



An investigation of restorative and experiential theories, applied within an open space framework for the Hospital Hill as a place that could benefit public health.

a development proposal for regeneration: **THE HOSPITAL HILL**

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by Heleen Pretorius

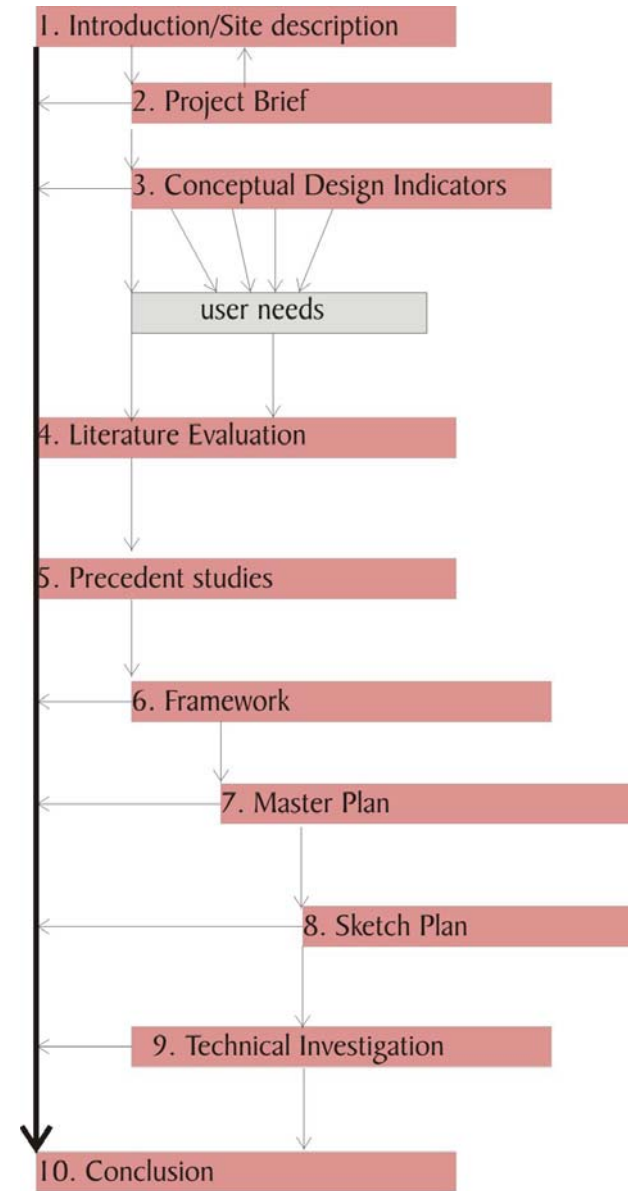
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Environment and Information Technology of the University of Pretoria.

“...almost meaningless to ask how to design an experiential landscape in a conventional sense because a part of it resides in the life patterns and psychological activity of individuals and groups and this is outside the realm of conventional approaches to design. Instead it may be more meaningful to talk about trying to create the conditions within which experiential opportunity can be optimised.”

Thwaites, K and Simkins, I (2007):114





EXECUTIVE SUMMARY

The Hospital Hill is characterised by illegibility, under-utilised space and lack of circulation control. Hospital Hill contains the Medical campuses of the University of Pretoria, as well as the Tshwane District Hospital. The Tshwane District Hospital is in the process of being upgraded to a Regional Hospital. This upgrade has profound implications on spatial organisation within the Hospital Hill Precinct and relationships between institutions and users.

This design aims to improve the spatial connectivity between the Tshwane Regional Hospital and the Campuses of the University of Pretoria through the application of a series of open spaces for the benefit of public health.

The hypothesis was tested and applied through the following methodology:

- Analysis of site specific design indicators
- Compilation of a user profile
- Literature
- Investigation of theories of restorative benefit and the experiential landscape to determine characteristics of an environment that *could* be beneficial to public health
- Precedents and previous studies

An open space development framework was compiled for the Hospital Hill. The Master Plan area focused specifically on the interface between the campuses of the University of Pretoria and the Tshwane Regional Hospital.

Dr. Savage Plaza was identified as the most important activity node of the Hospital Hill. This area was developed up to Sketch Plan design, applying some of the principles identified in the theory, to argue for the development of open spaces with the potential to benefit public health.

The Technical Investigation involved the development of a maintenance strategy for the open spaces. It includes the details of the hydrological systems applied at the Dr. Savage Plaza (stormwater detention feature, erratic fountain). Street furniture and edge details were investigated.



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GLOSSARY OF TERMS

Actualisation: The final layer in Maslow's (1964) hierarchy of needs. Achieving actualisation is dependent on satisfying the lower levels of needs, including physiological need, needs for safety, love and belonging; esteem, cognitive and aesthetic needs. Actualisation involves achieving one's true potential, by *"becoming everything one is capable of becoming."*

Area: "A subjectively significant realm engendering a sense of coherence and containment." (Thwaites and Simkins, 2007)

Attention restoration: Public health vs. therapeutic application of restorative environment. Recovery from everyday fatigue caused by the urban environment, and restoration of the capacity known as direct attention.

Bio-physical environment: Components of the environment that relate to topography, geology, hydrology, fauna and flora within the context of the Hospital Hill Precinct.

Centre: Subjectively significant location engendering a sense of here-ness and proximity (Thwaites and Simkins, 2007)

Complexity: An individual involvement variable that influences the visual preference of an individual towards an environment (Kaplan, 1975)

Coherence: The visual consistency of a sequential experience of an individual as he moves through a series of spaces.

Direction: "Subjectively significant continuity engendering a sense of there-ness and future possibility." (Thwaites and Simkins, 2007)

Ephemeral: Transient effects caused by contrasts in nature, for example sun to shade, wet to dry and changes caused by seasonal effects. Ephemeral qualities are believed to aid in restorative benefit.

Environment: The sense of place of the Hospital Hill Precinct that is the result of an intricate and changing relationship between bio-physical, physical-built and socio-cultural environments.

Extent: An environment is of favourable extent to an individual when what the individual wants to do corresponds with what the space has to offer (Hunziker et al., 2007).

Fascination: Effortless attention that stimulates feelings of wonderment, but should not require concentration. Soft fascination often correlates with restorative sensations.

Health: ".....is not the mere absence of illness, but means physical, social and mental well being (Mercer, 1975 according to World Health Organization)."

Imageability: Quality of a physical object, which gives an observer a strong, vivid image (Lynch, 1960)

Human-environment relationship: "This holistic, mutually defining human-environment relationship is thus one of continuous, dynamic and evolutionary change, driven by the activity of people expressed through where it happens." (Thwaites et al., 2007)



Legibility: “the ease with which [the city’s] parts can be recognized and can be organized into a coherent pattern” (Lynch, 1960: 2-3).

Open space: Areas predominantly free of building that provide ecological, socio-economic and place-making functions at all scales of the metropolitan area (Tshwane Open Space Framework, 2005).

Physical-built environment: The “figure” component of the figure-ground relationship within the context of the Hospital Hill Precinct.

Public health: The treatment of attention depletion of the urban individual through the availability of spaces with the ability to be restorative to a compatible individual, results in attention restoration and improves the ability of the general public to function within the urban environment.

Preferred environment: An environment that people can organise perceptually and also become involved with. (Kaplan, 1975)

Regeneration: The altering of existing spaces to such an extent that it results in an improved

relationship between components of the social-cultural, natural and physical-built environment.

Restoration: “the process of renewing physical, psychological and social capabilities diminished in ongoing efforts to meet adaptive demands.” (Hartig, 2004).

Restorative: used in a general sense to explore the potential of outdoor settings in towns and cities to provide a general sensation of revival or renewal, mitigating the stress and mental fatigue which can arise from prolonged exposure to some aspects of urban environments (Thwaites et al., 2005)

Restorative landscape: Environments with higher degree of four factors consisting of coherence, complexity, legibility and mystery are more preferred by people. It installs a sense of being away, extent, fascination, compatibility. This theory emphasises that if the four properties within a landscape are strong enough, it could be called a restorative environment (Huang, 1995).

Restorative perception: The higher the preference (of the user) towards an environment,

the higher the restorative perception of the environment.

Transition: “Subjectively significant point or area of change engendering a sense of transformation in mood, atmosphere or function.” (Thwaites and Simkins, 2007)

Socio-cultural environment: Another component of the environment that is in relationship with the bio-physical and physical-built environments within the context of the Hospital Hill.

Visual preference: Two information and two involvement variables are applicable: legibility and spatial definition are important informational variables; complexity and mystery are described as the two involvement variables. (Kaplan 1975)

Under-utilised space: The “figure” component of the figure-ground relationship, where the space contributes to the fragmentation, or is isolated, inaccessible or not being used to its full potential.



LIST OF ABBREVIATIONS

CBD:	Central Business District
CDTA:	Centre, Direction, Transition, Area
CTMM:	City of Tshwane Metropolitan Municipality
P.A.H:	Pretoria Academic Hospital
T.R.H:	Tshwane Regional Hospital
T.D.H:	Tshwane District Hospital
T.R.H.M:	Tshwane Regional Hospital Master Plan
SAHRA:	South African Heritage Resources Agency
U.P:	University of Pretoria

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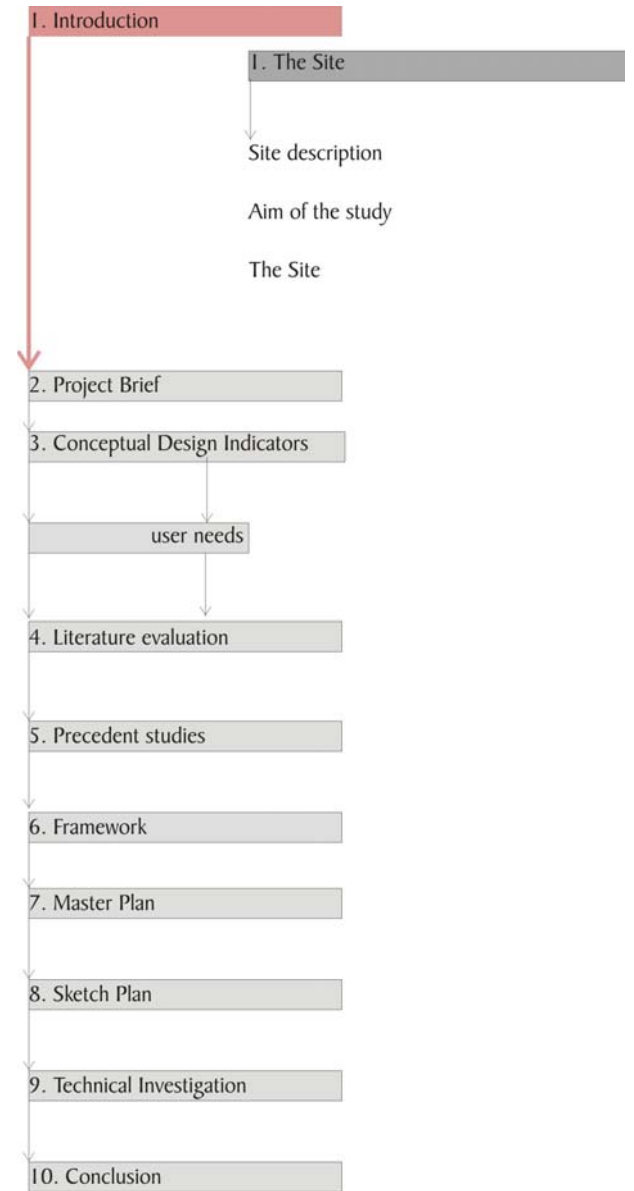


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1. INTRODUCTION

Landscape Architecture is a diverse field of study. From literature it seems that the dominant perception of the role of landscape architecture is to create meaningful landscapes for the pleasurable experience of humans. These landscapes can serve a function in many human environments ranging from large nature reserves to densely populated cities.

According to the World Urbanisation Prospects 2007 revision, 29 Million South Africans are urbanised. With an estimated population of 49 Million, 59.1% of our population live in cities. It is therefore of paramount importance that a landscape architect understands the relationships between the individuals, and how they interact with places within the urban fabric. This will enable the landscape architect to create places for the pleasurable experience of its users and with the potential of becoming meaningful to the individual. In this study a regenerative development for the Hospital Hill Precinct is proposed, based on these relationships.

1.1 Site description

The Hospital Hill Precinct is located in a peripheral urban context. It forms a node that is bordered by a variety of land use precincts that form part of the urban character of Pretoria. The Hospital Hill Precinct owes its name to the variety of health institutions and educational facilities for health practitioners and the physically impaired that are located within the area. The precinct is characterised by three dominant institutions:

- Pretoria Academic Hospital (P.A.H) on the northern boundary;
- The Tshwane District Hospital and ancillary buildings bordering the northern side of Dr. Savage Road; and
- The Faculty of Health Sciences of the University of Pretoria. (The faculty of Health Sciences consists of the Prinshof Campus for Dentistry and Basic Medical Sciences on the southern boundary of Dr. Savage Road, and the Medical Campus that is located in-between buildings of the Tshwane District Hospital).

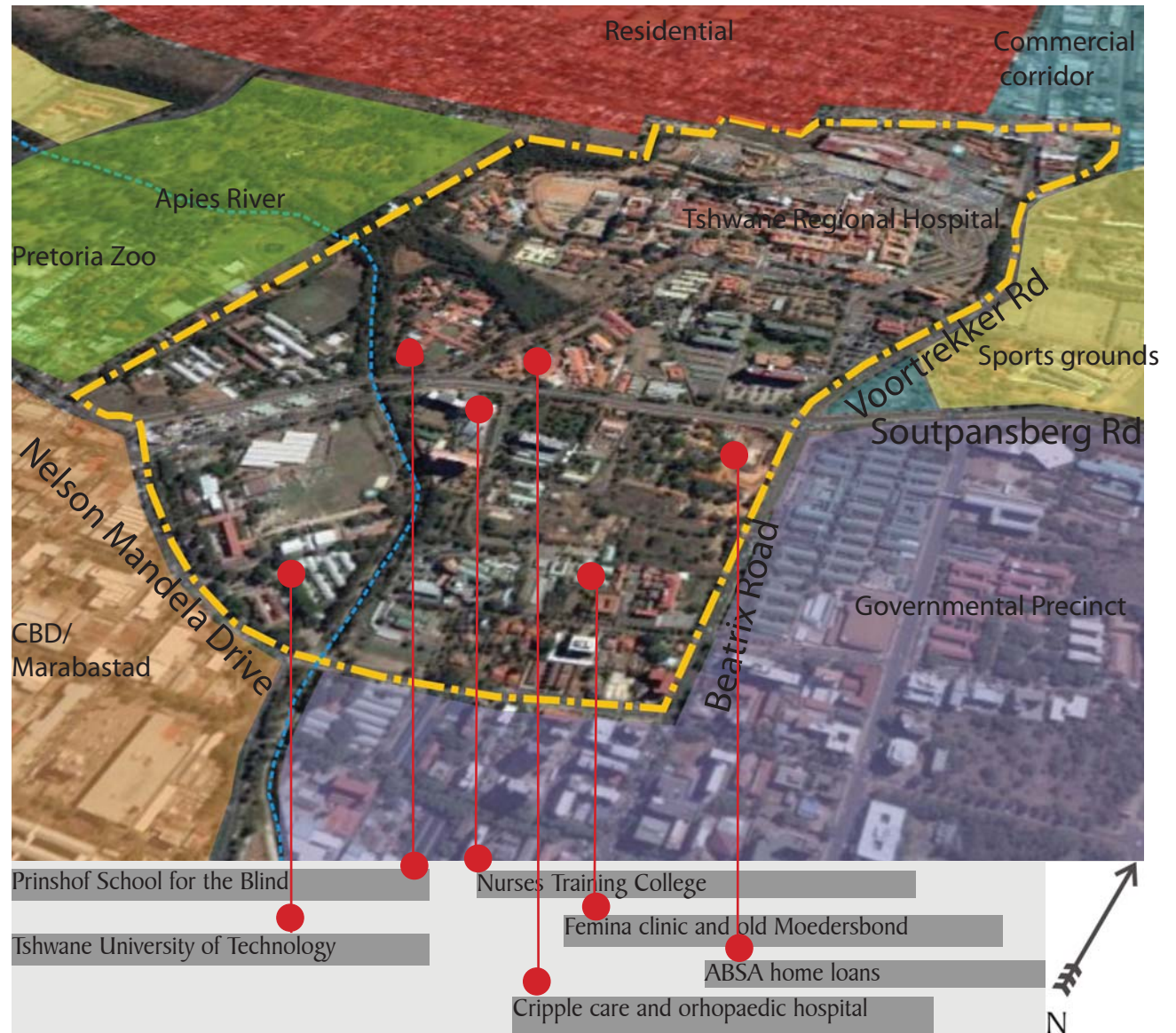


Fig. 1.1: Contextual map

Other facilities include:

- *Educational facilities in close proximity.* Prinshof School for the visually impaired; Riviera Primary School; Pretoria Hospital School; DAMsa; Tshwane University of Technology - Department of Arts; Nurses Training College; several crèches.
- *Healthcare facilities.* Femina Clinic; Orthopaedic Hospital, Old Moedersbond Hospital; Cripple care
- *Government.* Pension's Building, State Mortuary.
- *Commercial:* ABSA Home Loans.

Even though almost all the land uses within the precinct are conceptually related, fences spatially separate institutions that share facilities and staff. Furthermore, four major roads define the area:

- In an East- West direction, Dr. Savage Rd and Soutpansberg Drive, and;
- in a North-South direction, Voortrekkers Rd and Beatrix Rd leading towards the CBD.

The area is not clearly defined s 'hospital hill' due to a lack of identifiable character and entrance definition. Unsafe areas bordering the Apies River and under-utilisation of space adds to the general lack of maintenance. The built form results in a fragmented urban fabric that is inaccessible. The development of an urban development framework (UDF) could provide objectives to guide future development in the area.

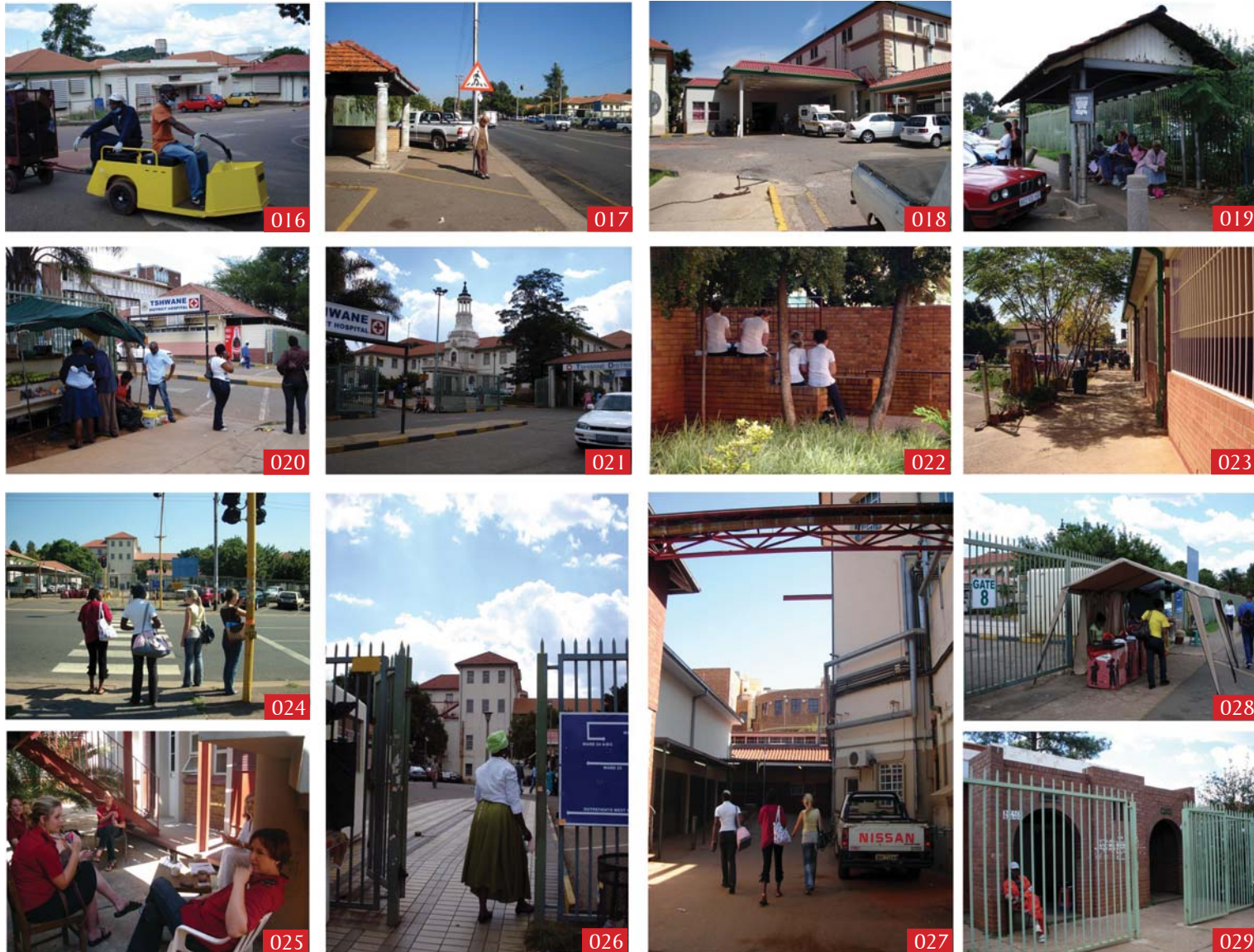
Refer to the site character collage on the next page for a general description of the area.





Fig. 1.2: Site character collage (Author, 2008)





- 016: Collection and removal of medical waste.
- 017: Waiting areas in Dr. Savage Road.
- 018: The trauma unit - patients, family and ambulances waiting in the sun.
- 019: Overcrowded bus shelter - many people make use of public transport.
- 020: Informal trading at the main entrance of the Tshwane Regional Hospital.
- 021: The historic imageability of the T.R.H.
- 022: Dentistry students on a lunch break
- 023: Patients waiting to be treated at the Skinner clinic.
- 024: Students and patients waiting to cross Dr. Savage Rd.
- 025: Lunch break at Radiotherapy.
- 026: Too many access points to the hospital.
- 027: The students on their way to lecturing facilities.
- 028: Telephone stalls.
- 029: Public toilets.

Fig. 1.3: User character collage (Author, 2008)

1.2 Problem identification

Specifically focusing on the spatial relationship between the Faculty of Health Sciences of the University of Pretoria, Tshwane District Hospital and the Pretoria Academic Hospital; the general problems of the Precinct can be divided into a set of sub-problems which can generally be traced back to illegibility; circulation control and under-utilised space as summarised below.

Illegibility

- Incoherent building patterns.
- Buildings from different eras and additions from all styles.
- Lack of maintenance.
- Functions of building not evident from its architecture.
- Too many entrances and points of access.
- Lack of signage or obscured signage.
- Relationships between parking-journey-arrival not clear.
- Taxi, bus, vehicle interface causes confusion and anarchy.
- Lack of actual movement between institutions that could share facilities.

Circulation

- Pedestrian movement in north-south direction between Campus- T.D.H (Tshwane District Hospital) and P.A (Pretoria Academic hospital) is unsafe and not legible.
- No provision for safe movement of pedestrians and bicycles across busy intersections.
- Lack of legible hierarchy between vehicles, buses and taxis.
- Insufficient parking.
- Access congestion during peak hours.

Under-utilised space

The site is densely built-up due to previous development pressure, which results in:

- Fire hazard.
- Poor maintenance.
- Illogical arrangement of function, leading to congested areas with insufficient parking, derelict areas with empty buildings as well as large areas that are open and under-used.

1.2 Aim of Study

The aim of the study is to investigate the relationship which exists between the application of the experiential landscape theory and restorative benefit, and to apply it within an open space system to alleviate the identified problems.

1.3 Methodology

Identification of problems and analysis of the study area will define the problem and inform the conceptual design indicators. The design motivation will be developed from the problem statement. Critical evaluation of literature as well as local and international precedents will then be used to formulate design objectives for the development framework. Synthesis of all the above will lead to the selection of a design proposal, which will be applied to the site and technically evaluated.

urban regeneration

restorative benefit

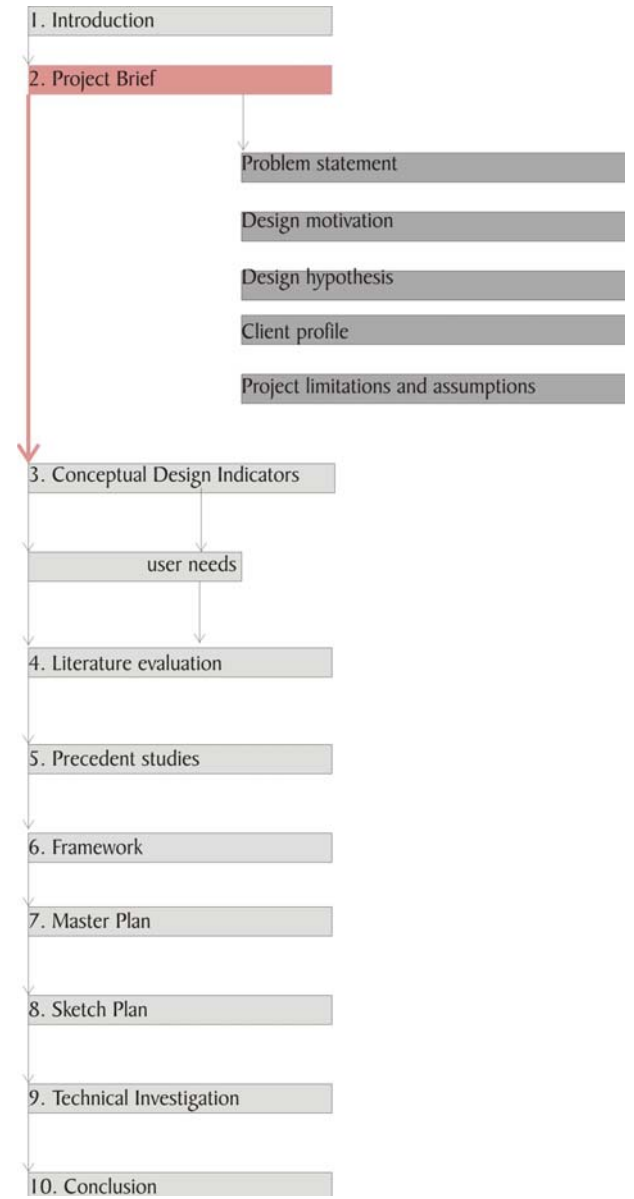
experiential landscapes

reclaim under-utilised space

integrated open space network

individual placemaking







2. PROJECT BRIEF

2.1 Problem statement

The Hospital Hill Precinct is characterised by inaccessibility and illegibility. The incoherent way by which the area was developed led to a multitude of buildings, each with different functions and users, scattered across the area. The result is poor legibility and illogical circulation patterns. A primary point of destination and orientation is needed. From communication with students, medical practitioners and pedestrians it was evident that there is continued movement of individuals and vehicles between different institutions, campuses and buildings within the Precinct.

Movement patterns between sub-complexes are strongly influenced by building arrangement. The Tshwane District Hospital is currently being upgraded to a Regional Hospital. The demolition of various buildings during this upgrade will increase the amount of under-utilised spaces between buildings and has profound implications on the functional arrangement and existing movement patterns on the site. This study investigates and proposes how the above problems can be addressed.

2.2 Design motivation

Analysis of circulation patterns, land use and users in the proposed master plan for the Tshwane Regional Hospital and its relationship with adjacent amenities will identify optimal axial lines of movement. The aim of this study is to design a hierarchy of directional, transitional and locational spaces along optimal axial lines of movement. Careful arrangement of such spaces will make optimal use of under-utilised space defined by the figure-ground. This will result in a more legible, accessible and safer passage through, and experience of, the Hospital Hill for all users.

2.3 Design hypothesis

The fragmented nature of the Hospital Hill precinct can be unified through the development and application of a network of hierarchical open spaces consisting of directional, transitional and locational restorative spaces. This will result in improved circulation, leading to a more legible experience for all users.

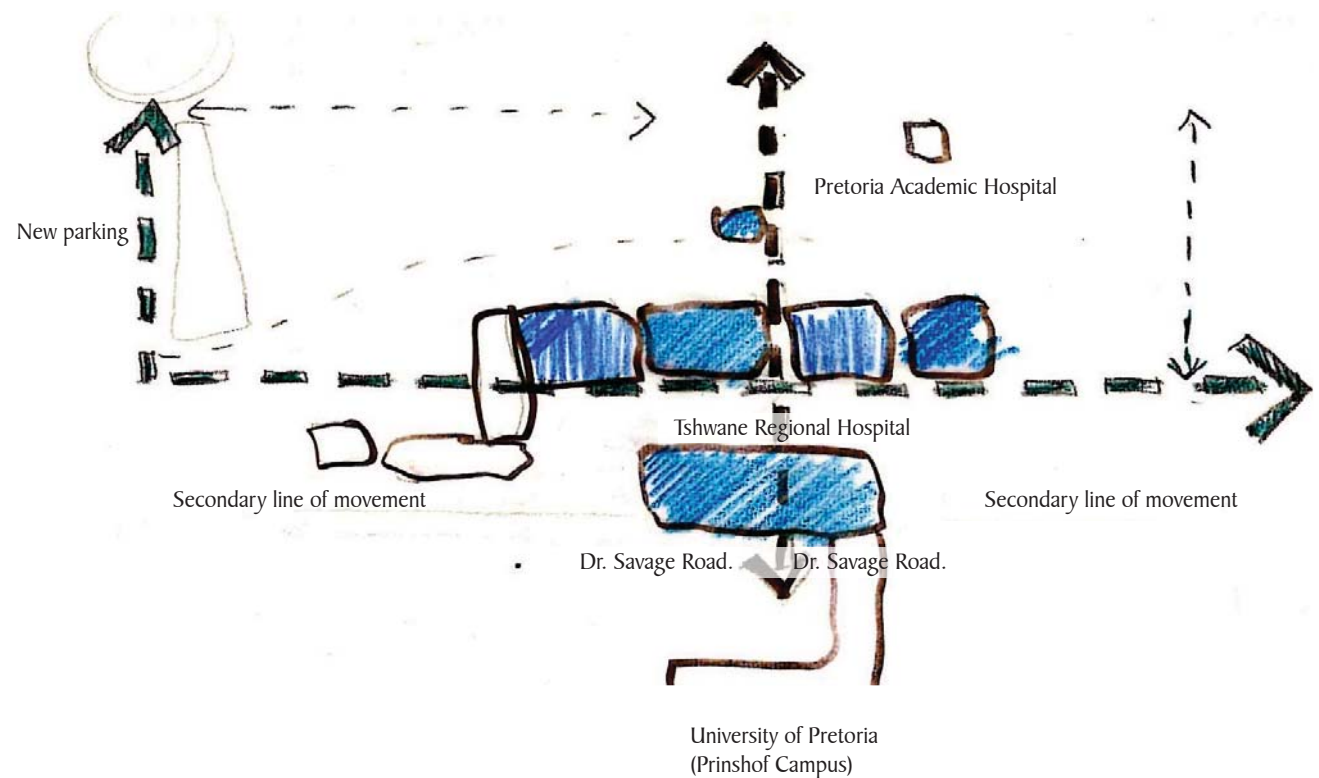


Fig. 2.1: Design hypothesis. (Author, 2008)

2.4 Client profile

The Tshwane District Hospital under the authority of the Department of Public Works is aware of the fact that their plans to upgrade the facilities to a Regional Hospital by 2010 will have an influence on circulation patterns on the premises, as well as on movement between the Hospital and the Faculty of Health Sciences of the University of Pretoria. They regard the upgrading of the hospital as a viable opportunity to integrate and regenerate the relationship between these institutions. This joint venture to improve legibility, the pedestrian-vehicle interface and reclaim under-utilised space will be beneficial to the University of Pretoria, the Tshwane Regional Hospital and all users of the transitional area in between.

Interested and affected parties include:

- Pretoria Academic Hospital
- All institutions on neighbouring properties
- City of Tshwane Metropolitan Municipality

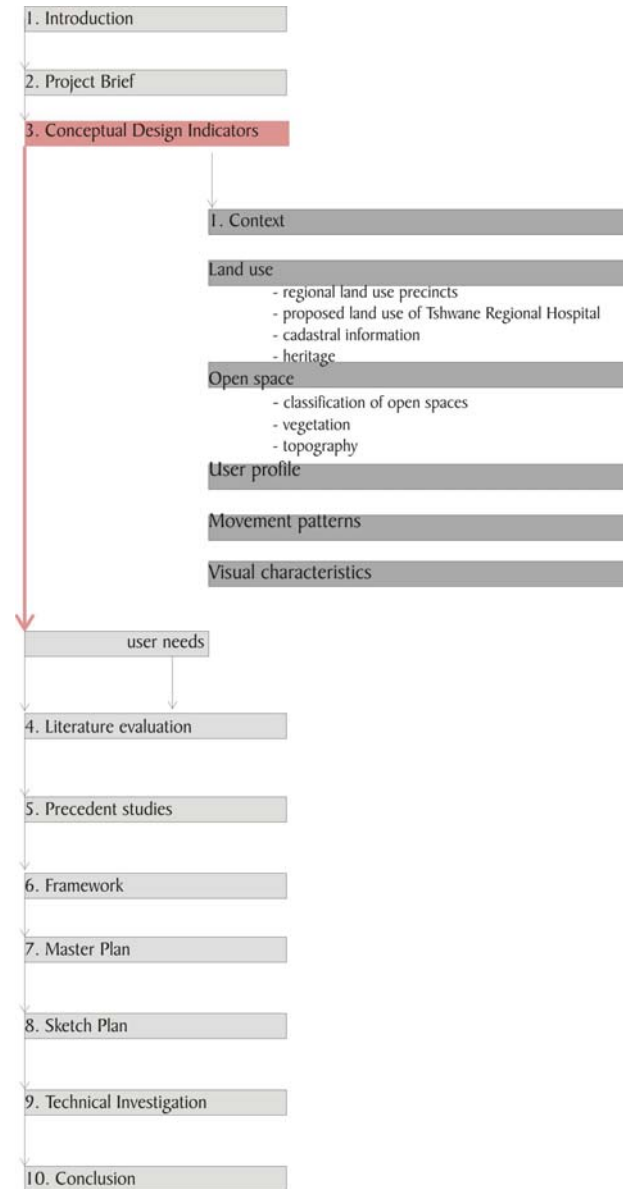
2.5 Project limitations and assumptions

Although it is proposed that a development framework for the entire precinct be drawn up, the focus for design purposes will specifically be on improving the spatial connection between the Faculty of Health Sciences of the University of Pretoria and the Tshwane Regional Hospital. Design objectives will be listed for other parts of the Master Plan.

This study is limited to the figure-ground as delineated in the Tshwane Regional Hospital Master Plan and will not question the validity of the placement of functions or buildings. However, the spaces in between (ground) are subject to review by the author.

According to Mr. Dan Potgieter from the University of Pretoria, Government enforces strict measures regarding the number of students on campus and it is assumed that no future development plans are envisaged.





3. CONCEPTUAL DESIGN INDICATORS

3.1 Context

The socio-geographic context of the site can be summarised as follows.

Region. The precinct is located in the transitional area between Prinshof and Riviera in the City of Pretoria, South Africa.



Fig. 3.1: Context of the study area (Google-earth, 2008)

Precinct: The precinct is characterised by educational and health institutions owned mainly by Government.



Fig. 3.2: The Hospital Hill Precinct (Author, 2008; Google-earth, 2008)

Site: The focus will fall mainly on the interface between the Tshwane Regional Hospital and the Faculty of Health Sciences of the University of Pretoria.

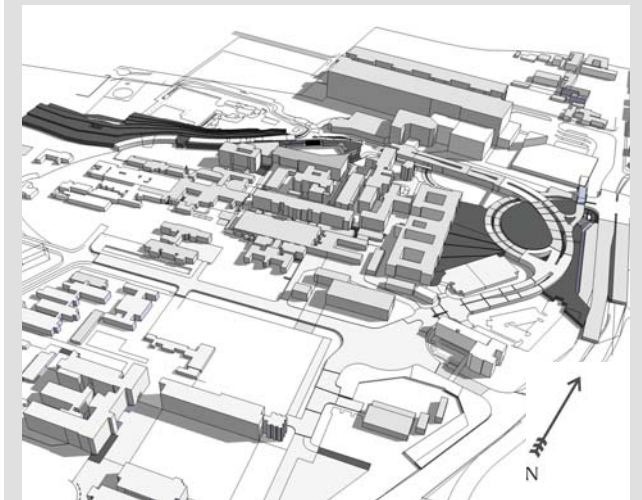


Fig 3.3: The Site. (Author, 2008)

3.2 Land use

3.2.1 Existing land use

Figure 3.4 depicts the land use of the Precinct area. The master plan area is indicated and will now be discussed in further detail.



Fig. 3.4: Land-use of the T.R.H.M imposed on an aerial photograph. Unfilled buildings are going to be demolished (Medi-plan Architects, 2007).

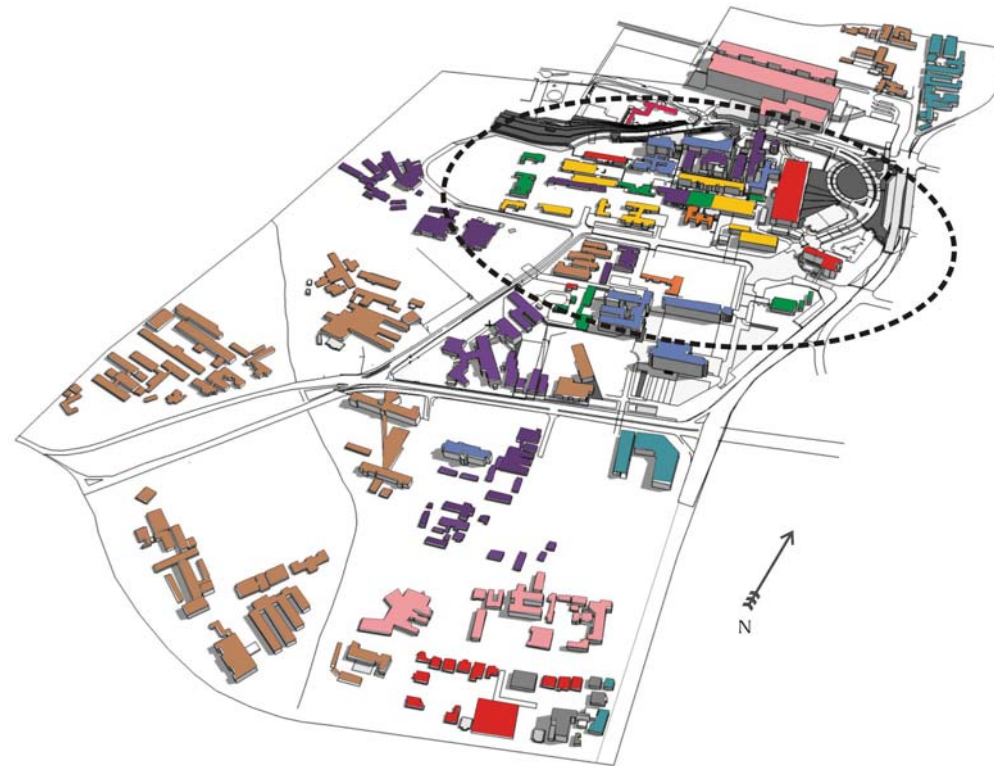


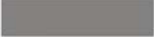









Fig. 3.5: The Hospital Hill: Land Use Areas (Author, 2008)

			
Educational	Commercial	Other Governmental	Administration
			
Other health institutions	Services	General wards	
			
Specialist	Residential	University of Pretoria	



3.2.2 Proposed land use of Tshwane Regional Hospital development plan

The aerial photograph in Figure 3.4 depicts buildings on the premises of the Tshwane District Hospital which will be retained during the upgrade to Tshwane Regional Hospital (Medi Plan Architects, 2007). Heritage value (in terms of the National Heritage Resources Act no. 25 of 1999), and potential fire hazard were aspects taken into consideration to determine which buildings should be retained. Furthermore, all the asbestos structures have been demolished, but the foundation walls and floor slabs are still intact. The extension of Bophelo Road to form a ring road system through the area has recently been completed.

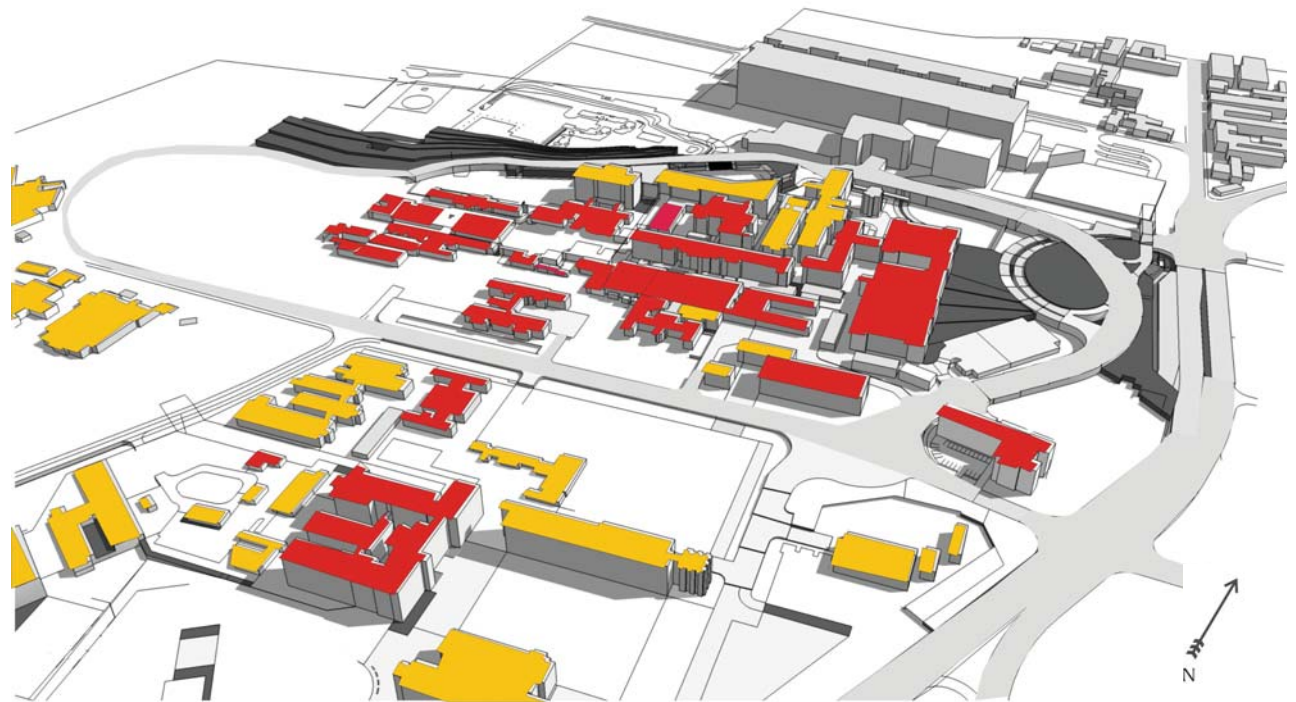


Fig. 3.6: Protection of Heritage Resources in terms of the National Heritage Resources Act, 25 of 1999. (Medi-plan Architects, 2007)



Buildings currently not protected by the National Heritage Resources Act



Buildings currently protected by the National Heritage Resources Act

3.2.3 Cadastral information and ownership

Although a variety of institutions share the land portions, most of it belongs to Government. In some cases the institutions have 100-year leases on the buildings. Due to the multitude of buildings, the boundaries of land portions are in some cases unclear, but because they all belong to one institution, a single boundary fence includes most of the portions.

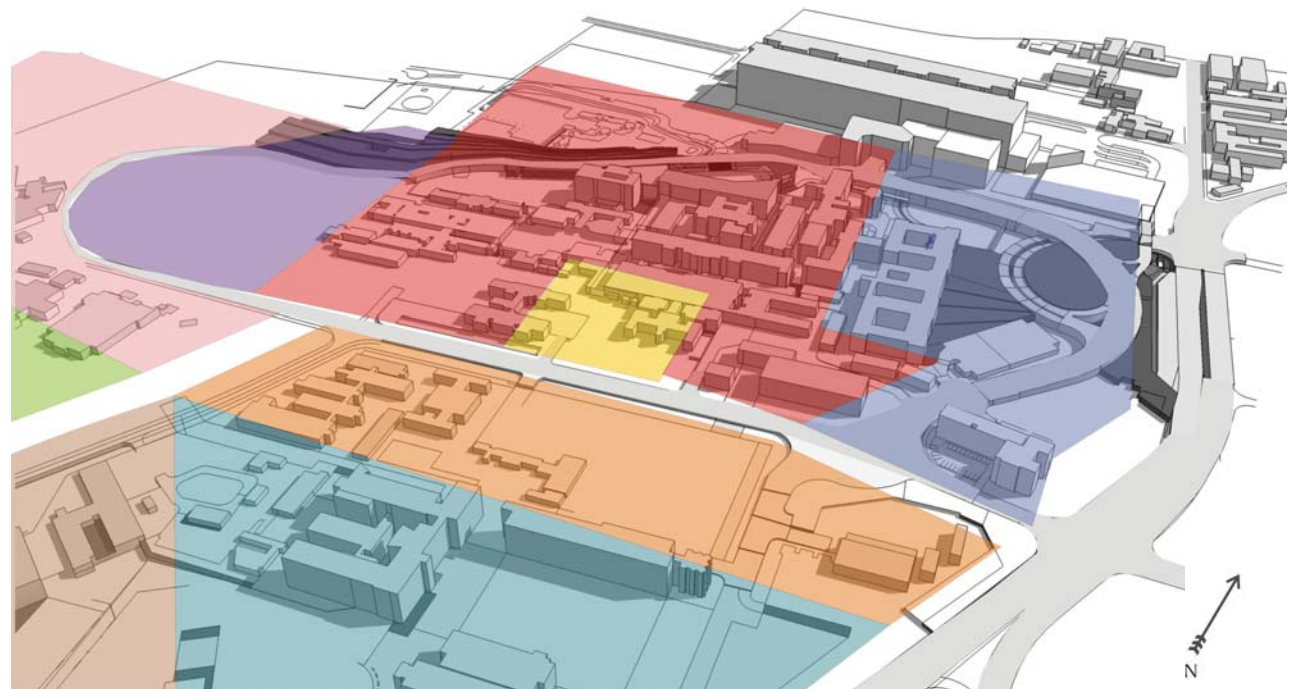











Fig. 3.7: Cadastral information and ownership (Author, 2008)

		
Ptn 39 of Prinshof 349- JR	Ptn 1 of Prinshof 349- JR	R/Ptn 28 of Prinshof 349- JR
		
R/Ptn 43 of Prinshof 349- JR	Ptn 58 of Prinshof 349- JR	Ptn 38 of Prinshof 349- JR
		
Ptn 51 of Prinshof 349- JR	Ptn 14 of Prinshof 349- JR	Ptn 53 of Prinshof 349- JR



3.3 Open space

3.3.1 Existing open space

Existing open spaces which are used for resting, observing and gathering are indicated. Examples include the large lawn at the Prinshof Campus of the University of Pretoria, and lawn areas outside the university hostels.

3.3.2 Under-utilised space

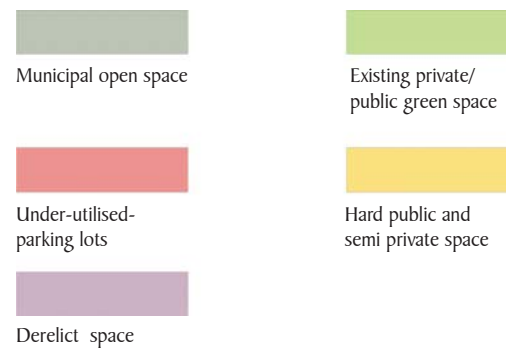
Under-utilised spaces are abundant on the site. For example spaces that have mono-functions, such as parking lots.

3.3.3 Derelict space

Spaces which fell into disrepair and are not being maintained or used for a specific function occur mostly between buildings. The remaining spaces where buildings have been demolished, also fall within this category.



Fig. 3.8: Classification of open spaces. (Author, 2008)



3.3.4 Vegetation

The site consists mostly of hard landscaping. The largest concentrations of trees are found in parking lots and street boulevards, but are mostly exotic. It is unpractical to propose removing all exotics, especially those in the built areas. The vegetation was assessed to identify trees with characteristics which would contribute to space creation, irrespective of whether they are indigenous. Where stands of exotic vegetation occur, for example in the drainage line leading to the Apies River, it is proposed that it should be removed in phases and replaced by indigenous species.

Prominent species include *Jacaranda mimosifolia*, *Pinus sp.* and *Ceratonia celiqua*.

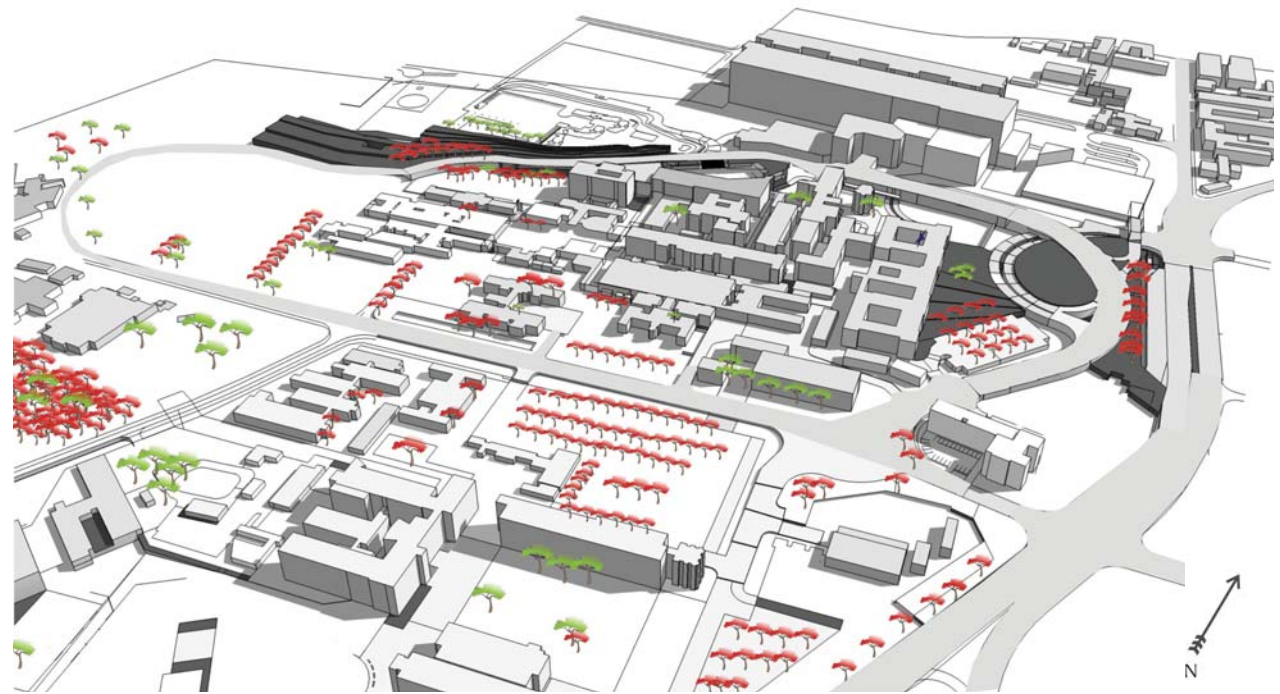


Fig. 3.9: Indigenous and exotic vegetation inventory. (Author, 2008)



Exotic



Indigenous



3.3.5 Topography

The Precinct is located on the southern slope of the Magaliesberg Mountain ridge and associated valley bottom. The Steenhoven spruit flows through the lowest part of the site. A slope analysis clearly indicates the steep areas that resulted in the terraced fashion by which the site was developed.

3.3.6 Microclimate

The dense fabric of the physical environment and little vegetation increases the amount of hard surfaces that absorb and store heat, resulting in an increased general microclimate. However, tall buildings separated from other buildings by small courtyards, create unpleasantly cold spaces that are always dark.

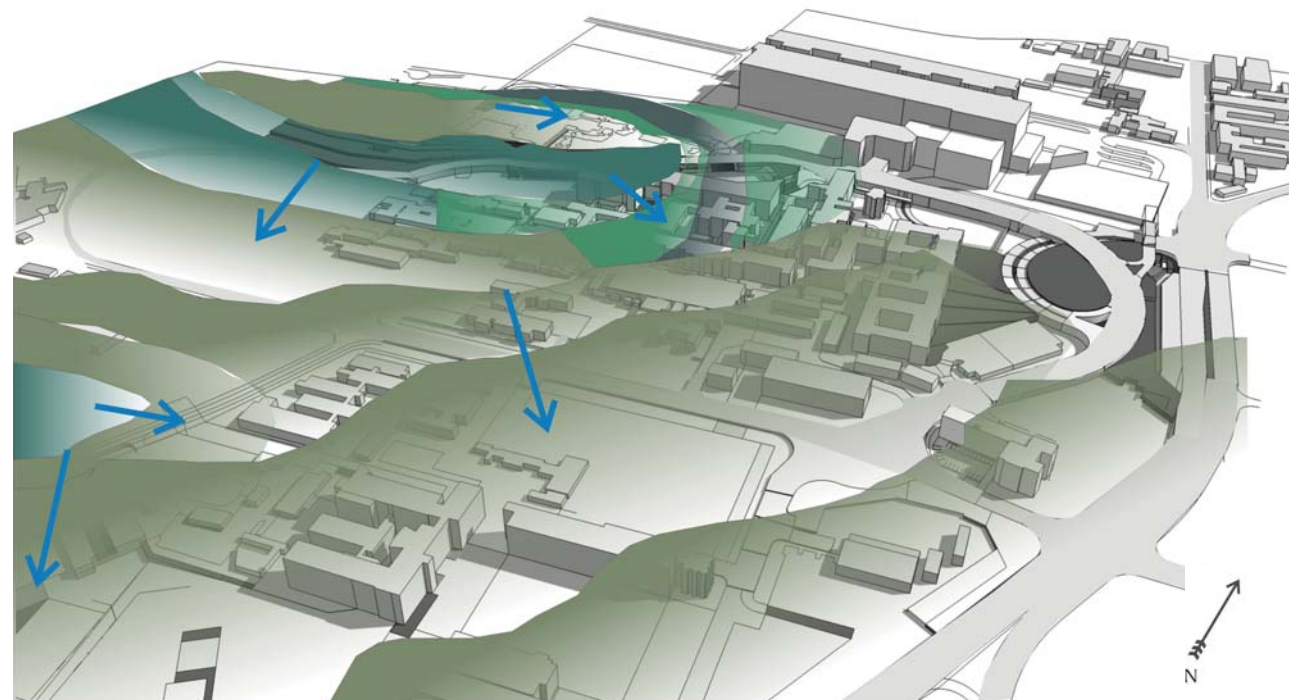
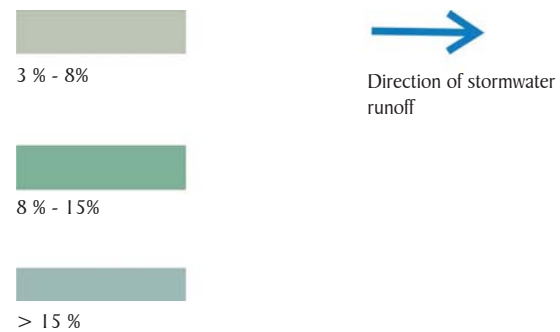


Fig. 3.10: Topography. (CTMM, 2005)



3.4 User profile

Spontaneous and semi-structured interviews were conducted to acquire general information about the users of the area. Questions included were: where the individual was from, mode of transport, where they have lunch and what their likes and dislikes about the area were. The information was used to compile the user profile. Direct observation and interviews confirmed that the social component of the area consists of a wide spectrum of users of all ages, races and intentions. For the purposes of simplification the users were divided into six groups for whom basic needs were listed.

- Health staff
- Patients
- Support staff
- Students
- Hostel residents
- Through traffic

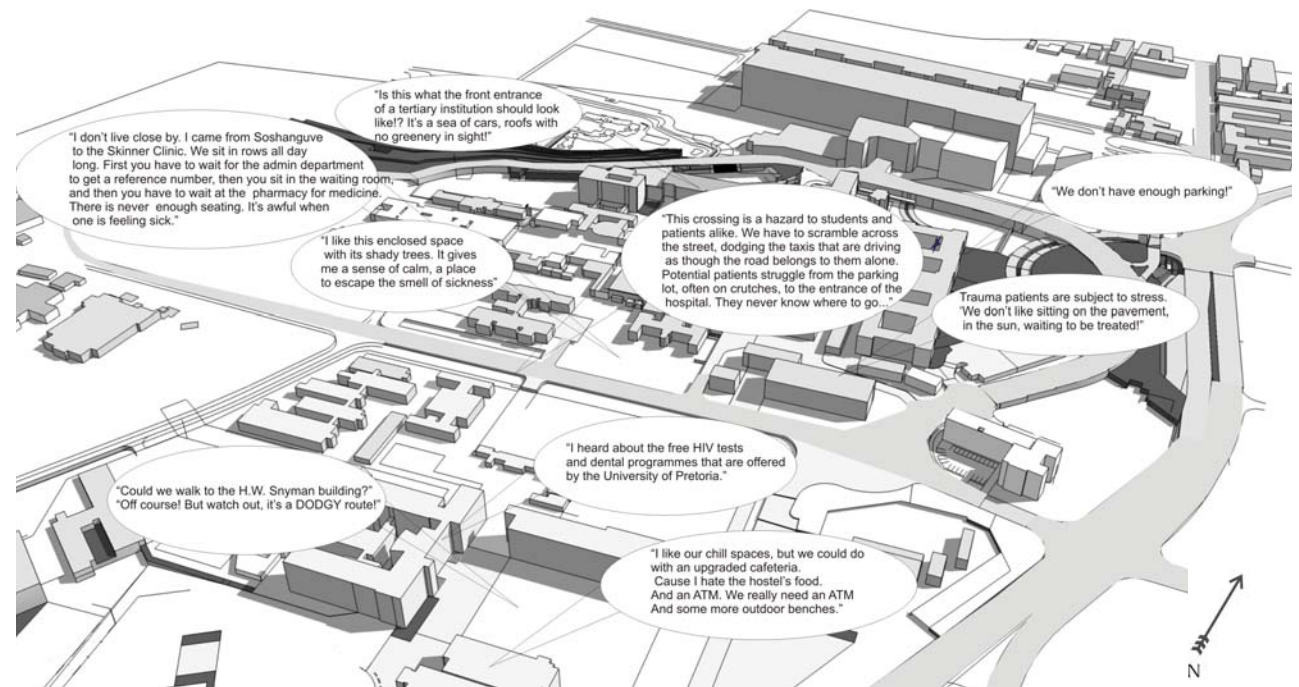


Fig. 3.11: User profile. (Author, 2008)



Figure 3.12 conveys the distribution of users conceptually. The circulation of users is closely related to the function of the buildings (refer to **Figure 3.5, Land Use**). Although the user profile varies greatly, it was found that their basic needs coincide and that those were closely linked to the specific location of the user, i.e. needs on the Prinshof Campus were generally homogenous. The same principle applies to the needs in the transitional area between the T.R.H. and Prinshof Campus, as well as to needs identified on the northern medical campus and the interface with the P.A. Hospital.

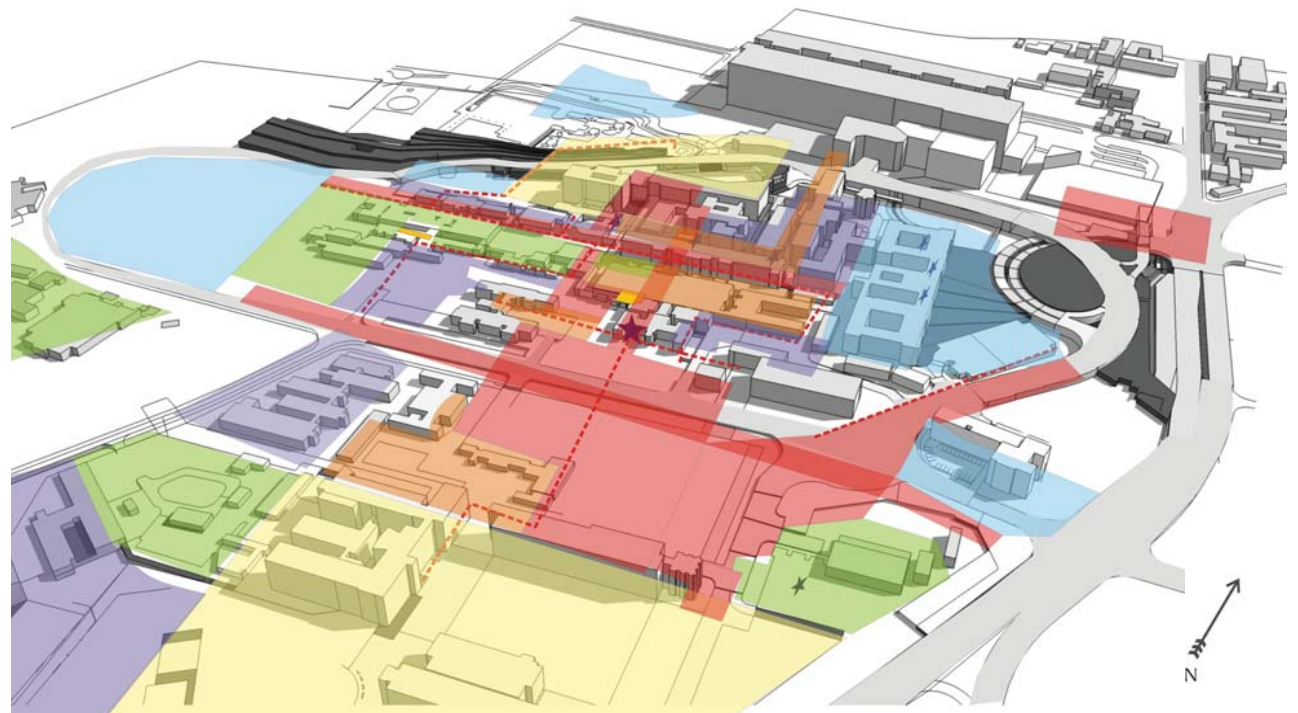
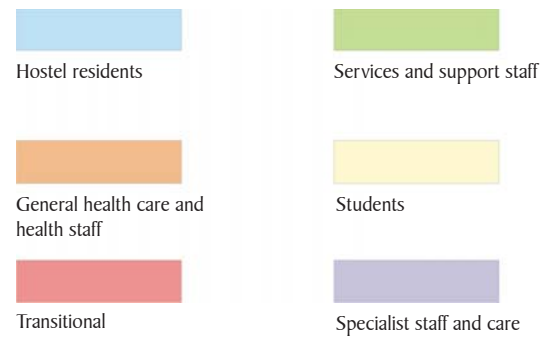


Fig. 3.12: Distribution of user groups. (Author, 2008)



An interesting correlation apparent from the observation of the distribution of user groups, is that the needs of the user depend greatly on the method of movement. As soon as a user changes from a pedestrian into a vehicular use, his needs change accordingly. The user profile was thus further simplified to depict the relationship between pedestrian (including cyclists, joggers, traders and patients being transported by golf cart) and vehicular movement (private vehicles, buses, taxis, delivery vans and ambulances). This relationship is shown as a set of three user journeys. This simplified model will be used to analyse and address the basic spatial needs of the users in the compilation of a framework, which after theoretical discussion, will be elaborated on in Chapter 6.

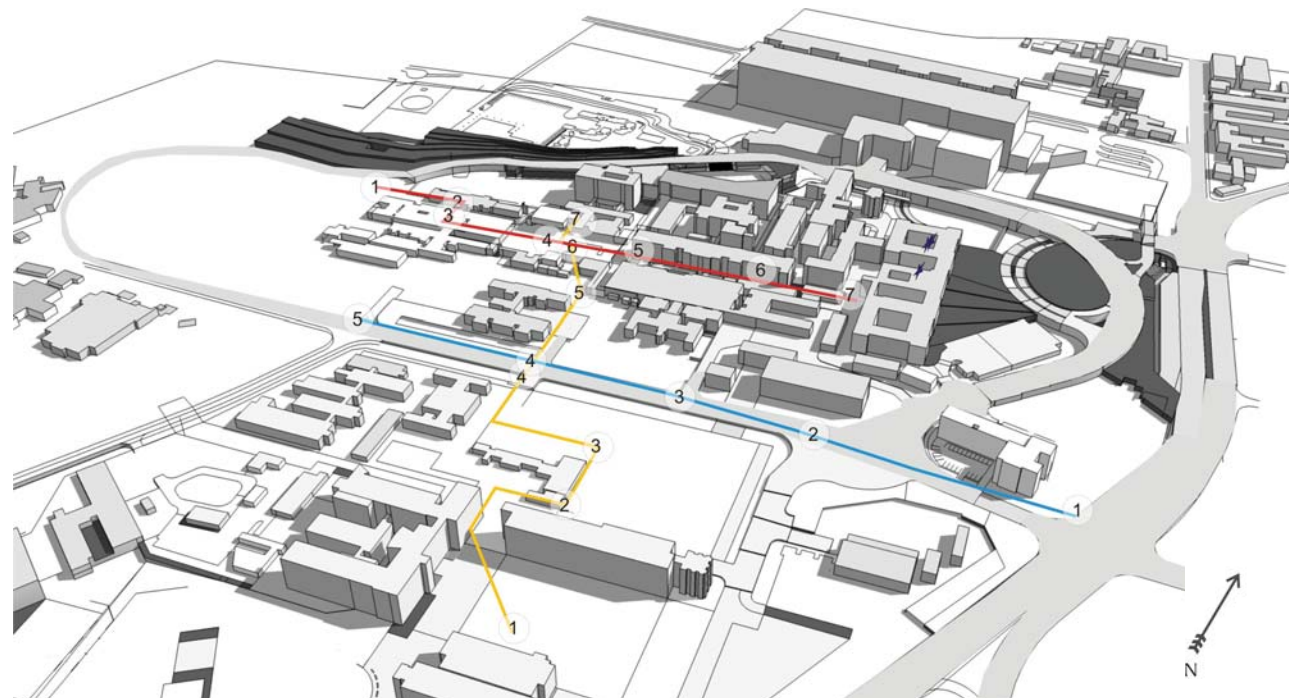


Fig. 3.13: Identification of 3 journeys through the urban fabric. (Author, 2008)

- Journey 1
- Journey 2
- Journey 3



3.5 Movement patterns

One of the sub-problems listed previously, is the lack of circulation control. The Precinct is characterised by a variety of movement patterns that are inter- and intra-institutional.

3.5.1 Pedestrians

Pedestrian movement is the most important form of circulation on the site. Due to inaccessibility all users are obliged to undertake extensive pedestrian journeys to reach their destinations. According to the results from interviews an estimated that 37% of the users are pedestrians. Pedestrian movement was analysed in terms of different types of users. A strong north-south axial movement pattern of hospital staff and students predominates, with a secondary east-west movement pattern mainly consisting of services and movement from parking areas towards the main axial line.

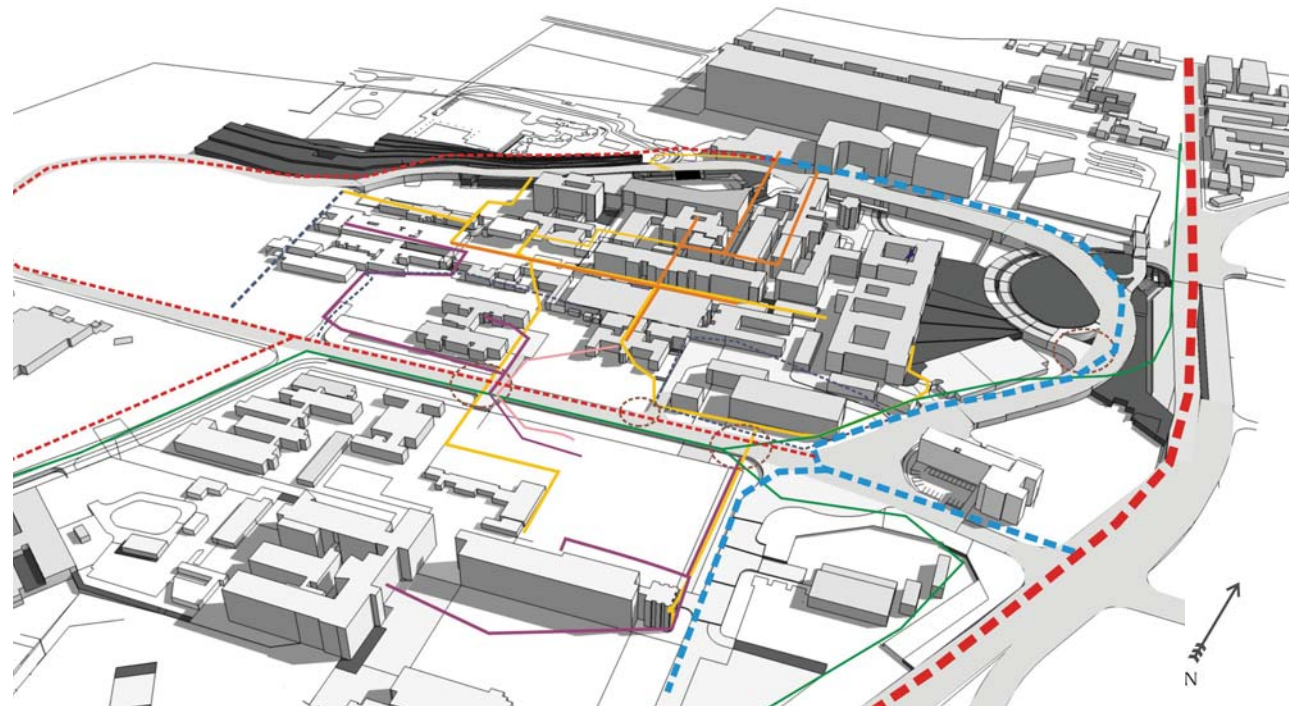
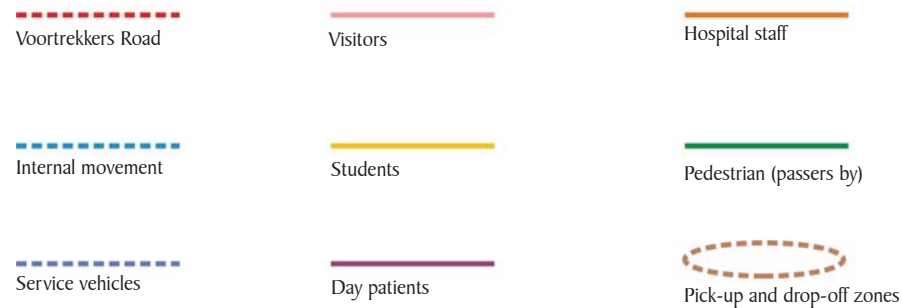


Fig. 3.14: Movement patterns. (Author, 2008)



3.5.2 Vehicles

Honours students of the Department of Architecture, University of Pretoria, researched transport methods at the Hospital Hill for their urban design module in 2008. They found that the mode of transport into the precinct can generally be divided into the following categories:

- Private car - 11.2 %
- Buses - 13.5%
- Taxis - 7%
- Train – 4%
- Motorcycle – 6.2%
- Other vehicles, including ambulances and delivery trucks.

The congested entrances during peak hours indicated a need for a controlled interface between public transport, pedestrian movement and private cars. Movement generally occurs in a strong east-west direction via Dr. Savage Road and Soutpansberg Road. with nodes of transition which are generally located at the entrances.

3.5.3 Access and movement legibility

Although fences are clearly evident right around the perimeter, , there are too many access points to the site. This results in a lack of control. The main entrances are not defined clearly enough. The transitional spaces are subject to absolute anarchy of movement, resulting in congested areas where all users battle for preference.

3.5.4 Inter-institutional movement

The movement of health staff and students occur mostly between the P.A.H, the T.R.H and the Prinshof campus of the University of Pretoria. Occasionally students do practical sessions at some of the adjacent institutions – for example the students of physiotherapy work at the Orthopaedic Hospital and Cripple Care.



3.6 Visual characteristics

3.6.1 Perceived characteristics

Although cadastral and topographical maps show that many institutions own sections of the area, the landscape is not read in terms of surveyor lines. The perceived boundaries can be strengthened to improve the legibility of the area. The perceived boundaries as depicted in Fig. 3.15 were influenced by:

- The slope on which the site is located. The difference in height results in vistas and views that vary according to the direction from which you approach the Precinct. (This will be further discussed in the section on legibility);
- Areas of concurring building type; colour; texture or form;
- Use and activity;
- Degree of maintenance;

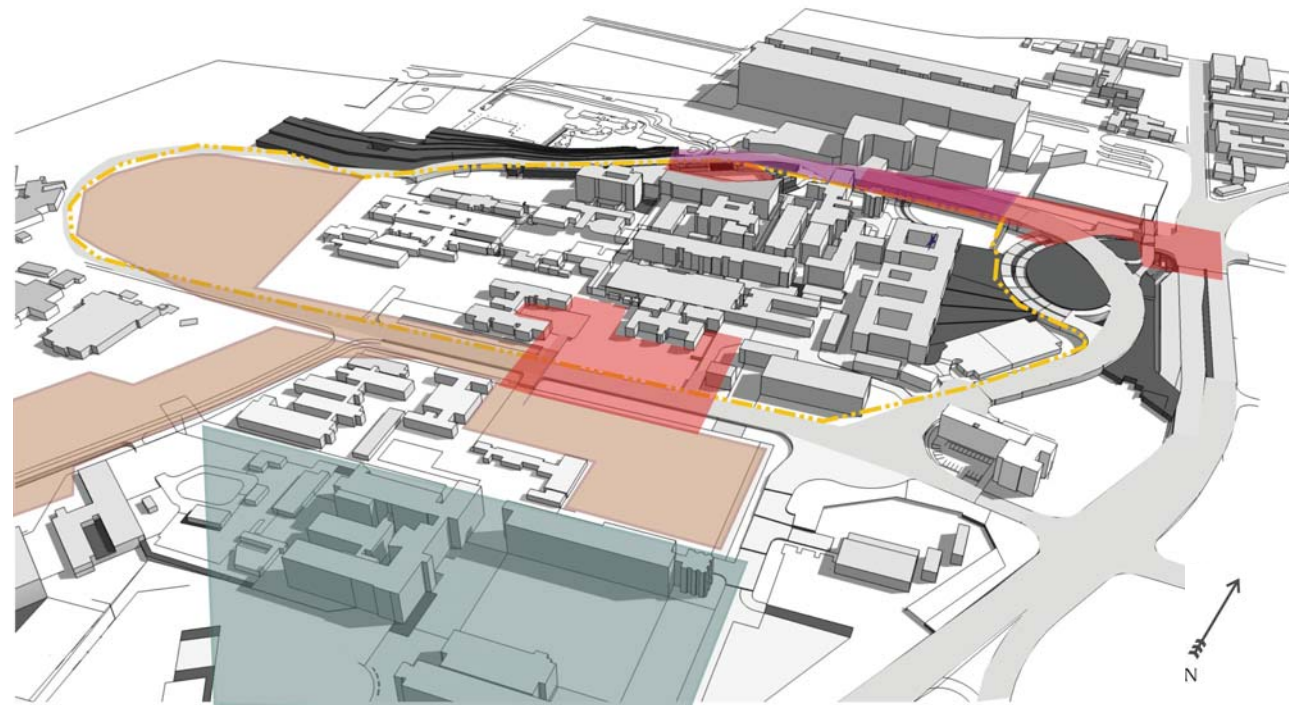
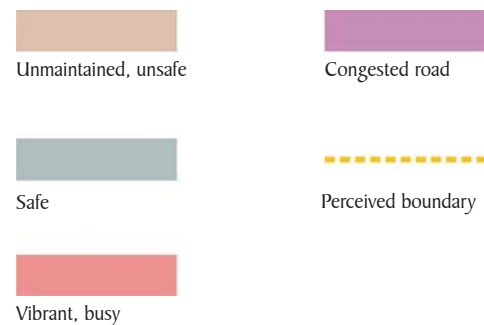


Fig. 3.15: Perceived characteristics. (Author, 2008)



3.6.2 Legibility

- The illegibility of the area was listed as one of the main problems. Most of the problems are the result of incoherent building patterns and haphazard additions. The functions of buildings are not apparent from the architecture. There are too many entrances into the site and insufficient signage. Although the sensation of being lost is daunting when entering the maze of buildings, it does stimulate social interaction when different users are trying to find their way.
- Because the area is so densely built and situated on a slope, improvement of legibility for the precinct will rely heavily on gateways and landmarks that are visible from a distance. Nodes and common points of reference are generally located along existing paths.
- Places of public interest corresponding with land use, results in districts of legibility. These districts can subsequently be used to strengthen the imageability of smaller areas within the precinct.

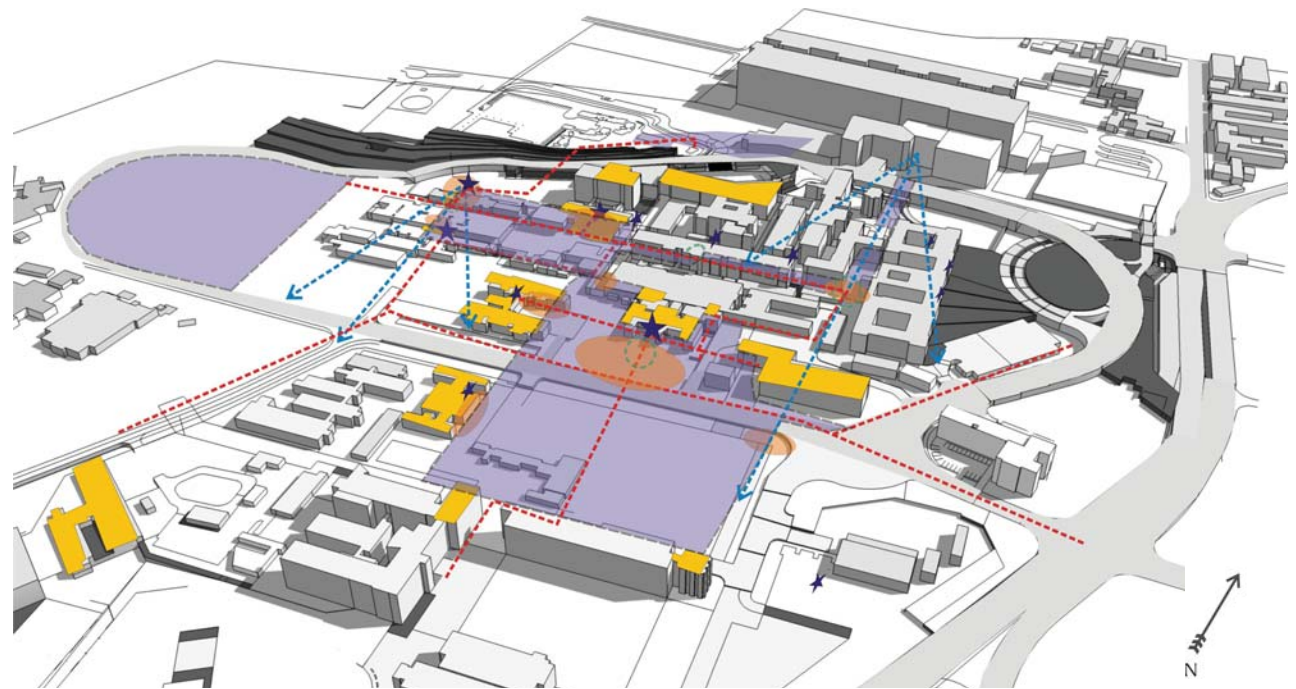
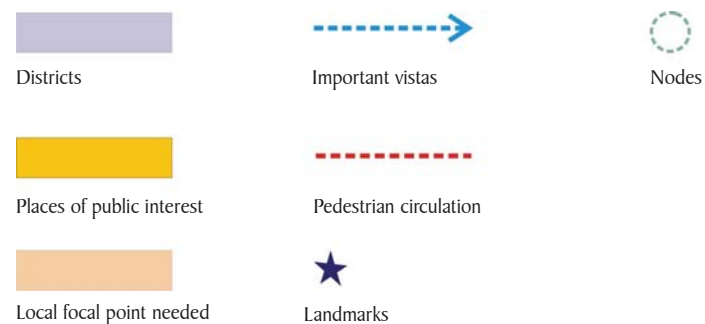


Fig. 3.16: Legibility. (Author, 2008)



3.7 Infrastructure

3.7.1 Services

Services and servitudes on the site include:

- *Steam pipe network.* The overhead steam pipe network gives a distinctive character to the site. The steam is used for disinfecting purposes. The oxygen and steam pipe plant is located in the Services Building on the intersection of Dr. Savage Rd and Voortrekkers road.
- *Storm water system.* The site slopes steeply in a southern direction up to Dr. Savage Road. The huge amount of paved surfaces increase the speed and amount of run-off. Existing storm water channels are indicated. Buildings are constructed in terraces resulting in run-off being channeled per terrace, leading into an underground piped system. The existing stormwater system is adequately developed. The use of stormwater for irrigational purposes can be investigated.

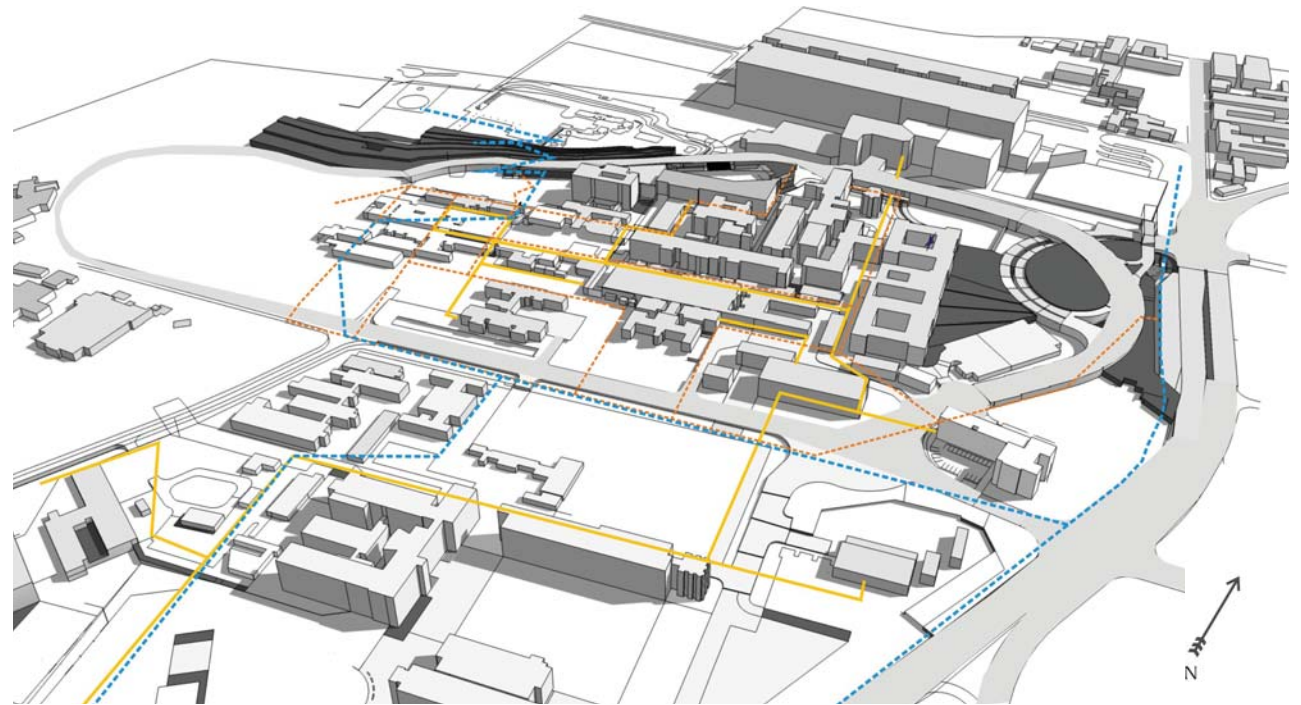


Fig. 3.17 Bulk services provision. (CTMM, 2008 and Author, 2008)



Fig. 3.18: The steam pipe network. (Author, 2008)

3.7.2 Parking

Insufficient parking seems to be one of the main problems which affects all users. The steep slope results in internal road reticulation that cannot be expanded. Parking arcades were constructed at the Pretoria Academic Hospital, but there is a serious lack of sufficient parking for hospital staff of the T.R.H. and students on the northern Medical Campus of the University of Pretoria. There is sufficient parking at the Prinshof Campus. Visitors parking for the T.R.H. is badly maintained and perceived as unsafe, resulting in a large under-utilised space.

The T.R.H is currently constructing new parking areas (single level) on the sites where some of the services buildings have been demolished. The ring road (Bophelo Road) has recently been completed. Although these new parking areas are located quite a distance from the T.R.H. and the medical campus, it is anticipated that they will be utilised, provided that the journey from the parking area towards the institution is safe and legible.

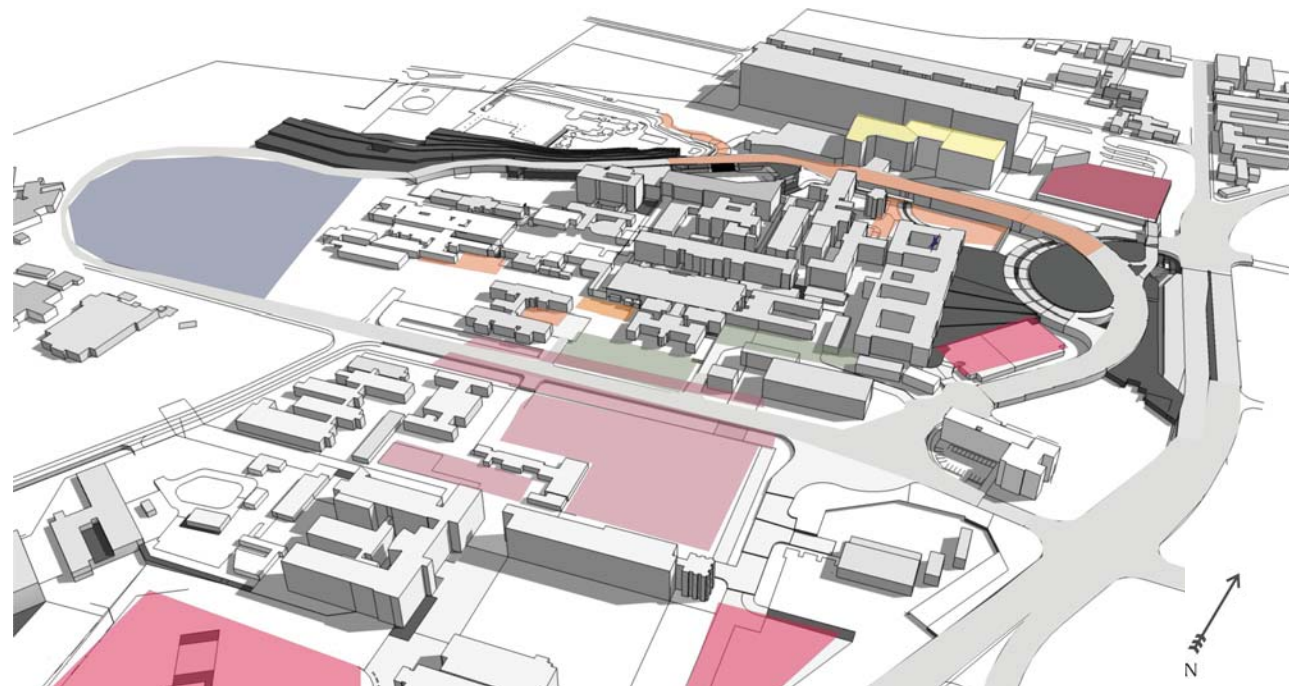
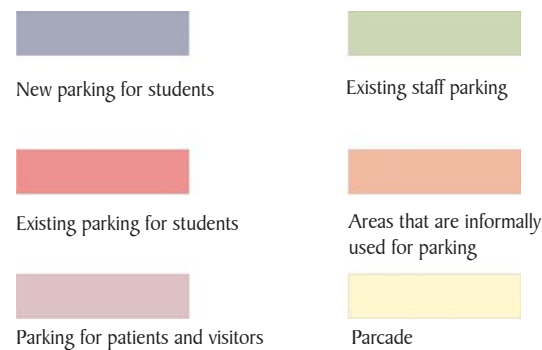


Fig. 3.19: Parking. (Author, 2008)



3.7.3 Maintenance

A general lack of adequate maintenance is evident throughout the area. This scenario is about to change due to the monetary injection that was budgeted for by the T.R.H. for upgrade from District to Regional hospital. Upgrades, restoration and general maintenance that has, for at least 20 years been left in gloom, are now being attended to. New buildings are being constructed in some areas. The large amount of demolished buildings left open spaces of rubble, overgrown with weeds. These under-utilised spaces provide opportunity for landscape interventions.



Fig 3.20: Unmaintained internal courtyard (Author, 2008)



Fig. 3.21: Remains of demolished buildings (2008 and Author, 2008)

3.8 User needs

From the site inventory it was evident that the site is located in an urban context. The Hospital Hill is distinguished from adjacent precincts by the similarity in land use. Land use on the site was analysed and grouped according to function. The open spaces between buildings were analysed in terms of extent and degree of maintenance. The arrangement of buildings and open spaces (the figure-ground) influences movement patterns on site. The movement patterns were investigated and the lines of movement were grouped in terms of principal users. A user profile of the social component was compiled from observation and interviews. It was found that although a wide variety of users frequent the area, their needs correlated with their method of movement. The users were subsequently re-divided into pedestrian movement, vehicular movement and transitional movement..



The following table was drawn up to summarise the relationship between pedestrian and vehicular movement in relation to the three sub- problems (illegibility, improper circulation control and under-utilised space) identified in Chapter 2.

Table 1: Summary of User Needs

User Need		
User group	Need	Pedestrian/ vehicular
Health staff	Safe movement: Inter and intra institutional	P
Health staff	Resting, eating, smoking space	P
Health staff	ATM/Kiosk	P
Health staff	More parking	V
Patients	Waiting areas with enough shade and seating	P
Patients	Safe crossing of Dr. Savage rd	P/V
Patients	Information kiosk - legibility	P
Patients	Access to outdoor areas for mobile patients	P
Patients	Proper drop-off zone for trauma emergencies	P/V
Support staff	Shortest route to accomplish task	P
Support staff	Kiosk or informal trade	P
Support staff	Easy access to public transport	P
Support staff	Easy access at designated service entrances	V
Students	Safe crossing of Dr. Savage rd	P/V
Students	Safe journey on TRH ground toward northern campus	P
Students	Outdoor resting and gathering spaces	P
Students	More parking	V
Students	ATM/Kiosk	P
Students	Upgrading of existing green spaces	P
Through movement-traders	Accessible and visible storage facilities	V
Through movement-traders	Proper trading infrastructure	P
Through movement-visitors	Legible waiting area and gathering space and information kiosks	P/V
Through movement-transport	Safe and accessible area for waiting and drop-off for public transport	P/V



3.9 Performance criteria

Analysis of movement patterns of pedestrians (students, patients, health staff, visitors and through traffic) and vehicular traffic (ambulances, public transport, such as taxis and buses, services and private transport) in Chapter 3, identified an optimum north-south line of movement. Anticipating the influence of implementation of the TRHMP on this (existing) line of movement, secondary east-west lines of movement were identified. It is proposed that optimisation of the existing line and incorporation of new interventions could result in a strong north-south axis into which east-west movement is connected at certain points. This hierarchy of spaces should consist of directional, locational and transitional spaces. They will guide the movement of the user, which in turn will address the legibility of the area by forming a characteristic line of movement which the user will eventually intersect. The lost spaces (as identified in Chapter 3) that are conveniently located along this axis will be used to incorporate needs of the users as identified in Chapter 3, resulting in a more legible, accessible and safer passage through, and experience, of the Hospital Hill for all users.

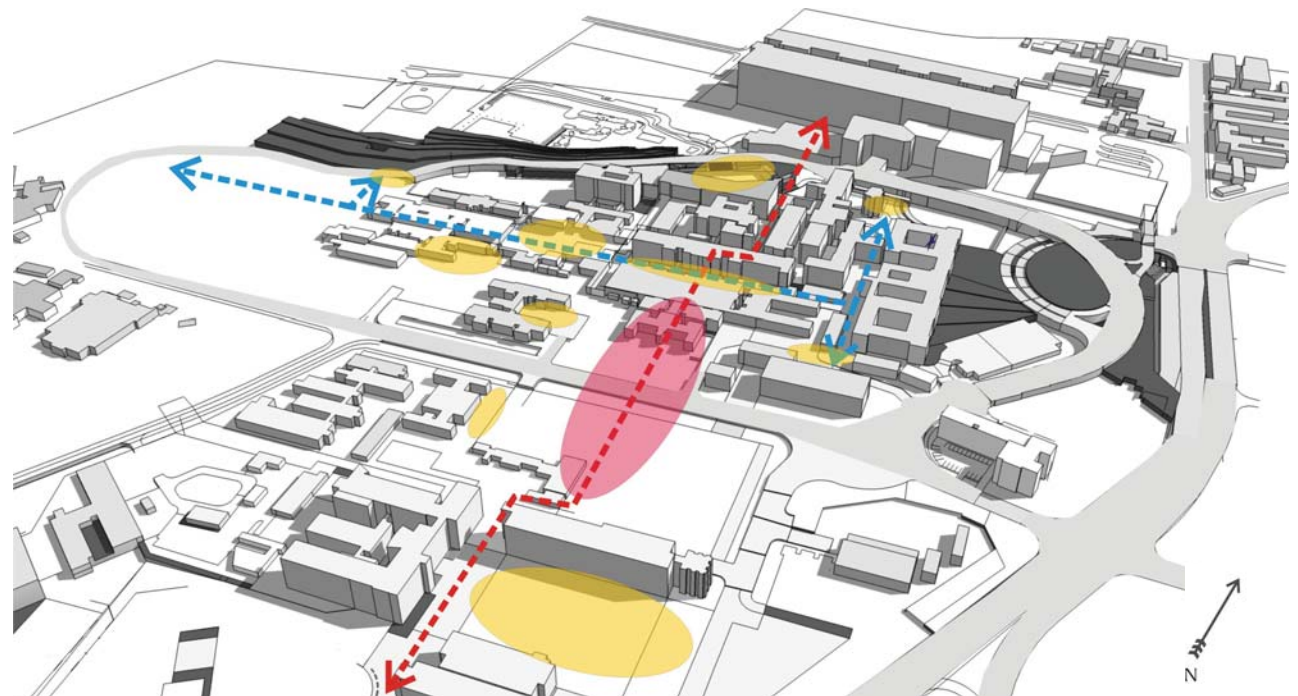
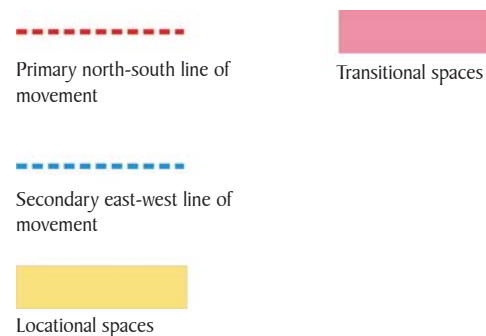
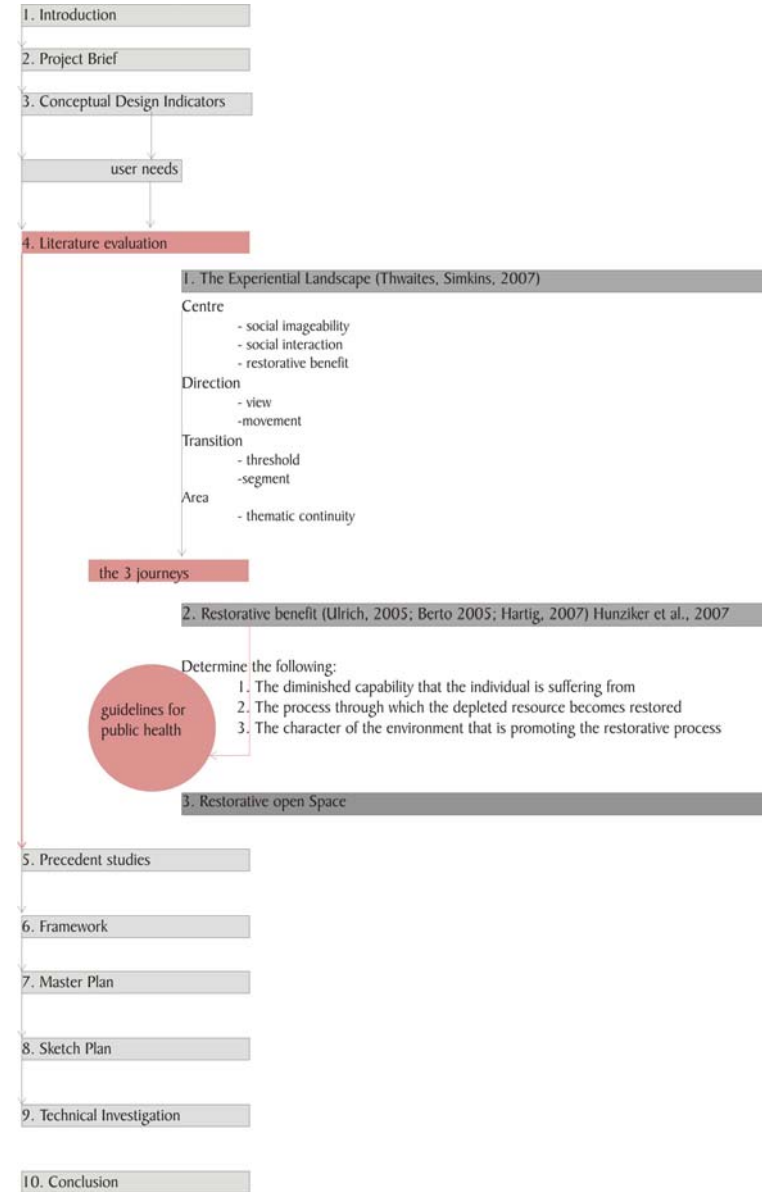


Fig. 3.21: Performance criteria. (Author, 2008)







4. LITERATURE EVALUATION

4.1 Introduction

In Chapter 1 the spatial problems associated with the study area were discussed. It was ascertained that the area is characterised by inaccessibility. This problem was divided into three sub-problems namely: under-utilised space, illegibility and lack of circulation control.

In Chapter 3, attributes of the physical environment as well as the needs of the social component regarding circulation control, legibility and utilisation of space were described. The users of the systems and spaces are equally important in defining both problems and opportunities. The study area is therefore defined by physical and bio-physical attributes, but it is characterised by a social component.

It is evident that the study area is frequented by a variety of users of all ages, backgrounds, cultures, education levels and even physical capabilities. It is important to investigate how improving the three sub-problems will influence the social component of this 'system' and its interaction within its setting or environment.

A literature evaluation of experiential landscapes and restorative benefit aims to improve the understanding of what could be an appropriate environment within, the context of the Hospital Hill.

4.2 Public Health Environment

The social-cultural component was divided into three user groups: pedestrians (including cyclists, joggers, traders and patients being transported by golf carts), vehicular traffic (private vehicles, taxis, buses, delivery trucks and ambulances) and transitional movement. It is necessary to determine characteristics of an environment that would be beneficial for interaction of the three user groups (social-cultural component). However, addressing the physical (spatial) needs of the users as identified in Chapter 3, is still no guarantee that all the different user sub-groups will regard the intervention as an environment which is favourable to their needs. To address cross-group and individual differences that might occur, the human environment is a very important aspect which must be considered.

"It is widely accepted by person-environmental theorists that once the most basic of Maslow's hierarchical needs have been met, the human aspects of the environment play a more

significant role in the elicitation of behaviour than the physical ones." (Moos 1987 in Griffin 1990)

This means that once the biological needs, the needs for safety and the need for love and belonging has been successfully achieved, the individual will aspire to improvement of status/self esteem . Then finally, on level 5 of Maslow's hierarchy, the individual would strive toward *actualisation*. The characteristics of the environment within which the social component (and by implication the individual) interacts, can influence the realisation of such needs, and is subsequently of vital importance to designers. As stated in the introduction, it is after all the duty of landscape architects to create meaningful landscapes (environments) for the pleasurable experience of humans. Such experiences could assist individuals in their quest for actualisation.

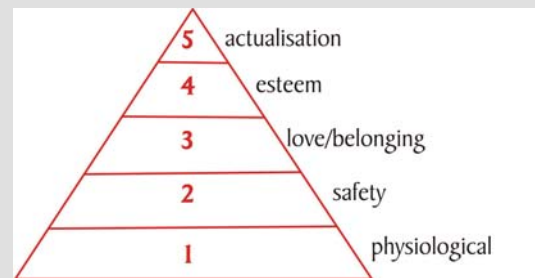


Fig. 4.1: Maslow's hierarchy of needs (Maslow, A.H (1943, Fig 7)

In their research on "Experiential Landscapes", Thwaites and Simkins (2007) found that social context has an important influence on the manner in which activity is oriented. Human activity is a response to a continuous exchange between individual motive and opportunities provided by the wider environment, which consists of physical and social aspects.

It is virtually impossible for the designer to determine what a space might mean to any specific individual at any specific time and to design accordingly. A more practical approach would be to determine categories of experience that are necessary for sustaining human well-being in general, and then to design for opportunities of contemplation that could lead to place making and actualisation. Three theories will be investigated to compile a layered system from which clues indicating how to address the interface between the physical and social environment at the Hospital Hill, can be gained. This will then be used in Chapter 6 to explore possibilities for individual place making and aspirations toward actualisation.



4.3 The Experiential Environment

The first theory which will be investigated is that of “Experiential Landscapes” researched by Thwaites and Simkins (2007). This theory is based on the analysis of the way in which people experience outdoor spaces within their everyday environment. In theory a person pays less attention to surroundings that they are not intentionally visiting, while spaces that read strongly to people who are used to them, will inevitably be even more legible to visitors. The theory is specifically aimed at places where the individual did not make a, and thus it finds particular application at the Hospital Hill.

Thwaites and Simkins’ investigation of CDTA ((Centre, Direction, Transition and Area), 2007) is considered a very viable way to analyse the experiential qualities of the areas, where both pedestrian and vehicular traffic occur. This theory is regarded as a set of parameters against which experiential qualities of the principal lines of movement can be measured to achieve strong enough qualities to guide both regulars and visitors, as well as pedestrian and vehicular users.

The three anticipated lines of movement that were identified for pedestrians, vehicles and transitional spaces in Chapter 3 were considered as journeys (refer to **Fig. 3.13**). They were evaluated at selected points in terms of spatial and experiential dimensions of CDTA to determine spatial strengths and weaknesses regarding the existence of:

Centre

- Social imageability
- Social interaction
- Restorative benefit

Direction

- View
- Movement

Transition

- Threshold
- Segment
- Corridor
- Ephemeral

Area

- Thematic continuity

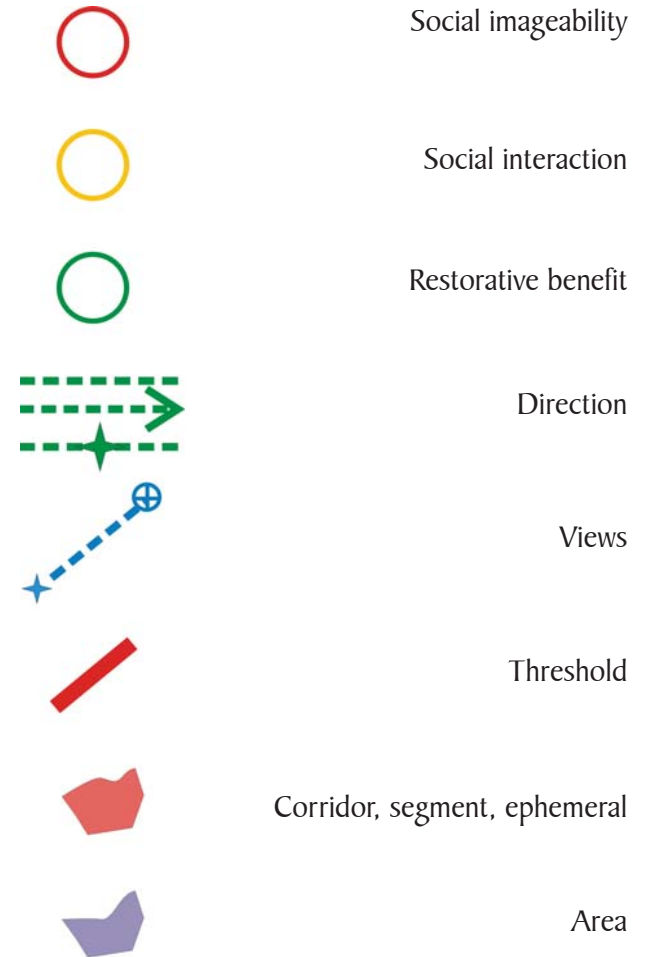


Fig. 4.2: Experiential Landscape Theory. (Thwaites, Simkins, 2007: Plate 4)

Although this approach is dependent on the personal frame of reference of the analyst, as well as the scale (on a smaller scale, a centre could for example be composed of areas, transitions and other centres), it gives valuable guidance in improving the existing environments in terms of their legibility, circulation efficiency and how space can be re-claimed. It is of course inevitable that visitors and regulars can have completely different conceptions of the same spaces; due to the varied utilisation of these spaces by the different groups.

The challenge lies in finding experiential qualities in all spaces which will guide users in terms of circulation through a series of legible locational, directional and transitional spaces. This creates the prospect of individual spaces conveying meaning to the individual and becoming a place that holds the potential for aspiring toward actualisation. both of these prospects will occur at the Hospital Hill, which in essence is an urban environment.

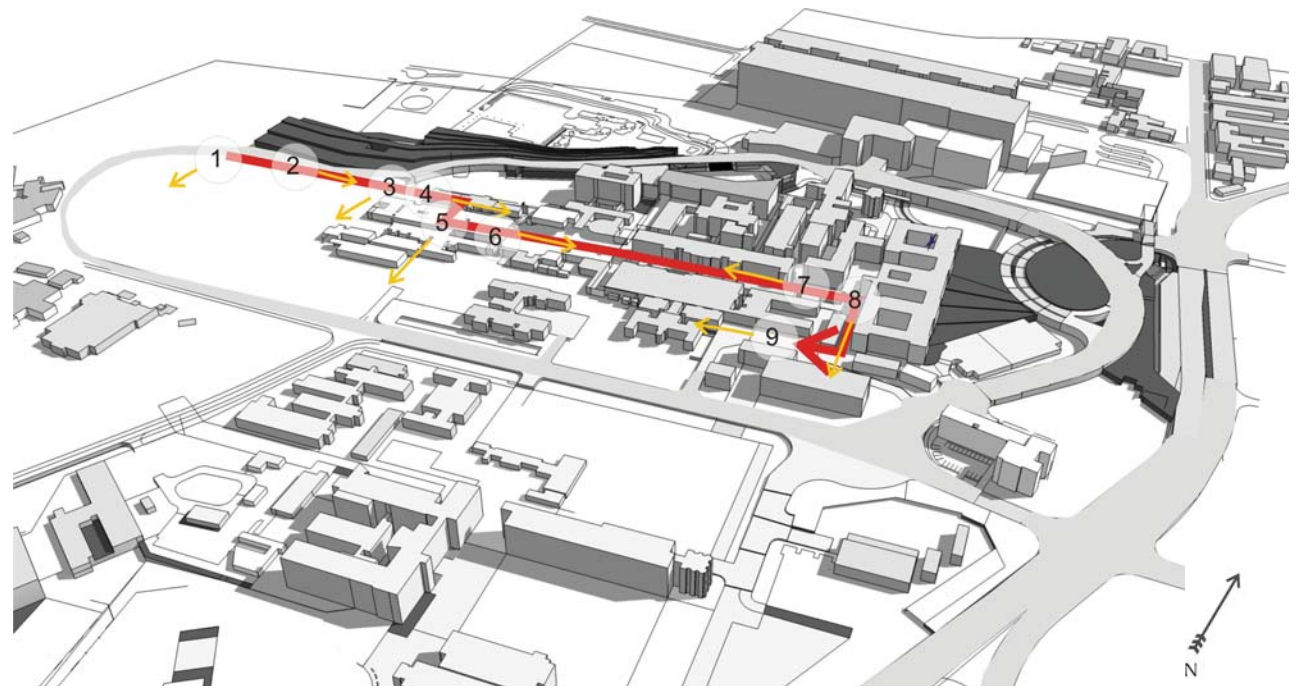


Fig. 4.3: Experiential Journey 3. (Author, 2008)

The following range of sketches proposes a sequential depiction of the secondary line of movement – journey number 3. The journey starts at the newly constructed parking areas at the western extent of the site and leads towards the arcade, through a series of directional and locational interventions (secondary line of

movement). The secondary line of movement bisects the site in an east – west direction and terminates at the brear of the Curlitzia residence. There it opens up into a green space at the trauma unit.



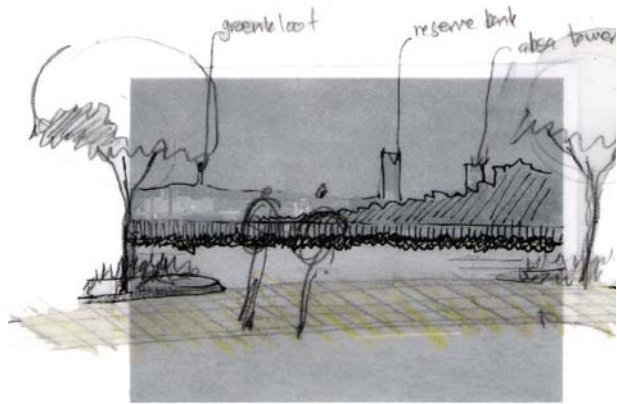


Fig. 4.4: Journey 3-1. View from proposed parking towards CBD. (Author, 2008)

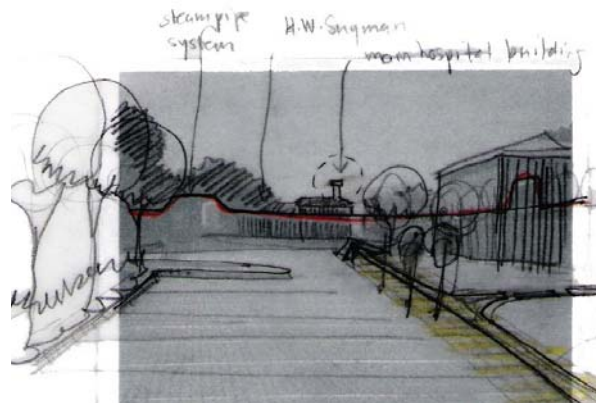


Fig. 4.5: Journey 3-2. View from proposed parking towards T.R.H. (Author, 2008)

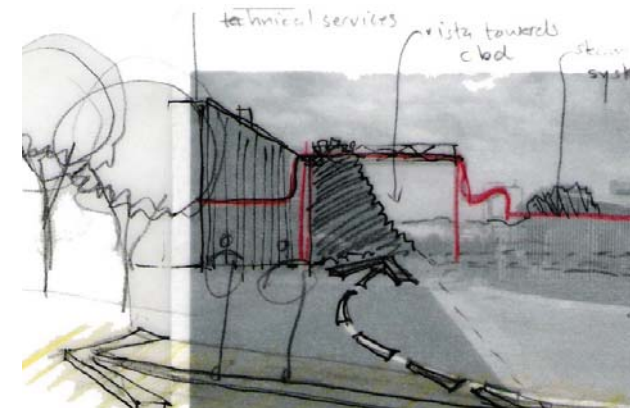
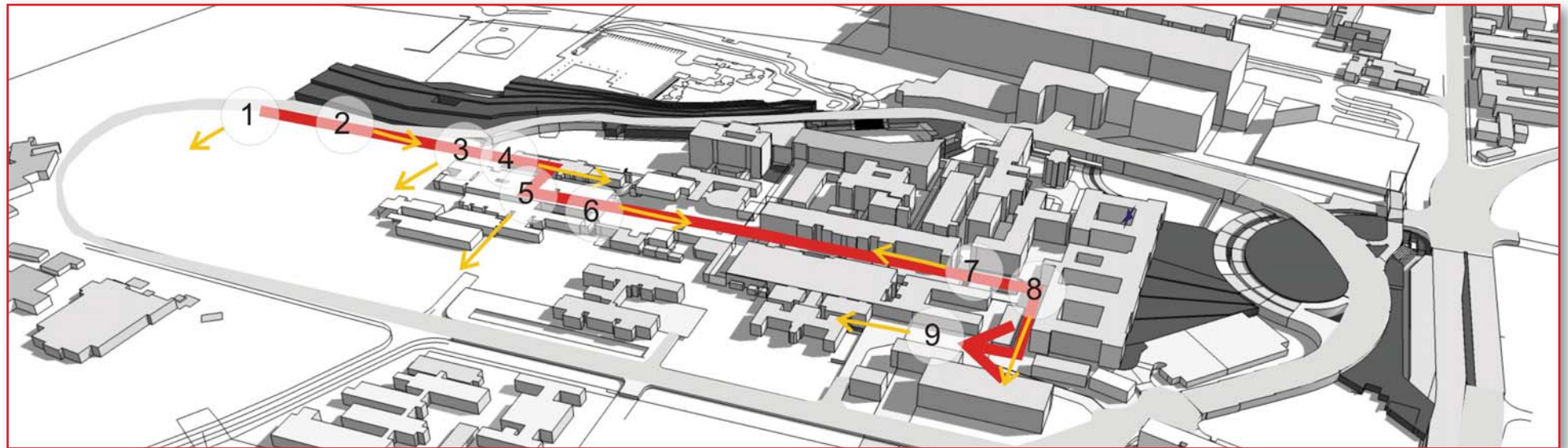


Fig. 4.6: Journey 3-3. Journey from parking towards technical services (Author, 2008)



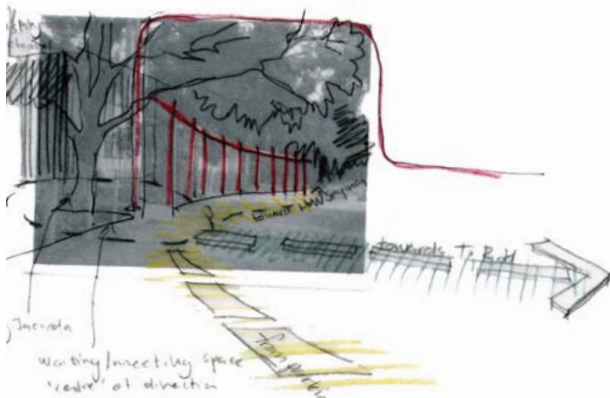


Fig. 4.7: Journey 3-4. View towards Dennekruijn and gathering space at start of secondary line of movement. (Author, 2008)

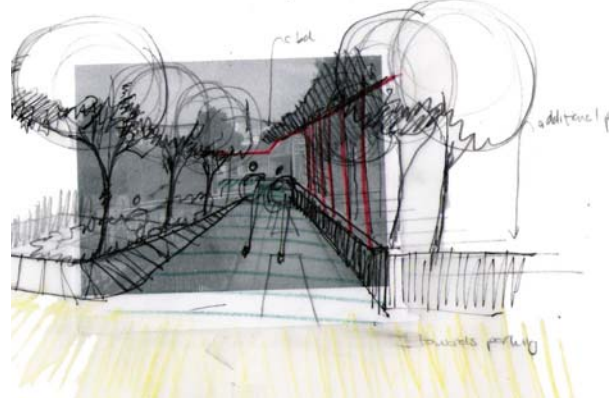


Fig. 4.8: Journey 3-5. View from gathering space through secondary line of movement, towards the CBD. (Author, 2008)

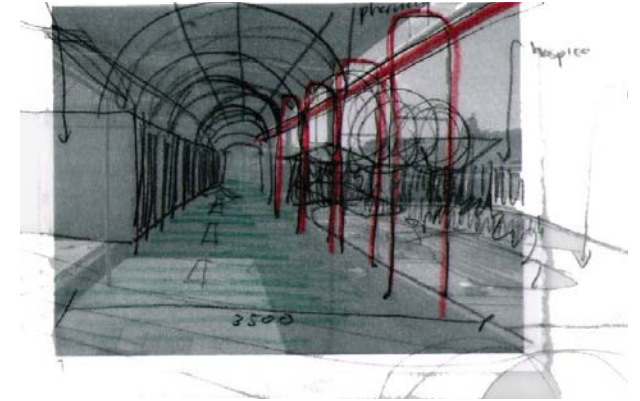


Fig. 4.9: Journey 3-6. View through secondary line of movement towards the east. (Author, 2008)

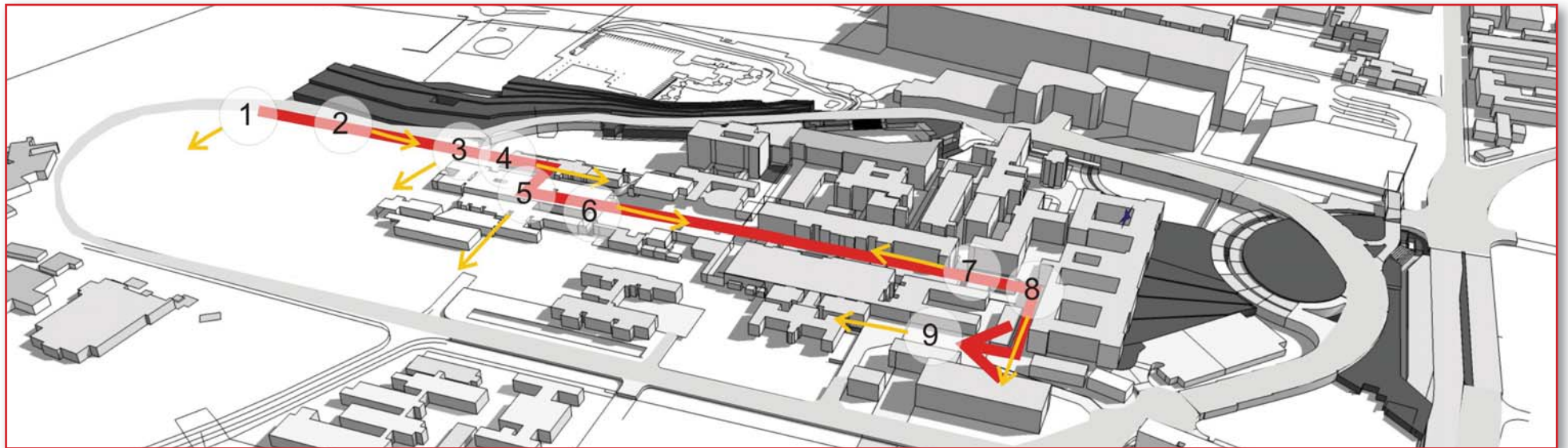




Fig. 4.10: Journey 3-8. View from secondary line of movement towards Outpatients clinic and Trauma Unit. (Author, 2008)



Fig. 4.11: Journey 3-9. View from parking area towards Outpatient's building. (Author, 2008)

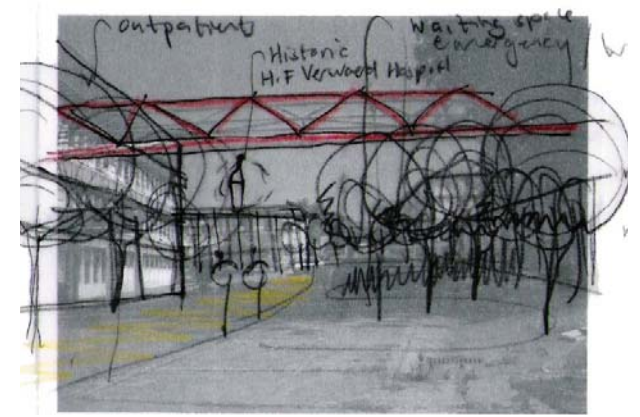
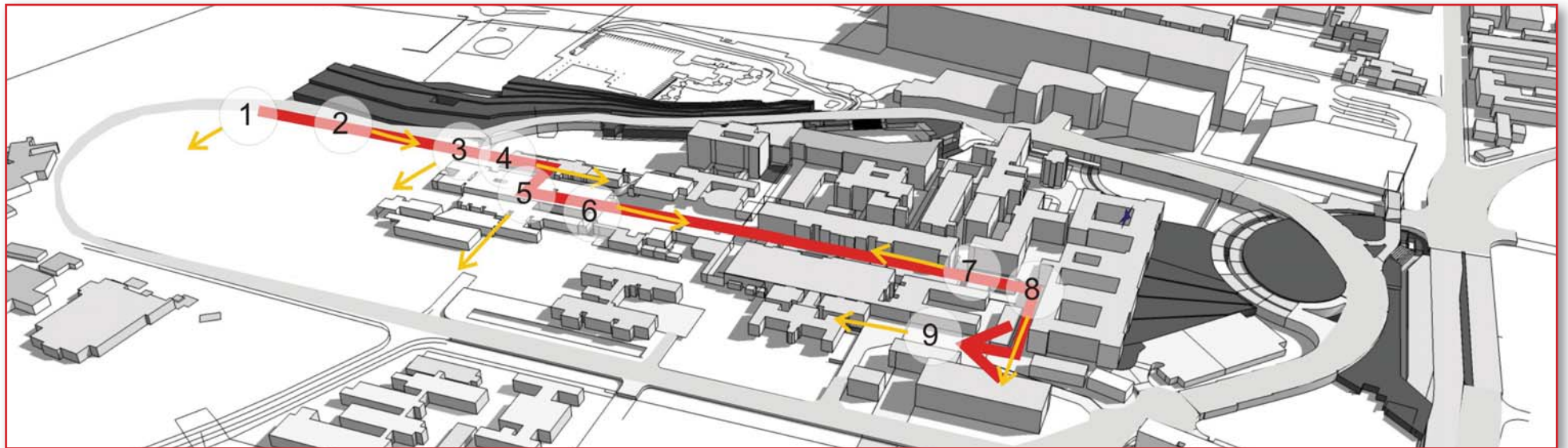


Fig. 4.12: Journey 3-11. View from proposed parking towards Trauma Unit (Author, 2008)



4.4 The Urban Environment and Public Health

Urbanisation is a reality, and in most cases, living in urban areas is the only option we have to be able to share in employment of resources. As described in Chapter 3, the study area is located in a node comprising of a variety of amenities, including marginal urban areas, residential, commercial and governmental precincts. Health and educational institutions define the character of the Hospital Hill. However, it is glaringly evident that the visual character of the Precinct is scarcely one which promotes feelings of security or improvement of health. Therefore, the second theory that will be investigated is that of restorative benefit. The aim is to add another layer to the basic experiential landscape, which will increase the prospect of acquired meaning to the individual.

Research by Berto (2005) has proven that people within urban environments are subject to attention depletion and consequently have to be restored to ensure optimal performance within the urban system. The introduction of spaces that aid the prospect of “restoration” from “normal, recurring needs for restoration” (Hartig, 2004) seems to be a valuable option in improving the

relationship between the individual and the urban environment. This opens up the range of application of restorative landscapes within a variety of settings. Benefits range from attention restoration and recovery from mental fatigue (Berto, 2005), to improvement of public health (Hartig, 2004; Berto 2005). Crisis rehabilitation of people who “are obliged to spend time confined in hospitals or other types of healthcare facilities.” (Ulrich, 1984), was also investigated. Furthermore, it has been stated that residing in a natural environment positively benefits people greatly affected by a crisis (the azimuth of a serious condition) more than people who are less affected ;and having contact with other people benefits people greatly affected by a crisis more than people who are less affected (Ottoson et al, 2008).

An important characteristic of restorative environments as Hartig (2004) stresses, is that no single environment can be restorative to all people at all times. He goes on to explain that restorative benefit is a process that can eventually be completed and that any benefit gained after equilibrium has been reached, may still be beneficial, but are not considered to be restorative.

The extent of restoration and the hypothetical application at the Hospital Hill, is based on a theory of restorative environments, as proposed by Hartig (2004). This theory emphasises the necessity to determine the characteristics of three components of restoration. Thus an argument for “public health” will be pursued from the literature..

The discussion and explanation of theory will subsequently be based on these three questions:

1. *The diminished capability that the individual is being restored from.*
2. *The process through which the depleted resource becomes restored.*
3. *The character of the environment that is promoting the restorative process.*

The first two of these questions denote the structuring of spatial hierarchy and the connection of spaces within the urban fabric. The third question, (through further investigation,) will investigate the potential of such landscapes for promoting “actualisation”, as described by Maslow, (1943) within a specific place.



4.5 The Hospital Hill - A need for restorative environment

As mentioned previously restorative environments can be applied to a variety of situations. It is expected that application of restorative benefit at the Hospital Hill will manifest as either one, or a combination of three investigations:

- Attention restoration
- Public health
- Crisis rehabilitation

The focus of the investigation for the educational facilities will fall on attention restoration as it is anticipated that they might benefit from it. The investigation of general public health in the transitional area could also lead to the improvement thereof. For the Hospitals, application of crisis rehabilitation will be investigated as that is to their advantage.

4.5.1 Educational facilities

"While the physical character and quality of a campus is defined by both its buildings and its open space, it is the open space which has the greatest potential for unifying and equalizing the shared space of the campus. It can promote the sense of

community derived from actively shared space, and provide for the enriching experiences of both planned and chance encounter." (Penn University guidelines, 1997)

This description of what campus outdoor space should be like, serves as a basis from which to argue for the additional benefits which could be achieved by incorporating attention restoration principles into the Hospital Hill open space framework.

1. *What is the diminished capability that the individual is being restored from?*

General fatigue caused by the urban environment and prolonged periods of concentration. In literature, distinction is made between voluntary and involuntary attention. Directed attention is tiring because, in addition to focusing on the object of attention, one has to ignore distractions as well.

2. *The process through which the depleted resource becomes restored.*

Attention restoration provides ways by which the capacity of attention can be

recharged. Kaplan (1995) states that involuntary attention (fascination) is effortless and will allow the attentional system to recover. Furthermore, a sense of "being away" (Kaplan & Kaplan, 1989) which involves escaping from unwanted distractions, could facilitate the process of restoration (Hunziker et al., 2007). Simonic (2006) states that an urban space could become a restorative environment if it is *"designed as a complex, coherent landscape in which users would already visually recognise potential for the variety of uses, related to their contact with natural elements."*

4.5.2 Transitional spaces

“Moving elements in a city, and in particular people and their activities, are as important as the stationary physical parts. We are not simply observers of this spectacle, but are ourselves a part of it ... Most often, our perception of the city is not sustained, but rather partial, fragmentary, mixed with other concerns. Nearly every sense is in operation, and the image is a composite of them all.” (Lynch, 1960: 2 in Miles. 2004)

Individuals representing almost all of the user groups, are present at any one time in the transitional spaces. The pace of movement is urgent, and the individual is eager to take in as much information as possible to aid speedy decision-making. However, in the same areas, one would always find individuals who are slowing down, waiting and observing. They are the spectators of the activity. The principles of the experiential landscape are primarily aimed at improving the experience of movement through a space, especially a transitional space. The theories of restorative benefit provide a valuable basis from which to create a pleasurable experience for the spectators and the individuals who choose to momentarily be remote, but not removed from

the urban spectacle. If such a space is always close, the principles of restorative benefit for the improvement of public health could prove very valuable.

1. *What is the diminished capability that the individual is being restored from?*

The diminished capability is general fatigue caused by interaction within the urban environment. This includes diminished attention, physical weariness and even mental fatigue.

2. *The process through which the depleted resource becomes restored?*

Although it can be argued that general open space might be adequately beneficial to improve these capabilities, it is anticipated that restorative principles could be applied to a greater advantage. The individual that seeks a sense of “being away” within a transitional area is already susceptible to soft fascination by the mere act of choosing to “slow down” within the boundaries of an area where he/she would still be able to observe the activity. Ottoson (2008) also claimed that the restorative benefits of having contact with other people during crisis rehabilitation are more beneficial to the patient than withholding contact. Could this also be applied as a principle in public health and attention restoration?



4.5.3 Medical facilities

“The individual.... who sits in an air-conditioned or heated room and gazes outdoors through a double-paned window experiences the outside world almost entirely in visual terms.” (Ulrich, 1984)

Although medical facilities are associated with hospital staff who could find attention restoration particularly beneficial, the needs of patients who are recovering from a crisis are even more susceptible to improvement by application of restorative principles.

1. *What is the diminished capability that the individual is being restored from?*

Diminished physical abilities, mental fatigue, stress, anxiety and exhaustion.

2. *What is the process through which the depleted resource becomes restored?*

Ottoson (2008) found that regular access to natural environments could act as a shock absorber should a crisis occur. Furthermore, they found that social

interaction had a positive affect on crisis rehabilitation. Ulrich (1984) states that the visual impact of the environment itself may convey safety or danger. Therefore regular access to a legible environment, which is high in both complexity and coherence, inducing soft fascination and conveying a feeling of safety would probably have a restorative benefit in crisis rehabilitation. The effect will be greater if positive interaction with the social component could take place.



4.6 Characteristics of the restorative environment

The third question Hunziker et al. (2007) posed, concerning the character of the restorative environment, will now be investigated. Although all people do not prefer the same types of environments, and it is obvious that cultural differences will have an influence on preferred types of environments ; we aim to compile a set of parameters for what a preferred environment for restorative benefit, within the context of Hospital Hill should be like.

Thwaites & Simkins (2007) explored the potential ability of a type of *centre* for potential restoration. They found that restorative benefit could be gained if the centre was separated from distraction; provided comfort, shelter and provision for rest. The effect was improved by the presence of nature in the form of trees and natural materials. Finally, stimulating features that encourage psychological engagement increases the benefit gained by the restorative centre.

Hunziker et al. (1997) explain that restorative benefit is a relationship between “extent, fascination, compatibility and being away”. Extent

relies on the relationship between perceptual and conceptual elements within a frame of reference, which could exist in the conceptual or imaginary domain. They therefore claim that “*extent can be experienced through intellectual activities, and not only in physical environments* and that compatibility “*exists in situations in which what the person wants to do matches with what the environment demands and supports*” (Hunziker et al., 2007).

However, the same authors also state that restorative potential evident in a place varies from one person to another; and also over time for any one person. Therefore no single environment can be restorative to the same extent to all people at all times. Furthermore, Kumar (2007) found that perception of the environment could be linked to behaviour of the user within the environment. It will therefore be virtually impossible to design spaces that have mono-restorative functions, i.e. restoring for example only trauma patients and no other. Consequently it is argued that the *availability* of a space with properties that could prove restorative to an individual is more important than specific guidelines for attention restoration, public health or trauma rehabilitation. Applied to the Hospital Hill the following can be claimed:



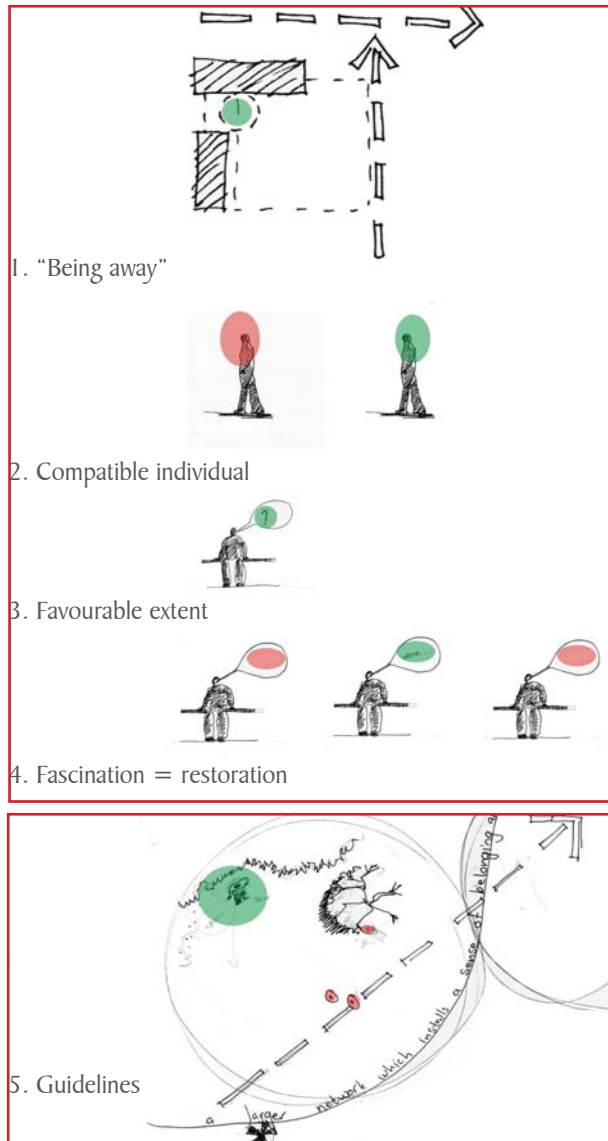


Fig. 4.13: Guidelines for public health (Author, 2008)

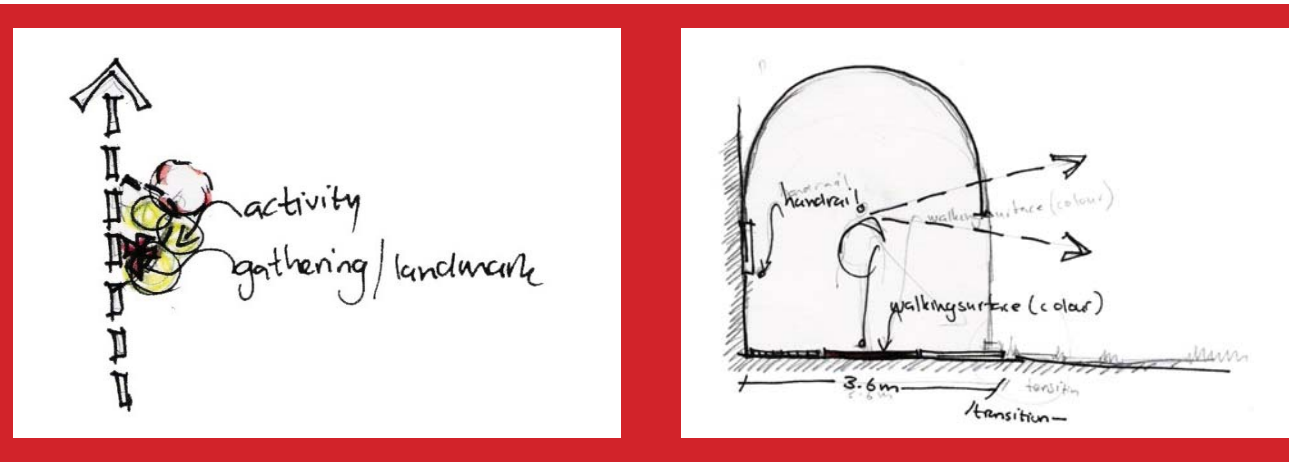
- A space should be available, nearby, removed but not remote, where a feeling of 'being away' can be achieved.
- Because the space is not inherently restorative it could only initiate benefit when a *compatible* individual enters the space.
- The experience of the compatible individual can be intensified if the *extent* of the environment is favourable to the individual. If the space or frame of reference contains physical or conceptual objects that will induce *fascination*, restorative benefit has been achieved.

All these factors are dependent on the frame of reference of the individual. However, the probability of inducing restoration and the degree of restoration can be intensified by the design if:

- Specific attention is paid to enhancing ephemeral qualities
- The environment is designed to be safe and accessible
- Comfort, shelter and provision for rest are provided
- Provision is made for chance social encounters and conversation

- The environment is rich in both complexity and coherence
- The environment is part of a larger network of spaces that induce a sense of belonging and orientation. The network and the specific space should be legible.
- Features that aid legibility are introduced, for example landmarks or nodes within the space. These could, if carefully designed, aid fascination and intellectual activities.

Referring back to the pedestrian and vehicular user groups, it is required to compile a set of parameters that will address restorative benefit for these groups. It is expected that the vehicular user will not gain much benefit other than visual benefit from restorative application. On the other hand the pedestrian group (consisting of a variety of sub-groups), will benefit greatly by the development of environments that are restorative in essence; whereas the individual could gain attention restoration, general regeneration in the application of public health, as well as crisis rehabilitation. From the principles listed for character of restorative environment, it was determined that the restorative spaces should be incorporated into a network of spaces. This network will guide movement and circulation, but the individual has the option of receding into a restorative space until he is restored enough to move back into the line of movement.

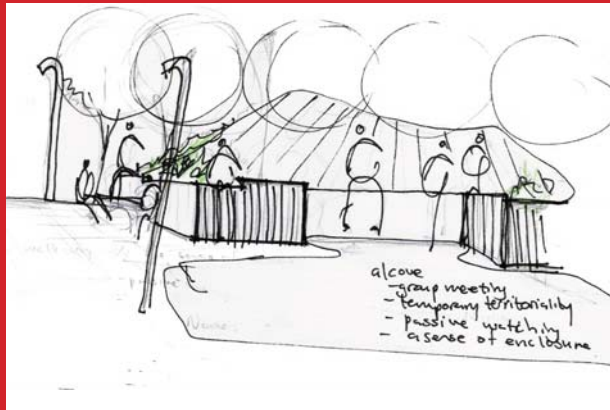


1. Activity pockets, alcoves

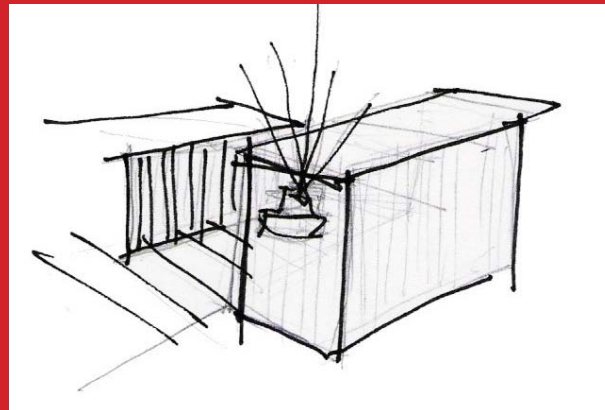
2. Arcade

Fig. 4.14: Design guidelines and patterns. (Alexander, 1975)

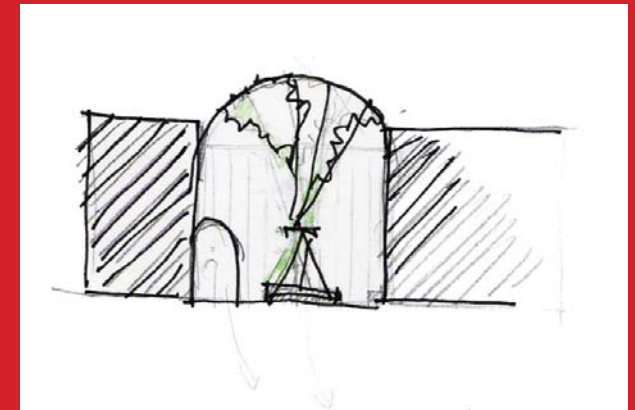




3. Meeting places



4. Roughly in the middle



5. A sense of enclosure

4.7 Restorative Open Space

The third theory that will be investigated is that of restorative open space (Thwaites et al., 2007). It is anticipated that a combination of the principles of experiential landscapes and restorative spaces, within a framework for restorative open space as described below, would be a viable method of incorporating a system for unification at the Hospital Hill.

“ ... spatial arrangement may offer potential to resurrect people’s connection with intuitively preferred forms and strengthen beneficial relations between human functioning and the spatial environment..”
(Thwaites et al., 2005)

Helleur (2001) in Thwaites et al. (2007) identified a wide range of specific properties and characteristics associated with restorative benefit. It was found that people benefit and respond positively to contact with the external environment when it fulfils their emotional, functional and behavioural needs, including the evolutionary, aesthetic and psychological dimensions to this. Helleur (2001) concluded that successful restorative urban settings are dependant on the implementation

of spatial networks which demonstrate consideration to issues of density, size and location.

Thwaites et al (2007) explored the possibilities of spatial configuration of human emotional fulfilment in urban open space, by proposing a conceptual framework for restorative urban open space, based on mosaics of linked and nested spaces woven into the urban fabric. The concept argues for fundamental properties of order as *“integrations of locational, directional and transitional spatial experience, which are present in the natural and cultural world and associated with human psychological benefit..”*
(Thwaites et al. 2005: 1)

Such a system of order within a network applied at the Hospital Hill will enhance the experiential qualities of the existing journeys that were identified in Chapter 3. A spatial hierarchy that varies in intensity of experience, but is always a recognizable unit, will strengthen the imageability of the Hospital Hill. It could also assist in alleviating circulation and legibility problems; while space could be reclaimed within locational spaces which could aid public health, within the larger network.

4.8 Application of Restorative Open Space to Hospital Hill

The axial lines of movement which were identified in Chapter 3 and analysed as journeys, will lead to the identification of spaces made up of combinations of centres, areas, direction and transition. These will be re-interpreted into a network of spaces consisting of directional, transitional and locational spaces. According to Thwaites et al., 2007 such an open space network should be evenly distributed on pedestrian routes, generally be contained and small in scale (15-20 x 30m) and located along places of interest. Although most of the restorative spaces in the context of the Hospital Hill will be located along the axial lines of movement, restorative spaces are required in other areas and at other institutions as well (these are not included in the site, but fall within the precinct). These spaces will be zoned in the urban framework, but will not be further elaborated on. Thwaites et al. (2005) also mentioned the occurrence of the individual space within a restorative framework. Individual spaces will be elaborated on in Chapter 6. and Chapter 7.



journeys

experiential attributes

restorative attributes

hierarchy of spaces

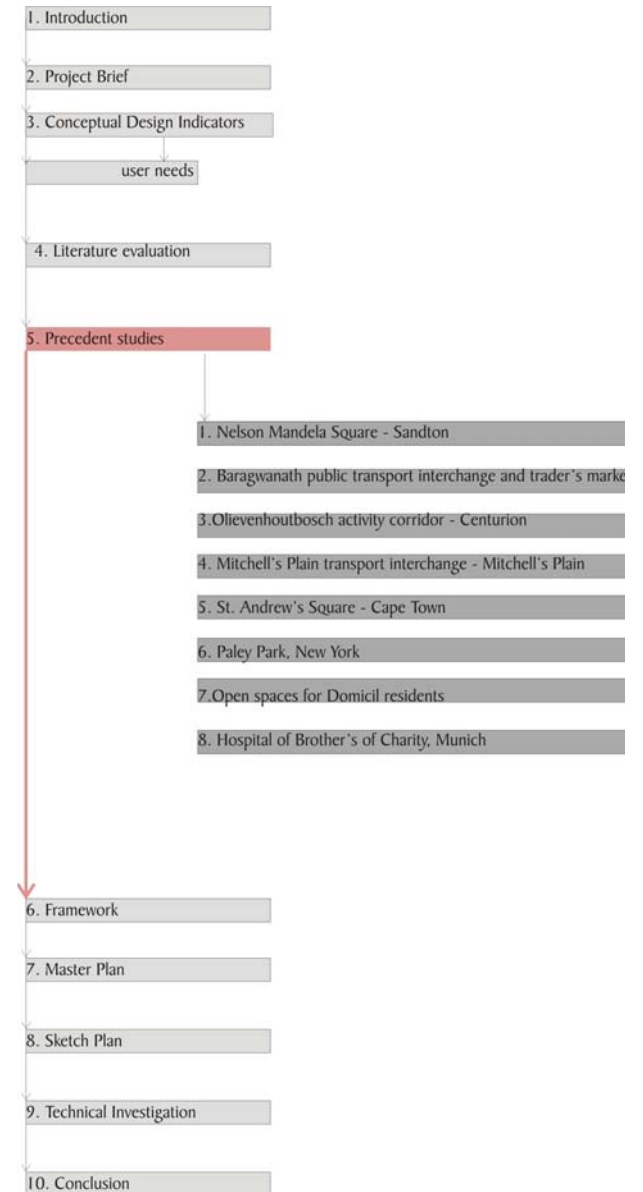
urban framework

restorative framework

guidelines for public health

individual places







5. CRITICAL REVIEW OF PRECEDENT STUDIES

A hierarchy of spaces have been identified within the framework. It is necessary to study precedents and analyse the methods in which legibility, circulation control and optimum utilisation were dealt with. None of the precedents are located in an environment which is similar to the study area. Nevertheless, it is believed that valuable lessons can be learnt from their in/ability to address these issues. After discussion of the precedents items with specific application to the Hospital Hill, will be listed.

5.1 Nelson Mandela Square

The Nelson Mandela Square in Sandton City is defined by three conspicuous buildings flanking a large public square, with a fourth building, a library, containing the space.

In terms of legibility the following can be noted:

- *Nodes.* An erratic, flat fountain defines the centre of the square. When the fountain is not working, the square appears too large and people tend to recede into the shade of edge structures. A fleet of fancy cars that are being washed in the square further invades the space. Although the activity is not endorsed, it does add a human factor to a scale that could otherwise be too daunting.
- *Paths and corridors.* The edges of buildings are flanked by a series of arcades that provide interesting textures and perforate the solidity of the edges.
- *Edges.* The Square is contained by tall building edges. The façades vary in detail and this strengthens the character of each building. The façade interface with the square was softened with a pedestrian

interface in the form of restaurants with seating space from where activities can be observed. There is a row of *Ficus* trees that provide welcome shade and shelter from the glare caused by bleak surfaces.

- *Landmarks.* On a larger scale the Michelangelo Towers and Sandton City subjectively proclaims the location of the square. Within the square the statue of Nelson Mandela, in front of the entrance into Sandton City and the flanking staircases, forms a recognizable image.

A taxi rank is located at the rear of the library. It is interesting to note that the commuters do not take a short cut through the square – the users of the square concur with the users of the upmarket buildings between which it is located, and are not representative of the general public.

Design implications:

Activities during different times of the day promote passive surveillance. Interactive features like the erratic water fountain provide a sense of playfulness and encourage participation of and fascination for all ages. Shaded edge areas become resting and observing spaces, while the sunny open areas host activities. Landmark elements strengthen the character of the square and become a point of reference.



Fig. 5.1: Nelson Mandela Square. (Author, 2008)





Fig. 5.2: Erratic fountain. (Author, 2008)



Fig 5.3: Car washers in the square. (Author, 2008)



Fig. 5.4: Shady seating on the edges of the square.
(Author, 2008)



Fig 5.5: Corridor flanking the Library. (Author, 2008)

5.2 Baragwanath Public Transport Interchange and Trader's Market

The Baragwanath Public Transport Interchange provides a parking and pick-up area for approximately 650 taxis and 22 buses. It furthermore houses 500 market stalls to serve the commuters. The transport interchange stretches 1.3 km along the Old Potchefstroom Road, one of the main entrances into the Soweto Township. The arcade-like structure is made from structurally sculpted concrete with redbrick infill. The users do not approve of the concrete architecture and they regard the structure as being incomplete.

Attention was given to architectural detail and public art was made a feature. These features were employed as landmark structures. The structures are partitioned according to function and destination. Circulation within structures take place in a rectangular one-way fashion, bisected by drop off and pick up zones. The spaces are vibrant and busy. The arcades with traders and waiting areas promote social interaction.

An interesting similarity to the Hospital Hill is the Chris Hani Baragwanath Hospital which is located on the opposite side of the Potchefstroom Road. The hospital complex and facilities of the Faculty of Health of the University of Witwatersrand generated enough pedestrian influx to warrant the building of a pedestrian bridge was built from the Baragwanath Transport interchange, across the Potchefstroom Road to the main entrance of the hospital. This hospital complex experiences problems similar to the Hospital Hill. These include illegibility and under-utilised space. Spaces between buildings are larger and this results in a more accessible environment.

The area is accessible by vehicles, but they drive at slow speeds and the vehicles do not hinder movement of pedestrians. Although the area is at least just as neglected in the sense of maintenance as the Hospital Hill, it is visually perceived as being safer. Furthermore, intra-institutional movement is limited, because the related institutions are located on the same premises. The largest influx is thus from pedestrians crossing the bridge and and the private vehicle entrance; therefore the hospital does not experience access and preference anarchy at their main entrances.

Design implications:

Durable and robust materials should be used and spaces should be designed for flexibility of use.



Fig. 5.6: Baragwanath Transport Interchange (Author, 2008)





Fig. 5.7: Concrete architecture: Trading corridor. (Author, 2008)



Fig. 5.8: View from Chris Hani Barnagwanath Hospital across pedestrian bridge towards the Baragwanath Transport Interchange. (Author, 2008)



Fig. 5.9: Pick-up and drop-off areas. (Author, 2008)

5.3 Olievenhoutbosch Ext 13 – Legong Activity Street

Legong street was regarded as an ideal location to commence the creation of a sense of place and identity for Olievenhoutbosch, as it is a major entrance into the Olievenhoutbosch Ext 13. An activity street that takes into account the need for an existing pedestrian and public transport system, would be a good backbone around which to design other amenities that will initiate a sense of belonging and ownership. Introduced functions include Rethabile Park, a public square which serves as a trading area and taxi ranks.

These amenities are located on intersections. The existing community centre on the western end of the street and the shopping centre to the east, serve as anchors for the activity street (UGF, February 2007).

Four taxi ranks were constructed in the same language as the trading stalls on the square. The ranks are increasingly utilised, although taxis still tend to stop illegally at intersections. The surfaces are hard and durable. Traffic is kept off

the pedestrian boulevard by a series of bollards, which emphasise movement and direction. A local artist crafted artworks and the seating areas in the square are painted in bright colours. The facilities are not being used to the optimum, but it is expected that the corridor will become more active when the market stalls are in use (UGF, February 2007).

Design implications:

Intervisibility between directional movement and resting spaces encourages passive surveillance and creates incentive for exploration.



Fig. 5.10: Pick-up and drop-off areas for taxis (Gerald Garner in UGF, Feb. 2007)



Fig. 5.11: Small square which emphasises intervisibility of different activities (Gerald Garner, UGF February 2007)

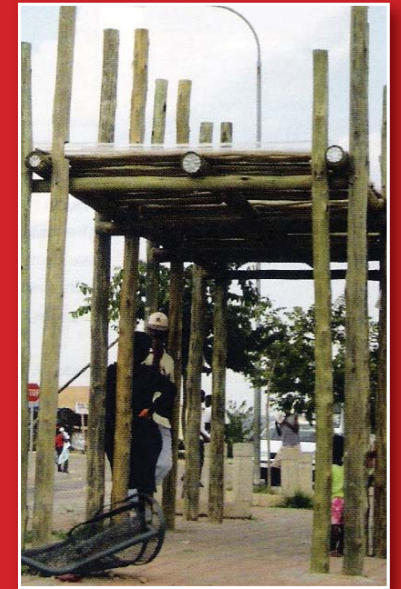


Fig. 5.12: Trade space Christelle Jordaan in UGF, Feb 2007)



5.4 Mitchell's Plain Transport Interchange

The Mitchell's Plain transport interchange aims at improving public transport facilities for approximately 70 000 users by creating a sense of place, and safer living and shopping experience (UGF, 2007). The landscape interventions included a tree-planting programme, installation of a site-specific range of street furniture and installation of interactive artworks. Mitchell's Plain is characterised by harsh environmental conditions, and therefore consideration of maintenance was very important:

- Only hardy trees, which are known to grow well in Mitchell's Plain, were used
- Automatically-operated, underground, drip-irrigation systems and a tree hole with a stone-chip mulch layer was used to protect the soil and irrigation rings (UGF, 2007)
- In areas where the pavement could not be lifted to install irrigation, 'dry water gel' was used.
- A fertilisation programme and tree-root protection zone was employed to further encourage growth.

- The paving pattern is simple but effective. The patterns aim to allocate spaces to specific users – trading stall allotments and parking lines are embedded in the paving pattern and needn't be painted.
- Public artwork designs were in the form of a competition for the primary school children of Mitchell's Plain. The winning entries were reproduced making use of galvanised-steel artwork in the form of individual panels and sculptures for tree guards.
- A large interactive play sculpture was constructed

Design implications:

Paving patterns can be used to gently enforce direction, and also to demarcate areas with similar use. Play structures activate a space by drawing passive surveillance, creating opportunities for soft fascination through observation and generating a vibrant atmosphere.





Fig. 5.13: Waiting areas (Graham, 2007)



Fig. 5.14: Interactive play equipment (Graham, 2007)



Fig. 5.15: Street furniture and paving (Graham, 2007)



Fig. 5.16: Aerial view of Mitchell's Plain Transport Interchange (Graham, 2007)

5.5 St. Andrews Square, Cape Town

The remains of approximately 2000 bodies, dating from the 17th and 18th century, were found during excavations for the construction of a shopping centre. SAHRA and the City of Cape Town initiated a process of finding a suitable place for reburial. The space which was chosen for this, is the St. Andrew's Square. It is situated adjacent to an envisaged pedestrian link between the central city, Green Point Stadium and the V&A Waterfront (UGF, 2007). Furthermore the space has historical significance, and so does spaces along the line of movement. *"The site will therefore form part of a network of spaces hat are intended to revitalise the pedestrian network, link with elements of memory, and help to positively change the public realm of the city."* (UGF, 2007) It is envisaged that these spaces will act as public "living-rooms" to connect communities and inform people's mental maps by improving legibility. The site was constructed in three phases consisting of the St. Andrew's Square in front of the 1830's Presbyterian Church, an ossuary and visitor's centre as phase 2, and finally a memorial garden in front of the ossuary.

Seen in plan, the three spaces flank the diagonal line of movement, forming a hierarchy spaces that will draw the pedestrian into deeper areas from where movement can be observed, but not obstructed. The availability of public ablution, a kiosk and visitors centre will increase activity in the spaces – this will ascertain its value as a public open space and not merely a graveyard. The choice of materials is natural but robust.

Design implications:

A clear hierarchy between private, public and semi-private space improves the legibility and usability of a space. The addition of activities that draw people in to the square (kiosk and ablution) activates the space, resulting in passive surveillance.



Fig. 5.17: Paving detail. (Manie Meyer, UGF, April, 2007)



Fig 5.18: Material use. (Manie Meyer, UGF, 2007)





Fig. 5.19: St. Andrew's Square. (Karen Eicker, UGF, April 2007)

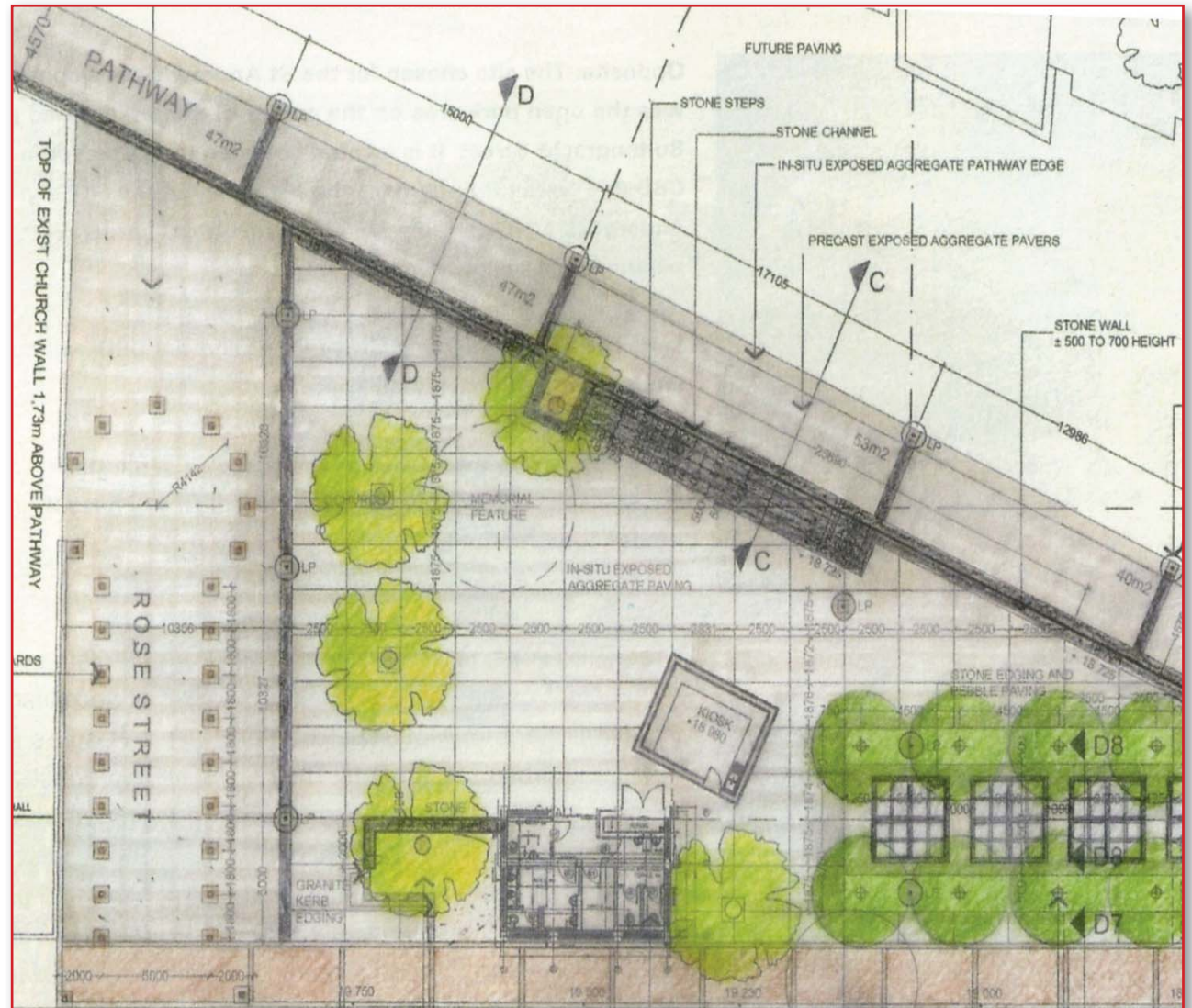


Fig.5.20: Site plan of St. Andrew's Square: (OVP Associates, in UGF, 2007)

5.6 Paley Park, New York

This park is a good example of a privately owned public space in the form of a 'vest-pocket' park in Manhattan, New York. The park is located directly on the street, but elevated by a few steps. This feature encourages people to look in and enter. The street is a source of noise, but the waterfall, which also forms a prominent feature, disguises the noise. The furniture is movable which allows for greater freedom of use. Tall trees provide shade and soften the building edges. Even though the space is heavily used and noisy, people claim that they enjoy it because the surroundings give them a feeling of calmness and being away (www.pps.com).

Design implications:

Level changes as a way of emphasizing the hierarchy of space is always effective, but it should not restrain people with disabilities to use a space. A series of small, more intimate spaces are often more effective than one large mono-functional space.

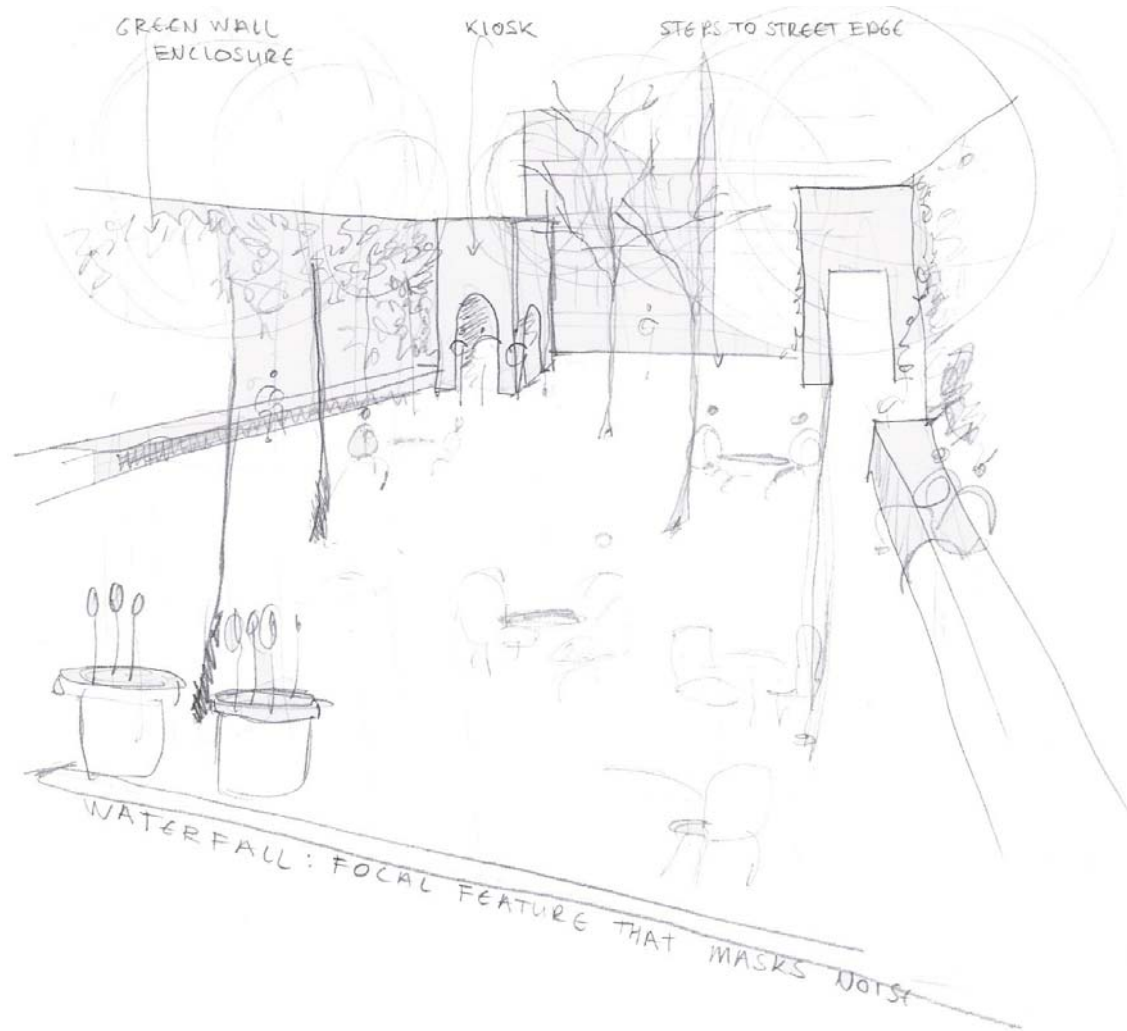


Fig. 5.21: Paley Park - view from the waterfall towards the street. (Author, 2008)

5.7 Open spaces for the Domicil Senior Citizen's Residence

This modern senior citizens residence aims at creating small courtyard spaces that are multi-functional and very accessible, especially for residents who cannot walk long distances. The garden is essentially aimed at restoration and the spaces, in terms of restorative design principles, the following was noted:

- The garden is high in ephemeral qualities like sun and shade patterns, moving water and seasonally flowering plant species.
- The garden is high in visual complexity.
- The colour and texture of pathways are consistent throughout the garden and provides a sense of coherence.
- Movable furniture allows for user comfort
- Due to the small size an adequate feeling of "being away" cannot be obtained.



Fig. 5.22: Domicil Senior Citizen Residence - Meeting places.
(Baumeester, 2007)



Fig. 5.23: Domicil Senior Citizen Residence. Secluded resting.
(Baumeester, 2007)

5.8 Hospital of the Brothers of Charity, Munich.

This hospital with the theme of “quality of life in illness” is located in a green belt that was converted into park-like gardens for the patients. (Baumeister, 2007). There are three types of gardens:

- *Flowering roof garden.* High in complexity, texture and ephemeral qualities. A few trees provide pleasant seating space. The plants are grouped according to flowering colour, which provides coherence.
- *Internal courtyard.* A covered space that can be used in all seasons. The materials are fabricated, with plexiglass walls, an enormous plastic grass sculpture and a fishpond with plastic fish. Shapes are generally geometric. Although it is high in coherence, the limited space and visibility thereof results in a space that will probably be beneficial, but not restorative.
- *Patient’s gardens.* Large trees provide shade to sit on designed seats, watching flowerbeds and water features. The gardens are rich in texture, but lack complexity. The shapes are geometrical which somewhat decreases the feeling of naturalness.



Fig. 5.24: Hospital of the Brothers of Charity
- Internal courtyard. (Baumeister, 2007)



Fig. 5.25: Hospital of the Brothers of Charity
- Roof garden (Baumeister, 2007)



5.9 Critical review

Review of the precedents provided valuable input. The following general guidelines regarding the three sub-problems were adopted:

5.9.1 Legibility

- The left-over spaces between tall buildings can be successful open spaces, provided that they are contained and encourage passive surveillance without intruding on privacy. Such squares should preferably be located adjacent to main routes, and not be divided by the main route.
- Landmarks as points of orientation and corridors as means of gently enforcing direction, can find specific application in the axial lines of movement.
- The buildings should not overshadow the human scale – open areas that are too large or spaces that are defined by edges that are too smooth overwhelm the user and results in the user not observing detail.

5.9.2 Circulation control

- Durable and robust materials should be used. This could be employed in a creative manner to enforce spaces and functions

in a two-dimensional way, for example depicting trading areas and parking spaces with paving patterns, rather than paint.

- Spaces should be designed to allow for flexibility and diversity of use.
- Taxi ranks, waiting areas and drop-off zones should be located in areas that are as convenient as possible for the user, otherwise the taxi will ignore the intervention and still drop-off his client as close as possible to his/her destination.
- Intervisibility between directional movement and resting spaces encourages passive surveillance and creates incentive for exploration.
- Trading stalls must make provision for safe storage of equipment and merchandise. Preference should be given to existing traders.
- Involvement of the community (users) to guide the decision making process. This will induce a sense of belonging, pride and ownership.

5.9.3 Space reclamation

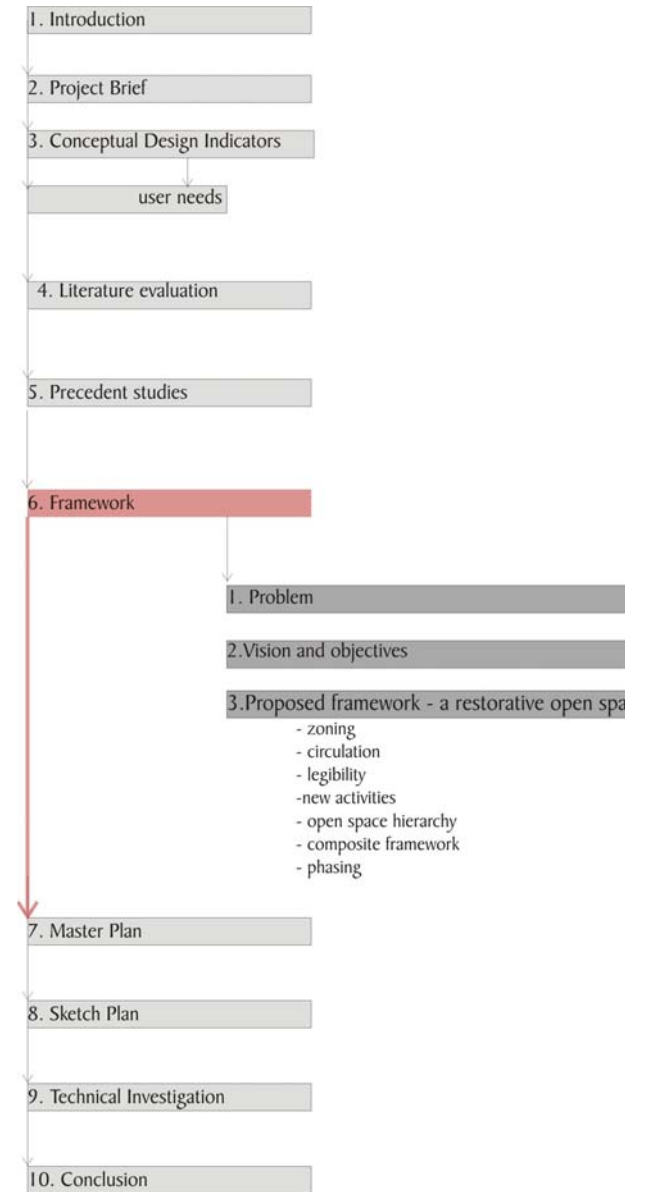
- Spaces to be re-claimed for use as public open spaces, should be adjacent to major pedestrian routes.

- The space should preferably encourage some visibility into and from the space, but the interface between the line of movement and the space should be subtly defined.
- People want to be able to contemplate, but not feel isolated. Therefore the scale of the space is important, and if very small, measures should be taken to mask noise so that the user does not feel too exposed.
- Ephemeral qualities are extremely important.
- The principles of inclusive design should be incorporated.

5.9.4 Restorative space

- Restorative spaces can be created in small, flat spaces. Using elements with varying height can enhance texture and variety and develop a sense of containment.
- The precedent gardens require lots of maintenance, which should be avoided at the Hospital Hill. Furthermore, the concept of moveable furniture in open spaces in South Africa is not established, but could be explored.







6. HOSPITAL HILL URBAN DEVELOPMENT FRAMEWORK

From the evaluation of literature, it is proposed that an integrated Open Place System be implemented at the Hospital Hill. Such a system could assist in alleviating the three identified problems; illegibility, under-utilised space and lack of circulation control.

6.1 Problem – a need for restorative open place

The principles proposed by Thwaites and Simkins (2007) for experiential landscapes will be used as baseline against which the continuity of the spatial experience of the network will be assessed. As a second layer, the system will draw from the principles of restorative benefit identified by Thwaites et al., (2007) for implementation in locational spaces, which will predominantly be used by defined users within the system. The first two layers will aim to improve the experience of the user by improving circulation, reclaiming under-utilised space and improving legibility. Careful arrangement of different spaces within this system could lead to a third layer of significance. In this layer the individual, within his/her own frame of reference, could find the opportunity to translate pleasurable experience into contemplation and even place-making. Such activities could lead to actualisation of the individual within the place.

6.2 Vision and objectives

Vision: To strengthen the identity of the Hospital Hill Precinct as a land use area dedicated to health and education. The relationship between the physical, bio-physical and socio-cultural environments

should result in an environment that is responsive to user needs in a social, environmental and economically sustainable way.

Objectives:

- Defining all entrances into the Precinct.
- Imposing a hierarchy of locational, directional and transitional spaces that will guide circulation and improve accessibility.
- Improving the circulation and reclaiming under-utilised space to increase the overall legibility.
- Creating a language for the area through co-ordinated branding, street furniture and material use. This will improve legibility and install stewardship.
- Improving circulation of pedestrians and cyclists by providing dedicated areas of movement
- Upgrading existing taxi ranks and providing an intermodal taxi node
- Encouraging mixed use developments, with intensified nodal development in identified areas.
- Establishing an area which can act as transition between the 'urban character'

of the Hospital Hill and the 'cultivated character' of the Zoo Precinct, by incorporating the Apies River into the open space framework (Apies River DF, Holm et al., 1999).

- Improving maintenance to gain a well-kept, nurtured and overall healthier appearance for the health institutions.
- Conserving historic buildings.
- Emphasising vistas into adjacent land use areas.

6.3 Existing frameworks

Some of the existing frameworks which were consulted to compile objectives for the Hospital Hill Precinct include:

- Tshwane Integrated Development Plan
- Pretoria Inner City Integrated Spatial Development Framework
- Tshwane Regional Spatial Development Framework: Central Western Region
- Apies River Development Framework, 1999
- Tshwane City Strategy 2004
- Tshwane Integrated Environmental Plan



6.4 Proposed solutions

The combination of experiential landscape principles and restorative benefit will be incorporated into a spatial framework. The framework will consist of a network of locational, directional and transitional spaces, as described by Thwaites et al. (2007), which aims to ameliorate circulation problems and re-claim lost space. These interventions should lead to improved legibility.

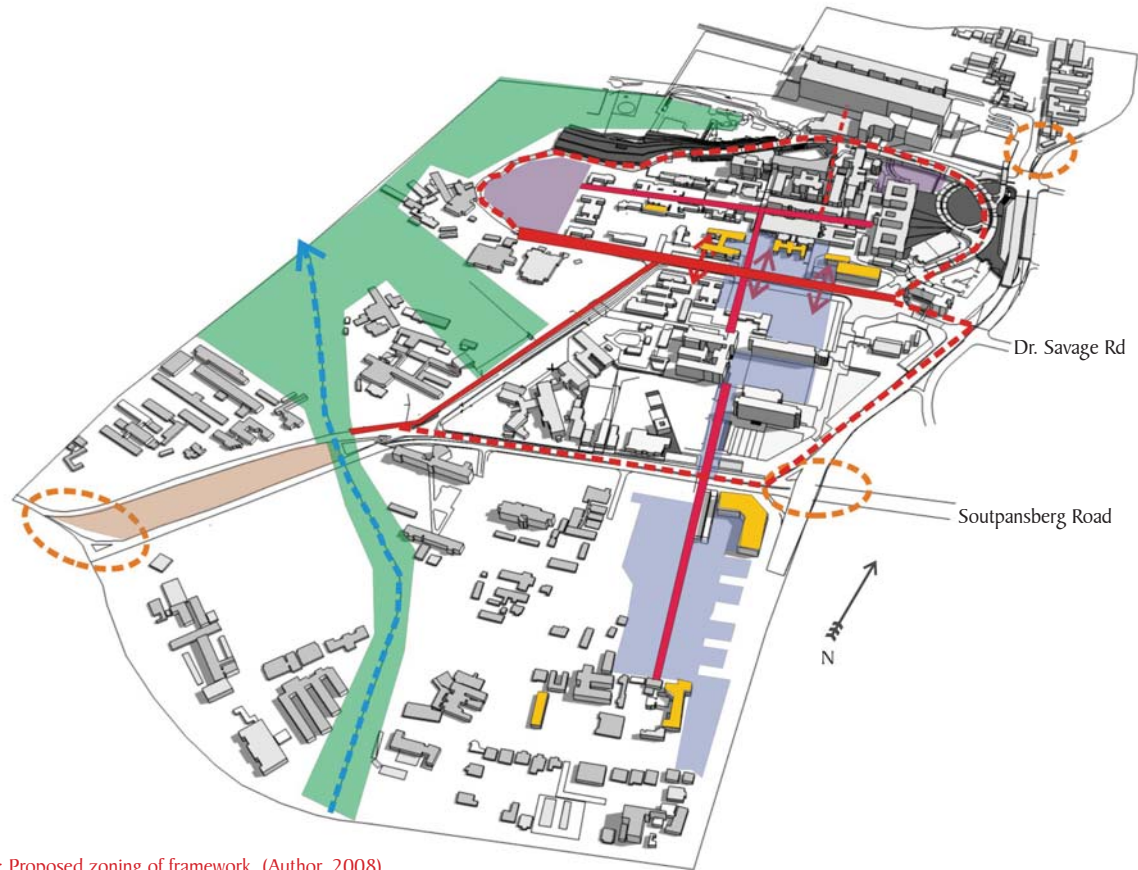
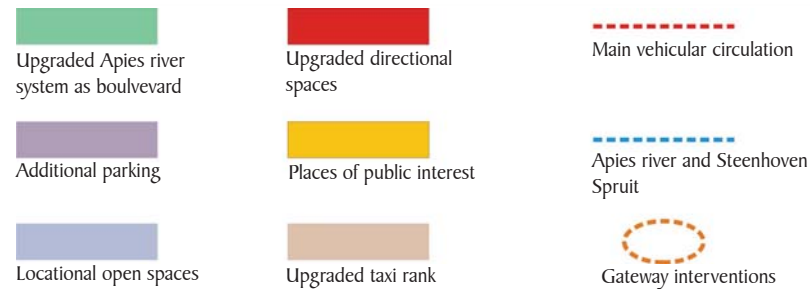


Fig. 6.1: Proposed zoning of framework. (Author, 2008)



6.4.1 Circulation control

The primary roads, like Dr. Savage Road, cater only for vehicular movement. A well-defined and accessible system for pedestrians and cyclists is necessary. In the transitional spaces, where modal transport interchanges occur and at the entrances of large government buildings (for example the T.R.H. and P.A.H main entrances), drastic measures are required to address the interface between vehicles and pedestrians.

Various access levels occur in the Precinct, ranging from areas with free access (public spaces and public roads), to areas where access is controlled, or restricted to students and staff. Such control measures are necessary to distinguish through (pedestrian) traffic, from actual users of the institutions. However, provision should be made for required inter-institutional movement, specifically between the T.R.H, the U.P and the educational facilities which are located in close proximity. Inter-institutional movement can be accommodated by cross-boundary, shared open spaces. Such spaces will not be accessible to the public, but will improve movement and usage at an inter-institutional level.

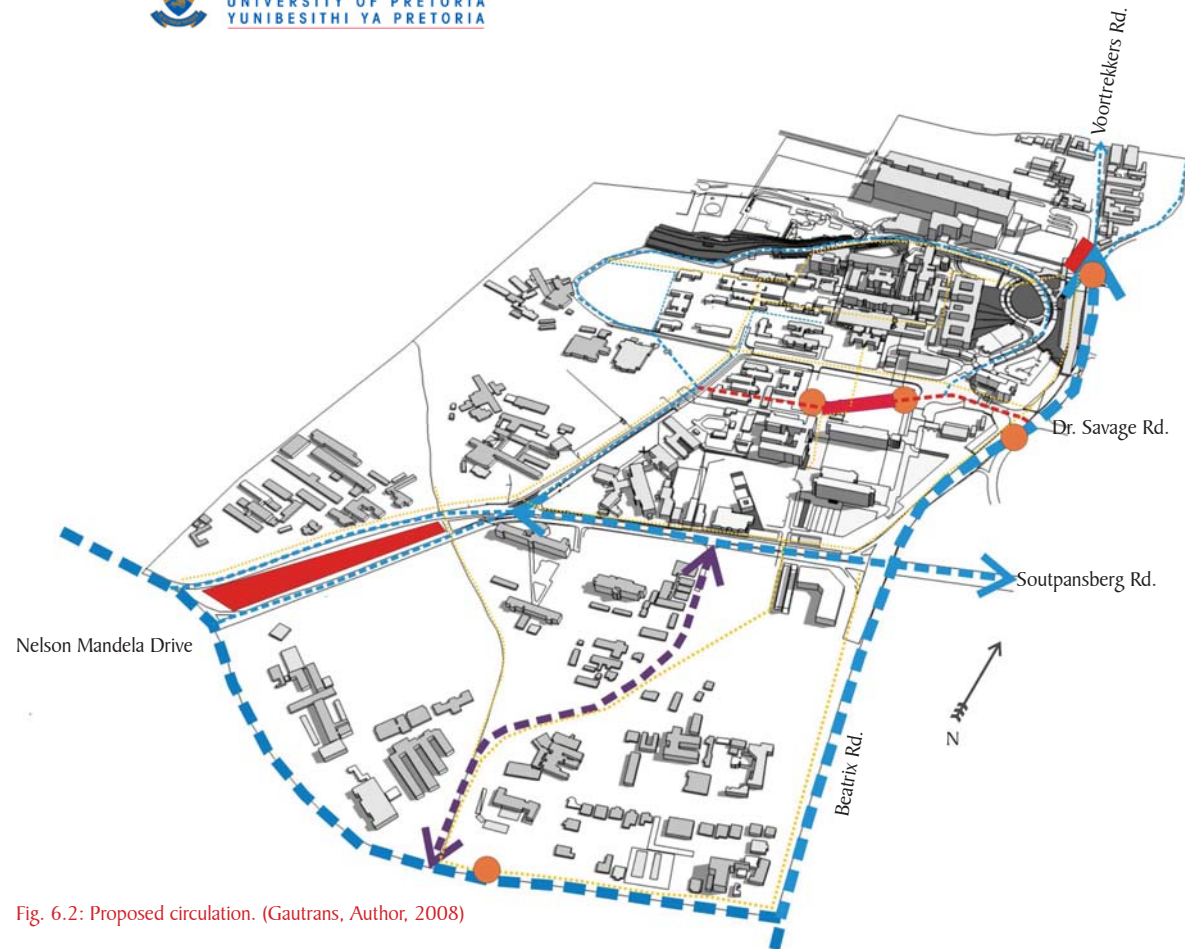
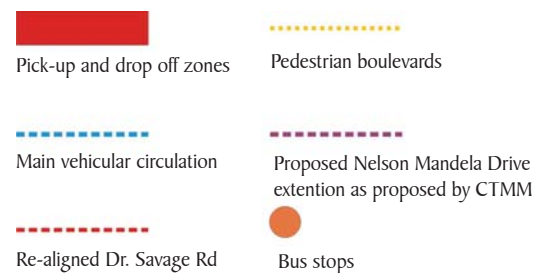


Fig. 6.2: Proposed circulation. (Gautrans, Author, 2008)



6.4.2 Legibility

Entrances into the Precinct should be designed as recognizable gateways that portrays and strengthen the character of the Hospital Hill. Exploiting views and vistas in combination with landmarks along defined pathways and edges, will help the user with orientation. The branding and design language of the area is of primary importance in defining character. Signage, street furniture, waiting areas, light fittings and walkways should form part of a custom-designed palette, which is recognizable as being part of the Hospital Hill Precinct. In combination, these factors will improve the imageability of the Hospital Hill.

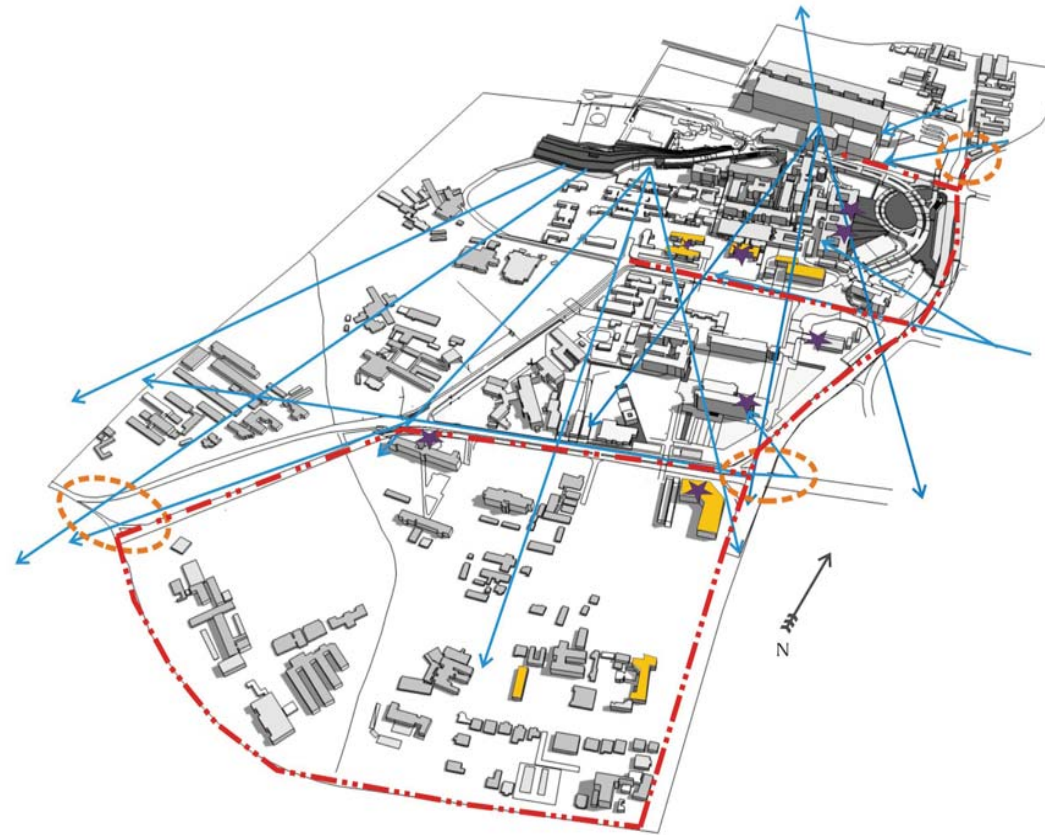
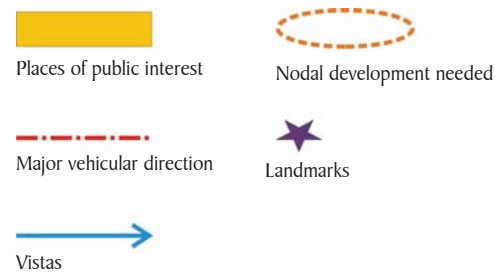


Fig. 6.3: Legibility. (Author, 2008)



6.4.3 Space reclamation

Vacant, weed-invaded stands of land are common in the Precinct. To improve the imageability of the Hospital Hill Precinct, these spaces should be upgraded and re-claimed. Upgraded spaces should be adjacent to corridors of movement or in-between the edges of buildings where it will provide a variety of options for reclamation of under-utilised space. These options include space for new buildings, more parking, modal transport interchanges, corridors of movement, public open spaces and dedicated semi-private spaces.

Throughout the Precinct there is a need for investment. Investment will attract more people and create more investment opportunities. These interventions should also be used to define the street edges. Commercial or mixed use should be introduced on the main gateway intersection of Soutpansberg Rd with Beatrix Rd, and at the intersection of the Nelson Mandela Road extension with Soutpansberg Road. A community centre and upgrade of the modal transport interchange next to the Steenhovenspruit in Prinsloo Road, will improve the character of the gateway into the area, and install a sense of place for the commuters who frequent the area.

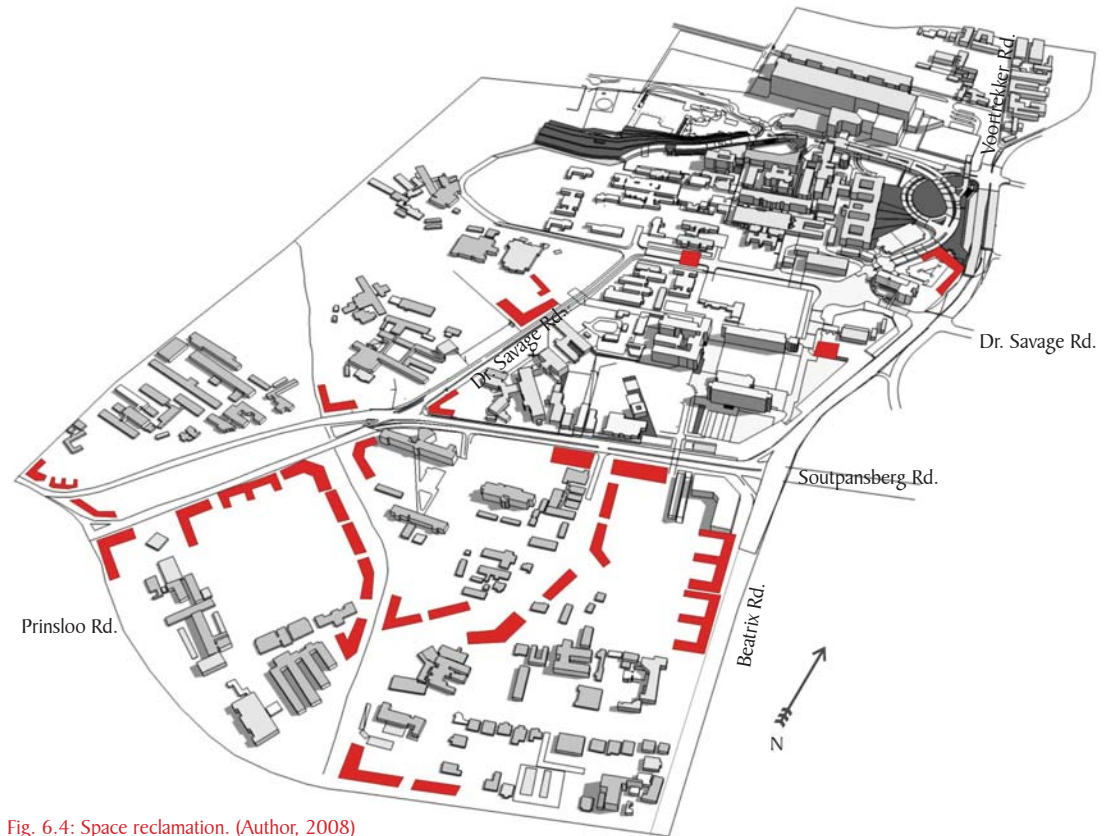


Fig. 6.4: Space reclamation. (Author, 2008)

 Proposed buildings



6.4.4 A restorative open space system

The users of the area have different requirements, but there is a need for restorative spaces that benefit public health. This network will consist of a hierarchy of locational, directional and transitional open spaces. Although most spaces cater for specific functions, they should always be designed in such a way that multi-use and flexibility can be achieved. The spaces vary in level of scale from large public open spaces, to very small contained spaces, to address the various needs.

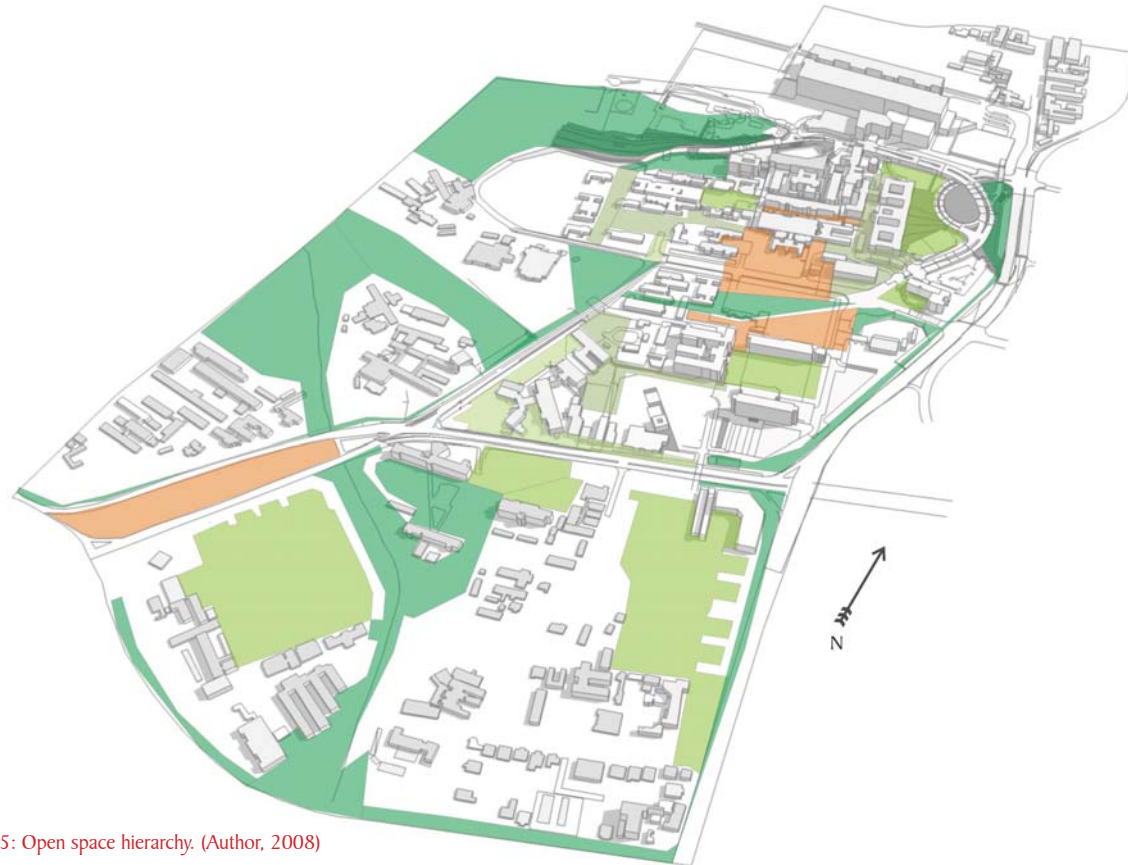
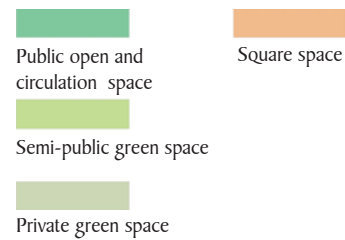


Fig. 6.5: Open space hierarchy. (Author, 2008)



6.4.5 The composite framework

The proposed framework for the Hospital Hill attempts the following:

- Defining all entrances into the Hospital Hill.
- Vehicular circulation proposals include to extend Nelson Mandela Road and re-align Dr. Savage Road.
- Improving pedestrian circulation through the introduction of boulevards (directional spaces). To apply co-ordinated branding of street furniture.
- Creating transitional spaces, for example the identified pick-up and drop-off areas to accommodate the needs of the users.
- Reclaiming space through the introduction of new activities, and
- through the development of dedicated open spaces.
- These spaces will serve as the connection between new and existing activities; and will result in an open space framework. Incorporating the principles of public health (Chapter 4) will lead to the development of a restorative open space system.

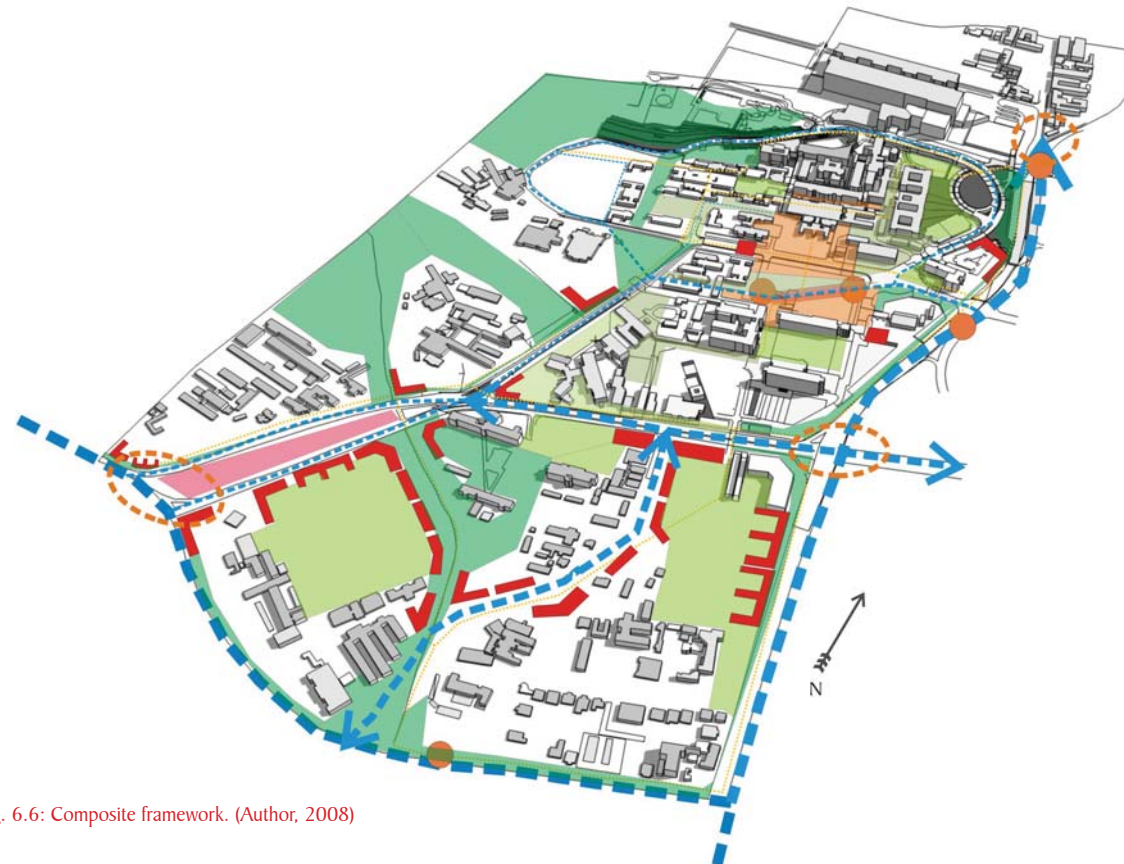
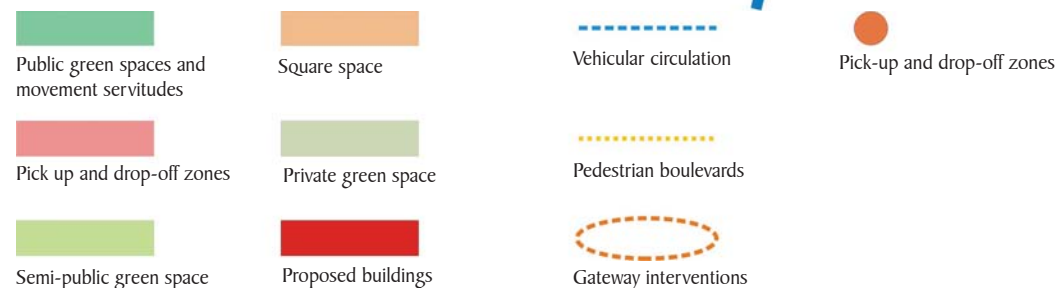


Fig. 6.6: Composite framework. (Author, 2008)



6.4.6 Phasing

An intervention of this scale cannot happen overnight. Four phases are proposed:

Phase 1: Defining gateway character and introducing capital investment in the form of new development.

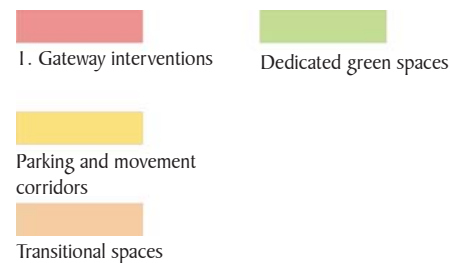
Phase 2: Defining and improving the movement corridors and parking.

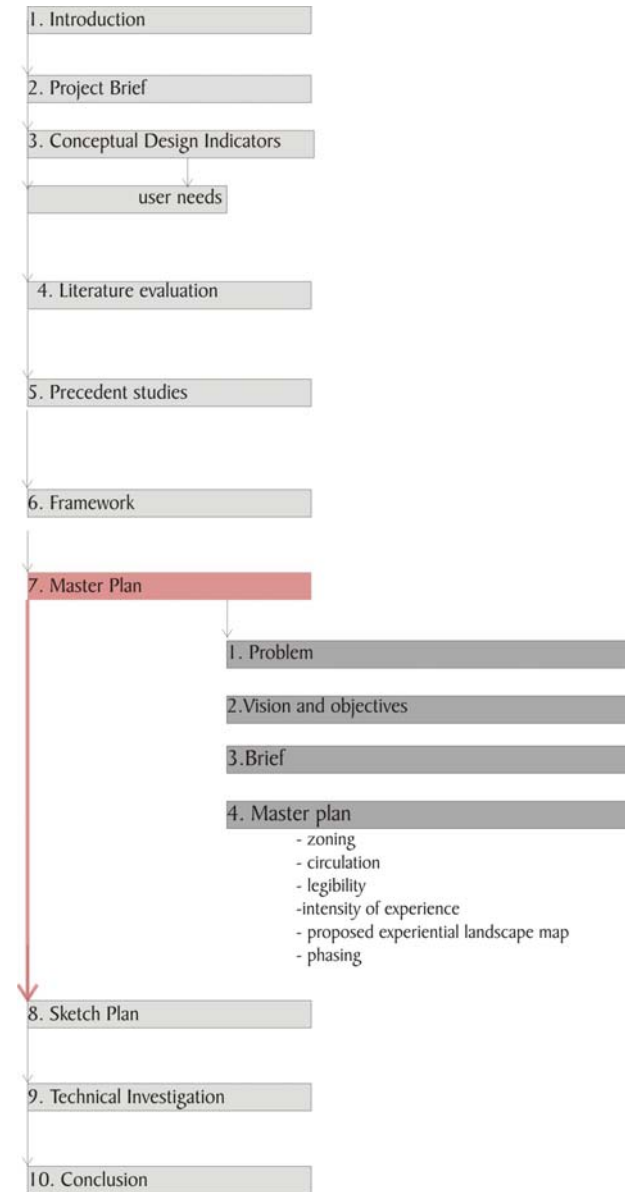
Phase 3: Upgrading the transitional areas by providing more parking, upgrading transport interchanges and defining public spaces in front of institutional buildings.

Phase 4: Improving inter-institutional movement by providing locational restorative spaces for the benefit of public health.



Fig. 6.7: Proposed phasing. (Author, 2008)







7. MASTER PLAN AREA – a system for regeneration

7.1 Problem Statement

Illegibility, under-utilised space and lack of circulation control was identified as the main problems on a precinct scale. The proposed restorative open space system aims to ameliorate these problems. However, without mitigation, the T.R.H.M will result in even more under-utilised space and illogical circulation patterns. The viable opportunities to reclaim space for different functions (parking, restorative spaces, public spaces etc.) will not be utilised in the implementation of this plan.

Some specific problems include:

T.R.H

- insufficient parking
- surplus access points
- no access to fire hydrants
- undefined walkways
- insufficient gathering, waiting and public areas
- undefined zones of function.

U.P

- unsafe movement
- insufficient parking
- lack of “public” waiting or recreational areas.

Some opportunities include

- Major restoration of some buildings is already under way and this will improve the imageability of the area.
- Using the established steam pipe network as a method of guiding direction.
- Catering for the needs of a variety of users and utilising a variety of uses, will result in vibrant spaces that are used 18 hours of the day.

7.2 Objectives

1. To reclaim the importance of the T.R.H as a public institution aimed at the improvement of public health.
2. To improve the spatial connection between the Medical Campus and the Prinshof Campus of the University of Pretoria.
3. To address illegibility and lack of circulation control and reclaim under-utilised space as part of a hierarchy of restorative open spaces.
4. Legibility can be improved through the intensification of existing experiential journeys.

These measures will result in a more accessible experience for the user. Therefore the master plan area will focus specifically on the relationship between the T.R.H and the U.P

7.3 Brief

To design a series of spaces, within the existing fabric, which could have the potential to aid public health. The interventions should be interconnected to an overall hierarchy of spaces that aim at addressing site-specific and user-specific needs. The hierarchy of space should guide movement and direction through the Hospital Hill. This will be achieved by providing connections to the region through exploiting views and vistas, but also, through improving accessibility on a local level through flexible and inclusive design.

The organization of movement should stimulate social interaction in some areas by enhancing existing centres and providing the user with choices. The relationship between movement (direction) and lingering (centres) should be linked by transitional spaces. In combination, these spaces should stimulate restorative sensations. The hierarchy of space should be unified through place-specific imageability and co-ordination of materials and furniture.

The restorative open space framework should be implemented in phases.



7.4 Proposed solution

7.4.1 Zoning

The proposed zonings for the master plan area is aimed at improving the experiential landscape . The successful functioning of the spatial hierarchy of the master plan is based on the relationship between landmarks and places of interest; movement patterns of users; and the natural environment. An optimum relationship between these components will result in a hierarchy of restorative open spaces which would unify the fragmented nature of the Hospital Hill, and improve circulation.

The following components will be discussed:

1. Circulation control
2. Legibility
3. Users
4. Space reclamation
5. Safety
6. Intensity of experience

Following a breakdown discussion, a post-development, experiential landscape map will be compiled.

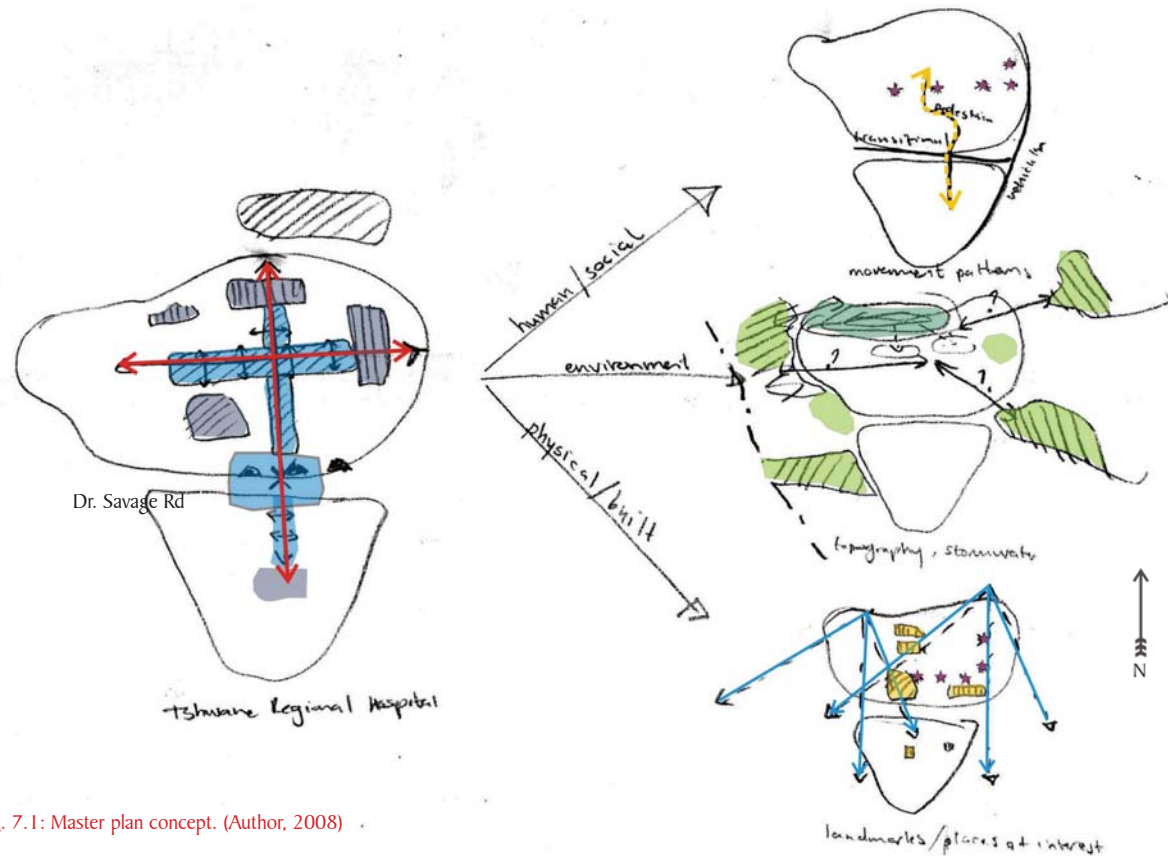
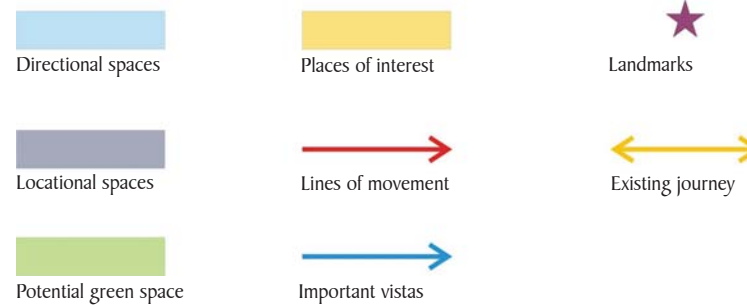


Fig. 7.1: Master plan concept. (Author, 2008)



7.4.2 Circulation control

Transitional zones play a prominent role in the intended control of circulation and access. Certain transitional zones were identified in the framework and these will be developed into nodes of transitional activity, for example waiting, pick-up and drop-off zones; access control points and trading areas. From these nodes movement can disperse into other directions. Transitional zones should always be linked to a directional or adjacent locational space.

Movement within the premises of the T.R.H is largely guided by the position of the existing steam pipe network which will be used as a secondary way of strengthening the imageability of the site and guiding pedestrian movement. Also refer to **Fig. 3.17**. Vehicular access should be restricted to Gate 8 for staff and students; and to the existing entrance to the new parking lot for visitors. The services entrance will remain. It is important that the master plan makes provision for access to fire hydrants in the case of fire.

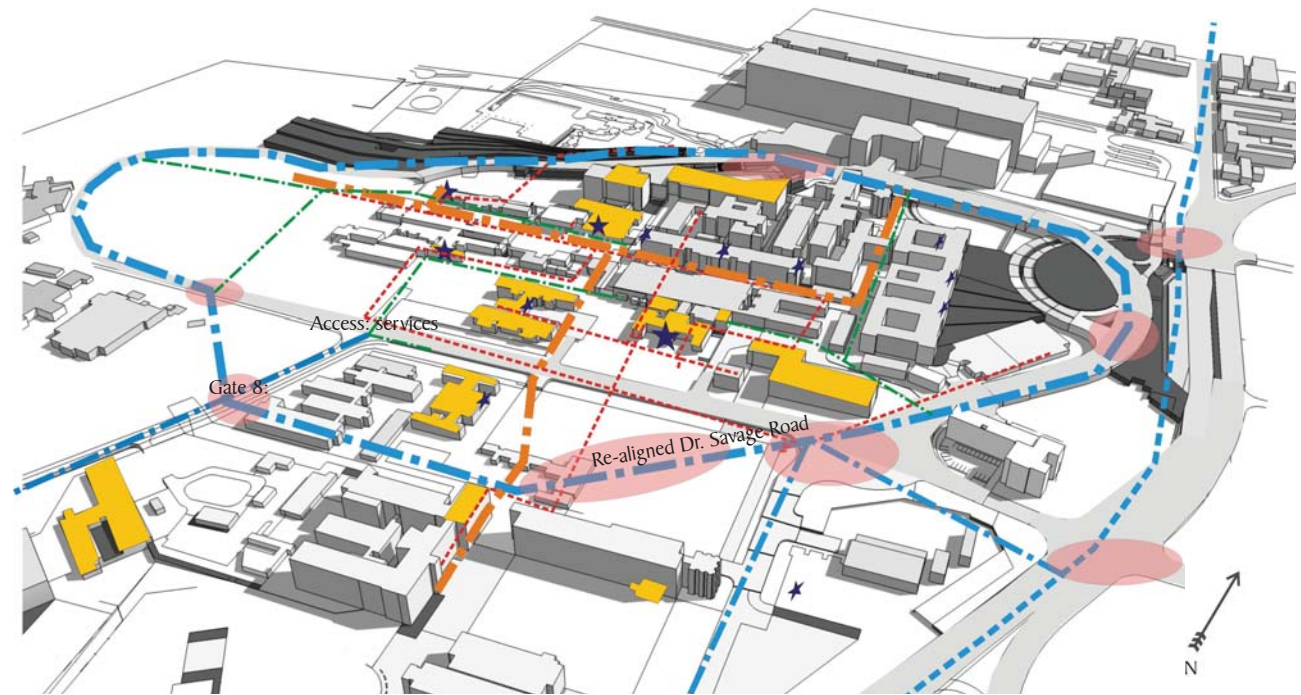
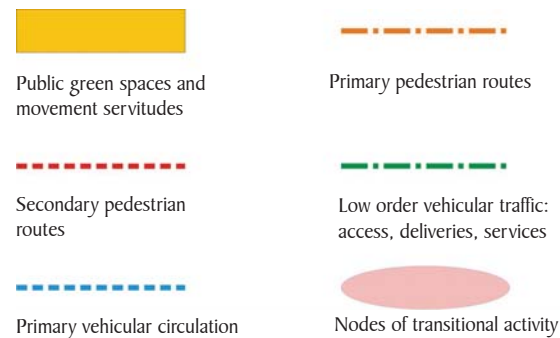


Fig. 7.2: Primary circulation.. (Author, 2008)



7.4.3 Legibility

Movement should be guided from the transitional spaces towards other activities through corridors and edges. The existing fabric should be exploited to further develop and emphasise local centres of social interaction and social imageability. This will lead to movement through the fabric in the form of sequential experiences that install sense of place and guide orientation.

The imageability of commonly used areas can be intensified through a colour-coded system imposed on the master plan areas. By repeating a specific colour, pattern or texture within a specific area, it subjectively intensifies the sense of place. It also serves as a guide to direct illiterate users.

The zones which were selected are based on function and visibility and include the following:

- Dr. Savage Plaza
- H.W. Snyman building; H.W. Snyman Square and associated activities such as the chapel and children's garden.
- The secondary line of movement with all associated spaces and functions should read strongly as the east – west spine of

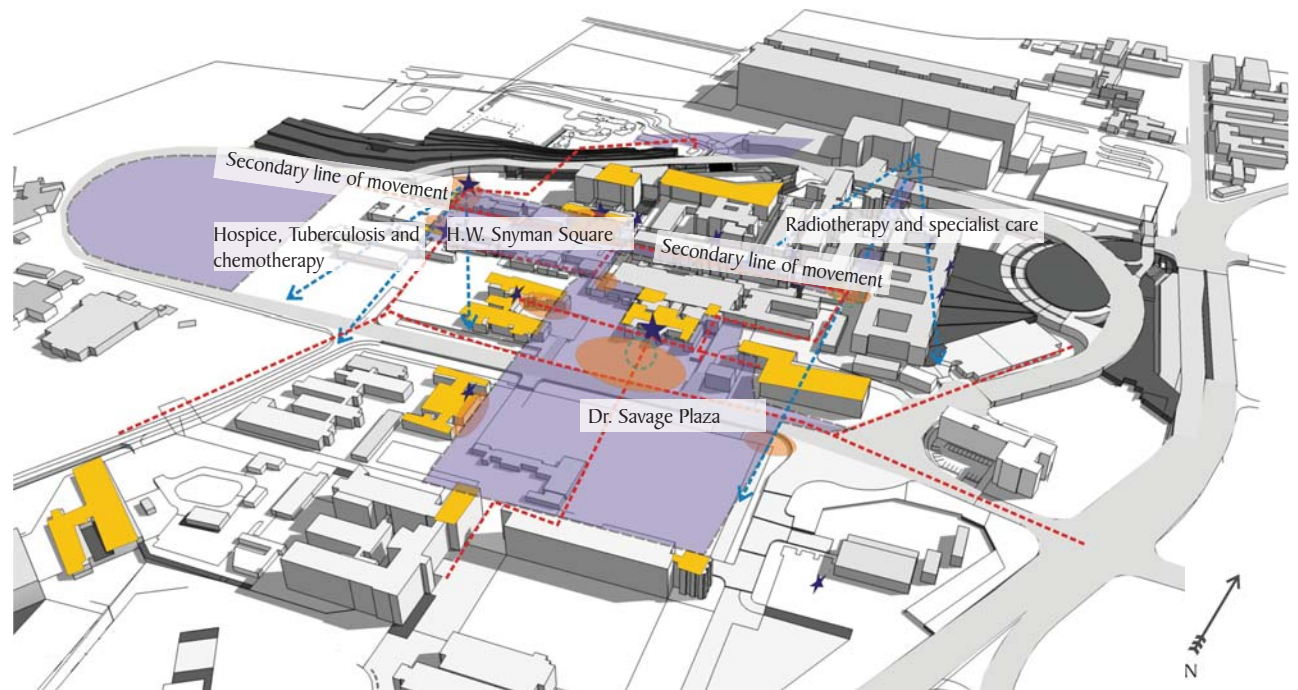
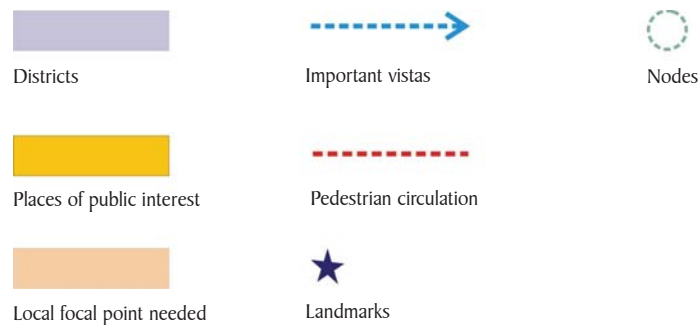


Fig. 7.3: Legibility zones. (Author, 2008)



the master plan area. The north – south spine will be defined by the intervention of the line of movement by Dr. Savage plaza. From the main entrance of the building, the plaza becomes an interior space.

- The Hospice, Chemotherapy wing and Tuberculosis hospital and their shared spaces.
- The Radiotherapy wing and Specialist Treatment


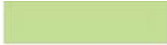




7.4.4 Space reclamation

Different activities are located along the lines of movement. These relate closely to the functions of buildings in close proximity, as well as the users of the spaces. Space reclamation is vital in improving the imageability of the area by reducing the number of vacant, weed-invested spaces. The users require specific functions, and these provide scope for reclaiming lost space:

- Student parking
- Staff parking
- Public plaza
- New buildings
- Visitor parking and drop-off zones
- Centres of social imageability for students at front and rear of H.W. Snyman Building.



Fig. 7.4 User groups. (Author, 2008)

	
Hostel residents	Services and support staff
	
General health care and health staff	Students
	
Transitional	Specialist care and staff



- Waiting areas at the Pharmacies, Hospice and Tuberculosis ward
- A vegetable and herb garden at the the Tuberculosis ward.
- Children’s garden at ward 2.
- Centres of restoration for staff and visitors.
- A memorial garden at the chapel.
- A contemplative space at the Pastoral Services building.
- Walkways and boulevards, leading from newly constructed parking lots towards the corridors of movement
- Irrigation dam for maintenance strategy

7.4.5 Safety

After numerous site visits, it is the opinion of the author that perceived safety is much more important than actual crime statistics. Although the area is presently dubious, the internal areas are not unsafe, they are merely unmaintained. The existing transitional areas are not hazardous, they are merely mismanaged. The introduction of a system of legible corridors and centres will define lines of movement and if these are well-maintained the user will regain trust in the respectability of the institution.

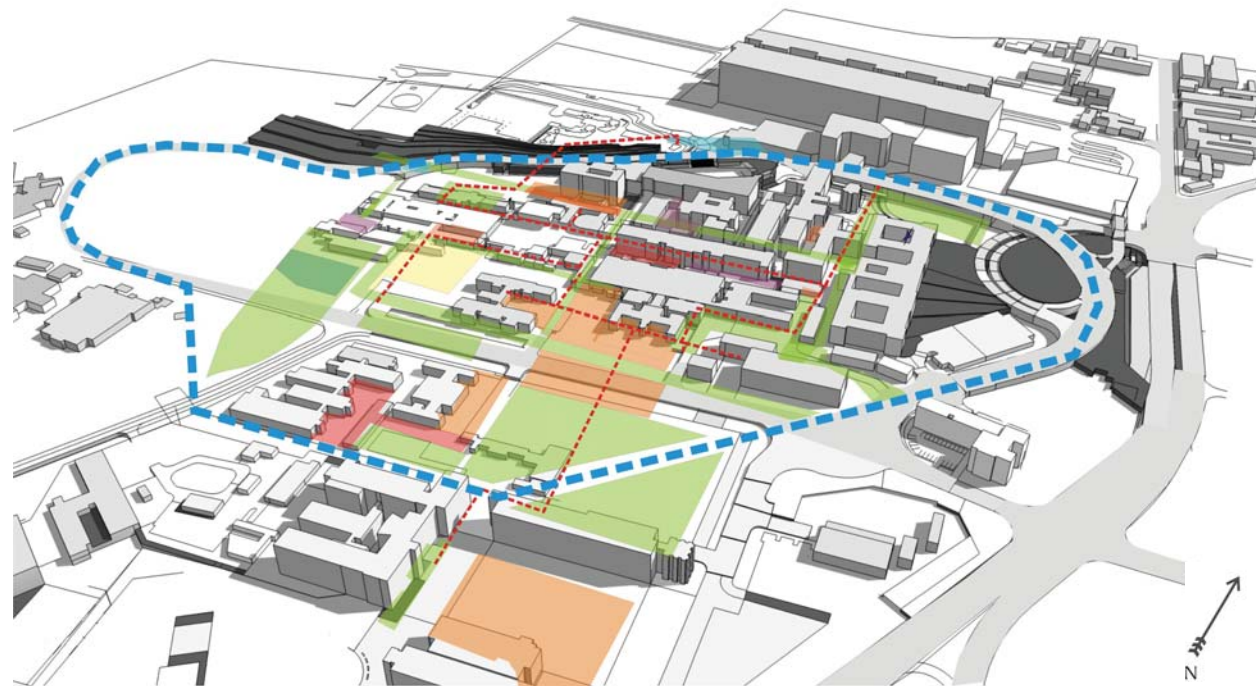
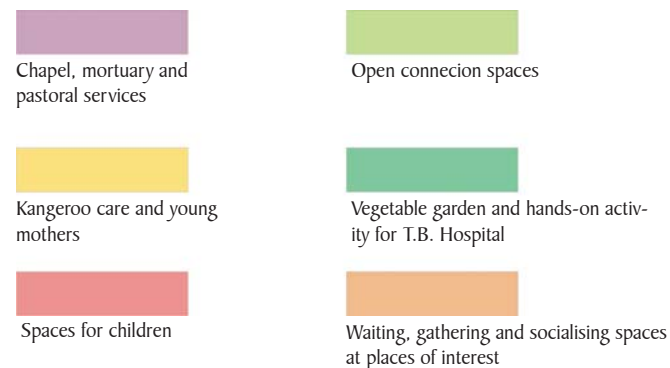


Fig. 7.5: Network of restorative spaces (Author, 2008)



7.4.6 Intensity of experience

The relationship between direction and centres can also be described as a relationship between movement and activity. To compile a zoning map for the Master Plan, this conceptual diagram of intensity of experience was combined with user needs, an existing experiential landscape map and the analysis of the three journeys.

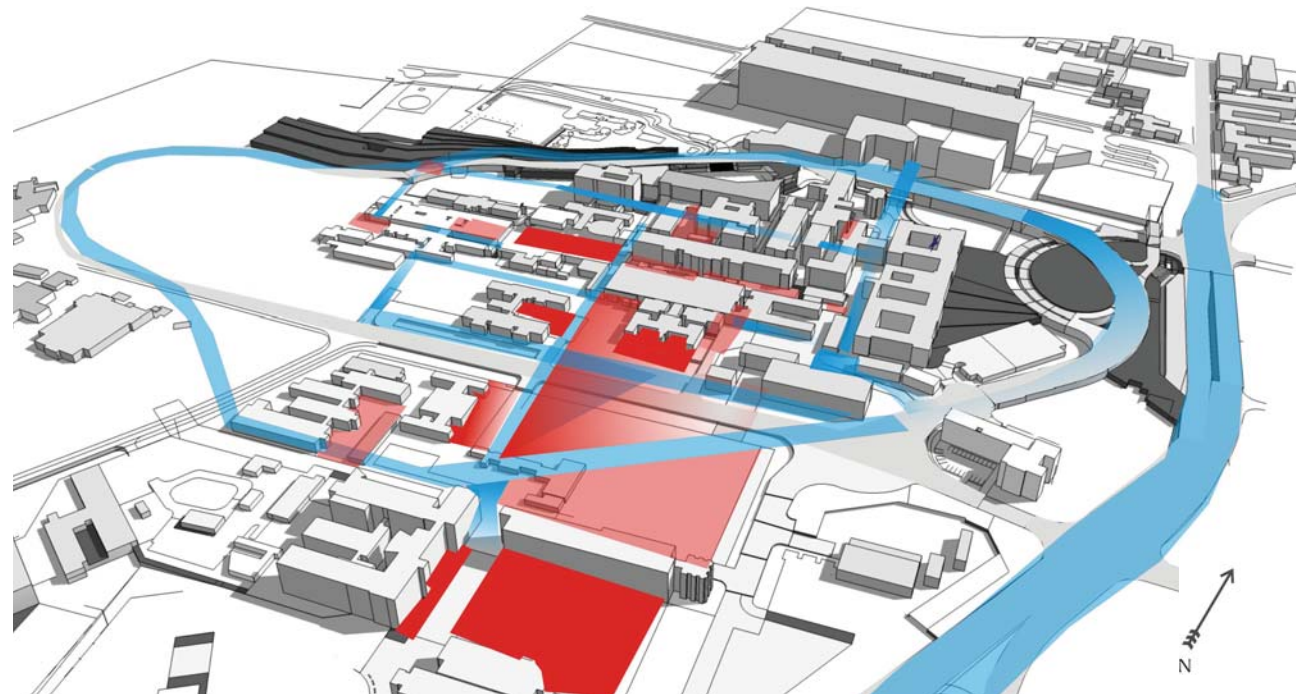


Fig. 7.6: Intensity of experience. (Author, 2008)



7.4.7 Combined zoning map

The discussion of circulation, legibility, users and under-utilised spaces which could potentially host activities, were included in the restorative network. In addition to those functions, transitional or infill activities are required to guide the journey and establish the intensity of experience. The zoning map further classifies the restorative network into some main categories as listed below:

- boulevard or axial line of movement
- square space
- green space
- waiting areas
- gathering spaces
- parking
- pick-up and drop-off zones

The zoning map will be used to inform the concept for the master plan, which will be discussed later on.

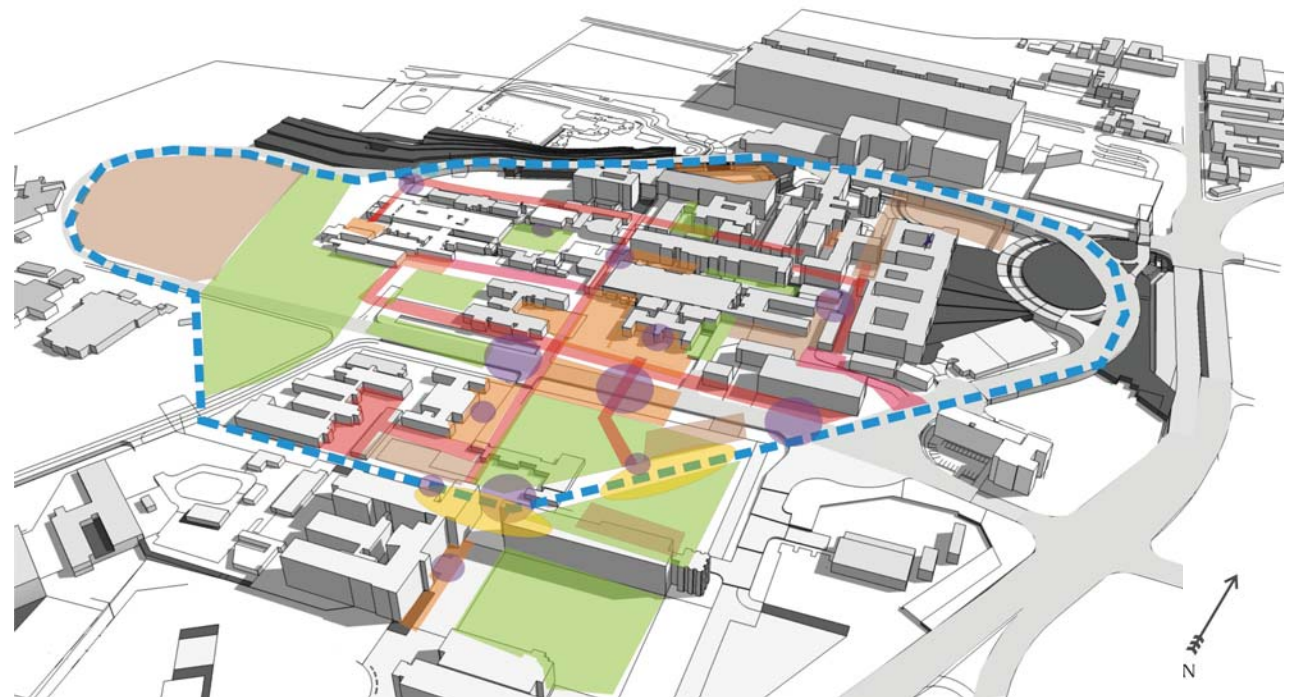
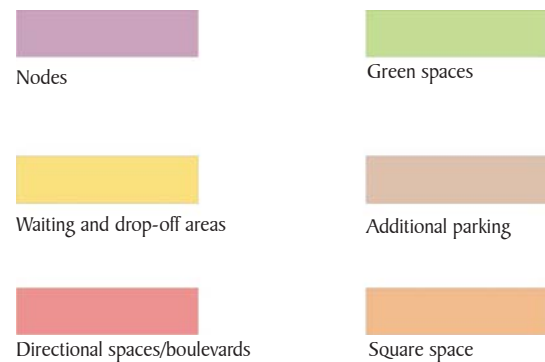


Fig. 7.7: Proposed zoning. (Author, 2008)

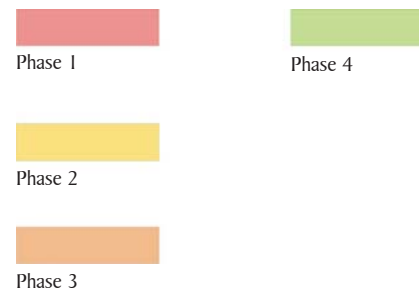


7.4.8 Phasing

- 1 – Re-alignment of Dr. Savage Rd to complete the ring system and associated parking areas.
- 2a – Upgrade and construct secondary lines of movement with waiting areas, more parking and access control
- 2b – Develop eastern wing of secondary line of movement to and from Pharmacy, Pastoral Services and Acute Care
- 3 – Develop square spaces
- 4 – Dedicated restorative spaces



Fig. 7.8: Proposed phasing. (Author, 2008)



7.4.9 Experiential landscape map

The proposed experiential map compiled by the author indicates a simulation of how the experiential qualities of the master plan can be improved. The map of anticipated experiential qualities in terms of the CDTA theory of Thwaites and Simkins (2007), very clearly illustrates the transitional area bordering Dr. Savage rd as commanding the most intense experience. Thus, Dr. Savage Plaza will be developed as the most important node of the open space system.

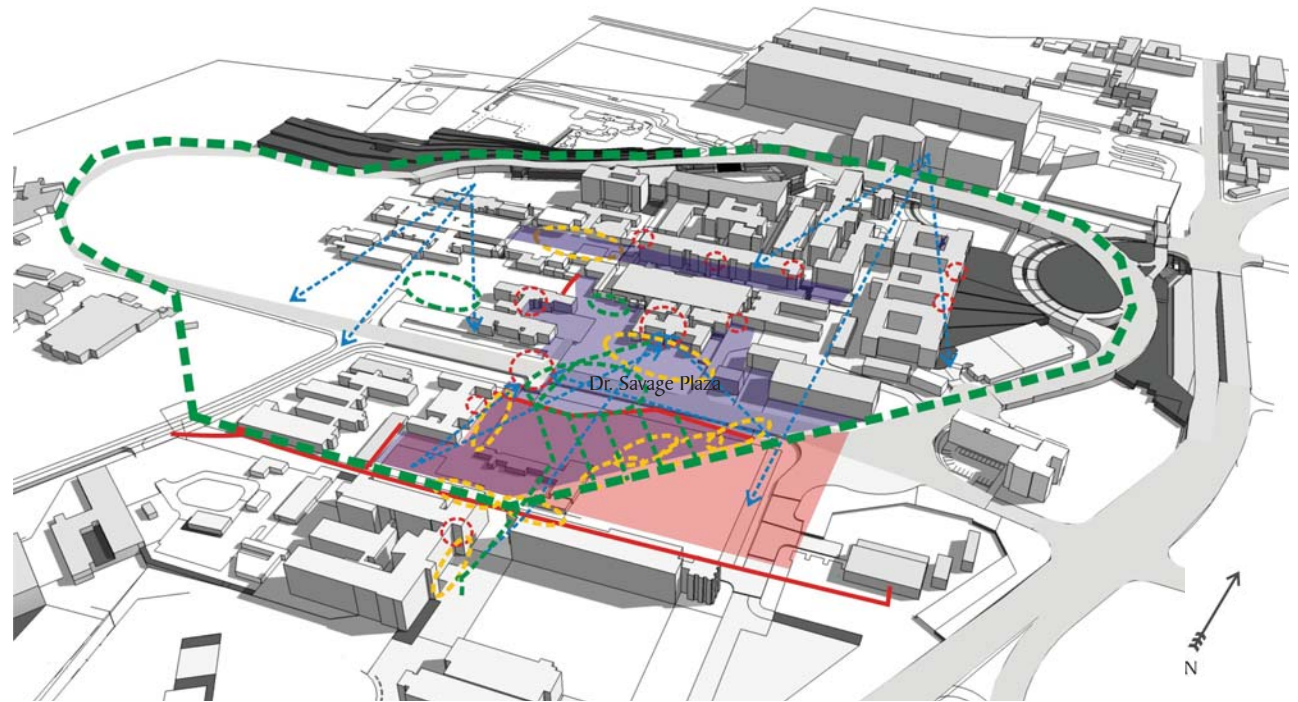
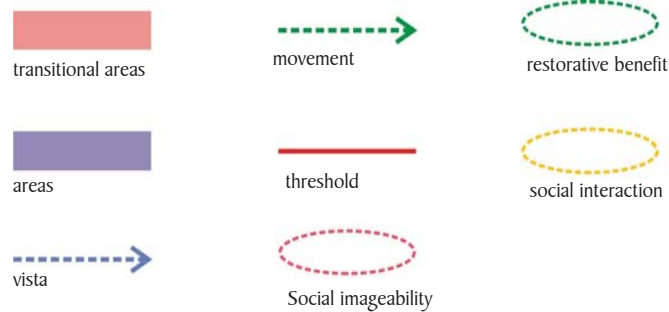


Fig. 7.9: Anticipated experiential landscape map. (Author, 2008)



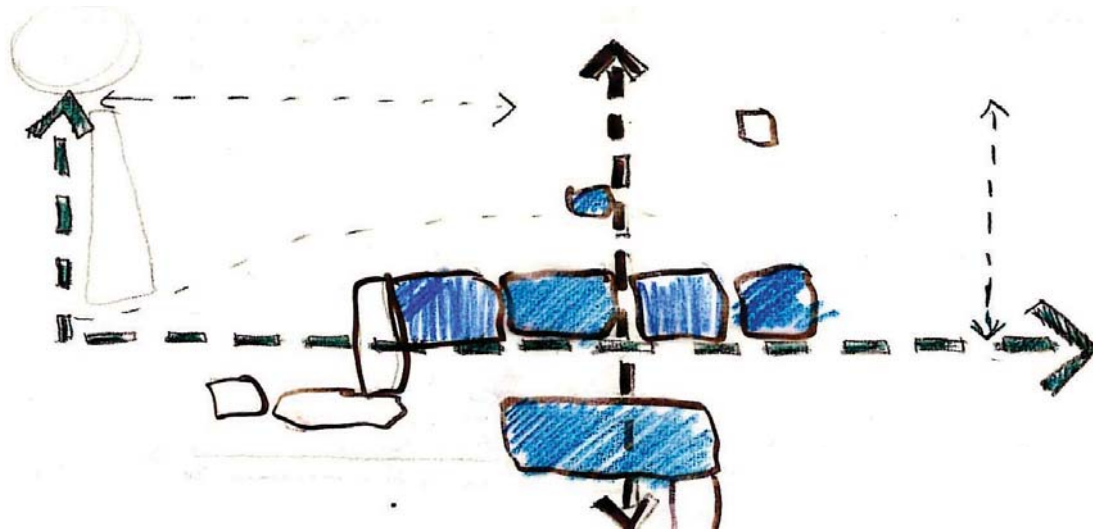












Fig. 7.10: Hypothesis. (Author, 2008)

The concept of the master plan is proof of the hypothesis as stated in Chapter 2; and objectives for the master plan area as listed under Section 7.2. The master plan is composed of a hierarchy of open spaces that guide direction through the fabric, which reduces the fragmented nature of the Hospital Hill. Furthermore the following can be stated:

- The proposed master plan reclaims the importance of the T.R.H as a public institution, specifically through the development of Dr. Savage Plaza. Student parking.
- The spatial connection between the Medical Campus and the Prinshof Campus of the University of Pretoria.
- Through a hierarchy of spaces which pays attention to the experiential qualities of moving through space, illegibility and lack of circulation control is addressed.
- Many of the vacant spaces that are a result of the implementation of the T.R.H.M can be redevelopment as spaces dedicated to the benefit of public health.

-  Places of public interest
-  Directional spaces and transitional zones
-  Semi-public open spaces
-  Private, dedicated open spaces
-  Pedestrian movement
-  Important vistas
-  Landmarks
-  Primary vehicular circulation
-  Secondary vehicular circulation (Access and services)
-  Network of directional spaces, as per hypothesis

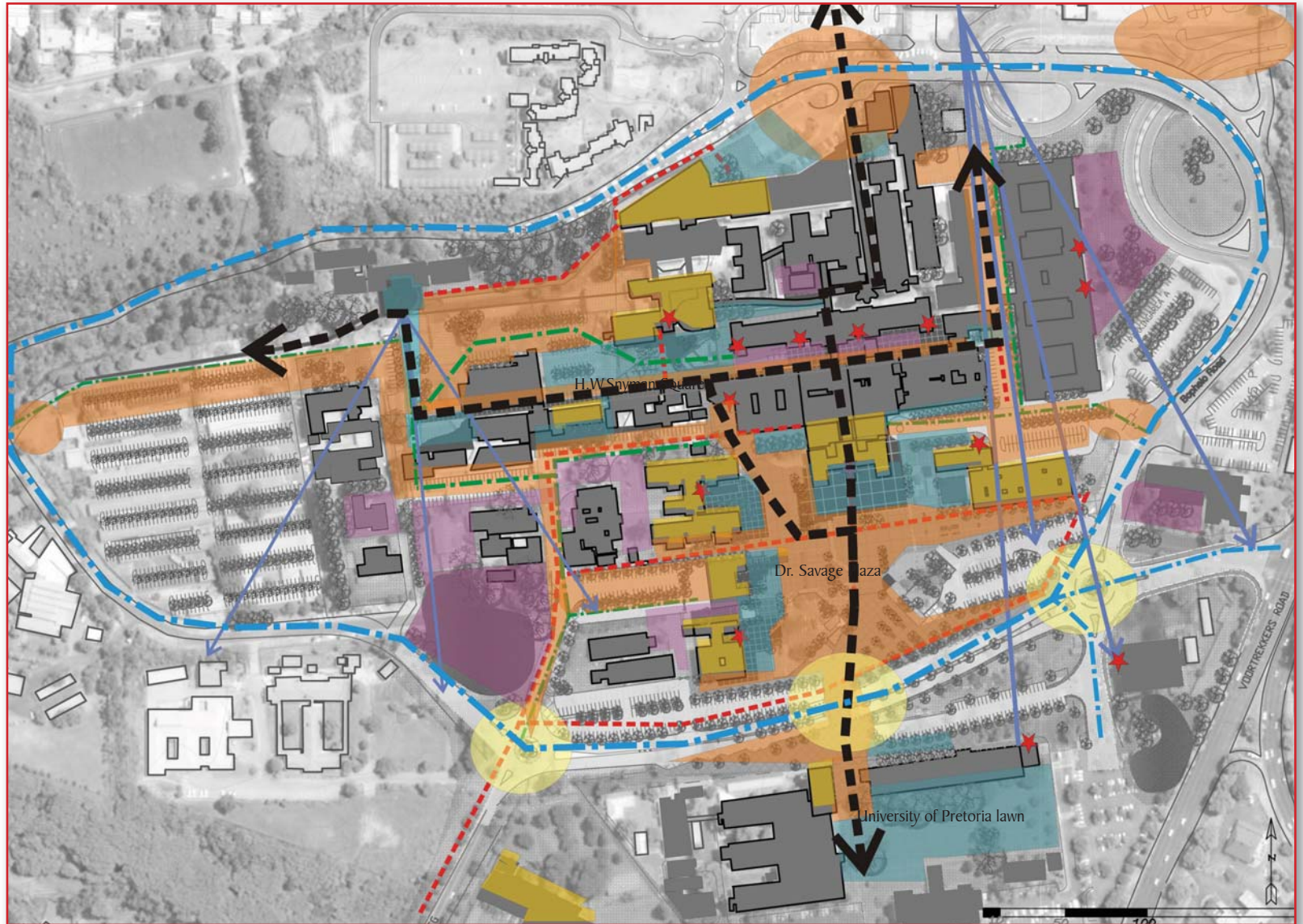


Fig. 7.11: Master Plan Concept. (Author, 2008)

Land use:

- A : Services, repairs and horticulture
- B : Mortuary
- C : Chemotherapy and cancer patients' wards
- D : Hospice and pharmacy
- E : Services: linen, archives and waste
- F : Specialised research
- G : Surgery and physiotherapy
- H : Services: Kitchens, linen
- I : General wards (x 5 levels)
- J : Trauma and emergency
- K : Skinner clinic
- L : Main admin reception and banking hall
- M : Psychiatric ward
- N : Pastoral services
- O : Chapel
- P : Children's ward
- Q : University of Pretoria Medical campus
- R : Radiotherapy
- S : Residences
- T : Out patients and pharmacy
- U : Services: steam pipe network
- V : Dental clinic
- W : Cripple care
- X : Creche
- Y : Kiosk and shop
- Z : Tuberculosis hospital and "Kangeroo Care"
- AA : Hospice

Activities:

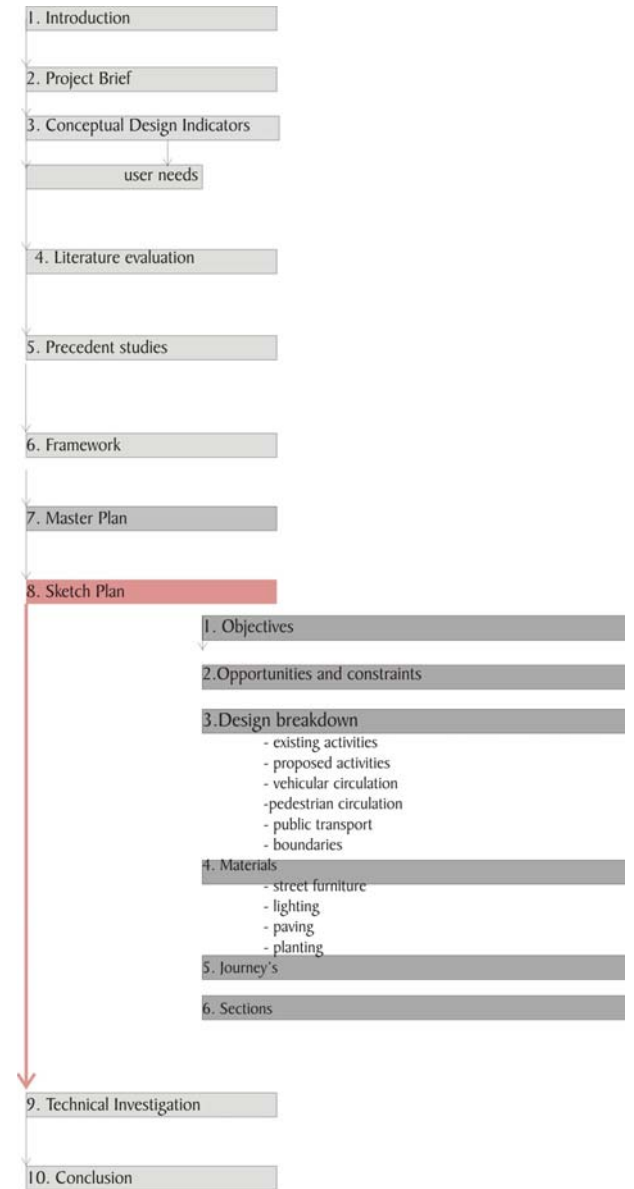
- 1 : Student parking
- 2 : Gathering and outdoor space in front of Dennekruijn hostel
- 3 : Boulevard from parking towards University of Pretoria
- 4 : Secondary line of movement : Covered walkway which opens up into flanked, useable outdoor space
- 5 : Vegetated berms form part of patient walkways (exercise corridor)
- 6 : Additional "soft" parking with access for fire hydrant
- 7 : H. W Snyman Square - Multi-functional outdoor space for University of Pretoria Medical Campus. Refer to Sections D and E
- 8 : Children and family spaces
- 9 : Memorial wall and chapel
- 10 : Quiet and contemplative space at pastoral services
- 11 : Outdoor space for general wards and staff
- 12 : Gathering space at entrance to Curlitzia residence
- 13 : Emergency drop-off zone, parking and staff parking
- 14 : Access control - Emergencies, drop-off and staff
- 15 : Re-aligned Dr. Savage Rd
- 16 a : Parking (mostly students)
- 16 b : Parking (mostly patients and visitors)
- 16 c : Parking (mostly staff)
- 17 : Drop - off zones

- 18 : Trading
- 19 : Outdoor space for Dental care
- 20 : Children's play area and connection to existing creche
- 21 : Outdoor restaurant seating, lockers and information kiosk and ATM
- 22 : Information tower and green wall
- 23 : Outdoor waiting areas for Skinner clinic, Out Patients and Trauma Unit
- 24 : Plinth to main building
- 25 : Green, private spaces for "Kangeroo Care" and Tuberculosis hospital
- 26 : Vegetable garden for Tuberculosis Hospital
- 27 : Outdoor areas and reception for Hospice
- 28 : Memorial garden
- 29 : Access control: staff and services
- 30 : Irrigation dam 1 (Refer to Section on Hydrology)
- 31 : Irrigation dam 2
- 32 : Green corridor between University of Pretoria (Prinshof Campus) and Cripple Care
- 33 : Gardens of the State Mortuary
- 34 : Pretoria Academic Hospital
- 35 : Existing courtyard at Radiotherapy
- 36 : Reception and socialising space for H.W. Snyman Building (University of Pretoria)
- 37 : Private outdoor areas for residences
- 38 : Great lawn. (University of Pretoria)
- 39 : Pedestrian crossing (Dr. Savage Road)





Fig. 7.12: Proposed Master Plan (Author, 2008)





8. SKETCH PLAN

8.1 Objectives

1. To create a design to aid the improvement of user's attentional capacity of the user.
2. To give the space a recognizable image and induce a sense of belonging, while maintaining progressive connection to overall open space framework.
3. To increase the possibilities of spatial experience and individual significance by including the participants and stakeholders in the consultation process.

8.2 Opportunities, problems and user needs

Opportunities:

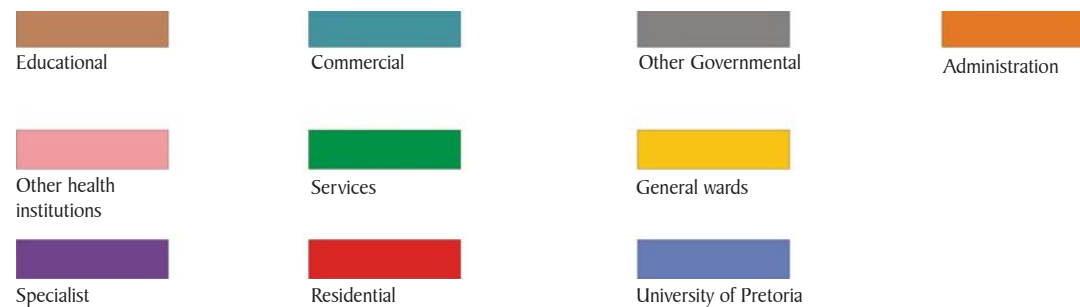
- the placement of three public buildings defines and contains a space which could act as public square
- bustling and continuous pedestrian movement across the area
- various activities: transport interchange, trading, waiting, pedestrian connection

Problems:

- unsafe crossing for pedestrians
- no waiting areas
- no designated pick-up and drop-off zones
- no designated trading areas
- placement of trees and controlled parking results in an under-utilised public space



Fig. 8.1: Existing land use. (Author, 2008, Tshwane GIS),





1: Main administration
(southern elevation)



2: Skinner clinic (eastern elevation)



3: Dental clinic (eastern elevation)



4: Pharmacy (to be demolished)



5: Creche (eastern elevation)



6: Out Patients (southern
elevation)



7: Faculty of Dentistry (northern elevation)



8: Services core buildings
(northern elevation)



10: Banking hall (western elevation)



11: Trauma unit (eastern elevation)

Fig. 8.2: Land use: site character. (Author, 2008). Refer to Figure 8.1



8.3 Existing activities

Land use around the sketch plan area include the following:

1. Main admin building
2. Skinner clinic
3. Dental clinic
4. Dental clinic (2) and pharmacy – to be demolished
5. Crèche
6. Outpatients building
7. Faculty of Dentistry – University of Pretoria
8. Services Hub
9. Pharmacy
10. Trauma Unit
11. Banking Hall.

8.4 Brief

The front entrance and streetscape of the T.R.H. form the most important exterior node of social interaction. This node should ideally prescribe the imageability of the Hospital Hill.

Movement should be guided into a central public space, from where the users are dissipated and guided into the fabric through a series of spaces. These spaces should guide circulation and accommodate varying activities, for example; informal trading, waiting areas, areas of orientation, pick-up and drop-off zones, social interaction and lines of connection between places of interest.

8.4.1 Proposed activities

1. A restaurant, with 24hr kiosk area, and a small general dealer for everyday necessities like milk, sugar and bread. An outdoor seating area with moveable furniture.
2. Information and orientation tower.
3. Day-care area with playpen for small children
4. Rentable locker space

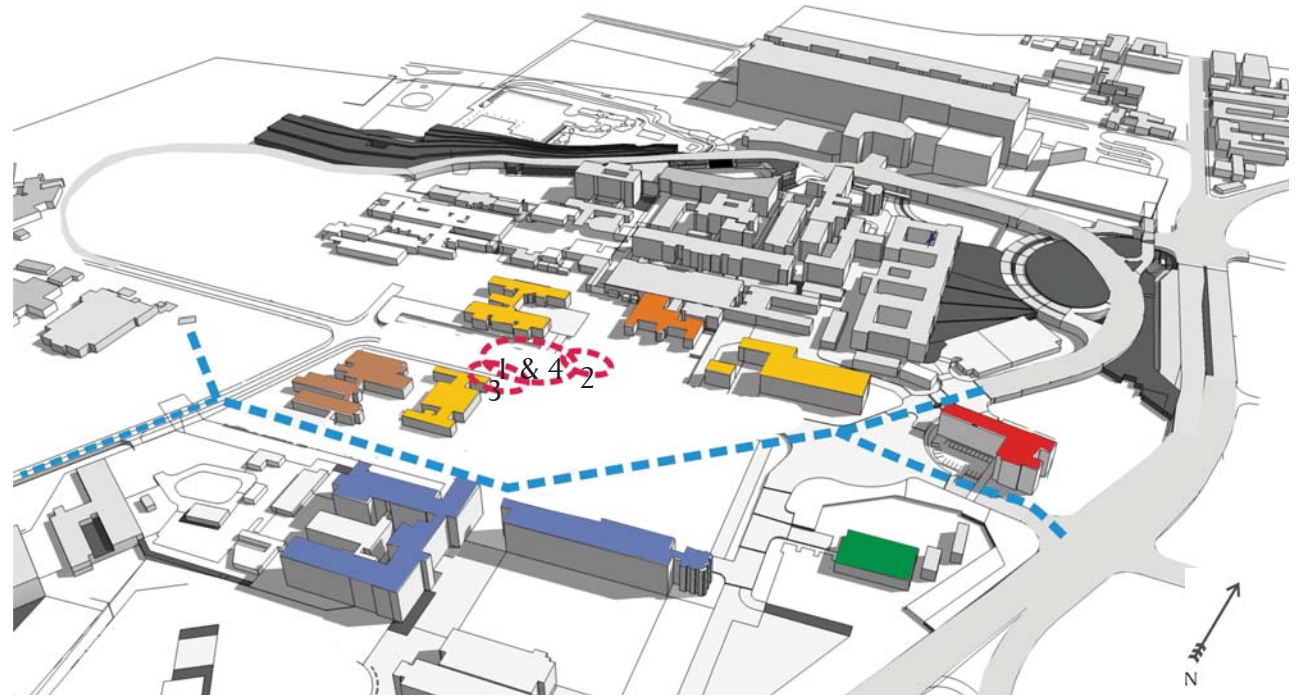
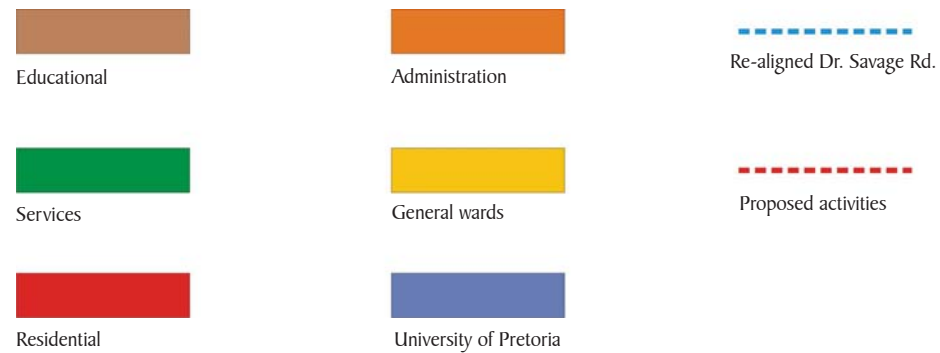


Fig. 8.3: Proposed land use indicating the re-alignment of Dr. Savage Road. (Author, 2008)



8.4.2 Vehicular circulation

Dr. Savage Road was re-aligned for the following reasons:

- To create a single intersection, which acts as a gateway into the Hospital, and an entrance to the Prinshof campus of the University of Pretoria and the Tshwane Regional Hospital.
- To create a larger, but more useable public space in front of the iconic building of the old H.F. Verwoerd Hospital. This would serve as a destination, lingering, transitional and orientation space. A larger space would provide opportunity to introduce new activities.
- To create parking and drop-off areas to the side of the Tshwane Regional Hospital (north of Dr. Savage Road), so that patients do not have to cross the busy road.
- To facilitate safer crossing of the road for students and individuals.
- To improve legibility by defining the edge of the University of Pretoria.

Services:

Service entrances are restricted to gates 4 and 7 as indicated on the Master Plan. These provide adequate access for deliveries.

Staff:

Internal parking lots, as indicated on the Master Plan, will be utilised by staff members who make use of private vehicles. Access will be controlled.

Emergencies:

Ambulances and other emergency vehicles will use the dedicated entrance and drop-off zone, and then park in the parking lot. Refer to the Master Plan (Fig. 7.12).

8.4.3 Pedestrian circulation

Pedestrian circulation consists of various user groups, and these vary in type and intensity during different times of the day. Refer to the figures 3.11-3.14. Pedestrian movement receives priority in every way. The crossing of Dr. Savage Rd consists of a slightly raised platform and a traffic light with pedestrian preference switch.

8.4.2 Public transport

As mentioned in Chapter 3, most of the patients travel to the hospital by means of public transport. The public transport node was designed to accommodate taxis, buses and private vehicle drop-offs. The drop-off area becomes a transitional node, with spaces for waiting and trading.



8.4.5 Boundaries

Although the proposed Dr. Savage Plaza will be public square with functions intended for use by the general public; the interior spaces do however require access control. Placing a boundary fence along the property of the University of Pretoria creates the opportunity to keep the Dr. Savage Plaza as open as possible. An access control system will be placed at the main entrance to the T.R.H to be used by all visitors. Regular users, such as students and medical staff, can gain access via the internal parking areas; as well as a card controlled swing door within the boundary fence.

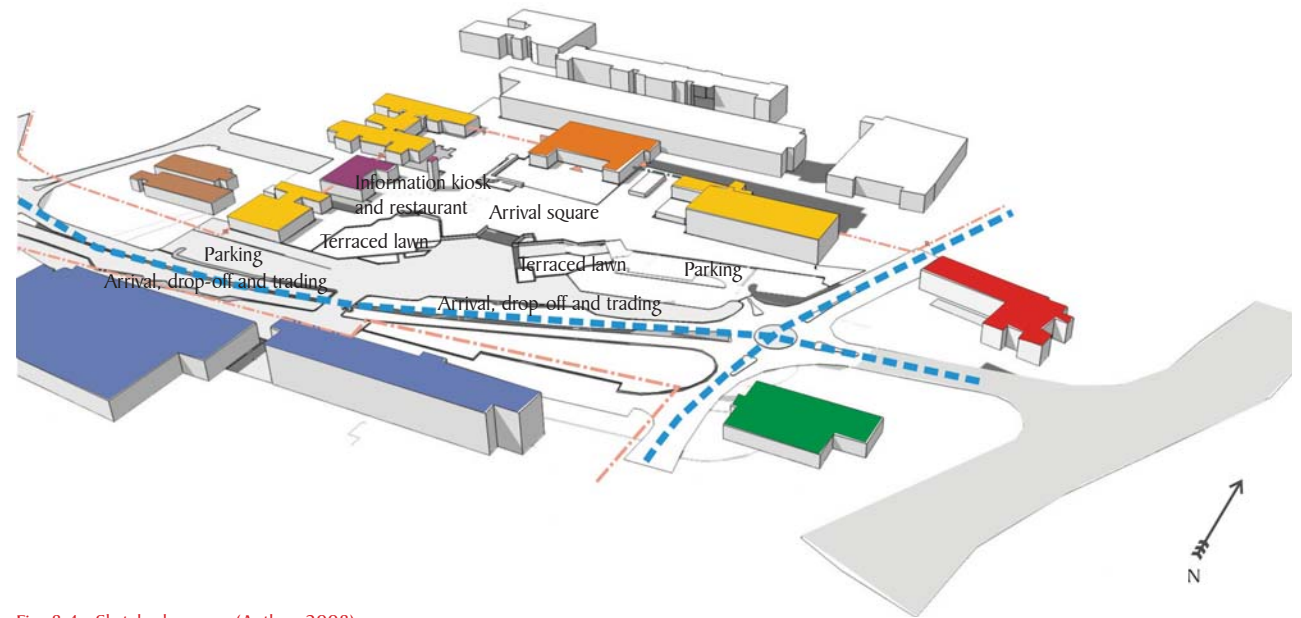
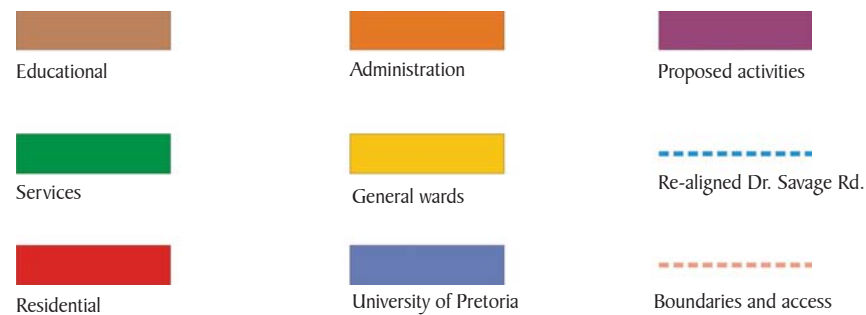


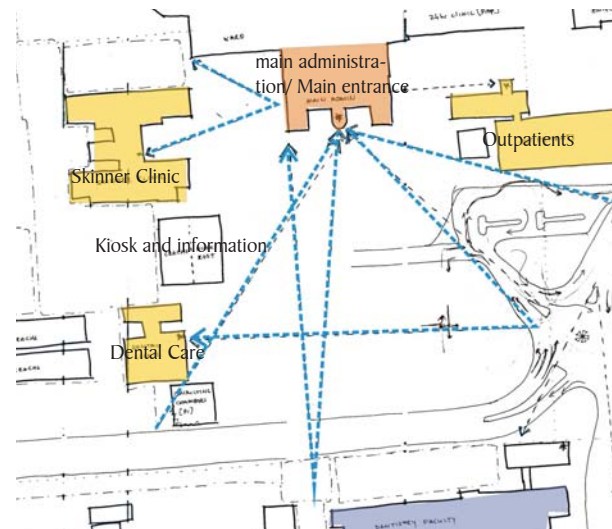
Fig. 8.4: Sketch plan area. (Author, 2008)



8.5 Concept

8.5.1 Conceptual development

The square is a very large space (approximately 150m X 150m) and it accommodates many functions. It could very easily not be contained enough to read as one space. Furthermore, Dr. Savage Road bisects the square. The challenge is to create an imageability that defines this large area as one square, but to incorporate a variety of smaller spaces to address human scale and accommodate different functions. This square will act as the social core of the institutions and improve social imageability. The spaces have to be informal and inviting so that the individual can relax and prepare himself to visit the institution. The overall imageability of the area should install trust in the institution.



01: Placement of activities to exploit vistas



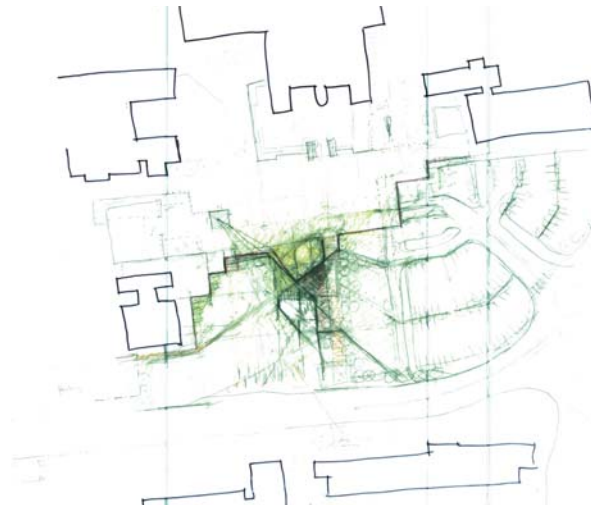
02: Zoning and relationships between activities

Fig. 8.5: Concept development. (Author, 2008)





03: Relationship between private, semi-public and public space



04: "Activity Edge"



05: Orientation of axis

8.5.2 Circulation

Circulation on the square is dominated by two main lines of direction:

- Movement towards the front entrance of the T.R.H.; and
- Movement towards the information kiosk

All major points of arrival exploit vistas to these activities to guide movement and orientate the user.

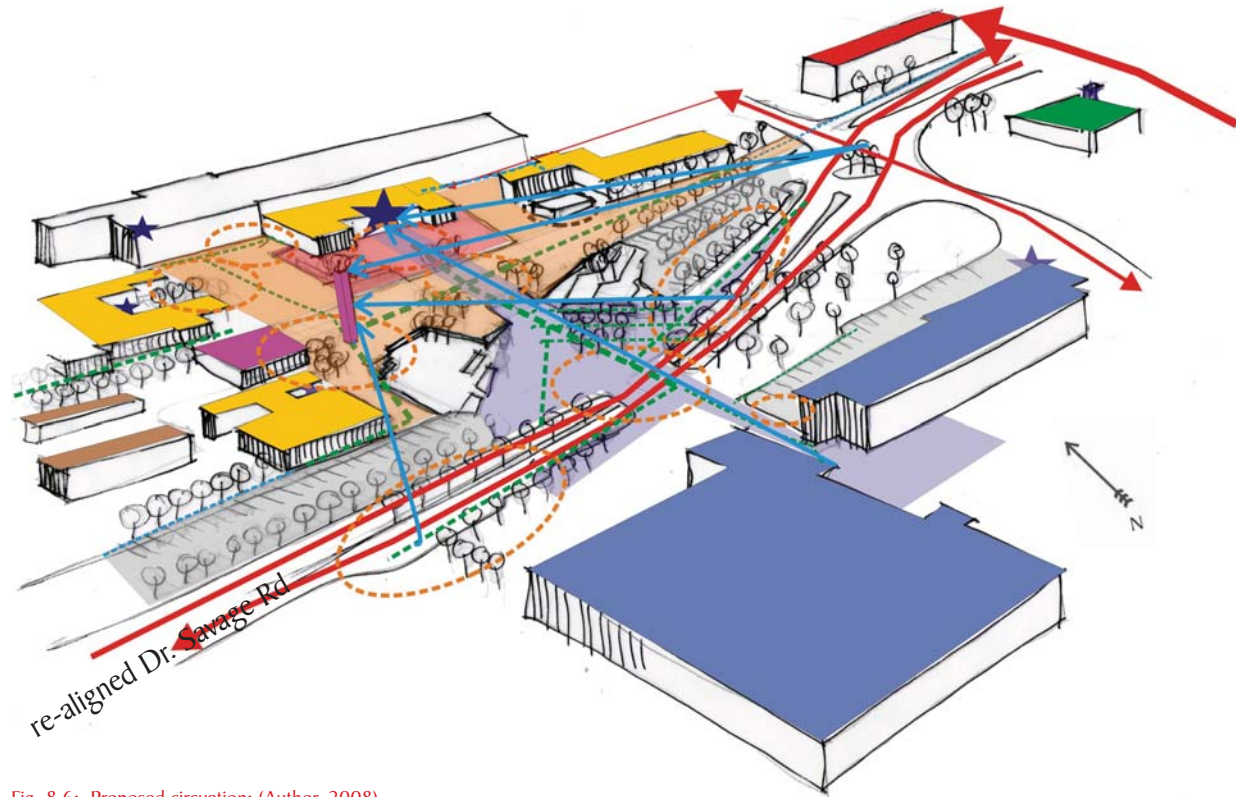
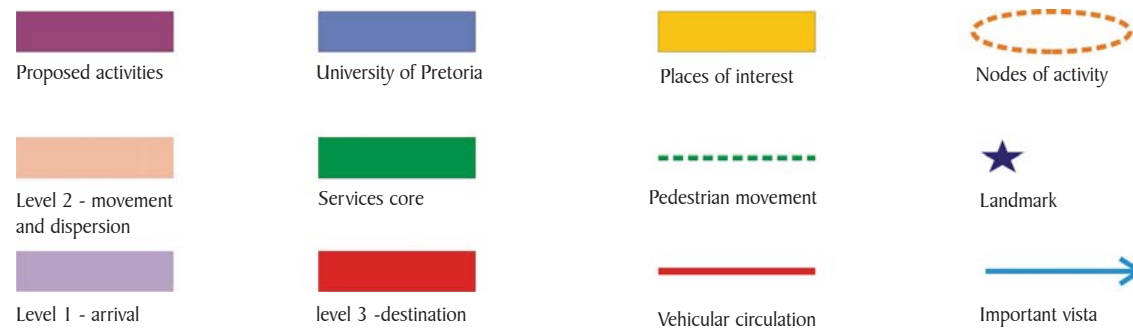


Fig. 8.6: Proposed circulation: (Author, 2008)



8.5.3 Users

Users and activities are closely related. In Chapter 3 needs were listed for the different user groups. A user profile was used to compile a programme (Refer to Section 8.5.6). A combination of user needs, site indicators and a spatial hierarchy resulted in the concept of a “transitional platform of activity”. This platform aims to address the needs of the transitional users and in essence becomes the activity edge which all users frequent.

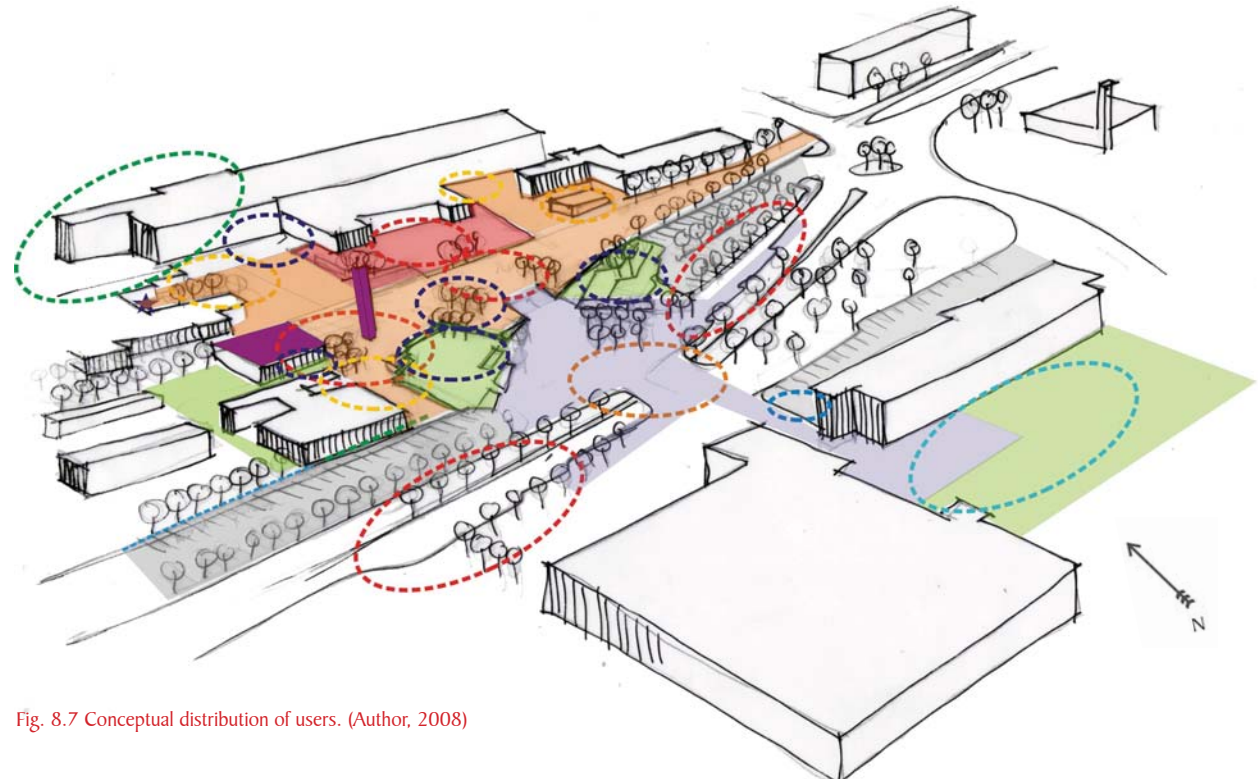
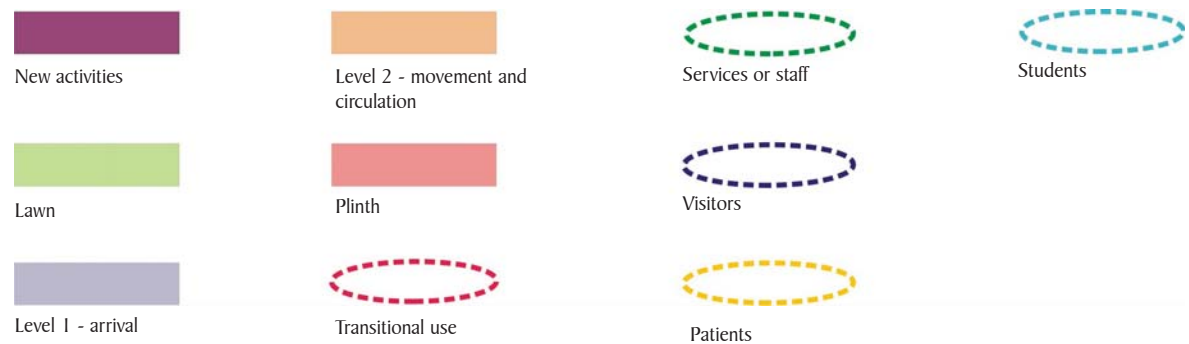


Fig. 8.7 Conceptual distribution of users. (Author, 2008)



8.5.4 A public square, for the benefit of public health.

In Chapter 4 the characteristics of an environment with the potential to benefit public health were discussed and listed (refer to Section 4.6). It is therefore argued that the Dr. Savage Plaza has a better probability of being restorative to an individual, if it contains a range of spatial organisations. The individual is then empowered to be *compatible* to a particular sub-space and to experience the *extent* thereof, as being favourable.

In the spatial organisation of the Dr. Savage Plaza specific attention was given to arrange activities in such a way that the probability of inducing *soft fascination* is increased. This can be achieved by:

- Arranging activities so that visibility between them is encouraged, but a sense of territory of the individual's space, is honoured.
- In this arrangement watching the activities of other individuals could fascinate the individual. It also improves passive observation and perceived safety. If the individual can always orientate himself easily within the space, it installs a sense of belonging.

- Placing the tower with the information kiosk was placed in such a way that it would, in most cases be visible from everywhere. This further strengthens the social imageability of the area.
- Providing opportunities for chance social encounters by placing shared activities, for example trade stalls, along the main lines of movement.
- *Creating fascination, which is an intellectual activity that is closely related to the personal frame of reference of an individual.* Exploiting ephemeral qualities within a small space can strengthen fascination, because it allows the mind to wander. Examples of these include; changing patterns in the sunlight and shadow lines, vegetation that changes significantly throughout the seasons, and larger scale interventions; for example the proposed stormwater detention feature. During the dry season they are sunken seating areas, but during thundershowers in summertime they become a dynamic systems that retain water and slowly releases it.



8.5.5 Experiential landscape

Spatial organisation of activities is strongly influenced by an experiential hierarchy. The design aims to strengthen existing social imageability and social interaction, while providing a clear hierarchy of spaces that contain the activities. The experience of moving through the spaces (the individual journey) becomes the evaluation of the experiential landscape. Also refer to Section 8.6. where three journeys through Dr. Savage Plaza will be discussed.

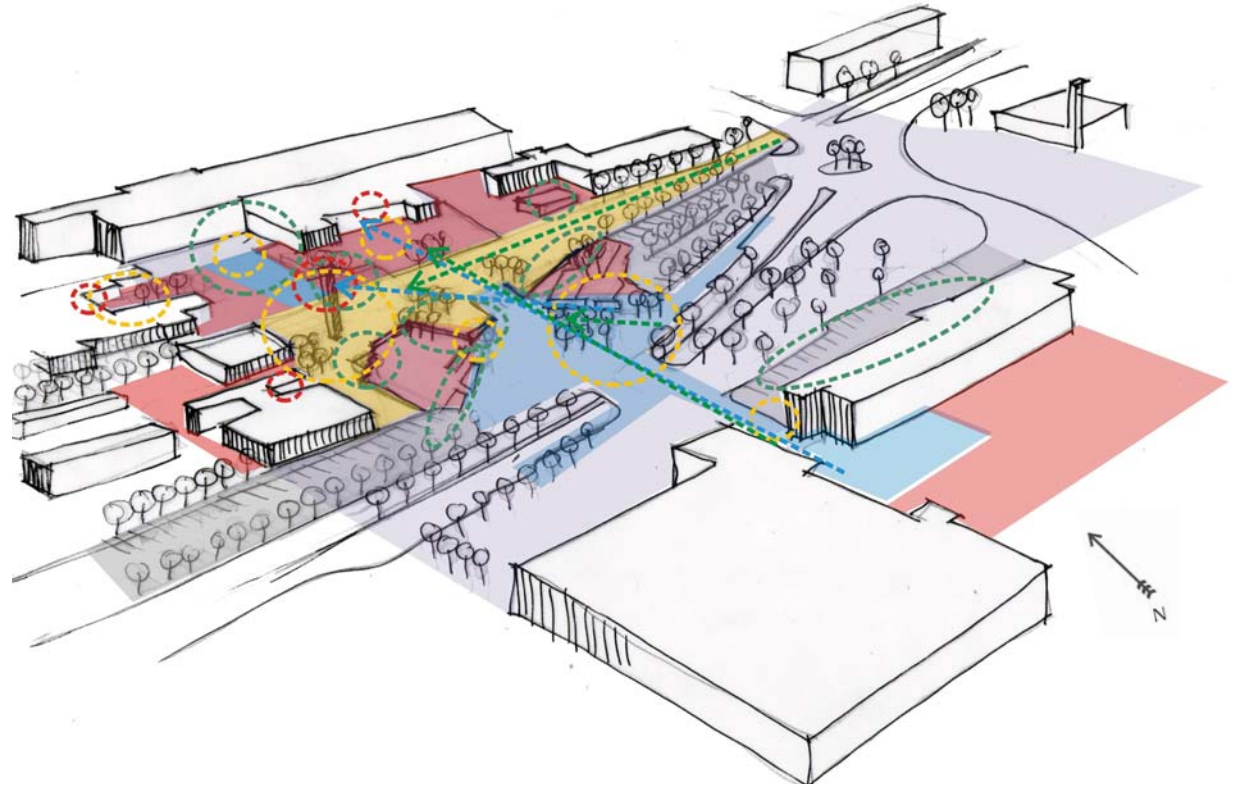
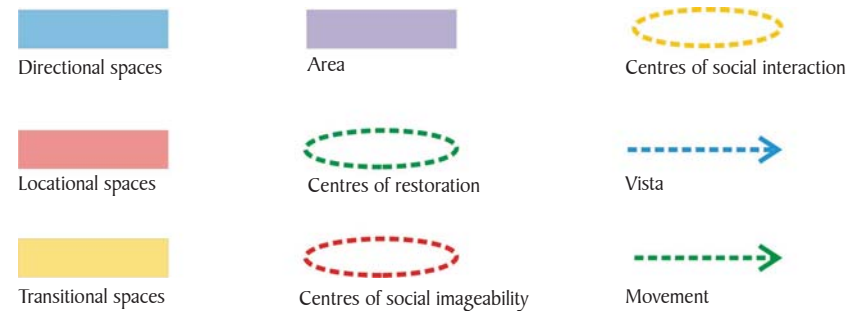


Fig. 8.8: Experiential landscape. (Author, 2008)



8.5.6 Programme

Six user groups were defined and they were subdivided into smaller groups. The user profile for these groups is based on interviews that were held during the analysis stage. The user needs were grouped to determine the need for similar activities. These little programmes were used to compile the spatial hierarchy of the transitional platform.



Liesbeth



Peter



Sylvia



Sam Wife



Andre



George & wife



Joshua



Phumzile



Emily & Wayne



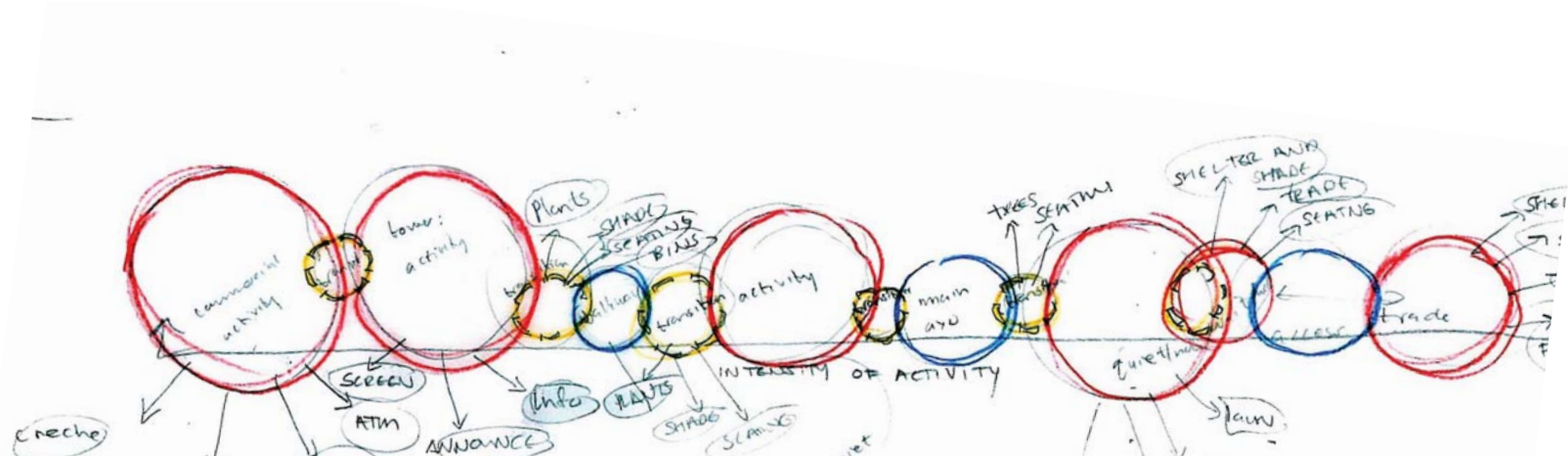


Fig. 8.9: Generation of activities within a hierarchy of locational, directional and transitional open spaces. (Author, 2008)

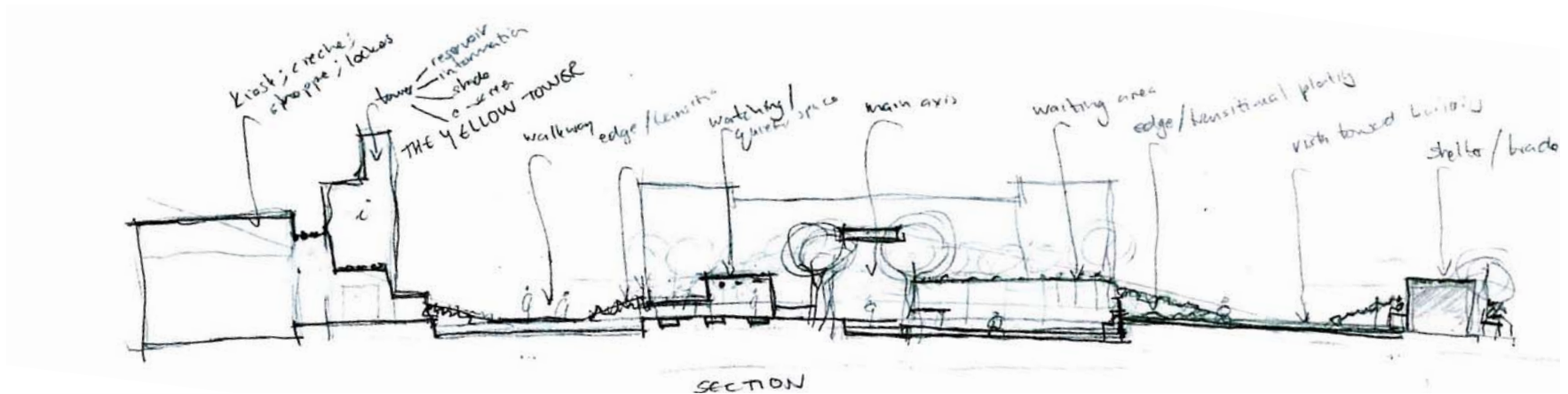


Fig. 8.10: Arrangement of activities on the "activity edge" (Author, 2008)

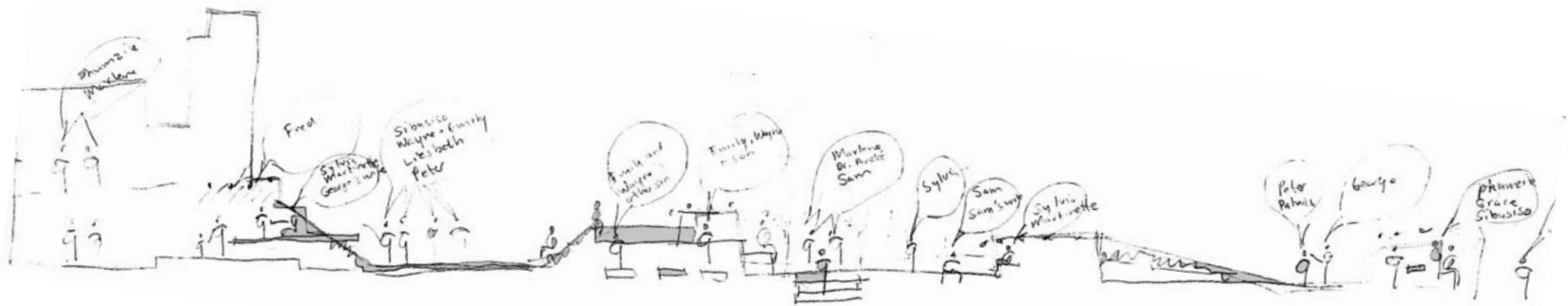


Fig. 8.11 : Relationship between activities and user needs. (Author, 2008)

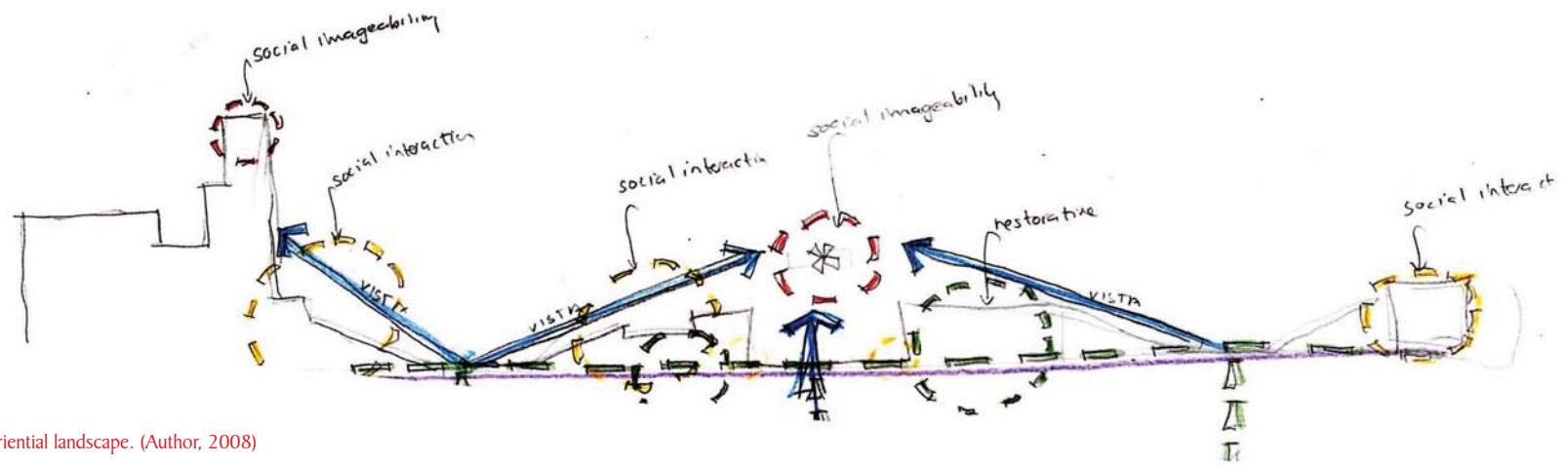


Fig. 8.12: The resultant experiential landscape. (Author, 2008)



Liesbeth



Peter



Sylvia



Sam Wife



Andre



George & wife



Joshua



Phumzile



Emily & Wayne



- Main direction of movement
- Secondary pedestrian movement
- Important vistas
- Vehicular movement
- Primary destination points
- Green spaces
- Locational spaces with specific application
- Transitional spaces that guide direction
- Arrival square: transitional space
- Nodal interchange
- Proposed parking

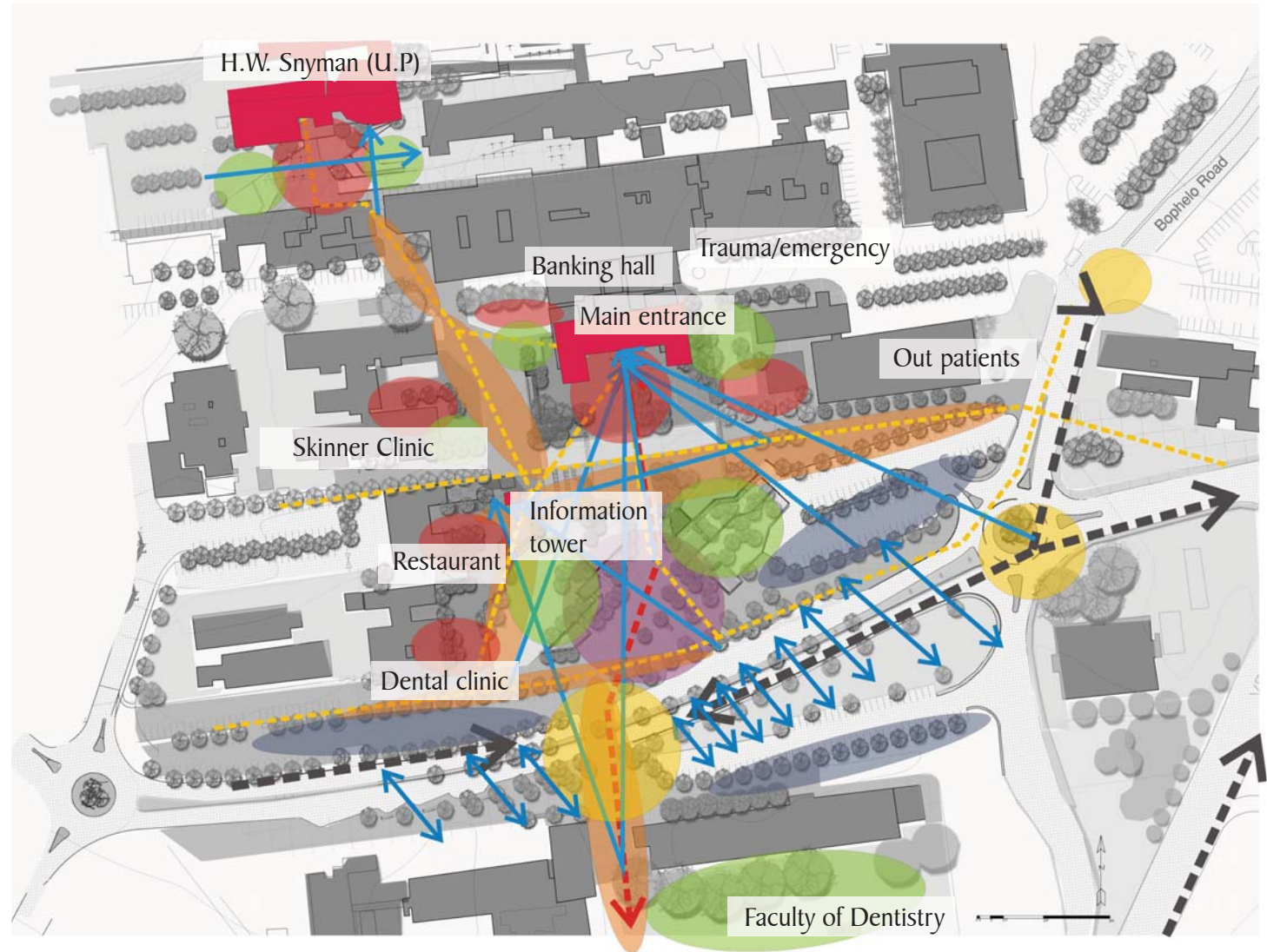


Fig. 8.13 : Sketch Plan zoning. (Author, 2008)

Land use:

- A : Creche
- B : Dental Clinic
- C : 24hr kiosk/restaurant and general dealer.
- D : ATM and services core
- E : Information kiosk and tower
- F : Skinner Clinic
- G : Admin and main entrance into T.R.H
- H : Banking Hall
- I : Trauma and Emergency Unit
- J: Chemist
- K: Out-patients' clinic
- L: Services
- M : Faculty of Dentistry (U.P)
- N: Pathology and HIV test centre (U.P)
- O: Cardiology and Surgery
- P: H.W. Snyman Building (U.P)
- Q: Children's ward

Activities:

- 1 : Waiting area at Dentistry with existing Quercus trees.
- 2: Waiting and gathering areas at crossing of Dr. Savage Roa.
- 3: Traffic light with pedestrian preference control switch.
- 4: Parking for visitors and patients
- 5: Pick-up and drop-off bays for taxis, cars and buses.
- 6 : Trade stall
- 7 : Lawn
- 8 : Terraced seating steps
- 9 : Waiting areas outside Dental Clinic
- 10: Children's playpen. (Access only from Creche and Restaurant)
- 11 : Outdoor restaurant seating
- 12 : Trellises - waiting areas
- 13: Rentable lockers
- 14 : Erratic fountain
- 15 : Shady observation spaces
- 16 : Stormwater detention feature: packed stone surface: infiltration
- 17: Feature wall with seating, lights and signage
- 18: Sunken seating areas/stormwater detention structures
- 19: Ramp to upper terrace
- 20: Terraced lawn areas
- 21: Parking for visitors and patients
- 22: Ramp to upper terrace
- 23: Lawn and waiting area at Chemist
- 24: Plinth in front of main entrance

Activities:

- 25 : Raised planter with seating
- 26: Drainage channel towards stormwater detention facility
- 27: Waiting areas in front of the Skinner Clinic
- 28: Waiting areas at the Banking Hall
- 29: Private garden for Tuberculosis Hospital
- 30 : Corridor towards secondary line of movement and the H.W. Snyman Square.
- 31: Secondary line of movement
- 32: Terraced lawn
- 33: Down ramp(emergency access)
- 34: Stormwater feature wall
- 35: Deck and steps
- 36: Children's courtyard
- 37 : Emergency drop-off area with roof-overhang, parking and shady waiting areas.
- 38 : Access control: staff and emergencies only
- 39 : Parking (Mostly for students)
- 40: Services yard
- 41: Irrigation Dam 2





Fig. 8.14 : Proposed Sketch Plan. (Author, 2008)

8.6 Journeys, sections and details

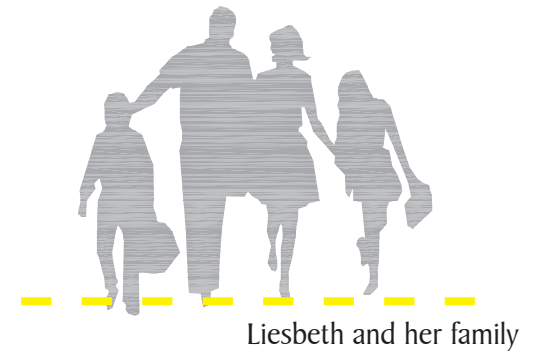
The ability of the space to be restorative is dependant on the frame of reference of the individual. The user journeys and user profile that was compiled in Chapter 3 will be now be used to illustrate the experiential landscape.

The journeys of Phumzile (nurse), Joshua (student) and Liesbeth and her family (patients) will now be used to illustrate the design in section and perspective.

Nurse - I am Phumzile Molobe and I stay in one of the apartments in Gezina. From there I take a taxi to the T.R.H.M. Sometimes I have to work the nightshift. Shift changes take place at 07h00 and 19h00. In the mornings I need a place to buy coffee and cigarettes. In the evenings I need a safe and well-lit area to wait for the taxi. Sometimes I also need to buy some basic groceries or money from an ATM. During the day I need an accessible outdoor area where I can smoke, but still be close enough to the ward if an emergency occurs.

Patient: I am Liesbeth. I have the flu and I need some medicine from the chemist. I have to know immediately where to go to, but it would also be nice to have a place to sit and wait, or do some shopping or activities with my small kids who come along on the trip.

Student: I am Joshua. I study dentistry at the University of Pretoria. I stay in Waterkloof and come to campus by car. On the Prinshof campus there is enough parking, so we park there. Sometimes we have classes in the H.W. Snyman Building which means we have to cross the busy Dr. Savage Rd. We need an ATM and outdoor refreshment area. In the vicinity of the H.W. Snyman building there is a need for lawn and an outdoor socializing space.



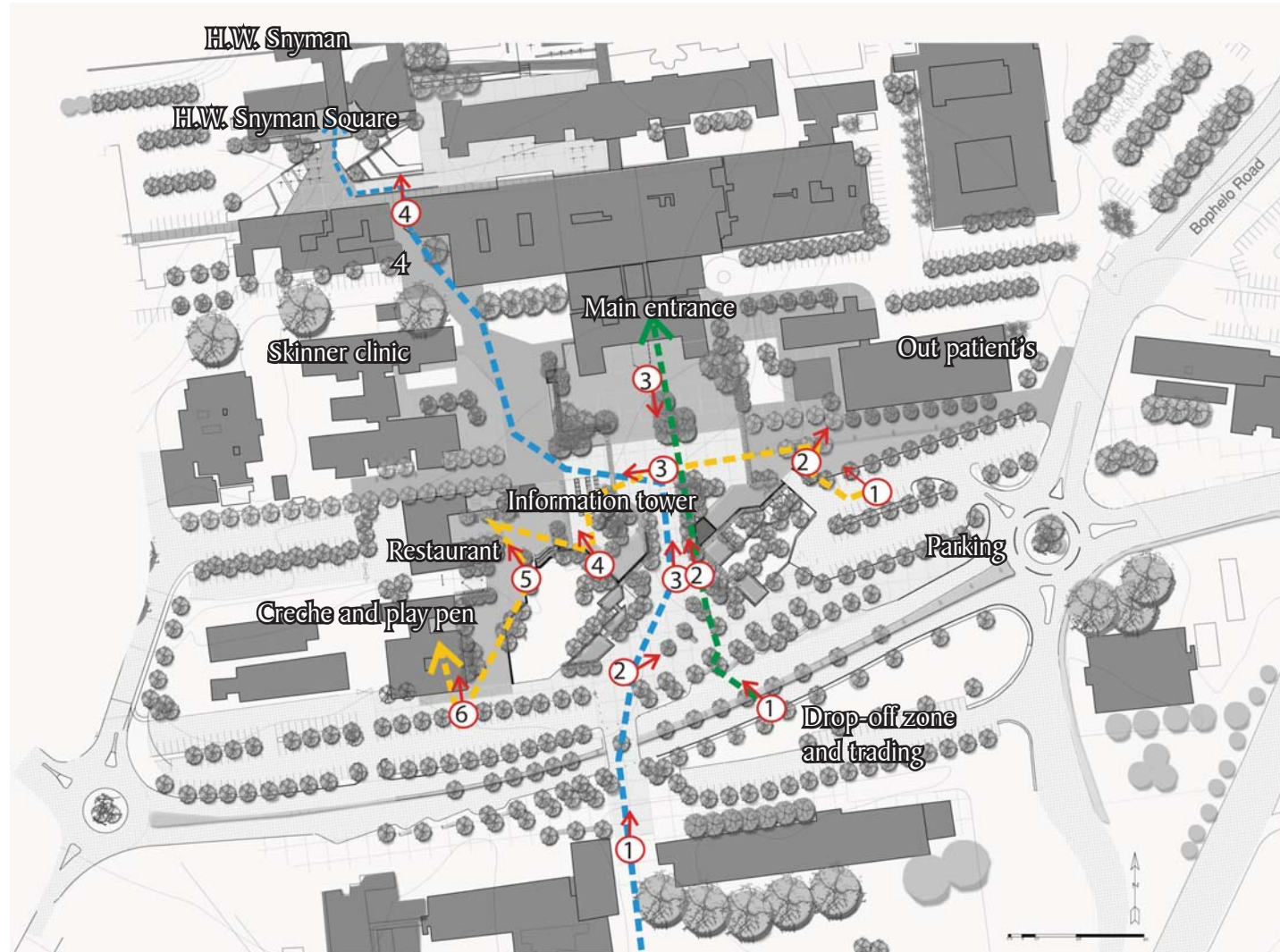


Fig. 8.15: Three experiential journeys for Dr. Savage Plaza. (Author, 2008)

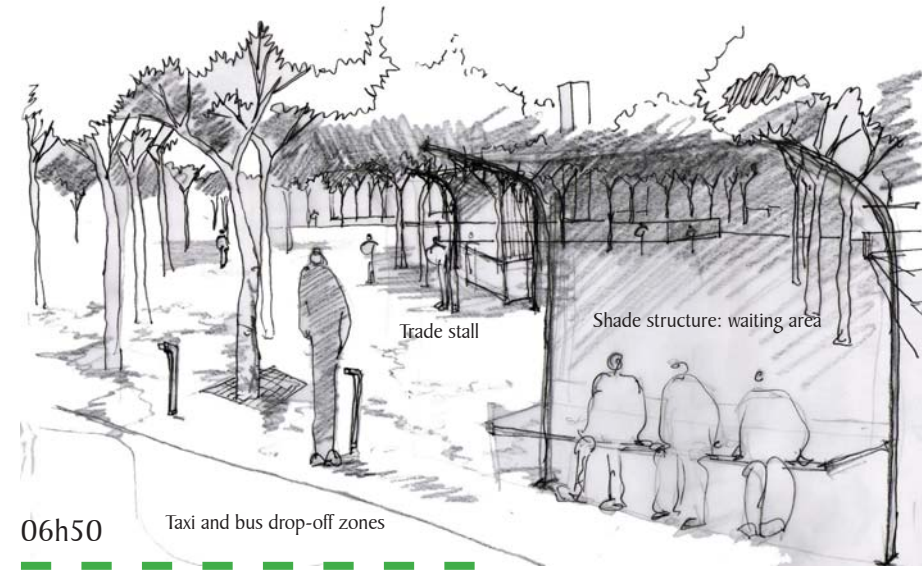
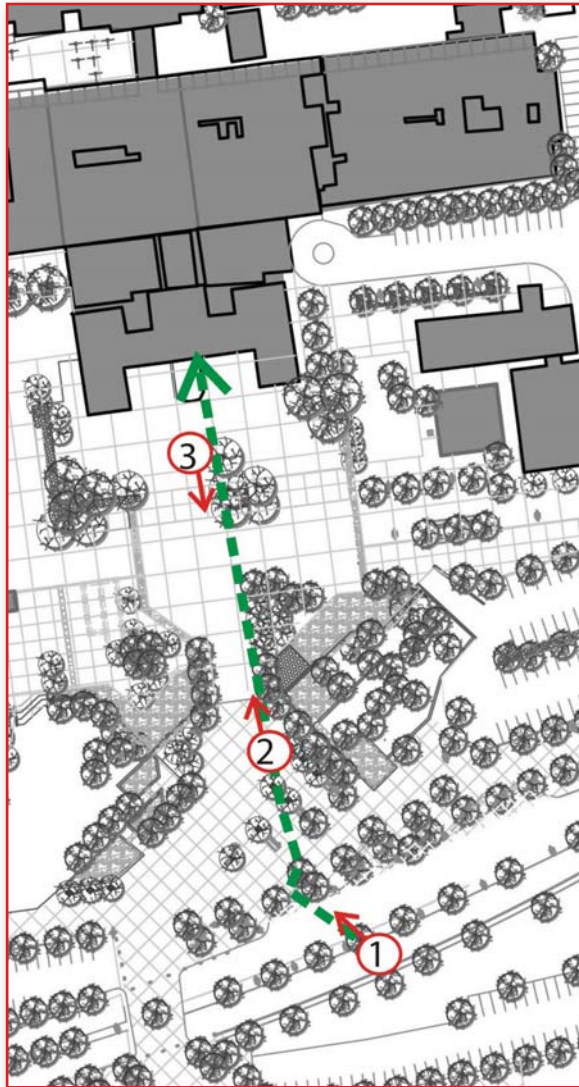


Fig. 8.16: 01 -Drop-off zone in Dr. Savage Rd and informal trade area. (Author, 2008)

“I enjoy coming to work by bus, because you get to know the regular commuters. When I get off, I always have a quick chat with some of my friends who worked the night shift - they are waiting to go home. I didn't have time to eat breakfast, so I quickly buy an apple and a cold drink from the trade stalls. I know the trader quite well by now.”

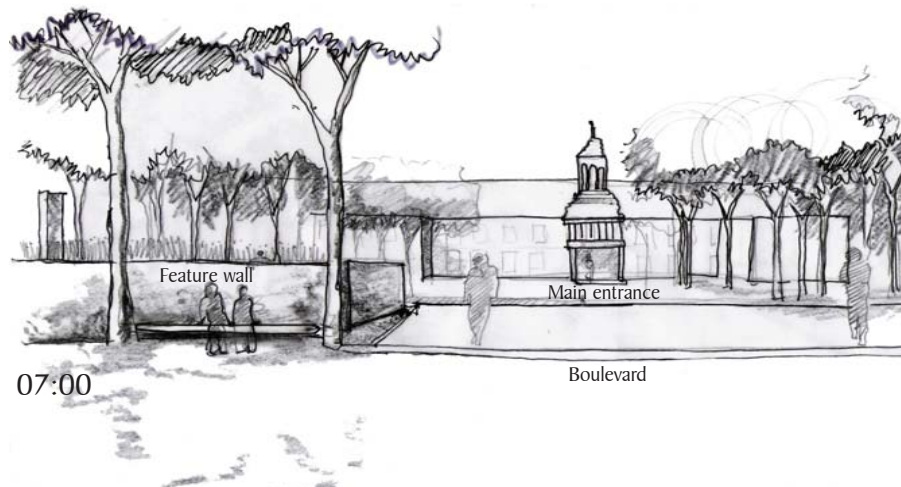


Fig. 8.17: 02 - View towards main entrance of hospital. (Author, 2008)

“There are dedicated parking areas for staff and doctors, but pedestrians and people who came with public transport enter the hospital through the main entrance.”

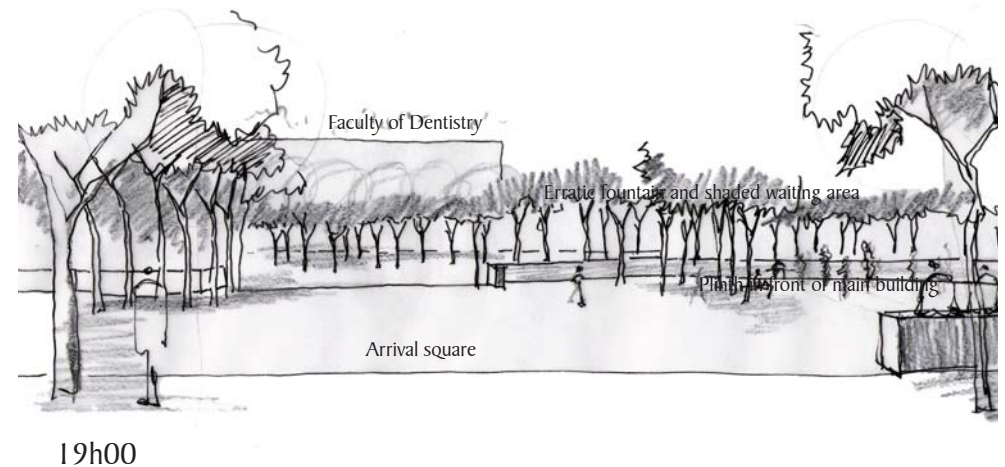
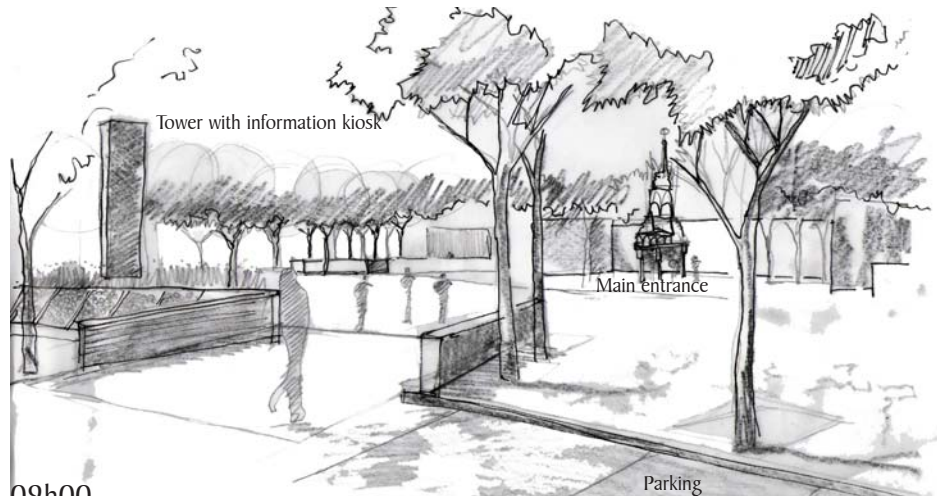


Fig. 8.18 - 03: View from main entrance towards Dr. Savage Rd. (Author, 2008)

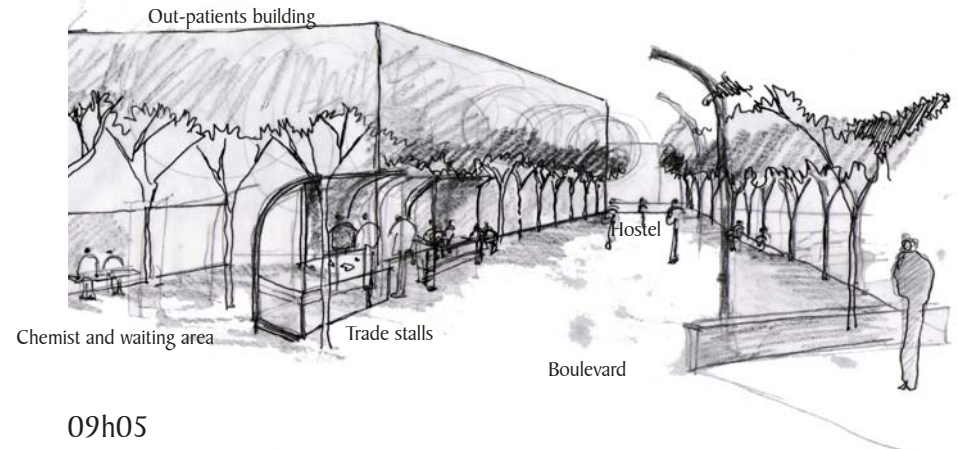
“After a long day on my feet I look forward to sitting down in one of the shady waiting areas. Usually I also buy a few tomatoes and onions from the general dealer. There is a conveniently located ATM.”



09h00

Fig. 8.19: 01- Parking area. (Author, 2008)

“Benjamin and I have small children. I have to come here once a month to fetch prescription medicine. But today Ben came with, because he wants to go to the Dental clinic. We had to bring the kids with us. We parked close by and in the shade.”

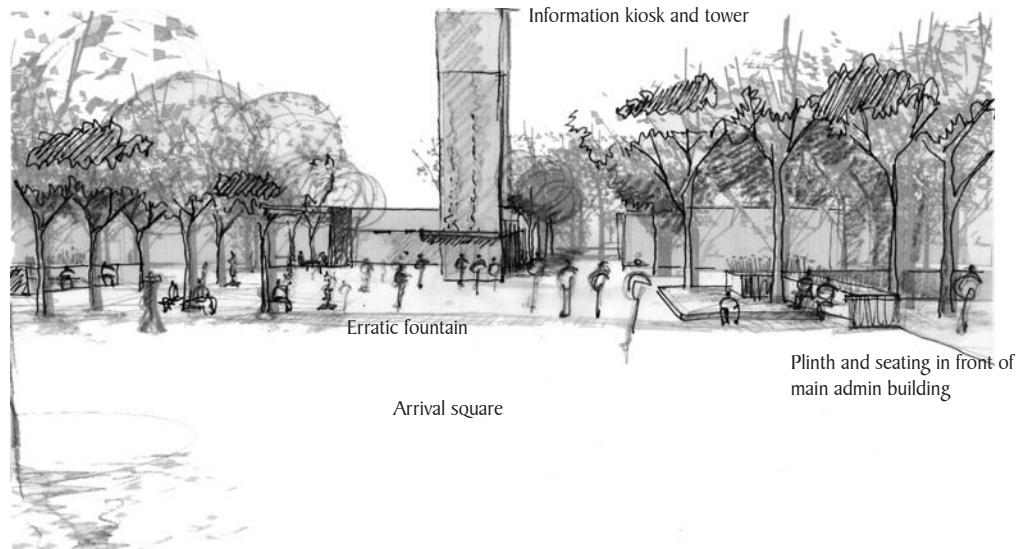


09h05

Fig. 8.20 - 02: Informal trade area. (Author, 2008)

“We walked up the ramp and saw a trade stall where we bought fruit for the children. People are already queuing in the shady waiting areas around the chemist.”

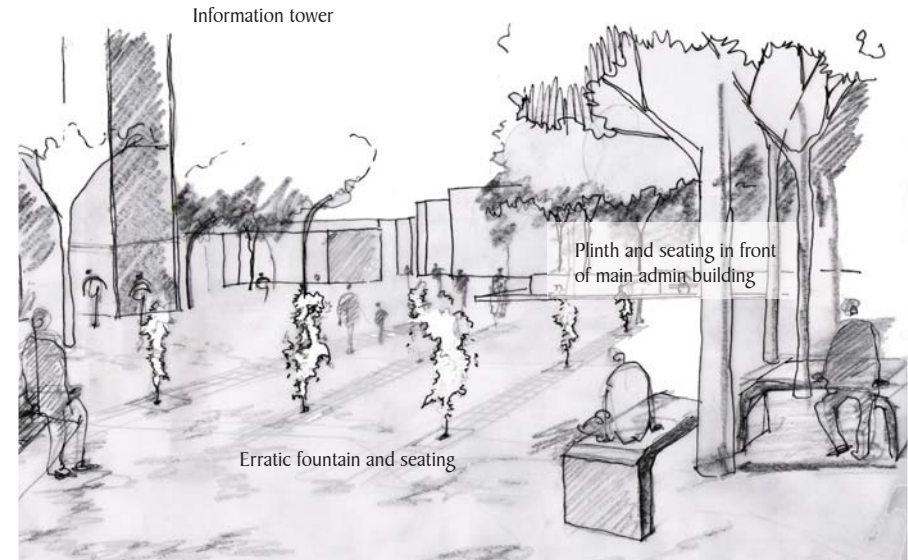




09h15

Fig. 8.21- 03: Approach to information tower. (Author, 2008)

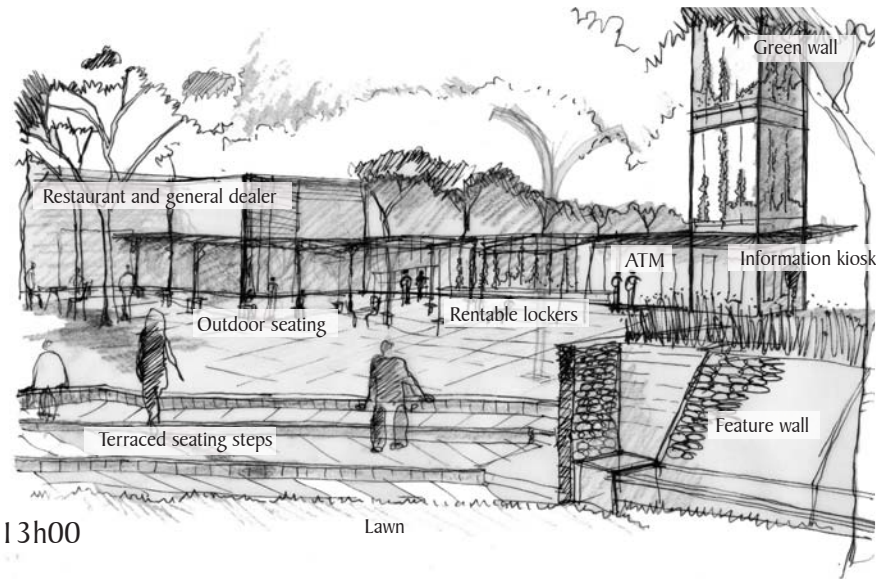
“We have to go to the Information kiosk so Ben can find out where he has to go. We’ll store our jackets and lunch in one of the lockers. The kids and I will enjoy being outside today, while we’re waiting for Ben.”



11h00

Fig. 8.21- 04: Shaded waiting and observing spaces. (Author, 2008)

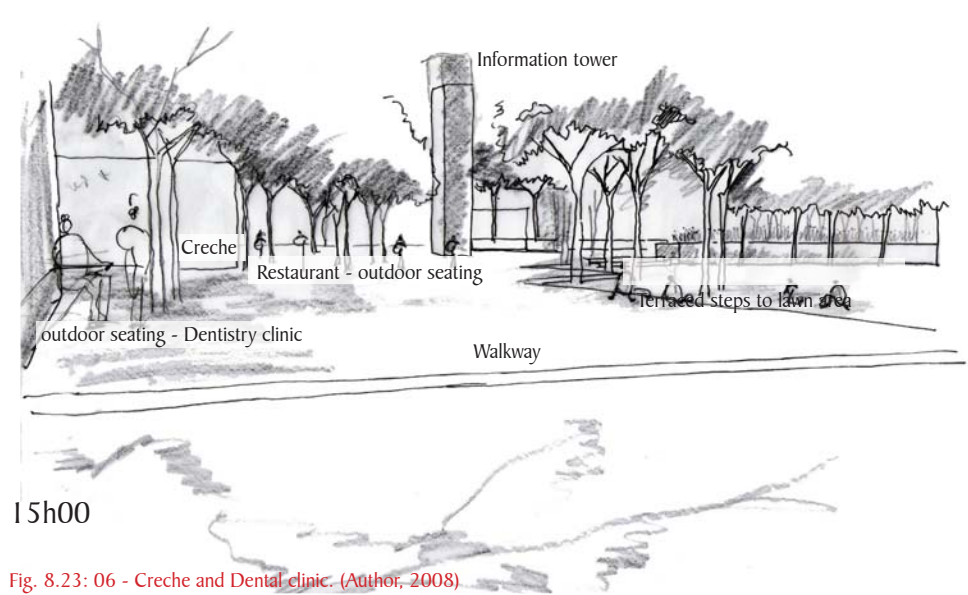
The children enjoy trying to guess which of the fountains will start spraying next. Older people sit in the quieter edge areas and watch the children that are bursting with energy.”



13h00

Fig. 8.22: 05 -Terraced lawn area. (Author, 2008)

Ben came back for lunchtime. We booked the kids into the daycare, because they wanted to play with the other children. Meanwhile we can have lunch on the terrace."

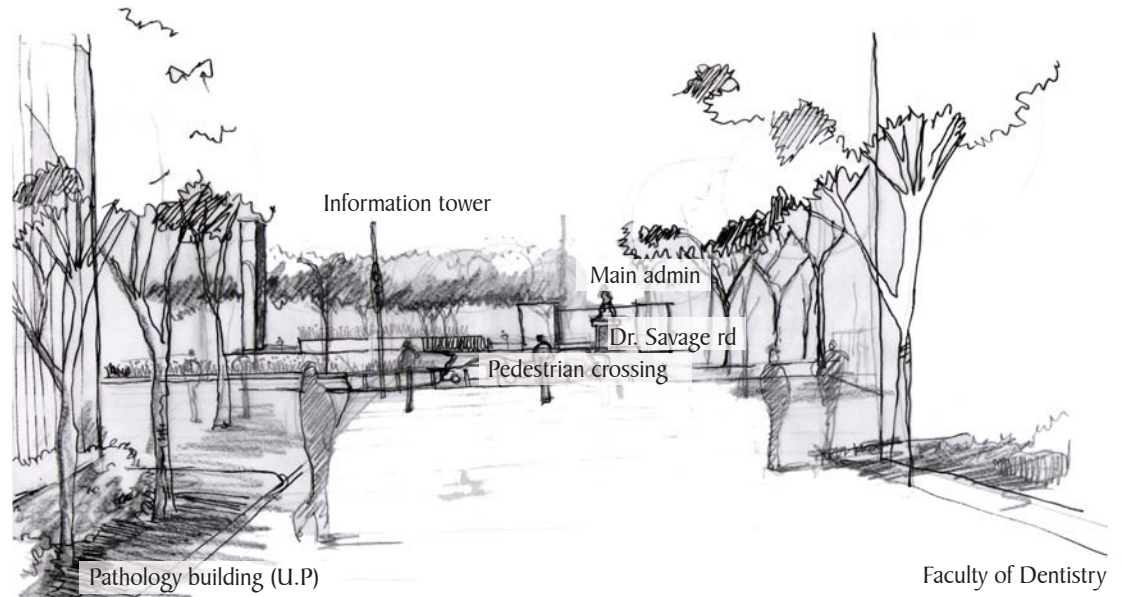
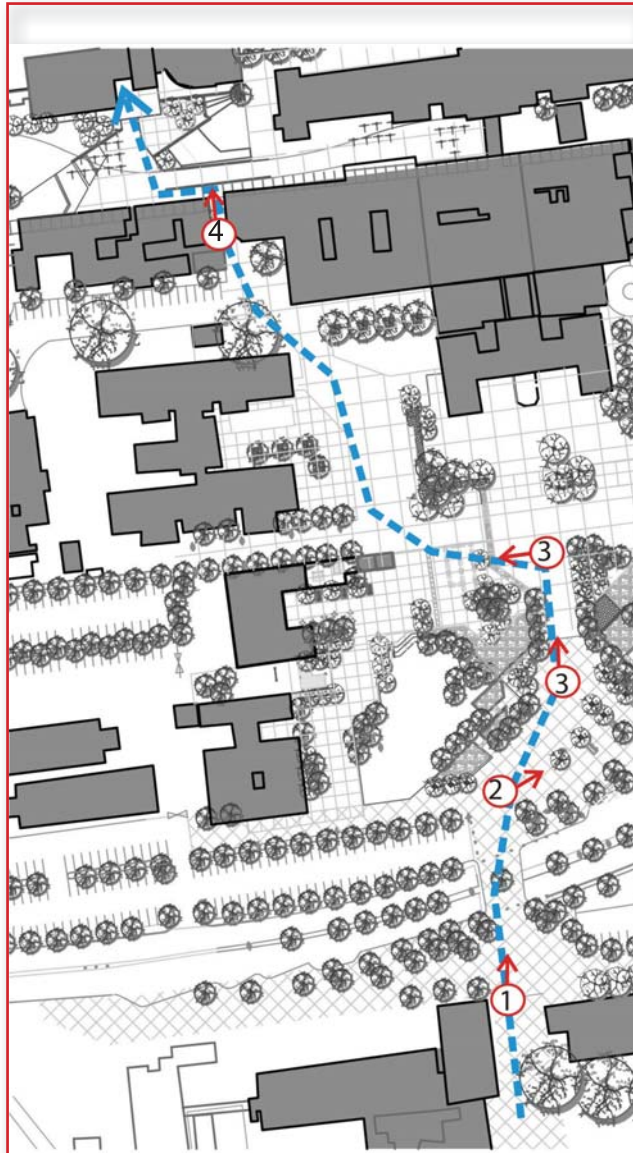


15h00

Fig. 8.23: 06 - Creche and Dental clinic. (Author, 2008)

"When Ben came back, we fetched the kids from the creche. After taking our bags from the locker and visiting the ATM and toilets, we bought milk and bread from the general dealer."

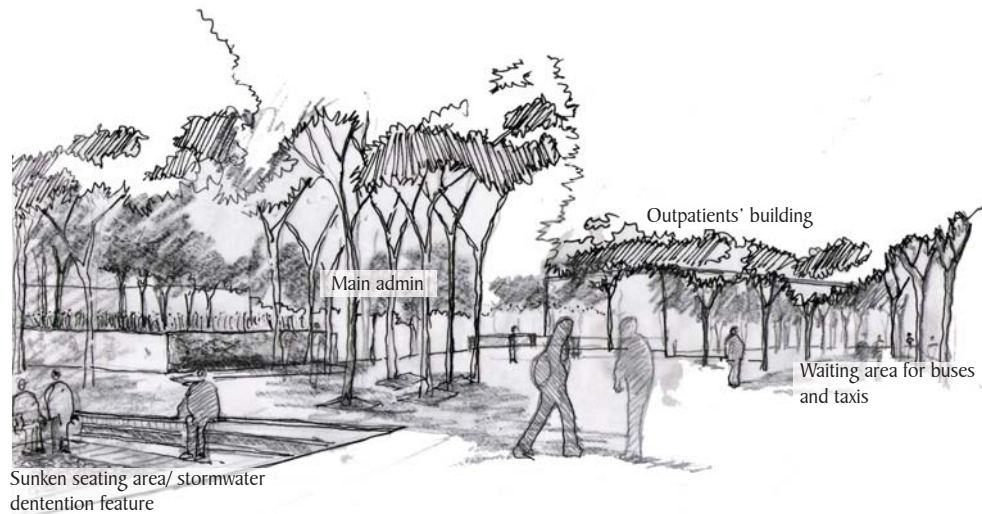




10h20

Fig. 8.24: 01 - Boulevard towards Dr. Savage Road. (Author, 2008)

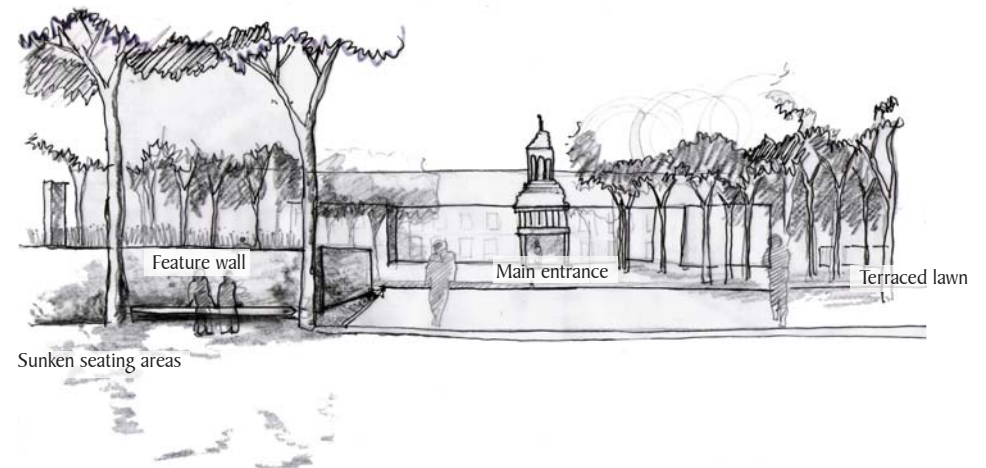
“We walk from the BMW building through the boulevard towards Dr. Savage Rd. There’s a traffic light with a pedestrian preference switch. We like the walkway because it is open and one can see quite far - we don’t feel unsafe. It is also close to the parking lot in front of the Dentistry building - easy access!”



10h25

Fig. 8.25: 06 -Sunken seating area and informal trade. (Author, 2008)

“John is my friend, he’s always late for the early morning classes. That’s why he waits until the next class in in the shady sunken seating area next to the boulevard. We meet up and sometimes we quickly buy cigarettes or cellphone airtime from the trade stall that is close by.”

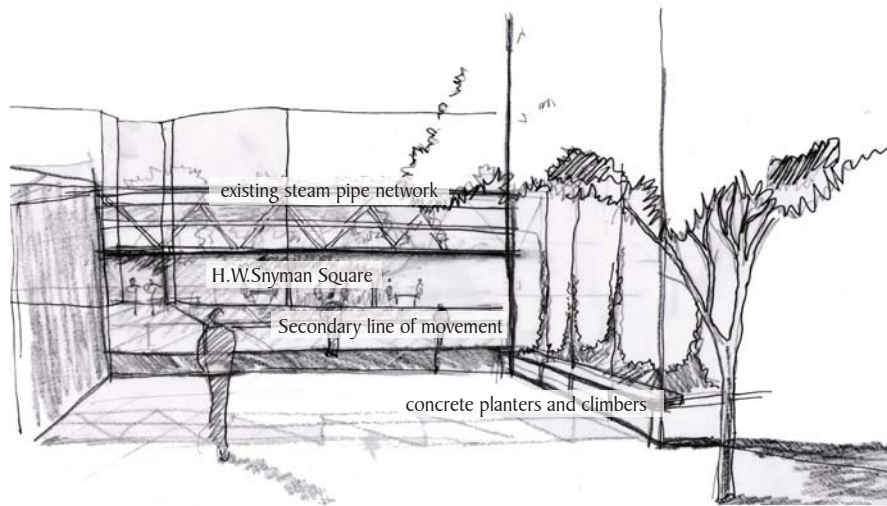


10h25

Fig. 8.26: 03 - View towards the main entrance of the T.R.H. (Author, 2008)

“This is the main entrance to the hospital. There is access control at this entrance, so it takes a little longer to go through here. We usually skip around to the card activated swing-door for students and staff to the west of the main building.”

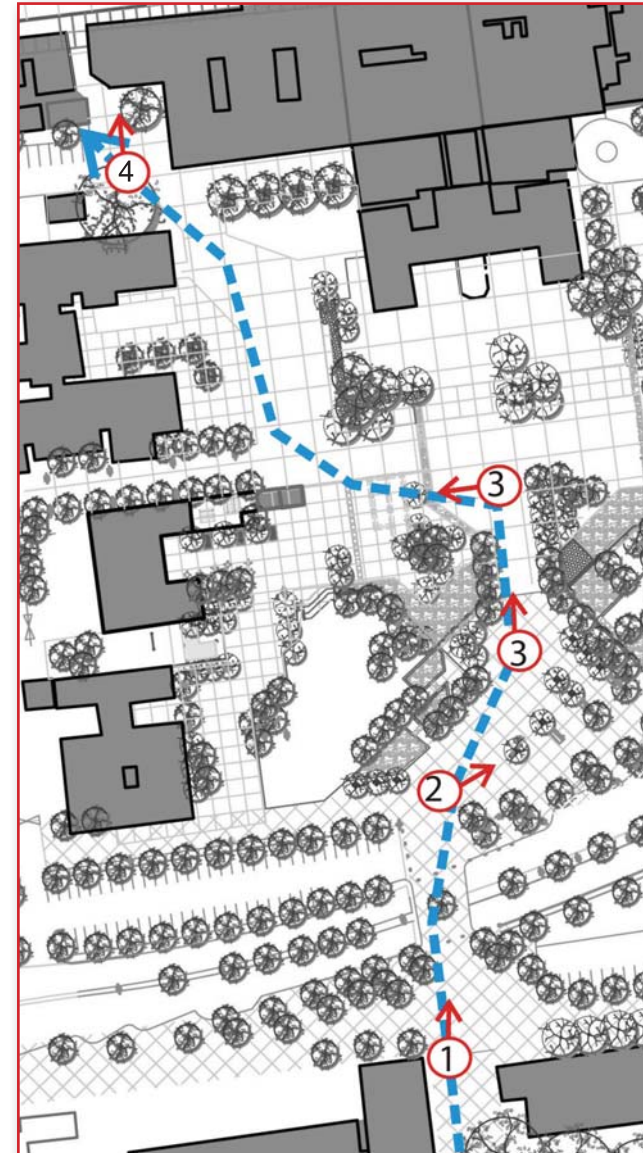




10h27

Fig. 8.27: 05 - Crossing the secondary line of movement towards the rear of the northern campus of the University of Pretoria, through the H.W. Snyman Square. (Author, 2008)

“We go through the corridor with the colourful steampipe network running above it. Behind this is one of the main walkways- it is colour coded and if you follow it, you can get just about anywhere in the hospital. At the H.W. Snyman Square there is plenty of shady waiting areas and a deck with moveable furniture. In wintertime we love to sit with our backs to the wall of the ramp that runs down to the Children’s wards. It’s sunny and there are lots of activities to look at. Sometimes we have to do assignments in groups. We enjoy sitting outside in one of the meeting places to discuss work before or after writing a test.”



8.6.1 Dr. Savage Plaza in detail

The proposed sketch plan aims to provide a wide range of spaces which have the potential to become meaningful to individuals, and it is believed that this arrangement of spaces could be beneficial for public health. The sketch plan was discussed in terms of journeys, and will now be explained in terms of materials, street furniture, planting palette and sections. In Chapter 11 some specific details (street furniture and edge details) and systems (stormwater detention feature, water feature, vertical garden and maintenance programme) will be discussed.

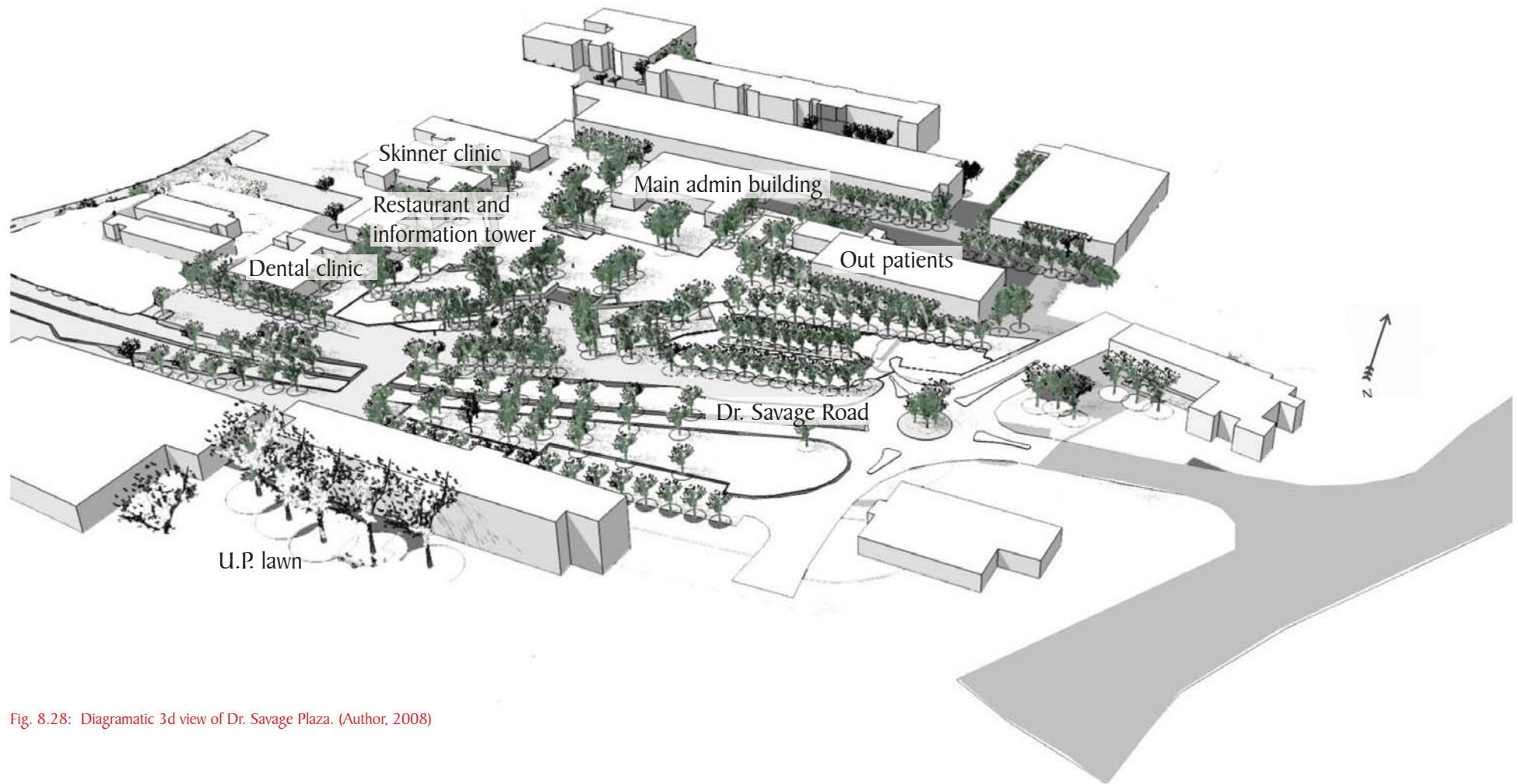


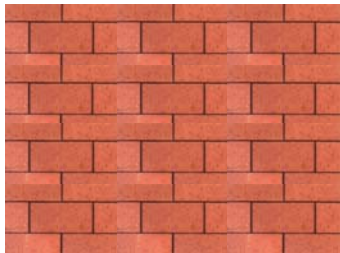
Fig. 8.28: Diagrammatic 3d view of Dr. Savage Plaza. (Author, 2008)



Infraset



Exposed aggregate concrete





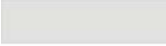
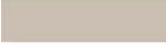


Corrobrick - burgandy pavers

Fig. 8.29 : Paving materials.
(Infraset.com, 2008; Corrobrick.co.za , 2008 and Author, 2007))

8.7 Materials and design guidelines

8.7.1 Paving

Paving is based on a grid system that is perpendicular to the existing buildings in the more formal areas, but in the transitional areas perpendicular to the information tower. The grid is composed of 3.6 m x 3.6 m units to accommodate combinations of a variety of pavers. In high-use areas the material is an in-situ cast concrete slab, with a red-brick edge and expansion joints on the grid intervals.

-  Corobrick burgandy
-  Infraset cobbles
-  Exposed aggregate concrete with red-brick joints
-  Feature wall: steel, mesh and packed rock structure
-  Drainage channels
-  Packed stone infiltration zones

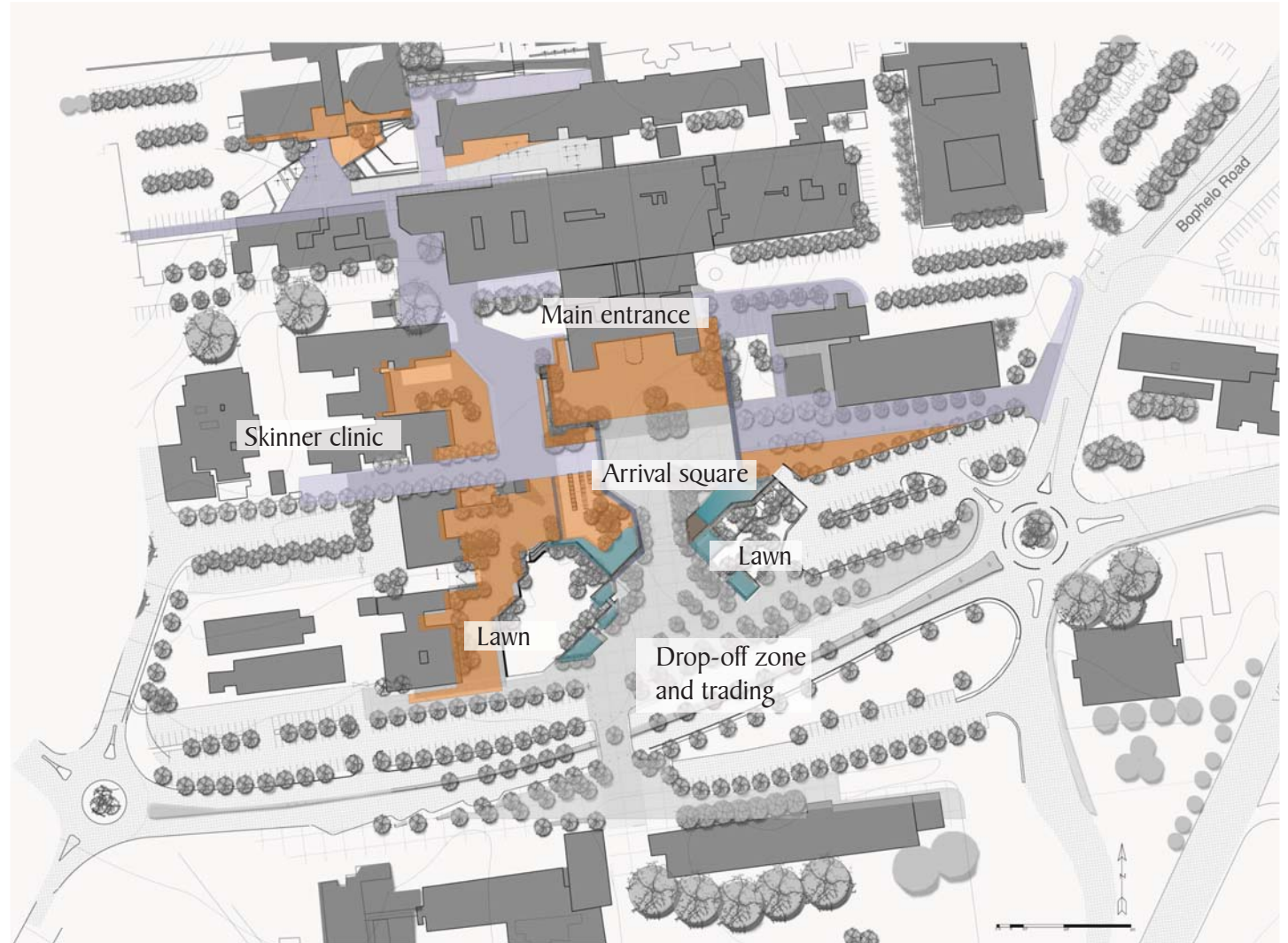


Fig. 8.30: Sketch plan - paving and materials (Author, 2008)

8.7.2 Street Furniture

The specific needs for the placement of street furniture was determined by the activities and the user profile. The palette consists of a range of:

- Bollards
- Bollards with lights
- Benches with backrests
- Benches without backrests
- Lampposts
- Shade structures
- Trade stalls

Robust materials were chosen and these include polished concrete, standard I-sections, IBR plates and square and round tube steel sections. The palette is colour coded to comply with the different master plan zones and it is also applied subtly to coloured ceramic tiles and signage.

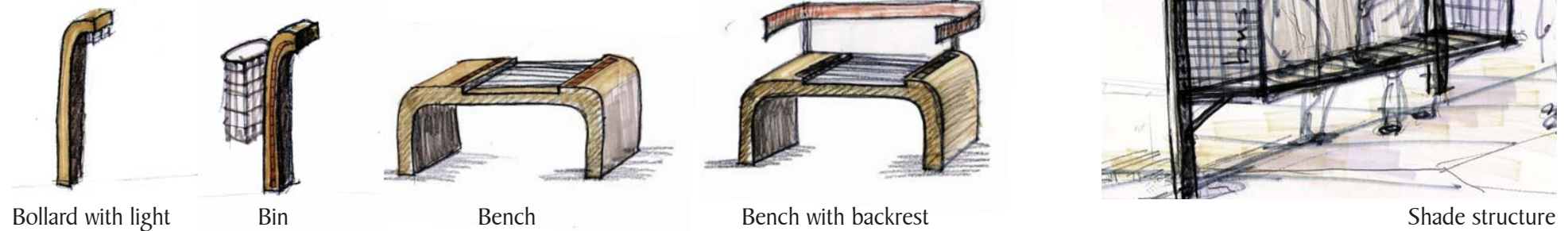
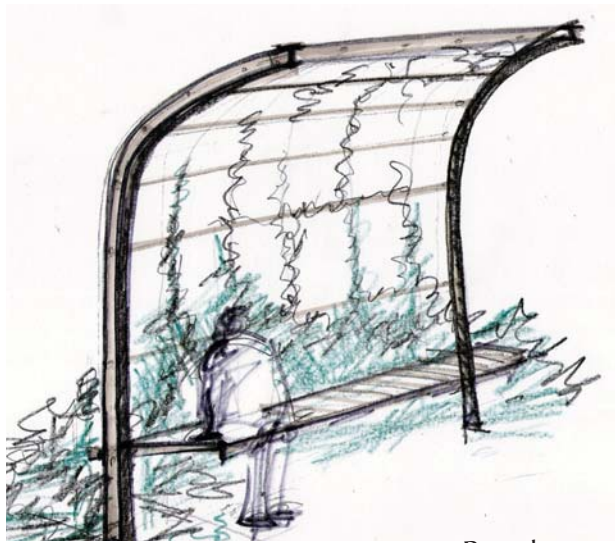
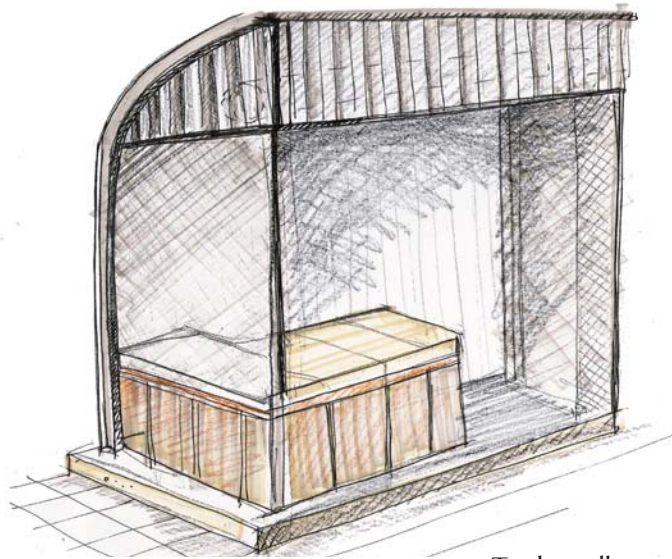


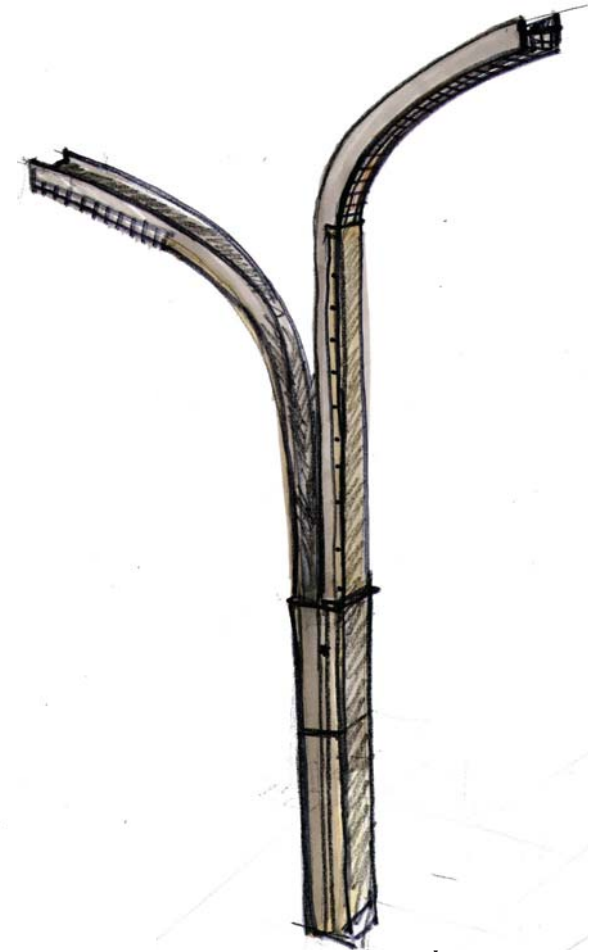
Fig. 8.31: Sketch designs for street furniture range. (Author, 2008)



Pergola



Trade stall



Lamp post

8.7.3 Lighting

The strategy for night use varies in scale.

- High-use areas are well lit with lampposts that shed light in two directions. This will encourage use in well-lit areas, resulting in a safer environment.
- Accent lighting is applied to the important buildings in the form of up-lighting. The tone of the colour should be warm.
- Indirect lighting – Subtle lighting of features, for example strip lighting on retaining walls, and LED uplighting in the erratic water fountain.
- Edge definition – Bollards with lights will be used to define low use areas.
- Special lighting – small LED lights embedded in random fashion on the plinth in front of the old admin building will subtly lead the user towards the building.



- Trade stall
- Lamp post
- Bench
- Bench with backrest
- Shade structure - waiting areas
- Rentable lockers
- Pergola

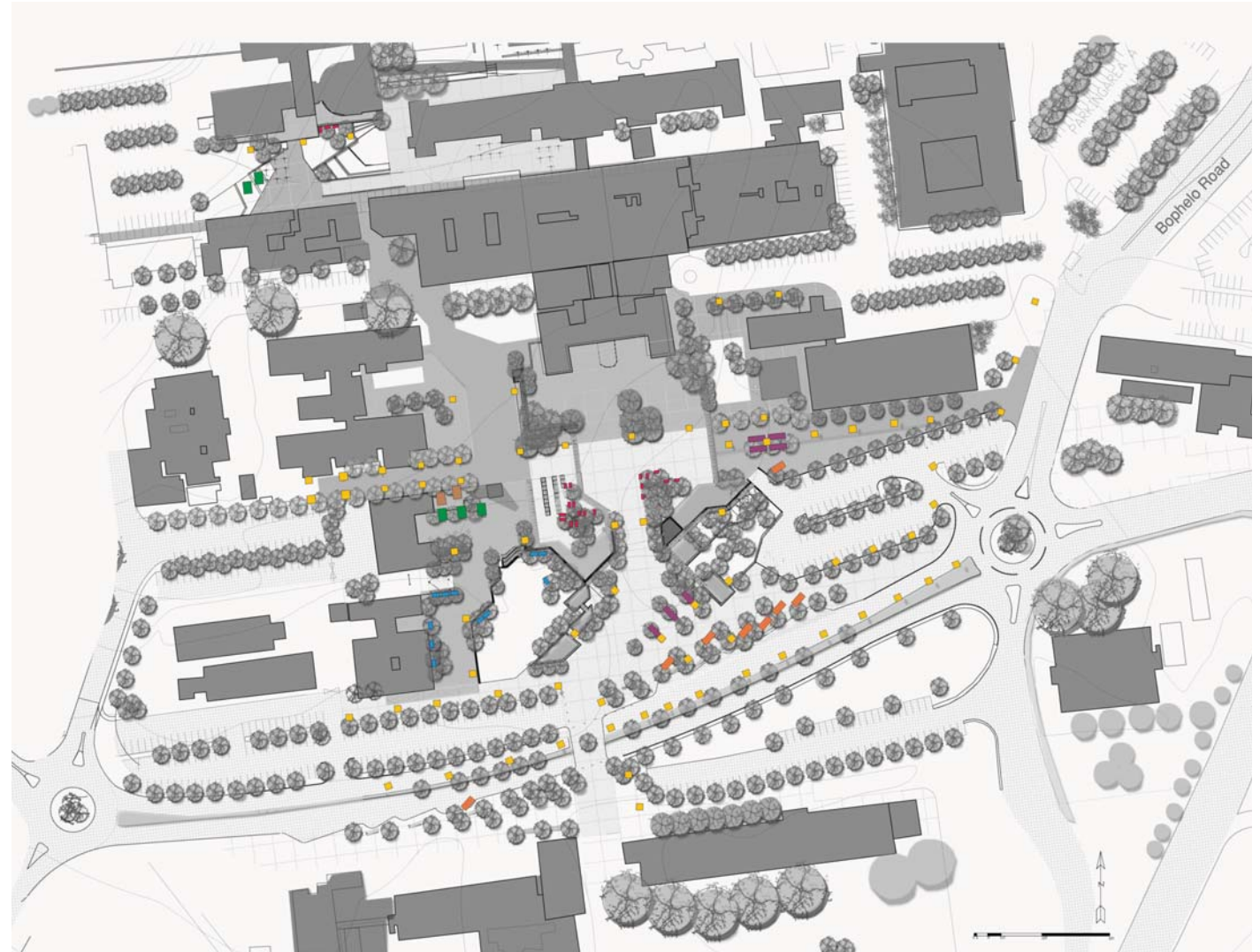


Fig. 8.32: Sketch plan: street furniture placement (Author, 2008)



Fig. 8.33: Planting palette. (Author, 2008)

8.7.4 Planting Strategy

Species were selected according to the following properties:

- Density of canopy
- Seasonal change of colour
- Deciduous or evergreen
- Sculptural qualities

Dense canopies are used in parking lots and waiting areas. Semi-deciduous trees with strong form are used in the boulevard areas and in more formal areas surrounding the building edges. Sculptural species, for example Erythrina lysistemon, were selected for accent areas. The lawn areas are planted with a combination from dense to deciduous trees to ensure a variety of options during different seasons.



-  *Albizia adiantifolia*
-  *Erythrina lysistemon*
-  *Dombeya rotundifolia*
-  *Celtis africana*
-  *Peltophorum africanum*
-  *Acacia sieberiana*
-  *Harpephyllum caffrum*
-  Existing tree to be conserved
-  Lawn
-  *Crocoshia aurea* and *Chlorophyt*
-  Shrubs in planter



Fig. 8.34: Sketch plan - Planting strategy (Author, 2008)

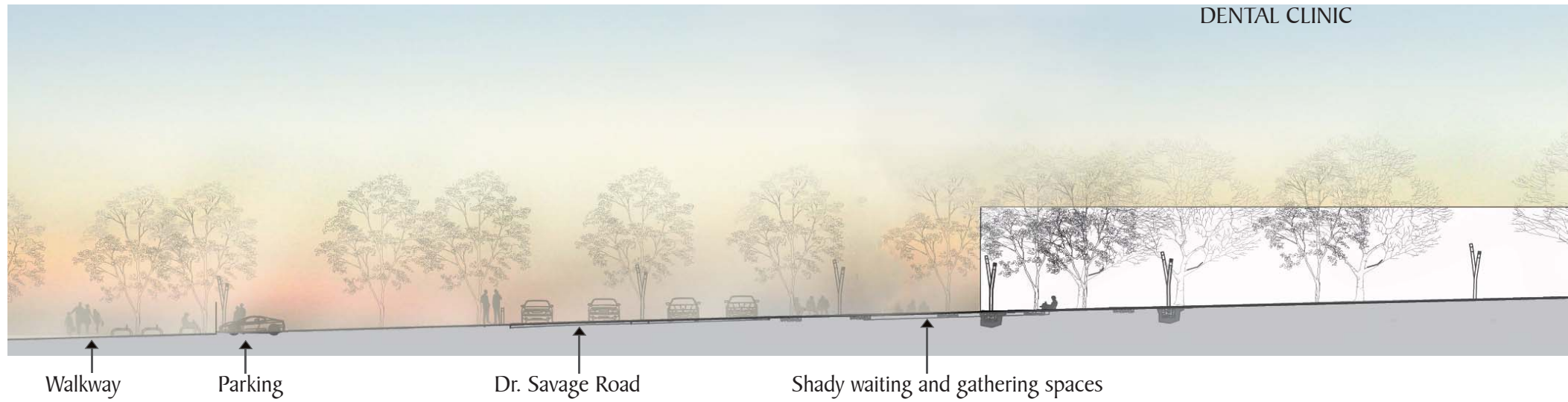
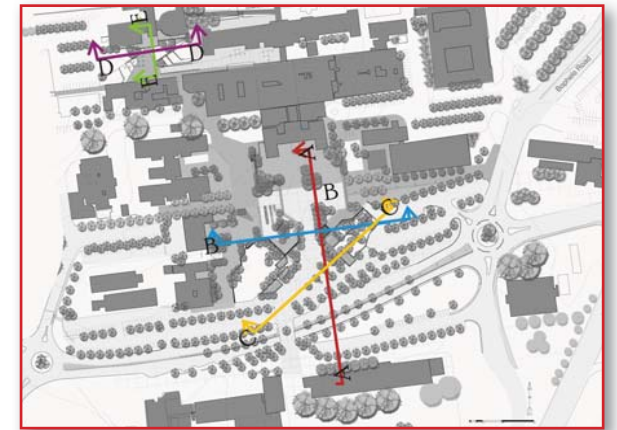
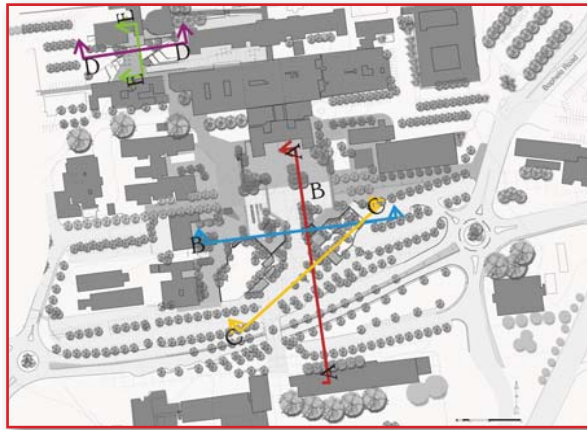
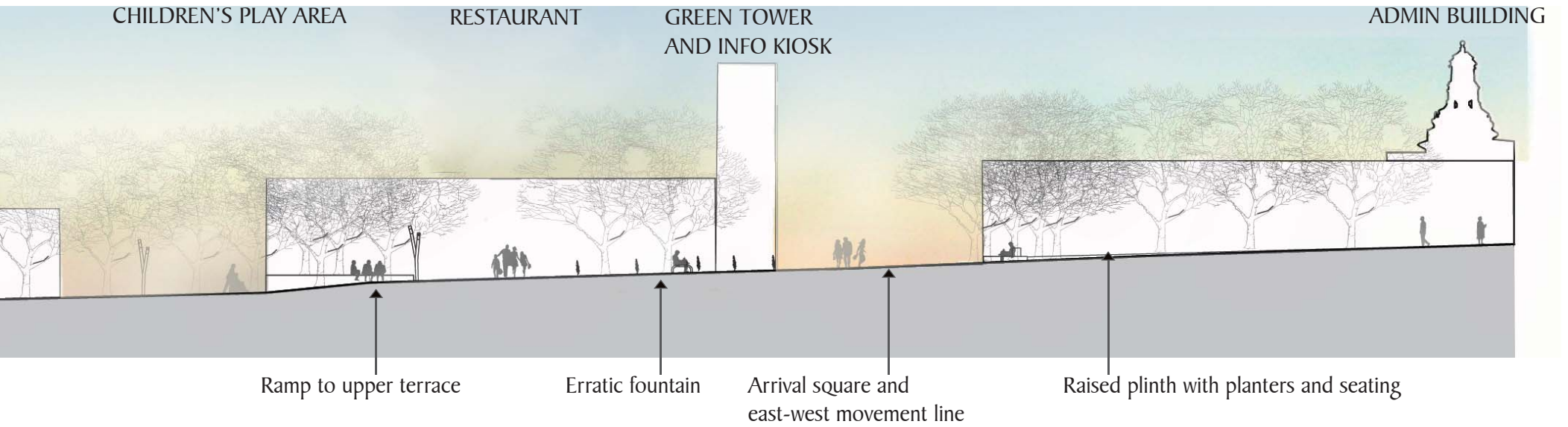


Fig. 3.35: Section A. Scale 1:250 (Author, 2008)





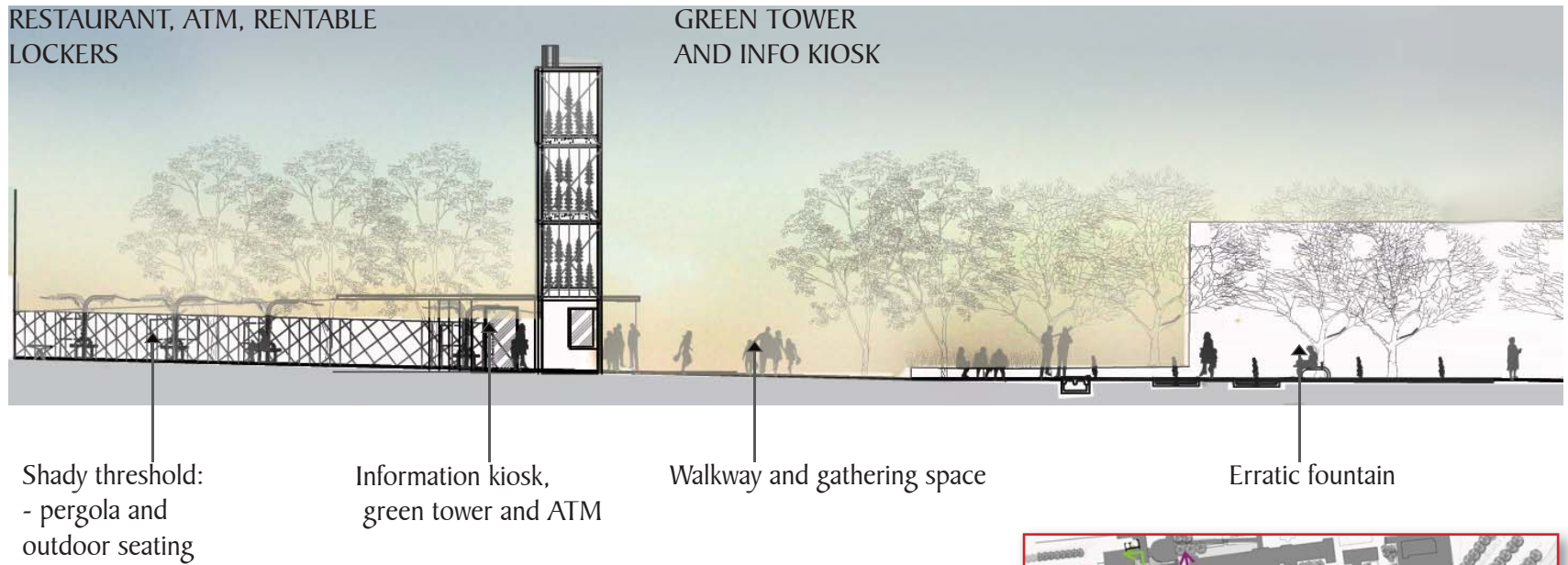
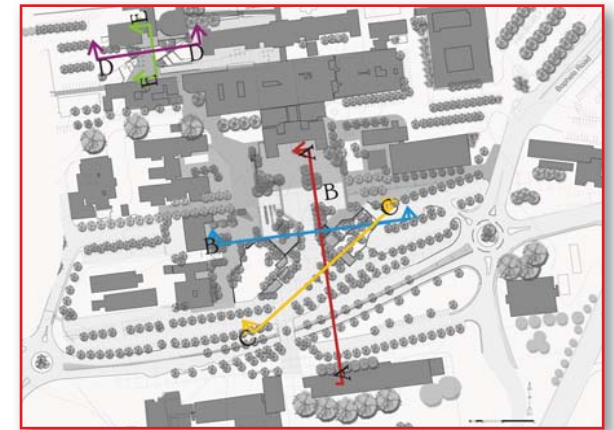
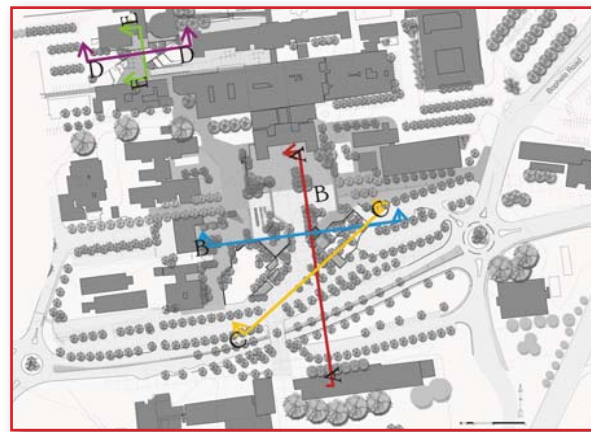
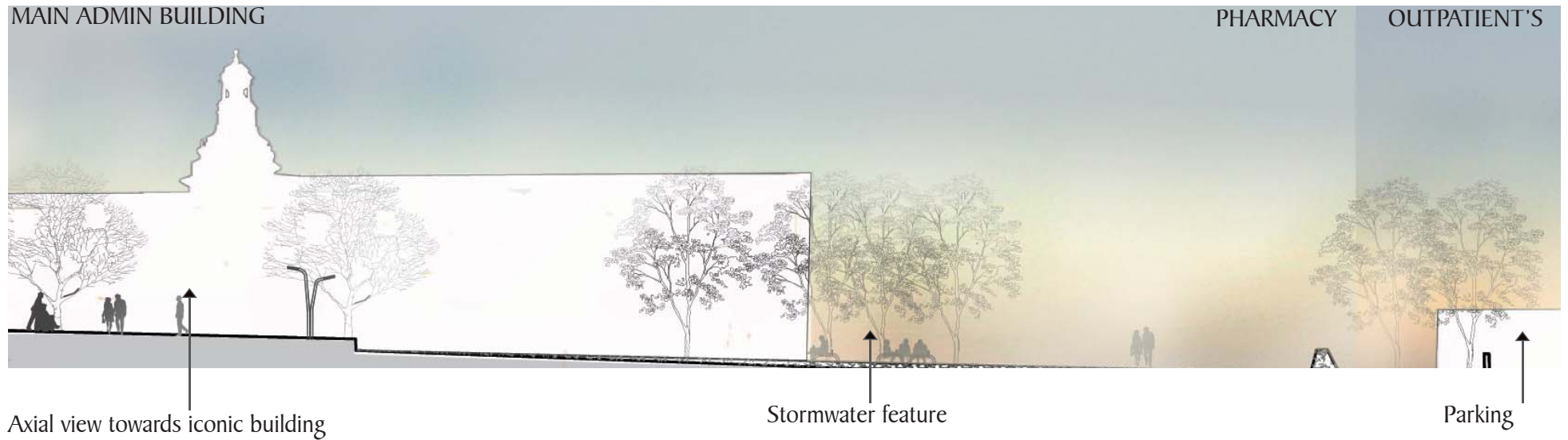


Fig. 3.36: Section B. Scale 1:250 (Author, 2008)





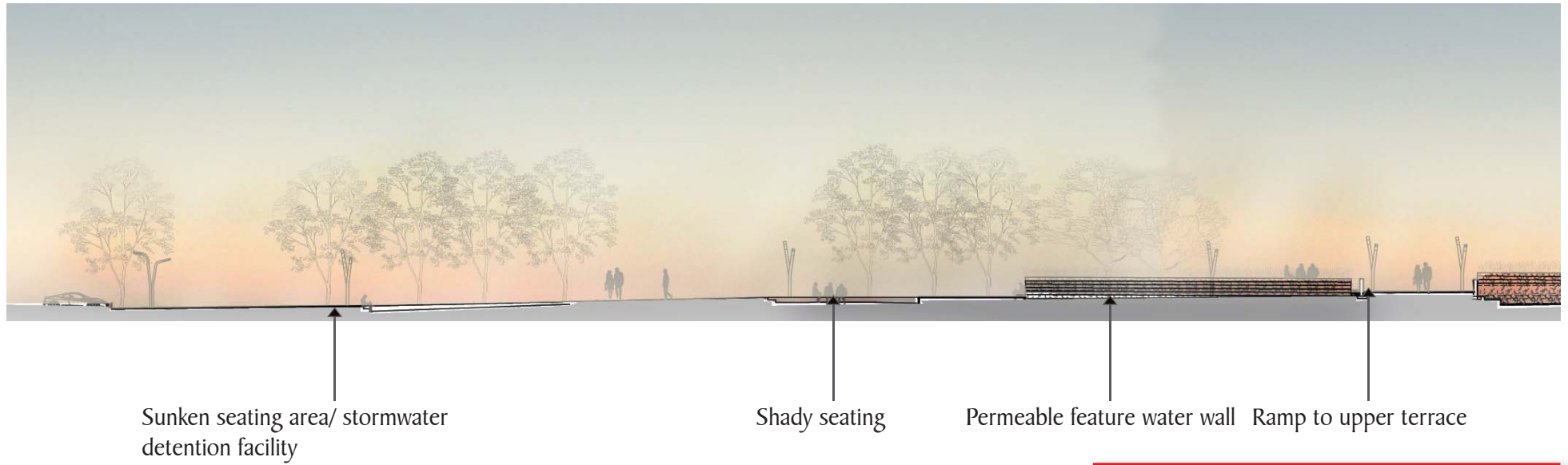
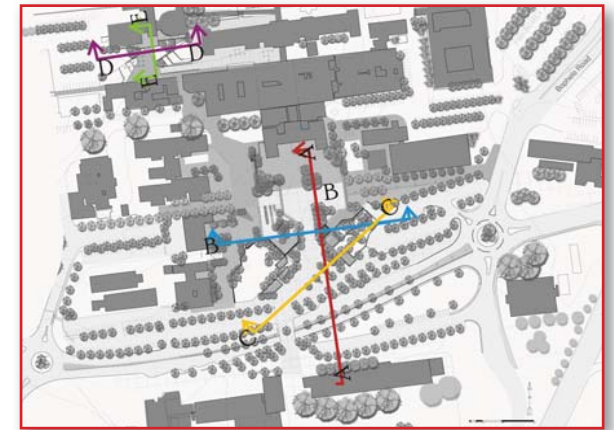


Fig. 3.37: Section C Scale 1:250 (Author, 2008)

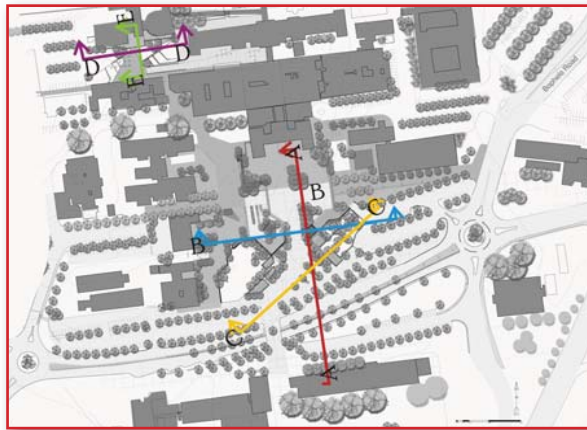




Terraced lawn area and feature wall

Ramp from parking to upper terrace

Shady boulevard and trading space



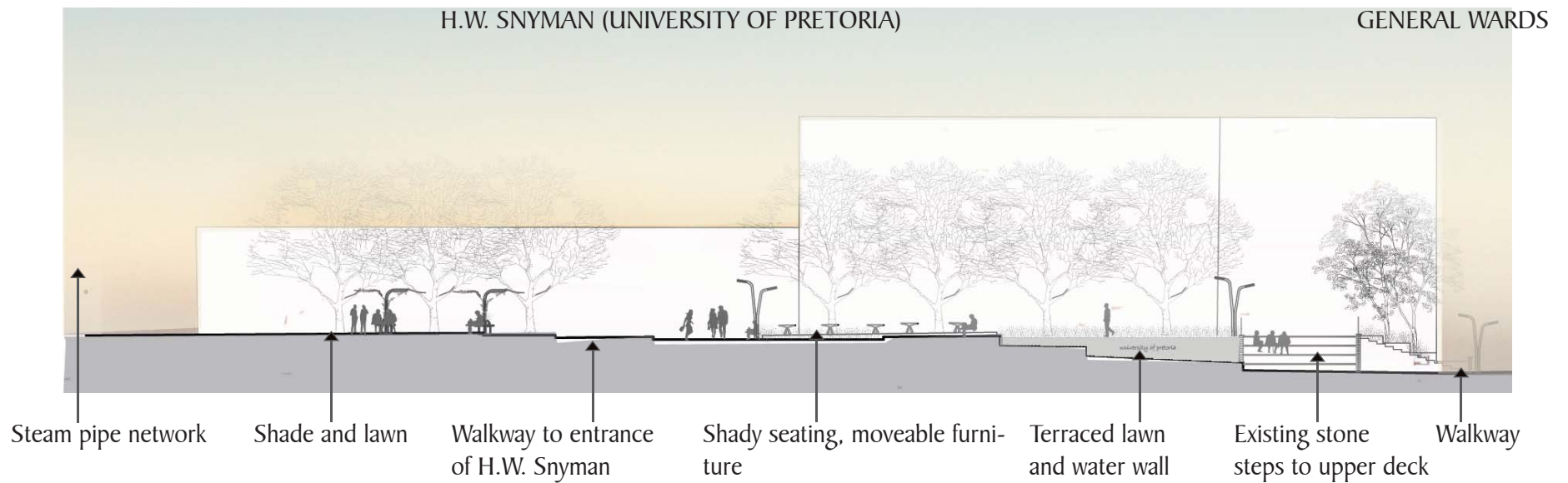
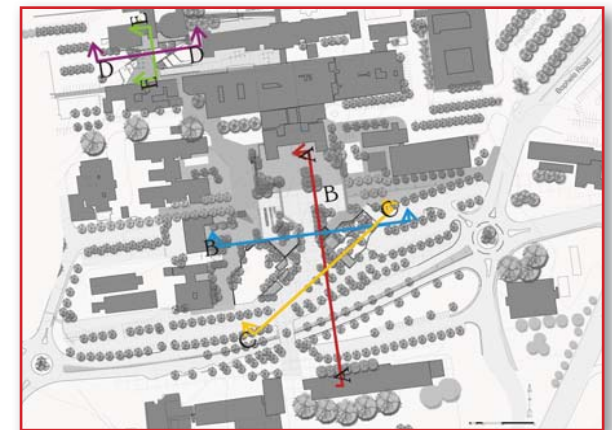


Fig. 3.38: Section D - (Master plan) Scale 1:250 (Author, 2008)



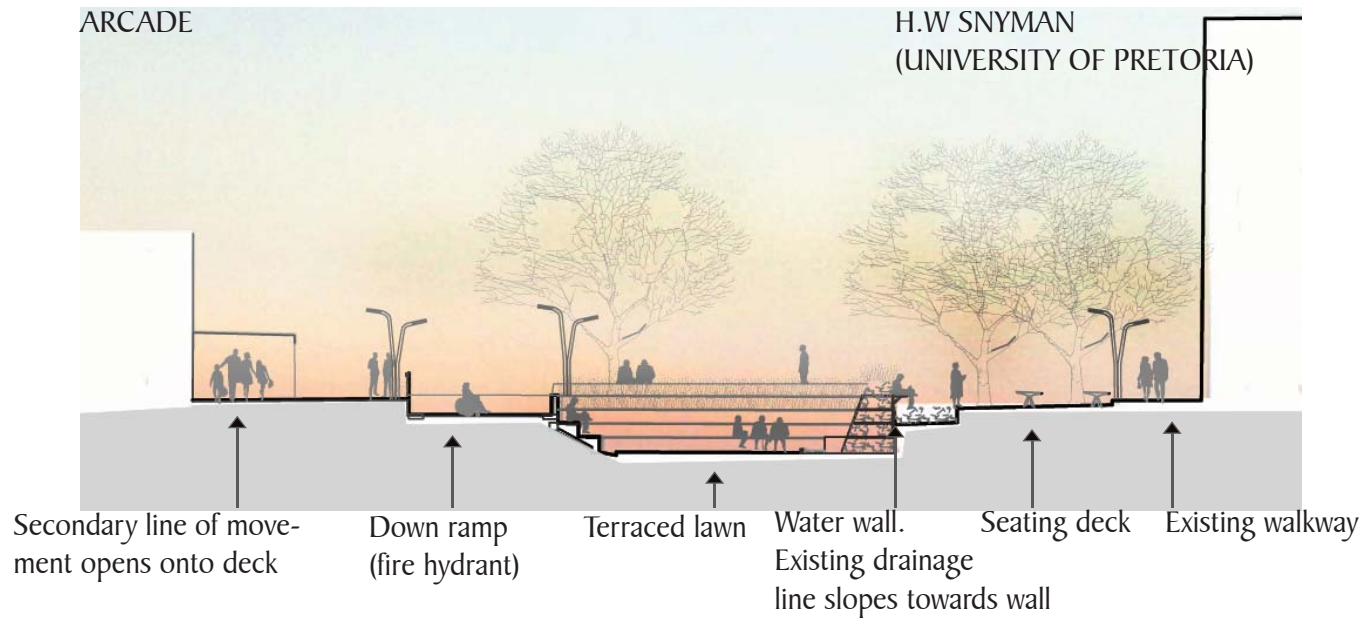
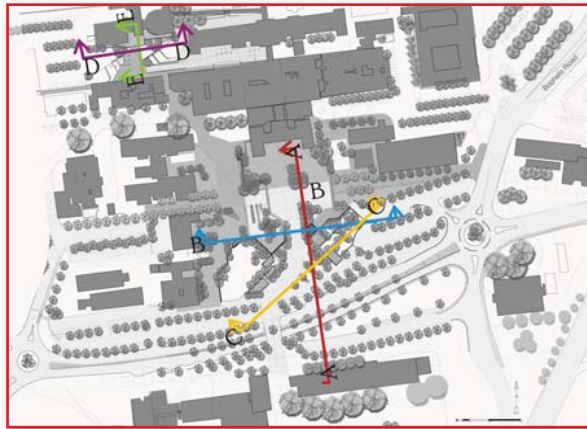
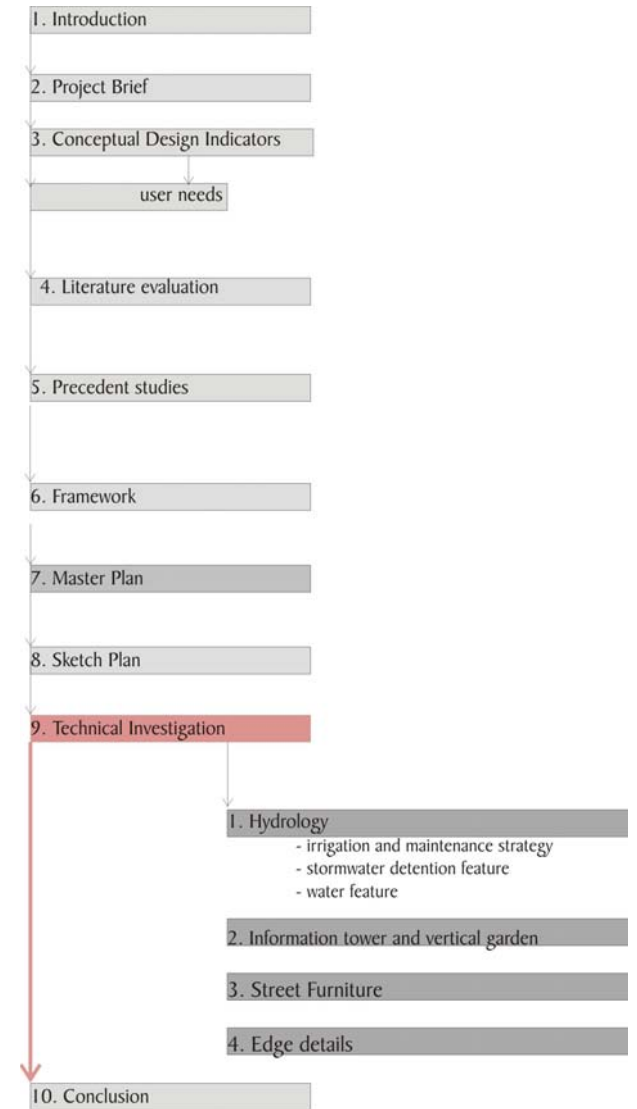


Fig. 3.39: Section E - (Master plan) Scale 1:250 (Author, 2008)







9. TECHNICAL INVESTIGATION

The technical investigation will be discussed along the following categories:

1. Hydrology and systems
 - Maintenance strategy
 - Stormwater detention facility
 - Water feature
2. Vertical garden and kiosk
3. Street furniture
4. Edge details

9.1 Hydrology

The hydrology consists of three systems:

1. The retention of stormwater for irrigational purposes (Refer to Master Plan)
2. Stormwater detention structures that double up as sunken seating areas (in Dr. Savage Plaza)
3. Water feature (Dr. Savage Plaza)

9.1.1 Irrigation and maintenance strategy

The success of the open space system is closely related to adequate maintenance. The proposed spaces will require lots of water. Stormwater will be used to irrigate the site. The following options were considered:

- Detaining water as it enters the site and gravity feeding it towards the open spaces
- Treating the water in an open system while it filters through the site.
- Using the existing stormwater network and storing the water in low lying areas.



Fig. 9.1: Areas zoned in the restorative open space framework which would require water for irrigational purposes. (Author, 2008)

The third option was identified as the most feasible for the site. To determine if enough water would be available, the process below was followed:

1. Determining the catchment areas.
2. Determining the amount of water needed for irrigation purposes per time period ,per catchment area. (based on type of coverage and average water requirement of 25mm per week).
3. Determining the amount of water available per catchment area.
4. Compile a monthly balance sheet of the water available.

From the above steps of the process, it was determined that two irrigation dams should be adequate for the storage of water. The dams should be located close to the lowest point of the main stormwater pipe, and preferably on under-utilised land.

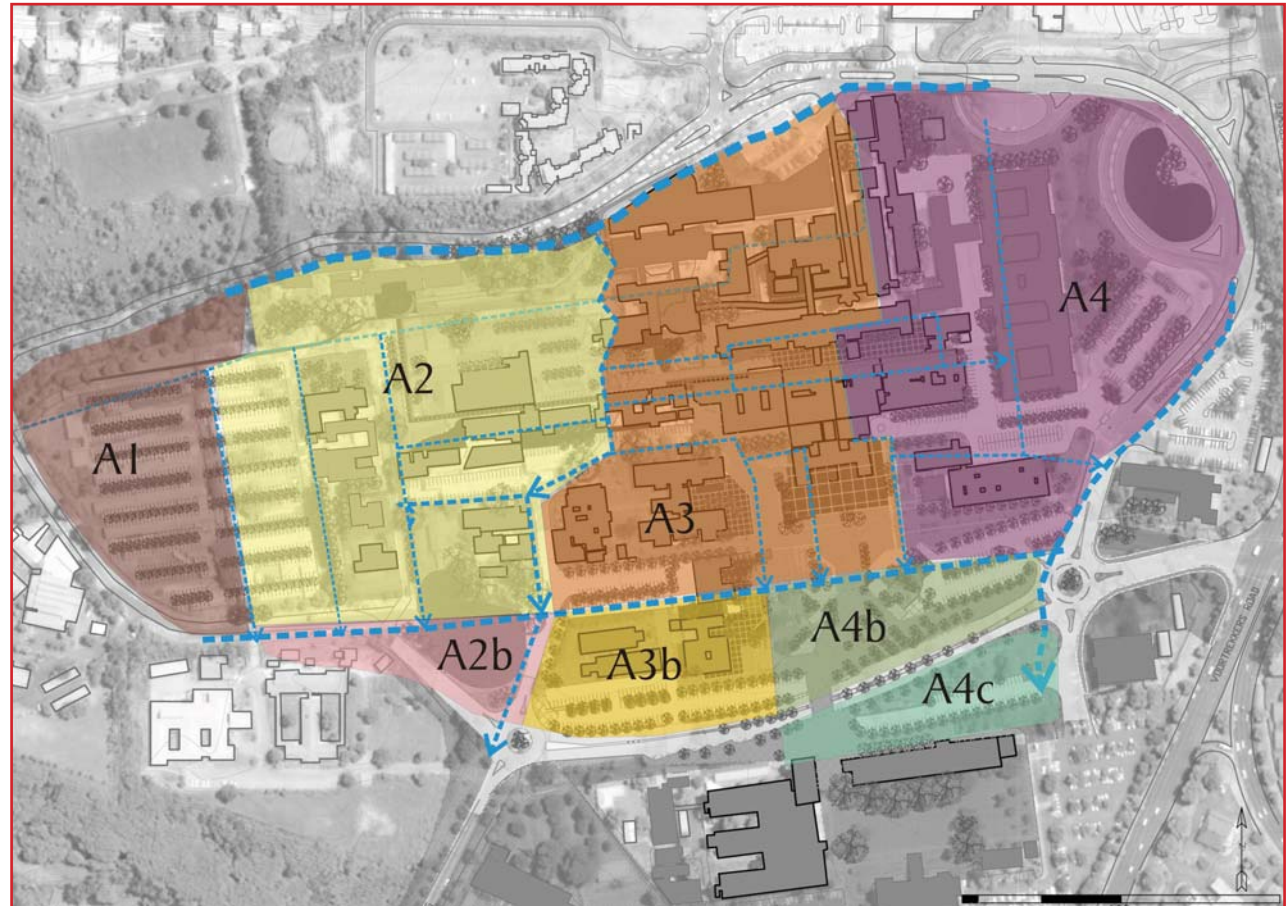


Fig.9.2: Existing Stormwater drainage network and catchment areas. (Author, 2008)

Dam	Catchments	Combined areas	Area to be irrigated	Volume needed per week	Volume needed per month	Volume need per year	Volume need per day m3
Dam 1	A1 + A2	78089	11638	131.5	1260	15129	41.6
Dam 2	A3 + A4 + A4b	125911	12542	335.7	1342	16297	44.6

Table 2: Water requirements for maintenance strategy (Author, 2008)

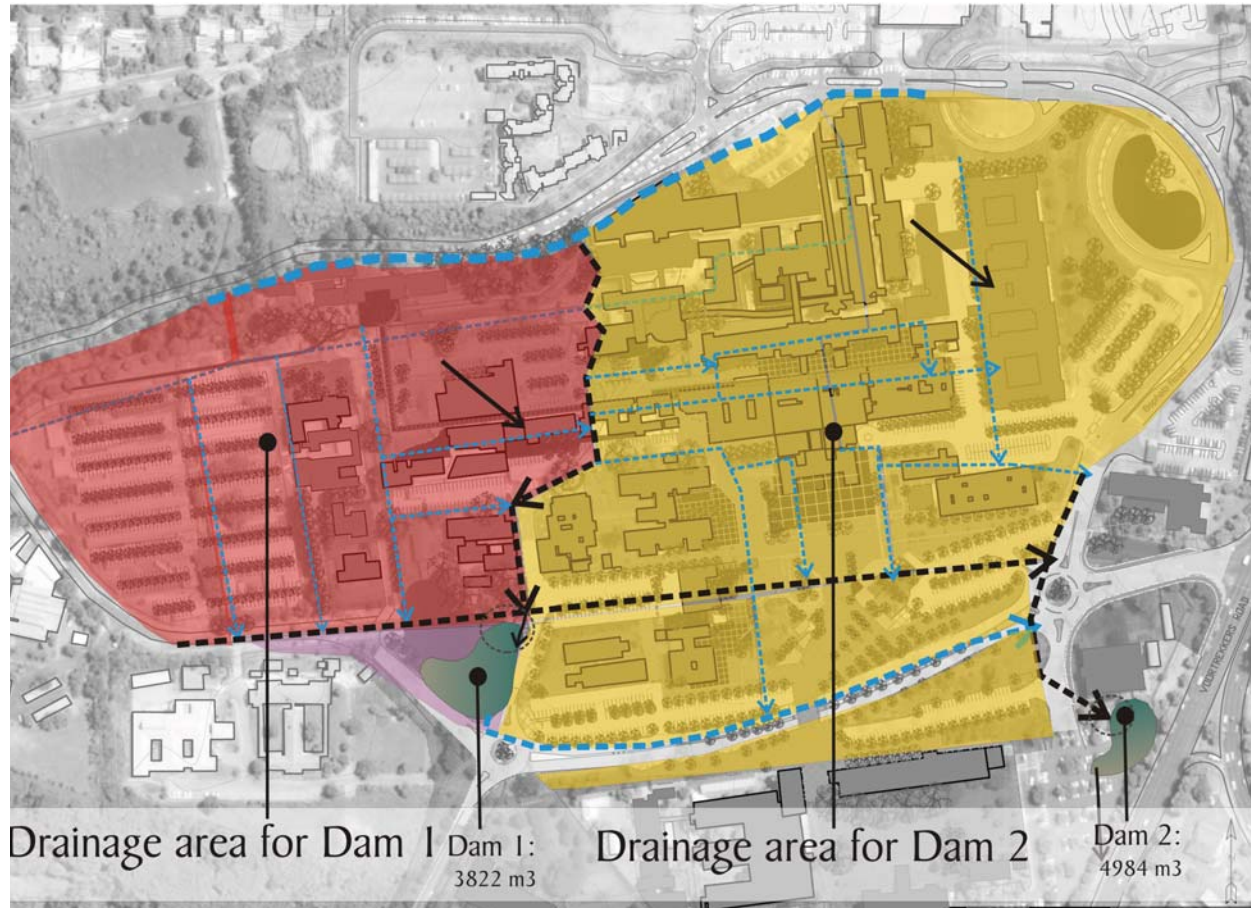


Fig.9.3: Existing Location of dams with associated catchment regions (Author, 2008)

In order to determine the volume of the respective dams, the following steps were taken:

1. Determining the combined catchment area for each dam.
2. Assuming a surface area for the dam.
3. Determining the rainfall spread. The mean annual precipitation for the sub-catchment area is 683mm. The inflow for the dam was calculated by determining the rainfall spread per month (rain on the dam; and rain that enters the dam via stormwater system). The spread takes into account water losses due to evaporation.
4. Determining the extent of evaporation. The mean annual evaporation (MAE) for the area is 1600mm and this was taken into account during calculations.
5. Determining the runoff factor, which is 0.85.
6. Determining abstraction/outflows. This is based on the amount of water needed for the ring system per week.
7. Calculating the proposed volume is the amount of excess water that needs to be stored to ensure that there is always enough water during the drier seasons.
8. Designing edge details according to conditions. Edge details are dependant on the slope at which the stormwater

pipe system enters the dam area. The pipe cannot enter the dam at a level that is lower than the water level. This results in a large transitional area and gradual slope. Thus the maximum capacity which the dams have to provide for are as follows:

Dam 1 = 3822.7m³

Dam 2 = 4984 m³

Also refer to Table 2. p 143.

9.1.1 a) Irrigation system

The stormwater drainage network is used to convey the water to the low lying areas. Water enters each dam via a stormwater inlet. Water will be filtered and pumped through a series of alternating smaller closed ring systems. Each dam's ring systems is operated with one pump, separated by a manifold and valve. With this strategy, a smaller pump can be used and maintenance of the system is easier. The system will, however, have many valves in different areas; so that overlapping systems can be used optimally. This means that all ring systems will not necessarily commence at the pump chamber, a section of one ring can be used reach another ring system.

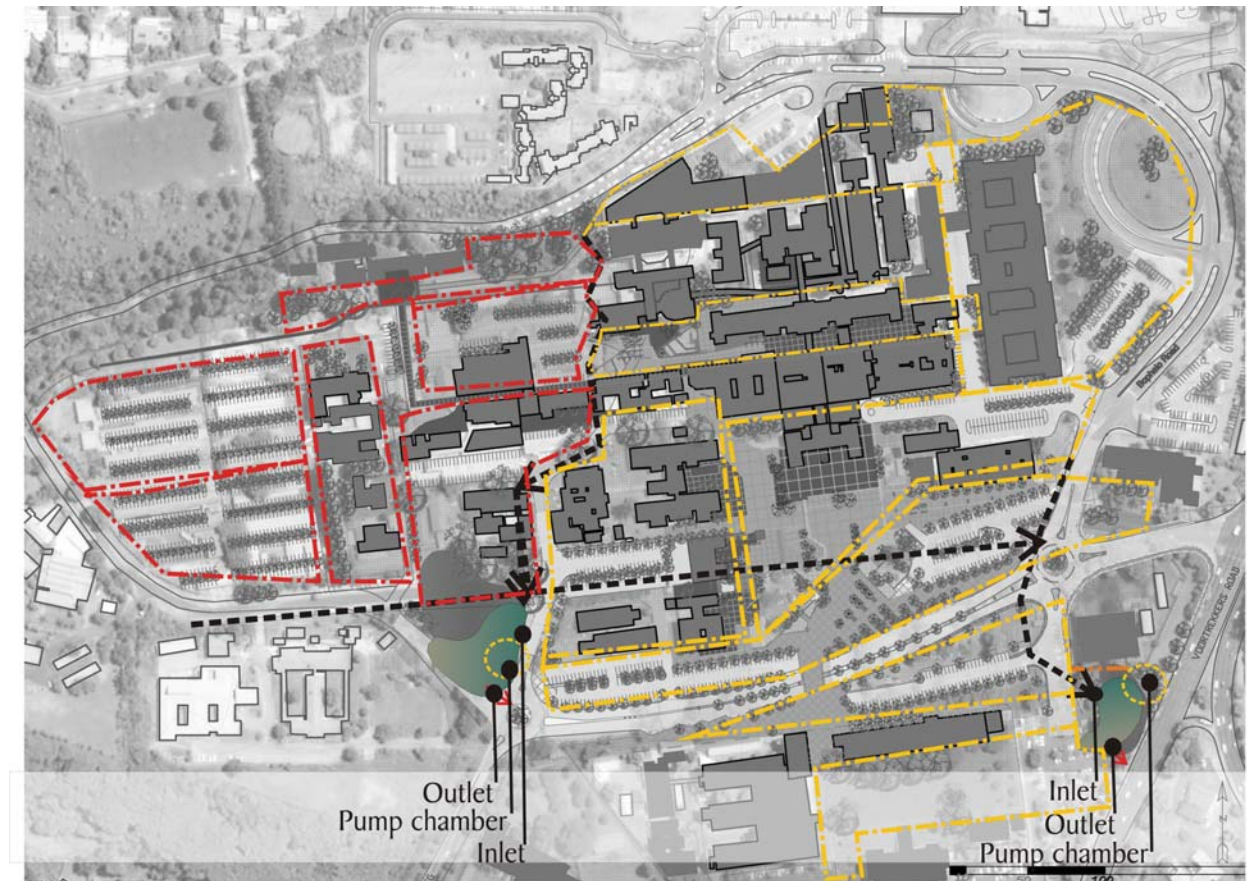


Fig. 9.4: Conceptual placement of irrigation zones . These should be connected through a series of valves to the pump and to other rings to form a network of overlapping ring systems. (Author, 2008)

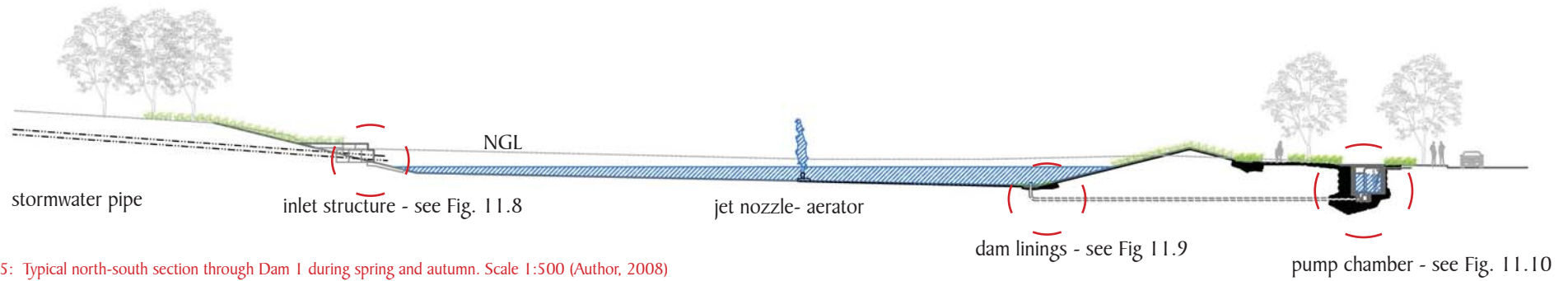


Fig. 9.5: Typical north-south section through Dam I during spring and autumn. Scale 1:500 (Author, 2008)

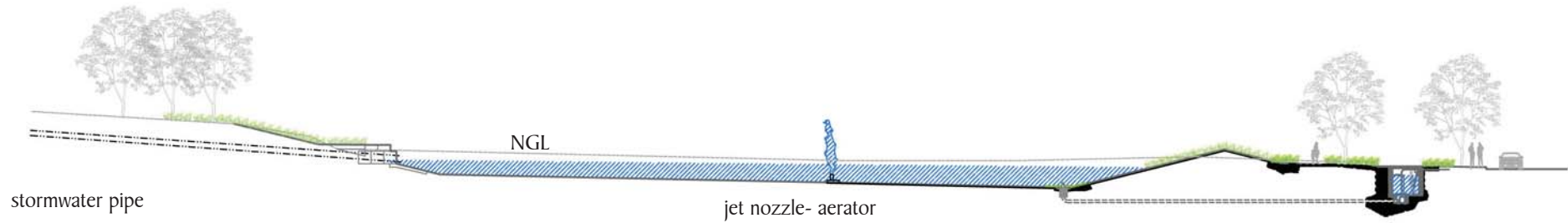


Fig. 9.6: Typical north-south section through Dam I during summer. Scale 1:500 (Author, 2008)

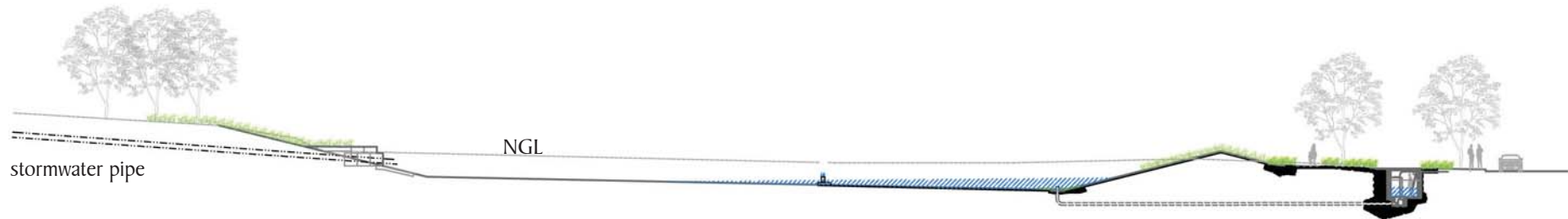


Fig. 9.7: Typical north-south section through Dam I during winter. Scale 1:500 (Author, 2008)

9.1.1b) Inflow and outflow

Although the dams were designed to accommodate all the stormwater that the network could contain up to the point of inlet into the dam, each dam should also have an overflow structure to deal with excess water in case of emergency. Such an overflow structure should be located at a high point in the dam wall and be connected to the main stormwater network downstream of the dam. The overflow structure was not detailed.

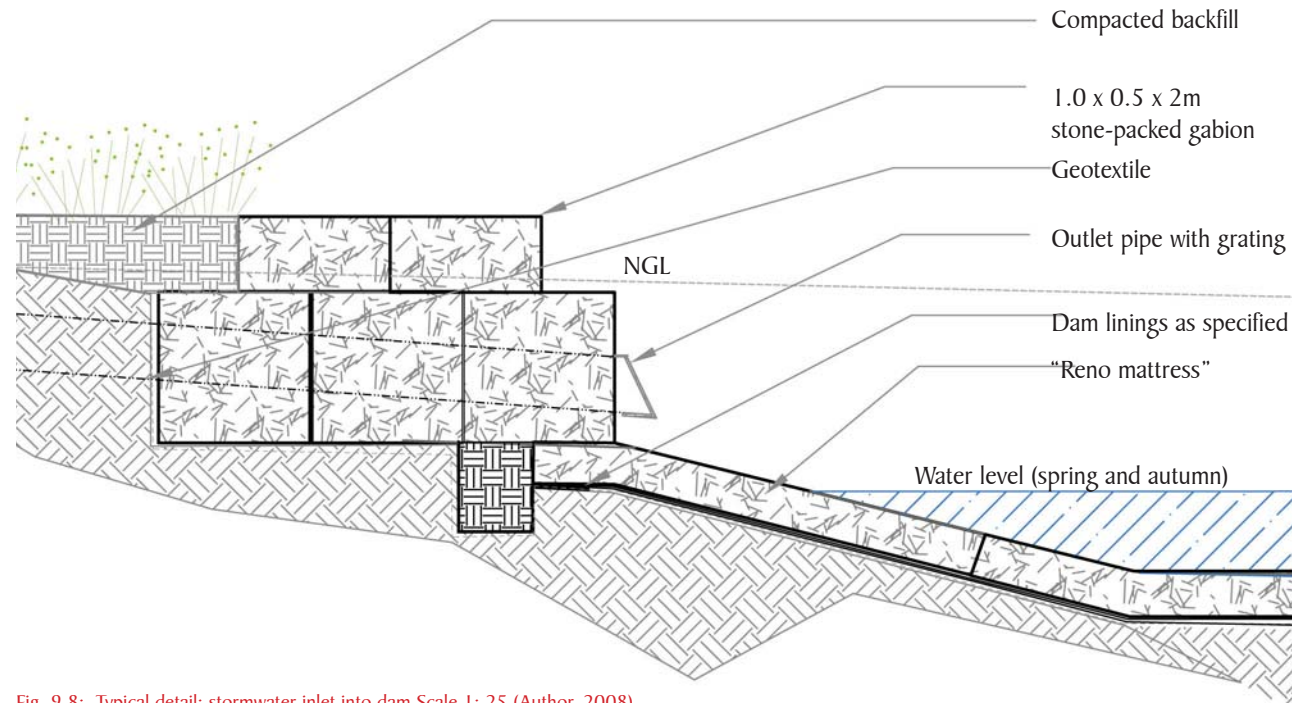
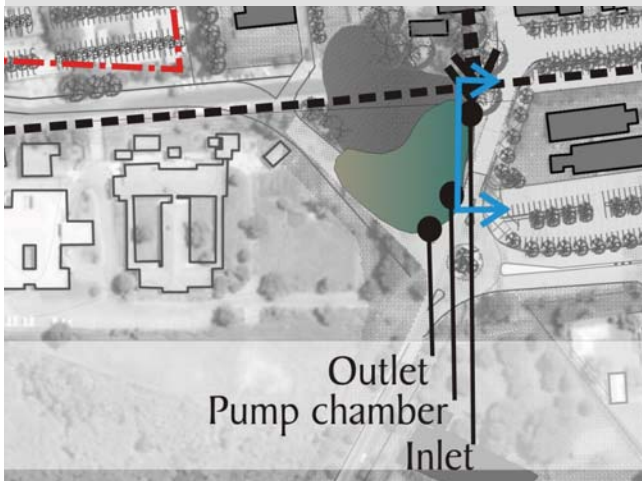


Fig. 9.8: Typical detail: stormwater inlet into dam Scale 1: 25 (Author, 2008)

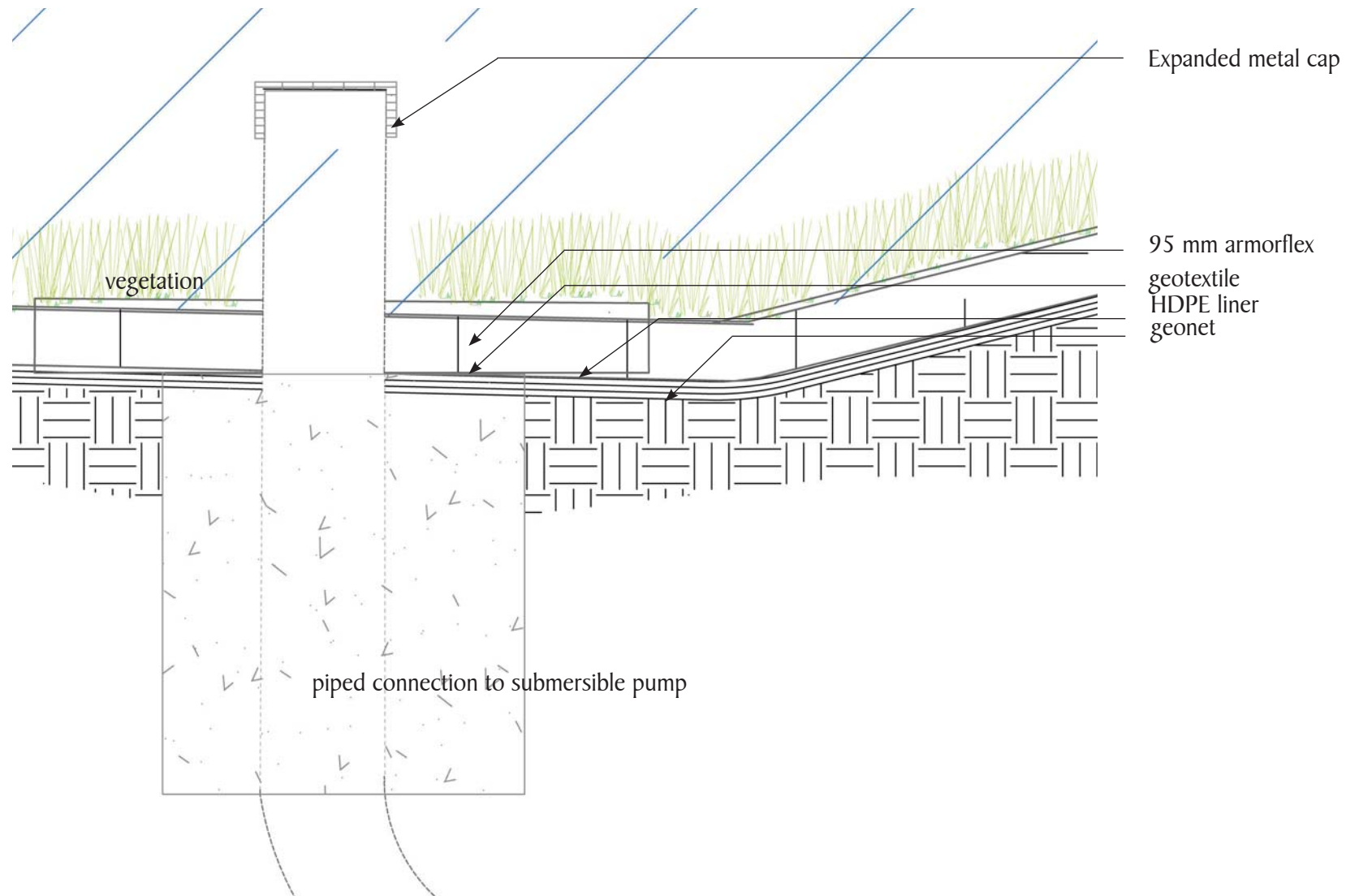


Fig. 9.9: Section through dam linings Scale 1:10 (Author, 2008)

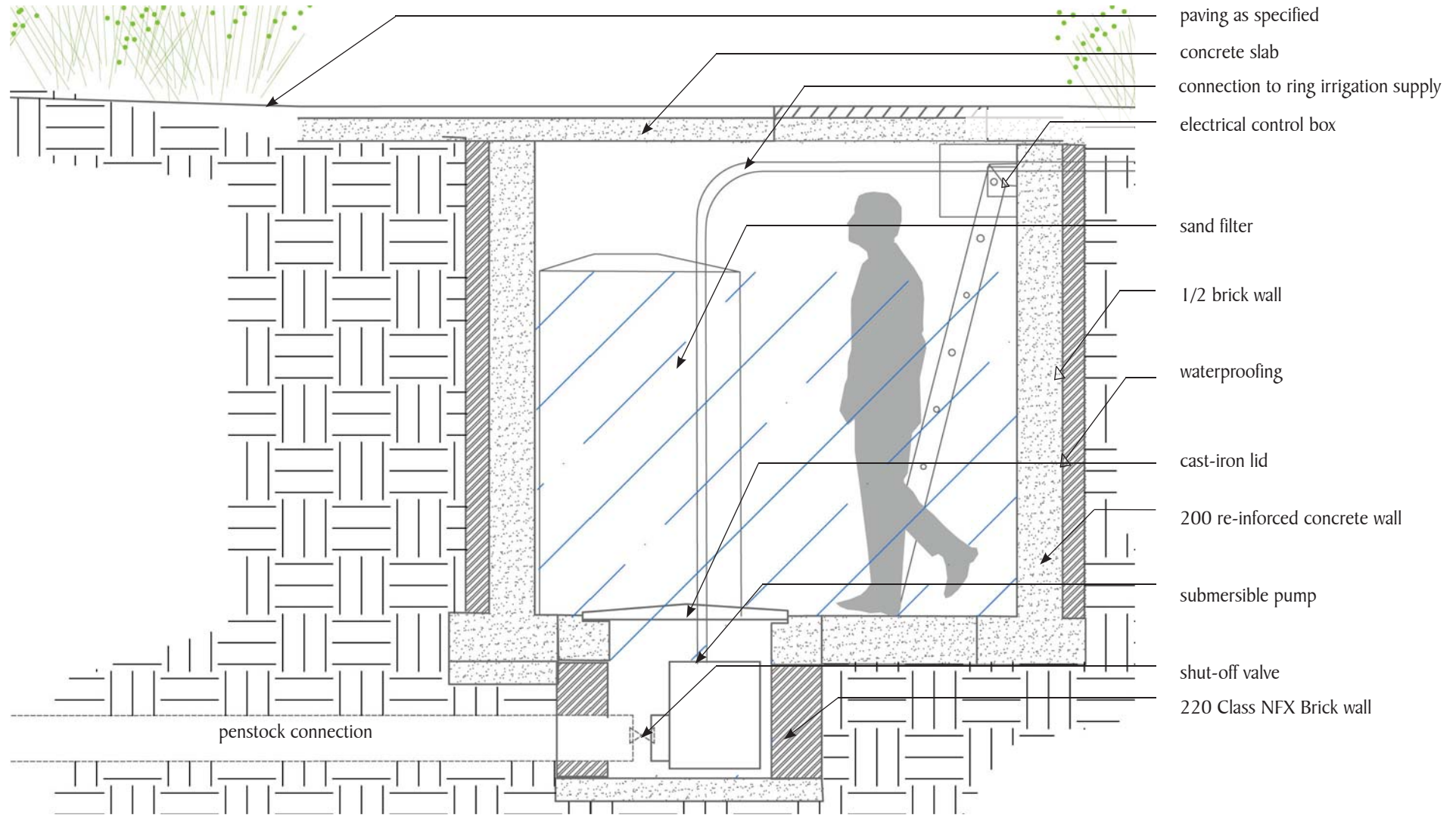


Fig. 9.10: Section through pump chamber. Scale 1: 25 (Author, 2008)

9.1.2 Stormwater detention feature

Sunken seating areas act as a stormwater detention features during the rainy season. Rainwater is channelled in furrows towards beds of crushed rock. The water drains through the medium and through the wire mesh and steel structure packed with crushed rock. Infiltration is prevented through an impermeable poly-olephyn layer. Water trickles slowly through the wall, over the little weir and into the channel that slopes at 4 % towards a series of sunken areas. The system is conceptually divided into three parts:

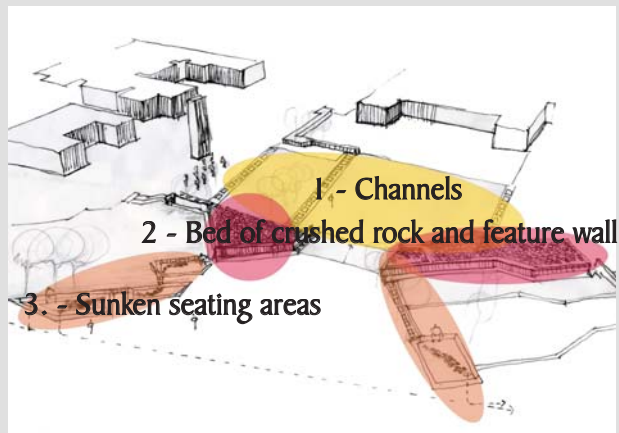


Fig. 9.11 Components of the stormwater detention system. (Author, 2008)

1. Channels

- The size of the channels was determined and verified using the Manning equation.
- The time of concentration (Tc) for water reaching the bed of crushed rock was determined with the Kirpich formula: 3.7 minutes
- $Q = 0.013m^3/s$

2. Bed of crushed rock and feature wall

- The depth of the bed is related to the maximum level difference which could be achieved between the upper and the lower terrace.

3. Sunken seating areas/detention structures

- The sunken area is graded to form a slight channel that flows from one detention facility towards the next. A drain is located on the highest point of the lowest step of the sunken seating area to cut-off excess water, from where it enters the existing stormwater system.
- Surface characteristics of the sunken seating areas were chosen to present different effects according to different amounts of rainfall.

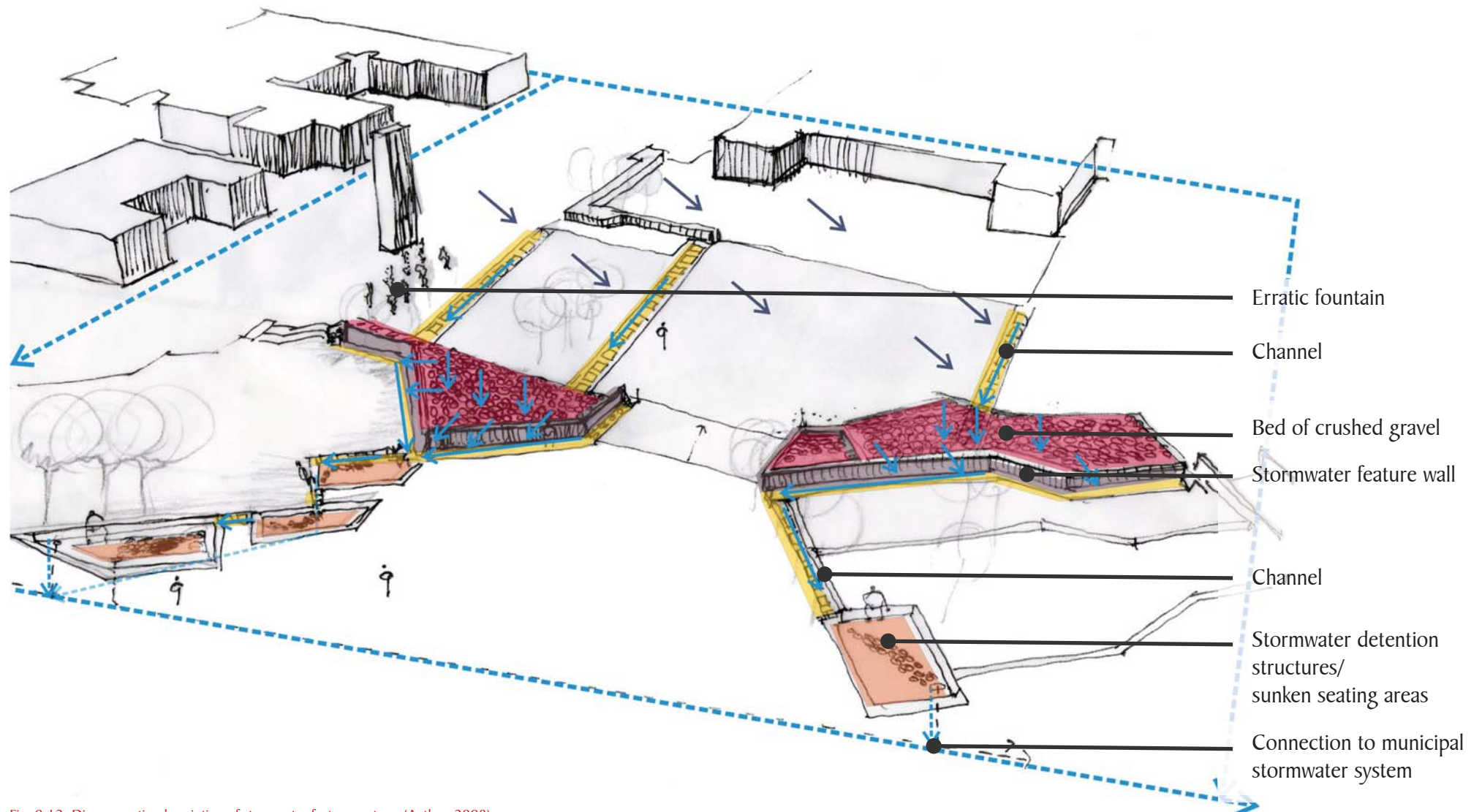


Fig. 9.12: Diagrammatic description of stormwater feature-system. (Author, 2008)

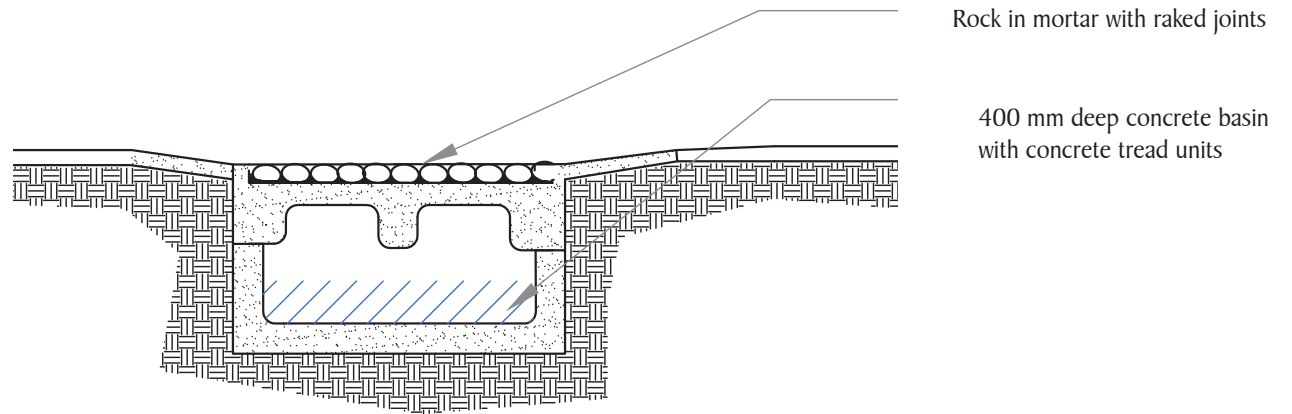


Fig. 9.13: Typical section of drainage channels toward stormwater feature. (Author, 2008) Scale 1: 25

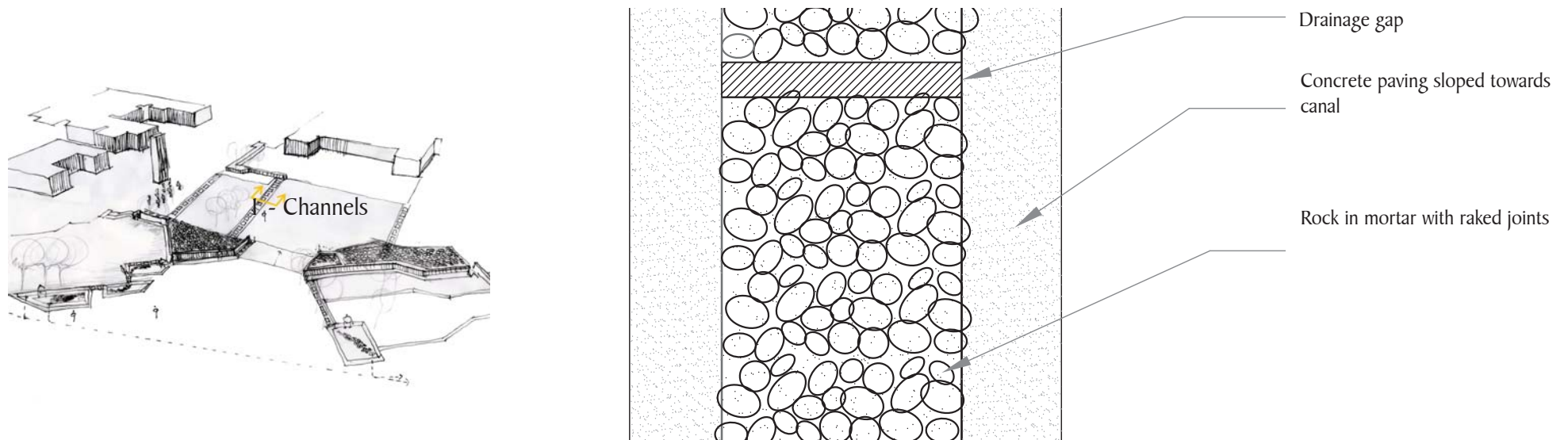


Fig. 9.14: Plan of drainage channels toward stormwater feature. (Author, 2008) Scale 1: 25



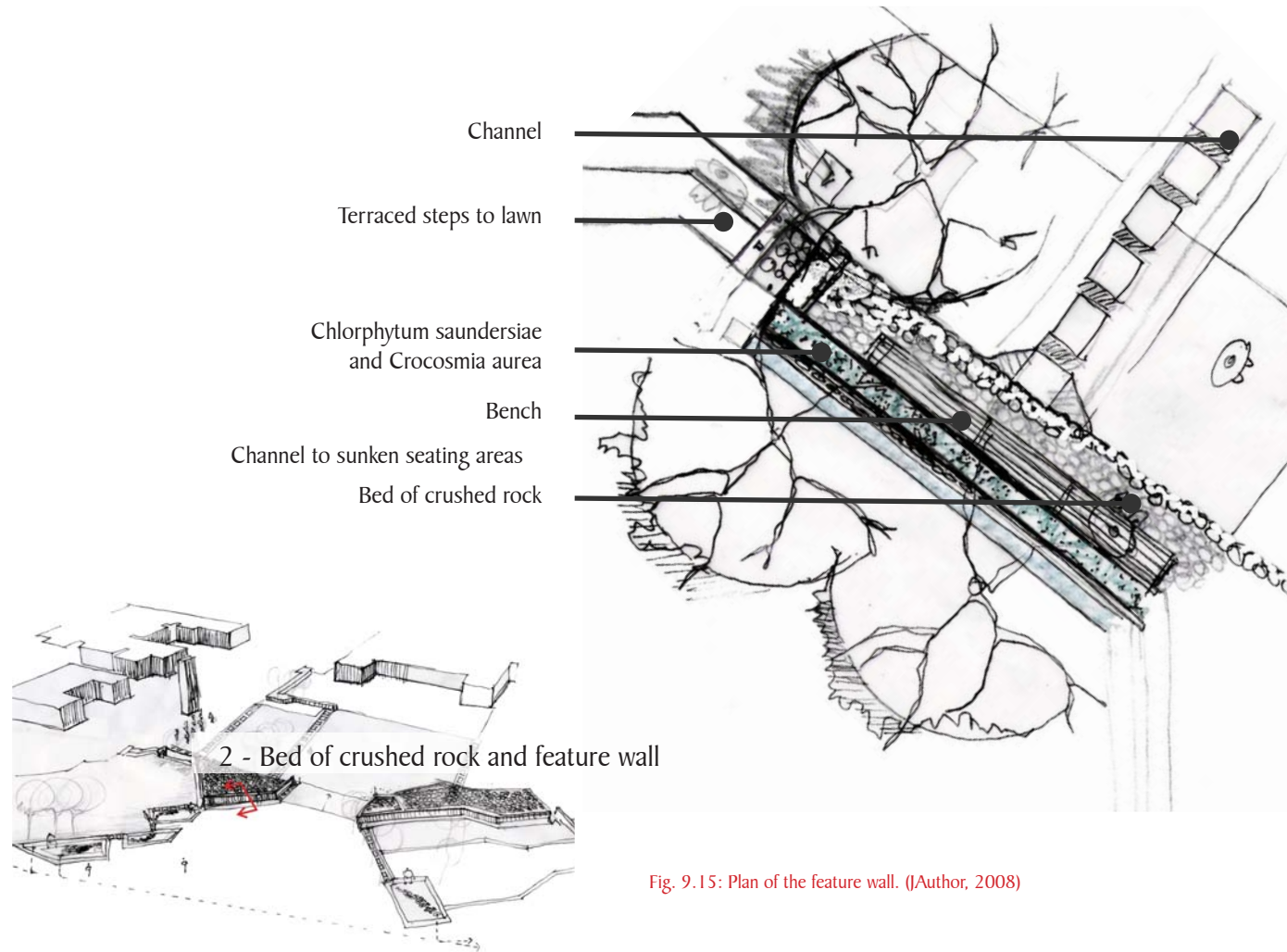


Fig. 9.15: Plan of the feature wall. (Author, 2008)



Fig. 9.16: Rock-filled wiremesh and steel structure. (Author, 2008)



Fig. 9.17: Stone clad walls and veldgrass. (Author, 2008)



Fig. 9.18: Rock-filled wiremesh and steel structure. (Asensio, 2005)

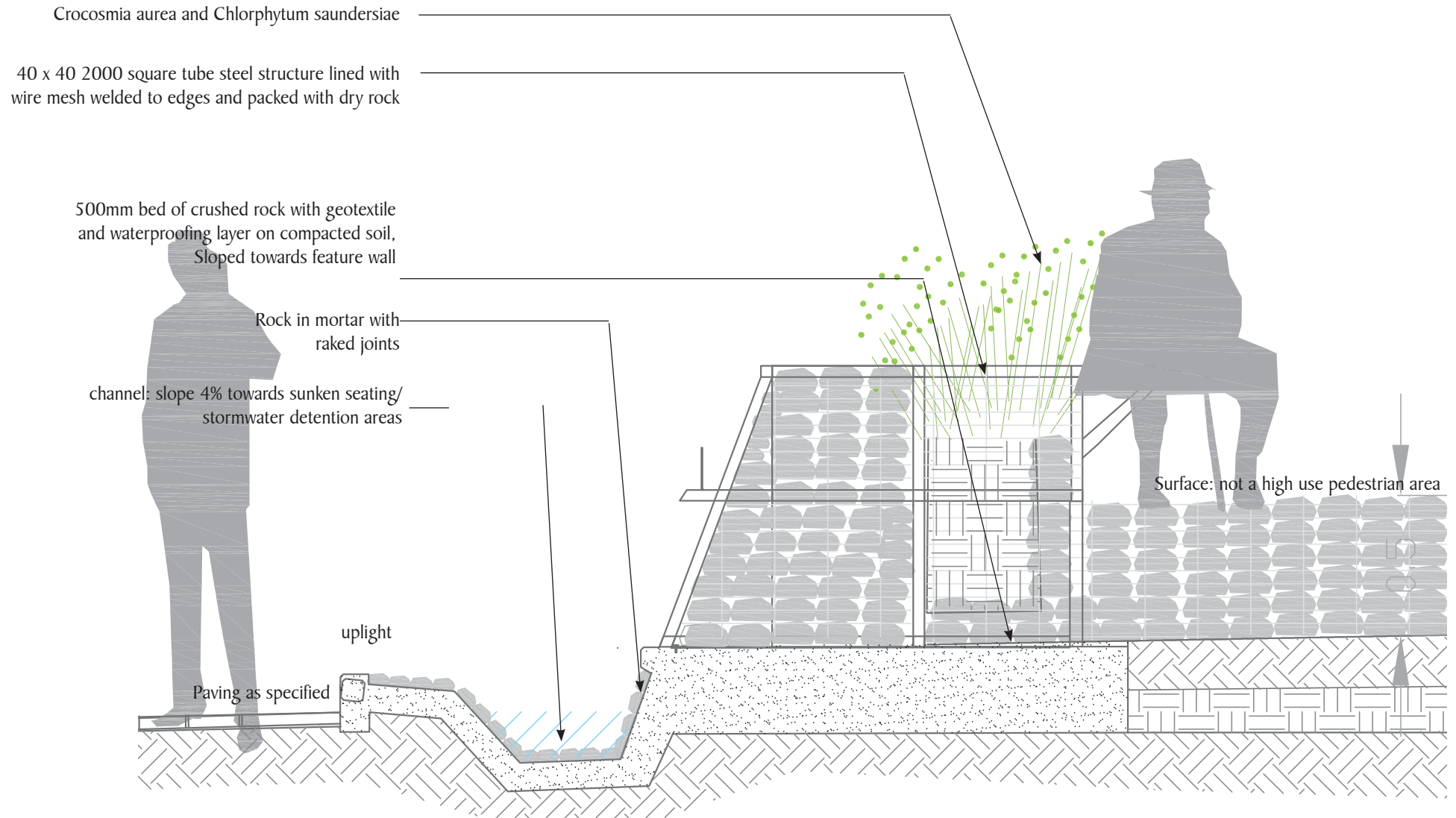


Fig. 9.19: Section through stone packed wire-mesh and steel structure: feature wall (Author, 2008) Scale 1: 20

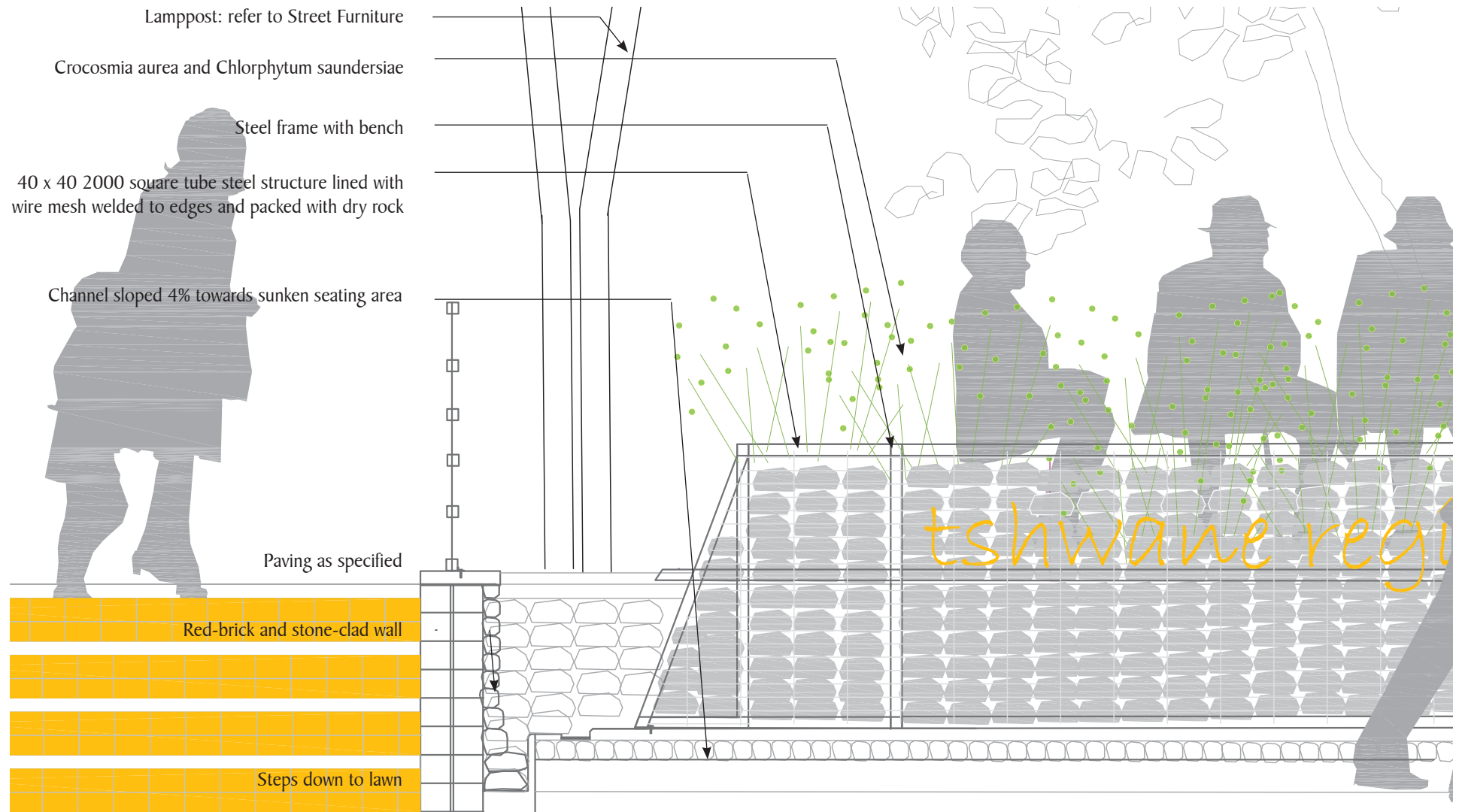


Fig. 9.20: Elevation of feature wall connection to walls, steps and ramps. (Author, 2008) Scale 1: 20

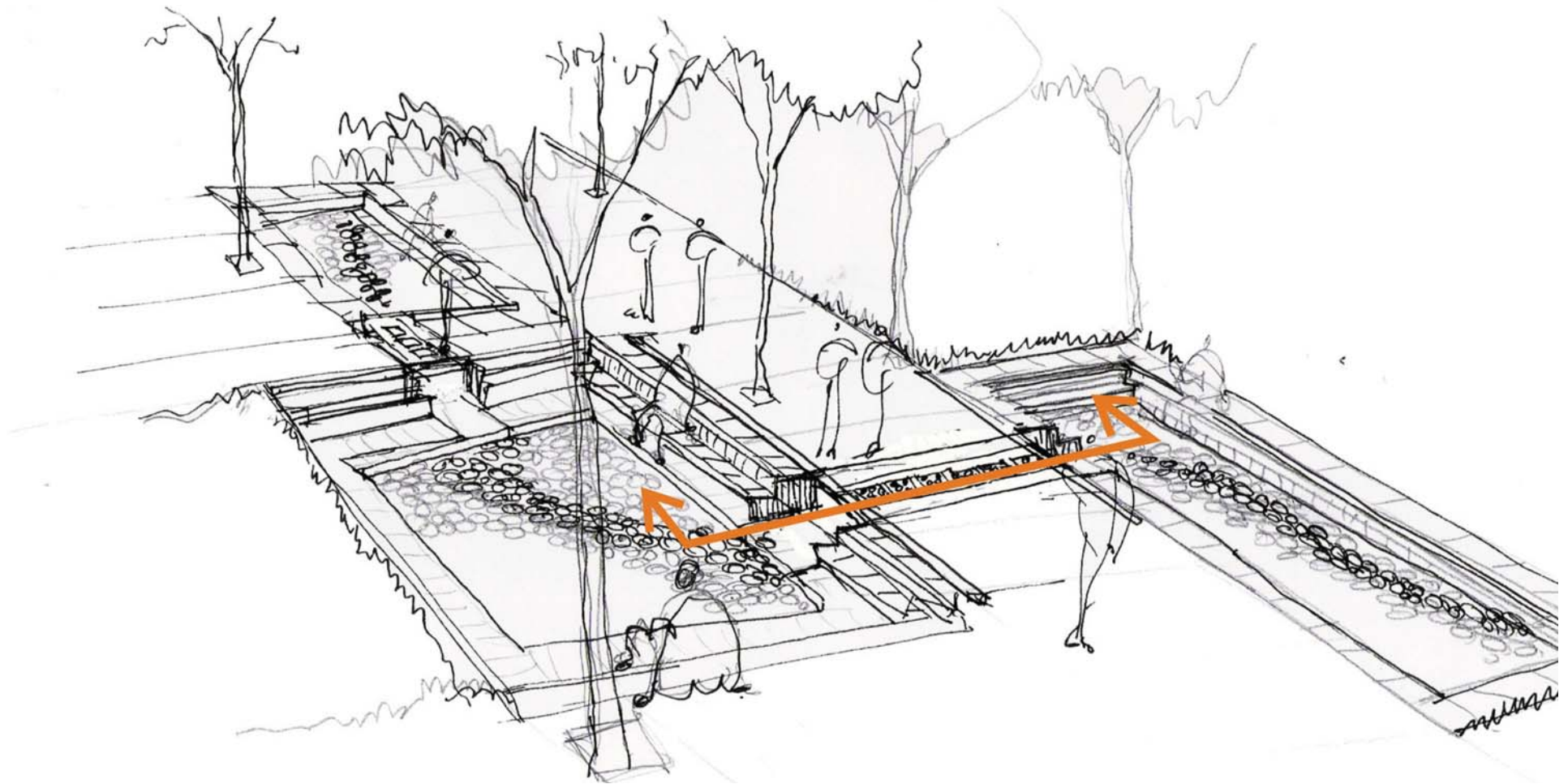


Fig. 9. 21: Perspective of sunken seating areas: channels. (Author, 2008) Scale 1 : 20

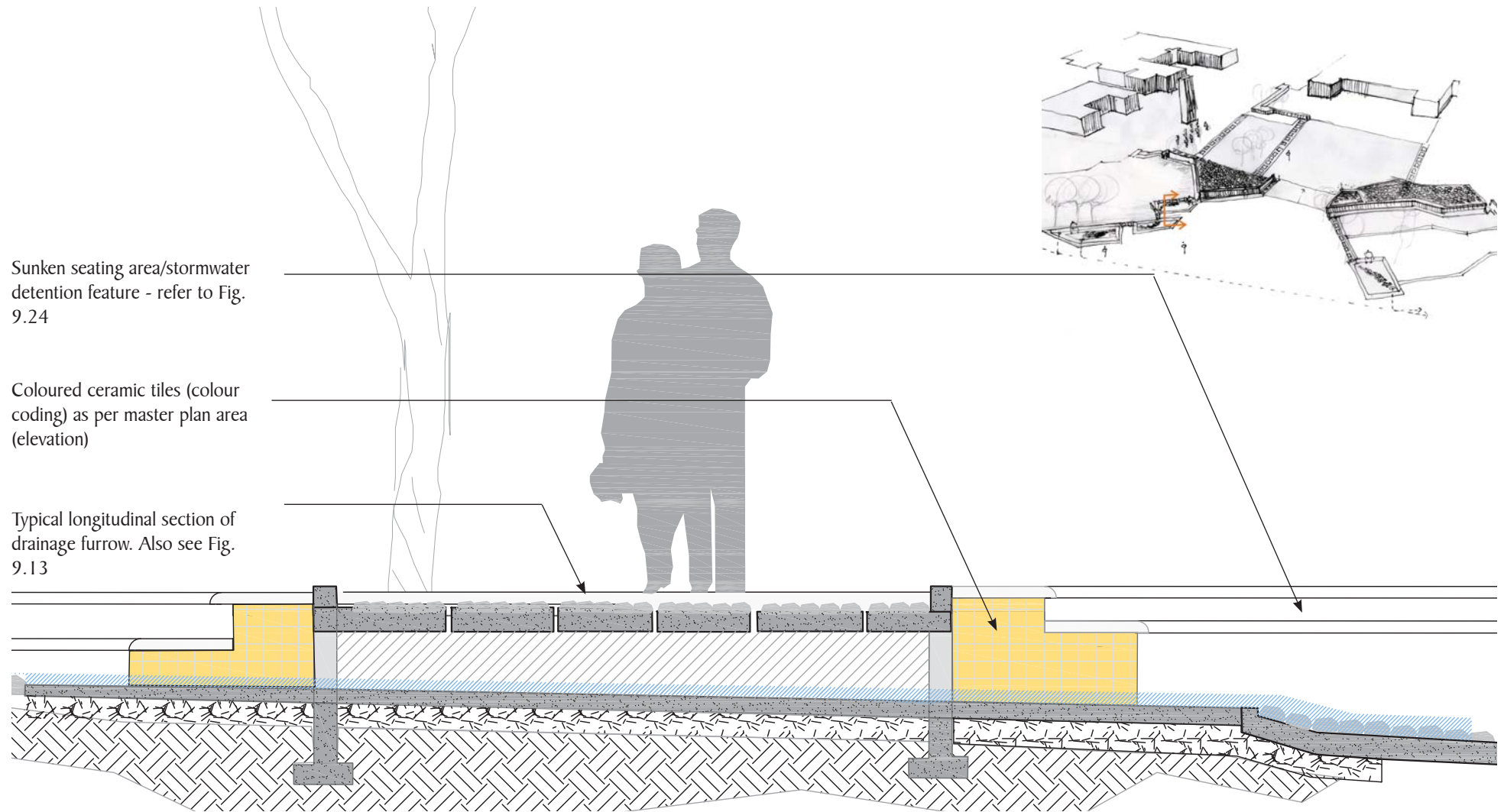


Fig. 9. 22: Drainage of water from one detention structure to the next. (Author, 2008) Scale 1: 20

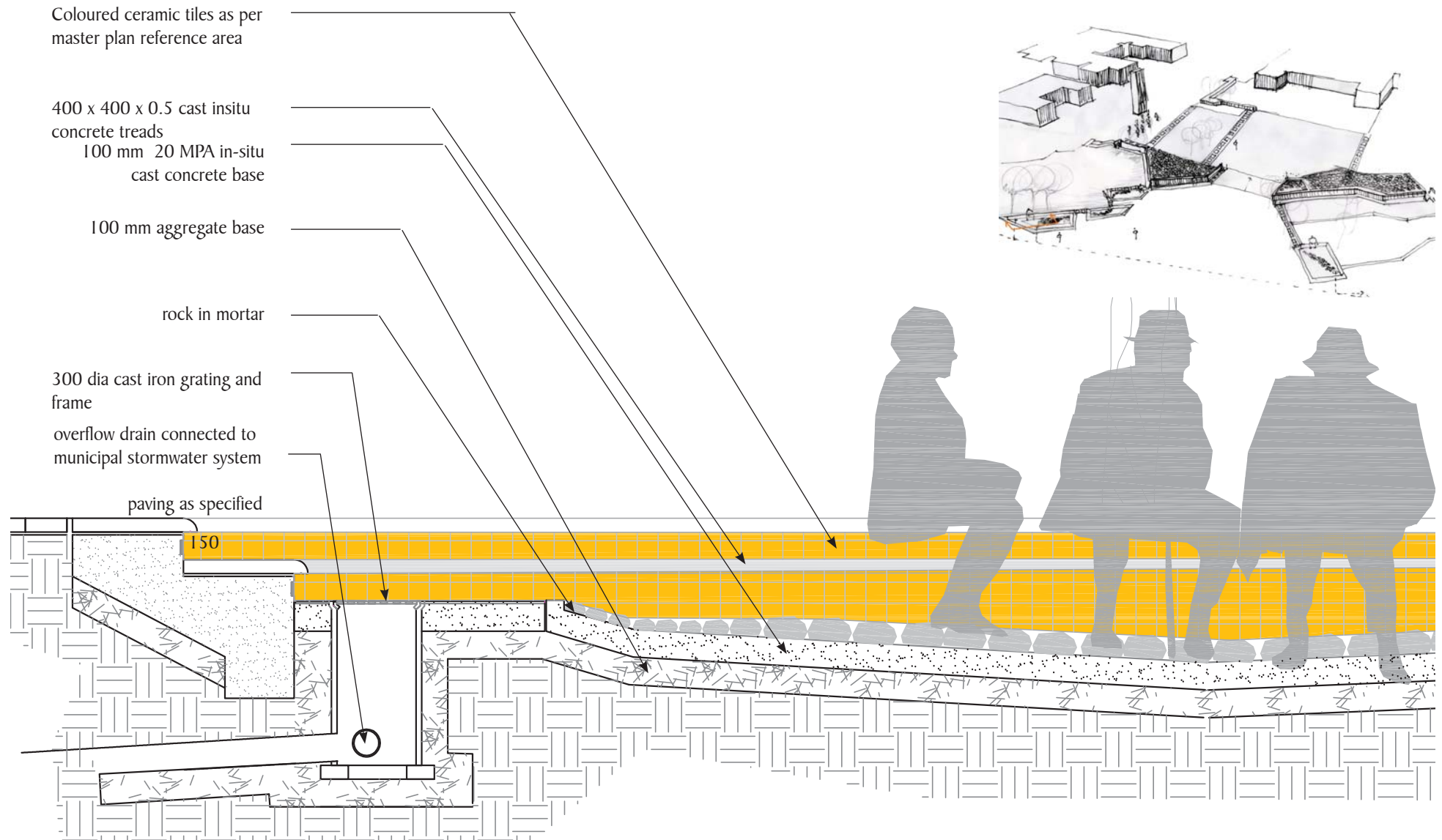


Fig. 9. 23: Sunken seating area and stormwater detention structure. (Author, 2008) Scale 1: 20



9.1.2 Water feature

An erratic fountain with 12 spouts is one of the main features of the transitional terrace. The spouts are connected in a circular fashion with a distributor pipe which runs through a series of channels. A suction pipe with chlorine tablets in the suction strainer will purify the water, before it is pumped through a centrifugal pump and 150 kg sand filter that is located in a pump room. The pump room is accessible from the service area of the information tower. (Refer to section 9.2, Fig. 9.30) The system is activated with an electrical control panel inside the pump chamber.

- The volume of the water in the channels is 0.5 m³ per channel or 3.5m³ in total
- The volume of the water in the air = 0.37m³

Therefore the total system requirement, with allowance for the difference between static and operating levels is 7m³. A 0.75 kWh pump should be adequate.

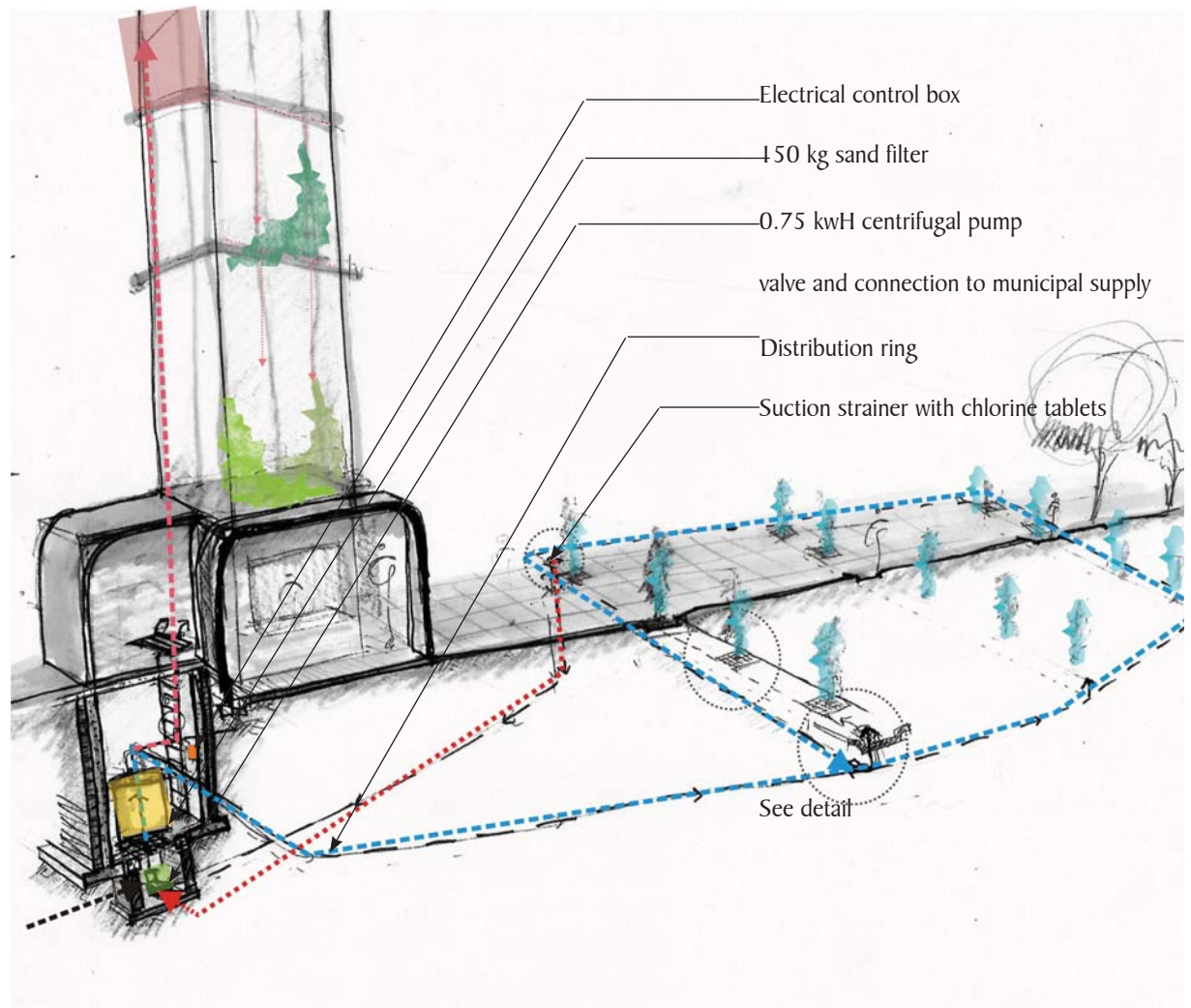


Fig. 9. 24: Erratic fountain supply system. (Author, 2008)

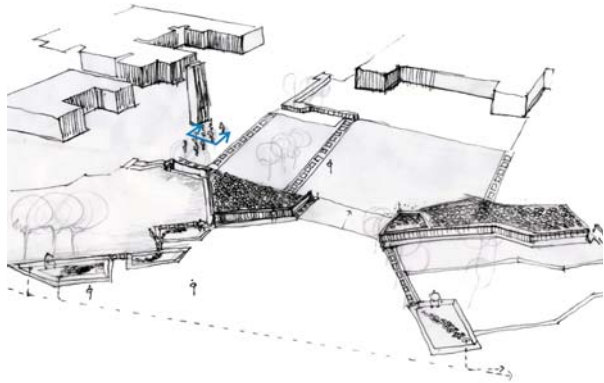


Fig. 9.26: Interactive water features. (Asensio, 2005)



Fig. 9.27: Feature lighting (Asensio, 2005)

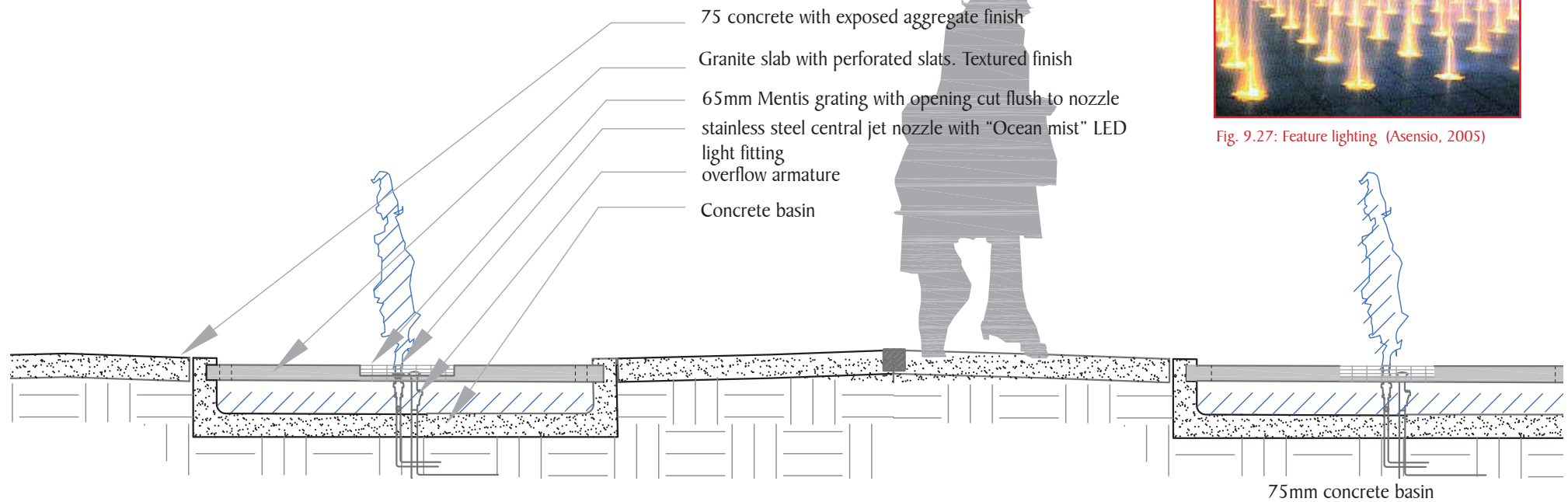
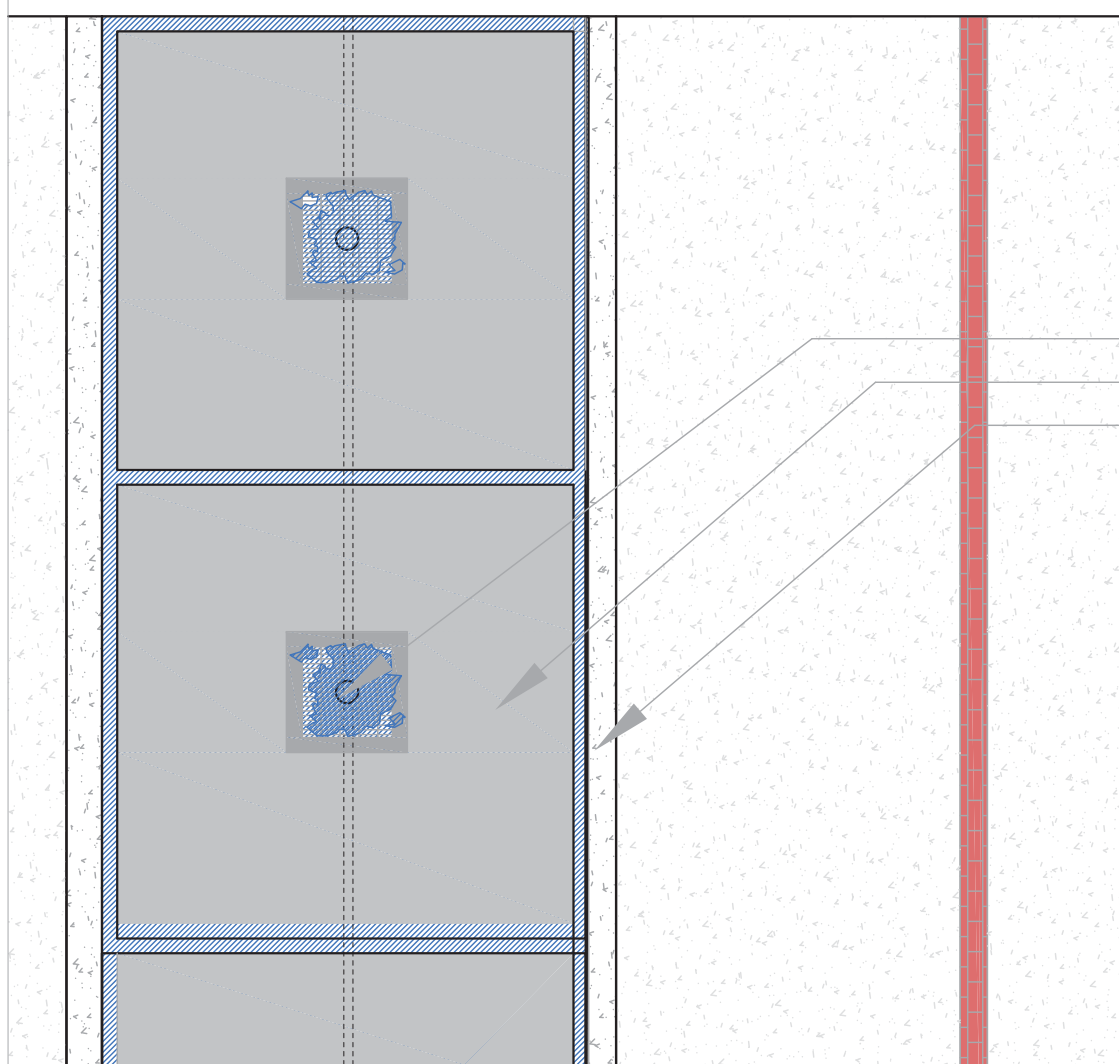


Fig. 9.25: Typical section of erratic fountain. (Author, 2008) Scale 1: 25





Mentis grating cut flush to stainless steel nozzle
Dark granite with texturised (non-slippery) finish and perforated slats.
75 concrete with exposed aggregate finish and red-brick detail

Fig. 9. 28: Plan - Erratic fountain. (Author, 2008) Scale 1: 25

9.2 Vertical garden and information kiosk

The vertical garden in the information tower is fed by a pump system from the same pump chamber as the erratic fountain, toward a tank on the top of the tower. This results in a pressure of 1.2 bar, which is adequate for drip irrigation of the plants on the platforms containing growth medium.

Each of the three vegetated levels will contain approximately 2.3 m³ of growth medium. Pre-cast containers containing the soil are placed on a steel platform. The plants will require 0.15m³ of water per level per week. Therefore a tank with a capacity of 500l should be adequate.



Fig. 9.29: Vertical vegetation structure. (Abelho, 2007)

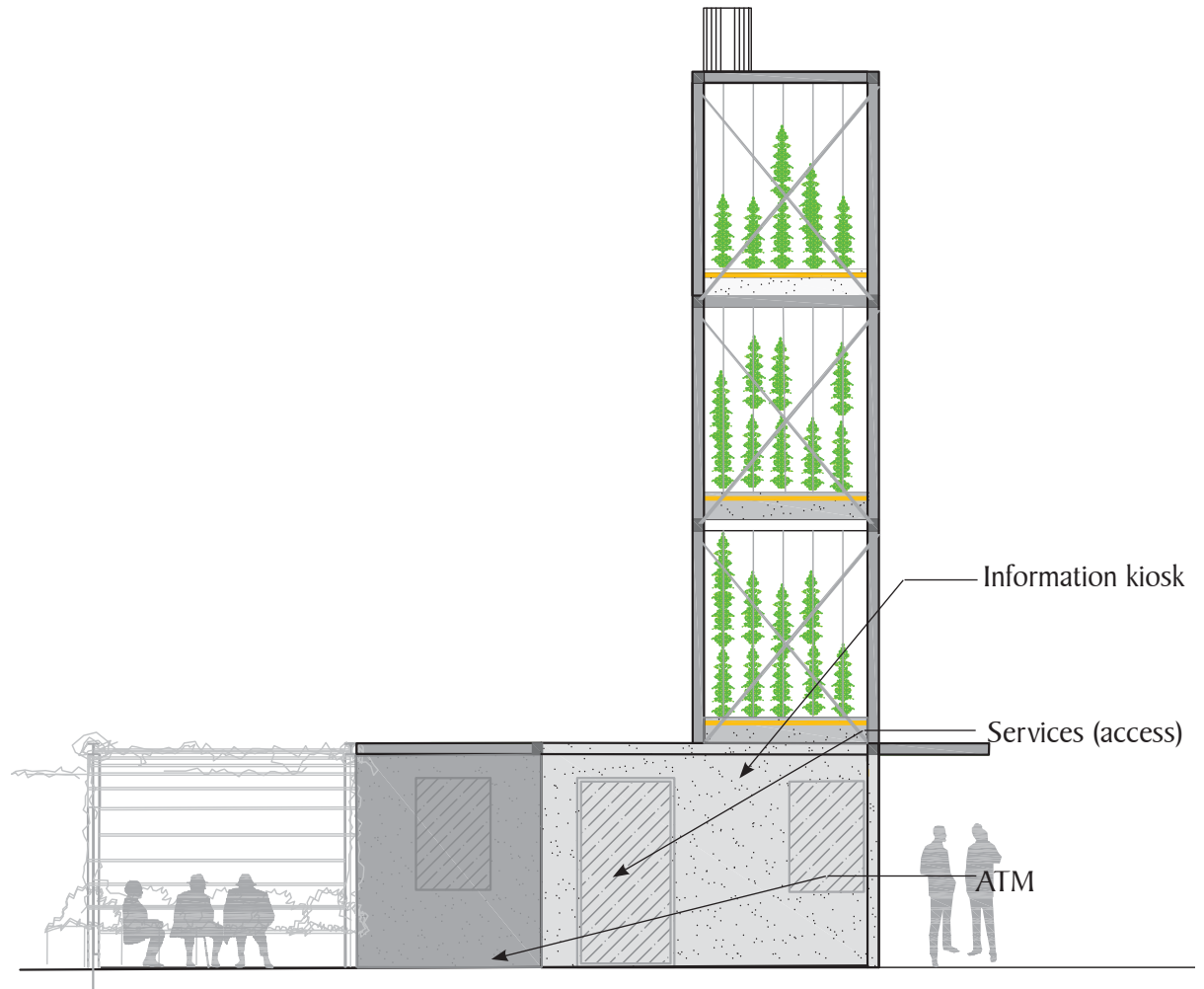


Fig. 9.30 : Green tower and information kiosk. Southern elevation. (Author, 2008) Scale 1 : 20



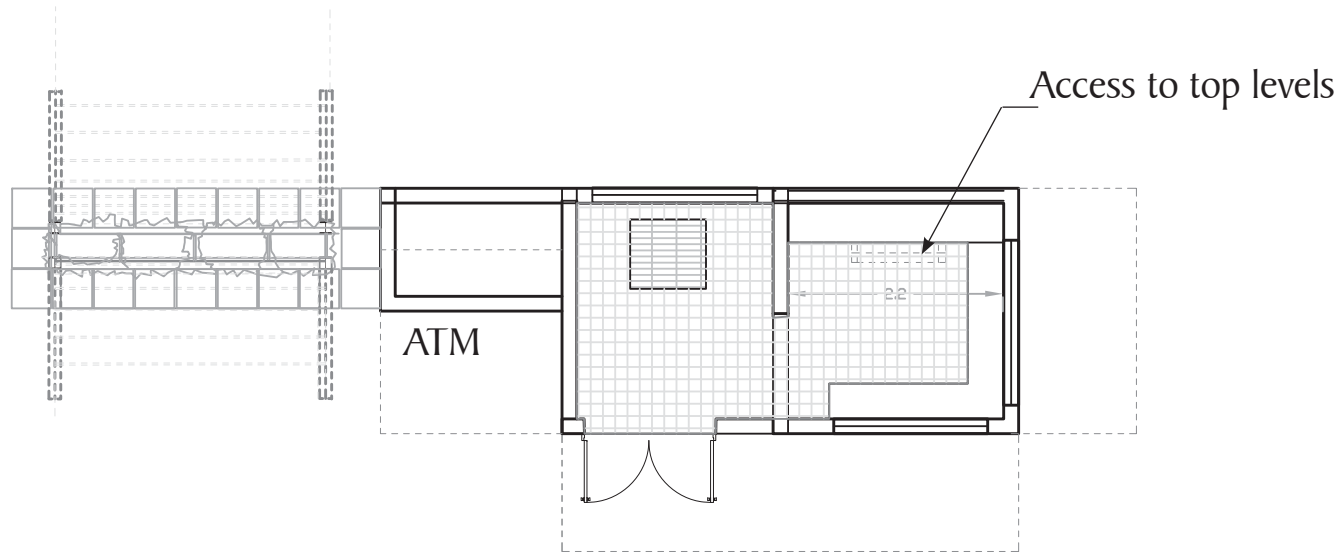


Fig. 9.31 : Diagrammatic plan view; information kiosk (Author, 2008) Scale: Not to scale



Fig. 9.32: Thunbergia alata (Joffe, 2001)



Fig. 9.33 Senecio macroglossus (Joffe, 2001)



Fig. 9.34: Clematis bracheata (Joffe, 2001)

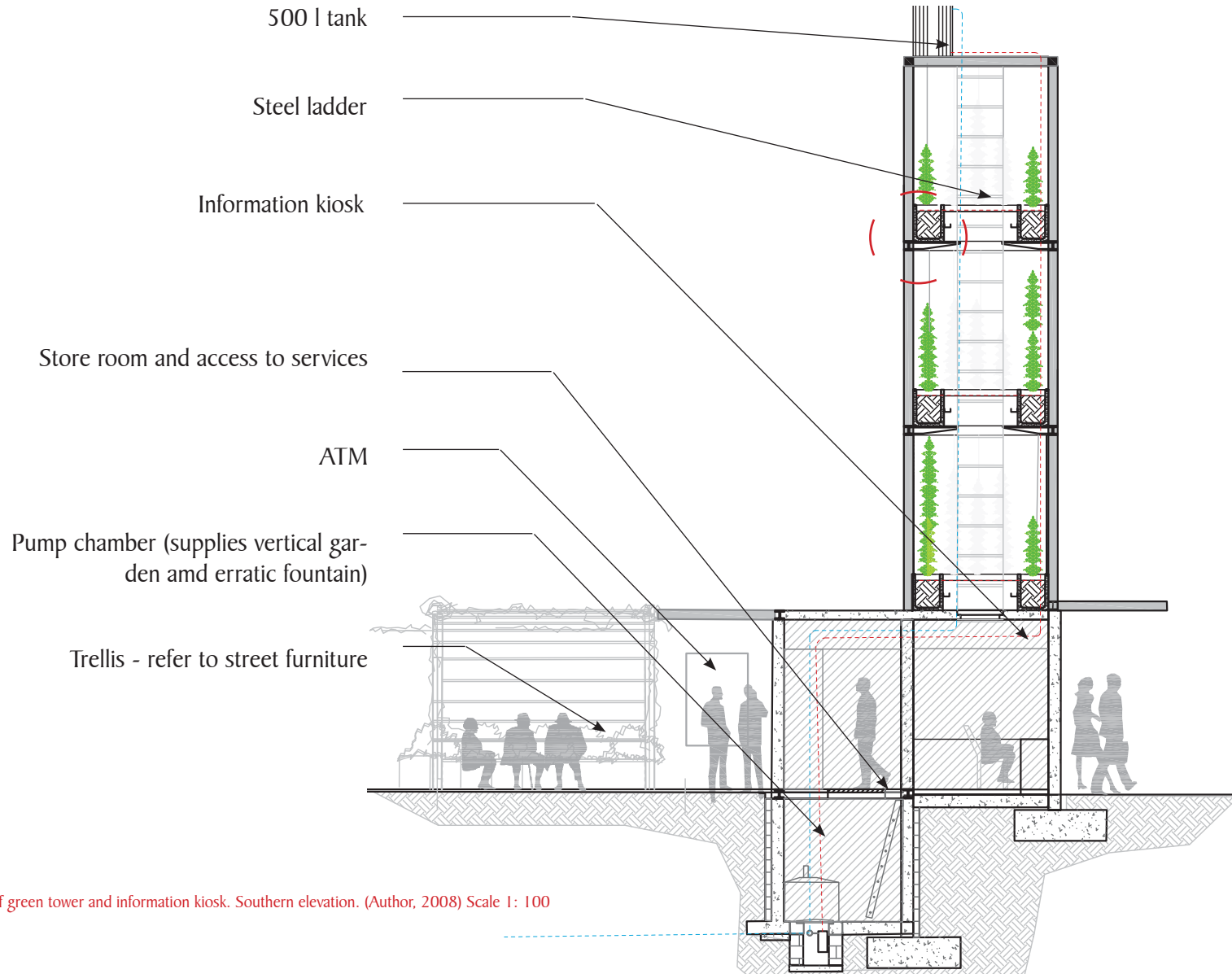


Fig. 9.35 : Section of green tower and information kiosk. Southern elevation. (Author, 2008) Scale 1: 100

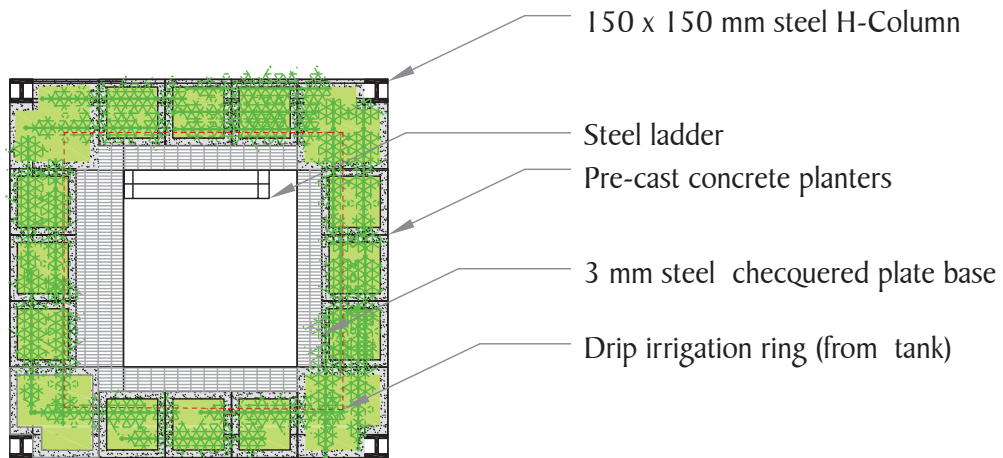


Fig. 9.36 : Plan view of green plarforms (Author, 2008) Scale 1: 50

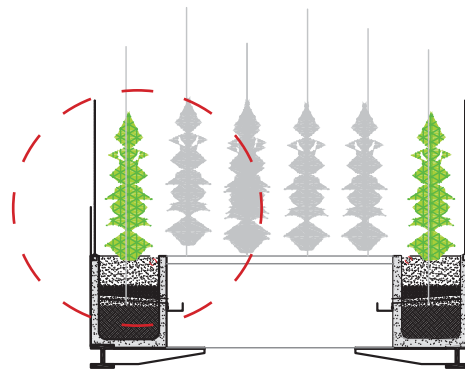


Fig. 9.387: Section: Green platform(Author, 2008) Scale 1: 50

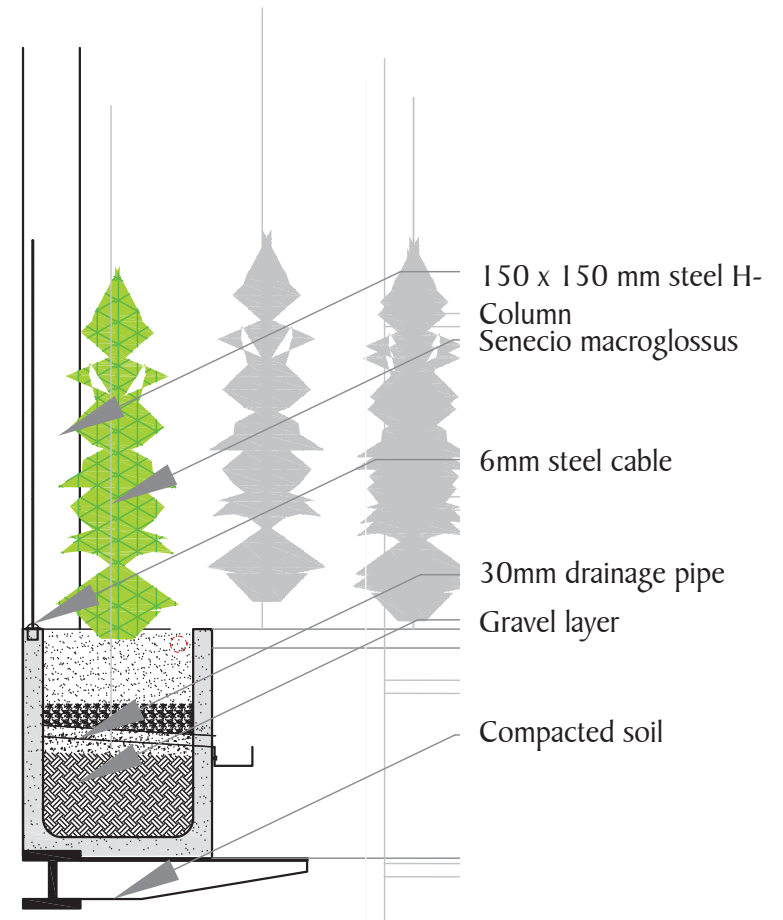


Fig. 9.38 : Detail: Vertical garden(Author, 2008) Scale 1: 20

9.3 Street furniture

Design guidelines were listed in Chapter 8. The design palette will be used to strengthen the imageability of particularly the Dr. Savage Plaza, but also the Hospital Hill in general. Material use include; polished concrete, standard steel H-profiles, galvanised afterwards, and galvanised IBR sheet metal. The range includes a bollard, bollard with light, bench, bench with backrest, shelter, shade structure and trade stall.

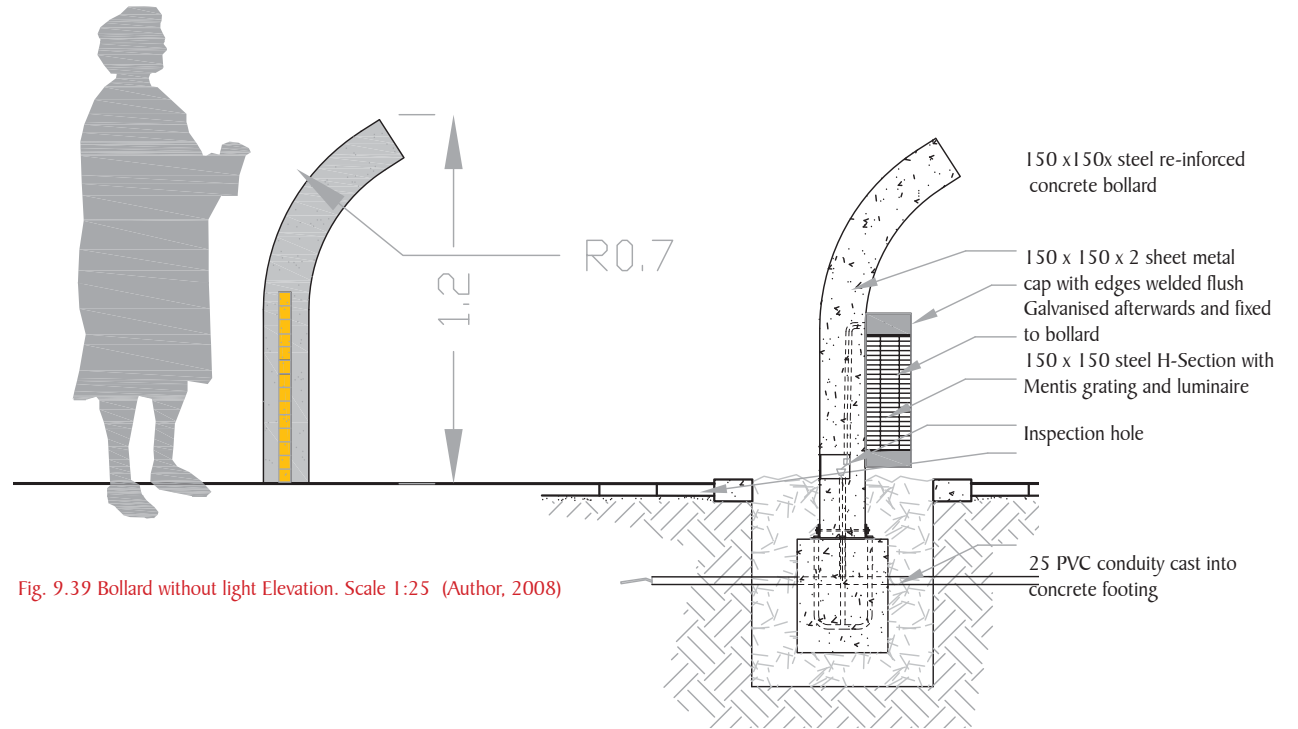


Fig. 9.39 Bollard without light Elevation. Scale 1:25 (Author, 2008)

Fig. 9.40: Bollard with light Plan Scale 1:25 (Author, 2008)

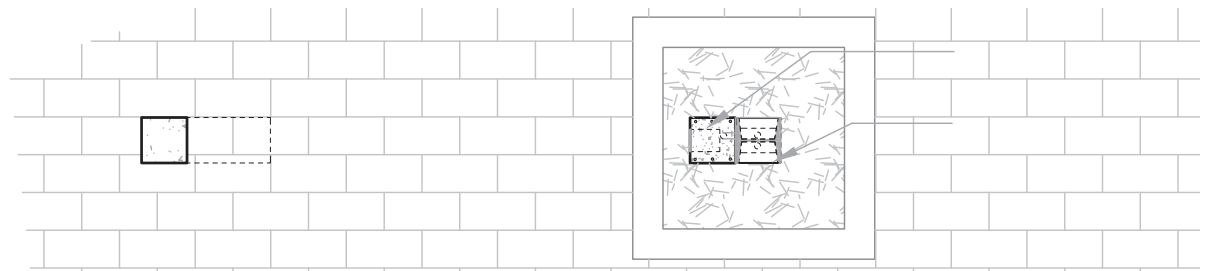


Fig. 9.41: Bollard without light Plan. Scale 1:25 (Author, 2008)

Fig. 9.42: Bollard with light Plan. Scale 1:25 (Author, 2008)



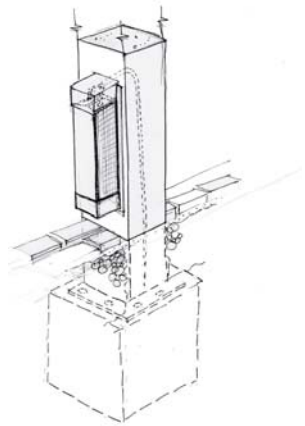


Fig. 9.43: Bollard with light, sectional perspective.
Scale: not to scale (Author, 2008)

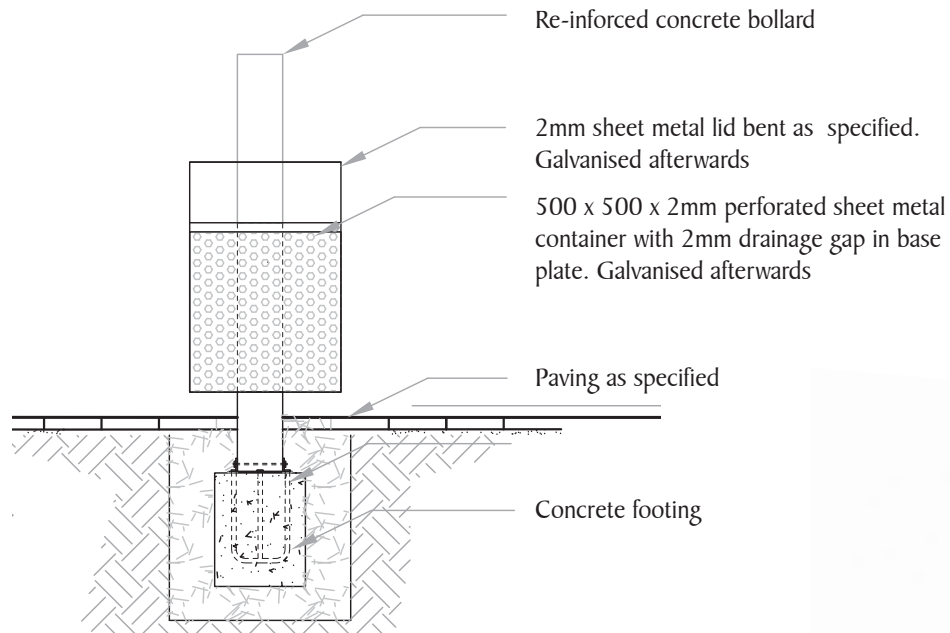


Fig. 9.45: Litter Bin
Part elevation. Scale: 1:25 (Author, 2008)



Fig. 9.44: Coloured, glazed ceramic tiles in concrete
Scale: not to scale (Author, 2008)

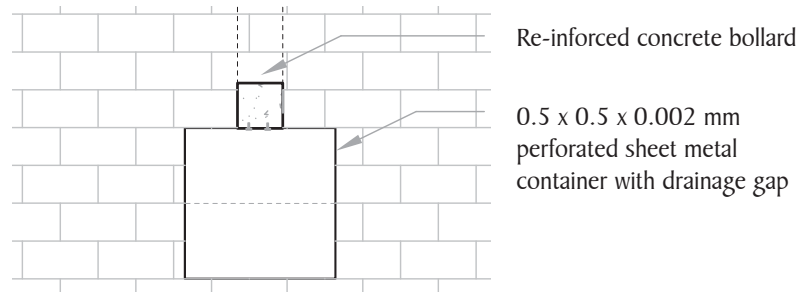


Fig. 9.46: Litter Bin Plan. Scale: 1:25 (Author, 2008)

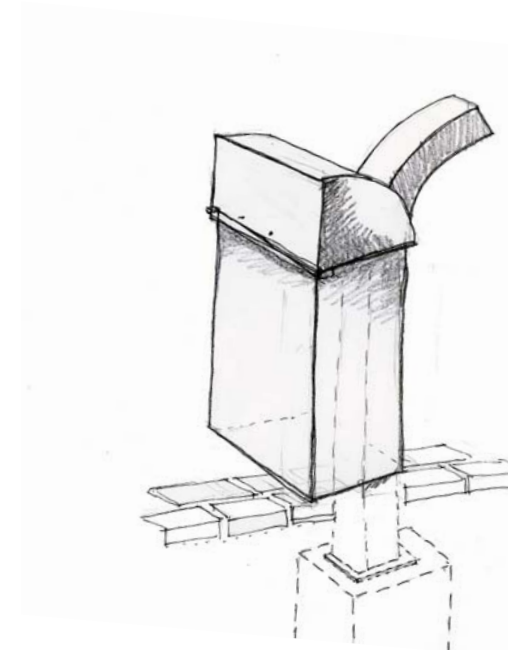


Fig. 9.47: Litter Bin. Perspective.
Scale: not to scale (Author, 2008)

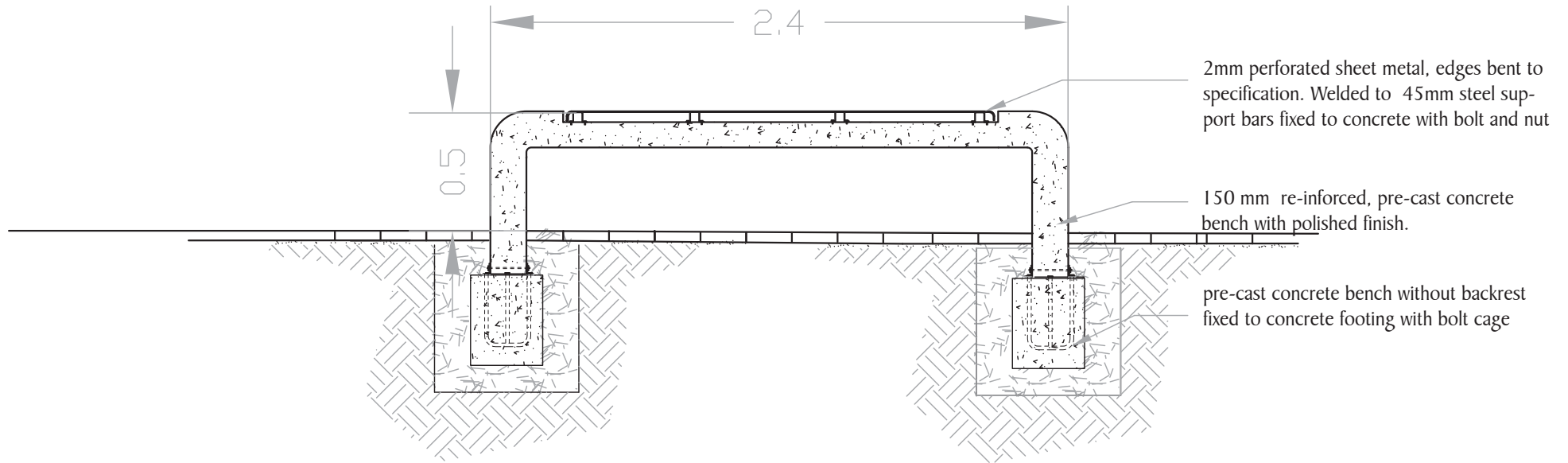


Fig. 9.48: Bench without backrest Part elevation. Scale 1:25 (Author, 2008)

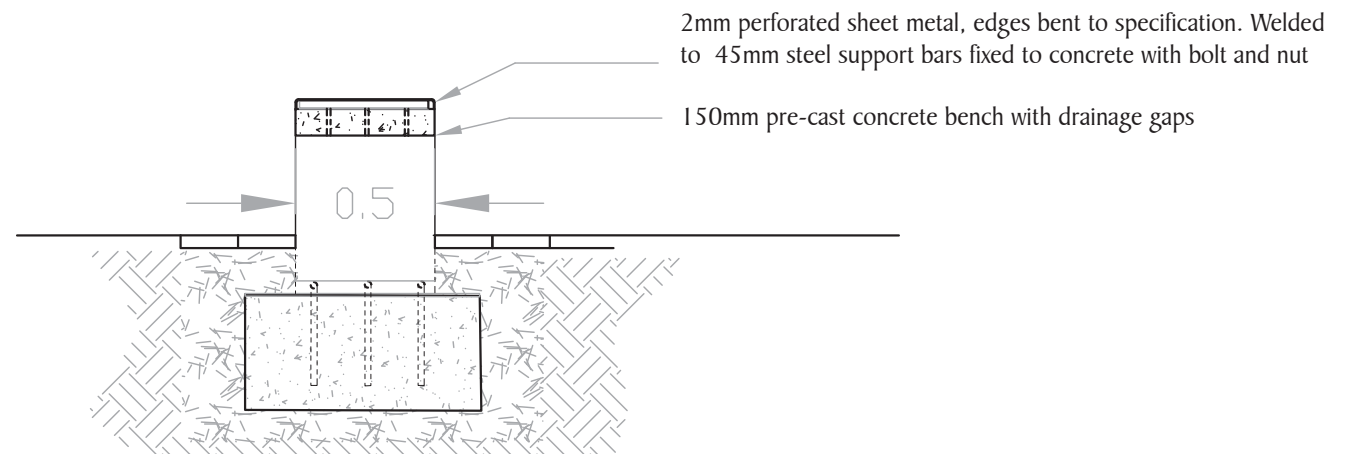
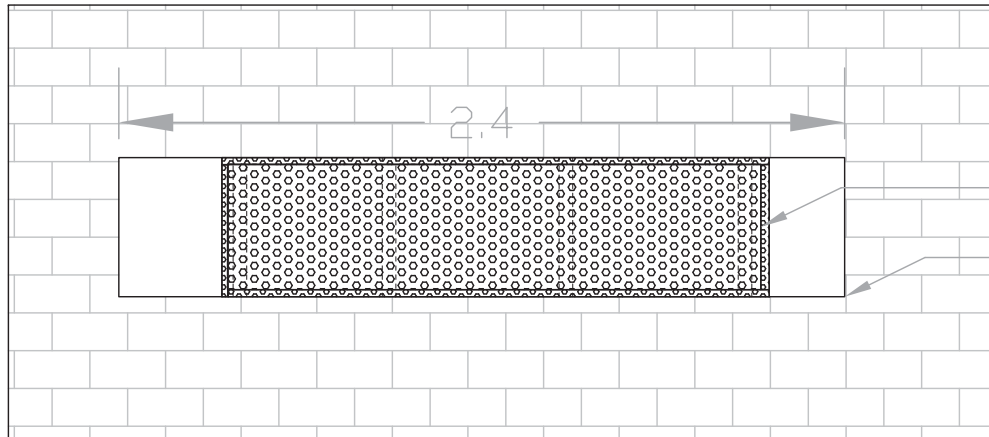


Fig. 9.49: Bench without backrest. Section. Scale 1:25 (Author, 2008)





2mm perforated sheet metal, edges bended to specification. Welded to 45mm steel support bars fixed to concrete with bolt and nut

150 mm re-inforced, pre-cast concrete bench with polished finish.

Fig. 9.50: Bench without backrest. Plan. Scale: 1:25 (Author, 2008)

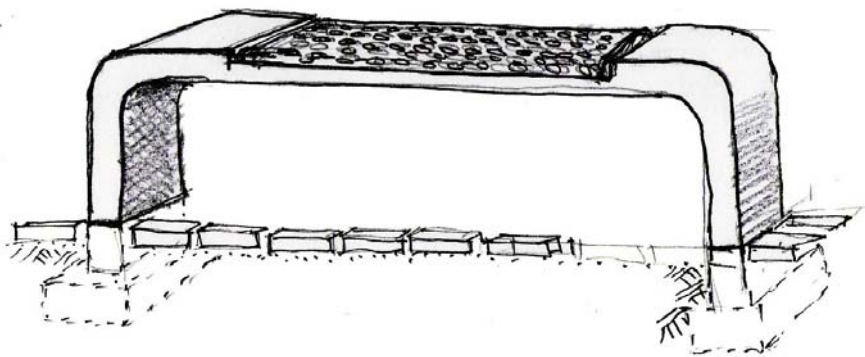


Fig. 9.51: Bench without backrest. Perspective. (Author, 2008)

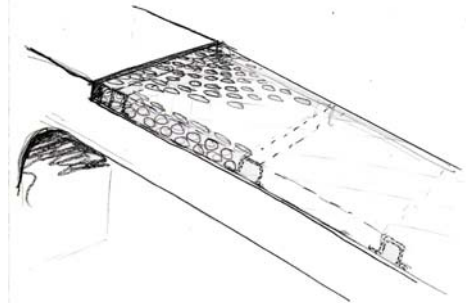


Fig. 9.52: Bench without backrest. Detail. (Author, 2008)

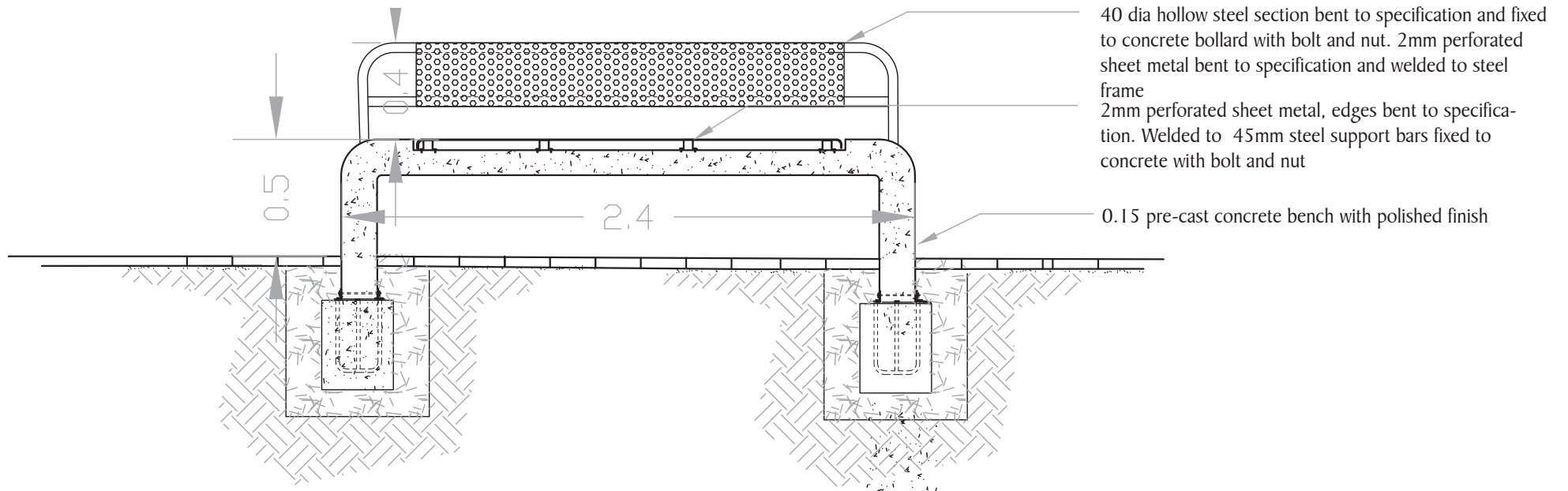


Fig. 9.53: Bench with backrest Part elevation. Scale 1:25 (Author, 2008)

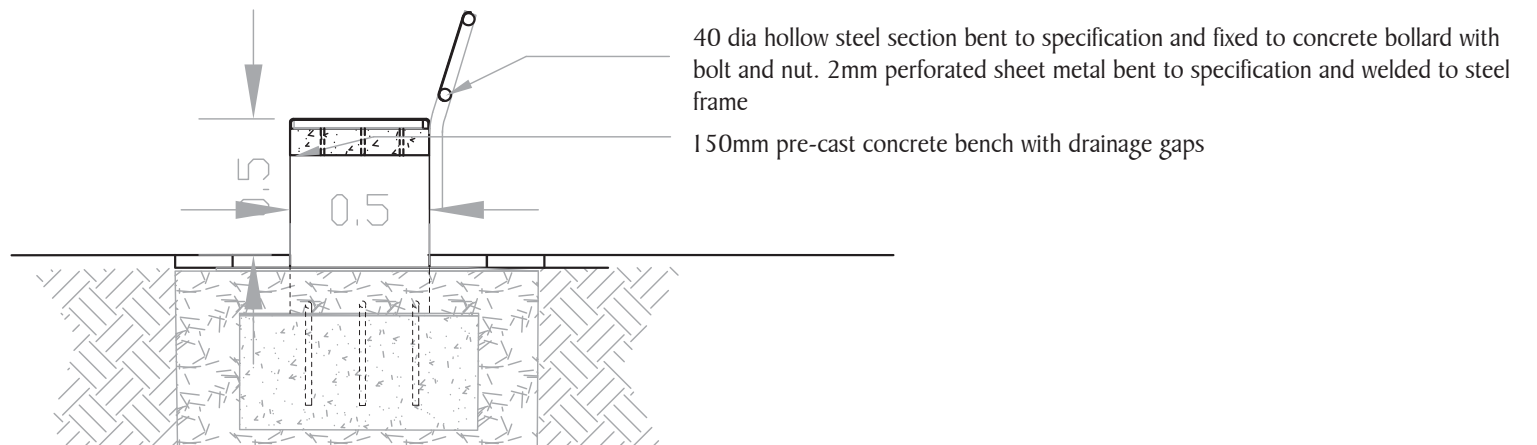
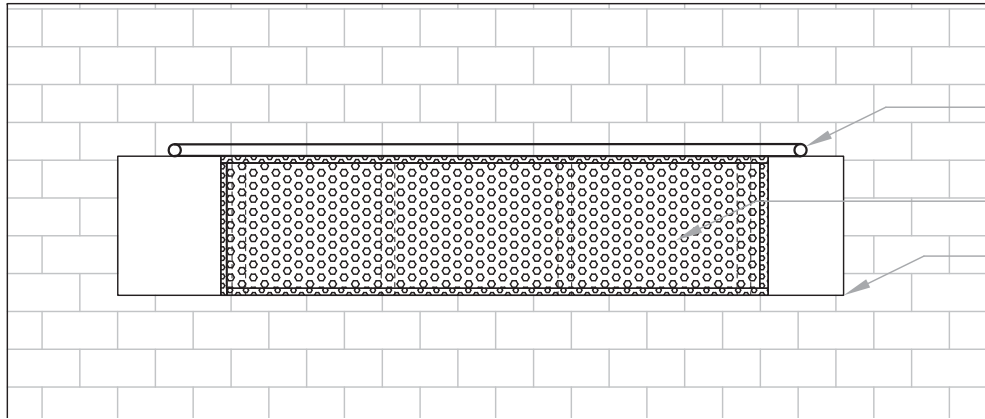


Fig. 9.54: Bench with backrest. Section. Scale 1:25 (Author, 2008)





- 40 dia hollow steel section bent to specification and fixed to concrete bollard with bolt and nut. 2mm perforated sheet metal bent to specification and welded to steel frame
- 2mm perforated sheet metal, edges bent to specification. Welded to 45mm steel support bars fixed to concrete with bolt and nut
- Pre-cast concrete bench with drainage gaps

Fig. 9.55: Bench without backrest. Plan. Scale: 1:25 (Author, 2008)

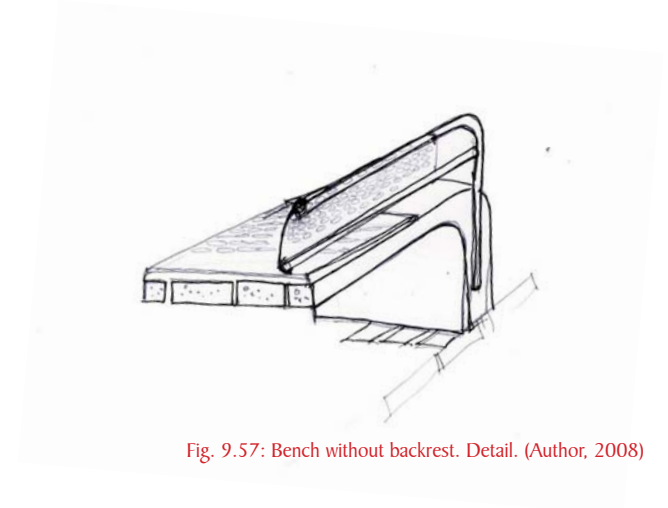


Fig. 9.57: Bench without backrest. Detail. (Author, 2008)

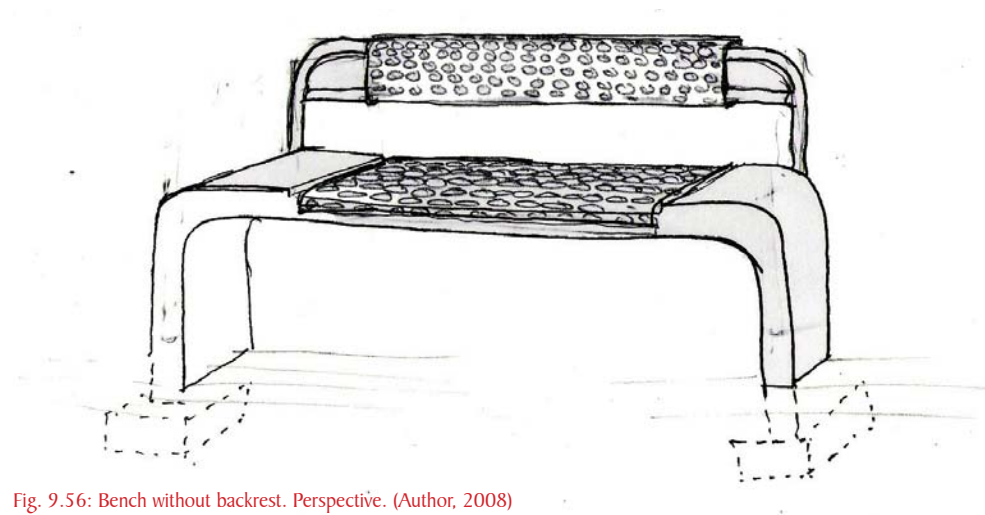


Fig. 9.56: Bench without backrest. Perspective. (Author, 2008)

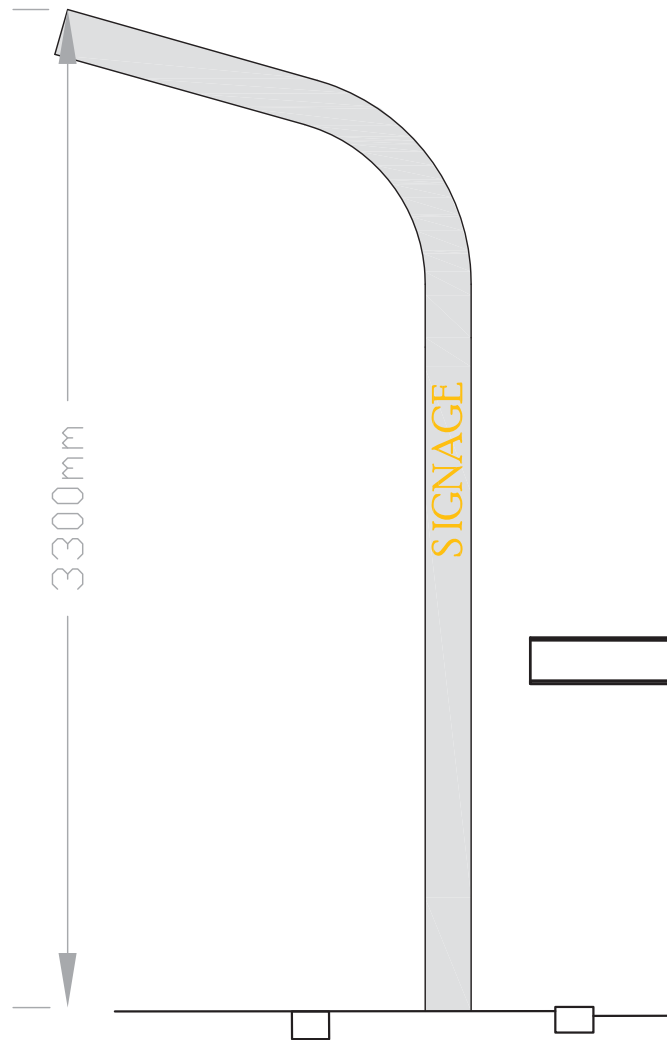


Fig. 9.58: Lamp Post. Elevation.
Scale 1:25 (Author, 2008)

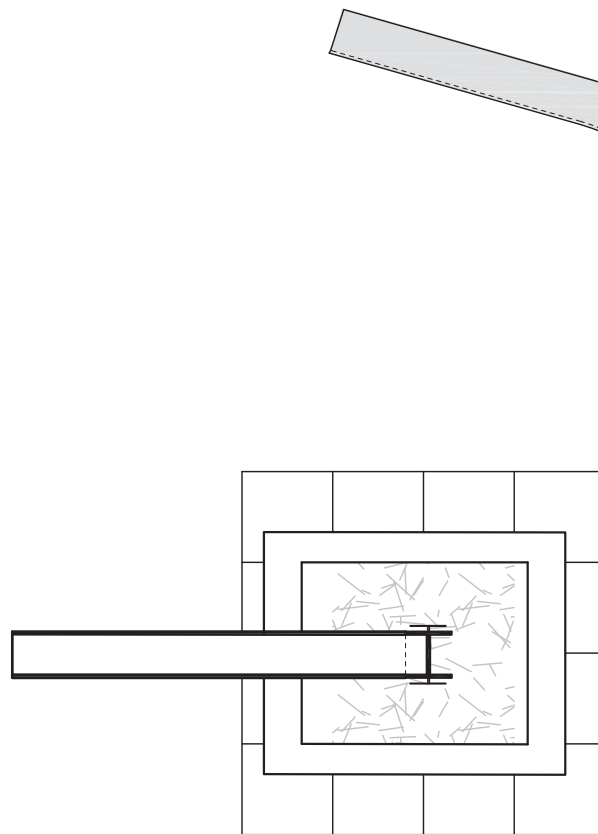


Fig. 9.59: Lamp Post. Plan
Elevation. Scale 1:25 (Author, 2008)

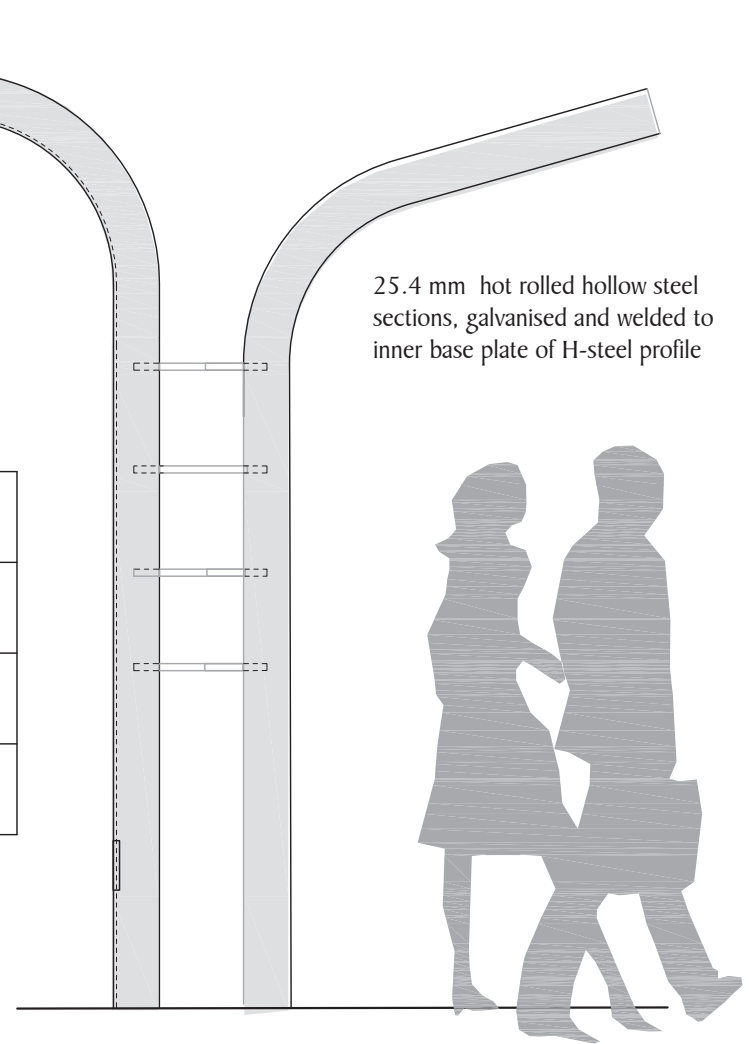


Fig. 9.60: Lamp Post (double option in high-use areas)
Elevation. Scale 1:25 (Author, 2008)



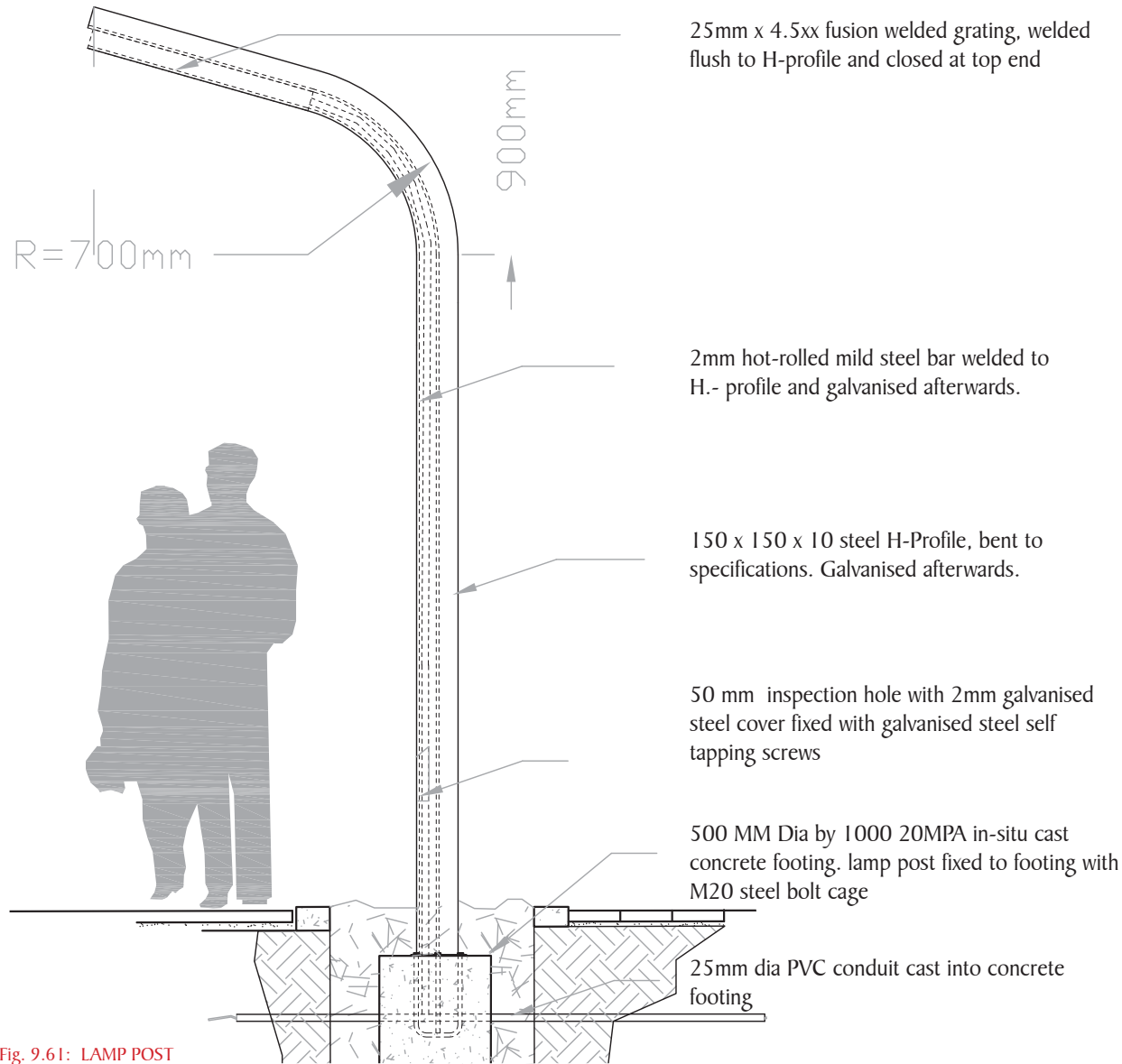


Fig. 9.61: LAMP POST
Section Scale 1:25 (Author, 2008)

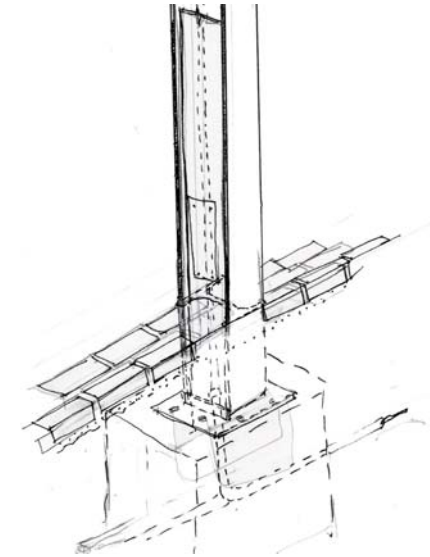


Fig. 9.62: Inspection hole and conduit channeled behind 2mm steel flange welded to inside of H-Section. Scale: Not to scale (Author, 2008)

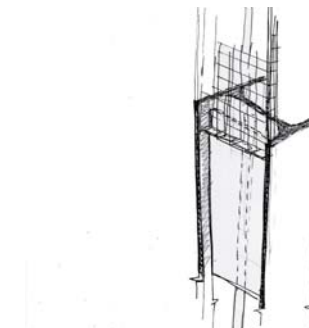


Fig. 9.63: Mentis grating bent to specification and welded flush to outer edge of H-profile and overlapping flange by 50 mm. Scale: Not to scale (Author, 2008)

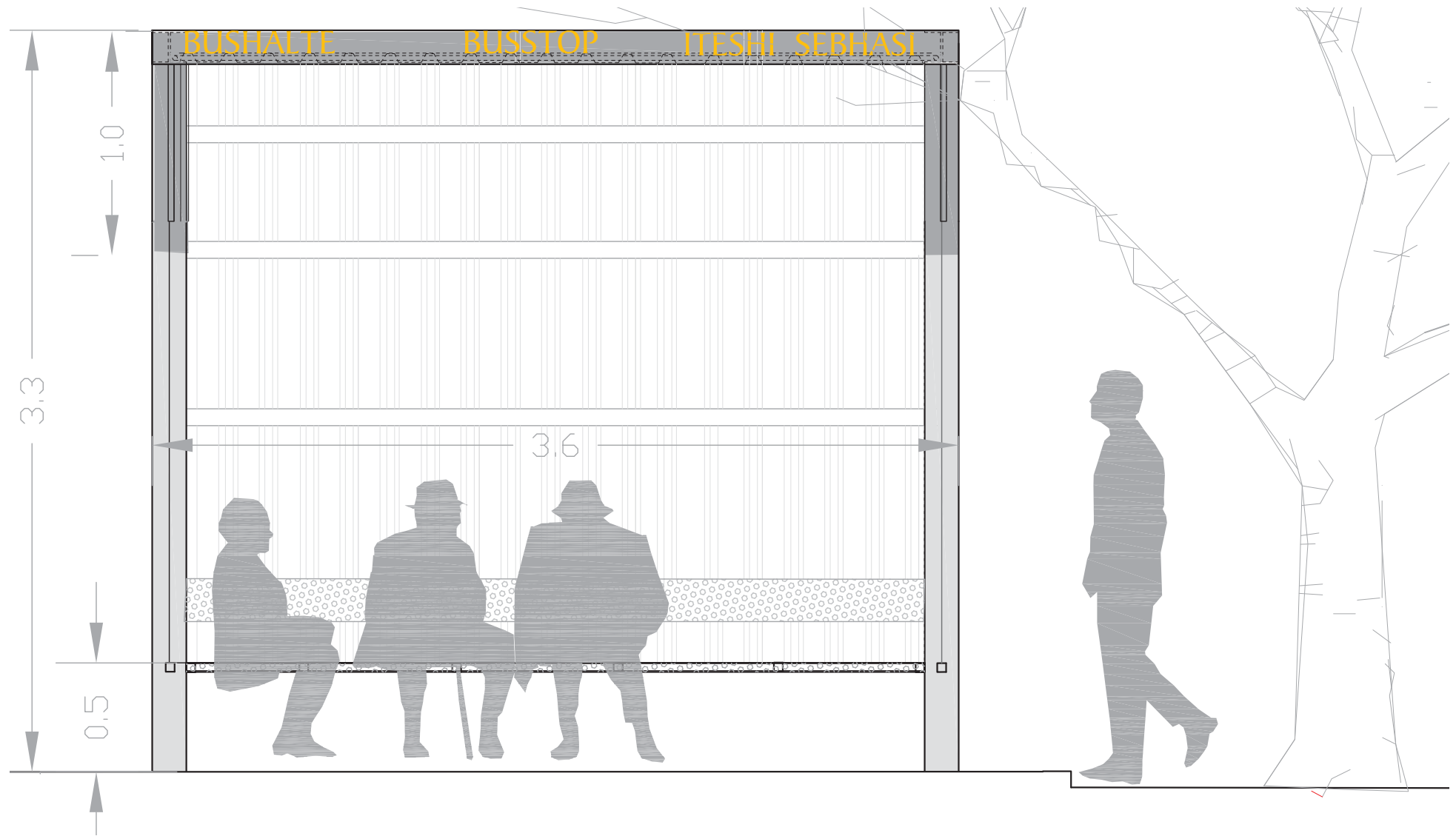


Fig. 9.64: Shelter. Elevation. Scale 1:25 (Author, 2008)



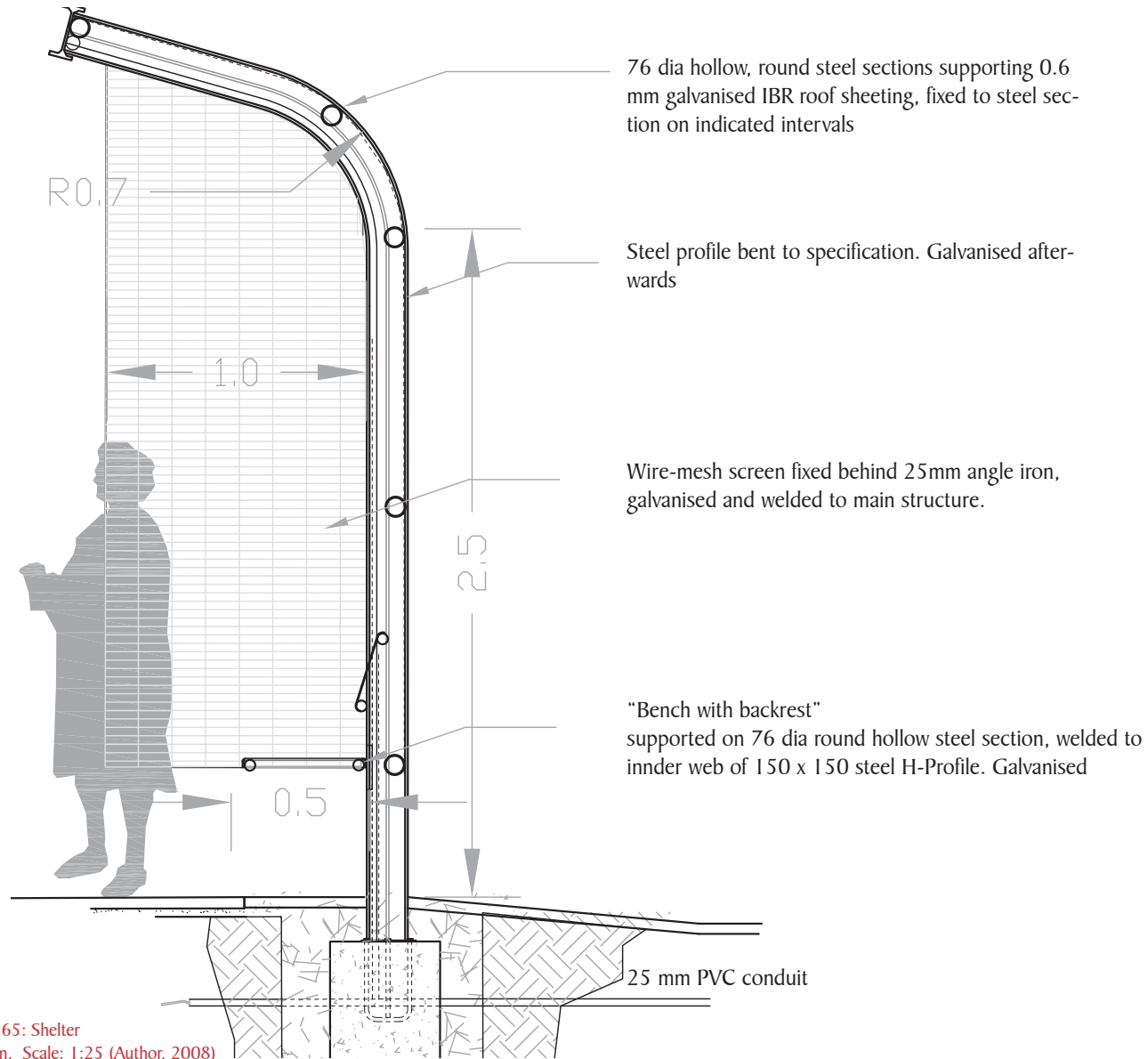


Fig. 9.65: Shelter
 Section. Scale: 1:25 (Author, 2008)

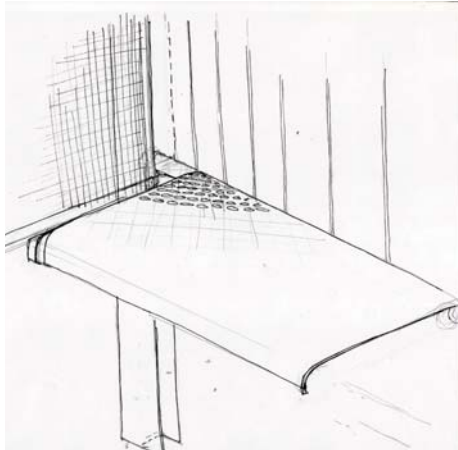


Fig. 9.66: Steel bench. 76 dia round, hollow steel sections welded to main structure with 2mm perforated metal sheet seating bended to specification and, welded to frame frame. Galvanised afterwards.
 Scale: Not to scale (Author, 2008)

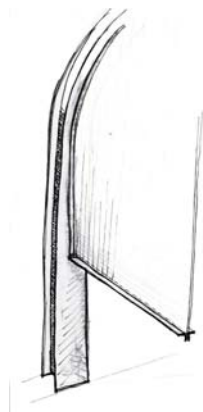


Fig. 9.67 Connection between H-profile (main structure), IBR-sheeting and wire-mesh screen. Scale: Not to scale (Author, 2008)

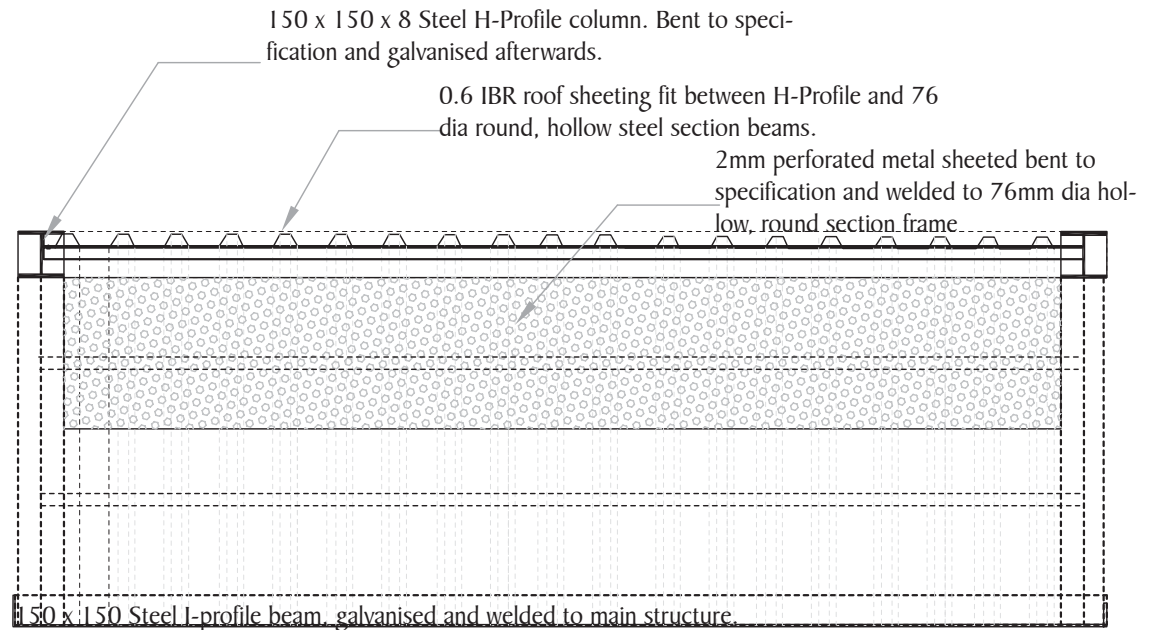


Fig. 9.68: Shelter
 Plan view. Scale 1:25 (Author, 2008)



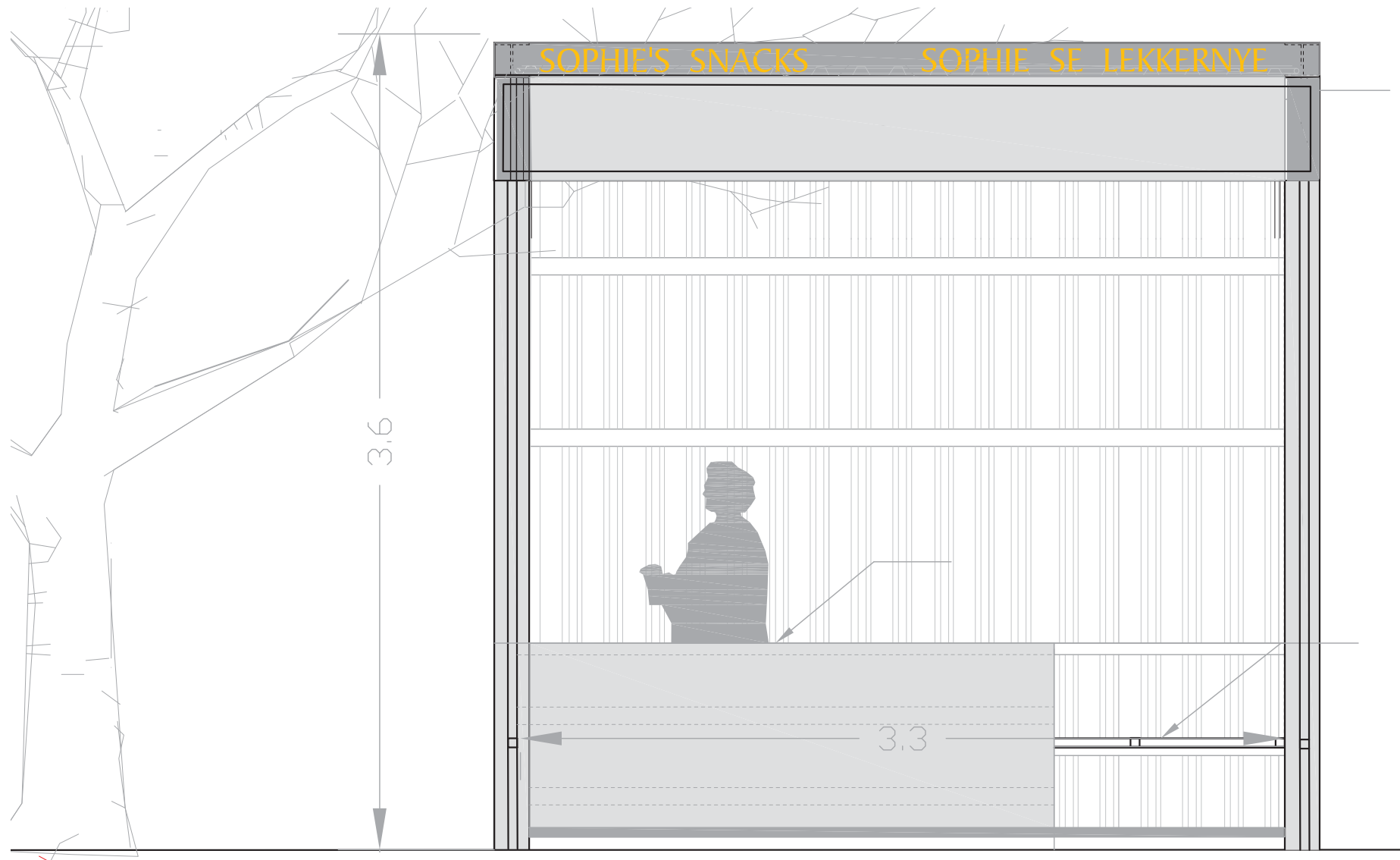


Fig. 9.69: Trade stall
Elevation. Scale 1:25 (Author, 2008)

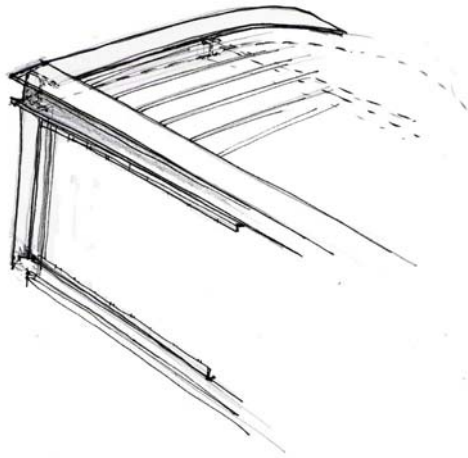


Fig. 9.70: Fixing of IBR sheeting to main steel structure. View from outside
Scale : not to scale (Author, 2008)

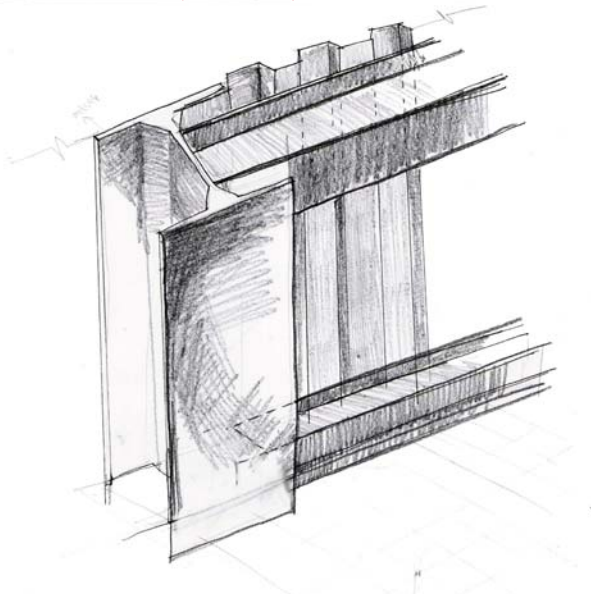


Fig. 9.71: Fixing of IBR sheeting to main steel structure. View from inside
Scale : not to scale (Author, 2008)

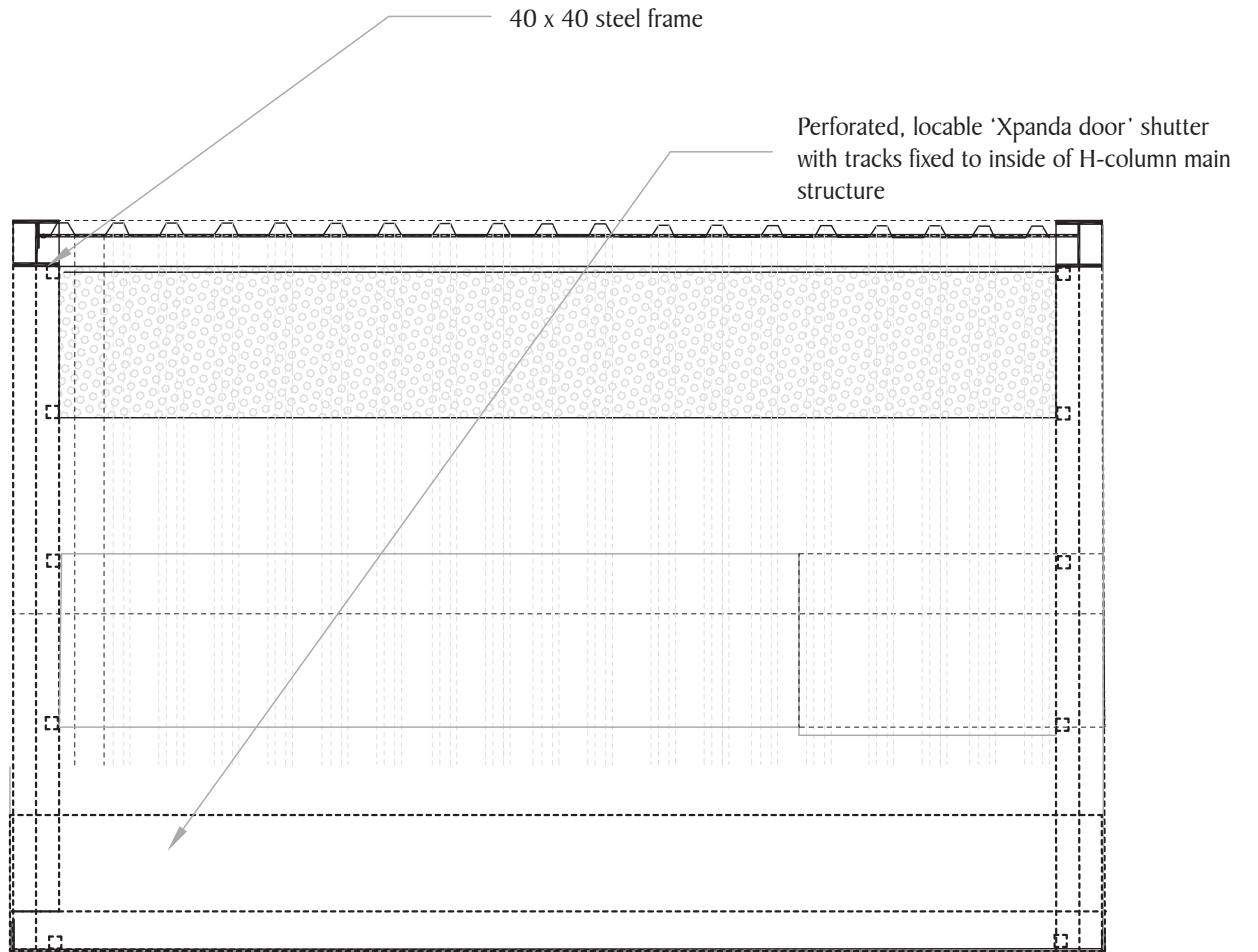
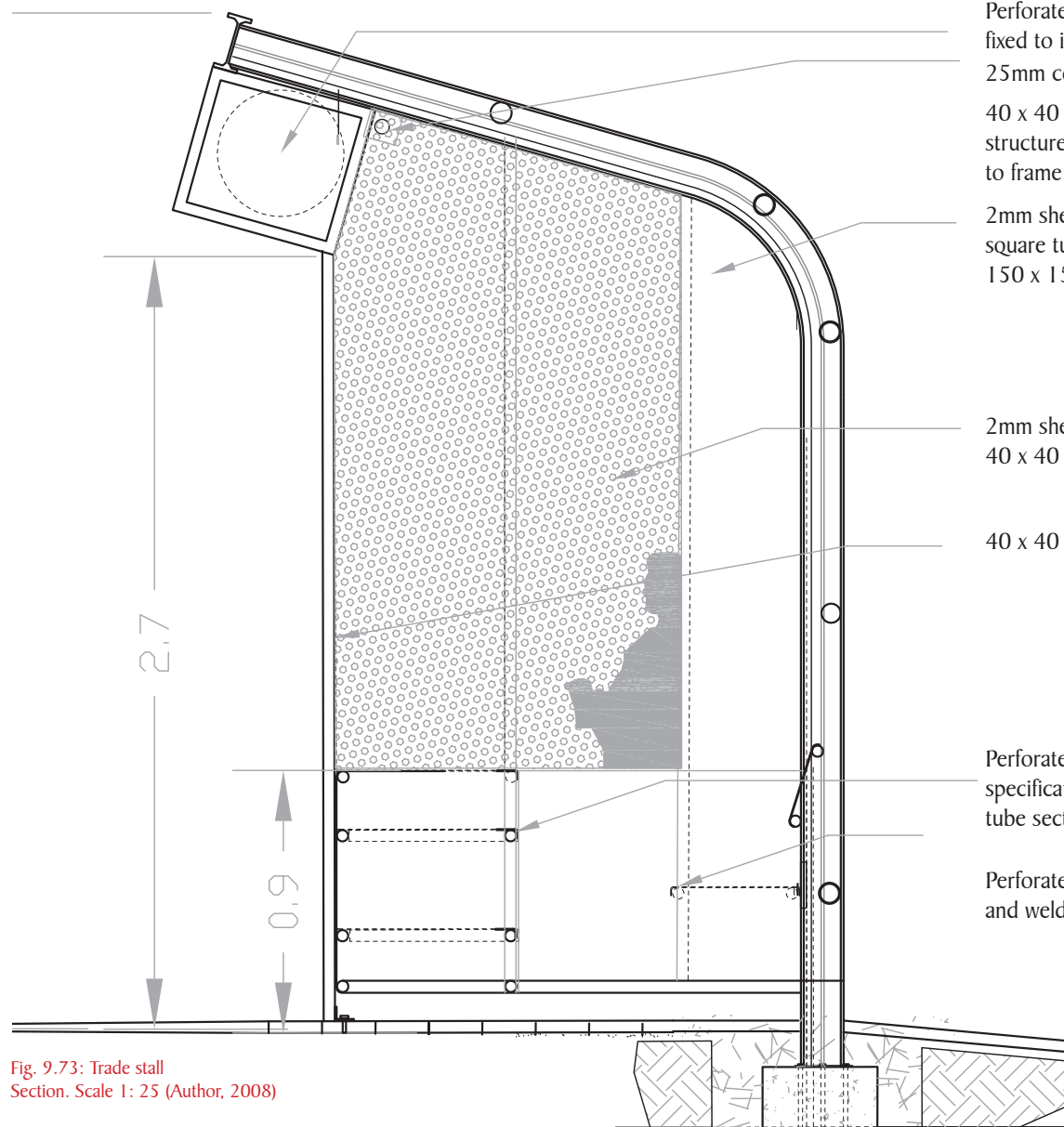


Fig. 9.72: Trade stall
Plan. Scale 1: 25 (Author, 2008)





- Perforated, locable 'Xpanda door' shutter with tracks fixed to inside of H-column main structure
- 25mm conduit connected to luminaire
- 40 x 40 square steel section frame welded to main structure with 2mm sheet metal sides welded flush to frame
- 2mm sheet metal wall fixed in front of 40 x 40 square tube support frame, galvanised and welded to 150 x 150 steel column
- 2mm sheet metal wall fixed in to and in of front 40 x 40 square tube support frame, galvanised.
- 40 x 40 steel frame
- Perforated sheet metal shelves bended to specification and welded to 76 dia round, hollow tube sections. Solid sheet metal to front of stall
- Perforated sheet metal seat bended to specification and welded to 76 dia round, hollow tube sections.

Fig. 9.73: Trade stall
 Section. Scale 1: 25 (Author, 2008)

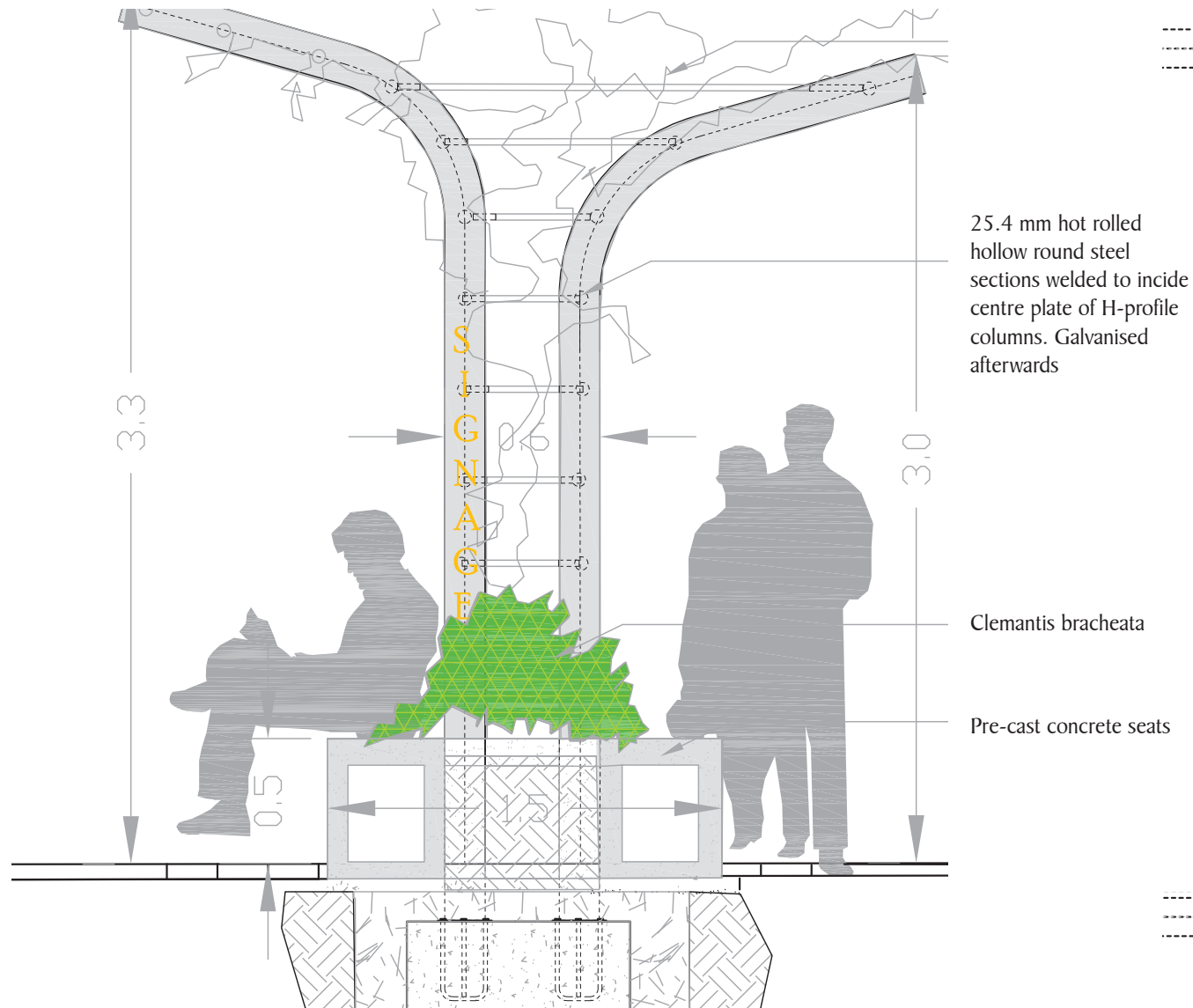


Fig. 9.74: Trellis
 Section. Scale 1:25 (Author, 2008)

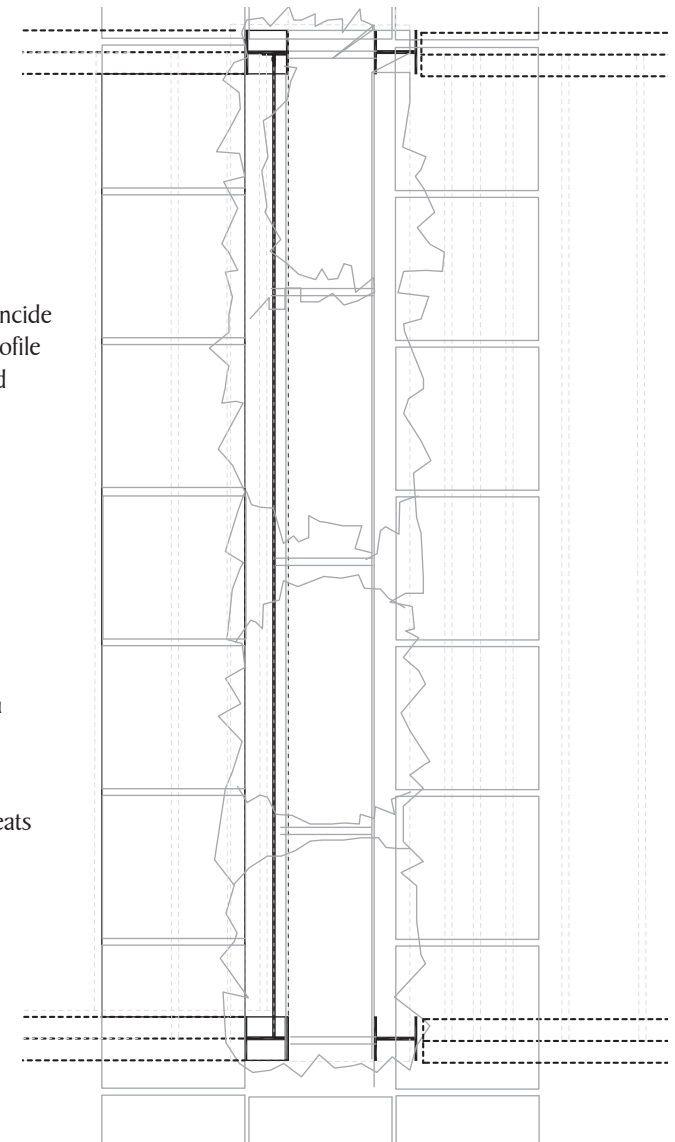


Fig. 9.75: Trellis
 Plan view. Scale 1:25 (Author, 2008)



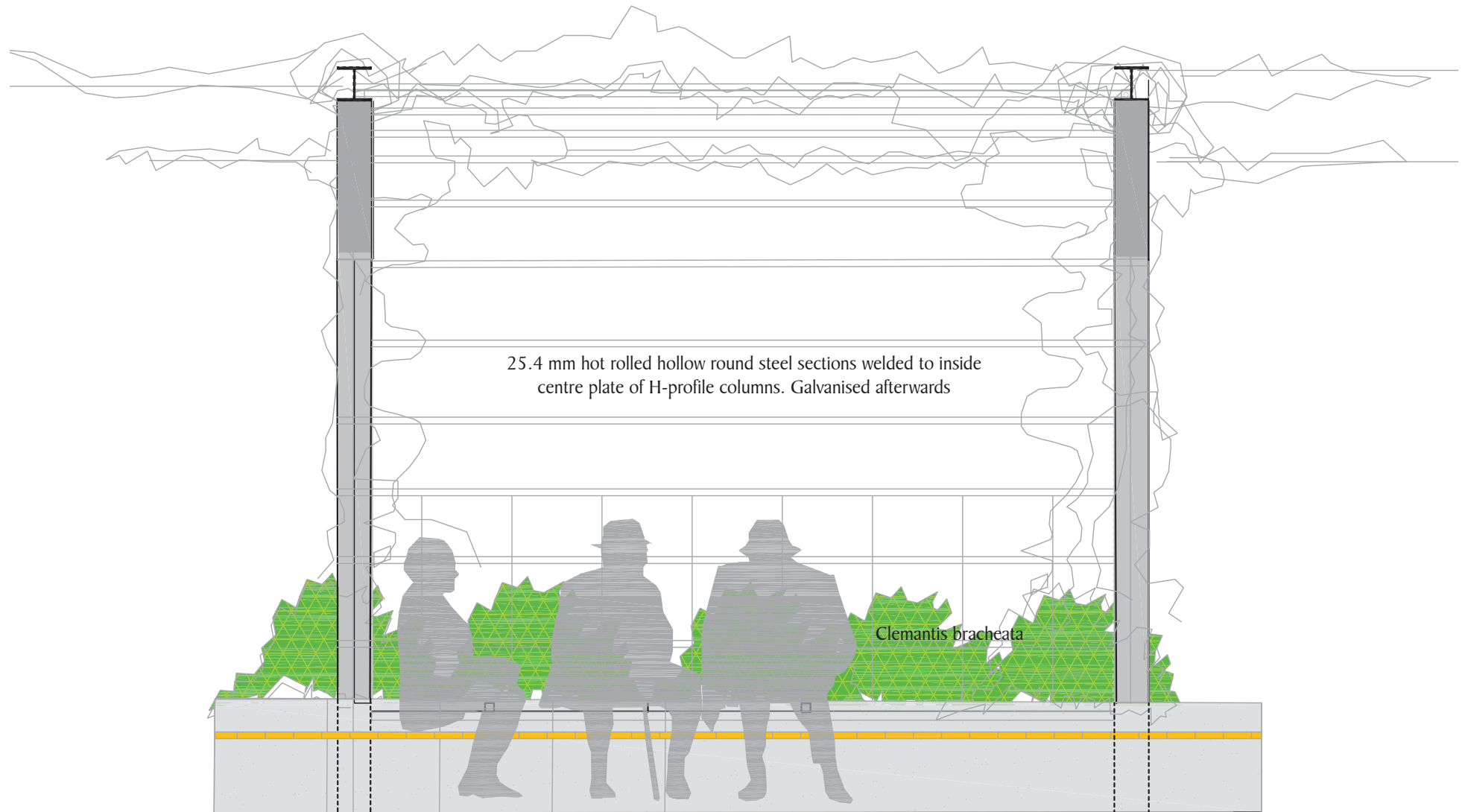


Fig. 9.76: Trellis. Elevation. Scale 1:25 (Author, 2008)

9.4 Edge details

Pre-cast concrete edges are used in most of the step details. The facing of the riser alternates between redbrick close to building edges, and dry packed stone in the terraced lawn areas leading up to the feature wall, which is constructed of the same material. The plinth in front of the main entrance to the T.R.H is constructed from redbrick.

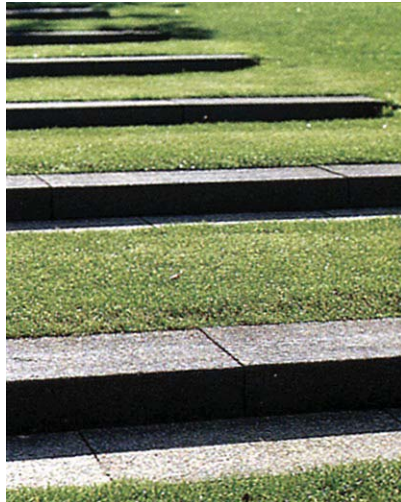


Fig. 9.76 Stepped lawn (Baumeester, 2007)

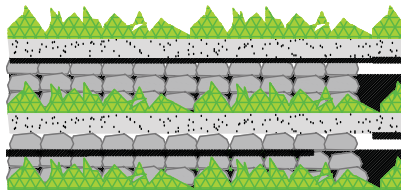


Fig. 9.77 Terraced lawn seating. Elevation. (Author, 2008)



Fig. 9.78: Stone packed retaining wall (Asensio 2005)

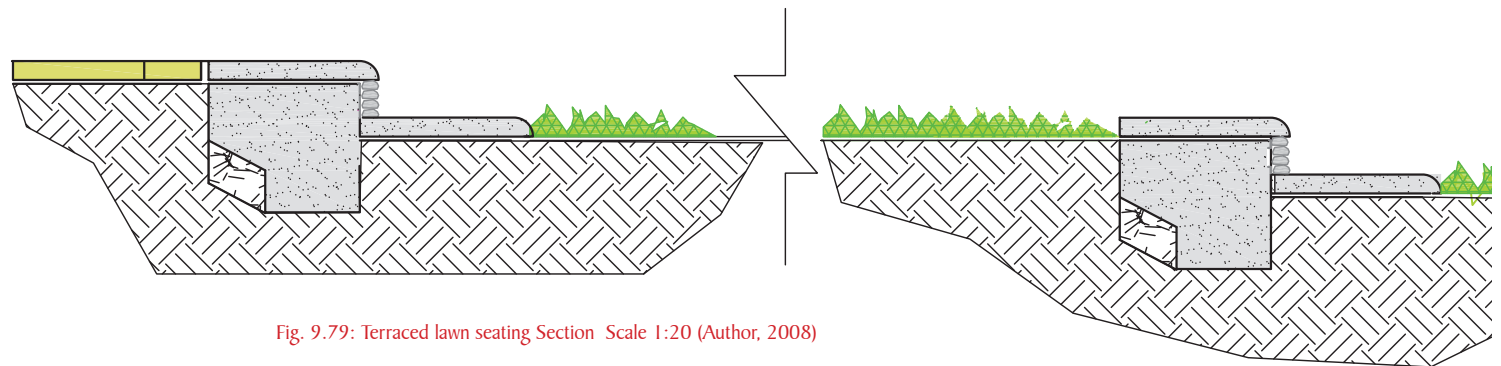


Fig. 9.79: Terraced lawn seating Section Scale 1:20 (Author, 2008)

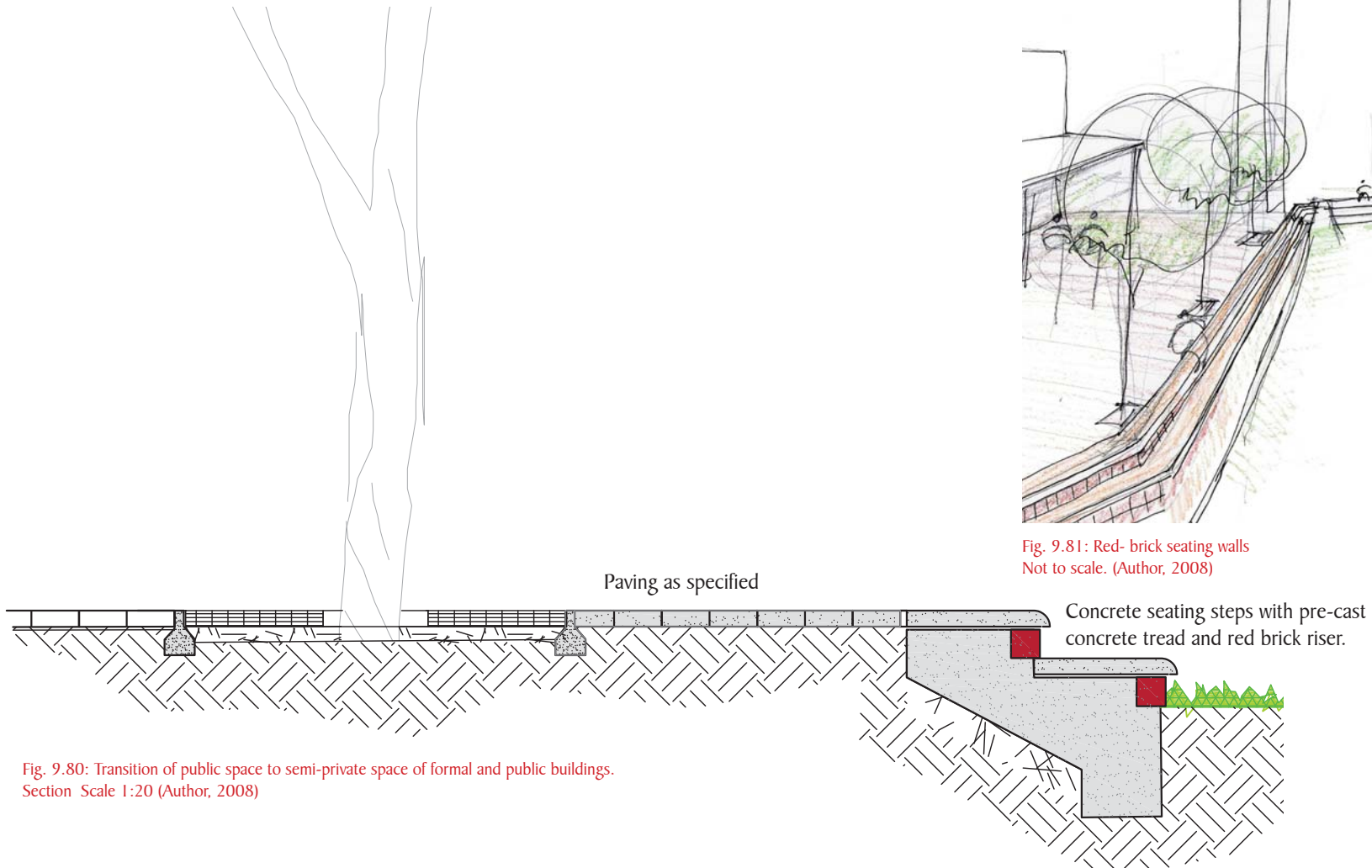


Fig. 9.80: Transition of public space to semi-private space of formal and public buildings.
Section Scale 1:20 (Author, 2008)



Fig. 9.81: Red- brick seating walls
Not to scale. (Author, 2008)



Fig. 9.82: Perspective of plinth and seating areas of main admin building (Author, 2008)

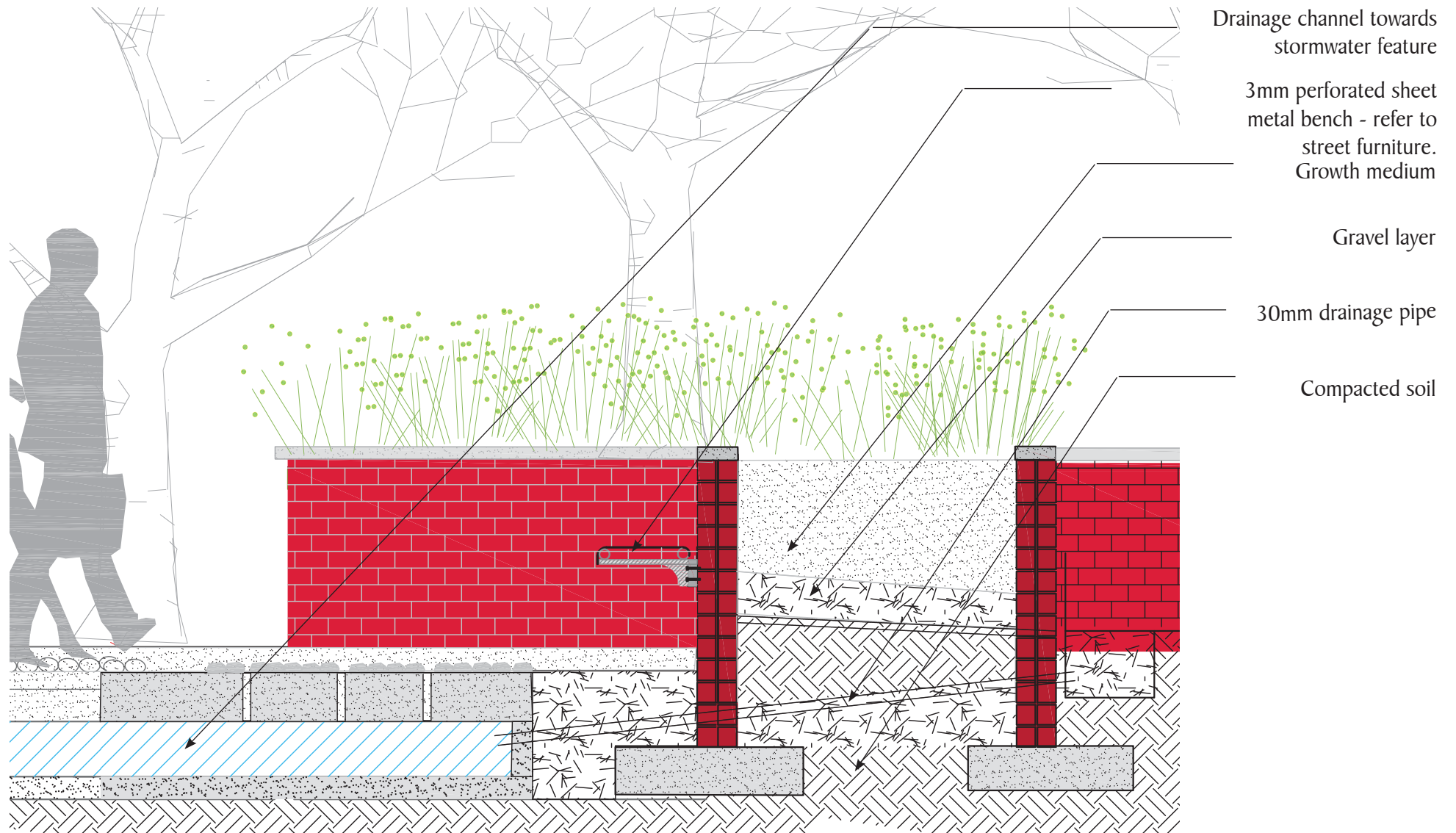


Fig. 9.83: Plinth to Main Administration building Section Scale 1:25 (Author, 2008)



10. CONCLUSIONS AND RECOMMENDATIONS

The hypothesis stated that the fragmented nature of the Hospital Hill Precinct could be unified through the application of a hierarchical network of open spaces. A development framework was compiled by using urban planning principles. The open space hierarchy was incorporated. Through the evaluation of literature an argument for open spaces that benefit public health was compiled. Consequently a design proposal was made for Dr. Savage Plaza.

The subjective nature of restorative theory and theories of the experiential landscape makes it difficult to prove that a space in isolation would be beneficial to an individual, but it can be proven that it will be beneficial to public health in general. Similarly it cannot be claimed that an open space framework is in essence a restorative open space framework. However, the efficacy of open spaces for public health is dependant on the context of a particular space within a larger network of spaces. Although some small interventions were proposed that would intensify the experience of the Hospital Hill for the user, the experience will be substantially increased if each intervention is linked in a logical way to the next. Without doubt there exists scope for application of open space frameworks for public health within the context of South Africa.





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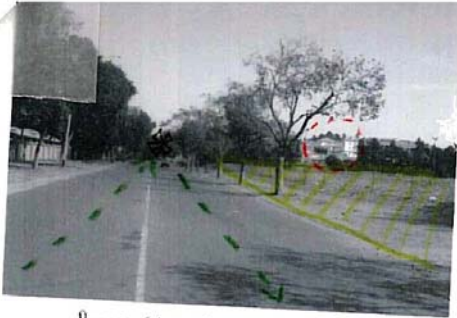
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Journey 1 and 2; Theory and Guidelines
ANNEXURE A:

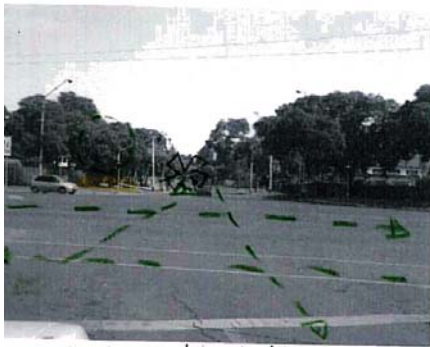


Rose Street

A directional space culminating in Dr. Savage Rd and Voortrekker Rd intersection. Interesting contradiction between recreational clubs (restorative centre) and densely built skyline (social imaginability). The road lacks as focal point or sense of destination which will announce arrival at the Hospital Hill precinct.

Objectives

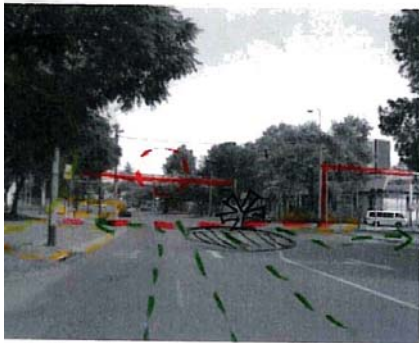
- Incrementally announce arrival at the Hospital Hill precinct by enhancing vistas
- Provide a focal point which the rd is leading towards.



Dr. Savage / Voortrekkerweg

Major intersection between Voortrekker Rd and Dr. Savage Rd. Lacking edge definition and announcements 'enhance characteristics' the chimney acts as an existing landmark, but partly. The space is strongly transitional. The entrance lacks coherence and legibility.

- Need for entrance feature that guide circulation and adds identifiable character and social imaginability



U.P. entrance

A transitional space that is rich in localised centres of restoration; social interaction (traders, waiting areas). But it lacks coherence. Enforcement of movement control measures might improve legibility. The stormpipe network that bisects the entire area forms a strong recognizable landmark and should be further exploited. The traffic of traffic is heavily divided at this entrance intersection: going north toward P.A.H. and South towards the Prinsloo campus.

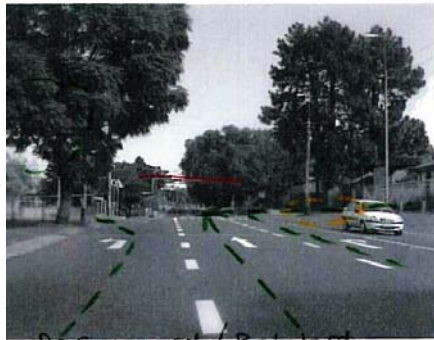
- A streetscape intervention that guides circulation and accommodate localised centres in a coherent way
- Provide for entrance trace and waiting areas
- Measures for reduction of speed





T.R.H entrance

Continued directional space that is very high in localized restness but lacks coherence. The space is interrupted by a strong transitional space between the two main entrances, where pedestrians, taxis, cyclists and traders compete for space on the edges. The road is only busy during peak hours - it is faulted that the road is over designed resulting in an abrupt transition to accommodate the human scale. The abundance of space and multitude of uses results in anarchy.



Dr Savage rd / Bopheloa rd

A directional and transitional space that is poorly enclosed. It lacks social integrability as a secondary entrance into the Precinct.



Newly constructed parking

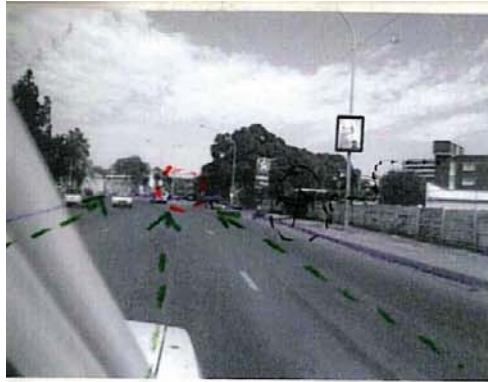
Newly constructed parking areas aim to re-claim lost space. The abrupt transition from dense growth in the background to the open, hard spaces should be softened by a gradient.

The fence creates a very strong, but ineffective sense of transition, boundary and enclosure.

- An intervention that guides movement by reducing, but optimising access points.
- The system should be adaptable
- Provide for informal trade and waiting areas
- Pick-up and drop-off zones
- Reduce traffic lanes
- Emphasize approach to T.R.H entrance through landscaping and boulevard
- Move parking - encourage walk
- Reduce flow speed of road
- Safe parking.
- Accommodate night usage
- Provide emergency vehicle

- Controlled access - for service at Gate 17
- Emphasize skinn pipe network
- Upgrade public ablutions
- Reduce flow speed of road
- in traffic circle.

- The edge/fence should be soft
- Single access
- Accommodate visitors into ex
- Define a specific directional to be used. This space should localised restorative centre areas along the axis.



Vehicular journey

A strongly defined sense of direction culminating in the entrance of the P.A.H. Although the approach to the hospital is strongly sequential, it can be enhanced to form a gateway into the precinct.



A transitional area that is rich in localised centres, but lacks coherent entrance definition, and control of different users. The space is vibrant and used by a variety. An existing boulevard with large trees is under-utilised due to safety. Differences in level provide opportunities for exploitation of gradient and transition between zones of use, but it is not exploited.



A amalgamation of functions, users and methods of movement result in a confusing transitional space that cannot accommodate the amount of activity. Minor interventions to provide for organized movement and waiting areas can improve the space significantly.

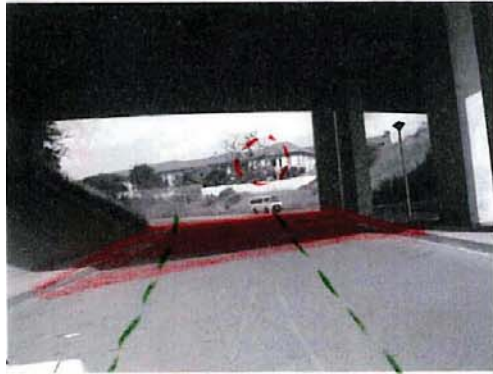
Edge definition can be improved with a transitional zone between built form and vehicular movement. This one should provide for pedestrian movement and should exploit opportunities for localised centres of interaction.

The approach to the P.A.H. can be strengthened by enforcing sequential transitional space visually focused on with a rhythm that culminates in an entrance feature.

- Provision for pick-up and drop-off.
- Waiting areas.
- Turnaround areas.
- Incorporate existing restorative boulevards.

- Provide drop-off and turn-around area.
- Improve maintenance.
- Use of materials on road surfaces can guide a hierarchy of movement.
- Make specific provision for movement of pedestrians.
- Clearly depict directions for parking, emergency, drop-off and through routes.





an exceptionally strong sense of transition. The lack of space and poorly defined hierarchy of movement in (3) results in the road surface being used for drop-off, waiting areas and informal tracks, blocking the ring-road system and causing further congestion.



Ramped directional space connecting entrance at P.A.H. with the T.E.H. entrance in Dr. Savage Rd. The ramp is steep and spatially divides the area. Large open and undefined spaces occur.

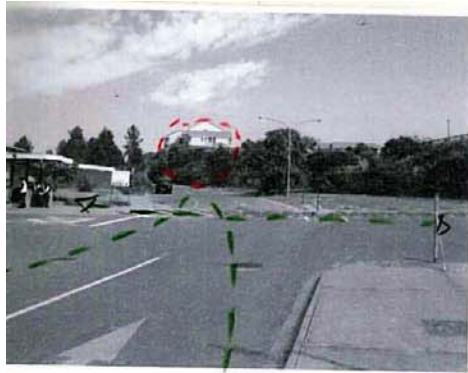


A space that is directionally so strong that it ~~does~~ makes very little provision for social interaction, restorative potential, ~~as~~ it is rich in landmarks of social imageability, and, when not congested by traffic and blocked by parked cars, it reads well.

- Reduce speed of vehicles in south-north lane
- Provide drop-off and waiting areas in north-south lane.
- Create places for social interaction and restorative spaces.
- Clearly demarcate pedestrian lines of movement.

- The open spaces should be a relationship between provision for natural habitat/restorative spaces, additional parking, and space for the control of circulation.

- Provide alternative and accessible parking so that flow of movement on the ramp can be improved.
- Make specific provision for pedestrian movement.



Vehicular journey (velocity)
 Transitional movement between entrances
 to Medical Campus on P.A.H.
 This node is strong in social
 imaginability, but lacks in localized
 centres for restoration or interacting,
 because movement is mainly directional.

- Reduce parking at Medical Campus entrance to provide a centre for social interaction and restoration
-



Newly constructed ring road on a steep
 slope results in a strong transitional
 space. It is rigid in the sense that
 it does not provide

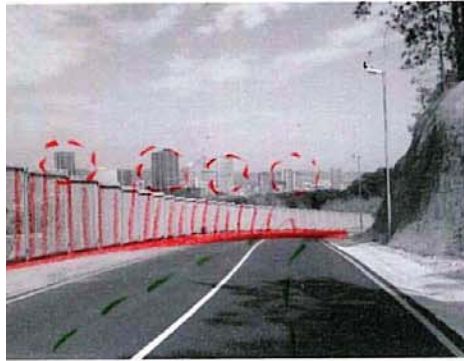
- Provide a gradient transitional space for movement of pedestrians along the road, as well as down the hill into the existing fabric.



In some parts the ring road system
 is enclosed by the hill and tall
 pine trees. This results in a strong
 perceived area and boundary

- Improve accessibility and safety into lower lying areas
- Provide safe pedestrian journey

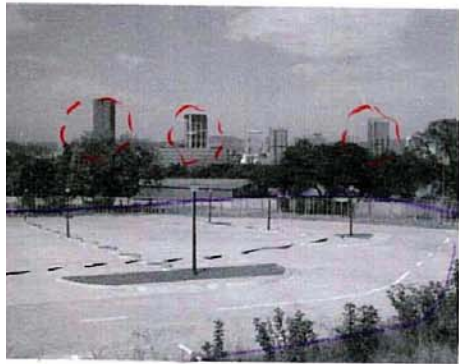




When the trees open up, an exceptionally strong vista onto the CBD of Pretoria is revealed

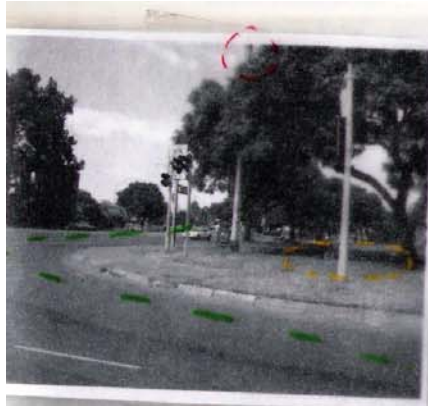
The boundary fence reads very strongly as transitional and distracts a little from the vista

- A gradient between the boundary fence and road can be achieved by
 - creepers and low planting
 - painting the fence a darker colour
 - providing a transitional interface to pedestrian movement.



View onto the newly constructed parking lots. The space is very strong in social imageability, but lacks directional guidance into the T.R.H and medical campus built fabric. The area is large, stark, empty

- a strongly read axis of movement should guide the user towards existing facilities
- This movement line should:
 - exploit vistas
 - be safe
 - provide opportunities for waiting and social interaction
 - well lit for night use
- Trees should be planted in parking lot to
 - reduce microclimate
 - soften the expanse of paving
 - guide movement



Precinct Journey

Weakly defined urban edge results in wasted space

Guideline

Wasted spaces are already used for social interaction and trading, but it could be improved by formalisation of pedestrian routes



Voortrekkerweg drives into 3-lane, one way streets.

High in social imageability and landmarks that serve as visual anchors

6. Improve transitional gradient between built fabric and road surface by exploiting localised centres around interaction and restoration along a defined line of movement



Intersection of pre Hospital Hill Precinct with Government Precinct. Lacks visual anchor, to draw attention to entrance, and exit of precinct.

- a traffic circle with advance feature to alleviate movement confusion and guide movement.
- Street furniture should enhance character

Directional space that is strong in localised centres. Multiplicity of uses and movement patterns result in a vibrant, but sometimes unsafe space

- Upgrade taxi rank
- Provide waiting areas
- Incorporate Apries River open space with existing green space to form a restorative network that accommodates movement within the precinct

Large trees provide welcome local centres of imageability, interaction and restoration. In strong contrast with deteriorated nature of Morabastad in the next block



Intersection between upgraded Nelson Mandela Dr and Prinsloo Street and Hae's Pritt crossing at Apries River

- Extend Nelson Mandela Dr.
- Landscaping
- Remove deteriorated building in island and replace with gateway feature or landmark building
- provide access to Apries river





Exceptionally strong in social imaginability and visual anchors. The base of direction can be improved by activating the edges



Large pieces of under-utilised space results in a lack of coherence at this primary gateway into the precinct.

- Introduce mixed use commercial use as 'infill' buildings to contain the edges and strengthen direction
- Include public open space
- Provide for pedestrians and cyclists



- Approaching changes in land use at taxi rank in Merabastoa is announced sufficiently by change in directional space and texture and density of vegetation. The area is not well maintained

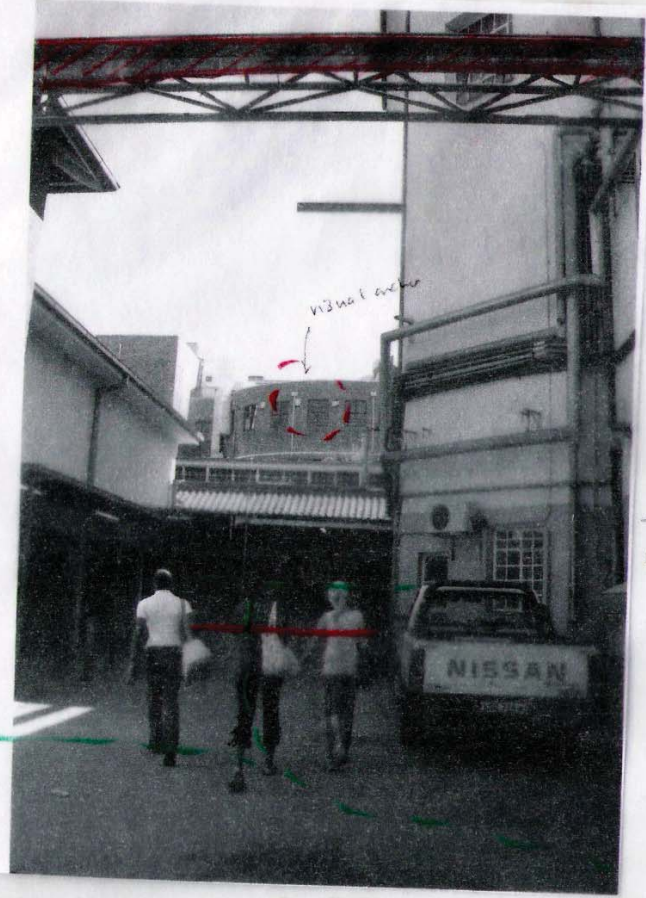
- Improve waiting areas, informal trade and drop-off/pick up zones by providing localised centres of interaction and restoration
- Exploit vistas
- Provide for pedestrians and cycling circulation



Small, residential, degraded building form a characteristic but weakly defined edge along this busy directional spine



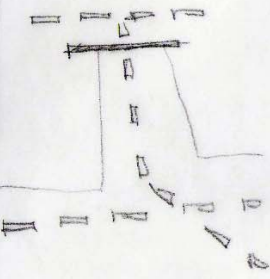
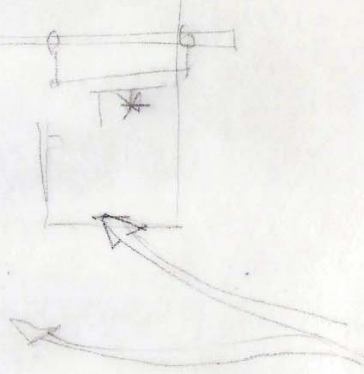
- Introduce infill functions along the boundary of the precinct



Intersection of various directional spaces form a weakly defined centre and transitional space. It lacks as a sense of coherence.

Guidelines:

- Introduction of visual anchors could help to guide direction
- Use of materials should guide and enforce direction
- Provide possibilities for social interaction or waiting areas.
- Strengthen sense of centre by emphasising thresholds between different directional spaces.
- Softer edge between building and directional spaces




A strong past
spaces. Used through activity,
spine connecting different
uses and areas at the T.R.H
used by a variety of uses
and methods of movement.

Guidelines:

- Improve legibility by introducing hallway with recognizable characteristic - this will improve continuity
- Provide opportunities for waiting, social interaction and transitional spaces that lead to restorative open space

Thurston et al

- the rhythm of banding treatment should be continuous, but allow for 'escape' to transitional + locational spaces

