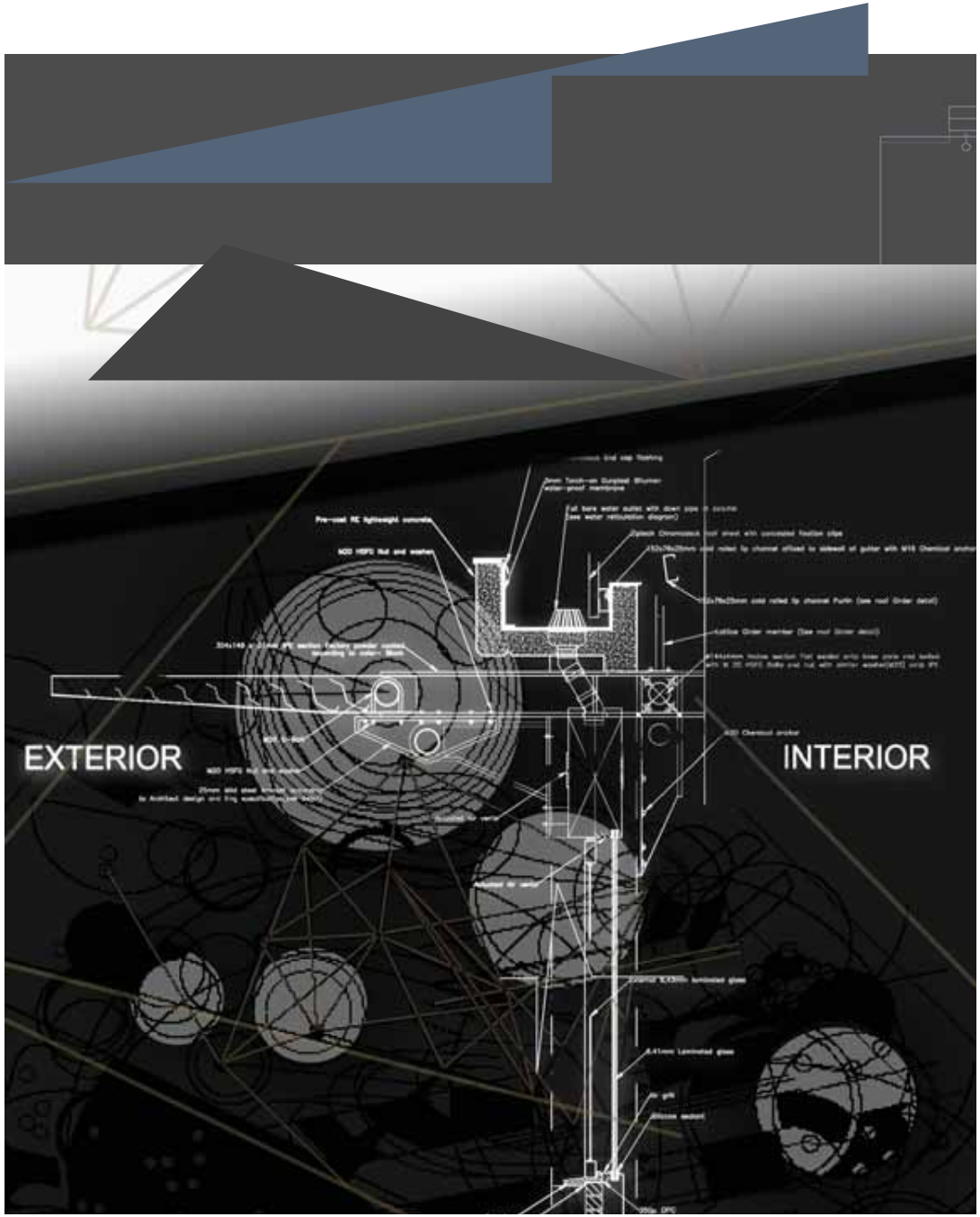

Interplaces:
Public Information Centre

Pieter Breytenbach

Study leader: Marga Viljoen

Studio Master: Jacques Laubscher/Arthur Barker
University of Pretoria
2012

Submitted in partial fulfilment of the requirements for the degree of Magister in Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology

Abstract

The study explores the mediating role architecture should play towards the re-integration of degenerate urban spaces, within existing contemporary urban environment. The architecture proposed, in this case a Public Community Information Centre, furthermore intends to find a workable solution, in mediating between society, the city, and the environment that will acknowledge the processes associated with sustainable social production in the quest to eradicate a fragmented, and culturally segregated society.

Die studie soos onderneem, ondersoek die medieerende rol wat argitektuur moet speel ten einde stedelike ruimtes gekenmerk deur stedelike verswakking, te herintegreer in ‘n kontemporere stedelike omgewing. Die voorgetelde argitektoniese ingryping, in die geval, ‘n Gemeenskaps Inligtingsentrum, is ‘n reaksie om ‘n gewensde, werkbare oplossing te vind, wat die prosesse aangaande voortgetsette gemeenskapsopheffing kan ondersteun. Verder poog dit om by te dra tot die ontknoping van ‘n kultuur gefragmenteerde stedelike gemeenskap, deur voortgesette mediasie tussen gemeenskap, die stad, en omgewing

Full dissertation:	Interplaces: A Community Information Centre
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Degree:	MArch (Prof)
Department:	Department of Architecture
Faculty:	Faculty of Engineering, Built Environment and Information Technology
University:	University of Pretoria
Project Summary:	Victoria Cobeli Information Centre
Programme:	Informal Instruction and Assembly: Occupancy class A1& A3
Site Description:	Medical precinct
	Brown site with historical elements
Client:	University of Pretoria
Users:	Public / Private
Site Location:	Portion 0, R/97, & R/41 of Farm Prinshof 349-JR.
Address:	Cnr Steve Biko Street/Soutpansberg Road, Pretoria
Theoretical Approach:	Aldo Rossi – City as process of becoming
Architectural Response:	Architecture as mediator in the creation of place
Research field:	Environmental potential/acknowledging cultural heritage

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

Pieter Breytenbach
November 2012

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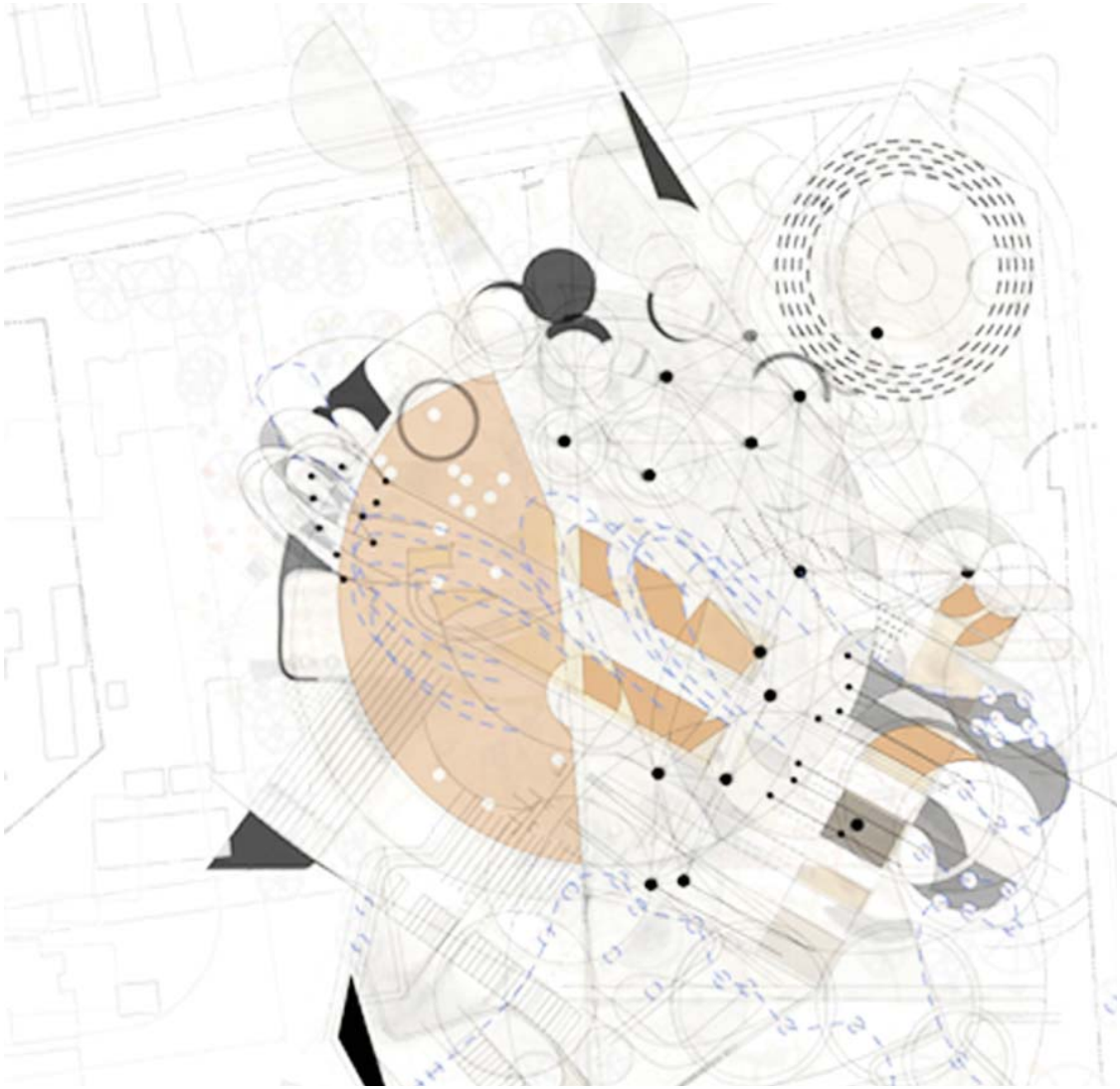
Part 1

Thesis Statement

The dissertation explores the mediating role that architecture can and needs to play in order to reintegrate into the existing urban fabric some urban areas that have degenerated. The investigation is site-specific – it examines site-specific conditions in the Pretoria/Tshwane central business district (CBD) and adjacent areas, as well as the historical layering that shaped the urban spaces under investigation. It explores the ability of architecture to serve as a means to create place, as well as to transform the temporality associated with place, as signified by the object.

Introduction: Architecture as Mediator

Chapter 1



Mediation: 'A speech or piece of writing expressing considered thoughts on a subject.'
Paperback Oxford English Dictionary (Soanes, 2005:468)

Fig. 1.1 Interspace 2012 -The Transformation map.

Urban architectural responses to complexity

South Africa's tumultuous history has played, and is still playing, an influential role in the way society is conceived and perceived, values are formulated, and norms are transferred. The multiplicity of the situation and the dynamic state of flux in which South African society finds itself poses a challenge to the building industry, and in particular to architects – in particular, it requires the built environment to play a mediatory role.

As a central premise, this study therefore adopts Robert Venturi's (1977:16-19) argument that architecture can be harnessed as a mediator between levels of organisation that are complex, and that include both the tangible and the non-tangible.

The study uses the Pretoria CBD as a context in which to investigate the concept of interplaces where the kind of functional zoning that Venturi (1977) refers to needs to be implemented and/or extended. It demonstrates a case of organised complexity in the larger context of the complex South African geographical and social landscape.

However, when the spatial and contextual order is challenged by the introduction or subtraction of energy (the space becomes a discursive space), the system is pushed from equilibrium, affecting both the implicit (unifying) and explicit (unfolding) order within the existing spatial and contextual relationships. The system then opens up to more possibilities and becomes more complex.

Architecture is no longer only required to mediate as a go-between climate, typology, and topography and the physical location on the one hand, and the users of the built environment on the other to ensure comfort. Rather, architecture is now also required to serve as a facilitator and mediator in a much larger sense – it must evoke new meaning, associated with place, and needs to mediate the crossing of physical thresholds left behind in the wake of transformation.

Edensor (2005:311-332) argues that in event-signifier relationships, meaning in spatial and contextual order is maintained through practised routes and constructed networks that culminate in regulatory systems and strategies, ensuring stability, meaning, and purpose of objects in place (see Fig.1.2). Practised routes imply restricted possibilities. Objects such as the built environment co-constitute the subject, such as the people who occupy and use that environment (see Fig 1.3).

However, when the spatial and contextual order is challenged by the introduction or subtraction of energy (the space becomes a discursive space), the system is pushed from equilibrium, affecting both the implicit (unifying) and explicit (unfolding) order within the existing spatial and contextual relationships. The system then opens up to more possibilities and becomes more complex. the subject, and ultimately, between the object, the subject and the environment.

Figures 1.2 and 1.3 explain the concept of stereotypical boundaries challenged in order to reveal new possibilities. It shows the object in relation to its context, and the possibilities inherent to it. It also shows the new level of relationships possible between the object and the subject, and ultimately, between the object, the subject and the environment.

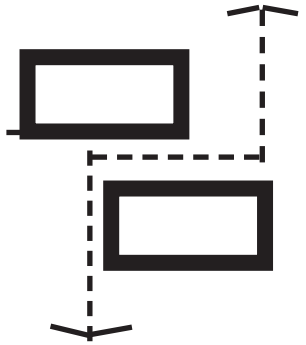


Fig. 1.2.1 Meaning of objects in space.
practised routes – restricted possibilities.

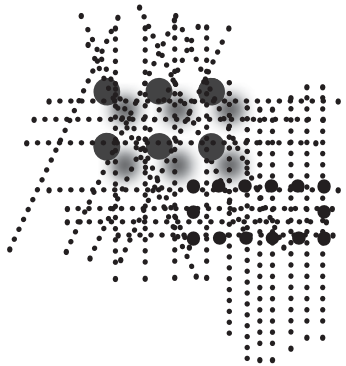


Fig. 1.2.2 Meaning of objects in space.
Moving through – discursive space.
More complex – more possibilities.

1.2 Theoretical Approach

1.2.1 General orientation

Re-integrating urban spaces that have degenerated back into the urban fabric poses a serious challenge, which this study addresses by interpreting and applying some theoretical discourses to a particular case. In addition to Robert Venturi's (1977:16-19) argument that architecture can be harnessed as a mediator, the main theoretical discourse that is explored is the propositions made about the city as a process of becoming by Aldo Rossi in his book L'architettura della ciita (1966), translated in 1982 as Architecture of the City (Rossi, 1982:3-11). The theory posits a process associated with the cultural representation through memory of an original event, progressing from existential connotation to event.

Rossi ([1966] 1982) argues that the city serves as a historical representation of fragments of various events, representations, and subjects. His theory was developed further by other theorists, such as Landzelius (2003:197), who claims that it is about fragments (representations) that retain greater independence from the whole, and suggests that the retained parts have more elements of meaning stemming from a previous state of context. A concept also described through recursivity and the subject's self-consciousness, evoked when confronted by a particular set of visual and linguistic signifiers.

Rossi's ([1966] 1982) theory is thus relevant for this study because the South African historical-political context subsequently influences both the urban and architectural scale of its cities. In this study, it is argued that within the understanding of these processes associated with fragments, an architecture to communicate beyond itself can be inspired, enabling the architectural artefact to perform a mediating function within larger communities. It can then be about an architecture that mediates, and connects across space and time. Ultimately, it is then about an architecture with a moral imperative to remember, rather than an obsession to undertake the impossible task of reproducing the past.

In order to understand the concept of representation and fragmentation, an object-waste investigation, as described by Breytenbach (2012) was undertaken in this study in order to understand objectively the processes associated with fragmented representation, and de-stabilisation, of which a brief discussion follows in the next section.

Recursivity is a physical and existential viewer self-consciousness, evoked by a particular set of visual and linguistic signifiers. It implies a self-awareness that asks the viewer to engage with the object's representation and its relationship to the environment, and the life context to which it refers and passes

Fig. 1.3. Object co-constitute the subject.

1.2.2 Waste-object theory

The waste-object metaphor posited by Breytenbach (2012), enables renewed purpose to be sought, awakening the energy inherent to process and place. In this theory, waste no longer signifies the object, although it still represents the object as it entered a different temporality. Its material status is in a state of transience – it is becoming something else, or almost nothing that is separately identifiable (Villeneuve, 2005:5).

The process of dissolving form derived from the waste-object metaphor initiates a dialogue. It results in a language that eventually allows for the transgression into "objects" themselves, by transgressing the assigned boundaries between "objects", and especially between objects and nature.

In essence, the ensuing dialogue questions the threshold associated with individuality, prompting the argument that there is a possibility that architecture can mediate by means of the transgression of assigned/implied boundaries. This metaphor therefore provides a suitable hypothesis for the purposes of the study, namely, that architecture mediates through the transgression of assigned boundaries.

Fig. 1.4 "Objects themselves".

Fig. 1.5 Emotive and mystical approach to art. (Kandinsky 1913, Google Images)

1.3 Primary Project Goals

The dissertation's primary design and programme goal is the design of a public information centre and gathering space aimed at intervention through accessibility of information. The centre will be called the Victoria Cobeli Information Centre. The programme is set out in detail in the diagram in Fig. 1.6

The initiative is based on health promotion and the notion of pro-active prevention. of what?. Health promotion is initiated through community and public participation facilitated through social production.

Formally, the centre will accommodate a community auto assessment centre, workshop spaces,an auditorium, administration and information hub, and a child care facility. The centre will be able to accommodate other community-inspired initiatives, as well as the University of Pretoria's extended community service programme based on applied learning, and directed at achieving mutual benefits with a positive impact with regard to satisfying specific community needs (UP Syllabi, 2012: JCP 201:68). (See Addendum A).

The University of Pretoria's involvement strengthens the need for a centralised facility that is easily accessible for students, community partners and beneficiaries.

On an informal level, the facility will support amenities and programmes aimed at the financial upliftment of local vendors and suppliers.
The Victoria Cobeli Information Centre will be a testimony to both public dignity and the wider society's moral obligation towards all its members.

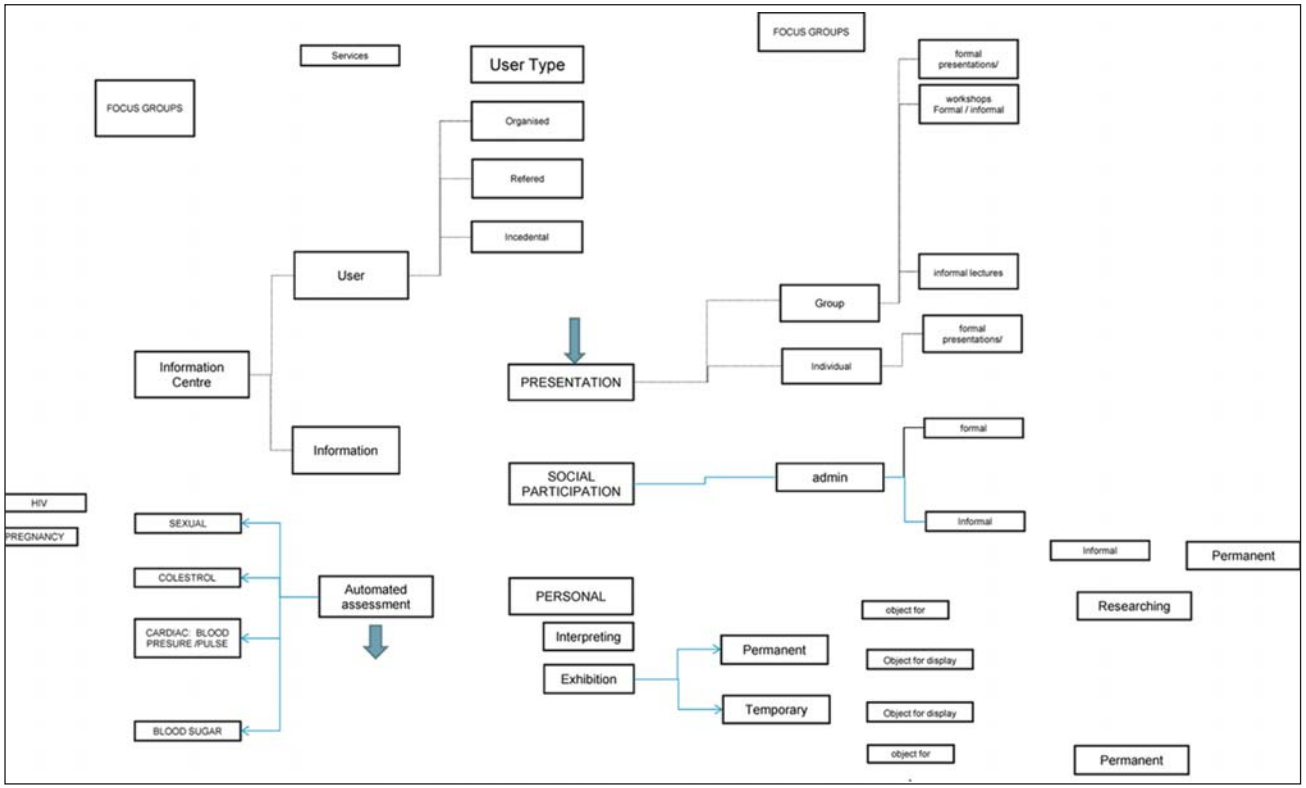


Fig. 1.6 Diagrammatic exploration of the programme.

1.4 The Client

The Victoria Cobeli Information Centre will not be owned by government, but the facility will be jointly funded by National Government's Department of Health and Social Development, and the University of Pretoria.

The facility will be operated by the University of Pretoria, employing community members. It will serve as a formal platform for the University's community-based programme which all second-year students in the Faculty of Medicine and Faculty of Engineering, Built Environment and Information Technology, must participate in, and will help to address government's continuous obligation to provide primary health care in South Africa.

Additional input will be made and financing will be provided by private and publicly owned companies, such as pharmaceutical corporations, as part of their social corporate responsibility.

Sub-letting facilities such as the auditorium as an event space will be another way to generate financing, and will serve as a platform to initiate further educational and developmental opportunities.

1.5 Problem Statement

The problem is twofold – it falls into the social and architectural realms, as set out below.

The primary question arises from a social problem. Socially, there is a need for a facility to mediate community upliftment through formal programmes, aimed at informing citizens and communities.

This then leads to the following key question in the architectural realm: How can the built space contribute towards mediating a renewed spirit of place by means of a re-integration of space in an urban South African context?

The second question also has a social and an architectural component.

The social question is what constitutes the creation of a renewed spirit of place, and whether it can be programmatically realised.

The related architectural question is then what spatial qualities are required to respond successfully to the architectural language associated with programme.

In order to arrive at socially and architecturally acceptable answers, architecture must serve as a mediator through the transgression of socially assigned boundaries. Although the environment mediates as a receptor, architecture is needed to interpret and give a Gestalt to these spaces – spaces that will eventually become places.

1.6 Design Intention

The primary design aim of this study is to show how architecture can act as a mediator in a social upliftment programme via the creation of an accessible and non-discriminatory public space. The proposed design is tested against the stated hypothesis that architecture mediates by transgressing socially assigned boundaries.

The design also aims to dissolve boundaries assigned through topography, the programme, and the socio-political, socio-economic, educational, cultural, and historical layering associated with the site. This aim is met by re-configuring classical approaches towards appropriation of space, to ensure enhanced possibilities of approach, accessibility, and circulation, moving from a spatial ideology of enclosure and restriction to one of openness and discursive interaction.

Moreover, the design aims at integration not only by linking spaces, but also by encouraging heterogeneous interaction between a variety of culturally and ethnically diverse groups in a safe, open environment.

The role of the city grid, as well as the city streetscape, is examined, because it forms part of the basic concept under investigation. The chosen site plays a crucial role in demonstrating the fundamental concept of mediation.

1.7 Delimitation of Study

The study is limited to the following:

- designing and implementing a public/ community facility that will interact within an existing precinct and proposed urban design framework; and

- designing inclusive circulation routes and pedestrian walkways to facilitate discursive interaction, incorporating and acknowledging existing and proposed regional and spatial development frameworks released by the City of Tshwane Planning Committee.

1.8 User Profile
(See Addendum A)

Based on previous applied programmes completed by second-year students in the Faculty of Medicine, Engineering, and Built Environment from the University of Pretoria, four basic user types were identified, namely:

- organised users – these are groups or individuals mobilised by themselves or by an external party regarding formal visits, or participation in workshops and other organised activities (see Fig. 1.6);

- incidental users – this category describes individuals or small groups of visitors that are exposed to the programmes/facility by chance; so their presence can be regarded as accidental (see Fig. 1.7);

- referred users – this category of users is referred by other organisations and institutions, or professionals, for example, by schools, universities, doctors, individuals, and other community centres (see Fig.1.8); and

- service providers – this group is comprised of staff (permanent and temporary), volunteers, and student community workers.

Fig. 1.7 Conceptual - Organised User

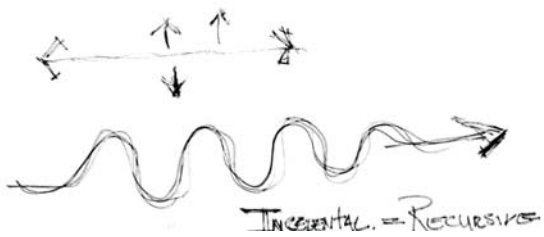


Fig. 1.8 Conceptual - Incidental user

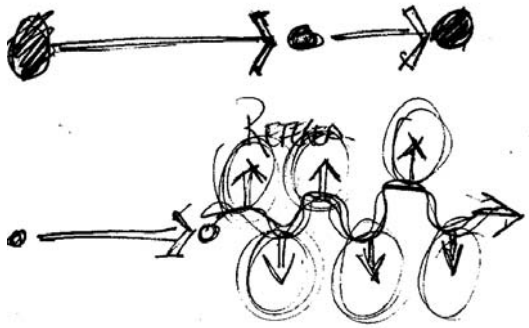


Fig. 1.9 Conceptual - Referred user

1.9 Research Method

The research was done in two stages.
First, in Part 1, the object-waste metaphor was explored as pure theoretical research with the objective of developing a conceptual hypothesis that expressed the challenge to the researcher, but with no direct practical application. The knowledge obtained was purely sought to add to the existing architectural research approaches available.
Second, in Part 2, applied exploratory research was conducted. This exploratory research can be classified as unstructured research that addressed the objective of solving a specific practical question regarding the specific phenomenon of architecture as a mediator with the application of a specific programme.
The method implied challenging existing principles as a consequence of applied practice, by introducing different concepts (many of which are not new) with the aim of dealing differently with the current changing city environment in Pretoria CBD. It implied working at a different level, where the appropriation of space is thus explored above the realm of occupying space.

1.10 Dissertation Outline

The study reported here reflects the process followed in the design process. It begins by setting out the focus or aim of the study in Part 1. Part 2 then moves on to discuss the practical process in the second phase of the study, starting from a basic idea, and moving on to the subsequent development of that idea into an architectural language that proposes an acceptable answer to the research question, confirms the hypothesis, and addresses a real world problem.

Urban Conditions:
Recording the Event

2.1 Place

Place is not only a demarcation of coordinates, or just a collection of buildings, but rather a series of events that left in its wake forms/ objects best translated as signifiers, as representations of those past activities according to Rossi's L'architettura della ciita (1966), translated in 1982 as Architecture of the City.

This chapter explores different scales of events captured through history. It is an exploration of the relationships and patterns of interaction that contribute to how place came into being and has been utilised, and how connections have been formed and used.

2.2 Pretoria

The specific geographic space that is explored is the Pretoria CBD. The name of the city has changed formally to Tshwane (although at the time of writing, the matter is still in dispute, and a legal battle continues to rage). However, the CBD still remains Pretoria, where the central government is housed in the Union Buildings.

Since the founding of the city, what is now still called Church Square has always been seen as the central hub of the city. It is from this square that the regular grid street pattern that characterises the city centre emanated, following the Roman Cardu Decomanus design.

Fig. 2.1 Orthographic map of Pretoria in 1928, showing the Cardu Decomanus design with Church Square as the hub.

2.3 Study area

The immediate study area extends on a north-south axis from Edmond Street to the south, to Soutpansberg Road/Dr. Savage Road to the north. On an east-west axis, it stretches from Steve Biko Street (formerly Beatrix Street) to the east, to Du Toit Street to the west. The greater framework is discussed from Church Street (now Stanza Bopape), the southern edge, and will coincide with Booysen Street Bridge to the north. (See Chapter 7)

The inner city (CBD) borders the site, as it is situated on the periphery of the city's northern quadrant. The area forms part of a health care precinct that has a rich layering of history.

Two important landmarks (the Pretoria General Hospital, and the Moedersbond maternity hospital) are typical of the site, which is surrounded by public buildings that fall under the authority of the National Department of Public Works. The study area is separated from the city by the Apies River, which has long been artificially channelled in this area.

Fig. 2.2 Study area in relation to street map.

In relation to the current figure-ground plan of Tshwane, the site occupies the CBD's periphery. It is separated from the city centre by an environmental barrier (the Apies river), as well as socio-political connotations attached to events that shaped the current condition of the site.

The current site shows little reminiscence of the buildings that once stood here, demolished on the basis of a now incomprehensible past. Although the context remains one of healthcare and compassion, the essence of place seems lost, nullifying the hereditary value marking the occasion.

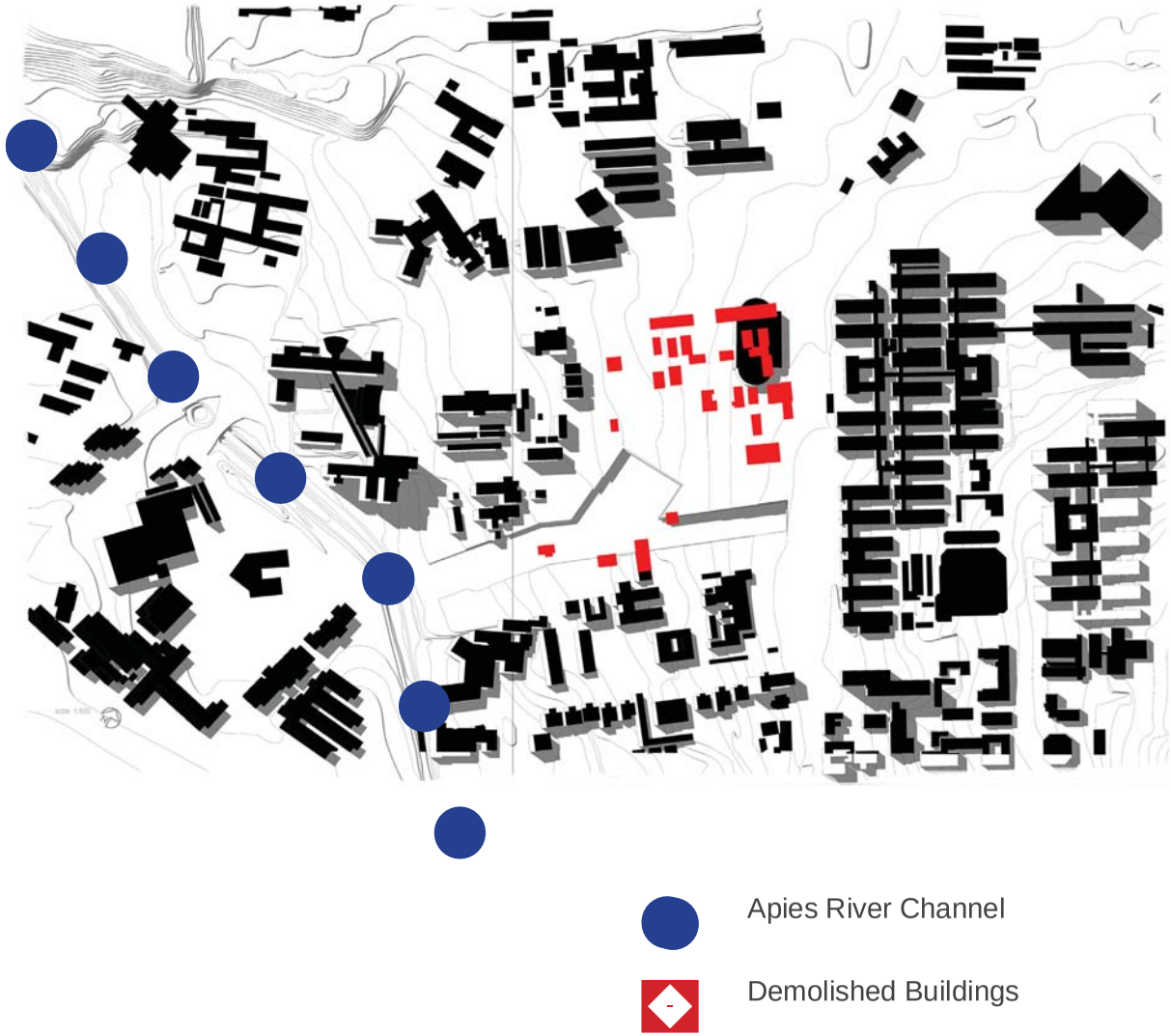


Fig. 2.3 Reminiscence of demolished buildings found on site in relation to figure-ground map.

2.4 Health and Social Care in Pretoria: A Brief History

2.4.1 The Volkshospitaal

The first hospital in Pretoria, the capital of the erstwhile Zuid-Afrikaansche Republiek, was lodged in an old house near the army barracks in what was then Potgieter Street (now Kgosi Mampuru Street). President Paul Kruger laid the foundation stone for the new Volkshospitaal on 21 June 1890. The new hospital boasted 130 beds. However, the population of Pretoria grew rapidly in the early part of the 20th century, and the small hospital soon became inadequate.

Fig. 2.4 First Volkshospitaal – Potgieter Street, Pretoria.

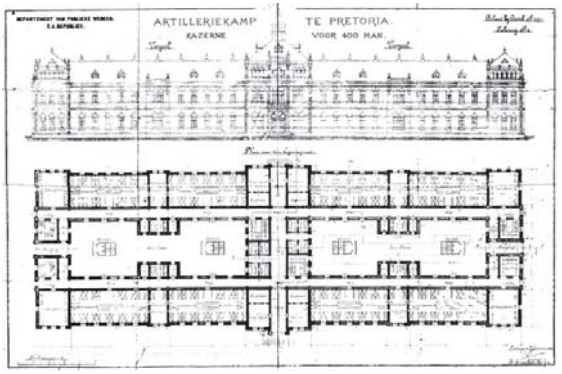


Fig. 2.5 First Volkshospitaal 1890 – Floor Plan

Fig. 2.6 First Volkshospitaal 1890- Potgieter Street

2.4.2 Donkiekamp

The site to be used for the Victoria Cobeli Information Centre proposed in the study was once, according to historian Rosa Swanepoel, a safe haven for destitute whites after the World War I. She writes: “It was a very poor white element that lived here in worse conditions than what can be called a shanty town, and it seemed that everyone owned one or more donkeys” (Swanepoel, 2006: pers.com.).

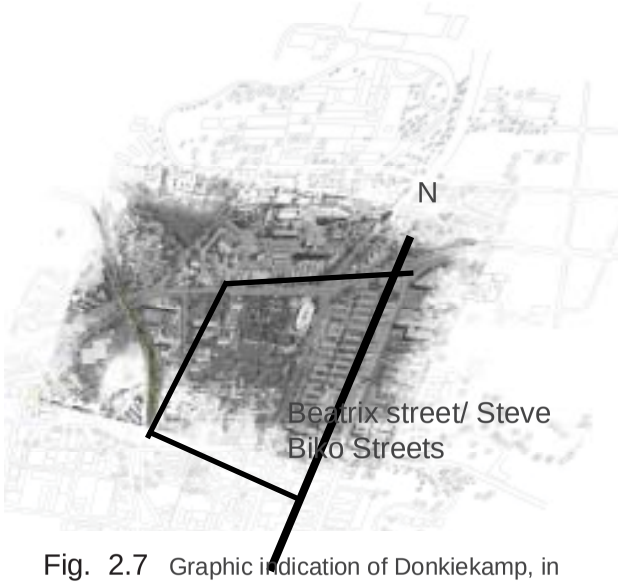


Fig. 2.7 Graphic indication of Donkiekamp, in relation to site

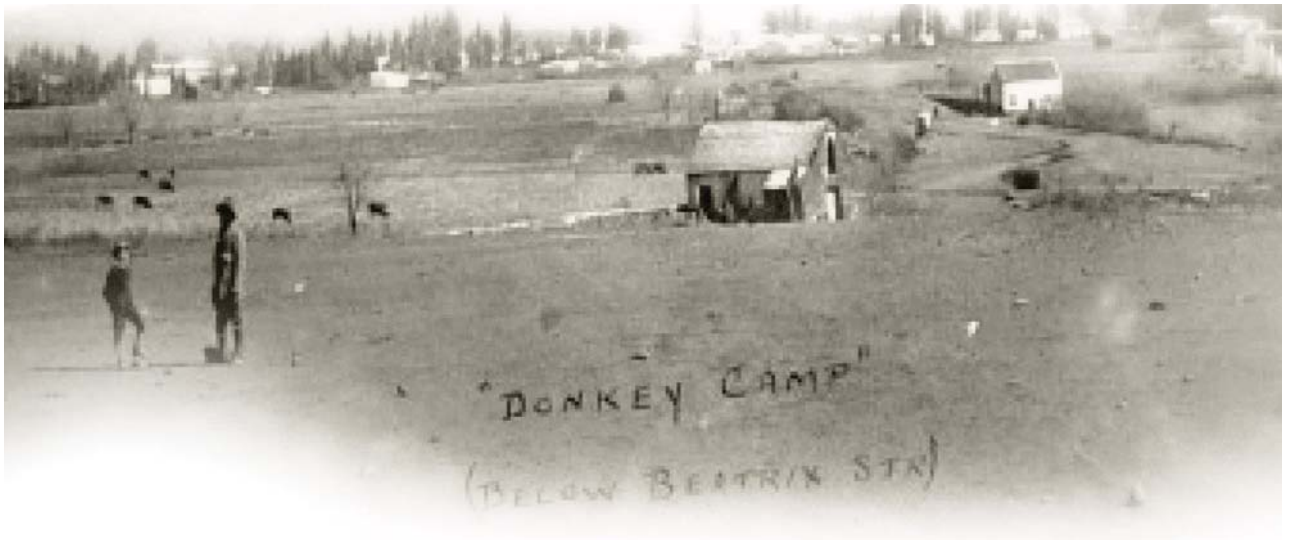


Fig. 2.8 Picture of Donkiekamp with Church Square in the background (Swanepoel, 2006: pers.com.).

2.5 Major Landmarks

The two main landmarks that indicate arrival at the site are the current Tshwane District Hospital (known variously as the Pretoria General Hospital, H.F. Verwoerd Hospital, and the Pretoria Academic Hospital), and the current Lebone Nursing College (known previously as the Moedersbond or UP Maternity ward).

2.5.1 The Tshwane District Hospital

The land was presented by the city council of Pretoria (1916) to the then provincial government of the Transvaal as the site for a new Volkshospitaal. It was, however, not accepted as suitable until 1922, and after the Groot Griep (the great influenza epidemic) had claimed five lives per 100 Pretoria residents.

Mr J.S. Cleland, then Head Architect for the Department of Public Works, was appointed as the architect, and the cornerstone was placed on 22 April 1927 (Mieny,1993:4-8). By 14 March 1932, patients and staff were admitted to the institution, with Dr L.S. Robertson as the first Superintendent.

Originally named the Pretoria General Hospital, it was renamed H.F. Verwoerd Hospital in 1967. In 1997, the name changed to the Pretoria Academic Hospital, and in 2008 the name was changed again to what is now called the Tshwane District Hospital. The hospital is still in use, although the new Steve Biko Academic Hospital has become the flagship academic hospital since 2006.

Fig. 2.9 Pretoria Academic Hospital after 1994, designed by Cleland

2.5.2 Moedersbond

The Moedersbond hospital was conceived in 1919 by eight women who were drinking a cup of tea in Church Square. They were touched by the plight of women who had to go through labour without the help of midwives. These women decided to start a training centre for midwives called the “Moedersbond”.

Initially, the late President Paul Kruger’s house in Church Street was used as a training centre, giving rise to the board called “Die Bond van Afrikaanse Moeders”.

The foundation stone for the new maternity hospital was laid by Dr D.F. Malan in 1931 on land granted by the then government in Beatrix Street (now Steve Biko Street). In 1932, the new hospital was already in use.

In 1960, the building was bought by the Transvaal Provincial Administration (TPA) from the Suid-Afrikaanse Vroue Federasie (SAVF) for the training of medical students when the new Transvaal Nursing College complex was complete.

Fig. 2.10 Moedersbond Hospital, cnr. Belvedere and Steve Biko Street.

2.6 The Precinct

It is evident from the preceding section that the site has been strongly associated with care and learning since it was first used, in its original humble inception as Donkiekamp.

Historically, there was also a crèche on the site, the Lawaaidraai Bewaarskool (the name was inspired by the noise made by emergency vehicles when they went around the corner at Oumashoop Street).

The site has also been home to a community nursing service, and an occupational therapy service, supported by X-ray facilities offered in conjunction with a prosthesis clinic.

Theoretically, the site represents and is evidence of the process associated with an open-ended long-term process of becoming and passing, of cultural representation through the memory of events, where the city and urban fabric act as a historical representation of fragments of various events.

Fig 2.11 Historical reminiscence of place.

"Social order is partly maintained by the predictable and regular distribution of objects in space. Rarely subject to conscious reflection, the situation of objects in their assigned places, and the impulse to re-institute them properly when they fall out of position testifies to a common sense idea that there is 'a place for everything and everything in its place'." (Edensor, 2005:311)

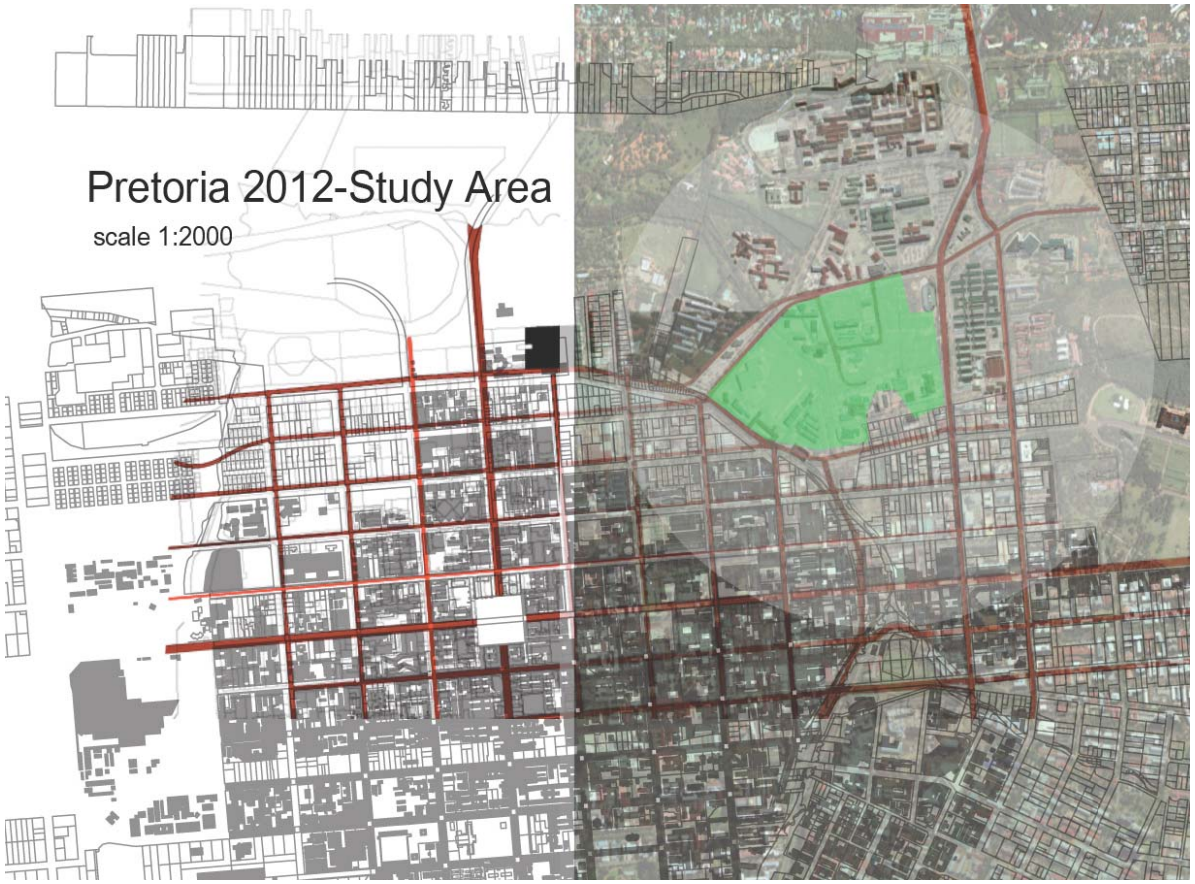


Fig. 3.1 Site and Location
City of Tshwane figure-ground plan.

3.1 Context Analysis

This chapter addresses the location and surroundings of the selected site, and starts from a global (macro) scale, moving to a micro analysis of the urban environment, and the buildings already on and surrounding the site, and their functions within and around the site.

South Africa is situated at the southern tip of the African continent, and is characterized by a strong representation of various cultural groups integrated into a democracy since 1994.

The City of Tshwane Metropolitan Municipality is located in the northern part of the Gauteng Province, which includes 13 former municipalities under one mayoral system. The name for this metropolitan municipality is derived from the Setswana name for the Apies River.

South Africa is situated at the southern tip of the African continent, and is characterized by a strong representation of various cultural groups integrated into a democracy since 1994.

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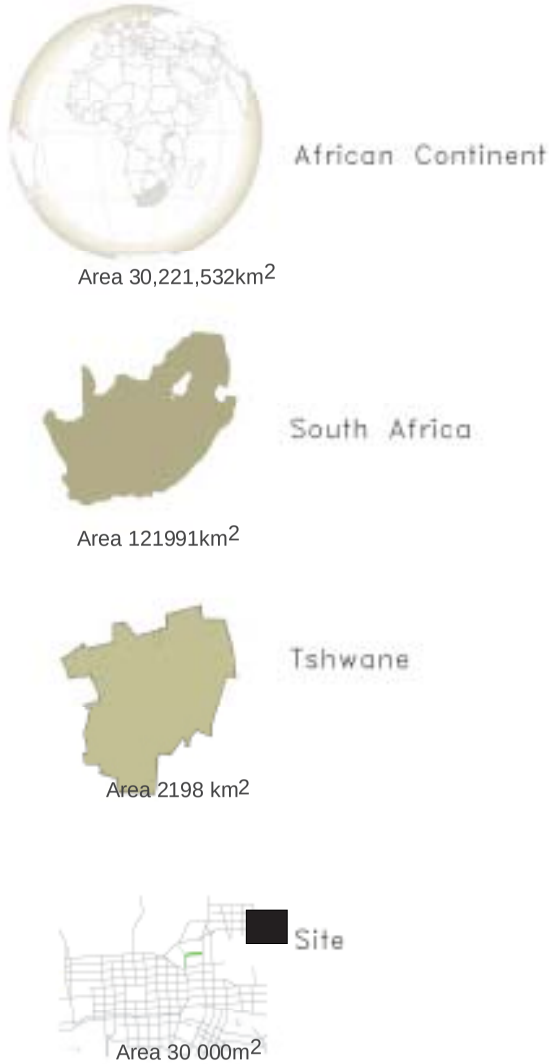


Fig. 3.2 Geographic Position

The City of Tshwane forms the central node of the City of Tshwane Metropolitan Municipality. It is surrounded by competing nodes such as

- A – Centurion to the south;
- B – Soshanguve to the north;
- C – Mamelodi to the east; and
- D – Atteridgeville to the west.

The CBD is well connected through a series of highways such as the N1, which runs north-south, the N4, which runs east-west, and the Mabopane and Platinum Highways connecting the north-western areas with the CBD.

Internally, the city is well connected, with two main types of transport node:

- A vehicular system, with the traffic absorbed in a formal city street grid; and

- A railway system, with Pretoria Main Station and Belle Ombre as the main commuter stations, and Capital Park and Koedoespoort as the main freight and engineering nodes.

Unfortunately, deteriorating infrastructure has led to a decline in bulk transport via rail, but new additions such as the Gautrain connecting Tshwane with Johannesburg and the new Bus Rapid Transport (BRT), system will hopefully alleviate the dire need for additional public transport.

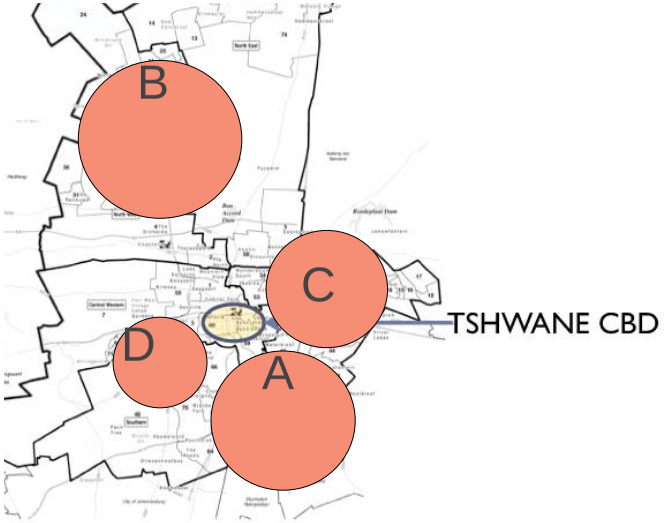


Fig. 3.3 Competing Nodes.

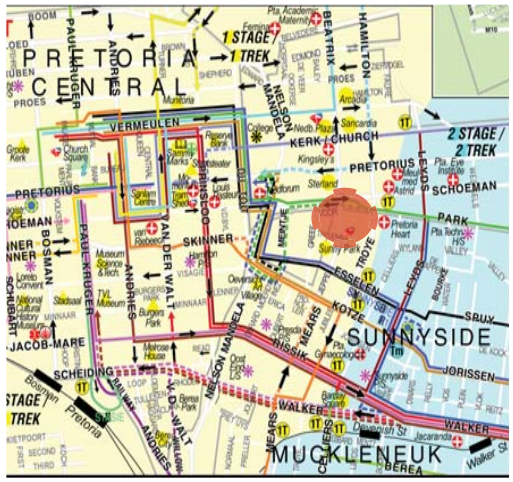


Fig. 3.5 Bus Routes in inner city.

Fig. 3.4 Major Highway carriages around study area.

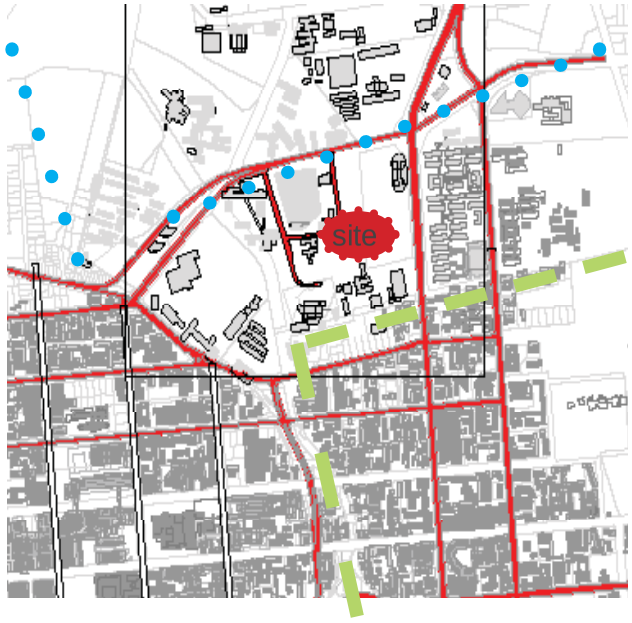


Fig. 3.6 Main site access Routes .

3.1.1 The site

The selected site (hereafter also called the precinct), is situated on a portion of land designated Prinshof 349-JR. It is bordered by Elandspoort 357-JR to the south, Bryntinrion 347JR to the east, and Elof Estate 320-JR to the north. The site is divided into two distinct portions and is mainly zoned for government use. Surrounding zoning allows for education and housing.

According to the title deed, zoning and land use rights, the height restriction on the site is 19 m.

Fig. 3.7 Aerial site map with boundaries.

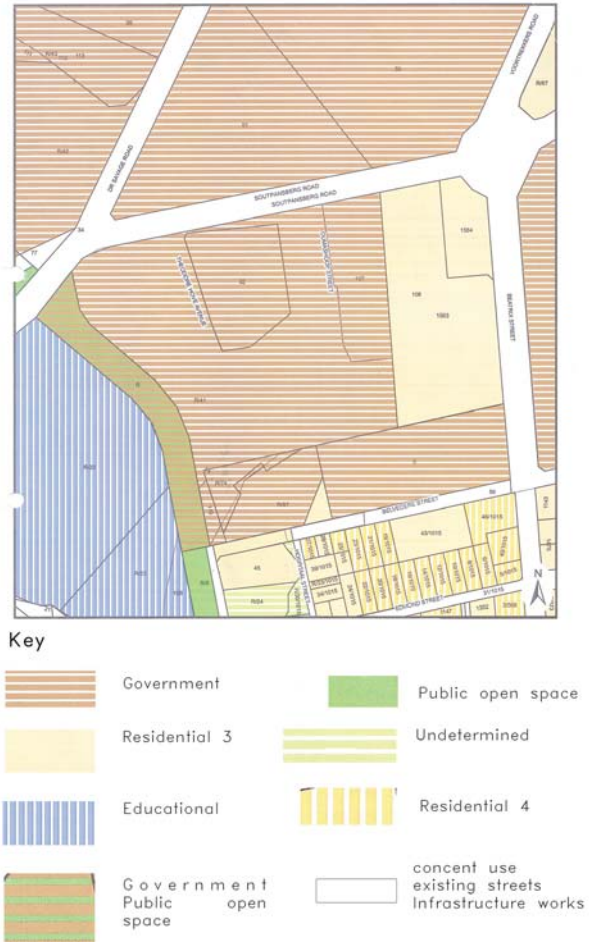


Fig. 3.8 Current zoning and land-use rights.

3.1.2 Existing structures within the precinct

Within the precinct, various medical, higher education and other facilities are visible and still in use.

- A – Old Transvaal Nurses College
- B – Medical Research Institute
- C – University of Pretoria Occupa tional Therapy and residence
- D – UP Tissue Clinic
- E – University of Pretoria's Prosthesis Clinic
- F – ABSA Home Loans Regional Office
- G – Old Moedersbond Maternity Clinic/ UP Gynaecology and Obstetrics/ Lebone Nurses School
- H – Tshwane District Emergency Unit
- I – Parking for emergency unit vehicles and garage
- J – Femina Women's Clinic
- K – South African Women's Federation Head Office

3.1.3 Buildings outside the precinct

- 1 – Tshwane University of Technology Heidehof Residence
- 2 – Tshwane University of Technology Works Department
- 3 – Old students' sports complex
- 4 – Taxi rank
- 5 – Children's Ward Tshwane District Hospital
- 6 – University of Pretoria Department of Pathology
- 7 – University of Pretoria Dental School
- 8 – Department of Agriculture
- 9 – Department of Fisheries and Forestry

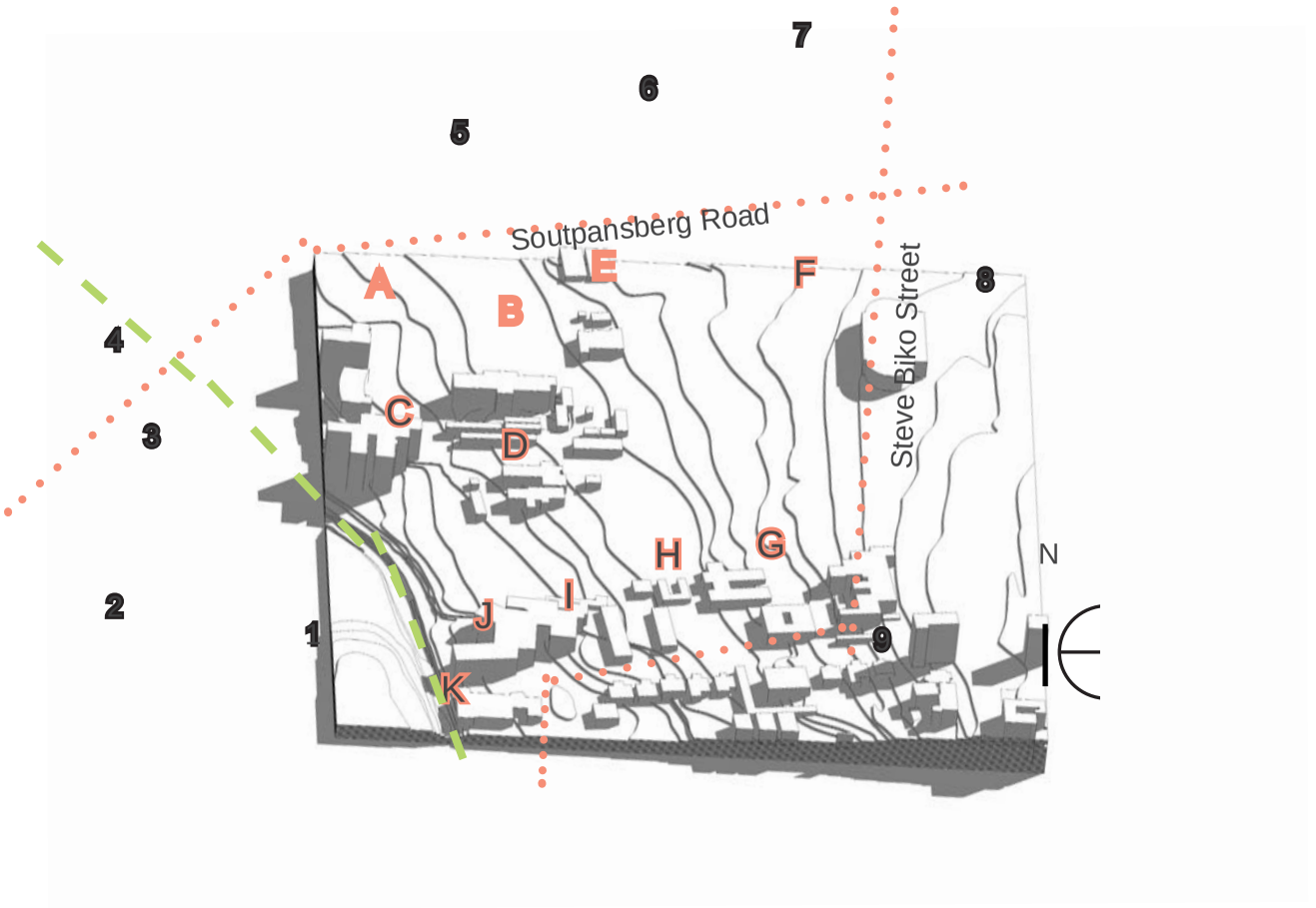


Fig. 3.9 Developments within Precinct

3.1.4 Surrounding buildings

The site is inscribed by some of the most famous buildings in Pretoria, as indicated in the diagram in Fig. 3.10. Although the site is isolated from these landmarks, visual links are maintained through the topographic elevation.

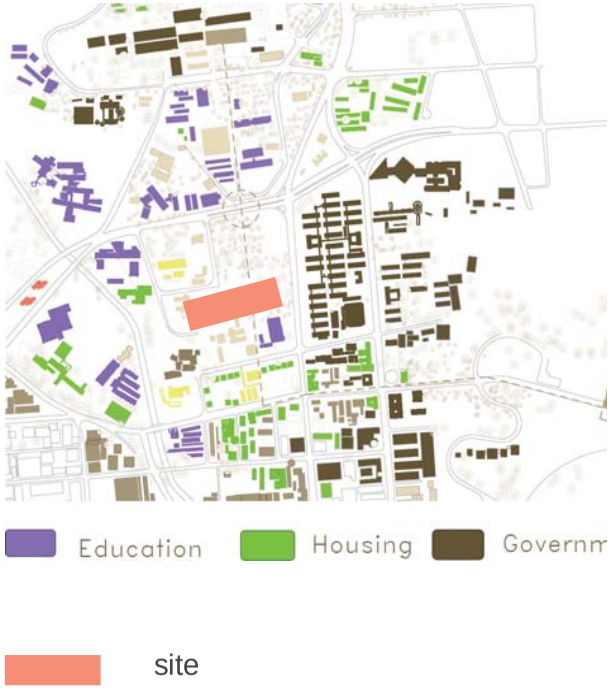


Fig. 3.10 Development surrounding precinct.

Fig.3 .11 Places of interest around the site

3.1.5 Analytical drawings based on visual surveyance

Fig. 3.12 shows that the main vehicular routes and vehicular circulation are all diverted around the site. A single secondary street services access and allows for circulation within the precinct.

Fig. 3.12 Existing circulation routes

From Fig. 3.13, it is clear that due to the high vehicular traffic volumes around the site, as well as the proximity of emergency services, noise levels in certain areas of the site are considerably higher than in others. Stop and start noise is also prevalent because of public transport drop-off areas, as well as traffic control lights and a pedestrian crossing.

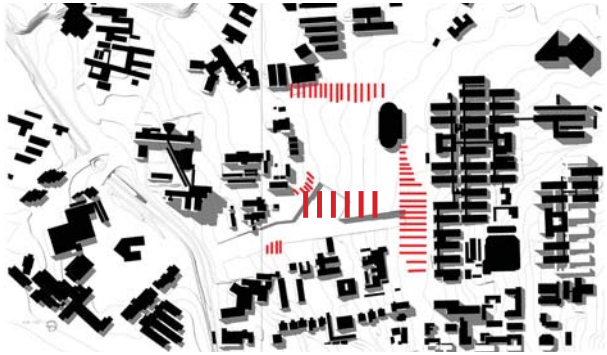


Fig. 3.13 Noise origins

Fig. 3.14 shows pedestrian movement is restricted and channelled by the security fencing around the site. The banks of the Apies river's channelling are underutilized, and they pose a security risk for pedestrians.

Fig 3.14 Pedestrian circulation routes

Fig. 3.15 indicates that amenities in and around the site are limited. A petrol station with a convenience store, and an adjacent taxi rank cater for specific needs. Formal convenience stores are situated well outside a 600 m walking radius.

Fig. 3.15 Existing amenities

N

Fig. 3.16 shows that legibility of the site by vehicular users is restricted due to one-directional traffic flow on the eastern side, which forms the main visual link from the east. Continuous movement in both directions from the northern edge provides restricted visual access. However, for pedestrians, the site is visible and accessible from the north-west and the south.

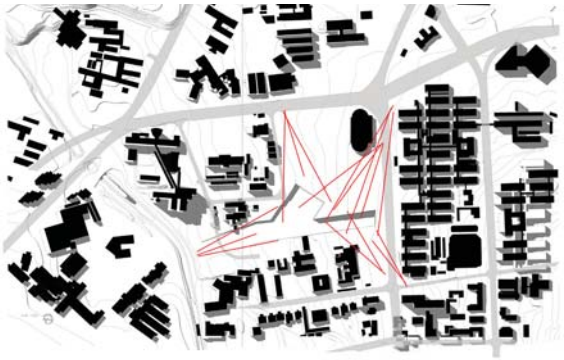


Fig. 3.16 Site legibility.

There are few usable green spaces (see Fig. 3.17) for security reasons, and the available spaces are underdeveloped. However, the Pretoria Zoo (officially the National Zoological Gardens of South Africa) provides a natural environment enjoyed by many city dwellers and visitors. However, although the site is considered an open space, it is a brown site.

Fig. 3.17 Green spaces.

The traces and reminiscence of a site once occupied but now abandoned are indicated in Fig. 3.18. The diagram shows evidence of a previous built environment that became unoccupied and is now unused due to the socio-political stigma attached to the site.

Fig. 3.18 Demolished buildings.

N

Topographically, the site slopes noticeably from east to west, with a decrease of 23 m over a distance of 130 m, creating an average slope of 3%.

The street edge conditions to Steve Biko Street (formerly Beatrix Street) to the east are less hostile than the conditions to the north, and they allow for a treed pedestrian walkway, a pedestrian crossing controlled and operated by traffic lights, with a transparent edge in the form of palisade fencing.

The northern edge of the site, adjoining Soutpansberg Road, is characterized by hostile vehicular movement and has exposed narrow walkways.
Soutpansberg Road is a two-way dual carriageway with a central island. There is no designated pedestrian crossing.

Fig. 3.19 Steve Biko Street – east.

Fig. 3.20 Soutpansberg Road – north.

Fig. 3.21 Section topography.

On the western edge, the Apies river channel acts as barrier/division between the city periphery and the site. There is no bridge structure other than the bridge in Edmond Street to cross this channel, which makes the area extremely hostile and unsafe.

Nevertheless, the Apies river channel does offer a beautiful natural green area with ample possibilities and opportunities that can be harnessed to enhance the aesthetics and quality of life in the city itself in general.

Internal circulation routes are poorly maintained, and they service only established users. The site with the existing access route from Steve Biko Street is currently in a state of disrepair, and needs to be upgraded.

Sewerage, water, and electrical reticulation are present on the site. However, these services are also in need of upgrading, as raw sewage from open sewer lines flows into the Apies river channel, posing a health hazard.

Fig. 3.22 Apies river channelled towards the Pretoria Zoo.

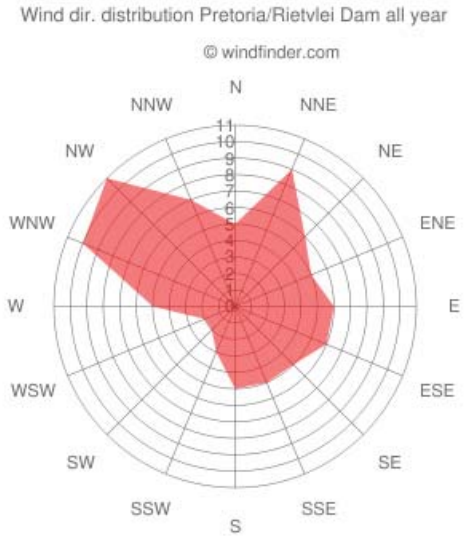
Fig. 3.23 Oumashoop Street as shown on plan.

Fig. 3.24 Green spaces around edge of channel.

Fig. 3.25 Internal circulation routes accessed from Steve Biko Street.

3.1.6 Climatic data

The site falls in the Northern Steppe climatic zone of South Africa, which implies that there are distinct rainy and dry seasons. Tshwane experiences relatively warm summers with summer rainfall and moderately cold, dry winters (Holm, 1996).



Month	January	February	March	April	May	June	July	August	September	October	November	December
Recorded High	36	36	35	33	29	25	26	31	34	36	36	35
Average High	29	28	27	24	22	19	20	22	26	27	27	28
Average low	18	17	16	12	8	5	5	8	12	14	16	17
Recorded low	8	11	6	3	-1	-6	-4	-1	2	4	7	7
Precipitation	136	75	82	51	13	7	3	6	22	71	98	110
Precipitation days	14	11	10	7	3	1	1	2	3	9	12	15

Fig. 3.26 Pretoria Climate Data Sheet

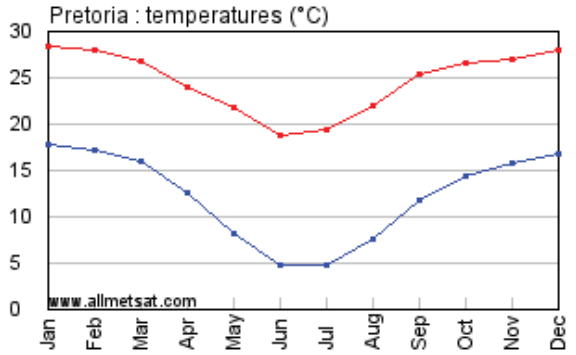


Fig. 3.27 Pretoria Temperature Graph

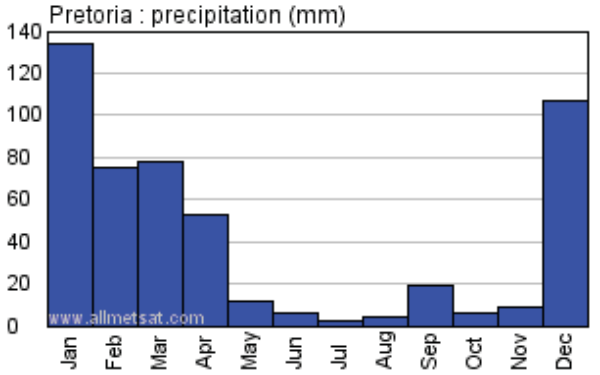


Fig. 3.28 Pretoria precipitation graph

3.1.7 Site – Geological composition

The geological composition of the site consists mainly out of Igneous Rock and specifically Hekpoort Andesite. This is extremely hard and is well suited for bearing loads of in the access of 15 MPA, and therefore provides for a good substructure for foundations and footings. When excavating beyond 30m the soil is susceptible to chemical weathering, and residual soil is rich with clay, and will produce a heave of 15-20mm.

Another important factor to consider will be the water table. However, since excavation will only be done to a depth of 8 m, including the basement garage, and since the Apies River is channelled along this stretch of the river, the water table poses no threat. Nevertheless, tanking of the basement parking level is considered as a basic precaution, and the method will be employed as a basic construction method.

Meintjieskop Fault line

Hekpoort Andesite

Strubenkop Shale

Daspoort Quartz

Timebal Hill

Apies River

Site

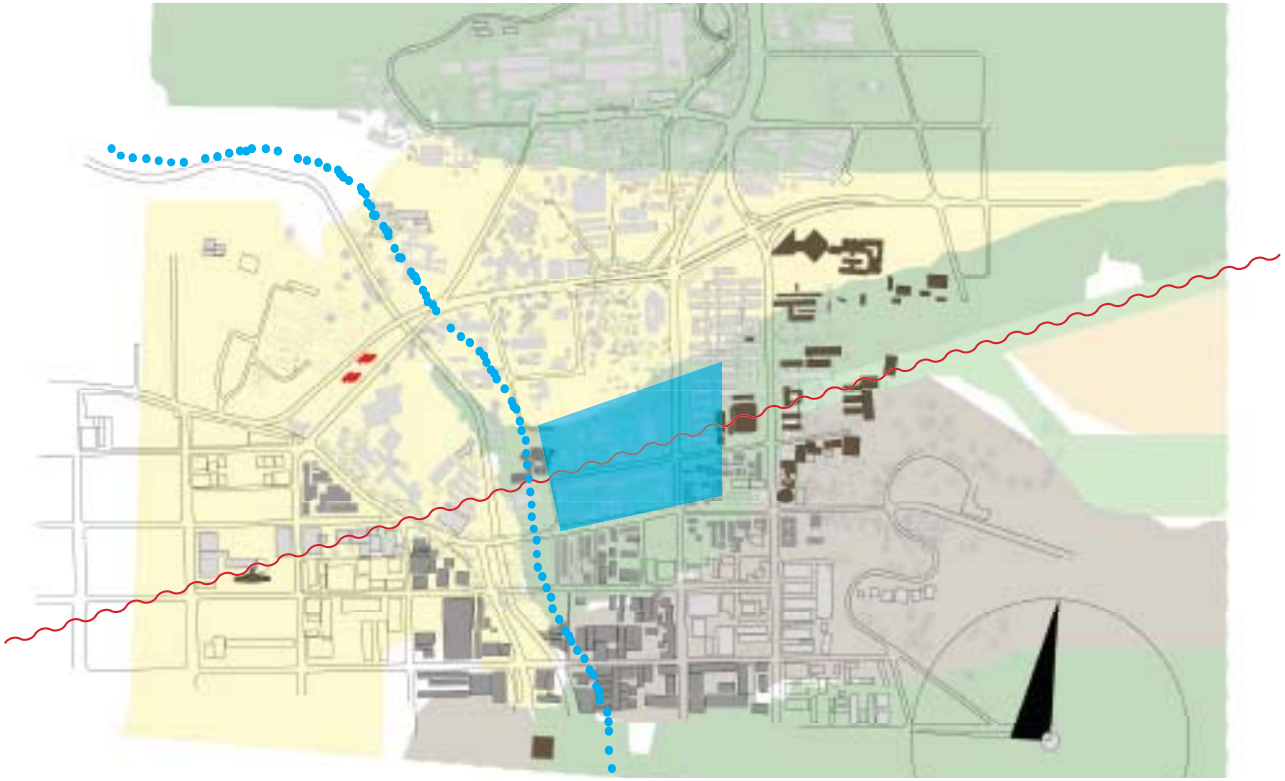


Fig 3.29 Pretoria Geological composition.

3.2 S.W.O.T. Analysis

S – Strengths

- Accessible;
- Ample potential green and open spaces;
- Green edge; and
- Well-defined and established precinct.

W – Weaknesses

- Separated from city by Apies river;
- Insufficient infrastructure;
- Commonly (ab)used as a waste disposal site;
- Dangerous; and
- Has become a shelter for homeless people.

O – Opportunities

- Situated on an access node to the city;
- Can serve as link between the precinct and city;
- Potential for the creation of new pedes trian-friendly public spaces with ameni ties;
- Rejuvenation of city;
- Creation of soft natural spaces on city periphery;
- Contributes to spatial development frameworks associated with site; and
- Provision of a public service facility.

T – Threats

- Security; and
- Urban decay.

Fig. 3.30 Steve Biko Street – street edge.

Fig. 3.31 On-site waste disposal.

Fig. 3.32 Defensibility.

3.3 Summary

It is evident from the two figure-ground maps (see Figs. ? and?) that, although development in the study area took place over a long time, density proportions matching those in the immediate vicinity of Church Square were not reached, despite the development of public buildings along the most prominent streets adjacent to the site. The area is characterised by a lack of civic character and legibility within the large scale urban fabric.

It is evident that urban development based purely on a particular programme and service needs alone will not be able to create the kind of productive space associated with successful urban design. The relationship between social production and social existence has to be considered to the extent that it has a spatial existence (Ullman, 2011:136).

The programme proposed for the area is based on the notion of a holistic bringing together of key aspects derived from an exploration into the layering of the prevailing urban conditions and the contextual analysis presented in this chapter.

Fig. 3.33.1 Pretoria 1889

Fig. 3.33.2 Pretoria 2007

Fig. 3.33.3 Site figure ground

N

Theory's real subject is history, and history constantly historicizes itself...."Theory, as much as architecture has to be grasped in the place and time out of which it emerges. We must attend to the different reasons theory is begun and the unforeseen uses to which those beginnings can actually be put." (Stiney, G. 2006 :13)

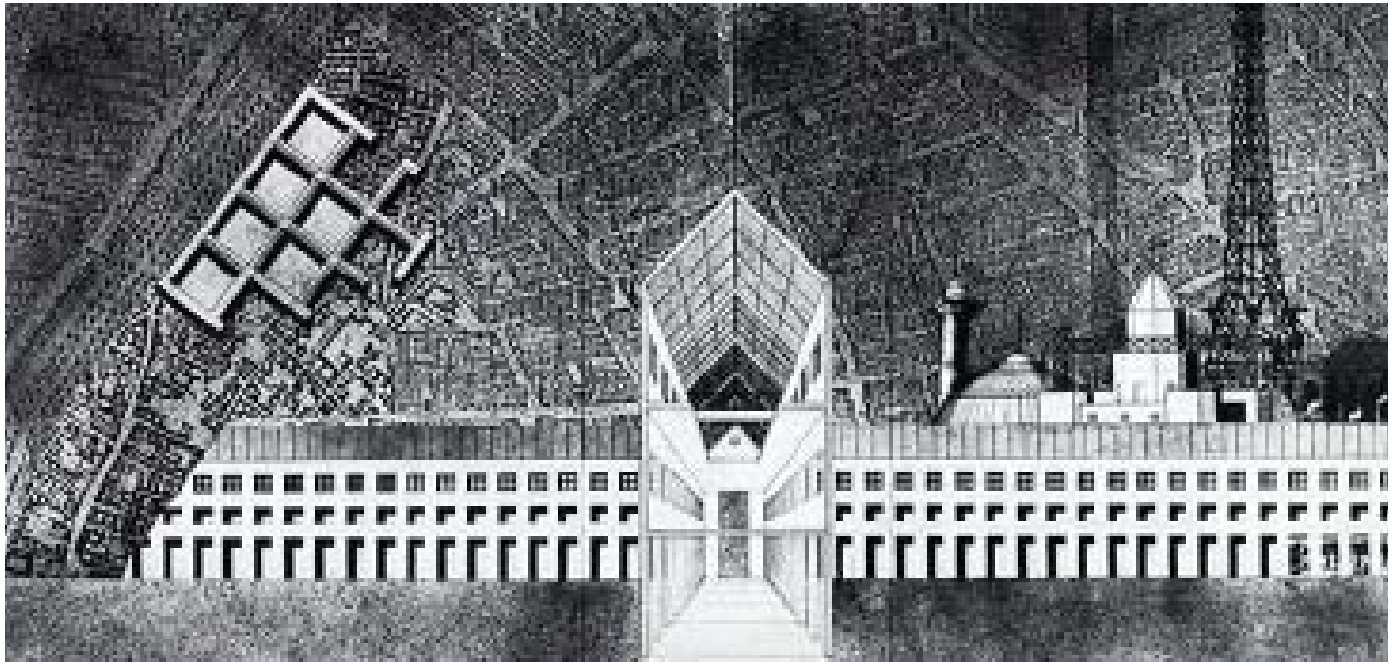


Fig. 4.1 Architecture of the city. (Rossi, 1982)

4.1 Theory Related to Site and Context

In contemporary South African urban environments, essence of place is in a process of flux, as a result of people's attempt to adapt to changes related to the new socio-political environment. It is a difficult transition, but the architectural ethos can be summoned to rectify problems that emanate from the past, and mediate between past and present, permanent and temporary, while maintaining political correctness, particularly in terms of access. The transition demands a search for a new discourse that will acknowledge the past, in order to deal with the present.

A combination of discourses are presented in this section of the study to achieve an holistic approach. The approach adopted in the study attempts to highlight and reconcile seemingly unrelated relationships, themes and hierarchies, within and between elements and objects within a particular context, which will ultimately be channelled to inform the design and architectural intervention as put forth in this study.

The theory of Architecture and the City by Aldo Rossi ([1966] 1982) encourages research into the history, development, design, social, and architectural aspects of the city. The theory invites a holistic "bringing together" and examining of many "urban objects" to allow for critical evaluation, and interdisciplinary urban research. This theory is discussed more fully in Section 4.2.

The architecture of the city is manifold in nature, and cannot be explained by citing single causes (Frampton, 2007:294). This complexity justifies the research into the urban conditions in the Pretoria/Tshwane CBD and environs and the context analysis undertaken in this study (see Chapter 3).

Similarly, the aesthetic theory of Wassily Kandinsky, in conjunction with the waste theory to be examined in this Section, as the name suggests, is useful to the study with regards to the origin of the non-object and the inter-relation between the representation of fragments. The aesthetic and waste theories propagates the importance of immaterialism where the singularity of the object boundary is blurred to accommodate transgression into new interplaces and spaces. Moreover, the basic architectural concepts referred to in respect of relationships between objects and space, as explained by Francis D.K. Ching (1996) are also discussed in this chapter (see table 4.1).

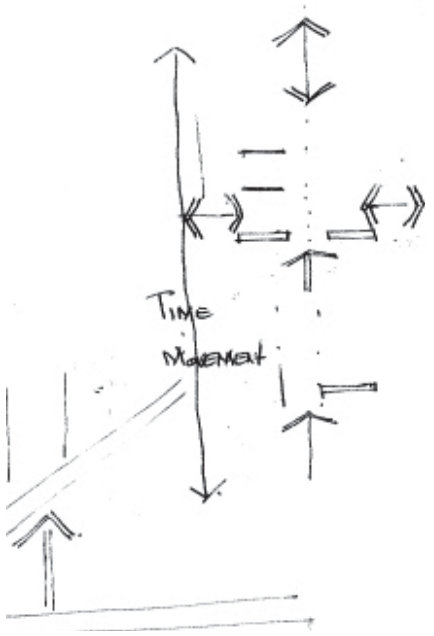


Fig. 4.2 Complexity of relationships with the blurring of boundaries.

4.2 Aldo Rossi'sTheory

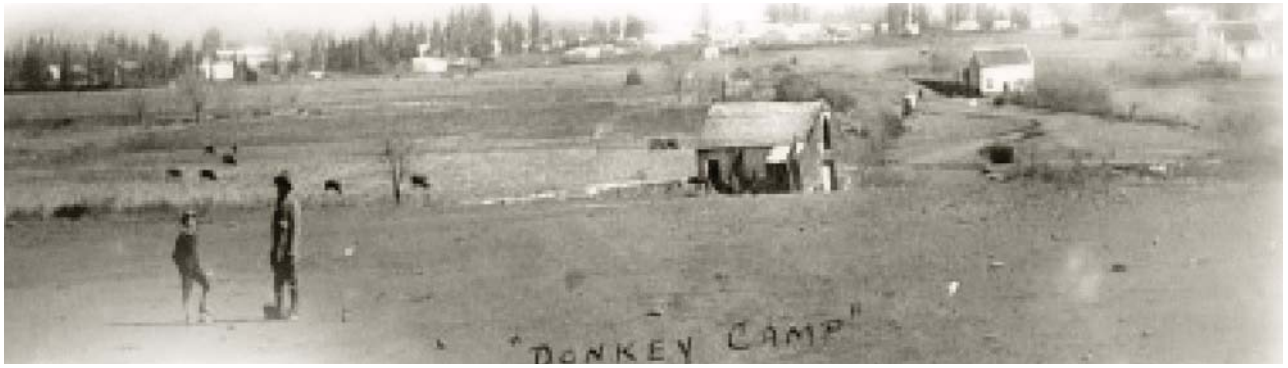


Fig. 4.3 Precinct Donkey Camp with Apies River in background (Date unknown)

"The city is a theatre for human events", according to Rossi (1982:7). Rossi (1982:7) perceives the city not as a collection of buildings, but rather as the result of open-ended, long-term processes of becoming and passing. The mere definition of a plan does not constitute the development of architecture and urban form (Rossi, 1982:7).

The architecture of the city (Rossi, 1982) does not necessarily coincide with the idealist modernist notion that form follows function (Frampton 2007:296), but rather suggests that cities are dynamic, and that there will always be some conflict between individuals and collective interests, in both the private and public spheres.

The term locus is central to the theory, as the term refers to a component, an individual artefact, which like permanence is determined not just by space, but also by time, typography, form, and, most importantly, by its having been the site of a succession of both historical and recent events (Rossi, 1982:page).

As a theatre of human events, the city is not a mere representation: it is a reality. It absorbs events and feelings, as every new event contains within it a memory of the past, and a potential memory for the future.

Buildings, on the other hand can be seen as signs of events that have occurred on a specific site, over the course of time.

Figs. 4.3, 4.4 and 4.5 depict the series of events that took place within the confines of the study's precinct, and the subsequent development and tearing down of buildings commemorating those events.

Architecture gives form to the singularity of place. In other words, the site in question has remained as a physical singularity, although its appropriation or served functionality has changed over time. It is in this specific form that the locus persists through many changes, and in particular, the transformation of the function of a site.

Fig. 4.4 Aerial view precinct 2001.

Fig. 4.5 Aerial view Precinct 2011.

4.3 Aesthetic Theory: Kandinsky

In essence, the discourse employed by Kandinsky (cited by Selts, 1975) implies the comprehension of reality through creative intuition. Kandinsky (cited by Selts, 1975) argued that art must express the spirit of the memory, but, in order to accomplish this task, it must be de-materialized.

The quality of a picture (as a particular form of art, for example) lies in what is usually called form: its lines, shapes, colours, planes, etc., without reference to anything outside of the canvas – but it is not enough to evaluate the picture purely in terms of its formal aspects.

Form constitutes matter, so an artist is constantly caught up in a struggle against materialism: “It is the spirit that rules over matter and not the other way around” (Kandinsky, cited by Selts, 1975:131).
Distortion excludes “real” objects, so the content is embodied in non-objective form, and the greatest external differentiation,becomes the greatest internal identity. Clarifying why the minimum of abstraction can have the most abstract effect, and vice versa.

Abstraction can therefore initiate a dialogue based on the direct communication that takes place at a primary, preverbal level, before either the spectator or the artist articulates. It is towards this level of communication that the architectural design envisaged in this study will be directed.

Fig. 4.6 Kandinsky 1911- Yellow Blue Red

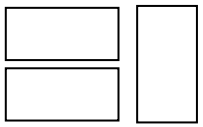
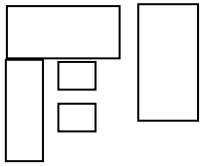
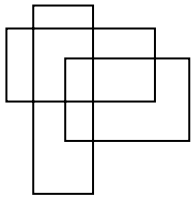
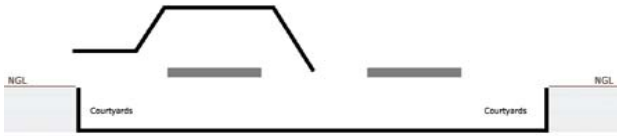
Theoretical Architectural Concepts	Derived composition	Derived composition	Derived parti composition of scheme
Figure-Ground theory: Space that results from placing figures should be considered as carefully as the figures themselves.	Although no objects are physically placed but rather interpret, it is important to focus on space between, and spaces created by objects.	 Simplicity	
Implied Spaces: When elements or spaces are not explicit, but are nonetheless apparent, we can see them even if we cannot see them. Negative and positive space: Movement through negative spaces but dwelling in positive spaces.	Patterns created be it implied, will be one of the important factors considered during analysis. Relationships between solid objects is considered, as well as how objects are arrived at during circulation.	 Complexity through excessive agglomeration	
Parti The idea of parti as central to concept (Eisenman "L" Concept)	General organization or composition expressed as diagram. Derived from understandings that are non-architectural and must be cultivated before architectural form can be born.	 Complexity created through informed simplicity	

Table 4.1 Relating Spaces: Adopted from Francis D.K. Ching 1996.

4.4 History and Place

History in the city comes to be known through the relationships between a collective memory of events, the singularity of place, and the sign of the place as expressed through form (Rossi, 1982:8). The city is perceived as a process of becoming and passing, where the singularity of place can accommodate a series of events, and where not all events can be signified architecturally.

The threefold relationship of site, event, and sign can become a characteristic of urban artefacts – hence, the locus becomes the place on which architecture or form can be imprinted. This relationship suggests a different limit to history, as history only exists as long as the object is in use, that is, as long as a form relates to its original function. However, when form and function are severed, and only form remains vital, history shifts into the realm of memory.

It is in this severing between form and function that a new renewed purpose is sought that will awaken the energy inherent to process and place. A process is needed that can initiate a new dialogue with a language that will allow the transgression of the object into the environment. This transgression will lead to the creation of interspaces, and inter-distinctive overlaps, which expose the basic concept of thresholds. The threshold then becomes a place, an "inter-place", a place where the singularities of objects merge to form a new transitional space in the singularity of place.

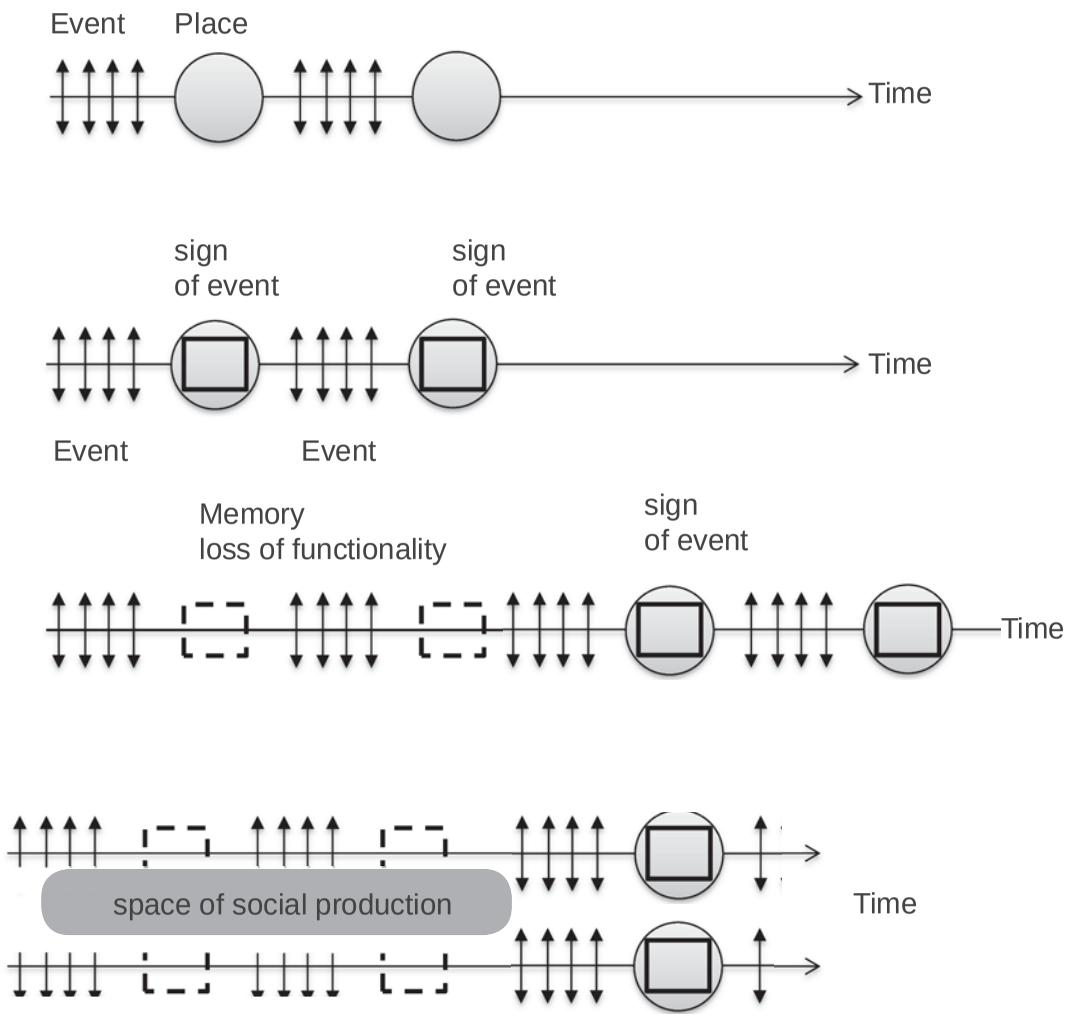


Fig. 4.7 The event as the event itself.

4.5 Interplaces

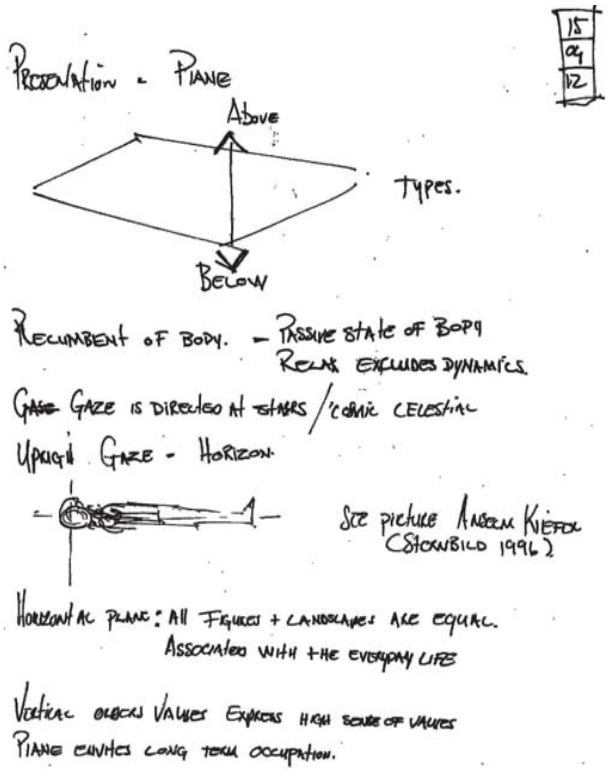
City life (the human theatre) is performed within the boundary of place (as defined in Section 1.6), encapsulated by a virtual fence, because the narrative is contained within places.

The dominant one-sided (anisotropical) pull of gravity makes the space we live in asymmetrical, and although geometrically speaking there is no difference between up and down, dynamically the difference is fundamental.

Anisotropy of space is experienced by means of kinesthesis, which reports on the physical tensions active in the body (for example, interprets gravitational pull as weight), and vision.

Visual experience differentiates between a horizontal and vertical orientation. The human (anthropocentric) view gives precedence to the vertical axis and divides the horizontal line into two parts, left and right. The gravitational axis of every object is recognized as the top priority, as it also allows the observer to relate to the vertical due to his/her fundamental awareness of his/her own gravitational axis (Ullman, 2011:138-144).

In architecture, the axis in the viewing direction always dominates over an axis that is transversal to the viewing direction, creating directional dependence with different values.to occupy an appropriate space for a long time.
The directional dependence constitutes subjective framing, which can be seen as a norma tive construction of a world, and a way of seeing “ourselves” within it. It is a world where objects and space are experienced at the same time, and where plane ultimately has the ability to create long-term occupation possibilities when accompanied by a process of social production. become equal, suggesting a gesture that can be associated with everyday life. Verticality, on the other hand, allows for an expression of values – it is repetitive and rhythmic.

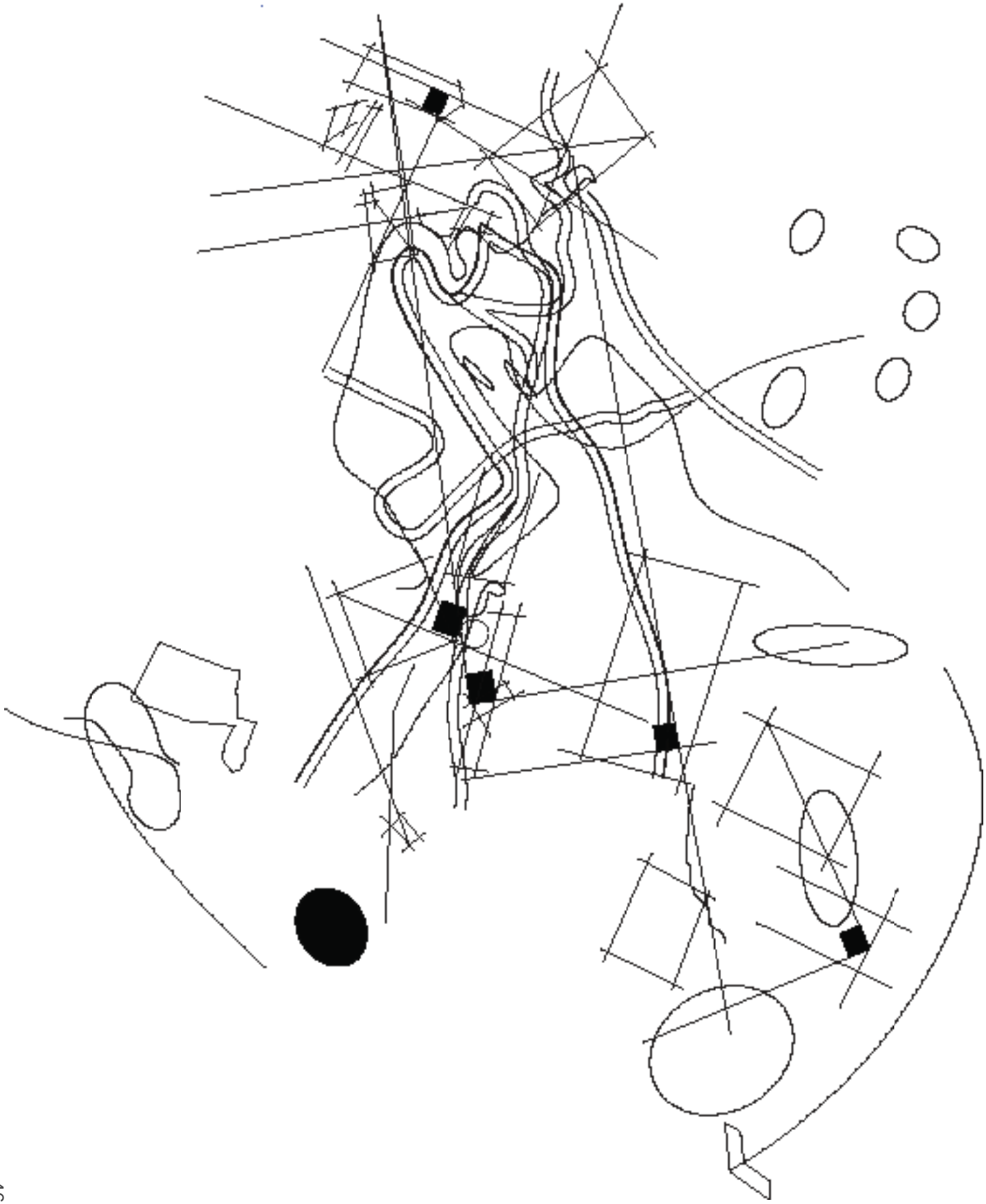


The horizontal plane is susceptible and conducive to objects to occupy an appropriate space for a long time.

The research invoked a new architectural language articulating transgression through mediation. This language is intended to give order to space, and aims to be responsible to society. It was developed based on the articulation of the horizontal plane. It is a language that will hopefully contribute to the implied interaction between object and context. It is within this emergent interface that the design proposed in the study finds its expression.

The city is inexorably linked to “citizenship”, and architecture is, first and foremost, for people, who always dwell on a horizontal plane.

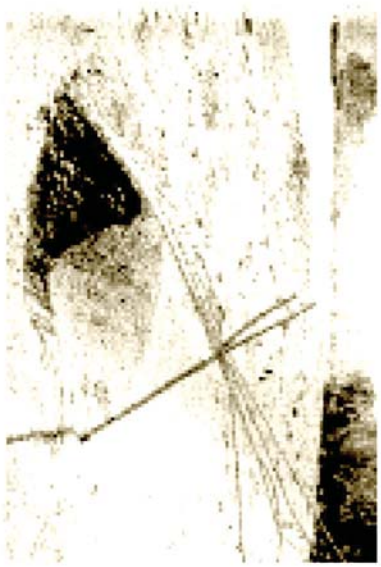
Fig. 4.8 Anisotropy explained.

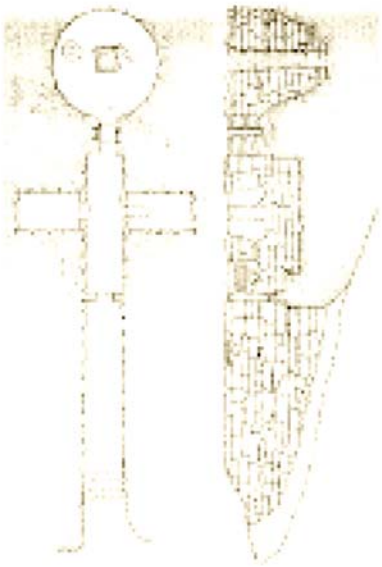


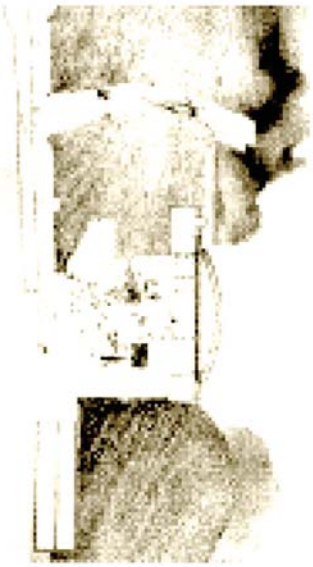
Part 2

Programme
&
Design Development

"The study of space offers an answer according to which the social relations of production have a social existence, to the extent that they have a spatial existence. They project themselves into a space becoming inscribed there, and in the process producing space itself. There is, however, a thing such as 'truth of Space' which embodies the movement of critical theory without being reduced to it. Human Beings are in space, they cannot absent themselves from it, nor do they allow themselves to be excluded from it. Space does speak but it does not tell all. Above all it prohibits. It is a mode of existence, it is practical 'reality'.Space is at once result and cause, product and producer." (Ullman, 2011:134)







Precedents

5.1 Introduction

A number of precedents were selected for the design proposed in this study to meet the requirements of the programme. The criteria for selecting the precedents discussed in this chapter were how the horizontal plane was accommodated, extended and altered in each of these precedents in order to articulate a new architectural language based on non-discriminatory accessibility. The following precedents are discussed:

- International Port Terminal, Yokohama, Japan (Foreign Office Architectcts)
- Musée des Confluences (Coop Himmelbau)
- Ewha Woman's University (Dominique Perrault)

Conceptually, the precedents chosen correlate with the conceptual idea developed in this study in response to the contextual analysis, urban conditions, and proposed programme established through a needs analysis (see Part 1).
Current strategies and framework policies implemented by the City of Tshwane were also considered.
These precedents also allow for a re-interpretation of surrounding landscapes and its relationship towards built forms.

The precedents chosen allows the landscape to frame the architectural intervention, insofar as the ensemble constitutes a kind of topography in itself. Ultimately, it allowed the author to reinterpret space through transitional spaces that can be classified as ' inter-spaces', a term conceptualized and coined by Zaha Hadid. (Guccione,2010)

5.2 International Port Terminal-Yokohama Japan- Master and Urban Plan - Major Transport Interchange- (2002)

The international port terminal, Yokohama, Japan (designed by Foreign Office Architects, 2002) was chosen to demonstrate the way linear geometry, in respect of streetscape design, was employed to create a folded ground plane and to accommodate the innumerable encounters of freely moving persons who drift into and through the city.

The design concept is based on a linear spine of activity that connects an extended port with the city by means of a pedestrian walkway above, and street access below. It is also an attempt at blurring conventional architectural hierarchies such as the floor, walls and roof, giving birth to continuous surfaces of topological architecture.

The design does not redefine any existing street edge condition, but rather extends the existing city grid to form a new connection point, and subsequently a new urban space. Transition is experienced through vertical and horizontal plane changes that emphasise the concept of a pliable landscape.

Fig. 5.1 Aerial view – International Port Terminal Yokohama: Japan.

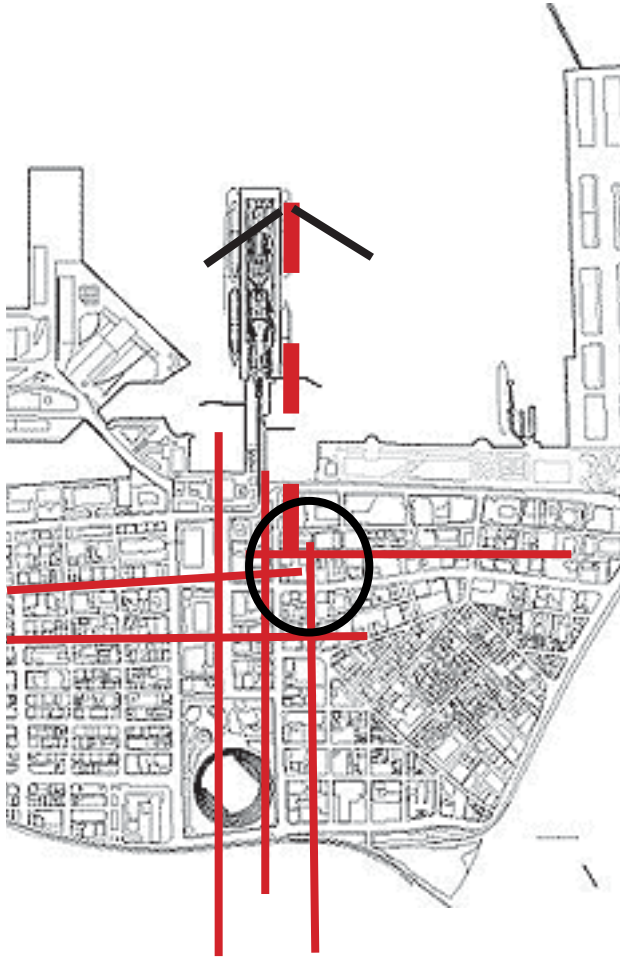


Fig. 5.2 Project's urban response to and extention of city grid

5.2.1 Structure

The relation between the skin and the areas established by the structural folds of the surface is one of the most important aspects of the project. The folded ground plane distributes the loads through the surfaces themselves, moving them diagonally to the ground.

This folding ground plane also generates a sense of a structure folding in onto itself. However, this makes the structure suitable to and adequate in coping with the lateral forces generated by the seismic movements that affect the Japanese topography.

Fig. 5.3 Folded ground plane.

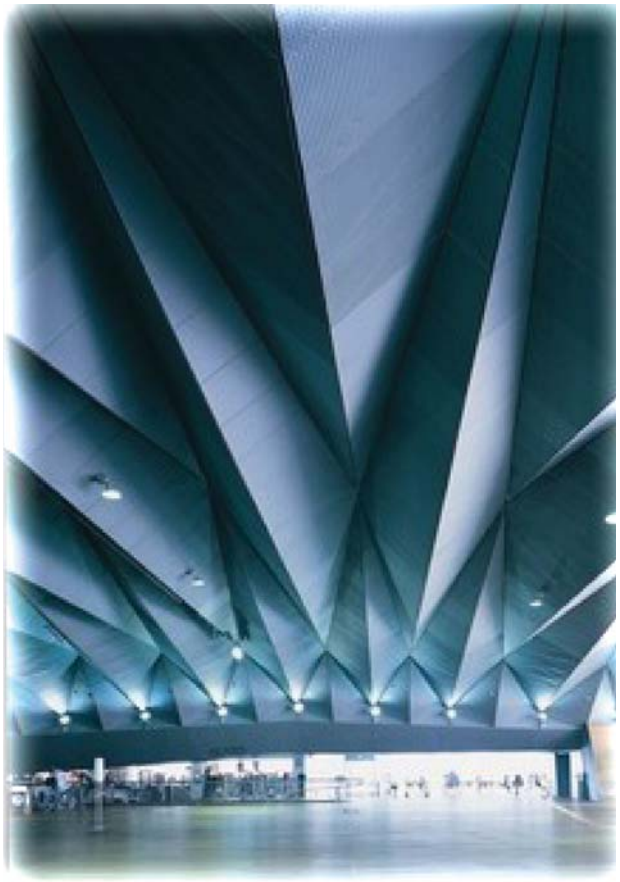


Fig. 5.4 ”Folded ground” translated into structure.

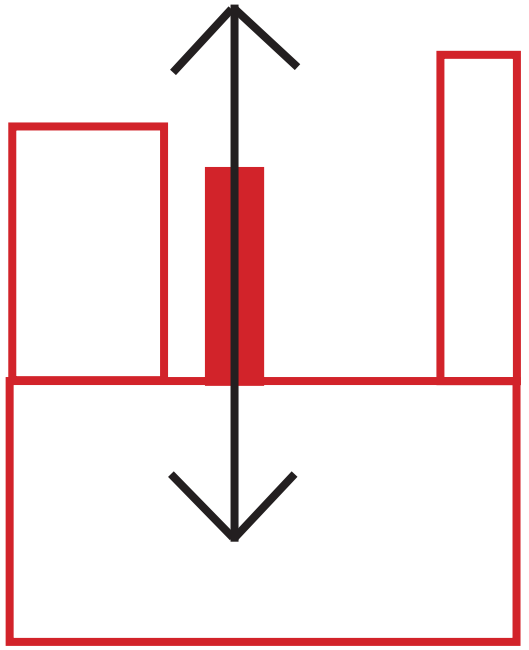


Fig. 5.5 Visual link generated of city

5.3 Coop Himmelb(l)au
Musée des Confluences, Lyon, France (2001-2005)

The Musée des Confluences is situated directly where two rivers converge on the periphery of an industrial precinct in Lyon. The project is also known and referred to as “The Crystal Cloud of Knowledge”.

According to Himmelbau (the architects), future society will be a society of knowledge. However, this knowledge can hardly be split into clearly defined fields.

This project is highly relevant to the proposed design intervention, because the design extended exploration into interspace, inter distinctness, and overlapping, which is also desirable in the intervention proposed in this study. This project also acknowledges boundaries imposed by natural/physical barriers.
This project correlates well with the theoretical notion of cities in flux and the constant transition and subsequent formulation of new urban spaces associated with cities.

Mutations of form, consisting of penetrations, deformations, and simulations (what happens at the same time) affect the architecture, resulting in an architecture characterised by interactions, where the fusion and mutation of different entities constitute a new shape.

The notion of public place as an enabler of access to knowledge, stimulated by a direct and active use, is highlighted in this precedent.

According to Himmelblau (Himmelb(l)au, 2001), the architecture hybridises the typology of a museum with the typology of an urban leisure space”.

Fig. 5.6 Aerial view of site.

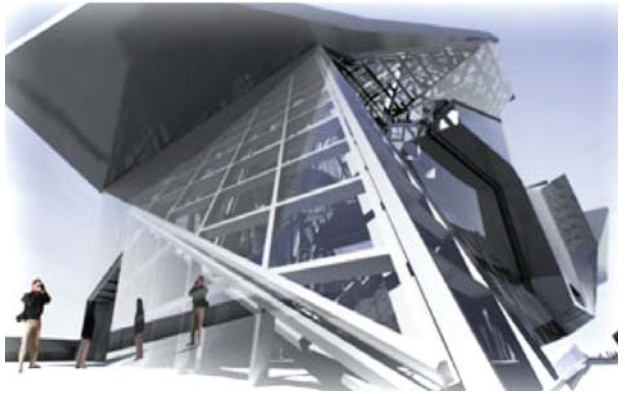


Fig. 5.7 View from external circulation route.

The concept of two architectural units connected in complex ways are a result of the striking interface-like situation of the building site, on the island at the point of confluence.

In the Musée des Confluences, the present and the future, the known and the still unknown are conceived as a spatial arrangement trying to “spur public curiosity” (Himmelb(l)au, 2001).

Furthermore, just like the international port terminal in Yokohama, the site is an extension of the park located at the southern tip of the island. A new urban space is formulated – a landscape consisting of ramps and surfaces, merging the inside and the outside, and resulting in a dynamic sequence of spatial events.

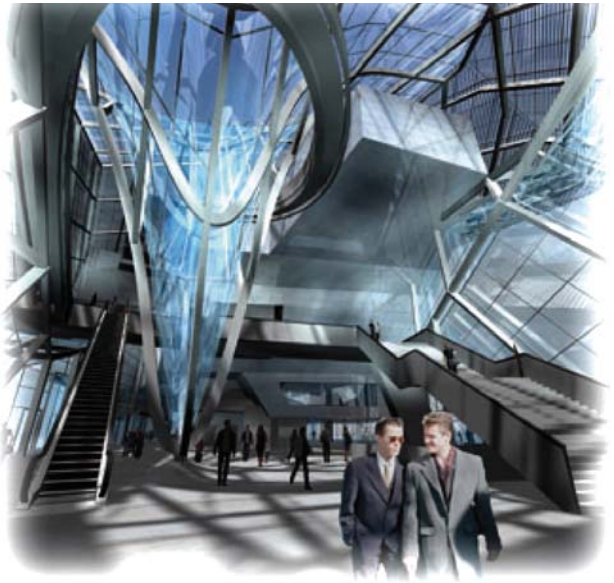


Fig. 5.8 Interior and internal circulation.

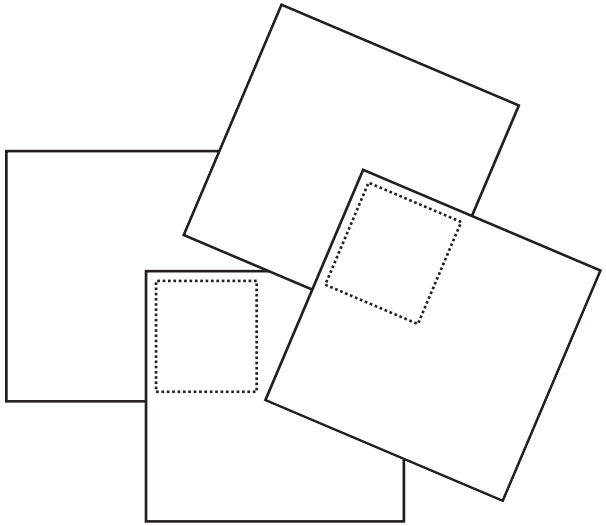


Fig. 5.9 Overlapping spaces and the creation of inter-spaces.

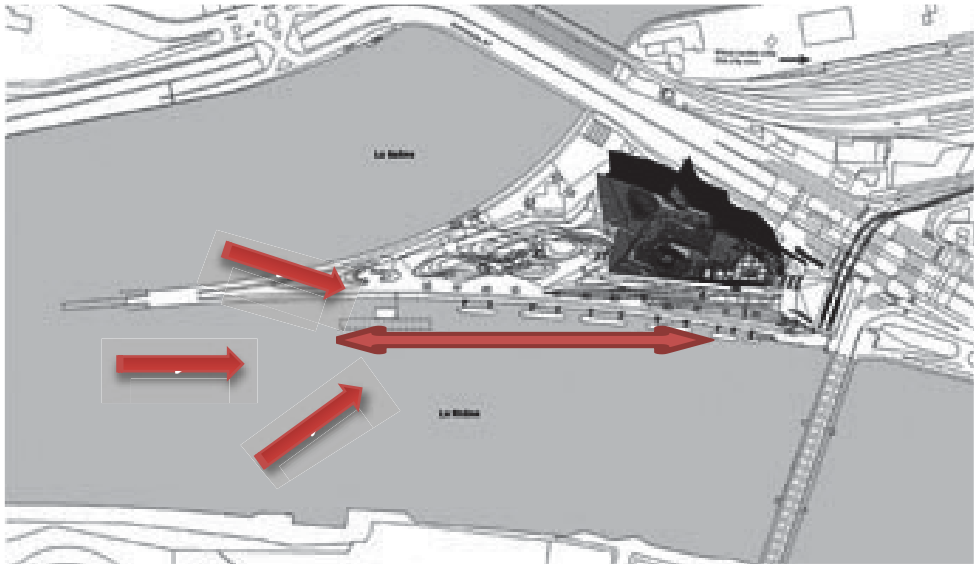


Fig. 5.10 Plan illustration of site.

5.4 Dominique Perrault
Ewha Woman's University, Seoul, Korea (2004)

This precedent challenges the complexity of site in relation to the greater precinct and the city. It summons a 'larger than site' urban response, where precinct and city tissue are woven together through landscape.

The topography of the site is exploited to reveal the interior of the EWHA campus centre. A void ("valley") is formed, where nature, sport grounds, event locations, and educational buildings mix, intermingle and follow one another.

The gently descending "valley" leads to a monumental stairway through the campus centre, bringing together the different levels of the buildings.

Dominique Perrault, the architect, believes that "concept and matter have to grapple one another" (http;//www.perraultarchitecte.com). Thus, the generally expected concept of building in landscape is challenged, as new relationships are forged, resulting in a linear activity spine charged with a new urban space possibilities.

The link between the architectural concept and the sustainable strategies adopted included an underground building vs. a green garden vs. landscape fracture, resulting in a building with a strong identity, which in turn resulted in extraordinary performances in terms of sustainability.

Fig 5.11 Aerial view

According to the architect, the design provides a “forum for the exchange of ideas as students gather after class to discuss their views, a piazza, with the cafeteria spilling out, creating a real ‘place’ to stop and relax, an outdoor theatre, as the stair can be used as an amphitheatre, a sculpture garden, where indoor gallery events can push outwards” (http;//www.perraultarchitecte.com).

He adds: “It is this flexibility (conceptual and real) which permits the new EWHA campus centre to inevitably weave itself into the landscape – sometimes a building, sometimes a landscape, and sometimes, a sculpture” (http;// www.perraultarchitecte.com).

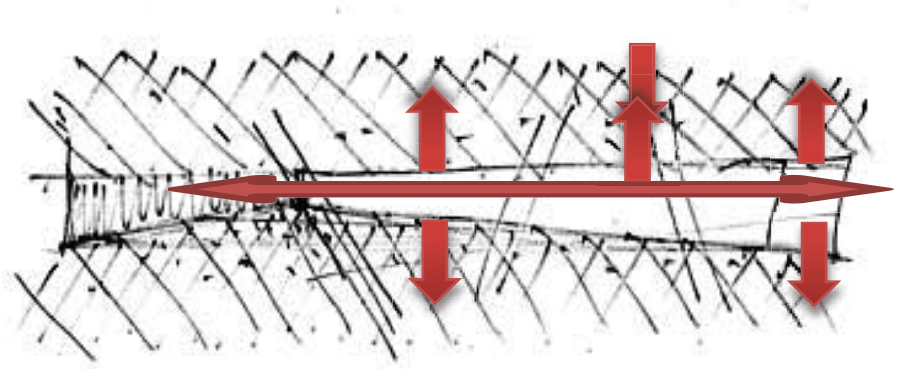


Fig. 5.12 Conceptual exploration of linear design and interspaces

Fig. 5.13 Main activity spine

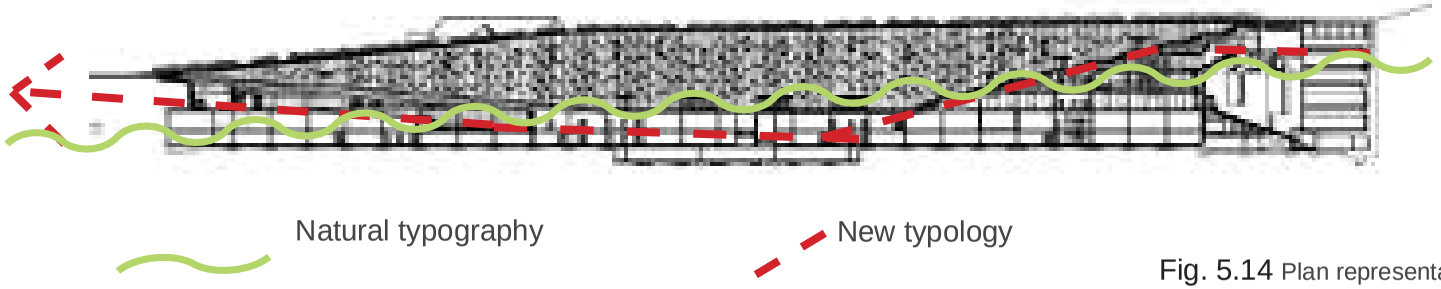
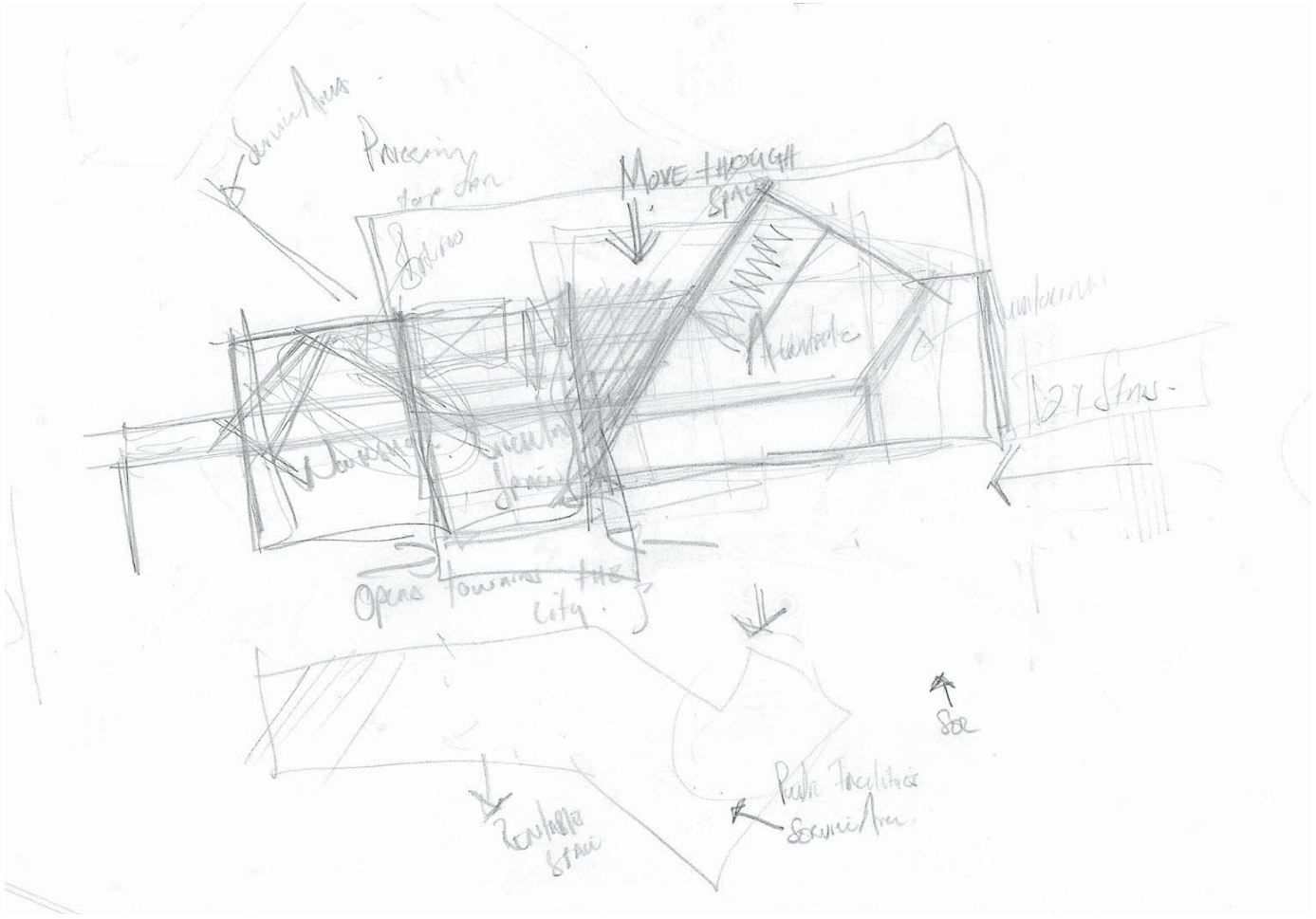


Fig. 5.14 Plan representation



"There is no spatial existence without social existence, and no social existence without social production. Humans not only exist in space, (as they cannot absent themselves from it), they are also producers, and participants in the process of social production." (Ullman, 2011:136)

6.1 Introduction

The roots of the current dysfunctional health system in South Africa can be found in various policies, from apartheid policies leading to the dispossession of the basic rights of parts of the country's population, to ineffective policies introduced in the post apartheid period. Factors such as racial and gender discrimination, migrant labour systems, and the destruction of family life have all inexorably affected people's health and health services, leaving a substantial gap in health equity.

The World Health Organisation's Commission on social determinants of health has found that factors such as social exclusion result in poor health (WHO, 2008). However, other studies, such as that by McIntyre and Gilson (2002), have shown that the health sector can be seen as a vehicle for achieving rapid equity gains.

Hence, the intervention proposed here, the Victoria Cobeli Information Centre, is an attempt to achieve equity gains through the incorporation of social and contextual factors by means of architectural mediation.

6.2 The JCP Programme

The main focus of the community-based module run by the University of Pretoria is service to the community, but continuity in fulfilling the intention is often lost due to the temporal life span of the module, and the fact that no specific place is associated with some of the programmes offered, and entered into by students, community workers, and volunteers. Moreover, a large part of the funding available is absorbed by transportation of students to and from communities situated well beyond the reach of public transport nodes.

The facility that is envisaged in this study will help bring about continuity (sustainability) in the social upliftment programmes, by associating a place with the activities offered when students who have completed their module are given the opportunity to become mentors. Mentorship strengthens the continuation of communal involvement, and creates a greater awareness of social issues and the need for civic responsibility.

The Victoria Cobeli Information Centre as a mediating space (see Fig. 6.1) will be a testimony to public dignity, and will help meet society's moral obligation to its communities.

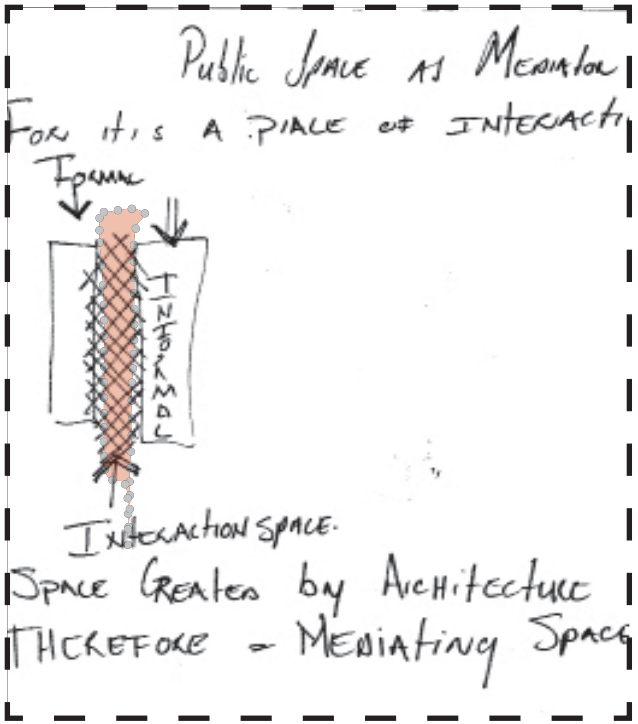


Fig. 6.1 Creation of public space.

6.3 Health Promotion

There is no singular accepted definition for health promotion, but the contemporary usage of the term usually implies a multifactorial process operating on individuals and communities, to promote health through education, prevention and protection measures.
Laverack and Lebonte (1996) argue that health promotion programmes are a subtle way of targeting behaviour change where programmes are specifically aimed at enhancing the public's experiences of empowerment in terms of the quality of their social relationships and self-identities, rather than at changing only specified health behaviours. A concept substantiating the process of social production.

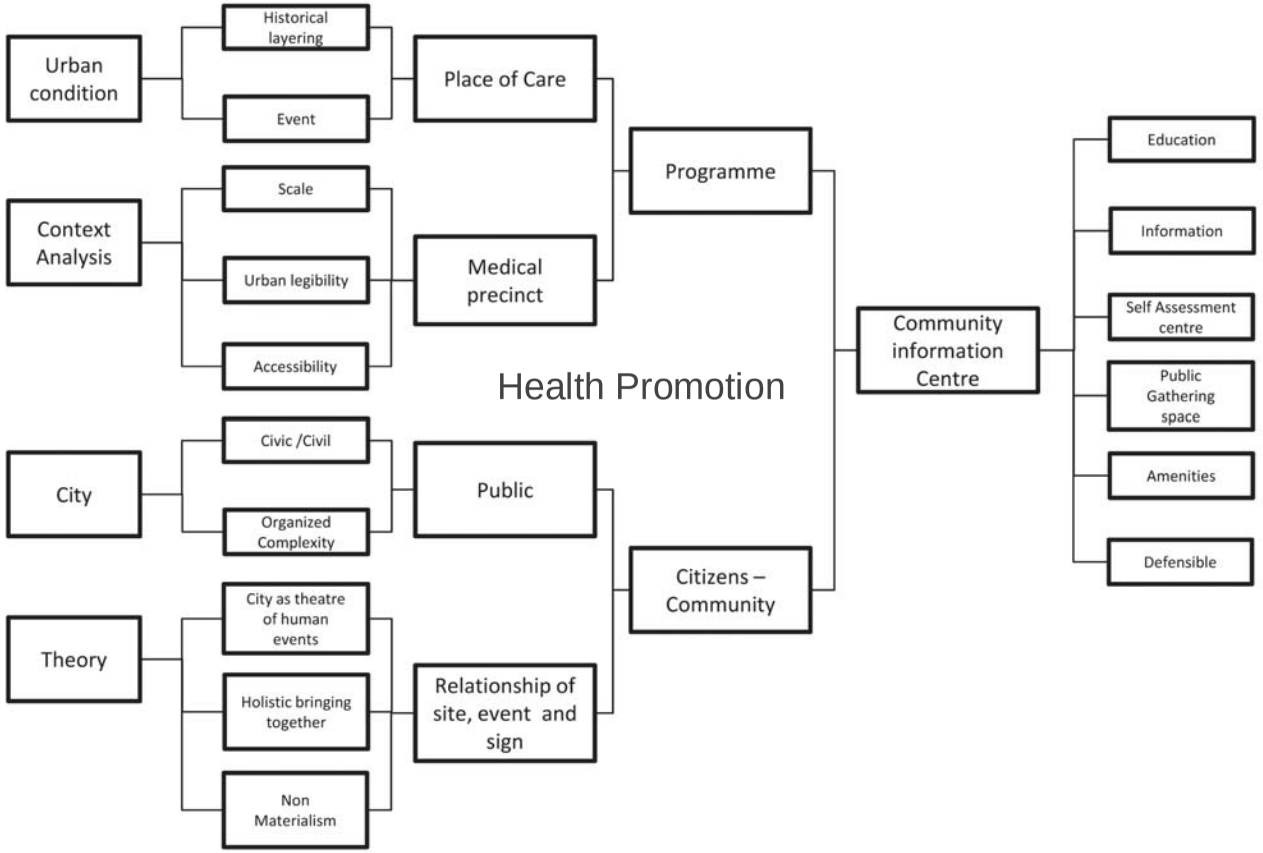


Fig. 6.2 Simplified flow diagram illustrating the contributing factors informing conceptual intentions of the program.

The primary design and the goal of the of the envisaged architectural intervention and programme, details the design of a public information centre, and gathering space, aimed at promoting health through preventative intervention and increased accessibility of information, mediated through a process of social production. (See Section 1.3)

Formally, the centre will accommodate a community auto assessment centre, workshop spaces, an information centre(library space), an auditorium, a child care facility, and amenity spaces.

The centre will be able to accommodate other public/community-inspired initiatives, as well as the University of Pretoria's extended community service programme based on applied learning, and directed at achieving mutual and beneficial impact regarding specific community needs (UP Syllabi, 2012: JCP 201: 68). (See Addendum A.) As already indicated in Section 1.3, the University's involvement strengthens the need for a centralised facility that is easily accessible to students, community partners and the intended beneficiaries.

Theoretically, the architectural intervention with supporting programme, responds to the social, spatial and environmental impact of segregated urban development. Contextually, it responds to the interrelationships between objects signified through events.

The centre is named after Victoria Cobeli. Some details of her life and significance are discussed next.

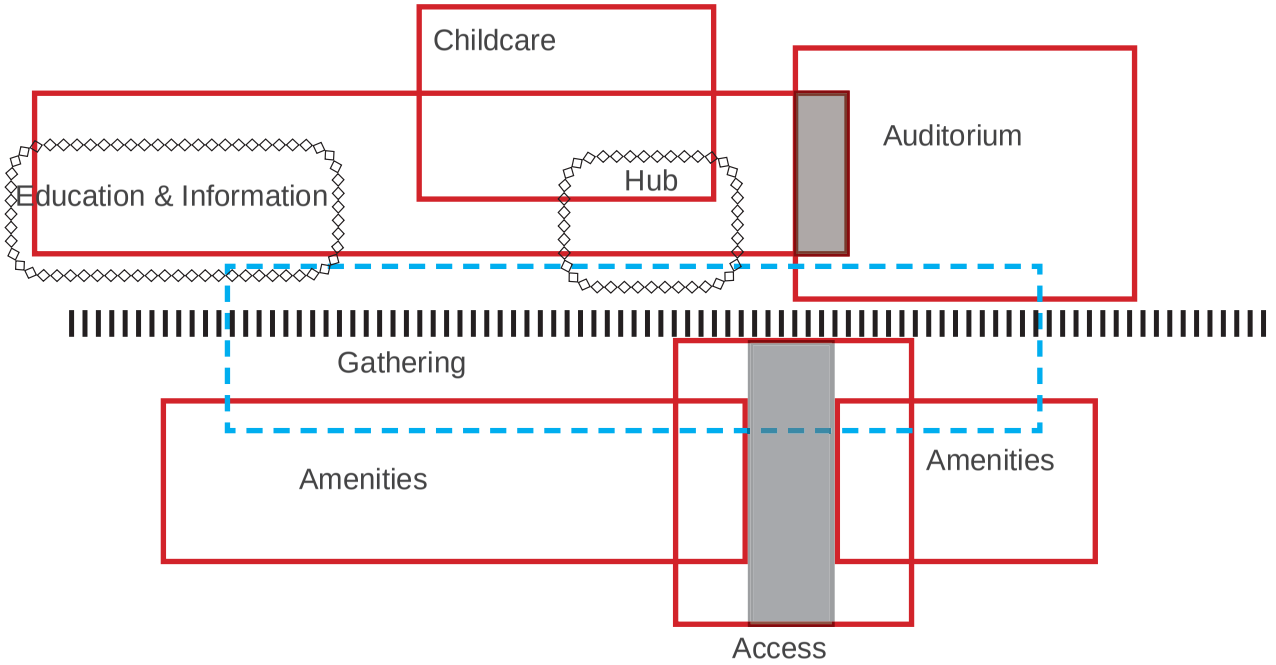


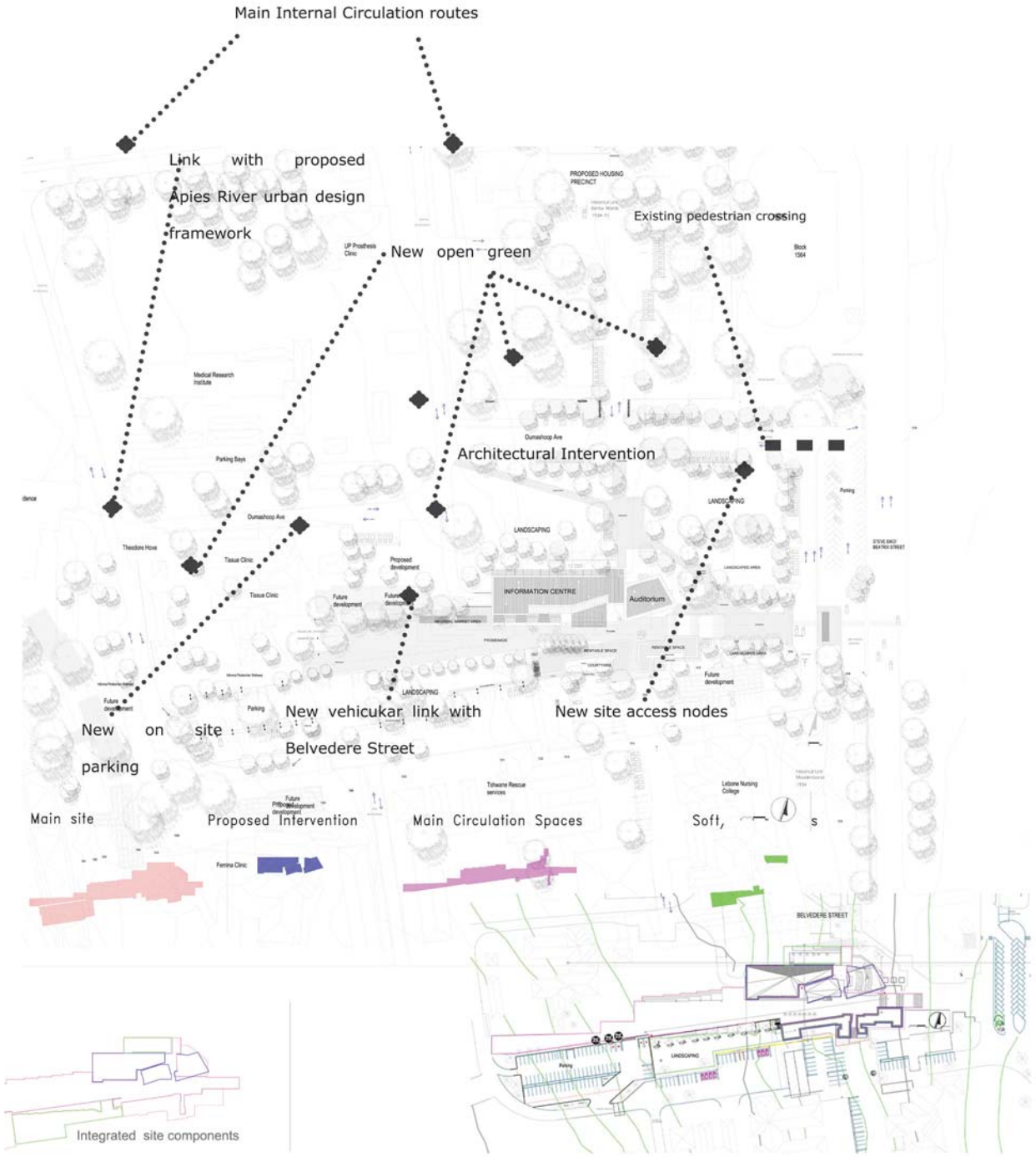
Fig. 6.3 Spatial exploration of programme

Fig. 6.4 Victoria Cobeli

Name:
Mangena, Anna Victoria (née Cobeli)
Born:
circa 1885-1895,
Mapumulo Mission Station (between Stanger and Kranskop), Natal
Died: 1961, Klipspruit, Johannesburg, South Africa
Significance: First qualified Black nurse in the Transvaal

Instead of following the teaching profession, which was almost the only profession open to African youths at the time, Victoria Cobeli decided to become a nurse. She went to one of the few hospitals that trained Africans as nurses, Victoria Hospital in Lovedale in the Eastern Cape.

She qualified in 1910, and came to the Transvaal where she worked at a number of places as the first qualified African nurse. In 1916, she married Alfred Mangena, and began working in Pretoria.



Urban Framework

Chapter 7

7.1 Introduction

The following section discusses the basic guidelines followed with regard to a new urban framework that encapsulates the requirements for the successful implementation of the Victoria Cobeli Information Centre.

These requirements were identified for the development as a whole and emerged from the site analysis done, and information obtained from existing framework policies. In order to understand the basic outlines of the proposed intervention, the following existing frameworks are briefly discussed:

- the City Development Strategy;
- the City Tshwane – Metropolitan Spatial Development Framework;
- the Tsotsoloso Quality Public Spacial Programme;
- the Nelson Mandela Development Corridor Development Framework (Holm Jordaan Group); and
- the Apies River Urban Design Framework.

7.2 Existing Frameworks

The following existing frameworks, some of which have already been partially implemented, play a significant role in the future development of the site.

7.2.1 City Development Strategy

The vision of the City Development Strategy (ref) is to implement a selective set of initiatives providing a coherent framework in order to develop a sustainable future for the city as a whole.

The City Development Strategy aims to

- provide a basis for a social compact;
- provide a process of sustainable growth; and
- offer new opportunities for growth.

This strategy also includes celebrating the capital in its symbolic role as the national capital – the seat of the National Government is the Union Buildings, and the main offices of all National Government departments are located within the city.

7.2.2 City Tshwane Metropolitan Spatial Development Frame work

The vision of the framework (City Tshwane – Metropolitan Spatial Development Framework, 1998) is to provide an overall spatial framework for the city which is structured around five concepts.

The Concept and Strategy are aimed at reducing sprawl and promoting growth that is balanced, as well as fiscally, environmentally and socially responsible. It allows for a densification and compaction strategy, as well as a rural development strategy.

Metropolitan Activity Areas are to be created. These are areas that manifest in nodal and linear configurations, resulting in regional and local nodes, and linear configurations of activity. The Tshwane Retail Strategy was formulated to guide decision-making with regard to retail nodes.

The Movement Strategy addresses the movement of people and goods. “Rail, together with the first order road system, should inform the city’s new structure to focus transformation of the urban area” (City Tshwane – Metropolitan Spatial Development Framework, 1998:537).

The Environmental Structuring Concept – Open Space and Conservation concept refers to the importance of creating linkages between the city’s built form, cultural heritage, symbolic locations, and natural structuring elements.

7.2.3 Tsotsoloso Quality Public Space Programme

The vision of this programme (ref) is to create a liveable city that provides citizens with a high quality public environment in which people want to settle and invest. A framework that can achieve this goal must be committed to ensuring that all citizens achieve a healthy and dignified living standard.

The Tsotsoloso Programme concentrates on

- centres – town centres;
- community facilities;
- linear spines of activity; and
- inter-modal interchanges.

The Tsotsoloso Programme defines critical elements of the public environment as

- public squares;
- markets;
- pedestrian walkways;
- public transport routes and stops;
- public art; and
- green Structures – landscaping and natural open spaces.

7.2.4 Nelson Mandela Corridor Development Framework

The vision of this framework, as developed by the Holm Jordaan Group, is "[e] nnoblement of a vibrant and intense urban development, which will create a 24 hour safe, exciting and economically viable environment" (Holm Jordaan Group, 2001:15).

Realising this framework involves

- creating maximum linkages and retaining pedestrian routes where possible;
- creating the maximum number of linkages in terms of land use and physical linkages;
- developing a pedestrian-friendly environment and support for public transport;
- ensuring that development is oriented towards the street and Apies river, especially in the ground floor applications;
- upgrading security in the area by means of increased activities, lighting and presence;
- retaining jacaranda trees, and replacing missing palm trees;
- providing public amenities as an integral part of land development; and
- striving towards balanced land use and ensuring a viable and livable urban environment.

7.2.5 Apies River Urban Design Framework

The vision of this framework (ref) focuses on the proposed edge development of the Apies River as a continuous accessible open space. The framework also proposes the development and management of interventions all the way from Fountains Valley to Bon Accord Dam, by the implementation of four character category guideline principles:

- urban;
- suburban;
- cultivated; and
- natural.

In specific, the proposed edge development of the Apies river as a pedestrian walkway is relevant to the Victoria Cobeli Information Centre.

7.3 Proposed Framework

The following framework was derived from the site analysis conducted, as well as the existing frameworks, which were reinterpreted.

The theoretical approach that was adopted was that the city is a dynamic organism that allows for short- and long-term intervention. It was also assumed that all frameworks should be reinterpreted on a regular basis to allow for new developments to influence the process of city building process positively.

The proposed framework for the intervention was based on three components, namely a contextual, a social and an environment component. These components are briefly described below.

7.3.1 The contextual component

This component refers to the immediate context of the site in relation to the bigger context.

7.3.2 The social component

This component relates to human interaction with regard to object and other subjects. Psychological well-being can be created through positive interaction, and the manifestation of a wealthy society.

7.3.3 The environmental component

This component refers to the environment and the way humans interact with it. Moreover, it refers to the interphases that are currently being implemented to bridge social interaction.

7.4 Guidelines

7.4.1 Contextual

The guidelines for the contextual component of the proposed framework are the following:

- Ensure connectivity by means of improved visual and circulation connections with the CBD through the implementation of an extended city grid and new horizontal plane street typology.
- Allow for public transport drop-off areas that will not infringe on the rights and privileges of pedestrian users.
- Be inclusive, allowing for access for persons with disabilities so that they can use the spaces.
- Implement a suitable scale and architectural language that will enhance and not compete with the existing architectural language of the site.
- Increase the diversity of land use within the precinct by providing safe and secure spaces that protect the users.
- Provide dignified private spaces.
- Allow for flexible and adaptable open spaces to accommodate events.

7.4.2 Social

The guidelines for the social component of the proposed framework are the following:

- Encourage social interaction and promote a sense of place.
- Check that the design principles encourage defensible spaces that do not create any security risks.
- Check that the design incorporates and encourages diurnal use.
- Provide access to amenities conducive to public and social wealth.
- Create a pleasant environment conducive to learning and be accommodating to bigger group use within a community (e.g. schools).

7.4.3 Environmental

The guidelines for the environmental component of the proposed framework are the following:

- Construct and manage the intervention with the least possible impact on the environment, and minimize unnecessary waste of energy, resources and materials.
- Implement a passive energy design to achieve thermal comfort.
- Share infrastructure with neighbouring developments.
- Provide recycling points.
- Manage storm water.
- Include landscape development and maintenance.

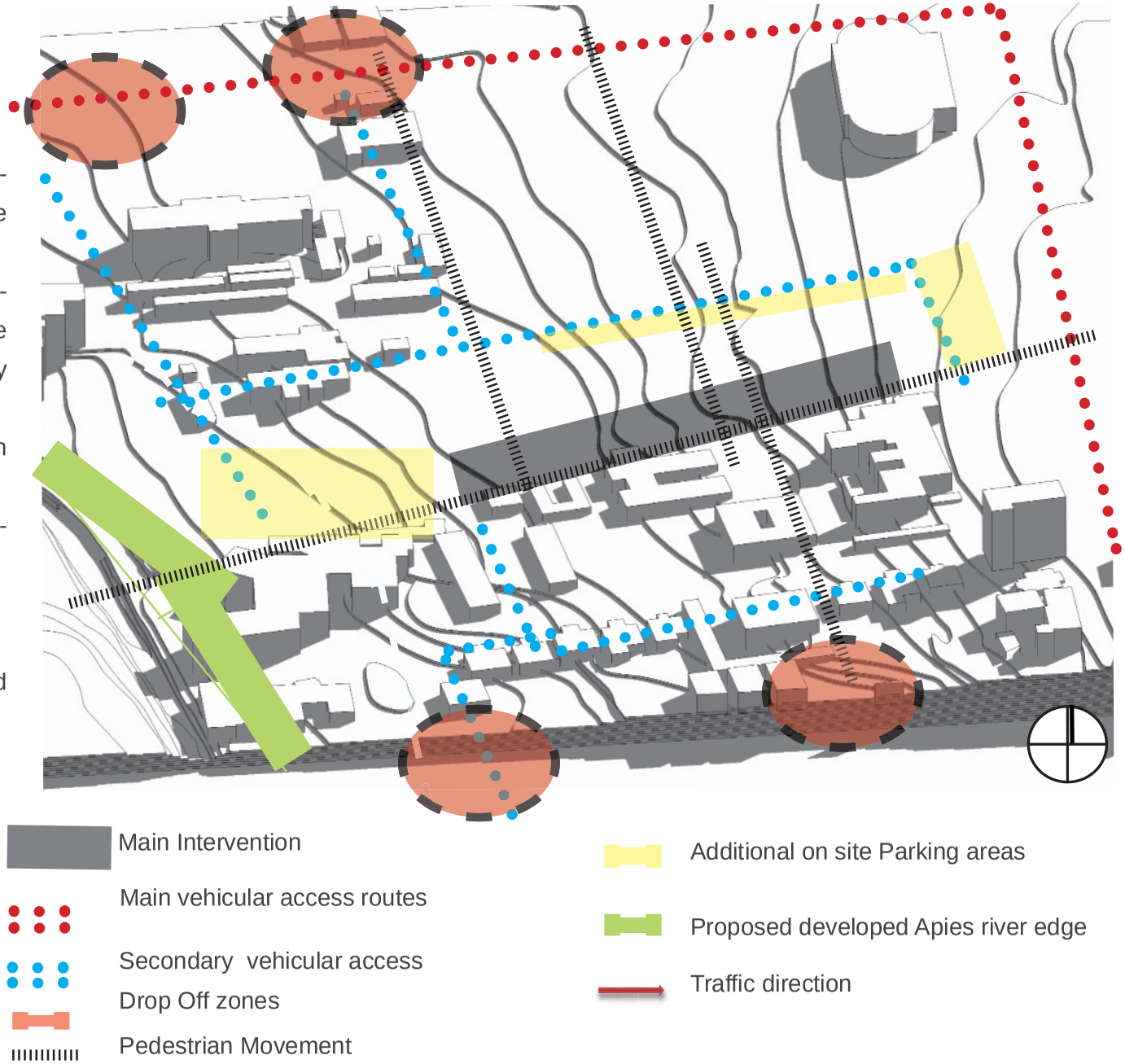


Fig. 7.1 Main movement and access nodes to and on site

7.5 Key Aspects Addressed through the Urban Framework

7.5.1 Accessibility and connectivity

As can be seen in Fig. 7.2, improved accessibility is provided to and around site for both vehicular and pedestrian use with the proposed direct link between Belvedere Street and Theodore Hove Street. This should not compromise site conditions, as no thoroughfare circulation is to be allowed.

Controlled access to redefined parking spaces will serve as a guideline.

Pedestrian circulation will follow along the main vehicular routes.

Fig. 7.2 Improved accessibility

7.5.2 Pedestrian circulation

As shown in Fig. 7.3, additional walkways will be a direct result of the design typology that is to be implemented. A new promenade will act as the main pedestrian walkway, which will be intersected by secondary routes.

Fig. 7.3 Improved pedestrian circulation and activity.

7.5.3 Anisotropy

The implementation of a depressed plane (see Fig. 7.4) will contribute to dealing more successfully with noise as generated by vehicular and emergency vehicle traffic.

This strategy will also improve formal on-site pedestrian circulation. The depressed plane will create a promenade that will organise movement and the way people interact with and within space. It will represent the tension between form and energy needed in the process of social production.

Fig. 7.4 Ordering movement.

7.5.4 Amenities

Site and urban analysis confirmed the shortage of amenities within the precinct context. Rentable space situated in the promenade space will alleviate the need for amenities, and will contribute to the sustainability of the services envisaged (see Fig. 7.5).

Roof gardens will be incorporated, where vegetables and herbs used can be successfully grown, and appropriated by tenants. In total, 620m2 of roof space will be made available. This programme, in conjunction with the formal programme presented, will increase the legibility of the site and precinct considerably.

Fig. 7.5 Extended amenities.

7.5.5 Legibility

Another aspect articulated in all the formal frameworks discussed was the delivery of a high quality public environment, articulated through accessible, positive, safe, and “green” open spaces.

The urban framework proposed addresses these issues by providing for pedestrian circulation routes that will not only link the site to natural resources such as the Apies river pedestrianization scheme, but will also create links within the precinct and the city with its beautiful treed street walks. Although extensive parking areas will be provided, no buildings on the site will be demolished.

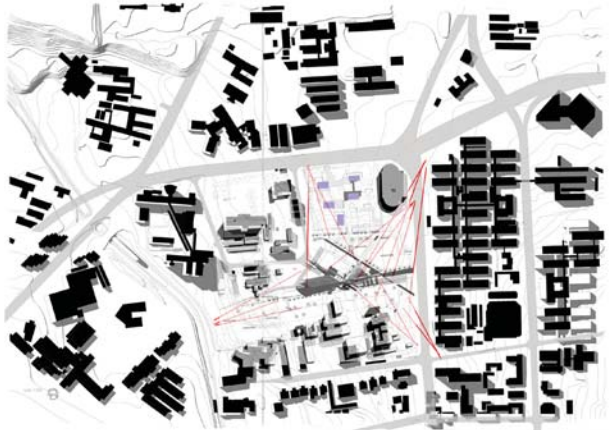


Fig. 7.6 Improved legibility.

Fig. 7.7 Extended green spaces.

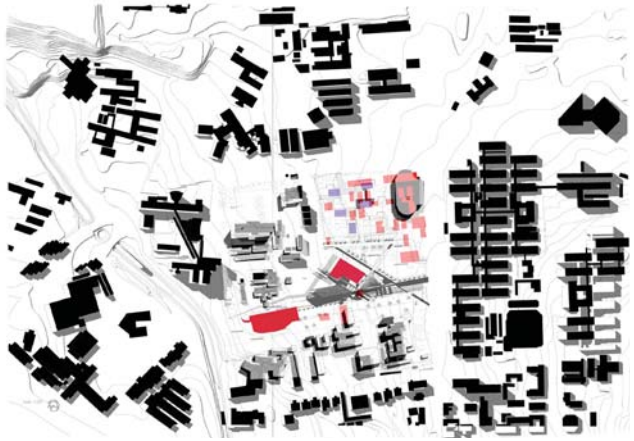


Fig 7.8 Acknowledgement of previous event signifiers.

Fig. 7.9 New Urban design-Aerial view of current site with proposed intervention

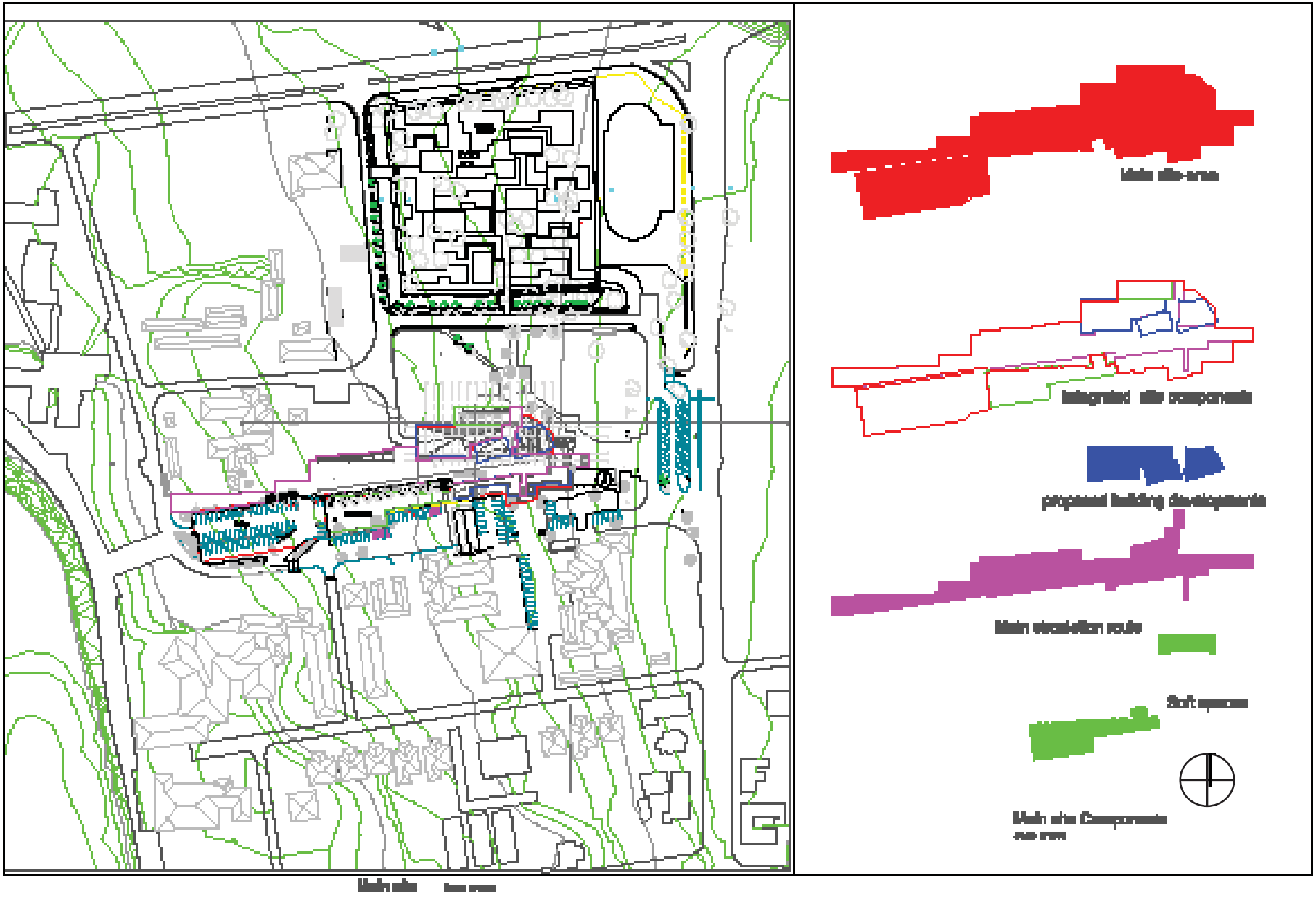


Fig. 7.10 New Urban design- Site Components

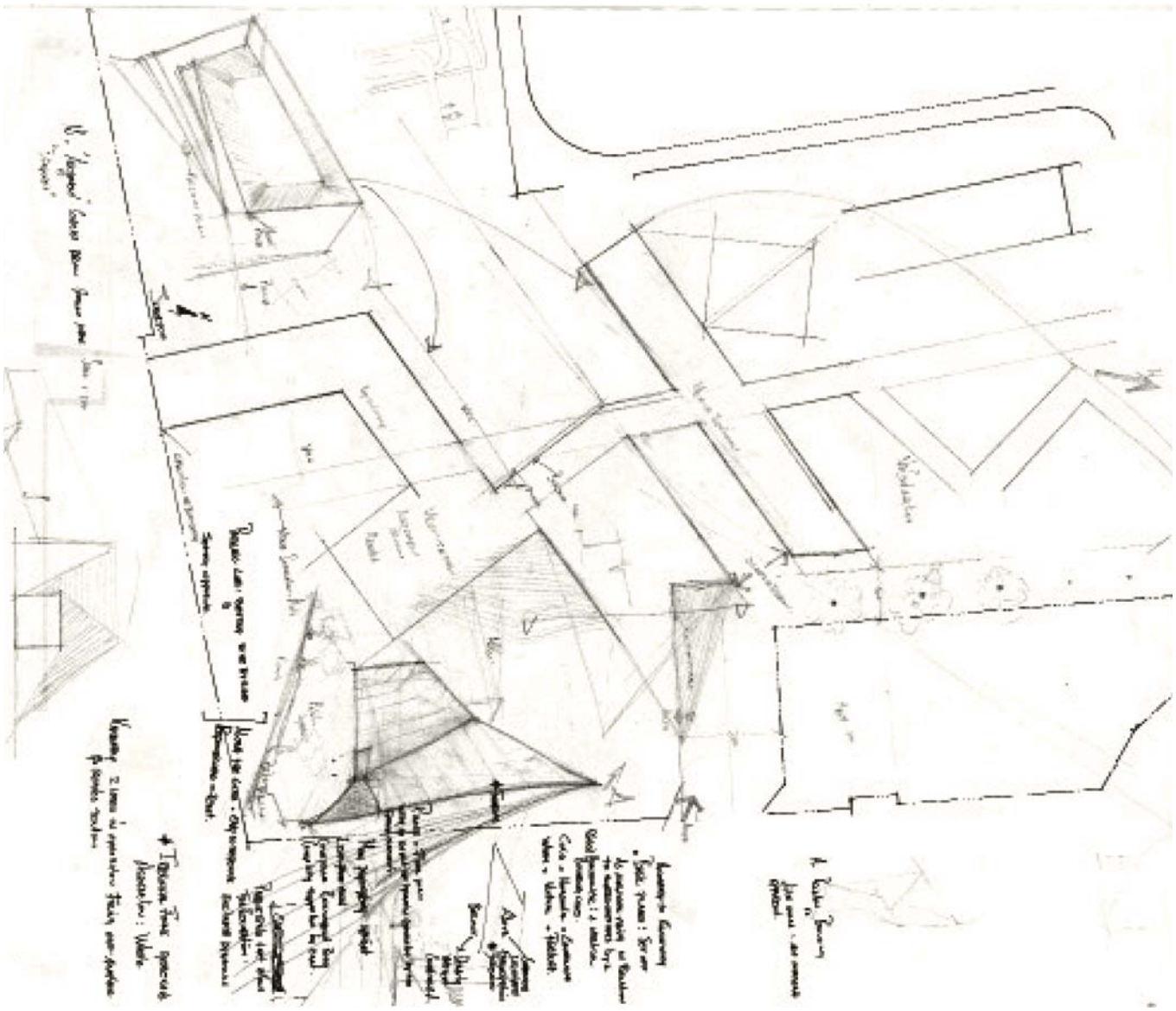


Fig. 8.1 Conceptual sketch of project intentions and design generators March 2012.

Concept and Design Development

"In the composition of a visual construction, a plane serves to define the limits or boundaries of a volume. If architecture as a visual art deals specifically with the formation of three-dimensional volumes of mass and space, then the plane should be regarded as a key element in the vocabulary of architectural design." (Ching, 1996:18)

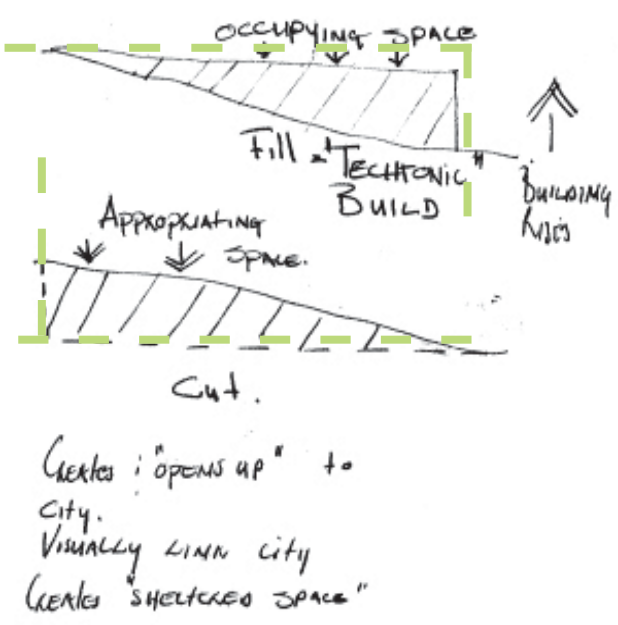


Fig. 8.2 Relationship between occupying vs appropriating space

8.1 Introduction

The conceptual birth of the scheme acknowledged four principles, as recommended by Clark and Pause (2005: 3-7), namely:

- topology /geometry;
- circulation to use – movement patterns as anticipated and required through the programme;
- natural resources – environmental adaptation;
- hierarchy – including massing; and scale

The design iterations in Fig. 8.3, illustrate the process of enquiry into the design language signifying an appropriate expression for the proposed programme.

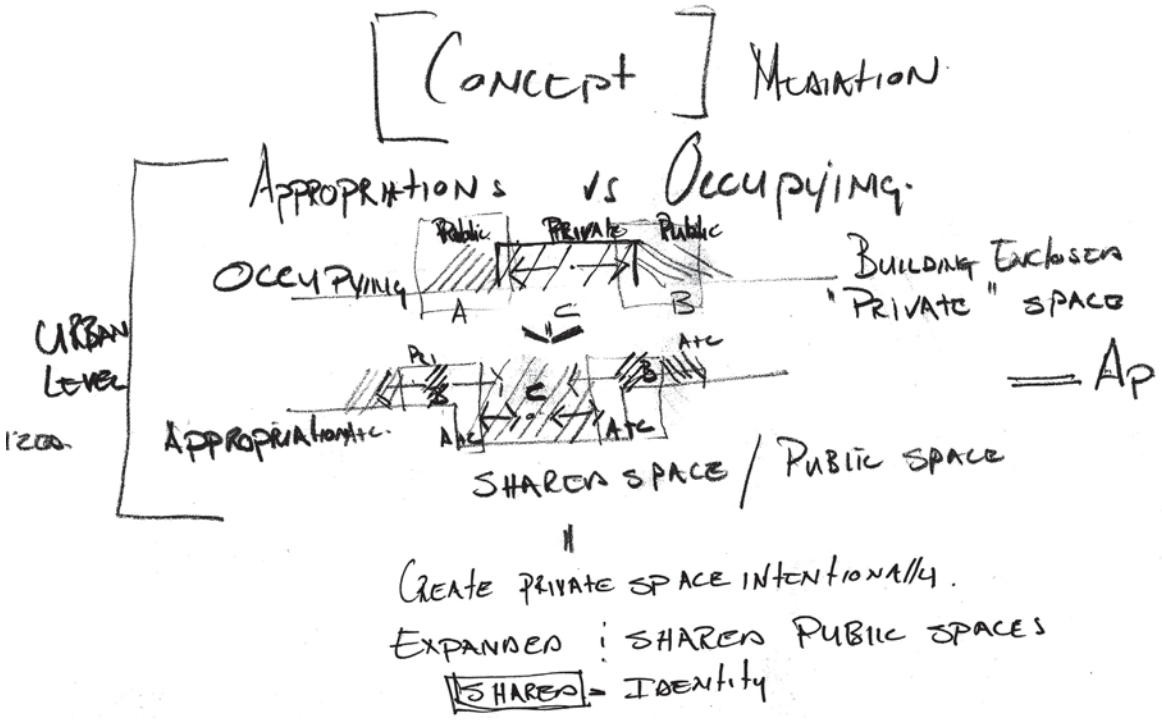


Fig. 8.3 Conceptual sketch accentuating mediation

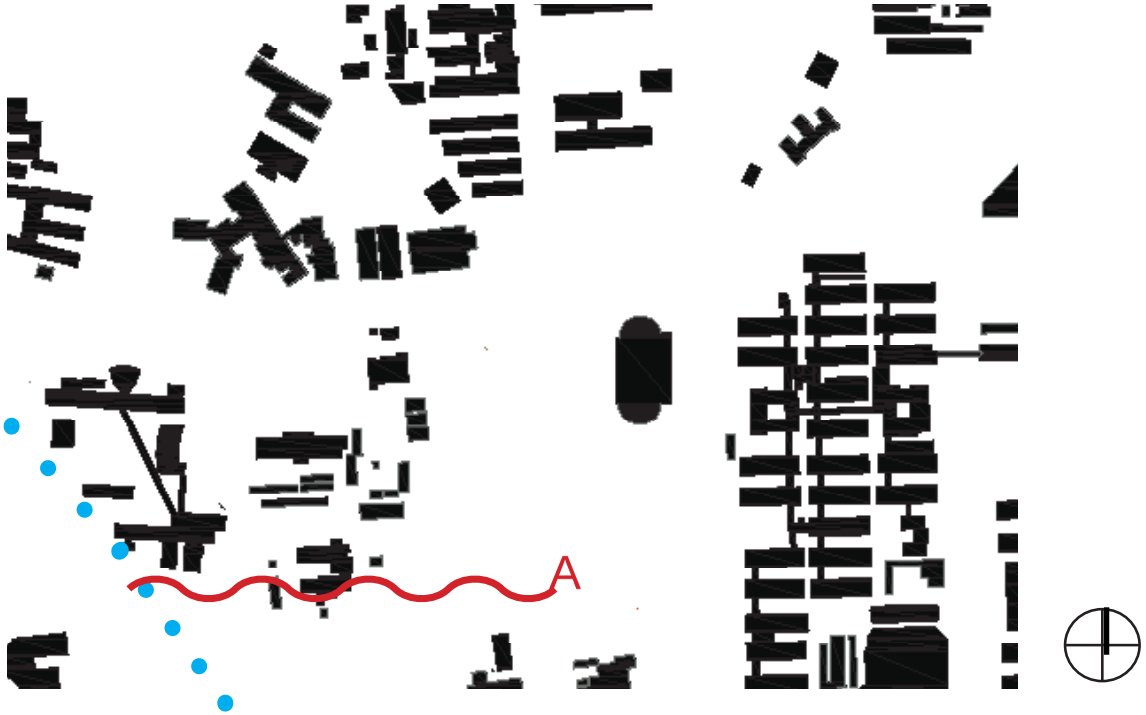


Fig. 8.4 Activity map.

8.2 The Medical Precinct

The noli map in Fig. 8.4 provides a two-dimensional representation of plane. In Chapters 2 and 3, the socio-political layering associated with the site was exposed and translated into an enigmatic diagram (see Fig. 1.1 Interspace 2012 -The Transformation map), depicting the various activities and energies associated with event, object and current use.

Objects were mapped, releasing a multitude of linear arrangements, which allowed architectural form to be ascribed to the envisaged programme.

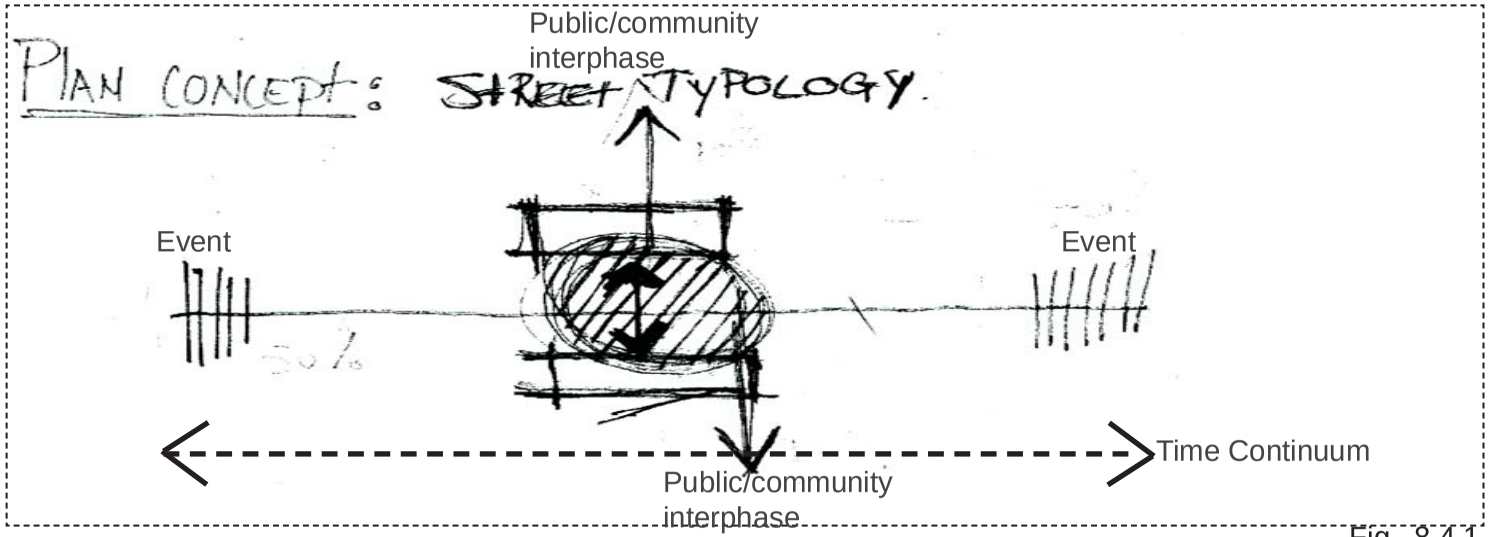


Fig. 8.4.1 Generated Linear Plan Concept

8.3 Topology (Geometry/Orientation)

The site topology required manipulation of the horizontal plane in relation to the existing street grid. The concept of a street not only implies direction of movement, but also direction of growth in the bigger urban scale. Streets depict the history of a city. They have a starting point and a destination, and give access to a variety of interplaces. A street is geometrically strong, and is representative of everyday life within the city (Clark & Pause, 2005:6).

In the proposed centre, the linearity of the plane is given an additional dimension of depth through the employment of a depressed plane, making the intervention “current” as it is excavated through the layers of time and history. A depressed plane creates a new locus where the previous state or context is neutralized. Both formal and social components share the same plane, initiating the process of social production.

The environment/earth becomes the new receptor for everything that takes place, therefore becoming the new Locus Solus. In the proposed design, courtyard spaces are introduced to accommodate spacial qualities such as defensibility in a natural way. Their introduction also addresses programme requirements that allows for social and public interphase.

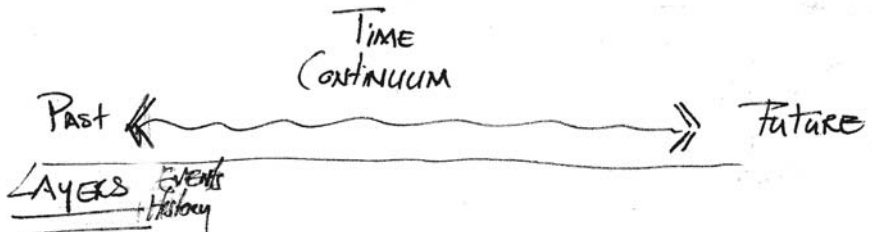


Fig. 8.5

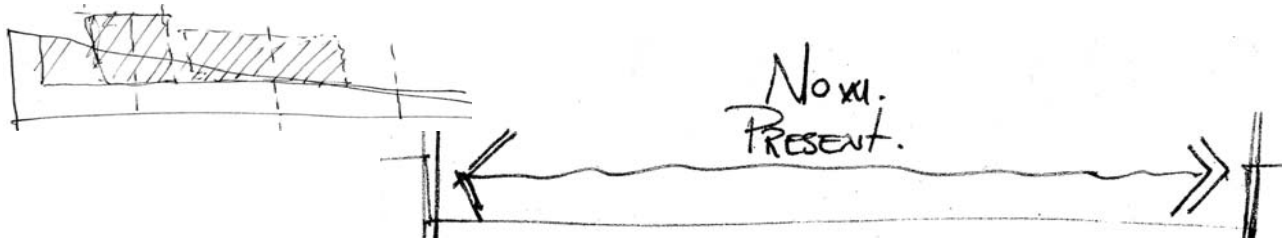


Fig. 8.6

Fig. 8.7

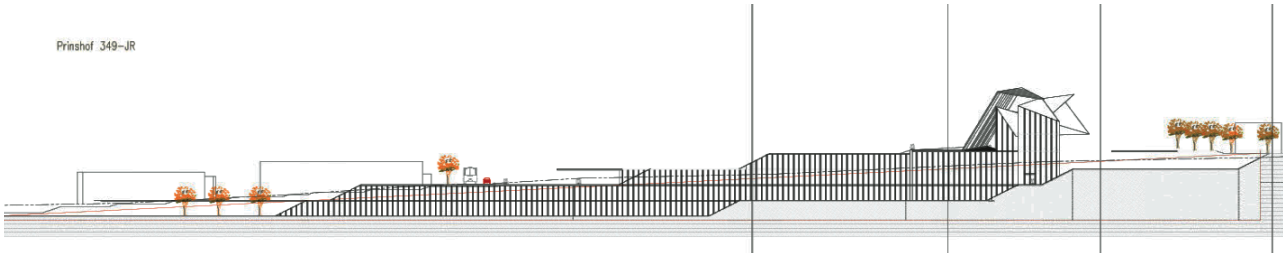


Fig. 8.8

8.4 Circulation

An east-west orientation is proposed to mediate as both a main circulation route and activity spine. It will establish direct linkages with the city through its incorporation into existing and proposed development schemes such as the Apies river plans discussed in Section 7.2.5, and the Nelson Mandela Drive Development Framework discussed in Section 7.2.4.

Environmentally, an east-west orientation allows for the appropriation of natural resources with regard to daylight and ventilation principles.

The proposed orientation will also accommodate the linearity of the programme associated with the production and administration of information, while creating defensible space through passive surveillance resulting from the social production that occurs.

Transparency and permeability will ensure visual linkages to the whole complex, instilling a sense of community and ownership.

Fig. 8.9 Aerial view of site with main movement direction (Anisotropy)

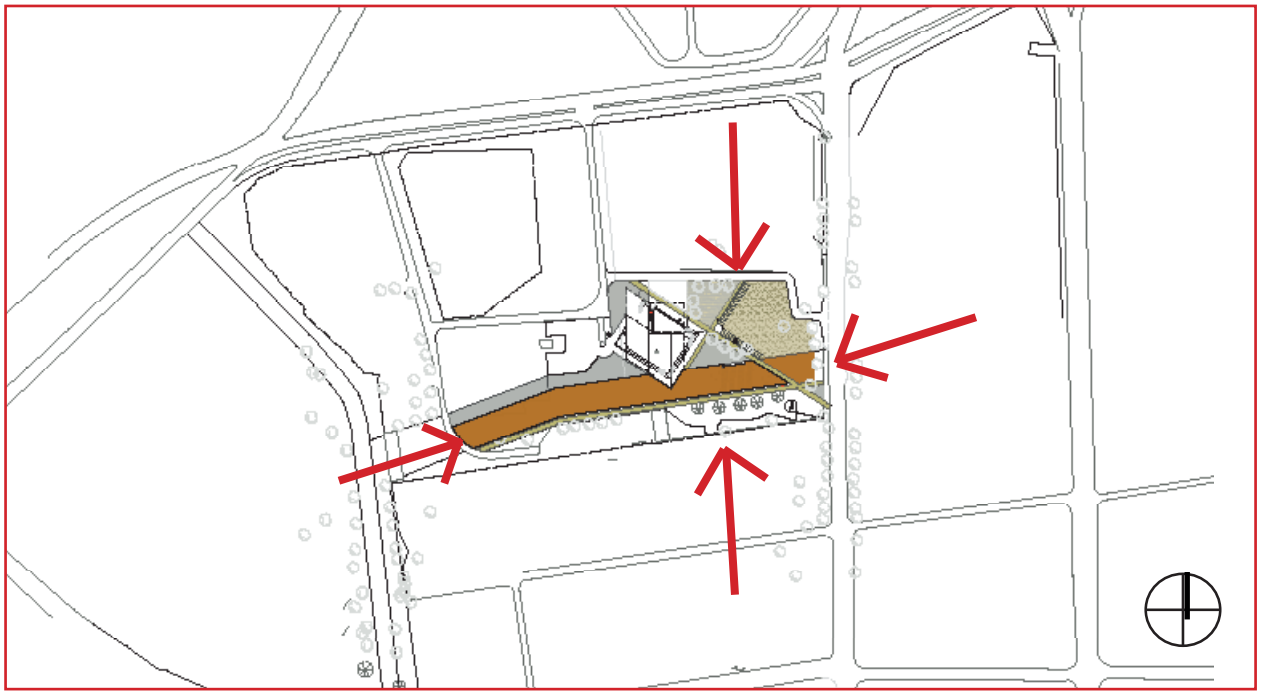


Fig. 8.10 Design development exploring accessibility and movement (April 2012).

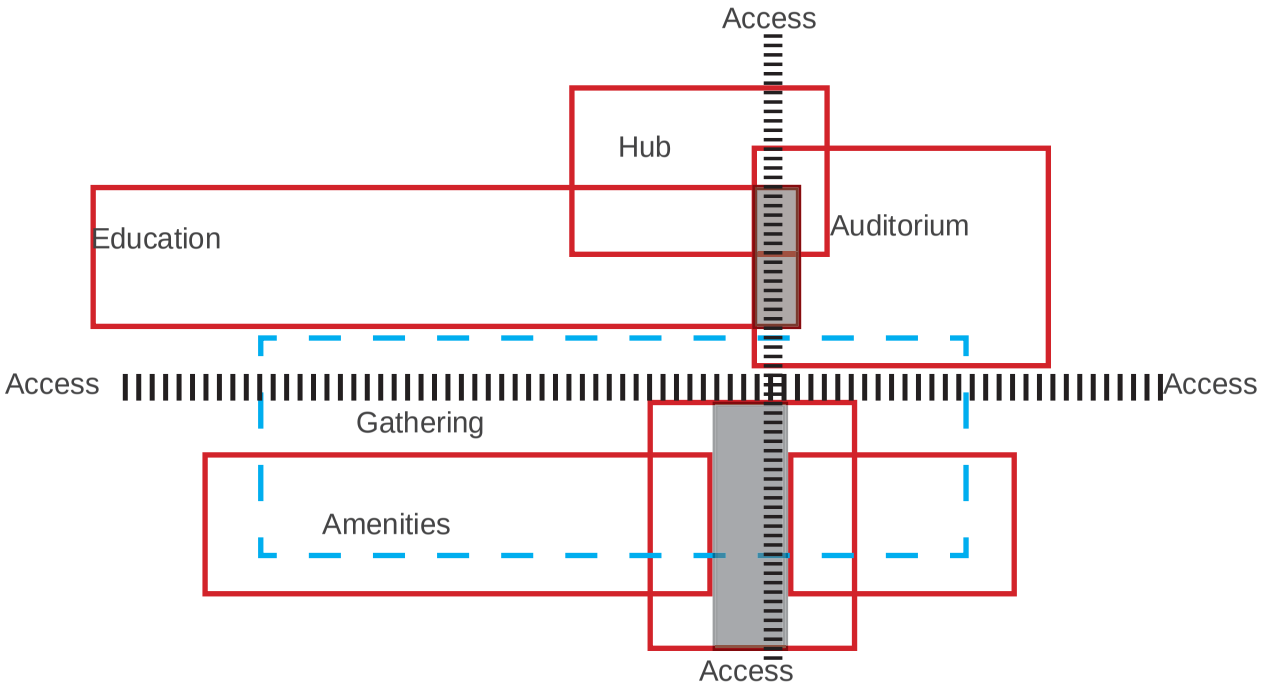


Fig. 8.11 Programme in relation to accessibility and movement.

8.5 Movement

Based on the four basic user types as discussed in chapter 1, movement and circulation to use-space, represents the significant dynamic and static components of the building. It is therefore the main contributor towards creating public space as social production generator.

The building is to be experienced from 4 main access points as depicted in shown figures 8.10. Figures 8.12 & 13 depict the east-west accessibility along the main axis of the development. It is characterized by open plan “street” and creates the relationships between major use- spaces.

Fig. 8.13 shows that accessibility from the north-western zone is more directed towards organised users, as this access route takes users to the western parking area from which the facility can be approached.
This is also the main distribution zone for the facility in terms of deliveries. The route does, however, also allow for cross-pedestrian movement across the entire site, and provides an entrance to the facility from the northern side.

Fig 8.14 explores access from the southern zone of the building. This is mainly a service access, as it accommodates staff access from the Lebone College and the Femina Clinic, as well as emergency services.

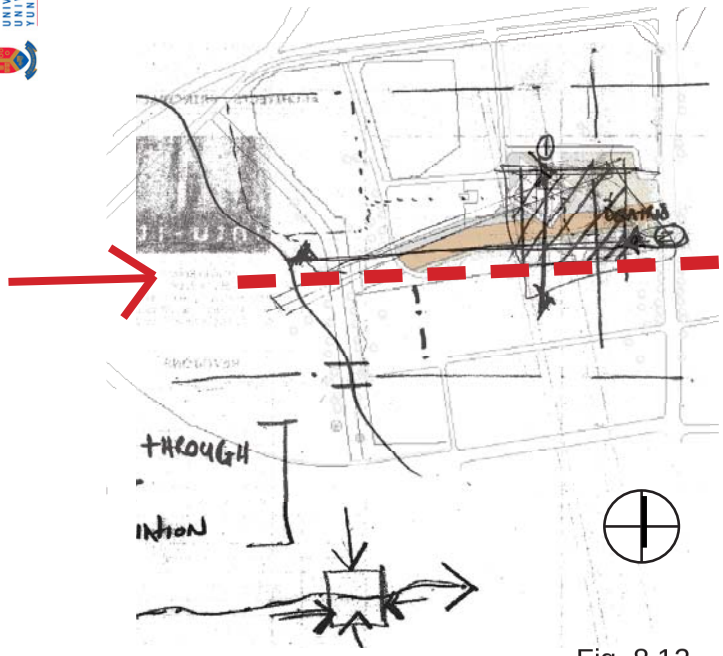


Fig. 8.12

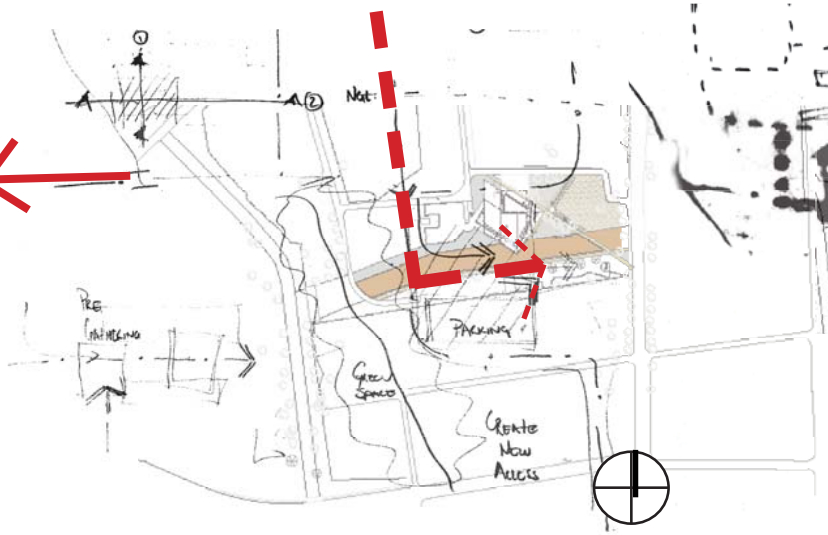


Fig. 8.13

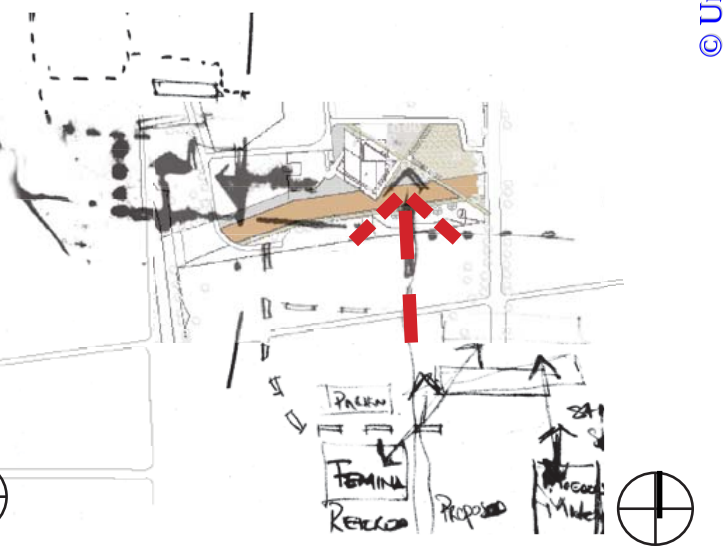


Fig. 8.14

8.6 Architectural Form

Architectural form was achieved through the application of two concepts:

- the way the city grid mediates the programme through adaptations to physical barriers, as depicted in Fig. 8.16; and
- the appropriation of space, and the way the building stereotomically emerges from the earth as depicted in Fig 8.17.

These two principles allow for the formalization of parti, plan, and tectonic language.

The linearity of the plan initiates directional movement, accommodating both programme requirements and social interaction. The use of natural resources, particularly daylight and natural ventilation, resonates with an environmental adaptation.

Other principles such as scale allow for qualitative differences in progression. Manipulated change from one spatial condition to another allows for a transgression of open-closed, public-private, simple-complex, and individual-group boundaries. These mediations occur both spatially and formally.

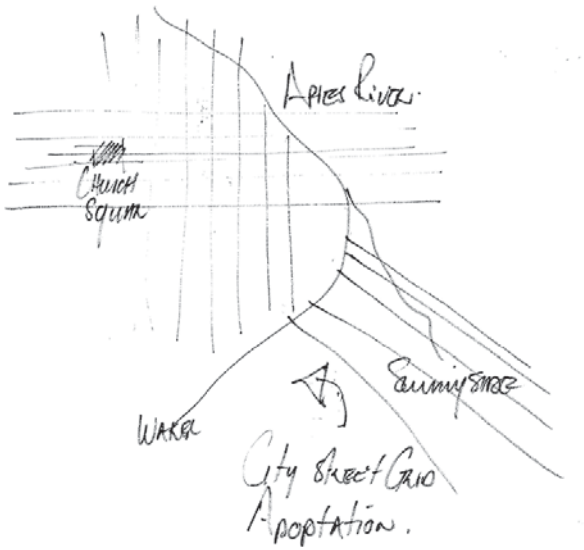


Fig. 8.15 Geometrical adoptations to physical barriers Pretoria city development

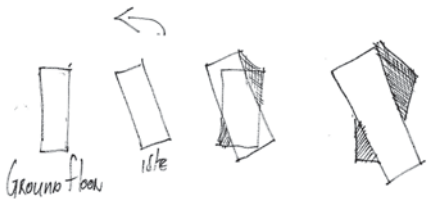


Fig. 8.16 Geometrical adoptations to physical barriers

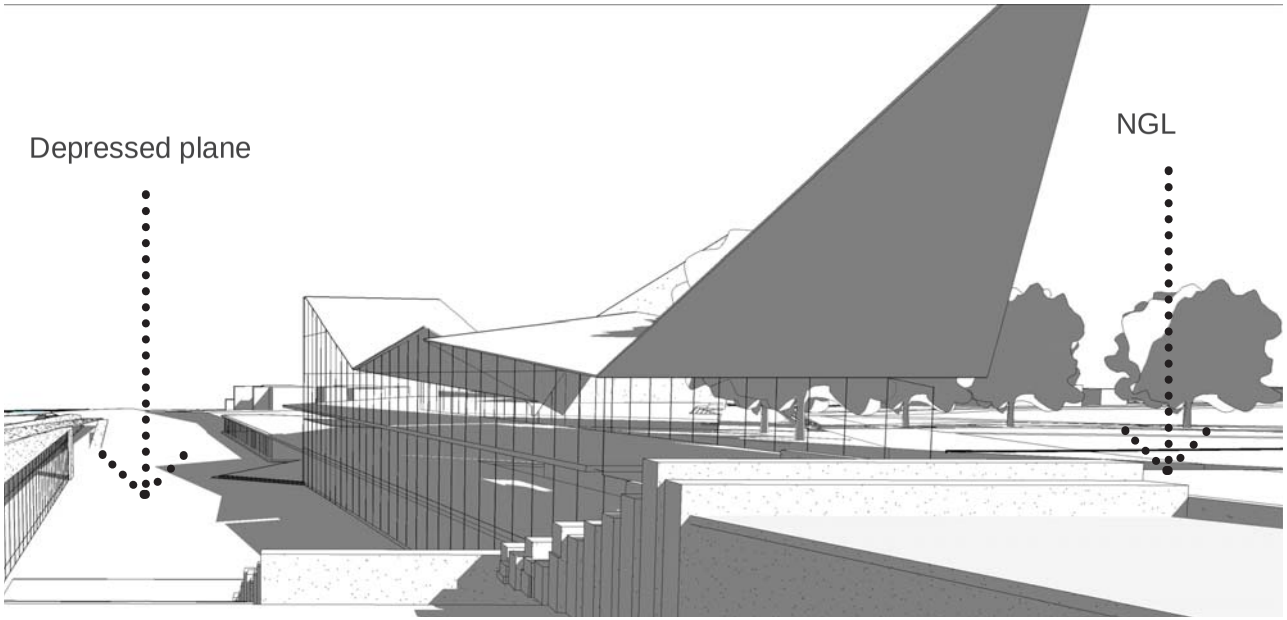


Fig. 8.17 Design exploration into architectural form and spatial quality derived from Parti diagramme

8.7 Linear of Plan

The linearity of the plan as form generator is evident. It informs, and distinguishes between movement and rest, contributing to both formal and informal usage patterns.

The implementation of thresholds and floor levels at different elevations strengthens this principle, and celebrates volumetric understanding (Clark & Pause, 2005: 3-7).

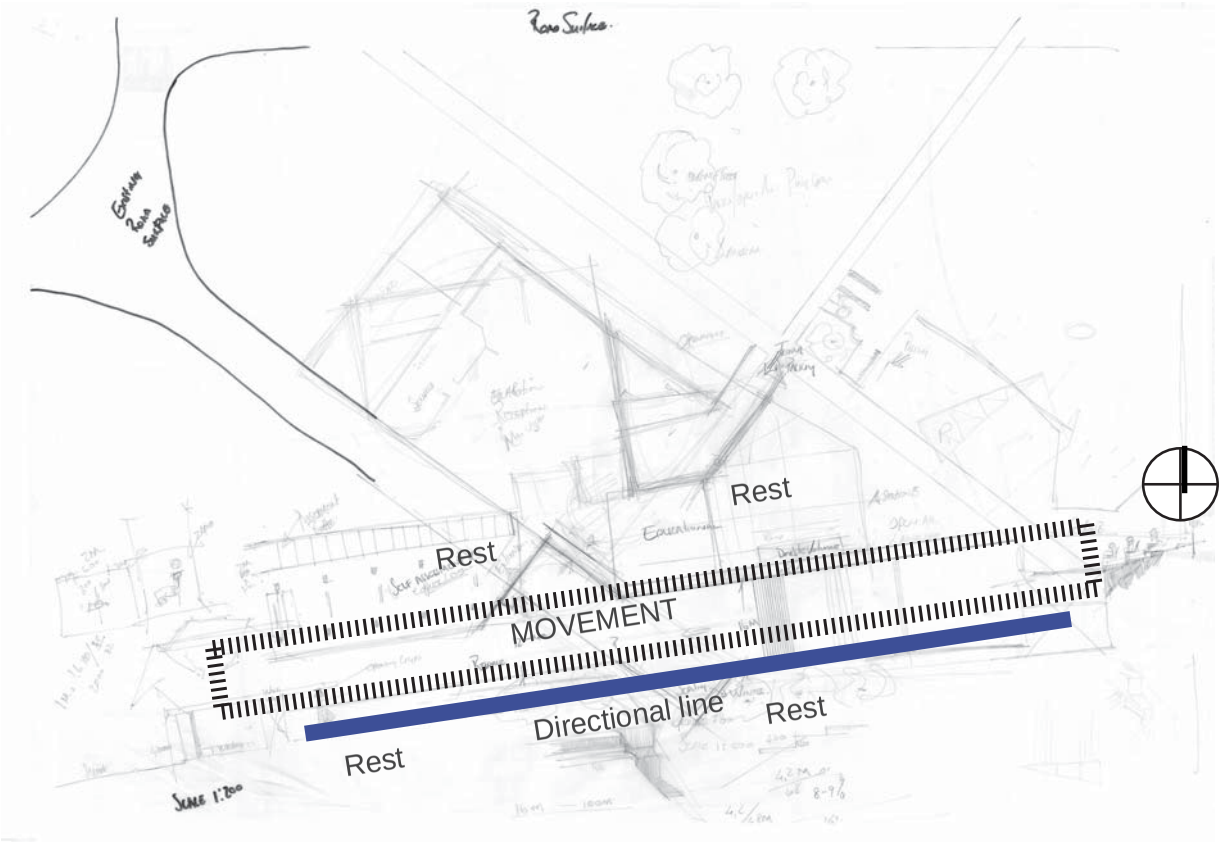


Fig. 8.18. Design development explorations into geometry and edge conditions. Building set against line of directional circulation. (May 2012)

8.8 Axial Relationship

The initial alignment with the immediate grid provides strong horizontal and vertical edges that strengthen the relationship within the existing precinct, in line with Leatherbarrow's (2004) argument that "the task of design is to combine the intentionality of the project with the willingness to let 'things' appear that have neither been seen nor expected".

Fig. 8.19.1 Pretoria City Grid

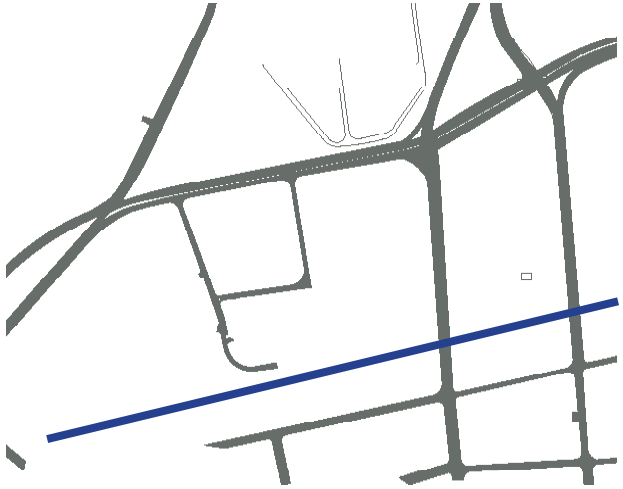


Fig. 8.19.2 Precinct internal grid -June 2012.

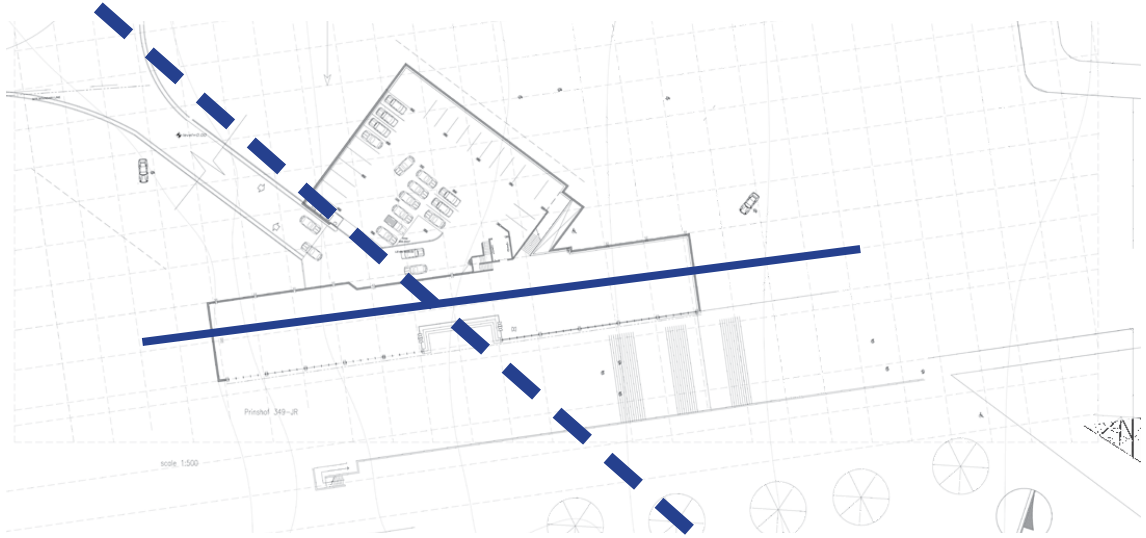


Fig. 8.20.1 Design development-June 2012

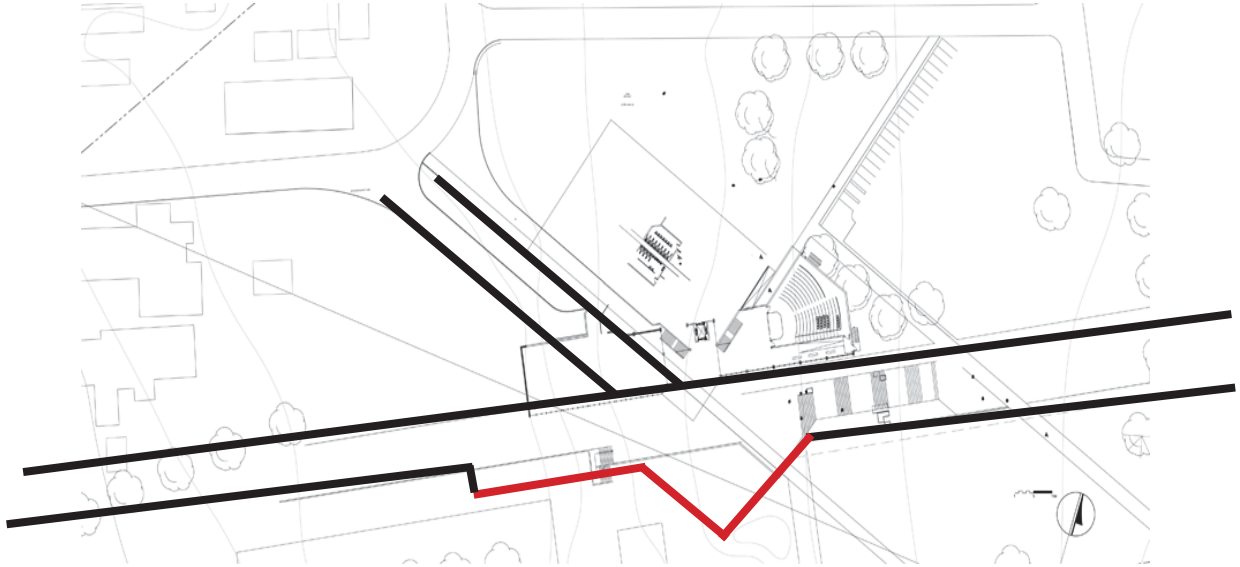


Fig. 8.20.2 Design development-July 2012

In Figure 8.20.1 & 2, the introduction of a secondary transverse axis creates a sense of enclosure and limitation, separating the precinct into two distinct areas.

The alignment of the east-west axis with that of the immediate precinct grid communicates the force associated with social production as it opens up towards meeting the city. Furthermore, it allows the building to respond and adapt to topographic decrements by creating a series of terraces on both sides of the central promenade, as illusrated in Figure 8.20.3.

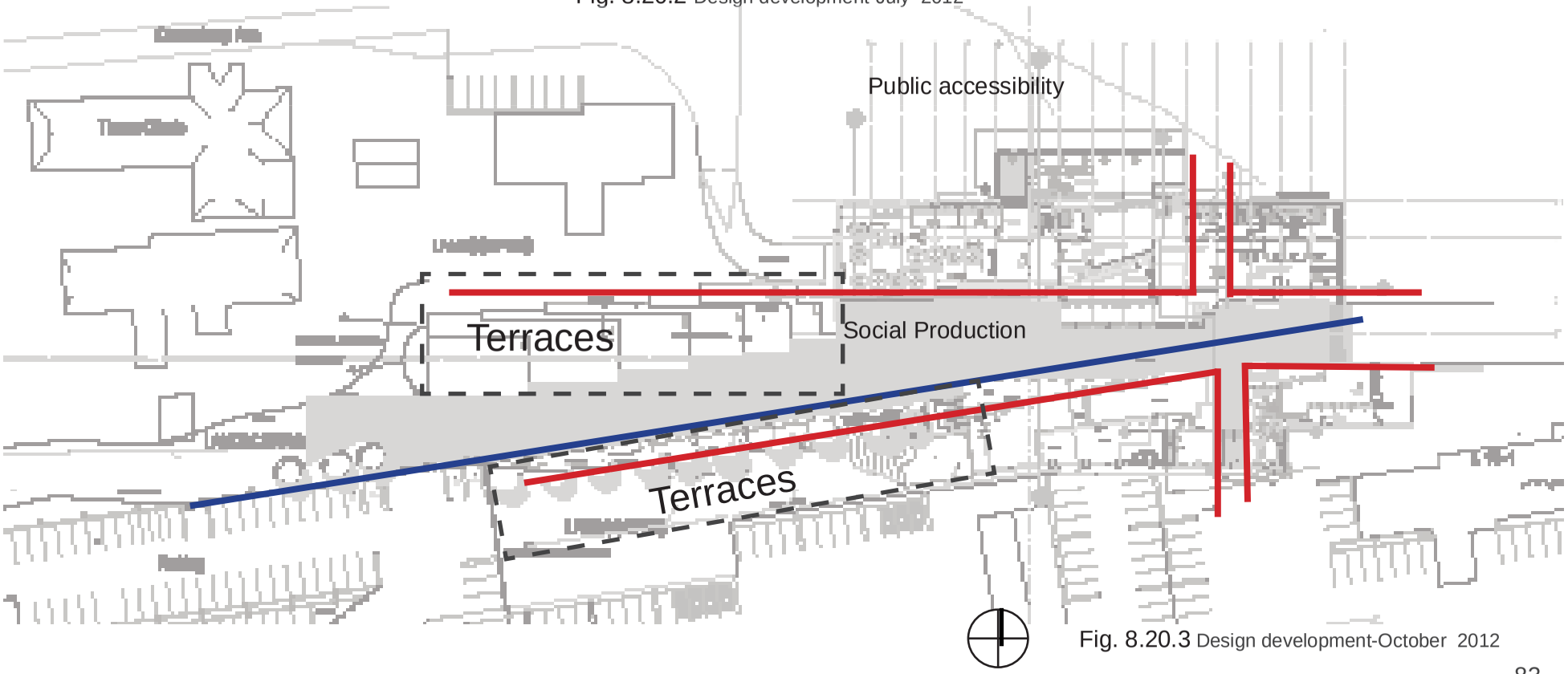


Fig. 8.20.3 Design development-October 2012

8.9 Structural and Spatial Design Development

The structural and spatial design development will be discussed under four headings, namely:

1. Stereotomy - this section deals with the topographical challenges posed by the site, the basement, and design decisions that influenced the structural and technical responses.

2. Tectonic - this section deals with the structural frame of the building and the relationship between the connection nodes in the structure and its outer skin.

3. Sustainability - this section covers aspects relating to the sustainablity of the building such as ventilation and thermal control, daylighting, rainwater harvesting and energy use.

4. Materiality - this section deals with the appropriation of the available, locally produced building materials that will contribute to the final aesthetics of the building.

Material aspects of the design will be simultaneously discussed under the same four headings, which cover various aspects of the technical investigation undertaken in this study.

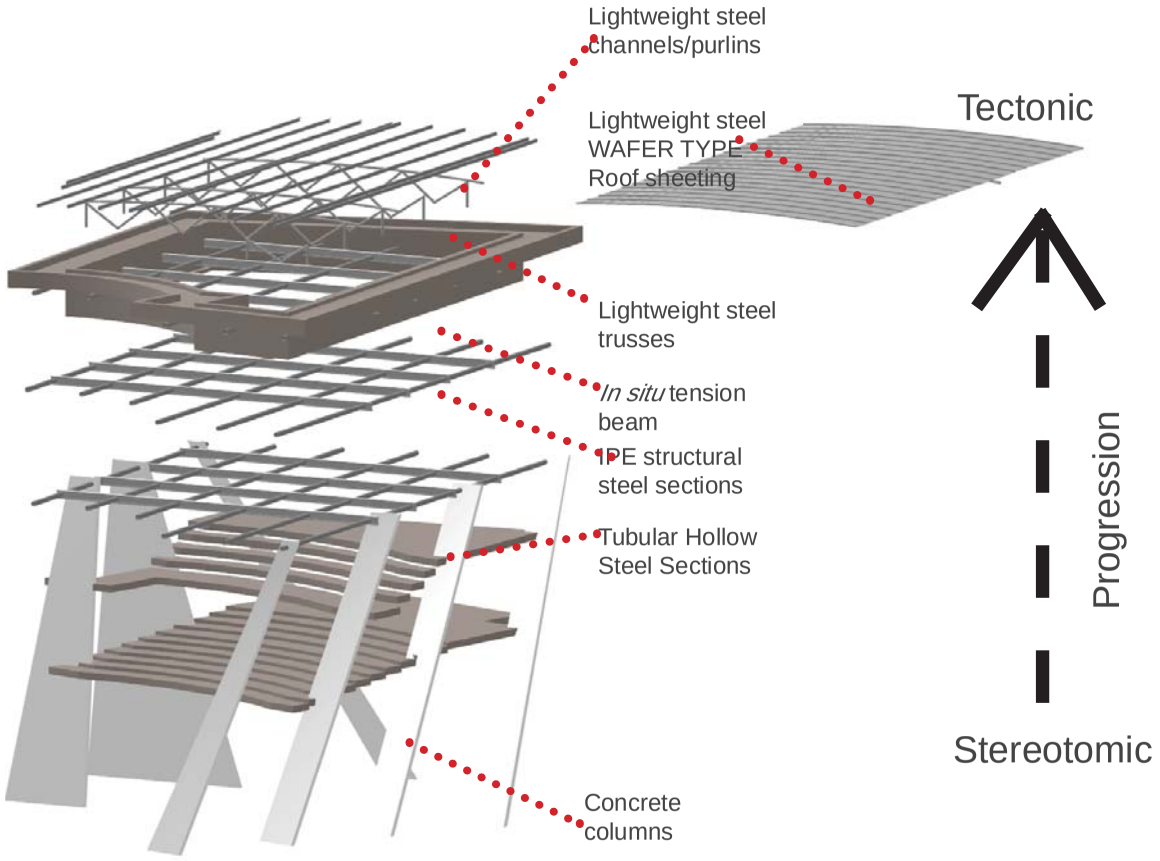


Fig 8.21.1 Design development – Structural progression

8.9.1 Stereotomy

Conceptually, the building typology resulted in a structure that adapted stereotomically and tectonically to its context by successfully mediating the topographic landscape. The introduction of a streetscape into the design allowed for a steep depression on a neutral level on which social production could take place.

Excavation resulted in courtyard spaces which serve as transitional spaces between the new structure and the existing topology, and a large basement. These spaces have been successfully converted into a defensible play area for children in the north wing, a semi-private public space for users of amenities on the southern flank, and a parking garage that can accommo-

Fig. 8.21.2 Contour model of immediate site

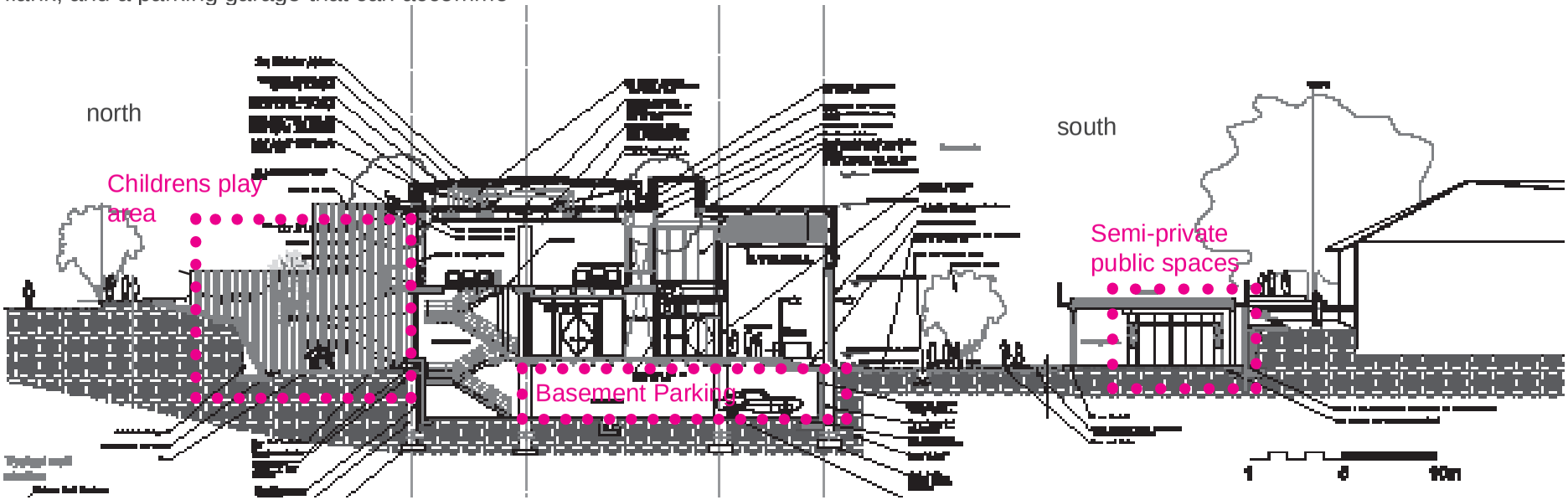


Fig. 8.21.3 Technical section indicating depressed plane and courtyard spaces

The basement and courtyards are constructed from a retaining concrete wall measuring 355mm in width.

Two systems are used in the construction of these two areas. A homogenous floor and wall system is used in the courtyards (see Fig. 8.21.4), whereas a separate floor and retaining wall system is used in the basement (see Fig. 8.21.5) to deal effectively with the heave that is typically associated with Hekpoort Andesite (Fig. 3.29), which is the predominant soil type on the building site. The Meintjieskop Fault line, which runs through the site, also warrants a separate floor and retaining wall system for large spaces.

Waterproofing is done with Bituthene 3000 sheeting, affixed with Bituthene primer, overlapping by 65mm. Bitumen-impregnated soft board protects the sheeting against backfill that might pierce the sheeting (see Fig. 8.21.4).

Water ingress through tie rod holes and pipe penetration are treated by grout and liquid Bithuthene, and finished with a covering layer of Bituthene 3000 (see Figs. 8.21.5 and 8.21.6).

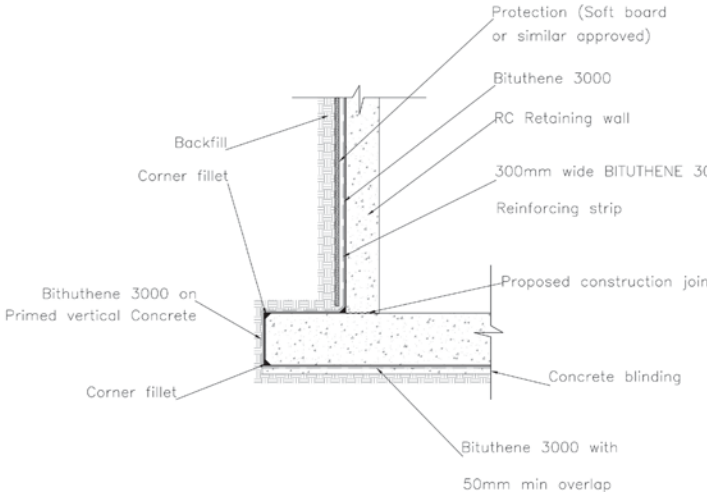


Fig. 8.21.4 Homogenous retaining wall waterproofing detail

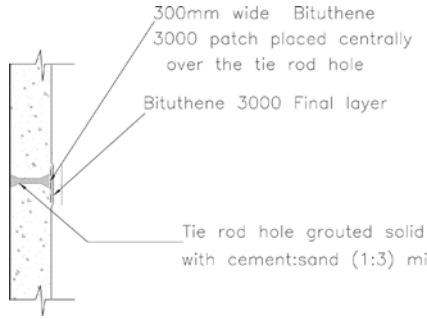


Fig. 8.21.5 Detail section showing sealing of tie rod holes

Fig. 8.21.6 Detail section showing sealing of pipe penetra tions

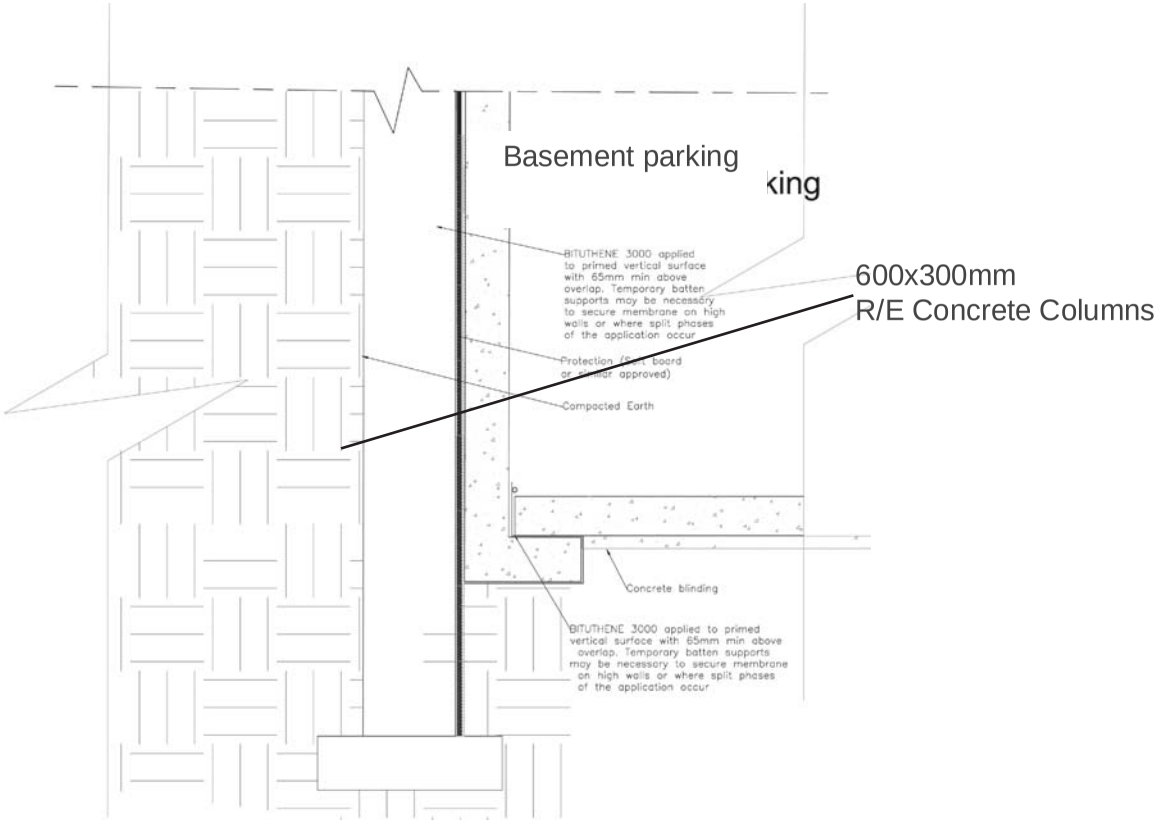


Fig 8.21.7 Two- part retaining wall accommodating weave associated with ground conditions

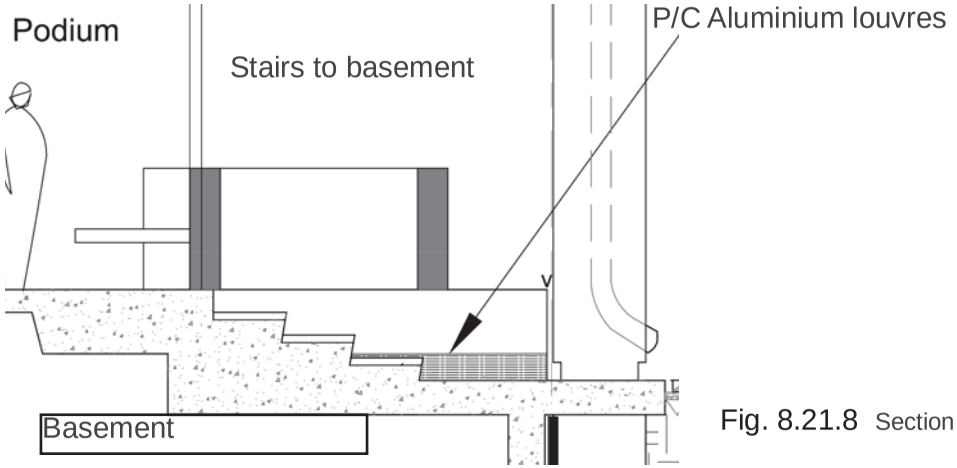


Fig. 8.21.8 Section detail of louvres for cross-ventilation

As Fig 8.21.7 shows, additional structural stability was ensured by adding piled columns, which serve as supports to the lateral forces exerted on the retaining wall by compacted backfill.

Watertightness in the basement area is not essential, since a Mentis grate mesh of galvanized steel is used to create a permeable cover for a gutter. It gives any runoff access to a storm water reticulation system. The grate mesh is positioned at the entrance to the parking area, at the bottom of the ramp (see Fig. 9.4 and 9.8). The gutter system runs throughout the parking basement.

Both the courtyard and basement spaces are naturally well-ventilated. The main access stairwell acts as a ventilation stack. Cross-ventilation is ensured by means of powder-coated aluminium louvre grids affixed to the opening between the promenade level and the Lower Ground Level podium.

Fire safety is a primary concern in basement typologies (see discussion in Section 8.10.2).

8.9.2 Techtonic

The implementation of a grid system allows for gracious proportions in a trade-off between the number of columns, and the span of the intervening floor slab. This concept helps to solve basement parking problems and allows ample opportunity for an open interior typology which can accommodate informal learning and provides adaptable workshop spaces (see Fig. 8.21.9).

Reinforced concrete columns terminate in steel connections that anchor a portal frame roof structure, acting as a raised horizontal plane.

Lateral stability is ensured by using 304x146x31mm Structural IPE Steel sections, which also allow for slender columns, which in turn contribute to a light, uncluttered linear effect. The lightness of the effect is enhanced by the placement of the columns, with bracing on a horizontal level within the roof plenum, strengthening the horizontal plane concept.

The structural steel frame permits articulated connection nodes which reflect an open plenum approach, exposing the roof trusses and bracing sections.

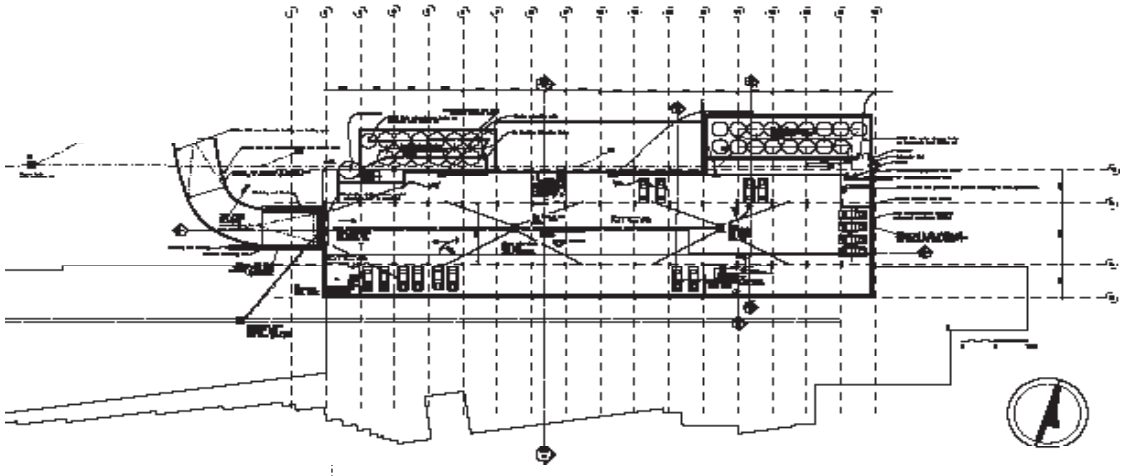


Fig. 8.21.9 Basement plan with applied grid system and column placing

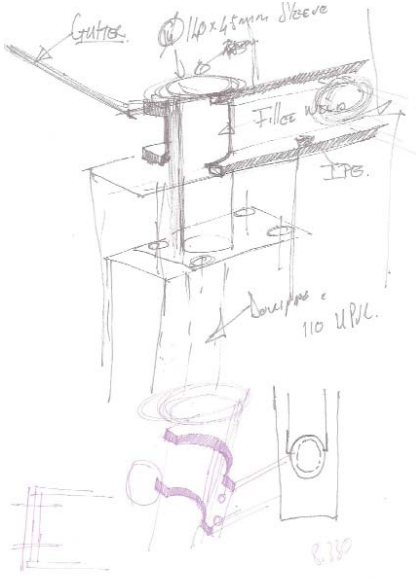


Fig. 8.21.10 Exploration of connection types and fixation

These connecting nodes create a permeability that resonate with the social/public programmes that have been adopted, as well as a sense of honesty of design and a sense of comfort and ease in users of the spaces.

However, the need for circulation (in particular the requirement of an inclusive design concept ensuring access for physically disabled users) enforced some design restrictions. Hence, a generous grid system is proposed, rather than a more economical grid system, which would have limited such access.

Slender steel elements contribute to the lightness of design achieved by the clean linear construction. This design is underpinned by the column placing, with bracing on a horizontal level within the roof plenum, strengthening the horizontal plane concept (see Figs. 8.21.11 and 8.21.12).

The quest for a lightweight double sheet (wafer) steel metal roof led to the decision to use Ziptech 420 Chromadeck. An expanded foam membrane between the sheets serves as insulation and reduces noise emanating from rain on the roof. The sheeting is placed on Butyl tape to ensure that there is no steel on steel contact, further reducing sound reverberation due to vibration transmitted onto steel sections.

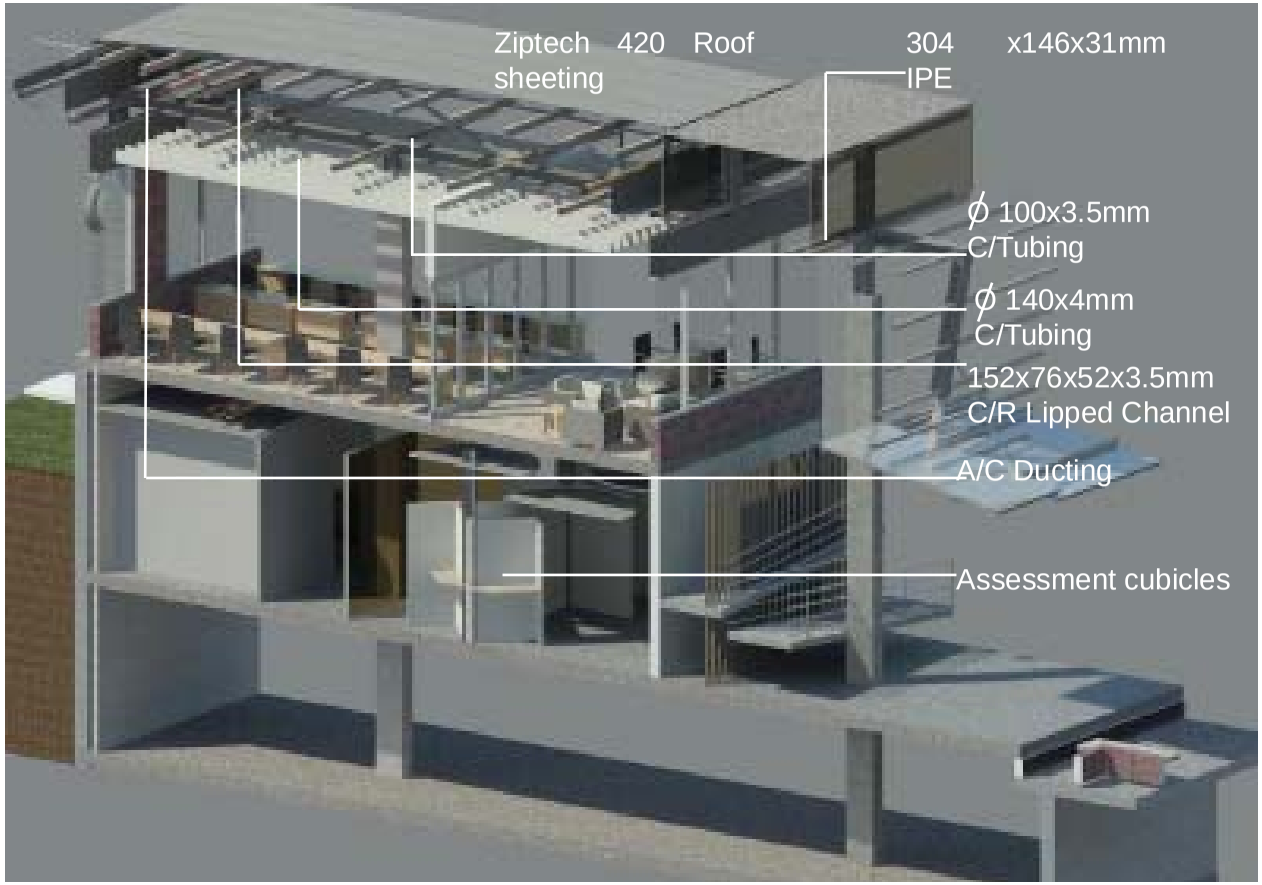


Fig. 8.21.11 Exploded detail of lightweight steel roof construction

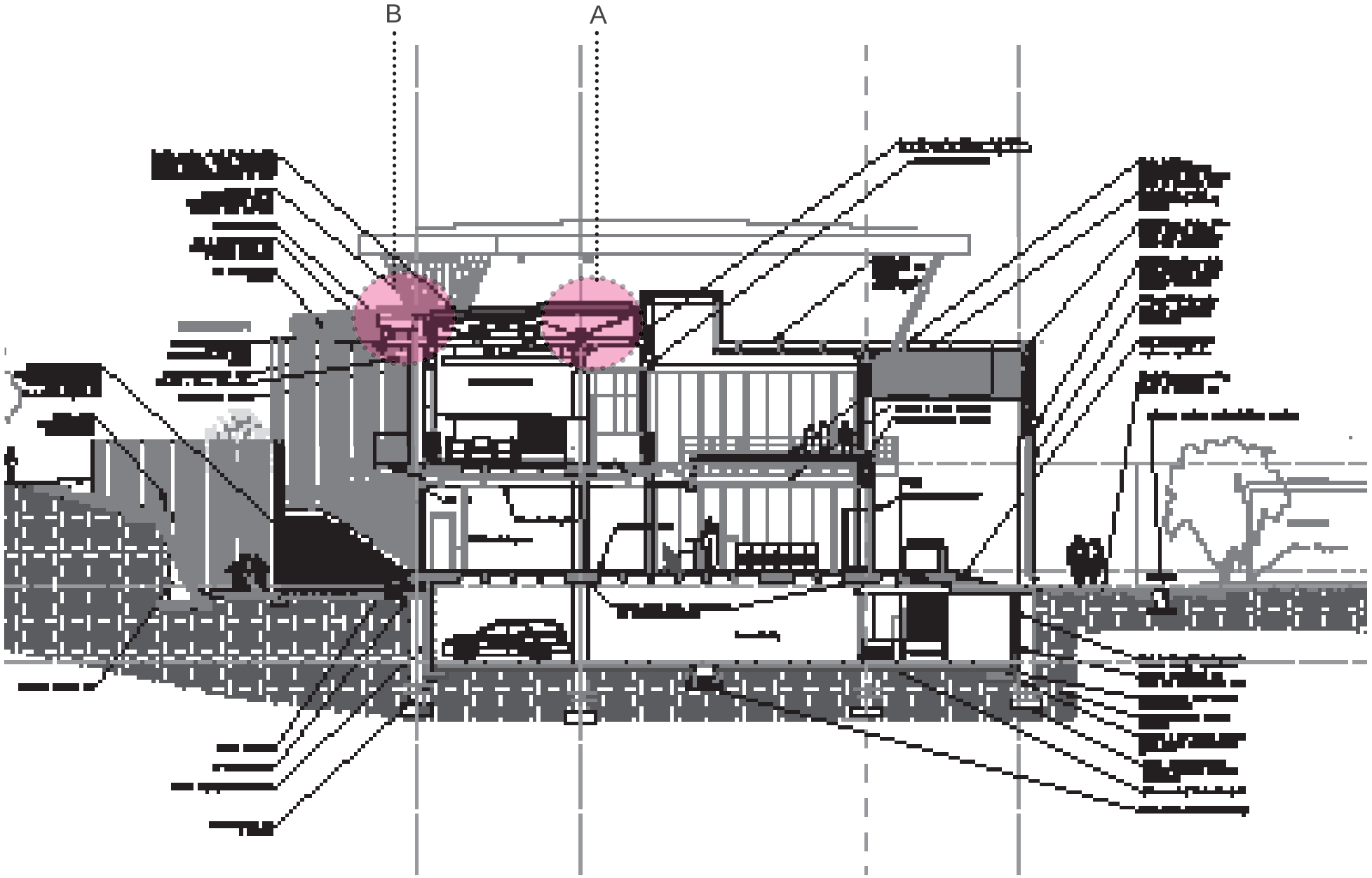


Fig. 8.21.12 Technical section through building exposing portal frame steel construction.

The curved roof creates a seamless appearance. A pre-rolled chromadeck gutter (2mm in girth) acts as both a fascia and a water channel, finishing off the edge of the roof. Rainwater is channelled off the roof via the gutter and downpipes of U-Pvc pipes with a diameter of 110mm placed inside the column structures. The rainwater is then collected in water storage tanks for re-use on roof gardens and irrigation. The water is distributed from a pump room, which is situated in the north-western corner of the basement (see Fig. 9.4).

On the southern side of the complex, a concrete roof with an integrated gutter/circulation path acts as a continuation of the natural ground plane (see Fig. 9.5).

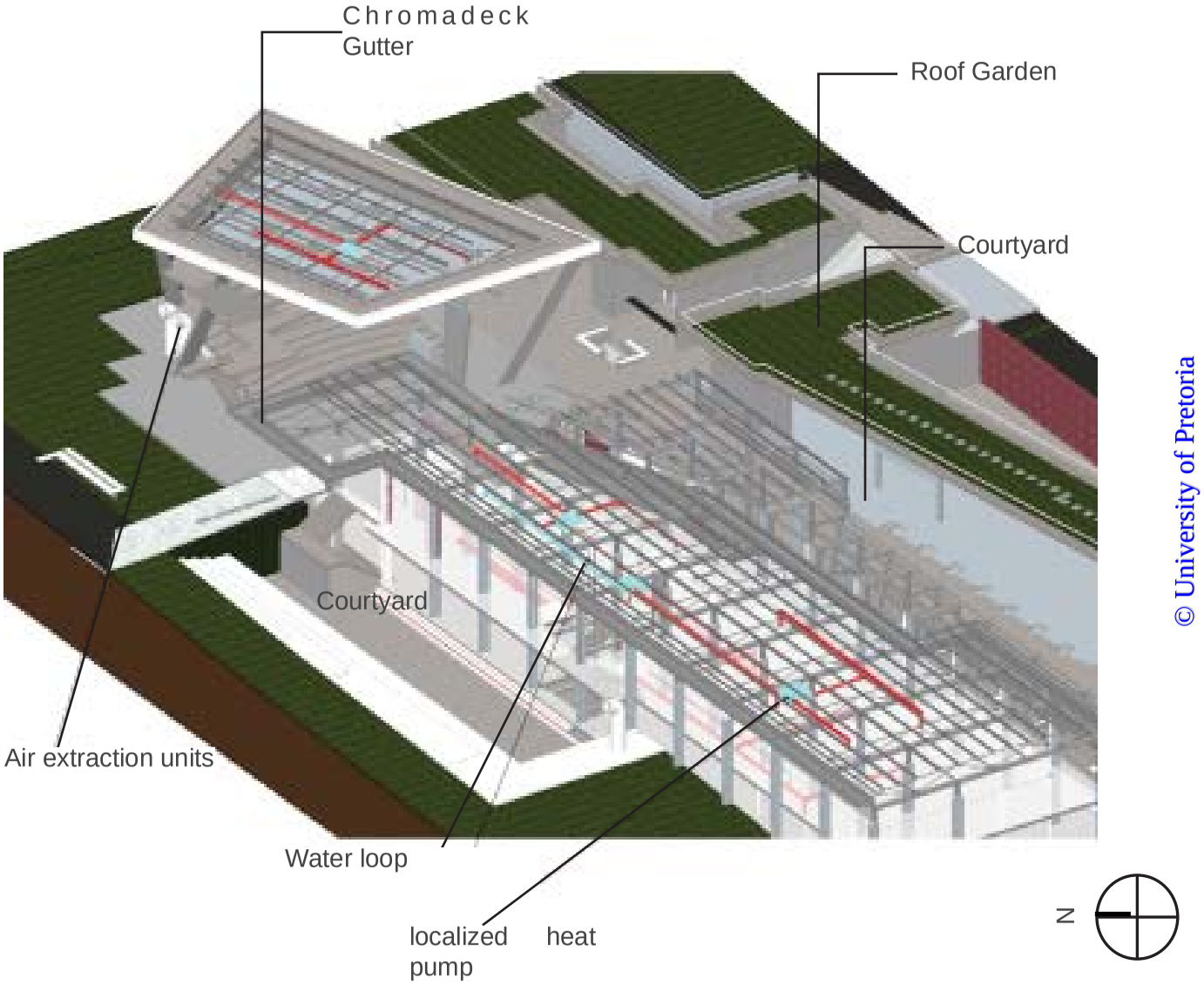


Fig. 8.21.13 Axiometric view of steel construction exposing roof services

Fig. 8.21.12 shows a typical Warren girder truss. These trusses are employed in a roof truss system for both the main complex and the auditorium.

This truss gives a 15:1 span to depth ratio, making it economical and functional. A truss depth of 1200mm at the edges to 1700mm at the apex is achieved in both complexes, leaving ample space for service reticulation. The increased height also contributes to the open plenum design featured in the complex.

The truss is connected to the structural column by means of a pin connection that allows for movement resulting from differences in thermal inertia (see Fig. 8.21.15).

The open plenum resolves potential maintenance problems by allowing direct access to all reticulation and installations. Figs. 8.21.14 to 8.21.18 show in detail the articulated nodes and connection types selected for use between the roof and the structural concrete columns.

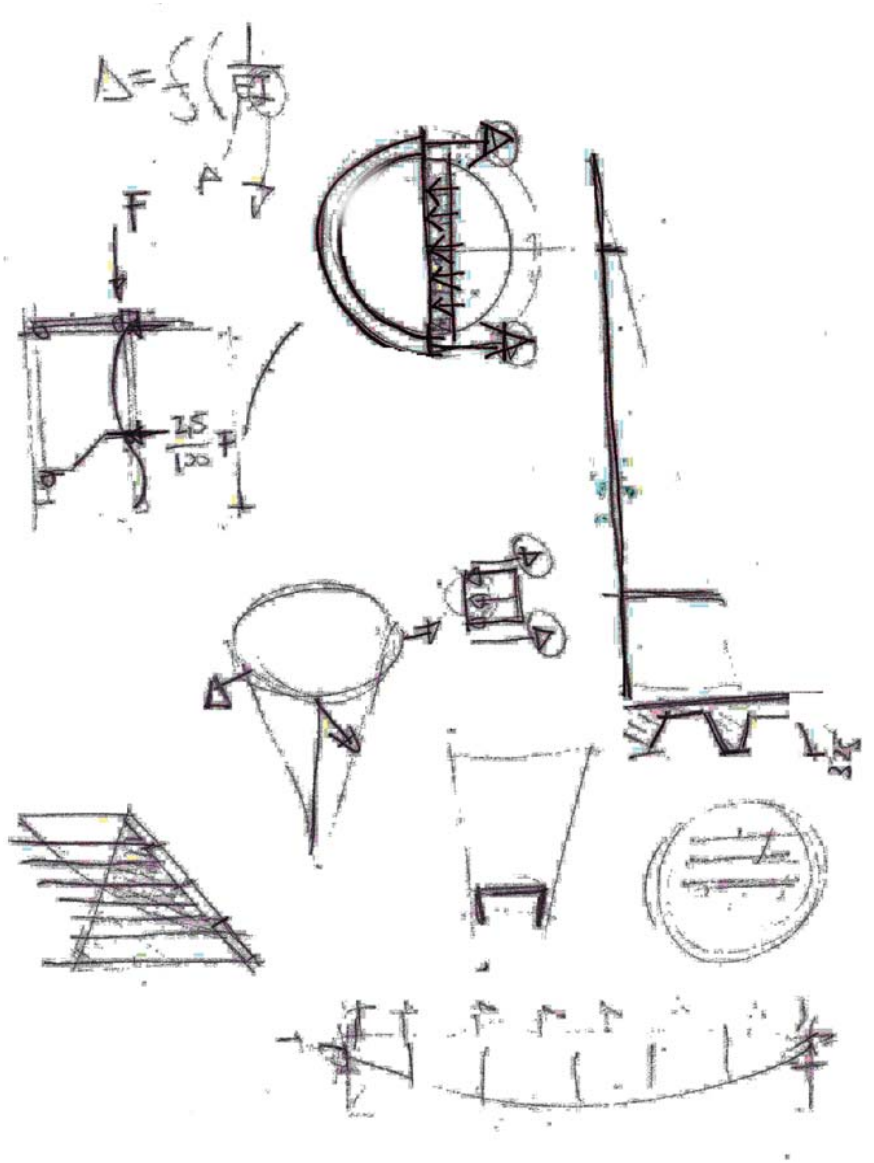


Fig. 8.21.14 Engineering principles associated with truss computations

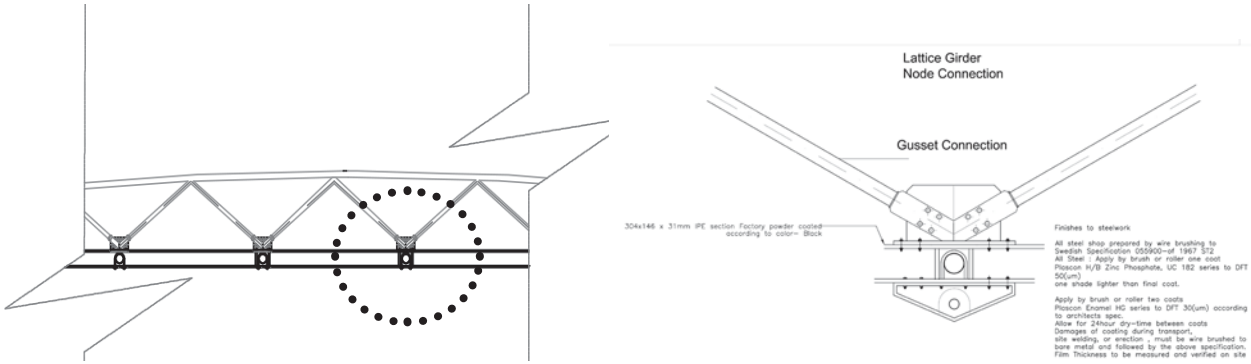


Fig. 8.21.15 Technical detail section of truss and pin connection (see also Fig. 8.21.12 A)

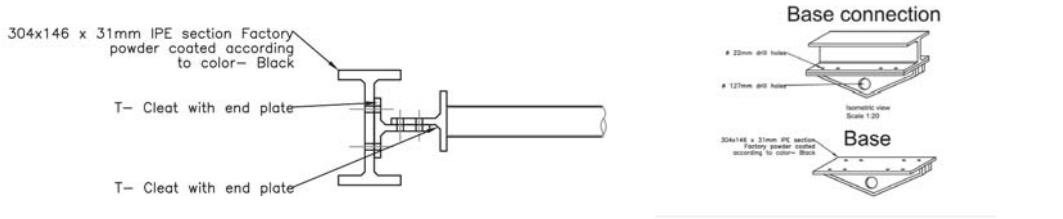


Fig. 8.21.16 Lateral bracing with pin node connection and base plate

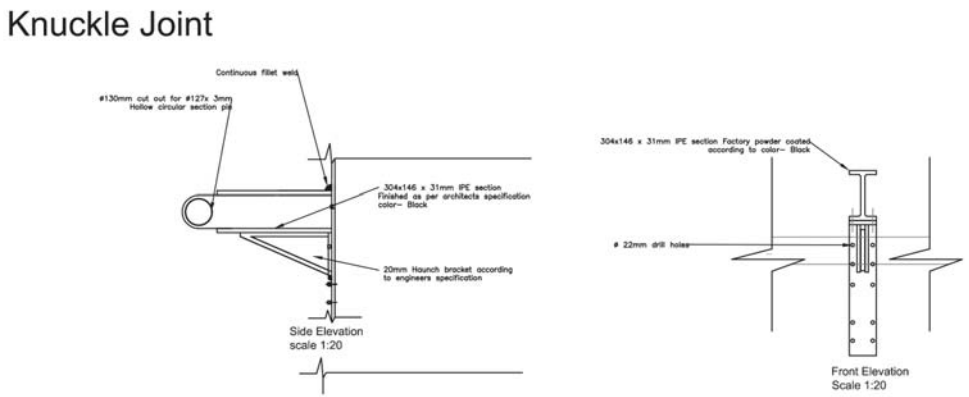


Fig. 8.21.17 Knuckle joint attached to column to form roof edge (see also Fig. 8.21.12 B)

8.10 Environment and Sustainability Considerations

"Sustainability is a way of thinking." (Guzowski, 2010:147)

The highest goal of any sustainable design is to achieve energy independence and self-sufficiency. This is not always possible, but the strategies employed in this design will reduce the energy dependency of the building.

The external skin of the building is used to achieve these goals of sustainability, and simultaneously serves as an aesthetic design element.

Sustainability can be achieved in two ways:

- through human willingness, supported by education; and
- through passive systems, which for the purposes of this study focus on the following:
  - temperature control and natural ventilation;
  - daylight strategies;
  - rain-water harvesting; and
  - solar power generation and use.

8.10.1 Temperature control and natural ventilation

The design allows for large parts of the building's skin (above and below ground level) to be exposed to thermal heat radiation, which is used to optimise the building's user comfort levels and thus also to ensure lower energy dependence.

Where the building is exposed above the natural ground level, an integrated ventilation system situated on the northern and southern facades serves as a heat recovery system in winter, and as a ventilator in summer conditions. (see Fig.3.28 Climate data sheet)

A bespoke shopfront design fitted with ACTIV^{TM} smart glass permits heat generated between layers of glass to be directed inwards by means of heat-sensitive actuators in winter and to be extracted by the buoyancy effect in summer (see Figs 8.22.2 and 8.22.3). This method addresses both ventilation and thermal control. In order for the system to work properly, the distance between the two glass panes should be at least 100mm to minimize a build-up of moisture.

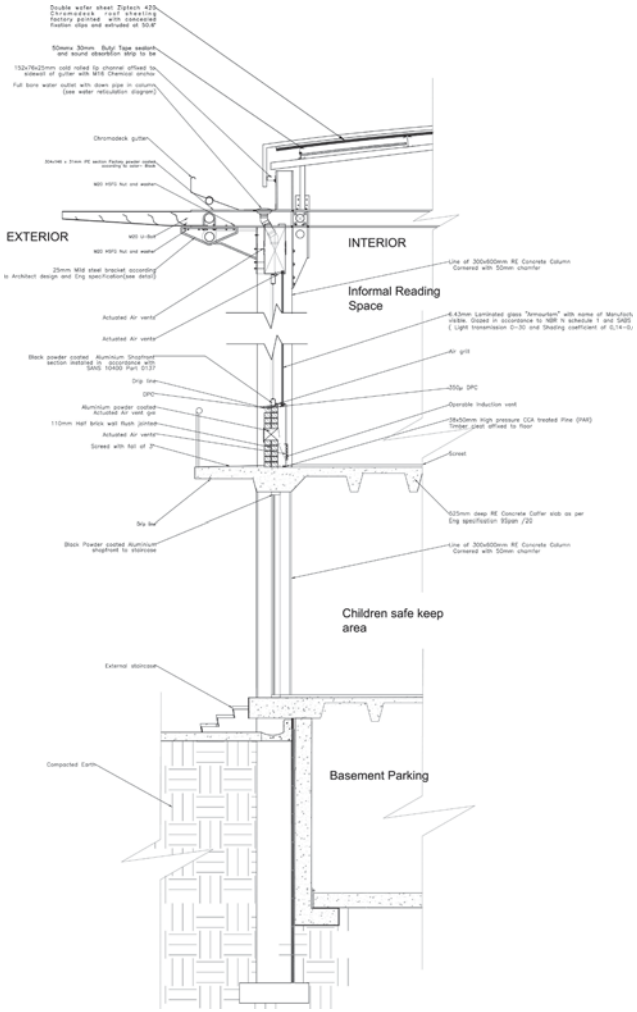


Fig. 8.22.1 Sectional detail of exterior skin

Figs. 8.22.1 and 8.22.2 show how at the winter and summer solstices, radiation from the sun operates on the louvre system and the building skin design. These systems enable the building to breathe and heat itself during the winter months and cool itself in the summer months.

During winter, direct radiation is allowed onto the double-glazed shop front, which is designed as a ventilation system. In this system, heat generated within the panes is directed through convection towards the interior, as a result of the buoyancy effect, and a series of computerized actuators controlled from a centralised building management system. Cold air is prevented from entering the building, which allows the heated induced air to warm the interior by means of convection.

In summer, the process is reversed. Direct radiation is bounced off the louvre system to prevent direct radiation onto the double-glazed glass panels. This also reduces glare. The heated air accumulated between the glass layers is directed outwards by a series of computerized actuators controlled from a centralised building management system. The heat generated is enough to cause a temperature increase inside the rooms at or above ground level and facing the exterior. This temperature increase creates buoyancy that induces cooler outside air to enter through ventilation grids situated 300mm above the floor level.

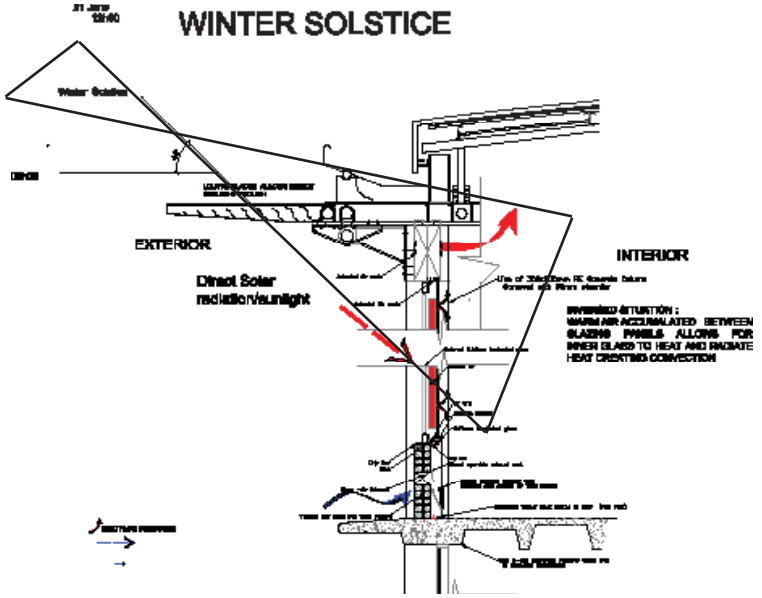


Fig. 8.22.2 Environmental considerations - Sun radiation ingress through louvre and shopfront - winter solstice

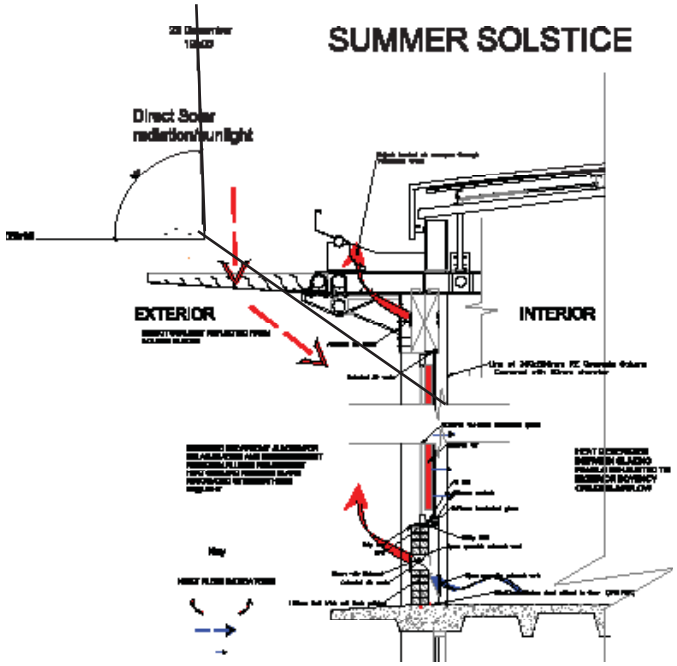


Fig. 8.22.3 Environmental considerations - Sun radiation ingress through louvre and shopfront - summer solstice

Since a large part of the building is below the natural ground level, thermal control is also achieved through thermal transmission. Radiated heat is conducted through the retaining walls (conduction is a principle associated with the flywheel effect).

The auditorium is ventilated and heated mechanically by means of air conditioning based on heat pump technology. A Water and Refrigerant Flow(TM) unit is installed to meet the project's environmental and energy consumption requirements. The unit uses a series of reverse cycle water source heat pumps, combined with a centralized external heat pump. All these pumps are connected by a neutral two-pipe water loop, making the unit effective in meeting both cooling and heating requirements (see Fig. 8.21.13).

For the auditorium, the same principles with regard to roof finishes apply as discussed in the previous section (dealing with the main complex). However, a sound absorbing ceiling is introduced, using Preggy Bell Perforated ceiling tiles by Pelican Systems. The auditorium's podium is positioned under a sound canopy to ensure optimum acoustics.

The mezzanine floor slab does not extend to meet the exterior (back) wall of the auditorium. This creates a sound break, allowing free movement of sound waves to reduce reverberation (echo) under the mezzanine (see Fig. 8.22.6).

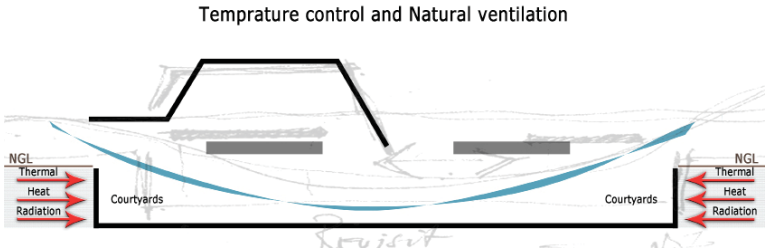


Fig. 8.22.4 Environmental considerations - thermal heat conduction

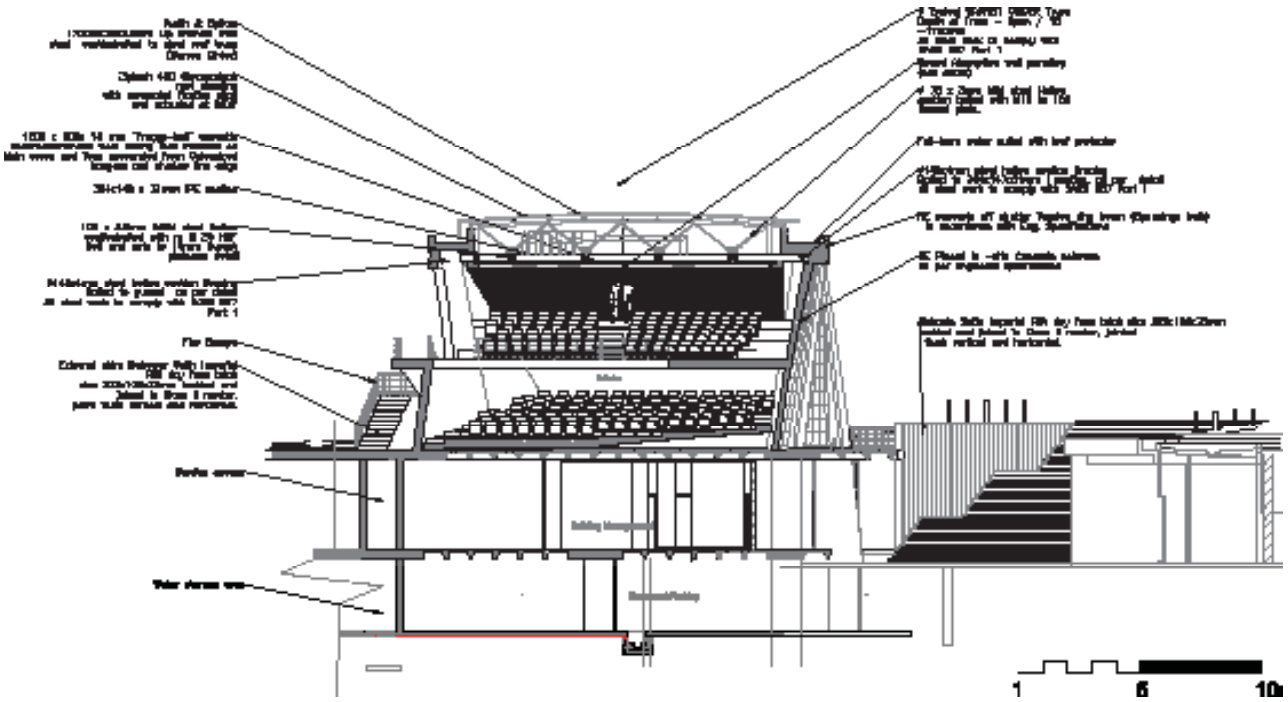


Fig. 8.22.5 Sectional view detailing the auditorium ventilation and thermal control

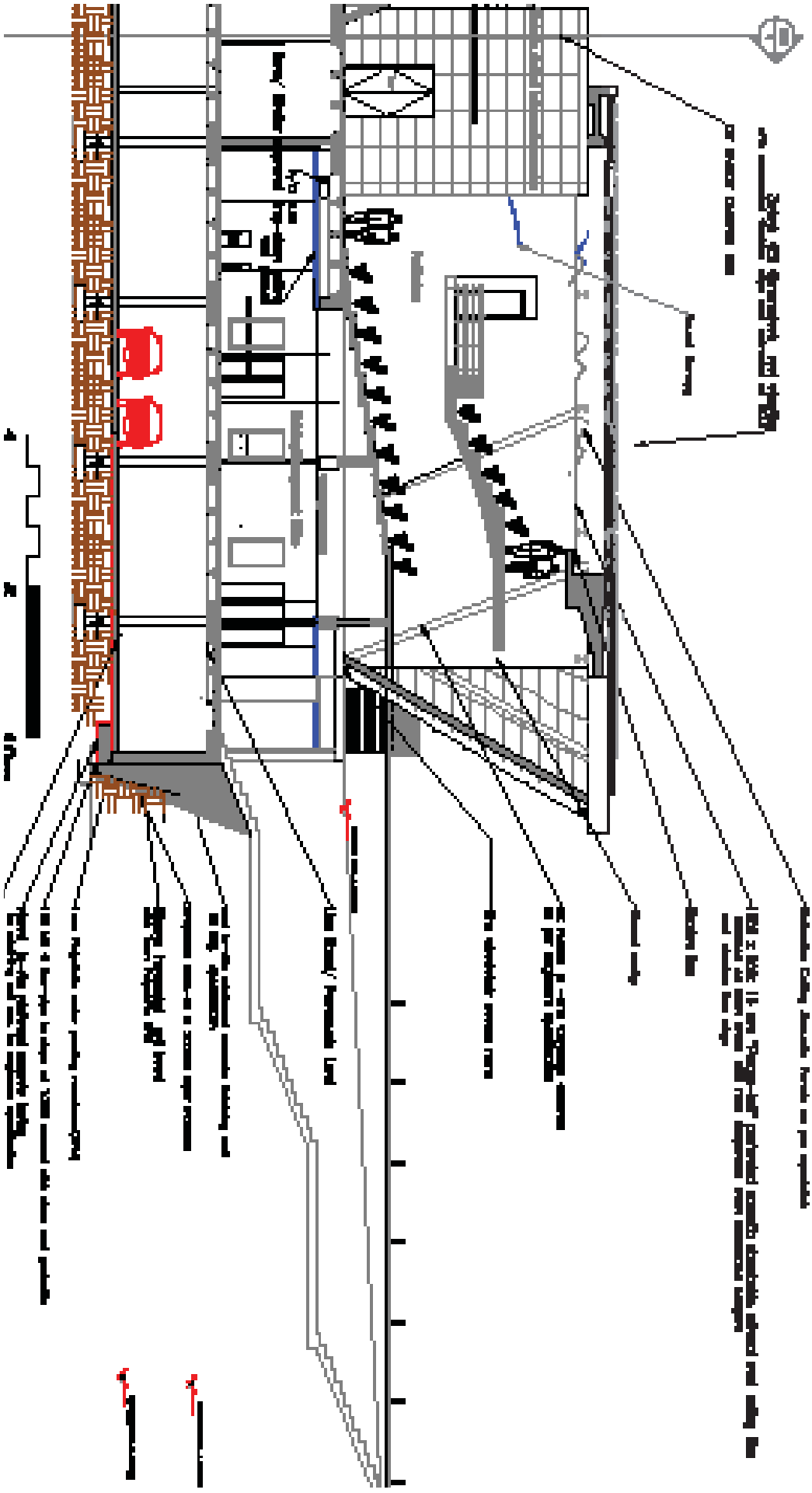


Fig. 8.22.6 Section detailing auditorium ceiling layout

The basic principle of smoke control is to limit the spread of smoke through the building, and provide a means by which smoke and heat can be extracted.

There are basically three requirements to adhere to:

- fan openings should positioned high up to extract smoke from the building;
- barriers should restrict the spread of smoke; and
- there should be inlet ventilators to provide replacement air supply to balance out the smoky air being extracted.

In this design, mechanical ventilation is available in the form of smoke extraction units that come online in case of fire. These extraction units are situated on the northernmost part of the building. They are assisted by permanent ventilation grids situated at the basement level. These permanent ventilation grids also serve as fresh air inlets under all conditions.

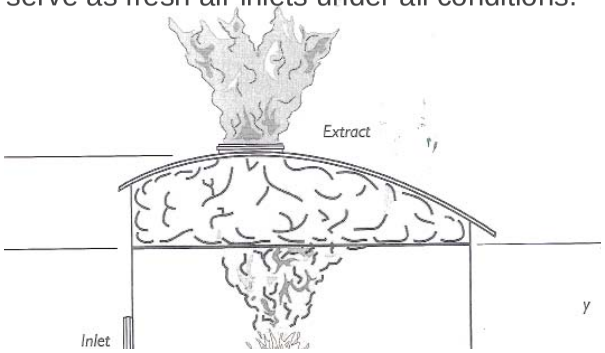


Fig. 8.22.7 Typical fire spread/smoke accumulation and extraction methods.

In Fig 8.22.7 and 8.22.8 typical fire spread/ smoke accumulation and extraction methods are illustrated. This method is not applicable to the current building typology.

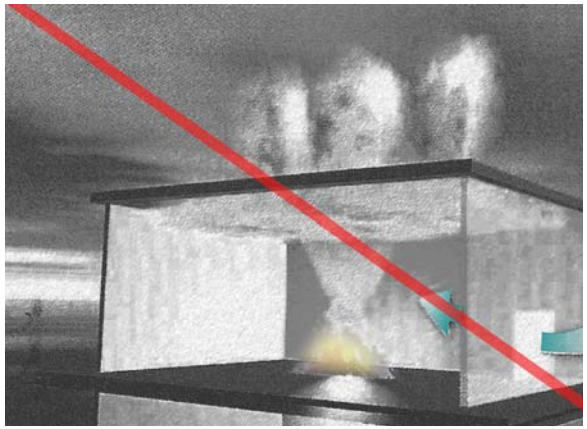


Fig. 8.22.8 Commonly practised methods

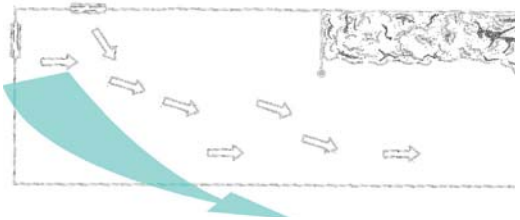


Fig. 8.22.9 Introduction of impulse ventilators that control the flow of smoke in deep basements, keeping large areas smoke-free by adding momentum to the air moving towards the extraction point.

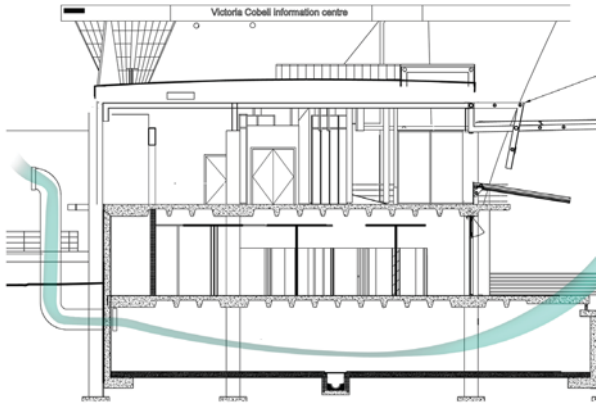


Fig. 8.22.10 The system is also efficient in reducing the carbon monoxide levels during peak periods.

Fig. 8.22.11 Obligatory signage accompanying fire safety plan and extinguishing equipment

8.10.3 Daylighting

The daylighting of interior spaces refers to using natural light. Both the quantity and quality of daylight is influenced by the use of direct and diffused sunlight, the external environment, and the architectural design of interior spaces.

Aspects regarding allowed radiation have already been dealt with in Section 8.10.1, and need not be repeated here.

The design of the building allows for the ingress of unfiltered light from the south and of diffused natural light through sun louvre systems from the north. This is done mainly to reduce glare on the ground floor, where the library/reading space is located.

The promenade and courtyard spaces have been designed in such a way that optimal daylight conditions prevail for most of the day, as depicted in Figs 8.22.6 and 8.22.7.

An extended roof canopy covering the main circulation ramp allows diffused sunlight into the structure, and creates visual flow.

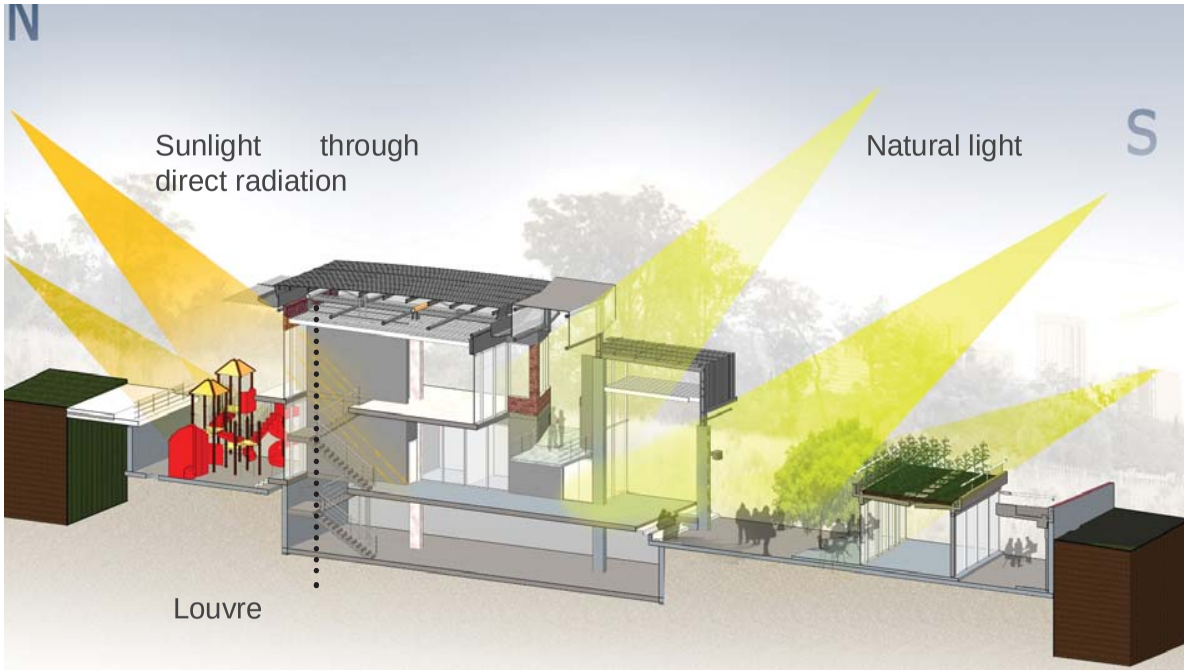


Fig. 8.23.1 Daylight optimization

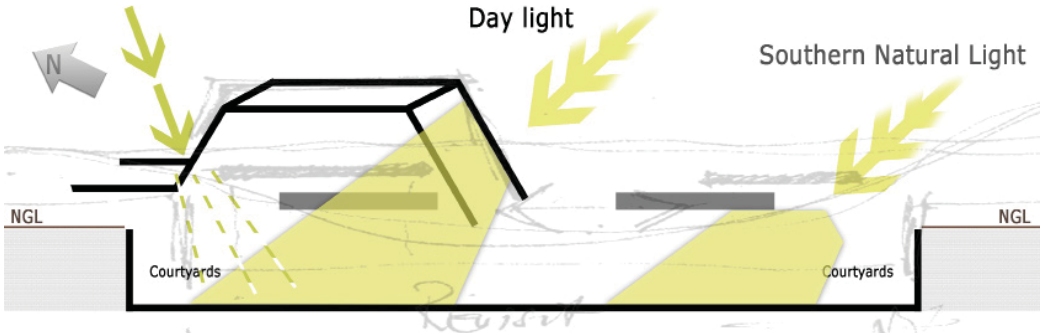


Fig. 8.23.2 Environmental considerations - daylighting

Midday conditions -
a promenade flooded by sunshine in all three solar instances, as depicted in Figs 8.23.3 to 8.23.5.

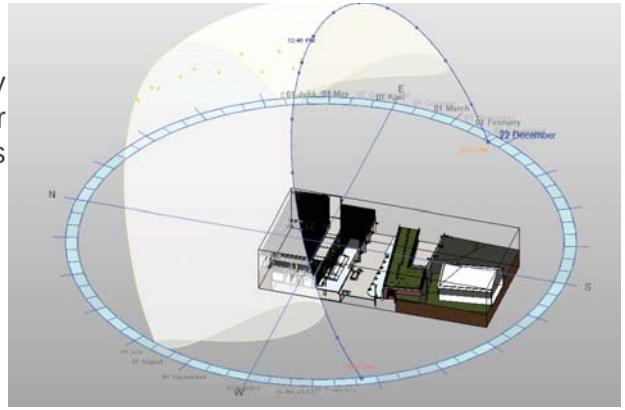


Fig. 8.23.3 Summer solstice 22 December at 12h00

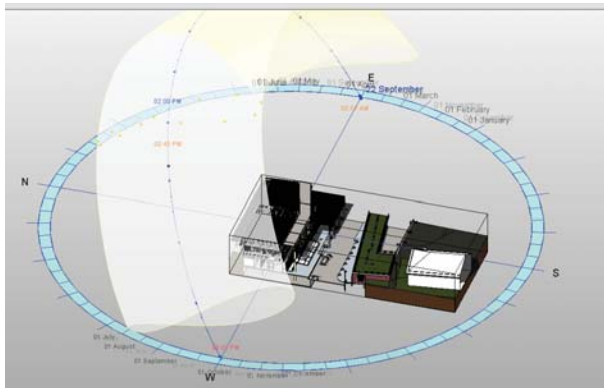


Fig. 8.23.4 Equinox 21 March/September at 12h00

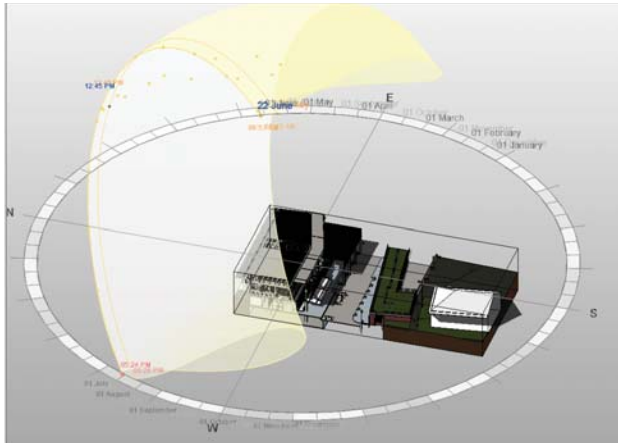


Fig. 8.23.5 Winter solstice 21 June at 12h00

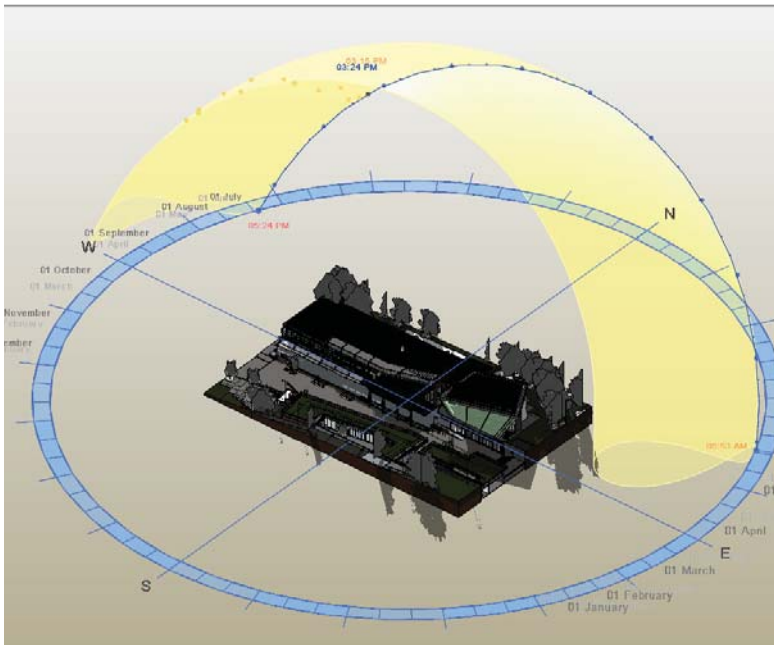


Fig. 8.23.6 Promenade shadow conditions on 21 June at 15h30

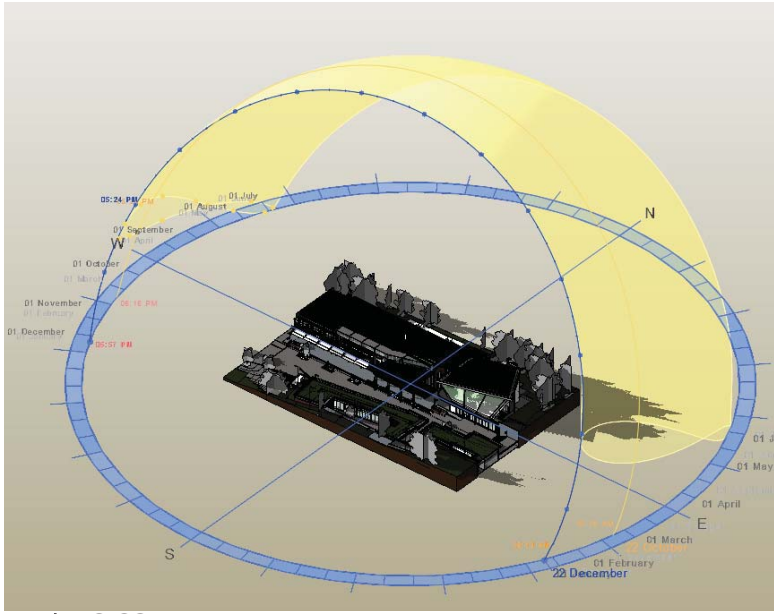


Fig. 8.23.7 Promenade shadow conditions on 22 December at 17h30

8.10.4 Rainwater harvesting

Rain water harvesting can serve as a source of potable water (clean and rich in nutrients), but in this design, rain water harvesting is used for two main purposes:

- to provide non-potable water (auxiliary) for water closets and sprinkler systems (cisterns); and
- to provide for irrigation for the roof gardens and surrounding landscaped areas.

Any water harvested is stored in tanks below ground level. The tanks are located on a level higher than those on which the ablution facilities are accommodated.

Fig. 8.24.1 Environmental considerations - rain water harvesting

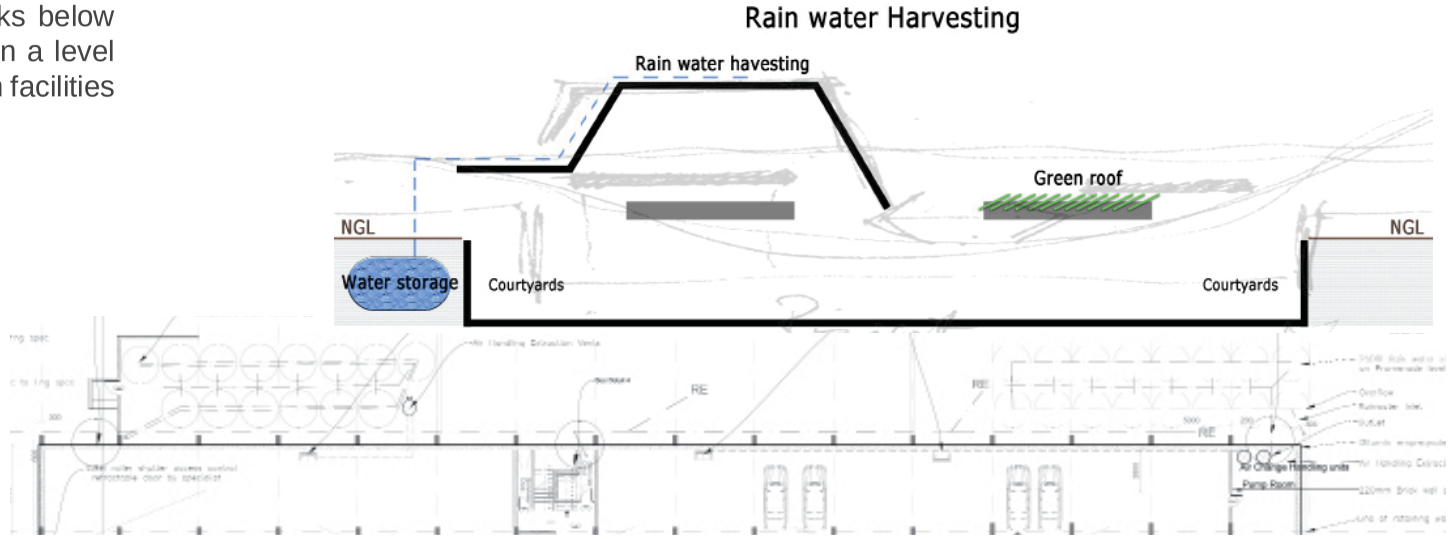


Fig. 8.24.2 Environmental considerations - water storage facilities and uses

8.10.5 Solar energy use

Solar energy is used in two areas:

- Solar water heating systems – a thermo-syphon system is used (see Fig. 8.25.2), based on liquid heated in closed tubes; the water is distributed through a water storage unit which heats the water (a closed system). However, hot water usage is limited, as the consumption envisaged does not require copious amounts of hot water to be readily available. A capacity of six 200 litre solar systems is sufficient. Two of the six systems are dedicated to the restaurant facilities on site.

- Generation of energy for peripheral lighting of the complex at night – developments in LED light technology allow for low voltage/ energy consumption flood lights to light exterior, as well as interior, occupied areas.

The installation of movement sensors reduces the burden on energy sources. All internal lighting is of the low voltage (lED) type.

The complex still depends on the national grid, especially with regard to the auditorium's sound facilities and ventilation.

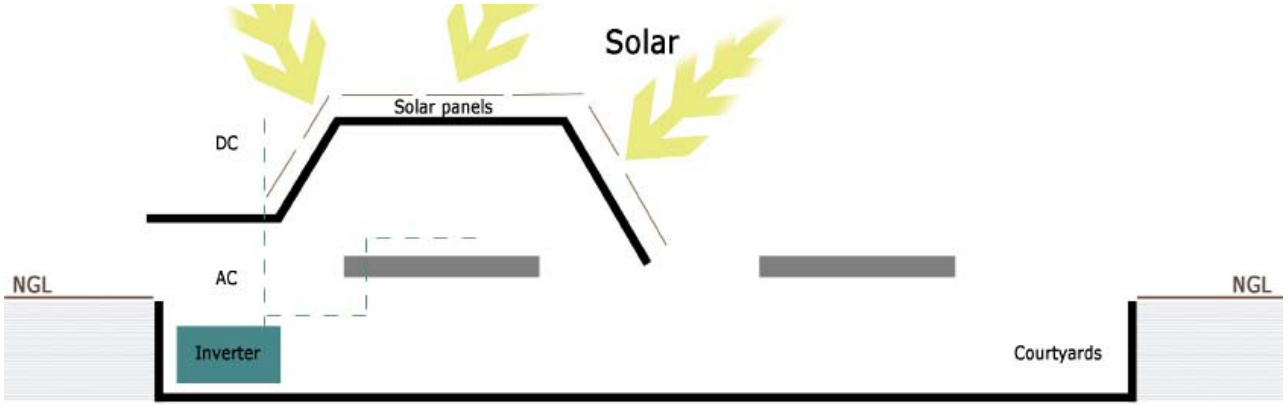


Fig. 8.25.1 Environmental considerations - solar energy

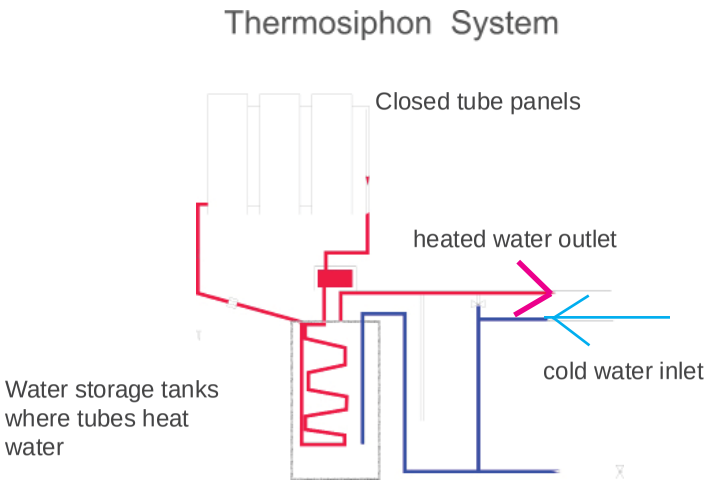


Fig. 8.25.2 Thermo-syphon water heating system.

In general, according to the Sustainable Building Assessment Tool (SBAT-P) V1, a low energy-consuming building should have the following:

- In winter:
  - good thermal separation;
  - a well-insulated building skin; and
  - heat recovery of ventilated air;
- In summer:
  - sun protection through shading devices (external); and/or
  - direct cooling of building mass;
- Night ventilation schemes (flywheel effect); and
- Earth heat exchanges.

The design scores relatively high on key aspects such as Adaptability, Efficiency, Accessibility and Energy, giving it an overall high score, as depicted in Figure 8.26.

Other areas, such as Materials and components, Capital cost, and Occupant comfort, scored relatively low. These scores can be attributed to the need for the building to be adaptable for a variety of user groups - it is not one singular user group that is considered here.

The initial excavation to the “Natural” Floor level (NFL) also affects scores negatively, but allows the building to perform well in other key areas, such as Earth heat exchange.

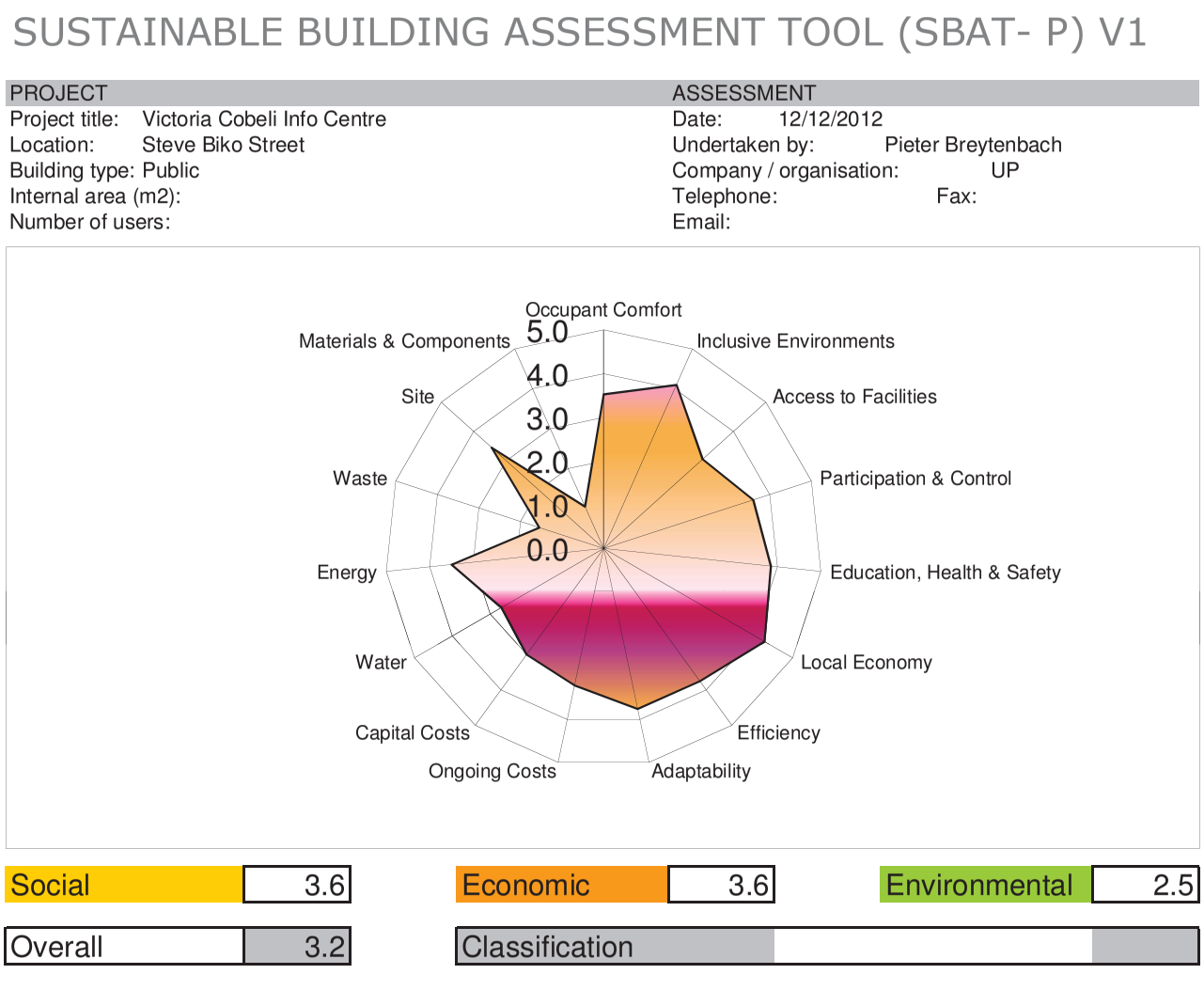


Fig. 8.26 SBAT Profile

8.11 Public Interface

Architecturally, the design revolves around a continuum on the horizontal plane, resulting in a promenade flanked by juxtaposed, but not opposing, structures.

Fig. 8.27.1 Parti-horizontal plane

The smaller scale of the southern wing of the complex allows for a personal response, while the taller northern flank addresses the requirements of the public programme.

Both structures adapt topographically to the site conditions, levelling out to meet the banks of the Apies river to the west.

The southern flank features a rooftop garden which celebrates continuity with the landscape. The structure on the northern flank progressively decreases in scale, to meet the natural topography by means of a series of initially roofed platforms/podiums that are conducive to informal trade.
All the existing indigenous flora have been retained, and the vegetation has been expanded to soften the hard spaces created by the promenade.

Permeability and flow have been established by means of access points and circulation routes connecting the complex with existing programmes functioning in the precinct (see Fig. 8.20.4).

The ground plane is penetrated by two staircases and a ramp originating in the parking basement, enforcing a preference for and the dominance of pedestrian movement over vehicular movement.

The ramp cuts through the structure flanking the northern edge of the promenade, allowing wheelchair access and promoting the use of the complex by people with physical disabilities, which is particularly important in view of the functionality of the complex which includes health promotion and equity.

The promenade allows infinite social production, linking the two flanks in a dialogical relation, mediating between the various areas of the complex and the precinct as a whole. It reflects the mediating and facilitating role of the complex in building equity within the bigger city environment.

Fig. 8.27.1 Public interface

Fig. 9.1 View - Promenade towards the City

Chapter 09

Design & Technical Resolution

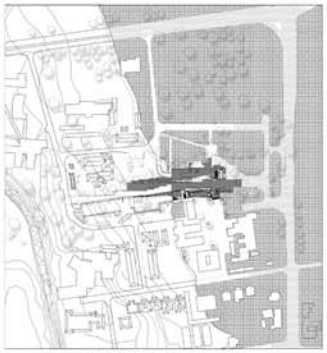
9.1 Occupational Schedule

Promenade-level 1	
Projected uses	social production
Required area	Limitless
:Assessment Centre	C1 /A1 1person/10m^2
:Information hub	A3 1person/5m^2
:Children safe keep	-
:Mens rest rooms	-
:Ladies rest rooms	-
:Deli	F2 1person/10m^2
:Kitchen	-
:Takeout	-
:Courtyard	-
Designed area	590m^2 +1780 m^2
occupation classification	A1 & A3
Population	-
Required lighting levels	200lux
Ventilation Requirements	Natural
Significant considerations	Natural ventilation and daylighting/ passive surveillance
Ground floor	
Projected uses	Library/ reading space; Auditorium; Roof gardens
Roof Gardens	
:Work space	1780 m^2
:Library,meeting and reading space	520m^2
:Voyer	281m^2
:Auditorium	281 m^2 ground floor 200 m^2 mezzanine
:Ladies rest rooms	Included
:Mens rest rooms	Included
occupation classification	-A3
Population	1 person/5sqm
Required lighting levels	200-400 lux
Ventilation Requirements	Natural & Mechanical
Significant considerations	Daylight & Solar energy

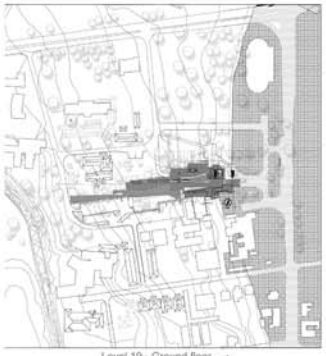
Table 9.1 Occupation schedule

Fig. 9.2 Northern Entrance to main complex

Level 12- Basement
1212m asl

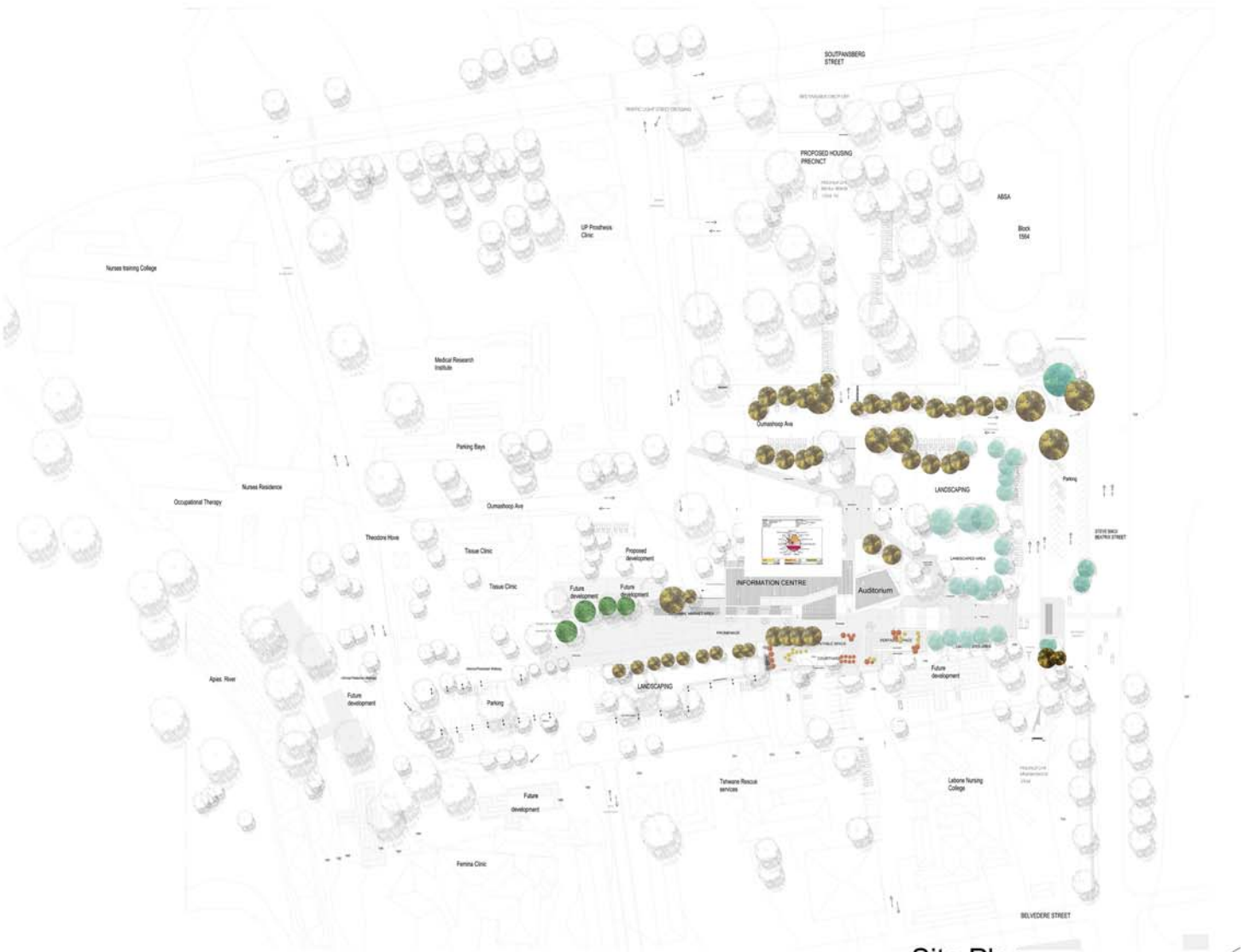


Level 15 - Promenade
1215m asl



Level 19 - Ground floor
1219 m asl

Topography
1:2500



Site Plan
1:500

0 50m

Pale-green, soft and feathery. The rough red-brown bark has shallow grooves and furrows and tends to peel off in rectangular flakes and strips. The hard brown hook-thorns are in pairs and do not shed easily. Cream-to pale yellow sweetly scented flowers and are followed by straight flat brown pods, up to 10cm long. Aggressive root system 9x9m high.

Hook Thorn
Senegalia Caffra

Growing as an individual tree in the open, under favourable conditions. Its a tree of medium height, typically up to 12m. It forms a dense canopy. The bole of a mature tree is thick and buttressed, often forked fairly near the ground. The trunk has a smooth, pale grey to white bark that may be loosely pealing in old trees.

Wit Stinkhout
Celtis africana

Reddish branches and rounded, pounded, drooping leaves. The grey-ish to dark brown trunk is rough and deeply furrowed. Sprays of very tiny yellowish flowers are followed by small shiny edible flattened fruits that ripen yellow-brow to brown. Non ag-gressive root system. Evergreen, can reach 8m in height.

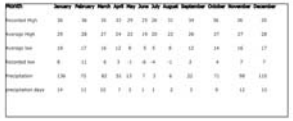
Bergkaree
Searsia leptodictya

Herbaceous perennial with erect stems of up to 1m in height, spouting from a woody rootstock.
Serrated leave margins. Small yellow flowers are borne in sparse clusters towards the end of the branches.

Anthericum -
Anthericumsaundersiae

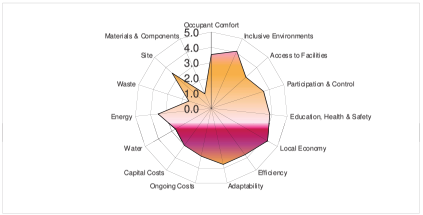
A varying perennial tufted grass. Each spikelet pair has long, dark twisted awn. Leaf sheathes are compressed. Leaf blades has a prominent midrib. The nodes are dark coloured. Ligule usually has a notch at the point. The entire plant has a red colour late in the season.

Rooigras -
Themeda triandra



SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Victoria Cobell Info Centre	Date:	12/12/2012
Location:	Steve Biko Street	Undertaken by:	Pieter Breytenbach
Building type:	Public	Company / organisation:	UP
Internal area (m2):		Telephone:	Fax:
Number of users:		Email:	



Social	3.6	Economic	3.6	Environmental	2.5
Overall	3.2	Classification			

Fig. 9.3 SITE PLAN AND TYPOLOGY

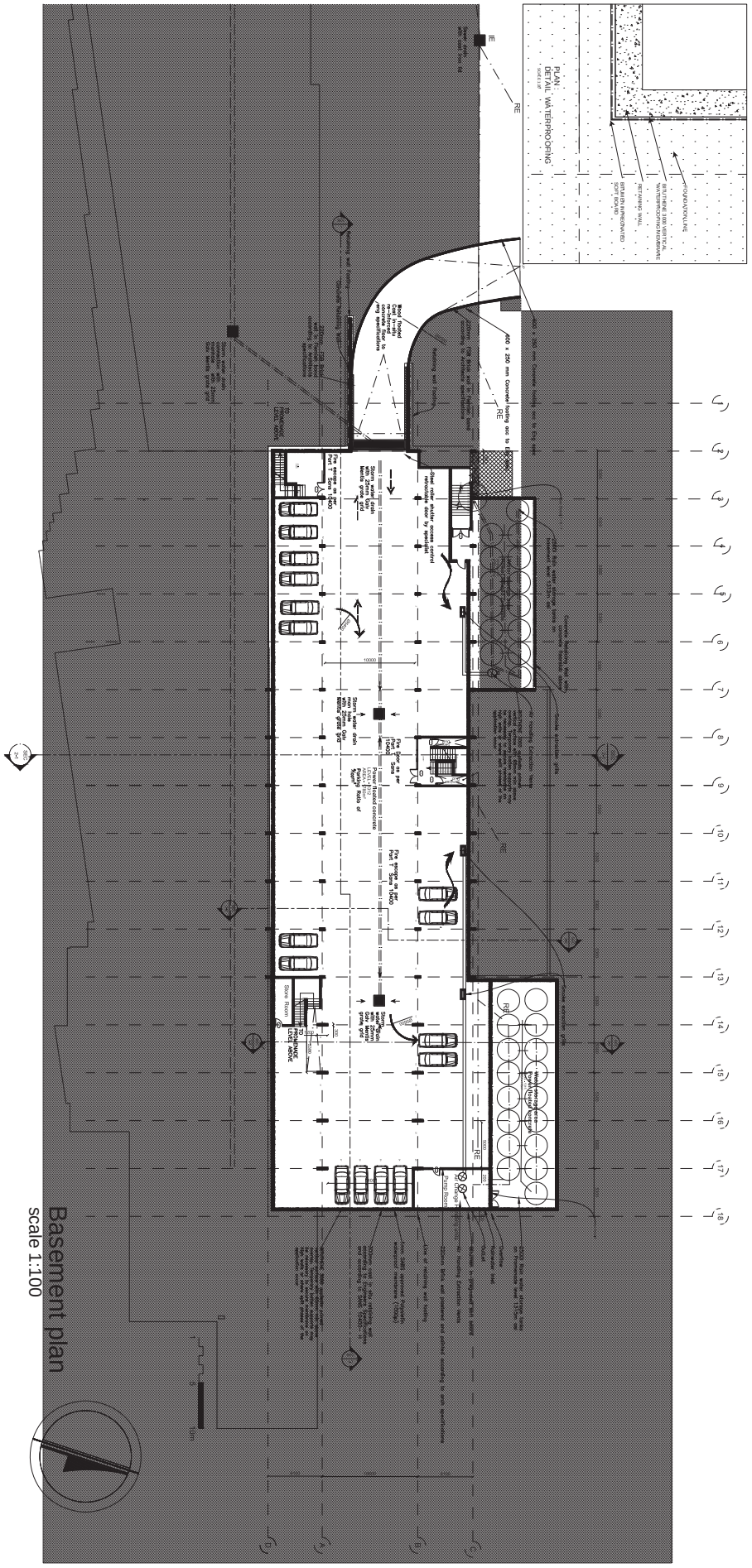


Fig. 9.4 BASEMENT PLAN

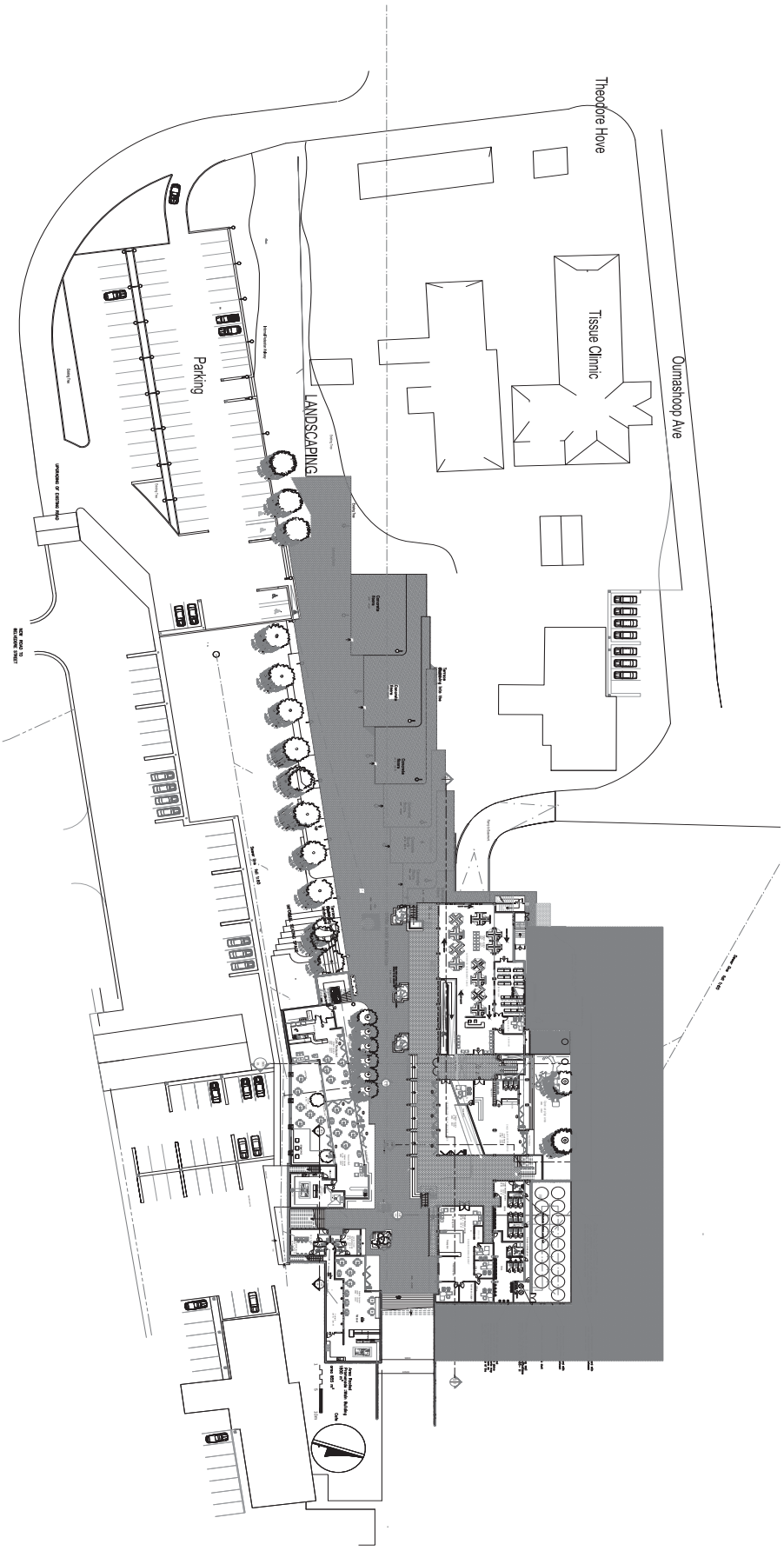


Fig. 9.5 LOWER GROUNFLOOR PLAN: PROMENADE

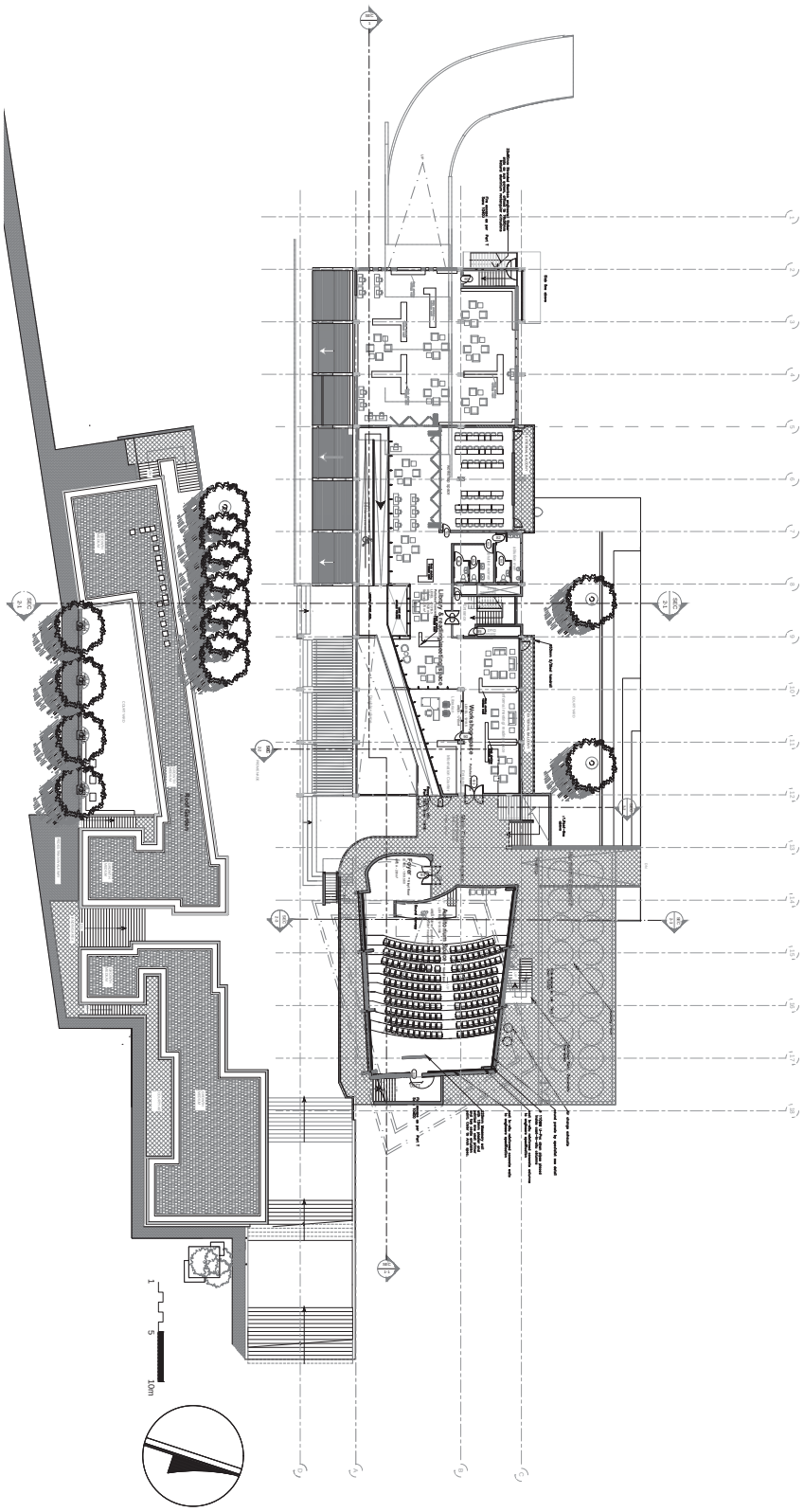


Fig. 9.6 GROUNFLOOR PLAN

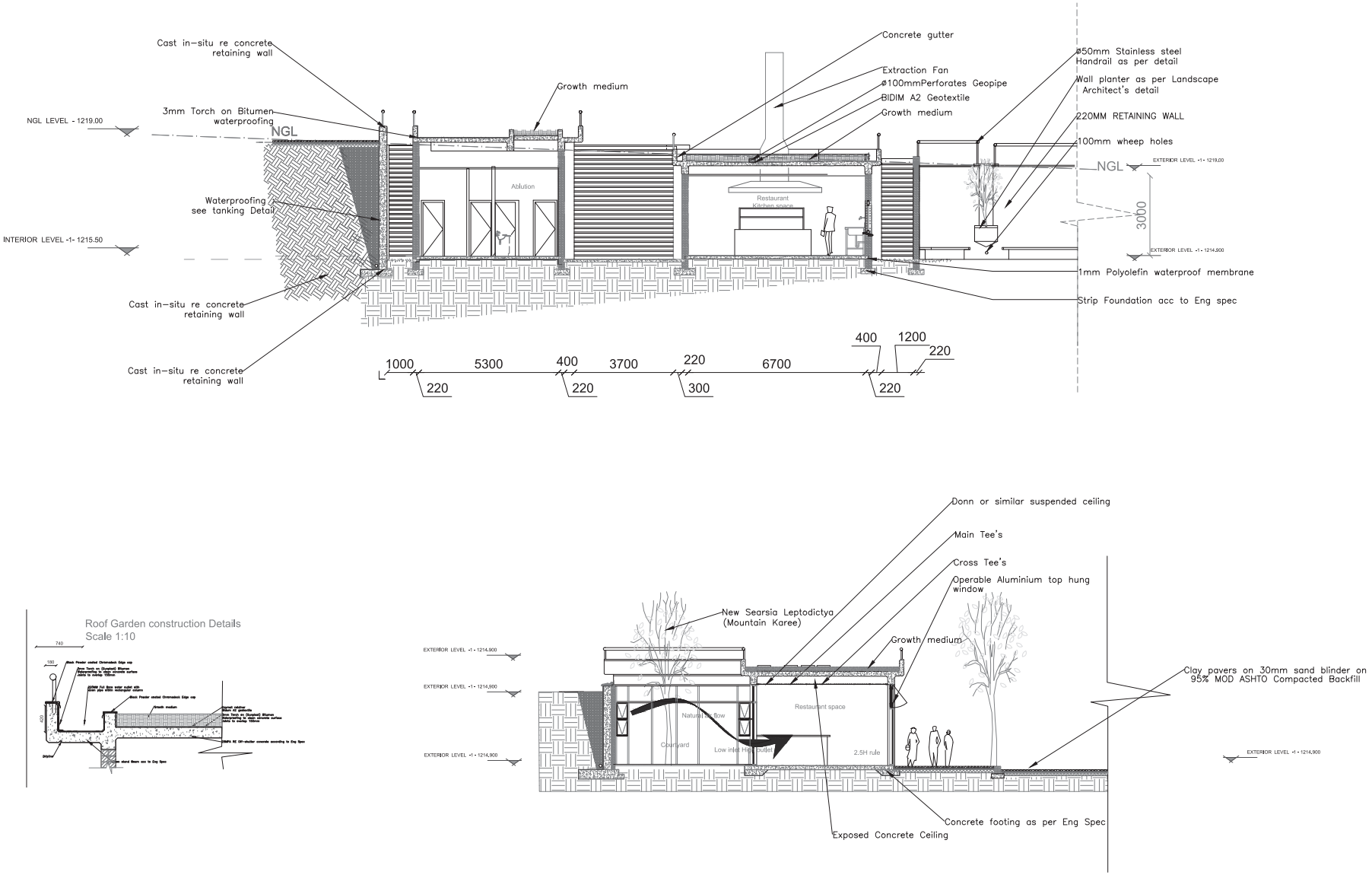


Fig. 9.7 SECTION 60 and 61

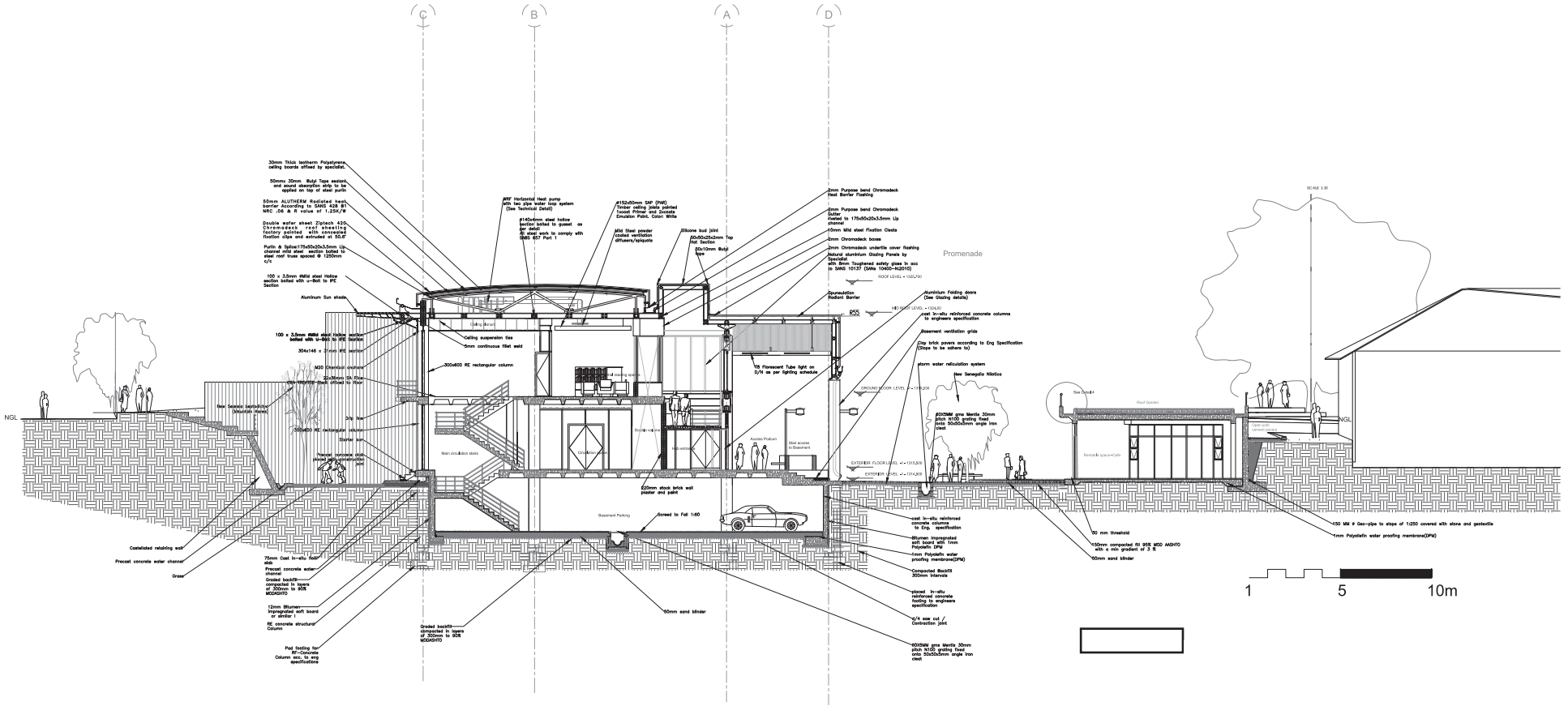


Fig. 9.8 SECTION 2-1

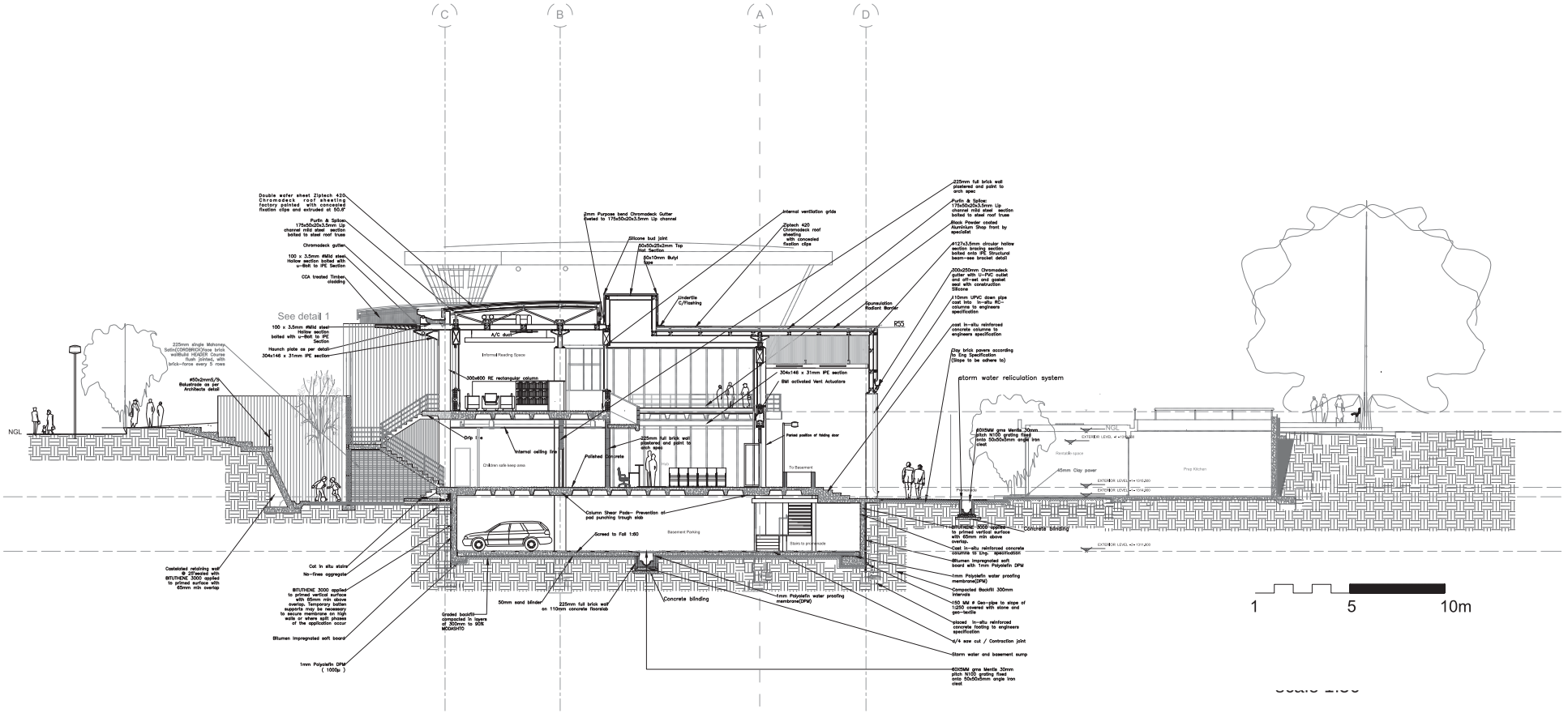


Fig. 9.9 SECTION 2-2

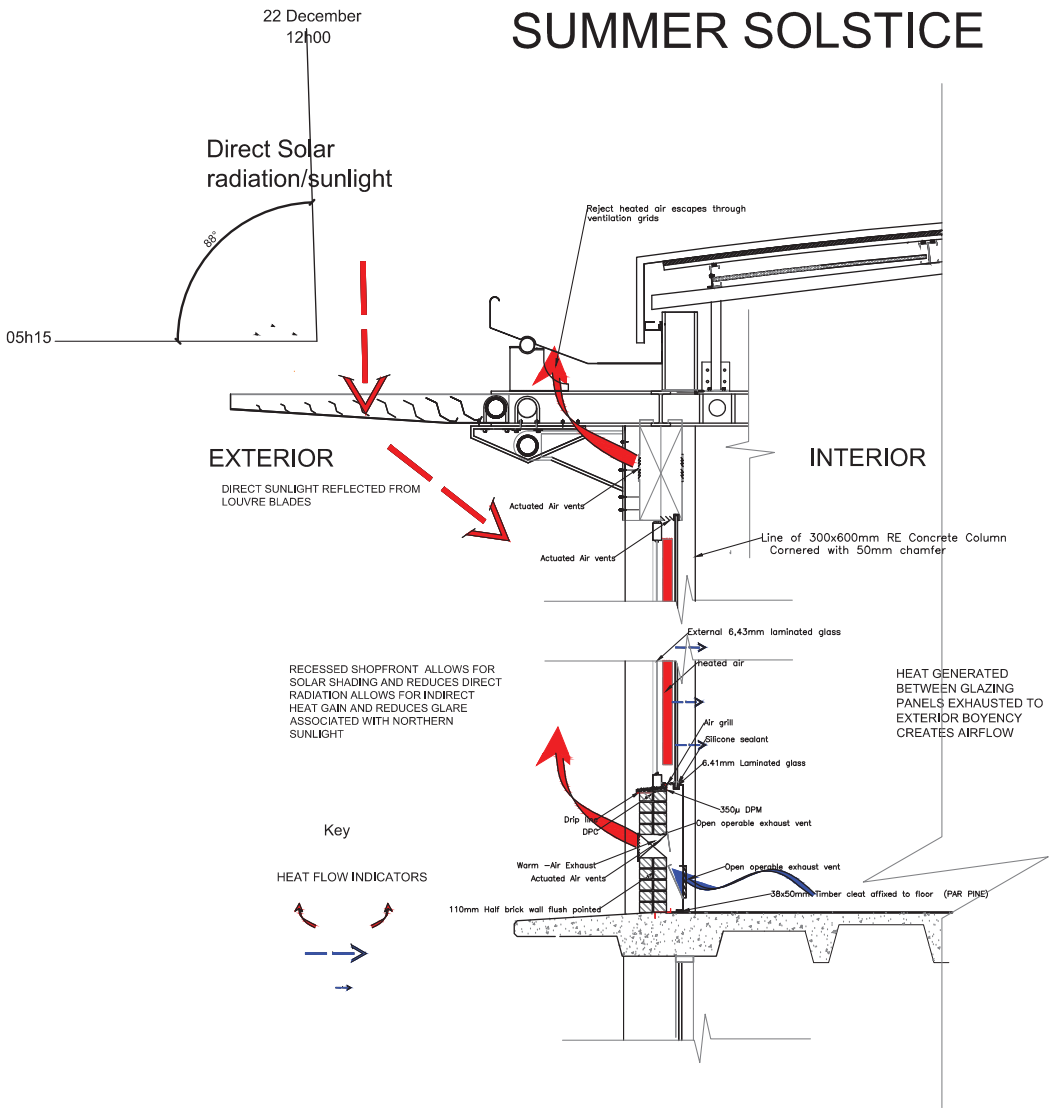


Fig. 9.10 DETAIL TEMPERATURE AND VENTILATION CONTROL-SUMMER

21 June
12h00

WINTER SOLSTICE

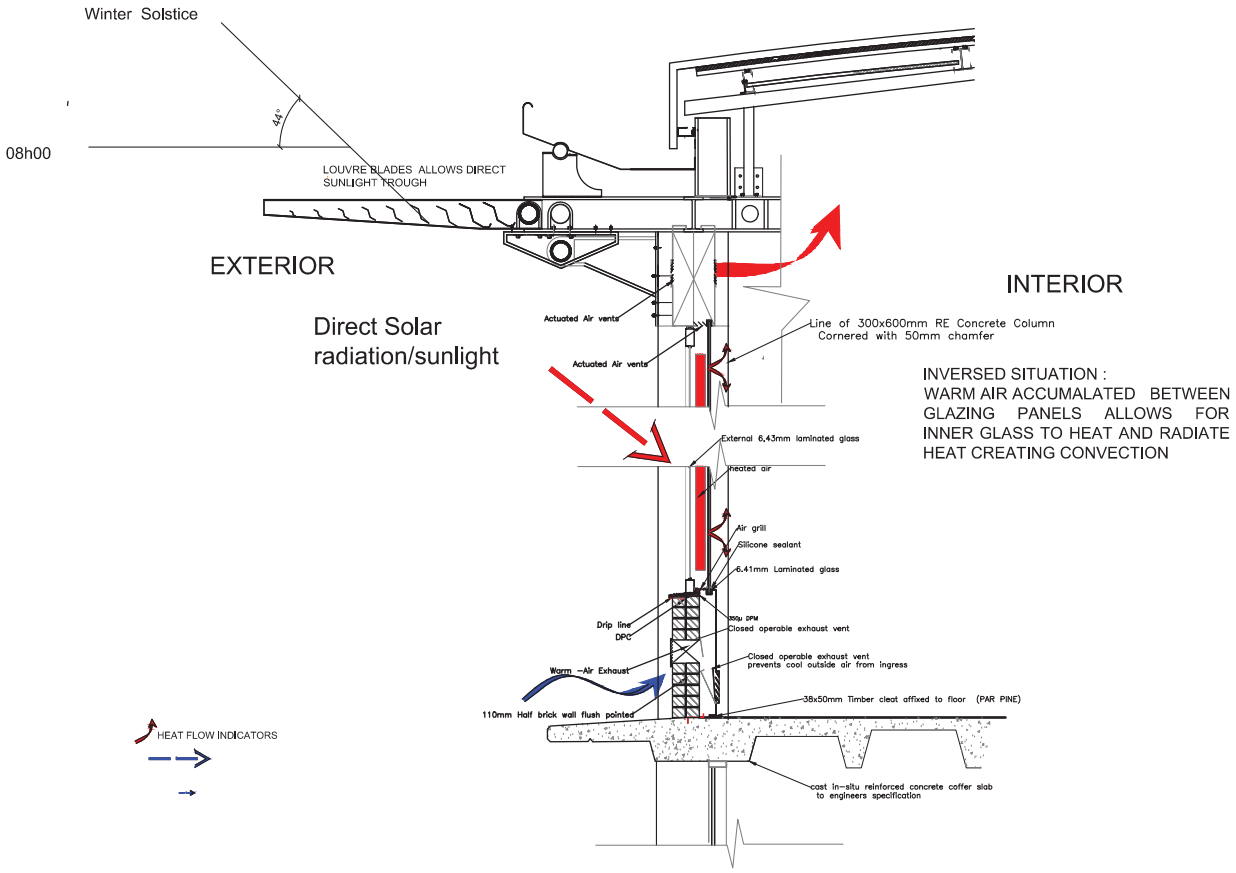
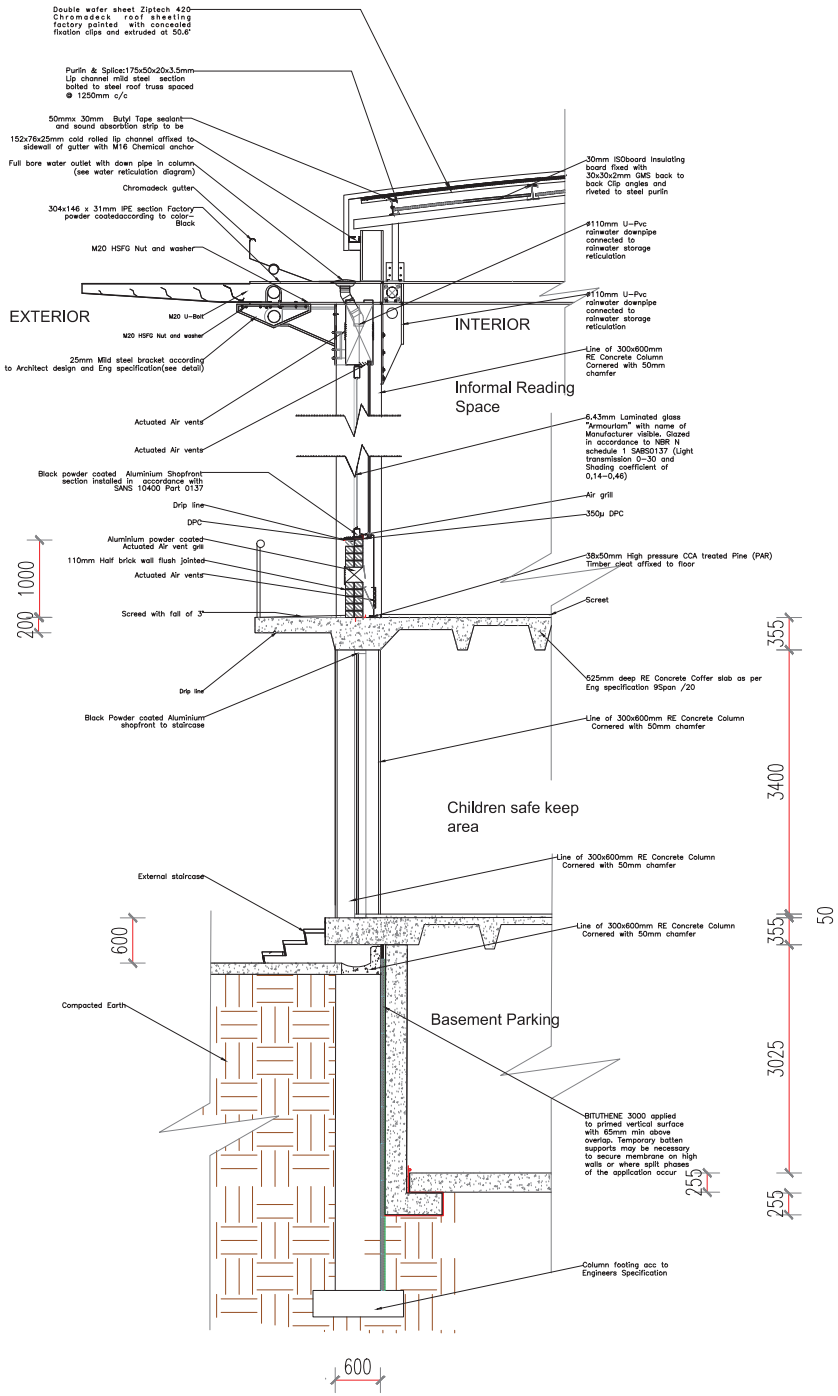


Fig. 9.11 DETAIL TEMPERATURE AND VENTILATION CONTROL-WINTER



detail 1

Fig. 9.12 DETAIL TECHNICAL SECTION THROUGH OUTER SKIN

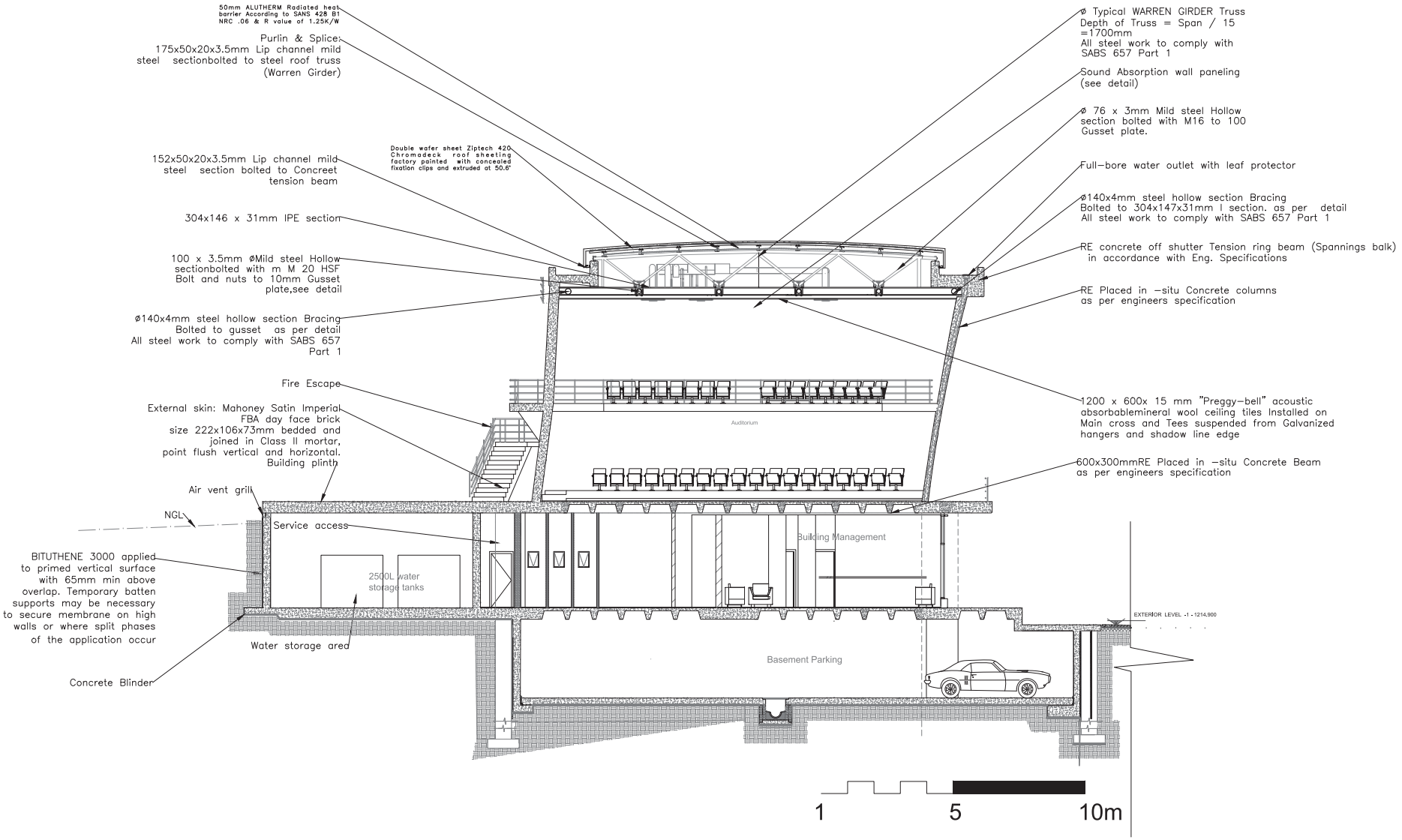
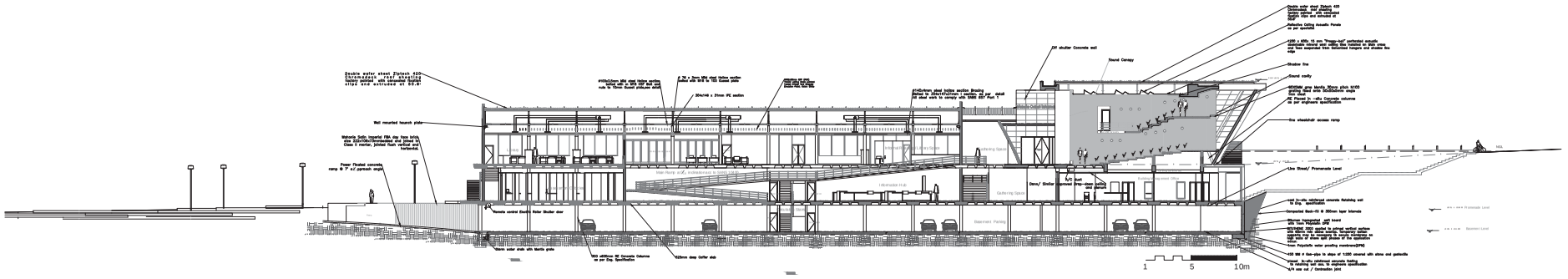
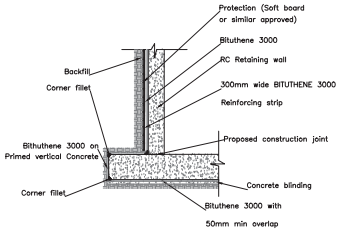
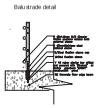


Fig. 9.13 SECTION 2-3

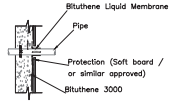




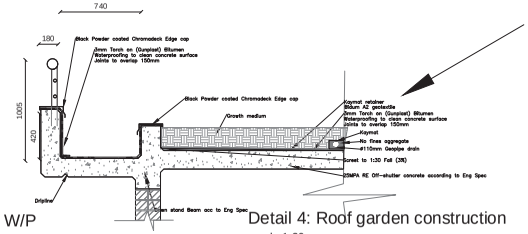
Detail 1: Basement Construction
scale 1:20



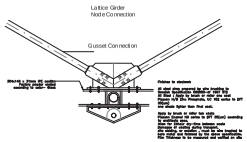
Detail 2: Balustrade
scale 1:20



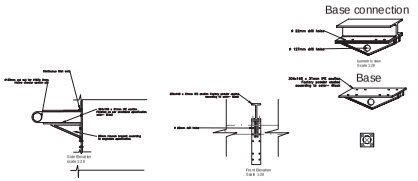
Detail 3: Pipe penetration W/P
scale 1:20



Detail 4: Roof garden construction
scale 1:20



Detail 5: Lattice girder
scale 1:20



Detail 6: Knuckle Joint
scale 1:20

Fig. 9.14 SECTION 1-1

Fig. 9.15 FINAL MODEL SOUTH EAST CORNER

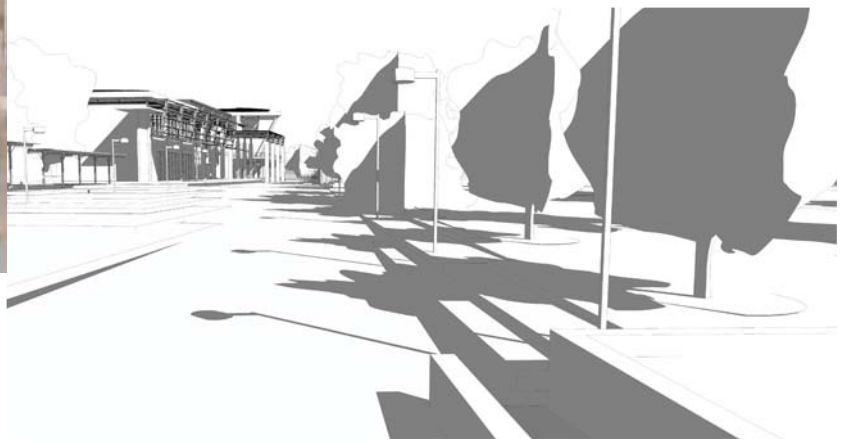


Fig. 9.16 3 D MODEL OF SOUTH EAST CORNER

Fig. 9.17 RENDERED 3D MODEL 22 DECEMBER at 07h00

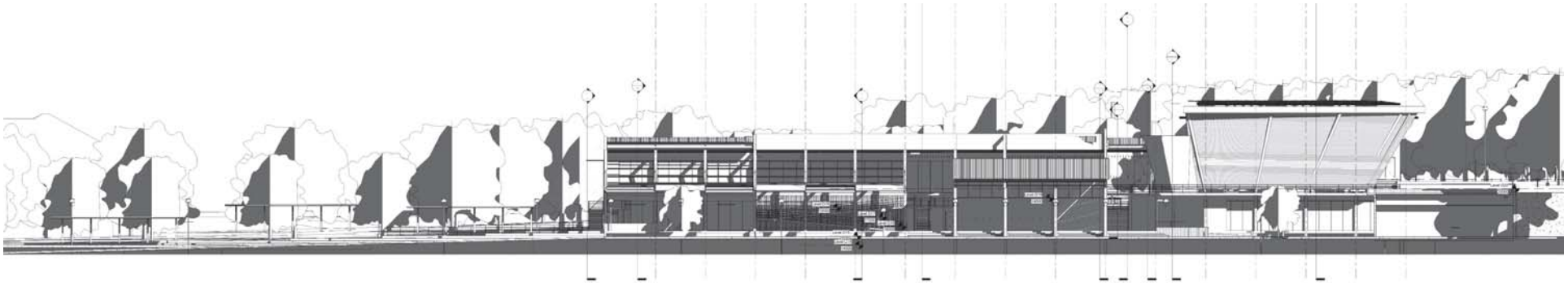


Fig. 9.18 SOUTH ELEVATION FROM PROMENADE LEVEL

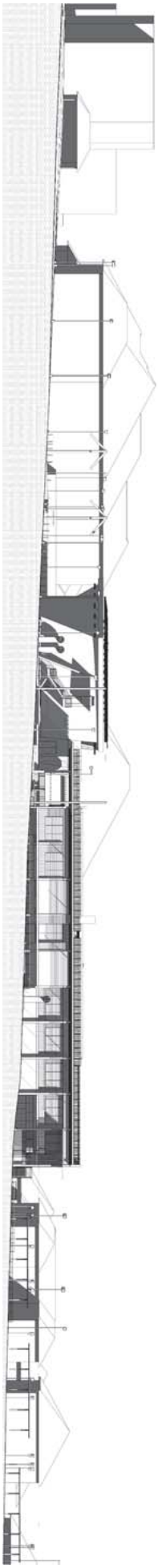


Fig. 9.19 NORTH ELEVATION

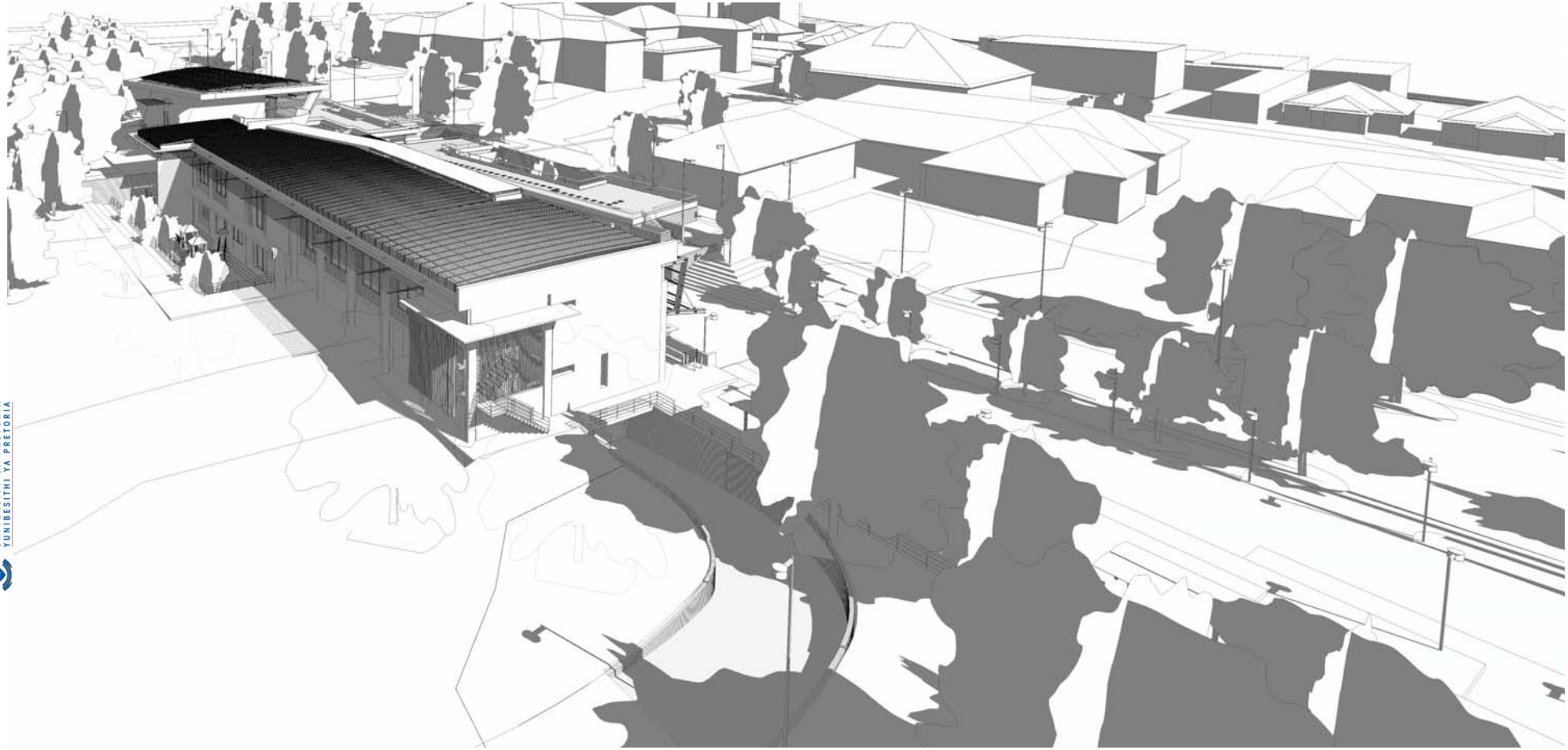


Fig. 9.20 VIEW OF NORTH WESTERN BASEMENT PARKING ENTRANCE

Fig. 10.1 New figure - gound map of precinct

Conclusion

Chapter 10

The architectural intervention proposed (the Victoria Cobeli Information Centre) in response to the problem statement addresses the programmatic requirements by articulating an architecture of volume and movement dependent on direction.

The study found that the mediating role that architecture can and should play between society, the city, and the environment, towards the creation of place within the city environment is based on the creation of a horizontal plane where object and landscape become equal, since the horizontal plane not only allows, but is susceptible to long- and short-term appropriation.

The study found that on the horizontal plane created by two opposing structures, architecture becomes the action space that is activated through a process where the social relations of production have a social existence. This confirmed the relationship between objects, as propagated by the noli map, and that there can be no spatial existence without social existence.

The plane becomes a means to facilitate and represent the exchange of cultural, socio-economic, educational, socio-political, and even spiritual values by different people and objects using the same space.

The architecture produced in response, to the problem, found that mediation is based on a transgression of existing assigned boundaries that resulted in distinctive overlaps, where a series of inter-spaces are created, allowing precinct and city to merge.

References

Ching, F.D.K. 1996. Form Space and order. New York: John Wiley and Sons.

Clark , R.H & Pause, M. 2005. Precedents in Architecture. Hoboken, New Jersey: John Wiley & Sons.

Cohen et Al, 2008. Le Corbusier Le Grande. New York: Phaidon Press

Edensor, Tim. 2005. Waste Matter- The debris of industrial ruins and the disordering of the material world. Journal of Material Culture. Vol10(3): 311-332. London: Sage publication

Frampton, K . 2007. Modern Architecture. (fourth edition) London: Thames and Hudson.

Freud, S Civilizations and its Discontents. trans lated by James Strachey. New York: Norton, 1962

Hawkins, G & Muecke, S. 2003. Culture and Waste, The destruction of Value. Lanham: Rowman & Littlefield.

Hays, K (ed) 1998. Architecture theory since 1968. London: MIT Press p.239.

Hill,J. 2006. Immaterial Architecture. London: Routledge.

Holm, Jordaan. 2001. Nelson Mandela Corri- dor Development Framework. Pretoria: Holm Jordaan Group

http://.jstor.org/stable/776627, accessed 17/03/2012 05:44) Lidsay, K. (1983)

Kandinsky and the Compositional Factor. Art Journal, Vol 43, no. 1. College Art asso ciation. Boston: G.K.Hall)

Michael Shanks (et al). 2004. The Perfume of Garbage: Modernity and the Archaeo logical" Modernism/modernity Vol. Eleven, NUMBER One PP 61-83Hopkins University Press.

http://Timeanddate.com/weather/south-africa/ pretoria accessed 23/8/2012 17:11)

http://.jstor.org/stable/776627 accessed 17/03.2012 05:44

Guccione, M. 2010. Zaha Hadid. Milan: Motta

Guzowski, M. 2010. Towards zero energy archi tecture. New Soalr design. London: Laurence King Publishing Ltd.

Landzelius, M. 2003. Commemorative Dis(re) membering: Erasing Heritage, Spatial Disinheritance, Environment and Plan ning. Society and Space 21: 195-221

Laverack, G. Lebonte,R. 1996. A planning frame work for community empowerment goals within health promotion. Health and Policy Planning, 15(3):255-262

Lidsay, K. 1938. Kandinsky and the Composi tional Factor. Art Journal, Vol 43, no.1. College Art association.

Lindsay and PeterVergo. (edited Kenneth, C), 1982. (Kandinsky: Complete Writings on Art (The documents of Twentieth Century Art)

Mieny, C.J. 1993. UP Geneeskunde 50. Pretoria: Gutenberg Boekdrukkers.

Ostwald M. "Fractual Architecture". Nexus Network Journal- VOL. 3, NO.1, 2001).

McIntyre, D. Gilson, L. 2002. Putting equity in health back onto the social policy agenda: experience from South Africa. Social Science and Medicine. 54(11):1637-1656 Available at: http://www.sciencedirect. com

Porter , T. 2004. ARCHISPEAK : An illustrated guide to architectural terminology. New York: Spon Press.

Seltz, P. 1957. "The Aesthetic Theories of Wass ily Kandinsky and their relationship to the origin of non objective painting",The Art Bulletin, VOL 39, NO. 2 (June,) pp.127-136

Soanes, C. 2005 Paperback Oxford English Dictionary. Oxford: University Press.

Stiney, G. 2006. Shape Talking about seeing and doing. Cambridge: MIT

Van Jaarsveldt, M. 2005. Capital faces people and places, Pretoria and surroundings Tshwane Metropolis. Halfway House: Marita van Jaarsveld Communications.

Ullman, Franziska. 2011. Basics, Architecture and Dynamics. Austria: SpringerWien NewYork.

Vileneuve, B. N. 2002. Waste-site stories: the recycling of memory. Albany : State university of New York Press.

World Health Organization, 2008. Commission on Social Determinants of Health: Health Equity through social determinants of health, final Report . Geneva.

FEATURES

Students gain practical experience while serving the community

by Dr Martina Jordaan

In 2005, the Faculty of Engineering, Built Environment and Information Technology (EBIT) at the University of Pretoria introduced the community-based project as a compulsory module in the students' undergraduate curriculum. This initiative was a new endeavour for the faculty and the first of its kind for students in the disciplines of engineering, the built environment and information technology in South Africa.

Since community-based learning was not included in existing modules at the time, it was necessary to establish a separate new module to cover this field. One of the complicating factors in developing such a module was the demanding time schedules of EBIT students.

The Community-based Project (JCP) module is offered on an open-ended and project-orientated basis. Students have the option of attempting the eight-credit (40 hours) module in any one of their undergraduate years of study, but preferably not during their final year.

Depending on the specific nature of the project, it can be attempted during the course of a semester or during vacation time. Projects can be done by students individually or in teams. The faculty encourages multidisciplinary project teams that consist of team members from different schools and departments in the faculty.

Students choose projects in an area they feel passionate about, while also considering the needs of the community. Popular projects include computer training for community members, designing and uploading websites for non-profit organisations, assisting secondary school learners with Mathematics and Science, renovating rooms in orphanages, and designing and building jungle gyms.

This module was formally accredited by the Engineering Council of South Africa (ECSA) in 2006. Since its inception, the number of students enrolled for the module has grown from 238 in 2005 to 1 459 in 2010. The number of projects undertaken in the various communities increased from 47 in 2005 to 445 in 2009.

Objectives, outcomes and assessment

Some of the critical cross-field outcomes stipulated by the South African Qualifications Authority (SAQA) are that students should be encouraged to think for themselves and be able to work in teams. Importance is attached to the acquisition of general intellectual skills, communication skills, time management skills, and attitudes and values. The Community-based Project module tries to accommodate these issues as reflected in its objectives and learning outcomes.

The main objectives of the module are as follows:

- The execution of a community service-related project, aimed at achieving a beneficial impact on a chosen section of society, preferably, but not exclusively, by engagement with a section of society that is different from the student's own social background.
- The development of an awareness of personal, social and cultural values, an attitude to be of service and a deep understanding of social issues.
- The development of important multidisciplinary and life skills, such as communication, interpersonal and leadership skills.

Depending on the nature of the project chosen by the student, the main learning outcomes of the module are demonstrated when the student exhibits the following:

- A deep and broad understanding of the social issues relevant to the project
- The ability to communicate effectively with the community at large

→ *Students who have completed the Community-based Project module can enter the world of work with a better understanding of the needs of the community.*

- The ability to communicate effectively through writing and presentations
- The ability to perform leadership functions
- The ability to work effectively in a multidisciplinary environment and to perform critical functions

In assessing a student's project work, the mark allocation is based on what the student has learned and the extent to which the learning outcomes have been achieved. The final mark earned is a reflection of the quality of learning achieved rather than the nature of the service provided.

Structure of the module

Although the main focus of a community-based module is service to the community, students are required to complete assignments and reflect on their experiences. Assessment includes the attendance of compulsory contact sessions, evaluation and approval of the project proposal, self-assessment, peer assessment and assessment by a supervisor from the community, as well as the community-based lecturer, during the execution of the project.

It also includes three reflections written during the project, a report in the form of a blog, and a presentation to the project coordinator, peers and the community in which the student was involved.

Ensuring sustainability

One of the greatest challenges of the module is to ensure the sustainability of the module, as well as the sustainability of the projects done in the community and with the community partners. At the end of the project, the students' participation may end, but the communities' realities remain.

Giving students a say in the different phases of the community projects has a strong influence on the academic and civic engagement that follows, and allows students to engage in problem-solving, decision-making, planning, goal-setting and helping others. Students who are dedicated to their projects develop a sense of social awareness and usually feel responsible for the continuation of their project and the partnership with the communities.

To ensure the sustainability of projects and students' involvement in the communities, a mentorship programme has been established where students who have completed the module become mentors to the following year's cohort.

These mentors ensure the continuation of their projects by assisting the new entrants to the module in executing their projects and assessing them upon completion of their projects.

→ *Participating in the Community-based Project module helps develop a sense of unity between the students.*

Attitude change

Community-based learning shows students that they can make a difference. It increases their confidence as citizens. Although the students' collective actions are not always successful, it teaches them to learn from their mistakes by engaging in a continuous sequence of action and reflection.

Community engagement is viewed as valuable, useful, relevant and interesting. Students become more engaged and acquire greater knowledge and skills. It also becomes more meaningful for students when they choose the issue to address, when the issue requires analysis and problem-solving, and when there is a personal connection with the community to the task at hand. Community engagement only becomes meaningful for students when the service actually meets an important need in the community.

It provides students with opportunities for meaningful involvement with the local community. As they implement service projects, students usually develop greater awareness of social issues and the need for civic responsibility.

They often learn leadership, teamwork and social skills, and improve their critical thinking and analytical abilities. In the process, they tend to increase their self-confidence and self-efficacy. Feedback from students is very positive.

Campus community partners

A list of more than 500 community partners has been compiled where students may do their projects. These community partners identify their specific needs and submit them to the University each year.

New community partners are visited or invited to discuss possible new projects and developmental needs. Many community partners contact the University and request assistance. Students also identify possible new partners and projects.

To ensure ongoing engagement with the community partners, it is important to establish a good relationship with a contact person at an institution or non-governmental organisation (NGO) where the students will be doing their field work. An empathetic and dedicated supervisor or contact person on site ensures the successful execution of a project and positive feedback from the students.

The community partners assist in assessing the students on their project outcomes. This assistance is acknowledged in the blog reports of the students. Feedback with regard to module outcomes and possible new projects is requested from the community partners.

Funding

Most of the funding received for the implementation of the community-based projects is used for the transportation of the students to and from the communities. Some corporate sponsors have come forward to address this problem. These companies take responsibility for certain projects that are identified by the company. They then use the outcomes of the projects to meet their social responsibility targets. Such agreements are in place with Exxaro and Kumba Iron Ore.

Junior primary learners enjoy their *cosy* reading corners

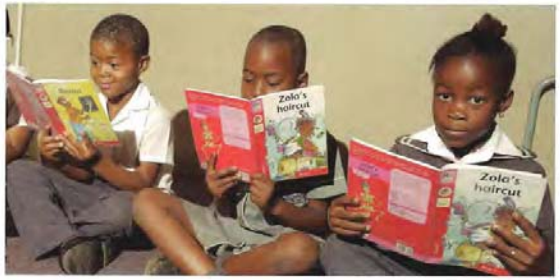
The vision of three students to create reading corners for learners became a reality when they carpeted the cement reading corners in three classrooms at the Irene Middle Farm School as part of their community project. These reading corners are now warm spaces where the learners can retreat into the worlds of their books and participate in other activities there.

→ *The learners of the Irene Middle Farm School benefited from the students' work.*

The students carpeted the reading corners in three junior phase classes. Each corner was 3 m^2 in size and allowed sufficient space to seat the whole class. As none of the students had ever laid carpets before, they had to plan their project really well in advance in terms of measuring, marking up the floor and applying glue to the carpet. This proved to be much easier on paper than in practice. The students had to do a lot of brainstorming as they went along, and succeeded admirably in creating warm spaces where the learners could sit, especially on cold winter days.

The unforeseen practicalities included surveying the three classrooms to decide on the location of each reading corner and clearing out these corners. This included moving shelves, cabinets, files and desks. The other big job was cleaning the floor in preparation for laying the carpets. Preparation included sweeping the area, scrubbing the floor (to allow the adhesive to bond), washing the allocated area (to ensure that no dust was left behind), and finally applying the adhesive.

On the last day, there was a great bonus: a donation of books for the school! The books were all brand new, and added to the excitement of finalising the reading corners. The three students kept their tools so that they could maintain the carpets. In their words, "Mission accomplished: we came, we saw and we conquered those reading corners."



→ *The learners received a donation of books as well.*

Venda Secondary School library is upgraded

A library that no one could use, with books in tatters and in complete disarray, stacked in dishevelled piles on shelves groaning under their unkempt load, prompted ten students from the University of Pretoria to jump in and transform this chaos into a true place of information. After the project had been concluded, the pupils of Tshilavhutume Secondary School in Mapate village in Thohoyandou, Limpopo, were able to easily access the books they wanted to use.

→ *The disorganised library at the Tshilavhutume Secondary School is turned into an organised space.*

The team was hoping to obtain sponsors for their project, which was executed over four days during the July holidays, but did not have much luck. The only sponsor was the University of Limpopo/Venda, which donated shelves, tables, a television set and microscopes, and provided them with transport. The lack of sponsorship did not deter this committed, enthusiastic team in their orange overalls. They tackled this gigantic task with gusto, cleaning out the entire library so that they could paint it and start stocking it from scratch. It took them two full days to sort out the books, working right through the night.

Despite the lack of sleep and very hard physical work, the students found time on the last day to have a career guidance session with the Grade 12 learners.

Their hard work paid off, as the school now has a library it can be proud of. It can now be fully utilised by the learners, who love their new library. The whole community was really excited about the new library, to the extent that even the primary school learners came to see the library on the last day.

The principal, MP Mathoma, says the school "now has a library." He was amazed at the transformation of the previously unused, dirty space into this new, clean, organised space. He says learners now frequently use the library. The school is very grateful for this intervention.

Vinolia Teffo, a metallurgical engineering student, said that she wouldn't trade this experience for anything. "JCP is really a good platform for students to be proactive in touching communities. I have learned that when people work together as a unit they can achieve a lot and make a tremendous difference in the lives of those they serve. The highlight of my experience was when the community expressed their gratitude," she said.

Tiny tots become TECH SAVVY

Eight enthusiastic students from the University of Pretoria were met with great excitement when they arrived at Sunnyside Preprimary School – not least of all because of the soccer fever that had gripped this school! The students had planned to present ten days of hands-on mathematics, science and technology lessons for the little ones in the form of the Tekki Tots programme, which was developed by the Meraka Institute.

→ *Learners at Sunnyside Preprimary School discovered that technology can be fun.*

When the innovative group of students finally got started, they used brightly coloured jelly tots to determine the preschoolers' different levels of learning. The children went on to make necklaces to learn about patterns and to learn to cut in straight lines, they performed "magic tricks" using cabbages and different solutions to learn about acids and bases, and explored the wonderful world of sounds and vibrations. This culminated in the children creating their own special musical instruments and even forming a band, singing favourite songs like Old McDonald and Big Fat Mama. Other fun activities included organising data using smarties (and, of course, eating them at the end of the lesson!) and mixing and separating colours, which led to much experimentation, not to mention the fascination at seeing the colours separating before their eyes.

→ *Shapes take on a new meaning.*

This is the fifth year that students from the University of Pretoria have taken the Tekki Tots programme to this school. Other projects that are being undertaken at the school include revamping the sandpit and building a roof for the school's entrance.

Headmistress Marietjie Engelbrecht commended the students and the University for initiating the JCP programme. She said that the Tekki Tots lessons encourage Grade R learners to think "outside the box" and that the one-on-one interaction with the students is invaluable. She looks forward to ongoing engagement with students from the University of Pretoria.