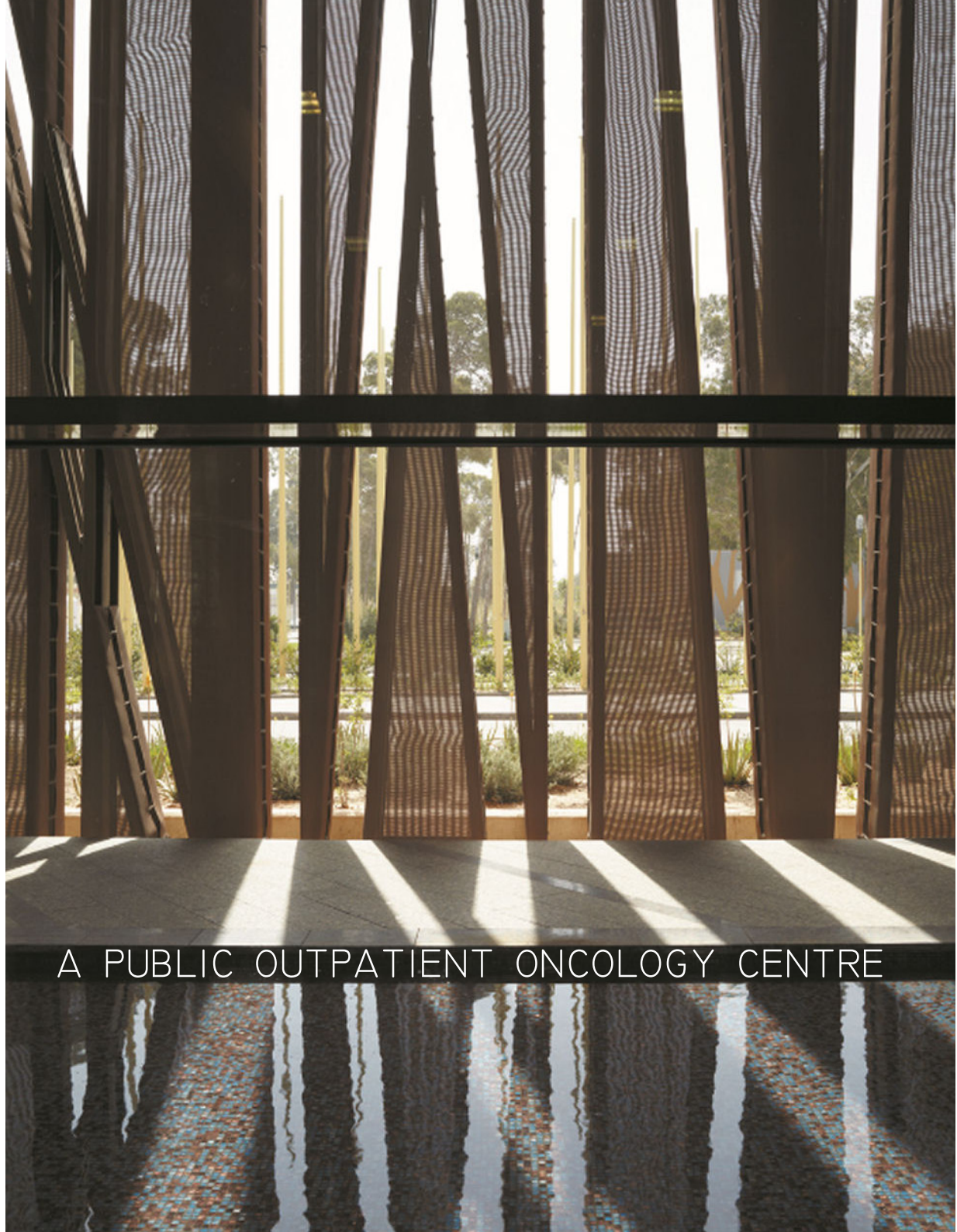


INFUSION

A PUBLIC OUTPATIENT ONCOLOGY CENTRE



I, Marc Adank 0503288D am a student registered for the course Master of Architecture (Professional) in the year 2012. I hereby declare the following:

I am aware that plagiarism [the use of somebody else's work without permission and/or without acknowledging the original source] is wrong. I confirm that the work submitted for assessment for the above course is my own unaided work except where I have stated explicitly otherwise. I have followed the required conventions in referencing thoughts, ideas and visual materials of others. For this purpose, I have referred to the Graduate School of Engineering and the Built Environment style guide. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my own work.

Marc Adank

November 2012

This document is submitted in partial fulfilment for the degree:

Master of Architecture [Professional]

at the University of the Witwatersrand, Johannesburg, South Africa, in the year 2012

FOR MY FAMILY

ACKNOWLEDGEMENTS

In completing this document, I would like to thank my family for their continued support, their love and the understanding they have shown me especially during the last few months of this year.

To my mom and dad, thank you for always being there for me and seeing me through what felt like a century of University. I love you guys.

To my brother and sister, thank you for standing by me through thick and thin and helping me get through each new project and year.

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Thank you to Professor Michael Herbst and the staff of the CANSA Association for your time and knowledge of the disease. To Yael Horowitz, the staff and patients of the Hillbrow Community Clinic for all their personal experiences and stories.

Thank you to Karan Bawa and Michael Cornwall for their continued friendship and for helping me when I was not on campus. To the boys and girls of Studio 2012, thank you for all the fun times, the stress, laughs and endless supply of coffee.

To all the patients who have also experienced cancer personally, their families and friends:
Stay positive, stay strong, stay informed.

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ABSTRACT

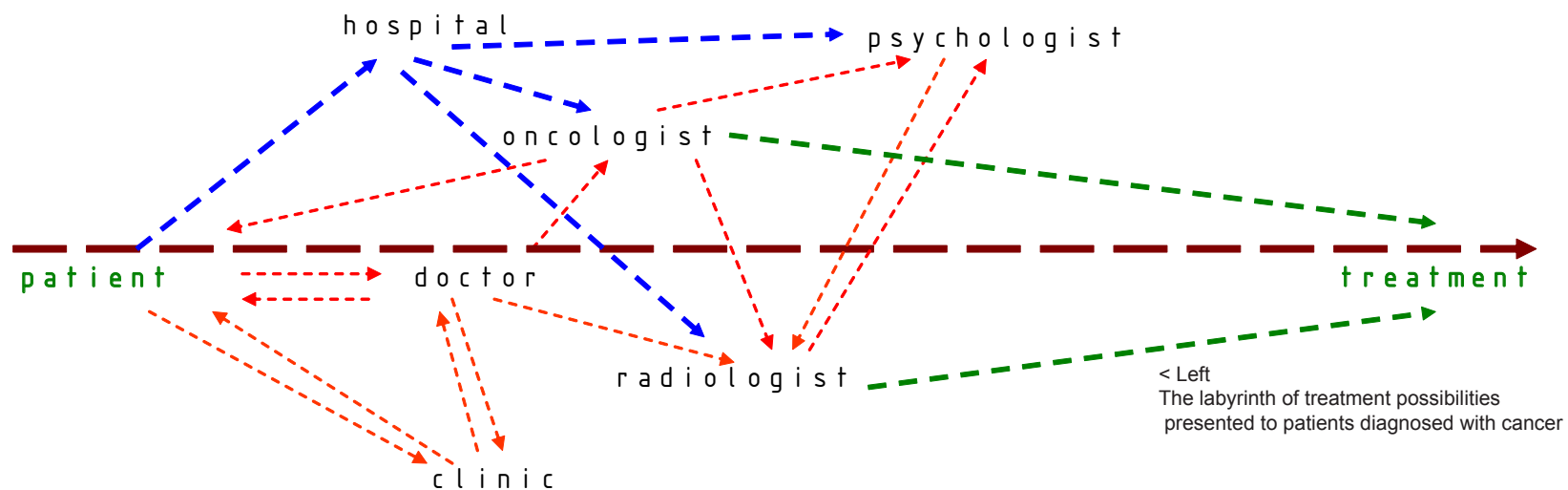
For many health practitioners death is seen as a failure and dying patients are avoided because they are reminders of that failure. A disconnection in the system in society exists. Patients are not educated to recognize the symptoms they present; first line practitioners are often not able to diagnose and refer patients to specialists who in turn should view the treatment of the cancer patient as holistic and that the support of the family and immediate care givers as paramount.

'It is the denial of death that is partially responsible for people living empty, purposeless lives; in contrast when you fully understand that each day you awaken could be the last you have, you take the time that day to grow, to become aware of who you really are, to reach out to other human beings'.

(Elizabeth Kubler-Ross, 1975).

The prevailing uneasiness and denial of death is reflected in medical procedures where quite often modern medical care isolates the patient from the community of loving caring persons. Personal and human needs are abandoned as the patient is isolated on a special wing or floor in a hospital, left alone by doctors and nurses especially when death is evident. Physicians and health care workers are trained to deal with life and not with death. Many physicians are strangers to the issue of death simply because they have been taught to diagnose, treat and cure. (McKay, 1985).

We need to see the individual as a part of a group of interacting, inter-related or inter-dependent elements that form a complex whole. This whole or system is what Lefebvre describes as that space that is directly connected and influenced by the society that inhabits it and conversely it also has an influence on society's structure.



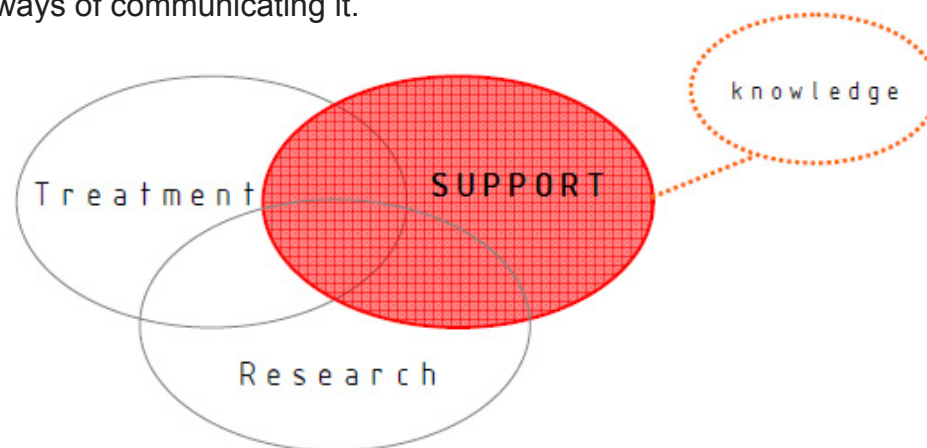
There is a critical disconnection between what is discovered and that which is delivered in the form of prevention, screening, diagnosis and the treatment of Cancer. The identification and elimination of all the barriers that prevent the benefits of this knowledge from reaching all communities, irrespective of their location or economic status, must be removed. These barriers may be experienced at any point along the continuum of prevention, screening, diagnosis and treatment.

An intense approach to providing this culturally relevant education and improved and intensive support systems is critical in order to bridge this 'gap' in communication between society and the advancing knowledge of cancer treatment and support.

The proposed development is for a Public Outpatient Oncology Centre that will provide an opportunity to integrate the knowledge of the private health sector (professional bodies) within public health and the context of Hillbrow's urban society. A centre to enlighten and fill the void between diagnosis and treatment of this non-communicable disease, providing a knowledge base to reduce the urban discrimination and marginalization of this disease.

It will provide the platform for re-integration of healing patients into the community, referred from the hospital, to the localized outpatient chemotherapy centre. On a larger scale, it shall also re-integrate the disconnected bodies that collectively form the Cancer Institute of South Africa.

This project does not aim to solve or to find a cure for cancer, nor does it hope to resolve the stigmas and problems associated with the Healthcare system in South Africa. Its focus is on the collective body of knowledge of the disease and providing possible ways of communicating it.



< Left
The relationship between the primary
functions in the cancer diagnosis process.

PREFACE

THE STATISTICS

Cancer has been termed, 'the silent killer'. In many cases, the patient is only aware of the disease in the late stages as the symptoms are often not easy to recognise, resulting in a high fatality rate. Another major contributor is the poor public knowledge of cancer.

Many of the people interviewed and their opinions sourced for this document still consider cancer to be a hereditary disease, a case of bad luck or even a punishment for past sins and they believe that there is nothing they can do to prevent its occurrence or recurrence. One of the best ways to fight a disease is through knowledge and understanding the facts. Some cancer statistics to consider:

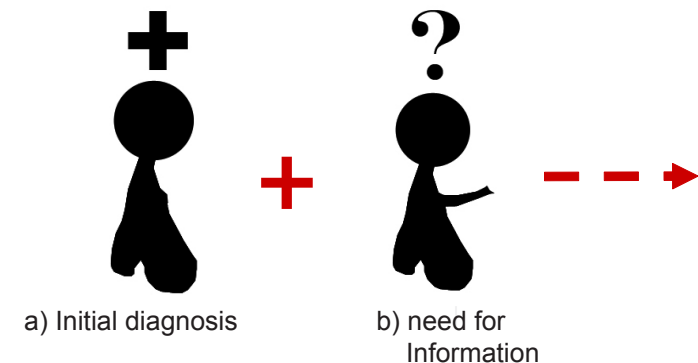
At least 12 million people world-wide every year, hear the words 'You have Cancer' (excluding non- melanoma skin cancers and other non-invasive cancers)

Cancer is the leading cause of death worldwide accounting for 7.6million deaths in 2008. (Roughly 13% of all deaths in 2008)

Worldwide, cancer kills more people than Aids, Malaria and TB combined.

About 70% of all cancer deaths in 2008 occurred in low to middle income countries.

According to the National Cancer Registry in 2004, South Africans have a lifetime risk of one in six (1:6) to be diagnosed with cancer. This projects a rough total of 13.1 million cancer victims by 2030.



This thesis aims to unpack and identify the developing journey of the Cancer patient, moving from the relative obscurity of misinformation, stigma and taboo associated with the disease from initial diagnosis to final treatment.

The aim here is to address the process of re-communicating the knowledge of the disease to the individual and attempting to highlight the constraints that govern society at large with regards to non- communicable diseases.

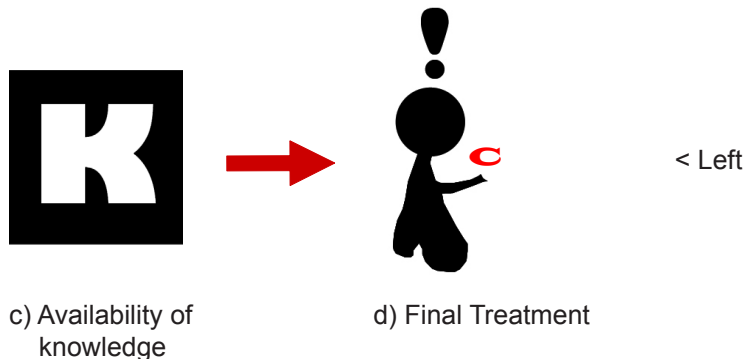
The systematic movement of cancer through the body and the physical movement of the patient through the city will help to suggest a relationship between the two.

The development of the proposed design will attempt to mirror and re-communicate the relationship between the individual and the institutional body of the Health precinct by using the theoretical themes as design informants. The proposed Public Outpatient Oncology Centre will function both as a gateway building for re-communicating the pedestrian movement with the existing Hillbrow Health Precinct, as well as creating an accessible, safe and sheltered space for cancer treatment and recovery.

The design will be defined by the public movement on and around the site. This will highlight the path of the individual as the patient and as the pedestrian and how this parallels the experience, with the stages of cancer treatment from diagnosis to recovery.

A sequence of thresholds will develop a strong interface between the building and the public, creating a permeable experience for the user.

The ideas regarding nature and architecture will inform the levels of facade development of the building, creating new thresholds between public and private space. The symbolic representation of an Infusion Centre will be re-inforced through the use of regenerative processes mirroring the recovery of the patients inside. Closed, sustainable systems will allow the building to heal the 'stigmatised' landscape and infuse a new approach to the treatment of cancer.



The process that defines the movement of the patient from Initial diagnosis to final treatment. This transition for the patient is often very sudden, undermining the Importance of the knowledge of the disease.

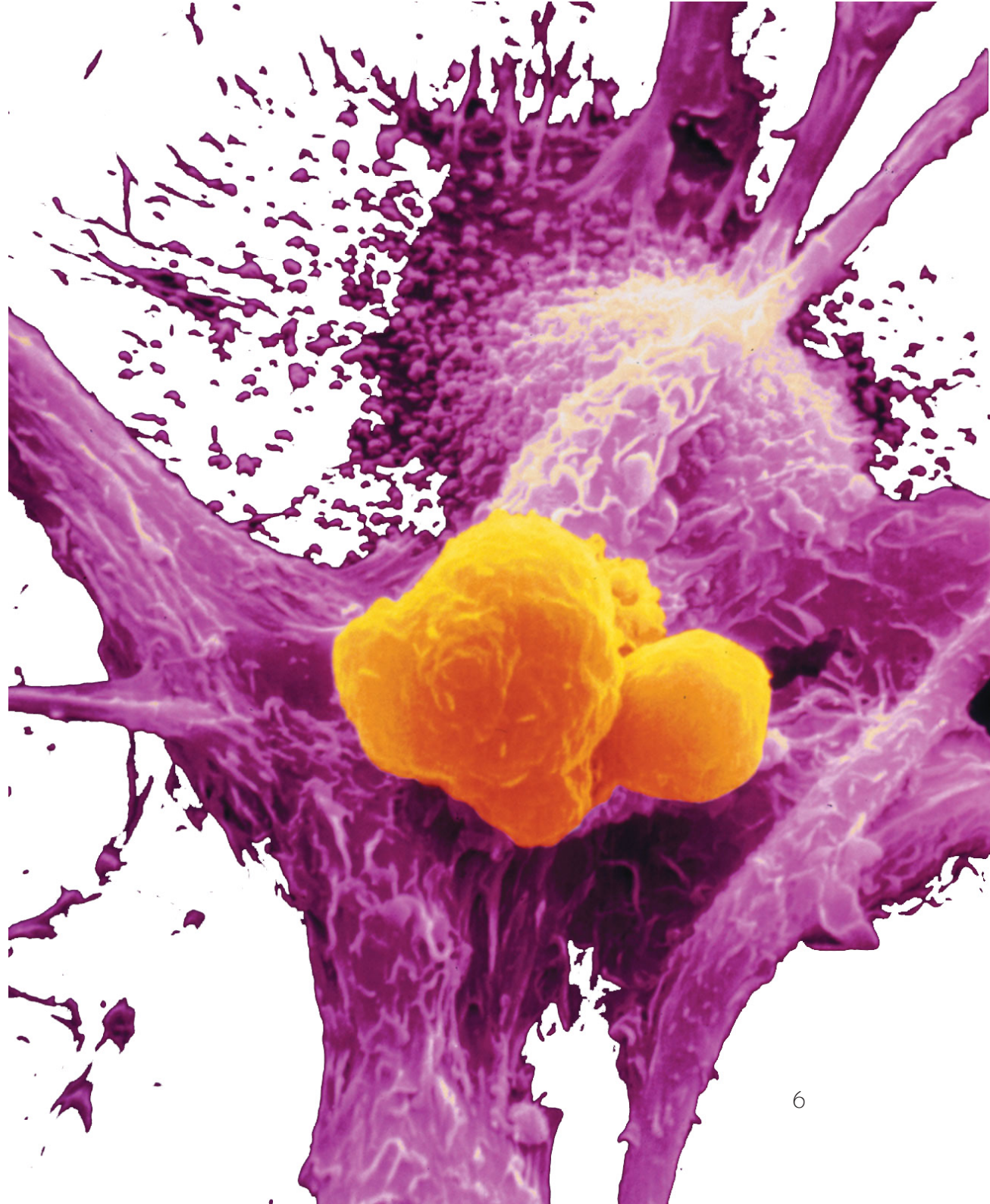
A common duality can be drawn between the process of Cancer cell movement through the body and the path of the patient through the Healthcare system.

As an early investigation, it was undertaken to track these paths, the path of cancer cell metastasis in the human body, the path of the individual patient through diagnosis in the public and in the private healthcare system. This process helped to identify the focus of the design proposal within the public cancer healthcare system.

CANCER AS A SYSTEM:

PATH OF THE CELL

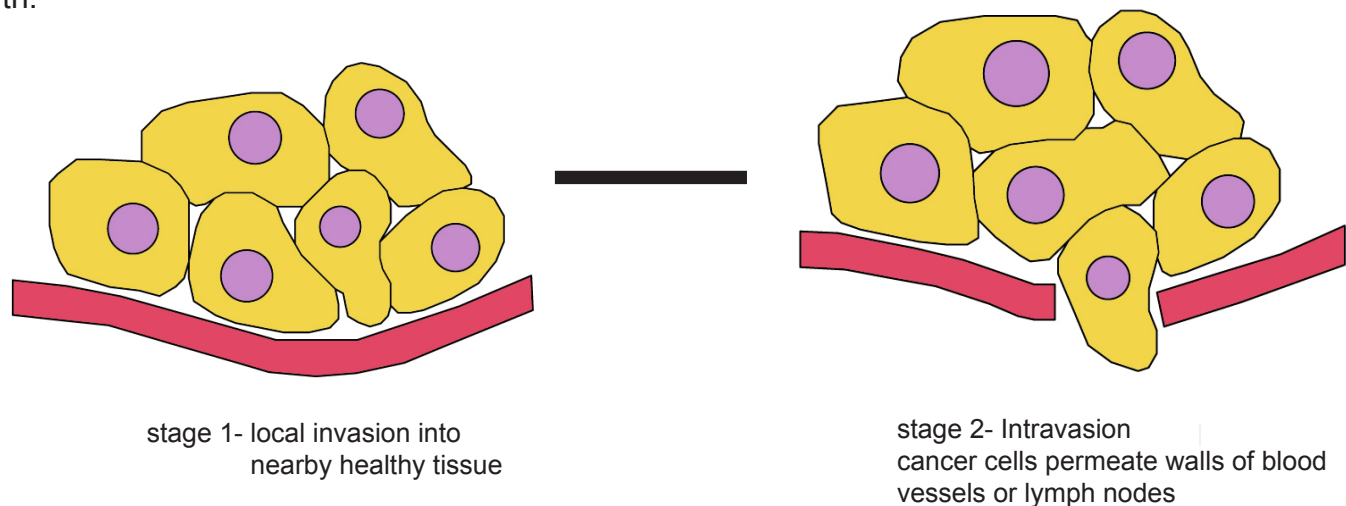
Cancer is the system in which normal cells in the body metastasize into abnormal cells dividing without control and are able to invade other tissues in the body via the blood and lymph systems. There are many different types of cancers and they all share certain similar characteristics with healthy cells of the same kind. To better understand the structure and nature of cancer, it is important to understand how they originate, develop and spread.

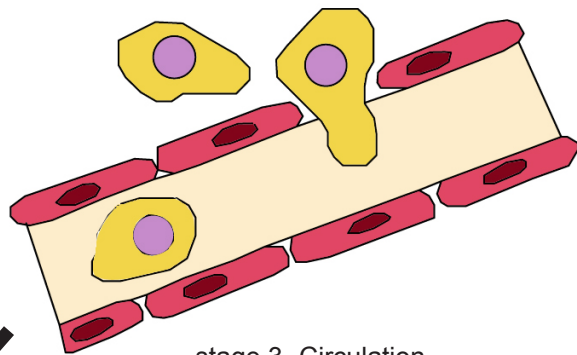


Tumour progression or metastasis is the process by which cancer cells originate in one place where it first starts and spreads to other parts of the body. During the process of metastasis, the cells of a tumour can vastly change in size, shape, internal structure and their biochemistry (Livestrong:2004).

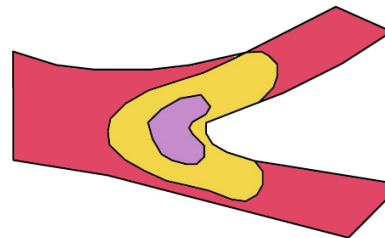
The process of Cancer cell metastasis can be dissected into the following steps:

- Local invasion - when the cancer cells invade the nearby normal tissue.
- Intravasation - When the cancer cells invade and permeate through the walls of the lymph and blood vessels.
- Circulation - The cancer cells move through the lymphatic system and the blood stream to other parts of the body.
- Extravasation - the cancer cells arrest or stop moving in the small blood vessels or capillaries and migrate into the surrounding tissue.
- Proliferation - the cancer cells multiply at the new distant location and form new tumours.
- Angiogenesis - these new tumours stimulate the growth of new blood vessels to obtain a blood supply. This new blood supplies the necessary oxygen and nutrients necessary for continued tumour growth.

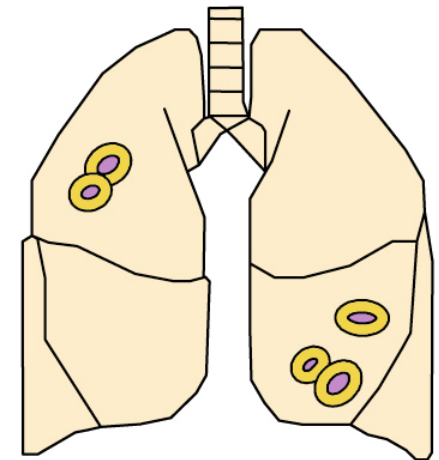




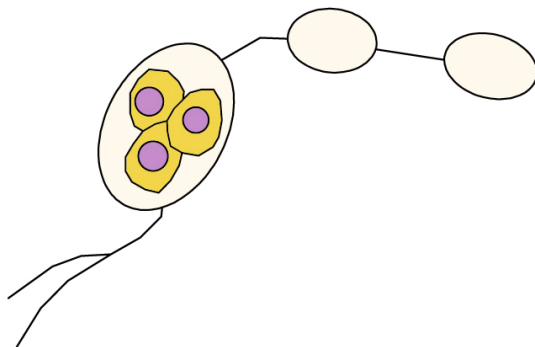
stage 3- Circulation
cancer cells move around the blood
system to various parts of the body.



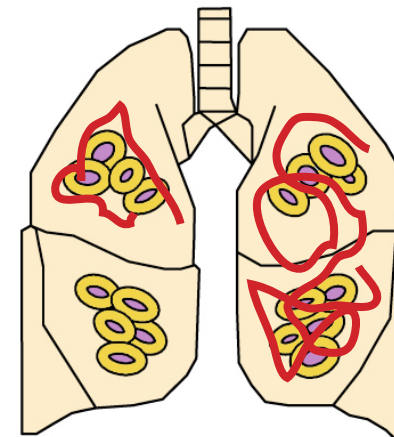
stage 4- Extravasation
cancer cells stop moving at capillaries
and migrate into surrounding tissue.



stage 5- Proliferation
cancer cells multiply at the new site to
form new tumours.



stage 3- Circulation
cancer cells move around the lymph
system to various parts of the body.



stage 6- Angiogenesis
tumours stimulate growth of blood vessels
that will maintain tumour growth

A PUBLIC AFFAIR

The Path of the Patient

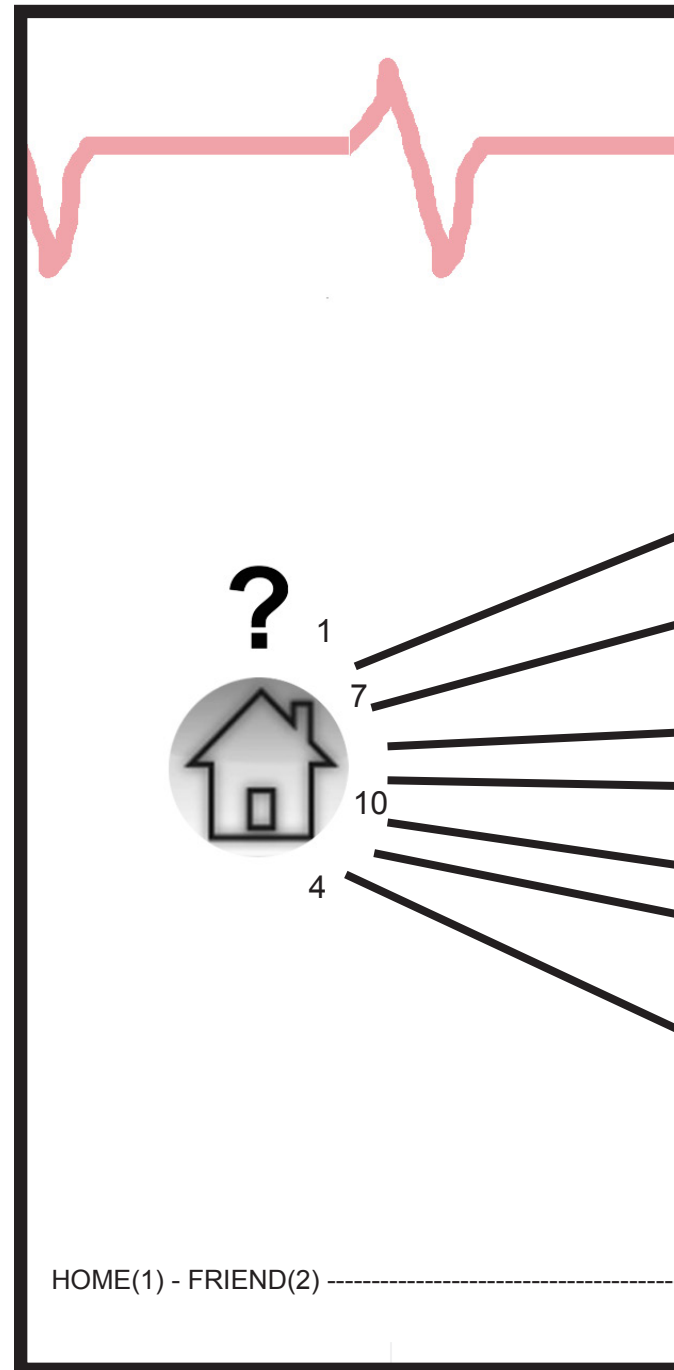
A personal experience of cancer IDENTIFYING the disconnection between the diagnosis and treatment process.

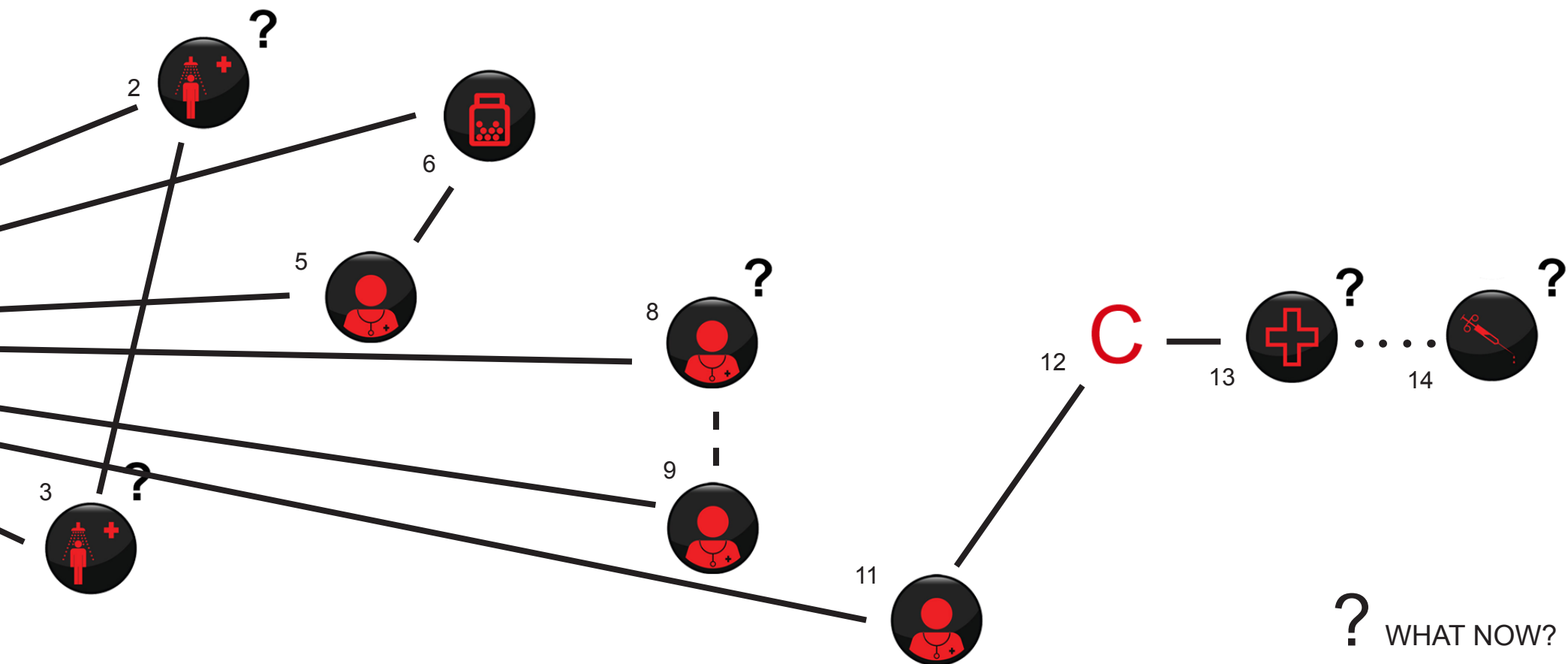
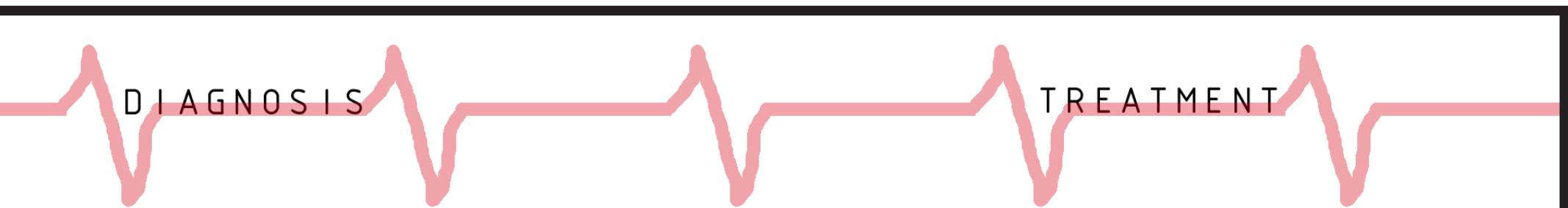
In late 2008, Jeffrey Dube (real name withheld) found a golf ball sized lump on the side of his body. It never hurt him, so he let it go. After two weeks, he noticed the lump was larger so decided to go see the doctor. Living in Hillbrow, he visited the local Esselen clinic for answers. After many hours sitting in the queues, with the assortment of illness's ranging from a runny nose to TB, he received his first diagnosis. The doctor very promptly issued him with a script for the pharmacist for an anti-inflammatory for his apparent 'gastric ulcer'.

'The Doctor is a good man, he makes us better' (Dube:2012).

Without questioning the doctors words, Mr. Dube continued with his normal everyday routines irrespective of the growing tumour in his body. Subsequently, two months later and after two more visits to Johannesburg General Hospital, he was diagnosed with acute stage 2 lymphoma. Mr. Dube is currently waiting for the next available appointment to see a surgeon to remove the tumour.

- COMPLEX PROCESS
- DURATION - 3 Months (before treatment)





-----FRIEND(3) - HOME(4) - DOCTOR(5) - PHARMACY(6) - HOME(7) - DOCTOR(8) - DOCTOR(9) - HOME(10) - DOCTOR(11) - **CANCER**(12) - TREATMENT(13 + 14)

A PRIVATE AFFAIR

My journey

IN June 2010, I was diagnosed with stage 2 testicular cancer.

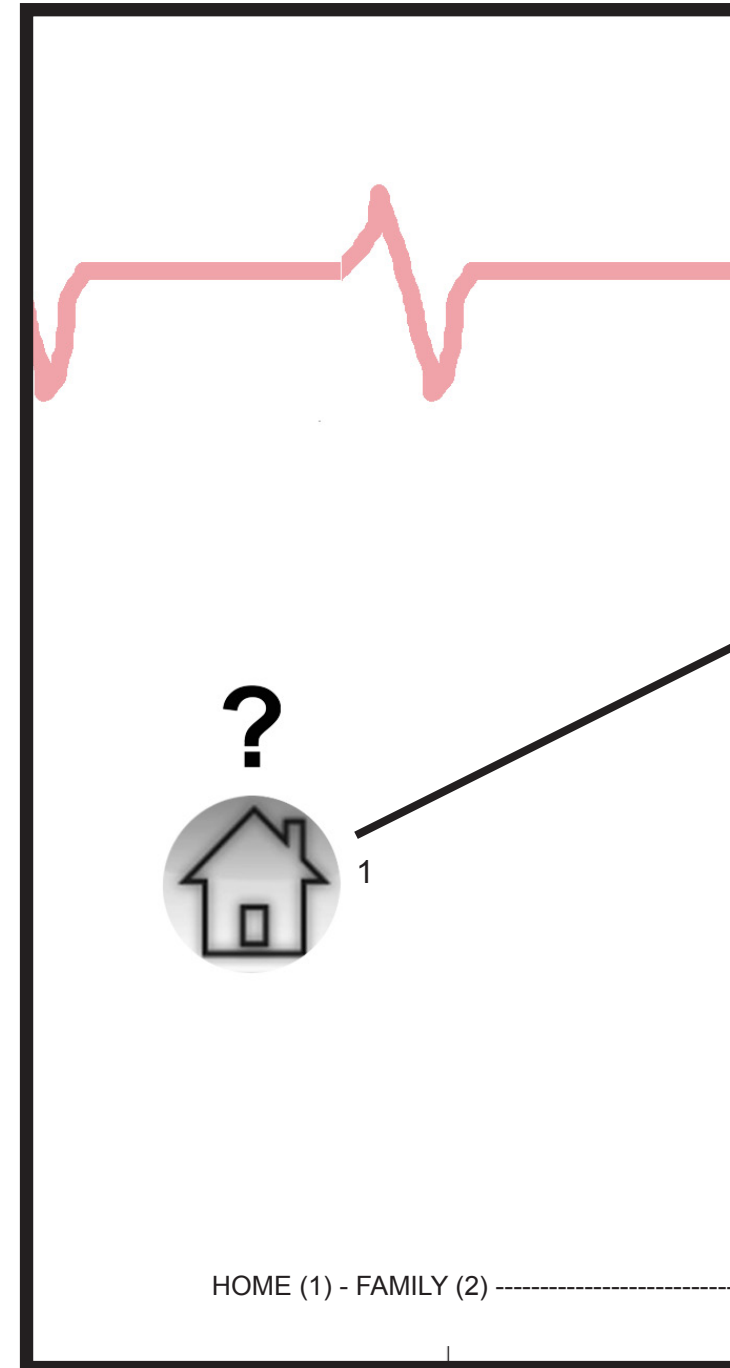
I began my honours year with much enthusiasm but the stress and pressure that goes hand in hand with Architecture began to build up. I noticed an abnormal growth in my groin and dismissed it quite quickly as a result of the stress I was under. Two months later, the growth had quadrupled in size, now the size of a tennis ball. I had no idea what was wrong, and consulted the internet for solutions. I was bombarded with new alien terms such as hydrocele, melanoma, benign and of course...
CANCER.

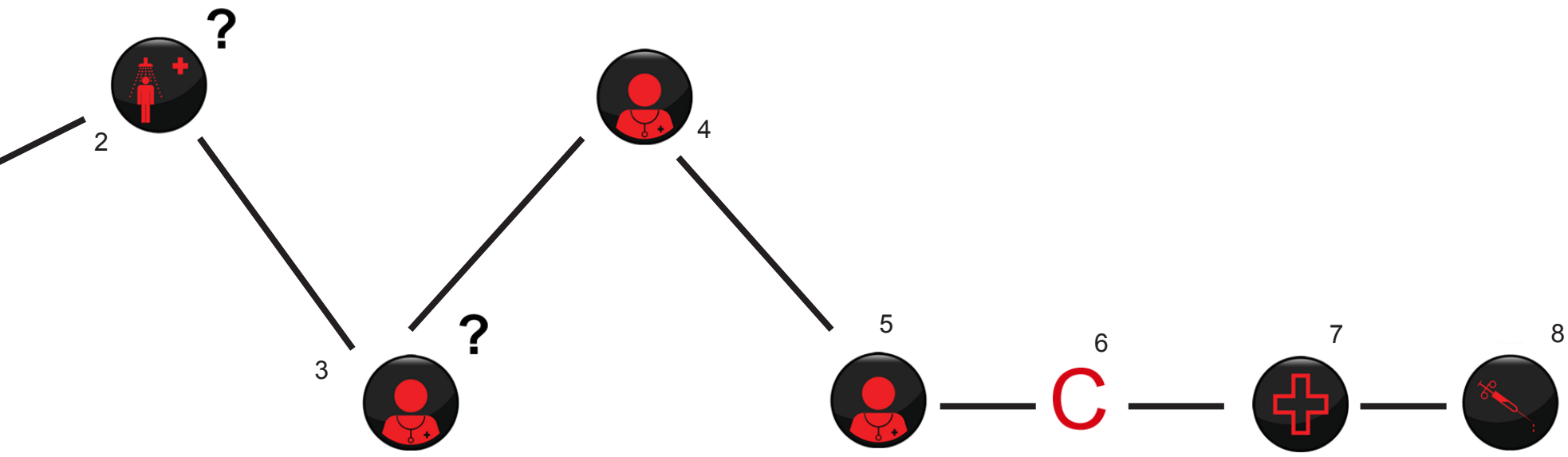
Out of fear and privacy, I asked my twin brother, being in the medical field, for some advice and his personal opinion. One day later and it was battle stations at home, I was promptly delivered to the doctor for a consultation. As it was a Sunday, the only professional help available was the locum on call.

The locum diagnosed it was a mere hydrocele and set up an appointment with the nurse to have it drained. A little wary of the prognosis, I insisted on a more 'professional' opinion and the next day I consulted my doctor. Within 10 minutes of examination, he promptly insisted on an operation to remove the metastasized tumour. It was official... I had **CANCER.**

My journey through cancer, although a physical challenge, was quite an easy process. I started my chemotherapy soon after the operation and with the knowledge and support of family and staff of my private care, I am still in remission. My journey, if anything, has taught me that there is a need for the integration of knowledge across all levels of care and the more you know about your disease, the easier it is to acknowledge and deal with it.

- DURATION - 2 Months (including recovery)





? WHAT NOW?

-----DOCTOR-locum (3) - DOCTOR- SECOND OPINION (4) - ONCOLOGIST (5) - **CANCER** (6) - OPERATION (7) - TREATMENT (8)

PUBLIC INFUSION:

AN UNDERSTANDING OF CHEMOTHERAPY

Infusion therapy involves the administration of medication through a needle or catheter. A drug is administered intravenously in cases where the oral medications are not effective. Chemotherapy is administered via infusion. The general practice in South Africa is for clinic or hospital based infusion centres, where infusion nurses who have specialist training are able to administer the drugs and take care of the patient.

The first use of the drugs to treat cancer was in the early 20th Century, although it was not originally intended for that purpose. Mustard gas was used as a chemical warfare agent during World War 1 and was found to be a suppressor of hematopoiesis or blood production. Nitrogen mustard used during World War 11 was found to be an agent that damaged the rapidly growing white blood cells. In December 1942 several patients with advanced lymphomas were given the drug intravenously. They showed a temporary but remarkable improvement. At the same time, following a German air raid on the Italian harbour of Bari, several hundred people were accidentally exposed to the mustard gas which had been transported to Bari by the allied forces. The survivors were found to have a very low white blood cell count. After the war and the declassification of reports, researchers were led to look for other substances that may have similar effects against cancer. The first chemotherapy drug, mustine was developed.

The first modern chemotherapeutic agent was arsphenamine, an arsenic compound discovered in 1909 and used to treat syphilis. This was later followed by sulfonamides and penicillin. There are a number of strategies in the administration or infusion of chemotherapeutic drugs. Chemotherapy may be given with a curative intent or it may be used to prolong life or to palliate symptoms. Combined modality chemotherapy is the use of drugs with other cancer treatments such as radiation therapy or surgery. Most cancers are now treated in this way. Combination chemotherapy is a similar practice that involves treating a patient with a number of different drugs simultaneously.

In neoadjuvant chemotherapy initial chemotherapy is designed to shrink the primary tumour thereby rendering local therapy less destructive. Adjuvant chemotherapy can be used when there is little evidence of cancer present, but there is risk of recurrence. This can be used to reduce the chances of relapse. It is also useful in killing any cancerous cells that have spread to other parts of the body.

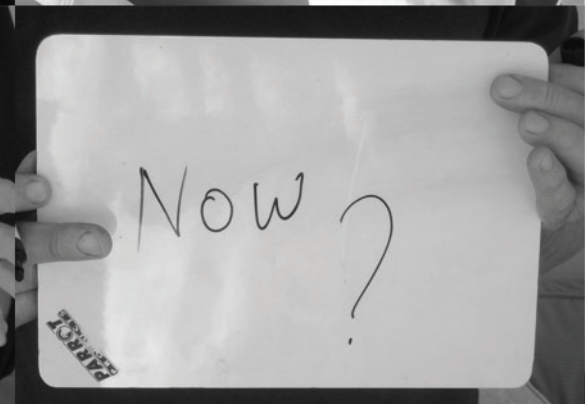
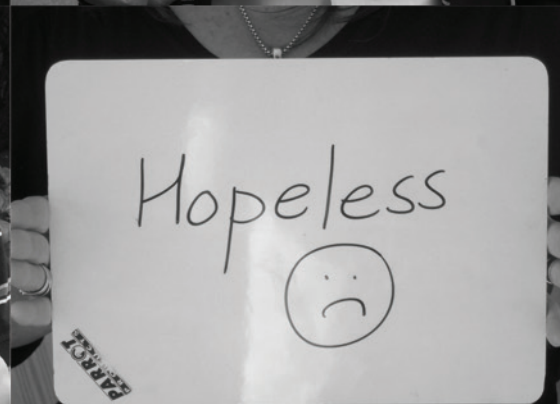
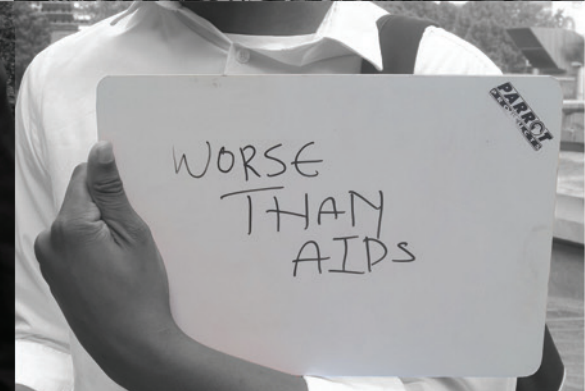
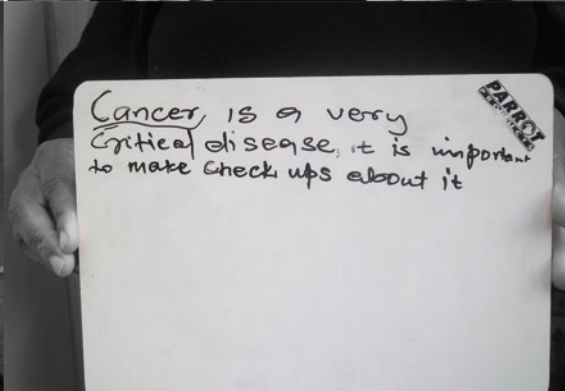
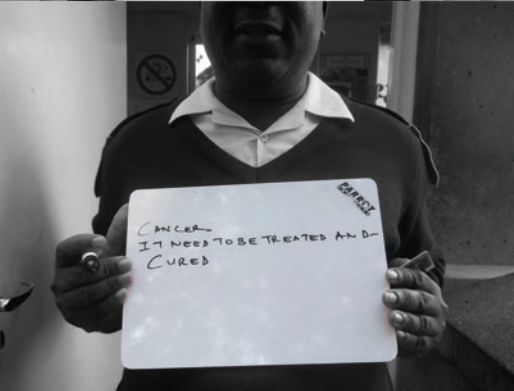
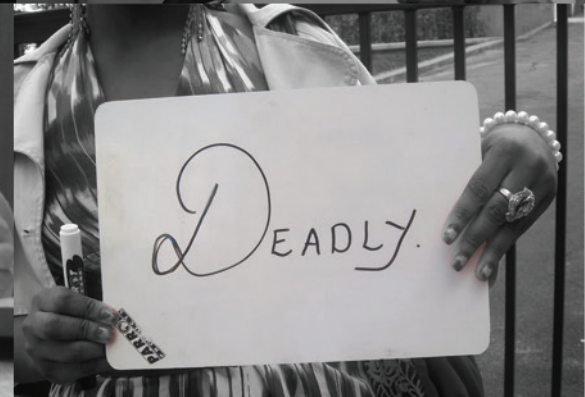
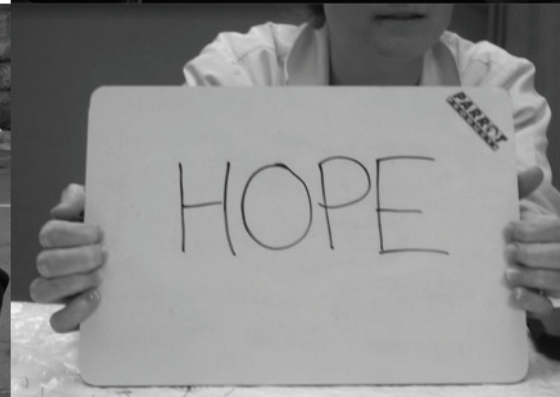
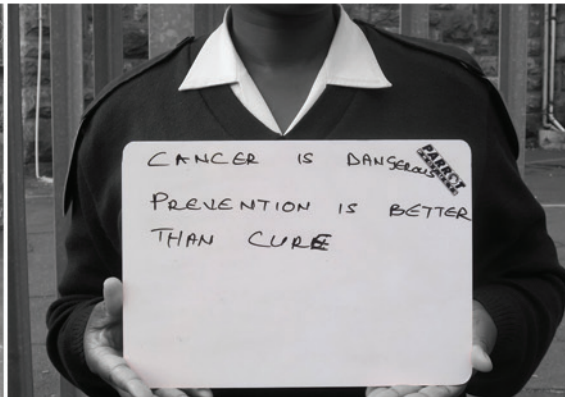
Palliative chemotherapy is given without curative intent, but simply to decrease tumour load and increase life expectancy.

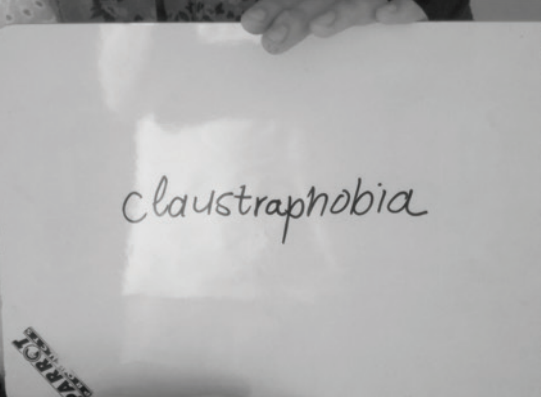
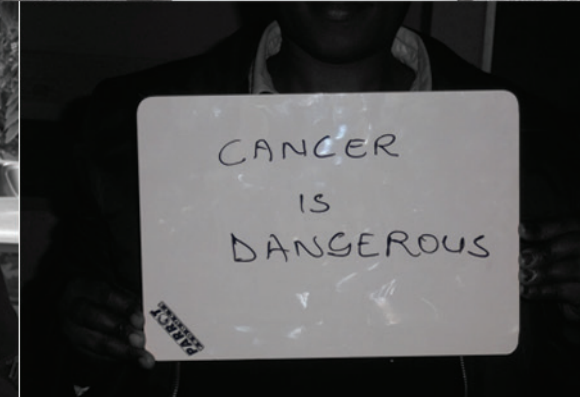
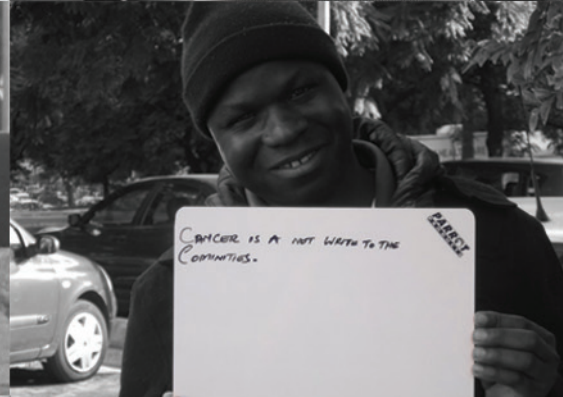
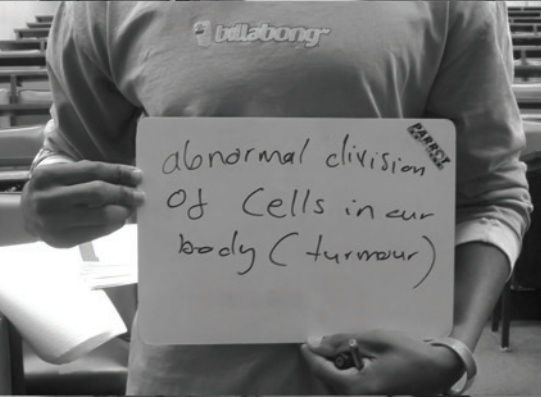
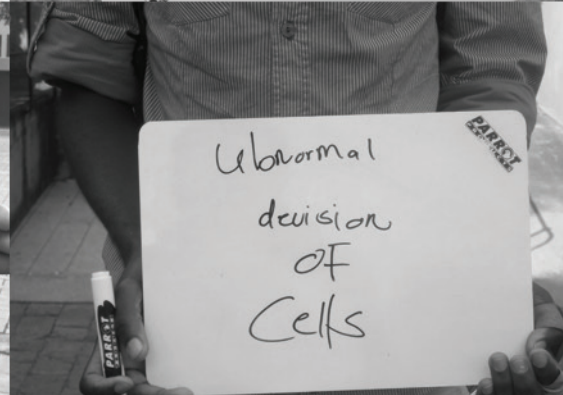
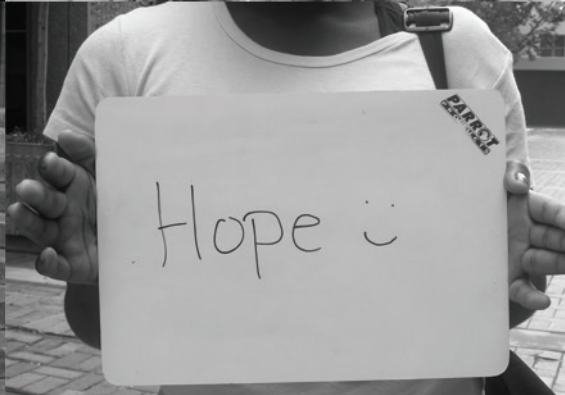
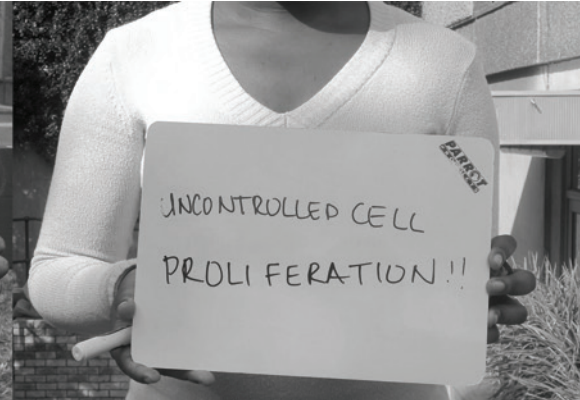
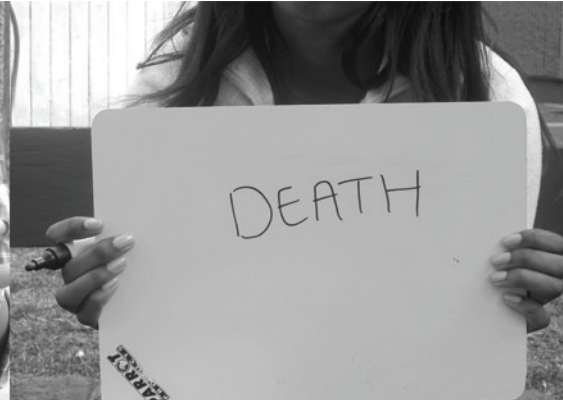
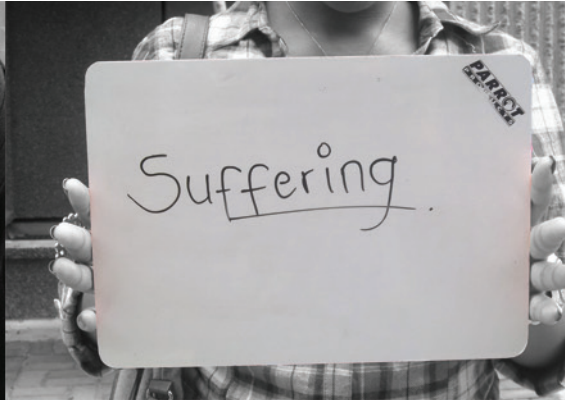
All chemotherapy requires that the patient be capable of undergoing the treatment. Performance status is often used as a measure to determine whether a patient can receive chemotherapy or whether dose reduction is required. Because only a few cancer cells in a tumour die with each treatment, repeated doses must be administered to continue to reduce the size of the tumour. Current chemotherapy regimes apply the drug treatment in cycles, with the frequency and duration of treatments limited by the toxicity to the patient.

All chemotherapy drugs affect the cell division or DNA synthesis in some way.

PERCEPTIONS OF CANCER

INFORMAL INTERVIEWS WITH RESIDENTS
WITHIN JOHANNESBURG'S INNER CITY





'IF WE CAN FACE THINGS DIRECTLY, WE CAN LEARN ABOUT THEM, AND WHEN YOU LEARN MORE ABOUT SOMETHING, YOU CAN FIGHT IT MORE EFFECTIVELY'.

INFORMAL INTERVIEWS WITH HILLBROW HEALTHCARE PROFESSIONALS AND PATIENTS AT ESSELEN CLINIC TO DETERMINE THEIR UNDERSTANDING OF CANCER

STIGMA

STEREOTYPING SOCIETY

^ Right
Stigma or tattoo: a "mark" that clearly
differentiates one person from another



“...space’s hegemony does not operate solely on the ‘micro’ level, effecting the arrangement of surfaces in a supermarket, for instance, or in a ‘neighbourhood’ of housing units; nor does it apply only on the ‘macro’ level, as though it were responsible merely for the ordering of ‘flows’ within nations or continents. On the contrary, its effects may be observed on all planes and in all the interconnections between them’

(Lefebvre, 1991:412).

Lefebvre refers to the inevitable connections that exist within society. A stigma allows for the identification and construction of stereotypes and the separation of labelled persons into distinct groups.

The Etymology of the word ‘stigma’ originates from the Greek word ‘stig’ which means to prick or puncture. A stigma is a mark of disgrace or infamy, a stain or reproach. The archaic meaning was a mark made by a branding iron on the skin of a criminal or a slave. This tattoo or scar would visibly identify these people as social outcasts and they would be avoided at all costs.

Goffman in his book, ‘Stigma: Notes on the management of spoiled identity’:1963, classifies stigma into six dimensions:

- 1) Concealable
- 2) Course of the mark
- 3) Disruptiveness - reactions in a social context
- 4) Aesthetics
- 5) Origin
- 6) Peril - the danger that others perceive the stigma to pose to them.

Foucault in his article “ of other spaces” describes the space in which we live as a Heterogeneous space.

‘ We do not live inside a void that could be coloured with diverse shades of light, we live inside a set of relations that delineates sites which are irreducible to one another and absolutely not super imposable to one another.’

Cancer is stigmatised and seen by many as ‘taboo’-in the original meaning of that word- ‘ a social or religious custom placing a ban or restriction on a particular thing or person’.(Oxford English Dictionary:2010)

This social stigma is the severe disapproval of a person on the grounds of characteristics that distinguish them from other members of society. Society labels someone as tainted, less desirable or handicapped.

NON-COMMUNICABLE?

It is important at this point to distinguish between Non-Communicable and Communicable diseases, bearing in mind Lefebvre's premise that in the 'social lived space', it is history, culture, symbolism and tradition that are socially created.

A non-communicable disease is a disease that is not termed infectious and cannot be transmitted virally to another person. It is due to either genetic inheritance or to certain lifestyle choices.

In 2008, the World Health Organisation (WHO) published a global statement report on non-communicable diseases making the following observations: Of the 63% of people who died in 2008 (nearly 36 million people) non-communicable diseases were to blame. 80% of these deaths occurred in middle to low income countries with cancer taking as many as 7.6 million lives every year.

South Africa is in the midst of a profound health transition that is characterised by a quadruple burden of communicable, non-communicable, perinatal, maternal and injury related disorders. Non-communicable diseases are emerging in both rural and urban areas, most prominently in poor people living in urban settings, and are resulting in increasing pressure on acute and chronic healthcare services.

(Mayosi: 2009)

~~NON-COMMUNICABLE~~

For my family

Cancer is a private and a public experience. It is private because it is personal. Testicular cancer is a personal encounter with the disease. It forces one to re-evaluate one's own view on life. It forces the personal experience into the public eye where family and friends share the disease. It is not an easy journey. It begins with a diagnosis, a vague acknowledgement of the implications of the word and then an abrupt realization that the course of treatment is an excursion into the undefined, the unknown. All previous conceptions of the disease are discarded, misconceptions are banished and one emerges vulnerable, yet renewed.

A SPACE 'THAT CLAWS AND GNAWS AT US'

(FOUCAULT, 1967: 38)

REACHING BEYOND THE BOUNDARIES OF STIGMA



ABOVE>

THE INNER CITY OF JOHANNESBURG MADE UP OF BRAAMFONTEIN AND HILLBROW. VIEW FROM A ROOF WITHIN THE INSTITUTIONAL BOUNDARIES OF THE UNIVERSITY OF THE WITWATERSRAND.





FRAGMENTS OF

ANONYMITY

RECOMMUNICATING THE PUBLIC WITH SPACE

Maybe...

by Charlie Altersitz

If we pretend long enough,
Maybe it'll just go away
Maybe we can wake up tomorrow morning
And laugh without the awkward tension
Maybe our jokes won't come off the tongue
With nervous apprehension
Does it hurt to laugh?
Maybe I won't say anything at all.

If we close our eyes,
Maybe the elephant in the room
Will get chased off by a mouse,
Or maybe it will choose to
Occupy someone else's home.
We can clean up where it stayed
And go on with our lives,
Like it was a short-lived resident
In our guest bedroom.
No different.

Maybe we're all looking at it the wrong way.
Maybe the "C" word we should be looking for
Is courage,
And we should do our best to wear it
On our sleeves, shirts, and hats
Like a baseball uniform of support.
And instead of wishing our elephant away,
We can stand up to the animal
And kindly ask it to move on.

Charlie Altersitz wrote "Maybe..." after his
stepfather was diagnosed with testicular cancer.

THE SOCIO-POLITICAL MILIEU OF
JOHANNESBURGS INNER CITY AND THE
INHERENT STIGMA ASSOCIATED WITH
CANCER AS A NON-COMMUNICABLE
DISEASE



JOHANNESBURG: THE SOCIAL CITY

Space is observed as the common ground between the physical and social cities. The social city in essence exists on either side of the physical city bringing it into existence and then acting upon the constraints it sets forward.

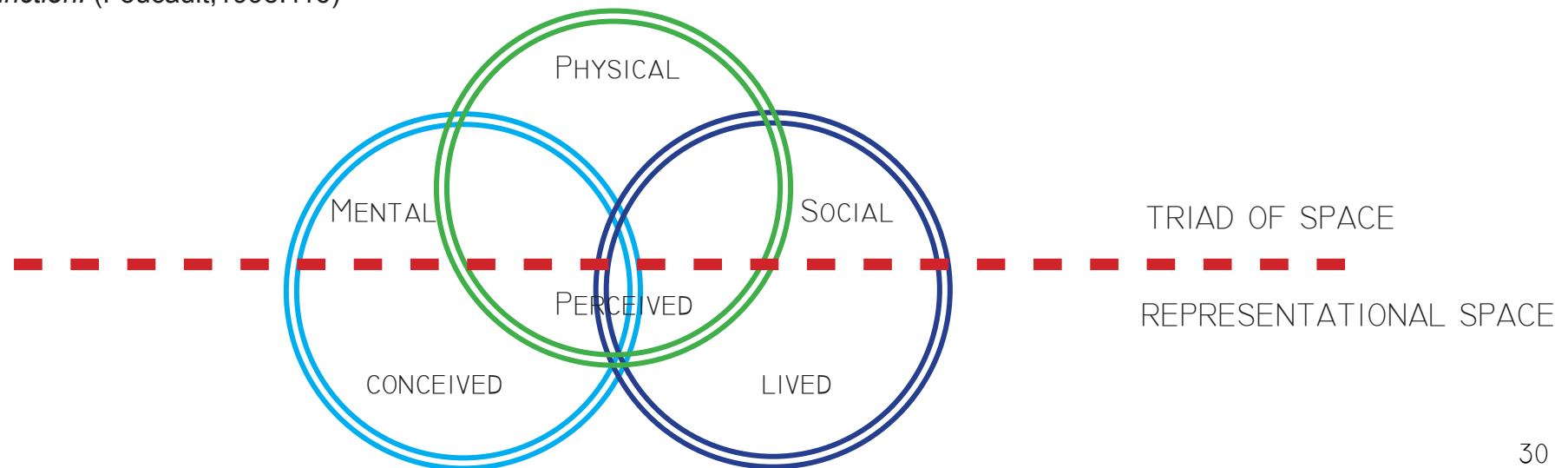
Lefebvre's theory of social space is based on what he calls the 'spatial triad'.

This triad is space as Mental, Social and Physical space. He identified with these three moments in the physical sense by defining what he terms 'Representational space'. The Perceived space is the space in society that is produced slowly, also referred to as the Physical space. The Conceived space represents the conceptual space that is conceived by planners and architects and becomes the dominant space in society. The final space, termed the Conceived space, is the Representational space where living and experience through associated symbols and images occur.

By using this 'Triad of space', Lefebvre further refines his notions that space is defined in its totality by the individual and society's influence on space and their modes of production.

The question can be asked, how is it possible that a physical process in the real world is able to relate to a social process in a systematic way?

... 'the positive role of the procedures of ordering cannot be understood if we do not take into consideration their restrictive and constraining function. (Foucault, 1995:116)



This challenge can clearly be identified today in the problem of social segregation in a city. We are able to formulate arguments regarding this segregation based on the social and economic factors, however, it is also important to realize that segregation is a spatial term and therefore has a higher, physical meaning to it over and above its social construct.

The rules, practices and meanings of a society are structurally interrelated; they reinforce one another and seem to form what might be called a 'system'. (Brian Fay:1975)

The idea that man cannot function independently of his social milieu has been extensively documented by social theorists and personologists.

Lefebvre's theory of Social space defines the space of people who deal with physical things. He argues that Social space is a social product and every society has its own space (Lefebvre: 1991).

Lefebvre defines space as an instrument, it is the principal stake of goal-directed actions and struggles (Lefebvre, 1991: 410). Space is not just a stage or a by product of history and society, it is a medium with an integral role in developing place.

A person acquires knowledge about himself and his social environment through his early education (Piaget,1971) as he experiences and assimilates norms, beliefs, values and attitudes in his particular social group. As the individual matures through experience and practice, information is transmitted through social interaction. (Piaget and Inhelder,1969). Parents, family members and teachers educate and teach the child. Children have to be exposed to situations to gain new knowledge. This by implication means that the individual's viewpoint is entrenched in the particular viewpoint of his social group. A critical model of social science (Brian Fay:1975) looks at the way in which people have programmed views and opinions which may or may not be distorted based on their acquired knowledge within the social groups. Bias, stigma and prejudice are therefore deeply embedded in a person's psyche as norm from a very young age.

This approach also then means that people cannot readily adopt a different viewpoint from the one in which they have lived for most, if not all of their lives. They have reinforced this system or structure they live in and this structure remains relatively stable over time.

“space is not an empty dimension along which social groupings become structured, but has to be considered in terms of its involvement in the constitution of systems of interaction” (Giddens,1984:368).

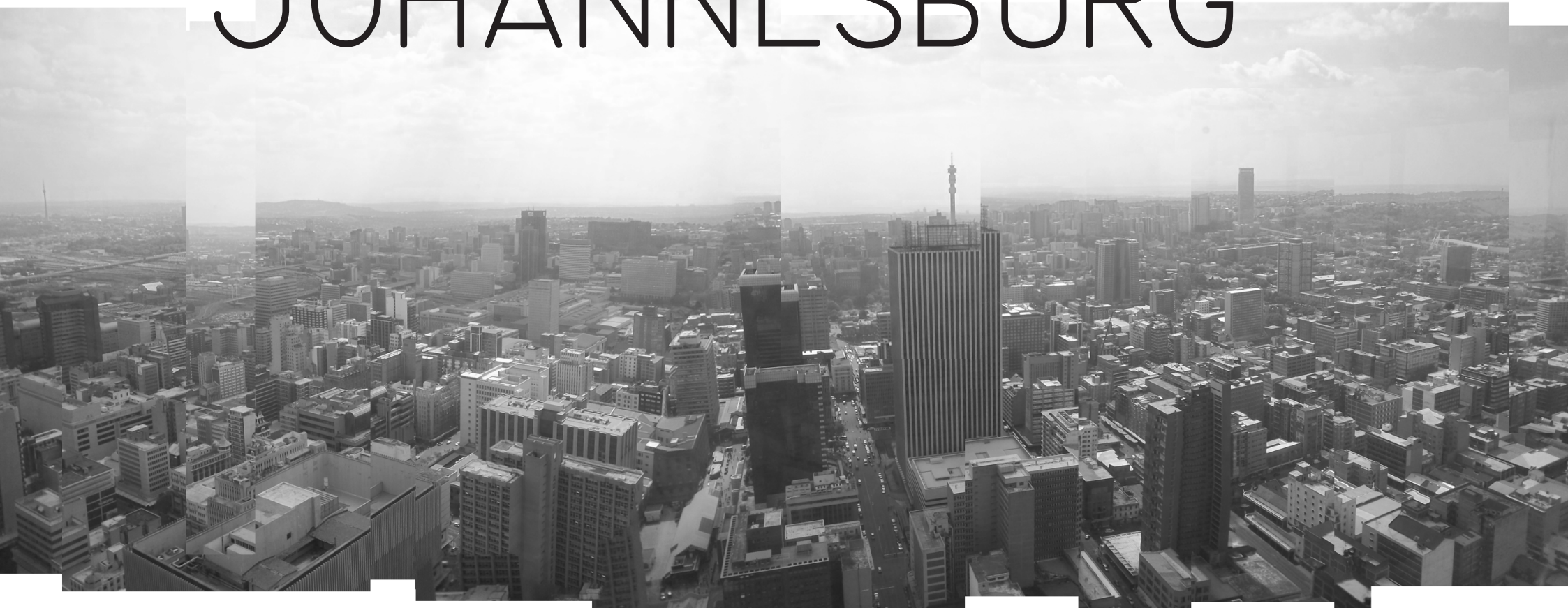
Theorists of modernity see the city as the place for the 'realization of the individual'. (Frederic Le Marcis:2004). The city is a network of communication that only functions completely and fluidly where resistance is resolved. (Brian Fay:1975). In order to provide a vocabulary where people can conceptualise themselves the consciousness of the people has to be raised.

People have to begin to see themselves and their situations anew. They have to acknowledge their situations and have to take responsibility for their own situations. For the cancer patient this would require the ability to recognize and understand their illness and to acquire the skills to cope and even alter the way in which they see their situation.

The larger support base would be required to recognize the non-communicable nature of the illness, to put aside entrenched misconceptions about the illness and through a greater understanding of the problem, meet the challenge of supporting the patient in their immediate frame of reference.

Attitudes and prejudices toward non-communicable diseases like cancer are learned by modelling, reinforcement and imitation (Louw, Ede, Louw: 1998) and this attitude is based on insufficient information and broad generalizations. (Plug et al,1997). It is moving beyond these restraints that would change perceptions of cancer patients and their care givers. It is in the wider context of economic, political and social change that the issues of inherent attitudes has to be investigated.

JOHANNESBURG



A FRAGMENTED CITY

Burden of History

Early Johannesburg developed out of need over historical premise. Johannesburg's rapid urbanisation was triggered by exploitation of vast deposits of gold. Formally established in 1886, the discovery of gold in the Johannesburg area set off a mass migration of people from all over the world. By 1875, almost 100 000 people lived in Johannesburg and the mines employed more than 75000 workers.

'The need for a constantly expanding market for its product chases the bourgeoisie over the whole surface of the globe. It must nestle somewhere, settle everywhere, establish connections everywhere...' (Marx & Engel: 1848)

Black people from the reservations were forced to work in the mines for at least a year. The South African War left the bulk of the Transvaal population homeless, poor and destitute and paved the way for urbanisation, cheap labour and extensive control of mining rights by foreigners. In 1910, Lord Milner instituted the Land Alienation Acts which resulted in more rural blacks being forced to leave for the mining centres in search of employment. In 1948, the National Party instituted the Group Areas Act and forcibly moved black population groups out of Inner Johannesburg areas. This Group Areas Act successfully divided the Johannesburg community into separate residential areas according to race, forcing these new segregated areas to function as independently as possible.

'In our rendering of Johannesburg, we depart from the global city paradigm without necessarily espousing all aspects of alternative models. A city is not simply a string of infrastructures, technologies and legal entities, however networked they are. It also comprised the actual bodies, images, forms, footprints and memories.' (Morris, 1999:14)

During the 1950s, Johannesburg was modelled on the idea of a cosmopolitan European City. In the 1960's Hillbrow was described as : 'The healthiest and most fashionable suburb in Johannesburg... within two minutes of Hospital Hill.' (Morris, 1999:6)

By 1991, the Group Areas Act of 1950 was removed and Hillbrow became a suburb with a hidden system within its Apartheid constraints with many of the white tenants allowing their domestic servants to live among them on the rooftops of the apartment buildings. This proximity to the city centre resulted in an increased demand for these spaces and an influx of migrant workers into Hillbrow. The Apartheid system under Verwoerd, forcibly tried to control this influx. Restrictions were placed and soon the number of black residents in Hillbrow diminished. In the 1970's, Hillbrow became the anti-sphere to the governments control system resulting in a dramatic transition in the racial composition of the residents of Hillbrow. During Apartheid, Bantu, coloured and Indian education were designed to control thought, delimit knowledge, restrict lines of communication and curtail contact across language barriers. (Kallaway, 1984: 94).

The National Party, ' aimed to dwarf the minds of black children by conditioning them to servitude.' The goal was to bring greater numbers of black youth under control. If we are to change people's perceptions in South African society toward non communicable disease then we have to investigate the education of the people and attempt to dispel these inherent prejudices. Many people believe that cancer is indeed a communicable disease and that people with cancer will inevitably die.

THE PHYSICAL

CITY



Hillier and Hanson: 1984 conceived the term Space Syntax which refers to a set of theories and techniques for the analysis of spatial configurations. The Physical City is seen as a complex pattern of space with all social activity and its interactions occurring in space, however social constructs do also have spatial traces due to their repetitive patterns. This starts to question the validity in viewing the City as a single entity.

Through the construction of these spatial patterns, it is possible to detect the social factors that have influenced their generation within the Physical city and it gives insight into the social consequences of spatial form. This will aid in detecting the signs of the Social city on either side of the Physical city.

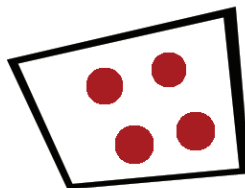
The deformed wheel is a natural way of overcoming the city centres tendency to become segregated and physically connects strangers to the heart of the city and the inhabitants to the outer layers.

A dual layer exists within cities. They are structured according to the process of public space and the residential space process. The public space process is about ordering space and connecting people and generally gives rise to the global structure of the city. The residential space process is used to restrain, control and create structural relations between the active part of the city. It constitutes the apparent richness of the background space of a City.

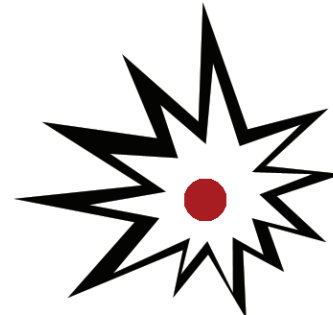
Spatial syntax is the study of these spatial patterns and can be used to add a new dimension to the social studies of a city. It aids us in identifying space as an active and independent component in the analysis of social patterns, help breakdown the influence of social factors on spatial form and identify the reverse impact of the spatial form on the social outcomes.



People move in lines



They interact in convex spaces



They experience changing visual fields as they move about the built environment

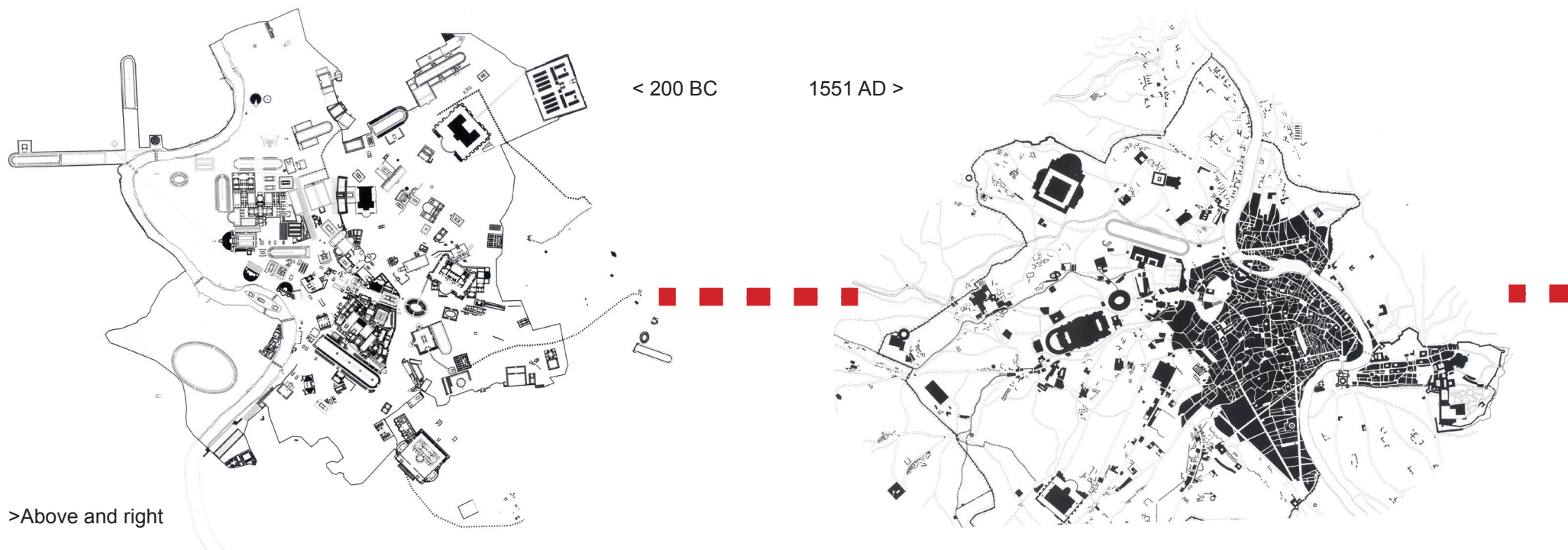
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Diagram to show how space is not the background to activity, but rather an integrated part of it

The analysis of spatial syntax works across varied scales, from the microscale, where people experience the city to the macroscale describing the spatialised social phenomena that constitutes this global scale.

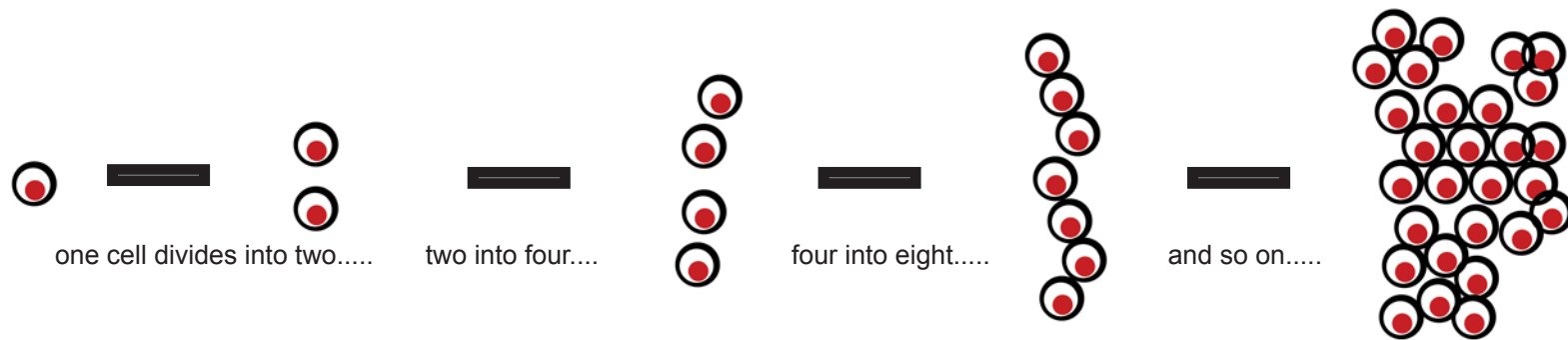
Cities are constructed as graded levels of integration and segregation and are the direct result of the patterns of human activity that are shaped by the Urban grid.

This method of syntax analysis can be used to analyse the structure-function relation in cities. On the larger scale, cities have the tendency to develop a distinct pattern, a deformed wheel. This is the collection of integrated lines that join the centre of the city to its outer edges. This wheel forms the dominate pattern of public space and depicts a certain social logic in its plan.



>Above and right

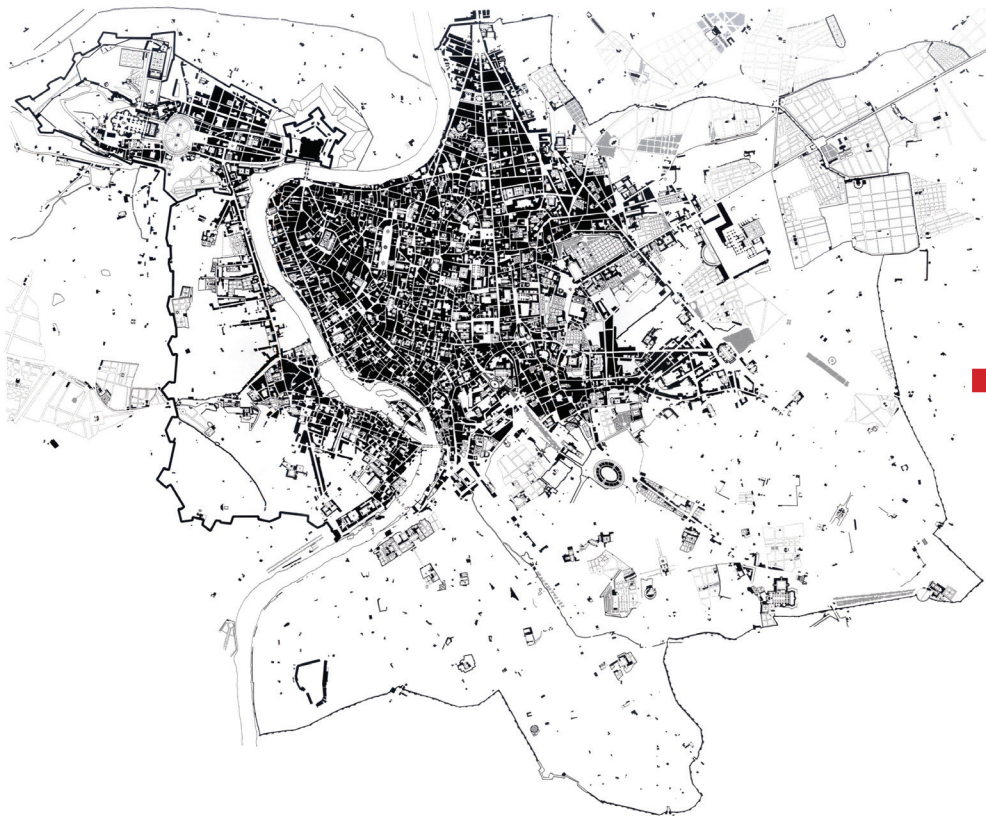
The Urban growth and development of Rome, Italy from 200AD to the late 19th century showing the relationship between space and human activity.



< Above

A clear duality can be seen between the proliferation of cancer cells and the urban growth of a city.

1748 AD >

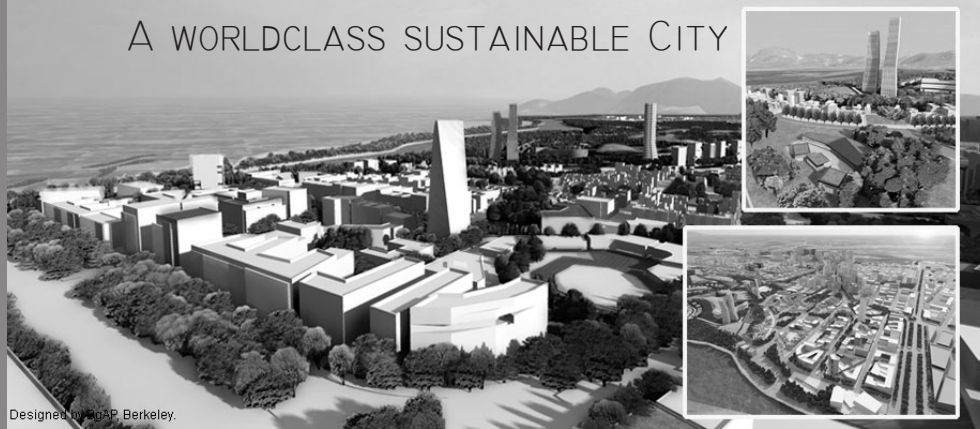


1957 AD >



NANOCITY

A WORLDCLASS SUSTAINABLE CITY



A HYBRID CITY THAT WAS DEVELOPED BY THE BERKELEY GROUP FOR ARCHITECTURE AND PLANNING WITH THE PURPOSE OF CREATING A NEW ECOSYSTEM FOR ADVANCED INNOVATIONS IN ECONOMICS, URBAN ECOLOGY AND SOCIAL INTEGRATION.

LOCATION: 216KM NORTH OF THE CAPITAL, DELHI, INDIA.

MASTERPLAN DESIGN PRINCIPLES:

BY USING THE CONTEXT AS AN OPPORTUNITY TO PROMOTE A CLIMATE SENSITIVE ENVIRONMENT, ALLOW LOCAL NATURAL SYSTEMS TO ADVANCE, A NEW ECOLOGICALLY INTELLIGENT ARCHITECTURAL RESOLUTION IS ACHIEVED. THE INTEGRATION OF LOCAL CLIMATE WITH THE ADVANCES IN TECHNOLOGY HELP TO DEVELOP THE 'FUTURE BIO-CITY.'

'CREATING A CITY OF PARKS, OF OPEN PUBLIC SPACE'.
(AL SAYYAD: BGAP:2008)

Future City

Place has an effect on the individual's identity.

Re-enforced by Lefebvre's theory of the Triad of Space, cities and space can no longer be analysed by individual factors including the genetic make up, social, political, cultural and the built environment.

It is through the collective understanding of these factors that we are able to comprehend the resultant effect of these mechanisms giving rise to the development of the future city. This integration of systems is clearly identified in the design and sensitivity of NanoCity (left) within its ecological landscape creating a homogenous 'city of parks, of open public space.'

(Al Sayyad:BGAP)

Many urban wounds and stigmas have been inflicted on the city landscape by the Modern and Post-Modern eras. These wounds include the growing perception of fear in the city, the rapid decrease in the sense of community and the physical decay of the urban environment (Ellin,2006:16)

In order to put forward a change and dissolve these urban stigmas, an integration needs to occur between existing institutions and the city at both an Urban level and the human interface.

Whilst modern urbanism espoused the separation of functions in urban form, integrated urbanism reaffirms their symbolic nature by combining and linking them.

(Ellin,2006:18)

A hybridisation of existing and new services or opportunities will aid in removing the boundaries between the institution and its community, creating a porous connection for the flow and distribution of knowledge and a new landscape for the interaction between the public and public health.

With the rise in World population and the movement of many people into the urban areas, evidence suggests (Sample:2008) that these cities are more prone to crisis, specifically, to failures that relate to and affect urban health.

Hilary Sample suggests that a new movement within the urban context is present. A new strategy that is starting is encouraging the development of the most advanced public health systems focussing mainly on the technologically advanced applications that are implemented in the defence of the threats on public health. This merge between the advancing medical knowledge and commercial development is defining a new identity, namely, 'the Biomed City'.

The principles of the Biomed City (BMC) are developed around the density of people, the urban landscape, public health and public infrastructure. With the primary goal being the further development of new infrastructure for the 'Urban Traumas'. (Sample:2008)

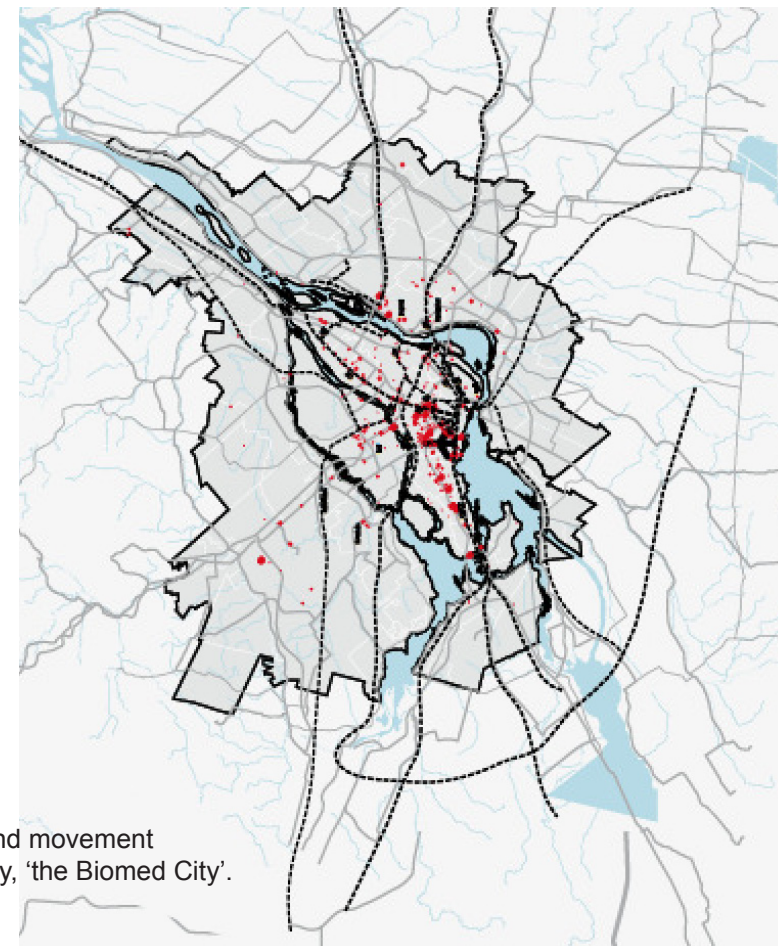
'Architecture is now emerging as the connective tissue between the small building scale and the large expanse of the global theme'. (Sample: 2008)

The architecture of the biocity is very specific and is refined in its requirement for programme and sustainable and advanced technology. The goal of the architecture is to redefine the systems needed to develop the architectural form or the city's 'immune system' whilst constantly renewing the interior environment.

A Hybrid approach

HYBRID - (n) A thing made by combining two different elements. (Soanes, 2006: 697)

> right
'Biomed City '
Winnipeg, Canada
Urban Connections and movement
defining a new identity, 'the Biomed City'.





LINKED HYBRID

PROGRAMME:

750 APARTMENTS
COMMERCIAL ZONE
HOTEL AND CONFERENCE
CINEMATEQUE
KINDERGARDEN
PUBLIC SPACE

BY STEPHEN HOLL ARCHITECTS:2009

AS THE NAME SUGGESTS, THE PROJECT IS A HYBRID OF FUNCTIONS THAT OCCUR WITHIN 8 TOWERS, HOWEVER THESE TOWERS ARE LINKED BY A SERIES OF URBAN BRIDGES THAT WEAVE BETWEEN THEM TO CREATE NEW URBAN SPACE.

STEPHEN HOLL TOOK HIS INSPIRATION FROM THE LOCAL POLYCHROMATIC CHINESE ARCHITECTURE AND HIS DESIRE TO DEVELOP STRONG CONNECTIONS TO THE CITY.

WITH HIS FOCUS ON HOW BODIES MOVE THROUGH SPACE, HE WAS ABLE TO CREATE AN ARCHITECTURAL TYPE THAT RESPONDS TO THE INDIVIDUALS MOVEMENT, TIMING AND ITS SEQUENCE OF EVENTS.

THE PROGRAMME OF HIS BUILDING CREATES INTERCONNECTED RELATIONSHIPS BETWEEN THE 'SKYLOOP' AND THE 'BASELOOP' AND ALLOWS FOR THE DEVELOPMENT OF NEW CONVERSATIONS AND VIEWS AS ONE MOVES THROUGH THE SPACES.

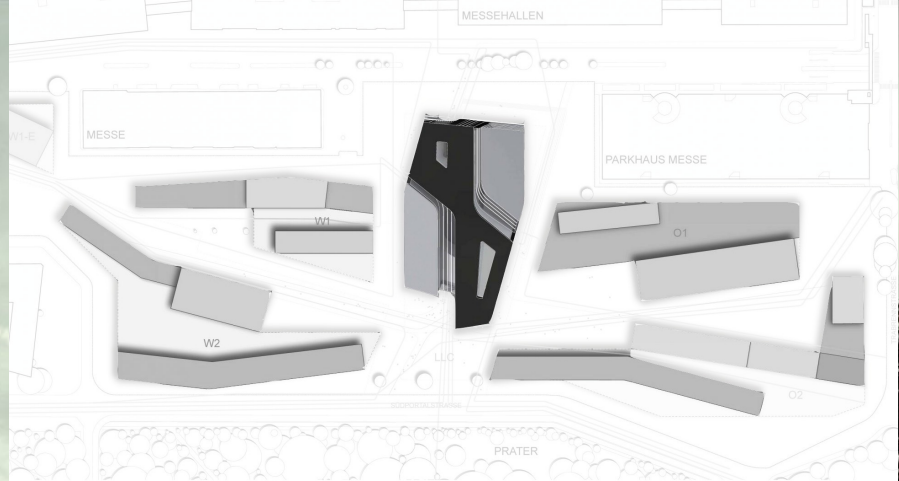
Hybridisation in architecture relates to the layering process of functions and activities within a project. This new form of architecture is in direct contrast to the purist and linear process adopted by Modernism. These 'hybrid' techniques have been adopted as part of the building's programme of uses, the building techniques and the detailing of its finishes by architects such as Rem Koolhaas and Steven Holl in his urban project, 'Linked Hybrid' .(left)

Koolhaas, in his book 'Delirious New York', highlighted the poetic density of Manhattan and the potential of each urban block to support an 'infinite number of superimposed and unpredictable activities'.

By hybridising the programmatic functions of a building, you are able to create an intense mix of element that react with one another to create new events.

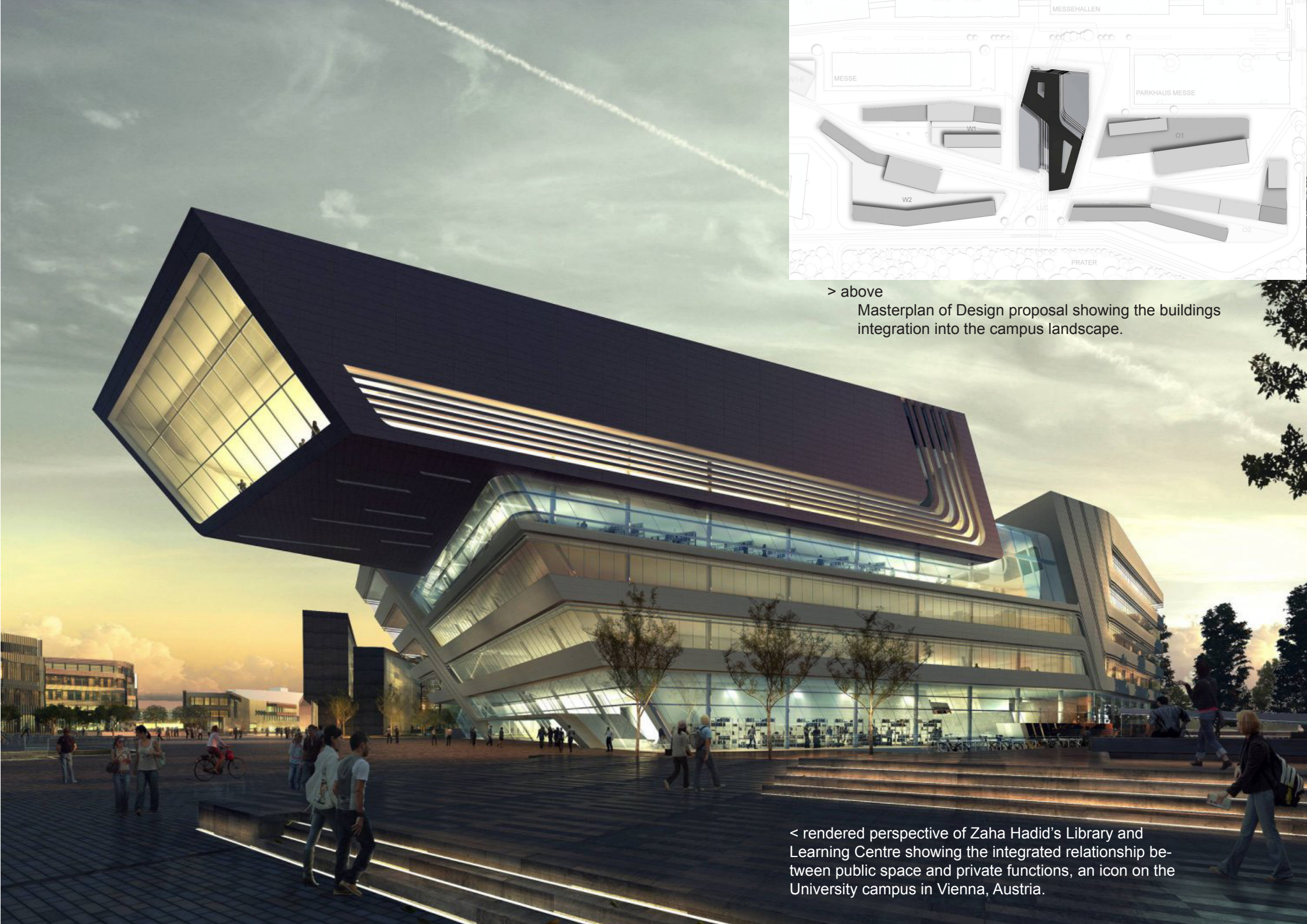
This hybridisation process helps to connects people and the activities at points of intensity and at the thresholds, thus attempting to reconnect the project to the urban environment and society to its functions. Cross programming has become a method of facilitating movement and connecting people to existing urban nodes. In Zaha Hadid's Library and Learning Centre:2008, the architects were able to facilitate a large number of activities within the building but also integrate their individual functions into the larger network system of the University campus.

Hybridisation in architecture helps to create new spaces, paths, connections and conversations that go beyond the buildings boundaries to influence its urban context, allowing an integration between the building and the city and conversely, the city with the building.



> above

Masterplan of Design proposal showing the buildings integration into the campus landscape.



< rendered perspective of Zaha Hadid's Library and Learning Centre showing the integrated relationship between public space and private functions, an icon on the University campus in Vienna, Austria.

LIBRARY AND LEARNING CENTRE

ACADEMIC CONNECTING FACILITY



UNIVERSITY OF
ECONOMICS AND BUSINESS.

LOCATION: VIENNA, AUSTRIA

ZAHA HADID ARCHITECTS

ZAHA HADID ARCHITECTS WAS FACED WITH THE URBAN CHALLENGE OF ATTEMPTING TO RE-INTEGRATE THE SYMBOLIC NATURE AND FUNCTION OF A PUBLIC LIBRARY INTO THE EVER EVOLVING LANDSCAPE OF A UNIVERSITY CAMPUS.

THE BUILDING HOUSES A LARGE NUMBER OF ECONOMIC FACILITIES WITH THE PUBLIC LIBRARY AS THE CENTRAL FOCUS OF THE DESIGN. A STRONG PUBLIC CONNECTION IS ACHIEVED THROUGH THE SEAMLESS INTEGRATION OF THE VARIOUS FUNCTIONS WITH EACH OTHER AND THE UNIVERSITY.

A LIBRARY AND LEARNING CENTER SHOULD BE MORE THAN A MERE LIBRARY IN THE CLASSICAL SENSE: IT IS A RESEARCH AND A SERVICE FACILITY, A WORKPLACE AND LOUNGE, A PLACE OF COMMUNICATION AND A TRAFFIC HUB, AT ONE AND THE SAME TIME

CHRISTOPH BADELT,
RECTOR AT UNIVERSITY
OF ECONOMICS

An Iconic position

ICON - (n) 'A person or thing regarded as a representative symbol or worthy of veneration and has a strong sense of identity in its given context'. (Soanes, 2006: 697)

Proshansky uses the term 'place- identity', to define the aspects of identity that are linked to space. Place-identity is an individuals incorporation of place into the larger concept of self. Proshansky further defines it as 'a *potpourri of memories, conceptions, interpretations, ideas and related feelings about physical space*'. Proshansky goes on to state that 'identity' is created both internally in the mind as well as through the body's interaction with the outside world. So by providing new avenues for growth of identity for the individual as well as the larger sense of place-identity (Proshansky:2008), opportunities are created to re-integrate stigmatised space with society.

In the case of the Hospital Hill clinic within the Hillbrow Health Precinct, the identity of sanctity and cure has been lost and replaced with a shell of empty halls and dark passages. The problem with many institutional buildings is that their functions almost overwhelm the generative identity of the building.

Preparations for the joyful event had been made on an extensive scale; the front of the new building (Hillbrow Hospital) was decorated with flags and foliage and presented a particularly attractive appearance.

(Diggers:1890)

This once icon of health sited on Hospital Hill, the fortitude of medical growth, was the first public hospital in Johannesburg. Today it stands empty, disconnected from Hillbrow, disconnected from society.

Permeable experience

Porous- (n) (of a material or membrane) allowing substance to move through it. (Soanes, 2006: 1067)

The architect, Juhani Pallasmaa (2001:51) strongly criticizes the formal and rigid approach to architecture that focusses on the use of aesthetically detaching visual imagery, isolating it from the real world.

Instead, he argues for a more sensory approach to architecture and its interventions. An architectural advance that promotes intimacy with its users and focuses more on the social interactions between the building and its context over aesthetic isolation. (2001:51) Tactile architecture is defined by the development and materiality of architecture as it interacts and is shaped by its existence in the existential world.

This sensory or 'haptic' architecture is layered and multi- sensory. It is both contextual and responsive to its environment, replacing the object-viewer relationship with the bodily experience of a temporal continuum, which evokes meaning in the acts of occupying and inhabiting space and experiencing space and experiencing matter, gravity and light. (Pallasmaa: 2001:52)

If something is transparent, it means we are able to see what lies beyond the surface. Architecturally, this does not mean that a building needs to expose everything, it merely shows some of its internal and conceals the rest.

It is through the urban condition of porosity, a method of allowing some seepage but not free flow through space, that enables the idea of translucency to enhance our experience of the urban city (Ellin,2006: 63).



> above

The BioVac Institute by Studiomas Architects.

The permeability of the skin in a way reflects the institutes wish to make public the clinical discoveries, metaphorically sharing their knowledge.

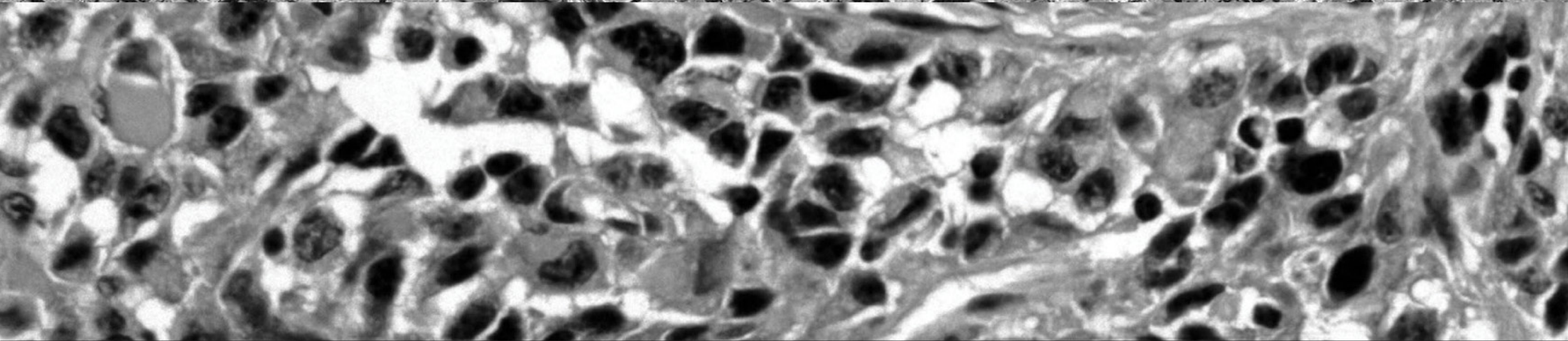
Knowledge- (n) information and skills acquired through experience or education (Soanes, 2006: 789)

Knowledge needs a sensory dimension to it. A permeation between what is known and unknown needs to be addressed. By focussing on the space making mechanisms such as the hybrid programme, the identity of place and transition through space, we are able to successfully communicate between the bodies creating an individual identity.

An attempt to remove the stigma of cancer and transform this 'non-communicable' disease may be possible through a transmissible body of knowledge. By instituting a place of identity, that communicates the knowledge of the disease and supports the community, perhaps it is possible to integrate the apparent disparity that is presently identified between the public and private healthcare systems.

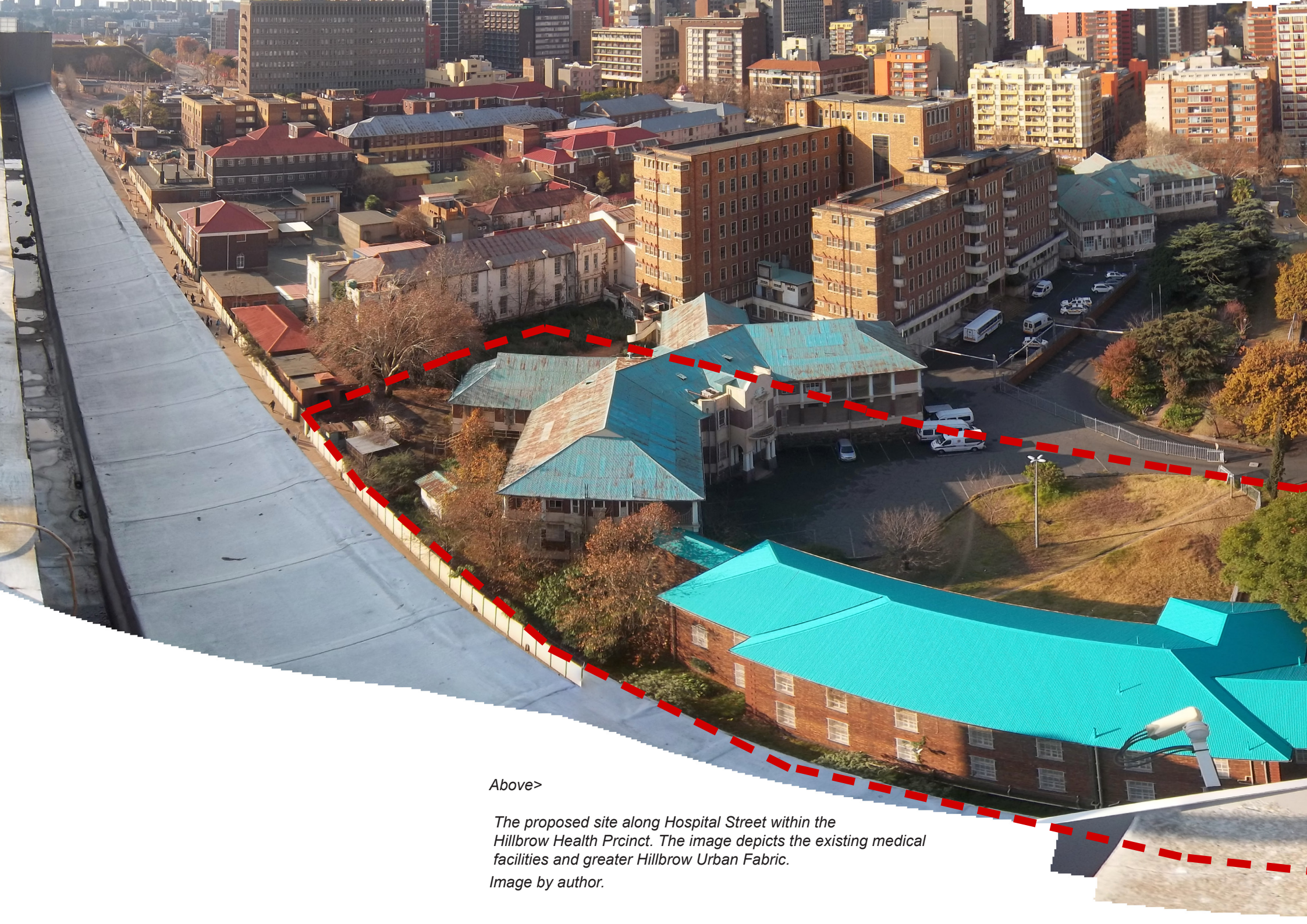
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The duality between cancer cells in the blood viewed under a microscope and the urban grid of an early 1600's Brazilian town.



Physical Context

Recommunicating Health



Above>

The proposed site along Hospital Street within the Hillbrow Health Precinct. The image depicts the existing medical facilities and greater Hillbrow Urban Fabric. Image by author.





SITE SELECTION

In a city as diverse as Johannesburg, the possibility and potential for a site to facilitate the functions and satisfy the needs of an institutional building are equally numerous. The selected site shall attempt to explore, demonstrate and interrogate the disconnection and re-communication of Health Architecture presented in the thesis. This exploration shall be analysed in relation to the local context, its dynamics and the local resources.

In order to define the location of site, to refine its idea as a place rather than a suitable space, analysis shall be on the individual as the user, their routines in relationship to site, the proximity of local services as well as the relevant cultural and climatic influences on the site.

SITE CRITERIA

INTENSITY

For sustained development of the Proposal, an urban density is required. A dense urban framework provides many advantages towards the building and the intended user.

- Easy accessibility and public transport,
- Close proximity to additional services,
- Development has higher potential of being beneficial to those in the immediate context.
- Local Council strategy promotes a compact Urban form in Development Nodes.

ACCESSIBILITY

No building should be seen as an isolated structure. A successful building integrates with its environment and should acknowledge the user as part of the architectural process.

- Accessibility should be provided for local pedestrian traffic as well as commuters via public transport.
- Urban green space should be used to facilitate the conversation between the user and the building.
- Access for the user to additional services that support the intended design.

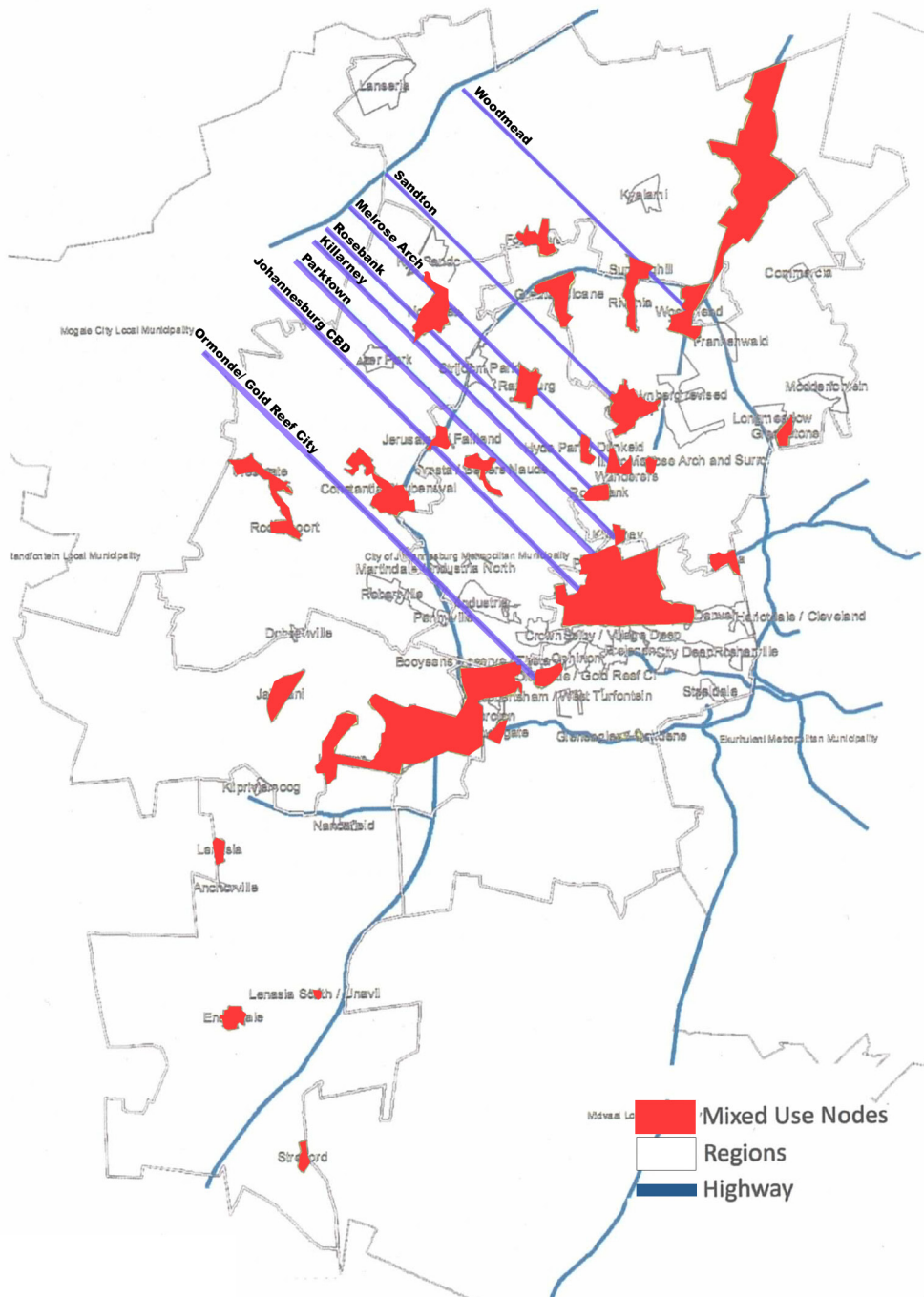
DEVELOPMENT NODES

In terms of site selection, it is necessary to refine the search for the perfect site. The Johannesburg Regional Site Development Framework suggests eight (8) main development nodes in Johannesburg. These nodes are the focus site areas for the site selection.

These nodes signify locations along the Regional Development corridors that the government wishes to encourage growth and they also have sufficient services to support intensive growth.

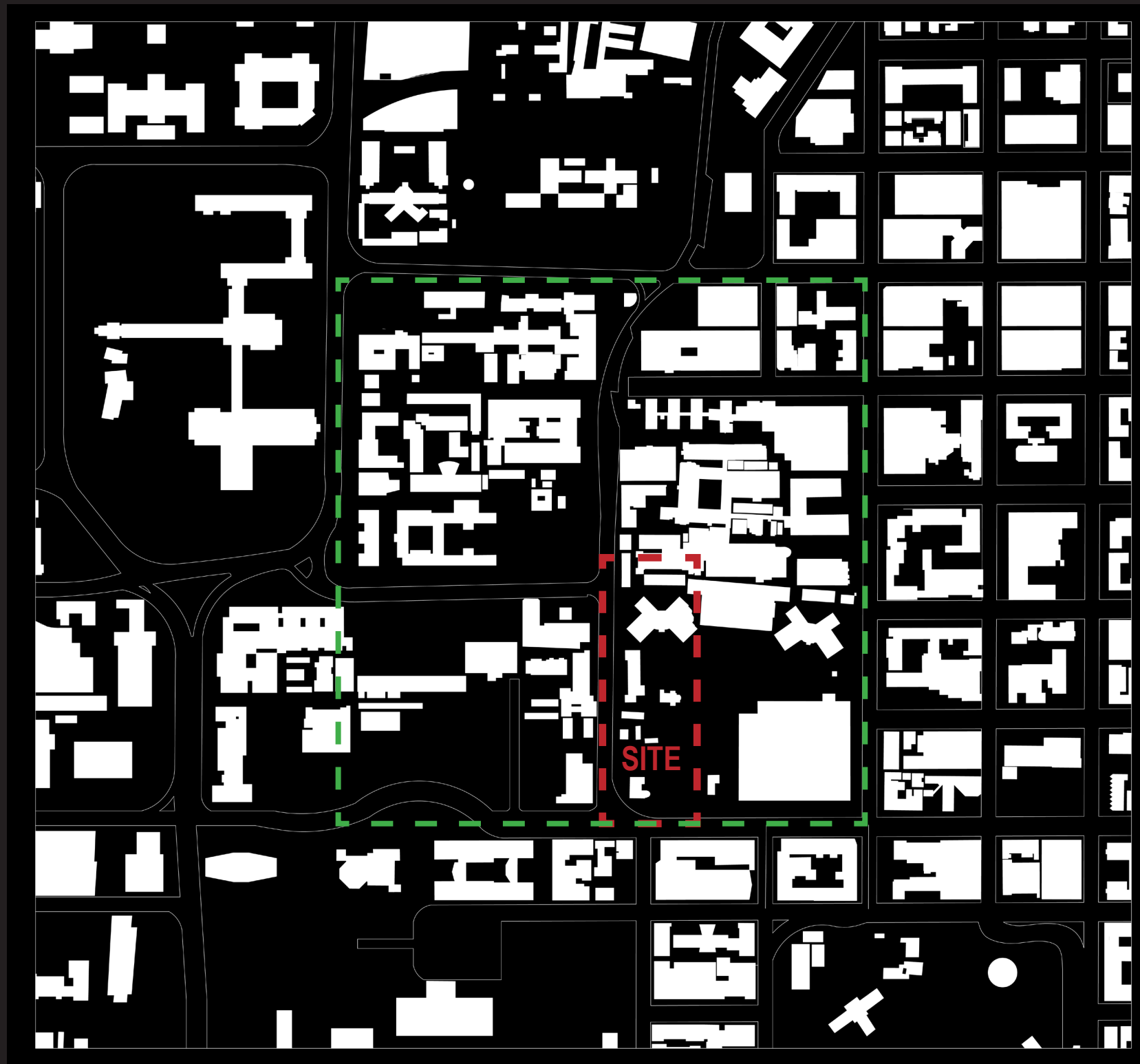
These Nodes are focused on their connections and on the focus on public transport systems, making them highly suitable areas for site selection (City of Johannesburg, 2008).

These 8 Nodes have been assessed via tabulation (*right*) of their facilities, services and proximity to site criteria. The final count between the choices identifies the ideal location for further research.



	NODAL HIERARCHY (*)	TRANSPORTATION	GAUTRAIN STATION	GAUTRAIN FEEDER	BRT ROUTE	FORMAL TAXI RANK	RAIL STATION	INFRASTRUCTURE	POLICE STATION	FIRE STATION	HOSPITAL / CLINIC	SOCIAL CENTRES	PEDESTRIAN PRECINCT	PARKS	LIBRARY	SCHOOLS	CITY IMPROVEMENT DISTRICT	POTENTIAL FOR HIGH RISE	TOTAL
WOODMEAD	R								X					X				X	3
SANDTON	M		X	X	X	X			X	X	X		X	X	X	X	X	X	13
MELROSE ARCH	D								X				X	X		X		X	5
ROSEBANK	R		X	X	X	X			X	X	X		X		X	X	X	X	12
KILLARNEY	D			X					X					X		X		X	5
PARKTOWN	R			X	X				X		X			X	X	X			7
JOHANNESBURG CBD	C		X	X	X	X	X		X	X	X		X	X	X	X	X	X	14
GOLD REEF CITY	R				X		X		X					X				X	5

*NODAL HIERARCHY KEY: C-CBD / M-METROPOLITAN / R-REGIONAL / D-DISTRICT / N-NEIGHBOURHOOD



SITE SELECTED

HHP (Hillbrow Health Precinct)

The Hillbrow Health Precinct is an agglomeration of institutional land that mainly facilitates public Health services as well as additional functions such as Laboratories. The Precinct is bordered by several prominent precincts including Constitutional Hill to the North, the Braamfontein regeneration Project to the West, Park Station and Joubert Park to the South and the Hillbrow Regeneration to the East.

“ The land uses have clustered such that they are inward facing and are isolated from their surroundings preventing the development through- linkages, effectively forming a movement barrier between Hillbrow and Braamfontein.” (GAPP-IODSA: 2004)

Ad-hoc building practises have resulted in an unintelligible precinct breaking the architectural language with the city. A lack of service maintenance has resulted in many of the existing buildings including the Hospital Hill facility (also known as the ‘old” Johannesburg General Hospital) in a state of disrepair. In order for the precinct to be revitalised, the HHP needs to make vital connections to the surrounding precincts connecting them together.

The selected site is located on Hospital Street within the Hillbrow Health Precinct. The selected site fulfills the required criteria. It has direct access the Park Station, Park Station Taxi Rank and the newly opened Inner City Gautrain Station. The site also maintains strong medical connections to existing infrastructure, supporting the placement of an **Public Outpatient Oncology Centre**.

INSTITUTIONAL PRECINCTS

The proposed site falls within a larger precinct and it is necessary to analyse the site on a large scale to identify the connections that will be made within the broader context of Johannesburg.

This macroscale analysis will look at

Institutional Precincts

Figure Ground

Inverted Figure Ground

Building Heights

Mobility Routes

Green Space

Land Use

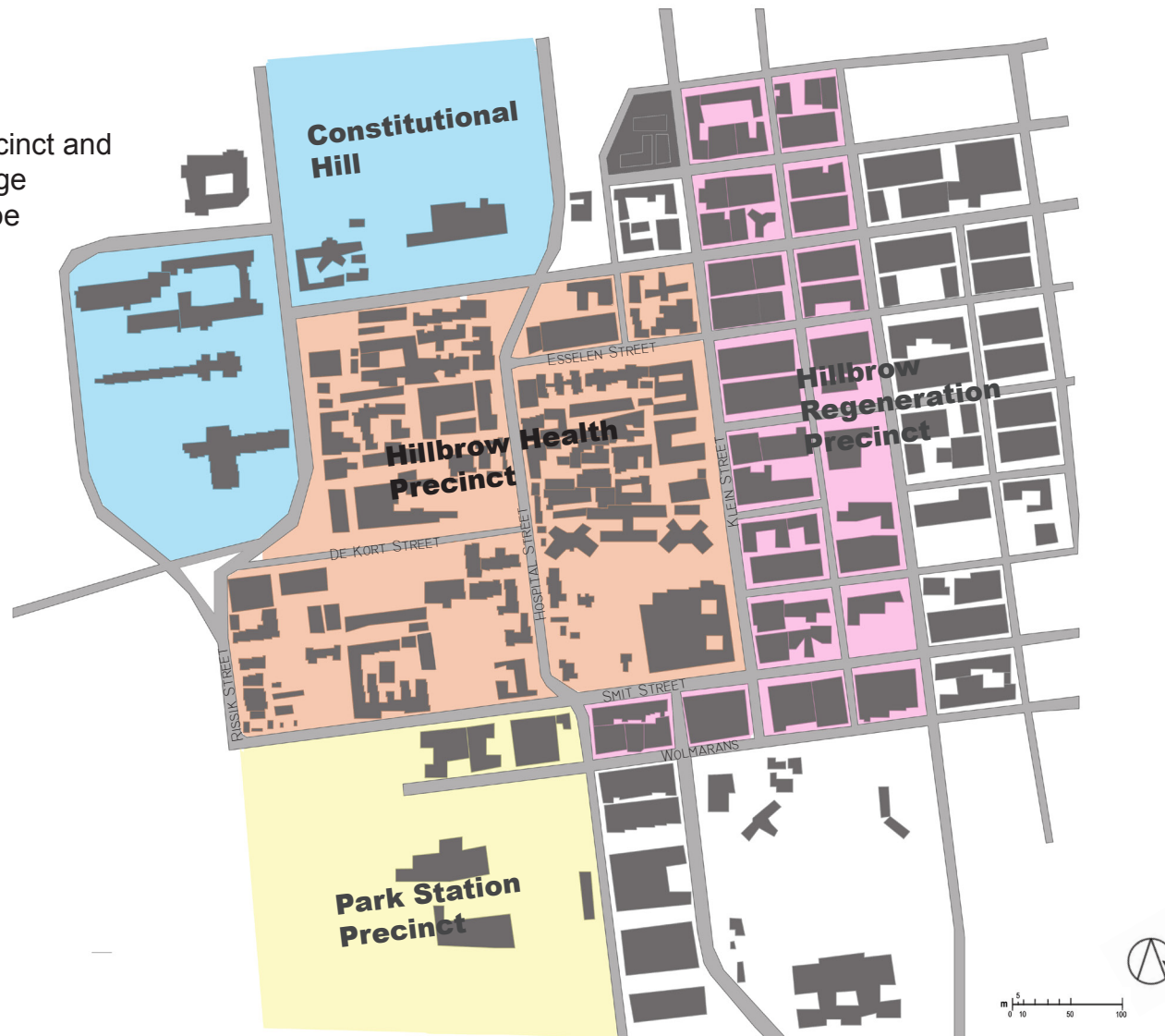
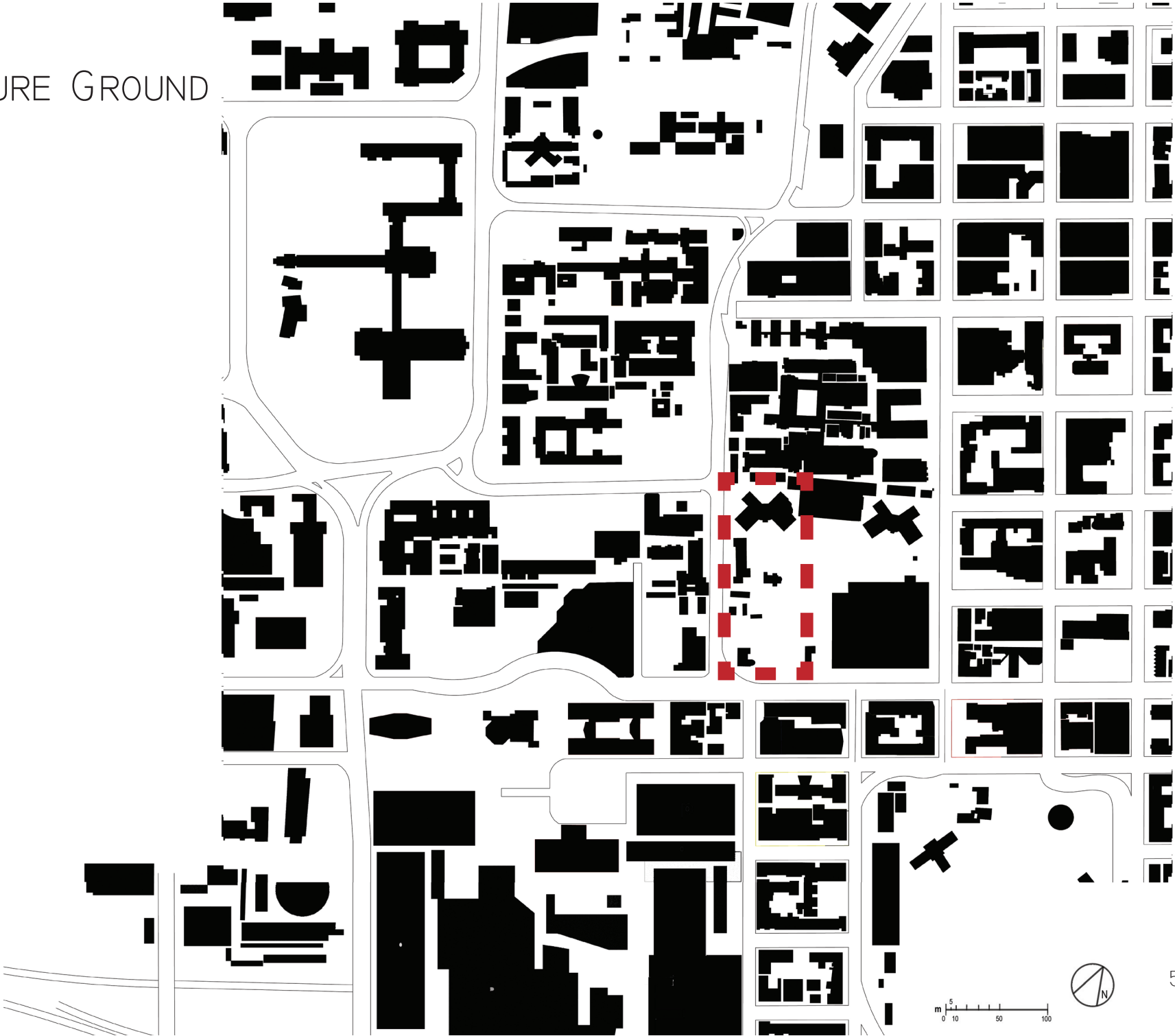


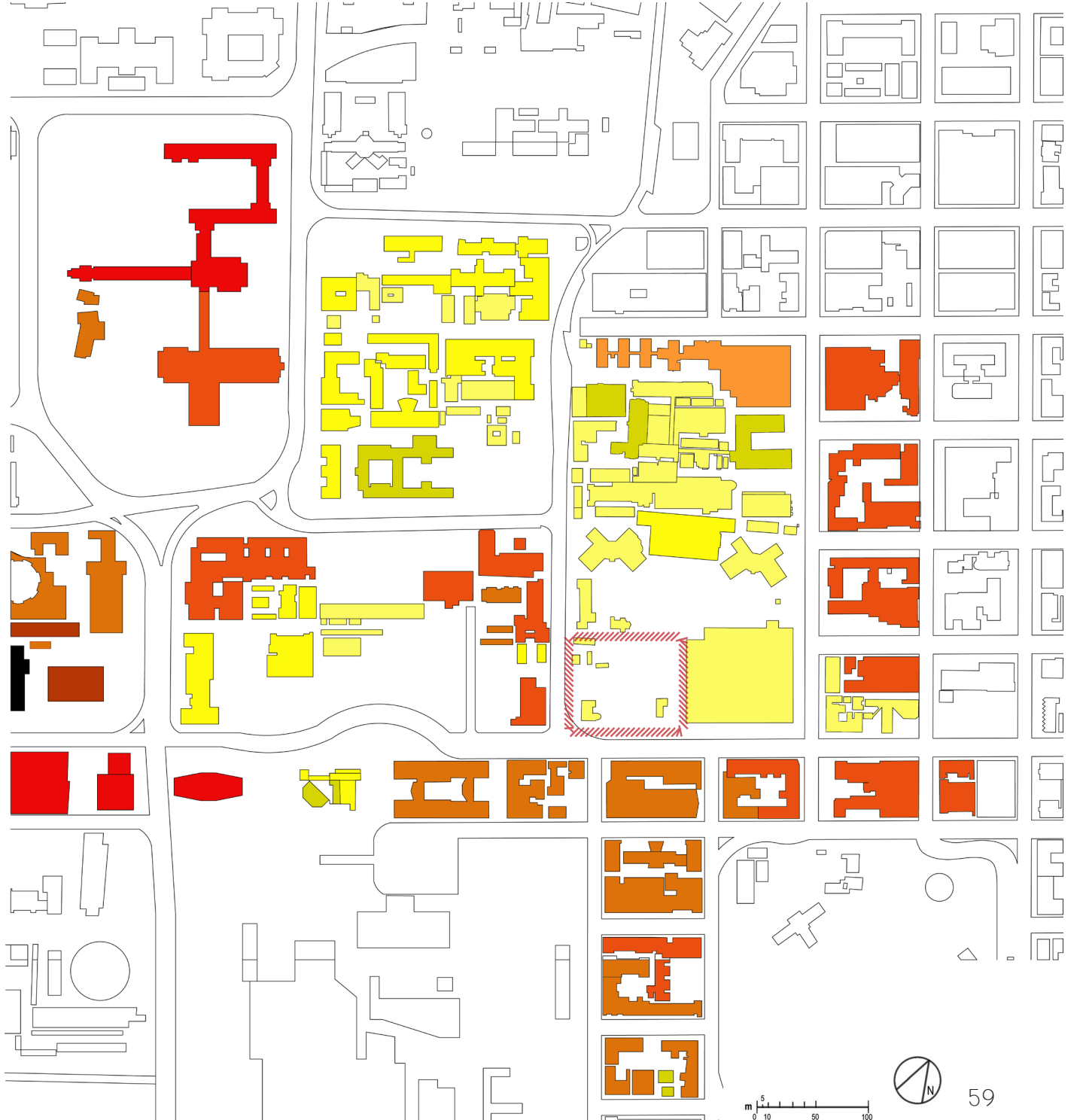
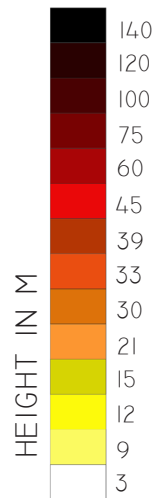
FIGURE GROUND



INVERTED FIGURE GROUND



BUILDING HEIGHTS



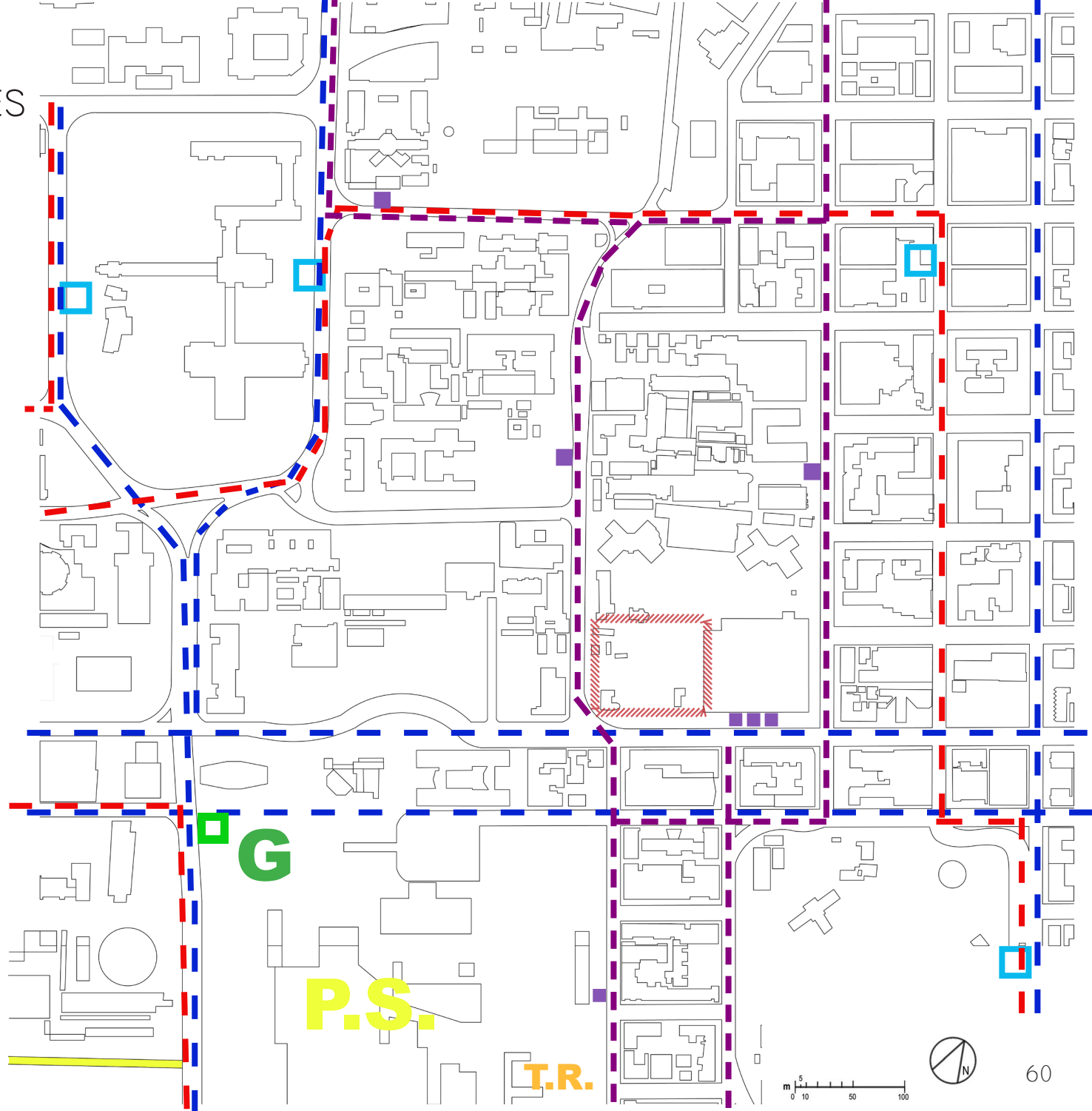
right >

The heights of the existing urban fabric surrounding the proposed site. The context is largely defined by high rise developments creating a protected internal precinct, the Hillbrow Health Precinct.



MOBILITY ROUTES

-  REA VAYA ROUTE
-  REA VAYA STATION
-  REA VAYA BUS STOP
-  MAJOR ROAD
-  RAIL NETWORK
-  PARK STATION
-  GAUTRAIN
-  TAXI RANK (FORMAL)
-  MAIN TAXI ROUTES
-  MAIN TAXI DROP-OFF



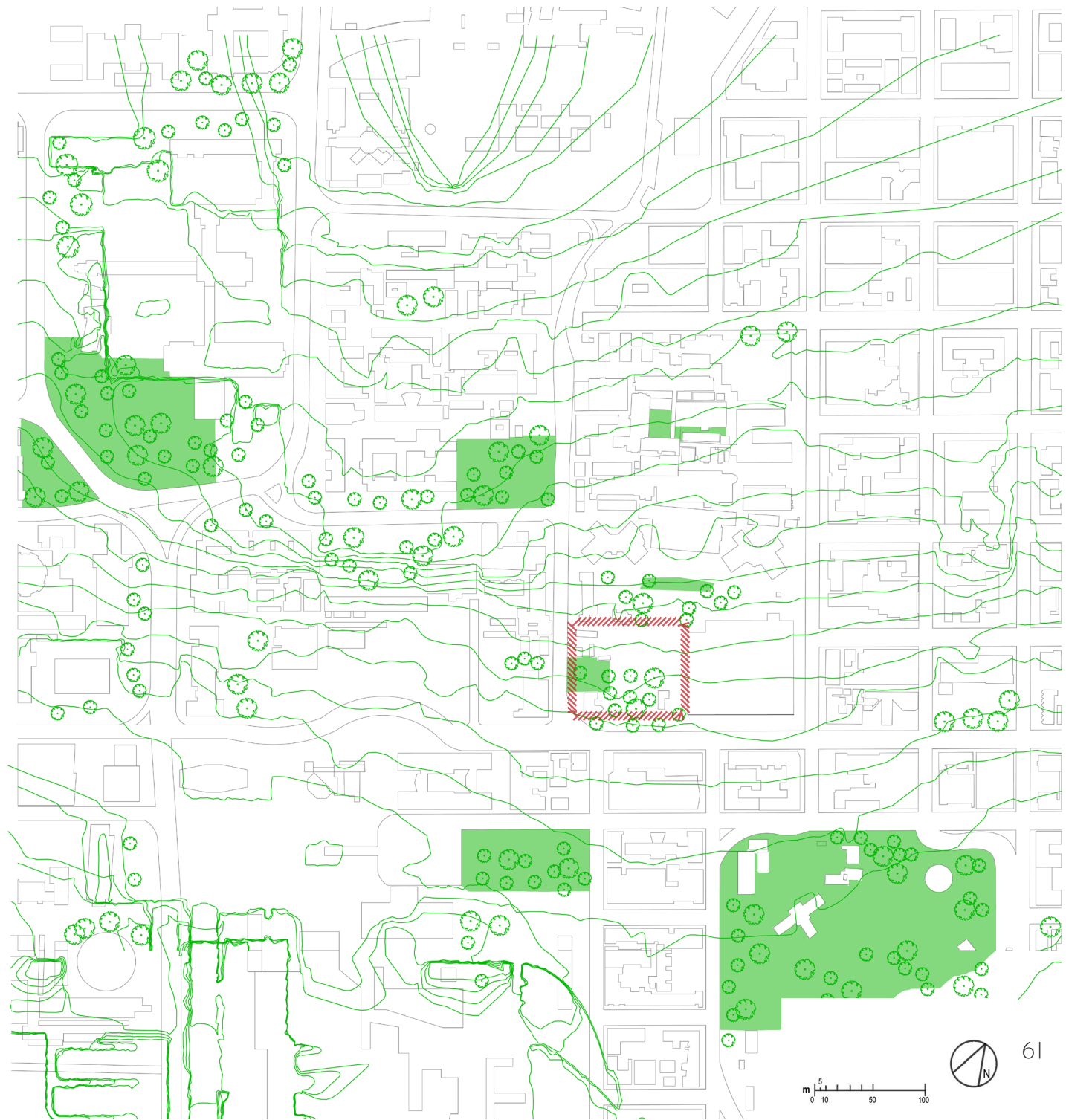
right >

The primary circulation routes that connect to site. The close proximity to a variety of modes of public transport promotes the development of a public and pedestrian oriented design.

GREEN SPACE

right >

The Inner City context of Hillbrow and Braamfontein has several pockets of green space within close proximity of the proposed site.



LAND USE

-  GREEN SPACE
-  RESIDENTIAL
-  COMMERCIAL SPACE
-  EDUCATIONAL
-  RELIGIOUS
-  HEALTHCARE
-  MORTUARY
-  SPECIAL USE
-  **PS** TRANSPORTATION
-  **T** TAXI RANK
-  **P** PARKING LOTS
-  **GAU** GAUTRAIN



A grayscale map of Hillbrow, South Africa, showing a dense urban grid. A specific area in the center-right is outlined with a red border. The map includes building footprints, streets, and some green spaces.

NON-COMMUNICABLE

HILBROW

INSTITUTIONAL CONTEXT

An institution is defined as any structure or mechanism of social order that attempts to control the behaviour of a set of individuals within a given community. Most institutions are identified with having a strong social purpose and a sense of permanence within the given environment and is developed as a system to control and provide order to society.

With the development of institutions, new forms of control such as discipline as a form of self regulation that permeated into modern society (Mills 2003:43) formed. Architecture has been used as a tool to both control and order space, and impose new forms of power by reorganising space to create uniform, controlled and structured space. institutions such as Universities, Clinics and Hospitals have become strong bodies of power within the urban framework.

Foucault examines this relationship between the body and the institution, and defines the commonality between the body's need to keep order and further control the systems that run it, and the systems that exist within society and how the institution enforces a sense of discipline to control it.

The requirement for power and control within an institution is evident in the connections that define its function. In the case of a hospital, there is a duality between the creation of power by the institution and the need for control by the user. A sort of ripple effect is evident in this case. The hospital uses a system of procedures or treatments to help the patient, thus enforcing a sense of power over them and the architecture is used to channel the users actions within a certain direction. This direction can be defined as the diagnosis and treatment stage.

This duality of power is present in the sense that as the user is being controlled by the institution, the user also demands information regarding the process and treatment. They wish to empower themselves with the knowledge thus strengthening the value of institutional power. This shared knowledge is then instituted further as the research component of these facilities attempts to control and find new cures and treatments. The hospital, clinic and research facility are all formal elements that are intended to control the spread of disease and the diseased body of the city.

The institution as a function and a body do not correlate very well. Although the institution's function is to diagnose an ailment such as cancer and provide methods of treatment until the patient is ready to be discharged, the actual architectural 'body' can be considered as cold and sometimes inhospitable. The sensitivity and transition between public and care is often overlooked resulting in a linear and unemotional treatment process. An attempt to remove the visual stigma's or boundaries that deem institutions as merely facades of the clinical functions inside them, will help to create spaces that encourage education and social interaction.

ISOLATED INSTITUTION

THE UNIVERSITY OF THE WITWATERSRAND



THE OPENING OF THE TRANSVAAL TECHNICAL INSTITUTE IN 1904 MARKED THE BIRTH OF THE INSTITUTION THAT WAS TO BECOME THE UNIVERSITY OF THE WITWATERSRAND NEARLY TWO DECADES LATER.

ACCORDING TO THE GOVERNMENT AT THAT TIME, PRETORIA WAS PREFERRED AS THE CENTRE FOR HIGHER EDUCATION IN THE TRANSVAAL. JOHANNESBURG POSSESSED MANY OBVIOUS ADVANTAGES. IT HAD EASY ACCESS TO MOST OF THE STUDENTS, IT WAS LOCATED NEXT TO THE MINES AND IN HOSPITAL HILL IT POSSESSED A NATURAL SITE FOR A MEDICAL SCHOOL. HOWEVER SOME POLITICIANS SAW JOHANNESBURG AS A DISADVANTAGE AS ITS COST OF LIVING WAS TOO HIGH AND IT WOULD PROVIDE STUDENTS WITH TOO MANY DISTRACTIONS AND TEMPTATIONS. IT WAS THE HAVEN FOR PIMPS AND PROSTITUTES, LIQUOR AND VIOLENCE. FOR SOME, IT WAS THE LAST PLACE THAN ANY RIGHT MINDED PERSON WOULD WANT TO ESTABLISH A UNIVERSITY INTENDED TO MOULD THE MINDS AND MORALS OF IMPRESSIONABLE MEN (MURRAY, 1982:16) .

The relationship between the a body of institution and the city context in which it is found will determine the level of integration and the transition of public movement.

A comparison between the integration of the Witwatersrand University and New York University in their respective Cities will help to understand the development process of the Hillbrow Health Precinct within the context of Johannesburg and provide methods of successfully communicating the institutional body with the public.

Hillbrow past institution

As influx in the population and the poor living conditions in the ad hoc early settlements associated with the early gold-rush in Johannesburg soon highlighted the desperate need for suitable healthcare. The available facilities were not suitable enough to deal with the outbreaks and plagues that faced this early mining community.

Early records show that the mines sick and injured were housed in a Gaol that was situated near the Height's Hotel on Commissioner Street. However the state of the facility was not at a very high standard as documented in a letter written by Reverend F.H. Fisher to the Sanitary Board,

'The whole thing is a disgrace to a civilized town. In an unkempt and brick floored room opening immediately into the courtyard of the gaol are a dozen bedsteads upon which lie sundry patients, white and native, young and old. In this filthy den comfort is unheard of and decency unknown . . . I am reliably informed that contagious and non-contagious cases are mixed in this terrible den.'

Early Hospital Facilities

With the public having knowledge of these conditions, there was an urgency by the magistrate to assist the growing community in solving these growing health issues. The purchase of a small galvanized iron and wooden building, that stood ten feet high and twenty feet long by sixteen feet wide on Commissioner Street, stood as the replacement for the old Gaol Facility. With this new change to the health system, a change was required within the social system. The public did not believe that a new building run by the same 'gaolers' would make a sizable difference and they requested that the authorities provide them with better Hospital facilities.

The temporary Hospital, a little brick-lined shanty that accommodated fourteen patients was erected on the North side of the City on the 1 August 1888. One month later, the government began the development of the 'Native Hospital' behind the Temporary Hospital. This treatment facility for the 'coloured' side of society comprised no more than eight beds in a tent.

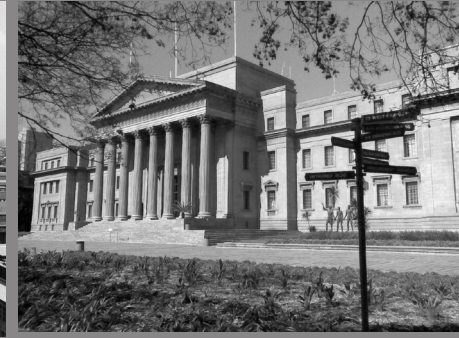
With the realization that a 'temporary' hospital was never going to keep up with the growing society, the sanitary board moved forwards in their goal to provide a permanent Hospital for Johannesburg. On 29 March 1889, the Vice President of South Africa, General Smit, laid the first foundation stone of the first permanent hospital in Johannesburg. This action cemented Hospital hill in Hillbrow as the origin of the framework for Medical growth history of Johannesburg.

The old Johannesburg Hospital was erected and declared a permanent hospital in 1890. It now stands as the Ronald Mackenzie Block. In contrast to its present abandoned and derelict state, it was once a point of mass convergence for Johannesburg as depicted in the Digger's News Article on 6 November 1890.

'...the gentle slope in front of the hospital buildings began to fill with people anxious to witness the ceremony. and troops of children. representing all the schools in town, formed long processions along the roads leading towards the Hospital Hill'. (Gear, 1965: 882).

'GREAT CITIES AND GREAT UNIVERSITIES BELONG TOGETHER,
THAT GREAT CITIES NEED GREAT UNIVERSITIES,
THAT A UNIVERSITY'S ACADEMIC ENTERPRISE LEADS TO THE
IDEAS, MINNOVATION AND HUMAN TALENT
THAT HELPS CITIES FLOURISH'.

(COMMUNITIES:2010)



THE UNIVERSITY AS A CITY

WHAT IS INTERESTING TO NOTE IS THE CONDITIONS SET BY COUNCIL FOR THE CAMPUS TO BE OPEN TO THE PUBLIC. THE UNIVERSITY WAS MODELLED ON THE IDEA OF IT BEING PART OF THE CITY, WHERE KNOWLEDGE WAS TO BE SHARED BETWEEN INSTITUTION AND INDUSTRY.

IN THE PRESENT DAY, THE UNIVERSITY HAS TRANSFORMED SO DRASTICALLY AND BECOME THE OPPOSITE OF AN OPEN INTEGRATED UNIVERSITY IN THE CITY. THE UNIVERSITY HAS TURNED ITS BACK ON THE CITY AND BECOME A SELF CONTAINED CITY WITHIN ITSELF.

IN THE CASE OF WITS, THERE IS NO PHYSICAL OR VISUAL CONNECTION TO THE CITY AND ITS SURROUNDING CONTEXT. IDEALLY THE UNIVERSITY AS A WHOLE SHOULD BE CONTRIBUTING TO THE VIBRANCY AND ENERGY OF THE CITY WHICH IS NOT VISIBLE IN PRESENT DAY BRAAMFONTEIN.

(GEHL, 1980: 115)

INTEGRATED INSTITUTION



NEW YORK UNIVERSITY

NEW YORK UNIVERSITY CONSISTS OF 18 SCHOOLS THAT ARE LOCATED WITHIN VARIOUS PARTS OF THE CITY. THE OVERALL LAYOUT OF THE SCHOOLS IN THE CITY ALLOWS FOR EASY ACCESSIBILITY FOR STUDENTS AND THE GENERAL PUBLIC. HOWEVER, THEY ARE STILL WITHIN CLOSE PROXIMITY TO ONE ANOTHER THUS DEFINING A LARGER CAMPUS COMMUNITY WITHIN THE CONSTRAINTS OF THE CITY.

THE LAYOUT ILLUSTRATES A GENUINE PHYSICAL CONNECTION WITH THE CITY AS EACH SCHOOL IS A COMPONENT OF A CITY BLOCK, ONLY SEPERATED BY THE MAIN TRANSPORT ROUTES. THE OVERALL PHYSICAL PLANNING OF THE UNIVERSITY RESPECTS THE EXISTING CITY GRID AND ITS CHARACTER WHILST ALLOWING FOR TRADITIONAL CLASSROOM BOUNDARIES TO EXTEND INTO THE STREET.

THE INTEGRATION OF THE UNIVERSITY WITH THE CITY MUST BE SEEN AS A SYMBIOTIC RELATIONSHIP. AS MUCH AS THE CITY PROVIDES A PLATFORM FOR STUDENT LEARNING AND/... (PAGE 62)

The development of supporting systems such as the laboratory and research facilities occurred concurrently with the Hospital's growth. Both these institutions evolved with the help of the other and by 1912, the South African Institute for Medical Research was built. It helped it develop the existing health system by providing new information and connections to medical specialization.

With this growth in Research and medical knowledge, a need for a more comprehensive education system was required. In October 1921, the very first training school for nurses was opened on the corner of Esselen and Hospital Street to support the growing demand for knowledge and medical care.

The practicing doctors introduced the schooling system into the development of the Hospital. Medical students became part of the clinics and wards as part of their progression of clinical training for the Witwatersrand Degree of MBBCh.

By 1939, the imposing building that stood on the site of the permanent hospital of 1890, was able to facilitate 1660 beds. Even though it was structured, internally, as a segregated institution with divided treatment space for whites and 'non-europeans', The new hospital became an Icon for the advancement of Medical science and its connection to the community. Even today, whilst the building stands empty, the many ward plaques bear silent testimony to the memories of those who helped the institution meet its obligations to the sick of Johannesburg and the steady growth of the Institution.

Hillbrow

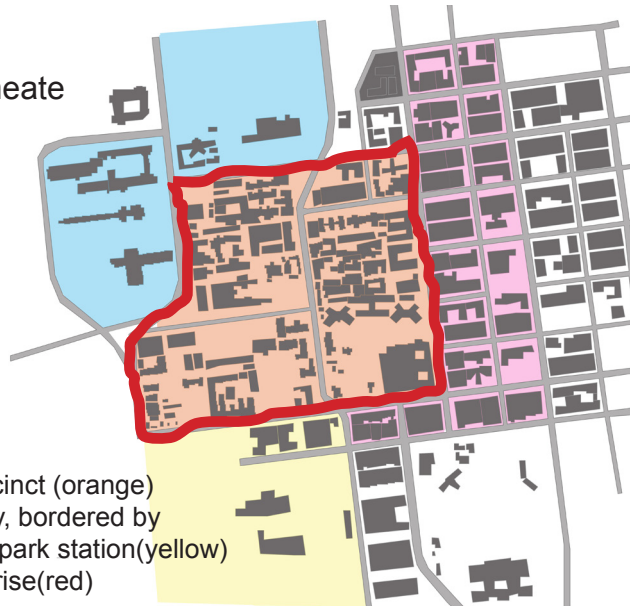
Present institution

Hillbrow has already begun to experience change through the rejuvenation of the inner city with the Government directing jobs towards the city centre and the active gentrification of the city to encourage inner city development and residential growth.

The most prominent landmark within Hillbrow that represents change and urban growth is the development of Constitutional Court. This institution that stands on the site of an old Apartheid prison with its strong connotations of the past controlling system, stands testament to the growth and change of South Africa's urban structure and society. Its location on the hill connects the civic precinct of Johannesburg to the stigmatised Hillbrow area.

The Hillbrow Health Precinct is bound by Hospital, Klein, Esselen and Smit streets. The precinct is fragmented into four distinct quadrants comprised mainly of research institutions, an existing public health clinic, a new and revitalised HIV clinic and the ghostly shell of Johannesburg's first hospital. At present, the public has limited access to the institution, as a body of knowledge and physically, through the public clinic.

An attempt is needed to permeate the barriers of the isolated institution to successfully integrate the precinct into the surrounding community.



> right

Hillbrow Health Precinct (orange)
fragmented from city, bordered by
civic precinct(blue), park station(yellow)
and residential highrise(red)

GROWTH, THE UNIVERSITY ALSO PROVIDES OPPORTUNITIES FOR THE GENERAL PUBLIC BY HOLDING LECTURES, TALKS AND PUBLIC CLASSES TO ENSURE THE CITY IS EQUALLY INTEGRATED WITH THE UNIVERSITY.



THE ORIGINAL VISION OF INTEGRATING NEW YORK UNIVERSITY WITH THE CITY WAS THAT IT WOULD BE 'IN AND OF THE CITY... IN AND OF THE WORLD' (IBID). IT IS A UNIVERSITY THAT IS DEEPLY CONNECTED WITH ITS SURROUNDINGS, WITH NEW YORK CITY: EASILY ACCESSIBLE TO ALL, DRAWING ENERGY AND INSPIRATION FROM THE VITALITY OF THE CITY. THIS ALLOWS STUDENTS DIRECT ACCESS TO THE DIVERSE CITY OF NEW YORK AND ITS RESOURCES.

THE SIGNIFICANCE OF A UNIVERSITY IN A CITY HAS BOTH PRACTICAL AND SOCIAL RELEVANCE. NEW YORK UNIVERSITY'S DIRECT PHYSICAL CONNECTION WITH THE CITY ALLOWS FOR AN INTEGRATED STUDENT LIFESTYLE. STUDENTS THEREFORE ARE NOT ONLY COLLEGE CAMPUS RESIDENTS BUT ALSO RESIDENTS AND USERS OF THE DIVERSE CITY.

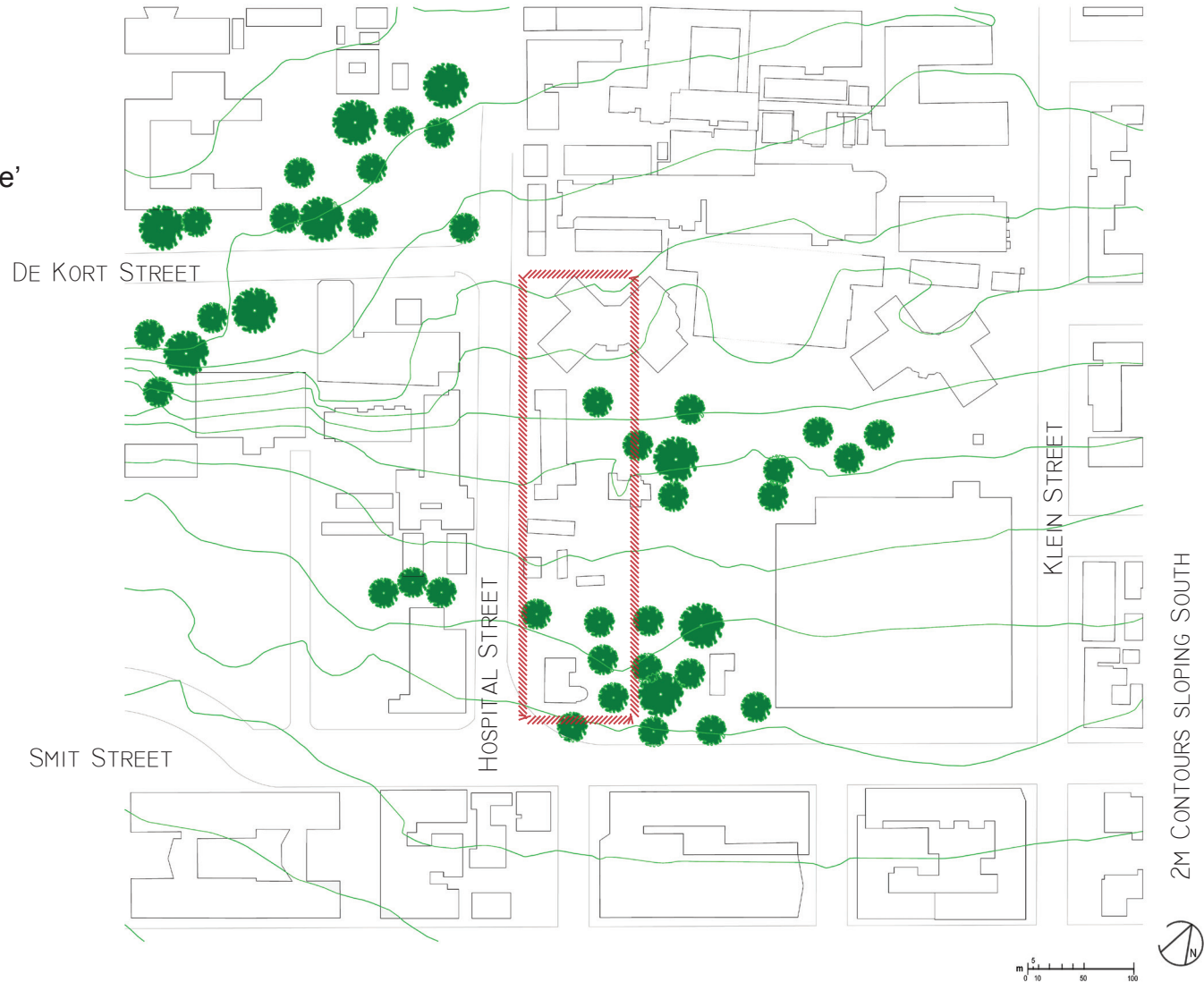
THE INTEGRATION OF THE UNIVERSITY IN A CITY HELPS TO CATALYSE A TRANSFER OF KNOWLEDGE AND CULTURE ACROSS VARIOUS RACE AND GENDER BOUNDARIES.

MICROSCALE

Focussing on the context at a microscale level will allow new connections to be made' that will aid in communicating space with the existing health precinct and the design proposal with the larger community.

This microscale analysis will look at

- Physical Context**
- Vehicle Movement**
- Pedestrian Movement**
- Heritage**
- Site Accessibility**
- Noise Pollution**
- Site Connections**



VEHICLE MOVEMENT



TAXI MOVEMENT

CAR MOVEMENT

BUS / OTHER



OBSERVATION POINT
(5MINS)

DE KORT STREET

HOSPITAL STREET

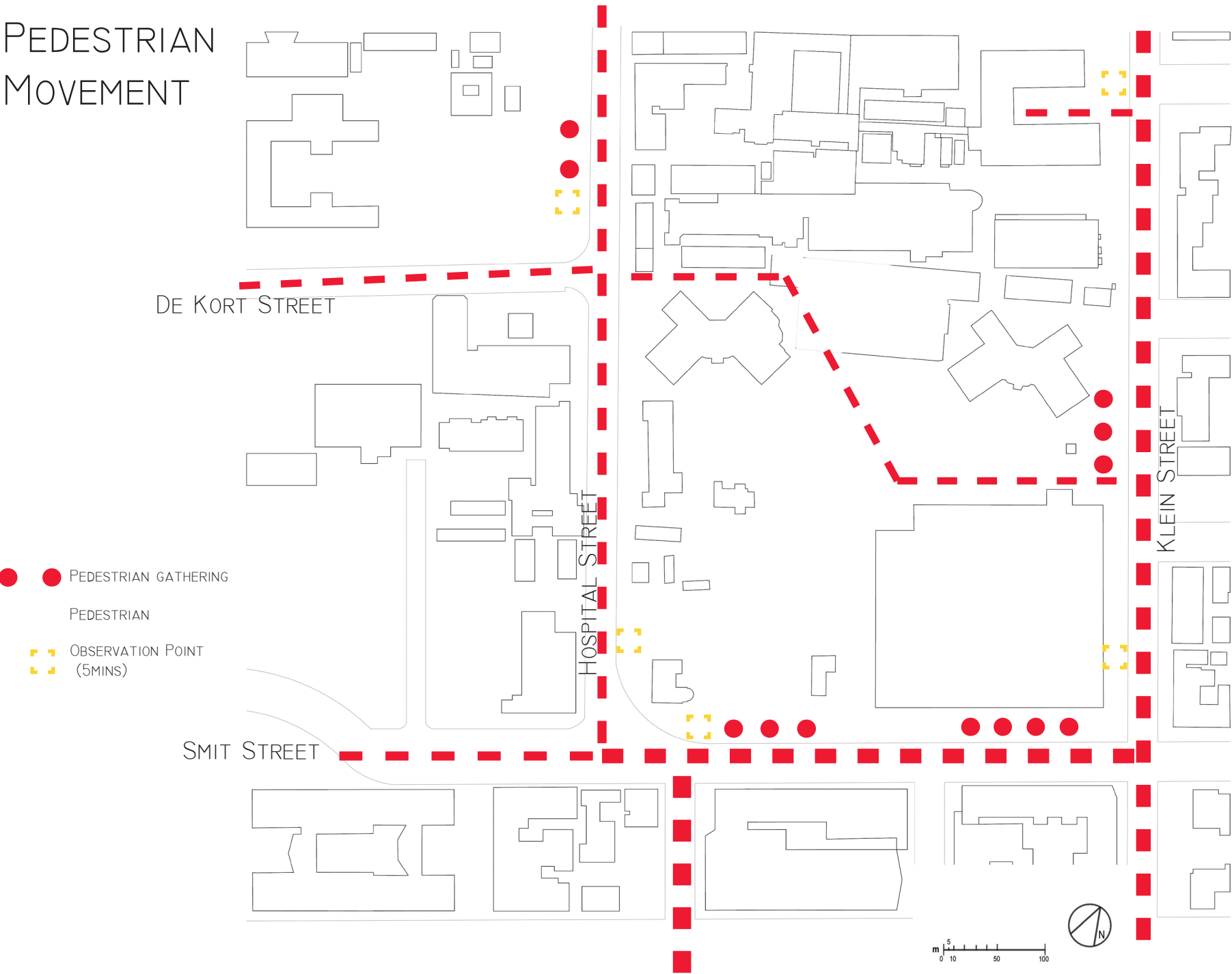
KLEIN STREET

SMIT STREET

0 10 50 100
m



PEDESTRIAN MOVEMENT



HERITAGE

MAINTAINED
POOR STATE

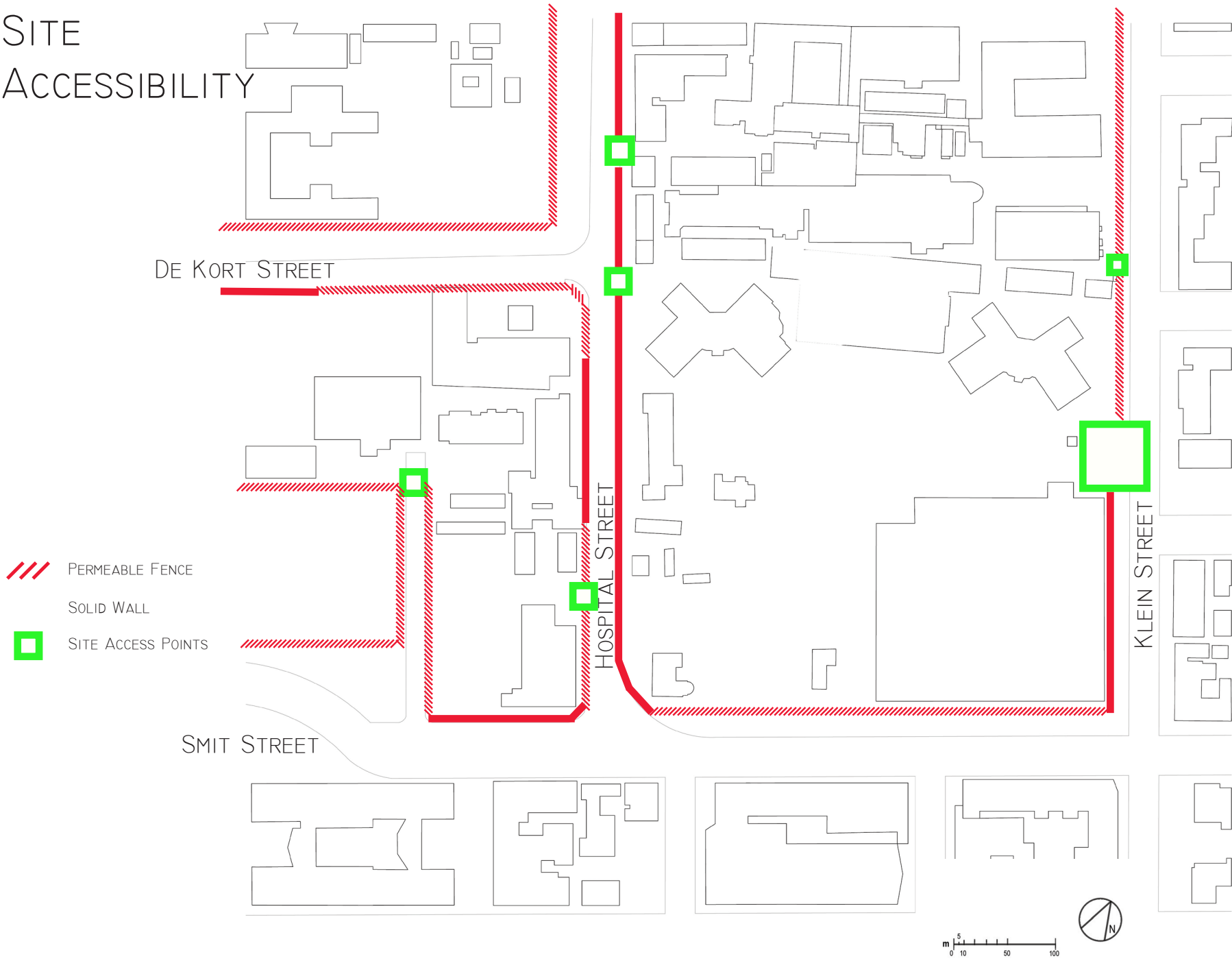
SMIT STREET

HOSPITAL STREET

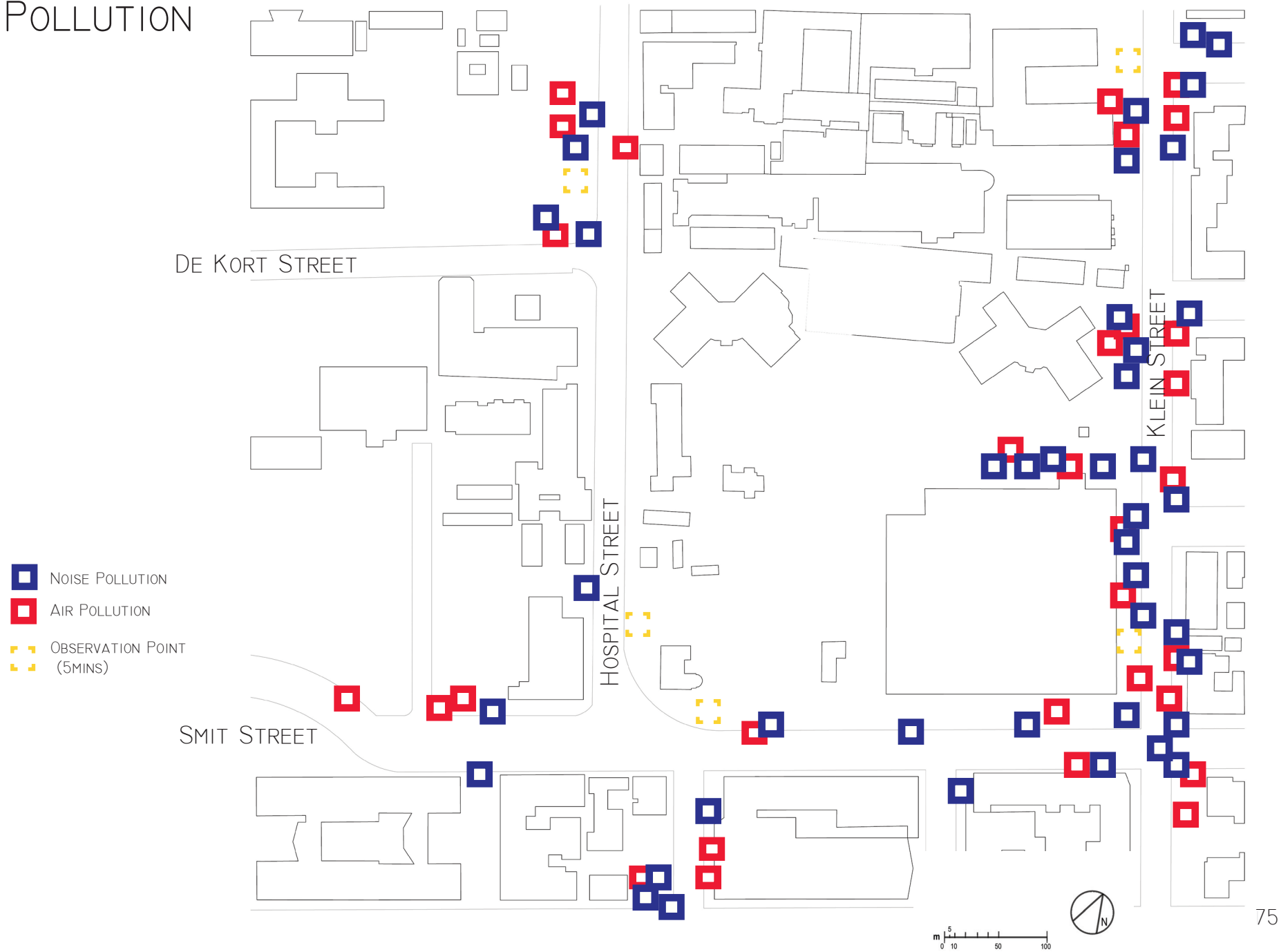
KLEIN STREET



SITE ACCESSIBILITY



POLLUTION



SITE CONNECTIONS

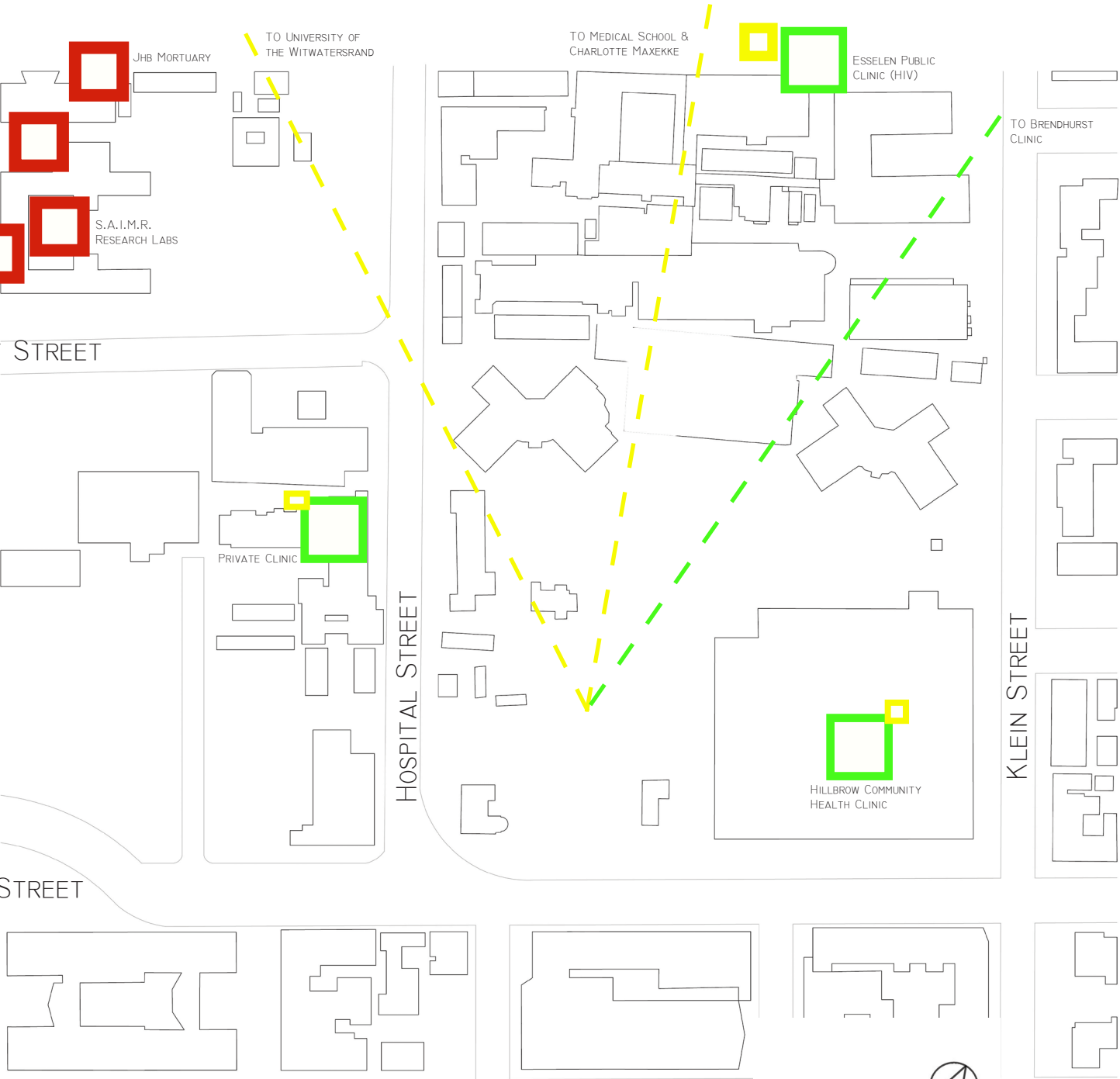
- TREATMENT CONNECTIONS
- RESEARCH CONNECTIONS
- SUPPORT FACILITIES
- EDUCATIONAL SUPPORT
- MEDICAL SUPPORT

DE KORT STREET

SMIT STREET

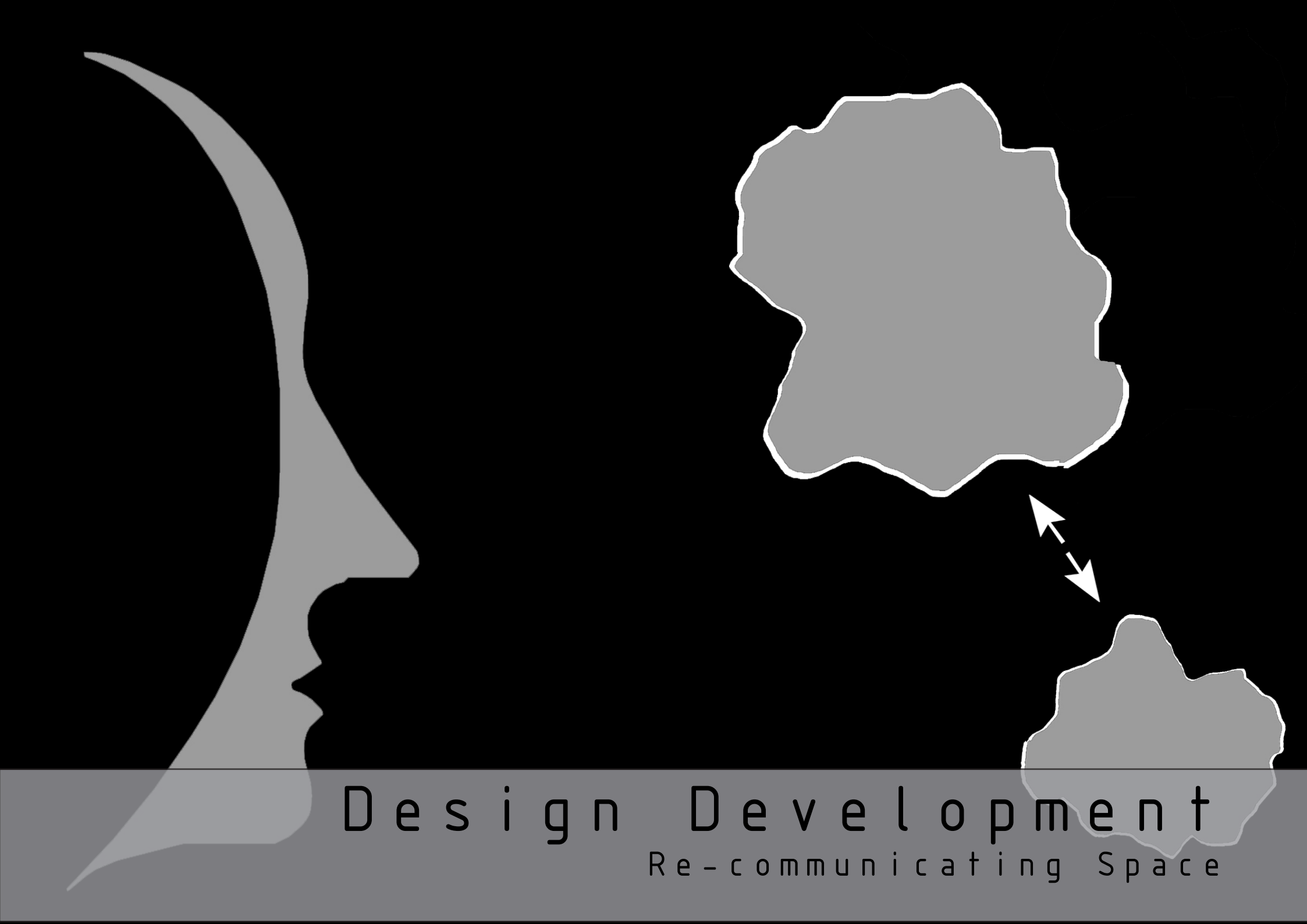
HOSPITAL STREET

KLEIN STREET



0 5 10 50 100





Design Development

Re-communicating Space

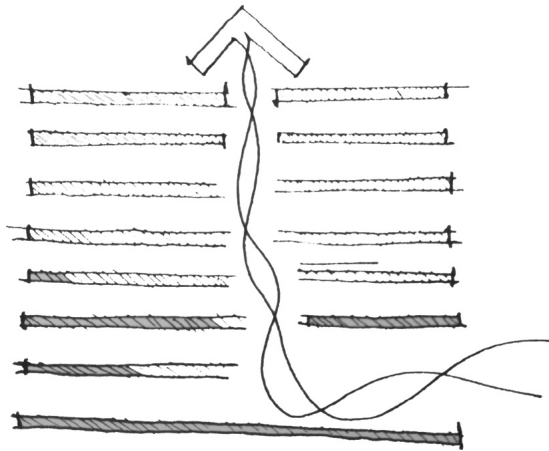
PUBLIC HEALTH A NEW TYPOLOGY

The word 'hospital' is derived from the Latin word '*hospitium*' and originally represented a shelter for the needy. It was later known as a place where the sick could recover. The hospital or public healthcare centre is regarded as an efficient mechanism for delivering treatment and as a place for healing.

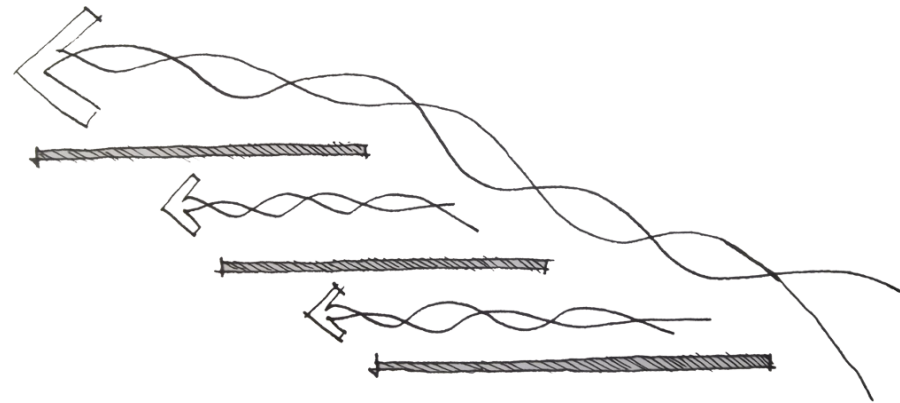
The design of public healthcare centres in the urban context have largely negated their context resulting in public spaces that have limited connections to the city. As a result, these healing centres have developed into function-orientated structures that focus on the clinical side of treatment and largely remove the personal relationship between patient and practitioner.

As architects begin to understand and focus on the necessity of public space and its urban connections as well as the strength in creating strong spaces for healing, a new typology can be developed.

An architecture that responds to the patient and communicates with the urban framework of the City, redeveloping the existing typology and integrating the patients needs with the buildings program.



The Existing Typology forces patient movement in a vertical direction limiting patient control.



The new Typology focusses on the movement of the individual and allows the filtered movement to define the spaces



< Left

A hybrid of the exposed services of the abandoned hospital on site. Photo taken by author.

DESIGN PROGRAMME

In order to develop a design with an appropriate programme, a hybrid between the existing functions and the proposed outpatient oncology centre is required. It is important to contextualise the programme and understand the 'genetic makeup' of the existing urban interface.

Through site analysis, it is evident that the precinct has strong existing connections to public health diagnosis and treatment facilities (red) and a prominent research body (grey). High pedestrian volumes as well as the availability of student accommodation onsite provide a large education and support component to the existing precinct program.

Although the site is located within a developing greenbelt, the 'green space' is under utilised with limited outdoor and public recovery space. The opportunity for cancer treatment in the area is very limited with basic services available and most patients referred to the larger hospitals out of the city.

The proposal for a public outpatient oncology centre shall act as both a gateway building, attempting to re-communicate the public with the health system as well as providing a place for the patient or pedestrian, to filter through, experience, acknowledge or recover in a safe and regenerative space.

The programmatic hybrid for the Oncology centre will draw on the existing site program and attempt to enhance their influence on the public. Focus will be placed on the patient and pedestrians paths with the site and their navigation through program from diagnosis to recovery. This will provide an opportunity for the building program and spatial hierarchy to develop for and around the individual.

Identified Contextual Programs



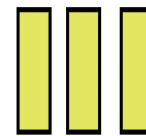
Treatment



Infusion



Recovery



Education

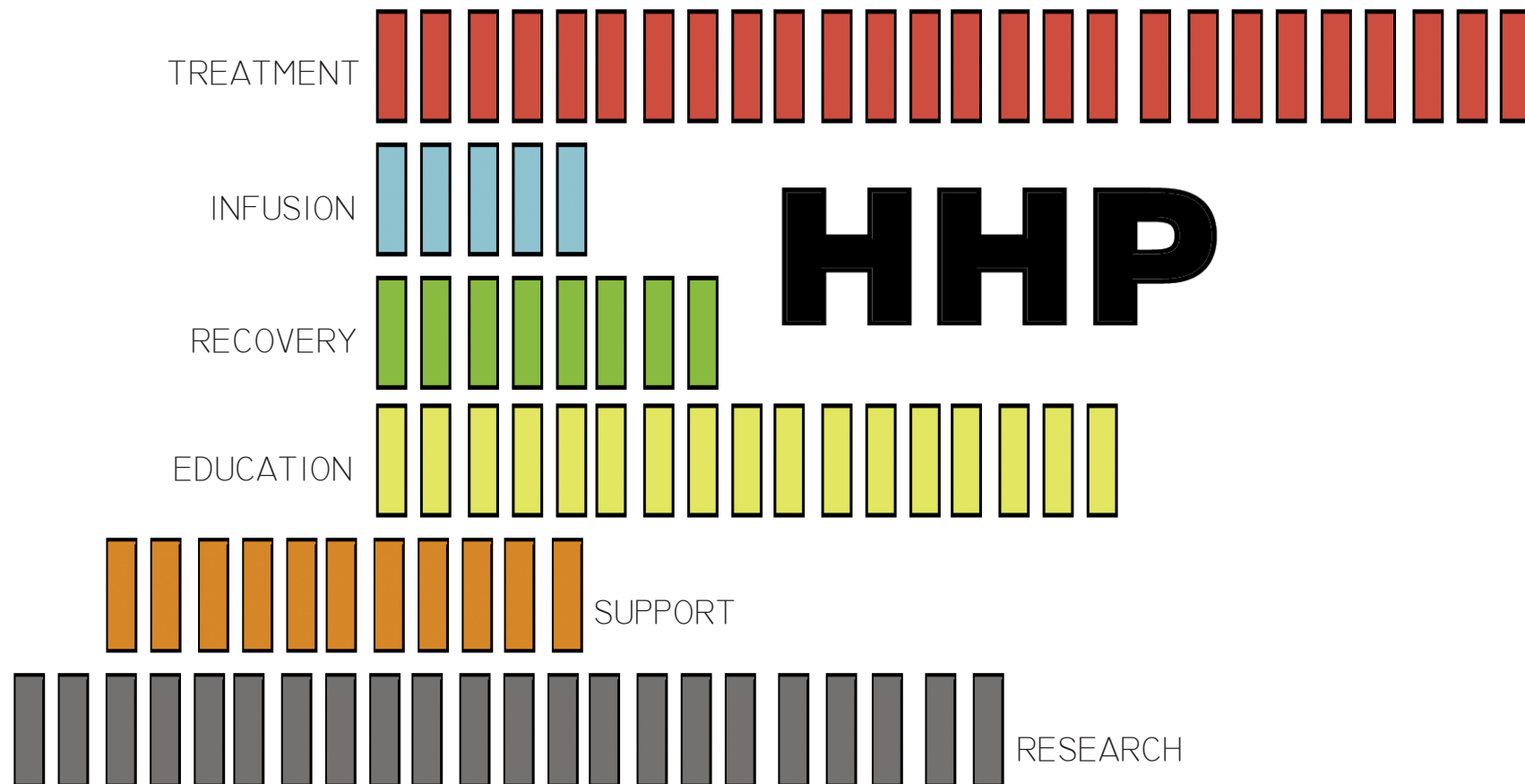


Support



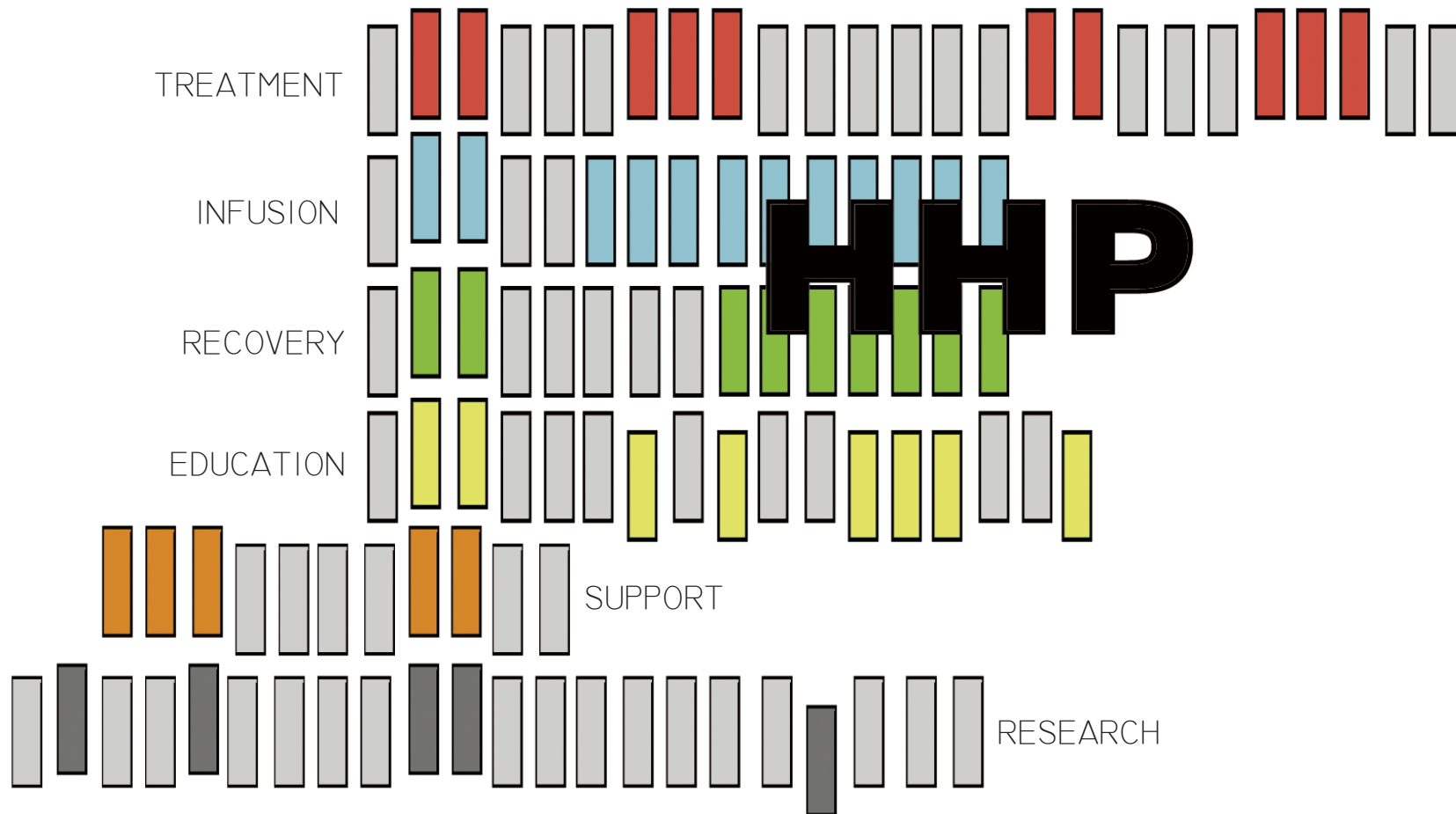
Research

EXISTING PROGRAMME



A defined programme was established after several visits and interviews within the Hillbrow Health Precinct (HHP). The diagram above is a basic representation of the proportion of services that make up the Hillbrow Health Precinct.

MUTATED PROGRAMME



A new programme was developed from the existing which highlighted the areas that needed more attention. The segments highlighted in colour represent the new programme elements and the focus intensity for each service.

A HYBRID PROGRAM INTERFACE AND TRANSITION

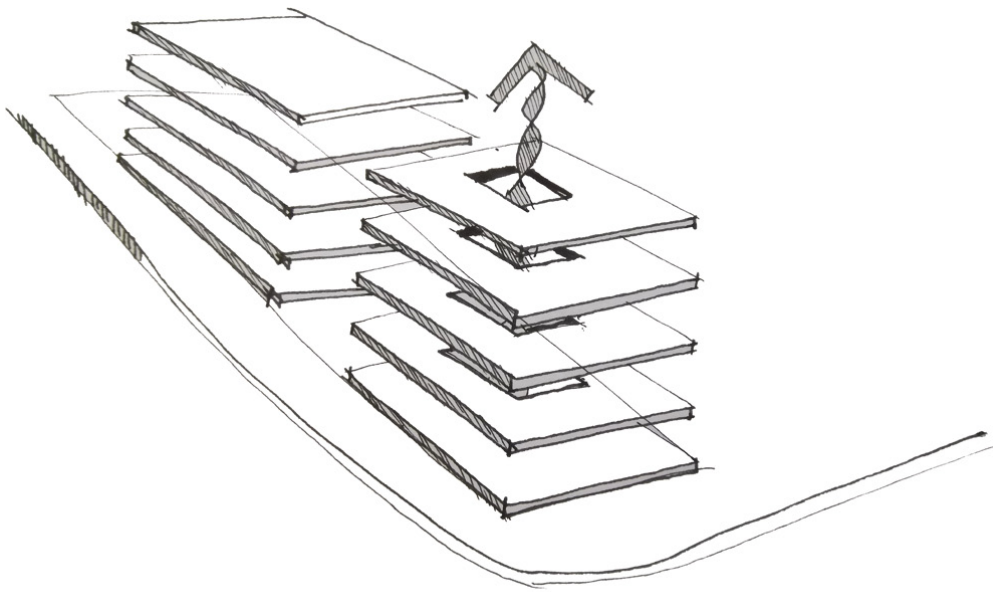
INFUSION: HILLBROW OUTPATIENT ONCOLOGY CENTRE PRELIMINARY AREA SCHEDULE

CATEGORY	% OF PROGRAM	SCHEDULE	UNITS	INDIV UNITS	TOTAL
DIAGNOSIS					
		GENERAL DIAGNOSIS			
		RECEPTION	1	35	35
		SECURITY	1	20	20
		PUBLIC ENQUIRY	1	60	60
		CONSULT ROOMS	6	25	150
		ADMIN	1	50	50
		SPECIALISED DIAGNOSIS			
		RECEPTION	1	35	35
		TUMOUR BOARD	1	50	50
		X- RAY	1	45	45
		SPECIALIST ROOM	2	40	80
TREATMENT					
		HARD TREATMENT			
		CT SCANNER	1	85	85
		PATIENT CHANGE	1	25	25
		WAITING AREA	1	35	35
		RECEPTION	1	30	30
		RADIOLOGY	1	100	100
		PATIENT CHANGE	1	25	25
		WAITING AREA	1	35	35
EDUCATION					

EDUCATION					
		CANSA INFO CENTRE	1	180	180
		ONCOLOGY TRAINING	1	225	225
		PUBLIC COUNCILLING	4	35	140
		PRIVATE COUNCILLING	6	25	150
		NURSE RESIDENCES	1	250	250
INFUSION					
		PAEDIATRIC INFUSION	1	200	200
		WOMAN INFUSION	1	200	200
		MALE INFUSION	1	200	200
		RECEPTION	3	30	90
		SPECIALIST ROOM	6	40	240
		INFUSION SPACE	2	100	200
RECOVERY					
		OUTDOOR COURTYARDS & LANDSCAPING		200	200
OTHER					
		HVAC ROOM	1	50	50
		PARKING	40	15	600
		BIO-WASTE STORE	2	10	20
		SERVICE AREA	1	50	50
		WATER TANKS	4	25	100
		TRANSFORMER	2	30	60

SITE RESPONSE

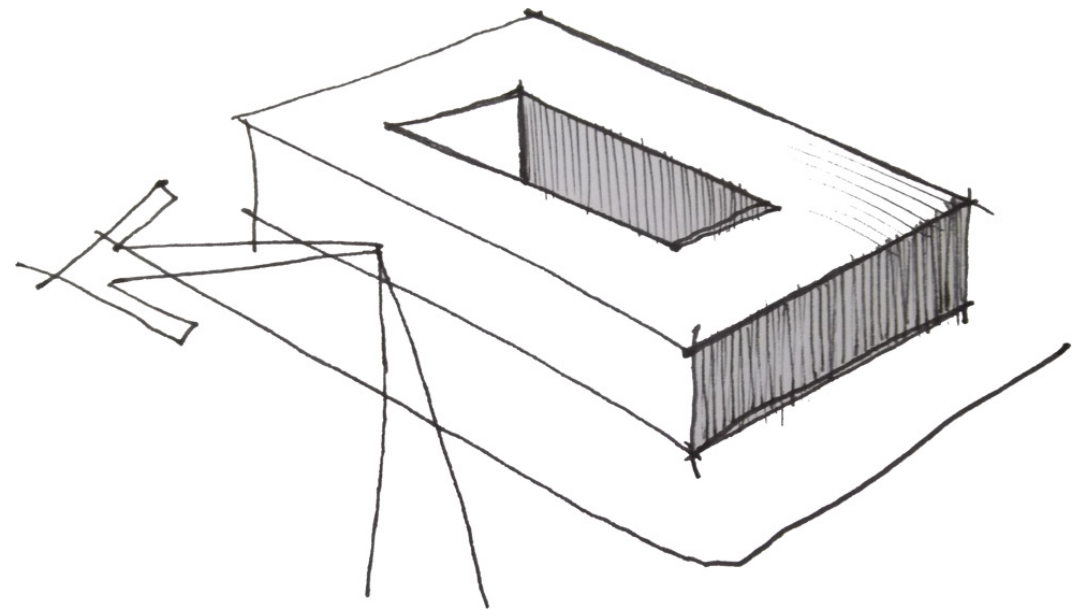
BRINGING PROGRAM TO SITE



TYPE 1- STACKED

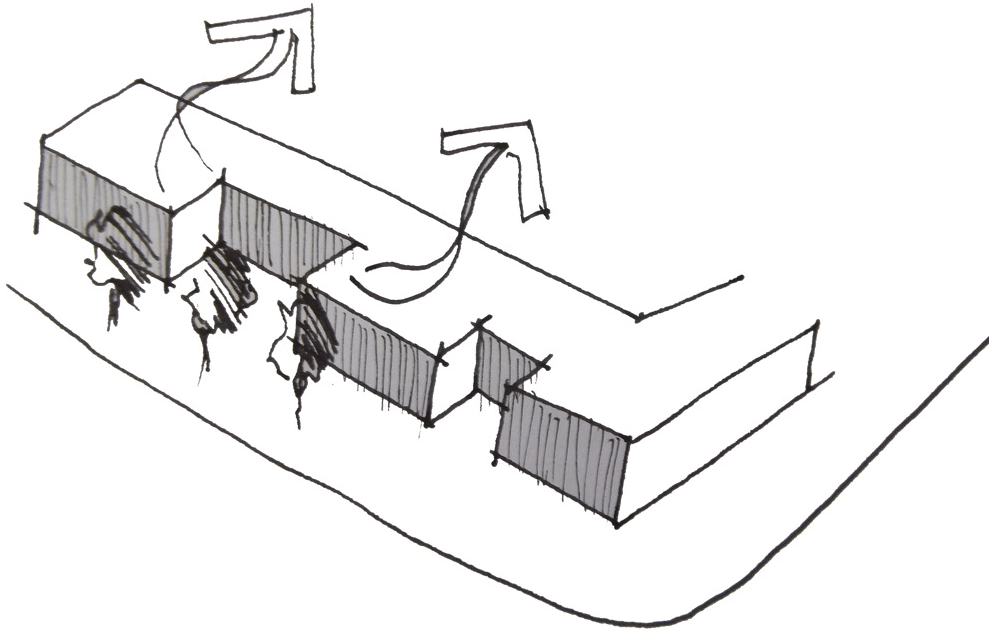
After defining the program for the Infusion centre, it was necessary to place it on site. A series of options regarding hierarchy, form and movement were developed.

The first attempt looked at stacking the program and defining a tower on site. This aided in service delivery between functions, however, there was no relationship with context resulting in an isolated structure with poor patient movement accessibility.



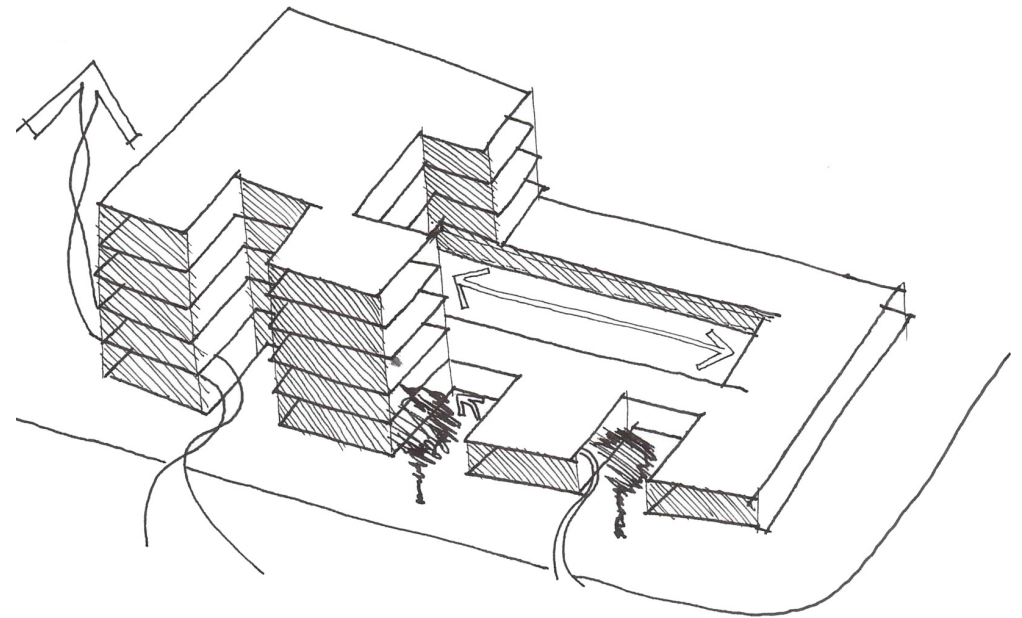
TYPE 2- HARD EDGE

The next attempt at placing the program on site took into consideration the importance of the path of the pedestrian. The result was a linear program arrangement defining a hard edge along Hospital Street. The form allowed for easy movement however the resultant building developed into a long structure that poorly communicated hierarchy of function and limited any filtered movement along the street edge.



TYPE 3- SOFT EDGE

Attempt 3 addressed the issues highlighted in the previous type. In order to successfully communicate the building and its program, a sensitive approach was required towards the public street edge. This approach supported the function of the building as an Infusion Centre by creating thresholds through the spaces, filtering the individuals movements and further enhancing the public - private space dynamic. This type, however, resulted in a weak balance between hard and soft edges losing its strong communication with the street edge.



TYPE 4-HYBRID PROGRAM

The final attempt highlights the successes of the previous types, developing a hybrid approach to site program. A strong edge is maintained along Hospital Street with pockets of space allowing filtered patient movement. Minimal stacking of functions is used to maintain thresholds between hierarchy of space. The main focus of this final placement is the sensitivity towards the path of the patient and allowing their path to navigate the program and not be defined by form.

SITE RESPONSE

COMMUNICATING EDGE

West Facade

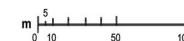
Soft edge
public filter
Defined by dominant
N-S Axis along
Hospital Street linking the
existing pedestrian
transport facilities

East Facade

Soft edge
public filter
Internal communication
with existing clinic and
Hospital

Key:

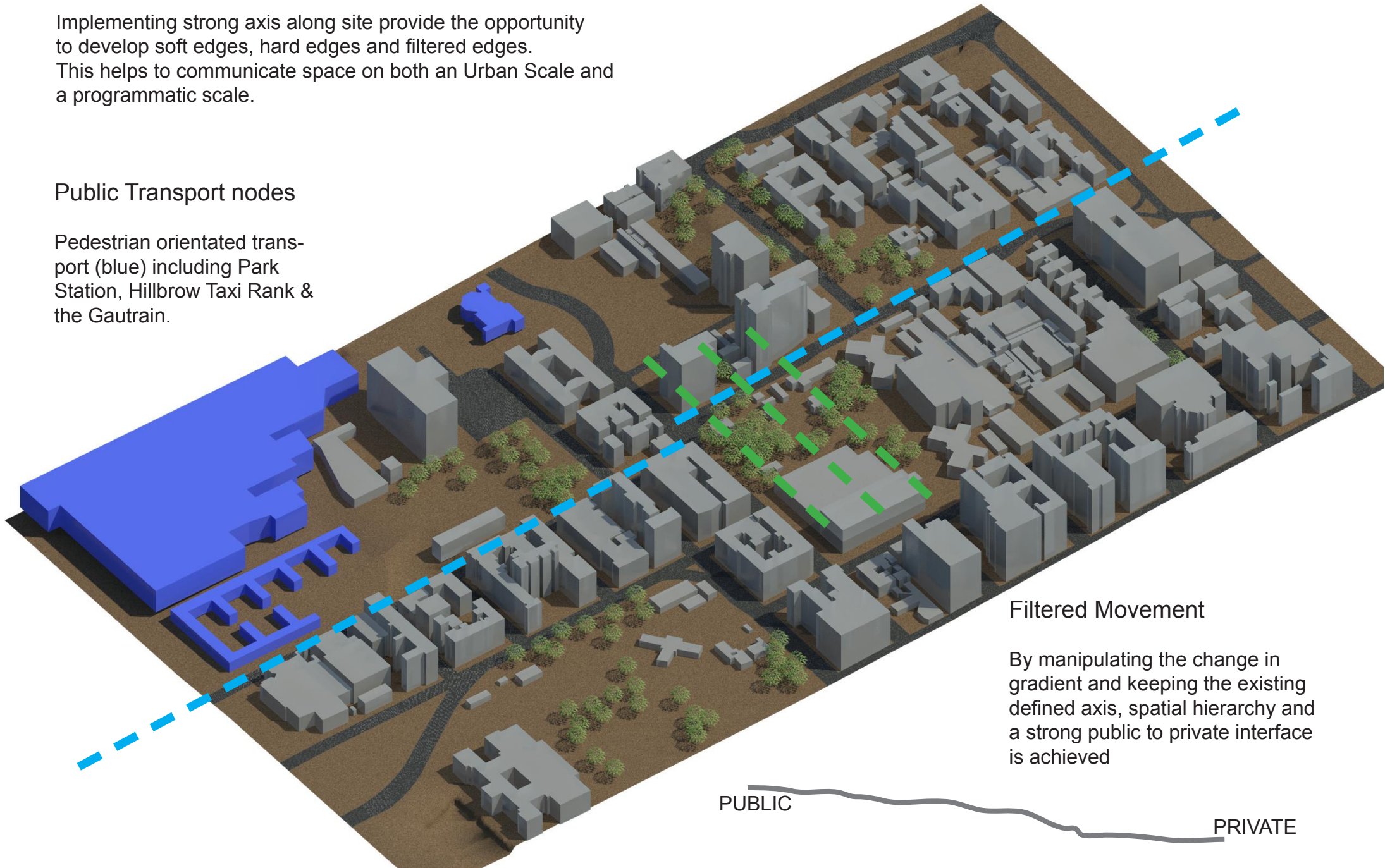
- Site Boundary
- E-W axis defining
site movement and
public filter interface
- N-S axis defining
Green edge & Primary
Public Communication
interface



Implementing strong axis along site provide the opportunity to develop soft edges, hard edges and filtered edges. This helps to communicate space on both an Urban Scale and a programmatic scale.

Public Transport nodes

Pedestrian orientated transport (blue) including Park Station, Hillbrow Taxi Rank & the Gautrain.



Filtered Movement

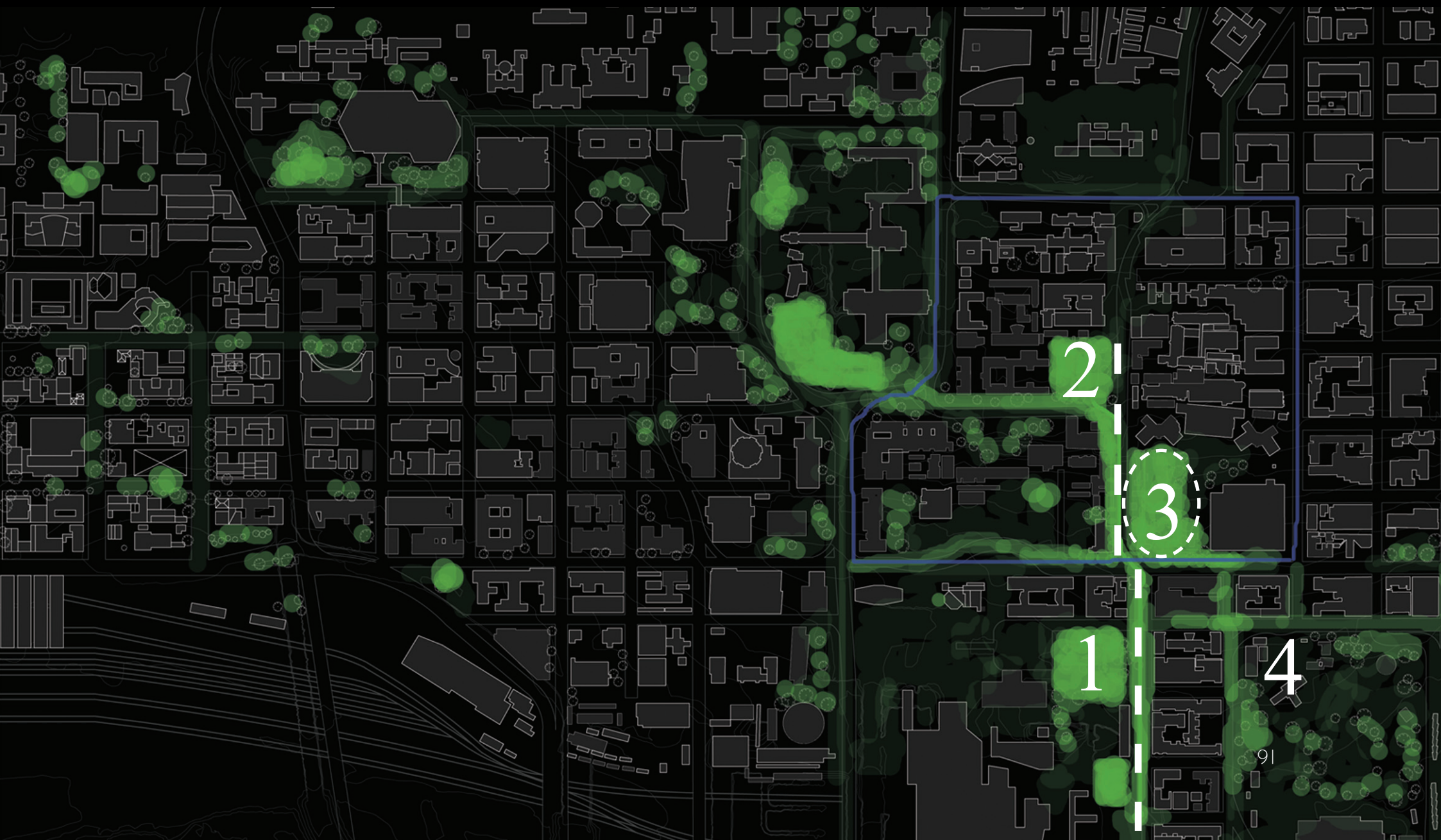
By manipulating the change in gradient and keeping the existing defined axis, spatial hierarchy and a strong public to private interface is achieved

PUBLIC

PRIVATE

SITE RESPONSE

CONNECTING GREEN SPACE



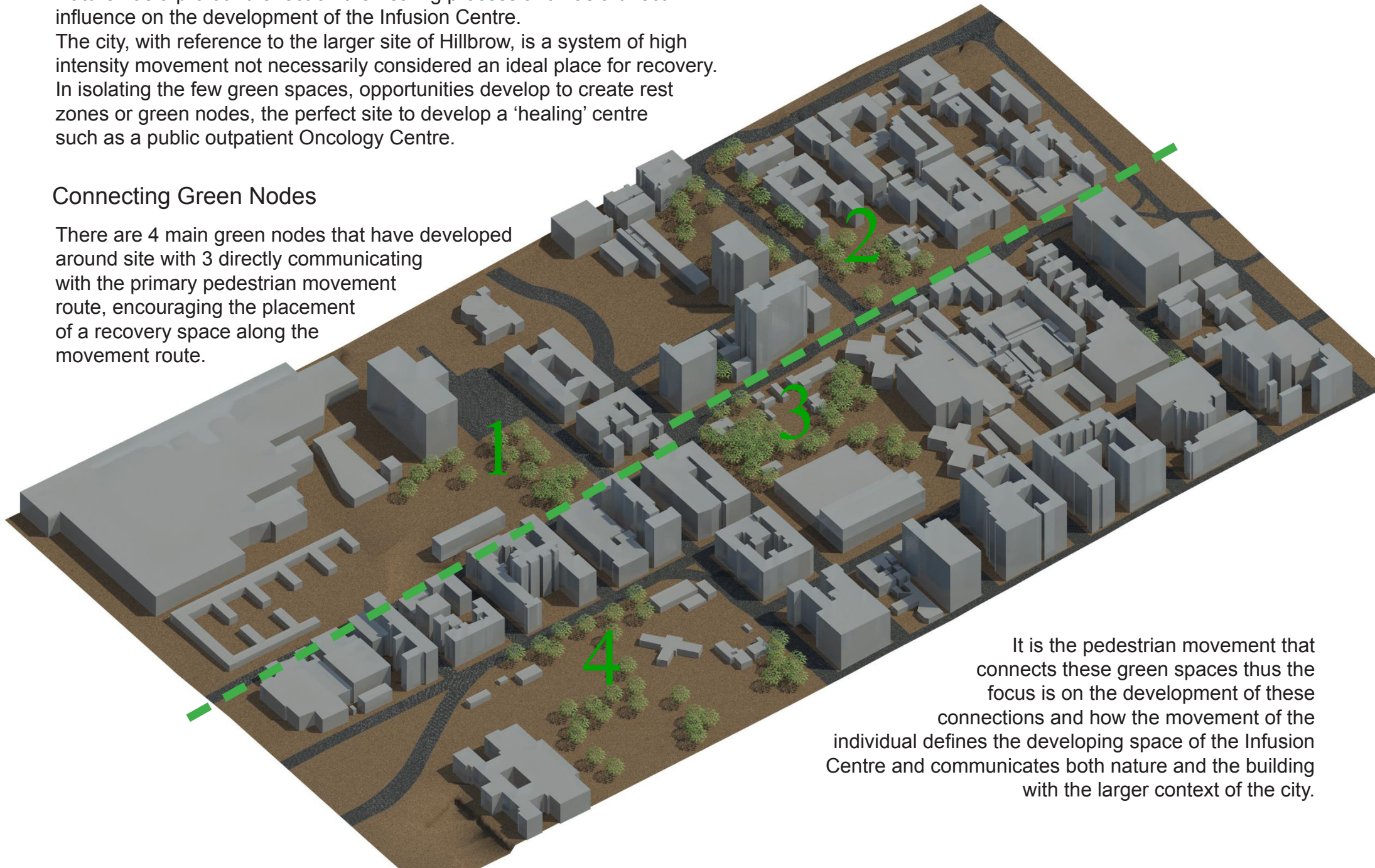
Influence of Green space on Healing

Nature has a profound effect on the healing process and has a direct influence on the development of the Infusion Centre.

The city, with reference to the larger site of Hillbrow, is a system of high intensity movement not necessarily considered an ideal place for recovery. In isolating the few green spaces, opportunities develop to create rest zones or green nodes, the perfect site to develop a 'healing' centre such as a public outpatient Oncology Centre.

Connecting Green Nodes

There are 4 main green nodes that have developed around site with 3 directly communicating with the primary pedestrian movement route, encouraging the placement of a recovery space along the movement route.



It is the pedestrian movement that connects these green spaces thus the focus is on the development of these connections and how the movement of the individual defines the developing space of the Infusion Centre and communicates both nature and the building with the larger context of the city.

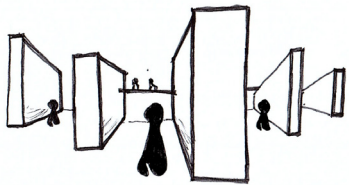
>Right

Some of the sketch models and early development sketches during the Design Charette earlier in the year.

DESIGN PROCESS

A 'design charette' was held in the beginning of the year to attempt to help us develop a design concept and responses to site conditions. We were asked to propose several themes from our developed theory and provide three separate approaches to our design. A few ideas were discarded along the way, but the exercise did help to develop stronger responses to:

- 1) Hierarchy of Space & thresholds
- 2) Public space vs Private Space
- 3) Soft edges & Hard edges
- 4) Program Hybrid
- 5) Filtering Space (recommunicating space)
- 6) Nature vs Built form



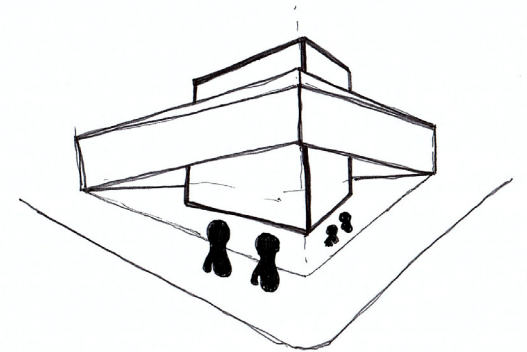
Filtered Approach



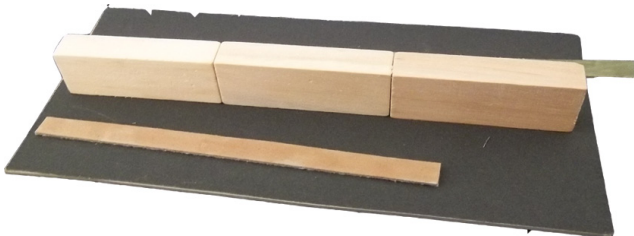
Defining Identity



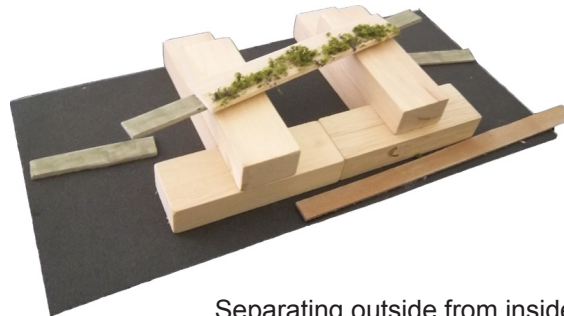
Visual filter



Spatial Hierarchy



Defining circulation paths



Separating outside from inside



Applying a hierarchy to circulation





< Above

The pedestrian and the patient.
The primary tool used to define site movement.

SITE RESPONSE

RE-COMMUNICATING PATH

THROUGH PATIENT MOVEMENT



FIGURE 1

In order to successfully communicate the public outpatient oncology centre, it is necessary to highlight the primary tool used in defining the program on site, the form and its function. The following diagrams will provide a sequence into the this development and show how the movement of both the patient and the pedestrian refines these.

In figure 1, there is a clear distinction between the path of the patient (green) and the pedestrian (red) and how their communication with the site will develop the Infusion Centre.

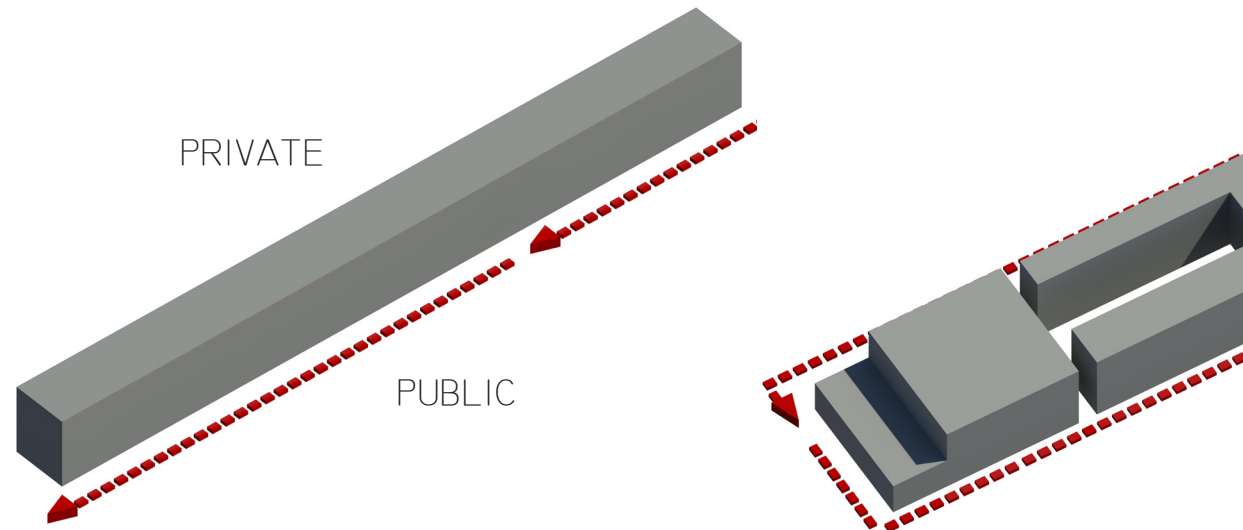


FIGURE 2

Figure 2 shows the current boundary constraints along Hospital Street. As Hospital street defines one of the boundaries for the Hillbrow Health Precinct, the pedestrian movement that is generated is very linear.

Walls and fences limit the communication between public space and private space.

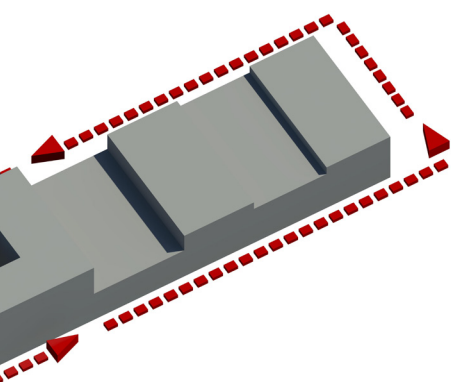


FIGURE 3

Figure 3 shows an early attempt to communicate the developing Infusion Centre by allowing pedestrian movement all around the building. This will allow the breakdown of the form into smaller parts.

The problem with this approach is that an 'island' building develops, further isolating the building from its precinct context and contradicting the notion of communication.

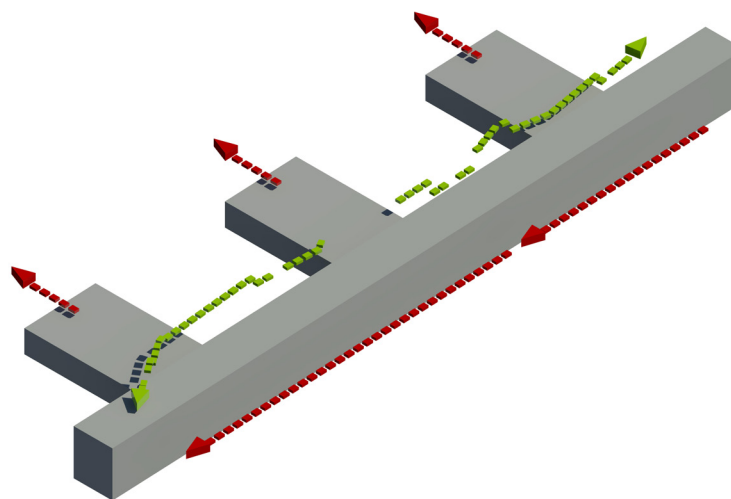


FIGURE 4

Figure 4 was the next approach to the street edge condition. A hard edge is maintained along Hospital street with controlled pedestrian access allowing filtered movement into the building.

The path of the patient (green) creates an isolated conversation and developing the program of the building. The continuous hard edge along the street worked against the concept and further isolated the public integration.

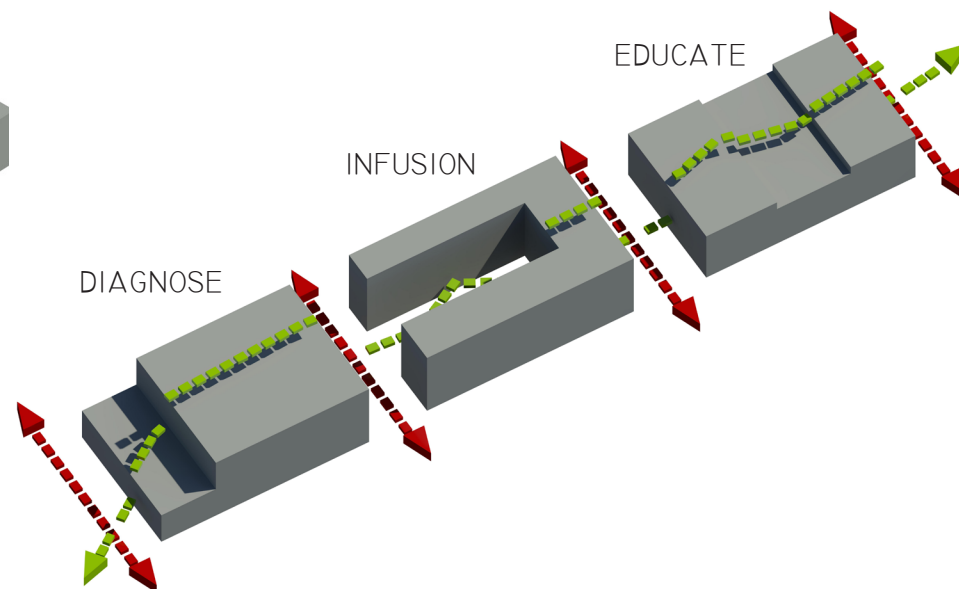
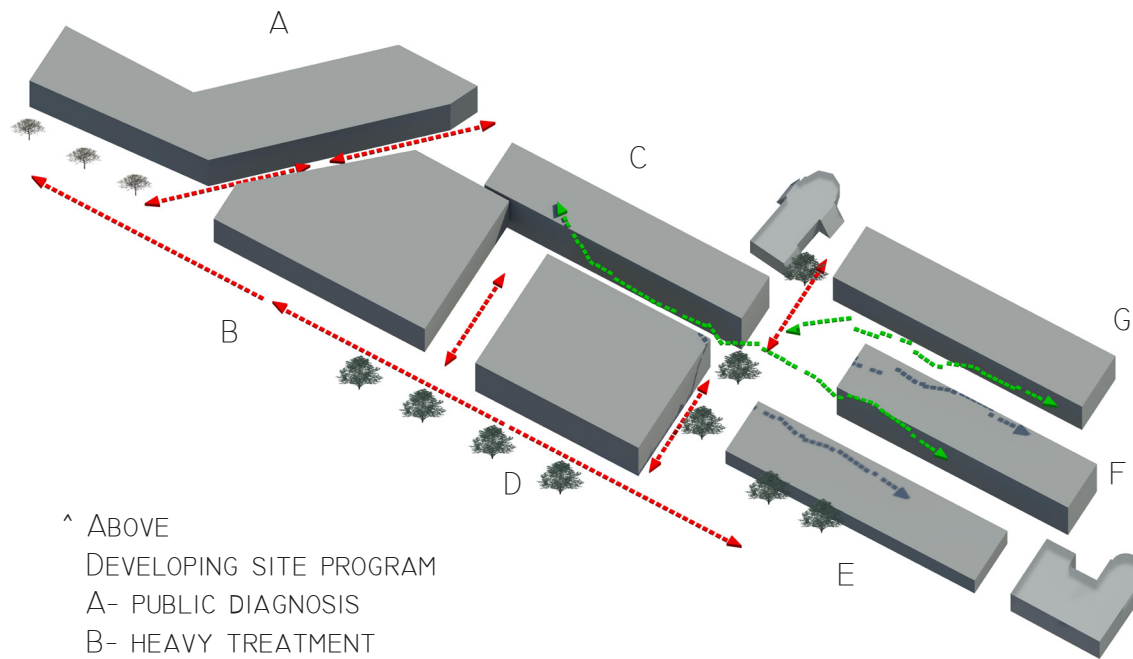


FIGURE 5

Figure 5 took the process one step further by intensifying the public 'filtered' movement through the building. This creates a stronger dynamic between the movement dialogues of the pedestrian (red) and the patient (green).

This filtered movement also starts to define the program hierarchy across the site developing the 3 primary zones.

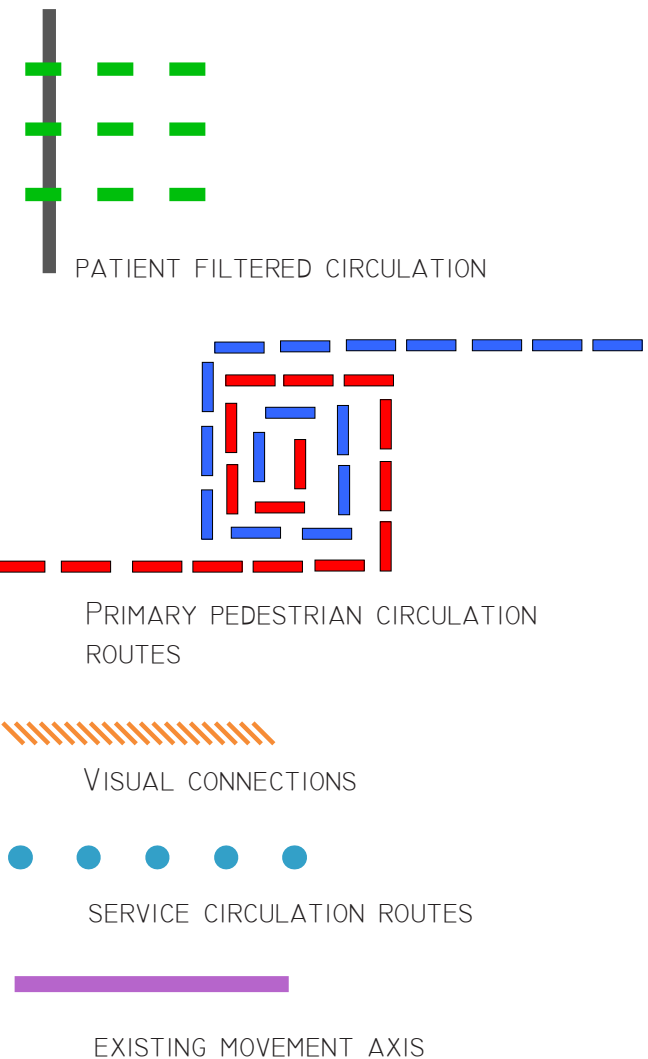


- ^ ABOVE
DEVELOPING SITE PROGRAM
A- PUBLIC DIAGNOSIS
B- HEAVY TREATMENT
C- PUBLIC INFUSION
D- PUBLIC CIRCULATION
E- CANSA AWARENESS CENTRE
F- STAFF ONCOLOGY TRAINING
G- COUNCILLOR AND SUPPORT CENTRE

FIGURE 6

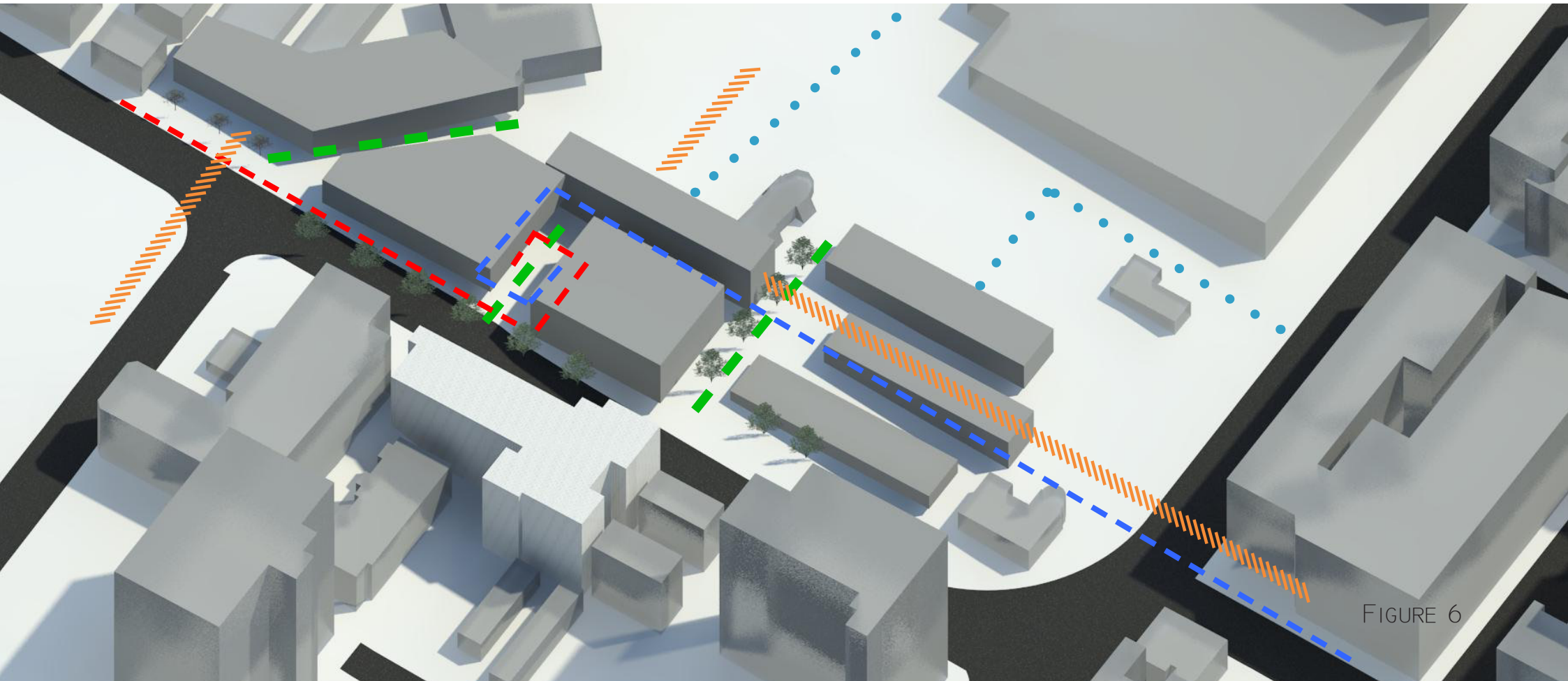
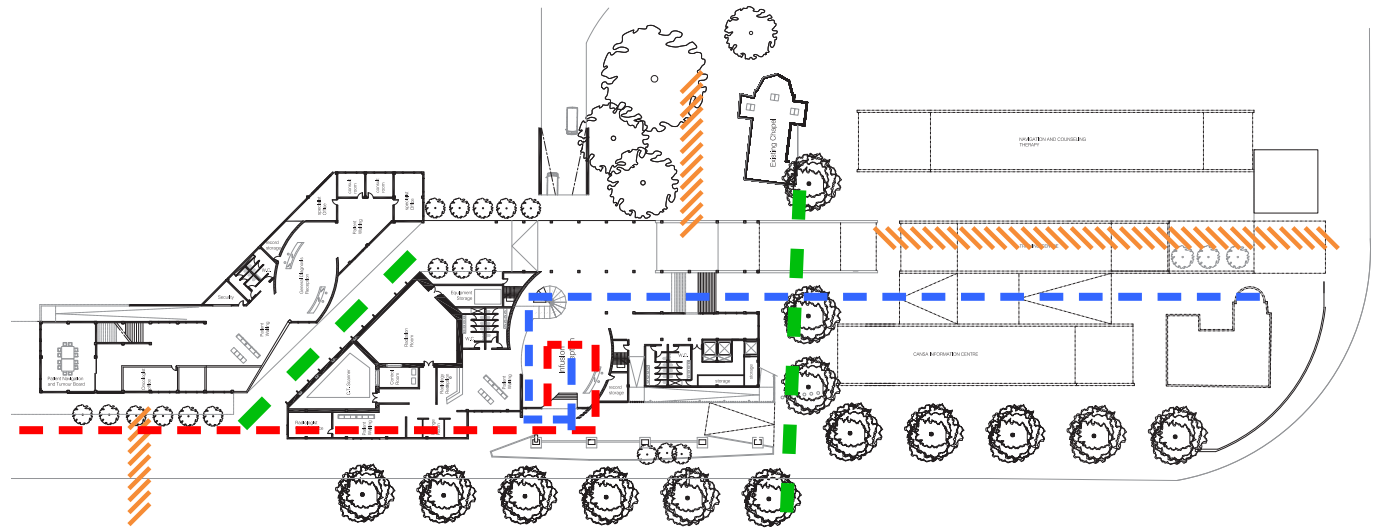
Figure 6 shows the further developed relationship between the program of the building and the movement paths developed by the patient and the pedestrian. This movement further breaks down the programmatic functions of the Infusion centre. The pedestrian (red) movement develops hard edges and the primary access points whilst an additional patient (green) movement defines an additional dialogue for the patients visiting on a recurring basis.

SITE RESPONSE DEFINING SITE CIRCULATION

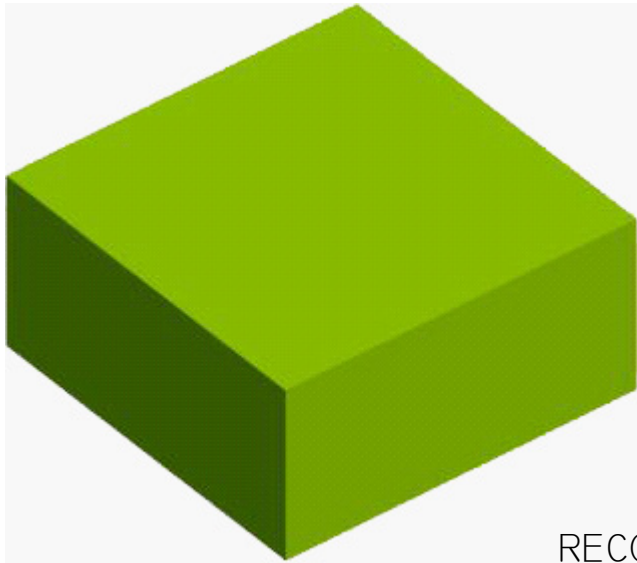


MOVEMENT ROUTES

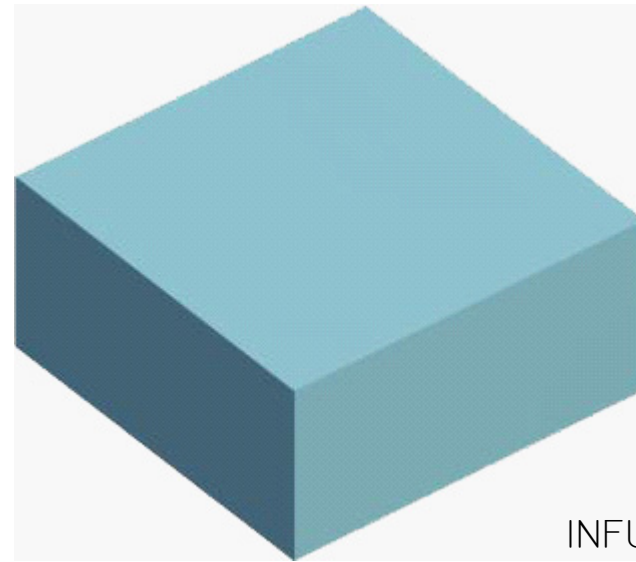
Figure 7 depicts the program form within its context of the Hillbrow Health Precinct along Hospital Street. The main movement routes and site responses are depicted. Strong visual connections with the context are maintained with the recovery spaces. A central atrium is defined by the primary pedestrian circulation on site, allowing for a strong connectivity between spaces. The existing movement axis are maintained to ensure a strong relationship between public, the Infusion centre and the existing Health Infrastructure.



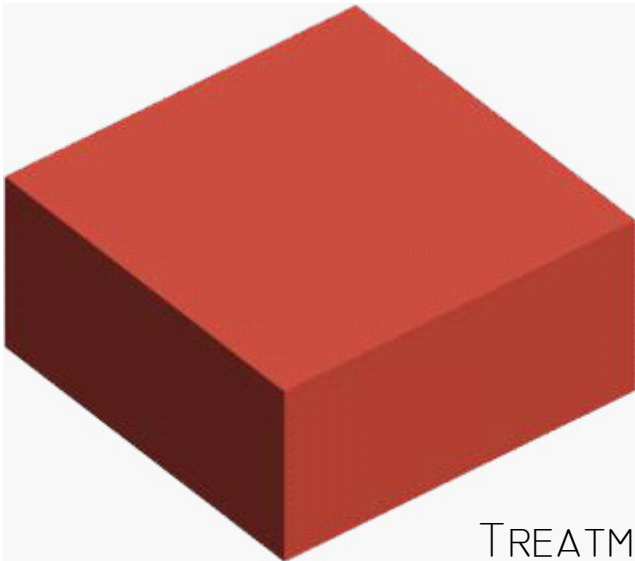
ON-SITE PROGRAMME



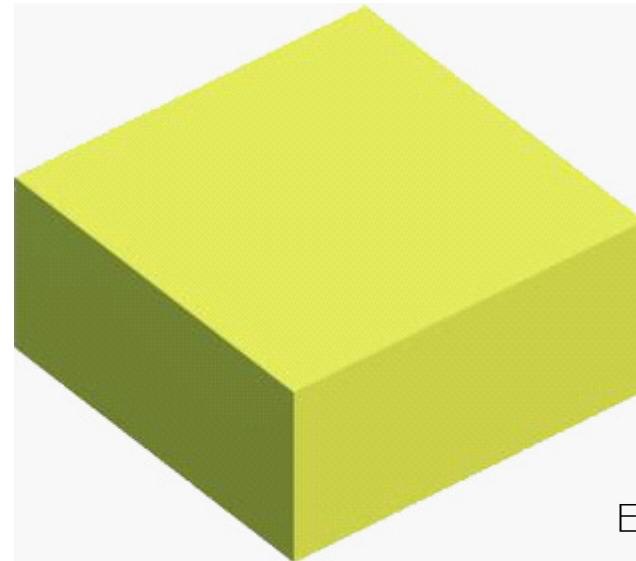
RECOVER



INFUSION



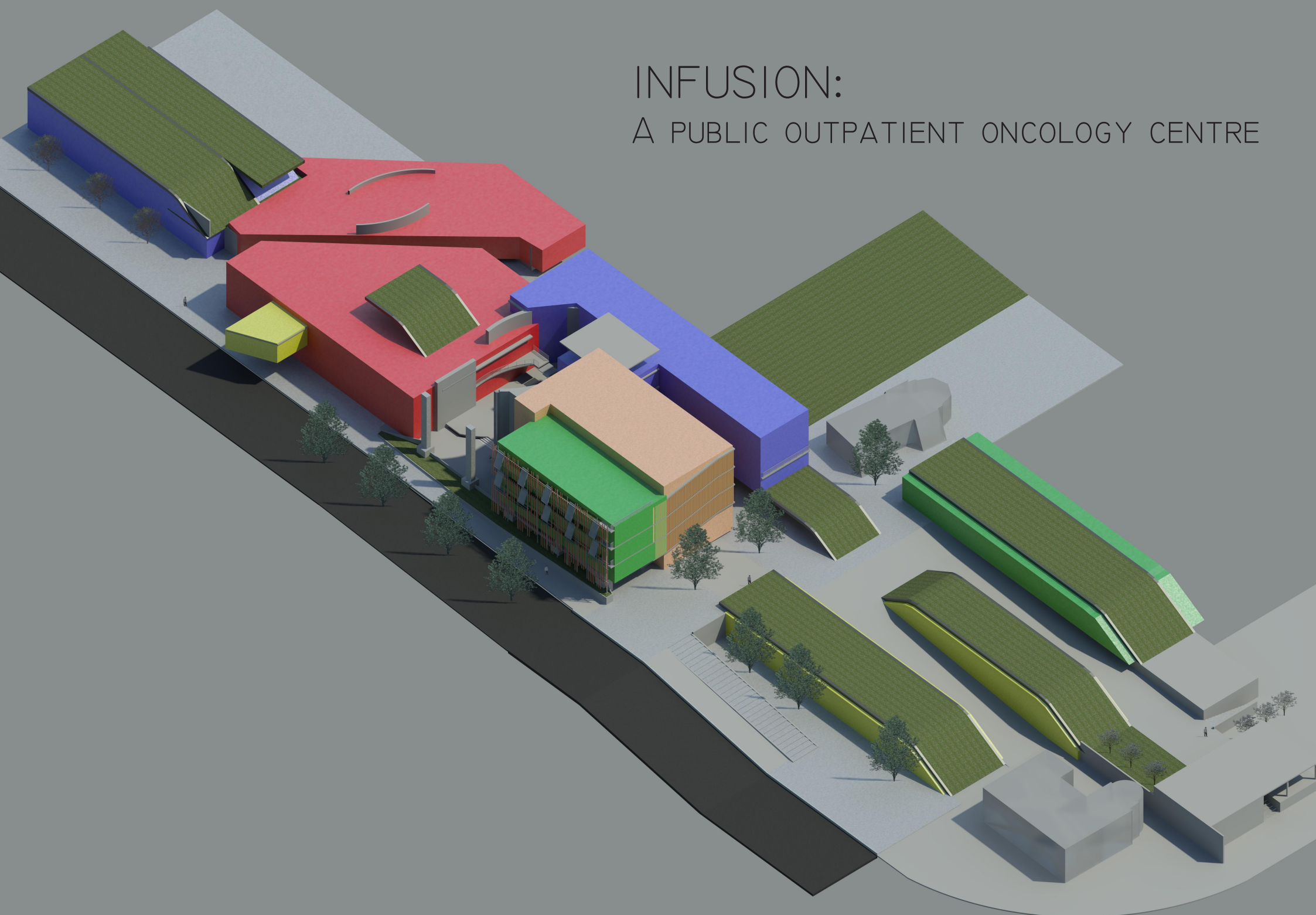
TREATMENT

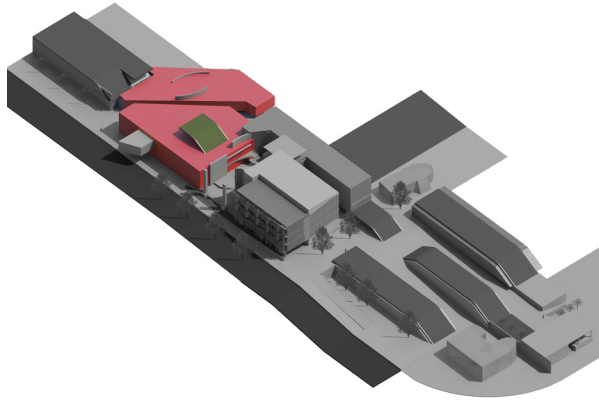


EDUCATE

INFUSION:

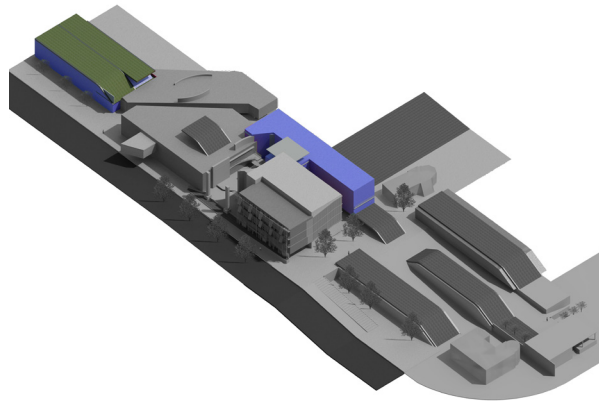
A PUBLIC OUTPATIENT ONCOLOGY CENTRE





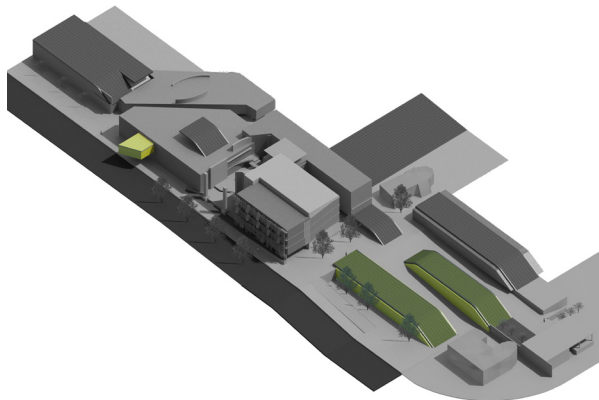
TREATMENT EDGE

- Secondary access route to Infusion Centre.
- Access to patient Diagnosis and treatment.
- Hard Treatment including Radiology and CT.
- Access to Critical Infusion.



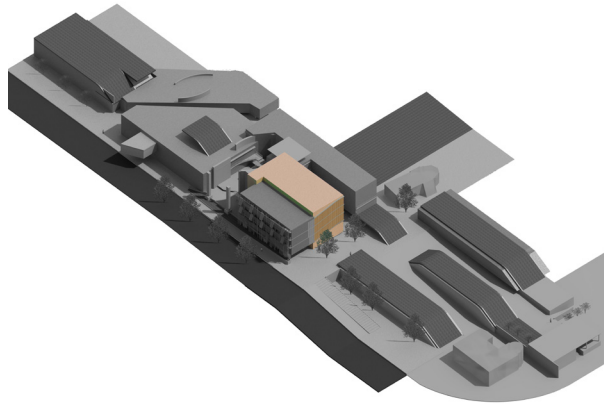
INFUSION SPACE

- Critical Infusion for patient requiring intensive and immediate Cancer treatment.
- 3 floors of Infusion. Levels are developed according to gender category to provide the best treatment to the patient whilst maintaining a high level of privacy and sensitivity.



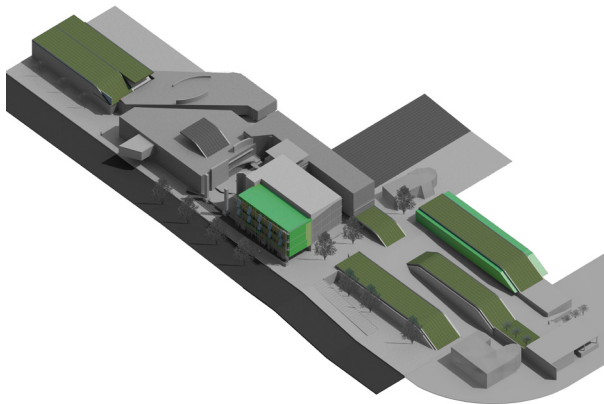
EDUCATE AND SUPPORT

- Cansa Support Centre to provide a first contact with the public, patient and family regarding the knowledge of the disease.
- An Oncology Training centre that responds to the current shortage of trained cancer nurses in the public health system.



PRIMARY BUILDING CORE

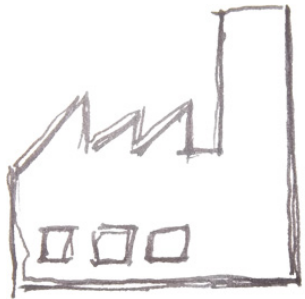
- In response to the variety of public transport in the area, the design needed to accommodate all forms of movement through the building.
- The placement of program across the site manipulates the natural slope to ensure easy of public movement.
- The primary core responds to all 3 points of entry and provides lift access to upper levels, stair access for direct circulation and a winding ramp for disabled movement and to connect the patient with green space.



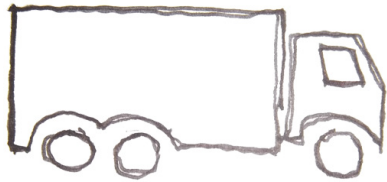
RECOVERY SPACE

- Recovery defines a large part of the infusion experience at the outpatient oncology centre. Access to green space for the patient is provided on each level and within walking distance of each major component.
- A green space adjoins the circulating ramp, providing rest space for the visitor and a protective environment from the outside world.
- Green roofs both provide a natural aesthetic for users as well as provide a necessary function in water collection on site.

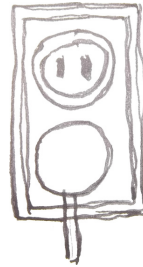
TECHNOLOGY: A SUSTAINABLE RESPONSE



MAKE



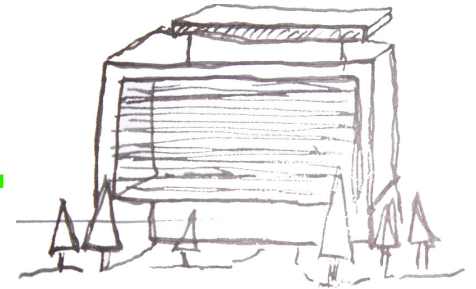
MOVE



USE



REGENERATE



HEAL

BIOPHILIA: CONNECTING NATURE

The goal of biophylic architecture is to create spaces that provide a positive emotional experience- a space of enjoyment, pleasure, interest, fascination, and wonder.

(Kellert et al.2008, cited in Heerwagen, 2009;47: 48)

According to the theory, 'Biophylia Hypothesis' (Wilson, 1984, cited in Heerwagen,2009, 39), people are considered to be emotionally connected to nature and its organic elements. Biophylic architecture attempts to bring both nature and the building into a single entity by 'deliberately integrating natural forms, elements and green conditions into the built environment.

(Joye et al, 2010:58)

Heerwagen states (2009:39), 'contact with nature is a basic human need.. a universal primary need' and it is through this basic connection that we are able to achieve both physical and mental health benefits.

The introduction of green spaces within the urban context has beneficial advantages. It helps to improve the physical appearance of a public environment (Joye et al. 2010:58), it aids in reducing the stress levels and health problems of occupants further improving moods (Joye ey al,2010:59).

Furthermore, a 'green space' has a largely positive effect on the mental wellness of users, with the presence or visibility of trees in an urban environment having beneficial results on a psychological level. (Ulrich,1986).

Most modern day architecture does not respond to the environmental and emotional needs of the user. Buildings have been designed to adapt and accommodate for mechanical efficiency resulting in energy intensive buildings that are not sensitive to the local site or the user resulting in a rift between the user, nature and the building.

Biophyllic architecture has started to re-introduce nature back into the urban form, making place for harmony between the user and his environment.

This chapter shall draw on the close relationship between the user, the built form and nature, incorporating the concepts and processes of Biophyllic architecture in order to identify the key processes to further the development of the design process. These investigations include:

- 1) Recoding Structure
- 2) Façade Resolution
- 3) Processes Regenerated

The following points have been identified as part of the technological application.

- > Creating an interface between public and private space and allowing these spaces to communicate with each other through a series of facades and screens. These will help to define privacy, spatial hierarchy and light quality and develop a stronger movement dialogue with the building.
- > Creating a controlled internal environment for proper recovery and treatment of varied levels of Cancer diagnosis in patients
- > Harvesting Nature's resources to create closed sustainable systems between the user, the building and nature.
 - > Maintaining adequate light intensity and quality for internal comfort. With the use of Photovoltaic louvres, solar energy will be harvested and stored to alleviate electrical usage and help to power energy intensive functions such as CT scanning and Radiology.
 - > As the relationship between nature and user is a key development in the building, the use of photo-sensitive algae tubes will be used to convert solar energy into Bio- fuel. This stored fuel will in turn be used to power generators and systems rooms.
 - > Harvesting rain water and filtering through roof gardens and roofscapes will provide adequate water supply for facility grey water, feeding the facility landscape and use for internal comfort through solar water heating and cooling

RECODING STRUCTURE

THE HELIX BRIDGE

MARINA BAY, SINGAPORE

COX GROUP PTE LTD (AUSTRALIA) & ARCHITECTS 6I (SINGAPORE)

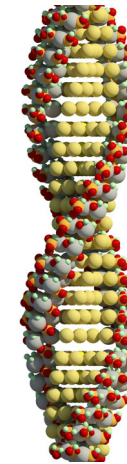
" The Helix is truly an engineering marvel. While the structure is incredibly delicate and intricate, it has been engineered to support more than 10 000 people at a time. The Helix is the first example of this structural solution applied to a bridge- there is nothing else like it ".

Dr See Ling Ming, Arup Project Leader

This pedestrian bridge is located next to the Benjamin Sheares bridge. It was designed as a lightweight structure to contrast the heavy vehicular traffic of the Sheares Bridge. The brief called for a design that was able to successfully link the Marina Centre with the Marina South inside Singapore's Marina Bay area. A key requirement of the brief was for the bridge, which spans 280m, was to successfully deal with the effects of the tropical climate.

The design incorporates two DNA helix spirals acting as a tubular truss providing the structural integrity of the bridge. The inner spiral is made up of glass canopies providing shade for pedestrians. The design is inspired by the form and curvature of the DNA structure. A series of lights are placed on the structure in order to highlight the design, the path and create a special visual experience for visitors. The letters C,G,A and T are highlighted on the bridge to signify the prime bases that make up the DNA molecule.

The design and material fabrication for the bridge is extremely efficient using 5x less steel than a conventional box girder bridge allowing the tubular truss design to carry the load across the 280m span with a minimum of 5 steel supports grounding it. The bridge's success lies in the design sensitivity and its ability to communicate structure and function through lighting and material. The Infusion Centre will attempt to use the same approach to communicate structure with the public making service visibility and patient movement a critical design developer.



^ Above
Rendered DNA helix showing the structure of individual molecules as a whole. (Image by Author)

> Right
Lower perspective of the Helix Bridge showing the lightness and open relationship between structure and user (Image by Huang,C: 2010)



GENETIC APPROACH

The human chromosomes are located in the nucleus of the cells in the body. The chromosome is the structure in the nucleus that contains the genes which determine your traits.

A cancer or tumour will develop when there is irregular cell growth resulting in a error in a cells DNA code. These cells are considered to be mutated. When an accumulation of these cells occur over time in different genes in the body, a malignancy is formed.

Single-Nucleotide Polymorphism Data (SNP's) are considered the new markers for determining variations in a person's DNA. It is not possible to find the position or sequence of the entire DNA for an individual, the pattern of the variation in the DNA or the SNP data is used to calculate new genetic data and the presence of possible cancers.

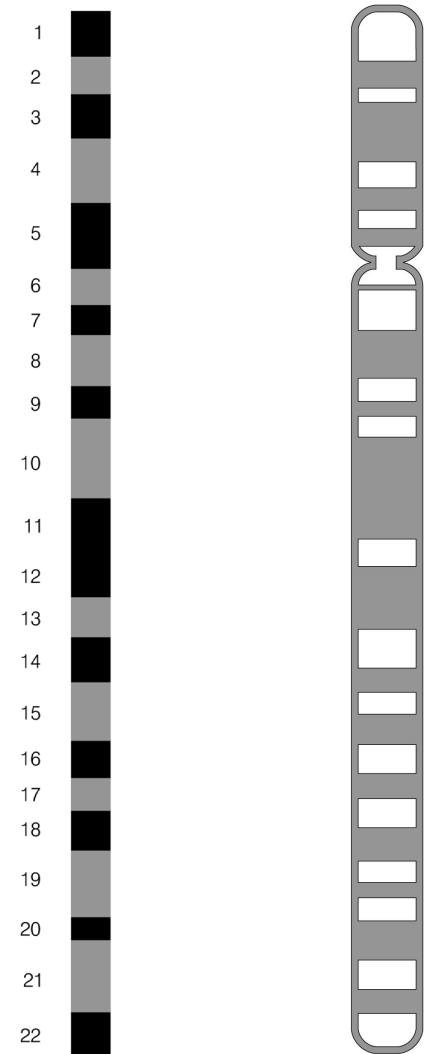
The images to the right depict a basic cancer chromosome found withn a mutated cell. It is made up of 22 base pairs with the 23 being unpaired. The configuration of the SNP distrobuti-
on will vary according to the cancer. It is in these variations that Cancer types are being identified.

For the purpose of the development of the Infusion Centre, the variable approach to the distrobution of SNP's will be translated into the further design of the facade and communication between public and private spaces.

DISTROBUTION OF SNP'S



CANCER CHROMOSOME

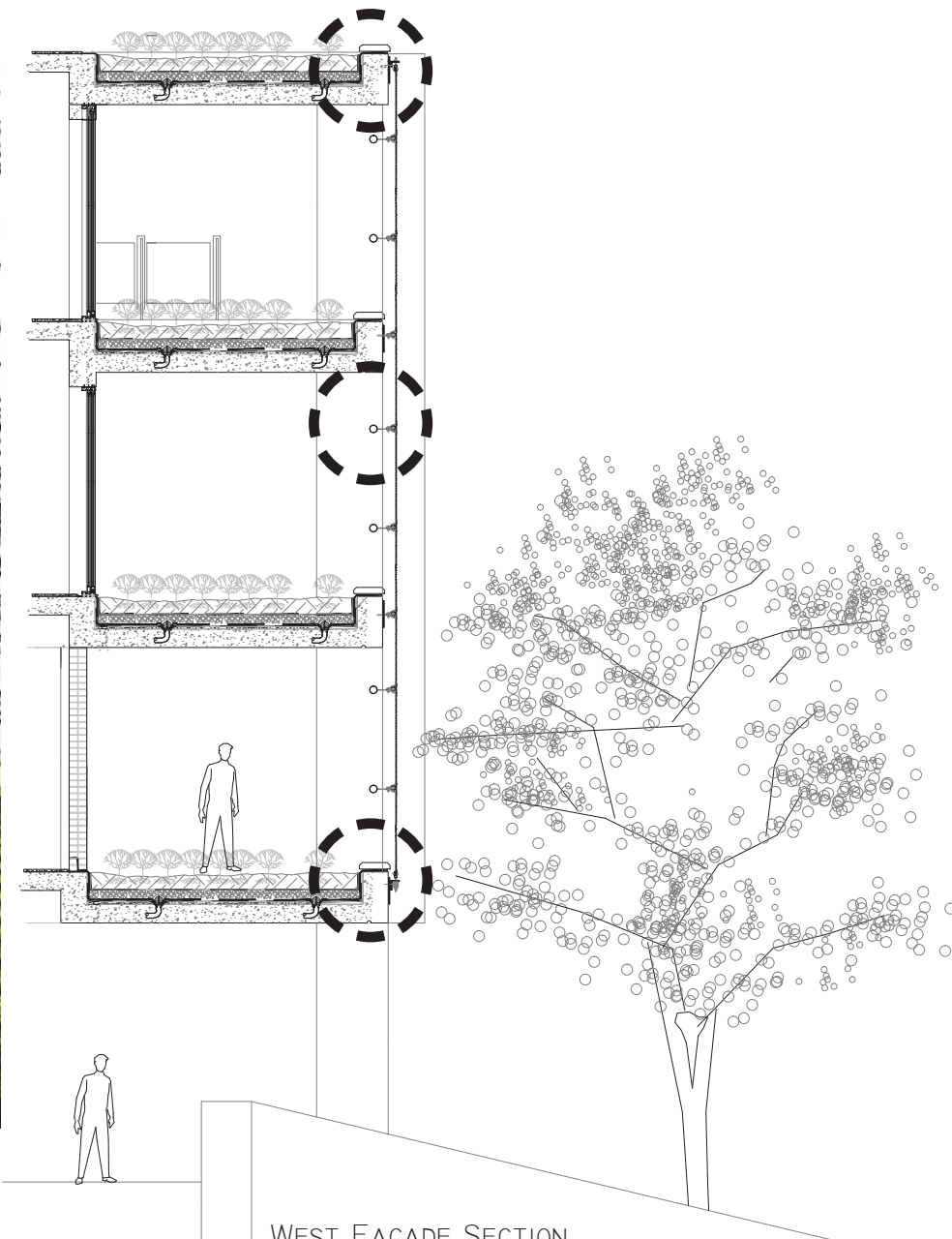


^ Above

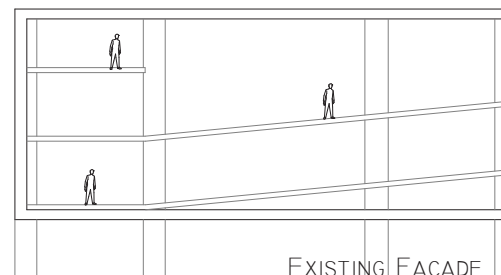
Decoding the general Cancer chromosome into its variations of SNP data for the development of the building facade system.
(Image by Author)



^ Above
Communicating the West Facade
The relationship between the patient and
nature and the public interface along
Hospital Street.



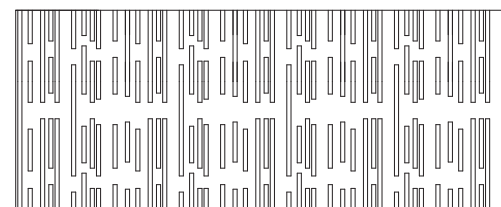
WEST FACADE SECTION
SCALE 1:100



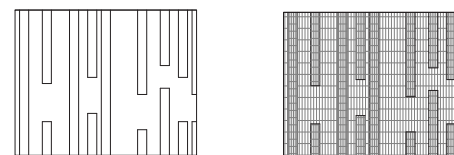
EXISTING FACADE

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18

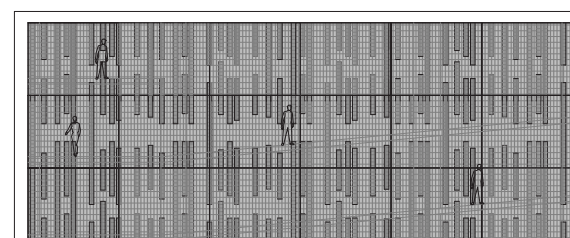
IMPOSED GRID OVER FACADE



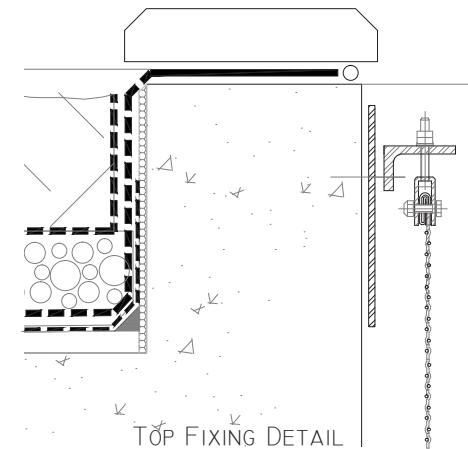
RATIONALISED FACADE ACCORDING
TO CANCER SNP'S



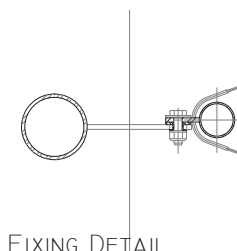
APPLICATION OF A SECOND
FILTERED SKIN



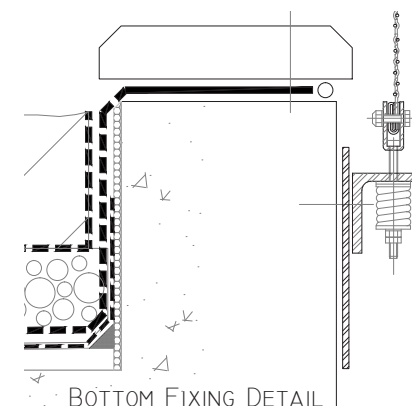
FILTERED WEST FACADE DESIGN



TOP FIXING DETAIL



INTERMEDIATE FIXING DETAIL



BOTTOM FIXING DETAIL

FACADE RESOLUTION

NEW GERMAN EMBASSY

BELGRADE, SERBIA

FAR FROHN & ROJAS WITH RHEINPARK_LR

" The 21st century is an era of perceived terrorist and ecological threat which sends architecture to the frontline and the city into defensive mode. The embassy building lies at the core of this threat and embodies an apparently inevitable contradiction between being both welcoming and at the same under constant security alert.

The Architect on design of New German Embassy (Frohn:2009)

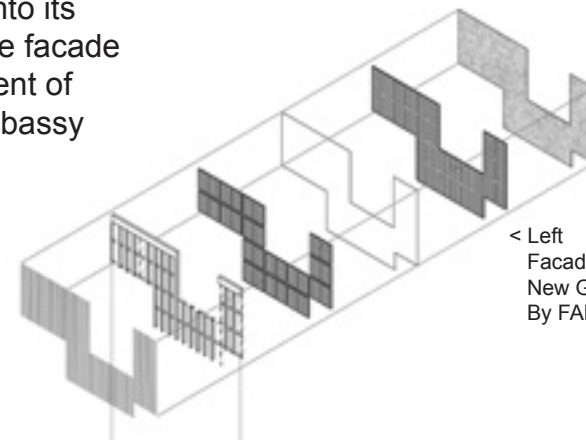
In 2009, the architects FAR designed a new building for the German Embassy in Belgrade, Serbia. Their approach to the design was termed as a 'disguised defence'. Understanding the political climate in the country and the fact that the embassy is an icon for public refuge, they developed an approach that dealt with both.

The building's brief called for a defensive structure that camouflaged the building into its environment and provided a protective layer to people seeking political refuge. The facade therefore became the primary design tool to transform the spaces. The development of a 'partial destruction' of the facade to directly communicate the program of the embassy with the political threats of the country is considered as a 'direct product of paranoia applied to architecture'. (Lambert, L: 2012).

A sequence of facades were developed to communicate the story between conflict and safe space. Material quality and density was used to reflected the intensity and contradicting spaces and create an evolving story through the building.



> Above
Partial Destruction of the Facade
New German Embassy in Belgrade, Serbia
by FAR Frohn&Rojas (2009)



< Left
Facade Progression
New German Embassy in Belgrade, Serbia
By FAR Frohn&Rojas (2009)

DEVELOPING THE FACADE

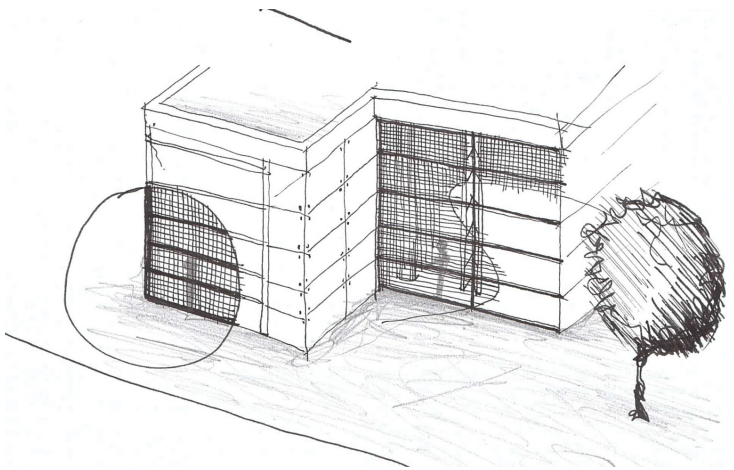
In developing the facade and its characteristics for the Infusion Centre, it is important to take both the path of the individual as well as the stages of recovery into consideration in order to design a building that encompasses healing on all levels. The facades will be used to define space and provide a story for the patients movement through the bulding and the overall relationship between the pateint, the building and nature. A progression of interfaces with the program will develop across the site to define the spatial hierarchy and levels of privacy.

THE 5 STAGES OF GRIEF

Elizabeth Kubler-Ross developed a response to the emotions that are generally felt by individuals who face pain or loss. Although these stages to her 'Healing Process' are not in any defined order, each one plays a significant role in the recovery process. These stages are defined as **denial**, **anger**, **acceptance**, **depression** and **bargaining**.

For the purpose of developing the facades of the Infusion Centre, the stages have been linked to the Primary program functions of the building and the spatial hierarchy across site.

THE STAGES		THE FUNCTIONS		THE FACES
DENIAL	_____	EDUCATE	_____	PUBLIC
ANGER	_____	DIAGNOSIS	_____	SEMI PUBLIC
ACCEPTANCE	_____	TREATMENT	_____	CONTROLLED
DEPRESSION	_____	INFUSION	_____	SEMI- PRIVATE
BARGAINING	_____	RECOVERY	_____	PRIVATE



REGENERATING PROCESSES

NASA SUSTAINABILITY BASE

MOFFETT FIELD, CALIFORNIA

WILIAM McDONOUGH + PARTNERS, DESIGN ARCHITECT

'How do you design a building like a tree?'

The Architect on design of the Nasa Sustainability Base (McDonough:2008)

The newly opened sustainability base, as part of NASA's Ames Research Centre in Silicon Valley is the architects attempt at designing a living, breathing structure that uses its natural surroundings to function and integrates into the landscape.

The 2 storey, 200m² building was designed to facilitate 200 people whilst making as small an impact on the environment as possible.

The building achieved LEED Platinum status through its use of NASA technology to develop sustainable methods to run the buildings services. The building makes use of solar panels to generate 30% of the power needed to run functions with the additional power needs being met by the energy harvested by wind turbines on site. A specially designed grey water system harvests rainwater and uses it to maintain the landscaping and recycles water from toilets and urinals.

An important factor in the design was the accessibility to daylight and views for the staff. Creating a positive and healthy atmosphere for staff increases productivity and general health. A structural exo skeleton enabled column free spaces to develop on the inside and allowed daylight to enter deeper into the building. This exo skeleton further aided in the solar shading performance of the building and lowered costs in respect to repairs

The building was designed to exceed the efficiency and effectiveness of conventional public buildings defining a new design typology that harmoniously integrates the user, nature and the building in a sustainable way.



< Left
Exo- skeleton Facade
NASA Sustainability Base, California
By McDonough (2012)



< Left
Courtyard Relationship
Nasa Sustainability Base
California
By McDonough (2012)

REGENERATIVE LIFECYCLES

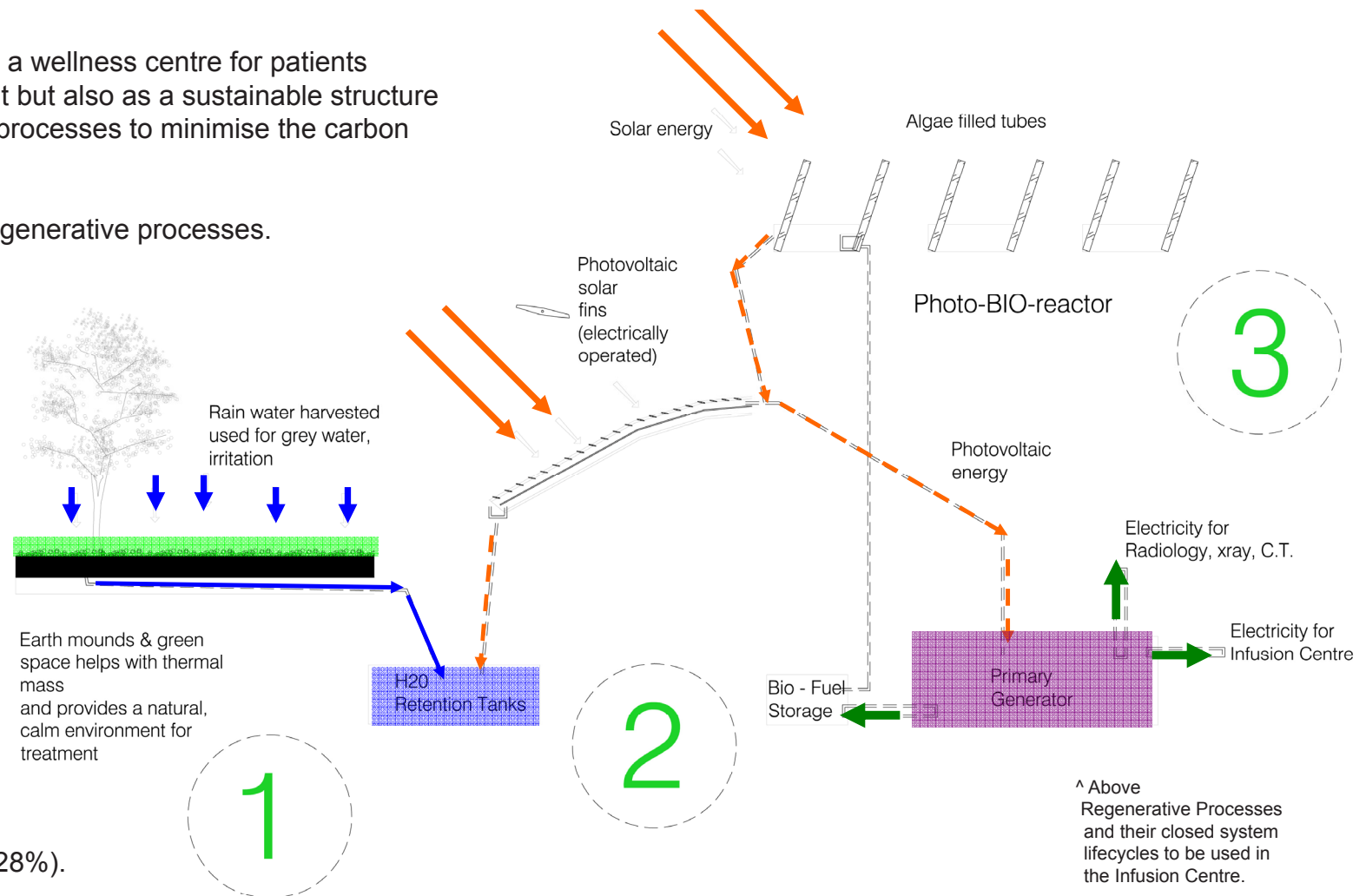
The Infusion Centre acts not only as a wellness centre for patients undergoing Chemotherapy treatment but also as a sustainable structure maintaining and harvesting nature's processes to minimise the carbon footprint.

The Centre makes use of 3 major regenerative processes.

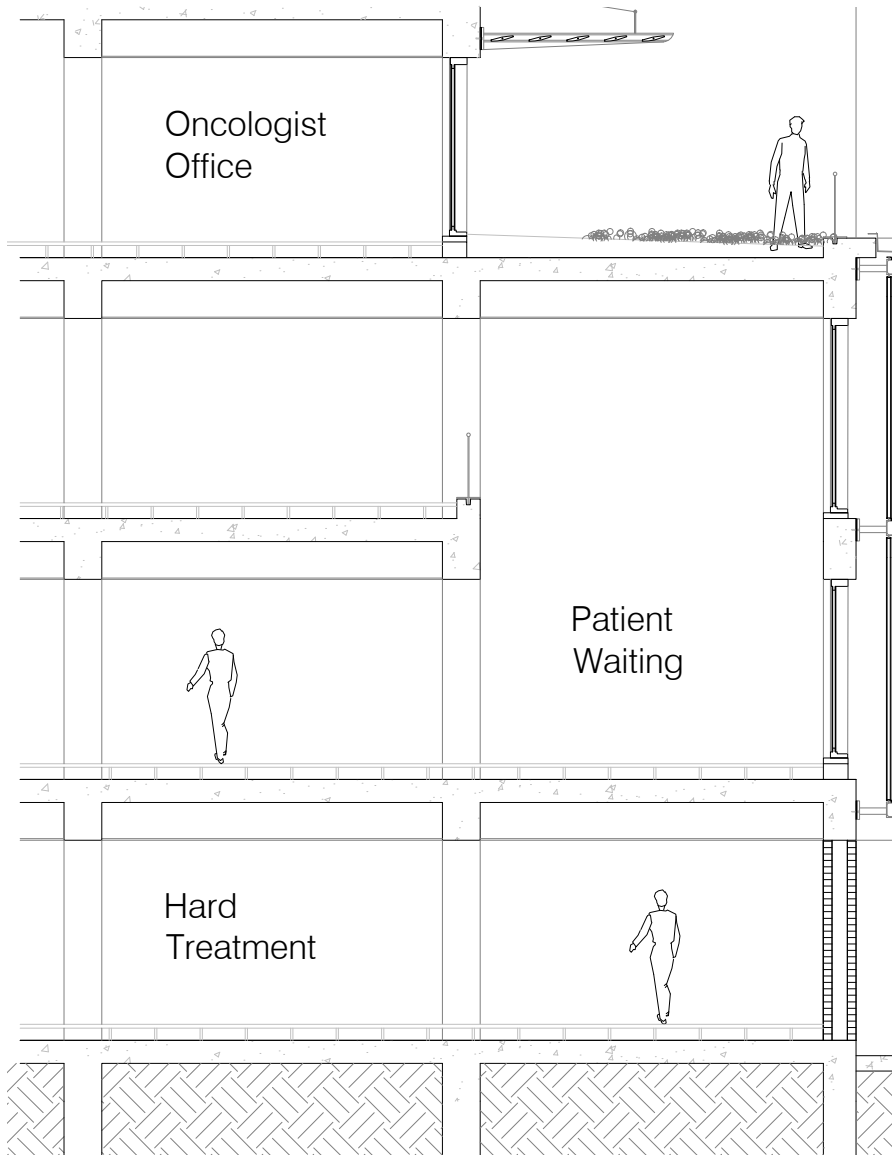
- 1) Landscaping and green roofs enable rainwater to be harvested for irrigation and stored in large retention tanks to be used for grey water systems and solar water heating. These green spaces also provide a calm, healthy environment for patients to receive treatment and recover.

- 2) Specially designed Photovoltaic solar fins will provide thermal relief and control light intensity into the building. These shall also harness the solar energy to be stored and used to power the building's primary generator (28%).

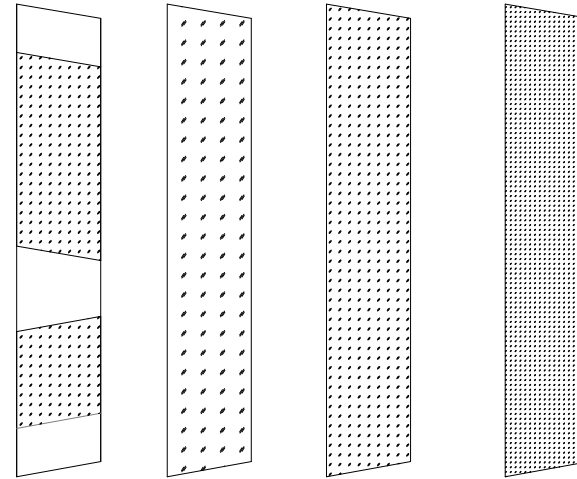
- 3) A system of algae filled tubes will form the Photo-Bio-Reactor, harnessing the solar energy and converting it into power (22%). The by-product produced, Bio-fuel, will be used to run the primary generator providing an additional 30% power. This power will be used to power intensive machinery such as CT, Radiology and x-rays and lighting for the Infusion Centre.



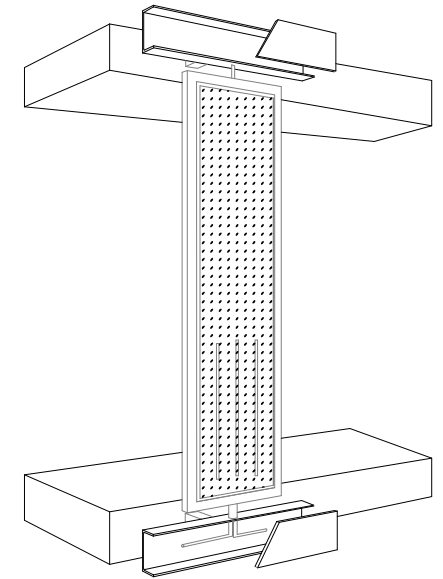
THE GREEN SCREEN



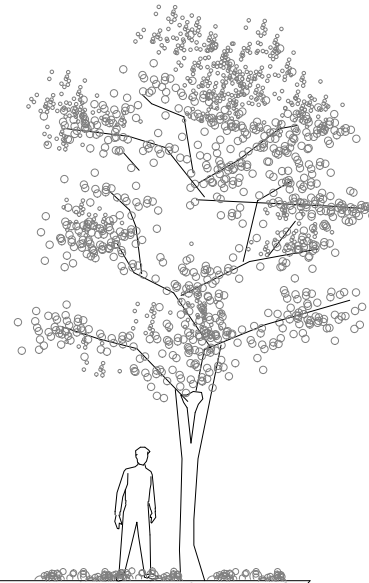
NORTH FACADE SECTION
SCALE 1:100



PROGRESSION OF
FACADE OPACITY



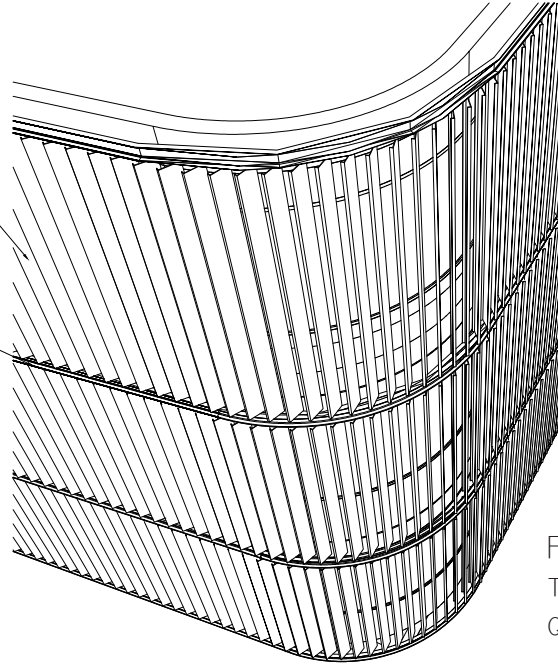
PERSPECTIVE OF
GREEN SCREEN



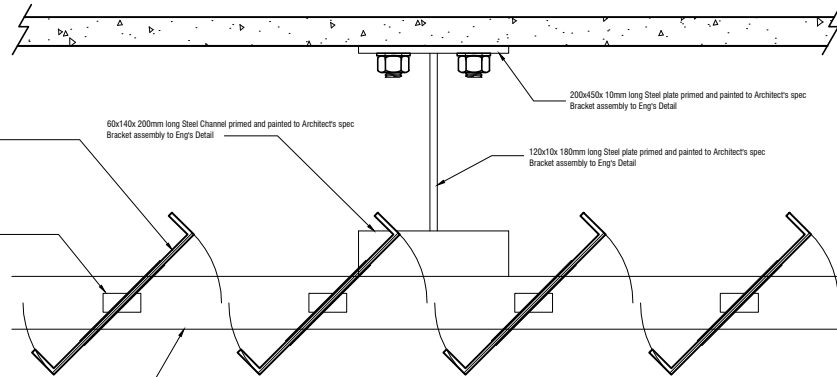
The design and proposal of a green screen will be incorporated on the East and North facades of the Infusion Centre. The screens follow the same principle as algae tubes. An algae rich solution is presented in a panel form to allow maximum surface area for photosynthesis. The by product produced is Bio- fuel and is used to power the Centre's generators creating a closed sustainable system.

The process of photosynthesis also presents an interesting play in the internal light quality with the glass opacity increasing as the process continues.

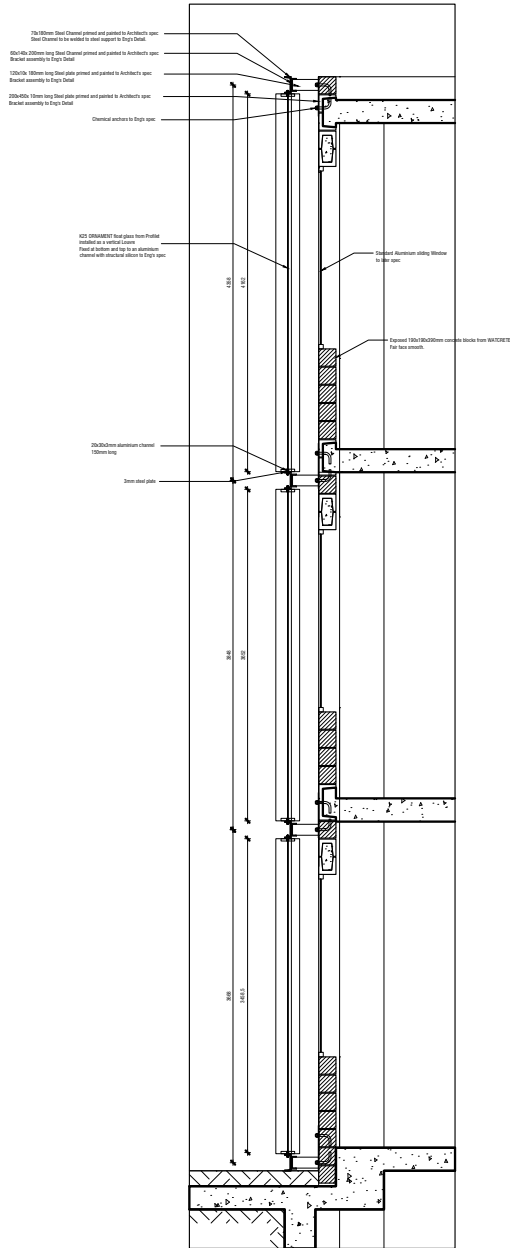
FILTERED MOVEMENT



PERSPECTIVE OF FACADE SCREEN
THAT CONTROLS BOTH LIGHT
QUALITY AND PATIENT PRIVACY.



SECTIONAL PLAN OF PROPOSED MOVEMENT SCREEN



SECTIONAL ELEVATION OF MOVEMENT SCREEN ALONG SOUTH FACADE

INFUSION:

A PUBLIC OUTPATIENT ONCOLOGY CENTRE



CRITICAL INFUSION

D

PRIMARY INFUSION CENTRE

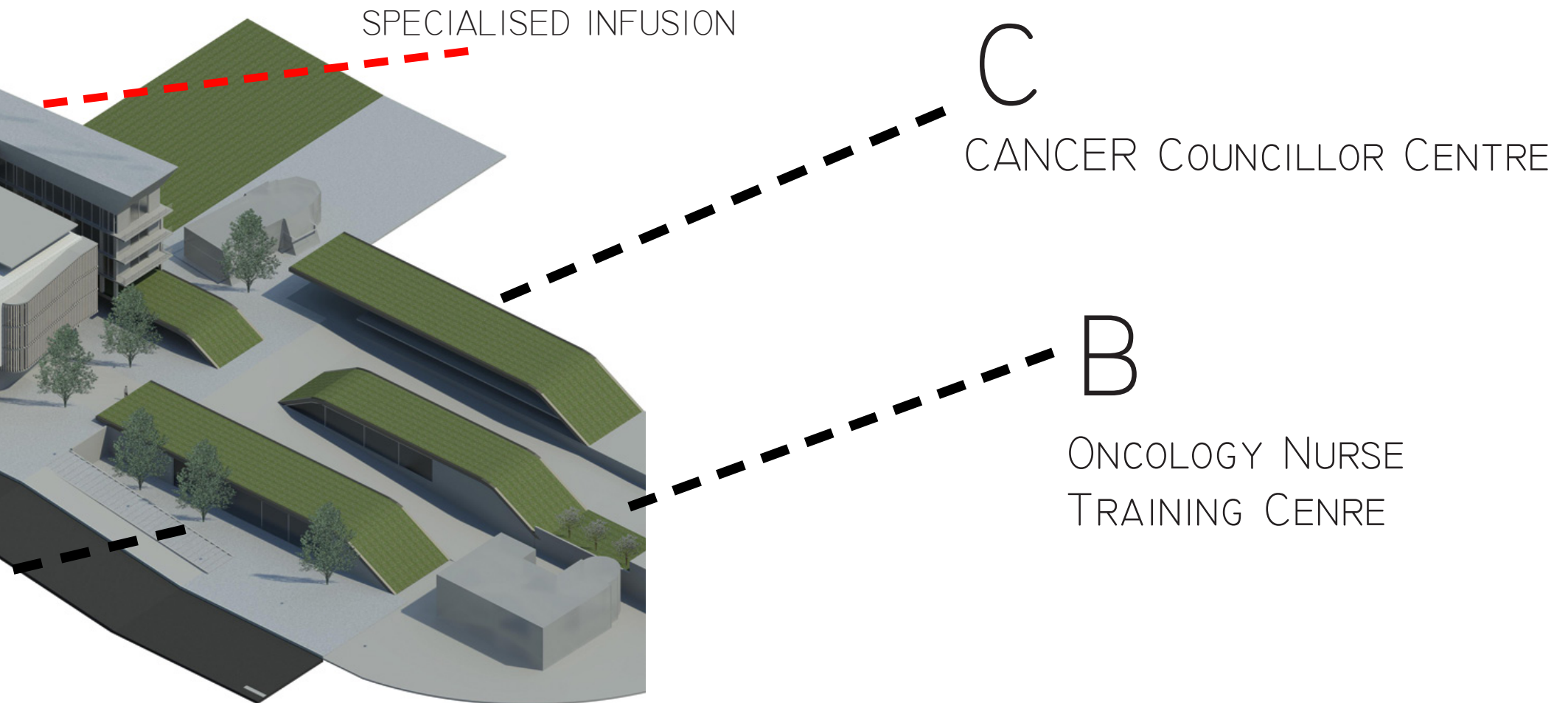
HOSPITAL STREET

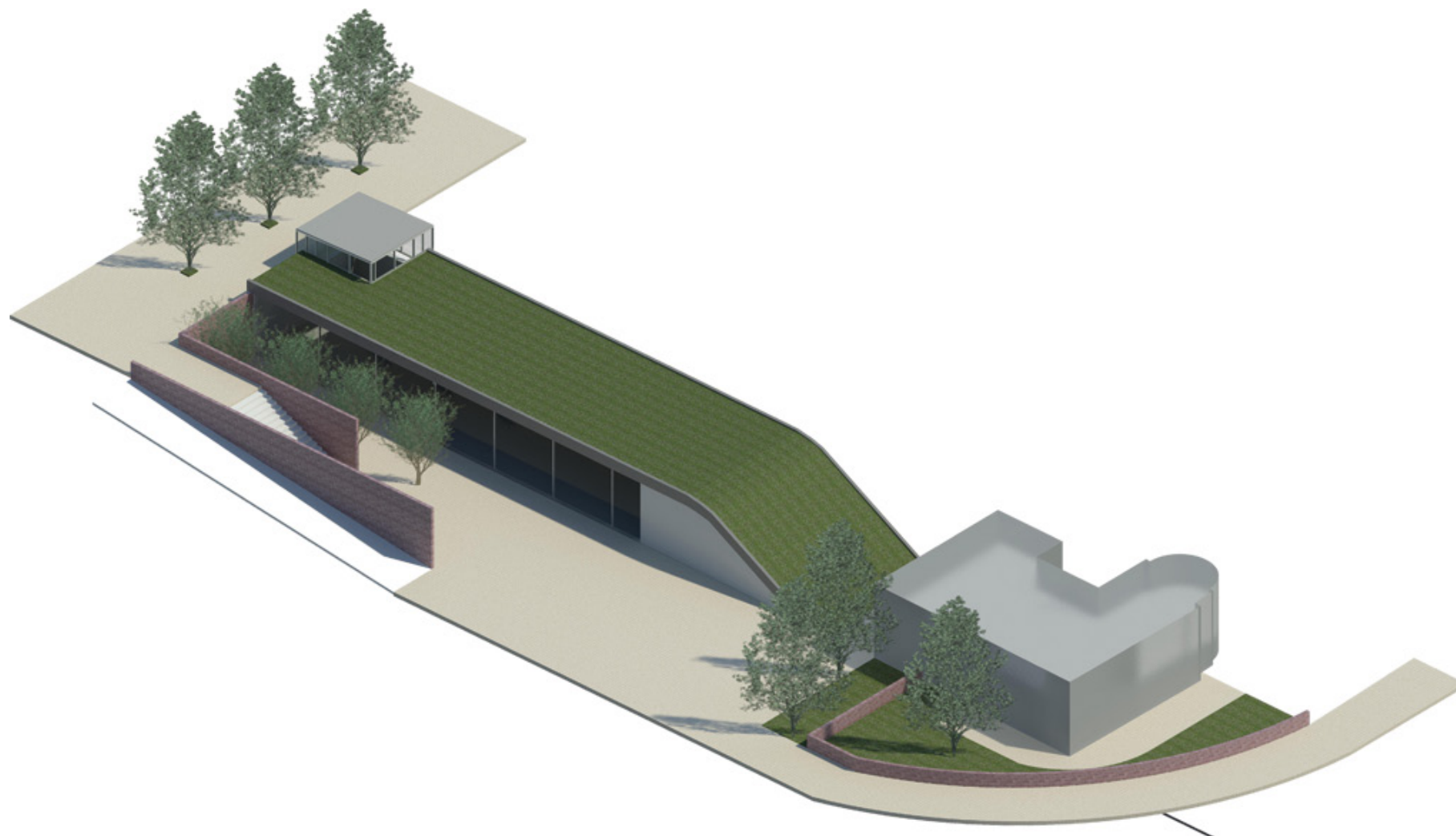
A

CANSA INFORMATION CENTRE

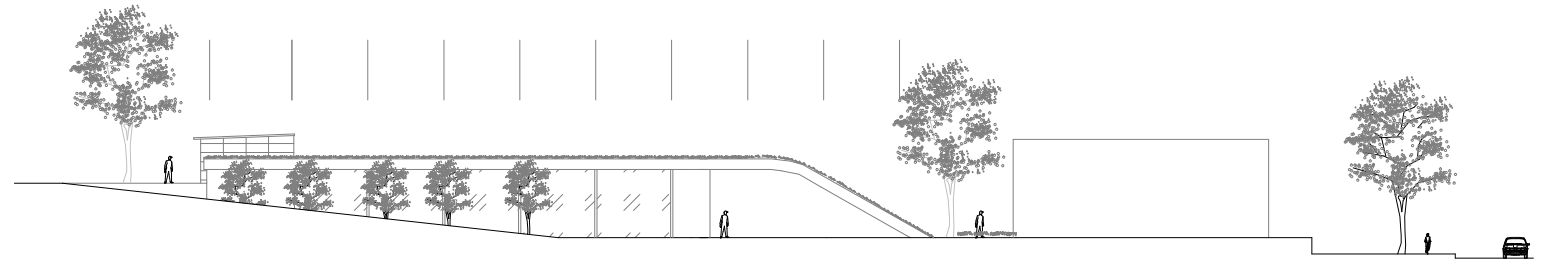
INFUSION:

A PUBLIC OUTPATIENT ONCOLOGY CENTRE

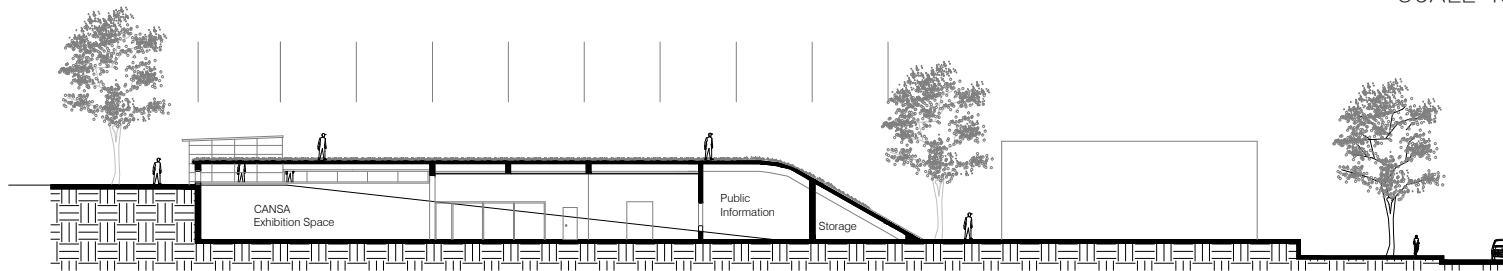




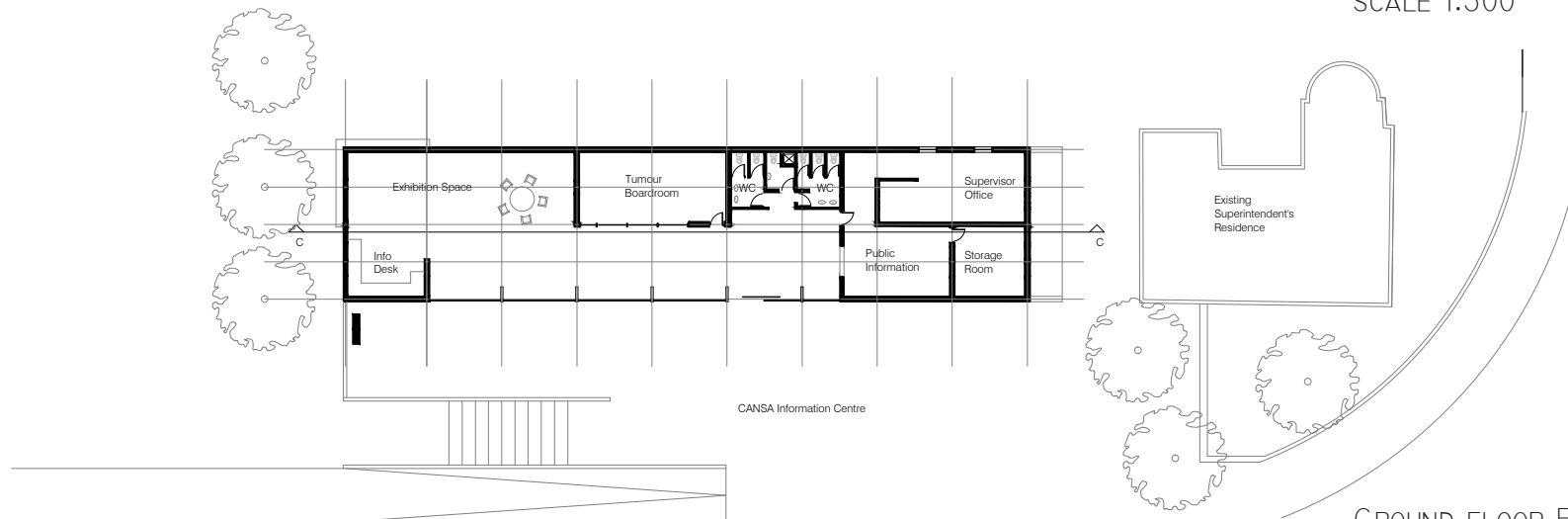
BUILDING A: CANSA INFORMATION CENTRE



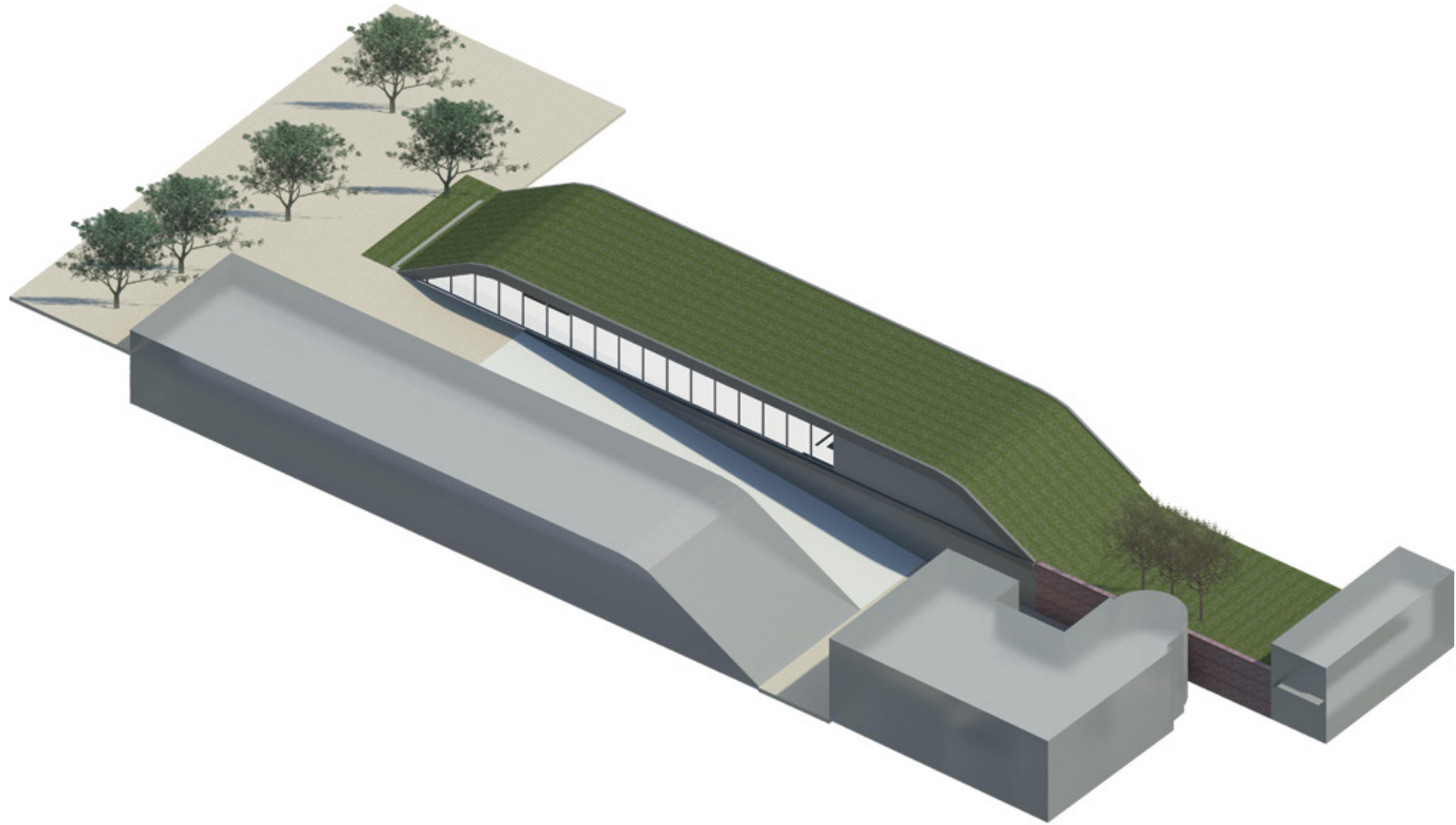
STREET ELEVATION
SCALE 1:500



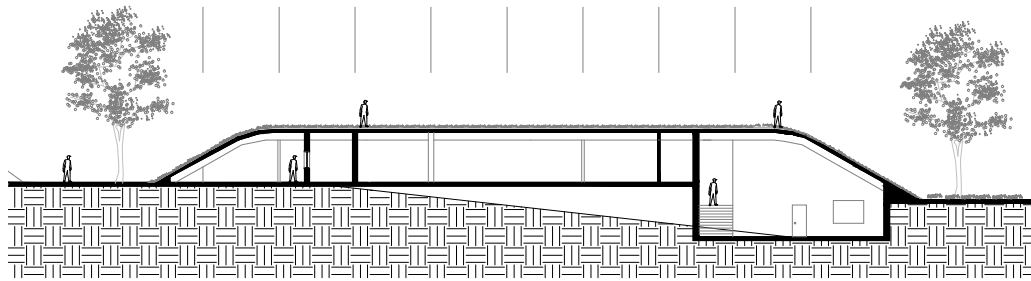
STREET SECTION
SCALE 1:500



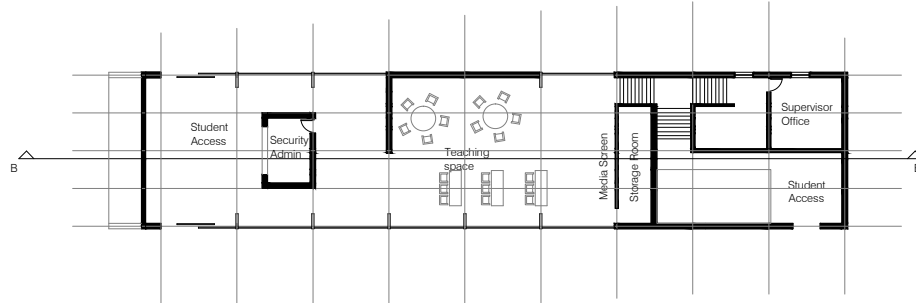
GROUND FLOOR PLAN
SCALE 1:500



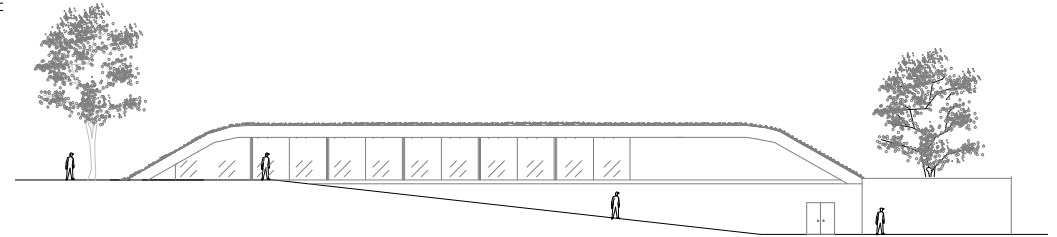
BUILDING B: ONCOLOGY NURSE TRAINING CENTRE



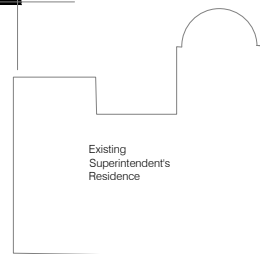
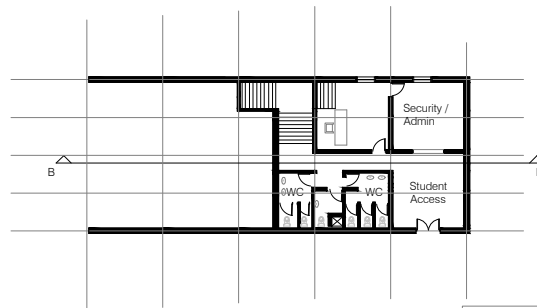
STREET SECTION
SCALE 1:500



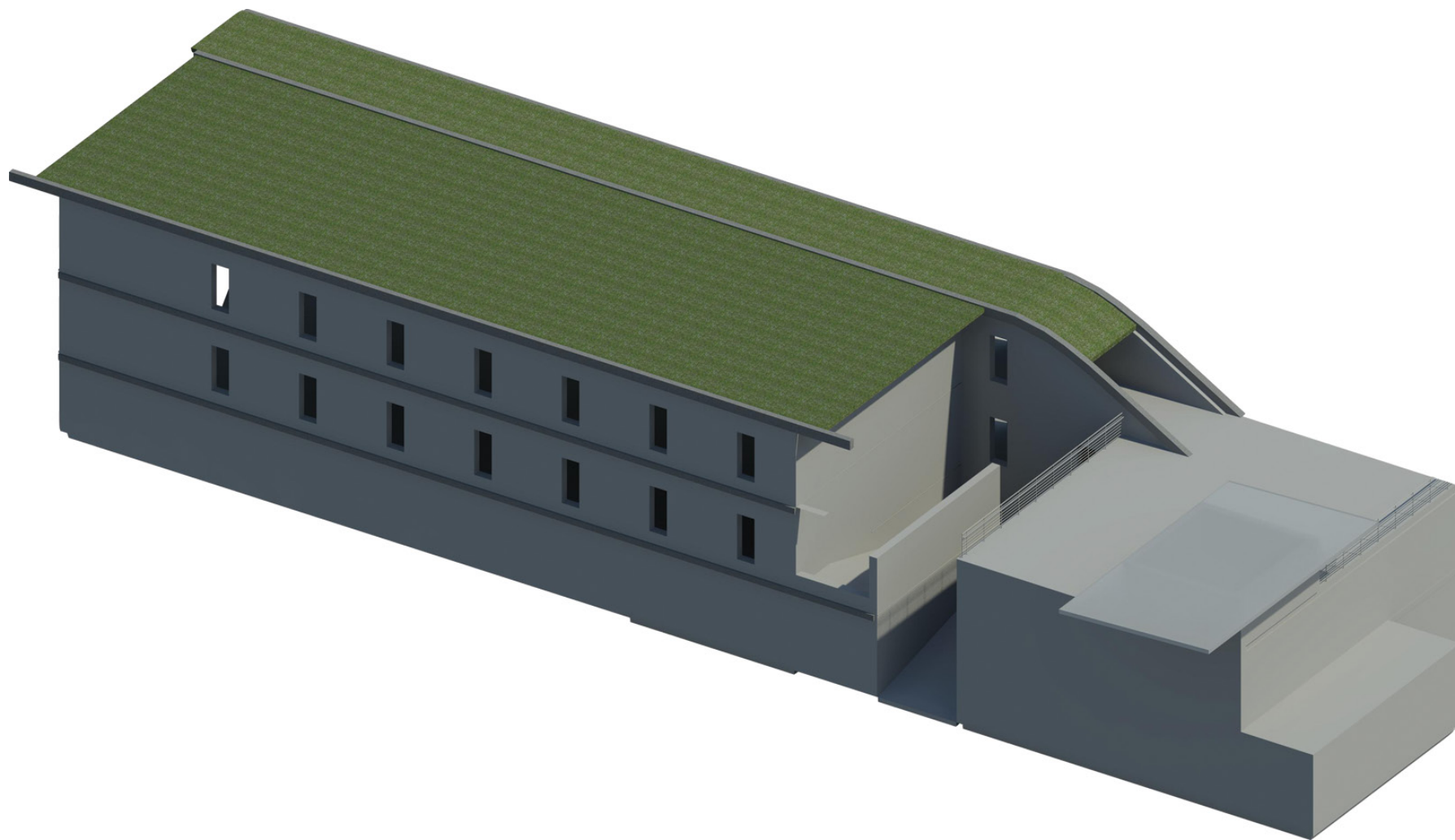
GROUND FLOOR PLAN
SCALE 1:500



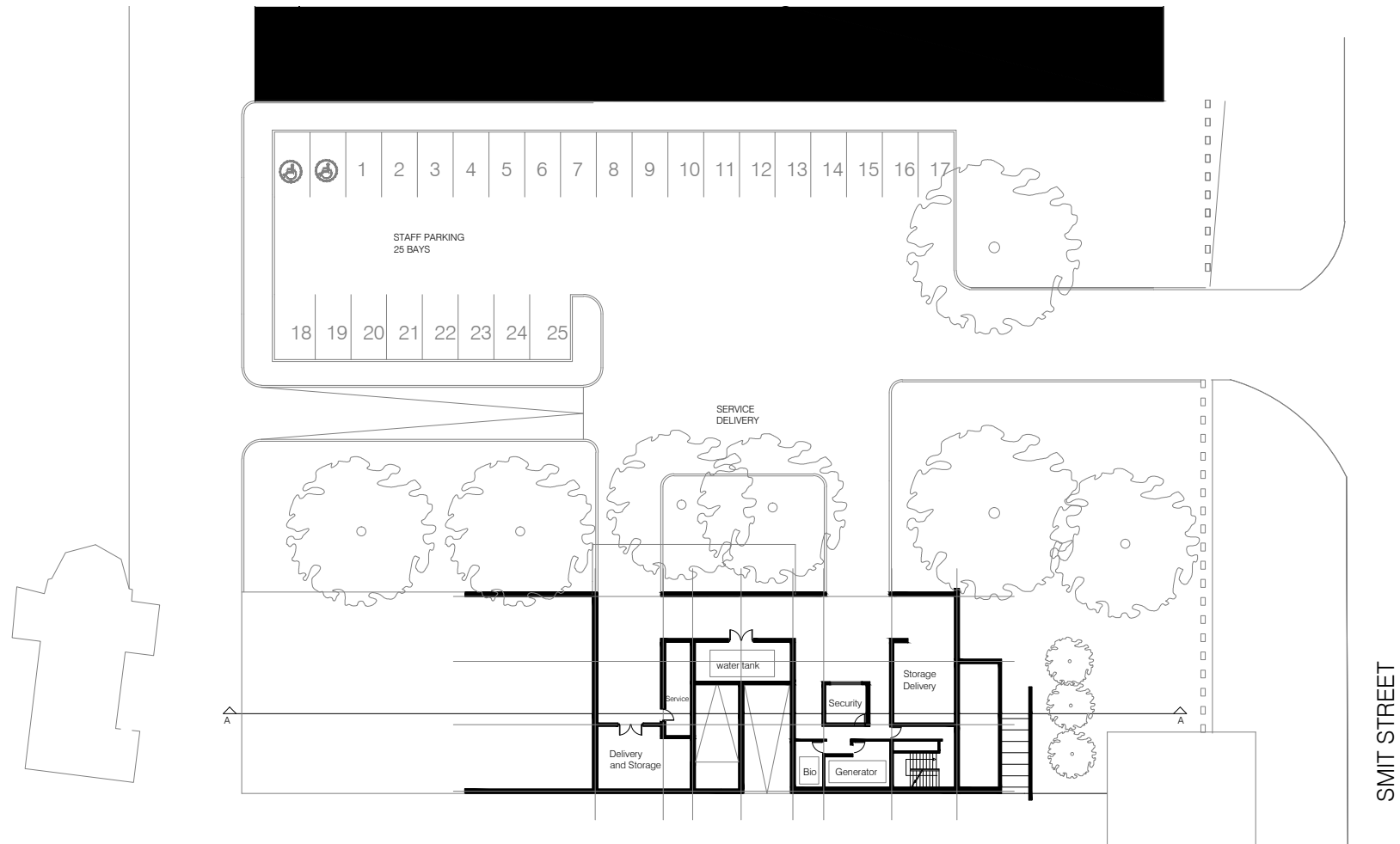
STREET ELEVATION
SCALE 1:500



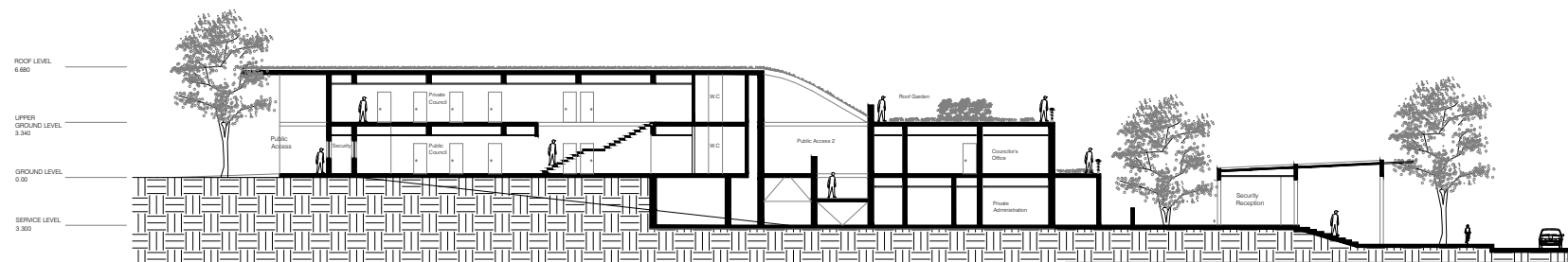
LOWER GROUND FLOOR PLAN
SCALE 1:500



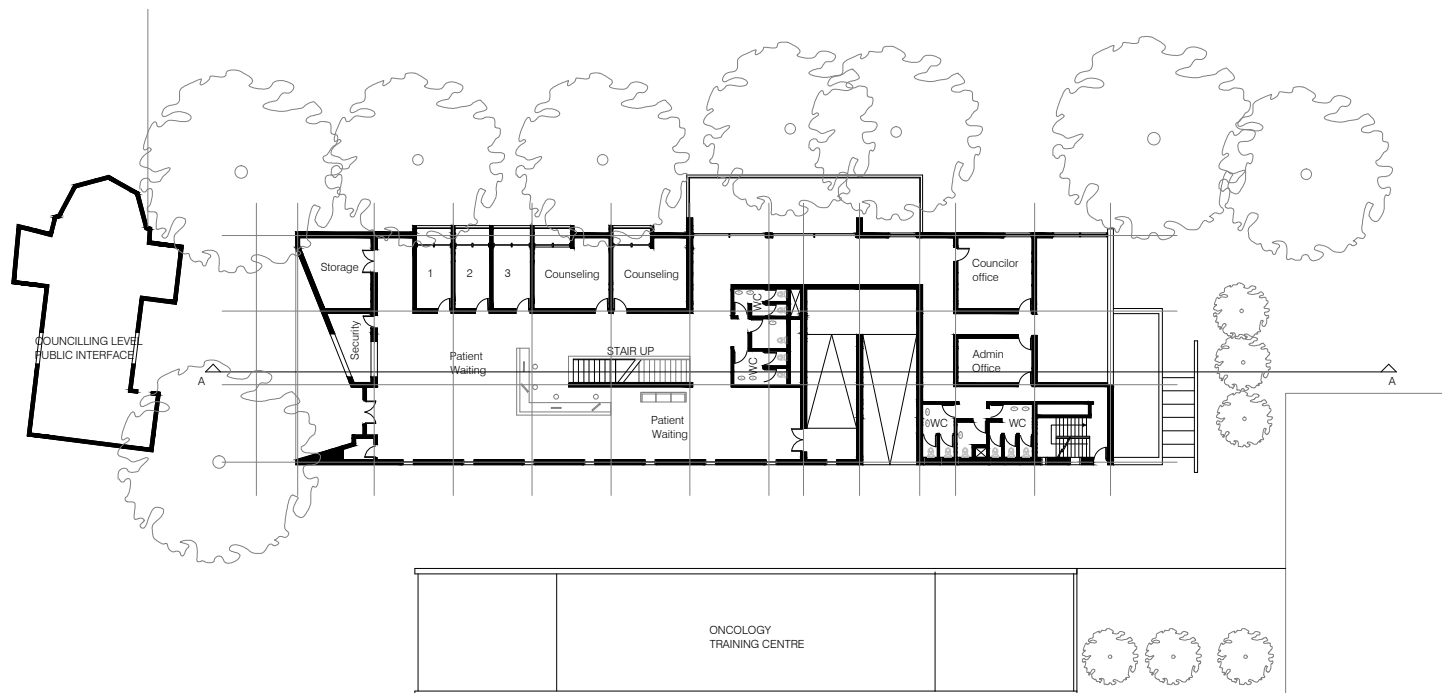
BUILDING C: CANCER COUNCILLOR CENTRE



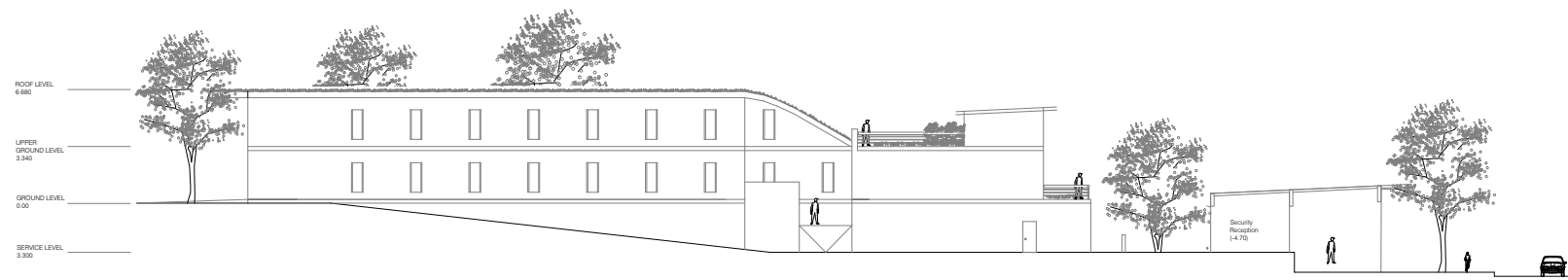
SERVICE FLOOR PLAN
SCALE 1:500



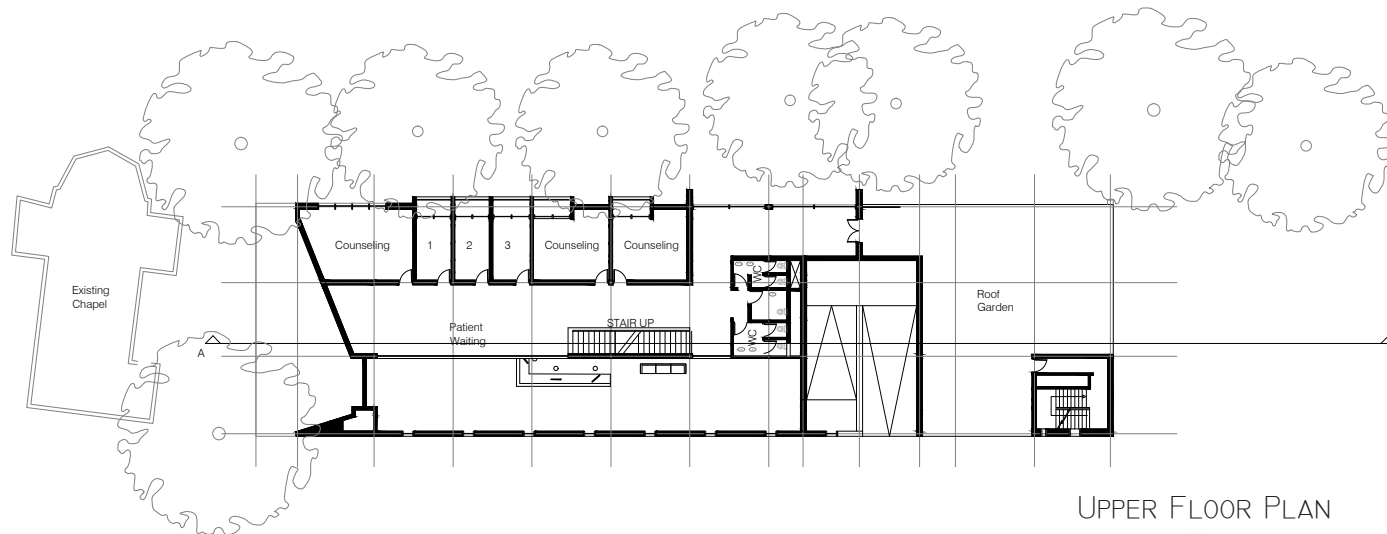
STREET SECTION
SCALE 1:500



GROUND FLOOR PLAN
SCALE 1:500

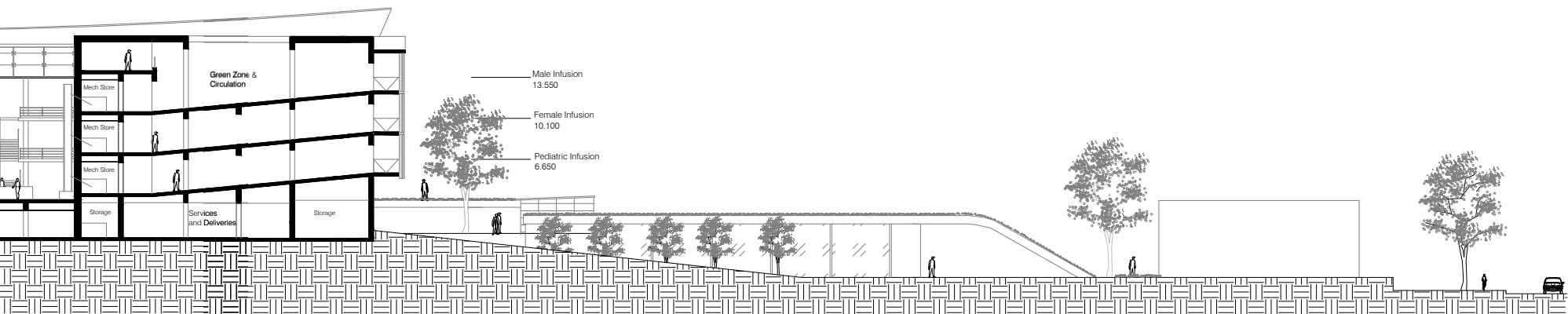


STREET ELEVATION
SCALE 1:500

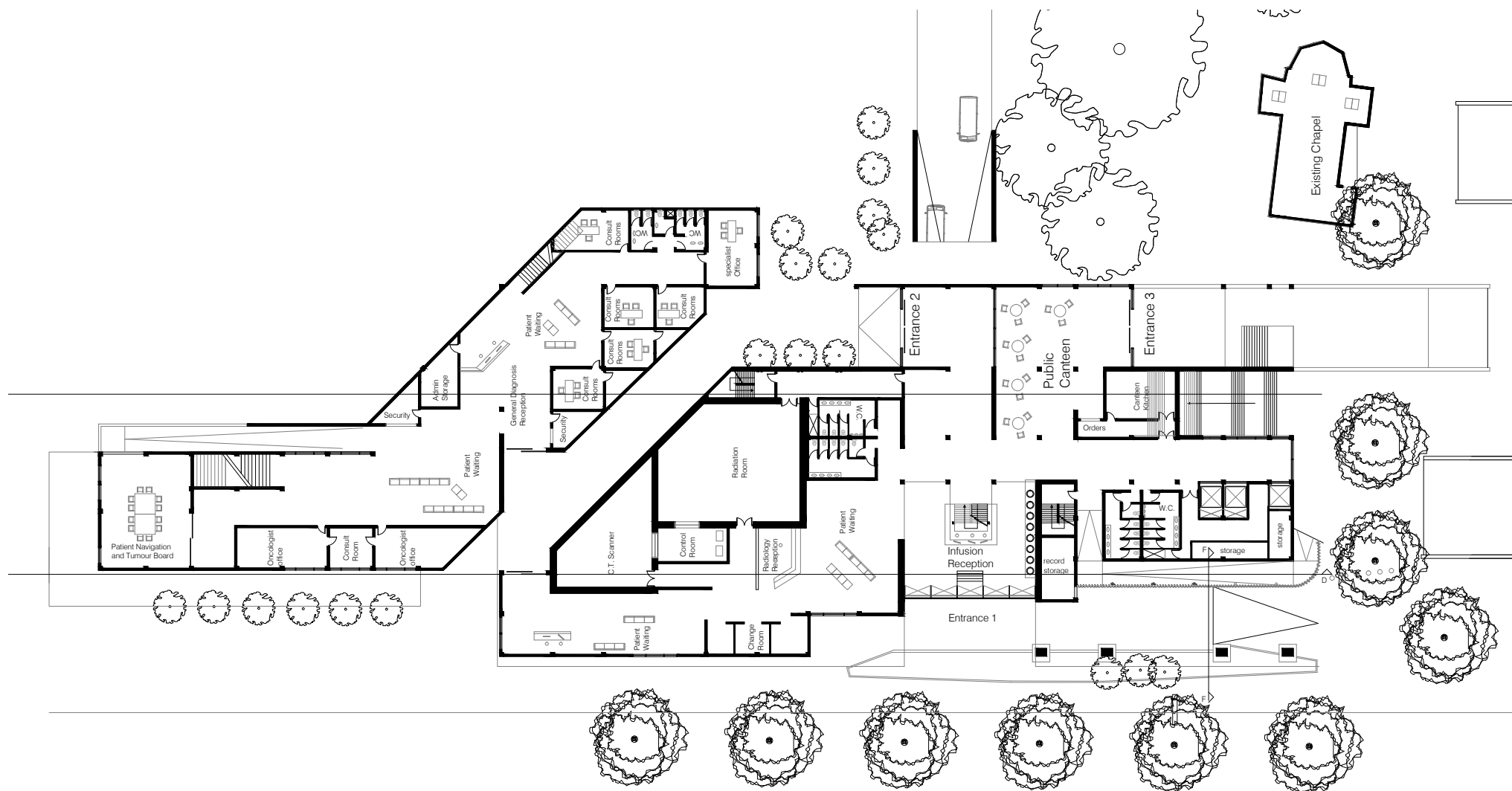


UPPER FLOOR PLAN
SCALE 1:500

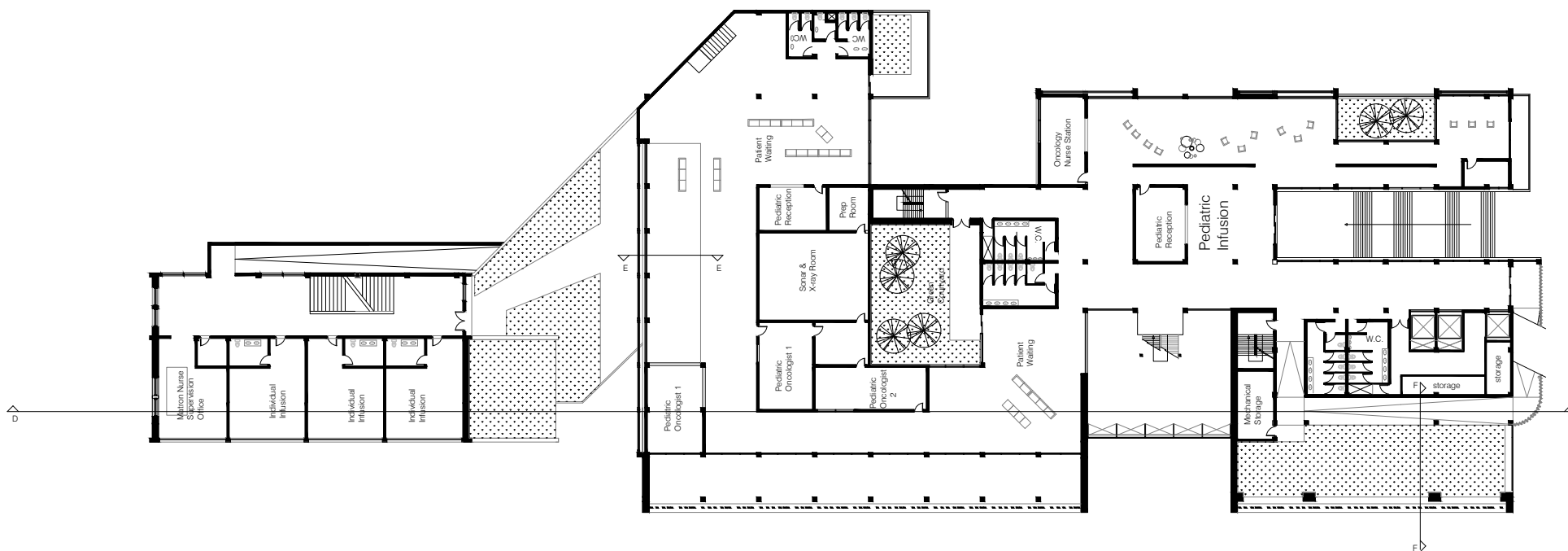
BUILDING D: PRIMARY INFUSION CENTRE



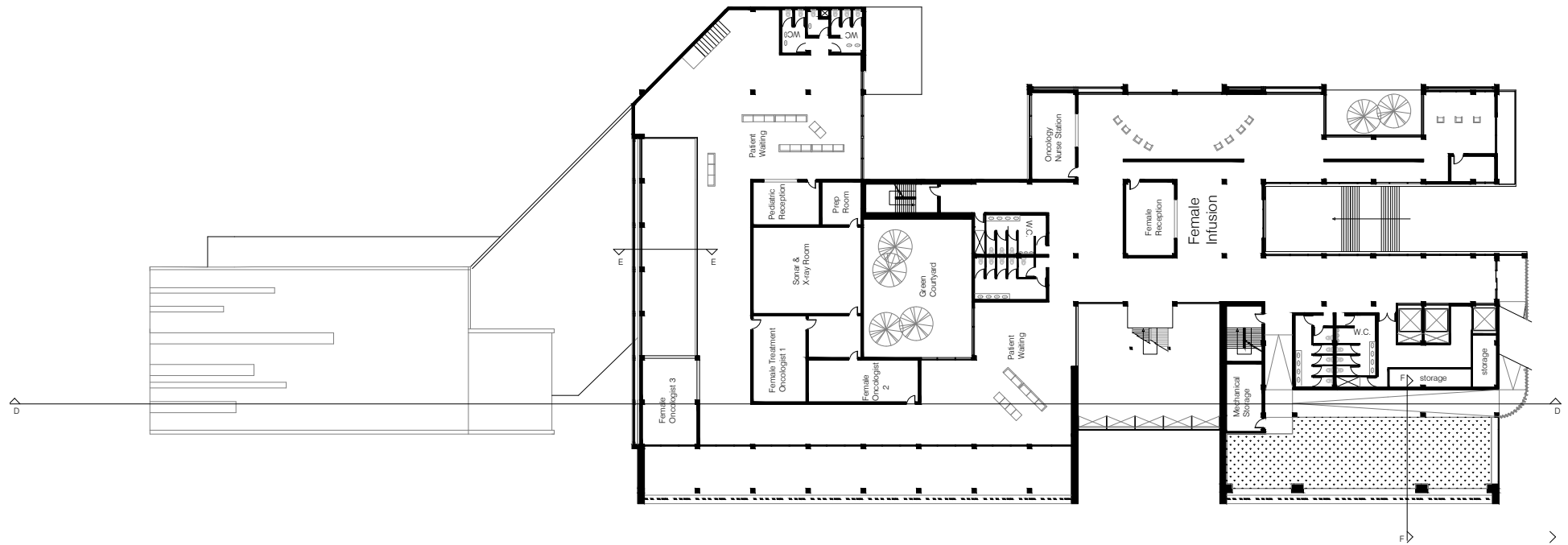
LONG SITE SECTION
SCALE 1: 500



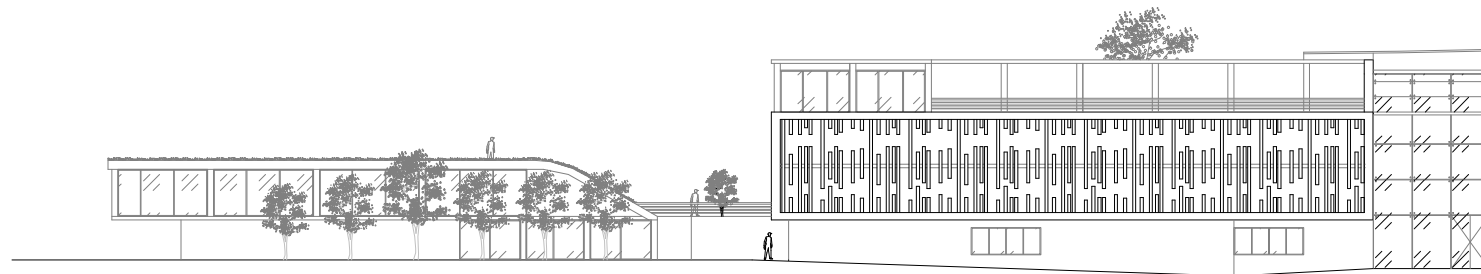
INFUSION CENTRE GROUND FLOOR PLAN
SCALE 1:500

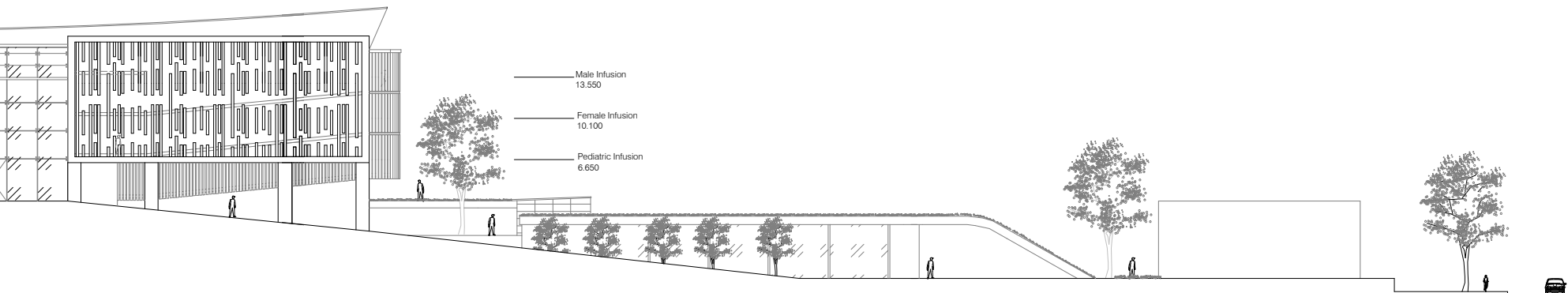
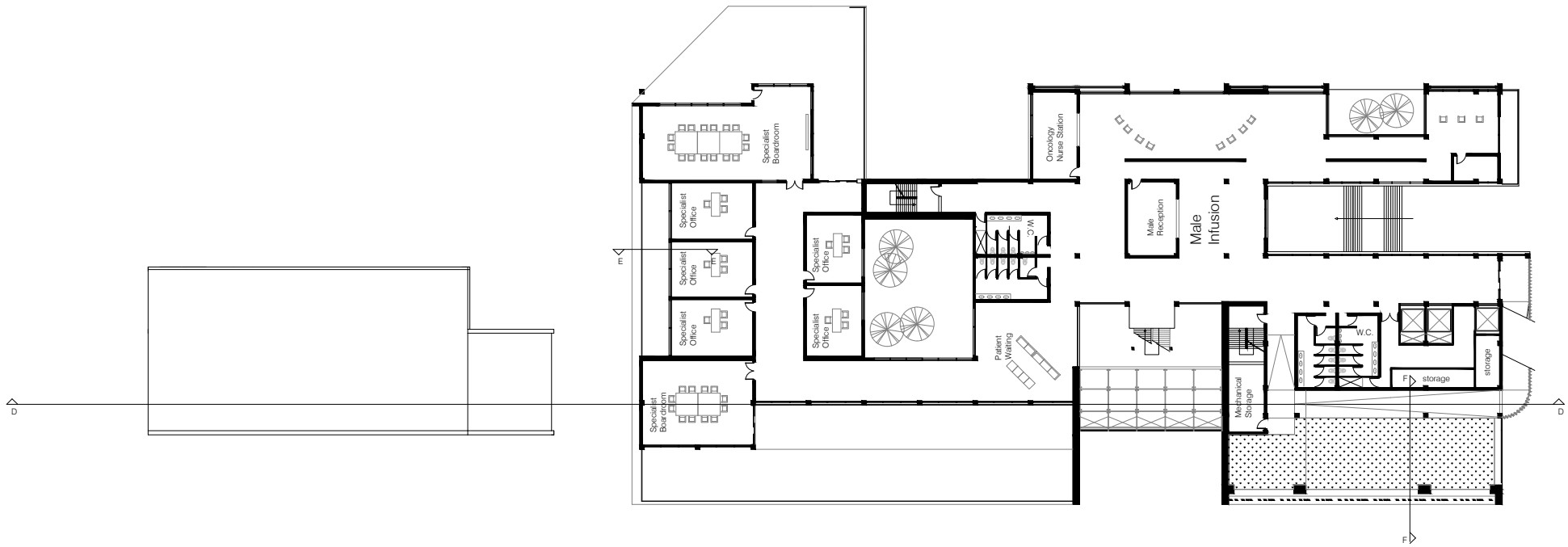


PAEDIATRIC INFUSION FLOOR PLAN
SCALE 1:500



FEMALE INFUSION FLOOR PLAN
SCALE 1:500







> Right
Internal Perspective of the
Patients Navigation into the
Infusion Centre via the
grand staircase.



^ Above
An internal view down the path between
the training centre and CANSA information
centre. This path visually communicates the link between
the Inner City public transport and movement of the
pedestrian on site

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Image 3. Panorama of Inner city- taken by author at Wits University. 15 April 2012.

Image 4. Rendered view of microscopic cancer cell- Microwork: 2010.

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Image 5. Process of cancer cell metastasis- drawn by Author:2012.

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image 6. Urban settlement pattern of 1500 Italian town of Venizia-

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Image 8. Image of Hospital Hill services- Taken by author at Hospital Hill:2012.

Image 9. Image of social city-

Image 10. Relationship between space and human activity- Drawn by author: 2012.

Image 11. Cancer cell proliferation- Drawn by the Author:2012.

Image 12. Urban development of Rome,Italy- Graves, C. 2009. The Geneology of Cities.

Image 13. Johannesburg panorama from Carlton centre- Taken by author: 12 April 2012

Image 14. Cad drawing of the Hillbrow Health Precinct- Drawn by author: 22 March 2012

Image 15. Image depicting the restricted nature of Wits as an institution- Taken by Author: 2010.

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Image 18. Aerial view of New York City- Block, N. 2009.

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Image 19. Street view showing Integration on NYU- Diozzi,M:2012

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Image 21. Rendered perspective of Kaohshing music centre- MADE IN architects: 2011.

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Image 22.Perspective of Linked Hybrid building in Beijing. Stephen Holl Architects:2009

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Image 23. Masterplan of Zaha Hadid's Library and Learning Centre in Vienna, Austria: 2008.

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Image 24. Perspective of Library and Learning Centre in Vienna, Austria:2008.

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Image 25. & 26. Internal perspective of Library and Learning Centre in Vienna, Austria: 2008.

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Image 27. Rendered perspective of DNA Helix - Modelled by Author: 2012.

Image 28. Lower perspective of the Helix Bridge showing the lightness and open relationship between structure and user.

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Image 29. Distribution of Cancer cell SNP'S - Drawn by Author: 2012.

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Image 30. Partial Destruction of the Facade for design competition of a New German Embassy in Belgrade, Serbia.

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Image 31. Facade Progression concept for competition of a New German Embassy in Belgrade, Serbia.

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Image 32. Exo- skeleton Facade design for the NASA Sustainability Base, California.

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Image 33. Courtyard Relationship of the Nasa Sustainability Base, California

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