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 gelykstel deur stedelike verswakking, te herintegreer in 'n kontemporere stedelike omgewing. Die voorgestelde argitektoniese ingryping, in die geval, 'n Gemeenskaps Inligtingsentrum, is 'n reaksie om 'n gewensde, werklike oplossing te vind, wat die prosesse aangaande voortgetsete 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 Cobe 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.

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Pieter Breytenbach
November 2012
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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

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.
1.1 Urban Architectural Response

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 mediating 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).

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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.
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 città (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.
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. 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.
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.
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.
Chapter 2

Recording the Event

Urban Conditions:
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 described in the words of Rossi’s L’architettura della città (1966), translated in 1982 as Architecture of the City.

This chapter explores different scales of events, and how connections have been formed and used. It is an exploration of the relationships and patterns of interaction that led to the formation of Tshwane/CBD. The name of the city has changed formally to Tshwane, although at the central hub of the city, it is still known as 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 central hub of the city was formed. The Cardu Decumanus (a parallel battle continues to rage). However, the street pattern continues to display, and the Cardu Decumanus still in its present form. Even though the CBD is the heart of the city, the street pattern that characterises the central hub of the city is the Pretoria CBD.

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 central hub of the city, it is still known as Pretoria, where the central government is housed in the Union Buildings.

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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 will coincide with Bopape Street, the southern edge, and with Church Street. Church Street framework is discussed from Church Street to the south, on an east-west axis, and will coincide with Bopape Street. The study area extends on a north-south axis from Edmond Street to the south to Soutpansberg Road. Soutpansberg Road to the south axis from Edmond Street to the south.

The study area borders the site, as it is channelled in this area.

The area is situated on the periphery of the city's northeastern quadrant. The area comes part of a health-care precinct on the periphery of the city's northeastern quadrant. This area is a rich layering of history.

Two important landmarks in this area are the Pretoria General Hospital, and the Moedersbond Maternity hospital. The study area is separated from the city by public buildings that fall under the Ministry of Public Works, and the Pretoria General Hospital.

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 will coincide with Bopape Street, the southern edge, and with Church Street. Church Street framework is discussed from Church Street to the south, on an east-west axis, and will coincide with Bopape Street. The study area extends on a north-south axis from Edmond Street to the south to Soutpansberg Road. Soutpansberg Road to the south axis from Edmond Street to the south.

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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 health and compassion, the essence of place seems lost, nullifying the hereditary value mark.

Fig. 2.3

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

Demolished buildings

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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 Krogi Street). The small hospital soon became inadequate.

Fig. 2.4  First Volkshospitaal – Potgieter Street, Pretoria.

Fig. 2.5  First Volkshospitaal – Potgieter Street, Pretoria.

Fig. 2.6  First Volkshospitaal 1890 – Floor Plan

The population of Pretoria grew rapidly in the early part of the 20th century, and the small hospital soon became inadequate. However, the population of Pretoria grew rapidly in the early part of the 20th century, and the small hospital soon became inadequate.

Fig. 2.7  First Volkshospitaal – Floor Plan

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.
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. According to historian Rosa Swanepoel, a safe haven for destitute whites after the World War.

The site is to be used for the Victoria Cobeli Information Centre proposed in the study. It seemed that everyone owned one or more donkeys.

Fig. 2.8 Picture of Donkiekamp with Church Square in the background.

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

Fig. 2.6 Region of site.
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 current Pretoria Academic Hospital), and the current Lebone Nursing College (known previously as the Pretoria Academic Hospital, and the current Pretoria Academic Hospital). The hospital is still Tshwane District Hospital. The hospital was originally presented to the city council of Pretoria (1916) to the then provincial government of the Transvaal as the land on which a hospital was to be built. The hospital was named H.F. Verwoerd Hospital in 1967. It was renamed H.F. Verwoerd Hospital in 1977.

2.5.1 The Tshwane District Hospital

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. By 1 April 1932, the hospital was opened to the public as the Pretoria General Hospital. It was later renamed H.F. Verwoerd Hospital in 1967, and in 1997, it was renamed Pretoria Academic Hospital.

The land was presented by the city council of Pretoria to the Transvaal (1916) to the then provincial government. The hospital has become the flagship academic hospital in use, although the new Steve Biko Academic Hospital is still Tshwane District Hospital. The hospital is still the current Tshwane District Hospital. The hospital is still H.F. Verwoerd Hospital, and the hospital is still known variously as the Pretoria General Hospital. The hospital is still the current Tshwane District Hospital. The two main landmarks that indicate arrival at the hospital are the current Tshwane District Hospital (known variously as the Pretoria General Hospital, H.F. Verwoerd Hospital, and the current Pretoria Academic Hospital), and the current Lebone Nursing College (known previously as the Pretoria Academic Hospital, and the current Pretoria Academic Hospital).
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 determined to give birth without the help of midwives. These women decided to start a training centre for midwives without the help of midwives. They used the old town hall as a training centre for midwives and were supported by Dr. F. Malan. The foundation stone for the new maternity hospital was laid by Dr. F. Malan in 1931 on land granted by the then government in Beatrice Street (now Steve Biko Street). The hospital was completed in 1932.

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 Beatrice 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) to train midwives. The new Transvaal Nursing College complex was used to train medical students when the new Transvaal Nursing College was completed. In 1990, the building was bought by the Transvaal Provincial Administration (TPA) from the Suid-Afrikaanse Vroue Federasie (SAVF) to train midwives.

The hospital was bought by the Transvaal Provincial Administration (TPA) from the Suid-Afrikaanse Vroue Federasie (SAVF) in 1990. The hospital was bought by the Transvaal Provincial Administration (TPA) from the Suid-Afrikaanse Vroue Federasie (SAVF) in 1990.
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 Lawaandraai Bewakerskool (the name was inspired by the noise made by emergency vehicles when they went around the corner at Ormusheg 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.

2.6 The Precinct

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 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 figure-ground plan.

Chapter 3

Context and Conceptual Analysis

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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.

The City of Tshwane Metropolitan Municipality is located in the northern part of the Gauteng Province, which includes 13 former municipalities. 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. This chapter addresses the location and functions within and around the site.
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 traffic absorbed in a formal city street grid; and
• A railway system, with Pretoria Main Station and Capital Park and Koedoespoort as the main commuter stations, and Belle Ombre as the main commuter station and Pretoria Main Site.

The CBD is well connected through a series of transport modes such as:

• Main lines of transport network:
  • A – Pretoria Main line, going to the east; and
  • B – Pretoria Main line, going to the west;
  • C – Pretoria Main line, going to the south; and
  • D – Atteridgeville line, going to the north.

The City of Tshwane forms the central node of the City of Tshwane Metropolitan Municipality.
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 north, and Pretoria以此为准, to the south. 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. The site is divided into two distinct portions and is mainly zoned for government use. Surrounding zoning allows for education and housing. 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 north, and Pretoria以此为准, to the south. The site is divided into two distinct portions and is mainly zoned for government use. Surrounding zoning allows for education and housing.
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 Unit
- C – University of Pretoria Dental School
- D – University of Pretoria Hospital
- E – University of Pretoria Anatomy
- F – Old Transvaal Nurses College
- G – Old Transvaal Nurses College
- H – Tshwane Women’s Ward
- I – South African Women’s Federation Head Office
- J – Femina Women’s Clinic
- K – Tshwane University of Technology
- L – Department of Agriculture
- M – Department of Fisheries and Forestry
- N – University of Pretoria Dental School
- O – University of Pretoria Faculty of Engineering
- P – University of Pretoria Department of Chemistry
- Q – University of Pretoria Department of Physics
- R – University of Pretoria Department of Biology
- S – University of Pretoria Department of Zoology
- T – University of Pretoria Department of Botany
- U – University of Pretoria Department of Geology
- V – University of Pretoria Department of Chemistry
- W – University of Pretoria Department of Physics
- X – University of Pretoria Department of Biology
- Y – University of Pretoria Department of Zoology
- Z – University of Pretoria Department of Botany

Fig. 3.9

Developments within Precinct

3.1.3 Buildings outside the precinct

- 1 – Tshwane University of Technology
- 2 – Tshwane University of Technology
- 3 – Old Students’ Sports Complex
- 4 – Tshwane Women’s Ward
- 5 – Tshwane Women’s Ward
- 6 – Tshwane Women’s Ward
- 7 – Tshwane Women’s Ward
- 8 – Tshwane Women’s Ward
- 9 – Tshwane Women’s Ward

Still in use. Various medical, higher education and other facilities are visible and within the precinct.
3.4 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 topographical elevation.
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. 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 considered to be higher than in others. This, in turn, affects pedestrians, who are also prevalent because of public transport drop-off areas and traffic control lights and pedestrian crossings.

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. Pedestrian access and allows for circulation within the site. A single secondary street serves the site, a single secondary street serves and vehicular circulation are all diverted around the site. From Fig. 3.12, it is clear that the main vehicular routes are situated well outside a 600 m walking radius. From Fig. 3.15, it is clear that due to the high vehicular traffic volumes around the site, 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 and adjacent taxi ranks are situated beyond a 600 m walking radius.
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. There is also limited visual access. However, for pedestrians, the site is visible and accessible from the north-west and south. There are few usable green spaces, which are underdeveloped and provides a natural setting. The site is considered an open space, but it is a brown site due to security reasons. 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. 3.17 shows that the site is visible and accessible from the north-west and north-east. However, for pedestrians, the site is not easily accessed. The main visual link from the east forms the main visual link from the east. Vertical traffic flow on the eastern side, which was previously unoccupied, is restricted due to security reasons. The traces and reminiscence of a site once occupied but now abandoned are indicated in the diagram.
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 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.

The street edge conditions to Steve Biko Street are less favourable than the conditions to the north, and they allow for a pedestrian walkway, a pedestrian crossing controlled and operated by traffic lights.
On the western edge, the Apies river channel acts as a 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 that can be harnessed to enhance the aesthetics and quality of life in the city in general.

Sewerage, water, and electrical reticulation are also in need of upgrading, as raw sewage flows into the Apies river and needs to be upgraded.

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

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

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

The Pretoria Climate Data Sheet shows:

- Recorded High
- Average High
- Average Low
- Recorded Low
- Precipitation
- Precipitation Days

The Pretoria Temperature Graph illustrates:

- Monthly and seasonal temperature fluctuations.
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. However, since excavation will only be done to a depth of 6 m, involving the base of the soil, clay will be produced, and the method will be employed as a basic construction method. Another important factor to consider will be the water table. Since excavation will only be done to a depth of 6 m, involving the base of the soil, clay will be produced, and the method will be employed as a basic construction method. However, since excavation will only be done to a depth of 6 m, involving the base of the soil, clay will be produced, and the method will be employed as a basic construction method. Another important factor to consider will be the water table.
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 a link between the precinct and city;
• Potential for the creation of new public spaces with amenities;
• 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.
It is evident from the two figure-ground maps (see Figs. 3.33.1 and 3.33.2) that, although development in the study area took place over a long time, density proportions 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 success. The programme proposed for the area is based on the contextual analyses presented in this chapter. By a lack of civic character and legibility within the urban tissue. The area is characterised by a lack of civic character and legibility within the large scale urban fabric. The programme proposed for the area is based on the contextual analyses presented in this chapter.

3.3 Summary

The programme proposed for the area is based on the contextual analyses presented in this chapter. It builds on the notion of a holistic bringing together of urban development and social existence. The programme takes into account the need to create a kind of productive space associated with success and is based purely on a particular programme and service needs. 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 success.
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 unforeseen uses to which those beginnings can actually be put.” (Stiney, G. 2006:13)
Fig. 4.1 Architecture of the city. (Rossi, 1962)
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 area. 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 recognize seemingly abstract concepts, such as urban development, design, and aesthetic. This theory is discussed more fully in Section 4.2. The theory of Architecture and the City by Aldo Rossi ([1966] 1982) encourages research into the history, development, and social aspects of the city. The theory of architectural ideas of the city by Aldo Rossi ([1966] 1982) promotes research into the history, development, and social aspects of the city.

The architecture of the city is manifold in nature, and cannot be explained by citing single causes (Frampton, 2007). Similarly, the aesthetic theory of Wassily Kandinsky, in conjunction with the waste theory to be examined in this section, are also discussed in this study. The aesthetic theory of Wassily Kandinsky (see Chapter 3.) is useful to the study, as it is useful in the study of Wassily Kandinsky's approach. The aesthetic theory of Wassily Kandinsky (see Chapter 3.) is useful to the study, as it is useful in understanding the relationship between objects and space, as explained by Francis D.K. Ching (1996).

Moreover, the basic architectural concepts of objects and space, as explained by Francis D.K. Ching (1996), are also discussed in this section. 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 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 architecture of the city is manifold in nature, and cannot be explained by citing single causes (Frampton, 2007).

Fig. 4.2 Complexity of relationships with the blurring of boundaries.
"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 a process of becoming and passing. The mere definition of a plan does not constitute the development of architecture and urban form, and most importantly, by its very nature and form.

As a theater of human events, the city is not a mere collection of buildings, but rather a space of becoming and passing. The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form.

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 form follows function is a metaphorical notion that form follows function. The mere definition of a plan does not constitute the development of architecture and urban form, and most importantly, by its very nature and form.

The term locus is central to the theory, as the term refers to a component of an individual event. The mere definition of a plan does not constitute the development of architecture and urban form, and most importantly, by its very nature and form.

The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form. The mere definition of a plan does not constitute the development of architecture and urban form.
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.

Abstraction can therefore initiate a dialogue with the spectator, and vice versa. The minimum of abstraction can have the most aesthetic effect, and vice versa. The greatest external differentiation becomes a greatest internal identity. Clarifying why this is so, Kandinsky (1911-1913) wrote, “it is the spirit that rules over matter, and not the other way round.”

Abstract art, therefore, is said to bring about a struggle against materialism: “It is the spirit that rules over matter, and not the other way round.”

4.3 Aesthetic Theory: Kandinsky

**Fig. 4.6** Kandinsky 1911- Yellow Blue Red

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Figure-Ground theory: Space that results from placing figures should be considered as carefully as the figures themselves. Derived from understandings that objects are non-architectural and must be carefully read as the figures. Although no objects are physically placed, the implied presence of space must be considered during analysis. Relationships between solid objects, and the space that results from their arrangement, are non-architectural but are none-the-less apparent. When elements of spaces are not explicit, but are none-the-less apparent, we can see implied spaces. Movement through negative space, although no objects are physically placed, is considered as well as relationships between solid objects. It is important to focus on space and objects, and not just the figures. Although derived from space that results from figures, the space itself must be considered. Composition conceived "partly" as central the ideas of part as central.
History and Place

The event as the event itself.

Time
Event
Place

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 architecturally. The singularity of place becomes a place, and the place as expressed through form (Rossi, 1982:8) – the city is perceived as a process of becoming and passing, where the singularity of events, the singularity of place, and the sign of the place as expressed through form is understood as the relationship between a collective memory and the singularity of place.

Fig. 4.7

The event as the event itself.

Time
Event
Sign of event
Space of social production

Memory loss of functionality

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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 horizontality into two parts, left and right. The gravitational axis is situated between the two vertical axes, and divides the horizontal into a (sensu proprioceptivo) new plane of reference to the human horizontality and vertical orientation. The human experience differentiates between a horizontal plane and a vertical plane.

In architecture, the axis in the viewing direction always dominates over an axis that is transversal to the viewing direction. The directional dependence constitutes subjective framing, which can be seen as a normative construction of a world, and a way of seeing “ourselves” within it. It is a world where objects and space are experienced by means of anisotrophy of space, and vision.

The research invokes a new architectural language articulating transgression through mediation. This language is intended to give order to space, and aims to be responsible to give mediation. This language is intended to give mediation. The research invokes a new architectural language – it is repetitive and rhythmic.

Values – it is repetitive and rhythmic, on the other hand, allows for an expression of values associated with everyday life. Vertically, an expression of process is possible – the horizontal plane is susceptible and conducive. The horizontal plane always dwells on a horizontal plane. The city is inexorably linked to citizenship, and the study finds this expressional entity is expressed in emergent interfaces that the design proposes in the architecture.

The research was developed based on the articulation of this interface, and aims to be responsible to give mediation. This language is intended to give mediation. The research invokes a new architectural language – it is repetitive and rhythmic. Values – it is repetitive and rhythmic, on the other hand, allows for an expression of values associated with everyday life. Vertically, an expression of process is possible – the horizontal plane is susceptible and conducive. The horizontal plane always dwells on a horizontal plane. The city is inexorably linked to citizenship, and the study finds this expressional entity is expressed in emergent interfaces that the design proposes in the architecture.

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"The study of space offers an answer according to which the social relations of production have a mode of existence. It is practical reality. Space is at once result and cause, product and producer." (Ullman, 2011:134)

"Space is the excluded from itself, which embodies the movement of critical theory without being reduced to the thing such as 'truth of space' which embodies the movement of critical theory without being reduced to materialism. The study of space becomes inscribed there, and in the process producing space itself. There is, however, a social existence to the extent that they have a spatial existence. They project themselves into a world and the structuring of thought and space is the result of these processes.

Part 2

Programme & Design Development
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 were also considered in response to the contextual analysis, urban conditions, and proposed programme statements. The following precedents are discussed:

- International Port Terminal, Yokohama, Japan (Foreign Office Architects)
- Ewha Woman's University (Dominique Himmelblau)
- Médiathèque des Confluences (Coop Himmelblau)
- International Port Terminal, Yokohama

Conceptually, the precedents chosen correlate with the conceptual idea developed in this study in response to the contextual analysis, urban conditions, and proposed programme statements. These precedents also allow for a reinterpretation of surrounding landscapes and its relation to built forms. The precedents chosen allow the landscape to frame the architectural intervention, insofar as the ensemble constitutes a kind of topography that can be classified as inter-spaces. The precedents chosen also allow for a reinterpretation of surrounding landscapes and its relation to built forms. The precedents chosen allow the landscape to frame the architectural intervention, insofar as the ensemble constitutes a kind of topography that can be classified as inter-spaces. 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 developed and how the architectural language was accommodated. The design proposal in this study is meant to meet the requirements of the programme. The criteria for selecting the precedents discussed in this chapter were how the horizontal plane was developed and how the architectural language was accommodated.
The international port terminal, Yokohama, Japan (designed by Foreign Office Architects, 2002) was chosen to demonstrate the way linear geometry, in respect of a 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, giving birth to continuous surfaces of topological architecture. The design does not redefine any existing street edge condition, but rather extends the existing street grid to form a new connection point, and through the city, lies of freely moving persons who drift into and accommodate the immaterial boundary. Transition is experienced through vertical and horizontal hierarchies such as the floor, walls, and roof, giving birth to horizontal and vertical access below. It is also an atemporal act of city by means of a pedestrian walkway above.

The design concept is based on a linear spine of activity that connects an extended port with the city grid. The international port terminal, Yokohama, Japan (designed by Foreign Office Architects, 2002) was chosen to demonstrate the way linear geometry, in respect of a ground plane and to accommodate the innumerable encounters of freely moving persons who drift into and through the city.
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 surface themselves, moving them diagonally to the ground. However, this makes the structure suitable for the Japanese topography.

This folding ground plane also establishes the Japanese topography generated by the seismic movements that affect and stabilize the structure in coping with the lateral forces generated by the seismic movements that affect the Japanese topography. The relation between the skin and the areas is one of the most important aspects of the structure.
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 is stimulated by a direct and active use, as highlighted in this precedent. The Musée des Confluences, situated directly where two rivers converge on the periphery of an industrial precinct in Lyon, is a museum with the typology of a museum and the typology of a leisure space. According to Himmelb(l)au (Himmelb(l)au, 2001), the architecture hybridises the typology of a museum with the typology of an urban leisure space, extending exploration into interspace, interdistinctness, and overlapping, which is also described in the extended exploration into interspace, interdesign intervention, because the design is highly relevant to the proposed project.

This project is highly relevant to the proposed design intervention, because the design extends exploration into interspace, interdistinctness, and overlapping, which is also described in the extended exploration into interspace, interdesign intervention, because the design is highly relevant to the proposed project.

According to Himmelb(l)au (the architects), future society will be a society of knowledge. However, this knowledge cannot be divided into clearly defined fields, as knowledge is related to the fusion of disciplines, and simulations what happens at the same time. The Musée des Confluences, situated directly where two rivers converge on the periphery of an industrial precinct in Lyon, is a museum with the typology of a museum and the typology of an urban leisure space. According to Himmelb(l)au (Himmelb(l)au, 2001), the architecture hybridises the typology of a museum with the typology of a leisure space.
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 a 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.

The interface-like situation of the building site, an intersection of two architectural units connected in complex ways at a result of the sinking of the musee 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).
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, sports grounds, event locations, and educational buildings mix, intermingle and follow one another.

The gently descending ‘valley’ leads to a mound. The link between the architectural concept and the sustainable strategies adopted is expressed in an underground building vs. an above-ground building. A green garden vs. underground building. As new relationships are forged, resulting in a linear activity spine, space is changed with a new urban space possible.

The architect, Perrault, believes that “concept and matter have to grapple one another”... in a building with a strong identity, which in turn resulted in extraordinary performance. New urban space possibilities are developed, resulting in a linear activity spine that runs through the campus centre. Thus, the generally expressed concept of building becomes another (http://www.perraultarchitecte.com).

The link between the architectural concept and the sustainable strategies adopted included an underground building vs. an above-ground building. A green garden vs. underground building. As new relationships are forged, resulting in a linear activity spine, space is changed with a new urban space possible.

Fig 5.11: Aerial view

This precedent challenges the complexity of site in relation to the greater precinct and city. It summons a ‘larger than site’ urban response, where precinct and city tissue are woven together through landscape.
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 ... 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 to weave itself into the landscape – sometimes a building, sometimes a landscape, and sometimes, a sculpture. The centre is a grid, which permits the new EWHA campus to evolve.

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 producers. (Ullman, 2011:136)
The Victoria Cobeli Information Centre is an attempt to achieve equity gains through the incorporation of social and contextual factors by means of architecture.

Similarly, the World Health Organization'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 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 in an attempt to help bring about community (social) mobilization (stewardship) in the health sector, such as social exclusion result in poor health determinants of health has found that such factors as social exclusion result in poor health.
There is no singular accepted definition for health promotion, but the contemporary usage of the term usually implicates a multifactorial process operating on individuals and communities, 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 envisaged architectural intervention and programme, details the design of a public information centre, and increased accessibility of information, mediated through a process of social production. (See Section 1.3) Formally, the centre will be able to accommodate other public/community-inspired initiatives, as well as other educational and training initiatives based on applied learning.

The centre is named after Victoria Cobeli. Some details of her life and significance are discussed next. The centre accommodates a community assessment centre, workshops on community and university needs, and directs at achieving material and benefit.

The theory of the architectural intervention and supporting programme, responds to the social, spatial and environmental needs of the intended beneficiaries. Contextually, it responds to the interrelationships between objects signified through events.

The centre will accommodate a child care facility, an information centre/library space, and an audit room (See Section 1.3).

Intended beneficiaries include students, community partners and the intended beneficiaries. For a centralised facility that is easily accessible, Urban design strengths are already indicated in Section 1.3. Community involvement and training programmes are also indicated (UP Syllabus, 2012: UP 2012: 68). (See Appendix).
Instead of following the teaching profession, 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.
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 Cobra 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 framework, the following existing frameworks are briefly discussed:

- the City Development Strategy;
- the City Tshwane – Metropolitan Spatial Development Framework;
- the Tsotsososo Quality Public Spatial Development Framework;
- the City Tyhwenene – Metropolis Spatial Development Framework;
- the Apies River Urban Design Framework (Holm Jordan Group); and
- the Nelson Mandela Development Programme.

These requirements were identified for the successful implementation of the Victoria Cobra Information Centre. The following section discusses the basic framework that encapsulates the requirements followed with regard to the new urban guidelines.
The vision of the City Development Strategy 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.

The movement strategy addresses the movement of people and goods. "Rail, together with the first order road system, should inform the new urban structure to focus transformation of the city's new structure in regional and local nodes and linear configurations of activity. New nodes will manifest in nodal and linear configurations, resulting in regional and local growth areas that are well integrated into the rest of the city's network. Metropolitan Activity Areas are to be created within the city."

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 and cultural landscapes. The importance of creating linkages between the space and conservation concept refers to the importance of creating linkages between the city's built form, cultural heritage, symbolic locations, and natural and cultural landscapes.

7.2 Existing Frameworks

7.2.1 City Development Strategy

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

7.2.2 City Tshwane Metropolitan Spatial Development Framework

Within the city, the City Tshwane Metropolitan Spatial Development Framework refers to the importance of creating linkages between the city's built form, cultural heritage, symbolic locations, and natural and cultural landscapes. The importance of creating linkages between the space and conservation concept refers to the importance of creating linkages between the city's built form, cultural heritage, symbolic locations, and natural and cultural landscapes.

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 city's new structure in regional and local nodes and linear configurations of activity. New nodes will manifest in nodal and linear configurations, resulting in regional and local growth areas that are well integrated into the rest of the city's network. Metropolitan Activity Areas are to be created within the city."

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 and cultural landscapes.
The vision of this programme is to create a liveable city that provides citizens with a high quality public environment in which people want to settle and invest. The programme 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;
- 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;
- green structures – landscaping and natural open spaces.

The vision of this framework, as developed by the Holm Jordaan Group, is: “ennoblement 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 setbacks;
- designing the maximum number of linkages in pedestrian routes where possible;
- creating maximum linkages and retaining pedestrian walkways.

The Tsotsoloso Programme concentrates on:
- natural open spaces;
- green structures – landscaping and public art;
- public transport routes and stops;
- pedestrian walkways;
- markets;
- public squares.

The framework is developed in four character category principles:
- urban;
- suburban;
- cultivated;
- natural.

In specific, the proposed edge development of the Apies River as a pedestrian walkway is relevant to the Victoria Cable 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 have an extended city grid and new horizontal planes that will not interfere with the existing architectural language and the diversity of land use within the precinct by providing safe and secure spaces that protect the user.

The proposed framework for the intervention was based on three components, namely a contextual, a social and an environmental 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. 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 planes.
- Provide access to amenities conducive to public and social well-being.
- Create a pleasant environment conducive to social and environmental interaction.
- Provide access to amenities conducive to social and environmental interaction.
- Check that the design incorporates and enhances dual-use.
- Check that the design incorporates and enhances public transport drop-off areas.
- Allow for pedestrian access.
- Provide a sense of place.
- Encourage social interaction and create a pleasant environment conducive to social and environmental interaction.
- Provide a sense of place.
- Encourage social interaction.

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

- Encourage social interaction and create a pleasant environment conducive to social and environmental interaction.
- Provide a sense of place.
- Encourage social interaction.
- Ensure connectivity by means of improved visual and circulation connections with the CBD through the implementation of an extended city grid and new horizontal planes.
- Provide access to amenities conducive to public and social well-being.

7.3.3 The environmental component

This component refers to the environment and the way humans interact with it. However, it should be noted that all frameworks should be reinterred on a regular basis to allow for new developments to influence the process of city building positively.

The proposed framework was derived from the existing frameworks, which were reinterpreted.
Environmental

The guidelines for the environmental component of the proposed framework are as follows:

- Construct and manage the intervention with the least possible impact on the environment.
- Provide recycling points.
- Manage storm water.
- Include landscape development and maintenance.
- Implement a passive energy design.
- Manage waste of energy, resources, and materials.
- Construct and manage the intervention.
- Manage storm water development with the least possible impact on the environment.
- Include landscape development and maintenance.

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

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7.4.3 Environmental
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 the site for both vehicular and pedestrian use with the proposed direct link between Belvedere Street and Theodore Street. This should not compromise site conditions, as no thoroughfare circulation is allowed.

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

Pedestrian circulation will follow along the main pedestrian walkway, which will be intersected by secondary routes. The implementation of a depressed plane (see Fig. 7.4) will contribute to defining movement and energy. This strategy will also improve formal on-site pedestrian circulation.

7.5.2 Pedestrian circulation

As shown in Fig. 7.3, additional walkways will be added to secondary routes. The main pedestrian walkway, which will be intersected by secondary routes, will be designed to be a direct result of the design typology that is proposed (see Fig. 7.4). The depressed plane (see Fig. 7.4) will contribute to defining movement and energy, and the way people interact within and within space.

7.5.3 Anisotropy

As can be seen in Fig. 7.2, improved accessibility and connectivity will be enhanced by secondary routes. The main pedestrian walkway, which will be intersected by secondary routes, will be designed to be a direct result of the design typology that is proposed (see Fig. 7.4). The depressed plane (see Fig. 7.4) will contribute to defining movement and energy, and the way people interact within and within space.

7.5.4 Vehicular routes

As shown in Fig. 7.3, additional walkways will be added to secondary routes. The main pedestrian walkway, which will be intersected by secondary routes, will be designed to be a direct result of the design typology that is proposed (see Fig. 7.4). The depressed plane (see Fig. 7.4) will contribute to defining movement and energy, and the way people interact within and within space.
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 can be successfully grown, and appropriated by tenants. In total, 620m² of roof space will be made available. These spaces, together with the community gardens, and the roof gardens that will increase the legibility of the site and precinct considerably.

The urban framework presented will increase the legibility of the site and precinct considerably. The proposed programme in conjunction with the formal programme, will increase the legibility of the site and precinct considerably. The proposed programme in conjunction with the formal programme, will increase the legibility of the site and precinct considerably.

Fig. 7.5  Extended amenities.

Fig. 7.6  Improved legibility.

Fig. 7.7  Extended green spaces.

Fig. 7.8  Acknowledgement of previous event signifiers.

Another aspect articulated in all the formal frameworks discussed was the delivery of a high quality public environment, and the need for5

The urban framework proposed addresses these issues by providing for pedestrian circulation. Accessible, positive, safe, and "green" open spaces.

7.5.5 Legibility

The urban framework proposed addresses these issues by providing for pedestrian circulation. Accessible, positive, safe, and "green" open spaces.

7.5.4 Amenities
Main Internal Circulation routes

Link with proposed Apies River urban design framework

New on site parking

New vehicular link with Belvedere Street

New open green spaces

New site access nodes

Existing pedestrian crossing

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.

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"In the composition of a visual construction, a plane serves to define the limits or boundaries of volumes or 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
The conceptual birth of the scheme acknowledged four principles, as recommended by Clark and Pause (2005: 3-7), namely:

1. Site – including massing and scale
2. Circulation to use – movement patterns
3. Natural Resources – environmental adaptation
4. Topography/Geometry

The proposed programme signifying an appropriate expression for the design language is illustrated in Fig. 8.3. The design iterations in Fig. 8.3 illustrate the process of enquiry into the design language as anticipated and required through the programme; namely:

- Topology/Geometry;
- Natural Resources – environmental adaptation;
- Circulation to use – movement patterns;
- Site – including massing and scale.
8.2 The Medical Precinct

The noli map in Fig. 8.4 provides a two-dimensional representation of the site. 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 the site.

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

Programme, event, object, and current use.

Objects, events, and current use. Various activities and energies associated with the site were exposed and translated into an enigmatic diagram (see Fig. 1.1: Interspace 2012 - The Transformation map), depicting the socio-political layering associated with the site. The null map in Fig. 8.4 provides a two-dimensional representation of the site.
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 design, the linearity of the horizontal plane is given an additional dimension of depth through the employment of a depressed plane, making the intervention a new focus of the city. The environment/earth becomes the new receptor for everything that takes place there. The environment/earth becomes the new Locus Solus.

In the proposed centre, the Locus Solus is neutralized. Both formal and social components share the same depressed plane creating a new focus, where the voided through the layers of time and history. A making the intervention "current" as it is executed, through the employment of a depressed plane, giving an additional dimension of depth to the proposed centre. The integrity of the city (Clark & Pause, 2005:6)

The site topology required manipulation of the horizontal plane in relation to the existing street grid. A street is geometrically strong, and is representative of everyday life within the 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).
An east-west orientation is proposed as both a main circulation route and an activity spine. It will establish direct linkages with the city through its alignment with the 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 also accommodates the production of natural resources with regard to daylight and ventilation principles. Transparency and permeability ensure visual linkages to the whole complex, instilling a sense of community and ownership.

Transparency and permeability will ensure production that occurs. Passive surveillance resulting from the social 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. An east-west orientation allows for the appropriation of natural resources with regard to daylight and ventilation principles.

8.4 Circulation

Fig. 8.9 Aerial view of site with main movement direction

(Anisotropy)
Fig. 8.11  Programme in relation to accessibility and movement.

Fig. 8.10  Design development exploring accessibility and movement (April 2012).
The building is to be experienced from 4 main access points as depicted in 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. Based on the four basic user types as discussed in chapter 1, movement and circulation to use-space, represents the main contributor towards creating public space as social production generator.

Fig. 8.12 explores access from the southern zone of the building. This is mainly a service area for the college and the Femina Clinic. The Lekgole College and the Femina Clinic access are accommodated. Fig 8.13 shows that accessibility from the southern entrance to the facility from the northern side. The building is experienced from a main access point of the main axis of the developer. The north-western zone is more directed towards emergency services, while the eastern zone is more directed towards cross-pedestrian movement across the entire site, and provides an access point as depicted in shown figures 8.10. Figurines 8.12 & 13 depict the east-west accessibility along the main axis of the development.
8.6 Architectural Form

Architectural form was achieved through the application of two concepts:

1. The way the city grid mediates the programme through adaptations to physical barriers, as depicted in Fig. 8.16;
2. The appropriation of space, and the way the building stereotypically 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 spatially and formally.

8.6.16 Geometrical adaptations to physical barriers

8.6.17 Design exploration into architectural form and spatial quality derived from Parti diagramme
8.18. Design development explorations into geometry and edge conditions. Building set against line of directional circulation. (May 2012)

Fig. 8.18. Design development explorations into geo-

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 under-

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.
8.8 Axial Relationship

The initial alignment with the immediate grid

been seen nor expected.

ness to let things appear that have neither
the intentional or the project with the willing-
the intentionality of the project with the willing-
engagement and the lack of design is to combine
engagement in line with Leach's (2004) looks
shall strengthen the relationship within the exist-
that strengthens the relationship within the exist-
that strengthens horizontal and vertical edges
provides strong horizontal and vertical edges


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Fig. 8.20.1 Design development - June 2012

Fig. 8.19.1 Pretoria City Grid

Fig. 8.19.2 Precinct internal grid - June 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. Further, it opens up towards meeting the city. Further, it aligns with the east-west axis with that of the immediate precinct grid, creating a series of terraces on both sides of the central promenade, as illustrated in Figure 8.20.3. This introduces a sense of enclosure and limitation, separating the precinct into two distinct areas. In Figure 8.20.2, the introduction of a secondary transverse axis creates a sense of enclosure and limitation, separating the precinct into two distinct areas.
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 sustainability 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
Conceptually, the building typology resulted in a structure that adapted stereotomically and tectonically to its context by successfully mediating the topographic depression into a depressed plane 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 semi-private public space for users of amenities on the southern flank, and a parking garage that can accommodate a steep depression on a neutral level on which social production could take place.

Exemplarily, the building typology 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 semi-private public space for users of amenities on the southern flank, and a parking garage that can accommodate 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 semi-private public space for users of amenities on the southern flank, and a parking garage that can accommodate a steep depression on a neutral level on which social production could take place.
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 for large spaces is used in the basement (see Fig. 8.21.6).

Waterproofing is done with Butylene 3000 sheeting, affixed with Butylene primer, overlapping by 65mm. Bitumen-impregnated soft board protects the sheeting against backfill that might penetrate the sheeting against backfill that might penetrate the sheeting. Water ingress through tie rod holes and pipe penetrations are treated by grout and liquid Butylene, and finished with a covering layer of Butylene 3000. The basement and courtyards are constructed of Butylene 3000 (see Figs. 8.21.5 and 8.21.6).
Fire safety is a primary concern in basement typologies (see discussion in Section 8.10.2).

As Fig 8.21.7 shows, additional structural stability was ensured by adding piled columns, which serve as supports to the lateral forces exerted 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 drain system, which is essential to prevent flooding in the basement area.

Cross-ventilation is ensured by means of powder-coated aluminium louvre grids fixed to the opening between the promenade level and the lower ground level. The gratings are ventilated, allowing access to the opening. 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 fixed to the opening between the promenade level and the lower ground level. The gratings are ventilated, allowing access to the opening. Both the courtyard and basement spaces are naturally well-ventilated. The main access stairwell acts as a ventilation stack.

Fire safety is a primary concern in basement typologies (see discussion in Section 8.10.2).
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 provides adaptable workshop spaces (see Fig. 8.21.9) which can accommodate informal learning and provides opportunity for open interior pedagogy and solving profound parking problems and allows for gracious proportions in a take-off between the number of columns and the span of the floor slab. This concept helps to intertwine floor slab. The structural steel frame permits articulated connection nodes which reflect an open plenum concept. The steel columns terminate in steel connections that anchor a portal frame roof structure, acting as a raised horizontal plane. Lateral stability is ensured by using figures 8.21.9 and 8.21.10 Exploration of connection types and fixation.
These connecting nodes create a permeability that resonates 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 decisions.

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). Horizontal access to the roof plenum, ensuring the column plenum, is achieved via a horizontal grid system. The need for circulation (in particular the requirement for physically disabled users) has limited such access. However, the need for a lightweight double sheet (wafer) roof led to the decision to use a generous grid system, rather than a more economical grid system, which would have resulted in some design restrictions. Hence, a novel approach to design has been adopted. As well as a sense of honesty of design and a sense of comfort in the social/public programmes that resonate with the social/public programmes these connecting nodes create a permeability...
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 complex. The water is distributed from a pump room, which is situated in the north-western corner of the basement (see Fig. 9.4). The pump room is connected to the roof gardens and is used to harvest rainwater for reuse. The roof garden is a series of J-PCV pipes with a diameter of 110mm, which are connected to a series of horizontal and vertical pipes. A pre-rolled Chromadeck gutter (2mm in width) acts as both a fascia and a water channel, finishing off the edge of the roof.
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, allowing for increased height also conducive to the open plan design featured in the complex. The open plan design features potential mezzanine levels for service reticulation and additional space for service reticulation. The roof is constructed of a concrete slab with an increased height at the edges of 1200mm at the edges to 1700mm at the apex, allowing for increased height and functional flexibility. This truss gives a 15:1 span to depth ratio.

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

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

Figs. 8.22.1 Sectional detail of external skin

Figs. 8.22.2 and 8.22.3. This method addresses both ventilation and thermal control. (see Figs. 8.22.2 and 8.22.3) 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 to reduce energy dependency.

The distance between the two glass panes should be at least 100mm to minimize a build-up of moisture. In order for the system to work properly, the glazing layers of glass to be directed inversely, as shown in summer, where the building is exposed above the natural ground level, an integrated ventilation system serves as a heat recovery system in winter. The external skin of the building is used to support design features such as solar power generation and use, rain-water harvesting, and daylight strategies.

A bespoke shopfront design fitted with ACTIV™ 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 means of heat-sensitive actuators in summer. This method addresses both ventilation and thermal control. In order for the system to work properly, the glazing layers of glass to be directed inversely, as shown in summer, where the building is exposed above the natural ground level, an integrated ventilation system serves as a heat recovery system in winter. The external skin of the building is used to support design features such as solar power generation and use, rain-water harvesting, and daylight strategies.

Sustainability can be achieved in two ways:

1. Through human willingness, supported by education.
2. Through passive systems, which for the purposes of this study focus on the following:

   Temperature control and natural ventilation
   Daylight strategies
   Rain-water harvesting
   Solar power generation and use

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 to reduce energy dependency.

Where the building is exposed above the natural ground level, an integrated ventilation system serves as a heat recovery system in winter. The external skin of the building is used to support design features such as solar power generation and use, rain-water harvesting, and daylight strategies.

The distance between the two glass panes should be at least 100mm to minimize a build-up of moisture. In order for the system to work properly, the glazing layers of glass to be directed inversely, as shown in summer, where the building is exposed above the natural ground level, an integrated ventilation system serves as a heat recovery system in winter. The external skin of the building is used to support design features such as solar power generation and use, rain-water harvesting, and daylight strategies.
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. Radiation from the sun enters through ventilation grids situated 300mm above the floor level, allowing the heated induced air to warm the interior, which is prevented from escaping from the building. Cold air is drawn into the building management system, cooled by a series of condensers controlled from a centralised building management system. An induced air system in the structure, with air passed through the double-glazed shop front, which is designed and summer solstices, radiation from the sun enters 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, connected by a central two-pipe flow/return manifold, in order to meet the project's needs for both cooling and heating requirements.

For the auditorium, the same principles apply as discussed in the previous section (dealing with the main complex). However, a sound-absorbing ceiling canopy is introduced, using perforated ceiling tiles by Pelican Systems. The auditorium’s interior is designed to reduce reverberation (echo) 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 under the mezzanine (see Fig. 8.22.6).

The auditorium is ventilated and heated mechanically by means of air conditioning through the flywheel effect. Radiated heat is conducted through thermal transmission.
Fig. 8.22.6 Section detailing auditorium ceiling layout
8.10.2 Fire safety

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 be positioned high up to extract smoke from the building;
- Barriers should restrict the spread of smoke;
- There should be inlet ventilators to introduce fresh air.

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 roof of the building. They are assisted by permanent ventilation grids also situated at the basement level. These permanent ventilation grids are also effective in reducing the spread of smoke during peak periods.

In Fig 8.22.10, the system is also different in that there is a new air flow of smoke in deep basements. The air flow is controlled by impulse ventilators that move smoke towards the extraction point.

In Fig 8.22.11, the obligatory signage accompanying the fire safety plan and extinguishing equipment is illustrated. The system is also efficient in reducing carbon monoxide levels during peak periods.

In Fig 8.22.8, commonly practised methods provide replacement air supply to balance out the smoky air being extracted. These should be inlet ventilators to introduce fresh air.

In Fig 8.22.7, the typical fire spread/smoke accumulation and extraction methods are illustrated. This method is not applicable to the current building typology.
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 through the building envelope. Aspects regarding allowed radiation have already been dealt with in Section 8.10.1, and need not be repeated here.

8.10.3 Daylighting

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 structure, and creates visual flow.

Fig. 8.23.2 Environmental considerations - daylighting

Fig. 8.23.1 Daylight optimization
Midday conditions - a promenade flooded by sunshine in all three solar instances, as depicted in Figs 8.23.3 to 8.23.5.
Rainwater harvesting can serve as a source of potable water (clean and rich in nutrients), but in this design, rainwater harvesting is used for two main purposes:

- to provide non-potable water (auxiliary) for water closets and sprinkler systems (cisterns);
- 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. The tanks are located on a level higher than those on which the ablution facilities are accommodated.

One main purpose: in this design, rainwater harvesting is used for potable water (clean and rich in nutrients), but potable water (clean and rich in nutrients)
Solar energy use

8.10.5 Solar energy use

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

Fig. 8.25.2 Thermo-syphon water heating system.

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 tank. The installation of movement sensors reduces the burden on energy sources. All internal lighting of the complex, except for the auditorium, is of the low voltage (LED) type.

• Generation of energy for peripheral lighting of the complex at night – developments in LED technology allow for low voltage flood lights to light exterior as well as interior, occupied areas. The six systems are dedicated to the restaurant.

The solar panel panels close the water outlet

Heated water outlet

Closed loop panels

Thermo-syphon System

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Closed tube panels

Water storage tanks where tubes heat water

Fig. 8.25.1 Environmental considerations - solar energy

Solar energy is used in two areas:

Solar panels

Solar

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 tank. The installation of movement sensors reduces the burden on energy sources. All internal lighting of the complex, except for the auditorium, is of the low voltage (LED) type.

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

The six systems are dedicated to the restaurant.
In general, according to the Sustainable Building Assessment Tool (SBAT-P) V1, a low energy-consuming building should have the following:

- In winter:
  - 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 and Energy. Giving it an overall high score, as depicted in Figure 8.26.

The design scores relatively high on key aspects such as:
- Earth heat exchanges.
- Night ventilation schemes (flywheel).
- Direct cooling of building mass.
- Sun protection through shading.
- Heat recovery of ventilated air.
- Good thermal separation.
- A well-insulated building skin.
- Good thermal insulation.
- Inclusive environments.
- Access to facilities.
- Participation & control.
- Education, health & safety.
- Energy.
- Waste.
- Water.
- Local economy.
- Global economy.
- Social.
- Economic.
- Environmental.
- Overall.

In general, according to the Sustainable Building Assessment Tool (SBAT-P) V1, a low energy-consuming building should have the following:
Architecturally, the design revolves around a continuum on the horizontal plane, resulting in a promenade flanked by juxtaposed, but not opposing, structures. 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 banks of the river. Permeability and flow have been established by means of access points and circulation routes connecting the complex with existing routes, allowing a personal response, while the vegetation has been expanded to soften the hard spaces created by the promenade.

The promenade allows infinite social production and enables the health promotion and equity environment complex in building equity within the bigger city. The ramp cuts through the structure flanking the northern edge of the promenade, allowing wheelchair access and promoting the use of the southern edge of the promenade. The ramp allows the structure hanging over the movement of pedestrian movement over which the continuity of pedestrian movement is continued by two stair.

Programmes functioning in the precedent (see Arch 8.20.4). The existing indigenous flora have been retained and the vegetation has been expanded to rediscover familiar environments that are conducive to social production. The southern flank features a rooftop garden, which is particularly important in view of the complex’s role in providing physical disability access and promoting the use of the southern edge of the promenade. The ramp allows the structure hanging over the movement of pedestrian movement over which the continuity of pedestrian movement is continued by two stair.

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8.11 Public Interface
Fig. 8.27.1 Public interface

- **Promenade**
- **Northern Courtyard**
- **Children's play area**
- **Southern Courtyard**

**Programme**
- Social Response
- Social Production

**Landscape**
- Rooftop Garden
- Rooftop
- Landscape

**Access**
- Drop off
- Steve Biko Street
- Auditorium
- Walkways

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Fig. 9.1 View - Promenade towards the City
Table 9.1  Occupation Schedule

<table>
<thead>
<tr>
<th>Location</th>
<th>Significant Considerations</th>
<th>Ventilation Requirements</th>
<th>Occupancy Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daylight &amp; Solar Energy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Lighting</td>
<td>200-400 lux</td>
<td>1 person/55m²</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- C1: Assessment Centre
- C2: Social Production
- C3: Office
- A3: Information Hub
- A2: Children's area
- A1: Work space
- Library / Meeting space
- Auditorium
- Lecture: and Reading Space
- Kitchen
- Courtyard
- Toilet
- Amenity
- Promenade Level 1

Note: Includes
- 200 m² Mezzanine
- 250 m² Ground Floor
- 280 m² Ground Floor
- 520 m² Ground Floor
- 1790 m²

Redrawn by University of Pretoria

9.1 Occupational Schedule
Fig. 9.2 Northern Entrance to main complex
Project title: Victoria Cobeli Info Centre  
Date: 12/12/2012  
Location: Steve Biko Street  
Undertaken by: Pieter Breytenbach  

Building type: Public  
Company / organisation: UP  
Internal area (m²): 
Number of users: 
Telephone: 
Fax: 

Occupant Comfort  
Inclusive Environments  
Access to Facilities  
Participation & Control  
Education, Health & Safety  
Energy  
Waste  
Site  
Materials & Components  

Social: 3.6  
Economic: 3.6  
Environmental: 2.5  
Overall: 3.2  
Classification  

Local Economy  
Efficiency  
Adaptability  
Ongoing Costs  
Capital Costs  
Water  

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Fig. 9.5  LOWER GROUNDFLOOR PLAN: PROMENADE

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Fig. 9.6 GROUNDFLOOR PLAN

- Workshop space - Polished concrete
  LEVEL - 1319.5
  AREA - 1780m²

- Auditorium Space - Vinyl floor
  LEVEL - 1319.560
  AREA - 281m² ground floor
  - 200m² mezzanine

- Foyer - Vinyl floor
  LEVEL - 1319.560
  AREA - 281m²

- Main Circulation space
  Polished Concrete
  LEVEL - 1319.560
  AREA - 281m²

- Ramp

- Northern Entrance

- Library & reading/meeting space
  Polished concrete
  LEVEL - 1319.5
  AREA - 520 m²
  Services - 75 m²

- Entrance

- Information Counter
  Double volume

- Workshop space
  LEVEL - 1319.5
  AREA - 1200m²

- Roof Garden
  LEVEL - 1319.5

- Landing Area

- Courtyard

- Promenade

- Ablution women
  ablution men

- Librarian

- Informal meeting / reading space

- Meeting area

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Fig. 9.10 DETAIL TEMPERATURE AND VENTILATION CONTROL—SUMMER
WINTER SOLSTICE

INTERIOR

EXTERIOR

DIRECT SOLAR RADIATION/SHADE

HEAT CLEARING CONVECTION
INNER GLASS TO HEAT AND MAINTAIN
WORKING CONDITIONS-BETWEEN
WINDEO SOLUTION

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Fig. 9.11 DETAIL TEMPERATURE AND VENTILA-
Fig. 9.18 SOUTH ELEVATION FROM PROMENADE LEVEL
Fig. 9.20  VIEW OF NORTH WESTERN BASEMENT PARKING ENTRANCE
Fig. 10.1 New figure - ground map of precinct
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, allowing for a series of inter-objects overlaps where a series of inter-object existent establishes boundaries that result in a transgression and mediation based on a transgression of the plane in response to the problem.

The study found that the mediating role that architecture can and should play between society, the city, and the environment towards the creation of a horizontal plane where objects of place within the city environment is based on the creation of a horizon that is able to merge, allowing for a new spatial existence without social existence, propagated by the void map, and that there can be no spatial existence without social existence. This is a process where the social idea of void is propagated by the noli map, and that there can be no spatial existence without social existence, propagated by the void map, and that there can be no spatial existence without social existence.

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 the problem statement, addressing the programmatic requirements of the Victoria Cobeli Information Centre in response to the problem statement.


The program received a donation of books and other learning materials from the University and explored the possibilities of promoting community engagement through the provision of such resources. The community responded enthusiastically to this initiative, and the project was able to reach a significant number of learners.

Community Engagement

The program engaged with the community to understand their needs and to develop strategies that would be effective in addressing these needs. This involved the collection of feedback from community members and the use of this information to inform the design and implementation of the program.

The program was able to provide a broad range of learning opportunities for children in the community, including access to books and other learning materials, as well as opportunities for social interaction and community engagement. The program was able to achieve this through a collaborative approach, involving the community in the design and implementation of the program.

The program was able to achieve a significant impact on the community, with many learners reporting an improvement in their learning outcomes. The program was able to achieve this through a combination of strategies, including the provision of learning materials, the development of a supportive learning environment, and the engagement of community members in the design and implementation of the program.