

## Little Eden

Society for the Care of Persons with Mental Handicap

# A New Home in Prinshof, Pretoria

by

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## Abstract

This discourse deals with the establishment of a third facility for the Little Eden Society for the Care of Persons with Mental Handicap in Prinshof, Pretoria. The Little Eden Society cares for persons with profound intellectual disability who require intense care and stimulation. A description of intellectual disability and mental illness, as well as the history of the treatment and social attitudes towards people afflicted by them, has been undertaken. This is reviewed together with the evolution of the architecture of various facilities for the care and treatment of intellectually disabled and mentally ill people. A number of precedent studies were undertaken of contemporary architecture, relevant to various aspects of the new facility. Finally, the client's existing facilities and needs were examined and understood in the context of the new facility. With these studies as grounding, the design of the new facility could be undertaken. The resulting design seeks to embody the Little Eden Society's ethos of complete care, addressing the needs of the mind, body and soul; seeking to stimulate and develop each person to their own individual potential.





## Preface

The reason I have chosen this client and topic for my dissertation is due to my personal connections to this organisation. My grandmother, Domitilla Rota Hyams, together with the support of my grandfather Danny Hyams, founded the home for the intellectually disabled forty years ago. Her apparition of the Madonna, placing these children in her care, reassured and confirmed for her that Little Eden would be carrying out God's work. Hopefully this dissertation provides some form of aid to the Little Eden Society, even if only creating awareness of the work done by this remarkable organisation.

I would like to take this opportunity to extend my thanks to:

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“...notwithstanding their inability to communicate as we do, my experience tells me that the souls of these children possess the same desire of the infinite as we do. Even with a reduced mind and understanding the soul is complete.”

(Hyams 2007a: book cover).



Figure 1 - Images of residents and staff of Little Eden (photographs courtesy of Little Eden Society)

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## 1 Introduction

“These children, with a far-away look, have souls more beautiful than the sun. They are angels. They are like lightening conductors on whom we should gaze with veneration. God could have created them normal, but they are as they are. There must be a reason for it which we cannot fathom. So we accept their creation as God’s design and accept them as a sign of His predilection” (Hyams 2007a: book cover).



## 1.1 Overview

According to Statistics South Africa (2001: 38-40), over two hundred thousand South Africans are afflicted by some form of intellectual disability. About twenty percent of these people suffer from the most acute form of this disability and are classified as being profoundly intellectually disabled. Profoundly intellectually disabled people have an IQ of below twenty, where an average person would score around one hundred.

An intensive and specialised type of care is required for such persons, and is provided by a limited number of state facilities and NGO's throughout the country. Attitudes and the practices pertaining to the care of these persons have also begun to change, from a traditional institutional approach, where they were accommodated and treated in self-contained institutional facilities removed from society, to today's thinking where greater integration of these people into society is advocated.

This dissertation deals with the study and design of a home, which will serve the needs of persons with profound intellectual disabilities in the greater Tshwane area. The client and organisation upon which the study will be based will be the Little Eden Society for the Care of Persons with Mental Handicap (hereafter referred to as Little Eden Society).

Little Eden (hereafter referred to as Little Eden – Edenvale) is a home for intellectually disabled persons established in 1967. Based in Edenvale and with a satellite home in Bapsfontein it currently serves the Gauteng area, with preference given to those closest to them in Ekurhuleni. The purpose of the home is to care for persons with profound intellectual disability. The Little Eden Society is a non-profit organisation, reliant on donations from the public and private sectors to supplement government grants and subsidies.

## 1.2 Formal problem statement

To design a facility to care for the profoundly intellectually disabled in order to care for and develop each person's mind, body and spirit to their full potential in an accessible and sustainable environment.

## 1.3 Research methodology followed

Research for this dissertation involved interviewing and discussing the needs and requirements for a new facility for the Little Eden Society, as well as using their existing homes as precedents for the planning and operational functioning of a new facility. Historical precedents and literature on the subject were also reviewed with the specific aim of establishing the needs and requirements of designing such a facility.



*Figure 2 – A view from the south of the proposed new Little Eden facility at Prinshof in Pretoria*

## 1.4 Assumptions

It is assumed that:

- The need for facilities to care for people with profound intellectual disability will continue to exist into the foreseeable future.
- The new facility will not cater for persons whose intellectual disability is combined with challenged and aggressive behaviour. This need will be met by the Little Eden – Elvira Rota Village facility based in Bapsfontein (hereafter referred to as Little Eden – Bapsfontein).
- The management and care system provided by the Little Eden Society is effective and efficient.
- The site will be made available for this purpose and that access to it will be approved.
- The funding mechanisms of the Little Eden Society are sufficient in acquiring the necessary finances for the construction of the new facility.
- The Little Eden – Prinshof home and the Prinshof School for the Visually Impaired (hereafter referred to as the Prinshof School) will share the open field.

## 1.5 Limitations

The Little Eden – Prinshof home will care for people with profound intellectual disability, which is often accompanied by physical disability and in some cases mental illness. As stated in the assumptions, this excludes those with extremely challenged and aggressive behaviour, as they are cared for elsewhere by the Little Eden Society.

The profoundly intellectually disabled are classified as persons with an IQ below 20. These people, unlike those with mild or severe intellectual disability, are considered uneducable. (See section 2.1.1 for an explanation of these terms).

Little Eden – Prinshof will provide for the 24-hour hostel care for 144 residents. In addition to their basic needs for sleep and food, the new facility will be required to provide mental and spiritual stimulation and development for the residents.



**Figure 3 - One of the Little Eden - Bapsfontein residents making music (photograph by the author 2007)**

## 1.6 Drivers for the establishment of the new facility

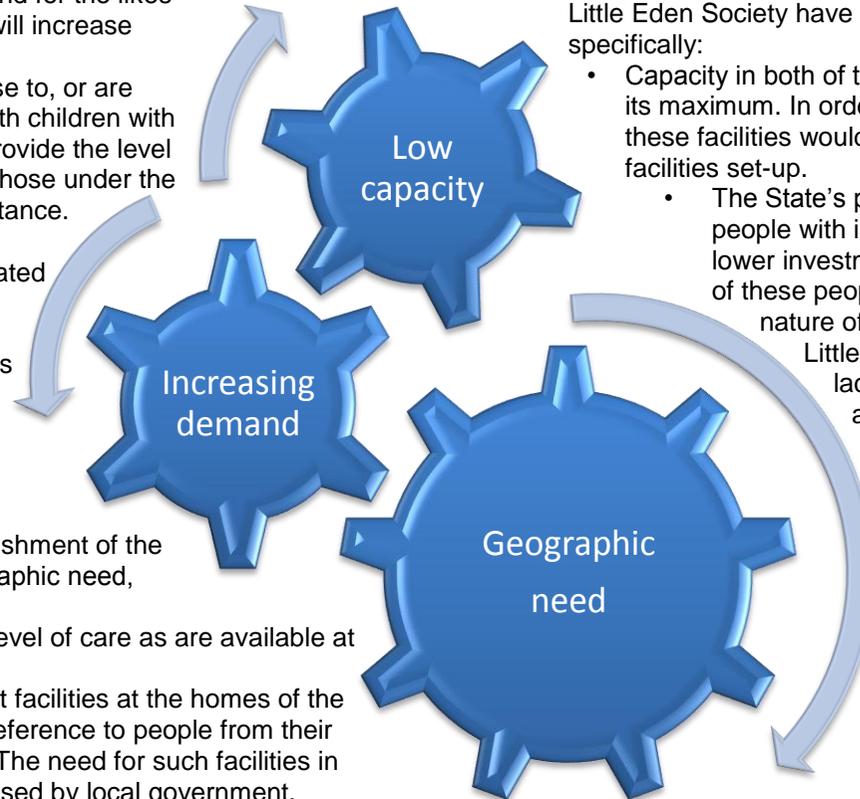
In continuing to meet the needs of those persons with profound intellectual disability, the Little Eden Society has identified a need to establish a new facility driven by three factors: increasing demand, low capacity and geographic need. These are explained below.

**Increasing demand:** It is anticipated that demand for the likes of services provided by the Little Eden Society will increase appreciably in the near future due to:

- An increasing number of families who choose to, or are required to, earn a dual income. Families with children with intellectual disability are no longer able to provide the level of care required and will turn to homes like those under the auspices of the Little Eden Society for assistance.
- Increasing urbanisation which leads to the breakdown of communities and their associated support structures, found amongst rural communities. Newly urbanised families previously reliant on these support structures would turn to homes like those under the auspices of the Little Eden Society for help.

**Geographic need:** A core driver for the establishment of the Little Eden Society's home would be the geographic need, taking into consideration the following factors:

- Few facilities, which provide the type and level of care as are available at Little Eden, exist within South Africa. The current facilities at the homes of the Little Eden Society serve Gauteng, with preference to people from their immediate surrounds, namely Ekurhuleni. The need for such facilities in other urban areas has been widely recognised by local government, communities and religious organisations.
- According to the Little Eden Society, they generally receive two or three telephone calls a day requesting placement in either of their two homes, including many calls from Tshwane. When vacancies are available, the Little Eden Society is required to place those from its catchment zone, but preference given to calls from its immediate surrounds, which excludes the greater Tshwane area.



**Low capacity:** Capacity issues in facilities in the homes of the Little Eden Society have been experienced, and more specifically:

- Capacity in both of the Little Eden Society's homes is at its maximum. In order to accommodate further residents these facilities would need to be expanded or additional facilities set-up.
- The State's policy of "community integration" for people with intellectual disabilities has led to lower investment in facilities to cater for the needs of these people. However due to the extreme nature of the disabilities of the people the Little Eden Society serves, and the lack of resources, including financial, available to communities, integration is often not possible. A need therefore still exists for institutional facilities. This has, in general, impacted capacity.

**Figure 4 – The three key drivers for the establishment of a new home: low capacity, increasing demand, geographic need**

## 1.7 Solution principles

In establishing a new facility, a set of governing principles has been defined by the client. These principles can be grouped into 3 categories: location, facilities and operations.

The new facility must provide for all the needs of the residents. While it goes without saying that this would include the physiological and safety needs such as accommodation, ablutions and kitchens, Little Eden Society's philosophy requires that those described by Maslow (Oxford Dictionary of Sports Science 1998) as higher needs for love and belonging, esteem and self actualisation are also addressed in a holistic manner. The new home should therefore have facilities which cater for:

- *Mind*: Being intellectually disabled, residents require specialised activities and thus facilities which develop their cognitive capabilities.
- *Body*: Persons with intellectual disabilities almost always have some form of physical disability which needs to be treated and developed.
- *Soul*: Involvement and participation in religious activities is essential to addressing the residents' love, belonging and self-actualisation needs.

The location of the new facility is of key importance to the establishment of a successful home. The following should be considered in choosing a location:

- *Located in Tshwane*: the Pretoria CBD and immediate surrounds have been identified as the location in which the new facility should be based. The reason for this is the following:
  - Tshwane has seen a marked increase in population as a result of urbanisation. As a direct result, the number of profoundly intellectually disabled persons within the city has also markedly increased. At present a limited number of facilities within Pretoria exist that provide the level and type of care offered by the Little Eden Society homes. The establishment of a new facility in Pretoria would alleviate a growing shortage in care services for profoundly intellectually handicapped persons.
- *Proximity to medical facilities*: the facility should be based within close proximity to state medical facilities. This is important, as most residents require specialised and frequent medical care.
- *Local support*: the success of the current facilities is in part due to the support of local religious, corporate and commercial organisations. The proximity of the new facility to these types of organisations within Pretoria is essential to ensure local support of the home.

The design of the new facility should facilitate the day-to-day operation of the home in terms of:

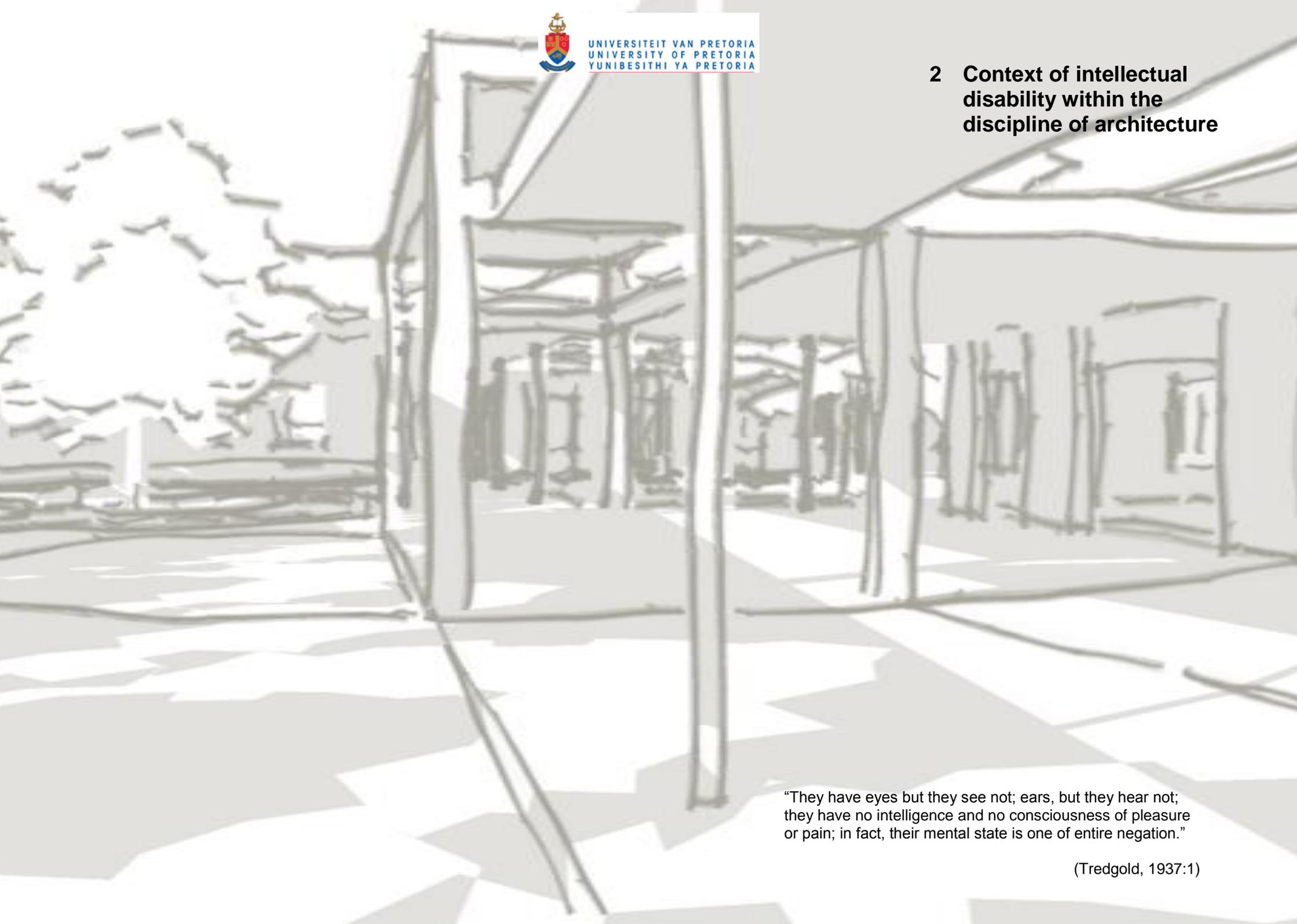
- *Economy*: The facility should be economically viable not only in its implementation but also in terms of its ongoing maintenance.
- *Quality*: Quality should never be sacrificed in favour of cost; the facility should be designed and built with a maximum lifespan in view before an overhaul is required.
  - *Environment*: The construction and operation of the facility should have a minimal impact on the surrounding environment.
  - *Best practice*: the facility layout and design should facilitate the day-to-day operations of the home and be based upon industry best practices, as well as those in use and identified at Little Eden Society's current facilities.



**Figure 5 – The 3 core solution principles upon which the new home should be based, namely: facilities, location and operations.**



## 2 Context of intellectual disability within the discipline of architecture



“They have eyes but they see not; ears, but they hear not; they have no intelligence and no consciousness of pleasure or pain; in fact, their mental state is one of entire negation.”

(Tredgold, 1937:1)

## 2.1 Intellectual disability

As persons with intellectual disability are central to this dissertation a basic understanding thereof by the reader is essential.

### 2.1.1 Terminology and definition of intellectual disability

The terminology used when referring to persons with “intellectual disability” has evolved and changed as our attitudes, thinking and understanding of the condition have progressed. But this change has also in part been driven by efforts to remove negative sentiment attached by society to the terms of the day. While terms such as “dim-witted”, “idiot” and “retard” were considered completely acceptable at some point in history, society has unfortunately latched on to these terms and used them in a negative context, to the point where the common interpretation was deemed as derogatory and thus not acceptable for day-to-day use.

In today’s popular vernacular the terms “mentally handicapped” or “mentally disabled” are more commonly employed when referring to persons with intellectual disability. In South Africa the term “intellectual disability” is currently more academic but is slowly gaining broader acceptance and use, especially within the medical field.

While most people have a basic idea what intellectual disability may mean, a formal definition is important in clearly characterising the mental condition attributable to such handicapped persons. Two definitions of intellectual disability have been chosen and are listed. The first of these is a broad definition from Wikipedia (2007b):

Intellectual disability “is a term used to describe life-long disabilities attributable to mental and/or physical or combination of mental and physical impairments, manifested prior to age twenty-two. The term is used to refer to disabilities affecting daily functioning in three or more of the following areas:

- capacity for independent living
- economic self-sufficiency
- learning
- mobility
- receptive and expressive language
- self-care
- self-direction



**Figure 6 - Impacted capabilities of intellectually disabled persons**

It reflects the person's need for a combination and sequence of special, interdisciplinary or generic care, treatment, or other services that are lifelong or of extended duration and are individually planned and coordinated. [Intellectual] disability is a modern replacement for the term mental retardation. [Intellectual] disabilities are usually classified as severe, profound, moderate or mild, as assessed by the individual's need for supports.” In America the preferred academic term is ‘developmental disability’, hence “intellectual’ has replaced the term ‘developmental’ in the above definition.

This 5 level scale, based on the Wechsler Adult Intelligence Scale (WAIS), upon which intellectually disabled persons are classified is tiered according to the person’s IQ. These tiers are defined in Table 1

**Table 1 – Intellectual disability rating (Encyclopaedia Britannica 2007a)**

Class	IQ
Profound intellectual disability	Below 20
Severe intellectual disability	20–34
Moderate intellectual disability	35–49
Mild intellectual disability	50–69
Borderline intellectual disability	70–79

The South African Mental Health Care Act (Act 17 of 2002:12) suggests that "...severe and profound intellectual disability means a range of intellectual functioning extending from partial self-maintenance under close supervision, together with limited self-protection skills in a controlled environment through limited self care and requiring constant aid and supervision, to severely restricted sensory and motor functioning and requiring nursing care.” According to Cleland (1979:3) the term profoundly intellectual disabled encompasses those who have an IQ of below 20. They rarely have any intelligible speech even at adulthood. The profoundly intellectually disabled people will more frequently than other people manifest sensory, skeletal and other physical abnormalities and sensory defects, skeletal abnormalities and other disabilities may co-exist. Total life support is therefore essential to

their survival with up to 40% of the profoundly intellectually disabled being bedfast or semi-ambulatory.

Historically there was little if any distinction made between intellectual disability and mental illness. Although the history is a combined history, this study is aimed at producing a design for a facility to care for the profoundly intellectually disabled, who sometimes suffer from mental illness as a result of their disability, but not for the mentally ill who have no intellectual disability. Because the history of the treatment and care of persons with intellectual disability and persons with mental illness is combined, the following definition for mental illness is also included:

Mental illness is a “psychological pattern that occurs in an individual and is usually associated with distress or disability that is not expected as part of normal development or culture... Categories of diagnoses in these schemes may include mood disorders, anxiety disorders, psychotic disorders, eating disorders, developmental disorders, personality disorders, and many other categories” (Wikipedia 2007e).

### 2.1.2 History of the treatment of mental illness & intellectual disability

Disability and illness of the mind and body have always existed, and according to Walsh (1910) there are records of such cases in ancient Egyptian, Greek and Roman times. Little information about the care for the intellectually disabled or mentally ill is available apart from the mention made of medieval monastic communities taking care of the sick and disabled. Walsh (1910) asserts that even though most literature declares that the first establishments devoted to the care of the insane started around the thirteenth century, there were earlier establishments. He states that there are records of a morotrophium, or home for lunatics, in Constantinople in the fourth century.

Intellectually disabled people, along with mentally ill people, were sent to asylums. At first there was no distinction made between mentally ill and intellectually disabled. They were both put in

asylums, which were often located outside the community and hidden from society. These people were often forgotten about by society at large, a society that as Cox and Groves (1990: 122) say, was often inconvenienced by their activities. Families who had intellectually disabled members would keep this secret, it was something to be ashamed about.

Davies (1988) points out that the hospital, the asylum and the prison are building types with parallel histories and a shared common ideology. As will be shown in a later example, the Narrenturm Asylum, they also shared architectural expression.



**Figure 7 –Bedlam by Hogarth, William. 1735. (Museum of London 1998)**

According to information posted by the Museum of London, the Bethlem Royal Hospital, one of the first known asylums, was founded in London in 1247 as the priory of St Mary of Bethlehem. By the fourteenth century the 'insane' were also treated here. In

1375 it was taken from the priory and became a royal hospital. Bethlem was shortened to Bedlam in common speech and according to Walsh (1907) the housing of 'lunatics' here led to the use of 'Bedlam' to mean a house of confusion. Every century there were several commissions of enquiry into the management of the asylum due to the abuses which occurred there. Walsh further states that the idle classes would go to Bedlam for their amusement, pay a penny and watch the antics of the insane.

Walsh (1910) notes that beginning in the latter part of the 18th and continuing into the 19th century, through the efforts of pioneers like Philippe Pinel and William Ellis, a doctor and an apothecary respectively, the introduction of more humane approaches and methods of treating the mentally disabled and mentally ill were introduced. These methods included amongst others:

- categorisation and segregation of patients according to type of disability and treatment
- reduction in the use of mechanical restraints and coercion on patients
- introduction of psychiatric methods of treatment
- therapeutic employment.

The first half of the 20th century could be considered as a partial reversal in the progress that had been made in the previous century towards more humane care and treatment of persons with intellectual disabilities. Due to the increased populations and overcrowding of institutions, there was a growing need to discharge patients as soon as possible which led to the development of some controversial and often inhumane treatments. Some of the best known and controversial include:

- frontal lobotomies
- eugenic compulsory sterilization
- shock therapy.

The latter half of the century however saw the exposure of these abuses in some part due to World War 2 conscientious objectors, assigned to psychiatric hospitals as part of their civil public service, and they were instrumental in the reforms of the 1940s and 1950s. The development of the first drug therapies around this time also changed the treatment and care regimes, provided

a more humane approach and encouraged the discharge of many patients into the community. The 1960s and 1970s saw a growing awareness by the broader public of mental institutions, their practices and the state of the institutions through the popular media. Some works like “One flew over the cuckoo’s nest” and “Zen and the art of motorcycle maintenance” painted a very unflattering picture of mental institutions. This resulted in the deinstitutionalisation movement in which we find ourselves today.



**Figure 8 – McMurphy (played by Jack Nicholson) receives electro-shock therapy in the movie “One flew over the cuckoo’s nest” (Wikipedia 2007f)**

people they treated their basic human rights through their segregation and confinement from society and day-to-day life. It called for the practice of normalisation of these people which essentially involved their integration into broader society in order to play meaningful and fulfilling roles, supported through community-based mental health services. The principles of the practice of normalisation were first defined and articulated in the 1960s and developed further in the 1970s. The practice of deinstitutionalisation of mental health services has been widely adopted across the globe (including South Africa) since then. Implementation thereof, especially by the early adopters, was not without its problems, particularly in situations where governments rapidly scaled back on building, staffing, operating and funding of large scale mental health services and infrastructure. These rapid changes led to the sudden closure of many mental hospitals and institutions, placing a largely unanticipated reliance on local community care. This unfortunately led to many former patients, instead of reintegrating successfully into society or receiving community treatment, simply ending up as homeless persons.

A key lesson learnt from these types of setbacks was that deinstitutionalisation and normalisation could not be applied as a blanket rule to all intellectually disabled persons. Each individual needed to be assessed to ascertain the degree and model of normalisation to be applied. It was however widely recognised that patients who were classified as having a profound intellectual disability still continued to require the long term care of an institutional nature, like that provided by the Little Eden Society. The application of this policy within South Africa is evident through policies which dictate that institutions like the Little Eden Society are only allowed to accept new residents who are classified as being profoundly intellectually disabled. If they choose to ignore this ruling, they risk losing their government subsidies.

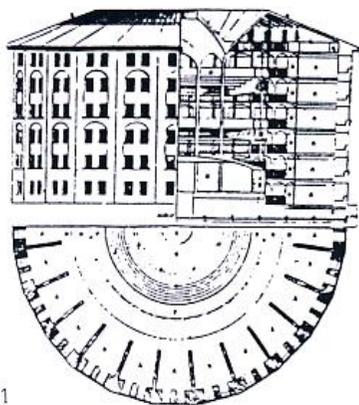
### 2.1.3 Current trends and thinking

The deinstitutionalisation movement advocated a move away from the traditional policies and practices of the institutionalisation of people with intellectual disabilities. It was argued that mental hospitals and other similar institutions dehumanised and denied the

## 2.1.4 The architectural evolution

Only around the time of the “reformation” in the treatment and care of persons with intellectual illnesses and disabilities, which happened towards the end of the 18<sup>th</sup> and into the 19<sup>th</sup> century, did the architecture of these facilities become a discipline in its own right. Prior to this, institutions were largely housed in non-purpose built structures like monasteries, jails and unused public buildings with a handful of dedicated structures in large urban centres.

With this change in thinking, the idea that the physical environment and surrounds of the patients were in many cases the motivation for as well as an essential ingredient in their treatment, gained popularity and recognition. The theory was that the building and its surrounding natural environment became important instruments of therapy. Architecture therefore became an important preoccupation in the field, and this is evident from the number of articles of an architectural nature in the professional medical journals of the day.



**Figure 9 - Bentham's panopticon (Davies 1988:16)**

The latter half of the 18<sup>th</sup> century saw a wider recognition for the need for purpose-built structures to house the mentally ill and intellectually disabled. These first buildings however reflected the fact that the more enlightened thinking advocated by the likes of Philippe Pinel and William Turk had not been implemented nor become widely known and accepted. These buildings closely resembled jails or fortresses personifying the widely held view that their patients were the un-reformable rejects of society who were in most cases dangerous and needed to be locked up. A classic example of such a structure is Vienna's Narrenturm built in 1784 and seen in Figure 10



**Figure 10 - The Narrenturm Asylum in Vienna, Austria (Wikipedia 2007h)**

The Narrenturm or “fools tower” was similar to the panoptic prison designs proposed by Jeremy Bentham in the late 18<sup>th</sup> century. The Narrenturm comprised a fortress-like circular building with slot-like windows for up to 250 mental patients. The interior design reflected that of the exterior with lattice reinforced doors and rings embedded throughout for chains to restrain patients. However soon after its completion the structure was out of date with the emergence of new theories for the treatment of the mentally ill and intellectually disabled.

The shift in the architectural theory and practice in the early 19<sup>th</sup> century led to the construction of facilities that could be best described as stately, designed to communicate a message of “optimism and civic pride”. The mental asylum had come into its own as a recognisable building type and become an integral public institution. The architecture combined large, imposing and monolithic buildings, more often Victorian but ranging in styles from Greek temples through to Gothic and Medieval castles, with extensive manicured garden surrounds. The location, also an

essential aspect in the theory, was typically outside of, or on the very outskirts of urban centres, removing the patient from society and their families. This removal from society and their families has since been seen as a common cause of many of the disorders as well as an undesirable interference in their treatment.

A prime example of such an institution based upon this thinking, can be found in the Hanwell Mental Asylum established in 1831 and

located in Middlesex in England. (Rossbret Institutions 2007) The architect was William Alderson. His neo-classical design consisted of a central block with an octagonal tower, and projecting wings at either end. The east side of the central tower was intended for the male patients and the west for the females. Spacious grounds, laid out with lawns and avenues of trees, surrounded the buildings.

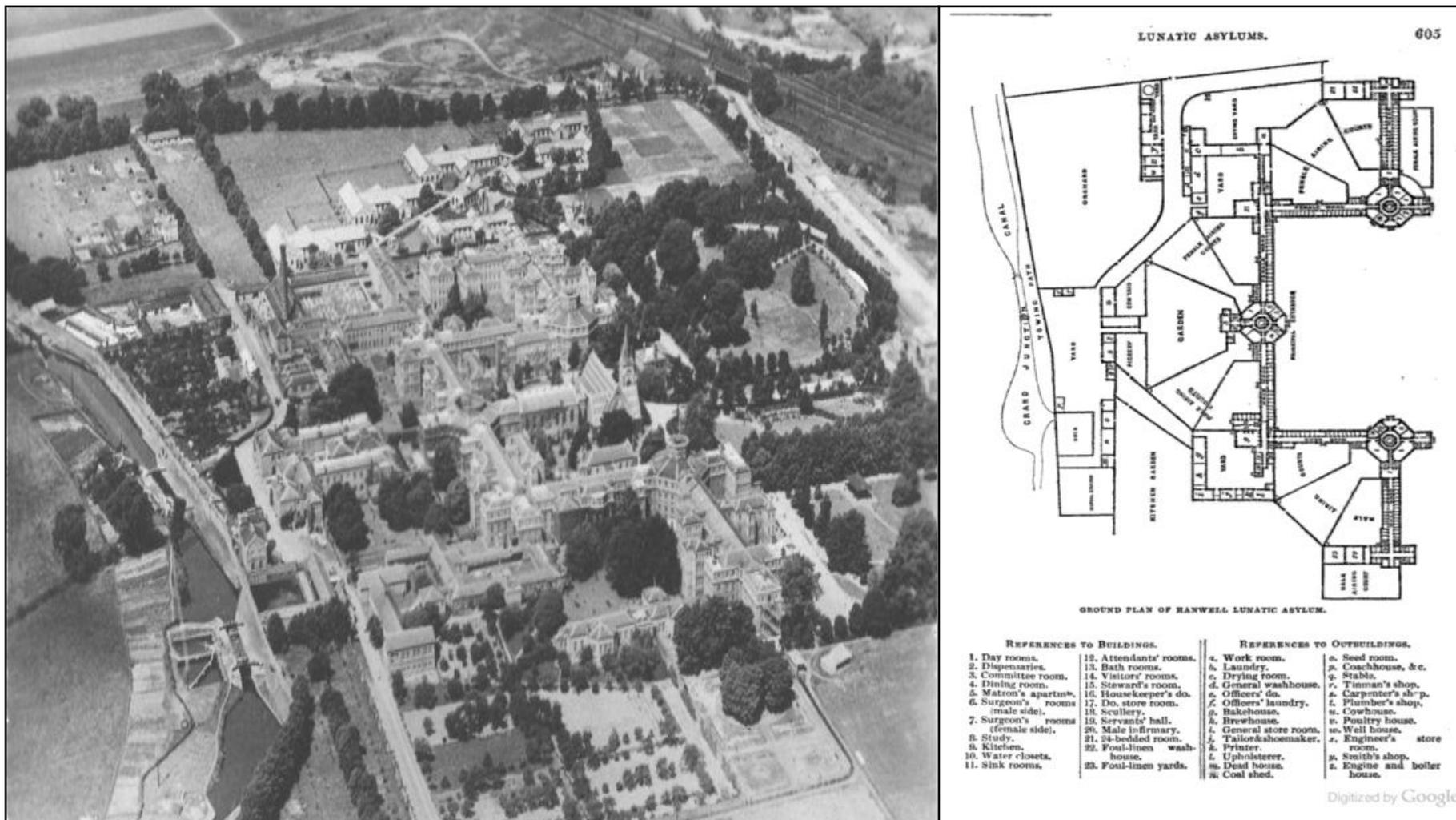


Figure 11 - The Hanwell Mental Asylum established in 1831 and located in Middlesex England (Wikipedia 2007c)

In an article written in 1834 Harriet Martineau (1834) he describes conditions that seem to be very different to those at the Hanwell Asylum:

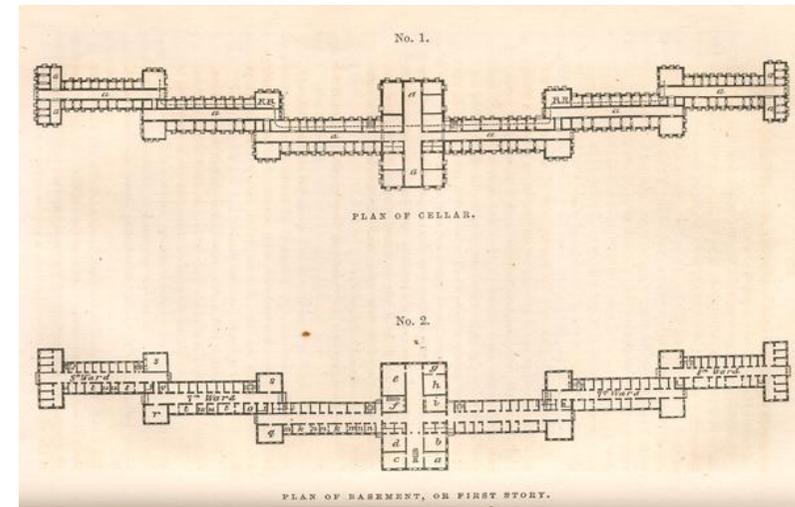
“It is commonly agreed that the most deplorable spectacle which society presents, is that of a receptacle for the insane. In ... asylums we see chains and strait-waistcoats, - three or four half-naked creatures thrust into a chamber filled with straw, to exasperate each other with their clamour and attempts at violence; or else gibbering in idleness, or moping in solitude.”

Martineau describes that the ‘Hanwell Lunatic Asylum’ was totally different to his understanding of mental asylums as illustrated in the above quote. Patients that came from these ‘receptacles for the insane’ and had been chained in confinement, were happy and content and allowed to roam around the grounds at Hanwell.

To illustrate the thinking of the time, it is considered appropriate to quote Martineau (1834) who said that “insanity is still considered as more disgraceful than crime, and that it is therefore made the immediate interest of the family of the insane to bury him in oblivion.” He described how their behaviour had changed and how including them in the day-to-day functions of the asylum kept them occupied and content. From his descriptions it is obvious that activities and participation in the operating of the asylum and the group activities, as well as their access to the outdoors gave the patients a sense of belonging and ownership.

A key proponent and contributor in the United States was Thomas Kirkbride who, according to Ozarin (2000), devised a set of widely applicable planning principles detailed in his published work “*On the Construction, Organization, and General Arrangements of Hospitals for the Insane*” in 1854 for the design of facilities for the intellectually disabled, also known as the Kirkbride Plan. Ozarin (2000) explains that these principles based upon the thinking of the day called for:

- a central structure in which the administration and functions such as the kitchen and laundry were housed
- patient wings extending from the left and right of the central administrative structure
- classification and segregation by gender and type of disorder (males and females in opposite wings)



**Figure 12 – The Kirkbride plan (Ozarin 2006)**

- parallel wings set back from the front structure and joined by short cross sections to the main structure
- each wing and ward to be adequately distanced from the others to allow enough light and fresh air to circulate
- comfortable furnishings as well as facilities for occupational and recreational therapies.

His writing also defined in great detail the position of, for example, drainage, heating, ventilation, and windows.

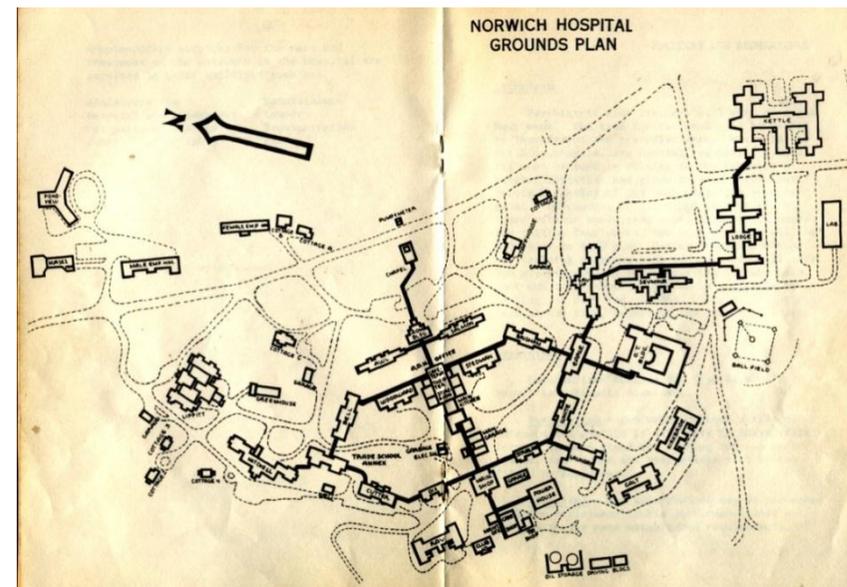
The philosophy and principles behind the design continued to be adhered to into the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. However the forms and styles of the buildings evolved and reflected to a greater extent the architecture of the time, being more austere and less ornate than the asylums of the mid 19<sup>th</sup> century. The structure’s shape became taller as opposed to the long slender original design of the mid 19<sup>th</sup> century. This is evident in King Park Psychiatric Hospital in New York, which was established in 1885 and is shown in Figure 13



**Figure 13 – The King Park Psychiatric Hospital in New York (Wikipedia 2007d)**

By the mid-20<sup>th</sup> century it became clear that the monolithic asylums, which had been constructed in such numbers and with great fervour over the previous two centuries, had fallen well short of expectations. Most had failed to surpass their predecessors, suffering from overcrowding, neglect and in some cases patient abuse and squalid living conditions. The decline of their use could also be attributed to the changed thinking, practices and technology in the architecture and care, which in part was brought about by the failure of the asylum model. The theory that the environment could be an important factor in the cause, care and cure of the mentally ill and intellectually disabled, was largely disregarded and considered mostly irrelevant by many in the field of mental health care. Large, self-contained and isolated facilities were also no longer approved of by the broader public. The deinstitutionalisation and community integration movement all but saw the end and total shutdown of these facilities, where most were abandoned and many destroyed with only a few surviving operational facilities in the 21<sup>st</sup> century.

While in their day the large self-contained monolithic asylum buildings dominated asylum architecture, other thinking and design began to emerge in the late 19<sup>th</sup> century. Two similar concepts were developed particularly in Europe, the “cottage or villa plan” and the “pavilion plan”. Both called for the fragmentation of the asylum into functional buildings distributed across the site in a pragmatic layout – this was in stark contrast to Kirkbride’s monolithic design. What differentiated them was the manner in which the various buildings were connected. The cottage design had no formal direct connection in contrast to the pavilion design in which the buildings were connected by a series of covered walkways. A hybrid of this layout was developed in the United States of America and comprised a complex of individual cottages surrounding a traditional linear plan asylum. The layout of the Norwich State Hospital in Connecticut in the United States, which follows a pavilion layout can be seen in Figure 14



**Figure 14 - Norwich State Hospital, Connecticut. Pavilion site layout**

The rejection of the asylum model may have been seen by some as the end of the specialised facility. As discussed in 2.1.3 it soon became evident, that after a few disastrous ventures into the practice of purist deinstitutionalisation and integration into communities, some form of facility would still be required to care for the mentally ill and intellectually disabled. To address this need, the concept of smaller functional buildings grouped in a village layout was advocated. It was also at this time that a differentiation was made between facilities for the mentally ill and for the intellectually disabled.

Colin Davies (1988:15) explains how even though there is objection to the architecture of the hospital or asylum simply because it is institutional, “we are kicking against the coercive aspect of caring.” While physical problems are treated with the patient’s consent, in the case of mental problems consent from the patient is not obtained. In this case caring and coercion are interlinked. He says that even though they might submit to the ‘coercion’ of caring in order to get well, or in the case of the intellectually disabled person, without making the choice, they want to make it more pleasant by domesticating the architecture. However the methods for caring are not domestic. Modern medicine and interventionist caring methods require technology and specialised equipment and facilities. Health buildings and facilities, and more specifically to this study, the design of the new facility for the Little Eden Society in Pretoria, needs to combine the human or ‘domestic’ quality that is found to be so comfortable with the practical and technological requirements associated with ‘institutional’.

Another issue associated with disability is access to buildings, to amenities to rooms. Disability is viewed as an abnormality and often seen as a disease, with disabled people requiring special provision. As Davies (1988:16) points out, disabled people are excluded from the term ‘general public.’ He explains how access add-ons are often seen as discriminatory with the stairs as the important access for the general public, while an added-on ramp or lift, often not present in the original design, could be seen as a special provision for abnormal people. While some may see this as hypersensitivity, he argues that at least in public buildings, access for able-bodied and disabled people should be included and given equal importance. As will be seen later in this study, access is an important driving force behind the design of the Prinshof home, and the circulation route becomes the main connecting element of the facility with the different buildings and elements feeding off it.

#### 2.1.4.1 Therapeutic gardens and the adventure playground

According to Marcus and Barnes (1999) gardens can have a healing and restorative effect on people for a number of reasons. This includes the aesthetics of nature, which creates a beautiful place that will entice residents to go outdoors. Stress relieving benefits of healing gardens can be achieved through experiencing sunlight, viewing trees and flowers and listening to the sounds of water and birds. They explain that the healing power of gardens is enhanced by how it is detailed to support activities other than just being in a plant filled space. This can include elements that encourage socialising, space to spend time alone or in groups, to move at a leisurely pace or more vigorous exercise and providing the choice to be in the sun or the shade. They state that a garden can be healing for the people who are actively involved in creating and maintaining it. Furthermore, they describe how paradise is symbolised by a garden in the Judaic, Christian and Islamic religions, “[w]hether one accepts religious dogma or views it anthropologically, religion, nature and spirituality are fundamentally bound.” (Carey 1999:9). Taiocchi (2007) describes Little Eden as the ‘earthly paradise’ belonging to the intellectually disabled residents.

Wolff (1979:89) says that play is the most essential means of communication for the young and, by deduction, the intellectually disabled who are mentally ‘young’. She says that play can help the person to realise that he or she has the ability to cause a change in the environment and thereby communicate something about him or herself. She states that play allows each person to “achieve personally significant meaning from their environment through direct physical and social interaction.” Adventure playgrounds provide for physical play activities involving coordinated motor skills and large muscle development, promoting active participation through the use of novel, varied and complex stimuli. Wolff suggests possible playground equipment, besides the readily available jungle gyms, swings, slides and seesaws, should also include, amongst others, climbing apparatus with platforms and shelters, jumping decks with thick foam rubber pads below, a pond (with removable safety net), bridges, sandpit, climbing nets, earth mounds, tires and climbing ropes.

## 2.2 Precedent studies

### 2.2.1 Chapel of Light

*Location:* Campus of the University of Technology, Vanderbijl Park, South Africa

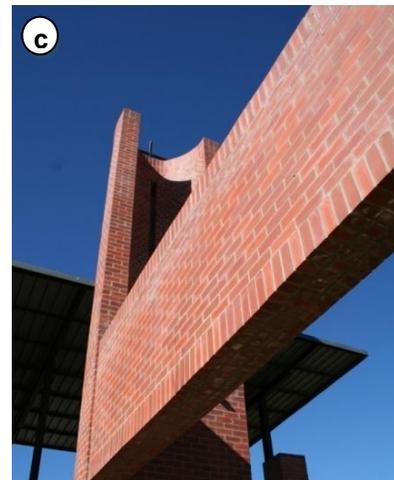
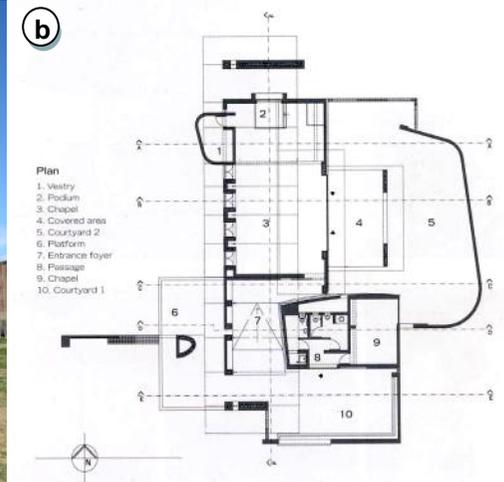
*Architects:* Comrie-Wilkinson Architects

*Year completed:* 1999

*Description:* The Chapel of Light was built as a multi-denominational facility to serve the religious needs of the university, and to accommodate up to 100 people. It is notable for its low construction cost.

*Architecture & design:* The chapel is set in a stark landscape of open fields, parking lots and uninspiring dormitories blocks. According to Deckler, Graupner and Rasmus (2006) the chapel therefore needed to create its own context. The first element of the building, which attracts attention is the tower and attached free-standing wall which create a focal point at the entrance of the chapel. The building is constructed mainly from red face brick with various concrete elements. The steel roof appears to float over the building and extends past it. This ties the various spaces and elements of the building together, as well as covering an outdoor gathering space at the entrance.

The red brick exterior is contrasted by the cool illuminated white interior. Deckler et al. (2006) state that this transition can be seen as a metaphor contrasting the hard reality of the world outside with the peace and sanctity of the chapel. The interior is softly lit during the day by indirect and reflected natural sunlight.

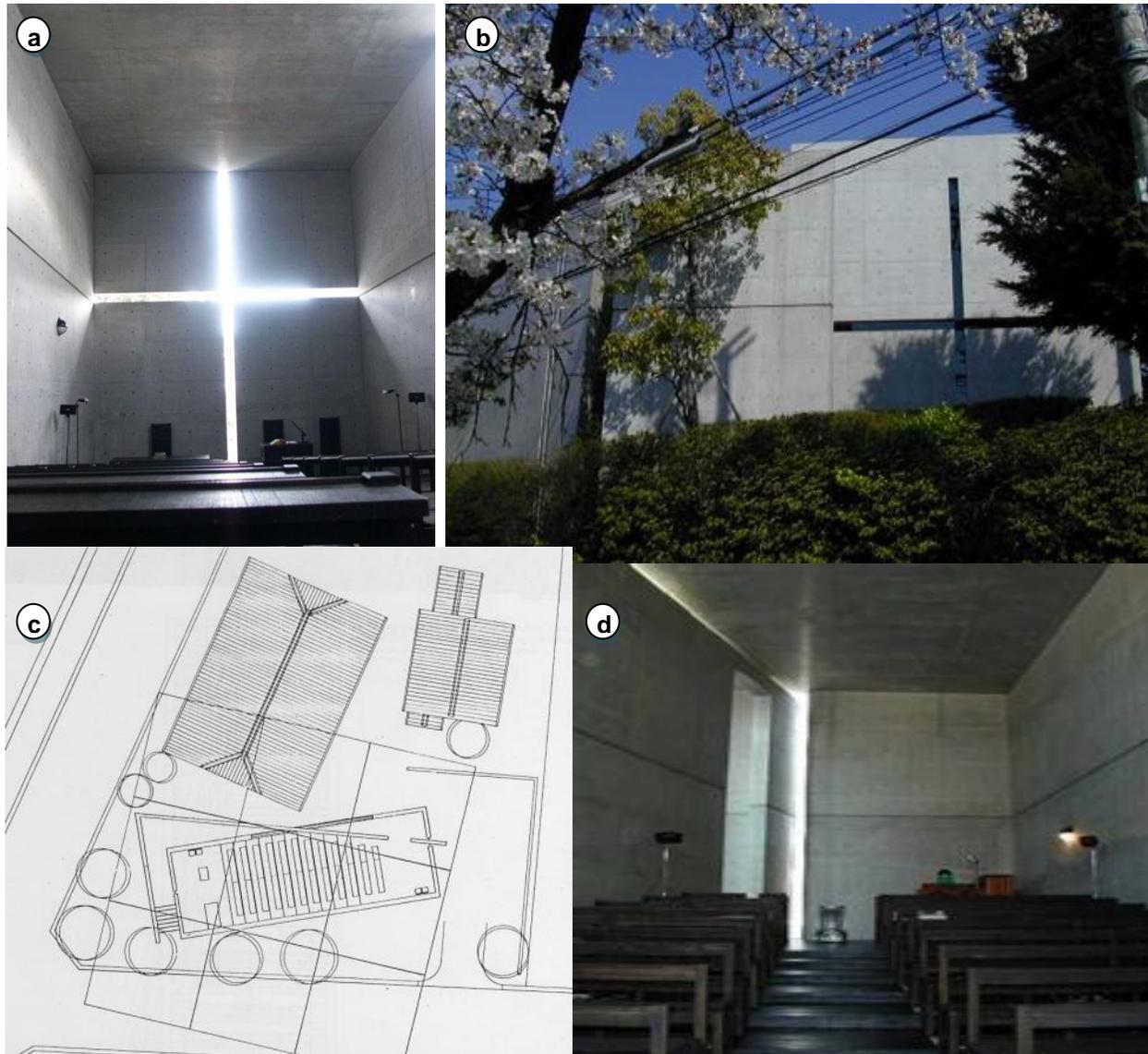


**Figure 15 – Various views of the Chapel of Light – (a) external view from the north west of the building (b) a plan of the chapel (c) a low angle view of the free standing wall and tower (d) external view of the chapel office (photographs by author, plan from Deckler et al. 2006: 55)**

*Key takeaways:* The following aspects of the architecture and design have been noted as being pertinent to this dissertation:

- The manner in which the face brick and concrete, as practical and often plainly employed elements, have been used to create an aesthetically pleasing building.
- The use of indirect lighting in the chapel to create a sense of cool, peace and sanctity.
- The use of the tower to focus the visitor to the starting point of their journey.
- The roof as a feature of the building, as well as a complementary element to the brick and concrete.

## 2.2.2 Church of Light



**Figure 16 – Church of Light, collage: (a) a view of the cruciform cut into altar wall (b) an external view of the cross form in the east wall (c) a high level layout of the site (d) the Sunday school extension of the church (Wikipedia 2007a and galinsky.com 2007)**

*Location:* Ibaraki, Osaka Prefecture, Japan

*Architect:* Tadao Ando

*Year completed:* Church 1989, Sunday school extension 1999

*Description:* The Church of Light is located on a small site in a residential suburb in the city of Ibaraki on the corner of an intersection. The site originally accommodated a small wooden chapel and the minister's house. The church itself is fairly small by standards, only 113m<sup>2</sup> in size.

*Architecture & design:* According to Ando (1991) the church comprises a concrete cube which is penetrated by an angled wall that separates the spaces between the church and entrance area. The building is constructed from poured reinforced concrete. Entering the church, the visitor is confronted with the defining cruciform of light cut into the concrete wall behind the altar, which is illuminated by sunlight in the mornings. The structure is designed to have presence, create a sense of lightness and conjures up a feeling of emptiness. It is designed to encourage a sense of separation and isolation from the outside world. Ando's intention is that there is room for the 'spiritual' to fill. Ando (1991) explains how, by making light an abstract element, and the only natural element in the space, nature becomes abstract and this purifies the architecture.

*Key takeaways:* The following elements within the Church of Light have been noted as relevant to the design of the Little Eden Society facility:

- The use of simplicity and clean lines in the design helps to focus the visitor's attention on the function of the building, which is a space for facilitating spiritual awareness and growth.
- The manner in which light is used as a feature in itself as opposed to just providing light for visibility.

### 2.2.3 Saheti School

*Location:* Senderwood, Johannesburg

*Architect:* Mira Fassler-Kamstra

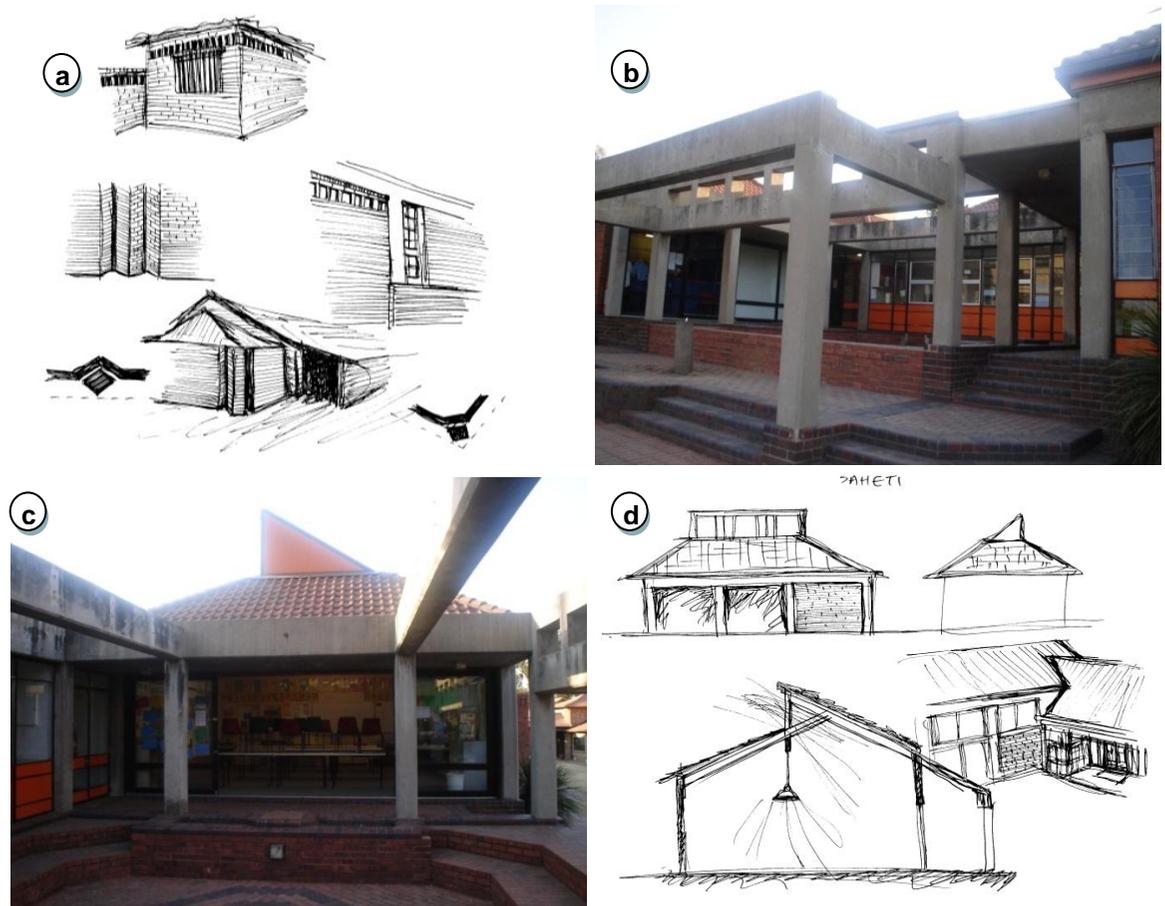
*Year opened:* 1974

*Description:* Saheti is a private school providing educational services from grade 000 through to grade 12, with a Greek cultural basis. It has capacity for just over 900 pupils and provides facilities and services catering for the academic, cultural and sporting needs of its pupils. (Private Schools South Africa 2007)

*Architecture & design:* The school buildings include academic classroom complexes, a music centre, a sports centre as well as a Byzantine-styled chapel, surrounded by gardens and outdoor sports facilities. The buildings are mostly single storey with tiled hipped roofs, many of which are gabled hipped with clerestory windows on one side, which create interesting roof profiles as well as provide practical benefits around lighting and ventilation. The materials used are face brick, terracotta roof tiles and concrete beams and columns. The school campus layout is connected through paved walkways.

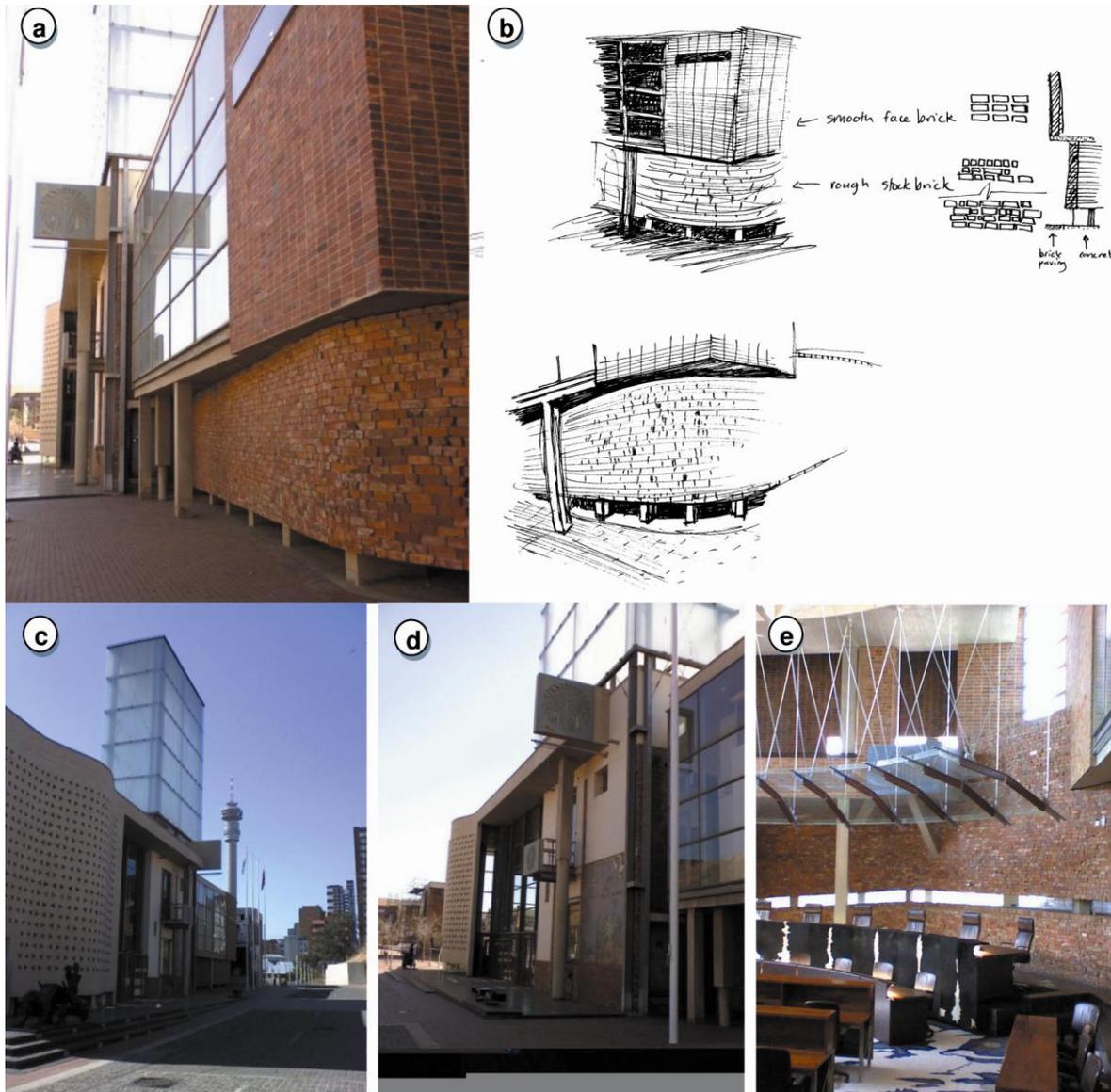
*Key takeaways:* The following architectural aspects of the school are notable and applicable to this dissertation:

- The pitched roofs achieve a number of benefits:
  - They give the school a more residential and friendlier feel as opposed to a clinical and almost oppressive, institutional look and feel which many school buildings suffer from.
  - The interesting roof profiles become a feature of the building as opposed to being only functional.
  - The roof overhangs increase the natural lighting and ventilation of the interior spaces.
- The concrete beam and column elements define the open spaces and courtyards as well as create visual interest.



**Figure 17 – Various views and sketches of Saheti School: (a) sketches showing brickwork and junctions (b) courtyard at classrooms in the primary school (c) view from courtyard of roof (d) sketches of roof design (e) sketches of screened courtyard with brickwork (f) new sports centre with splayed hipped roof and creative brickwork (photographs and sketches by author)**

## 2.2.4 Constitutional Court



**Figure 18 – Photos of the Constitutional Court detailing: (a) different styles of brickwork to create different textures (b) a sketch impression detailing the brick work (c) and (d) external views of the southern side of the foyer and tower (e) the brick finish and windows at the external ground level of the main court chamber (photographs and sketches by author)**

*Location:* Braamfontein, Johannesburg  
*Architect:* OMM Design Workshop & Urban Solutions Architects and Urban Designers  
*Year completed:* 2004

*Description:* The new Constitutional Court was built on the site of a notorious apartheid era prison, which once held Nelson Mandela as well as Mahatma Gandhi.

*Architecture and design:* The court buildings are located on the site of an old prison. Rather than demolish the prison and erect a new structure, parts of the prison have been transformed and integrated into the new buildings. The overall layout of the complex is open and accessible to the public while still offering the privacy of the internal courtyard wrapped by the courtrooms, judges' chambers and library buildings. According to Law-Viljoen [n.d.] the court building is made up of independently articulated parts. The materials used are brick, concrete, steel and glass. The facility has been designed to minimize environmental impact through the use of passive climate control, thermal massing through a subterranean rock store, effective ventilation and grey water system.

*Key takeaways:* The following design and architectural aspects of the Constitutional Court are considered applicable to this dissertation:

- The use of brick, concrete and steel.
- The environmental design considerations in terms of lighting, cooling mechanism such as:
  - the employment of grey water system
  - the extensive use of natural lighting
  - the ventilation design.

## 2.2.5 Legislature and Office Complex for the Mpumalanga

*Location:* Nelspruit, Mpumalanga

*Architect:* Meyer Pienaar Tayob Schnepel Architects and Urban Designers

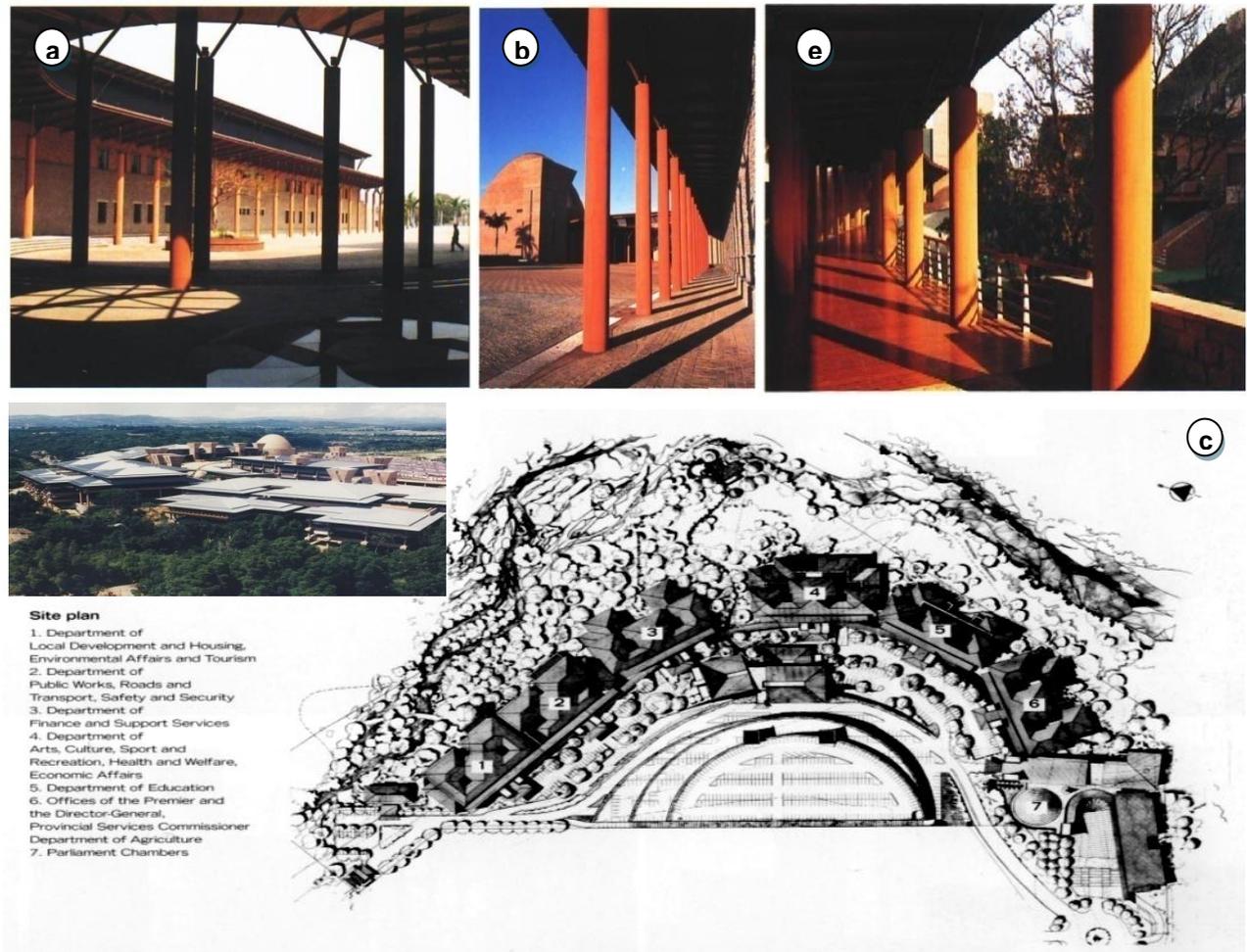
*Year completed:* 1997

*Description:* The complex is home to the chamber of parliament for Mpumalanga as well as offices for the various government departments of the Mpumalanga Province.

*Architecture and design:* The layout and design of the complex has clearly taken advantage of the site, its contours, views and vegetation. According to Deckler et al. (2006:15) the buildings are arranged as pavilions along the natural contours of the site embedded in and overlooking indigenous forests and rivers. What is also evident is that the circulation was a key consideration in the design and layout of the complex. The different buildings all attach to and feed off the circulation spine, which is a brick paved, covered walkway supported by concrete pillars with steel 'branches'.

*Key takeaways:* The aspects of the Legislature's design, which have been noted as relevant are:

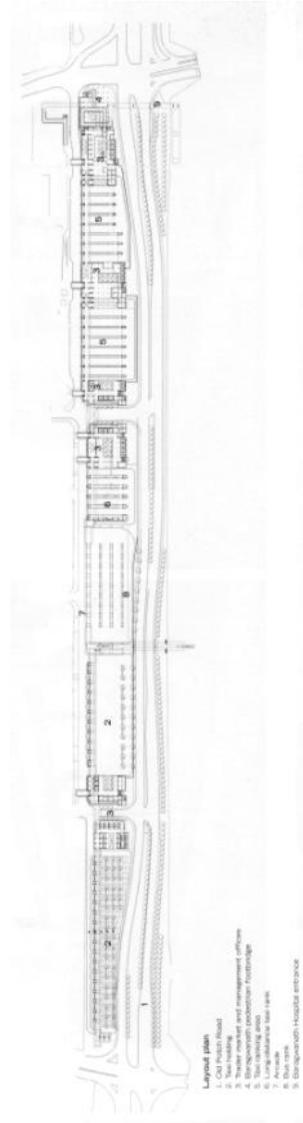
- The strong and clear circulation of the complex achieved through covered walkways, which are a feature of the design as much as a function.
- The use of vegetation surrounding the buildings and layout to create a more tranquil and natural environment.
- The use of extensive roof overhangs and the close proximity of trees and vegetation as solar shading and cooling mechanisms.



**Figure 19 – (a) (b) and (c) – views of the walkway. (d) view of the complex (e) plan (Deckler et al. 2006: 14-16)**



### 2.2.6 Baragwanath Public Transport Interchange at



*Location:* Soweto, Gauteng

*Architect:* Urban Solutions Architects and Urban Designers

*Description:* The Baragwanath public transport interchange and Traders Market provide much needed transport infrastructure for the area and was developed as part of an infrastructure investment program for Soweto. A key challenge of the project was to combine the needs of taxi associations, bus companies and traders into a workable design. The interchange serves almost 70% of Soweto commuters.

*Architecture and design:* According to Deckler et al. (2006:67) the most notable quality of the facility is its rectilinear shape, being almost 1.3km in length, which was for the most part dictated by the shape of the site. Due to this a core need of the design was to bind the various functional elements together through a strong pedestrian movement spine achieved by means of a covered concrete walkway. The danger of monotony in such a long facility, constructed and finished in raw concrete was overcome by sculpting the design of the concrete walkway. The extensive use of concrete was created by the need for a robust low maintenance structure. Intuitive navigation was achieved through the creation of landmark towers at entry and focal points.

*Key takeaways:* Relevant design aspects of the interchange to this dissertation are:

- The manner in which concrete has been used to create a defined, robust and interesting movement spine.
- The use of tall elements to create focal points at entries and starting points.
- The application of simple sculpted shapes and variations within the concrete form to avoid monotony.
- The integration of seating into the structure of the walkway

**Figure 20 - Various views of the Baragwanath Public Transport Interchange and plan (Deckler et al. 2006: 14-16)**

### 3 The client



“My greatest wish is that more will be done to ensure the comfort and safety of persons with intellectual disability. And that more communities, families and individuals will come to understand the value of these special people and reach out to them, instead of choosing to look the other way.”

( Hyams 2007b:3)

### 3.1 Social, political and economic roots

Domitilla Hyams was concerned with the suffering of a mother of an intellectually disabled child and felt the need to provide relief for her. After her apparition she made it her life's work to take care of these children. To begin with, Danny Hyams and his wife Domitilla visited institutions for intellectually disabled children. They consulted experts in the field, and asked the mayor of Edenvale for land. Three months later the Little Eden Society opened their doors to care for three little girls. Between 1967 and 1976 the residents were housed in thirteen different locations. The first permanent home was built in Edenvale and opened in 1976.

When the society was started there were limited facilities available for the care of intellectually disabled people, many of whom were also very physically disabled. For this reason the Department of Health approved of the initiative. In the Apartheid era separate facilities had to be built, by law, for "whites" and "non-whites". Despite this fact, Domitilla insisted on the admission of "non-whites" from a very early stage, knowing full well that she could get into a lot of trouble for this.

Economically, the Little Eden Society has always and still relies on fund raising and donations, as they are a non-profit organisation. "When Little Eden has been in debt a cheque has just arrived. When they were desperate for a vehicle, someone gave one. When a volunteer was needed full time to take the children to and from the schools, a driver was found. Nothing has been easy." (Toc H 1971). Fund raising was a lot easier in those early days of Little Eden.



**Figure 21 - The founders, Danny & Domitilla Hyams, during a visit to Little Eden - Edenvale by Nelson Mandela in 2002 (photograph by author)**

## 3.2 Precedent study – Little Eden

### 3.2.1 Overview of Little Eden

Between its two homes, the Little Eden Society cares for 290 children and adults. These residents have profound intellectual and almost always physical disabilities, their average physical age is twenty years but the average intellectual age is that of a one-year-old child, with some as low as the level of a newborn, needing to be fed, carried, changed and bathed.

Little Eden Society's first and primary facility is its home in Edenvale. Mostly smaller children and residents requiring frequent medical attention live here. It has residential units and therapy facilities and a chapel on the premises where the Holy Mass and daily prayers are part of the spiritual care that the staff and residents partake in. It further houses the administration facilities for management and finance of the Little Eden Society.

The Elvira Rota Village, situated in Bapsfontein, includes the residential and therapy facilities as well as an operational farm providing for part of the daily food requirements. It also gives the residents a hands-on connection to nature. A facility for those residents with extremely challenged behaviour, who might inflict injury on themselves and others, is also located at their Elvira Rota Village.

The relative location of each home is illustrated in Figure 22.

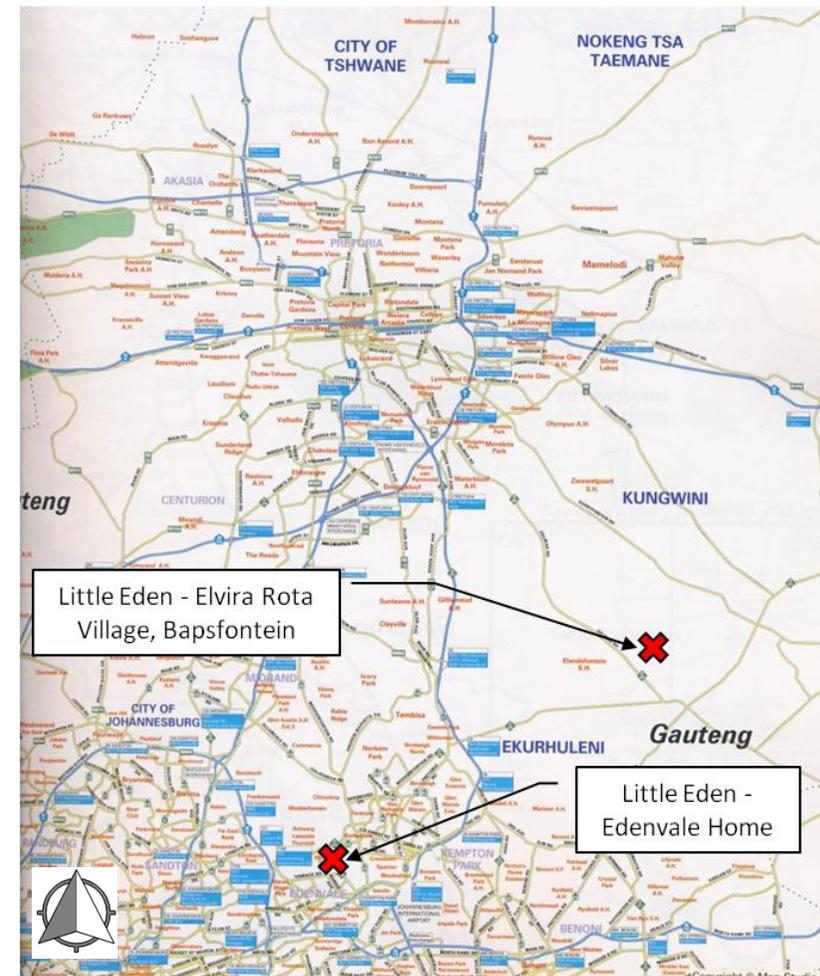


Figure 22 - Current Little Eden Society homes (after Map Studio 2006:7)

### 3.2.2 The Edenvale home

#### 3.2.2.1 Location & site layout



**Figure 23 – Zoning of the Little Eden Edenvale facility (after aerial photo extracted from Google Earth 2007-02-22)**

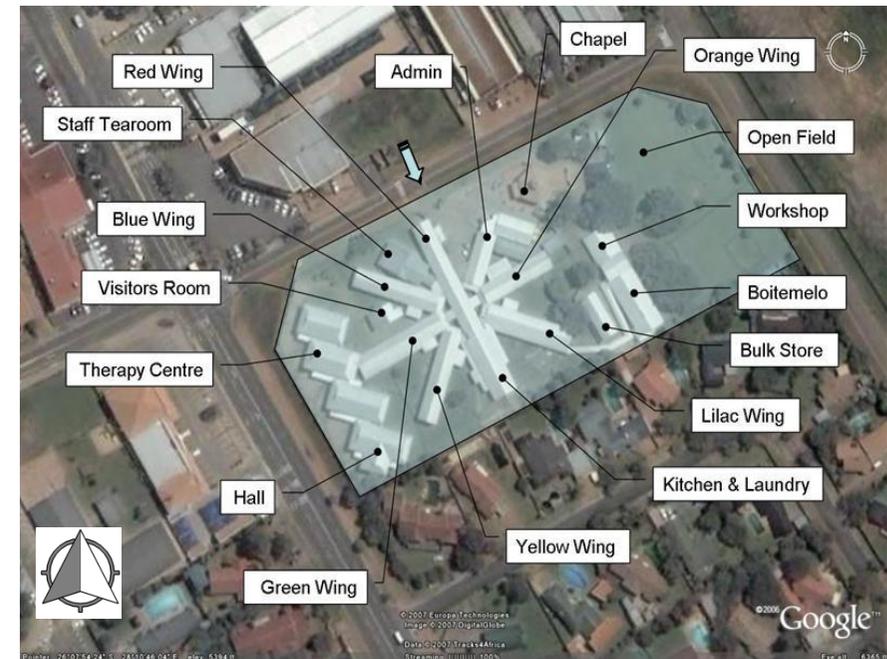
Unlike other homes which were generally removed from the community, the site chosen for the Edenvale home was located between the residential suburb and the local retail centre of Edenglen on the southeast side and the industrial township of Sebenza to the north, Johannesburg South Africa. This is illustrated in Figure 23, which shows how the home is nestled between residential, retail and industrial zones. The choice of this location has proven to be most beneficial as community involvement from an individual up to a corporate level has been high since the inception of the home.

The facility is located on 1,63 ha of land and was built in stages over a number of years as the need arose and finance became available. The maximum coverage allowable for the site is 40% but only 27% is

here needs to be space for holding fundraising events, such as the annual fête, as well as outdoor space for the residents to play and take part in e activities such as their sports day. 180 of the 290 residents are cared for at the Edenvale home.

Work on the site began with the construction of a radial layout of prefabricated buildings. This was followed by the therapy centre and finally the chapel was built. Five of the buildings within the 'star' are dormitories, which provide accommodation for the residents. Two of the radial buildings house the administration, laundry and kitchen. The nurses' station is located in the centre of the radial star configuration. This allows for consistent monitoring by the nurses and provides easy access to each wing.

At the site's western extremity is the stepped configuration of the therapy centre extending from the north to the south boundaries and shielding the residential buildings from the busy road to the west. The eastern third of the site is an open field. Bordering this field is the chapel, Boitemelo dormitory and the bulk stores structure.



**Figure 24 – Layout of the Little Eden - Edenvale facility (after aerial photo copied from Google Earth 2007-02-22)**

### 3.2.2.2 Stylistic origins and architecture

The buildings that comprise Little Eden - Edenvale were built over time and this is evident from the architecture. The new is made to fit in with the old, without trying to look exactly the same. As a result the architecture is a combination of a number of distinguishable styles:

- *Architecture of surveillance* - From an initial inspection of the site layout, it became clear that an architecture of surveillance was established in the radiating star plan which was influenced by panoptic layout designs, allowing for easy control.
- *Functionality*- At closer inspection of the individual buildings it also became evident, that the architecture is quintessentially functional. This can be attributed to the urgency of the need for facilities at the time as well as the financial constraints, which were always a consideration for an organization such as the Little Eden Society.
- *Accessibility* - All the buildings on the site are single story with adjoining covered ramps to allow for easy navigation as well as to accommodate the slope of the site and access with wheelchair, pram and carriage.



**Figure 25 – A view of the precast structure of the dormitories (photograph courtesy of Little Eden Society)**

As the primary contractor for the initial panoptic star, the Little Eden Society chose a company called RIBCO, who, at the time, had just built an institution in the West Rand for the care of 'non-white' psychiatric patients. RIBCO was able to erect the required buildings economically and rapidly by using a prefabricated rib-frame construction technique with pre-cast reinforced concrete panels that slid into the "ribs." The inherent functionalism becomes clear with closer inspection of the prefabricated structure. The exterior panels are composed of an exposed aggregate, which requires very low maintenance. The windows in these panels are

high, which allows for privacy and limited accessibility by the residents on the one hand but limits the amount of natural light entering into the buildings. The different wings are colour-coded allowing for easy recognition. These buildings all have pitched roofs of IBR sheeting, and the floors are all covered in vinyl. In response to the problem of limited light, part of the yellow wing was altered, large windows and glass doors were installed and it is now used as a sun-room for the residents.



**Figure 26 – A view of the sun room in yellow wing (photograph courtesy of Little Eden Society)**

To link the various radiating wings and the Boitemelo wing, a system of steel walkways and shelters was designed and constructed after the buildings were completed. The ground under this was then paved to allow for easy movement for the physically disabled and to help control the storm water.

The old staff quarters, built at the same time as the core buildings, were also constructed using the rib-frame, but instead of the usual concrete panels, it was decided that the infill was to be built from bricks. This included an upstairs store. The staff quarters were then used as a training centre for self-help skills. As the staff now no longer lived on the premises they needed new ablutions and tearooms. These were constructed in 1980. A conventional brick structure was chosen over the previously used rib-frame construction, with an exterior wall of face brick. The interior walls

were plastered and painted. The roof was made from IBR of the existing complex. The training centre was then converted into a dormitory for the older boys in 1983, this is called the Boitemelo wing, named after one of the late residents.



**Figure 27 – External views of the therapy centre at Little Eden - Edenvale (photographs courtesy of Little Eden Society)**

In 1980 the therapy centre was constructed on the highest part of the site. The roofing is IBR, like the rest of the complex. The construction of this centre is of a higher quality and today is still in good condition both internally and externally. The external wall consists of a combination of face brick panels and plastered walling, echoing the rib-frame construction of the core buildings. The therapy centre consists of four buildings that are interlinked with covered walkways and verandas. The windows are larger than that of the core buildings and the building has better thermal control properties both in the summer heat and winter cold.

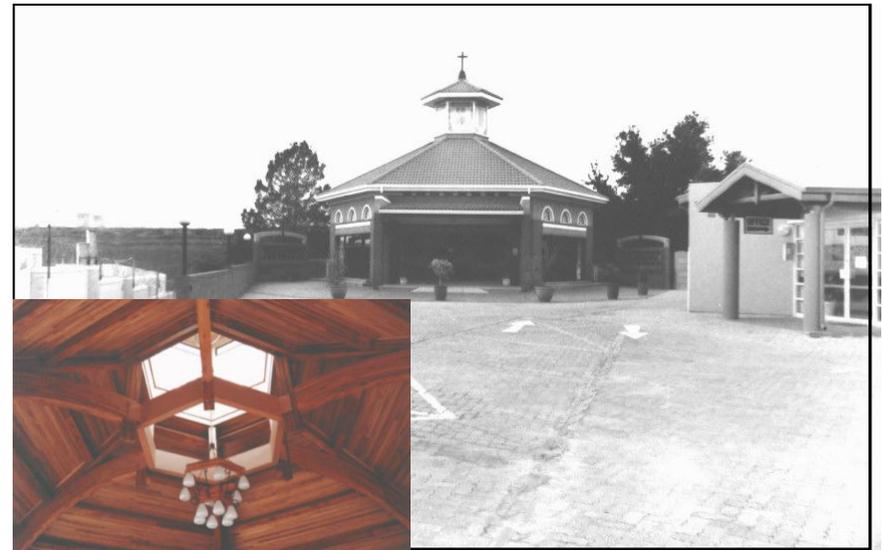
The Chapel of Our Lady of the Angels was begun in 1992 and blessed in 1993. This building includes a lower level garage and storage space, as well as ablution and kitchen facilities that are used during public gatherings, such as the annual fête. The chapel is hexagonal in shape and was built using brick. The exterior walls have a combination of face brick and plastered and

plastered areas, similar to that of the therapy centre. The interior of the chapel is notable for its wooden ceiling panels and beams.

The large open piece of land on the northeast side of the site, the park, is used as a playground for the residents, as well as hosting their annual sports day and the annual fête.

The new staff tearoom and ablution facilities were built in 1997. This was constructed from bricks, with face brick on the exterior. Large windows allow for natural lighting and ventilation. These facilities are larger than the previous ones and cater not only for the staff, but also for visitors.

The administration facilities were renovated in 1999. The new facilities were built from brick and plastered to look similar to the exposed aggregate of the original buildings. A new entrance was created to mark the threshold into the reception area. An internal court exists between parts of the new and old sections, allowing light and air to enter the building, as well as providing a green space.



**Figure 28 – An external view of the chapel as well as a close-up of its timber ceiling (photographs by author)**



3.2.2.3 Functionality and services provided

**Table 2 - Functions and services provided (derived from information received from Little Eden Society)**

Function/ service	Description	Structure
Accommodation	Each resident has his/her own bed or cot. A wing typically sleeps about 25 residents	Dormitories or wings
Frail care	Red wing houses 25 residents who require continuous monitoring and medical attention	Red wing
Bathing & ablutions	Toilets, baths, nappy changing areas, sluice rooms, teeth are brushed twice a day, hairdressers cut hair regularly	In each dormitory
Administration	The administrative functions of the home take place within the administrative wing and include offices for the various permanent staff members, meeting rooms and reception	Admin
Laundry	Little Eden requires an industrial laundry facility to wash, dry and iron 2500 nappies as well as copious amounts of clothing, bed linen, etc. every day	Kitchen & laundry wing
Kitchen	5 meals a day are prepared for each resident including mid- morning and mid-afternoon snacks. This equates to over a thousand meals which need to be prepared daily	Kitchen & laundry wing
Therapy	A number of therapies are provided at Little Eden, including: occupational therapy, physiotherapy, hydrotherapy, reflexology and music therapy	Within the therapy centre, hall as well as dormitories
Garage	An extended 4 bay garage can fit up to 8 vehicles	Garage
Workshop	The workshop is used to perform minor maintenance to the buildings and equipment as well as to store various tools and garden equipment	Workshop
Staff day time catering	No overnight facilities are provided for staff, a tea and lunch room are however provided	Staff room

Function/ service	Description	Structure
Visitors room	Visitors and families of residents are received in the visitor's room where they can spend time with the residents	Visitors room
Religious services	Daily prayers are said together and regular masses attended.	Chapel
Storage	Storage is a valuable resource at the facility. Anything and everything is stored, including spare chairs, tables and mattresses.	Bulk storage building and garages under the chapel
Concerts, fêtes and entertainment	Throughout the year a number of concerts, fêtes and other fund raising events are held either in the open field or in the hall.	Hall & open field
Outdoor activities and exercises	Various outdoor activities, for both the mobile and immobile residents, take place on the field at the bottom of the site	Open field
Parking	Parking for staff and visitors is provided in the parking area in front of reception with overflow on to the open field	Parking at reception, garages and open field
Paper & recycling collection	As a source of income, Little Eden has a number of paper, glass and other recycling bins on the property which are located in the parking lot	Recycle bins in parking Lot
Jumble and second hand goods collection, processing & storage	Little Eden receives a number of donations of clothing and other items, which it either uses or resells. Storage and processing of this normally occurs in the storage garage below the chapel	Storage garage below the chapel
Nursing, medical & dental services	130 of the 180 residents are on medication for conditions such as epilepsy and some for aggressive and psychotic behaviour. 24 hour nursing care is provided including regular administration of medicine as well as regular consultations by general practitioners, psychiatrists, dentists and chiropractors	Nurses station and doctors room at the centre of the dormitory star



The buildings are listed and relevant areas derived from received from Little Eden Society are given in Table 3.

**resident dormitory wing assignment by physical and mental conditions (derived from information received from Little Eden Society)**

**Table 3 - Schedule of buildings and areas for Little Eden - Edenvale (derived from information received from Little Eden Society)**

Category	Individual Buildings	Area (m <sup>2</sup> )	% Area	Category % Area
Accommodation	Standard care dormitory (5x)	975m <sup>2</sup>	22%	35%
	High care dormitory (red wing)	167m <sup>2</sup>	4%	
	Older residents dormitory	411m <sup>2</sup>	9%	
Support & administration	Kitchen and laundry	180m <sup>2</sup>	4%	12%
	Administration offices	215m <sup>2</sup>	5%	
	Store	60m <sup>2</sup>	1%	
	Staff tea room and ablutions	90m <sup>2</sup>	2%	
Care & therapy	Therapy centre (physio-, occupational- & hydrotherapy)	1030m <sup>2</sup>	23%	25%
	Sun room	40m <sup>2</sup>	1%	
	Medical consulting rooms & nurses station	25m <sup>2</sup>	1%	
Spiritual	Chapel	620m <sup>2</sup>	14%	14%
Services	Sheltered walkways, ramps & link spaces	644m <sup>2</sup>	14%	14%
<b>TOTAL</b>		<b>4457m<sup>2</sup></b>	<b>100%</b>	<b>100%</b>

Capability	Wing	Green	Red	Blue	Yellow	Orange	Lilac	Boitemelo
	Capability Characteristic							
Mental functioning	higher	•						
	lower		•	•	•			
Mobility	mobile	•				•	•	
	immobile		•	•	•			•
Physical age	younger	•						
	older			•				•
Behaviour	un- disturbed	•	•	•	•			•
	disturbed					•	•	
Strength	strong	•				•	•	
	weak		•	•	•			•
Gender	male	•	•	•	•	•		•
	female	•	•	•	•		•	•

Residents are grouped together according to their physical and intellectual ability and behaviour. As intellectual disability is due to the malfunctioning, underdeveloped or damaged brain, it follows that people affected by this will have a higher chance than normal people of having physical disabilities and mental illness as well. Although the tables for both homes show how the groups are divided up according to their intellectual and physical abilities and disabilities, this is a generalisation. As each and every person is different and unique the boundaries are often blurred and there is overlap between groups. There is also constant change as some residents improve and others deteriorate.

### 3.2.2.4 Lessons learnt

A number of important lessons were learnt from Little Eden-Edenvale, and these were in part addressed in the Bapsfontein home (the Elvira Rota Village), and it is important to note these here.

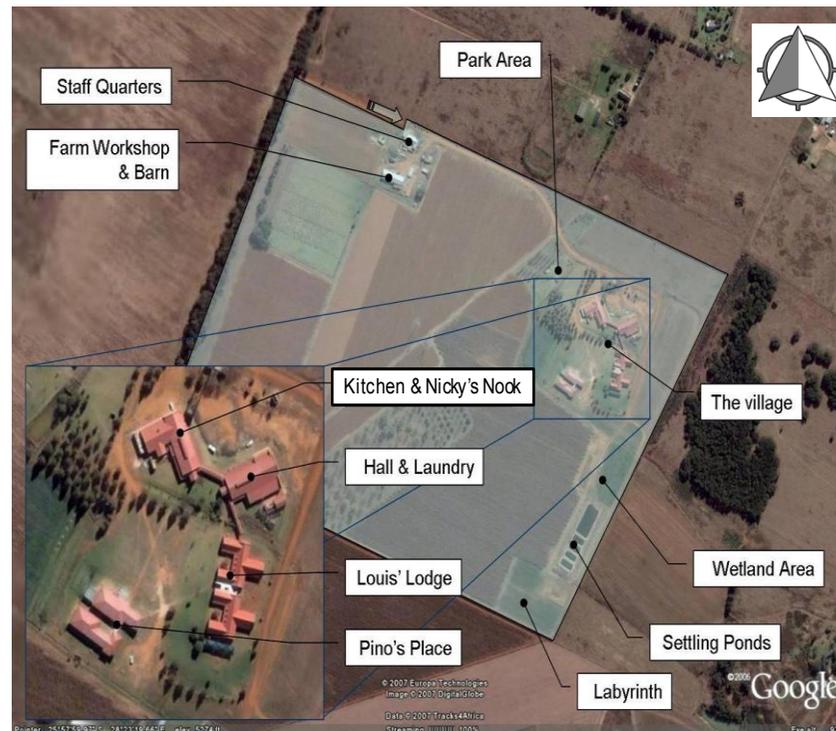
The important flaws in the design and architecture of the home include:

- Poor heat exchange properties of the prefabricated buildings, which can be attributed to the thickness and materials of the prefabricated walls.
- The bathrooms were too small to allow for comfortable manoeuvring of the residents in wheelchairs and trolleys.
- The window heights and sizes limited natural lighting into the spaces, this was due to initial safety concerns around the accessibility of the windows. However in hindsight this proved only to be an issue for the most active and violent residents. More natural sunlight and dayrooms in the accommodation buildings would have been better as residents benefit greatly from this.
- The prefabricated walls make alterations difficult (one cannot even hammer a nail into the walls).
- In general the nursing station and doctor's room were too small.

At the same time a few aspects of the design have proven advantageous:

- Having the residents' accommodation concentrated in one area and in a layout that is easy to control and monitor, makes the management of the residents, as well as day-to-day activities, quicker and easier to perform.
- The nature, design and quality of the therapy centre buildings have proven to be highly economical and environmentally friendly. Specifically: heating and cooling requirements are lower, external building maintenance is less due to the partial face brick finish and the tile flooring requires less maintenance.
- The location of the site, between commercial, residential and retail areas has also proved advantageous. Little Eden enjoys the support of a number of corporate and religious organizations as well as individuals mostly from the surrounding area.

### 3.2.3 Elvira Rota Village, Bapsfontein



**Figure 29 - Layout of the Elvira Rota Village in Bapsfontein (after aerial photo extracted from Google Earth 2007-02-22)**

The Elvira Rota Village is located in the rural area of Bapsfontein in Gauteng, South Africa, and is the agricultural satellite facility of the main Edenvale home. This facility cares for 110 of the 290 residents accommodated by the Little Eden Society.

The Elvira Rota Village is located on a 43ha farm and was developed by the Little Eden Society in order to provide a home where the residents have more interaction with the natural environment such as caring for the animals and plants. Generally the older and more mobile residents reside here.

The staff quarters, farm workshop and barn are located in the north east of the farm. Some farm animals, for therapeutic caring by willing residents, are kept in this area. The crops and pecan nut orchards take up most of the land.

The village is located in the north east of the farm. This includes the therapy facilities, kitchen, laundry, hall and dormitories with their ablutions, diningroom, day rooms and verandas. The park with its playground equipment and shaded benches is to the northwest of the village.

Pino's Place is Little Eden Society's facility for persons with not only profound intellectual disability, but also disturbed and challenged behaviour, which is considered a danger to themselves and others. This is located in the south east of the village, in a self-contained unit.

The wetland area and labyrinth (not established at the time of the photograph in Figure 29) are the most recent additions to the Elvira Rota Village. These are located near the settling ponds in the south east corner of the site.



**Figure 30 – A view of the dormitories as well as the adjoining walkways (photographs by author)**

### 3.2.3.1 Stylistic origins and architecture

As the Elvira Rota Village was established after the Edenvale home, lessons learnt greatly impacted on the design of this facility. The architecture of surveillance, inherent in Edenvale's radial layout, made way for a village layout, which combined a village-like plan with covered walkways linking the buildings. The use of robust materials and higher quality construction was an imperative, based upon the lessons learnt in the Edenvale home.

Red face brick was used extensively in the construction of almost all of the buildings in the facility. The roofing throughout is double-pitched IBR with gable end walls. The adjoining walkways have red brick paving, walls and pillars to match the buildings with double pitch red IBR roofing and exposed treated timber rafters.



**Figure 31 – Inside a dormitory and view down a corridor (photographs by author)**

The dormitories at Bapsfontein are configured around courtyards. Whereas the Edenvale home has large dormitories, each accommodating up to 25 beds and cots. Dormitories were made smaller in Bapsfontein primarily because the type and level of care provided for the residents housed here is less intense, requiring a lower level of nursing care.



**Figure 33 – View of the inside of the hall (photograph by author)**

the facilities in Bapsfontein were built for the older and more mobile residents, rooms were built for between one and ten residents. It was found that on average the residents prefer each other's company to being by themselves, with the exception of those who are more disturbed or challenged. For this reason when alterations and additions were executed, the smallest rooms were designed to accommodate at least two people.

Great care was taken with the interior finish to protect the structure and fixtures. Metal kickboards on the cupboards and doors and steel railings for use as grab rails as well as wall protection were installed in the high traffic areas such as passages.

The interior of the hall has painted exposed rafters with a raised section in the roof with clerestory windows. This not only provides additional natural lighting to the hall but also ventilation.



**Figure 32 – The residents with challenged behaviour are housed at Pino's Place (photograph by author)**

Pino's Place is the section accommodating those people with more challenged and disturbed behaviour. It has single rooms, as some of these residents either need to be isolated from others or want to be by themselves, as well as rooms for up to ten people. Materials and fittings used in Pino's Place are robust and tamper-proof as some of the residents are capable of damaging finishes and fittings.

Windows are made from polycarbonate, not glass, to protect users from possible broken panes. Doors are solid with extra hinges. Epoxy coating is used in the bathrooms instead of tiles as the residents have been known to remove the tiles from the floor and walls. Fittings such as toilets, basins and baths are made from stainless steel as porcelain fittings when broken can result in sharp edges that can injure residents and staff. Mirrors are made from high gloss stainless steel instead of glass. Slabs are used instead of tables as tables can be broken and thrown around.

Residents are encouraged to participate in activities such as the biannual concerts, and the development of the wetland area and labyrinth. This not only creates a sense of achievement and belonging for the residents, but also helps to create awareness amongst members of the public as they are invited to experience these activities and places. Residents are also encouraged to help out with chores and caring for one another, this further adds to their sense of belonging.

### 3.2.3.2 Functionality provided and services rendered

Of the 110 residents, Louis' Lodge houses 50 residents with separate sections for males and females. Nicky's Nook, a section for the older men, houses 20. The older females are grouped with the younger residents, and enjoy mothering them. Pino's Place has two self-contained units, one for "aggressive challenged behaviour" and the other for "challenged behaviour" accommodating 40 residents in total. The grouping is illustrated in Table 6Table 5.

Nicky's Nook is the dormitory for the older men who are often weaker than the younger residents. the oldest resident is fifty-five, a lot younger than what is usually being called old. Their bodies age a lot quicker and they experience the physical and mental effects of old age a lot younger than is normally the case. People suffering from intellectual disability often have physical problems and are more prone to illness. In the past they often had a shorter life expectancy than mentally healthy people. Nowadays with the level of medical care available these people reach older ages.

**Table 5 - Resident grouping by physical and mental attributes (derived from information received from Little Eden Society)**

Capability	Wing	Green	Red	Blue	Yellow	Orange	Lilac	Boitemelo
	Capability Characteristic							
Mental functioning	higher	•						
	lower		•	•	•			
Mobility	mobile	•				•	•	
	immobile		•	•	•			•
Physical age	younger	•						
	older			•				•
Behaviour	un- disturbed	•	•	•	•			•
	disturbed					•	•	
Strength	strong	•				•	•	
	weak		•	•	•			•
Gender	male	•	•	•	•	•		•
	female	•	•	•	•		•	•



**Figure 34 – A view of Nicky's Nook as well as part of the adjoining covered walkway (photograph by author)**

Louis' Lodge has separate sleeping areas for males and females, but they all share in the same group activities. The older girls, in their twenties, are grouped with the younger residents and enjoy

mothering them. Their daytime groups are named the Butterflies and the Bumblebees.

Members of the Butterflies are generally the younger and intellectually better functioning individuals who have less physical and intellectual disabilities than the members of the Bumblebees and require more intellectual stimulation.

The Bumblebees generally have older members, display more problematic behaviour, frequently suffer from mental conditions, or have physical problems such as spastic bodies and autism. They therefore require less stimulation, and the stimulation they receive is different and less intense than that received by the Butterflies.

Pino's Place, as already stated, is home to residents with more challenged and disturbed behaviour problems. Until Pino's Place was built, residents who were a danger to themselves and others had to be transferred to other homes, as Little Eden did not have the facilities to deal with their behaviour problems. Pino's Place has two self-contained units, Olive and Acacia.

The group of intellectually disabled people staying in the Olive section is the bigger group and although they have disturbed challenged behaviour, they are the lesser disturbed of the two groups.

Acacia houses the smaller group. This group requires less stimulation as over-stimulation can cause outbursts. Some of the residents in both groups (Olive and Acacia) need or prefer to be by themselves and thus some of the accommodation includes single rooms with the remainder in rooms of six beds.

The farm produces pecan nuts, maize and bean crops for sale as well as vegetables for the residents. Farm animals are kept for therapeutic care and interaction with the residents who enjoy feeding and looking after them. Horse riding is a favourite pastime for some of the more active residents. Borehole water is used for irrigation as well as other services.

The wetland area, started in 2004, was developed to create a more sustainable and eco-friendly environment. The Little Eden Society doesn't only help the residents to look after themselves, but also to care for the environment. Residents who were able and willing to, helped in the development of the wetland and the labyrinth. Participation in activities such as these not only help them look after nature, it also gives them a sense of achievement and belonging.

The wetland has a variety of indigenous plants and provides a sanctuary with its benches and walks, as well as functioning as a natural water filter and home to bird and insect life.

The labyrinth, which opened on Arbour day 2006, has a calming effect on residents, staff and visitors. Labyrinths, unlike mazes which confuse with their choices and dead-ends, help one to focus the



**Figure 35 - The labyrinth (photograph by the author)**

mind  
and the  
soul on

an intellectually and spiritually calming journey with a visible destination. Little Eden has found a marked change in the behaviour of its residents using the labyrinth, they are calmer and even those residents who display aggressive disturbed behaviour have less outbursts.

## 4 The Site



“The site should be well placed to share the life of the community. There is always the need to stimulate interest and awareness” (Nellist 1970:25).

Reasons for the location of the identified, new site were given in section 1.7, and it was argued that the most suitable area would be located within Tshwane and specifically around the Pretoria CBD. This section details the site selection for the new home.

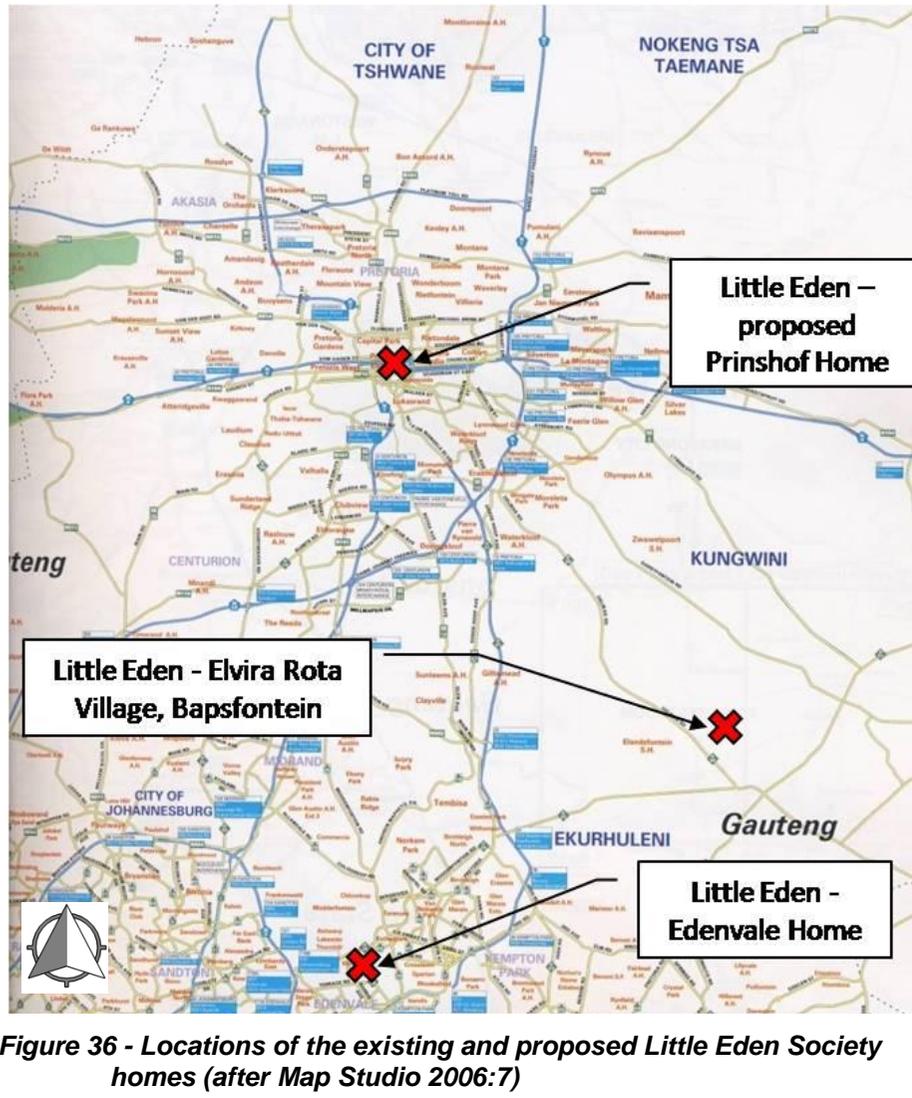


Figure 36 - Locations of the existing and proposed Little Eden Society homes (after Map Studio 2006:7)

#### 4.1 Identified sites evaluation

The area in which the site selection took place was within the recommended designated area, which is situated in the northern part of the Pretoria CBD. Within this area a medical and institutional precinct was identified as the most appropriate in which the facility would be located. The designated area and medical and institutional precinct is illustrated in Figure 37.

Broadly, the site requirements for new premises for the Little Eden Society are:

- *Size*: the size of the site should be at least 10 000m<sup>2</sup> to accommodate the required facilities, and have a capacity for 140+ residents without having to erect a multi-storey facility.
- *Accessibility of site*: it needs to be easily accessible by vehicles (especially ambulances) with proximity and ease of route to medical facilities.
- *Accessibility within site*: it needs to be easily used by wheelchairs, prams and carriages, therefore the flatter the site the better.
- *Access to outdoors and nature*: living in and interaction with the natural surrounds is an important passive therapy for the residents. The natural setting of the site is therefore important.

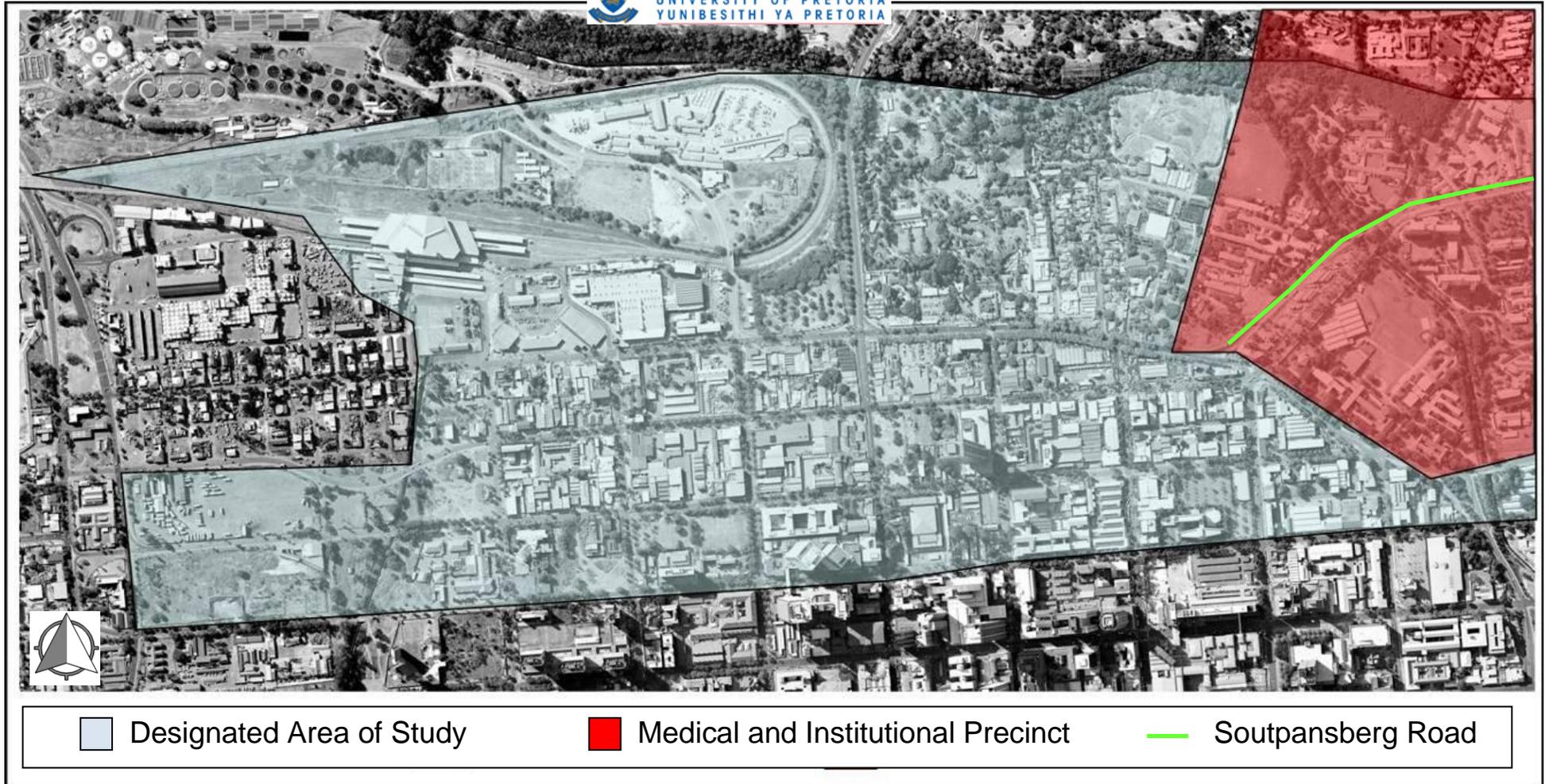
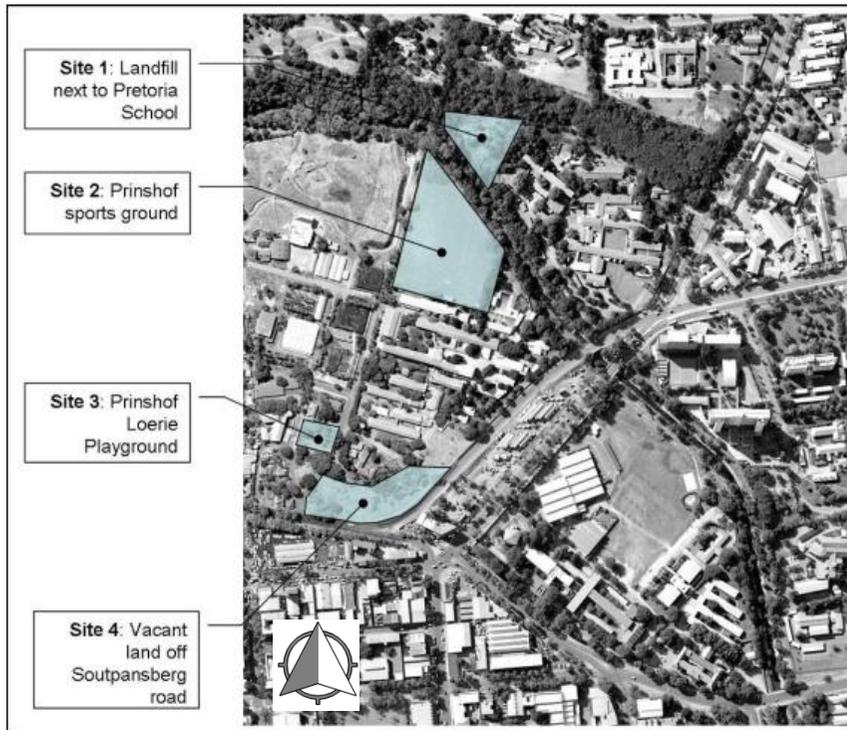


Figure 37 – Designated area and medical and institutional precinct

The focus area was further narrowed down to the northwestern Soutpansberg Road. Here other facilities for people with disabilities are located and to the south and east of this road many medical facilities are situated. Within this area 4 sites were considered as suitable for the home. The location of each is illustrated in Figure 38.



**Figure 38 - Possible sites**

*Site 1: Landfill next to Pretoria School for Cerebral Palsy Children,*  
The approximate area of the site is 10850 m<sup>2</sup> and is suitable for the following reasons:

- It has an excellent natural setting in the green belt, on the ridge and next to the Apies River.
- It is in close proximity of the surrounding medical facilities.

This site was however deemed as not suitable for the following reasons:

- Access to the site would be problematic due to the fact that it is surrounded by the Pretoria School for Cerebral Palsy Children, the Apies River, the Pretoria Zoo and the Association for People with Disabilities. Currently access is through the Pretoria School, which

ould prove to be very problematic. New road access would have to be applied for and zoned and there is insufficient space for this.

- The site is compromised due to its use as a landfill. This would prove expensive to rehabilitate.

*Site 2: Prinshof School sports ground*

This site is north of the Prinshof School for the visually impaired is currently being used by them as a playground and sports field. The north boundary of this site is the Apies River. Part of the site could be a shared field for sport and play for both the Little Eden Society's planned building and the Prinshof School. This site meets all the criteria in that:

- Access to the site can be made from Prinshof Street.
- Being a sports field most of the site is almost flat, making ease of movement for people with compromised mobility more comfortable.
- The approximate area of the site is 18 296 m<sup>2</sup>, well in excess of the 10000m<sup>2</sup> requirements.
- It is located adjacent to the Apies River and a green belt, with the northern edge of the site having a good natural setting.

*Site 3: Prinshof School Loerie playground*

This site is currently used by the Prinshof School Loerie Section for Special Education as their playground. A spokesperson for the school mentioned that plans are afoot to relocate the Loerie section to the north-east of the school grounds, which is currently an unused staff residence, and sell off the Loerie area. The site is suitable because it has:

- easy road access.
- a low site gradient (the site is almost level).

The site is unsuitable for the following reasons:

- approximate area of the site is 2135 m<sup>2</sup>, thus too small.
- it has a poor natural setting.

*Site 4: Vacant land off Soutpansberg Road*

This site is south of the Prinshof School and is currently vacant and unused. It is suitable because it has the best road access of all the sites, being at the intersection of two main roads.

The site is however unsuitable for the following reasons:

- The approximate area of the site is 8086 m<sup>2</sup>, a little short of the requirement.
- It is close to the commercial district, and has little privacy and no natural setting worth mentioning.

This is summarised in Table 6

**Table 6 - Site evaluation matrix**

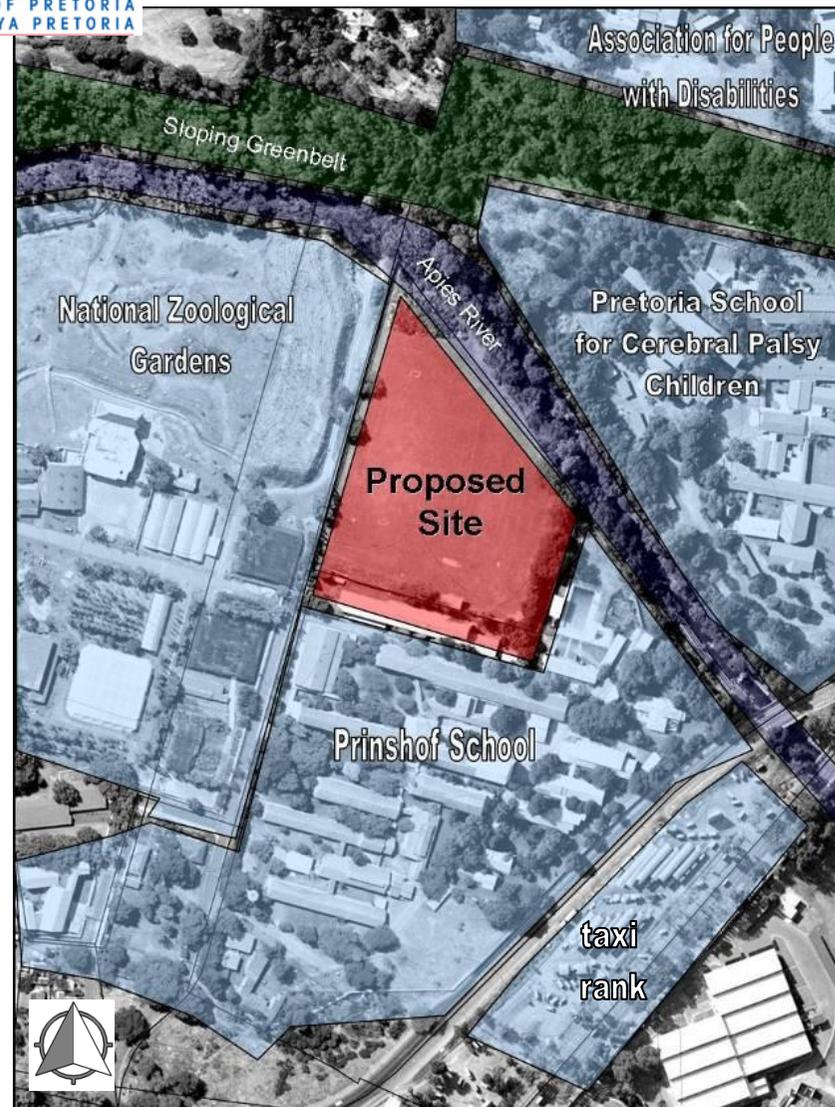
Site #	Site size	Road access	Gradient	Natural setting	Proximity to medical facilities	Score
Site 1	10850m <sup>2</sup>	No	No	Yes	Yes	3/5
Site 2	18296m <sup>2</sup>	Yes	Yes	Yes	Yes	5/5
Site 3	2135m <sup>2</sup>	Yes	Yes	No	Yes	2/5
Site 4	8086m <sup>2</sup>	Yes	Yes	No	Yes	2.5/5

From the matrix it is clear that the most suitable site is the Prinshof School sports ground. This will therefore serve as the location for the new home.

#### 4.2 Selected site overview

The chosen site, Portion 64 (made up of R/61 and 62) of the farm Prinshof 349-JR, is owned by the City of Tshwane Metropolitan Municipality and is used by the Prinshof School as a sports and play area. Part of the site needs to be left open for space for sports and play and for holding fund-raising activities such as fêtes. The open space should be situated in such a way as to accommodate the Prinshof School as well. The site is surrounded by:

- *To the west*, the National Zoological Gardens (hereafter referred to as the Zoo).
- *To the south*, the Prinshof School which caters for people with compromised sight, sometimes accompanied by other physical disabilities.
- *To the east*, the Pretoria School for Cerebral Palsy Children (hereafter referred to as the Pretoria School).
- *To the north*, the Apies River, Association for People with Disabilities, and the sloping green belt.



**Figure 39 – Overview of the selected site and immediate surrounds**

### 4.3 Context of the site

#### 4.3.1 Site photographs

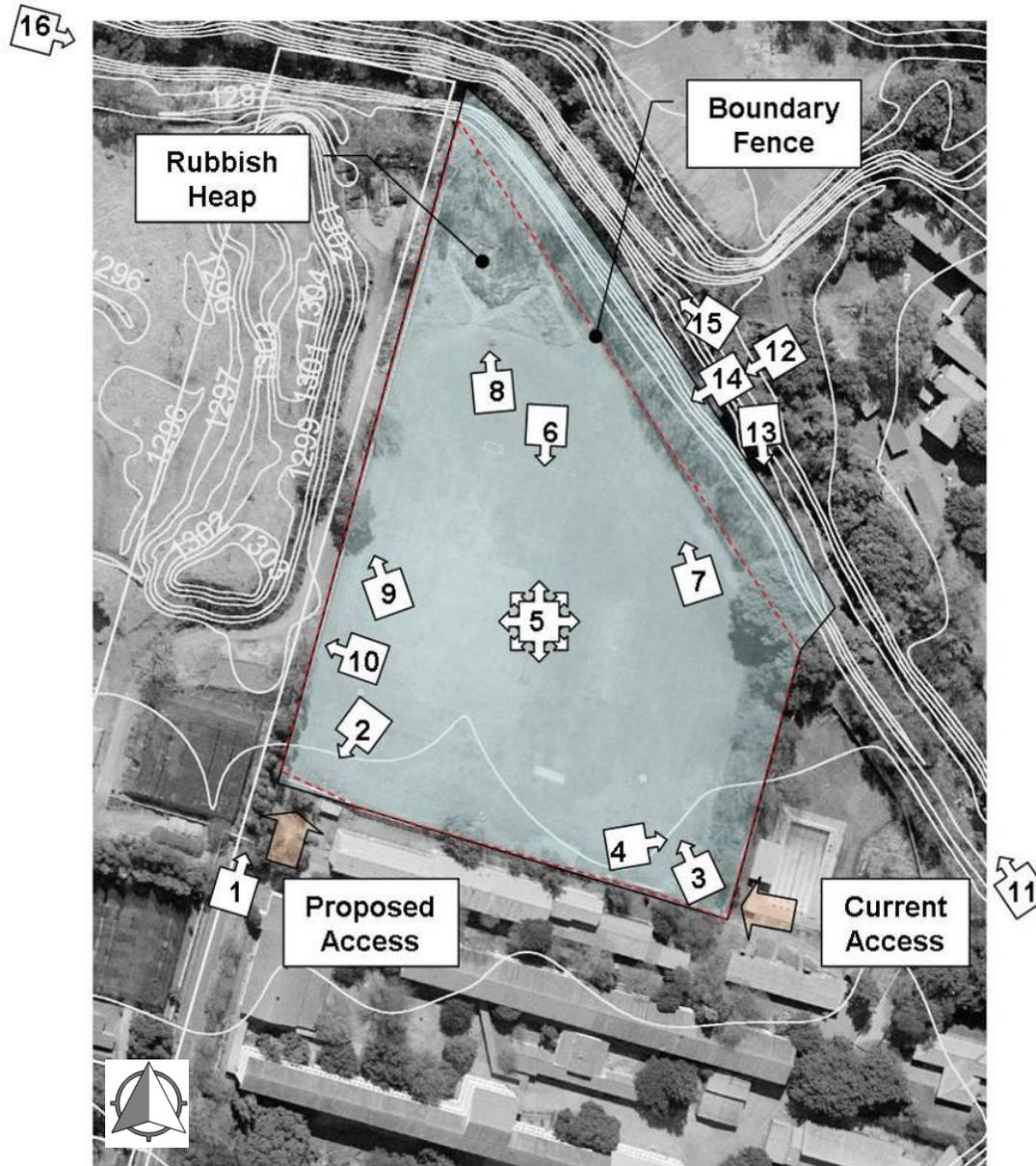


Figure 40 - Camera positions for the subsequent photographs



**Figure 41 - Position 1 - Panoramic view of end of Prinshof Street**



**Figure 42 - Position 2 - Position of proposed access**



**Figure 43 - Position 5 - 360° Panoramic view of site**



**Figure 44 - Position 3 - Panoramic view of site from school access**



**Figure 45 - Position 6 - View towards existing access**



*Figure 46 - Position 7 - View along boundary fence towards refuse heap*



*Figure 47 - Position 8 - Refuse heap at the northwest corner of the site*



**Figure 48 - Position 9 - View along west boundary with Zoo**



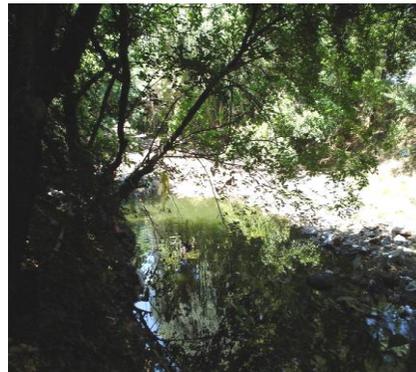
**Figure 49 - Position 10 - View through fence towards Zoo**



**Figure 50 - Position 11 - View along Apies River from Soutpansberg Road**



**Figure 51 - Position 4 - View along east border**



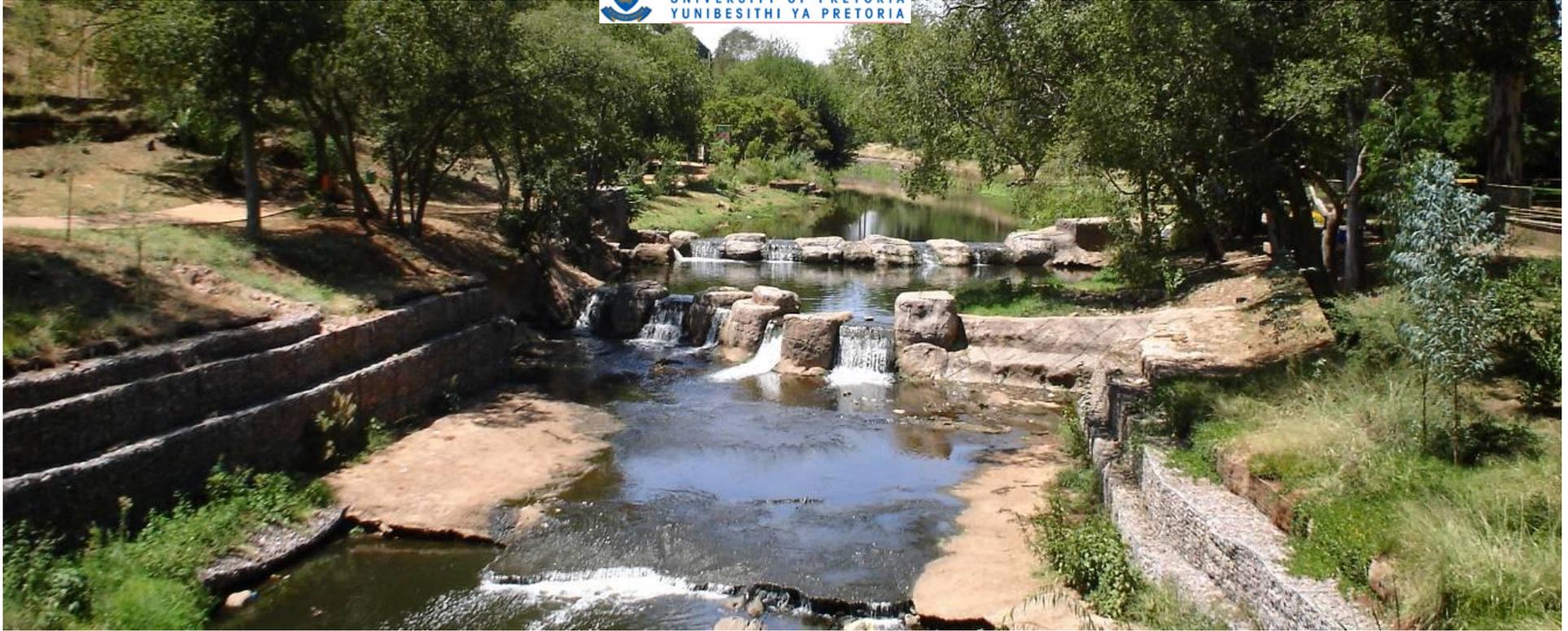
**Figure 52 - Position 13 - View east along Apies River from opposite bank**



**Figure 53 - Position 14 - View across Apies River towards site**



**Figure 54 - Position 15 - View west along Apies River from opposite bank**



*Figure 55 - Position 16 - View east along Apies River from Zoo*



*Figure 56 - Position 12 - View of Apies River from opposite bank*



#### 4.3.4 Services

All services are available on site or are within 200m of the site. This includes:

- *Sewerage lines* which run through the north of the site.
- *Refuse collection* which stretches all the way to the south west corner of the site.
- An *electrical distribution box* which is not more than 100m south of the site.
- *Water lines* are less than 200m from the site.

Accessibility to services will therefore not be an issue for the site.

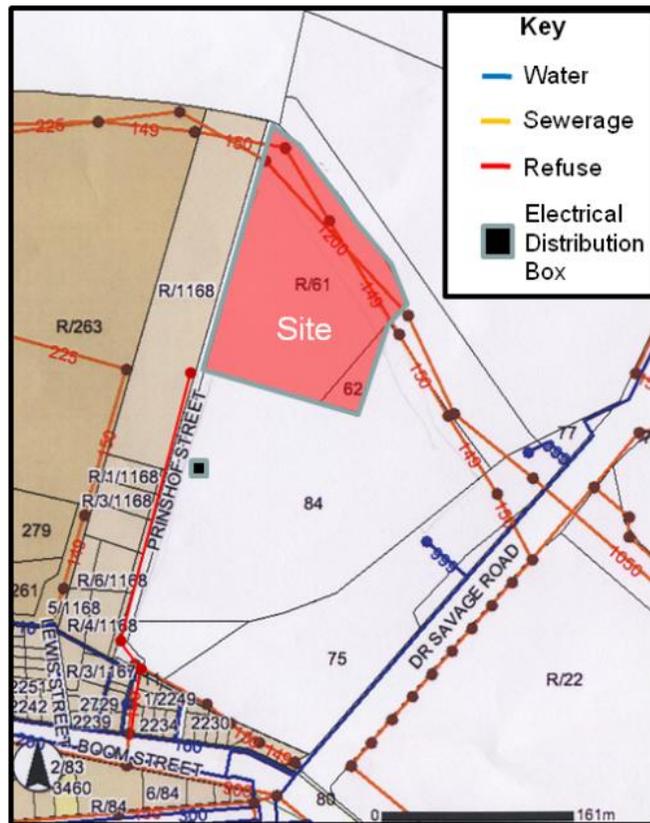


Figure 60 - Overview of services' in the immediate area

The transport infrastructure and services in the immediate area are good. This is evident from the proximity of bus and taxi routes and ranks which are concentrated just south of the site. As already indicated vehicle access would be from Prinshof Street which itself is accessible from major routes such as Soutpansberg Road and the N4. Pedestrian walking distances from the main taxi ranks are only 5 minutes to the site.

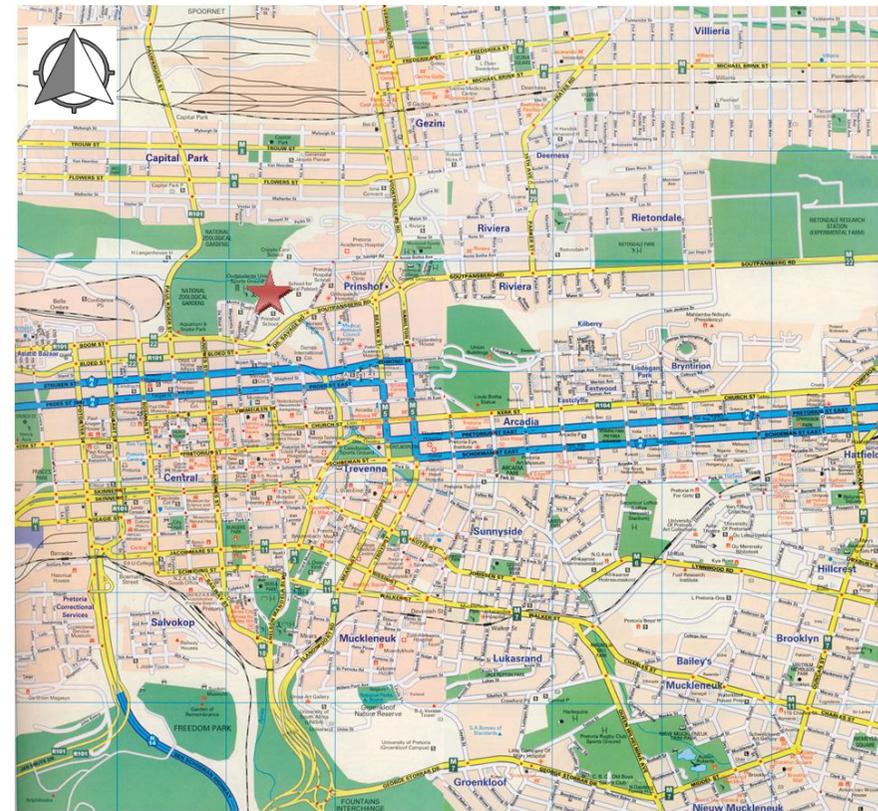


Figure 59 - Street map showing the proposed Little Eden Society Prinshof site (Map Studio 2006)

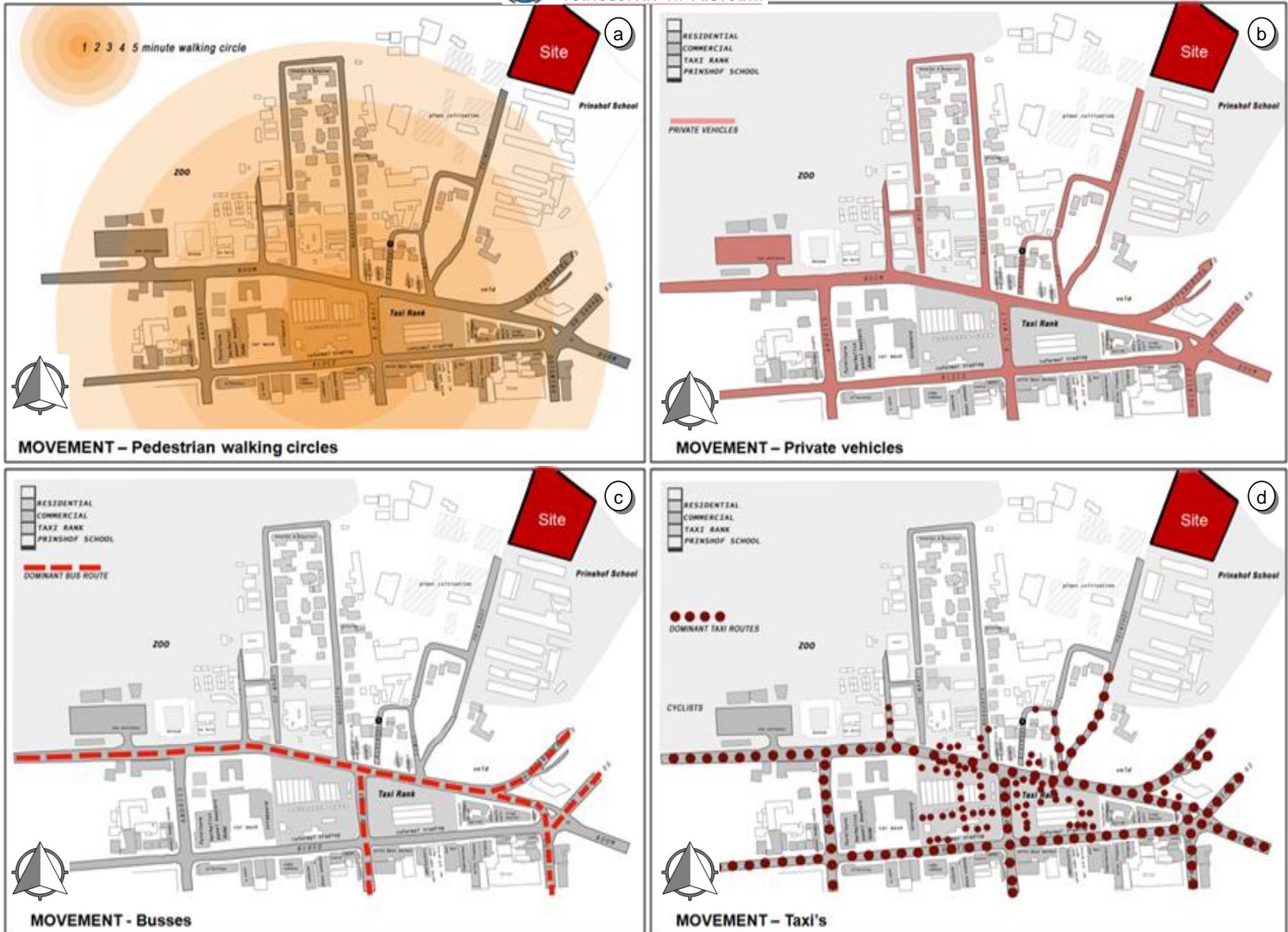


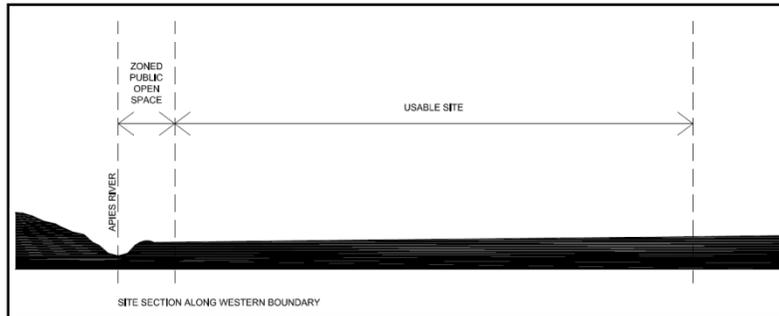
Figure 61 – Transport infrastructure and services in the immediate area: (a) pedestrian walking times (b) vehicle access (c) bus routes (d) taxi routes (class group work 2007)

#### 4.3.6 Geography

According to information obtained from the University of Pretoria's Geography department, the soil type in the Prinshof area is shale with plinthic catena: upland duplex and marglitic soils rare, dystrophic and/or mesotrophic; red soils widespread. The vegetation in the area is classified as urban temperate Bushveld.

Previously used as a sports ground, this site has a gentle fall north towards the Apies River. From the boundary fence towards the river there is a slope up about half a metre presumably over the sewerage pipes and then a steep slope down to the river.

Nellist (1970) mentions that there are advantages to a site with a slight rise, in that it gives the advantage of a pleasant and open outlook even when surrounded by buildings. In the way in which he describes the ideal site in the northern hemisphere, it can be deduced that in the southern hemisphere a gentle north facing slope with access from the south or west would be a good site choice.



**Figure 62 – Section along the west boundary and contour plan**

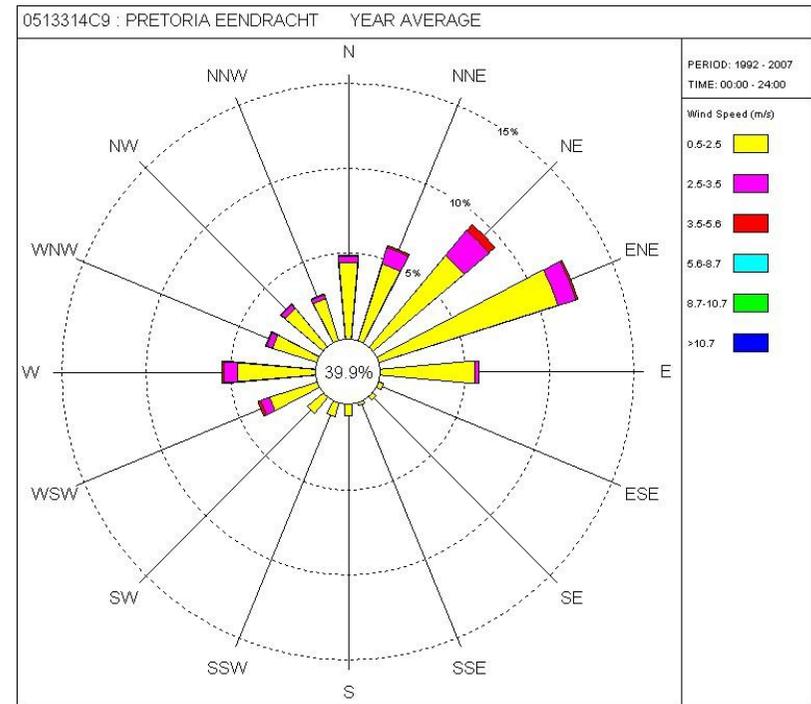
### 4.3.7 Hydrology

The Apies River is directly adjacent and runs to the north of the site. There is a 50-year flood-line which extends into the north of the site in the section zoned as public open space. The flood line does not extend past the northern boundary wall into the site.



**Figure 63 – Illustration of the flood lines for the Apies River to the north of the site (City of Tshwane Metropolitan Municipality 2007)**

*Wind* – According to wind roses received from the South African Weather Service, the average prevailing winds from August through to April are from the north-east and east-north-east, with the prevailing winds in May and June blowing from the west. During July the wind blowing from the east-north-east is only slightly stronger than that blowing from the west and the north-east. Figure 64 shows the average wind directions and speeds, with fewer than forty percent calm wind speeds. See Appendix for individual wind roses.



**Figure 64 - Wind rose showing the year average (McBride 2007)**

*Temperature* – Temperatures are mild to hot but rarely above the 35 degree mark or below freezing. At the extremes some level of discomfort will be experienced especially by the patients, many of whom could be extra sensitive to high and low temperatures and thus the design needs to take into consideration the temperature conditions at summer’s and winter’s peaks. As part of the design a low-energy building design philosophy will be applied.

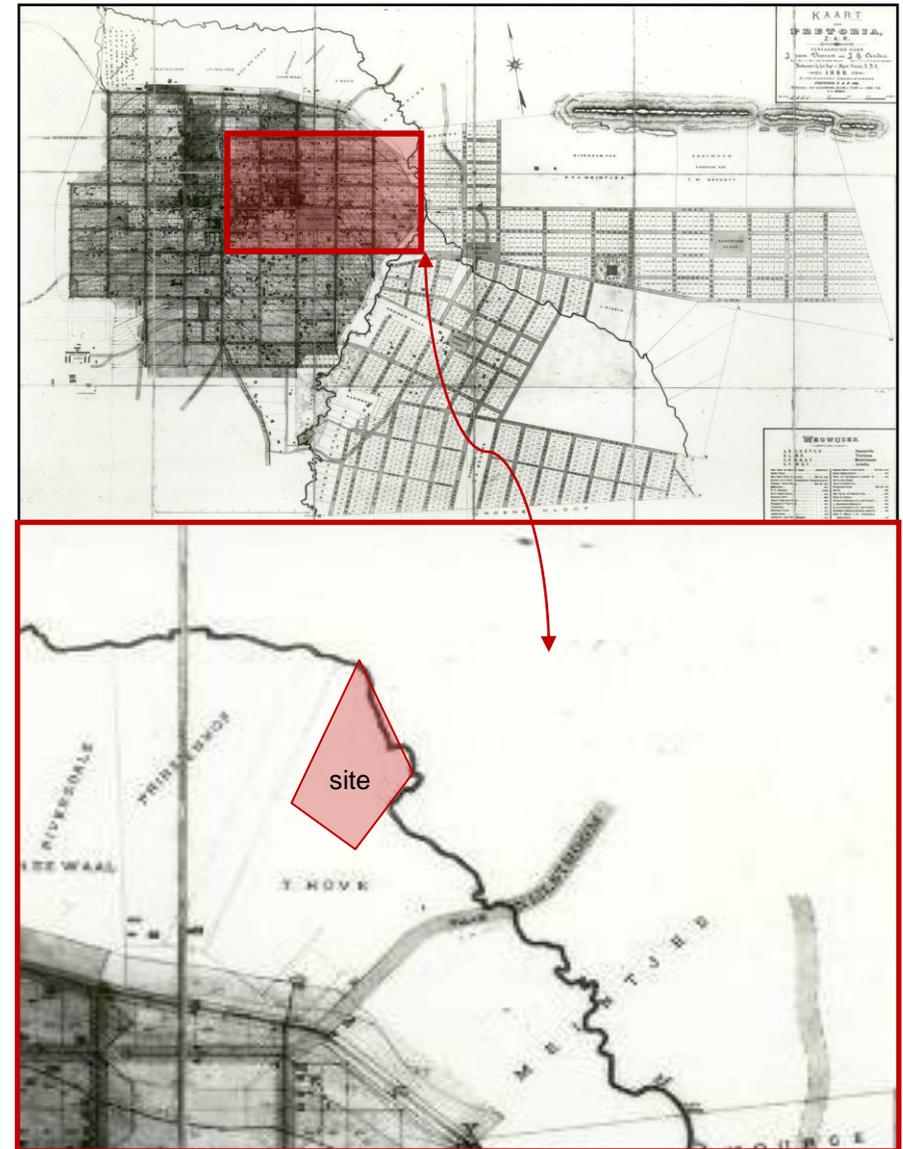


name Prinshof came from the neighbouring property, Prinsenhof, after its owner Joggem 'Tweeduum' Prinsloo.

*Precipitation* - Rainfall levels are medium to low. Standard methods of drainage and waterproofing are to be applied throughout the design. Rainwater harvesting will be used for the irrigation of the gardens. The temperature and precipitation data for Pretoria is listed in Table 7.

**Table 7 - Pretoria climatic data (South African Weather Services 2007)**

Climate data: Pretoria	Position: 25° 44' S 28° 11' E	Height: 1330m	Period: 1961- 1990				
This climatological information represents the normal values and is based on monthly averages for the 30-year period 1961 – 1990							
Month	Temperature (° C)				Precipitation		
	Highest Recorded	Average Daily Maximum	Average Daily Minimum	Lowest Recorded	Average Monthly (mm)	Average Number of days	Highest 24 Hour Rainfall
January	10	29	18	8	136	14	160
February	36	28	17	11	75	11	95
March	35	27	16	6	82	10	84
April	33	24	12	3	51	7	72
May	29	22	8	-1	13	3	40
June	25	19	5	-6	7	1	32
July	26	20	5	-4	3	1	18
August	31	22	8	-1	6	2	15
September	34	26	12	2	22	3	43
October	36	27	14	4	71	9	108
November	36	27	16	7	98	12	67
December	35	28	17	7	110	15	50
<b>Year</b>	<b>36</b>	<b>25</b>	<b>12</b>	<b>-6</b>	<b>674</b>	<b>87</b>	<b>160</b>



**Figure 65 - Plan of Pretoria in 1889 (after Van der Waal 1999)**

#### 4.3.9 Historical context of the site

A plan of Pretoria from 1889 shows that the identified site, and the site of the Prinshof school, were originally one plot owned by Theodore Hove (1834-1906). According to Van der Waal (1999) this ground, together with the plots originally owned by Eddie Meintjes (1861-1917) became part of the Prinshof Experimental Station, a farm where various grasses were cultivated in the early 20<sup>th</sup> century.



Subsequently the proposed site and part of neighbouring became the Oudstudente Unie Sports Ground. Of the Oudstudente Unie Sports Ground all but the proposed site was incorporated into the Zoo. The proposed site is currently owned by the City of Tshwane Metropolitan Municipality and is used by the Prinshof School as a playground and sports field.

people can live fulfilling lives and where their needs are addressed at multiple levels.

#### 4.3.10 Mental health services in the region

- *Weskoppies Psychiatric Hospital* (hereafter referred to as *Weskoppies Hospital*) – originally known as the Lunatic Asylum, is a psychiatric hospital offering services for mental illness, and is situated approximately 6 kilometres from the Pretoria Academic complex. The *Weskoppies Hospital* has approximately 1400 beds and a bed occupation figure of 95%. Approximately 5000 patients are admitted annually, whilst the outpatient section handles approximately 5200 patients per annum.
- *Denmar Specialist Psychiatric Hospital* - established in 1951, was the first private psychiatric clinic in Pretoria. It is a 120-bed hospital with day clinic facilities. Today, due to continuous development and upgrading, it is one of the largest private psychiatric facilities in the country.
- *Vista Private Psychiatric Clinic* - provides private mental health services to the general public and has a capacity of 127 beds. Only patients of 16 years and older are admitted. The most common conditions treated at the clinic, are mood and anxiety disorders i.e. depression, bipolar disorders, post-traumatic stress disorders and substance abuse.
- *Paul Jungnickel Home* - is a residential facility that delivers a 24-hour care service to 132 residents who, due to their physical and/or intellectual disabilities, are not able to function independently in the community.
- *YANA* – Assisted accommodation for mentally ill people in Zwavelpoort.

As detailed above, most of these facilities are institutional in nature providing medical based care and treatment of patients over a short to medium term basis. Those that do provide a “home” for patients over a longer term (typically their entire life) and offer a more holistic approach to their care, are limited in number and capacity. A need therefore exists within the community to provide a home in which

#### 4.4 Site analysis – opportunities and constraints

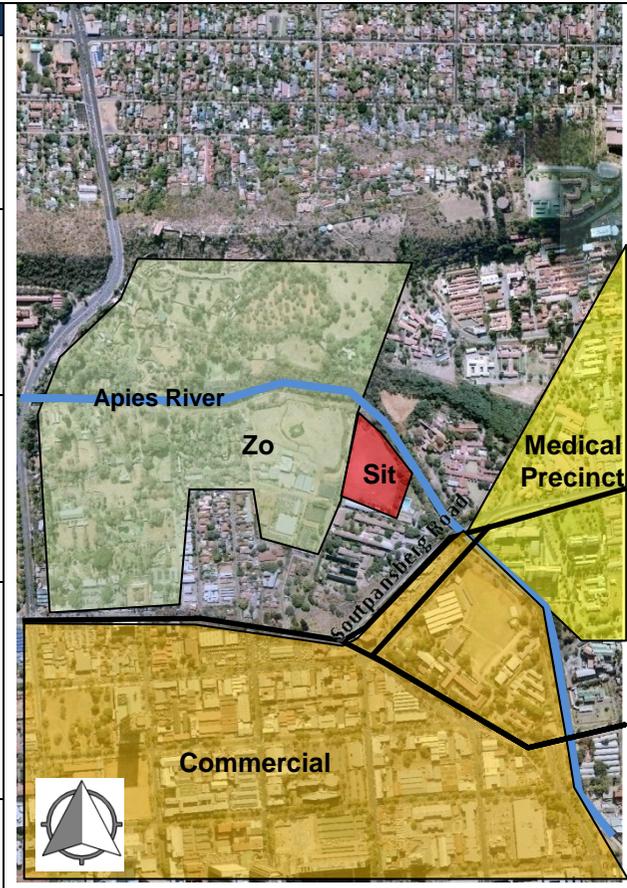
Opportunities		Constraints
<p><i>River:</i> The river it is a link with nature, even if only a visual one. Assuming that the Apies River Urban Design Framework guidelines are followed and the river upgraded, controlled access to the river from the site would definitely be a positive opportunity.</p>		<p><i>River (access and flooding):</i> It is dangerous for people with a disability, who if mobile, may not be able to swim and therefore controlled access to the river is important. Flood lines also become a problem as the ground slopes up before sloping down to the river to accommodate the 1:50 flood line, therefore restricting visual contact with the river and greenbelt.</p>
<p><i>Medical precinct:</i> The site, as shown in the context study, is close to medical facilities as well as facilities dealing with people with various disabilities. This is an opportunity and can provide support for the home in cases of emergency and the possible sharing of facilities. Access to facilities such as the Zoo also creates an opportunity.</p>		<p><i>Low rainfall:</i> Pretoria's rainfall is moderate to low. Water conservation and harvesting of rainwater should be a serious design consideration especially if extensive gardens are planned.</p>
<p><i>Site gradient:</i> The flatness of the site is an opportunity as this makes accessibility easier for users of wheelchairs, prams and carriages. The sharing of some of the ground as a common field by the Prinshof School and the Little Eden Society's planned building is an opportunity that can be used to the advantage of both.</p>		<p><i>Temperature:</i> Pretoria in general, has a fairly hot climate in summer. Provision should be made for the cooling of the facility during the summer months, preferably using passive mechanisms. Making use of the winds during summer months is also recommended</p>
<p><i>Access:</i> the site has access to the main roads without being on a main road which limits the possible traffic noise. There is also a small residential area between the site and the Zoo, which provides the opportunity for local residents to get involved with volunteer work. It will also provide recycling collection points for the surrounding community.</p>		<p><i>River (security):</i> The river also poses a security risk making the northern site boundary less secure.</p>
<p><i>Commercial district:</i> The site is also close to public transport and commercial enterprises within the commercial district south of the site.</p>		

Figure 66 – Opportunities and constraints of the site

a community based organisation, in close partnership with government, that will serve the city's poorest and most neglected residents, creating a better life for them and their families.

## 4.5 Legal and regulatory context

### 4.5.1 Alignment with the Mental Health Care Act, Act 17 of 2002

The new Mental Health Care Act (hereafter referred to as the Act) was drafted and passed in the year 2002. It advocated major changes to the principles and manner in which mental health care is provided and how the sector operates.

The main purpose of the new Act was to make mental health a health issue like any other, and not to separate it out as something totally different from other illnesses. An intrinsic part of the Act was the move to bring community services closer to the mentally ill patient instead of removing patients from the community and placing them in an institution out of sight. The Act essentially rearranges the mental health service and takes it from being a separate vertical programme to being a service that is decentralised and integrated into primary health care.

While this may imply the scaling back and restructuring of facilities and services especially provided to those patients with moderate or mild disability, the need for homes and other intuitions which, address the challenging needs of severe and profoundly disabled patients remains, a necessity. For such organisations the Act defined a new manner in which these organisations must render their services.

### 4.5.2 Alignment with the City of Tshwane Metropolitan Municipality's 'Tshwane's City Strategy'

In late 2004 the City of Tshwane Metropolitan Municipality finalised its strategic plans for the region for the next fifteen years. The proposal for the Little Eden Society's planned building- the Prinshof home (hereafter referred to Little Eden – Prinshof) is examined below in relation to what has been advocated in this strategy.

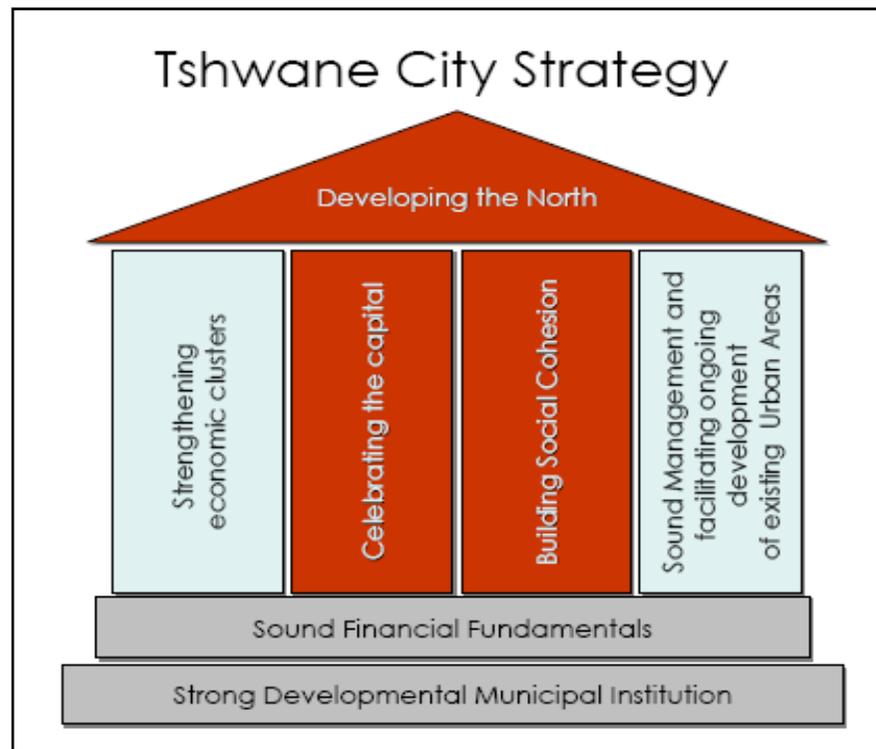
In its executive summary the strategy defines a key guiding principle, being a city that "deals creatively and realistically with the plight of the poor, but which delivers beyond the municipal mandate, mobilising the resources of all spheres of government, the economy and communities to create a better life for all" (City of Tshwane Metropolitan Municipality 2004: 6).

To this end it can be noted that the overall objectives of the Little Eden Prinshof home are closely aligned with the City of Tshwane Metropolitan Municipality's 'Tshwane's City Strategy' as it is an establishment founded

The strategy defines seven focus areas or objectives. Of these, three are noted as central and core to the strategy. These seven focus areas, with the key objectives in italics, are:

- *Developing the north*
- Strengthening economic clusters
- *Celebrating the capital*
- *Building social cohesion*
- Sound management and facilitating ongoing development of existing urban areas
- Sound financial fundamentals
- Strong developmental municipal institution

These seven focus areas, with the three key focus areas highlighted in red, are illustrated in Figure 67 taken from the strategy document.



**Figure 67 - Tshwane's City Strategy (City of Tshwane Metropolitan Municipality 2004: 8)**

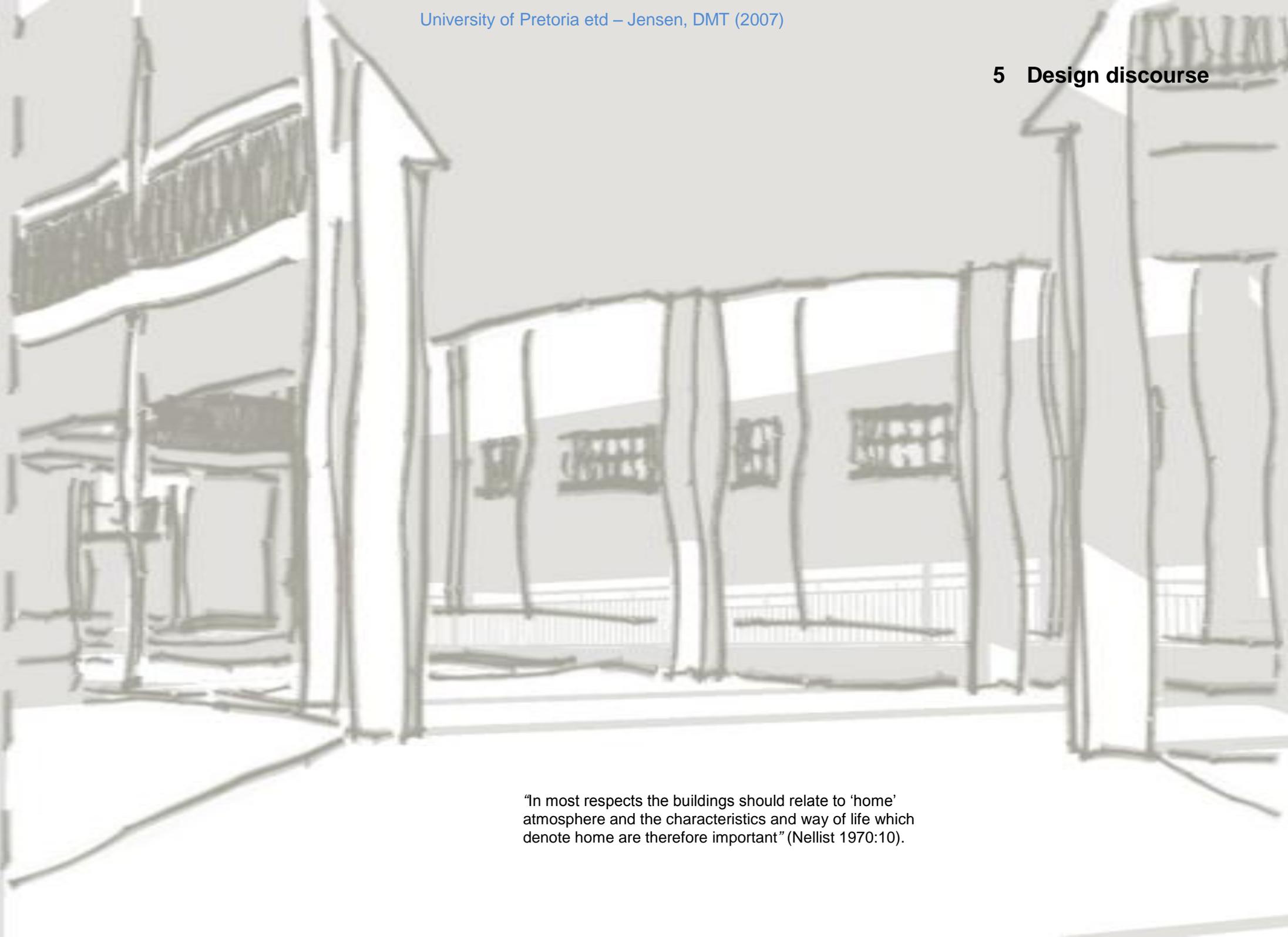
The establishment of the new facility is aligned to two of the objectives of the city.

“Focus 1: Infrastructure-led expansion of development potential of the North to tackle poverty” – The strategy advocates a “zone of choice” to be the focus of development and investment activities in the city. This zone of choice is defined to extend from the industrial areas of Akasia and Rosslyn in the west, to the N1 highway in the east.

As a result, this “zone of choice” should see an appreciable increase in population density and thus an increased need for supporting facilities including a home for the intellectually disabled such as Little Eden–Prinshof. The site of the proposed home would be approximately 5kms south of this region with close access via the R101, which runs directly through the northern region.

“Focus 5: Building high levels of social cohesion and civic responsibility to maximise development opportunities.” In line with the community integration model advocated by the Department of Health for institutions catering to intellectually disabled persons, the Little Eden–Prinshof home would by its nature promote social cohesion and civic responsibility within the immediate population through their day-to-day involvement in the home and with the residents. From a direct development impact point of view, the home would obviously provide employment and skills development opportunities for the people of Tshwane. Indirectly this home will alleviate the appreciable economic and responsibility burdens placed upon the families of the residents of the home, which would indirectly increase the economic capacity of those families.

## 5 Design discourse



"In most respects the buildings should relate to 'home' atmosphere and the characteristics and way of life which denote home are therefore important" (Nellist 1970:10).

## 5.1 Hypothesis

Through the proper site selection and planning, and the proper detail planning of facilities, the physical, mental and spiritual requirements for the care of persons with profound intellectual disability can be satisfied in an economically viable and environmentally sustainable manner.

## 5.2 Requirements

This home will have to have sleeping, eating and ablution facilities for the residents, therapy and medical facilities, administration, a place of worship, staff facilities and supporting facilities such as kitchen and laundry. According to Little Eden Society's principles, these facilities must be accessible to all levels of ability and encourage the mental, physical and spiritual growth and development of residents to their full potential. The facility should accommodate activities and therapies, which foster a loving and caring environment, with a strong connection to nature.

According to Bronston (1980: 13) desirable conditions for living arrangements for persons with disabilities include:

- ready access
- aesthetics of facility (residential rather than institutional)
- physical comfort
- age appropriate facilities and services
- positive value image of service and clients
- intense programming
- individualisation
- respectful and warm social interactions
- social integration
- meaningful participation of consumers and public
- self-renewal orientation
- receptivity to research
- ties to academia.

## 5.3 Design principles

The basis of the below developed design principles is derived from a knowledge and understanding of the treatment and caring for people who suffer from an intellectual disability, the study of architectural

designs of homes for the intellectually disabled person as well as the needs the client expressed. These principles are defined below:

- *The residents' special needs* – First and foremost this facility must address the needs of the residents, many of whom will spend their entire life at a home. For example, the design should take into consideration that residents can often be confused and disorientated. Routes and pathways should be easy to follow, without becoming long intimidating corridors. According to Cox and Groves (1990:126) this can be achieved by providing spaces for meeting or withdrawing into, and if possible, with a connection, even if only visual, to the outdoors. They can also be combined with day areas.
- *A secure but open environment* - The security of the residents, staff and visitors is also important. Violence and crime is an unpleasant part of life and the design needs to take this into consideration. The security consideration should prevent unwanted visitors from entering the facility as well as prevent residents leaving the facility unsupervised. At the same time the design needs to ensure that it does not fall prey to the failed jail and fortress styled designs of some of the asylums. It is therefore unnecessary to have high intimidating walls everywhere, however there needs to be a secure perimeter which can be achieved simply by the choice of the site, as the use of external walls of buildings and landscaping techniques.
- *The safety of the residents* – Especially residents who have challenged behaviour, have little concept of self care and preservation and can injure themselves and others and damage their surroundings. Their behaviour can be managed with supervision and medicine for the most part, but the design of the building also needs to accommodate such possible happenings. For example, this constraint has a major impact on the decisions made for the types of finishes and materials used. Special care needs to be taken with the choice of materials used in structures like windows, some of which should have toughened glass or a clear plastic, for example, polycarbonate. Reachable windows should have limited opening ability.
- *Practicality* – From an operational point of view, the design must aid the day-to-day operations of the facility such as catering and cleaning as well as to cater for emergency situations, for example, when a resident requires prompt hospitalisation. Vehicle accessibility to the premises, and within the facility, is therefore important. The layout, proximity and accessibility of the various buildings are important considerations. On a medium to long-term

basis, the durability and maintainability of the buildings are equally important. Applying the latest thinking and trends in the design should be tempered with practical considerations. While the asylum design and architecture of surveillance proved not to be ideal it had many practical benefits that should not be disregarded for the sake of being progressive. “Quality and durability should not be compromised as skimping usually costs more in the long run” (Slaviero 2007).

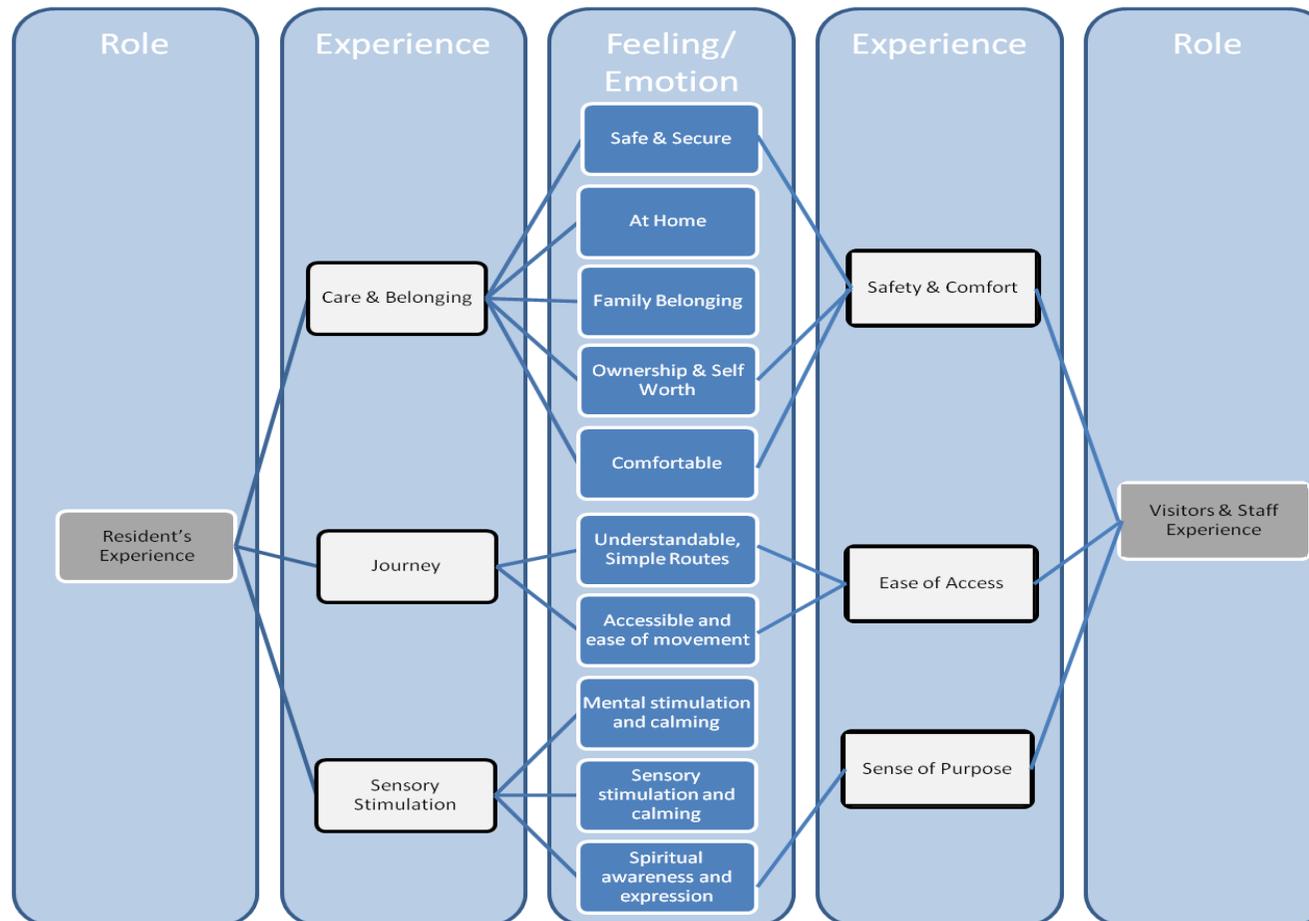
- *The economy and environment* – As the facility will be built, operated and maintained purely on the budget of an NGO charity which is mostly reliant on donations for its income, the economic feasibility of the structure’s implementation as well as ongoing maintenance are key. This goes hand-in-hand with the environmental aspect of the design, especially as far as heating and cooling is concerned.
- *Community integration* - Compared to the old institutions, which deliberately encouraged a sense of withdrawal and physical restraint, Cox and Groves (1990:123) recommend that facilities should avoid a clear feeling of segregation from society. The involvement and support of the community in the home is important to ensure its long-term sustainability and success. The design must take into consideration its “community and visitor friendliness index”. It should encourage outsiders to want to visit and be involved in the new home. Aesthetic qualities and facilities available for use by the community, visitors and volunteers are therefore important considerations.

## 5.4 Experience of the architecture

The architecture of the new Little Eden Society facility is about how, through its buildings and other elements, the people, who would use it, should experience the facility and what feelings and emotions would be evoked. However, different people would experience the architecture in a different manner depending on the role they play within the facility. In trying to simplify things, the roles were whittled down to two core roles, which share common experience and emotional needs, namely:

- visitors and staff
- residents.

These are articulated and explained diagrammatically in Figure 68:



**Figure 68 - The conceptualisation of the experience that the facility should provide**

### 5.4.1 Safety, care, comfort and belonging

The design of the facility needs to cater for the emotional needs of the residents as well as of the staff and visitors in terms of safety, care, comfort and belonging. These include:

- safe and secure what??
- at home and family belonging
- ownership and self worth
- comfort.

**Table 8 - Architectural concepts to achieve the safety, care, comfort and belonging experience**

Emotion/feeling	Architectural concepts through which this can be achieved
Safe & secure	<ul style="list-style-type: none"> <li>• A single access point to the facility will allow maximum access control.</li> <li>• Multiple security boundaries created through boundary walls as well as the layout of the buildings can achieve multiple security zones within the site without creating a “jailed in” feeling.</li> <li>• Ample secure parking within the site’s boundary walls</li> <li>• The use of rounded edges to minimise accident related injuries.</li> <li>• The use of materials that are robust, non-toxic and less likely to break.</li> <li>• The use of safety barriers such as railings for elevated walkways.</li> <li>• Quick access for emergency vehicle to the accommodation as well as throughout the site.</li> </ul>
At home	<ul style="list-style-type: none"> <li>• Incorporation of residential architectural elements into the architecture of the facility such as:               <ul style="list-style-type: none"> <li>○ use of double pitched roofs</li> <li>○ use of typical residential building materials like brick and plaster</li> <li>○ creation of gardens around the various buildings, especially the accommodation area</li> </ul> </li> <li>• The creation of a village concept within the facility, where various buildings fulfil functions of home, play, school, church, etc.</li> </ul>
Ownership & self-worth	<ul style="list-style-type: none"> <li>• Availability of amenities such as gardening where residents can perform simple tasks thus creating a perception of contribution and therefore self-worth.</li> <li>• Through scaling of personal elements such as bedrooms, to create a perception of ownership and private space i.e. smaller bedrooms of 2 to 5 beds as opposed to large dormitories of 10+ beds.</li> </ul>
Comfort	<ul style="list-style-type: none"> <li>• Ensuring the heating and cooling considerations are taken into account and correctly applied, for example:               <ul style="list-style-type: none"> <li>○ building orientation must take into consideration solar heating conditions</li> <li>○ overhangs and other shading mechanisms are employed and correctly configured to maximise benefits both in summer and winter</li> <li>○ ventilation is effective and controllable</li> </ul> </li> <li>• Ambient noise is considered when placing the building on the site, remembering that elements such as the accommodation and chapel require lower levels noise</li> <li>• The ability to move between buildings while being shielded from harsh weather such as heat and rain through covered walkways.</li> </ul>

### 5.4.2 Simple, quick and easy routes

The navigation of the facility should be intuitive and moving between buildings and elements should be quick and easy for staff and visitors as well as for residents. The resident should experience the journey around the facility as:

- understandable with simple clear routes
- accessible to and from all buildings and elements
- effortless where movement is facilitated as much as possible.

**Table 9 - Architectural concepts to achieve the simple, quick and easy experience**

Emotion/Feeling	Architectural concepts through which this can be achieved
Understandable, simple and clear	<ul style="list-style-type: none"> <li>• The creation of a single main “movement” spine with direct as possible profile connecting the facilities’ buildings and elements which will make journey choices simple and easy.</li> <li>• Ensuring that movement structures such as walkways are as open as possible, not enclosed by walls or buildings on all sides. This assists the user with orientation as well as allows them to “journey” through the facility experiencing the various sights and sounds.</li> <li>• The ability of the user to see their end destination makes orientation and journey easier and less unknown. This is important where residents can become easily anxious if they feel they are lost.</li> </ul>
Accessible and quick	<ul style="list-style-type: none"> <li>• Buildings and elements should be placed in proximity to one another so as to minimise journey distances and times for anticipated high frequency commutes.</li> <li>• Access ways to and from buildings should be as close to primary movement paths as possible.</li> <li>• The creation of a single primary “movement spine” will also act as a pedestrian “highway”, facilitating rapid movement.</li> <li>• Movement walkways should be wide enough to allow passing traffic of wheel chairs, prams and carriages.</li> <li>• Vehicle access to buildings requiring pickup or delivery services.</li> <li>• Basic access to all buildings onsite via vehicle transport.</li> </ul>
Effortless	<ul style="list-style-type: none"> <li>• Especially for residents with physical disabilities movement needs to be facilitated through the use of ramps which must be conveniently placed and lifts where required.</li> <li>• Distances of high frequency commuting routes such as between the kitchen and accommodation and accommodation and therapy, should be as short as practically possible especially where users are required to transport people and goods on foot such as pushing a wheelchair or delivering food to the accommodation.</li> </ul>

### 5.4.3 Mind, body and soul

Talking about intellectually disabled children, Spivack (1984:72) says that, “[l]ocked within the perceptual, physical, and emotional handicaps that these children may have, we must assume there are capabilities and needs to love, aesthetic sensibilities, social needs, the desire to be as much a free, full human being as is possible within the limitation with which the child was born.”

The Little Eden Society is renowned for not only caring for its residents but also spending resources to develop each facet of the person’s abilities in terms of their mind, body and soul. The architecture of the facility should therefore also look to creating and encouraging:

- mental and sensory stimulation and calming
- spiritual awareness and expression.

**Table 10 - Architectural concepts to achieve the mind, body and soul experience**

Emotion/Feeling	Architectural concepts through which this can be achieved
Mental and sensory stimulation and calming	<ul style="list-style-type: none"> <li>• Access and exposure to natural sunlight is an important need of the residents. Buildings, especially the accommodation, should maximise sunlight exposure through large as well as strategically placed windows. These should generally be north facing to take advantage of the light and warmth properties.</li> <li>• Where natural lighting is required to create a more relaxed and reflective atmosphere, the use of indirect lighting is recommended. This would especially be applicable to the chapel.</li> <li>• Interaction with, and proximity to nature is an important mechanism to calm and stimulate the mind and senses. This can be achieved by:               <ul style="list-style-type: none"> <li>○ planting gardens surrounding the various buildings of the facility, especially around the accommodation</li> <li>○ creating gardens that are specifically grown for their sensory impacts in terms of sounds, visual, touch, taste and feel e.g. flowering plants and fruit trees</li> <li>○ have plants in close proximity to the main walkways, in that way make the journey a sensory experience as well.</li> </ul> </li> </ul>
Spiritual awareness and expression	<ul style="list-style-type: none"> <li>• The establishment of a chapel on site is an obvious measure to serve the spiritual needs of the residents, staff and visitors. The labyrinth facilitates a calming and spiritual journey.</li> <li>• Because the very reason for Little Eden Society’s existence is as a result of a deep spiritual devotion, it is consciously and should therefore architecturally also be a central aspect of the facility. This conscious reminder and recognition should be accentuated through the construction of a bell tower which is visible to residents, staff and especially visitors.</li> </ul>

## 5.5 Site layout approach

By reviewing of the architectural evolution of buildings which facilitated the care of people with mental illness and intellectual disability in the past, a number of building layouts and overall design principles have been discussed. The table below defines the various building types as well as an evaluation of each in terms of their applicability to the design of the new home for Little Eden - Prinshof:

**Table 11 – Choice of site layout approach**

Building type		Description	Evaluation against design principles					
			Needs	Security	Safety	Practic-ality	Econo-my / environ-ment	Integra-tion
<b>Contained block</b>		This would entail a single self-contained multi-storey building, housing all the functions and services required. It would be surrounded by the gardens and other external elements.						
<b>Kirkbride plan</b>		This design comprises a single self-contained building of no more than 2 storeys including various wings forming a long narrow stepped building. The gardens and external elements surround the building as well as occur within the courtyards created through the orientation of the wings.						
<b>Village</b>		The Village layout entails separate buildings housing the various functions. Circulation is achieved through connecting walkways and roads. The landscape and external elements are integrated into the layout between and around the individual buildings.						
<b>Radial plan</b>		The radial layout requires the various wings to be orientated in a star configuration around a central surveillance and control point. The gardens and external elements may be wedged between buildings in the star or around the complex.						

<b>Key</b>					
	Does not address the principle	Only begins to address the principle	Partially addresses the principle	In the most part addresses the principle	Fully addresses the principle

While all four layouts have their advantages, there is no outright “winner “ across all criteria. The village concept does score the highest and is also in line with current thinking and best practice. The village layout will therefore be applied in the design of the Little Eden - Prinshof home.

## 5.6 Core building and element identification

By means of the context studies conducted, it was also established that the home needs to provide a number of functions and services to make up a self-contained facility. Enabling these functions and services requires infrastructure, particularly building infrastructure. A number of buildings, structures and elements were identified to serve these needs. Table 12 lists the 14 buildings, structures and elements identified as required for the facility.

**Table 12 – Listing of required buildings and elements for the new facility**

Functions & services required	Corresponding building/element	Functions & services required	Corresponding building /element
Accommodation	<b>Dormitories</b>	Facility vehicle parking	<b>Garages</b>
Ablutions		Minor structure and vehicle maintenance & repairs	
Day rooms		Tool and part storage	
Reception	<b>Administration</b>	Backup generator	<b>Service yard</b>
Retail		Waste storage & disposal	
Meeting & conference		Outdoor staff and facility vehicle parking	
Offices		Community religious services	
Physiotherapy	<b>Therapy centre</b>	Residents religious services	<b>Chapel</b>
Occupational therapy		Fêtes and outdoor events	
Hydrotherapy		Community sports training grounds	<b>Open field &amp; playground</b>
Reflexology		Outside activities for the residents	
Music therapy		Sensory garden	
Large group therapy		Orchard	
Concerts & entertainment	<b>Hall</b>	Vegetable garden	<b>Gardens</b>
Laundry		Covered pedestrian access	
Kitchen	<b>Services</b>	Vehicle access	<b>Covered walkway</b>
Doctor's room		Vehicles parking	
Nurse's office		Labyrinth	<b>Parking and access roads</b>
		Rain water reservoir	

### 5.7 Site layout design

Once identified, the placement of each building and element within the site needs to be addressed taking into consideration constraints and characteristics of the site as well as full advantage of synergies between elements to ensure the optimum operation of the facility. When considering placement of the various buildings, structures and elements within the site, the following factors need to be considered for each:

1. level of public access
2. level of security
3. noise levels
4. required privacy levels
5. aesthetics and setting.

These 5 factors need to be evaluated and are articulated in Figure 69.

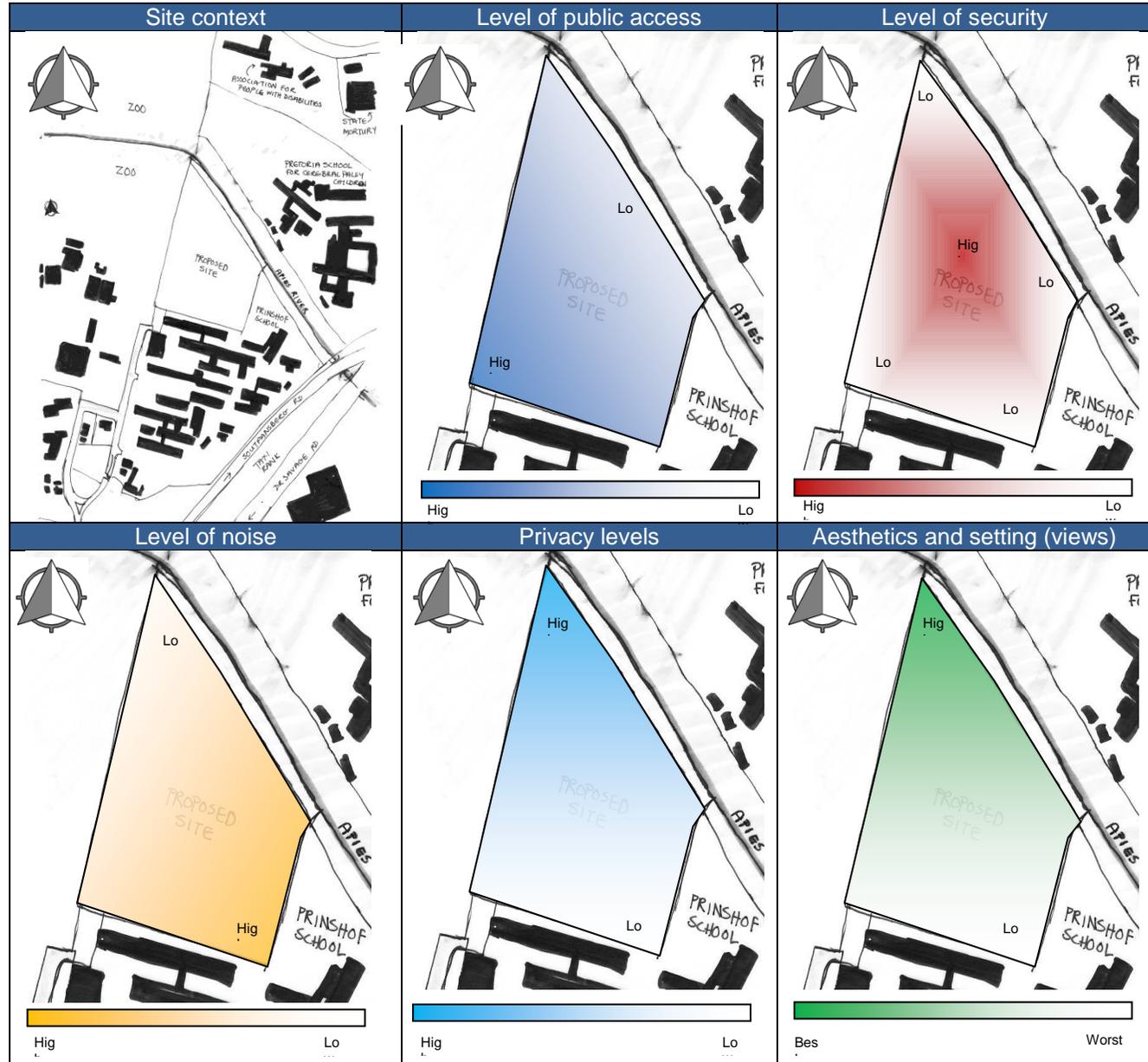


Figure 69 – Evaluation of various characteristics of the site

Once the characteristics of the site were understood they needed to be applied to the various buildings and elements in order to gain an insight as to where on the site their ideal placement would be. Each building and element was thus evaluated and ranked in order of importance against the 5 characteristics used to describe the site. This is shown in Table 13:

**Table 13 – Ranking of the required buildings against the site evaluation characteristics**

Building/element	Level of required public access	Level of required security	Required reduced noise levels	Required privacy levels	Aesthetics and settings
Administration	2	3	3	9	6
Dormitories	10	1	1	1	1
Therapy centre	9	2	4	2	4
Hall	7	7	5	5	7
Services	8	5	6	6	10
Garage	6	4	7	7	12
Service yard	4	8	8	8	11
Chapel	3	6	2	4	5
Open field and playground	5	11	10	10	8
Gardens	11	10	9	3	2
Parking	1	9	11	12	9
Water retention pond	12	12	12	11	3

Level of importance ranking											
1	2	3	4	5	6	7	8	9	10	11	12
Highest		High			Mediocre			Low			Zero

Finally, the interactions and importance of proximity between the buildings and structures themselves needed to be characterised and quantified in order to understand the relative positioning of each to one another. A relationship matrix was used which rates the importance of proximity between all building and structure this matrix is shown in Table 14.

Within the matrix, “hot spot” clusters can be identified which indicate a need for proximity between the buildings and structures within the cluster. By means of this method 3 proximity clusters and 2 cluster connections were identified:

- 1. Reception cluster:** This cluster represents those buildings providing public facing service. The public parking, administration, chapel and hall buildings should therefore be placed in close proximity to one another.
- 2. Services cluster:** These are the building and structures providing essential operational services to the rest of the facility and include the services building, garage and service yard which should be clustered.
- 3. Residential cluster:** The dormitories, therapy centre, field, garden and pond represent the residential or living space within the facility. The building and elements should be clustered with one another.
- 4. Services and reception connection:** The services and reception clusters should be located close to one another and have a strong link.
- 5. Services and residential connection:** The services and residential cluster should be in close proximity to each other and have strong connectivity elements between them.

**Table 14 – Building/Element proximity relationship matrix**

Rating	Importance of Close Proximity	Parking	Administration	Chapel	Hall	Services	Garage	Service Yard	Open Field & Playground	Therapy Centre	Dormitories	Gardens	Water Retention Pond
1	Extreme												
2	High												
3	Mediocre												
4	Low												
5	None												
Parking		1	1	2	3	3	2	1	3	4	3	5	
Administration		1	3	2	1	1	1	5	3	4	5	5	
Chapel		1	3	1	5	4	5	3	3	3	2	5	
Hall		2	1		3	3	5	1	1	5	2	5	
Services		3	1	5	3	1	1	5	3	1	3	4	
Garage		3	1	4	3	1	2	1	5	5	5	5	
Service Yard		2	1	5	5	1	1		5	5	5	4	
Open Field & Playground		1	5	3	1	5	5	5		2	4	2	5
Therapy Centre		3	3	3	1	3	5	5	2		1	1	4
Dormitories		4	4	3	2	1	5	5	4	1	3	2	2
Gardens		3	5	2	2	3	5	4	2	1	2		2
Water Retention Pond		5	5	5	5	4	4	4	5	4	2	2	

### 5.7.1 Site layout

Using the site characteristic information as well as building/element proximity relationship matrix, the various buildings and elements were positioned upon the site. To do this, the site was initially divided into areas and each element included, obtaining a rough layout. After extensive further development based upon the initial rough layout a more defined site plan was obtained. These are illustrated in Figure 70.

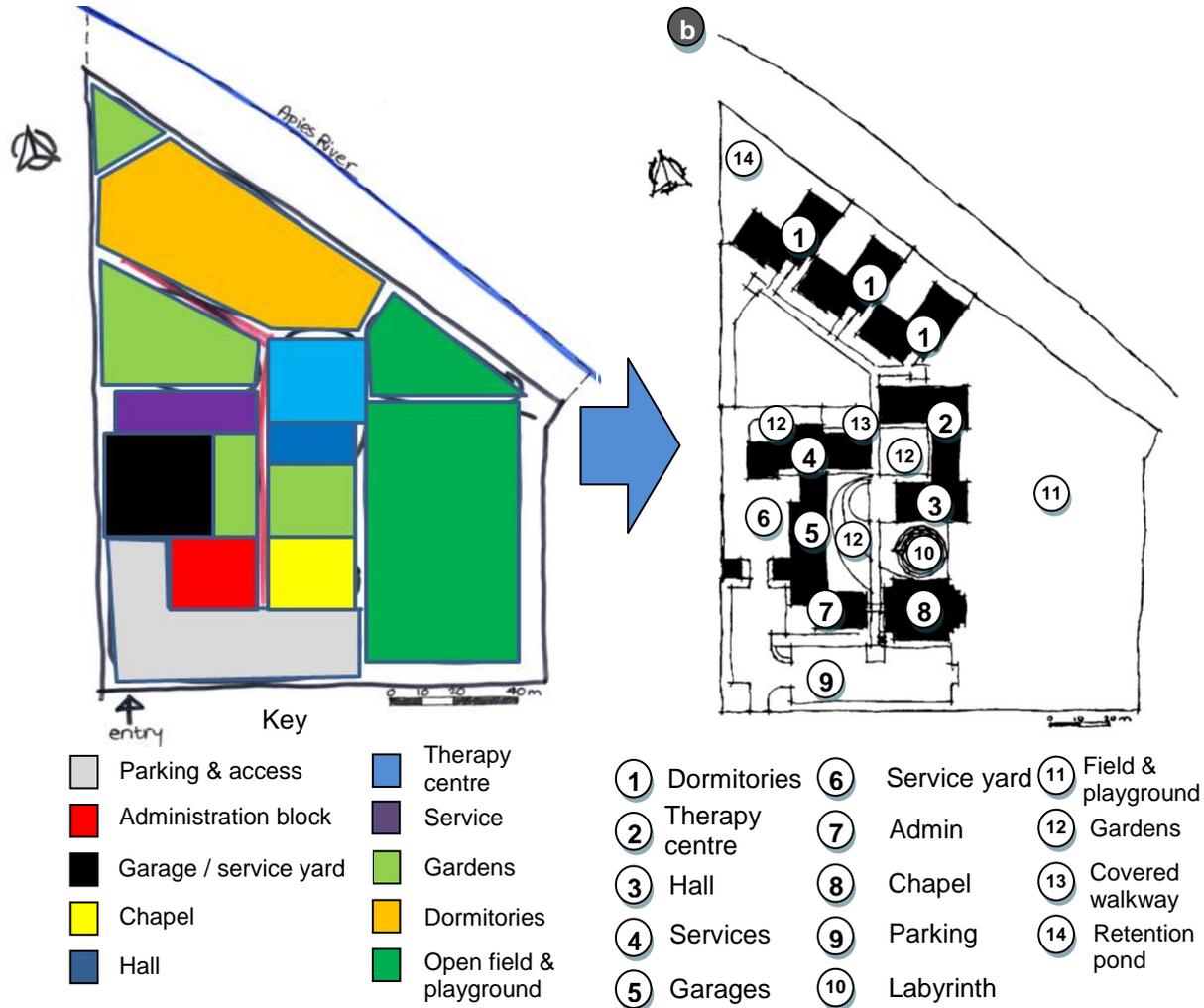


Figure 70 – Site plans showing (a) initial rough layout (b) final site layout design

### 5.7.2 A village layout

This layout design also achieves the chosen village layout plan. The buildings have been arranged in a village type of plan. 'Home' is where one eats, sleeps and baths. 'School' would be the therapy centre. 'Work' includes tending the gardens and helping in the laundry and kitchen. The chapel provides a place for prayer.

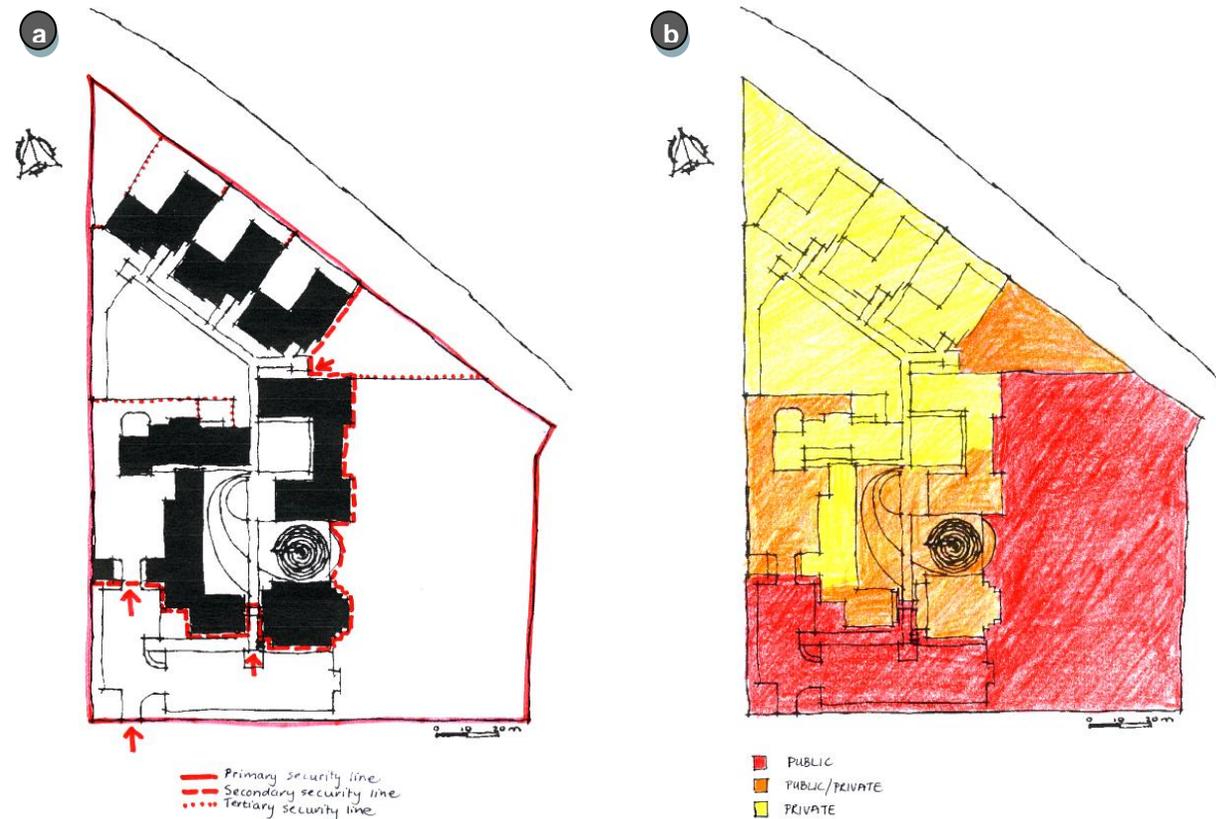


Figure 71 – A site plan illustrating the application of the village concept

### 5.7.3 Security and privacy layout

In order to create the safety and security for the residents, staff and visitors, various concepts and elements have been employed in the design of the facility including:

- A single access point from a quiet cul-de-sac road ensures entry and exit can be well controlled.
- The boundary walls and fences provide the primary line of security from external forces such as crime and violence, as well as keeping residents within a supervised environment. The site is surrounded on one side by the Zoo, two sides by the school and the river on the fourth side. The river boundary is the only side that presents a security risk because it is uncontrolled. This will be negated by the appropriate fencing on the boundary as well securing access to and traversal of the river through the implementation of barriers in conjunction with the neighbouring organisations and the City of Tshwane Metropolitan Municipality's plans for the upgrading of the Apies River.
- The buildings form part of the secondary security line which separates the public from the more private areas, and allows for a more controlled access of the public.
- The layout allows access for emergency vehicles such as ambulances and fire trucks around the site as the buildings are all at least 4m from the boundaries.



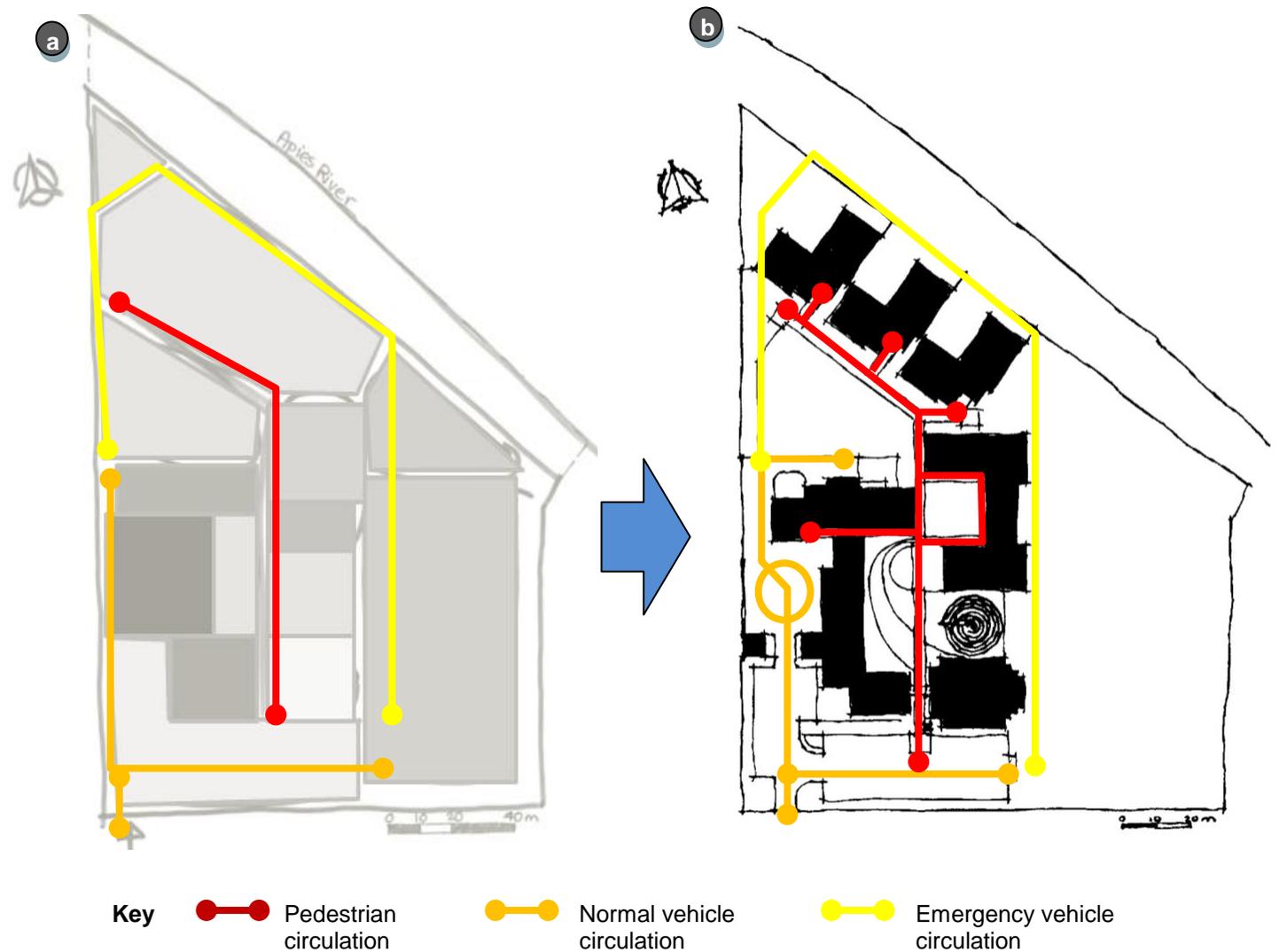
**Figure 72 – Site plans showing (a) security lines and (b) public and private areas**

### 5.7.4 Circulation

The final consideration before designing the site layout was the basic circulation. Three types of circulation were identified:

- normal vehicle circulation
- pedestrian circulation
- emergency vehicle circulation.

These were then applied to the grid site layout giving a very rough approximation of the required circulation for the site. Using the placement and circulation assessments and information, as well as an exhaustible number of design options the site layout was finally resolved.



**Figure 73 – Site plans showing (a) initial circulation layout and (b) final circulation design**

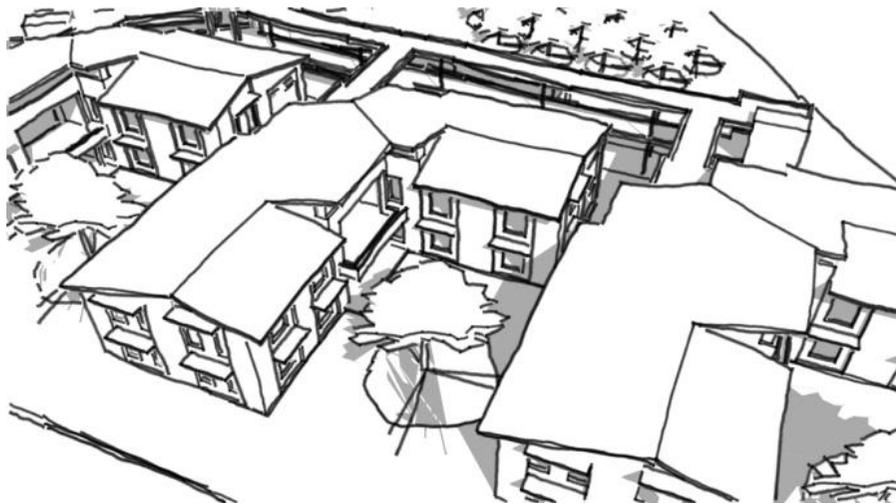
## 5.8 Design

### 5.8.1 Common elements

Based upon the principles and ideas discussed in the preceding chapter on design principles and the experience of the architecture, the common and core elements of the architecture can be defined before proceeding into the detail of the design. These elements identified and to be discussed are:

- roofing
- walls
- windows
- walkways.

#### 5.8.1.1 Roofing



**Figure 74 – A view of the modelled dormitory building roofs**

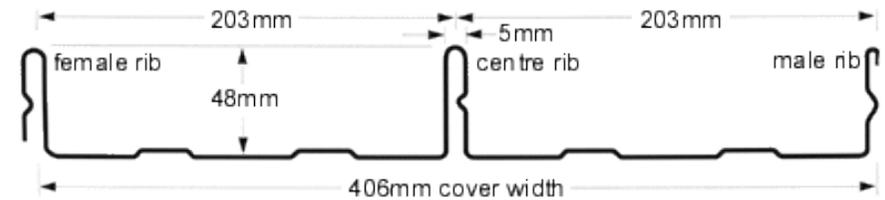
*Style:* Double pitched with gabled ends. For the church and hall, single pitch will be used and a combination of both for the dormitories.

*Pitch Angle:* An overall pitch angle of 15° will be employed throughout with the exception of the church and hall where a shallower angle of 8° will be used.

*Material:* Brownbuilt roof sheeting.

*Shading and overhang:* The overhangs of the roofs have been designed to provide maximum shading during the summer months and heating during the winter months.

*Application of principles and experiences:* A more residential feel is gained through double pitching of the roof as well as through the use of sheeting which matches the styling of the surrounding residential buildings. Optimal sunlight penetration is achieved for both summer and winter times, through optimal building orientation and extended overhang of the roofs. This in turn reduces heating and cooling load costs and increases the comfort of the residents and other occupants.



**Figure 75 – cross section of Brownbuilt roof sections (Brownbuilt 2007)**

## 5.8.1.2 Walls



**Figure 76 - A view of the modelled brick and plaster finish for the dormitory buildings**

*Material:* Plastered and off-white painted masonry walls with sections of red face brick.

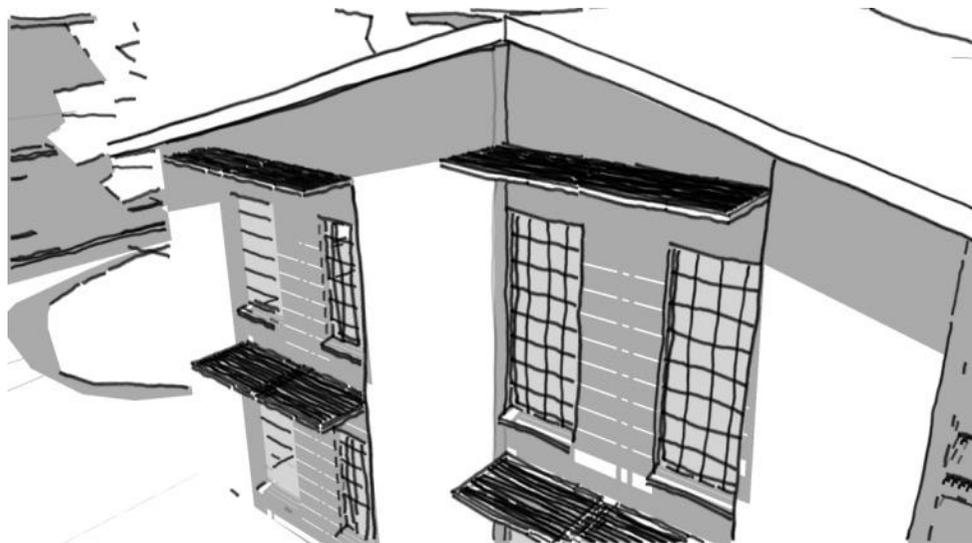
*Style:* Stretcher bond is to be applied throughout with selected focal areas to have decorative brickwork and alternate bond styles such as stacked.

*Application of principles and experiences:* The use of face brick portions and plastered portions, which are common residential construction materials, further lend a residential feel to the buildings. In combination, they create an aesthetically appealing texture and finish to the buildings. Face brick also has low maintenance requirements, so when it comes to repainting this only has to be done to part of the facility.



**Figure 77 – Photographs of various brick bonds (photos by author)**

### 5.8.1.3 Windows



**Figure 78 - A modelled view of the cottage pane windows used in the facility**

*Material:* Steel frames. Safety glass to be used in the dormitories and therapy centre.

*Style:* Cottage pane with opening and fixed sections. Limited openings for windows accessible to residents, especially on the upper floor.

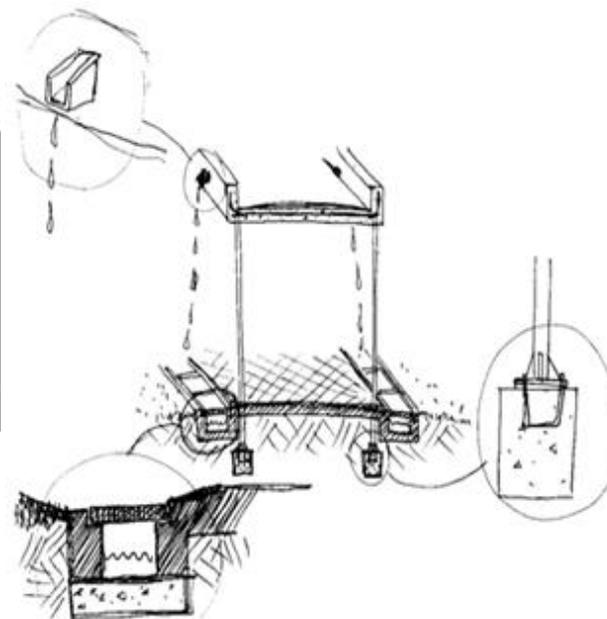
*Shading louvers:* Shading louvers will be applied where required to prevent excess sunlight penetration during the summer months.

*Sizing and placement:* Window areas are large and tall to maximise sunlight and views outside. Frames are to be set low in the wall to allow wheel chair bound residences to see outside.

*Application of principles and experiences:* Large and accessible windows ensure

that residents can get maximum sensory stimulation through exposure to adequate natural light as well as to maintain a connection to the natural environment. The use of cottage pane windows allows for security bars to be part of the overall design of the windows as opposed to accentuating their presence.

**Figure 79 - Cross section sketch illustrating concept of the concrete walkway with foundation and drainage detail**



### 5.8.1.4 Walkway

*Material:* Reinforced concrete roof on round steel tube pillars. Brick paved ground floor walkways.

*Finish:* Off-shutter concrete. Painted steel columns.

*Safety:* Elevated walkway has steel vertical bar balustrades.

*Drainage:* Drainage points will be located along the walkway roof. These will feed into steel grate-

covered gutters on either side of the walkway. This water is channelled along the walkway and eventually into the retention pond.

*Application of principles and experiences:* The use of concrete for the construction of the walkways makes it a strong and defined element within the architecture and differentiates it from the brick and plaster of the surrounding buildings. This makes navigation of the facility through the walkways clearer and more intuitive. The covered walkway also protects the user from the outdoor elements making movement within the facility comfortable and possible under most weather conditions. The use of round as opposed to more angled profile pillars reduces the likelihood of a serious injury if anyone were to fall against them. The walkway also serves the secondary purpose of rainwater collection and channelling it to the retention pond in the northwest corner of the site.

### 5.8.2 Design overview

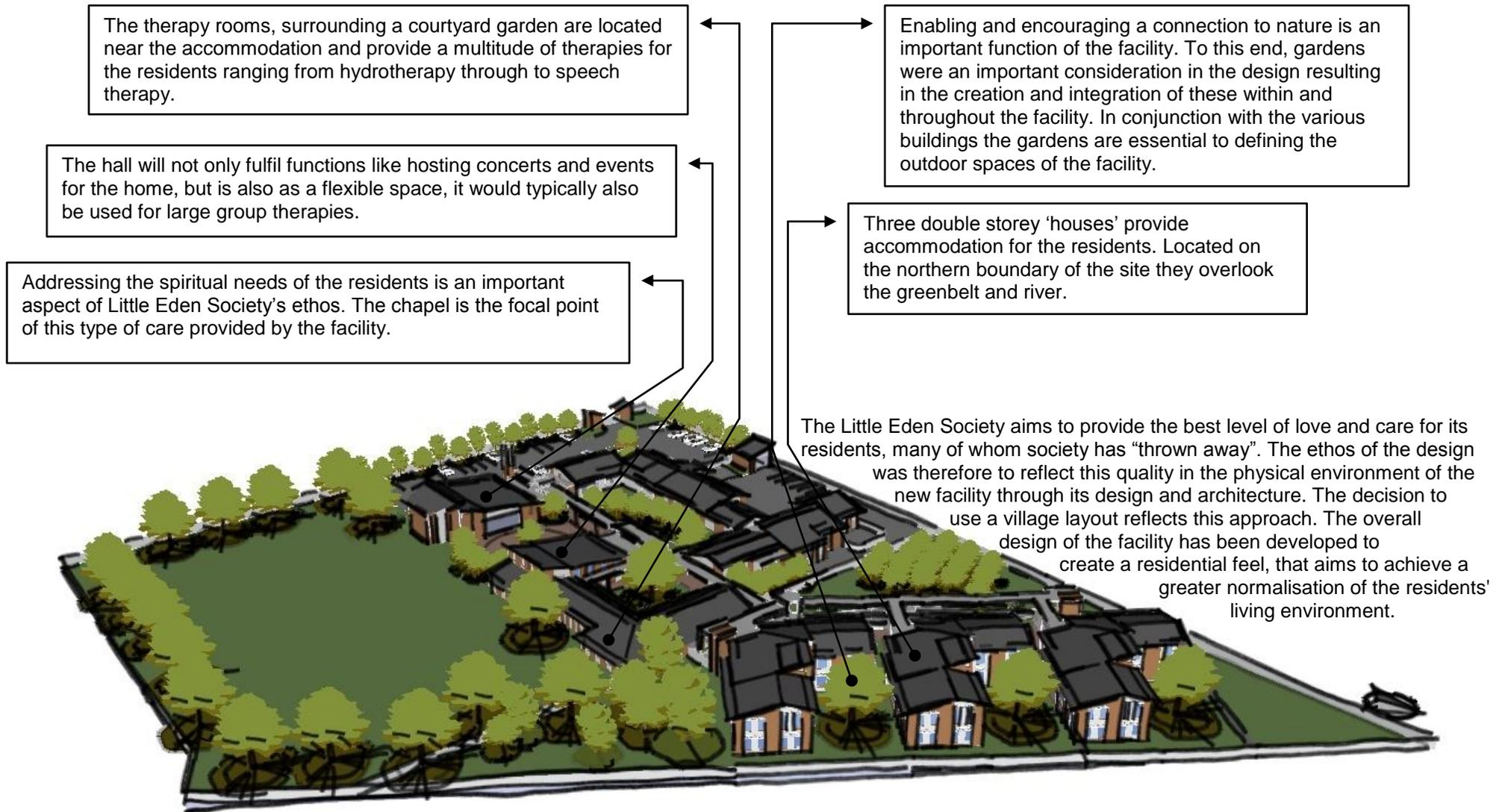


Figure 80 – A view of the modelled facility from the northern end of the site

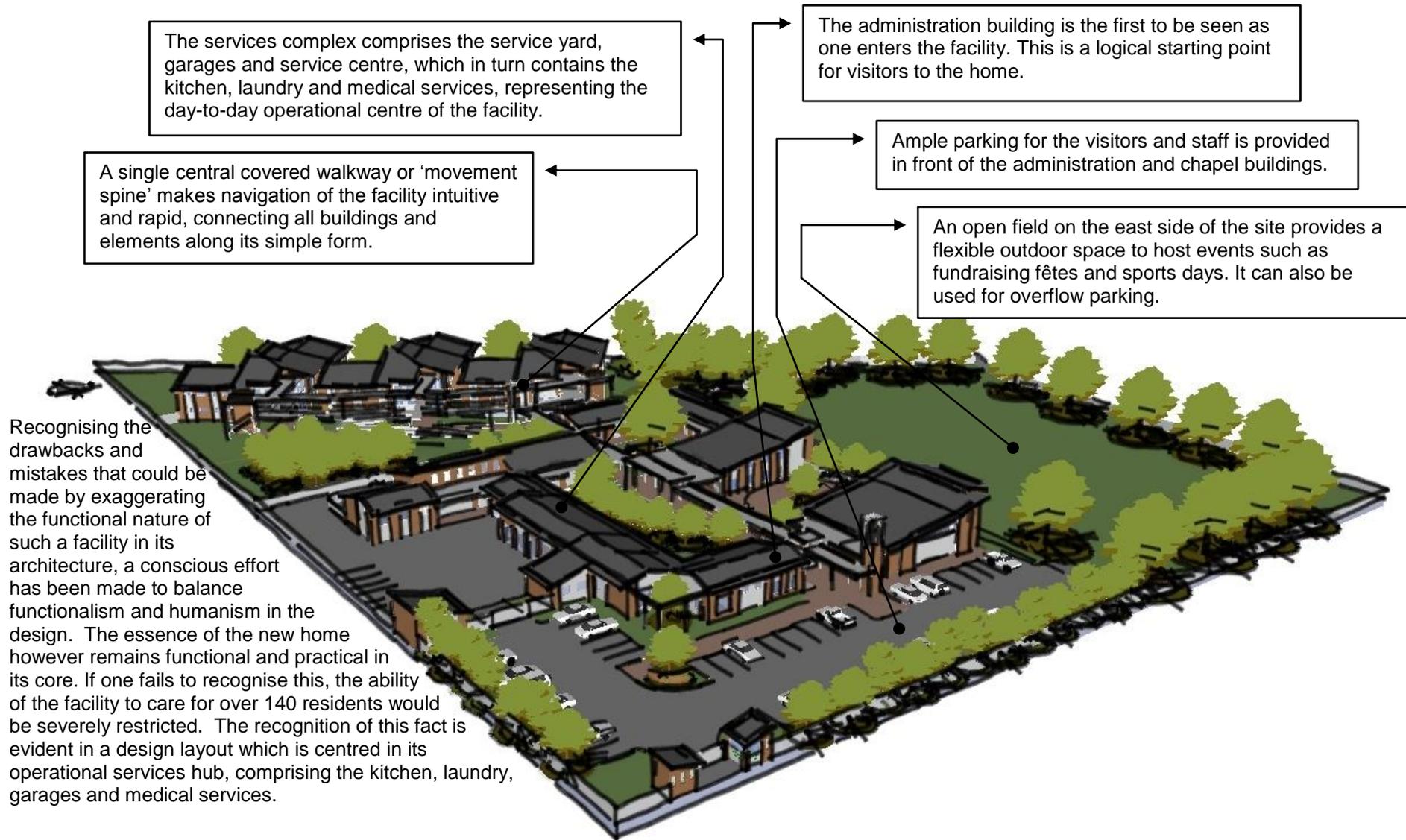


Figure 81 – A modelled view from the south west corner of the site



**Figure 82 – Various modelled views of the facility: (a) a top or roof view (b) a view from the western side of the site (c) a view from the eastern side of the site**



Figure 83 – Locality plan

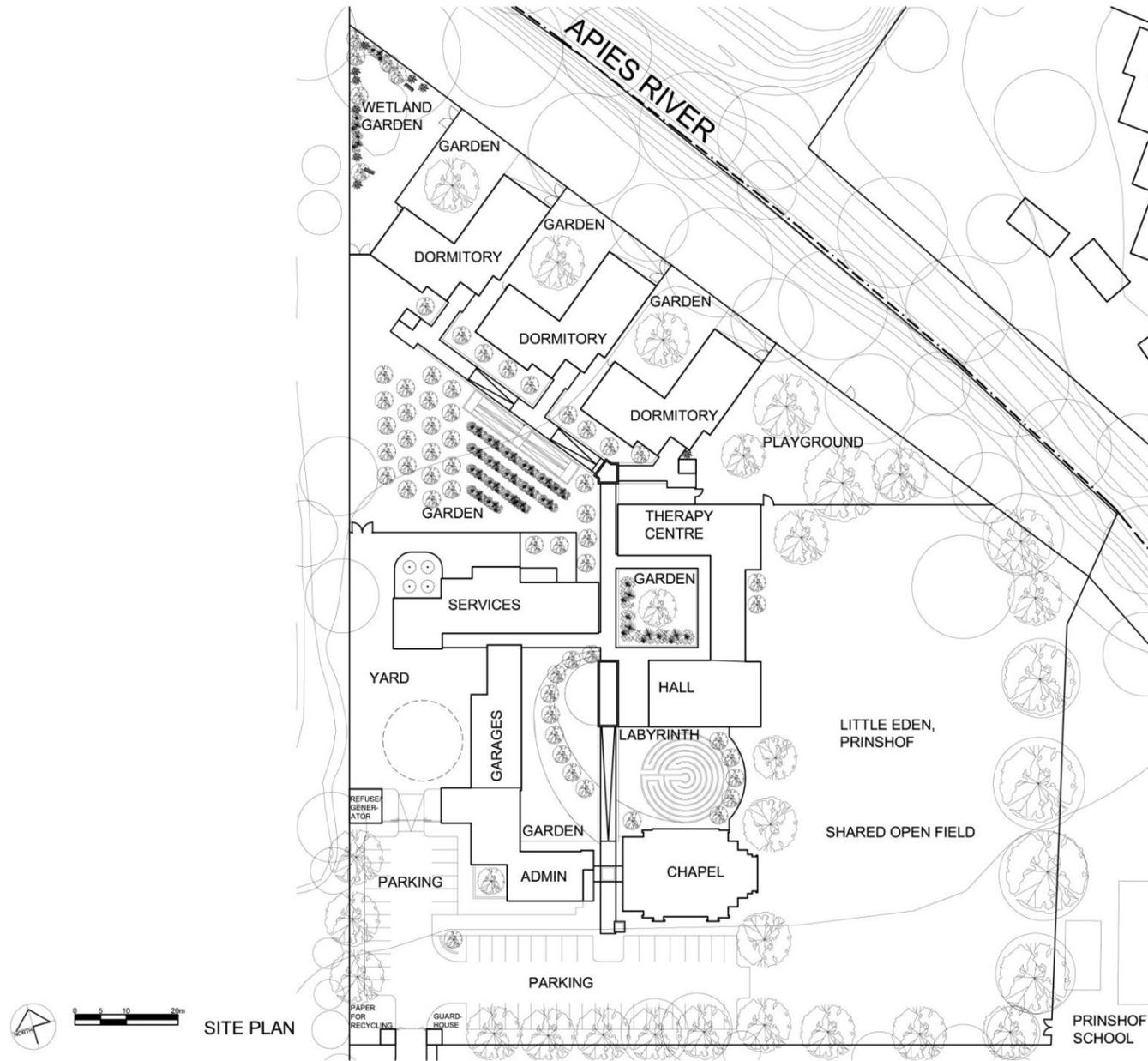


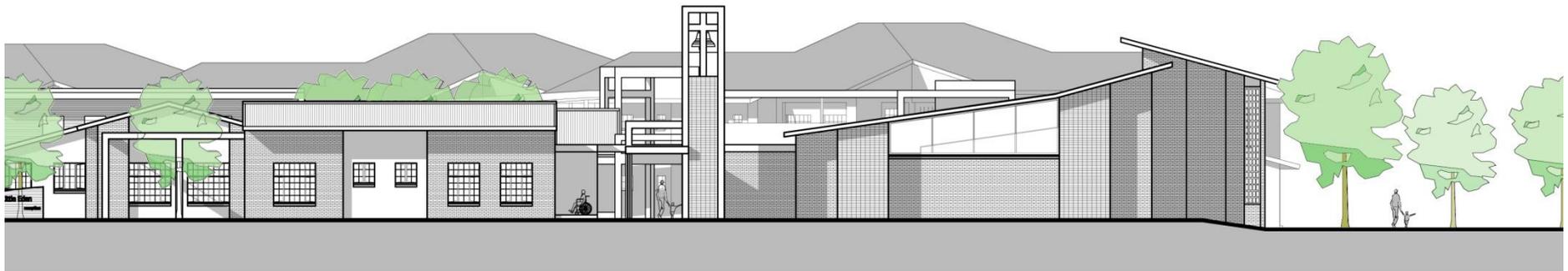
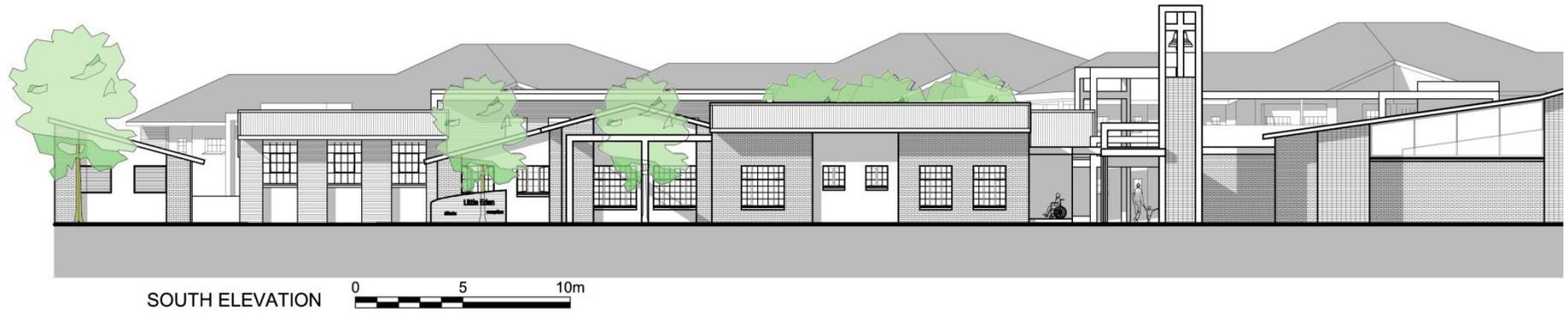
Figure 84 – Site plan



NORTH ELEVATION 0 5 10m



Figure 85 – North elevation



**Figure 86 – South elevation**

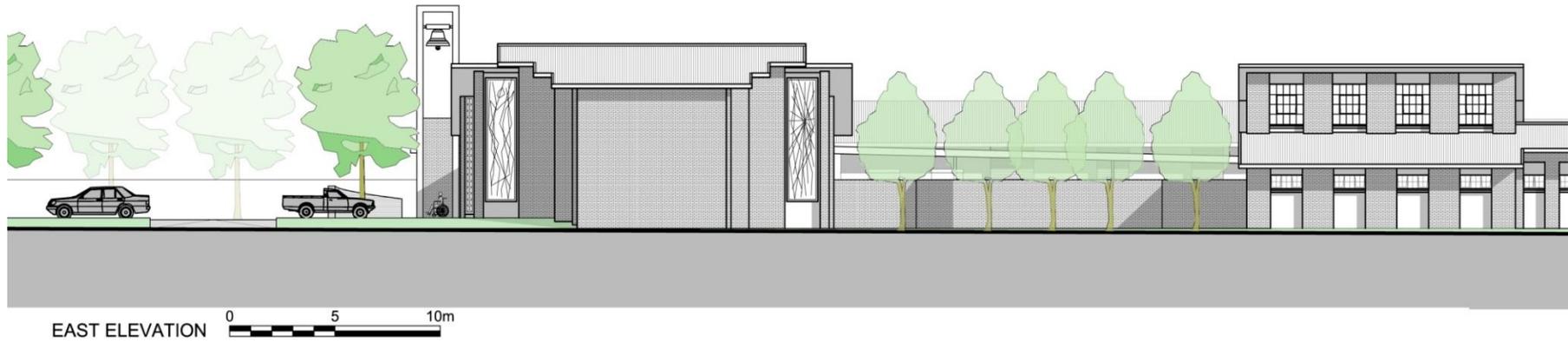


Figure 87 – East elevation



**Figure 88 – West elevation**

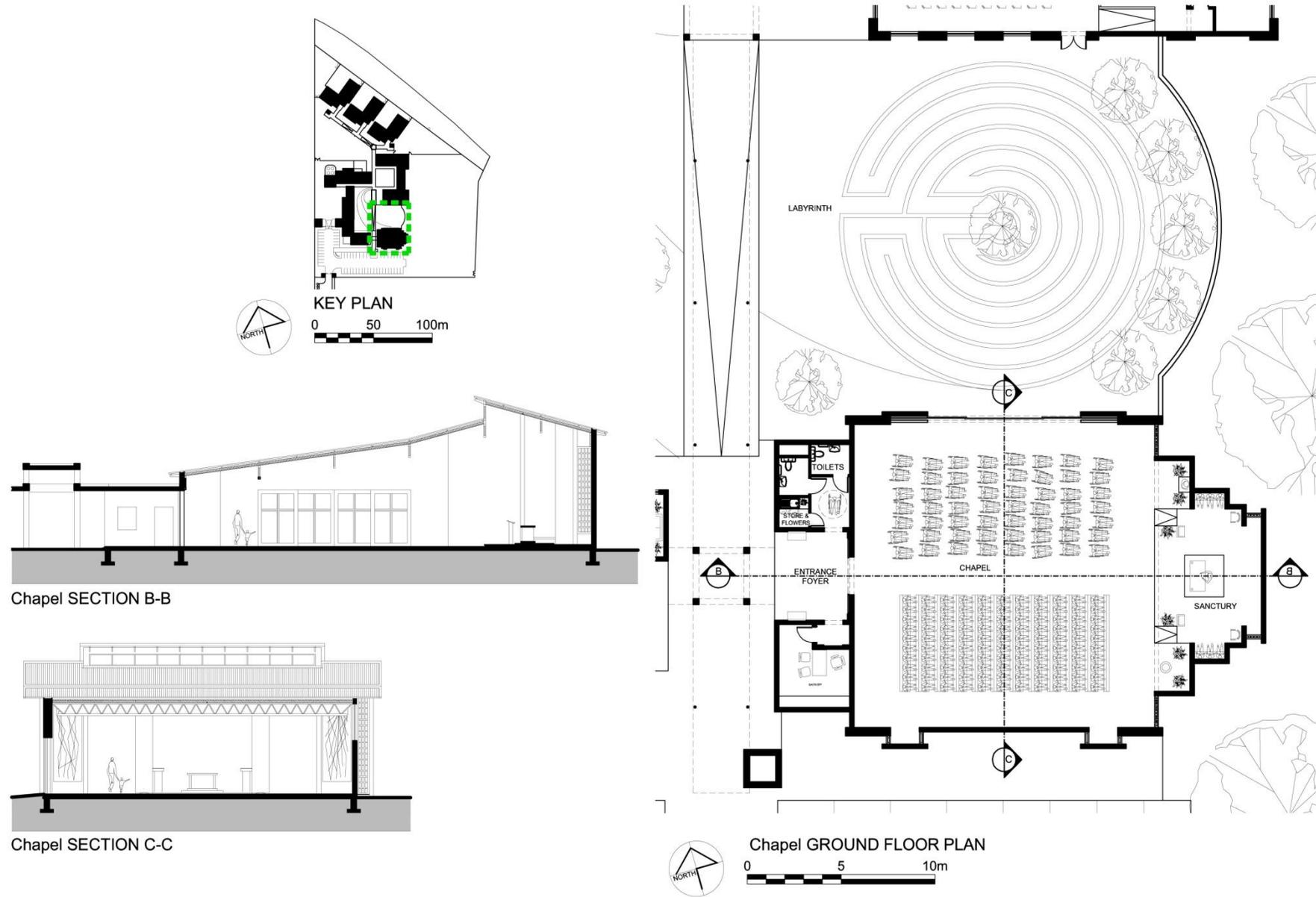


Figure 89 – Chapel plan

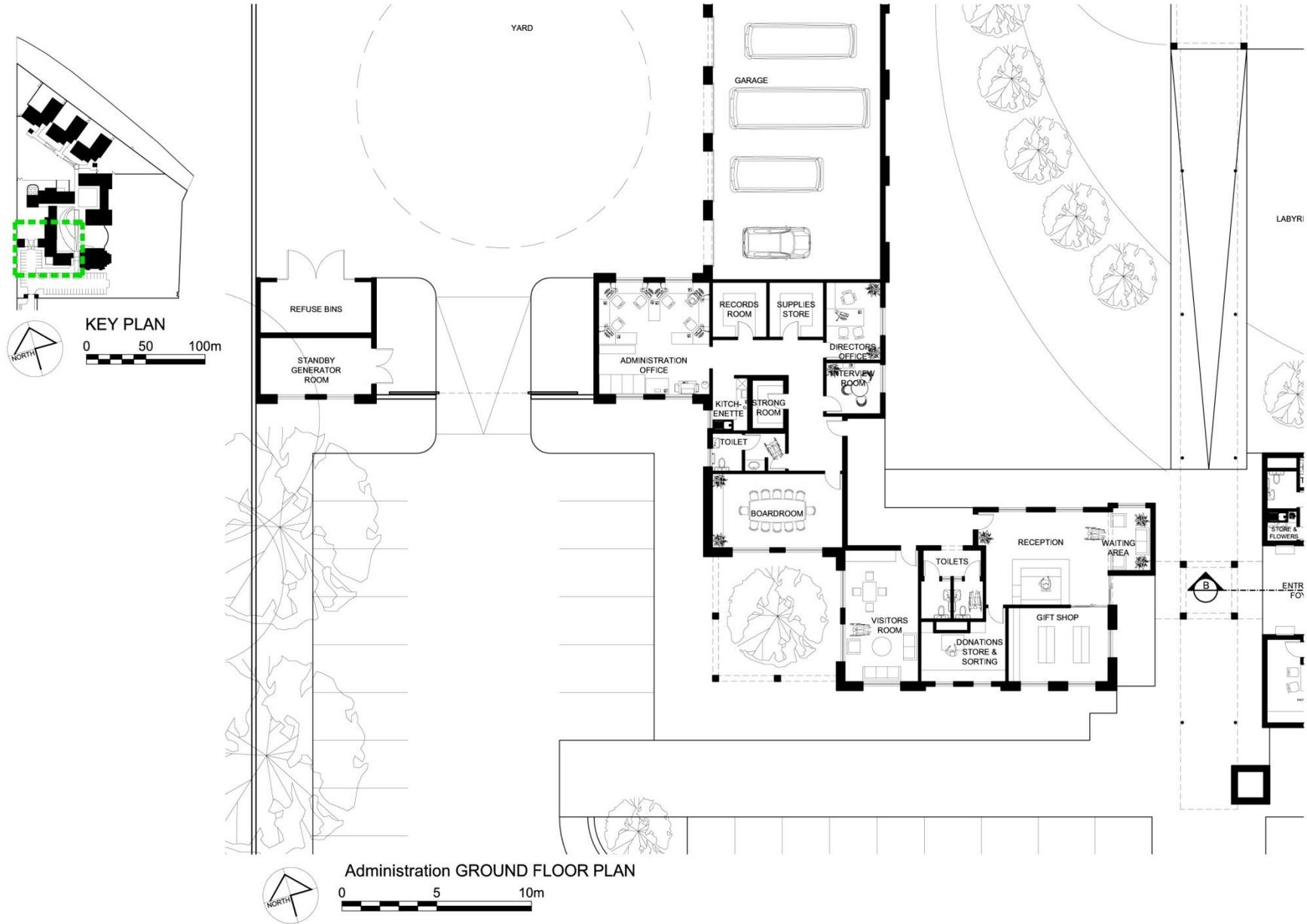


Figure 90 – Administration plan

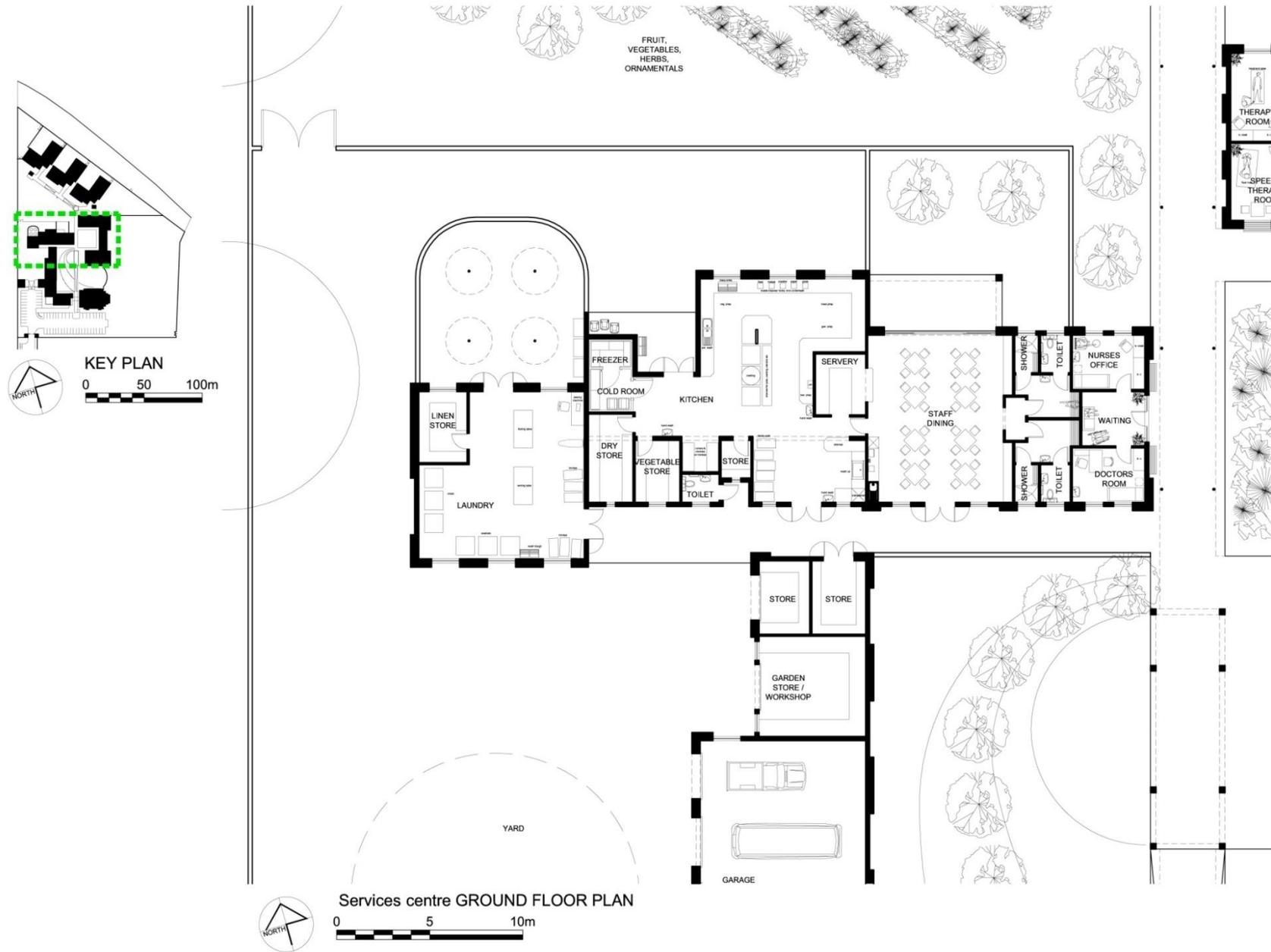
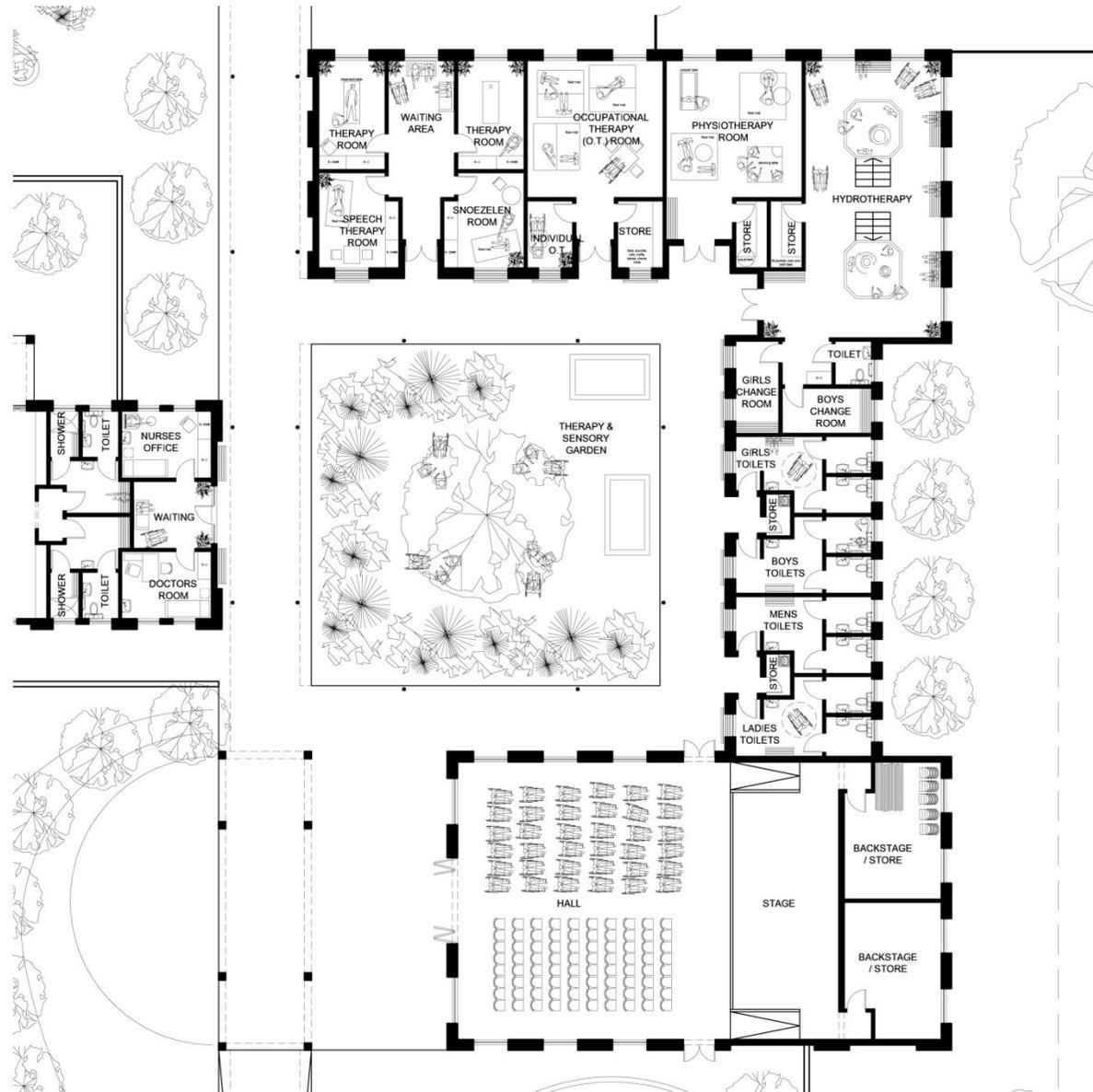
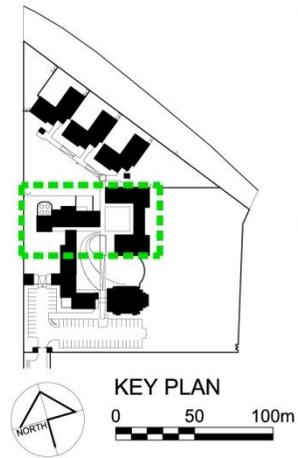


Figure 91 – Service centre plan



**Therapy centre GROUND FLOOR PLAN**  
0 5 10m

Figure 92 – Therapy centre plan



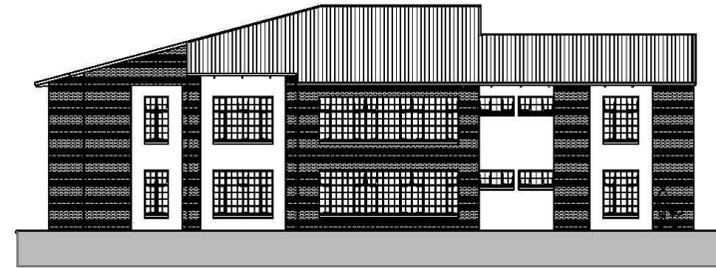
Figure 93 – Dormitory ground floor plan



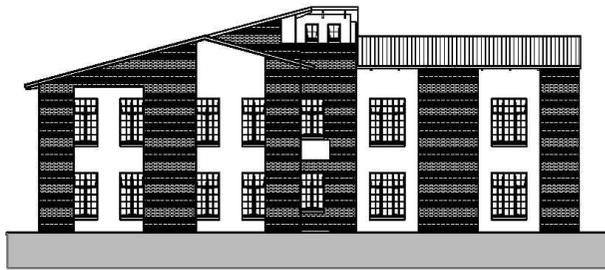
Figure 94 – Dormitory first floor plan



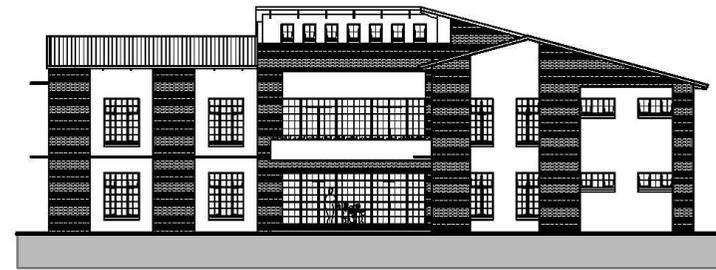
Dormitory SOUTH-WEST ELEVATION



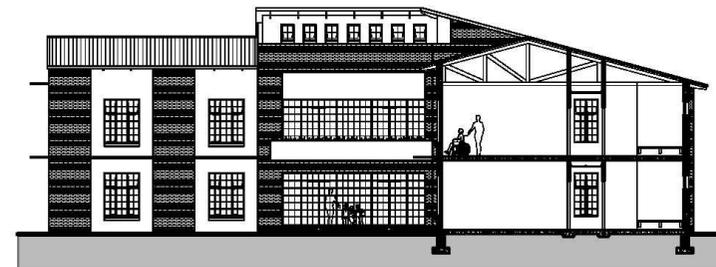
Dormitory SOUTH-EAST ELEVATION



Dormitory NORTH-EAST ELEVATION



Dormitory NORTH-WEST ELEVATION



Dormitory SECTION A-A

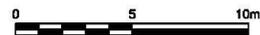


Figure 95 – Dormitory elevations and sections



*Figure 96 – Render of the west side of the western dormitory*



*Figure 97 - Render of the walkway and terraced garden with the chapel in the background*



*Figure 98 – Render of the south side of the chapel*



**Figure 99 - Render of the entrance and administration building with chapel in the background**



*Figure 100 - Render of the therapy centre and hall courtyard*

5.8.3 Administration

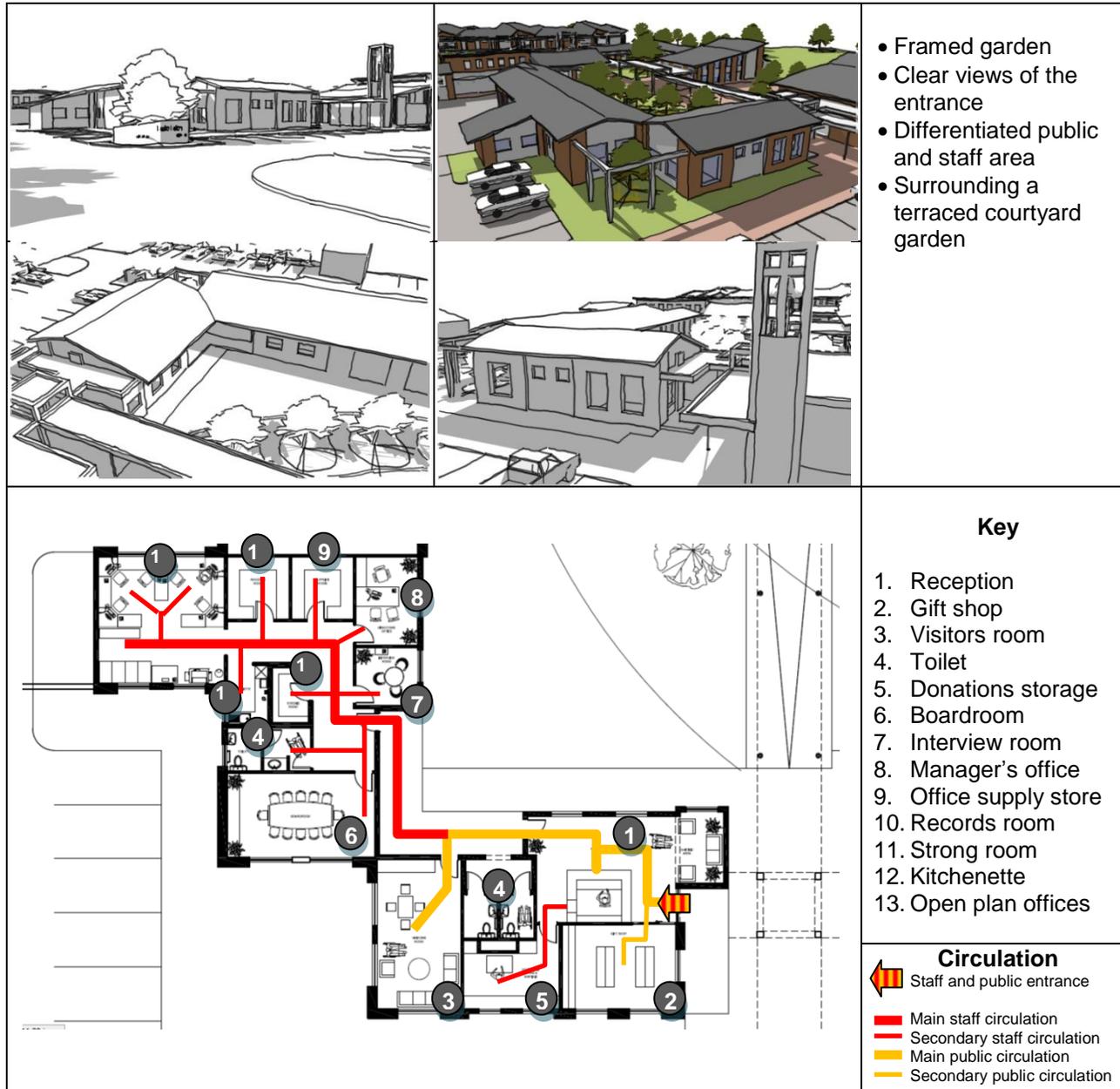


Figure 101 – Overview of the designs and layout of the administration building

5.8.4 Chapel

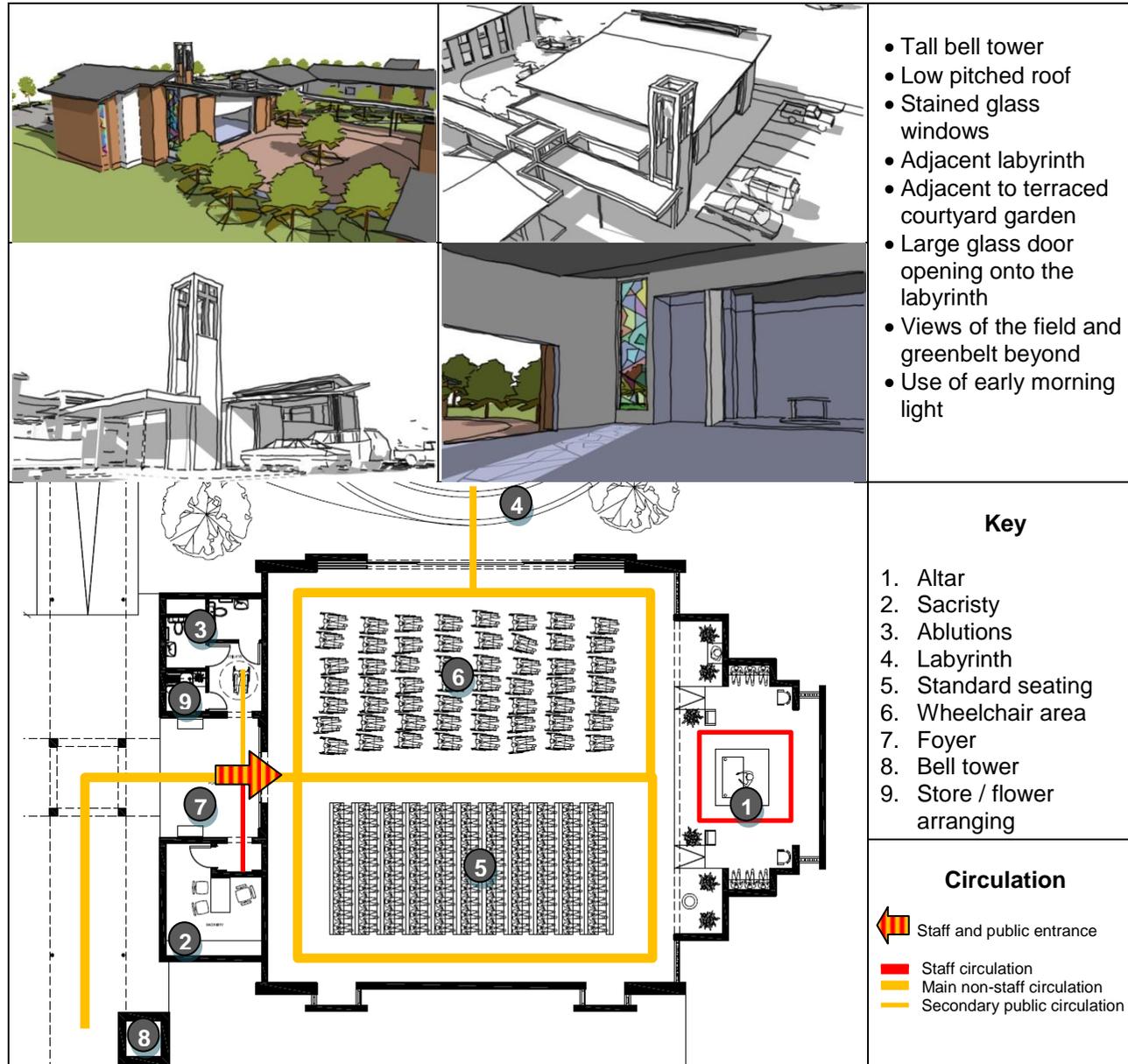


Figure 102 - Overview of the designs and layout of the chapel

5.8.5 Hall

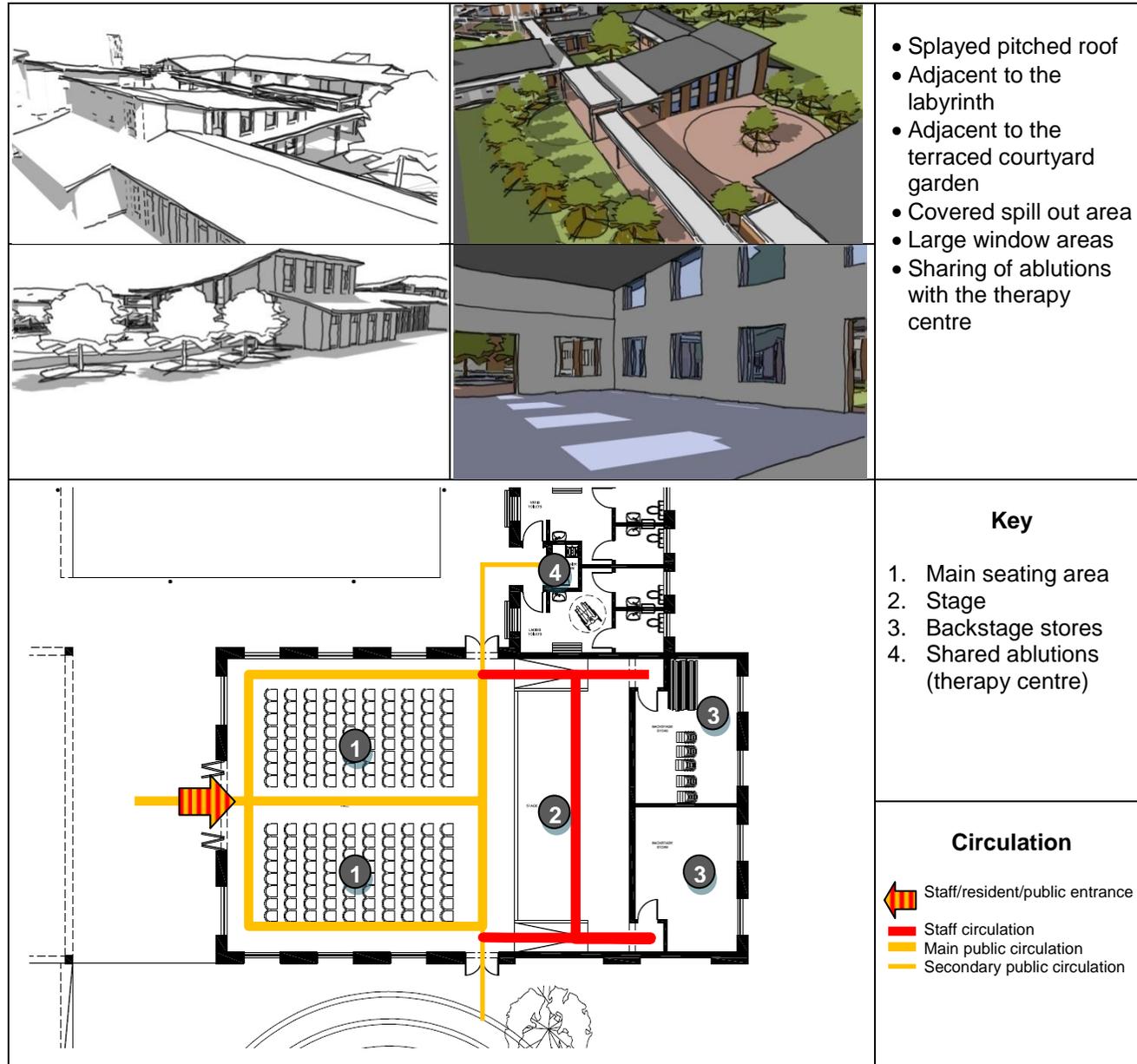


Figure 103 - Overview of the designs and layout of the hall

5.8.6 Therapy centre

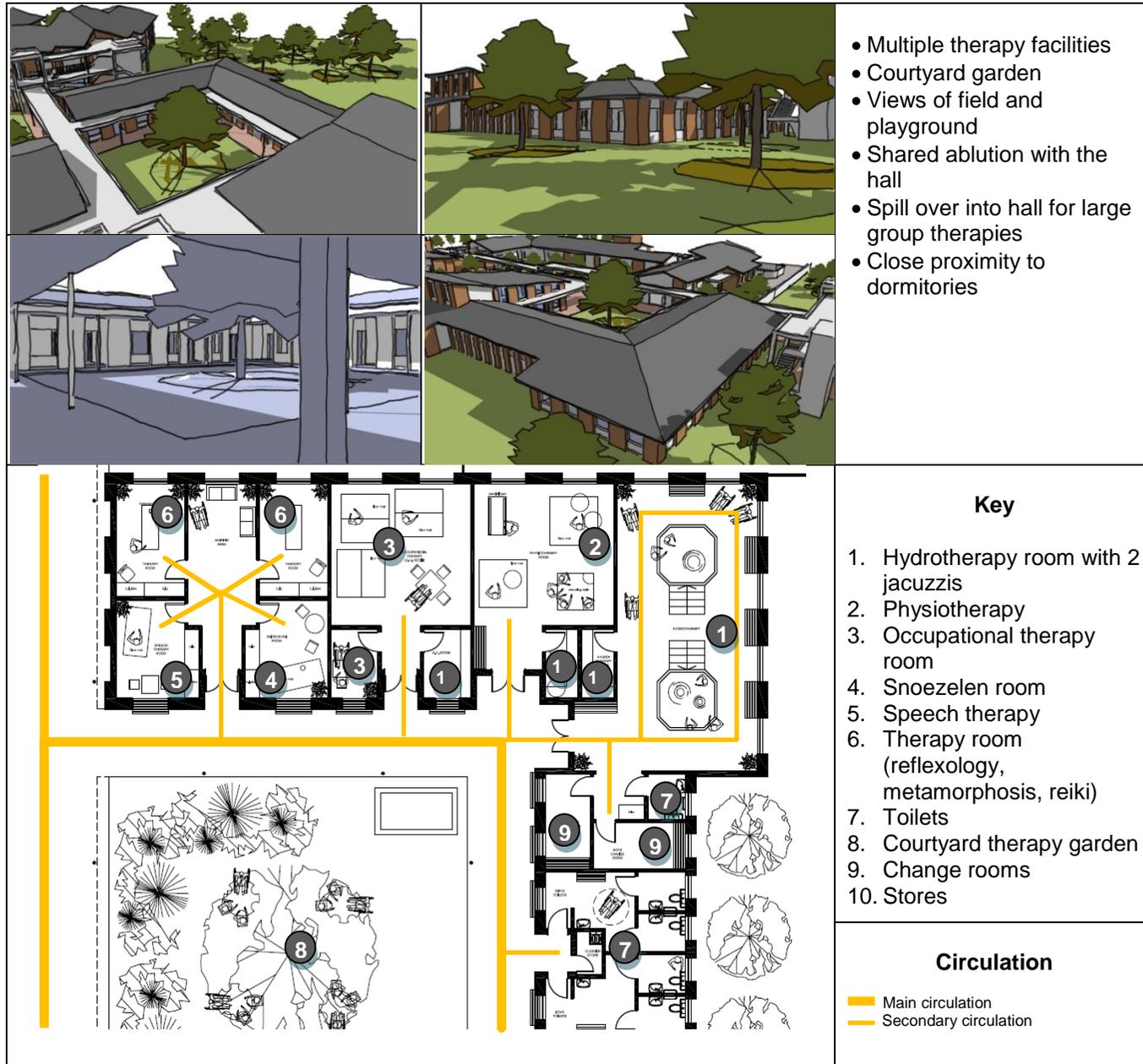


Figure 104 - Overview of the designs and layout of the therapy centre

5.8.7 Garage and service yard

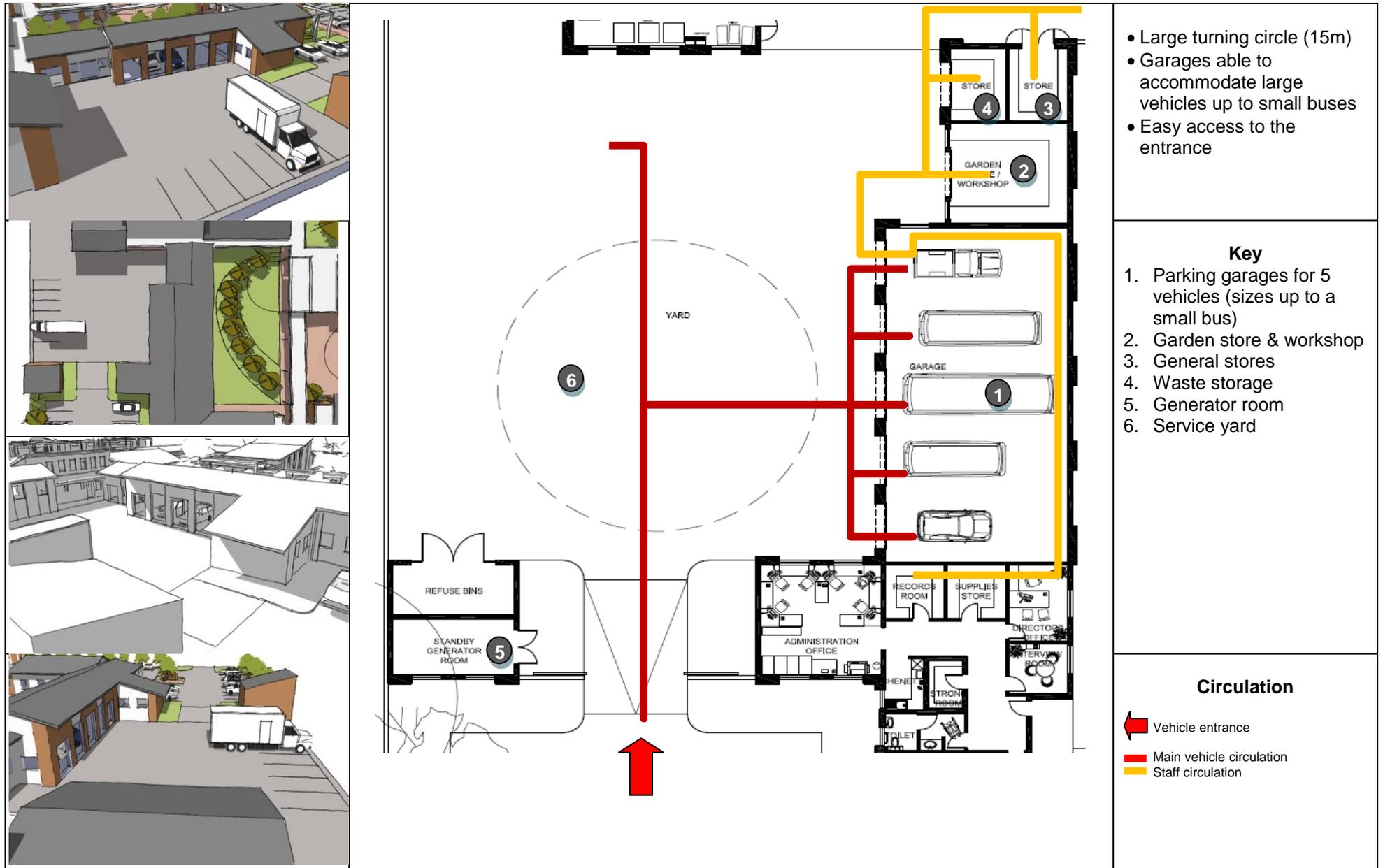


Figure 105 - Overview of the designs and layout of the garage and service yard

5.8.8 Services

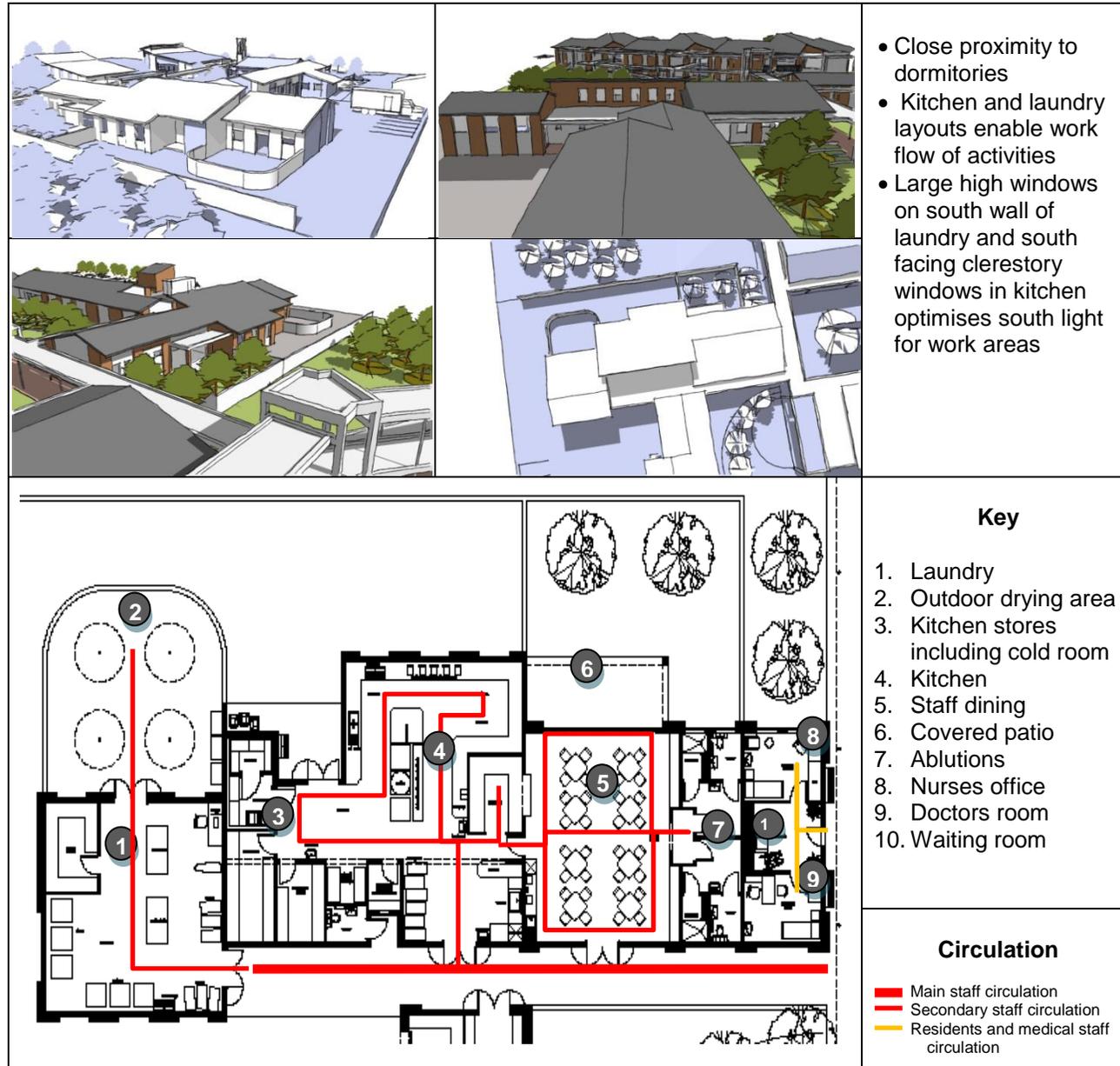


Figure 106 - Overview of the designs and layout of the services centre

5.8.9 Dormitories



Figure 107 - Overview of the designs and layout of the ground floor of the dormitories



Figure 108 - Overview of the designs and layout of the first floor of the dormitories

5.8.10 Walkway

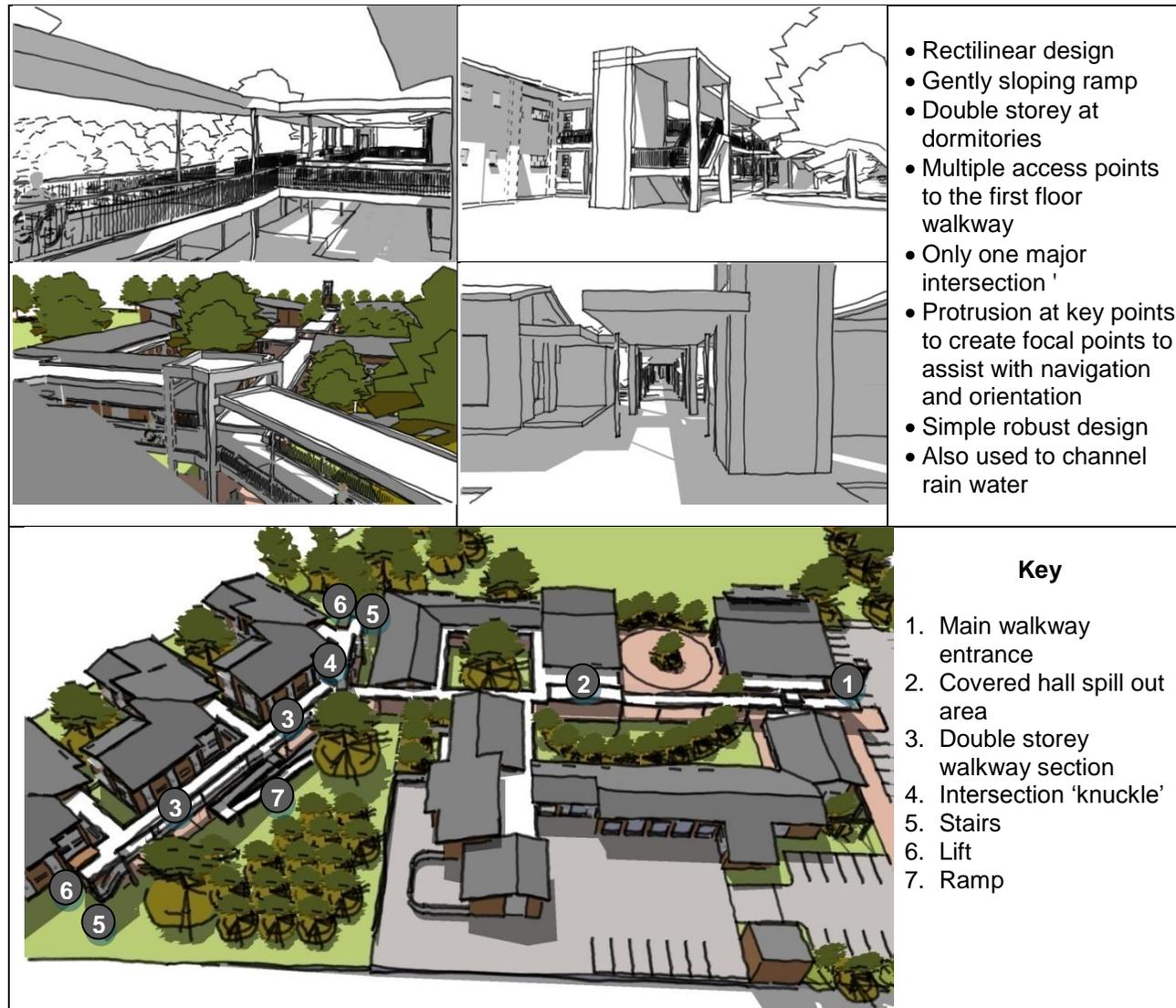


Figure 109 - Overview of the designs and layout of the covered walkway

5.8.11 Gardens

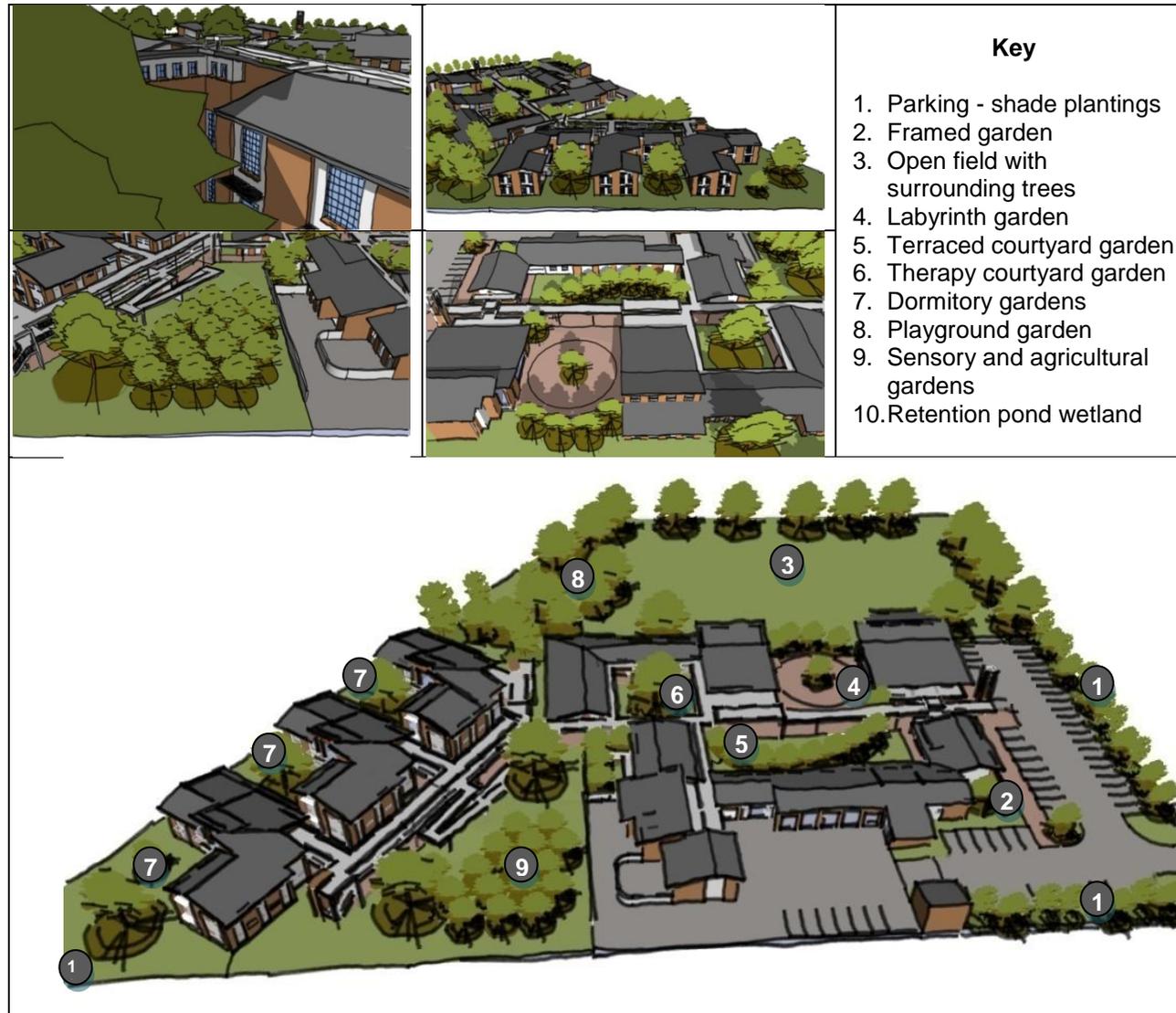


Figure 110 - Overview of the design and layout of the gardens

## 5.9 Application of design principles

### 5.9.1 Residents' needs first

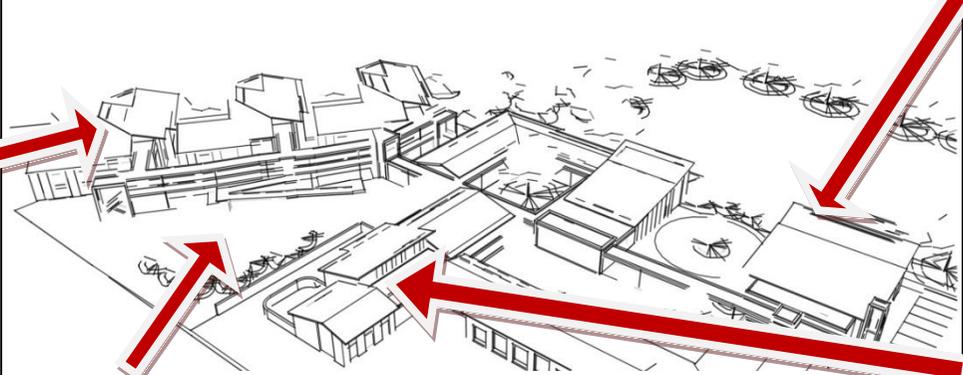
	<p><b>Therapy centre:</b> The therapy centre will provide the necessary group and individual therapies for the residents including:</p> <ul style="list-style-type: none"> <li>• Hydrotherapy - making use of the two jacuzzis</li> <li>• Physiotherapy</li> <li>• Occupational therapy</li> <li>• Speech therapy</li> <li>• Reflexology, metamorphosis, reiki</li> <li>• snoezelen room (see appendix)</li> </ul>		<p><b>Chapel and labyrinth:</b> The chapel will provide for the residents' spiritual needs through daily prayers and weekly services. The labyrinth outside the chapel is used as a spiritual and calming therapy.</p>
<p><b>Accommodation:</b> The accommodation for the residents will be housed entirely within the three dormitory houses. The houses contain bedroom and dormitories for between two to five people. They also contain the necessary ablutions and support facilities like nappy change rooms. The day room functions as their dining room and living room where the residents would spend their time during the day when not engaged in external activities.</p>			
	<p><b>Horticultural gardens:</b> There are gardens located throughout the facility, but those directly behind the dormitories, the orchard and vegetable garden, will specifically be used for sensory and horticultural therapy for the residents. The residents will also help cultivate the garden, which will include raised planters for access from wheelchairs.</p>		<p><b>Services:</b> The services centre provides for the food preparation services of the residents and staff. It also houses the laundry with industrial washers, dryers and outside hanging lines for washing and drying the resident's linen, clothes and nappies. The doctor's room and nurses office located closest to the main walkway will provide 24 hour medical services and care for the patients.</p>

Figure 111 – Application of principles: addressing the residents' needs (1/3)

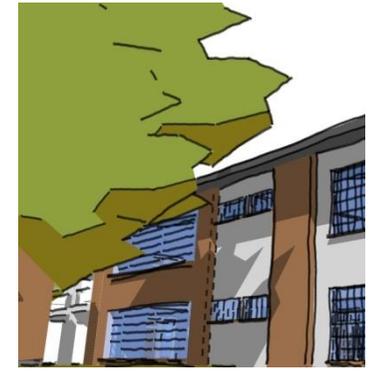
<p><b>Sensory gardens:</b> Gardens are situated throughout the facility including adjacent to walkways. This makes commuting between buildings and the outdoors play activities a sensory experience as residents observe, touch, hear and smell the vegetation around them.</p>			<p><b>Clear and simple navigation:</b> Buildings and especially the main walkways have been designed to have linear and clean forms, without hidden corners and turns. The use of concrete for the walkway also differentiates it from the other buildings making it easy to discern and follow</p>		
				<p><b>Connection with nature:</b> Being in close proximity to, or interacting with the natural environment, has many therapeutic benefits for the residents. To enhance this connection with nature gardens and trees are situated around the dormitories. The dormitories were also intentionally placed on the northern boundaries of the site, facing north, to take advantage of the sights and sounds of the green belt, ridge and river.</p>	
<p><b>Open and bright environments:</b> Many of the doors in the home especially in the dormitories are cottage pane. This combined with windows, which are intentionally larger; create spaces which are more open, better ventilated and brighter. Residents benefit greatly from increased natural light exposure.</p>			<p><b>Enhanced building accessibility:</b> Mechanisms such as elevators and ramps make access to all parts of the facility by staff and residents possible, notwithstanding the disability they may experience.</p>		

Figure 112 – Application of principles: addressing the residents’ needs (2/3)

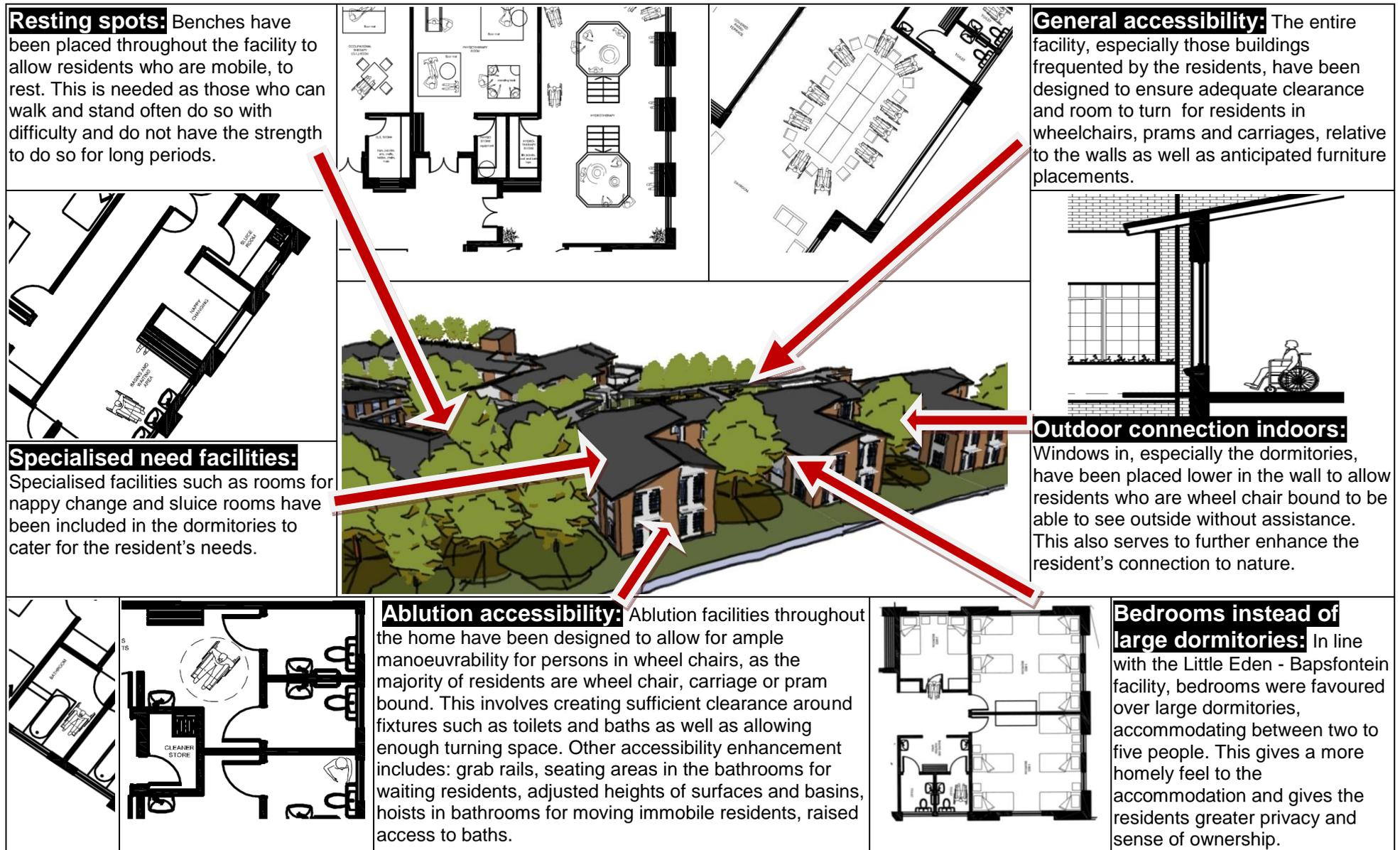


Figure 113 - Application of principles: addressing the resident's needs (3/3)

5.9.2 Secure but open environment

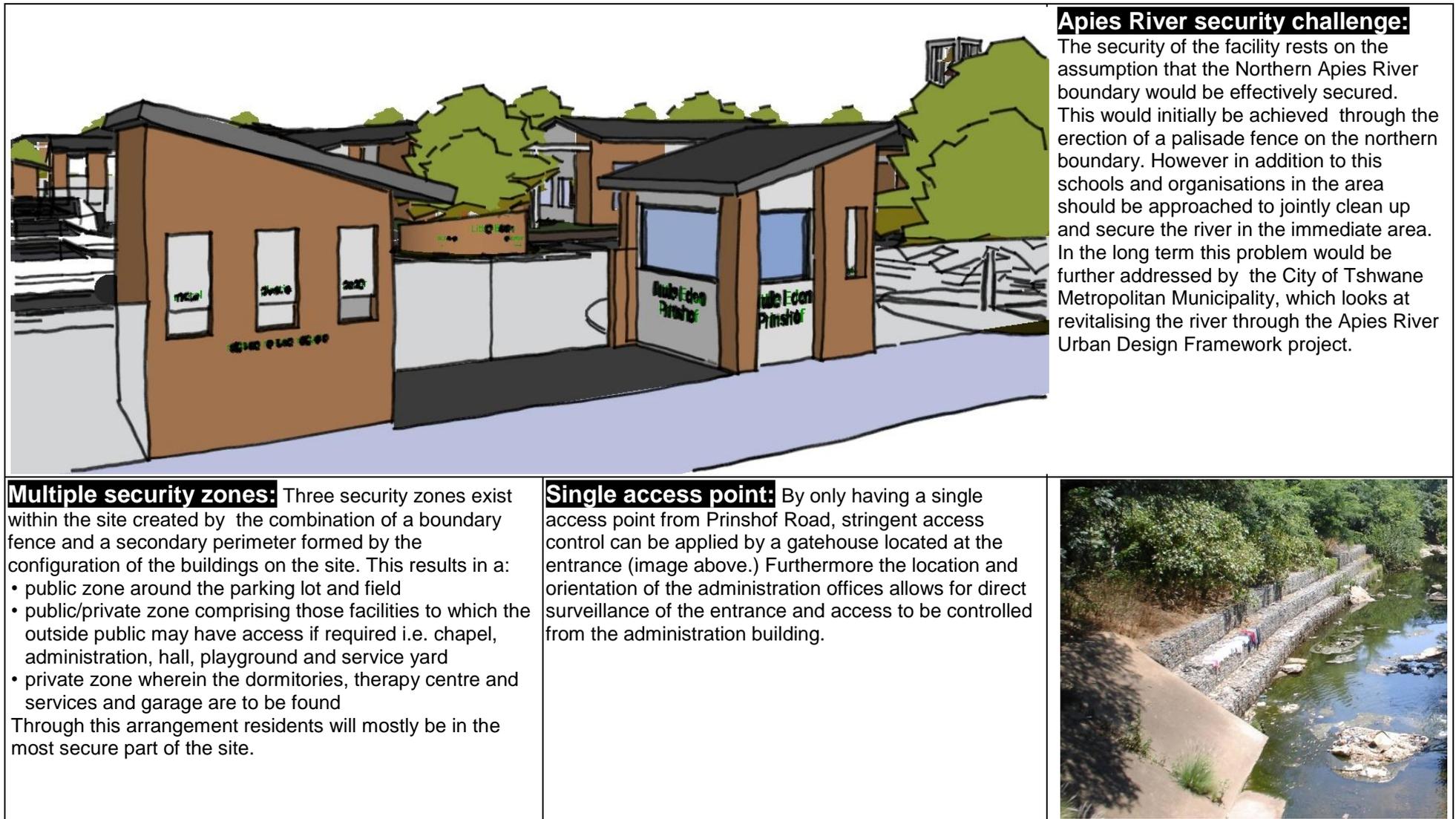


Figure 114 - Application of principles: secure but open environment

5.9.3 The safety of the residents

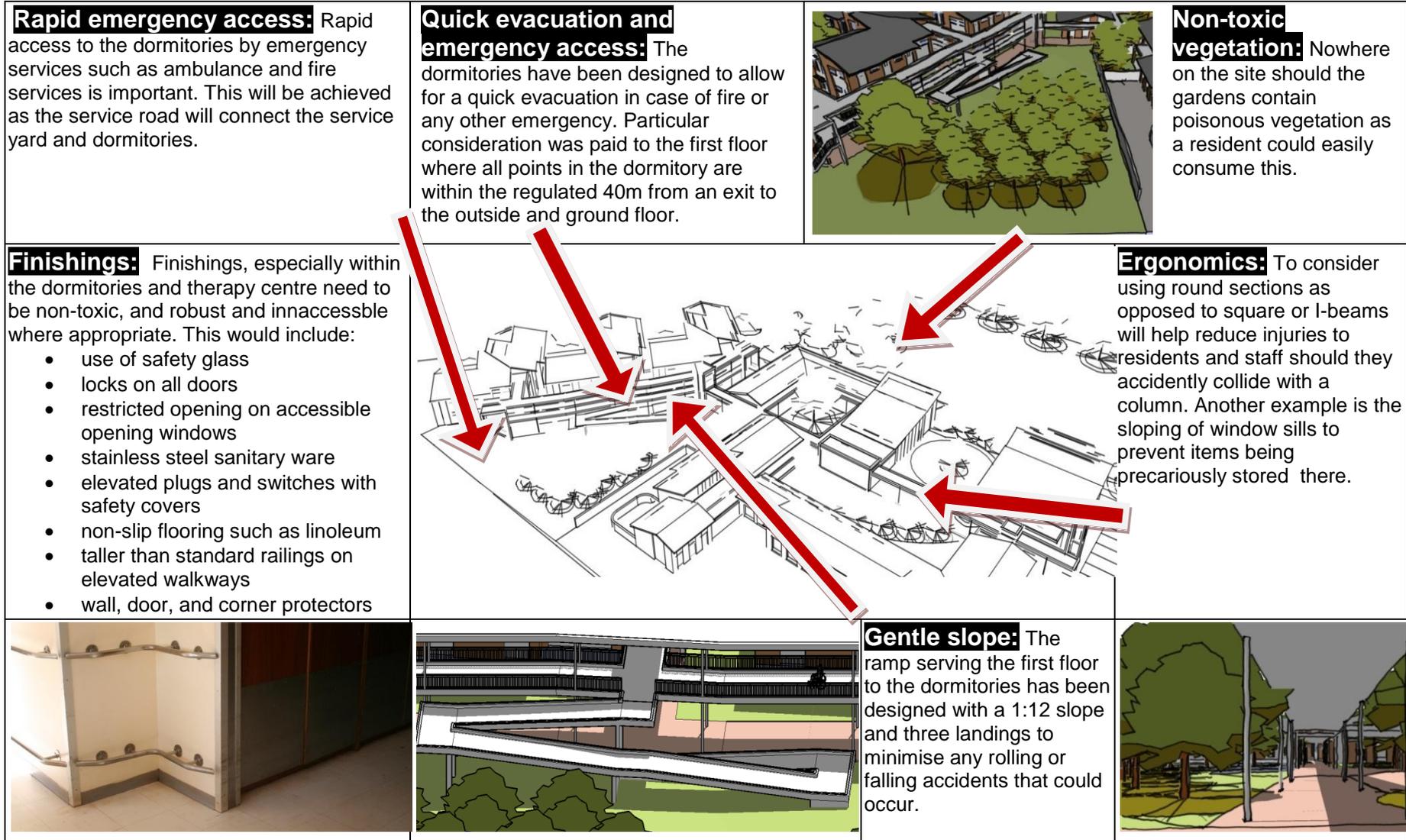


Figure 115 - Application of principles: safety of the residents

5.9.4 Practicality

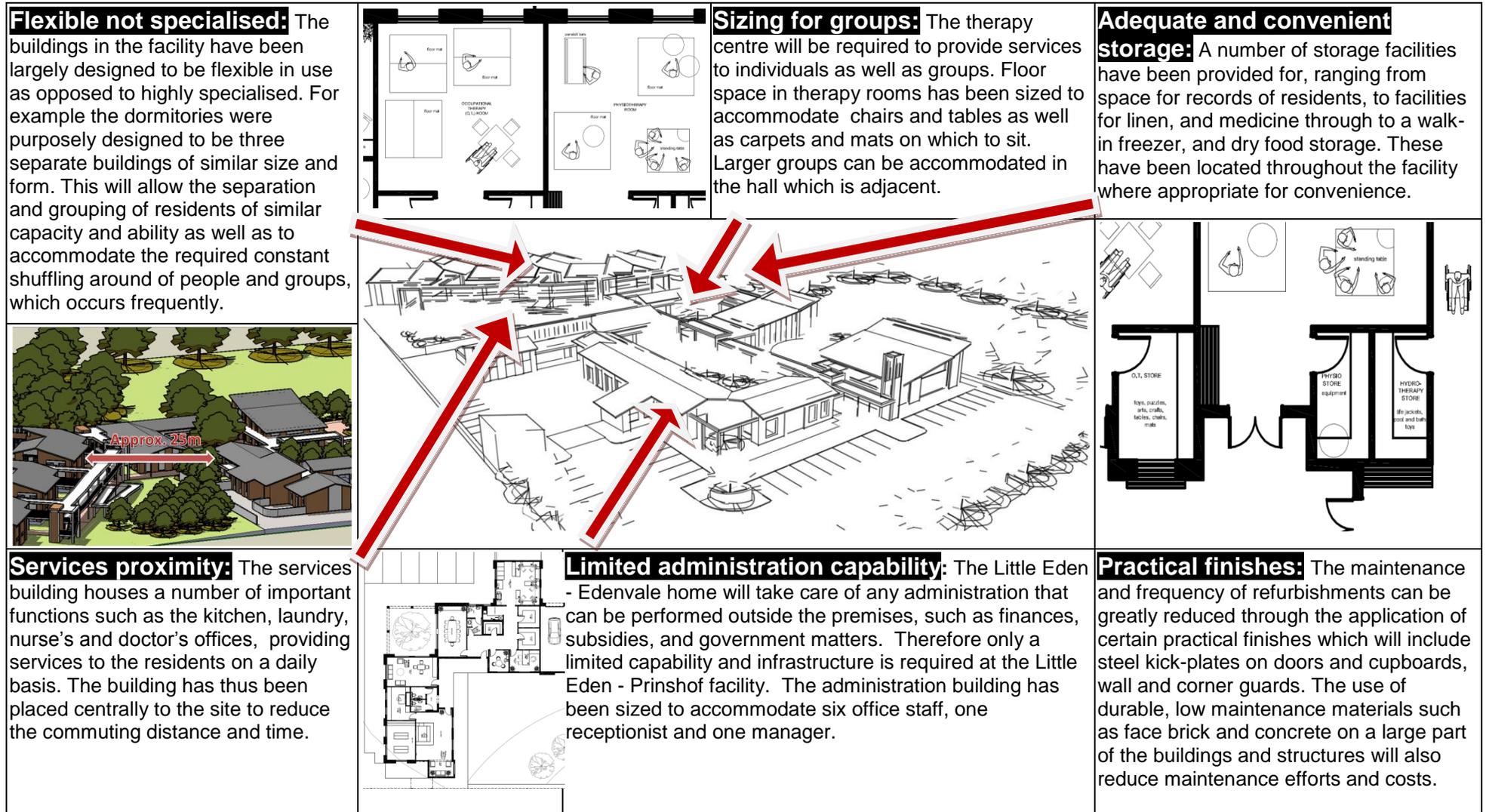


Figure 116 - Application of principles: practicality

### 5.9.5 The economy and environment

According to Slaviero(2007), the CEO of the Little Eden Society, “the relationship with the environment and caring for the environment is part of Little Eden’s functioning”. As a welfare organisation, the Little Eden Society is very cost sensitive. It is thus recognised that the economy of the facility, is in part, a function of its environmental impact, which translates directly into the cost of energy and other resources. Two green architecture practices have been integrated into the design of the new facility to reduce its environmental and economic impact:

1. passive heating, ventilation and cooling
2. a rainwater harvesting system.

#### 5.9.5.1 Rainwater drainage and collection system

Rainwater catchment, drainage and storage systems have been integrated into the site layout and design to use circulation elements for collection and channelling of the rainwater. A retention pond is located in the northwest corner, the lowest part of the site. Catchment is achieved through collection of rainwater and run-off from the roofs of the various buildings and walkway. Most of the run-off water is channelled to the main walkway, which is easily achieved due to its proximity to the majority of the buildings in the facility. The main walkway’s layout is well shaped to channel the water to the retention pond adjacent to the most western dormitory. Rainwater from the garages, service yard and partly from the service centre and administration building is channelled using the emergency access on the western boundary down to the dormitories. The location of the retention pond has two advantages, (i) it can be used as a feature for the surrounding gardens and its location and (ii) proximity to the river allows for an easy solution to the problem of overflow.

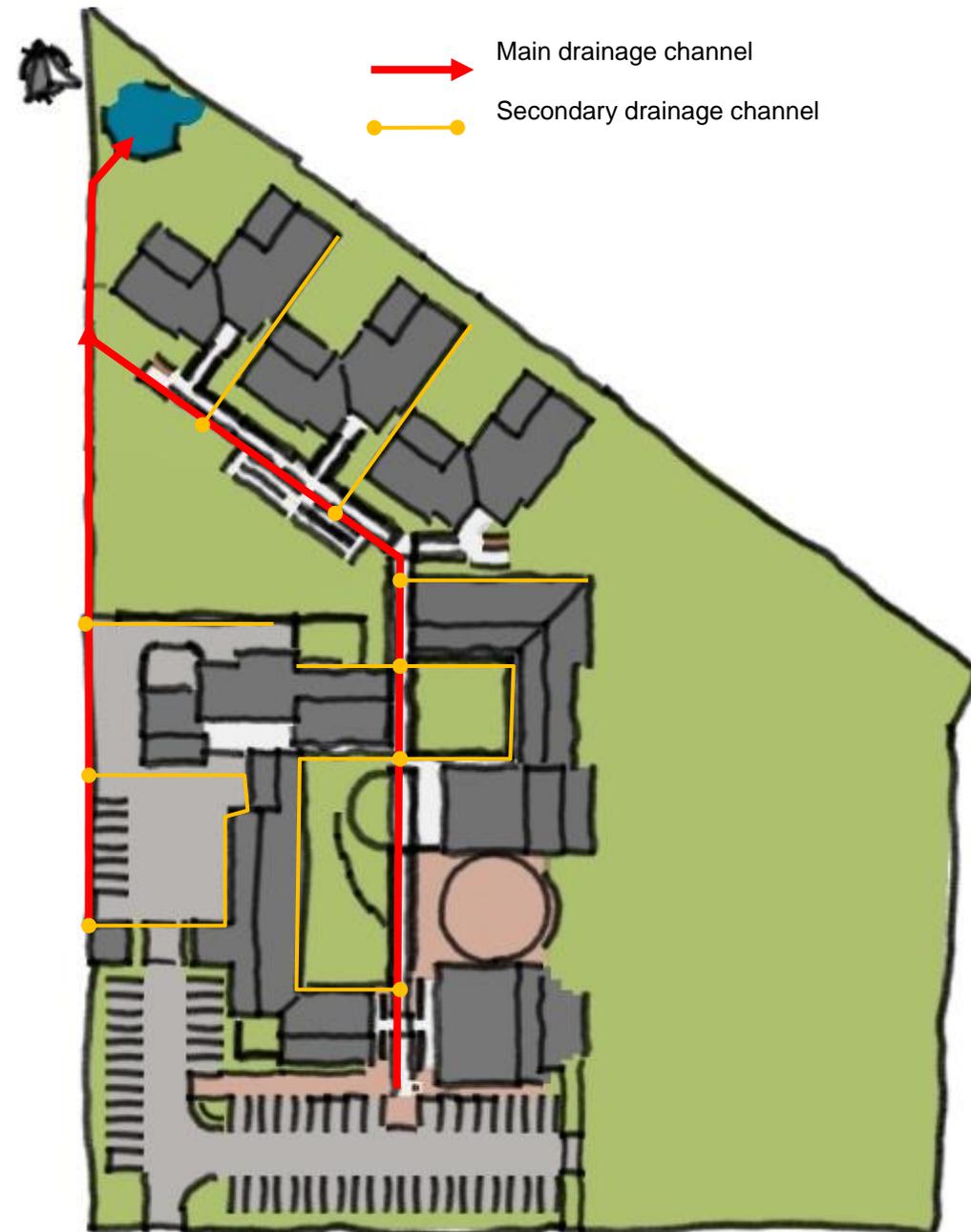


Figure 117 – The rain water drainage system

5.9.5.2 Passive climate control

Passive climate control elements have been integrated into the facility passive solar design of overhangs and louvered shading, tree shading, ventilation and solar water heaters. These mechanisms are illustrated and explained in Figure 118.

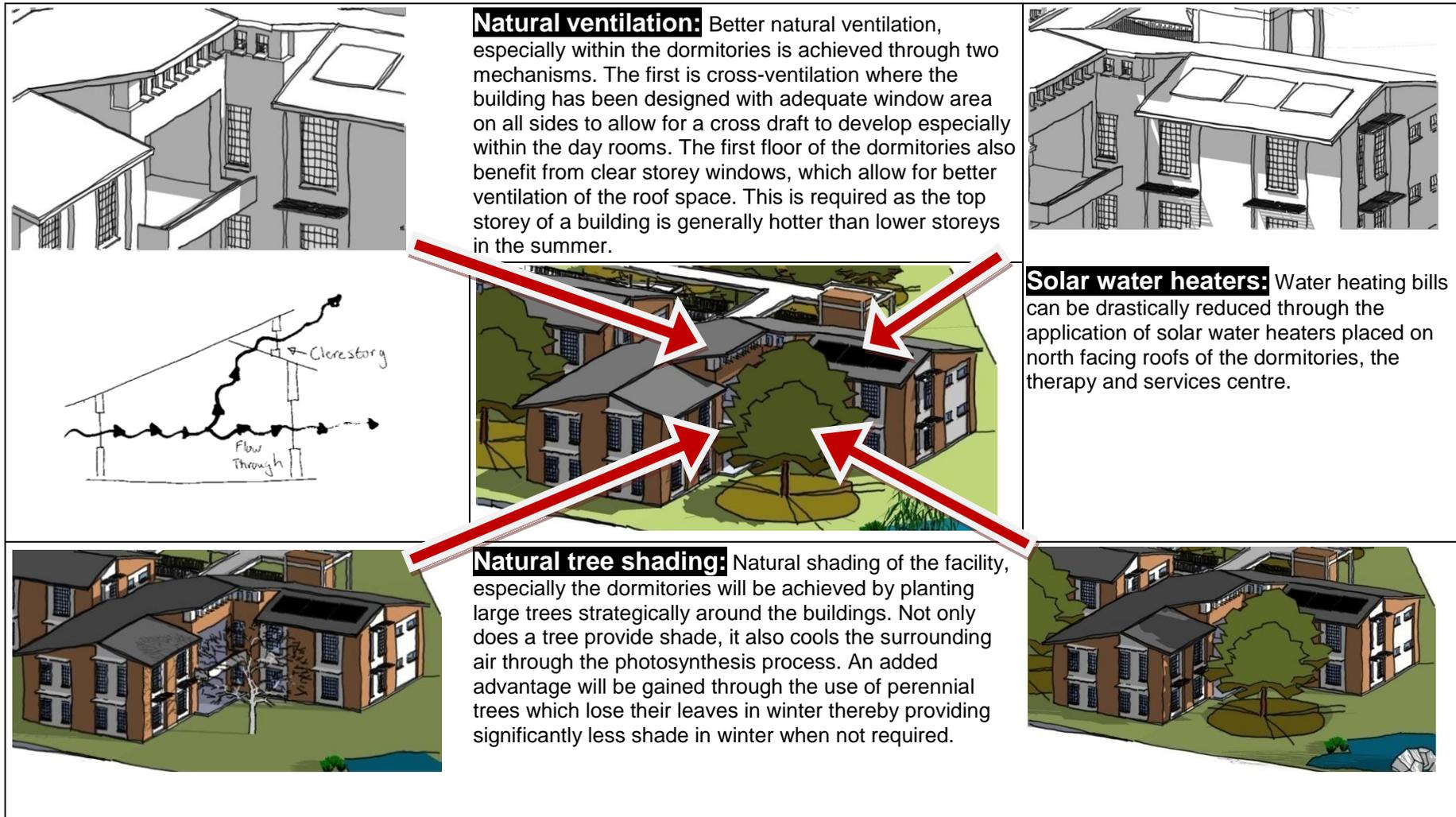
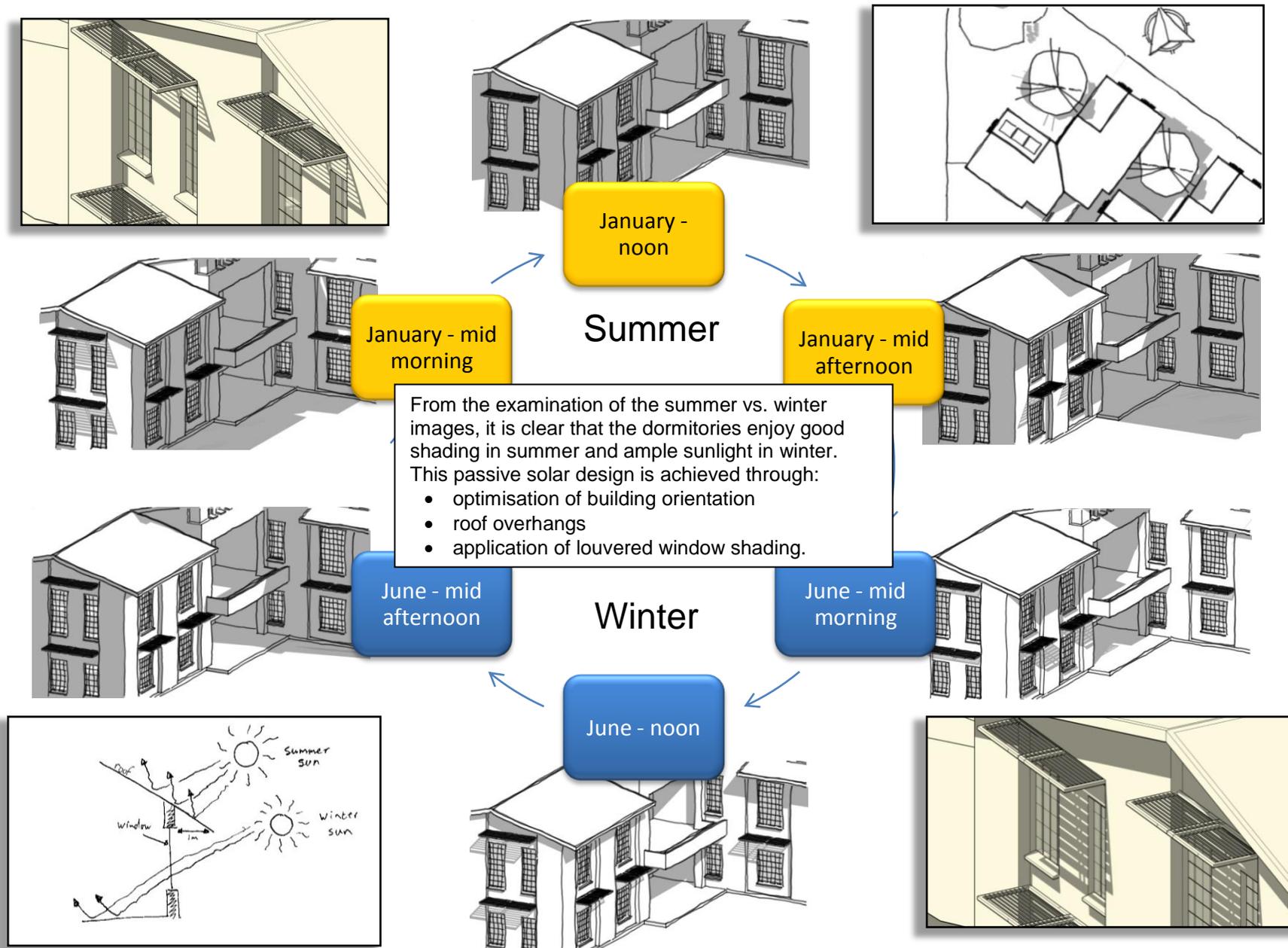


Figure 118 – Passive heating, ventilation and cooling



**Figure 119 – A diagrammatic explanation of the passive solar design of the facility. Note the level of shading in the summer simulation images versus those of the winter**

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5.9.6 Community integration

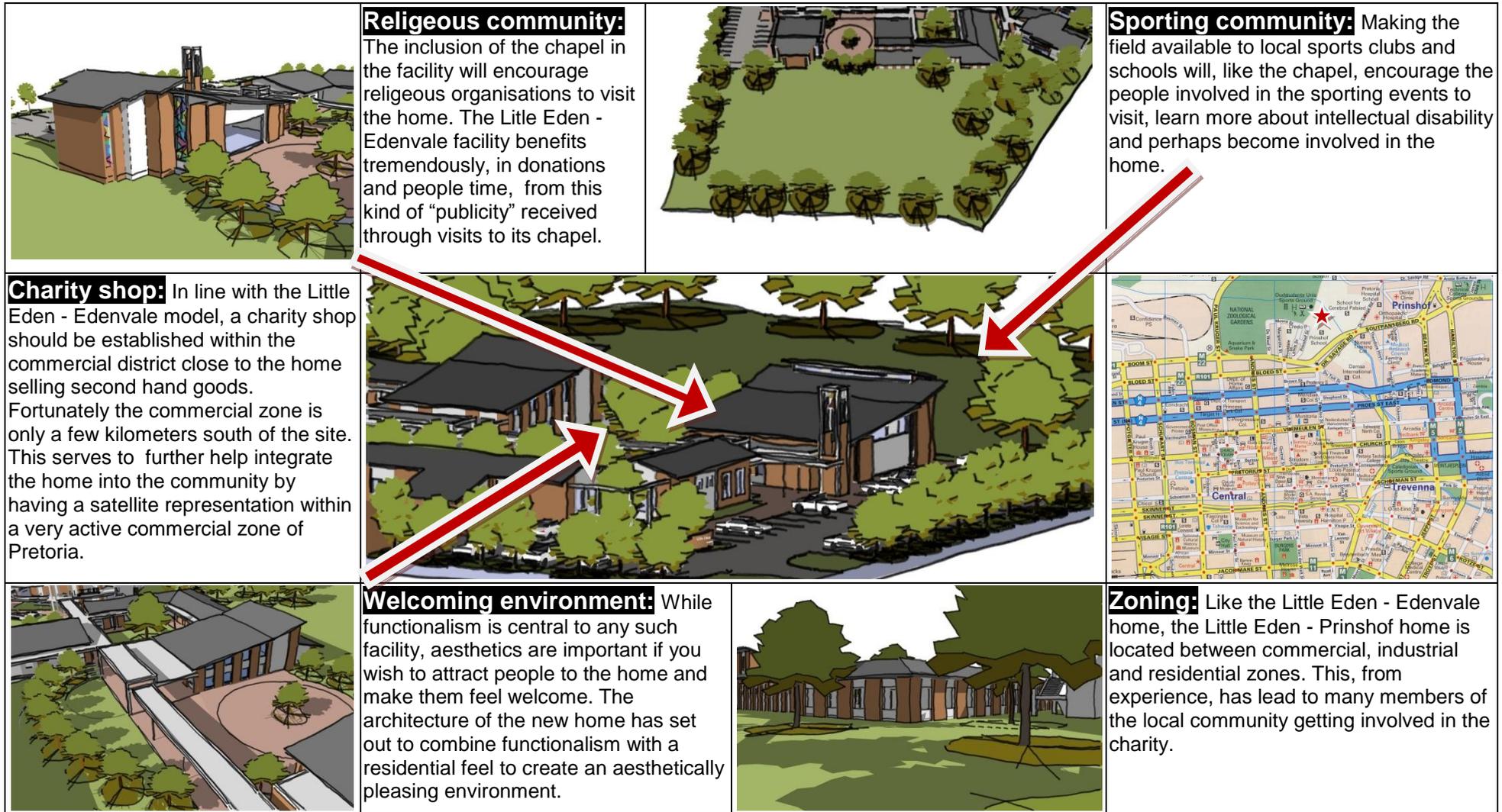


Figure 120 - Application of principles: community integration



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## 7 Appendices



## 7.1 Appendix A – Accommodation schedule

### 7.1 Appendix A - Accommodation Schedule

Preferable maximum coverage is 25% allowing space for outdoor activity and connection to nature. Site is 1.8 ha, or 18000m<sup>2</sup>, therefore the preferred maximum area is 4500m<sup>2</sup>. According to Cox and Groves (1990: 134) current thinking restricts

the size of residential accommodation for intellectually disabled people to between 100 and 200 beds. This facility will accommodate 144 beds.

**Table 15 - Accommodation Schedule**

Function		Area (m <sup>2</sup> )	no.	total (m <sup>2</sup> )	
Administration	Reception and waiting area	40		40	
	General office	36		36	
	Superintendent office	12		12	
	Boardroom	28		28	
	Store for office supplies	9		9	
	Records room	9		9	
	Strong room	9		9	
	Store & sorting for donations	15		15	
	Kitchenette	6		6	
	Staff toilets	9		9	
	Visitors' room	28		28	
	Visitors' toilets	7		7	
	Shop	21		21	
	Therapy centre	Hydrotherapy room	77		77
		Hydrotherapy store	5		5
Change rooms		20		20	
Occupational therapy room		46		46	
Occupational therapy store		6		6	
Physiotherapy room		41		41	
Physiotherapy store		5		5	
Speech therapy		14		14	
Snoezelin room		14		14	
Individual therapy room		14	2	28	
Toilets (residents)	36		36		

	Toilets (Staff / visitors)	36		36
	Cleaners' store	2	2	4
	Hall with stage	205		205
	Backstage / store	24	2	48
Staff room	Dining area & lockers	70		70
	Toilets/showers	30		30
Kitchen & laundry	Kitchen	100		100
	Kitchen stores	35		35
	Laundry	70		70
	Laundry stores	10		10
Medical	Doctors room	12		12
	Nurses office	12		12
	Waiting	10		10
Place of worship	Chapel	312		312
	Sacristy	15		15
	Toilets	15		15
	Store/ flower arranging	3		3
	Day room	88	6	528
Accommodation	Bedrooms	145	6	870
	Toilets	18	6	108
	Baths	16	6	96
	Basins & waiting	21	6	126
	Nappy changing	5	6	30
	Sluice room	4	6	24
	Covered patio	30	6	180

Outdoor spaces	Dormitory gardens	355	3	1065
	Wetlands	334		334
	Therapy garden	227		227
	Vegetable & herb garden	9975		9975
	Labyrinth	456		456
	Shared field with school	6240		6240
	Playground	974		974
	Terraced courtyard	600		600
	Laundry yard	70		70
	Parking	1515		1515
Covered outdoor circulation	Service yards	997		997
	Covered walkway	864		864
	Ramp	113		113
	Stairs	10	2	20
Garage etc.	Lifts	9	2	18
	Garage	162		162
	Workshop / garden store	30		30
	stores	12	2	24
	Back-up generator room	19		19
	Refuse storage	17		17
	Collection for recycling	9		9
	Guardhouse	9		9
Area (including first floor & outdoor spaces)				27208

## 7.2 Appendix B - SBAT (Sustainable building assessment tool)

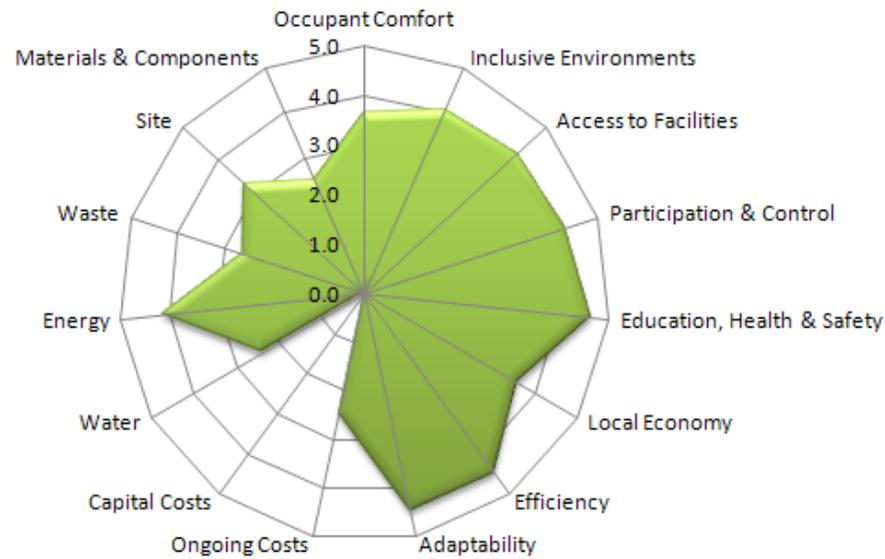
### SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

**PROJECT**

Project title: **Little Eden**  
 Location: **Prinshof**  
 Building type (specify): **Residential/Community**  
 Internal area (m2): **3847m<sup>2</sup>**  
 Number of users: **200**  
 Building life cycle stage (specify): **Design**

**ASSESSMENT**

Date: **15-Oct-07**  
 Undertaken by: **Danielle Jensen**  
 Company / organisation: **Univeristy of Pretoria**  
 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_



**Social** 4.2

**Economic** 3.0

**Environmental** 3.0

**Overall** 3.4

Building Performance - Social			
	Criteria	Indicative performance measure	Measured Points
<b>SO 1</b>	<b>Occupant Comfort</b>		<b>3.6</b>
SO 1.1	Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	90 0.9
SO 1.2	Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with unpolluted air source	90 0.9
SO 1.3	Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dbA)	94 0.9
SO 1.5	Thermal comfort	Temperature of occupied space does not exceed 28 or go below 19°C for less than 5 days per year (100%)	0 0.0
SO 1.5	Views	% of occupied space that is 6m from an external window (not a skylight) with a view	90 0.9
<b>SO 2</b>	<b>Inclusive Environments</b>		<b>4.1</b>
SO 2.1	Public Transport	% of building (s) within 400m of disabled accessible (20%) and affordable (80%) public transport	80 0.8
SO 2.2	Information	Comprehensive signage provided (50%), Signage high contrast, clear print signage in appropriate locations and language(s) / use of understandable symbols / manned reception at all entrances (50%)	50 0.5
SO 2.3	Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	100 1.0
SO 2.4	Toilets	% of occupied space with fully accessible toilets within 50m along easily accessible route	100 1.0
SO 2.5	Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	75 0.8
<b>SO 3</b>	<b>Access to Facilities</b>		<b>4.2</b>
SO 3.1	Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	80 0.8
SO 3.2	Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	80 0.8
SO 3.3	Retail	All users can walk (100%) / use public transport (50%) to get to food retail	80 0.8
SO 3.4	Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post/telephone/internet)	80 0.8
SO 3.5	Exercise	All users can walk (100%) / use public transport (50%) to get to recreation/exercise facilities	100 1.0
<b>SO 4</b>	<b>Participation &amp; Control</b>		<b>4.3</b>
SO 4.1	Environmental control	% of occupied space able to control their thermal environment (adjacent to openable windows/thermal controls)	90 0.9
SO 4.2	Lighting control	% of occupied space able to control their light (adjacent to controllable blinds etc/local lighting control)	90 0.9
SO 4.3	Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100 1.0
SO 4.4	Sharing facilities	5% or more of facilities shared with other users / organisations on a weekly basis (100%)	100 1.0
SO 4.5	User group	Users actively involved in the design process (50%) / Active and representative management user group (50%)	50 0.5
<b>SO 5</b>	<b>Education, Health &amp; Safety</b>		<b>4.7</b>
SO 5.1	Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied space (75%). Construction training provided on site (25%)	75 0.8
SO 5.2	Safety	All well used routes in and around building well lit (25%), all routes in and around buildings visually supervised (25%), secure perimeter and access control (50%), No crime (100%)	100 1.0
SO 5.3	Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel/intranet site)	100 1.0
SO 5.4	Materials	All materials/components used have no negative effects on indoor air quality (100%)	90 0.9
SO 5.5	Accidents	Process in place for recording all occupational accidents and diseases and addressing these	100 1.0

Building Performance - Economic				
	Criteria	Indicative performance measure	Measured	Points
<b>EC 1</b>	<b>Local economy</b>			<b>3.6</b>
EC 1.1	Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	0	0.0
EC 1.2	Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	90	0.9
EC 1.3	Local components	% of components (windows, doors etc) made locally (in the country)	90	0.9
EC 1.4	Local furniture/fittings	% of furniture and fittings made locally (in the country)	90	0.9
EC 1.5	Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	90	0.9
<b>EC 2</b>	<b>Efficiency</b>			<b>4.5</b>
EC 2.1	Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	80	0.8
EC 2.2	Occupancy	% of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24) *100)	100	1.0
EC 2.3	Space per occupant	Space provision per user not more than 10% above national average for building type (100%)	90	0.9
EC 2.4	Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	100	1.0
EC 2.5	Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	80	0.8
<b>EC 3</b>	<b>Adaptability</b>			<b>3.7</b>
EC 3.1	Vertical heights	% of spaces that have a floor to ceiling height of 3000mm or more	95	1.0
EC 3.2	External space	Design facilitates flexible external space use (100%)	80	0.8
EC 3.3	Internal partition	Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%)	30	0.3
EC 3.4	Modular planning	Building with modular structure, envelope (fenestration) & services allowing easily internal adaptation (100%)	80	0.8
EC 3.5	Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	80	0.8
<b>EC 4</b>	<b>Ongoing costs</b>			<b>2.5</b>
EC 4.1	Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	10	0.1
EC4.2	Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%)	5	0.1
EC 4.2	Metering	Easily monitored localised metering system for water (50%) and energy (50%)	100	1.0
EC4.3	Maintenance & Cleaning	% of building that can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials	34	0.3
SO 4.5	Procurement	% of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	100	1.0
<b>EC 5</b>	<b>Capital Costs</b>			<b>0.0</b>
EC 5.1	Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	unknown	
EC5.2	Procurement	Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	unknown	
EC 5.3	Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	unknown	
EC5.4	Technology	3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	unknown	
EC 5.5	Existing Buildings	Existing buildings reused (100%)	0	



Building Performance - Environmental			
	Criteria	Indicative performance measure	Measured Points
<b>EN 1</b>	<b>Water</b>		<b>2.4</b>
EN 1.1	Rainwater	% of water consumed sourced from rainwater harvested on site	0 0.0
EN 1.2	Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	100 1.0
EN 1.3	Runoff	% of carparking, paths, roads and roofs that have absorbant/semi absorbant/permeable surfaces (grassed/thatched/looselaid paving/ absorbant materials)	50 0.5
EN 1.4	Greywater	% of water from washing/relatively clean processes recycled and reused	0 0.0
EN 1.5	Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	90 0.9
<b>EN 2</b>	<b>Energy</b>		<b>4.2</b>
EN 2.1	Location	% of users who walk / cycle / use public transport to commute to the building	75 0.8
EN 2.2	Ventilation	% of building ventilation requirements met through natural / passive ventilation	100 1.0
EN 2.3	Heating & Cooling	% of occupied space which relies solely on passive environmental control (no or minimal energy consumption)	100 1.0
EN 2.4	Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient ( ie energy star rating)	90 0.9
EN 2.5	Renewable energy	% of building energy requirements met from renewable sources	50 0.5
<b>EN 3</b>	<b>Waste</b>		<b>2.6</b>
EN 3.1	Toxic waste	% of toxic waste (batteries, ink cartridges, flourescent lamps) recycled	100 1.0
EN 3.2	Organic waste	% of organic waste recycled	80 0.8
EN 3.3	Inorganic waste	% of inorganic waste recycled.	80 0.8
EN 3.4	Sewerage	% of sewerage recycled on site	0 0.0
EN 3.5	Construction waste	% of damaged building materials / waste developed in construction recycled on site	0 0.0
<b>EN 4</b>	<b>Site</b>		<b>3.3</b>
EN 4.1	Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	0 0.0
EN 4.2	Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100 1.0
EN 4.3	Vegetation	% of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	80 0.8
EN 4.4	Food gardens	Food gardens on site (100%)	100 1.0
EN 4.5	Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	50 0.5
<b>EN 5</b>	<b>Materials &amp; Components</b>		<b>2.5</b>
EN 5.1	Embodied energy	Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	100 1.0
EN 5.2	Material sources	% of materials and components by volume from grown sources (animal/plant)	10 0.1
EN 5.3	Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	80 0.8
EN 5.4	Recycled / reuse	% of materials and components (by weight) reused / from recycled sources	10 0.1
EN 5.5	Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	50 0.5

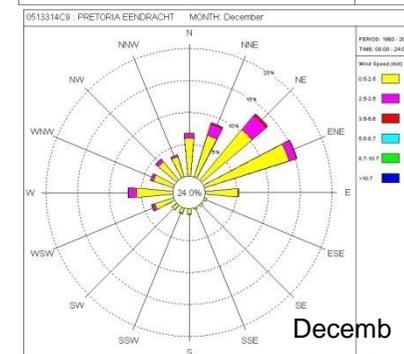
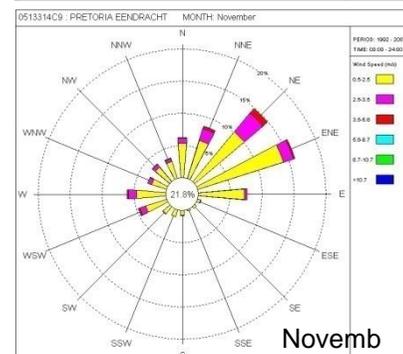
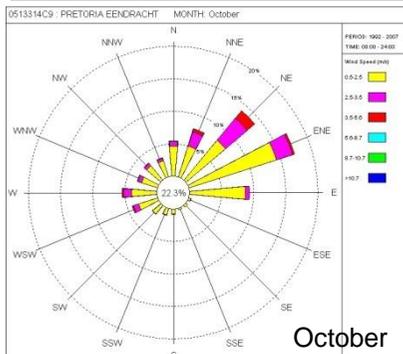
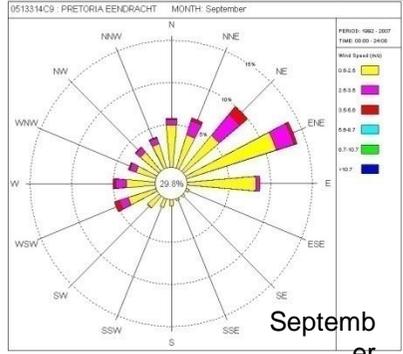
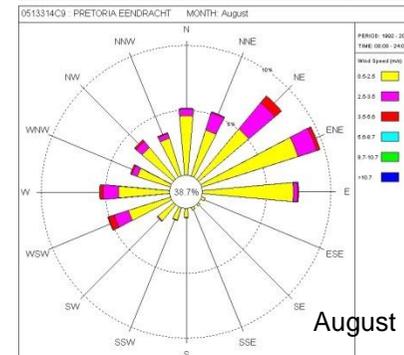
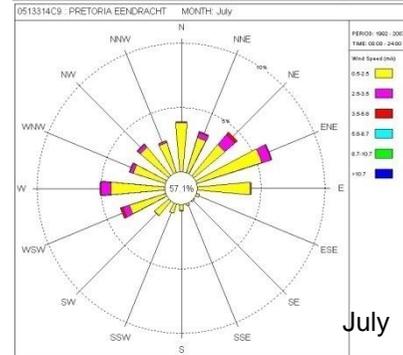
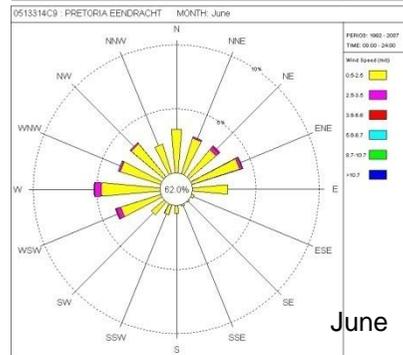
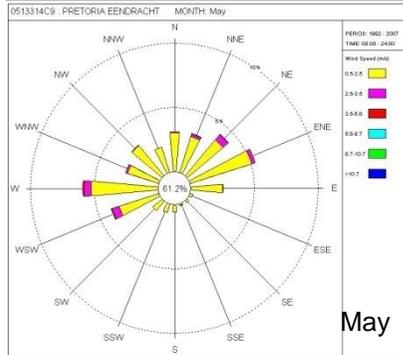
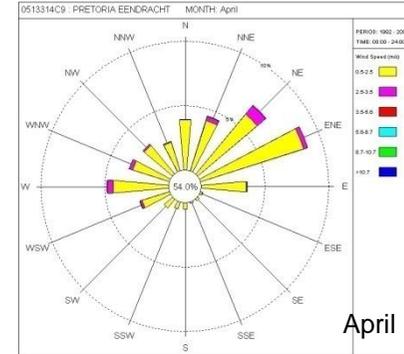
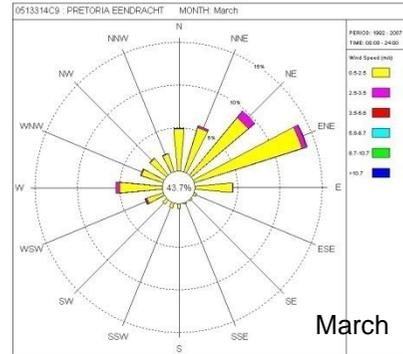
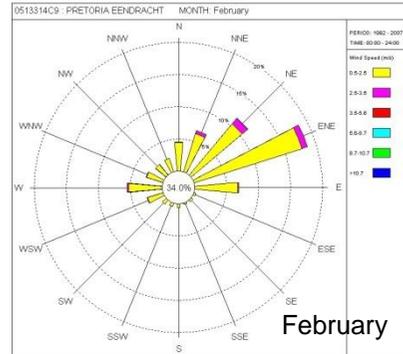
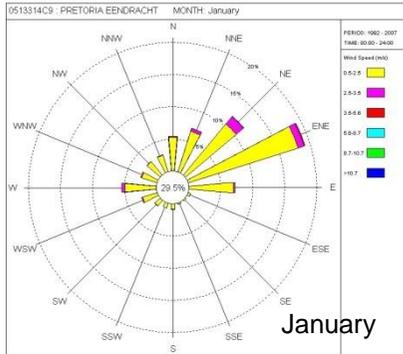
## 7.3 Appendix C – Norms and standards

Required accessibility as summarised from Holmes-Siedle (1996)

- Parking bays for wheelchair users should be at least 3 600mm wide by at least 4 800mm long.
- Pathways: well illuminated, even, firm, well drained and non-slip in wet and dry conditions. Sudden gradient change and gaps more than 10 mm should be avoided.
- Paths clearly marked.
- Width for two wheelchairs to pass each other is 1800mm, minimum width of path is 900 minimum, preferably 1350mm.
- Ramp gradient should be 1:12, non-slip, minimum unobstructed width of 1m, but preferably 1,8m to allow passing; top and bottom landings of 1,2m minimum with intermediate landings of at least 1,5m for every 10m travelled; continuous handrail 900mm above ramp surface if ramp is longer than 2m. Cross-slope, for drainage, should not be more than 1:50.
- Channel gratings and manhole covers should be non-slip and flush with pavement. Openings not to exceed 13mm in one direction, elongated openings to be perpendicular to general direction of movement.
- Minimum light level, in external areas such as stairs and ramps, required by people with partial sight is 50-75 lux.
- Changes in level and steps need to be marked with contrasting colour.
- Handrails are essential to people with mobility difficulty and sight impairment.
- For wheelchair accessibility door clear opening width is a minimum 900mm where it is approached head on or from the side if the corridor is at least 1200mm, otherwise 1000mm wide if the corridor is 900mm.
- Toilet cubicle to have minimum dimensions of 2m x 1,5m for wheelchair accessibility.

## 7.4 Appendix D – Wind roses

Wind roses received from the South African Weather Services (McBride 2007)



## 7.5 Appendix E – Group research

Group research work done as part of the MArch(Prof) course

### HERITAGE



### HERITAGE - Existing



GROUP 4: HERITAGE CONTEXT								
Description								
Building No	Building Type	(Architectural & Technical Description) Typology	Materials	Historical Value	Condition	Orientation	Function	Occupancy
<b>De Waal street:</b> is a short street between Boom & Mosca street. To the western side are high walls enclosing zoo buildings; small houses run along the eastern side, all set back the same distance from the street. Most houses are kept in the same original scale.								
1	house	single storey house with pointed corr iron roof & veranda supported by square timber poles. Concave fluted end gable faces the street. Walls are plastered & painted above a dado of red face brick.	timber, plasterd walls, corr iron		medium	W	dwelling	yes
2	house	one of the bigger dwelling houses in the area, built symmetrically around a central arched entrance. A (later added) veranda runs along the street facade & side, supported by stone-built pillars. Roof ventilator faces the street. Two impressive, richly decorated timber windows on either side of the entrance on the veranda front.	timber, stone, plastered walls		medium	W	offices	yes
3	house	Symmetrical dwelling house covered by corr iron roof with central roof ventilator & ridge finials. The veranda rests on pre-built columns, resting on stone layer, forming part of the ballustrade wall.	stone, concrete, corr iron		good	W	dwelling	yes
<b>Mosca street:</b> today forms the back side of the U-shaped street with three names running through Riverdale. The zoo fence forms the northern boundary, on the southern side are two houses which have been changed quite severely.								
4 & 5	house	The two houses are linked by a later added addition. The one house is much more recent than the other one. Overall, the houses have been altered a lot over time.	plastered walls, corr iron, timber		good	W & N	hospice/ hospital	yes
<b>Margaretha street:</b> similar to De Waal street in terms of scale and appearance.								
6	house	House has undergone many alterations, but is important as a typical dwelling house.	plstrd walls, corr iron, conor		good	E	dwelling	yes
7	house	House has undergone many alterations, but is important as a typical dwelling house.	pntrd stone, corr iron, pl walls		medium	E	dwelling	yes
8	house	Small house, without any well-preserved architectural characteristics. Typical street & scale relationship.	face brick, corr iron, plstrd walls		good	E	dwelling	yes
9	house	Symmetrical, semi-detached house under one uninterrupted corr iron roof. On either end forms a veranda, covered by the same roof. Walls are plastered & painted.	conor, corr iron, plstrd walls		good	E	dwelling	yes
10	house	Small house, without any well-preserved architectural characteristics. Typical street & scale relationship.	face brick, corr iron, plstrd walls		good	E	dwelling	yes
11	house	scale of the house and appearance resemble House No.38 in De Waal str.	corr iron, plstrd walls, timber		good	W	dwelling	yes
12	house	Small house, without any well-preserved architectural characteristics. Typical street & scale relationship.	pres oeil, corr i, plasterd walls		medium	W	dwelling	yes
13	house	House with gable facing the street, steep veranda on two sides. Corr iron roof. Veranda rests on pillars that form part of the ballustrade wall. Timber sash windows.	corr iron, plstrd walls, timber, concrete		medium	W	dwelling	yes
14	house	Big dwelling house with small corner-gable facing the street. The multi-faceted corr iron roof faces the the veranda, which runs along two sides of the house. Double timber & glass swing doors appear on the veranda.	concrete, corr iron, plstrd walls, timber		medium /low	W S-W	women clinic, surgery	yes



<p><u>Riverdale Street</u> is a small residential area surrounded by the zoo, Mosca street, the old street wall next to Prinsloof, Lewis and Boom street. Because heavy traffic does not pass through the area, the atmosphere is much quieter &amp; it feels like having entered a different world. Riverdale was developed independent of the city pattern and thus the streets are smaller and do not line up with the surrounding pattern. Houses are generally small and unpretentious. The placidness of the street is striking.</p>								
<p><u>Boom street</u>: the northern side of Boom street is characterized by open spaces leading through the unchannelled Apies river and up and over Daspoort Hill. As the street name indicates it, the street is lined on both sides with big Plantane trees. These tree rows originate at Von Willich str, through Marabastad and ends at the Du Toit, Bloed &amp; Prinsloo crossing. The southern street scape is more commercial, while the northern side is quieter, embracing the zoo, Apies river, parking etc</p>								
15 & 16	house	Two bigger houses, which have been altered substantially and to which ugly additions have been added. Important as remaining witness of scale & age of dwelling houses in Boom str., in comparison to those in Riverdale str.	face brick, corr iron, plstrd walls		medium	S	optometrist, dentist	yes
<p><u>Lewis street</u>: starts at Boom street and runs to the north. The residential scale is kept along Boom street, but as from Riverdale street bigger buildings and open fields appear next to the road.</p>								
17	house	Small dwelling house, covered by a pointed corr iron roof. Big, triangular roof ventilators sit on every side of the roof. A veranda, facing the street rests on columns. This house, in spirit & scale, is one of the most important buildings in the area.	corr iron, timber, face brick, plstrd walls		good	E	dwelling	yes
18	3-storey flats	Three-storey building with court yard. Exterior walls consist of two colours face brick; corr iron roof. Sombre Art Deco & International influence, seen at the heavy roof line which reminds of Frank Lloyd Wright's Prairie House. Typologically important as human-friendly & multi-storeyed dwelling unit in the city.	face brick, concr, steel		good	N	Flats: Flora Court	yes
<p><u>Andries street</u>: is a typical one-way street in Pretoria, but has a very important origin: the T-junction at Boom street, where the old Museum sits next to the zoo. A pity that the importance of the building gets lost. Spaces are determined by the changing context, such that the pedestrian roads change from wide to narrow, tree-lined to open, residential to commercial. Jacarandas line the street up to Vermeulento soften the street scape.</p>								
19	house	Simple single storey house with front & back verandas. Front veranda with plastered walls and low wall with etched edge strip. Plastered walls with stone plinth, timber windows and -floor.	concr, pressed ceiling, plstrd walls, corr iron		medium / low	N & W	dwelling	yes
20	house	Symmetrical semi-detached house with corr iron roof. Plastered & painted walls on painted face brick plinth. Timber windows, purple steel ceiling. The total house consists of a T-shape. A veranda runs along three sides of the house, supported by pre-built columns.	face brick, concrete, plstrd walls, corr iron		good	N & W	dwelling	yes
21	house	Typical Edwardian village house with some exceptions in character. Gable wall & 'erker' face the street. Corrugated iron roof; face brick and painted, plastered walls with ledge all on painted stone plinth. Timber windows & louvres. Kirkness brick edging in garden.	face brick, plstrd walls, corr iron, timber		good	W	dwelling	yes



22	house	Single storey dwelling house with corr iron roof. Gable wall with 'erker' windows facing the street. Veranda with pre-fab columns on square bases and lean-to roof. The veranda stretches from the entrance along the house front & around the corner. The exterior walls consists of plastered strips and face brick (now all painted) on painted stone plinth. Timber windows with arched stone work as lintels. late Victorian/ Edwardian house with numerous original details. Outdoor building with loft window and double-pitched roof.	plstrd walls, corr iron, timber		medium	E	Centre for SA radio league	yes
23	7-storey flats	7-storey flat building. This building places an unsympathetic focus on the way the streets join.	face brick, plstrd walls		good	N	Flats	yes
24	courtyard bldg	Built ca. 1899. The old museum front is on the property of the zoo. The entrance gate under a semi-round 'timpaan' of sand stone is in the centre of the symmetrical facade between two richly decorated pavilions stretching high above the lower corr iron roofs of the museum buildings. Sand stone cut work appears on the pavilions, at the top corinthian capitals & pillars. Prominent triangular roof ventilators appear at measured distances on the museum roof. A very important city land mark!	concrete, corr iron		low	S	Museum	no
25	2-storey dwelling	one of the first residential houses next to the zoo. House has interesting cottage-type characteristics, but lacks serious maintenance. Seems fairly unchanged over the years, although a bit ad-hoc. The white painted plastered walls are partly covered by a climbing plant.	painted face brick walls, tile roof, timber		medium/ low	W	storage	no
<p><u>Bloed street</u>: the corner café at the Boom/Bloed/Prinsloo street crossing is an important architectural appearance and although this example is not very dramatic, it remains important as a typological example of smaller business buildings of the bazaar era. Characteristics such as the covered verandas and corner entrances are generally kept in reasonable condition. Bloed street is characterized by its big Jacaranda trees along side the street sides and low buildings adjacent to the street. Side walks are generally dirty and not well looked after, although lively. Two unbuilt stands on the northern side of the street result in a big gap in the city fabric. Splashes of colour and advertisements on the southern side, confuse to lead the eye to small single- and double storey buildings.</p>								

GROUP 4: HERITAGE CONTEXT  
Description

Bldg No	A ddr.	Photos	Bldg No	A ddr.	Photos
1	De Waal str 34. Erf no: 2025		6	Margaretha str 45. Erf no: 2010	
2	De Waal str 36. Erf no: 2021		7	Margaretha str 39. Erf no: 2020	
3	De Waal str 40. Erf no: 2013		8	Margaretha str 31. Erf no: 2020	
4 & 5	Mosca str 50 & 281. Erf no: 2001 & 3027		9	Margaretha str 27. Erf no: 2003	

10	Margaretha str 25. Erf no: 2038			14	Margaretha str 2. Erf no: 2065		
11	Margaretha str 28. Erf no: 2035			15 & 16	Boom str 306 & 310. Erf no: 2242 & 2241.		
12	Margaretha str 16. Erf no: 1/2051			17	Lewis str 8. Erf no: 3183		
13	Margaretha str 12. Erf no: 2055			18	Boom str 257. Erf no: 3057		

19	Andries str 2. Erf no: 3135.			23	Boom str 245. Erf no: 2863		
20	Andries str 4 & 8. Erf no: 3135.			24	Boom str (next to zoo) Erf no: R/17		
21	Andries str 12. Erf no: 3135			25	Boom str 277. Erf no: 3389		
22	Andries str 11. Erf no: 847/1			Margaretha street scape & Bloed street Corner Cafe			

## 7.6 Appendix F – Snoezelen room

Information replicated as it appears online (International Snoezelen Association 2007)

### Definition:

"Snoezelen is derived from the words "snuffeln" (to sniff, to snuffle) and "doezelen" (to doze, to snooze). It was developed in the Netherlands in the seventies by institutions caring for severely disabled people. Behind Snoezelen is a multi functional concept: In a purposely designed room (mostly a white room) the use of light and sound elements, scents and music initiate sensual sensations. These have both relaxing and activating effects on the different perception areas. The specific design directs and arranges the stimuli; it creates interest, brings back memories and guides relationships. Snoezelen induces wellbeing, in a calm atmosphere fear will be taken away, people feel secure. Snoezelen is therapy as well as promotion and is used for all stages of development (from toddlers to old people).



Since the eighties the experiences made in 25 years in more than 10 nations are being collected and assessed.

At present (as of 2005) there are more than 1200 Snoezelen-rooms in Germany. They can be found mainly in institutions for mentally disabled people and senior citizens, but also in hospices and clinics (particularly in psychiatry, oncology neurology, podiatry), in nursery schools and schools."



Children with a handicap in a room designed for snoezelen.  
Photo credit: Het Balanske, Tielt-Winge, Belgium. (Wikipedia 2007g)

## 7.7 Appendix G - types of handicap

Nellist (1970: 6 – 7) describes the different types of handicaps as follows:

*Downs syndrome* - They make up a large proportion of the intellectually disabled. They are recognisable by distinct physical characteristics including thick necks, chesty, slightly swollen in appearance. They find speech difficult especially pronunciation of words. They vary in intelligence and ability and are often aware of their surroundings and willing to cooperate.

*Autistics* – They are not as common as persons with Downs Syndrome and often look perfectly normal physically. They are withdrawn and appear to live in a world of their own. They often show no interest in group play and frequently do not talk at all. They can be repetitive and obsessive in small actions. They are often quite intelligent, with a large number having a normal IQ, but the profoundly intellectually disabled often also suffer from autism to some degree.

*Hyperactive children* – As with autism, this often occurs to children with a normal IQ, but the profoundly intellectually disabled are frequently also considered hyperactive. These children are also prone to obsessive, repetitive behaviour, often of a noisy or violent kind, even though the violence is often unintentional. These children can be emotionally disturbed and very tense.

*Cerebral palsy* – As with autistics and hyperactive children, these children are not always intellectually disabled. In this disability there is a lack of physical muscular co-ordination. Their movements are jerky and uncontrolled, leading to frustration and emotional problems which can restrict their ability to develop mentally.

*Schizophrenia* – As with the above-mentioned problems, not all schizophrenics are intellectually disabled and not all intellectually disabled are schizophrenic. This is often called “split personality” and has been over dramatised in the media. Schizophrenia leads to confusion as to what is real and what is not real and is accompanied by unreasoning fears which the average person finds difficult to understand.

*Other physical disabilities* – The intellectually disabled often also suffer from physical disability including physical deformity, blindness, partial sight, deafness, inability to walk or walk badly, some can pull themselves along the ground or crawl only.

## 7.8 Appendix H - Little Eden Information

Information replicated as it appears in the leaflet supplied by Little Eden Society for the Care of Persons with Mental Handicap

Contact details for Little Eden:

PO Box 121  
Edenvale  
South Africa

Tel. (011) 609-7246

Fax (011) 452-4560

Email: [info@littleeden.org.za](mailto:info@littleeden.org.za)

Website: [www.littleeden.org.za](http://www.littleeden.org.za)

NPO: 001-827

Little Eden Society in a nutshell:

### Who are we?

- Our mission is to care for and develop people with profound intellectual disabilities, to their full potential
- We believe that persons with intellectual disabilities are whole, complete people, created by God with a mind, body, spirit and a soul... regardless of their multiple disabilities
- We aim to recognise in them their abilities and to work with them at their level of functioning

### Quick facts on LITTLE EDEN

- We are a registered non-profit organisation
- We are licensed by the Department of Health
- We have been granted Section 18 A status
- We care for 290 children and adults with profound intellectual disabilities
- We consist of two Homes: one in Edenvale accommodating 180 residents, and the other on a farm in Bapsfontein (Elvira Rota Village), accommodating 110

- Statistically the average age of our residents is 20 years
- The average mental age is that of a one-year old
- Many of our residents also suffer from mental illness, disturbed challenged behaviour and multiple physical disabilities
- Several residents are HIV positive or have AIDS and some were previously abused or neglected
- 219 residents were abandoned or came from indigent families. These families are thus unable to contribute financially to the care of their child

### Facilities, services and activities

- The level of care of the residents is intensive, such as would be experienced in a hospital or frail care facility
- The Edenvale Home caters more at the level of frail care as well as having a full therapy programme
- At Elvira Rota Village, Bapsfontein, there is a greater emphasis on participation in activities of daily living with, to a limited degree, a certain level of independence, e.g. Bobby enjoys walking down to the farm to work with the animals every day
- 220 members of staff are employed, working in shifts to ensure that there is 24-hour daily care

### How can you help?

Currently it costs LITTLE EDEN R3500 per month per child to continue giving the necessary nursing care, love and support. This amounts to approximately R12million per year.

LITTLE EDEN receives approximately 50% funding from Government. The shortfall of over R7million must be raised every year to keep the doors of the Society open. To meet this shortfall, LITTLE EDEN raises funds through specific appeals to corporates, fund-raising events, its two second-hand shops, etc. Therefore, donations are always welcome, be it monetary or in kind!

The ongoing care program includes:

#### Nursing:

A nursing sister is on duty 24 hrs a day  
210 residents are on medication daily

Daily chest therapy is critical to the majority of residents  
Emergency interventions are often required

**A set, daily routine:**

Making residents feel secure and have a sense of belonging

**Individual personal care:**

Sleeping cots and wheelchairs, feeding (5x meals per day), clothing and nappy changes, personal hygiene support (bathing and teeth brushing). In our industrial kitchens 290 meals are prepared five times a day and the industrial laundries ensure that 2500 nappies are washed daily, apart from linen and clothing for all the residents.

**Daily therapies:**

Such as occupational-, hydro-, physio-, music-, art-, and pet therapy, metamorphosis and reflexology

**Individual care and stimulation:**

Paulos learnt how to lift first his left and then his right hand. With months of dedication Sonto learnt how to eat and enjoy solid food. Jacuzzi helps Suanrie's spastic muscles to relax and a combination of therapies keeps Ahmed's severe asthma at bay. The children are also exposed to relationship and social skills development

**Family and love:**

To the 290 residents, LITTLE EDEN is their family and source of love, critical to their reaching their full potential.

**Spiritual development and support:**

Residents from Elvira Rota Village are brought to the Chapel at the Edenvale Home every month for First Friday Mass, with Matthew and Daniela serving the Mass. A routine of daily prayers is followed.

**Participation in concerts and creative activities:**

The children participate in creative activities and have produced artwork on display in the Homes. Beautiful concerts are put together with the hard work and dedication of staff and this gives the children a sense of belonging and achievement, especially when the audience applauds.



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