

TACTILE | TEXTILE

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MASTER OF LANDSCAPE ARCHITECTURE | 120 CREDITS | SHKSUM001

UNIVERSITY OF CAPE TOWN | DECEMBER 2017 | SUMAYYAH SHAIKH

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ACKNOWLEDGMENTS

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fulfillment of the degree of Masters of
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*in the school of architecture, planning and
geomatics*

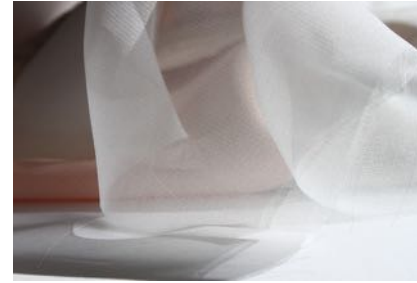
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EXECUTIVE SUMMARY

Design is a profession that sees no boundaries when it comes to creativity and expression. This project aims to bring together the realm of textile design and Landscape Architecture.

Through various design exercises and expression, the limits of each of these areas of interest are realized through a process of design and site analysis. A textile holds many properties and qualities. By analyzing the capabilities of these textiles to unlock potential design ideas. The study is taken further when the ACT of textile manipulation was studied and then stitched back into the design project.

The site, is located in Rondebosch East. It is a neighbourhood that is adjacent to Athlone, Rondebosch and Lansdowne. The site, in particular forms part of the cities biodiversity corridor networks. However, it is severely degraded and un-kept. It has resulted in a large and expansive, unsafe space that contributes to the already crime stricken area.

The project aims to revive the flora and fauna that once existed on this site, namely the Cape Flats Sand Fynbos; provide play spaces for children of all ages as well as market/ retail spaces for the growing entrepreneurial community.

The study and project comes together in the design and construction of the site while taking the above objectives into consideration. The detailing of materials and material treatment all reflect the findings and opportunities found in the textile study.





STUDY

STUDY ABSTRACT

The study is focused on the roles and principles of textiles, textile manipulation and its potential relationship with landscape architecture.

Tactility bonds the two worlds of fashion and landscape together. It changes in scale, intimacy and movement. The study explores how textiles perform in relation to the following principles; movement, climate, reaction, light, transformation, scale and communication.

The etymology of the word TEXTILE is derived from the Latin 'texre' meaning to weave or to construct. The word text is related to communication and the word 'tek' is related to building or architecture.

The study has been conducted via various different media upon a range of different materials. These consist of film and media, light and shadow studies, projections, etching and transferring of textures, pattern cutting, stitching, and the making of paper and textile from plant material, to name a few.

The act of textile manipulation and the product of these techniques is then used in the conventional site analysis that a landscape architect would conduct. These techniques being, a pleat, knot, veil, seam, weave, drape, dart and skirt. Each of these are broken down into their structural, functional and landscape roles. For example, a Veil is structurally light and semi opaque. Functionally it is aimed at concealing that which is behind it, yet it is not completely enclosed, thus revealing the object behind. In landscape design, a veil can be translated into a row or cluster of trees that is aimed at concealing objects in the background.

Taking this process, a step further, these textile manipulation terms are then translated into verbs. These verbs of weaving, pleating, knotting etc. is then used as tools to analyze the site and its context in context of the act -of textile manipulation itself. From this, the area of study is broken up into pattern pieces. This unlocks a new perspective on how each of these pieces' work -or do not work- together. This then begin to set out a set of opportunities and constraints for the site and its surroundings. Are there potential seams or connections that have not yet been realized? Are there opportunities in the converging topographic darts?.

As previously mentioned many of the design principles and ideas we know in architecture have been influenced and have influenced textiles and fashion. This study is focused on the *act* of textile manipulation and the properties of different materials.



INTERNATIONAL STYLE

“A small town factory in the Netherlands might not seem like the obvious birthplace for African haute couture. Helmond is a place most people (Dutch or African) wouldn’t be able to point out on a map and yet, this unassuming little town is where one of the most iconic fashion brands of West and Central Africa was created. As the main supplier of fashion prints to nearly half a continent, the textile company has continued to dominate that fashion scene there for almost 170 years. How’d that happen? Rooted in European colonialism and a testament to African ingenuity, creativity, and cultural pride; it’s a surprising story...”

“Vlisco hadn’t meant to become the main supplier of wax print fashion fabrics to West and Central Africa. In fact it’s almost by accident that they did. They originally had their eye on an entirely different market– Indonesia.

We go all the way back to 1864, when Amsterdam entrepreneur Pieter Fentener van Vlissingen took over a small textile-press company in Helmond. Pieter’s uncle, who worked in the former Dutch East Indian colonies, convinced his nephew to produce a knock-off version of a traditional Indonesian textile known as Batik.”

“And these outfits don’t just celebrate the women’s individual style. The fabrics themselves are assigned names and meaning to communicate information about the women that wear them – meanings that are not assigned as a marketing trick by the producers, but that are created by the women who sell and wear the fabrics.”
(Oosterhoff, 2015)

Textile do not only play a role in the aesthetic and visual qualities of design, they also form part of a larger communication network that is read and received through grain and print.

Figure 1.3 communicates the importance of education and the desire to learn and expand ones knowledge. Whereas, figure 1.5 speaks about a longing for freedom. Some examples of how messages are conveyed through various fabric prints and designs are illustrated below.

Communication is an important part of human behavior as it allows us to engage and understand one another in the spaces that we occupy. In fact it also contributes to the fundamental aspects of childrens children’s development. Furthermore as shown in Figure 1.2 the beginnings of a textile print that communicates the designs of the ‘textile verbs’ on site is illustrated. These patterns form part of the first stage of specializing the textile verbs.



Figure 1.1 : Textile production (Oosterhoff, 2015)



Figure 1.2 : Textile print



Figure 1.3 : Textile expression - education (Oosterhoff, 2015)



Figure 1.4 : History of African prints (Oosterhoff, 2015)

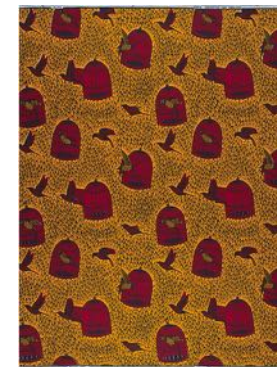


Figure 1.5 : Textile expression - freedom (Oosterhoff, 2015)

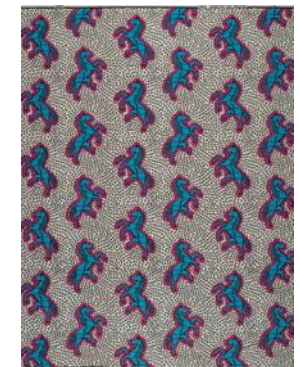


Figure 1.6 : Textile expression - rivalry between women (Oosterhoff, 2015)

“With fabric, we can create very complex patterns. If you then start designing with light, reflections, shadows and the shimmering presence of tissues, you can begin creating layers of patterns, printed on materials like glass, which can be designed to function like a device, an optical instrument for making new patterns of spatial and perceptual effects. The technical and material details and connections required to create these high-quality effects must be to the standard of couture or tailoring. This is significant: the quality of the material is in the detail and the quality of the devices that fix it. If the edge and the materials are perfectly designed, the quality of the overall project and its feeling increases. Textiles change their properties depending on their tension and the detail of their structure. When you install these kinds of textiles, its not ornamentation or decoration, it’s not fake – the structures and patterns have real physical and aesthetic qualities.”

– Dominique Perrault
(Castle, 2005)



tex-tile

A garment is something that we use to cover our bodies. It keeps us warm or cool. It is close to our bodies. It has a texture. It has a color. It has a pattern. It has a form. It is a form of expression and adornment. It is a form of communication. It is a form of identity. It is a form of culture. It is a form of art. It is a form of science. It is a form of technology. It is a form of history. It is a form of society. It is a form of life. It is a form of death. It is a form of everything.

The etymology of textile is linked to technology, from the Greek *tekton* (craft) and *texnē* (art). The Latin derivative of *texere*, meaning to weave, conceptualized and connected.

Different patterns are used for different occasions. Textiles are often manipulated to form *contour*.

The operation of textiles represent the real expression of the history of architecture.

Architecture and textile are used in a similar way. As a metaphor for a structure is physically made of a material or object. The architecture is actually built from the textile material.

A textile is able to manipulate light, it decreases its intensity through diffusion and reflection.

Similarity – objects that look similar are perceived as a group of others.

Continuation – when the eye is drawn from one object to another, preferring to see a continuous line than separate objects.

Texture – stress for the human eye to see spatial objects when the object itself is homogeneous or unvaried.

The interaction between architecture and textile that occurred when man learnt to follow a textile with a path.

Proximity – when individual objects are placed close together, they are seen as a group or a whole.

Figure ground – the visual hierarchy in which the object stands from the background. However, there are always two planes of focus.

Symmetry and order – the symmetry is balanced and provides a sense of harmony to the viewer.

Textiles have made some changes in terms. Chosen in effects and functions, colours in animals and silk in products.

Figure 1.7 : Textile collage



HISTORY OF TEXTILES

The discovery of textile dates back to the earliest stages of the stone age. Textiles were discovered among the earliest ruins of Peru, New Mexico and Arizona. "Flax fabrics, were unearthed in England among the ruins of the Lake Dwellers of the Stone Age in Switzerland."

The ruins of Assyria, Persia, Egypt, North and South America depicted the whole process of the textile industry.

There is a strong resemblance between the Peruvian fabrics and those found in the tombs of Egypt. Both textiles seemed to be of high quality and aesthetic. Needles were made from bone and copper and the yarns and threads were made by twisting and wetting individual fibers.

The migration of textile production is believed to move from East to West. Starting in Asia and then quickly spreading to places like Greece, Italy and Spain.

Previously, textile production and agriculture were always situated in close proximity to one another. However after the industrial revolution, this relationship was strained, until it became scarce to see this production model.

(Walton, 1937)

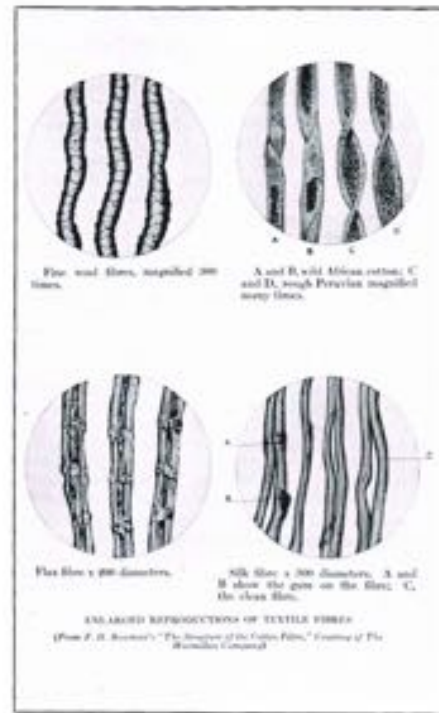
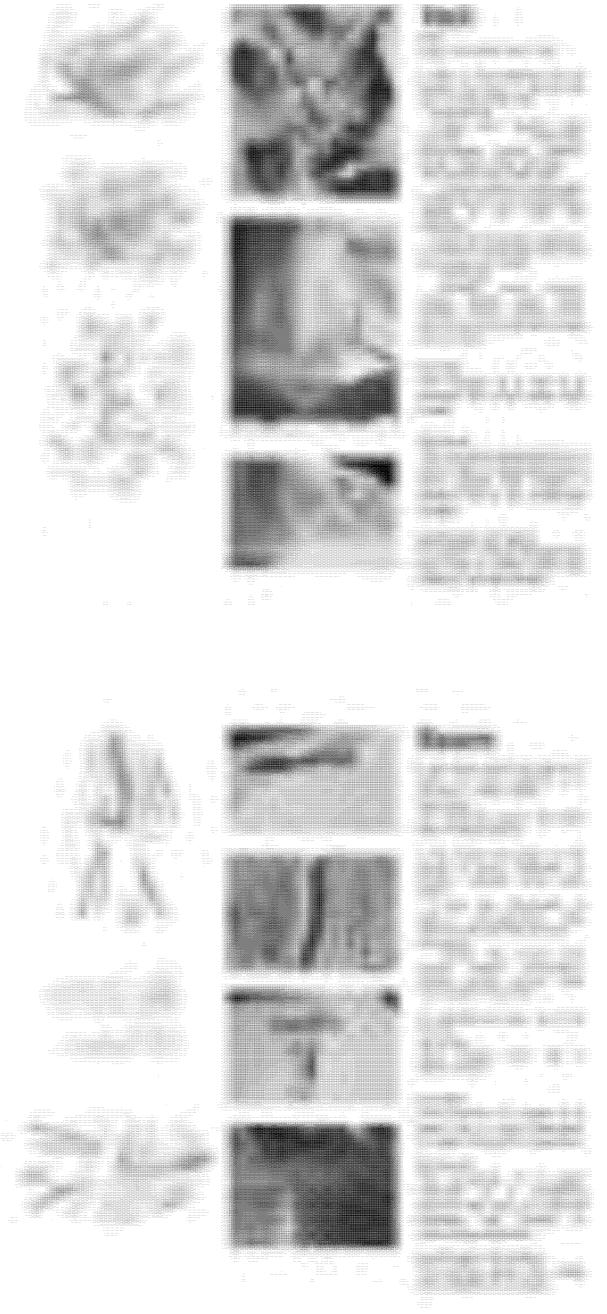
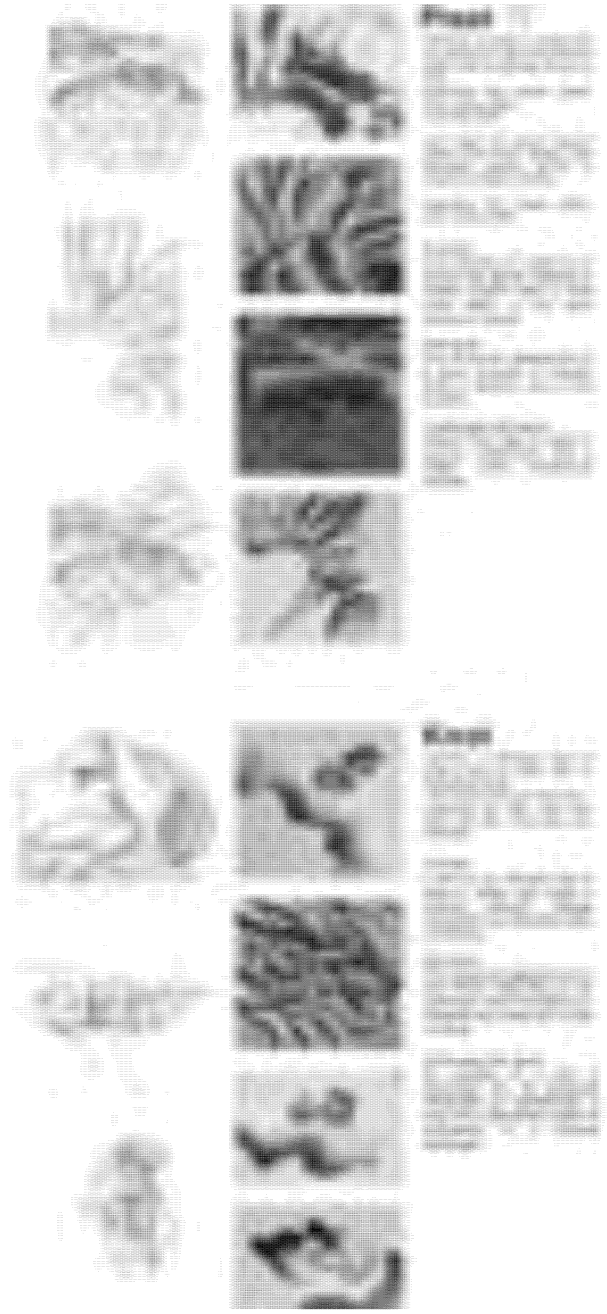
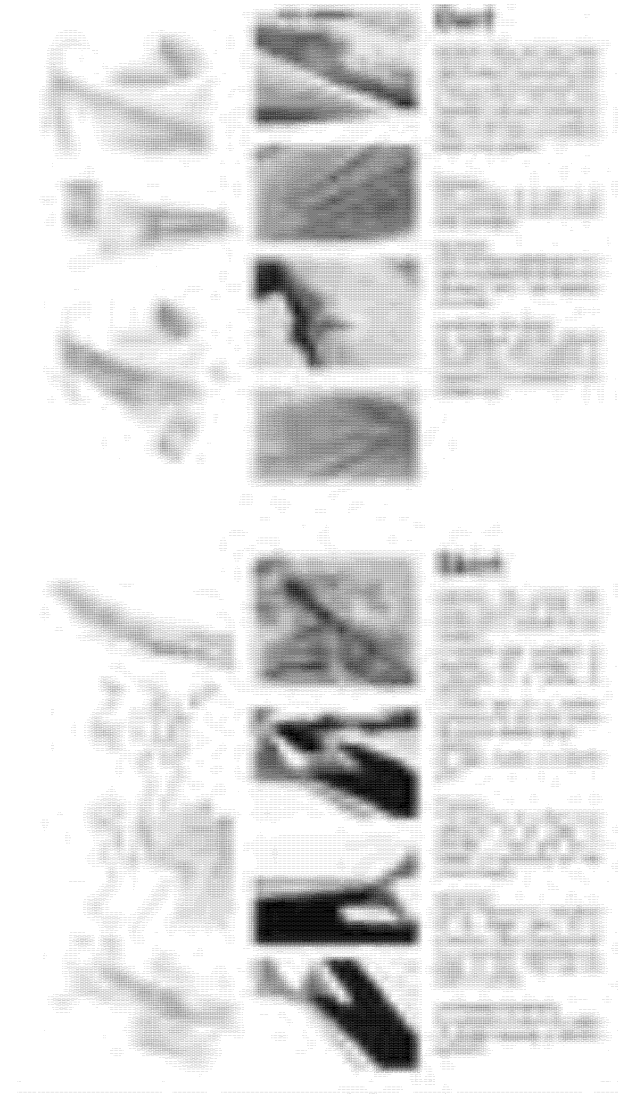
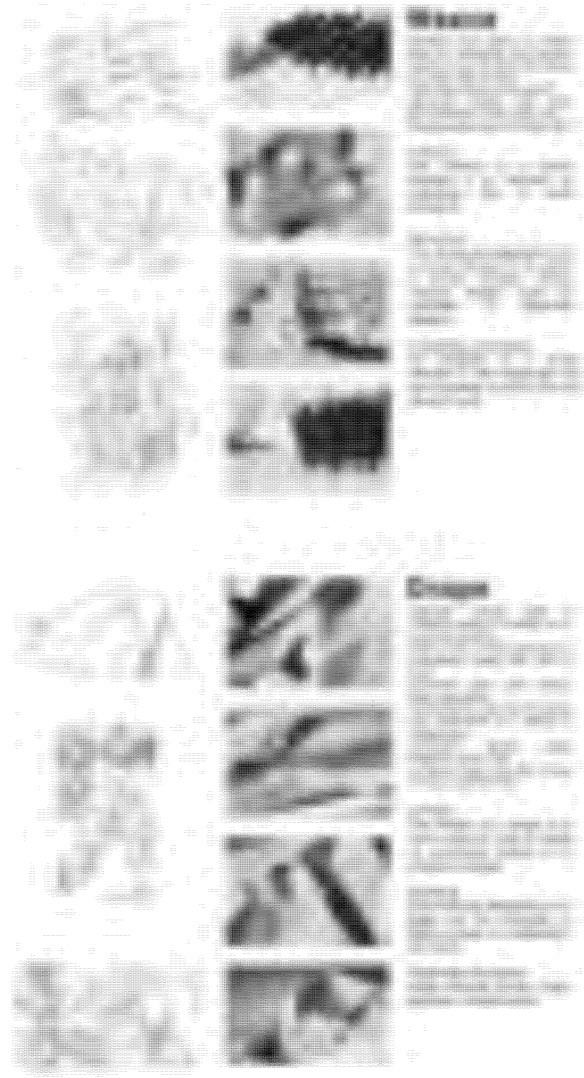


Figure 1.8 : Fibers
(Walton, 1937)



Figure 1.8.1 :Greek weaving and spinning
(Walton, 1937)







DISSERTATION

DISSERTATION ABSTRACT

We have seen many designers such as Cristo and Jean Claude, with their fabric installations in many cities around the world. The works of Petra Blaisse from Inside Outside who's work consists of designing landscapes and curtains, consider the mediation between the two climates. Fashion designers such as Paco Robanne, John Galliano and Jean-Paul Gaultier who's Boroque designs on the runway have all been influenced by architecture.

This project looks at textures and tactile qualities of a space. This is explored in both spatial qualities and material. The program of the project is that of a park that focuses on play and biodiversity. The approach has shifted the project into a different realm of thinking of an otherwise simple idea. As they say, the devil is in the details, and with this project, although the details are subtle they are what make this project unique. This project also looks at performance and ergonomics. From the balustrade details to the heights of plants, the spaces are designed for adults, children, and people of all sizes in between. They are designed as safe spaces, with clear visibility where needed and the appropriate 'eyes of the pockets' approach.



The site is in Rondebosch East along the M5 and Kromboom road. Zooming out, we see that the site forms part of a larger blue/green network, where there are many open spaces, including school fields along the North-South axis. On the western side of the M5 is a canal that flows into the black river. In terms of scale, we can see that the site is fairly large, approx. 87 200m², however it is smaller when compared with the Rondebosch common.

The site has the potential and opportunities to have a positive impact on the community. These, include, potential for biodiversity conservation and regeneration as well as communal recreational space for the neighbourhood. A cut flower farming area can also be incorporated on the site to the right of 7th Avenue. It is mostly saturated and promotes the growth of wild arum lillies to grow freely.

This can be an economic opportunity for cut flower farming as well as an income generator and an opportunity for job creation. One of the major constraints that the site and context faces is the elevated levels of crime. Over the past three years the number of household robberies, home invasions and targeted syndicates have increased. The community has rallied together to for a neighbourhood watch group among other initiatives to counter act these negative effects on the community.

SITE AS TEXTILE

The site is vast and un-kept. It presents itself as an unsafe space as there is poor visibility across the site. From living in the area I have learnt that the site is something that people either walk around (recreationally); cross in a hurry, to get to the Crawford train station or drive around it and not pay any attention to the open space.



Figure 1.9 : Site in context
Scale 1:10 000 @A2

SITE IN CONTEXT



Figure 2 : Western view
Photograph by Sumayyah Shaikh



Figure 2.1 : South view
by Sumayyah Shaikh



Figure 2.2 : East view
photograph by Sumayyah Shaikh



Figure 2.6 : Site analysis
drawn by Sumayyah Shaikh



Figure 2.3 : Footpath with view of mountain
photograph by Sumayyah Shaikh



Figure 2.4 : Desire line across path
photograph by Sumayyah Shaikh



Figure 2.5 : Desire line across path towards M5
photograph by Sumayyah Shaikh

TOPOGRAPHY

The site has been treated in three different ways. Meaning that three different fabrics were cut from the site template and used as a base for site analysis. The same drawing, shown in figure 2.7 is stitched onto the individual layers.

This is done through textile manipulation on the sewing machine. Due to the varied strength of each of the prototypes, they have all reacted differently to the textile manipulation. Thus contours and a sense of topography has emerged.

Using the drawing produced for each of these layers, pattern pieces were drafted, cut and stitched to produce 3D site layers.



Figure 2.7 : Sewing analysis
drawn by Sumayyah Shaikh



Figure 2.8 : Topography from material
drawn by Sumayyah Shaikh

Drawing from the structural, functional and landscape counterparts in the first portion of the study, the three layers of material are compared to the three 'layers on site'. A Robust, Intermediate and Flexible or vulnerable layer.

In the study and methodology of textiles, the site is cut on three different layers of fabric. A robust, leather layer, an intermediate, crepe cotton layer and a fragile or flexible Georgette layer.

It was interesting to see how each of the fabric layers responded to the same set of analysis.

The robust layer was then translated into a contours drawing which started to speak to the topographic manipulation of an existing, gentle site. The resulting depressions on the site are referred to as the pockets of the site.



Figure 2.9: Textile layers on site

TEXTILE MANIPULATION ON SITE

The overall design and performance of the site follows the same principles that were unpacked in the **study** component of the project.

Figure 3 illustrates the different layers of 'textile terms' are drafted and put together to make up the site. At this point the layers are analyzed individually before being put together as one composite diagram.

Figure 3.1 illustrates how these pattern pieces were cut and stitched to form three dimensional analysis layers of the site.



Figure 3.1 : Textile manipulation as site analysis

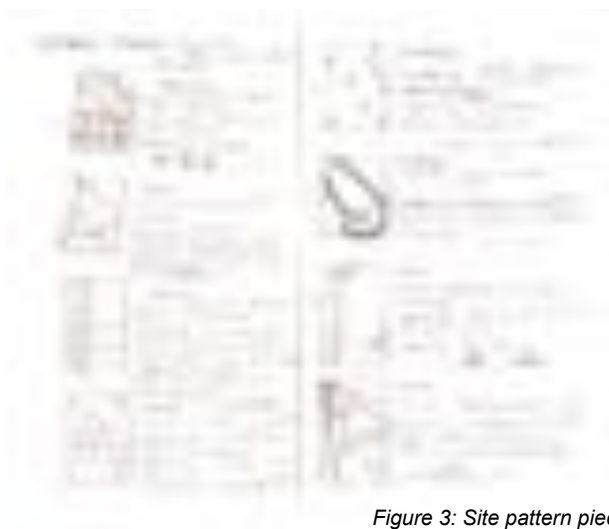


Figure 3: Site pattern pieces

FABRIC IN SECTION

The textile layers in figure 3.1 are over-layed to produce a single Site Analysis diagram.

Figure 3.2 illustrated the sections taken through these layers. The sections illustrate and amplify the existing qualities that are present on site.

This method has allowed the subtle tangible qualities of the site to the foreground as well as the intangible qualities to become visible.

These sections not only speak to the feeling of the existing site but start to lend themselves to the potential spatial qualities that the site may possess.

These sections are broken down into 15 threshold typologies or *swatches*.

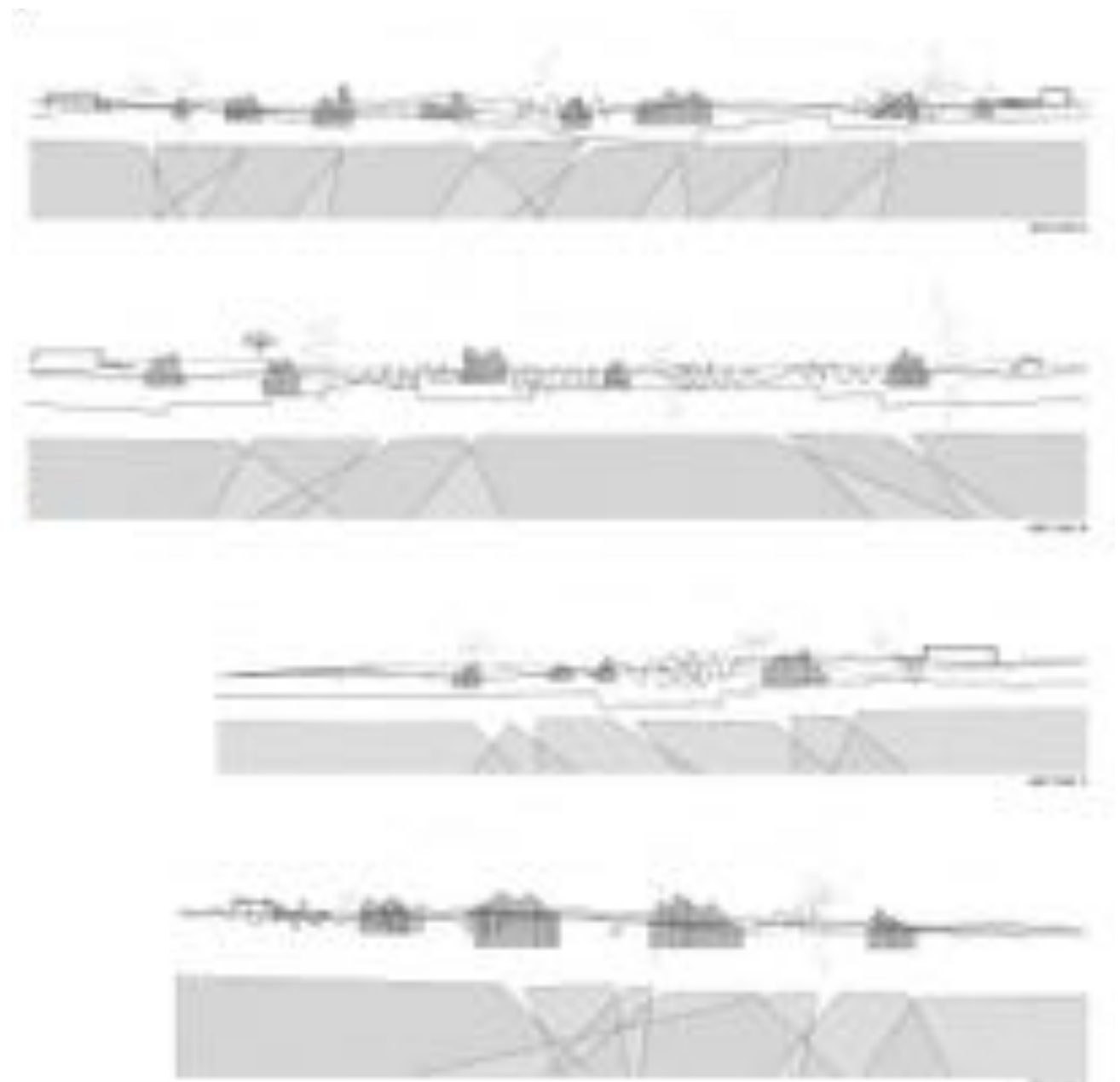


Figure 3.2 : Textile manipulation as site analysis sections

SWATCHING TYPOLOGIES

The process of creating a textile is conducted through a series of swatching and thread selection, as illustrated in Figure 3.3.

The 15 threshold sections are treated in the same way as a textile swatch. These threshold sections are spatialized and drawn into plan where they are colour swatched for a finer grain of design. Each colour in the plan swatched are indicative of a spatial quality or material. This is illustrated in the key in Figure 3.4.

The swatches are treated as performance typologies. This allows for the swatched to be plugged into the site analysis.

Each topographical pocket is then analyzed according to its context. The swatches are then plugged into this analysis and a textile plan emerges. See Figure 3.7. The finished plan is manipulated so that it forms a seamless design.

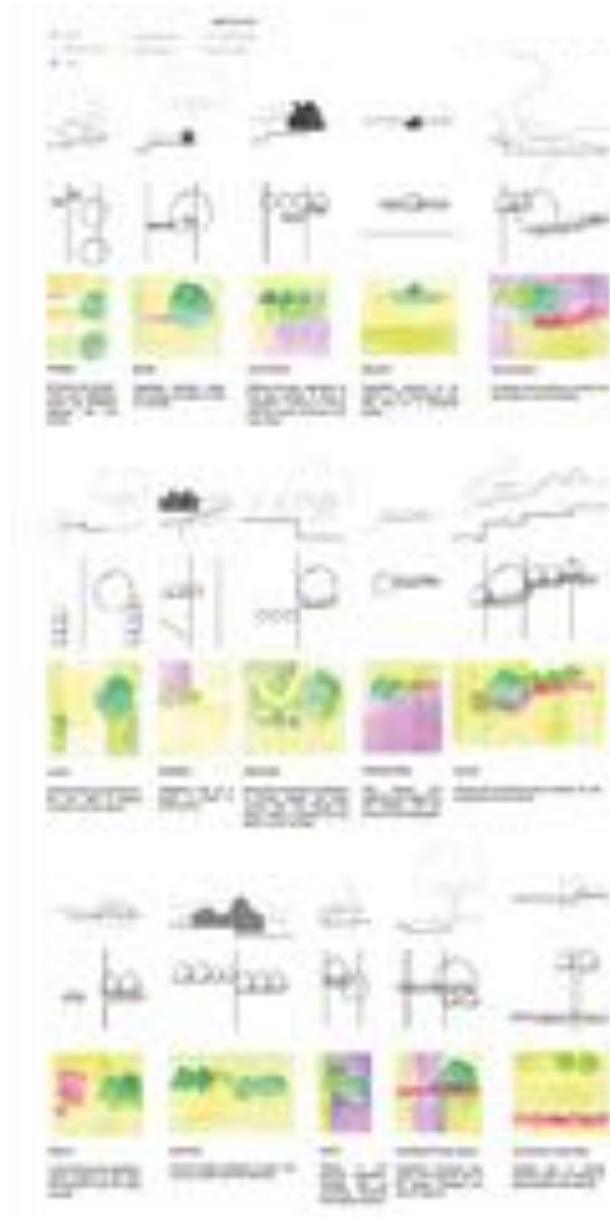


Figure 3.4 : Textile swatches



Figure 3.5 : Textile sections in context



Figure 3.3 : Constructing textiles



TRANSFORM
It is not the way to transform into a different form. It is not the way to be different enough to be different. It is not the way to be different enough to be different. It is not the way to be different enough to be different.

POCKET EMBELLISHMENTS

Scale is an important principle that is demonstrated in the different layers that make up the entire site. The textile sections are a good example of how something that is perceived at a very large scale is broken down into a smaller scale.

EDGE AND SURFACE

Each of the pockets are designed according to their context however, they all follow similar edge and surface principles. Figure 3.6 illustrates an example of this.

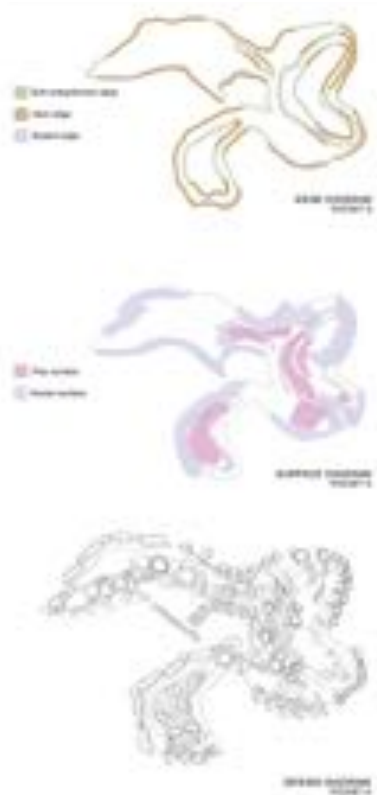


Figure 3.6 : Surface and Edge diagrams



Figure 3.7 : Swatch pocket plan

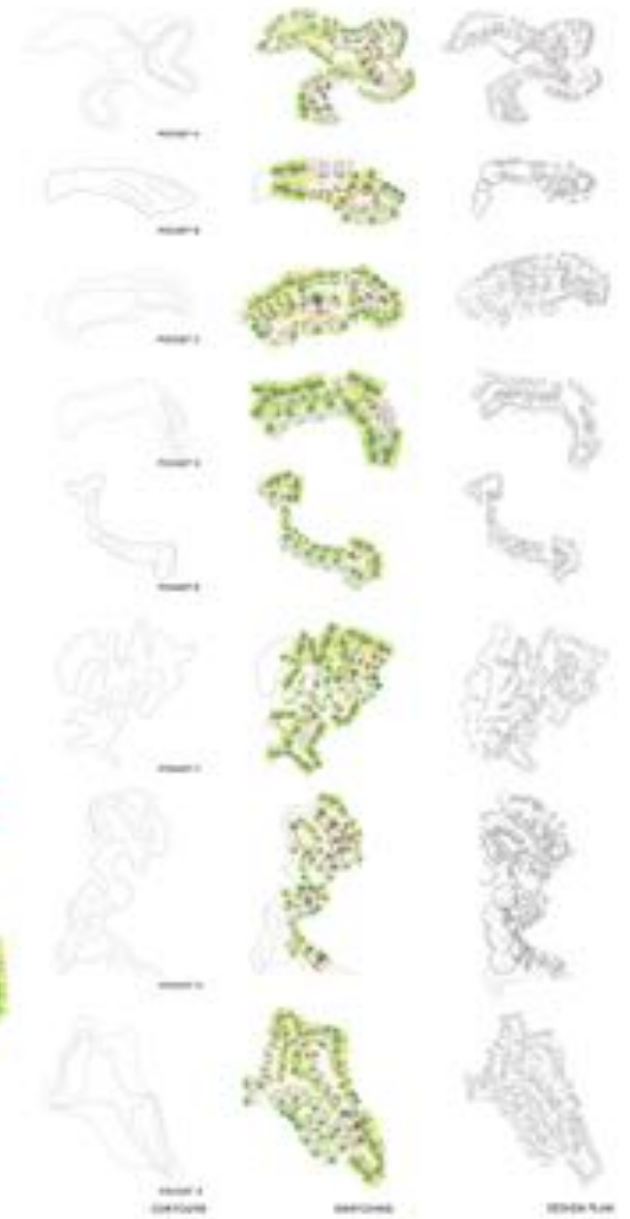


Figure 3.8 : Swatch pocket plans

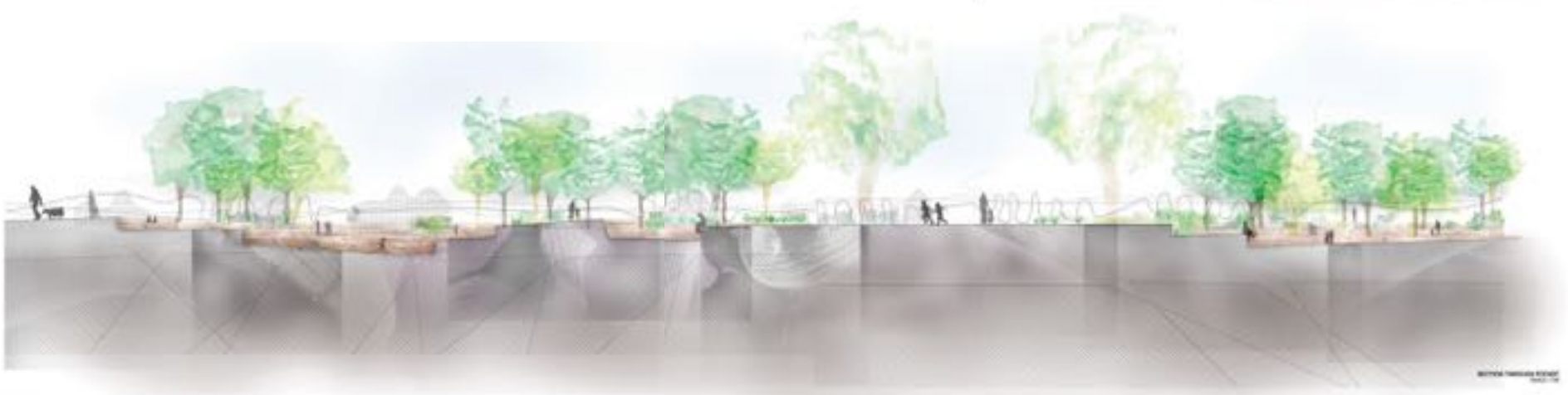


Figure 3.9 : Section through biodiversity play pockets



Figure 4: Plaster model of play pockets on site



Figure 4.1 : Design plan
scale 1:1000 @ A1

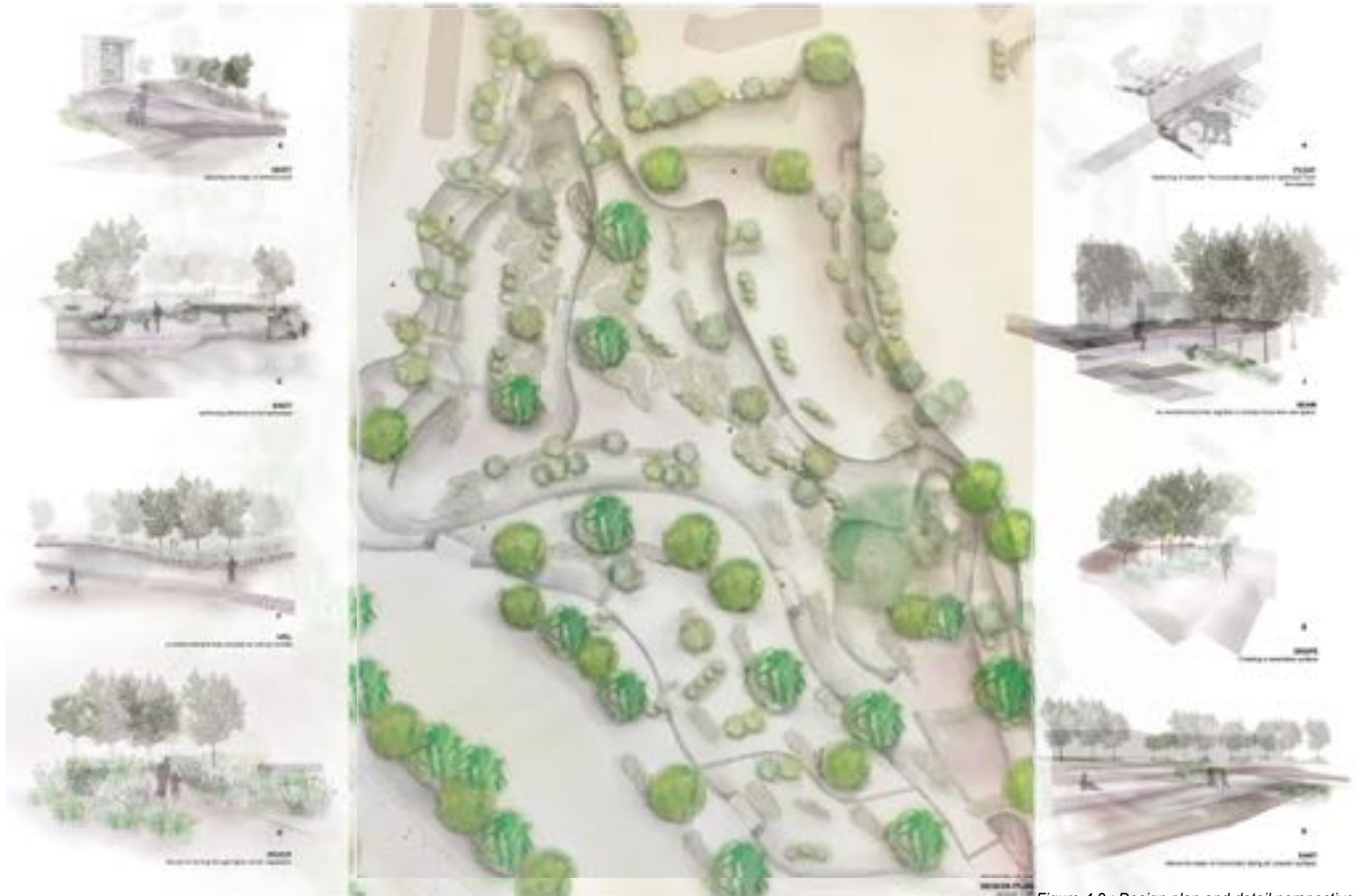


Figure 4.2 : Design plan and detail perspectives
scale 1:500 @ A1

PLAY VS PLAYFUL

The focus of the project is textures and tactile qualities of a space. The program of the project is that of a park that focuses on play and biodiversity. These qualities are concentrated in the topographical pockets in the park. This therefore created a contrast between the 'new' -vegetated pockets of play- and the 'old' existing vegetation.

NORTH

This portion of the site addresses the street. The park space becomes an extension of the street and aims to catch the attention of people as they walk by. The space encourages people to rest and linger. This part of the park is classified as 'mature play'. The activities that take place here pertain to street performance, yoga classes and small concerts.

SOUTH

This portion of the site functions as a radial space. It is anchored in the center by market space structures that look out into the surrounding play pockets. This portion of the site is access controlled due to the nature of the activities on site.

LILLY PLAZA

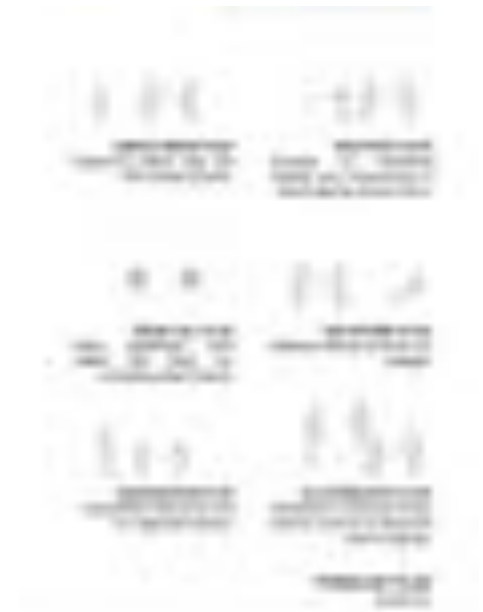
This portion of the site is dedicated to Arum Lilly, cut flower farming. It also functions as a recreational space where visitors can meander through and picnic. The circulation on the site consists of elevated walkways as well as stepping stones on the ground.



Figure 4.3 : Functional diagram



Figure 4.4 : Play vs playful diagram



VEGETATION PROPORTION

The site falls within the Cape Flats Sand Fynbos region. On site the sand is calcareous and loose. However, the area is severely degraded and many weeds have taken over the site. The introduction of indigenous Cape Flats Sand Fynbos, would not only revive the ecological system of the area but will also create awareness about what was, what can be.

The site design, is partially planted, predominantly in the pockets, therefore adding to the contrast of old and new. Water recharge areas are also designed into these pockets and the catchment is then directed to the adjacent cut flower farming site via underground piping. The current ground water level in this area is 5m, therefore the pockets do not expose the ground water table.

The overall design of the site is very much focused around the idea of play. This is reflected particularly in the ergonomics of the site. The scale and proportion of vegetation was carefully considered for the scale of adults and well as children. This is to ensure safety as well as tailored experiences and freedom of movement for both adults and children.



Figure 4.5 : Vegetation species and scale diagram





*Figure 4.6 : Section B
West walkway adjacent to M5*





Figure 4.7 : Elevation A
Lilly plaza



MATERIAL DETAIL

The material palette for this construction of this site is fairly simple. However the selected materials allow for them to be treated in many different ways. This is done through the construction methods, material finishes and specialized form-work.

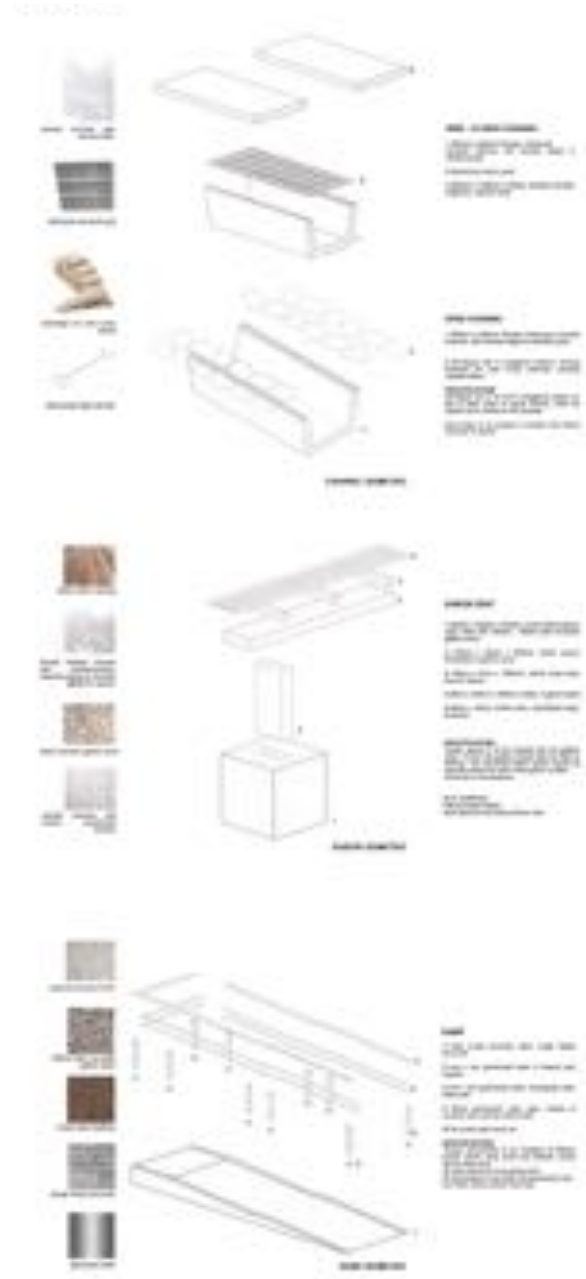
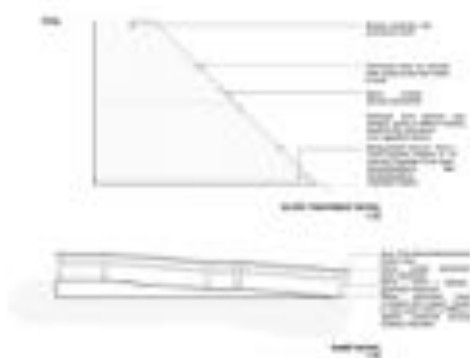
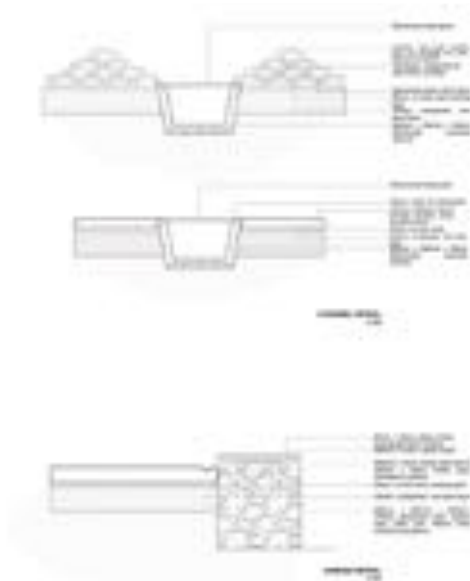


Figure 4.8 : Channel treatment



Figure 4.9 : Gabion treatment



Figure 4.9 : Ramp treatment

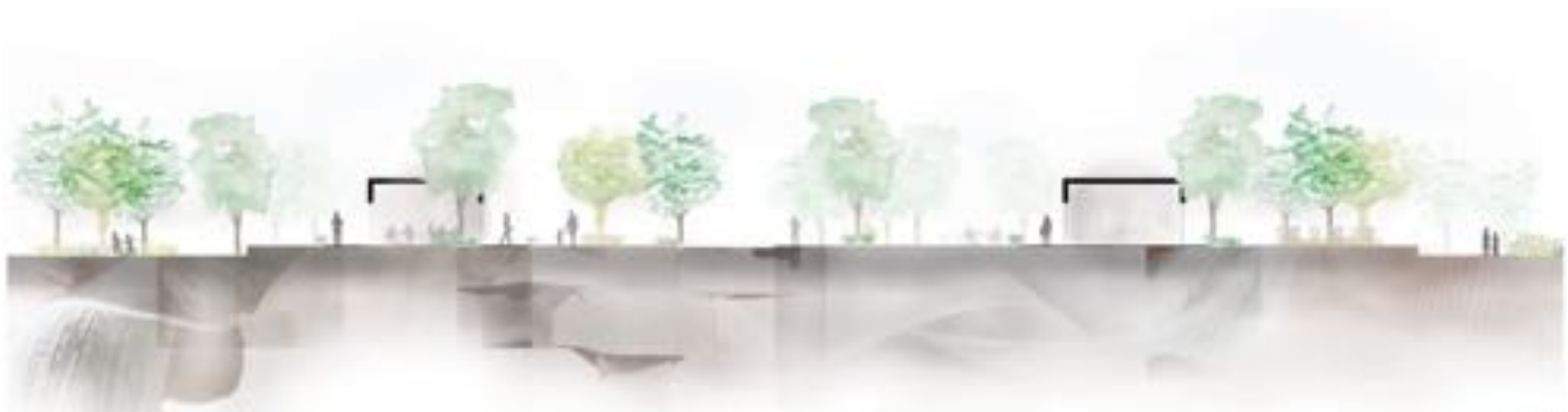


Figure 5 : Section A
Retail core of site



MOVEMENT

When you touch fabric with your hands, you are engaged and connected to it with your skin. Your body feels the movement of the fabric.





*Figure 5.1 : Section C
Lilly plaza East*





*Figure 5.2 : Section D
Retail and apartments relationship to park*



*Figure 5.3 : Section E
7th Avenue and new road intersection*



*Figure 5.4 : Section F
Thresholds between apartments and vegetated biodiversity pockets*



*Figure 5.5 : Section G
Relationship of street (7th Avenue) to park*



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REFERENCES

Bye, E. (2010). A direction for clothing and textile design research. *Clothing and textile research journal* , p. 217.

Castle, H. (2005). *Architextiles*. Architectural Design .

esri. (n.d.). Cape Farm mapper. Retrieved September 2017, from Cape Farm mapper: <https://gis.elsenburg.com/apps/cfm/>

Holmes, W. H. (2009). *The Study of textile art in its relation to the development of form and ornament*. BiblioBazaar, LLC.

James, A. (2013). *Exploring the looping path*. Australia: RMIT University .

MacDowell, J. C. (2000). *A history of the South African textile industry*. University of Kwazulu Natal, E commerce. Durban: UKZN.

Majola, C. M. (2011). *Ground water vulnerability map for South Africa* . Council for Geo science , Western Cape unit . Council for Geo science.

Oosterhoff, I. (2015, 10 30). *Cabinet of chic curiosities*. Retrieved 10 2017, from MESSY NESSY: <http://www.messynessychic.com/2015/10/30/made-in-holland-the-chanel-of-africa/>

SANBI. (n.d.). SANBI. Retrieved 2017, from PlantZAfrica: <http://pza.sanbi.org>

SANBI. (2017). *Technical guidelines for CBA maps*. South African Biodiversity Institute . Beta Version .

Shyong, E. (1991). Patent No. 5016183. USA.

Walton, P. (1937). *The Story of textiles*. New York: Tudor publishing co.





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