for visually impaired users. The first section of the secondary research is an in-depth literature review of the existing body of knowledge in the form of books,

journals and unpublished theses. A critical analysis of this literature formed the basis of the criteria by which the precedent and case studies were analysed.

The second section of secondary research is a critical analysis of international precedents found in architectural journals and books. Five precedents from various countries were selected for analysis. All examples are custom-built buildings and have been analysed through photographs and architectural drawings.

Precedent studies include:

**1. The Richard Attenborough Centre for Disability and the Arts**, University of Leicester, United Kingdom, 1997. Architects: Ian Taylor with Bennetts Associates.

This example was chosen to analyse the degree to which aural architecture is effective in buildings.

**2. House near New York**, United States. Architects: Charles Moore and Richard B Oliver.

This example was chosen to analyse the value of designing for the use of human senses on sighted users.

**3. W. Ross Macdonald School for the Blind**, Ontario, United States, 2005. Architects: G. Bruce Stratton Architects.

This example was chosen to analyse the success of the single-spine plan.

**4. Vision Care Centre, Bristol, United Kingdom, 1993. Architects: Alec French Partnership.**

This example was chosen to analyse the concept of encouraging independence, integration into society and normality of lifestyle.

Finally the data obtained from this research document serves to derive a brief and accommodation schedule which will inform the design of a new building in which to accommodate the KwaZulu-Natal Society for the Blind in Durban, South Africa. The focus of the research emerges in the use of materials and the layout of the building. The design practicalities attained from this research informs the design ensuring that it addresses and adequately resolves the issues explored and conclusions drawn in this document.

# chapter three : literature review & theoretical framework

Chapter 3 : Literature Review & Theoretical Framework

## **3.0. Literature Review**

### **Introduction**

This chapter formulates a review of the relevant aspects of the topic. It reviews and summarises the information gathered and places it into the context of existing knowledge. The available material has provided a background of knowledge from which to draw information regarding the design of buildings for visually impaired people.

### **Accessible Design**

Selwyn Goldsmith believes that architects can make a significant contribution to the quality of life of the visually impaired. (Goldsmith: 1976) Careful consideration of the way in which blind and partially sighted people experience the environment should lead to a building of conscious design which meets the needs of visually impaired people in a variety of aspects.

### **Human Adaptability**

There are those who believe that specialist design for the visually impaired is not necessary. Vaughn argues that people with a visual impairment have coped well in the built environment in the past without modifications and have adapted to the way in which sighted architects have designed habitable buildings. (Vaughn: 1993) However research by the United Kingdom's Royal National Institute for the Blind (RNIB) does not support this view. The RNIB's research reveals that a large percentage of the visually impaired appear isolated and feel trapped in their homes. This confirms that people with a visual impairment do not cope well in the built environment which

focuses on the sighted user and ignores the needs of the blind or partially sighted person.

Goldsmith argues that the human body is extremely flexible and is able to adapt to harsh conditions imposed by his or her environment. Goldsmith feels that designers take advantage of people's ability to endure discomfort and inconvenience. He suggests that designers should design buildings that suit all people and their needs.

### **Wayfinding**

Wayfinding is the term used to describe the process which people go through in order to find their way around an environment. Wayfinding is fundamentally a problem-solving activity and is affected by a variety of factors. People's perception of the environment, availability and understandability of information, one's ability to orientate oneself spatially, decision-making and environmental factors all affect how successfully one finds one's way.

The United Kingdom's NHS (National Health Service) Estates Wayfinding document produced as guidance for healthcare facilities in Britain proposes that if an individual successfully solves a wayfinding problem on their first visit to a building and have the ability to remember that solution, then they should not have a problem on their subsequent visits to the same building. Information facing the visitor should be simple enough to be followed while at the same time sufficient enough to ensure successful wayfinding. It is also important to remember that blind and partially sighted people require more information and varying information from that of a sighted person.

The NHS document discusses the wayfinding problems experienced by people who have lost their sense of sight or have reduced vision. A person's type of visual impairment and their degree of residual vision determine how they will find their way. Less than 10% of visually impaired people are totally blind. The remainder rely on their residual vision to determine shapes, contrasts and colours to aid them in their wayfinding process. The visually impaired rely heavily on sound and touch to find their way hence architects are encouraged to exploit these elements in order to create an environment that is easily navigated by the blind or partially sighted person.

According to Romedi Passini architectural communication provides the user with the information needed to solve wayfinding problems as defined above. (Passini: 1988,425) Passini performed multiple wayfinding studies on blind and sighted subjects to determine the information needs of the blind person. He discovered that the blind user plans his/her journey in more detail than sighted people do which requires additional information from the environment. Passini argued that carefully thought-out design interventions can have a major effect on the mobility of the blind user. The blind way-finder formulates more decisions than a sighted person and uses more units of environmental information to make these decisions. Identifiable objects and architectural features can serve as reference points, however they must be meaningful and communicate specific identifiable features. Passini suggests that in order for buildings to be user-friendly surroundings for visually impaired people, the designer must reflect the need for additional environmental information. How well the information is perceived will determine whether it is user-friendly or not.



It is important to note that an excess of orientation clues can become confusing and result in a clutter of information that cannot be deciphered; "Such information must not be chaotic, for it is only when information changes visually handicapped individuals' perceptions logically and directly that we can talk of a clear architectural idea of the environment." (Bobrova: 1990,26)

### **The Environment and the Blind**

There is significant controversy over what type of environment is appropriate for blind and partially sighted people. Jose R. Bernardo considers that an architect can design an artificial environment completely tailored to the sensory needs of the blind person however this would be labelled as 'protective'. (Bernardo: 1970) He then considers an environment which disregards the blind person altogether and labels it 'hostile'. Bernardo ponders whether an environment that is difficult to cope with would make the sighted environment easier to manage. Bernardo proposes that the most suitable environment is perhaps one that is 'progressional'. A 'developmental sequence of environments' serves to integrate the blind minority into the sighted majority. Such an environment will be 'protective' within the centre and 'hostile' towards the exterior when introducing the individual to the sighted environment. Bernardo concludes that the only way to truly assess what environment to design is for the architect to consult the visually impaired people for whom he is designing. "Obviously the mature architect cannot rely on his own experiences when designing for the blind, for being sighted, he lacks the kind of experiences that the blind have. He has, therefore, to rely on information made available to him." (Bernardo: 1970,263)

## **The Human Senses**

People use four of their five senses – sight, sound, touch and smell – in varying degrees and sometimes subconsciously when interacting with the built environment. By looking at each sense independently we can distinguish how each sense is used. The consequence when one sense is removed or its effectiveness reduced is that the other senses are greater depended upon.

### **Sight**

Sight is the sense most relied upon. Our vision allows us to comprehend images that are far and near. We can see the nature of objects, whether they are smooth or rough, soft or hard. Our eyes reflect the environment back to us. Less than 10% of visually impaired people are totally blind. It is therefore important not to exclude the inclusion of visual elements in the way of bold forms, tonal contrasts and colour.

### **Sound**

For a person without sight, the most informative and developed sense is hearing. Sound is omni-directional providing information about activities which are all around, far or near. Sound gives warning and offers direction. Buildings return sound to us, structuring and articulating our understanding of space.

### **Touch**

Texture can only offer information at arms length. Texture can be informative but cannot give information about something a long distance away, only that which is imminent.

Smell is rarely used as a directional clue. However it can be used as a source of information and guidance. A coffee shop, for example, emits an aroma of coffee disclosing its location to the visually impaired person.

### Emphasis on the Non-Visual

Architecture is a full-body experience and too often architects focus exclusively on visual aesthetics. Through the exploration of sensory architecture it is evident that visually impaired users benefit positively from architecture that communicates with them through their remaining functional senses.

Furthermore, it is apparent that sensory architecture is richly satisfying to sighted users too. Tatiana Bobrova believes that an environment of favourable design for the visually impaired is advantageous to the sighted person too. He states, "Any architecture must be of a design so as to be perceived by the whole complex of sensory organs of man. It is only then that it will be truly human." (Bobrova,T: 1990,32)

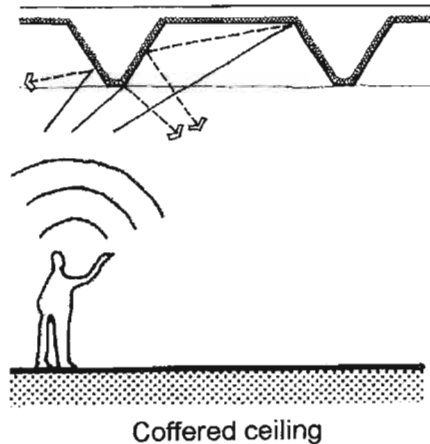
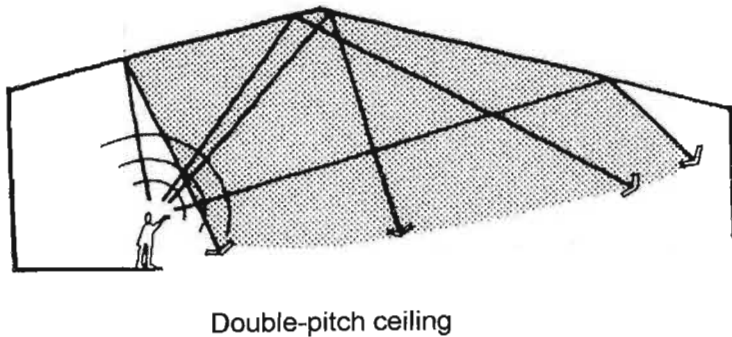
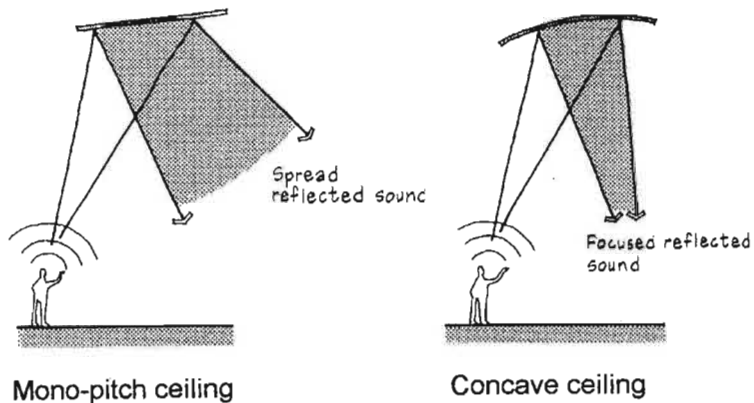
The most persistent memory of a space is most often the smell, sound or feel of it. Rarely do we remember the appearance of spaces but a particular smell can rouse an image completely forgotten by the eye. Architecture that appeals to one's senses is committed to memory on a deeper level thus aiding the visually impaired person to memorise a buildings and their layouts.

Bernardo states that the aural, olfactory and tactile environment means very little to the sighted person but means everything to those without sight. “The sighted individual will pay little attention to a small ramp leading into a space; or to the transition from a soft floor to a hard one; or from a brilliant room with hard surfaces to a mellow one with soft wall coverings; or from a warm room to another slightly cooler. And he will pay little attention to these details because that is all they are to him: details. But these clues are not details to a blind individual. These clues *are* the space itself. They provide the only way blind persons can perceive space and become orientated to it.” (Bernardo: 1970,264)

Bernardo does not relate any of his concepts to the wide range of visual impairments that exist. The needs of the totally blind as well as the partially sighted must be included in the conceptualisation of the design. A person with partial sight may never develop the ability to determine auditory distinctions but will benefit from tonal contrasts and bright colours.

### **Acoustic Architecture**

For the visually impaired a space is understood and appreciated through its echo. A sound source can provide directional guidance. Hearing provides a medium of instruction and a guide in movement. Common sounds within buildings provide clues so these sounds should not be suppressed. The sound of a cash register within a shop gives direction or the rumbling of escalators or the chimes when the lift doors open all provide clues about the buildings layout.



The ways in which sound can be used in physical orientation was summarised by Fetherstone as follows: (Fetherstone: 1958,9)

- Observation of a familiar sound serves as a guide to position and orientation;
- Observation of an unfamiliar sound indicates a potential hazard such as a moving vehicle;
- Observation of one's own footsteps indicates the nature of the floor surface, the volume being passed through and echoes of obstructions to be noted.

Warren Brodey in his article *Sound and Space* identifies different sound qualities that varying environments portray. In his research with blind people he discovered that different sound qualities carry different moods. A room with hard plaster and block accentuates higher tones increasing fatigue by making everyone sound as though they are speaking sharply. A carpeted and acoustically-tiled room can make a meeting sound dead as enthusiasm is 'wet-blanketed' by a dead sounding space. (Brody: 1965)

Reflection of sound is different on flat, bent or oblique surfaces and the height of rooms plays a part too. The different sound behaviour of one space in contrast to another provides visually impaired people with an image of where they are. Hence differences in acoustics are closely linked with the visible geometric features of the environment. (Illustration 3.0)

Brodey reveals that windows communicate information to blind people in a variety of ways. They are not merely places where heat streams in or is drawn out, but they

III 3.0: Reflection of sound on different surfaces (Egan: 1988,93-340)



Ill 3.1: change in texture underfoot alerts pedestrian to an adjacent opening (Barker: 1995,42)



Ill 3.2: change of texture surrounding bollards warns of potential hazard (Barker: 1995,44)

serve as ears which emit sounds from the outside, bringing the outdoors into the room, enlarging the space and presenting the blind person with information as to the detail of the outdoors. The sounds that come through windows and openings help blind people to orientate themselves. The sounds resonate off materials which have different reflecting properties providing the blind person with key information about his/her location and the nature of the environment he/she finds himself/herself in.

### **Tactile Architecture**

Blind people live in a world of surfaces. They can only use their sense of touch within the radius of their arms and hence rely on this sense for determining their exact location. Tactile aids provide information about their position within an environment by the feel of their surrounding surfaces by hand or underfoot. Changes in floor textures to delineate different areas are useful aids. (Illustration 3.1&3.2) Fetherstone suggests that touch can be exploited in the following ways: (Fetherstone: 1958,10)

- Differentiating surfaces can identify different areas within a building
- Different edges to surfaces provide a warning of change
- Differentiating surfaces provide a warning of hazards
- Guide strips give directional aids

A highly tactile environment gives a building richness and a depth which can be observed by the blind, the partially sighted, and the sighted person.

The sense of smell is not as widely used as the other senses but it does play a part in providing clues if there are elements within a design which actively release smells into the environment.

Smell is often not intentionally included in the design of a building as a location clue, however people will use it to identify and remember places. For example the smell of food identifies a restaurant. The scent of trees in blossom identifies planting. The smell of thyme, lavender and rosemary identifies an herb garden. Laundries, kitchens and coffee areas give off scents too which disclose their location.

Aromatic clue givers are easily recognisable and help to describe the environment to the visually impaired person.

## 3.1. Theoretical Framework

### Introduction

In determining architectural theories to be explored one must first ask the question: for whom is the building intended and what is the building's aim? Once these factors have been considered it is evident that the theories to be explored, evaluated and interpreted must relate to the specific needs of the building and its users. With this in mind the theories outlined below have been researched and have served to inform the theoretical framework of the design of a building for the society for the blind.

Places and buildings need to be nourishing to the human being in order for them to be of a health giving nature. A society for the blind has many facets; one of those is the facet providing a helping hand in order to initiate the healing process. The healing nature of architecture is examined in this chapter.

Consistent use of sensory cues helps to structure and identify a person's surroundings. An environment that is legible and easily identified to the visually impaired person requires certain elements in order for them to comprehend it. This is explored through the perception theory.

The positive and negative effect of specially designed buildings particularly for the disabled minority, which is the blind, is critiqued. An assessment of the theory of an 'architecture for the blind' questions whether architects should create specialised environments or rather solve existing problems in our normal built environment.



The provision of groups within the greater environment is explored in the neo-institutionalisation theory and what affects these groups of accessible architecture have on people with disabilities.

The theoretical discourse provides a set of requirements to fulfil which serves as a programme for the building to fulfil. It is this approach that establishes the theoretical framework considered for the design.

Although most visually impaired people will never be able to regain their sight, the environment in which they enter for aid and care must be of a healing nature. A healing environment will accelerate the pace at which a person gains mobility or the pace at which a person comes to terms with their impairment and the consequences thereof. Architecture can either serve to support their impairment or damage it.

#### **Spirit of Place**

Through the use of one's senses the spirit of a place is formed in one's mind and body. More than the appearance of a place it's the spirit of the place which effects us emotionally. A building therefore with a sense of wholeness and peace will nourish the user on an emotional level. An outside source, ie counselling, is needed to initiate the healing process however the environment can provide nourishment and support for the person. Healing environments and healing qualities of environments can therefore be discussed.

#### **Architecture as Nourishment for the Senses**

Architecture is experienced through the senses. For visually impaired people it is experienced through, smell, touch, sound and warmth. Good architecture will nourish these senses. If a building emits a bad odour it can ruin the entire environment for the person. Hence the smells that materials, such as carpets or wood stains, give off should be considered when selecting materials.

Textures that we touch with our hands or feet identify approachable or inapproachable places. The way a bench feels to sit on determines whether a person will linger there or move on to a more welcoming seat.

The sound of a room can affect the mood of space. If sound resonates or echoes the mood is sharp and anxious, if sound is absorbed it can feel flat and lifeless. It is thus important to obtain the right balance to ensure the appropriate mood in a space.

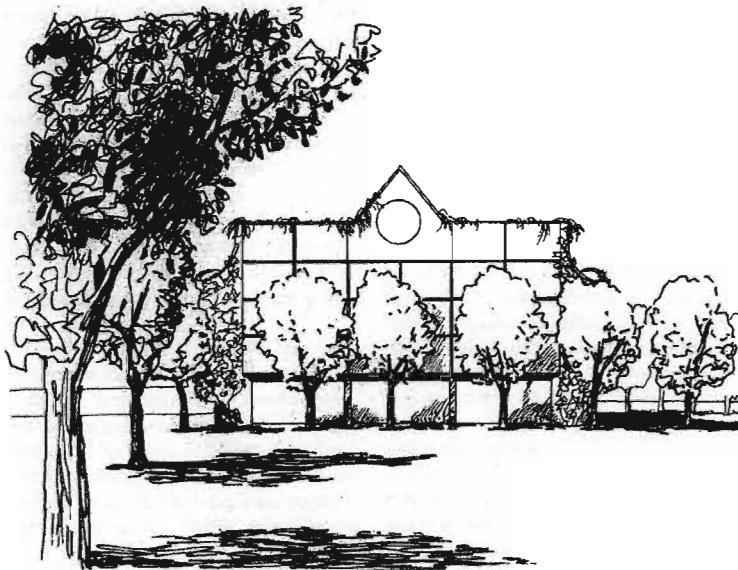
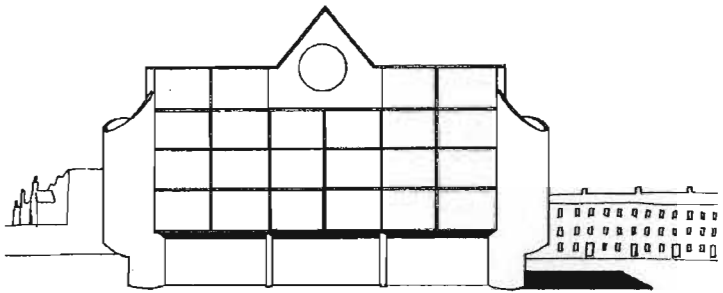
### **The Essence of Place**

The spirit of a place is perceived through our finer senses. These senses recognize the invisible reality which lies beyond our senses of touch, smell and hearing. This is the spiritual essence of a place. The way in which it has been planned, built, is cared for and has evolved portrays the unspoken values which are the sense of place.

Soft surfaces have healing qualities. Softer surfaces feel more alive and relaxed and renew us. Harder surfaces are lifeless, sterile and tense. Our surroundings can dictate our mood and emotions causing us to feel a certain way. Vegetation plays an important role in a healing environment. Vegetation brings life and softness. (Illustration 3.3) The spaces between buildings therefore become crucial in designing a place which heals.

### **Summary**

Our surroundings are a powerful art form which has the potential to be healing in nature. It is therefore of utmost importance to consider how the environment is shaped and manipulated in order to provide support to the person who is dealing



III 3.3: Example of plants softening hard surfaces  
(Day: 1990,76)

with sight loss. The spirit of a place affects us emotionally and should be carefully considered when designing for the visually impaired person.

Good architecture nourishes the human senses. Consideration of the senses in the design of the building creates an environment that enables and comforts the user in a manner that can bring healing on an emotional level.

'Failure to nourish the soul is experienced also as failure to provide the right physical environment.' (Day: 1990, 80)

In Kevin Lynch's book, *Image of a City*, he explores the image of the environment as perceived by the individual moving through it. Lynch touches on legibility, structure, identity and 'imageability' to explore the way in which the individual perceives the environment one finds oneself in. (Lynch: 1960)

The urban theory explored by Lynch can be applied to visually impaired users. Perception means to *perceive* rather than to *see*. Lynch explores how one perceives a city through 'imageability'. The way in which the blind or partially sighted person perceives his/her environment is crucial to the designer's understanding of how a visually impaired person will perceive the environment that the designer creates for them.

#### **The Image of the Environment**

Lynch identifies a series of elements which establish a coherent framework within an environment; path, landmark, edge, node and district. These elements help us to navigate an unfamiliar space and have a role to play in the ease of legibility of space. These elements can be defined as follows;

Paths: routes of movement, circulation, channels, transit lines

Edges: linear elements, boundaries between parts

Districts: recognisable sections which are entered into

Nodes: focal points that can be entered into, a junction or concentration of activities

Landmarks: external points of reference not entered into

An environment is most legible when these elements are clearly defined for the user.

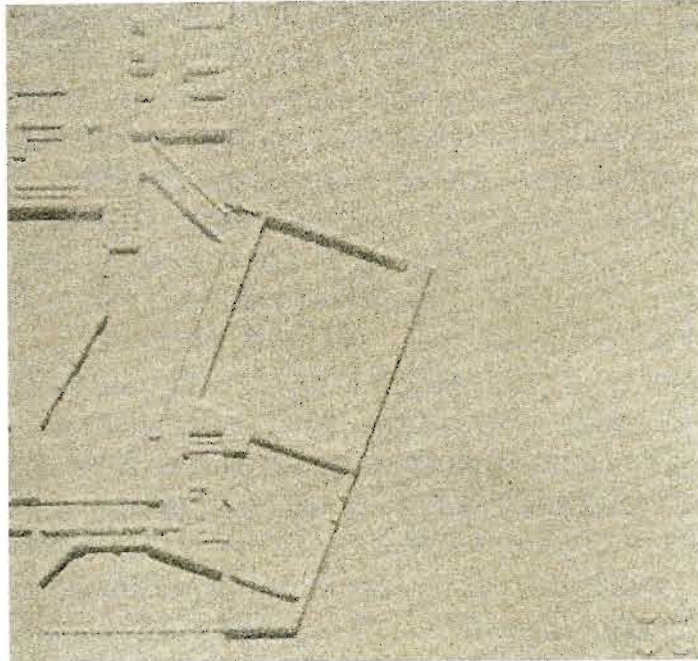
Lynch suggests that for sighted people almost every sense is in operation when experiencing and moving through an environment. This is certainly true for visually impaired people moving through a building, except that their sense of sight is hindered or absent. Their remaining senses are not only in operation but are relied upon in order to accurately perceive the environment they find themselves in.

### **Legibility**

Lynch describes the legibility or clarity of a city as “the ease with which its parts can be recognised and can be organised into a coherent pattern.” (Lynch: 1960,2) A legible city contains districts, landmarks and pathways which are easily identifiable to the visitor. Aldo van Eyck said “make of each house a small city and of each city a large house” (Engel: 1999,28) confirming that an urban theory can be applied to an individual building. A building with easily identifiable areas, markers and routes produces a legible building. Regardless of an individuals’ abilities or disabilities, features need to be included in order to achieve legibility. Legibility is of particular importance for visually impaired users; hence the importance to ensure that legibility is achieved using non-visual aids.

Lynch suggests that structuring and identifying the environment can be achieved through the use of many cues, namely; visual cues of colour, shape and tone as well as sensory cues such as smell, sound, touch and kinaesthesia. Visual cues are

useful to the partially sighted however blind users rely entirely on the provision of sensory cues for their ease of orientation and wayfinding.



III 3.4: Example of a tactile plan (Filler: 1978,83)

A tactile plan at the starting point of the journey is a useful device for the visually impaired user to employ as a memorised point of reference when in a position of disorientation. (Illustration 3.4) A clear image, committed to memory, of existing surroundings is a useful tool. “A good environmental image gives its possessor an important sense of emotional security” (Lynch: 1960,4)

Lynch considers the ‘rare experience’ of being lost in an environment. He suggests that in the event of becoming disorientated one would feel anxiety. With visually impaired people this possibility is a probability. It is essential for the design of a building for the visually impaired to be legible and navigable to the blind or partially sighted person. “A distinctive and legible environment not only offers security but also heightens the potential depth and intensity of human experience.” (Lynch: 1960,5)

An ordered environment guiding the user at every opportunity, Lynch believes, may hinder the possibility of ‘new patterns of activities’. It may be beneficial to include areas for self-exploration and spaces allowing for ‘new patterns of activities’.

Passini, in his book *Wayfinding in Architecture*, states that it is the sole responsibility of the architect to ensure that the information provided is legible to all users particularly, for the purposes of this dissertation, the visually impaired. “A place that

facilitates the obtaining and understanding of environmental information will have a high legibility factor.” (Passini: 1984,110)

### **Imageability**

“A rather awkward term, imageability, has been used to describe the ease with which a place can be mentally represented”. (Passini: 1984,110) Lynch defines ‘imageability’ as “that quality in a physical object which gives it a high probability of evoking a strong image in any given observer”. (Lynch: 1960,9)

Landmarks help to fill in the image; things such as signs, trees, doorknobs and other detail serve as reference points for visually impaired people. “The characteristic that would give a space landmark values was its distinctiveness from other spaces”. (Passini: 1984,113)

### **Summary**

In order to achieve an environment that is legible and easily identified there are certain elements which need to be in place for the visually impaired user. Structuring and identifying the environment can be achieved through the use of cues, namely; colour, tone, smell, sound and touch. This technique of consistent use of sensory cues from the built environment aids the visually impaired person’s orientation and wayfinding.



### 3.1.3. Towards a Theory of an Architecture for the Blind

This premise is discussed by Jose R. Bernardo, an American Architect, in his paper *Architecture for Blind Persons*. Bernardo discusses the specialised design of buildings particularly for the disabled minority which is the blind. This section assesses this theory and what it stands for. Does it serve to propose architects' create specialised custom-designed environments or rather solve problems that exist in the normal built environment?

#### Defining Architecture in Non-Visual Terms

Vanoli's research into architecture for the blind in his unpublished thesis, *Un sighted Barriers*, exposes two prominent and opposing schools of thought.

The group opposing the idea of an architecture for the blind do so on this argument:

It is virtually impossible for architects to assess the type of non-visual information that blind people use for orientation. Bernardo states that "the architect will have to redefine architecture in non-visual terms. This is extremely difficult, if not impossible, for someone who is not blind." (Bernardo: 1970,262) Bernardo ponders whether it is possible for an architect to conceptualise the blind person's spatial image and whether an environment that is deliberately tuned to satisfy his/her sensory needs would be assistive. Bernardo states "the architect will have to face a complete reversal of priorities if he is to design successfully for the blind." (Bernardo: 1970,262)

Bernardo establishes that buildings which are specially designed provide a protective environment that 'mothers' the visually impaired user. (Bernardo: 1970,262) This disadvantages visually impaired people when they find themselves outside of this protective environment. It is believed that specially designed buildings enhance segregation as the users become familiar with them and then cannot cope when in the normal environment. Visually impaired people will therefore avoid the normal environment thus reducing interaction with sighted people.

The group supporting an architecture for the blind do so on this argument:

Bernardo concludes that architects can in fact make a valuable contribution to the blind person's ability to orientate him/herself. "In order to facilitate the blind person's comprehension of space, the architect can and should modify those non-visual parameters that are seldom considered by most architects." (Bernardo: 1970,263)

Research has concluded that visually impaired people have the ability to orientate and locate themselves by relying on non-visual spatial information. Vanoli concludes that a visually impaired person would benefit positively from an environment that complements and assists him/her in his/her mobility and process to orientate themselves using non-visual spatial information. (Vanoli: 1972)

There are underlying complexities to these discussions. Every visually impaired individual has specific conditions associated with his/her impairment and these

specific needs must be met. These needs are important to discern and can be distinguished as follows;

1. Children preparing for life in a sighted world
2. Elderly visually impaired people
3. Newly visually impaired people being rehabilitated.

Each of these categories calls for different environments. Children require a lesser degree of adaptation as they are in the process of learning how to cope in the world and a building that 'mothers' them would disadvantage them when they find themselves in a normal environment. The same applies for the newly visually impaired people being rehabilitated. A completely protective and helpful environment will disadvantage them once they leave the building. However when designing for the elderly visually impaired, a special environment that is convenient, pleasant and easy to cope with, would be appropriate.

### **Existing Problems in the Built Environment**

The group that are opposed to the concept of architecture for the blind are however in favour of adjusting the built environment to ensure accessibility and safety for blind users. Architectural barriers prevent the enjoyment of a building. A space that distorts sound can give false clues and disorientate a visually impaired person. Obstacles below knee level, unclear definition between pavement and street and large facades of glass are all potentially hazardous to the partially sighted or blind person. These dangers must be taken into consideration when designing a building specifically for the use of visually impaired people.

Is this not the architect manipulating the environment he is designing for the visually impaired users? Therefore can this approach of merely adjusting the built environment for safety reasons be defined as architecture for the blind? Whether the designer is opposed to or supporting of custom-designed architecture for visually impaired people, it is evident that architects can contribute to the visually impaired person's perception of his/her environment through the provision of non-visual information.

### **Summary**

A debate exists between those who believe that a 'mothering' environment is appropriate and those who believe that a 'hostile' environment is better suited. A balance needs to be achieved between these two approaches in order to achieve a design which benefits all users and their joint spectrum of visual impairment conditions.

#### **3.1.4. Neo-institutionalisation Theory:** mini-institutions within the greater environment

This theory discusses the provision of mini institutions within the greater environment and what affects these pockets of accessible architecture have on people with disabilities and specific to this discussion, the visually impaired.

This topic is a controversial one. This discussion will attempt to identify the attributes of each argument and conclude on an appropriate design approach for a building for a society for the blind.

There exists a group of professionals and people with visual impairments who are in opposition to the provision of specialist buildings. They are of the opinion that these specialist buildings are unhelpful to visually impaired people, as the majority of buildings will never be made more accessible. It is felt that protecting visually impaired people from the real world with purpose-designed buildings will hinder their development of being rehabilitated into the existing environment and disadvantage them when they find themselves in inaccessible buildings. Furthermore they are of the belief that specialist facilities and buildings will result in an enforcement of segregation and isolation. Their fear is that specialist design will disempower people by contributing to their dependence. They believe that purpose-built buildings will exhibit to the general public the concept that people with visual impairment are incompetent. Their primary suggestion is that people with impairments should be treated as normal.

Richard Mettler forms part of this group and is concerned that designing a building that fully caters for the visually impaired and presents no obstructions and complications for the user is detrimental to their rehabilitation into the real world where the built environment disregards the visually impaired user. It is Mettler's opinion that a building which cradles the visually impaired user contributes to their dependence and isolation and reinforces the belief that visually impaired people are incompetent. (Mettler: 1987,476)

On the other hand there are many professionals and visually impaired individuals who reject this view. They argue that environmental accessibility should be seen in the context of equal opportunities for all. They feel that prejudices arise from ignorance which is a matter to be dealt with by the state. They believe that it is important to appreciate that people are all different from one another. Different people have different needs and these needs must be addressed appropriately. By treating everyone as normal, there are many who will be excluded, including visually impaired people. Selwyn Goldsmith suggests that "special treatment does not mean stigmatising treatment". (Goldsmith: 1976,46) Goldsmith goes on to propose that people with disabilities are handicapped because of the environments that they are forced to exist in. "A disabled person is not automatically a handicapped person; whether or not there is a handicap depends on the nature of the individual's impairment and the circumstances in which he is placed. A physical disability is a handicap only where it constitutes a barrier to the achievement of specific goals". (Goldsmith: 1976,17) For example a scientist confined to a wheelchair working on the fourth floor of a building can perform as well at his job as his able-bodied colleagues. If the fire alarm sounds, he becomes handicapped because the

elevators automatically return to the ground floor and he is unable to use the fire stairs along with his colleagues. It is the constraint imposed by the environment that has created the handicapping situation.

The architect plays a key role in demystifying the concerns that this theory raises. The architect must endeavour to achieve the best possible solution as regards living and treatment conditions. Architects have a role to play by ensuring that the design is one that empowers the visually impaired community and the building that results, serves as an example to the public of accessible architecture where the architecture meets the users at their point of need. It is therefore important for the architect to adequately understand the stigmatism he/she is designing into and create an environment sensitive to the users concerns.

### **Summary**

Mini-institutions within the greater environment raise concerns that such buildings contribute to the visually impaired person's dependence. Some are of the opinion that custom-designed buildings will hinder visually impaired people's development and disadvantage them when they find themselves in inaccessible buildings. Their suggestion is that people with impairments should be treated as normal. Architects must ensure that the design empowers the visually impaired community and that the building serves as an example to the public where the architecture meets the users needs.

The points of view explored serve as a grounding for the conceptual framework of the design of a building for visually impaired people.

It is apparent that differences exist among professionals and visually impaired people as to what environment is the most beneficial for blind and partially sighted people. Some believe that an environment specially designed for visually impaired people will hinder their development and others believe it will aid them both in their development and independence.

Concluded here is that a balance between the two schools of thought must be achieved. A building that is entirely 'mothering' provides no challenges or opportunity for mobility training within the building's facilities. However a building that is 'hostile' in its design suggests a total disregard for the users and becomes a difficult and unpleasant environment for visually impaired people to navigate. As this building is intended to be a safe haven and a pleasurable environment for visually impaired people it is concluded that a building which is subtle in its approach to design (for example; tactile clues underfoot for guidance as opposed to cluttering handrails which give an institutional feel) will be successful.



# chapter four : precedent studies

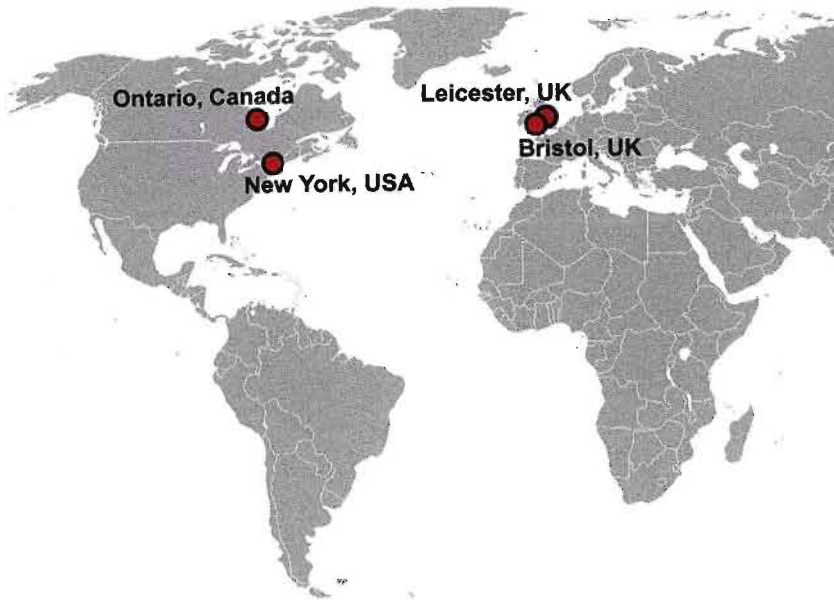
Chapter 4 : Precedent Studies

In this chapter existing precedent will be explored in order to examine how architects have engaged with the issue of designing for visually impaired users. This chapter will discuss the way in which the selected examples define architecture for the visually impaired and how they deal with fundamental issues facing the designer.

The built examples in this chapter will address the following questions:

- How have architects approached the design of buildings for visually impaired people, and the associated issues of wayfinding, circulation and movement, which similarly confront the designer here?
- How has the stimulation of human senses been explored and integrated into the design?
- How is the building appropriate for sighted users, has community interaction been explored?
- How does the building address the concept of encouraging independence, integration into society and normality of lifestyle?

These precedent studies will also help to establish what possibilities exist for additional facilities. The studies will serve to inform relationships between facilities and functions. Furthermore these studies will serve as a background for comparison to the local case studies in chapter five, which will be a major informant in deriving the requirements for the brief which will inform the design of a facility for a Society for the Blind.



III 4.0 : Map of the World

**1. The Richard Attenborough Centre for Disability and the Arts**, University of Leicester, United Kingdom, 1997. Architects: Ian Taylor with Bennetts Associates.

This example was chosen to analyse the degree to which aural architecture is effective in buildings.

**2. House near New York**, United States, 1978. Architects: Charles Moore and Richard B Oliver.

This example was chosen to analyse the value of designing for the use of senses on sighted users.

**3. W. Ross Macdonald School for the Blind**, Ontario, Canada, 2005. Architects: G. Bruce Stratton Architects.

This example was chosen to analyse the appropriateness of the single-spine plan.

**4. Vision Care Centre**, Bristol, United Kingdom, 1993. Architects: Alec French Partnership.

This example was chosen to analyse the concept of encouraging independence, integration into society and normality of lifestyle.

## 4.2. The Richard Attenborough Centre for Disability and the Arts, University of Leicester, United Kingdom, 1997. Architects: Ian Taylor with Bennetts Associates.

University of Leicester, United Kingdom, 1997. Architects: Ian Taylor with Bennetts Associates.

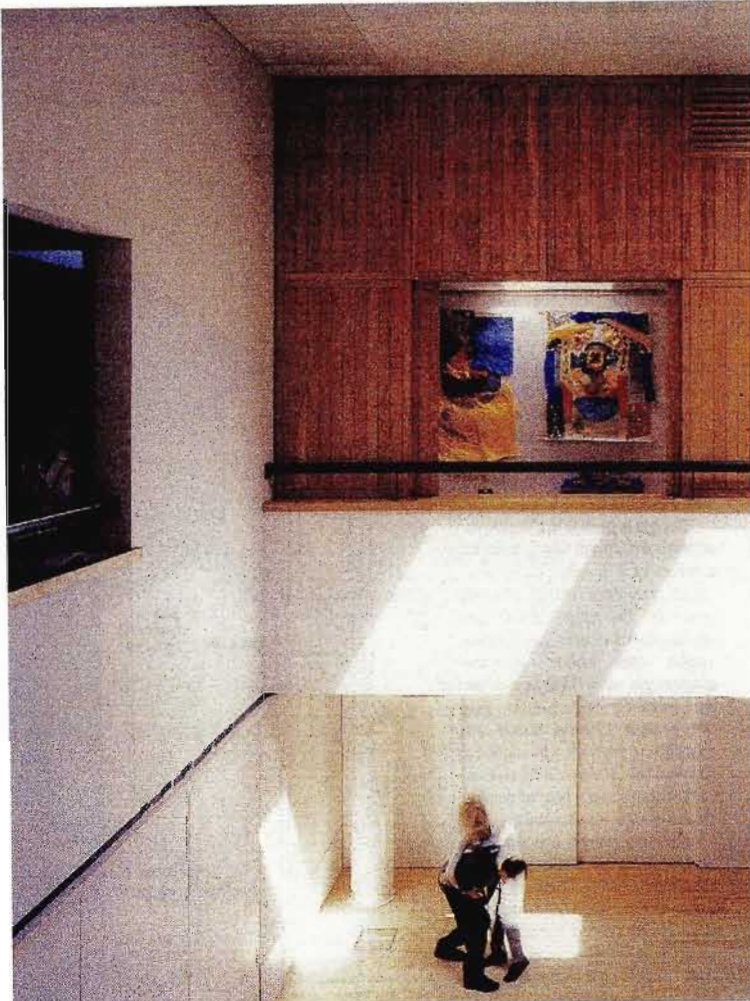
### Concept

The architects' intention was to design a building that would facilitate creativity and allow for expression of the users in the form of arts, dance and drama. Their vision was that the building should lift one's spirits. The architects wanted to avoid cluttering the building with devices for disabled people but rather use a subtle approach of engaging with disabled users with 'passive' design elements ensuring the building feels 'normal'.

### Spatial Organisation

The Richard Attenborough Centre for Disability and the Arts is a building for students with various disabilities facilitating creativity and expression. Visual arts, dance, drama and music are integrated into a programme of practical and theoretical arts education. The centre houses visual arts, dance, drama and music rooms including a research library, sculpture studio, hall and offices. The building caters for a variety of handicaps, visual impairment being one of them.

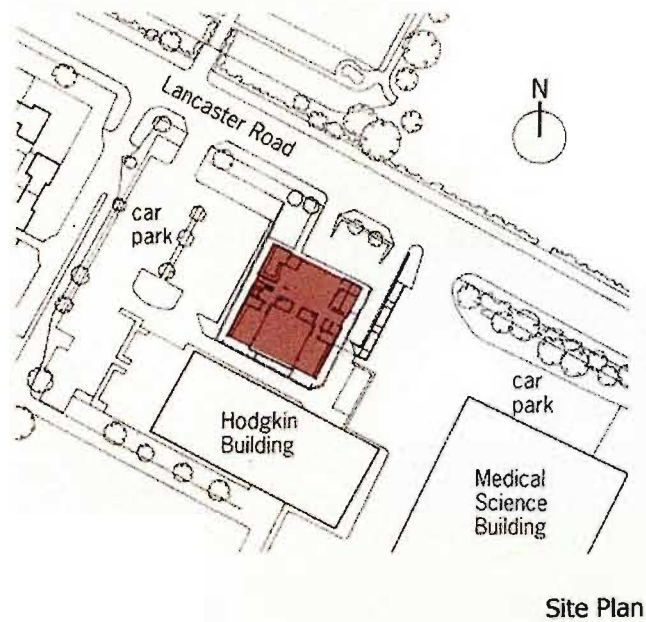
From conception, this building was designed to be pleasing to the senses. This is achieved through the use of a mixture of materials that are textured to the touch. Furthermore the building is designed to promote an abundance of sunlight which warms the interior. (Illustration 4.1) The building makes use of natural light resulting in a warm, cheerful building.



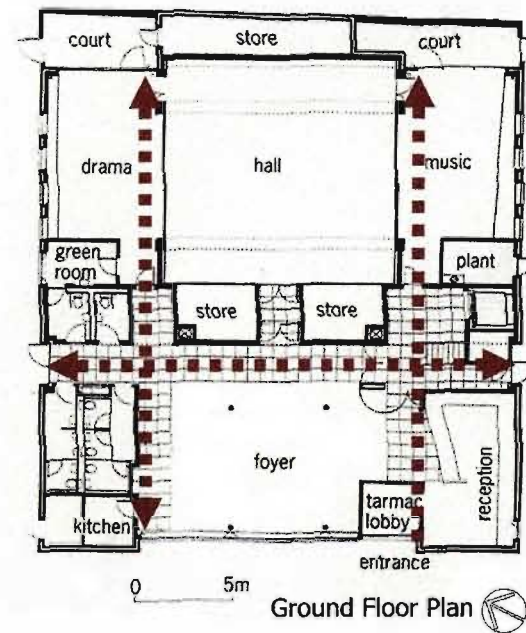
Ill 4.1: Sunlight permeating hall (Dawson: 1997,29)

## Readability of Building Configuration

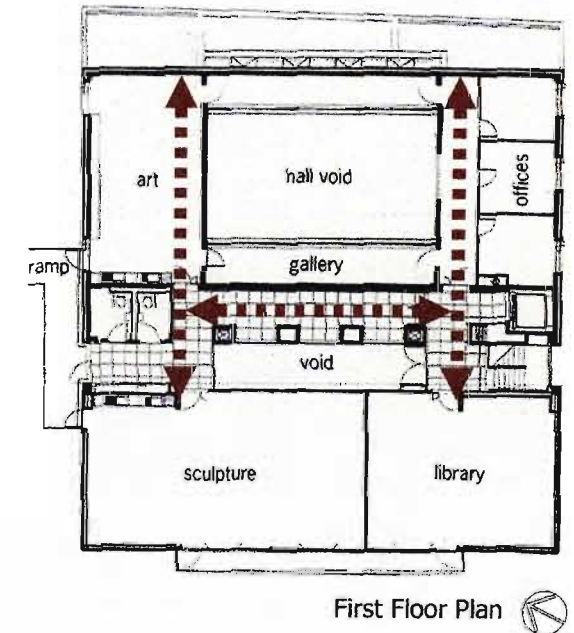
The building had to be uncomplicated, both to be comprehended by the users and operated by staff and students alike. The H-pattern circulation plan is legible to visually impaired users and is easily explained from reception without the need for Braille maps and signs. (Illustration 4.2) The architects' rejected special devices which would clutter the building in favour of 'passive' design where the building feels 'normal' yet provides access for all.



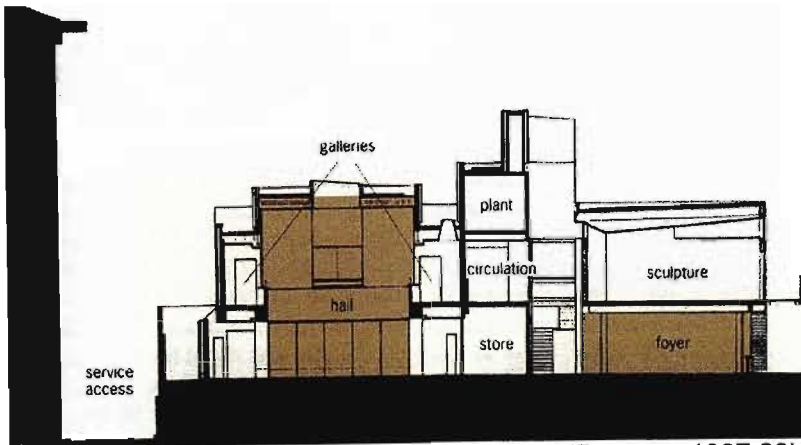
III 4.2: Location Plan (Dawson: 1997,24)



III 4.3&4.4: Floor Plans (Dawson: 1997,24)



While the plan is straightforward and rectilinear, the section has been manipulated to develop different acoustic conditions in different rooms. (Illustration 4.5&4.6) A low ceiling has a different acoustical quality to that of a room with a high ceiling or a double volume space. The aim was that a variety of acoustic stimuli including materials and geometries be used in order to create specific environments in each room. This feature serves in aiding the visually impaired in their orientation by ensuring that different spaces are identifiable.



Ill 4.5: Section showing varied ceiling heights (Dawson: 1997,26)



Ill 4.6: Double volume hall (Dawson: 1997,25)

The floor, wall and door finishes are specifically for the visually impaired user's benefit. Good tonal contrast is achieved, walls are white, doors dark and flooring is mid-tone aiding those who can dimly perceive tone to orient them. (Illustration 4.7) Flooring materials suit the functional requirements whilst at the same time provide consistent clues to location. Circulation areas are paved in textured concrete paving slabs so that the visually impaired can define these areas.



Ill 4.7: Tonal contrast between door, wall & floor (Dawson: 1997,25)

Essential to the success of this design was the relationship between architect, client and building users. The future users of the building were taken into consideration and consulted at all stages of the design process which has resulted in a well informed building.

### **Summary**

For the visually impaired user, direct light can cause glare which can be problematic. The main concern is that the architects' accomplishments to facilitate the visually impaired users are compromised due to an oversight on the issue of direct light. Unobstructed direct light results in glare which can cause discomfort for those with partial vision.

This analysis acknowledges that the building responds to the needs of its users through a variety of creative sensory stimuli. An approach such as this one reminds us that architecture is not solely a visual art, but it is as much spatial, tactile and atmospheric. In many buildings of this nature aural design is scarcely considered but in this precedent study acoustic design was approached with creativity resulting in a building that communicates to the visually impaired users.

The readability of the building's configuration is vital to a visually impaired person. Elements such as textures, colours and aural spaces should be an essential consideration in the design process.

### 4.3. House near New York, United States. Architects: Charles Moore and Richard B Oliver.

#### Concept

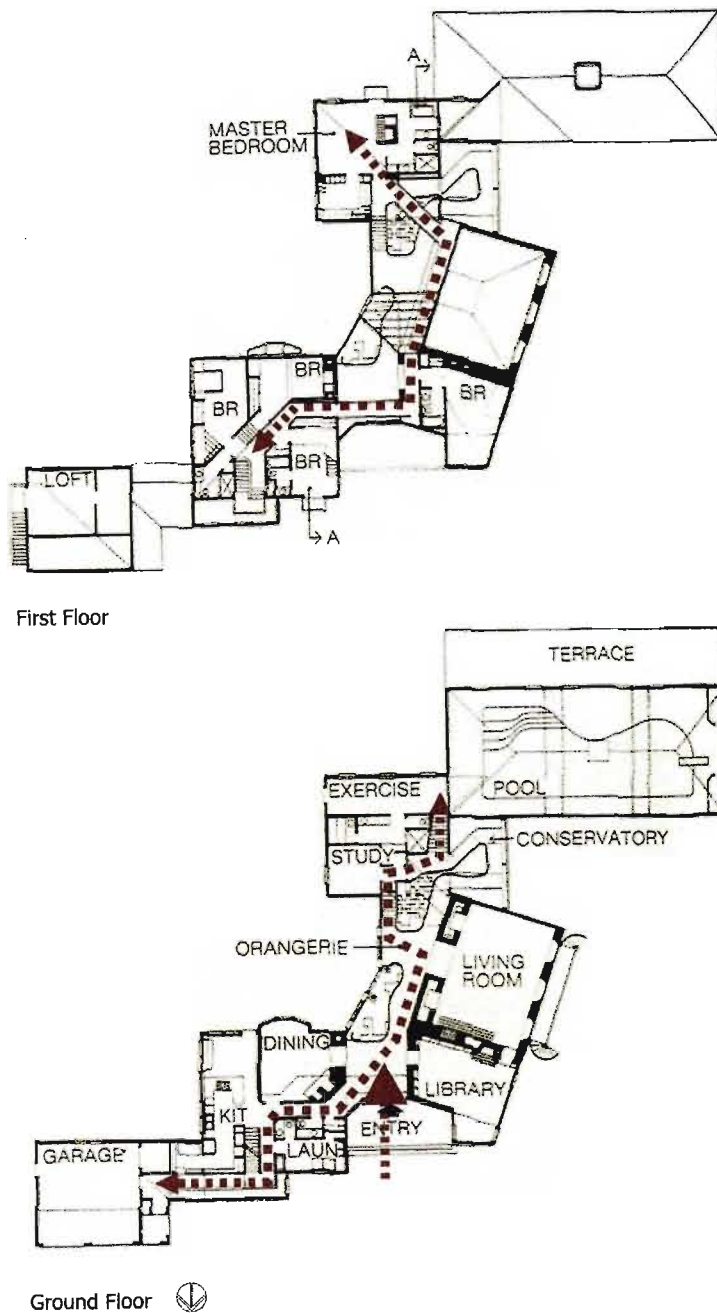
The client, who is totally blind, had two main requirements for the design of his home. Firstly he did not want it to look like a home for a blind person and secondly he wanted the design to enhance his independence, this being his strongest desire and at the same time his greatest deprivation.

The architects' main objective was in Moore's words, "to make something that could be felt as well as be seen." (Moore in Filler: 1978,82) Moore and Oliver envisioned the house to have a tactile quality that could stimulate the clients remaining senses and provide him with exploratory features.

Circulation and movement through the house is the major design theme. Chamfering of corners and gentle modifications ease the client through the home. (Illustration 4.8) Furthermore a crafted mahogany railing winds its way through the home providing additional guidance. (Illustration 4.9) The architects' considered this necessary in order to provide the client with the independence he required.

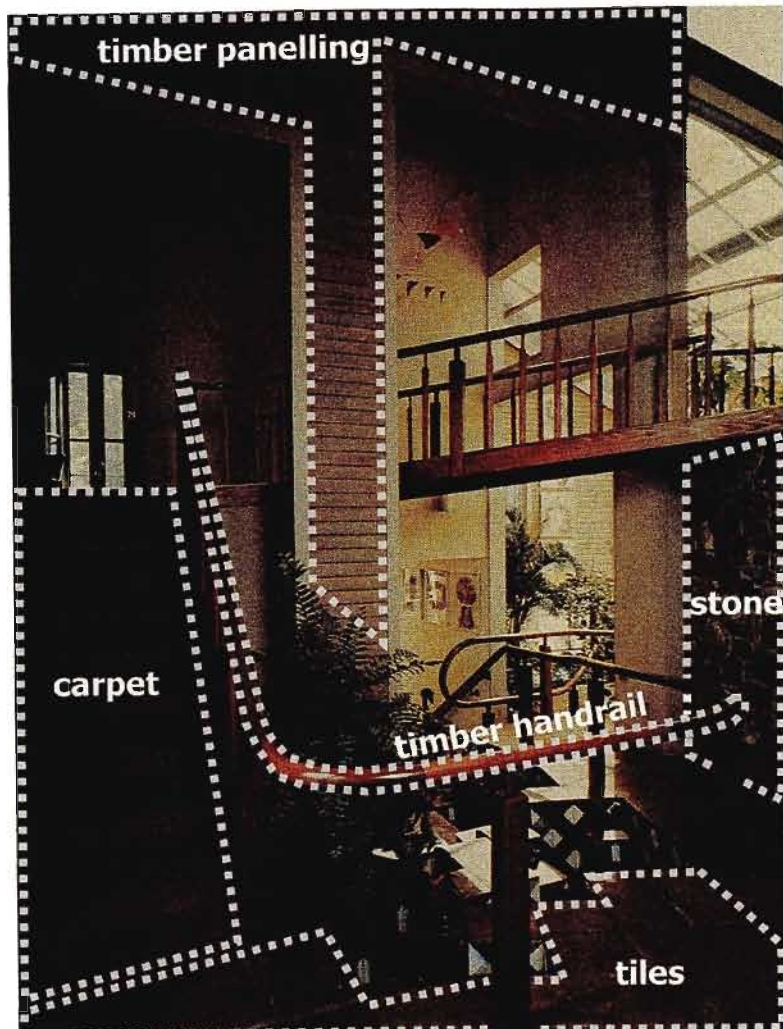
#### Designing For Sense

This home is designed to be felt and to be seen. Floor textures vary indicating one's position within the house, for example handmade tiles in the kitchen provide a pleasurable texture underfoot. The blind and visually impaired live in a world of surfaces and for this reason the architects have drawn on the tactile qualities of



Ill 4.8: Floor Plans (Filler: 1978,82)





Ill 4.9: Juxtaposition of materials within the house  
(Filler: 1978,85)

materials. (Illustration 4.9) The client's increased dependence on his sense of hearing made him keen to have aurally understandable spaces in which to live. This makes it possible for him to gauge his location within the house as well the whereabouts of others. An uncarpeted strip between the hallway and living room provides an audible announcement of the arrival of another member of the family.

The design relies on natural ventilation. Air-conditioning is only used on very hot days. This design requirement eliminates annoying background noise and stale odours that encumber the acuteness of one's sense of hearing and smell.

For the visual family of the client this house has a particularly restful visual aura, emphasising that design for the disabled has much to contribute in design for sighted users too. Many materials used were conceived for pure sensory delight and have been welcomed by the family.

### Summary

This precedent study has been selected as a relevant study because of its extensive coverage of the senses sight, touch, sound, smell and hearing. This design finds its main success in enhancing the client's independence through the manipulation of space to provide a sensory environment.

It is pleasing to observe that conscious design of sensory qualities is relevant to sighted users too. Through this precedent study it is recognised that sensory qualities give richness to a building, which is both practical for the visually impaired user and stimulating for the sighted user.

**4.4. W. Ross Macdonald School for the Blind, Ontario, United States, 2005. Architects: G. Bruce Stratton Architects.**

**Concept**

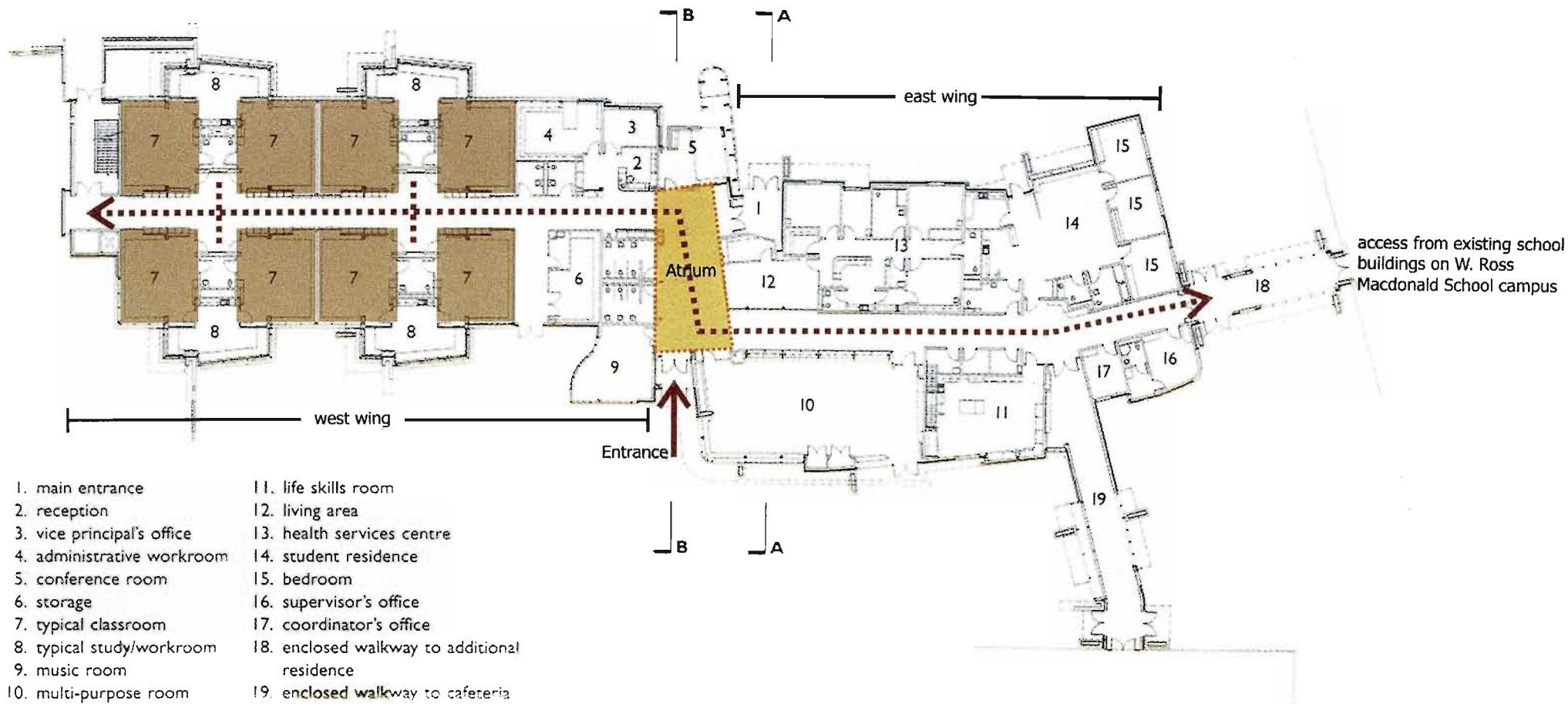
The W. Ross Macdonald School for the Blind comprises several buildings dedicated to the education of over 200 visually impaired children. The concept employed involved the use of the single-spine plan where all functions branch off one single circulation route. This layout is simple to follow and easily memorised by visually impaired users. The architects explored navigation through touch where guiding textures feature both on the walls and underfoot to aid orientation.

**Spatial Organisation**

The single-spine plan, with a bend at the entrance, features extra wide corridors of approximately 3 metres as opposed to the common 1.6 metres and oversized doorways relative to the corridors width to accommodate increased circulation requirements of the children in their wayfinding process. (Illustration 4.10) In plan the two wings form a junction at the centre which creates a focal point adjacent to the main entry foyer. (Illustration 4.11) The eastern wing accommodates student residences, a health services centre, classrooms, music practice studios, and a multi-purpose space. A double volume atrium at the entrance alters the acoustical quality of the space thus defining it. The atrium is spanned with exposed steel beams allowing light in through clerestory windows. The western wing has meeting rooms and offices close to the atrium. Four 'teaching pods' follow on from there, each 'pod' has two classrooms divided by washrooms and a shared activity room.



III 4.10: 3 metre wide corridors to accommodate increased circulation requirements (Jen: 2005,34)



**Ground floor**



III 4.11: Floor Plan (Jen: 2005,34)

The architect's objective was to promote an enriched living and learning environment with as few barriers as possible. The design caters for the unique needs of the students enabling them to learn in an environment that is hospitable to their needs.

### **Light**

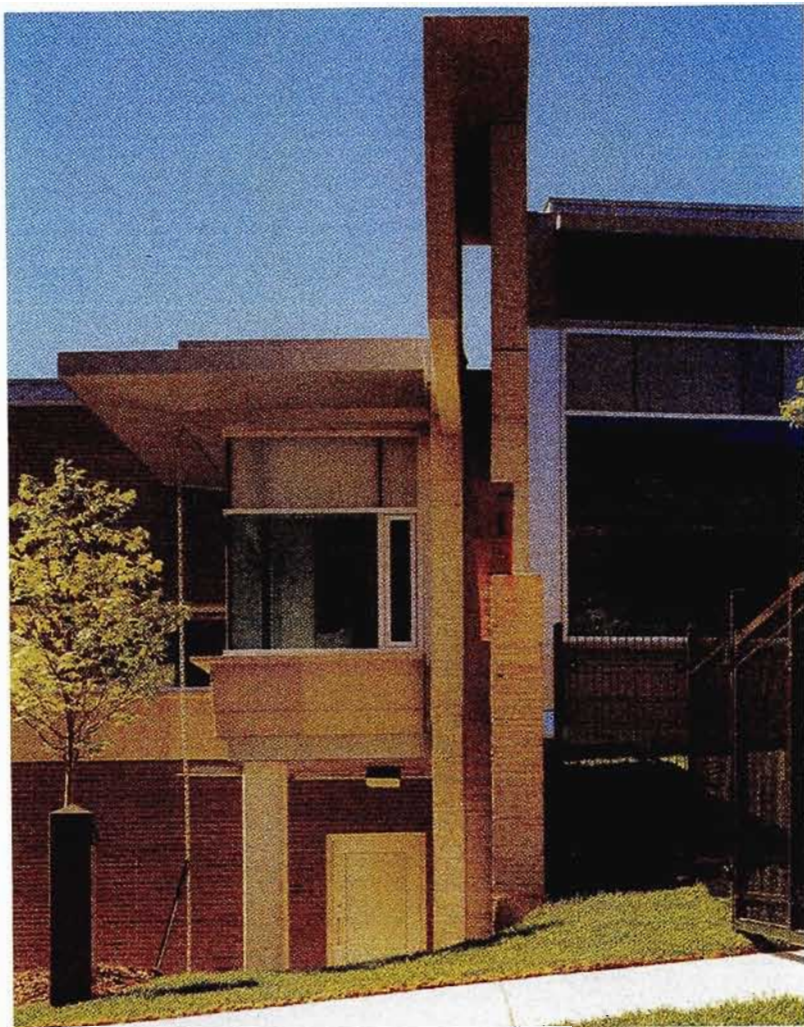
Natural and artificial light were carefully considered. Most students are highly sensitive to glare so direct sunlight is minimized. The fenestration is designed to achieve diffuse daylighting conditions through the implementation of shading devices. Broad concrete beams and a series of exaggerated concrete fins are designed to block late afternoon sun from entering directly. Windows have lower than normal lintels to reduce the amount of direct light that enters the classrooms. Furthermore the use of sand blasted glass to ensure indirect natural light reaches the central corridors from the classrooms. Artificial light sources are indirect and operate with dimmers so that the individual can adjust it to suit his or her need and comfort.



Ill 4.12: Trail rails in corridors (Phillips: 2005,67)

### **Navigation through Texture**

The design philosophy focuses on 'navigation through texture'. Off-shutter concrete walls detailed with smooth ceramic tiles work with a continuous 360mm wide black 'trail rail' along the walls that children use to guide them along the corridor. (Illustration 4.12) Contrasting tactile floor materials provide audible clues for students aiding them in the creation and navigation of their mental map. At critical junctions the flooring differentiates from dark porcelain laid tiles to blonde maple hardwood flooring, providing a contrast in colour and audible quality. These tactile markers orient the students at every step of their daily route and enable them to differentiate



Ill 4.13: Use of textural materials on exterior of building  
(Jen: 2005,68)

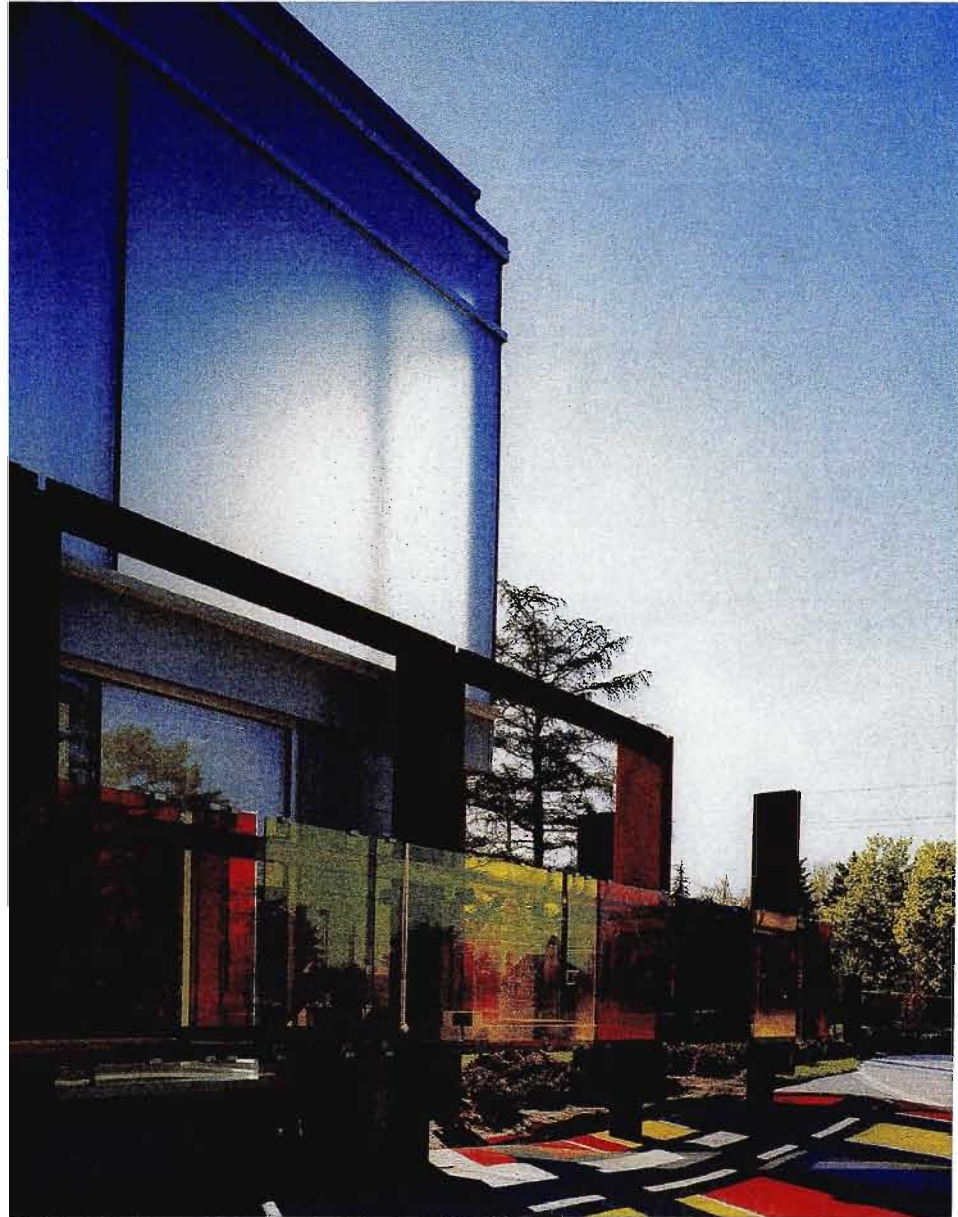
between zones in the process of wayfinding. All students are legally blind however many are partially sighted therefore robust colours and strongly expressed forms become critical to the student's experience of their surroundings.

The rich variety of materials designed for the senses on the inside of the building, with great consideration given to detail, appear to be echoed on the exterior. (Illustration 4.13) In situ and pre-cast concrete are combined with rusted steel, horizontally scaled zinc, concrete block and facebrick to give this building a distinctive textural quality. Metal chains hang from the soffits channelling water into rusted steel-lined concrete trays filled with pebbles. This mixture of materials provides the children with a stimulating environment to be explored with their sense of touch. Brightly coloured glass is attached to a weathered steel structure that features at the schools entrance. (Illustration 4.14) The glass panels are tinted red, blue, orange and yellow forming a transparent screen which casts patterns of transparent light onto the ground. This is another means of stimulation for partially sighted children.

### Summary

The low profiled building has a sculptural quality that is ironic as students cannot fully appreciate its visual aesthetics. This precedent study shows that the architect has created a building which exceeds the visual, and embraces the sensory aspect of the human body, while at the same time including visual qualities. It is uncertain whether the mirroring of sensual materials on the interior and exterior of the building was intentional. However this is seen to be an appropriate response in design where the visually impaired are specifically designed for, but the sighted are not excluded.

The method in which direct light is dealt with is inventive and thorough, and provides a satisfactory model for dealing with direct daylight.



III 4.14: Coloured glass at entrance (Phillips: 2005,32)

**4.5. Vision Care Centre, Bristol, United Kingdom, 1993. Architects: Alec French Partnership.**

Bristol Royal Society for the Blind is an independent and local voluntary organisation. It is the oldest charity of its kind in Britain. Services to people with visual impairments had been fragmented for many years, therefore the need arose to provide a centre where all services would be available.

**Concept**

The concept had to be one of flexibility as the Vision Care Centre needed to house many services under one roof. The architects' main objective was to create a pleasant environment for blind and partially sighted people to meet and interact without hazardous obstacles in their path.

**Spatial Organisation**

The centre serves as the headquarters for the society, with offices and conference facilities. (Illustration 4.15) It also accommodates existing resources; spaces for rehabilitation and training programmes, a cassette tape and publications library, an information unit and a display area with adjoining shop. The local health authority relocated its eye-assessment and low-vision clinics into the building. The Royal National Institute for the Blind and the Guide Dogs for the Blind Association also have regional offices here. The centre provides a kennel block for the dogs, group activity spaces for social interaction, catering facilities, coffee bar and gardens.

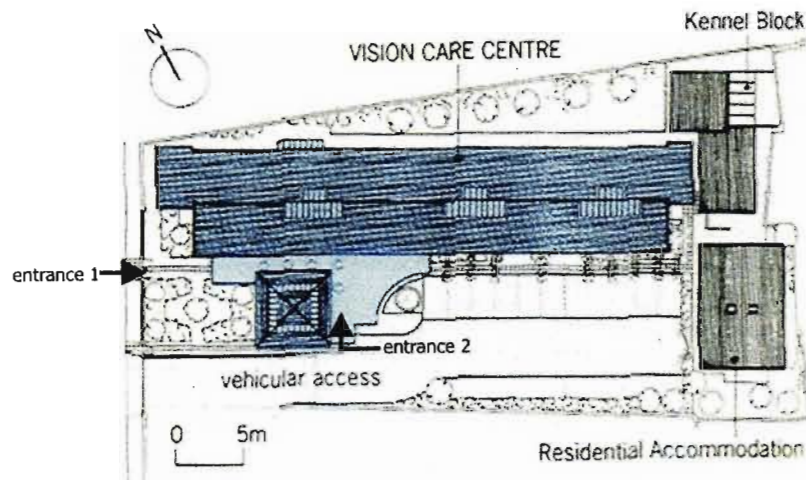


Ill 4.15: Street Entrance (Dawson: 1993,41)

The brief was challenging. The building type was unique, the building users had special needs and the design needed to promote the society's philosophy: encouraging independence, integration and normality.

## Site

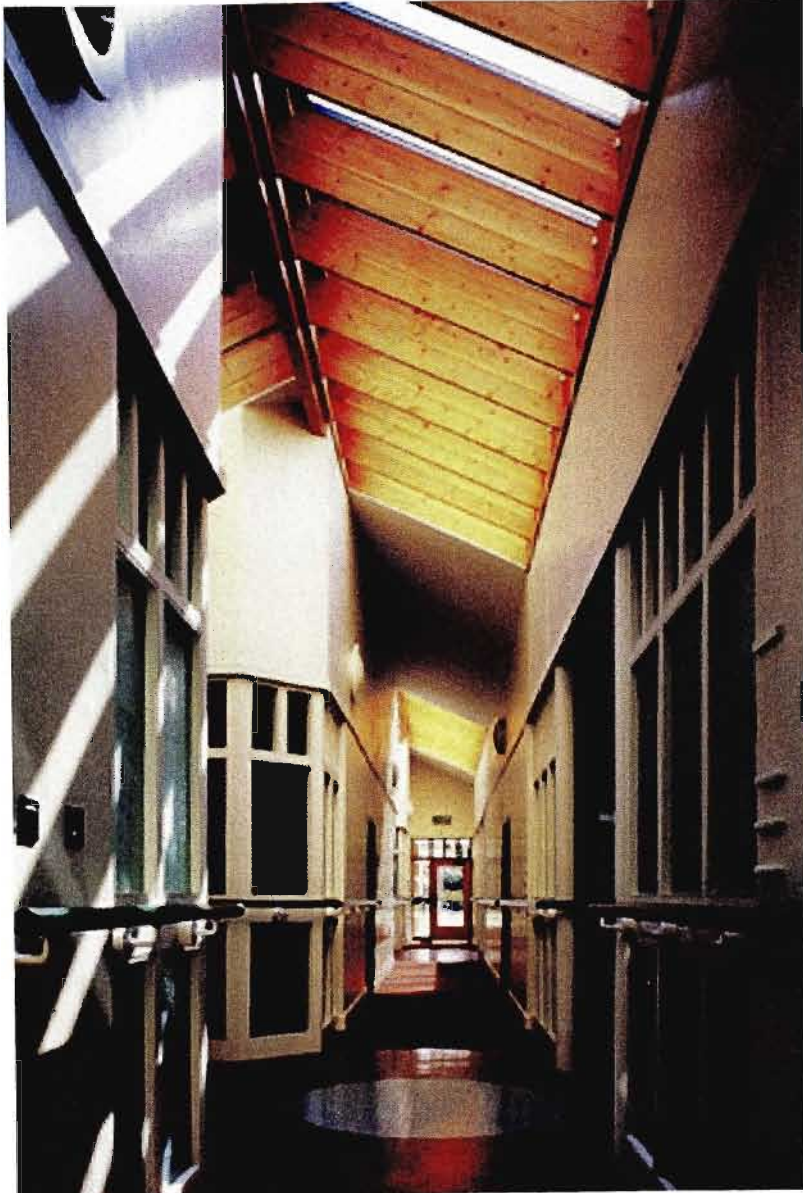
In this example site selection was the principal concern. The site needed to meet the criteria of the Bristol Royal Society for the Blind: (Illustration 4.16)



III 4.16: Site Plan (Dawson: 1993,42)

- The site needed to be of sufficient size to accommodate the wide range of facilities.
- Affordability was essential as the project would be funded entirely by the society, a registered charity.
- The site was to be located in the centre of the city to ensure good access by public transport.
- Integration with other city centre amenities was key so visitors could combine their visits with other activities.
- The site needed to be part of an area of mixed use as varied environment is essential for mobility training.
- The site was to be reasonably peaceful so as to be conducive to training, reading and the appreciation of the building's facilities.

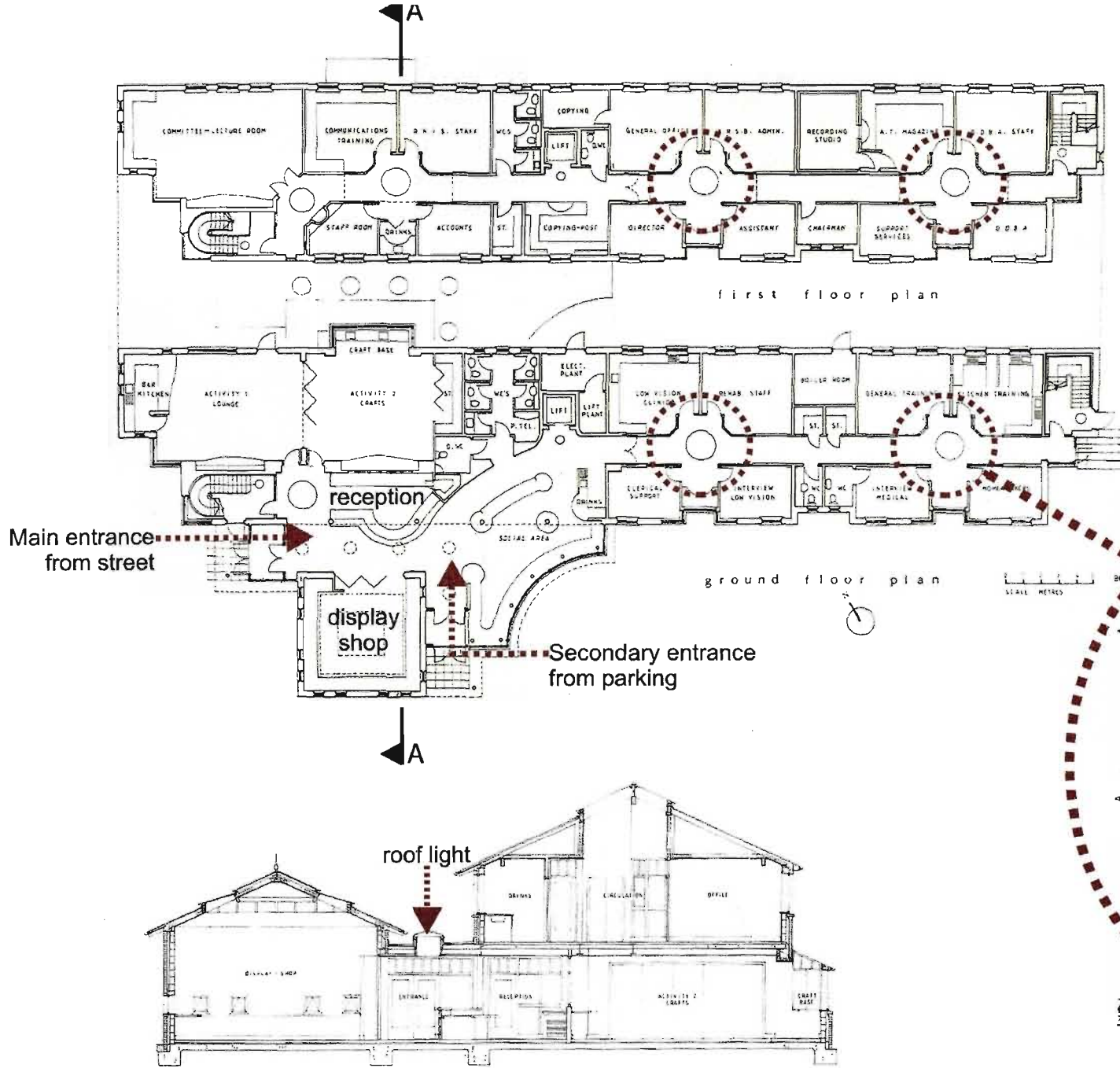




Ill 4.17: Focus point along corridor (Dawson: 1993,48)

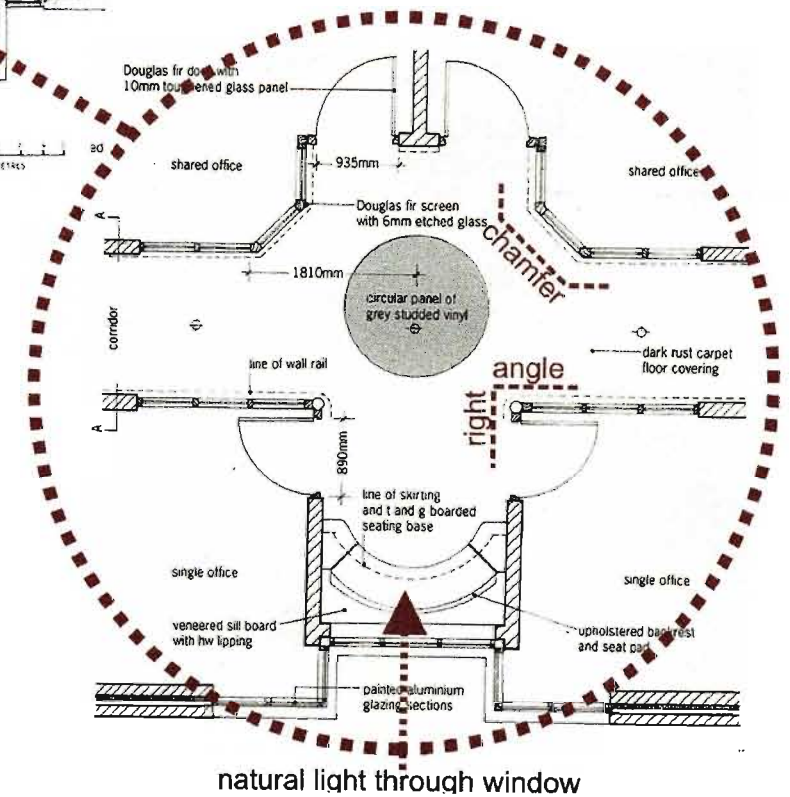
The building has two entrances, both are obvious and easy to locate. One entrance is for visitors arriving independently leading from the street while the other provides access from the car park. Both entrances converge on the reception area embracing the display shop. Reception serves as the 'command centre' welcoming and orientating visitors and overseeing the elevator, stair and public rooms.

All public facilities are on the ground floor and offices are on the first floor. (Illustration 4.18) Thus visually impaired visitors need only learn the layout of the ground floor and the office staff benefit from a peaceful office environment on the first floor. Similarly on the ground floor large public spaces are placed conveniently at the front of the building near the entrance, while training and rehabilitation rooms are in a quieter area towards the rear of the building. A clear linear circulation layout links all rooms and spaces. Important orientation clues are given in places to draw attention to specific changes. Doorways can be confusing to the visually impaired who find their position difficult to memorise and locate. The architects have organised door openings into groups of four doors each. (Illustration 4.17&4.18) The corridor widens at each cluster to create a focus point, a unique place looking and feeling different. At these focus points roof lighting as well as a large fully glazed window fills the space with natural light highlighting the area for partially sighted people. Floor texture changes at this point aiding blind persons to identify the area. Projecting eaves and external fixed louvers reduce glare and a window seat creates a place of identity.



III 4.19: Section A-A (Dawson: 1993,47)

### A feature of the design



III 4.18: Floor Plans (Dawson: 1993,45)

The principles adopted for site selection in this example are of value to the author, as these criteria could be adopted in the selection process for a site in Durban.

The extensive accommodation schedule is of particular value, as this precedent study will help to establish the possibilities that exist for internal functions and facilities. This will be a major informant to determining the requirements for the final design.

The creation of places which are identifiable and easily located by visually impaired people has merit. These places, where clustering of doors occurs, give a sense of comfort to the user. The qualities are quiet and subtle but serve their purpose admirably.

The linear circulation pattern ensures an easily navigable route. The arrangement of public facilities on the ground floor and admin on the first floor provides an uncomplicated arrangement where changes in level do not present an additional hindrance for visually impaired users.

## 4.6. Conclusions

The five examples examined in this chapter engage with the problem of designing for visually impaired users in a variety of ways.

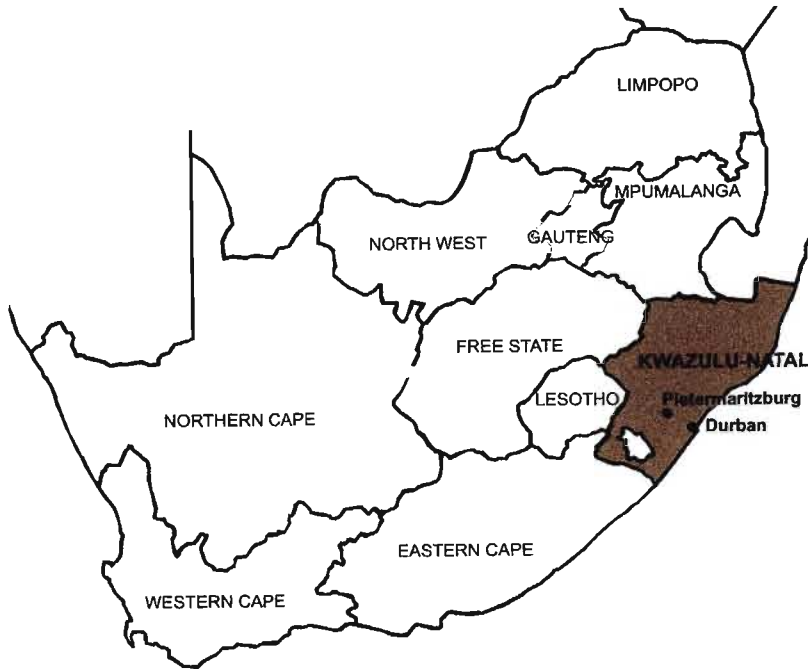
Issues of wayfinding, circulation and movement have been dealt with in two common manners; firstly a simple, easily navigable layout such as the single-spine or linear plan and secondly the use of texture underfoot or on walls to define circulation routes.

Senses have been addressed in all the above examples. Some deal specifically with touch and others include aural architecture. None of the examples engage directly with the sense of smell which is a lost opportunity. The manner in which the senses have been addressed varies from case to case revealing the wide spectrum of solutions available to the designer.

In all of the precedents studied in this chapter, the visually impaired person has been addressed and catered for. It is pleasing to observe that the sighted have not been excluded in this process. The architects have included a variety of textures and materials that are aesthetically pleasing to the sighted. This ensures that an institutional environment is not portrayed but rather a pleasant and welcoming one, which interacts with the visually impaired user, is achieved.

Lastly, these examples serve to encourage independence, integration and a normality of lifestyle which are important elements to consider when designing for visually impaired people.





III 5.0 : Map of South Africa

This chapter reports on case studies conducted in Durban and Pietermaritzburg. (Illustration 5.0) This exercise serves to examine how architects in South Africa have engaged with the issues of designing for blind and partially sighted people. It is intended to analyse and interpret the way in which the selected examples have attempted to define architecture for the visually impaired. This chapter will investigate how architects have dealt with fundamental issues facing the designer in terms of providing an environment that is beneficial and practical for the visually impaired. These case studies will serve as a major informant for the requirements for the final brief.

The built examples in this chapter will address the following questions:

- How have South African architects approached the design of buildings for the visually impaired and the associated issues of navigation, circulation and mobility, which similarly confront the designer here?
- Has sensory architecture been explored and integrated into the design?
- Does the building address the concept of encouraging independence, integration and normality?

These case studies will also help to establish the possibilities that exist for functions and facilities. These studies will establish the users' relationship with the buildings they inhabit and evaluate poorly designed areas. The intention is to draw on the information gathered in this chapter in order to formulate an appropriate design

approach to buildings for the visually impaired. The findings will be a major informant in determining the requirements for the final recommendation as a designed product.

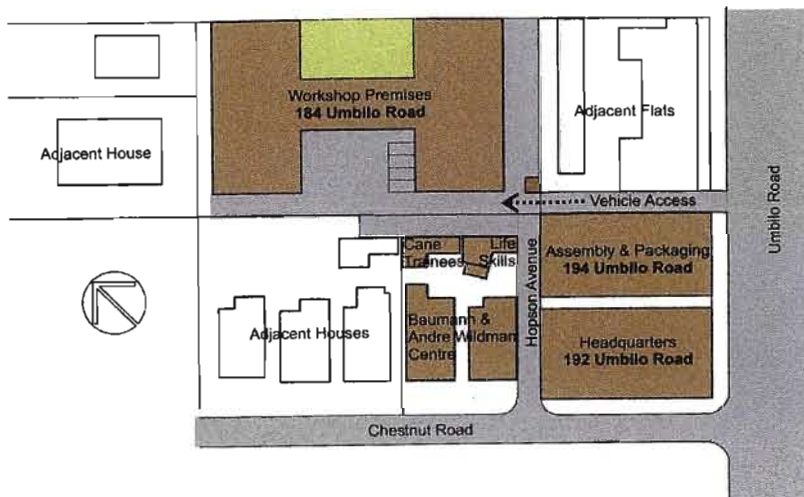
Chosen Case Studies:

**KwaZulu-Natal Society for the Blind**, Umbilo Road, Durban, 1986: Architect unknown. Chosen to analyse the relationship between functions within the Society and accommodation required for the headquarter facilities.

**John Edward Palmer Residence**, Sherwood, Durban, 1965: Hesketh & Driman Architects. Chosen to analyse the effectiveness of an uncomplicated layout and high daylight levels.

**Arthur Blaxall School**, Mountain Rise, Pietermaritzburg, 1982: S.N. Tomkin Hanson & Partners. Chosen to analyse the use of colour for partially sighted people and the value of tactile clues.

## 5.2. KwaZulu-Natal Society for the Blind, Durban



III 5.1: Site Plan showing existing buildings currently belonging to the KwaZulu-Natal Society for the Blind

The KwaZulu-Natal Society for the Blind occupies a cluster of buildings located in Umbilo Road. There are a total of five individual buildings, some of which have been donated to the Society, others acquired over time and consolidated into the KwaZulu-Natal Society for the Blind. (Illustration 5.1)

### Location

The Society is on bus and taxi routes; public transport being the main form of transport used by blind and partially sighted people. The Society is in good proximity to the city centre and other amenities and it sits on the fringes of suburbia.

### Accommodation

The headquarters, located on the corner of Umbilo and Chestnut roads at 192 Umbilo Road, include a showroom where weaved products and furniture that visually impaired people produce are displayed and sold; administration offices for headquarters; and a Resource Centre.

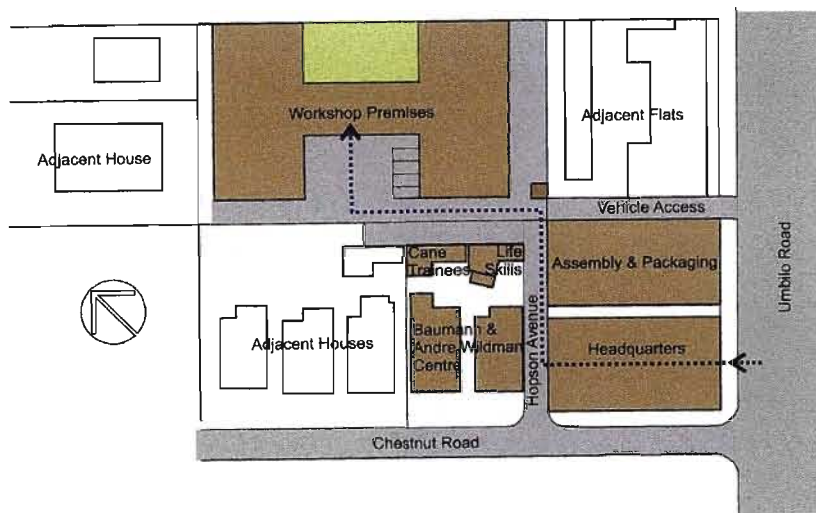
The building neighbouring the headquarters is 194 Umbilo Road. Although this building is owned by the Society, the ground floor is rented out and the first floor is used by the Society for their assembly and packaging enterprise.

In Chestnut Road, directly behind the headquarters building, are Baumann House Children's Development Centre and Andre Wildman Residential Educational Centre accessed off Hopson Avenue. Adjacent to Baumann House at 184 Umbilo Road are the workshop premises.



## Relationships between Buildings

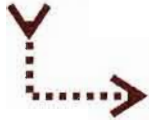
The headquarters building was built for the Society in 1986. In 1993 the workshop premises were added. The two town houses, Baumann House Children's Development Centre and Andre Wildman Residential Educational Centre, to their rear were donated to the Society. These acquisitions resulted in a rather haphazard yet compact set-up.



III 5.2: Route through building facilities from Umbilo Road

The headquarters building has two points of entry. The showroom entrance directly off Umbilo Road is for visitors arriving independently, while the second point of entry provides access from the car park and Hopson Avenue. (Illustration 5.2) The street entrance is primarily concerned with customers to the showroom, however visitors who arrive by bus, taxi or on foot, including blind and partly sighted persons, use this entrance. Users must navigate through the showroom and past the administration section in order to reach the Resource Centre. This route is not ideal for visually impaired users as displays and products on the showroom floor are constantly re-arranged thus providing an inconsistent path that cannot be memorized. Secondly the reception, which doubles up as the cashier, is not positioned at a point where the visitor will intercept it on his/her route into the building. It would be useful to position the reception where the visitor intercepts it on arrival as an explanation of where to proceed to is often necessary, particularly for visually impaired visitors. If the user needs to go from the Resource Centre to the workshop premises he/she must exit at the rear of the centre and navigate a narrow lane, Hopson Avenue, exiting through a pedestrian gate directly onto the driveway servicing the parking lot. This is a hazardous arrangement especially for blind and partially sighted people. (Illustration 5.3)

From Umbilo Road entrance



negotiate furniture in showroom



sharp turn on landing



sharp turn through doors



right turn at resource reception



turn to exit through gate



navigate lane



combination of kerb & step down



navigate vehicles



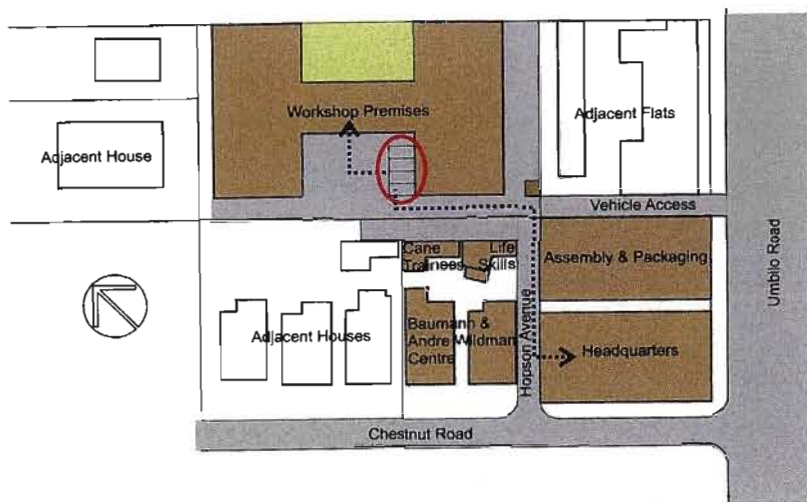
right turn across visitors parking



arrive at workshop entrance

To workshop facility

Ill 5.3: Images show the difficult route the visually impaired must navigate in order to get from the street entrance to the workshops



III 5.4: Route through building facilities from parking facility

On arrival by car, visitors must navigate in the opposite direction to visitors arriving at the street entrance. (Illustration 5.4) The visitor must navigate the driveway, through the pedestrian gate, along Hopson Avenue and into the back door leading to the Resource Centre. Hopson Avenue is accessible off Chestnut Road; this connection is a security risk and confusing to visitors arriving by car.

This site layout is inefficient. Users are relatively independent once orientated to the buildings' layout, however first-time visitors find the layout confusing and difficult to comprehend. The existing layout is unclear, unsafe and not user-friendly. The layout causes confusion for both visually impaired and sighted visitors.



III 5.5: KwaZulu-Natal Society for the Blind Headquarters street entrance

### 5.2.1. Headquarters: 192 Umbilo Road, Durban

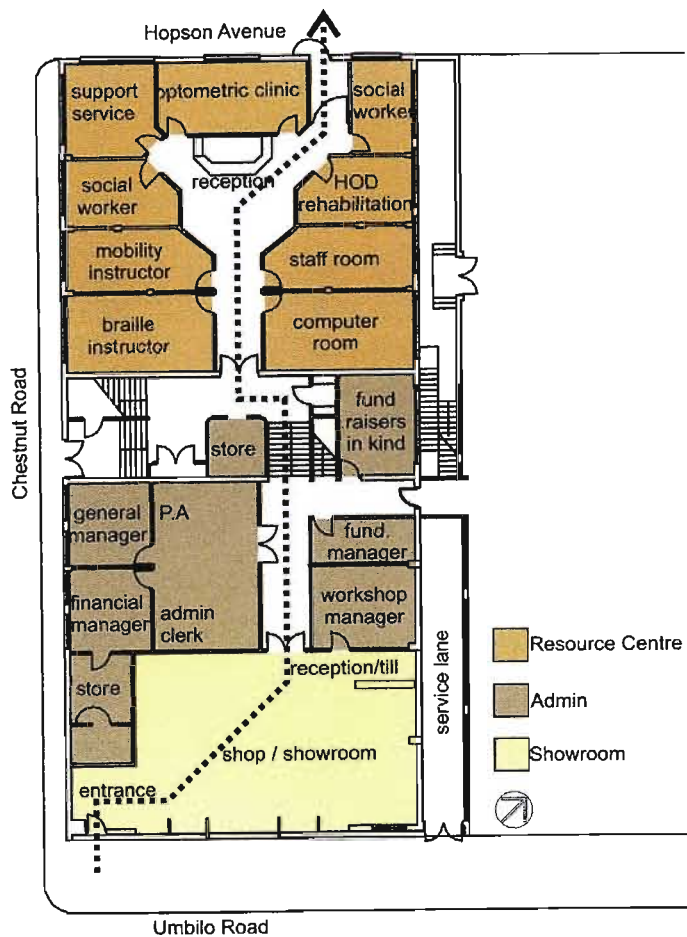
Architect: unknown, 1986

#### Accommodation

This building accommodates the headquarters offices for administration as well as a Resource Centre which includes an optometry clinic, a vision enhancement clinic, social workers offices, offices of an employment consultant, orientation and mobility instructors, a skills developer and a Braille teacher.

#### Spatial Organisation

The design of the layout of the Society's headquarters building is poor. Sighted workers including managers, secretaries and fundraisers are located toward the front of the building directly behind the showroom. This arrangement forces the blind



III 5.6: Floor plan showing circulation through building



III 5.7: Showroom on Umbilo street

and partially sighted users to navigate their way past the offices in order to reach the Resource Centre. (Illustration 5.6) As a Society for the Blind, the visually impaired user should be the primary concern. It is however important to remember that sighted users do share the environment and therefore must not be ignored. When a new visitor first arrives at the street entrance to the Society, he/she is met by a change in floor level into the lobby and a sharp right hand turn into the showroom. The threshold, being the first point of contact with the building, should be predictable and legible to the visually impaired person.

The Resource Centre is linear in layout consisting of a double-banked corridor. This arrangement of door openings randomly positioned along a passageway can be confusing for visually impaired users who find their position difficult to memorise and locate. The reception is situated at the confluence to the corridor, directly intercepting visitors coming in the Hopson Avenue entrance but not those arriving at the Umbilo road entrance.

The showroom on Umbilo Road has a glazed street frontage so as to maximise exposure of the products to the public. (Illustration 5.7)

### Non-Visual Clues

The building's design displays no obvious attempts to aid the blind and partially sighted users in their mobility. There are no intentional tactile clues underfoot to provide guidance or caution for visually impaired users. There is no use of aural architecture distinguishing different spaces. The building demonstrates little effort to provide an environment that is user-friendly to its members and visitors.



III 5.8: Example of fixed furniture in the Vision Care Centre, Bristol (Dawson: 1993,46)



III 5.9: Dimly lit double-banked corridor

### **Built-in Furniture**

Furniture throughout the building is moveable. In areas that serve as thoroughfares, fixed furniture is essential. Fixed furniture can be memorised and avoided. In the reception waiting area the furniture is not fixed and can be rearranged and cause a collision, fixed furniture in areas such as these is preferable. (Illustration 5.8)

### **Light**

Daylight is of great importance to partially sighted people as it maximises their residual vision. The Resource Centre is dimly lit and the double-banked corridor restricts daylight from entering the central space. (Illustration 5.9) The rooms themselves have small openings at a high level allowing little natural light in. To compound the problem the openings in the rooms on the eastern side of the building open onto a narrow service lane tucked between 192 and 194 Umbilo Road.

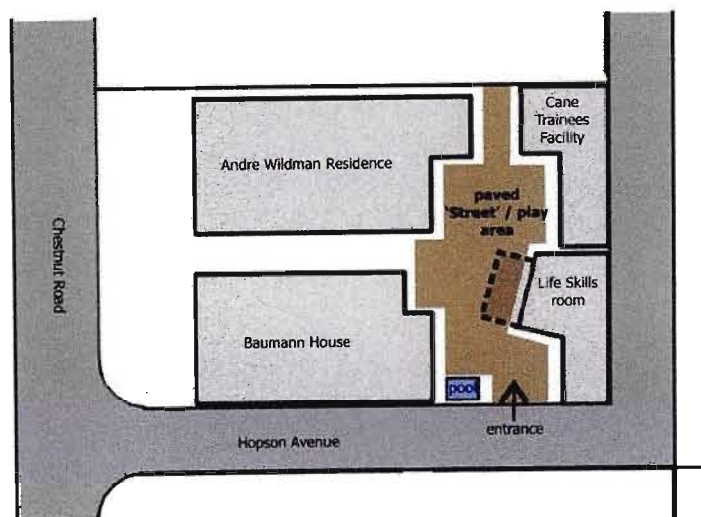
### **Natural Ventilation**

The double-banked corridor in the Resource Centre is not an ideal arrangement, however fanlights have been incorporated to allow for cross-ventilation. Mrs Rosh Subrayen, Head of Department; Resource Centre, comments that the fanlights are not effective as the air within the space gets hot, uncomfortable and stale, producing an atmosphere that de-sensitises one's senses on which the visually impaired are reliant.

### 5.2.3. Baumann House Children's Development Centre and Andre Wildman Residential Educational Centre



Ill 5.10: Baumann House, Andre Wildman Residential Educational Centre and Life Skills Room in street-like arrangement



Ill 5.11: Floor Plan showing street-like arrangement

Baumann House is a schoolhouse and Andre Wildman Residential Educational Centre provides accommodation. They are two adjacent town houses that were donated to the Society and have been renovated for the user's specific needs. Andre Wildman Centre accommodates several weavers who are from rural areas and are in the process of completing the weavers' six month training period.

#### Spatial Organisation

The arrangement of these buildings has a village-like aesthetic. The life-skills room and Cane Trainees Facility are small additions that face Baumann House and Andre Wildman Centre forming a street-like quality. (Illustration 5.11) This set-up is successful as it encourages social interaction between functions. The life skills room has a large veranda projecting into the 'street'. This veranda is a shaded outdoor space where children play and adults socialise. The veranda further serves to block direct light from entering the classroom while still allowing an abundance of light into the space; a successful means of solar control.

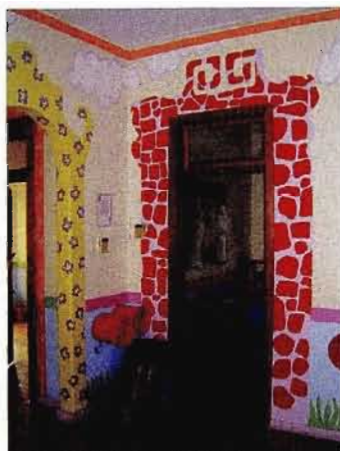
The Andre Wildman Residential Educational Centre provides accommodation which caters for eight residents. The residents are from out of town and stay for the duration of their weavers' courses which is the duration of six months. Mrs Merle Brown, the general manager of the Society, expressed that there is a greater need for accommodation.

Detail design is an important part of the conceptualisation of a building for the use of visually impaired people. Bright colours and colour contrasts aid partially sighted people in their navigation and the use of textures benefit the blind user.

The interior of Baumann House was designed by a group of Durban University of Technology Interior Design students. The scheme includes a variety of tactile experiences for learners. The floor materials vary, creating different textures underfoot. In the gathering spaces thick carpets contrast with the wooden floors. The activity room is defined by a hard-wearing rough carpet which also changes the acoustics of the room thus differentiating it from other rooms. Learners with residual vision can enjoy the brightly painted murals on the walls. These colourful murals surround the doorways defining them for partially sighted learners. The children's lockers have beaded key rings attached to them to distinguish the ownership of each locker.



Ill 5.12: Thick carpet in gathering space



Ill 5.13&5.14: Bright colour defining doorways



Ill 5.15: Bright lockers with tactile key rings

## 5.2.4. Workshop Premises: 184 Umbilo Road

Architect: Barry J. Clark, 1993



III 5.16: Workshop cubicles



III 5.17: Shelving for storage of finished products

The workshop premises are accessed via the driveway leading from Umbilo Street. It houses the weavers' workshops and storage facilities as well as a boardroom situated on the ground floor. The Society no longer requires vast floor space and as a result, the building now stands largely empty. Part of this unused floor space is rented out providing the Society with additional income.

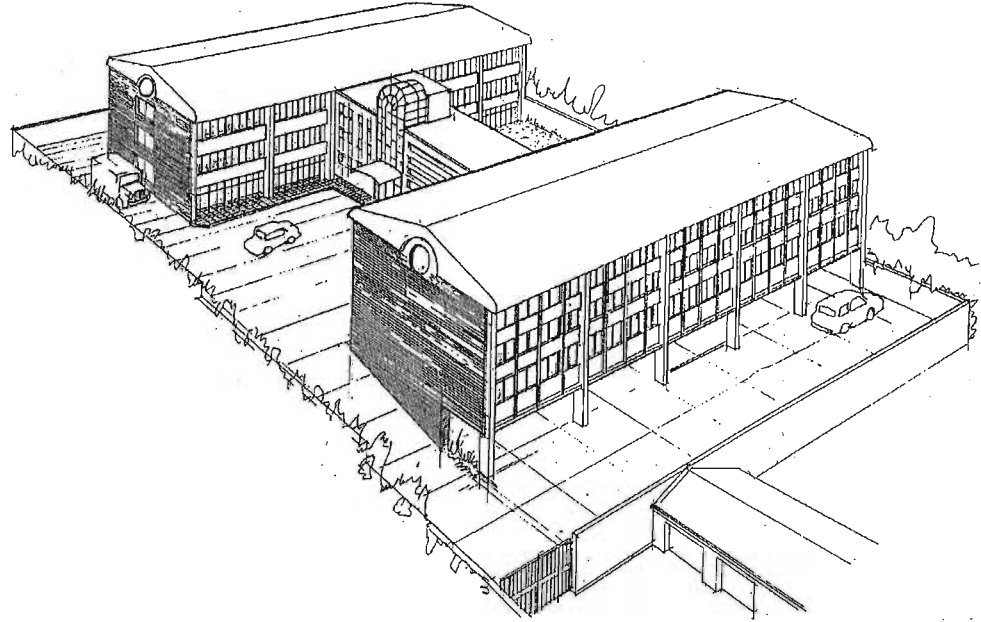
### Spatial Organisation

The building is designed in an H-shape layout. Two blocks of workshops are connected in the bar by the service core including circulation ramps intended to aid the visually impaired and provide ease of passage for movement of materials between the two blocks. The H-shape layout is satisfactory as its simplicity and legibility is easily navigable for visually impaired users.

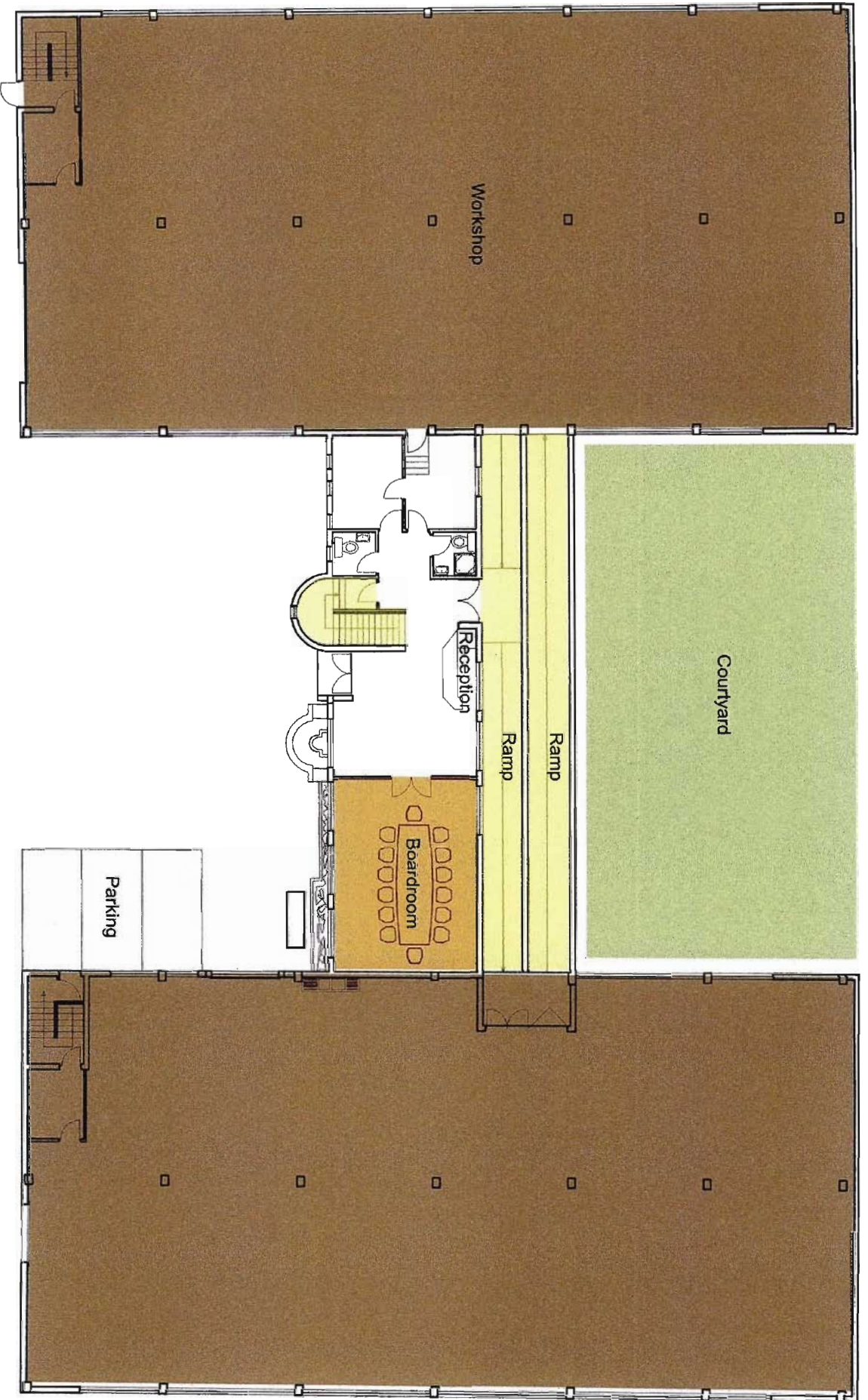
The entrance is directly opposite the reception desk where directional assistance can be obtained. The boardroom is positioned adjacent to the reception. This boardroom is used for formal meetings and doubles up as a casual meeting place for planned activity days which are arranged to encourage social interaction between visually impaired people. These functions need to be separately provided for, as they have different needs, this would also enable both functions to occur simultaneously.



The workshops accommodate a series of fenced cubicles where individuals can work and store their materials safely. (Illustration 5.16) The environment is functional as the fenced booths do not obstruct light or ventilation; a constant light quality is retained across the space.



III 5.18: KwaZulu-Natal Society for the Blind Workshop Premises (Barry J. Clark)

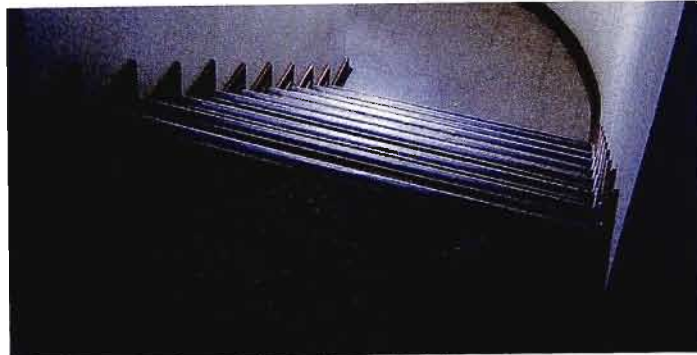


III 5.19: Ground Floor plan of Workshop premises





III 5.20: Tactile markers at base of stairs



III 5.21: Tactile markers at top of stairs



III 5.22: Image shows glare in workshops which is problematic

### Relationship to site and surrounding buildings

Situating the workshops remote from the headquarters is commendable as the workshops emit noise. The building is accessible to vehicles making dispatch of products and deliveries of materials uncomplicated. Locating the boardroom in this building is questionable. The link from the boardroom to the headquarters is distanced. However for a visitor arriving by car, the boardroom in this location is quickly and easily accessed.

### Non-Visual Clues

Tactile clues have been provided on the flooring in the stairwell. These clues alert the user to the commencement and termination of each flight of stairs. (Illustration 5.20&5.21)

### Light

The H-shape arrangement allows for glazing on the north and south facades of the blocks ensuring a high daylight level in the workshops. This benefits the partially sighted; high daylight levels maximise their residual vision providing an assistive working environment. The concern here is direct light, as glare can be problematic to partially sighted people. (Illustration 5.22) This has not been sufficiently dealt with on the north façade where solar control is needed.

### Ventilation

The H-shape plan lends itself well to cross-ventilation. The two blocks have floor plates of 17 metres deep; a floor plate of 15 metres or less is preferable for natural

ventilation to occur, however this is adequate. Natural ventilation provides clues about the outside environment for visually impaired people.

### **Summary**

The individual buildings could respond better to the needs of visually impaired users. The headquarters and workshop premises require responses that will aid visually impaired users, providing them with location clues, both tactile and aural.

The layout of the headquarters building serves the sighted users more efficiently than visually impaired users. A simple layout that is legible and user-friendly for visually impaired users would serve the Society's purposes more effectively.

Baumann House Children's Development Centre and Andre Wildman Residential Educational Centre have responded well to the needs of visually impaired children. These spaces are interactive and stimulating. They provide the children with tactile and audible clues defining different spaces. The use of bright colour aids the partially sighted in defining doorways and provides further stimulation.

It is apparent that the organisation is inadequate in its overall design. The relationship between the buildings is complicated and serves the Society's purposes poorly. Excellent work is being achieved within the Society and it is a shame not to see evidence of this in the expression of the architecture.

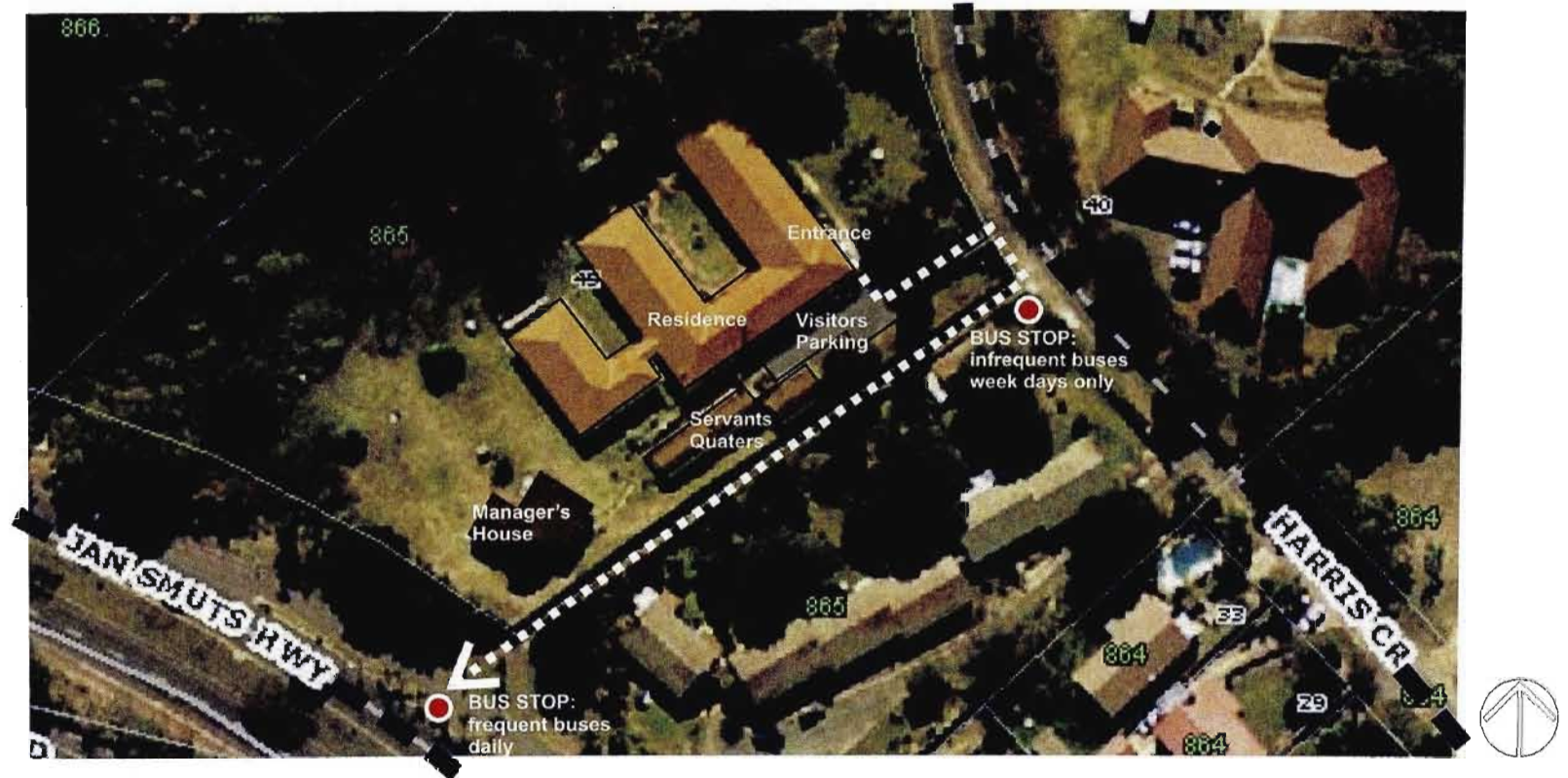
### **5.3. John Edward Palmer Residence, Sherwood**

Architects: Hesketh & Driman Architects, 1965

The John Edward Palmer Residence was purpose-designed for blind and partially sighted residents and as a result is an appropriate example for analysis. The building is efficient in its design and is described as user-friendly by the building's users. There are areas that could have been improved upon; considering the building's age it is likely that the information available today was not as extensive when the building was conceptualised.

#### **Accommodation**

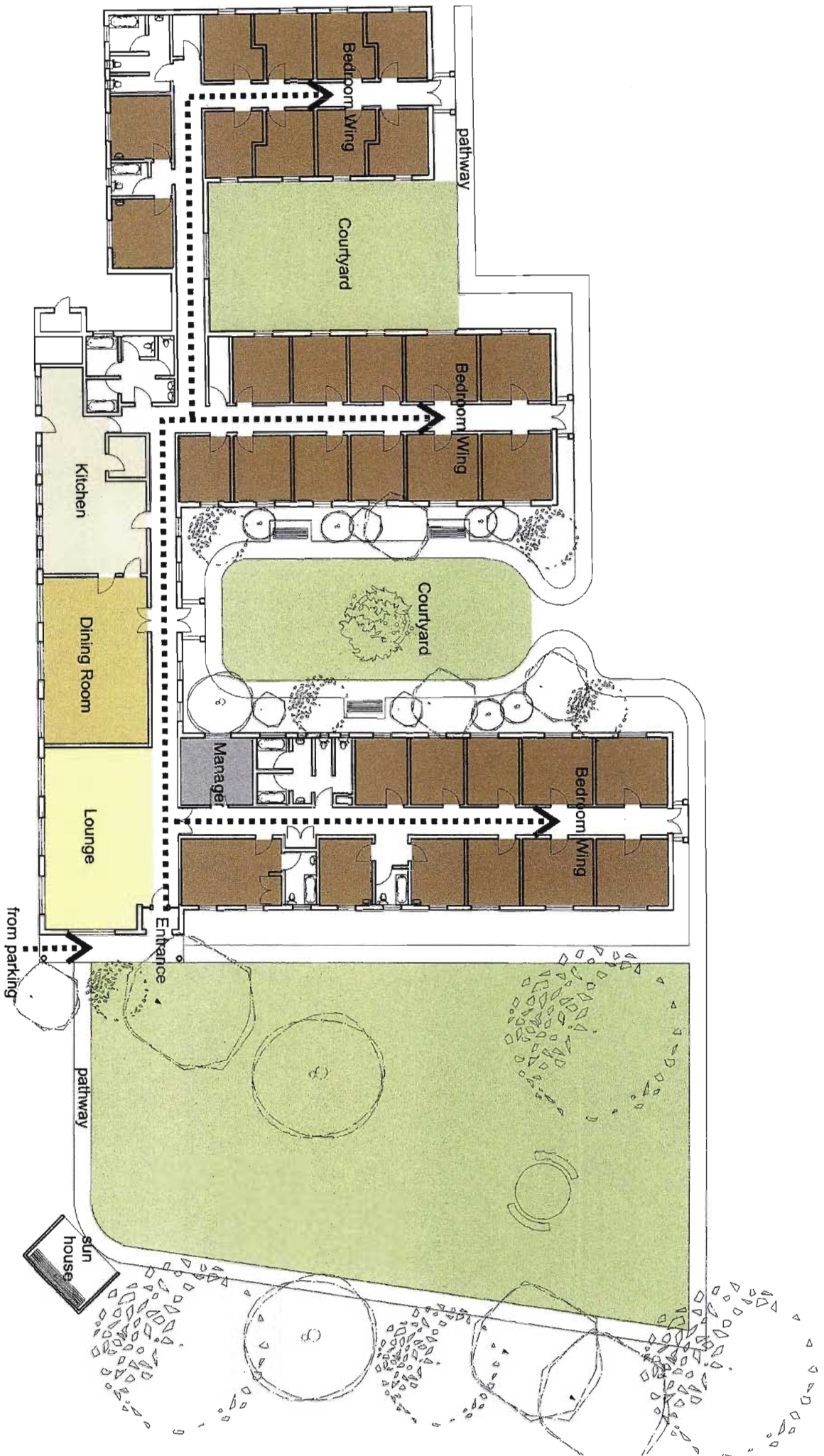
The facility consists of 35 bedrooms for visually impaired elderly residents, a lounge, dining room, kitchen, servants' quarters and manager's house. Several bedrooms are used for alternative functions; some are storage rooms and one has been modified into the manager's office.



III 5.23: Location plan showing routes to bus stops ([www.durban.gov.za](http://www.durban.gov.za))

### Location

The John Edward Palmer Residence is located in Harris Crescent in Sherwood. (Illustration 5.23) It is situated on a bus route however the bus is infrequent and only operates on weekdays. Residents can egress the premises walking down a narrow lane leading to Jan Smuts Highway where there are frequent buses on a daily basis. When the building was built this was a safe option however today this route is discouraged due to it being unsafe. This is unfortunate as it restricts residents who frequent the city.



III 5.24: John Edward Palmer Residence Ground Floor Plan

## Spatial Organisation

The building is arranged in an E-shape layout. (Illustration 5.24) This layout is straightforward for the residents to navigate. Once the blind or partially sighted visitor has been orientated to the buildings layout, they are independent in their mobility.

The E-shape forms courtyards between the wings. One of these courtyards offers an exercise and recreation space for the residents. The courtyard arrangement ensures that there is a continuous path to be followed. Handrails are strategically placed around the gardens, providing assisted mobility for elderly residents, encouraging safe recreational walking. Recreation and exercise spaces are important as most of the residents remain at the facility all day. (Illustrations 5.25-5.28)

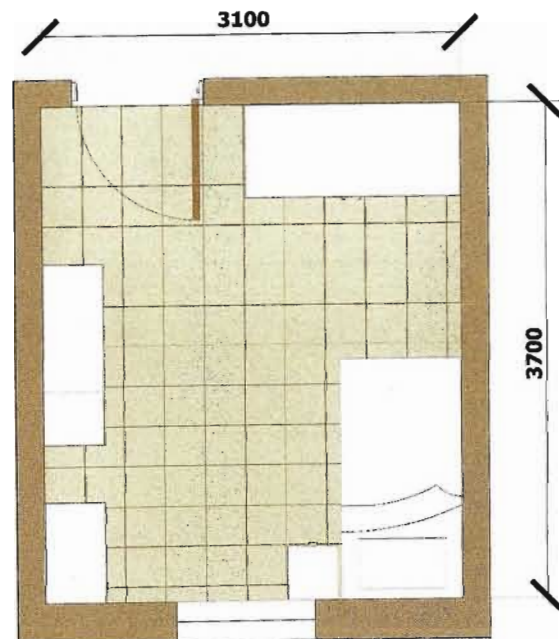


III 5.25-5.28: Images show garden and courtyard spaces with railings providing a continuous path to follow





III 5.29: Single bedroom



III 5.30: Floor plan of single bedroom

The bedroom wings are made up of double-banked corridors. These corridors are long monotonous passages displaying an arrangement of door openings randomly positioned along the corridor. This arrangement can be confusing to visually impaired people who find their position difficult to memorise and locate. A better solution would be the provision of breakout spaces where clustering of bedroom doors could occur. These spaces could have included seating and openings to allow light into the space thus accenting and identifying it. Features such as these would make the space inviting. This would also encourage interaction between residents thus not restricting socialising to the lounge area alone.

The bedrooms are small; single rooms have a floor area of 11.5 square metres and double rooms an area of 15 square metres. (Illustration 5.29&5.30) The individual's bedroom is the only place of privacy they have as such it is felt that these rooms could be more generous in size. A number of the residents spend much of the day in their rooms hence the importance that the bedrooms are liveable spaces. Furthermore resident's guests often visit in the bedrooms therefore provision of seating is needed. The floors are tiled, this evokes an institutional aesthetic. A warmer, more pleasurable material underfoot, such as carpet, would improve the quality of the bedrooms.

### Changes of Floor Levels

There are no changes in floor levels anywhere in the building. The single story facility is totally flat, even upon entering the front door. This attention to detail eliminates the possibility of accidents on stairs.

## Non-Visual Clues

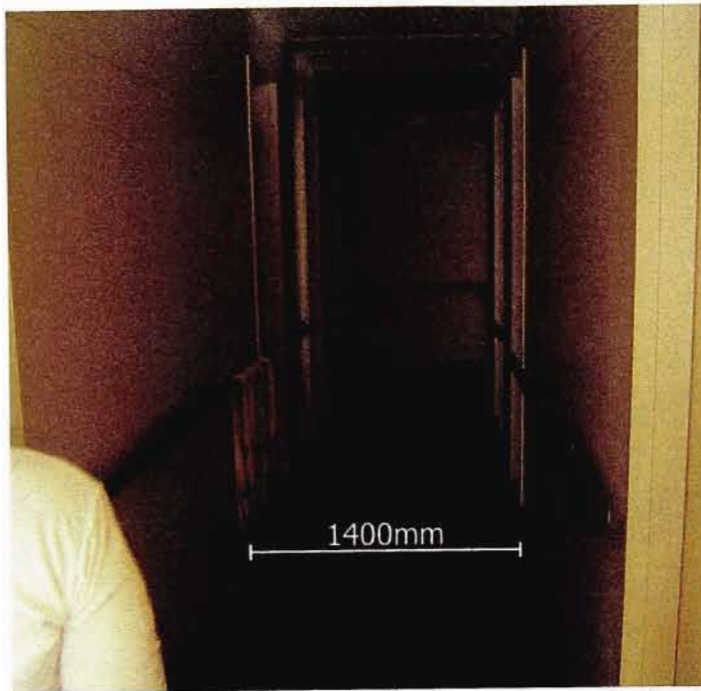
Handrails clutter every available wall. (Illustration 5.31) These serve to guide the blind and partially sighted users and also serve as a means of physical support. The handrails give the facility an institutional appearance but because of the elderly nature of the residents they are essential for support purposes.

All surfaces in the facility are tiled in vinyl, which is cleanable and maintainable, excluding the lounge which is carpeted. The carpet in the lounge provides a clue underfoot establishing the user's arrival at the lounge.

## Light

Mrs Norma Bosse, manager of the John Edward Palmer Residence, has had the walls painted a light colour to enhance natural light through the reflection of daylight into deep spaces. Her observation is that the partially sighted residents enjoy bright colour so she has introduced brightly coloured cushions into the lounge furniture.

The partially sighted residents rely on light to maximize their residual vision. The double-banked corridors result in poor light levels in the passages. (Illustration 5.31) The access spine linking the three wings is successfully lit. (Illustration 5.32) It provides access to the kitchen and dining room on the south side and is punched with openings looking onto the courtyard on the north elevation. This corridor is filled with natural light and as a result is far more successful than the double-banked corridors.



Ill 5.31: Image showing poorly lit passageway and extent of handrails



Ill 5.32: Image showing successfully lit passageway

## **Ventilation**

Cross-ventilation in the bedrooms can occur across these wings due to the provision of fanlights, provided residents keep them open.

## **Summary**

The layout of the John Edward Palmer Residence is legible and residents don't have problems with navigation. The central courtyard formed by the E-layout is successful and practical for recreation and exercise.

The main concern is the monotony of the corridors. A far more successful solution could have been achieved here by breaking the monotony of the long passageways creating more inviting and varied spaces.

The issue of low light levels is evident. The double-banked corridors cause the passageways to be dark and cross ventilation does not occur well here.

The building functions well and aids the blind and partially sighted users in their mobility and navigation. The John Edward Palmer Residence is an uncomplicated environment which the residents are content in.

## 5.4. Arthur Blaxall School (formerly New Horizon School), Pietermaritzburg

Architects: S.N. Tomkin Hanson & Partners, 1982



III 5.33: Arthur Blaxall School



III 5.34: Location plan

The school was established in Durban in 1954. In 1968 it relocated to Pietermaritzburg. In 1982 the current building was completed.

The building was purpose-designed. The architects travelled abroad to inspect precedent for the design of a school for the blind however the information gathered was not realised in the final design. The result was a typical school design.

The school both educates the learners academically and practically. Many classes teach learners basic life skills which will aid them when dealing with the environment outside of the school's confines. It is debated as to whether the school should have been specialist designed or not, there is a fear of a specialist school protecting learners from conditions they will encounter outside of the school.

### Location

The suburb, Mountain Rise, is safe and secure. Royston Road, which the school is located on, has no heavy traffic so this does not present an immediate risk. (Illustration 5.34) The majority of learners stay in the school hostel. The day pupils live in close proximity to the school.

## **Accommodation**

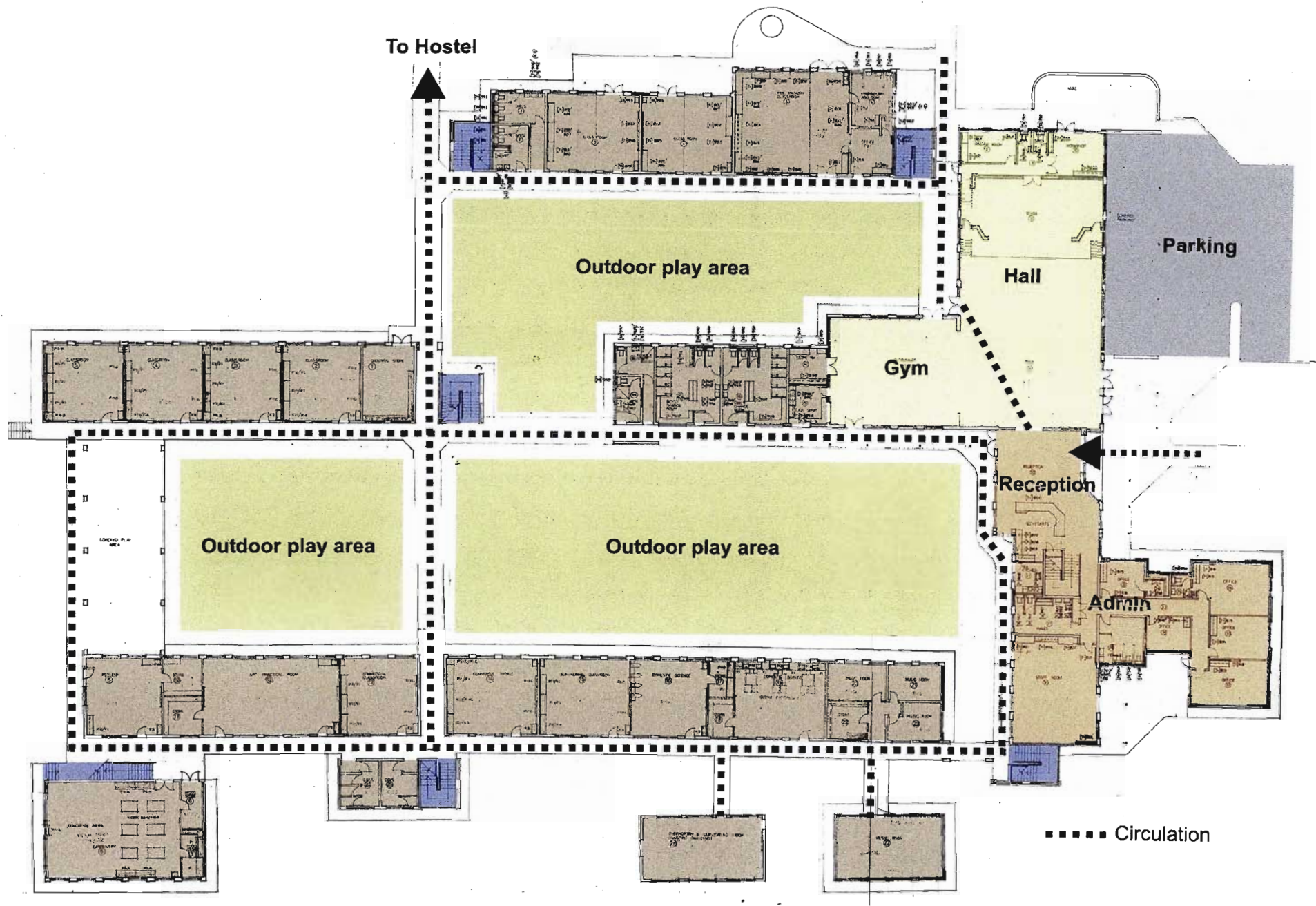
The school caters for 210 learners of which 160 reside in the hostel. Two thirds of the students are partially sighted and the remainder totally blind. The school is categorised into three blocks as its layout dictates. The school accommodates classrooms for all grades, specialised classrooms for teaching of various skills, the administration block, a school hall, gymnasium and hostel.

## **Spatial Organisation**

The school is arranged in parallel rows. (Illustration 5.35) There are three wings of classrooms parallel to each another, with linking external passages. The terminal element is the administration block and school hall. This layout is not problematic for the partially sighted however the blind require orientation instruction and even after the instruction problems with navigation are still experienced.

It was observed that learners often stop to talk with one another and then forget their location and are unsure of what direction to continue in. For this reason a simple footprint is preferable.

Corridors are 1.7 metres in width. This width becomes too narrow when all the learners move between classrooms at the change of subjects. Blind and partially sighted people require more circulation space than sighted people for navigation.



III 5.35: Ground Floor Plan showing circulation routes (S.N. Tomkin Hanson & Partners)

There was a lack of colour in the initial design. Bright colour and contrasts are visible to the partially sighted. The current school principal, Mr Desmond Frank, is in the process of altering this by having the poles and benches painted in bright colours in order to add interest as well as to enhance the visibility of obstructions in the partially sighted learner's path. (Illustration 5.36&5.37) Mr Frank has also had murals painted in areas to provide animation to the walls. (Illustration 5.38)

Contrasts are helpful for the partially sighted; a dark door against a light wall helps the user to identify the doorway. Mr Frank has had the handrail and railing painted in contrast to each other to aid the partially sighted learners to identify the rail more easily. (Illustration 5.39)



III 5.36&5.37: Bright colours defining elements: poles & benches



III 5.38: Bright mural for stimulation



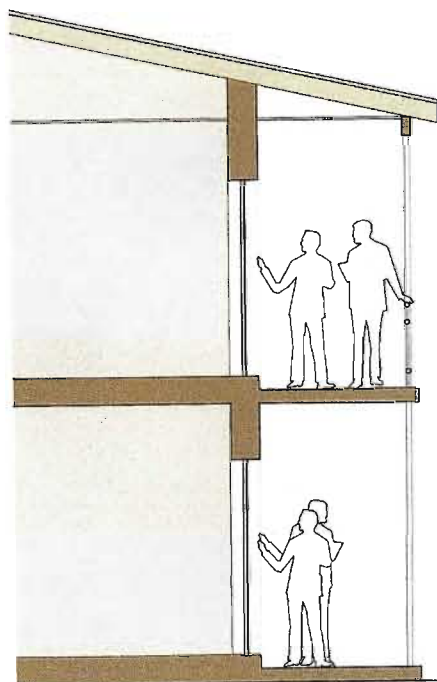
III 5.39: Black handrail on white railing

The stairwells require tactile markers underfoot to alert the users to where each flight of stairs commences and terminates.

Blind users find the veranda posts along the corridors, often in front of doors, a hazard and regularly bump into them. (Illustration 5.40) Tactile markers on the floor to guide the user safely between the poles or alternatively warning the user of the potential hazard would be useful.



III 5.40: Example of a pole situated in front of a door



III 5.41: Sketch showing users navigating themselves along the corridors by trailing one hand along the wall or handrail

Observation of the children's interactions with the school buildings revealed the manner in which the blind learners utilise the wall by trailing one hand along it to navigate themselves along the corridors thus locating door openings. (Illustration 5.41) This is the ideal positioning for a tactile marker along the wall serving as a trail rail enabling the building to engage with the users providing a marker pleasing to touch in place of the rough brickwork. This method of navigation causes constant collisions particularly on the ground floor where no handrail is provided opposing the wall. A method of guidance on the opposite side of the corridor, such as the railing on the 1<sup>st</sup> floor, would improve the situation. Collisions could thus be avoided by a regulation, for example: keep to the left.

The above-mentioned means of navigation enables learners to count doors in order to determine their classroom. Counting doors is a method widely used amongst visually impaired people in finding the facility they require. Clustering of doors would be more efficient as clusters can be counted rather than individual doors.



An observation made was the way in which the blind shuffle as they walk as they feel the floor underfoot, any sudden change in levels are trip hazards and should be avoided. Fire hose reels should be recessed into the wall. Many students collide with these as they are situated at an awkward height where visually impaired people do not feel for obstacles.

### **Summary**

This school should have been purpose-designed with the blind and partially sighted users' specific needs in mind. It is regrettable that the architects lost the essence of designing for the users unique needs. The school has potential and with minor design alterations could have been a building at the forefront of specialist design for the visually impaired.

Mr Desmond Frank, the school principal, is in the process of making minor alterations to the school, by adding colour in areas to enhance the visibility of obstructions for the partially sighted thus making the school more blind-friendly. These additions are commendable however it would have been advantageous if the architects had included similar techniques at the onset of the design process.

The case studies examined in this chapter are largely inadequate in their design. Comparison between international precedent and Kwa-Zulu-Natal examples of buildings designed for the visually impaired revealed that buildings used by the blind and partially sighted in South Africa are insufficient in their design. It is noted that the buildings available for analysis are old examples and as such universal design was not given much thought in that time.

International designers have engaged with visually impaired users and the problems they encounter with the built environment and hence designed accordingly. There are a variety of principles and techniques available to the designer when designing for blind and partially sighted users; non-visual clues, contrasting materials, aural architecture and indirect lighting techniques to name a few.

Specific design considerations and criteria need to be incorporated into the design of buildings for visually impaired users in order to maximise the potential and success of the structure for the end user.



### Introduction

It is the purpose of this chapter to derive a brief that will serve to inform the requirements for the design. This chapter will determine the functions the building needs to perform. An accommodation schedule based on the precedent and case study evaluations will be formulated. Appropriate construction systems and materials will be discussed.

### Design Intentions

This building is to provide the visually impaired community with a safe environment that will serve as a base and a resource for visually impaired people in Durban.

The building will be a facility that provides blind and partially sighted people with tools that aid them in dealing with and living with their impairment. As such the building will provide the visually impaired person with assistance in navigation and orientation but at the same time provide the user with challenges designed to aid with rehabilitation. The design approach is therefore a balance between a normal environment and a specialised one. The building will not portray an institutional appearance but will be subtle in its approach to specialist design.

The type of building aimed for is one of sensitivity. The design should be aware of the visually impaired person's sensory perceptions. The building will enhance the visually impaired person's independence by providing clues to aid with orientation using touch, sound and smell. The building will harness sounds and smells that

penetrate from the outside thus providing additional clues about the surrounding environment.

The building will be legible and clear with a memorable circulation method that is easily navigated and which links all spaces.

The building will display community integration and provide a means for interaction between visually impaired and sighted members of the community. Interaction within the building is encouraged; the inclusion of spaces that promote interaction between visually impaired people will be considered in the design.

#### **The Client**

The existing KwaZulu-Natal Society for the Blind is a charity organisation which provides support, training and healthcare services to blind and partially sighted people in the Kwa-Zulu-Natal area. The Society's headquarters, training facilities and services are based in Durban and outreach as far south as Ixopo. The KwaZulu-Natal Blind and Deaf Society concentrate of the northern regions. The KwaZulu-Natal Society for the Blind will act as the client.

#### **Funding**

The Society, being a charity organisation, relies on donations for its existence. The fundraisers manage events for the raising of funds to aid the organisations finances. Furthermore basketry and furniture sales provide an income which is returned to the Society.

## **Revenue Generators**

The Society's services are limited due to the financial restrictions they incur from relying on donations for their existence. The demands on the Society are greater than that which they can provide. There is a demand for additional instruction positions in the Resource Centre that cannot be filled due to lack of funding. There is also a demand for places in the cane trainees program where visually impaired people are taught weaving and carpentry skills over a period of six months. It is therefore proposed to incorporate elements into the design in order to provide the Society with a form of stable income to assist funding. The inclusion of a lecture venue which will be useful for the Society and could serve to provide a small revenue from rent as well as reinforce the Society's philosophy of integration with the greater community.

## **Users**

The Society's headquarters, training facility and healthcare and support services all form part of the Society's facilities. Therefore users include predominantly blind and partially sighted people, both those visiting the facility for services and assistance as well as those training on site on a daily basis forming part of the cane trainees' program; some of whom reside on the premises. The administration and support staff who are predominantly sighted users make up a smaller component of users of this building.

## **Social Requirements**

The building is intended to serve the blind and partially sighted community providing them with the means to function effectively within society. An additional function is to

communicate the Society's work to the greater community ensuring social awareness. The building should alert the community to the charitable work that is done and the services that are provided for the blind and partially sighted community. Furthermore the building seeks to echo the Society's philosophy of integration by incorporating blind and partially sighted people into the greater community. Lastly the building will exhibit the high quality products, which blind and partially sighted weavers produce, on the street front alerting the public to the creative and self-empowerment facet of the Society.

### **Environmental and Technical Requirements**

This is a charity organisation therefore this building must not incur unnecessary costs in construction and maintenance of the building. The use of natural heating, lighting and ventilation is the ultimate target. This implies short spans and adjacent openings to achieve cross ventilation, glazing in the recommended proportions to room size and maximising the north orientation for habitable rooms such as offices and residential accommodation and the south orientation for studios.

Solar control is essential so as to reduce glare and create an environment with a constant lighting quality particularly in the studios where close work is being performed. Direct light causing glare, as discussed in this document, is problematic for partially sighted people therefore actions must be taken to ensure the lighting quality in all spaces is adequate.

Achieving natural ventilation is a common goal amongst architects and is indispensable in Durban's humid summer. For the blind and partially sighted, natural

ventilation has an additional benefit of providing the sightless with clues from the outside giving them information about wind direction, outside temperature and outside scents which aid the formation of their environment. The constant use of air conditioners dulls ones sense due to the constant noise and the stale environment they produce. Furthermore air conditioners are costly to install, maintain and run. Therefore natural ventilation is the ultimate goal.

### **Construction System and Materials**

Due to the charitable nature of this organisation the building must not incur unnecessary costs in daily running and maintaining of the building. An appropriate construction system would be frame and infill. This is a method which allows for flexibility of construction as it allows for uncomplicated future expansion.

The building will respond to blind and partially sighted users on a sensory level thus stimulating the user's remaining senses and aiding their interpretation of their environment. Therefore a variety of tactile materials will be juxtaposed so as to animate the building and provide detectable surfaces for orientation purposes.

### **Site and Location Requirements**

The fundamental factors to consider when selecting a site are integration, accessibility and exposure. The Society's philosophy is integration; the site therefore should ideally be located in an area that encourages integration with the greater community. Mrs Merle Brown, general manager at the Society, highlights that accessibility is key to the siting of a building of this typology; the site must ensure good access by public transport, the sole means of independent travel for people



with a visual impairment. It is also advantageous that the site be close to other amenities so that visitors can combine their visits with other activities. In addition it's beneficial for the site to be part of an area of mixed use, as a varied environment is essential for mobility training. The site should be reasonably peaceful so as to be conducive to the appreciation of the buildings facilities. The site must be secure and perceived as safe to ensure visitors are at ease when orientating themselves between the building and their means of transport.

With these views in mind the following criteria have been set:

- Sufficient in size to accommodate the wide range of facilities
- Accessible by public transport as this is the sole means of independent travel for people with a visual impairment
- Integrated into the community rather than isolated from society enforcing the Society's philosophy of integration
- Integrated with other amenities so that visitors can combine their visits with other activities
- Situated in an area where linkage can be established with other sensory elements that are already present; for example adjacent to a park or public gardens
- Street frontage as exposure is essential for the showroom to ensure successful trade
- Part of an area of mixed use as a varied environment is beneficial for mobility training
- Peaceful so as to be conducive to the appreciation of the buildings facilities

- It must be located in a safe environment where crime is not an immediate threat to blind and partially sighted pedestrians

### **Functions within the Building**

The building serves as the headquarters for the KwaZulu-Natal Society for the Blind. Of equal importance is the Resource Centre which serves the blind and partially sighted community with facilities such as mobility instructors, physiotherapists, optometrists, occupational therapists and social workers. The Society also provides services that empower the visually impaired providing them with a means of acquiring an income. This is in the form of weaving and furniture making. The society runs a six-month course that teaches individuals to produce weaved/furniture products and start their own business ventures in the areas that they come from with the skills learned. The building contains studios and residential units for weavers attending the course. Furthermore the Society houses a showroom where these weaved products made on site are displayed and sold. The building also provides social facilities where a group of visually impaired people meet on a weekly basis to learn crafts, drink tea or listen to motivational speakers while at the same time enjoying social interaction.

Discussions held with the General Manager, Mrs Merle Brown and the Head of the Rehabilitation Services Department, Mrs Rosh Subrayen, are the basis for accommodation provided.

## **6.2. Accommodation Description**

### **Approach & Entrance**

The most important factors concerning the approach and entrance to the Society are accessibility, legibility and security. Blind and partially sighted people must be able to locate and identify the entrance with ease and feel secure and safe on approaching the building from the bus stop or parking facility. Secondly the entrance is to be of a welcoming nature and of appropriate size for mobility purposes; to allow for multiple blind, partially sighted and sighted persons to navigate the approach and entrance at their leisure.

### **Reception & Orientation Areas**

It is essential for blind and partially sighted visitors to locate the reception with ease on arrival. This is a point of reference where visitors can attain further information of which direction to take in order to reach their desired destination within the building. The use of detectable tactile surfaces at this location will be helpful for blind people to serve as guidance to the different routes facing the visitor at the reception point. Colour and contrast will aid the partially sighted visitor in determining the routes of circulation. These routes need to be clear and legible to all users.

### **Showroom**

It is essential for the showroom to have good street frontage as visibility of products to the public ensures sales. The showroom must be easily accessible from the parking facility as on occasion loading of products will be necessary.

### **Seminar Room**

The inclusion of a seminar room for education, activities, promotional talks, discussions and demonstrations of topical issues facing visually impaired people in Durban will benefit the Society. This accommodation will also serve as a revenue generator where the public can hire the venue as desired. This furthers interaction with the community by providing a facility permitting the community access into the core of the Society.

### **Outside Areas**

It is important that outside areas be navigable for blind and partially sighted users. Large open spaces require pathways for the visually impaired to follow. These pathways can take on a variety of forms, physical, tactile or aural. Outside areas should be quiet and peaceful, as well as secure but at the same time connected to the surroundings in order to further encourage social interaction with the greater community.

### **Social Areas**

These facilities are to be welcoming and user-friendly for blind and partially sighted users. They should be easily accessible from all areas of the building. A tea kitchen facility should accompany these facilities.

### **Administration Offices**

The offices need to provide all the standard spaces required by administration. Natural light and ventilation is the ideal.

## **Resource Centre**

Due to the nature of the Resource Centre where patients are to be counselled and tended to, the facility should be quiet. Ventilation and high light levels are required especially for instructors who need an abundance of daylight to aid them in teaching the partially sighted to maximise their residual vision.

## **Workshops**

These areas are to be well lit so as to maximise the partially sighted individuals residual vision. However it is important to remember that direct light causing glare must be avoided therefore orientation and solar control are essential in these working environments. They are typically large open spaces where communication, interaction and sharing of skills amongst trainees can occur. Compartments are required so that each member has their own individual space in which to work and store their personal belongings and materials. Break-out spaces for resting and social purposes would greatly benefit the quality of working life. These spaces are to be well ventilated; as these large working areas can get very uncomfortable.

## **Storage**

Adequate storage areas need to be provided for the storage of materials, semi-complete products and finished products.

## **Residence**

The cane trainees program teaches visually impaired people skills they can use to create an income for themselves. There is an accommodation demand for the provision of 10 beds. This accommodation should be in the form of residential units

which will adapt residents to apartment-style living. Sharing of facilities such as lounges and dining areas would encourage socialising and interaction amongst residents.

### **Parking**

The total number of sighted staff members currently working at the Society is 21. Therefore a total of 30 parking bays for staff and visitors are estimated. The proposed seminar room will facilitate 40 people therefore another 25 parking bays is required. A total of 55 parking bays are therefore required.

## **6.3. Developing the Accommodation Schedule**

The following accommodation schedule is based on discussions with the managerial staff at the existing KwaZulu-Natal Society for the Blind. Discussions regarding the current needs of the Society and the potential future needs have aided the author in establishing an accurate accommodation schedule for the final designed product.

ACCOMMODATION SCHEDULE						
Description	Particulars	Quantity	Area (m <sup>2</sup> )	Area Total (m <sup>2</sup> )	Furniture/Fittings	Equipment
<b>Entrance</b>						
Entrance Foyer	adequate space for circulation & orientation, waiting space & area for vertical circulation	1	50	50	seating	
Reception	line of entry to intercept reception desk for easy location thereof	1	9	9	reception desk, chair	
Showroom	street frontage, easily accessible from parking facility	1	100	100	display units, shelving	
				sub-total:	159	
<b>Headquarters</b>						
General Manager		1	18	18	desk, chairs	
General Manager's PA		1	18	18	desk, chairs	
Financial Manager		1	18	18	desk, chairs	
Admin Clerk		1	18	18	desk, chairs	
Fundraiser's In Kind		2	18	36	desk, chairs	
Fundraiser Manager		1	18	18	desk, chairs	
Tea Kitchen	visible for monitoring purposes	1	15	15	countertop, cupboards, sink	fridge, kettle
Boardroom	accessible from parking facility, natural light & ventilation	1	40	40	board table, chairs	
Ablutions	naturally ventilated	1	16	16	4 wc's, 2 whb's	
				sub-total:	197	
<b>Resource Centre</b>						
HOD Rehabilitation		1	18	18	desk, chairs	
Braille Instructor	instruction area for 2 learners at a time	1	25	25	desks, chairs	
Mobility Instructor	instruction area, high light levels required	4	25	100	desk, chairs	
Social Worker	seating area for counselling sessions	4	20	80	desk, chairs, seating	
Support Service	display area for assistive devices	1	20	20	desk, chairs, display unit	
Optometric Clinic	shuttering device required to block light during eye testing	1	20	20	desk, chairs, optometric chair	optometry equip
Computer Room	accommodate 5 learners at a time, classroom environment	1	25	25	desks, chairs	5 pc's, 1 printer
Staff Room	accommodate 11 people, recreational space, tea kitchen	1	35	35	seating, countertop, sink	fridge, kettle
Physio/OT Room	equipment store, therapy area, room shared by part time physio & occupational therapist	1	25	25	desk, chairs, OT mat	
Seminar / Activity Room	accommodate 40 people access to café and ablutions	1	90	90	seminar table, chairs	projector
Café	partly covered	1	100	100	tables, chairs	
Kitchen	direct access to café	1	30	30	counter, sink, hob	fridges
Ablutions	naturally ventilated	1	16	16	4 wc's, 2 whb's	
				sub-total:	584	
<b>Studios</b>						
Studio Manager	access to workshops and loading zone	1	18	18	desk, chairs	
Framing Studio	high light level, natural ventilation, interactive environment	1	330	330	work benches, chairs	
Weaving Studio	high light level, natural ventilation, interactive environment	1	330	330	work benches, chairs	
Material Store	access to loading zone	1	220	220	shelving	
Finished Products Store	access to loading zone and showroom	1	110	110	shelving	
Ablutions	naturally ventilated	4	16	64	4 wc's, 2 whb's	
Tea Kitchen		4	16	64	countertop, cupboards, sink	fridge, kettle
				sub-total:	1136	
<b>Residence</b>						
Dwelling Units	natural light & ventilation	6	68	408	Bed, chair, closet	
				sub-total:	408	
<b>Parking</b>						
	for building users, visitors, showroom customers and KZNSA customers	45bays				
				overall sub-total:	2484	
				10%circulation	248.4	
				total:	2732.4	





This chapter outlines conclusions reached in this document and provides recommendations for an appropriate response for the design of a facility for a Society for the Blind in Durban.

The building serves as a base and a resource for all visually impaired members of the community and thus should strive to accommodate the combined needs of the users. The building is visited periodically by individuals and provides temporary accommodation for those who are part of the weaving and carpentry training. Therefore the building should be a safe, pleasant and considerate building for the visually impaired users.

A balance between achieving normalisation within the design while at the same time ensuring the right amount of specialisation is to be achieved. Design considerations which will aid visually impaired individuals in their mobility will serve to empower individuals by providing them with practical, enabling information about the environment they find themselves in.

### **Normality and Independence**

Achieving normality is essential. The building should not be institutional or 'mothering' and should thus avoid handrails cluttering every available wall and rather adopt a subtle approach where tactile clues provide guidance. The building should not be 'hostile' and totally undecipherable in its design either. Sensory design that

offers guidance and orientation clues provide a subtle approach to specialised design.

The design should enhance independence by providing elements that serve for training purposes; an environment that teaches visually impaired people to navigate a variety of surfaces and built forms will benefit visually impaired people in their progression towards independence.

“The physical environment should assist visually impaired people in their efforts to achieve full mobility since mobility is an essential prerequisite to independence and successful integration”. (Vanoli: 1972, 78)

### **Layout and Circulation**

The key component to the circulation system is legibility. The route must be easy to navigate. Therefore a clear and simple circulation method that links all spaces is appropriate. A layout that is easily mind mapped and memorised by the users will be successful. Many visually impaired people use route memory where changes of direction, tempo or function are associated with memorised clues.

Counting doors or identifiable forms is a common method used by visually impaired people to locate the room or facility they seek. Clustering of doors reduces monotonous counting and tactile or bold forms are simpler to locate and count than actively seeking individual door openings.

The building should display the possibilities that exist for sensory conscious design. The research has revealed that designing for the senses not only encourages a deeper more intimate interaction with the building but serves as important wayfinding information for visually impaired people providing them with key information about their surroundings.

### **Sight**

Established in this document is the benefit of bold forms, tonal contrasts and use of colour for partially sighted users. Visual elements maximise residual vision and provide location clues determining different functions within the building.

### **Sound**

Common sounds within buildings provide people with clues. These sounds should not be suppressed but rather expressed. The sound of a cash register within a shop provides direction or chimes when the lift doors open announce the positioning of vertical circulation.

Furthermore, acoustical differences between areas, such as changes in ceiling heights or differing materials causing different reverberation sounds and echoes, assist visually impaired people in their understanding of spaces. These techniques should be employed in the design.

## **Smell**

Aromatic clue givers such as fragrant plants in strategic areas help with navigation. Kitchens and coffee areas release odours. Manipulating the position of such areas as far as possible will serve as clues that are easily recognisable.

## **Touch**

Tactile surfaces can be used for guidance in a trail rail and underfoot. Tactile surfaces underfoot provide warnings of changes in direction or changes in floor level or warn of hazards within the path, such as columns, bollards or street signs.

## **Materials**

In order to achieve a building which addresses the senses and encourages exploration of surfaces, a range of tactile materials, with varying tactile properties, must be adopted. Materials such as stone, slate, smooth steel, rough rusted steel, brickwork, timber, off shutter concrete, polished concrete and coloured glass should be explored and manipulated within the design.

## **Conclusions**

Sensory design is to be translated into the building's design so as to aid visually impaired people in their independence. A balance between a 'mothering' environment and a 'hostile' environment will achieve an overall sense of normality. Sensory design offering guidance and orientation clues provide a subtle approach to specialised design.

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Brown, M (General Manager of KwaZulu-Natal Society for the Blind) 5 March 2007, Durban

Clark, B (Architect of conversion at KwaZulu-Natal Society for the Blind) 7 March 2007, Durban

Frank, D (Principal of Arthur Blaxall School) 13 March 2007, Pietermaritzburg

Moosa (Blind Teacher at Arthur Blaxall School) 13 March 2007, Pietermaritzburg

Subrayen, R (Head of Department Resource Centre) 3 April 2007, Durban







This report documents the key elements considered during the design process of a new facility for the Kwazulu-Natal Society for the Blind in Durban.

The existing Kwazulu-Natal Society for the Blind is inadequate in its design, layout and size. A new facility is proposed that is tailored to both the Society's corporate needs as well as the visually impaired person's individual needs.

A need exists for a Society for the Blind in Durban as it serves as a facility which provides tools which aid, train and instruct blind and visually impaired people to cope in their daily activities without sight. The Society provides visually impaired people with treatment, advice and helpful aids for each individuals specific needs. Furthermore the Kwazulu-Natal Society for the Blind provides onsite training in basketry weaving and carpentry that provides visually impaired people with skills that they can use in order to provide themselves with an income.

### Site and Location Requirements

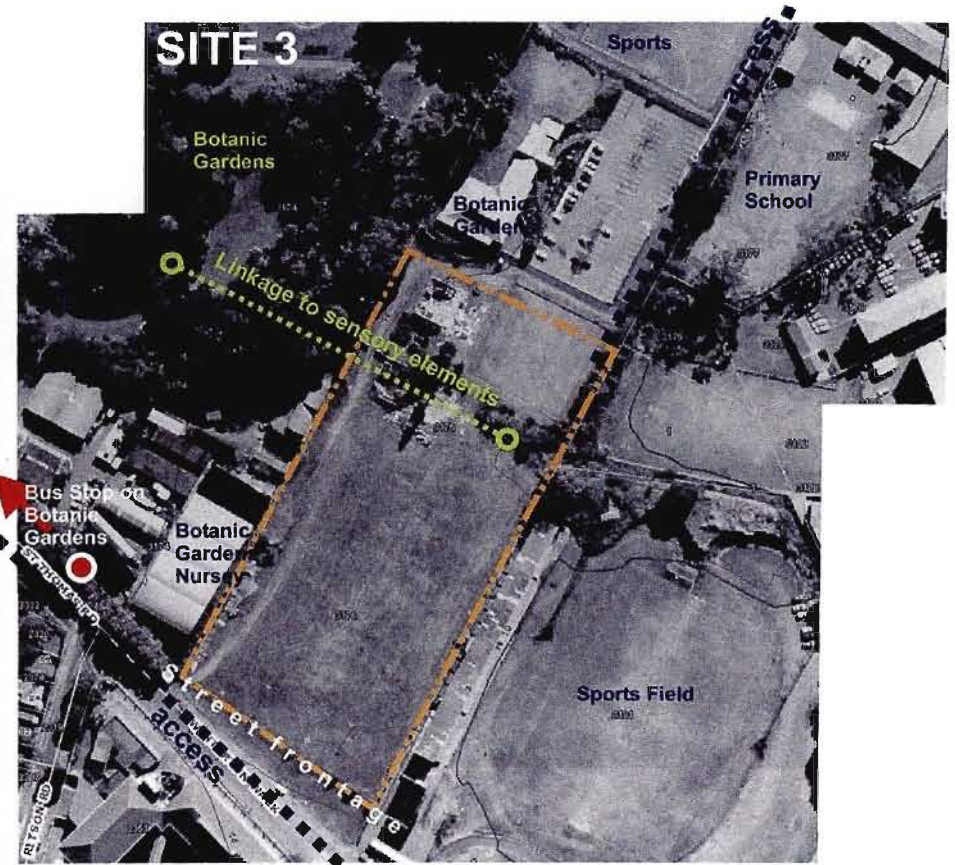
The fundamental factors to consider when selecting a site are integration, accessibility and exposure. The Society's philosophy is integration; the site therefore should ideally be located within an existing community where integration is encouraged. Accessibility is key to the siting of a building of this typology; the site must ensure good access by public transport, the sole means of independent travel for people with a visual impairment. It is also advantageous that the site be close to other amenities so that visitors can combine their visits with other activities. In addition it is beneficial for the site to be part of an area of mixed use, as a varied environment assists in mobility training. The site should be reasonably peaceful so as to be conducive to the appreciation of the buildings facilities. The site must be secure and perceived as safe to ensure visitors are at ease when orientating themselves between the building and their means of transport.

With these views in mind the following criteria have been set:

- Accessible by public transport as this is the sole means of independent travel for people with a visual impairment
- Integrated into the community rather than isolated from society enforcing the Society's philosophy of integration
- Integrated with other amenities so that visitors can combine their visits with other activities

- Situated in an area where linkage can be established with other sensory elements that are already present; for example adjacent to a park or public gardens
- Street frontage as exposure is essential for the showroom to ensure successful trade
- Part of an area of mixed use as a varied environment is beneficial for mobility training
- Peaceful so as to be conducive to the appreciation of the buildings facilities
- It must be located in a safe environment where crime is not an immediate threat to blind and partially sighted pedestrians

Three viable options emerged, the sites that met the majority of the above criteria were considered carefully. The site on Bulwer Road was considered to meet the criteria most accurately and was therefore selected.



Site Selection Criteria	Site 1 Bulwer Road	Site 2 Essenwood Park	Site 3 Botanic Gardens
Accessible by public transport	●	◐	◐
Integrated into the community	●	●	
Integrated with other amenities	●	●	
Link to sensory elements that are already present	●	●	●
Street frontage for showroom exposure	●	●	◐
Part of a mixed use area	●	●	◐
Peaceful: conducive to appreciation of bldg facilities	◐	◐	●
Safe environment	●	●	◐

## **THE CLIENT**

The Kwazulu-Natal Society for the Blind acted as the client. The Society is a charity organisation providing support, training and healthcare services to blind and partially sighted people in the Kwa-Zulu Natal area.

## **FUNCTIONS OF THE BUILDING**

The Kwazulu-Natal Society for the blind houses the Society's headquarters. It also includes the Resource Centre which serves the blind and partially sighted community with facilities such as mobility instructors, physiotherapists, optometrists, occupational therapists and social workers. The Society also provides services that empower the visually impaired providing them with a means of acquiring an income. This is in the form of weaving and furniture making. The society runs a six-month course that teaches individuals to produce woven goods and furniture products and start their own business ventures in the areas that they come from with the skills learned. The building contains studios and residential units for weavers attending the course. Furthermore the Society houses a showroom where these weaved products are displayed and sold. The building also provides social facilities where a group of visually impaired people meet on a weekly basis to learn crafts, drink tea or listen to motivational speakers while at the same time enjoying social interaction.

**ACCOMMODATION SCHEDULE**

Description	Particulars	Quantity	Area (m <sup>2</sup> )	Area Total (m <sup>2</sup> )	Furniture/Fittings	Equipment
<b>Entrance</b>						
Entrance Foyer	adequate space for circulation & orientation, waiting space & area for vertical circulation	1	50	50	seating	
Reception	line of entry to intercept reception desk for easy location thereof	1	9	9	reception desk, chair	
Showroom	street frontage, easily accessible from parking facility	1	100	100	display units, shelving	
				<b>sub-total:</b>	<b>159</b>	
<b>Headquarters</b>						
General Manager		1	18	18	desk, chairs	
General Manager's PA		1	18	18	desk, chairs	
Financial Manager		1	18	18	desk, chairs	
Admin Clerk		1	18	18	desk, chairs	
Fundraiser's in Kind		2	18	36	desk, chairs	
Fundraiser Manager		1	18	18	desk, chairs	
Tea Kitchen	visible for monitoring purposes	1	15	15	countertop, cupboards, sink	fridge, kettle
Boardroom	accessible from parking facility, natural light & ventilation	1	40	40	board table, chairs	
Ablutions	naturally ventilated	1	16	16	4 wc's, 2 whb's	
				<b>sub-total:</b>	<b>197</b>	
<b>Resource Centre</b>						
HOD Rehabilitation		1	18	18	desk, chairs	
Braille Instructor	instruction area for 2 learners at a time	1	25	25	desks, chairs	
Mobility Instructor	instruction area, high light levels required	4	25	100	desk, chairs	
Social Worker	seating area for counselling sessions	4	20	80	desk, chairs, seating	
Dtudent/Volunteer Office		1	15	15	desk, chairs	
Support Service	display area for assistive devices	1	20	20	desk, chairs, display unit	
Optometric Clinic	shuttering device required to block light during eye testing	1	20	20	desk, chairs, optometric chair	optometry equip
Computer Room	accommodate 5 learners at a time, classroom environment	1	25	25	desks, chairs	5 pc's, 1 printer
Staff Room	accommodate 11 people, recreational space, tea kitchen	1	35	35	seating, countertop, sink	fridge, kettle
Physio/OT Room	equipment store, therapy area, room shared by part time physio & occupational therapist	1	25	25	desk, chairs, OT mat	
Seminar / Activity Room	accommodate 40 people access to café and ablutions	1	90	90	seminar table, chairs	projector
Café	partly covered	1	100	100	tables, chairs	
Kitchen	direct access to café	1	30	30	counter, sink, hob	fridges
Ablutions	naturally ventilated	1	16	16	4 wc's, 2 whb's	
				<b>sub-total:</b>	<b>599</b>	
<b>Studios</b>						
Studio Manager	access to workshops and loading zone	1	18	18	desk, chairs	
Framing Studio	high light level, natural ventilation, interactive environment	1	330	330	work benches, chairs	
Weaving Studio	high light level, natural ventilation, interactive environment	1	330	330	work benches, chairs	
Material Store	access to loading zone	1	220	220	shelving	
Finished Products Store	access to loading zone and showroom	1	110	110	shelving	
Ablutions	naturally ventilated	4	16	64	4 wc's, 2 whb's	
Tea Kitchen		4	16	64	countertop, cupboards, sink	fridge, kettle
				<b>sub-total:</b>	<b>1136</b>	
<b>Residence</b>						
Dwelling Units	natural light & ventilation	6	68	408	Bed, chair, closet	
				<b>sub-total:</b>	<b>408</b>	
<b>Parking</b>						
	for building users, visitors, showroom customers and KZNSA customers	45bays				
				<b>overall sub-total:</b>	<b>2499</b>	
			10%circulation	249.9		
				<b>total:</b>	<b>2748.9</b>	



### Designing for Visually Impaired People

Research reveals two prominent and opposing schools of thought surrounding the issue of designing for disabled people. Those that believe the building should be custom designed to accommodate the disabled persons every need and those that believe the building should be normal as other buildings in the built environment that do not accommodate the disabled person's every need.

The group that believe the building should be normal believe that a building which is specially designed provides a protective environment that 'mothers' the visually impaired user. (Bernardo: 1970,262) This disadvantages visually impaired people when they find themselves outside of this protective environment. It is believed that specially designed buildings enhance segregation as the users become familiar with them and then cannot cope when in the normal environment. Visually impaired people will therefore avoid the normal environment thus reducing interaction with sighted people.

The group that believe the building should be custom designed to visually impaired peoples needs believe that buildings specially designed aid visually impaired people in their ability to navigate and orientate themselves. It is believed that architects can make a valuable contribution to the blind person's ability to orientate him/herself. They believe that a visually impaired person would benefit positively from an

environment that complements and assists him/her in his/her mobility and navigation. (Vanoli: 1972)

### **Legibility**

Legibility is of particular importance for visually impaired users and features need to be included in order to ensure that legibility is achieved using non-visual aids.

Kevin Lynch suggests that structuring and identifying the environment can be achieved through the use of many cues, namely; visual cues of colour, shape and tone as well as sensory cues such as smell, sound, touch and kinaesthesia. Visual cues are useful to the partially sighted however blind users rely entirely on the provision of sensory cues for their ease of orientation and wayfinding.

In order to achieve an environment that is legible and easily identified there are certain elements which need to be in place for the visually impaired user. Structuring and identifying the environment can be achieved through the use of cues, namely; colour, tone, smell, sound and touch. This technique of consistent use of sensory cues aids the visually impaired person's orientation and wayfinding.

### **Wayfinding**

Wayfinding is the term used to describe the process which people go through in order to find their way around an environment. If an individual successfully solves a wayfinding problem on their first visit to a building and have the ability to remember that solution, then they should not have a problem on their subsequent visits to the same building.

Less than 10% of visually impaired people are totally blind. The remainder rely on their residual vision to determine shapes, contrasts and colours to aid them in their wayfinding process. The visually impaired rely heavily on sound and touch to find their way. Exploiting these elements will create an environment that is easily navigated by the blind or partially sighted person.

It is important to note that an excess of orientation clues can become confusing and result in a clutter of information that cannot be deciphered; "Such information must not be chaotic, for it is only when information changes visually handicapped individuals' perceptions logically and directly that we can talk of a clear architectural idea of the environment." (Bobrova: 1990,26)

## **SENSORY ARCHITECTURE**

### **The Human Senses**

People use four of their five senses – sight, sound, touch and smell – in varying degrees and sometimes subconsciously when interacting with the built environment. The consequence when one sense is removed or its effectiveness reduced is that the other senses are greater depended upon. Architecture that appeals to one's senses is committed to memory on a deeper level thus aiding the visually impaired person to memorise a buildings layout.

### **Sight**

Sight is the sense most relied upon. Our eyes reflect the environment back to us. Less than 10% of visually impaired people are totally blind. It is therefore important

not to exclude the inclusion of visual elements in the way of bold forms, tonal contrasts and colour.

### **Sound**

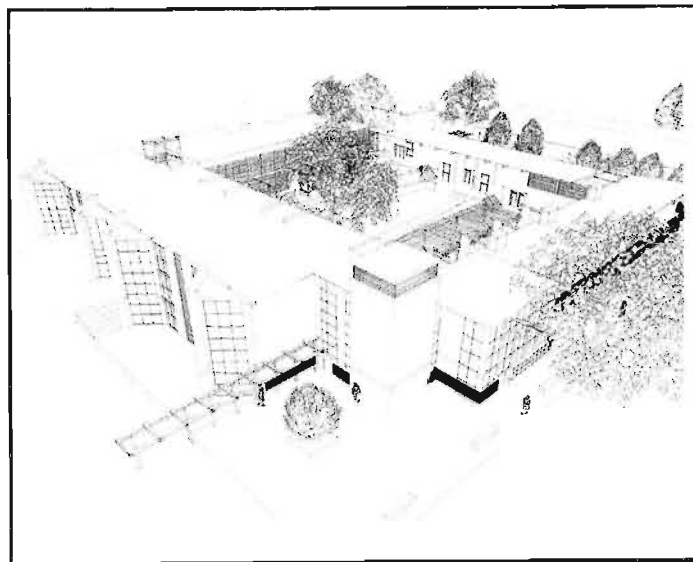
For a person without sight, the most informative and developed sense is hearing. Sound is omni-directional providing information about activities which are all around, far or near. Sound gives warning and offers direction. Buildings return sound to us, structuring and articulating our understanding of space.

### **Touch**

Texture can only offer information at arms length. Texture can be informative but cannot give information about something a long distance away, only that which is imminent. Tactile aids provide information about their position within an environment by the feel of their surrounding surfaces by hand or underfoot. Changes in floor textures to delineate different areas are useful aids.

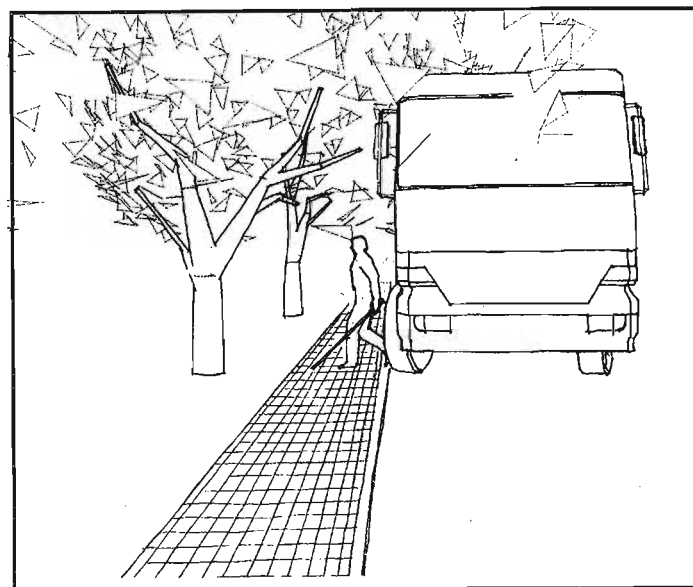
### **Smell**

Smell is rarely used as a directional clue. However it can be used as a source of information and guidance. A coffee shop, for example, emits an aroma of coffee disclosing its location to the visually impaired person.



This building provides the visually impaired community with a safe environment that serves as a base and a resource for visually impaired people in Durban. The building provides blind and partially sighted people with tools that aid them in dealing with and living with their impairment. The building provides the visually impaired person with assistance in navigation and orientation but at the same time it provides the user with challenges designed to aid with rehabilitation. The design approach is therefore a balance between a normal environment and a specialised one.

The design is aware of the visually impaired person's sensory perceptions. The building enhances the visually impaired person's independence by providing clues to aid with orientation using touch, sound and smell. The building harnesses sounds and smells that penetrate from the outside thus providing additional clues about the surrounding environment.

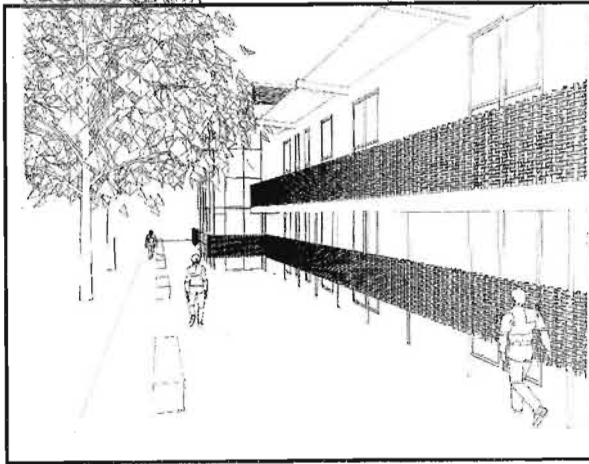


The building is legible and clear with a memorable circulation method that is easily navigated and which links all spaces.

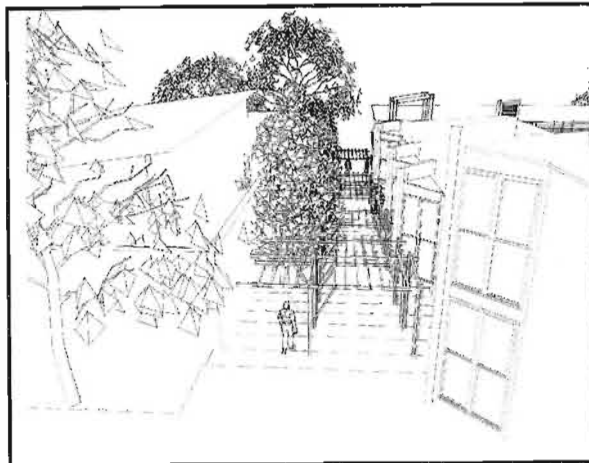
Interaction within the building is encouraged; the inclusion of spaces that promote interaction between visually impaired people are provided in the design.

#### **Urban Design and Approach to the Building**

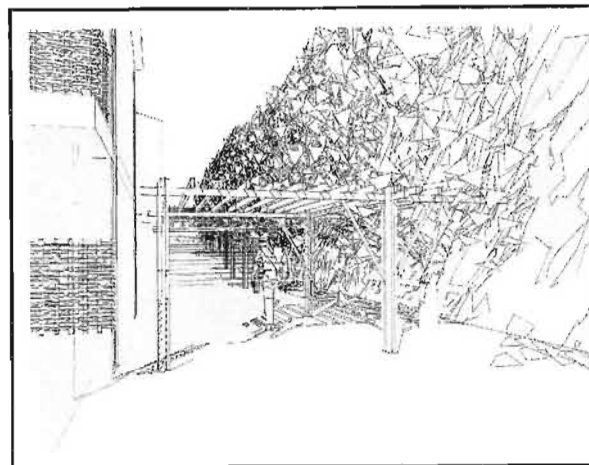
Textured strips guide the visually impaired person from the bus stop to the threshold of the building where the paving texture changes demarcating the buildings margin.



Traffic calming elements and a pedestrian crossing are positioned on Bulwer Road providing a place for visually impaired people to safely cross the road. A woven screen runs along the front of the building guiding the visually impaired person to the entrance. A port coche with large panes of coloured glass highlights the entrance for partially sighted visitors and colours reflect on the ground as the sun shines.



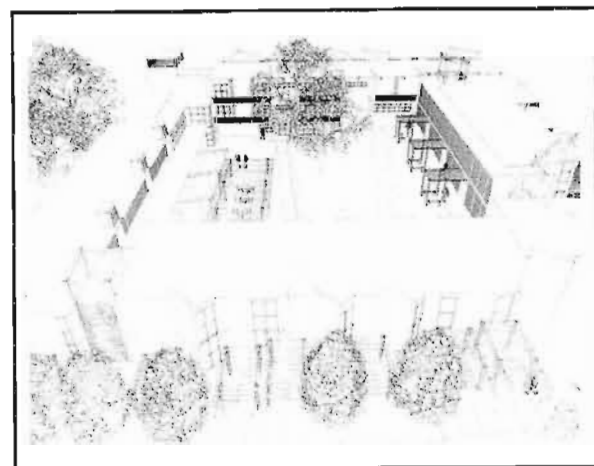
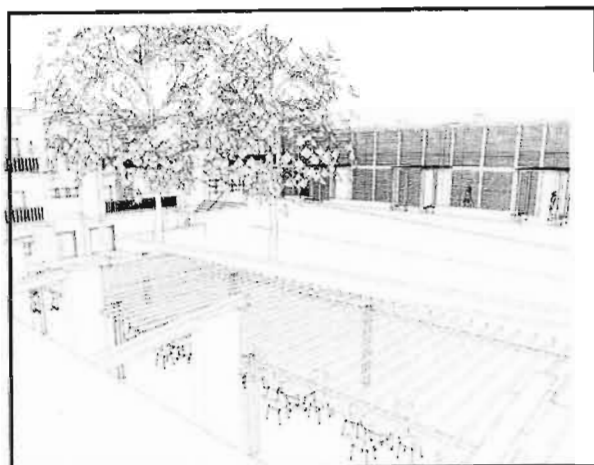
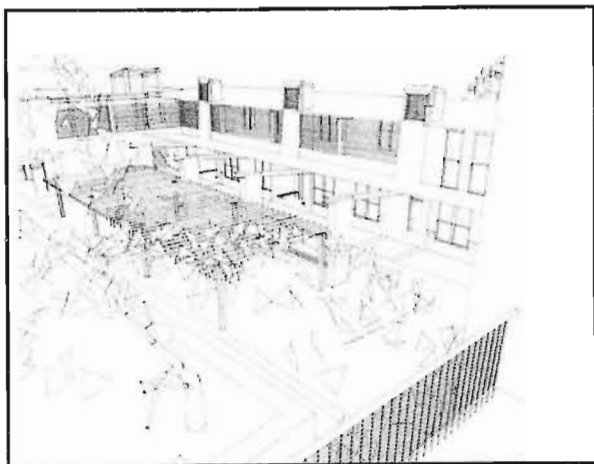
It is proposed to widen Ferguson Road in order to provide an adequate parking area that serves both the Kwazulu-Natal Society for the Blind as well as the KZNSA. Users of the KZNSA are then encouraged to walk past the studios encountering the weaving and carpentry which takes place in them past the showroom, thus maximising the exposure of the products to the pedestrians.



The link between the Kwazulu-Natal Society for the Blind and the KZNSA is paved and planted and steps down from Bath Road to Bulwer Road. This connection accommodates overflow parking in Bath Road and provides easy passage for visitors to the KZNSA. Pergolas stretch out from the building to engage with the KZNSA but touch down within the sites boundary without touching the KZNSA. The pergolas provide shade to the building and the pedestrians using the connection.

On the northern edge of the site the residential units overlook Bulwer Park providing passive surveillance. The circulation axis along the courtyard terminates at an existing tree on the site where a screened seating area looks out onto the park and playground providing further surveillance of the park.

## Building Layout

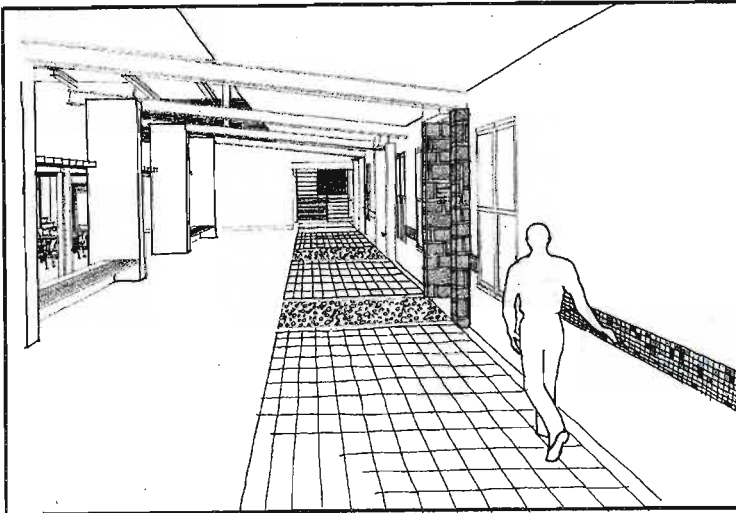


The building's functions are arranged around a central courtyard. The building's entrance area is located on the corner of Bulwer and Ferguson roads. The resource centre forms an L-shape along Bulwer road and stretches up towards Bulwer Park sharing a boundary with the KZNSA. The Headquarters offices sit a level above the Resource Centre, removed from the flow of visitors thus a quieter environment. The showroom where the basketry and furniture is sold is situated on Bulwer Road and steps out to stand in line with the KZNSA's shopfront. The studios where weaving and carpentry training occurs is the largest bulk of the building and is thus located along Ferguson Road along the western façade ensuring that the 3 stories do not over shadow the courtyard or other buildings from north sun. Wings off of the studios block the west hot afternoon sun with thick composite stone, block and brickwork walls and open toward the south where large glazed areas allow soft south light into the studios. The residential units are situated on the northern edge overlooking Bulwer Park, they have a direct link to the studios. The courtyard is the hub of the centre, it houses the café, a mobility instruction garden and a herb garden.

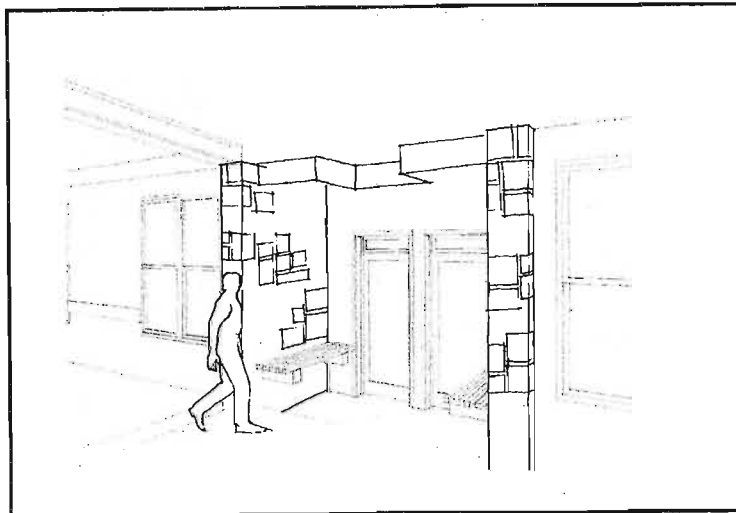
The courtyard concept ensures a safe environment that is simple in layout and easily mindmapped and memorised. The layout is legible as all functions open onto one common space; this also encourages interaction between individuals within this common space. The courtyard allows the building to be easily monitored by staff. Furthermore for visually impaired visitors it is easy to hear the movement of others within the space thus identifying the whereabouts of other individuals. The clear circulation route has identifiable places along the route providing orientation clues at specific places drawing attention to specific things.

## Movement through the building

On arrival the visitor encounters the reception which serves as the command centre where directions can be obtained. The user then moves in a linear direction through the reception and into the resource centre area. Tactile clues underfoot and a mosaic trail rail along the wall guide the user along the circulation route. Circulation spaces are oversized as visually impaired people require more space than sighted people to orientate themselves. Vertical circulation occurs at the termination of each major axis.



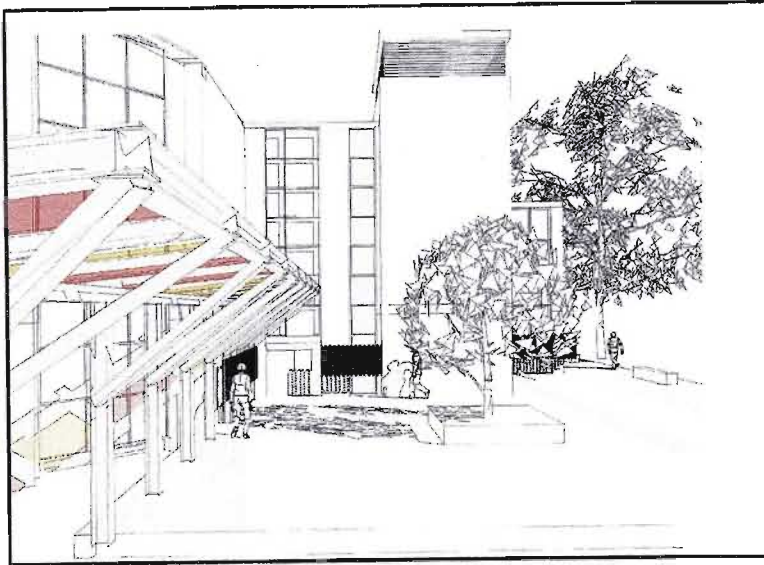
The route around and through the courtyard becomes a sensory journey. The building engages with the user through the provision of navigation and orientation clues which aid the visually impaired person to identify their whereabouts and direct them to their desired location. The design thus enhances independence – this being the visually impaired person's greatest desire and greatest deprivation. The building uses passive design elements to guide users and avoids cluttering the building with devices for disabled people which give an institutional feel. Instead a subtle approach is employed ensuring the building still maintains an element of normality.



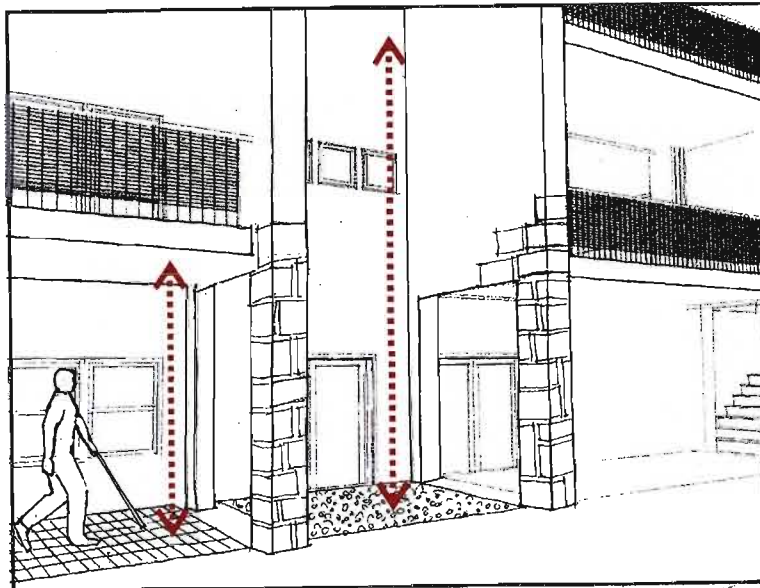
Doors are clustered and highlighted by heavy jutting out stone walls which protrude into the walkway slightly so as to pick up the tip of the visually impaired person's cane. Light shafts situated above illuminate the space with sunlight. The visually impaired often use a method of counting elements as means of finding their desired destination. These elements engage with the user providing a rhythm for them to count along their journey.



The blind live in a world of surfaces. A variety of textures are explored throughout the building both on the floor and the walls providing paths to follow. Surfaces can be explored by hand or underfoot providing orientation clues and adding to the colour of the visually impaired persons journey through the building.



For the partially sighted robust colours and strongly expressed forms become critical to the experience of their surroundings. It is important to maximise the use of their residual vision. Colour is incorporated at key points where important elements need to be highlighted. At the entrance a coloured glass port coche highlights the entrance guiding the partially sighted user into the building. At the termination of each main axis where vertical circulation occurs, coloured glass towers serve as beacons highlighting the stair and reflecting a multitude of colours onto the ground below.



The blind and partially sighted rely heavily on their hearing. The observation of one's own footsteps indicates the nature of the floor surface, the volume being passed through and echoes of obstructions to be noted. Ceiling heights have been varied throughout the design providing different acoustics for the visually impaired visitor to help them identify different areas. The different sound behaviour of one space in contrast to another provides visually impaired people with an image of where they are. The reception for example is a double volume; the sound behaviour alerts them to the vastness of the space thus identifying it as a prominent one. Cantilevering balconies cover the walkway along the studios. At entry points there is a break in the

cantilevering balconies providing an acoustic difference in these areas thus drawing attention to these entrances.

At points of vertical circulation at the end of each main axis, giant wooden chimes hang above the stairs thus identifying them and providing an audible direction clue to the corners of the building, this helps the visually impaired person to orientate themselves within the building.

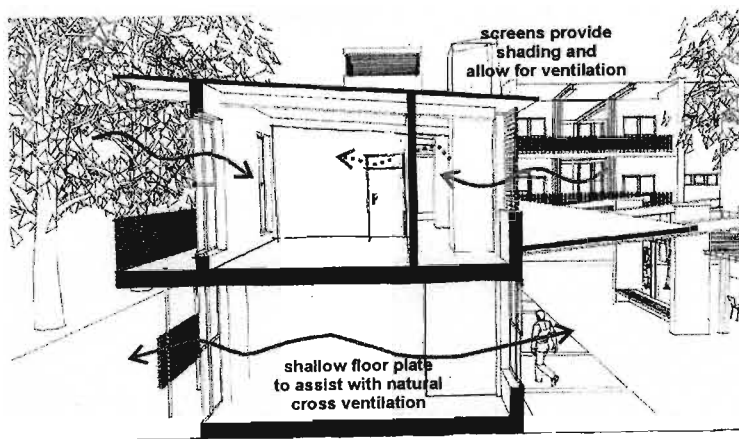
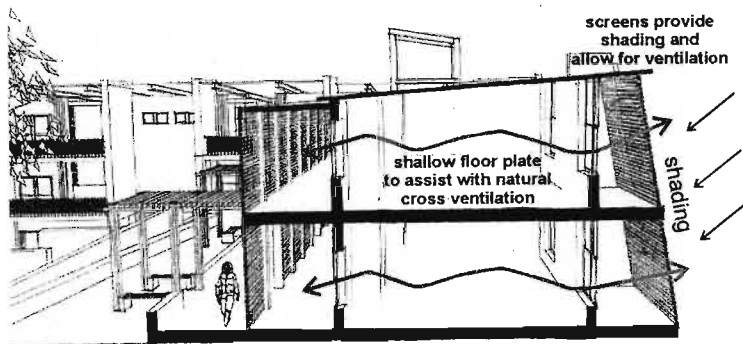
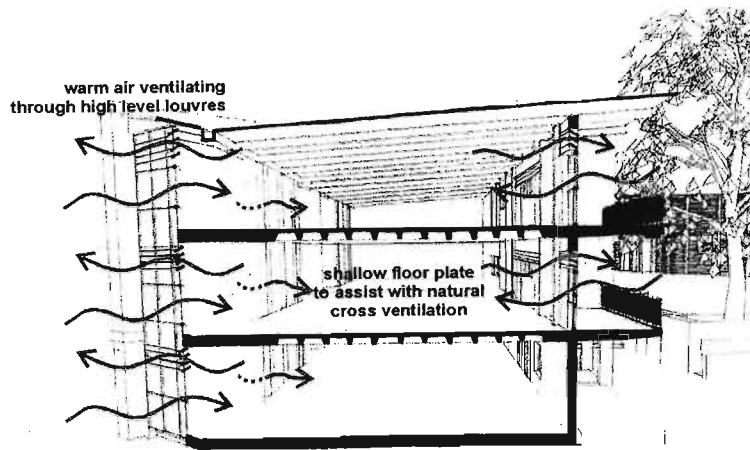
Furthermore a water feature located at the external stairs provides an audible warning of a change in level.

Windows communicate information to blind people in a variety of ways. They serve as ears which emit sounds from the outside, bringing the outdoors into the room, enlarging the space, aiding in orientation and providing the blind person with key information about the nature of the environment he/she finds himself/herself in. All windows are thus operable and those facing onto the streets are tall to maximise the information attained.

At the termination of the main axis the building opens to the outside allowing sounds and breezes to penetrate into the courtyard. This further assists the visually impaired person to formulate the surrounding environment in their mind and provides begins the process of integration into the community.

There are elements within the design which actively release aromas into the environment further engaging with the visitor and providing clues which aid in

memorizing the buildings layout. The café provides both the sound of chatter combined with the aroma of food and coffee. The herb garden releases scents into the air towards the north of the site.



The use of natural heating, lighting and ventilation is the ultimate target. Short spans and adjacent openings achieve cross ventilation. Glazing in the recommended proportions to room size and maximising of the north orientation for habitable rooms such as offices and residential accommodation and the south orientation for studios help to achieve natural light and ventilation.

Solar control is essential so as to reduce glare and create an environment with a constant lighting quality particularly in the studios where close work is being performed. Direct light causes glare and can be problematic for partially sighted people therefore actions have been taken to ensure the lighting quality in all spaces is adequate. The studios have glazing facing south so as to receive indirect south light. On the north eastern facade which opens towards the courtyard, balconies extending 2.5 metres aid in shading and shielding the studios from an excess of direct light.

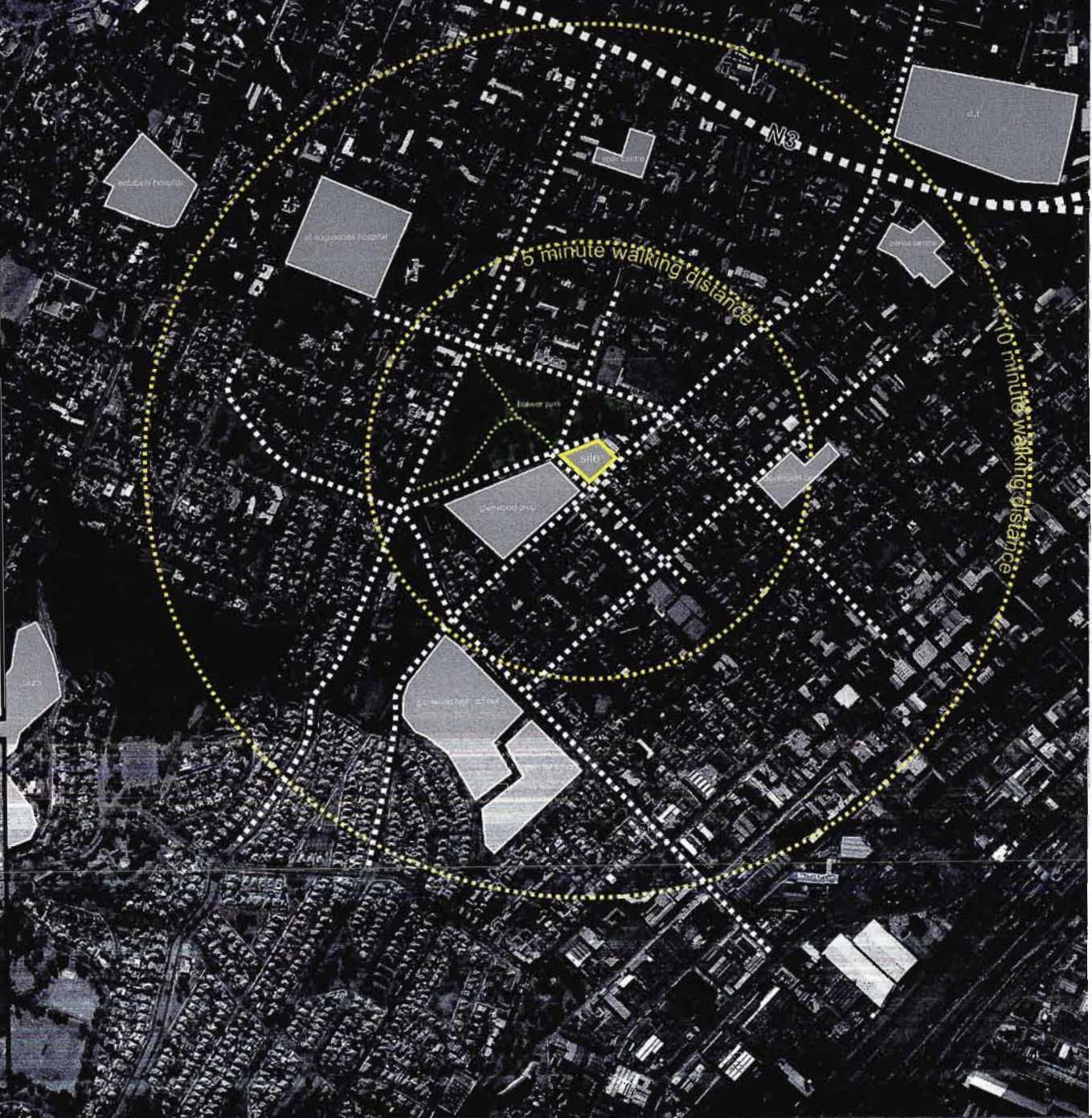
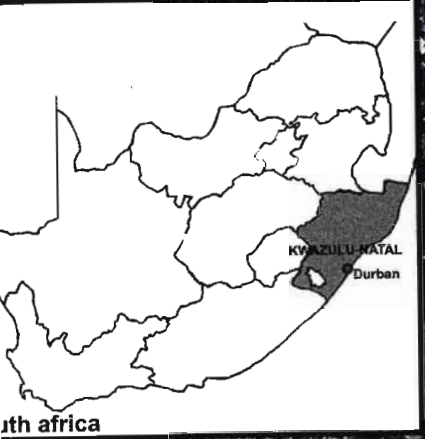
Timber screens have been included throughout the building to provide solar control and shading whilst at the same time allowing natural ventilation.

For the visually impaired, natural ventilation is preferable over air conditioning as natural ventilation provides the sightless with clues from the outside giving them information about wind direction, outside temperature, scents and sounds which aid them in their formation of the environment. The constant use of air conditioners dulls ones senses due to the constant noise and the stale environment they produce.



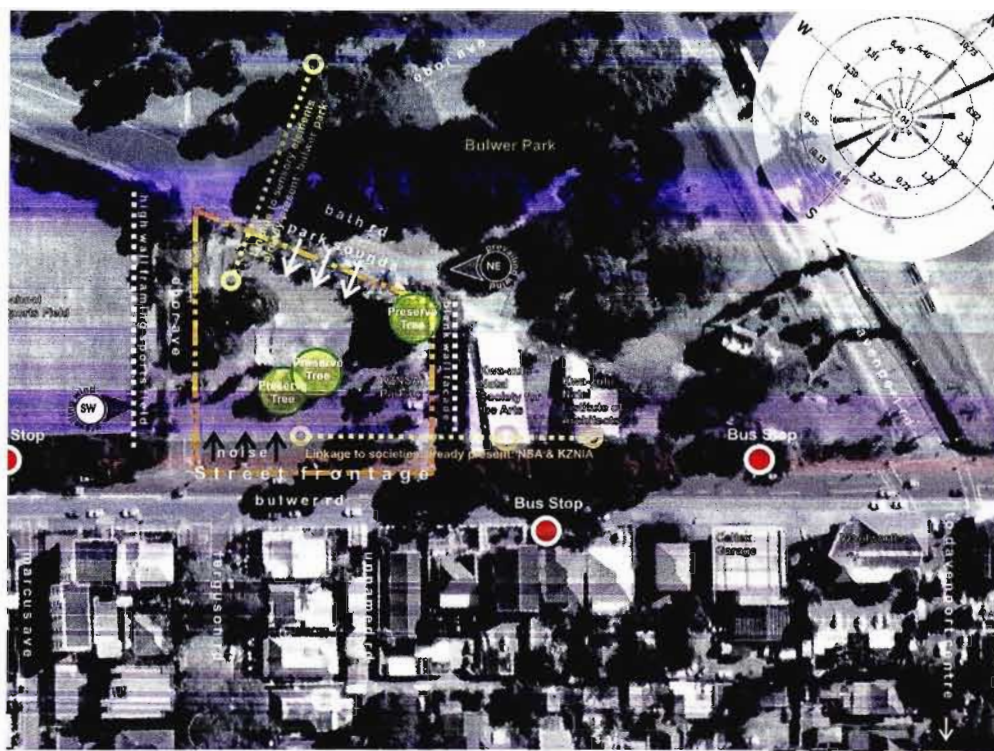
The building construction method is concrete columns and reinforced concrete slabs with brick infill.

The building displays many textures and surfaces which aid in the visually impaired persons wayfinding process. Some of these include; stonework, brickwork, exposed concrete aggregate, polished power floated concrete, cobbles, mosaic, timber screens, plastered walls, pebbles in mortar, gabion walls and stainless steel checker plate sheeting.



- site criteria**
- accessible by public transport :** primary form of transport for visually impaired people
- integrated into the community :** enforcing the society's philosophy of integration
- integrated with amenities :** users can combine trips to the society with shopping and other errands
- linkage with other sensory elements :** bulwer park
- street frontage :** maximum exposure for shop
- mixed use area :** a variety of uses provides opportunity for varied mobility instruction
- peaceful environment :** for appreciation of the sensory design and the buildings facilities
- safe environment :** where crime is not an immediate threat to visually impaired pedestrians

# SITE ANALYSIS



**bus stops :** bus stops are located every few hundred metres along Bulwer road within short walking distance of the site

**Bulwer park :** soft edge, breezes, park sounds - bird-life, rustling trees, children playing

**Bulwer road :** hard edge, commercial edge, street frontage, traffic noise, busy edge

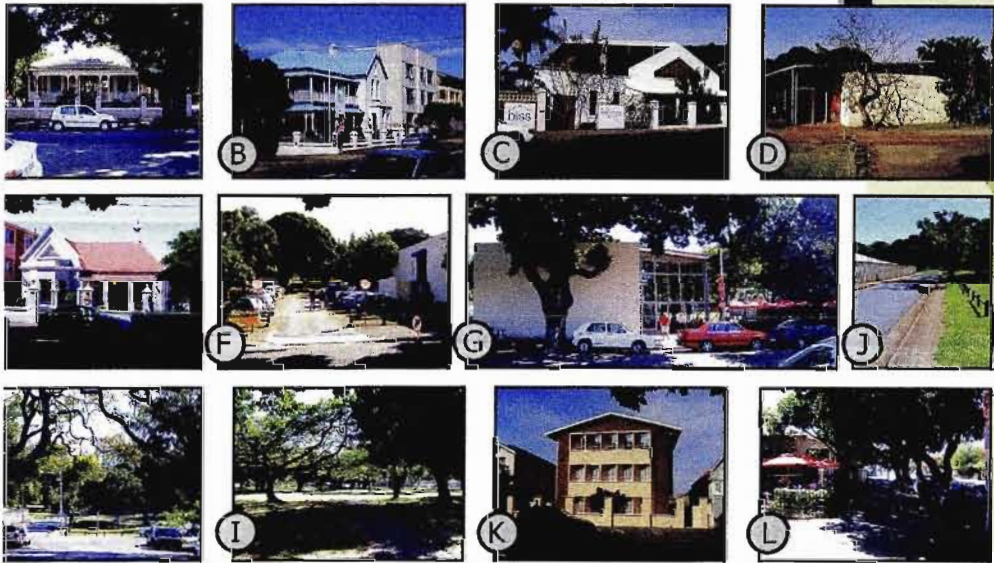
**surrounding functions :** residential, commercial, retail, kznsa and kznsa

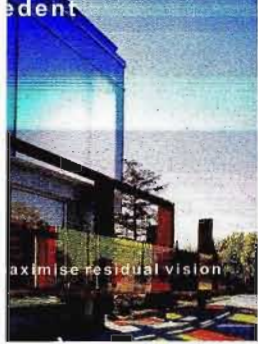
**boundaries :** the site is bounded by the kznsa and a school field on either side and Bulwer Park on the northern edge

**linkages :** existing linkages between societies and bus route links major retail complexes

**existing trees :** well established fig trees on the site are to be preserved. They provide good shade and continue the pattern of trees through from Bulwer park

**kznsa parking :** the existing parking is on municipal land and is leased on a yearly basis to the kznsa. It is proposed to relocate the parking thus reclaiming the entire site





maximise residual vision



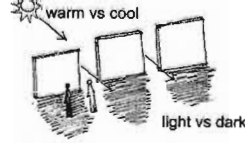
interplay of surfaces

carpet

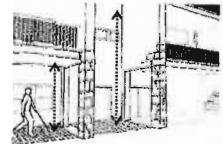
tile



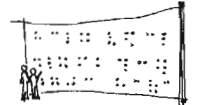
Woven products created by visually impaired



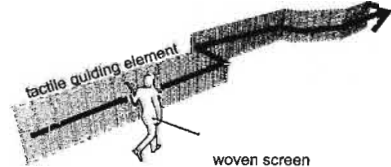
light vs dark



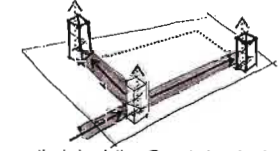
differences in ceiling heights provide acoustic variations identifying different areas



Braille wall



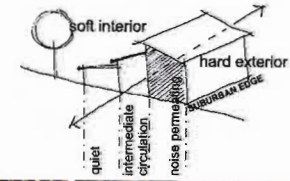
woven screen



vertical circulation @ route termination points



sound element at changes in level



soft interior

hard exterior

quiet

intermediate

noise permeability

kinaesthetic



wind movement

designing for sense

sight



bold forms . colour . contrast

sound



varying volumes . rustling trees . traffic noise . birdlife

touch



texture . temperature

smell



herbs . aroma of coffee . trees in blossom

### conceptual framework

sensory dialogue between building and user.

simple well planned layout

legible circulation route safe environment with a sense of 'place'

sensory orientation clues aural, olfactory, tactile and atmospheric.

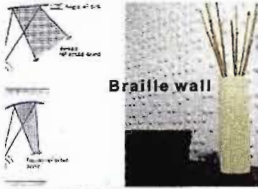
outside clues penetrate core providing external environmental info.

linkage to surrounding sensory elements ie bulwer park

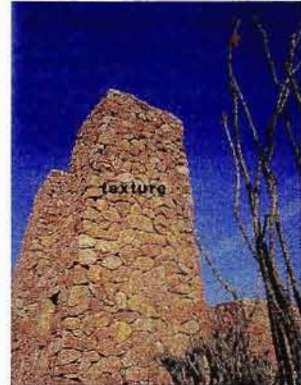
rhythm, pattern and repetition for counting

contrasts: light vs dark solid vs void rough vs smooth

enhance independence: the visually impaired person's greatest desire and greatest deprivation



Braille wall



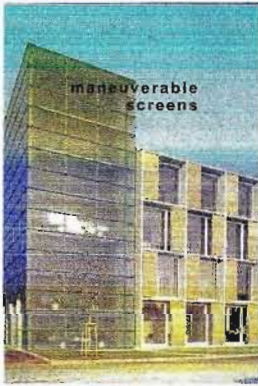
texture



glare prevention



clues underfoot



maneuverable screens



tonal contrast



identifiable 'places'



senses garden



tactile path

smell

sound



glass wind chimes



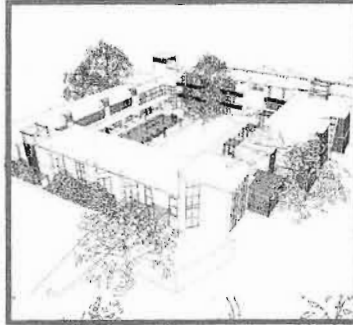
glass features



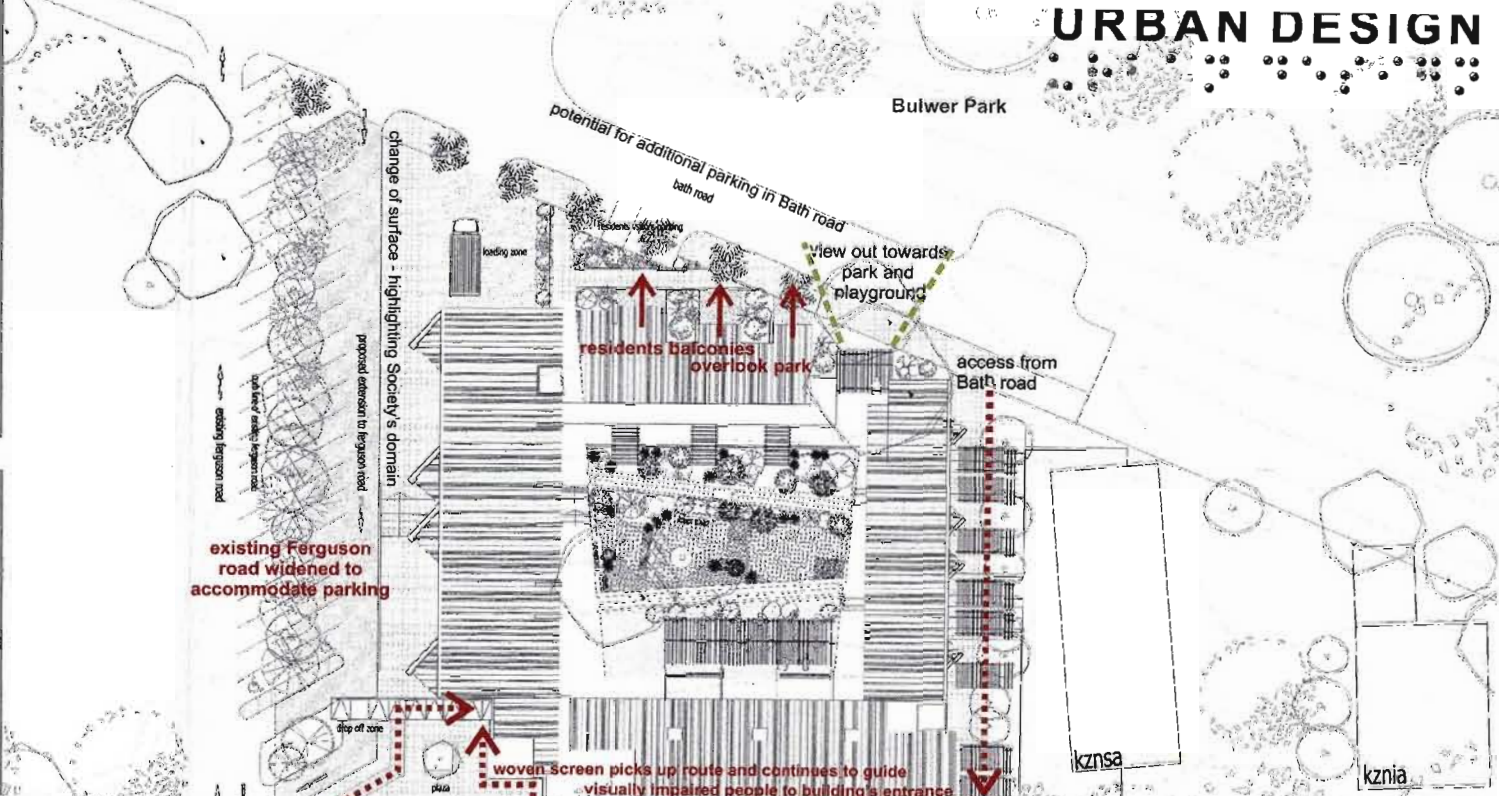




the ground study



visuals



textured path guides visually impaired people from the bus stop to the building

textured path guides visually impaired people from the bus stop to the building



textured path guides visually impaired people from the bus stop to the building



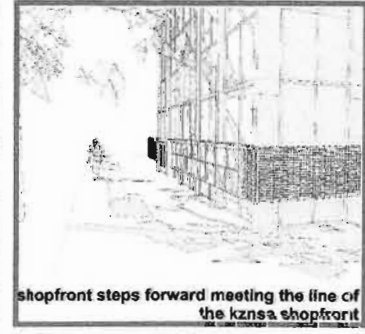
Bulwer road elevation



woven screen guides visitor to the entrance



approach to entrance



shopfront steps forward meeting the line of the kznsa shopfront



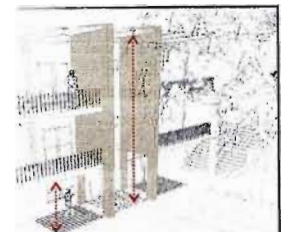
street furniture along Bulwer road provides seating and identifies the road edge



shaded and planted pedestrian link between Bath and Bulwer roads



pedestrian link meeting Bulwer road

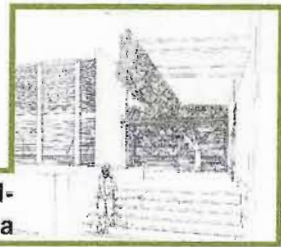


**sound:** ceiling height changes along circulation route identifying doorways and stairs  
**touch & sight:** bold tactile stone walls identify entrances  
**touch:** tactile references underfoot at point of entry

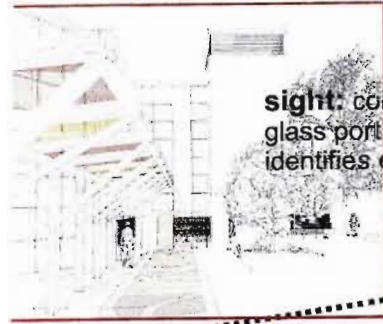


**sight:** coloured glass tower element  
**sound:** giant wooden wind chime feature  
**touch:** curved wall guides visually impaired person into wc  
**sight:** floor to ceiling glazing provides light source at route end giving orientation clue

**kinaesthetic:** breezes from park  
**sound:** bird life from park, children playing



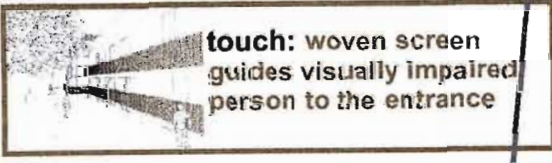
**sound:** tree rustling, bird-kinaesthetic: cooling shaft



**sight:** coloured glass portico identifies entrance



**touch:** Braille at entrance with a tactile element & a symbolic one

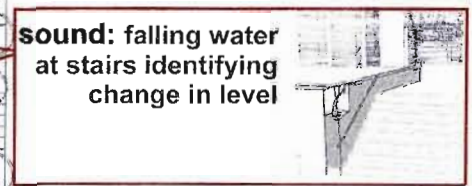


**touch:** woven screen guides visually impaired person to the entrance

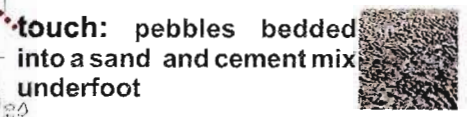
**sight:** light wells at door clusters illuminates space highlighting it  
**kinaesthetic:** warmth from light well



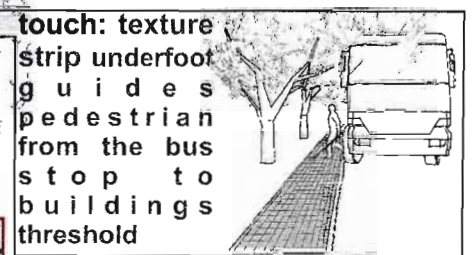
**touch & sight:** bold tactile stone walls identify door clusters



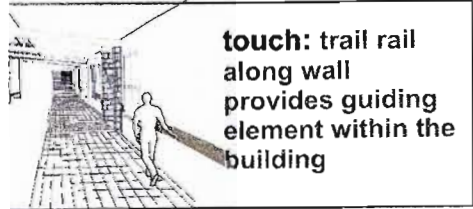
**sound:** falling water at stairs identifying change in level



**touch:** pebbles bedded into a sand and cement mix underfoot



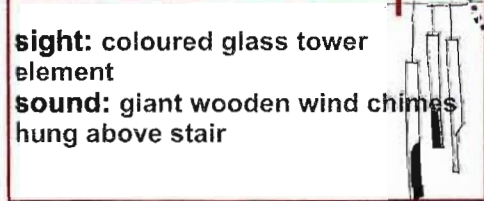
**touch:** texture strip underfoot guides pedestrian from the bus stop to buildings threshold



**touch:** trail rail along wall provides guiding element within the building



**touch:** exposed aggregate concrete underfoot identifies circulation spine studios



**sight:** coloured glass tower element  
**sound:** giant wooden wind chimes hung above stair

**touch & sight:** mosaic columns identify boundary between walkway and café

**sensory architecture**  
 architecture that appeals to the senses is committed to memory on a deeper level. it aids visually impaired people to memorize a building and remember its layout and features.

**sight**  
 less than 10% of visually impaired people are totally blind - visual elements therefore have importance - bold forms, tonal contrast, colour.

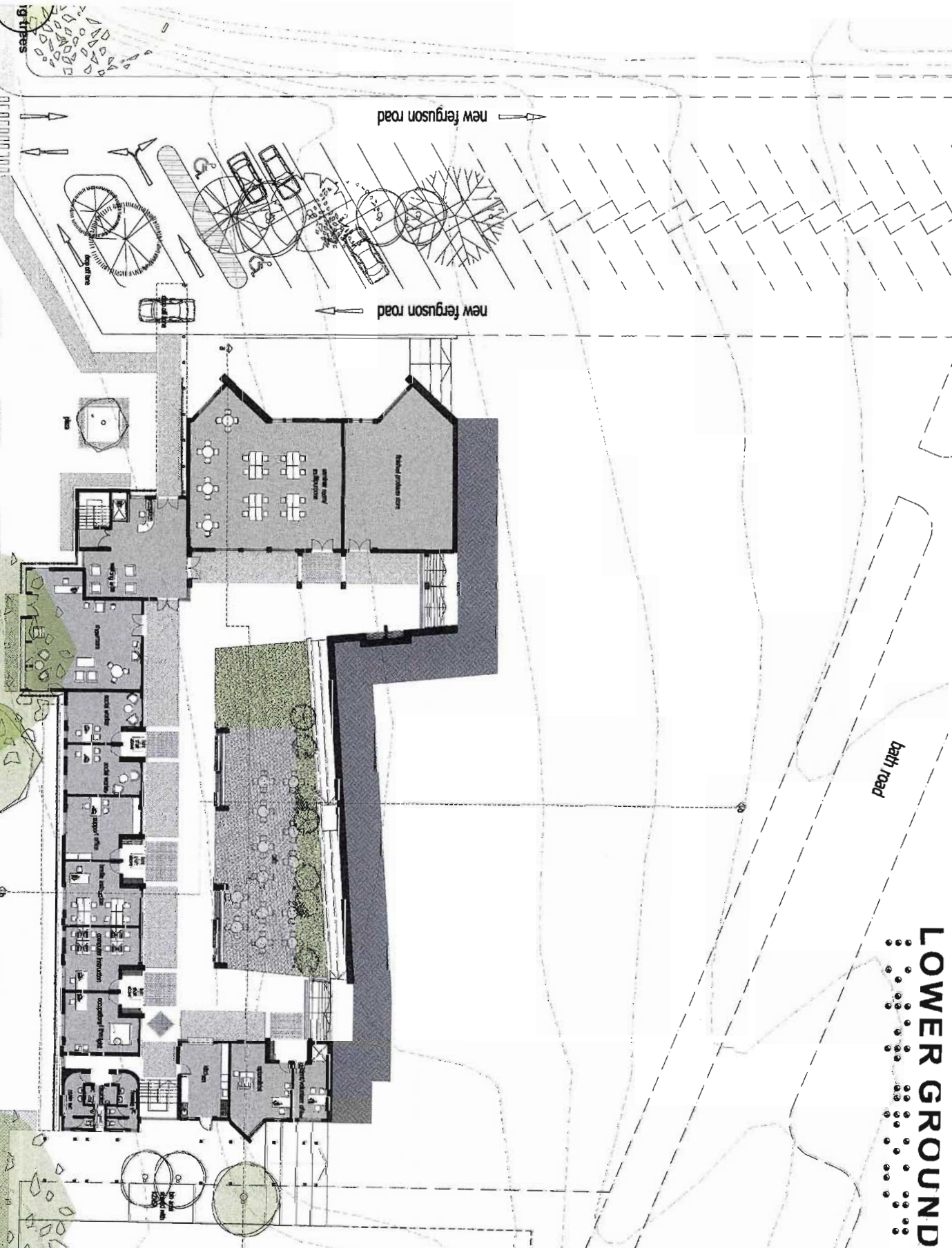
**sound**  
 the most informative and developed sense is hearing. sound is omnidirectional. information of surroundings is provided through sound. buildings return sound to us - sound articulates our understanding of space.

**texture**  
 blind people live in a world of surfaces. sense of touch is limited to the radius of the arms therefore provides exact location information by hand or underfoot.

**smell**  
 smell is used as a source of information or guidance. aromatic clue givers are easily recognisable.

'the sighted individual will pay little attention to a small ramp leading into a space; or to the transition from a soft floor to a hard one; or from a brilliant room with hard surfaces to a mellow one with soft wall coverings; or from a warm room to another slightly cooler. and he will pay little attention to these details because that is all they are to him: details. but these clues are not details to a blind individual. these clues are the space itself. they provide the only way blind persons can perceive space and become orientated to it' bernardo: 1970

# LOWER GROUND FLOOR PLAN

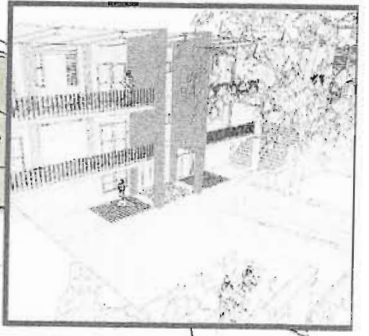
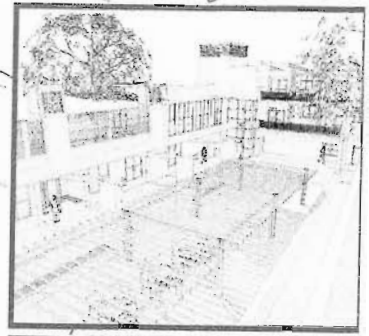


kznsa

scale 1:100

K W A Z U L U - N A T A L S O C I E T Y F O R T H E B L I N D

# UPPER GROUND FLOOR PLAN

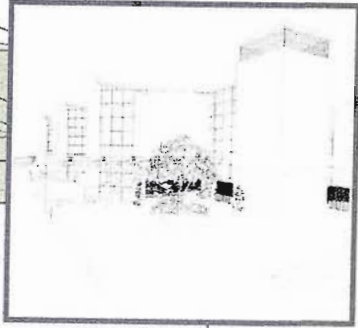
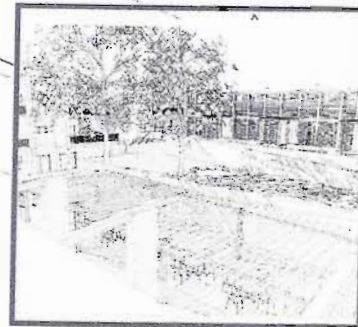
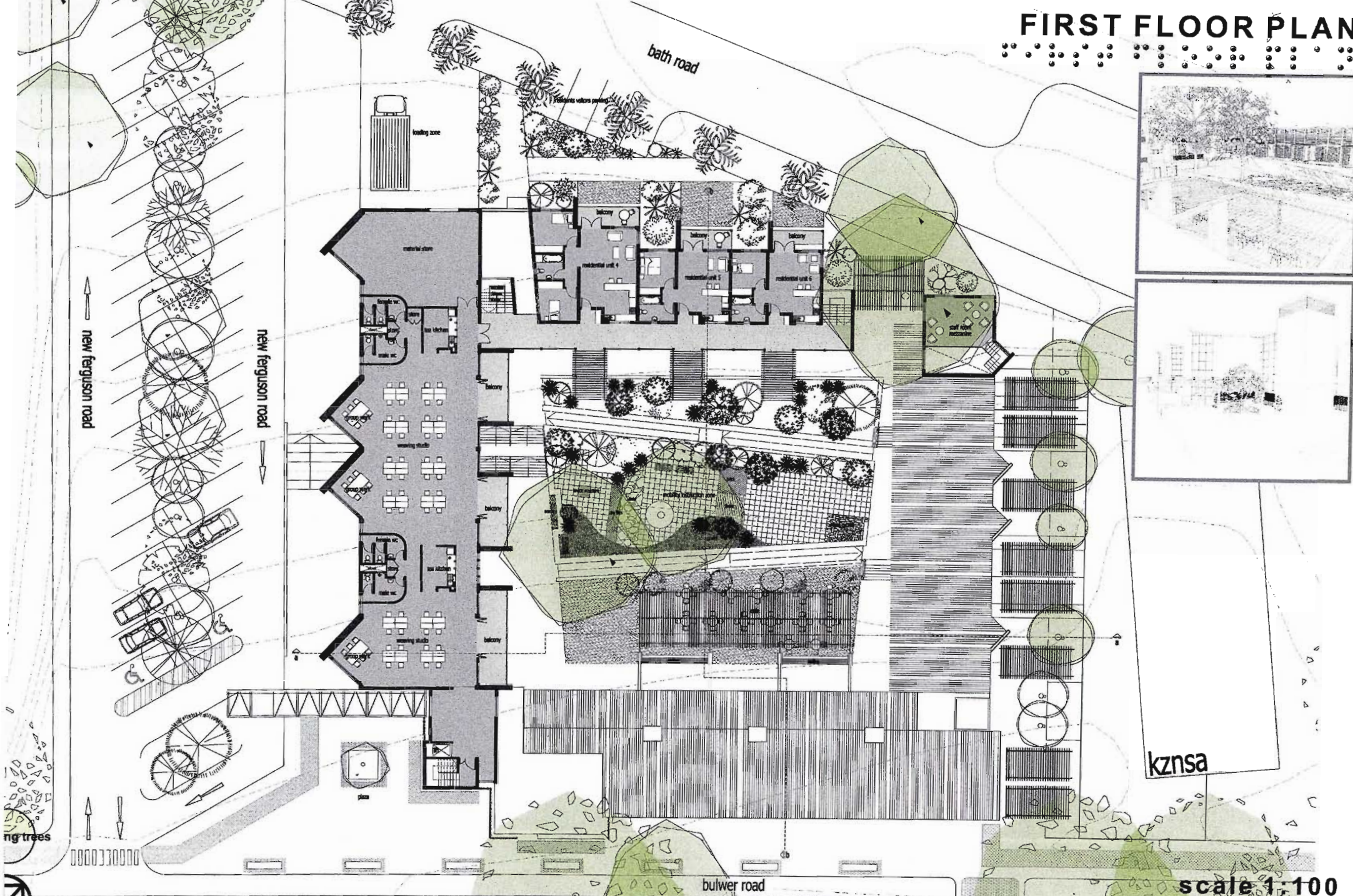


kznsa

scale 1:100



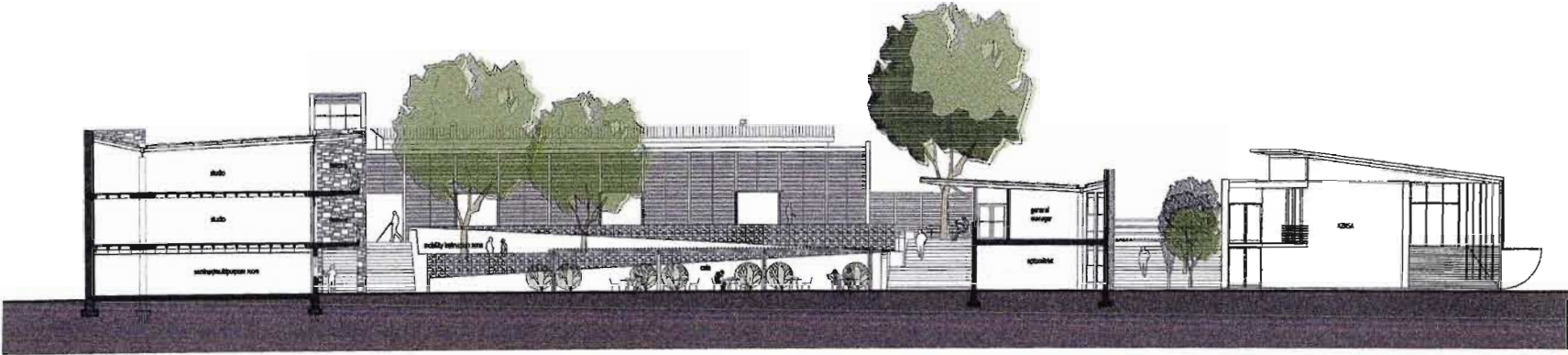
# FIRST FLOOR PLAN



kznsa

scale 1:100





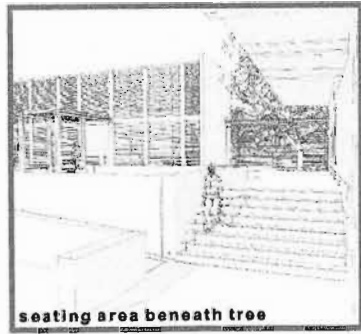
SECTION A-A



SECTION B-B



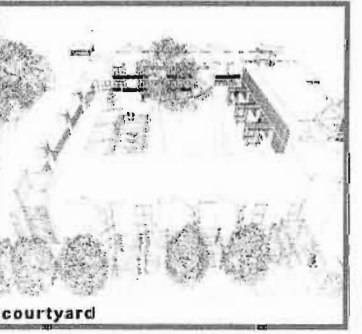
evacuation route



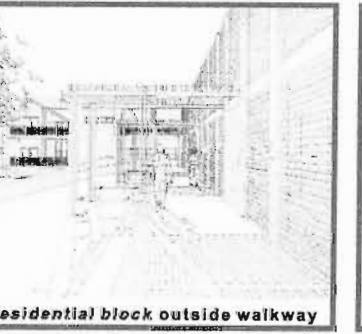
seating area beneath tree



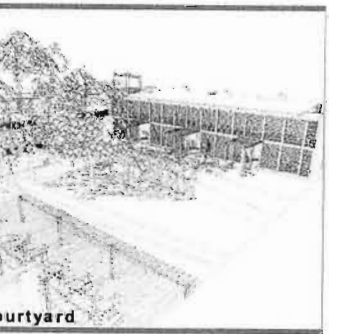
view of café from studios



courtyard



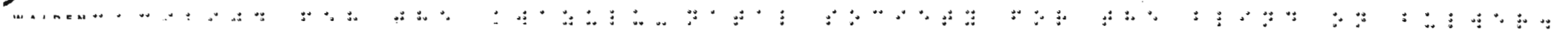
residential block outside walkway

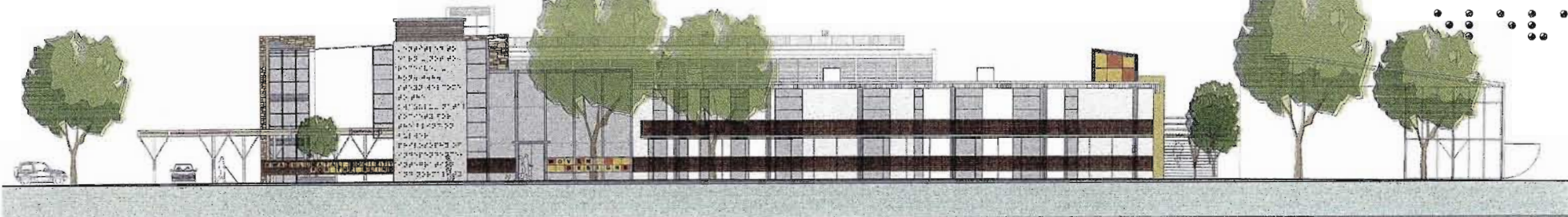


courtyard

scale 1:100

KWAZULU - NATAL SOCIETY FOR THE BLIND





WALDEN ROAD ELEVATION 1:100



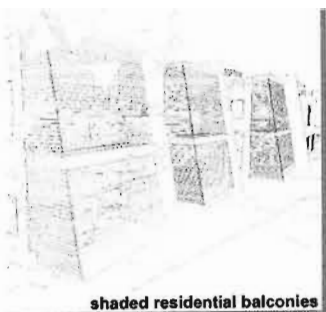
WALDEN ROAD ELEVATION 1:100



WALDEN ROAD ELEVATION 1:100



WALDEN ROAD ELEVATION 1:100

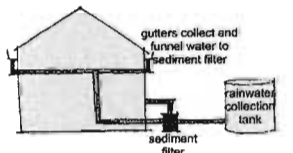


shaded residential balconies

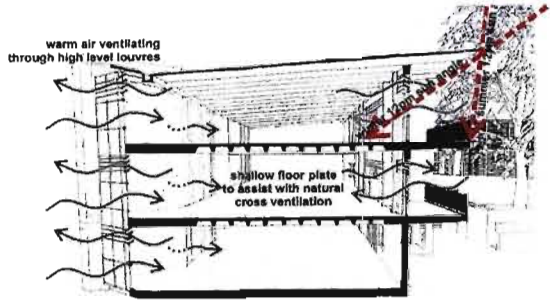


screens provide shading to offices

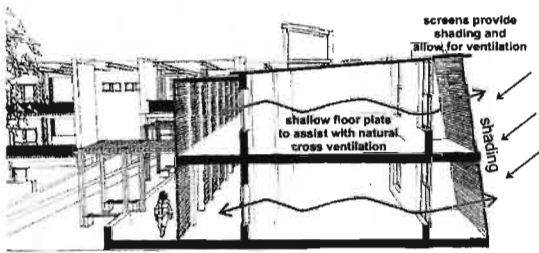
RAIN WATER COLLECTION



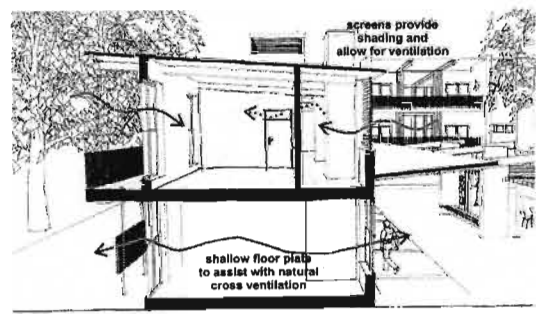
mono pitch roofed areas provide potential for rain water collection implementation. Rain water can be used to water the courtyard and building's landscaped areas furthermore can be used as grey water for flushing s. Rain water collection tanks will be located at the top site for ease of distribution. Water pressure is provided jump.



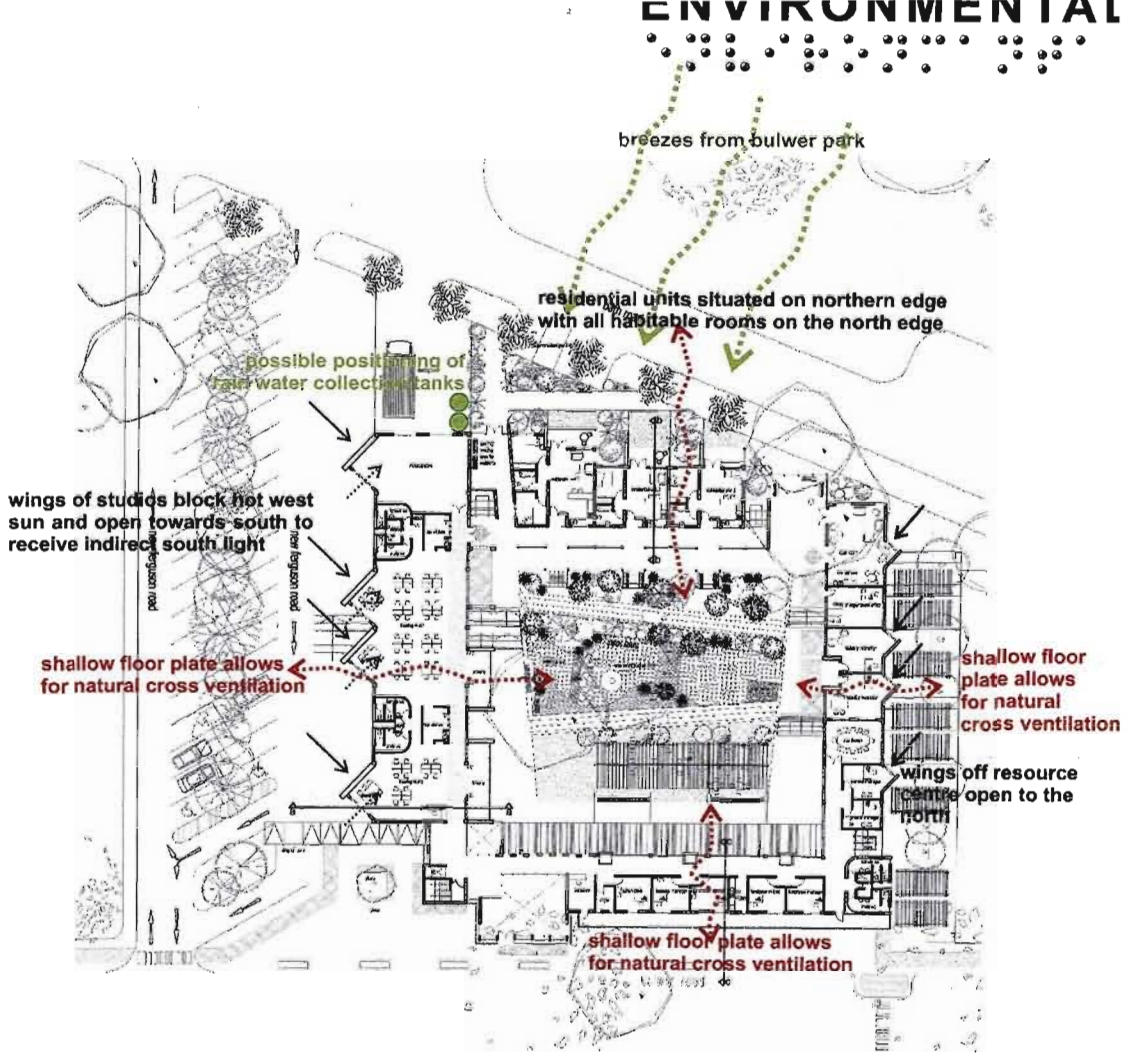
section a-a



section b-b



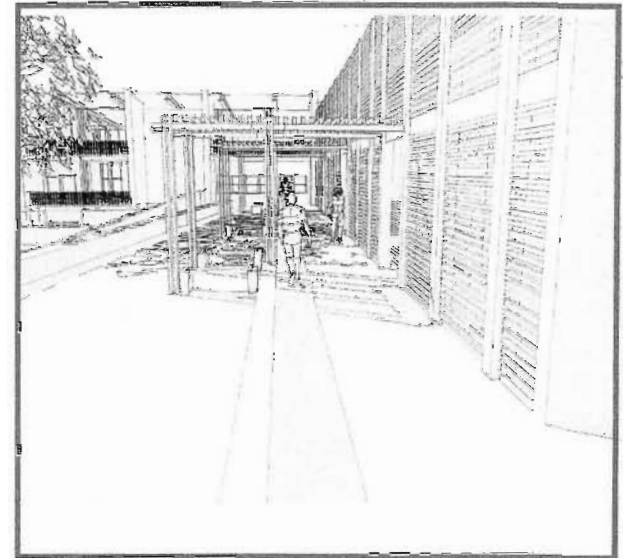
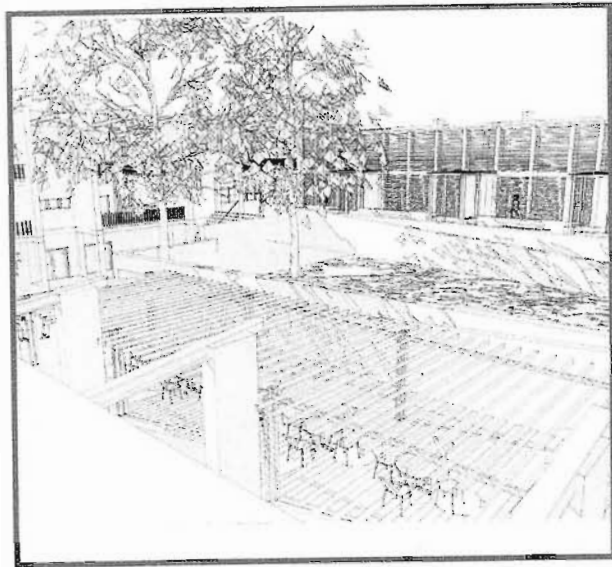
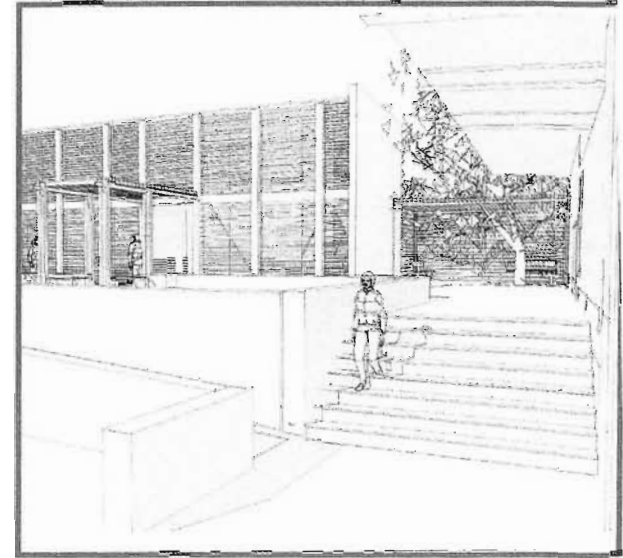
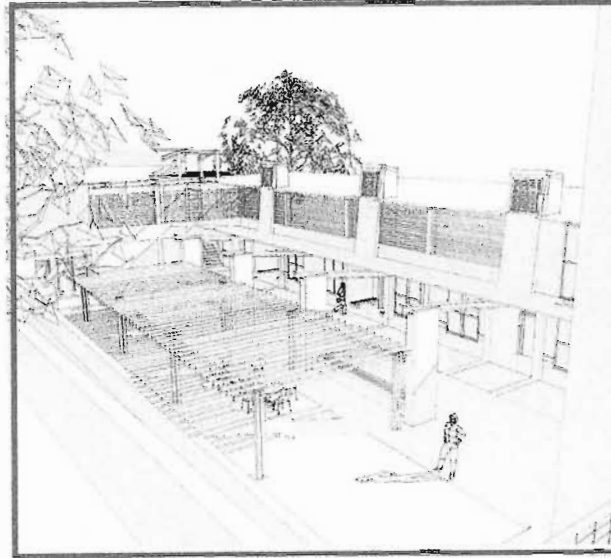
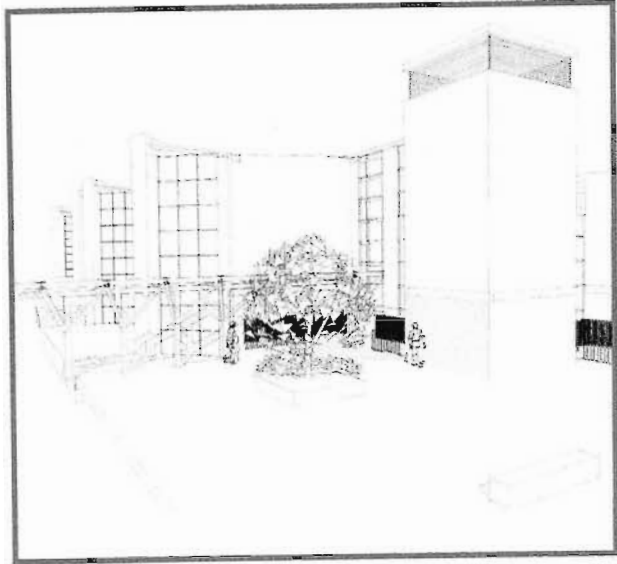
section c-c



COURTYARD SOLAR STUDIES







# TACTILE BOARDS

