



rehabilitate  
body, nature and architecture  
sports rehabilitation centre Groenkloof campus

figure 1

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Mentor .  
Study Leader.

Gary White  
Nicholas Clarke

by david schalk van der merwe

# list of figures\_

## chapter 1\_introduction

figure 1.1\_ edited photo of campus, author.

figure 1.2\_ edited photo of Telkom tower from Fort Klapperkop, author.

figure 1.3\_ edited photo of Telkom tower from Leyds street, author.

figure 1.4\_ edited photo of

figure 1.5\_ edited photo of images edited

## chapter 2\_theoretical framework

figure 2.1\_ Manet's painting "Le dejeuner sur l'herbe", [http://en.wikipedia.org/wiki/File:Manet,\\_Edouard\\_-\\_Le\\_D%C3%A9jeuner\\_sur\\_l'herbe\\_\(The\\_Picnic\)\\_1.jpg](http://en.wikipedia.org/wiki/File:Manet,_Edouard_-_Le_D%C3%A9jeuner_sur_l'herbe_(The_Picnic)_1.jpg), accessed on 25 January 2009.

figure 2.2\_ hand drawn sketches of man and nature relationships based on theoretical concept, author.

figure 2.3\_ hand drawn sketches of different approaches based on theoretical concept, author.

figure 2.4\_ Poussin's painting "Et in arcadia ego (I, too, have lived in Arcadia)", [http://en.wikipedia.org/wiki/Et\\_in\\_Arcadia\\_ego](http://en.wikipedia.org/wiki/Et_in_Arcadia_ego), accessed on the 15 October 2008.

figure 2.5\_ edited Autocad drawings of Groenkloof campus, author.

figure 2.6\_ hand drawn sketches of relational ap-

proaches based on theoretical concept, author.

figure 2.7\_ hand drawn sketches redemption based on theoretical concept, author.

figure 2.8\_ hand drawn sketches of conclusion based on theoretical concept, author.

figure 2.9\_ edited hand and contour image, author.

## chapter 3\_urban complex ion

figure 3.1\_ Gross photos of Pretoria, Africana photo collection, Africana museum, Pretoria, Tshwane.

figure 3.2\_ edited photos of the city of Pretoria from various angles depicting the modern city, author.

figure 3.3\_ aerial photographs of Pretoria redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 3.4\_ aerial photographs of Pretoria redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 3.5\_ sketch of geological soil profiles, Carruthers, V. 2007.

figure 3.6\_ photo collage of the environmental characteristics for winter and summer, author.

figure 3.7\_ photos illustrating the urban environment within the given context of Groenkloof,

Pretoria, author.

figure 3.8a,b\_ aerial photographs redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 3.9\_ photos illustrating the urban environment within the given context of Groenkloof, Pretoria, author.

figure 3.10\_ aerial photographs redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 3.11\_ sketch illustrating the proposed urban inter-relationships for the given urban context of Groenkloof, Pretoria, author.

figure 3.12\_ edited photo taken from Freedom park illustrating the landscape, author.

figure 3.13\_ edited photo taken from Freedom park illustrating the city, author.

## chapter 4\_ the body

figure 4.1\_ aerial photographs of Pretoria edited by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 4.2\_ photo of Groenkloof campus from Telkom tower, author.

figure 4.3\_ Gross photos of Pretoria, Africana photo collection, Africana museum, Pretoria, Tshwane.

figure 4.4\_ aerial photographs of Pretoria redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 4.5\_ aerial photographs of Pretoria redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 4.6\_ edited Autocad drawings of Groenkloof campus, author.

figure 4.7\_ sketches depicting the contextual characteristics as seen from various places on Groenkloof campus, author.

figure 4.8\_ hand drawn sections of Groenkloof campus illustrating the land form, author.

figure 4.9\_ photos of problematic functions of buildings on Groenkloof campus, author.

figure 4.10\_ photos of dysfunctional facilities on Groenkloof campus, author.

figure 4.11-24\_ various stitched photographs illustrating the visual analysis of the proposed site on Groenkloof campus, author.

## chapter 5\_ design framework

figure 5.1\_ photos of Coromandel estate, Lydenburg, Mapumalanga, author.

figure 5.2\_ photos of Hammanskraal campus buildings, author.

figure 5.3\_ precedent study images, DOORDAN, D.P. 2000, p. 150,151,257,258.

figure 5.4\_ precedent study images, ASENSIO, P. 2002, p. 54,56.

figure 5.5\_ precedent study images, ROBSON, D. 2004, p. 150.

figure 5.6\_ photo of runners on Groenkloof campus and sketch illustrating the concept of movement, author.

figure 5.7a-c\_ edited and stitched range of photos took on Groenkloof campus on two runners moving through the site along a small foot path, author

figure 5.8\_ sketch illustrating the concept basic principles of the design programme, author.

figure 5.9\_ sketches indicating the integration of the programme, author.

figure 5.10\_ sketches illustrating the placing of the functions diagrammatically, author.

figure 5.11\_ sketch plan of building programme, author.

figure 5.12\_ sketches of building and landscape placing exploration, author.

figure 5.13\_ aerial photographs redrawn by author, <http://www.up.ac.za/dspace/handle/2528>. accessed on the 5 March 2008.

figure 5.14\_ photos of model exploration during the design process, author.

figure 5.15\_ sketches illustrating the building and land form exploration also a sectional sketch illustrating the climatic integration in the design, author.

figure 5.16\_ sketch plan on site with climatic conditions illustrated, author.

figure 5.17\_ diagrammatically illustration of social responses of the design, author.

figure 5.18\_ photos of model and a sketch illustrates the solid and void exploration of the design, author.

figure 5.18\_ 3D model showing the solid and void exploration of the design, author.

figure 5.19\_ edited image of the building and landscape illustrating the integration, author.

figure 5.20-24\_ 3D model section, aerial and interior views of design proposal illustrates the various responses, author.

## chapter 6\_ technical investigation

figure 6.1\_ edited drawing illustrates the proposed building, author.

figure 6.2\_ plan of the structure and grid, author.

figure 6.3\_ 3D model illustrating the structure and primary services within the building, author.

figure 6.4a-c\_ images of a plan and views indicates the placement of services within the building, author.

figure 6.5a-b\_ sections illustrate the ventilation and climatic responses explored for the design, author.

figure 6.6\_ precedent study images, LECUYER, A. 2001, p. 32,33.

figure 6.7\_ site plan illustrating the landscape response of the design, author.

figure 6.8a-d\_ 3D images depicting the opening exploration through the design, author.

figure 6.9a-b\_ Galvalume sheeting for shading, <http://www.luxalon.com.au/au/en/facades/softwave/softwave50/sb.cn> accessed on the 30 April 2009.

figure 6.9c\_ Renzo Piano's shading mechanisms for doors, ASENSIO, P. 2002, p. 10.

figure 6.10a&b\_ sections illustrates the sun angle movement and responses over the facades of the design, author.

figure 6.11\_ glazed roof structure by Renzo Piano, ASENSIO, P. 2002, p. 18&19

figure 6.12\_ plan of the roof structure of the design, author.

figure 6.13a&b\_ technical details for the roof structure, author.

figure 6.14-16\_ photos of materials and textures found on the site, author.

figure 6.17\_ photo illustrating required concrete patterns for the design, author.

figure 6.18\_ photo illustrating required brick finish for the design, author.

figure 6.19\_ aluminium and steel colours and textures, <http://www.hunterdouglascontract.com/solarcontrol> accessed on the 22 October 2008.

figure 6.20a&b\_ photos of Brooklyn mall, Pretoria interior illustrating the roof and ventilation sys-

tems, author.

figure 6.21a&b\_ analytical system sketches made for precedent study within Virgin Active gyms, author.

## chapter 7\_ conclusion

figure 7.1\_ edited photos and images of site interaction, author.

figure 7.2\_ edited photos and images of site interaction, author.

## chapter 8\_ appendix

figure 8.1\_ sketches of Muckleneuk and Lukasrand, 1993. Holm & Jordaan Architects and Urban Designers, p. 15.

figure 8.2\_ 1993. Holm & Jordaan Architects and Urban Designers, p. 22.

figure 8.3\_ letterhead regarding building plans, archives, University of Pretoria, Tshwane.

figure 8.4\_ existing landscape and building profile, archives, University of Pretoria, Tshwane.

figure 8.5\_ site plan with rubbish dump areas indicated, archives, University of Pretoria, Tshwane.

figure 8.6\_ sections indicating soil and rubbish areas, archives, University of Pretoria, Tshwane.

figure 8.7\_ proposal model, archives, University of Pretoria, Tshwane.

figure 8.8\_ proposal model, archives, University of Pretoria, Tshwane.

figure 8.9-12\_ various stitched photographs illustrating the visual analysis of the proposed site on Groenkloof campus, author.

figure 8.13\_ precedent study drawings of disabled design, author.

## chapter 10\_ technical drawings

figure 10.1\_ design proposal Autocad site plan drawing, author.

figure 10.2\_ design proposal Autocad basement plan drawing, author.

figure 10.3\_ design proposal Autocad ground floor plan drawing, author.

figure 10.4\_ design proposal Autocad first floor plan drawing, author.

figure 10.4\_ design proposal Autocad roof plan drawing, author.

figure 10.6\_ design proposal Autocad section a-a drawing, author.

figure 10.7\_ design proposal Autocad section b-b drawing, author.

figure 10.8\_ design proposal Autocad section c-c drawing, author.

figure 10.9\_ design proposal Autocad section d-d drawing, author.

figure 10.10\_ design proposal Autocad section e-e drawing, author.

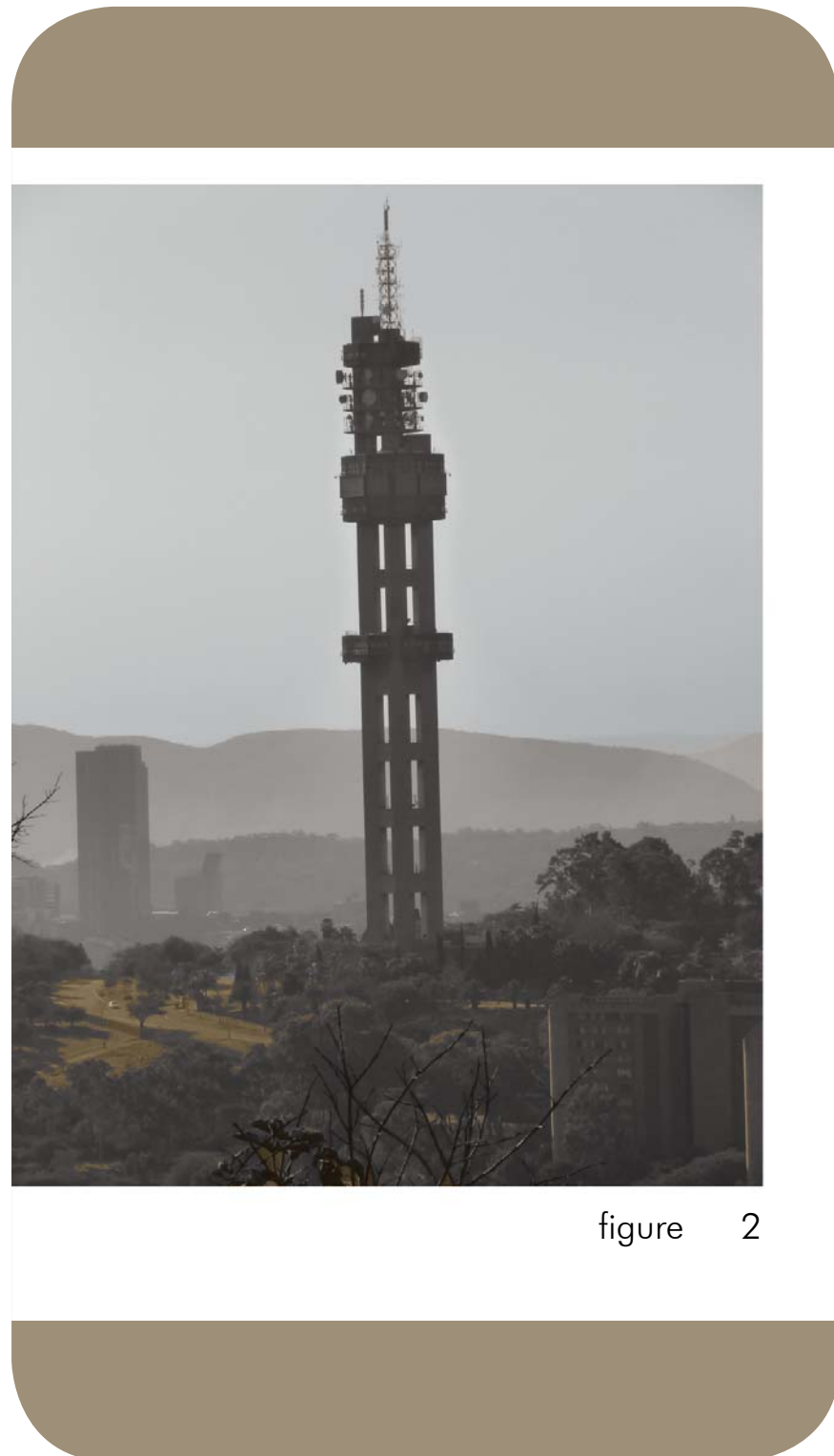
figure 10.11\_ design proposal Autocad section f-f drawing, author.

figure 10.12\_ design proposal Autocad details drawing, author.

figure 10.13\_ design proposal Autocad details drawing, author.

figure 10.14\_ design proposal Autocad details drawing, author.

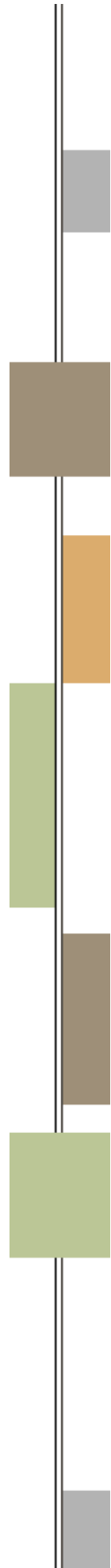
# c o n t e n t s \_



1 _ introduction	_ list of figures	ii
	_ contents	vii
	_ prologue	ix
2 _ theoretical framework	_ 2.1 living inter-dependence	1
	_ 2.2 dream of arcadia	5
	_ 2.3 redemption	6
3 _ urban complexión	_ 3.1 introduction	9
	_ 3.2 historical city	10
	_ 3.3 regional urban structures	
	_ _ecological	12
	_ _social	14
	_ _economical	17
	_ 3.4 conclusion	17
4 _ the body	_ 4.1 site proposal	23
	_ 4.2 historical context	23
	_ 4.3 site analysis	
	_ _plans & sections	25
	_ _photo elevations	30
5 _ design framework	_ 5.1 introduction	41
	_ 5.2 precedent studies	41
	_ 5.3 design principles	
	_ _activities and movement	44
	_ _orientation	51
	_ _solids and voids	57
	_ 5.4 conclusion	59



figure 3



6 _ technical investigation	_ introduction	65
	_ stereotomic	66
	_ tectonic	73
	_ materials	81
	_ precedent studies	84
7 _ conclusion		87
8 _ appendix		89
9 _ bibliography	_ sources	103
	_ references	108
10 _ technical drawings		113

# prologue \_

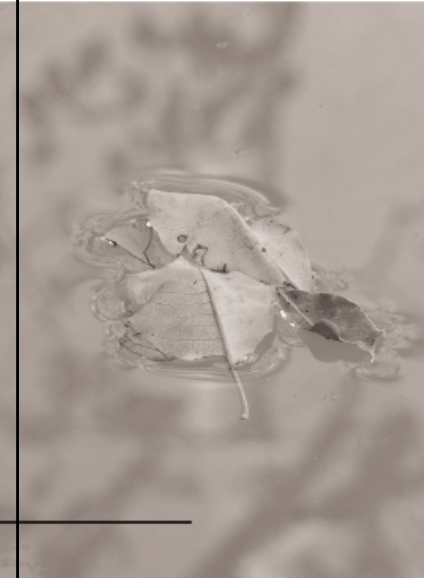
“We did not inherit this land from our ancestors, but are rather borrowing it from our children.” (VAN LILL, D. 2005:69)

Man and nature...captured within a relational existence. Theoretically this document disputes the man-nature-relationship with the emphasis on architectural participation, in an attempt to redefine their interdependency.

Architecture creates a new landscape - despites its inherent character. (NESBIT 1996:461)

And if the true problem is acknowledged - that of our social arrangements, then we'll be able to see our alienation from nature as a failure, for nature shouldn't be shaped around our needs but we should rather strive towards a harmonious co-existence. (KATZ & KIRBY 1991:263)

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Humans receive the recognition that they are “of nature” yet they also poses a “second nature” due to their capability of objective reason. (NESBIT 1996:461)

By analysing man’s way of living over a lifetime, a better understanding can be drawn to what the ideal relationship should be. In turn this will be used in the present context and measured against current situations. The function of the urban framework will also be defined and the site characteristics identified within this understanding.

"Our troubled planet can no longer afford the luxury of pursuits confined to the ivory towers." (WATSON 1984:121)

Based on this, an attempt will be made to redefine this relationship between man and nature within an existing context. Identifying a model relationship and practically applying it to the given context. At best it will attempt to give a better solution for some of the current issues related to this topic.

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“Human life is not intended to oppose nature and endeavour to control it, but rather to draw nature into an intimate association in order to find union with it.” (NESBIT 1996:460)

# theoretical framework\_

“Le déjeuner sur l’herbe” the painting by Manet illustrates how man dominates nature through the simple gathering of people around a blanket on the ground. The basic human need for protection against the elements is inevitable and it is something we all do. When going to the beach we firstly secure a horizontal plane which is then followed by a roof. For this we require walls, all of this determines the limits of our controlled area. These elements allow architecture to define and determine the limits of space between the sky and earth both vertically and horizontally. For ultimately the horizon exists as the limit between the earth and the sky. (CAMPO BAEZA, A. 2006: The Foundation of Architecture)

## 2.1 living inter-dependence\_

Christian Norberg-Schulz defines the Heideggerian concept of dwelling or being to mean a total man-place relationship. Man’s desire to identify with nature. If the fabric (metaphorically used for the purpose of this dissertation is the honest portrayal of man’s purest need, it could be argued that building and architecture became the tools to satiate this need.



the unblemished relationship man - nature

“Norberg-Schultz reintroduces the ancient Roman idea of the *genius loci*, the spirit of a particular place, (creating a link to the sacred), which provides an “other” or opposite that humanity must confront in order to dwell. He interprets dwelling as being at peace in a protected place. Thus, enclosure, the act of marking or differentiating a place within space becomes the archetypal act of building and the true origin of architecture.” (NESBIT 1996:412)

Norberg-Schultz emphasizes the importance of the essential architectural elements. The wall, floor, or ceiling experienced as a horizon, boundary, and frame of nature. For him architecture clarifies the location of human existence. Heidegger describes it as between the sky and the earth, in front of divinities. (NESBIT 1996:412)

The word urban fabric undeniably describes best the twenty first century man-nature relationship. Man evolved and his relationship dramatically changed. The twenty first century urban fabric finds its boundaries not in one need but a multitude of man’s desires.

Two hypothetical images (figure 2.2a&b) used to describe the man-nature relationship over a period of time. Between them the path of man’s evolution, caught in the thoughts of each era. Theoretically

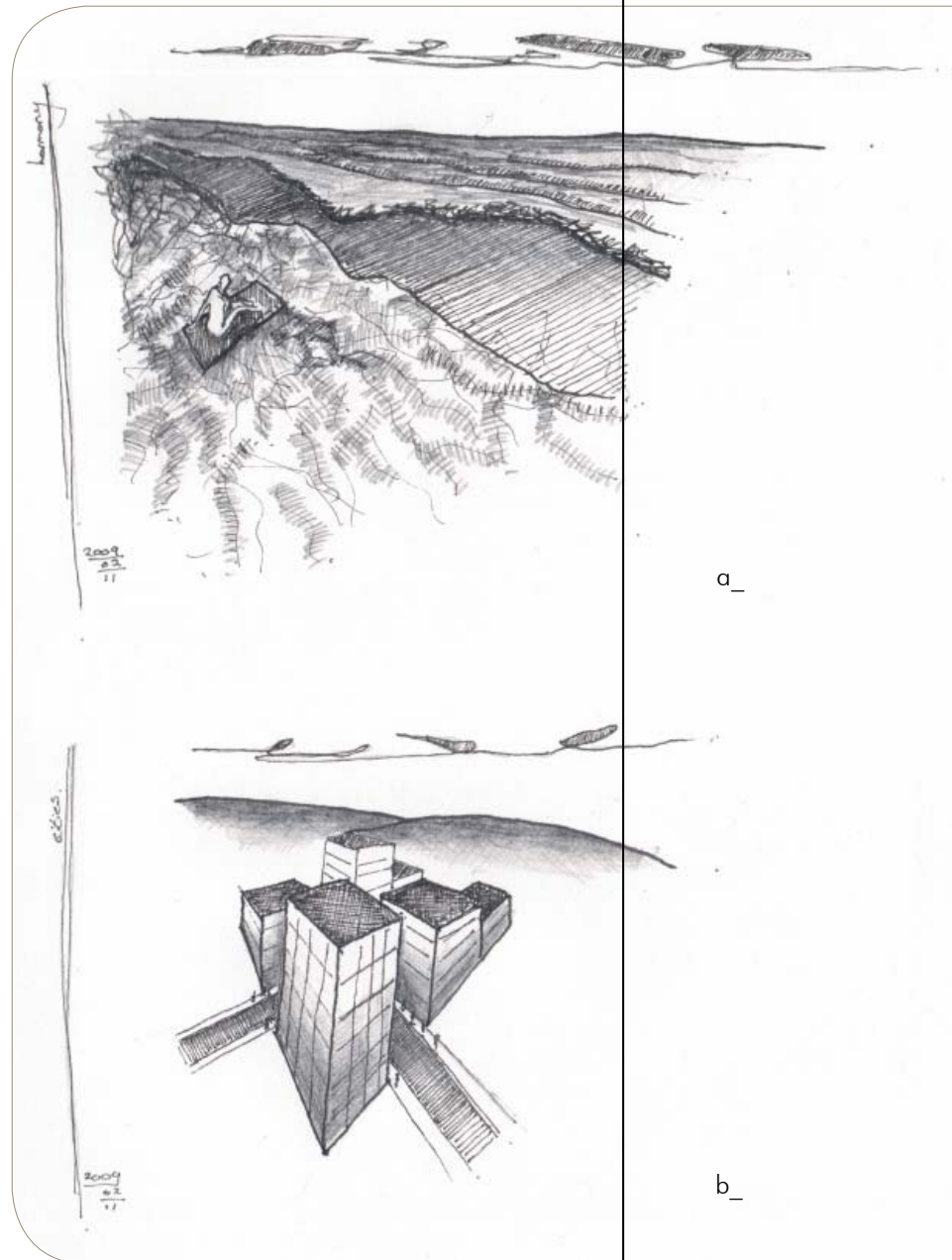


figure 2.2

this can be illustrated using three empty boxes (figure 2.3). The empty boxes represent a single problem and the content illustrates a range of responses. This is further illustrated by folding three maps differently, pouring coffee over them and then observing the results (figure 2.5). Responses based on diverse cultures, knowledge, needs, desires, topographies, religions and politics.

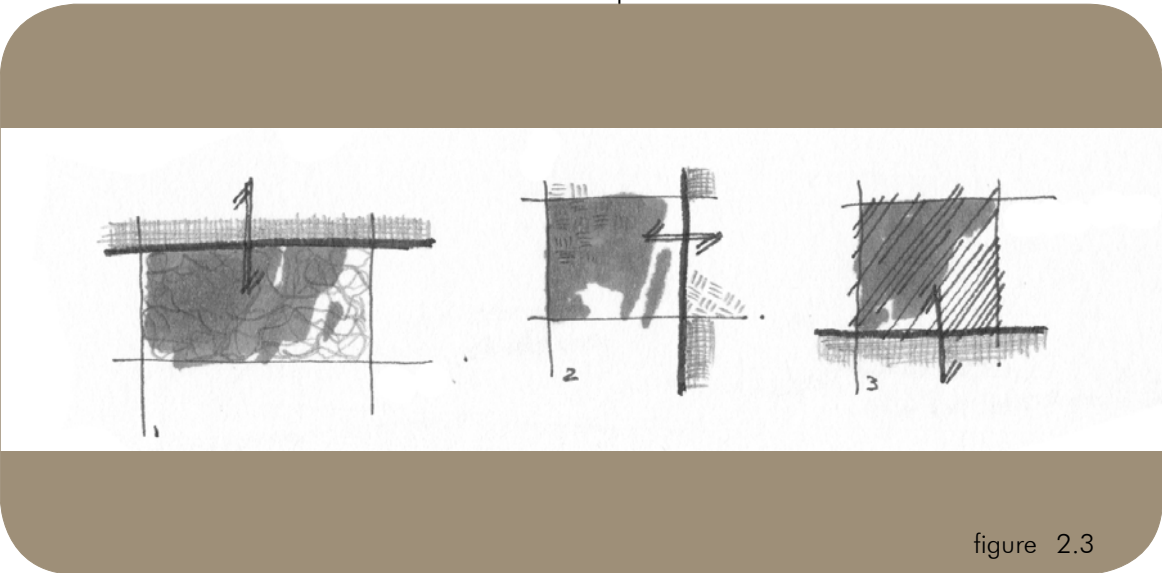


figure 2.3

“We did not think of the great open plains, the beautiful rolling hills and winding streams...as wild. Only to the white man was nature a wilderness... to us it was tame. Earth was beautiful and we were surrounded with the blessings of the Great Mystery. Not until the hairy man from the east came and with brutal frenzy heaped injustice upon us and the families we loved was it wild for us. When the very animals of the forest began to flee from his approach, then it was for us when the Wild West began.” (KATZ & KIRBY 1991:266)

This statement made by a Native American illustrates the vast difference between various world views and their response towards nature.



figure 2.4



a\_square fold



c\_triangle fold



b\_irregular fold

figure 2.5

“Ando points out a significant distinction between Eastern and Western attitudes to nature Japanese culture emphasizes a spiritual threshold between building and nature, as opposed to a physical boundary in western culture.” (NESBIT 1996:456)

It could further be argued that at the core of the differences, lies similarity in all of man’s needs.

## 2.2 dream of arcadia\_

Man’s ideal desire to create Utopia (Heaven on earth.) This is evident in all of man’s history as seen with the Egyptians, the Romans and the Mayans just to mention a few. The irony in this ideal can best be described through a painting of Poussin’s.

“Et in arcadia ego (I, too, have lived in Arcadia)” (LACHMAN 2004:293)

In the painting (figure 2.4) a couple of shepherds’ look at a tomb stone, written on the stone is the words: “Et in arcadia Ego.” Meaning I, too, have lived in Arcadia (refers to a perfect world). The one conclusion, being that this is the grave of someone who also lived in Arcadia. Secondly it could be understood as death himself speaking ominously in the eternal present.

This illustrates man’s attempt to create the perfect answer for an imperfect question.

Each paradigm (the Renaissance, the Enlightenment and the Modern Movement) demanded man to resolve the pertinent questions associated with that time period. These answers were based on differences and similarities throughout the world.

Architecture was often used by the Neo-pastoral romance, displaying the unspoken need for a close relationship between nature and human well-being. The need for this intimate relationship is a common theme in western art and literature, and also in the polite society were the relationship allows the existence of human dignity and morality. (HAWKES & MCDONALD & STEEMERS 2002:15)

One of these were made by James Lovelock and he uses the “Gaia Hypothesis” a world seeking an optimal physical and chemical environment for life on this planet in an attempt to describe the optimal relationship. This is a relatively new paradigm, and a certain response to modern society and the concern for its pressures on mother earth.

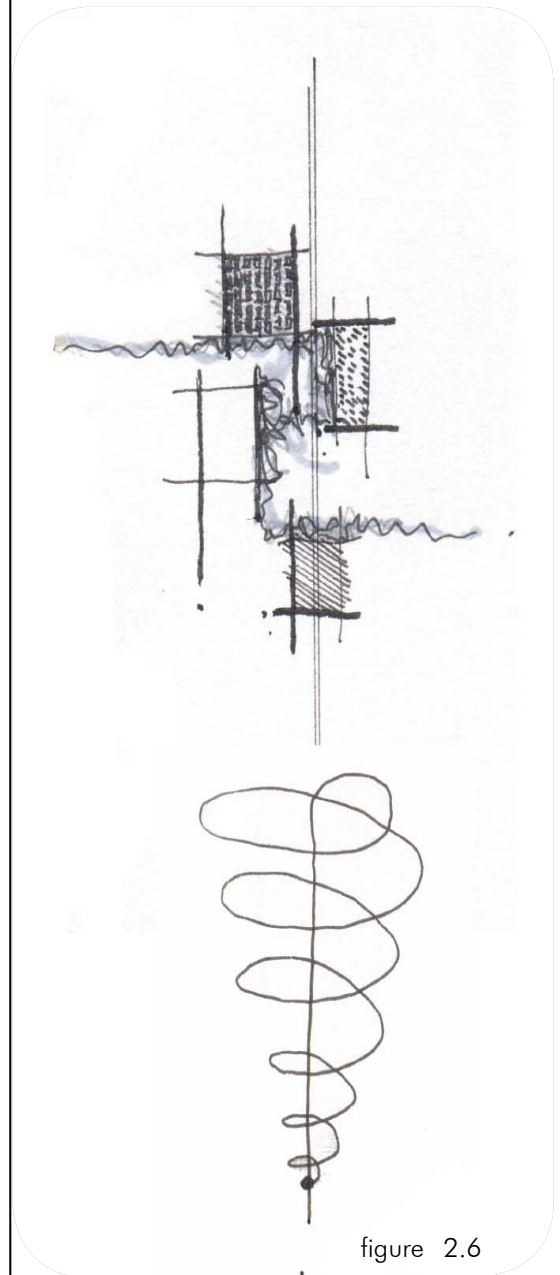


figure 2.6

## 2.3 redemption\_

And the one question has always been the relationship between man and nature. Imagine a point on a piece of paper which illustrates a given problem; the thought process in solving this problem becomes a spiral loop (figure 2.6). The loop starts of as small circles and changes into larger loop as the thought process grows, but the result will always be a straight line back to the point. No matter what the thought process there will always be a relationship between the answer and the question.

Global warming, resource depletion and the desperate need for more sustainability lifestyles are the foremost concerns for the twenty first century. They all relate to the simple question of the man-nature relationship. There are many other social, economical and political problems. For the purpose of this dissertation the main objective will be to address the environmental problems within the given urban context.

For the people who life in the now–future, it is their duty to keep: peace, food and over population before the world as its long term fate. (WATSON 1984:121)

"Our troubled planet can no longer afford the luxury of pursuits confined to the ivory tower." (WATSON 1984: 121)

Answering this question requires an understanding of the answers produced for the man-nature relationship over man's history. By identifying the similarities and differences in the answers, the current problem's argument is strengthened.

When one considers all these facts, the best solution for the question at hand would be for man to acquire a more 'primitive' lifestyle. This entails a closer and more intimate man-nature relationship and essentially an innovative representation of a healthy fabric in the given context.

Insights obscured by ideological post-Enlightenment philosophy and Marxist-scientism can be recuperated through an examination in which the way nature and man is connected in everyday life. These insights should be restored to the point where man and nature is no longer separated by those logics. (KATZ & KIRBY 1991:264)

Our intent is to reveal some of the ways that this separation focuses attention on the control of nature and thus conceals the 'nature' of control over social behaviour." (KATZ & KIRBY 1991:264)

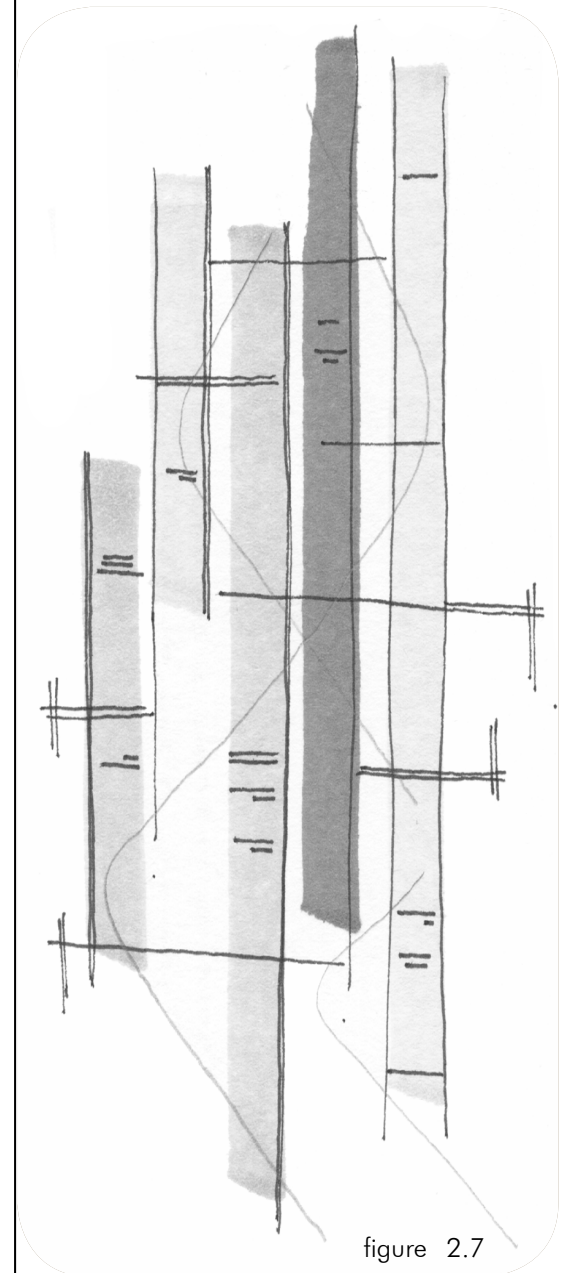


figure 2.7

Vernacular architecture displays how mankind used the available resources, to establish stability and adaptability to the natural forces. This is true to the development of a theoretical ground which emphasises the deep social and cultural roots it has with the natural forces. These settlements show their interest for environmental enquiry and are not influenced by fashion or self-consciousness. (HAWKES & MCDONALD & STEEMERS 2002:16)

Norberg-Schulz identified phenomenology as a “method” to urge a “return to things”. The potential of phenomenology in architecture, through the creation of specific places, will create more meaningful environments. (NESBIT 1996:412)

Phenomenology and regionalism is used in this document to attain more contextual and responsive architecture. Establishing more frugal urban environments in which users are actively participating.

Vittoria Gregotti argues that a site needs to intensify, condense, and identify the precise structure of nature and our understanding of it. This quality is fundamental to Kenneth Frampton’s critical Regionalism. (NESBIT 1996:413)

And finally to get closer to this state of living, rehabilitation could be used to define the fabric which is to be the path. To achieve change would require a breaking point in society. The

fractured environment and the fragile body of man are placed side by side. Both are broken and change is the only way to survive and ensure their existence. The fabric can be used as a path on which both can journey to a new state of being. Providing the opportunity for transformation, in which the man and nature relationship could be re-established through reflection. The architecture will attempt to answer the present questions but should rather be seen as an opportunity of redemption.

Humans receive the recognition that they are “of nature” yet they also poses a “second nature” due to their capability of objective reason. (NESBIT 1996:461)

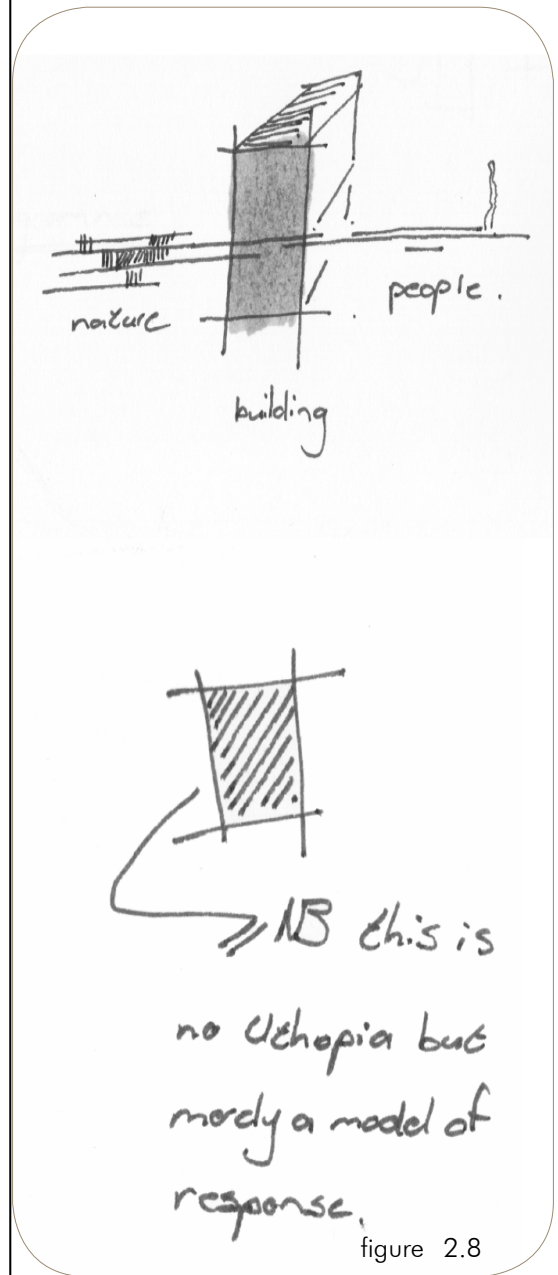
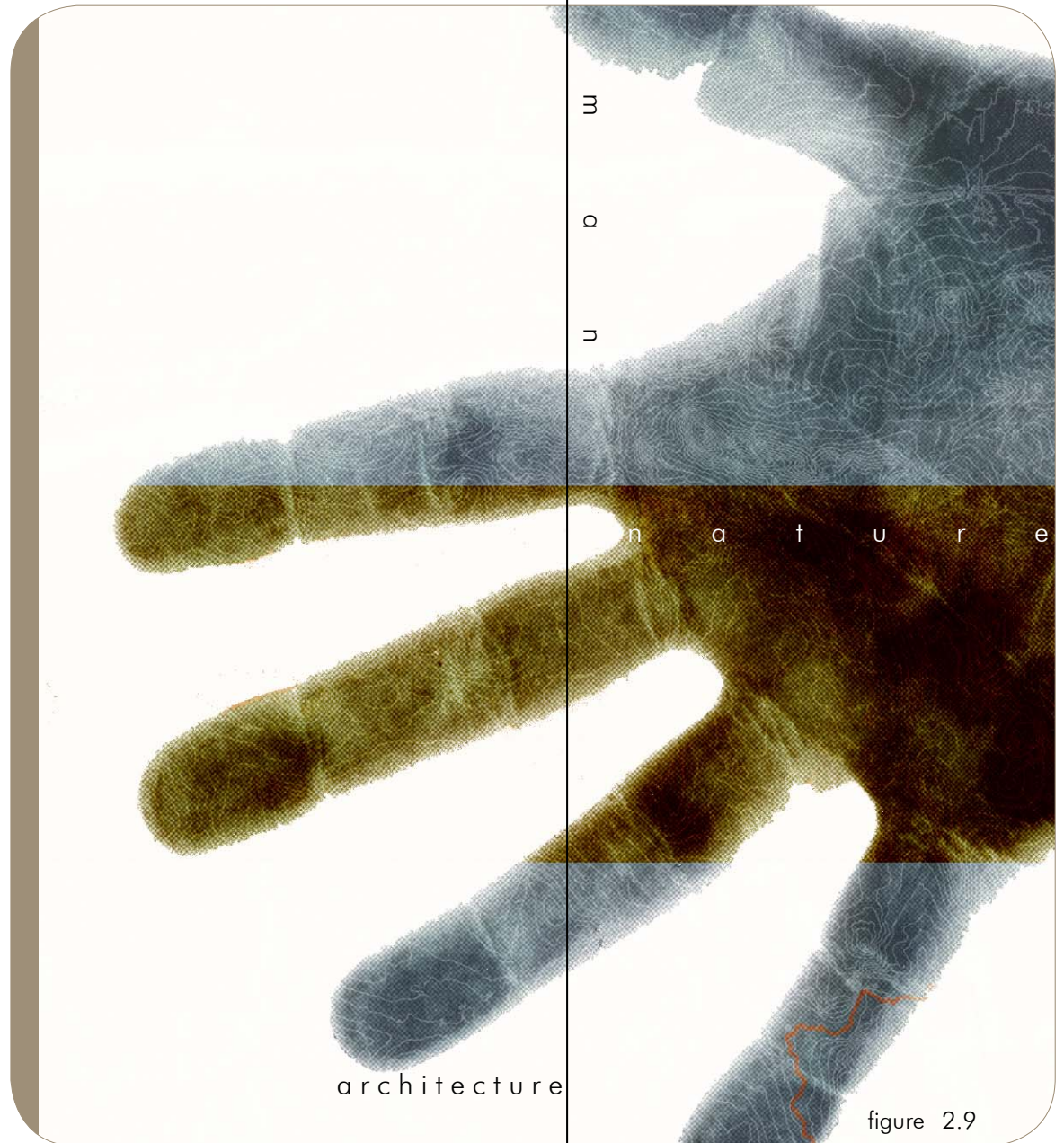


figure 2.8

"The dualism collapses as we recognize that we are both of nature and yet on the verge of reshaping our own biology - nature is placed within ourselves rather than vice versa." (KATZ & KIRBY 1991:264)



# u r b a n c o m p l e x i o n \_

## 3.1 introduction\_

In times to come the maximum efficiency of urban environments will be a prerequisite to the functioning of a city. The impact that man inflicts on the Earth, as well as social, environmental and economical consequences has been the topics of the last century. In dealing with the growing demands of man, change in planning practices and efficient allocation of resources are of utmost importance. For the purpose of this document the emphasis will be on the function of institutions and their relationship to the city and their surrounding neighbourhoods. This document will make an attempt to define the ecological, social and economical structures of these institutions within the urban fabric and where applicable methods of procurement.

The preamble of the research is the creation of integrated and well defined urban spaces, where the ecological, social and economical structures are of equal value and have total frugality.

“Balance can be defined as the happy co-existence of things such as the relationship between humans and nature.” (LYNCH, 1981: 108-112).



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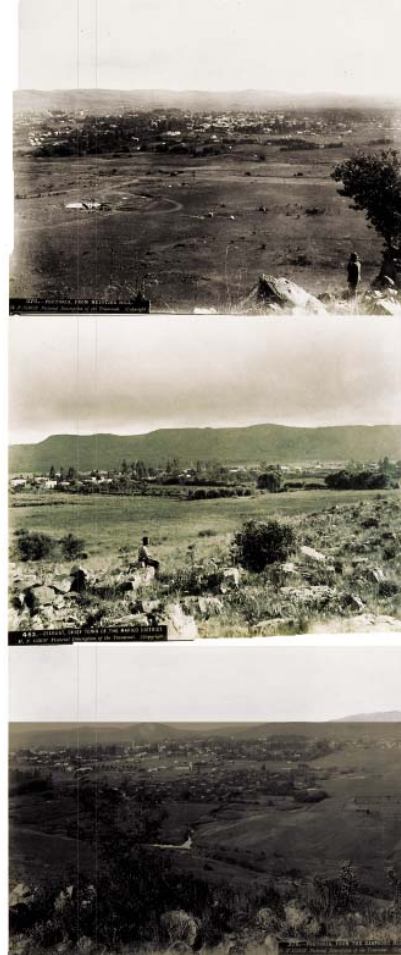


figure 3.1

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figure 3.2

"The desire to maintain close contact with nature to maintain human dignity and morality is a common theme in western art and literature. Polite society has often appropriated rural ideals in the representation of its fascination with nature. The Neo-pastoral romance of the seventeenth and eighteenth centuries was frequently expressed through the medium of architecture. Implicit in this was a sense of the relationship between human well-being and the contact with nature." (HAWKES & MCDONALD & STEEMERS 2002:15)

### 3.2 historical city\_

The African city was in historical times shaped by western philosophies during colonization. The idea of the city was driven mostly by optimisation of resources, or driven by political agendas. Pretoria as such is a political city and this can be seen in many of the elements that were used to define or design the city, for example the layout was based on the cardo and decumanus system used in ancient Rome. Furthermore the buffer zones that were created between cultural extremes were driven by political propagandas. The effect of these practices are still very visible in the contemporary city form which is characterized by cultural and political fragmentation, low density suburban sprawl and institutionalized service provision.

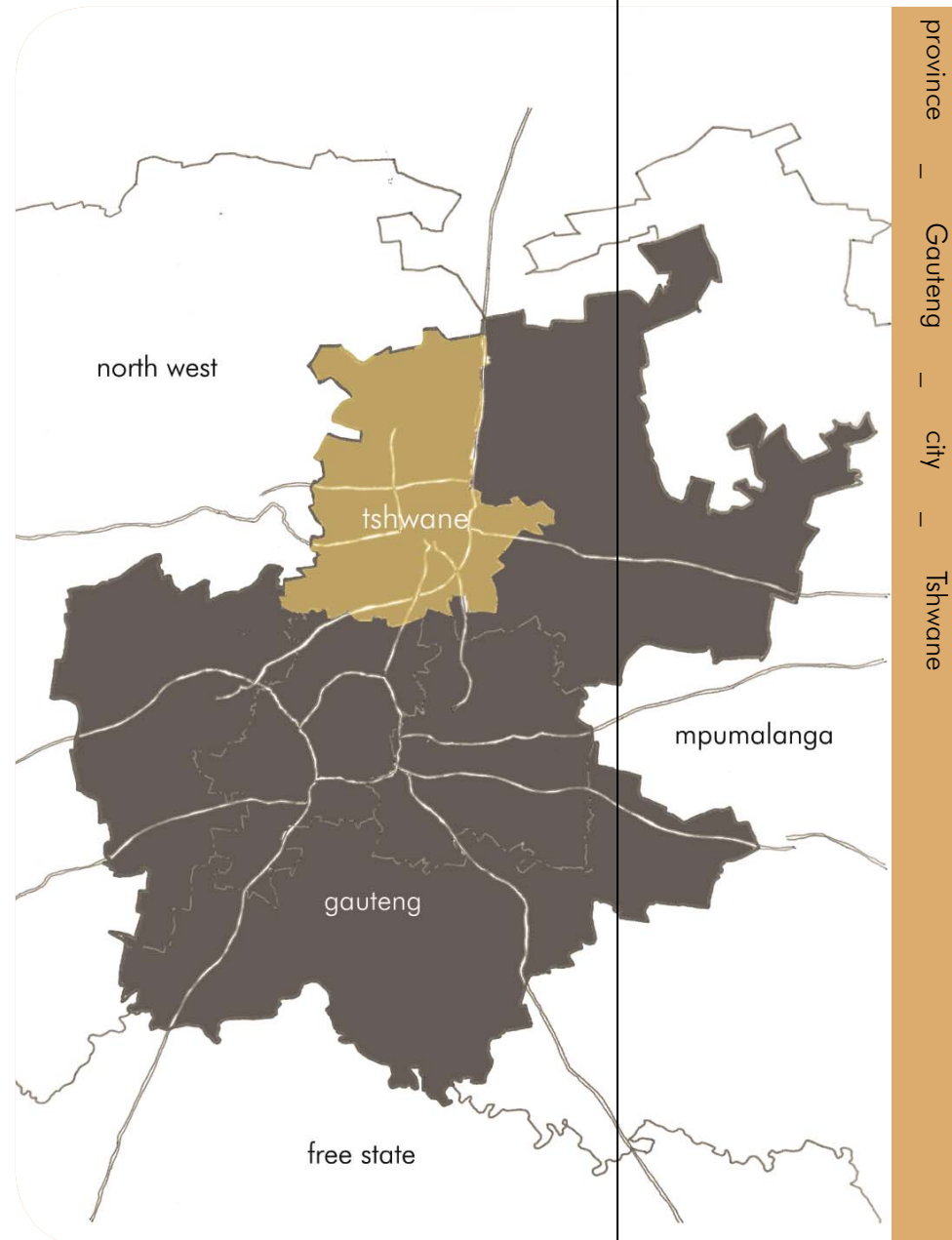


figure 3.3

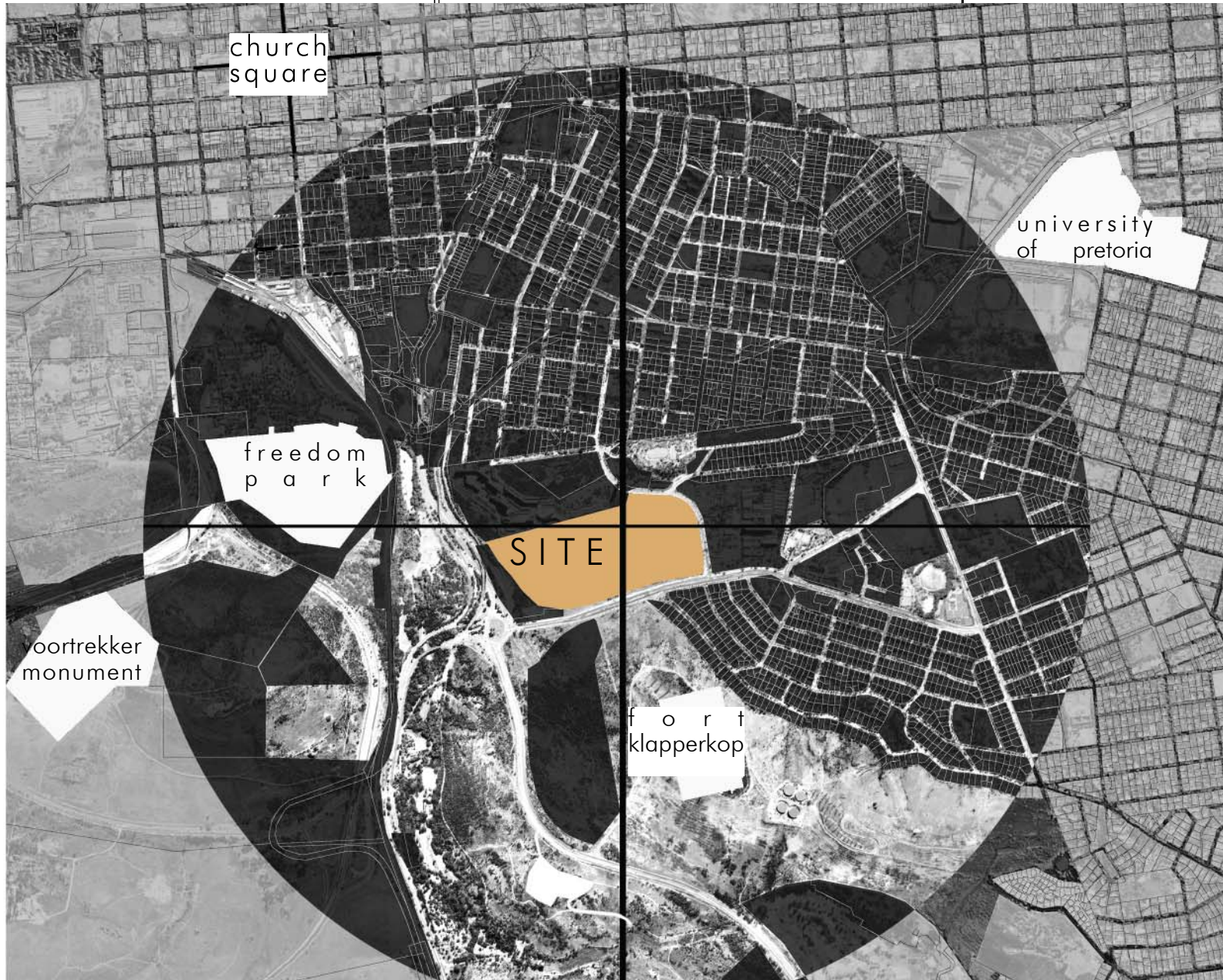


figure 3.4

### 3.3 regional urban structures\_

#### 3.1\_ ecological

“The highest level of balance in a city is between society and the cosmos. It creates a sense of wholeness, identity and uniqueness to the city. Secondly, the city and its participants should maintain contact with nature. Finally, a balance between participants of the city should be achieved to allow equity within the community of the city “ (DEWAR et al, 1991: 18-22).

#### 3.2\_ locality

The site is placed within the urban fabric as green pockets, in the form of squares and parks, which typically includes most of the hills due to their fragile compositions. The greater part of this ecological land mass consists of preserves which seize the corridors of the city.



#### 3.3\_ altitude

The altitude of Pretoria ranges between 1560m-1620m above sea level and is between 300m and 380m above the valley floor. For the purpose of this document the mean average of 1590m and 340m will be used according to the location of the site.

#### 3.4\_ geology

The site forms part of the greater Magaliesberg mountain range and its geological structure (figure 3.5). Ridges are composed of sedimentary layers which tilt upwards in a northerly direction from the northern Bushveld periphery. The upper layers of these ridges consist of Quartzite. These Quartzite layers are supported by a shale substrate. Quartzite is a hard sedimentary rock, more resistant to weathering. The shale sedimentary layers are largely exposed on the southern ridges. Being less resistant to weathering creates cliff like southern valleys. Shale is a bluish-grey colour which weathers to a reddish-brown clay which is typically used for brick making. The result is a landscape of mountains and ridges we are so familiar with.

The proposed site can further be geologically classified as part of the Timeball Hill quartzite.

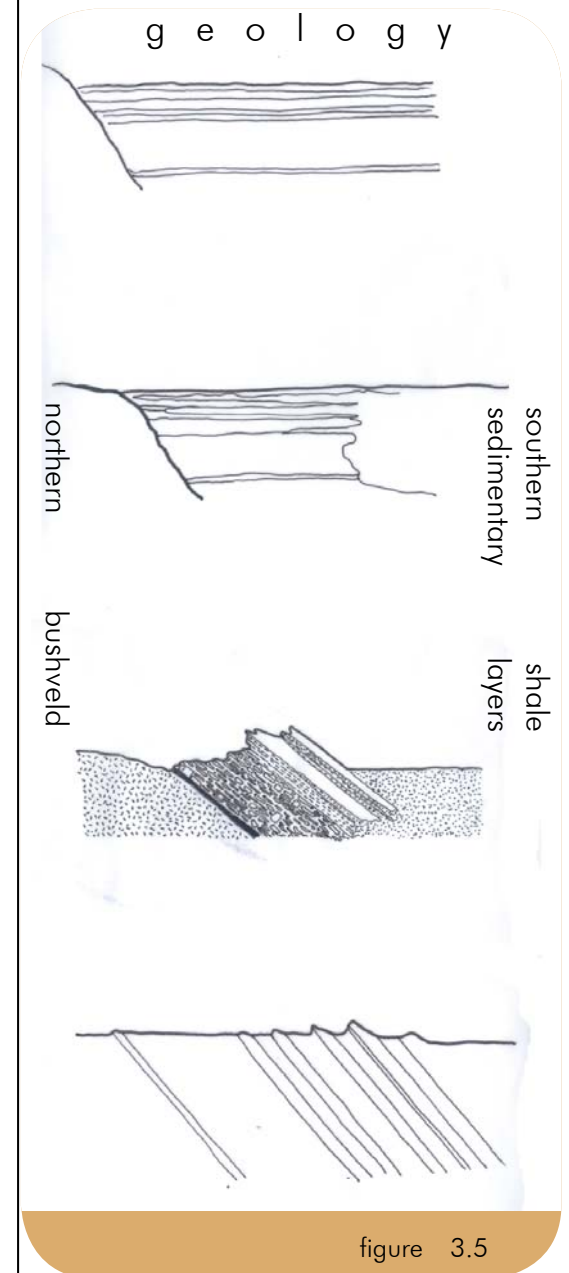


figure 3.5

### 3.5\_ environment

The Highveld is characterised by grassland and scattered trees in the wetter parts; and especially on the southern sides and in the kloofs of the ridges of the Magaliesburg (figure 3.6). Due to the topography and diverse microclimates the landscape accommodates various plant and animal species. More specifically the area used in the dissertation is part of the Bankenveld.

The proposed site is part of the Bankenveld, and is formed by the Magaliesberg Range.

### 3.6\_ climate

The area is characterised by warmer summers with fairly dry air, and thunderstorms and hail is not uncommon. Winter days are sunny with very dry air and very cold nights with frost.

6.1\_temperature: [mean average quarterly temperatures for Pretoria]

Jan. 27.8°

April. 24.4°

July.18.3°

Oct. 26.8°

6.2\_wind: [prevailing wind directions]

Summer mornings East to north-east

Summer afternoons North to north-east

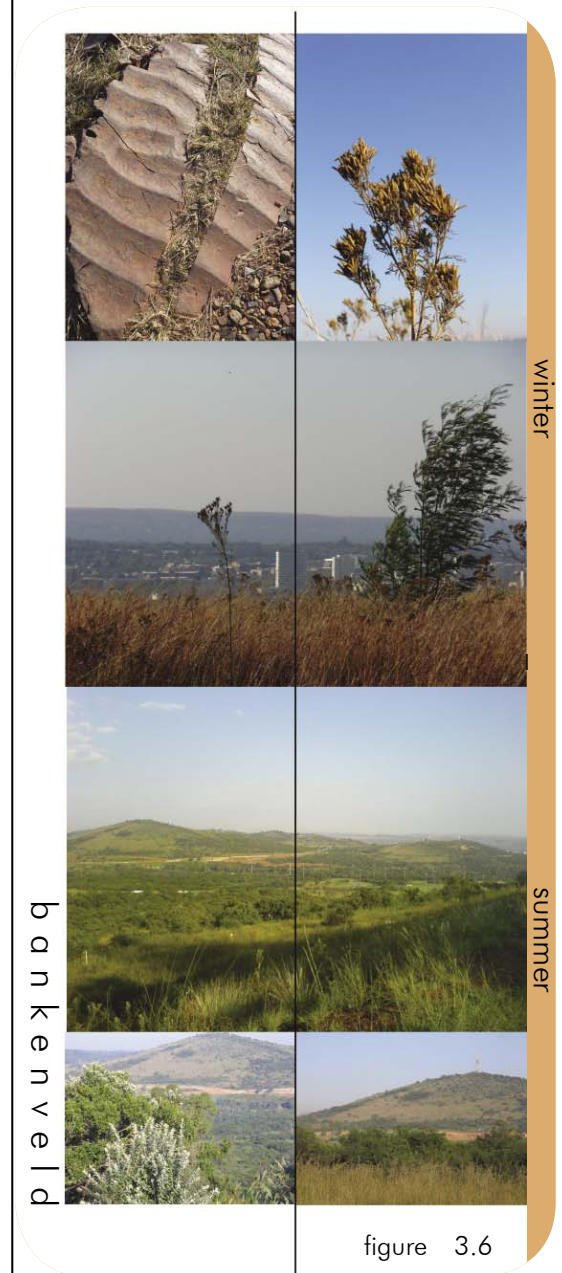
Winter mornings South-east to north east

Winter afternoons North-west

\*Note that during winter evenings mountain breezes are very familiar when cold air sinks down and accumulates in depressions.

6.3\_Rainfall:

Average annual rainfall 681mm



\*Note that 80 - 84% of the annual rainfall falls between October and March. The rest of the year only counts for 16% of the rainfall.

6.4\_ Sunshine:

\*Note that for an average year there is only three days of no sunshine. And an average of 24 days of a month has more than 50% sunshine per day.

6.5\_Humidity:

Mean average                      30-50%

3.4 social\_

"The agglomeration of individuals, groups and communities generates a greater range of opportunities and facilities. Intensive activities and events needs to be exposed to inhabitants of many local areas which will generate support and participation of a wide range of people." (DEWAR et al, 1991: 18-22).

"Inclusive design should be obtained by allowing for various user types ranging from disabled to elderly. Parks and open spaces must be accessible for all." (LYNCH, 1981: 108-112).

4.1\_community

"The city should create a sense of identity and belonging for individuals in the city community. Places of interaction should be provided to create experiences that individual living cannot provide. Social ties are essential in urban life and that can be provided through human interaction. Social interaction is not only fundamental to human development, but an essential part of urban development. Communities in the city flourish when innovation, communication and interaction are efficient." (DEWAR et al, 1991: 18-22).

The city of Pretoria is shaped by strong educational and political functions. This creates vast and rich combinations of communities and cultures within the city. These communities range from temporary to permanent residents. Due to the cities changing and rich social framework a well structured urban framework is required to support the constant change. On a macro scale the more permanent residents of the city and neighbourhoods function as support network.

Institutional campuses are grouped within the urban framework and due to rapid expansions



urban context study

figure 3.7

they have been forced to develop a multitude of facilities on various small pockets of available land. Alternatively, Institutional campuses can be allotted large undeveloped parcels of land through town planning schemes, even if the institution does not have the financial ability to properly develop the land. This has caused certain campuses to be alienated and under developed.

Higher density developments are used to sustain the living demand in close proximity of the campuses. These developments are based upon individual living and in most cases lack the necessary social spaces to sustain these living conditions. Most of the lower density old neighbourhoods consist of residential, commercial and even political practices such as embassies. Sustaining a richer urban environment but still limiting the social spaces to individual properties.

#### 4.2\_freedom

“Cities must promote maximum positive environments. Complex and positive environments creates a rich experience for city participants. Freedom and equity of choices can only be achieved through appropriate constraints that are provided by government and policy.” (DEWAR et al, 1991: 18-22).



figure 3.8a

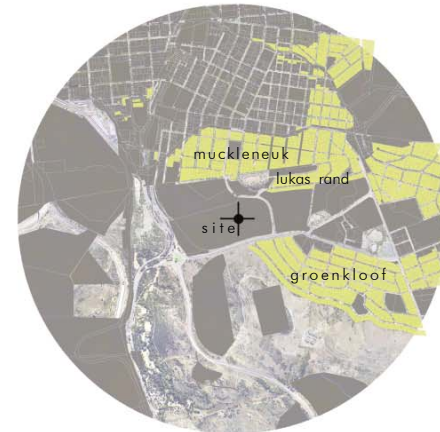
Security problems within the city have created a buffer towards the freedom of the user. Public spaces have been reduced to semi-public spaces as a result. Large green spaces can be found in the form of recreational and conservation areas with historical value. These areas mostly occur on the edges of the city, or as spines cutting through the city, and bare no relation to the city. Large fences provide security for the infrequent users, creating segregated networks of commercial and green spaces.

All these elements create negative and closed off spaces which limits the user. The result is fragmented social networks with limit freedom.

#### 4.3\_interdependence and integration

“The city must consist of complex structures and interdependency of different activities and public, semi-public and private spaces must be directly related.” (LYNCH, 1981: 108-112).

One of the prominent problems associated with city is the way various structures function independently. No relation exists within the urban network creating undefined spaces. Within the given context large parcels of land are dedicated to exclusive private land use. Open spaces exists inside and outside these institutional property but have confined functions and users.



low density  
residential



high density  
residential

figure 3.8b

### 3.5 economical\_

#### 5.1\_efficiency

“Intensity, diversity and necessary complexity of activities should be integral to the urban framework. This will result in intense interaction and high levels of population support. The city should feature diverse activities over relative small distances in high stimulus environments which will promote the learning experience. There should also be a balance between the intensity of privacy and urbanity.” (DEWAR et al, 1991: 18-22).

Higher densities within the urban framework has allowed for more efficient land use. Efficiency not only depends on density but also the way in which the property could be utilised by having more than one function. Campuses have evolved from being only institutions to commercial entities which means they now generate an income not only from students. This can only be beneficial if the student community and the public community benefit from this.

#### 5.2\_maintenance

“Proper management and access to public services will lead to healthy and safe environments in the city. Positive spaces encourage positive people.” (LYNCH, 1981: 108-112).

The problem with the majority of institutions is the fact that they are in-accessible to the general public. Public and private investments have been attempted and have succeeded, and easier management and growth were noticed in the results. However the new functions required more facilities and the result was that the existing infra-structure could not sustain this demand. The second problem was that multiple users excluded the student who was supposed to benefit from this.

### 3.6 conclusion\_

A philosophy of imperialism evolved around the sensual and physical experience of individuals within an urban environment. The two pillars of successful urban environments are the human factor and the conservation aspect according to Uytendogaard (DEWAR et al, 1991: 19). This approach of imperialism stands in stark contrast to the philosophy of a new rationalism which formed part of the modernist town planning paradigm. The town planning in South-Africa as it is based on these methodologies has left the city with spatial segregation. These segregated “planned” environments do not sustain a positive environment. And according to Christopher Alexander human beings will always have the need to interact and depart into space close to nature. As mentioned by Alexander these feeling spaces within African cities have been limited



urban context study

figure 3.9

to ill defined urban parks and poorly defined green belts, consisting out of scattered trees and paved surfaces. Acknowledging the existing concerns already associated with the protection of designated urban green spaces.

“according to their second pillar of planning consciousness relates to the natural condition which provides the setting upon which, and the basic resources with which, human life is played out.” (DEWAR et al, 1991: 19)

“the three central concepts is the dynamic balance – between man’s activities and the resource base upon which those activities take place. In any human action on the land, there are ecological considerations which must be respected.” (DEWAR et al, 1991: 20)

This creates an exciting opportunity to allow new urban interventions to connect not only to the built fabric but also to physically connect the green/urban environments. The proposed philosophy of imperialism strongly complements the spatial linking of spaces as experiences rather than just through routes.

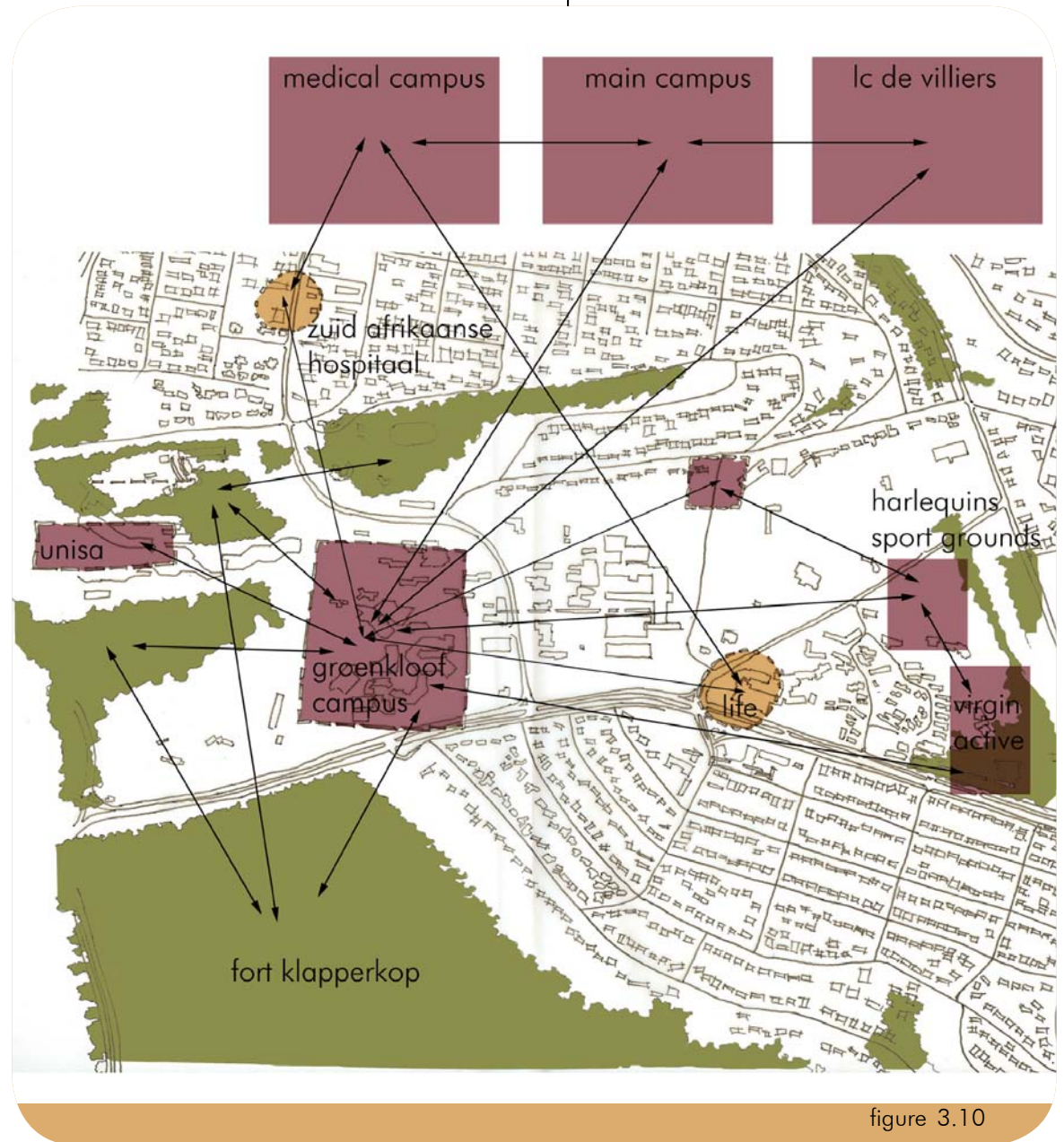


figure 3.10

multiple interlocking and linear systems

“Scientific investigations into man’s interaction with the environment have shown that there are upper and lower limits to the rate of input of environmental stimuli for the healthy functioning of the human organism.”  
(NITSCKE, 1993: 45)

This can be achieved by integrating public and private functions within the urban framework. Institutions located on large land parcels currently under utilized due to economical constraints and causing a breakdown of the urban fabric, can be redeveloped to gain and expand the institutions functions within the urban network.

Also reserving land parcels and redefining the edge of urban developments. Establishing more defined urban and rural relationship, where the character of the landscape is retained. Allowing more diverse functions with multiple stake holders and shared management of the urban fabric. Effective management strategies are vitally important for optimum performance. This will ensure increased life span of the built environment. An increased life span contributes to a positive sense of place.

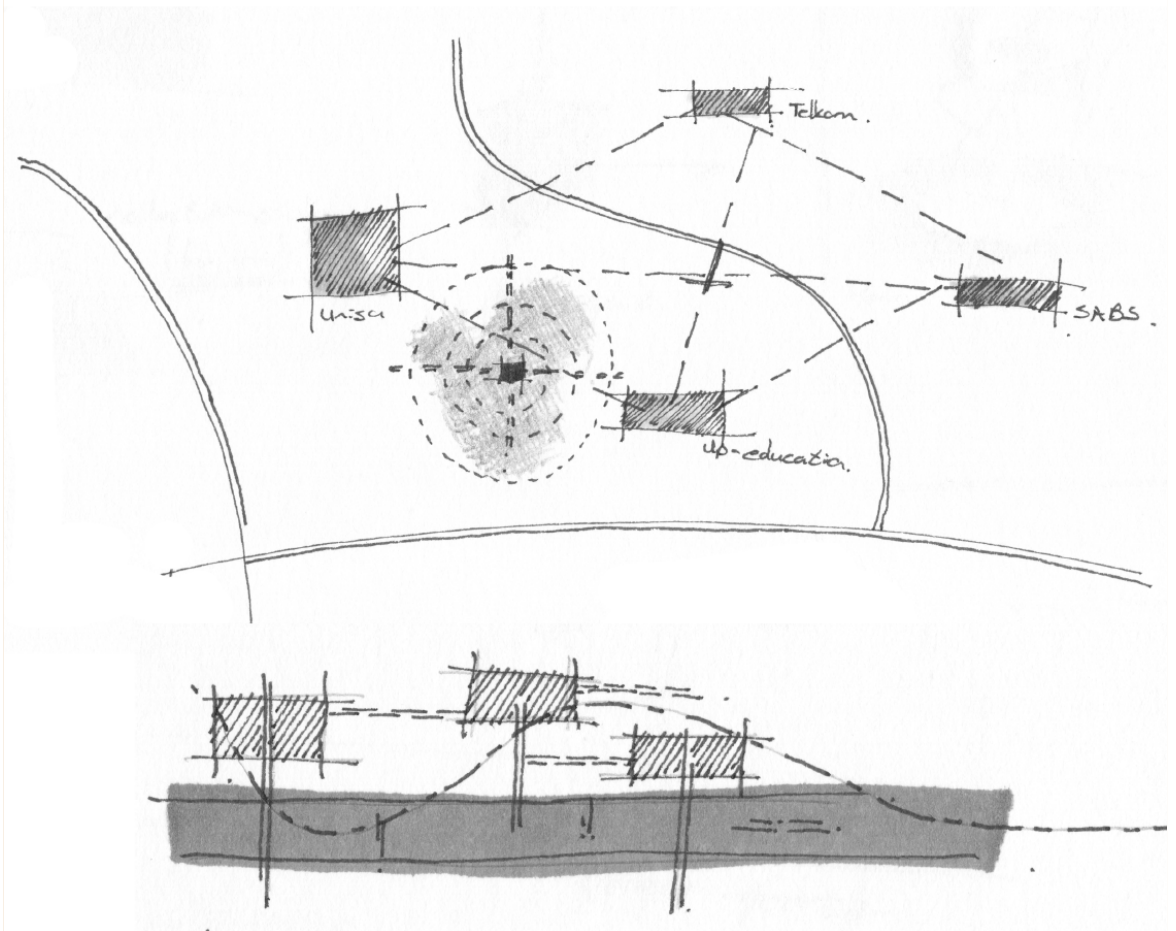


figure 3.11

Stronger networks with multiple interlocking and linear systems will help create more positive spaces. These networks in return will accommodate a large mix of economic, ecological and social activities and facilities. This will extend the life cycle of existing functions and create a more sustainable urban framework.

“the second is regionalism and the recognition of the inextricable interdependence between the characteristics of a place, people’s activities in that place and the emergence of cultural expressions and form.” (DEWAR et al, 1991: 19)

“the third concept of resource sensitivity is the recognition of the importance of all resources and the need to utilize these wisely.” (DEWAR et al, 1991: 19)



figure 3.12



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figure 3.13

# the body\_

## 4.1 site proposal\_

The site is situated against one of the Magaliesberg's southern ridges within a valley, in the city of Tshwane. Encircled with rich environmental landscapes, institutional buildings and recreational spaces are characteristic of the surrounds of this site. These institutional buildings include the South African Bureau of Standards, the South African National Parks Board, the University of South Africa and the University of Pretoria Groenkloof Campus (The old Normaal Kollege Pretoria). Recreational spaces include the Harlequins Sports Club, Groenkloof Virgin Active gym and Groenkloof Nature reserve. It is further bordered by finer grids of residential dwellings on the northern side of both sides of the valley's ridges.

The site is placed on the property of Groenkloof Campus and edging the recreational green spaces to the west and the built up heart of the campus to the east. The analysis will indicate the current problems associated with the campus and propose possible solutions.

## 4.2 historical context\_

Imbedded in the site is a rich historical presence and cultural heritage. The valley is surrounded by "koppies" representing the struggles of the past and illustrating the militaristic function of the landscape as a vantage point during war.

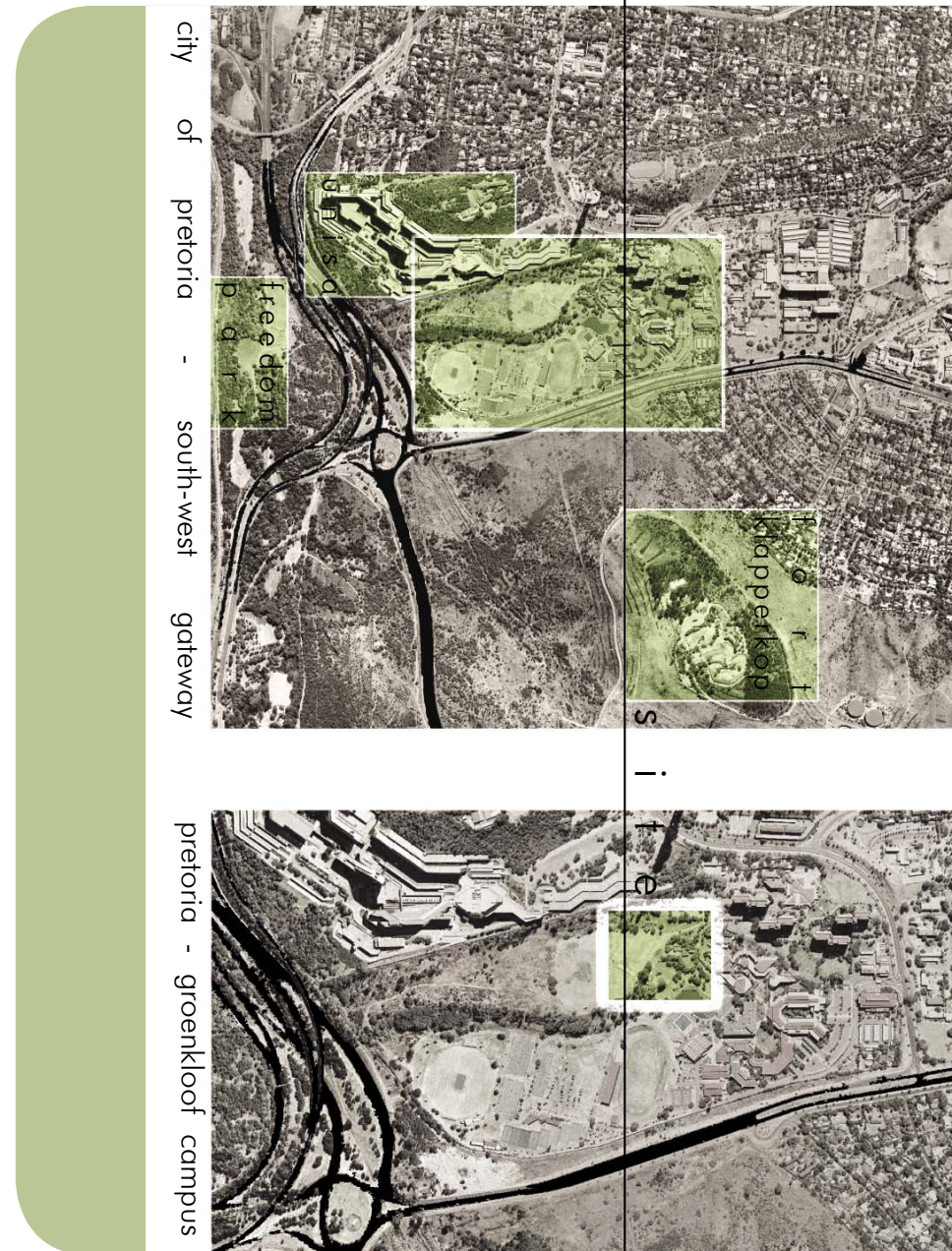


figure 4.1

Over the past decade the site has gradually changed its functions and users. It started with the early traditional cultures which inhabited the area and particularly the San people who lived along the hills up until the 1800's. Throughout the colonial times these hills were used for battle forts and block houses. During 1887 one of the pioneers of Pretoria, John Johnston Kirkness started quarrying the clay in the valleys which was to be used for the Kirkness clay bricks. After the clay ran out in 1960, large excavated areas had to be filled and the quickest and simplest solution was to use the site as a dumping terrain.

As the city developed and the threat of wars subsided, proper planning of the city became the primary objective of the state. This included proper urban development plans for future developments within the city. These proposals included social institutions and public facilities which would further the education of the general public.

In 1902 The Educational College of Pretoria started in Sunnyside but by the 1970's new highways through the Sunnyside area, increasing student numbers and the lack of infra-structure emphasized the need for larger educational premises. The required property for the NKP (Normaal Kollege Pretoria) was permitted by the Government in 1975 and was allocated between the University of South Africa (UNISA) and the Bureau of Standards (SABS). It was the current Groenkloof campus premises which were to be utilized to accommodate the new campus, and the campus was built during 1980



existing context figure 4.2



historical context figure 4.3

-1989. Large portions of the overall project were never completed due to financial short comings. Due to this, fragments of the campus were left with no response to each other. The proposed heart of campus never realised, and the end result is an undefined space overwhelmed by the surrounding environment.

### 4.3 site analysis\_

“In our context “identification” means to become “friends” with a particular environment.” (NESBIT 1996:424)

#### \_plan and section\_

The campus has a rich diversity of functions with residential, educational and sports facilities already found on the premises. Owing to this high diversity of functions, various social spaces exist on the premises. The spaces range from privacy of a room to the public space of the sport field. Unfortunately the campus has never had any specific relation to other campuses and more particularly to its existing context. This is greatly due the fact that the primary function of the campus has lost its importance in the South-African context. Currently some of the activities that were based at L.C. De Villiers Sports Campus have been moved to Groenkloof

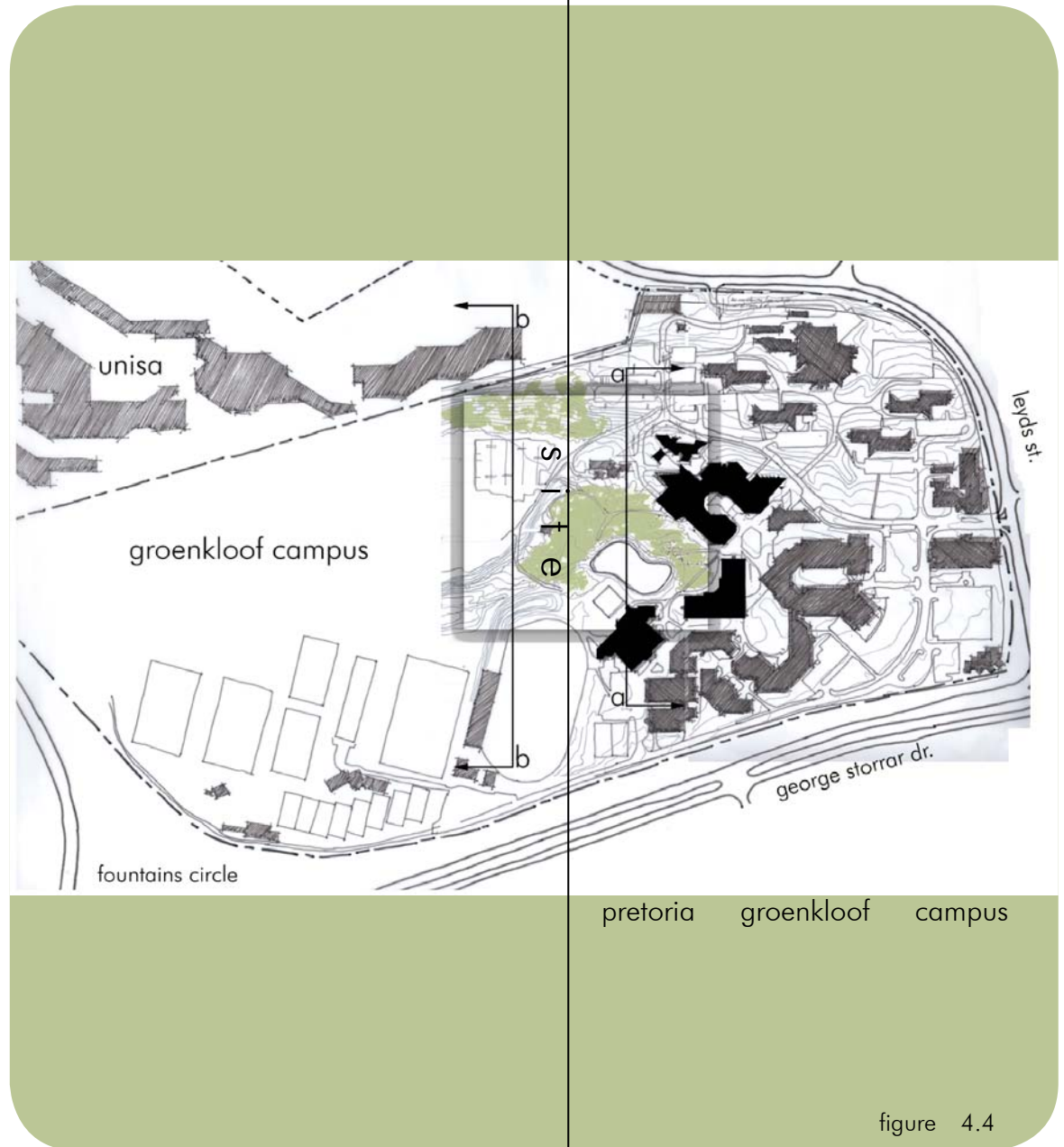


figure 4.4

due to a lack of space. Primarily these activities include dancing and hockey, but some of the other athletes have also moved to Groenkloof based upon their own preference. Overall this move is as a result of the High Performance centre that was established at L.C. De Villiers. The problem with this is that L.C. De Villiers has grown so much recently that the current facilities are over utilized and overcrowded.

The lack of access to the site and the surrounding institutional property, created an environment of inclusive spaces at the Groenkloof Campus. This can be seen on the northern boundary where the University of South-Africa is located, and to compound the problem, the largest portion of its facilities is parking orientated. Large public transport systems connect these institutions and neighbourhoods.

One of the main concerns is the under development of the campus's facilities and its undefined centres due to the infinite space as the campus opens into the landscape. A lack of management and finances has left large portions of the Groenkloof property in-active. The potential of these areas are undeniable but their use as conservation areas should be considered within the larger context of the area.

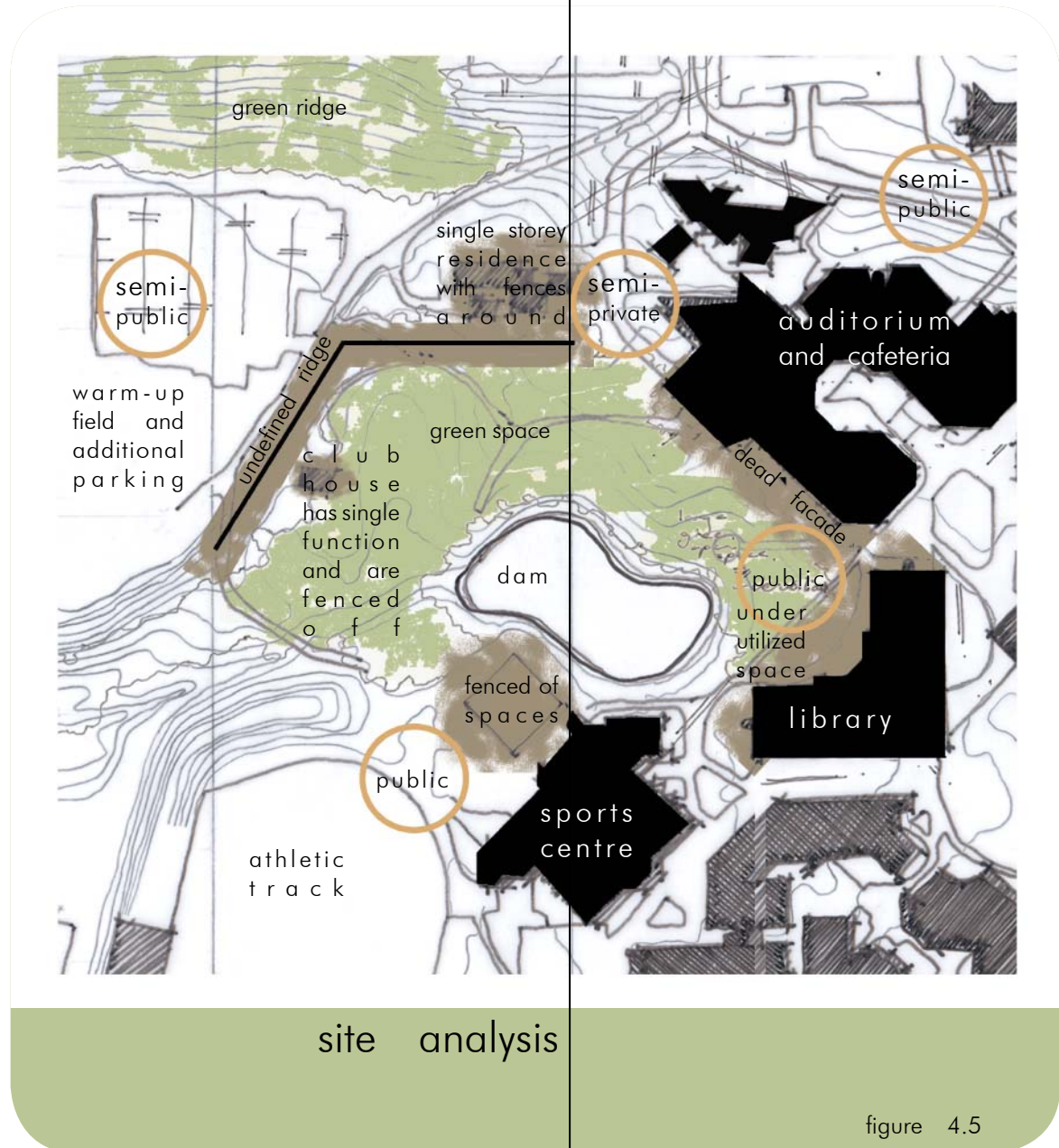


figure 4.5

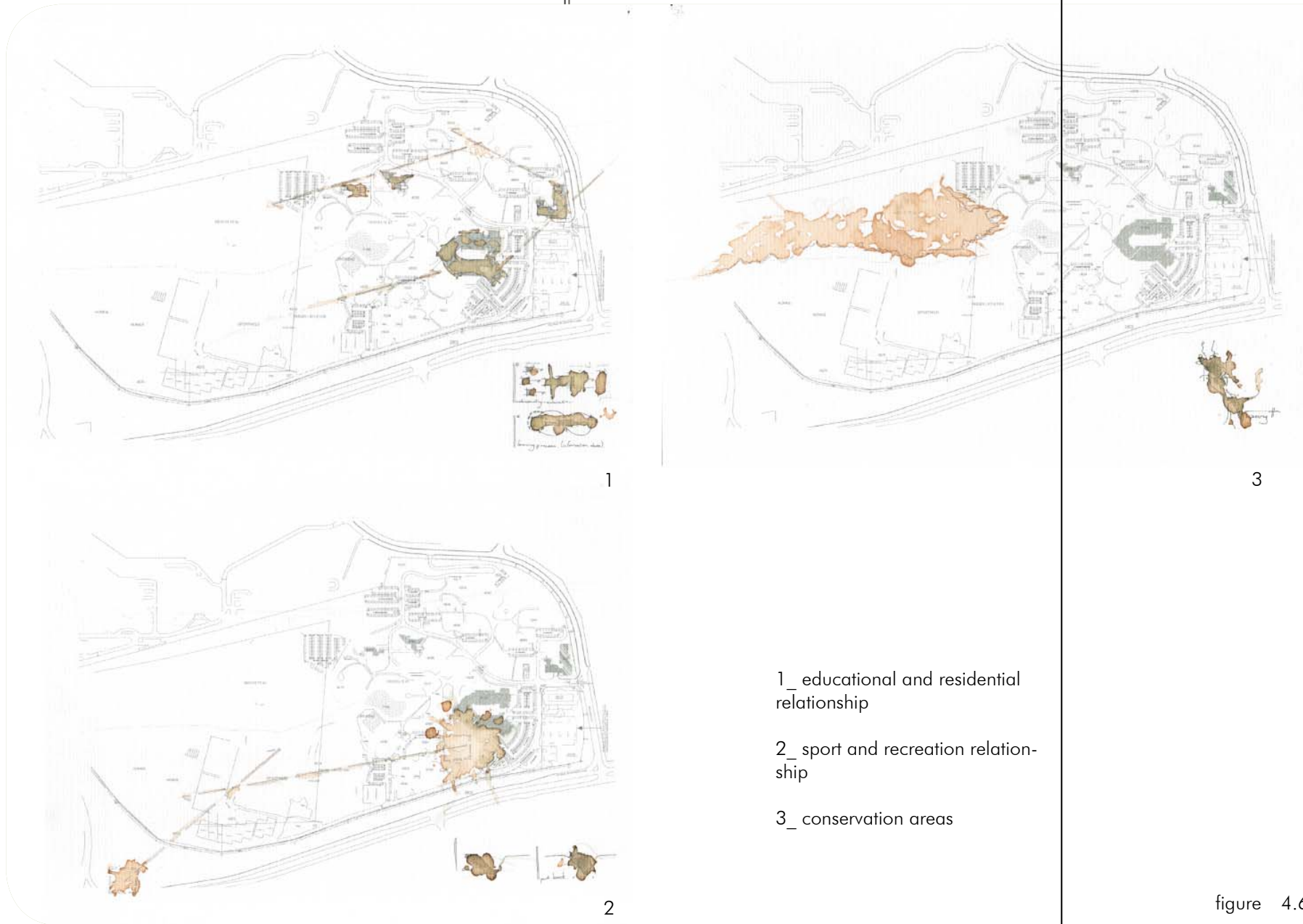
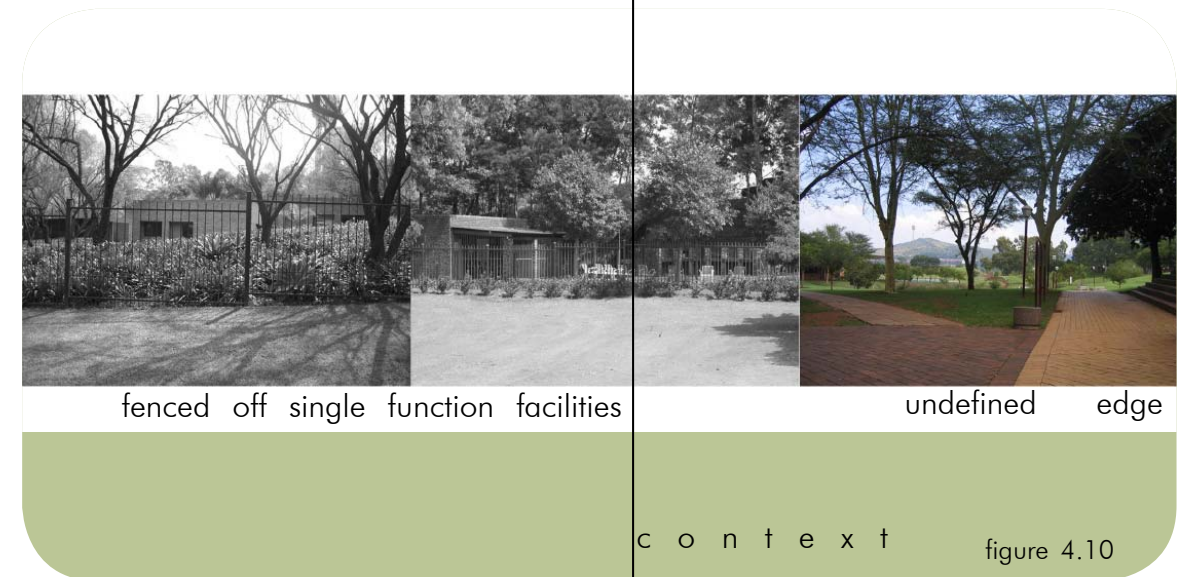
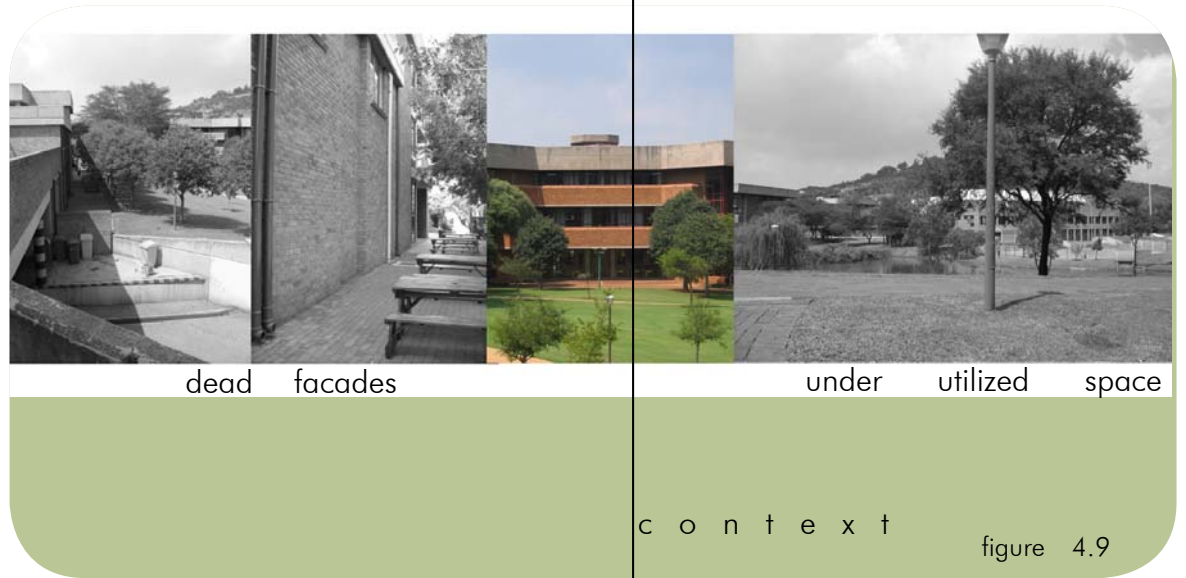


figure 4.6

The residential component of the campus consists of hostels which only functions for certain parts of the year. This means that for at least three months of the year the campus are completely under utilized. These residences are occupied by students from main campus and Groenkloof campus, although the majority of students are studying on Groenkloof campus. During the year various head counts (based upon a two hour period over lunch time) were made in the cafeteria in regard of this matter. The results showed a ninety percent decrease over the holidays. For this reason as well as financial concerns, the services within student facilities have not been upgraded.

Auditoriums are currently used by students and occasionally by the general public, but due to the lack of proper infra structure the public use of the facility is limited to smaller events. Most of the buildings lack sufficient heating and cooling devices and less than eighty percent of the campus can accommodate disabled users.

What was supposed to be the heart of the campus is now an over sized park with undefined edges fronted by dead building facades. The scale of the green space is enlarged by sports fields and conservation areas of the context. The libraries front entrance has been closed off and what remains is a dead edge within the larger green space. Exacerbating the problem is the fenced-off recreational swimming pool next to the sport centre and a bricked up facade of the cafeteria. The cafeteria's only open facade faces a small courtyard

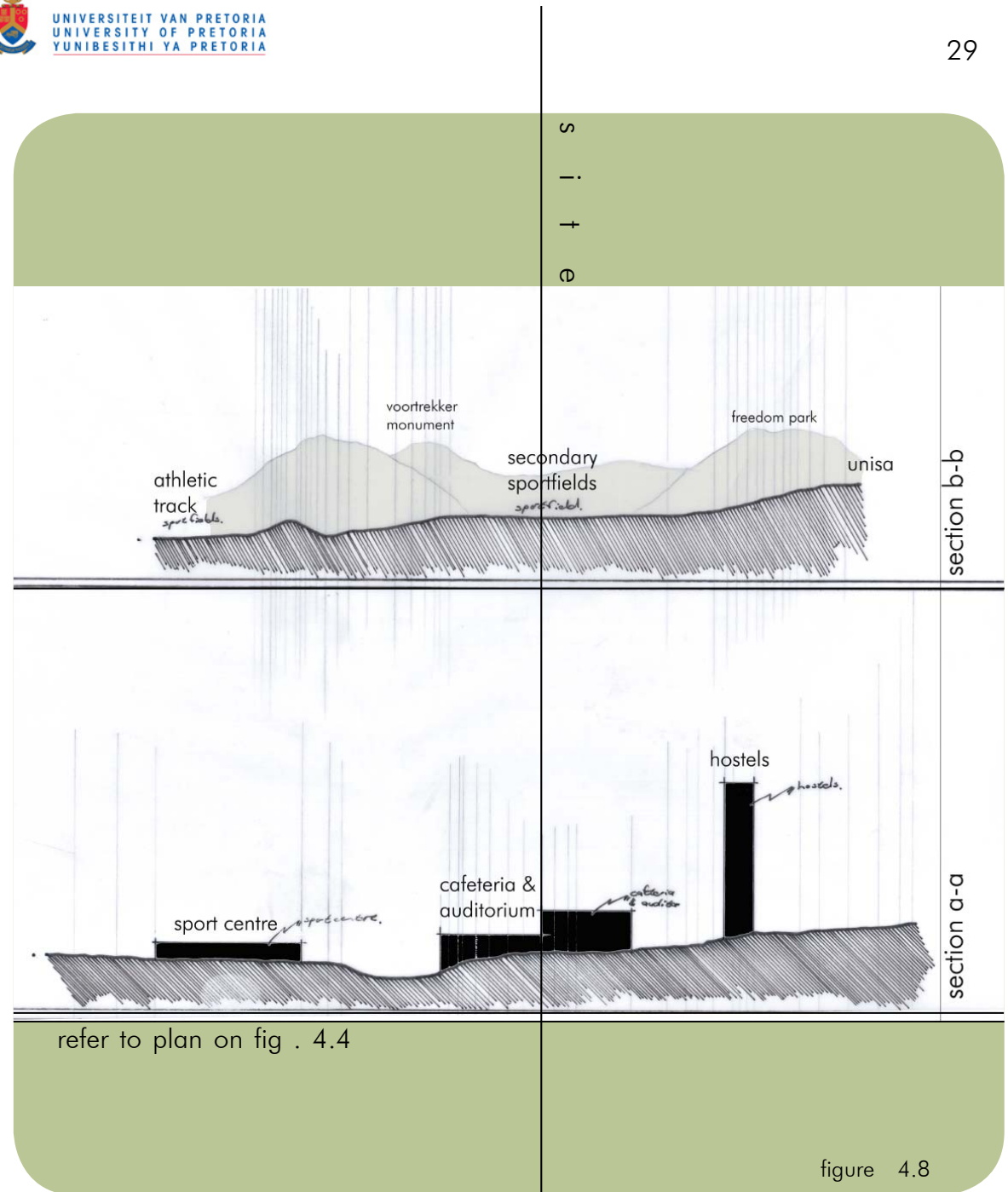


on the eastern side. A small single storey residence and a club house sits within a green space south west of the cafeteria. Their limited functions and their private nature can be considered as the under utilization and inappropriate use of the space. For this reason these buildings should be demolished and substituted with higher densities and more diverse functions.

Historical events have left the site's soil conditions in a fragile state. Deep foundations will be a prerequisite for the property and is more expensive to construct. The site functions as a storm water drainage basin for the surrounding hills and drainage and run-off is problematic. Rich diversity in habitats can be found along the ridges even if they are classified as disturbed habitats. The exotic species that flourish in the disturb spaces is of greater concern to the landscape.

As a result of the land form temperatures fall drastically during the winter months as the cold air accumulates in the valley basin. Temperatures are further lowered by the water mass situated in the basin. The water will cool the air temperature at a much faster rate than usually noticed. These uncomfortable temperatures are mostly experienced during the early mornings and in the late afternoons.

Various parking spaces are allocated on the campus and the warm-up field parking is as result of modern city living in South-Africa. The use of this area is not a prerequisite and there are other



alternative parking solutions available.

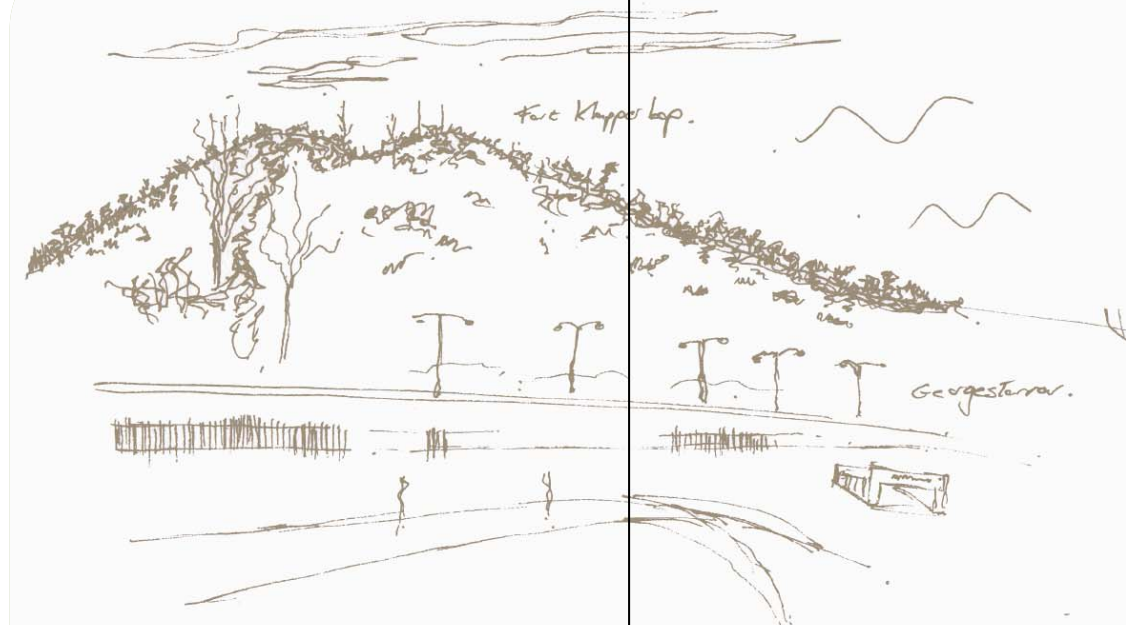
It can be interpreted from the sections of the campus and the placement of buildings that it does not respond directly towards the context.

\_photo elevation

The visual study of the site's landscape produced a better understanding of how the various components related towards each other. This was done by constantly moving through the surrounding context whilst focusing on Groenkloof campus. Giving a better visual understanding of how the contextual landscape relates toward the site. In the end the same analysis was done on the site itself, where the relationship between the site and the contextual landscape was measured. Whilst moving through the site the architecture responded to the contextual landscape at some points and at others not at all. These studies identified the visual character and functions of the site and the contextual architecture.

"A place is therefore a qualitative, 'total' phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight." (NESBIT 1996:414)

site relationship and scale



existing textures

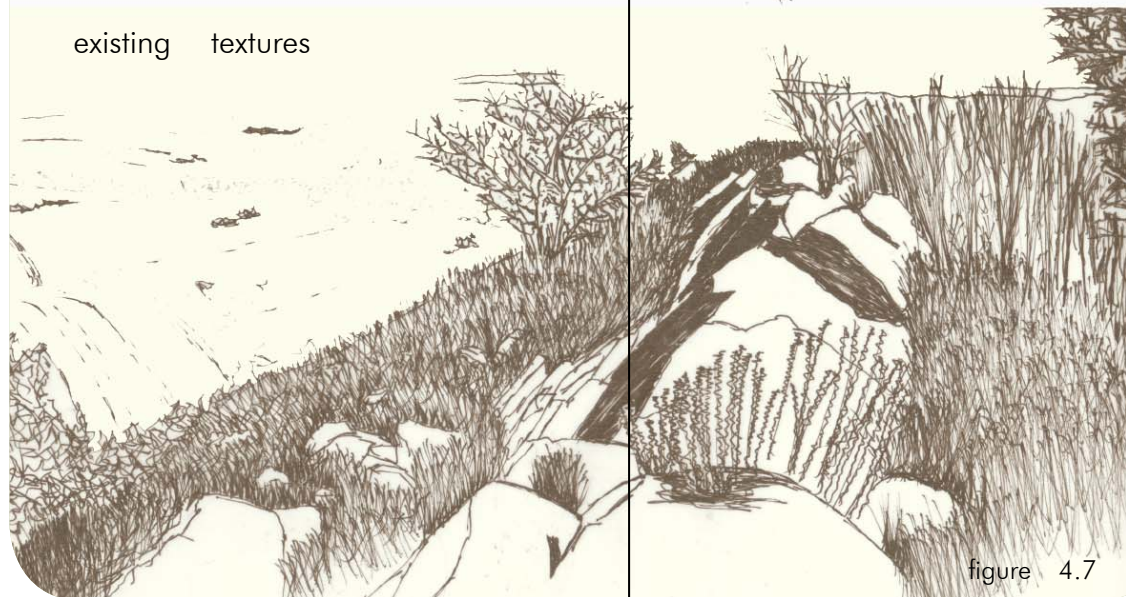
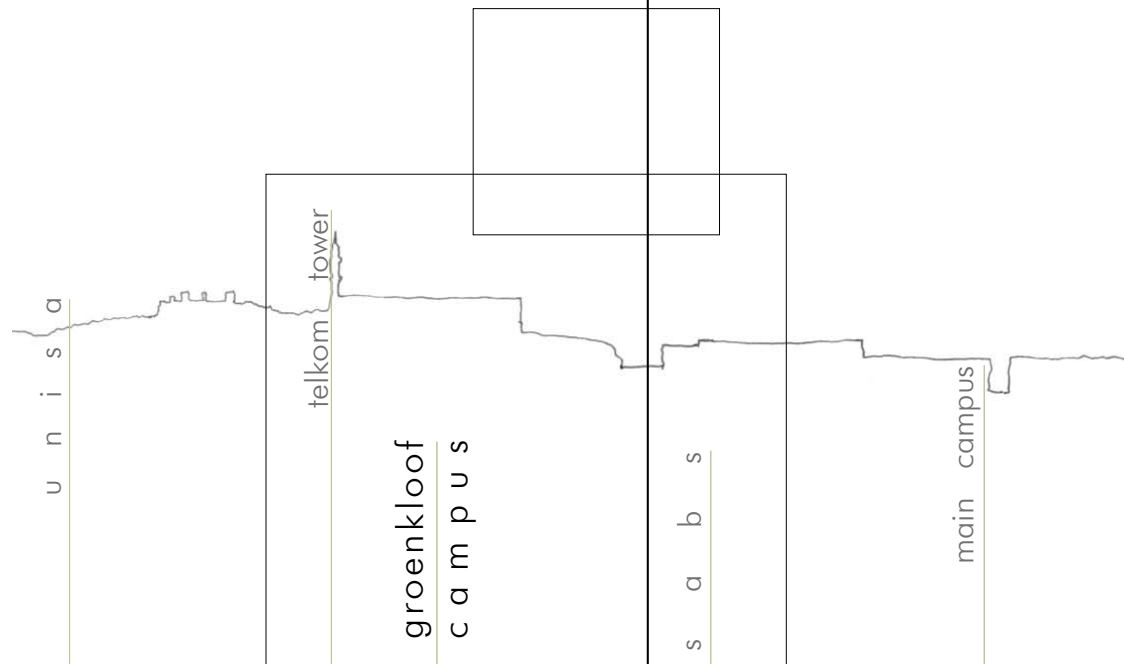
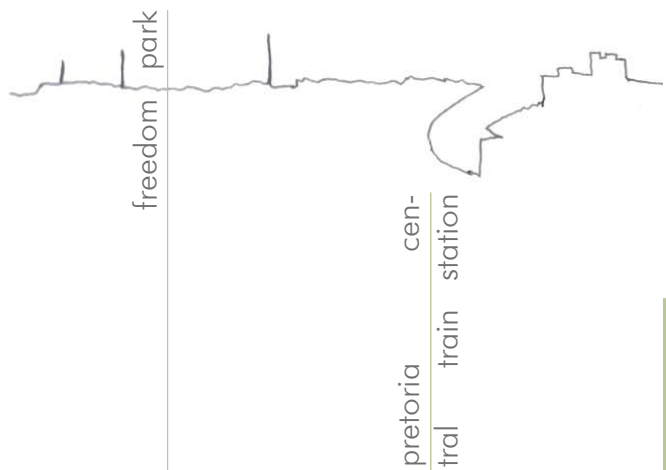


figure 4.7



fort klapperkop view

figure 4.11



figure 4.12

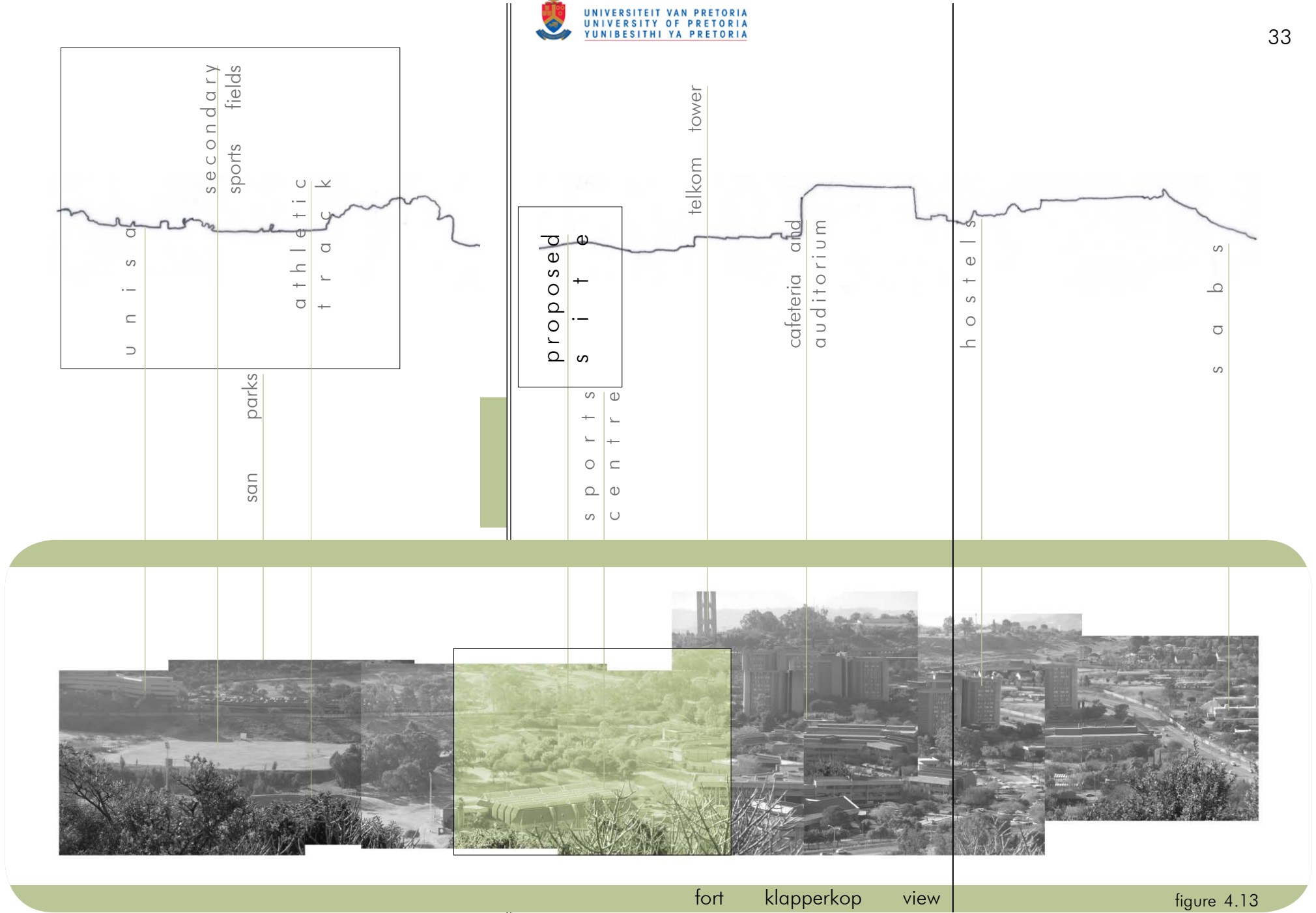
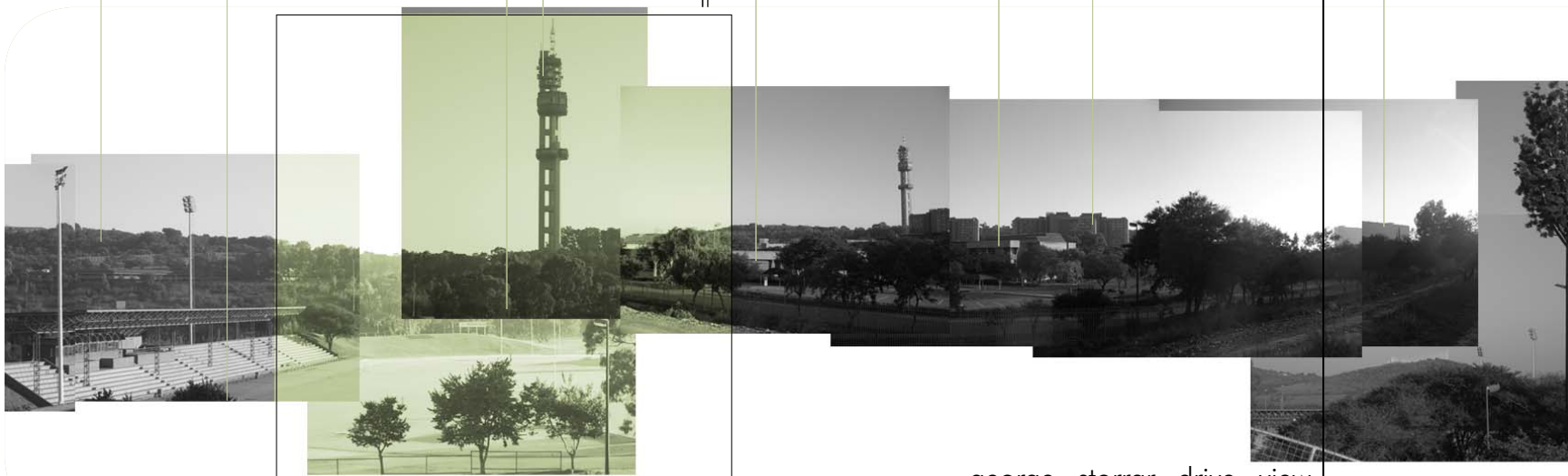


figure 4.13



george storrar drive view

figure 4.14

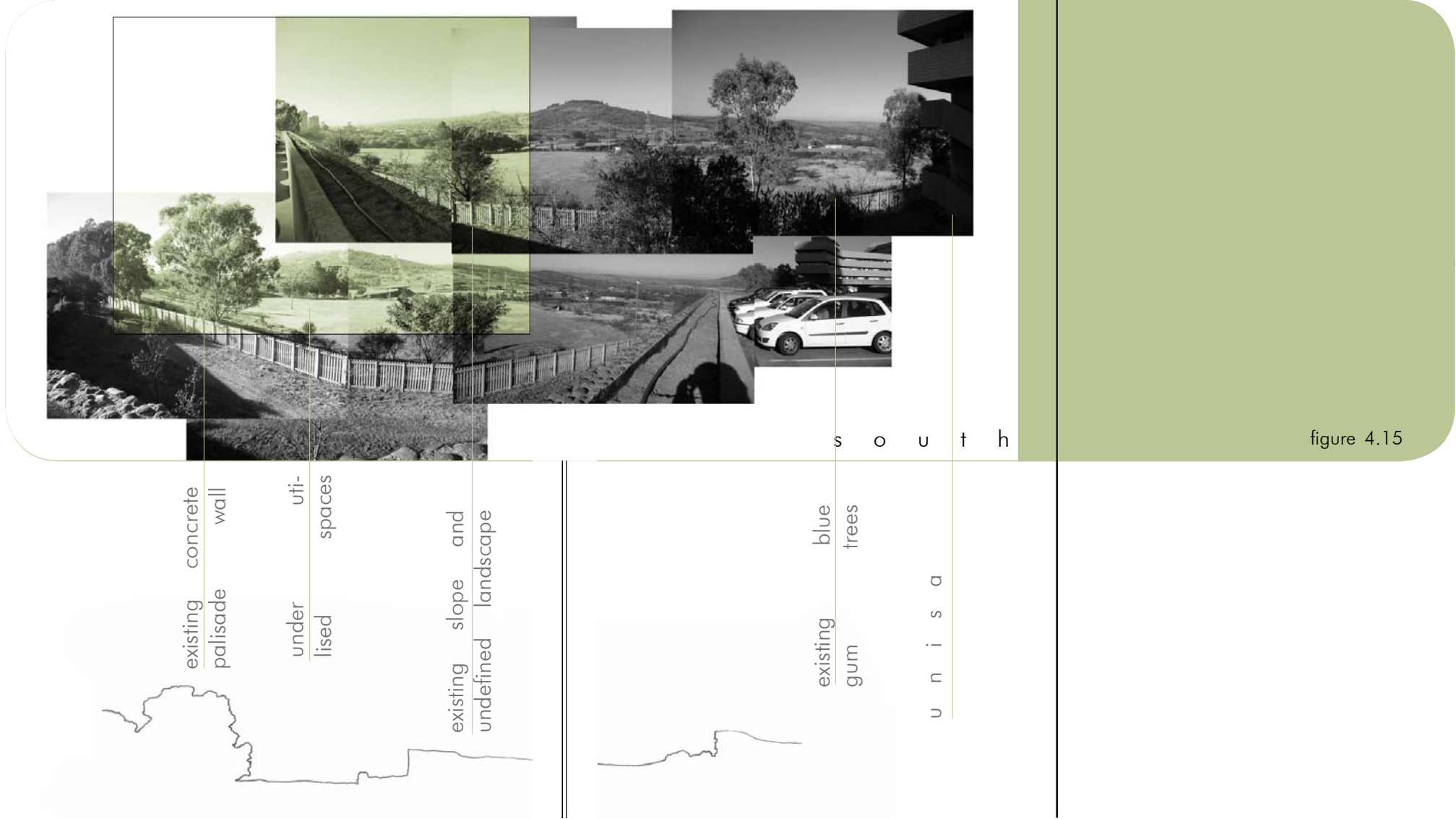


figure 4.15

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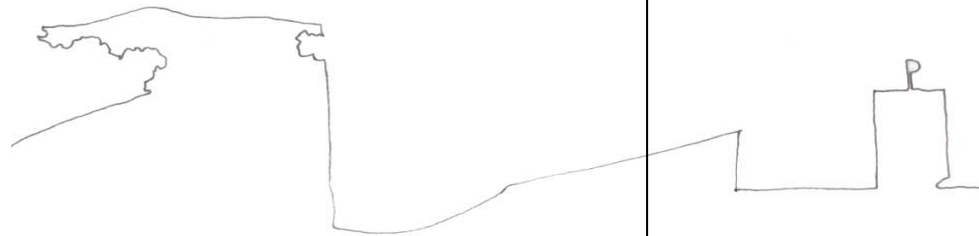
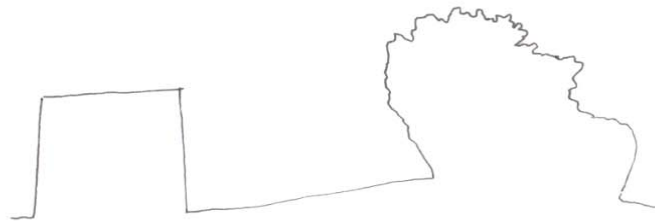
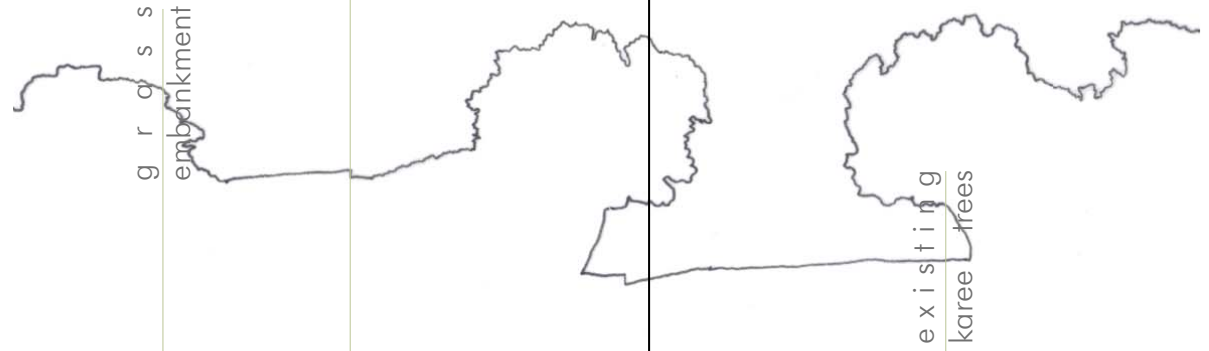
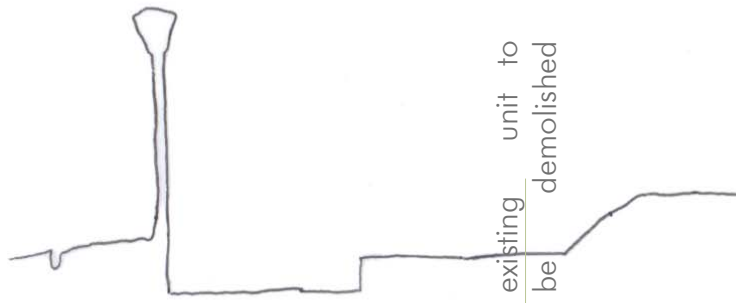


figure 4.16



figure 4.17





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figure 4.18

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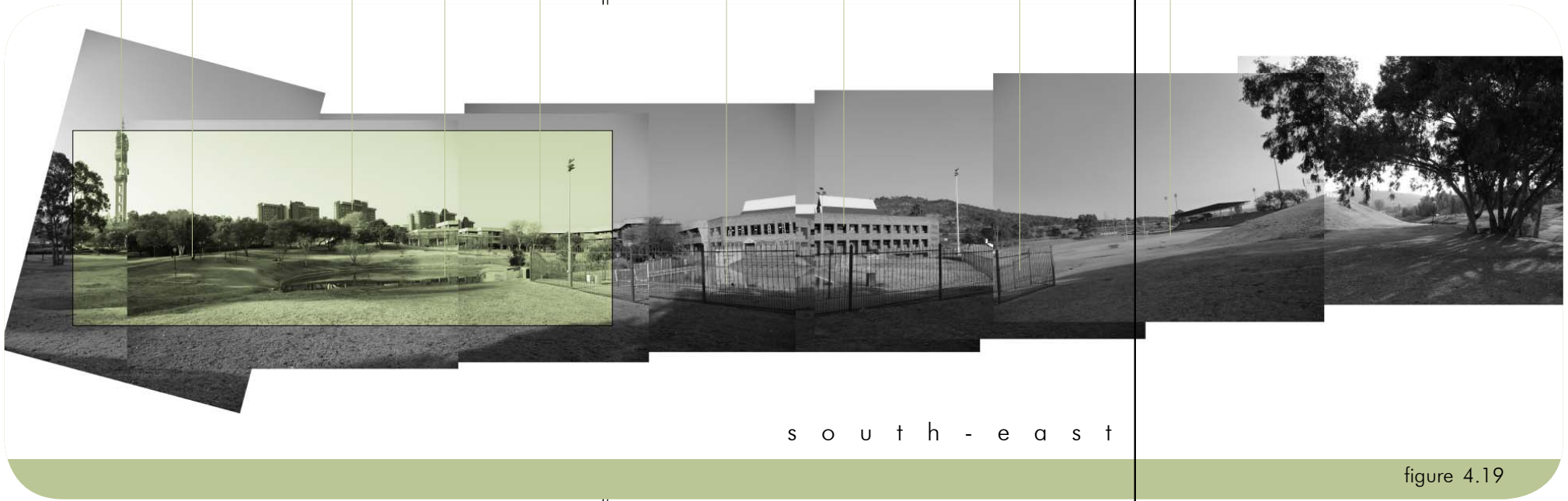
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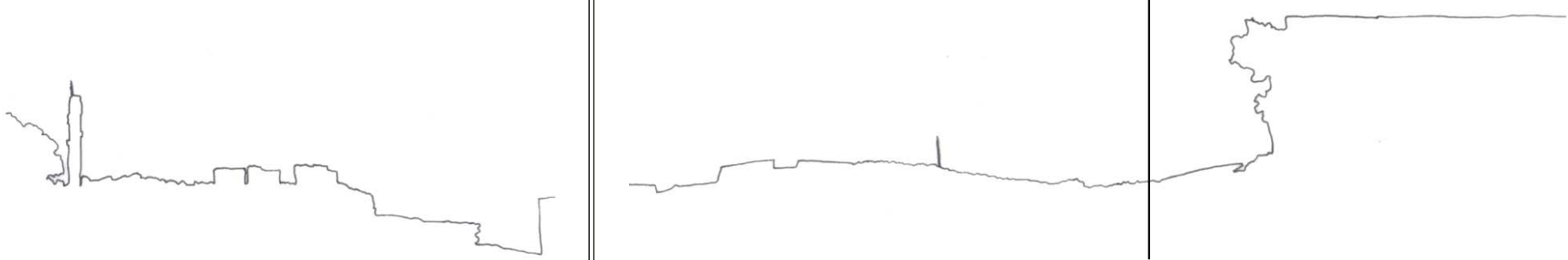
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s o u t h - e a s t

figure 4.19



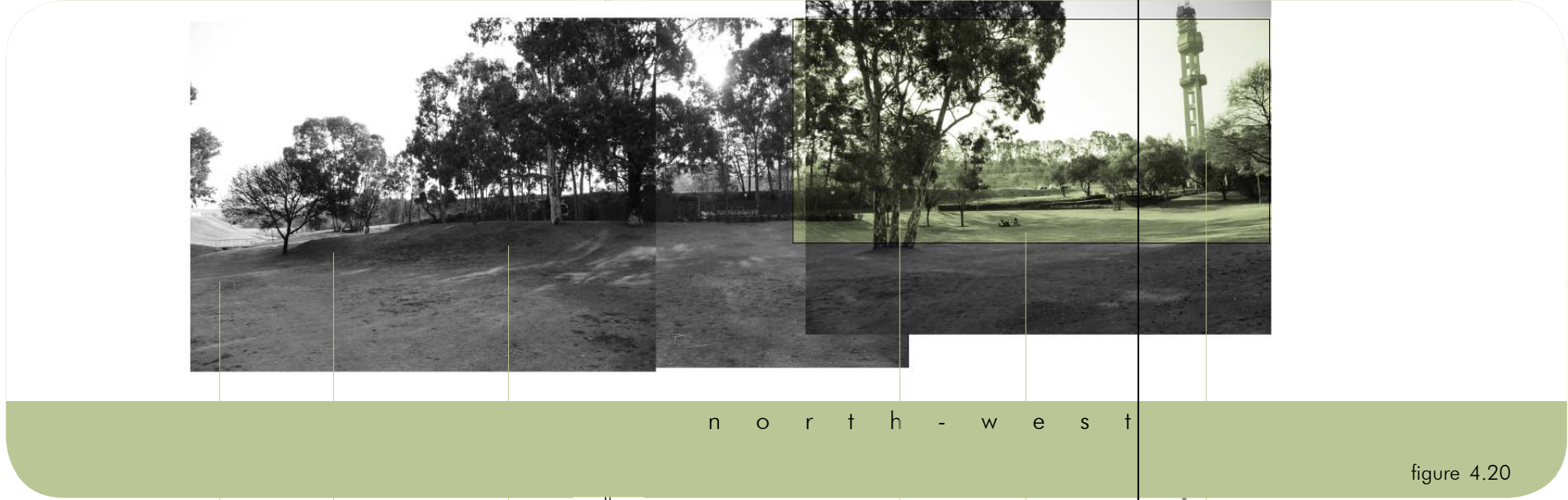
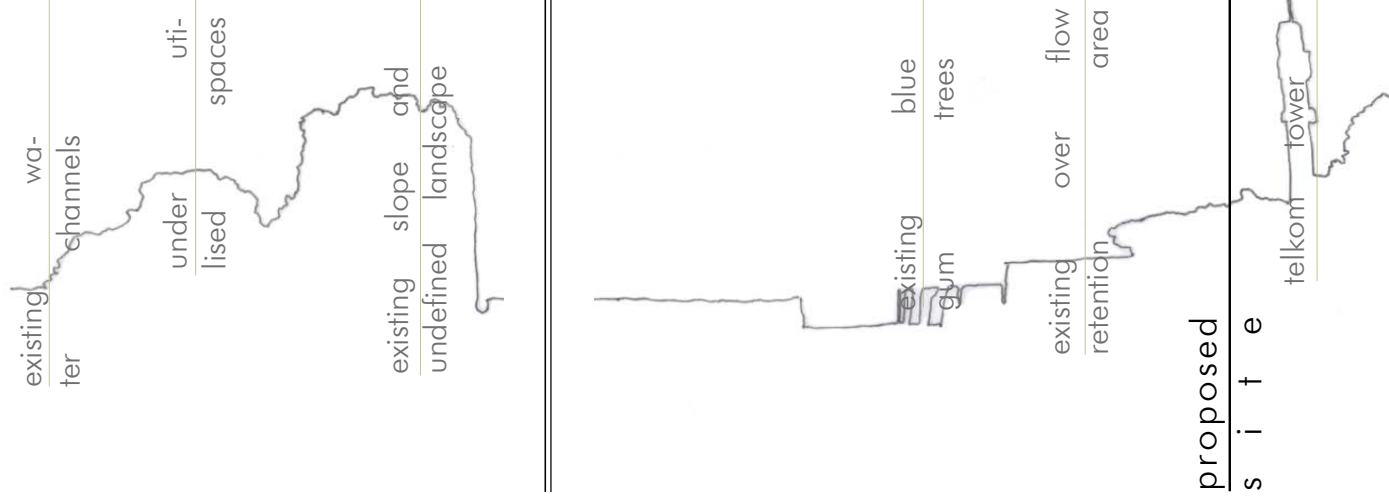


figure 4.20



# d e s i g n f r a m e w o r k \_

## 5.1 introduction\_

Tadao Ando speaks of the architecture which the site itself is seeking in his article Towards New Horizons in Architecture (NESBIT 1996:456). Based on the analysis of the proposed site, the strong historical and environmental characteristics required a more responsive architecture which would celebrate and respect the context.

A human rehabilitation facility is chosen to achieve the objective in this dissertation. The word rehabilitation according to the dictionary means returning to a previous state of being. Sport rehabilitation requires physical and psychological treatment for the athlete to establish this state. Objectives for rehabilitation would differ for each case, but ultimately the path preferred would be for complete reconditioning of the athlete - allowing the athlete to perform and function at their previous state of being. The meaning and reality of rehabilitation, ultimately means to form a new state of being. For every athlete would carry with them the scar tissue of their accident, be it physical or psychological. Scar tissues act as growth stimulators in the athlete's life. The primary function of the rehabilitation would be to help the athlete to deal with these problems. Finally the athlete would need to accept their scar tissues and at this point the athlete establishes a new state of being.



Site rehabilitation would require the same type of perseverance, where the scar tissue needs to be identified and dealt with accordingly. The landscape typically includes the buildings and the people that uses it. Acknowledging the historical background and analysing the current state of the landscape. The aforementioned allows a new relationship between man and nature in which both are required to reflect on their past and redefine their animation within the given context.

To achieve this, three design guidelines are defined and used to direct and define the proposed architecture. These principles are measured and defined by in-depth evaluation of existing architectural responses in a local and international context. This will allow for a more responsive design solution within the given context and hopefully also guide other designers in their search for appropriate responses.

## 5.2 precedent studies\_

To understand the relationship between architecture and its assigned activities within a specified context or environment required the in-depth study of current architectural approaches. The architectural works (referring to the Hammanskraal Campus, Hammanskraal,



figure 5.1

Tshwane) of local architects such as Allan Konya and Schalk du Toit were evaluated considering that they were working in a common context. Further local evaluation was based on the work (referring to the Coromandel estate, Lydenburg, Mapumalanga) of Marco Zanuso an Italian architect hired to do a homestead for a local family. His architectural solutions were based on his understanding of the environment in a fairly critical regional matter.

Internationally, the works of architects (referring to Lake Flato, Glenn Murcutt, Geoffrey Bawa, Enric Miralles, Alvar Aalto and Mies van der Rohe) with their contextual and regional design methods were evaluated to optimise the resolution of the task at hand. The study of the placing of the Kandalama hotel (referring to Dambulla, India) within the landscape as it reflects the identity of the environment in plan and in section. This indicates the architects understanding of the site as he uses the building to extend and emphasise the context in a responsive design solution. Enric Miralles uses radical tectonics to highlight the identity of the landscape, expressing the prominence of forms and textures, obtaining stronger characteristic spaces.

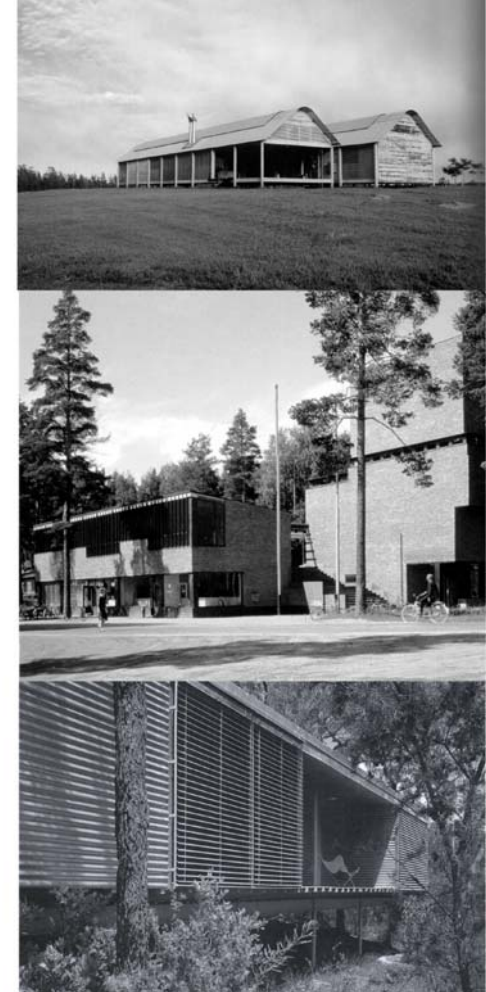
Glenn Murcutt and Mies van der Rohe graciously place their buildings on the landscape indicating their respect towards the environment. The way the Farnsworth House (Plano, Illinois, United States of America) gently sits within the context as well as the simplicity of the building, accentuate

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figure 5.3

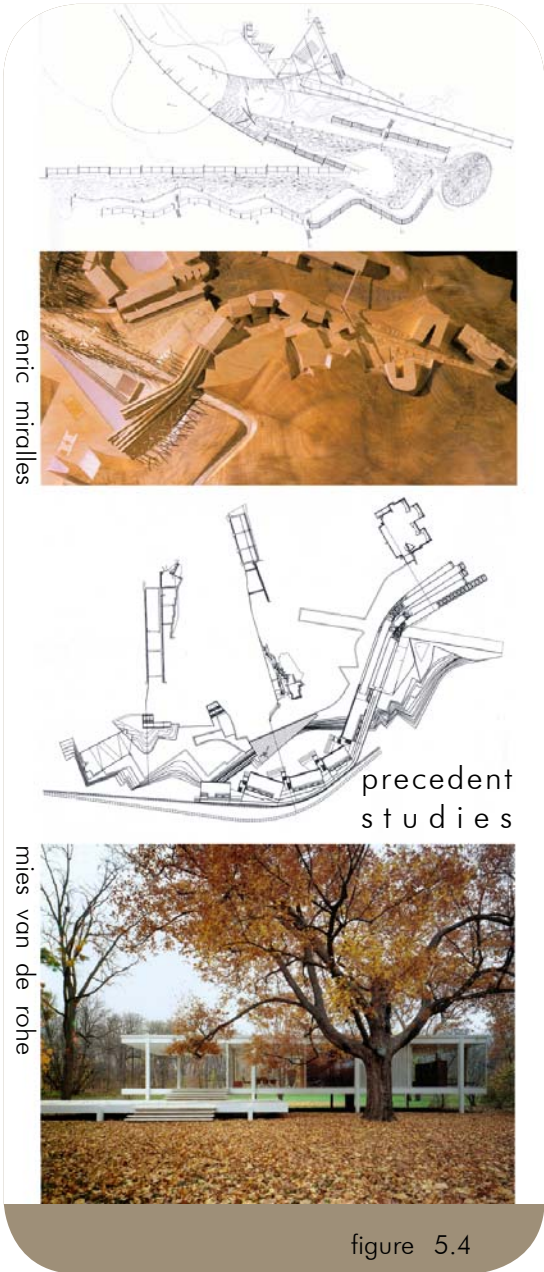
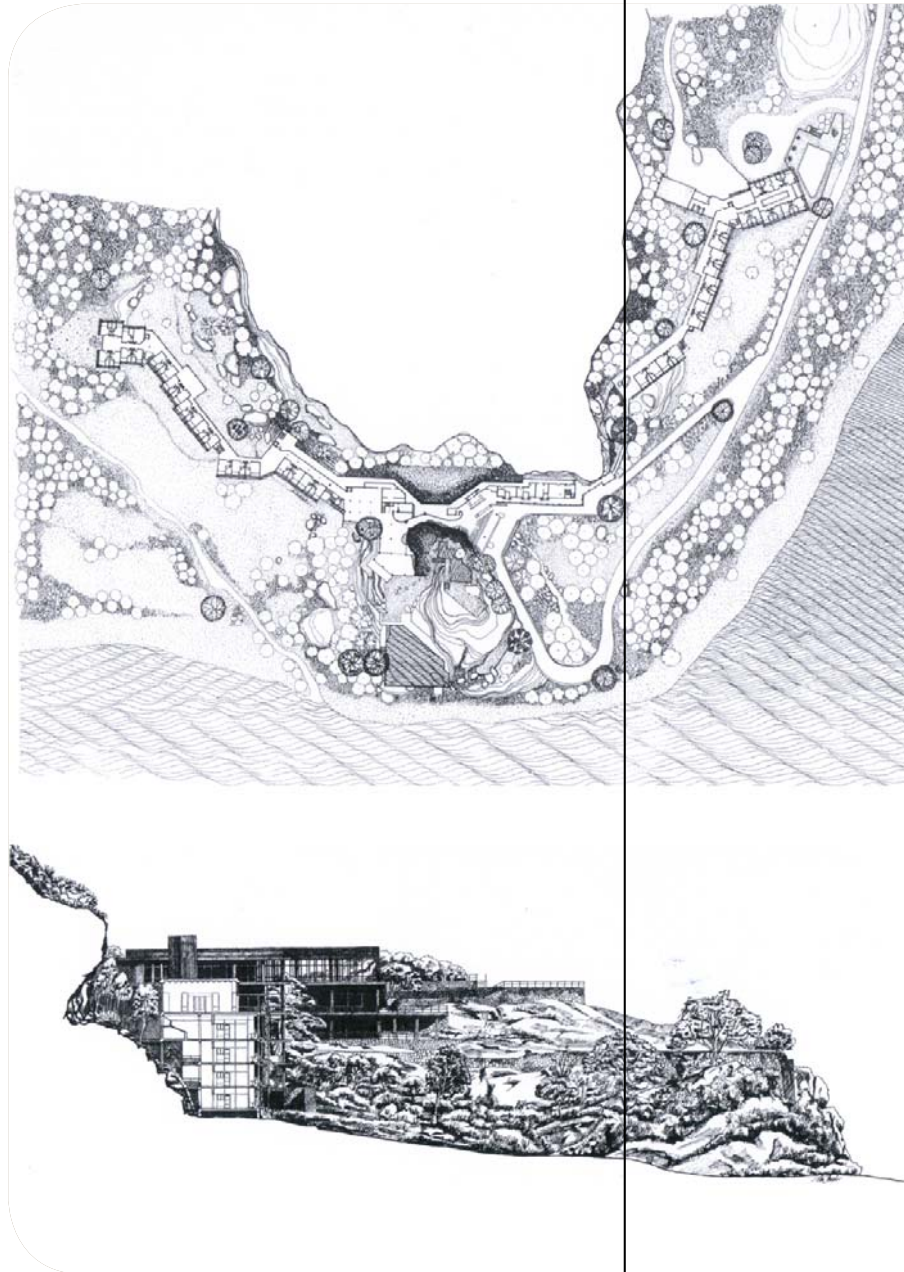


figure 5.4



Kandalama hotel ( Dambulla, India) by Geoffrey Bawa

figure 5.5

the landscapes qualities. Level changes do not prevent the internal spaces from opening up toward the landscape. Glenn Murcutt uses economical structures which respond perfectly to the climate and environmental characteristics of the site.

And finally the uncomplicated architectural works of Alvar Aalto were evaluated. His architectural solutions based on the climatic requirements and the simple use of natural materials and undulating lines was investigated.

### 5.3 design principles\_

#### 2.1\_ activities and movement

"He would claim that the problem is not with the space, but with its programming in terms of function rather than event." (NESBIT 1996:157)

"The sole judge of the last term of the trilogy, 'appropriate spatial accommodation' is, of course, the body, your body, my body – the starting point and the point of arrival of architecture. The Cartesian body-as-object has been opposed to the phenomenological body as subject and the materiality and logic of spaces. From the space of body to the body-in-space

– the passage is intricate. And that shift, that gap in the obscurity of the unconscious, somewhere between body and Ego, between Ego and Other..." (NESBIT 1996:159)

"Bodies not only move in, but generate spaces produced by and through their movements. Movements – of dance, sport, and war – are the intrusions of events into architectural spaces. At the limit, these events become scenarios or programs, void of moral or functional implications, independent but inseparable from the spaces that enclose them." (NESBIT 1996:160)

#### i. spatial character\_

The three images (fig.5.7) of the two athletes running through the site best describe the inherent characteristics of the place. It also illustrates the endless possibilities of movement within the given context. Thus the changes in activity and movement can be directly related to a change of spatial experience. The movement is not confined to a single space but rather an amalgamation of intricate spaces. These spaces consist of indoor, outdoor and infill spaces and allows alternating movement through them.

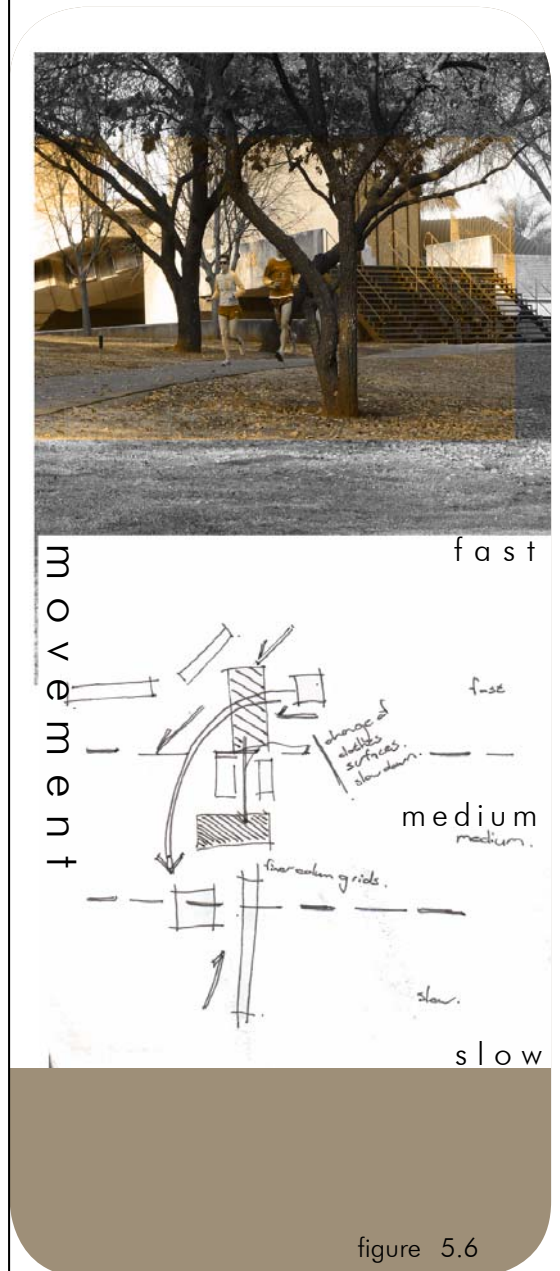


figure 5.6



running

along

a

path

the

athletes

movement



figure 5.7a

creates

various

transcending

spaces

which

is



figure 5.7b

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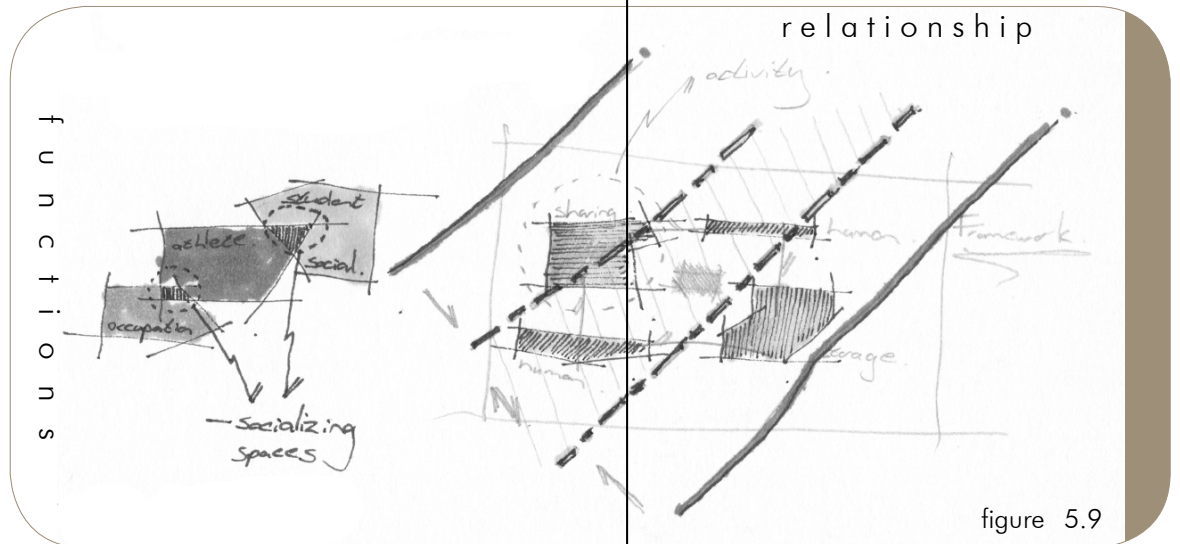
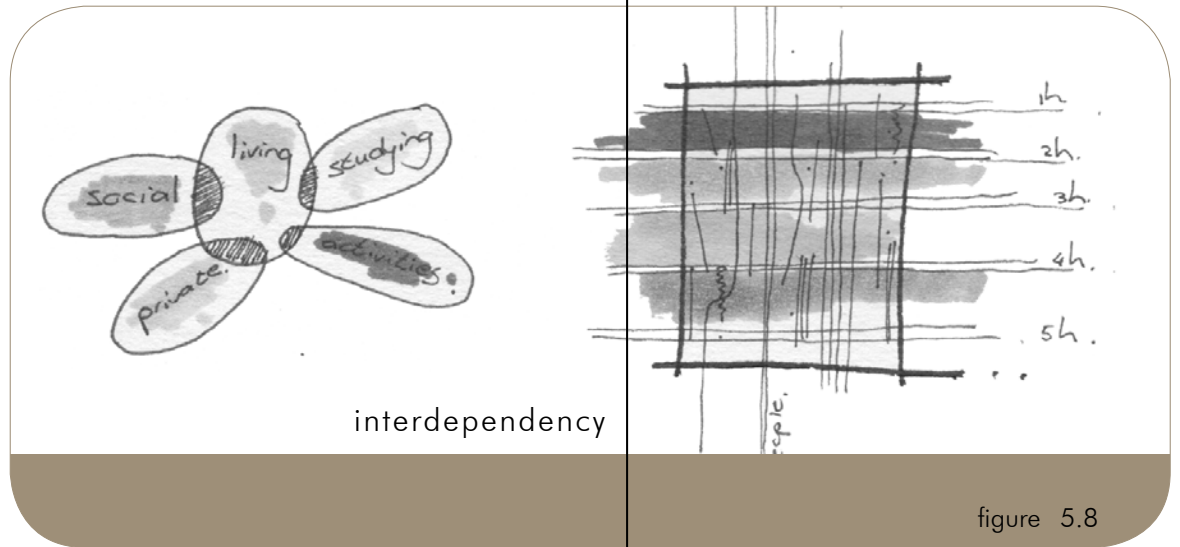
activity

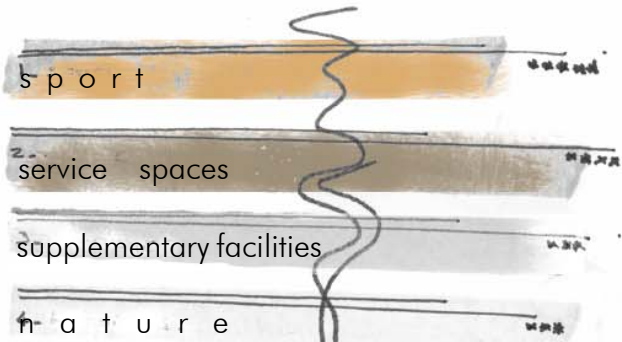
figure 5.7c

ii. programme\_

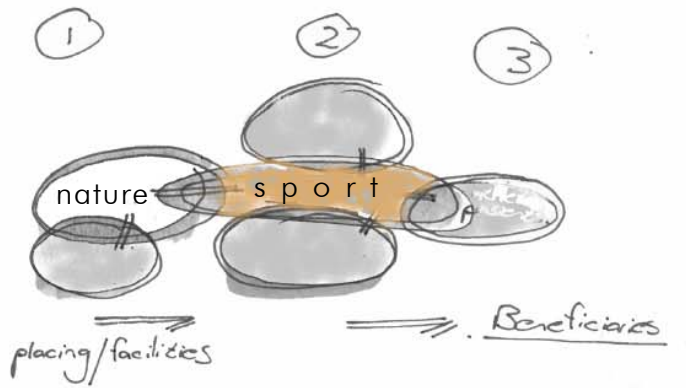
Bernard Tschumi writes that space is formed by events such as theatre and sport, and substantiates my choice of building for this particular site (NESBIT 1996:160). The existing activities will be combined with new activities allowing greater movement and inter-relation between activities. All of these activities are based on human body interaction, as passive and active movements are placed alongside each other. Most of the activities require specialised equipment but are open to be performed both indoor and outdoor. The opportunity arises then to allow for a range of integrated spaces which would accommodate these activities and also function as flexible service space.

This broadly describes the theoretical functioning of the building as it should be devised on the site. The detail of the programme is based on thorough investigation of similar facilities which consisted of the High Performance Centre on L.C. De Villiers and other commercial institutions such as the Virgin Active Group. Water activities were chosen as the centre point of the programme accommodated by various indoor and outdoor training nodes and living areas. All of these are serviced by specialised and separate service areas obliging to the required demands. This programme was used as the baseline to which further investigation could be measured.

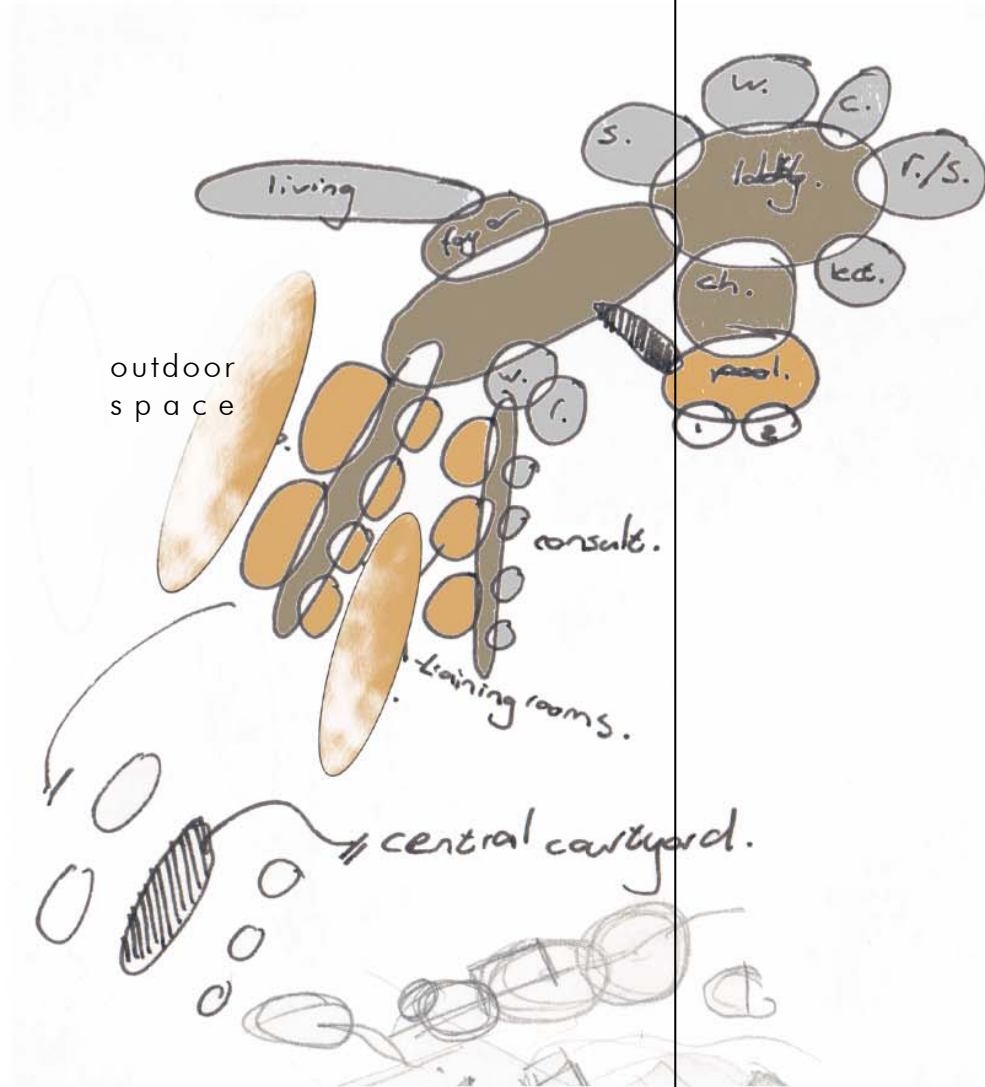




1



2



3

concept programme development

figure 5.10



concept programme implementation

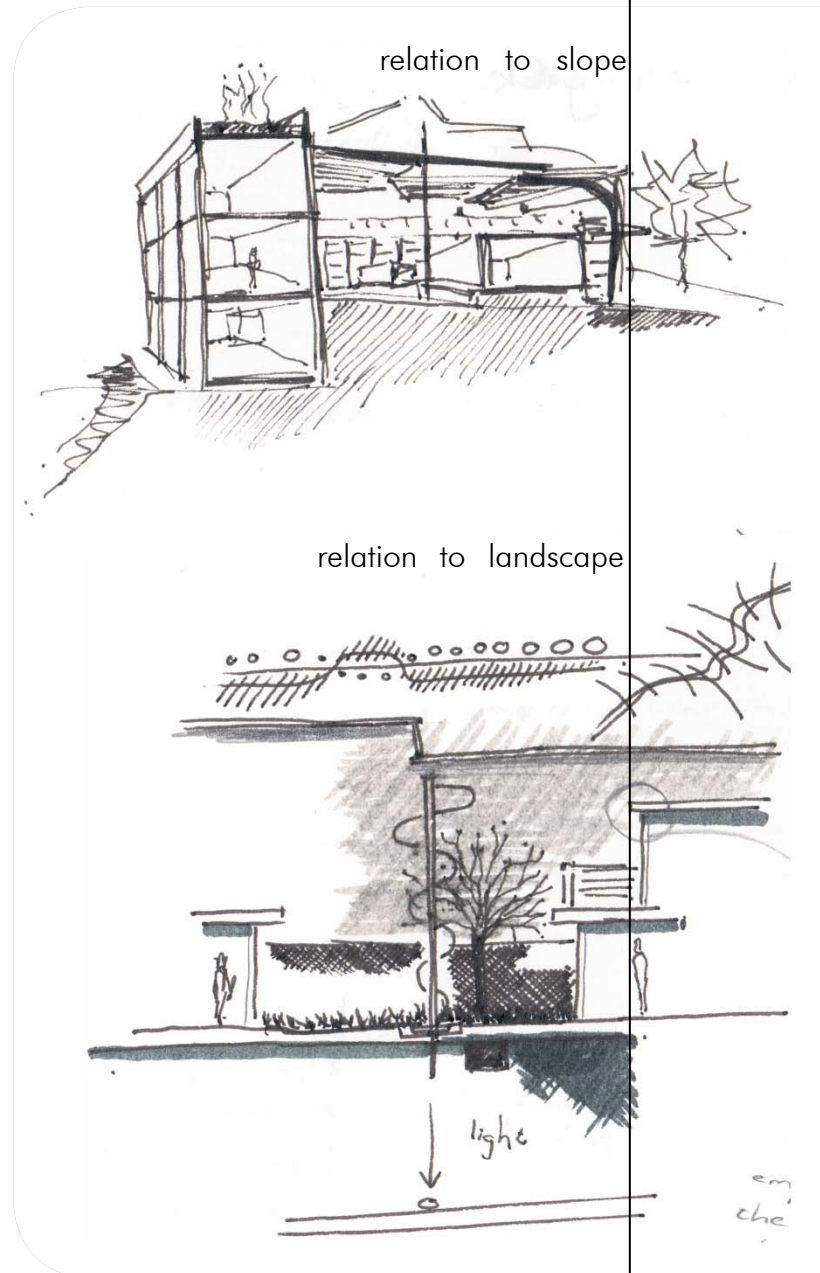
figure 5.11

## 2.2\_orientation

“The presence of architecture – regardless of its self-contained character – inevitably creates a new landscape. This implies the necessity of discovering the architecture which the site itself is seeking.”  
(NESBIT 1996:461)

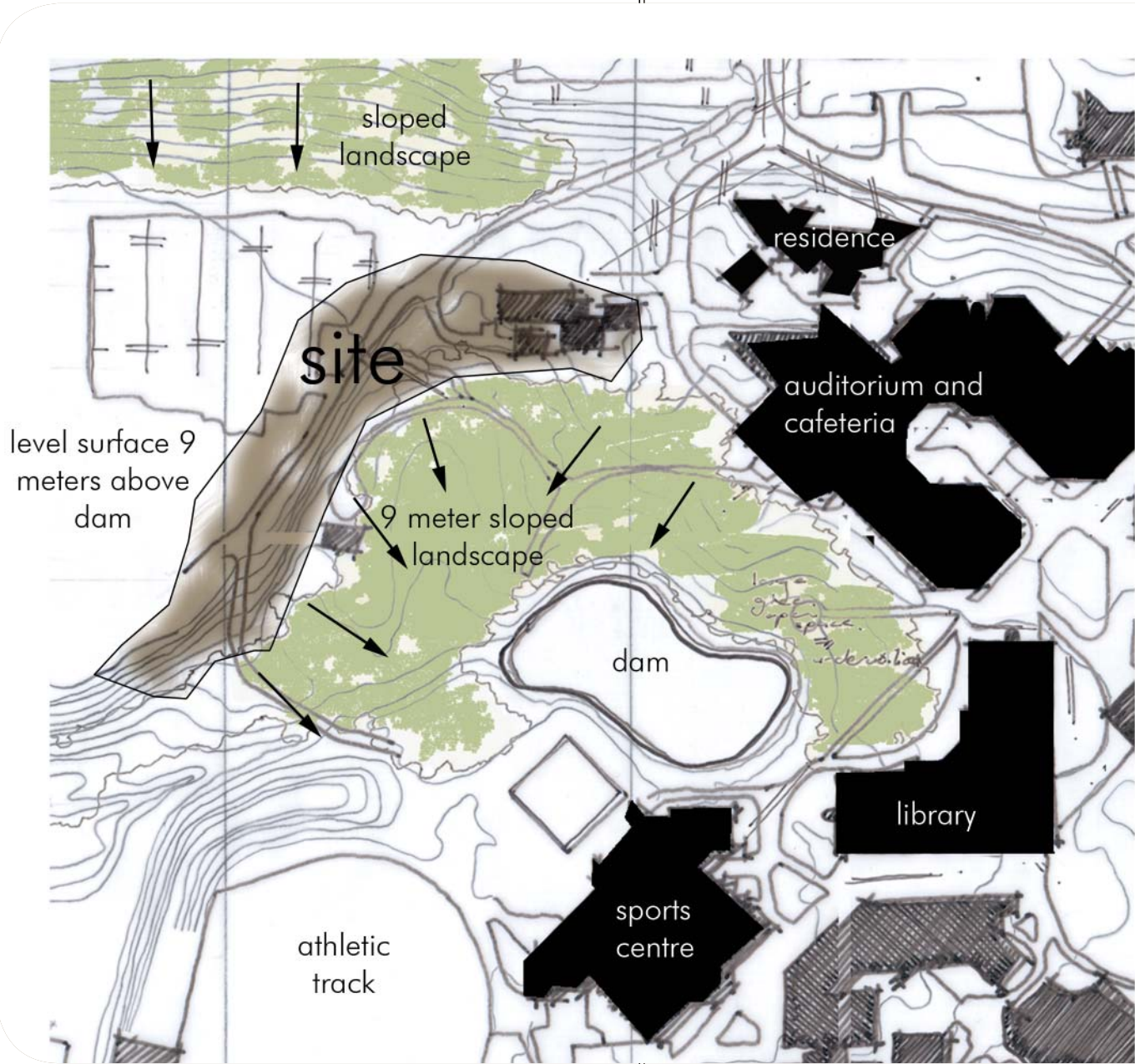
“.., the architecture’s nature is not always found within building. Events, drawings, texts expand the boundaries of socially justifiable constructions.”  
(NESBIT 1996:460)

In pursuit of an architecture suited for the proposed site, the site’s formal characteristics must be identified. These characteristics would be cultural traditions, the urban structure, natural environmental qualities, climate, and the living patterns. In defining the orientation for this - given the project - the emphasis fell on the particular characteristics of landscape, climate and social intervention. The appropriate logic was formulated based on these criteria and functioned as guideline for the architecture.



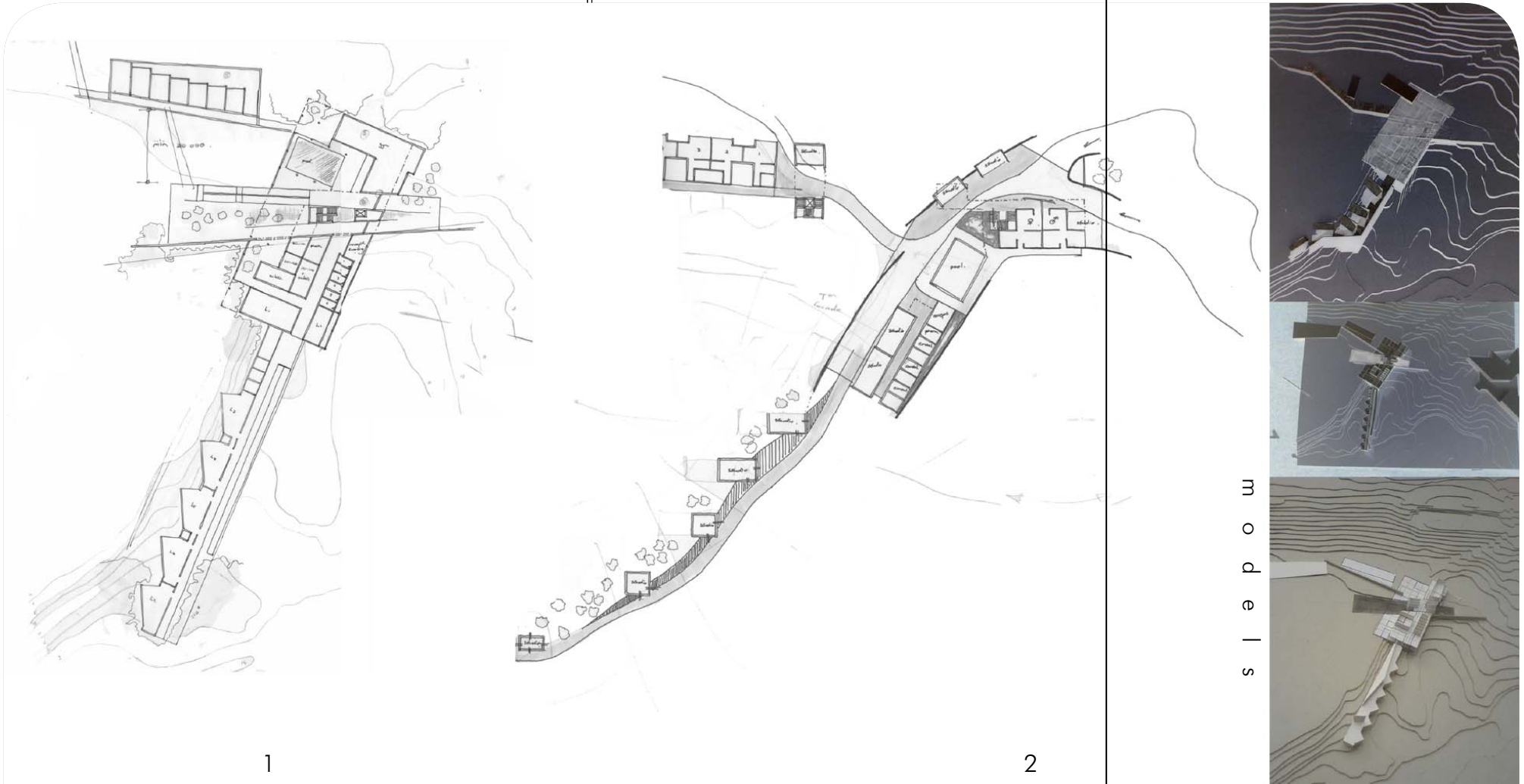
spatial  
exploration

figure 5.12



site proposal

figure 5.13



1

2

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design exploration

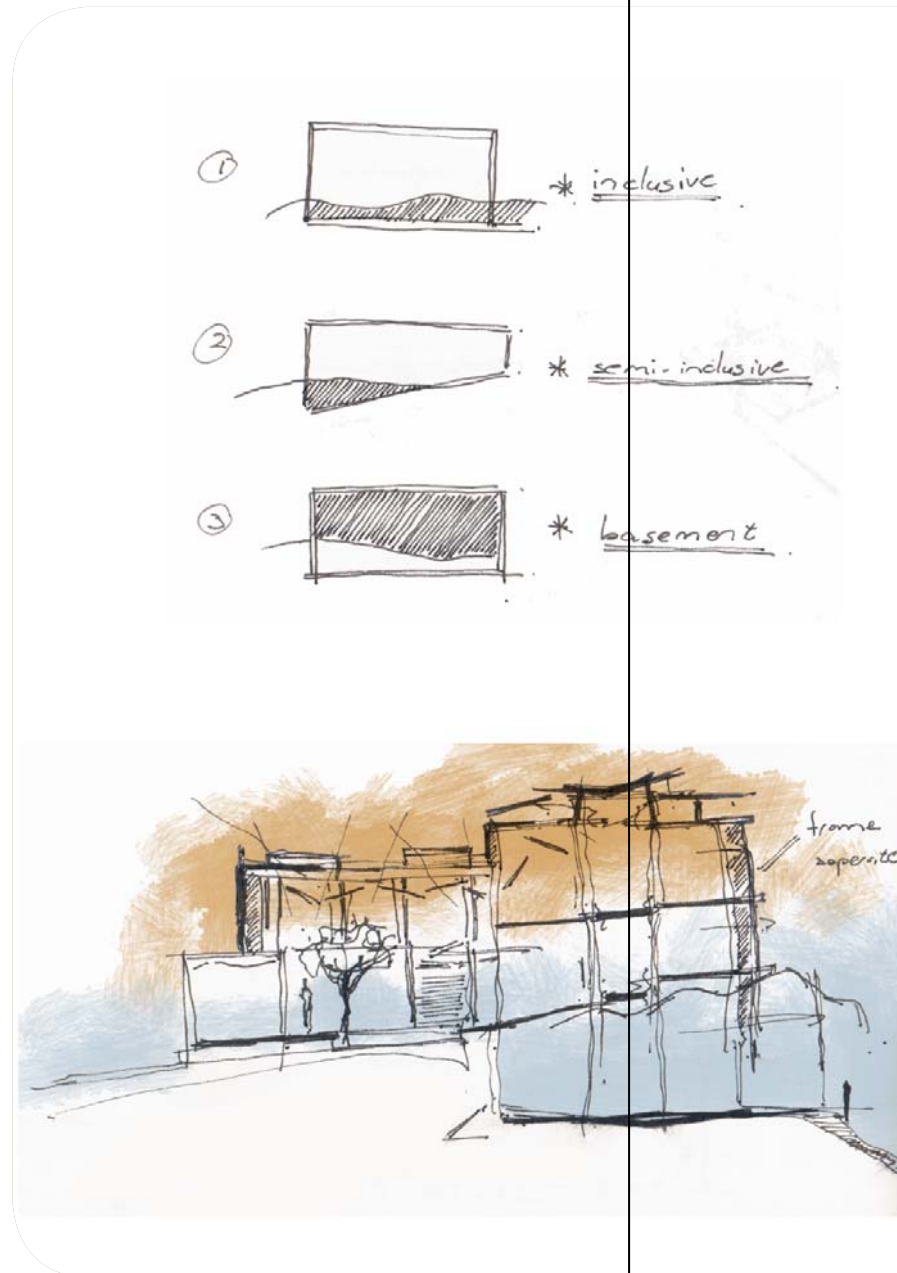
figure 5.14

## i. landscape\_

The design exploration required an understanding of the landscape's form and language. Contours represent the landscape's identity in plan and section. These contours indicate biodiversity, water articulation and the history within the context. Furthermore the landscape consists of an external landscape as seen from the particular site and the internal landscape as is seen from the surrounding context, and the inherent identity in both was of the utmost importance in the formulation of the proposed architecture. The form of the building explored this language and came to represent it in a new landscape form.

## ii. climate\_

Contextual and critical regional design is deeply rooted in climatic responses and a similar response was chosen for the proposed architecture. This required an understanding of the climatic factors which would ultimately influence the design. Due to the form of the landscape wind is not a concern for most part of the year. And the correct landscaping would be sufficient in solving this problem. Sun paths were crucial to the design orientation due to large shadows created by existing buildings and the site location on a southern ridge. Temperature fluctuations on the site as a result of a water mass and land depressions were another concern to



l a n d s c a p e

c l i m a t e

figure 5.15

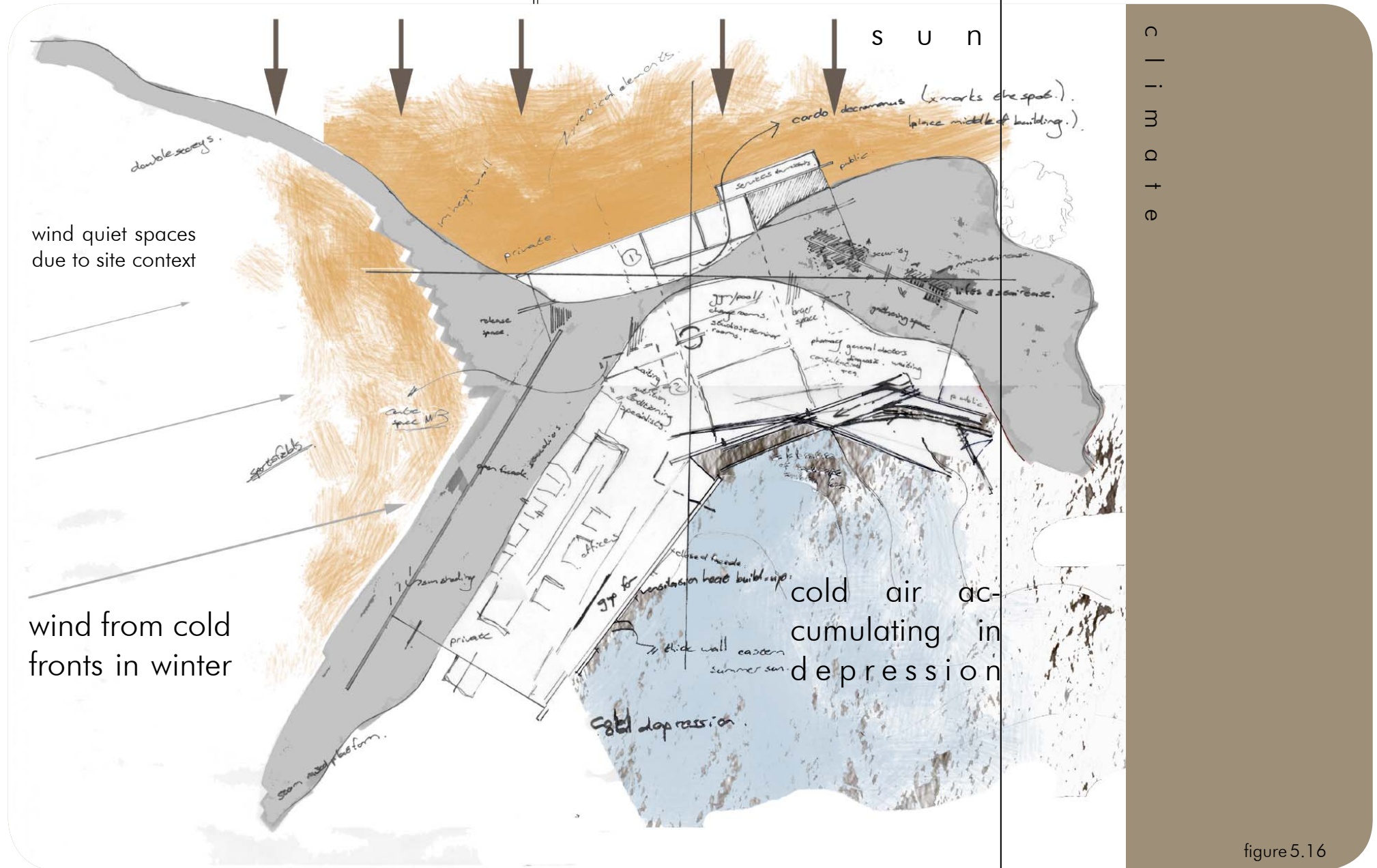


figure 5.16

the design of the building. All of these points were used as indicators and helped direct the design process towards a more responsive solution.

### iii. social\_

The two primary social indicators identified are recreation and education. These indicators are then broken down into smaller sub-categories. By identifying the various social spaces on the site a more accurate building placement will be achieved. Typically, activities are placed according to their requirements in regards of public versus private space.

This will allow the design of new activities to respond to the existing context with the least force. Merging the existing social context with new social activities will create a new relationship. Through this new relationship a more intricate social network could be maintained which is beneficial to the existing social structure.

The main objective is focused on defining the crucial edge that exists between the primary indicators. The design orientation will attempt to define this edge through its form and functions. And at best resolve the dysfunctional relationship that currently exists.

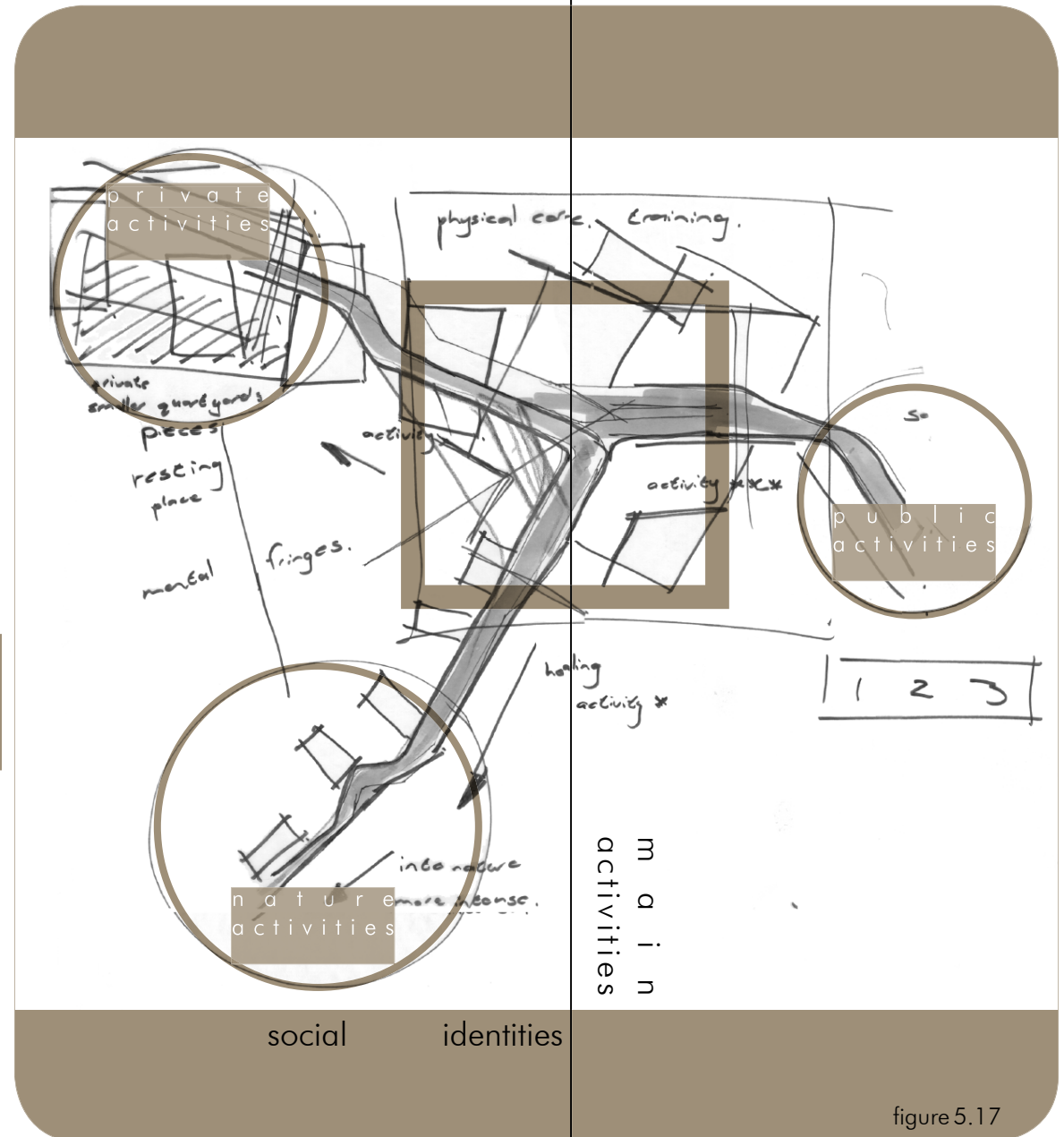


figure 5.17

## 2.2\_solids and voids

“He proposes that an alternative way to look at “the materiality of architecture... is in its solids and voids, its spatial sequences, its collisions. This poetic possibility emphasizes the choreographic aspect of the body’s experience of architecture, which he sometimes describes as “cinematic” in order to stress movement and its temporal dimension. Significant to his proposal for architecture “as event” is the idea that bodies construct space through movement.” (NESBIT 1996:456)

All of the above mentioned principles are finally expressed through the use of solids and voids. Solids and voids function as the glue which connects and expresses the architectural design in form and materiality.



v o i d s

s o l i d s

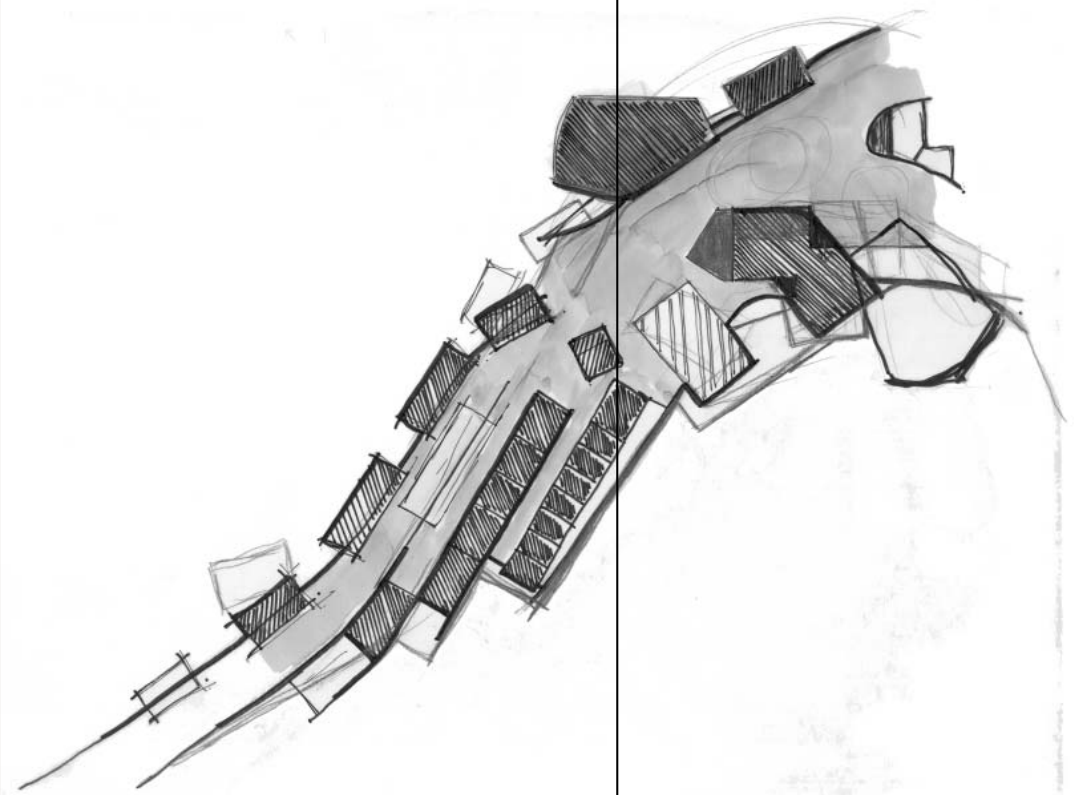


figure 5.18

solids  
—  
voids

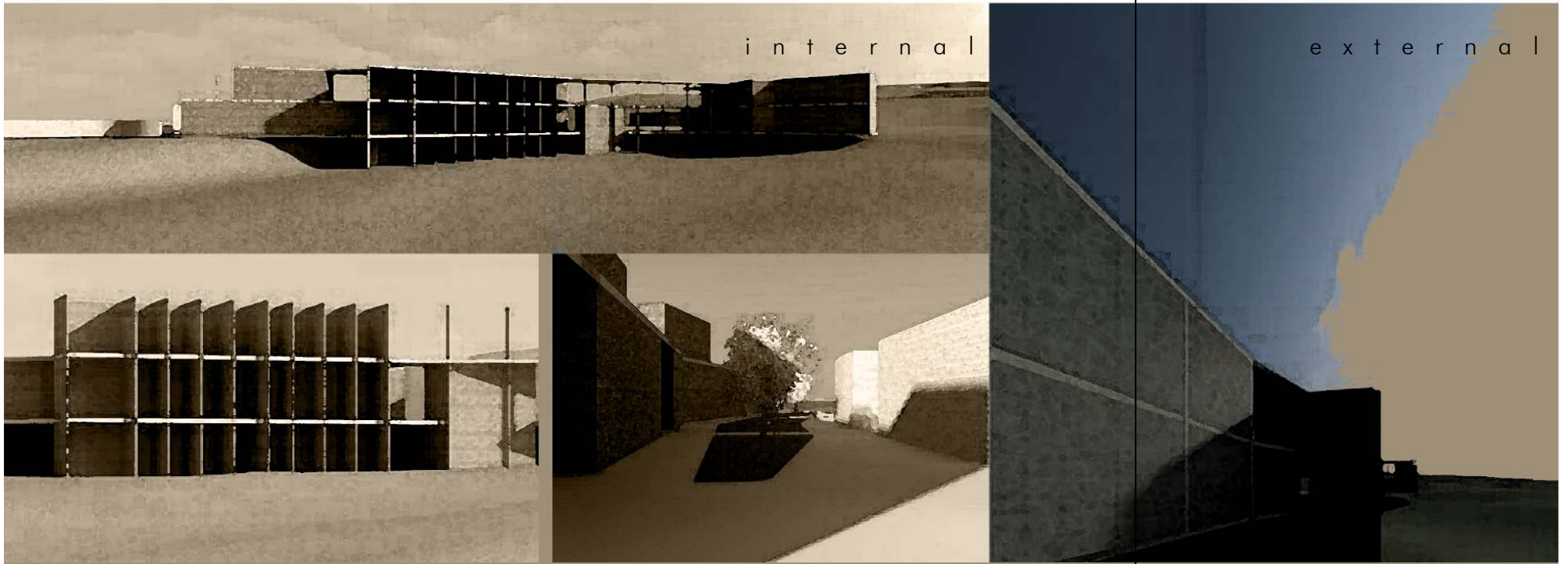


figure 5.19

## 5.4 conclusion\_

The proposed architecture illustrates not just a product, but more precisely a process of trial and error. And doing so expresses a new landscape through architectural means, with an architecture derived from the fundamental principles of regionalism and phenomenology.

The designed rehabilitation centre will be a catalyst for capturing the essence of the site and defining the lost spaces. The centres design and activities attempts to re-define the current relationship of the existing campus in relation to other campuses, and even more so to define the relationship between the campus and the landscape. This will be achieved through recreation and sport rehabilitation activities.

“Pretoria regionalism...reflects a particular response to nature and landscape through the economical use of naturally available and industrially produced materials with an empirical response to climate...” (FISCHER 1998. 123)

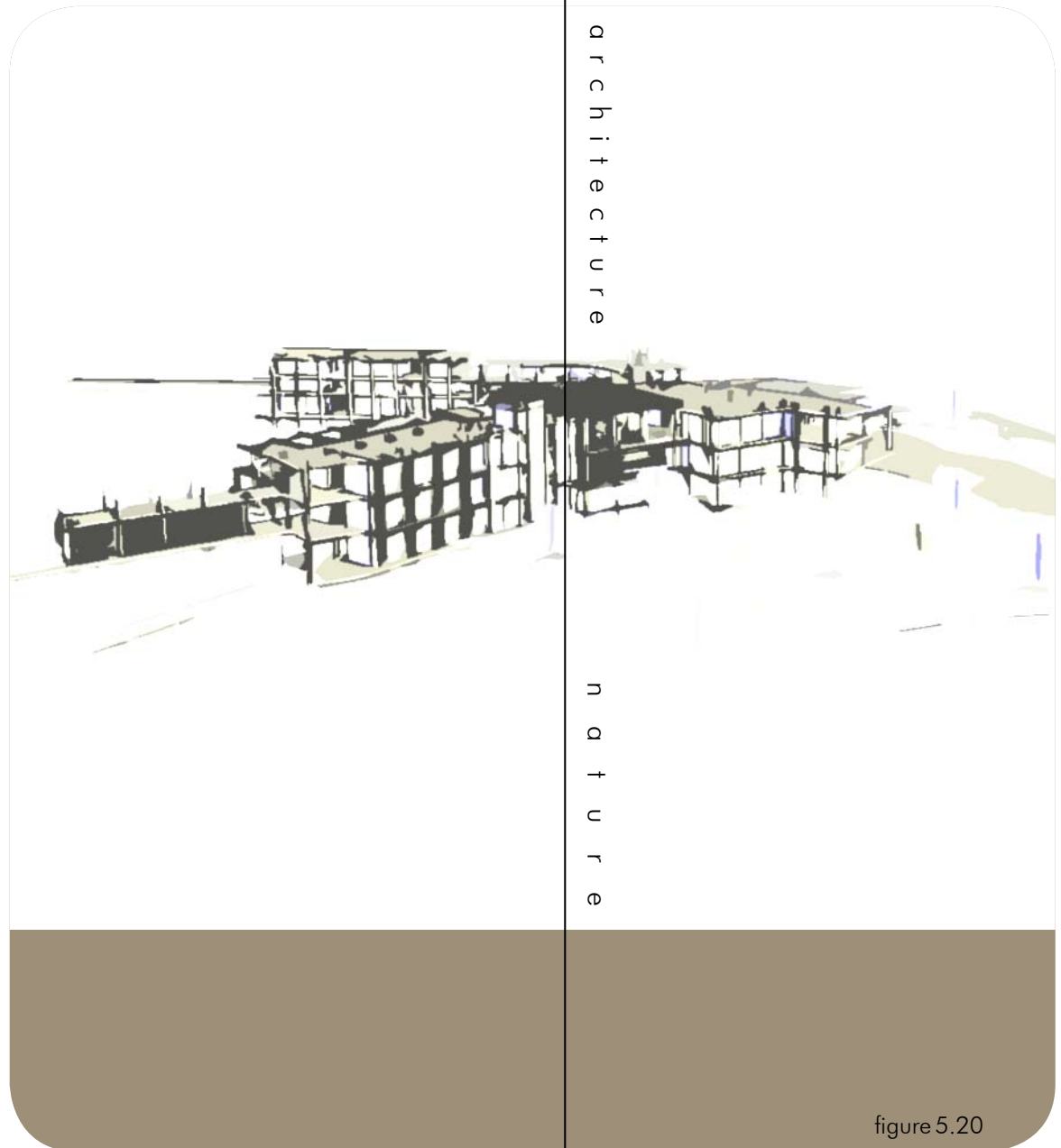


figure 5.20

airial \_ view south west

defined edge

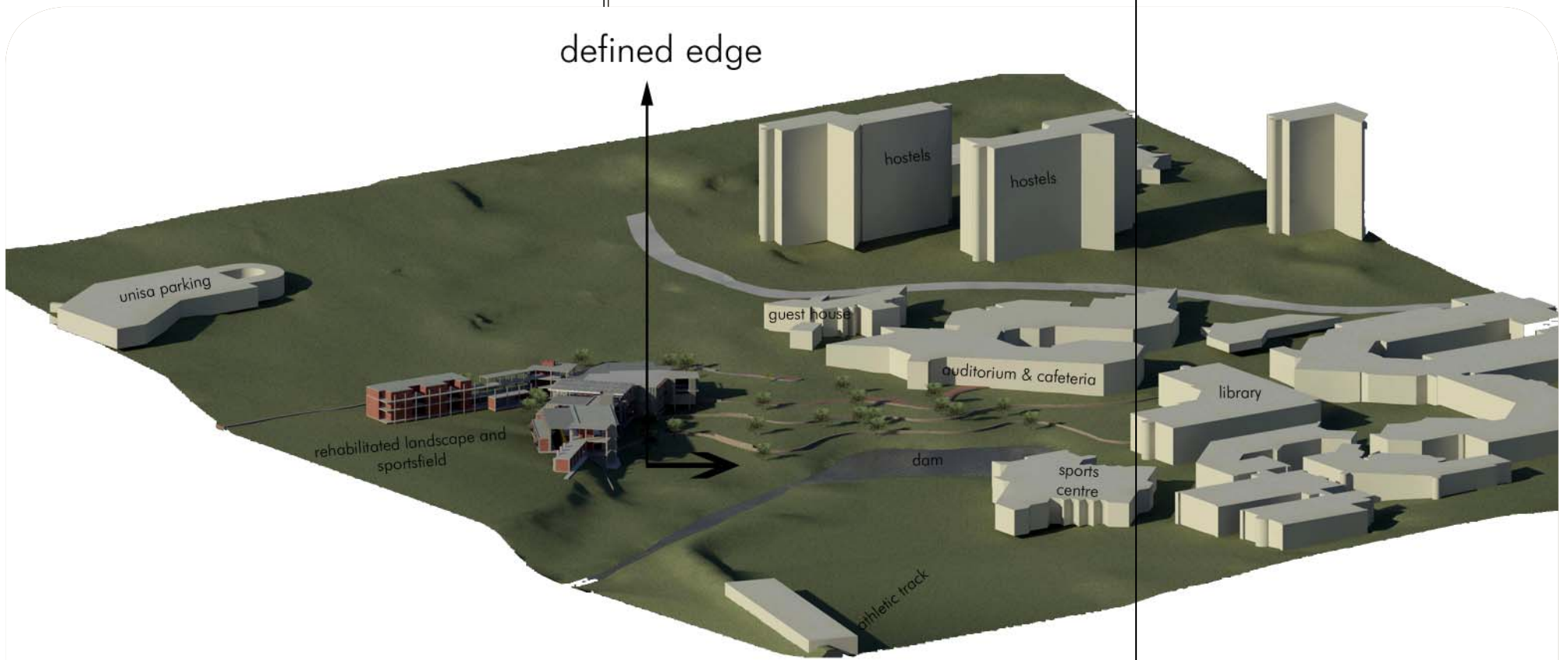


figure 5.21

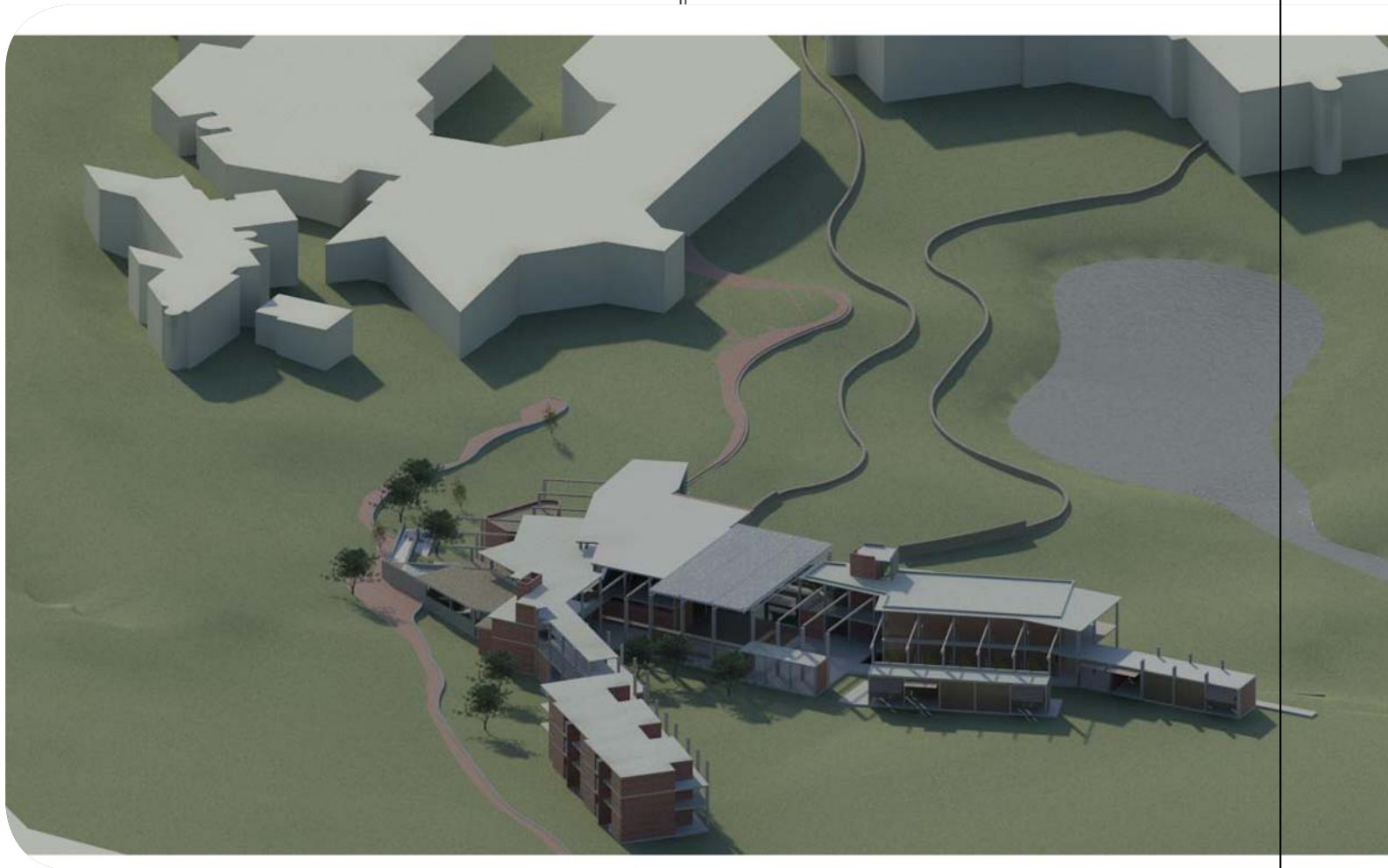


figure 5.22

south \_ east \_ elevation



figure 5.23



design  
—  
section

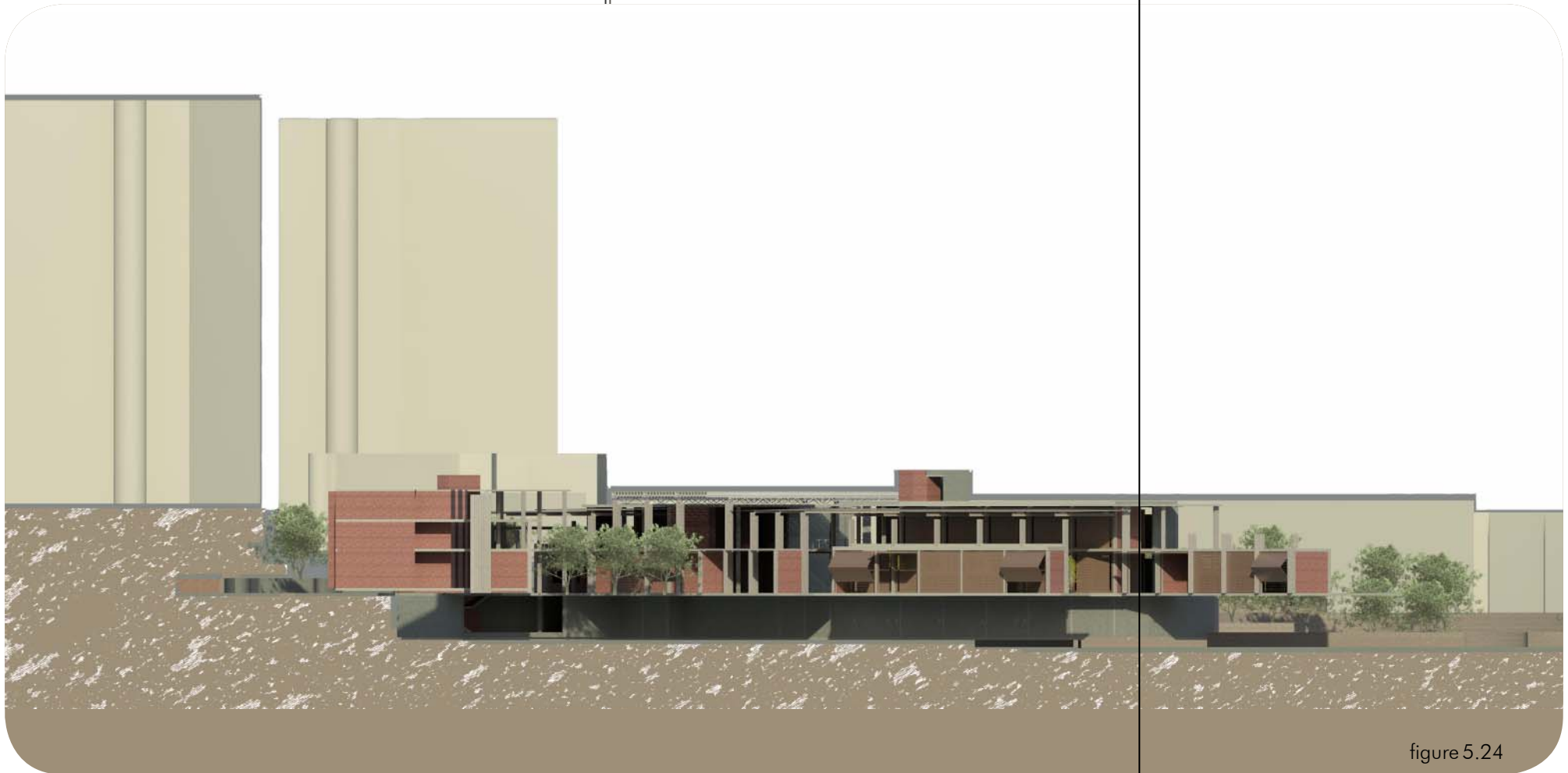


figure 5.24



figure 5.25

# t e c h n i c a l i n v e s t i g a t i o n \_

## 6.1 introduction \_

“Gottfried Semper classified the building craft as two fundamental procedures: the stereotomic of the earthwork, the repetitious piling up of massive elements to compose a volume; and the tectonics of the frame, lightweight components composed to define a spatial matrix.”  
(FRAMPTON 1996:5)

“Vernacular architecture displays varying roles played by these two forms, influenced by climate, custom and available material. The tectonic or frame component has an affinity to the sky, whereas the stereotomics has an affinity to the earth, dissolving therein.”  
(FRAMPTON 1996:7)

Architecture can then be understood as the expression of sky and earth. The same sky and earth to which man’s existence is bound. It can then be argued that architecture can be used to redefine the relationship between man and nature.

The technical discussion will consist of these two elements, and their relation to the human component, with the primary focus on the tectonic as a fleeting and temporal interface.

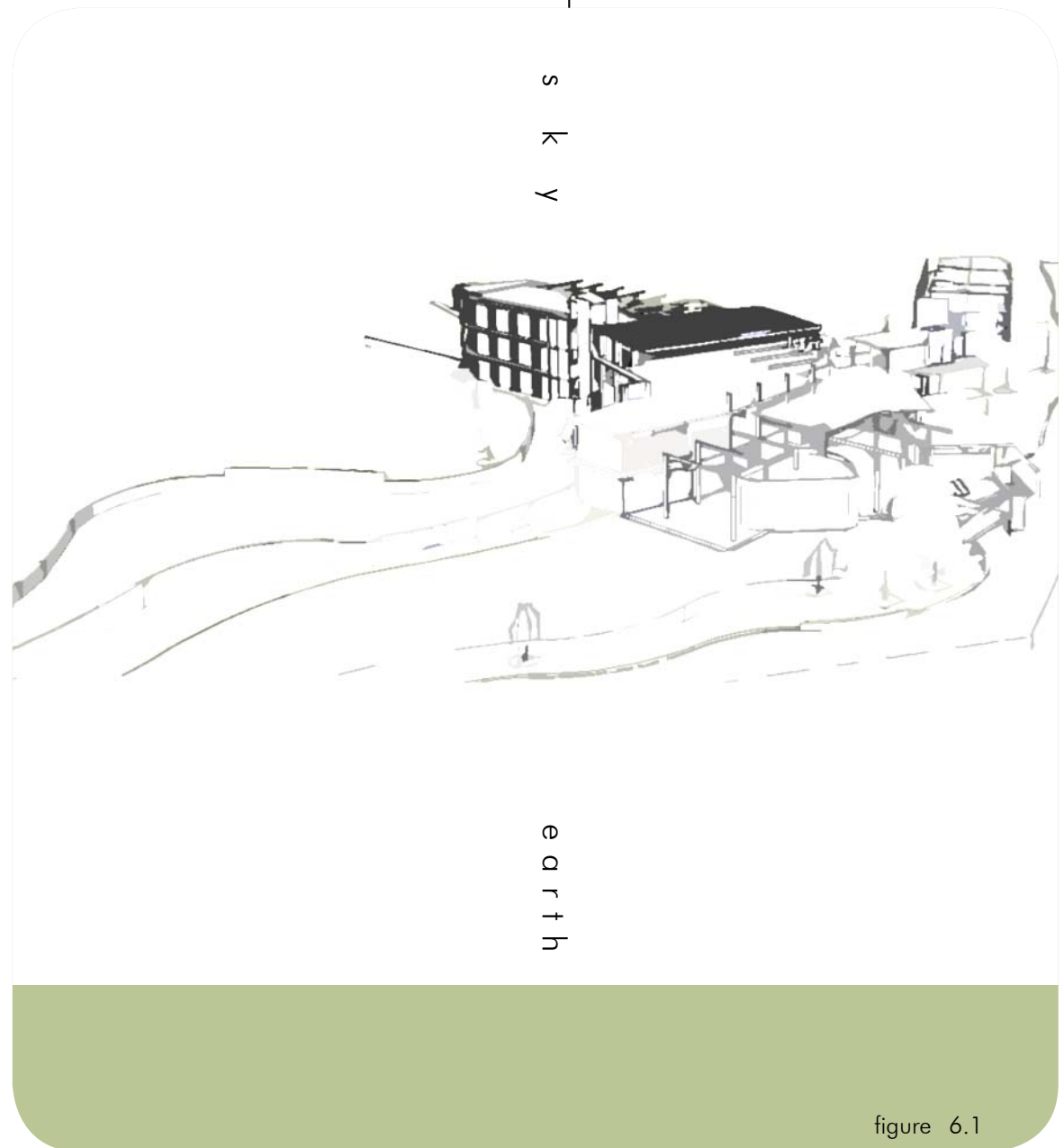
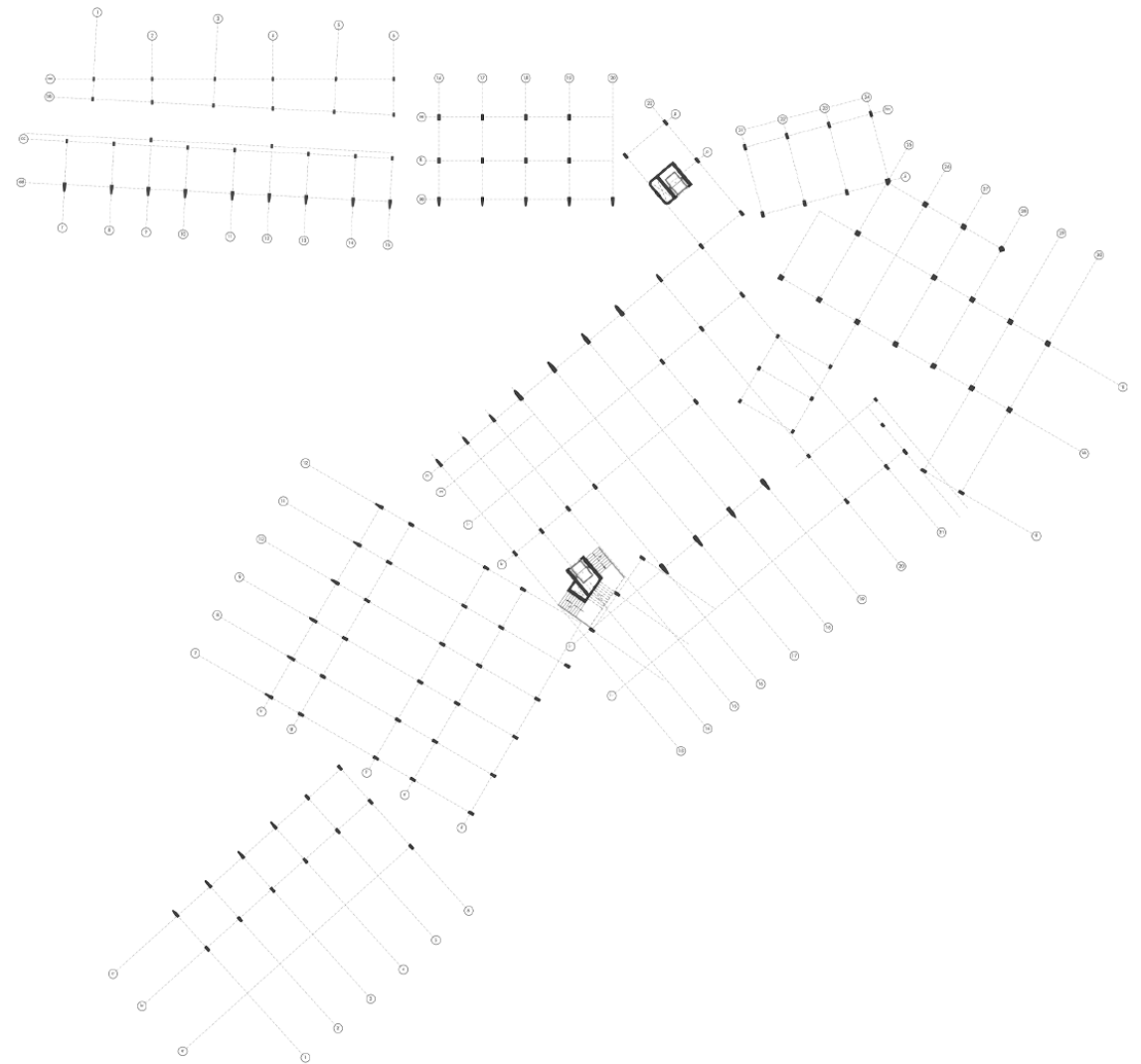


figure 6.1

## 6.2 stereotomic\_

"I understand STEREOTOMIC architecture as that in which the gravitational force is transmitted continuously, in a continuous structural system, in which the constructive continuity is complete. It is a massive, stony, weighty architecture, which settles down on the earth as if it had been born there. It is an architecture that seeks light, that perforates its walls so that light may enter. It is the architecture of the podium, the plinth, the stylobate. It is, in short, the architecture of the CAVE." (CAMPO BAEZA, A. 2006: Approximations to the Terms "Stereotomic" and "Tectonic.")



base plan  
not to scale

figure 6.2



structural model

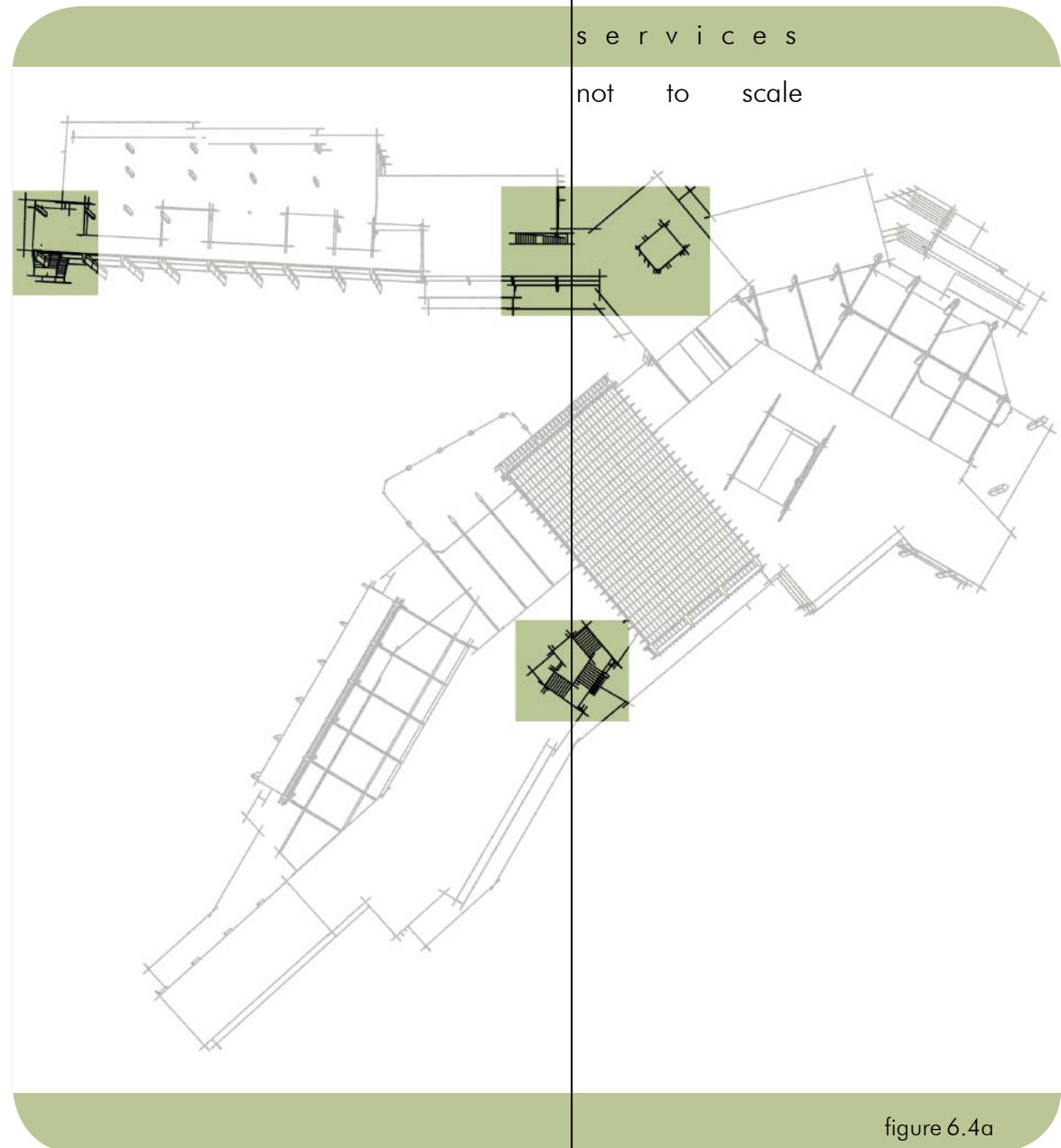
figure 6.3

## 2.1\_structure

“Inspired by Brazil Builds, many civic and institutional buildings built after the 1940’s display elements such as Brise Soleil, roof gardens and fluid concrete form work.” (FISCHER 1998. 123)

Two different factors determined the choice of concrete as a structural system. The one is the search for a more contextual and regional architectural design solution, and the other based upon material requirements. The inherent mass of concrete makes it favourable for more temperate internal environments.

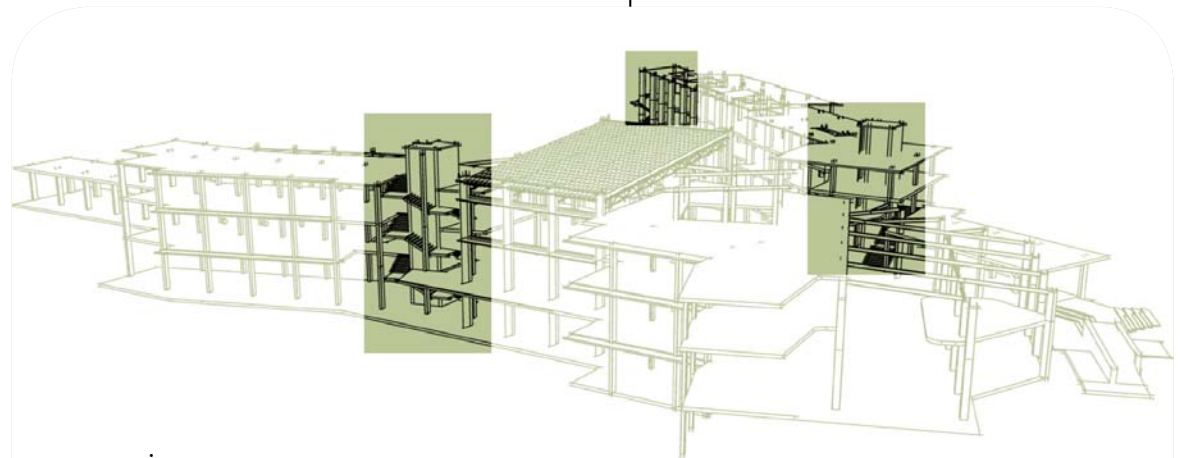
The structural grid is based upon the spatial design of the building. Several separate grids are integrated to make up the proposed structural grid, and originates from the site’s inherent landscape form. The grid can be further understood as an expression of the buildings activities. Off-shutter concrete columns are then used to extend the structural grid into the proposed spaces. Different column sizes indicate the spatial hierarchy and also depict the height of freestanding columns. The shape of the column is used to partially protect the interior spaces from direct sunlight. Columns are tapered toward the exterior which enhances the experience of movement in and out of the building. These structures function as frames to the interior and the exterior spaces.



## 2.2\_services

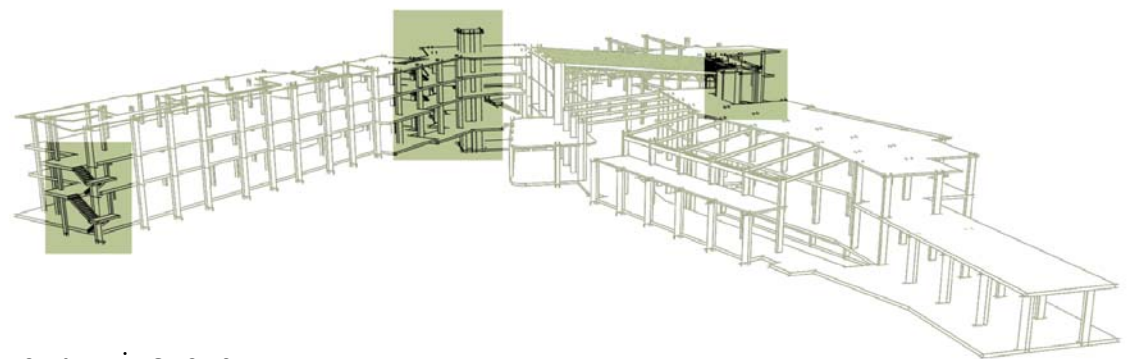
Horizontal services in the building are connected vertically by means of two primary cores. These cores accommodate the lifts, staircases, and the smaller service shafts. Regulations and design principles depicted the placing of these cores. A secondary service shaft is placed at the end of the living as a fire regulation. Most of the services will be accommodated in the basement with the indoor pool services. The reason for this is the integration of the pool heating system and the cooling system of the building. This system will also benefit from a rock bed storage system which will sub-track cooler air from the surrounding environment. Such a system will utilise the existing natural climatic conditions in optimising its functionality. These integrated heating and cooling systems are more efficient within this particular type of building, and precedent studies based on these scenarios also validated this. The only problem arose with the calculations which indicated that during the winter months there will be a loss in the system due to higher heat demand.

The building temperature will be regulated in three different zones. Uncontrolled external spaces will solely depend on the natural ventilation of the site. Semi-controlled internal service spaces will be mechanically ventilated but there will be no direct cooling of these spaces. The heat released by the pool will be used as part of this



s e r v i c e s

figure 6.4b



s e r v i c e s

figure 6.4c



figure 6.5a

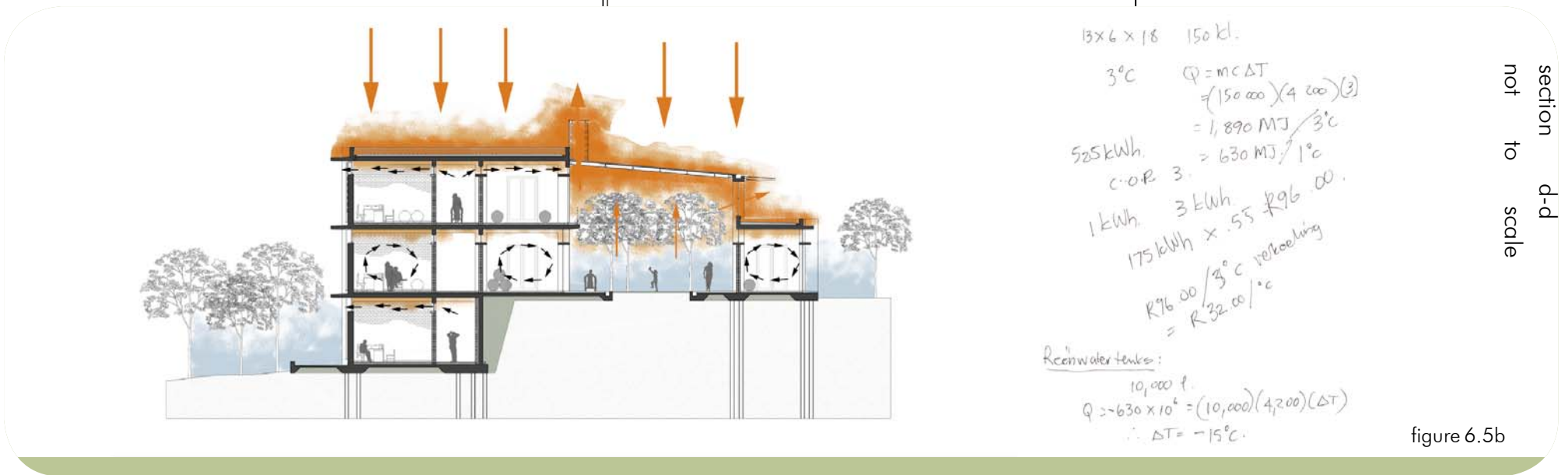


figure 6.5b

aforementioned system. Cooling and heating will only be implemented in the controlled spaces of the building which will include the offices and studios. In optimising the systems efficiency each space will maintain its own temperature based upon demand.

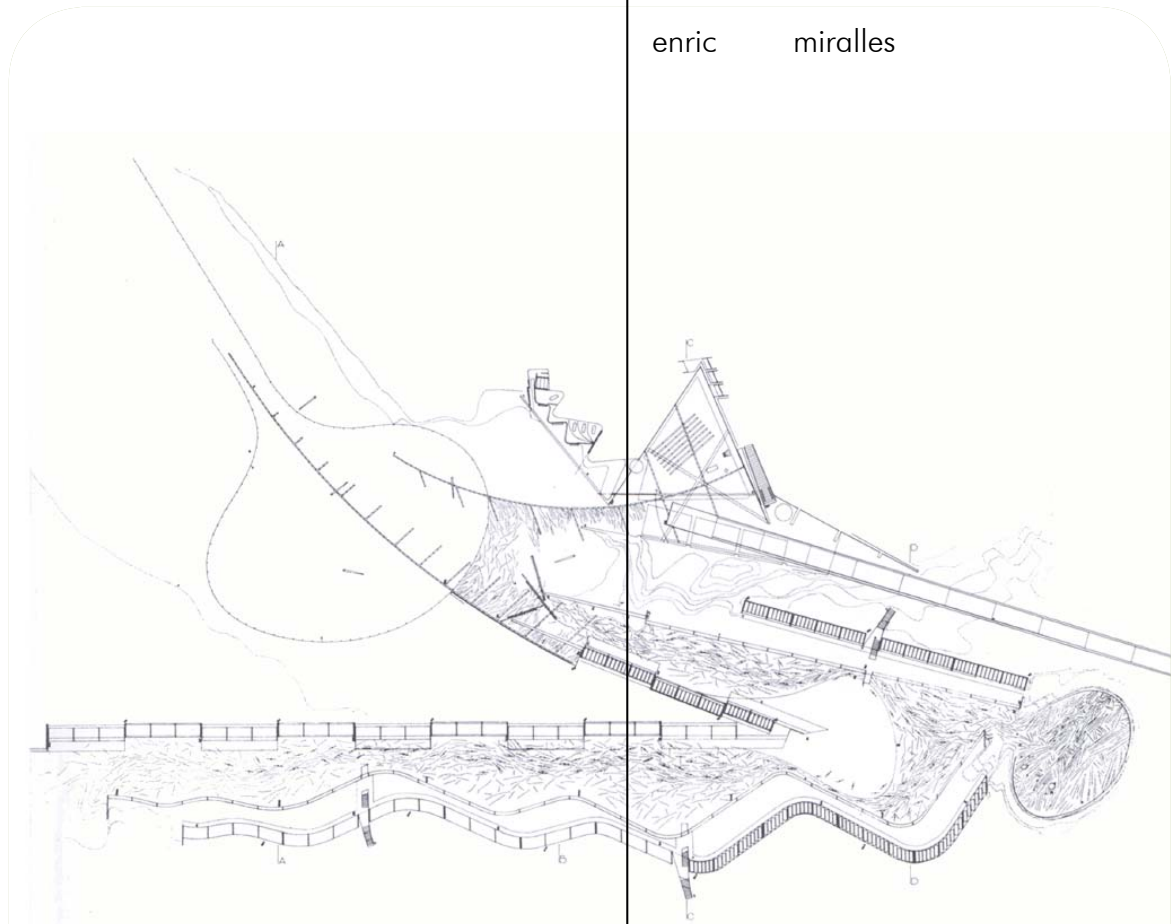
Heating of the pool will be passively assisted using solar water heaters installed on the roof of the building. A small percentage of rain water will be stored in the rock bed which will assist the ventilation system. The building orientation and material choices result in the semi-controlled areas ventilating passively.

### 2.3\_landscaping

A landscape is the representation of the earth itself. And it communicates the inherent history of the site. The preamble of the landscaping was the creation of a relation between the existing campus, the new facility and the environment. By doing this the design could create spaces for disabled users in which they can freely move.

The architectural works of Enric Miralles was used to define a method of response for the site. He uses contours as design elements and expresses it as simple lines and more complex structures. Using tectonic elements and textures he redefines the landscapes he works in.

Based on these works the landscaping was

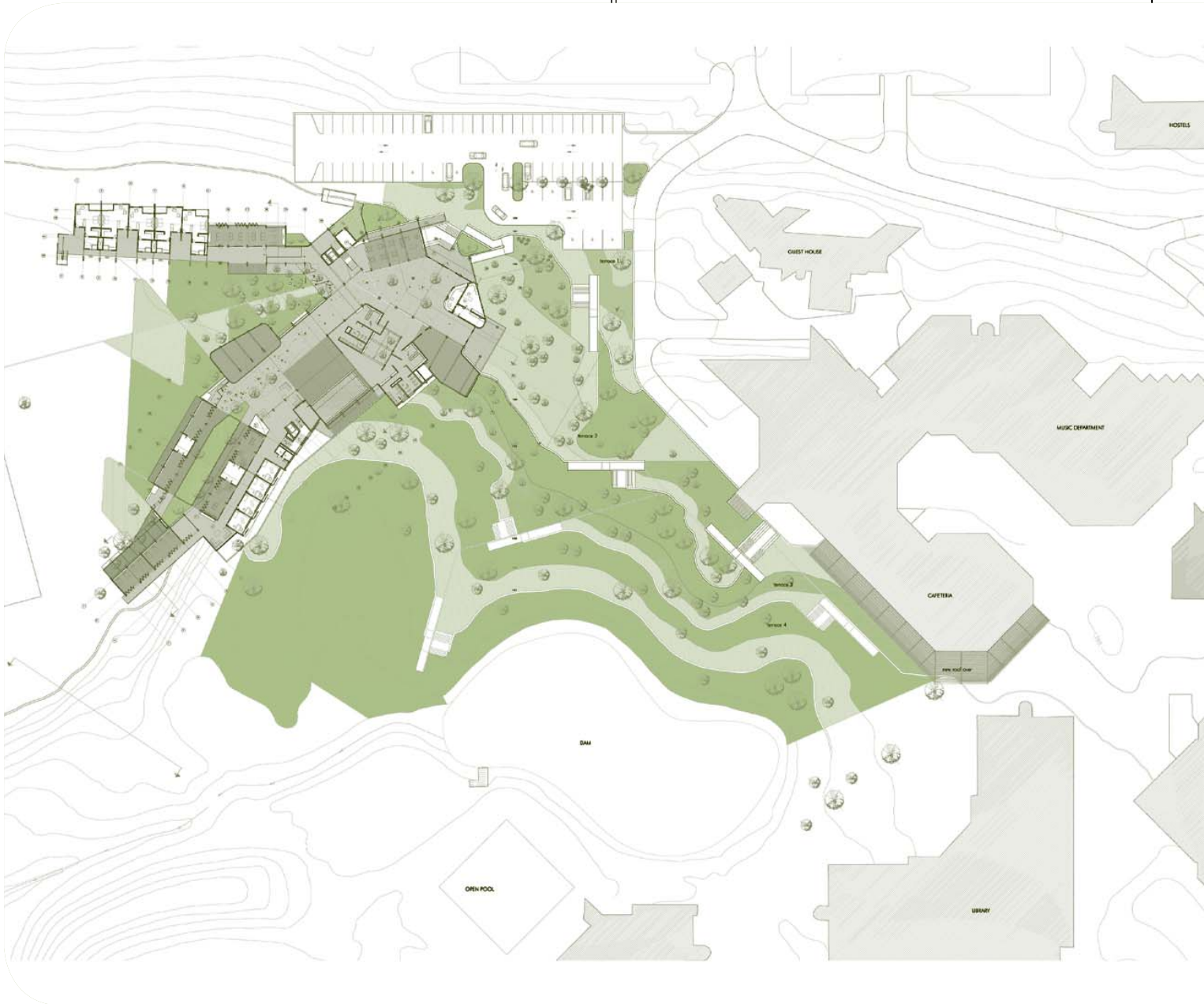


enric miralles

parc dels colors (spain)

igualada cemetery (spain) figure 6.6





landscaping  
not to scale

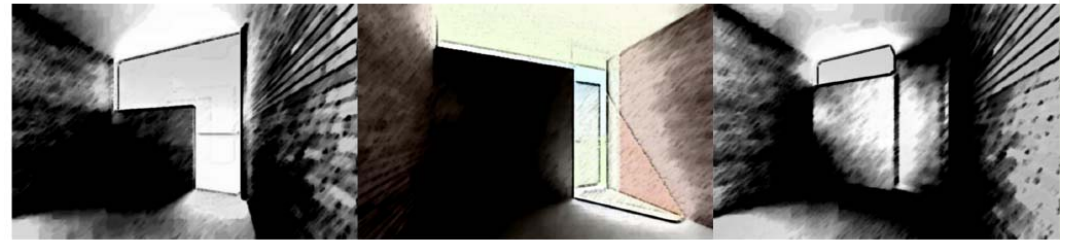
figure 6.7

designed to integrate the new building and the existing landscape. Terraces were designed to accommodate disabled users and allow for new ways of experiencing the same space. These terraces were based upon the contours and became the roots of the design. The landscape runs from the existing campus through the new design and into the open rehabilitated landscape.

### 6.3 tectonics\_

"I understand TECTONIC architecture as that in which the gravitational force is transmitted in a syncopated manner, in a structural system of knots and joints in which the construction is articulated. It is a bone, wood and light architecture, which sets itself on the earth as if raised on tiptoe. It is an architecture that defends itself from the light, that has to look after and veil its open spaces to be able to control the light that pours into it. It is the architecture of the shell, of the abacus. It is, in short, the architecture of the HUT." (CAMPO BAEZA, A. 2006: Approximations to the Terms "Stereotomic" and "Tectonic.")

i n t e r i o r



1 2 3

figure 6.8a

e x t e r i o r



figure 6.8b

### 3.1\_openings

“The generic window is obviously the most delicate point at which these two natural forces impinge upon the outer membrane of the building, fenestration having an innate capacity to inscribe architecture with the character of a region and hence to express the place in which the work is situated.” (HAWKES & ASSOCIATES 2002: 20)

The function of openings in the buildings is to create intricate meetings between man and the natural forces. Placed within these openings are the simple yet fundamental elements of windows and doors. They function as thresholds between the indoor and outdoor spaces with the window as the most frangible point of the building facade. For this reason the doors and windows will not act as boundaries but rather as convening spaces and the extension of space. By opening and closing these elements movement, light and ventilation could spontaneously occur.

The design resolution required the exploration of mechanical and manual mechanisms for the opening of windows and doors. Materials for these elements were explored and the options were wood, steel and aluminium. The conclusion was that aluminium frames were the more economical option on the scale of the building due to the fact that wood would require too much maintenance and steel would be too heavy. Door openings are designed to permit fluent slower and faster movement through them. This allows the service

i n t e r i o r

open - closed



figure 6.8c

e x t e r i o r



flexible openings



figure 6.8d

space to function as an extension of the training areas. Window openings are primarily designed to protect the user from the natural forces and emit substantial light into spaces. Small openings are used on the eastern facade where the western facade has larger openings but the latter windows function as an extension of the outdoor space and will have shading elements.

These openings are an important element in framing the landscape and creating a stage of events for the users. Ventilation will be allowed based on the allocated ventilation zone of the building. And the higher openings will consist of much smaller opening sections for practical reasons.

### 3.2\_shading devices

Various elements were explored in this regard based upon practical, economical and aesthetical principles. One of the concerns was the amount of expected light in relation to the permissible amount based on heat gains. Wood was the first choice but maintenance on these elements proved to be uneconomical. Profiled Galvalume sheets were then chosen for its economical and aesthetical qualities. The selected material has a curved profile and is perforated and coloured. These sheets are then placed in a frame which will either be fixed on a sliding track or fixed directly to the structure.



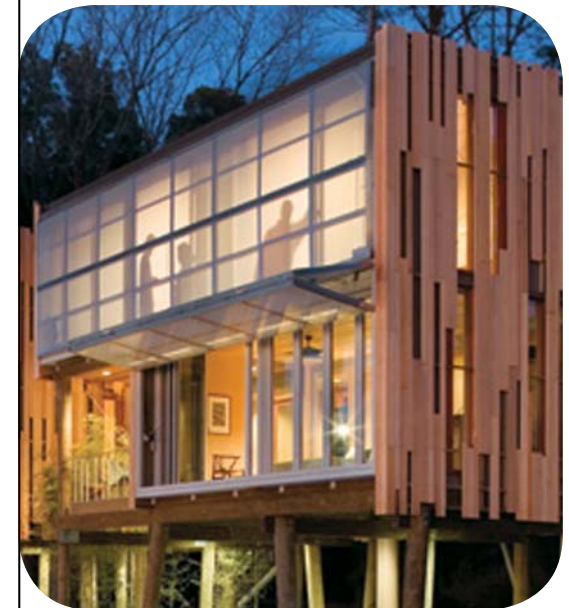
figure 6.9b

## m a t e r i a l s

figure 6.9a



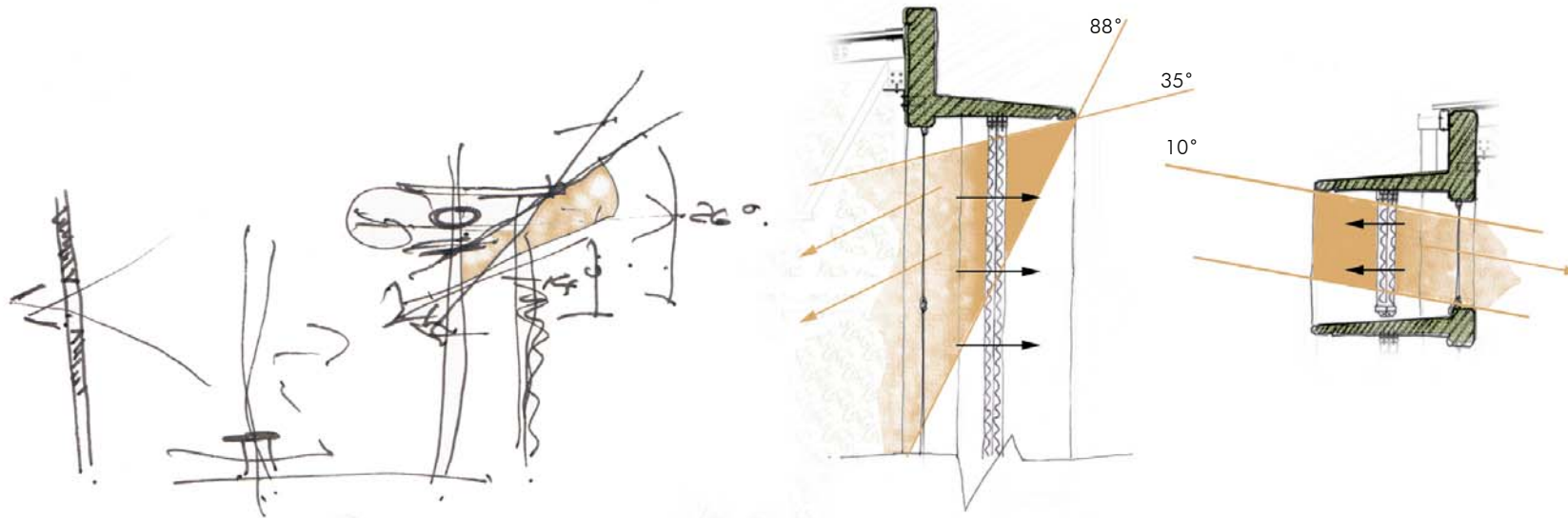
figure 6.9c





section  
not to scale  
c-c

figure 6.10a

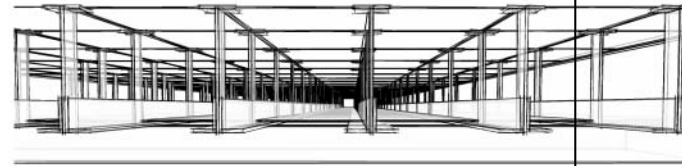


details  
not to scale  
1&4

figure 6.10b

renzo piano

figure 6.11



beyeler foundation (switzerland)



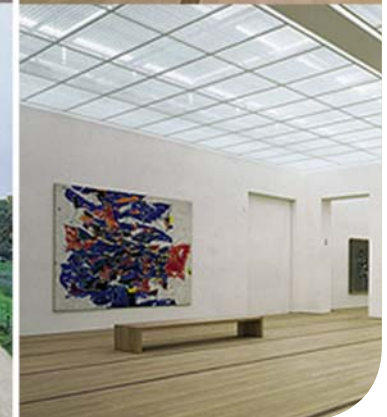
Vertical shading devices were allocated to the eastern and western facade to protect it from early morning sun. These elements had to function as a second membrane of the building in the same fashion as the hair on the skin of the body. This will protect the glazing from direct sun exposure and prevent heat build up inside the building.

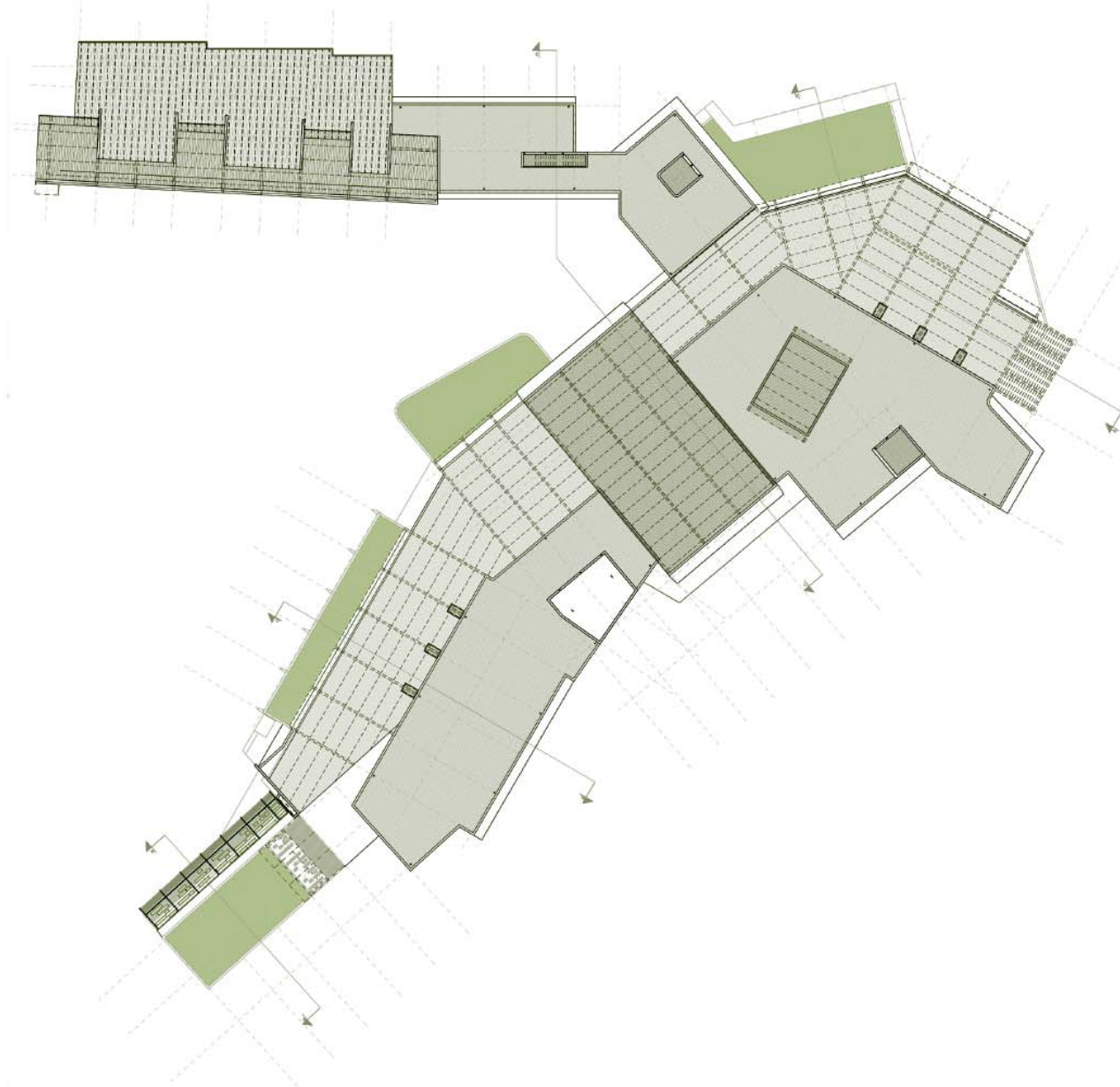
Horizontal shading is provided with the appropriate roof overhangs, and the size of the overhangs are based upon sun studies done for the building. The extension of the roof structure doubles up as shading device for the eastern, western and northern facade. Concrete roof overhangs are tapered for aesthetical reasons and are provided with a drip for construction purposes.

### 3.2\_roof structure

The tree exists with its shadow, with the densest part existing close to the centre. As one moves out of the tree shadow it decreases in density until it opens to the sky. The detail of the branches and leaves decorate the shadows and leave the constant presence of time. The roof functions as the intricate horizontal layer between the sky and earth. It in the given context of the South-African climate it protects us from harsh natural forces.

Various precedents were used in formulating the appropriate roof structure. Renzo Piano's Beyeler Foundation building in Basel, Switzerland was





roof plan  
not to scale

figure 6.12

used for its light structure and translucent qualities. But vast climate differences made the structure insufficient here. Further studies were made in the local context and included various Virgin Active gyms and also Brooklyn Mall. These facilities proved to be valuable in defining the design principles for the roof structure. For none had the perfect roof structure solution, however by analysing them all, the essential concerns could be identified and possible solutions could be determined.

Three roof elements make up the final roof structure. The first roof is the hard concrete roof over the core of the building and reflects the formal character of the design. These roofs are thermally insulated against unwanted heat build up on the roof. Solar water heaters will be located on these flat surfaces. Furthermore a separate Diamondek roof structure is used to highlight the importance of the movement space. The Diamondek interlocking sheets are used with bubblefoil and plywood for insulation purposes. Hierarchy is created in the building by elevating and lowering the roof structure according to the design requirements. Finally the use of sod roofs will be applied to the single storey elements within the design. These roofs will function as a physical and visual relation to the landscape. They will be visible from within the building and will allow for easier maintenance.

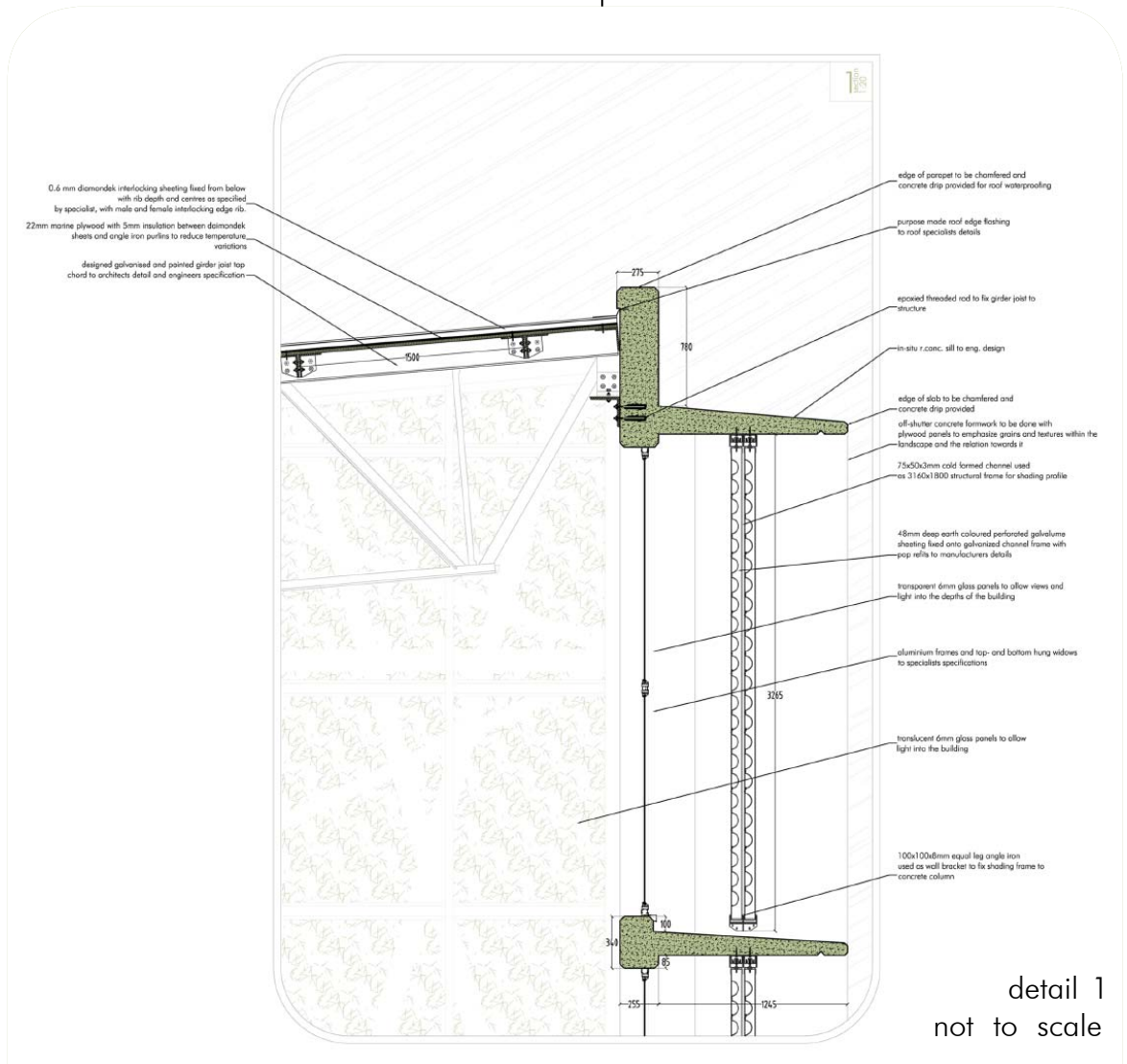


figure 6.13a

detail . 1  
not to scale

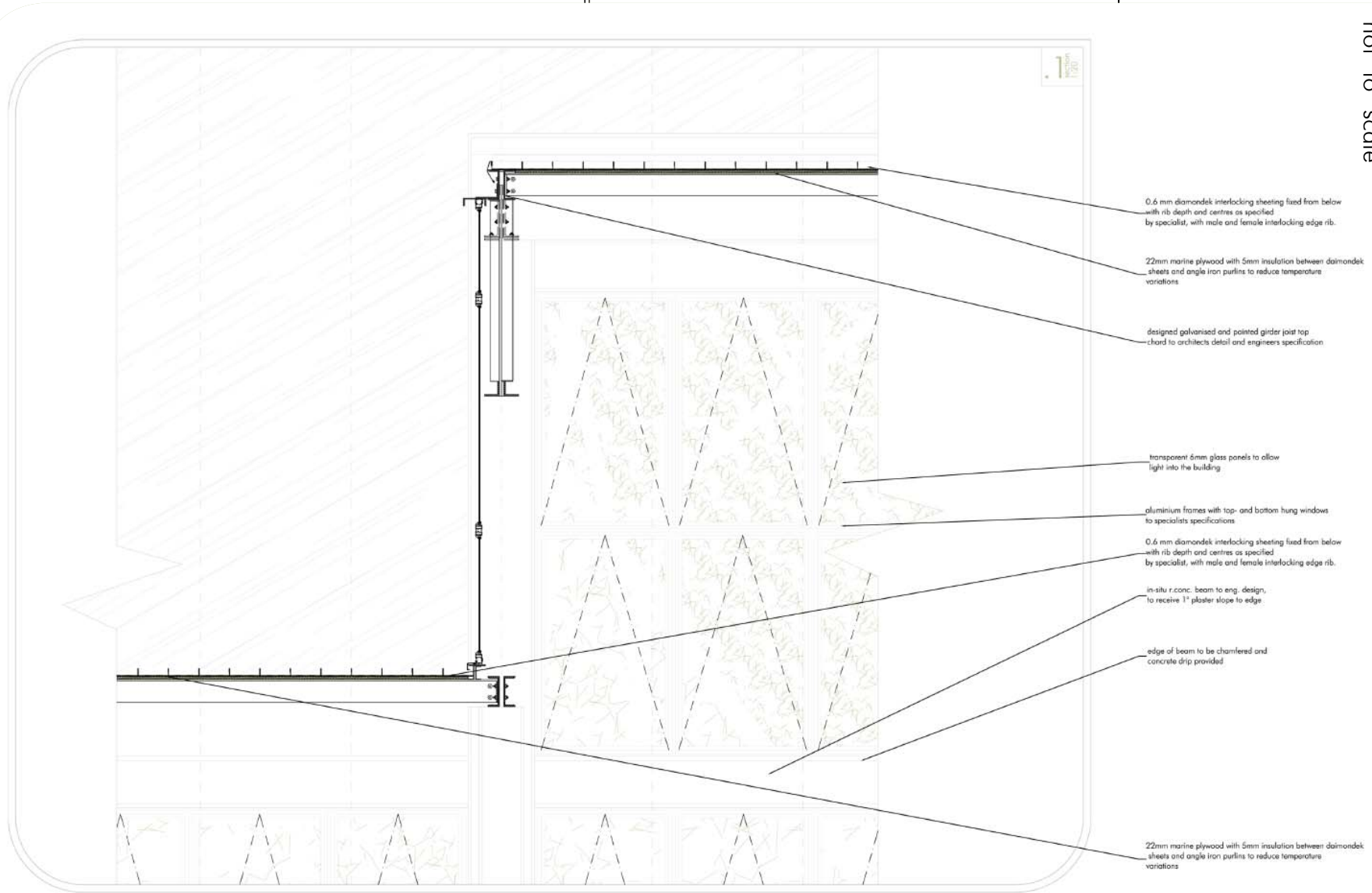


figure 6.13b

## 6.4 materials\_

“The use of a given material should never happen by choice of calculation, but only through intuition and desire. For the young architect each material is measurement of strength. To apply the material to its ultimate capacity is natural for youth. The expression of this inherent force compliments a natural vitality. The material’s sensation carries its conviction and the energy of youth attains structural perfection. With time, certain architects will accept age as a tiredness which has a beauty of its own, allowing raw material a dimension of life and wisdom. The acquiescence of age is a recognition of maturity, a sign of personal growth. It is a generosity transcended through simplicity.”  
(FRAMPTON 1996:358-359)

“Scientific investigations into man’s interaction with the environment have shown that there are upper and lower limits to the rate of input of environmental stimuli for the healthy functioning of the human organism. And if the input is too low, the human being will automatically try to increase it by either moving faster through an impoverished environment or by creating additional stimuli (mental activity) from within to substitute for the outer deprivation. Other studies have indicated that human discomfort or stress can be generated by either



figure 6.14



figure 6.15

too much or too little external stimulation, that is, by sensory overload or deprivation.” (NITSCKE, 1993: 45)

“The confrontation with nature and the concrete actuality of materials are intended to provoke reflection.” (NESBIT 1996:456)

#### 4.1 \_site textures

Rich earth colours make up the palette for the site’s textures. These colours and textures are used in the design to express the contextual properties. Floor surface patterns express the indoor and outdoor connections as the users move through the building. This will be achieved by using tile insets of the existing site’s textures placed in custom made resin tiles. These tiles are used in the service spaces and reflect movement through the building. The use of small wood insets is used in the building to emphasize joints and spatial qualities.

#### 4.2 \_concrete

The concrete structure is to be made of off-shutter concrete cast-in-place. A smooth grained texture is achieved by using oiled shutter-plywood shuttering to function as a non-absorbent formwork. Swelling of the wood prior to the concrete pouring, will water tight the formworks joints. The formwork is placed orderly and in a symmetrical manner with the minimum seems. Surface defects and tie holes will be patched and made good according to approved methods. Grains symbolize the contextual textures



figure 6.16

## m a t e r i a l s



figure 6.17

and sculptural landforms. The intricate concrete details require custom made formwork and the use of concrete specialists in execution.

#### 4.3\_masonry

The historical value of the site determined the use of red SA-stock bricks as an infill material. Sand used for mortar must closely resemble the colour properties of the site's soil colour. Wall and detail finishes are flush jointed and washed representing a structural honesty of the material. The use of various bonds relinquishes the material properties and these textures enhance the spatial experience of the site and building. Detail in the building is added by using brick patterns and then conveying these details into the surrounding landscape. These brick details help obtain more human scaled spaces even if the spatial volumes are of a much larger scale.

#### 4.4\_steel

The detail of the building as it transcends into the landscape required a finer detail to which steel properties adhered. It is primarily used in the roof structure and smaller detail such as railings and shading devices. Joints are accentuated and celebrate the intricate composition of the surrounding environment. The detail of the members evolves toward the edges where nature and architecture meet. These details are then further expressed in the skin of the building. Aluminium doors and windows are used in the building



figure 6.18



figure 6.19

based on their economy and their light material properties. Anodising is used on the aluminium for its harder and more abrasive surface finish.

#### 6.4 precedents studies\_

The in-depth study of similar facilities and systems was done to establish an understanding of the required measures. The associated problems could be identified and accordingly resolved in the proposed design based on these studies.

Brooklyn Mall, Brooklyn, Pretoria, Gauteng\_

2008/09/26 10:00\_

2008/09/26 14:00\_

The thermal and light impact was studied at the given times, and temperature differences were noticed and measured at various skylights. Temperatures were higher on the upper levels and even higher temperatures were found under the larger skylight situated over the escalators and lift areas. Even though these skylights were higher than the other skylights, they had insufficient heat extraction. As a result, the warm air accumulates quickly in these areas and cause discomfort, largely



figure 6.20a

b r o o k l y n

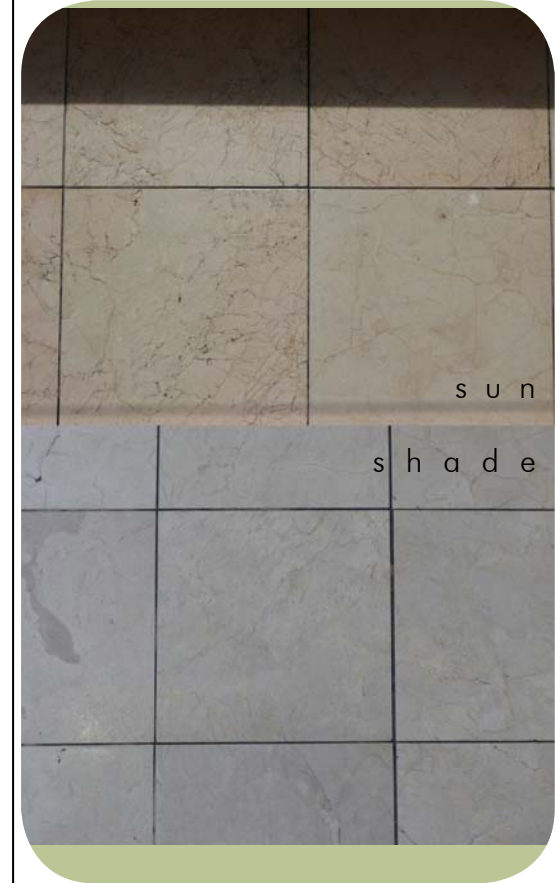


figure 6.20b

due to the height and volume.\_

Glazing for these skylights is used with a metal mesh, allowing diffused light to filter into large parts of the building. The photographs taken of the tiles under the skylights, and then directly out of the sun indicated a slight discomfort. This conclusion applies only for the larger skylights due to the vast volumes of light being conveyed in these areas.

Virgin Active, Gauteng, South-Africa\_

2008/10/05 08:00-17:00\_

Virgin Active (Three different gyms were documented for the study but for privacy reasons they will be mentioned in this document only as Virgin Active South Africa.)

The study included current ventilation systems within their gyms specifically related to heated pools within the building. Temperature control within the building is based on varying activities. Implications of condensation due to higher moisture and temperature differences on roof and glass surfaces were studied, as well as material uses due to the higher moisture content in the air. Open and concealed ventilation and cooling systems were used and only one used height difference over

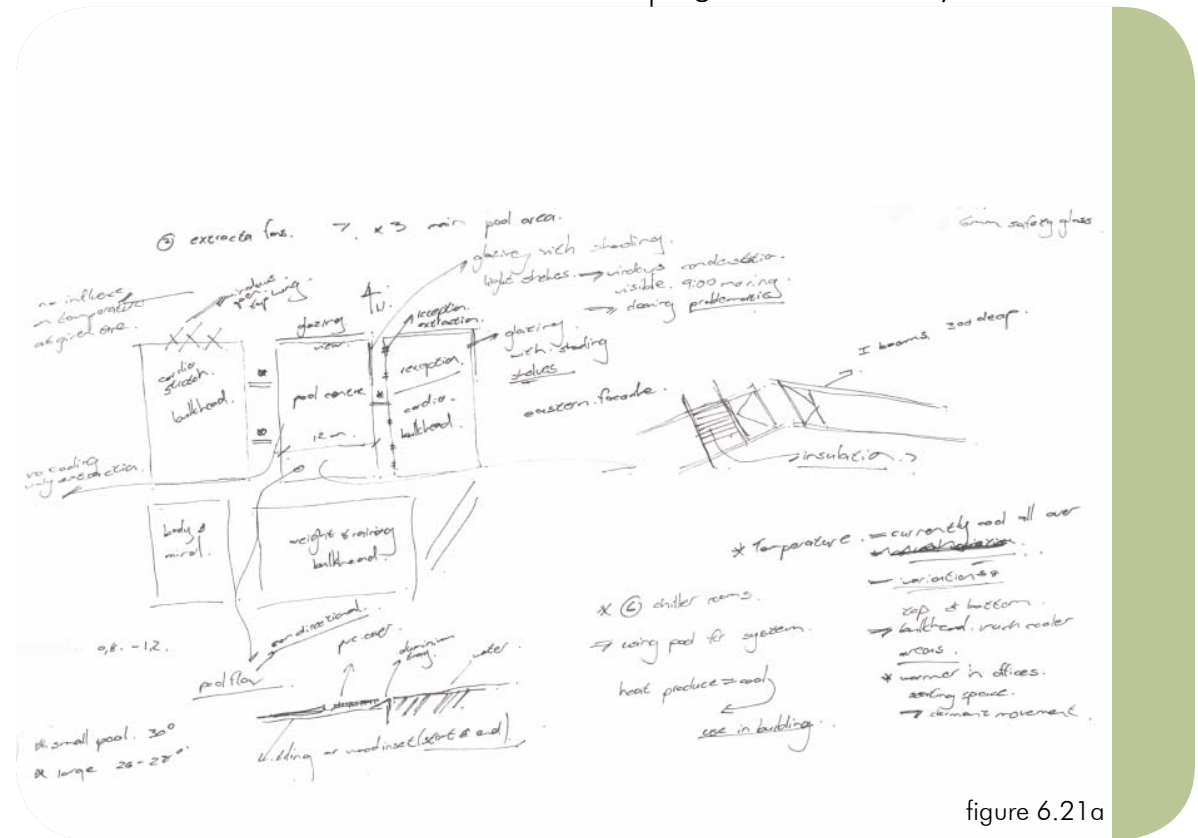


figure 6.21a

pool to compensate for additional heat gain. Structurally the buildings could be classified as warehouse type with steel roof structure and metal sheeting on the exterior. The interior roof surface consisted either of Iso-board, bulkheads or some sort of PVC sheeting. Pool temperatures varied from 26-30 degrees depending on the use of the pool. Flow-rims are used for their hygienic qualities, but they are not the best for professional swimmers due to their visual deceptive characteristics.

Cooling within the building is based on regions and the use of various cooling systems, and offices had warmer temperatures than the studios as a result. The reason for this would be to accommodate low and high levels of activities.

The use of an integrated system helps to maximise output and input creating greater efficiency. Over the pool areas the only interventions are the extraction of hot air.

Exposed glazed facades are shaded externally with horizontal metal shelves which function as shading. External shading devices were not sufficient and alternative roll-up shading devices are used in all these cases internally.

Basic cleaning of the facilities happens on a daily basis but with an industrial scaled cleaning and maintenance activity every quarter.

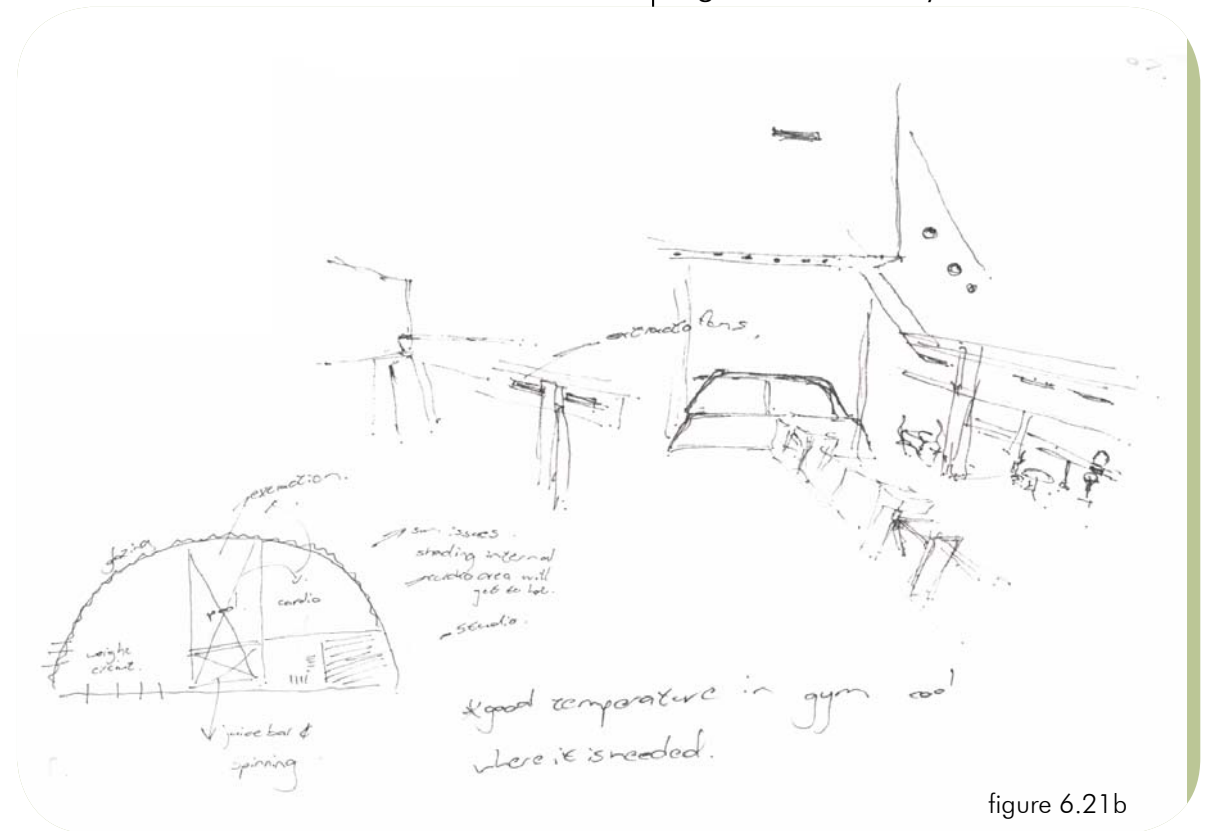


figure 6.21b

# conclusion\_

The true living condition humans require is an intimate and frugal relationship between man and nature. Various attempts have been made to attain an honest relationship. Some have had more success than the others and perhaps both will apply for this document. The answer in the end was not to get the right and perfect solution but rather the attempt of achieving something better. Living cities where interdependent urban networks function cohesively with intricate micro environments, thus optimising the use of land resources based on basic human needs rather than the idealised desires. Placing the architecture to respond and emphasize this. Perhaps the best example for this is the Athens Acropolis and the way it functions in the contextual environment. The aim of the dissertation is to achieve this relationship, but time has proven to be the best judge of success.

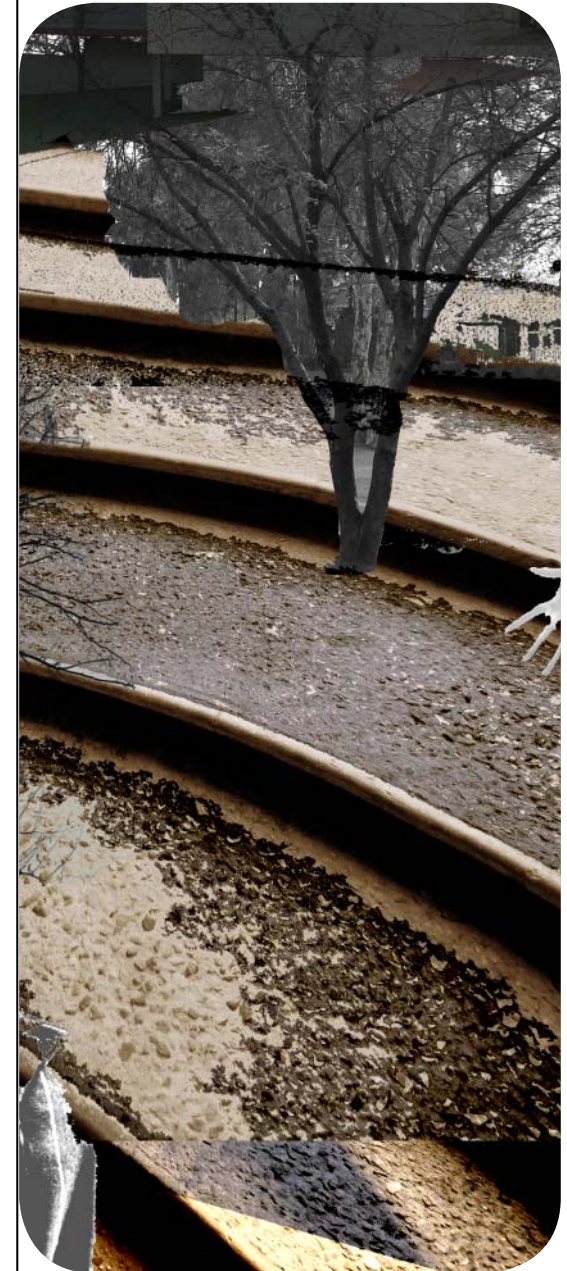
We need to consciously realise our power to produce nature for as we engage with nature and recognise that our producing of nature is aligned with our social relations-then only will we be able to construct different natures. By reintroducing ecology as a social construct and acknowledging the use of material social practices it may be possible to renew the social nature. (KATZ & KIRBY 1991:268)

And perhaps then our children will have the same honour of sharing this earth with all its other counter parts.

JUAN DOMINGO SANTOS. Hushed music.  
Poetry of a silence  
HUSHED MUSIC. POETRY OF A SILENCE  
Notes on an intimate architecture  
The Gaspar House by Alberto Campo Baeza

“Time settled happily there...”  
There is, between the walls, an arrested  
architecture  
that forgoes venturing out. It exists in itself, in  
Nature,  
in the heart, where each thing is as it is.  
Intact in its original purity, it has lived for some  
time removed from an exterior reality  
which hurts it. Impregnable, it sinks its roots  
and retreats inside so as not to shed its essence.  
There is within an invisible thought  
which is offered to view,  
yet remains hidden in its longing for opacity,  
to thus become the resting place  
of the soul.  
In the interior nothing is the same. A serene,  
tranquil architecture  
that appropriates reality with an intimate order.  
A visible captivity;  
the beauty of a void which opens its innermost  
parts.  
The transparent and diaphanous quality of the  
whole leads irremediably  
to abstraction.  
There is a calm presence, a rare stillness. An  
intimate occurrence. A mystery

figure 7.1



which fulfills its destiny. Its place is time, even before the space it inhabits. A time in which there is neither before nor after, an immobile time of eternalized instants. II  
The ownerless air enters. It flows freely. It laps the walls dense with captivity. It plies the carved void like an imaginary ship that interrupts dintels of light and shadow. There is a silence. A special silence. A comfortable, mysterious, silence which transports us to a different time. A place where the displaced sound of the air allows itself to be caught in order to sing of its mystery.

(Shostakovich in the background on a long summer's night)  
JUAN DOMINGO SANTOS, Granada 1995  
(CAMPO BAEZA, A. 2006: The Gaspar House)

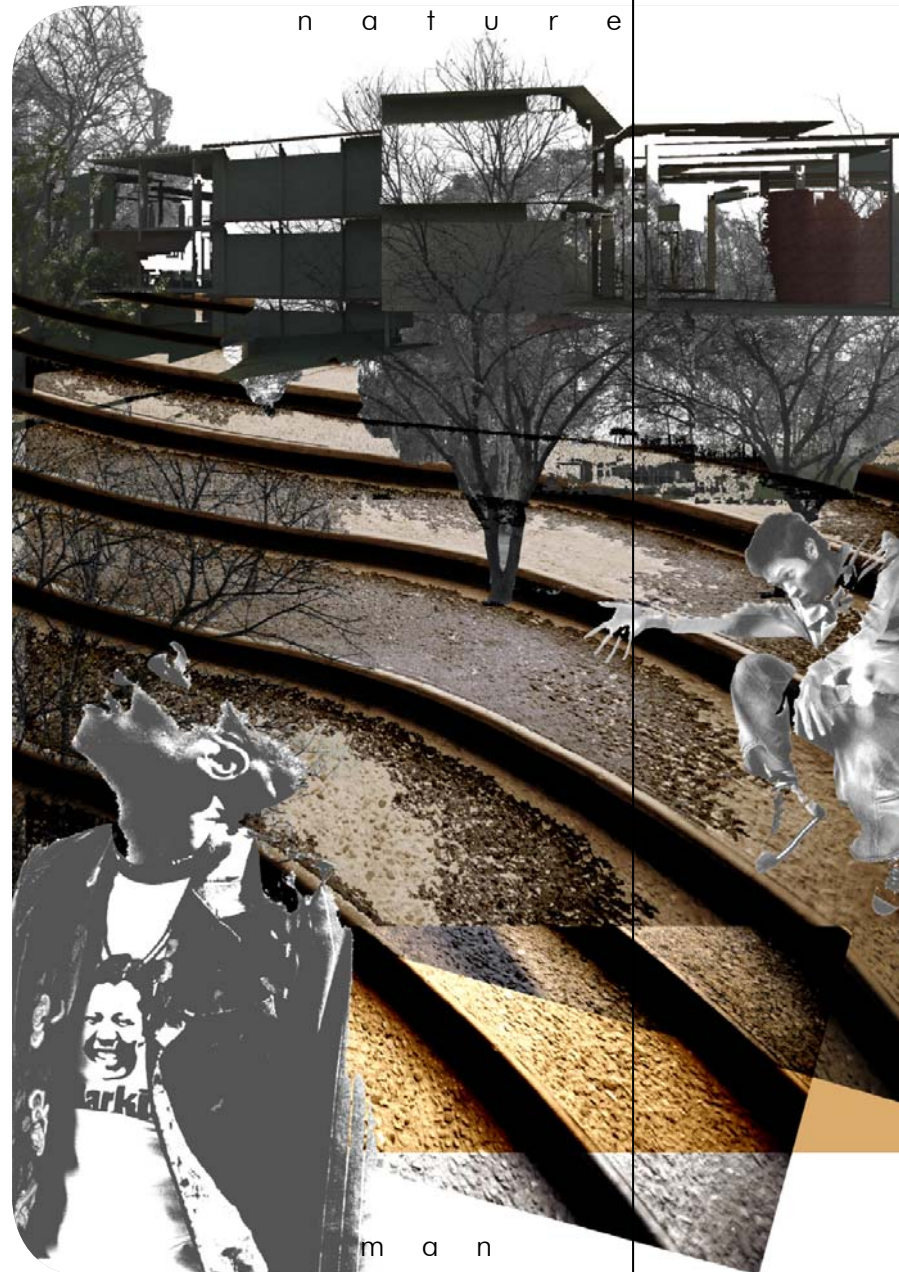


figure 7.2

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Muckleneuk/Lukasrand in the Pretoria context

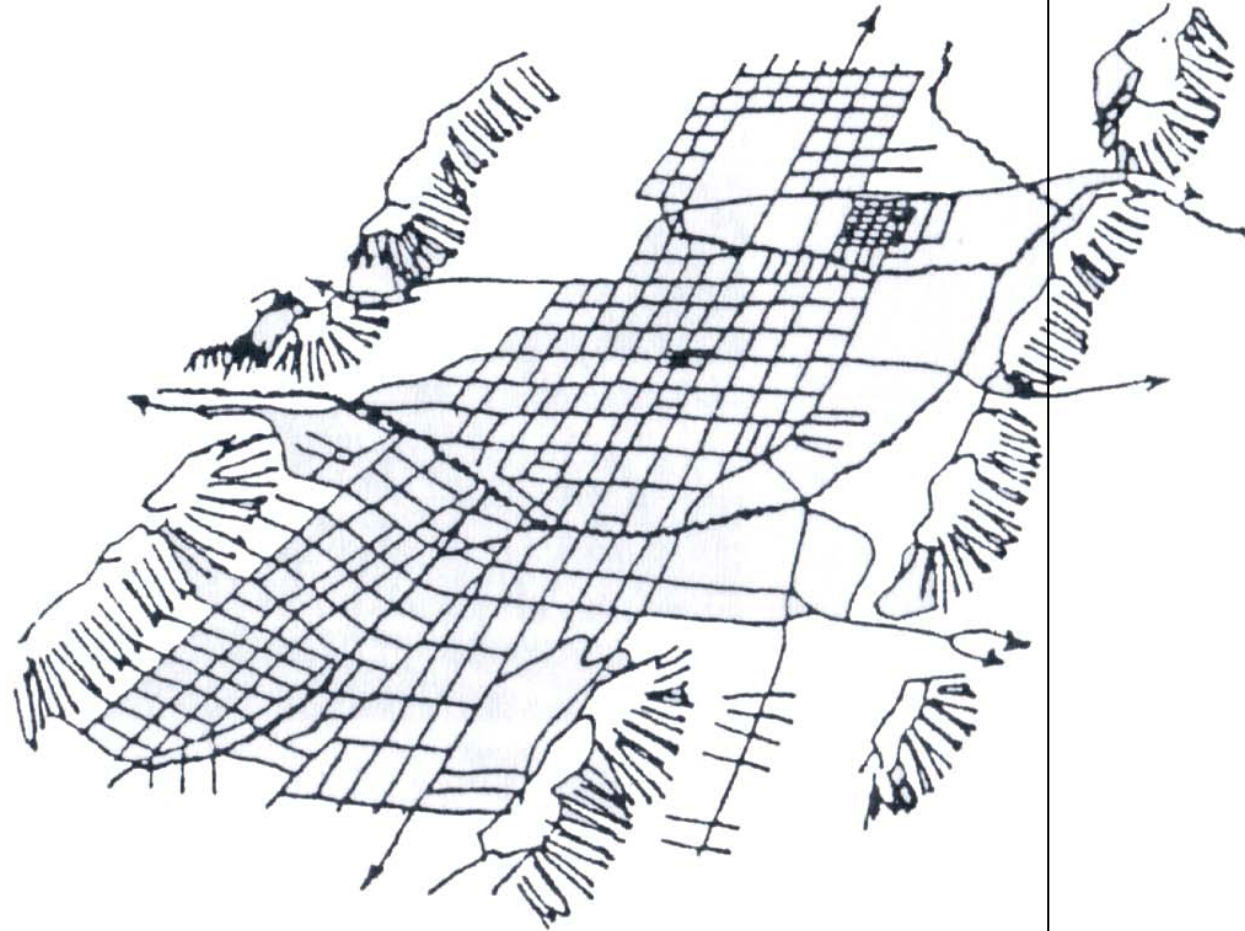


figure 8.1

natural place structure of Muckleneuk/Lukasrand in the Pretoria context

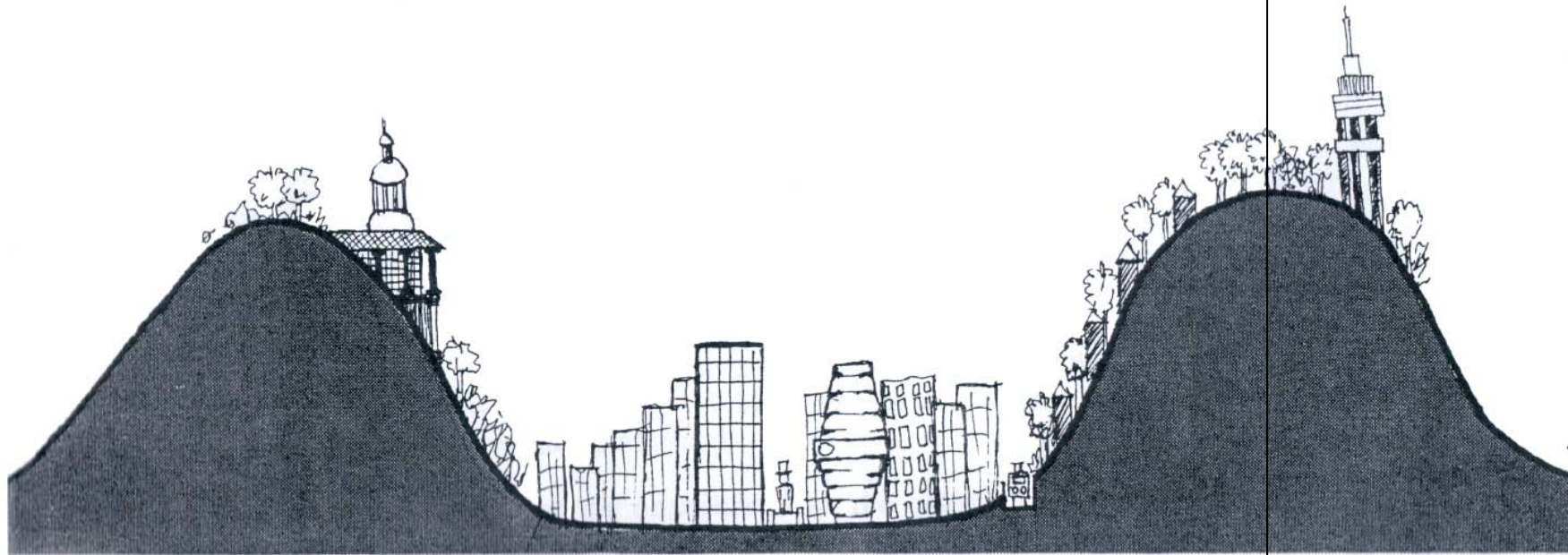


Figure 7.6

Figure 7.6: Muckleneuk/Lukasrand in the Pretoria context



letterhead regarding building plans

Verwysings No. T.O. In 746-2  
Reference  
Naam Meester  
English  
Tel. No. 48074



(L)

BYLAAG I

T.O.D./T.E.D. 200

All mededelings moet geradeneer word aan die  
Direkteur van Onderwys.

All communications must be addressed to the  
Director of Education.

TRANSVAALSE ONDERWYSDEPARTEMENT  
TRANSVAAL EDUCATION DEPARTMENT

G16

Privaatsak X76  
Private Bag X76  
PRETORIA  
0001

1977-10-19

Die Registrateur  
Pretoria Onderwyskollege

Meesterplan vir Kollege en Sportvelde (ou  
Kirkness terrein)

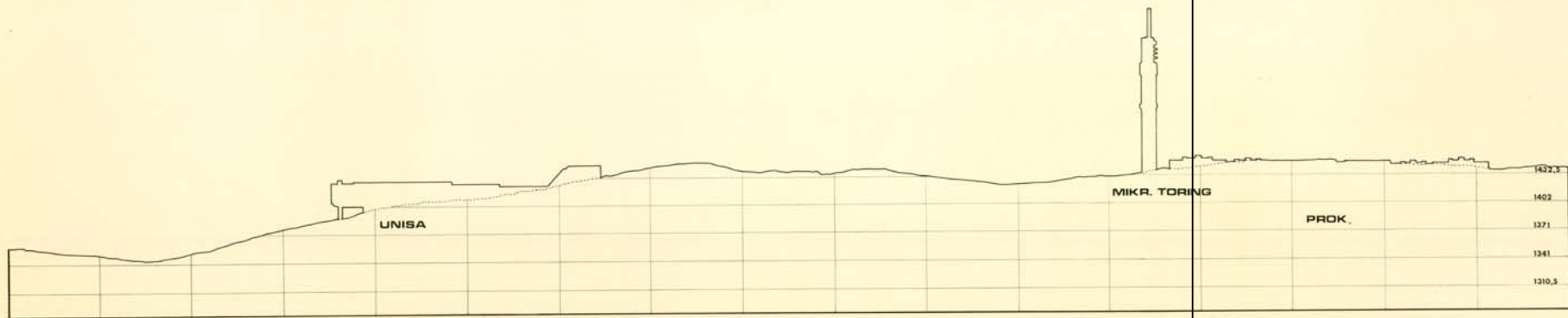
Tekening nos./Drawing nos.: VS/100 (Meesterplan)  
Folio nos.:

Aangeheg in duplikaat is die goedgekeurde sketsplanne van bogenoemde  
diens.  
Attached in duplicate are the approved sketch plans for the above  
service.



*[Signature]*  
Namens DIREKTEUR VAN ONDERWYS  
For DIRECTOR OF EDUCATION

existing landscape and building profile



**GEBOUWPROFIEL TEEN  
HEUWEL  
SKAAL 1:2500**

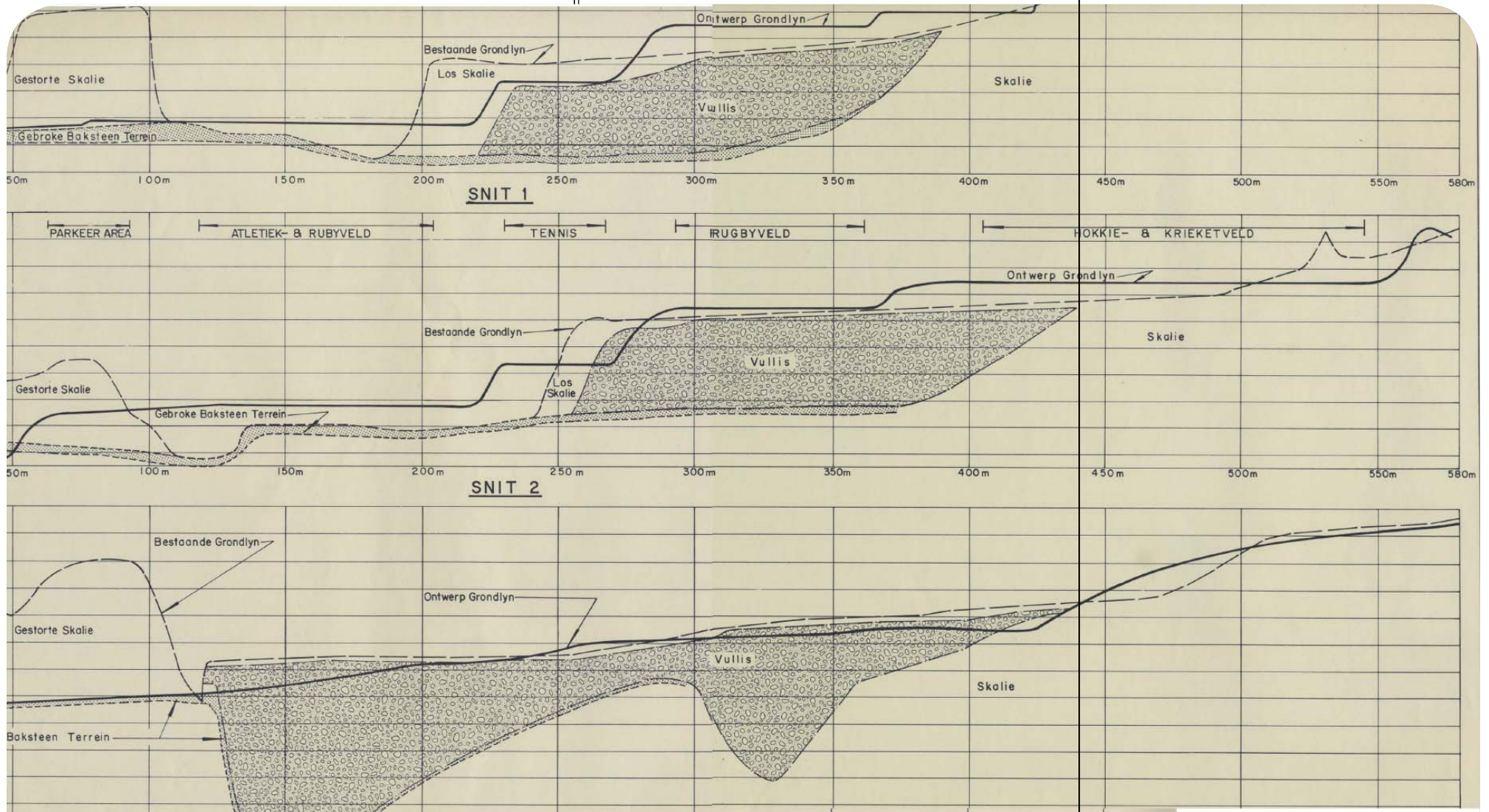
figure 8.4



site plan with rubbish dump areas indicated



figure 8.5



sections indicating soil and rubbish areas

figure 8.6



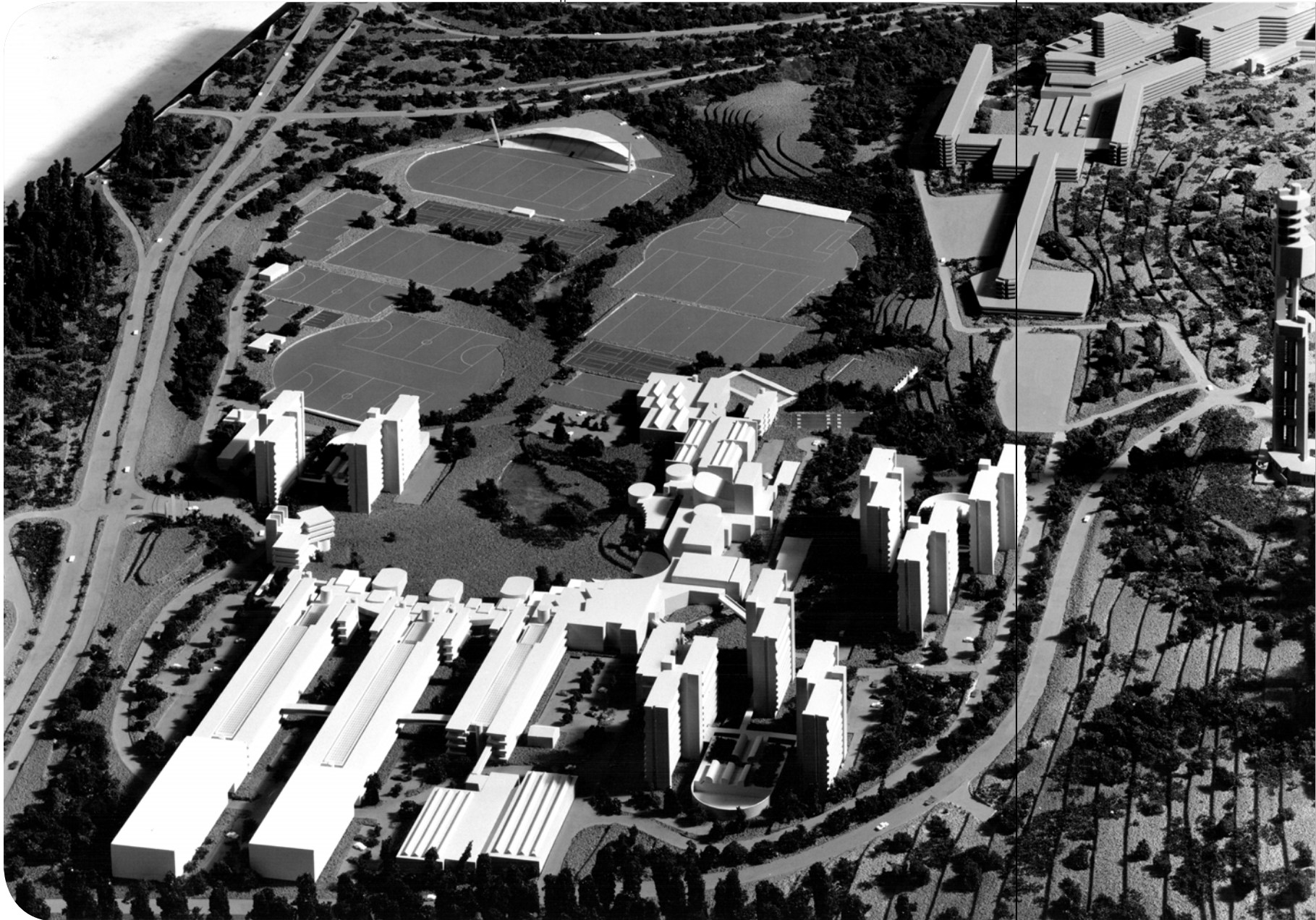
proposal model

figure 8.7



proposal model

figure 8.8



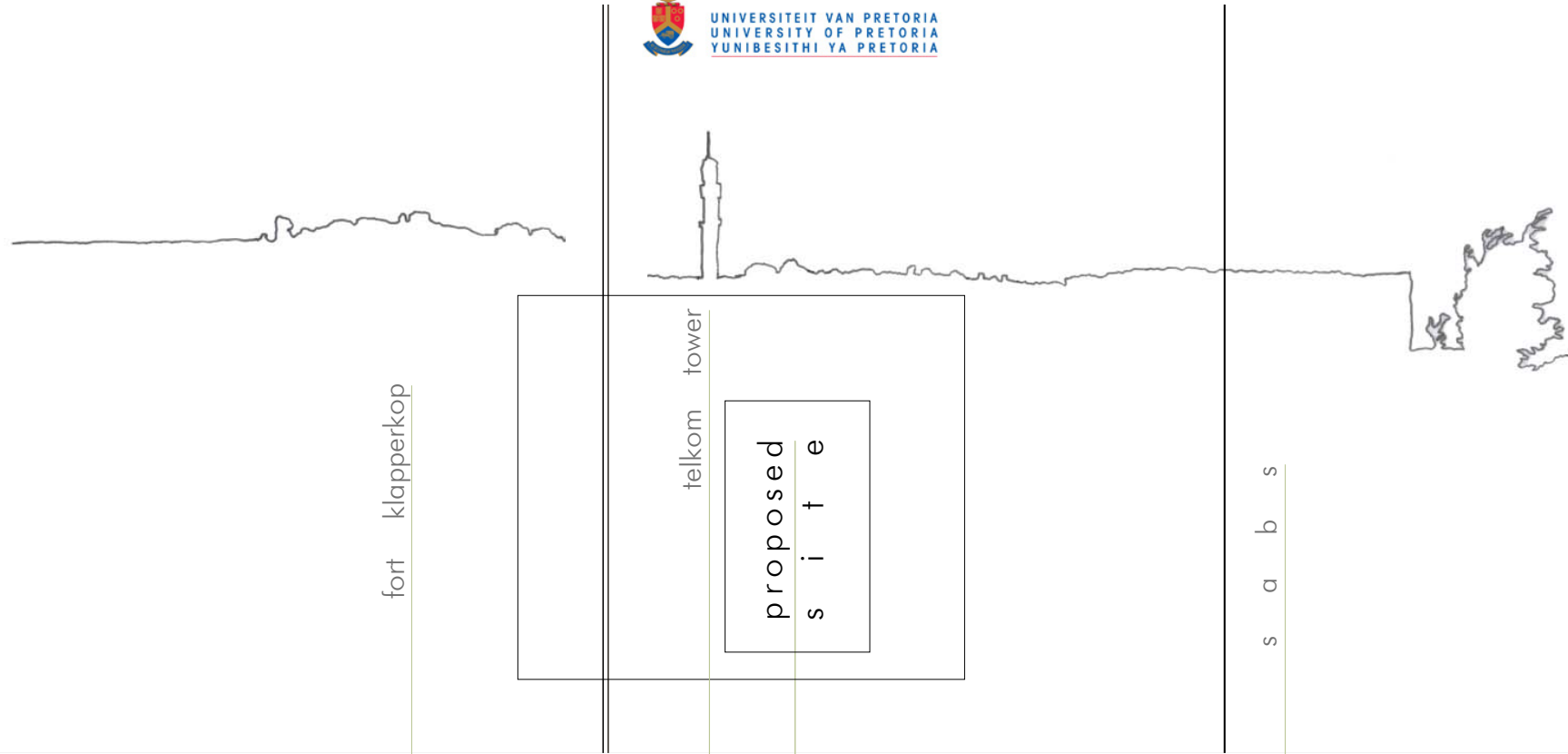
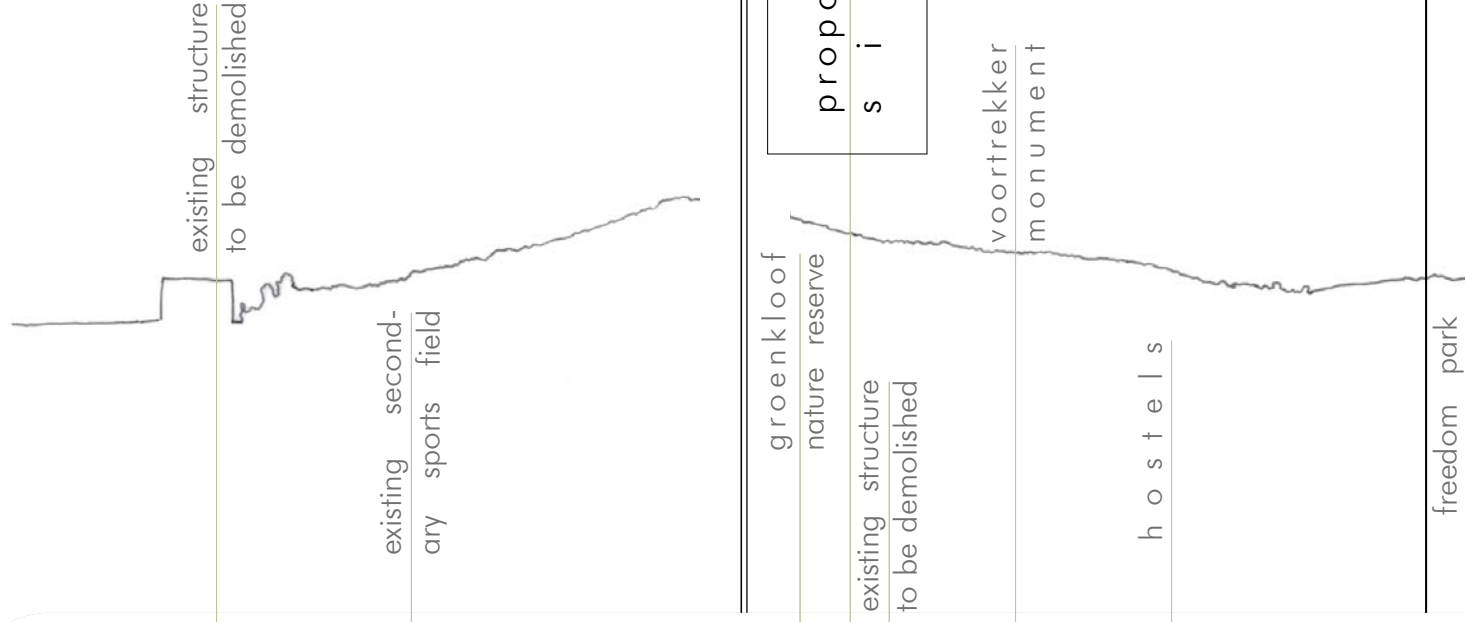
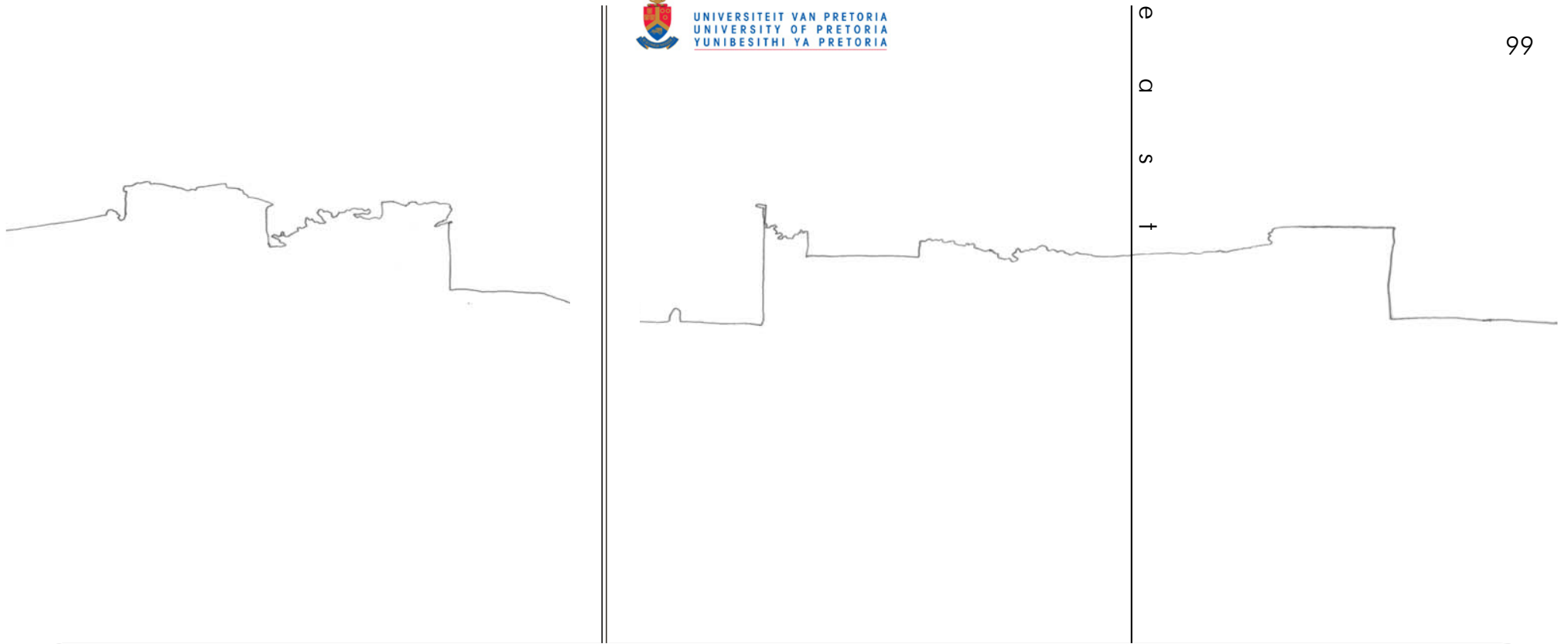


figure 8.9



view west from site

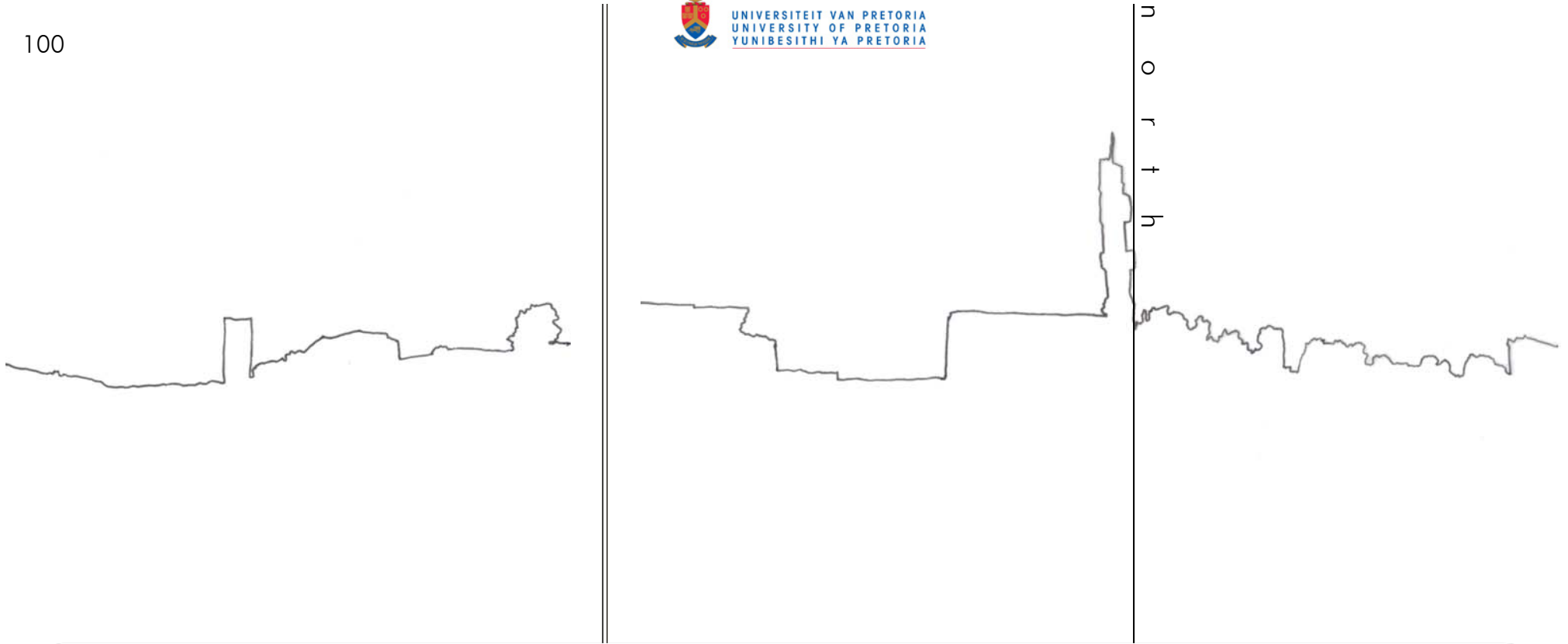
figure 8.10



view towards groenkloof campus



figure 8.11

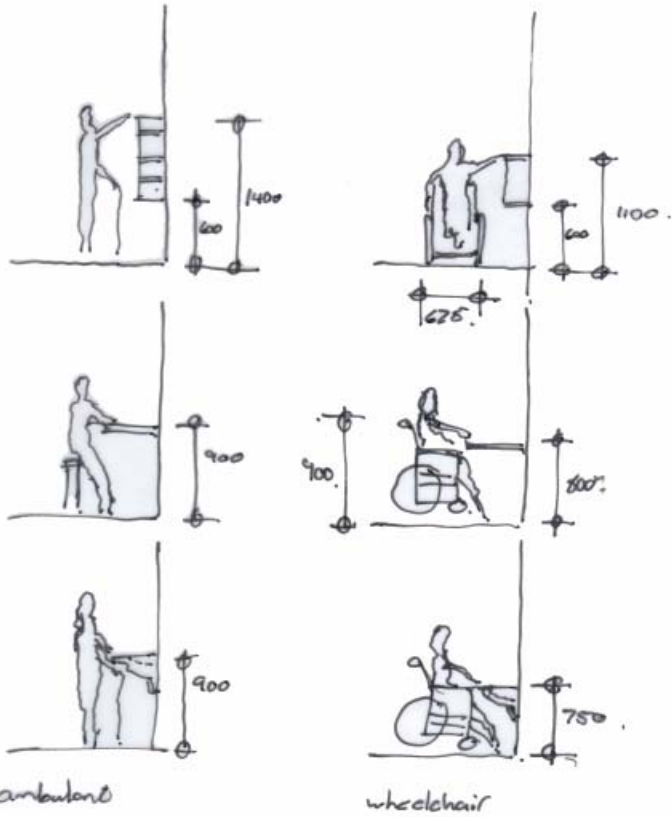


view towards unisa and sanparks

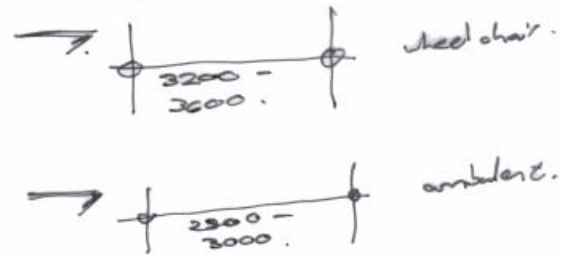


figure 8.12

disabled precedent studies



Parking disabled



Ramps

1:12  $\Rightarrow$  resting intervals (1200 min - 1000 min)  
 $\Rightarrow$  9m  
 $\Rightarrow$  1,5 m

1:10  $\Rightarrow$  drop of ramp.

1:8  $\Rightarrow$  @ parking

Stairs - ambulant . prefer .

T  $\Rightarrow$  min 320 mm.  
 R  $\Rightarrow$  max 145.

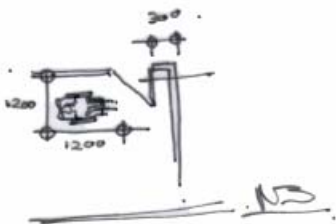
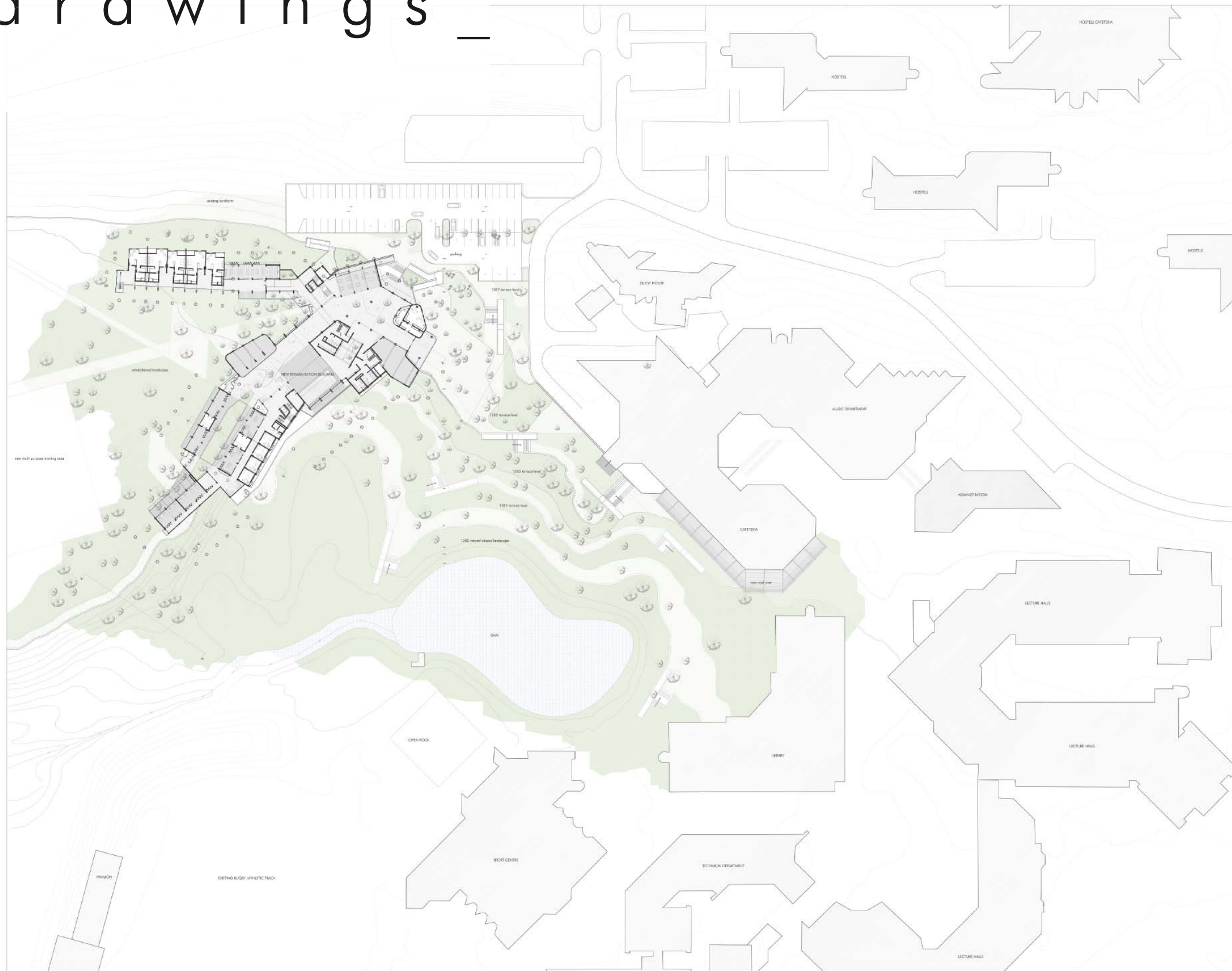


figure 8.13

# technical drawings



site plan not to scale

site plan  
N

figure 10.1



basement plan not to scale

basement floor plan

figure 10.2

ground floor plan not to scale



ground floor plan

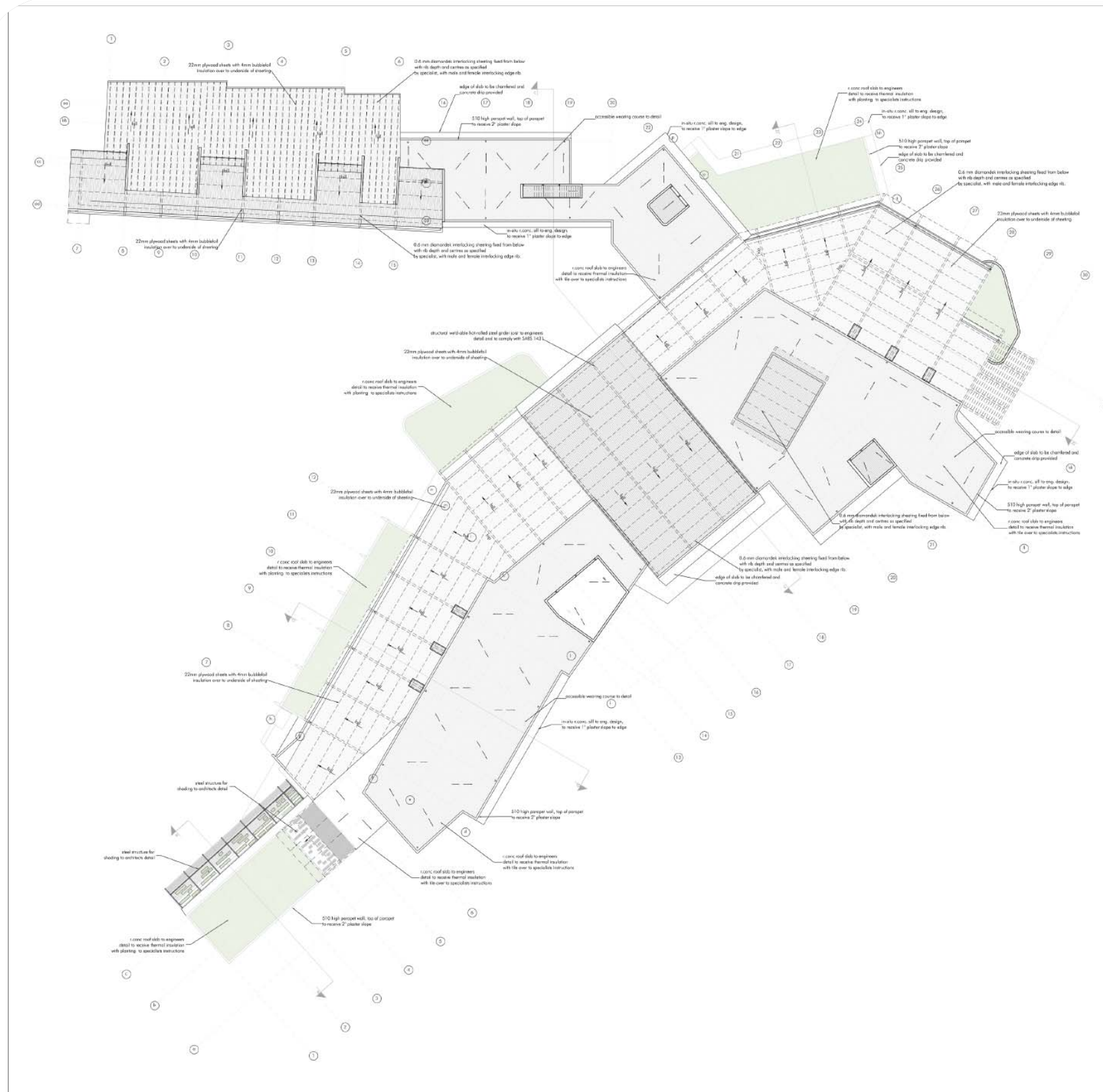
figure 10.3



first floor plan not to scale

first floor plan

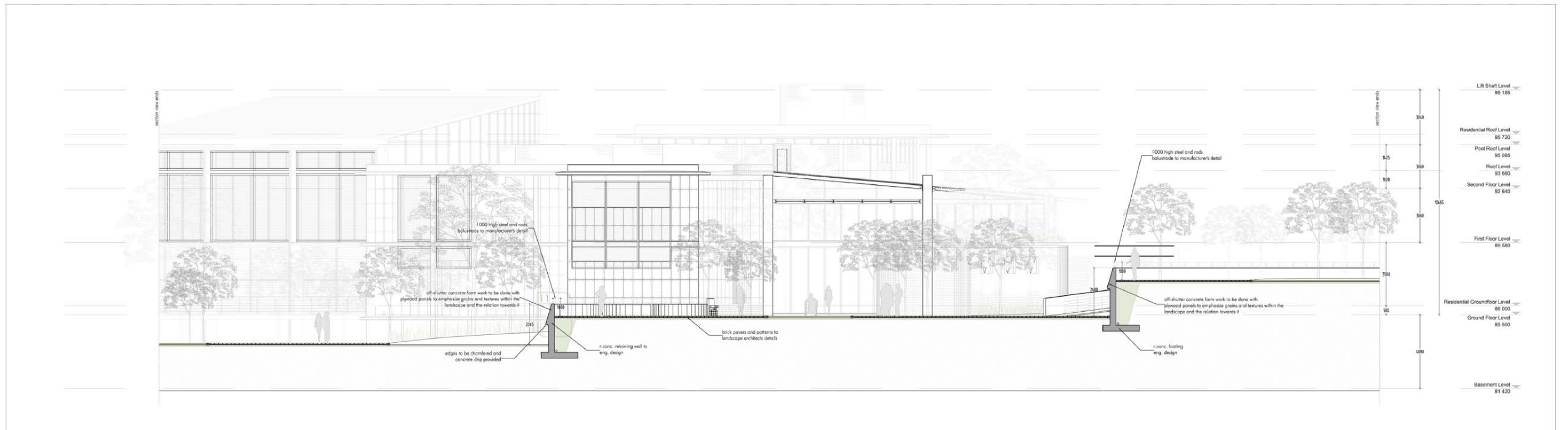
figure 10.4



roof plan  
N

figure 10.5

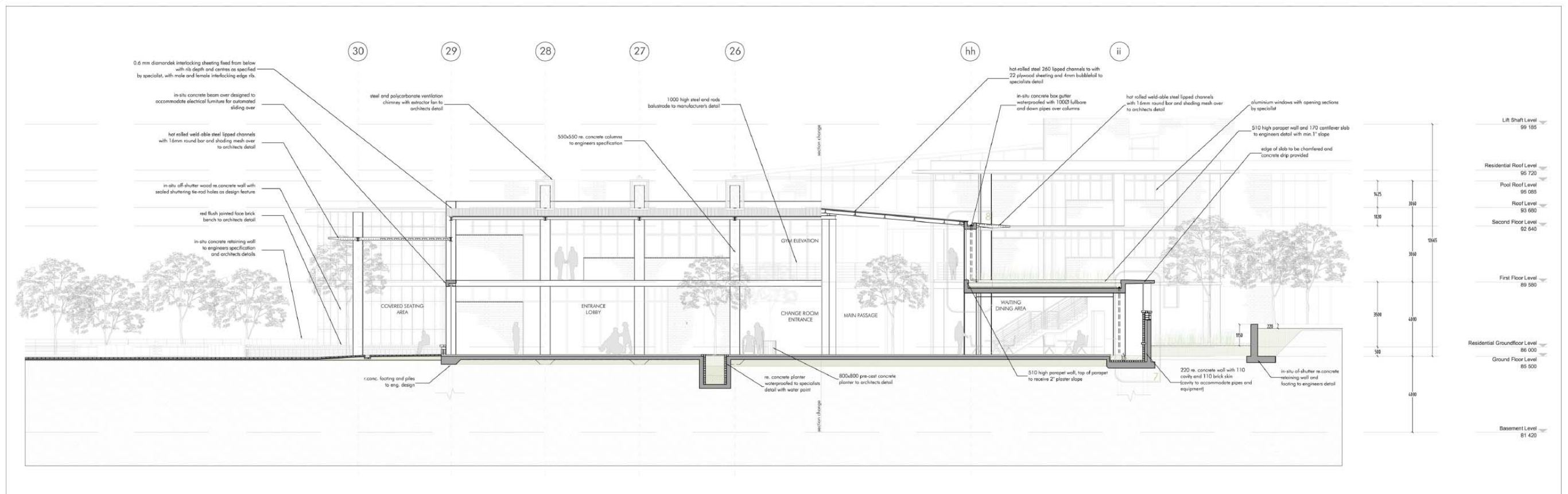
figure 10.6



section a-a

section a-a not to scale

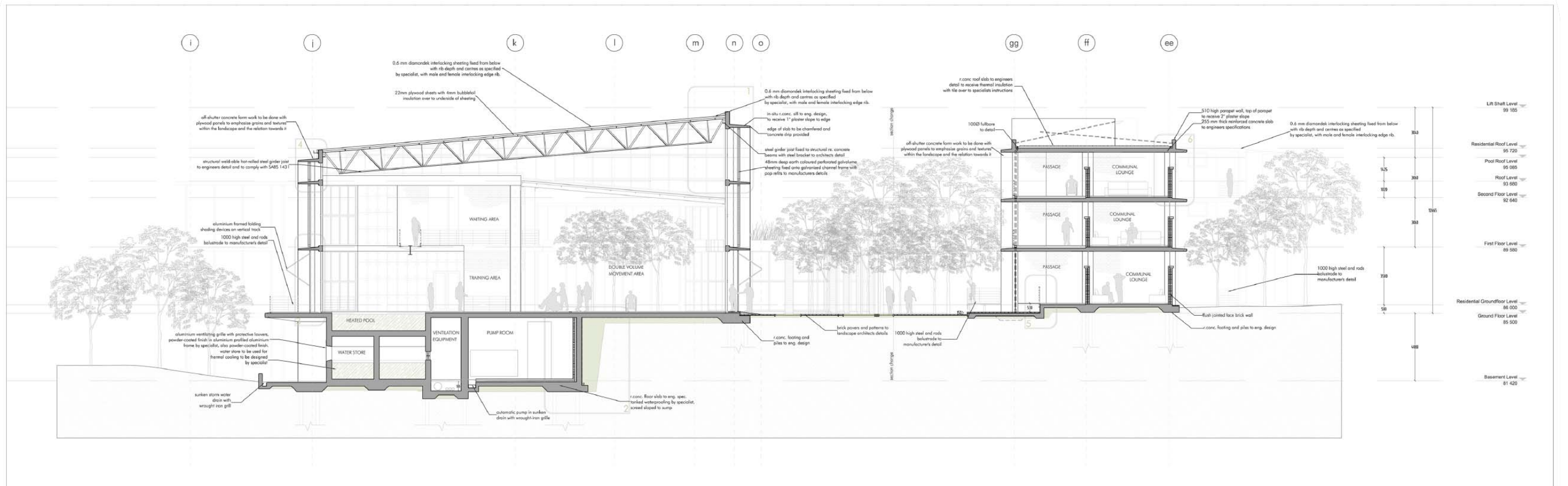
figure 10.7



section b-b

section b-b not to scale

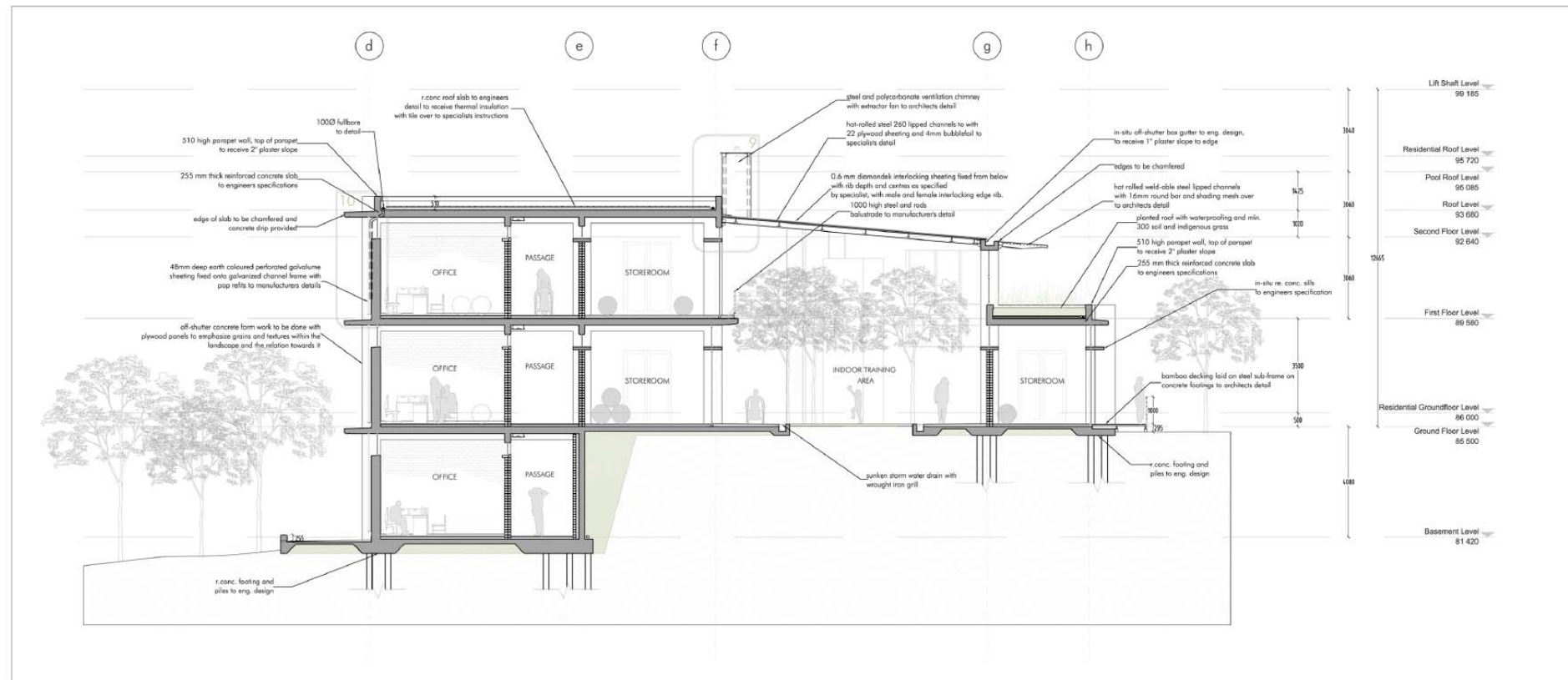
figure 10.8



section c-c

section C-C not to scale

figure 10.9



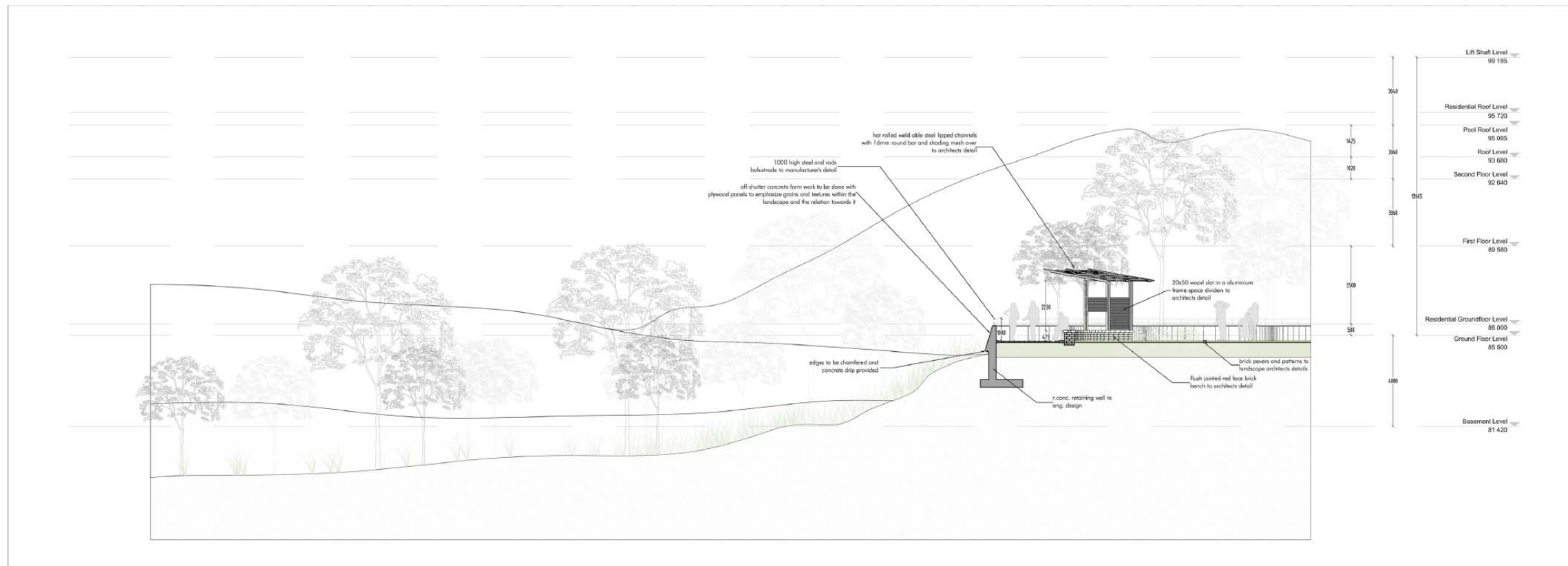
section d-d

section d-d not to scale



figure 10.11

section f-f not to scale



section f-f



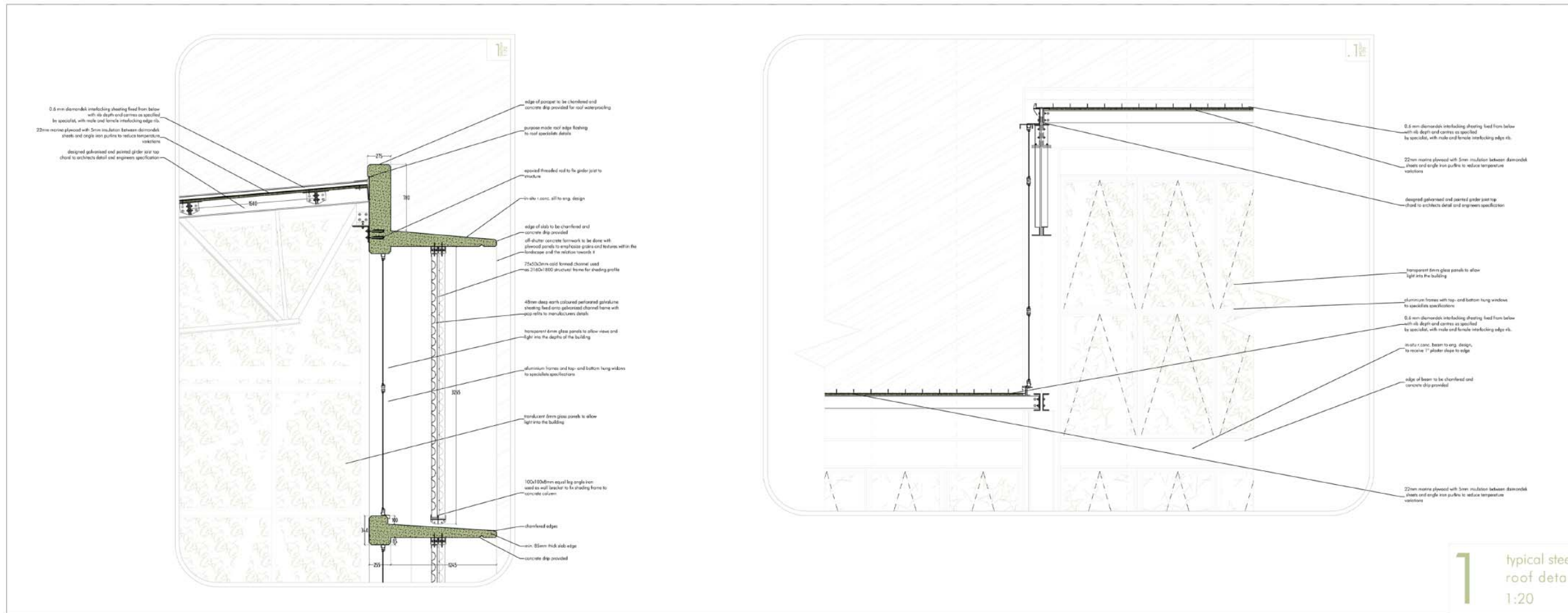


figure 10.12

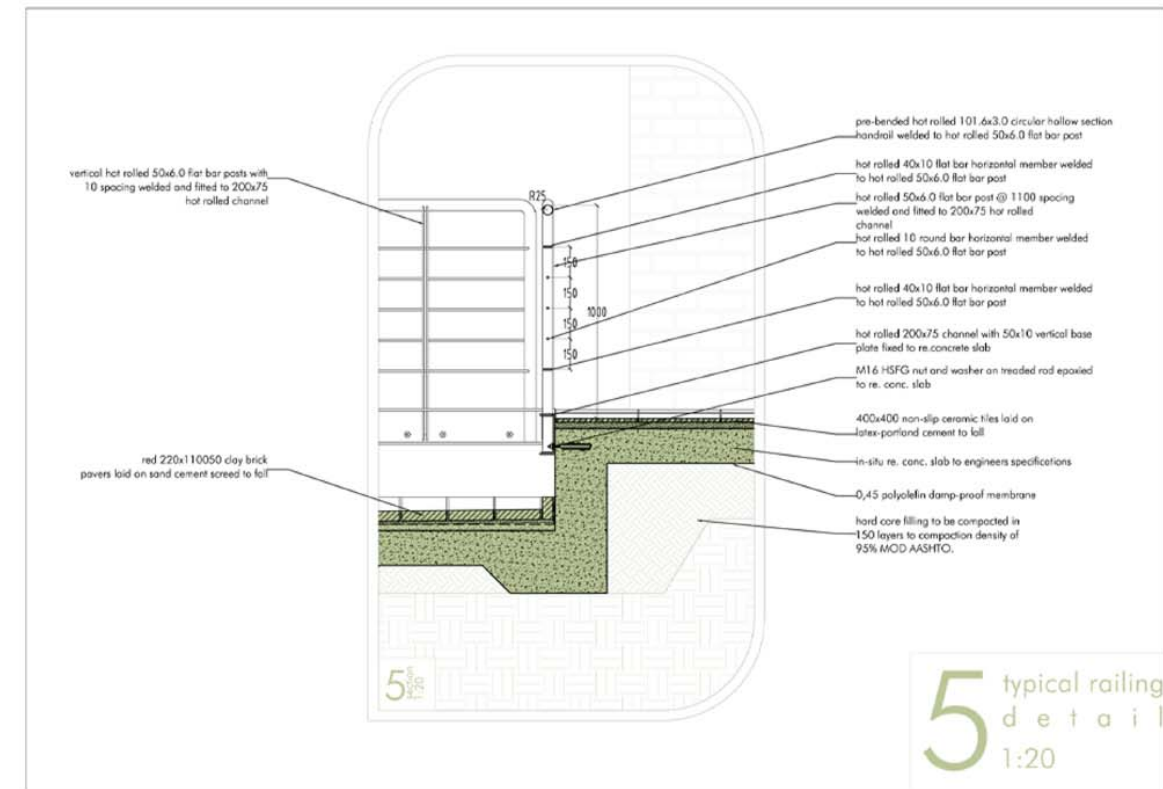
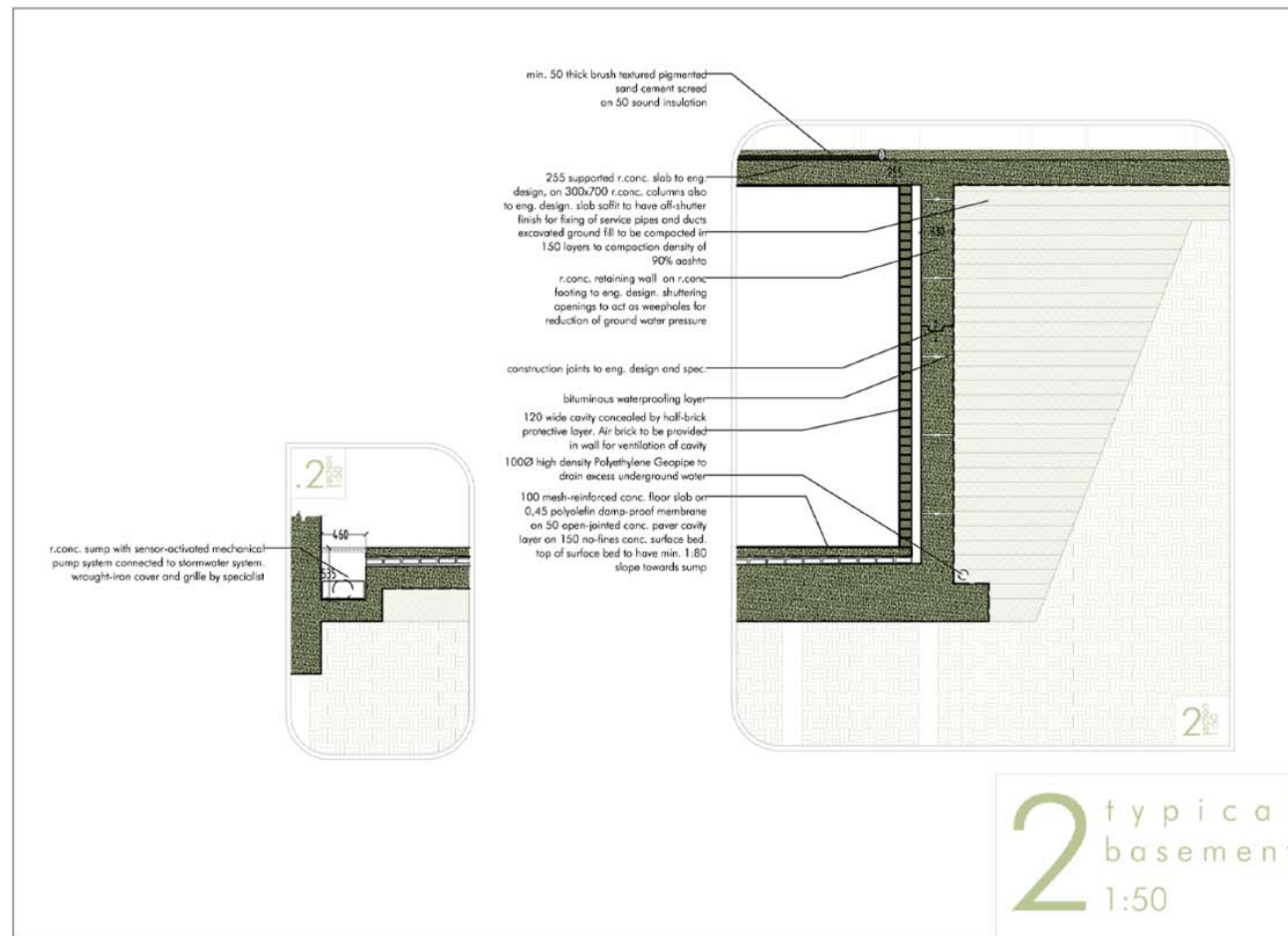


figure 10.13

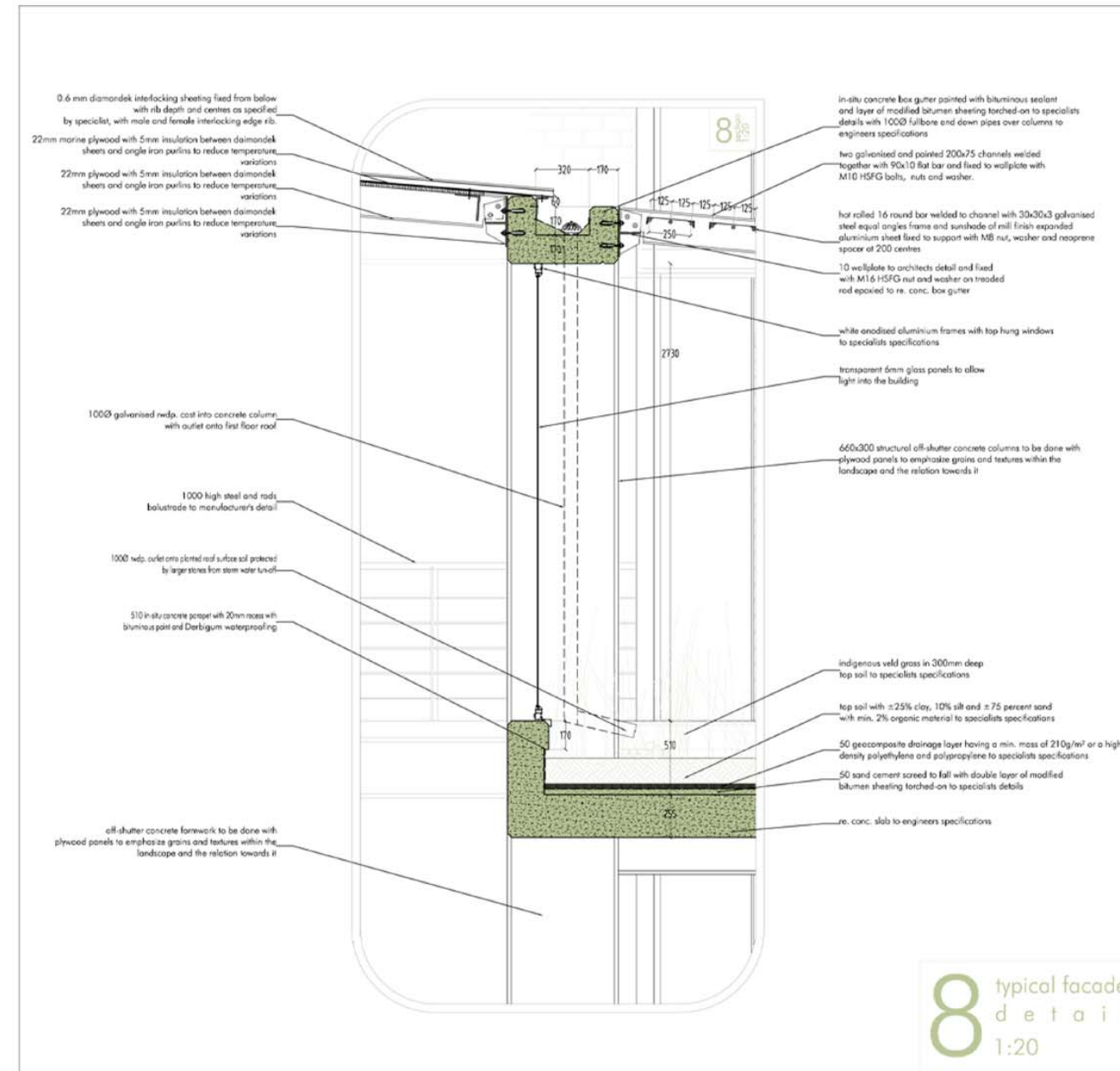
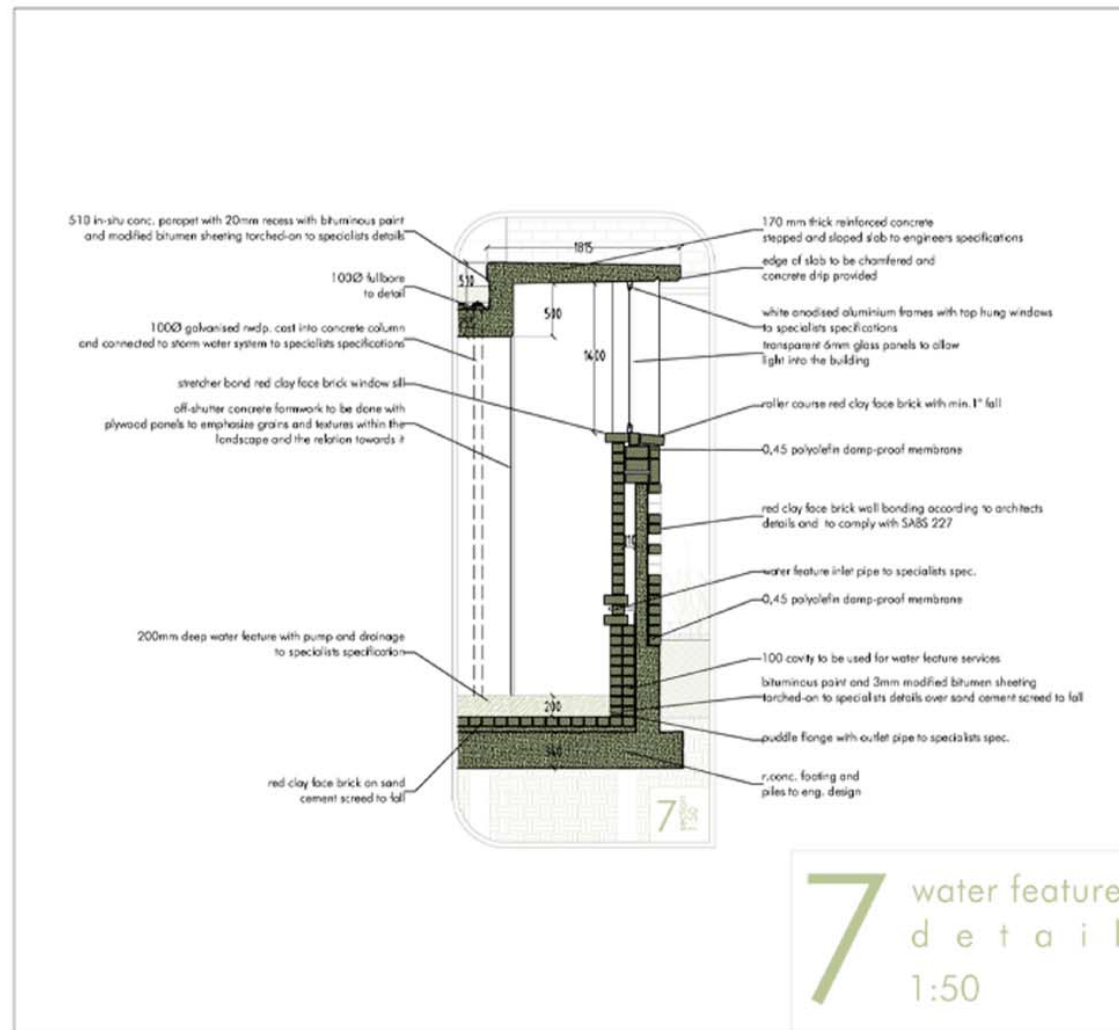


figure 10.14