DOORNKLOOF

Merike Swanepoel

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"TO SEE A WORLD IN A GRAIN OF SAND, AND HEAVEN IN A WILD FLOWER,
HOLD INFINITY IN THE PALM OF THE HAND AND ETERNITY IN AN HOUR".

Jan Smuts

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"IN SOME MYSTERIOUS WAY STRUCTURE AND PATTERN ARE AT THE VERY
ROOT OF THE UNIVERSE AND OF THE MIND".

Kurt Koffka, German Psychologist

"DOORNKLOOF"

by Merike Swanepoel

2012

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"STUDY LEADER"

Nico Botes

"STUDY FIELD"

Heritage and Cultural Landscapes

University of Pretoria
Pretoria 2012

Submitted in partial fulfilment of the requirements for the
Degree of Magister in Architecture (professional)
in the Faculty of Engineering, Built Environment and Information Technology,
University of Pretoria.

“DOORNKLOOF”

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this DISSERTATION *is* PRESENTED *in a* SERIES *of* BOOKLETS *or* MAGAZINES, *it serves as* SEPARATE DOCUMENTS *that* FORM THE WHOLE DOCUMENT; “DOORNKLOOF”.

SMUTS *described the philosophy of* HOLISM in SIX STAGES.

Each of these six stages is presented in different booklets and will form the core concept of each booklet:

Booklet One
WORLD of IDEALS and VALUES

Booklet Two
CONSCIOUS WORLD *of* MAN, *in human*

Booklet Three
ASSOCIATIONS *like* COMMUNITIES *and* STATES

Booklet Four
THE PHYSICAL *and* MATERIAL WORLD

Booklet Five
LIVING BODIES *like plants*

Booklet Six
ANIMATED FIELDS *as in animals*

Smuts described the philosophy in the following sequence: The physical and material world, Living Bodies like plants, Animate fields as in animals, Conscious world of Man, Associations like communities and states, World of ideals and values.

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

Merike Swanepoel

PROJECT SUMMARY

"DOORKLOOF"

by Merike Swanepoel
27157530
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"COURSE COORDINATOR"
Jacques Laubscher (Dr) and Arthur Baker (Dr)

"MENTOR"
Nico Botes

"PROGRAMME"
Integrated Museum and Biorepository for Bankenveld Landscape.

"SITE DESCRIPTION"
The farm Doonkloof, Irene, Centurion
Doornkloof 391-JR.
GPS Coordinate -25.889458° 28.230776°

"CLIENTS"
Doornkloof Grassland Institute; Friends of the Jan Smuts Foundation; SANBI (South African National Biodiversity Institute); Royal Botanic Gardens, Kew Gardens

"USERS"
Doornkloof Grassland Institute, Friends of the Jan Smuts Foundation, SANBI (South African National Biodiversity Institute), Royal Botanic Gardens, Kew, Millenium Seed Bank and visitors of Doornkloof.

"THEORETICAL PREMISE"
A study in Holism and Phenomenology.

"ARCHITECTURAL APPROACH"
Development of a new museum typology for a ecological cultural landscape.

"RESEARCH FIELD"
Heritage and Cultural landscapes.

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“DOORNKLOOF”

an INTRODUCTION *to the author's* DOORNKLOOF

"PROLOGUE"

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As a young girl (every other Saturday morning) my mother would drag me to Irene Market. It became a ritual: of waking up early, strolling through the market, buying a boerewors roll for breakfast, and finding a quiet spot to eat and watch the crowds. These Saturday mornings became a tradition in our family.

Years later in a bustling bar in Maputo, I had an interesting conversation with a lecturer, who enthusiastically told me stories about the South African president Jan Smuts. Back home in Pretoria, I briefly read a Wikipedia page to answer a few questions.

As the build up to my Master's year came along, and having to decide on a topic, a space and an architecture, these memories of Irene Market flooded back to me. I was filled with a nostalgia to return to the site, which was always a place filled with precious memories that evoked a certain feeling of calmness. In my memories Irene was a sanctuary, a place where you can escape the suburbs, a place where the trees told stories. I returned to Doornkloof once more, where the story and legacy of Jan Smuts can be felt in the atmosphere, it became a place of true inspiration.

The Doornkloof Farm, throughout my investigation, became layered with meaning. Every layer that I uncovered gave this space a more spiritual meaning. It is only through uncovering and understanding Doornkloof that the meaning and importance of the philosophy of Holism became clear to me. It became the philosophy that gave meaning not only to my thoughts but to the design.

Figures

***figure 1** _ OPPOSITE PAGE _ Grasses in early winter at Doornkloof*

an ABSTRACT of the DISSERTATION

"DOORNKLOOF"

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This dissertation grew from an investigation of the farm Doornkloof in Irene, Pretoria. The farm was home to General Jan Smuts and it is here that he wrote his seminal philosophical work "Holism and Evolution" and found his own grass specie *Digitaria Smutsii*.

The theoretical investigation is rooted in the interpretation of Holism, as an architectural theory, which informs the proposed design intervention.

This study is informed by an analysis of the area of Irene, its origins and its future growth lead to the development of a holistic framework. This study proposes to inform the future socio-economic and historical importance of the farm as open public space for the citizens of Tshwane and Irene.

The research intervention proposes a new architectural programmatic typology that will celebrate the importance of the Bankenveld landscape. The systematic rehabilitation of the grassland landscape will be achieved by introducing small scale interventions.

The series of design interventions will rehabilitate the existing historical layers of the site, create new interest in the farm, improve the economic position of the Jan Smuts Foundation (the owners of the farm) and protect the landscape for the future generation users.

Figures

figure 2_ *OPPOSITE PAGE _ Grasses in focus*

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"ACKNOWLEDGEMENTS"

to everyone that makes me happy

&

my mom, dad & brother

WORLD OF IDEALS

“HISTORY IS EXPERIENCED AS NOSTALGIA AND NATURE AS REGRET, AS A HORIZON FAST DISAPPEARING BEHIND US”.

Henri Lefebvre

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BACKGROUND *to the* DISSERTATION

"WORLD OF IDEALS"

and an INTRODUCTION *to the* LANDSCAPE

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BACKGROUND

In the past, our identities as people were created by our connection with the landscape. The landscape as a representation of space and time gave our bodies and souls clues about who we are and where we belong. Our current way of living has eroded our land, it has become an endless expansion of identical homes, billboards, malls, office parks, endless loops of highways filled with slow moving traffic, fast food outlets and car dealerships (Farrar 2010).

The landscape is distorted with signs and symbols that only the mind can interpret and thus the body gets left behind. Technology has created communities of the mind, and not communities of body and spirit. Society as a whole feels the need to reconnect with time and space, with the landscape (Zukin 1991). The increasing divide is rendering us to become only a mind that cannot perceive, experience and understand the complex whole (Farrar 2010).

LANDSCAPE

Irene (a suburb of Tshwane), originally developed from a farm named Doornkloof. The farm's name originated from the large Thorn Tree (Doringboom) forests that was seen on the rocky outcrops and in the valleys of the vast grasslands (Helme, Carola & Julia 1976).

The Doornkloof grassland, with its dolomite hills and caves and the thorn trees have been a witness to the inhabitants of the area since the early stone age when the first people arrived to drink the water from the Hennops river. The landscape tells the story of the development of South Africa, the wars of a country and of the world; it has seen the life and death of plant and animal species, and of human life.

Today this landscape, with its ancient and unique biome, is home to vast housing and industrial estates; it is a landscape disappearing, and only a very small section remains. The remaining portion of the farm Doornkloof is the starting point of the dissertation, the only surviving grassland koppie in the Irene area.

Figures

figure 1 _ OPPOSITE PAGE _ View from Smuts Koppie 1973 *figure 2 _ OPPOSITE PAGE _ View from Smuts Koppie 2012*

View from Smuts Koppie 1973

View from Smuts Koppie 2012

An INTRODUCTION to the

"INTERVENTION"

BACKGROUND and HYPOTHESIS

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There are only a few landscapes within the urban realm where the holistic experience between humans and the landscape can take place. These landscapes are often threatened by the increasing urbanisation and societal disregard. Doornkloof, a remaining portion of the original farm owned by General JC Smuts, is threatened to become a disregarded landscape. The landscape with its unique heritage and ecological significance will in future (due to developments) become dwindling and eventually become obsolete.

HYPOTHESIS

An understanding of General JC Smuts (previous owner of the landscape) and his philosophy of Holism can inform an architectural intervention that can re-establish the landscape's ecological and heritage importance and future potential.

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figure 3 _ OPPOSITE PAGE _ An Abstraction of the holistic experience between humans and the landscape.

An INTRODUCTION to the

"INTERVENTION"

brief, site, programme & client

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THE BRIEF

The brief calls for the development of a new programmatic structure within the landscape that can protect, store and save the disappearing grassland biome of Irene. The intervention should serve not only as a vault for the future of the landscape but as a living museum that has the ability to regenerate the historical, functional and ecological connections between the landscape and the future urban environment of Irene.

THE SITE

The site is the starting point for the intervention. The landscape of the farm Doornkloof revealed that the Smuts Koppie (on Doornkloof) is a dying Grassland Biome and that an intervention is needed to protect and conserve the landscape.

PROGRAMME

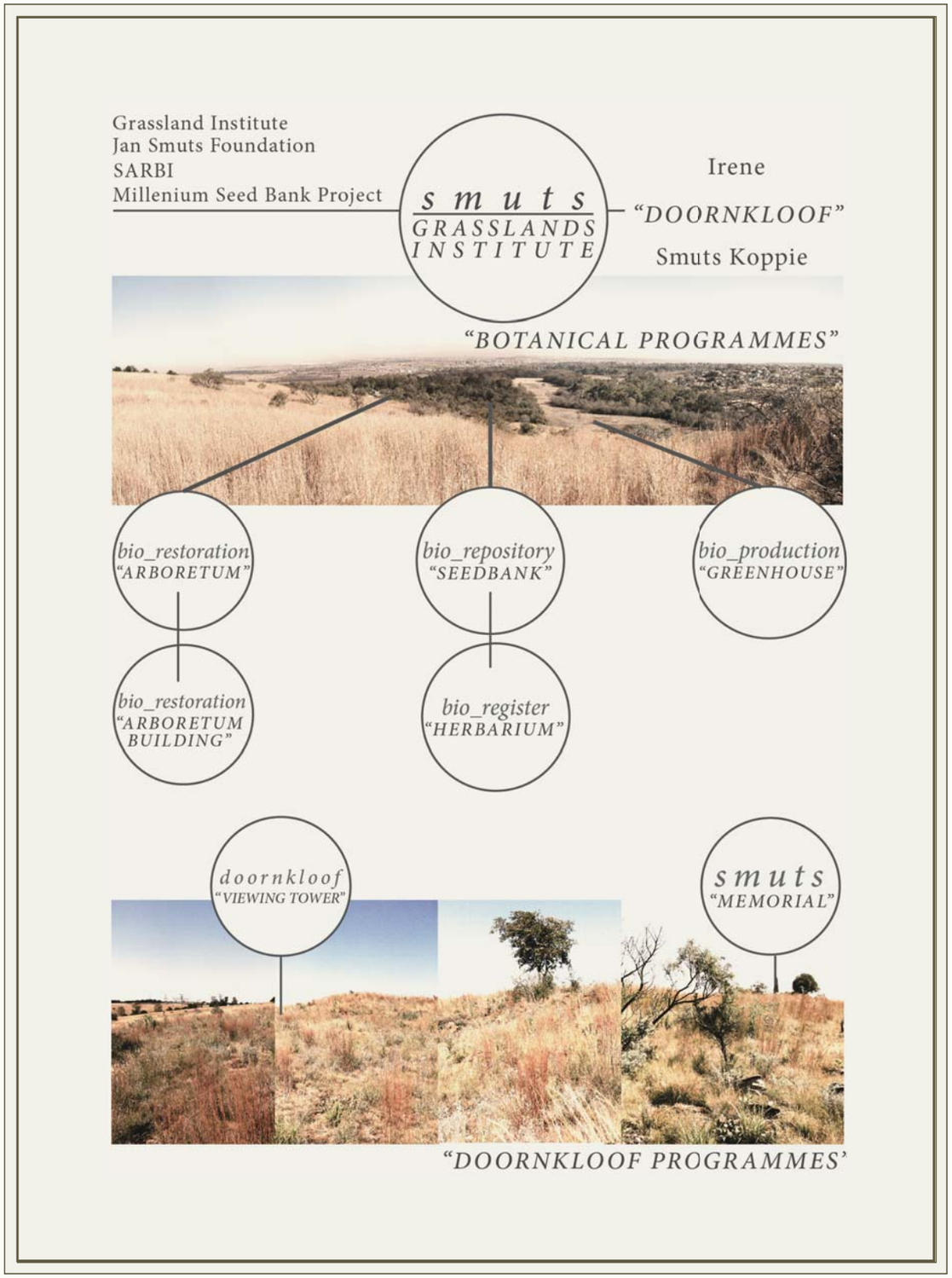
The proposed programme for the architectural intervention can be described as a proposed "Integrated Museum for the Bankenveld Landscape" or the "Smuts Grassland Institute". The museum comprises of various elements: a Seedbank, a Herbarium and an Arboretum. The Bankenveld Grassland Institute has the capacity to store the seeds of all the plant species seen in the landscape, research and display facilities for the preserved plant species, and a living museum or arboretum that has the capacity to regenerate the surrounding landscape by reinstating species that have already died within the landscape, while creating positive ecosystems to maintain and restore the current landscape.

CLIENT

The selection of the client will serve to regenerate the connection between the landscape, the heritage of the site and the future of the site. The client for the project is a collaborative partnership between various role players that are involved with the components. The Friends of the Jan Smuts Foundation, an organization that promotes and protects the landscape of Doornkloof, The SIBR - Botanical Institute of South Africa, Kew Gardens and the Millennium Seed Bank Project.

Figures

figure 4 _ OPPOSITE PAGE _ Infographic showing selected programmes within the Doornkloof Landscape



"RESEARCH METHODOLOGY"

EMPERICAL *and* THEORETICAL PREMISE

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The research methodology is divided into an empirical and theoretical premise. The empirical method describes research in the area of natural sciences, while the theoretical premise develops to support the design premise.

EMPIRICAL PREMISE

Historical Research

Historical aerial photographs, maps, archival resources and other books and academic research articles with specific reference to the historical layers and its subsequent influence on the landscape will be uncovered to indicate the significance of the landscape of Irene.

Critical Observation and Discussion

Research through observation, interviews and discussions will be conducted to document the current conditions of the context. An understanding of the history and processes of the development and ecological processes on site is important to the progression and direction of the project. Veld exploration walks with Dr Braam van Wyk (Head of Department Plant Sciences at the University of Pretoria) provided information about the stories and nature of the grasses on Smuts Koppie. Long conversations with the Friends of the Jan Smuts Foundation, especially Cheryl Smith, provided history, heritage and interesting stories about the site and Jan Smuts.

Mapping

All the information gathered during the historical research and observation phases was mapped to uncover the layers of the site and to reveal a potential design.

THEORETICAL PREMISE

The theoretical premise is located within the philosophy of Holism and the ecological issues revealed during the study; this is placed within the context of current architectural discourse. The theoretical discourse serves as a guideline towards a design resolution. The design project is influenced firstly by the philosophy of Holism as created by Jan Smuts, and secondly by architectural theory of phenomenology which describes the experience of building materials and their sensory properties.

"DESIGN PREMISE"

FRAMEWORK *and* PRECEDENTS

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FRAMEWORK

A selection of existing frameworks that deals with the Irene area, within the southern district of Tshwane, revealed a glimpse of the future of Irene. The areas surrounding Irene, especially along the main vehicular corridors of the R21 and the N1, is earmarked for an increase in commercial and light industrial activity, while the remaining areas of Irene are set to increase the housing and population density.

It is within this context that the proposal for the Smuts Grassland Institute is located.

PRECEDENTS

Applicable precedent studies were required that deals with similar problems as identified during the design process.

Precedents illustrating Master Planning with a focus on regeneration through ecological reprogramming:

Navy Pier, AECOM and BIG Architects
Embedded Boundaries, Liana Bresler

Precedents inspiring an aesthetic quality:

Quinta Do Vallado Winery, Francisco Viera de Campos
Mountain Pavilion, Peter Salter

Precedents illustrating the working of a specific architectural typology:

Greenhouses:
Mavula Greenhouses, Dirk de Bruyn

Seedbank:
Svalbard Global Seed Vault by Peter W. Søderman

Herbarium:
National Botanical Gardens Herbarium, Pretoria, Architect Unknown

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CONSCIOUS WORLD OF MAN

“EVERY GREAT THINKER WHO HAS TRIED TO EXPLAIN REALITY TO US
STARTED FROM A SIMPLE VISION OF
NATURAL TRUTH”.

Piet Beukes describing General Smuts

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“CONSCIOUS WORLD OF MAN”

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An INTRODUCTION *to* HOLISM

"CONSCIOUS WORLD OF MAN"

and the BACKGROUND *of* JAN SMUTS.

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In 1908 General Jan Smuts bought the farm Doornkloof. (Helme, Carola, & Julia, 1976). Doornkloof was his inspiration and his sanctuary; he was inspired by the landscape and today the landscape is inspired by him. Telling the story of General Smuts forms a integral part of understanding the landscape. The philosophy of Holism forms the theory used for the design intervention.

DOORNKLOOF: HOME TO HOLISM

Through the years, Doornkloof was a refuge and inspiration to General Smuts. His son Jannie Smuts wrote in the book Jan Christian Smuts:

> "When my father returned home to Irene after his public trips he would sigh contentedly as he crossed the threshold and say 'Isn't this Wonderful'" (JC Smuts 1952: 179).

Away from the bustle of the cities and far from the clamouring humanity, Doornkloof was a place where Smuts could relax and live a natural life.

Smuts' longing and sometimes intense nostalgia for his childhood in Riebeeck West served to strengthen and mature his deep-rooted love for the veld and the wide unspoiled spaces of nature. Doornkloof offered Smuts the beauty and the luxury of reflecting and reconnecting with the veld that he loved very much (Beukes 1989 : 65).

In 1924, Smuts found himself without a political position and for the first time he was free to do as he wished. Smuts moved into his study at Doornkloof and it is here in the sanctuary of Doornkloof that he set to write a book on philosophy. For many years Smuts read, studied and arranged his philosophical ideas into a book, "Holism and Evolution", that he finished in a mere eight months (Beukes 1989 : 89).

Figures

figure 1 _ OPPOSITE PAGE _ The General Smuts

DEVELOPMENT OF HOLISM

Smuts was only 19 and a student at Victoria College when he was first struck by the strange and wonderful phenomenon that is the human person and it's almost divine personality. In 1889 Smuts declared that the person is the highest manifestation of the truth, and this realisation became the guiding star of his thinking and his interest until his dying day. Sir Keith Hancock in his Creighton Lecture on the Smuts Papers wrote: " When people ask me where and how he got this idea of holism, I can only reply that he grew up with it, he grew into it" (Beukes 1989:112).

In 1894 Smuts wrote a treatise on Walt Whitman: "A study in the evolution of personality", in which he tried to lay bare some co-ordinating principle, some truth which would illuminate the whole human experience. Gradually the idea of the whole as the centre and unity of all matter and of all life came to the forefront of his thinking.

> "Gradually I came to realize that personality was only a special case of a much more universal phenomenon, namely the existence of wholes and the tendency towards wholes and wholeness in nature." (Beukes 1989 : 113).

HOLISM AND EVOLUTION

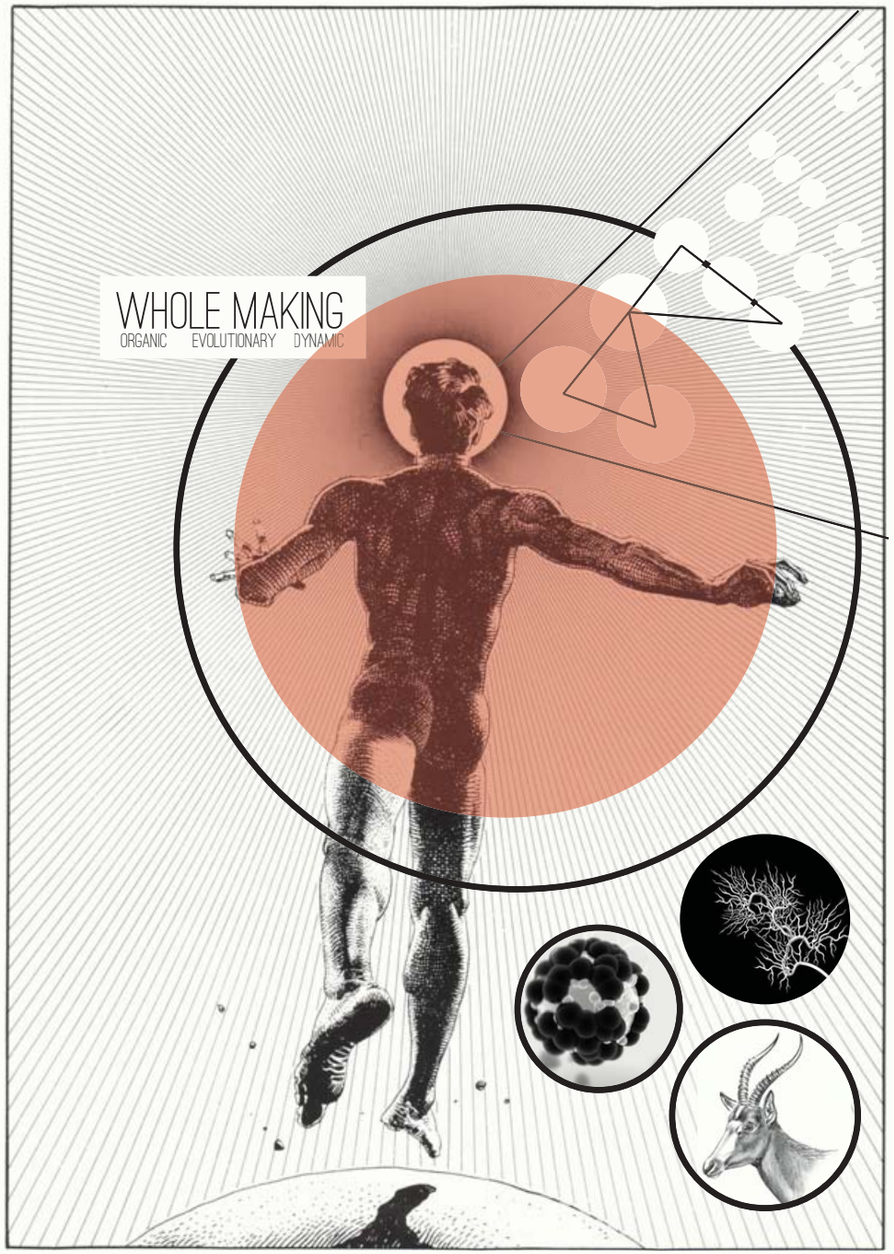
> *"In many respects Holism is a remarkable book, quite apart from the fact that it is a link between the physical and metaphysical" JC Smuts (JC Smuts 1952: 286)*

Smuts saw in every personality, every individual, a whole that was more than its parts, a personality that was more than the body, intellect, emotions and all its other attributes. He noticed this same phenomena in plants and animals, the smallest cells in life, in atoms and in the universe. All his observations lead him to see that there is a whole-making phenomena that is not merely mechanical or artificial; it is an organic, dynamic, evolutionary, creative process that combines the parts to become the whole and again combines with other parts to form an even greater whole (Beukes 1989: 114).

Underneath the processes of creating new and higher forms of life lies the creative principle. It is the scale of wholes that forms the ladder of evolution and it is not merely mechanical, although it has its roots in the material world, for at every step "something more" comes into play, a new force, a sort of special field where the new whole becomes more that the parts from which it is formed.

Figures

figure 2 _ OPPOSITE PAGE _ The human as the centre of Holism



The whole, which is more than its parts has something internal, some inwardness of structure and function, something 'more'. (Beukes 1989: 113).

Smuts described "the more" as a holistic force that is the key to all existence. To express this idea he coined the word *'holism'* from the Greek word *'holos'* meaning whole (Beukes 1989: 113).

The theory of holism is a philosophy that provides a key to understanding how, in nature, a higher form can grow out of a lower form, formulating an answer that may solve the seminal questions of life. How can life develop out of a material world? What new force comes into play to form and animate life out of plant life? How does the human mind develop by itself out of the conditioned animal instincts? Somewhere a new vital force operates, a force which, in a creative way, bring a new element into play that lifts the process of development onto a higher

Understanding this vital force, this phenomena, is the understanding of two interacting forces. The first is evolution (Darwin), a force that drives growth and development. The second is holism, which means that there is a definite pattern, an inner core that produces ever higher forms in all evolution; it is the binding and formative phenomena (Smuts 1926 :194).

Between the interaction of Holism and Evolution, the patterns of life are shaped to ever higher forms.

> " If you take patterns as the ultimate structure of the world, if it is arrangements and not stuff that make up the world, the new concept leads you to the concept of wholes. Wholes have no stuff, they are arrangements. Science has come round to the view that the world consists of patterns, and construe that the world consists of wholes. "
> (Smuts 1926: 326)

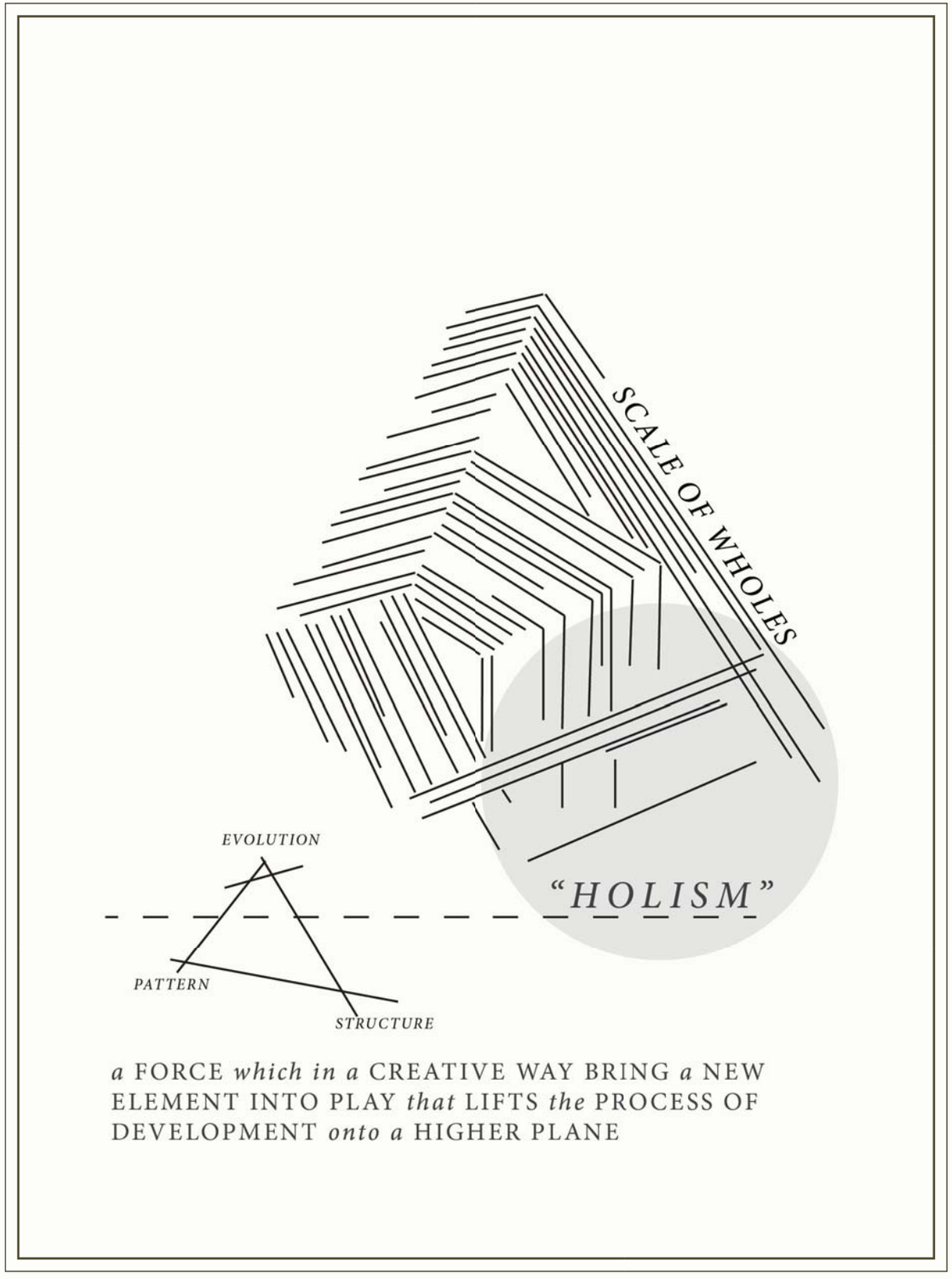


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figure 3 _ OPPOSITE PAGE _ The parts that make the whole

THE HOLISTIC PERSON

The most important aspect of this theory is the distinction and realization that the there is no duality between matter and mind. The mind and the matter or the body is not different manifestations. We have a material body and a spiritual nature that, through holistic evolution, are one. There is no conflict between our bodies and our souls. Human-beings are unity thus there is underlying unity in all nature and the universe. (Beukes 1989).

BODY & MIND, A HOLISTIC RELATIONSHIP

Martin Versfeld, the respected South African philosopher, asks in his essay *Pots and Poetry:* "Can we drop the masks of our busy thinking, and get lost in what we are" (Versfeld 1985 : 56).

Versfeld is not the first to think about the problem of our endless world of the worship of the mind (thinking) and our disregard for our bodies and our body's experience with the world, the environment, nature and our fellow community members.

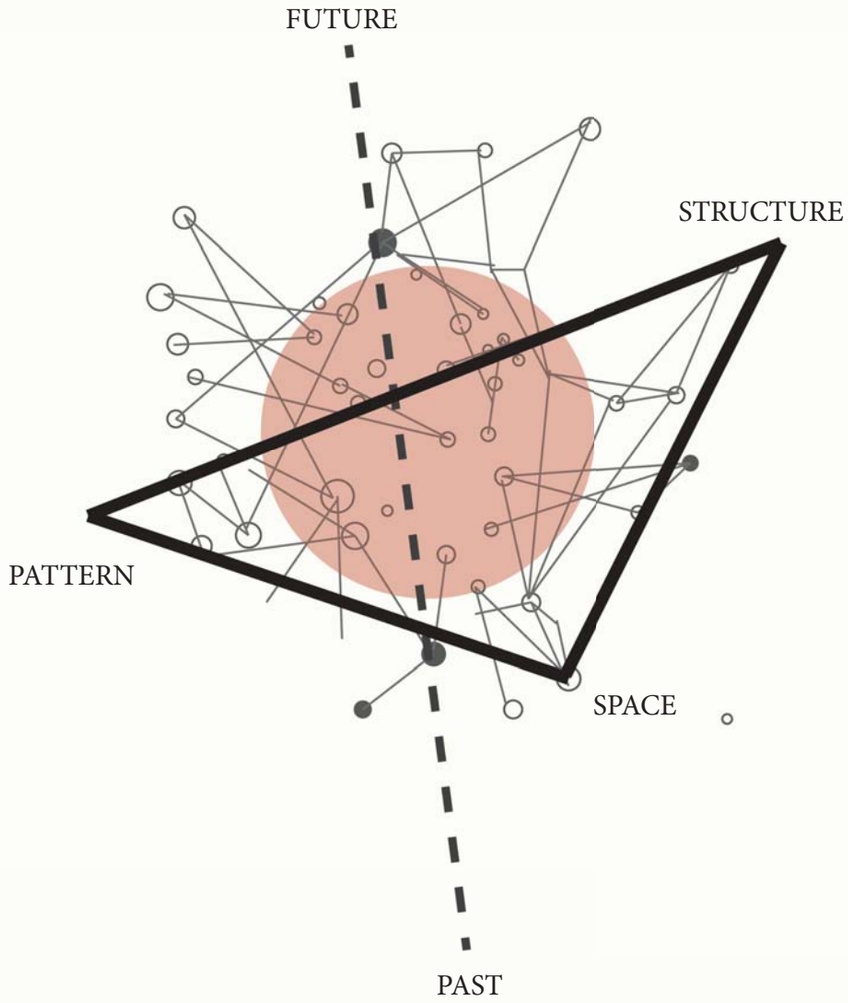
Smuts' theory of Holism stresses that there should be no duality or conflict between the body and the soul (Smuts 1926). Our current way of living has increased the divide and thus we have lost our ability to perceive and understand nature, the environment; this has increased our longing for open space. For it is only in open space where we can feel absolute freedom, which allows us to meditate on who we are.

Yi Fu Taun (1977: 36) states that the body is the only measurement of space. It is only in the act of engaging the body with the surrounding landscape that we can have a spiritual experience, where the mind is forced to reflect on the state of the surroundings. Smuts was a firm believer of the impact of the body's experience and how it can alter the mind. In many letters written to friends, he stresses the importance of sleeping under the stars, walking in the veld and swimming in the ocean.

> *"He was continually writing about the mountain, about the bush and about sleeping under the stars, which revealed his interest in the sense of the inner life, the sense of the spiritual in nature and it was along those lines that he was continually developing his holistic ideas. this was evident both in his private conversations and in the letters which he wrote" (Beukes 1989: 236).*

Figures

figure 4 _ OPPOSITE PAGE _ The synthesis of phenomena and holism



HOLISTIC ARCHITECTURE

The philosophy of Holism illustrates two fundamental concepts that can be translated into an architectural theory that will be used to illustrate and inform the proposed intervention.

a. Structure and pattern are the whole making structures in the universe.

b. There should be no duality between the mind and the body.

The proposed architecture will create patterns within the landscape that will enhance the body's experience within nature which will support the development of the inner life, creating new structures.

Figures

***figure 5** _ OPPOSITE PAGE _ A measure of space*

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ASSOCIATIONS

"THE DISCOVERY OF IRENE'S BEAUTIES WAS A LONG AND DELIGHTFUL PROCESS, FOR IRENE WAS 'DIFFERENT'. PERENNIAL WATER, IN STREAMS AND FOUNTAINS, HAS GIVEN IT UNUSUAL ADVANTAGES FOR THE HIGHVELD. THICK WOODS OF INDIGENOUS TREES AND WILLOW AND OAK FRINGE THE HENNOPS RIVER. STATELY AVENUES, PLANTED MORE THAN HALF A CENTURY AGO, GIVE IT AN AIR OF DIGNITY, LIKE THE CAPE. THERE ARE ROCKY KOPPIES SET WITH WILD ALOES AND SUCCULENTS, THERE ARE THE MIMOSAS AND THORN BUSHES OF THE BUSHVELD".

Marjurie Juta

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Joubert 2009

figure 37,39
"*Elevation _ House Penelope*"
Joubert 2009

figure 38
"*Photo of Exterior _ House Penelope*"
Joubert 2009

figure 39
"*Elevation _ House Groenewald Irene*"
Joubert 2009

figure 40
"*Photo of Exterior _House Groenewald Irene*"
Joubert 2009

figure 41
"*Aerial Photo of Irene Village*"
Venter 2009

figure 42
"*Aerial Photo of Cornwall Hill*"
Venter 2009

figure 43
"*Aerial photo of Irene 2009*"
Pretoria Orthophoto 2009

figure 44
"*Future Projection of the Growth of the Irene Aerial (2050)*"

figure 45
"*Jan Smuts Avenue*"

figure 46
"*Entrance to Jan Smuts Avenue*"

figure 47
"*Bankenveld Landscape on Smuts Koppie*"

figure 48
"Alien Species on Doornkloof"

figure 49
"*Hennops River*"

BACKGROUND *to the* CONTEXT *of* IRENE *and it's*

"ASSOCIATIONS"

§

BACKGROUND

The area of investigation (for the purpose of the design intervention) is the suburb of Irene, which falls within the greater Tshwane municipality. Irene is located within the southern part of Tshwane, within a 15 km radius from the Pretoria CBD. The area is characterized by its "rural" lifestyle, dolomite rock walls and its memorable landscape.

Irene developed from the farm Doornkloof, one of the oldest farms in the "Transvaal", originally owned by Voortrekker leader Daniel Elardus Erasmus. He registered the title deed for the farm in 1844. In 1889 the entrepreneur, A.H. Nelmapius, bought two thirds of the original farm and named it after his daughter Irene. The last third of the farm, still known as Doornkloof, was sold to Jan Smuts in 1908 (Helme, Carola & Julia 1976: 64).

The greater region of Irene forms part of the history of the original farm, Doornkloof, and thus the physical and historical context in which the architectural intervention is located.

Figures

figure 1 *_ Doornkloof locality within African Context.* ***figure 2*** *_ Doornkloof locality within South African Context* ***.figure 3*** *_ Doorkloof locality within Tshwane.* ***figure 4*** *_ Doorkloof locality within Centurion.*

fig 1.

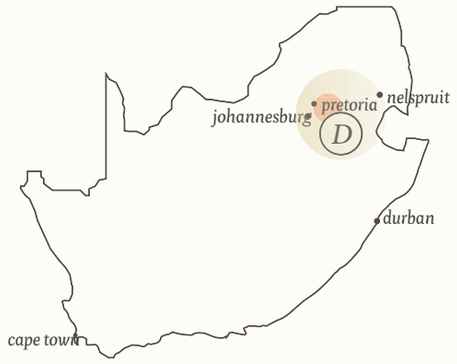


fig 2.

fig 3.

1 - Rietvlei Dam Nature Reserve
2 - Irene Village Mall
3 - Quarry
4 - Doornkloof Shopping Centre
5 - Irene Village Oval
6 - Irene Concentration Camp
7 - Irene Train Station and Shopping Centre
8 - Irene Country Lodge
9 - Irene Farm
10 - Irene Country Club
11 - Full Gospel Church and Theological School
12 - Targus Agricultural Research Centre
13 - Jan Smuts House
14 - Cornwall Hill Quarry
15 - Cornwall Hill
16 - Irene Village
17 - Southdowns Mall

water bodies
conservation areas
heritage and cultural tourism destinations
places of consumption

fig 4

a DESCRIPTION *of* IRENE

"AN OVERVIEW OF IRENE"

and the HISTORY of IRENE

§

A DESCRIPTION OF IRENE

"Irene is the word for peace in Greek. Still almost unaffected by the fever and fret of modern life, Irene's inner hearts is a place of pace, the sum total of all those things that make our five senses quicken at the mere thought of them - the sweet smell of cows, wistaria and jasmine, honeysuckle and buddleia, silage and rich moist earth - the feel of the great trees, of the exhilarating unpolluted air of winter on a golden cloudless day and the soft caress of a starlit night in summer - the taste of fresh figs, farm milk, catawba grapes and plums - the sound of human gaiety, of doves and guinea fowl and gurgling coucals - and the sight of sunshine on calm or swiftly flowing water, of horses in a green field, of stone walls and leafy village lanes, of a wild rare creature running through the veld grass, and of storks in the sprinkler-washed, rainbow tinted lucerne. This is the quintessence of Irene its vibrant inner core, where the physical and spiritual combine to create an almost overwhelming impression of colour and shade, sparkle and maturity, and remind us of our increasing need for the enduring values of truth and tranquillity, beauty and humility in a rapidly changing world" (Helme, Carola, & Julia, 1976: 23).

THE DEVELOPMENT OF IRENE

Irene has a very distinctive architectural and aesthetic quality. The architecture is rooted within the farming heritage of the area, as illustrated in the time-line presented on pages 11 to 23.

Figures

figure 5 _ Early Stone Age People figure 6 _. Mzilikazi figure 7 _. Daniel Elardus Erasmus first owner of Doornkloof figure 8 _. Andries Pretorius father of Pretoria figure 9 _. Stone age tools found in the Hennops River figure 10 _. Grass and Wattle Huts figure 11 _. Wattle and Daub Houses of early Irene figure 12 _. Early Pretoria figure 13 _. Ossewa used by the Voortrekkers during the Groot Trek

"the HISTORY of IRENE"

fig 5

STONE / IRON AGE

Stone arrowheads and tools discovered in the Hennops River bed, indicate that people lived in the area.

fig 6

1800-1825

Bakwena Tribe or Crocodile People lived in the area.

1825

Mzilikazi kills and drives away the Bakwena Tribe.

fig 7

1830

Boer Voortrekker Daniel Elardus Erasmus leaves Cape Town on the Groot Trek.

1844

Daniel Erasmus registers the title deads for the farm Doornkloof. (D)

fig 8

1855

The village on the neighbouring farm Elandspoort is named Pretoria.

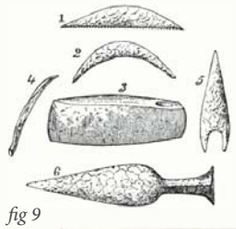


fig 9

fig 10

fig 11

fig 12

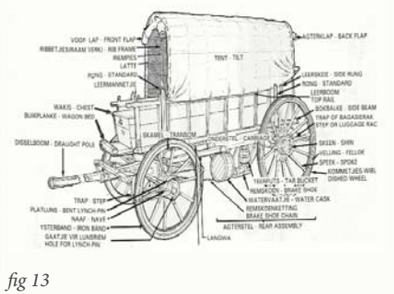


fig 13

fig 14

fig 15

fig 16

1889

9 A.H Nelmapius buys two thirds of the Erasmus farm.

Irene is named after Nellmapius' daughter, Irene.

1893

7 The first train arrives at the newly built Irene Train Station.

1896

9 J.A van der Byl becomes the official owner of Irene Farm.

1898

The first trading store is built in the area.

fig 17

fig 18,19

Figures

figure 14 _ A.H Nelmapius owner of Irene figure 15 _ Greenhouse at Irene Farm figure 16 _ Drawing of Old Dairy, Irene figure 17 _ Gable at Irene figure 18, 19 _ Irene Farm Structures 2012 figure 20 _ OPPOSITE PAGE _ 5136 Hectares farm Doornkloof originally owned by D.E Erasmus figure 21 _ Portions of the farm Doornkloof sold to AH Nelmapius figure 21 _ Sketch of Irene and Surrounds 1956

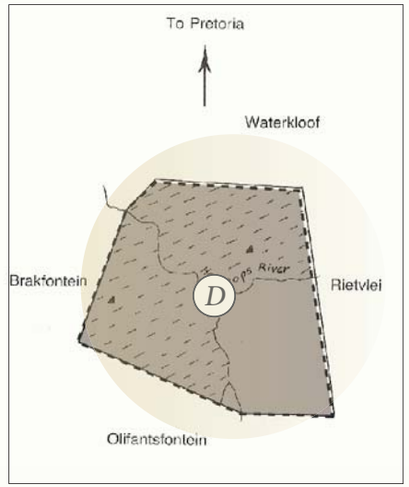


fig 20 Drawing illustrating the farm Doornkloof originally owned by D.E Erasmus

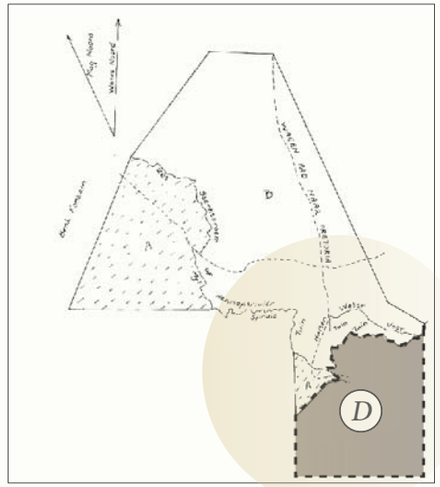


fig 21 Drawing illustrating the portions of Doornkloof sold to AH Nelmapius

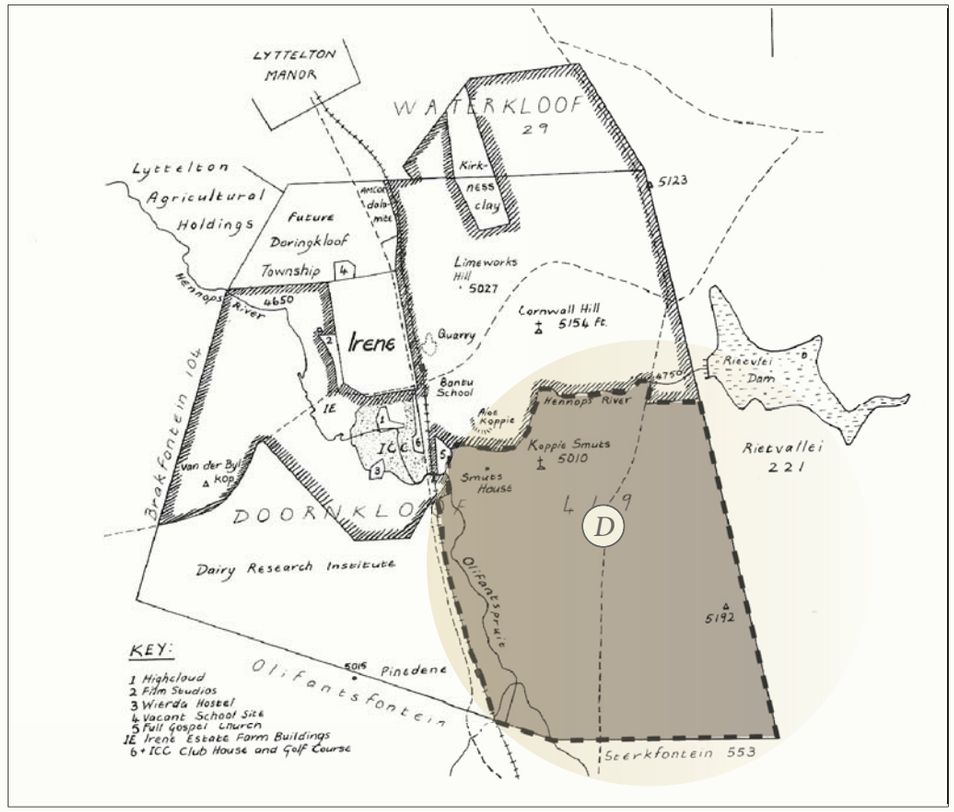


fig 22 Drawing illustrating Irene and Surrounds in 1956, indicating the portion of Doornkloof owned by General Smuts

"ASSOCIATIONS"

fig 23

fig 24

fig 25

1889

6 The Second Boer War breaks out.

1900

The Duke of Cornwall, builds a British ford on Irene's highest koppie, Cornwall hill.

1901

7 The British Army establishes a Concentration Camp in Irene.

1902

The Anglo Boer War ends.

1902

Irene village is created by J.A van der Byl.

1903

Irene Farm becomes home to the Government Tree Nursery.

1904

The establishment of the first hotel in Irene.

1908

J. C Smuts buys the last third of the farm Doornkloof still belonging to the Erasmus Family.

1911

10 The establishment of Irene Golf Course and Club.

1923

Ethel van der Byl lays the foundation stone of the Irene Village Hall

1937

1 The Maria van Riebeeck nature reserve is proclaimed, today known as Rietvlei Dam Reserve.

fig 26

fig 27

fig 28

Figures

figure 23 *_ Brick Making at Irene Concentration Camp* ***figure 24*** *_ Hack's store near the Irene Station* ***figure 25 & 26*** *_ Jan Smuts House 1910* ***figure 27*** *_ Irene Country Club House 1923* ***figure 28*** *_ Rietvlei Dam Nature Reserve* ***figure 28*** *_ Aerial Photo of Irene 1933*

fig 28. Aerial Photo of Irene 1933, indicating the extent of Doornkloof

"ASSOCIATIONS"


fig 29


fig 30


fig 31

1930

11 The Full Gospel Church buys a section of the Irene farm.

1954

The establishment of the National Diary Institute, in Irene.

1958

12 The Irene Extension no 1 is built. The area's first flats, shops and garage complex.

1959

14 Lyttelton became known as Verwoerdburg.

1974

The Pretoria Jan Smuts Airport motorway (R21) is opened.

The Irene estate's lime works had to be closed down.

1975

Irene area contains about a 1000 houses, several blocks of flats and a large business and shopping centre.

1998

15 Cornwall Hill Residential Estate is established.

8 The Irene Country Lodge is opened.

2003

9 The first restaurant is built in the original barn on Irene farm, *The Barn*.


fig 32


fig 33


fig 34

Figures

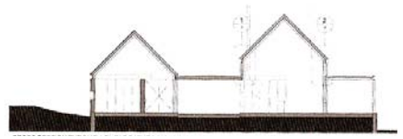
figure 29 *_ Irene Extension Number One 1958* ***figure 30*** *_ Irene Village Hall 1965* ***figure 31*** *_ 1907 photograph of the kilns of the Irene Lime Works* ***figure 32*** *_ Cornwall Hill Estate* ***figure 33*** *_ Irene Country Lodge* ***figure 34*** *_ The Barn Restaurant* ***figure 35*** *_ Aerial photo of Irene 1974*

fig 28. Aerial Photo of Irene 1974, indicating the extent of Doornkloof

IRENE'S ARCHITECTURAL IDENTITY

The timeline presented expresses not only the sequence of development of Irene, but also speaks about the aesthetic and architectural development of the area.

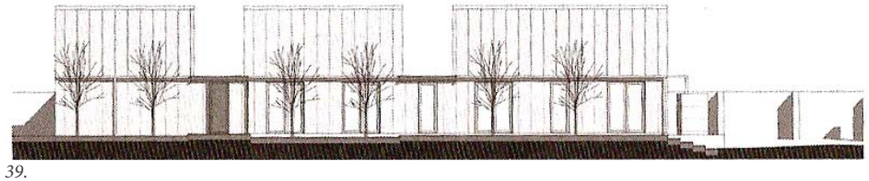
Irene's architectural identity has largely been built on the tradition of farm style living. The modern architecture of the region reflect the aesthetic components which has long been part of Irene's identity: dolomite rock harvested from the surrounding koppies used for boundary walls, corrugated iron structures inspired by the barns and agricultural complexes of the area. House Penelope *(fig 36 - 39)*, in the Southdowns Estate, by Derick de Bruyn architects, is described: *"It responds to the rural charm and particular vernacular of the Irene Area, which is evident in the dairy, Smuts Farm, the Hennops River, the tall ash and oak trees, the country club, the dolomite walling, the market, agricultural sheds and corrugated iron roofs." (Joubert 2009: 94)*



36.

37.

38.



39.

Figures

***figure 36** _ 36. Cross section _ House Penelope **figure 37, 39** _ 37, 39 Elevation _ House Penelope **figure 38** _ Photo of Exterior _ House Penelope*

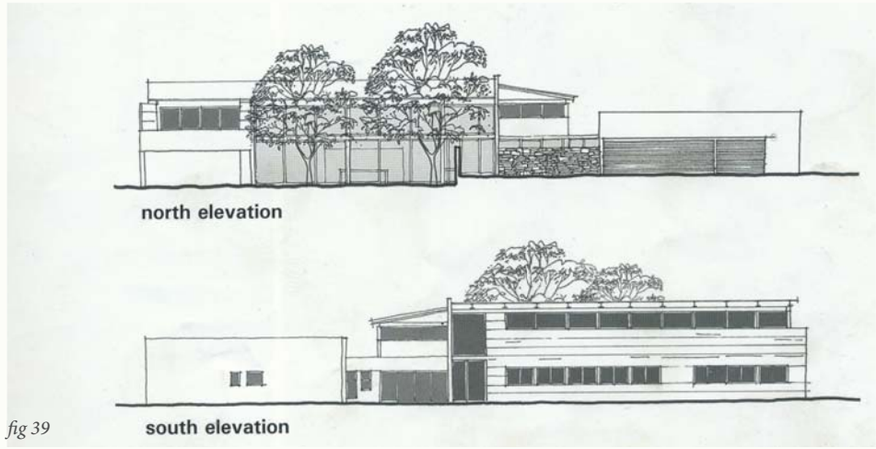


fig 39

fig 40

Images

***figure 39**_ Elevation _ House Groenewald Irene **figure 40** _ Photo of Exterior _House Groenewald Irene*

IRENE'S TODAY

Today Irene is characterized as a suburb for housing and living. The "rural village" character, which is supported by a farm and country feel, attracts the elite Tshwane resident. Residents are largely between the ages of 30 - 54 year, with a higher education level and fall within the LSM 10 (Lifestyle Measurement Index) bracket with a high level of disposable income (Venter 2009).

A recent report, compiled by Thinus Venter (2009), indicated the largest percentage of residents of Irene have been staying in the area for more than 10 years, due to the safety and country-like environment that is easily accessible. The second largest proportion have only been living in Irene for two years. This reflects the impact of infill urban development, which has dramatically increased in recent years. With the increase in residents, a number of public-commercial-consumption spaces have been developed, reflecting the same rural aesthetic that Irene is known for.

Irene has grown up to be a suburb of contradictions, "rural country living estates" are spread out over vast landscapes with singular dwellings on large erfs *(fig 41 & 42)* within highly internally connected and privatized spaces. New developments are more dense and country living is only seen in the architecture. Private space is the epitome and ideal, while public facilities are only seen in malls. The developments become disconnected from the "country" and the community (Venter 2009).

fig 41

fig 42

Figures

figure 41_ Aerial Photo of Irene Village figure 42 _ Aerial Photo of Cornwall Hill figure 43 _ OPPOSITE PAGE _ Aerial photo of Irene 2009

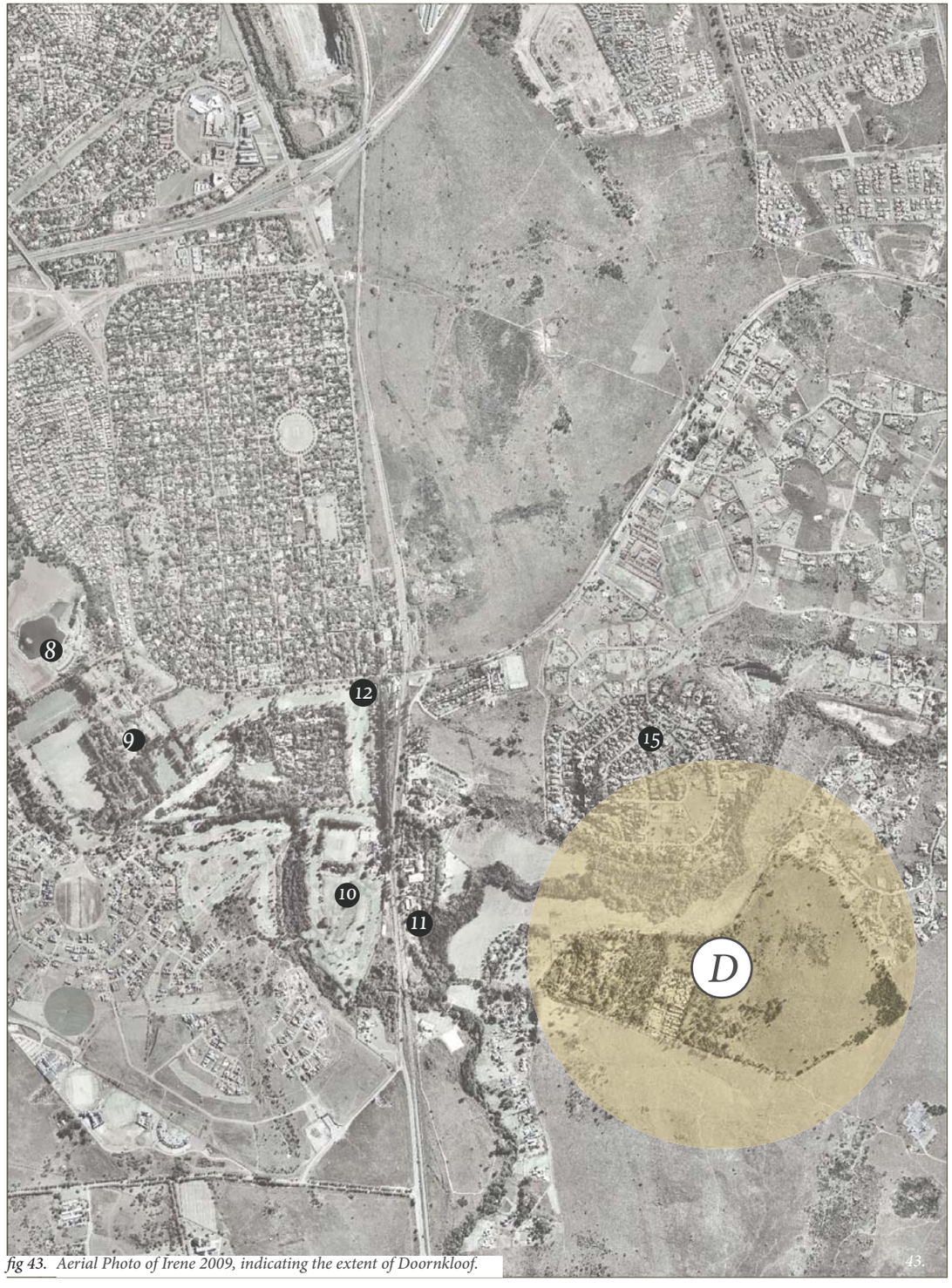


fig 43. Aerial Photo of Irene 2009, indicating the extent of Doornkloof.

IRENE, A FUTURE PROJECTION

Irene is situated in-between two major Gauteng road systems: the N1 and the R21. Irene is highly accessible, close to the Pretoria CBD and the Johannesburg Metropolitan area.

The Southern Tshwane Development Framework earmarks various areas along the N1 and R21 as areas of economic growth. Especially within the Irene area, Botha Avenue will be developed as a light-industrial and commercial node. The intersection of the R21 and Nellmapius Road will be developed as a light-industry zone with high tech land uses and office complexes (Tshwane Regional Spatial Development Framework Southern Region 2010).

Housing developments, mainly cluster homes, are spreading over the landscape, and even more housing areas are planned to provide for the growth in industry.

The future projection of Irene paints a picture of a highly developed suburban commercial and housing zone, with low density buildings spread out over the landscape. A landscape with gated communities, privatized urban parks, golfing estates, industrial gated office parks, roads with endless stream of single passenger car commuters.

This is a landscape in need of a breathing space (Tshwane Regional Spatial Development Framework Southern Region 2010).

Figures

figure 44 _ OPPOSITE PAGE _ Future Projection of the Growth of the Irene Aerial (2050)

METHOD *for FRAMEWORK*

"HOLON FRAMEWORK"

and the STUDY AREA

§

THE HOLON FRAMEWORK

"A holon is a system (or phenomenon) which is an evolving self-organizing dissipative structure, composed of other holons, whose structures exist at a balance point between chaos and order. It is maintained by the throughput of matter-energy and information-entropy connected to other holons and is simultaneously a whole in and itself at the same time being nested within another holon and so is a part of something much larger than itself. Holons range in size from the smallest subatomic particles and strings, all the way up to the multiverse, comprising many universes. Individual humans, their societies and their cultures are intermediate level holons, created by the interaction of forces working upon us both top-down and bottom-up. On a non-physical level, words, ideas, sounds, emotions—everything that can be identified—is simultaneously part of something, and can be viewed as having parts of its own, similar to sign in regard of semiotics."

Since a holon is embedded in larger wholes, it is influenced by and influences these larger wholes. Holons also contains subsystems, or parts, it is similarly influenced by and influences these parts." (Koestler 1967)

The Holon Framework addresses the spatial needs of the area, providing future infrastructure that re-works what already exists, open space, movement, historic events, spaces of interest, programmatic structures in the urban condition. The framework study views the future of the area as a potential precinct for cultural and ecological heritage.

With the consideration of the Tshwane Open Space Framework, the Tshwane Spatial Development Framework and the Southern Region Spatial Development Framework, a supporting framework is considered.

METHOD FOR FRAMEWORK

The focus of the framework is:

a. current and future land use

b. movement - public and private transport

c. heritage layers

d. the ecological environment

The study area for the framework is a section of the suburb of Irene; it is not an area with a clear cut boundary, but rather considers the areas for their importance in creating the cultural and ecological heritage precinct site.

THE STUDY AREA IS DEFINED BY

Residential areas
Irene Village, Cornwall Hill Housing Estate, Phomolong Housing, Irene Country Club Estate, The River Walk Estate, The Veterans Retirement Village.

Access Roads
Nelmpius Drive (main access road to area from the R21), Main Road/ Botha Road - connects the area from the N1

Secondary Road
Jan Smuts Avenue which connects the area to the access Roads

Railway Line
That connects Pretoria Station with Park Station in Johannesburg.

Railway Station
Irene Station

Schools and Learning Institutions:
Cornwall Hill College, and Irene Middle School, The Full Gospel Church Theological School.

Churches
Irene Village Church, The full Gospel Church

Business and Commercial:
Taurus Research Centre, 2 Local Shopping centres with Offices

Heritage Landmarks
Jan Smuts Museum, Irene Station, Irene Farm, Concentration Camp, Cornwall Hill Memorial, Jan Smuts Memorial.

Ecological Systems
The Hennops River, The Doornkloof Koppie.

Activities and Recreation
Irene Country Club, The Full Gospel Church Campsite, The Jan Smuts Museum, Caravan park and Camp site.

Figures

figure 45 _ OPPOSITE PAGE _ Jan Smuts Avenue

1 - Nelmapius Drive
2 - Jan Smuts Avenue
3 - Railway Line
4 - Main Road

5 - Irene Train Station
6 - Irene Village
7 - Irene Country Club Estate
8 - Irene Country Club

9 - Irene Primary School
10 - Irene Church
11 - Phomolong Village
12 - Three Houses

13 -Targus Agricultural Research Centre
14 - Full Gospel Church
15 - Hennops River
16 - Meyers Farm
17 - Entrance to Doornkloof

18 - Jan Smuts House
19 - War Veterans Retirement Village
20 - Cornwall Hill Estate
21 - Two Rivers Estate

INTERVENTIONS & GUIDES

The Framework mainly addresses Jan Smuts Avenue as an entrance road to the Jan Smuts Museum and proposed Ecological Park.

The architectural theory deals with the disconnection of the mind and the body and the holistic person, sets the platform for the framework. As well as the theory of holons, which stresses the idea that every whole impacts on each other to work together.

1. The growth of the suburbs and housing developments in the area is in urgent need of a public space for recreation, relaxation and a place to be with nature. This public space should address the community's need for freely accessible public and recreational space.

2. The park will not only address the community and societies need, but protect the unique ecosystems of the area.

3. The site that was home to Smuts, was his sanctuary, his escape from the cities. This public park will not only be Irene's escape but the city of Pretoria's escape, it is a sanctuary for the city and its surrounds.

PARK AS URBAN INTERVENTION

Doornkloof farm as a urban conservation area and a instigator for environmental protection and management.

The Hennops river as protected body of water - with an increased effort to conserve and restore the ecosystems that surrounds it.

To create a sequence of entrance points, to emphasize the importance of the urban park, to create a identity for the area.

Creating infrastructure to support the creation of a urban park

- Establish a connection with the Irene station.
- Creating a network of walkways from the station to the park.
- Creating a bus system, that can assist the elderly and disabled to access the park.
- The establishment of a much needed public parking structure for the area which will include "tour" bus parking.
-The management and upgrade of Jan Smuts avenue, which is the only access route.
- The creation of a heritage walk that leads visitors to various landmarks and sites of significance.
- The creation of an information centre for the area.

Figures

figure 46 _ OPPOSITE PAGE _ Entrance to Jan Smuts Avenue

ECOLOGICAL AND
ENVIRONMENTAL MANAGEMENT

- Acknowledging the celebrating the existence of the Hennops river.

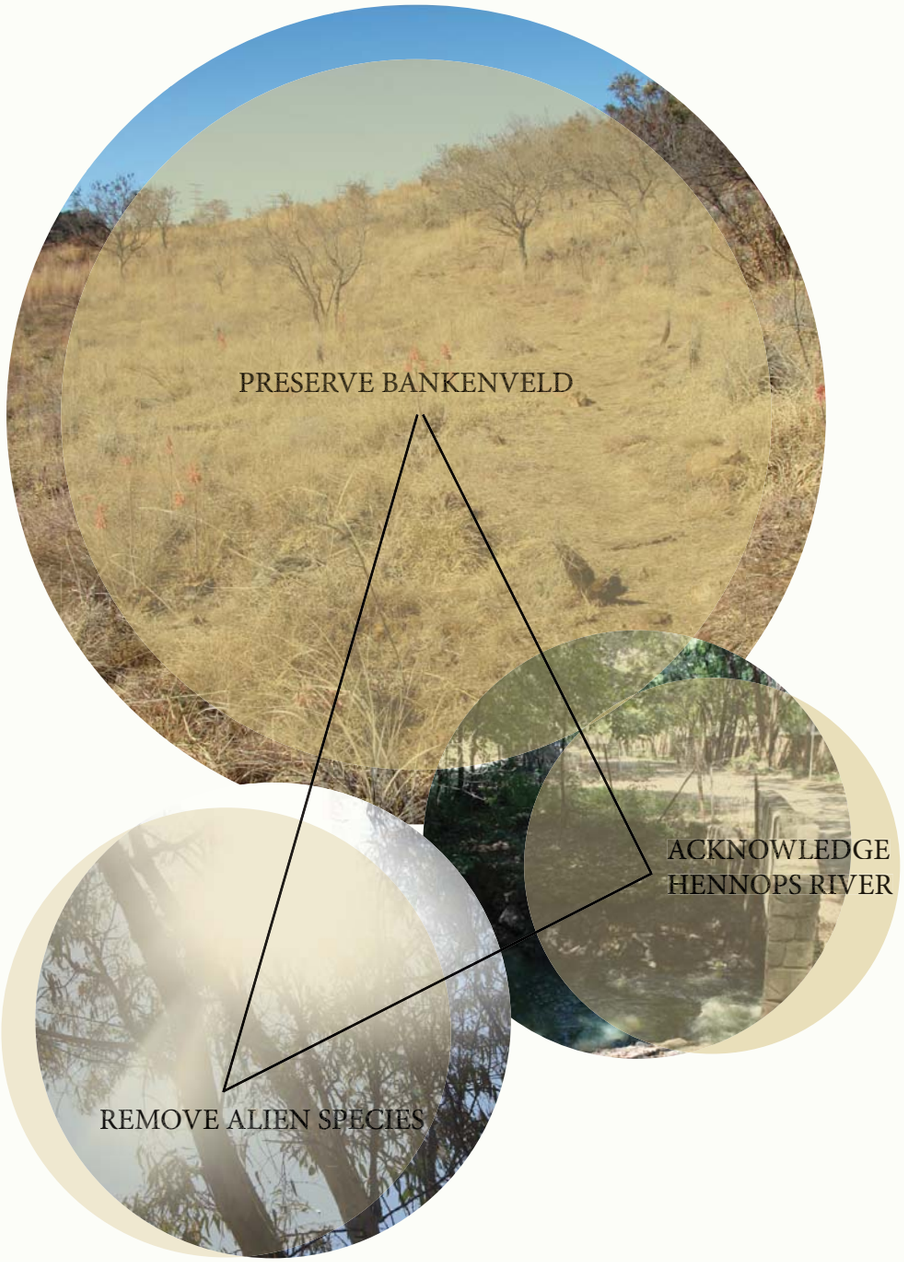
- Preserving and conserving the Bankenveld landscape.

- Creating systems to restore the landscape.

- Creating a systems based approach to deal with the alien species in the landscape.

Figures

figure 47 _ OPPOSITE PAGE _ Bankenveld Landscape on Smuts Koppie
figure 48 _ OPPOSITE PAGE _ Alien Species on Doornkloof
figure 49 _ OPPOSITE PAGE _ Hennops River



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4

PHYSICAL AND MATERIAL

“DOORNKLOOF LIES IN THE ROLLING DOLOMITE COUNTRY, WITH ITS ROCKY HILLS AND TALL GRASS. HERE THE HENNOPS RIVER, THE HEADWATERS OF THE LIMPOPO WHICH FLOWS ROUND THE NORTHERN BOUNDARY OF THE UNION, BREAKS PICTURESQUELY THROUGH THE HILLS AND MEANDERS QUIETLY DOWN A RICH LOAMY VALLEY”

General JC Smuts

§

4

INDEX

"PHYSICAL AND MATERIAL"

§

4

LIST of IMAGES

"PHYSICAL AND MATERIAL"

§

a HISTORY *of DOORNKLOOF,*

"PHYSICAL AND MATERIAL"

and the BACKGROUND *of the* GROOTHUIS

§

"The attractions of the old shanty (Die Groothuis) at Irene lie in its associations, rather than appearance. The approach to the house along the narrow dirt road is winding and informal and the house is obscured by a haphazard jumble of trees" (JC Smuts 1952: 268).

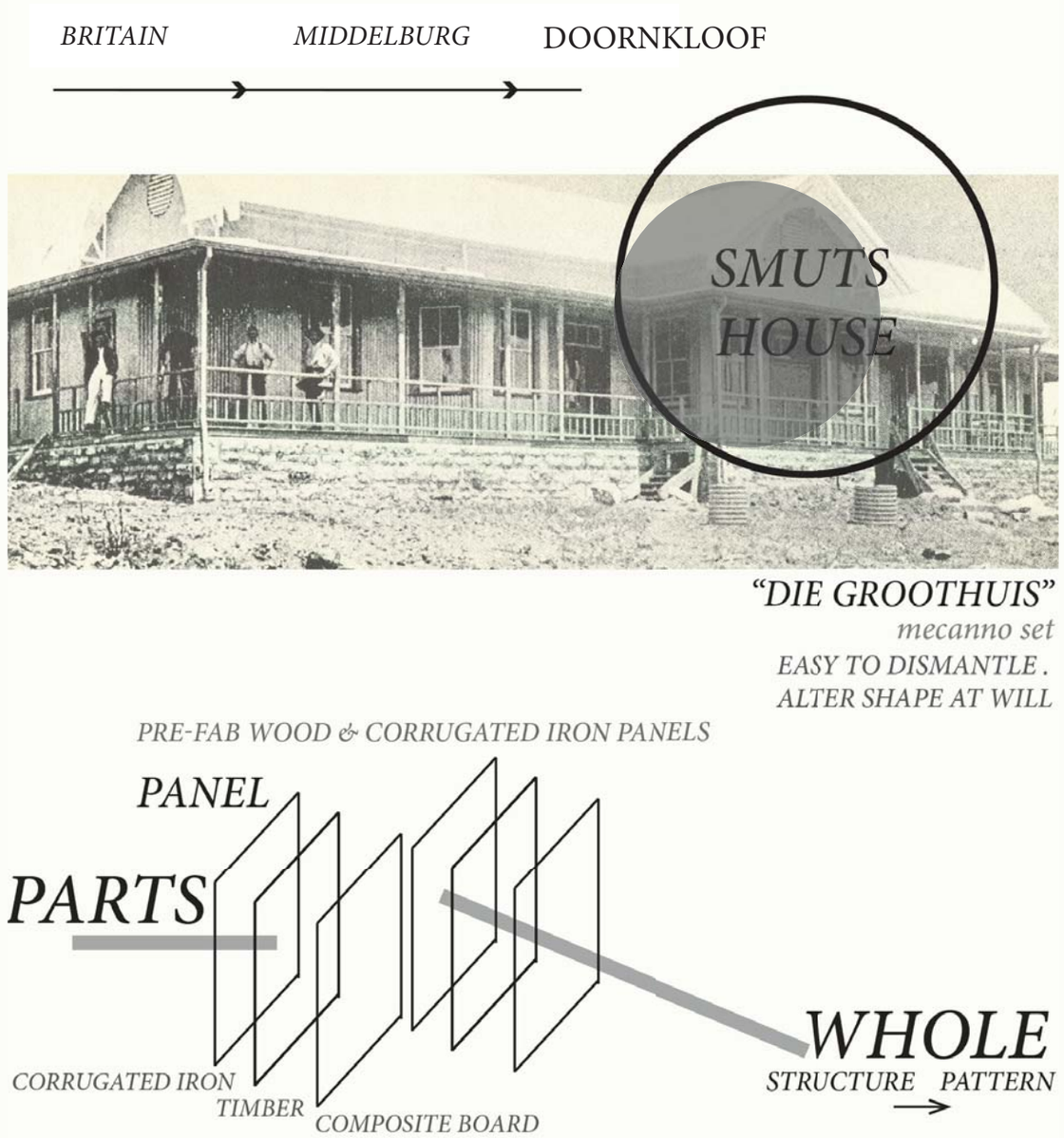
In the September of 1908 the Colonial Secretary of the Transvaal Colony, General JC Smuts, bought the remaining third of the farm Doornkloof owned by the Erasmus Family (JC Smuts 1952).

General Smuts decided not to build a new house, but rather to buy a building that had been used as a British officers' mess at Middelburg in the Transvaal. The house was prefabricated in England, and consisted of prefabricated wood and corrugated iron panels, which allowed the house to be dismantled and easily re-arrangeable according to the family's needs (JC Smuts 1952: 268).

The architectural nature of the house gave it the quality of being very pliable and adaptable. The house in its original built condition had a *stoep* running along the length of three quarters of the house. The stoep was continuously changed and adapted into extra rooms as the family's needs grew. General Smuts' son Jannie described the house: "as a big meccano set, for it was easy to dismantle the internal walls and alter its shape at will" (JC Smuts 1952: 269).

Figures

figure 1 _ OPPOSITE PAGE _ Smuts House as a Holistic Structure



THE HOUSE TODAY

After General JC Smuts' death in 1950 Issie Smuts became the owner of Doornkloof. Issie Smuts died in 1954 and in 1960 Guy Brathwaite, an ex-service man of World War II and an attorney in Pretoria, heard that Doornkloof was to be sold to a business organisation that was planning to turn the old house into a sanatorium. Brathwaite and many other South Africans believed that the house and the farm should be preserved as a monument. Brathwaite intervened and bought the house as well as its surrounding 50 hectares, which he saw as a fitting memorial to General Smuts (Lean 1995 : 15).

Brathwaite called for a conference of ex-serviceman and here they formed the General Smuts War Veterans Foundation. The organisation assumed ownership of the property and undertook its administration. This foundation (still in existence today) is not subsidised by the state, and all funds necessary for the preservation of the house and grounds are raised by the foundation (Lean 1995: 16).

The house today serves the role of a museum in commemoration of General Smuts and his family. The house reflects his simple tastes, his love of nature, his dedication to science, history and philosophy. The house is maintained by a very small income generated from the entrance fees to the museum and the occasional donation, placing the Foundation in a state of financial difficulty, which does not support the maintenance of the museum (Lean, 1995: 20).

The house-museum is also renowned for the Jan Smuts House Library which houses books based on topics ranging from international relations, politics, economics, history and other related disciplines. As one of three libraries in South Africa enjoying UN depositary status, the library has been able to build up a collection of United Nations Periodicals, official records and conference proceedings (Foundation, 2011).

Figures

figure 2 _ OPPOSITE PAGE _ Interior of Smuts House figure 3 _ OPPOSITE PAGE _ Place of Silence figure 4 _ OPPOSITE PAGE _ Smuts in his Library

fig 2

JAN SMUTS HOUSE MUSEUM
House as memorial to statesman and family man

fig 3

PLACE OF SILENCE
Memorial to Brathwaite

fig 4

SMUTS HOUSE LIBRARY
UN Depository

the

"LANDSCAPE"

and the LANDSCAPE TODAY

THE LANDSCAPE

The farm landscape was bare at the time that the Smuts family moved in, but Jan and Issie Smuts set out to plant a vast number of trees which are still visible today. For an additional income Smuts planted half a million blue gum and pine trees, which were sold to a mine nearby as mine prop timber (JC Smuts 1952).

When the family first moved in Issie Smuts was a fervent gardener, but Jan Smuts preferred his wild, indigenous plants and scorned the exotic varieties of gardens. Gradually Issie let the idea of her garden go, and let nature take its course. The front of the house was a wilderness with a character of its own (JC Smuts 1952 : 289).

THE LANDSCAPE TODAY

The remaining landscapes of the Doornkloof Farm is managed and supported by the Friends of the General Smuts Foundation, a group of people whose common goal is to preserve the natural landscape of the farm. They have recently took it upon themselves to try and restore the natural landscape, by firstly trying to sustainably remove the pine and blue gum trees, which are alien to the ecosystem, and by introducing an arboretum which will attract the bird and insect species which have disappeared from the area.

Various other programmes and activities take place on the farm, as seen in *fig 7 & 11*.

Figures

figure 5 _ OPPOSITE PAGE _ The landscape of Smuts Koppie

"DOORNKLOOF"

explained

The main contextual informants at Doornkloof can be divided into two main categories, the existing built structures and the natural structures.

The Groothuis and the Place of Silence are the main architectural informants on site and illustrates the farm's aesthetic character, while informing certain activities that surrounds the built structures.

The natural aspects, the veld and the river can be explored along a walking trail which leads the visitor through various zones on site, and culminates at the Jan Smuts Memorial on Smuts Koppie.

The existing and proposed site conditions can be seen in figure 6 - 30.

Figures

figure 6 _ Site model showing existing conditions on site.

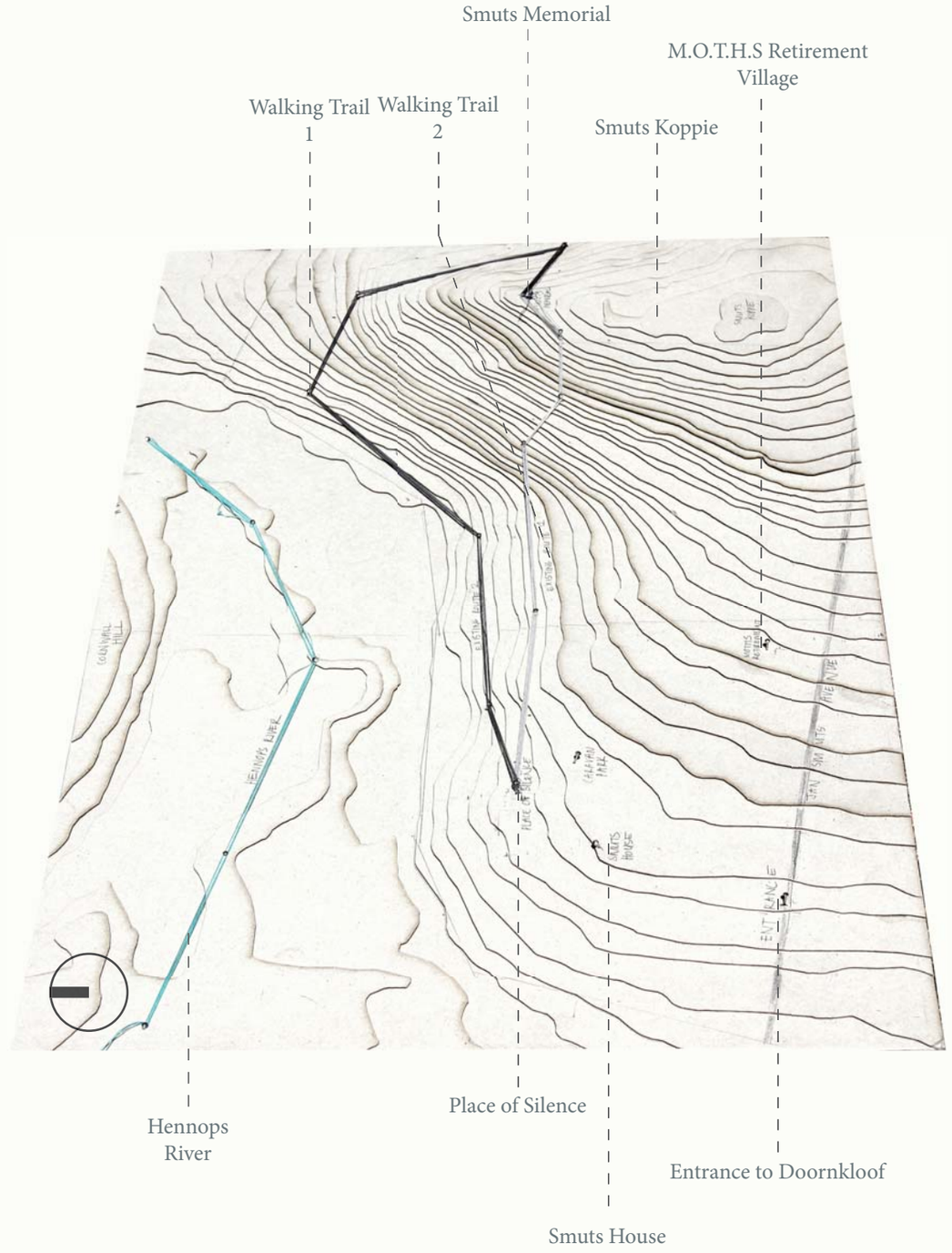


fig 7

1. Original Parking 2. Original Entrance 5. Ouma's Tea Garden 6. Smuts House Museum 8. Place of Silence 13. Smuts' Memorial. 14. Original Hiking Routes 17. War Veterans Retirement Village

fig 8

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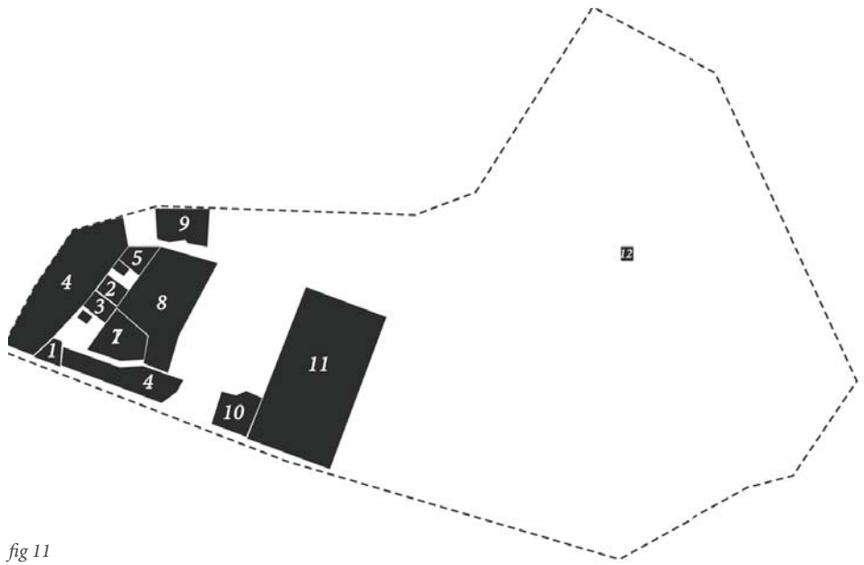

fig 11

1. Original Entrance 2 .Smuts House Museum 3. Tea Garden 4. Garden and Irene Market 5. Manager's Accommodation 6. Vehicle Exhibit 7. Parking Area 8. Doornkloof Caravan Park 9. Friends of Smuts Foundation Arboretum 10. Staff Housing 11. War Veterans Retirement Village 12. Smuts Memorial

fig 12

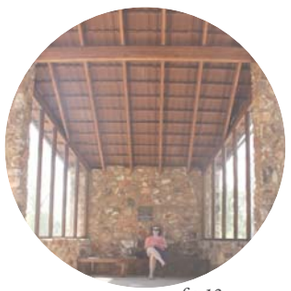

fig 13

fig 14

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***figure 11** _ Activity Zoning Plan of Doornkloof **figure 12** _ Smuts House Museum **figure 13** _ Place of Silence, Interior **figure 14** _ Jan Smuts Memorial*

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1. Proposed Parking 2. Entrance 3. Proposed Entrance Garden 4. Smuts House Museum 5. Ouma's Tea Garden 6. Smuts House Museum 7. Emily Hobbhouse Tree 8. Place of Silence 9. Proposed War Veterans Memorial 10. Proposed Seed Vault and Herbarium 11. Proposed Greenhouses 12. Proposed Doornkloof Viewing Tower 13. Upgraded Jan Smuts Memorial 14. Existing Walking Trails. 15. Proposed Arboretum 16. Proposed Arboretum Visitors Centre 17. Proposed Staff and Guest Housing

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fig 18

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***figure 15** _ Proposed Site Plan **figure 16**_ Emily Hobbhouse Tree **Figure 17** _ Proposed Seed Vault and Herbarium **figure 18**_ Proposed Greenhouses*

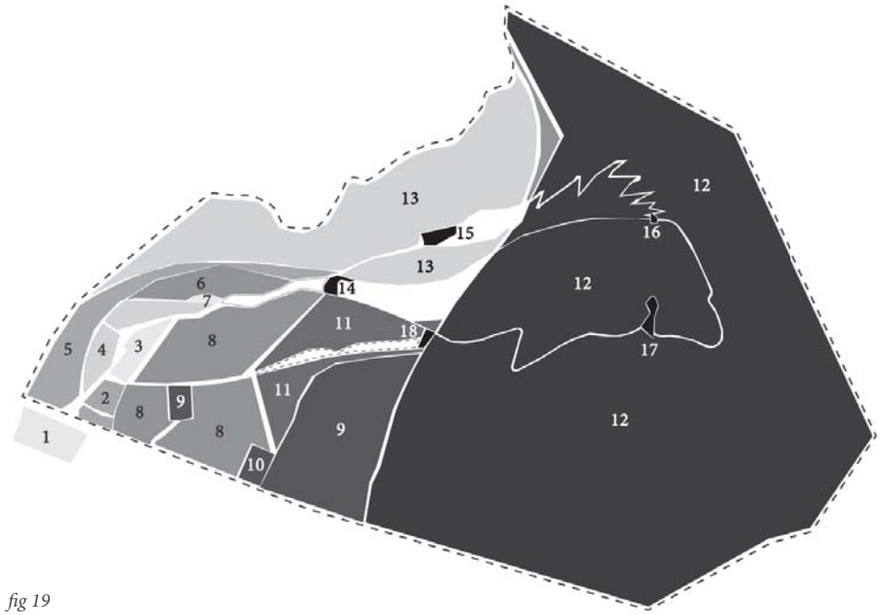
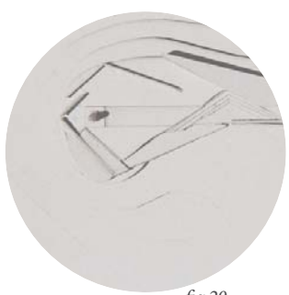


fig 19

1. Parking 2. Entrance Garden 3. Smuts House Museum Complex 4. Event Space 5. Issie Smuts Garden 6. War Veterans Memorial 7. Place of Silence 8. Recovered Grasslands 9. Staff and Guest Housing 10. Collections and Administration 11. Arboretum 12. Smuts' Koppie Protected Pristine Grasslands 13. Hennops River Grasslands 14. Seedbank and Herbarium 15. Bulbous Plants Greenhouses 16. Doornkloof Viewing Tower 17. Smuts' Memorial 18. Arboretum Visitors Centre



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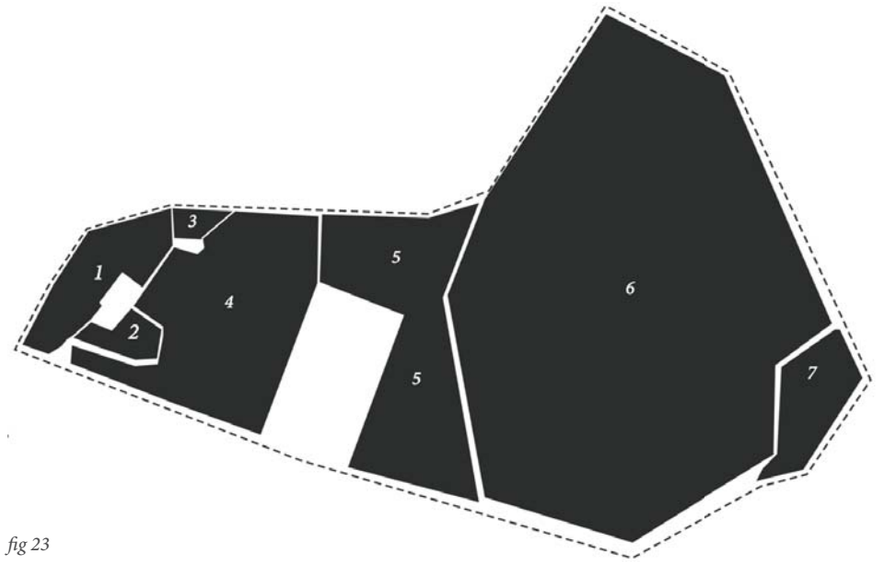

fig 23

1. Lawn and Formalised Garden 2. Lawns with Alien Species 3. Indigenous Arboretum 4. Alien Forest with Lawns 5. Bankenveld Woodlands with Critical Alien 6. Species Invasion 7. Bankenveld Landscape, with alien Invasion 8. Semi-Prestine Bankenveld Grasslands and 9. Rocky Outcrops with Woodlands Species

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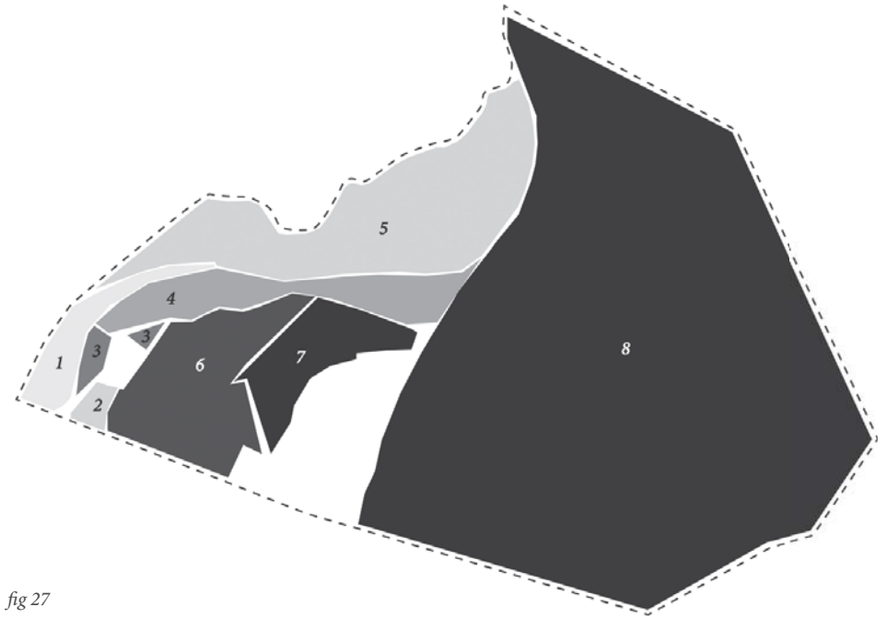

fig 27

1. Recovered Grasslands and Formalised Garden 2. Bulbous Entrance Garden 3. Lawn 4. Rehabilitated Bankenveld Woodlands 5. Hennops River Grasslands 6. Bankenveld Rehabilitation Grasslands 7. Bankenveld Grasslands Arboretum 8. Pristine Bankenveld Grasslands

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fig 29

fig 30

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figure 26 _ *Proposed Vegetation Zoning of Doornkloof* ***figure 27 _*** *Bulbous Entrance Garden* ***figure 28 _*** *Hennops River Grasslands* ***figure 29 _*** *Bankenveld Grassland Arboretum*

SMUTS KOPPIE

One of General Smut's favourite walks was a botanical ramble on a small koppie below Cornwall Hill. This is now known as the "Oubaas Trail", this steep and stony koppie is known for its wild flowers and grasses which grow in profusion among the *Kiepersol, Blinkblaar* and *Wag-n-Bietjie* trees. In the autumn the tall grey *Crassula* with its yellow flowers and the pink *Aloe* abound and in November the purple *Velozia* and innumerable small flowers are in bloom. General Smuts spend many hours practising his love for botany on this hill (Helme, Carola, & Julia 1976: 68).

General Smuts died on the 10th of September 1950. After a church service in the Groote Kerk in Pretoria, his body was sent to Johannesburg for cremation. When all the formal procedures was over his family scattered his ashes on Smuts Koppie (Lean 1995: 20).

Figures

figure 31 _ *Smuts Memorial 1964* ***figure 32*** _ *Smuts Memorial 1973* ***figure 33*** _ *Smuts Memorial 2012*

fig 31

fig 32

fig 33

DECLINE OF SMUTS KOPPIE

Gauteng, the smallest province in South Africa, is home to more than 25% (8 million) of the South African population. It is therefore understandable that urbanisation and its associated impacts pose some of the biggest threats to the natural environment in urban areas. Human impact is one of the most significant influences on the composition of vegetation in urban environments, including complete loss of habitats due to the construction of residential, industrial or other developments (Grobler *et al.* 2006 :77).

Natural areas adjacent to urban areas, are often subject to harm as alien plant species invade areas, while the lack of natural processes such as veld fire frequency, causes a massive disruption in the natural environment (Cilliers *et al.* 2004: 52).

The study area, Irene, can be described as false grasslands, or Bankenveld. Bankenveld is known for its patches of woodland vegetation found at sheltered sites on hill slopes and rocky outcrops (Grobler *et al* 2006: 368).

At present, formal protection of grasslands is minimal. Transformation of grasslands (both current and predicted), are caused by: degradation from overgrazing, invasion by alien vegetation and high levels of fragmentation which all point to the crucial need for a conservation strategy for the remaining semi pristine grassland areas (Marais, 2004 : 8).

No exact data is available for the Smuts Koppie, but recent data based on a study of Rietvlei Nature Reserve Grasslands (situated within a 5 km radius from Smuts Koppie), with the same biome and grassland type, reveals the following:

a. As many as 82 plant species can be found per 1000 square meters.

b. More than 60% of the grasslands within the area have already been changed or destroyed.

c. The destroyed grassland should urgently be rehabilitated, for future communities, and to ensure a healthy eco-system (Marais, 2004 : 24).

Figures

figure 34_ The Biomes of South Africa ***figure 35_*** *The location of Irene within the Grassland Biome of South Africa* ***figure 36*** *_ Irene's location within the section of the grasslands with the highest percentage of alien invasion* ***figure 37*** *_ Irene's location within the section of the grasslands with the biggest decline of natural bird life.*

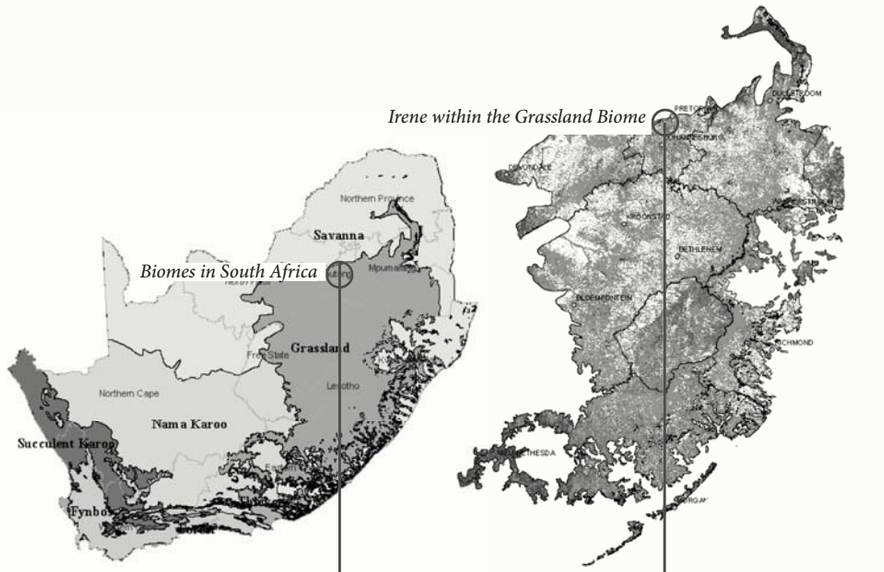

fig 34 *fig 35*

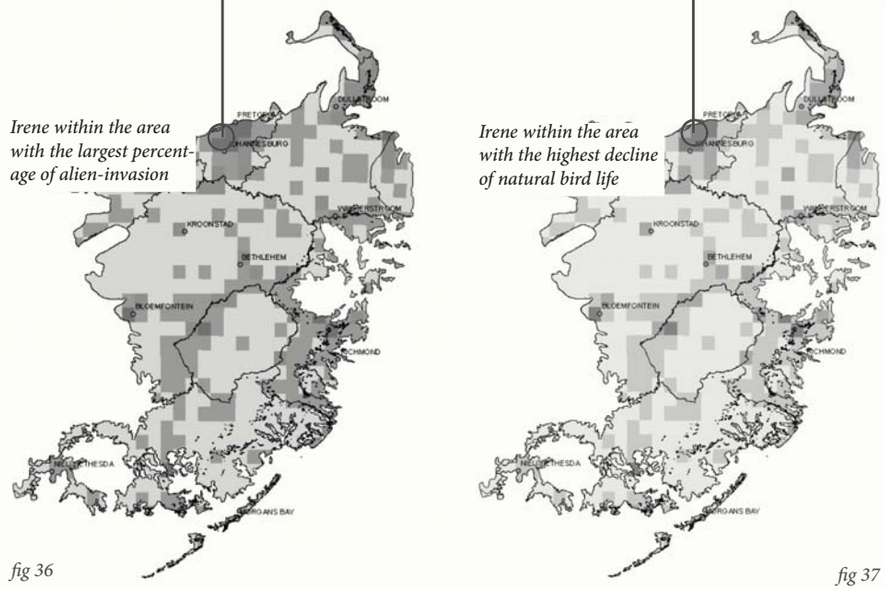

fig 36 *fig 37*

THE LOVE OF GRASSES

General Smuts wrote a splendid foreword to the authoritative work, *The Grasses and Pastures of South Africa,* which illustrates his love of botany and his interest in grasses.

> *" In general I may say that people do not realise the importance of grasses for human life. We literally live on grasses. All the important cereals which sustain human life, such as wheat, rice, maize and millet are grasses... Meat also, through animals, is a product of grasses. Directly and indirectly, all life is grass, and not merely 'like' grass, as the poets say. And when we consider how small the globe is, and how rapidly the human race is expanding and over-occupying it, we begin to realise to what an extent the whole future of the human race on this globe is dependant on the progress we may make in the development of our grass resources through conservation and research into new improved forms."* (Helme *et al* 1976 : 66*)*

General Smuts further writes about the complexity and beauty of grasses, and it is within this piece of writing that we catch a glimpse of him as a scientist, a poet and a philosopher.

> "Myself, when young, loved nature rather than sport, and took to botany as a hobby. Gradually I began to realise that the family of grasses was the most important of all, and did my best to become acquainted with that perhaps most difficult of all plant families. It is difficult because it is one of the largest families in botany, and the flowers are mostly very small and insignificant, and often call for the use of lenses to distinguish them properly. No wonder that other easier, more gaudy and attractive families are preferred by botanical beginners. But once you take a little trouble to become acquainted with grasses, their attraction and their glory grow on you, until at last you surrender completely to their charm. And in Africa, once you leave our desserts, it is grasses and glory all the way. At sunrise and sunset on the veld, in spring and autumn, when youth and maturity are in command, there is a strange fascination which no pen can describe. It is not single flowers, but the mass which overwhelm your senses. You become a passive instrument for nature to play on with all her magic fingers. Give me the grasses, the rolling veld, the bush veld savannah, with bush and trees dotting the endless grass scene in all its variety of shade and tone, with scents and sounds of bird and insect added, and shy animals silently stealing through the grass cover. That is the grass pattern of life, and there is no fascination like it. It is the combination of it all, the ecology of the grasses with their associated plant and animal life, which gives it such a unique interest" (Helme *et al.* 1976 : 67*)*.

Figures

figure 38_ *Grasses found at Doornkloof*

fig 38

"DOORNKLOOF"

a STATEMENT *of* SIGNIFICANCE

§

Doornkloof was established in 1836 and is therefore one of the oldest farms in the Tshwane district and is renowned for the house built by General JC Smuts in 1908, but the history of the site and the remnants of the landscape dates back to the early stone age. In 1969 the big house (Die Groothuis) was declared a National Monument.

The estate has undergone numerous sub-divisions, and the divided landscape has been sold off to various property development stakeholders. The remaining portion of the farm falls within the ground owned by the Friends of the General Smuts Foundation.

The remaining portion, is home to a famous Bankenveld landscape, which was a source of inspiration to General Smuts, and it is on this Bankenveld koppie that the family scattered his ashes, and erected a obelisk monument in his honour. The conservation of this koppie and the landscape , does not only contribute to the conservation of our heritage, but forms an integral part of conserving the natural heritage of our country.

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figure 39 _ *The starting point of the Oubaas Trail at Doornkloof*

fig 39

4

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LETTER FROM
THE TIMES
Thursday January 30, 1964

IN MEMORY OF SMUTS

FUND TO PRESERVE DOORNKLOOF

TO THE EDITOR OF THE TIMES

Sir,—In 1950 Field Marshal Smuts died at Doornkloof, his farm near Pretoria, where he had lived for over 40 years.

Doornkloof is a simple wooden farm-house which has remained as Smuts left it, with the wild gardens he designed. The old house itself is being cared for and visitors from all over the world are welcomed. But inevitably, as time passes, the property demands more preservation, and the grasses, trees, and shrubs need skilled care.

We believe that the people of Britain may wish to share in a memorial to Smuts by contributing to a fund to preserve Doornkloof in memory of this man who shone among his contemporaries, was a devoted friend of this country, and whose counsels and initiatives in war and peace were on a high plane of statesmanship and humanity.

Those who are willing to subscribe are asked to write to:—G.P. Chambers, Esq., Lloyds Bank Ltd., 39 Piccadilly, London, W.1, who has kindly consented to act as honorary 'treasurer of the appeal in the United Kingdom.

We are, Sir, yours faithfully,
WINSTON S. CHURCHILL.
ATTLEE.
January 28.

Printed for The Times Publishing Company, Limited, E.C.4, by The Bradbury Agnew Press

Figures

figure 40_ *Letter written by Winston Churchill for the preservation of Doornkloof.*

5

LIVING BODIES

"WE ARE INDEED ONE WITH NATURE"

General JC Smuts

§

5

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“LIVING BODIES”

§

5

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"*Master Plan for Navy Pier*"
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figure 6
"*Artist Impression for Navy Pier Public Space*"
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figure 8
"*Doornkloof Site Plan, indicating the series of interventions planned.*"

figure 9
"*Exploded Axonometric of Rhizome Route.*"

figure 10
"*Rhizome Walking Trail*"

figure 11
"*Conceptualized Grassland Arboretum*"

figure 12
"*Model of Shamaʾa Proposal*"
Bresler 2010

PROPOSED INTERVENTION

"LIVING BODIES"

and the PROGRAMME

§

The proposed interventions programme is derived from the following concerns and problems noted in previous chapters:

NATURAL AND GRASSLAND BIOME

a. The degradation and lack of preservation of the Bakenveld landscape.

b. The lack of breathing and natural space within the Irene district.

HERITAGE OF SITE

a. The preservation of the landscape as "grave" to Jan Smuts.

b. The influence of the veld on Jan Smuts The veld becomes a memorial to the memory of his life's passion, botany.

c. The re-institution of Smuts' herbarium.

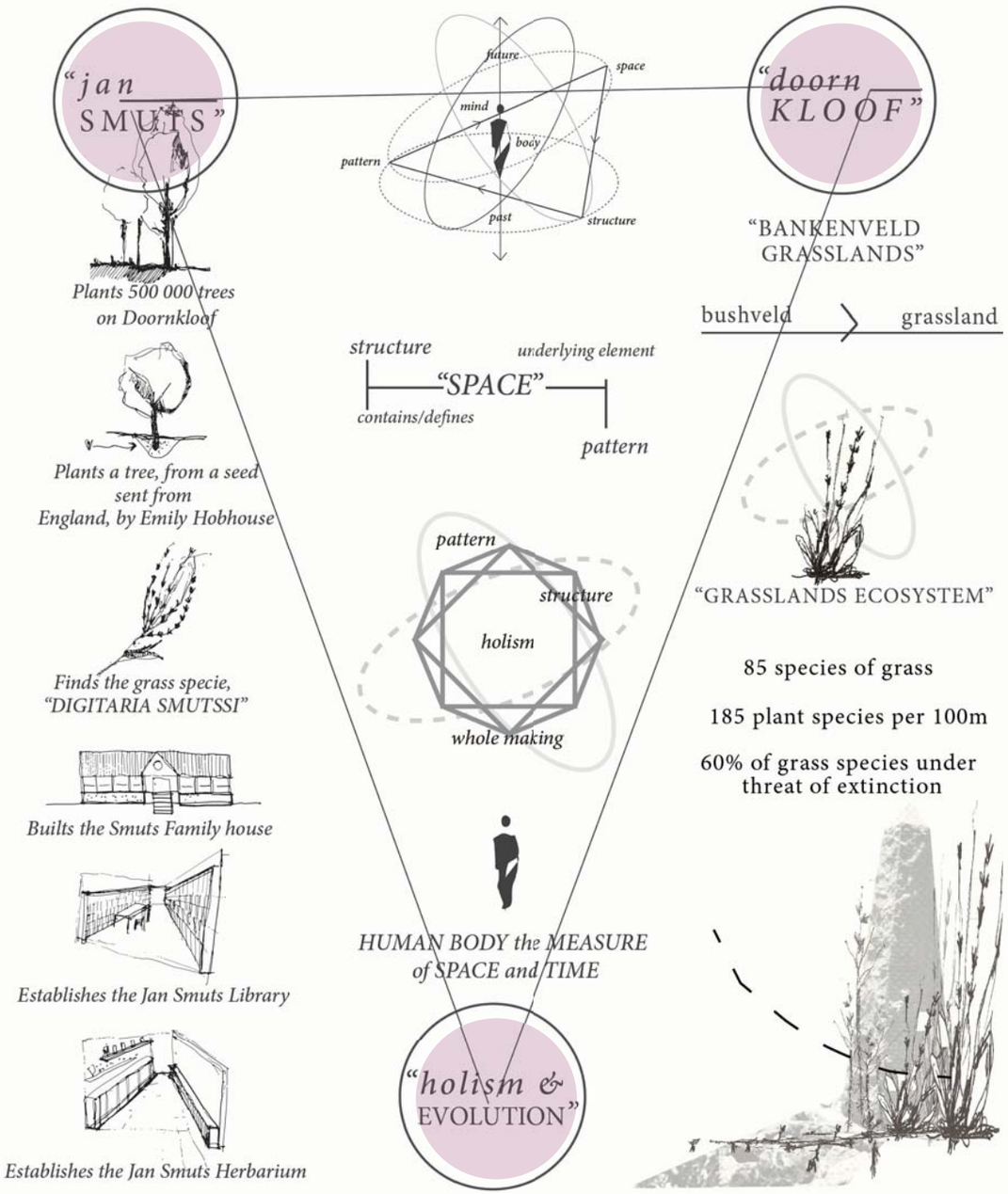
d. The landscape as home to Smuts Finger Grass

THEORETICAL PROBLEM

The importance of the concept and philosophy of Holism, and the role it can play in creating architecture.

Figures

figure 1 _ OPPOSITE PAGE _ Elements informing intervention and programme



PROPOSED ECOLOGICAL PROGRAMMES

A strategy was needed to provide systematic preservation of the history of the farm and the landscape. As stated in "PHYSICAL AND MATERIAL WORLD", the farm has experienced a dramatic decline in funding, which has caused the landscape surrounding the Smuts House to become a disregarded landscape.

The proposed ecological programme of this study will addresses the landscape, while creating economic activity and interest in the landscape, in an effort to regenerate the farm and the memory of Smuts, not as a politician, but as a philosopher, botanist and scientist.

The ecological regeneration of the farm will be achieved by instituting a Bankenveld Grassland Arboretum, where the 85 species of grass found on Koppie Smuts will be planted. The Arboretum serves as the first stage of rehabilitation.

A. THE BANKENVELD GRASSLAND ARBORETUM

The arboretum is seen as a museum for trees. The Friends of the Smuts Foundation has in recent years tried to plant and maintain an arboretum, but due to lack of interest and funds, this programme has not been as successful as originally intended. The proposed arboretum for Grasslands Institute will function as a resurrection of the landscape which has perished due to the invasion of alien species and the increase in pollution in the area.

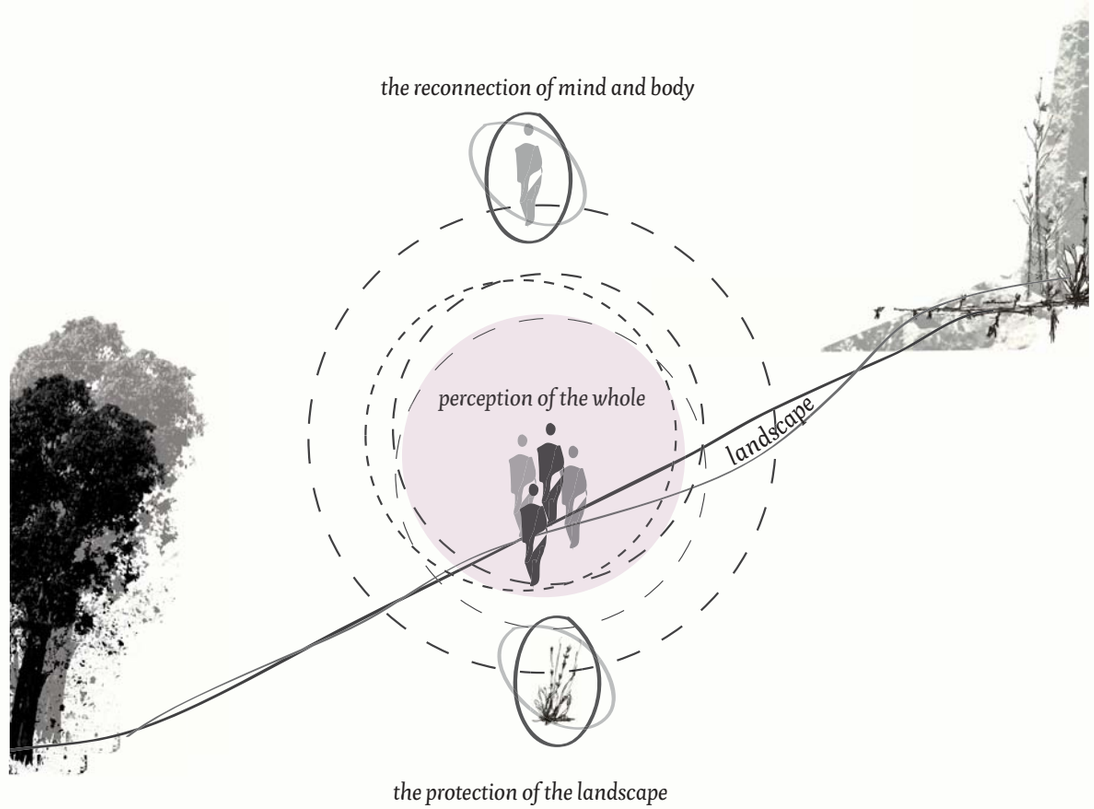
As soon as the Arboretum is established it will start serving as harvesting ground for grass species, which can be sold to the public and other entities.

B. SEEDBANK

The Seedbank will serve as a vault or a pod where the seeds of all the grasses that exist within the grassland biome will be stored and kept safe for future generations. A special focus will be placed on storing and conserving the grass and other plant species that are specific to the landscape of Irene and the Bankenveld ecosystem.

C. HERBARIUM

Jan Smuts was a avid botanist and Doornkloof was home to his extensive herbarium, which in recent days have closed down due to lack of funding and staff. The herbarium within the Smuts Grassland Institute Landscape will be a



Figures

figure 2 _ OPPOSITE PAGE _ Holistic concept of regeneration and rehabilitation

re-institution of the Smuts Herbarium.

The herbarium will be an exhibition space of all the plants that can be found within a Bankenveld Grasslands Eco-Sytstem. The herbarium will function in such a manner that the public is involved in the process and education plays an important role.

D. *GREENHOUSES*

Greenhouses will be built on the flat planes of the site. The greenhouses will serve as cultivation houses for bulbous plants, shrubs and trees of the Bankenveld ecology. These plants will be used to regenerate the current landscape, serve as a exhibition space and also as economic generator. All plant material will be sold to the public.

PROPOSED LANDSCAPE PROGRAMMES

The development of ecological programmes will create new interest on the farm, which will introduce new visitors to the site. This will create the opportunity to establish the farm as a passive recreational public park.

The passive recreational park will provide the community of Irene and Tshwane district with a natural open space where walking trails, lookout points, and event spaces are available. Here the community can interact with the natural environment, do bird-watching, tree identification and other forms of nature-based recreational activities.

This introduces two main interventions on site, The Doornkloof Viewing Tower, and an upgrade of the Smuts Memorial.

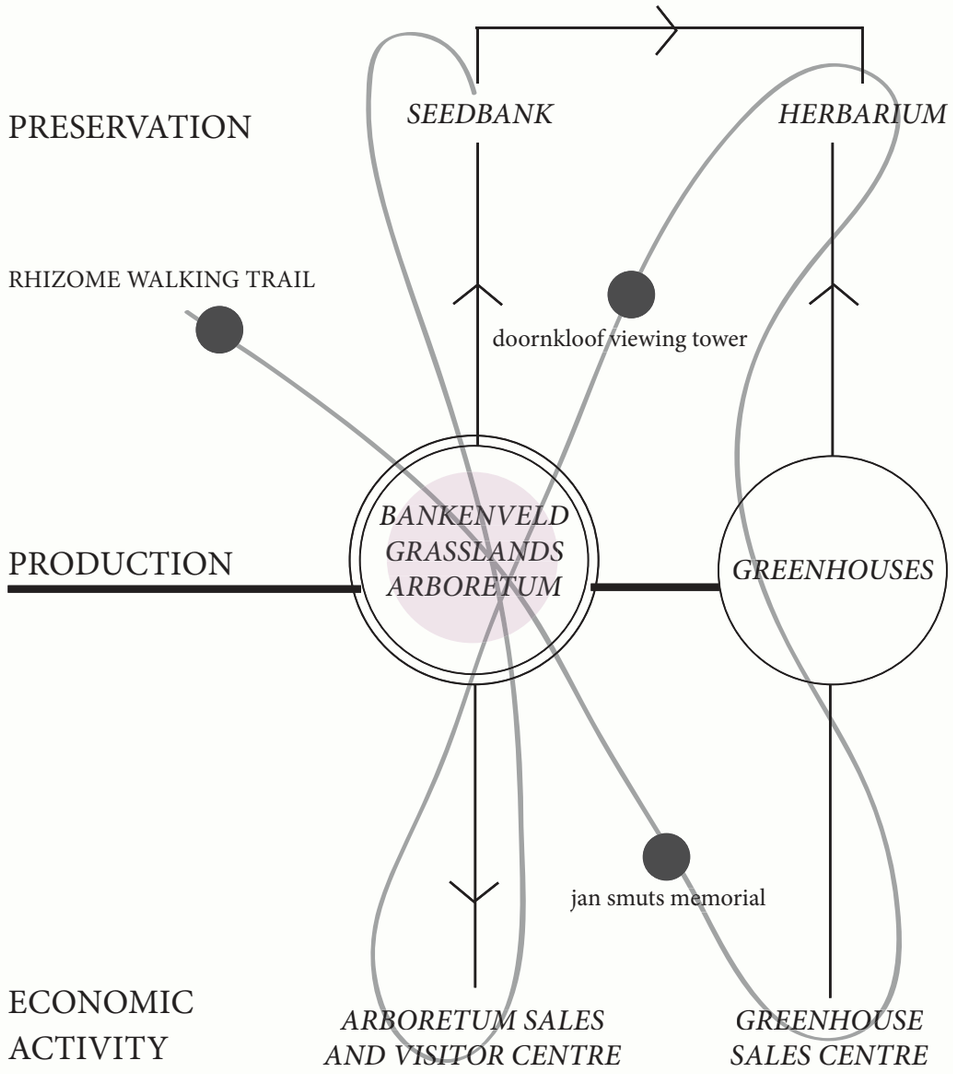


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figure 3 _ OPPOSITE PAGE _ Programmatic Structure

“CONCEPTUAL DEVELOPMENT”

the DOORNKLOOF MASTERPLAN

§

MASTERPLAN

“FUNDAMENTAL CONCEPT”
Rehabilitation through connectivity.

“FUNDAMENTAL PROCESS”
Rehabilitation of Bankenveld Landscape.

Programmatic and ecological layering of natural and architectural elements within the landscape of Doornkloof which serves to reproduce and rehabilitate the natural environmental state of farm.

The masterplan addresses the reconnection of the two existing walking trails of the farm within the surrounding areas and to find a way to connect the site with its surrounding context.

The reconnection or rhizome walking trail serves to illuminate the existing and proposed interventions, the natural environment and the rich phenomenological experiences presented by the farm.

“DOORNKLOOF AS ‘SUB-URBAN’ PARK”

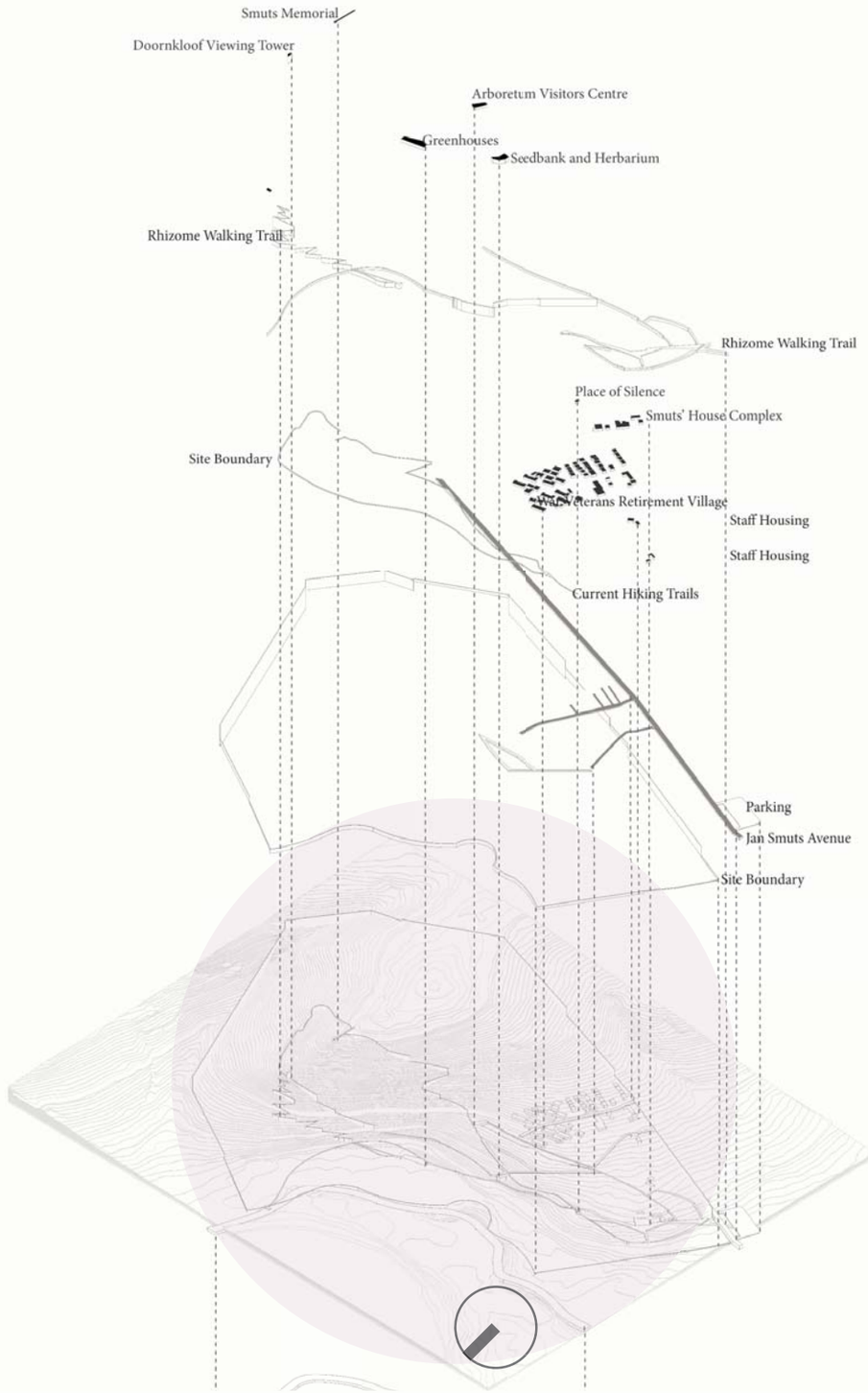
The farm will serve as a passive recreation park, within the context of Tshwane, this introduces activities such as;
- walking trails,
- picnic areas,
- viewing spaces,
- bird watching,
- passive and active environmental education.

“DOORNKLOOF AS ECOLOGICAL REHABILITATION FACILITY”

The introduction of a series of interventions along the rhizome walking trail will serve to rehabilitate the environment;
- Bankenveld Grassland Arboretum,
- Seedbank and Herbarium,
- Greenhouses for the growth of bulbous plants.

Figures

figure 4 _ OPPOSITE PAGE _ Exploded axonometric of proposed masterplan for Doornkloof.



PRECEDENT STUDY FOR MASTERPLAN NAVY PIER AECOM AND BIG ARCHITECTS

Chicago, Illinois, United States of America

Client: *City of Chicago*

Design Leadership: *AECOM and BIG Architects*

The Chicago Navy Pier is the worlds largest pier and Illinois' largest attraction. The pier is historically famous for offering the inhabitants of Chicago with a public gathering space with views of the lake. Today the pier is a congested space, with disappointing views of industrial spaces. BIG and EACOM Architects propose a rehabilitation of the pier with a mix of programmes to create public interest while maximising the experience through a holistic approach.

The proposal introduces a variety of public programmes with a focus on a ecological approach while creating a new relationship with the lake, *"a playful ribbon of connectivity, expanded program and shaded pedestrian flow" (BIG & EACON 2012: 81).*

The entire project is based on the following principles:

1. Circulation and Movement
2. Rehabilitation through horticulture
3. Public Spaces
4. Entertainment and Educational Spaces
5. Reconnection with the water body

The design approach is based on:

1. Successful integration with the project masterplan.

2. The enhancement of experience through features that add positive addition to the location, while adding beauty and experience on a human level.

3. The reinforcement of the destination, while still being a part of the overall site story.

4. Provide memorable experiences. All interventions are designed to respond to the context but add a level of unique experience, that people will remember and visit again and again.

5. Durability and accessibly.
(BIG & EACON, 2012)

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figure 5 _ OPPOSITE PAGE _ Master Plan for Navy Pier figure 6 _OPPOSITE PAGE_ Artist Impression for Navy Pier Public Space figure 7 _ OPPOSITE PAGE_ Section through Navy Pier Public Space

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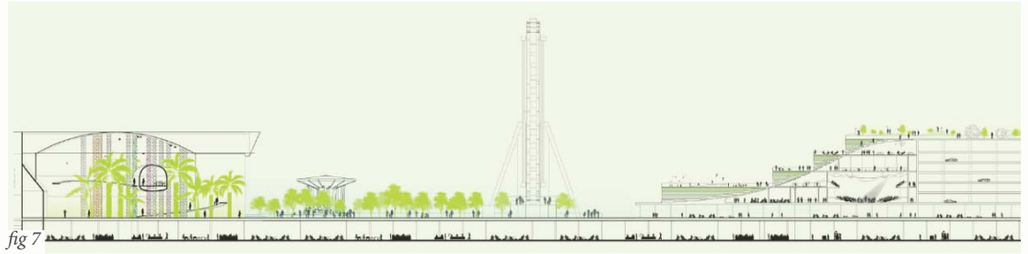
fig 6



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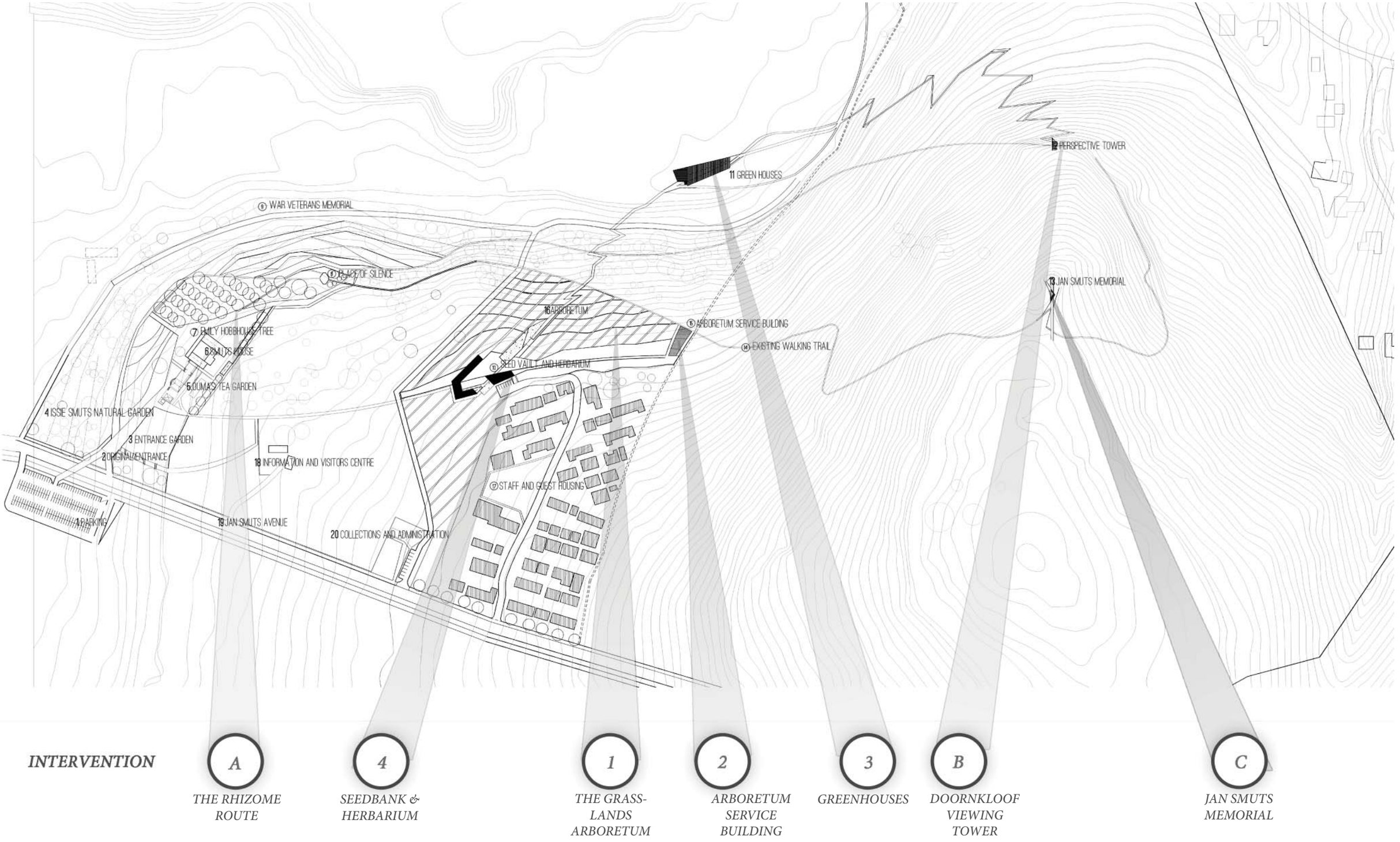


Figures

figure 8_ Doornkloof Site Plan, indicating the series of interventions planned.

"CONCEPTUAL DEVELOPMENT"

LANDSCAPE PROGRAMMES

INTERVENTION A
THE RHIZOME ROUTE

"FUNDAMENTAL CONCEPT"
Connectivity within the landscape.

"FUNDAMENTAL PROCESS"
Accessibility and articulation of the landscape.

The landscape addresses the reconnection between ecological, economic and social production.

The landscape is conceptualised as an articulated surface of interaction between, ground, light and flora and fauna. The rhizome route is designed in such a manner to allow maximum interaction between the public and the newly created interventions. The rhizome is the underlying principle that ties together the various programmes, and enables the landscape to become a park within the context of Irene.

The route allows the visitor to experience various sections of the landscape in a comfortably accessible manner. Thus the language of the route, even though similar in its architectural approach, is used as a language of the in between, illustrating and illuminating different aspects of the landscape.

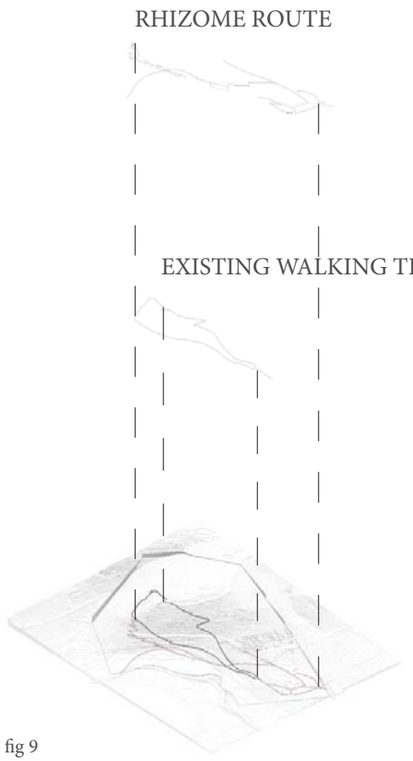


fig 9

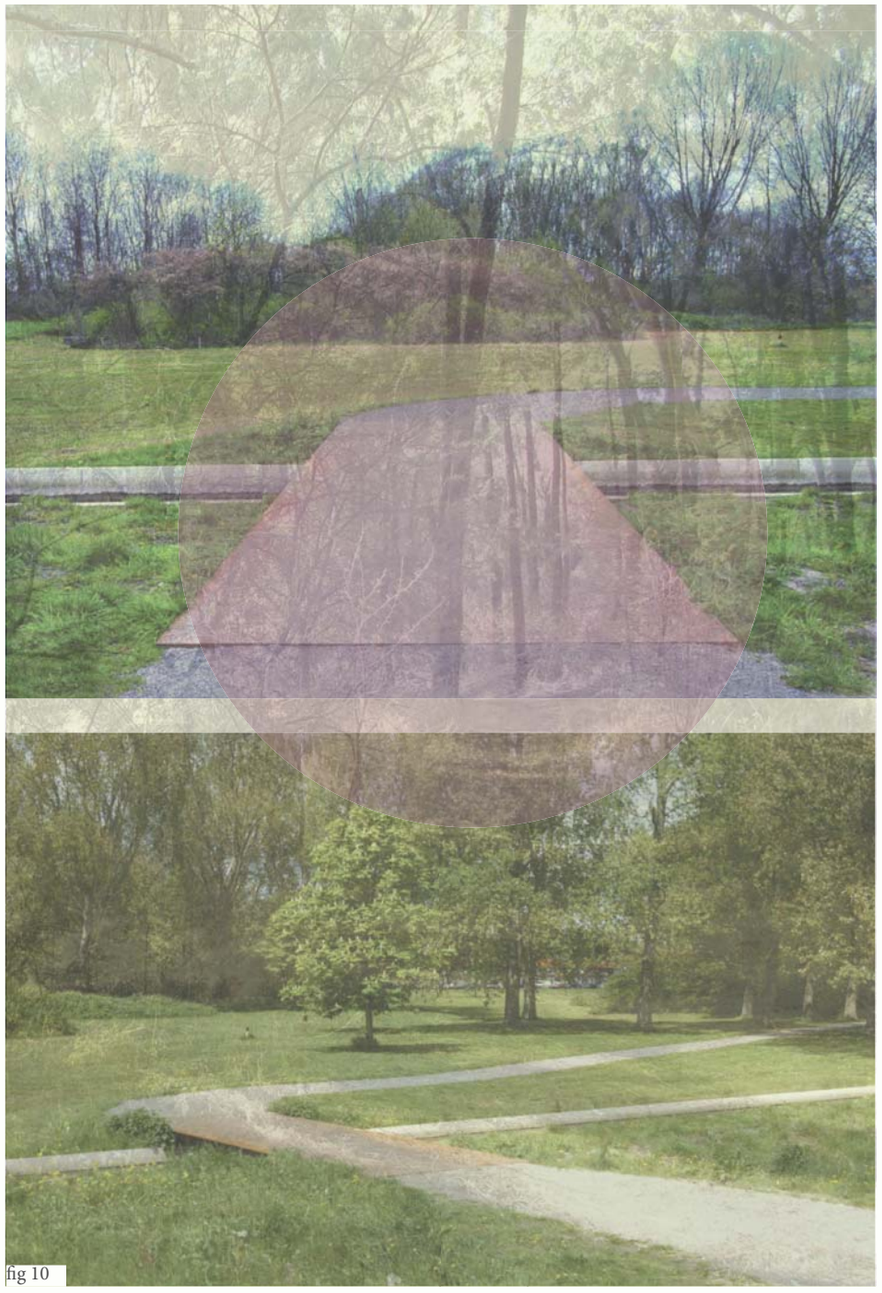


fig 10

Figures

figure 9 Axonometric of Rhizome Walking Route Figure 10 _ OPPOSITE PAGE _ Rhizome Walking Trail

"CONCEPTUAL DEVELOPMENT"

ECOLOGICAL PROGRAMMES

INTERVENTION ONE
THE ARBORETUM

"FUNDAMENTAL CONCEPT"
Grassland Rehabilitation.

"FUNDAMENTAL PROCESS"
Grassland rehabilitation, plantation, harvest and exhibit.

"ECONOMIC PROCESS"
Selling and distribution of Bankenveld Grass species.

"ECOLOGICAL PRODUCT"
The 85 Grass Species of Doornkloof.

The Bankenveld Arboretum is situated on a section of the farm, which is characterised by a large Blue Gum (Eucalyptus) forest. The Blue Gum forest was planted by Smuts as a source of financial income. Today these trees, are significantly damaging the grassland ecosystem; Blue Gum trees are notorious for dominating the landscape by absorbing large quantities of ground water, which threatens the survival of other less dominant species. Blue Gum trees also shed large quantities of their bark, that effect the acidity of the soil around them, thereby releasing a chemical into the surrounding soil which kills native competitors (Robertson, 2009).

The removal of the trees is essential to the survival of the grasslands. According to Biologist Dr Braam van Wyk, the appropriate way to remove the trees from the landscape, is by chopping them down, and inhibit their growth through a organic poison. The entire removal of the tree will effect the very delicate grass root system, and eventually inhibit any form of rehabilitation (van Wyk, 2012).

After the trees are removed a system of rehabilitation is implemented.

1. The neutralisation of soil conditions.

2. The introduction of pioneer grasses. The successful growth of the pioneer grasses depends on a system of constant watering and providing the grasses with sufficient nutrients and growth inducing products. Pioneer grasses serves a protective role within the ecosystem, protecting the bare soil against wind, sun, erosion and flooding.

3. As soon as the pioneer grasses are established, sub-climax grasses are introduced. With a constant maintenance and care, the sub-climax stage will provide a further stabilising effect on the area.

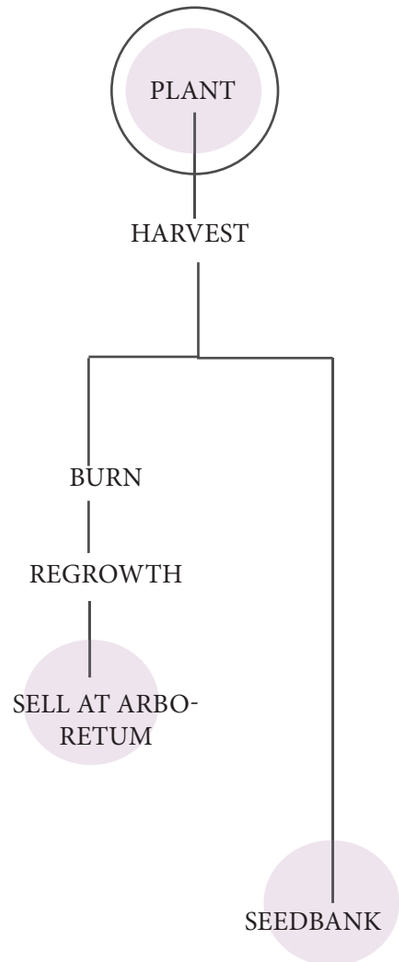
4. When the above grass stages are established, the climax stage grasses are introduced, it signifies a very healthy ecosystem, and serves as the final stage within the rehabilitation process.

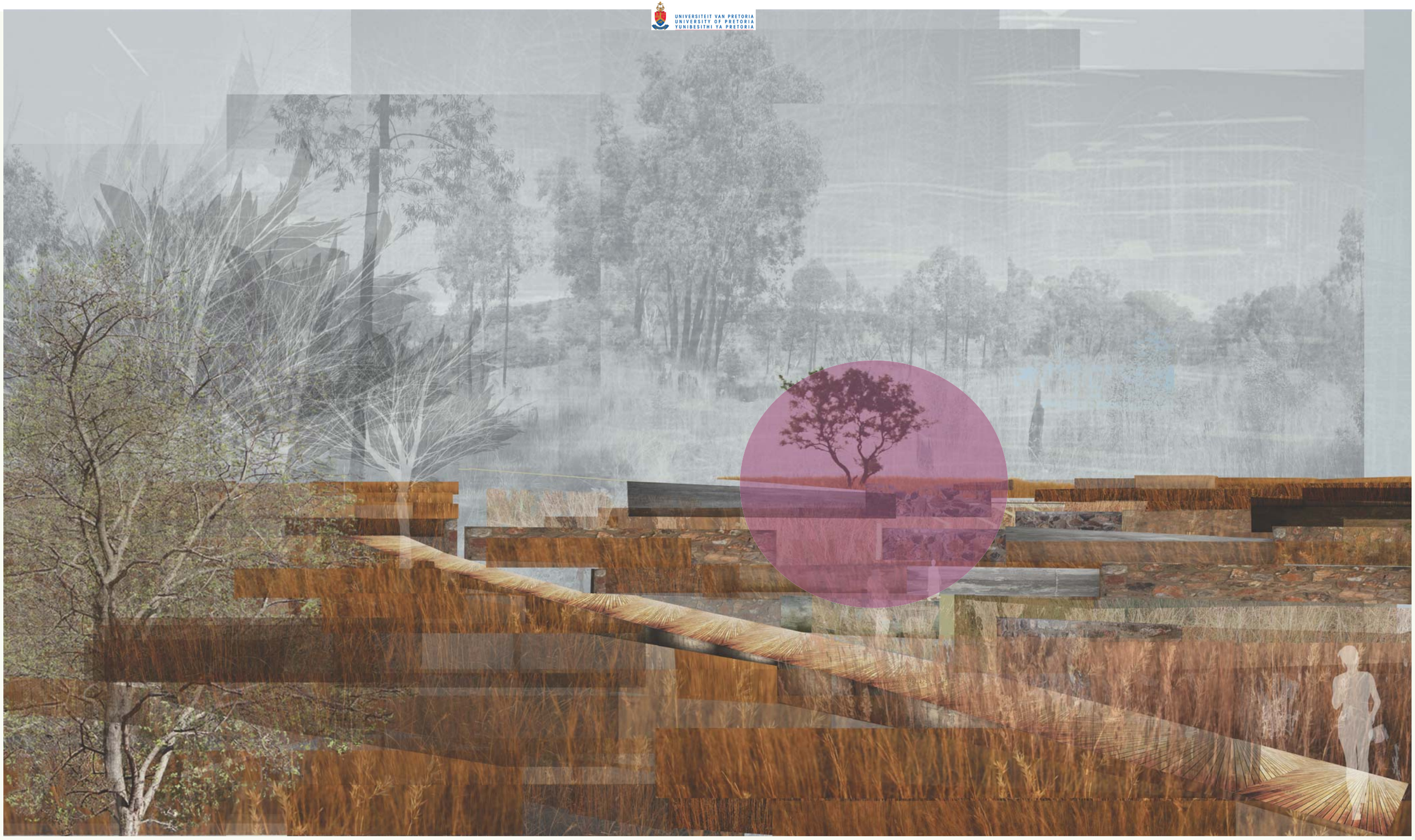
The Bankenveld Arboretum :

REHABILITATES the first level of grasslands. Which will restore biodiversity and aid in the reintroduction of insect, animal and bird species.

After rehabilitation and eventual stabilisation, the arboretum will be able to PROVIDE grass species for other damaged areas on the farm.

It will also serve as a ECONOMIC GENERATOR. Grass seeds will be harvested, sold to the public and also to the ecological rehabilitation specialists. The arboretum's successful growth will provide the Smuts Grassland Institute of with the opportunity to sell an entire Bankenveld Grasslands Ecosystem, which could aid other sites (such as mining sites) in their rehabilitation process.





Figures

figure 11 *_ Conceptualized Grassland Arboretum*

PRECEDENT STUDY FOR THE ARBORETUM EMBEDDED BOUNDARIES

LIANA BRESLER

GEI BEN-HINNOM AND WADI AL-RABABA, JERUSALEM, ISRAEL

A THESIS PRESENTED AT THE UNIVERSITY OF WATERLOO

The intervention presented in Bresler's thesis proposes a residential wastewater treatment facility. The hydrological system dilutes the level of contaminants, thereby reducing the ground water pollution and renewing the flow of water into the shrinking Dead Sea (Bresler 2010: 54).

The design reveals a valley between the Palestinian and Israeli borders, an abandoned site, where waste is dumped, a disregarded space. The introduction of wastewater treatment, will not only serve as a functional programme, but act as connection space. It oscillates between connection and separation and provides the disconnected communities with a wall and a bridge, offering the citizen a space to dwell in the abandoned in-between. It becomes a place to imagine the 'other', a place where the community can reflect on their relation to the ground (Bresler 2010: 101).

Breslers thesis reacts to the context in a similar fashion as the intervention proposed at Doornkloof. The rehabilitation of abandoned land, that offers the surrounding community with a reflection space, where the whole and our relationship to the whole can be contemplated. Both serve a functional purpose as well as an aesthetic purpose, while providing community open space.

Figures

figure 12 _ OPPOSITE PAGE _ Model of Shama'a Proposal
figure 13 _ OPPOSITE PAGE _ Section of Shama'a
figure 14 _ OPPOSITE PAGE _ Impression of Shama'a

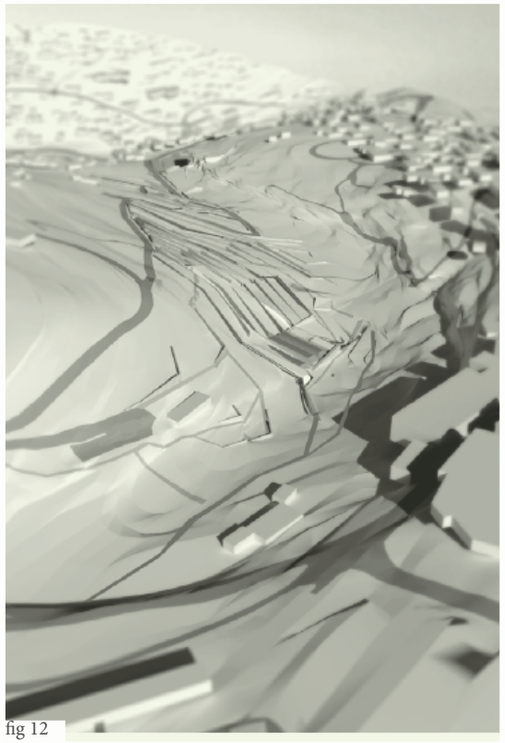


fig 12

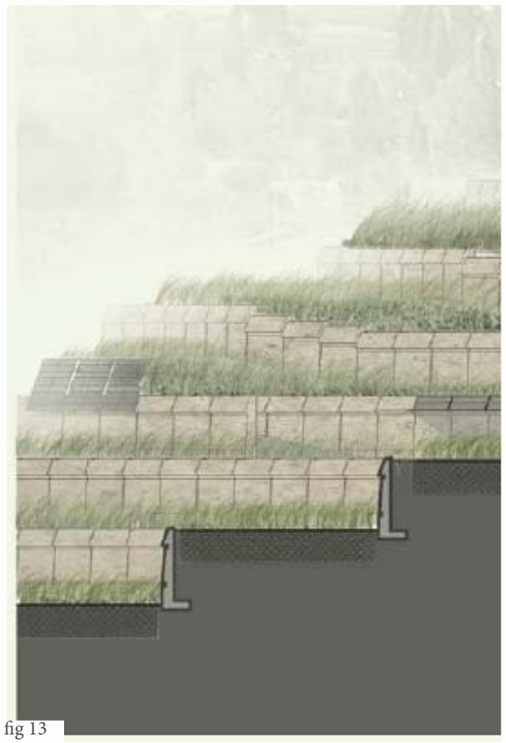


fig 13


fig 14

INTERVENTION TWO

THE ARBORETUM BUILDING

"FUNDAMENTAL CONCEPT"
Intertwining of production landscape and natural landscape.

"FUNDAMENTAL PROCESS"
Exhibition and Management.

"ECONOMIC PROCESS"
Selling and distribution of Bankenveld Grass species.

"ECOLOGICAL PRODUCT"
The 85 Grass Species of Doornkloof.

The Arboretum Building serves as a service space for the arboretum. Providing staff with facilities, storage, while also serving as a visitors centre for the arboretum.

The building serves as a mediator between the production landscape (arboretum) and the natural landscape (Smuts Koppie) while also creating a barrier between the contrasting landscapes. The structure is anchored to the ground, and commemorates the formalistic aspect of the Smuts Koppie.

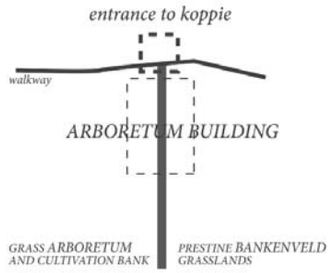


fig 15

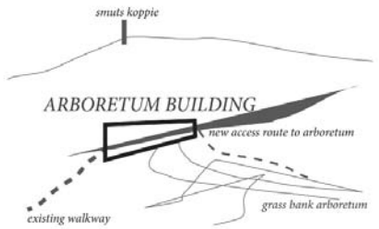


fig 16

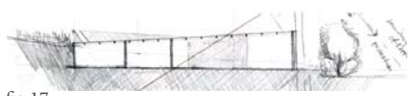


fig 17


fig 18

Figures

figure 15 & 16 _ Parti Diagramme for Arboretum Building figure 17 & 18 _ Concept Development figure 19- 21 OPPOSITE PAGE _Conceptual models for the Arboretum Building.

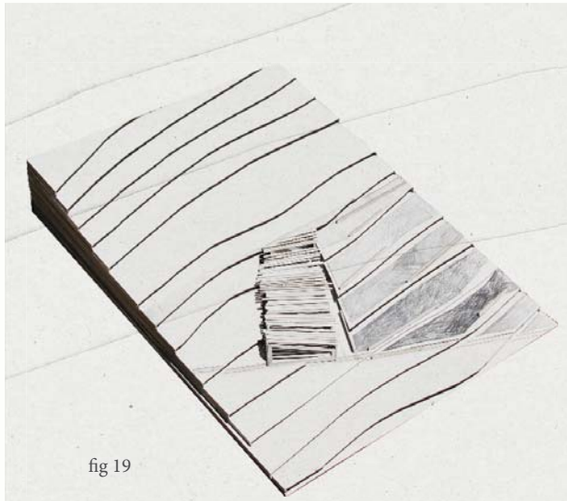


fig 19


fig 20

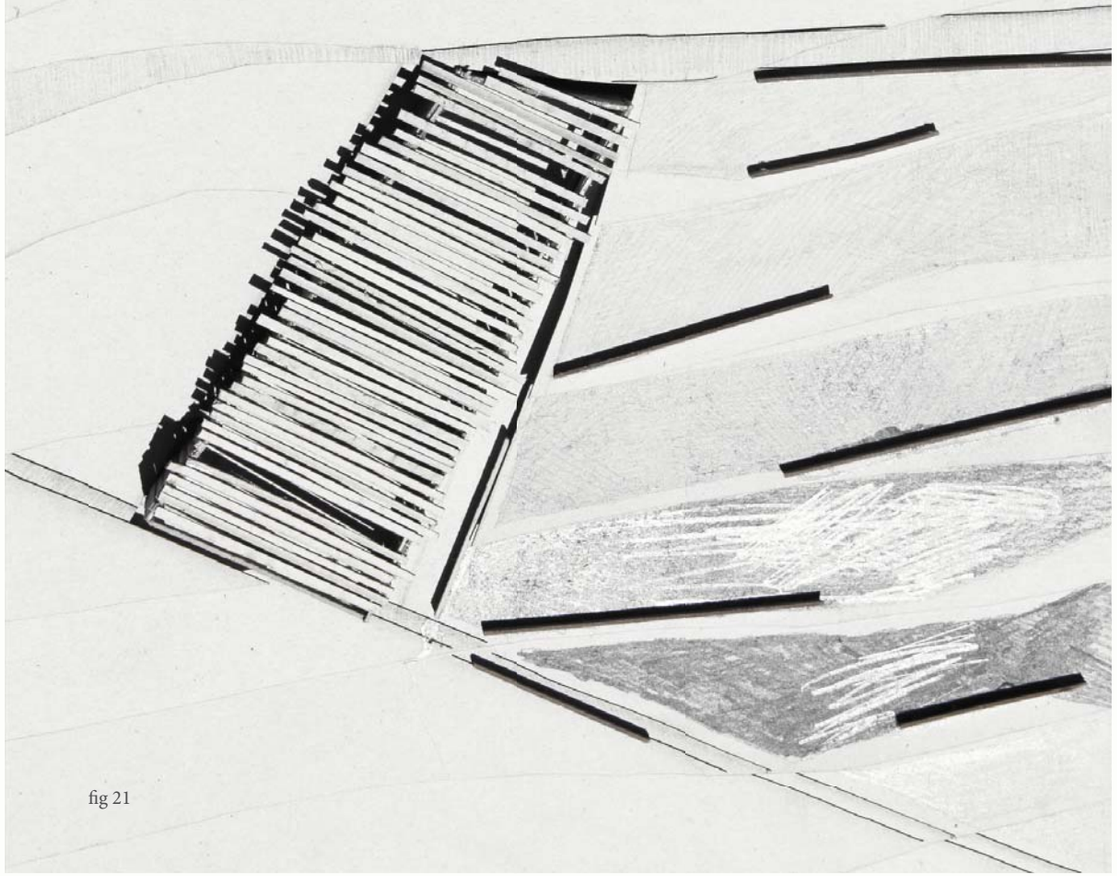


fig 21

PRECEDENT STUDY FOR THE ARBORETUM SERVICE BUILDING QUINTA DO VALLADO WINERY FRANCISCO VIERA DE CAMPOS

Vilarinho dos Freires, Peso da Regua, Portugal.

Client: Quinta do Vallado

Project Architect: *Guedes + DeCampos*

The proposal for the enlargement of the winery of Quinta do Vallado required an extension to the existing cellar with a proper integration into the landscape. The interaction with the landscape had to be incisive, adapting itself to the given programme while conquering an expressiveness that could value both the built complex and the surrounding landscape.

"The new volumes create a relation of tension and balance between buildings and topography, merging in the land declaring its artificial nature" (Campos, 2011)

Figures

figure 22 & 23_ *OPPOSITE PAGE Model of Quinta do Vallado* ***figure 24_*** *OPPOSITE PAGE _Plan of Quinta do Vallado* ***figure 25 & 26 _*** *OPPOSITE PAGE _ Photos of of Quinta do Vallado*

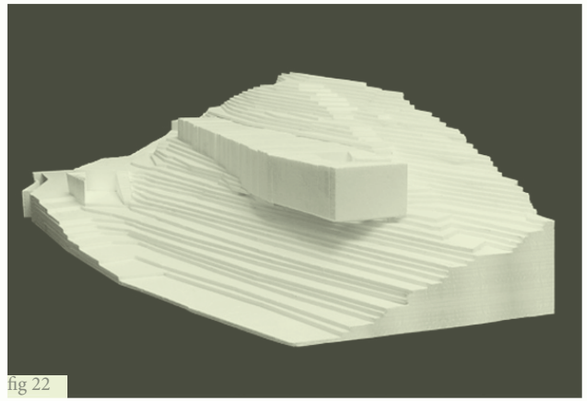


fig 22

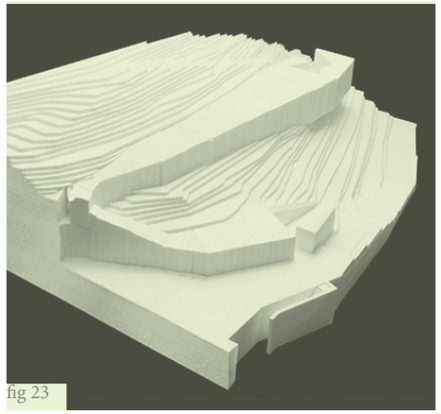


fig 23

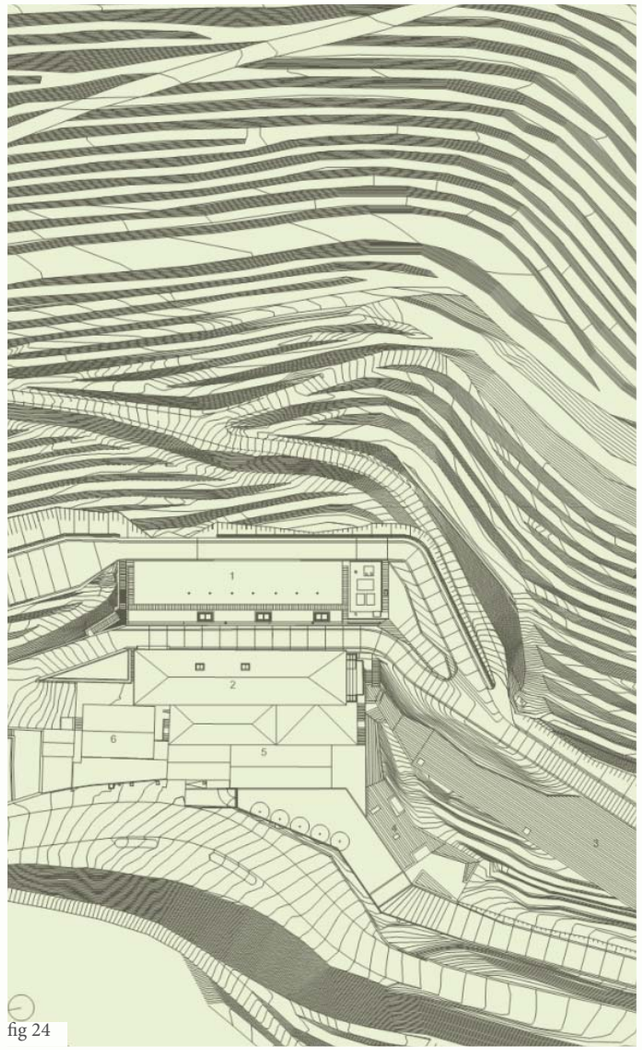


fig 24


fig 25

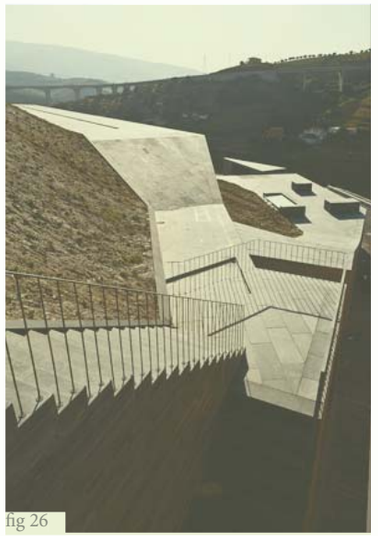


fig 26

INTERVENTION THREE
THE GREENHOUSE

"FUNDAMENTAL CONCEPT"
Flouting structure intertwining heritage of agricultural fields with future production.

"FUNDAMENTAL PROCESS"
Horizontal Horticulture.

"ECONOMIC PROCESS"
Selling and distribution of Bankenveld Bulbous plants, shrubs and trees.

"ECOLOGICAL PRODUCT"
Bankenveld Bulbous plants, shrubs and trees.

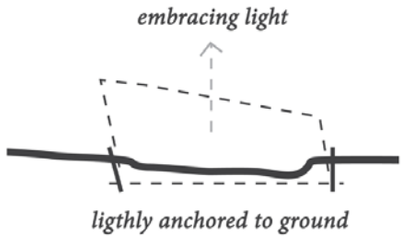


fig 27

The Greenhouse is conceptualised as a building lightly anchored to former agricultural fields. The landscape is relatively flat compared to the rest of the site, making it the ideal site for a greenhouse. The building is designed in such a manner that it has maximum exposure to sunlight and natural resources such as wind and water.

The greenhouse acts as a bulbous, shrub and tree forest where hydroponic production is suspended over the landscape.

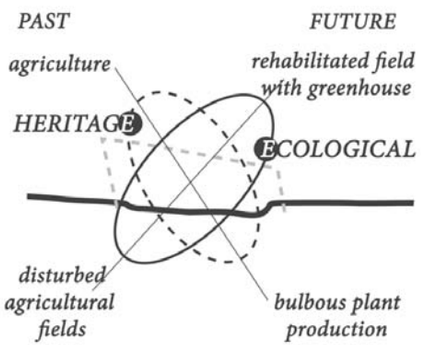


fig 28

Figures

figure 27 & 28 _ Conceptual diagrams explaining the concept of the greenhouse ***figure 29*** *OPPOSITE PAGE _Interior Structure of Greenhouse* ***figure 30 - 32_*** *OPPOSITE PAGE _Concept models for the greenhouse structure.*

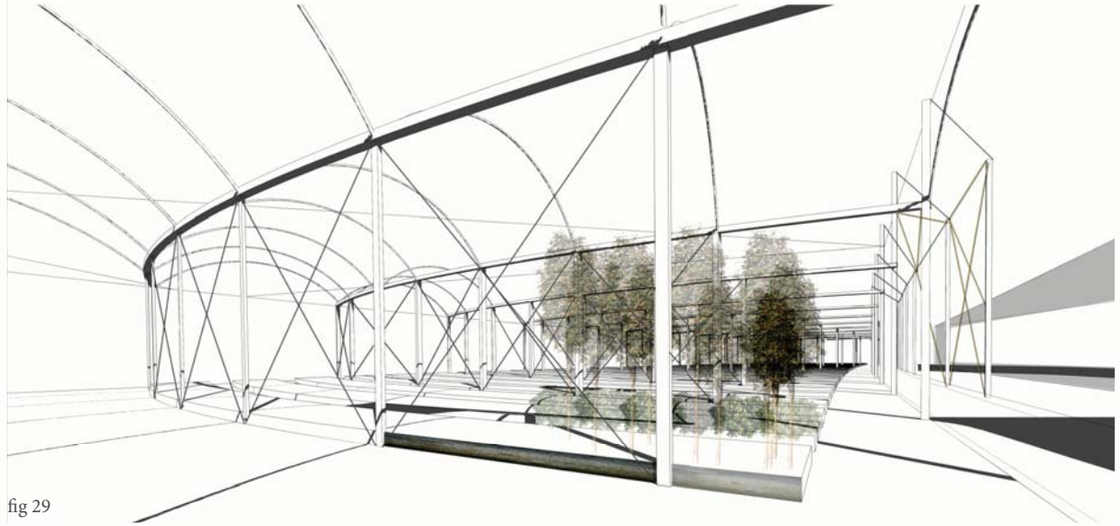


fig 29

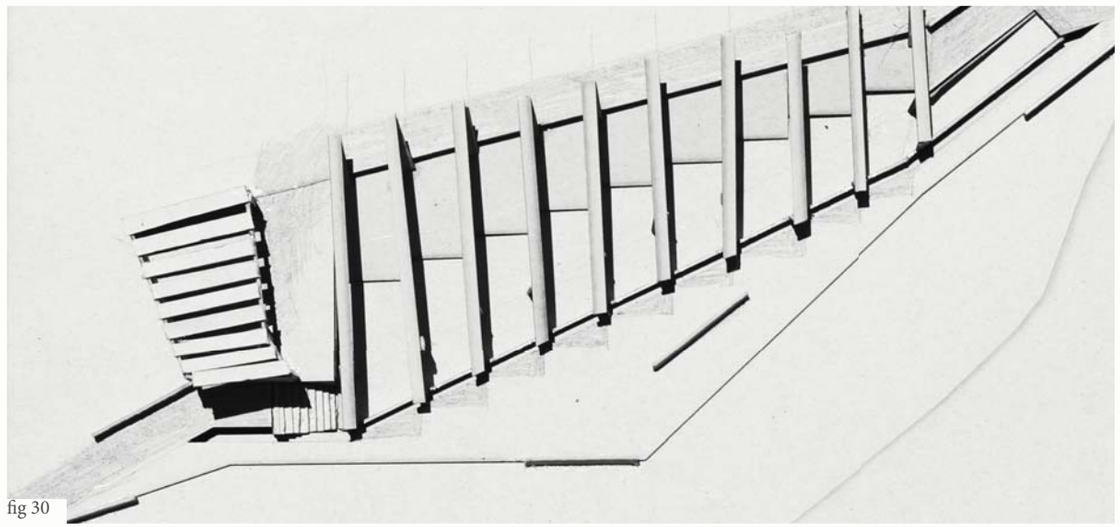


fig 30

fig 31

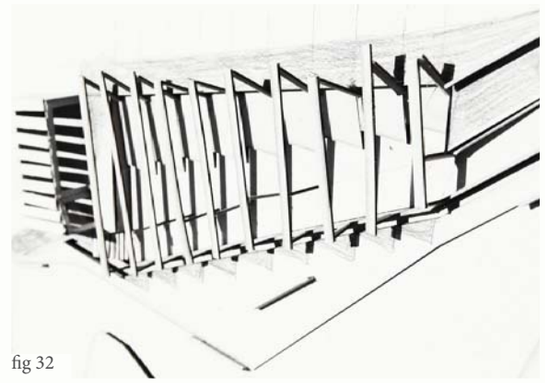


fig 32

PRECEDENT STUDY FOR THE GREENHOUSES
MAVULA GREENHOUSES

Irene, PRETORIA, SOUTH AFRICA

Client: *Mavula Flowers*

Project Architect: Dirk de Bruyn

Mavula Flowers is a commercial flower production entity located approximately 10km from Doornkloof. The Greenhouse construction uses very 'low-tech' technology with simple construction methods and materials. The project revealed the fundamental principles of greenhouse construction and operational systems for maximum production.

Figures

figure 33 - 36 _ OPPOSITE PAGE _ Photographs of Macula Greenhouses.


fig 33


fig 34


fig 35


fig 36

"CONCEPTUAL DEVELOPMENT"

LANDSCAPE PROGRAMMES

INTERVENTION B

DOORNKLOOF VIEWING TOWER

"FUNDAMENTAL CONCEPT"
Completion of Route.

The viewing tower is conceptualised as a tectonic structure. The tower stands on the south eastern side of the Smuts Koppie, characterised by rocky outcrops and a few indigenous thorn trees.

The viewing tower serves as a node that connects a existing walking trail with the newly created Rhizome Walking Trail.

The structure rises from the landscape and provides the viewer with a sequence of stairs, which elevates them from the landscape. On each level a different view of the landscape is provided and finally, as the visitor reaches the final platform, a view of the Jan Smuts Memorial is given.

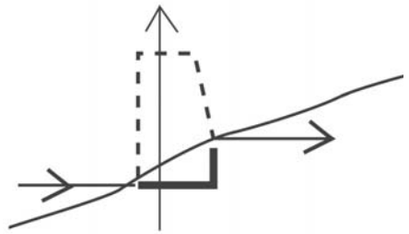


fig 37

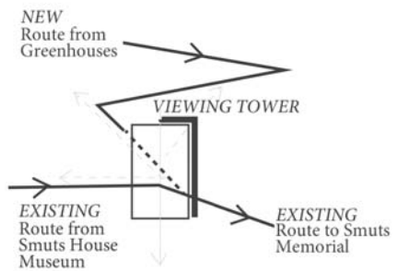


fig 38

Figures

figure 37 & 38_ Diagrams showing the concept of the viewing tower ***figure 39*** *_ OPPOSITE PAGE _ Impression of the Doornkloof Viewing Tower* ***figure 40 - 42*** *_ OPPOSITE PAGE _ Conceptual models for the viewing tower.*

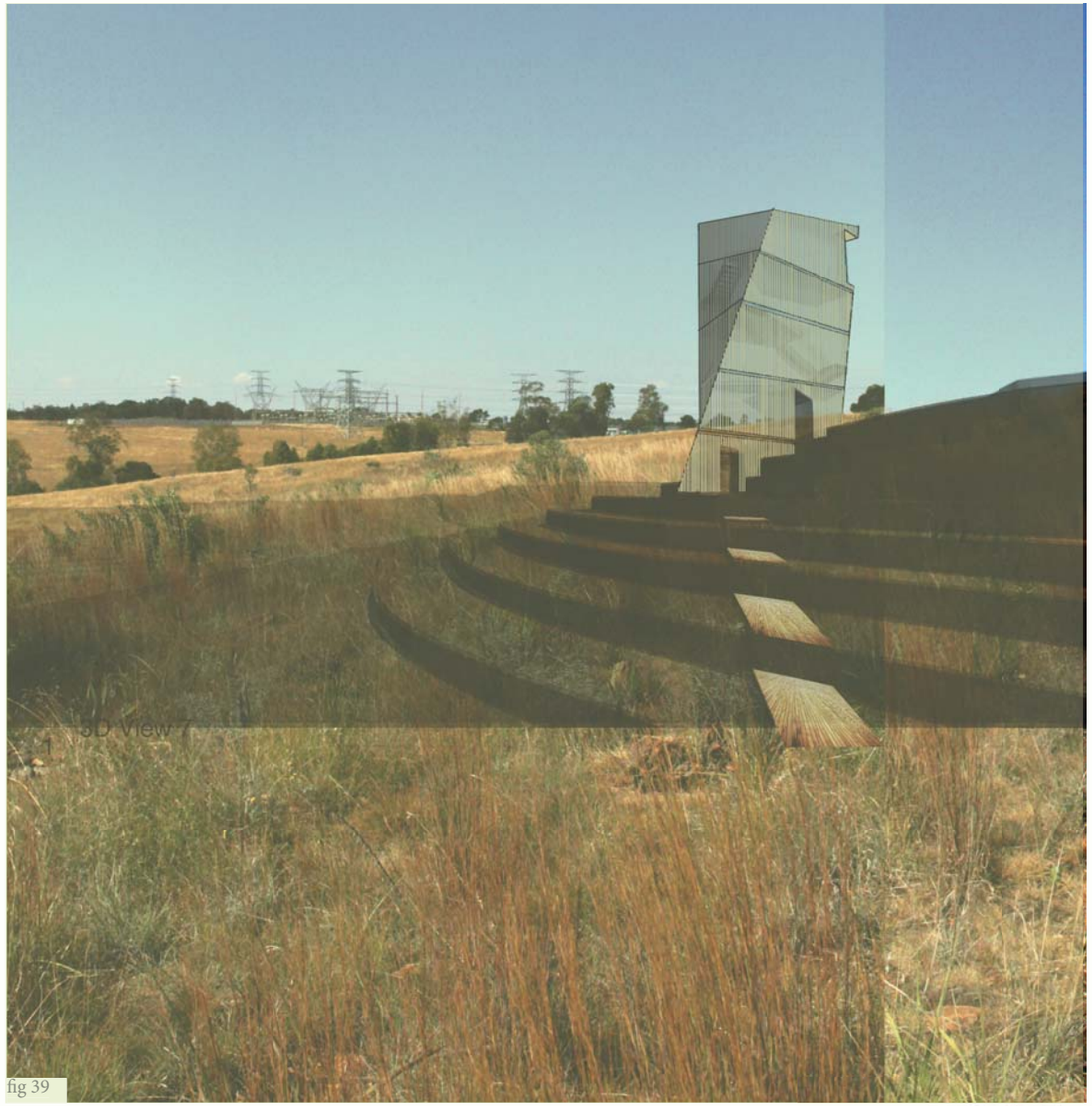


fig 39

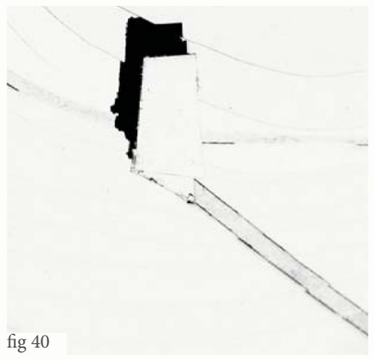


fig 40

fig 41

fig 42

PRECEDENT STUDY FOR THE DOORNKLOOF VIEWING TOWER MOUNTAIN PAVILION PETER SALTER.

Bambajima, Toyama, Japan

CLIENT: Unknown

PROJECT ARCHITECT: Peter Salter

Built as part of a series of small projects in the early 1990's, the Mountain Pavilion is one of a few built projects by British Architect Peter Salter (Archidose, 2004).

Salter embraces the built character of northern Japan, but does not resort to mimicry. The project reflects the traditional forms, construction and materials of the region, while blending seamlessly with the environment.

The building is designed to harmonise with nature while playing between contemporary and tradition, its form being an artistic response, but also resembling a Japanese warrior helmet (Archidose, 2004).

Exterior materials primarily consist of copper with some wood, while the inside wood predominates with bamboo being used for the railing infill. The choice of materials gives the structure a subdued presence in its natural surroundings (Archidose, 2004).

Figures

figure 43 *_ Concept Drawing of Mountain Pavilion* ***figure 44*** *_ OPPOSITE PAGE _ Landscape of Mountain Pavilion* ***figure 45*** *_ OPPOSITE PAGE _ The Mountain Pavilion*

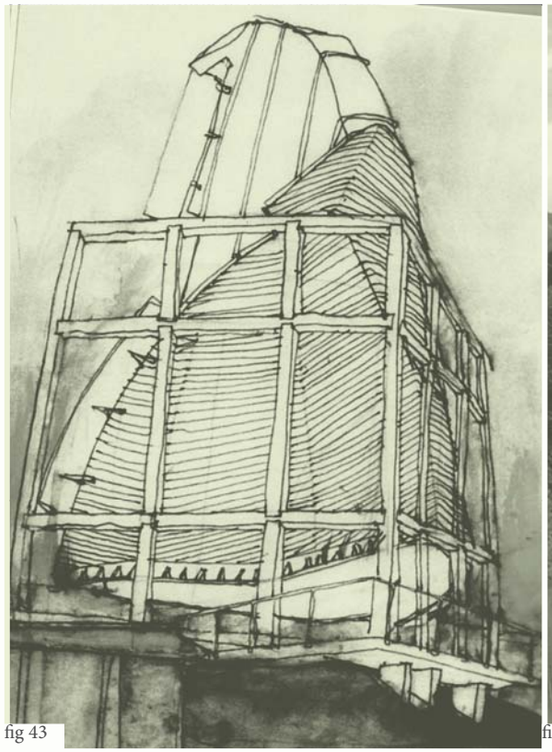


fig 43

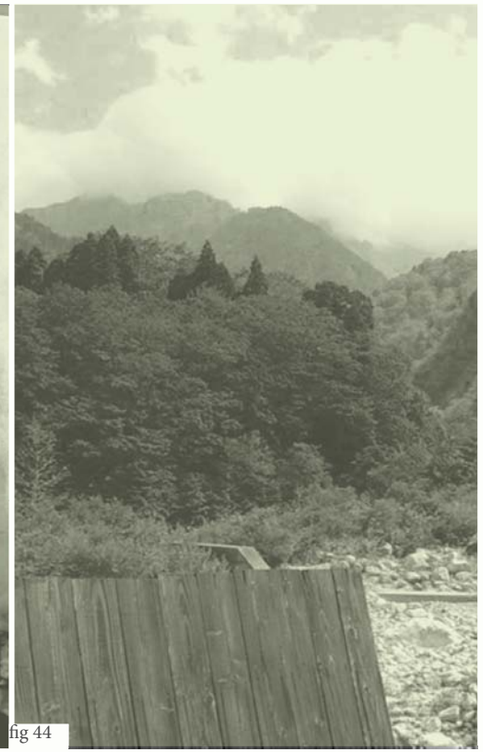


fig 44


fig 45

"CONCEPTUAL DEVELOPMENT"

LANDSCAPE PROGRAMMES

INTERVENTION B
SMUTS MEMORIAL

"FUNDAMENTAL CONCEPT"
Completion of route and rehabilitation of memorial.

Smuts Koppie stands on the southern side of the Doornkloof farm. A red granite obelisk stands sentinel to the koppie.

The obelisk stands as a final destination of the two existing walking routes. The two routes, arbetrarely ends, a few meters from the obelisk, and the user is forced to find his own way to the memorial.

Within the framework of the masterplan it is presented that the two routes should be joined together, and completed, to commemorate and celebrate the memorial within the newly created context of Doornkloof.

The newly created memorial will serve as a homage to General Smuts as a scientist, while providing the visitors with viewing and seating platforms. The seating platforms will give the user a unique view of Irene and its surrounding areas.

The intimacy of the memorial is not blatantly ignored. Smaller reflection spaces grants the user with a indirect and intimate viewing of the obelisk and the bronze plaques that commemorate the members of the family.

Figures

figure 46 _ OPPOSITE PAGE _ Parti Diagram of Smuts Memorial figure 47 _ OPPOSITE PAGE _ Conceptual development of Smuts Memorial figure 48 _ OPPOSITE PAGE _ Plan of Smuts Memorial figure 49_ OPPOSITE PAGE _ Parti Diagram explaining movement and the body's relationship with memorial.

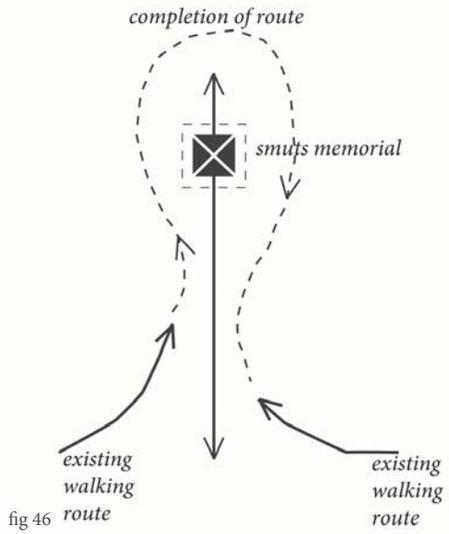


fig 46

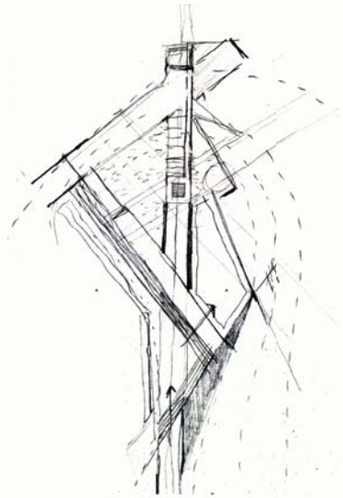


fig 47

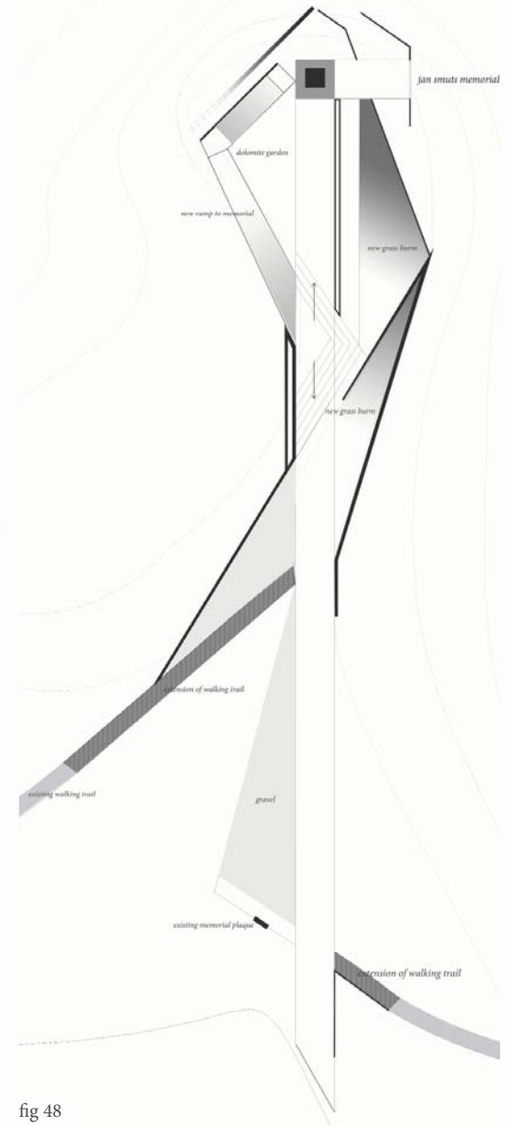


fig 48

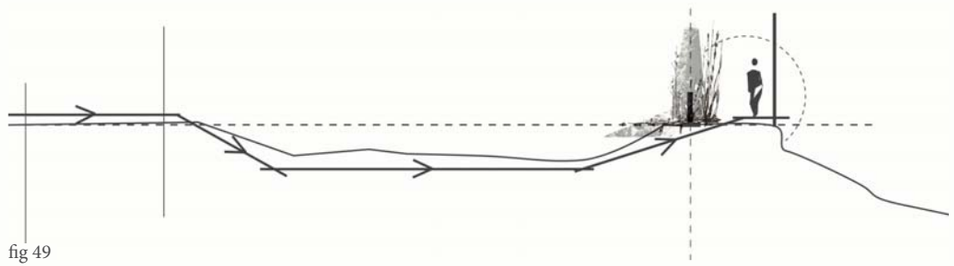


fig 49

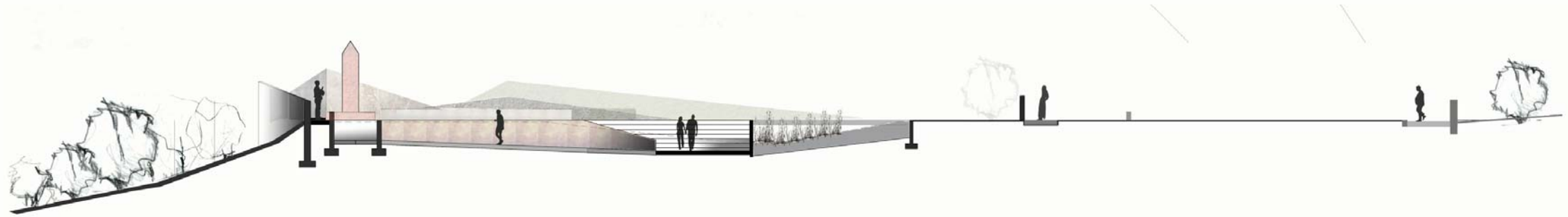


fig 50

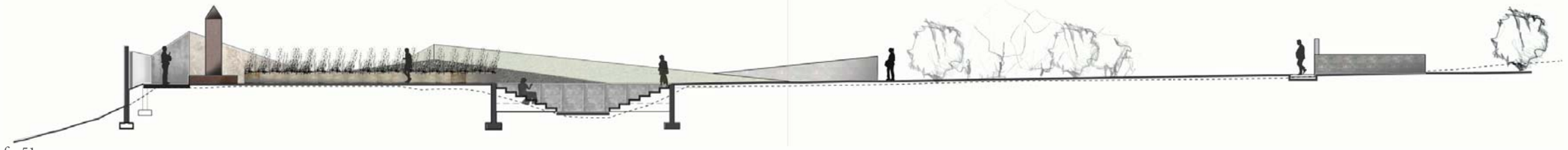


fig 51

fig 52

Figures

figure 50 & 51 *_ Conceptual Sections showing the Smuts Memorial* ***figure 52*** *_ Visualisation of Smuts Memorial.*

INTERVENTION THREE

THE SEEDBANK AND HERBARIUM

"FUNDAMENTAL CONCEPT"
Plant product based exhibition.

"FUNDAMENTAL PROCESS"
Preparation, Safekeeping and Exhibition.

"ECONOMIC PROCESS"
Exhibition of Ecological Products.

"ECOLOGICAL PRODUCT"
Plant Seeds and Plant Specimens.

The Seedbank and Herbarium complex is located and anchored within the Grasslands Arboretum. To ensure successful growth of grass species the arboretum needs a constant supply of water. Due to the proximity of the Henops River, water from the river is pumped to a dam located at the highest point of the arboretum.

The seedbank and herbarium complex interacts, interjects and maximises the full potential of the newly created water body.

The complex is divided into three fundamental programmes.

a. The Grassland Seedbank
b. The Seedbank and Herbarium Workshop
c. The Doornkloof Herbarium.

The Seedbank functions as a space where the seeds harvested from the arboretum are kept, saved and protected. The structures for seed safe keeping also function as exhibition spaces where visitors to the complex can view the process of preparing the seeds for safekeeping, and viewing the specimens within a protected environment. The Seedbank also functions as sales point where visitors and other entities can purchase the seeds of the 85 grass species cultivated at Doornkloof.

The second part of the complex is the Workshop where all other plant specimens are prepared for the herbarium exhibition.

The final part of the route is the Herbarium where a series of plant related exhibitions take place.

Figures

figure 53 & 54 _ OPPOSITE PAGE _ Diagrams showing intentions of Seedbank and Herbarium ***figure 55*** *_ OPPOSITE PAGE _Diagram of development of original design idea for Seedbank and Herbarium.* ***figure 56 - 58_*** *OPPOSITE PAGE _ Development of original design idea for Seedbank and Herbarium*

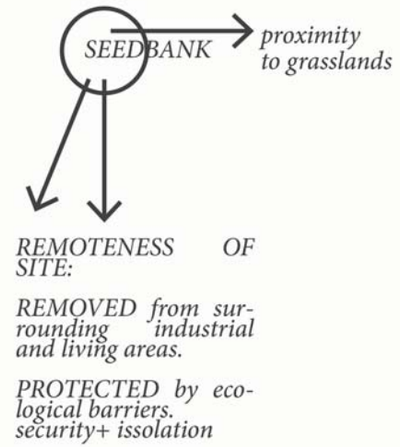


fig 53

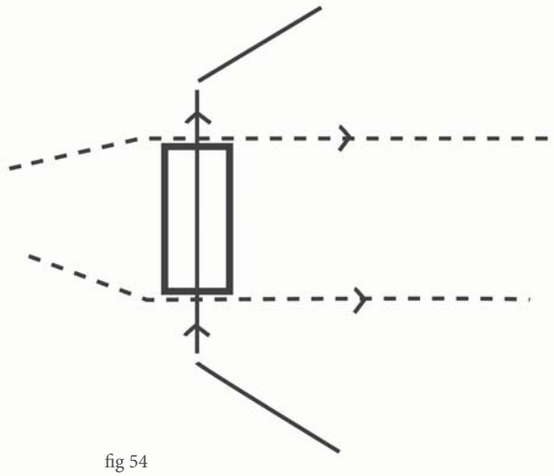


fig 54

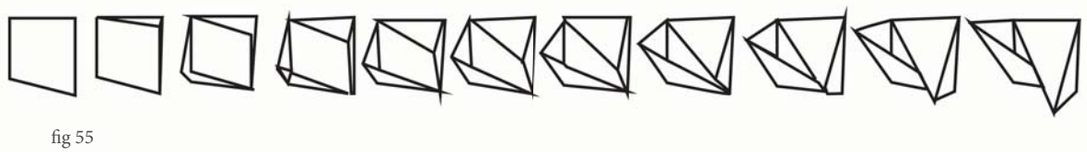
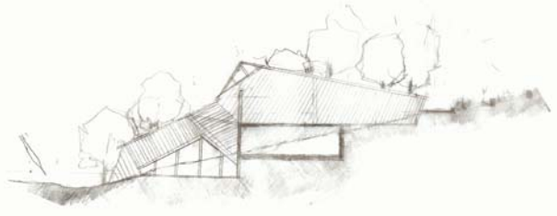


fig 55



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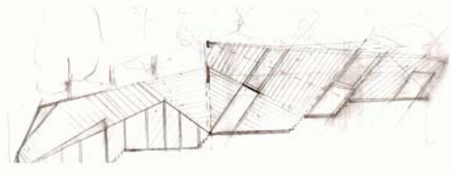

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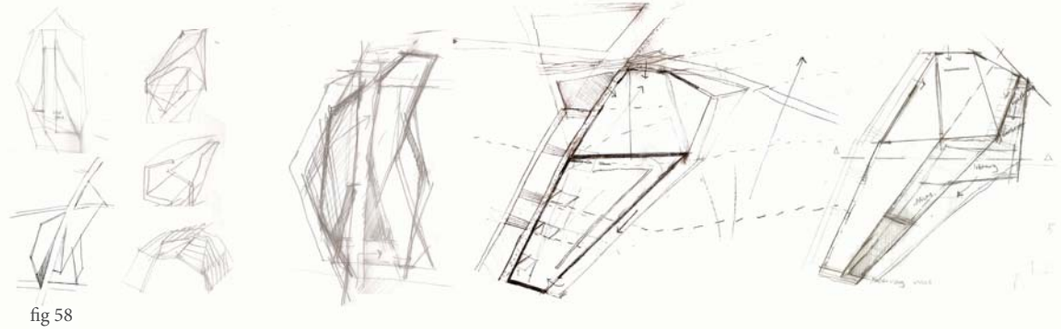

fig 58

PRECEDENT STUDY FOR SEEDBANK SVALBARD GLOBAL SEED VAULT. W SODERMAN

Spitsbergen Mountain Range, Norway

Client: *Svalbard Seed Vault*

Project Architect: W Soderman of MNAL

"Ensuring that the genetic diversity of the world's food crops is preserved for future generations", the seed vault in the permafrost of the Norwegian Island of Spitsbergen Mountain Range takes the current continued destruction of biological diversity as the impetus for its existence (Fowler 2008).

The vault is marked by a concrete prow jutting from the mountain. The narrow opening leads to a tunnel that continues deep into the permafrost and to the three underground chambers for storage of the actual seeds. The facility is rather small, 1000 square meters but uses the mass of the earth and the cold climate to protect the seeds (Hill 2009). The centre is equipped with digital x-ray machines engineered to withstand temperature fluctuations, rising sea levels and even terrorist attacks (Chan 2011).

Crucial Elements that can inform the proposed design.:

- Properly frozen or dried seeds can be conserved for many years, but only if the facility itself is well managed and safe. Funding crises, equipment failure, mismanagement, mistakes and accidents are a fact of life, and natural disasters, war and civil strife can all affect seed banks. Any of these factors can cause a seed bank to lose samples, resulting in the actual extinction of crop varieties and diversity (Fowler 2008: 36).

- Svalbard is surrounded by a permanent layer of permafrost which offers natural freezing for the seeds, allowing the ideal temperature of -18 degrees Celsius to be easily maintained.

- The Seed Vault is built into the mountain, which improves security and provided insulation (Fowler 2008).

- A 125 meter long tunnel cuts into the mountain, with three vault rooms, 27 meters long, 9.5 meters wide and 5 meters high. Entrance is through a set of air-locked doors, which serve primarily to keep the cold air from escaping during the brief periods when people enter to deliver or retrieve seeds (Chan 2011).

- The seed banks stores a total of 3 million seed samples (Fowler 2008).

Figures

figure 57 *_ OPPOSITE PAGE _ Svalbard Global Seed Vault Plan* ***figure 58 & 59*** *_ OPPOSITE PAGE _ Svalbard Global Seed Vault Seed Storage Systems* ***figure 60*** *_ OPPOSITE PAGE _ Artist Impression of Svalbard Global Seed Vault*

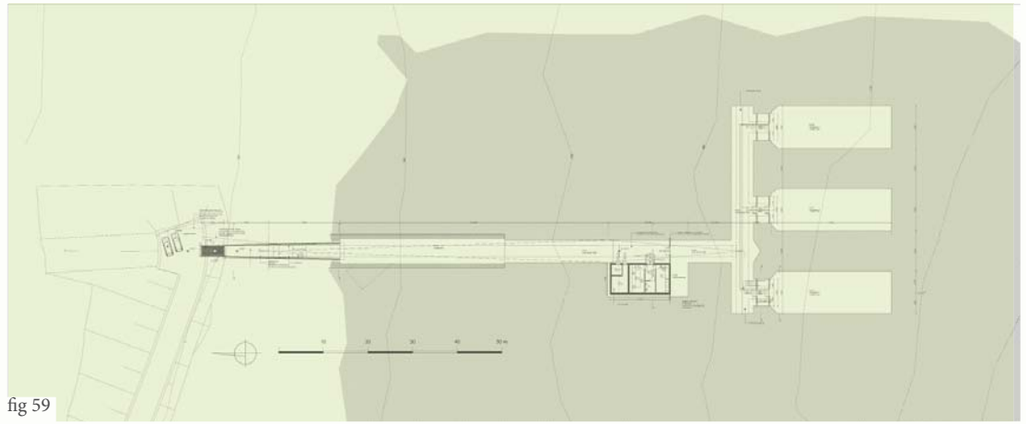
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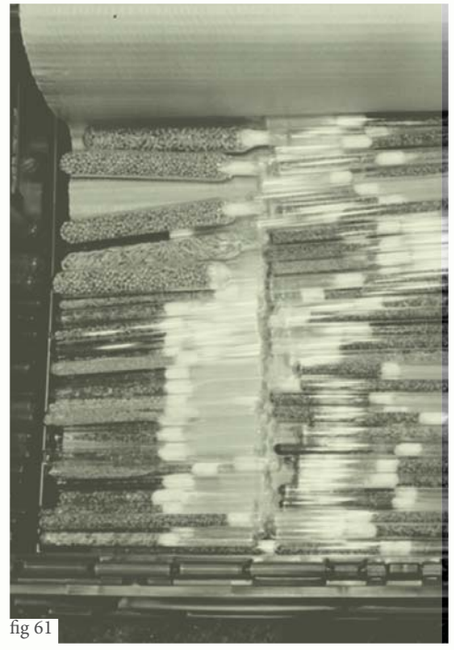
fig 60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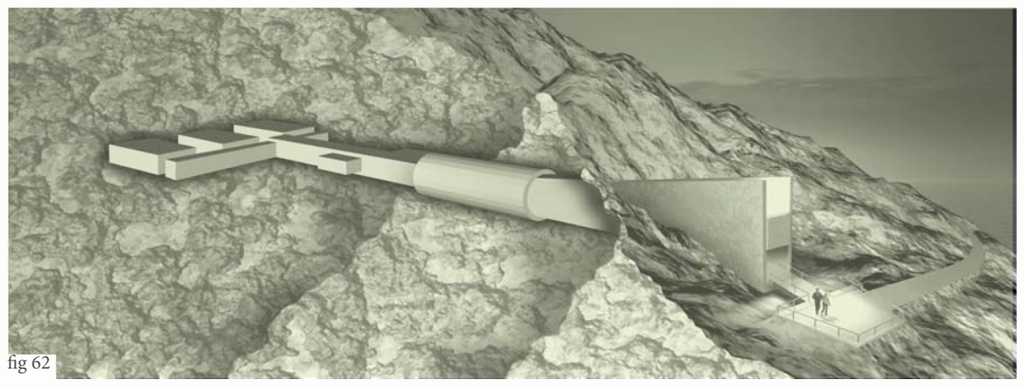


fig 62

PRECEDENT STUDY
PRETORIA BOTANICAL GARDENS HERBARIUM

Pretoria, South Africa

Client: South African National Botanical Institute

The Pretoria Botancial Gardens Herbarium, also known as the National Herbarium served as a precedent of process. A tour of the herbarium revealed the delicate process of documenting, storing and protecting the botanical library.

The preparation process involves the following stages:

1. Receival of botanical specimen.

2. Identification and labelling of specimen.

3. Press and drying of specimen.

4. Freezing (at -4 degrees Celsius), to remove any contaminants.

5. Mounting and labelling of specimen.

6. Specimen is then entered into the herbarium data base.

7. Finally, the mounted specimen is transported to the storage room, where it is categorised according to genus and species.

The National Herbarium is a rather isolated building and is only open to the public by appointment. The interesting and delicate process is hidden away in the basement of the already isolated building. The specimens are eventually stored in a room with a series of steel cabinets that contains the different species, as per genus. There is no exhibition, no display of the final product, it is treated as a sacred item, only to be removed when it is needed.

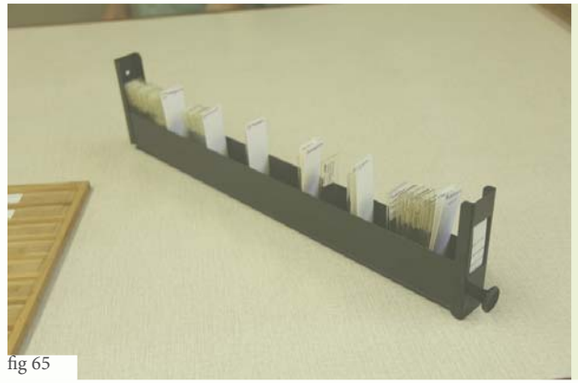
The proposed Herbarium of Doornkloof will function in quite the opposite fashion, celebrating, exhibiting and involving the public with the process, is part of the educational process. The Doorkloof Herbarium will create a public awareness which is needed to ensure the future protection of the art and science of biology.

Figures

figure 61 _ OPPOSITE PAGE _ Driers at the National Herbarium *figure 62 _ OPPOSITE PAGE _ Plant Presses at the National Herbarium* *figure 63 _ OPPOSITE PAGE _Plant Speciments* *figure 64 & 65 _ Herbarium Data*


fig 63


fig 64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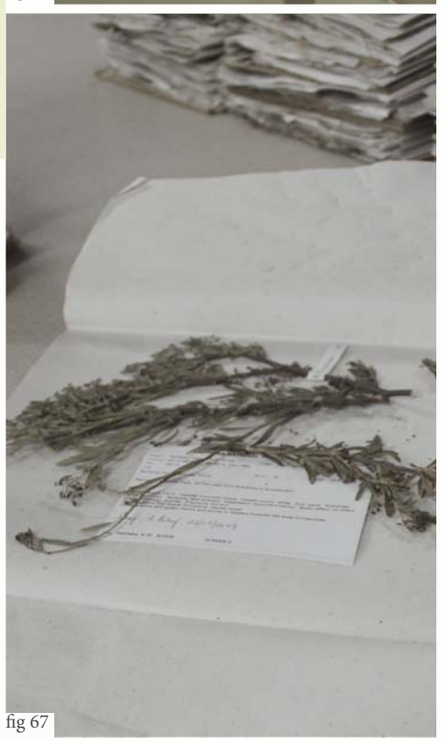
fig 67


fig 66

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6

ANIMATED FIELDS

"TIMBUKTU. THE LAST PURE PLACE. ISOLATION BEING THE MOTHER OF PURITY. ALL MEN ARE JEALOUS OF TIMBUKTU BECAUSE TIMBUKTU IS REMOVED FROM MEN, IT'S THE WHOLENESS MEN HAVE FRACTURED, THE SACRED EXTREME THEY'VE TRADED AWAY."

Tom Robbins, Half Asleep in Frog Pajamas

§

"NATURE'S GOT A HANKERING AFTER EXPERIMENTS"

Trader Horn

§

6

INDEX

“ANIMATED FIELDS”

§

6

LIST of IMAGES

"ANIMATED FIELDS"

§

An INTRODUCTION *to*

"ANIMATED FIELDS"

and the CONCEPTUAL DEVELOPMENT

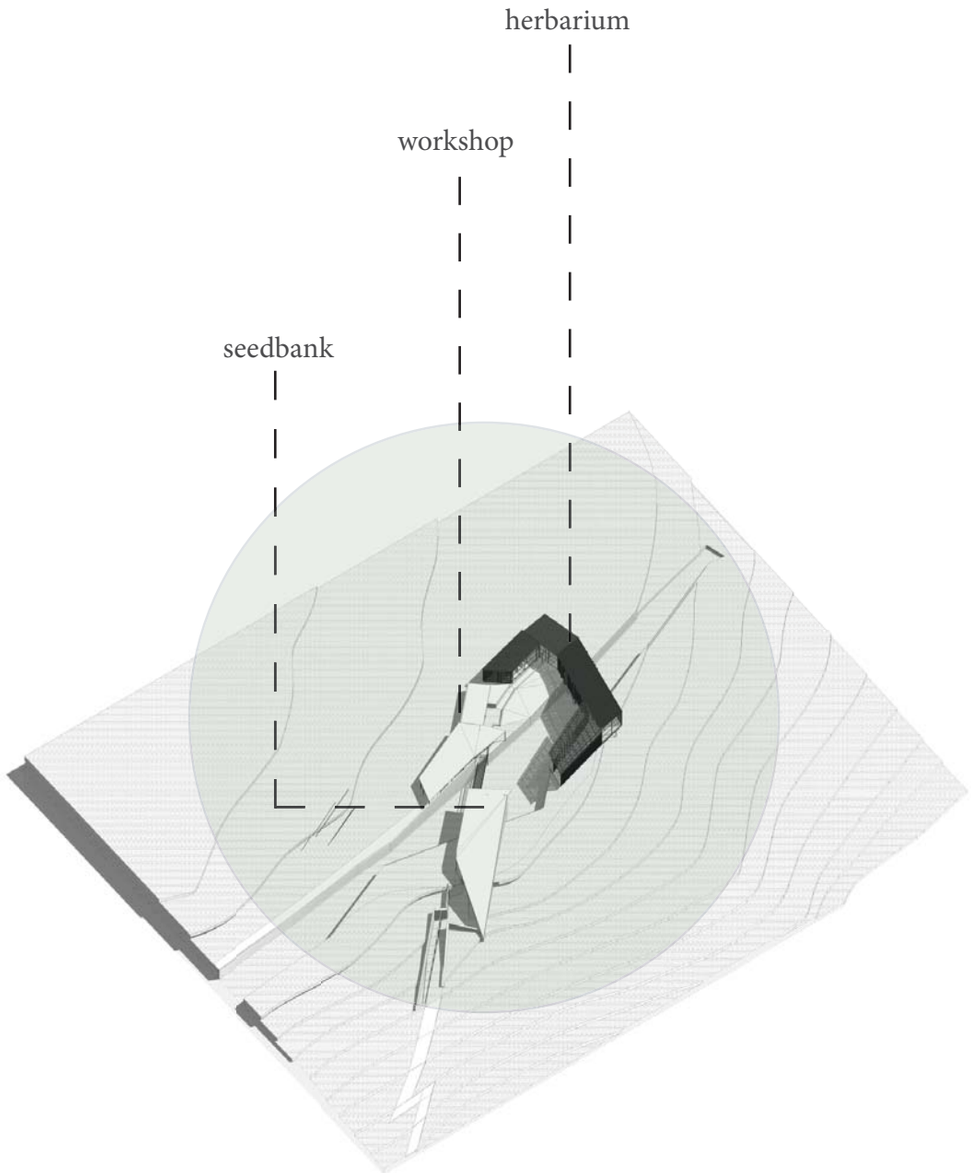
Steven Holl describes an architectural design as a process which fuses: *"idea, concept, architectural thought, fusing of an idea with phenomena and the pre-theoretical ground"* (Holl 1993:21). Even though it is a process, he states that every design is a mysterious and unpredictable journey. Alberto Perez-Gomez (2003) defines it as a search for the *"poetry of specifics"*. In this search aiming to capture the specific, the architect interprets limitless possibilities.

The design process is thus based on a process, starting from information and disorder, confusion of purpose, programme, ambiguity, infinity of materials and forms, which is ordered through a system of theoretical thought. (Holl 1993 : 21)

The first theoretical principle is that of Holism that introduces a ordering principle described by the ability of elements, to create wholes through structure and pattern. The second being that of phenomena and which has *"the possibility of an architecture that is capable of revealing the nature of experience, at the same time constituting its meaning through experience"* (Perez-Gomez 2003 : 546)

The philosopher and father of phenomenology, Merleau-Ponty describes an idea as something that cannot be sensed, it is the means through which sensibility is achieved, "the interior armature of which the visible manifests". Idea is the invisible force that generates the realm of phenomena; the means being by which phenomena makes sense (Merleau-Ponty 1962 :149).

To the architect the idea is a non-determinate image around which the architect elaborates his design, the idea constitutes the base of the architectural design leading to develop into an architectural work.



Figures

figure 1 _ OPPOSITE PAGE _ Proposed design intervention - intervention four - seedbank and herbarium.

An INTRODUCTION *to the* SEEDBANK & HERBARIUM

"ANIMATED FIELDS"

and the CONCEPTUAL DEVELOPMENT

§

The concept for the Seedbank and Herbarium Complex was derived from the following informants:

a. The approach to Holism.

b. The arboretum landscape as topographical and aesthetic informant.

c. The stereotomic and techtonic approach as seen in Smuts House.

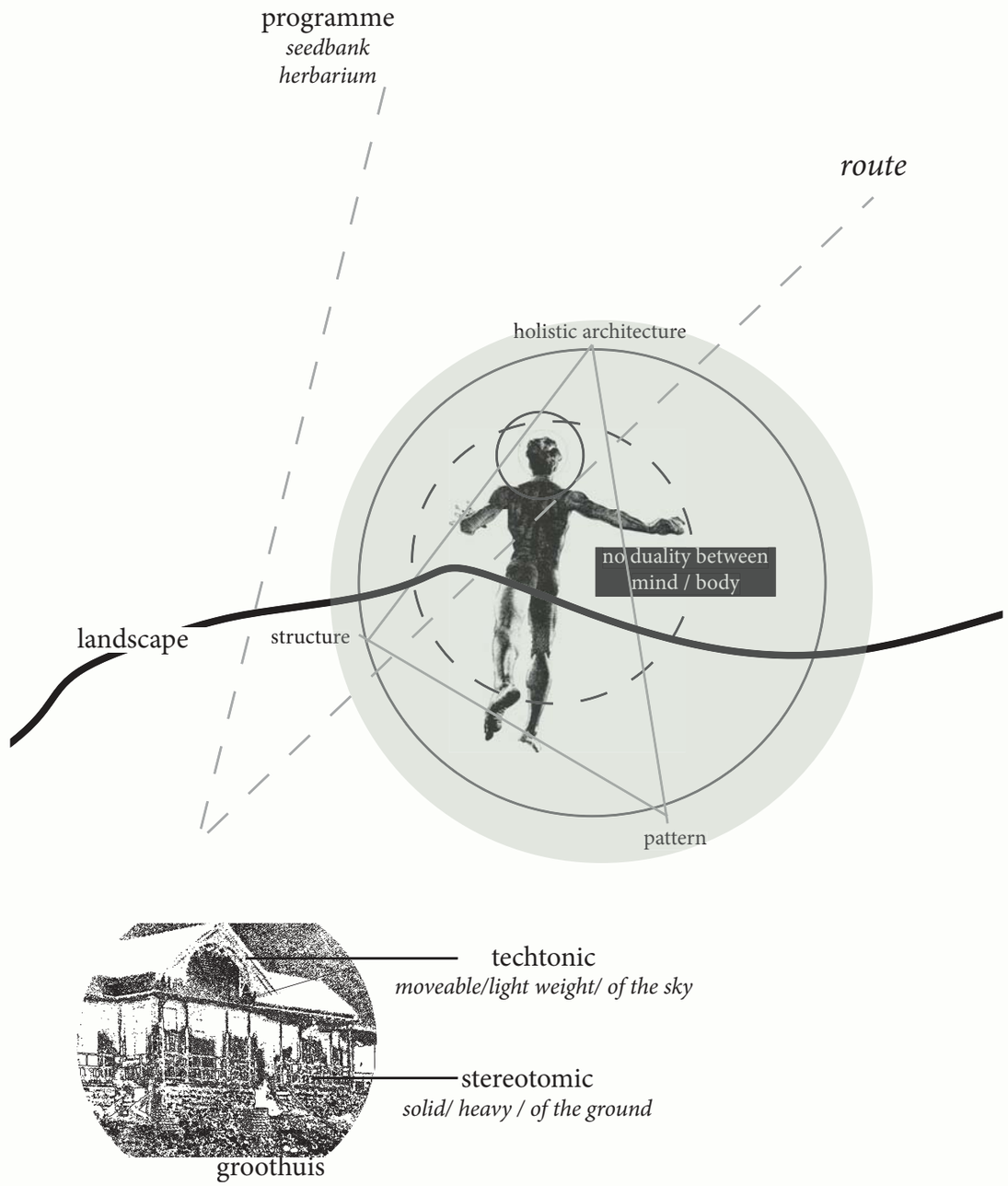
d. The conceptual idea from the grasses found on Doornkloof.

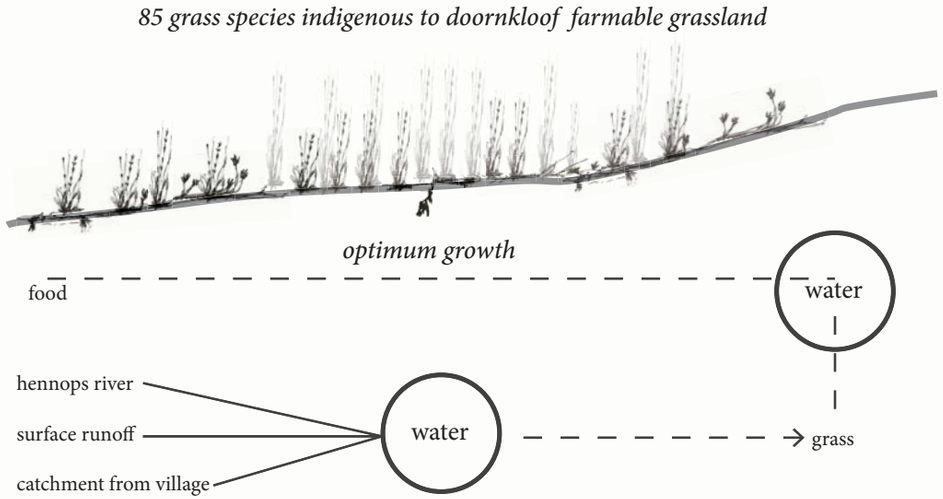
e. The programme as structural and aesthetic informant.

f. The continuation of the rhizome route throughout the building complex.

Figures

***figure 2** _ OPPOSITE PAGE _ Informants for Seedbank and Herbarium*





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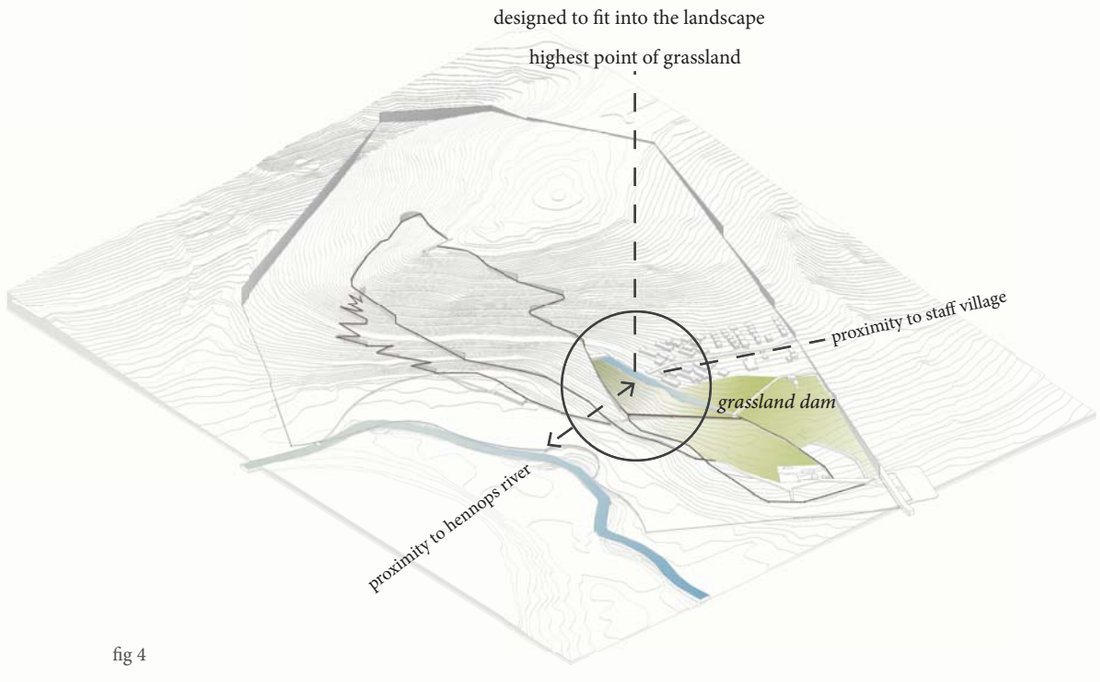

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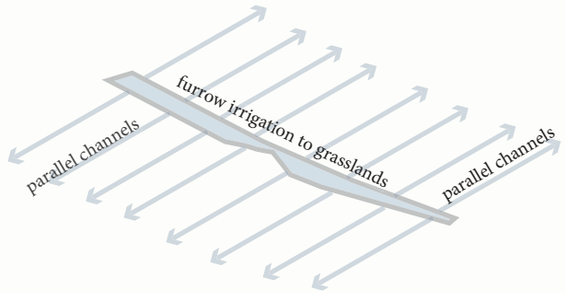

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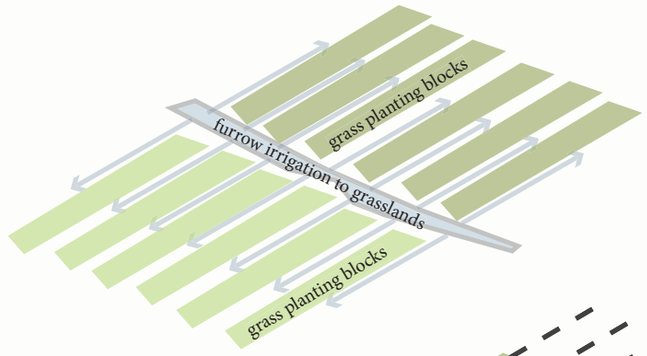

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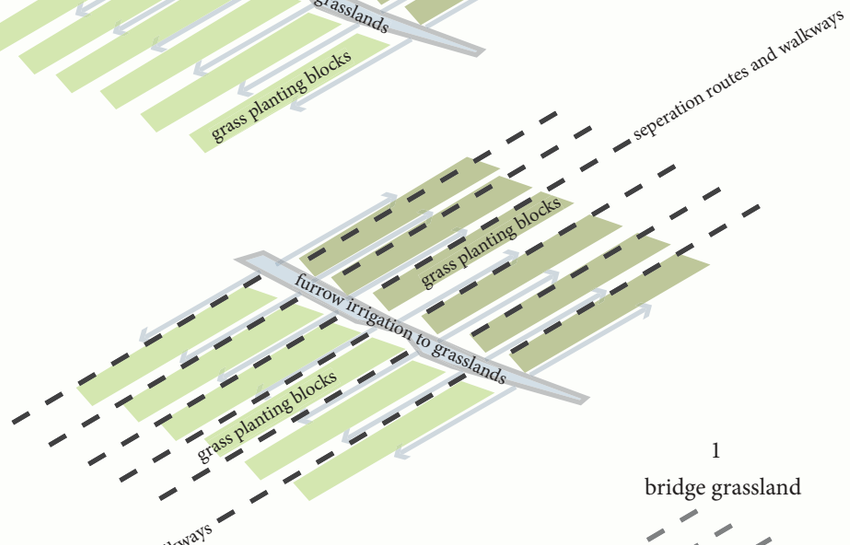

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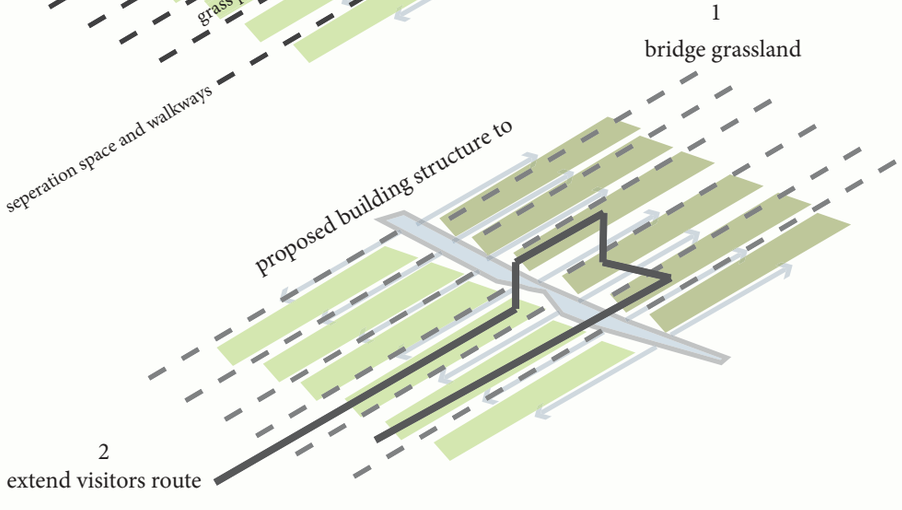


fig 8

Figures

figure 3 *_ Diagram showing the need for a water body within the landscape.* ***figure 4*** *_Context of Seedbank, Herbarium and Grassland dam with surrounding site.* ***figure 5 - 8***_ *OPPOSITE PAGE _ Water body within the landscape informing investigation and architecture.*

SEEDBANK & HERBARIUM

"ANIMATED FIELDS"

and the DESIGN DEVELOPMENT

The design development was a process of integrating three fundamental programmes into one building complex.

These three programmes are intimately tied together through the extension of the Rhizome Route, which directs and guides the visitors through the various buildings.

The route is extended from the grasslands, and firstly enters the Seedbank, where the 85 grass species are processed and placed on display. Within the Seedbank building the visitor can access a bridge which crosses the Grasslands dam. The bridge leads to the Workshop building where the process of plant preparation is placed on display. Lastly the visitor enters the Herbarium structure, which displays the botanical drawings and specimens found on the farm. The Herbarium functions as exhibition space as well as a secondary bridge structures which leads the visitor to cross the dam for a second time, where they can exit into the grasslands and rejoin the original walking trail.

DESIGN PROCESS

The design developed through the use of various design models, drawings and computer modelling.

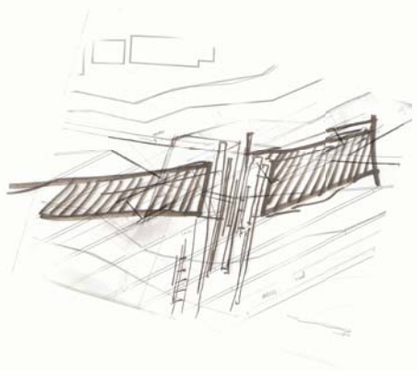
The process involved the constant interpretation of the route, the water body, the concept of grasses and the programmatic requirements of the various buildings. The interpretation and interaction with the landscape was one of the most prominent design informants.

Figures

figure 9 - 13 *_ Concept diagrams for Seedbank and Herbarium complex* ***figure 14 & 15*** *_ OPPOSITE PAGE _1:500 Design Model* ***figure 16 & 17*** *_ OPPOSITE PAGE _1:200 Design Model.*

fig 9

fig 10



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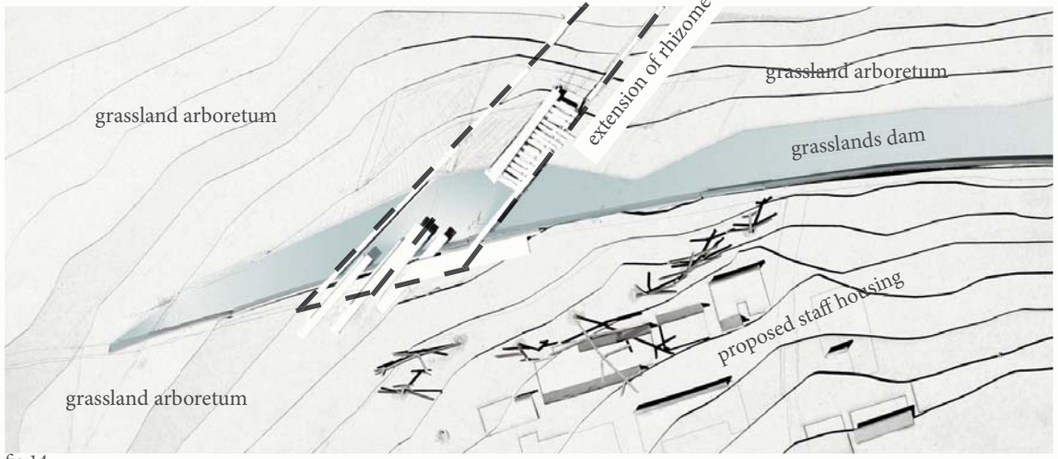
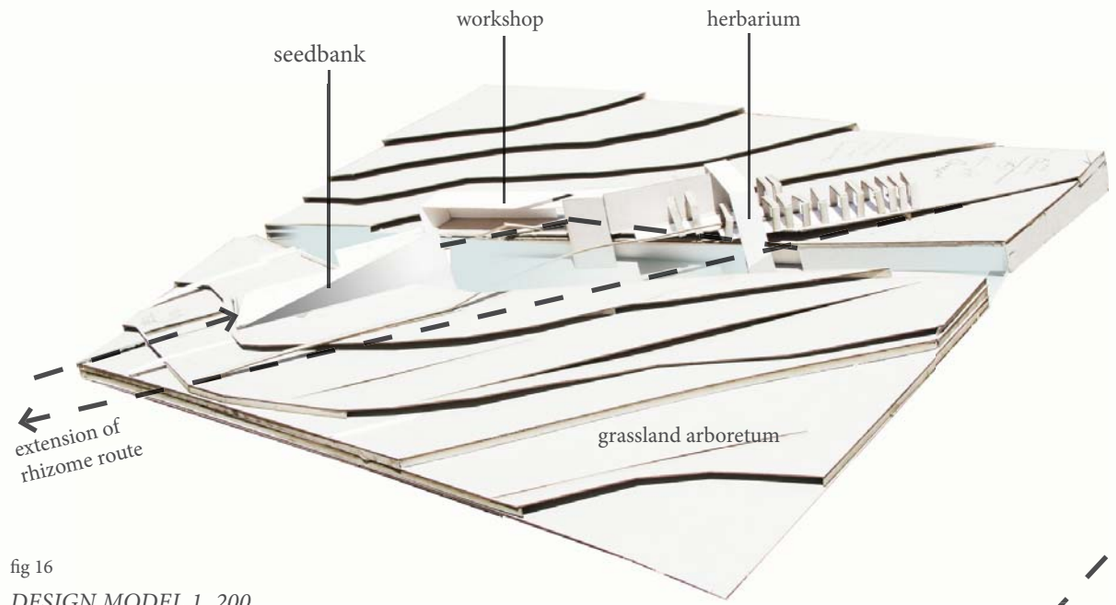


fig 14
DESIGN MODEL 1_500

fig 15
DESIGN MODEL 1_500



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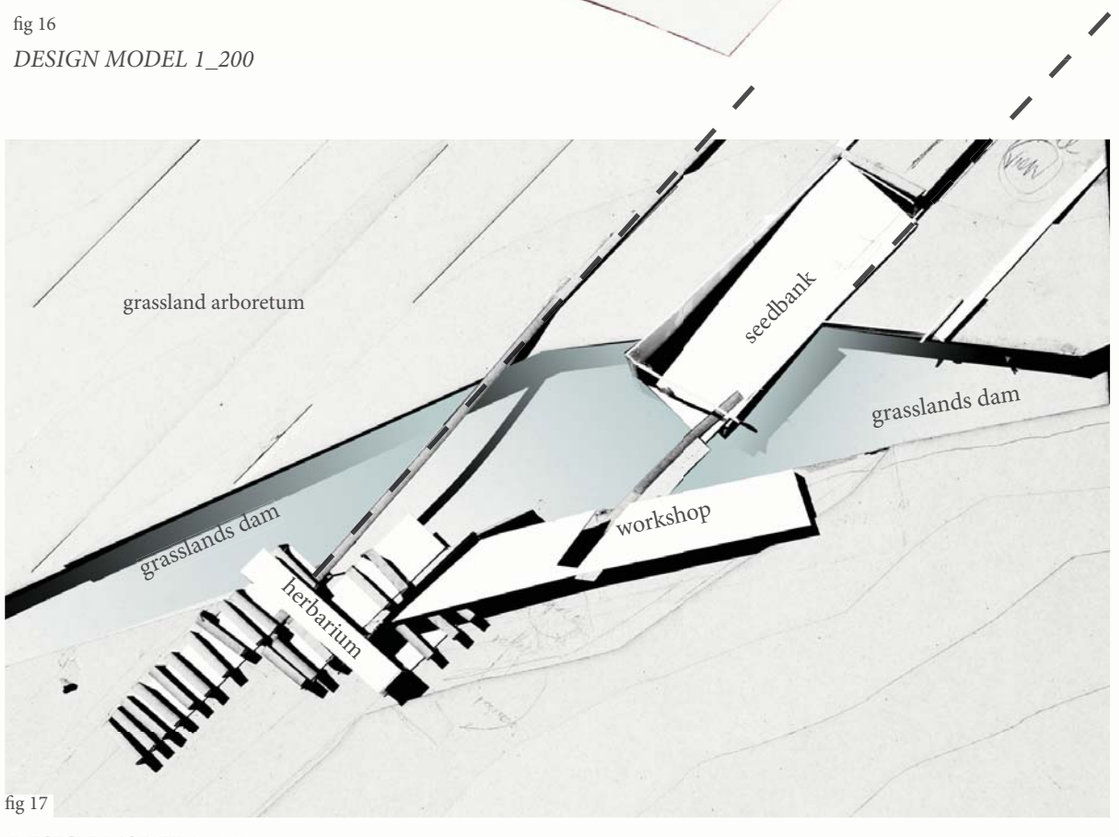
DESIGN MODEL 1_200



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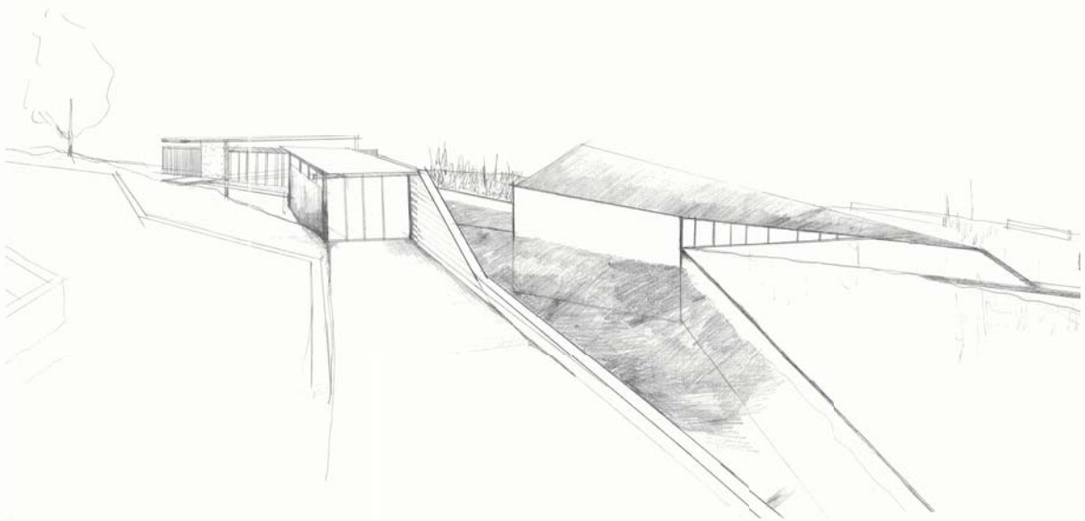
DESIGN MODEL 1_200



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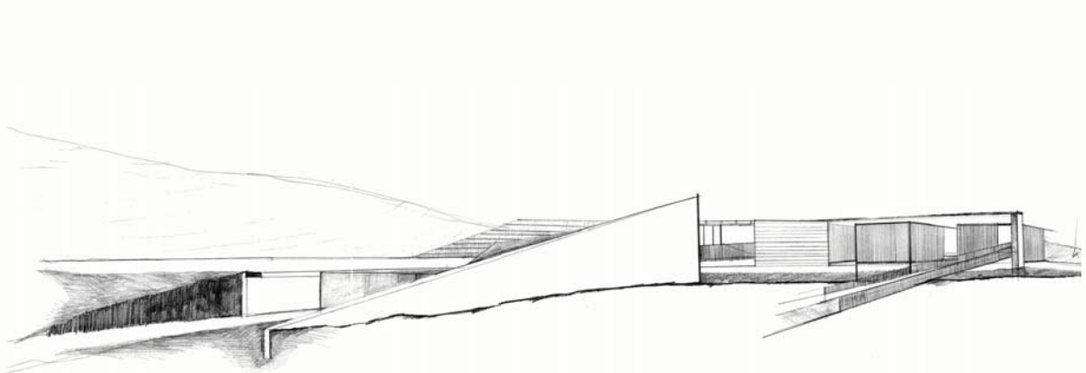
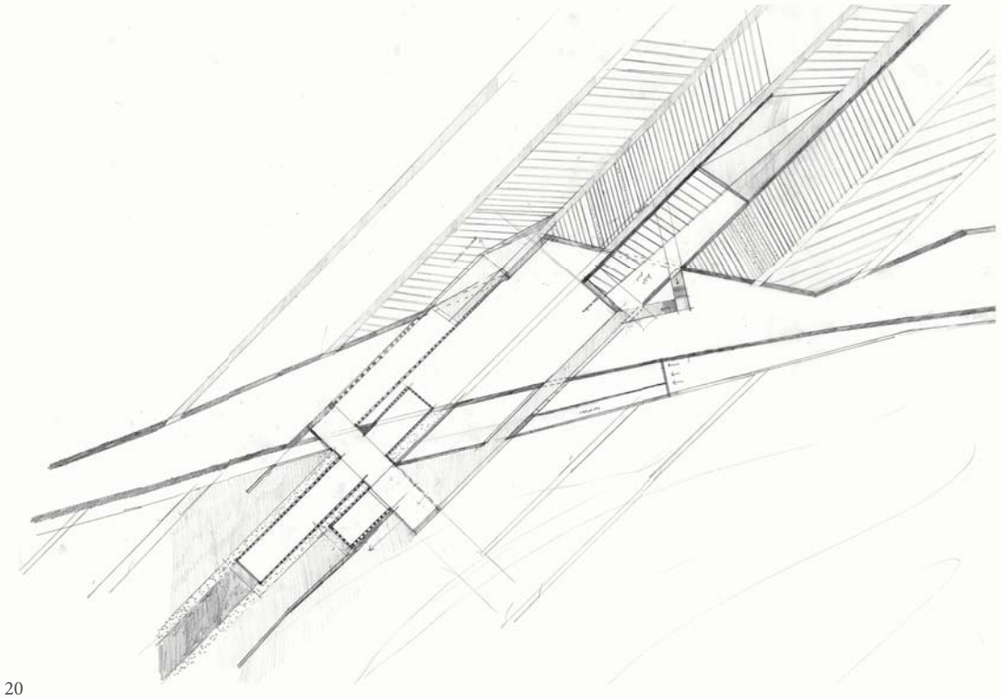


fig 19

Figures

figure 18 & 19 *_ Development Drawings of Seedbank and Herbarium Complex* ***figure 20 & 21*** *_ OPPOSITE PAGE*
Plan development of Seedbank and Herbarium



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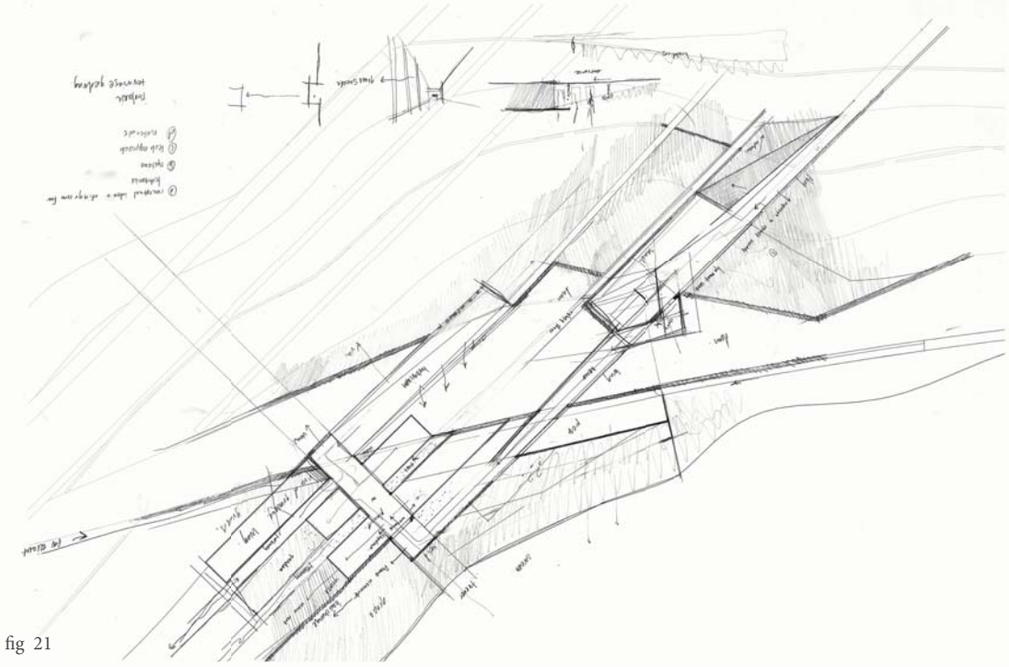

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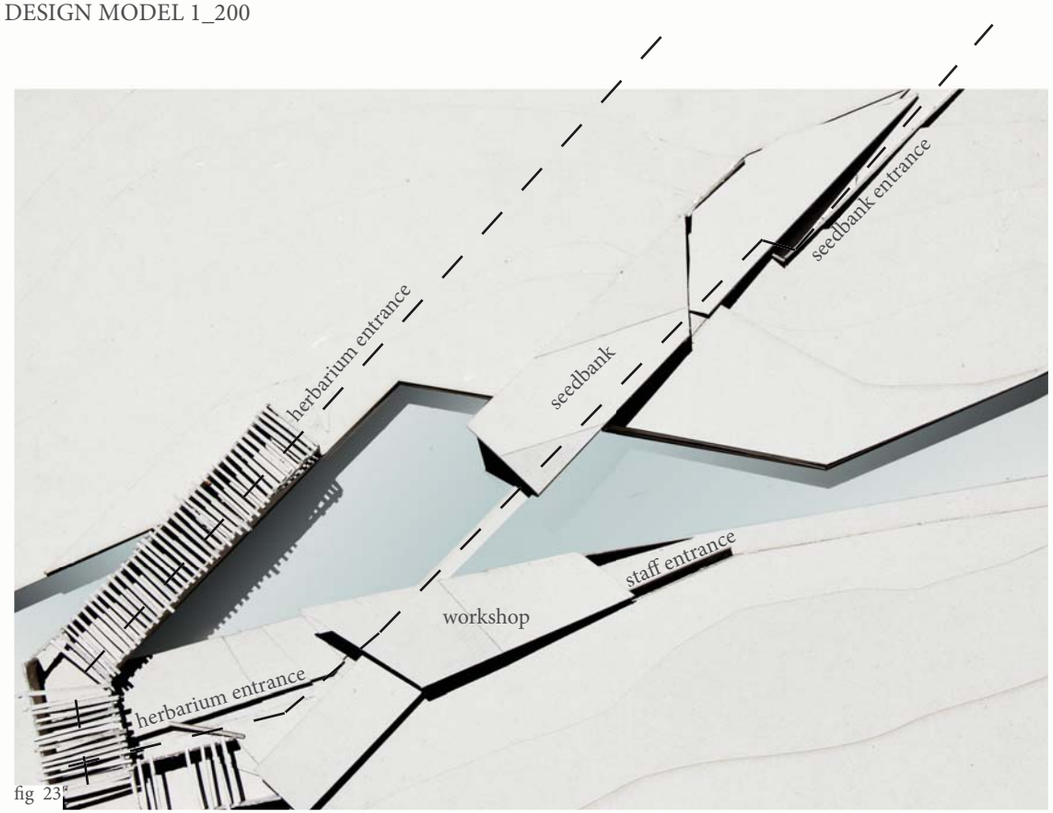
DESIGN MODEL 1_200



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DESIGN MODEL 1_200

fig 24
DESIGN MODEL 1_200

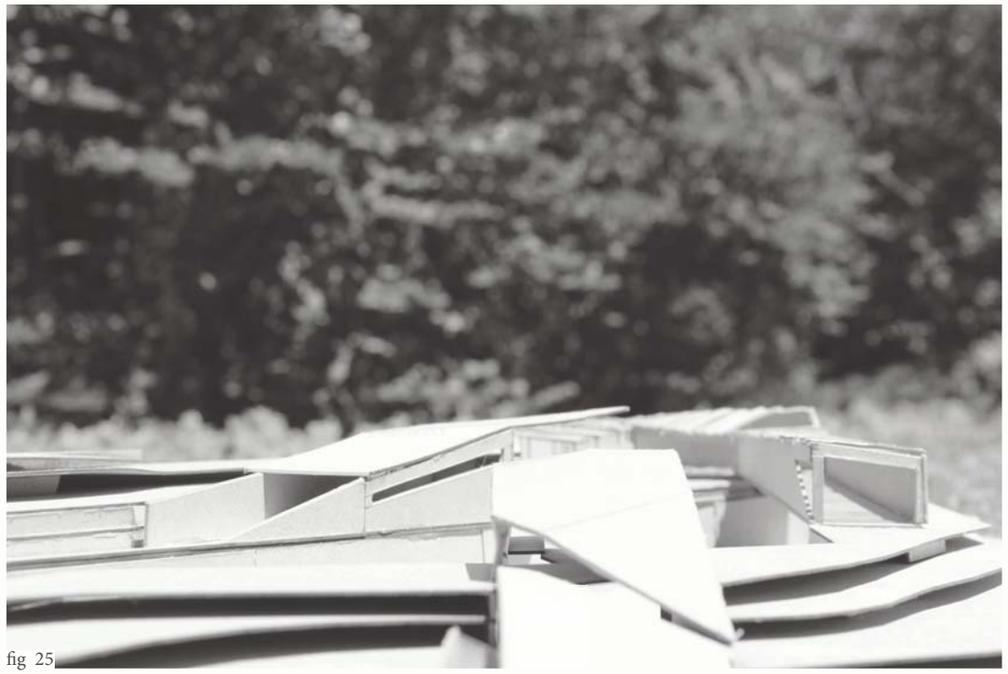


fig 25
DESIGN MODEL 1_200

Figures

figure 22 & 23 *_ Seedbank and Herbarium 1_200 design model* ***figure 24 & 25_*** *OPPOSITE PAGE 1_200 Design Model of Seedbank and Herbarium, illustrating form and connection with landscape*

SITE PLAN

1 - Rhizome Route
2 - Seedbank
3 - Connection Bridge
4 - Grasslands Dam
5 - Workshop
6 - Terraced Grass Area
7 - Herbarium
8 - Herbarium Exit
9 - Grassland Arboretum
10 - Service Road
11 - Paring Area
12 - Entrance to Workshop
13 - Public Bathrooms
14 - Staff Housing

figure 26 _ Site Plan for Seedbank and Herbarium

SEEDBANK FIRST FLOOR PLAN

1 - Seedbank Ground Floor Entrance
2 - Seedbank first floor Entrance
3 - Seed Storage Silos
4 - Drying Room
5 - Seed Preparation
6 - Stairs from Ground Floor
7 - Connection Bridge
8 - Plant specimen preparation room
9 - Plant drying room
10 - Workshop Entrance and Reception
11 - Workshop Bath rooms and staff storage room
12 - Workshop service yard
13 - Staff facilities
14 - Public Bathrooms
15 - Connection Route
16 - Herbarium storage
17 - Screening room
18 - General exhibition
19 - Herbarium exhibtion
20 - Herbarium Exit
21 - Grassland dam
22 - Staff parking
23 - Service road.

figure 27 _ Ground Floor Plan for Seedbank and Herbarium

fig 28 LONG SECTION THROUGH HERBARIUM

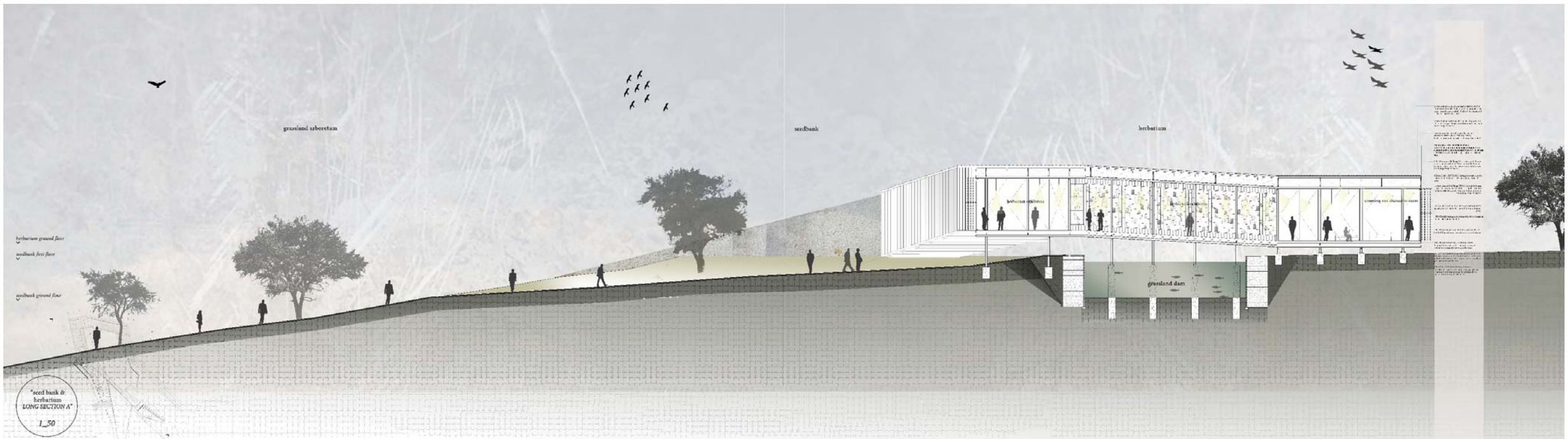
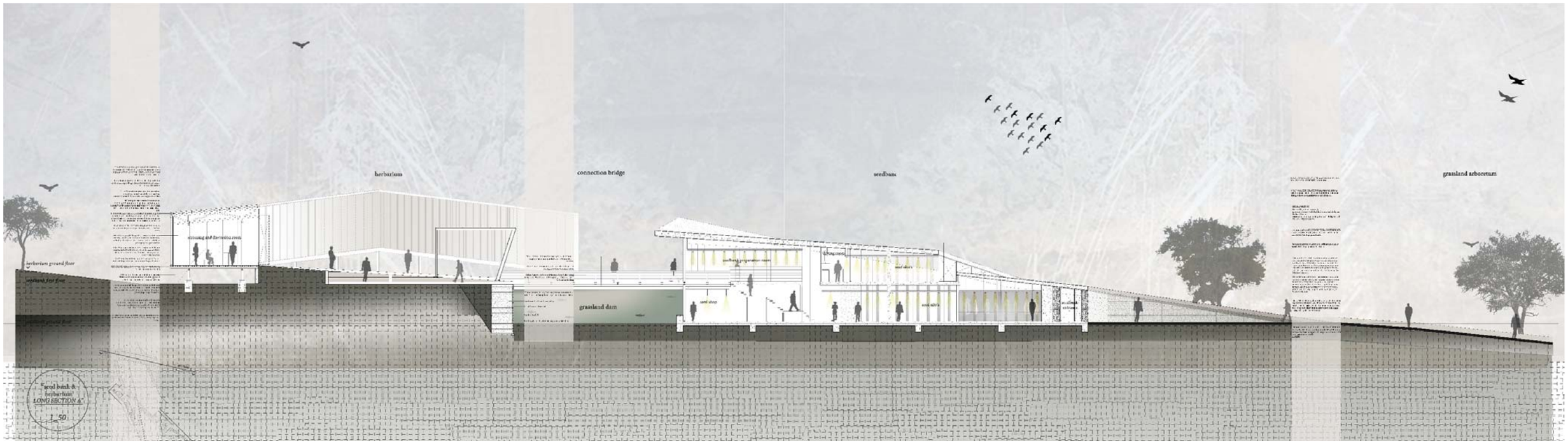


fig 29 LONG SECTION THROUGH SEEDBANK



SEEDBANK

THE PROGRAMME

The Seedbank houses the seeds of the 85 species of grass found within the arboretum.

The storage of seeds has to fundamental requirements:
1. Seeds need to be stored at -18 degrees Celsius.
2. Seeds need to be kept in a stable scientific requirement to ensure safekeeping.

The satisfy these requirements the seedbank is conceptualized as protective pod that is enclosed by the surrounding landscape. A section of the building is anchored within the grasslands dam which further provides the building with cooling thermal layer.

The storage of the seeds take place within "seed silos", which is custom made cryogenic freezers. The seed silos do not only serve as storage systems but are designed to exhibit the seeds to the public.

The interior spaces are designed in such a fashion that it serves as an extension of the rhizome route. Offering the visitor with an intimate glimpse of the process of seed storage, while educating them on the different grass species and seeds.

The route of the visitor and the staff members are intertwined, offering both parties the opportunity for interaction.

Lastly the visitor can buy the seeds from Seedbank to take home and replant to increase the spread of grasses. The selling of seeds enhances two fundamental processes, it creates a financial income for Doornkloof while spreading the growth of grasses throughout the Gauteng region.

Figures

figure 30 _ OPPOSITE PAGE _ Seedbank process and storage strategy

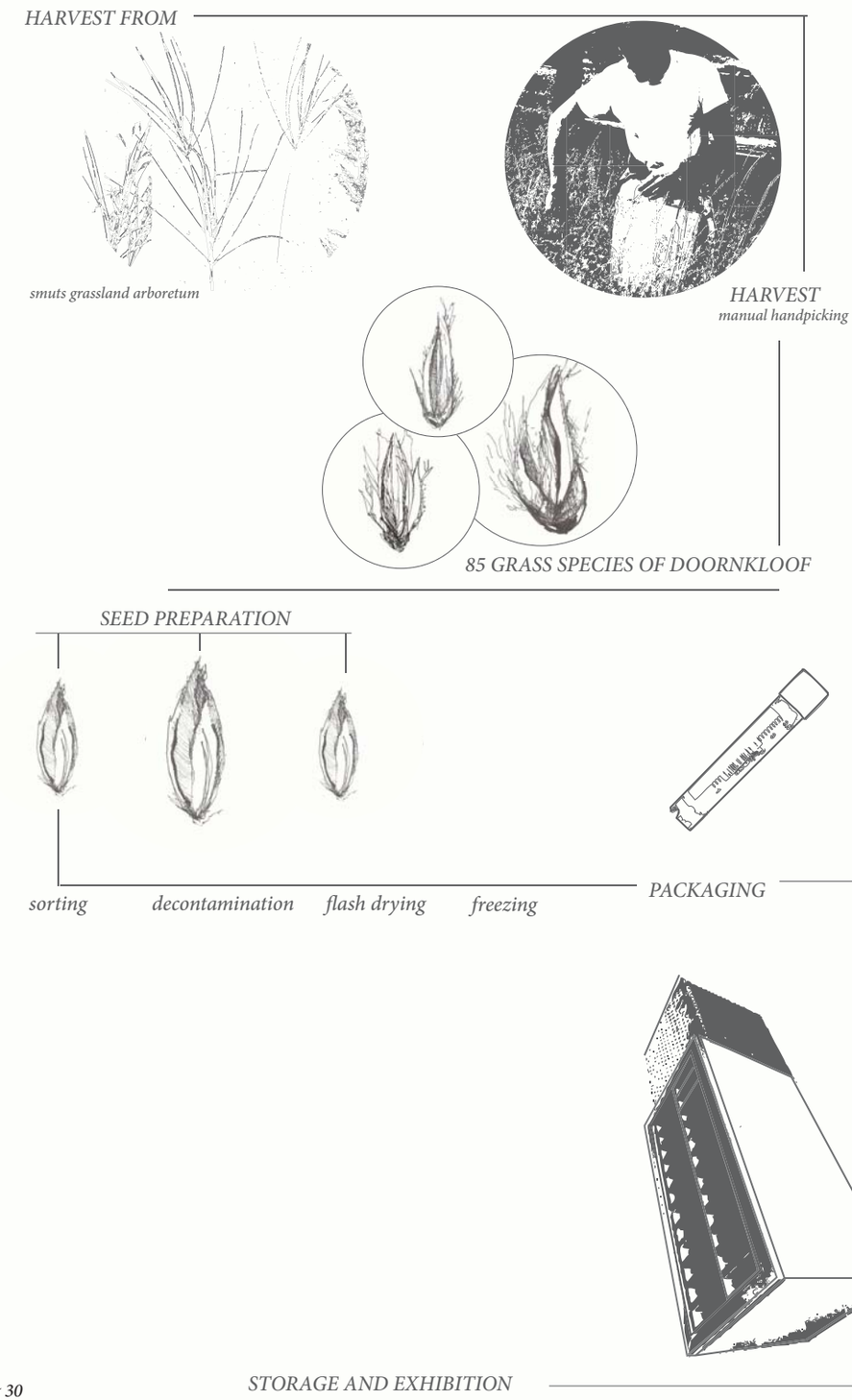


fig 30

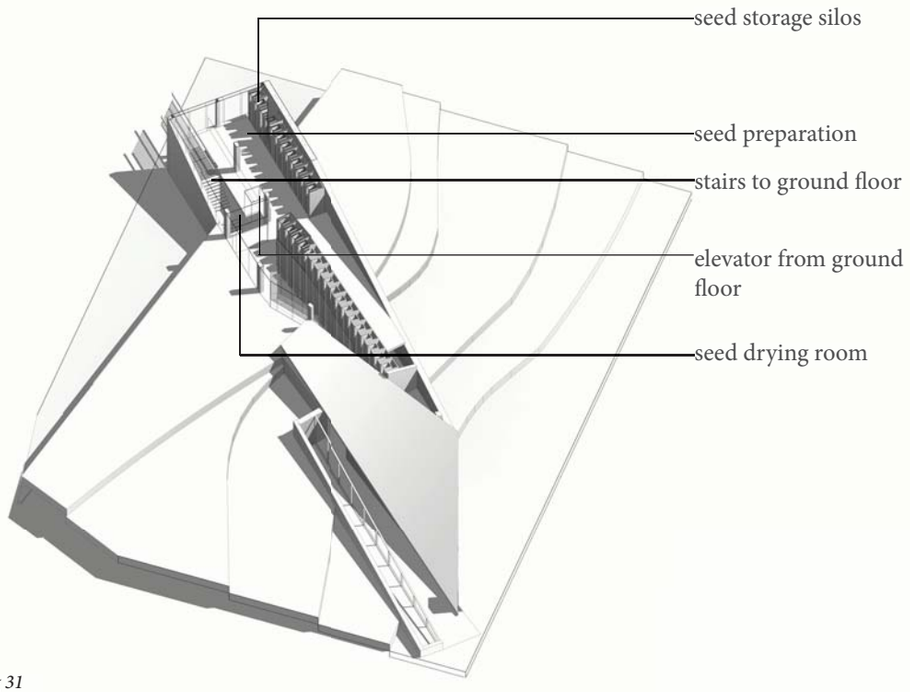


fig 31
SEEDBANK FIRST FLOOR

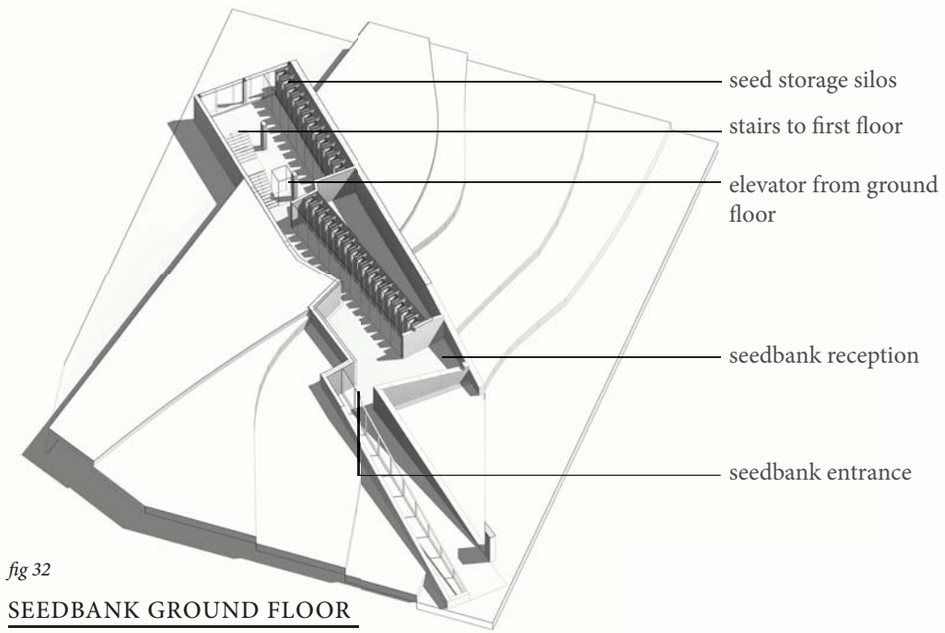


fig 32
SEEDBANK GROUND FLOOR

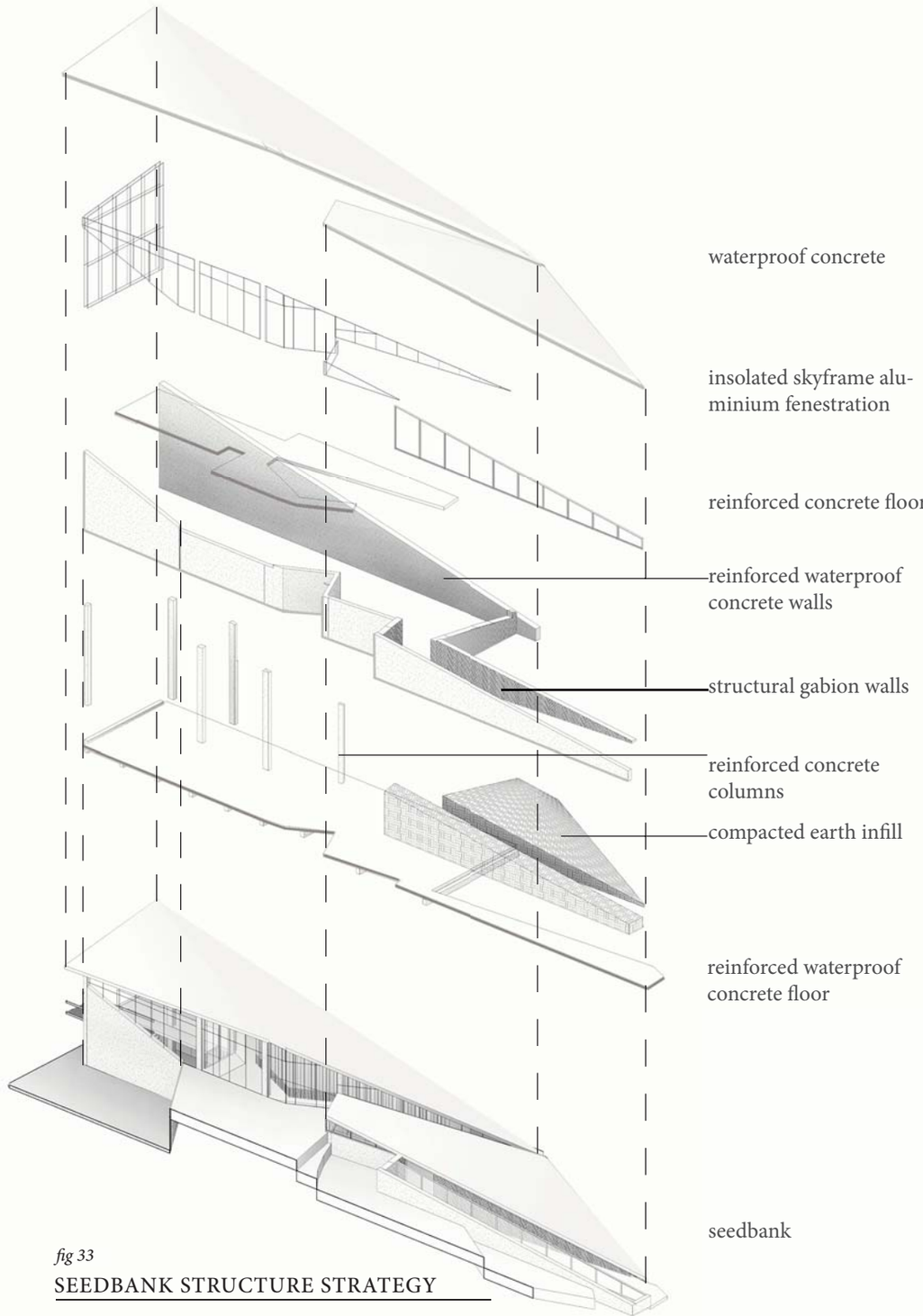


fig 33
SEEDBANK STRUCTURE STRATEGY

SEEDBANK
STRUCTURE STRATEGY

The structure is conceived as a protective pod in which the grass seeds are kept and protected in an insolated and controlled environment.

The primary structure consists of a rigid concrete exterior shell. The concrete shell consists of:

a. Waterproof reinforced retaining walls for water and earth.
b. Waterproof reinforced concrete raft foundation.
c. Waterproof reinforced roof.
d. The primary structure is also supported with interior concrete columns.

The secondary structure is largely an interior service system comprising of a series of aluminium custom made fridges for seed storage.

SEEDBANK
MATERIAL STRATEGY

The architecture of the Seedbank participates in the stereotomic history of the farm with a strong reference to the anchoring dolomite plinth of the Groothuis.

Strongly integrated and routed with the landscape, the Seedbank anchors itself in a stereotomic manner to the Grassland dam and the Grassland Arboretum.

The material pallet reflect the intention of the programme and the landscape.

Exterior Material.

a. Concrete
A large section of the Seedbank is placed within the Grassland dam thus Lafarge Ultra Waterproof Concrete is used.

b. Gabion Walls.
Locally found dolomite rocks, to reflect the aesthetic of the area.

c. Fenestration

Interior Material.

a. Steel

b. Aluminum

Figures

figure 34 _ OPPOSITE PAGE _ Seedbank material palette. figure 35 _ OPPOSITE PAGE _ Section through Seedbank.

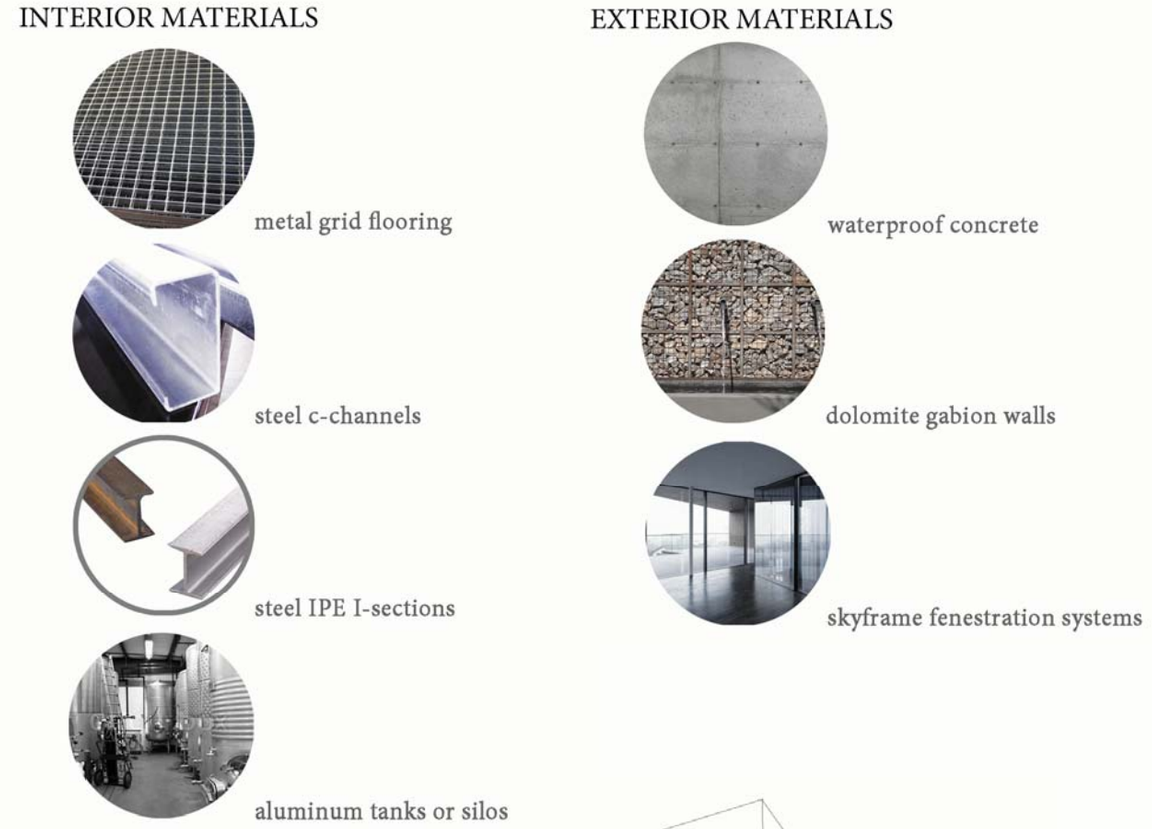
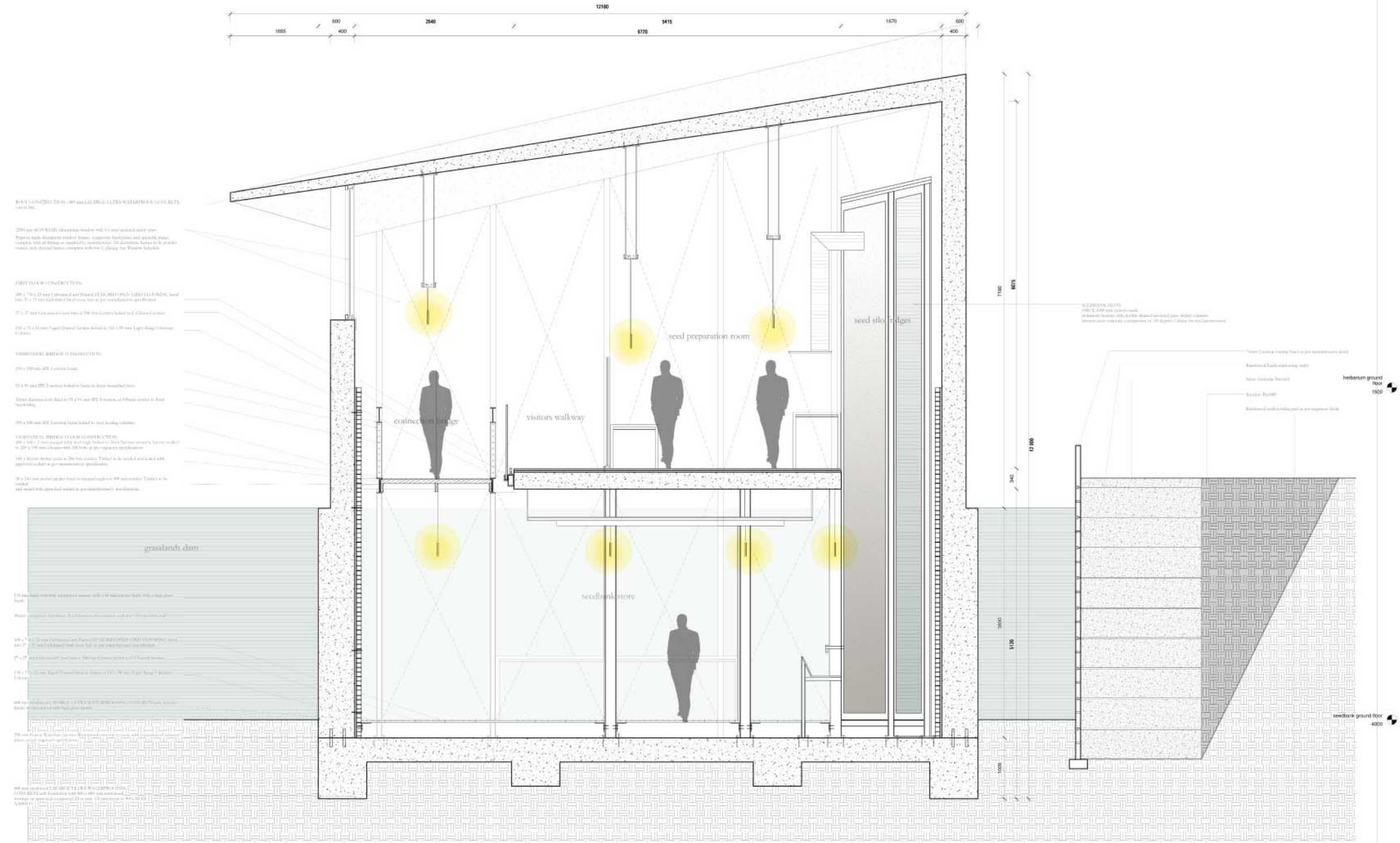


fig 34

fig 35



SEEDBANK SECTION
1_20

WORKSHOP
THE PROGRAMME

The workshop functions as a mediating structure between the seedbank and the herbarium.

Mediation happens on various planes,
1. Spatial mediator
2. Structural and aesthetic mediator
3. Programmatic mediator.

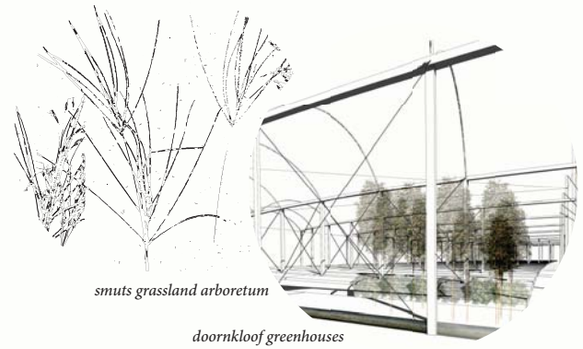
The workshop houses facilities for the preparation of herbarium specimens. The preparation is divined by a very specific process as illustrated in figure 37.

The workshop serves as a administration and management space for the Seedbank and Herbarium Complex housing facilities for staff use, such as offices, bathrooms, dressing rooms, storage and a kitchen.

The structure is designed in such a manner that the process of preparation is placed on display for visitors.

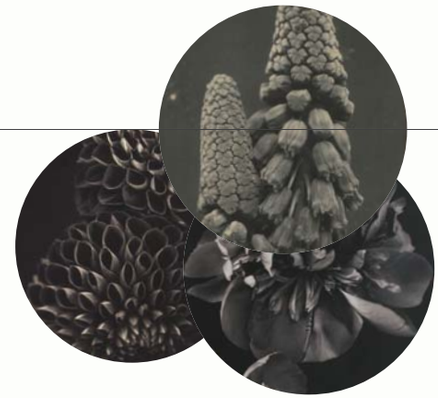
Figures

figure 37 _ OPPOSITE PAGE _ Herbarium process and storage strategy



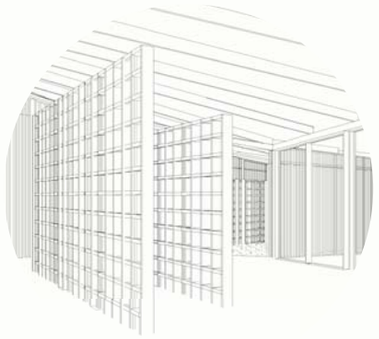
HARVEST FROM

HARVEST
manual handpicking



BULBOUS PLANTS, SHRUBS AND TREES FROM DOORNKLOOF

sorting *data capture* *dry* *decontaminate* *MOUNT*



STORAGE / EXHIBITION

FINAL PRODUCT

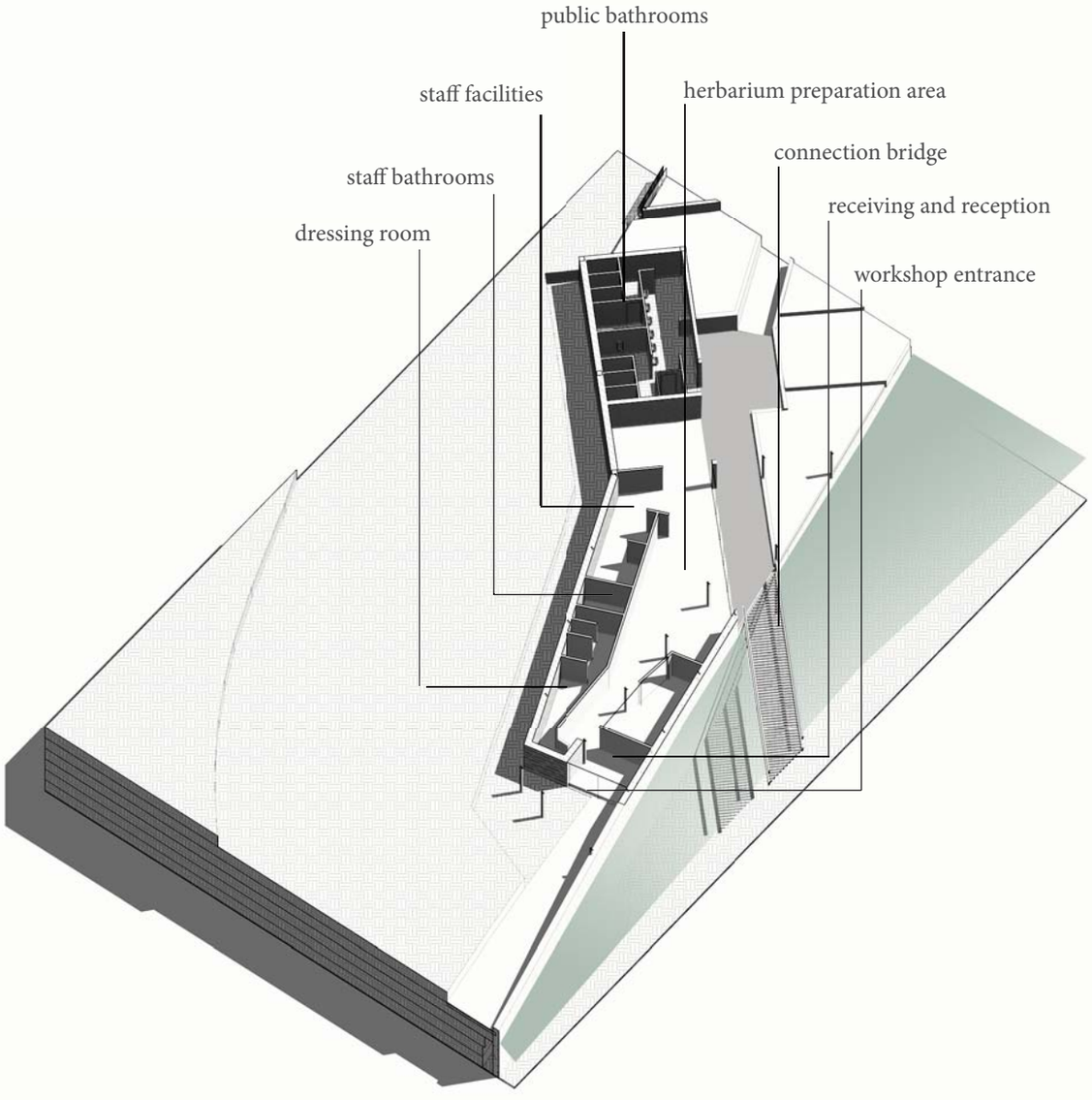


fig 38
WORSKSHOP GROUND FLOOR

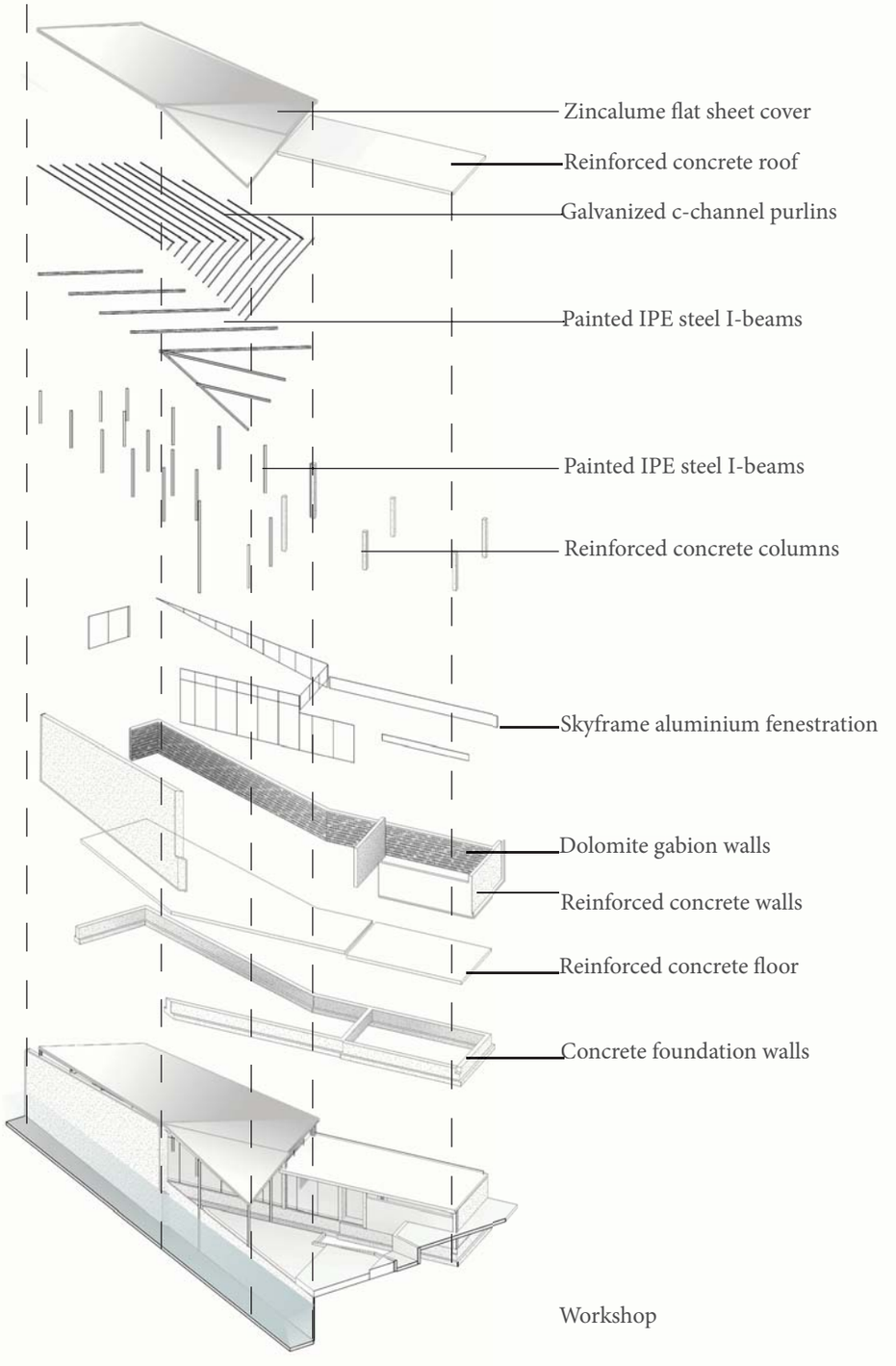


fig 39
WORKSHOP STRUCTURE STRATEGY

W O R K S H O P
STRUCTURE STRATEGY

The workshop structure is a mediating structure, which reflects a structural strategy between that of the Seedbank and the Herbarium as seen in figure 39.

The workshop structure is divided into two separate structures, the main worksop and the public bathrooms.

The primary structure of the workshop consists of:

a. Waterproof concrete walls
b. Dolomite rock gabion walls
c. A portal frame steel structure for the roof.

The Secondary structure of the Workshop is a series of interior non-structural walls to separate rooms.

The primary structure of the bathrooms consists of.

a. Reinforced concrete floor,
b. Exterior concrete walls and Dolomite Gabion walls.
c. A reinforced concrete roof.

W O R K S H O P
MATERIAL STRATEGY

The material strategy reflects a combination of materials as seen in the Seedbank and the Herbarium as seen in figure 40.

Figures

figure 40_ OPPOSITE PAGE _ Workshop material palette.

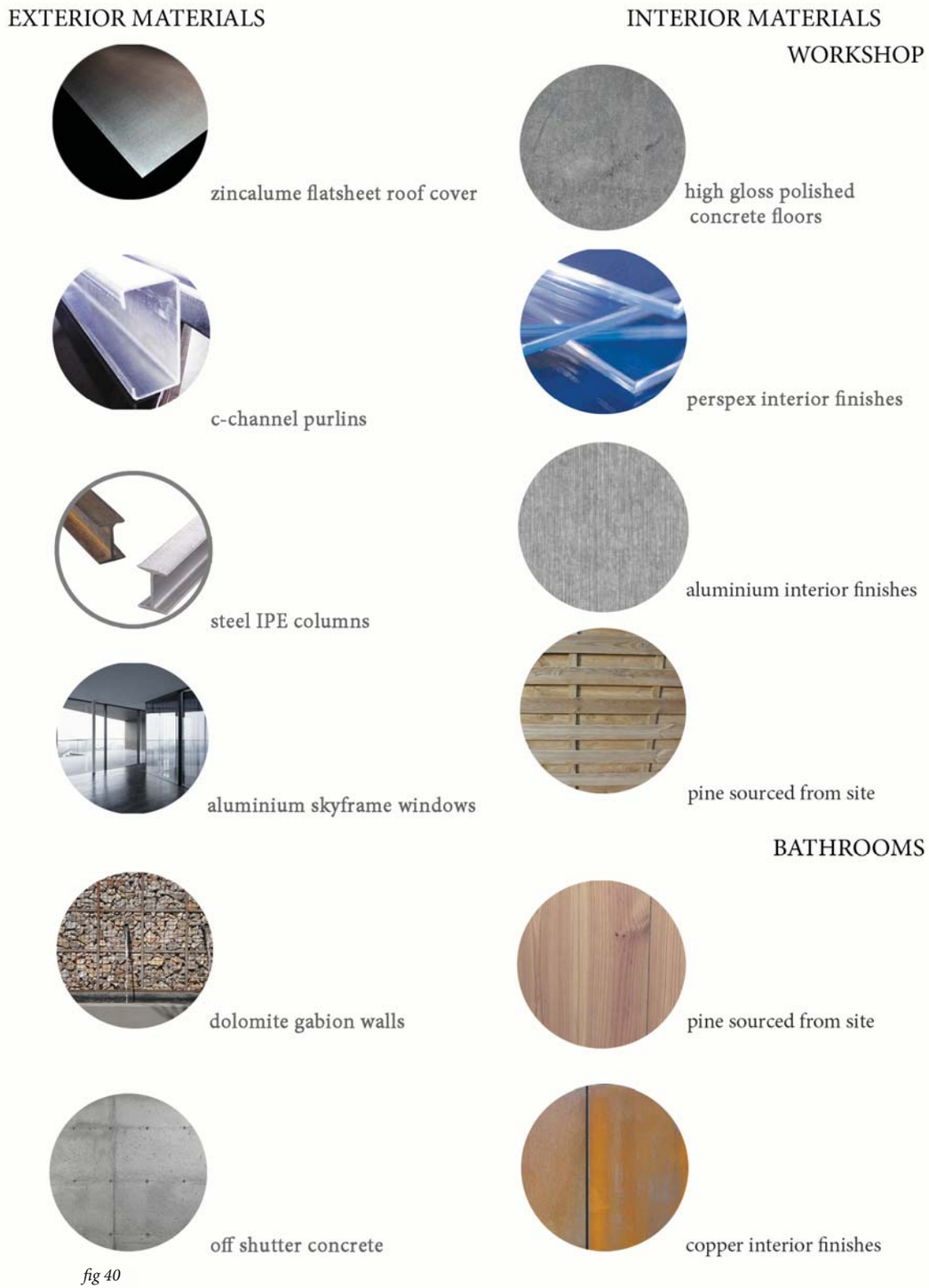


fig 40

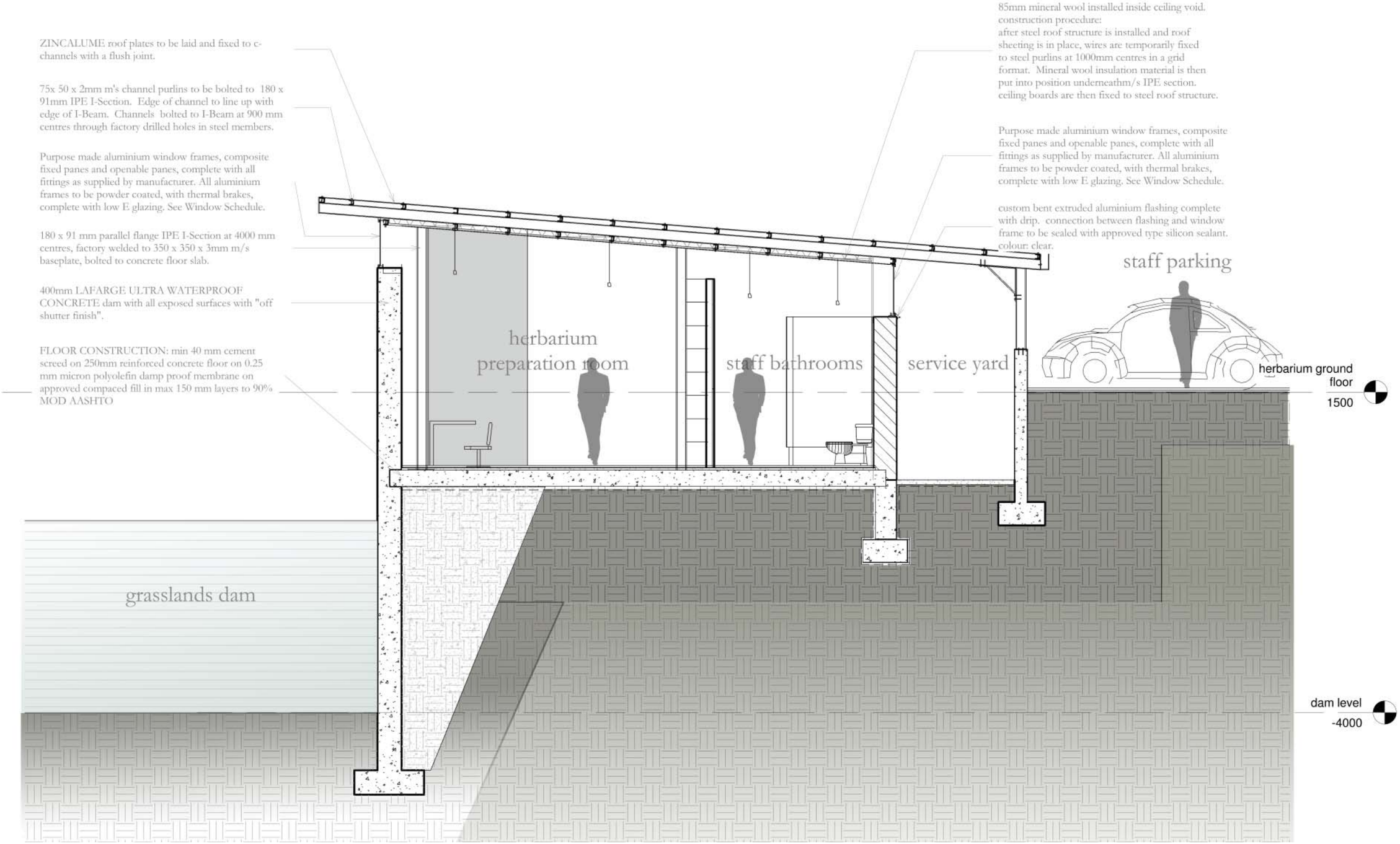


fig 41 WORKSHOP SECTION

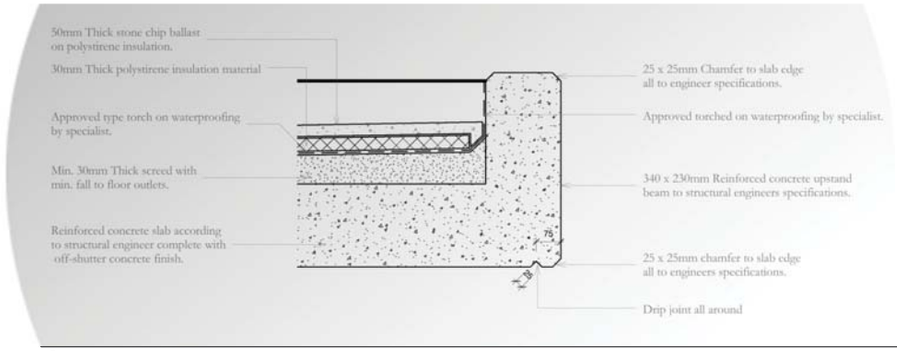


fig 42 DETAIL OF BATHROOM ROOF CONSTRUCTION

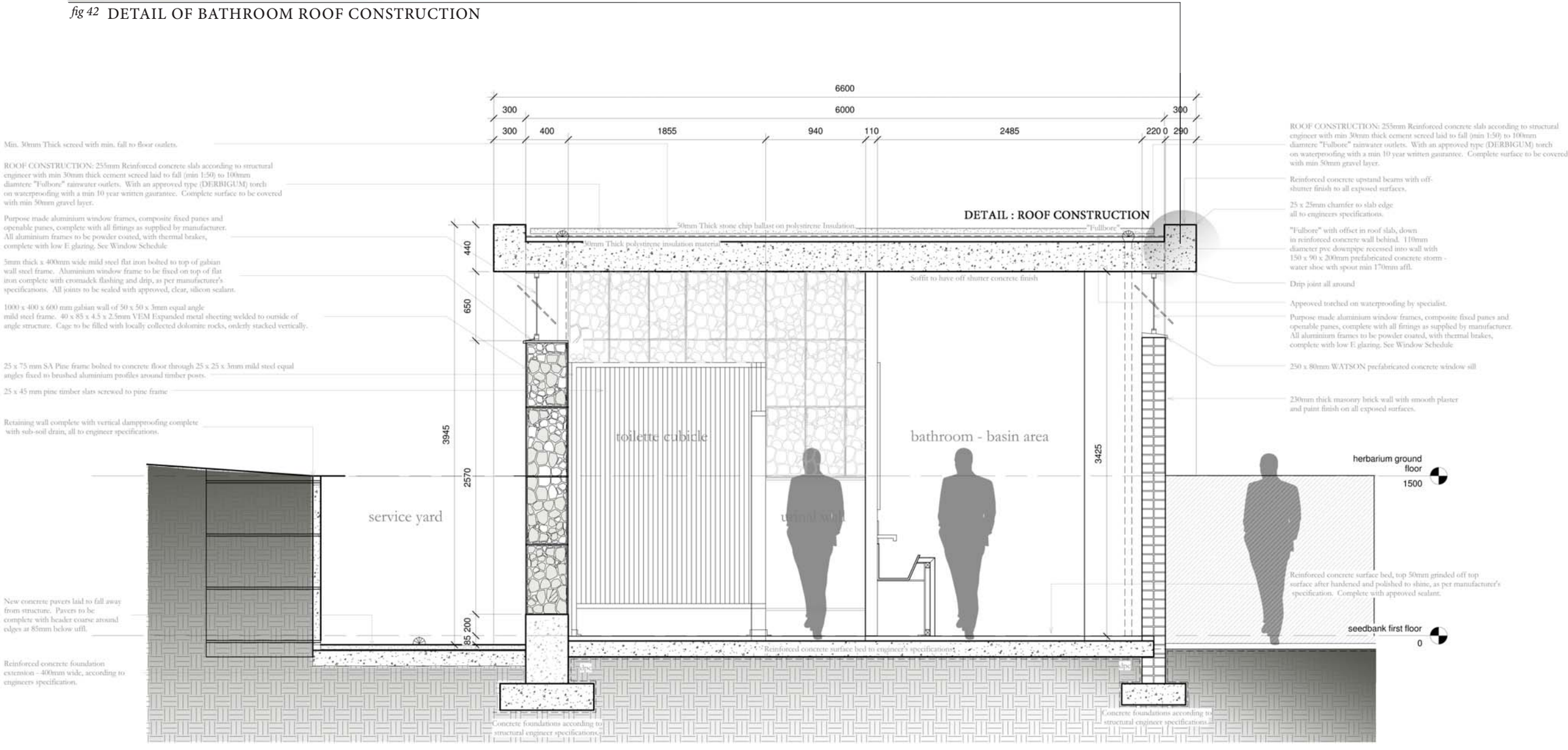


fig 42 BATHROOM SECTION

HERBARIUM
THE PROGRAMME

The herbarium houses botanical samples, drawings and specimens of the various plants found on the Doornkloof farm.

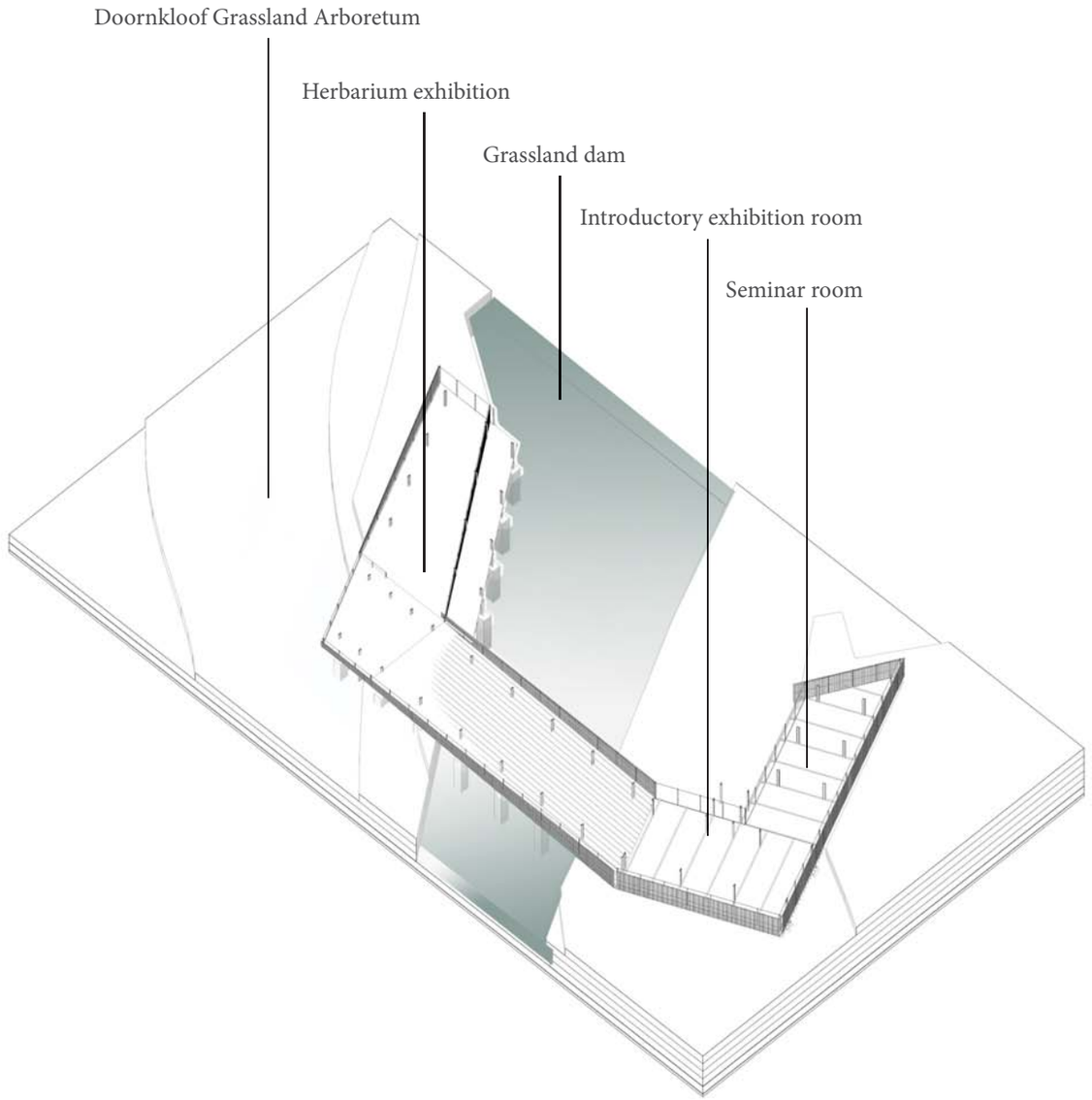
The herbarium is conceptualised as a very light structure that floats above the landscape and grassland dam, reflecting the delicacy of the material stored.

The herbarium houses two main programmes: a screening or lecture room, the first exhibition room or the general exhibition and lastly the main herbarium exhibition room.

The screening room will be used as a educational space where the process and design of the exhibition is explained. The general exhibition serves as an introductory display, while the final part of the exhibition houses the plant specimens.

To create an optimum environment for the exhibition the entire structure is wrapped in glass and transparent polycarbonate sheeting. Even though the interior is bathed in light, the structure provides for moveable timber screens which can be used as shading devices.

The storage of the botanical specimens take place in system or grid of moveable and changeable perspex boxes. This system allows for easily changeable exhibition rotation.



Figures

figure 43 _ OPPOSITE PAGE _ Herbarium Ground Floor

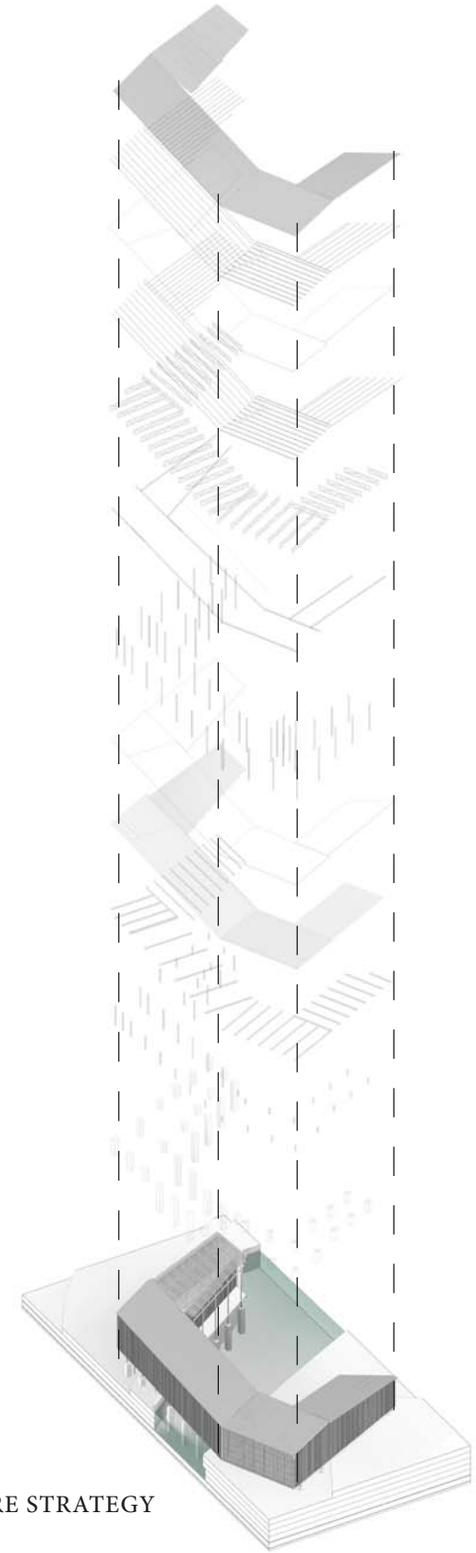


fig 44 REINFORCED EARTH CONSTRUCTION DETAIL

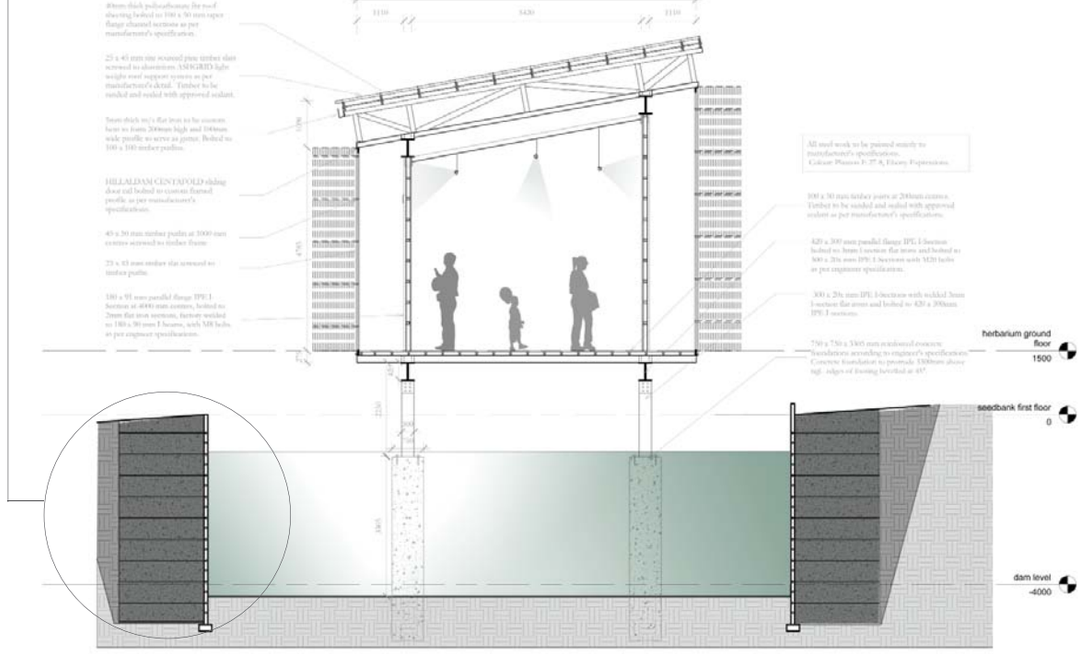


fig 45 HERBARIUM STRUCTURE STRATEGY

fig 44 HERBARIUM BRIDGE SECTION

HERBARIUM
STRUCTURAL SYSTEMS

The herbarium is conceptualised as a lightweight floating structure. Due to the proposed removal of the Pine and Bluegum forest on the farm a large quantity of timber will be available. The structure will mainly comprise of a portal frame steel and timber structure.

The structural steel elements will be used to connect the building to the ground, while the timber infill or secondary structure functions as moveable shading or screening devices.

The structural approach differs slightly throughout the building, the first section, the herbarium general exhibition space sits on the grassland arboretum and is thus only simply tied to the ground with concrete footings. The second part of the structure or the herbarium bridge spans over the grassland dam. The structure of the bridging element comprises of a steel vierendeel truss with the depth and ability to span over the entire water body.

HERBARIUM
MATERIAL STRATEGY

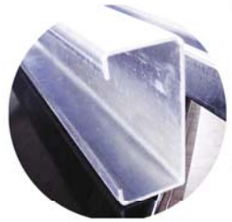
To create the aesthetic of the light weight structure with maximum light penetration. The material palette is very simple, with painted steel columns which form the basic structure, the structure is enclosed with glass and aluminium fenestration systems. The entire structure is wrapped in a simple timber screening system.

As mentioned the timber is sourced from site thus it encapsulates the spirit of the place while reflecting the traditional aesthetics of the area.

Figures

figure 46_ OPPOSITE PAGE _ Herbarium Material Palette *figure 47_ OPPOSITE PAGE _ Herbarium Bridge Section*

pine timber slats
sourced from site



c-channel purlins

polycarbonate roof sheeting

fig 46

IPE steel I-section

pine timber decking
sourced from site

concrete columns

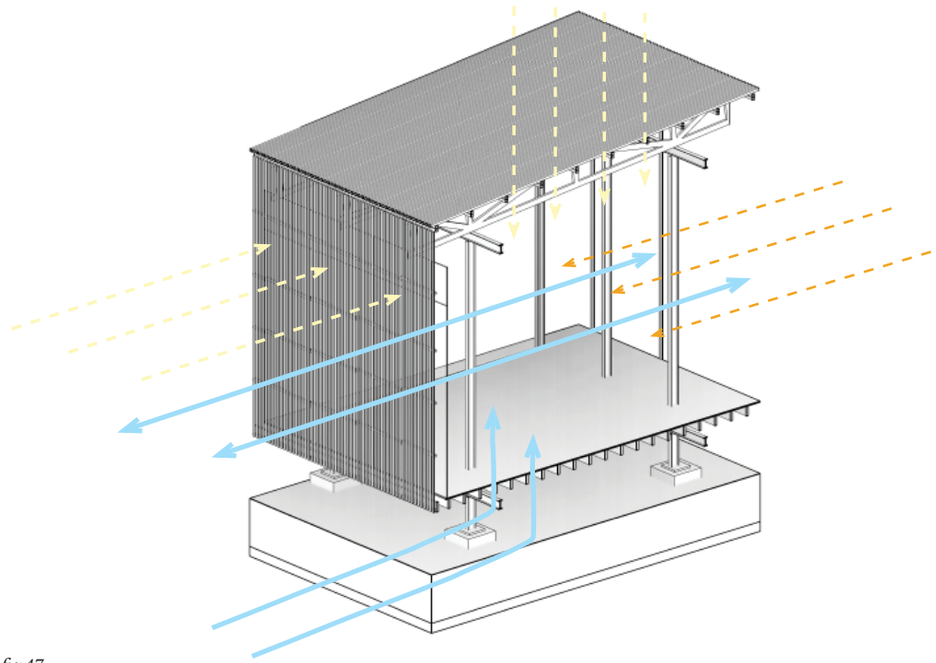


fig 47

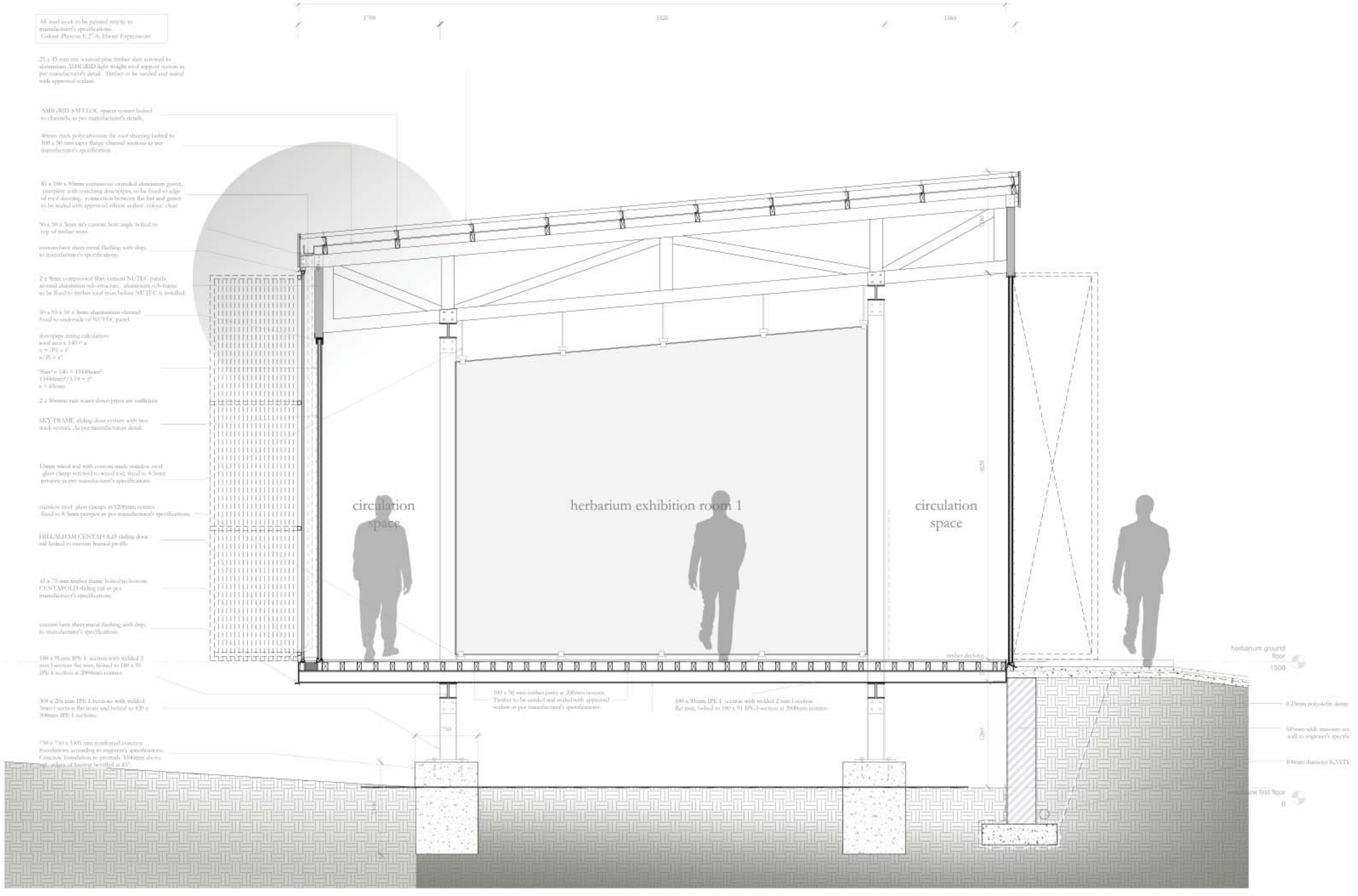


fig 48 HERBARIUM SECTION

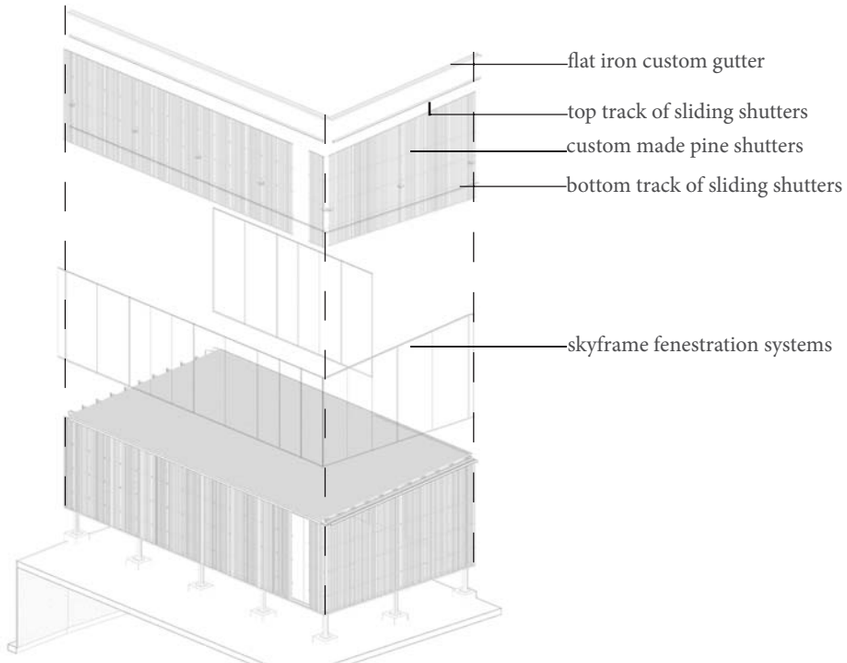


fig 49 HERBARIUM FACADE STRATEGY

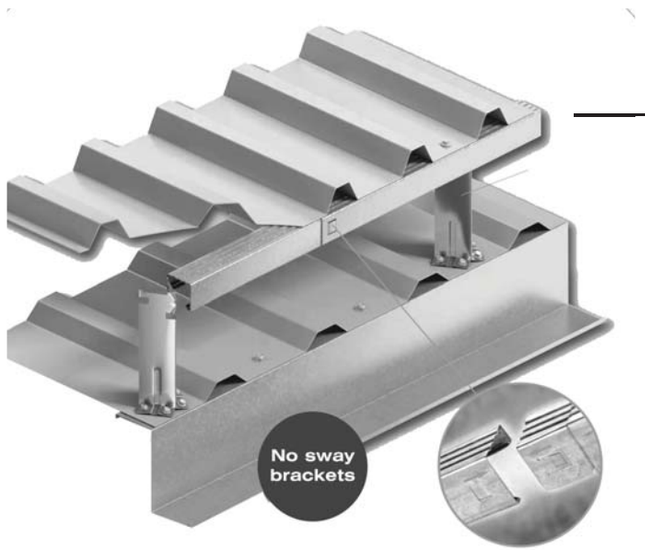


fig 50 DETAIL A

skyframe fenestration systems

custom made pine shutters

aesthetic of pine shutters

aesthetic of pine shutters

fig 51 FACADE MATERIAL PALETTE

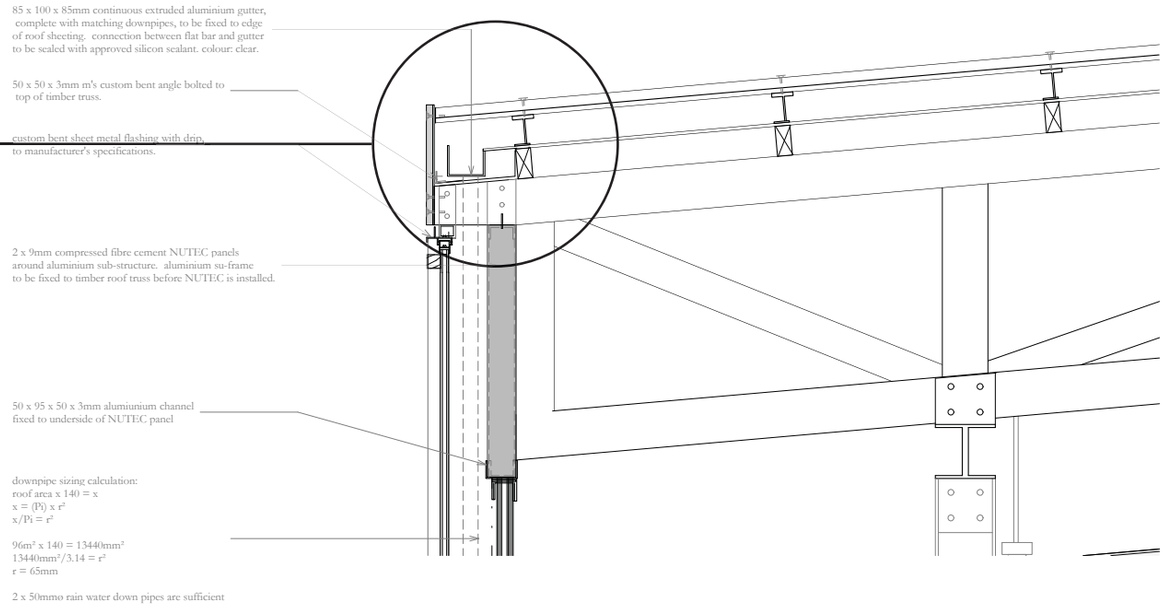


fig 52 DETAIL B

fig 53 - view from connection bridge

Figures

figure 53 - 56 _ Artist impressions of proposed Seedbank and Herbarium

fig 54 - interior of herbarium

"ANIMATED FIELDS"

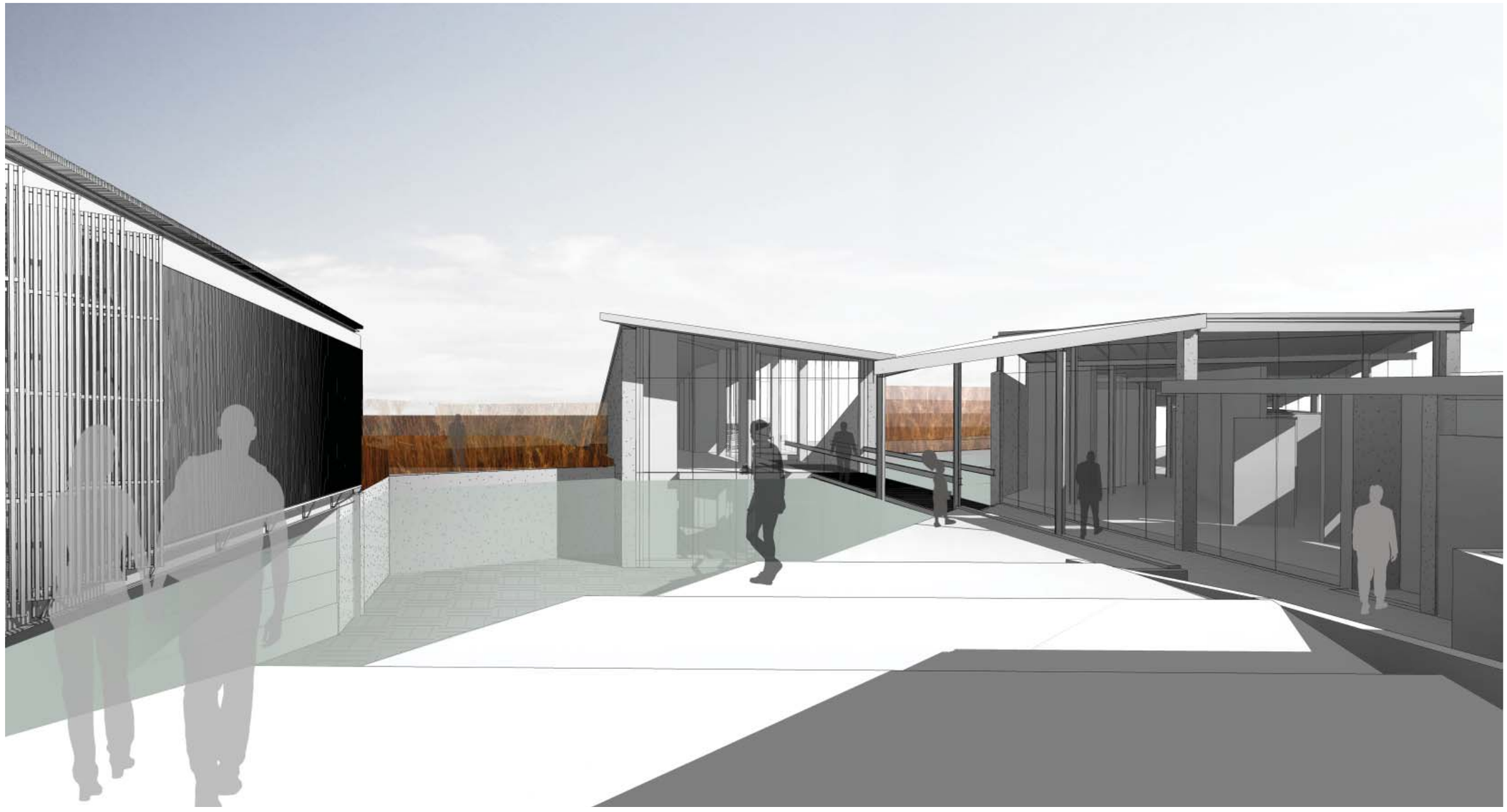


fig 55 - view from herbarium to seedbank

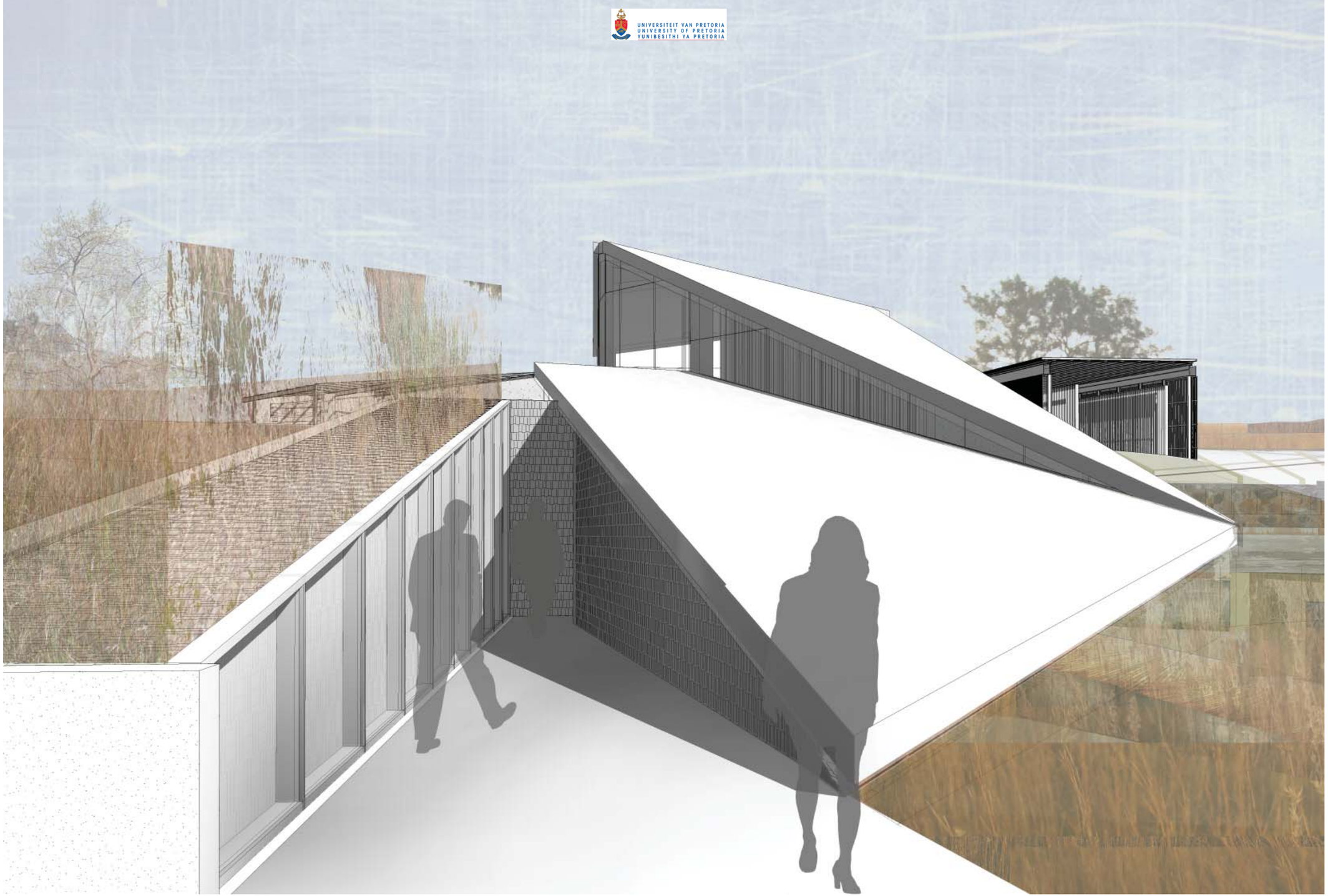
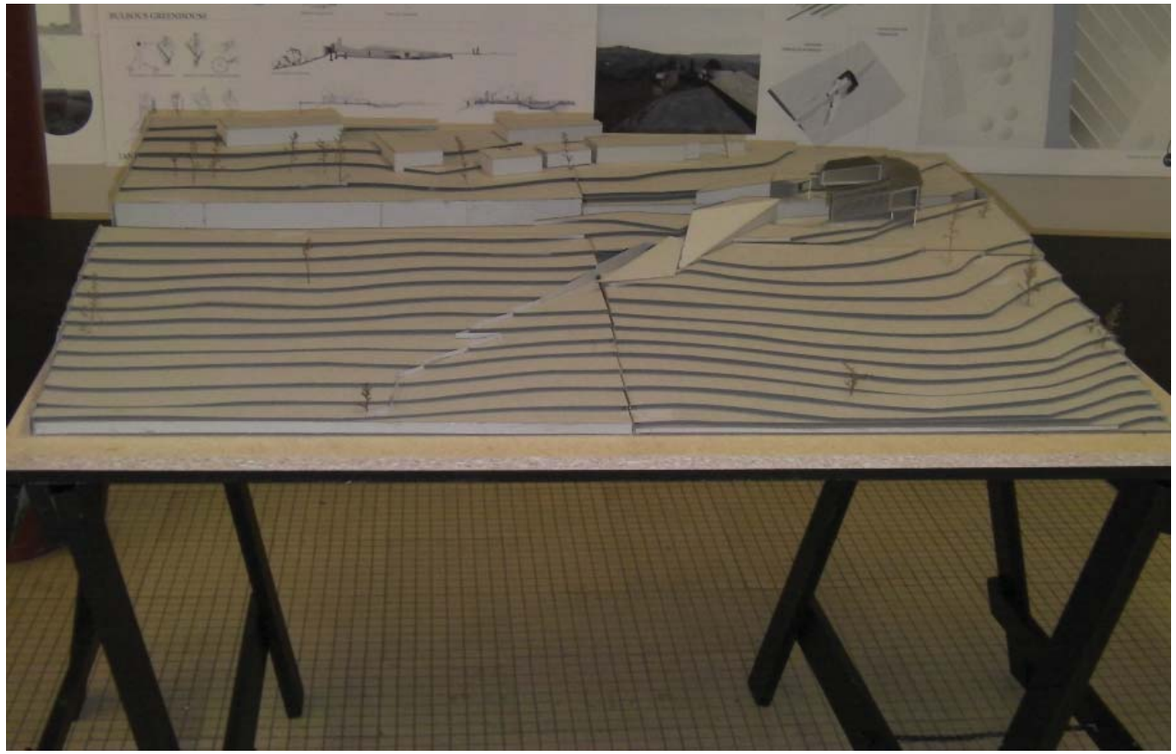
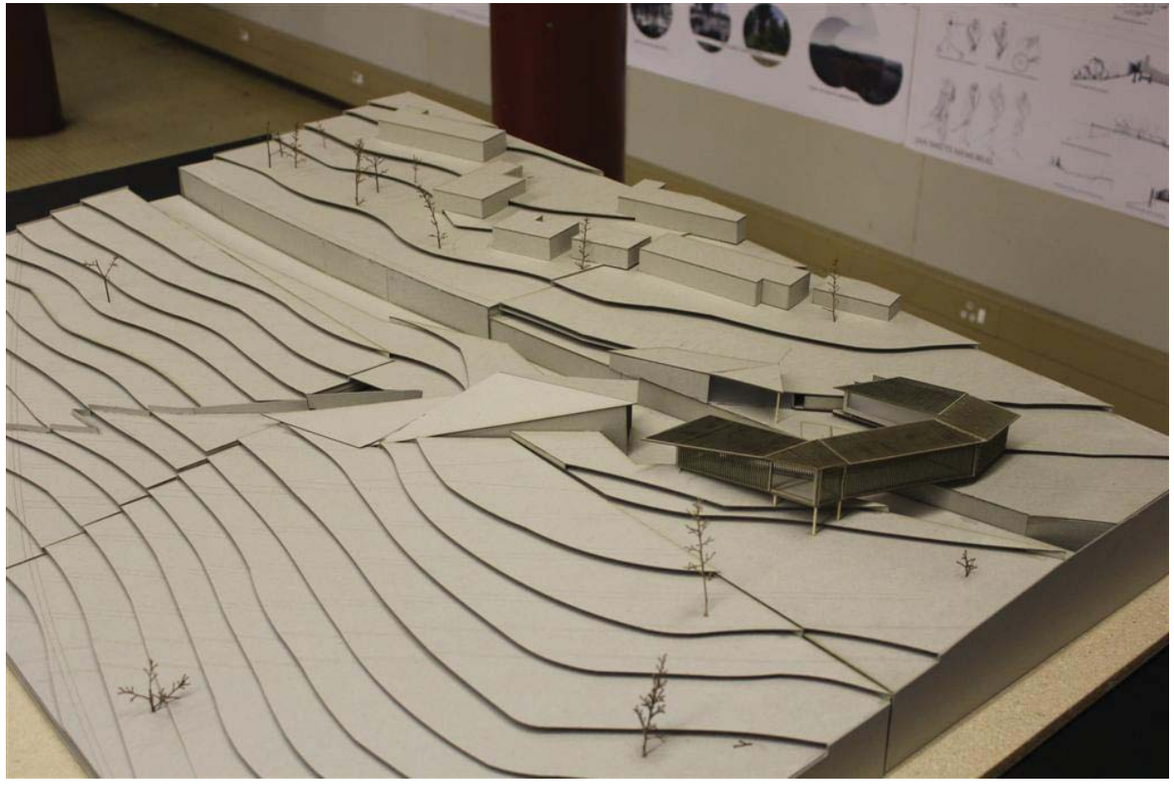


fig 56 - entrance to seedbank

"ANIMATED FIELDS"





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DOORNKLOOF

concluded

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