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IN | DETOXIFICATION

Therapeutic architecture toward healing substance abuse

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GNKTYM001

Site area: Mitchells Plaine Town Center

Project Title : In-Detoxification: Therapeutic architecture toward healing substance abuse

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Supervisors: Simone Le Grange

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Date:
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ACKNOWLEDGEMENTS

Thank you, God, for giving me the strength and courage to accomplish my goals and complete this journey, through him anything is possible.

My parents, Ivan and Jacqueline thank you for your constant support and encouragement. Your love, guidance and commitment to ensuring I reach my goals has always motivated me to grow. Through the sacrifices you made for me to accomplish my dreams, you constantly provided a platform of support through faith and confidence.

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Simone le Grange, my supervisor, thank you for your support and guidance throughout this degree.

ABSTRACT

This study explores rehabilitation by means of therapeutic architecture, to rehabilitate individuals from substance abuse and addiction. The study aims to understand how rehabilitation can benefit the community, facilitated by a community orientated program for individuals. The site used for the project is located within the Cape-Flats, in the town of Mitchells Plain.

This project aims to study the concept, practice, and technologies behind creating a rehabilitation center that uses phenomenology and therapeutic design principles as its underpinning to create a therapeutic environment in the form of a rehabilitating center. The study aims to understand architectural means allowing a healthy relationship between the urban and the individual, encouraging and establishing respect for the community through program. The study is done as a response to the current social issues displayed in the Cape-flats and modern healthcare facilities whose design is based on the ability to function and house medical equipment rather than performing as an instrument of healing.

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SECTION 1

INTRODUCTION

1.1 FOCUS AND PURPOSE

David Reilys admits, “we don’t know what life is. A gardener does not know how a plant has grown, but it doesn’t help stop them from becoming masters of growing”. (Reily, 2018) My personal fascination with human behaviour, influenced by the surrounding built environment, inspired this project’s initial direction in exploring spatial practice which allows provocation of healing through the human network of senses, allowing a deep psychological and physical connections with the immediate built environment.

Technologically and programmatically, this project draws ideas from phenomenology and biophilia and investigates how architecture can create environments that encourage or induce healing. The project investigates the substance abuse conditions in Mitchells Plaine, a region within the Cape flats, on the outskirts of Cape town, western-Cape. The projects explores the need for therapeutic architectural intervention through rehabilitation within the opportunities and constraints of the urban context. The project is focussed on architectural design qualities that are required to stimulate healing, centred upon the creation of a therapeutic architecture within an urban context for a socio depressed peripheral community.

The structure of the paper is divided into 7 main sections in which the issue, theory and technology, programme, site, and design will be discussed. The dissertation will conclude with a summative analysis of the key points discussed.

1.2 RESEARCH QUESTIONS

Main Question:

- How can therapeutic architecture serve as both a tool of healing individuals and our socio depressed communities?

Sub-questions:

- How can buildings be shaped to provide aid in restoration of patients?
- What are the principles of a design shaped for care?
- How can architecture uplift a community?

SECTION 2

THEORY AND TECHNOLOGY

2.1 ARCHITECTURAL HEALTHCARE EVOLUTION

“Medical care cannot be separated from the buildings in which it is delivered” (Horsburgh, C. 1995, p.735) This statement reflects the power of space and its projection on the human body. When the quality and design of space affect the ability of a human to heal, it emphasizes architecture’s ability to provoke healing. According to Horsburgh, historically the design of hospital spaces from the year 1945 to 1974 was focused on the ability of areas to house medical equipment and manage staff functionality (Horsburgh, 1965). Architectural design for healthcare is a simplified version of the healthcare environment, repressing the human senses and neglecting the phenomena of healing through office and shopping centre material finishes and little to no vegetation. This is suggestive of a design focus that lacked acknowledgement of spatial qualities.

Modern hospitals and care facilities have recently adopted the incorporation of the patient and family-orientated design. This design approach has included visitation spaces, family waiting rooms, larger parking areas, and commercial activities such as shops and cafes. An acknowledgement follows the idea of this design approach that user-orientated spatial design can attract more patients and increase user healing (Horsburgh, 1965). This has resulted in hospitals catering to staff and patients through spatial and visual design, which has been used to aid in patient use.

2.2 ARCHITECTURE AS A THERAPEUTIC VESSEL

Human health and well-being are drastically influenced by the surrounding built environment. Architecture supports our daily functions and livelihoods, taking the shape of our homes, workplaces, gathering spaces, and schools. These vessels incapsulate memory, emotion, time, and activity, and are able to affect humans at a physical and mental level. Architectural built form and the consequential environment imposed on the user have the potential to project-specific phenomena. Phenomena of healing can increase user well-being, reduce stress, and provide space for therapeutic care stimulating healing of the urban environment at an individual and communal scale.

2.3 THE ROLE OF THERAPEUTIC ARCHITECTURE

The practice of therapeutic architecture has evolved into a recognized concept as a result of revolt against institutional treatment facilities. The rapid advancement of technology and medical science linked to an architectural focus on functionality has led to the existing institutionalized “healing” environments. The notion of therapeutic spaces has been practiced for centuries and refers to spaces in which users are able to heal without environmental stressors. The word healing is derived from the Anglo-Saxon word “haelan”, meaning to restore to previous condition. Healing cannot be limited to being a tangible cure but rather a system or process of restoration where therapeutic architecture seeks to encourage healing and wellbeing. The practice does not suggest that the built form heals the patient, but rather the architectural and spatial arrangement provides means to elements of nature, activity and opportunity that encourage the healing of process on a physical and psychological level.

2.4 PHENOMONOLOGY AND HEALING

This paper uses phenomenology to understand how spaces and architectural design can influence the patient's healing, amplifying therapeutic methods. The study identifies architectural design tools guided by theory, to understand the spatial influence on the user. The study identifies psychological tools that aid in the manipulation of phenomena to create environments that promote healing. These phenomena are not required to be tangible but could result from remembrance, experience, or the user's imagination. This type of phenomenology is known as descriptive phenomenology and suggests the user grouping one's preconceived ideas while recalling the spatial phenomena (Herrington, 2017).

Worked Matter: Worked matter is essential to our everyday lives and links us to the hive or collective, community, and society. Worked matter can include any human-stamped physical or cultural environment in which we live, including bus routes, institutions, and customs. Utilizing worked matter, we individually and collectively carve out our being in the world. Humans psychologically apply meaning to things so that a small rectangle of paper is no longer just a piece of paper but a movie ticket (Herrington, 2017). Worked matter performs as an image, sensation, or physical element that prompts the imagination.

Spatial exchange: As occupiers of space, humans undergo spatial interaction daily. Exchange occurs between user and context, by each party imposing themselves on the other. As the space imposes its form and character on the user, the user simultaneously projects aspects of their own body on the setting. The function of an architecture that aims to heal is to then impose phenomena of care upon the user as the setting becomes part of the physical and-oral self of the individual

Figure 2.1: Archi Maki model and memory collage, Author,2022

Architecture, memory, and healing: Through imagination and phenomena, humans develop an Intangible memory. This collection of memories is formed from our lived experiences which we relive, reshape, and reimagine, and is dependent on our behaviour as individuals. Memory can influence our actions in the world and steer our morals throughout numerous interactions (Russell,2006). In understanding that architecture can evoke memory, where built environments are said to be a specific place in time, memory, has the power to influence our understanding of environments. Architectural spaces through utilizing memory can influence body and behaviour through a layering of phenomena accessing the individual's intangible memory. By designing spaces that reflect the user's ability to recollect and reimagine, we can strengthen a sense of self in the user by promoting healing through this environment. Architectural built forms have the ability to materialize and preserve the human course of time, making us aware of our context. These vessels provide a concrete form of remembrance. They become memory devices that the user uses to contain and project past and new memories. The built forms stimulate the mind and memory allowing us to recollect and imagine. The effect of memory is once again emphasized by Pallasma who states that what we remember, becomes who we are (Pallasmaa, 2007)

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Architecture as an emotional vessel: The main function of architectural space is the act of a process, activity, or being. In addition to being a device that we can use to articulate memory, architecture can act as an amplifier of emotion. In application it allows the designer to create space which emotionally speaks to function and creates space-specific phenomena

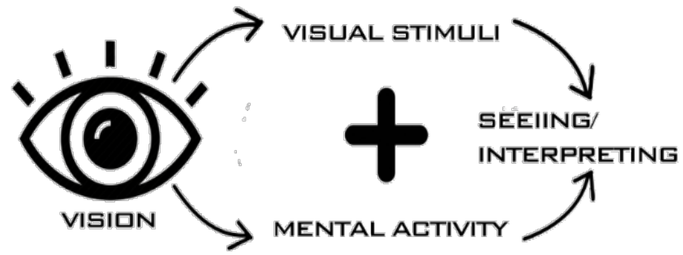


Figure 2.2: Seeing and interpreting, Author,2022

Memory, making and healing: Architecture and making have always been in direct dialect. The fundamental idea of architecture cannot come to fruition without the element or process of making. From the conception and formulation of the project, the maker places personal qualities and projects themselves within the work. The final result announces a moment in time, a layering of thoughts, a specific society and emphasizes the designer's individuality within the resultant. The significance of making is the ability of the thing to magnify and make visible our collections of memory and eventually our very sense of self. The idea of making can be translated to spatial practice, as we as designers make and create space that the users receive based on their perceptions. In environments of healing, the spatial domain for healing and self-identification comes from the flexibility of programmable space, which evokes phenomena of making; this can be done through space in which the user can programme and active spaces that allow a connection to production of tangible memory.

The power of the Home: The term home is a term with underlying layered emotions of safety and nostalgia powered by our memory. The house can be considered an architectural space that grants the user suggested function by an arrangement of furniture and fixings. The house becomes a home when we as users reflect ourselves within the internal boundaries of the house. We impose our sense of self through projecting memories and pieces of ourselves into the house and the objects within, this intern creates the phenomena of the home. The home for the user is a space of true healing, a space where one's true appearance is reflected. A space where the user can reminisce, imagine, and heal.

2.5 ARCHI MAKI - PHENOMONOLOGY EXPLORATION

The study was completed through an exploration of the senses resulting in an exploration through model building , looking at spatial memory layering and phenomenology. The test used a collection of randomly created model spaces to project phenomena of space on the viewer that could be associated to a memory or place. The recollected memory was then overlayed onto specific images to recreate the memories to understand how spatial layout influenced perception and memory. The study was used as an entry point in understanding the effects of space on the user.

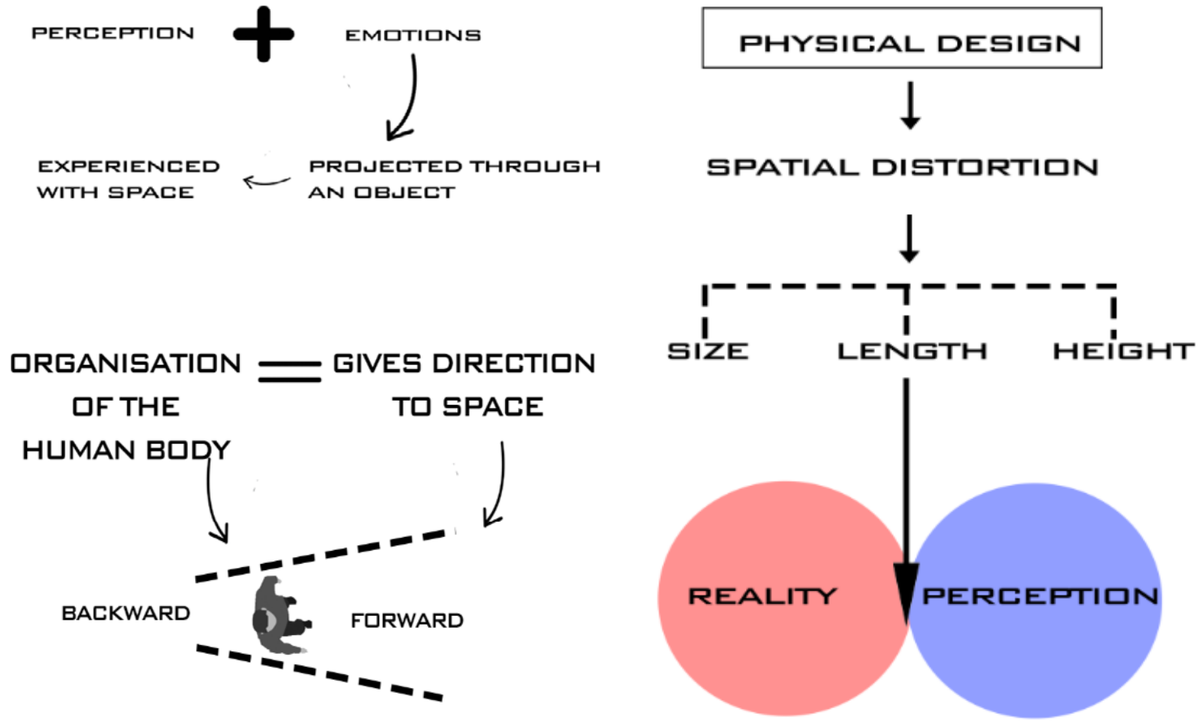


Figure 2.3: Design and affects on the user, Author,2022

Figure 2.4: Archi Maki model and memory collage, Author,2022

2.6 THERAPUTIC DESIGN PRINCIPLES

Modern-day evidence has extended past the boundaries of medical science and astronomy. Through studies of human and built form relationships it has extended to evidence-based design in the field of architecture. Evidence-based design follows design practice in healthcare facilities that are proven to impact patient and staff wellbeing, health, and morale. This paper acknowledges it as a tool to aid in the disruption the disease by addressing one of the three factors that contribute to relapse, environment. The practice acknowledges that disruption of the disease by altering the environment can disorder the continuation of the disease.

Evidence based practice will be used to understand and create design principles. These principles will be used toward designing an environment that will allow a commitment of patients to healing, negating common detrimental environmental conditions. Physical treatment of patients becomes a guide for programming of spaces overlayed with sensuous design techniques creating environments that are proven to stimulate patient morality, emotion and spiritual-being aiding in the healing process. By disrupting the environmental factor, high risk environments such as Mitchell's Plaine can be altered and strengthened using resistant community engaging architecture towards healing.

The following research explores evidence based design and spatial practice aimed at creating architectural healing environments, exploring the effects of lighting, material, memory, nature-based relationships, and a stimulation of the senses. The research has been ordered as a set of therapeutic design principles to use in the design.

Figure 2.5: Design for psychological connection, Author

Therapeutic principle 1 Natural daylight	Therapeutic principle 2 Sanctuary	Therapeutic principle 3 Geometry	Therapeutic principle 4 Sensory Engagement
Theraputic effects: patient oreintation increased comfort increased prodcutivity reduces stress	Theraputic effects: positive distraction sensory engagement sense of security personal control	Theraputic effects: way-finding tool positive distraction aesthetic pleasure reduces anxiety	Theraputic effects: positive distraction sensory engagement way-finding tool reduces anxiety + stress
Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac	Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac	Case study: Maggie's Leeds Cancer Caring Centre Harehills - Heatherwick Studio	Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac
Application: courtyards communal spaces private spaces contemplative space	Application: theraputic space private spaces contemplative space	Application: thresholds major circulation communal space	Application: waiting rooms contemplative space techtonics

Therapeutic principle 5 Color Psychology	Therapeutic principle 6 Circulation & Movement	Therapeutic principle 7 Scale	Therapeutic principle 8 Biophilia
Theraputic effects: sensory engagement way-finding tool psychological stimulation reduces anxiety	Theraputic effects: creates autonomy patient orientation direction of programme way-finding tool	Theraputic effects: sensory engagement positive distraction differentiation emphasis on individual	Theraputic effects: creates comfort positive distraction connection to environment sense of time
Case study: Groot Klimmendaal center - Koen Van Velsen	Case study: Groot Klimmendaal center - Koen Van Velsen	Case study: Maggie's Leeds Cancer Caring Centre Harehills - Heatherwick Studio	Case study: Maggie's Leeda Cancer Caring Centre Harehills - Heatherwick Studio
Application: material textures circulation	Application: passages thresholds circulation routes	Application: thresholds major circulation communal space	Application: All internal spaces

Figure 2.6: Therapeutic design principles, Author

Therapeutic principle 1
Natural daylight

The use of natural daylight within healing facilities is highly favored over artificial sources. Correct study and use of natural daylight have the ability to influence the healing process of individuals, where excessive or inadequate exposure can negatively impact patients and staff. Daylighting through design has a psychological effect on space which in turn affect the users. The spatial quality of light can be altered based on the architectural intent. In healing environments, the use of light in combination with form,reflection, color and openings can be used to alter the perception of space and thus the patient's mood and psychological state.

To ensure best design for natural lighting the consideration of orientation, form and façade is key in manipulating environments. These elements along with shading devices such as roof structures and vegetation work together to create passively stimulating environments. A single room can project alternate atmospheres based on the manipulation of light and the parameters of openings. Maximum connection to the exterior is favored where single small windows allow minimal visual and psychological connection, double or large windows provide regulation of internal lighting. Where two or more windows are placed in a room, the internal atmosphere allows orientation of patients in their surroundings. The addition of several openings to a space, develops an understanding of time through seasonal change color, and thermal perception (Day, 2004).

Figure 2.7: View of exterior from internal circulation. Koen van Velsen. Netherlands. 2011

The Groot klimmendaal center uses a mix of natural and artificial lighting to continuously project a warm environment. Glazing can be found on all facades , providing natural lighting to circulation paths and exterior views.

Figure 2.8: Image of clerestory lighting space, MJP Architects. Cheltenham, England. 2011

Natural lighting is well incorporated into the Maggie center which hosts a raised roof line allowing light from clerestories to light internal spaces throughout the day. The lighting is also diffused and adjusted to suit environments where privacy/public levels are separated.

Therapeutic principle 2
Sanctuary

The design of spaces that appropriate contemplative design for patients in rehabilitation is vital towards healing. In attempting to heal the process of self-engagement through privacy provides a platform for the patient to address their inner thoughts. In designing spaces which allow patients privacy and psychological stimulation, architecture must manifest physical contemplation.

Contemplation of the patient is associated with self-reflection towards the inner self and towards offering relief and aiding in the healing process. Jones extricates three principles of contemplative design principles. Jones deems the principles as architectural modes towards religious and non-religious contemplative spatial practice (Jones, 2015). The theatrical mode provides setting to activity. Secondly the sanctuary mode creates boundaries from the exterior world. Finally, the contemplative mode where the architecture acts as the object of purpose.

Figure 2.9: Image of contemplative spacein garden, MJP Architects. Cheltenham, England. 2011

The Maggie center offers patients two individual spaces of sanctuary. These spaces are represented as separate modules but are integrated well into the function of the facility allowing patient and staff flexibility of private and public space.

Therapeutic principle 3
Geometry

Architectural design has always favoured the use of straight lines in regard to construction methods. The use of square or rectangular shaped spaces allows an organisation of plan that resembles functionality and are easily articulated to formulate plans. Rectangular spaces are often perceived as harsh and direct creating flat environments with little sharp corners. These are in juxtaposition to the use of curved forms that represent movement, safety, and destination and can be utilised in spaces offering circulation or positive distraction. The form and shaping of elements are capable of affecting patient moods and behaviour. A balance between the use of straight and curved design must be employed to appropriate a de-institutionalised approach to healthcare as internal spaces that are sharp and straight “can easily feel like boxes: uncomfortable, claustrophobic and life-suppressing” (Day, 2004, p.91).

Figure 2.10: Maggie leeds internal shared space. Heatherwick Studio.2020

The Maggie Leeds center curves to generate its form, giving emphasis to circulation and movement, and creating a relationship between the building and its vegetative context. Within there is a variation between spatial volumes based on function allowing spaces to cohere proportionately.

Therapeutic principle 4
Sensory Engagement

The human senses are an extension of our ability to associate memory to the tactile. Pallasma explains how the loss of attention to design that engages the senses has resulted in an architecture that is left flat, illusory, and irrelevant (Pallasmaa, 2005). When architectural intent extends beyond aesthetic pleasure to engage psychologically through tactile practice, the architecture becomes a tool for encouraging well-being (Day, 2004).

Architecturally the process of healing is triggered through patients' emotional reactions when use of sensory engagement is incorporated to formulate emotional and psychological response of the immune system, activating the healing process. (Barbara, et al, 2013). The patient's behaviour and mood are direct results of the perception surrounding environments, therefore in applying tactile design tools to aid in sensory engagement, spaces that autonomously heal the user can be achieved.

The design of the klimmendaal center placed nature and engagement of the senses at the forefront. The center is nestled within nature and makes use of the environment. The play of light within is used to activate the senses based on function.

The Maggie center uses elements of timber and steel, displaying connections and joints, this increase in tactility of the building encourages interest in the users and provides positive distraction. The use of natural colors and timber psychologically connects user and staff to nature.

Figure 2.11: View of work spaces with exterior view. Koen van Velsen. Netherlands. 2011

Figure 2.12: Image of steel and timber use, MJP Architects. Cheltenham, England. 2011

Therapeutic principle 5
Color Psychology

The use of colour in architecture has been identified as a tool toward psychological stimulation towards evoking emotion, mood changes and behaviour. In environments of healing, colour can be used as a generator of wellbeing (Manhke, 1987). Colour is perceived by the user in relation to their layering of memories associated to past activity or cultural symbolism. Architecture should embrace colour usage as a design tool toward environmental control and stimulation of patient emotional response. Numerous studies into the psychology of colour have made it possible for architecture to adapt and assess environmental control with fair accuracy.

The table below adapted from (Manhke, 1987 & 1996) depicts the common affective values for the major colour hues and their uses.

The Groot Klimmendaal centre as shown in figure x displays beautiful use of natural light and colour to create pleasant and interesting environments. The colours are highlighted by the use of white and give users movement ques and is suggestive.

Figure 2.13: View of internal lighting and color use. Koen van Velsen. Netherlands. 2011

RED	ORANGE	YELLOW	GREEN	BLUE	PURPLE	WHITE	BLACK
ARROUSAL EXCITEMENT WARMTH LIFE COMBAT LOVE PASSION	EXCITEMENT STIMULATION NATURE AUTUMN ENERGY FUN	CHEERFUL RADIANT FRIENDLY SPIRITED COMMUNICATION	RELAXATION NATURE REFRESHING PEACE PROGRESS	RELAXATION WATER CLEANLINESS WELLLNESS	SUBMISSIVE WELATH MYSTERY QUALITY TRUTHFUL LONELY MOURNING	PURE STERILE CLEAN LIGHT SPIRITUAL UNFIRENDLY	QUIET DISMAY INDUSTRY HEAVINESS ELEGANCE SOPHISTICATION
RED IS A DOMINANT COLOR AND SHOULD BE USED AS AN ACCENT COLOR IN HIGHLIGTING SPECIFIC ELEMENTS OF CIRCULTION OR FUNCTION.	ORANGE IS A CHEERFUL AND SOCIABLE COLOR BEST SUITED TO SPACES OF GATHERING OR EVENT.	YELLOW IS GOOD FOR VISIBILITY HIGHLINGTING OF CIRCULATION AND FUNTION. IT CAN ALSO BE USED AS A HIGH VISIBILITY TOOL IN SERVICE SPACES.	THE COLOR GREEN IS ASSOCIATED WITH NATURE, CONCENTRATION AND STIMULATION. THE COLOR IS BEST SUITED FOR SPACES OF LEARNING AND MEDITATION.	THE COLOR BLUE IS OFTEN ASSOCIATED TO WATER AND A SENSE OF CALM. IT SHOULD BE EMPLOED IN SPACES OF RELAXATION AND CONCENTRATION.	PURPLE HAS MANY PSYCHOLOGICAL EFFECTS AND SHOULD BE USED AS AN ACCENT COLOR TO ARTICULATE FUNCTION.	WHITE IS ASSOCIATED TO CLEANLINESS AND PURITY. WHITE ALLOWS FOR REFLECTION OF LIGHT AND SHOULD BE USED FOR SPACES OF TRANQUILITY AND INTEREST.	HARDLY USED IN SPACES OF HEALING. SHOULD BE USED TO HIGHLIGH JOINING MATERIAL OR COLOR.

Figure 2.14: Table of colors. Mahnke, F.H. (1996)

Therapeutic principle 6
Circulation & Movement

We can employ many tools as designers for the articulation of circulation within our spaces, including the use of orthogonal and symmetric circulation in plan and by differentiating function and space through colour and dimension (Horsburgh, 1995). Patients who are active in rehabilitation and feel the stress of illness are more prone to information overload and are less capable of reading their environment (Horsburgh, 1995). Patients can often be frustrated by circulation configurations; thus, clearly defined paths and entrances must be used. Several design features can reduce visual confusion encountered by patients and the circulation. Modern institutionalised approaches to healthcare circulation have left patients having trouble finding their way. Often excessive signage, limited material pallets and lack of colour results in spaces that are perceived as identical.

Orientation of the patients with clear circulation paths are achievable through specific way-finding design tools. First the creation of spatial anchors in the forms of landmarks provide patients with a visual reference and locating device. Secondly the use of colour, height and depth differentiate spaces from one another allowing patients to identify space with orientation. Finally, the use of exterior views allows patients orientation within the context.

Figure 2.15: View of interior circulation route. Koen van Velsen. Netherlands. 2011

The Groot Klimmendaal centre uses natural and artificial lighting and colour to enhance user movement and circulation through the facility. Functions are associated to specific colours with white interior external walls highlighting openings and views contextualising users in their surrounding.

Therapeutic principle 7
Scale

The scale of rooms and circulation can influence the patients and workers who use the space. Horsburgh notes how the hospital space cannot be designed as a factory or a home but must be influenced by the human and community scale (Horsburgh, 1995). He notes that the patients' surroundings must provide therapeutic means and become as important as the specific medical measures. A critical consideration is the volume of patients the facility can account for.

Whilst providing adequate functional spaces for treatment, the facility's scale regarding context, patients and function must be balanced. Horsburgh notes the scale of internal hospital spaces should be constructed through modulation and have variety in design. This should be done to project changes in function and atmosphere. He notes this also enhances the progression from public to private space (Horsburgh, 1995). Special consideration should be taken to hallways and lobbies as these are pedestrian environments and should be appropriately scaled to allow for control of user movement and programme.

Finally, Horsburgh notes consideration of threshold is to be taken in healing environments as they denote spaces and allow users to navigate space. Low ceilinged thresholds and corridors makes for spaces that feel private rather than public. Horsburgh believes negation of attention to scale and movement are the shortcomings of modern-day healthcare spaces.

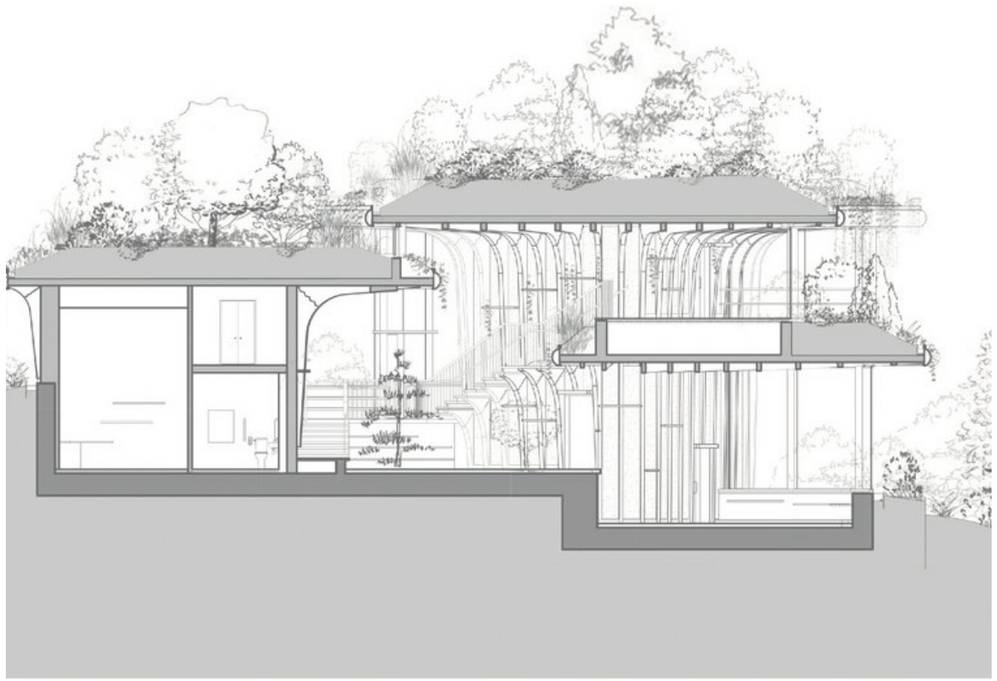


Figure 2.16: Section through Maggie Leeds centre. Heatherwick Studio.2020.

The Maggie Leeds cancer center uses the human scale in order to manipulate movement and circulation. the spaces are differentiated through changes in volume and level and are consistant throughout the design.

Therapeutic principle 8
Biophilia

Successful architectural intervention focuses on building a successful relationship with the built form and the context. The act of emotionally being connected to a particular location over a period through memory layering and activity has allowed humans to develop spatial phenomena, establishing a layering of bodily phenomena that can be identified within spaces that share similar factors. These relationships can be established by identifying and creating links to the location's geographic, historical, ecological, and cultural connections. This can be created using locally sourced and made materials, applying the correct orientation of the built form within the landscape to allow for connection to nature and existing site elements, integration of culture and ecology into the landscape with the architectural form and a commitment to enhancing and creating a Genius Loci. Biophilia is a theory based on human and natural relationships. Applying biophilia to architecture, means considering nature's presence inside and ouside when designing. Biophilic design aims to provide users with a sensory engaging atmosphere using design elements associated with nature to establish a connection to the user's physical and mental state.

There are possible reasons suggested by Ulrich that explain the benefits a of healthy relationship between humans and natural elements. Firstly, humans associate physical activity with natural environments stimulating health. Secondly nature is often linked to social aspects helping humans to connect to one another. Further, nature provides a temporary escape from our realities acting as an escape. Lasty nature has a direct effect on the human mind where humans associate nature to restoration in juxtaposition with the urban setting (Ulrich, 1991). Architecturally the following principles and tools are fundamentals of biophilic design:

1. Visual connection to nature - Allows direct visual interaction between user and external environment.

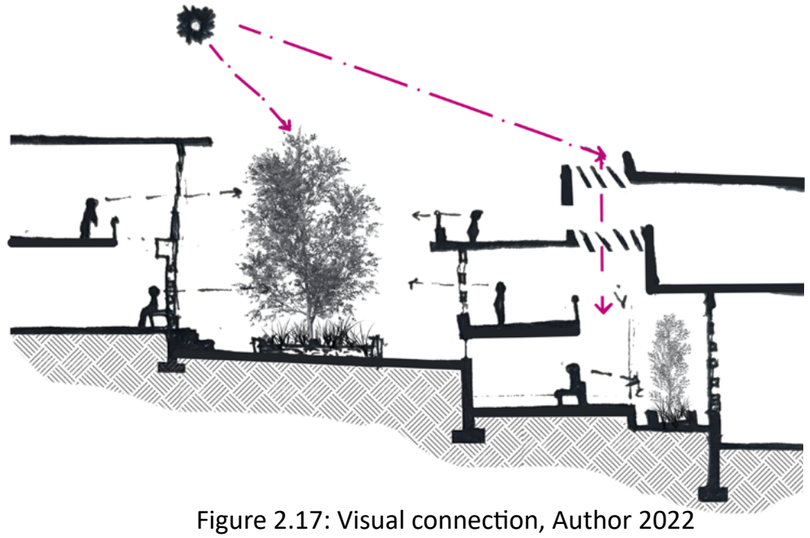


Figure 2.17: Visual connection, Author 2022

2. Non-visual connection - The use of sounds and smell from natural ellements such as wind and water allow a non visual connection to nature

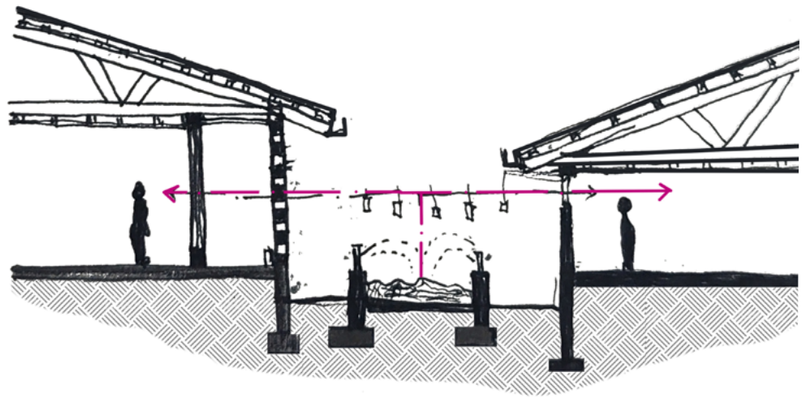


Figure 2.18: Non-visual connection, Author 2022

3. Variation in air flow - This allows users to experience spaces differently based on the specific location.

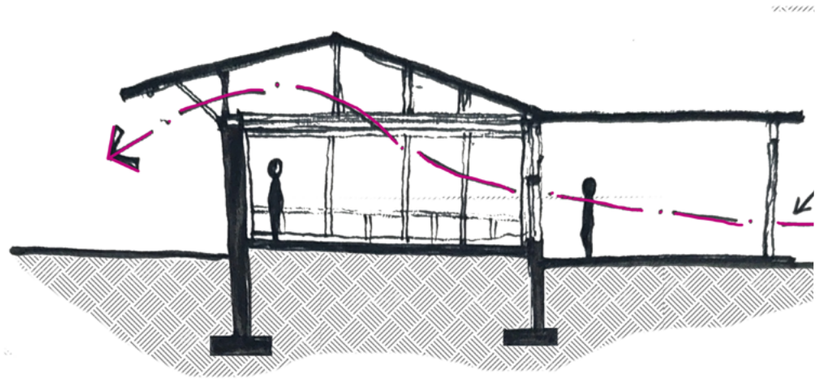


Figure 2.19: Airflow variation Author 2022

4. Dynamic lighting - This allows for direct & indirect lighting of spaces based on orientation.

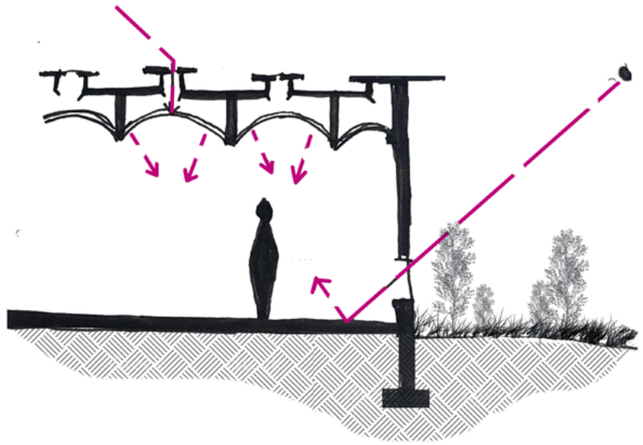


Figure 2.20: Dynamic lighting, Author 2022

5. Connection to water - visual and tangible natural ellement and process which can be used to connect user to nature through activity and sound.

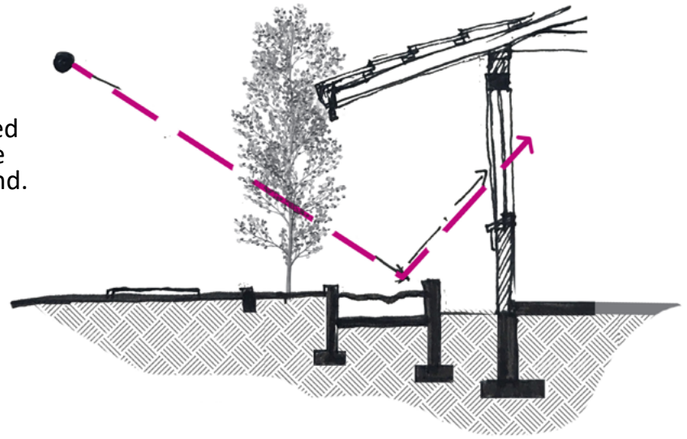


Figure 2.21: Connection to water, Author 2022

6. Patterns and symbols - Allows for indirect psychological connection to nature.

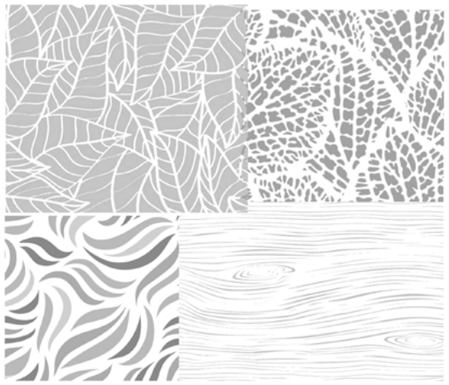


Figure 2.22: pattern & symbol, Author 2022

Visual stimuli – creating visual connections between the user and natural context evokes interest and pleasure associated with the space that can successfully stimulate healthy social interactions. views of natural elements, systems, or processes promote calm for patients and can be considered a design tool to amplify healing.

Psychological relationship – Psychological triggers associated with nature can be used in design where a physical or visual connection cannot be established. Architectural considerations of form, material usage, tectonics, and color are able to stimulate the phenomena of nature within users.

Thermal Comfort – The thermal performance of spaces can drastically affect the outcome of the perceived phenomena. Biophilic design offers systems that passively operate cooling the building through the use of vegetation and natural systems. Processes observed in nature can often result in buildings performing better at a sustainable level

Natural Form – Biophilic design elements are representative of nature and its systems often involving the use of recognized forms, symbols, and textures. Examples of this include bio-morphism, using architectural elements to mimic natural form.

Humans and nature: Various human practices of spirituality, beauty, attraction, order, and complexity have sought to strengthen the relationship between humans and nature. Within a healing environment, the provision of spaces that allow for spiritual and symbolic resonance promotes healing through function.

Architecture with nature should respond to the body and mind of the user. The application of biophilic design principles practiced through locative construction and material sourcing based on context creates an environmental relationship between users and nature, producing restorative and revitalizing space within buildings. This promotes psychological well-being for the user through the surrounding context. Biophilic Design has the potential to provide users with space that activate the senses and project phenomena of healing through nature. In incorporating biophilic design into the final design of the rehabilitation. I hope to enhance the user experience, fuelling the healing nature of the facility and establishing its phenomena within the community.

SECTION 3

IN SEARCH OF A SITE

3.1 THE CITY AND OPPORTUNITY

Stefan Jensen states that the importance of violence can be quantified (Jensen, 1999) and highlights conditions of those who live and experience a cycle of violence daily, as living scars of the post-apartheid landscape. This study focuses on the drug users of Cape Town, more specifically, areas of the Cape flats. In reviewing substance abuse conditions in Cape town, the cape flats have been highlighted as an area of increasing drug and gang activity with intense pressure being place on social services and the criminal justice system.

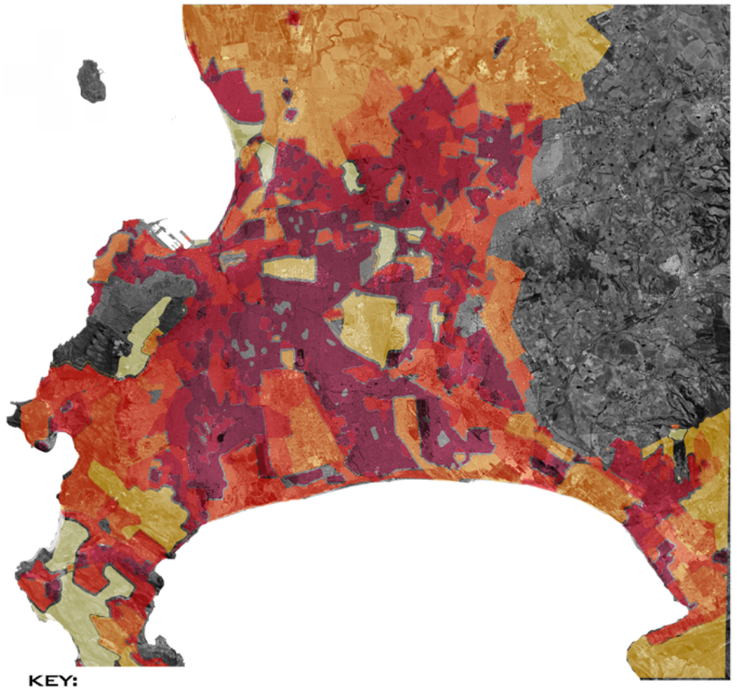
The Cape flats is an area in Cape Town, birthed through the Apartheids 1950's Group areas act, and used as a space of dumping for the people of color, consisting of predominately people classified as colored. The Cape Flats consist of Bishop Lavis, Hanover-Park, Khayelitsha, Mannenberg, Steenberg Langa, Nyanga, Bonteheuwel, Heideveld, Elsie's River and last in enormous Mitchell's Plain. The area's population came largely from forced removals during the 1960s and 1970s, creating spaces of pure races (Jensen, 1999). The area is criticized for having poverty zones with social issues and violence connected to gangs and drugs (Jensen, 1999). The social issues within these communities are a direct result of high employment rates, lack of opportunity, poverty, and lack of community. When Apartheid ended in 1994, law enforcement was no longer occupied with controlling the population. Without law enforcement and underlying social issues, the area allowed drug and gang activity to flourish (Vorobyov, 2020).

The existing state-subsidised addiction services are unevenly distributed throughout Cape town with provision of services being favoured in mainly white privileged areas. The facilities provided to residents of the Cape flats function as out-patient facilities and are placed on the peripheries of these socio-depressed communities making them inaccessible to the public who require their services. This study will focus on the area of Mitchells Plain, a notorious area of crime in the Cape Flats, contributing to more than seventy percent (70%) of all drug use in South Africa.

The social issues within these communities are a direct result of high employment rates, lack of opportunity, poverty, and lack of community. When Apartheid ended in 1994, law enforcement was no longer occupied with controlling the population. Without law enforcement and underlying social issues, the area allowed drug and gang activity to flourish (Vorobyov, 2020). Gangs and violent acts are often associated to drug related incidents where drugs have become a part of the social system. With constant demand for supply of illicit substances the addicts become the source of the violence.

The following map data represents the study of opportunity and services awarded to communities on the peripheries of the city. The data from Cook, et al (2019) was studied and adapted to create this mapping (Cook, et al, 2019)

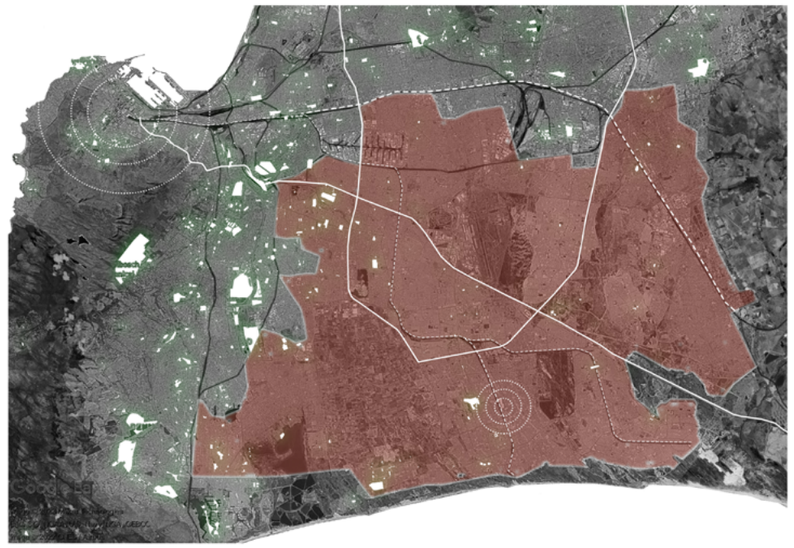
MAP NAME: CAPE TOWN DENSITY DISPURSEMENT



KEY:

- <1 inhabitant/km²
- 1–3 inhabitants/km²
- 3–10 inhabitants/km²
- 10–30 inhabitants/km²
- 30–100 inhabitants/km²
- 100–300 inhabitants/km²
- 300–1000 inhabitants/km²
- 1000–3000 inhabitants/km²
- >3000 inhabitants/km²

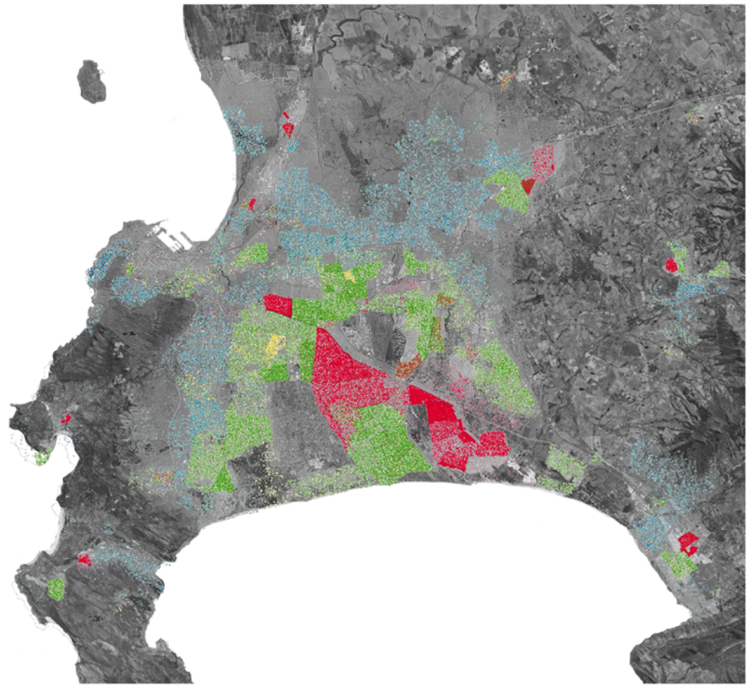
MAP NAME: CAPE TOWN CAPE FLAST VS TRANSIT



KEY:

- CAPE FLATS
- MAIN ROAD
- GREEN MAINTAINED SPACES

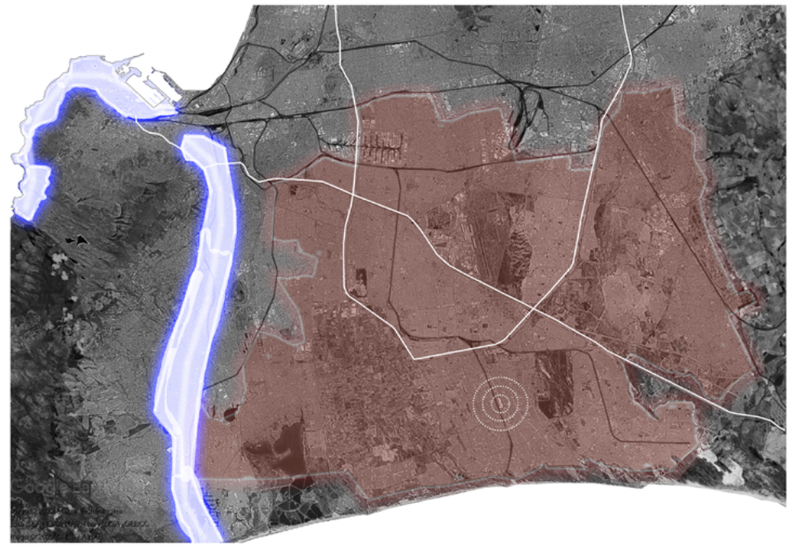
MAP NAME: CAPE TOWN RACE DISPURSEMENT



KEY:

- INDIAN
- BLACK AFRICAN
- WHITE
- COLOURED

MAP NAME: CAPE TOWN PUBLIC SERVICES DISPERSAL

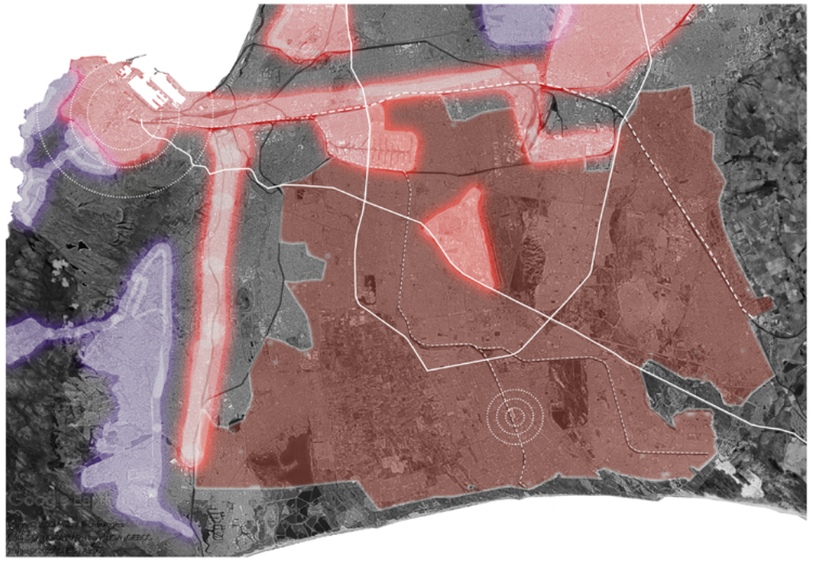


KEY:

- CAPE FLATS
- MAIN ROAD
- HIGH QUALITY LAND

Figure 3.1: Cape Town mapping, Cook, et al, 2019 edited by author

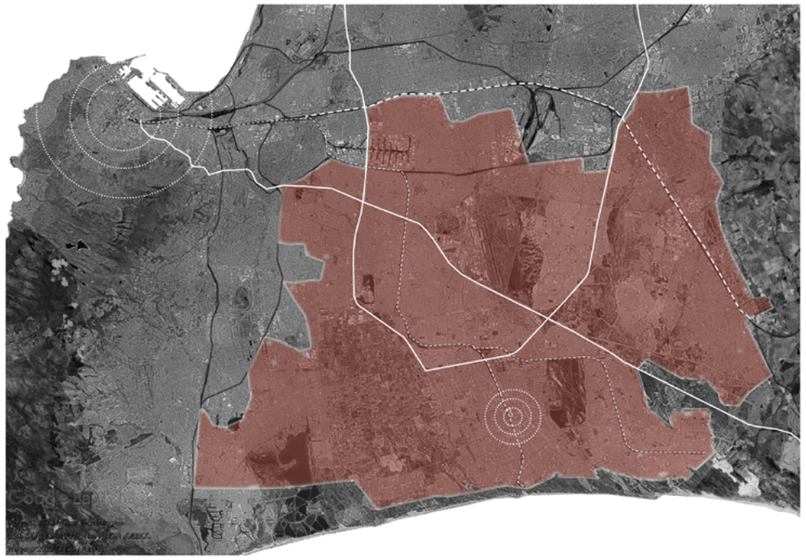
MAP NAME: CAPE TOWN ECONOMIC SPACES AND WHITE RESIDENTS VS CAPE FLATS



KEY:

- CAPE FLATS
- MAIN ROAD
- HIGH ECONOMIC SPACE
- WHITE RESIDENTS

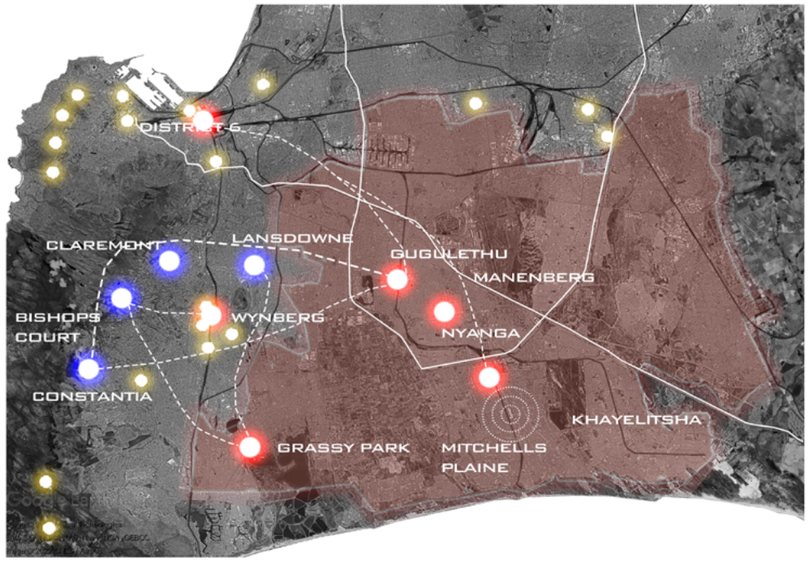
MAP NAME: CAPE TOWN CAPE FLAST VS TRANSIT



KEY:

- CAPE FLATS
- MAIN ROAD
- TRAIN LINE

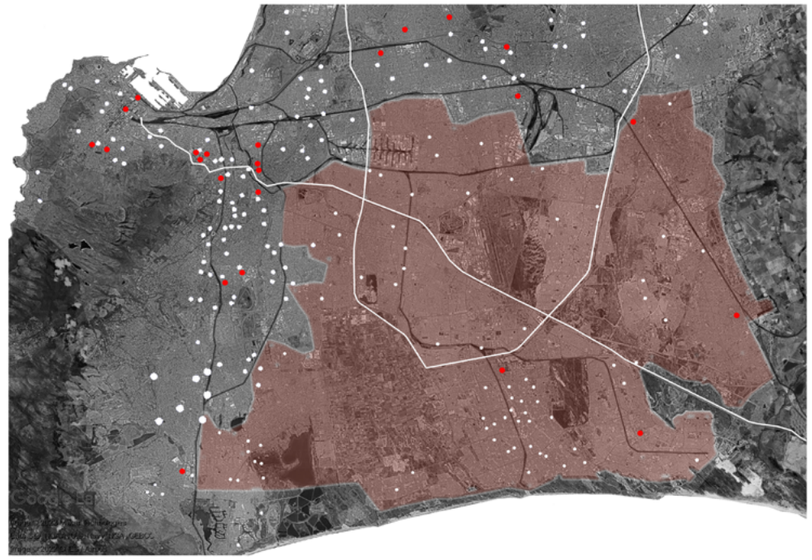
FORCED REMOVALS VS CAPE FLAST VS REHABILITATION FACILITIES



KEY:

- CAPE FLATS
- MAIN ROAD
- RELOCATED FROM
- REHABILLITATION CENTRES

MAP NAME: CAPE TOWN PUBLIC SERVICES DISPERSAL



KEY:

- CAPE FLATS
- MAIN ROAD
- SCHOOLS
- HOSPITALS

Figure 3.2: Cape Town mapping, Cook, et al, 2019 edited by author

3.2 ANALYSING THE EVIDENCE

From the mapping it is clear that the disbursement of amenities and services, and jobs are concentrated toward the CBD. Surrounding areas therefore have easy access to services however the communities of the Cape flats experience a different way of life than those of the more centralized areas. The report titled monitoring alcohol, tobacco, and other drug abuse treatment admissions in south Africa by SACENDU in 2020 was used in providing statistical evidence of substance abuse and contains detailed data from studies conducted in South Africa on substance use treatment centers and focuses on drug Use in the Country with reference to the Western Cape –Mitchells Plain (Myers et al, 2009). The statistics and sources highlight an escalation of substance abuse with an increased usage amongst teenagers.

With little help from state sources residents of these communities are subjected to a continuous cycle of violence fed by gang violence, crime, and murder that are associated at the root to illicit substances. Residents of these communities who wish to seek help are faced with issues of access, and funding with only two government funded rehabilitation facilities lying within the western cape borders. These facilities being Kensington treatment centre who caters solely for females, and the De Novo treatment centre in kraaifontein. The placement of these facilities makes them inaccessible to the communities of the Cape flats being positioned on the outskirts, further limiting access, opportunity, awareness and access to services (Myers et al, 2009).

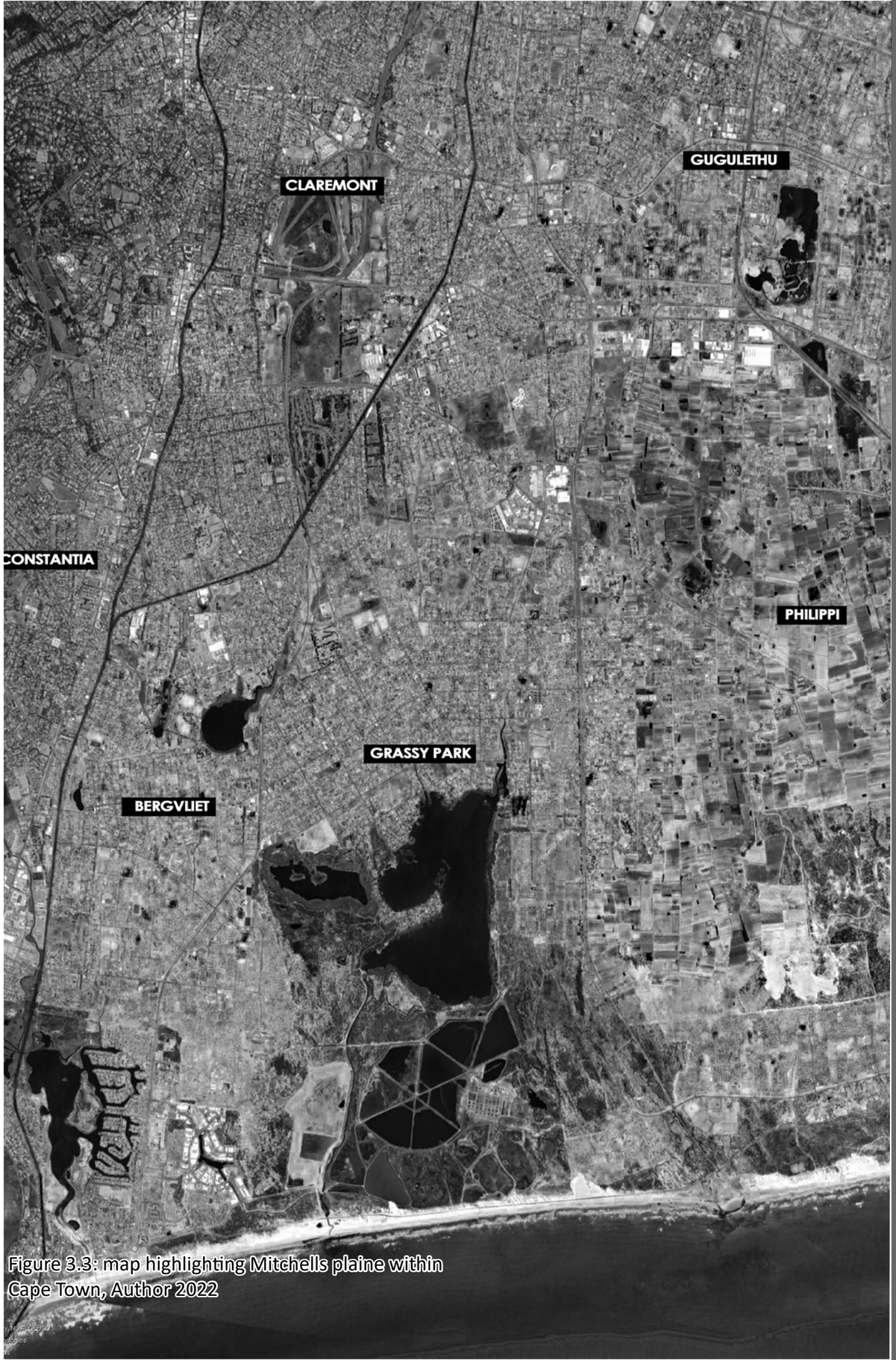
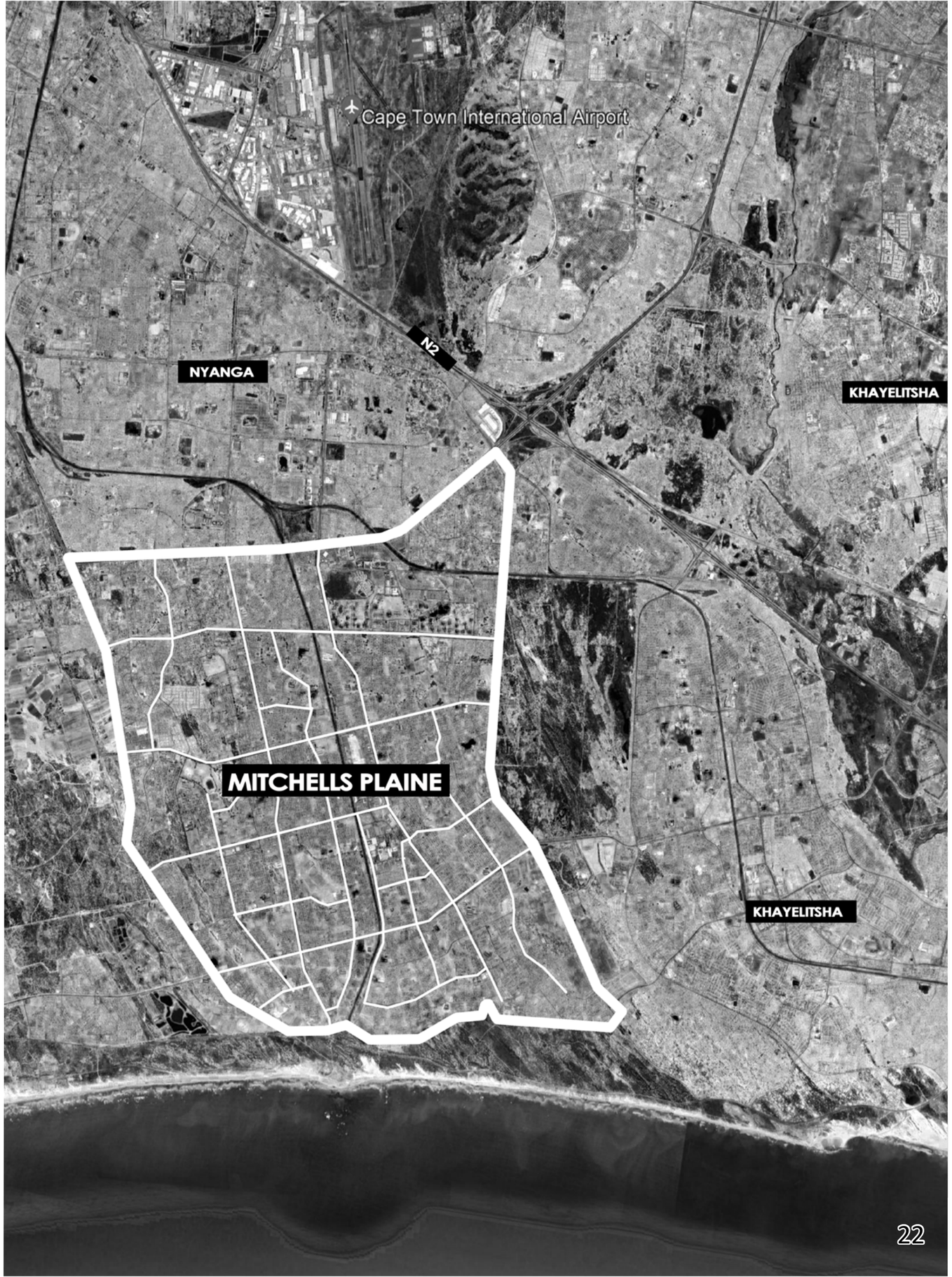


Figure 3.3: map highlighting Mitchells plaine within Cape Town, Author 2022



The disturbing statistics and increase in substance abuse and crime related instances calls for action and intervention toward healing the communities within the Cape flats. An intervention is needed to address the existing social issues that plague these communities by reviewing the existing conditions and provision of environments that are deemed for healing. The intervention is required to facilitate programmes of community engagement and youth substance abuse prevention programmes in order to address the cycles of violence present within these communities.

This paper takes the position of introducing a healthcare facility that caters to individuals and the community of Mitchells Plaine. The context of Mitchells Plaine provides opportunity for an investigation toward healing, targeting a notorious community of the Cape flats. The response to substance abuse through a rehabilitation facility allows addressing of a prominent social issue and a system of violence. By placing the intervention within Mitchell's Plaine it promotes awareness, accessibly, affordability of services once unattainable and allows means to integrate healing at a community level.

Mitchell's Plaine was established as a township in 1971 by the city of cape town to accommodate "coloured" people who were evicted and forcibly removed from areas such as district six. The town is located 22km from Cape Towns city centre and is connected via the M5-motorway. The town is bordered by Khayelitsha and Crossroads. The town is classified as a dormitory town with large underdeveloped and vacant spaces. The town is spatially marginalised with little opportunity and access to services for residents.

With the town lying far out from the city centre, access to amenities such as jobs, opportunities, healthcare, and recreational space is limited to residents supporting the local social issues and violence. Thirty percent (30%) of residents within Mitchell's Plaine are currently unemployed with forty-one percent (41%) earning less than R1600.00 per month. Mitchells Plaine holds many schools within its borders, however seventy five percent of the population have not obtained a matric qualification. The following study examines the fabric of Mitchells Plaine in order to identify a suitable site.

3.3 MITCHELLS PLAINE MAPPING

The mapping of transit routes, activity, and services allows a spatial understanding of the disbursement and availability of service. The sum of the services and activity can be found within the town center where commuters from variouos communites of the cape flats gather for transit purposes. .

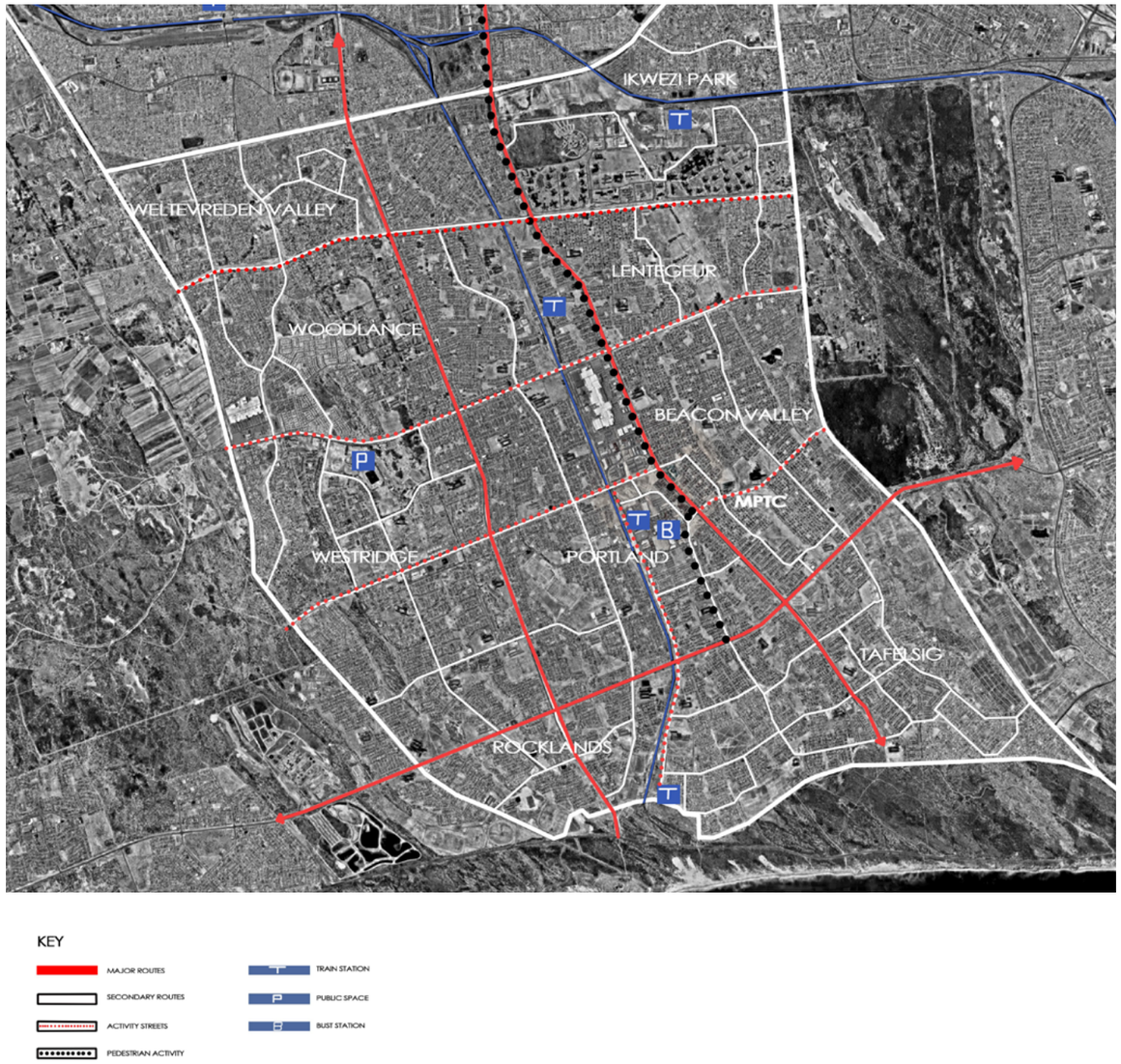


Figure 3.4 : Mitchells Plain transit mapping, Author 2022

Mitchells Plaine has many schools within its borders catering to both primary and hgihschool. the schools are all of a standad design with two rectangular forms creating a single couryard in the centre flanked by circulation. all schools in the area are adjoined to large pieces of land, with most being unsupervised and neglected.

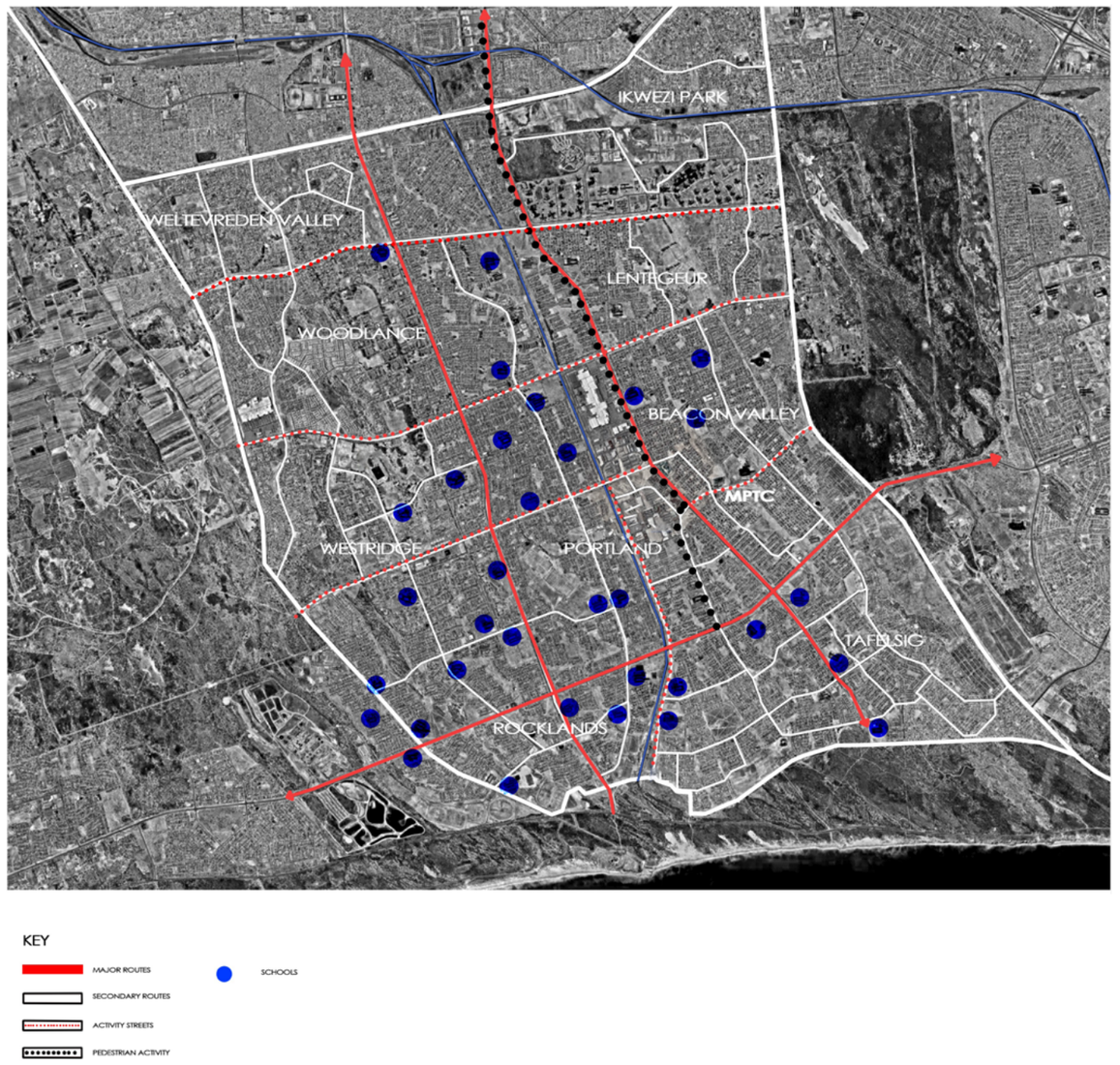


Figure 3.5: Mitchells Plain school mapping, Author 2022

Aknowlegdement of a green-belt which runs through mitchells plain can be observed starting at the coast leding toward the city. This allows opportunity to emphasize the existing beauty of Mitchells Plaine.Mitchells Plain also has potential to acess the cape aquifer below for potential vegetation.

Figure 3.6: Mitchells Plain vegetation mapping, Author 2022

The mapping of occupancy and services allows a spatial understanding of the disbursement and availability of service with most services being found within the town center. The creation of activity nodes can be seen where major intersections have been overlayed with social and public services wit the largest found within the town center.

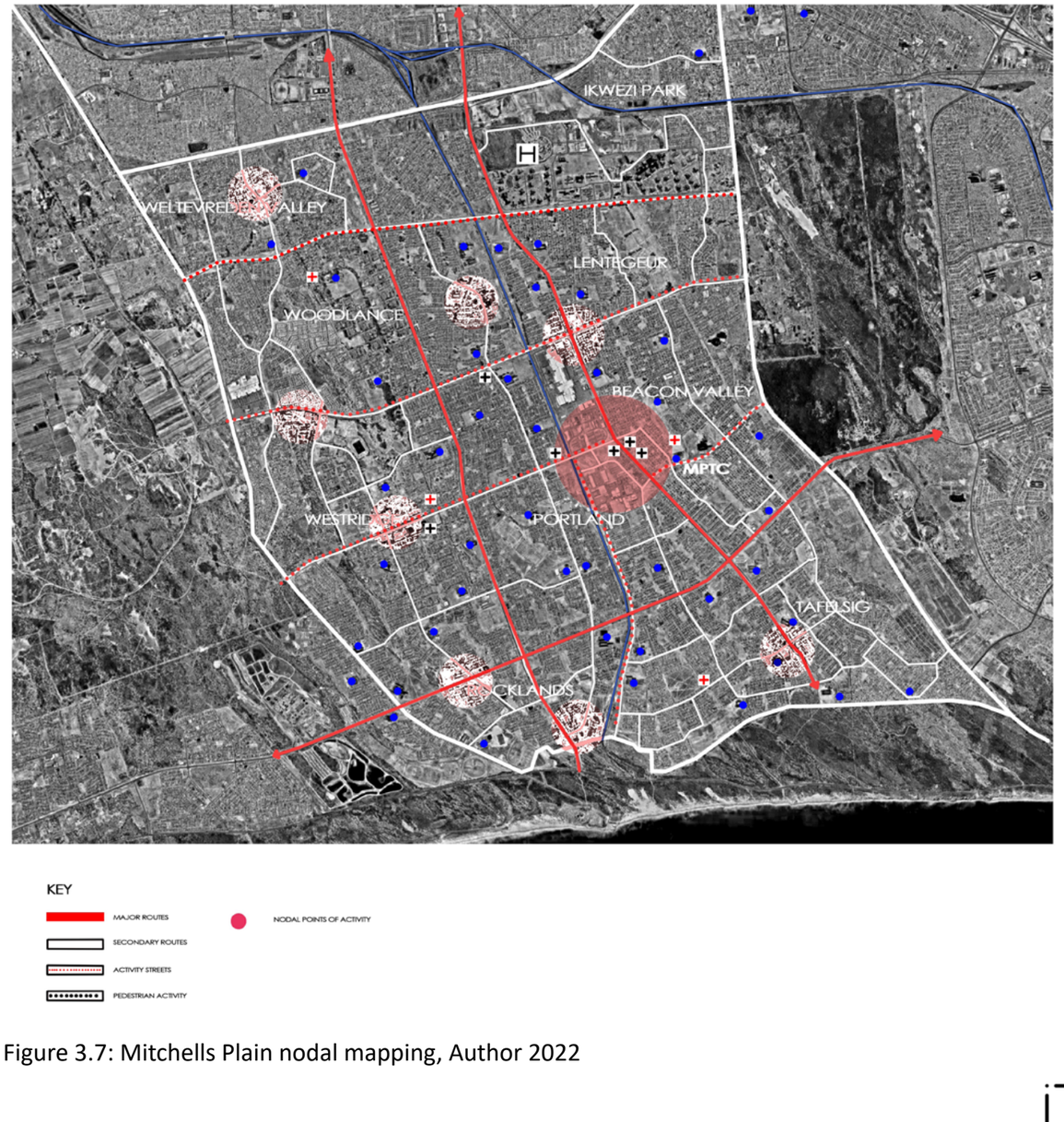


Figure 3.7: Mitchells Plain nodal mapping, Author 2022

3.4 MITCHELLS PLAINE TOWN CENTER MAPPING

Mitchells Plaine town center hosts the highest concentration of transportation systems within the cape flats, catering to the mini-bus, bus services and railway. The center is situated along the main road and is linked to the city of Cape Towns future route of intensification.

The center is surrounded by parking lots with the periphery of the center consisting of the local hospital, the university of the western cape faculty of dentistry, the Mitchell's plain south African police service headquarters, and Mitchell's plain magistrates court, and several avenues that are lined with more traders. Within the town center clusters of social services are available to residence with schools and healthcare available. The area hosts many zones of activity and attracts many commuters from the cape flats commuting toward the city.

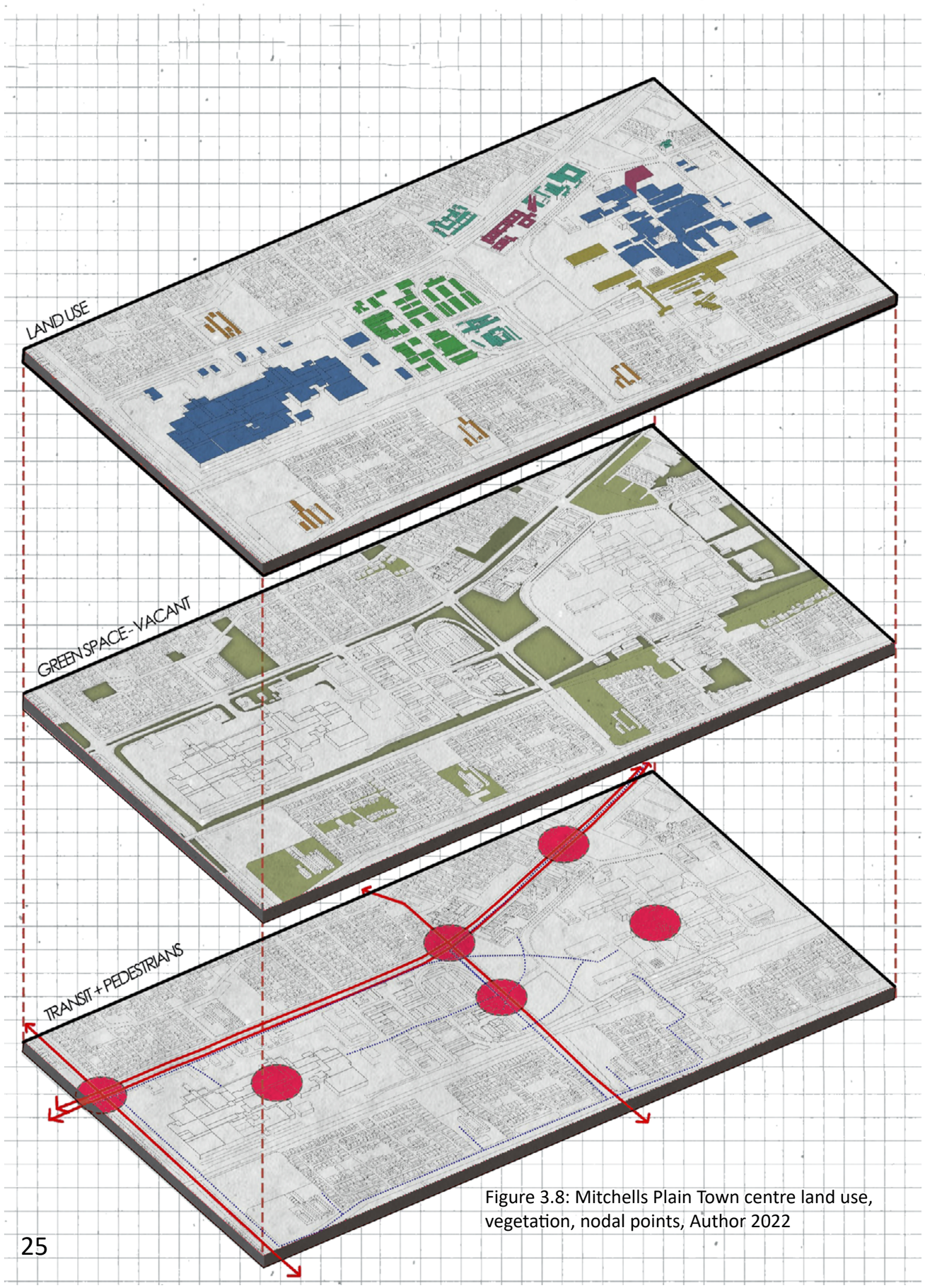


Figure 3.8: Mitchells Plain Town centre land use, vegetation, nodal points, Author 2022

MAP NAME: MITCHELLS PLAIN TRANSPORT AND ACCESS

KEY:

OPEN SPACE

BUILDING MASS

COMMERCIAL
SOCIAL SERVICES
RESIDENTIAL
LIGHT INDUSTRIAL
GREEN SPACES
TRANSPORTATION
RELIGIOUS
SECURITY
EDUCATIONAL

CAR ROUTES
WALKING ROUTES
SCHOOLS

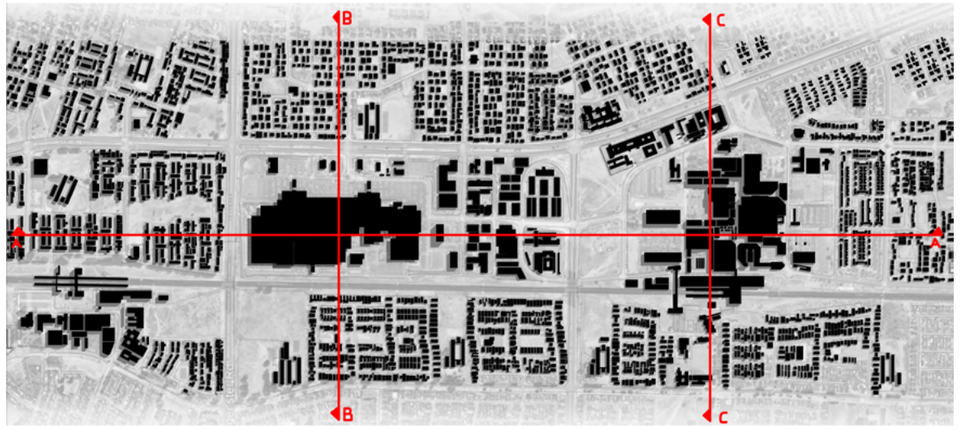
Figure 3.9: Mitchells plaine town centre urban analysis, Author 2022

MAP NAME: MITCHELLS PLAIN TRANSPORT AND ACCESS

KEY:

BUILDING MASS

ROAD NETWORK



SECTION A-A

SECTION B-B

TRAIN TRACK
MAIN ROAD
STATION
ACTIVE NODAL SPACE
SECONDARY MAIN
ACTIVE ROADS
DEPOT

3.5 IDENTIFYING INTOXICANTS

Public space/ Lost space:

The town has a large sums of open unused space. These spaces are neglected and lack sense of ownership leading to a lack of identity and place. Spaces within the town centre are largely used or zoned as parking with pedestrians traversing them as shortcuts. The only intervention being the provision of a few lights activated at night. These spaces are thus prone to criminal activity.

Unemployment vs Schools:

Mitchells Plaine is host to a numerous amount of schools with both primary and highschool being present. Although the means for attaining knowledge are in place, more than seventy percent of residents have not matriculated. Statistical evidence has shown a large increase in substance abuse and use amongst teenagers and scholars. the need for intervention thus is an intergenerational one.

Lack of Opportunity:

With more than seventy percent of residents not having matriculated, it has left a large sum of the population unemployed. Mitchells plaine does not hold large sums of industry or work related activity to allow for development of skills or trade in the area. With little opportunity and possibility for job finding within the town, residents are forced to look toward the city .

Walkability Vs Safety:

In examining the fabric of Mitchells Plaine it is clear that the design of the town lacks walkability and adressal of pedestrians. Roads are wide with little pedestrian markings and traffic control. The town favors the use of the motor vehicle with little attention given to street users other than the provision of lighting.

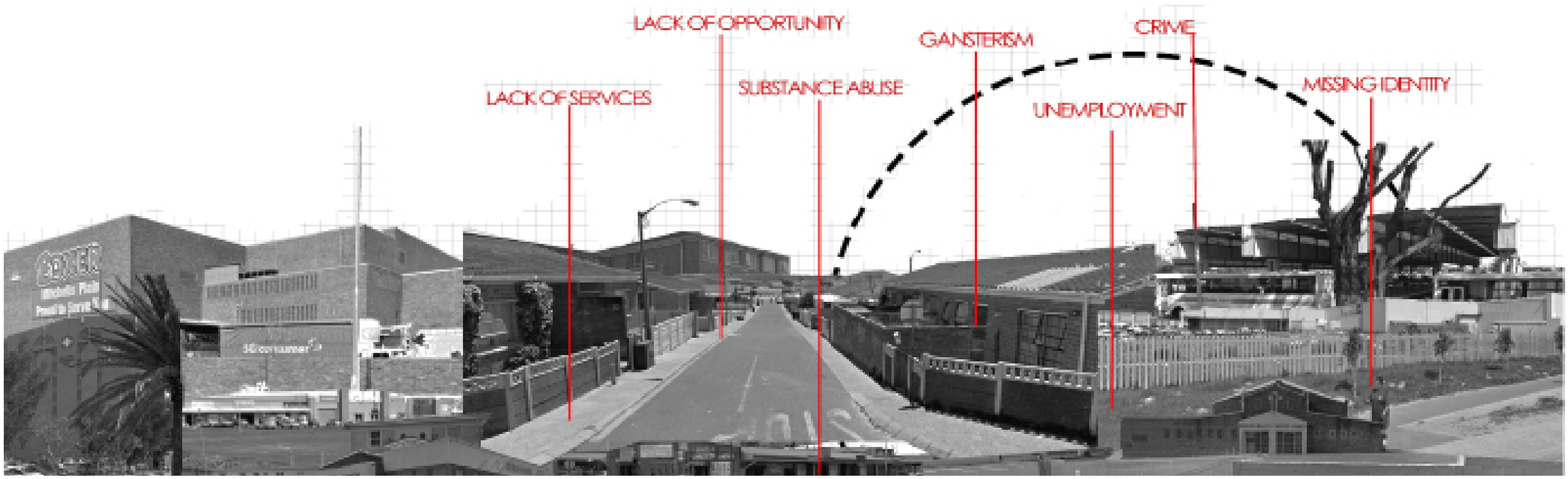


Figure 3.10: Mitchells Plain Town centre collage , Author 2022

3.6 SITE CRITERIA

Location:

The site is to be located within Mitchells Plain town center. The centre allows for easy access to the site and transportation.

Size:

The size of the size needs to cater for the the program of the rhabilitation comfortably whilst still alowing access to external couryards and spaces.

Context:

The context should respond to the intervention allowing integration into the existing services and facilities to strengthen the program and intervention.

Value:

The site should allow for integration of communal activities to foster a community relationship.

Vegetation:

The site need vegetative potential to allow for maximum connection of patients to nature.

Access:

The site is to be easily accessible to all members of the community through foot traffic and motor vehicle.

3.7 SITE SELECTION

Site Selection:

60 Peugeot Crescent Beacon Valley, Cape Town, 7785 .The site is located within Mitchells Plain town center. The centre allows for easy access to the site and transportation.

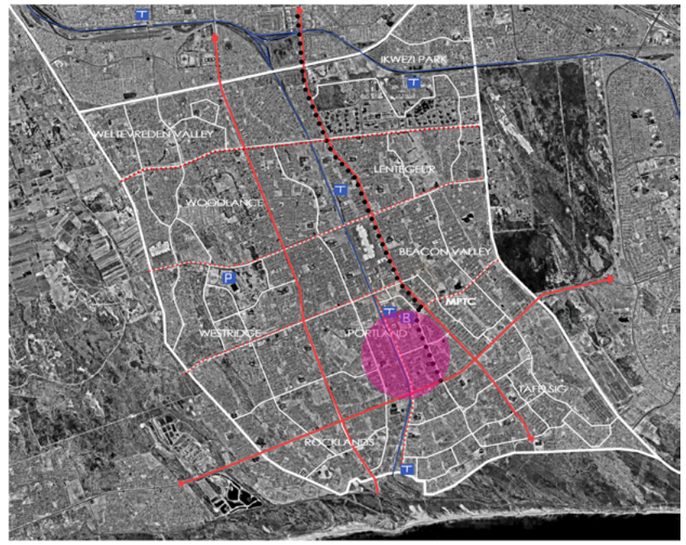


Figure 3.11: Mitchells plain town centre highlighted in red, Author 2022

Figure 3.12: Site selection highlighted in red, Author 2022

SECTION 4

SITE

4.1 PHOTO DOCUMENTARY


Chrystler crescent


Chrystler crescent


Chrystler crescent


Chrystler crescent


Chrystler crescent


Chrystler crescent


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive


AZ berman drive

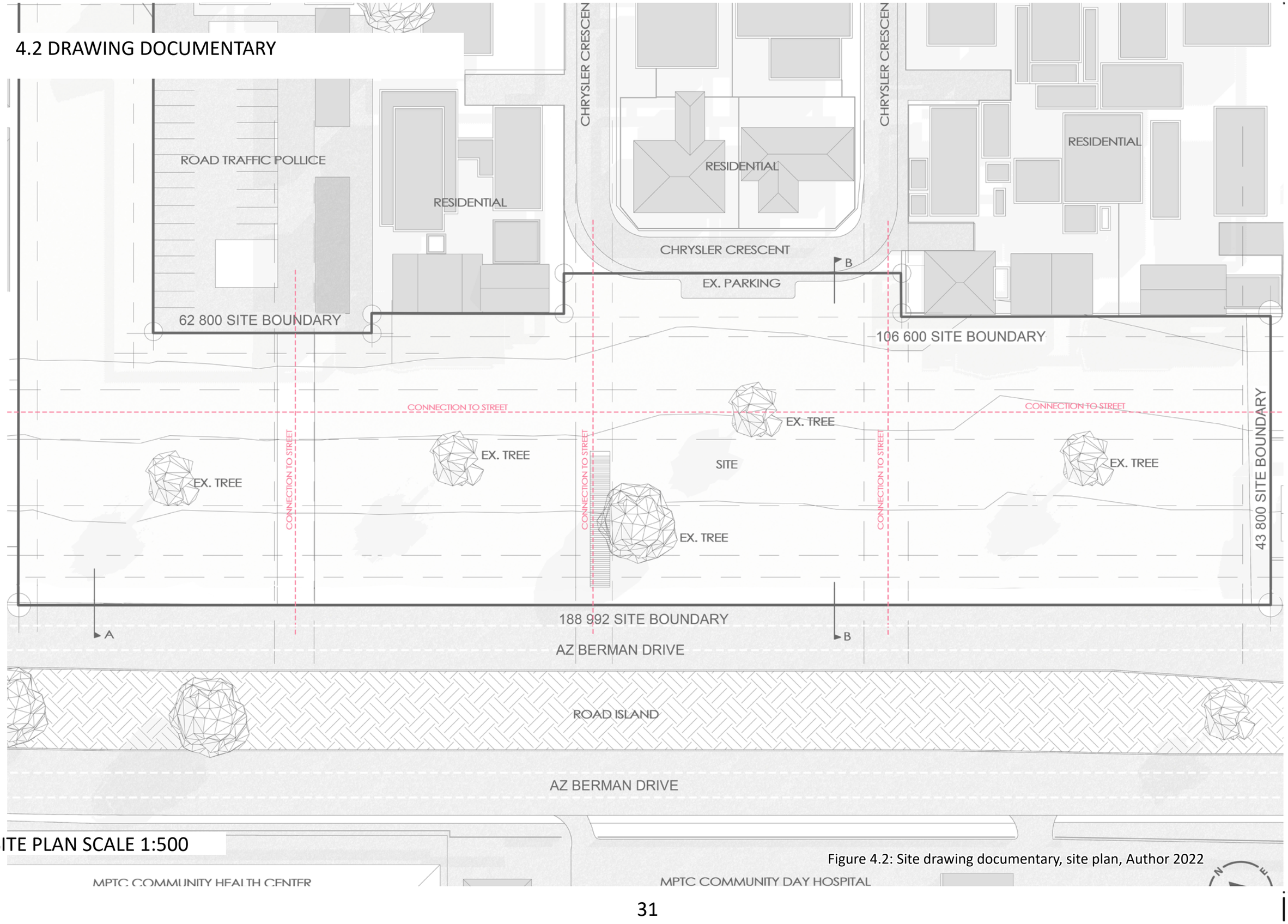

AZ berman drive


Chrystler crescent


AZ berman drive

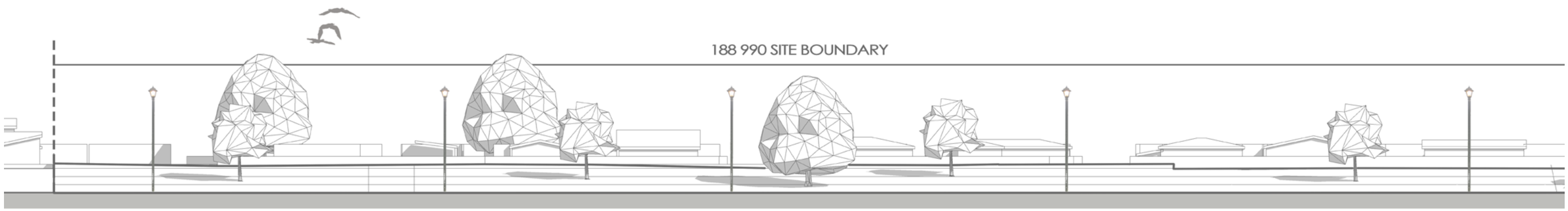
Figure 4.1: Site photo documentary, Author 2022

4.2 DRAWING DOCUMENTARY



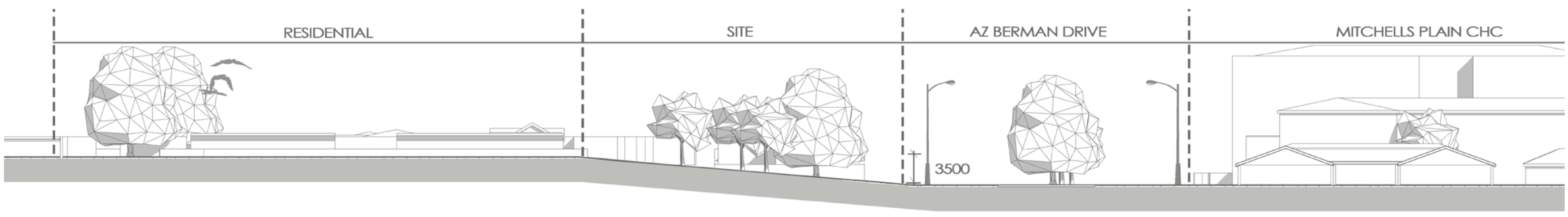
SITE PLAN SCALE 1:500

Figure 4.2: Site drawing documentary, site plan, Author 2022



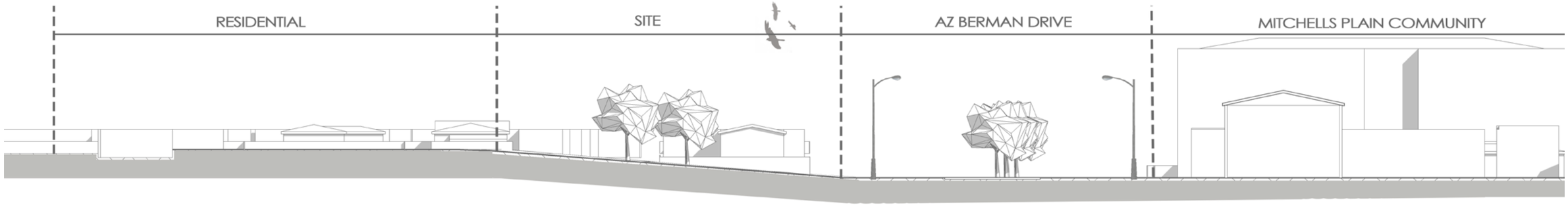
AZ BERMAN SECTION

1 : 500



CROSS SECTION A

1 : 500



CROSS SECTION B

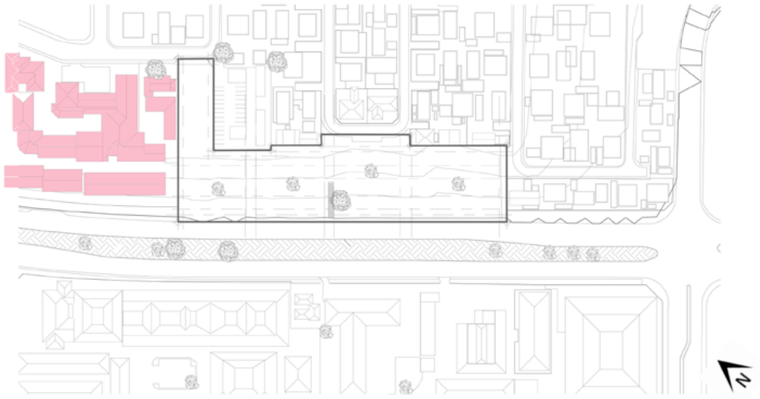
1 : 500

Figure 4.3: Site drawing documentary, sections, Author 2022

4.3 SITE ANALYSIS

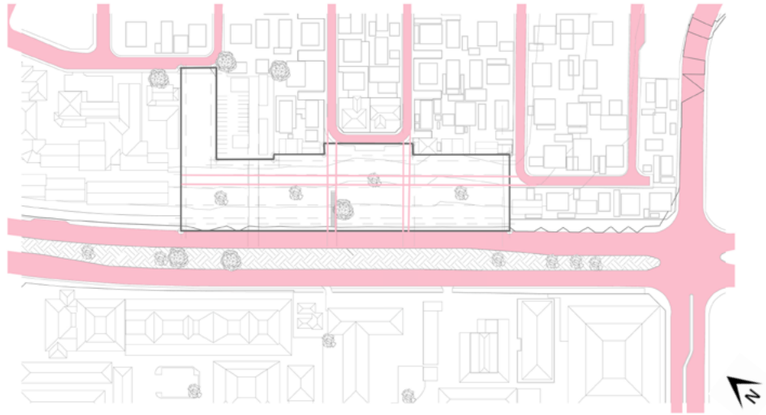
Frail care Center:

The center for frail care borders the northern site edge allowing opportunity for integration to existing healthcare services.



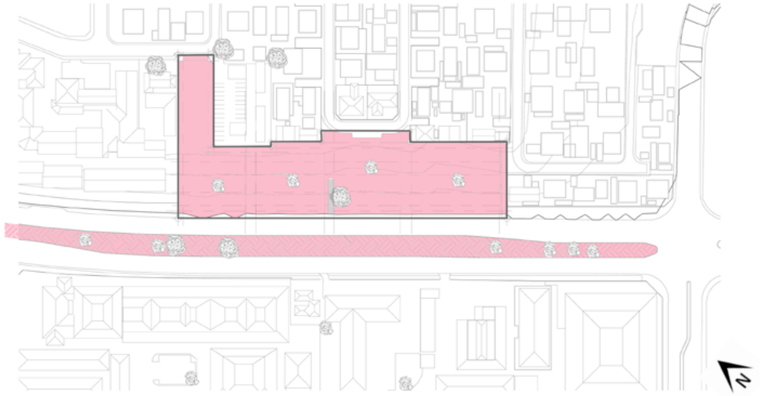
Accessibility:

The existing road network and pedestrian paths allows for generous accesibility to the site



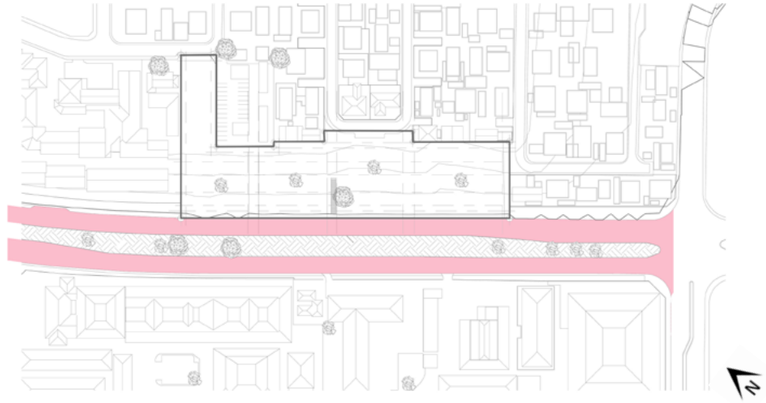
Vegetation:

The site is sloped with healthy vegetation allowing integration of the facility with nature.



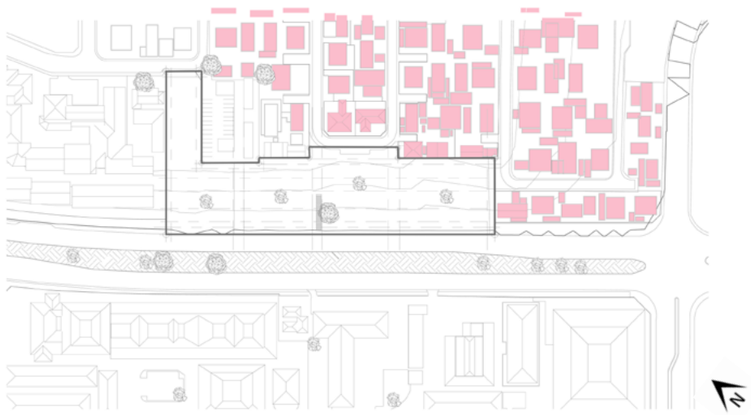
Main road:

The main road, AZ berman drive, is often congested with vehicular traffic and should be considered in the facilities public engagement.



Residential edge:

The north-east site boundaries are bordered by residential units allowing integration with the existing community through smaller scaled forms.



MPTC CHC:

The south-western site boundary faces the existing Mitchells Plain day hospital allowing a connection to the existing healthcare facility.

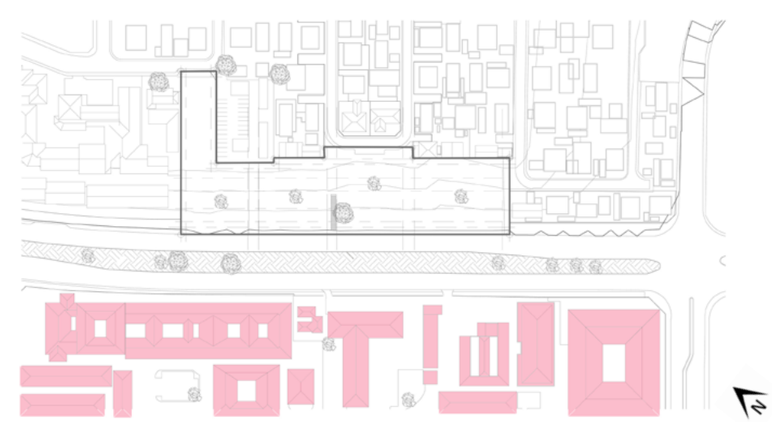
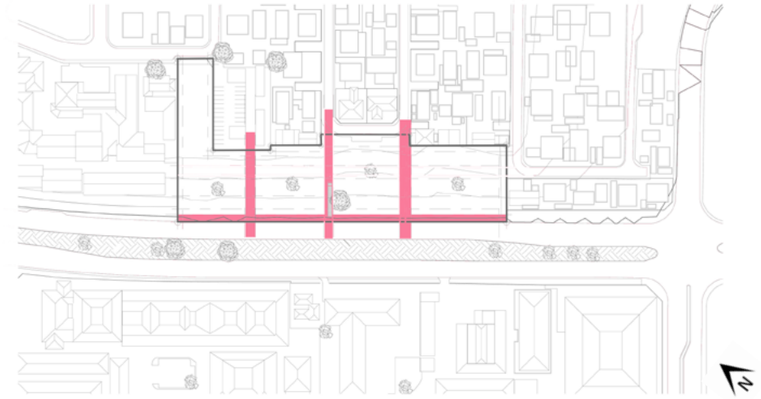


Figure 4.4: Site analysis diagrams, Author 2022

Figure 4.5: Site analysis diagrams 2, Author 2022

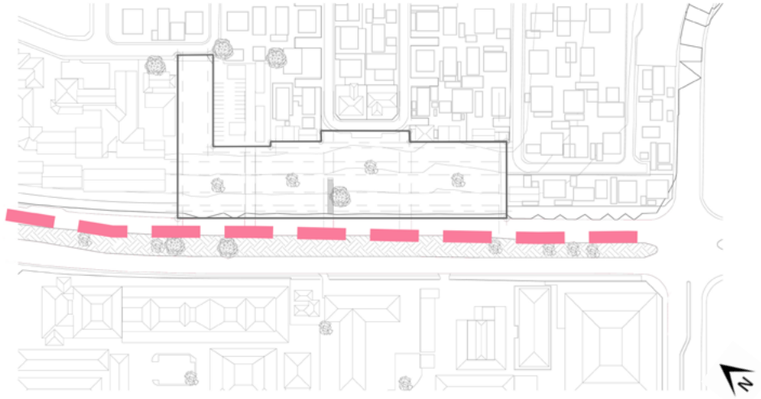
Activity:

The existing pedestrian paths brings activity to the site with residents of the area traversing through the site as a thoroughfare.



Noise Pollution:

The main road, AZ berman drive, is the main contributer to noise pollution.



Wind:

The prevailing south easterly winds effects are evident on site with existing vegetation showing signs of angled growth.

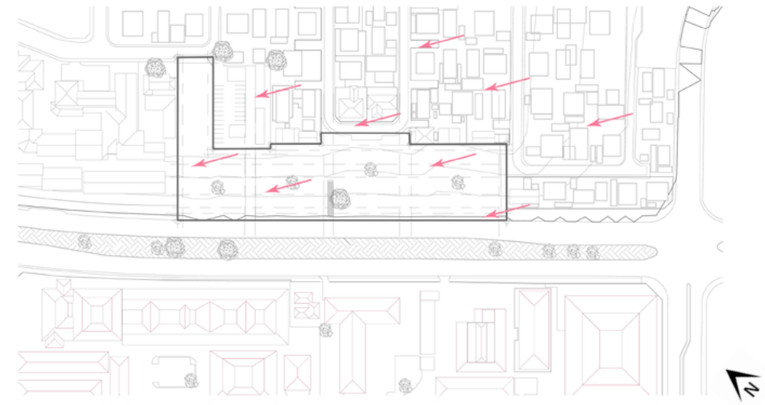


Figure 4.6: Site analysis diagrams 3, Author 2022

4.4 HISTORIC ANALYSIS

The site has alwasy remained vacant with hardening of pedestrian pathways occuring between 2004 - 2007. The site is used for pedestrian traversal toward the services in the town center and hosts soe playground equipment.

2022

2004

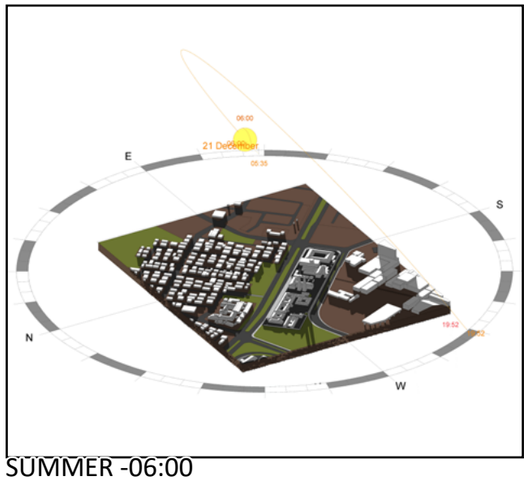
2008

2006

2015

Figure 4.7 : Historical analysis, Google earth, edited by author 2022

4.5 SOLAR STUDY WITH RELATION TO MASS



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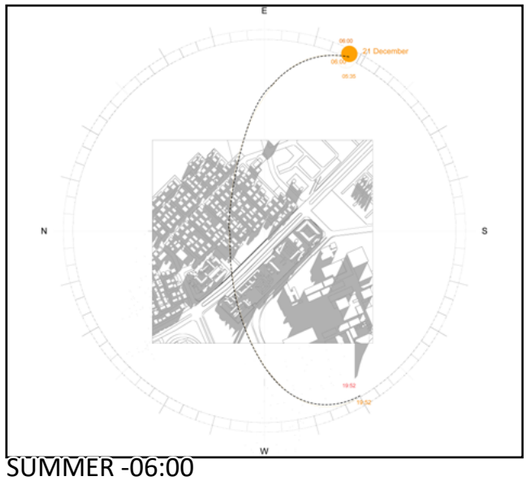

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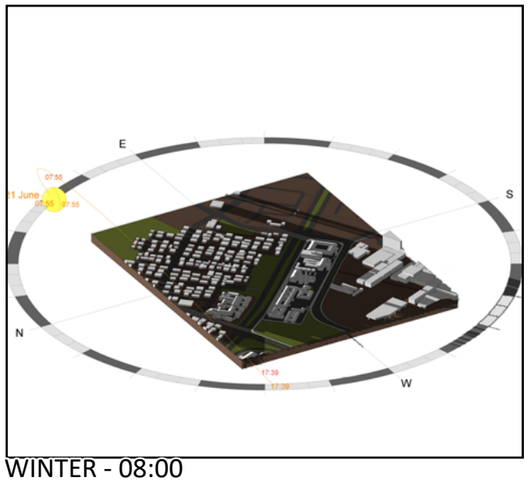
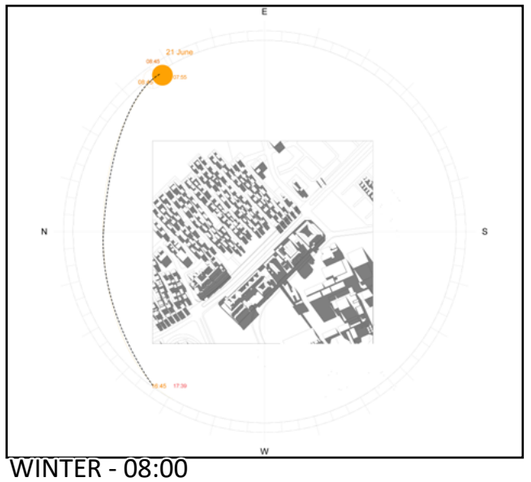
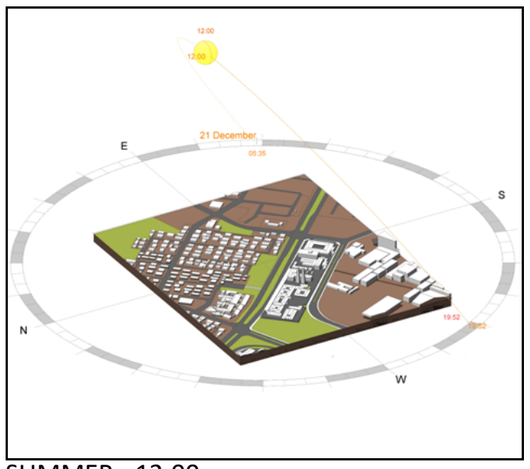


WINTER - 08:00



WINTER - 08:00



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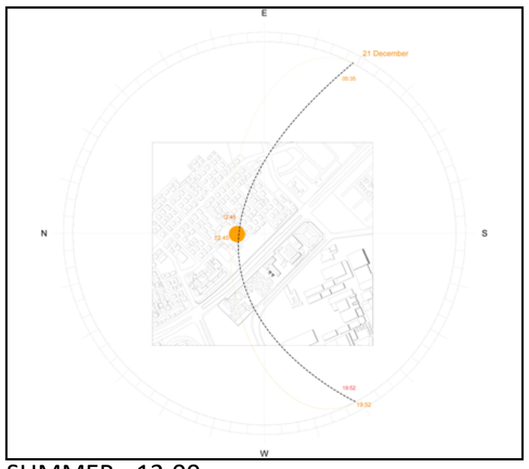

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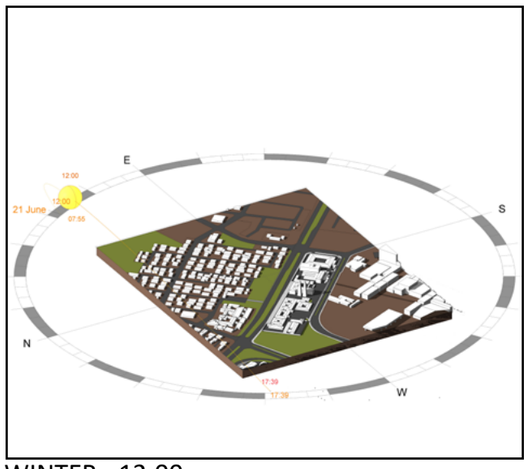

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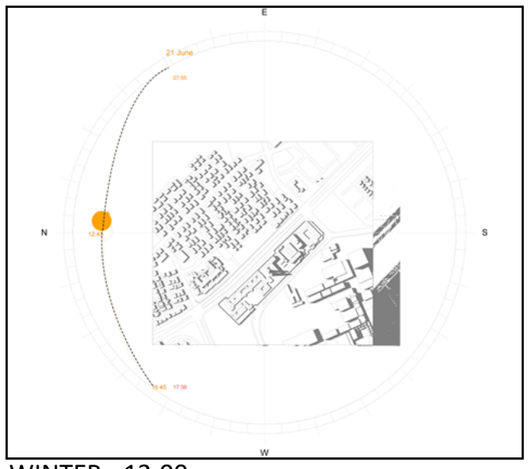

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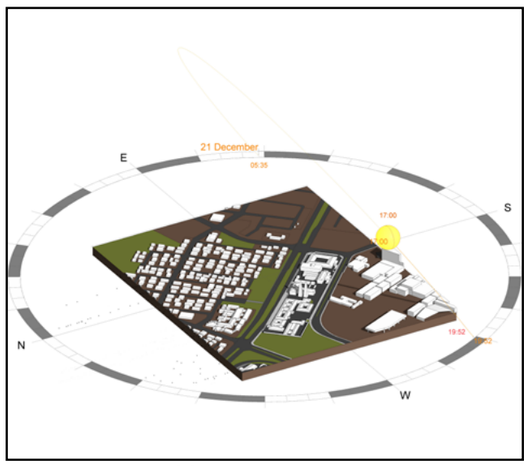

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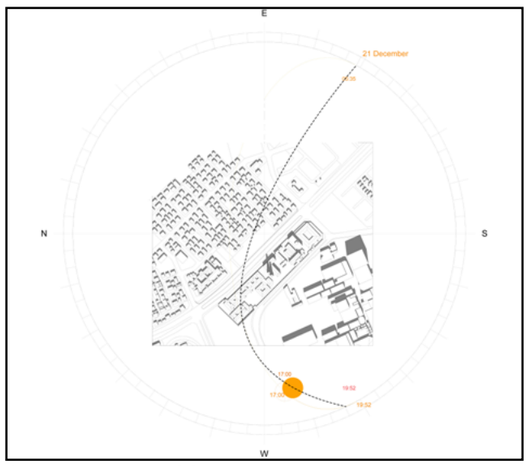

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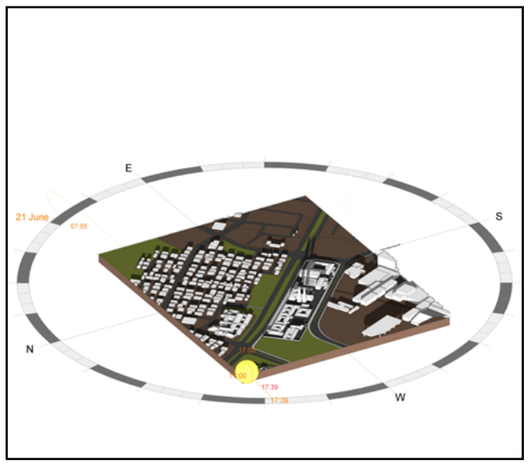

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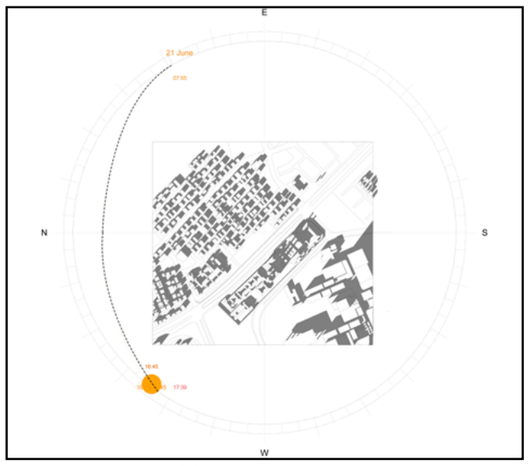
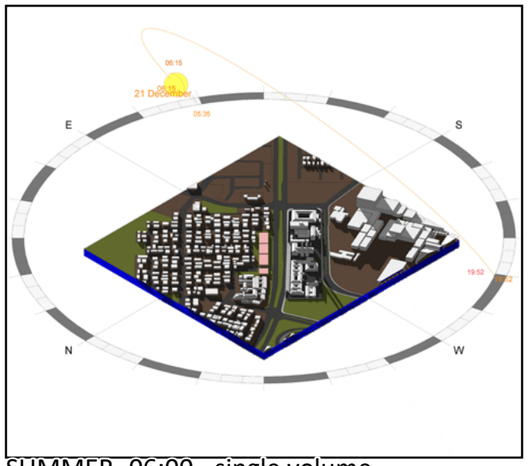
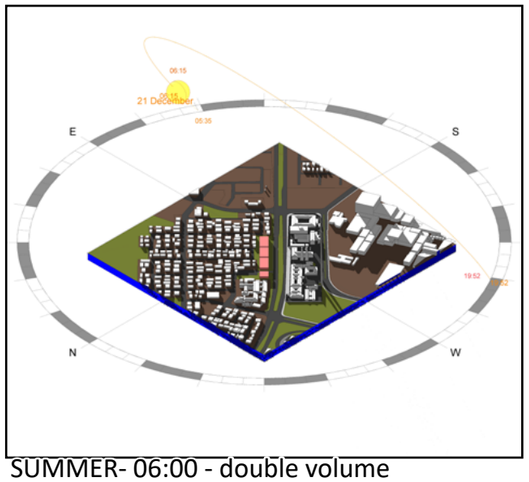


WANITER - 17:00

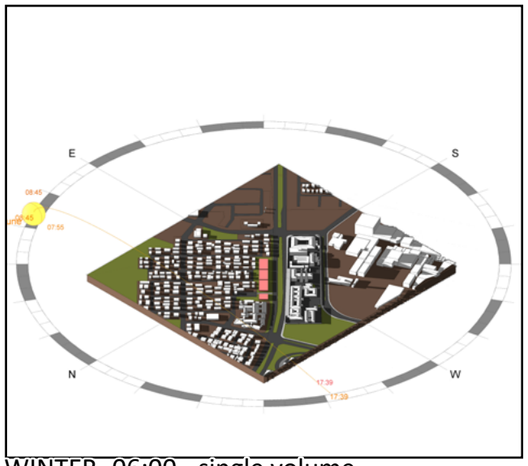
Figure 4.8: Sun analysis, Author 2022



SUMMER- 06:00 - single volume



SUMMER- 06:00 - double volume



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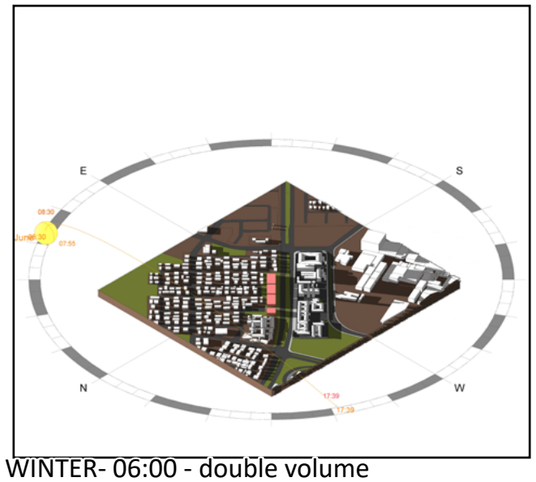

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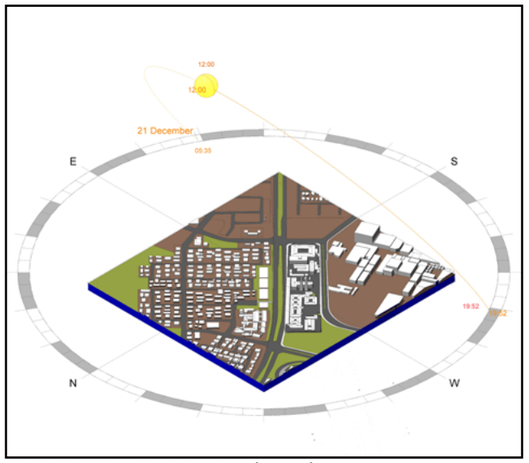

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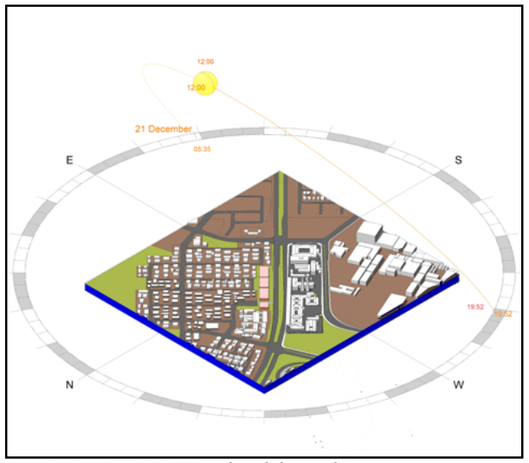

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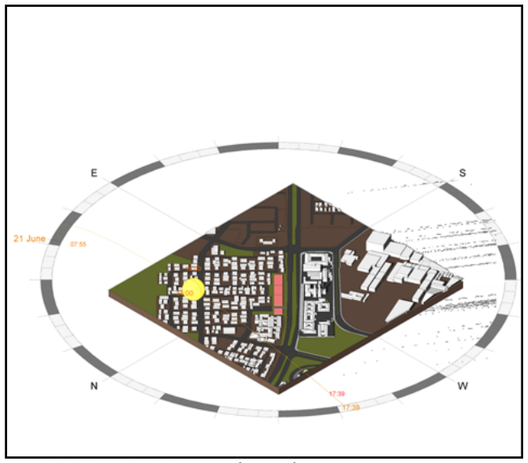

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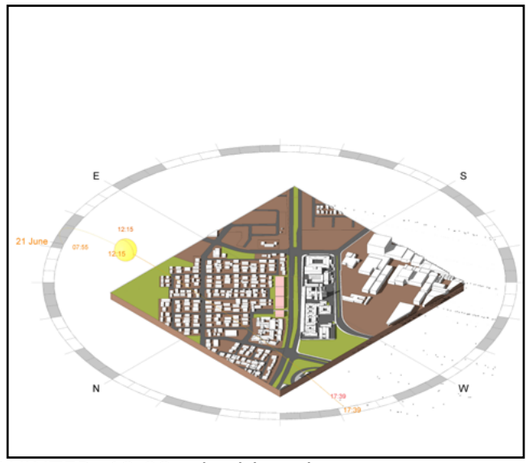

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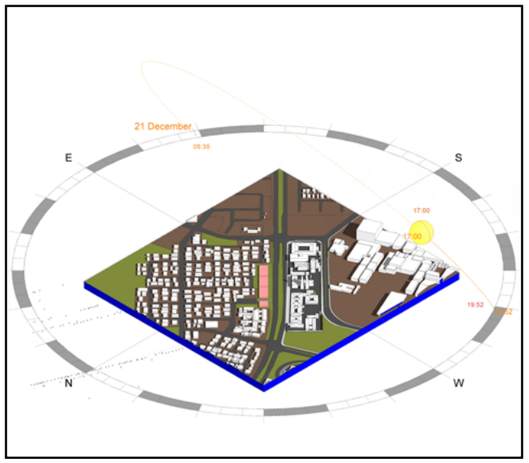

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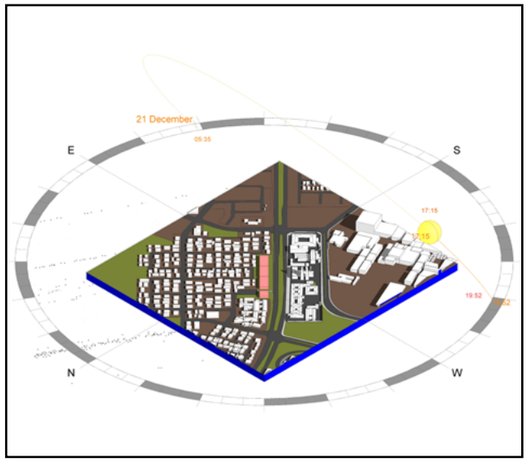

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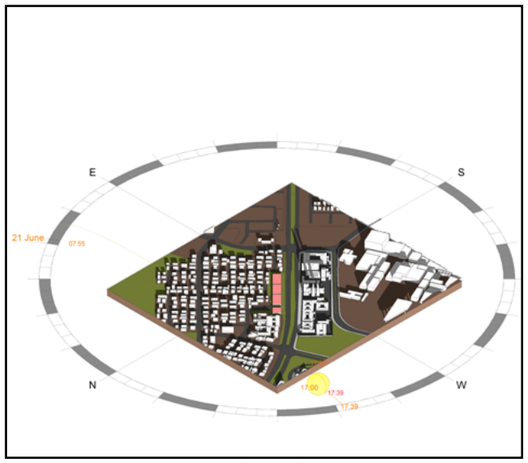

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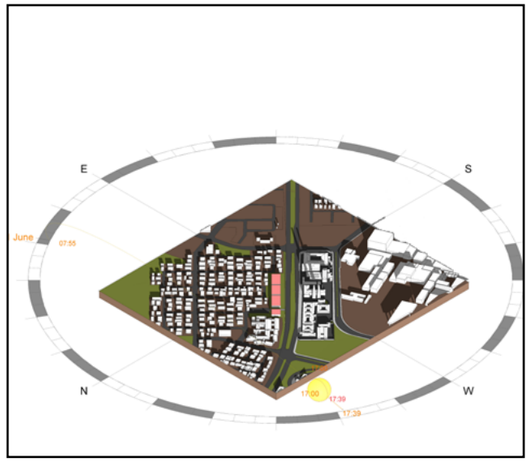

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Figure 4.9: Sun analysis, Author 2022

SECTION 5

PROGRAMME

5.1 SUBSTANCE ABUSE AND THE USER

There are no specific differences when trying to specify the user, as abuse is widely seen throughout the cape through different age groups, genders, locations, and ethnicity. The number of other and new drugs grows larger each day. With demand for the product, in a society whose anxiety and stress levels are increasing, the accessibility to these substances has become largely accessible to the public. Although there is no stereotypical substance user, there are typical signs of use being denial, periodic abstinence, and a self-image. Drug abusers suffer from the need to constantly use a substance, intensifying the addiction and becoming a constant desire and fixation in their lives.

As the drug addict's addiction grows, it becomes the focus of the addict's life. The obsession eventually becomes the addict's self-image. The denial ends, and the drug addict begins to spend most of their time associating with individuals who have the same interests. The addicts become alienated from true friends and family members who are not addicted to drugs. Addiction is classed as a psychological disease of the brain; it affects brain productivity and behavior. When substance abusers take part in consumption, it means subconsciously, the pleasures of the substance are outweighed by the consequences. Addiction can be treated through various treatments, support, and care.

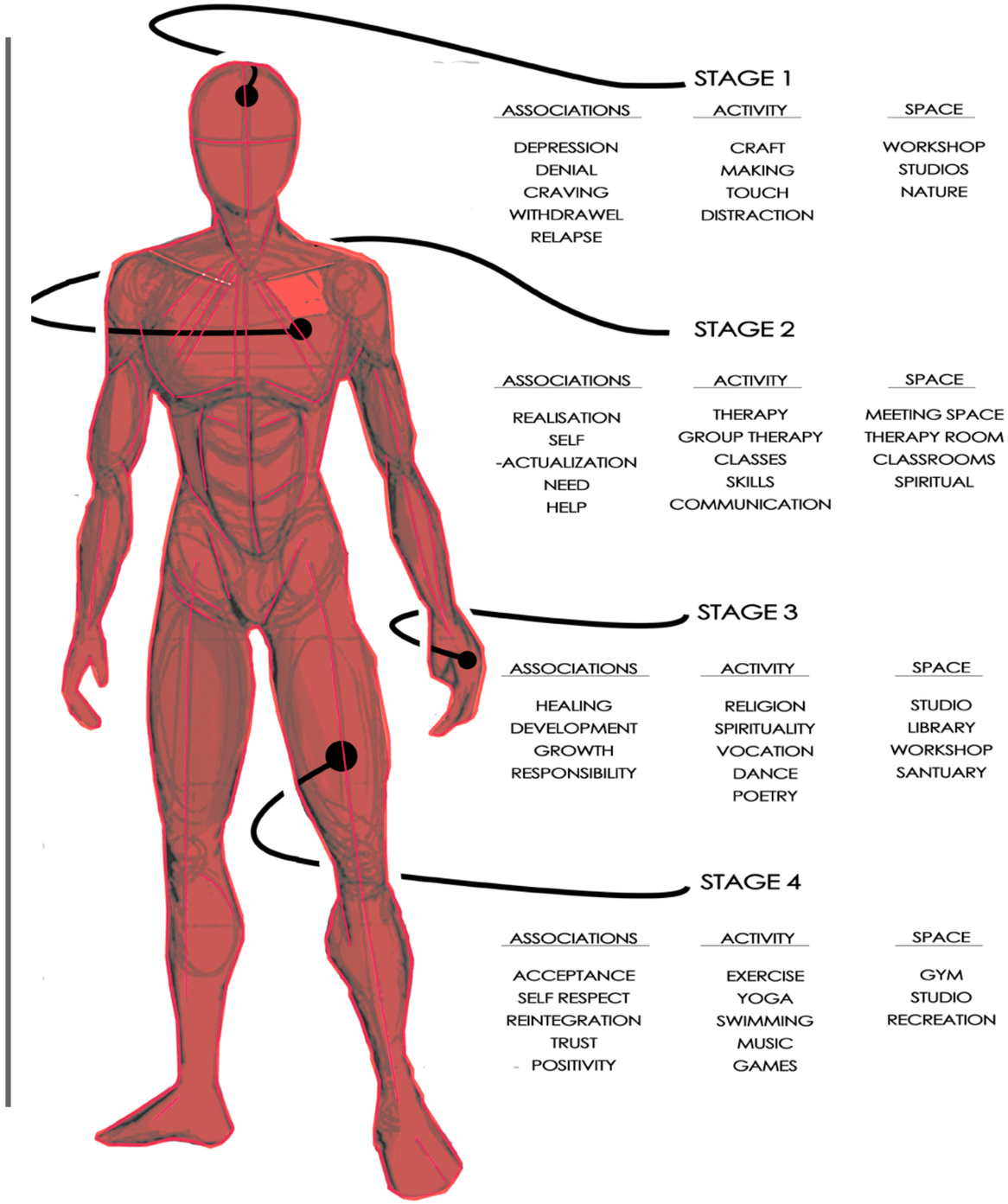


Figure 5.1: Stages of patient rehabilitation, Author 2022

5.2 UNDERSTANDING REHABILITATION ANATOMY

The first step in the rehabilitation of a patient is the assessment phase. At this stage, the level of addiction is determined to allow for registering of necessary treatment (Myers et al, 2009).

The second phase of treatment is termed detoxification (Myers, et al 2009). The process of detoxification is a two to four weeklong process. This stage requires privacy and careful attention to the stimulation of healing. Once complete, the patient is then integrated into the therapeutic community (Myers et al, 2009).

The third phase of rehabilitation requires the patient's movement to an outpatient facility. The exact outpatient facility is dependent on the stage of treatment and level of initial addiction (Myers et al, 2009). The facility hosts day-to-day treatment facilities and will involve patient participation over six weeks. This stage of treatment is the most important in the rehabilitation, architecturally associated with permanent housing for patients, which could house patients for six months (Myers et al, 2009). The patient participates in therapeutic community groups that involves group activities and social engagement.

The fourth stage of rehabilitation involves the patient being placed into halfway housing, spaces of occupancy which allow integration into society and enables the development of skills, practice, and knowledge.

The fifth phase is the final stage of rehabilitation. It involves patients being fully integrated into society, with continuous visits to the facility reassuring treatment and potentially aiding in the treatment of others (Myers et al, 2009).

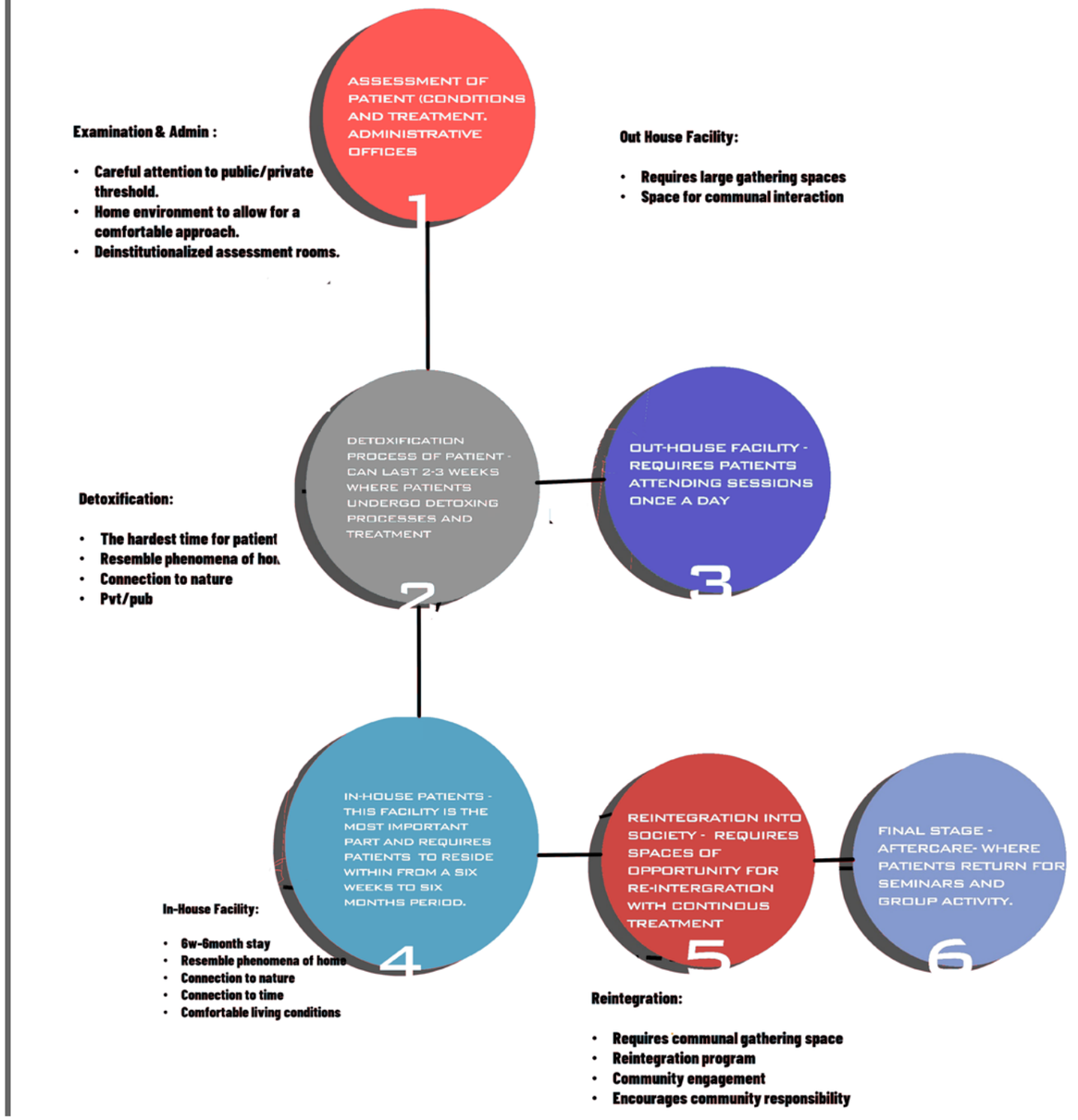


Figure 5.2: Rehabilitation anatomy, Author 2022

5.3 DESIGN CONSIDERATIONS

Examination & Admin : Requires Careful attention to public/private threshold. Creation of Home environment to allow for a comfortable approach. Design for de-institutionalized assessment rooms.

Detoxification: This is the hardest time for patients as the substance is taken away and withdrawal may occur. These spaces should include and resemble phenomena of home. To provide positive distraction a connection to nature is advised. The balance of private and public space must be considered. Architecturally the process of detoxification must be designed to allow the user maximum comfort and activity. Spaces should also be allocated to allow for activity stimulating the mind and body (Myers et al, 2009).

Out House Facility: Requires large gathering spaces for use by staff patients and community for therapy and discussion. These spaces should be well designed withs social interaction as the design focus

In-House Facility: Patients are required to live with conditions ranging from six weeks to six month stays. These spaces should resemble the phenomena of the home and community allowing patient reintegration at a residential scale. These spaces should also feel comfortable having strong connections to nature and time.

Reintegration: This Requires means of social interaction through activity. Reintegration can be achieved through group activity and community engagement fostering a communal sense of ownership. Sporting facilities, workshops, studios, music and recreation spaces are favored.

Aftercare : These spaces allow current patient and returning patient to engage on a social and therapeutic level sharing stories through social gathering and activity. These spaces should also allow for community engagement to foster a relationship. Activities such as theatre, drama, music, and sports are engaging toward aftercare.

5.4 ADRESSING THE CAPES REHABILITATION PROGRAMME

In mapping and understanding the anatomy of our rehabilitation facilities in the Western Cape, an issue of a segmented program is made visible. The programme of rehabilitation is separated into different facilities placed at a distance from each other. Patients and community members alike do not have the opportunity to experience a full range of services with ease of access. Within the western cape the process of detoxification often occurs at state funded hospitals and clinics with little attention being paid to the environment of detoxification. The process of rehabilitation that involves counselling and group therapy can be found in the rehabilitation facilities located on the outskirts of the Cap Flats communities. Currently there are three spaces that accommodate for reintegration in Mitchells Plaine spread through the community. This segregated program results in a low success rate of addiction treatment where the condition of relapse is aggravated by the opportunity of the individual to interact and move within their respective communities without guidance or support.

This paper proposes that integration of all rehabilitation programs under one facility. This allows a fluidity within the programme and reduces the chance of relapse. By combining the functions patients are then able to identify with others at different stages of rehabilitation providing a social and communal connection. The facility will incorporate the use of communal activities to foster a good relationship between the building and its context providing a platform for family relations and connection to scholar and pedestrian commuters. In order to help develop the skills of the community a skills development center and library will be included.

A healing environment through community engagement: In attempting to heal the users of a community through a community-driven rehabilitation. In using community-based therapy: 1) voluntary entrance into the programs. 2) reality-based group methods 3) using community-based recovering addicts as positive examples and therapists. 4) using structures of progress that encourage elevation and advancement (CSAT, 2005).

Having voluntary entrance: The notion of forcing care of the mind on a user can often result in the treatment having little to no effect as the patient believes they do not need the care. Allowing voluntary entrance attracts patients who have a sincere desire to overcome the addiction by demonstrating user motivation toward a new life.

Using reality-based group treatment: This treatment method involves the patient engaging in real life situations, sharing ideas and memories and exploring drug-free commitments. This allows users to engage with the therapy on a more personal level allowing acceptance of the addiction. Even though the patient might agree to the habit, further engagement is needed to aid the patient in believing in rehabilitation. The therapy also allows patients to engage with other patients as co-therapists (CSAT, 2005).

Recovering as Therapy: In allowing a social engagement between those who have overcome and are trying to maintain their success with those who seek aid. This method engages addicts with those who know life when addicted and have challenged it. Secondly, these Co-therapists see how the healing process works and can be magnifiers. Finally, the co-therapist knows how to manage and look past tricks in addicts allowing them to form a better connection.

Treatment organisation: In allowing an open-ended system where patients will enable themselves to progress through the promotion and increased responsibility through their treatment. This produces self-growth within the patient and provides for social maturity and learning skills that can be used in the larger community and city context.

Creating community space and place: Architecturally the provision of space invites the user and allows the community to engage with it, inviting conversation between the community and the haling of the individual by giving these spaces phenomena of the domestic environment through furniture, layout and material (CSAT, 2005).

5.5 REHABILITATION PROGRAMME

REHABILITATION PROGRAMME

	ADMINISTRATION		
	Room Name	#	publ/priv
ADMIN/THERAPY			
	Reception	1	public
	Waiting room	1	public
	Admissions office	1	private
	Family visitation	4	public
	Archive/storage	1	private
	Security room	1	private
	Control room	1	private
	Offices (NGO)	3	private
	Ablutions	2	private
	Meeting room	2	private
	Seminar room	1	private
	Staff Lounge	1	private
	Staff Storage	1	private
LAboratory			
	Examination rooms	3	private
	Blood test / Urinalysis	1	private
	Laboratory	1	private
Psychiatry			
	Therapy rooms	4	private
	Psychiatrist office	2	private
	Clinical Psychologist room	1	private
	Clinical Psychologist room	1	private
Services			
	Services	1	private
	Circulation	1	private

	DETOXIFICATION		
	Room Name	#	publ/priv
ADMIN/THERAPY			
	Admin/storage	1	private
	Records room	1	private
	Emergency room	2	public
	Examination room	2	public
	Drug store	1	private
	Control room	1	private
	Nurse station	1	private
	Clinic	1	private
ACTIVITY			
	Activities room	1	public
	Studio	2	public
	Communal lounge	1	public
	Reading room	2	public
Resid.			
	Female room	1	private
	Male room	1	private
Services			
	Services	1	private
	Circulation	1	private

	IN-HOUSE OUT-PATIENT FACILITIES		
	Room Name	#	publ/priv
AD			
	Seminar room	2	private
Serv.			
	Services	1	private
	Circulation		private

	IN-PATIENT		
	Room Name	#	publ/priv
Residential			
	Male room	*	private
	Female room	*	private
	Juvenile room	*	private
	Ablutions	3	private
	Communal space	2	private
ACTIVITY			
	Prayer room	1	private
	Caffeteria	1	private
	Reading room	3	private
	Activities room	2	private
	Studio	2	private
	Communal lounge	1	private
	kitchen	1	private
Services			
	Services	1	private
	Circulation	1	private

	RE-INTEGRATION		
	Room Name	#	publ/priv
Private			
	Activities room	1	private
	Social room	1	private
	Seminar room	2	private
	Ablutions	2	private
	Play therapy	1	private
	Music studio	1	private
	Art studio	1	private
Community			
	Reading room	2	public
	Library	1	public
	Classroom	2	public
	Skills center	1	public
	Computer lab	2	public
Services			
	Services	1	
	Circulation	1	

5.6 SITE SPECIFIC PROGRAMME

Site		
Room Name	#	publ/priv
Cad Laboratories	1	public
Library	1	public
Commercial	10	public
Community centre	1	public
Daycare	1	public
Music studio	1	public
Art studio	1	public
Reading room	1	public
Classroom	4	public
Skills center	1	public
Aftercare housing	8	public

SECTION 6

DESIGN DEVELOPMENT

6.1 DESIGN RESPONSE

The design proposal aims integrate its programme into the surrounding context to foster new relationships within the community, namely:

- Patient & Rehabilitation
- Community & Rehabilitation
- Patient & Community

The first introduces design which extends beyond singular function. The rehabilitation is designed to allow for patients, staff and community members to acess services and community orientated spaces on the front, softening the street edge. A primary patient access point is located toward the back to allow for private entry of patients assumig an ethical position toward patient arrival.

Internally the intervention aims to connect different patient groups through a progressive programme. A disbursement of the activity is introduced to stimulate a real-life simulation and re-integration programme.

further the theraputic design principles are applied to challenge the institutional approach of programme. ultimately the rehabilitation becomes a capsule of therapy which extends itself to the community and its residents.

6.2 DESIGN CONCEPT

The layout of the rehabilitation attempts to deinstitutionalize the planning of healthcare facilities by providing freedom of movement and activity to the patient through a private internal courtyard which runs through the length of the building. The courtyard emphasizes the interior functions of the spaces which occupy its edges and becomes a living space where activity and social gathering flourish. The design makes use of forms being definitive spaces of function held together by a courtyard providing a connection to nature and evokes an urban and communal atmosphere supplemented by attached spatial phenomena.

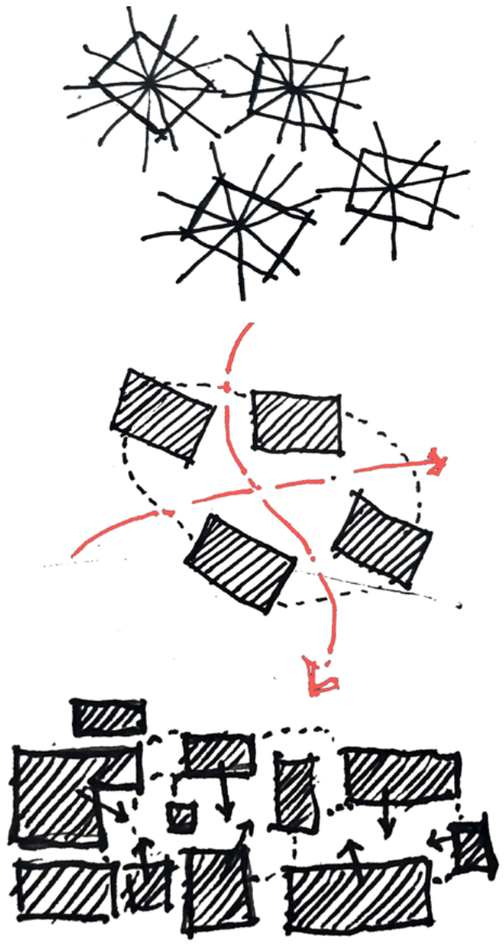


Figure 6.1: Concept diagram, Author 2022

6.3 SITE VS PROGRAMME

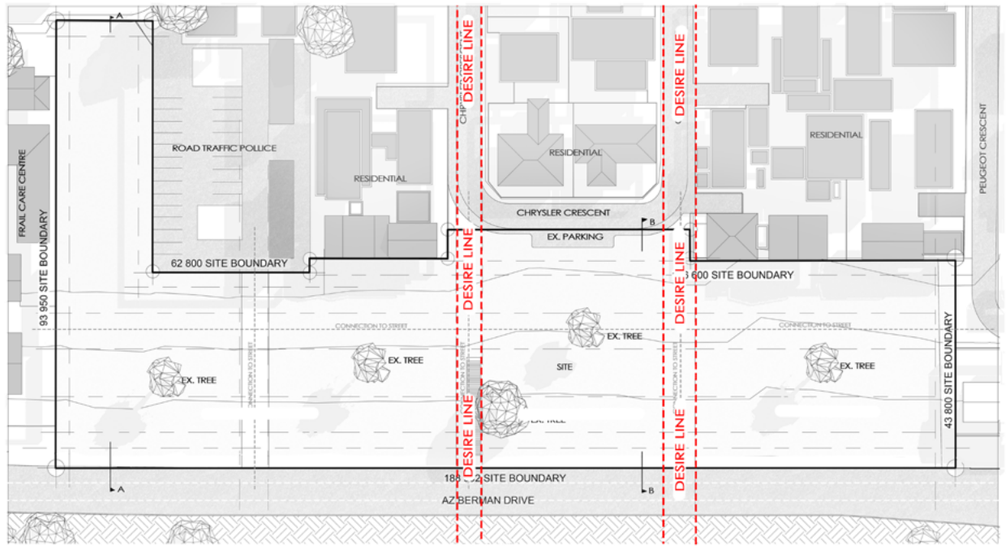


Figure 6.2: Site vs program 1, Author 2022

1. The existing roads running vertical to the the site are extended through the site as desire lines. These are proposed as formalised pedestrian pathways resultantly fragmenting the site into three parts.

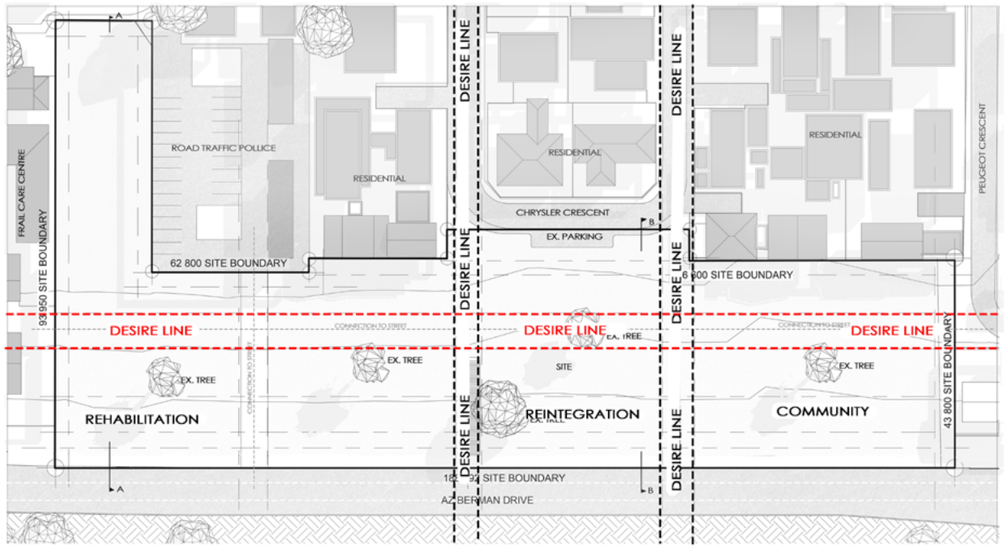


Figure 6.3: Site vs program 2, Author 2022

2. The existing road running horizontal to the the site is extended through the site as a desire lines. This is proposed as formalised pedestrian pathways and will act as an interior urban road linking all activities of the site through movement. The desire line further fragments the site allowing disbursement of functions.

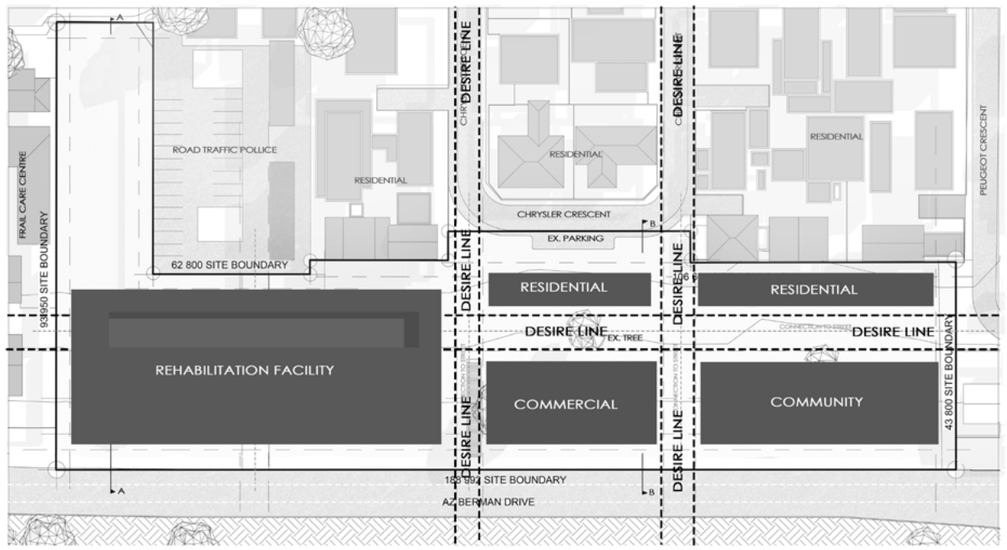


Figure 6.4: Site vs program 3, Author 2022

3. Massing is then placed in accordance with functions and the flow of the rehabilitation anatomy. The main rehabilitation houses most of the programme with the halfway housing being placed externally toward the top of the site to allow integration with the existing housing.Reintegration facilities in the form of commericial facilities are placed externally to allow a connection to the public and attract pedestrians.

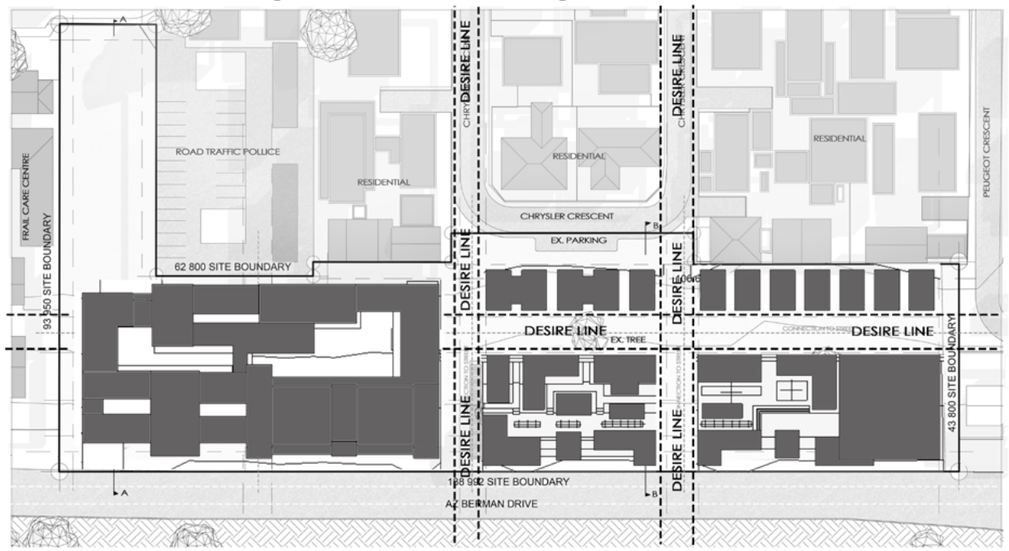


Figure 6.5: Site vs program 4, Author 2022

4. The massing is then developed to allow for movement throughout the site again usuing the horizontal desire line as an anchor point in informing the pedestrian circualtion and flow of programme within the rehabilitation. The right hand side of the site has been zoned for communal activites such as a communal hall and skills and trade development facilities.

6.4 SITE DESIGN - SPATIAL DEVELOPMENT

1. Existiing site

2. Addition of formalised pedestrian pathway created through using desire line.

3. Addition of landscaped pathways and level changes

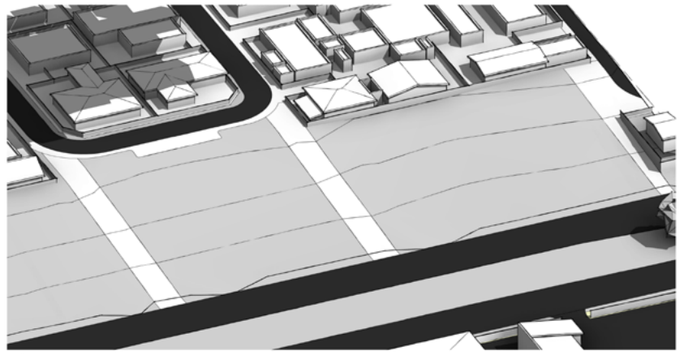
4. Addition of formal commericial spaces with residential component above to activate new pedestrian street.

5. Addition of community orientated programme including workshops and skill development centres, with residential component above.

6. Addition of formal community gathering space

7. Rehabilitation programme extension: Reintegrative communal aftercare housing addition to new pedestrian street edge to integrate patients into community and activities. Red is indicative of workshop s[ace where blue is residential

8. Rehabilitation programme extension: Reintegrative aftercare housing addition to new pedestrian street edge to integrate patients into community and activities. Red is indicative of workshop s[ace where blue is residential



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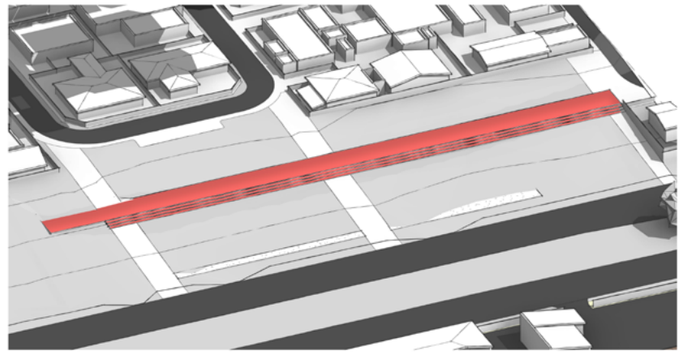

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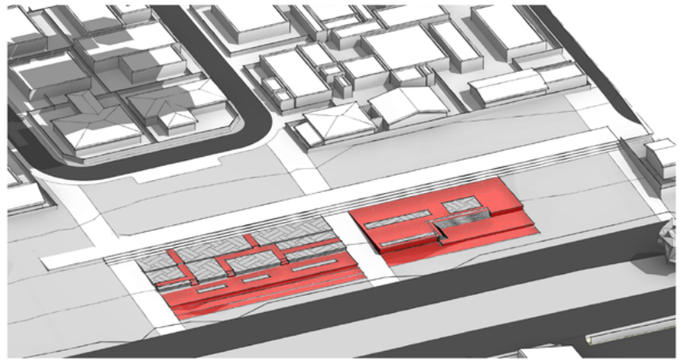

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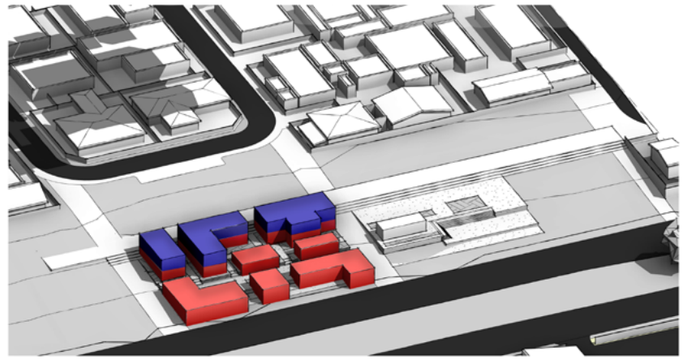

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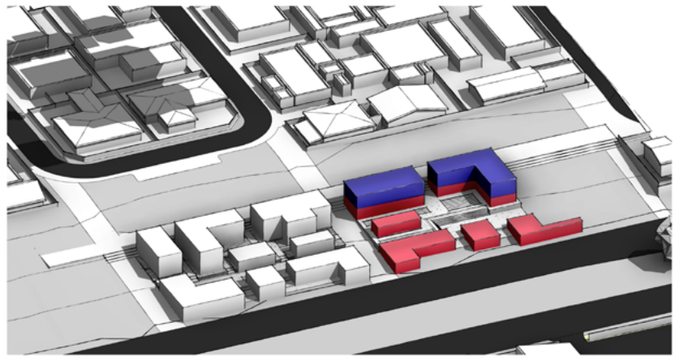

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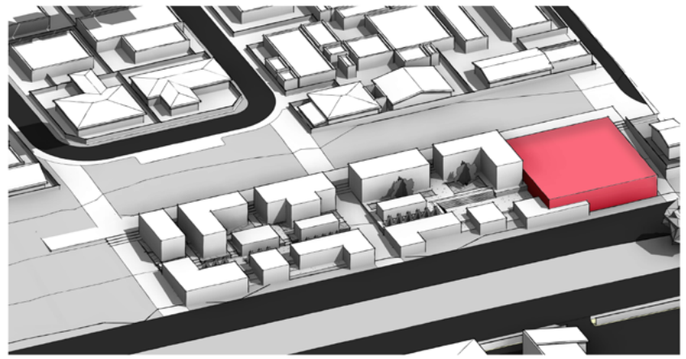

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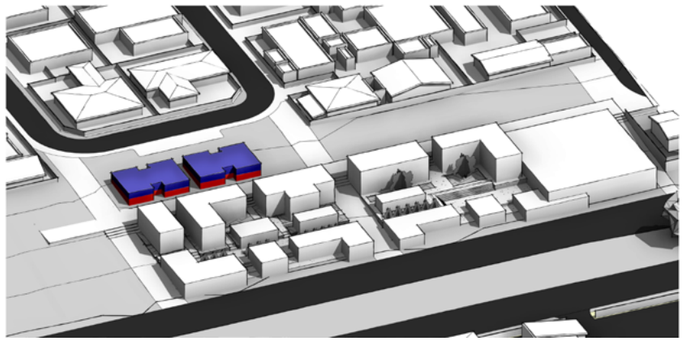

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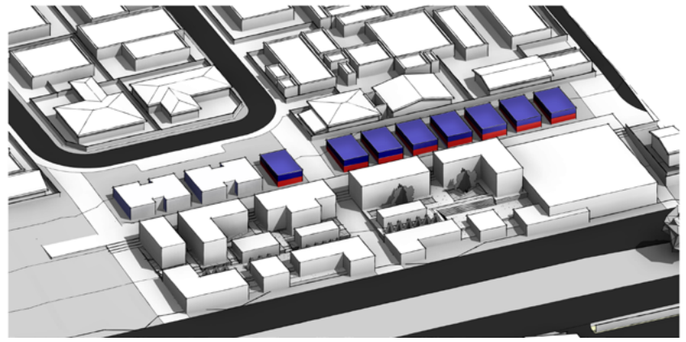

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Figure 6.6: Site spatial development, Author 2022

6.5 REHABILITATION PROGRAMME LAYOUT

Ground storey:

The design of the ground floor is based on its relationship to the street edge and the public. The spaces on the street cater for the needs of the public by providing therapy consulatation, NGO offices, and public service offices with the inclusion of a clinic for drug related issues. The stafff and visitor entrance is also located on this edge with the family visitation zoe located looking toward the street. these functions act as a buffer from the internal rehabilitation functions and residency.

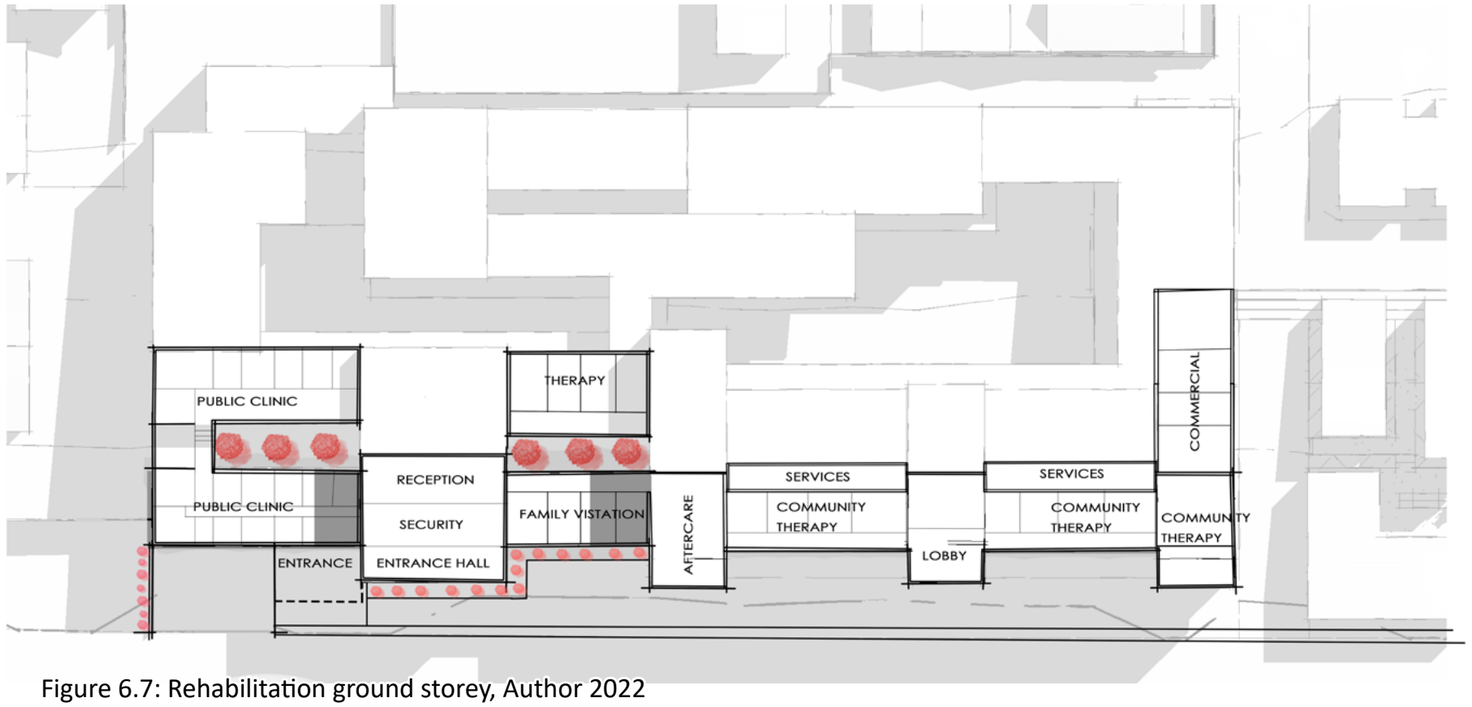


Figure 6.7: Rehabilitation ground storey, Author 2022

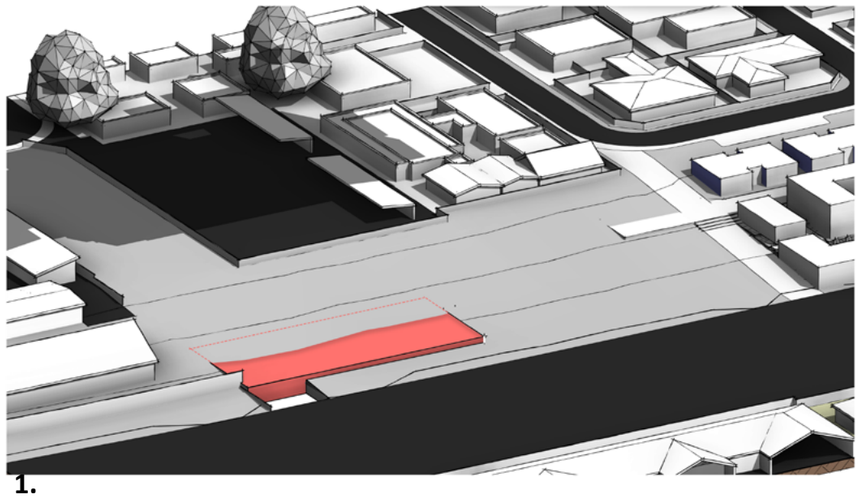
First storey:

The first storey is given to the patient through the use of a connective internal couryard. The courtyard acts as in internal/external secondary circulation route which extends itself into becoming a platform for theraputic activity. The courtyards specific functions support the internal funtions of the surrounding forms. Within the courtyard, patients are able to acess activities, daily therapy sessions and classes. The first storey is layed out to allow minor seperation of activity where detoxification and supplementing activities are placed to the left of the courtyard, with in-patient stay facilities located on the right.

Figure 6.8: Rehabilitation first storey, Author 2022

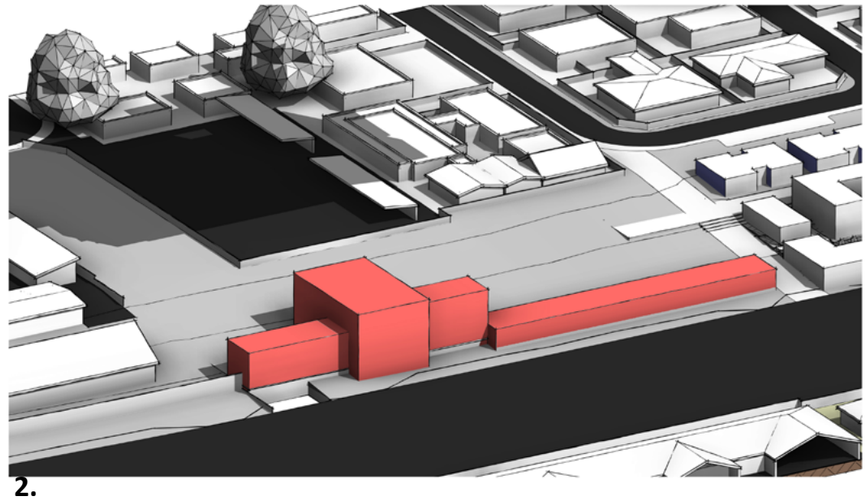
6.6 REHABILITATION DESIGN - SPATIAL DEVELOPMENT

1. Addition of parking for visitors and staff members



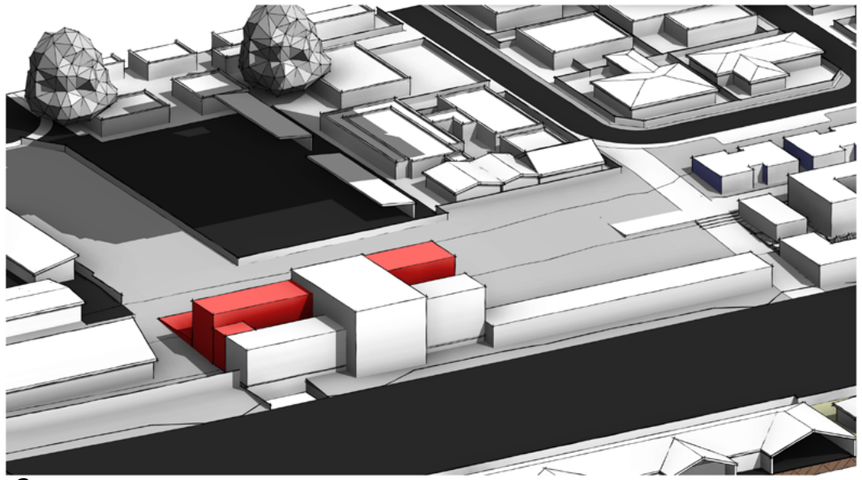
1.

2. Addition of communal clinic for drug related treatment and to ease stress encountered by existing facilities. Addition of formal staff and visitor entrance. Addition of community theraputic layer.



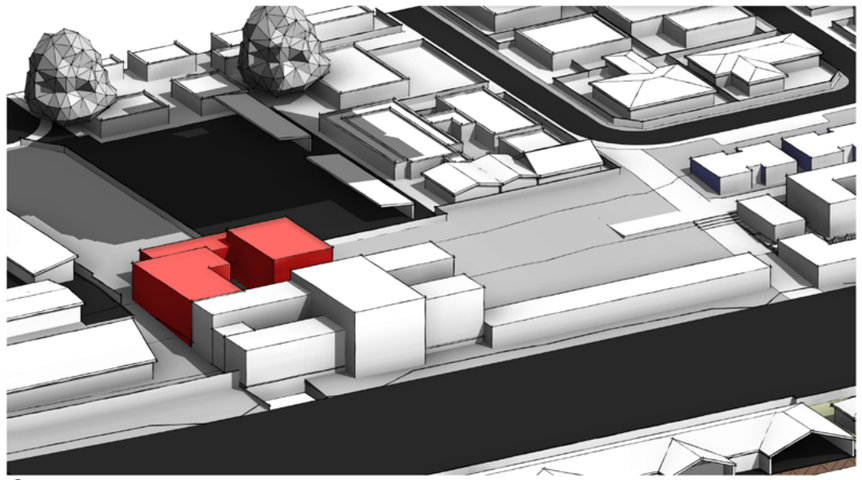
2.

3. Addition of internal clininc and Internal theraputic facilities.



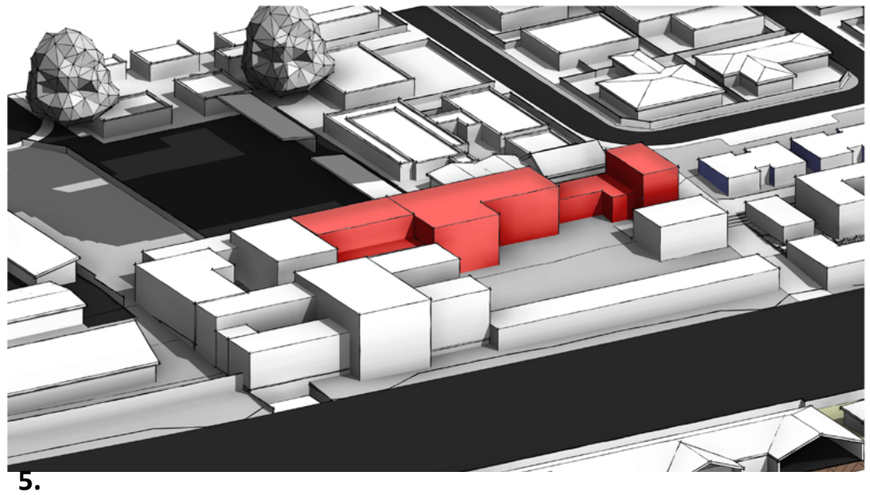
3.

4. Addition of patient private entrance, Administration, Processing and Detoxification residency.



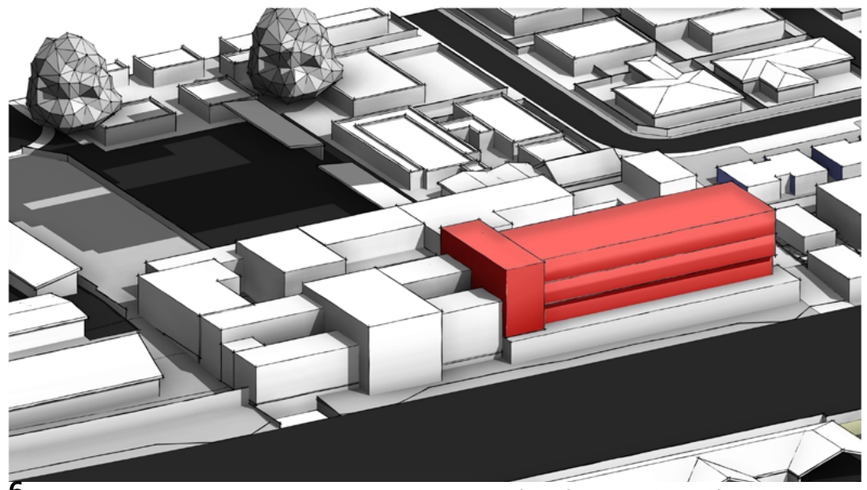
4.

5. Addition of activity spaces (Library, gym, kitchen, Dining, workshops, contemplation)



5.

6. Addition of In-Patient residential facilities & vertical circulation.



6.

Figure 6.9: Form development, Author 2022

6.7 CIRCULATION OF PROGRAMME

1. The Pedestrian

Existing:
In this context the pedestrian is reffered to as a non-resident of Mitchells plain. The pedestrians are those who use the services and transportaion of Mitchells plain to commute. Currently there is no relationship between the site and pedestrians.

Proposed:
By adressing the main street egde with urban activity and commericial functions, pedestrians are invited to interact with the site and its functions. By placing services (clinic, NGO offices, counselling offices) on the edge of the rehabilitation functions become accessible to the public forming a relationship.

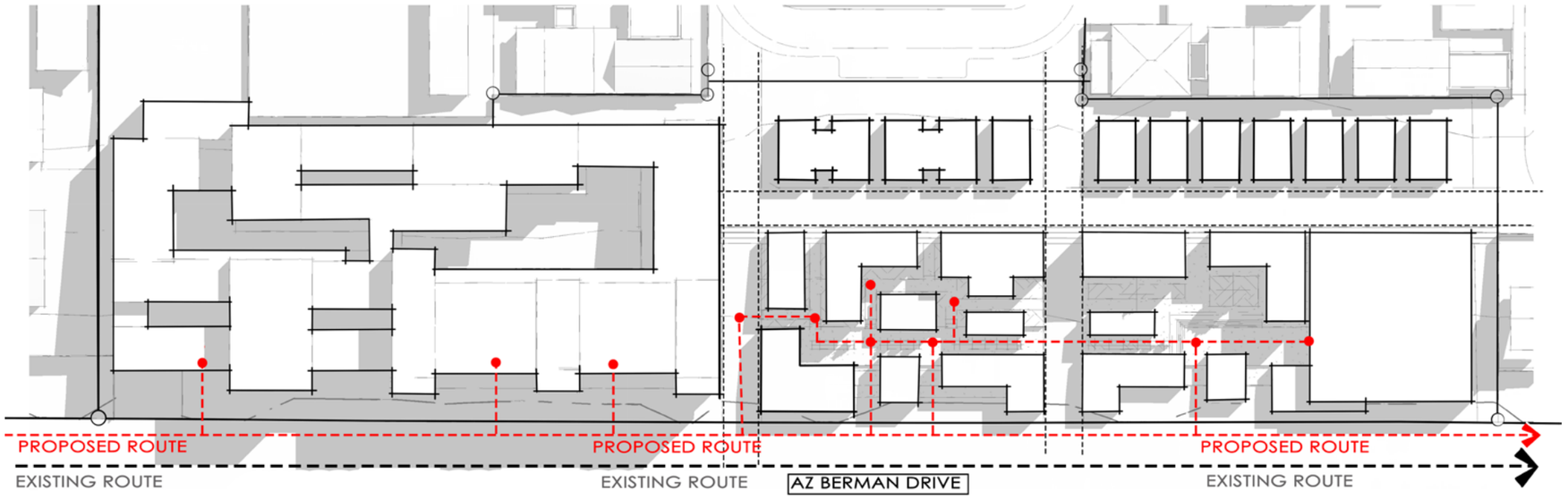


Figure 6.10: Pedestrian circulation, Author 2022

2. The Community

Existing:
In this context the community is reffered to as individuals who occupy or are residents of Mitchells Plain and the sites context. Currently the site is used by the community as a pedestrian path for residents who traverse the site to cross over the main road, Az Berman.

Proposed:
In order to promote a positive acceptance of the intervention, a relationship must be formed with the community. The rehabilitation facility offers services and healthcare treatment to residents toward the front of the site and proposed commercial and communal activity spaces are proposed to allow for interaction between residents, pedestrians, and patients at who are being re-integrated.

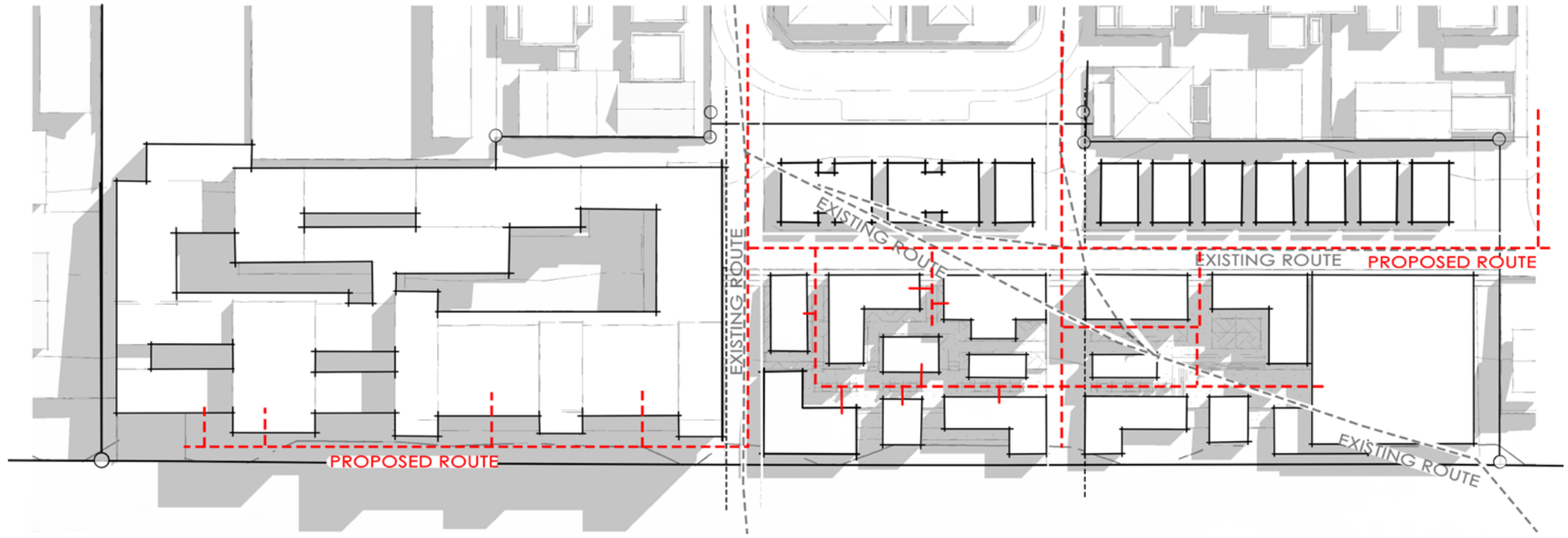


Figure 6.11: community circulation, Author 2022

3. The Staff and Visitor

Staff:
Staff are able to acces the rehabilitation through the basement parking or through the street facing entrance. staff have access to all facilities and have an internal residence component.

Visitor:
Visitors refers to a mix of those who are visiting patients and those who are visting the rehabilitation centre to attend seminars or meetings. Visitors are able to acces basement parking or enter through the street facing entrance. Visitors have access to family visitation rooms, Ablutions and seminar rooms.

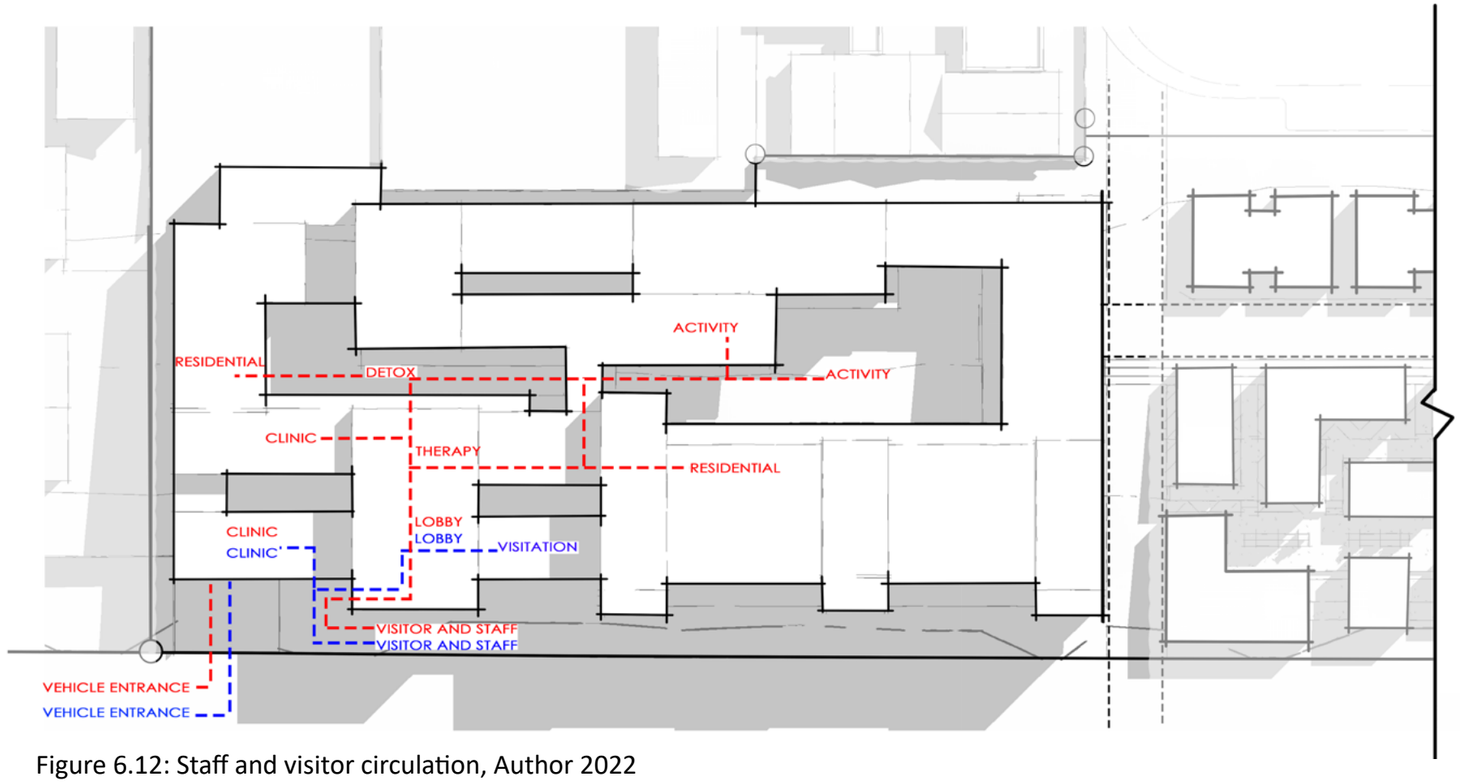


Figure 6.12: Staff and visitor circulation, Author 2022

4. The Patient

Proposed:
The layout of the prrogramme is governed by the progression of the patients treatment whilst still allowing the patient freedom to socialize and move freely through the internal courtyard space, acting as an extension of the horizintal desire line and an anchor of the internal functions.

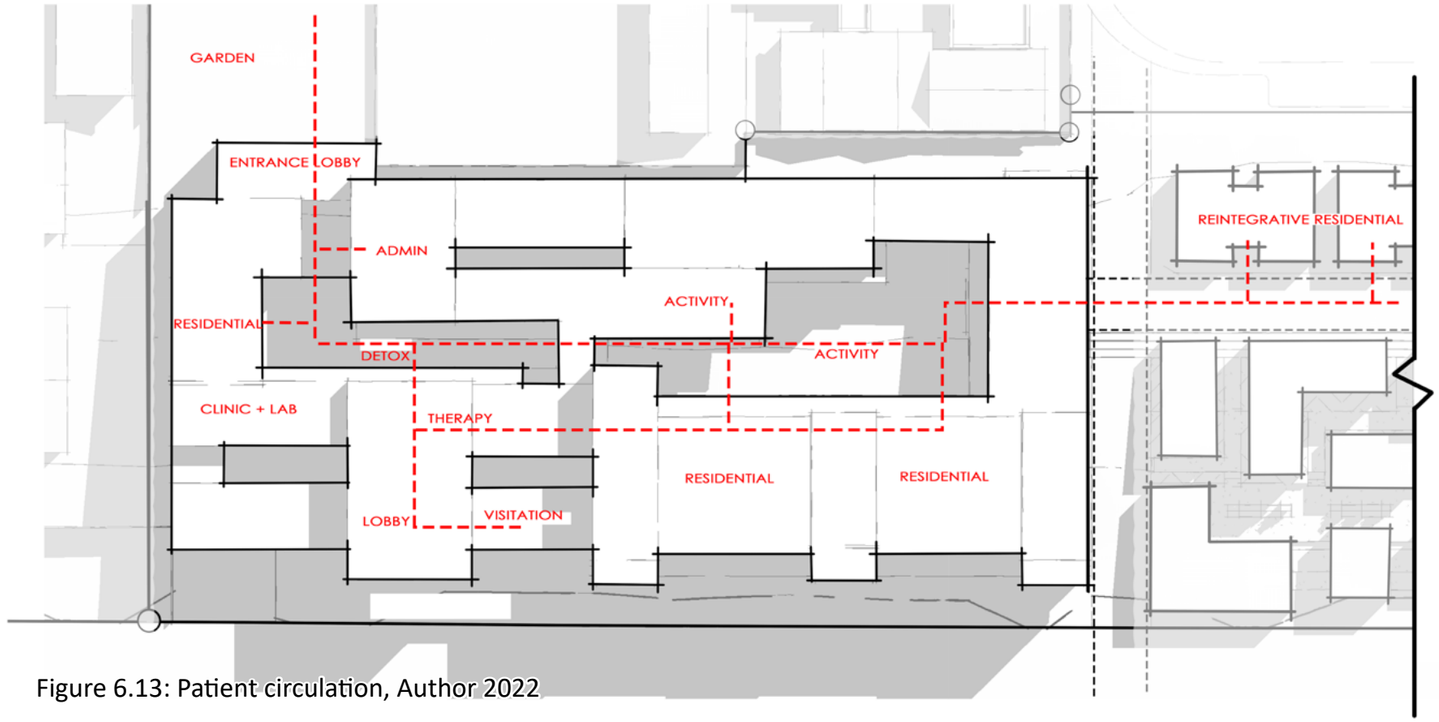


Figure 6.13: Patient circulation, Author 2022

SECTION 7

CONCLUSION

7.1 CONCLUSION

The design proposal is an example of a rehabilition system which integrates itself wholely at each level and develops relationships through its programme and flow. The literature and the theoretical framework has successfully been applied to the design proposal and as a result a Theraputic architectural environment has been created that deinstitutionalizes an approach to modern healthcare and is sculpted by the patient and well-being. As architects it is important that we design for people and that our buildings are a result of well informed design always keeping the users best interests in mind. Designing architectural environments that function as living spaces and enhance well-being should be our ultimate goal.

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Location:

The site is to be located within Mitchells Plain town center. The centre allows for easy access to the site and transportation.

Size:

The size of the size needs to cater for the the program of the rhabilitation comfortably whilst still allowing access to external couryards and spaces.

Context:

The context should respond to the intervention allowing integration into the existing services and facilities to strengthen the program and intervention.

Value:

The site should allow for integration of communal activities to foster a community relationship.

Vegetation:

The site need vegetative potential to allow for maximum connection of patients to nature.

Access:

The site is to be easily accessible to all members of the community through foot traffic and motor vehicle.

MASTER OF ARCHITECTURE (PROFESSIONAL)

School of Architecture, Planning, and Geomatics

DESIGN DISSERTATION
Course Code: APG5079W

Project Title:

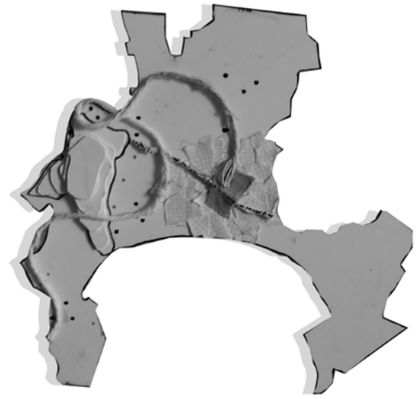
IN | DETOXIFICATION

Therapeutic architecture toward healing substance abuse

Supervisor: Simone Le Grange

Tymon Luke Gunkel

GNKTYM001



CIRCULATION OF PROGRAMME

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Existing:
In this context the pedestrian is reffered to as a non-resident of Mitchells plain. The pedestrians are those who use the services and transportaion of Mitchells plain to commute. Currently there is no relationship between the site and pedestrians.

Proposed:
By adressing the main street egde with urban activity and commericial functions, pedestrians are invited to interact with the site and its functions. By placing services (clinic, NGO offices, counselling offices) on the edge of the rehabilitation functions become accessible to the public forming a relationship.

2. The Community

Existing:
In this context the community is reffered to as individuals who occupy or are residents of Mitchells Plain and the sites context. Currently the site is used by the community as a pedestrian path for residents who traverse the site to cross over the main road, Az Berman.

Proposed:
In order to promote a positive acceptance of the intervention, a relationship must be formed with the community. The rehabilitation facility offers services and healthcare treatment to residents toward the front of the site and proposed commercial and communal activity spaces are proposed to allow for interaction between residents, pedestrians, and patients at who are being re-integrated.

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Staff:
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Visitors refers to a mix of those who are visiting patients and those who are visting the rehabilitation centre to attend seminars or meetings. Visitors are able to acces basement parking or enter through the street facing entrance. Visitors have access to family visitation rooms, Ablutions and seminar rooms.

4. The Patient

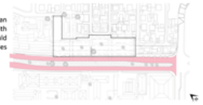
Proposed:
The layout of the progromme is governed by the progression of the patients treatment whilst still allowing the patient freedom to socialize and move freely through the internal courtyard space, acting as an extension of the horizintal desire line and an anchor of the internal functions.

Frail care Center:
The center for frail care borders the northern site edge allowing opportunity for integration to existing healthcare services.

Accessibility:
The existing road network and pedestrian paths allows for generous accesibility to the site

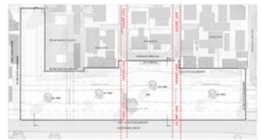
Vegetation:
The site is sloped with healthy vegetation allowing integration of the facility with nature.

Main road:
The main road, AZ berman drive, is often congested with vehicular traffic and should be considered in the facilities public engagement.



Residential edge:
The north-east site boundaries are bordered by residential units allowing integration with the existing community through smaller scaled forms.

MPTC CHC:
The south-western site boundary faces the existing Mitchells Plain day hospital allowing a connection to the existing healthcare facility.



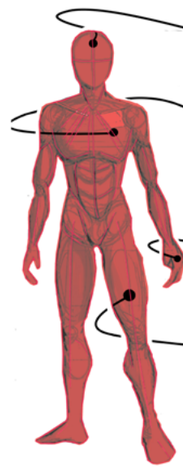
1. The existing roads running vertical to the the site are extended through the site as desire lines. These are proposed as formalised pedestrian pathways resultantly fragmenting the site into three parts.

3. Massing is then placed in accordance with functions and the flow of the rehabilitation anatomy. The main rehabilitation houses most of the programme with the halfway housing being placed externally toward the top of the site to allow integration with the existing housing.Reintegration facilities in the form of commercial facilities are placed externally to allow a connection to the public and attract pedestrians.

2. The existing road running horizontal to the the site is extended through the site as a desire lines. This is proposed as formalised pedestrian pathways and will act as an interior urban road linking all activities of the site through movement. The desire line further fragments the site allowing disbursement of functions.

4. The massing is then developed to allow for movement throughout the site again usuing the horizontal desire line as an anchor point in informing the pedestrian circuaition and flow of programme within the rehabilitation. The right hand side of the site has been zoned for communal activites such as a communal hall and skills and trade development facilities.

Therapeutic principle 1 Natural daylight	Therapeutic principle 2 Sanctuary	Therapeutic principle 3 Geometry	Therapeutic principle 4 Sensory Engagement
Therapeutic effects: patient oreintation increased comfort increased productivity reduces stress	Therapeutic effects: positive distraction sensory engagement sense of security personal control	Therapeutic effects: way-finding tool positive distraction aesthetic pleasure reduces anxiety	Therapeutic effects: positive distraction sensory engagement way-finding tool reduces anxiety + stress
Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac	Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac	Case study: Maggie's Leeds Cancer Caring Centre Harehills - Heatherwick Studio	Case study: Groot Klimmendaal center - Koen Van Velsen Maggie's Cancer Caring Centre Cheltenham - Sir Richard MacCormac
Application: courtyards communal spaces private spaces contemplative space	Application: therapuitic space private spaces contemplative space	Application: thresholds major circulation communal space	Application: waiting rooms contemplative space tectonics
Therapeutic principle 5 **Color Psychology**	**Therapeutic principle 6** **Circulation & Movement**	**Therapeutic principle 7** **Scale**	**Therapeutic principle 8** **Biophilia**
Therapeutic effects: sensory engagement way-finding tool psychological stimulation reduces anxiety	Therapeutic effects: creates autonomy patient orientation direction of programme way-finding tool	Therapeutic effects: sensory engagement positive distraction differentiation emphasis on individual	Therapeutic effects: creates comfort positive distraction connection to environment sense of time
Case study: Groot Klimmendaal center - Koen Van Velsen	Case study: Groot Klimmendaal center - Koen Van Velsen	Case study: Maggie's Leeds Cancer Caring Centre Harehills - Heatherwick Studio	Case study: Maggie's Leeda Cancer Caring Centre Harehills - Heatherwick Studio
Application: material textures circulation	Application: passages thresholds circulation routes	Application: thresholds major circulation communal space	Application: All internal spaces



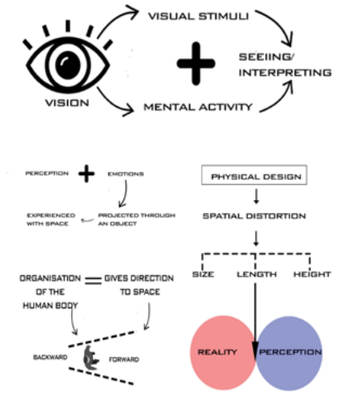
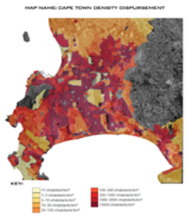
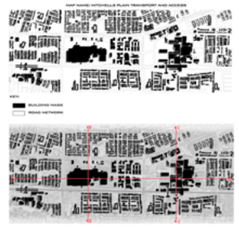
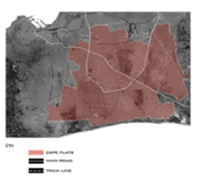
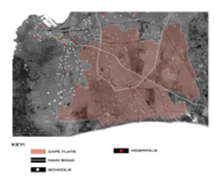


Figure 2.3: Design and affects on the user, Author,2022









1. Addition of parking for visitors and staff members

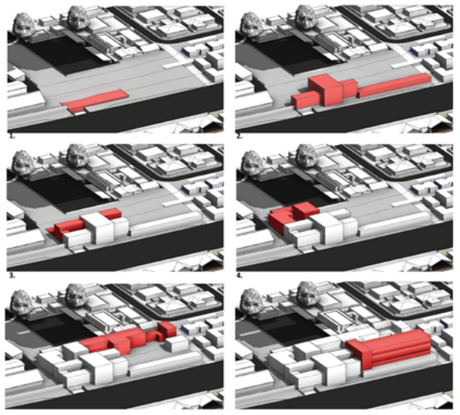
2. Addition of communal clinic for drug related treatment and to ease stress encountered by existing facilities. Addition of formal staff and visitor entrance. Addition of community theraputic layer.

3. Addition of internal clininc and Internal theraputic facilities.

4. Addition of patient private entrance, Administration, Processing and Detoxification residency.

5. Addition of activity spaces (Library, gym, kitchen, Dining, workshops, contemplation)

6. Addition of In-Patient residential facilities & vertical circulation.



SITE DESIGN - SPATIAL DEVELOPMENT

1. Existing site

2. Addition of formalised pedestrian pathway created through using desire line.

3. Addition of landscaped pathways and level changes

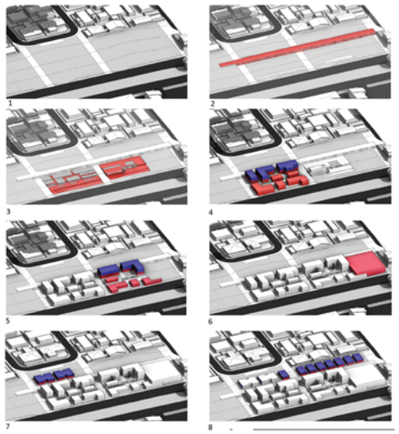
4. Addition of formal commericial spaces with residential component above to activate new pedestrian street.

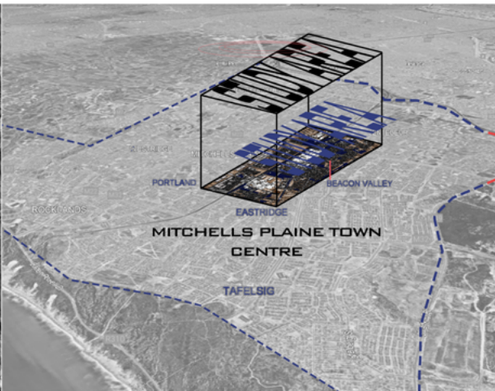
5. Addition of community orientated programme including workshops and skill development centres, with residential component above.

6. Addition of formal community gathering space

7. Rehabilitation programme extension: Reintegrative communal aftercare housing addition to new pedestrian street edge to integrate patients into community and activities. Red is indicative of workshop sjace where blue is residential

8. Rehabilitation programme extension: Reintegrative aftercare housing addition to new pedestrian street edge to integrate patients into community and activities. Red is indicative of workshop sjace where blue is residential



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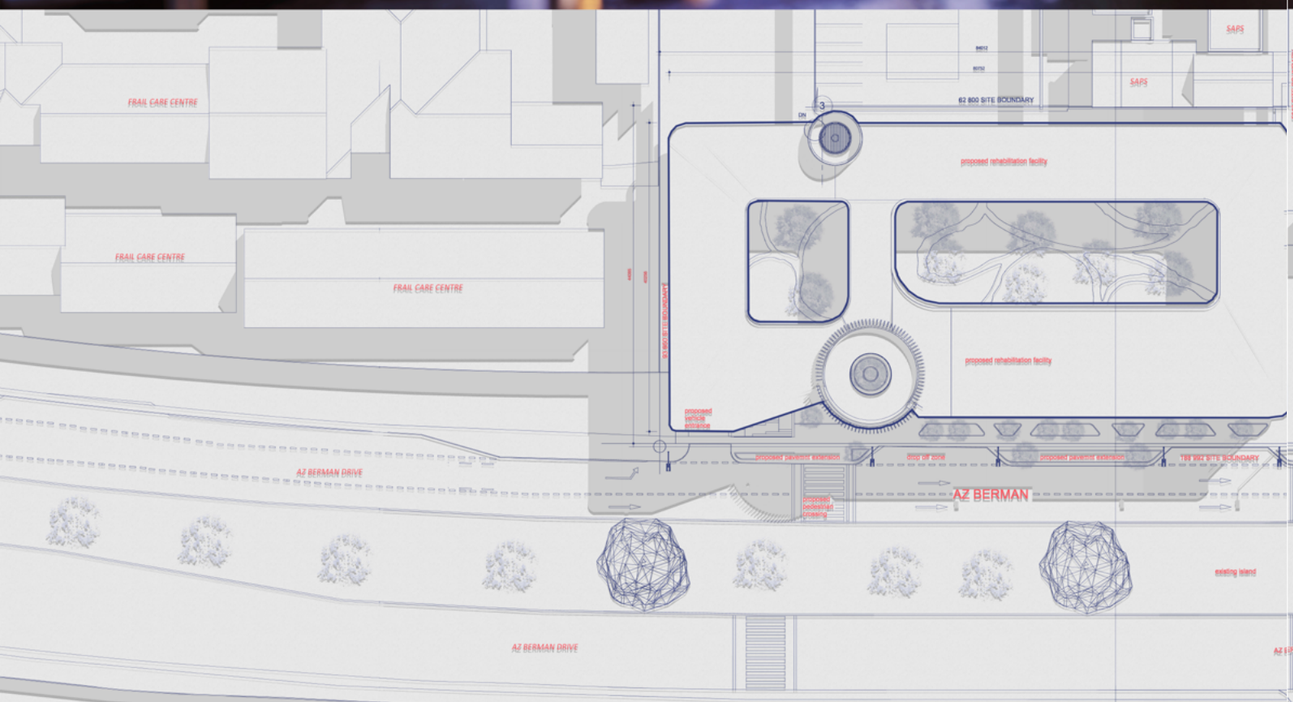
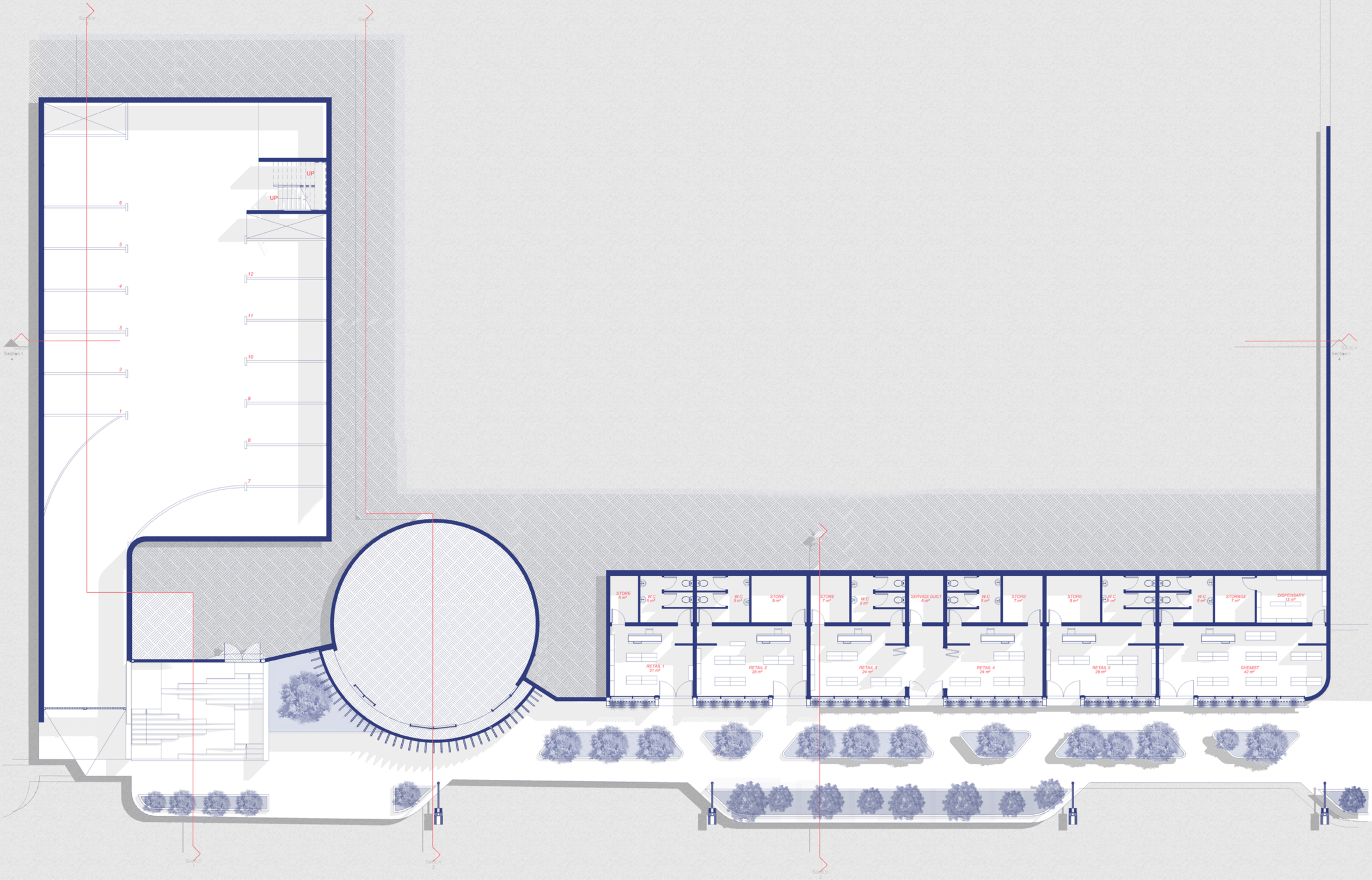
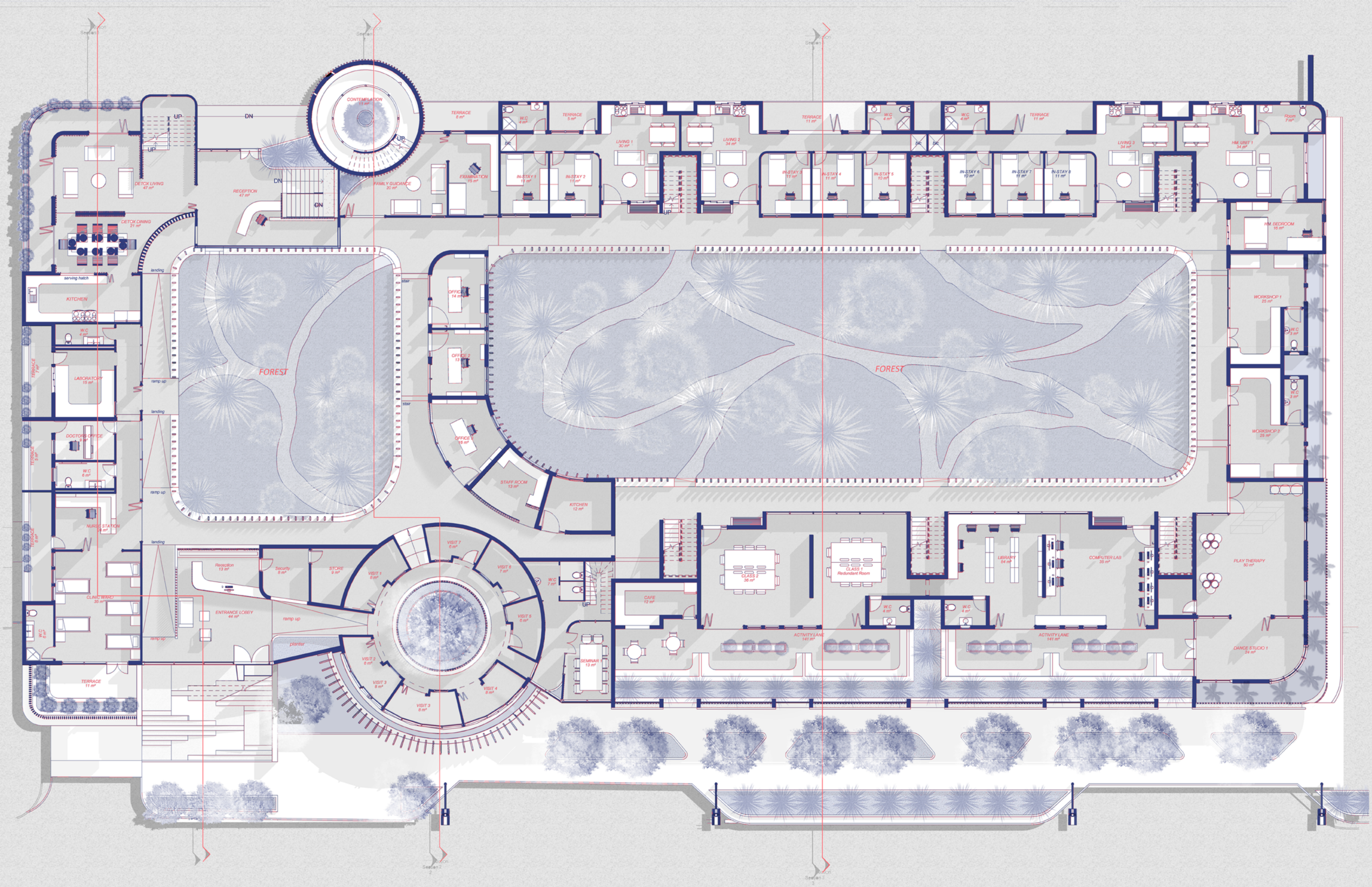

FRAIL CARE CENTRE
FRAIL CARE CENTRE
FRAIL CARE CENTRE
SAPS
SAPS
62 800 SITE BOUNDARY
proposed rehabilitation facility
proposed rehabilitation facility
proposed vehicle entrance
AZ BERMAN DRIVE
proposed pavement extension
drop off zone
proposed pavement extension
189 982 SITE BOUNDARY
proposed pedestrian crossing
AZ BERMAN
existing island
AZ BERMAN DRIVE

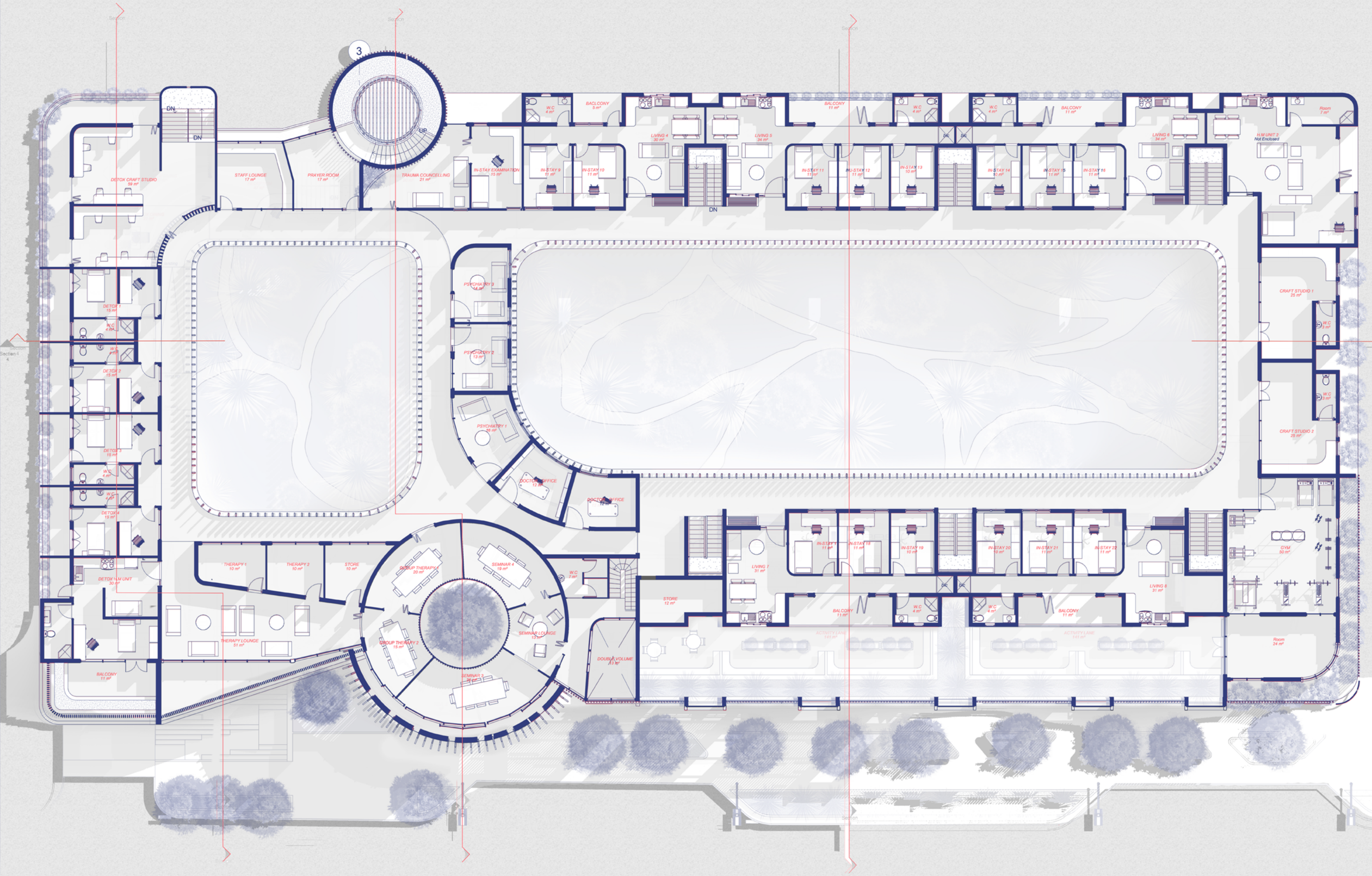

CHRYSLER CRESCENT
49 144 SITE BOUNDARY
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
56 071 SITE BOUNDARY
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed housing unit
proposed pedestrian path
proposed pedestrian path
proposed pedestrian path
proposed commercial
proposed pedestrian yard
proposed pedestrian yard
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed commercial
proposed skill centre
proposed braai service
proposed community hall
proposed tasting centre
RESIDENTIAL
RESIDENTIAL
proposed pedestrian path
AZ BERMAN DRIVE
proposed pedestrian crossing
proposed pedestrian crossing
AZ BERMAN
AZ BERMAN



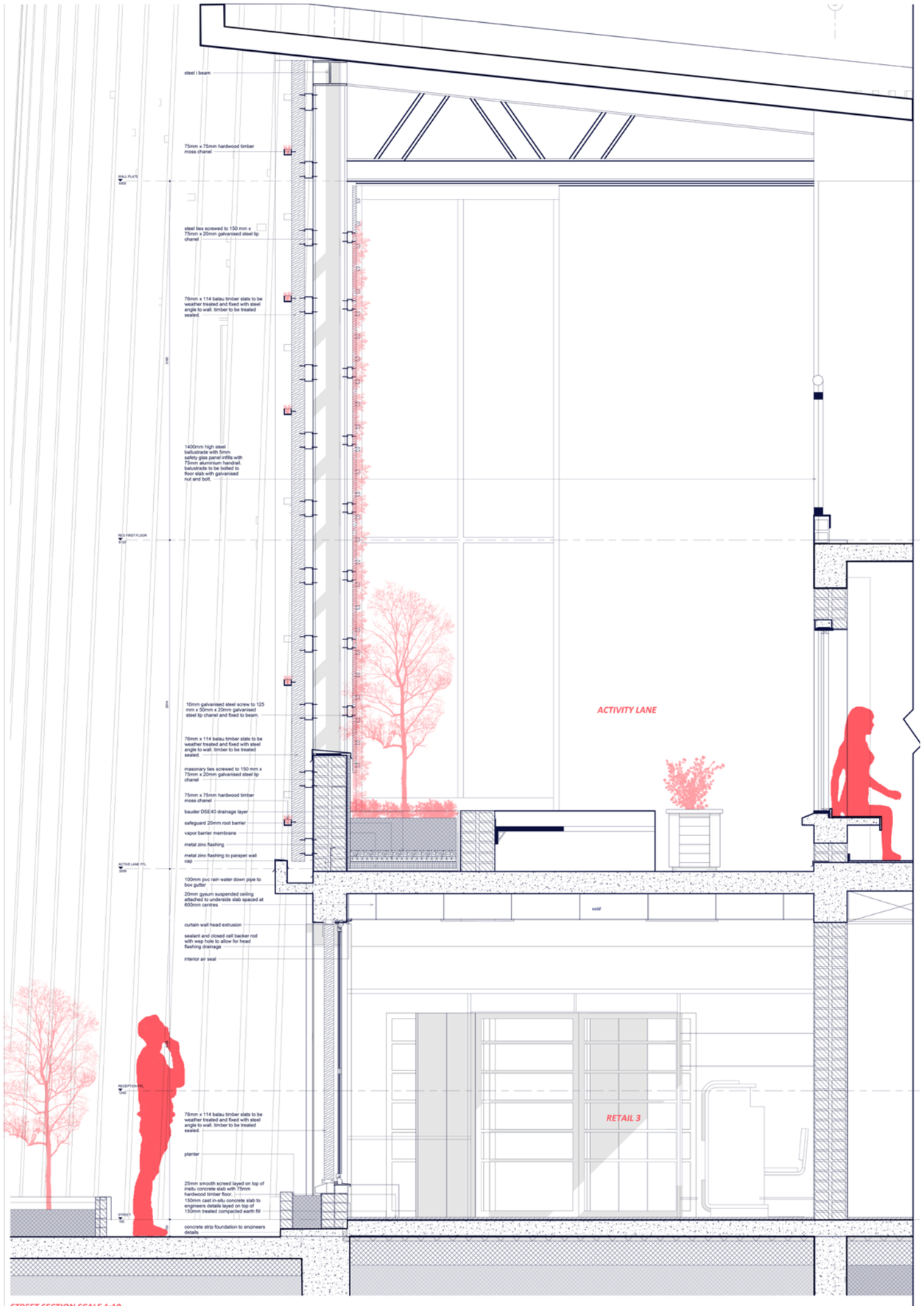
STREET LEVEL SCALE- 1:100



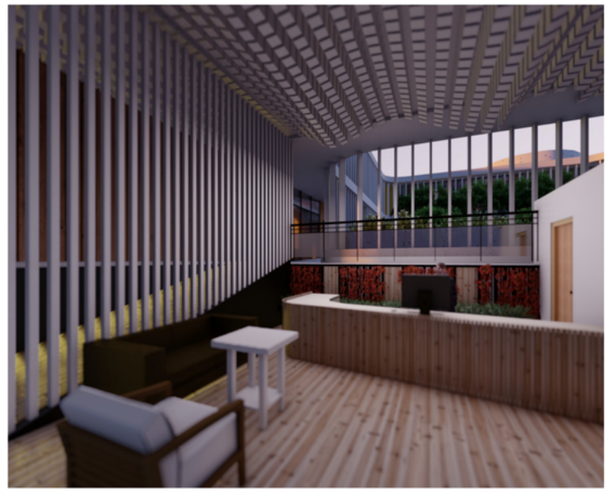
GROUND STOREY PLAN - SCALE 1:100



FIRST STOREY PLAN SCALE - 1:100



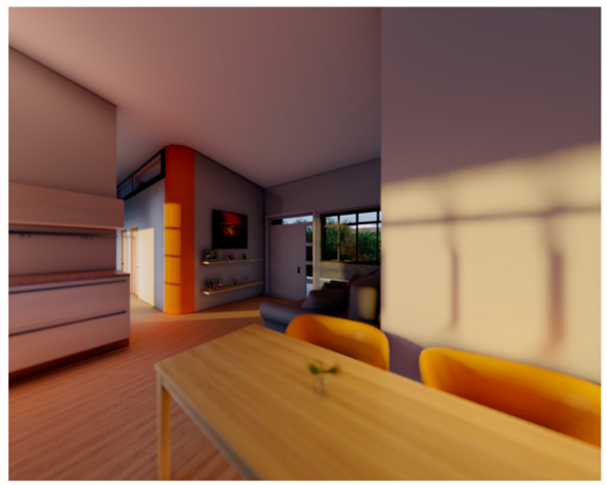
STREET SECTION SCALE 1:10



STREET RECEPTION

ACTIVITY LANE

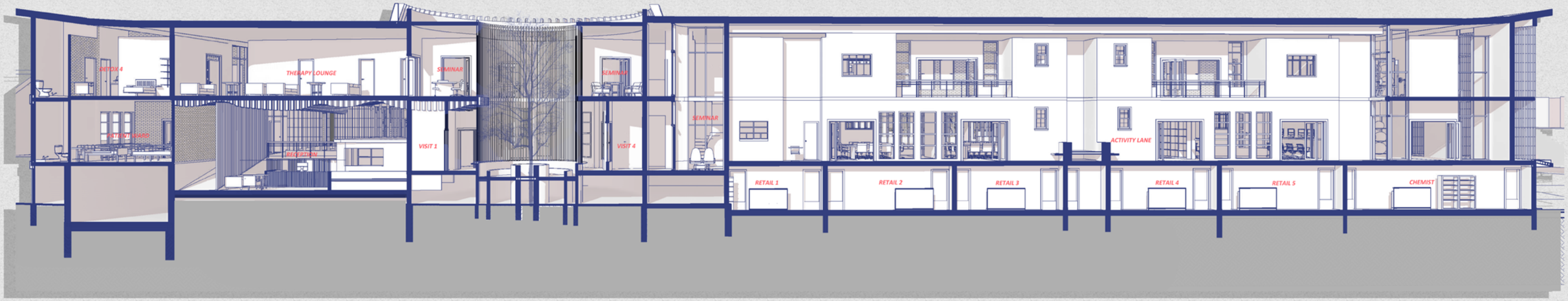
DETOX IN-STAY



RESIDENT PATIENT LIVING SPACE

FAMILY VISITATION

INTERNAL FORREST

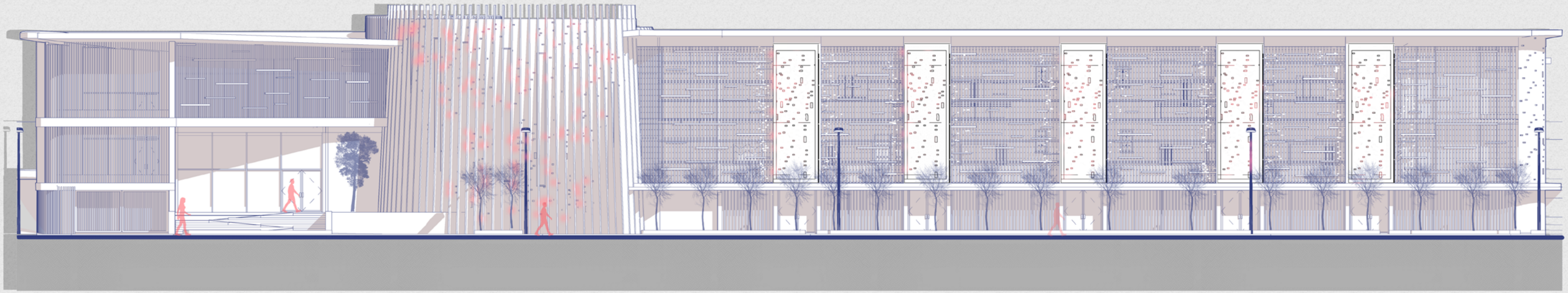


SOUTH WEST SECTIONAL PERSEPCTIVE SCALE 1:100

1 : 100

SOUTH WEST SECTIONAL PERSEPCTIVE SCALE 1:100

1 : 100



SOUTH WEST ELEVATION SCALE 1:100

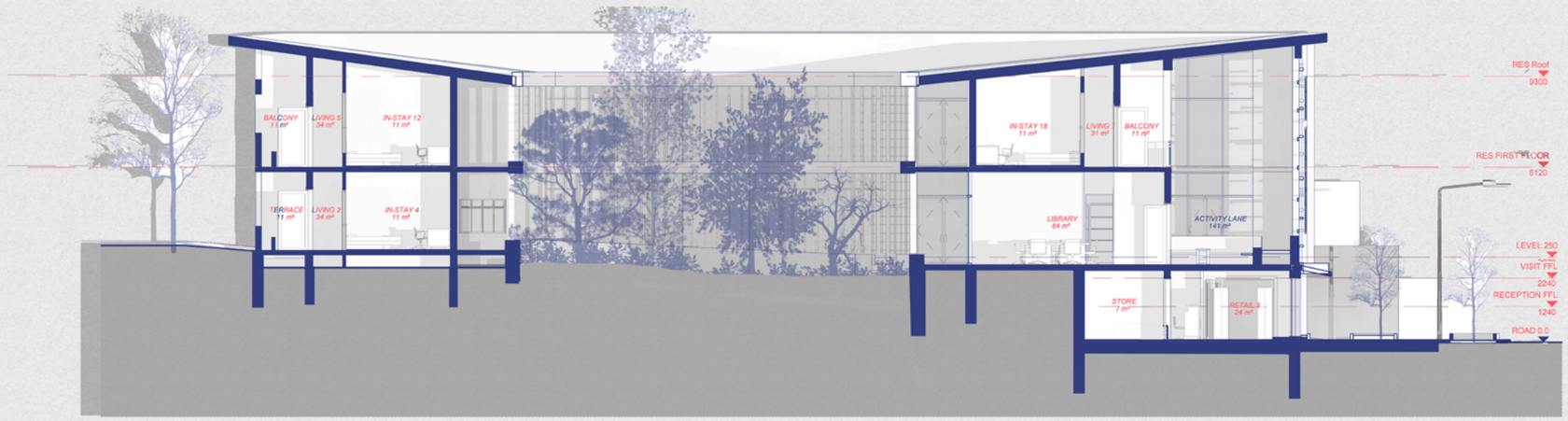
1 : 100

Section 1

1 : 100

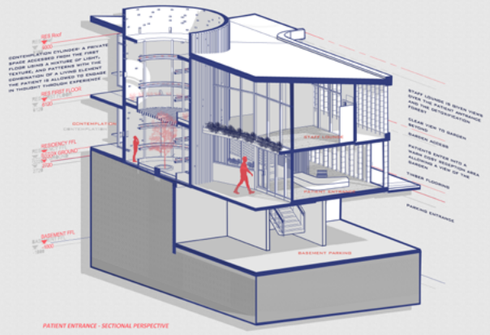
Section 2

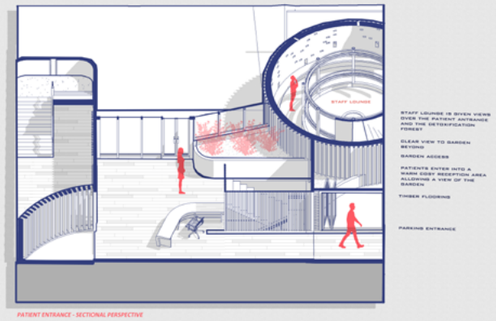
1 : 100

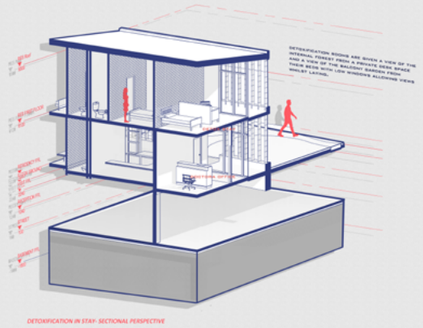


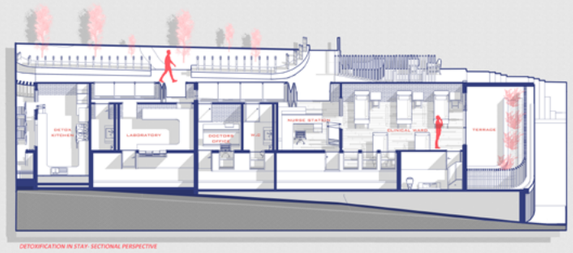
Section 3

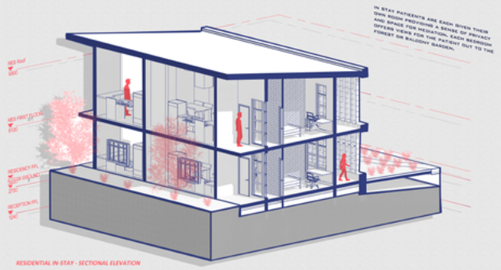
1 : 100

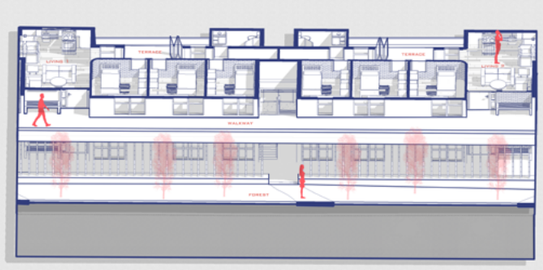

PATIENT ENTRANCE - SECTIONAL PERSPECTIVE

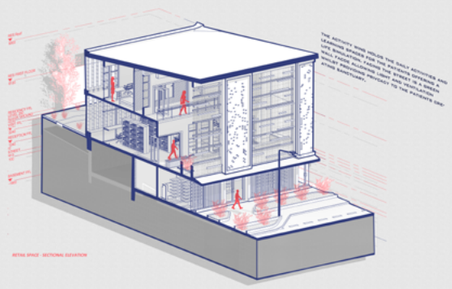

PATIENT ENTRANCE - SECTIONAL PERSPECTIVE

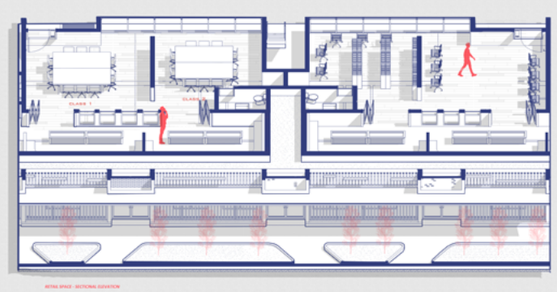

DETOXIFICATION IN STAY- SECTIONAL PERSPECTIVE

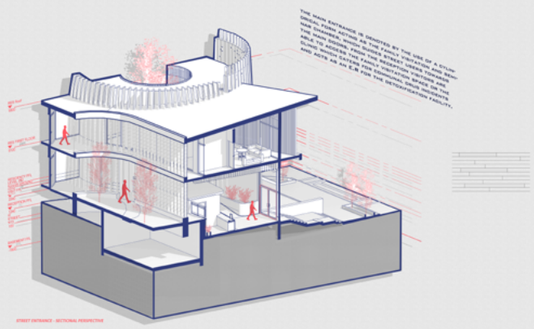

DETOXIFICATION IN STAY- SECTIONAL PERSPECTIVE

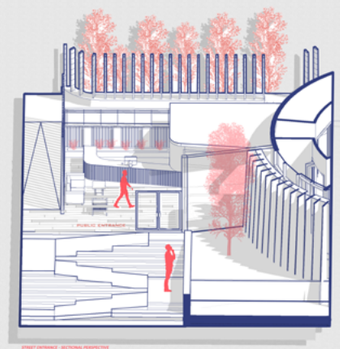

RESIDENTIAL IN-STAY - SECTIONAL ELEVATION

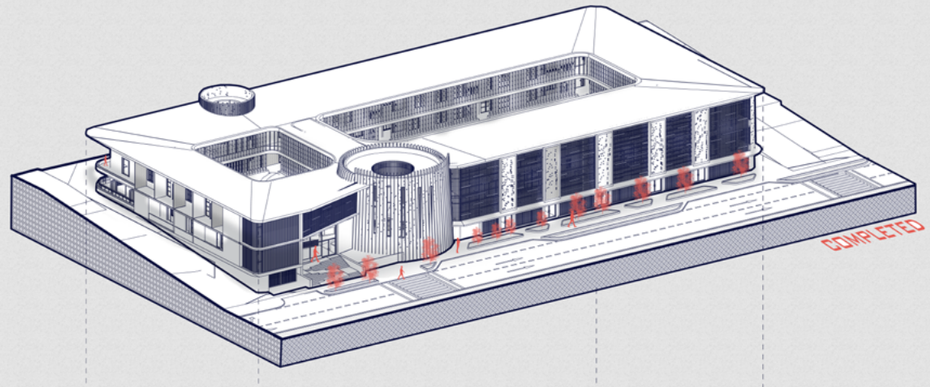

RESIDENTIAL IN-STAY - SECTIONAL ELEVATION

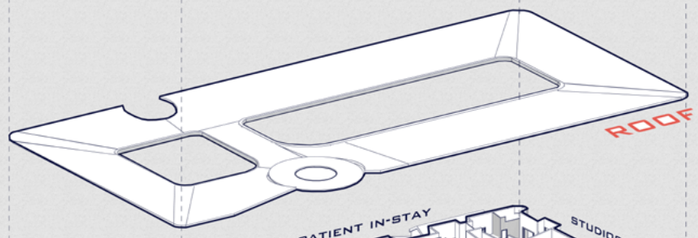

RETAIL SPACE - SECTIONAL ELEVATION

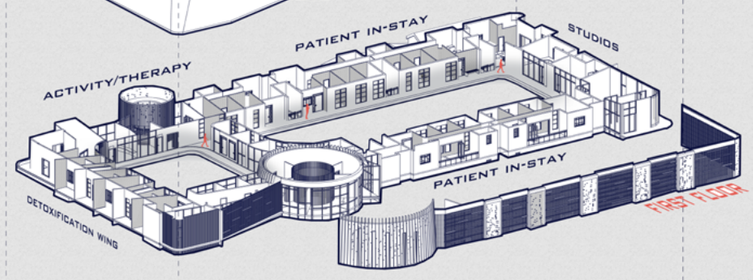

RETAIL SPACE - SECTIONAL ELEVATION

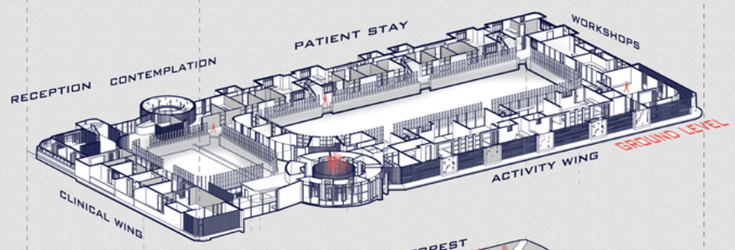

STREET ENTRANCE - SECTIONAL PERSPECTIVE

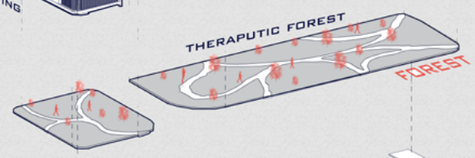

STREET ENTRANCE - SECTIONAL PERSPECTIVE

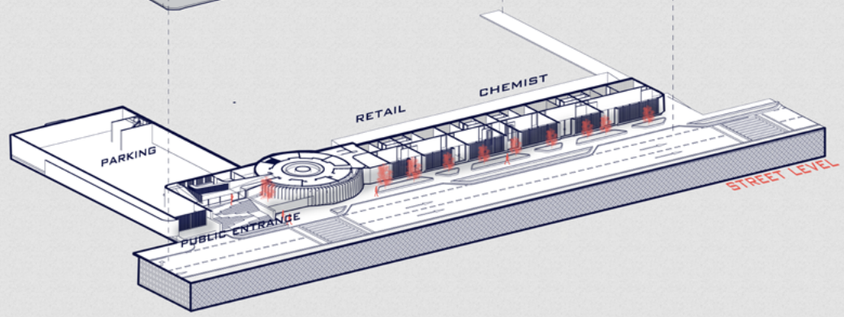

COMPLETED


ROOF


PATIENT IN-STAY
STUDIOS
ACTIVITY/THERAPY
PATIENT IN-STAY
DETOXIFICATION WING
FIRST FLOOR


PATIENT STAY
WORKSHOPS
RECEPTION
CONTEMPLATION
ACTIVITY WING
GROUND LEVEL
CLINICAL WING


THERAPUTIC FOREST
FOREST


RETAIL
CHEMIST
PARKING
PUBLIC ENTRANCE
STREET LEVEL