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Playscape for mentally challenged children:

The concept of boundary

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Submitted in partial fulfilment of the requirements for the degree Master of Landscape Architecture (Professional) in the Department of Architecture, Faculty of Engineering, Built Environment and Information Technology, University of Pretoria

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Dissertation title: A Playscape for Mentally challenged Children: The Concept of Boundary

Site description: Derelict and fenced-off open area

Adress: Du Plessis Street, Westbury, Johannesburg, South Africa

GPS Coordinates:-26.105436, 27.583037

Client: The Department of Social Development along with The Reid Foundation and the community.

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of Landscape Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.
I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Acknowledgments

To the Landscape Architect of all Landscape Architects, You are my foundation. All glory to God.

“For once You have spoken all nature and science follow the sound of Your voice” (Hillsong,2017).

Thank You.

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Morne, your diligence and hard work inspires me and you always know what to say. Thank you for your support. Becoming your wife is the greatest blessing God has offered me.

Abstract:

Outdoor green spaces are necessary for cognitive development. Many mentally challenged children in South Africa lack proper treatment and access to green spaces, as well as basic social interaction. This dissertation investigates why play in outdoor spaces is beneficial and how this can be achieved through the basis of a playscape focusing on development and therapy for mentally challenged and abled-bodied children. The design solution also aims to uplift the community and create safe spaces.

The main research question asks how a playscape can transform the segregated, derelict areas in Westbury into spaces that encourage child development. The hypothesis states that activity-orientated play-ground design that recognizes the abilities of mentally challenged and abled-bodied children, and provokes imagination, can create platforms that remove social boundaries and aid in development. Furthermore, naturalistic playground design can aid in solving the issue of boundary within Westbury, while effectively defining open space and creating a sense of place.

In order to test the hypothesis, pragmatic requirements for child development were obtained through a literature review and by conducting interviews with therapists dealing with mentally challenged children. Case studies were consulted to understand the application in design.

In conclusion, it is confirmed that naturalistic, activity-orientated playground design can create platforms that remove social boundaries and aid in development and therapy. By using archetypical landscape elements that provoke the imagination, a multifaceted playscape can be created. This dissertation in its design application demonstrates that it is possible to use boundary to create safer, integrated spaces, while effectively defining an open space. By this example a playscape and its surrounding spaces can offer platforms for economic, social, communal and environmental upliftment within Westbury.

Table of content

Glossary of terms

Autism spectrum disorder: The result of a neurological and developmental disorder. Some signs of autism might be having difficulty communicating, which results in not being able to socially interact with people. People with autism often have repetitive actions and their activities are often limited.

Corridors of Freedom: A Johannesburg initiative focused on transit orientated development, where the goal is to develop housing possibilities around an important movement axis.

Defensible space: Spaces where people have the option of defending themselves or being protected.

Derelict site: Plots of land that is not being used appropriately and is prone to decay.

Disability: Having difficulty to perform an activity that most people can perform easily.

Inclusive play areas: Play areas that are accessible for everyone, including the disabled.

Green space: An outdoor space with some vegetation or natural element.

Mentally challenged: A person that has any mental challenge, including mental disabilities or disorders, trauma or behavioural issues.

Rehabilitation: Through using therapy, the goal is to restore someone to wellbeing or that they should be able to do physical activities that could not have been done before treatment.

Segregation: Being set apart from others or two groups that are set apart from each other.

Social integration: Bringing two or more groups together, often with a common goal or activity.

Sensory integrated therapy: A type of therapy that stimulates a child's senses in order to develop specific fragments of a child's being. This type of therapy is especially beneficial in cognitive development.

1 Introduction

In the following chapter the author will discuss the focus of the dissertation which includes playscape design for the mentally challenged child, the main question, the hypothesis and sub-questions along with the limitations of the study and lastly, the author will introduce the site and the user.

Fig.1.1: Mentally-challenged child imagining that he can fly (Author,2017)

Introduction

There are a great number of mentally challenged children in South Africa with a lack of sufficient treatment available for these children in less fortunate communities.

In South Africa, 2.5% of children under the age of 18 has a disability (Stats SA, 2014).In 2001 there were 474 000 disabled children in South Africa. The SA Annual General Household Survey (AGHS) conducted in 2009, showed that this number increased to an estimated 2.1 million disabled children (11.2%) in South Africa. In Gauteng 7.6% of children had difficulty with performing daily activities and 2% (51 545 children) had serious disabilities (AGHS, 2009). Amongst the disabled children in South Africa, 4.2% have cognitive disabilities and 2% have communication difficulties (Stats SA, 2014).

According to the South African Depression and Anxiety group, 17% of children in South Africa suffer from common mental disorders. Developmental disorders, such as autism, often co-exist with mental disabilities. Amongst every 110 children in South Africa, at least one is born with autism. The statistics on mentally challenged children will never be definite because it is often an invisible disability; most mentally challenged children are merely regarded as 'difficult' because people are often unaware that a child is mentally challenged.

Generally, disabled people have less access to care and rehabilitation services (World Health Organization, 2016).There is also a lack of environmental accessibility for the disabled. Many disabilities will be prevented if children have access to stimulation of the senses and physical exercise (AGHS, 2009).

ABLED CHILD

Fig.1.2: Illustration of abled child that will be shown throughout dissertation(Author,2017)

MENTALLY CHALLENGED CHILD

Fig.1.3: Illustration of mentally challenged child that will be shown throughout dissertation(Author,2017)

Because of the lack of suitable outlets for disabled children, these children are often left isolated. People in South Africa have to be made aware of the signs and symptoms of mental disabilities. A social issue that we have to deal with is the segregation between the abled-bodied and the disabled.

Playground designs for the disabled are mostly focused on making them accessible, removing physical barriers, but many designers seem to forget to remove social barriers. These playgrounds are most often not challenging enough for the abled-bodied and the result is social segregation between the disabled and abled-bodied. These appliance-orientated designs offer play that merely occupies the child but does not aid in the child's development. Keith Christensen (2003: 2), a designer of inclusive play areas, states that due to "the absence of appropriate outlets for the abilities of the disabled child, the most common effects of the disability is isolation."

There is a lack of diversity in these appliance-orientated play areas, with little variety in activity, but at the same time they are over-programmed, leaving little space for the imagination (Christensen, 2003).

Client profile

Shaun Constant, a Westbury resident, started the Reid foundation that cares for disabled children. The Reid foundation plans to build a day care centre for disabled children. The Department of Social Development started a children's service directory in order to serve vulnerable children and their parents. The aim is to acquire funds from this initiative in order to cover the costs for the proposed playscape.

This will be a community initiative and therefore belong to the community (see chapter 3).

THE REID FOUNDATION

LOCAL STUDIO
ARCHITECTURE AND URAN DESIGN

WESTBURY AIDS SUPPORT GROUP

Care 4U2

Fig.1.4: The Reid Foundation's logo (The Reid Foundation,2017)

Site introduction

The study area is located in Westbury, Johannesburg. Westbury is located 8 km to the West of Johannesburg CBD. The study area (a derelict, open space) forms part of a large communal, health and education hub. It is therefore within close proximity to a community hall, clinics and schools. The study area is one of the few areas in Westbury that is surrounded by public infrastructure. The site is situated in Roberts Avenue, which is mostly used by pedestrians.

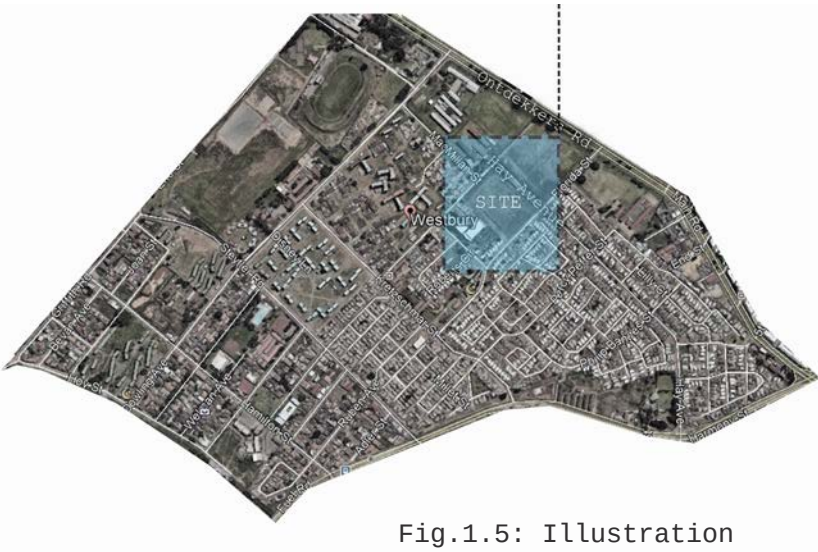


Fig.1.5: Illustration of Westbury (Author,2017)

Westbury's landscape is made up of derelict green spaces that are enclosed by physical boundaries. From conversations with residents it became clear that these spaces have become platforms for crime activities such as dog fighting, gambling and substance abuse.

Westbury's initial planning shows evidence of the apartheid landscape and as a result, it is contributing to spatial segregation. As an attempt to separate race, a coloured community was eventually forcefully relocated to Westbury before 1955. In 1955, Sophiatown (Westbury's neighbour) underwent forced removals in order to accommodate the poor Afrikaner.

A buffer between Westbury and Sophiatown consisting of vacant space and an industrial zone, which sometimes stretches as far as 300m, was created by the Apartheid Government. This spatial segregation is still evident in Westbury today.

A clinic in Westbury was opened in 2016 for the less fortunate communities, attracting many disabled adults and children from all over Johannesburg. Nontheless, there is still a lack of early childhood development initiatives, especially for the disabled. The building typologies in Westbury also leave little space for children to play. There is currently only one public park that is in a well-maintained state and it does not accomodate disabled children.

Social segregation is a common issue within Westbury because the disabled children are either moved from one school to the next or left indoors because no one knows what to do with them. The disabled children therefore do not interact with other children because Westbury lacks the needed infrastructure and programmes.

Main research question

How can a playscape transform the segregated, derelict areas in Westbury into spaces that encourage development for mentally-challenged and abled-bodied children?

Research objectives

The aims of this study will be:

1.To encourage the development and rehabilitation of mentally challenged children through play, in naturalistic settings. Play environments in naturalistic settings have proven to aid in child development (Moore, 1999).

2.To identify the abilities of mentally challenged children, instead of focusing on their disabilities.

a.Investigate how this can start to aid social integration between mentally-challenged and abled-bodied children.

3.To design for the needs of abled-bodied children.

a.The current 'Inclusive' playgrounds are often not challenging enough for abled-bodied children.

b.There is a lack of development opportunities for these children.

4.To design for removing social barriers, instead of just designing for accessibility (removing physical barriers).

5.To encourage activity-orientated design, instead of the current appliance-orientated design.

6.To investigate the concept of boundary as a solution and a problem.

7.To investigate defensible space and how this can be used to protect the most vulnerable members of society, children.

Hypothesis

The hypothesis states that:

•Diverse, activity-orientated playground design that recognizes the abilities of mentally challenged and abled-bodied children, and provokes imagination, can create platforms that remove social boundaries and aid in development.

•Naturalistic playground design can aid in solving the issue of physical boundaries within Westbury, while effectively defining the open space to give people the opportunity to take ownership of public areas and create a sense of place.

Sub-questions

•How can diverse, activity-orientated design allow spaces to aid in child development and provoke imagination?

•How can a playscape accommodate mentally challenged children, yet challenge the abled child?

•How can design encourage spatial and social integration while effectively defining and securing an open space with boundaries?

•How can playscapes aid a sense of ownership and sense of place?

Research methodology

Site data and data about the community will be obtained through personal interviews and through literature review.

a)Data collection and interpretation

1. Interviews with therapists
2. Case studies

b)Literature review

•Pragmatic requirements for mentally challenged and abled children.

•Child development through play:

–Benefits of naturalistic settings

-Imagination

-Risk

-Therapy

•Boundaries:

-Social segregation

-Spatial segregation

•Sense of place

Delimitations

•As illustrated earlier in this chapter, South Africa has many disabled people with various disabilities but for the purpose of this dissertation, the focus will be on cognitive disabilities and other mental challenges.

Limitations

•The site is located in a high crime area so site visits were therefore limited and accompanied by a community liaison person. Not as many site visits could be undertaken as the researcher wished for.

Assumptions

•Because of the fact that the Reid Foundation is active within Westbury due to the number of mentally challenged children caused by drug and alcohol abuse during pregnancy, it is assumed that there are many mentally challenged children in Westbury and the surrounding areas.People are also often unaware that a child is mentally challenged.

•Based on the large amount of ill and disabled people that visit Westbury Clinic, it is assumed that the proposed design will attract many people.

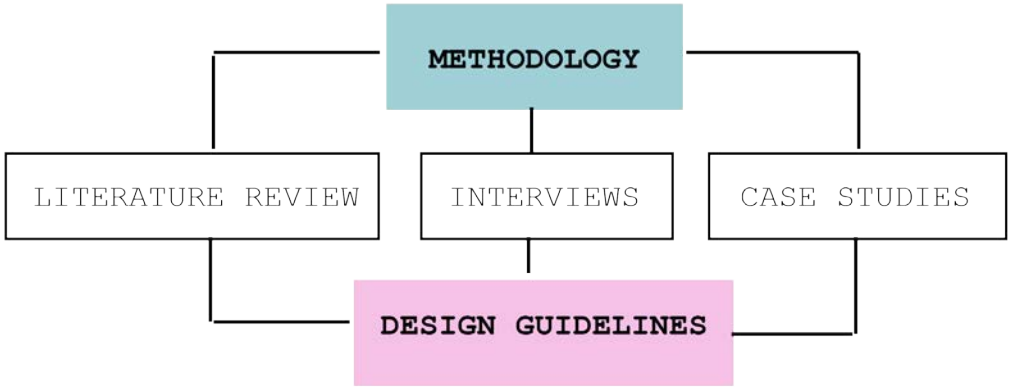


Fig.1.6: Illustration showing how design guidelines will be produced (Author,2017)

2 Theory and research

Part 1: The typical child

This chapter provides a literature review that investigates:
-How diverse, activity-orientated design can allow spaces to aid in child development and provoke imagination
-How design can encourage spatial and social integration while effectively defining and securing an open space with boundaries, and
-How playscapes can aid a sense of ownership and sense of place

Fig.2.1: Mentally challenged and abled child playing together in a river bed (Author,2017)

Introduction

This chapter considers a playscape’s role in child development and the imagination, as well as its role in social and spatial integration. This chapter also discusses how a playscape can aid in creating a sense of place and ownership within Westbury.

How can diverse, activity-orientated design allow spaces to aid in child development and provoke imagination?

From the literature survey four aspects were discovered that are critical for Child Development: Play, Imagination, Nature and Risk. This section will start off by describing child development requirements and then take a look at each of the four components that aid in child development through design. The author will then discuss the shortcomings of current landscape design and how these aspects might be incorporated.

Child development through play

Play encourages emotional, social, cognitive and physical development. Play is a requirement for a child's development because children learn about spatial, body and directional awareness through play (Weaver, 2000: 12). "Because of the way in which children relate to the world through play and their attraction to nature" (Moore and Wong, 1997), naturalistic play settings aid in a child's cognitive, socio-emotional and physical development by providing the child with multi-faceted opportunities for play. Age-appropriate play and development will be discussed in more detail in the next chapter.

In order to understand the physical world, our human sensory system has to function properly; experiencing nature allows this to happen. Landscapes provide multisensory stimulation and this is important for a child's sensory system. Zhang (2014) explains that during the early stages of a child's development, explorations through natural landscapes are important because it encourages a child's spatial awareness where he or she learns how to test their environment and solve problems. A landscape should allow for discovery and free play (White, 1997).

In contrast to clinical environments, naturalistic play areas allow therapists to observe children in order to aid in rehabilitation or development. Outdoor playscapes become a place where children enter a different state of mind, as opposed to being inside. The outdoors allows them to forget about their problems. The landscape also acts as a stage on which children can act out situations, together (Meyer, 2011).

In addition, psychologist Harry Harlows explains that if children do not interact and play with other children during the first few years of their life, they are more likely to end up suffering from neurosis and psychosis, as an adult (Harlows in in Alexander, Ishikawa & Silverstein, 1977: 68). They learn to communicate and manipulate their own surroundings and it is through this process of play and social interaction that a child reveals more about themselves (Wolff, 1979). Social integration is therefore important for child development. The current lack of connections between nature and children has caused "physical, emotional and social ills" (Freuder, 2006:2 such as ADD (attention deficit disorder), depression and lack of muscle development.

Interacting with natural elements and being able to play with loose parts, encourages development. Nature provides us with many loose parts, such as seeds or pebbles, which provoke imagination through dramatic play. These loose parts become props in a child's stories. As in the rest of the landscape, rocks, mounds and valleys are only the physical aspects of the playscape but the stories are created by the children themselves. By manipulating natural elements and considering scale in the landscape, feelings and imagination can be provoked (Meyer, 2011).

Fig.2.2: Children interacting with natural elements (Author,2017)

Imagination

Paul Harris, a psychologist, explained that "The imagination is absolutely vital for contemplating reality" (Harvard Graduate School of Education, 2002) because it is often within our fantasies, that our conscious and subconscious thoughts start appearing. Fantasy forms part of a person's imagination and it plays an important role in therapy. Children often escape reality through their fantasy worlds. A child's emotional, social and cognitive development is greatly influenced by the stimulation of his or her imagination (Harvard Graduate School of Education, 2002). Diverse, naturalistic green spaces allow for more creativity, as opposed to built spaces, because of the various natural, multifaceted elements that stimulate imagination (Spencer & Blades, 2005: 128). Playground design should encourage activities that provoke imagination and green spaces are essentially part of this.

By giving meaning to our relationship with the earth or by conceptualizing natural elements, the imagination can be provoked. Lebenswelt refers to a German word that translates to 'the world-as lived' (Corner, 1990). This describes the phenomenon that our senses allow us to learn about the world through engaging with it.

In antiquity, designers started to realize that they are able to shape and change the physical world, while embodying the theoretical world. 'Poiesis', the Artistotelian idea, describes the notion of giving shape to untouched matter. It was in this period where a garden became an icon with meaning. A garden was important to connect people to nature and the earth because it aided in the mental wellbeing of the users, on a daily basis. From the Enlightenment, landscapes were designed to stimulate the senses but also provoke imagination (Corner, 1990).

Children, as opposed to adults, enjoy complexity. They want to discover and be surprised. Adults tend to want spaces that do not offer risk; this often becomes boring for children. The more we simplify and order a space, the more we limit the child's ability to imagine, explore, manipulate and discover. Naturalistic playscapes could be diverse, activity-orientated approaches that add value and meaning to our relationship with the earth (Freuder, 2006).

Risk and playground standards

Allowing children to practice risk is important for cognitive, physical and social development. Extremely safe environments do not allow children to assess challenges. Adventurous play encourages a child to discover his or her skills and thus allows them to engage with demands that they feel comfortable with. The child becomes resilient because he or she faces a challenge and learns from mistakes (Wolff, 1979).

There is a difference between risk and hazard. A hazard, for example, can be a poisonous plant that a child might eat or a level change that is not easy to see, and can cause someone to trip. A climbing structure with a material underneath it that can break the fall of a child, for example, can be perceived as a risk. Risk is necessary but a hazard should be avoided.

A natural or adventure playground allows children to experience a variety of challenging activities and risk. Platforms of risk should be designed according to abilities and age appropriate activities. By grasping challenging play, the safety of the child increases because he or she starts to learn about cause and effect. The design development chapter will illustrate how risk can be appropriately incorporated in a playscape.

Current landscape design

The South African National Standard (SANS) 51176 contains the playground standards that South African playground designers should adhere to. Just like other countries' playground standards, the SANS standards do not correlate with the theory that supports child development. As mentioned, risk is vital for child development but the standards do not allow for designs that offer risk. For example, according to SANS 51176, play equipment should not be higher than 1500mm and that all ropes should be tied at both ends. How are children allowed to experience how high they can swing or climb? A buffer material placed underneath high structures and the exclusion of obstacles, might be more accommodating of risks.

As mentioned, the imagination is also vital for child development but current landscape design tends to use standard equipment that lacks poetic qualities, mystery and meaning. By restoring a child's relationship with the earth and thereby giving meaning to nature, the imagination can be provoked. Landscape architecture's vital role of giving value to connecting people to nature has begun to lose its 'depth' (Corner, 1990).

Naturalistic play activities, which provoke imagination, “stimulates a wider range of developmentally appropriate play activity” (Frost and Klein, 1979) and encourages social interaction. These required play activities include complex, dramatic and free play opportunities where children can invent new games, practice risk and re-enact stories (Meyer, 2011).

In summary diverse, activity-orientated design for child development and imagination must include:

- Complex, naturalistic outdoor environments (can be achieved through plants and other natural materials)
- Diversity and multifaceted elements
- Multi-sensory stimulation
- Loose parts and free play
- Social interaction
- Platforms for the interaction of a variety of stories
- Possibilities for stories
- Hazard free opportunities and activity-orientated challenges that encourage children to explore and take risks

Fig.2.3: Children playing in complex and multifaceted spaces(Author,2017)

Fig.2.4: Children interacting socially(Author,2017)

Fig.2.5: Children taking risks during play (Author,2017)

Fig.2.6: Illustration of free play, naturalistic play settings with various loose parts to assist in development (Author,2017)

How can design encourage spatial and social integration while effectively defining and securing an open space with boundaries?

As illustrated above, social integration is important for child development. As mentioned in the introduction chapter (see chapter 1), Westbury consists of derelict open spaces that are contributing to spatial segregation. For this reason the literature was revisited in search for design principles to overcome this. In the next section, the author explains how a landscape can foster interaction between children. Thereafter, I will discuss how landscape design can connect spaces yet oppose spatial segregation.

Social integration

Natural, public spaces enhances chances of social integration, yet are often considered unsafe, causing children to be denied of the benefits.

'Unruly children in unbounded spaces' was the title of an article by von Benzon (2016), where disable children were considered to be vulnerable and vast, natural spaces were considered to be unsafe for these children. The perceived risks resulted in extreme structure, as well as social segregation between the abled-bodied and disabled. This segregation contributes to the fact that young disabled children often do not have access to green areas. Instead, over-programmed and highly structured areas are designed to accommodate these children. The current 'taskscapes' are implemented to accommodate 'risky' children, instead of allowing them to enjoy the landscape and reap the benefits that nature has to offer (von Benzon, 2016).

Zhang (2014) states that beautiful nature promotes better prosociality. Tests were conducted and the results showed that people who experiences the beauty of nature showed to be more generous. Participants experienced an increase in helping behaviour and positive emotions (Zhang, 2014). Natural meeting spaces will also allow children to get rid of built up emotions and frustrations and in this way, the chance of bullying and violence is decreased (Meyer, 2011).

It is important that children interact with other adults and not only their own parents in order to encourage social development (Alexander et al, 1977: 26, 68, 86). Residents in low income areas, such as Westbury, do not encourage their children to play away from home (Coley et al, 1997: 469). Safe, public spaces that foster interaction between children and the community are therefore a necessity in Westbury. In the next section the requirements for such spaces are investigated.

Fig.2.7: Illustration of vast, open spaces on site (Author,2017)

Spatial integration

Westbury has a lack of public space. The fenced-off, open spaces in Westbury (see chapter 1) has the potential to become public spaces. Boundary, an edge that defines an area, can be used as a spatial informant to encourage spatial integration between these spaces by defining and connecting them. Spatial integration explains the process of design that merges or overlaps spaces that can support each other's functions or activities.

In a high-crime area such as Westbury, it is important to achieve spatial integration because it encourages ease of movement between these spaces and therefore it promotes passive surveillance. These derelict spaces should be integrated into a larger network so that they do not become isolated and uncared for (Wilson, 1982). This may contribute to the broken window theory (Wilson, 1982) which will be discussed later in this chapter.

Boundaries can be visually or physically permeable and can connect spaces by allowing activities to be viewed and supported from adjacent spaces. As a landscape architect, we have many materials with which we are able to create boundaries in order to define spaces for specifically intended usage. Topography, vegetation and built structures can be used as boundaries that vary in degree of permeability. The degree of permeability and the type of enclosure can drastically affect how safe the user feels (Dee, 2001). Enclosing a space with impermeable boundaries can cause a user to feel threatened, especially in a public environment such as Westbury. Too little enclosure can also result in a vast, undefined landscape. Appleton's (1996) theory explains that enclosing a space on two or three sides, instead of completely enclosing a space, provides refuge and prospect, making users feel safer (Dee,2001). More permeable materials are generally considered safer because it allows people who pass by to see into the space, it encourages active and passive surveillance and it allows the user to not feel trapped. For example, a small space enclosed by hedges will attract a child because he or she will perceive the space as safe and ideal to be alone. A large space defined by permeable boundaries, for example, an open lawn area with a visually permeable fence, will indicate a space for group activities, such as soccer. Visually permeable boundaries also assist in the visual linking of spaces (Dee, 2001). An example of an activated boundary that assists with passive surveillance can be a vertical vegetable garden. The vertical garden separates two spaces but can be occupied by users from both spaces. A common activity of agriculture can connect these spaces and because it is occupied, surveillance is provided of the adjacent spaces. Walls often provide cities with spaces that allow for social and communication possibilities. A raised walkway that acts as a boundary can also assist in encouraging prospect over adjacent spaces (Dee, 2001). These examples show how a boundary is able to connect spaces in order to encourage spatial integration, yet define them.

Boundaries should be visually permeable and activated, providing spaces on both sides of the boundary with functions or activities. Boundaries can therefore:

- Define social and private spaces, aiding in social integration.
- Create safe spaces by encouraging active and passive surveillance.
- Connect spaces, therefore aiding in spatial integration.

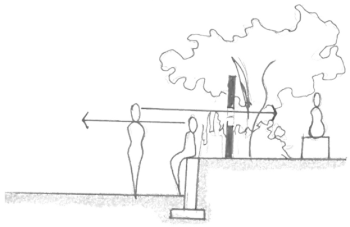


Fig.2.8: Illustration of boundary that defines semi-private space (Author,2017)

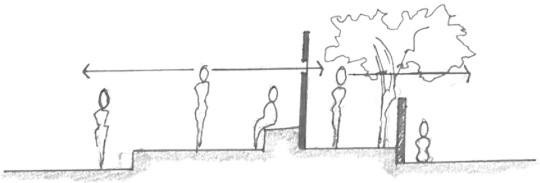


Fig.2.9: Illustration of boundary that creates visual access but also creates enclosed space for children (Author,2017)

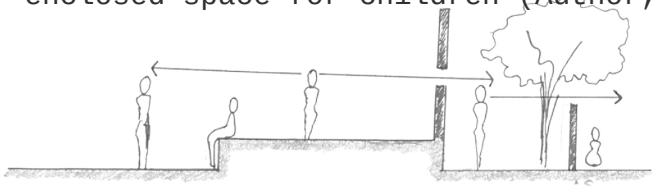


Fig.2.10: Illustration of boundary that creates vantage points and allows for visual access (Author,2017)

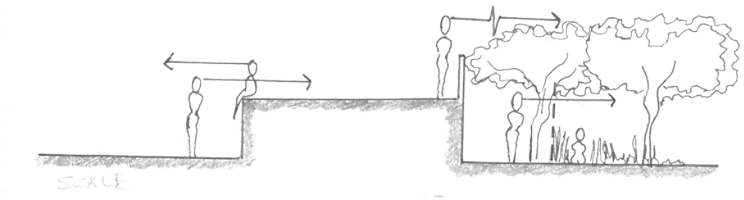


Fig.2.11: Illustration of boundary that creates vantage points (Author,2017)

How can playscapes aid a sense of ownership and sense of place?

As explained in chapter 1, the open areas in Westbury have no sense of ownership or sense of place and are therefore prone to crime activities such as dog fighting and drug and alcohol abuse. In this section I will explain how a natural playscape can aid in a sense of place and ownership by encouraging the community to interact with the site.

The broken window theory by James Q (Wilson, 1982)explains that if a window of a building is broken people might think that the building is not being maintained and it will therefore be further vandalized and attract crime. The derelict, open spaces in Westbury are not contributing to a sense of ownership and a sense of place.

Green spaces are perceived as better maintained and they therefore discourage criminal behaviour, making these spaces safer. Kondo (2017) investigated the relationship between trees and crime. From 2007 to 2014, crime activities increased as the amount of trees decreased, in Cincinnati. Following James Q's broken window theory (1982), their results showed that crime increases when the amount of trees decrease because a neighbourhood that undergoes a loss of trees, is perceived as not being taken care of. Trees also attract more pedestrians to the streets and therefore increase surveillance. More vegetation may therefore decrease crime activities and start to reverse the broken window effect (Kondo, 2017).

During the 1950's, the architect Aldo van Eyck (in Johnson, 2013) investigated how a sense of place can be encouraged in derelict, post-war plots. Between the 1950's and 1980's, van Eyck believed that place and occasion was important and that a playground was the perfect combination of the two. He recreated the derelict plots into spaces that facilitates activity and promotes social interaction. He proposed minimalist design in order to provoke imagination and to leave spaces open to interpretation. Playgrounds started to aid in connecting these derelict spaces to the city and the city was given back to the people and children (Johnson, 2013).

Fig.2.12: Illustration of van Eyck's playgrounds in the city (www.merijnoudenampsen.org)

Fig.2.13: Illustration of van Eyck's playgrounds in the city (www.pinterest.com/pin/1545)

The proposed playscape in Westbury can aid in creating a sense of place, by taking these sites back from crime and giving them to the community. Currently, the residents of Westbury use the streets for social interactions and communal activities such as holiday activities for the children or after school homework programmes. A playscape can facilitate social and communal activities supported by the community and in this way it will aid a sense of ownership.

As the community is encouraged to appropriate their own spaces by using the proposed facilities for their social and communal activities, giving the landscape an identity, a sense of place and community is encouraged (Woods, 2016). People can share skills and resources. This allows a place to become part of a supportive network and simultaneously starts to create defensible spaces (spaces that allow users to take control of their own safety). As illustrated by van Eyck's designs, fostering social interaction leads to a sense of community, which leads to a sense of place (Johnson, 2013).

In order to allow for appropriation, facilities and infrastructure should be designed in such a way that they can facilitate many communal and social activities. For example a pergola with seating can facilitate an informal market, homework or social spaces. If the derelict, open site is designed into a playscape that allows for many other community activities, the community of Westbury can appropriate their own spaces and the site will aid in a sense of place and ownership.

Playscape prototypes

From the literature review, three prototypes of playscapes were identified that will be discussed in this section:

Natural playscapes

As illustrated above, natural playscapes offer various textures and complexity which stimulate the senses and benefits the health of children. These playscapes become therapeutic (this will further be explained in the next chapter) but at the same time they provoke imagination. The landscape is used as a play medium that allows children to imagine various situations. A natural playscape brings us in direct contact with nature's elements such as the soil, rain and sunshine. These sensory experiences aid in bringing value and meaning to our relationship with the earth.

Adventure playscape

During the 1940's Lady Allen, a playground designer in England, started using adventure playgrounds as a means for treating traumatized children during World War 2. Adventure playgrounds offered spaces where children could physically manipulate their own environment and create ideal settings (Londonplay, 2017).

Adventure playgrounds offer a permissive play philosophy, situations that offer voluntary play opportunities that allow children to choose how they want to play (Londonplay, 2017). This is aimed at children who do not experience structure at home and are prone to juvenile tendencies. In Westbury, due to the current criminal activities it is possible that children do not experience structure and could benefit from adventure playgrounds.

Robinson Crusoe playscape

Alfred Trachsel, a playground designer, encouraged the essence of the adventure playground and added art and team activities. His playgrounds also acted as community centers. His designs offered activities for the elderly, children, parents and other members of the community (Johnson, 2012).

The Robinson Crusoe playground encourages permissive play and inclusiveness, offering various ages with activities, which will be adapted to the proposed playscape in Westbury, in order to encourage a sense of community. These principles will be combined with natural playscape design that provides many benefits that are mentioned earlier in this chapter.

Fig.2.14: Illustration of adventure playground where children are allowed to use loose parts to construct play opportunities(www.pinterest.com/pin/316096467567186481)

Conclusions

•Opposed to the current appliance-orientated designs, naturalistic, activity-orientated design stimulates and develops various facets of a child by providing multi-sensory stimulation, loose parts, possibilities for stories and opportunities to explore and take risks.

•Provoking the imagination of a child is vitally important and can be done through natural playscape design by giving meaning to our relationship with the earth or by conceptualizing natural features as part of the design.

•Playscapes can aid in a sense of ownership and of place by allowing the community and the children to appropriate their own spaces by occupying the proposed facilities with social or communal activities.

•By combining naturalistic playscape design with permeable and activated boundaries, the design can aid in social and spatial integration in Westbury.

•The playscape design will be a combination of a natural playscape and a Robinson Crusoe playscape that will encourage age-appropriate risk, which is important for child development.

For more detail on the design development of these conclusions into design guidelines, please refer to chapter three.

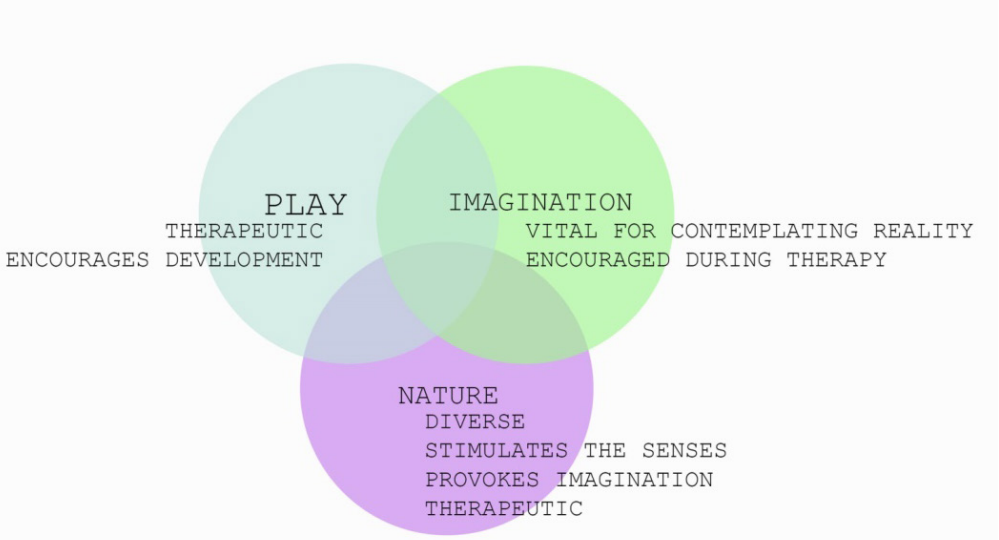


Fig.2.15: Illustration of three key components for child development and therapy (Author,2017)

3 Programme and theory

Part 2:The mentally challenged child

This chapter provides a literature review that investigates:
-How a playscape can accommodate mentally challenged children, yet challenge the abled child

It concludes the findings and sets out design guidelines based on chapter 2 and 3 literature review.

Fig.3.1: Illustration of abled child helping mentally challenged child to climb up a mound (Author, 2017)

Introduction

As mentioned in Chapter 1, current playgrounds that are designed for the disabled are mostly over-programmed (a programme of too many activities, leaving little space to practice the imagination) and appliance orientated. The abled-bodied child is most often not considered in the design and this leads to social segregation between the disabled and abled-bodied child. These playscapes do not provoke imagination, they do not provide challenges and they do not foster interaction (Christensen, 2003).

Fig.3.2: Design should accomodate and develop both the mentally challenged and abled child (Author, 2017)

The previous chapter discusses the concept of risk and challenges that should be implemented in the design in order to occupy a child and aid in development. Chapter 2 discusses the typical child where as this chapter will focus more on mentally-challenged children. In the context of this dissertation, a mentally-challenged child is a child that suffers from mental disabilities, disorders, trauma and the associated challenges. As part of the research, four child development therapists who work with abled-bodied and mentally-challenged children, were interviewed. They were asked about therapy and the associated spatial informants, as well as the importance of the imagination (refer to questionnaire in appendix).

The following section will discuss how a playscape can accommodate the mentally-challenged child and aid in development. At the end of the chapter, design guidelines considering both the abled and mentally-challenged child will be illustrated. The proposed design should consider rehabilitation and habilitation. Rehabilitation considers children who suffer from temporary disabilities due to trauma. Habilitation considers children who are unable to recover from mental disabilities. The aim of habilitation is to offer development goals and to improve the child's quality of life (Marcus, 1999).

How can a playscape accommodate mentally challenged children?

From the literature survey two main aspects of development for the mentally-challenged child was discovered: nature and sensory integrated therapy, which will be further discussed in this section. The author will start by addressing trauma and thereafter, discuss the benefits of nature and mental health.

Untreated, hidden trauma can cause behavioural, learning and emotional disorders (Marcus, 1999). Untreated, the trauma can result in the child being unable to socialize and make use of fantasy play to develop social skills. After a traumatic experience, a child's brain often blocks the traumatic experience out. The brain tries to protect the child against trauma and this causes the child not to remember or deal with traumatic experience. Nature play offers symbolic and sensory stimulation which is therapeutic. The landscape offers secure spaces but also risk and this allows the child to overcome challenges and gain confidence, these experiences can allow the child to rethink his or her situation and come to terms with it (Marcus,1999).

According to Bratman (2015), "experiencing nature benefits mental health and cognition", an experiment was conducted where people had to take a walk through an urban environment and through a natural area. When the results were compared, the nature walk proved to decrease anxiety and rumination and results showed cognitive benefits, such as improved concentration (Bratman, 2015).

Wilderness Adventure Therapy is a type of therapy that allows people with psychosocial and behavioral issues to go on a supervised adventure, into natural areas, for a short period of time. According to Bouwen (2016), this type of therapy can prevent, detect and treat mixed mental health issues. It is said to be most appropriate for children who do not respond to traditional treatments. Bouwen explains that this manner of treatment was tested and the results showed substantial improvements in self-esteem and psychological resilience, as well as improvements emotionally and behavioural (Bowen, 2016).

As illustrated above, nature and the various facets it has to offer, can aid in therapy and the development of mentally-challenged children.

Fig.3.3: Illustration showing naturalistic settings that can aid in trauma and therapy by allowing the child to feel more relaxed (Author, 2017)

Designing for the mentally challenged child

The literature survey and interviews with therapists illustrated that mentally-challenged children are more vulnerable and can easily get confused or hurt and that most mentally-challenged children's sensory systems are either very sensitive or not at all. This will be further discussed in this section.

While interviewing the therapists, most of them agreed that sensory integration therapy is the most successful therapy when treating mentally-challenged children. They explained that some of these children are sensory defensive and others are sensory seeking. The sensory seeking child wants to touch, hear, move and see as much as s/he possibly can. The sensory defensive child wants to sit on a soft surface, protected from harsh light and only hear soft sounds. In an interview an occupational therapist described a child's sensory system as a cup, explaining that "the cup is either too full or too empty and stimulation needs to be considered accordingly" (Therapist 1: 2017). During the interviews it was also mentioned that most therapeutic spaces have a 'time out zone' where the child can escape to when they are overwhelmed. Many of these apparatus used during therapy hung from the ceiling. Different swings and hummocks are used during sensory integration therapy. Natural elements, such as sand and water, are also frequently used, especially when working with sensory seeking children.

As mentioned, some mentally-challenged children are sensory defensive which means that they can be over stimulated easily. Plants can be used to create screens between spaces in order to prevent over stimulation. A fountain, for example, can be used to calm a child by creating soothing sounds. The design should encourage activities that develop the proprioceptive system and the vestibular system, such as interactive and sensory walls. The proprioceptive system refers to the process of receiving and responding to information. The vestibular system refers to sensory information that relates to orientation and motion. Because the sensory systems of mentally-challenged children are more sensitive, activities that encourage the release of anxiety or stress should be carefully designed (this will be discussed in the design guidelines). Acknowledging the sensory defensive child and the sensory seeking child, flexible spaces should allow for free play, solitary play, group activities or sessions with therapists. Elements of the design should stimulate the senses but also allow for spaces that prevent over stimulation.

The therapists also mentioned that child-directed therapy is important for the development of the child. The child choses which therapy they want to do and when they are ready for it. The therapists explain that mentally-challenged children will most often not cooperate when being forced to do something. One therapist stated that "if an autistic child walks into therapy and you start by telling him or her what to do, your

therapy session will not go well" (Therapist 2: 2017). Free play, amongst all children but especially when dealing with mentally-challenged children, is beneficial.

When designing for mentally-challenged (and abled) children, security and supervision is very important because a child might become confused and wander off into harm's way. The play areas should encourage challenges for the children. Climbing, balancing, jumping and taking risks will build a child's self-esteem. It is important to consider the fact that some mentally-challenged children do not understand cause and effect and this might cause children to get hurt because they are more likely to do things that might get them hurt, such as standing in front of a moving swing.

As mentioned, mentally-challenged children can easily get confused. Therefore, spatial definition and layout is important because it should aid in orientating the child and make a space more legible. Different surface materials and colours should be used to indicate that the child is moving into another space. Plants can also define spaces or allow children to explore or play hide and seek between trees and shrubs. Challenges such as autism and the associated stress are caused by not knowing how to orientate oneself. Cues, both visually and physically, should be designed in such a way that children know where they are and what to do.

Natural materials benefit child development and therapy. Materials such as mud, sand and clay can be used as design elements to allow children to feel and manipulate different textures. Opportunities should be created in the landscape where children can engage with their senses, such as wind chimes, a water feature or sand pit. Muscle groups and motor skills can be developed through activities that encourage things like balancing or climbing. Rock boulders, tree stumps, ladders or tunnels can be used to create these opportunities. Play opportunities should allow children to practice risk or coordination.

Vegetation can be used to give spaces different textures, colours and fragrances. Interaction with different life forms is educational and therapeutic: Plants can attract different beetles, lizards and birds. Elements in the landscape, such as water elements or bird feeders should further attract wildlife. Plants can stimulate imagination and exploration.

Three out of four of the therapists also explained how important the imagination of a child is and that most mentally-challenged children function better in their fantasy worlds. The imagination is often provoked during therapy, by encouraging fantasy or dramatic play, in order to learn more about the child. Fantasy play also develops social skills because children who are often isolated and withdrawn start to interact with other children or therapists because they feel safer in their fantasy world (Therapist 4:2017).

In order to allow a child to creatively manipulate his or her own surroundings, loose parts play has to be encouraged. Loose, natural elements such as sticks, seeds, leaves, rocks and nuts can be used for play and allow a child to build and manipulate, this develops motor skills The loose parts play theory describes that "In any environment, both the degree of inventiveness and creativity and the possibility of discovery are directly proportional to the number and kind of variables in it" (Nicholson, 1971).In this way, the child starts to design the environment. Tires, planks, bricks and other materials can be used in these spaces. Children often create obstacle courses with these materials that develop planning skills and large muscle groups.

Working in the landscape by digging, sweeping or planting allows children to reduce anxiety and let go of fear. This is beneficial to abled-bodied and mentally-challenged children but should be emphasized when dealing with the mentally-challenged because it helps children to deal with trauma or to develop their mental state and social skills. Children develop and learn better through hands-on initiatives such as horticultural therapy. Horticultural therapy is often used as a therapy for mentally-challenged children. This manner of therapy allows children to feel competent and it helps improve their self-esteem. Therefore, it also aids in developing their social skills. Children begin to nurture another living thing and this helps them to speak about trauma or their feelings. Mary Reynolds believes that by "healing the land, we heal ourselves" (Woods, 2016).

Fig.3.4: Planting, picking flowers or pulling grasses allows children to reduce anxiety (Author, 2017)

"Riverbanks, woods, and hills evoked both attraction and fear, but it gave children the freedom to be alone or with friends and act independently" many of these elements encourage activities that "create an effective bonding among children and natural elements in their natural surroundings"(Hart, 1993). By stimulating the imagination and senses through naturalistic design, you create the optimal therapeutic space for mentally-challenged children who are sensory seeking and by preventing over stimulation, yet provoking imagination in his or her own 'escape space', for the sensory defensive child.

The playscape will encourage risk, development and therapy for mentally-challenged and abled-bodied children, while fostering interaction.

Westbury Playscape and the community

In order for the proposed playscape to function in a high crime, low income area such as Westbury, the community has to be involved during the design process and eventually, maintain the playscape. The community has a few key role players who will be vital for the success of the proposed playscape. They will be discussed in this section.

Fig.3.5: Illustration showing location of initiatives in Westbury(Author, 2017)

Westbury Primary School plays an important role in Westbury. The school offers development programmes for teenagers and skill development programmes for adults. The school becomes a place of education and skills development for the entire community. The playscape could provide the school with platforms that encourage their involvement in the development of the children and the community.

The elders in Westbury are vulnerable to crime and they do not have much to occupy their time with. Most elders are in the Westbury old age home. Many elders are part of the Westbury park committee. The Thuso senior group makes hand-made items to sell; they also exercise and enjoy gardening and social activities. Places of trade and social interaction can be implemented in the playscape to attract these elderly people. This will increase passive surveillance and economic opportunities. The elderly suffering from Alzheimer's disease can enjoy the sensory experiences that the playscape has to offer. The proposed design will also aid in orientating the elderly in time and space that suffers from Alzheimer's disease, as well as provide them with a safe space.

An important initiative in Westbury is the Women of Vision programme who deals with abused women and children, they provide the community with a vegetable garden and a toy and book library. The playscape can aid in treating the traumatized children, as well as provide them with spaces where they can play with their toys or read a book.

Westbury clinic can accommodate a large number of patients. The playscape will become a space where therapists from the clinic can bring mentally-challenged children for therapy or just to observe them. Children can also play while their parents attend the clinic.

The playscape becomes a catalyst initiative that starts to bring the community together to support child development, just like the Robinson Crusoe playground as mentioned in the theoretical chapter.

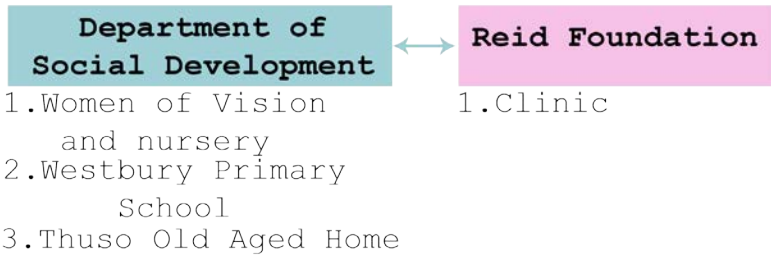


Fig.3.6: Illustration showing structure of group initiatives(Author, 2017)

Conclusion

The following design guidelines conclude the theory explained in the last two chapters (chapter 2 and 3).

Development needs: Abled-bodied and mentally-challenged children

	0-6 years	7-13 years
Cognitive development	•Stimulation of senses •Dramatic play •'Escape zones' •Complex play opportunities •Allow for opportunities for alteration and construction •Natural elements •Stimulate imagination	•Group interactions •Invent new games •Stimulation of the senses •'Escape zones' •Complex play opportunities •Stimulate imagination •Risk
Socio-emotional	•Parallel play (alone but next to someone) •Some social interaction •Loose parts for pretend play	•Fantasy play •Re-enact stories or experiences •Quiet spaces
Physical development	•Different textures •Surfaces for sitting or crawling •Climbing and jumping •Kicking balls •Balancing •Things to pull up against	•Challenges •Sense of adventure •Discoveries

(Adapted from Meyer,2011)

Fig.3.7: Illustration of a grassland area that can act as a platform for stories, provoking the imagination, and play opportunities(Author, 2017)

Design guidelines

The following design guidelines conclude chapter 2 and 3.

•Design legibility: Users should be able to orientate themselves easily.

This can be done by:

-Using landmarks (focal points), edges, nodes and pathways.

-Clear indication of entrance, showing a child that it is safe to enter.

-Design layout should be clear for easy navigation.

-Spaces should be well defined by edges, materials and boundaries

-The use of signage, lighting, colours and textures.

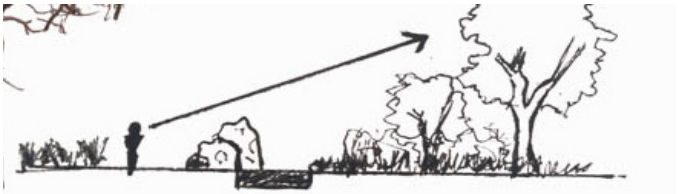


Fig.3.8: Large tree used to orientate a child in a space (Author, 2017)

•Small, isolated areas as escape spaces (mostly for the sensory defensive child):

-Provided in: main circulation
large, open spaces

-Allow for views and surveilance

-Children should not feel trapped

•Spaces that allow for sensory integrated therapy

-Sensory stimulation by means of natural materials and loose parts

-Interactive and sensory walls

-Sensory garden plants (taste, smell or texture)

-Accommodation of therapy apparatus such as hammocks

-Elements such as water, fragrances etc.

-Horticultural therapy (also relieves stress and anxiety)

•As illustrated in both chapters, naturalisic playscapes offer many developmental benefits. In addition, these settings offer the following benefits for mentally-challenged and abled bodied children:

-Secure spaces that offer risk

-Decreases anxiety and rumination

-Improved concentration

-Offers spaces where therapists, together with naturalistic play settings, can aid in prevention, detection and the treatment of mental health issues

-Improvemes self-esteem and psychological resilience, as well as behavioural and emotional improvements

-Improves a child's process of receiving and responding to information

-Provide loose parts that help develop planning skills

-Foster interaction

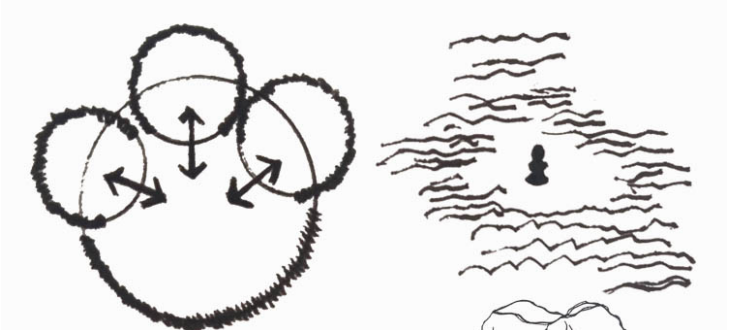


Fig.3.9: Escape spaces should be provided for children who get overwhelmed easily (Author, 2017)

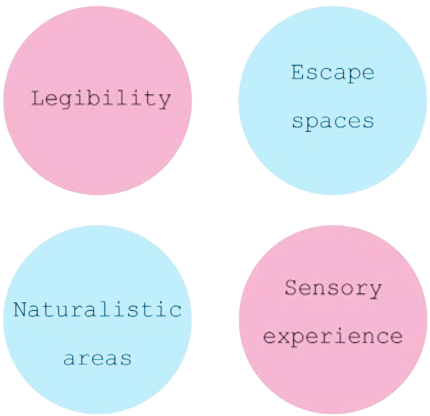


Fig.3.10: Four main drivers of the design(Author, 2017)

4 Context, site analysis and urban vision

In this chapter the urban context will be investigated in order to understand the site's surroundings. Secondly, a site analysis will be conducted and lastly, the proposed urban vision will be illustrated.

Fig.4.1:Illustration of children imagining that they are climbing a cliff (Author, 2017)

The study area is located in the west of Johannesburg. The site is situated close to the northern perimeter of Westbury, just south of Ontdekkers Road. The site is currently a derelict, fenced-off area prone to crime activities.

Westbury consists of vast spaces, an abundance of hard surfaces, small housing units and derelict residential blocks.

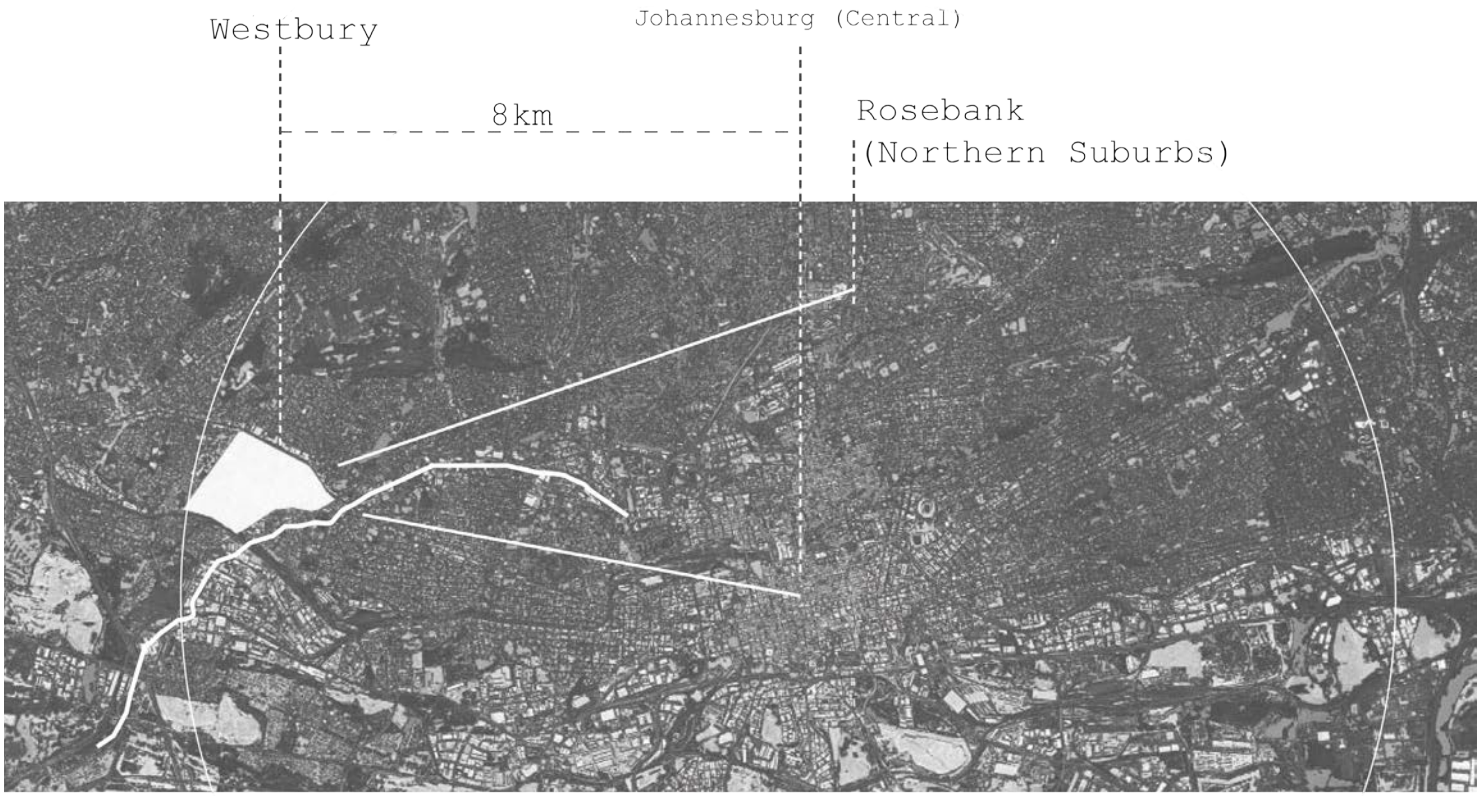
Fig. 4.2: Illustration of typical urban fabric (Urban vision group, 2017)






Westbury is home to gangs, financially disadvantaged residents and vulnerable children who are prone to drug and alcohol abuse.

Fig.4.3-4.8:Photos taken of Westbury residents (Bieber, 1994)



Westbury is located 8km to the west of Johannesburg CBD, which allows for many job opportunities but it is part of an area that has been previously disadvantaged.

Fig.4.9:Location of Westbury (Urban vision group, 2017)

The figure ground study shows the amount and size of the vast, undefined spaces within Westbury.

Fig.4.10:Figure ground study (Urban vision group, 2017)

Analysis

Sophiatown [1.1] and Montclare [1.2]

These form the surrounding suburban areas, although they host some mixed use functions, the main zoned landuse is residential.

Westdene [2]

“Commercial and Light Industrial” on Ontdekker’s Arterial Road, segregating the area to the south.

Northern Westbury Buffer Zone [3]

This region, consisting of vacant open space and industrial areas, disconnects Westbury from commercial and social activity on its Northern and Western boundaries.

Core residential Island [4]

Spatially segregated by vacant open space from surrounding suburbs.

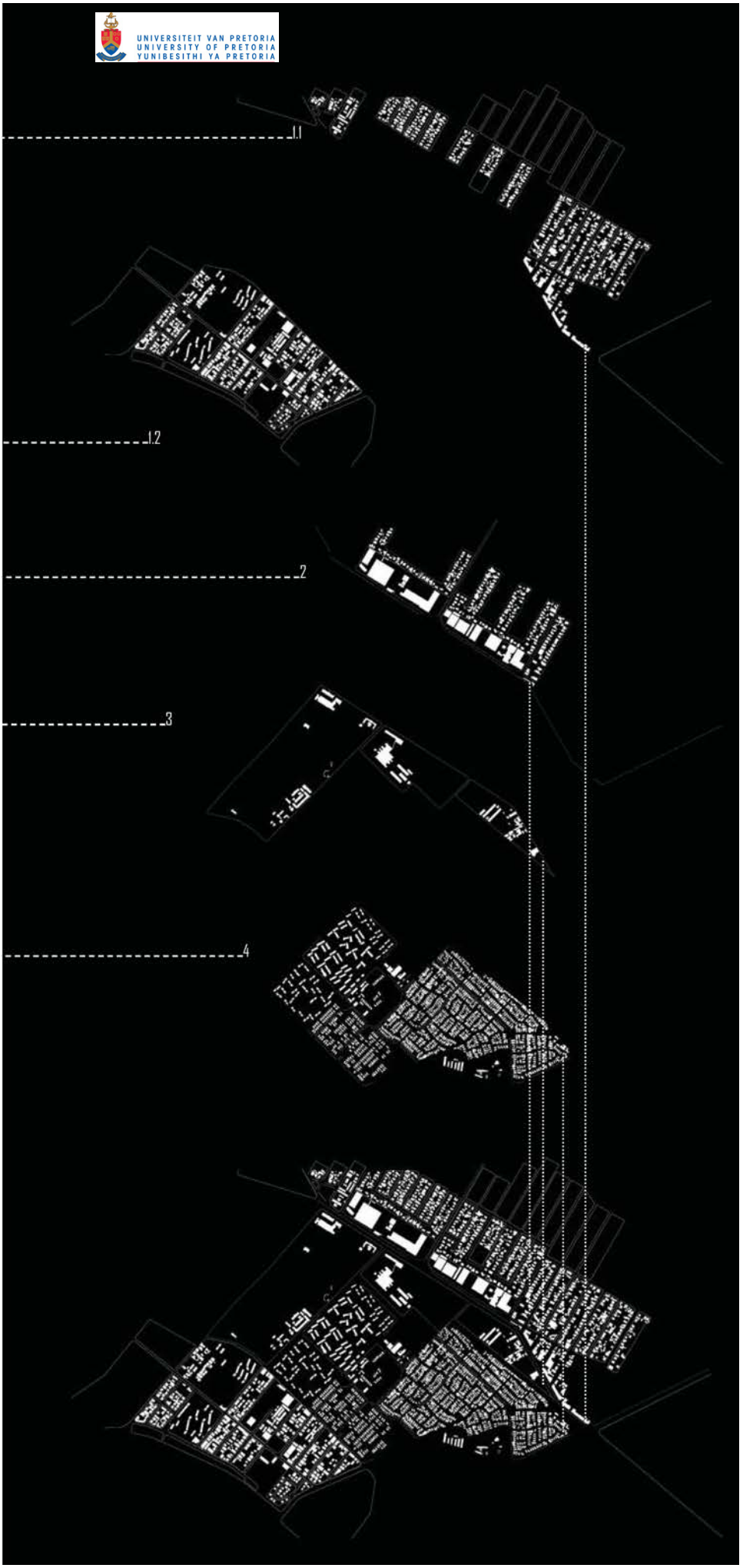


Fig.4.11: Analysis of Westbury, reading from the bottom to the top (Urban vision group, 2017)

Fig.4.12: context(Urban vision group, 2017)

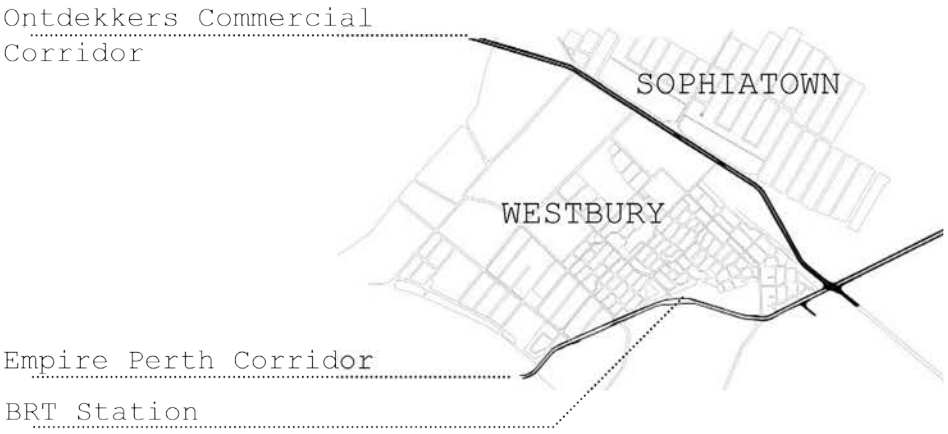


Fig.4.13:context(Urban vision group, 2017)

Fig.4.14:Green areas (Urban vision group, 2017)

Fig.4.15:Boundaries and green areas (Urban vision group, 2017)

Activity

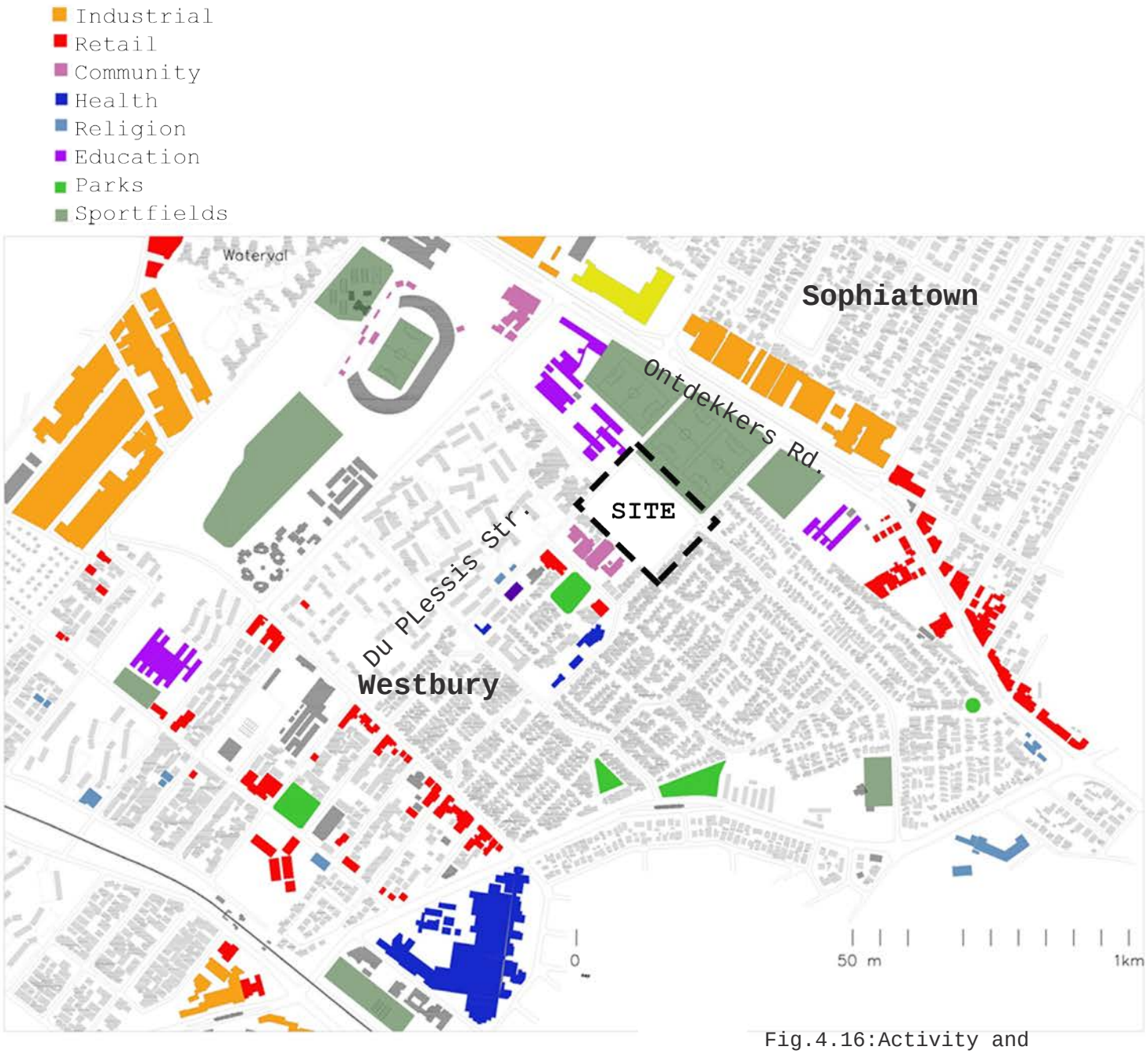


Fig.4.16:Activity and programme (Author, 2017)

This image shows activity and programme in Westbury, indicating the buffer of green areas and industrial activity. This image also illustrates the number of communal, educational and health activities within walking distance of site.

Site

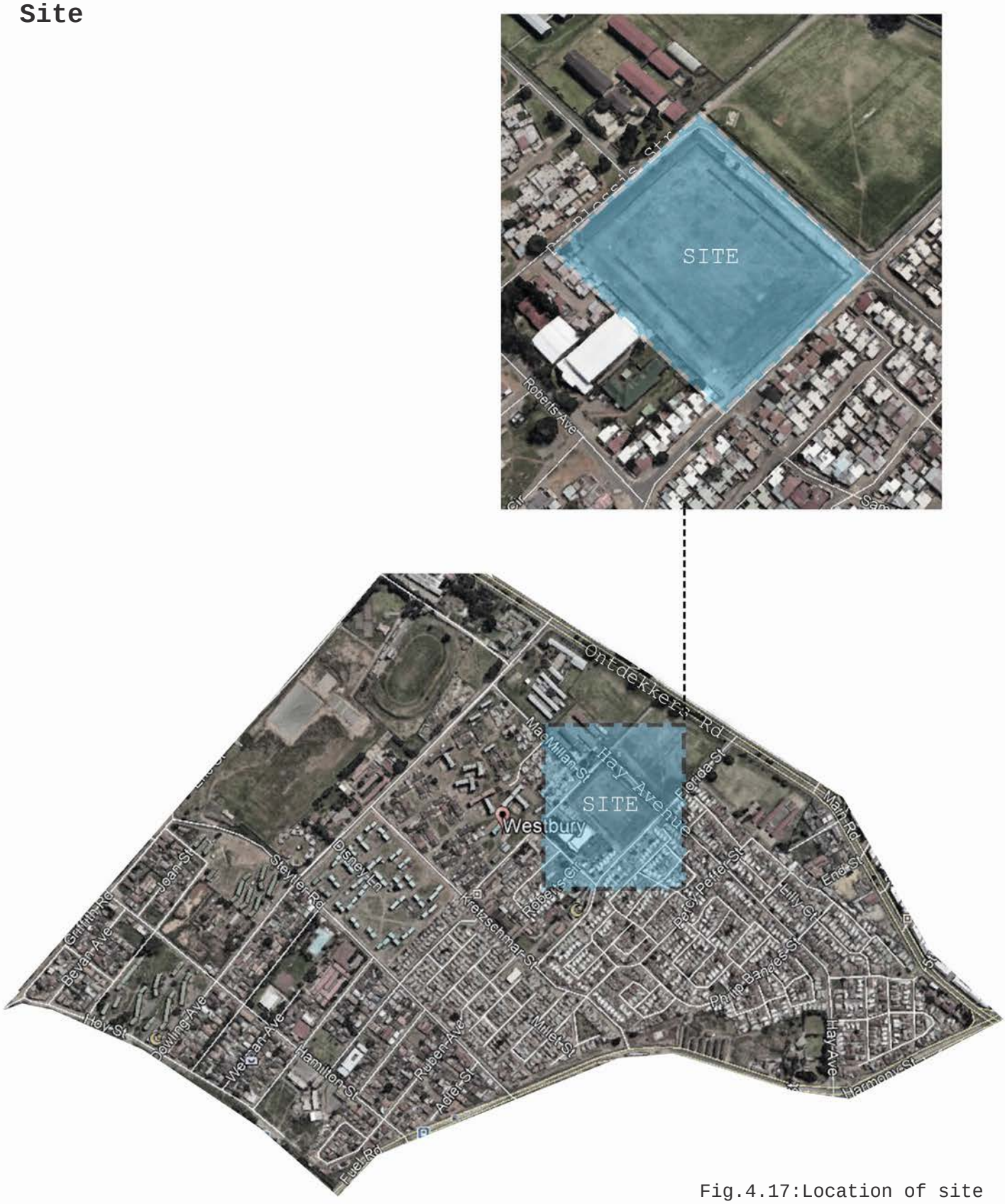


Fig.4.17:Location of site
(Urban vision group, 2017)

Fig.4.18: Image of Westbury Primary School adjacent to site (Author,2017)

Fig.4.19: Image of concrete palisade fences(Author,2017)

Fig.4.20: Image of community hall adjacent to site(Author,2017)

These images show the site and its surroundings. As illustrated, the site and the context consists of vast spaces and concrete palisade fences.

Fig.4.21: Image of site(Author,2017)

Activity

The following illustrates the various community initiatives within Westbury, that is able to support the functions of the proposed design.

1.WOMEN OF VISION

Creche
Helps abused women and children
Provides a vegetable garden
Offers holiday programmes for children

2.COMMUNITY HALL

Social events
Meetings
Provides a space for skills training

3.CLINICS

Common medical treatments
Rehabilitation programmes
Offers therapy for the disabled
Nutritional support

4.OLD AGE HOME (Thuso senior group)

Arts and crafts and retail opportunities
Social events such as danceing
Takes care of people with Alzheimer's disease

5.SCHOOL

Drama and arts club
Skils training

6.TOY AND BOOK LIBRARY

Provides underprivileged children with toys and books

Fig.4.22: Illustration of activity and context (Author, 2017)

Movement and Access

The following illustrates movement around site and access to site.

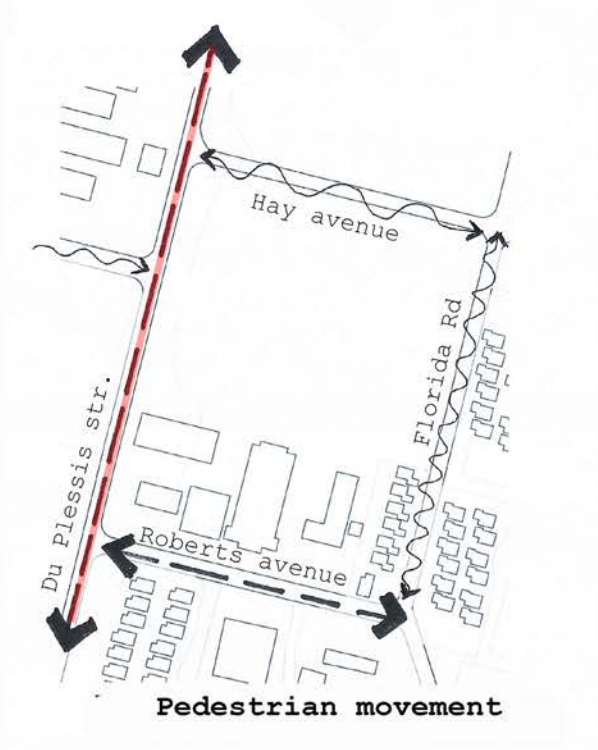


Fig.4.23: Illustration of pedestrian movement (Author, 2017)

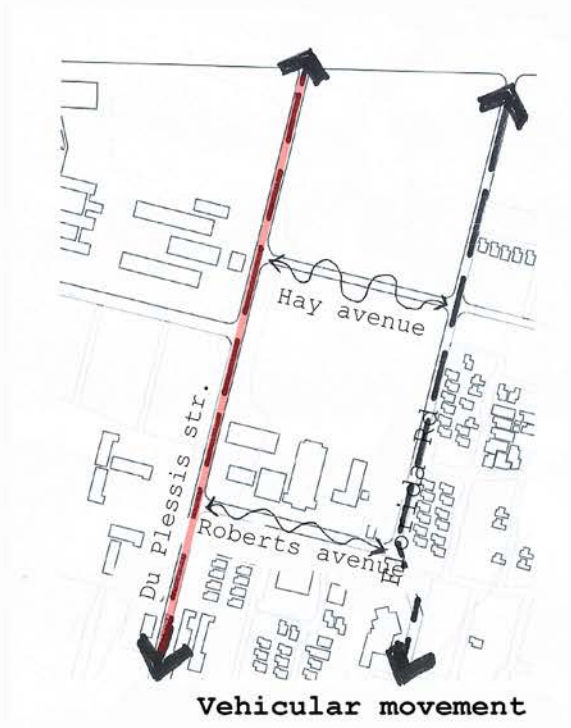


Fig.4.24: Illustration of vehicular movement (Author, 2017)

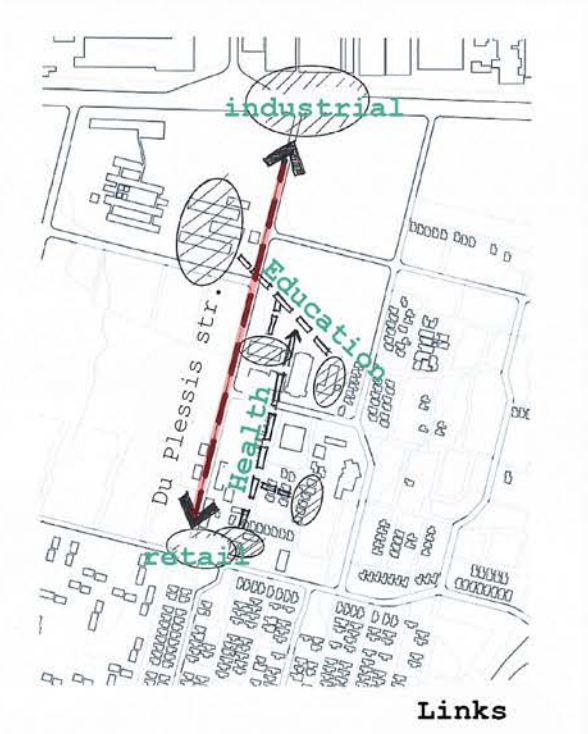


Fig.4.25: Illustration of links (Author, 2017)

Movement

Three streets border the site, which are:

- Du Plessis street (to the west) accomodates primary vehicular and pedestrian movement.
- Roberts Avenue (to the South) also accomodates primary pedestrian movement.
-There is no movement on site at present

Access

-The site is fenced-off therefore no vehicle can access site.
-The occasional pedestrians currently access the site through the broken fence on the Western side of site.
-The surrounding streets could give access.

Links

- Du Plessis street forms part of a potential link between industrial and retail activities that could break the segregation of Westbury and Sophiatown.
-The site can potentially accomodate the link between Westbury Primary school (North West of site) and the nursery school on the southern edge of the site by allowing for movement and activity between the two.

Analysis

Vegetation
Biome: Grassland
Bioregion: Mesic Highveld grassland Bioregion
Description: Totally cultivated land with no natural vegetation except for weeds and grasses. The larger landscape mostly consists of man-made infrastructure.

Soil
Description:
High in lixisols
Lower horizon is clay-enriched
High saturation of bases

Climate
Temperate climate.
Dry winters, warm summers.

Topography
The majority of the surface of the site is mostly flat with a slope of 1:60. The western portion of the site consists of steeper and eroded slopes, with a slope of 1:12.

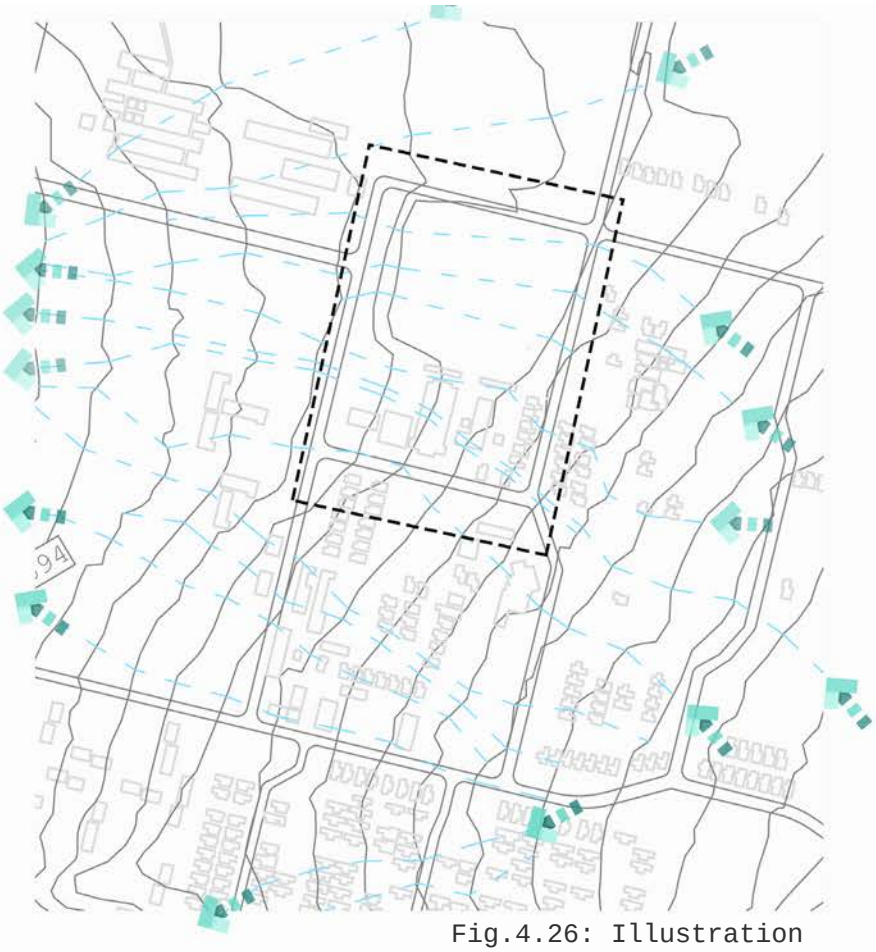


Fig.4.26: Illustration of runoff(Author, 2017)

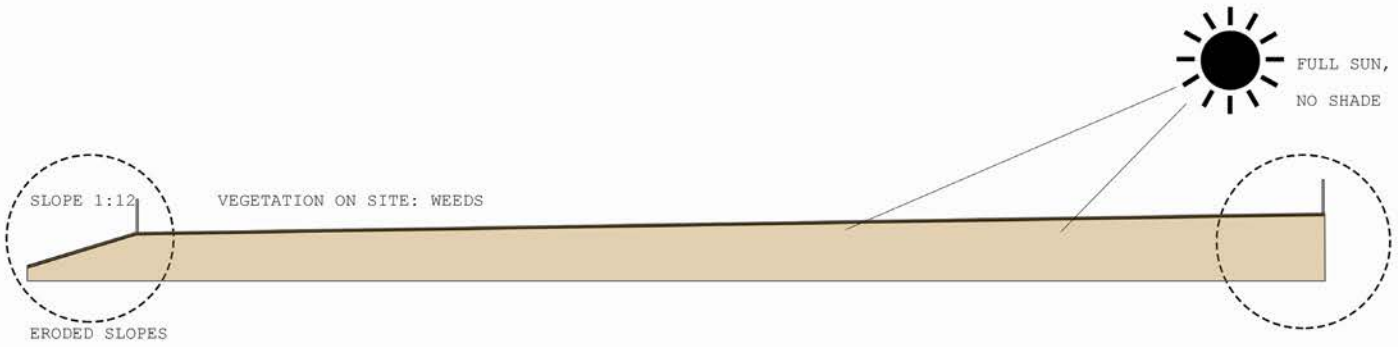


Fig.4.27: Section of site(Author, 2017)

SWOT Analysis

In conclusion, the following summarises the analysis:

Strengths

-The site is located in a health, communal and educational hub. It is within close proximity to a large clinic and school, therefore the site can attract many visitors and support the associated activities.

-The site is within walking distance of the Ontdekker's commercial corridor and the BRT station.

-The site's southern edge is fronted with operating buildings, thus increasing surveillance.

Weaknesses

-The site is currently derelict and fenced-off, contributing to spatial segregation.

-Except for illegal activities, no other activities are currently being practised on site.

-The western slopes of the site are eroded.

-The site is not being maintained.

Opportunities

-There is a great opportunity to use the site as a link between its surrounding programme and activities such as the schools and clinics. The site can support various existing systems such as the health system in Westbury.

-The site can become a safe space where children can gather after school or therapists can bring their patients.

-The site can become a safe space where children can gather after school or therapists can bring their patients.

-The site can become a social space that brings the community together by allowing for spaces that encourage social activities.

Threats

-The site is situated in a high crime, economically disadvantaged area.

-The site is currently attracting activities such as drug and alcohol abuse, gambling and dog fighting.

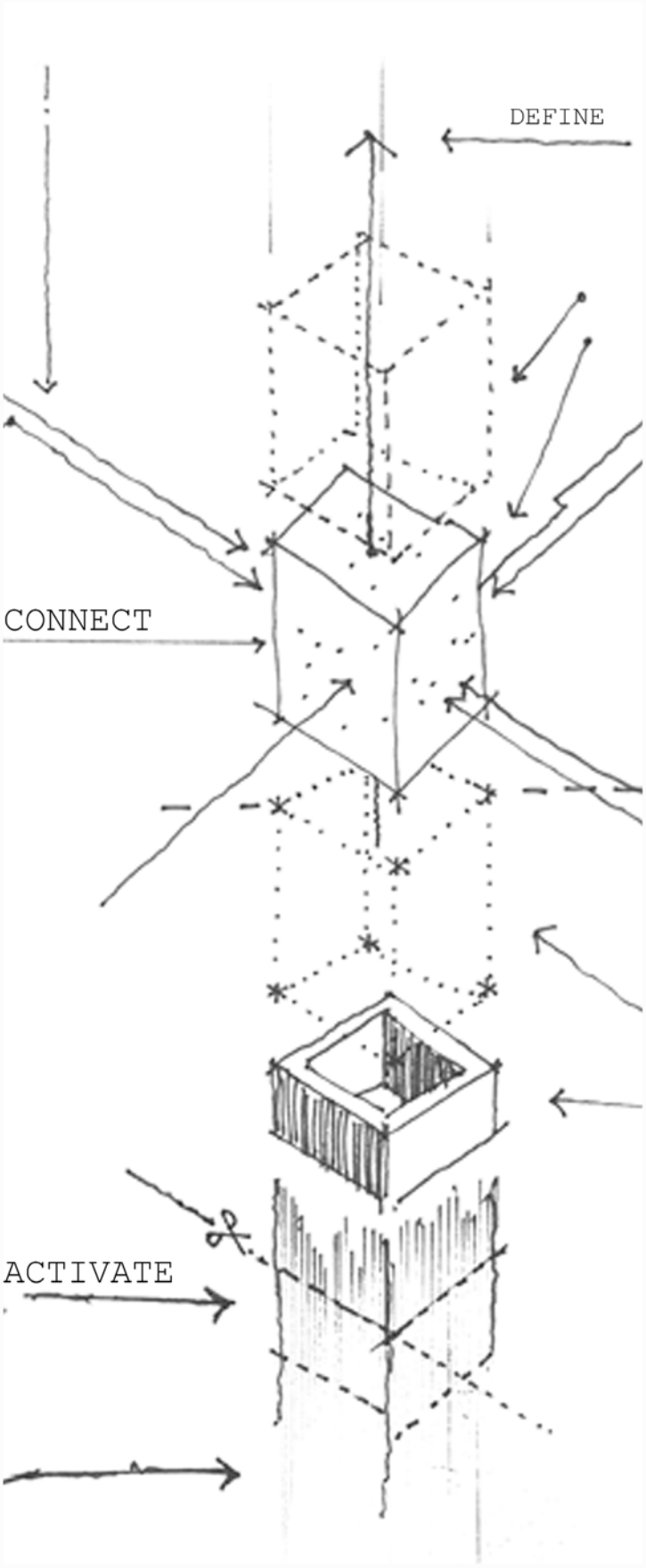
-Except for the southern edge of site that is occupied during the day, the site has many visual'blind spots'in concealed spaces that are unsafe.

The weaknesses and threats will be adressed through design and the strengths and opportunities will be built upon in order to unlock the site's potential.

Fig.4.28: Image of site (Author, 2017)

Fig.4.29: Image of site (Author, 2017)

URBAN VISION



The urban vision is positioned as a critique on current space making approaches in Westbury and the larger development strategy in critical areas. Existing projects maintain a single focus and remain contained behind fences, not contributing to the urban landscape.

The urban vision explores the possibility of linking existing infrastructural development with proposed spatial intervention.

The main aims are to connect, define and activate existing and proposed interventions.

Fig.4.30: Urban Vision strategy(Author, 2017)

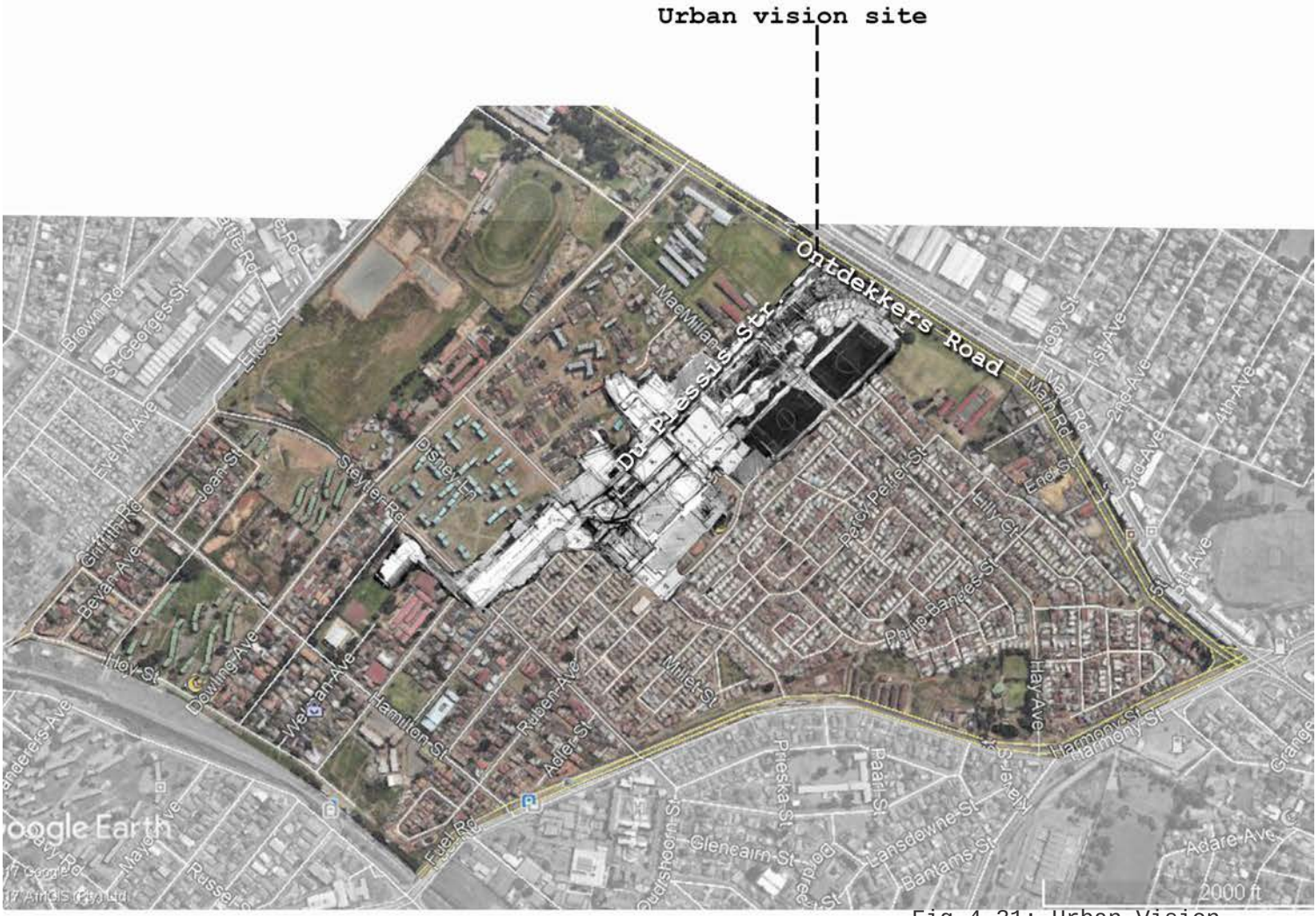


Fig.4.31: Urban Vision (Author, 2017)

Urban vision concept shows the extension of Du Plessis Str. through to Ontdekkers Road. Image shows proposed retail opportunities along Du Plessis Street that links to Ontdekker's industrial activities.

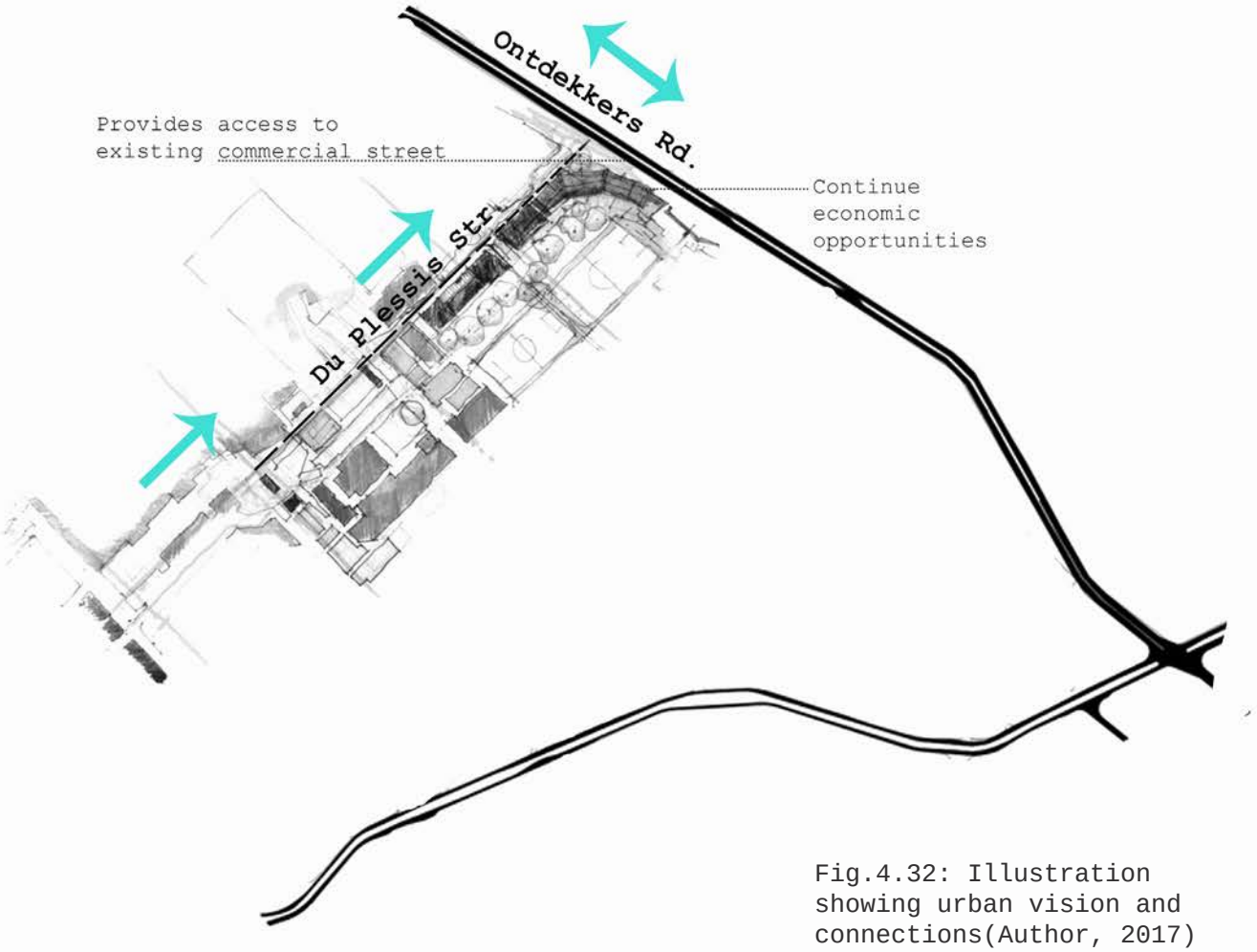
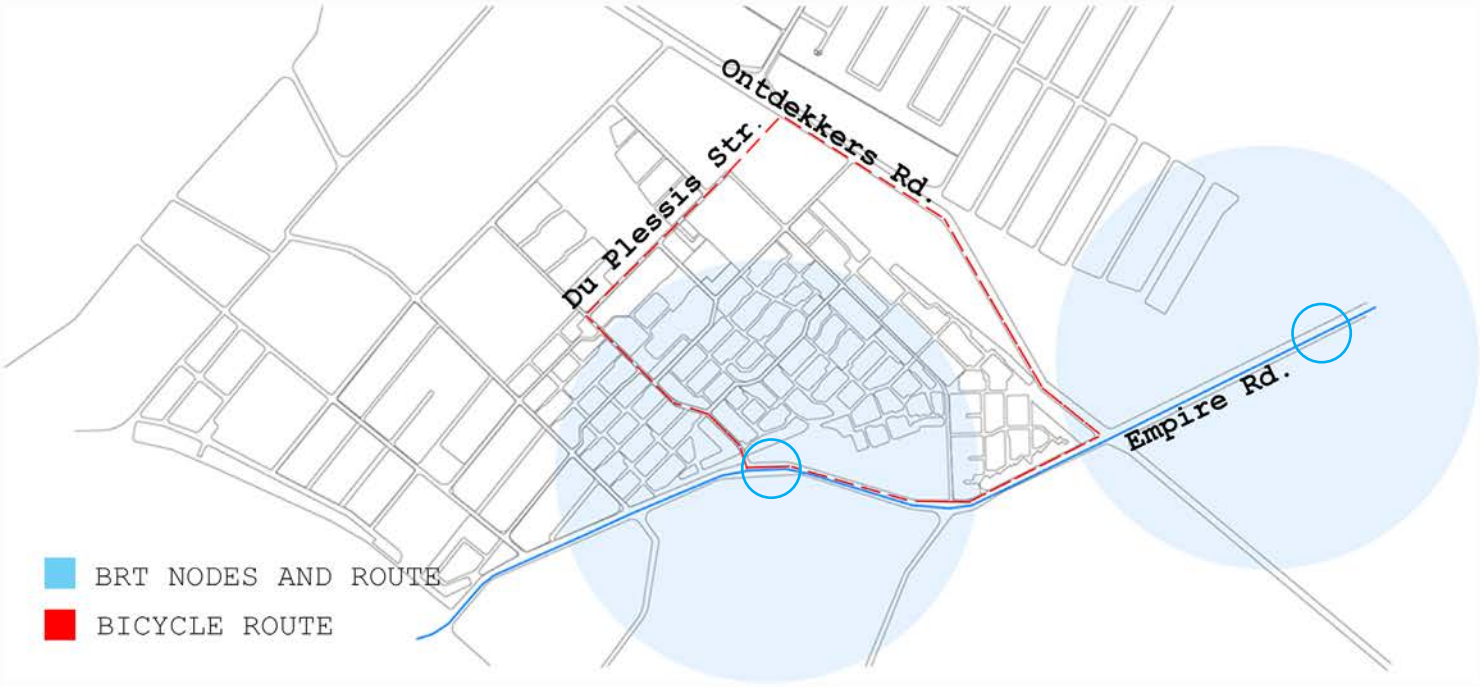


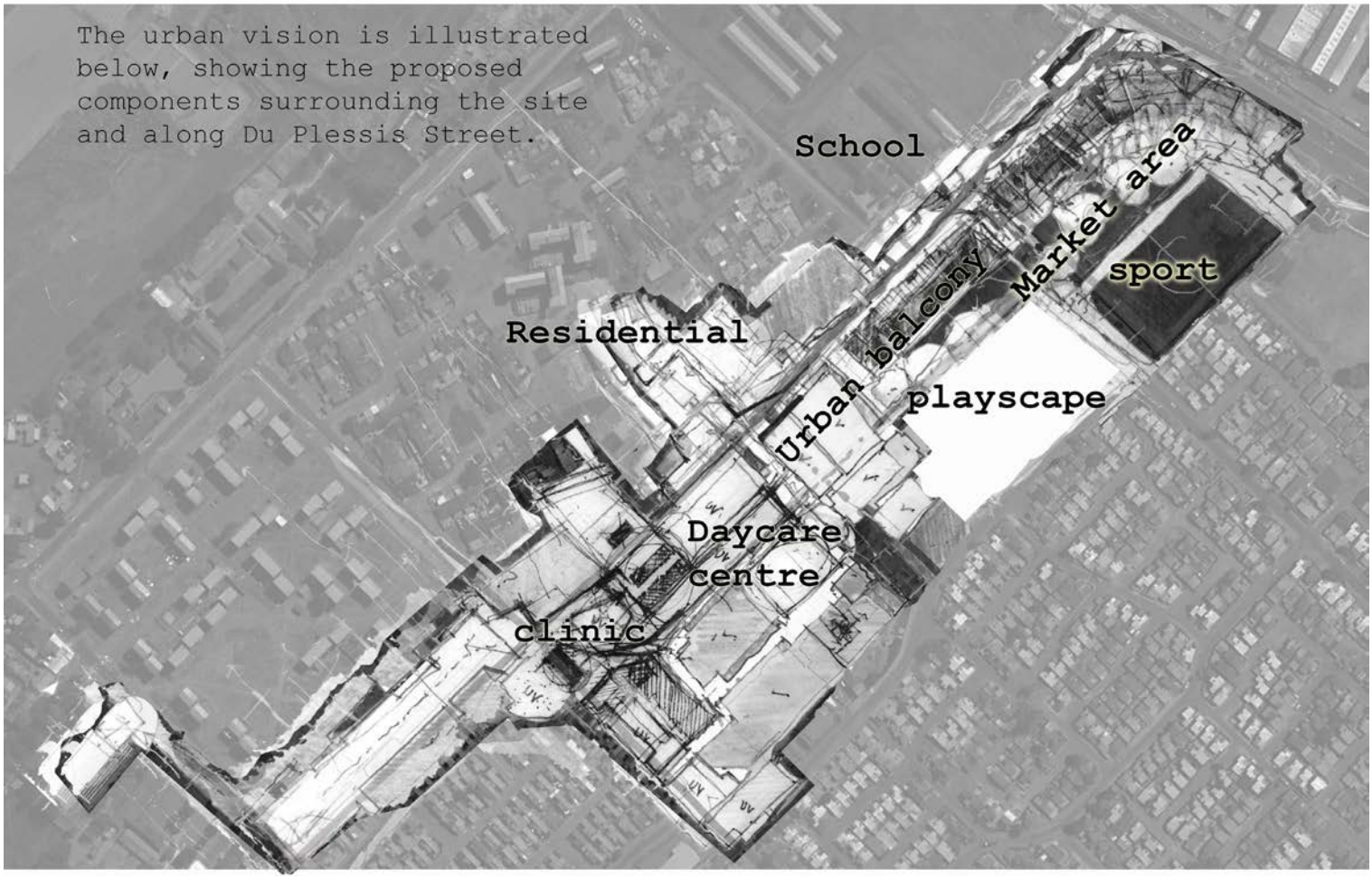
Fig.4.32: Illustration showing urban vision and connections(Author, 2017)



A bicycle route that links up with the BRT station is important because many of Westbury's residents make use of bicycles and the BRT station as their main transport.

Fig.4.33: Illustration showing bicycle routeand BRT nodes(Author, 2017)

Fig.4.34: Illustration showing urban vision (Author, 2017)



Urban design principles adapted from Violence Prevention through Urban Upgrade (VPUU) initiative which aims to reduce crime by activating spaces that are prone to crime activities (see chapter 5):

•Movement and access:

-Walking routes should be clear and well lit.

-Trees and seating spaces should be provided in order to attract pedestrians.

-Entrances to public spaces should be defined and clear.

-Various activities should occur along main routes

-Landmarks and visual ques should assist in orientation.

-Well defined and distinct crossings and vehicular and pedestrian spaces.

•Surveillance:

-Public areas should be able to be viewed from users in occupied buildings (Active frontage).

-Buildings should provide for different uses and activities, aiding in ownership and surveillance (integration of uses).

-Public spaces should be well lit.

•Aesthetics and maintenance:

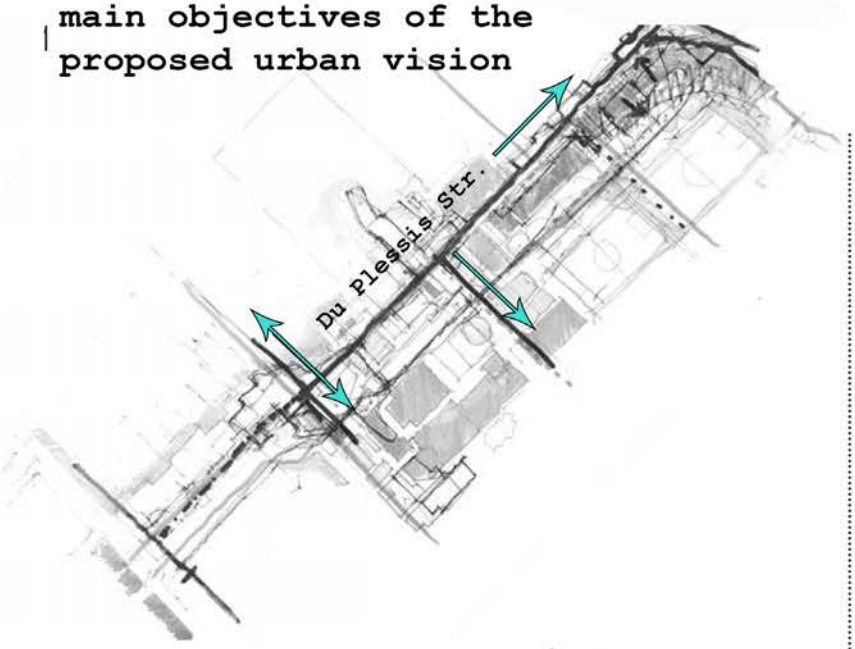
-Visually appealing, robust public areas should attract users and be easily maintained in order to prevent the Broken Window Effect from occurring (See theoretical chapter).

-Public spaces should be well maintained in order to aid in a sense of ownership and place.

(Adapted from VPUU,2016)

Illustrations showing the main objectives of the proposed urban vision

1



Roads & Pathways [Accessibility]

Forming a link between neighbouring **Suburbs and Programmes**

Hierarchy of Route | Pedestrian_Vehicular

Fig.4.35: Illustration showing roads and links(Author, 2017)

2

Core Development [Infrastructure]

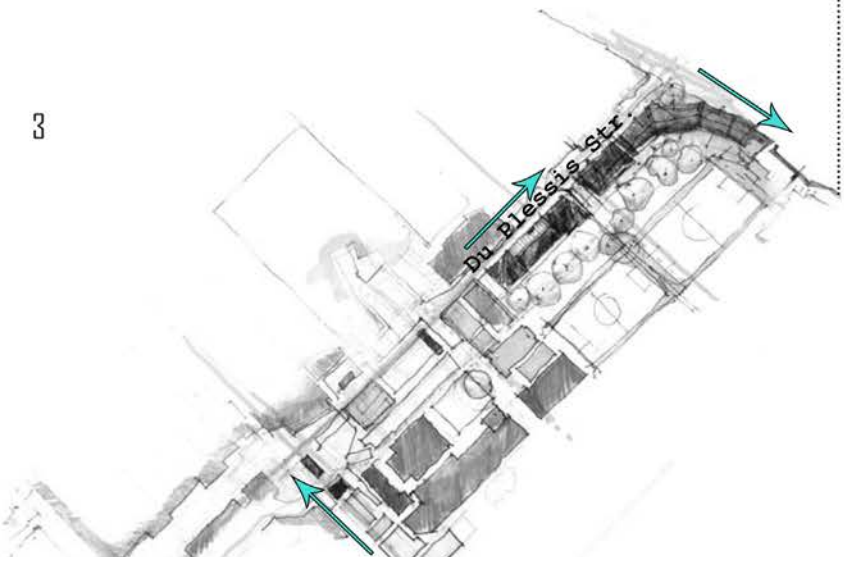
Link to Existing Program and Functions

Definition and Identity of Space and Program

Landmark | Integration | Placement

Fig.4.36: Illustration showing node of proposed infrastructure (Author, 2017)

3



Linking Development [Social & Economic]

Secondary High Street

Perpendicular to exiting commercial street

Reflecting the Westdene Commercial strip and providing a **gateway** of access.

Fig.4.37: Illustration showing economic and social links(Author, 2017)

Fig.4.38: Illustration showing master plan area(Author, 2017)

5 Precedents

In the following chapter the author will discuss a few precedents and draw valuable guidelines from them to inform the master plan and detail design.

The following precedents will be discussed:
-Contextual precedent:
Violence Prevention through Urban Upgrade (VPUU) in Khayelitsha
-Functional precedents:
Ian Potter's wild play garden in Australia
Nelson Mandela Children's Hospital in Johannesburg
-Formal precedents:
Jan Celliers Park in Pretoria
Freedom Park's Sentlhaga in Pretoria

Violence Prevention through Urban Upgrade (VPUU)

Location: Khayelitsha, Cape Town

Landscape Architect: Tarna Klitzner

Westbury and Khayelitsha are both high crime areas and are made up of a similar urban fabric. The aim of the VPUU initiative is to reduce crime by 'positively occupying perceived dangerous spaces' (Cooke, 2011). Principles of movement and access, surveillance, aesthetics and maintenance (see chapter 4) were used throughout the design process in order to increase safety.

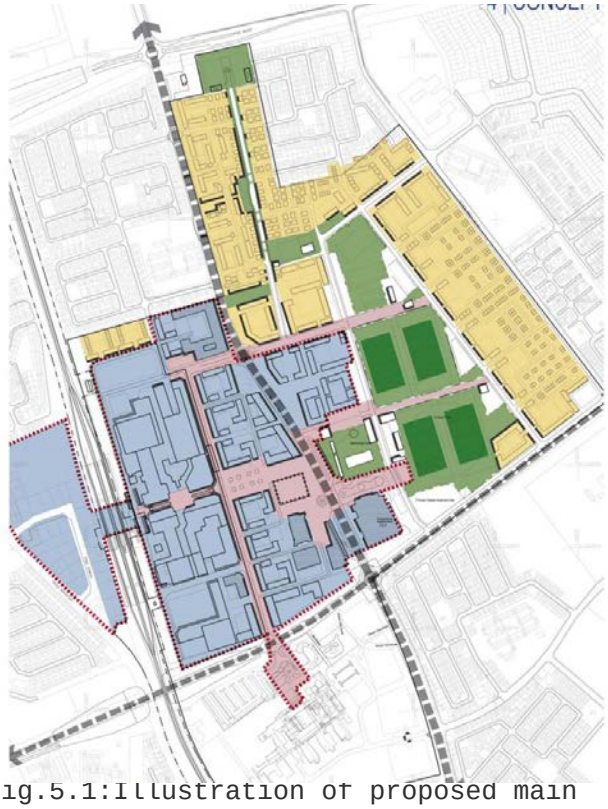


Fig.5.1:Illustration of proposed main links (http://www.makekadesigns.com)

Fig.5.2:Illustration of the 'Active Box' initiative (building in red) that aids in surveillance (https://www.groundup.org)

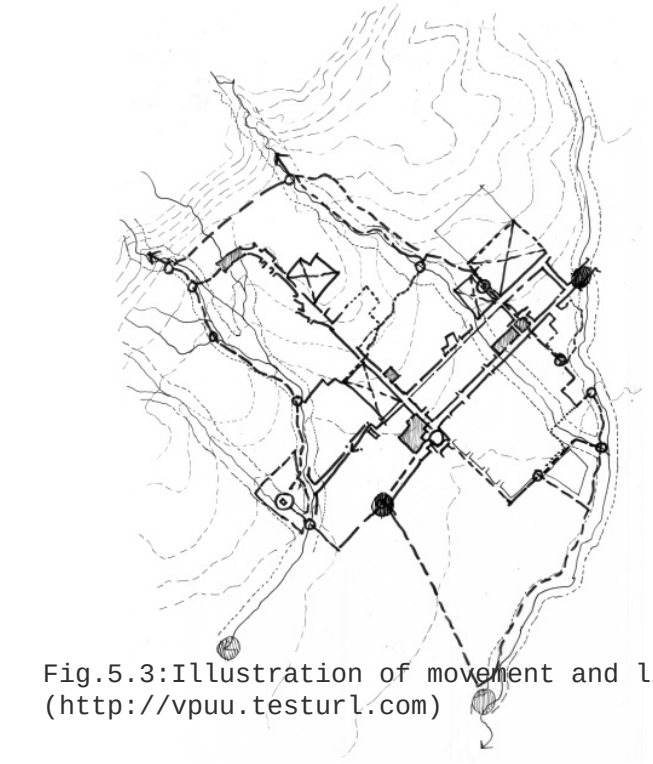


Fig.5.3:Illustration of movement and links (http://vpuu.testurl.com)

Community

Community initiatives were encouraged in order to assist in drug and crime issues, as well as training and skills development. A popular initiative, the Active Box, formed part of the community patrol programme. A few 'Active Boxes' were implemented in order to serve as a landmark but being occupied by a caretaker, it also assisted in surveillance.

Conclusions

By implementing similar initiatives such as landmarks, surveillance strategies and by encouraging the community to occupy space, it will aid in reducing the crime and creating a sense of community in Westbury.

Since the VPUU initiative was implemented in Khayelitsha, crime has reduced by 20%. The community has taken ownership of public spaces and in turn. The project's social, sport and economic initiatives are uplifting the youth and the rest of the community (VPUU,2016).

Ian Potter Children's Wild Play Garden

Location: Centennial Park, Australia

Designer: Sustainable Parklands

Fig.5.7:Illustration of plan(www.centennialparklands.com.au)

Nature Play

The aim of the project is to encourage children to explore nature and reap the associated benefits (see chapter 2 and 3). Multi-sensory stimulation and loose parts were offered in the following areas:

The Artesian Waterway

Fig.5.4:Illustration of water play (www.centennialparklands.com.au)

The Bamboo Forest

Fig.5.5:Illustration of forest play (www.centennialparklands.com.au)

Dry Creek Bed

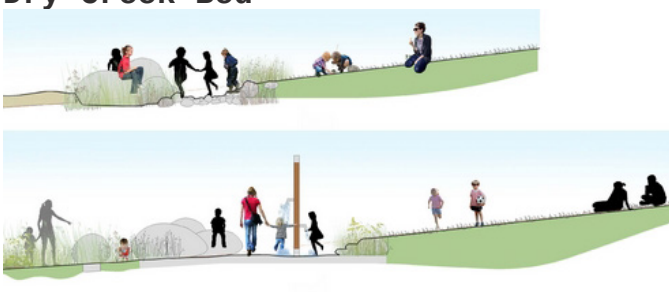


Fig.5.6:Illustration of Dry Creek (www.centennialparklands.com.au)

The Jungle Play Area

Fig.5.8:Illustration of jungle area(www.centennialparklands.com.au)

The Relaxation Tree

Fig.5.9:Illustration of relaxation tree(www.centennialparklands.com.au)

Conclusions

As mentioned in chapter 2, naturalistic play settings offer children with diverse and multifaceted play opportunities.

Similar archetypes such as the Dry Creek Bed or Bamboo Forest can be used to encourage nature play, sensory integrated therapy and loose parts play.

Nelson Mandela Children's Hospital

Location: Johannesburg, South Africa

Landscape Architect: Green Inc.

The gardens at the Nelson Mandela Children's Hospital were designed to assist in recovery, play and relaxation.

Therapy

The Occupational therapy garden was designed in order to encourage children to enthusiastically take part in their therapy sessions.

Fig.5.10:Image of occupational therapy garden (www.worldlandscapearchitect.com)

The sensory (Horticultural therapy) garden encourages the child to become a caretaker, nurturing plants, instead of just being a patient.

Fig.5.11:Image of horticulture therapy garden (www.worldlandscapearchitect.com)

Materials and construction

Private, passive and therapy spaces were separated by sculptural screens, inspired by children's drawings.

Fig.5.12:Image of screens that represent drawings done by children (www.worldlandscapearchitect.com)

Other drawings were used to show depictions of monsters on ground surfaces in order to provoke the imagination.

Fig.5.13:Image of ground surface showing a monster that was drawn by a child (www.worldlandscapearchitect.com)

Conclusions

This precedent inspired some of the Sketch Plan's programme (horticultural therapy or other play spaces) and it encouraged the author to make use of 'playful' screens or boundaries.

Play and nature can be used to inspire material choice and the construction process.

This precedent also highlights the fact that in order to undergo successful therapy, spaces should make therapy fun.

Jan Celliers Park

Location: Groenkloof, Pretoria

Designer: Harry Bruins-Lich

Also known as the Protea Park, the park was designed in the 1960's where Bruins-Lich encouraged the use of plants found on site.

Complexity

The park contains various plant species with different colours and textures.

Fig.5.14:Image of pathway surrounded by various plants and textures(Author, 2017)

Vegetation and a stream, which runs through the park, define different spaces intended for a variety of activities such as picnics, games or reading.

Fig.5.15:Image of stream in an enclosed space(Author,2017)

Play

The opark offers diverse spaces where various elements can stimulate the senses. The Jan Celliers Park has no manufactured play equipment yet children are always playing in the stream, on the lawn, in a tree or hide and seek in a bush.

Imagination

As mentioned in chapter 2, the landscape offers children many platforms on which they can practice their imagination and reenact stories.

Fig.5.16:Image of resting space amongst vegetation (Author,2017)

Fig.5.17:Image of open area(Author,2017)

Conclusions

As mentioned, a landscape should encourage complexity and provoke the imagination. This precedent inspired the Sketch Plan design because it proved that play areas do not need to be appliance-orientated in order to be successful(i.e. jungle gyms etc.); elements such as trees, grasses and water provides more than enough play opportunities.

Sentlhaga playground

Location: Freedom Park, Pretoria

Landscape architect:

Newtown Landscape Architects

Concept

Sentlhaga playground metaphorically represents a nest which symbolizes the story of creation, as told by indigenous people.

Mystery and the imagination

Various walls and vertical elements create 'nest-like' spaces that feel safe and enclosed.

The walls encourage mystery and imagination by encouraging the children to be curious about what

Conclusion

Sentlhaga shows how a concept can be taken through to the construction process. The walls that define the 'nest-like' spaces encourage various play opportunities.

Principles of refuge and movement, as well as encouraging mystery and imagination through the use of boundaries, will be adapted to influence the Sketch plan design.

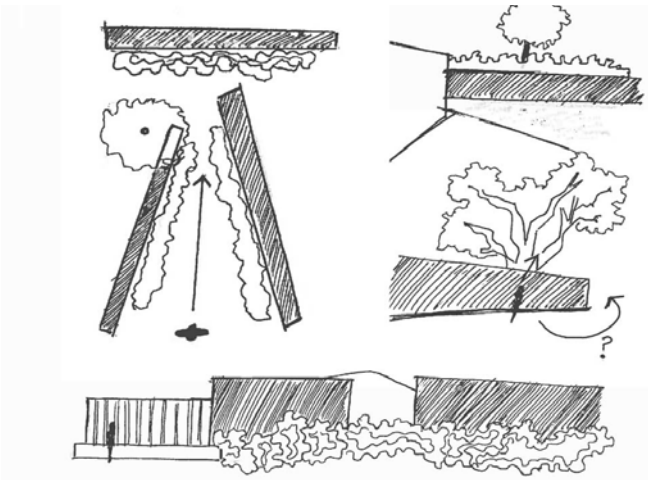


Fig.5.18:Illustration of walls that influence movement and encourages mystery(Author,2017)

Fig.5.19:Illustration of zero-depth water feature(www.newla.co.za)

6 CHAPTER SIX

DEVELOPMENT OF THE MASTER PLAN

Introduction

The final master plan is a combination of precedent, the urban vision, design development and a continuous iteration of the outcomes.

Due to the site being surrounded by community initiatives, retail opportunities and various user groups that are socially and economically disadvantaged (see chapter 4), the master plan design has to respond to the site's rich context.

The master plan shows the functions surrounding the site in order to portray the rationale of the design decisions made during the sketch plan design development (i.e. entry points, movement, program etc.). The master plan seeks to create economic opportunities and provide safer spaces for social and communal activities while encouraging spatial integration.

In this chapter design inspirations, influences and iterations that generated the master plan is discussed and is followed by the discussion of the final master plan.

Fig.6.1: Children looking up at tree (Author,2017)

Overview

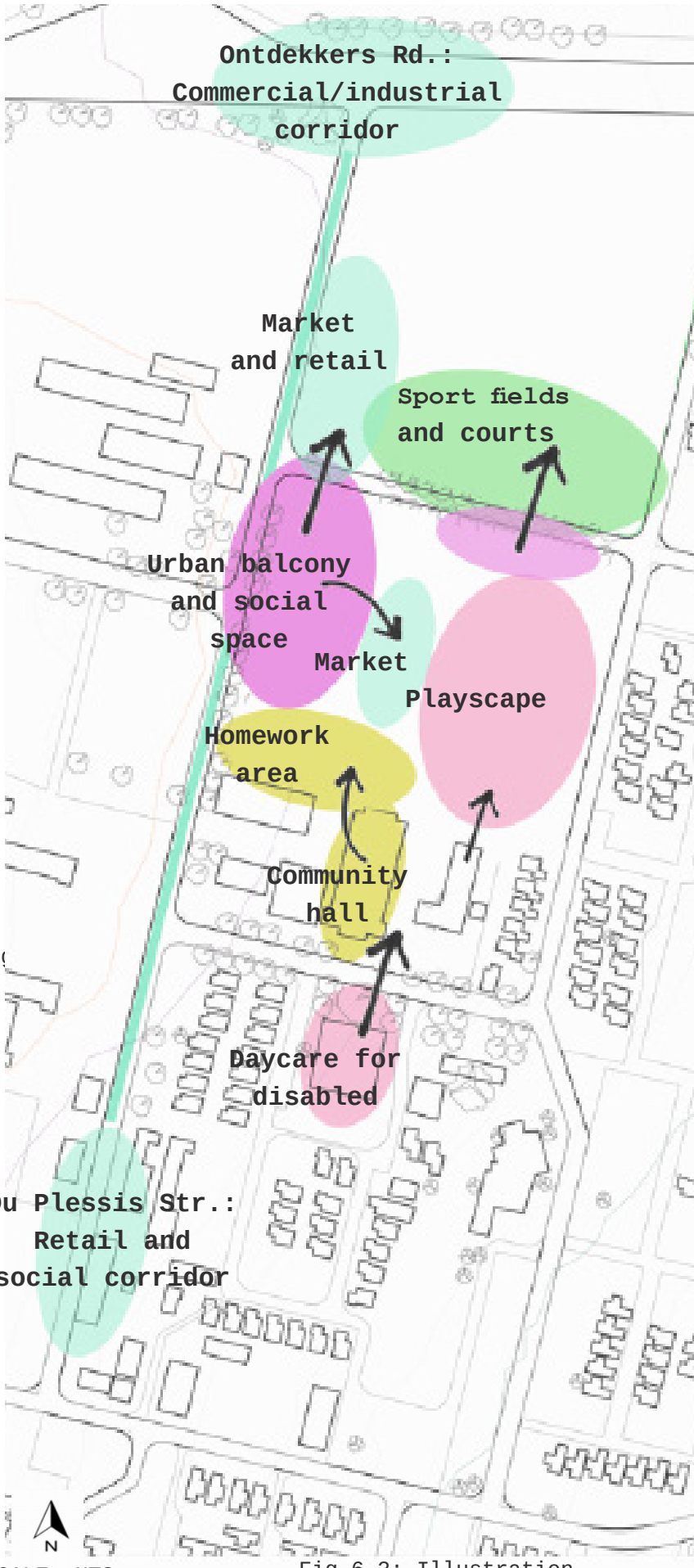
The master plan design has to confront many users' needs on site and of the larger community in Westbury, as well as develop boundaries and space that oppose spatial segregation which is commonly found in Westbury (see chapter 1).

From the context analysis, the author found that there are contextual issues within Westbury such as the lack of social space, safe spaces for children and spaces that allow for economic and communal prosperity. The master plan design should confront these issues and therefore be grounded in the community and urban context of Westbury.

Much of the form generation and design of the master plan was informed by basic design. Including principles such as movement, function, edge and other archetypical principles mentioned in Forms and Fabric in Landscape Architecture by Catherine Dee (2001).

Program

- Existing library and reading spaces
- Communal spaces
- Urban balcony
- Social spaces
- Homework area
- Market and retail spaces
- Sport fields and courts
- Playscape
- Spaces for therapy sessions
- Recreational and picnic



SCALE: NTS

Fig.6.2: Illustration of program and activity (Author,2017)

Aim of Master plan

1.Social justice
This should be a safe space which can be used daily, satisfying daily social needs of the Westbury community and people residing in Sophiatown , which are within walking distance.

2.Economic prosperity
The design should include market spaces where residents can sell products or promote services, such as the Thuso elder group (see chapter 3) that can sell their hand-made products, in order to uplift the economic status of the community.

3.Opposing spatial segregation
Building on the urban vision (see chapter 4), the master plan makes use of movement, overlapping activities and edges that contribute to spatially integrating the site with its surrounding context.

4.Creating safe space
Referring to the Violence Prevention through Urban Upgrade precedent in Khayelitsha (see chapter 5), the precedent's principle of 'positively occupying perceived dangerous space' (Cooke,2011) in order to reduce crime has been adapted in order to be incorporated into the master plan design. The design encourages the community to assist in preventing drug abuse and crime by occupying unsafe spaces, increasing surveilance and taking ownership of spaces.

Fig.6.3: Illustration showing 4 principles used in master plan design (Author,2017)

Design inspiration

Design decisions were made that originated from the following:

From site analysis

In the site analysis (see chapter 4) there were some attributes of the site that were identified as opportunities:

a)Hay Avenue is a primary pedestrian route that links the site to sport activities to the north of the site (see fig.6.2).

b)The active frontage to the south of the site that the existing buildings and activities offer.

c)The site becomes an important pedestrian link between Roberts avenue and Hay Avenue, linking activities to the south of the site such as the community hall, nursery (see fig.6.6) and clinic to activities to the north such as the sport activities or the school (see fig.6.2).

d)Du Plessis street is an important link between retail and industrial activities.

e)The eroded slopes to the west of the site in Du Plessis Street (see fig. 6.5), opposite Westbury Primary School can be seen as an opportunity because of its location.

The northern edge of the site should allow for access, as well as thresholds through which pedestrians move through from the sport facilities to Hay Avenue and to site. The southern edge of the site should respond to the existing buildings and activities, namely the community hall, the library and the nursery school that also houses the Women of Vision (see chapter 3). The author proposes that the site should allow for primary pedestrian movement from Roberts Avenue to Hay Avenue, creating an urban corridor through which social and retail spaces are repeated (see fig.6.2).

As mentioned, Du Plessis Street is an important street and as mentioned in the urban vision (see chapter 4) it is proposed to be a retail link. The author proposes that retail activities and economic opportunities should be implemented in Du Plessis Street. The author proposes that the western edge of the site, in Du Plessis Street, should also allow for after school waiting areas for the children as well as resting social spaces.

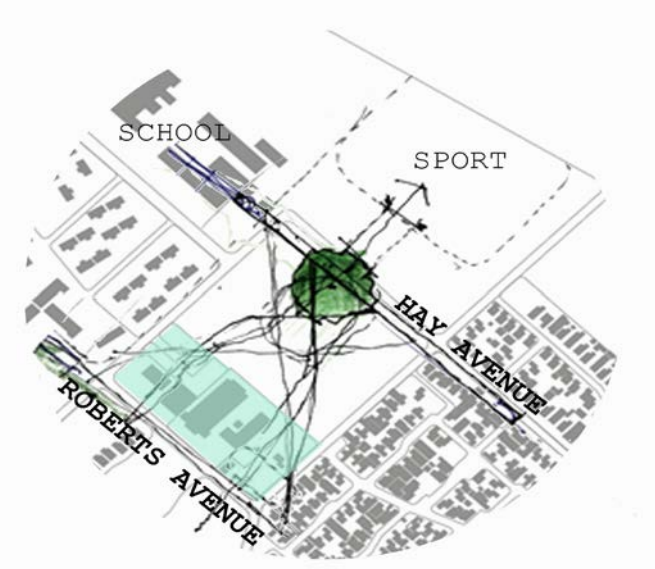


Fig.6.4: Illustration showing proposed link from southern edge of site to northern edge of site (Author,2017)

Fig.6.5: Illustration showing eroded slopes in Du Plessis Street (Author,2017)

Fig.6.6: Community hall and nursery in Roberts avenue(Author,2017)

From theory and precedent

Excluding the design of the playscape (which will be discussed in more detail in chapter 7), the following factors that were discussed in chapter 2 ,3 and 4 had to be translated into specific design intentions at master plan level:

a)Activated and permeable boundaries can aid in spatial and social integration in Westbury

b)The prospect and refuge theory

c)Design legibility: Users should be able to orientate themselves easily.

d)The Violence Prevention through Urban Upgrade (VPUU) implemented in Khayelitsha suggested some principles to assist in reducing crime (see chapter 5). These Principles of movement and access, surveillance, aesthetics and maintenance (see chapter 4) were encouraged throughout the design.

The master plan also recognizes existing community initiatives such as The Reid Foundation and Women of Vision (see chapter 3) and offers spaces that can contribute to their necessary functions and needs. This was manifested in the program in order to ensure the community initiatives are encouraged to assist in child development and therapy.

Conceptual approach

Bringing together program, site and ideas, the concept needed to integrate the site with existing and proposed spaces surrounding the site while including the above mentioned in order to drive the design.

Fig.6.7: Illustration of master plan vision(Author,2017).

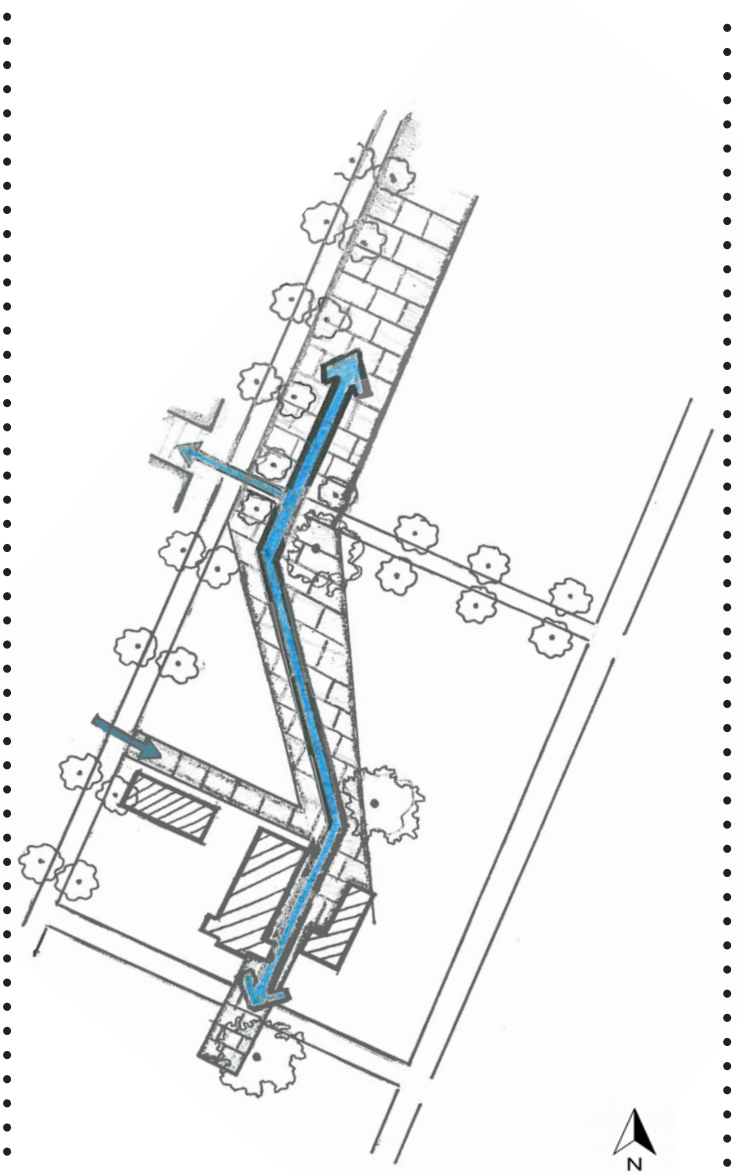


Fig.6.8: Master plan concept diagram showing urban corridor that links the site to its surroundings(Author,2017).

Development of the master plan

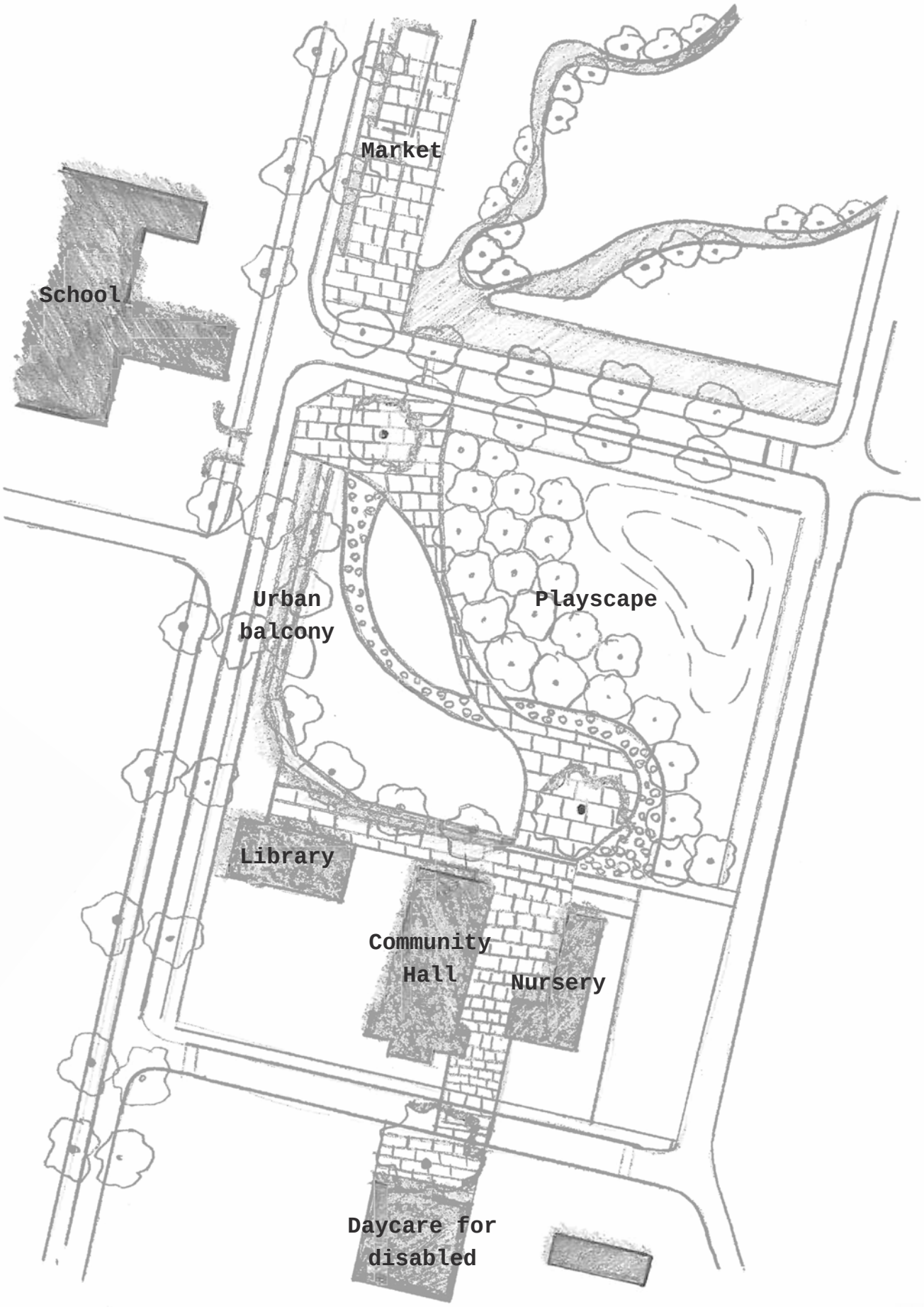


Fig.6.9: Illustration showing master plan iteration(Author,2017)

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Development of the master plan

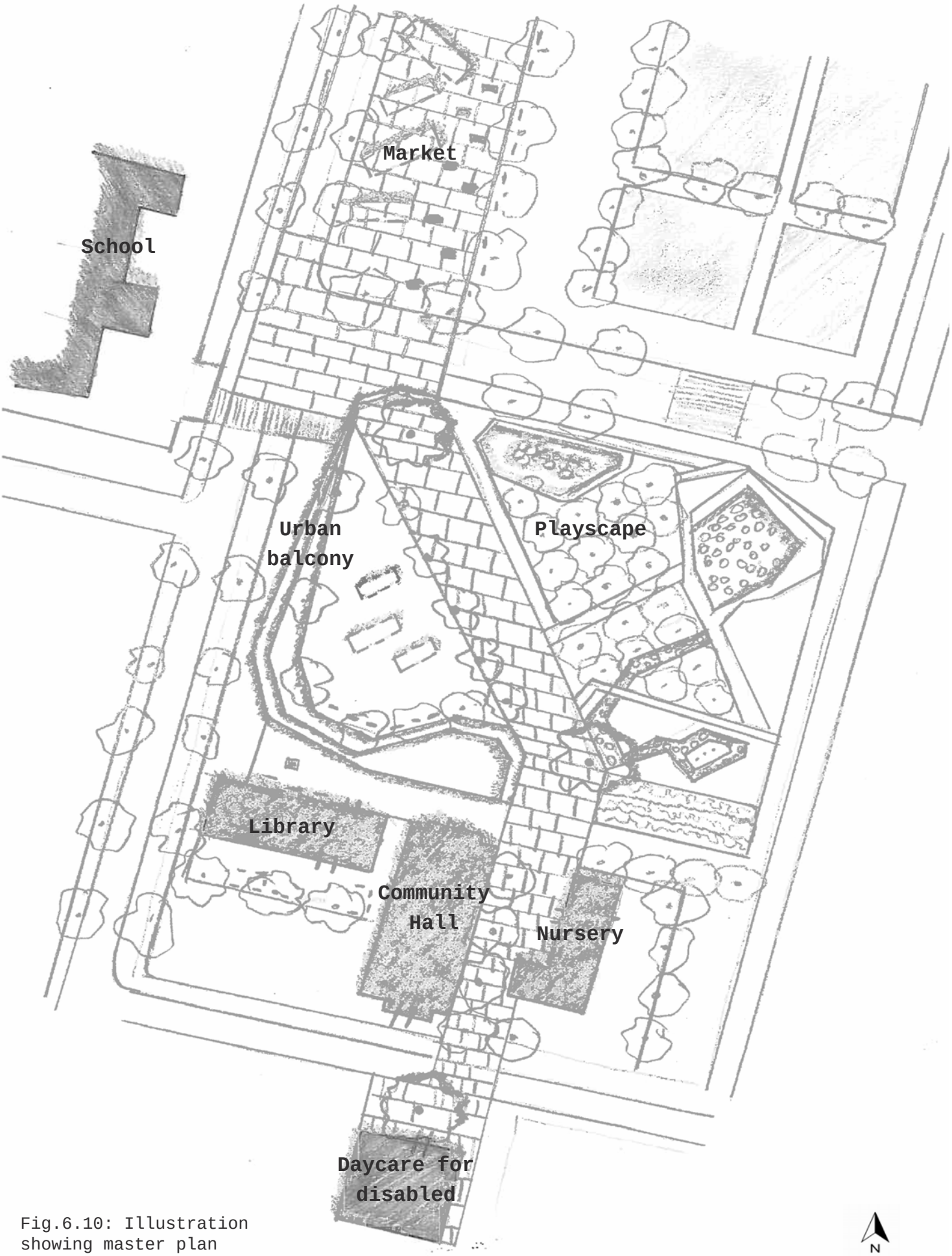

Fig.6.10: Illustration showing master plan iteration(Author,2017)

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Final master plan

Fig.6.11: Illustration showing final master plan (Author,2017)

Description of master plan

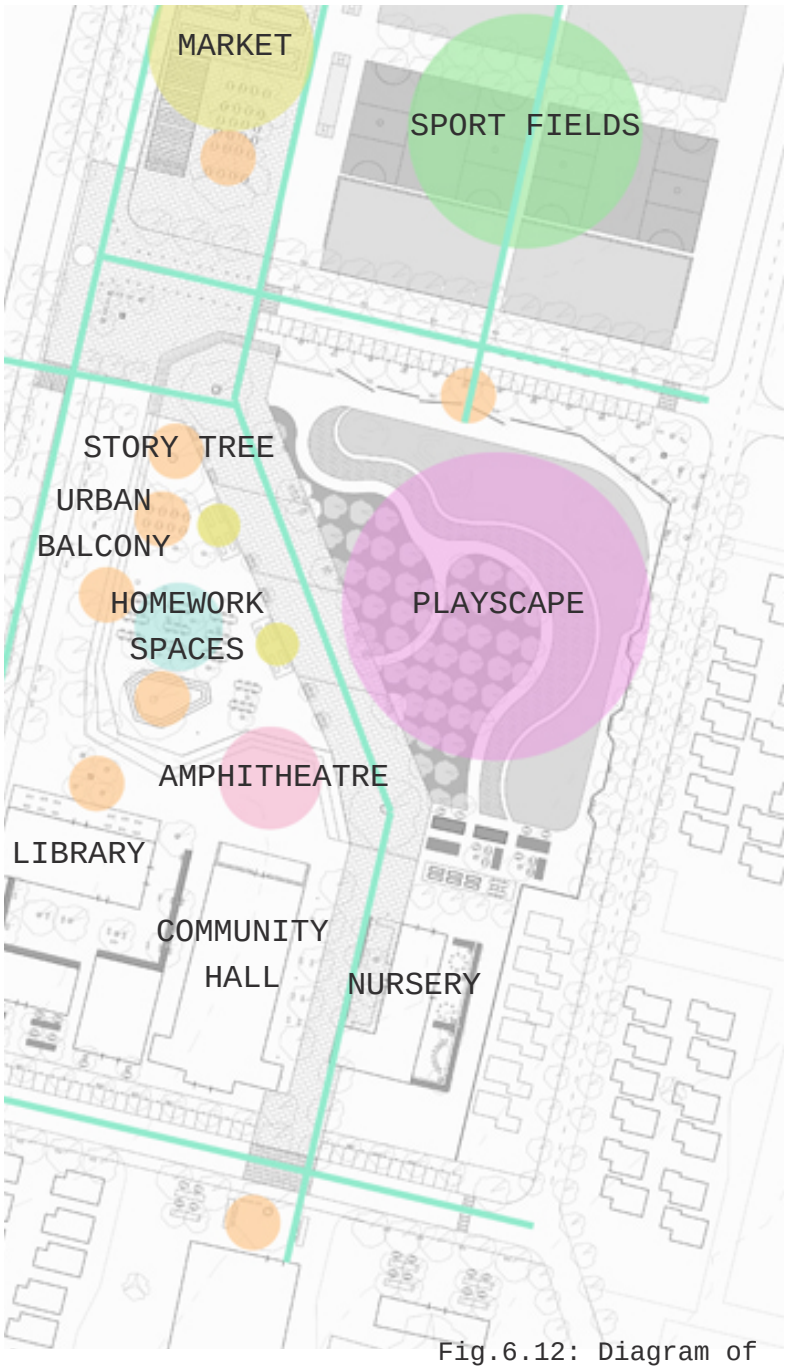


Fig.6.12: Diagram of spaces in master plan (Author,2017)

- Market space:
  Along the northern edge of the busy Du Plessis street, market spaces invite people in from Ontdekker's Road. The market spaces allow residents such as the elders to sell their handmade crafts (see chapter 3). This aids in improving the economy of Westbury.
- Sport fields:
  Existing sport fields have been designed to accommodate different types of sports for different residents. Sport plays an important role in Westbury because it is part of a rehabilitation programme run by the community.
- Story tree:
  The story tree becomes a platform where grandparents or parents share stories and tales with their children. This space aids in social integration between the young and old and it provokes the imagination.
- Homework spaces:
  These well lit spaces accommodate for children that do not have space or electricity at home.
- Urban balcony:
  This area becomes a waiting area for children after school, as well as social spaces.
- Amphitheatre:
  Accommodates the school's drama club or any other performances. Community meetings can also be held here.
- Playscape:
  Will be discussed in the sketch plan (chapter 7).

Sections

Fig.6.13: Section through Hay Avenue (Author,2017)

Section AA

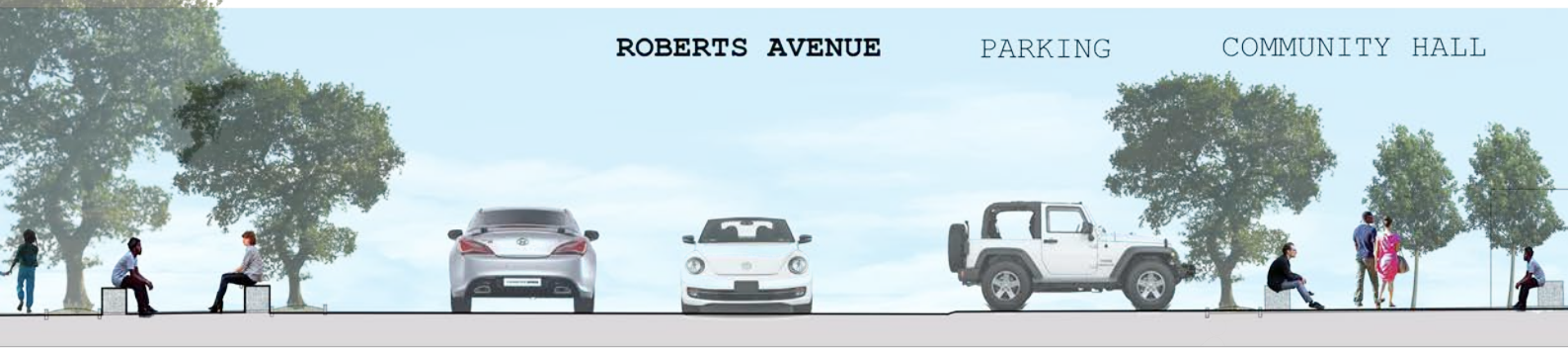


Fig.6.14: Section through Roberts Avenue (Author,2017)

Section BB

Fig.6.15: Section through Du Plessis Street(Author,2017)

Section CC

Fig.6.16: Section through public corridor and homework spaces (Author,2017)

Section DD
SCALE: NTS

Function and use

Weekday

6am to 6pm

- Playscape:

-Children before and after school

-Children from Nursery school

-Therapy sessions with therapists from clinic and disabled daycare center

- Market spaces
- Social spaces
- Sport areas

After 6pm

- Homework spaces
- Social spaces
- Amphitheatre:

-communal or social activities

Weekend

- Playscape:

-Children from community

- Social spaces
- Market spaces
- Sport areas
- Amphitheatre:

-communal or social activities

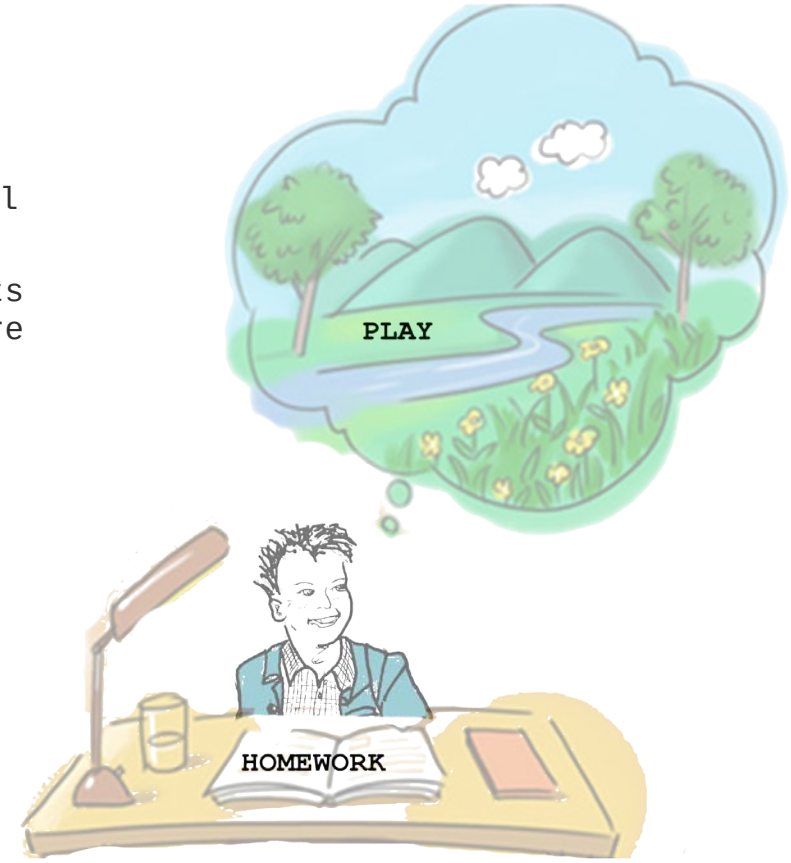


Fig.6.17: Image of child doing homework, dreaming about playing (Author,2017)

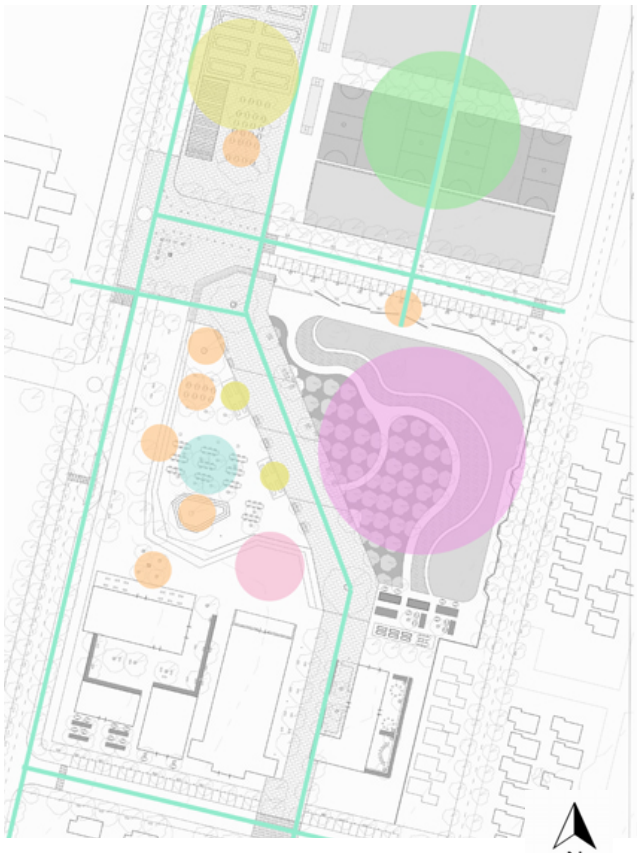


Fig.6.18: Illustration showing primary pedestrian movement and activity (Author,2017)

Conclusion

The intention of the final master plan is to activate the site and integrate it with its surrounding spaces and activities, while encouraging boundaries and activated edges for safety reasons.

The master plan design confronts real issues within Westbury such as economic disadvantages, the lack of civic space, the possibility that many children do not have safe afterschool spaces and the lack of therapy or rehabilitation spaces.

Existing spaces and activities, as well as theoretical aspects generated ideas for the final master plan which were centered around social justice, economic prosperity, spatial integration and safety.

SCALE: NTS

Fig.6.19: Sketch plan area (Author,2017)

7 CHAPTER SEVEN

DEVELOPMENT OF THE SKETCH PLAN

Introduction

The sketch plan area has a specific focus on naturalistic playscape design and designing for the mentally-challenged and abled-bodied child. The sketch plan is found as part of a resolved urban vision and master plan. The aims of this dissertation were met in this chapter.

As explained in chapter 2, the sketch plan design should consider spaces for therapy and child development while assisting in social and spatial integration.

In this chapter the concept and intentions of the sketch plan will be explained, the design explorations and the final sketch plan.

Fig. 7.1:Drawing of children running through grassland (Author, 2017)

ch plan design intention

The main intention of the sketch plan would be to illustrate how a playscape can be designed to accommodate the sensory seeking and sensory defensive child (see chapter 2 and 3), the mentally challenged and the abled-bodied child while considering safety and accommodating supervision.

While addressing age related needs for child development, the sketch plan design also encourages an activity orientated approach, instead of the common appliance orientated playscape, while constantly aiming to provoke the imagination. With a focus on designing for cognitive development, physical and emotional development was also addressed in the design.

Design guidelines from theory

-Design legibility: users should be able to orientate themselves
-Small, isolated areas as escape spaces (mostly for the sensory defensive child)
-Spaces that allow for sensory integrated therapy
-Secure spaces that offer risk
-Encourage loose parts play
-Foster interaction
-Provoke the imagination

Conceptual approach

Concept

Rethinking the potential of landscape archetypes in order to design an activity-orientated playscape that provokes the imagination of a child, in a integrated landscape.

Developing a child's imagination as a design generator.

As part of the design process, I considered looking at fantasy maps because maps project a place and then extend it to an imaginery or metaphorical space. This materializes how a child's imagination works, he or she sees a space and then imagines what the space can be.

Firstly, the author generated an intuitive fantasy map of site (see fig.7.2) where she considered landscape elements and events on site as well as imagined elements that were depicted in the fantasy map. This technique of mapping was used to conceptualise the site with the goal of provoking the imagination and generating design ideas.

The author then looked at popular fantasy maps in order to analyse typical components such as the castle, the forest or the island, in order to extract typical components of stories. The author felt that some of the components resulted in a western approach so south african stories were also analysed and compared to popular fantasy maps. The results showed that many of the stories had similar archetypes.

Another abstract fantasy map was then generated by overlaying archetypical fantasy components from popular maps and south african stories (see fig.7.3).

Fig. 7.2:An intuitive fantasy map of the site (Author, 2017)

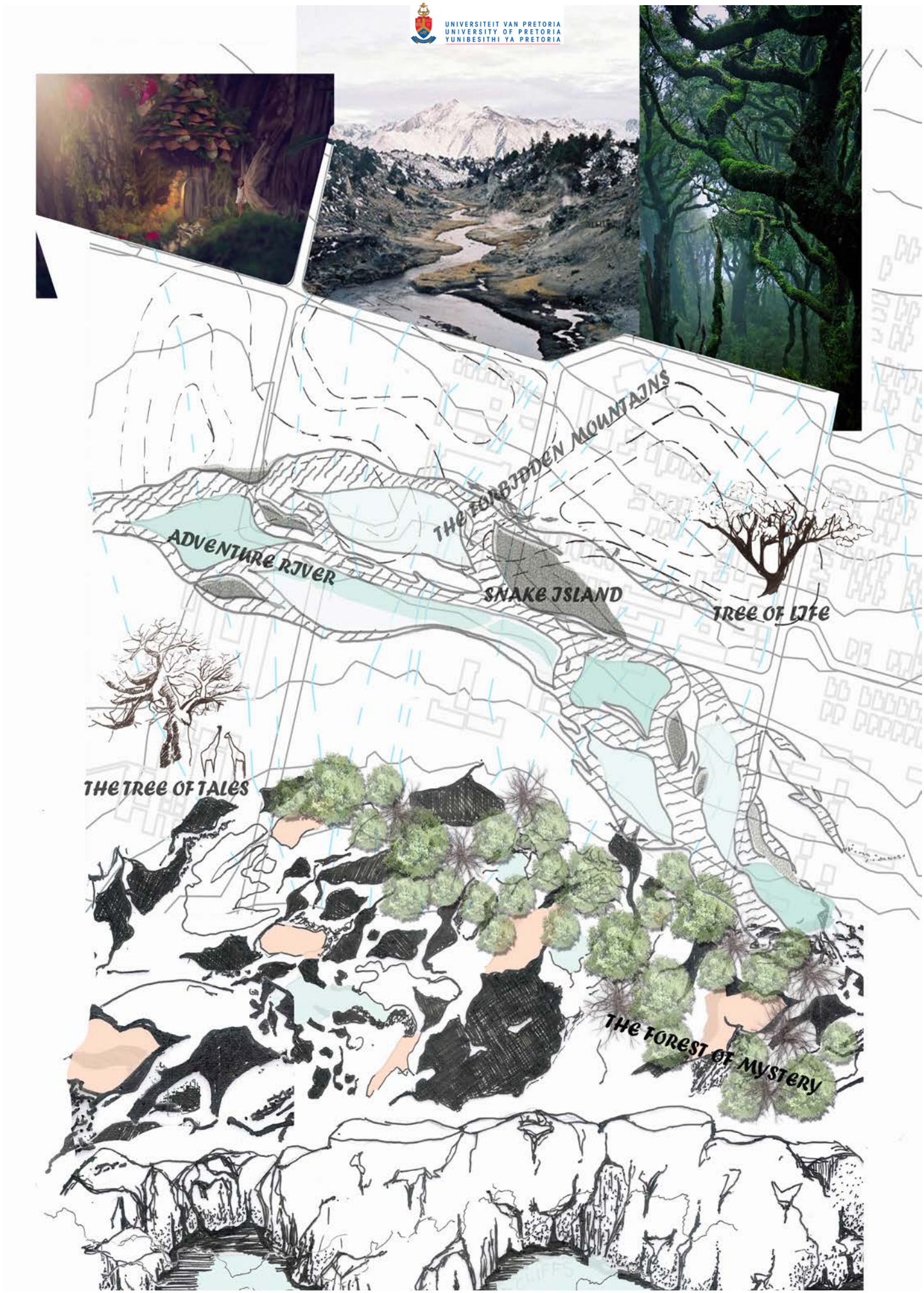


Fig.7.3:An abstract fantasy map generated by overlaying archetypical fantasy components from popular fantasy maps and south african stories. (Author, 2017)

Archetypes

After generating the fantasy map (see fig.7.3), five typical archetypes were selected from the map. These archetypes were selected because they were common components in both south african stories and fantasy maps. Primarily, these archetypes were selected because of their potential to aid in child development and to provoke the imagination by becoming platforms for stories.

Tree as landmark

- Focal point
- Aids in orientation
- Provokes imagination

Fig.7.4: Illustration of tree (Author,2017)

River

- Develops small muscle groups
- Aids in orientation
- Sensory integrated therapy

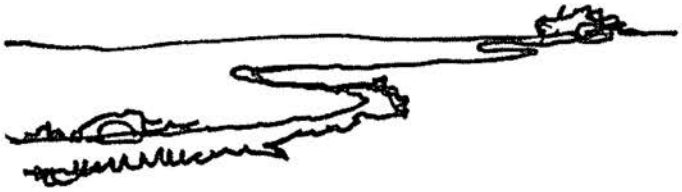


Fig.7.5: Illustration of river (Author,2017)

Grassland

- Provides children with escape spaces
- Provokes imagination
- Sensory integrated therapy

Fig.7.6: Illustration of grassland (Author,2017)

Woodland

- Provides children with escape spaces
- Provokes imagination
- Sensory integrated therapy

Fig.7.7: Illustration of forest (Author,2017)

Mountains

- Develops large muscle groups
- Aids in orientation
- Provokes imagination
- Provides risk
- Sensory integrated therapy

Fig.7.8: Illustration of mountains (Author,2017)

Fig.7.9: These naturalistic, archetypical settings provoke the imagination and become platforms that aid in the deveopment and therapy of mentally-challenged and abled-bodied children (Author,2017)

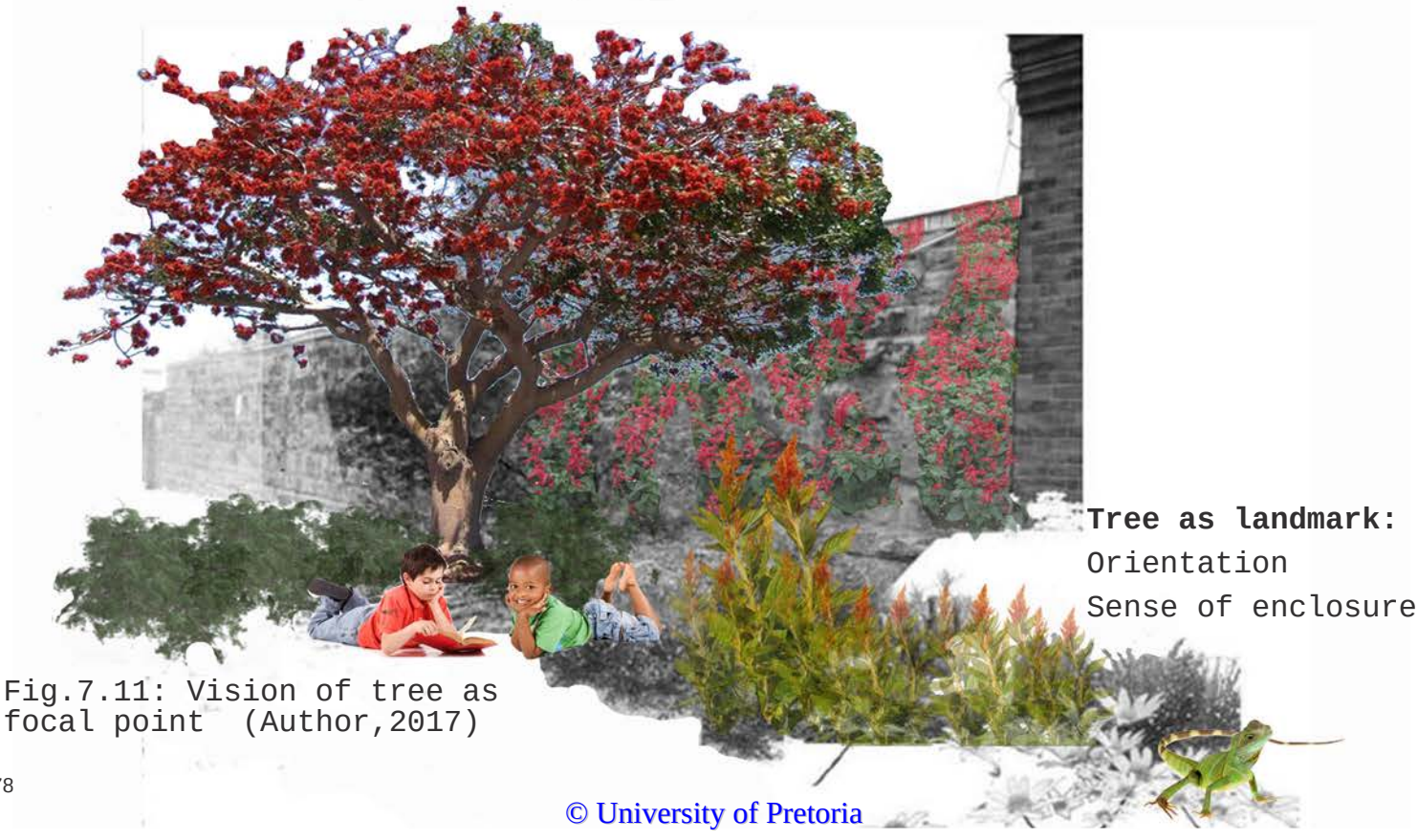
Design inspirations and informants

Sensory integrated therapy:

Therapy apparatus

Natural materials and loose parts

Fig.7.10: Vision of woodland area (Author,2017)



Tree as landmark:

Orientation

Sense of enclosure

Fig.7.11: Vision of tree as focal point (Author,2017)

Natural edges: Orientation

Landscape elements as platforms for stories: Imagination

Fig.7.12: Vision of dry river bed (Author,2017)

Nature play: Loose parts and cognitive benefits

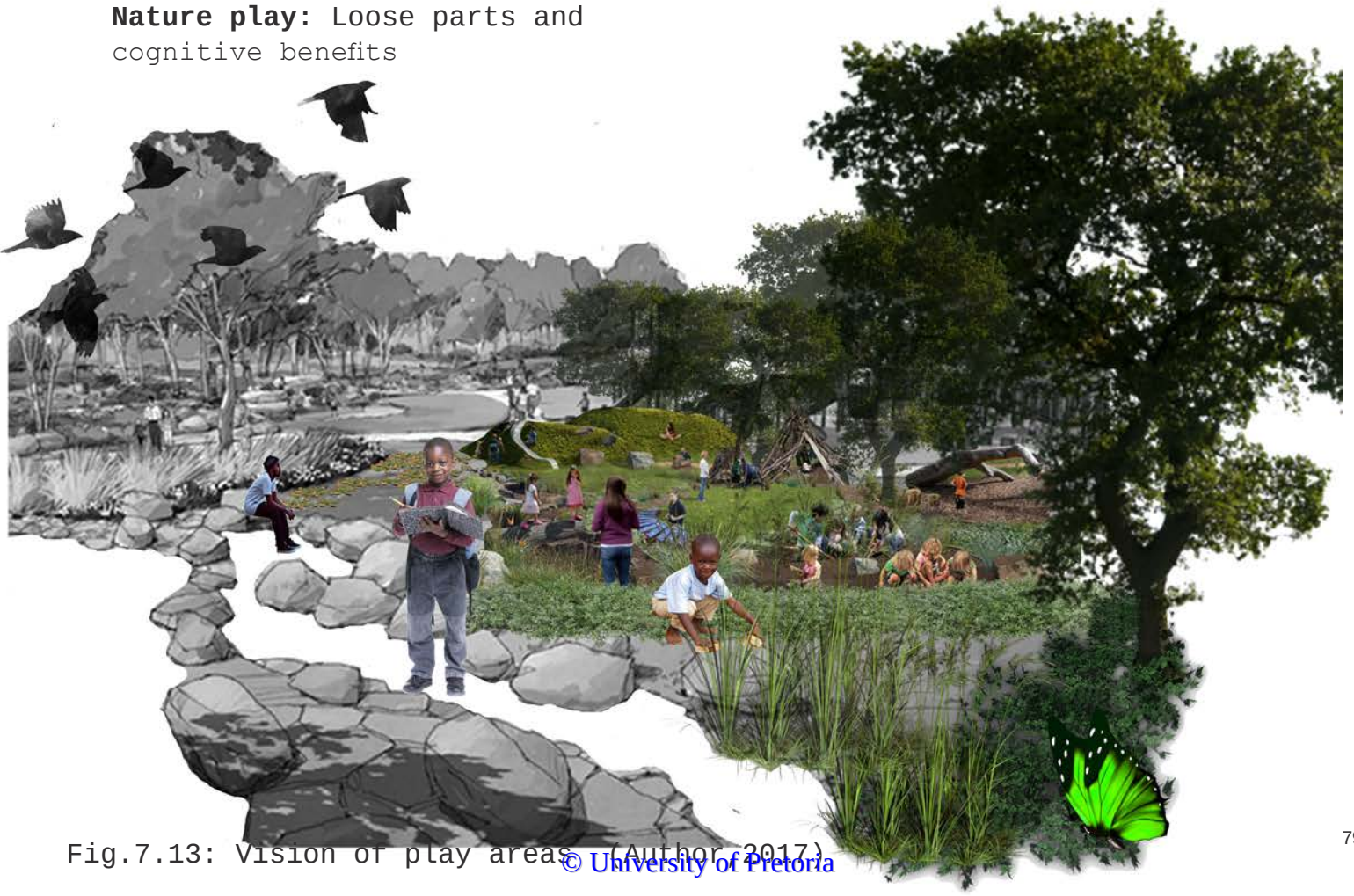


Fig.7.13: Vision of play areas (Author,2017)

Boundary as design informant

As explained in chapter 1, one of the main urban issues within Westbury is spatial segregation and as mentioned in chapter 4, the site is contributing to this issue because it is fenced off and part of a large buffer that is seperating Westbury from Sophiatown.

In the landscape design discipline a boundary is often associated with negative connotations but within the context of the proposed program, a boundary of some sorts is necessary for keeping the children safe.

In the context of the sketch plan design, boundary should assist in keeping younger children in and keeping adults with wrong intentions out. Boundary should aid in integrating the site with surrounding areas by providing a function to both the interior and the exterior.

The preferred boundary should be permeable but considering dangers such as pedophiles or dangerous adults passing objects through a fence, design considerations should aid in preventing this. Height differences, thresholds and edges will be used to strengthen boundaries.

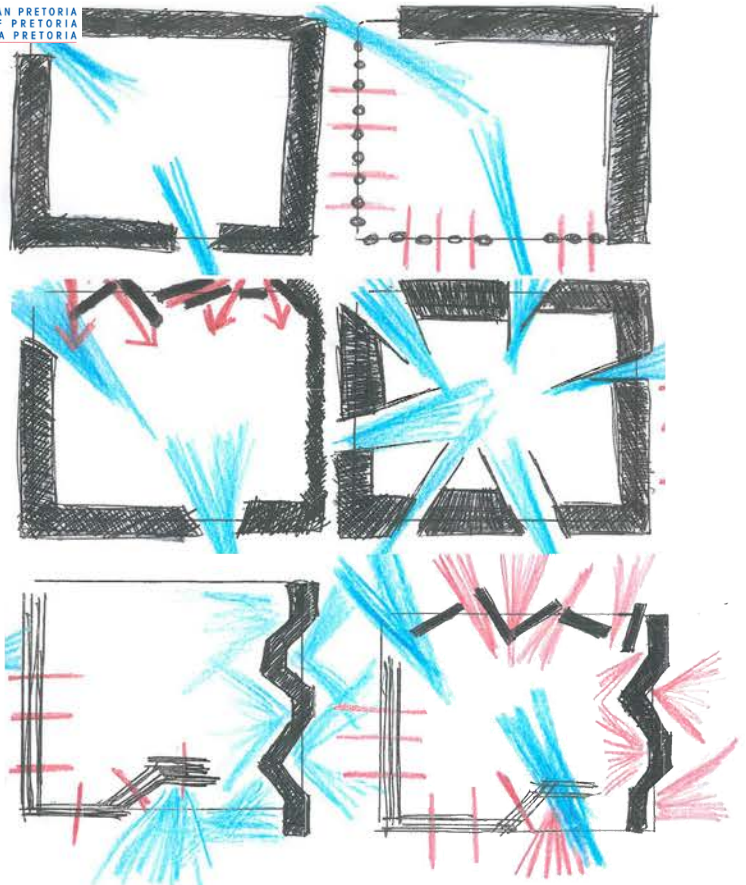


Fig. 7.14: Exploring possible exterior boundaries while considering access and views (Author, 2017)

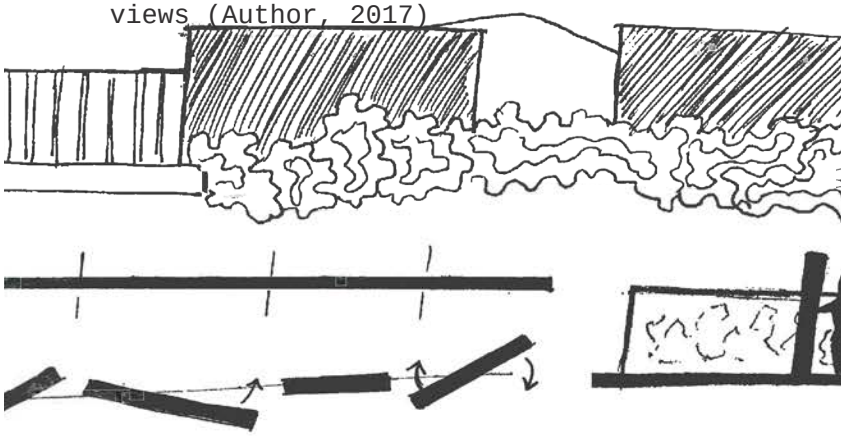


Fig.7.15: Considering interactive boundaries that creates space(Author, 2017)

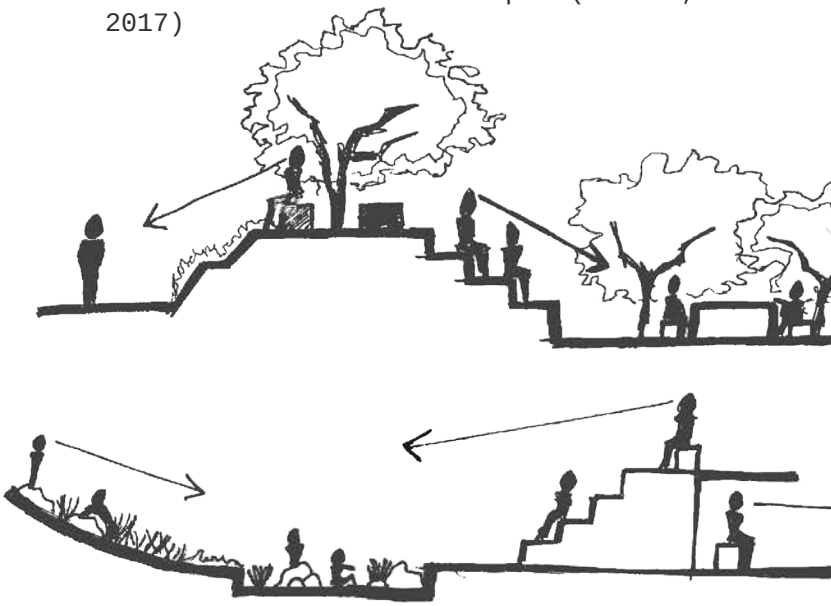


Fig.7.16: Exploring interior edges and boundaries that create play opportunities(Author, 2017)

Fig.7.17: Exploring boundary as resting space, allowing for vantage points(Author, 2017)

Fig.7.18: Exploring boundary as difference in height(Author, 2017)

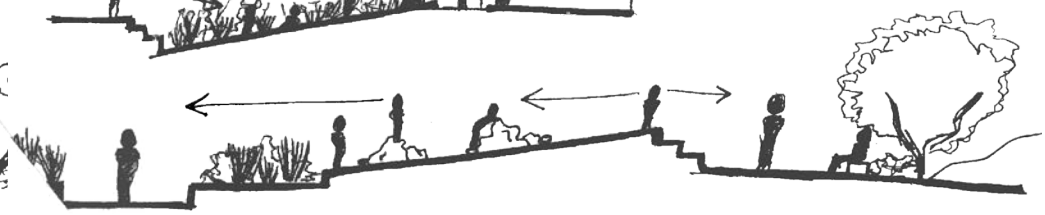


Fig.7.19: Exploring edges that create deifferent experiences(Author, 2017)

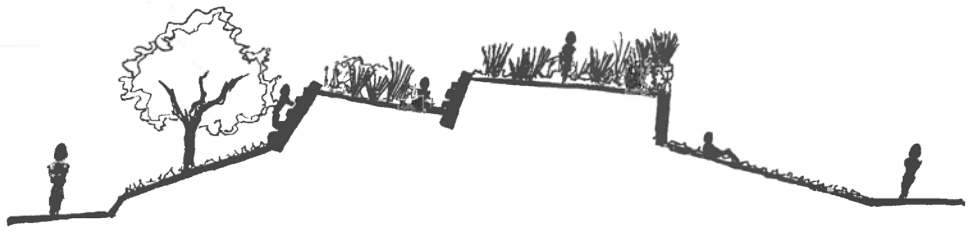


Fig.7.20: Exploring boundary as ‘mountain’ archetype(Author, 2017)

Development of sketch plan

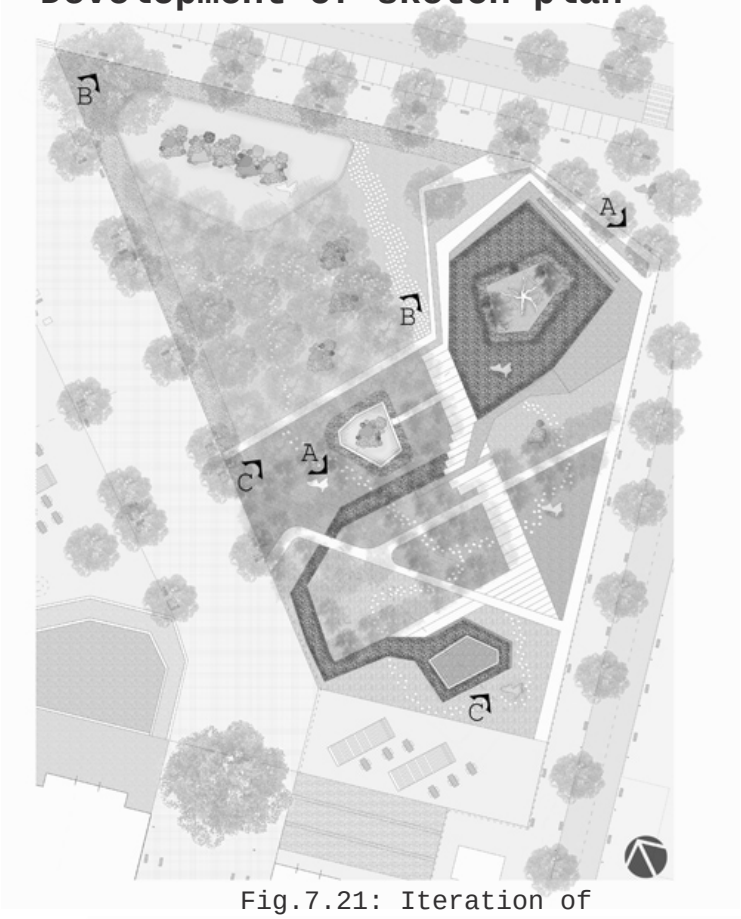


Fig.7.21: Iteration of sketch plan (Author, 2017)

The initial sketch plan illustrates the different archetypes mentioned as part of the concept. The plan shows rigid forms but the author felt that organic forms were better suited for the playscape because of the more naturalistic approach mentioned in chapter 2.

The initial sections, illustrated below, shows the basic spatial qualities of the archetypes previously discussed but the author felt that the design was too ‘object driven’ instead of a design that showed a continous landscape.

Fig.7.22: Development of sketchplan through exploring in section(Author, 2017)

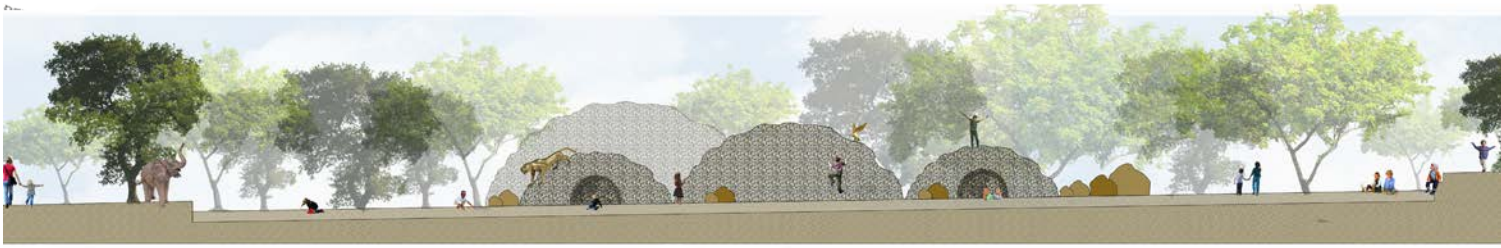


Fig.7.23: Development of sketchplan through exploring in section(Author, 2017)

Fig.7.24: Development of sketchplan through exploring in section(Author, 2017)

Development of sketch plan

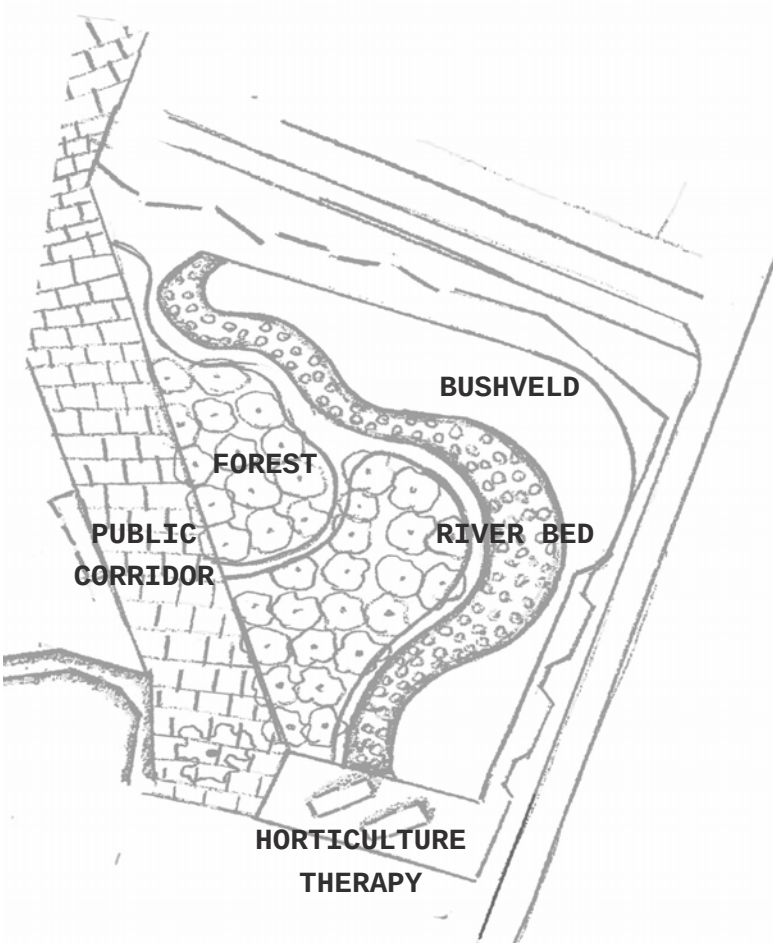


Fig.7.25: Development of sketchplan through iteration(Author, 2017)

The next iterations of the sketch plan were more organic in form, as mentioned.

The 'forest' archetype was used as a buffer between the more public areas and the playscape.

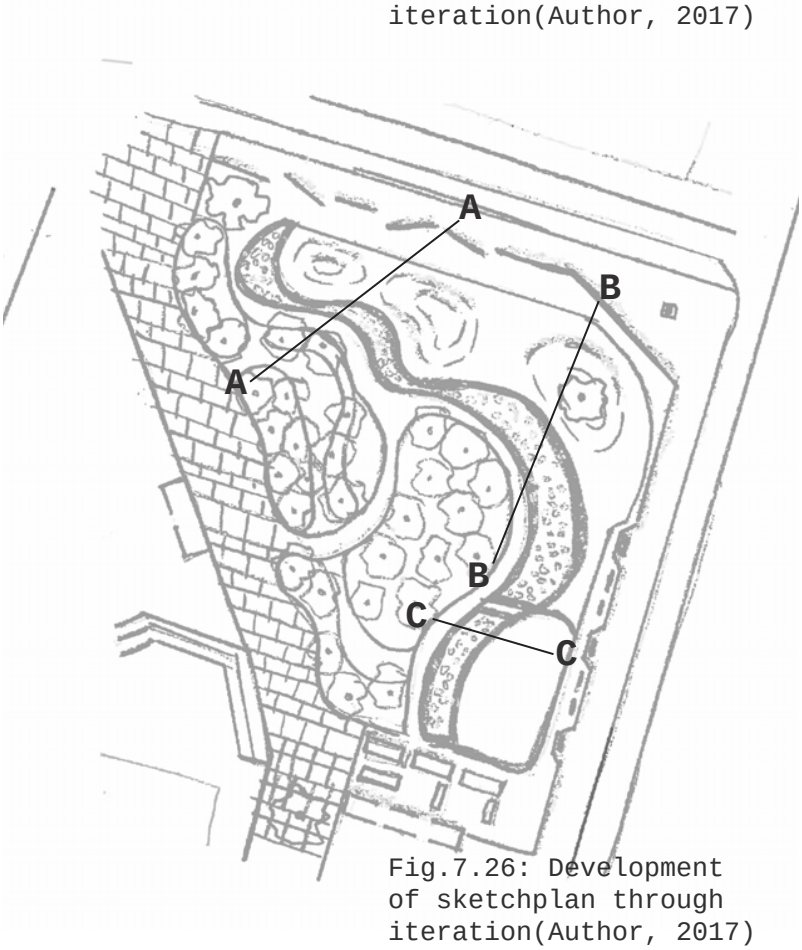


Fig.7.26: Development of sketchplan through iteration(Author, 2017)

The following iteration shows how the playscape spills into the public corridor.

Secondary pathways were also developed during this itteration.

Sections on next page

Development of sketch plan

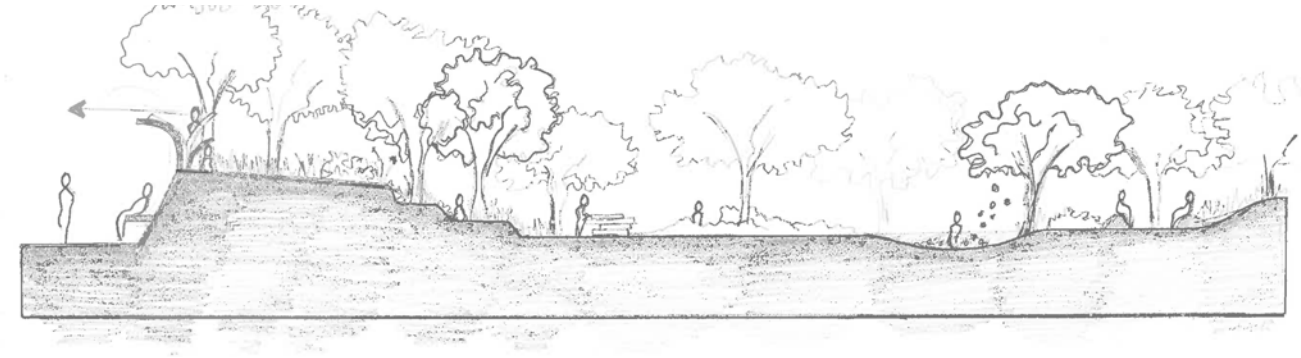
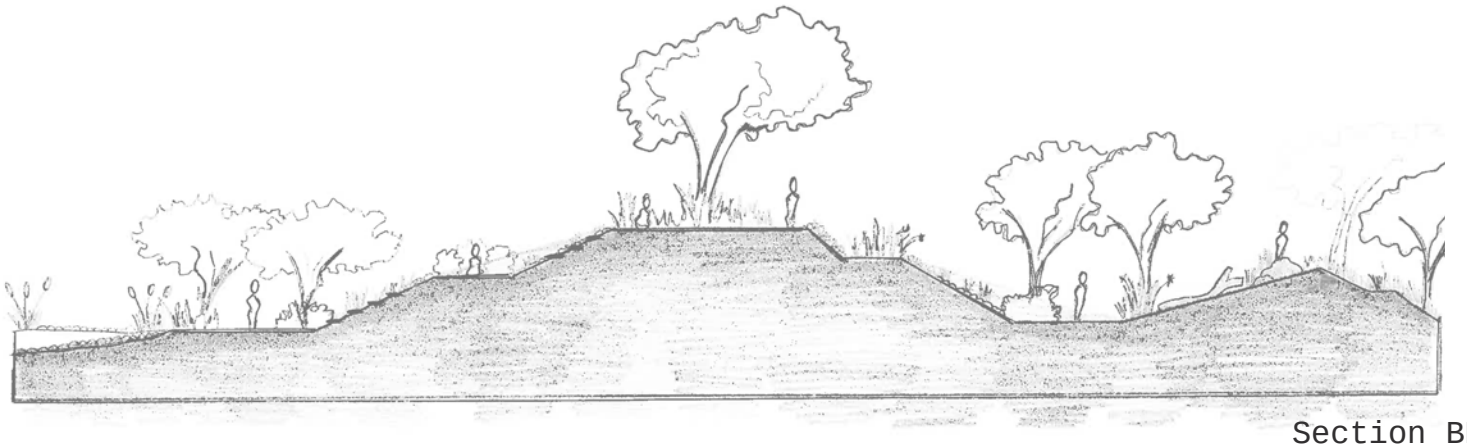


Fig.7.27: Development of sketch plan through exploring in section (Author, 2017)

In this section the author explored using topography to create a sense of enclosure, play opportunities and a functional boundary (seating space).

Fig. 7.28: Development of sketch plan through exploring in section (Author, 2017)

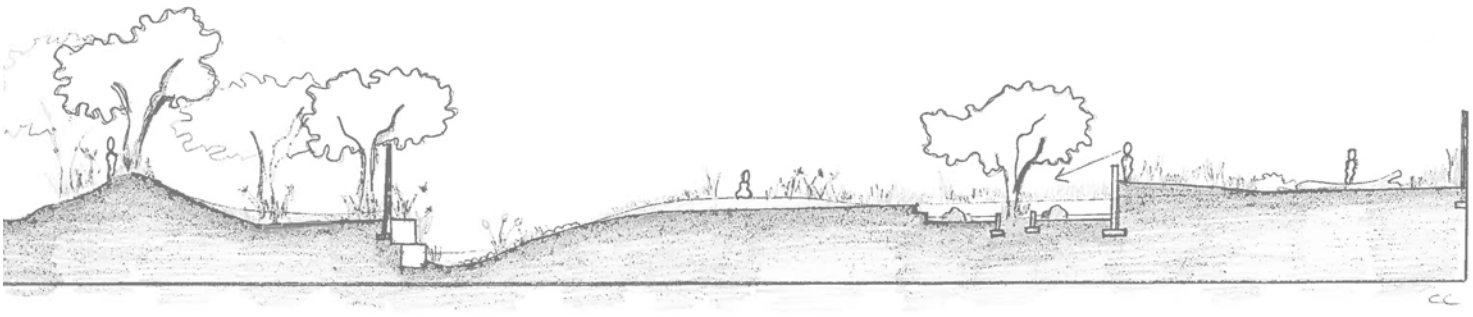
In this section the author explored the ‘mountain’ archetype.



Section BB

Fig. 7.29: Development of sketch plan through exploring in section (Author, 2017)

In this section the author explored complex play opportunities.

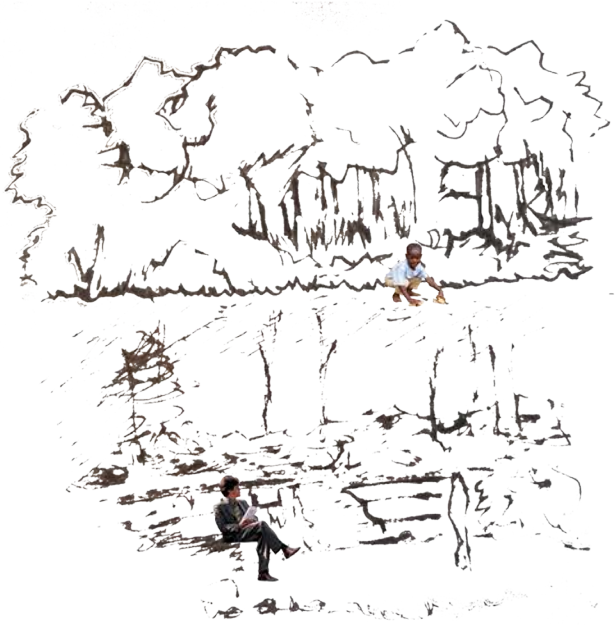


Section CC

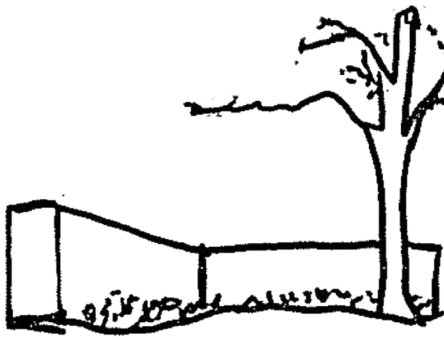
Fig.7.30: Development of sketchplan through exploring in section(Author, 2017)

In this section the author explored an enclosed space for the 3-5 year olds.

A therapist



A parent



A child

Fig.7.31: Vignettes showing typical views in the design(Author, 2017)

Final sketch plan

The final sketch plan is an accumulation of activity-orientated playscape design, typical archetypes found in children's literature and design that considers the mentally challenged and abled-bodied child.

The sketch plan will be discussed in detail on the following pages.

Fig.7.32: Sketch plan(Author, 2017)

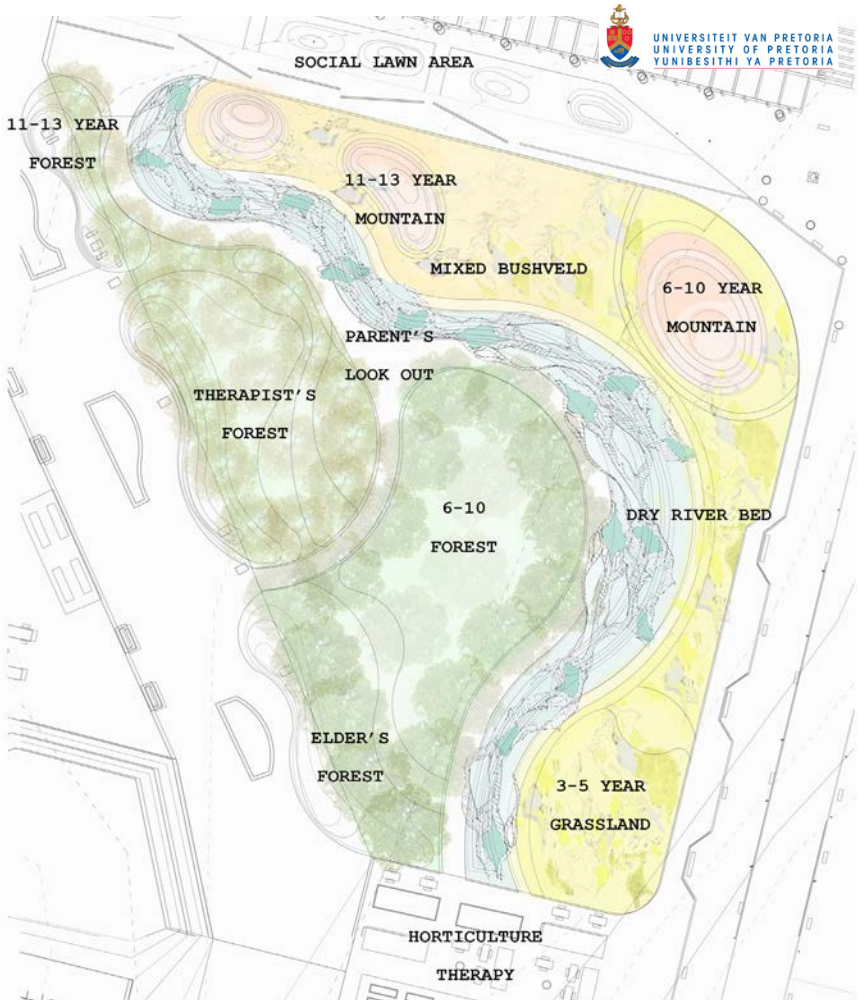


Fig.7.33: Sketch plan diagram(Author, 2017)

x Social lawn space

The lawn seating and social area is used as a threshold to indicate the transition from the playscape to the street. This area is also for parents or teachers who wish to relax.

x 11-13 year mountain

This area is specifically for the 11 to 13 year olds. The design therefore allows for more social spaces and more risk, while they develope their large muscle groups.

x Mixed bushveld:

These spaces allow for exploration between plants, running through grasses or the opportunity to sit under a tree.

x 6-10 year mountain:

This area is specifically for the 6 to 10 year olds. The design therefore allows for more complex play opportunities and large muscle group development.

x 3-5 year grassland

This is an enclosed space specifically for the 3 to 5 year olds. Boulders, stumps and steps allow children to pull themselves up or practise risk. This area also encourages parallel play, which instigates social interaction.

x Dry river bed

The dry river bed develops smaller muscle groups and plays a large role in sensory integrated therapy. Children can climb small boulders and pretend its an island, play with rocks or run down the river.

x Horticulture therapy

The horticulture therapy area is supervised by the therapists and plays a large role in therapy. The children and elders begin to nurture another living thing and in turn, this relaxes them and gives them self worth.

x Elder's forest

This area gives the elder's a space to relax in a naturalistic setting. The elder's also contribute to the overall supervision of the playscape.

x 6-10 year forest

The forest space allows the 6 to 10 year olds to practice free play amongst plants with different fragrances,colours and textures. Loose parts play is also encouraged by the seeds, twigs and leaves in the forest.

x Therapist's forest

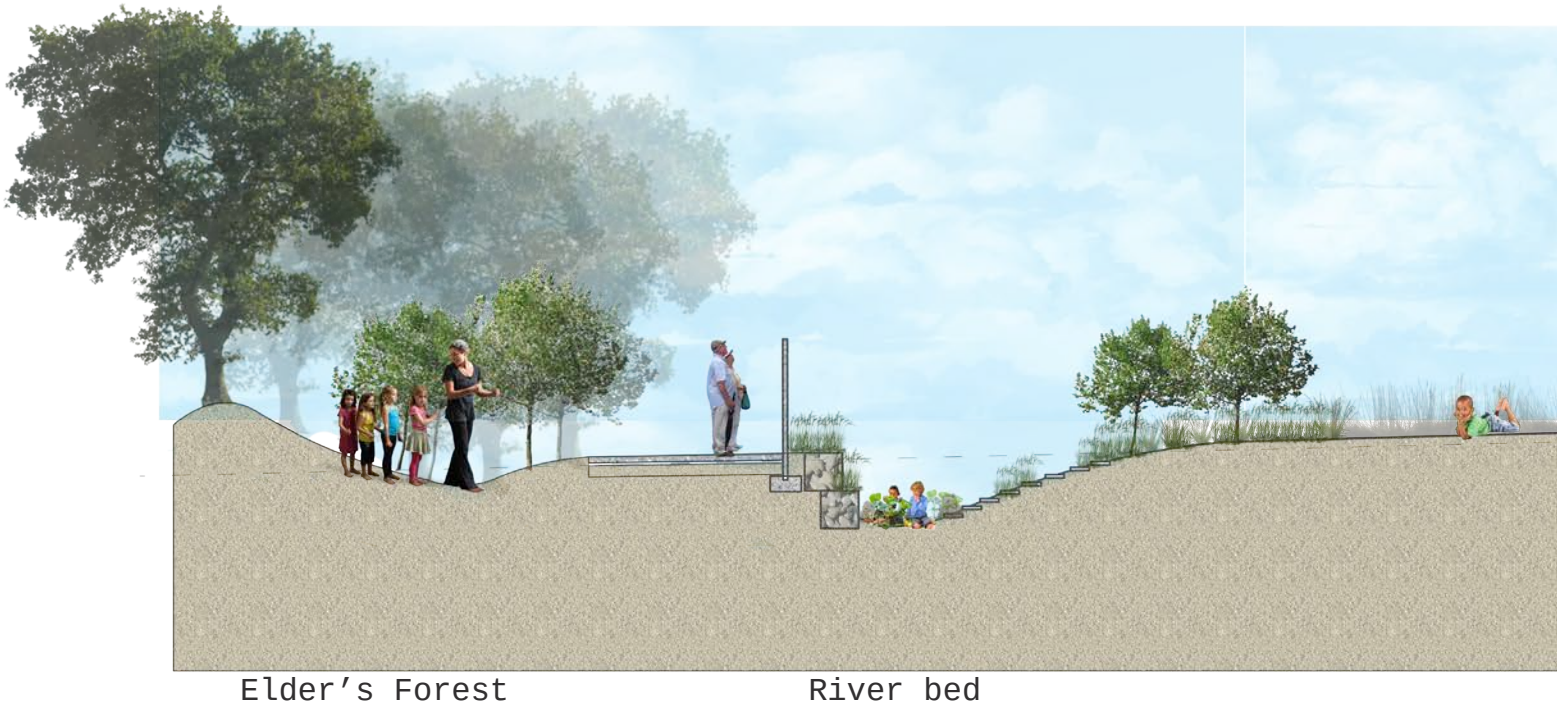
This area is used by therapists for therapy sessions. Therapy apparatus such as hammocks, hang from the trees.

x 11-13 year forest

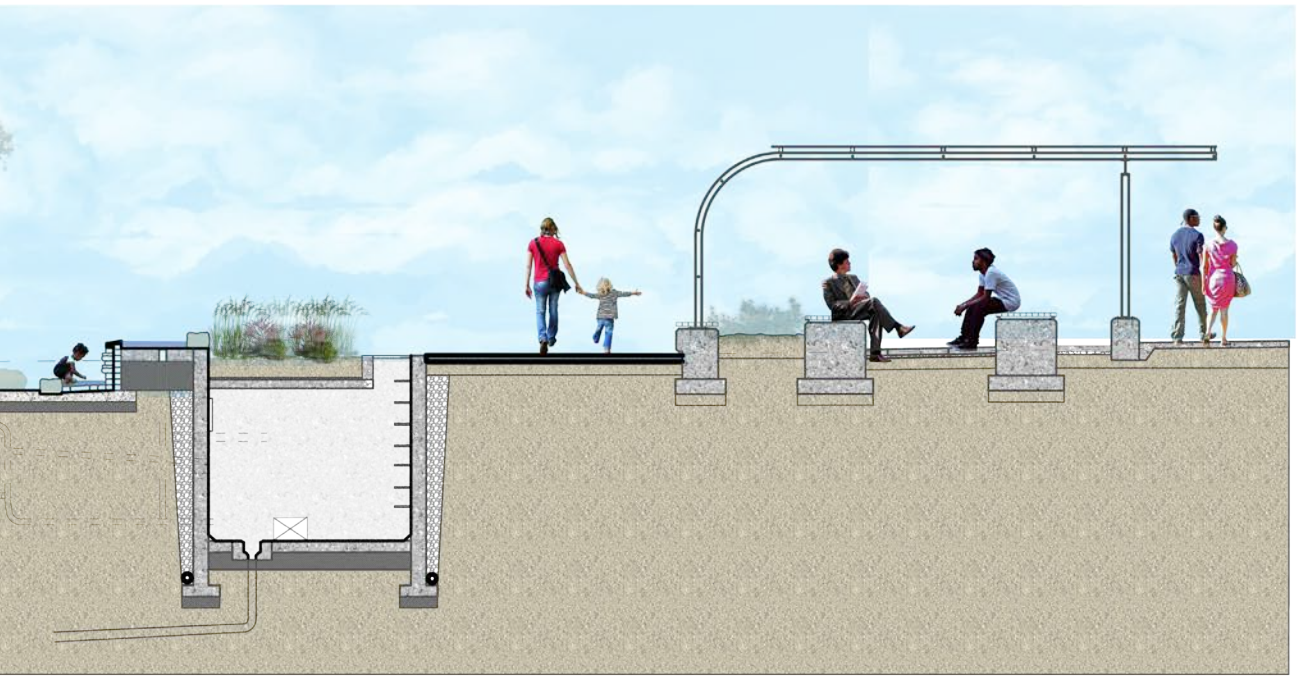
This forest space is mostly for social interactions between the 11 to 13 year olds or relaxation.

Sections

River Bed Bushveld Zero-depth water feature



Elder’s Forest River bed



100mm deep
'pond'

Pathway

Pergola
social space

3-5 year
cliff and sunken play
area

Exterior boundary

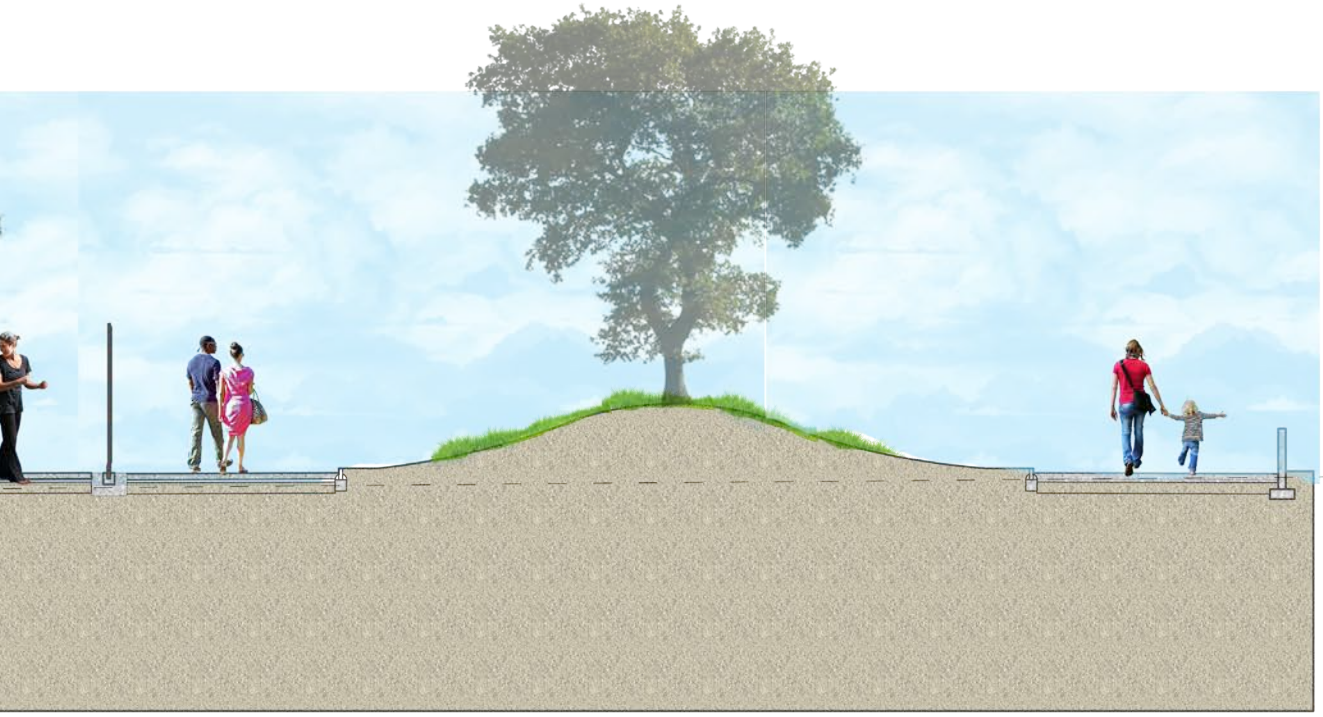
6-10 year Mountain

Social space

Public corridor

Exterior boundary

Therapist's forest



Exterior boundary

Lawn mound

Therapist’s forest

River bed

Activities

Keith Christensen, a playground designer (see theoretical chapter), explained that activity orientated design, instead of appliance orientated design creates a setting where all children may be included and it offers diverse play opportunities that aim to aid in development (Christensen, 2003).

The archetypes that are used in the design process will accommodate the following activities:

- Climb
- Run, jump and roll
- Balance
- Create, build, grow
- Rest
- Sense
- Share and cooperate
- Teach and learn
- Imagine and inspire
- Protect, separate and enclose

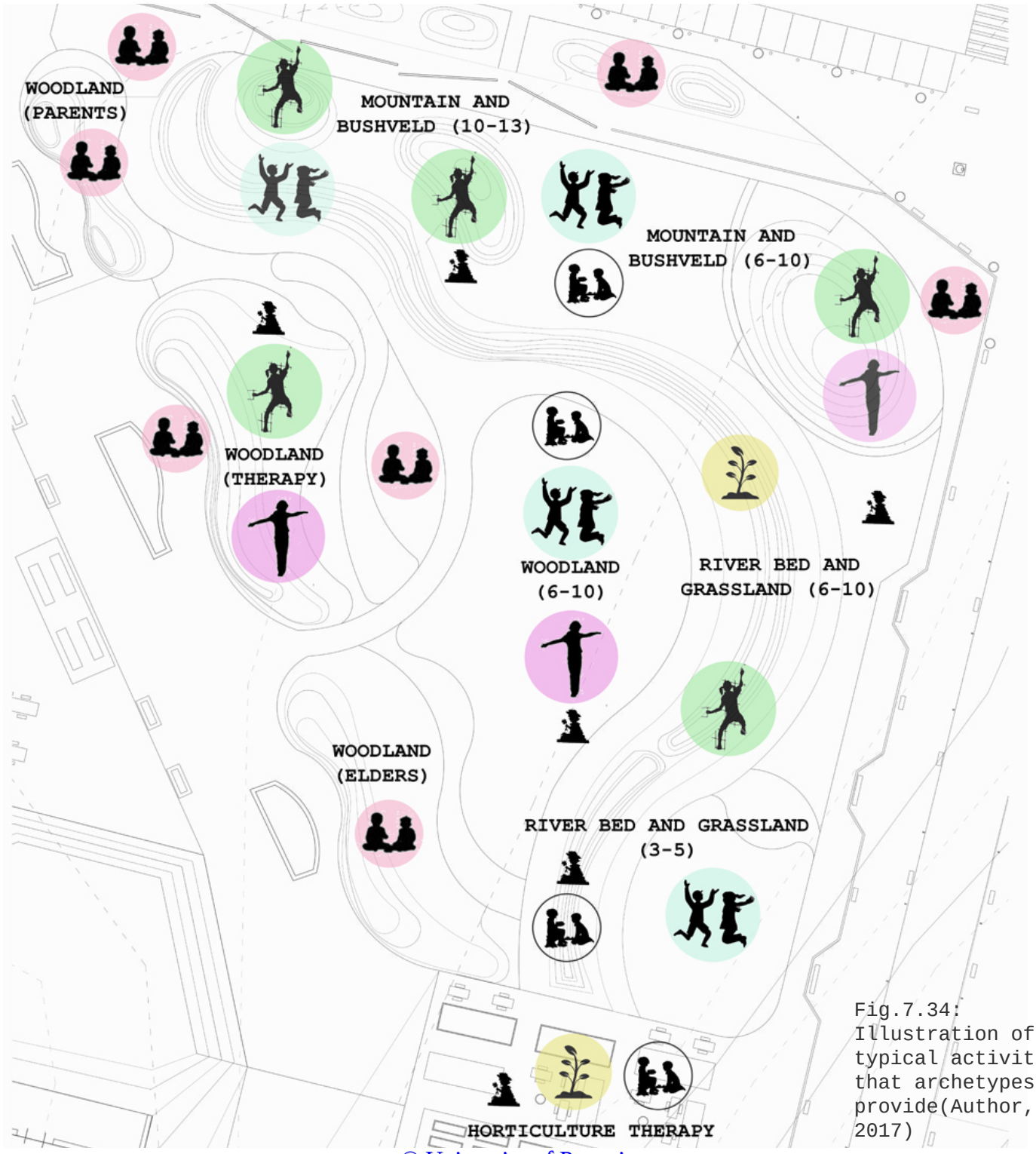


Fig.7.34: Illustration of typical activities that archetypes provide(Author, 2017)

Access and supervision

Besides nescessary boundaries, access and supervision is also important.

The supervision includes therapists, parents, teachers and the elders. Spaces were designed in order to accommodate these adults near an entrance/exit or primary route.

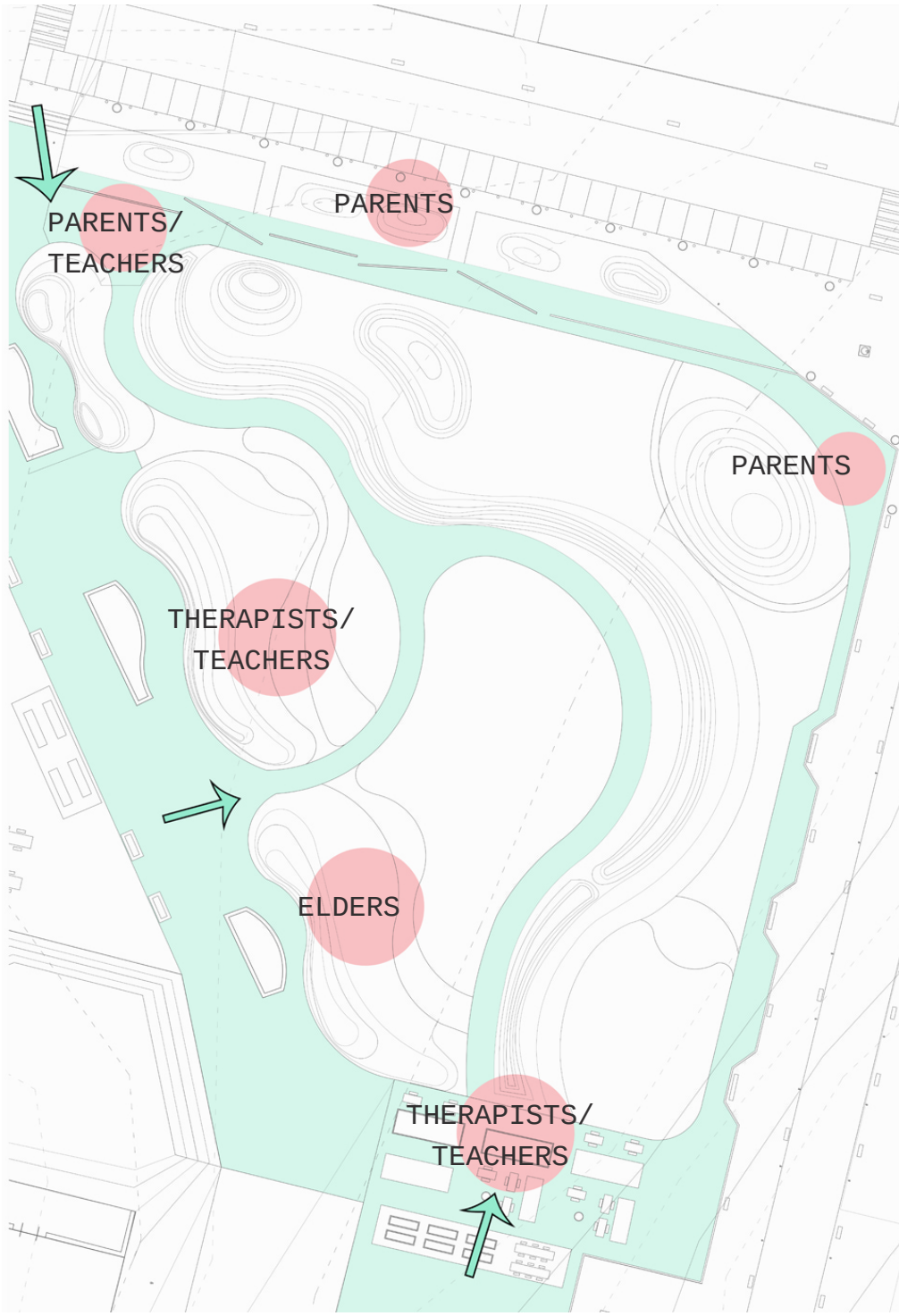


Fig.7.35: Illustration of primary movement, supervision and entrances(Author, 2017)

Boundaries

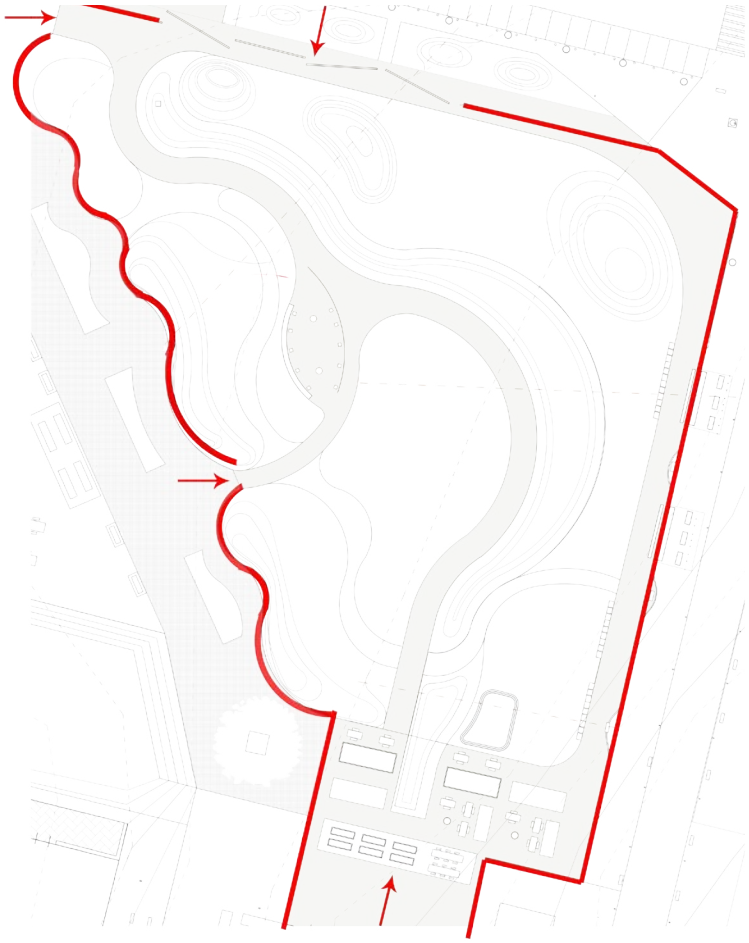


Fig.7.36: Illustration of boundary that does not allow for physical access(Author, 2017)

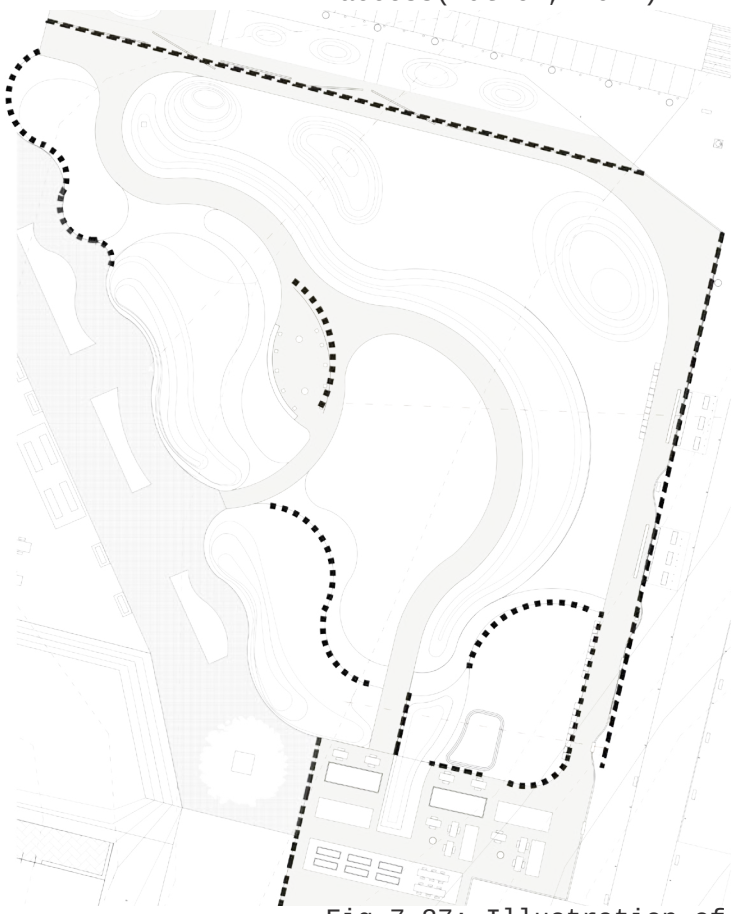


Fig.7.37: Illustration of permeability of boundary that allows for visual access(Author, 2017)

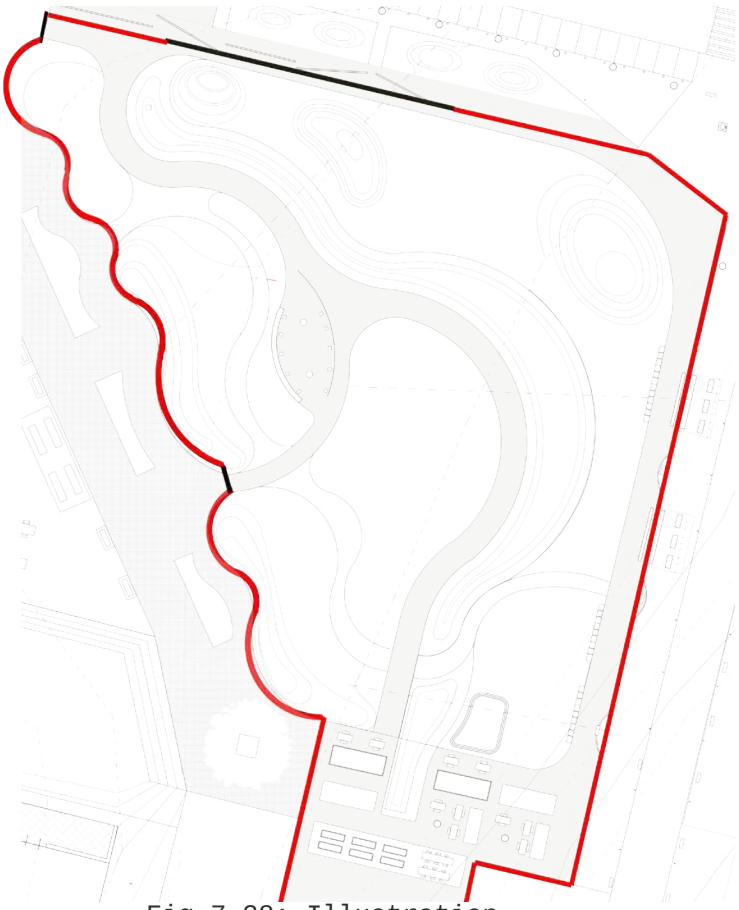


Fig.7.38: Illustration of boundary locked up at night(Author, 2017)

8 CHAPTER EIGHT

TECHNICAL INVESTIGATION

Introduction

In the following chapter the author will discuss the material and planting choices for the design as well as illustrate the lighting and water strategy. Specific construction details of the design will be explored and explained to indicate how the design concept and intent were carried through.

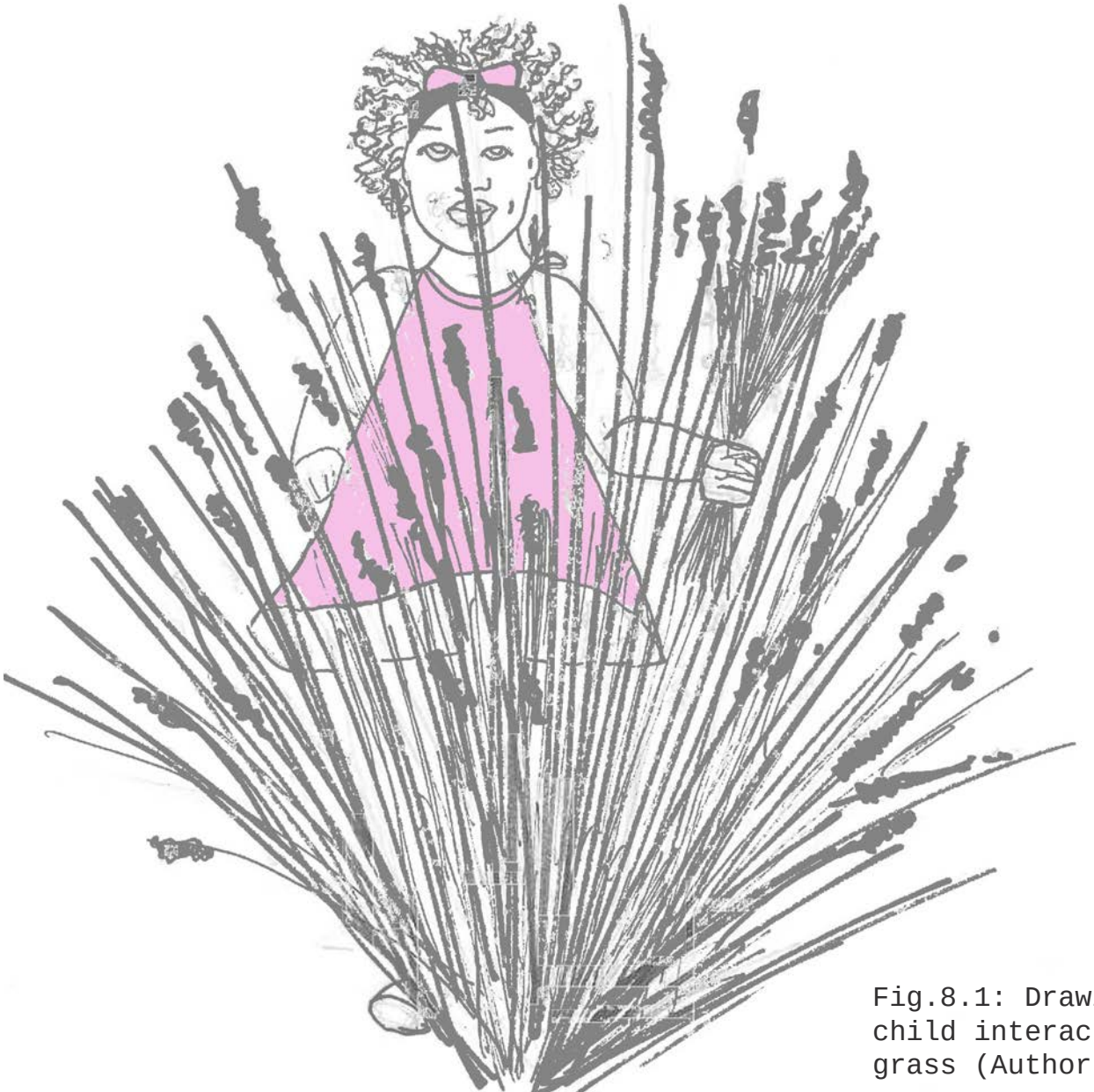


Fig.8.1: Drawing of child interacting with grass (Author,2017)

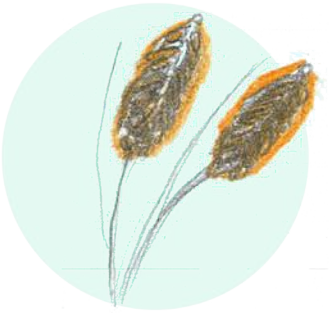
Planting strategy

Fig.8.2: Illustration of planting strategy (Author,2017)

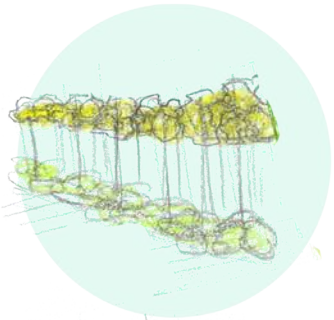
The plant choices have to contribute to sensory integrated experiences, loose parts play, interaction with natural materials, legibility and the imagination.

Texture
Pteris vittata

Colour
Kniphofia ensifolia



Edges
Helichrysum nudifolium



Form
Elionurus muticus

Edible
Ancylobotrys capensis

Focal point
Cussonia paniculata

Plant palette

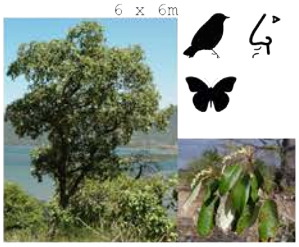
ATTRACTS BIRDS | INTERESTING TEXTURE/ LOOK | ATTRACTS INSECTS | ATTRACTIVE FLOWER | FROST TOLERANT | WATER WISE
FRAGRANT | EDIBLE | SHADE-LOVING

Woodland

TREES


10 x 9m
Celtis africana


9 x 10m
Combretum molle


6 x 6m
Croton gratissimus


4-6 x 4m
Buddleja saligna


Eucla crispa


Ehretia rigida


Erythrina lysistemon


8 x 8m

SHRUBS


Blechnum australe


Pteris vittata


Oplismenus hirtellus


Haemanthus humilis

Comellina africana


Dietes grandiflora

River bed

TREES


10 x 13m
Combretum erythrophyllum

SHRUBS


Gunnera perpensa


Gomphostigma virgatum


Hesperantha coccinea


Kniphofia ensifolia


Crinum bulbispermum


Juncus lomatophyllus


Melinis nerviglumis


Setaria sphacelata


Stiburus alopecuroides

Bushveld

TREES

10 x 9m

Celtis africana

9 x 10m

Combretum molle

Dombeya rotundifolia

Lippia javanica

SHRUBS

Helichrysum nudifolium

Digitaria monodactyla

Eragrostis chloromelas

Grassland

Hyparrhenia hirta

Eragrostis chloromelas

Helichrysum nudifolium

Melinis nerviglumis

Elionurus muticus

Themeda triandra

Aloe aristata

Harpochloa falx

Eragrostis racemosa

Mountain

TREES

Dombeya rotundifolia

Cussonia paniculata

Ehretia rigida

SHRUBS

Aloe striata

Aloe aristata

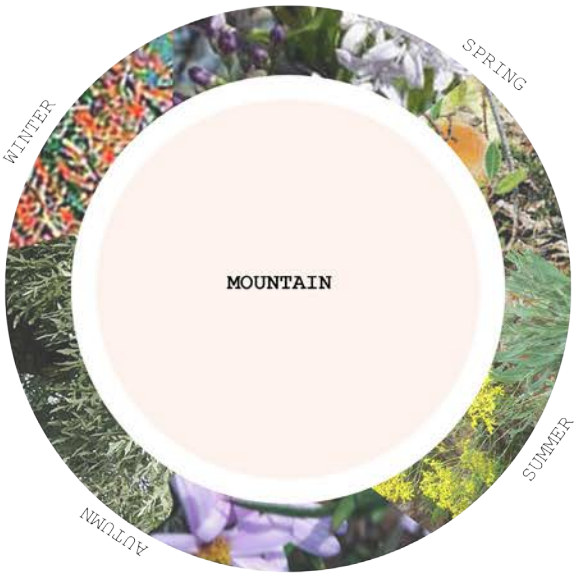
Ancylobotrys capensis

Athrixia elata

Senecio venosus

Digitaria eriantha

Seasonal planting cycles



These images show how planting can aid in sensory experiences and provide loose parts for play, throughout the year.

Fig.8.3-8.7: Illustration of seasonal cycles (Author,2017)

Bird's song and interaction with different insects create sensory experiences and provokes the imagination.

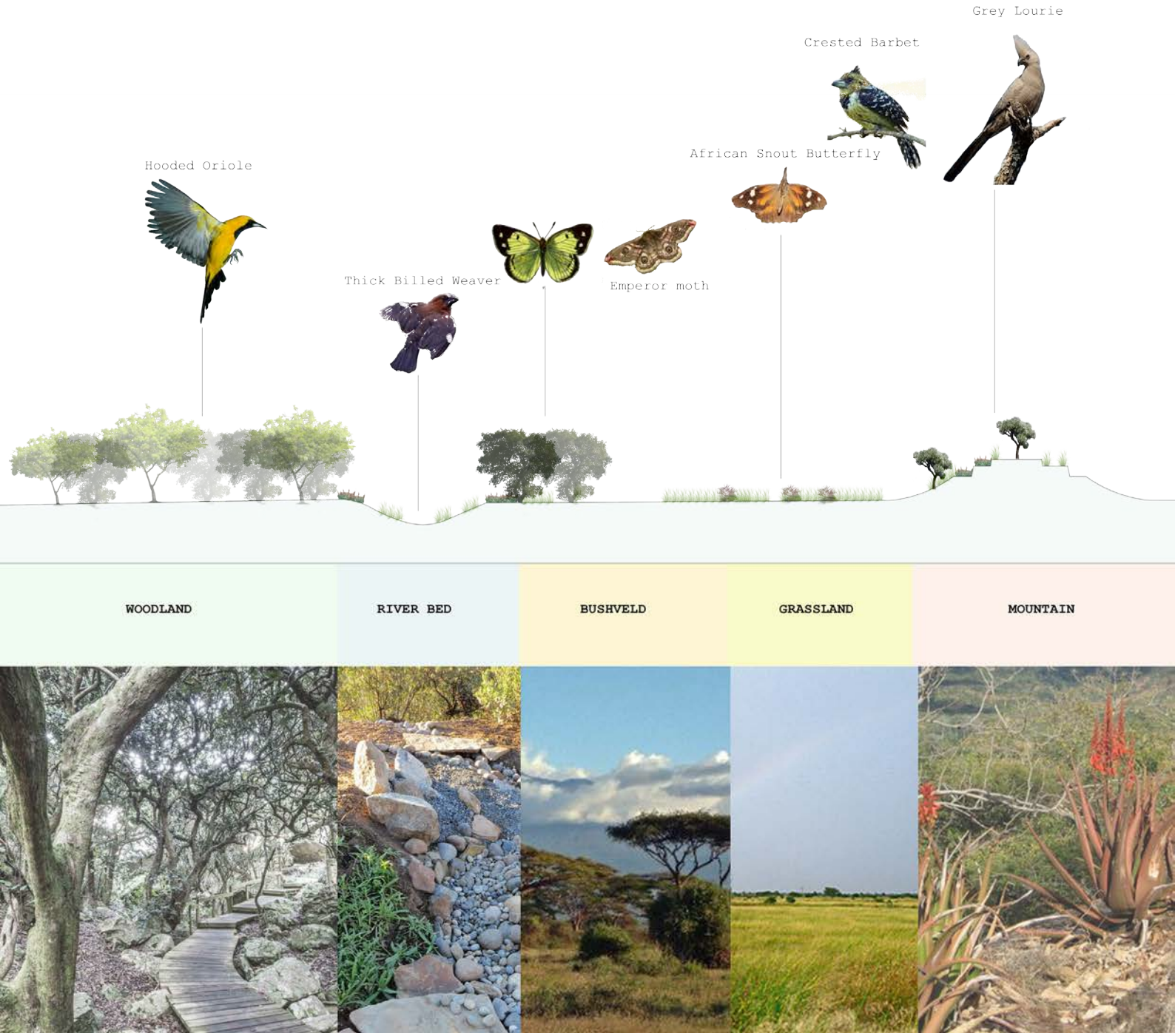


Fig.8.8: Illustration of archetypes and birds and insects (Author,2017)

Planting plan

WOODLAND
- *Dietes grandiflora*
- Mix: *Setaria* and *Comellina*
- Mix: *Blechnum* and *Pteris*
- *Haemanthus humilis*

BUSHVELD
- *Setaria spp.*
- *Eragrostis spp.*

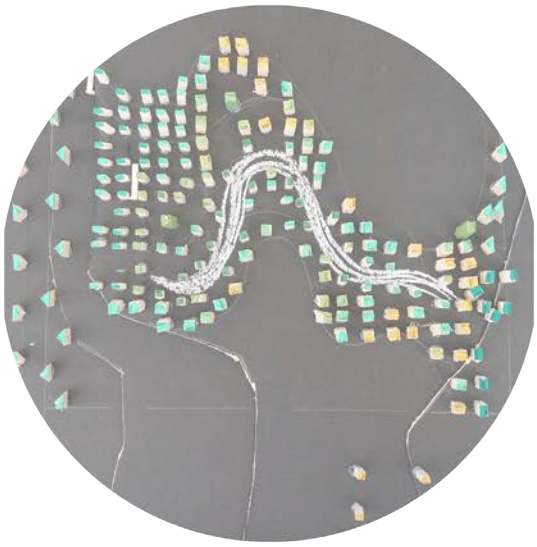
GRASSLAND
- *Helichrysum*
- Mix: *Hyparrhenia and Elionurus*
- Mix: *Eragrostis*
- *Themeda*

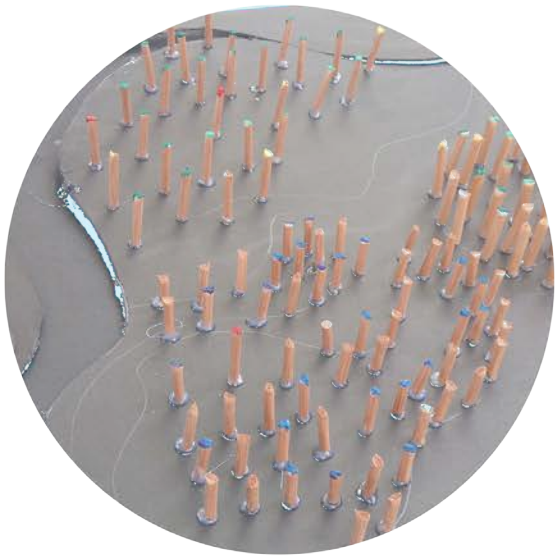
MOUNTAIN
- *Athrixia elata*
- *Aloe spp.*
- *Ancylobotrys capensis*
- Mix: Digitaria and [illegible]

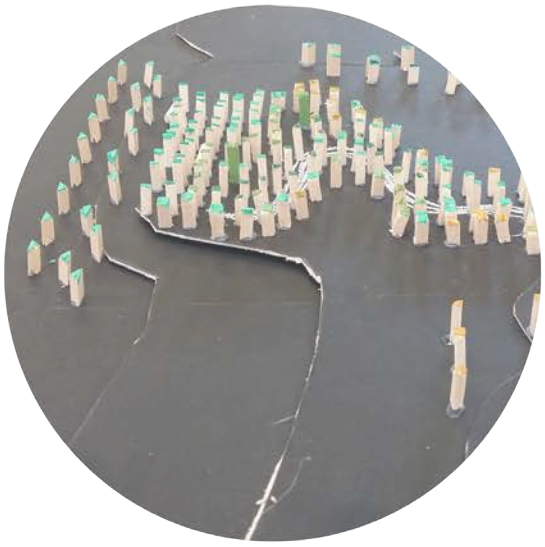
RIVER BED
- *Kniphofia ensifolia*
- *Melinis nerviglumis*
- Mix: *Hesperantha and Gomphostigma spp.*
- Mix: *Gunnera and Crinum spp.*
- *Juncus spp.*

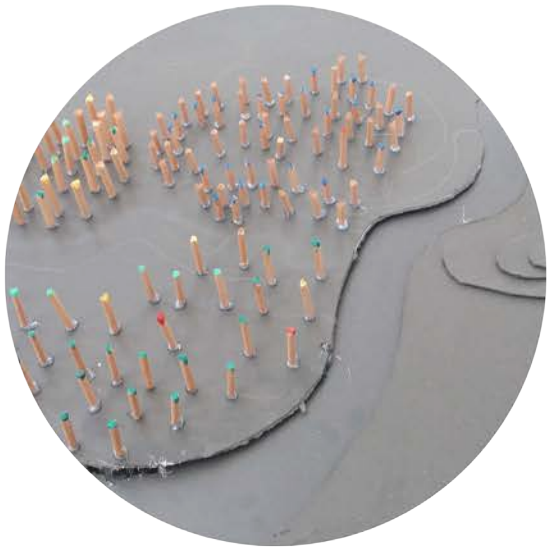
Fig.8.9: Illustration of planting plan (Author,2017)

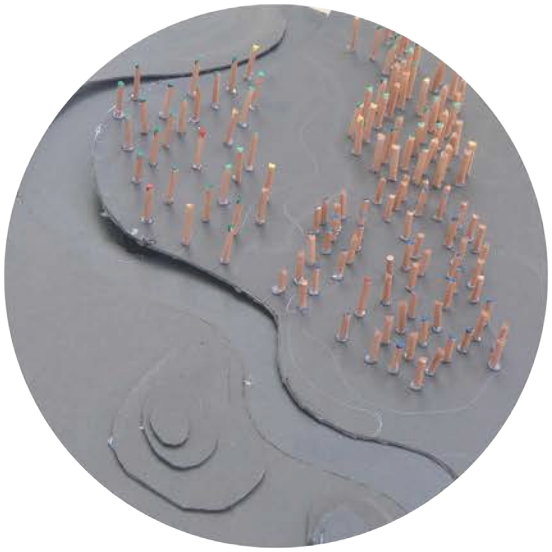
Model explorations







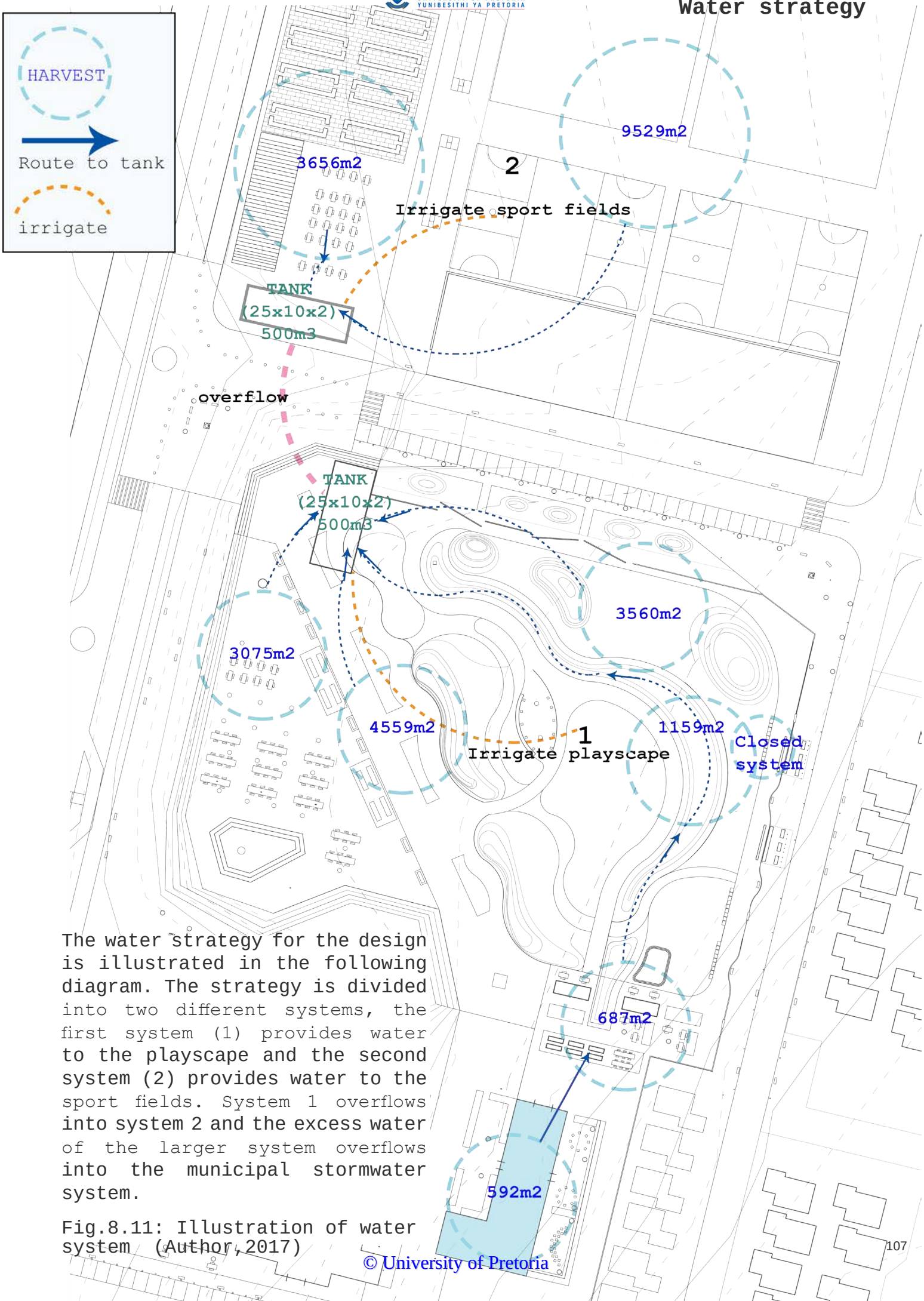




The following models were done in order to explore tree densities, pattern and spatial qualities. Different colours represent different tree species.

Fig.8.10: Illustration of water system (Author,2017)

Water strategy



The water strategy for the design is illustrated in the following diagram. The strategy is divided into two different systems, the first system (1) provides water to the playscape and the second system (2) provides water to the sport fields. System 1 overflows into system 2 and the excess water of the larger system overflows into the municipal stormwater system.

Fig.8.11: Illustration of water system (Author,2017)

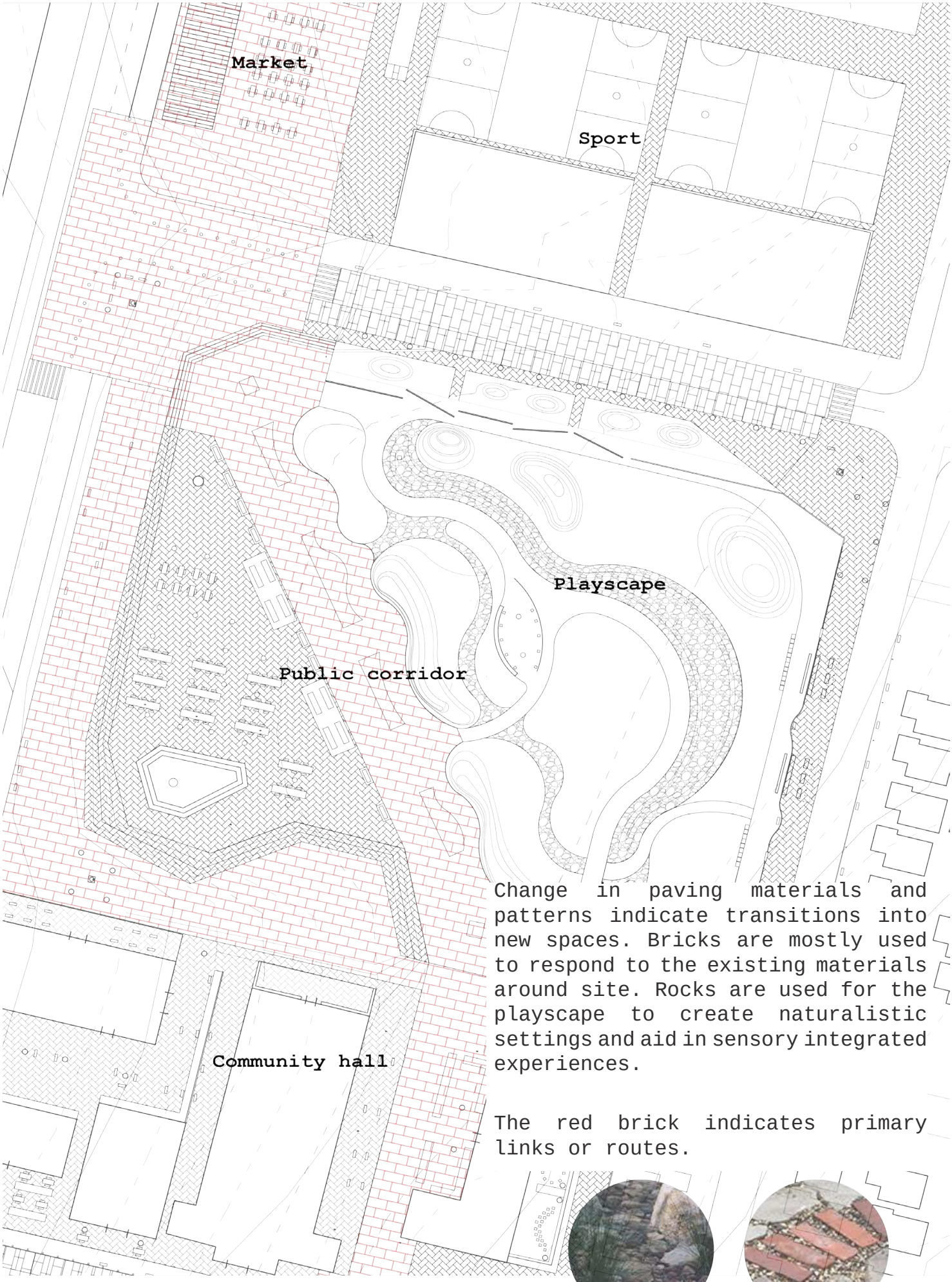
Lighting strategy

Illumination is of utmost importance to ensure safety. The lights that are chosen are robust.

The playscape area will be closed at night due to the fact that it is unsafe for the younger children to wonder around at night. The homework area will be well lit for safety reasons and to allow children that do not have electricity at home to be able to do their homework at night. Occasional sport events will occur at night, flood lights are therefore also required.

Fig.8.12: Illustration of lighting strategy (Author,2017)

Paving plan



Change in paving materials and patterns indicate transitions into new spaces. Bricks are mostly used to respond to the existing materials around site. Rocks are used for the playscape to create naturalistic settings and aid in sensory integrated experiences.

The red brick indicates primary links or routes.

Technification approach and materiality

According to the research and concept of this dissertation, the constructed landscape needs to aid in sensory integrated therapy and child development, as well as ensure the safety of the children.

During the technical investigations, the author explored the concept of boundary. The explorations included exterior boundaries for safety reasons and interior boundaries to assist in defineing spaces and creating enclosed spaces. The exterior and interior boundaries need to ensure that at any given moment, one or the other should prevent direct contact or visual access to vulnerable children.

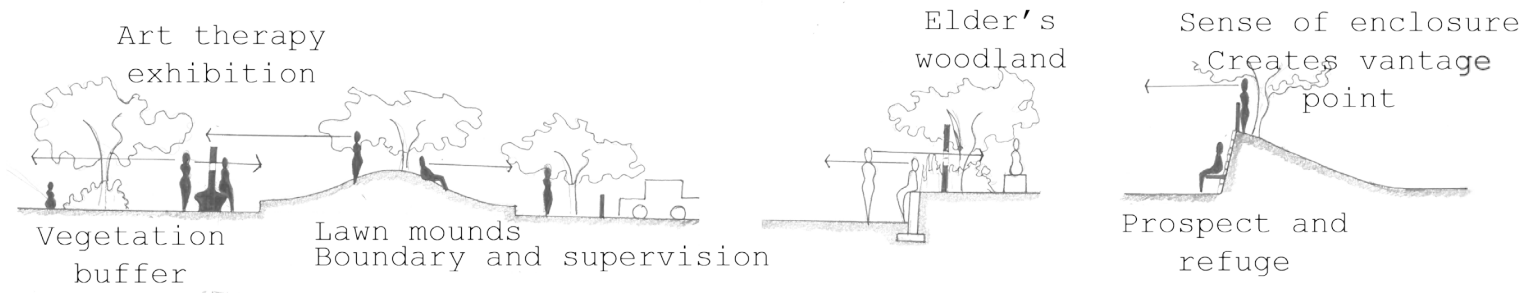
Responding to theory, the exterior boundary needs to alternate between an activated or visually permeable boundary (see chapter 2). The author decided that the exterior boundary should relate to the surrounding context, in terms of materiality. Figure shows typical materials found within Westbury, which mostly consists of brick, concrete and steel.

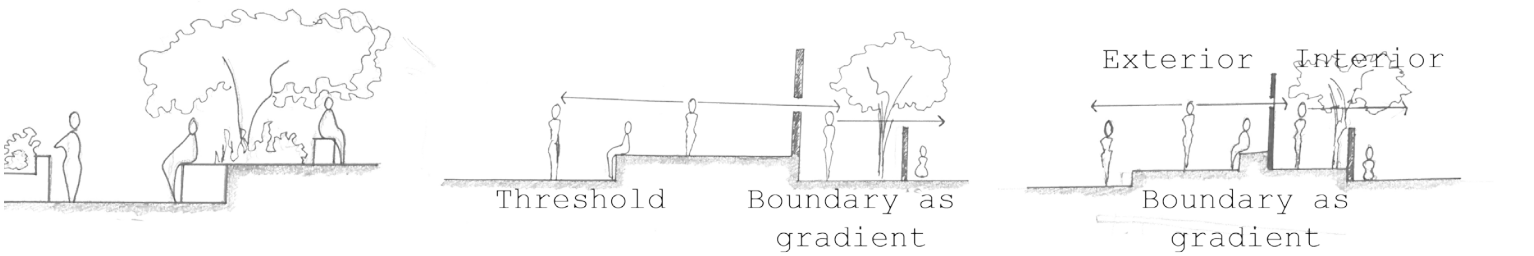
Responding to this dissertation's explorations of archetypes, the interior boundaries needed to portray an archetype that aids in sensory integrated therapy and child development, while provoking the imagination. The material choice depends on the specific archetype and will be discussed later on in this chapter.

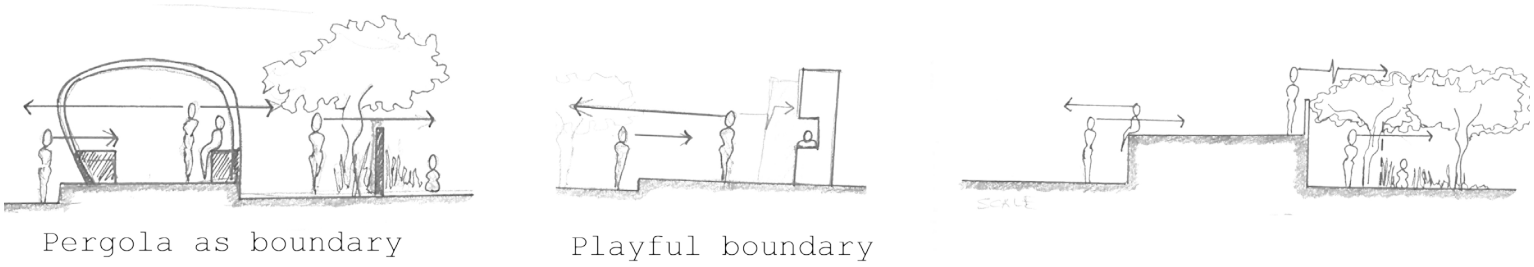
Concrete, bricks and stone is found and produced on an old mine, about 10km from site.

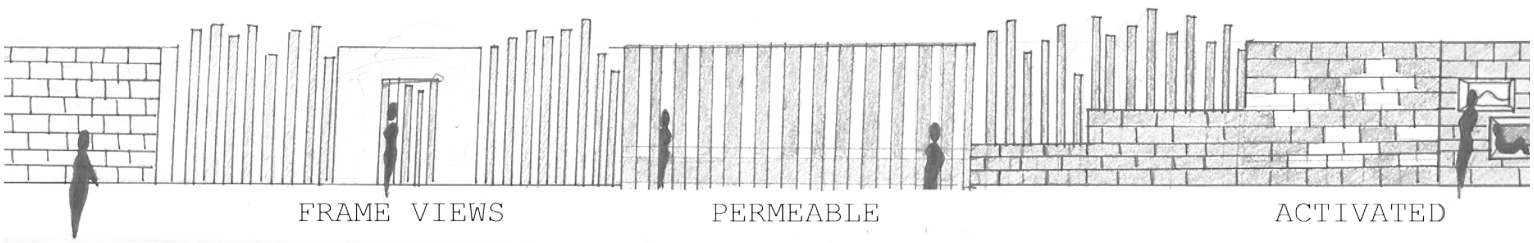
Materials seen in Westbury

Materials found and produced near site

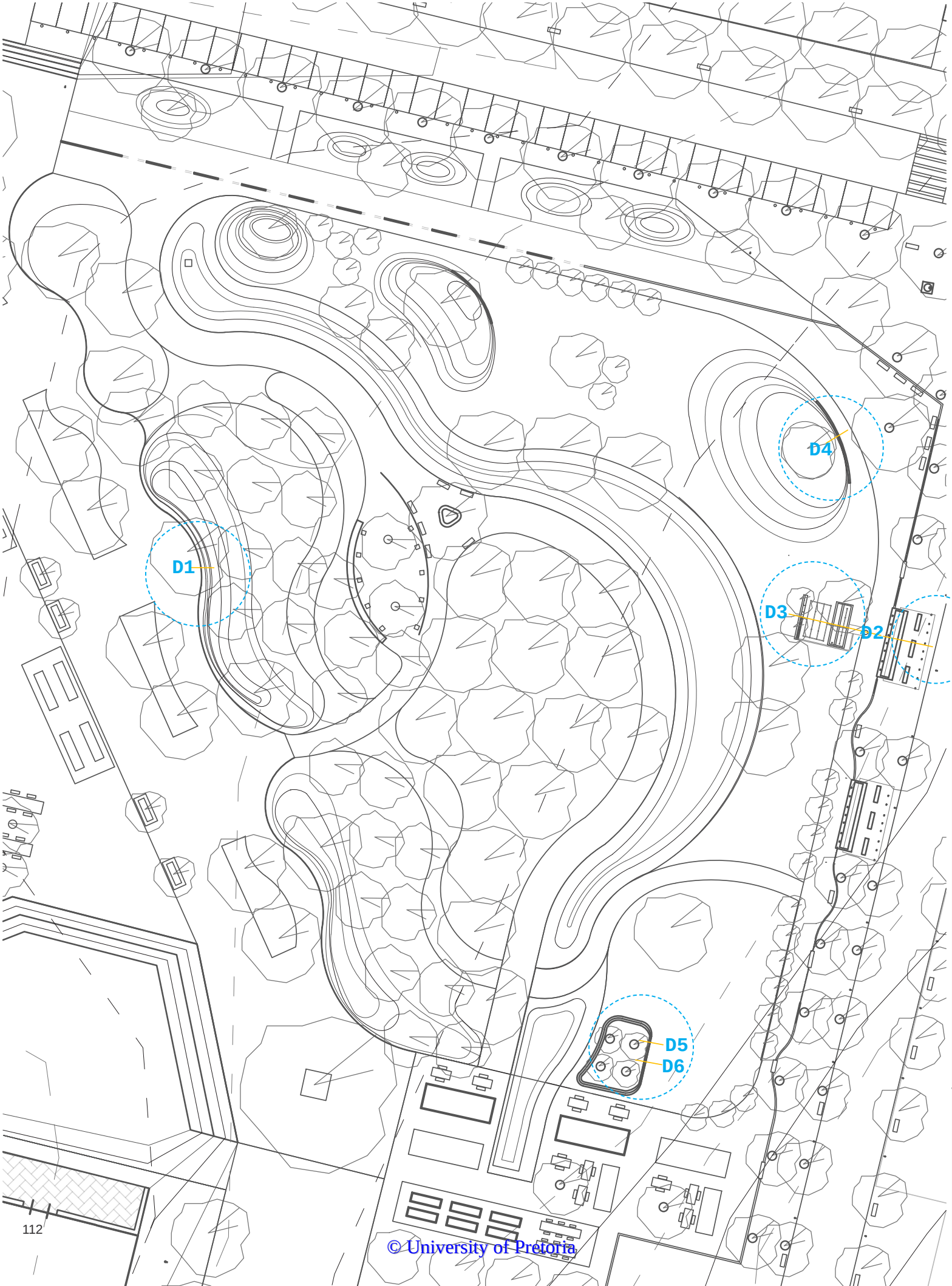








Reference Plan



Details

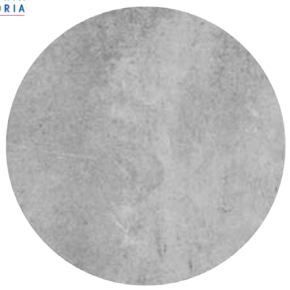
Exterior boundary

This retaining wall creates a sense of prospect and refuge for the person sitting up against it. The wall provides a resting space for people walking along the public corridor.

The berm creates a sense of enclosure for the users in the playscape, a vantage point is also created where children are able to look out.

Brick and concrete was chosen in order to respond to the context.

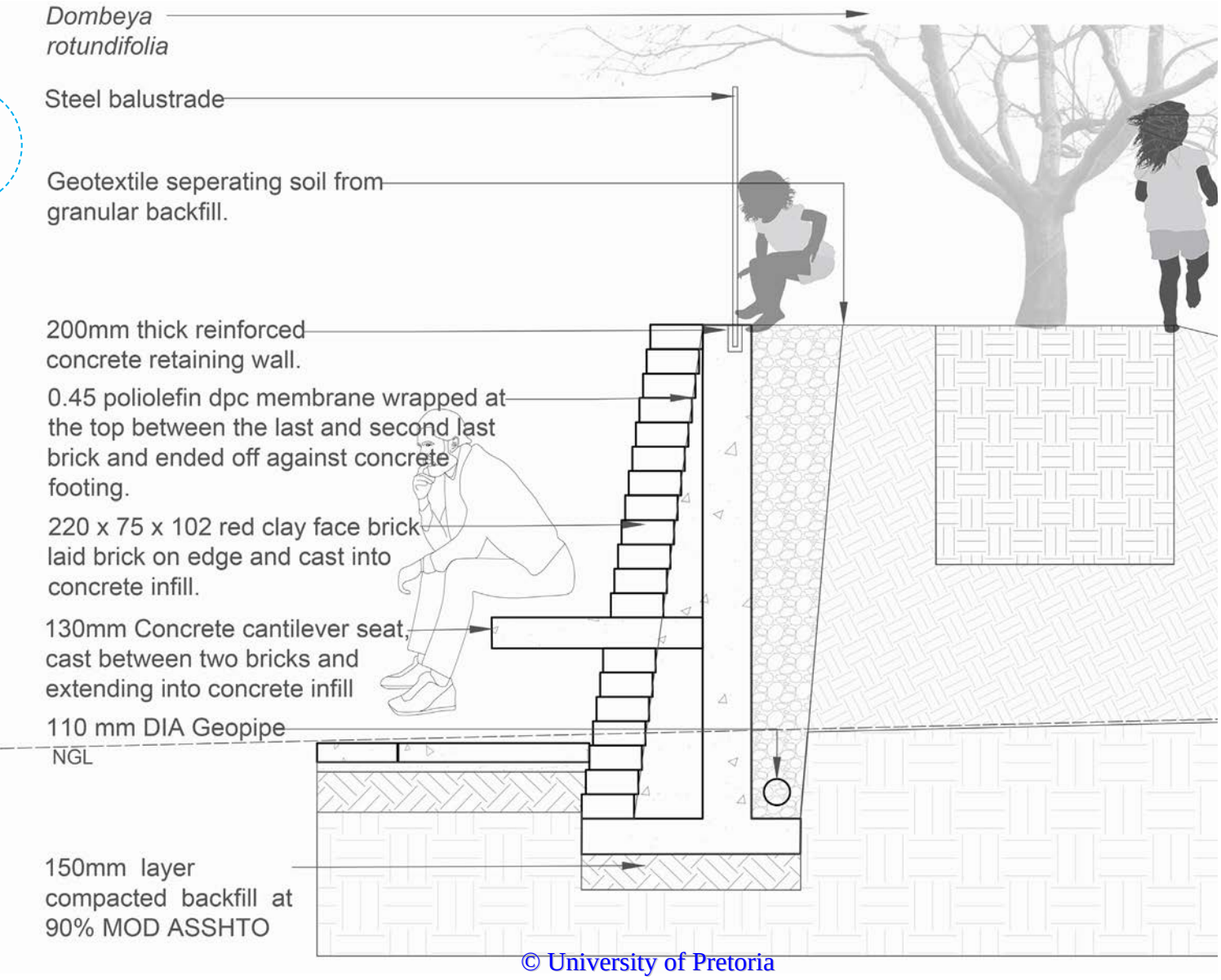
Social interaction
Vantage point
Sense of enclosure



Concrete
-Robust
-Durable

Brick
-Robust
-Available near site
-Fits into context

Dombeya Rotundifolia
-Feature tree

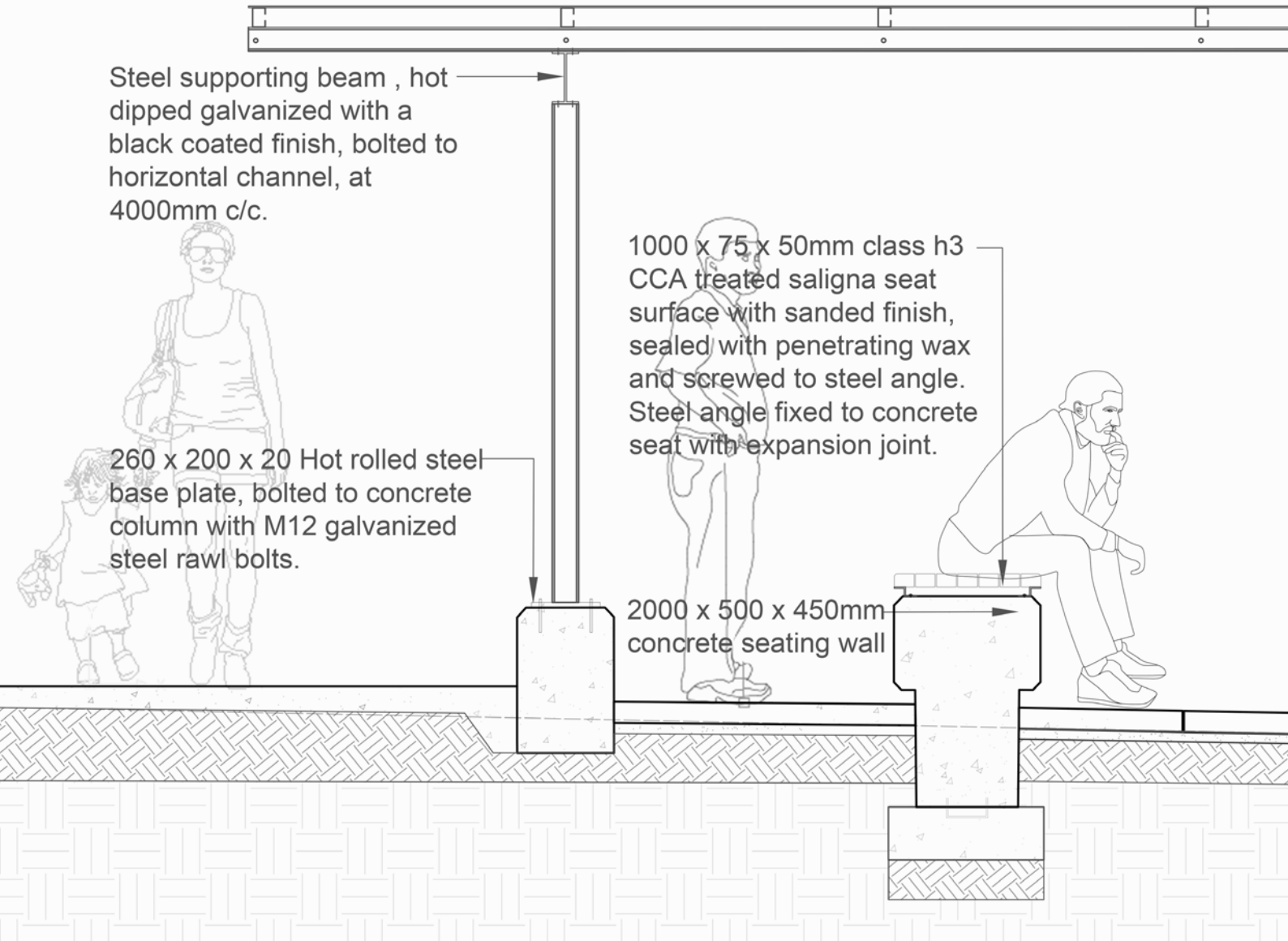


Exterior boundary

As part of the boundary explorations, the author found that a pergola structure can become a permeable and activated boundary that encourages social interaction.

Social interaction

Sensory experience



Jasminum multipartitum

-Attractive flower

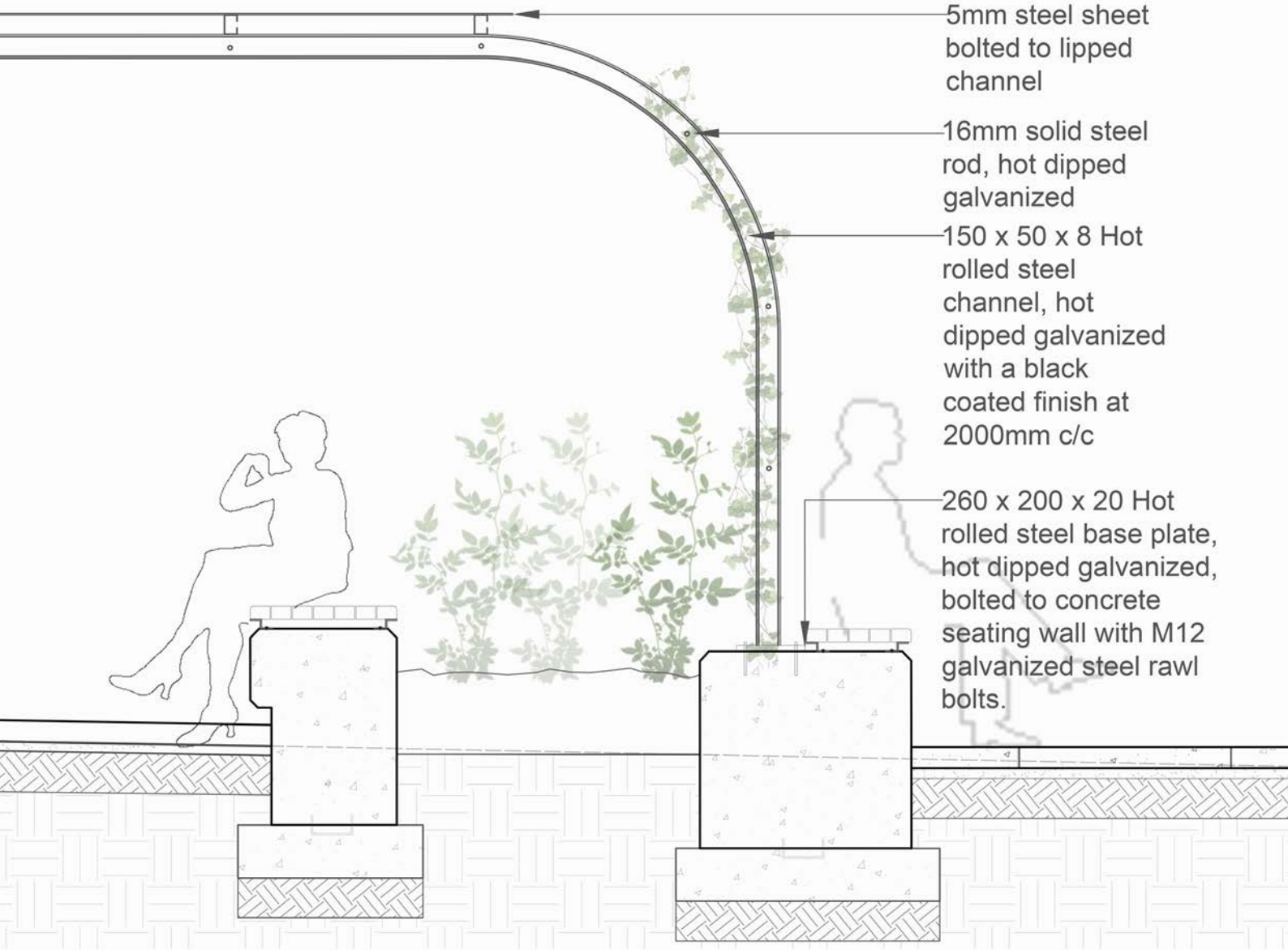
-Fragrant

-sensory experience

Galvanised Steel

-Robust

-Not likely to get stolen because galvanised steel cannot be recycled



Interior boundary

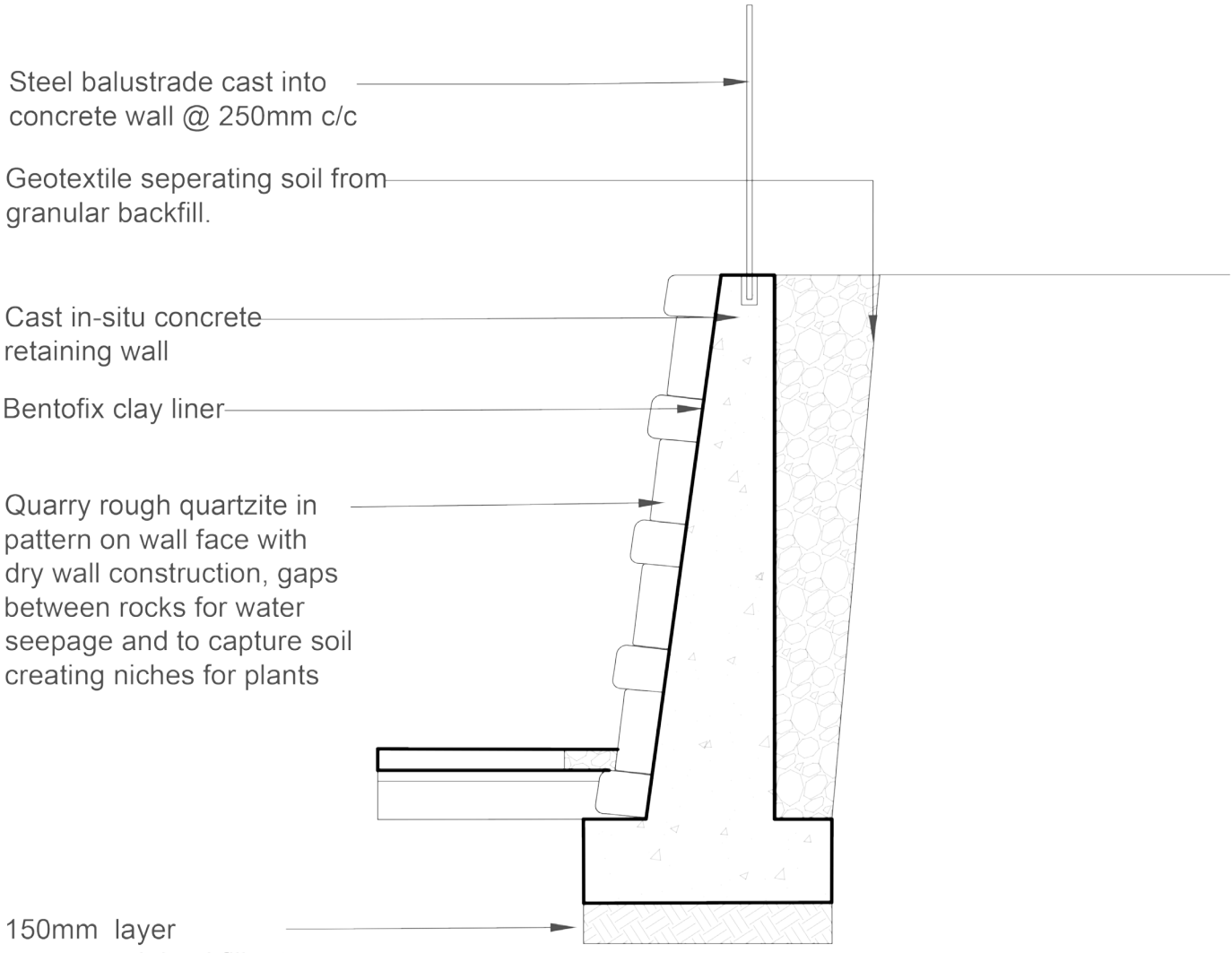
This boundary was developed as the edge of the 'mountain' archetype, designed to be steep enough for children not to climb down or up it but to look down from it.

Responding to the 'mountain' archetype, the wall is made from natural stone with gaps between the stone, allowing for plant growth.

The mountain archetype develops large muscle groups and aids in sensory integrated therapy. The vantage point also allows children to escape their current space, which relaxes them. Children can watch other users or watch lizards running over the rocks.

Quartzite stone
- Habitat creation
-Aesthetics
-Support for plant growth

Concrete
-Robust
-Durable

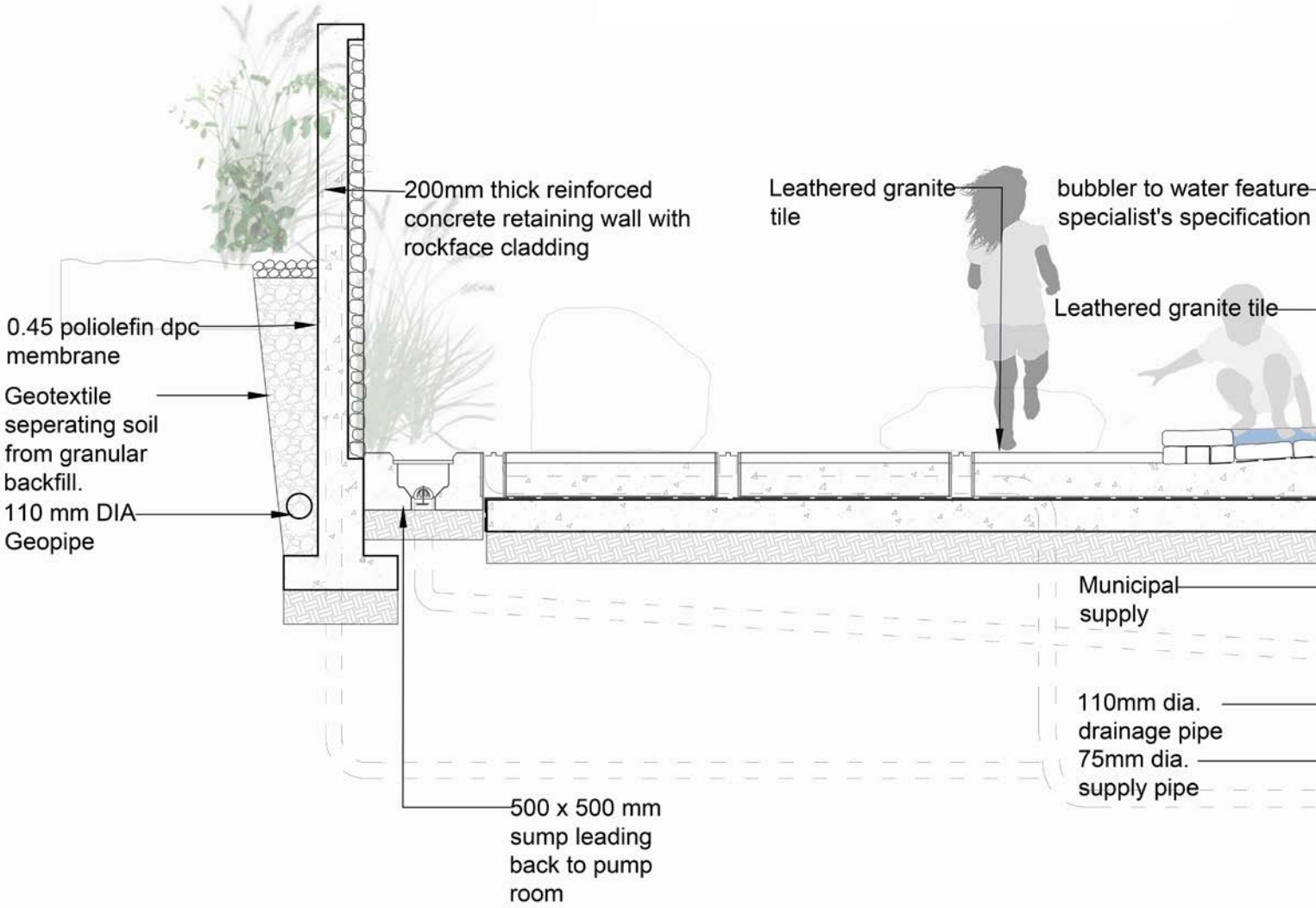


DETAIL 3
SCALE:NTS

Legibility
Imagination
Sensory experience
Vantage point

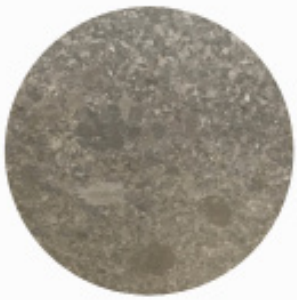
Interior boundary

This water element serves as a threshold between a public space and a semi-private space. A pond-like archetype was explored because of the various sensory integrated benefits that water has to offer. The space varies from a dense, vegetated space that the children have to climb through, to a space where they can wet their feet in. This mimics the route a person takes down into a pond. Finally, the children can play in the zero-depth water feature, or look up at the 'waterfall wall' (a feature wall with water running down it).



DETAIL 4
SCALE:NTS

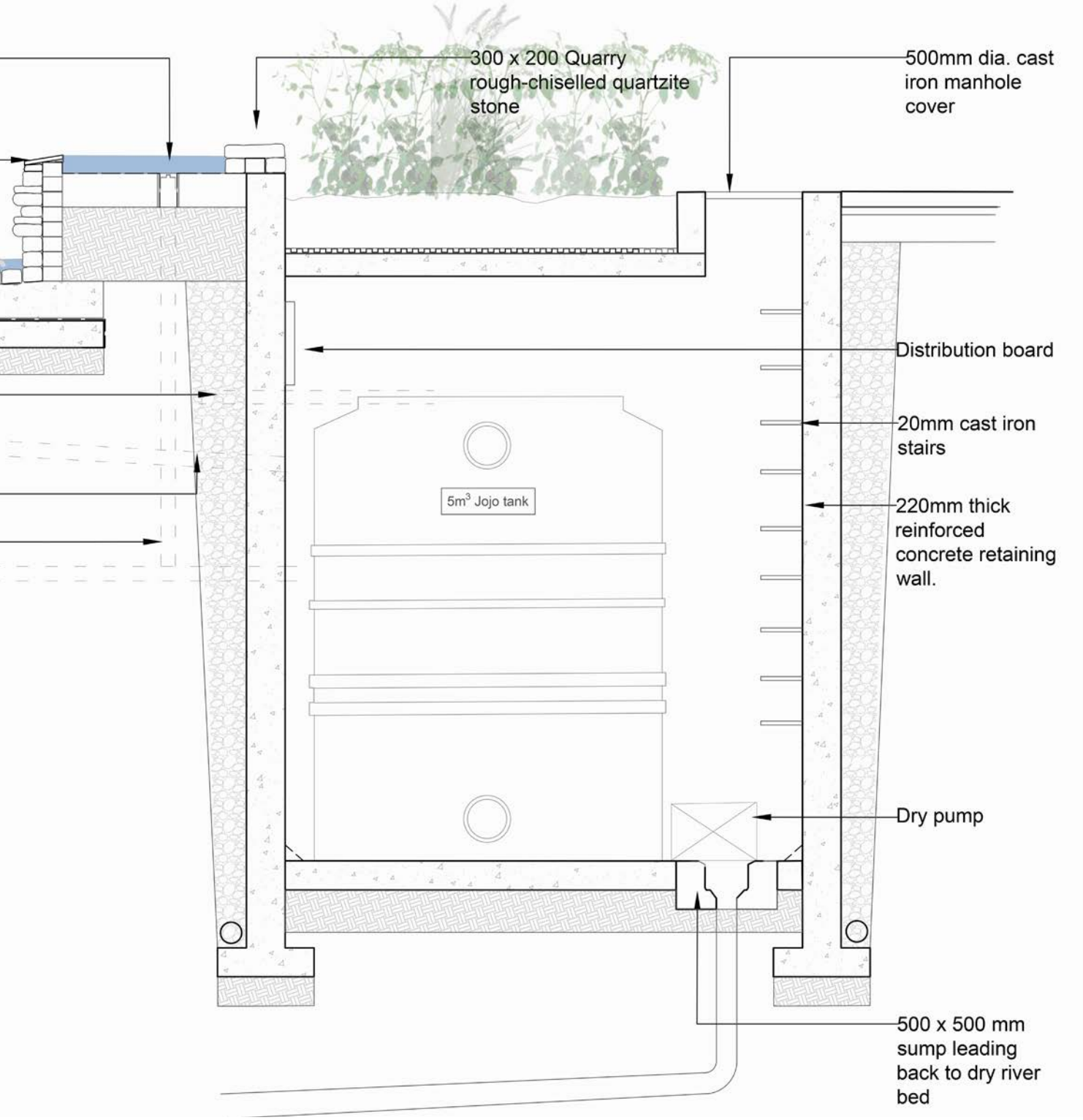
Quartzite stone
-Habitat creation
-Aesthetics
-Support for plant growth



Granite
-Durable
-Robust
-Quarry near site

Stiburus alopecuroides
-attracts birds
-attractive flowers and texture
-sensory

Kniphofia ensifolia
-attracts birds
-attractive flowers and colour



Interior boundary

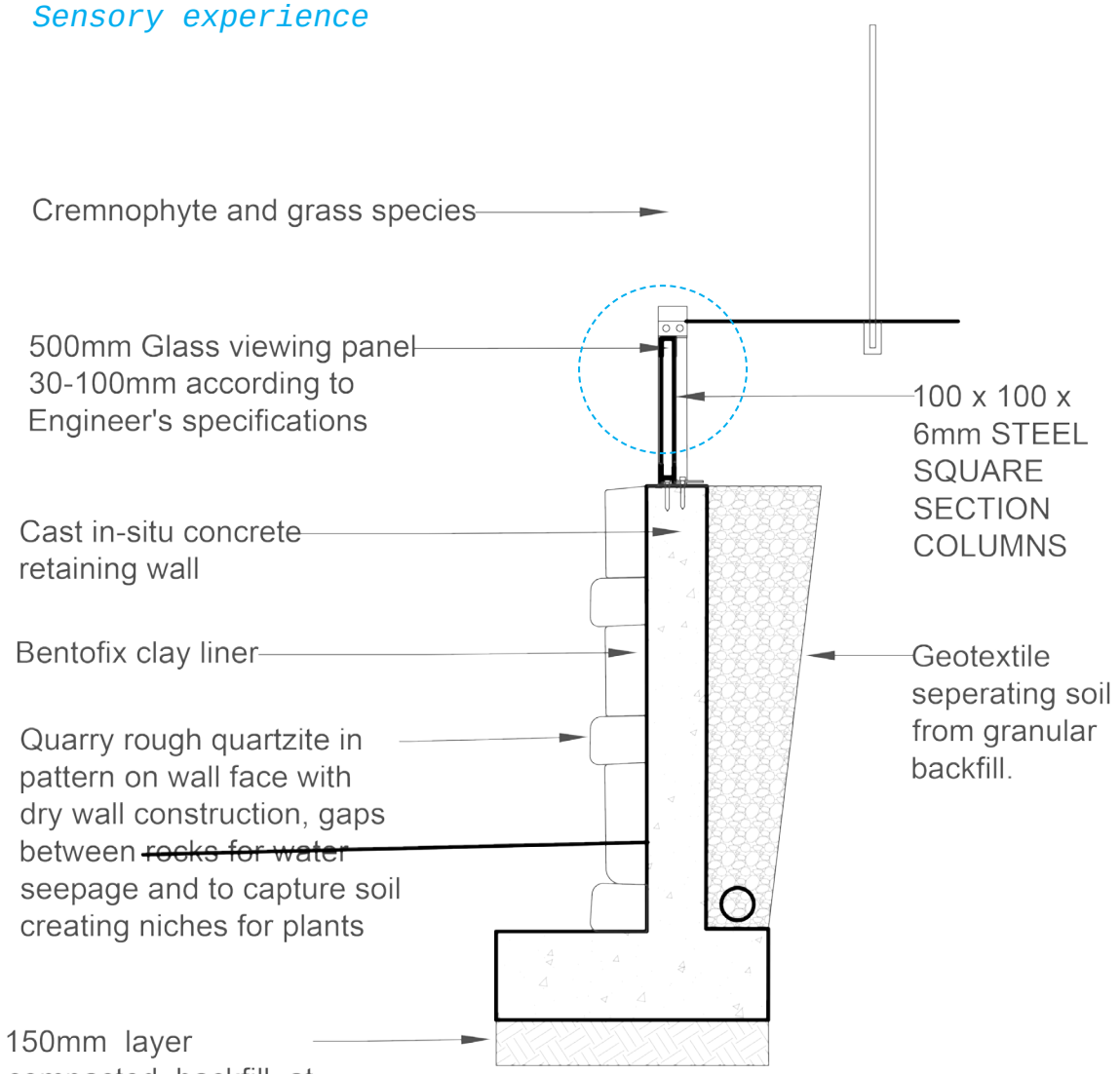
This boundary serves as a 'cliff-like' retaining wall with which the children can interact with. Responding to the 'cliff' archetype, the wall mostly consists of quartzite rock. To the top of the wall glass panels are used in order to expose the soil profile and activities, something we do not experience often. By exposing the ground, children learn more about ecological functions and at the same time, it encourages them to be curious about what is beneath their feet.

Aloe hardyi
-Attractive flower
-Cremnophyte
-Imagination

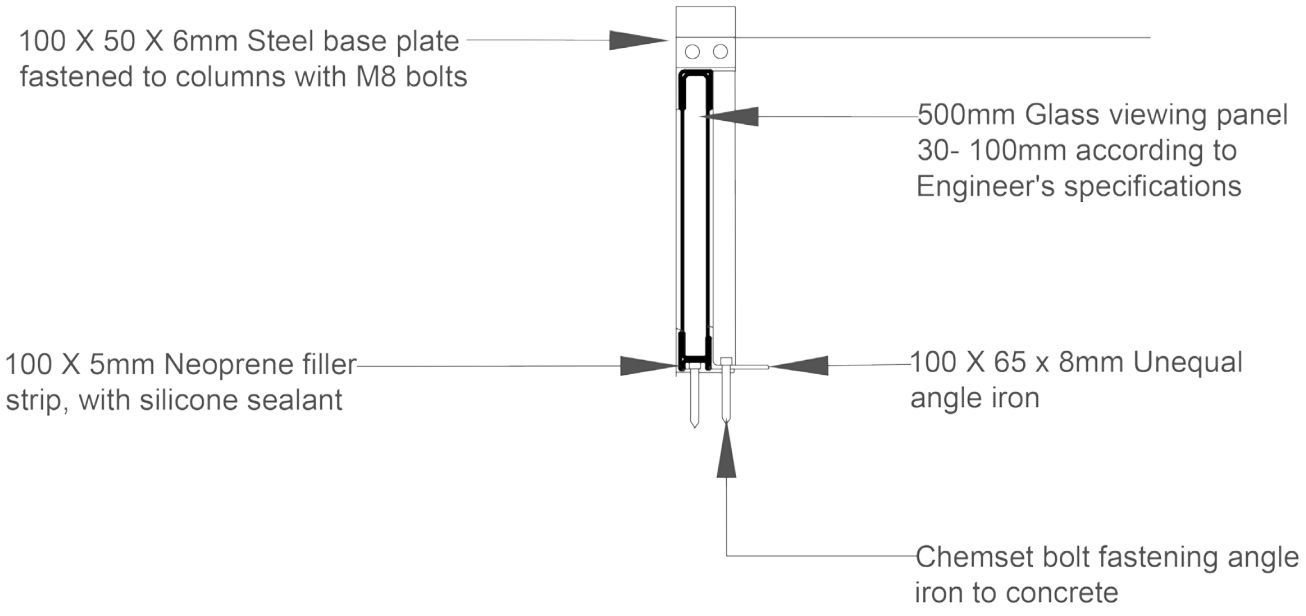
Quartzite stone
- Habitat creation
- Aesthetics
-Support for plant growth

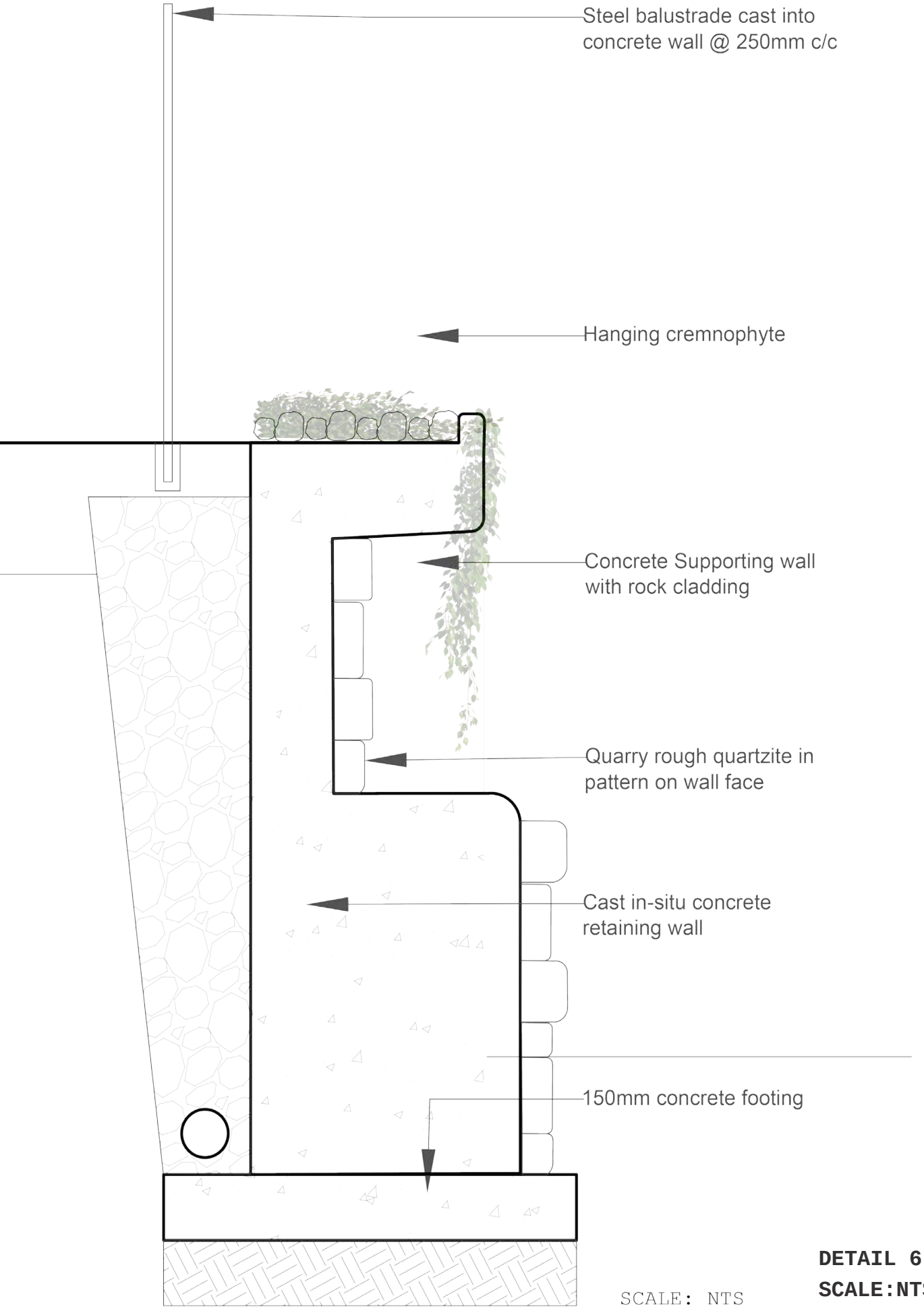
Glass viewing panel

Imagination
Sensory experience



DETAIL 5
SCALE:NTS





SCALE: NTS

DETAIL 6
SCALE:NTS

Interior boundary

This boundary also serves as a 'cliff-like' retaining wall but it allows a child to climb into a 'cave-like' space. As mentioned in chapter 3, mentally-challenged children often get overwhelmed so these cave-like spaces provide them with an escape space. The escape spaces allow children to sit alone or interact with one child. Typical cremnophytes are encouraged to start hanging down the wall, covering up the 'cave'. These plants should be pruned in order to allow for some visual permeability.

Escape space
Imagination
Sensory experience

Quartzite stone
-Habitat creation
-Aesthetics
-Support for plant growth

Aloe hardyi
-Attractive flower
-Cremnophyte

9 Conclusion

Fig.9.1: Mentally-challenged and abled-child playing together(Author,2017)

Conclusion

The aim of this dissertation was to create a playscape for mentally challenged and abled-bodied children. It is argued that naturalistic, activity-orientated playground design can create platforms that remove social boundaries and aid in development and therapy.

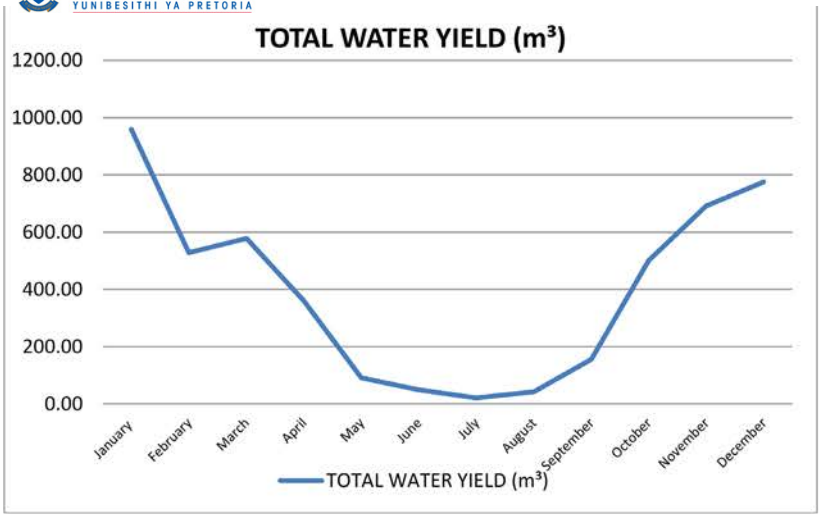
By using archetypical landscape elements that provokes the imagination, a multifaceted playscape is created that aid in the therapy of mentally-challenged children and the development of abled-bodied children.

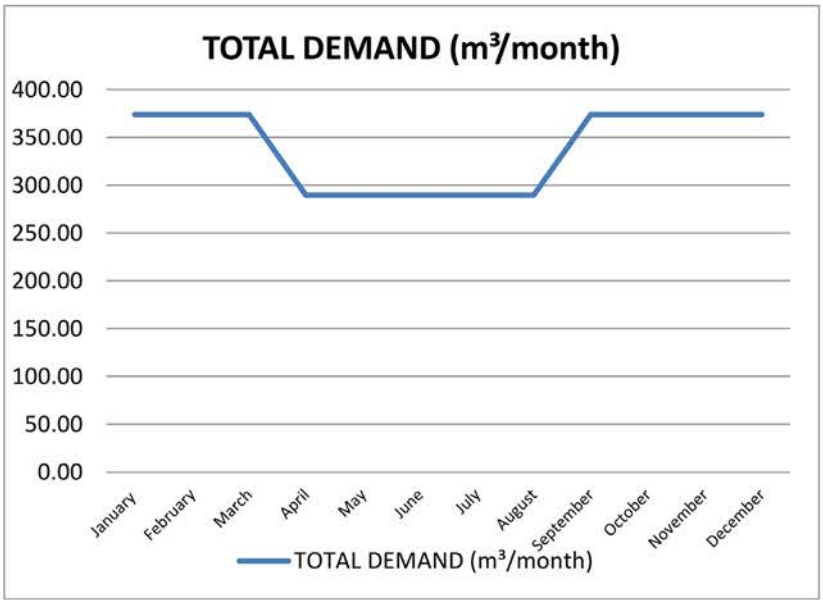
The issues of safety and spatial segregation within Westbury had to be considered during the design process. This dissertation shows that it is possible to use boundary to create safer, integrated spaces, while effectively defining an open space to give people the opportunity to take ownership of public areas and create a sense of place.The playscape and its surrounding spaces offer platforms for economic, social, communal and environmental upliftment within Westbury.

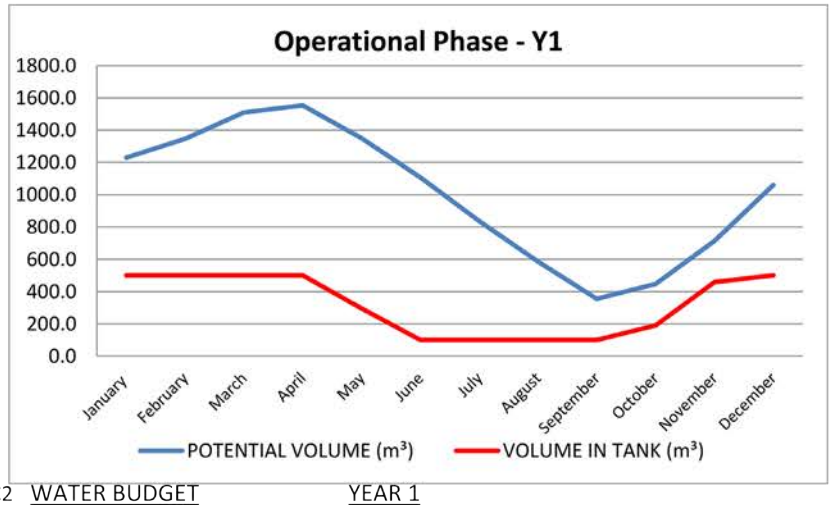
It is hoped that this dissertation will be used to oppose the negative connotations of boundary within landscape architecture and that the design principles will be used to create playscapes where mentally challenged and abled-bodied children can develop and play together.

10 Appendices

10.1 Appendix A: Water calculations







C2 WATER BUDGET YEAR 1

MONTH	YIELD (m³/month)	DEMAND (m³/month)	MONTHLY BALANCE	POTENTIAL VOLUME (m³)	VOLUME IN TANK (m³)
January	890.2	373.8	516.4	**1230.4**	**500.0**
February	490.9	373.8	117.2	**1347.5**	**500.0**
March	536.7	373.8	163.0	**1510.5**	**500.0**
April	333.8	289.7	44.2	**1554.7**	**500.0**
May	85.1	289.7	-204.6	**1350.1**	**295.4**
June	45.8	289.7	-243.8	**1106.2**	**100.0**
July	19.6	289.7	-270.0	**836.2**	**100.0**
August	39.3	289.7	-250.4	**585.8**	**100.0**
September	144.0	373.8	-229.8	**356.1**	**100.0**
October	464.7	373.8	91.0	**447.0**	**191.0**
November	641.5	373.8	267.7	**714.7**	**458.7**
December	720.0	373.8	346.2	**1061.0**	**500.0**
ANNUAL AVE.	4411.7	4064.6	347.0		

10.2
Appendix B: Ethics approval

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Reference number: EBIT/42/2017 30 August 2017

Ms B Hartzenberg
Department of Architecture
University of Pretoria
Pretoria
0028

Dear Ms Hartzenberg,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "A playscape for mentally challenged children: The concept of boundary" has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.

2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.

3. If action is taken beyond the approved application, approval is withdrawn automatically.

4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

5. The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

10.3
Appendix C: List of Figures

10.4
Appendix D: List of References

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