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t h e v o i d

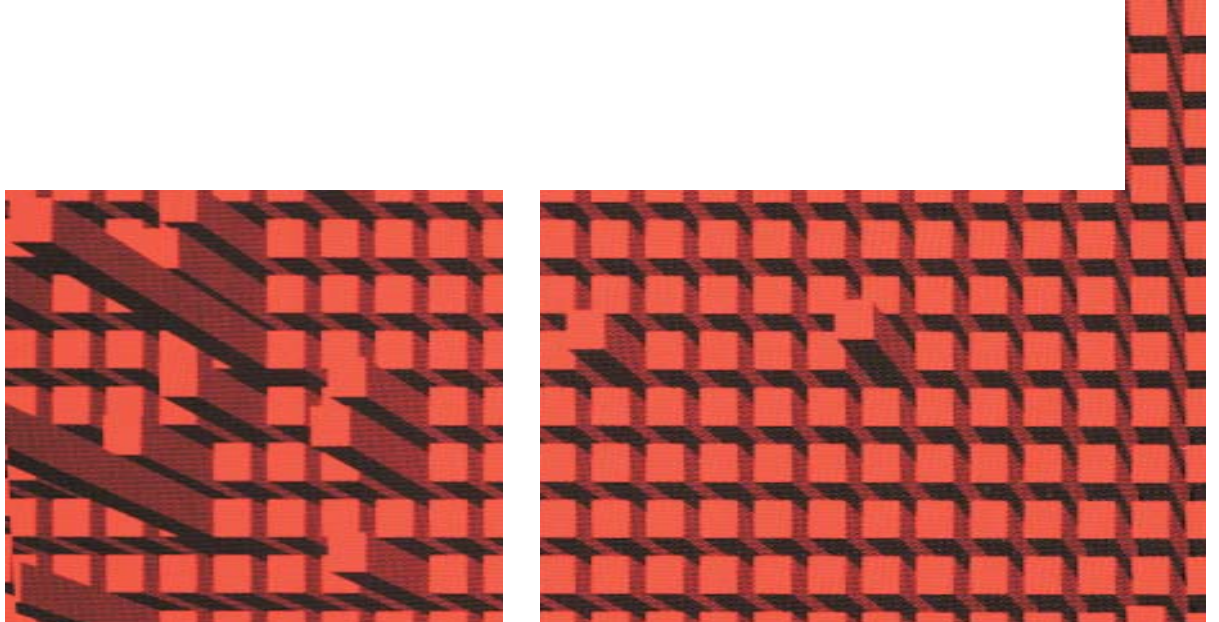
by despina athienides

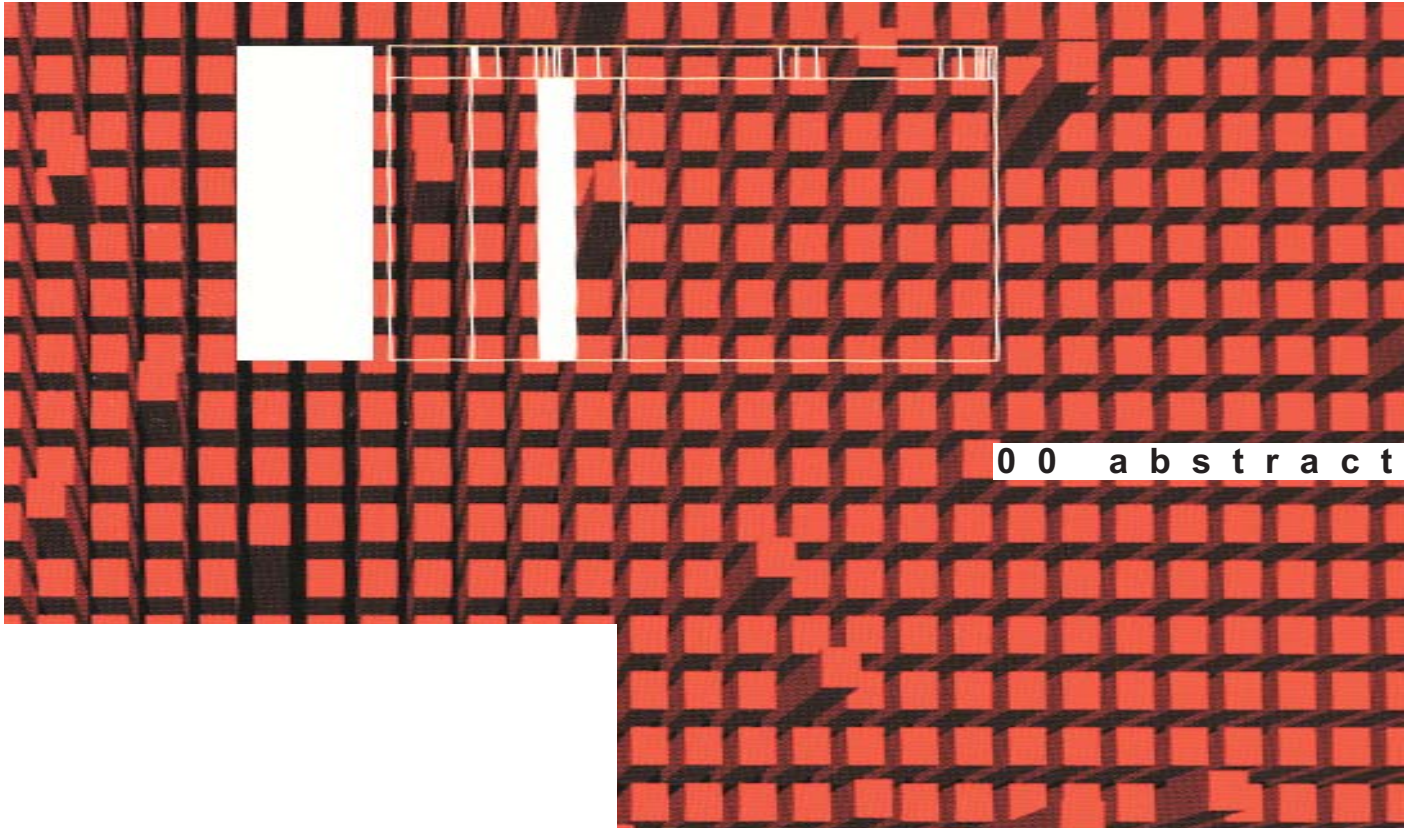


Submitted in fulfilment of part of the requirements for the degree
Magister in Architecture [professional] in the Faculty of Engineering,
the Built Environment and Information Technology.

University of Pretoria
Department of Architecture
Mentor: Prof. Karel Bakker

November 2005





The challenge of this project is to turn a large residual empty space into a public place, a truly 'relational space'.

The site was decided upon first, and within its vastness, the spirit of the surroundings arose which in turn gave birth to the development of the building programme. At the stage where a site was chosen, no particular functional theme other than that of "adaptive reuse" existed. Located in the industrial sector of Pretoria West, the site was chosen for its ability to stun the visitor to silence with its scale and grandeur. Currently housing the Pretoria West Power Station, the visitor is confronted by structures which appear to be beyond the realm of human interaction.

The dissertation explores the transformation of an 'urban void' to a public place where events can be held. This proposed events centre thrusts the landscape into the intervention, blurring the thresholds between inside and outside. The building itself has little regard for the boundaries imposed on it by the site. Purposely ignoring these limitations, the building extends its boundaries over the lake, creating space above untouched territory.

The site is difficult to perceive and experience as one entity, or even to be understood in one instance, therefore the visitor is encouraged to experience the smaller moments of the site. Thus the design aims to fragment the intervention into smaller experiences, which allows the visitor to engage more intimately with the intervention. This project addresses the issues of visual contact. It reveals the thresholds as environments with degrees of transparency and projection, rather than as tangible boundaries.

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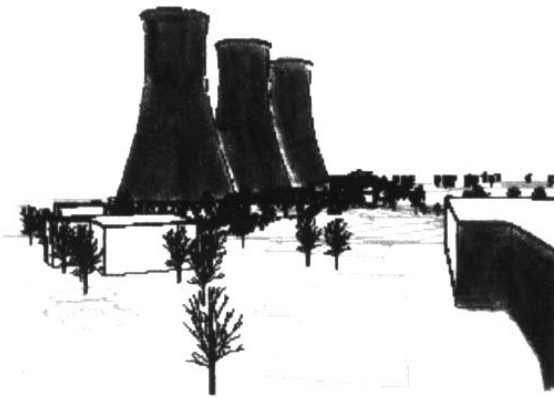
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002 INTRODUCTION

fig 2.1 Sketch of cooling towers



“THE OBJECT MUST
EXCITE CURIOSITY
AND DESIRE. A
CONSIDERABLE
DEGREE OF
STRANGENESS IS
INDISPENSABLE. THE
PROJECT, LIKE ANY
TRUE OBJECT OF
DESIRE, MUST AT
FIRST APPEAR
MYSTERIOUS, AN
UNKNOWN TERRITORY
WAITING TO BE
DISCOVERED AND
EXPLORED” (HADID
2005:112).

The aim of the discourse is to establish an understanding of the role of **adaptive reuse** in the **recycling of the city fabric**. This dissertation seeks to explore how sites threatened with redundancy and abandonment can become sites of opportunities. The process of transformation is investigated and documented showing the development of a site from 'urban void' to the re-inhabitation of that void.

The goal is to create a lively and dynamic environment which allows its participants to engage and interact with **foreign objects** found in the urban setting - such as the cooling towers of a coal fired power station - whilst providing opportunities for people to gather at the city edge.



fig 2.2 Cooling towers viewed from Quagga road

1

For the sake of this discourse, the **assumption** has been made regarding the availability of the site for the proposed intervention. Though most parts of the site housing the power station are currently operational, it shall be assumed that all components of the site are **v a c a n t** and **n o n - o p e r a t i o n a l**.

“A wave of verticals. Its agitation is momentarily arrested by vision. A gigantic mass is immobilized before our eyes” (de Certeau 1988:91).



fig 2.3 skyline of Pretoria West



003 purpose

One of the prime purposes of architecture is to heighten the **drama of living**. The differentiated spaces must be articulated in order to ensure that the emotional content of the particular act of living which takes place in them is reinforced.

THE NEED

This project strives to accommodate a meeting place, a place of interaction that at the same time provides suitable spaces for the visitor to explore all that the site has to offer. The project physically serves as an anchor, a catalyst for change, giving the industrial region of Pretoria West a new 'Heart'.

THE SITE

The site is at an intersection of two busy roads, Buitekant and Mitchell streets, one with heavy motor traffic and the latter with heavy pedestrian traffic. Situated along Pretoria's most western edge, originally consisting of a coal-fired power station, this abandoned and derelict site is now held hostage by its emptiness.

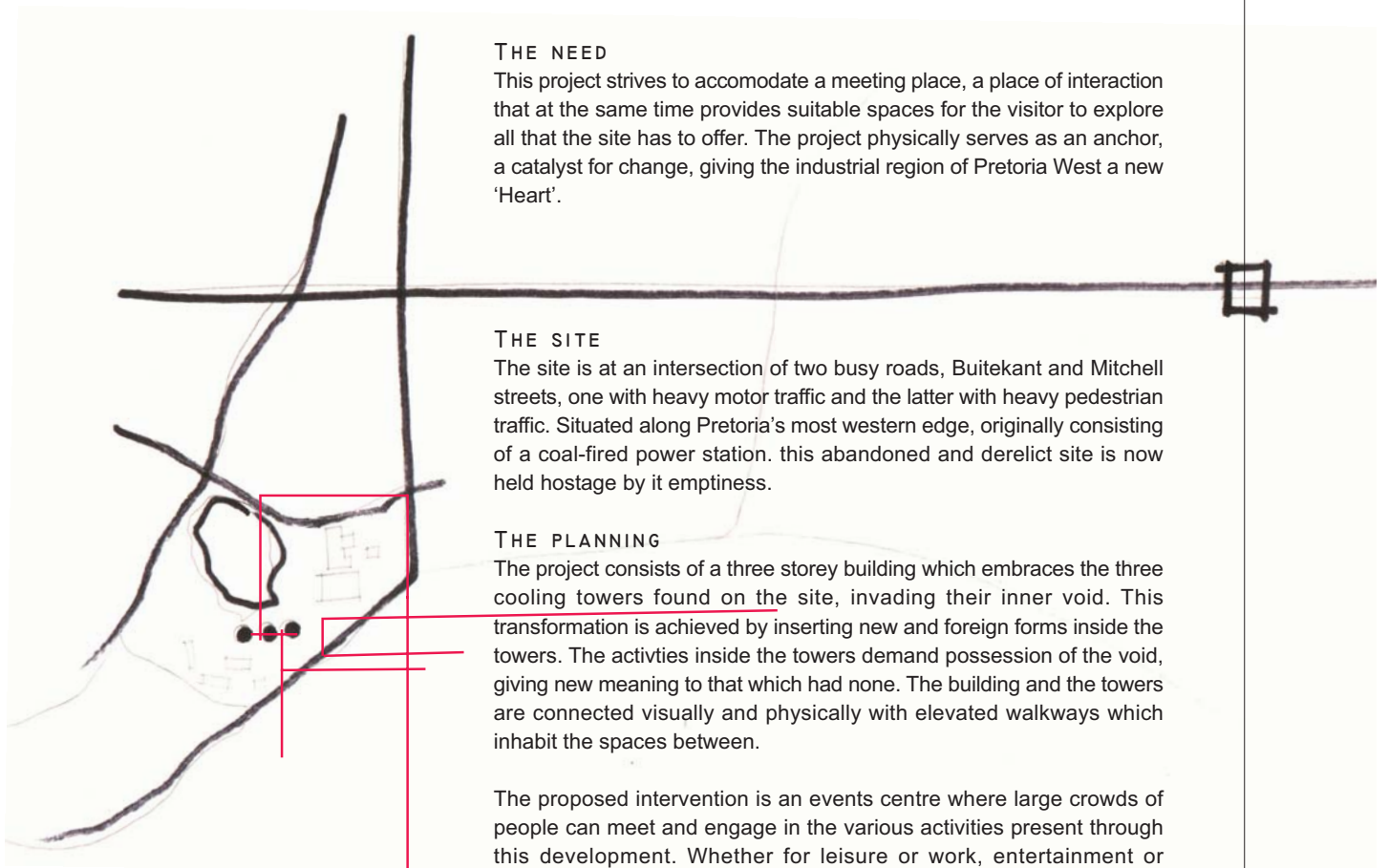
THE PLANNING

The project consists of a three storey building which embraces the three cooling towers found on the site, invading their inner void. This transformation is achieved by inserting new and foreign forms inside the towers. The activities inside the towers demand possession of the void, giving new meaning to that which had none. The building and the towers are connected visually and physically with elevated walkways which inhabit the spaces between.

The proposed intervention is an events centre where large crowds of people can meet and engage in the various activities present through this development. Whether for leisure or work, entertainment or conferences, this events centre seeks to bring people together by merging various activities at the city's edge.

THE BUILDING

The building is made up of a series of movement paths. Whether walls or floor surfaces, this linear building understands the importance of circulation. Open and closed interior spaces are inter-connected by circulation paths and elevated walkways. The spaces are further connected by voids and translucent floor and roof materials. Much emphasis is placed on the ability of the building's facade to interact with its user.



The desire exists for people to gather and re- inhabit the city edge. It is at the edge where people meet and disperse, activities merge and overlap. It is this edge that offers limitless possibilities to the city dweller.

The centre is to accommodate:

- * events and large gatherings
- * conferences
- * coffee shops and restaurants
- * exhibitions
- * a museum of coal-fired power stations
- * shops
- * offices
- * guest houses
- * viewing platform

A photograph of a book spine, tilted diagonally. The spine is dark, possibly black or dark green, with a lighter, textured material visible at the top and bottom. A white label is affixed to the spine, featuring the text "004 context study" in a bold, black, sans-serif font. The background is a plain, light-colored surface.

004 context study



Cities as social condensers

Cities are stages for the great triumphs and tragedies of humanity - sites for the events and interactions which define the ages.

"The building of cities is one of man's greatest achievements. The form of his city always has been and always will be a pitiless indicator of the state of his civilization" (Bacon 1967:13).

"A city is an idea first, an expression of the idea which the society believes itself to be. It is made up of built fabric and people. 'City forms, their actual function and the ideas and values that people attach to them make up a single phenomena'" (Lynch 1960:30).

Cities that are social condensers provide opportunities for social events to condensate against the blank canvas of the city, leaving a visible vapour suggesting the activities present.

“...we must **collect** all the VISUAL SYMBOLS of this urban being – all the evidence of its pathologies and normalities, gathering and storing all the memory tokens from bygone times, so that in our present time we can arrive at an equilibrium between the urban being and its material environment” (Boyer 1994:17).

00411 City of collective memory

In the city of collective memory, we find that different layers of historical time, superimposed on each other or different architectural strata, no longer generate a structural form for the city but merely culminate in an experience of diversity. Especially in the last few decades, these architectural residues from earlier times have become important sites of pleasure. Perhaps it is the elusive quality of these outmoded places or their precarious state of existence that offers the spectator pleasure. Pleasure might be found because these fragments reawaken forgotten memories, or because their original function and purpose have been erased. Whatever it is, these fragments and remnants cause an unexpected shift of attention, allowing a reappraisal of their presence in the city (Boyer 1994:19).

According to Fisher, in *Defining the urban condition: accelerating change in the geography of power* (Bakker 1995:74) “architecture, like all artifacts, may be seen as carriers of cultural information or an expression of cultural identity and cultural rootedness. Architecture is produced and exists within specific paradigmatic timeframes, within which the artifact displays its content and interrelationship of its constituent elements a correspondence with the spirit of the paradigmatically bound cultural system”.

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fig 4.1 Northern elevation of site

City spaces have come to be conceptualized as 'texts' that are inscribed with the multifaceted, sometimes overlapping, **traces of time**, experience and use. These urban texts can be defined as any aspect of the urban landscape that can be 'read' or deconstructed to reveal cultural values.

The coding and decoding of these urban texts and meanings is an interactive process with the users of the city being actively engaged in a dialogue with its spaces.

As a result, the city of collective memory allows a single urban landscape to exist within a multiplicity of places that have been defined through use, imagination and cultural practise.



fig 4.2 Derelict power station "A"

The **urban conquerors**, MAJESTIC in their presence and overpowering in their victory, are found standing proudly against the backdrop of a once booming industrial edge. The site, layered with history and rich in meaning informs the city of collective memory and suggests the further layering of the city.

The intervention seeks to gather and store all the memory tokens present on the site, with the intention of transforming the site into an environment which finds its meaning in the present whilst respecting its past. This enables the city of collective memory to be read at a human scale.

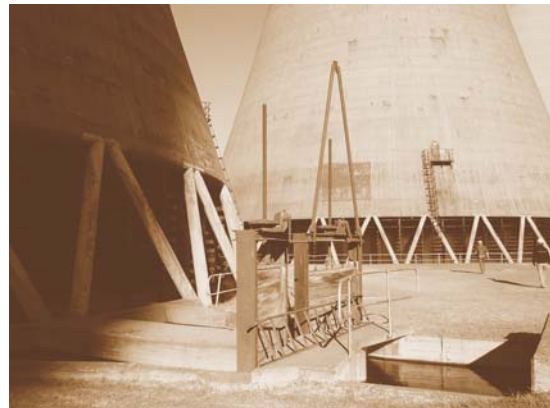


fig 4.3 At the feet of the cooling towers



fig 4.4 Pretoria's urban fabric

00412 Recycling the city fabric

Each period in history has added its own signature to the urban make-up as the continuous process of growth, decay and regeneration contributes to the chronological layering over time.

The stratification of successive layers in the historical development of the city fabric is evident in the city's architectural history. This evolution of the urban structure is shaped by a succession of encounters, compressions, expansions and interpenetrations. Each successive layer has left its mark – traces of the past – on the urban context.

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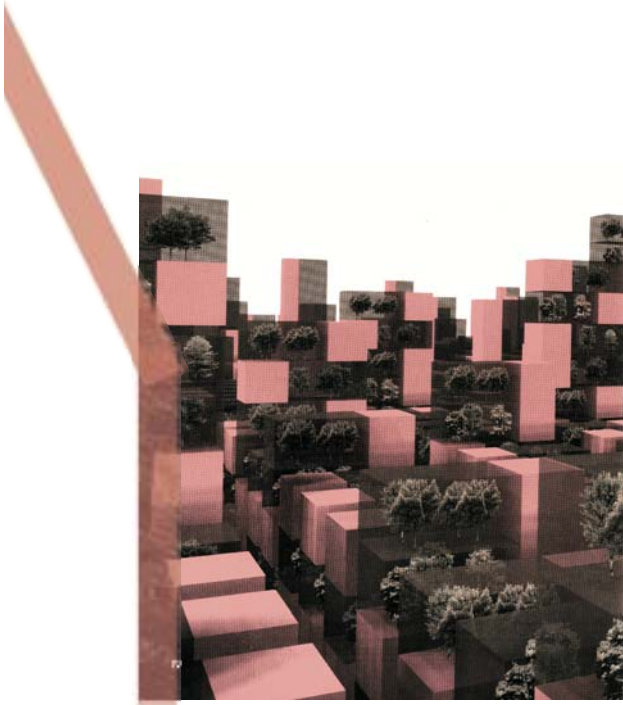
Voids as opportunities rather than voids as emptiness.

Sites threatened with redundancy and abandonment prevents the site's potential to become something greater than it currently is - derelict and vacant.

In 're-inhabiting the void' a once thriving power generating site of Pretoria is transformed and recycled into a spirited environment brought back to life willing again to engage with its users.

Today, our urban interventions take place in an amorphous and imponderable space, comparable to chess figures moved across a horizontal screen with white noise. The grid of the chessboard has disappeared and along with it the clear rules determining how the figures on it are to be moved. Yet the figures have remained. And its moves are still significant, even though the coordinates of its moves can no longer be determined as easily as they used to be.

However, the more the background recedes, the more distinct the figures have to be. For, in view of the implosion of the old order, it is these figures which make a city. Their interrelations create force fields of great tension, and in doing so create space. This process is infinitely more complex than the ordained decision to lay down a plan and then fill it up, step by step, with architecture. Space is no longer pre-ordained. It comes into being as a result of the force fields which figures create together, forming the basis of a vigorous urbanity.



0042 Urban exploration

00421 Anchoring

Building transcends physical and functional requirements by fusing with place, by gathering the meaning of a situation. Architecture does not so much intrude on a landscape as it serves to explain it. Architecture and site should have an experiential connection, a metaphysical link, a poetic link. When a work of architecture successfully fuses a building and situation, a third condition emerges.

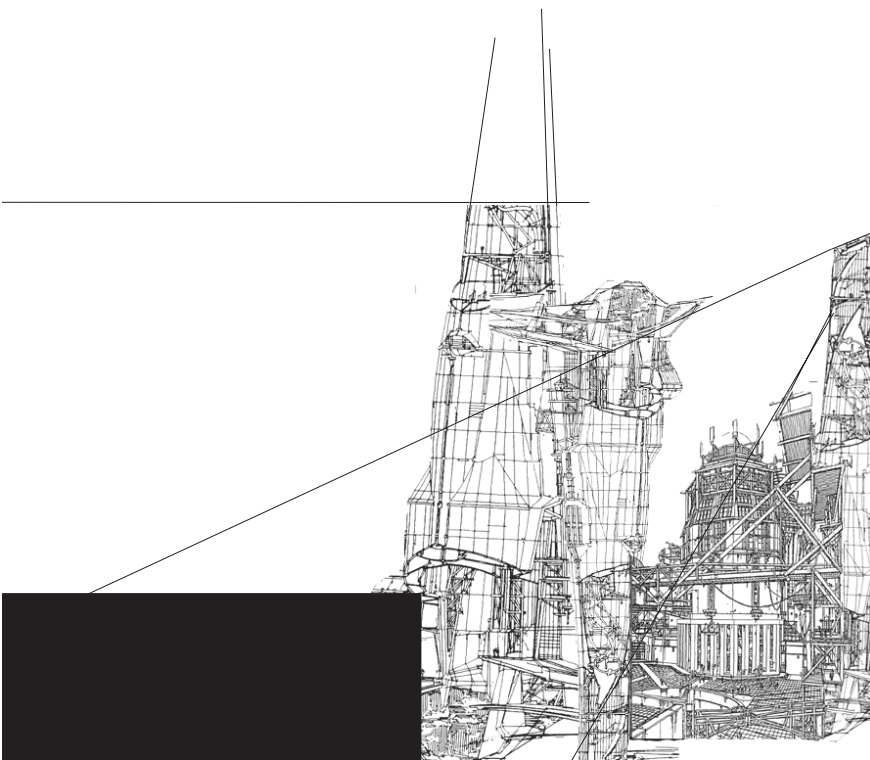
In this third entity, denotation and connotation merge; expression is linked to an idea which is joined to site (Holl 1989:9).

Architecture is bound to situation. The site of a building is more than a mere ingredient in its conception. It is its physical and metaphysical foundation. The architecture of the intervention will respond to the context within which it finds itself. Within a landscape of monstrous industrial buildings and landmark elements, where people appear to crawl at the feet of these LARGE SKYSCRAPING STRUCTURES, a sense of human scale is lost. The architecture of the intervention aims to reintroduce the human scale into the built environment of the power station, but in no way tries to compete or threaten the scale of the power station or the adjoining towers. The elegance enhanced through the architecture aims to compliment the scale of these mammoth structures.

Envisioning a landscape left for dead, an **abandoned** site, waiting to be **transformed** yet full of unleashed potential...

As a designer of the built environment it is from this perspective that I explore the process of anchoring the intervention, which aims at reinhabiting that which is now lost, with an abandoned site accomodating a once well-known power station.





00422 An urban edge

Pretoria West, home to the vast industrial land that borders the inner city of Pretoria, can be recognized as an urban edge because of its position and role in demarcating and distinguishing that which is suburban from that which is urban. The site accommodating the existing Power Station occupies a strip of land, bordering the confines of the city.

Pretoria West, known for its industrial character, accommodates both lightweight and heavy industries. Currently a car-dominated industry governs the Pretoria West industrial sector, but there is a strong working class residential character too.

Good accessibility to the edge is advantageous to the site because of its location in relation to the city center with the main access artery being Church Street. Whilst safety precautions prohibit the power station from being permeable, and with only one entry point into the site, it is proposed that the site be made more permeable, increasing the number of access points onto the site.

The power station exists as an island amongst a sea of manufacturing industries. The power station tends to dominate the skyline of Pretoria and boldly states and very specifically defines its important position as the edge of its city.

0043 Theoretical exploration

00431 Design philosophy: Parasitism in architecture

Parasites **intrude** and **inhabit**. In so doing their presences demands a rethinking of sites of inhabitation. In the natural world some parasites can be tolerated and housed without any ill effect on their host. Such parasites may live externally to their host or they may live internally within the host's actual body.

An architecture of the parasite may be literally parasitical. In this instance the formal presence of the work would be such that its incorporation would allow it to remain formally distinct and yet programmatically interconnected with its host. The architecture of the parasite ties in with pre-existing infrastructures and programmes to open up new possibilities rather than being a space to which programme and infrastructure have to be brought.

In general terms the parasite has to take up a position within the body of what is given and consequently begins to insert itself into the spaces that the given provides. As such the grid or even the block, the contours of boundaries and edges will not be recognized by the parasite. The parasite has to survive within the given and the condition of that survival would be its refusal to recognize lines that mark out pre-existing edges and boundaries, and any compromise undertaken by the parasite becomes a structural transformation of the site.

If the host is to survive, the parasite has to negotiate the space of its internal incorporation. It can only live off the host if the host is maintained. It can only be present as a guest if the host is able to maintain the guest as a guest. What defines parasitism is the co presence of **maintaining** and **transforming**, because the conditions of edge and boundary that establish the site have to be transgressed and thus reformed by the presence of the parasite. What this means is that an architectural parasite has to be deliberate. It has to work with infrastructures, using and adapting them to its own ends. Here, of course, parasitism has to be distinguished from reuse. The transformation of the power station by Herzog and de Meuron's at Bankside in London into the Tate Modern is not an instance of parasitism. The parasite inserts itself into and between spaces absorbing infrastructure and allowing for openings and developments to occur because of its presence.

In parasitical architecture, a 'new' building works with, adds to and incorporates elements of the old. That incorporation opens up interstitial spaces within the new building by refusing the limitation imposed by what were the exterior walls of the old building. The challenge on the level of design is to construct a building that involves this complex relation to its site.

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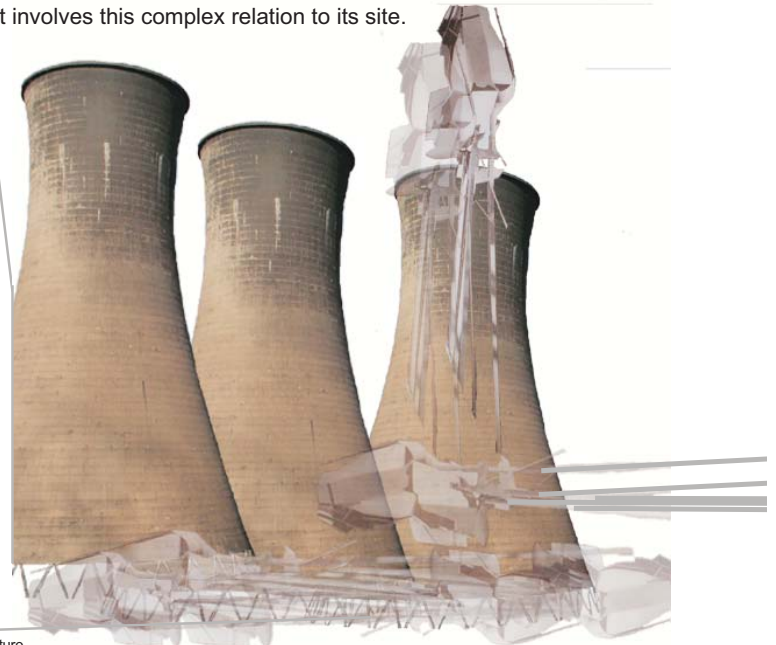


fig 4.5 Concept of parasitic architecture

In the world of architectural theory, a world in which buildings breathe and parasites are more than pests, the idea is to strip down a building into a kind of essence that explores a theoretical “suturing”, or uniting of new and old structures.

With the suture complete, at least on paper, the building can theoretically “breathe in”. When the abandoned building no longer has any need to exist, it is allowed to go back to nature; to be free, to breathe out. But before it is abandoned, it breathes in and has its life. The suture is a way of going between these - it provides for the next life of the building.

Architectural parasites are not pests: they do not draw off energy from their hosts. The existing structure is seen as a body whose lungs and organs of digestion produce enough surplus energy for weaker, dependent organisms.

Parasites may in certain cases perform a social function where the role of the host is not played by any single building but by this run-down, faceless slumbering part of the city where numerous buildings are to be torn down in the next few years. The parasite performs a social function which the condemned area previously lacked and which, perhaps, might even have an animating effect. It is therefore a case of parasitic infection as therapy, a kind of architectural bleeding with leeches.

004311 Precedent: Parasitic architecture

Little effort - Great effect

In Cirugeda Parejo's "Scaffolding" project (1998), the concept of contemporary docking onto larger, permanent structures reappears, he used the scaffolding to create extra living space.

After all, the great attention that parasite projects have been enjoying for several years is also due to the fascination that the unpleasant little creatures exert on us. In spite of their smallness, they have developed outstandingly successful survival strategies and can maintain themselves against apparently much more powerful organisms and thus excite our attention. In the best cases, parasitic architecture can achieve a great effect with little effort by opening our eyes to previously unrecognized spatial possibilities (www.anarchitektur.com).



fig 4.6 Parasitic architecture

**004312 Rooftop Remodeling
Falkestrasse : Vienna, Austria
(1 9 8 3 / 1 9 8 7 - 1 9 8 8)**

A law firm wanted to extend their office, which was situated on the first and second floor of the building and reached the attic. All that existed was a visualized line of energy which, coming from the street, spans the project, thus breaking the existing roof and thereby opening it.

This project identifies with parasitical architectural characteristics because of the way the project has latched onto an existing building, thus breaking through the boundaries and limitations that the roof imposed.

The clarity in being able to distinguish between what was and what has been added emphasizes the projects existence as a parasite and definately affects the way in which one may respond to the design.

(<http://www.coop-himmelblau.com>)



fig 4.7 Rooftop remodeling



fig 4.8 Rooftop remodeling interior

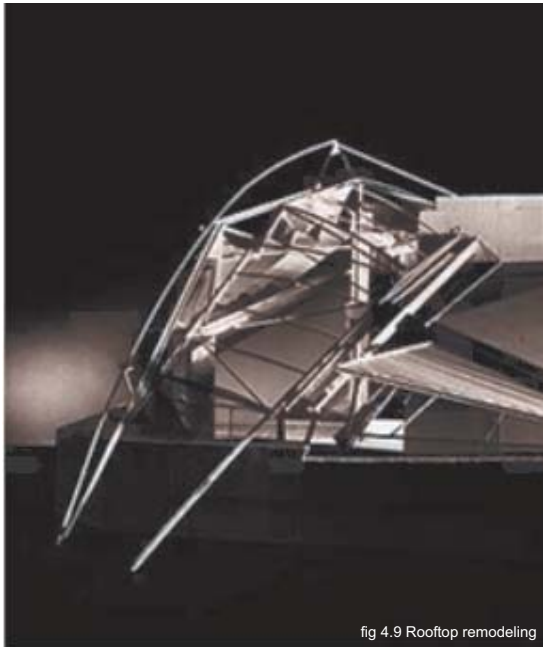


fig 4.9 Rooftop remodeling

00432 Adaptive reuse

Shouldn't we preserve those buildings whose space is a valuable asset, even if they do not lay claim to noble characteristics?

“Every building, however recent, is destined to be transformed” (Pelissier 1994:11).

Because their structure tends to outlive their function, buildings have continuously been adapted to new uses and this need to find new uses when old buildings are threatened with redundancy offers an opportunity of building new **urban tissue** where the old ones have been torn to pieces.

In their damaged state these structures suggest new forms of thought and comprehension, and new conceptions of space that confirm the potential of the human to integrate with the building.

Wanting to preserve a factory made out of disused brick shows a desire to perpetuate its architectural expression. Anyone can understand and sympathize with this wish to give new life to constructions doomed to neglect and ruin.

What can we gain by preserving these monuments of industrial architecture? – Everything! : an urban structure can be conserved.

The spaces for transformation are here, all around us. These include not only the sites of destruction but also the sites of abandonment. The emphasis in converting buildings to new uses has shifted from the historic building and the problem of extending its life, to the challenge of using existing space.

Now there is no choice but to invent something **new**, which nevertheless must begin with the **damaged old** (Woods 1997:27).

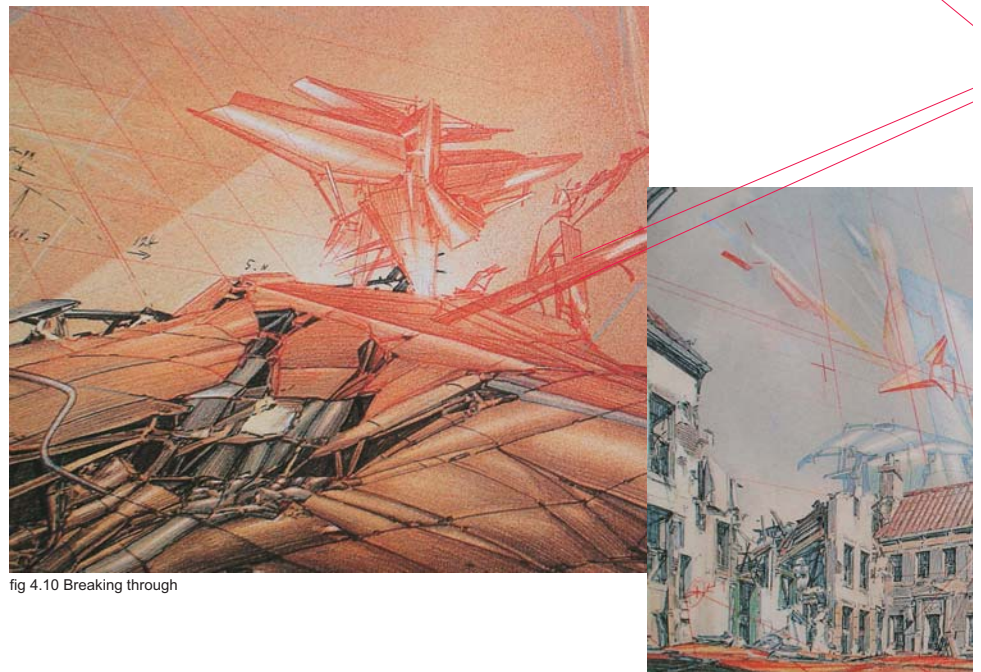


fig 4.10 Breaking through

“The **scab** is a first layer of reconstruction, shielding an exposed interior space or void, protecting it during transformation” (Woods 1997:16).

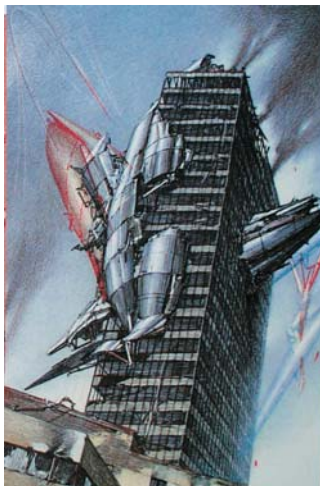


fig 4.11 Scab

“The **scar** is a deeper level of reconstruction that fuses the new and the old, reconciling, coalescing them, without compromising either one in the name of some contextual form of unity. The scar is a mark of pride and of honor, both for what has been lost and what has been gained. It cannot be erased beyond what it is, a **mutant tissue**, the precursor of unpredictable regenerations. To accept the scar is to **accept existence**” (Woods 1997:16).

“The scar shows a more authentic relation to time; it does not consecrate like the monument; it does not make timeless. The scar marks the WOUND without erasing it, allowing healing without forgetting. An impasse is crossed without erasure” (Woods 1997:165).

fig 4.12 Scar



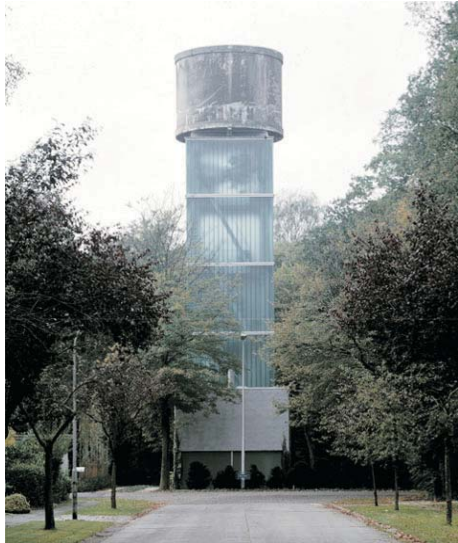


fig 4.13 Water tower house



fig 4.14 Water tower house interior

004321 Precedent: Jo Crepain's Water Tower House, Antwerp

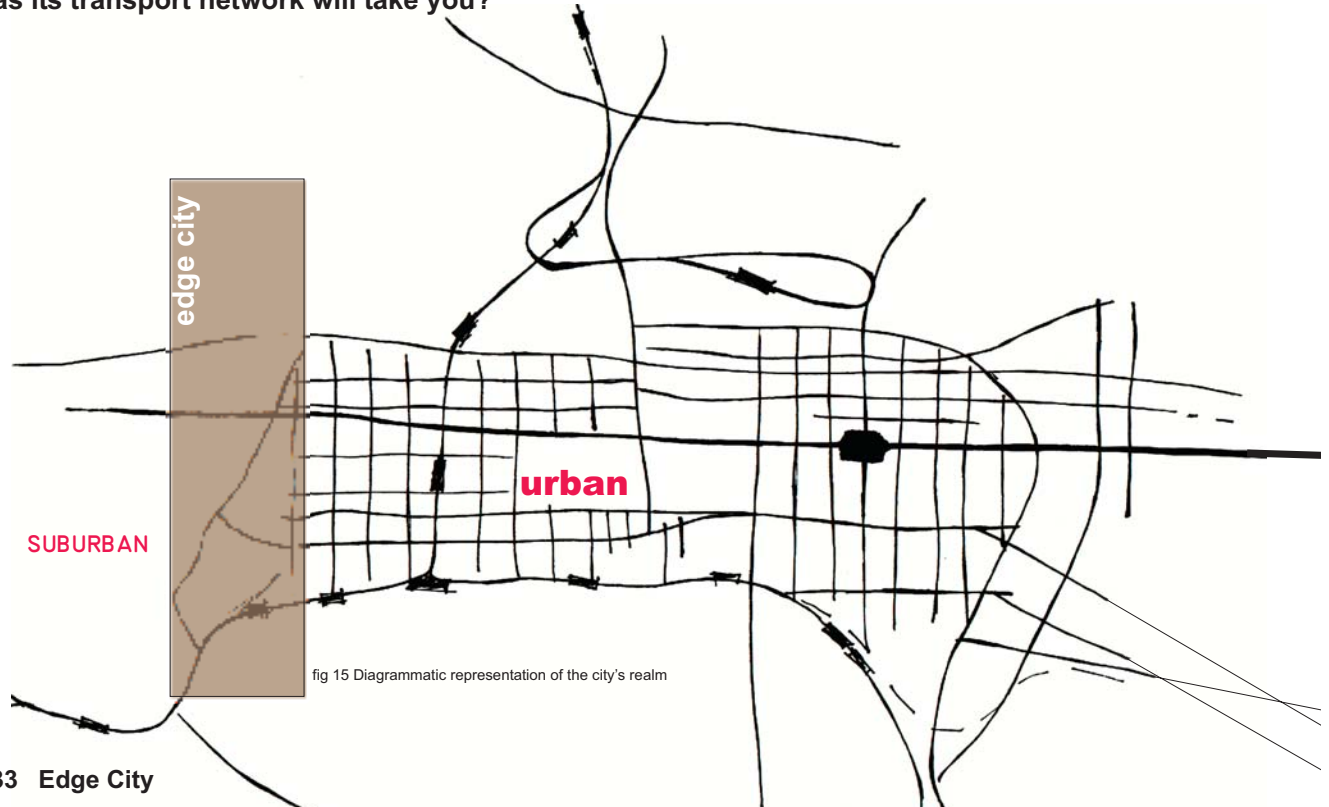
Jo Crepain's sensitive metamorphosis of an empty quayside warehouse into a residential flat respects the architectural character as he has employed cool rationality and a tough industrial vocabulary to open up the building and create extraordinarily austere light-filled spaces.

Erected near Antwerp this water tower was one of the first to be built in concrete and it was taken out of service in 1937 and subsequently fell into a state of dilapidation. It consists of a 4-meter-high cylindrical water tank raised on four 23-meter-high columns. The visible concrete structure of the tower is complemented by elements in steel and glass in a way that has allowed the original character to be retained.

In this precedent, a regular water tower was noticed for its potential to accommodate architecture. Jo Crepain had long been struck by the melancholy romance of the place, by the tower rising from its watery crypt, as skeletal as the surrounding trees, thus architecture was born from its setting (www.jocrepain.com).



Where then is the **edge of a city**? As far as you can see? As far as you can think?
As far as its transport network will take you?



00433 Edge City

The term 'periphery' transcends locality and represents instead a philosophical zone – the architecture of opportunity.

Until the advent of the Industrial Revolution the 'peripheral condition' had long been understood as the demarcation of the city limit where built form confronted unbuilt territory. The periphery may best be exemplified not by its geographical location but by the increasing importance of re-developing industrial areas within city limits. In many ways, the peripheries function as areas of expansion and experimentation for the planning without which no city can survive.

Dieter Steiner explains the periphery as: "a state **in-between**, between old centres and new islands, a region of non-location that remains in motion, free, contradictory, wild and plain beautiful" (Lapunzina 1995:318). The edge does not simply separate other spaces, but defines spaces within themselves, spaces "between". They are not simply outlaw zones, feeding on themselves, but the critical edges of urban life and culture as a whole.

It is at the edge of a city that boundaries are questioned and space leaks and spills out and eventually overflows. It is also at this point, the edge that a threshold has been crossed, but the threshold is not some abstract line; it too is a space of transformation, a place for radical reconstruction. The site under investigation intended to anchor the intervention is at the edge of a city. On entering the Power Station, a threshold is most definitely crossed, an imaginary line, a psychological space begins to unfold in your mind, informing you that you are now at the edge of a city and it is then that you suddenly feel the need to understand what happens at the city edge. It is then all made clear that at the edge of this city, is the place where people come together for leisure, for work, for play and to view the rest of the city.

Whilst the sole purpose of the urban edge is to contain physical development and urban sprawl and re-direct growth towards a more integrated, compact and efficient urban sprawl, the exploration of strategies to counter sprawl at the periphery of cities – the formation of spaces rather than the formation of objects – are primary aims of the edge of a city projects.

The Apartheid City as an Edge City

The Apartheid City has been identified as an edge city because of the demarcation of informal settlements along the periphery of the city with the intention of dividing communities into racially segregated settlements. But, just as the spaces of the apartheid city divided, they also generated crossings and interactions: crossings as people moved and lived and worked in different places. These edges and thresholds within the apartheid city acted as boundaries and our cities are laced with such “uncrossable” spaces. A space becomes an impasse because of the way it relates to other spaces.

“The difference between intervention and insurrection is that the former involves an outside moving in and the latter involves an outside moving out, as in the case of a population that was never truly part of a system. Every city has such an “outside” – a displaced group in a neighbourhood that is cut off from major flows of the city-within it” (Woods 1997:163).

The site provides the opportunity for an intervention to materialize, a moving in of new ideas, a new programme that suggests and provides for new activities.

Pretoria West, identified as an edge city, located along the city’s periphery, comprises mostly of the industrial sector of Pretoria. Characterized by the largely noticeable car industry, Pretoria West is evidently different from what lies beyond its borders - the world of the suburban.

The **edge that divides**, the **edge that separates**, emphasizes and exaggerates the differences between that which is urban, and that which is suburban or even further beyond, rural.

Driven by the light industry in the area, Pretoria West is known for its mammoth scale buildings and intimidating structures that capture and hold captive vast amounts of valuable space. Whilst people beyond the cities limits are purposely excluded, buildings capturing captive cathedral like spaces should be transformed, reintroducing them into society. Redirecting their energy into a new lifecycle paying attention to the needs of its users.

Beyond the edge that divides, lies an **EDGE THAT JOINS**, and beyond the edge that segregates lies the edge that BRIDGES, where possibilities become OPPORTUNITIES, for it is at this edge where people come together simply just to ‘be’. The edge therefore needs to be redefined as a place of ‘being’. That which allows its engagers to come unobstructedly and observe that which happens around them in the city that surrounds them.

0044 Historical exploration

There is a realization that many ordinary industrial buildings had a functional character that gave them beauty and distinction, and the scarring of old buildings in our landscape can be brought back to life.

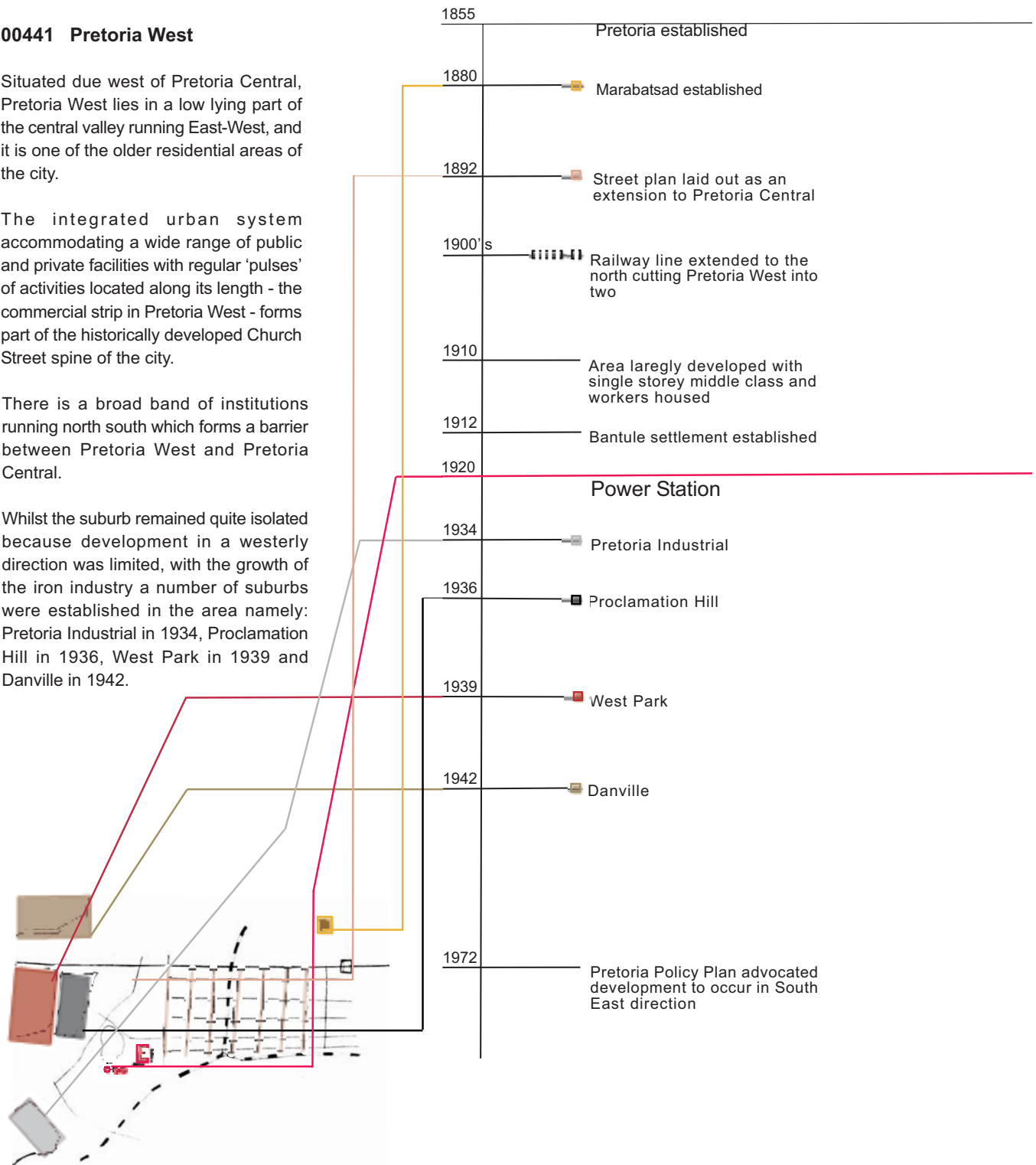
00441 Pretoria West

Situated due west of Pretoria Central, Pretoria West lies in a low lying part of the central valley running East-West, and it is one of the older residential areas of the city.

The integrated urban system accommodating a wide range of public and private facilities with regular 'pulses' of activities located along its length - the commercial strip in Pretoria West - forms part of the historically developed Church Street spine of the city.

There is a broad band of institutions running north south which forms a barrier between Pretoria West and Pretoria Central.

Whilst the suburb remained quite isolated because development in a westerly direction was limited, with the growth of the iron industry a number of suburbs were established in the area namely: Pretoria Industrial in 1934, Proclamation Hill in 1936, West Park in 1939 and Danville in 1942.



More recently there has been a marked increase in the proliferation of non-residential activities, predominately car related and the nature of this change and the scale at which it is taking place is threatening to destroy the residential fabric of Pretoria West (Erasmus 1997:7). "Not only has the number of dwelling-units declined, but the residential character of large parts has almost completely been destroyed" (Erasmus 1997:2).

This gives rise to the concern that the built fabric of Pretoria West is no longer conducive in allowing its visitors to intimately engage with such environments. Development in the area has resulted in the loss or even neglect of the human scale. Spaces giving no priority to the human scale, makes it difficult for people to engage with.



fig 4.16 Abandoned power station

00442 Pretoria West Power Station

The Pretoria West Power Station operated for the first time in 1920 with the erection and installation of the Pretoria "A" Power Station. With a growing demand for more electricity, a proposal for an additional Power Station was submitted, with the decision that the "A" Power Station should be expanded, and another cooling tower erected to assist in the production of the increased energy demands. In 1940 the second cooling tower was erected, but because of the Second World War (1939- 1945), it was not utilized until 1949. The Pretoria "B" Power Station was erected on the same site, south of Pretoria "A" Power Station and put into service in 1961. Prior to the construction of the "B" Power Station, its two accompanying cooling towers were erected in the 1950's alongside the existing cooling towers of "A" Power Station.

The 1970's saw the closing of Pretoria "A" Power Station and the total exclusion of the station in 1996 because it was no longer economically viable to operate. However, the original cooling tower from "A" Power Station remained in use for "B" Power Station until 2000. The "B" Power station cooling requirements were functional through the use of only three cooling towers. The last three cooling towers to be erected were chosen to meet these requirements. Because of this, Pretoria West witnessed the demolition of Cooling Tower 1, leaving the remaining three towers to dominate the skyline of Pretoria.

The derelict original Power Station "A" building is a **remnant shell** waiting to be **re-conceptualized**.

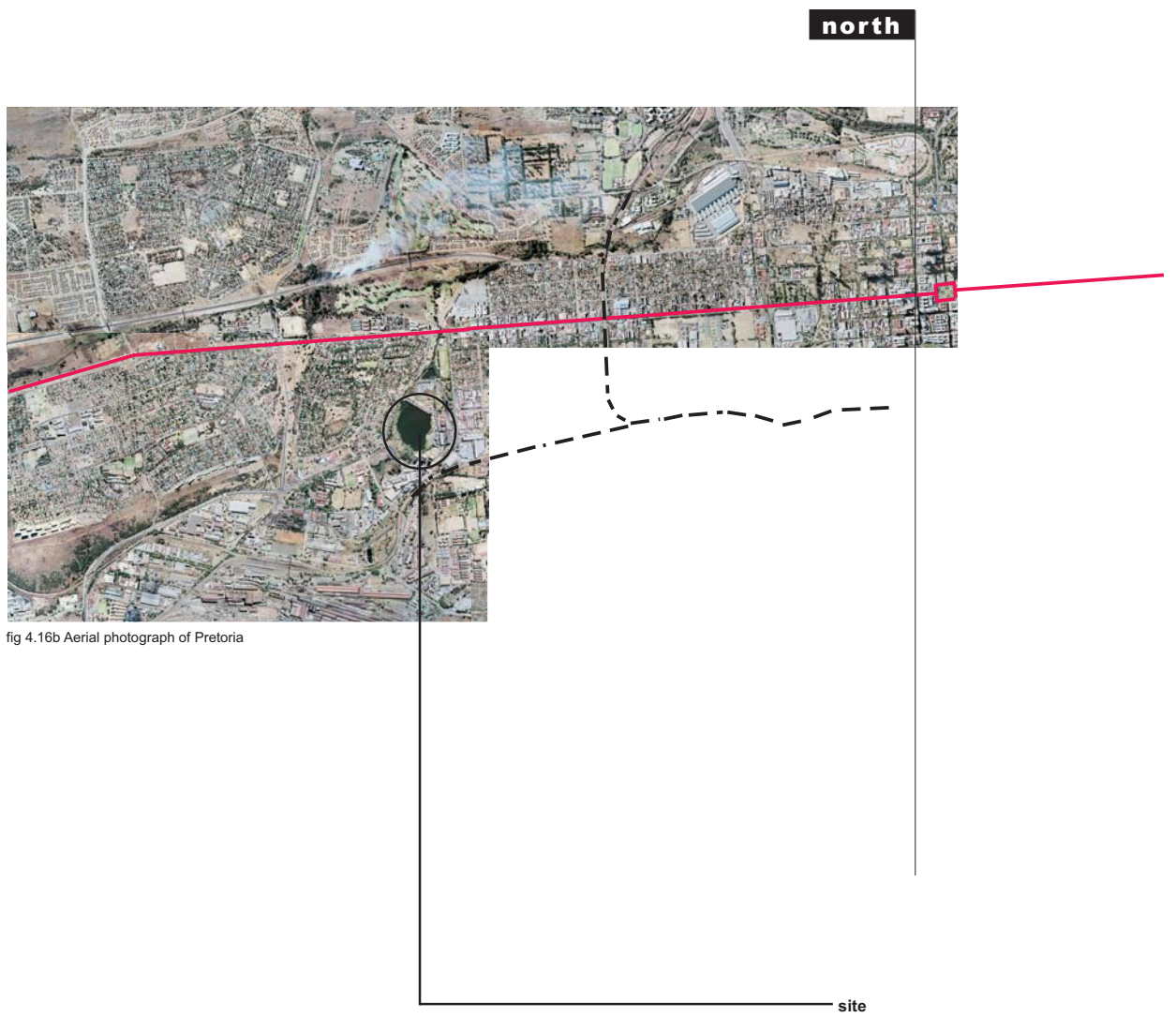


fig 4.16b Aerial photograph of Pretoria

0045 Urban Analysis

This urban analysis seeks to understand the urban setting of the site under investigation. A theoretical exploration of the urban context of the intervention aims to inform and guide the design, with the expectation that the intervention will successfully respond to the landscape and its immediate context.

“ There are existing potentials in our spaces. They must be recognized and drawn upon in order to make possible the transformation of material-social spaces. “radical reconstruction” produces new structures that frame the relations in which buildings and spaces operate: in order to transform social relations we must transform space and time” (Woods 1997:156).

There are no official frameworks set-up for the Pretoria-West precinct. This analysis is guided by the Pretoria City planning and development physical development services.

The site analysis focuses on the programming of site knowledge to produce a multitude of site information layers – to be viewed in various combinations. As a result: an urbanism that manifests from an analytic categorization. Site construction is always a subjective understanding of the infinite number and type of causes constituting an urban site. The site presented by the designer, and explained as such is thus already a designed product of analysis and construction.

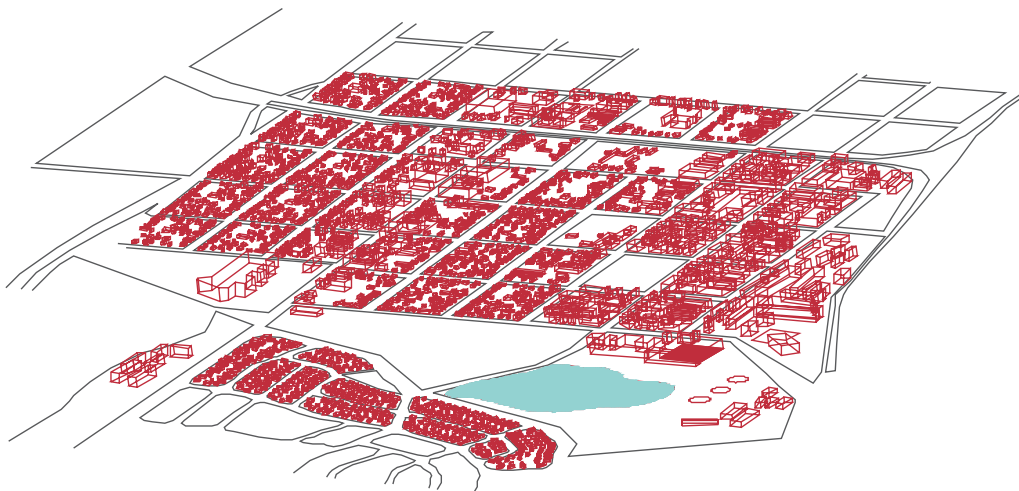




fig 4.17 Space as objects

00451 Macro Scale

Spatial issues at a macro scale relate to the legibility of the city, inter-precinct linkages and the edge interface, and these spatial issues are also concerned with linkage to the wider metropolitan area.



fig 4.18 Building as objects

004511 Figure Ground Study

The figure ground study clarifies the structure of urban spaces in a city by establishing a hierarchy of spaces of different sizes, and the figure ground study of the Pretoria West precinct indicates a lack of definition of city blocks and streets. The buildings are often set back from the street thus not defining the streets as urban edges.

The intrusion of large scale development has resulted in a loss of the human scale, and increased building set-backs have resulted in lack of continuity of street space and poor definition of urban space. Poor interface between public and private realms has resulted in a fragmented pattern of development.

A scattering of **isolated objects** has literally disrupted our territory, strewn along roads and the borders of the compact city.

The fine-grain fabric of the traditional development, particularly the residential component, is evident and contrasts markedly with more recent large scale commercial development. The implication is that the variety and complexity inherent in the area is being reduced, resulting in the demise of unique urban qualities.

004512 Legibility study

District:

Pretoria West must enable as many people as possible to live conveniently close to a large concentration of urban facilities.

Edge:

The edge must be treated as an amenity zone which should be accessible for the enjoyment of all people.

Path:

Church Street with its continuous linear space forms part of the east west artery of Pretoria. The linear space becomes an entity in itself, like a linear park which connects various significant activity nodes.

Node:

Church square is the original energy source of the city.

Landmark:

The physically defined visual loci that mark place in Pretoria West comprise of a number of buildings,

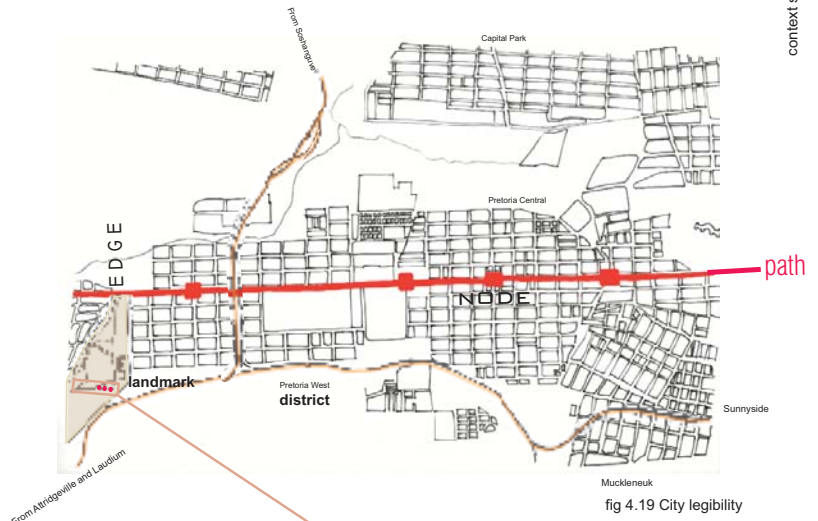


fig 4.19 City legibility

context study

site



fig 4.20 The urban system that feeds into the urban edge

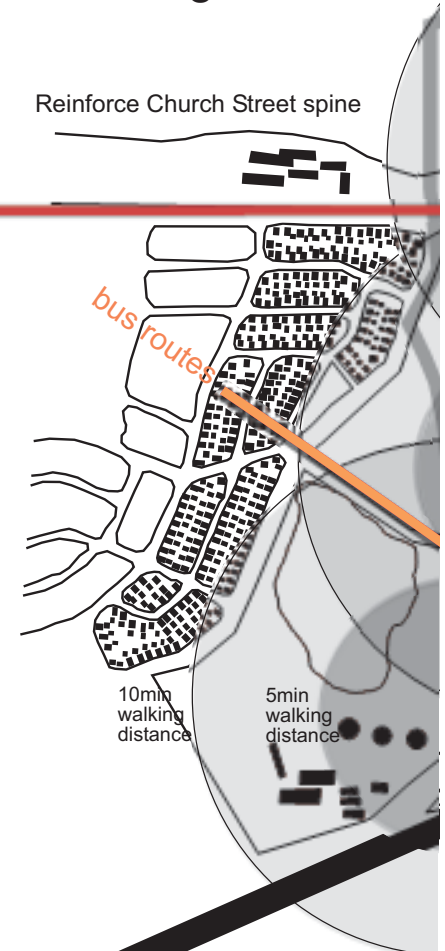
Urban fringe planning is often associated with the idea of recreation and escaping the city. This gives rise for the opportunity of allowing people to gather at the city edge with the intention of recreation.

The identified strip of **urban voids** reaffirms the city edge, and the densification of these sites in turn result in the recycling of the urban fabric.



edges

Reinforce Church Street spine



comprises of the gridded street network, together with services infrastructure, the railway infrastructure, including all stations, Pretoria Wholesale Market, Pretoria Show Grounds, Pilditch Stadium and the Power Station. It is of interest that part of this utility, the power station, has been phased out, and that the buildings together with the three cooling towers and dam, are landmark elements.

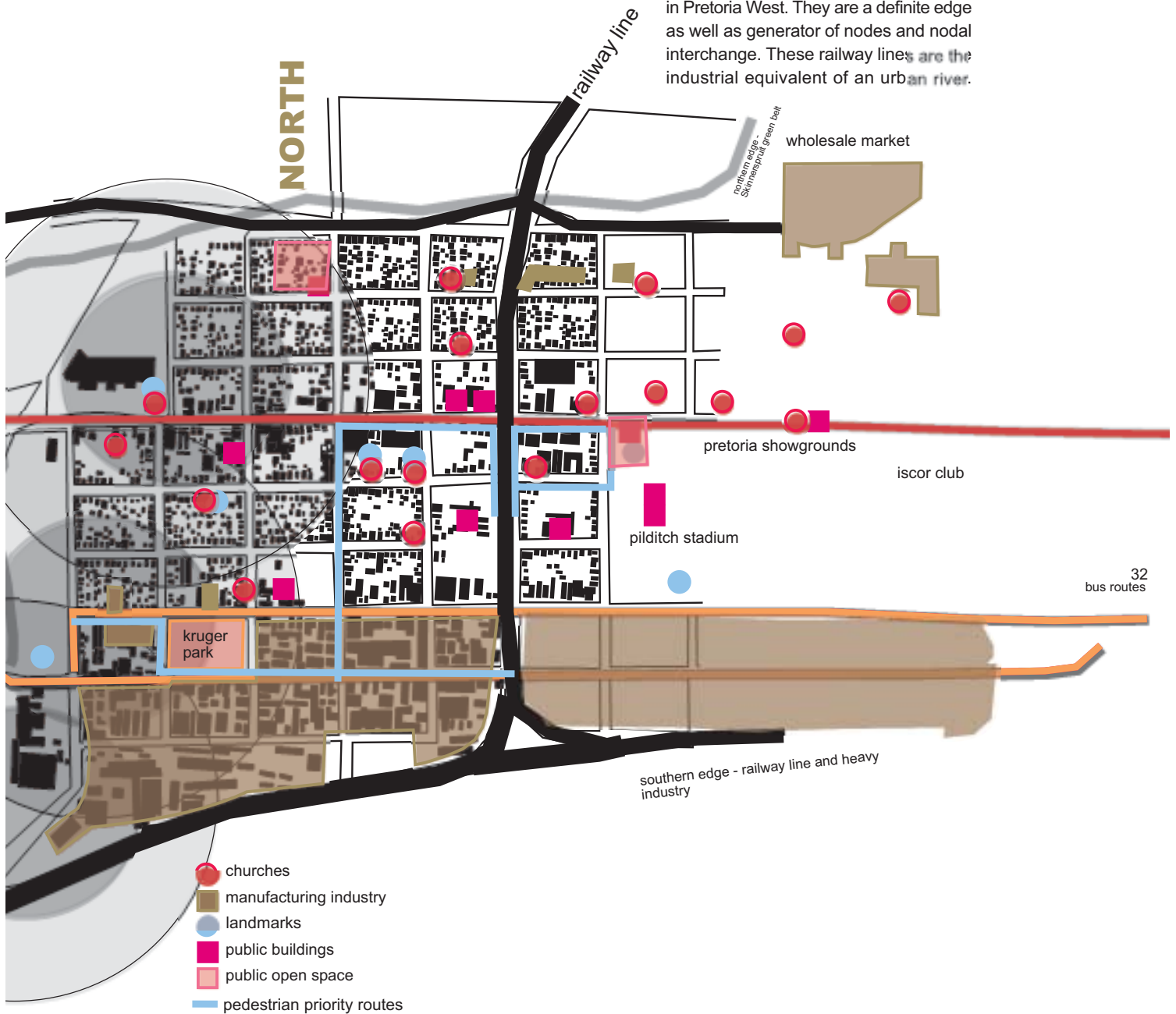
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The commuter rail system, with a number of stations at close intervals, serves the industrial area adequately. The finest grain commercial activities are those along Church Street, which is also part of the historically developed urban spine of Pretoria, whilst activities along Mitchell Street tend to be predominately car related. A fair number of institutions are located in Pretoria West and the immediate area; several of these are of metropolitan significance. This concentration of facilities entails that a large number of people are drawn to Pretoria West on a regular basis, which has potential for supporting and reinforcing the commercial structure.

The identification of city's edge and an understanding thereof allows the architect or urban planner to capitalize on the potential within a site such as that which the power station is located on...

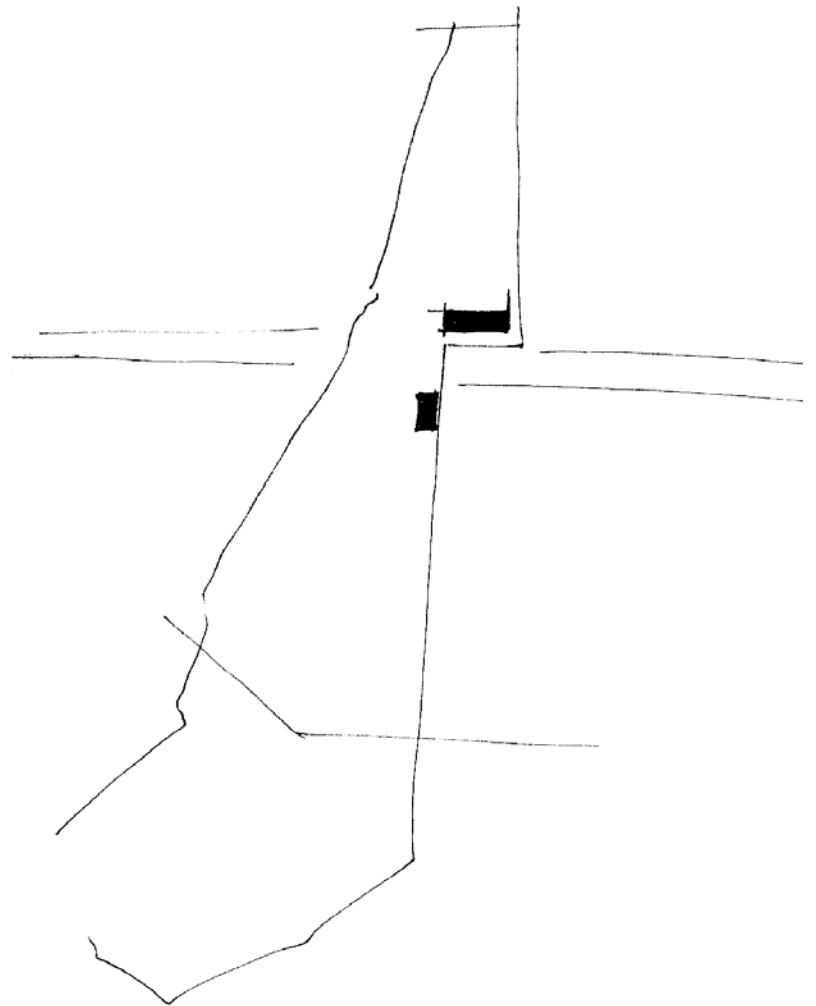
"Urban voids", if dealt with correctly may operate as social condensers. Bringing people together and providing the space and environment in which to do this, with the help of the intervention, the city's users now have the opportunity to engage with a site that was intended to only serve the function for which it was created. The railway lines form a pivotal feature

in Pretoria West. They are a definite edge as well as generator of nodes and nodal interchange. These railway lines are the industrial equivalent of an urban river.



Analysis of infrastructure

00452 Meso Scale



Buildings are constructed as distinct structures that derive their usability by plugging into various networks.

At a meso scale, it is still evident that this site is in fact an urban void - an industrial wasteland. Existing railway tracks and ash dumping sites, one begins to realize the importance of reading and understanding the site as a complete whole. At this scale, the intervention is identified as a catalyst for the rehabilitation and re-inhabitation of this entire site.

Currently the site has two entry points but only one is operational. An additional entry point is suggested closer to the towers to accommodate for the need of an increase in population.

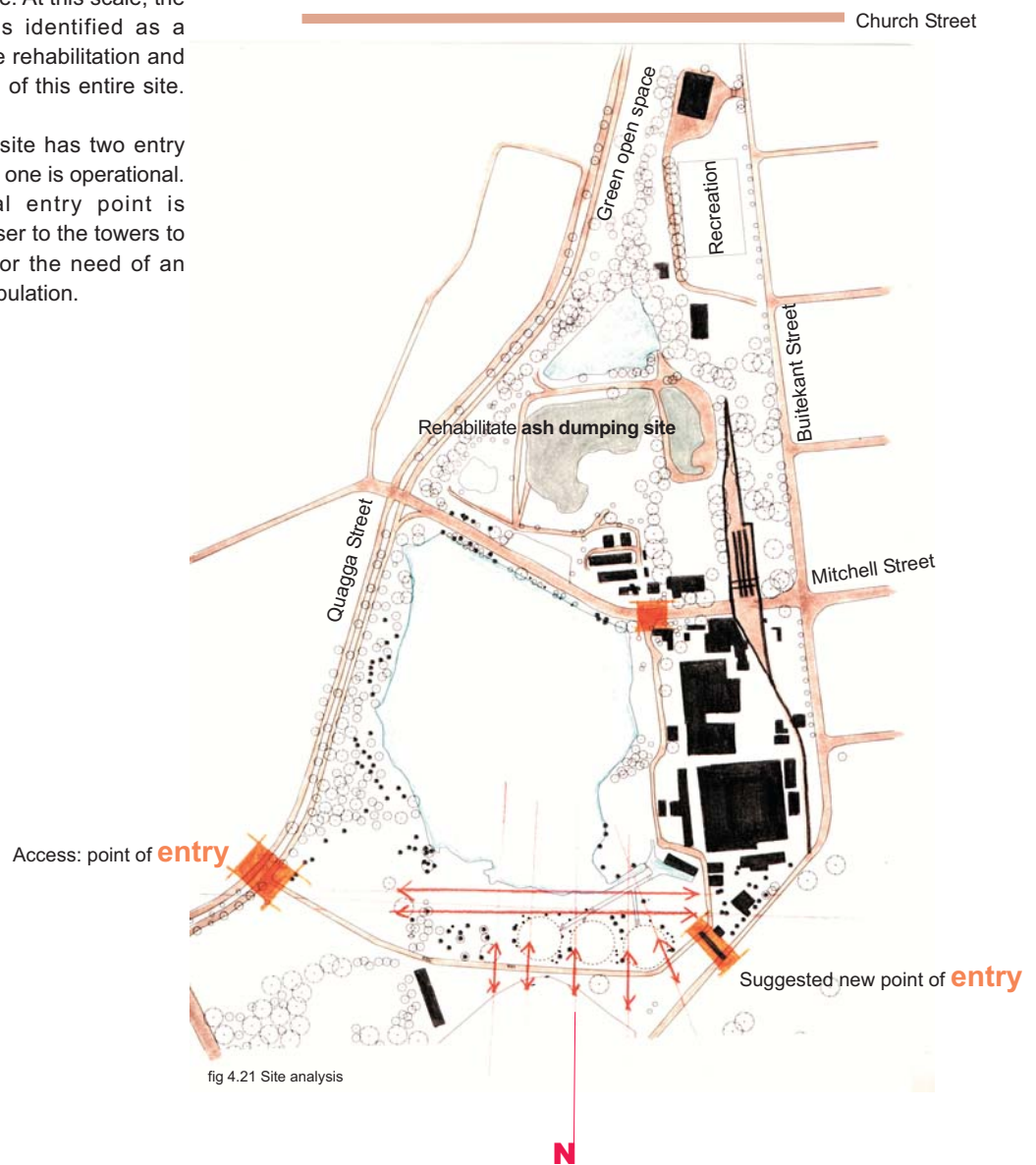
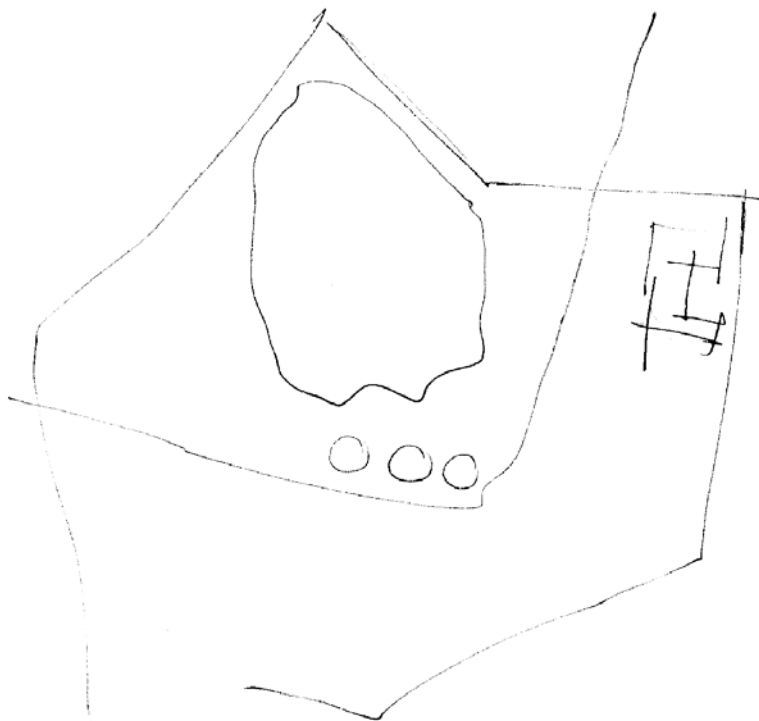


fig 4.21 Site analysis

00453 Micro Scale

Site itself is the construction of indefinite knowledge of and from the urban fabric and location; while the urban site cannot be seen as a stable and constant place – neither spatially, nor socially. This knowledge of *site* is most often an experientially based knowledge, expansive to include the larger surrounding urban fabric (Kahn 1995:200).

An important issue in the planning of the site is the degree to which both public and private spaces are revealed, understood and encountered.



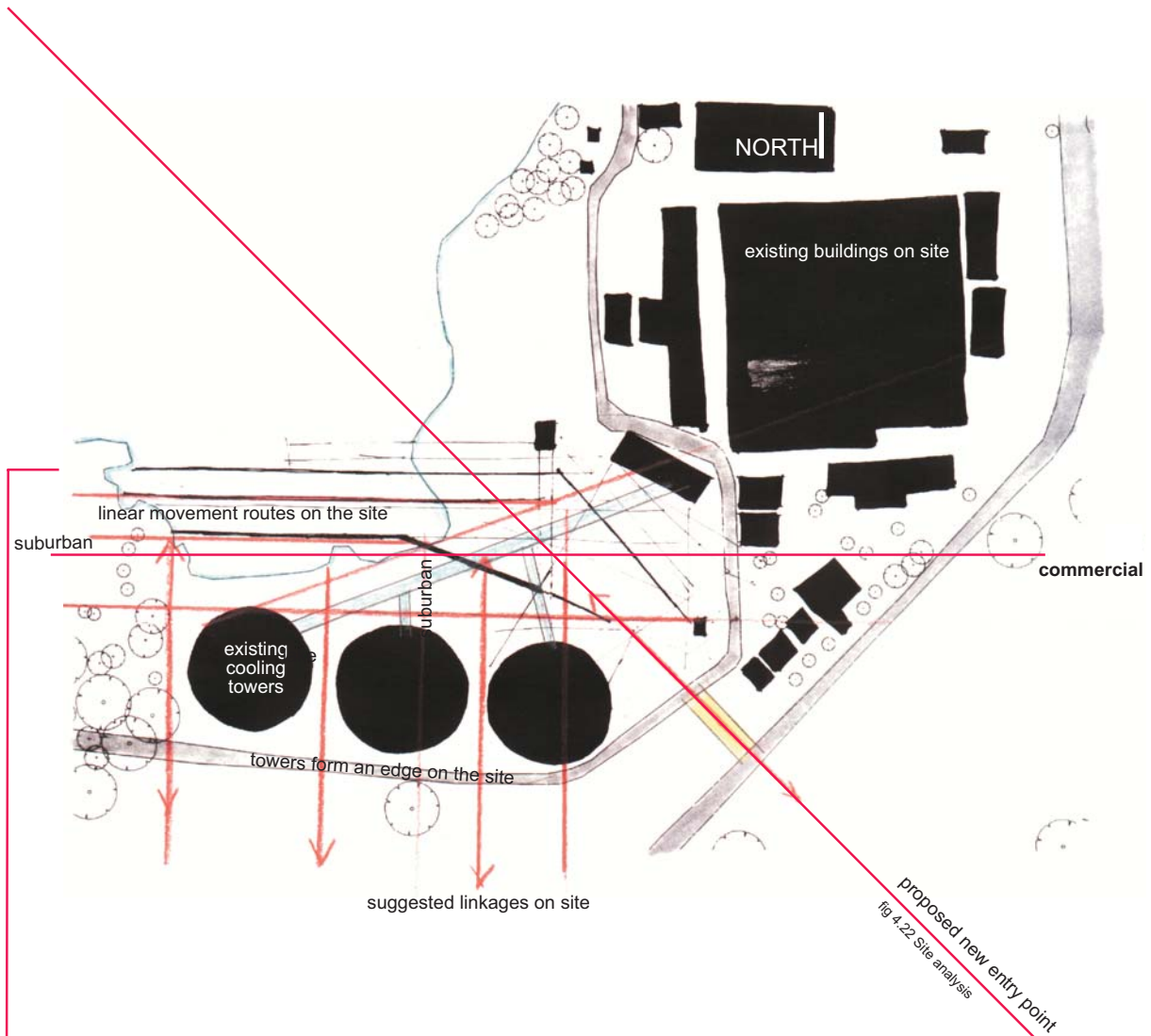


fig 4.23 Aerial photo of site

The existing buildings on the site frame the road to the towers. Standing alongside the lake, the three cooling towers form a very distinct edge on the site. Movement on the site is suggested to be directed by the linear space formed between the towers and the edge of the lake. This space between the two edges on the site gives birth to the specific site for the intervention.

The intervention seeks to link the suburban sector with the commercial sector of Pretoria West. Thus the specific site for the intervention gives rise to the possibility of a linear design which is aimed at facilitating and bridging these two areas on either side of the site.

0046 Development strategies

An important factor in the achievement of a dynamic urban quality is the multifunctionality of space; human activities are too complex to be compartmentalized into simple spatial cells.

The intervention aims to ensure the maintenance and reinforcement of an integrated and connected open space system, which is a functional part of the urban structure and which is accessible to all and that focuses on higher density urban development with a mix of residential densities and where possible concentrations of the highest density developments at points and lines of high accessibility.

00461 Urban Proposals

Clear and comprehensive linkages should be defined between urban elements and by strengthening and defining urban borders and boundaries, landmarks and activity nodes, this may be achieved. The Power Station site should be treated as a clearly defined edge and this should be maintained and strengthened.

The power station site as a whole seeks to achieve the following, with the intervention proposed acting as a catalyst for the desired changes. On a larger scale, the intervention aims to achieve:

- high residential densities within walking distance of the commercial strip
- proximity of public open spaces
- the presence of landmarks
- maintain the edges of Pretoria West

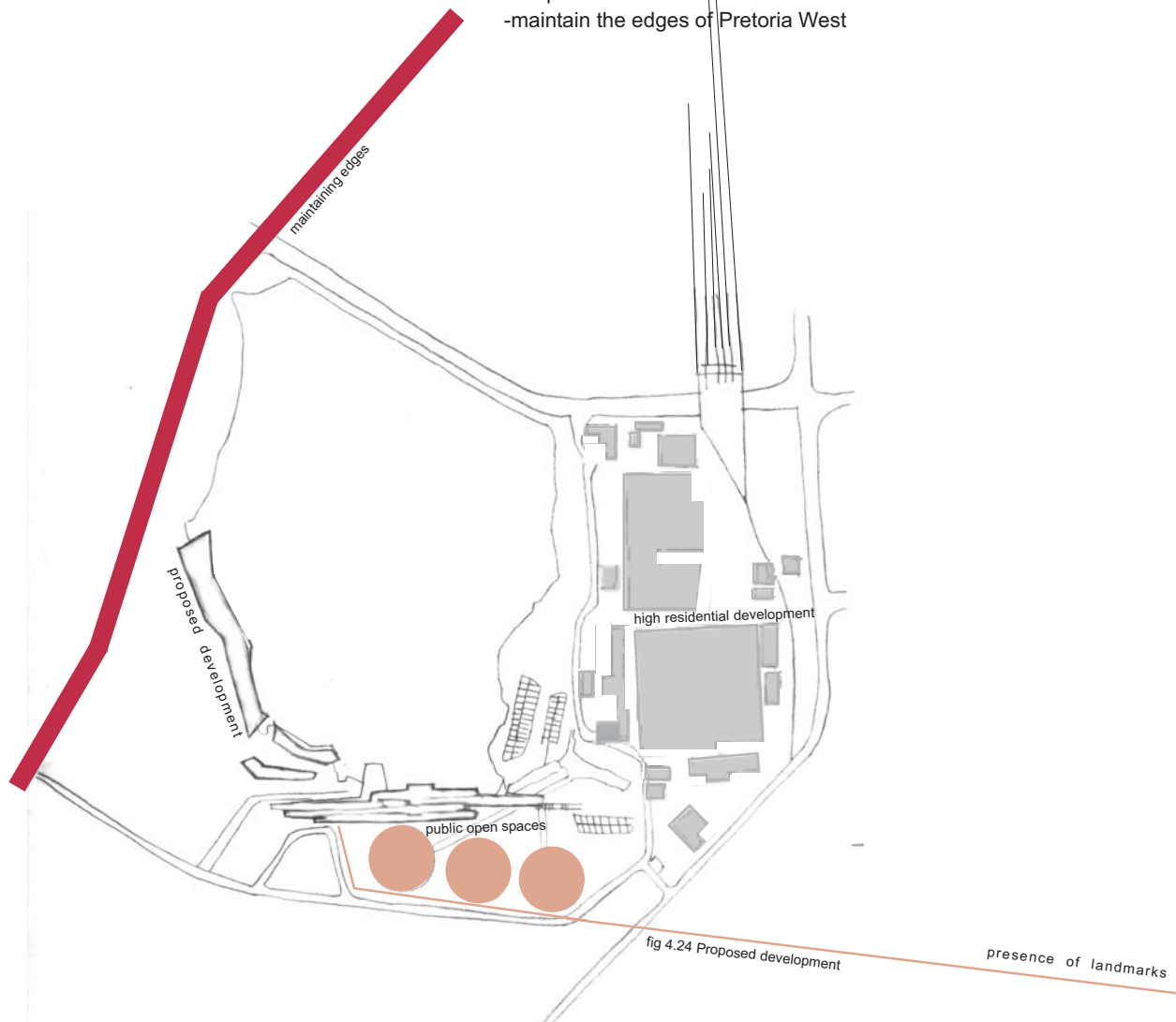




fig 4.25 Eastern elevation of site

0047 Narrative Journey

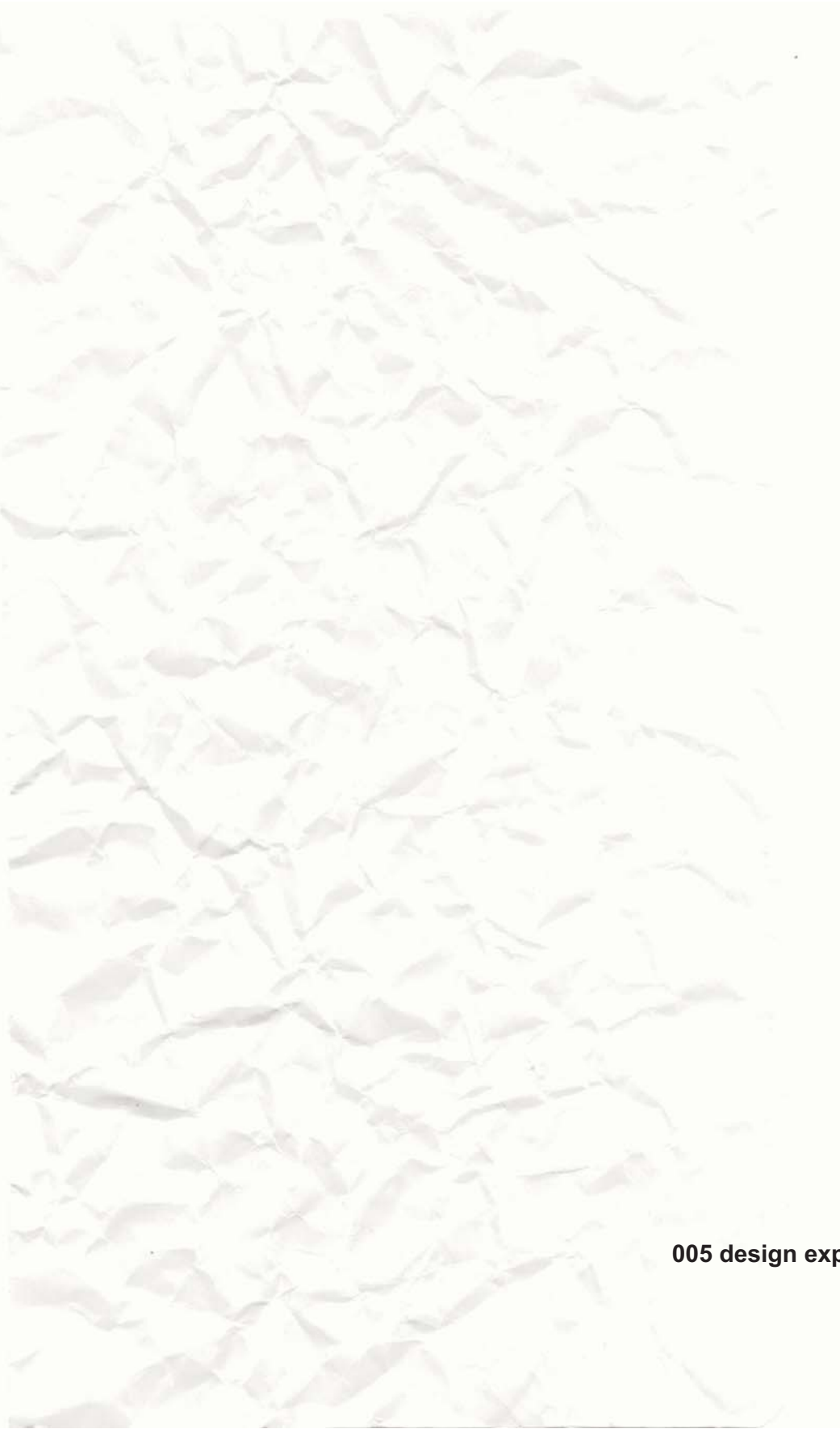
Driving down Buitekant Street, suddenly I catch a glimpse of the three standing **“urban survivors”**. Turning right into Mitchell Street I start comprehending the setting and context in which they find themselves, standing all alone. Entering the main gate of what was once the only entry point into the power generating station of Pretoria West, I'm filled with a rich nostalgia of the past life of this now derelict and abandoned **“urban void”** – “sickness that if not dealt with may spread and contaminate the surrounding area”.

As approaching the towers, the car can go no more. Hit by this vision of suspended walkways and restaurants floating above the water, the only question searching for an answer is, “How did they get up there”, On top of the tower?. All is about to be revealed as I excitedly approach the floating bridge. The anxiety is high, catching odd glimpses of the towers, then the lake, then the bridge ahead of me. All views controlled and structured, I almost feel like the architect intended on playing games with me. Showing me a piece of something, then immediately taking it away. It is at that perfect point in time that all is revealed.

.....so this is what all the anxiety was about.....



... the intimidation of a blank piece of white paper...



005 design exploration

0051 Design brief

The 'programme' throughout this project is thought of as a set of desired behaviours and the spatial qualities appropriate to them, rather than a statement of quantities of space.

This events centre seeks aims to create an environment where people not only engage with one another on the occasion of various events, but that they engage with the immediate environment hosting these events.

The intervention is a place of meeting and interaction. The site will encompass a large park, allowing people to weave through the site, crawling at the feet of the cooling towers and engaging with them on elevated walkways as well as interacting with the lake.

The creation of an **urban events centre** gives rise to the possibility of large crowds gathering and moving about the site comfortably.

Certain design requirements have been placed upon initial conception of the intervention which informs the brief of various decisions.

These include:

- The decision to design for **maximum INTEGRATION** into the surrounding environment and landscape
- The site as well as the building should have multiple entrances and various access, resulting in an intervention that permeable and accessible
- An interplay between the interior and exterior
- A place that facilitates and embraces unplanned visits as well as this place being a destination
- A place of respect and **grandeur**
- Providing education in the form of a museum of coal-fired power stations as well as providing entertainment with the various events
- To reintroduce the towers as **icons** in the city
- That this place be a place of **convergence**

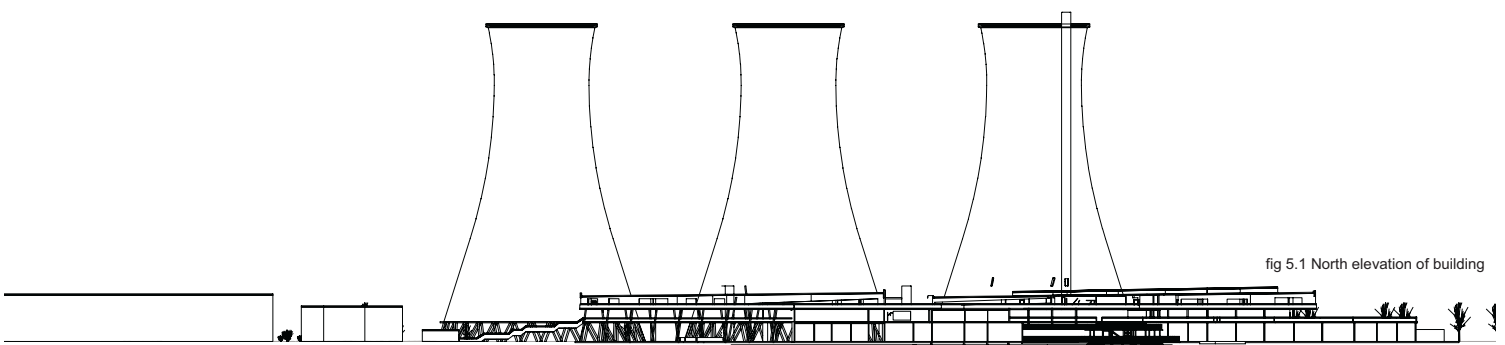


fig 5.1 North elevation of building

0052 Design conception

The feeling when engaging with the power station for the very first time is overwhelming and breath taking. The experience suggested to me that something of value had just been discovered - a hidden treasure - waiting to be found in order to be transformed into something far greater than that which it currently is, a relic from a previous industrial era when it was the size of the structures that spoke of their importance in society.

From a distance, it appeared that these epic structures exist in a state of complete disagreement and contradiction. Whilst the towers, mammoth in their appearance, bring about feelings of anxiety and intimidation, it is the presence of the lake alongside them that contributes a sense of serenity and composure to the site.

In exploring the relationship that stems from the space between the towers and the lake, it becomes apparent that this state of contradiction in which they exist, does in fact inform the design and can be seen as an asset if the design responds to this relationship and exploit the tension between these opposing elements. It was only in exploring and understanding the potential and power in contradiction, that the question, can contradiction as a productive force produce an architecture that exploits this characteristic arose?

The site lends itself to other contradictions. Fully dependant on man for its existence as a power station, all the structures on site suggest a scale which indicates otherwise. The scale of the structures on the site has little regard for the interaction of man and in no way does it indicate to a visitor that man was ever a part of this once fully functional and flourishing industrial site.

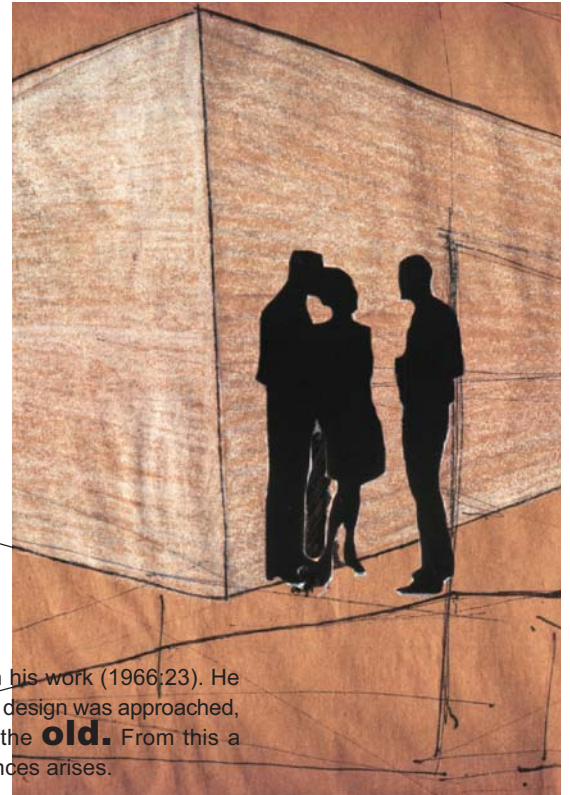


fig 5.2 Concept sketches

As an architect, Venturi chooses to embrace the phenomenon of 'both – and' in his work (1966:23). He acknowledges the law of contradiction and it is from this similar perspective that the design was approached, **embracing both the new** and merging it with the **old**. From this a meeting that produces new meanings by mixing the boundaries between differences arises.

The design concept was seeking to revive these disused structures by accentuating and reinforcing their initial architectural qualities within the context of their new functions. Original functions are of course ephemeral, but the architecture remains and can be reused.

The design reacts and responds differently at different points of the programme, informed by the activities suggested for the various spaces, the intervention in some instances fills the existing voids, and in other situations, the intervention responds as a parasite, attaching itself to its host, the towers. In some instances the intervention forces you around the tower with a controlled circulation route.

During the design conception, the decision was made to limit the scale of the intervention to prevent it from competing with the scale and drama of the existing elements on site. This recognition of the physical context as a dramatic backdrop upon which the intervention could attach itself was an important comprehension that later played a major role in perceiving the site as a unified whole.

fig 5.3 First concept model

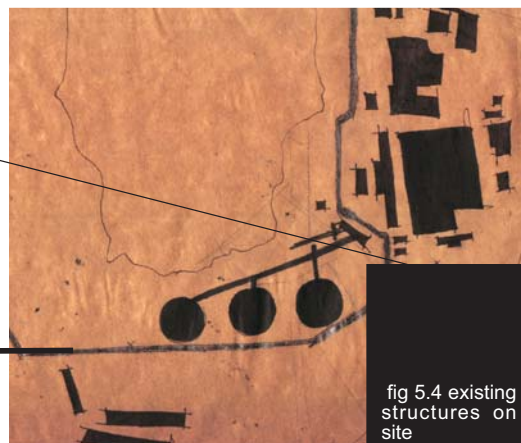
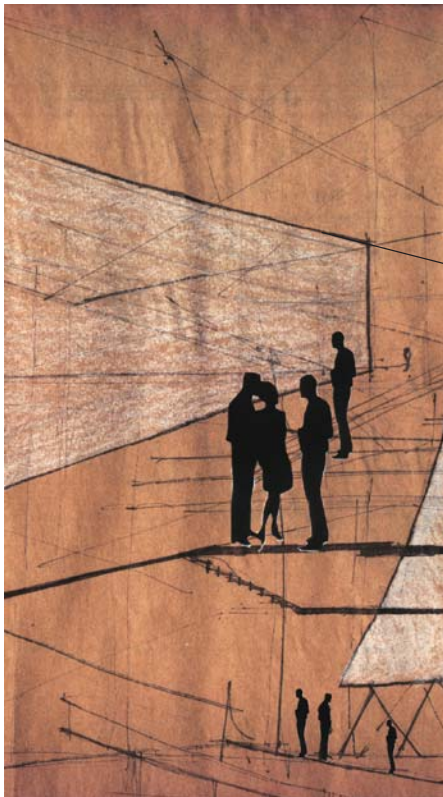
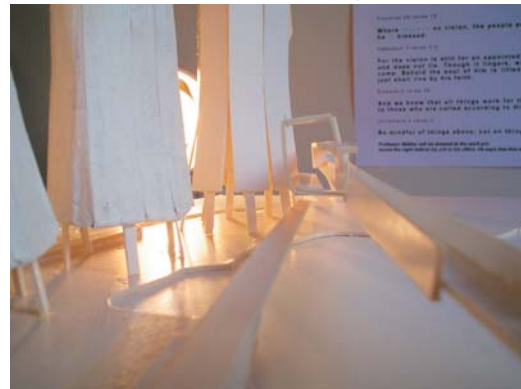


fig 5.4 existing structures on site

0053 Design approach

43

Throughout the design conception the main approach is to provide people with the opportunity to experience such vast unusual spaces that the cooling towers contain inside and create outside. This design, aimed at creating a place of grandeur. A place that provides both education and entertainment. Spaces that are versatile in functions as well as participators, even in times of participation.

The intervention aims to reintroduce these towers into the urban fabric, and to reinstate their rightful positions as icons and recognizable landmarks within the city.

The project focuses on creating spaces of convergence, a coming together of activities and people, and it is best described as a coming together of:

Architecture and people
Architecture and administration
Architecture and the city edge



Space is perceived and dealt with throughout the design as an envelope, a surface that **coils and uncoils**, rises up and shrinks back again. Because circulation is an important element in the design of the intervention, circulation and movement throughout the intervention is seen as a social act, and even crossings, pauses, and breaks become movements.

As a designer of the built environment, I recognize the importance of seeking to preserve the traces of the past within our cities and allowing the layering of rich environments to develop. It is through the acknowledgement and respect of a city's past that the city of collective memory slowly starts to form and become a city layered with memory as parts of the city's fabric undergo recycling yet never erasing that which is of a past era.

The architecture in this project speaks of an architecture of **BENDING AND TWISTING**, in a continual struggle against gravity, against time, as the towers threaten the participator with their age and verticality. An abandoned architecture, not waiting to be filled, but serene in its transcendence.



0054 Design evolution

In the process of the design exploration, the design reached a point of stability from where it could evolve and blossom.

Neighbouring buildings on site are anchored to the earth by establishing a sense of control over the landscape, almost dominating it. As pedestrians crawl at the feet of these industrial artifacts of a bygone era, it is only when the engager comes into contact with the cooling towers, that this perception changes, for it is at the feet of these towers, that it's understood what a minimal impact these towers have on the earth as they rest so lightly upon the soil beneath their columns. Their appearance from a distance suggests that they - the towers - are heavily grounded structures, yet when standing alongside them, you begin to comprehend the sacredness of the ground floor as it is almost entirely **freed**, allowing the space that fills the void within to overflow and leak out as it comes into contact with the ground floor. Little physical contact is made between the towers and the site and this results in the perception that these enormous structures are floating.



fig 5.5 Ground floor of cooling towers

For the reason of allowing the participant to experience the sacredness of the ground floor, the participant is afforded the opportunity to wonder through these towers, walking beneath them as they follow a path leading towards the forest of columns.

At the edge of the city the essence lies in the design of spaces not objects. The building symbolizes a bridge, a continuous linear space with connected floating walkways hovering above the lake and suspended in mid air, suggesting that the anchoring of the site and the intervention is very much a philosophical one, as the intervention embraces the idea of freeing ground floor with gaps and openings punched into the building.

Throughout the building, it is the movement spaces that are the main element of the design, and since much emphasis is placed on the designing of the circulation routes it becomes clear that the designing of spaces rather than objects is more important.

fig 5.6 Concept sketches



45



fig 5.7 Water channel leading to cooling towers



fig 5.8 Freeing the ground floor

00541 Functionality

“One of the most important effects aesthetically of the industrial revolution was the introduction of structures into the landscape that had nothing to do with the human scale, but reflected rather the superhuman nature of the new industrial activities” (Richards 1958:20).

The City Generating Station is a product of the industrial revolution, and it belongs to a group of purely functional buildings that receive their extraordinary architectural qualities from their straightforward utilitarianism. Their awesome scale, sensitive but confident handling of materials and the articulation of architectural elements such as stairways and window openings, create a subtle architecture intended to fulfill the needs they were built for.



fig 5.9 Layering of site components

Industrial buildings have been designed and built with the realization that sometime in the near future they will become obsolete, technology will improve and they will be outdated. One day these structures will be empty shells, sculptures in the landscape, a visual testimony to change. Either having to be destroyed or have a large sum of money invested for their renovation to fulfill a completely different brief.

In order to provide the opportunity for participants to engage with these structures, the reintroduction of the human scale into these environments needs to be carefully addressed. The intervention seeks to solve these issues and provides the opportunity for the participant to engage with these structures and buildings in a way that before was never possible. These once mono functional utilitarian structures now transformed become vibrant spaces where people gather.

00542 Design language

“A ‘freespace’, is a non-place - a place not utilized, without function or meaning - where a surge is most likely to enter. It is here that the surge is able to overflow, to shake and stir - consolidate into dense composites forming ripples and ridges. A rupture arises, which, in turn, creates new surfaces –composites” (Woods 1997:162).

These towers, once a freespace, now will have forms rupturing from within them, creating new surfaces above the towers, viewing platforms, overflowing of spaces. These new forms attempt to blur the boundaries between the inside and outside of the towers. No longer a freespace, these forms modestly transform the space from **‘void as emptiness’** to **‘Void as wholeness’**.

Parasitical architecture forms an important part of the design language. In some instances the intervention is literally a parasite and attaches itself to the host and remains distinct and programmatically interconnected with its host. Because the parasite does not recognize boundaries and edges, it is important that the parasite introduces new edges. Space that’s needed for its survival is often negotiated between the parasite and the host. As the parasite inserts itself into and between the towers, this becomes apparent. Absorbing its hosts’ infrastructure and allowing for openings and developments to occur it is made clear of the important role the host plays in making this intervention possible.

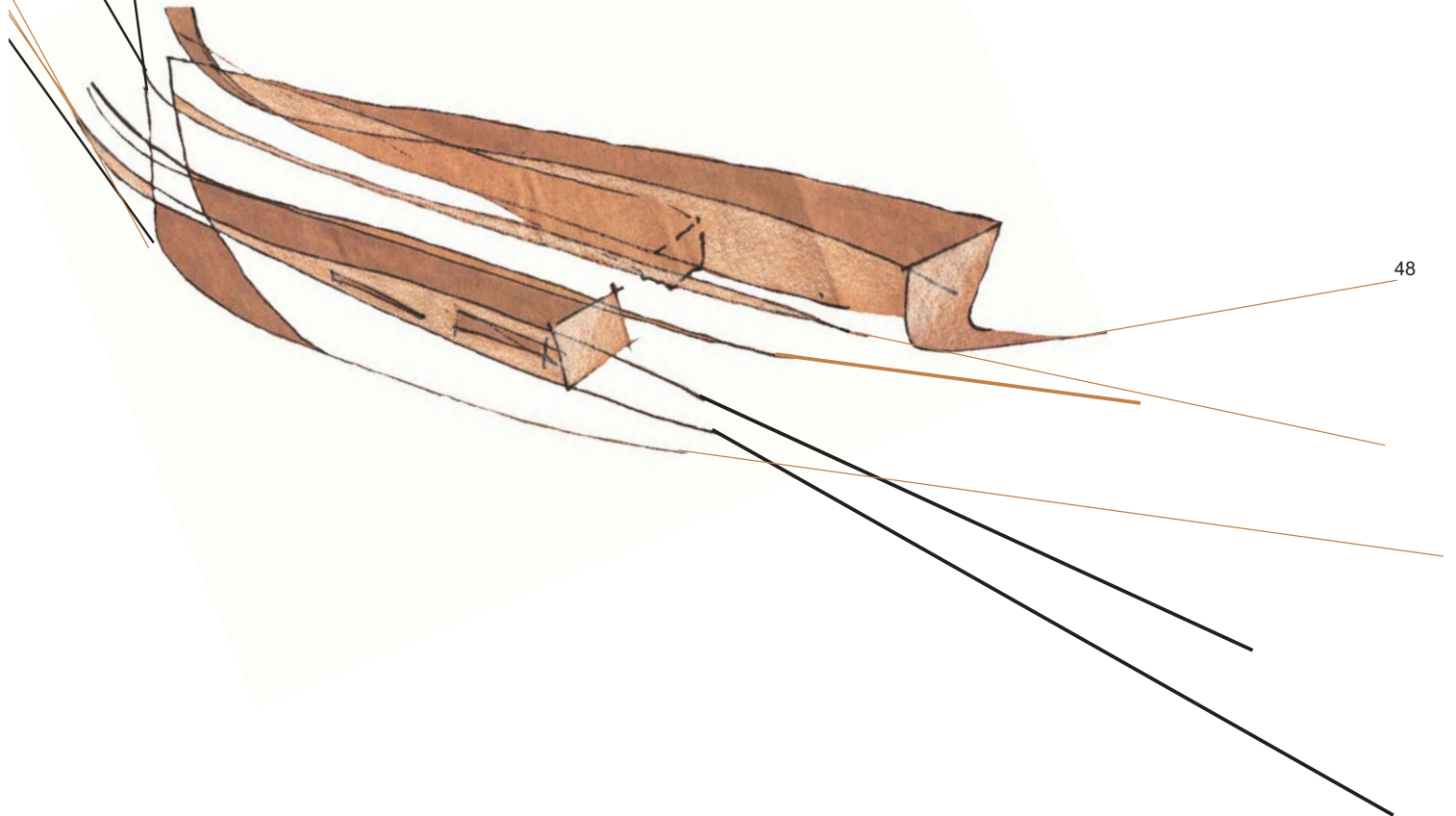
When dealing with architecture of a parasite, a new building works with and adds to and incorporates elements of the old. The design language understood here is the identification and significance of the old, and the relevance in responding to it in order for the intervention to be a success.

00543 Scale, form and proportion

Pedestrians crawl at the feet of the towers. In no way does the scale of the towers acknowledge the scale of man. Perhaps it should never. It is after all the scale of the towers which leaves you feeling intimidated and overwhelmed. No building on the site competes with the scale of the towers and no intervention in future should ever try to. It is important to clarify that the intervention seeks to compliment the scale of the towers by in no way interfering with it. The intervention is designed to relate to the human scale, and because of the intervention it now becomes possible for man to engage with the towers.

The form of the building responds to the **verticality** of the towers. Seeking to compliment the form of the towers, the building is designed around a linear movement route. The form of the building is derived from the functional requirements needed to accommodate large groups of people, with walls acting as channelling mechanisms, the circulation routes on site and throughout the building give birth to the form of this building, along with other considerations.

Proportion within the designing of such a building is a major driving force in the design conception. The proportion of the building to the towers is very important because it directly affects the way in which the building responds to the towers. This consideration for proportion confirmed the design decision that the building height should be no more than three storeys.



00544 Circulation

The participator must attempt to see the experience of space continuity in terms of a series of movement systems based on different rates of speed and different modes of movement; each of these interrelated with the others and each contributing its part to the total experience of the site.

The spatial flow meets the functional needs of the building which is to welcome a large public comfortably, especially during exhibition previews and events; and to move about easily, even on busy days. Throughout the building, space is treated as permeable, and flows go both ways, in and out of it; space is permeated.

Movement in and around the site is seen as the vehicle of experiencing the towers, for without movement, no space relations will be experienced. Because movement carries such a responsibility in terms of experiencing the site and the intervention, circulation throughout this project is treated as a social event. Circulation areas are treated as transitional zones between public and private realms. If movement throughout the building is to be perceived as a social act, then the concept of inhabitable circulation becomes important. In order for circulation routes to be platforms for social events, they need to provide the opportunity of being inhabited rather than merely serving their function as alleyways of movements.



fig 5.10 Spatial organization

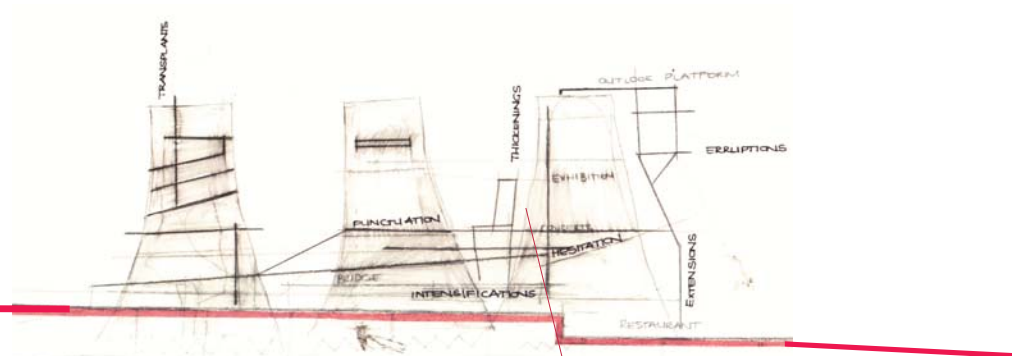


fig 5.11 Movement paths

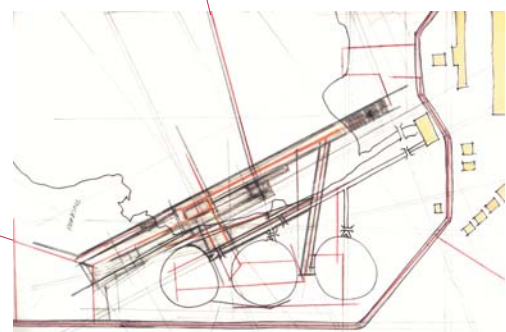


fig 5.12 Circulation routes around the site

Spatial organization



fig 5.13 First concept model of floating bridge

The **floating walkways** linking the building to the towers are seen as 'strips of space', longitudinal sections of inhabited circulation routes. Walls too are placed to aid the movement of people along and through the building. These walls together create a bundle of pathways. Roofs too become inhabitable and serve as viewing platforms beyond their functional demands.

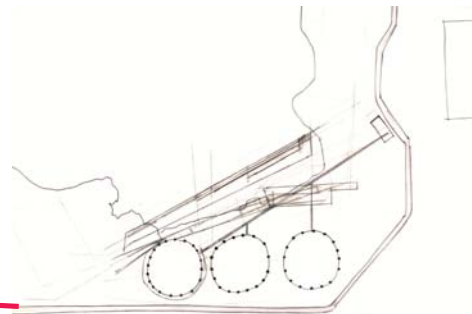


fig 5.14 Movement paths _ concept

Precedent: LOT-EK

LOT-EK is an architecture studio based in New York. As an architectural practise, many of their projects deals with the rethinking of the way in which the human body interacts with products of the Industrial culture. (www.lot-ek.com)



fig 5.15 Above times square

Above Times Square

As a tourist destination, the **s p a c e a n d c r o w d s** are the event. Elevated catwalks provide vantage points above the street and up the sides of the buildings, inhabiting the spaces behind the billboards. The proposal enhances passage and allows stopping to view the Square.

This new layer of circulation has flexible components that can adjust to specific events, such as collapsible stage and bleachers. Activated billboards provide views and amenities such as comfort stations, lunchtime bench perches above the street and visitor. They also provide general balconies for the spectacle and box seats and platforms for politicians and at special events.



fig 5.16 Path of walkways

00545 Skin vs shell

Skin represents a transition between the outsides and the insides. Industrial skins have assumed a life of their own. It is a life whose pedigree, however is more alien than human. Our skin is alien to us, marking the exterior, the end of ourselves. It is a screen on which we watch its ability to heal.

In dealing with spaces inside the towers, the outer envelope has been detached from the interior volume. The building within a building begins to take form becoming an independent whole. These curvatures and warped surfaces of the towers wrap around the inhabitant like a second skin. While the design of a flowing architecture theoretically seeks to smooth distinctions between the exterior and the interior, the divisor is actually heightened. Skins weave through space, transforming from inside to outside, top to bottom, ceiling to floor, seat to leg.

Skin is the space of flux, and the influence of the skin as surface with substance and depth, as well as skin as a woven element through space, is evident in the design, as facades are treated as a protective skin. In some situations making a clear distinction to the end of the building, yet in other instances, the skin tends to blur these boundaries.

'Shell' refers to a space that is protected by an outer layer much like a skin, yet when discussing skin in architecture, one understands that some activity is taking place below the surface of the skin that cannot be seen yet with a shell, the space is left void.

The towers' shell remains as a reminding ruin of the original structure, as a memory, and its role is to enhance the new independent structure, now having enough confidence to grow out of its original confines. The space that is contained within these shells is perceived not as space as emptiness but rather space as fullness.

The towers left void are at times viewed as shells - mere outer layers - protecting the space that's contained within its confines yet the minute an intervention is injected into the shell, that same outer layer now is viewed as a **second skin** to the participant.

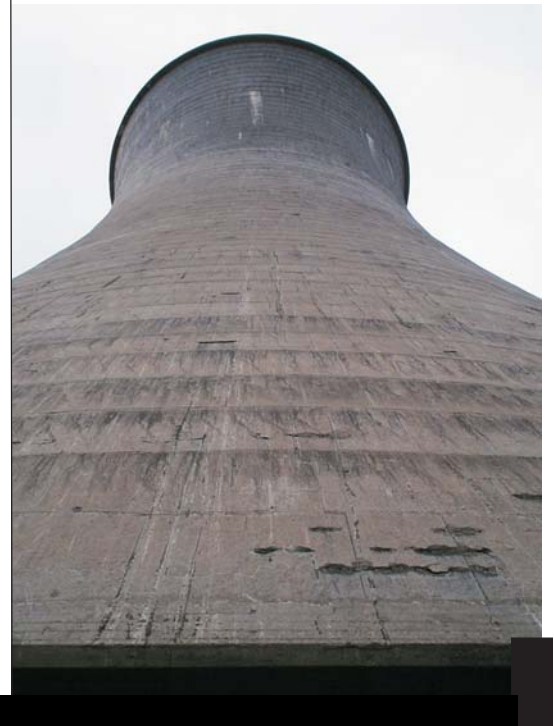


fig 5.18 Towering the participant

53



fig 5.17 Sketch of the towers

00546 Thresholds

The site located on the edge of an urban center, margin of an industrial region, and border of the district of Pretoria West, is also a border that joins and disjoins two different worlds, joining and disjoining the vibrant inner city to the death threatening industrial region.

The attention paid to the thresholds throughout the design encourages the participator to question the boundaries of their immediate environment. Because the site is located on an edge and is seen to be suspended between two worlds, that of the urban center, and the suburban periphery, the treating of thresholds becomes an important element in the design. When crossing over a threshold the participator will question whether they are floating above the lake, touching the earth, or suspended somewhere in between.

The floating walkways and bundle of paths are an important element in the design as they are alleyways of possibility, points of entry and departure, sites of encounter, transaction, discovery and display for the people who use them.



fig 5.19 Concept perspectives

00547 Light and ventilation

“Space remains in oblivion without light. Light’s shadow and shade, its different sources, its opacity, transparency, translucency, and conditions of reflection and refraction intertwine to define or redefine space” (Holl 1989:11).

Punctuating the towers to allow for the use of natural light and ventilation becomes a challenging task. Openings are placed on opposite ends of the towers to aid cross ventilation inside the towers. The surfaces surrounding the cooling towers on a ground floor level are soft surfaces with shaded spaces. Dense vegetation is also suggested to keep the air around the cooling towers cool.

The poetic slits carved out of the towers romanticize the idea of providing natural light and ventilation. A main source of natural light and ventilation will be the opening at the top of the cooling tower.

The participator is the person who senses the flow of messages that are transmitted by a design. The changing visual picture is only the beginning of our sensory experience; the changes from light to shade, from hot to cold, from noise to silence, the flow of smells associated with spaces, and the tactile quality of the surface underfoot, all are important in the cumulative effect.

55

power station



fig 5.20 Pretoria's skyline

0055 Urban survivors

The towers do not distribute functions or assign place. Instead they provide a background for processes of transformation and conversion to open up the adjacent decaying structures and extract their potential. They provide the opportunity for people and activities to attach themselves to and eventually these structures become the surface upon which social events and public gatherings condense.

Steven Holl (Holl 1991:5) believes that the horizon is a paradox, and “a philosophical construct of eternal anticipation. Yet the notion of tomorrow is the essence of visionary architecture and planning”. The three cooling towers stand proud on the horizon as they have for decades. These urban survivors now form part of a vibrant edge city environment where large crowds of people gather for work, leisure or simply to ‘be’



fig 5.21 Turbine Hall Johannesburg

city center



00551 Transformation

Transformation of a site explores the idea of breathing new life into disused buildings. The desire to save constructions destined for demolition inspired me to think of new ways of using these edifices, whilst maintaining their original structures. This is a very enriching approach to architecture, in so far as it provides a new dimension to an existing framework.

In the spaces made void by destruction, new structures can be injected. Complete in themselves, they do not fit exactly into the voids, but exist as spaces within spaces, making no attempt to reconcile the gaps between what is new and old, between two radically different systems of spatial order and of thought.

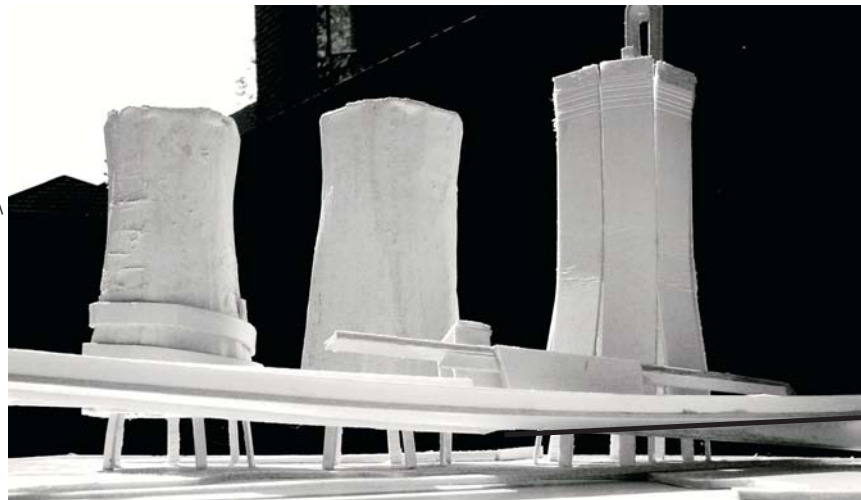
Everything can be viewed from the perspective to be in a constant process of change, in constant motion from becoming, development and decay. The context of this intervention is a site containing architectural residue from an era in architecture where function was all that mattered. Sites like these contribute to the city of collective memory and this conserving and layering creates rich environments that are already cladded with different memories from different times in history even from before we as architects set foot on the sites.



fig 5.22 Power station: derelict

57

fig 4.23 First concept model



00552 Interacting with the Power Station

A large space, massive machines, doorways and passages leading to dark hollow spaces. Machines so large that they speak of an era when the importance of the function of the machine was expressed by its size. The smell of dust, time and old buildings. The site is literally one incredibly large machine.

A mosaic of shattered glass, and weathering structure. A mass of sculptured cathedral-like space, both containing space inside and creating space outside. The found images – reworked machines. Steel and glass structures – cathedrals.

The transformation from a monumental rotting carcass which has been lying deteriorating for some years floundered into an inhospitable future. New forms rising growing from within – reaching up projecting towers erupting amid the sounds and energies of the city.

A legacy, a remnant of a past – an eighty year old generating station that is composed of a layering of traces. The architecture becomes enhanced and richer with the existence of these traces, and it is important to preserve the traces in order for it to be remembered and engaged with.

The idea of a suspended walkway attached to the floating building over the lake will allow the building to be viewed as a sculpture. The viewer moves around the elevated structure, experiencing its three dimensionality. This experience of space created inside by the towers and outside by the realization of the end of the towers' skin cannot be achieved from one single viewpoint. Awareness of space goes far beyond cerebral activity. It engages the full range of senses and feelings, requiring involvement of the whole self to make a full response to it possible.

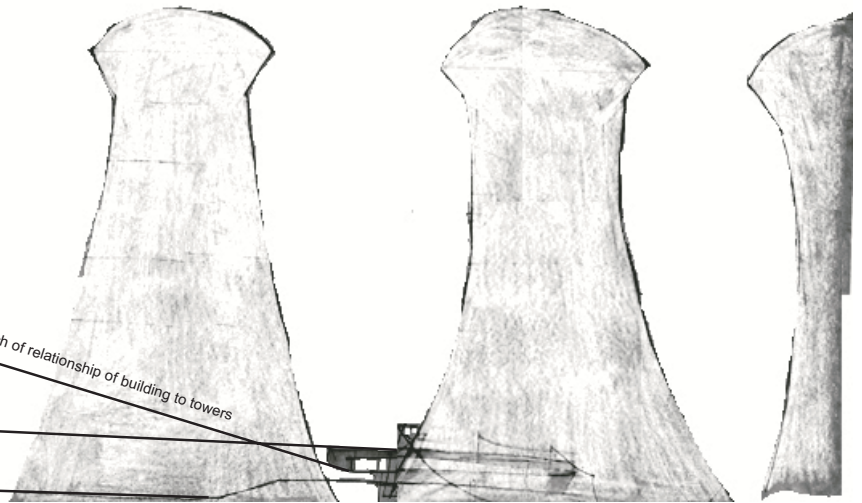
0056 Shifting scales

With minimal intervention on the site, the scale of the three urban survivors shifts from an object dominated scale where massive, monolithic structures ruled and dominate, to a scale which allows the visitors to interact with the urban objects. The degree to which people are able to interact with such structures from the industrial era has also changed, and what was once seen as an object which contained space inside but had no thought of the space its placement created outside now changes to a series of transformed objects in space which jointly create a space which acknowledges the human scale and invites the visitor to engage with itself.

59

Identifying the towers as valuable artifacts that should be conserved and adapted in order to accommodate a new function is the essence in understanding the layering of the city and its importance in providing rich and nostalgic environments. At a macro scale, this project is used as a catalyst for change that seeks to recycle the urban fabric. At a site specific scale, the different layers which provide the layering of the city become apparent as clarity is given to what is new, what is not and what has been left behind with the hopeful destiny that it will still be transformed.

fig 4.24 Sketch of relationship of building to towers



Precedent: LOT-EK

LOT-EK is an ongoing investigation into the 'artificial nature', or the unmappable outgrowth of familiar, unexplored, manmade, and technological elements woven into the urban/suburban reality. It is an extracting from this artificial nature prefabricated objects, systems and technologies to be used as raw materials.

LOT-EK is the random encounter with such objects, which are displaced, transformed and manipulated to fulfill program needs. It is the dialogue that develops with the specific features of these already existing objects and generates unexpected spatial/functional solutions. An approach needs to be developed where we start re-thinking the ways in which the human body interacts with products and by-products of the industrial/technological culture. (www.lot-ek.com)



fig 4.25 Container mall

Container Mall: New York

Nine levels of containers are stacked to make an improvised typology for the mall. The project takes advantage of the inherent intelligence of standardized shipping containers to configure vertical malls that could be erected in left over empty lots throughout the city. Each container module serves as an indoor booth in the fashion of an urban market. In this scheme, the containers are placed in an undulating manner,

animating the façade. A system of catwalks, stairs, and elevators is **wedged between** the

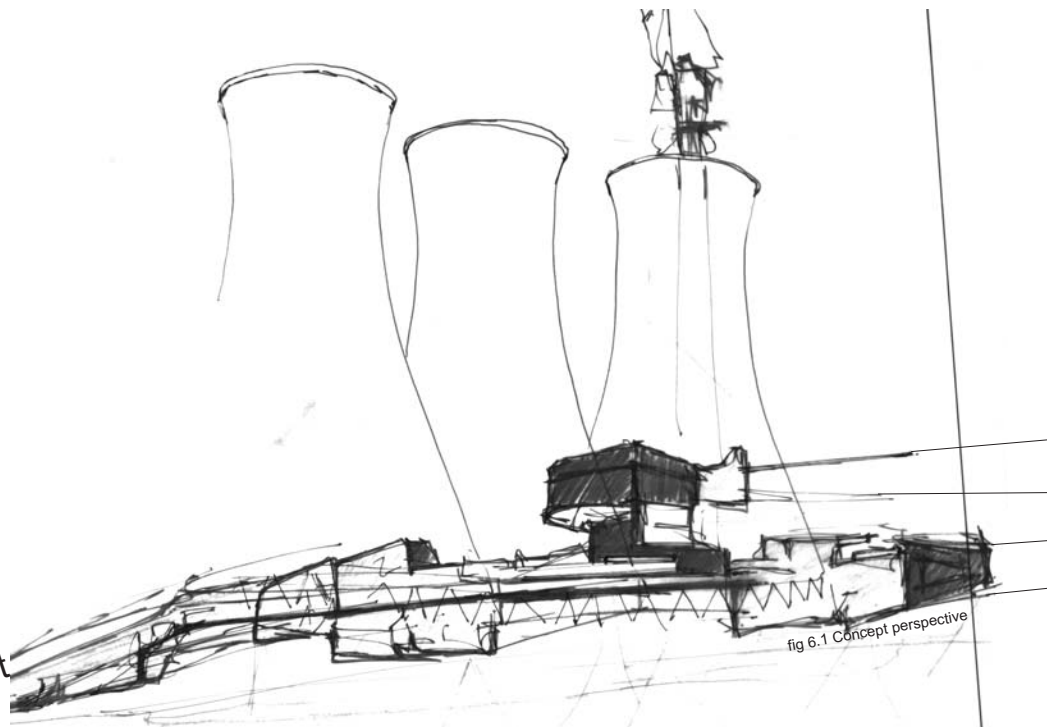
container stack and the wall of the adjacent building to make up the circulation and a series of outdoor public spaces. Containers are taken out at different locations, allowing the exchange of air, light, and street views. (www.lot-ek.com)



fig 4.26 Students pavillion

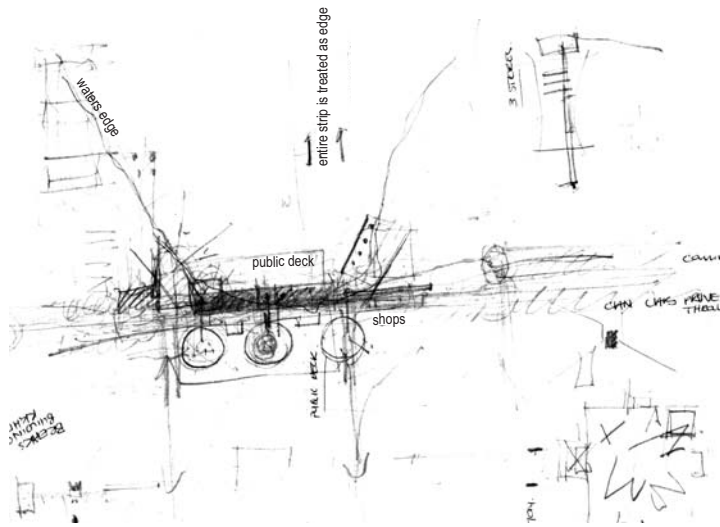
Student Pavilion: Seattle

An 80' long section, cut between the main wings and the tail of a Boeing 747 fuselage, is placed on a sloping site on the University campus overlooking Lake Washington. The fuselage section is **transformed** into a student pavilion fitted for both work and leisure. (www.lot-ek.com)



006 design development

fig 6.1 Concept perspective



0061 Cities as social condensers

The design developed and evolved with much emphasis placed on the designing for large crowds of people. A main concern when designing was one of creating spaces where large groups of people may gather and move around freely on the site. Aiming to design a place which becomes a backdrop against which social activities may condense, became a major focus during the design development. Design decisions resulting from such analysis manifests in reality such as the treatment of overflow spaces, and the importance thereof because it is these vast public spaces which cater for the act of social condensation.

fig 6.2 Conceptual planning

0062 City of collective memory

The city of collective memory informed the design by creating **spaces that bridge** those that exist and those proposed. This layering of the design, respecting what is and transforming the whole into something new by layering the site and the design.

Much emphasis was placed on transition spaces and the treating of thresholds for the reason that these spaces **introduce the new to the old and the participator to both.**



fig 6.3 Second concept model as viewed from the main entrance





0063 Urban edge

The intervention has found its roots at the edge of the urban setting. It is at this urban edge where the visitors senses are heightened to the edges that define, confine, guide and create the spaces around them. Careful attention was paid to the edges within the design at a building specific level. Walls are treated not as structural elements but rather as edges within themselves, defining the paths of movement, guiding the flow of spaces as they merge in areas where they tend to over spill.

- 65 Columns define edges according to their grid or path. Not experienced as structural components but as edges that respond directly to the edge of the water, earth and towers that they embrace.

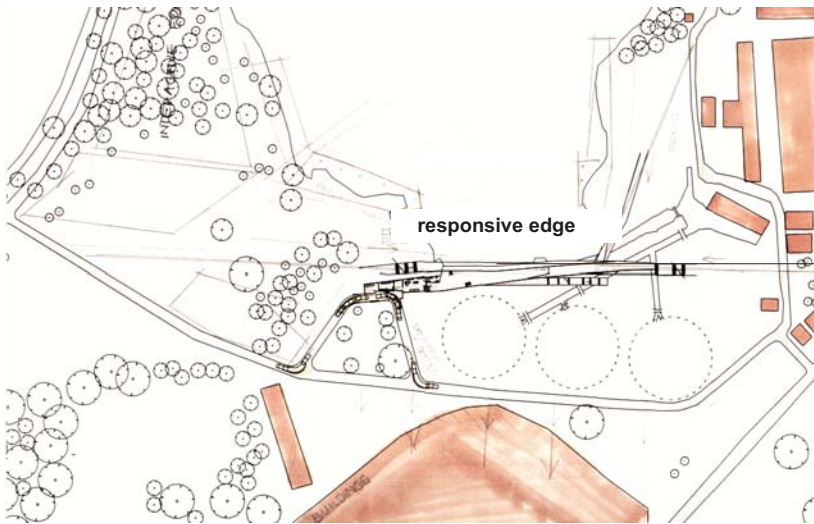


fig 6.5 Conceptual planning with regards to edges on site

fig 6.6 First concept model exploring the building as a parasite



0064 Parasitism in architecture

At times perhaps the visitor feels like the parasite to the towers

..... **invading** this sacred territory
 not sure whether inside or outside, beneath or below
 all boundaries are a **blur**

..... the roof itself
 a parasite in its own right
 **attaching** itself to the host

The **outlook platform** stands proudly on its host. This viewing platform allows the visitor to engage with the city as a whole. The platform takes on the relationship of a parasite as it comfortably latches onto its host, not harming it, not detracting from its natural setting, simply creating a new relationship, forming spaces and creating experiences that otherwise would not be possible. Viewing a city from a great height is a way of taming it. However, the observer is also rendered vulnerable by this experience.

“The exhilaration we feel when we view a great city from one of those rare vantage points where one can ‘take it all in’ is the thrill of seeing in one moment the enormity of ... human work”(Kasinitz 1995:3).



fig 6.7 Circulation routes within the towers

0065 Recycling the city fabric

Starting with the damaged old, new form begin to emerge as the theory of adaptive reuse becomes something tangible, something that someone can begin to engage with.

Recycling the city fabric goes beyond a simply theory, it becomes a **design approach**, a conscious decision to identify voids and underperforming areas in the city fabric and address their needs in order that these spaces transform into places of fullness.

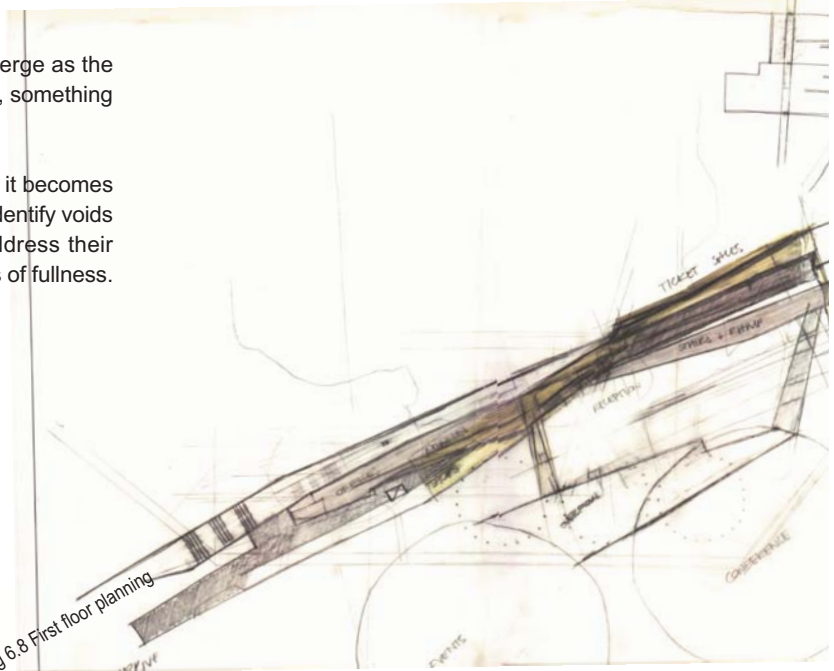


fig 6.8 First floor planning

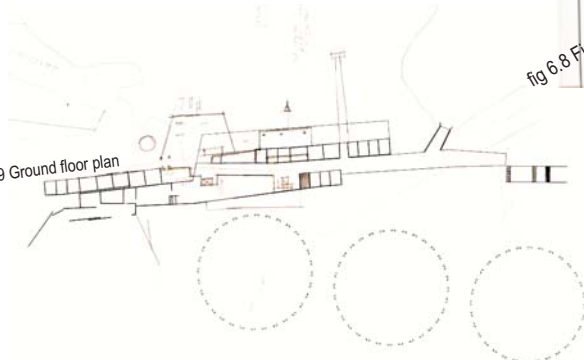


fig 6.9 Ground floor plan

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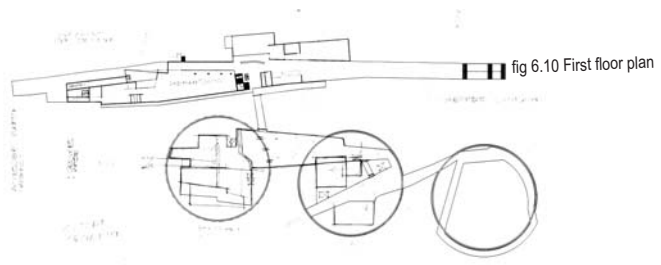


fig 6.10 First floor plan

The landscape park flows under the floating volume of the existing towers and folds upwards into the towers. The ground floor is treated and experienced as a park, allowing people to crawl at the feet of these skyscrapers, **w e a v i n g** their way through the slanted columns, in and out of the towers....

The 'urban folly' is the public landing that weaves through the water yet allows activities to take place above the water.

0066 Circulation

The stairs of the main entrance rise and land elegantly, sweeping and swiftly drawing people up to the first level.... The concrete stairs and concrete walls operate as channeling mechanisms which also serve as railings. They form a congruent dialogue with the towers with both their material and their mass.

The overall dynamism and fluidity of the elongated form emphasize movement through and around the building. The building can be entered from either end but each entrance is articulated differently.

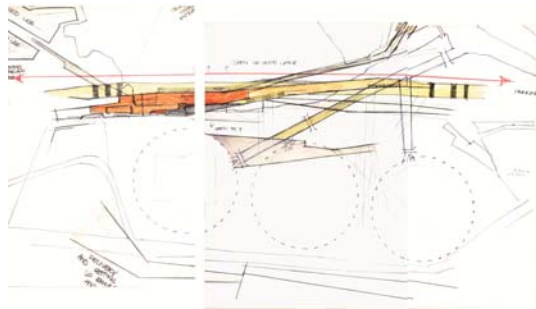


fig 6.11 First floor circulation routes

The building weaves together a variety of activities and functions into a living structure. A weaving thread which turns and covers and in other instances transforms space into a public place. Splintering occurs and is emphasized by **interruptions - breaks** - in the building which allows views outwards.

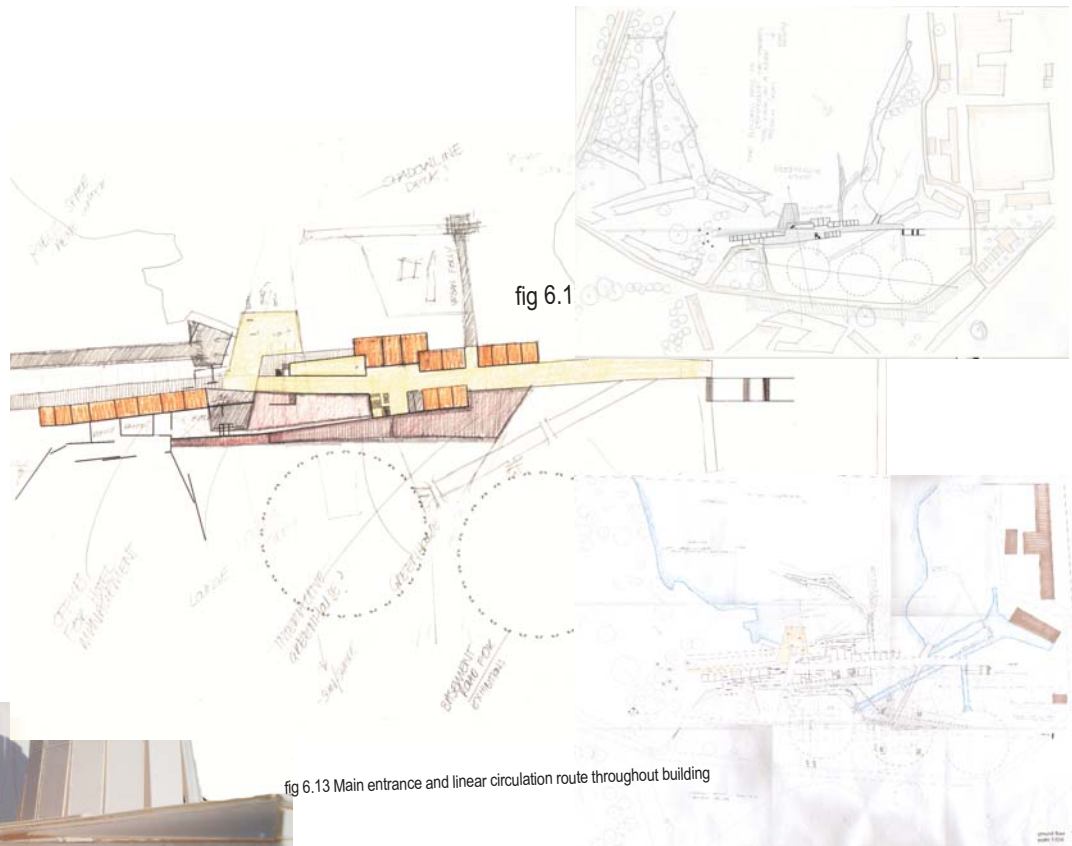


fig 6.1

fig 6.13 Main entrance and linear circulation route throughout building



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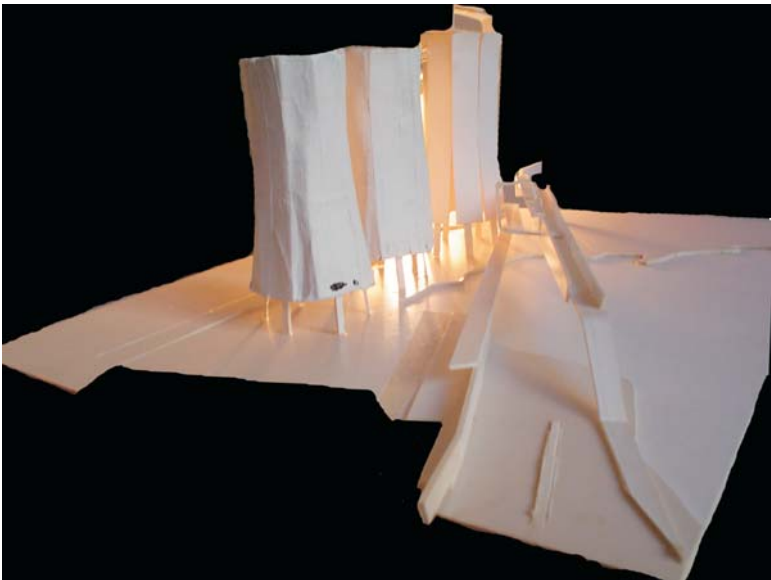
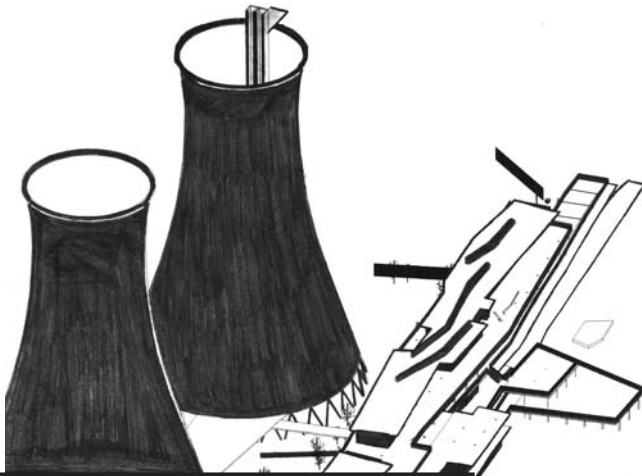


fig 6.14 The monolithically sculptured building floats over the lake.

0067 Openings

A concrete ribbon of continuous structure wraps around itself to generate the lining of the building, folding the city inwards.



The play of lines continues throughout the building as light lines in the floor or strip lights in the ceiling.

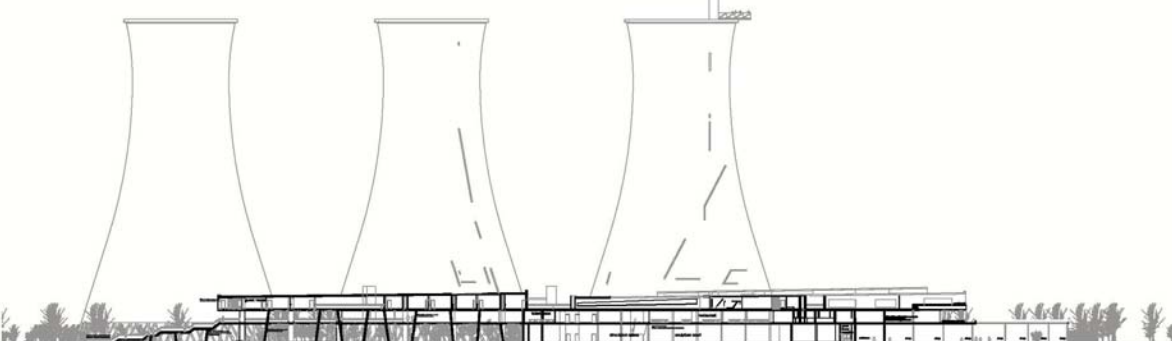


fig 6.15 Turbine hall, Johannesburg openings in the walls are not conventional windows



fig 6.16 Concept model northern elevation

No windows are used for the towers, instead gaps and slits are found throughout the intervention, allowing light in and views out. Throughout the building, the positioning of windows is a major consideration because of the effect that this has on viewing the site from inside the building. Openings are strategically placed in order that views may be framed for the participant to appreciate. Strategically placed, slits carved into the facades invite strips of light rays in, in other instances, the large freeing of the facades with the use of curtain wall systems, invites the city into the building or into the tower.



0068 Accomodation schedule

Ground floor:	Area	Qualities
Shops	971m ²	Disabled access Passive climate control Natural lighting Visual connection between outdoor - indoor
Parking	1196m ²	Disabled access
Delivery rooms	47m ²	
Cloak rooms	51m ²	Disabled access
Management offices	104m ²	
Luggage storagge	31m ²	
Coffee shop	49m ²	Disabled access Visual connection between outdoor - indoor Natural daylighting Passive climate control
Scuplture court	127m ²	Disabled access Natural daylighting Overflow onto outdoor spaces Circulation Visual connect with the outdoor spaces
Public deck	480m ²	Gathering large crowds of people
Juice bar	124m ²	Natural daylighting Adequate ventilation
Guest rooms reception	67m ²	Natural daylighing Adequate ventilation Disabled access
First floor:		
Restaurant	444m ²	Disabled access Visual connection with the outdoor spaces Adequate ventilation Circulation
Cloak rooms	51m ²	
Offices	289m ²	Passive climate control Visual connection with outdoors Natural daylighting
Administration	90m ²	Disabled access Natural daylighting Passive climate control
Ticket sales	68m ²	Disabled access Large crowds of people gathering Circulation Visual connection with outdoor area Disabled access Natural daylighting Adequate ventilation
Bar / Lounge	159m ²	Visual connection with outdoor area Disabled access Natural daylighting Adequate ventilation
Kitchen and pantry	153m ²	Natural daylighting Adequate ventilation

Second floor:

Guest rooms	1292m ²	Natural daylighting Passive climate control Visual connection with outdoor spaces
Lounge	37m ²	Disabled access Diabled access Visual connection with outdoor spaces Adequate ventilation Natural daylighting
Laundry	52m ²	
Cleaning room	17m ²	
Kitchenette	18m ²	
Communal space	365m ²	Diabled access Visual connection with outdoor spaces Passive climate control Natural daylighting

Western tower:

Events halls	433m ²	Diabled access Adequate ventilation Adequate lighting Circulation
Dressing room	73m ²	
Workshop	41m ²	
Lounge	89m ²	Diabled access Adequate ventilation Adequate lighting
Cloak rooms	68m ²	
Overflow spaces	316m ²	Diabled access Circulation Visual connection with outdoor spaces
Outlook platform - viewing platform - observation tower	136m ²	Diabled access Circulation
After events venue	453m ²	Diabled access Circulation Visual connection with outdoor spaces Adequate ventilation Adequate lighting

Central tower:

Conference rooms	291m ²	Diabled access Circulation Adequate ventilation Adequate lighting
Kitchenette	13m ²	
Overflow spaces	327m ²	Diabled access Circulation Visual connection with outdoor spaces
Exhibitionspace	404m ²	Diabled access Circulation Adequate ventilation Adequate lighting Visual connection with outdoor spaces
Cocktail bar	30m ²	
Storage	172m ²	

Eastern tower:

Museum walkways	170m ²	Diabled access
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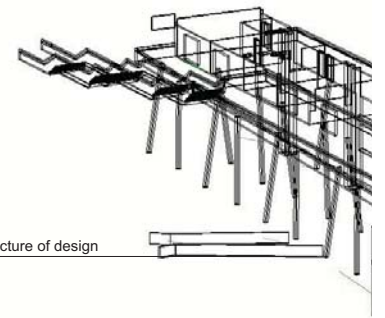
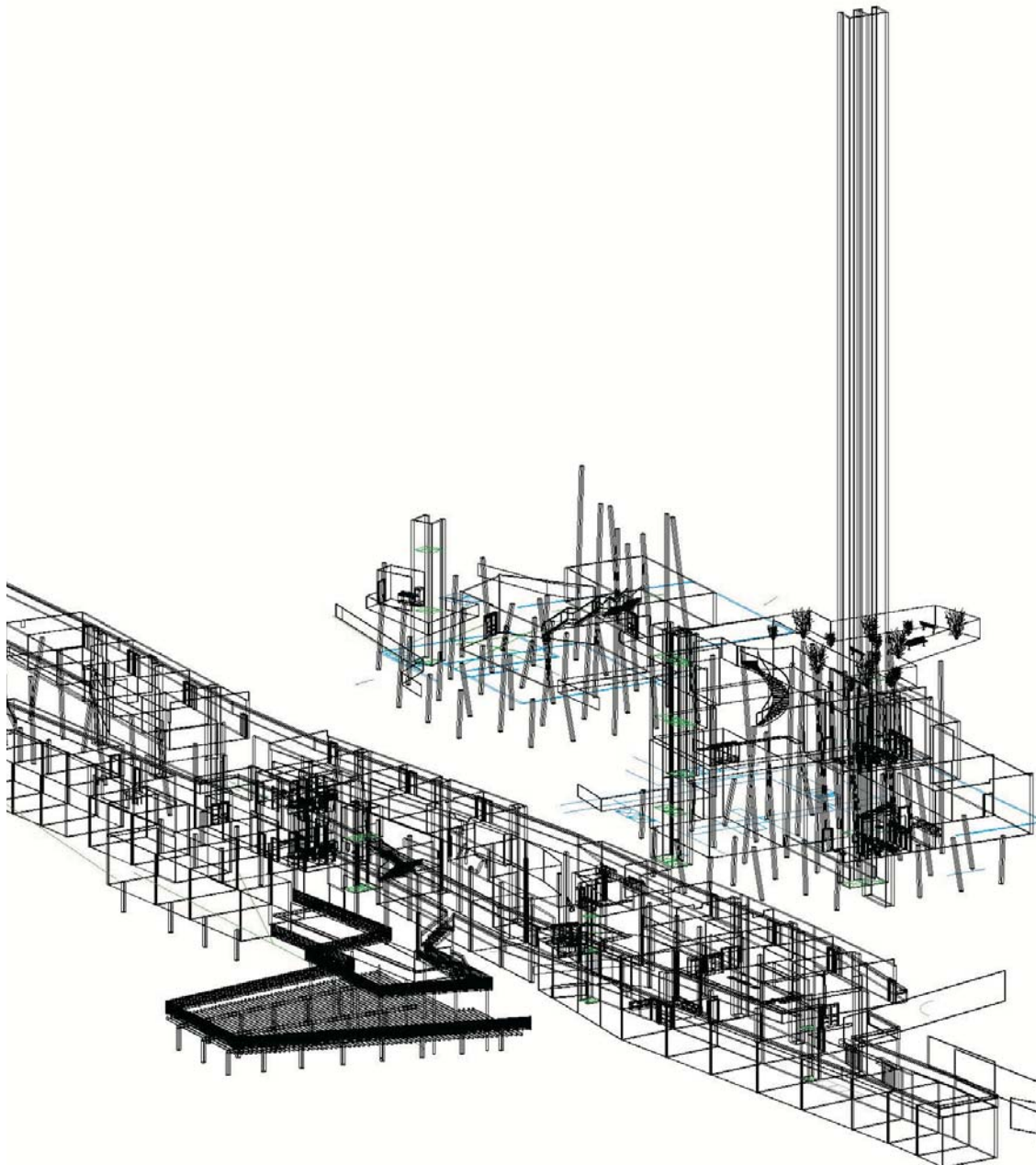


fig 7.1 Structure of design

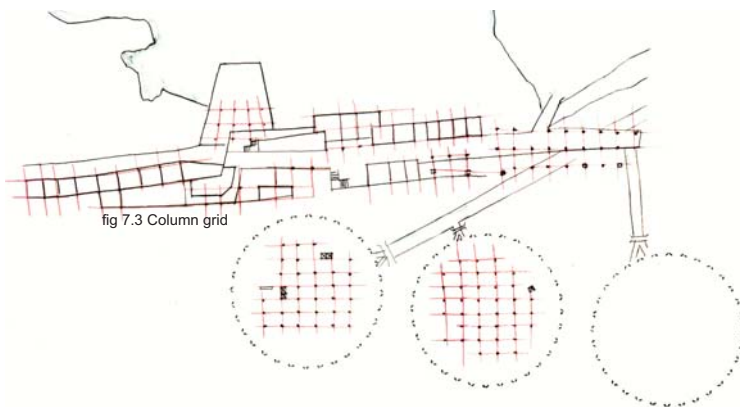


0071 Structure

The structural system used in the intervention comprises primarily of steel and concrete, with concrete being the primary building material used throughout the intervention as it accentuates and emphasize a dialogue between the building and the towers. Concrete is used as the permanent grid material, as **ORGANIZATIONAL ARCHITECTURAL ELEMENTS**, around which evolution of the building programme may take effect.

The service cores situated along the length of the building, form part of the permanent, non-programmable spaces that will remain static in its configuration over the buildings life span.

Column and beam construction is used throughout the building, being stiffened by slabs as well as the vertical cores. Reinforced off-shutter concrete columns of 305mm x 305mm in size are used throughout the intervention. Inside both the cooling towers housing the conference facilities and the events centre, the columns are arranged on a 5m x 5m grid. A total of 33 columns are used inside the tower accomodating the events facilities and the outlook platform. The lift shafts and wet cores provide additional vertical support inside the towers. A sum of 39 columns are used in the tower housing the conference facilities and exhibition spaces.



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The concrete columns supporting the building are arranged on a 6m x 6m grid, and all the concrete columns used in the design are **slanted at different angles**, bearing reference to the columns supporting columns of the cooling towers.

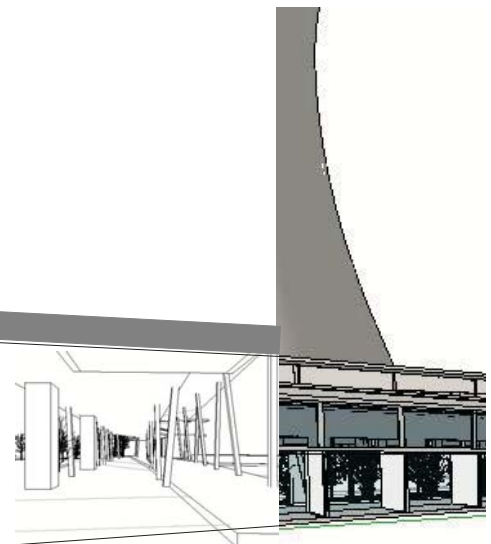


fig 7.2 Structural stability provided by service cores and slanted columns

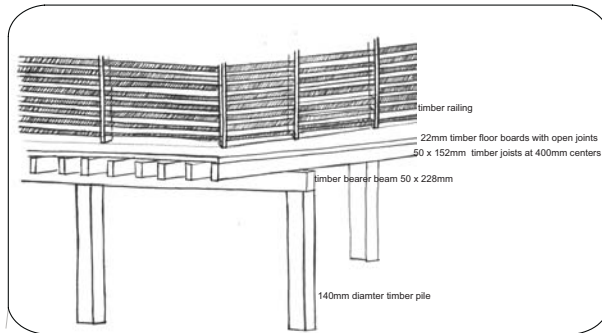


fig 7.6 Wooden deck and pile construction

Concrete driven piles form the foundation for a section of the building where it appears to be suspended in mid air. These piles anchor the north facing shops overlooking the lake. Timber piles are used for the wooden deck which serves as the public place upon arrival at the western entrance of the building.

Piling into the lake is made possible due to the fact that the building's placement is along the water's edge. During the construction period, the water's edge is manipulated and pushed back whilst the piles are placed in position. Once the construction and placing of these piles has been completed, the water's edge is manipulated back to its original position.

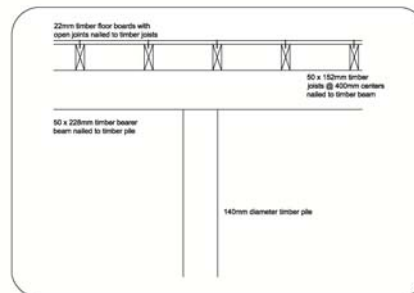


fig 7.4 Detail of wooden deck and pile

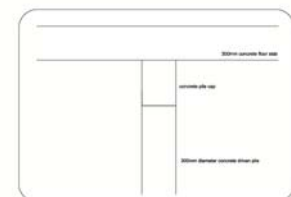
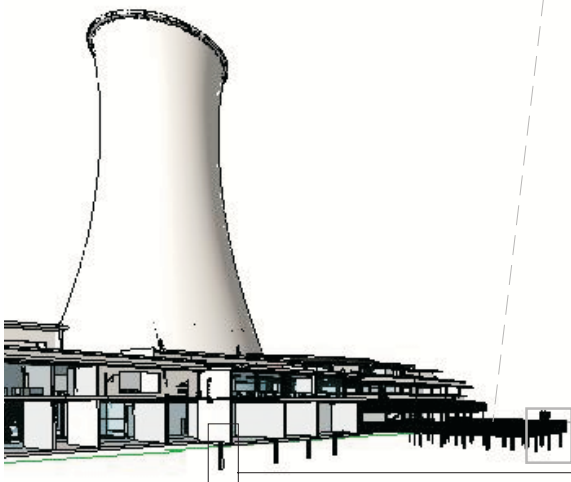
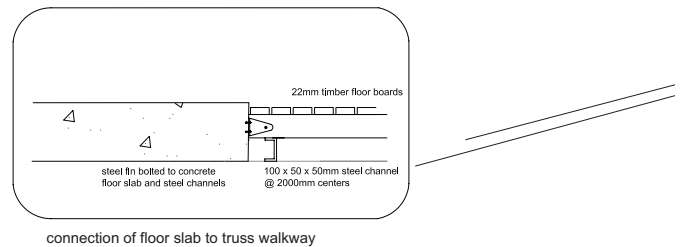


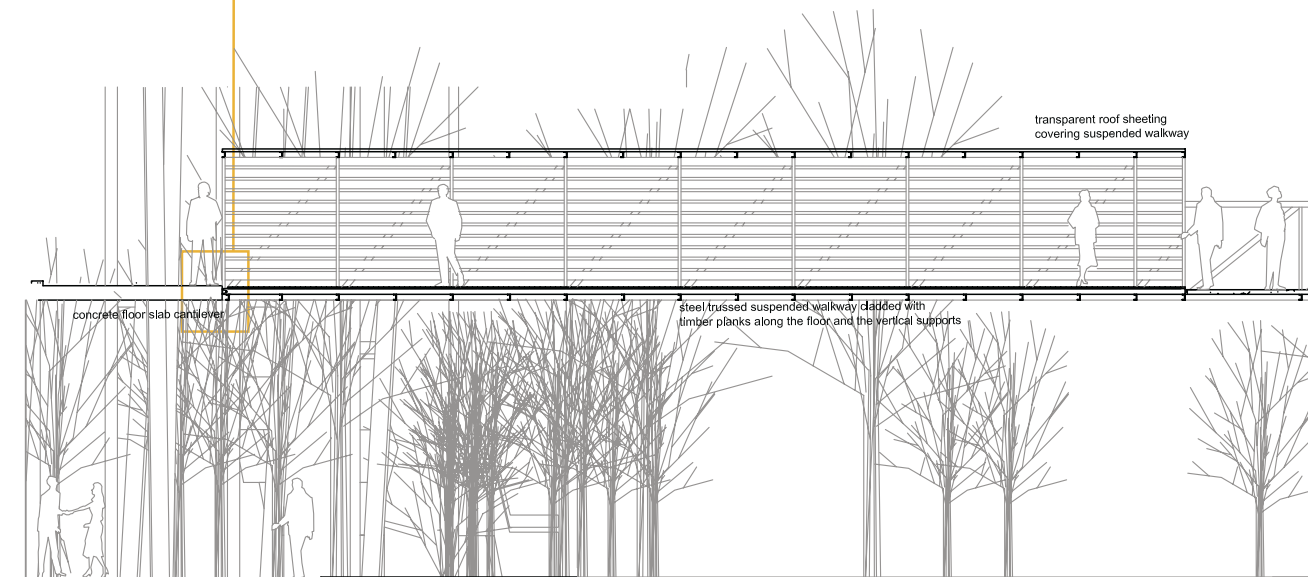
fig 7.5 Detail of concrete pile

Steel is used in areas where the structural requirements of concrete do not meet those required. In many instances throughout the intervention, the design requires that certain structures span distances of up to 30m in some cases with no vertical support. As in the case of the suspended walkways spanning and bridging the building and the towers, the truss systems used here are able to span the required distances between two anchored supports. The vertical structural members of the truss system provide an edge or railing reaching heights of up to 2 meters.

Steel is used more extensively inside the towers due to its structural advantages such as its ability to span large areas with minimum supports. Lightweight steel floors are inserted in both the towers, which are vertically supported by concrete columns. The **steel trussed floors** speak of an architectural language that heightens the differences between the mass of the outer shell and the lightweight structures within it. This can only be recognized and experienced once inside the towers.



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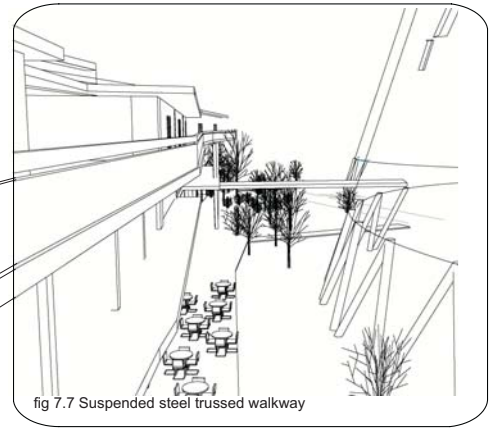


fig 7.7 Suspended steel trussed walkway

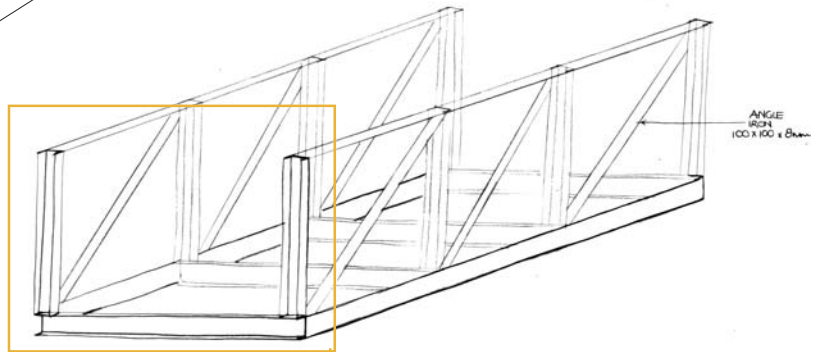


fig 7.8 Truss structure

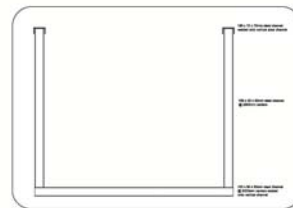
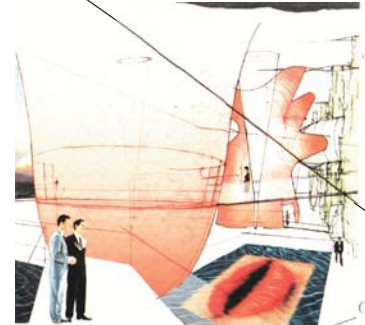


fig 7.9 Truss system components

00711 Precedent: Diller and Scofidio, Blur building

Diller + Scofidio operate differently than traditional organizers of space and materials and they refuse to accept the myth that art and architecture are simply the production of functional elements. They do not start from the premise that the aim of architecture should be the production of an object that houses a defined function and that behaves in a responsible fashion. They are not concerned, at least not primarily, in modulating environmental inputs to produce an efficient and sensible place to live, work, or play. And they do not make the way in which the building continues or contributes to the context in which it appears the focal point of their design activities. Their work is not consumable bits of cultural commentary that lives on white walls or on museum pedestals. Rather, it has the character of art as a concentrated form of value, the form of architecture, and the function of providing a self-conscious form of display.



The objects they make have a seemingly effortless grace and appropriateness that we do not have a proper critical language to assess.



fig 7.10 Blur building



fig 7.11 Steel elevated structure
(Diller & Scofidio 2002:80)

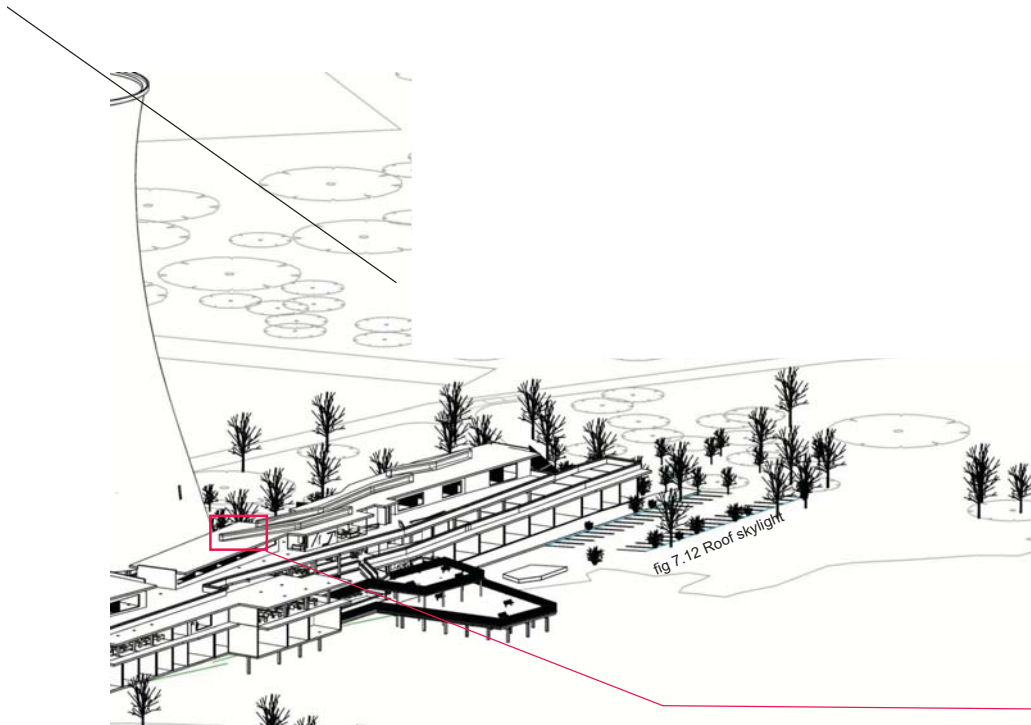
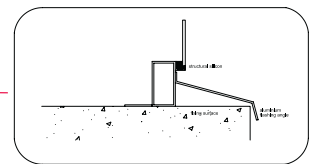


fig 7.12 Roof skylight

00711 Roof construction

The roof is constructed of cast-in-situ concrete slabs. The roof overhangs provide the necessary shading needed for the northern facade openings.

The roof designed to allow light in slopes in a eastern direction. With various pitches each sloping in the same direction, light filters through the glass skylights of raised surfaces of the roof. These openings at the roof level are perceived as **slits** IN THE ROOF, flooding the guest rooms with natural daylighting.



80

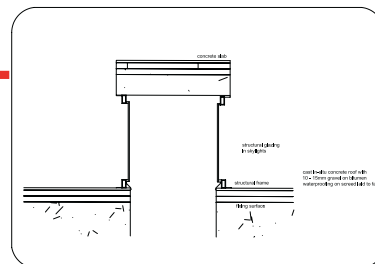


fig 7.13 Detail of roof skylight

0073 Human comfort

00731 Ventilation

A combination of mechanical and passive ventilation systems is used throughout the project. Passive ventilation is explored and used in as many instances throughout the design with the intention of saving energy over the buildings life cycle. Where passive ventilation could not create the comfortable environment the users require, mechanically assisted passive ventilation became the solution, as in the instance of ventilating the towers.

Natural ventilation is only efficient if proper cross ventilation can occur, and the cross ventilation is dependant on the path of the air flow as well as its distance. Throughout the building, the designing of rooms, whether offices or guest rooms, is kept to an average depth of 7 meters in order to create opportunity for cross ventilation to occur. The depth of rooms not only contributes to the ventilation but also the natural daylighting of the spaces.

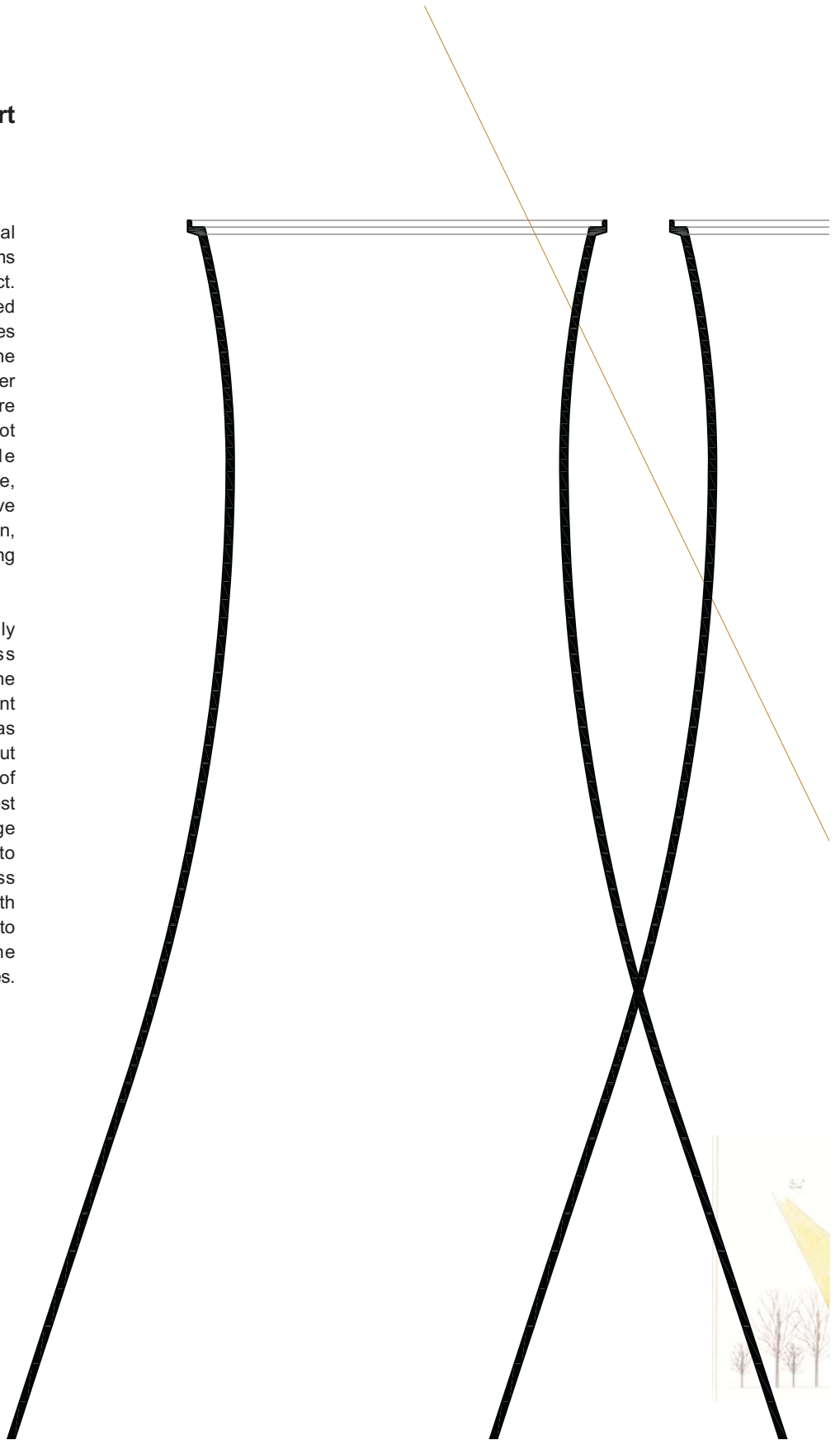




fig 7.14 Section showing shading overhangs

When dealing with the issue of **ventilating the towers**, the assumption was initially made that the stack effect would be ideal in ventilating the towers. The exploration of this assumption proved that in order for stack ventilation to occur, a considerable difference in temperature needs to occur in order for the air to flow freely from a high pressure to a low pressure. Because of the vastness of the space inside the towers and the lack of direct sunlight, it became apparent that the temperature inside the towers will almost always be cooler than the temperature of the air outside the towers. In order for the stack ventilation system to work, it is required that the temperature of the air inside the towers needs to be hotter than that outside the towers in order for the cool air outside the towers to be drawn in, heats up and is exhausted through the opening at the top of the tower. Various methods were explored as to how the air inside the towers could be heated up in order to facilitate this stack ventilation, and though in theory painting the skin of the tower black should work, in reality it proves to fail, for the vastness of space is too large, and the surface area that will heat up is not sufficient for the requirements.

It was later discovered that the stack ventilation system will not be successful in ventilating the towers, and therefore a mechanically assisted stack ventilation system needs to be addressed. Four ducts will be used to draw air into the towers and exhaust the air out again. This mechanically assisted passive ventilation proves to be the most successful option in solving the ventilation of the towers.

00732 Form and orientation

The building, linear and narrow in form facilitates natural ventilation and lighting, and allows all occupants to individually control their micro climate by opening a window.

The building is orientated around an **east-west axis** with the largest facades facing north and south. The orientation of the building allows for all guest rooms and offices to be north facing to capitalize on the natural daylighting of the site.

The form of the building evolved around optimizing on natural daylighting and passive ventilation with the emphasis placed on cross ventilation. Long and narrow in its appearance, the buildings form stretches out across the entire length of the three towers in order that it may have a direct relationship with all three towers.

83



00733 Thermal mass

The thermal mass provided by the concrete roof and exterior concrete walls absorbs the heat from direct and indirect solar radiation during the day, and after a delay period which is determined by the density and thicknesses of the absorbent surfaces, radiates the heat energy to the internal spaces. With the thickness of the roof and wall surfaces ranging between 230mm to 400mm, a sufficient delay period is created to ensure that internal temperatures are effectively lowered during the day and raised during the evening.

00734 Fenestration

Northern and southern facade fenestration are filtered by sunscreen components. These facades are adjustable in terms of openable windows and sliding doors. Horizontal shading devices are used on the northern facade in order to shade the glass openings from direct sun, such as roof overhangs. In a building such as the one proposed, it is important to note that against the backdrop of the towers, windows are not used, rather, the building is cut into with gaps in some instances, allowing light and air in and at other instances this is done with little slits carved into the facade.

Twice the light intensity of artificial light is required to achieve the same visual quality as that afforded by natural daylighting, therefore designing for the optimization of natural daylighting is far more sustainable and energy efficient. Good daylighting is achieved by firstly, avoiding direct sunlight on critical tasks which can cause glare and visual disability, and secondly bringing daylighting in through clerestories and skylights. This allows a deeper penetration of the light and a better distribution throughout the space.

The interior surface of the towers shall be painted **white** in order that the light penetrating the tower from the open top is distributed deeper and diffused throughout the interior of the towers, capitalizing of the little natural daylighting that is present in the towers.

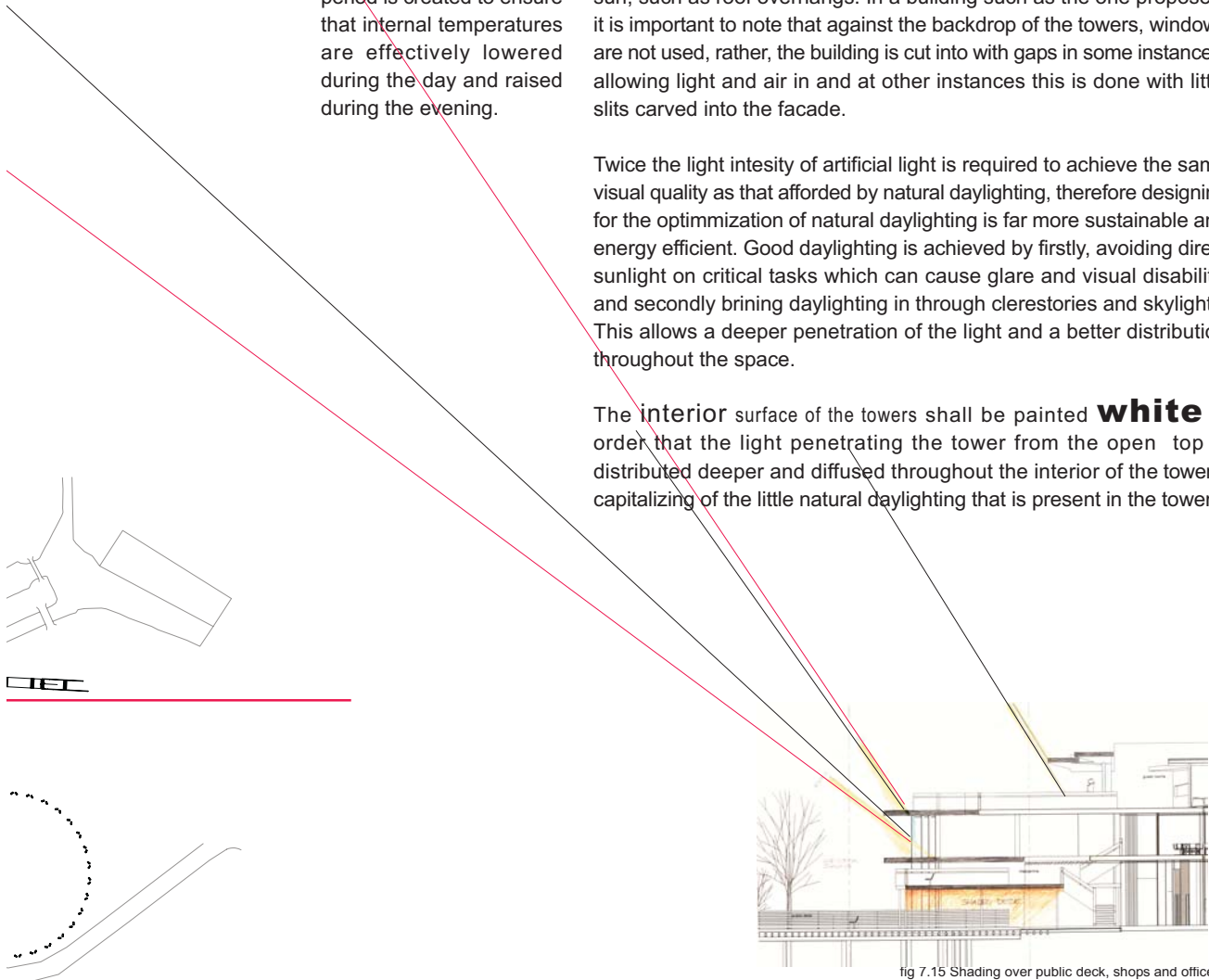


fig 7.15 Shading over public deck, shops and offices

0074 Vertical circulation

The vertical circulation routes comprise of lifts as well as concrete staircases. Upon arrival on the eastern entrance of the building, one is faced with a stairway which **elegantly** RISES AND LANDS. This route of vertical circulation along with all the others throughout the building suggest that the movement and circulation routes should become inhabitable. They should provide places where waiting and gathering is possible without hindering the flow of other users. This circulation throughout the building becomes a social act within itself.

The concrete balustrades **frame the edges** of the building. With slits in their appearance, the balustrades speak of the same architectural language as that of the rest of the building and the towers.

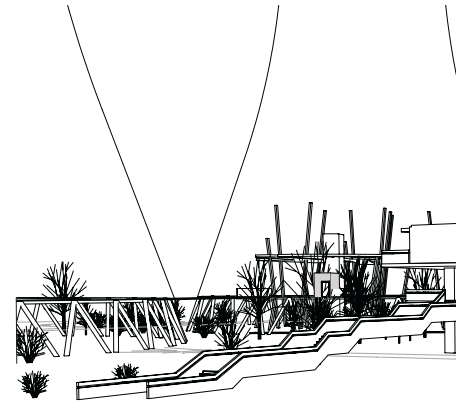
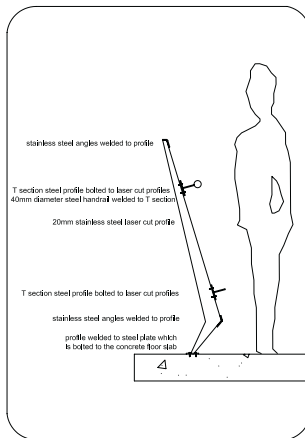


fig 7.16 Sweeping visitors up into building

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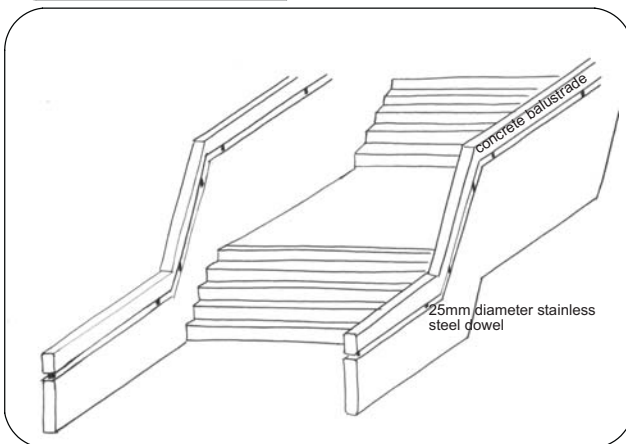


fig 7.17 Pre-cast concrete staircase

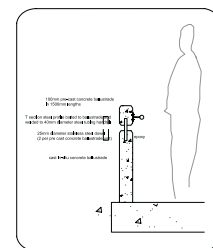


fig 7.18 Detail of concrete railing

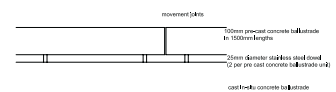


fig 7.19 Elevation of concrete railing

0075 Curtain wall system

The decision is made to use steel as the structural material for curtain wall construction. Because structural steel members are generally smaller than aluminium, a lighter appearance is insured, complimenting the elegance of the building. These curtain walls, made up of steel frames which are factory-made, are fixed to the concrete structure.

The control of heat flow is achieved through the use of insulation. Although it is not apparent from the exterior, the curtain wall system uses considerable insulation behind spandrel glass. Because of the materials used in the structure, glass and metal, which are highly conductive, the system must also contend with potential condensation on the interior surfaces. To curtail this effect, the curtain wall system incorporates two distinct features: first, a sealed double glazed window and second, a thermally broken mullion, with a foamed-in-place polyurethane connection.

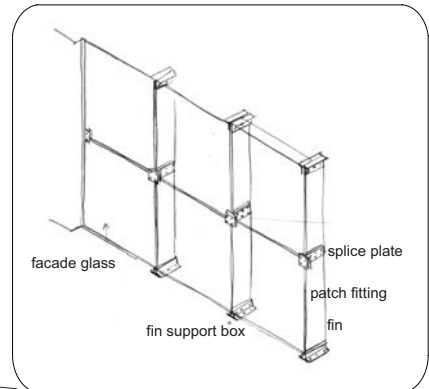


fig 7.20 Curtain wall system

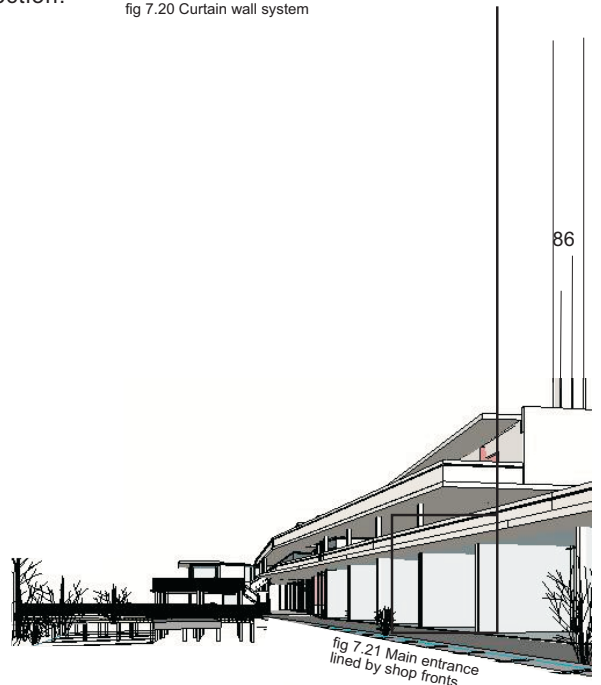


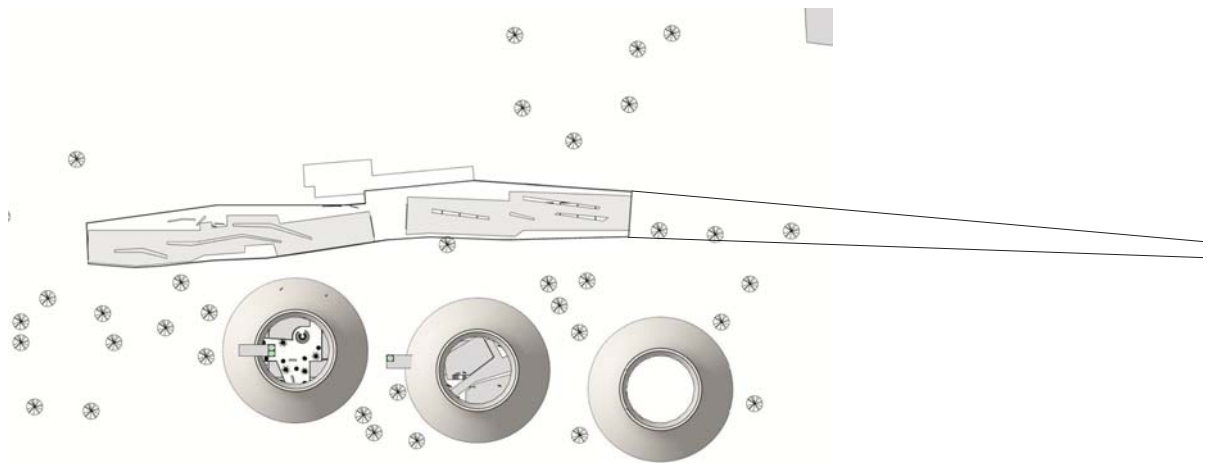
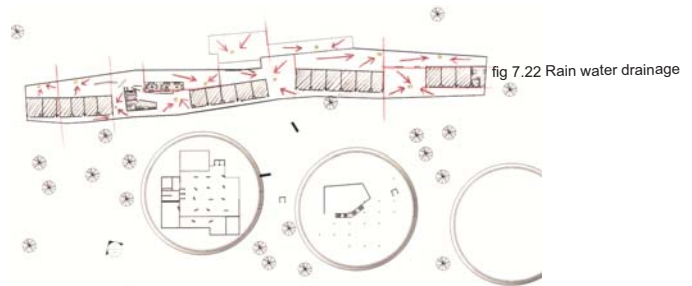
fig 7.21 Main entrance lined by shop fronts

0076 Rain water drainage

The drainage systems are incorporated into the building skin or floor finish.

The concrete roof sloping in a eastern direction with three sloping concrete slabs raised above the concrete roof also sloping in the same direction. The water is channelled and collected in 9 areas of the roof. For a roof area of 2176m² with a fall of screed of no less than 1:70, 9 downpipes are sufficient for the discharge of rainwater if the downpipes are of 150mm x 150mm measurements.

These downpipes are then taken down the wet cores or columns and the water is then fed back into the dam.



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