

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.

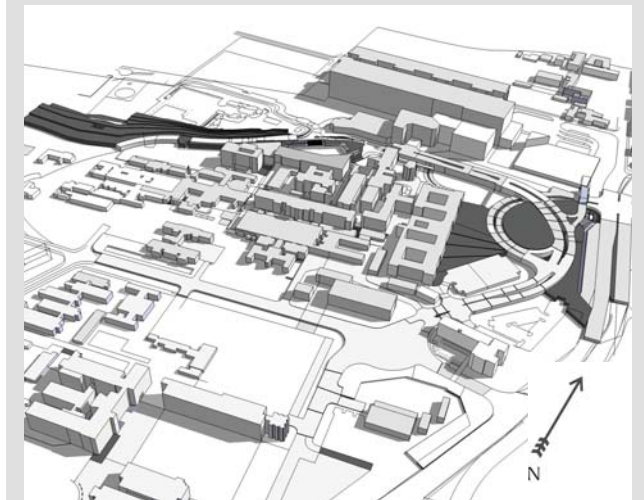


Fig 3.3: The Site. (Author, 2008)

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).

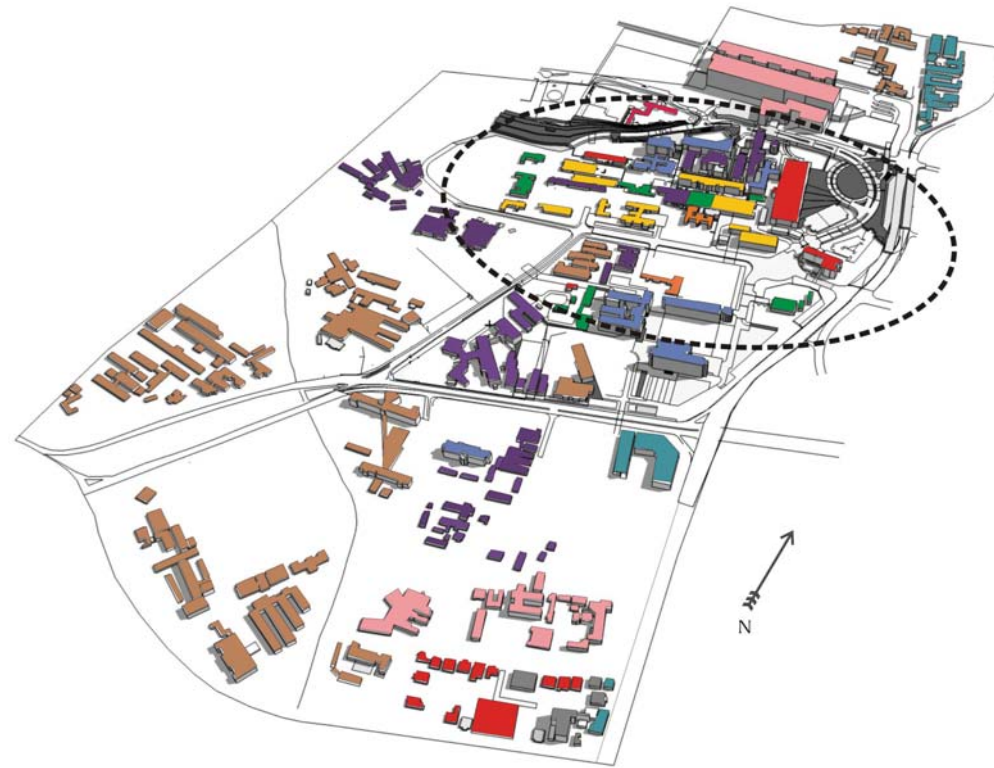


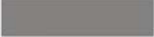









Fig. 3.5: The Hospital Hill: Land Use Areas (Author, 2008)

			
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.

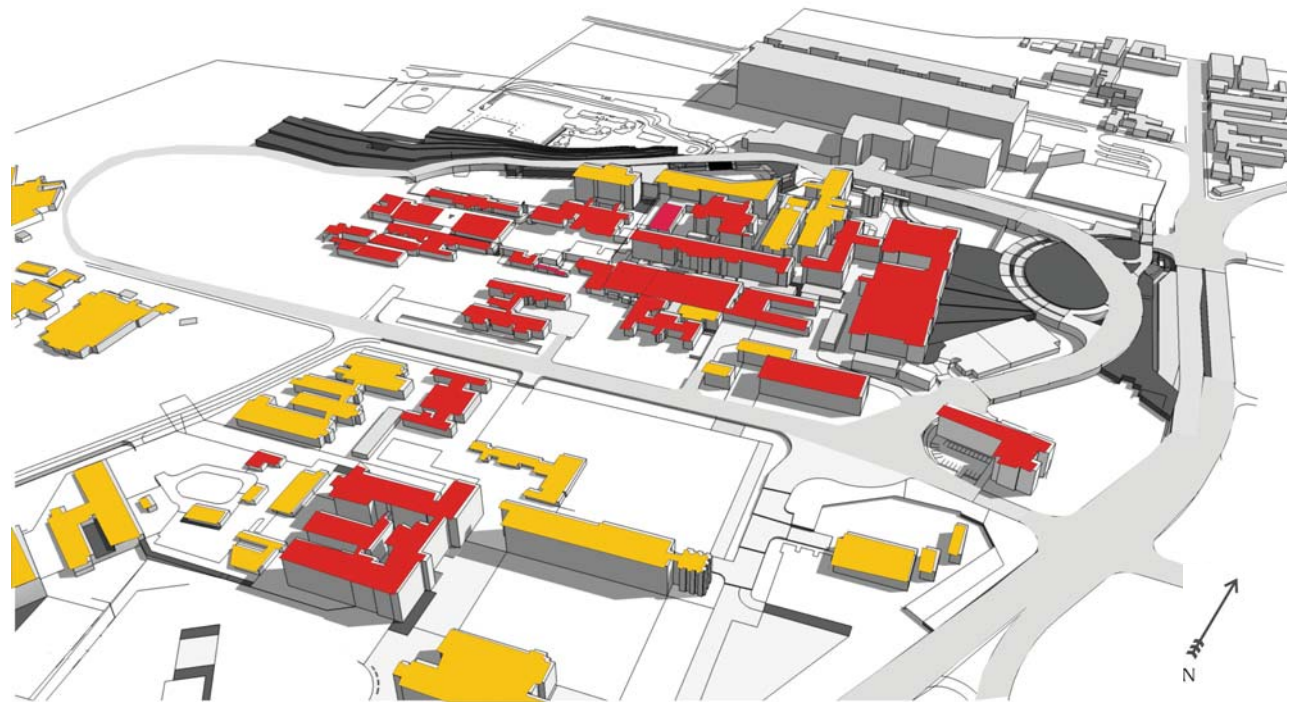


Fig. 3.6: Protection of Heritage Resources in terms of the National Heritage Resources Act, 25 of 1999. (Medi-plan Architects, 2007)



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.

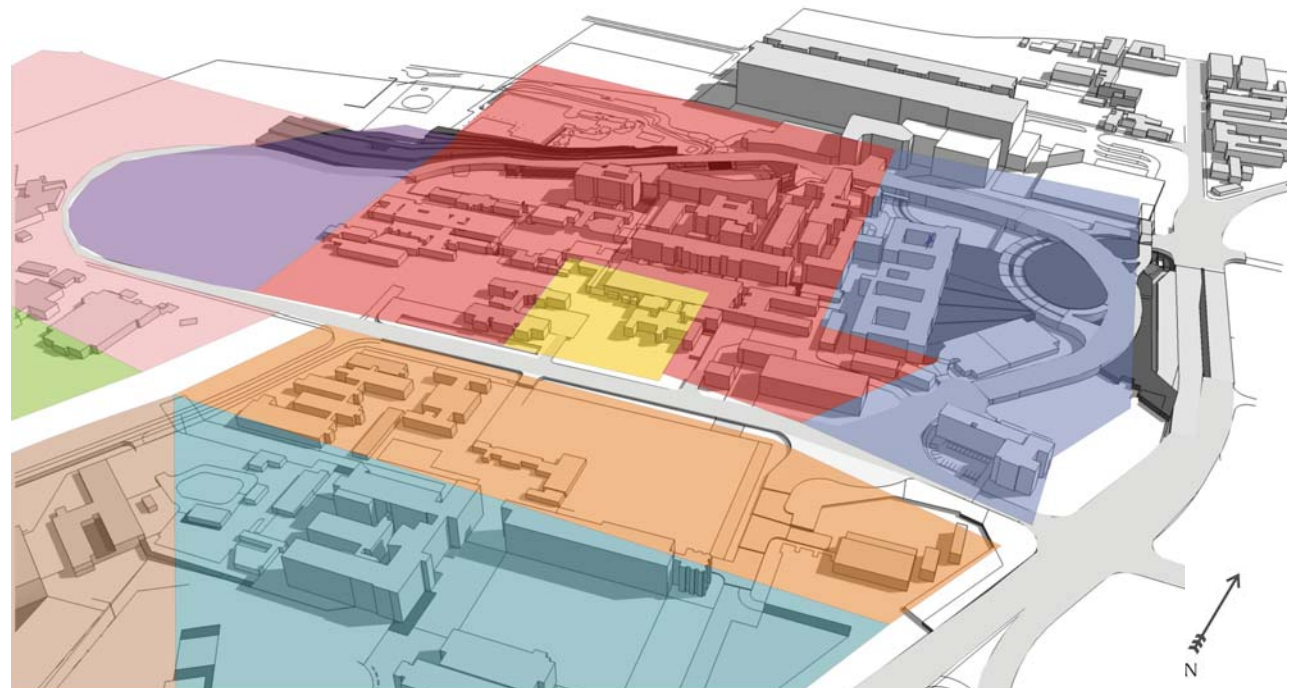






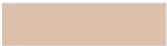




Fig. 3.7: Cadastral information and ownership (Author, 2008)

		
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

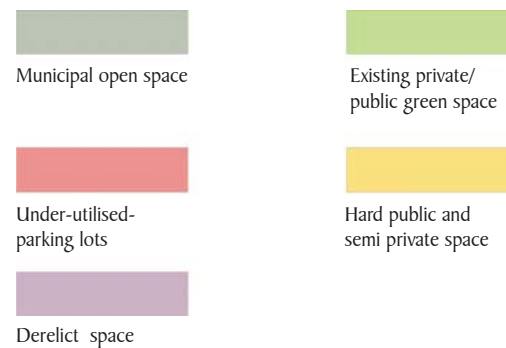
Under-utilised spaces are abundant on the site. For example spaces that have mono-functions, such as parking lots.

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*.

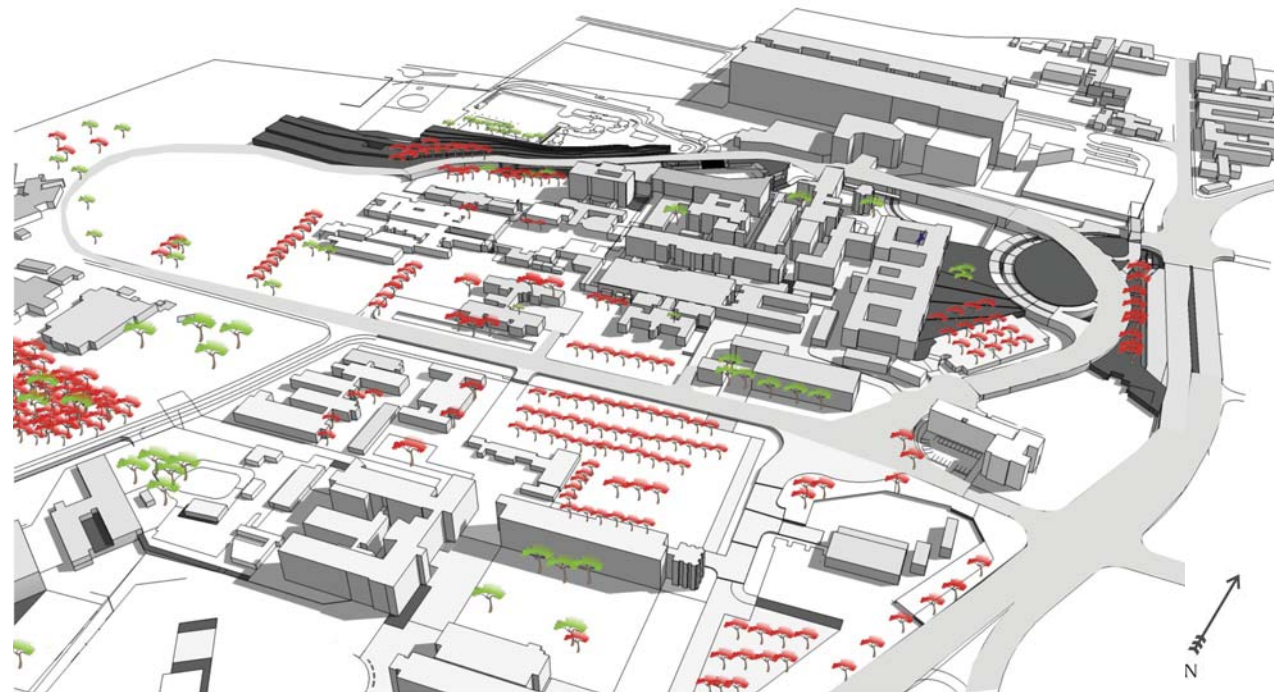


Fig. 3.9: Indigenous and exotic vegetation inventory. (Author, 2008)



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.

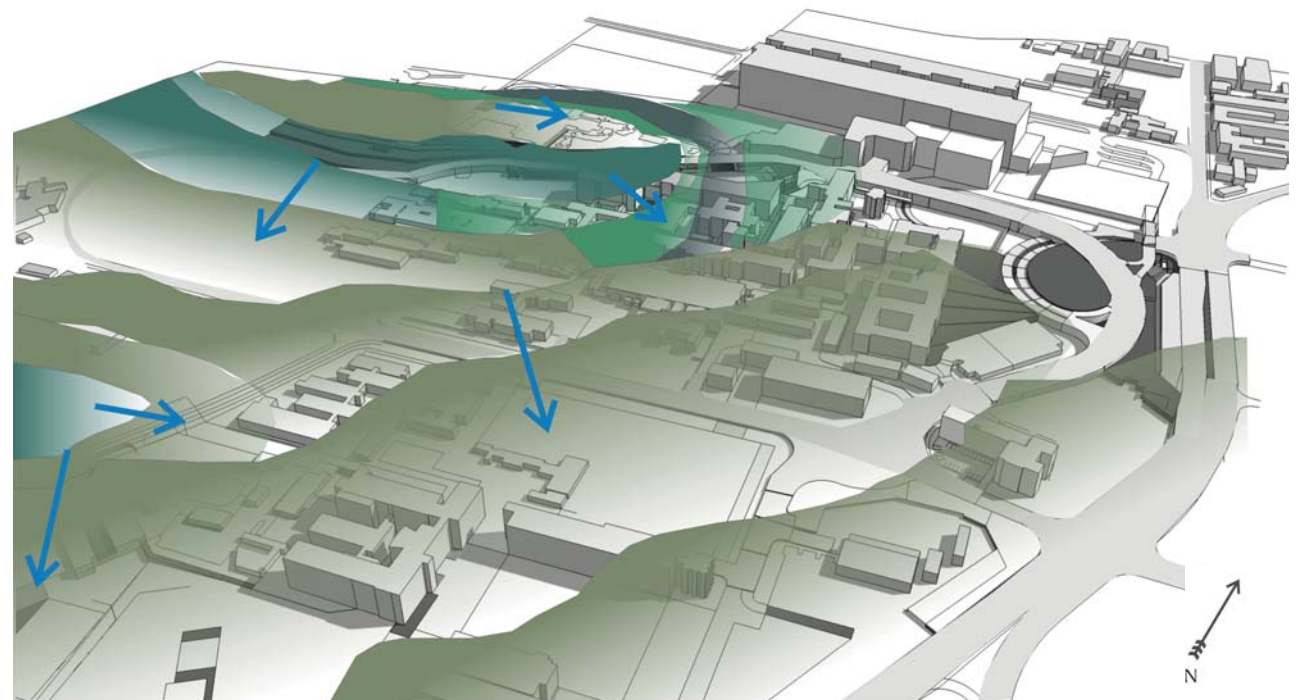
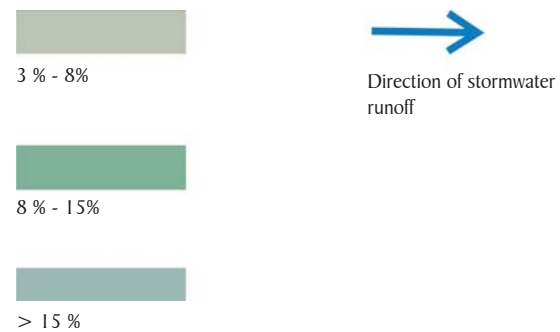


Fig. 3.10: Topography. (CTMM, 2005)



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

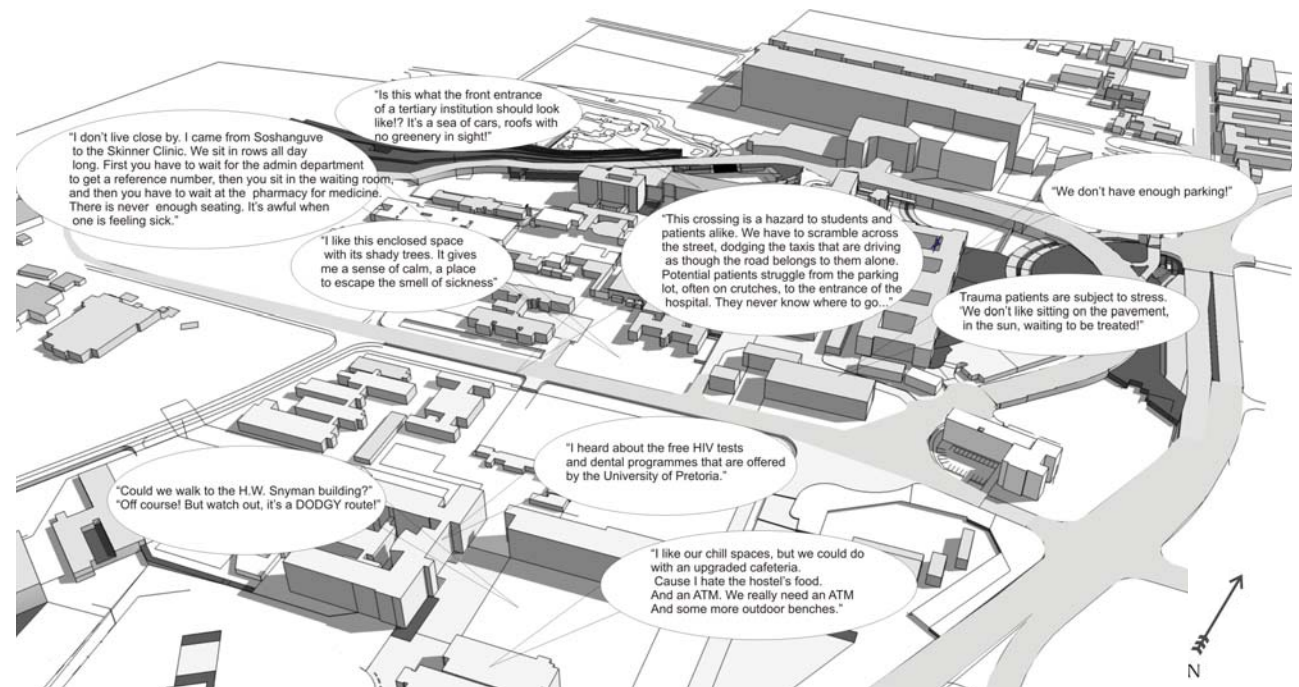


Fig. 3.11: User profile. (Author, 2008)



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.

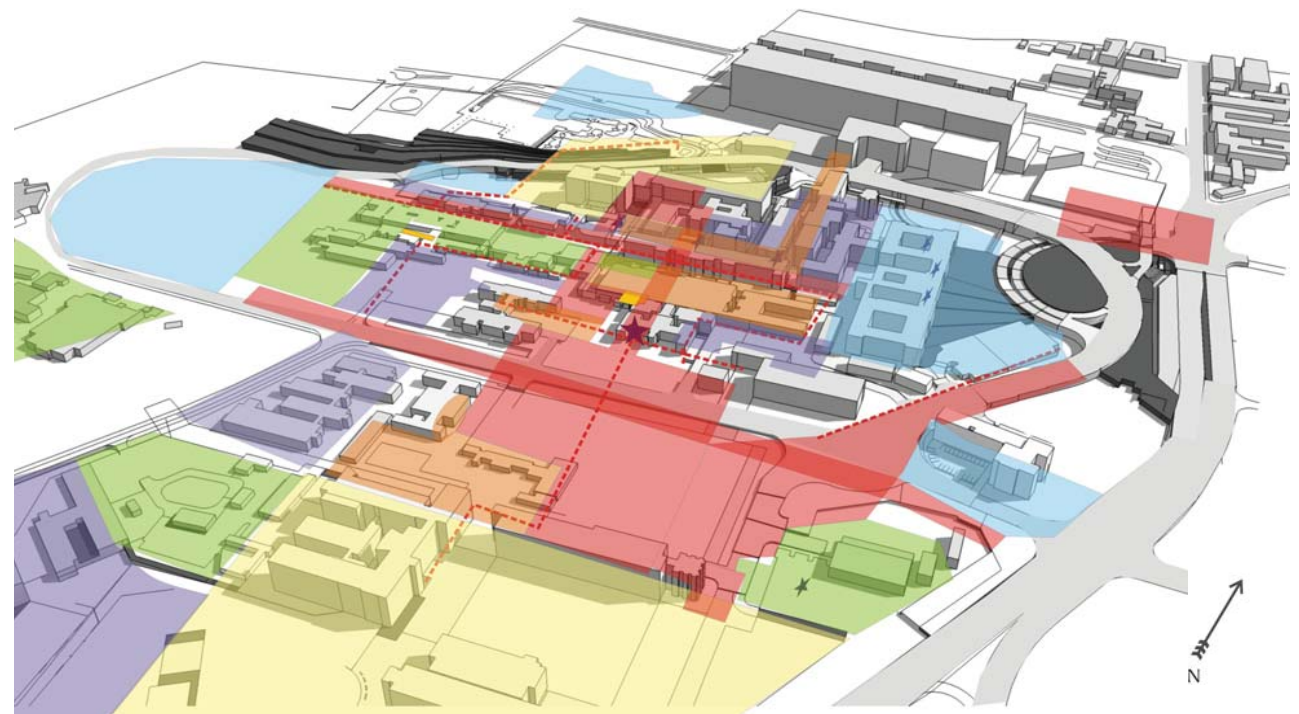
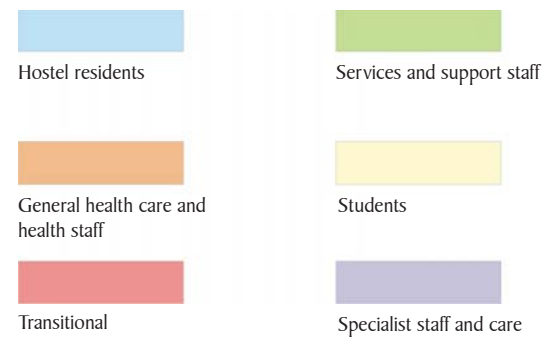


Fig. 3.12: Distribution of user groups. (Author, 2008)



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.

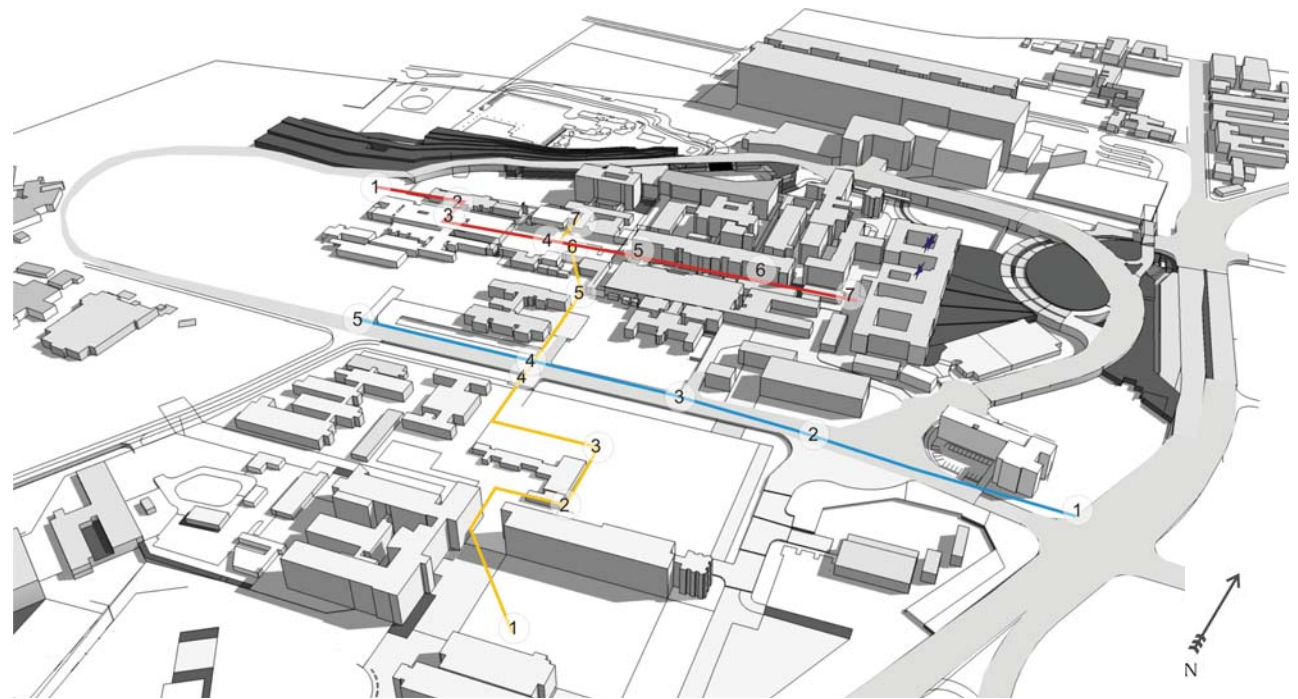


Fig. 3.13: Identification of 3 journeys through the urban fabric. (Author, 2008)

- 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.

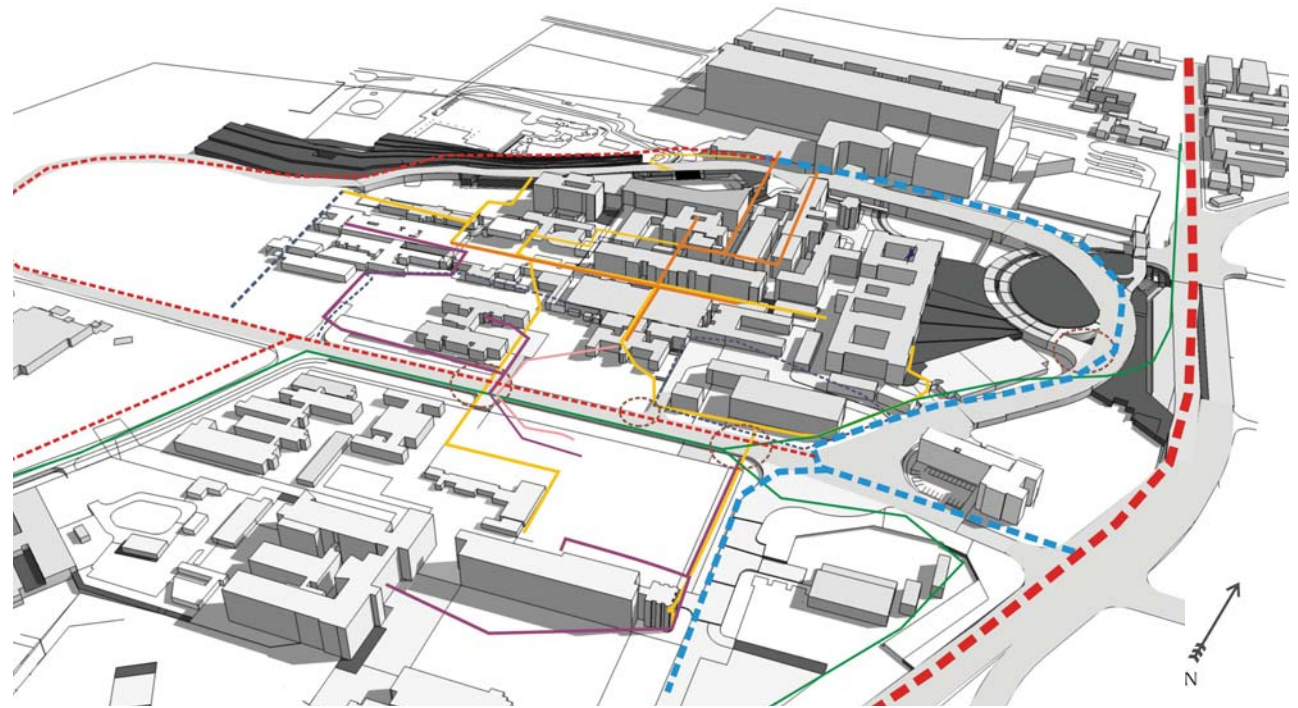
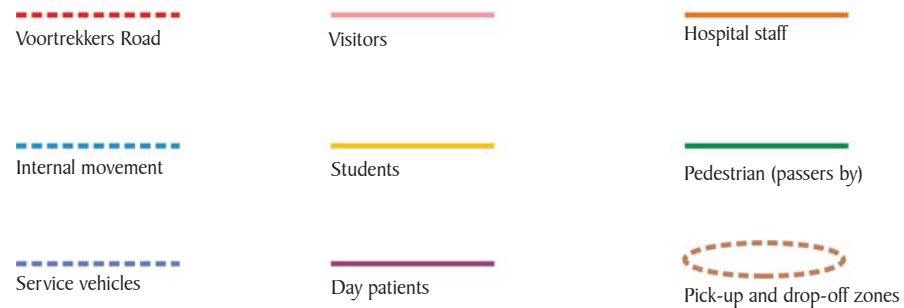


Fig. 3.14: Movement patterns. (Author, 2008)



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;

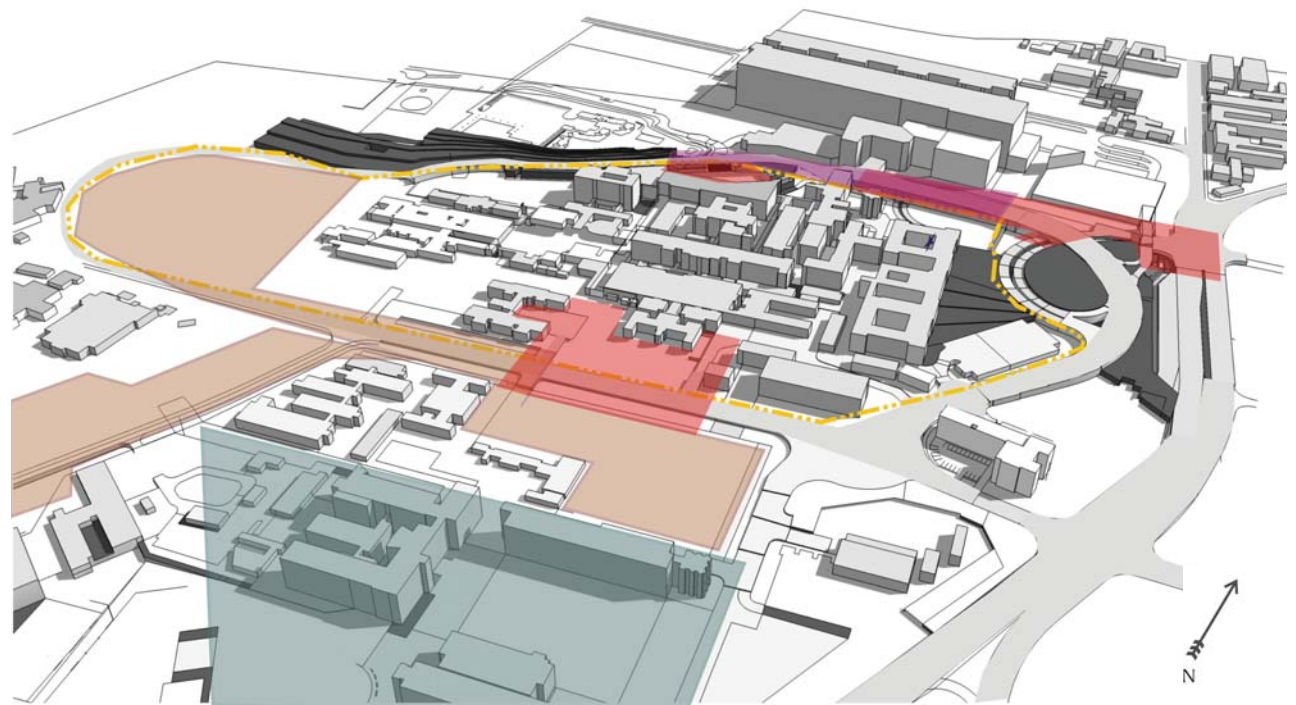
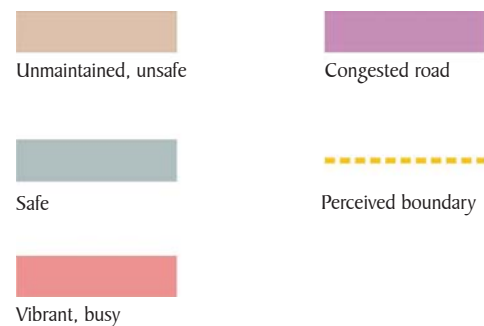


Fig. 3.15: Perceived characteristics. (Author, 2008)



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.

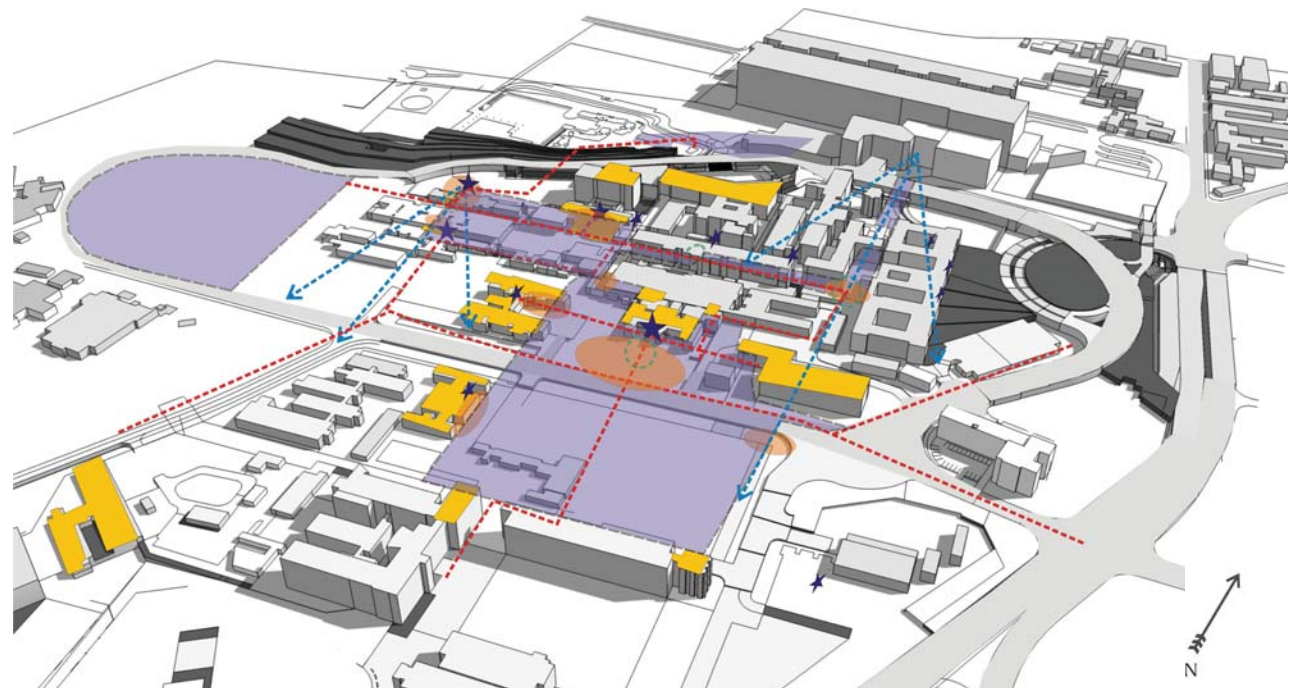
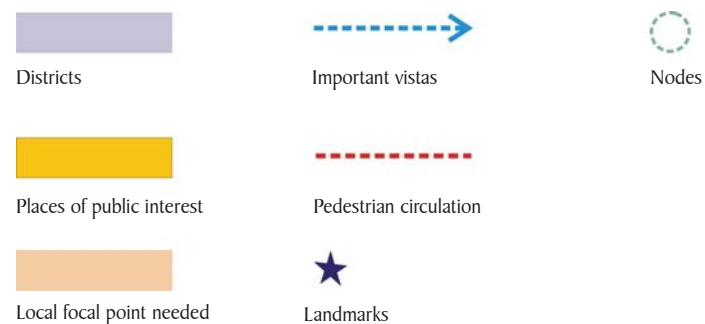


Fig. 3.16: Legibility. (Author, 2008)



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.

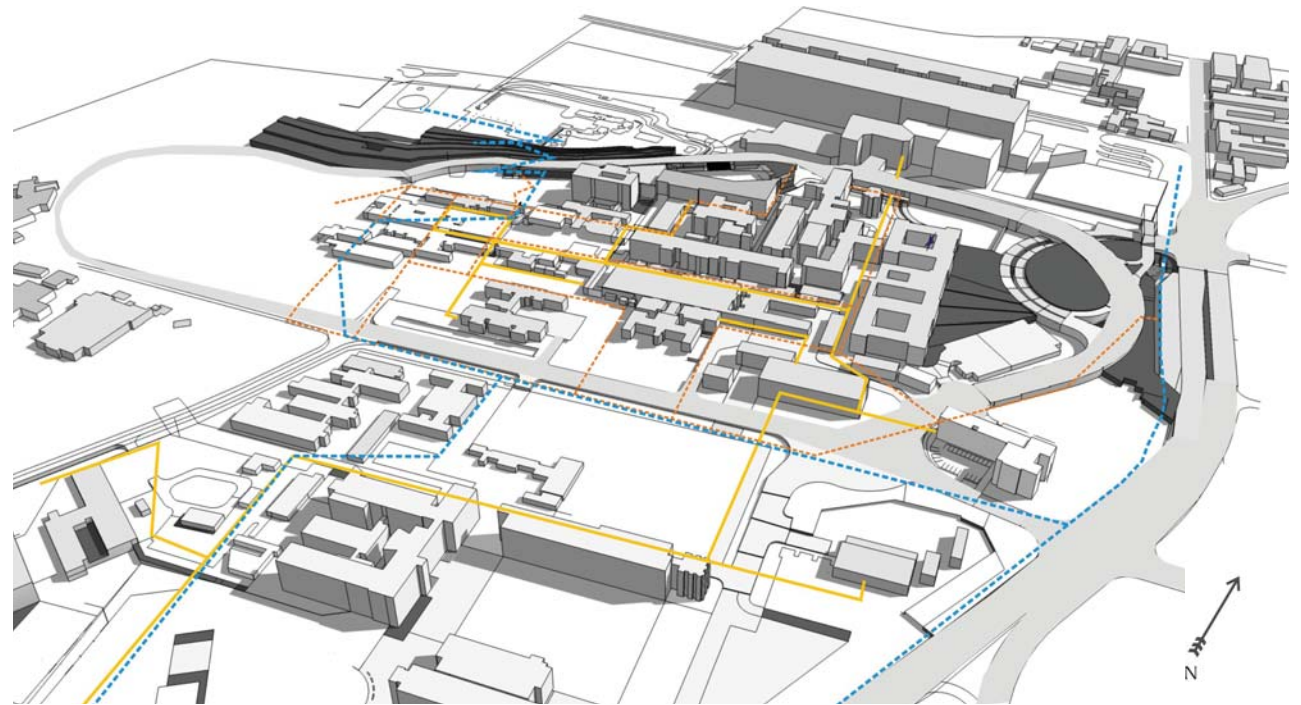


Fig. 3.17 Bulk services provision. (CTMM, 2008 and Author, 2008)



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.

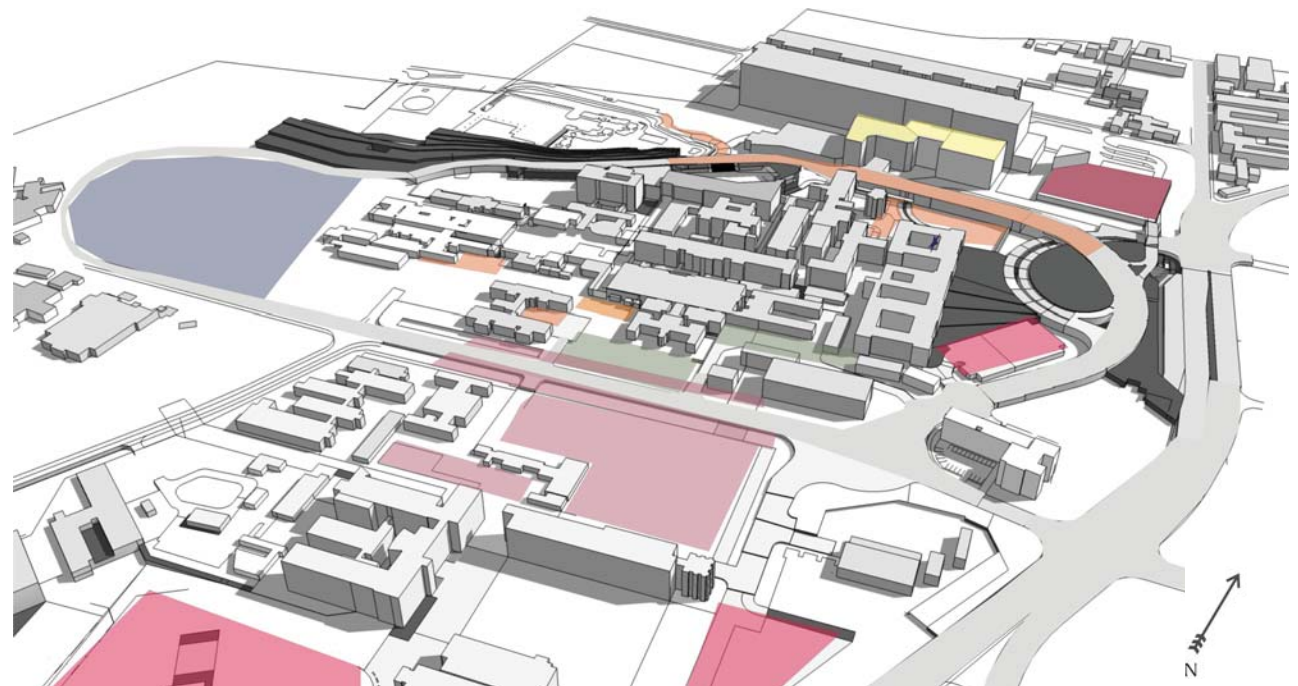








Fig. 3.19: Parking. (Author, 2008)

	
New parking for students	Existing staff parking
	
Existing parking for students	Areas that are informally used for parking
	
Parking for patients and visitors	Parcade



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.

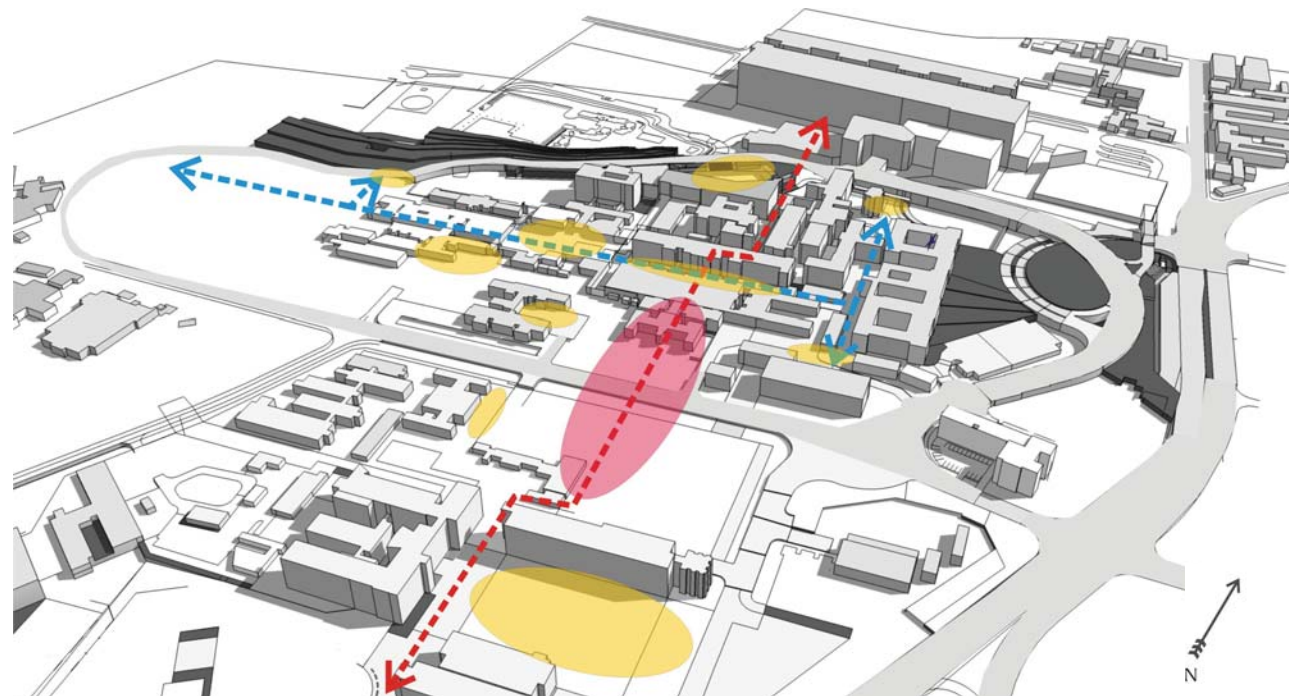


Fig. 3.21: Performance criteria. (Author, 2008)

