

Birth Freedom:

Healing Architecture's Impact
on the Experience of
Childbirth and Healthcare
Through a Community
Maternity Centre in Alberton.

Leonie Grobler



Birth Freedom: Healing Architecture's Impact on the Experience of Childbirth and Healthcare Through a Community Maternity Centre in Albertyon.

Student: Leonie Grobler 1864528

**School of Architecture & Planning
University of the Witwatersrand
Johannesburg, South Africa**

Supervisor: Anita Szentesi

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Figure A: Front Page

Declaration

I, Leonie Grobler, Student number 1864528, am a student registered for the course Master of Architecture (Professional) in the year 2024. I hereby declare the following:

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

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.

Signature

Date: 21 February 2025

Abstract

This research explores the topic of childbirth and maternal health care in a community context where such facilities are lacking in focus and accessibility. The study explores the narratives of pregnancy, childbirth, and the postnatal period through the lenses of phenomenological experience, feminist theory, and healing. Its focus lies in how these concepts can shape the design of maternal healthcare architecture.

The aim is to research and design a community health care centre that focusses primarily on aspects surrounding childbirth, and secondarily, aspects of female reproductive healthcare and family planning. The intervention aims to challenge the clinical nature of healthcare, improve accessibility to quality and affordable healthcare, and give women freedom over their reproductive healthcare choices.

The site of the study is within the town of Alberton, located South of Johannesburg, in the Ekurhuleni Metropolitan Municipality. The goal of the research study is the development of a birthing centre model that serves as an alternative option to existing clinical birth settings which are part of larger hospitals.

Research will be conducted through site analysis, contextual analysis, data analysis, theoretical and architectural research and precedent studies. This information will be used to guide the design process and develop a resolved building. This research project consists of two parts, a research report, and a set of design drawings, which will be combined into a single thesis document.

Acknowledgements

I would like to acknowledge my supervisor, Anita Szentesi, for her support and mentorship. I want to express my thanks for her input and involvement in this research project.

I also want to extend my gratitude to my teachers and mentors from the School of Architecture and Planning, who guided me through the years, sharing their knowledge and enabling me to complete my architectural studies.

My heartfelt appreciation goes to my peers for their camaraderie and solidarity during this final year of our education. I will forever value the discussions and exchanges that kept us going through confusing projects, stressful deadlines, and intense reviews.

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Chapter 1

Introduction

Introduction

Pregnancy and childbirth are an integral part of the human experience and an important chapter of most women's lives. It is a journey full of new experiences and feelings, but also fears and choices. The act of childbirth starts the narrative of a new human being. Unfortunately, this journey could also result in an unexpected end to a narrative. Due to various risks or circumstances, such as unwanted pregnancies, birth complications or socio-economic circumstances, it can result in the death of the mother and the child.

According to the World Health Organisation, an estimate of 287 000 women died in or after childbirth in 2020. 95% of deaths happened in lower middle to low-income countries, with 70% of maternal deaths occurring in Sub-Saharan Africa (World Health Organization, 2023).

The maternal mortality rate in richer countries is around 12 deaths per 100 000 live births, while poorer countries' rates are around 430 deaths per 100 000 live births. (World Health Organization, 2023). In South Africa, the maternal mortality rate averaged at 88 deaths per 100 000 live births, however the statistic per province shows a different picture – with Gauteng as high as 102.9 per 100 000, while the Western Cape is much lower with 43.6 per 100 000 (Statistics South Africa, 2022).

These statistics are a tragic indicator of the inequality prevalent in healthcare worldwide and locally. Goal 3 of the United Nations 17 Sustainable Development Goals includes the maternal health with the aim to reduce maternal mortality to less than 70 per 100 000 live births by 2030. (National Department of Health, 2021:4) This includes aspects such as maternal mortality, neonatal mortality, and maternal and neonatal nutrition.

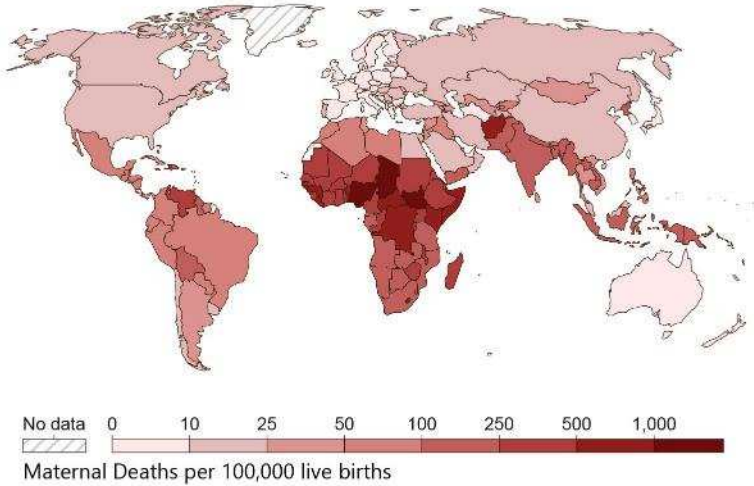


Figure 1.1: World Maternal Mortality Map, edited graphic, UN MMEIG (2023)

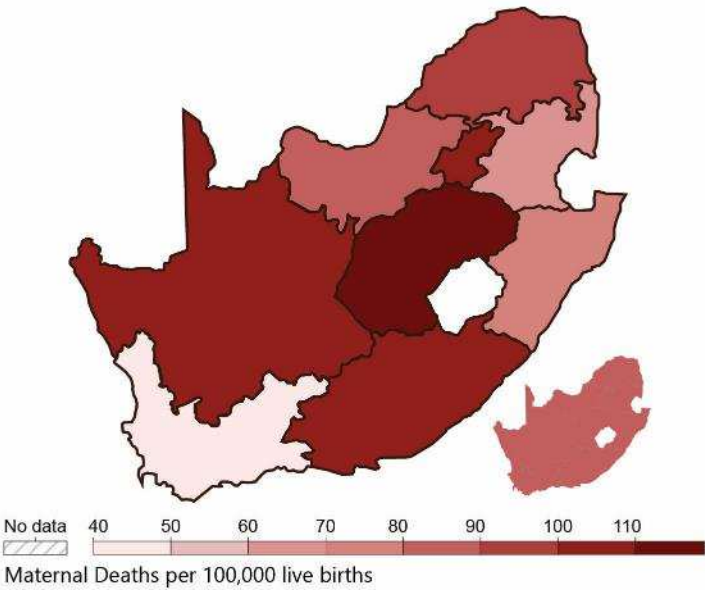


Figure 1.2: South Africa Maternal Mortality in 2022

The topic of maternal health and healthcare poses a series of complex challenges. South Africa faces the severely contrasting issues of a poor public health care system and an expensive public healthcare system. There is significant inequality between public and private healthcare in terms of access, quality of care, services provided, resources available and affordability. There is also a notable difference between urban and rural healthcare availability and accessibility. (National Department of Health, 2021:9)

The public health sector faces operational and clinical shortcomings such as a shortage of medical facilities, poor infrastructure, lack of equipment, staff shortage, skill shortages and poor management. (National Department of Health, 2021: 7-8, 22, 23)

The lack of maternal healthcare poses risk to the physical and mental health of women. The main causes of maternal death in South Africa include obstetric haemorrhage, hypertension, sepsis, abortions, and illnesses such as HIV, sexually transmitted infections (STIs), tuberculosis (TB) and malaria. (National Department of Health, 2021: 4,13)

Maternal mental health during and after pregnancy is crucial to the wellbeing of mother and child. Poor mental health during pregnancy can lead to medical issues that impact both the mother and fetus. Postpartum mental disorders influence “maternal responsiveness” and the child’s development. (National Department of Health, 2021: 10 - 11)

This project aims to research and design a community maternity facility model that aims to support women during pregnancy, childbirth, and general aspects of female reproductive care.

The investigation aims to answer the question:

How can healing architecture holistically influence the physical and mental experiences of childbirth and women’s reproductive wellbeing?

Research Objective

The project objective is to challenge the current model of childbirth spaces. The project will include investigating standard and alternative birthing knowledge in combination with the architectural theories surrounding feminism, healing architecture and phenomenology. Furthermore, the contextual and site research will introduce additional layers and themes to the project.

Theoretical Objectives

The main objective of this study is to design a functional building which responds to the problems of maternal healthcare posed in the research question and research objectives. Therefore, this paper will delve into feminist, healthcare and architectural phenomenology theories to firstly examine the existing state of maternal healthcare facilities, and secondly to propose an architectural solution to address the present situation.

An investigation of feminist theory is the starting point for this research due to the female-centric nature of pregnancy, childbirth and motherhood. This includes aspects of women's autonomy, reproductive rights and care ethics. This will include readings of Jane Rendall, and other feminist texts.

Care ethics and autonomy in the healthcare environment lead to the topic of patient centred care and quality care. This prompts an investigation into healing architecture. Simonsen, Sturge and Duff's paper on Healing Architecture provides a good starting point in the emergence of healing architecture in healthcare areas and refers to different case studies, including a study of healing architecture in delivery rooms by Nielsen and Overgaard.

To further enhance the phenomenological experience of childbirth and healing architecture, Juhani Pallasmaa's Eyes of the Skin will be an important reading because of the topics of experiential quality of spaces and memories associated with spaces.

Case Studies and Precedents

Case studies will focus on the current standard and alternative birthing centre options. Investigations will revolve around healing architecture spaces. The purpose of the precedent studies will be to analyse the functionality, aesthetics, design, and experiential quality of existing architectural designs, and to gather insights into previous approaches, which will guide me during my own building design. Literary references will include books, articles, documents, journals, papers, websites, and other source materials.

Identification of Issues

The research project addresses social issues such as access to quality affordable healthcare, socio-economic barriers, reproductive rights, and bodily autonomy. Architectural issues include the design of a space that promotes the ethics of care, patient centred care and architectural spaces that facilitate holistic wellbeing. This also ties into sustainability and ecological issues to combat the effects of climate change. Urban issues include urban planning, public space, and community programming, as well as community narratives. Issues of heritage and history will focus on traditional knowledge around pregnancy and birthing.

Ethics Clearance

This study has been granted clearance by the Human Research Ethics Committee (HREC Non-Medical). The protocol/clearance number for the study is: SOAP021/03/2024.

Intended methods of enquiry

This project is a form of creative research that combines formal research and architectural design. The research consists of a series of analysis, inductive reasoning, interpretation of data, theoretical research and creative thinking that relate to architectural themes, constraints, and precedents. The creative research process is a form of discussion and design.

Analysis will include site studies, contextual studies, census data, statistics, precedent studies, and other data. Theoretical research includes topics of maternal healthcare, childbirth, and architectural theory.

For the site analysis, public behaviour observations will be required to analyse patterns of public movement and activity levels around the site. Observation will take place on the public roads and sidewalks of Erf 941 Florentia, Alberton. No direct contact with people is required. No identifiable or personal information of any persons regarding their identity, activities, or destinations to be collected. This will be recorded using analysis through hand sketches and diagramming to ensure the anonymity of the general public.

Other research including human participants may include interviews with professional maternal healthcare practitioners such as midwives and medical professionals.

Participants must be practitioners or experts in maternal healthcare and birthing practises and preferably work around Alberton or its surrounds. Participants will be contacted via their official contact details via phone call or email. Participants will be invited to participate in an interview via an email, with a participant information sheet attached, explaining the research, conditions, and to obtain permission and consent. Thereafter, a meeting date and location will be decided.

The interview will last about 30 mins. The participant's confidentiality and anonymity can be guaranteed during the interview / discussion. Confidentiality can be guaranteed because the participant's responses will not be shared with anyone else. Similarly, anonymity will be guaranteed during the data collection process because the participant's name will not be disclosed to anyone else. The interview will include questions about participants experience in the maternal healthcare field and problems with the current state of maternity care. Questions will revolve around the physical environment participants work in and their experience of these spaces. A mobile device will be used to capture audio recording of the interview, subject to participants consent.

For the duration of the research, data will be kept on a password protected laptop and cloud storage. Thereafter it will be kept for 3 years and then be destroyed.

Other human participant data will include the use of existing human information in published research papers conducted on the topics of healthcare and architecture, and human information in published reports and documents pertaining to the site and context.

The process is non-linear and will have various iterations and open-ended exploration. The research is a combination of quantitative and qualitative methods that will change, develop, and evolve during the course of the research project. Sketch charettes, sketch design, modelmaking, technical development and design development will form part of this process.

This combination of methods, analysis and research will result in a fully resolved architectural proposition, namely a community birthing centre.



Figure 1.3: Mapping of Healthcare Facilities

Context

The study takes place within the context and community of Alberton, Ekurhuleni. The town of Alberton has a lack of public healthcare such as municipal clinics and government hospitals compared to surrounding areas (figure 1.3: Mapping of Healthcare Facilities). The town is mainly dependant on private healthcare. This a problem for households who are not able to afford private healthcare and medical aid.

Alberton has a population of 121 536 according to the City of Ekurhuleni Annual Report 2020/21. The only hospital within the town bounds is the private Alberton Netcare Hospital. Currently only three public healthcare facilities exist within the town - the Alberton North Municipal Clinic, the Brackenhurst clinic and Eden Park Clinic. These facilities have issues such as long waiting times and poor service delivery (Malunga, 2021).

This project aims to create an alternative birth environment for low-risk pregnancies. The project aims to lower dependency and pressure on the current healthcare system by creating a dedicated maternal healthcare space.

Chosen Site

The chosen site for the project is Erf 941 in Florentia Extension 1, Alberton. The site was chosen due to its proximity to the hospital, accessibility, and community narratives. It is a large piece of vacant land and has remained undeveloped since Alberton's inception. The site is 37.392 sqm and surrounded by residential zoning. Nearby programming includes a primary school, high school, sports facilities, old age home and cemetery. It is also located nearby the only Hospital within Alberton. The site is accessible and central to the community.

The architectural intervention aims to relieve pressure on the healthcare system by creating an alternative space for childbirth within the community. The intervention will tie into the existing community fabric and contribute to the narrative of the community - live (households), learn (schools), play (community facilities), work (businesses) and death (cemetery).

Building Typology

The building typology is a maternal healthcare centre that includes a maternity unit, community healthcare clinic, boarding facilities, and a wellness centre. The building primarily serves as a vessel for maternity care and childbirth. It aims to combine the comfort of a homebirth with the safety and care of a hospital. In conjunction, it also provides necessary healthcare for women's reproductive health and screenings, family planning, abortion services, antenatal care, and postnatal care. The building programming will therefore include birthing space, consultation rooms, clinic, and basic medical programming. The building will also include support spaces and teaching spaces, to create support for women and their partners. This space differs from a hospital setting in the sense that it provides all-inclusive support during and after pregnancy, promotes holistic wellbeing and enables more freedom and autonomy to the patients. It will offer the comforts of a home environment, while still providing the safety of clinical setting.

The programming will develop as the research progresses, and will be guided by the journey of pregnancy, and the complex choices and narratives associated with each stage: from before conception to after delivery. Official Government guidelines, Town Planning regulations and SANS regulations will form of the legal framework for the design.

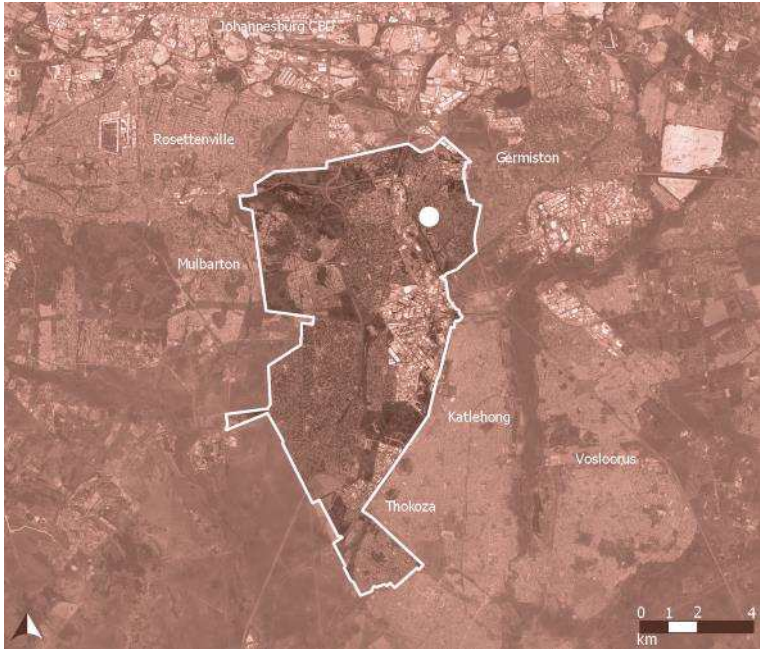


Figure 1.4: Map of Alberton, edited image

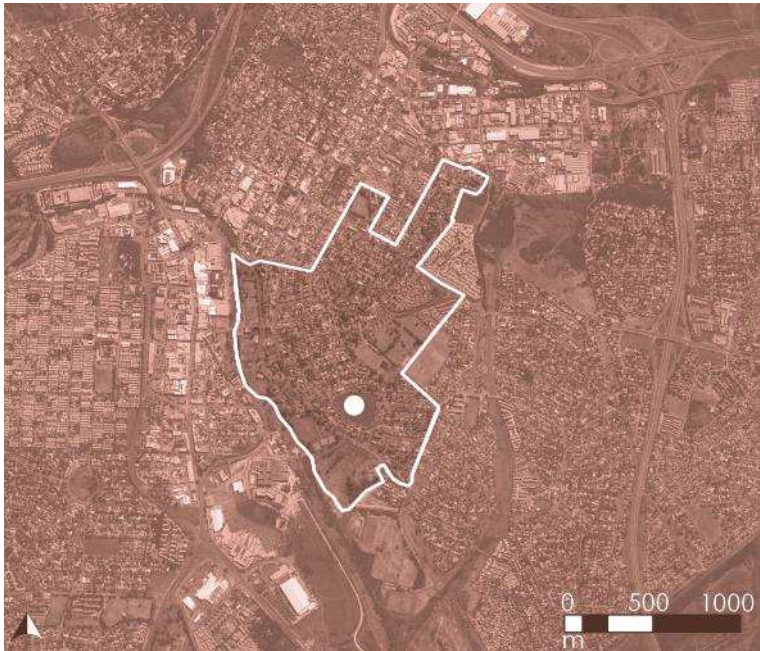


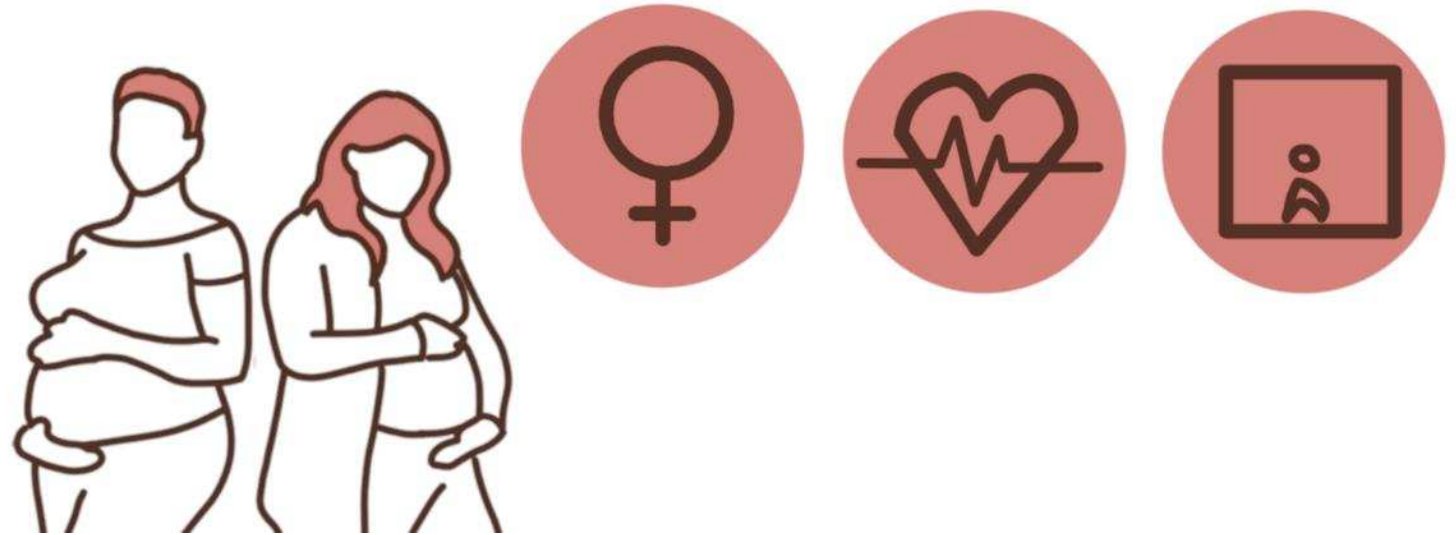
Figure 1.5: Map of Florentia , edited image

Chapter 2

Theoretical Essay

Figure 2.1: Introduction Graphic

The Experience of Childbirth Through the Lens of Feminism, Healing, and Architecture



Experience

- 1 “direct observation of or participation in events as a basis of knowledge”
- 2 “something personally encountered, undergone, or lived through”
- 3 “the act or process of directly perceiving event or reality”

(Merriam-Webster, definition retrieved 23 May 2024)

The way we experience life, events and architecture is through the human body. These experiences have a physical and mental impact on our lives. Life and architecture are a multifaceted sensory experience that impact human perception, thinking and feeling. My concept of a birthing centre puts emphasis on the experience of childbirth through architecture. This essay critically interrogates the experience of childbirth through the lens of feminism, healing, and architecture with an emphasis on autonomy and care.

The starting point for my analysis of the childbirth experience starts with Feminism and the Female Experience. The main driver for feminist theory is that human civilization has been dominated by patriarchal norms and traditions, which treated women as inferior and subordinate (Raina, 2017). Feminism is defined as a complex set of social and political movements and ideologies with the common goal of equality and justice in all aspects of life (Raina, 2017). Feminism advocates for civil and political rights for women, social and economic justice, and liberation from gender stereotypes (Rendall, 1985). In short, feminism challenges the status quo by enabling women to define an “autonomous identity” (Raina, 2017: 3376) and “define their own place in society” (Rendall, 1985:1).

The fight for women's rights consists of four waves of feminism. The first wave, spanning from the 19th century to early 20th century, fought for equal social and moral rights for women. The second wave in the 1960s fought for equality of legal and social rights (Raina, 2017: 3373). These first two waves also fought for reproductive rights and bodily autonomy (Neyer and Bernardi, 2011:162). The third wave in the 1990s starts to expand feminist theory to topics of postcolonial feminism, gender studies and ecofeminism as well as social justice. The fourth wave starting around 2012 uses social media as a tool to shed light on the sexual misconduct and violence women experience. (Raina, 2017: 3374)

Aspect of reproduction has always been a core principle of feminism. However, the topic of motherhood is often a topic of discourse between feminists. Before the onset of modern feminism in the late 18th to 19th century (Rendall, 1985), strict gender roles separated women from men. For most women, their futures were limited to the domestic realm, confined to family roles or employed in domestic service (Rendall, 1985:4) (Best, 2003:17). Education for women was tied to their roles as mothers and homemakers and a women's worth was tied to their husbands, children, and the domestic environment (Rendall, 1985:109).

Some arguments for early 19th century feminism state: "...women must be regarded and treated as the equals of men, in order to work the improvement of man himself" (Rendall, 1985:115). This statement argues that equality between the genders will be beneficial to all of humanity. However, the wording "improvement of man himself" is still a very gendered statement, seemingly still shifting the focus on the benefit for men, rather than for women. Another argument for women's recognition and education states : "...women to be educated to do work more vital than men's, in the rearing of children" (Rendall, 1985:115). This statement delegates the role of parenting to the mother, denying the role of the father in childrearing. This highlights the narrative of the woman's worth being tied to motherhood, while a man's worth is not tied to fatherhood.

Traditional values and stereotypes portray women as “superior caregivers” to men, who are perceived as less competent or disinterested in parenting (Veneziano, 2003:78). Gender stereotypes and biological differences are used as a justification for traditional gender roles, and further influenced through cultural and historical influences (Best, 2003) (Veneziano, 2003).

In various cultures, traditions and societies, women are tied to their reproductive worth and domestic duties, while men are tied to external and economic duties (Best, 2003) (Brown ,2003). A woman’s life transitions are defined by biological functions such as menarche (the first menstruation), motherhood and menopause. Virginity and fertility are important virtues in several traditional cultures. Traditions vary from across cultures and societies – and while some practices might be joyful and wanted by the woman, other traditions are harmful to woman such as genital mutilation, menstrual customs, child marriages, arranged marriage, domestic abuse and purity culture (Brown, 2003).

Gender stereotypes also create a distinction between women and men by associating different traits and characteristics to each gender. A study by Williams & Best in 1990 (Best, 2003) surveyed participants from twenty-five countries worldwide to study gender stereotypes. Women are being associated with words such as “Affectionate”, “Gentle”, “Emotional”, “Submissive”, “Weak” and “Sentimental” (Best, 2003:14). While men are associated with words such as “Adventurous”, “Independent”, “Strong”, “Aggressive” and “Rude” (Best, 2003:14). These traits often distinguish between masculine or feminine traits and perpetuates dangerous narratives that enabled discrimination and inequality.

Modern ideology aims to promote an egalitarian standard, with more women entering the economic realm and domestic duties being shared by both genders, however majority of household work still often falls on women (Best, 2003). Motherhood adds another layer of complexity by adding parental duties to the mix (Brown, 2003). Mothers are often seen making sacrifices and take on a greater role in parenting and domestic duties (Neyer and Bernardi, 2011) (Rendall, 1985:116). This still stems from the patriarchal constructs of childbearing and motherhood being seen as the “women’s nature” (Neyer and Bernardi, 2011:165).



Figure 2.2: Study of Gender Sterotypes from 25 countries from Best (2003)

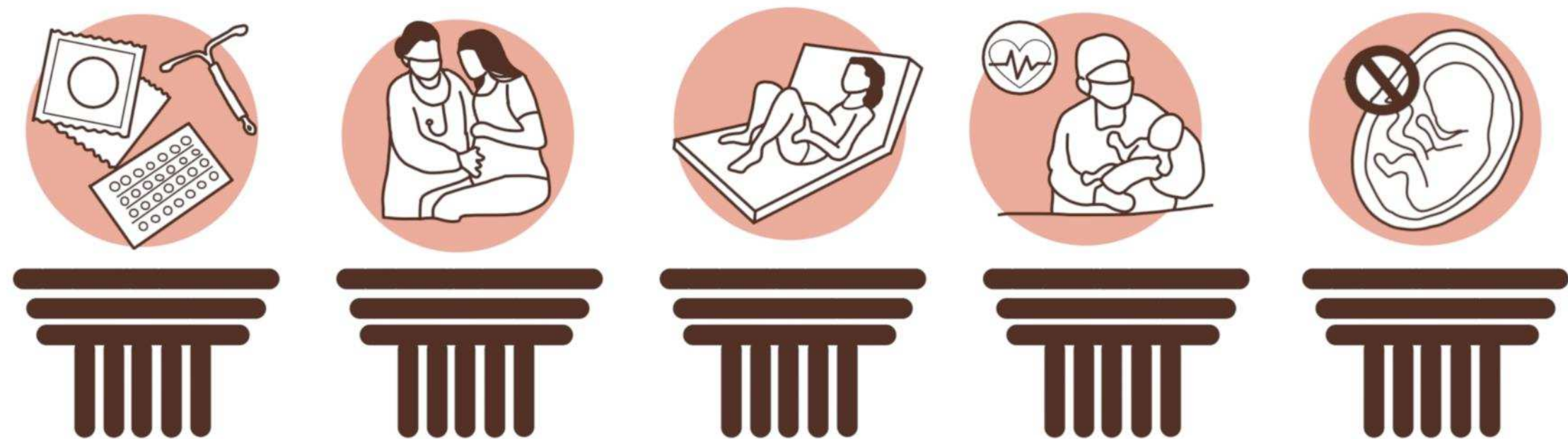
Women are often compared to aspects of nature such as “serene”, “nurturing” and “earth” (Raina, 2017:3373). There have always been strong historical connections between women and nature, herbal knowledge and healing (Barnawi, Richter and Habib, 2013) (Ehrenreich and English, 1973). The woman healer is a phenomenon found throughout history, bearing herbal knowledge and midwifery knowledge. The profession of the midwife supported and celebrated childbirth and pregnancy as a social event, with midwives being the bearers of cultural heritage and knowledge (Barnawi, Richter and Habib, 2013). Herbal remedies for various ailments and maternal healthcare have been used throughout history and still have a place in modern healthcare (Ehrenreich and English, 1973). Traditional medicine still plays a key role in rural African communities where access to modern medicine and healthcare is lacking (Shewamene, Dune and Smith, 2017). However, throughout history, the woman healer has faced marginalisation, discrimination and persecution due to social, political, medical and religious doctrine, deemed inferior and subordinate to male healers (Barnawi, Richter and Habib, 2013) (Ehrenreich and English, 1973). There is a strong historical narrative of the marginalisation of women’s healthcare and the female healer, rejecting traditional medical knowledge and denying woman an equal role in society.

Some feminists claim that motherhood is a uniting experience among women, while others argue that the patriarchal constructs surrounding motherhood were the basis for denying women’s rights (Neyer and Bernardi, 2011:169). This is where the feminist principle for a woman’s right to define herself comes in. Motherhood is a choice, and rejecting motherhood does not make a woman different from other women who choose motherhood. Postmodern feminism rejects the notion of “mother” as a fixed, single label and instead sees it as part of the many labels a woman may identify herself with (Neyer and Bernardi, 2011:167).

Reproductive rights and autonomy have always been a key tenet of the feminist movement. With changing socio-economic conditions, urbanisation, modernisation and changing traditional values, many women have opted to control their fertility and have smaller families (Rendall, 1985:224) (Statistics South Africa, 2020). Reproductive autonomy is a means to empower women and challenge patriarchal control (Neyer and Bernardi, 2011).

Feminism aims to redefine motherhood. Instead of rejecting motherhood to fight patriarchal control, there is a struggle to reform the patriarchal society to accommodate motherhood (Neyer and Bernardi, 2011).

Figure 2.3: 5 Pillars of Safe Motherhood



In various places in the world women do not have control over their reproductive choice or face losing their rights. In South Africa, our constitution protects women’s reproductive rights (Statistics South Africa, 2022). The Department of Health declares that safe motherhood is dependent on five pillars:

- Choices of birth control
- Basic antenatal care
- A clean and safe environment for childbirth
- Emergency obstetric care
- Choice to terminate pregnancy

(Department of Health, 2016:13)

For women who choose motherhood, childbirth represents a transition in a woman’s life. There is a physical transition from pregnancy to birth and a social transition to mother. The woman leaves a place of familiarity, experiences a transitional event and at the end returns to society, having undergone a change (MacLellan, 2020:3566). This narrative is reminiscent of a Hero’s Journey (Campbell, 1973). The transitional event of childbirth and shift to motherhood is a complex physical and mental experience that can leave a new mother feeling vulnerable. This transitional phase is known as “Matrescence” (Masur, 2024).

Despite feminist discourse, childbirth is still considered a uniting experience for many women. The experience of childbirth creates a connection between mothers that transcends social-political barriers (Burns, 2000). However, socio-economic barriers and different birth experiences still have an impact on the physical and emotional wellbeing that accompany the overall experience of childbirth.

The overall experience of a women's birth is related to the future wellbeing of the mother and baby. The birth experience is intertwined with physical and psychological factors, which is influenced by the birth environment. A positive birth experience can lead to higher self-esteem and feelings of empowerment, while a negative birth experience can lead to mental health disorders such as post-partum depression, PTSD, and subsequent fear of childbirth. (Nielsen and Overgaard, 2020)

The shift from home births to hospital births, as well as the shifts from midwives to obstetricians, have completely redefined the experience of childbirth (Dayyabu et al., 2019). This has led to the process of childbirth and design of delivery spaces to be more clinical and guided by modern medical knowledge (Coddington, Catling and Homer, 2020). This has had a significant improvement on maternal and infant mortality rates (World Health Organization, 2023). However, this new environment has led to feelings of disempowerment for women and a disregard for psychological needs (Nielsen and Overgaard, 2020). This stark clinical hospital setting creates a sense of vulnerability and helplessness for patients (Gerteis et al., 1993). This raises the question on how to balance the safe, clinical, and medical methods of modern medicine with the needs, comfort and values of the mother.

Poor quality care and negative birth experience can influence a woman's choice to engage with health and maternity services. (Jolly et al., 2019) (MacLellan, 2020). A negative experience is related to a disregard for a woman's vulnerability in the birth environment. Childbirth is a very naked and intimate experience; therefore, an inadequate environment can lead to feelings of loss of privacy, loss of dignity and shame of exposure (Jolly et al., 2019) (MacLellan, 2020).

Poor quality care includes disrespect and abuse, which infringes on the human rights of women. These infringements include physical and verbal abuse, discrimination, denial of care and issues surrounding consent (Jolly et al., 2019:2).

The first step in improving the experience of childbirth is the concept of quality care. The experience of care and healthcare revolves around the enhancement of wellbeing, and relief from pain and suffering (Gerteis et al., 1993).

Ethics of care involve the following aspects: (Cohen and Fenster, 2021:257)

- *Caring involves reaching out to others*
- *Care is an action to maintain and repair*
- *Care is based on culture and context*
- *Care is an ongoing activity*

“Care ethics conceptualises the self as part of a network of mutual interdependence.”

(Cohen and Fenster, 2021:259)

Quality care is experienced from the perspective of the provider and the patient. From the perspective of the healthcare provider, quality care involves “professional standards, clinical outcomes and technical measures” (Gerteis et al., 1993: 2). Quality care for the patient revolves around the physiological and the psychological experience of the patient. Patient centred care consist of seven elements (Gerteis et al., 1993: 2).

- Respect for the patient’s needs, values, and preferences
- Coordination of care and integrating services
- Communication and education between patient and provider (informed consent)
- Physical comfort
- Emotional Support
- Involving family and friends (the community)
- Continued care

Continued care is an important aspect of patient centred care and is fundamental to the ethics of care, emphasizing that care is an ongoing activity (Gerteis et al., 1993) (Cohen and Fenster, 2021). This refers to the postnatal and postpartum experience of the woman. Regardless of a positive or negative birth experience, the added role of mother and the new experience of motherhood may leave a woman vulnerable (MacLellan, 2020). This phase of Matrescence represents a period of change in a woman’s identity, schedule and priorities (Masur, 2024). The principle of continued care in the form of postnatal medical care, counselling, community support and continued education, can support women physically, mentally and emotionally during this transitional phase.

Communication and education play a crucial role in women’s autonomy regarding their reproductive healthcare and care in general. Education and communication between healthcare providers and patients empowers women with information regarding their reproductive health. (Jolly et al. 2019:6). Community involvement for maternal rights, education and awareness can empower women with knowledge on their reproductive health and when to seek care (Dayyabu et al., 2019) (Jolly et al. 2019:6). Educated woman are more likely to question healthcare providers and be involved in decision making (Gerteis et al., 1993:5). Education is also linked with limiting fertility through contraceptives (Statistics South Africa, 2020). Education and information regarding procedures and maternal health allows women to take agency over their reproductive healthcare and childbirth experience. When women participate in decision making, it leads to empowerment and an overall more positive birth experience (Gerteis et al., 1993) (Jolly et al. 2019) (MacLellan, 2020).

The above aspects relate to the social relationship between patient and healthcare provider to improve the experience of maternal healthcare. However, the physical space that facilitates the act of care is relevant to the experience of its users. The design and optimization of space is where architects engage with aspects of care ethics and wellbeing. As designers, we can control the experience of a person within a space and the effect of architecture on healing.

The architectural aspects of a healthcare space have a considerable influence on patients' experience. Hospital settings can create an uncomfortable space of "estrangement and detachment" (Pallasmaa, 2012: 22). The clinical design and configuration of a birthing room can leave a woman feeling exposed. The bright lights, uncontrolled staff access and monitors and machinery, creates a power imbalance between medical staff and the patient (MacLellan, 2020). Bright lights and constant illumination are a form of mental torture, eliminating a sense of privacy and emphasising exposure (Pallasmaa, 2012: 51). This contradicts aspects of patient centred care by neglecting physical and emotional needs.

Hannah Arendt in her writing "The Human Condition" (1958) describes "labor, work and action" as the fundamental human aspects. (Arendt, 1958:7) She uses these terms to describe aspects of human life. Labour relates to biological functions of humans, work relates to the artificial aspects of human life, and action relates to the interactions between people. (Arendt, 1958:7) She goes on to describe that these three aspects are crucial to human existence - labour creates life, work creates permanence and action creates memory. (Arendt, 1958:7-8)

These three concept are closely linked to the concept of a holistic birth space. Labour, representing the physical aspect of childbirth, work representing the physical built environment, and action representing the narratives, emotions and experiences within the space.

There is a need for birthing spaces to promote an aspect of healing and wellbeing, improving the experience of healthcare spaces and promoting holistic continued care. Here we explore the aspect of healing architecture and experiences within healthcare space.

*"...architects care for the
occupants of their buildings
professionally, in the same way that
doctors care for their patients."
(Cohen and Fenster, 2021:258)*

Arendt links the concepts of “labour, work and action” to the word “natality” to describe new beginnings. This concept of natality is subject to literal and figurative interpretation.

Natality can be linked to matresence as the woman faces a new role as a mother. This makes it crucial that the interactions with people and physical environment contribute to a positive birth experience.

Caregivers, health practitioners and midwives play a crucial role during the birth process. Poor environmental conditions within healthcare facilities such as staff and skill shortages, resource limitations, lack of support and poor infrastructure create a challenging work environment for healthcare workers. (National Department of Health, 2021: 7-8, 22, 23) (Malesela, 2021:49) These difficult working conditions are often associated with mistreatment from staff such as verbal abuse, physical abuse, neglect and overall poor-quality care. (Malesela, 2021:49). Proper physical support in facilities will ensure that healthcare practitioners are able to provide quality patient care. In addition to physical resources, staff also require emotional support to cope with grief following traumatic births. Experiencing a traumatic birth can create a sense of helplessness and failure among healthcare workers. (Malesela, 2021:52)

The physical birth environment has a considerable influence on a woman’s experience and wellbeing (Nielsen and Overgaard, 2020). A safe birthing space improves the mental wellbeing, is associated with shorter labours and less medical intervention, better bonding between mother and child, and improved postnatal recovery (MacLellan, 2020: 3567).

Architecture can be used as a tool to bring an experience of wellbeing to a space. Healing architecture refers to a physical environment that encourages “well-being and rehabilitation” (Simonsen, Sturge and Duff, 2022:322). Healing architecture enacts the principal of continuous care by creating a physical space that facilitates physical and mental healing (Simonsen, Sturge and Duff, 2022).

“...the human condition of natality; the new beginning inherent in birth can make itself felt in the world only because the newcomer possesses the capacity of beginning something anew,” (Arendt, 1958:9)

Healing architecture involves having spaces that facilitate a synergy of the physical, mental, and spiritual aspects of healing. Spatial design and experiential quality that are based on patient centred care can create a positive experience for the patient (Simonsen, Sturge and Duff, 2022). Architecture that considers the multisensory nature of the human experience, contributes to a holistic wellbeing and a positive experience of a space (Pallasmaa, 2012).

Physical design features of a space that facilitate healing includes (Simonsen, Sturge and Duff, 2022:319-320):

- Comfort and control
- Privacy
- Views of nature and outdoors
- Interior spatial quality
- Legibility of spaces and programming
- Allowance for flexibility
- Support spaces

Childbirth and architecture are both multisensory experiences. Childbirth is a liminal experience representing a transition in a woman's life (MacLellan, 2020:3566) and therefore the birth space can be seen as a liminal space that facilitates this transition to motherhood. Architecture can enhance this experience of matresence.

Pallasmaa's criticism of the occularcentric and the haptic holds relevance to feminism and the birthing space. The experiential quality of the space is experienced through the human body. The experience of a space is remembered through the body creating physical and psychological memories. (Pallasmaa, 2012:44,49)

Pallasmaa describes occularcentric culture as "the specters of patriarchal rule" (Pallasmaa, 2012:21) by drawing parallels between vision and aspects of control, domination, and security. Architecture that focusses solely on the aspect of vision, creates a feeling of detachment and separation. (Pallasmaa, 2012:14,22,50). A birthing room that is optimized for surveillance and medical observation exposes a woman both physically and emotionally, creates vulnerability and detracts from the birth experience (MacLellan, 2020) and creates a "birth of the clinical gaze" (Deacon, 1998:272).

"Creative work calls for a bodily and mental identification, empathy and compassion."

(Pallasmaa, 2012:13)

Skin and touch are two important aspects of the human experience, touch being described as “the mother of the senses” (Pallasmaa, 2012:12). The haptic experience of touch is relevant to both the experiential quality of the birthing space and the experience of childbirth. Childbirth is an intimate experience that involves bonding through skin-to-skin contact. There is a strong correlation between sensation of skin and feelings of home – creating a sense of comfort(Pallasmaa, 2012: 56).

The human body consist of various sensory systems that work together to capture and create experiences of the space and self: (Pallasmaa, 2012:45)

- The visual system – captures the aesthetics, physical appearance and light quality of space
- The Auditory system – captures the auditory quality of space, the acoustic quality and sounds of interaction with the building.
- Taste-smell system – captures the quality of the air and ventilation, the smells within the space relating to its use, age or condition.
- Orientating system – the aspect of wayfinding, navigation, accessibility and legibility of space.
- Haptic System – includes all of the experiences above. The interaction with the space, the texture of materiality, heat and cold, humidity, wind, movement, vibrations, emotions and atmosphere of the space.

A space of healing is a space of multisensory experience, perceived through the human mind and body. An integrating of the space and the senses brings a sense of stability. (Pallasmaa, 2012:44, 49)

An alternative model to the typical medical birthing room aims to return to the domestic setting as birthplace, emphasizing the wellbeing and experience of the mother through patient centred care and the principles of healing architecture (Nielsen and Overgaard, 2020). The experience of home is an experience of intimate warmth, and a space of safety and comfort (Pallasmaa, 2012: 56). A home-like birth environment creates a feeling of welcome and improves the emotional experience, autonomy and comfort within the space(Nielsen and Overgaard, 2020).

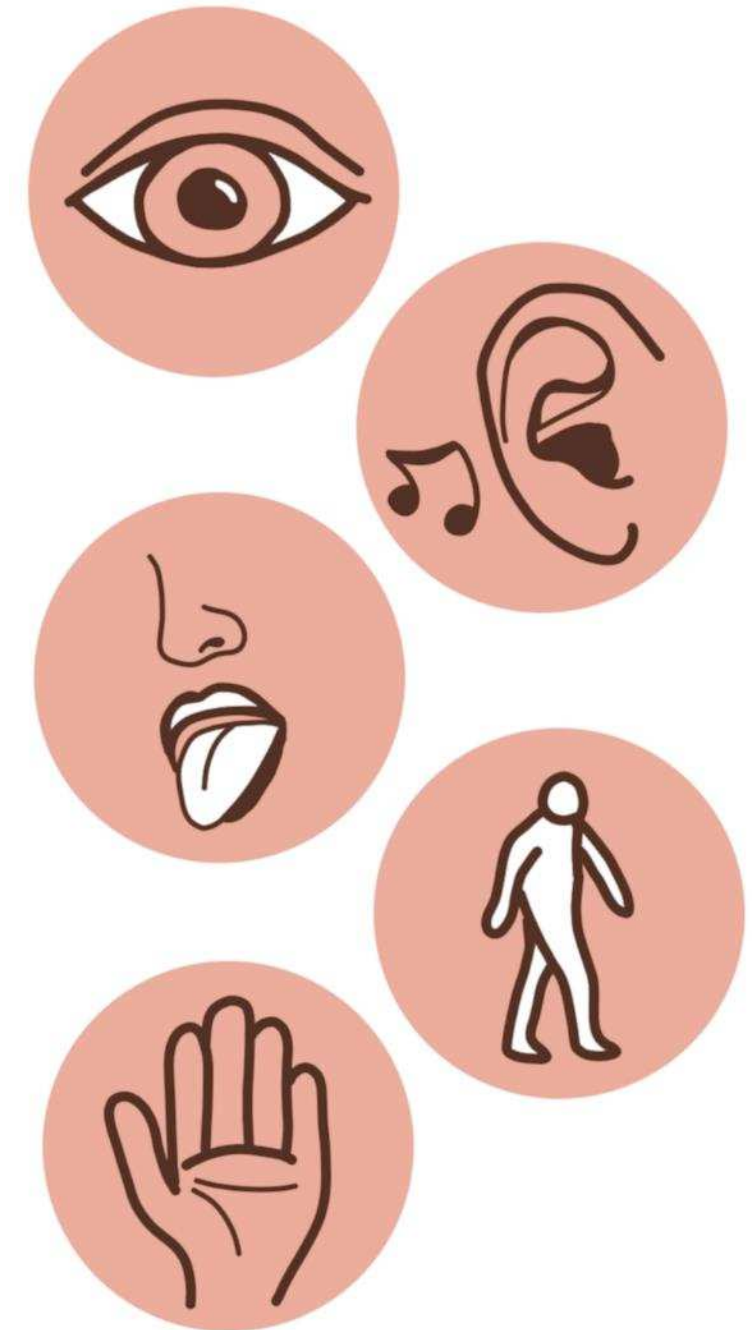


Figure 2.4: The sensory systems according to Pallasmaa

The interior quality of the space needs to provide comfort and tranquillity to the mother. The birth environment can be enhanced by creating a home-like setting by hiding medical equipment out of sight, having comfortable furniture and allowing free movement around the room (Nielsen and Overgaard, 2020:8). The space should also make provisions for different methods of birth, such as waterbirths, and different birth positions – such as squatting as opposed to laying down. This flexibility in birthing methods allows woman autonomy in their birthing experience.

The birthing environment needs to act as a protective womb to protect the experience of the birthing woman. Privacy in the birth space ensures a safe space for the mother that reduces the risk of exposure and feelings of vulnerability. Due to the nakedness and intimacy of childbirth, and heightened emotional state, it is important to provide privacy for the mother, her support partner and birthing attendant. The birthing room needs to be a single occupancy room with a private bathroom (Nielsen and Overgaard, 2020). The room layout needs to protect the patient's privacy, such as preventing views into the room from outside and limiting access to the space (International Health Facility Guidelines, 2017:10).

The need for thresholds is important, thresholds between public, private and patient zone. The threshold spaces are synonymous with transition spaces, an important aspect of the transitional experience of childbirth.

Different building spaces have a “characteristic sound of intimacy or monumentality” (Pallasmaa, 2012: 54). The sound quality of the birthing space needs to promote a sense of tranquillity and calm. Acoustic privacy is needed, both to prevent noise from outside and to contain birthing sounds from within the room (International Health Facility Guidelines, 2017:11).

Whilst it is important to prevent views into the room to respect patient privacy, a beneficial aspect of healing architecture is views to the outside, as well as a visual and audial connection to nature (Simonsen, Sturge and Duff, 2022). Visual and audio distractions can help women during the process of labour and improve experience (Nielsen and Overgaard, 2020:7). Access to a secure outdoor space is valuable to a healing experience (Simonsen, Sturge and Duff, 2022). A connection to nature and the outside reinforces the idea of the natural aspect of childbirth. Additionally, movement between outside and inside gives the woman a sense of freedom and autonomy.

“Heightened experiences of intimacy, home and protection are sensations of the naked skin.”

(Pallasmaa, 2012:56)

In contrast to the stark bright light usually associated with medical spaces, dimmer light quality such as the soft light of twilight has a sense of cosiness (Pallasmaa, 2012: 50, 51). Dawn and twilight are associated with transition. The experience of transitional light can add to this transitional experience. Allowing the mother to control the light and ambience of the space, give her a sense of control over her environment and experience, enabling her to make decisions that fits her wellbeing (Nielsen and Overgaard, 2020:7).

Ventilation and air quality of the space both need to facilitate a healthy environment as well as a comfortable environment for the mother. The clinical smell of medical settings might detract from the birth environment. Smells can create strong associations and memories of a space (Pallasmaa, 2012: 58).

The presence of a partner provides emotional support to the mother during the birthing process. Involving the partner in the birth process creates a sense of equality and intimacy for the couple (Nielsen and Overgaard, 2020). The involvement of the partner also highlights the transition to parenthood. In the case of heterosexual couples, the involvement and support of the father is a victory for feminism, as it highlights the equal value of both parents in the role of parenting and the shared responsibilities of childbearing. Since labour can be a lengthy process, the provision of a comfortable space for the birth partner within the birthing space is beneficial to both the mother and their support person (Nielsen and Overgaard, 2020).

The involvement of family and friends is a key factor in patient centred care and the well-being of patients (Simonsen, Sturge and Duff, 2022). However, it remains the mother's choice of who is allowed within the birthing space. While some women may prefer the support of family and friends in the room, other may prefer to limit the people in the room due to the intimate nature of the experience. This makes it beneficial to have waiting spaces located outside the birthing environment where family and friends can wait. This starts to create a series of spaces outside the birthing environment, with various thresholds of privacy and different qualities of spatiality, sound, and light. This gives the woman more freedom in and around the space, increasing autonomy in her birthing journey.

There is a strong relationship between the principles of patient centred care and healing architecture. Spatial design choices can facilitate care ethics and aspects of healing of the birth process. The architectural quality of the birth environment has a strong impact on the autonomy and experience of the patient.

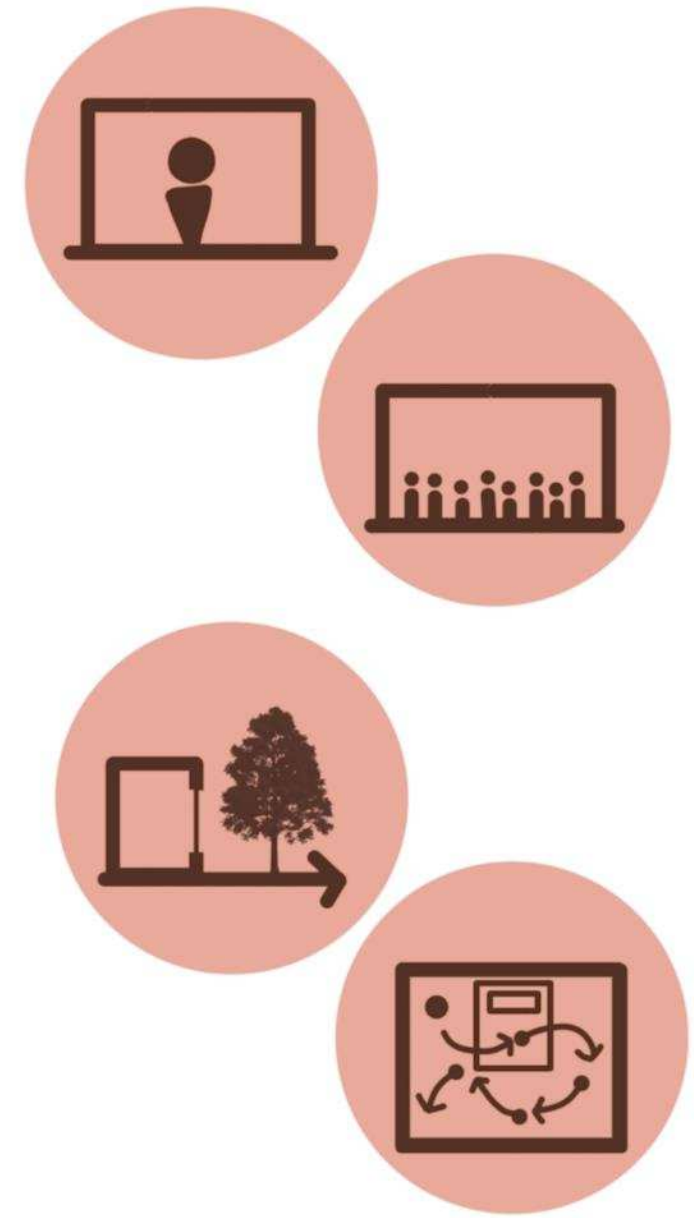


Figure 2.5: Spatial Drivers

The main principle of this essay explores the experience of womanhood, experience of healthcare and experience of architecture to create a combined experience of maternal healing environment. The essay identifies the systemic issues that create a poor experience and investigates solutions to enhance the overall experience.

In conclusion, the experience of childbirth is closely linked to aspects of feminism, healthcare environments and architectural phenomenology. Aspects of reproductive autonomy, motherhood and care lie at the heart of feminist theory as motherhood has been ground for the denial of woman's rights. We see how the harmful stereotypical narratives influence the treatment of women within medical birth environments. The clinical nature of the childbirth environment has led to the disenfranchisement of woman's reproductive autonomy. By introducing ethics of care and patient centred care, we start to return a sense of autonomy to women in the birth space. Furthermore, the inclusion of the multisensory aspects of phenomenological architectural theory adds an additional layer of complexity to enrich the design intervention to create a holistic healing experience.

By interrogating the theory of feminism, healing and phenomenology, the following design drivers emerge. These drivers are (1) Care ethics and Patient Centred Care, (2) Holistic Wellbeing, (3) Healing Architecture, which includes aspects of privacy, autonomy and connection to nature, and (4) Phenomenological Experience of domestic environments.

These drivers create a concept of a continues cycle of care that uses healing environments to support woman throughout their pregnancy, during childbirth and continues afterwards. This will form the basis of a birth centre that enables female empowerment, promote holistic maternal healthcare and create positive birth experiences.

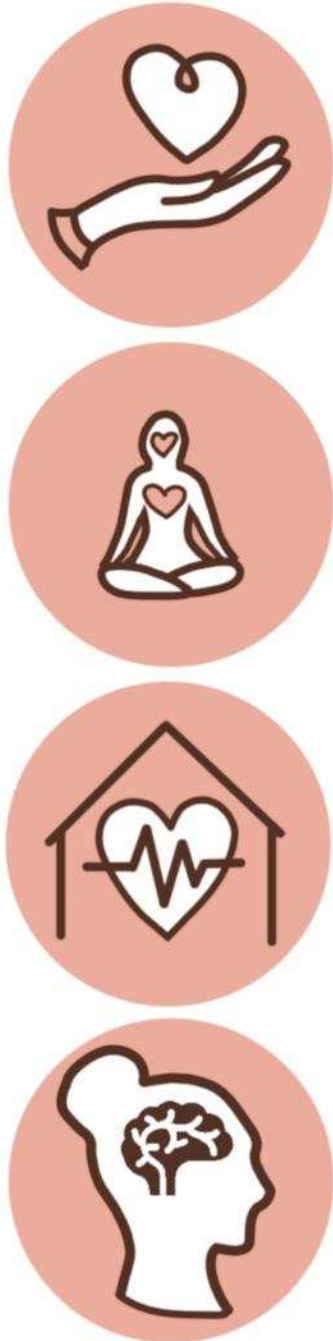


Figure 2.6: Birth Centre Design Drivers

Chapter 3

Site Analysis

Introduction to Context

Alberton, Florentia, Erf 941

The research area is in the town of Alberton, located south of Johannesburg, and forms part of the Ekurhuleni Metropolitan Municipality. The site is a large erf of undeveloped land in the suburban neighbourhood of Florentia. The suburban context has a rich narrative of life and community. Nodes such as homes, schools, churches, workplaces and graveyards paint the picture of the life of a person and the life of community. However, this story lacks a beginning – the start of a new life.

This chapter explores the macro context of Alberton such as its history, population, climate and medical facilities. Thereafter I zoom into the context of Florentia, exploring the zones and nodes part of the narrative of the site. Finally, I look at the site itself, its features, surrounds and design strategies for a birthing centre.

Various tools are used for this analysis including site visits, Regional Spatial Development Framework (RSDF), Bioregional Reports, Ekurhuleni GIS portal, Local Newspaper articles and Alberton Heritage Society Documents.

Figure 3.1: Alberton Locality Map, edited image



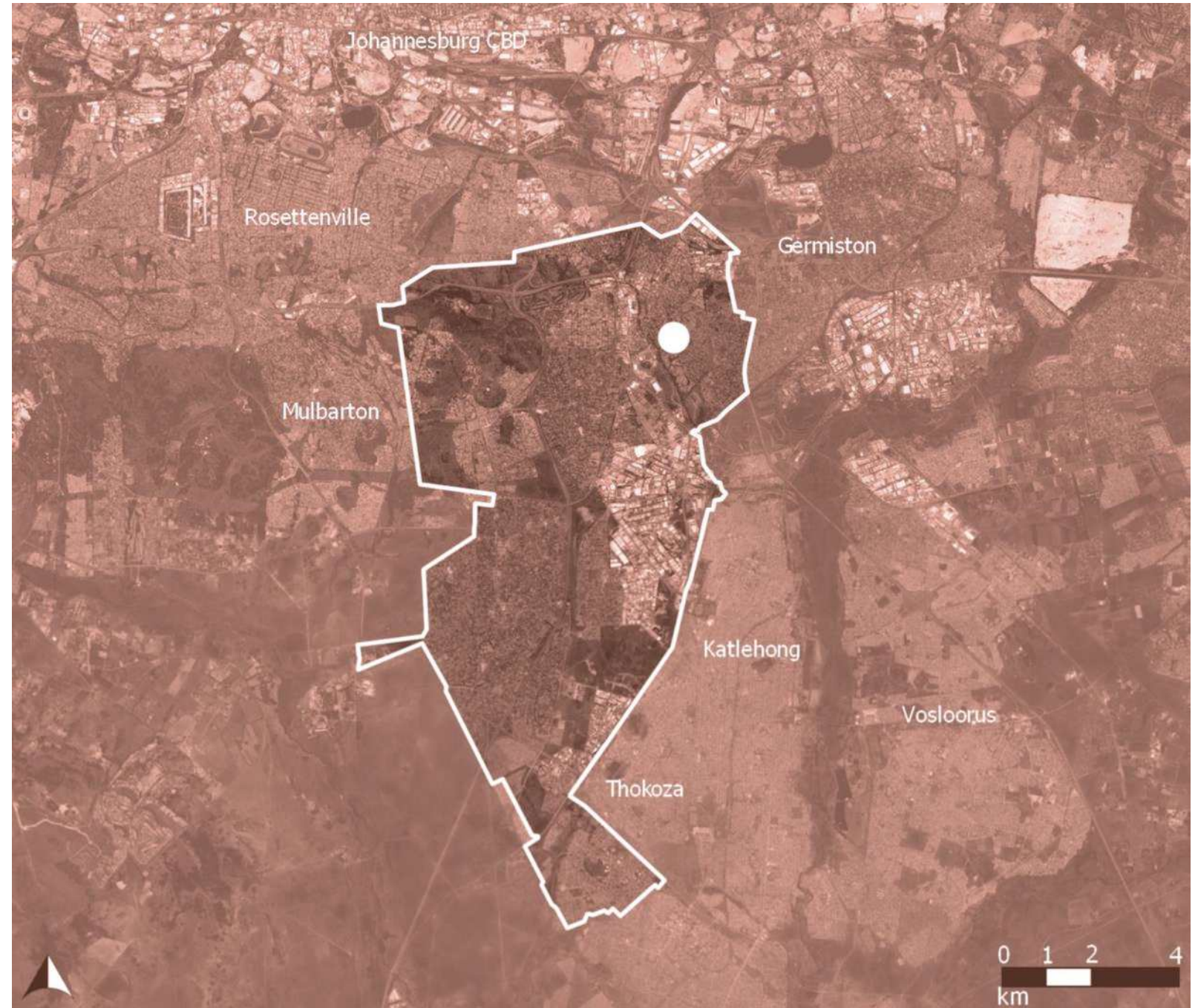
Macrocontext

The town of Alberton

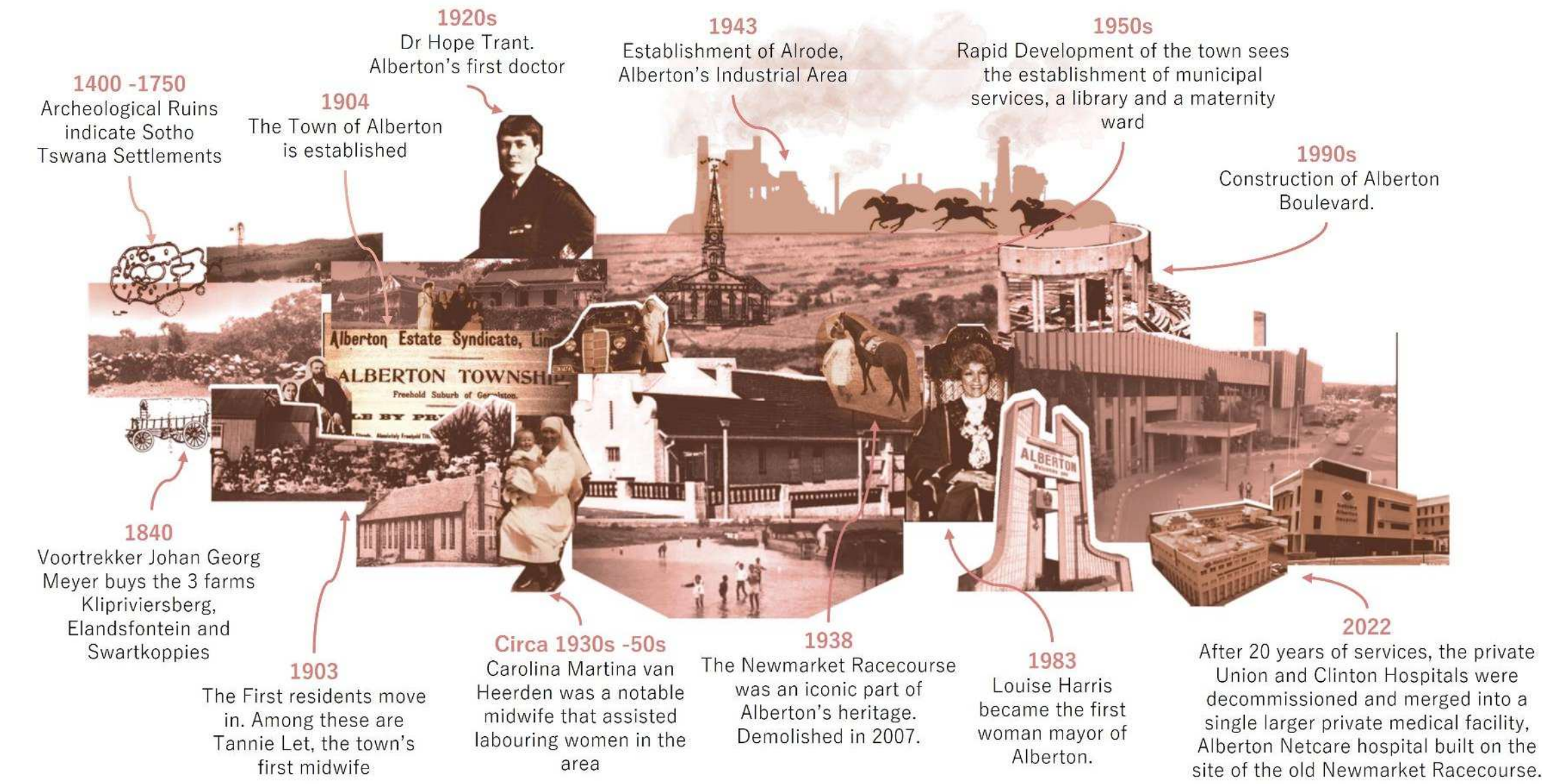
The Town of Alberton is located south of the Johannesburg mining belt and along the Natalspruit River. Alberton lies within a valley between the rocks of Klipriviersberg and the ridges of the Witwatersrand. Established in 1904, the town was ideally located close to jobs in the mines, railway and industries of Johannesburg and the East Rand. The town also aimed to provide a place for displaced families from the Anglo-Boer War. (Alberton Heritage Society, n.d.)

Today Alberton forms part of the Ekurhuleni Metropolitan Municipality, formed in December 2000, which consolidated nine towns and eleven townships of the East Rand into South Africa's fourth largest municipality. This consolidation of these areas holds several spatial and socio-economic challenges and inequalities, notably in the healthcare sector. (GIBB, 2015)

Figure 3.2: Map of Alberton and Surrounds, edited image



History of Alberton



Sources: (Alberton.co.za, 2014) (Alberton Heritage Society, n.d.) (Daniel, 2022)
(Klipriviersberg Nature Reserve Association, no date) (Kruger, 2014)

Figure 3.3: Collage of Alberton History

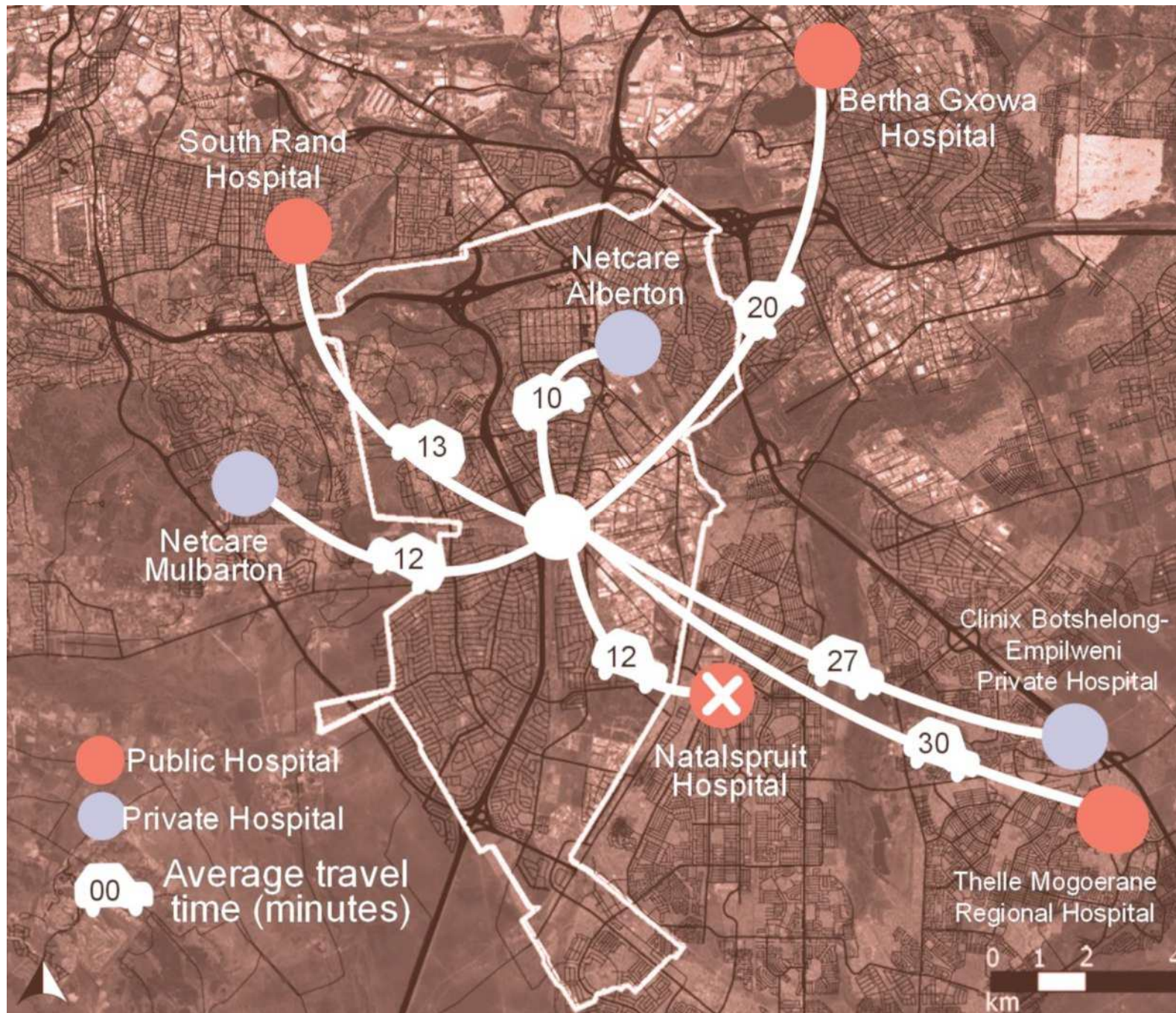


Figure 3.4: Distance to Nearest Healthcare Facilities, edited image

A Shortage of Hospital Care

Alberton has a wide network of private medical practitioners but is severely lacking in the public healthcare realm. The only hospital within town is the private Netcare Alberton Hospital. There is no public government hospital in the town. This is not only problematic for residents residing within the town that cannot afford private healthcare, but also people travelling to the town from other areas that work within the town's businesses and industry.

In 2014, the government Natalspruit Hospital in Katlehong was demolished and moved to Vosloorus due to dolomite land conditions (Maule, 2014). This controversial move has affected healthcare access for the communities of Thokoza and Katlehong (Modiba, 2023). The location of the new Thelle Mogoerane Regional Hospital in Vosloorus is not central to Alberton, Katlehong, Thokoza and Vosloorus. The RSDf framework suggest that the old Natalspruit site is a more optimal site to serve the surrounding communities (GIBB, 2015: 84).

The nearest three other hospitals are the Private Netcare Mulbarton in Johannesburg South and Government facilities South Rand Hospital and Bertha Gxowa Hospital.

Population, Density and Access

Alberton only has three municipal clinics – the Brackenhurst Clinic, Eden Park Clinic and Alberton Clinic. There have been various complaints about service delivery at these clinics. Complaints include long queues and waiting times, lack of seating for frail and elderly patients, a broken appointment service, rude and disrespectful staff, lack of communication and inconsistent operating hours (Malunga 2021)(Malunga 2023). Various pregnant women have raised complaints over refusal of treatment and verbal abuse by staff and midwives (Malunga 2022).

Alberton has a population of 121,536 according to the 2011 census (Frith 2011). According to the RSDF framework, the standard for healthcare is 1 clinic for every 10 000 people, 1 day hospital per 50 000 people and 1 government hospital per 100 000 people (Gibb 2015:79).

In terms of public healthcare, this means ideally that most suburbs need at least one public clinic. The Eden Park Clinic alone serves a suburb of more than 20 000 residents. This leaves the Brackenhurst and Alberton Clinic to serve a population of 100 000 people. The private healthcare system and private clinics lessens the demand on municipal services; however, it is unrealistic to assume that everyone has financial capacity for private healthcare and medical aid.

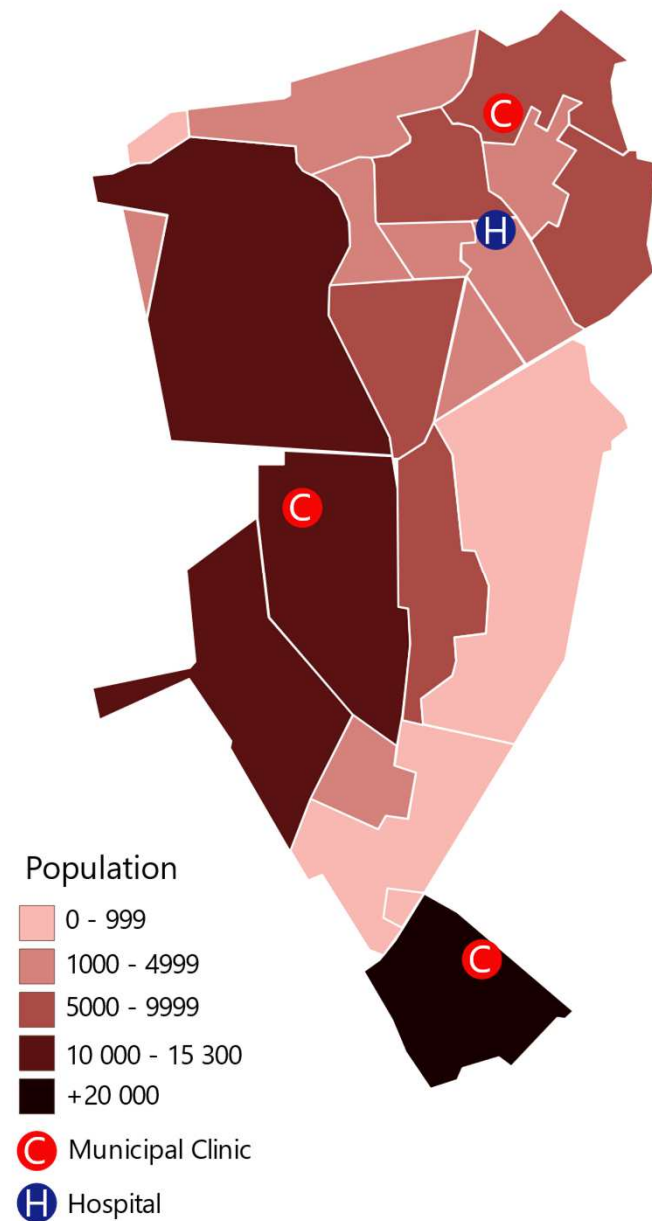


Figure 3.5: Population Map of Alberton

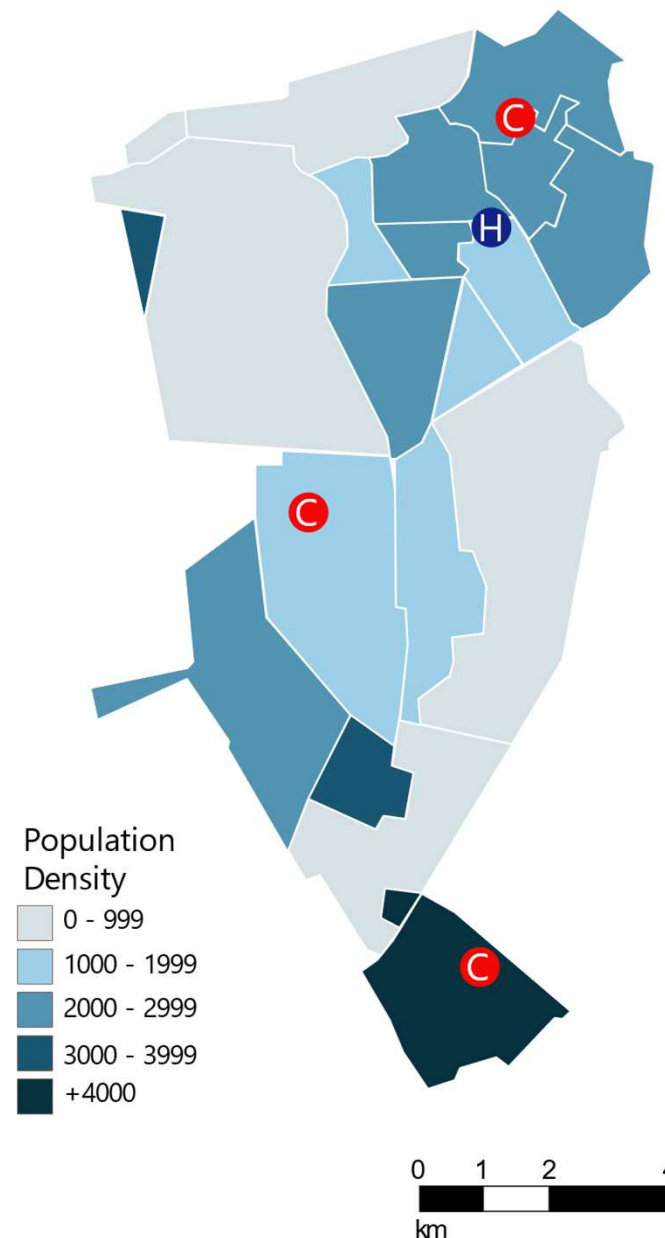


Figure 3.6: Population Density Map

Infant Abandonment

Infant abandonment is a sad reality in South Africa. Reasons for child abandonment in South Africa includes poverty, gender inequality, lack of family support and sexual violence. Restrictive legislation criminalises child abandonment, and adoption processes requires permission of both the father and mother (Rosenberg, 2021). Mothers unable to care for their baby should be able to safely hand over their baby to nurses, police officers or social workers, but are often turned away (Ndlovu, 2023). Baby Savers or baby boxes are safe alternatives for woman to safely and anonymously surrender their baby; however, legislation deems this as an illegal act of child abandonment (Rosenberg, 2021) (Ndlovu, 2023).

Without proper safe alternatives of relinquishing care of an infant available to struggling mother, infants are often abandoned in places such as drains, open fields and rubbish bins. (Rosenberg, 2021) Between 2018 and 2021, there were at least five incidents of infants found deceased in Alberton (Pienaar, 2018) (Thloloe, 2018) (Walker, 2019) (Walker, 2021). There was another incident just outside Alberton where a foetus was found in drain (Nair, 2015). It is unknown if this last incident was due to an unsafe abortion or miscarriage, but it does highlight a lack of access to prenatal healthcare and support to expectant mothers.

This lack of accessibility to public mother and child healthcare facilities inspires my concept for community-based birthing centres to take the pressure off of the struggling healthcare system, and be in close proximity with the communities that they serve.



Figure 3.7: Locations of Abandoned Infants



Figure 3.8: Alberton's Connection to Johannesburg, edited image

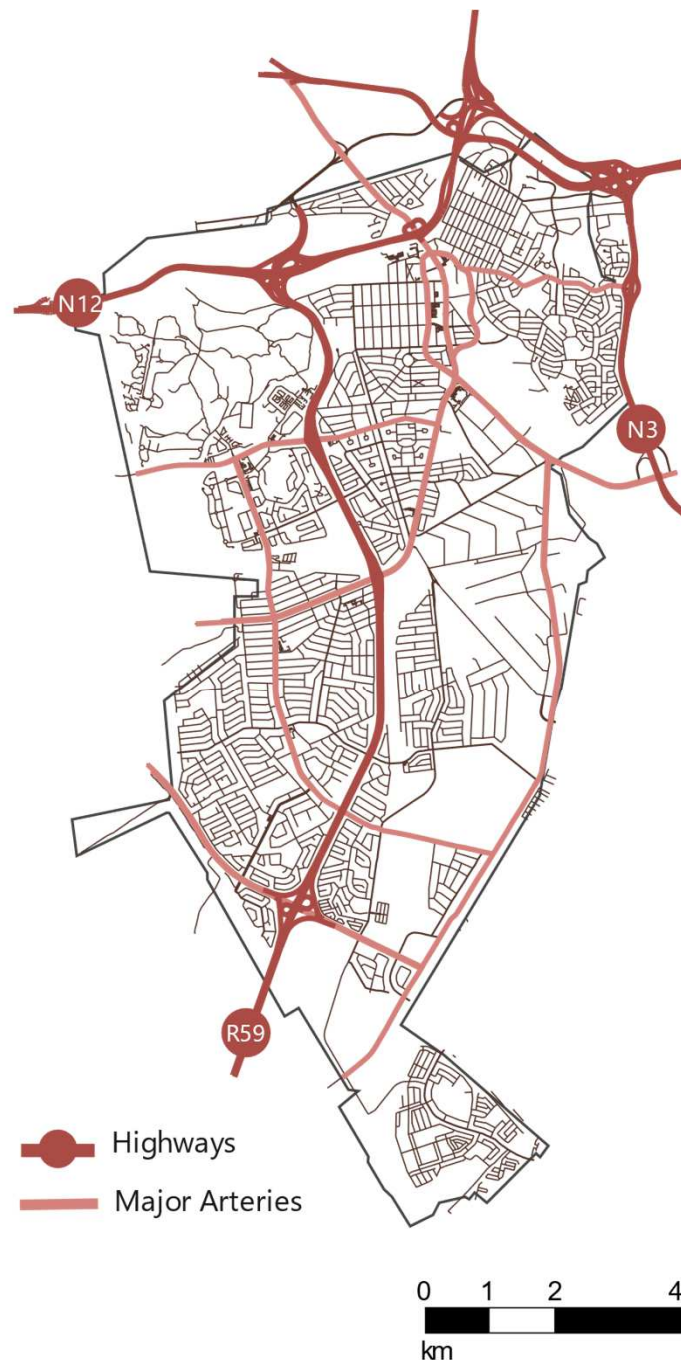


Figure 3.9: Road Network in Alberton

Connectivity

The town is well connected to major roads and routes to key locations. Routes such as the N12 forms part of the Johannesburg ring road, the N3 creates a connection between Johannesburg and the Durban Ports, and the R59 creates a link to the South towards Vereeniging. Alberton's main economic driver is the manufacturing and industrial industry (GIBB, 2015:12) and requires a good transportation network for freight.

Within Alberton itself, the main artery is Swartkoppies Road, that eventually splits into Voortrekker Road and the Ring Road, the heart of the town. This artery creates a connection and access between suburbs. Despite the good road networks, the town is lacking when it comes to public transport such as bus and rail services. The taxi industry makes up for this gap in transportation needs (GIBB, 2015:38).

Figure 3.10: Average Monthly Precipitation

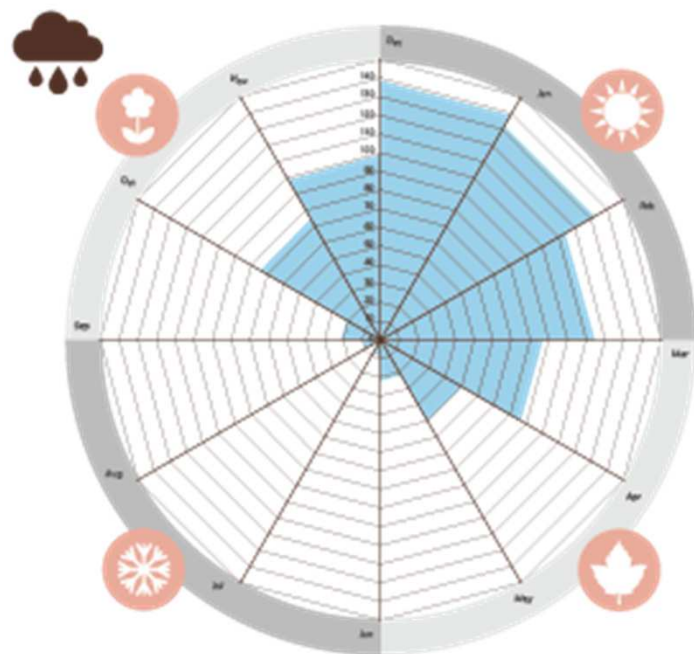
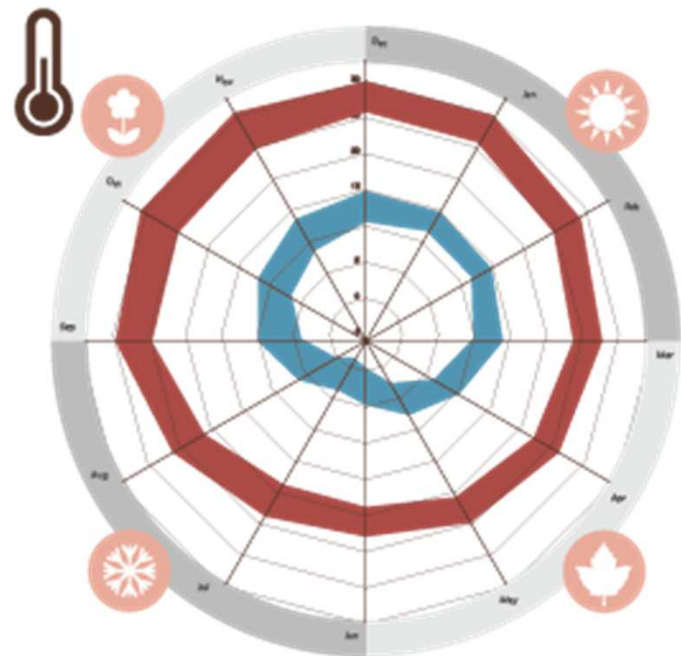


Figure 3.11: Average Monthly Temperatures



Climate and Climate Change

Due to its location on the highveld plateau, Alberton's climate is classified as "Subtropical Highland Climate" (Cwb) according to the Köppen Climate Classification (Kottek et al., 2006). This mean that Alberton has dry winters and warm wet summers.

Most Rainfall is during the summer months of December and January. Hot summer days can reach up to mid-thirties and winter lows can dip to the negative (meteoblue, no date).

Climate change in the region leads to increased temperatures and extreme weather events such as heatwaves and violent storms (GIBB, 2015: 95). Without drastic measures, there is a prediction in an increase in temperature, rainfall, extreme weather events, and humidity (GIBB, 2015: 96). These factors and events that deviate from the current norm and climate data need to be taken in account when designing a building. Recent years have already shown an increase in weather anomalies (meteoblue, no date).

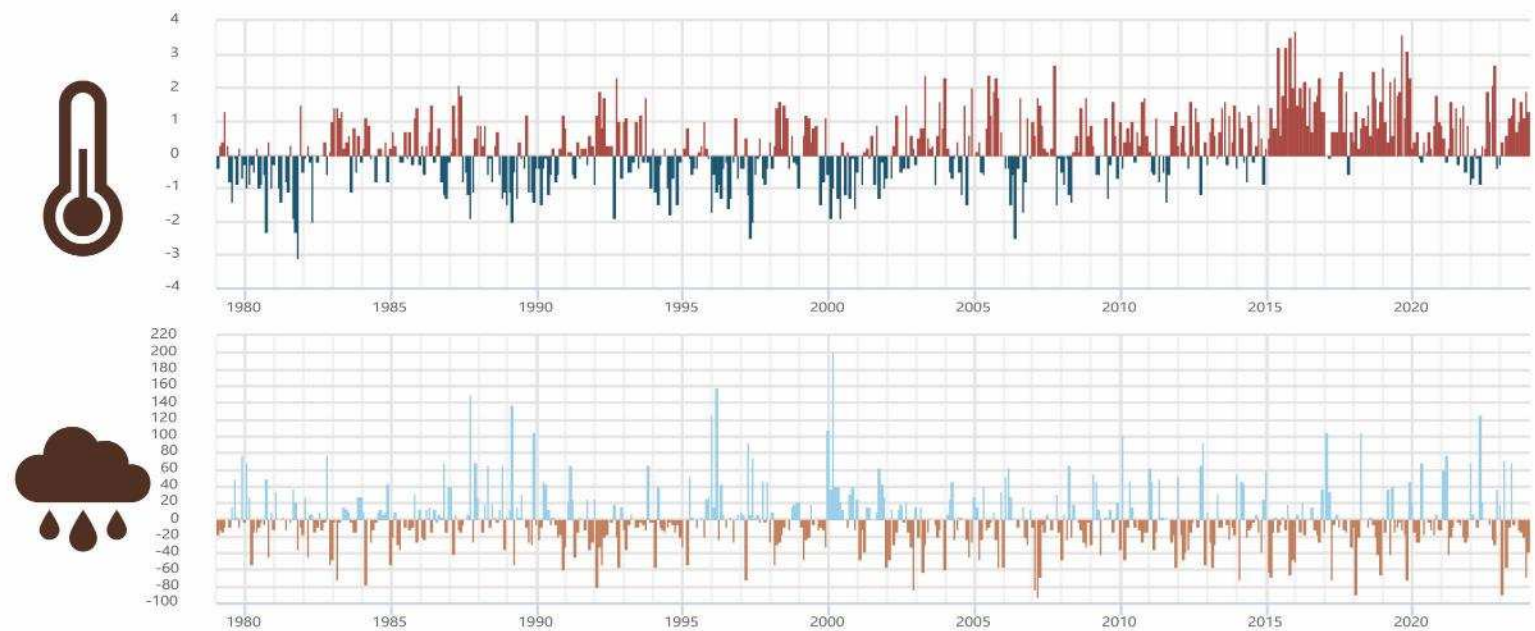
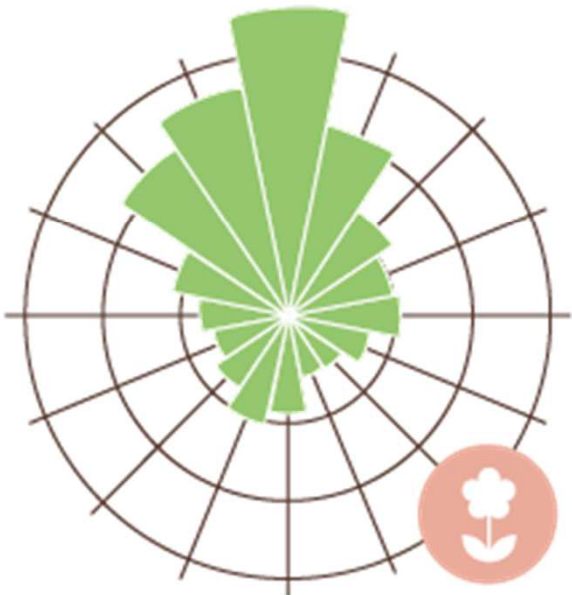
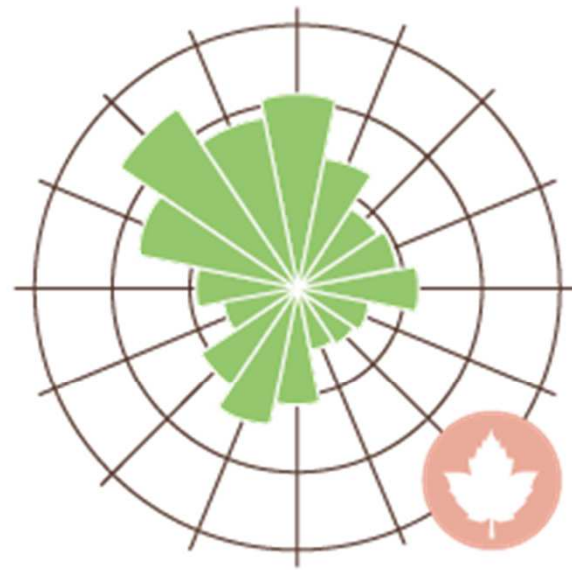
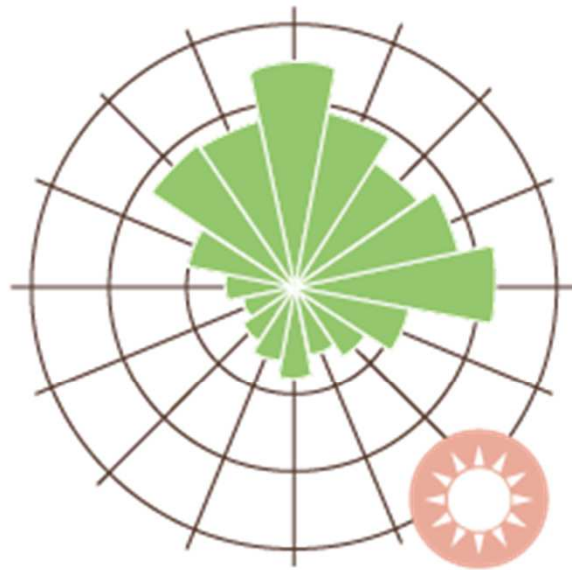


Figure 3.12: Climate Change in Alberton, edited graphic.



Prevailing Winds

Prevailing winds change depending on the season, with North and Eastern winds driving the summer rains. Spring winds have strong Northern Winds. Autumn and Winter winds are more varied, with July winds from the Southwest bringing cold weather. Overall, the yearly average shows a strong overall trend for Northwestern winds. (Kruger and Mbatha, 2021)

These wind directions are a potential design driver for natural ventilation on the site.

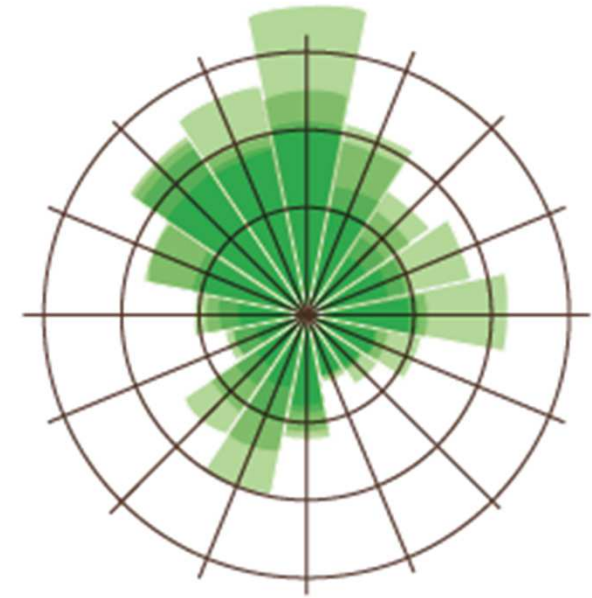


Figure 3.13: Yearly and Seasonal Winds.
Redrawn from reference

Site Selection

Alberton is densely developed with low to medium density residential buildings and viable open space within suburbs is running out. A recent popular trend in Alberton is the development of medium density townhouses on leftover open spaces. Other open spaces are not viable due to the presence is of industrial pollution, topography, environmental constraints, and servitudes.

However, despite these barriers, I have identified six potential sites for my design intervention. These sites are currently vacant but recommended for community development according to the Regional Spatial Development Framework (GIBB, 2015).

The key criteria for that I focused on for my site selection, are the relation of the site to the neighbouring community and the community narratives, access to the site and environmental conditions.

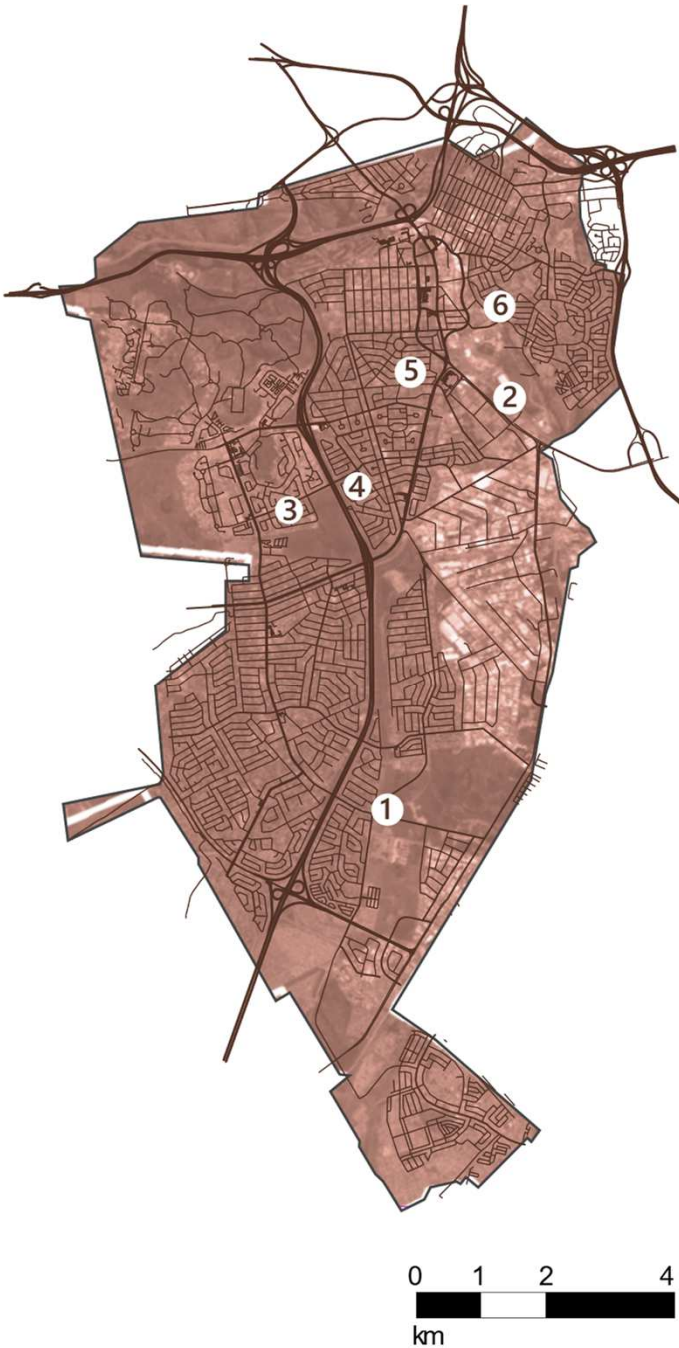
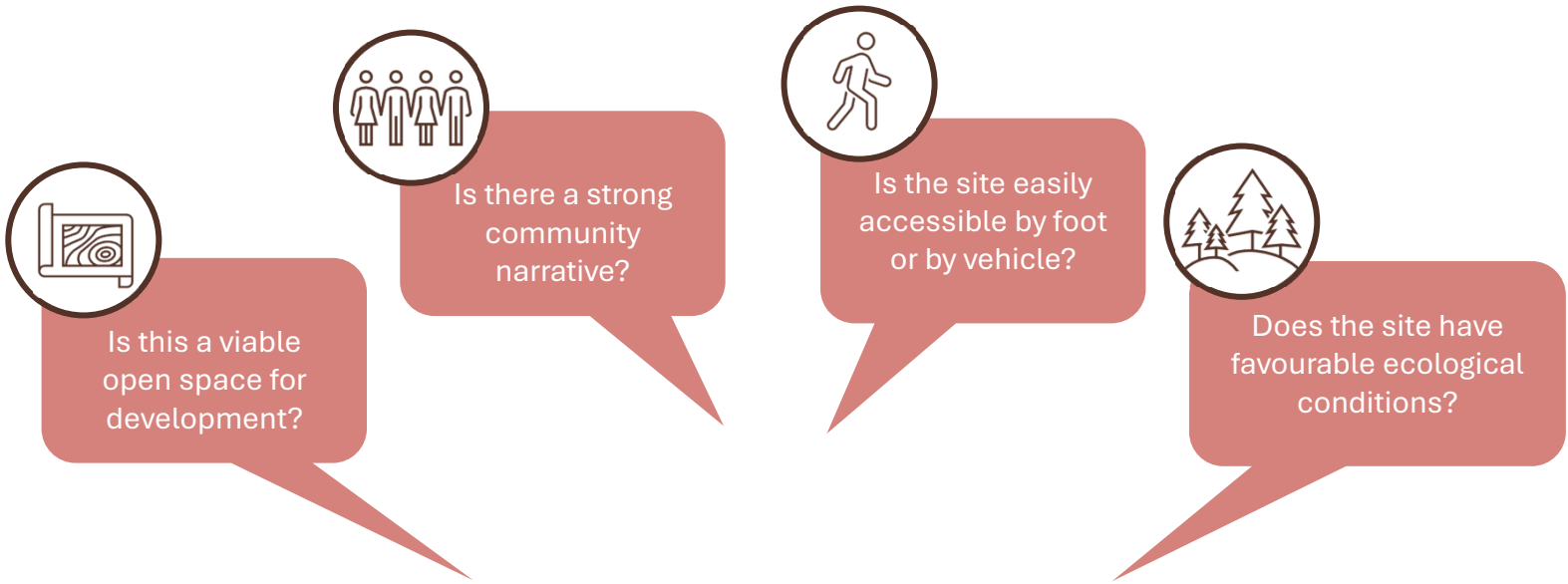
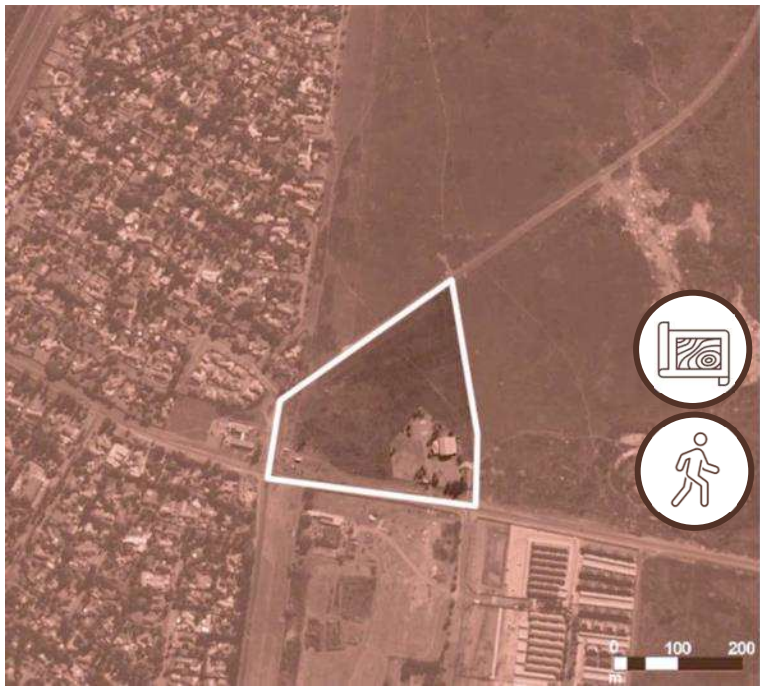


Figure 3.14: Site Selection Map

Figure 3.15: Mayberry Park Site, edited image



Site 1: Mayberry Park (89 693 sqm)

The Mayberry Park Site sits on the corner of a large undeveloped span of land on the edge of Alberton bordering Thokoza. This site was the initial first choice for the project, however, the presence of servitudes, electrical lines and critical biodiverse zones made the site unsuitable for the project. The site also lacks context and feels isolated from the community. This site does however have vast potential for community development and consolidation between the communities of Thokoza and Alberton that can be explored in future research.

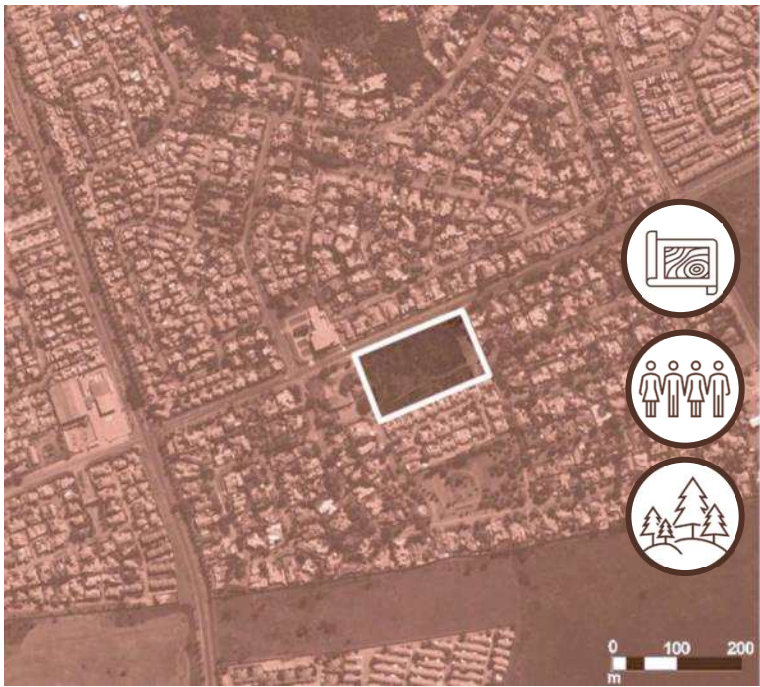
Figure 3.16: Newmarket Site, edited image



Site 2: Newmarket (199 001 sqm)

Another strong initial contender was of a section of the old Newmarket Racecourse. This site has rich cultural and historical significance to Alberton. The site is located near the Alberton Netcare Hospital and along Heidelberg Road, a major road which connects to the N3, creating a connection to surrounding areas. However, this area has been highly commercialised in recent years. Due to the heritage value of the site and lack of sensitivity to the cultural significance by other developments on site, the project does not feel appropriate here. The presence of a wetland zone further complicates viability of the site.

Figure 3.17: Meyersdal Site, edited image



Site 3: Meyersdal (18 306.47 sqm)

The Meyersdal site's potential lies in its proximity to community facilities such as a park and various churches. The site has good north frontage and potential access to Hart Avenue on the North. The site is flat with no trees or geographical features. However, the site forms part of a gated community, decreasing accessibility to the site. The site is currently used as a pedestrian route through the neighbourhood.

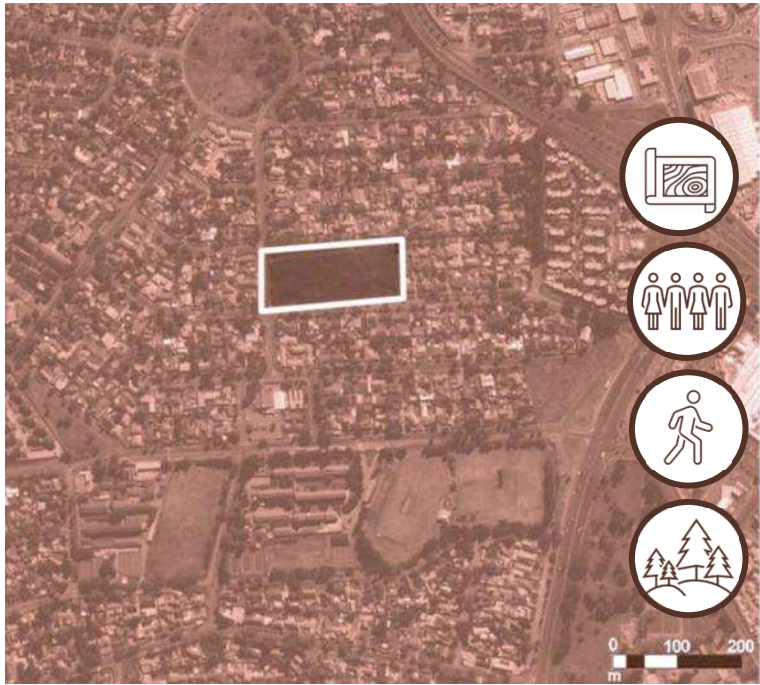
Figure 3.18: Randhart Site, edited image



Site 4: Randhart (30 180.95 sqm)

The Randhart site is a large vacant site and flat with trees lining the perimeter of the site. The site is accessible to vehicles on three sides. There are some churches and schools located near the site. However, the site feels quite hidden and difficult to find, road quality is poor, and the context did not feel suitable for the project.

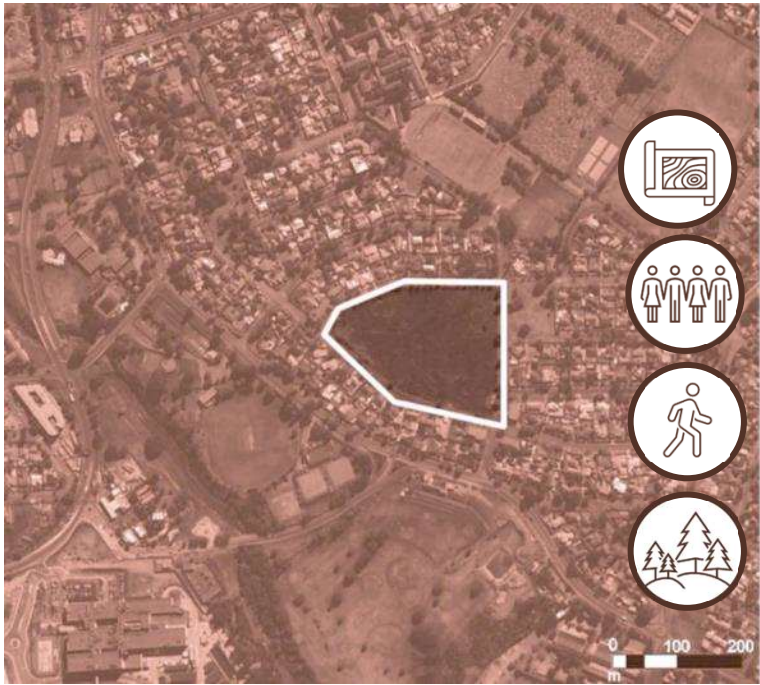
Figure 3.19: Raceview Site, edited image



Site 5: Raceview (17 096.50 sqm)

One of the stronger contenders for the site is a vacant space in Raceview. I was drawn to this site due to its strong community narratives with parks, churches and schools. It is located near shopping malls, major roads and emergency services. The site has good North frontage and views. There are no significant geological features, and few trees line the South perimeter of the site. Currently the site is used as a pedestrian shortcut. The drawback to the site was that this site, despite not being a park, felt like an oasis within the dense neighbourhood. It felt that a development here would interfere with the character of the neighbourhood.

Figure 3.20: Florentia Site, edited image



Site 6: Florentia (37 392.04 sqm)

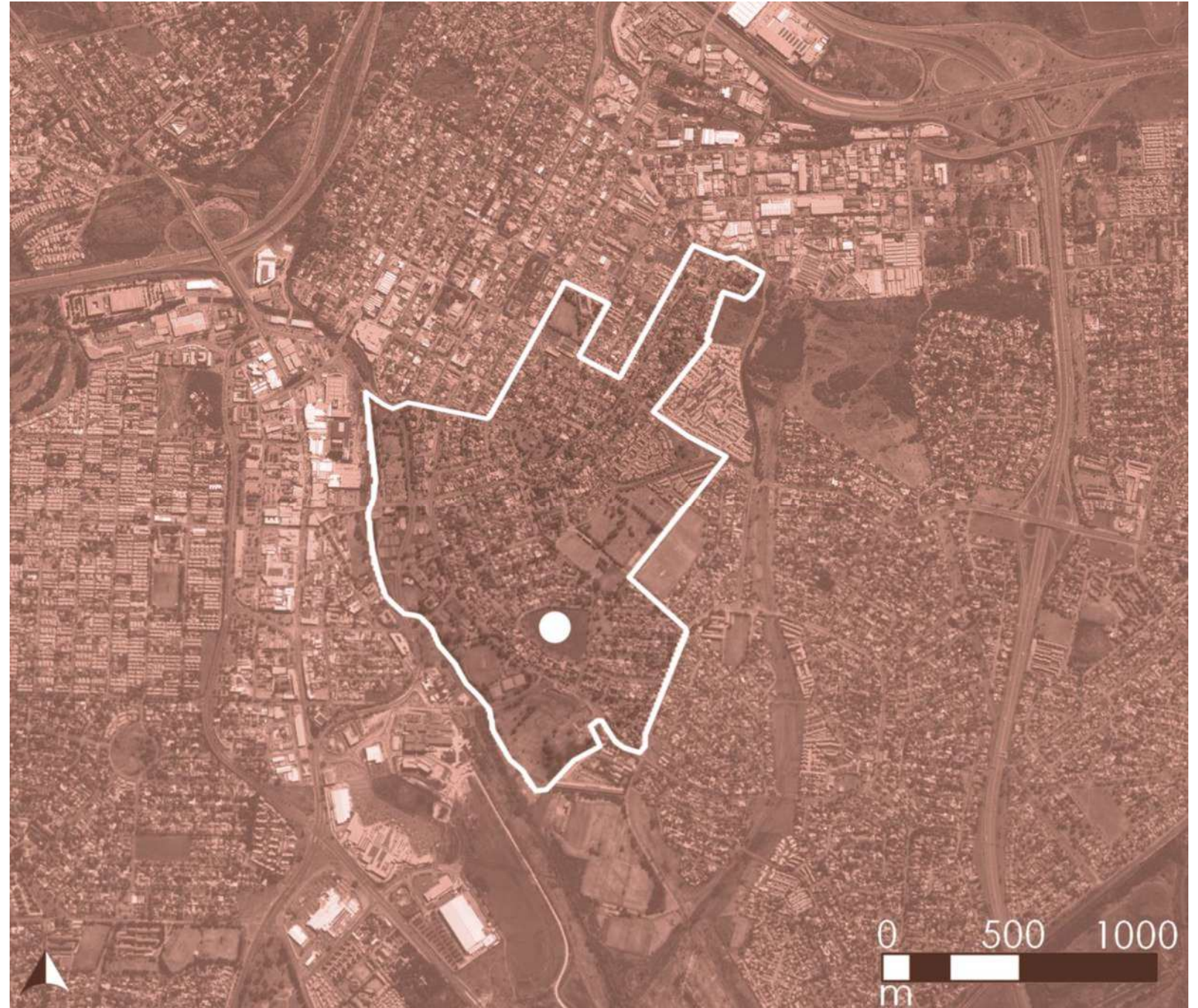
The Florentia site was the other strong contender and was chosen as the final site. This site has the richest context in terms of the narrative of the community with schools, churches, parks and graveyards nearby. It is located close to major roads, emergency services and shopping malls. The site is accessible from all sides. The site slopes gradually towards the south, has no major geological feature and has trees lining the perimeter of the site. A pedestrian shortcut runs through the middle of the site.

Figure 3.21: Map of Florentia , edited image

Microcontext

Florentia And Surrounds

After a brief analysis and visit of the sites, the Florentia Site came through as the strongest contender due to its accessibility, narrative potential, and contextual conditions. This chapter explores the narrative of the context and the urban/suburban fabric of the site.





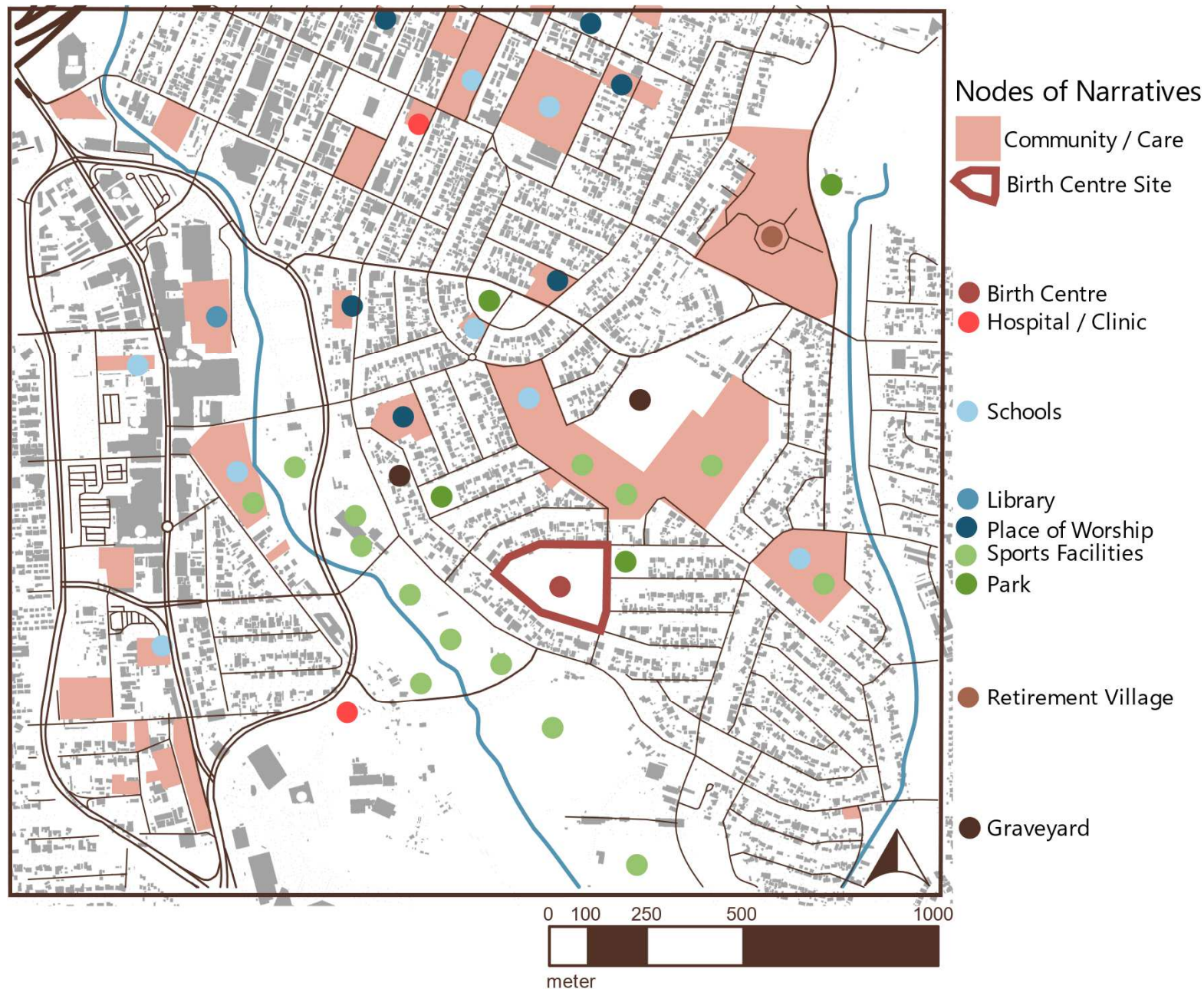
Activity Zones

The land zoning reflects a narrative of the context. Instead of using language such as “residential” and “business”, I found it more fitting to use language to describe activity instead. Consequently, we have districts of activity - a district for home and a district for work. I found it interesting that the areas that involve community, care and learning are scattered throughout these two zones.

The Regional Spatial Development Framework (RSDF) sets out proposals and guidelines to foster development and improve different land zones. For home/ residential zones, guidelines suggest the development of pedestrian friendly walkable neighbourhoods, green open spaces and creating a “sense of place” (GIBB, 2015:74). For work/ business districts, guidelines suggest the provision of social facilities and open spaces, as well as safe access to these spaces (GIBB, 2015:76).

Community development can combine these aspects to create a connection between work and home.

Figure 3.22: Zoning of Florentia and Surrounds, redrawn from reference

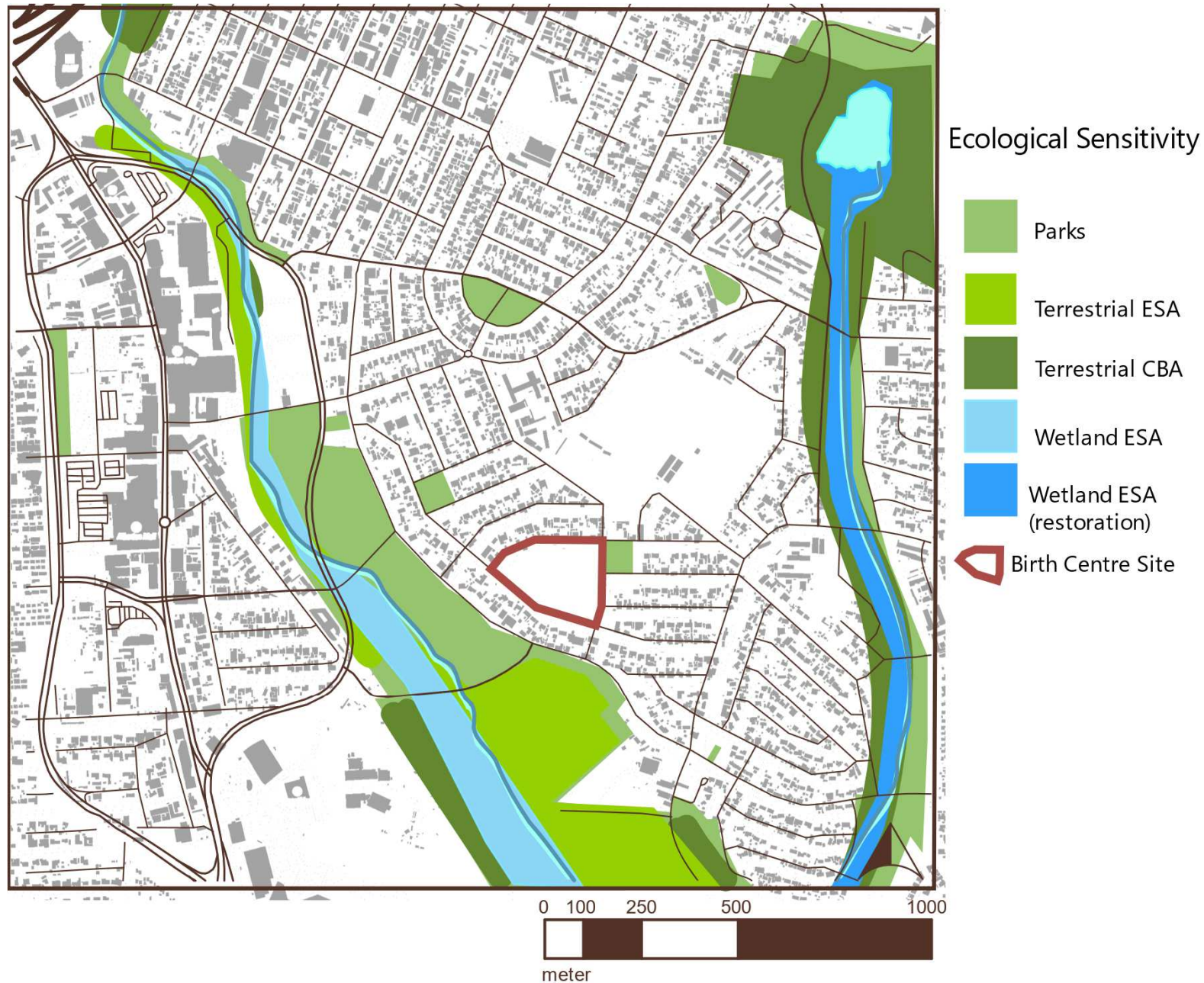


Nodes of Narrative

Behaviour can be described as the interaction between humans, the built environment and nature, with each other and within their context. Human behaviour falls into patterns of repetition, relating to different scales and timeframes, and a narrative of individual and collective behaviour starts to emerge (Tsukamoto et al., 2010: 8-9). Collective narratives are created by familiar, social and community groups, guided by different “morals, routines, rituals and context” (Grobler, 2023:2) which start to create intricate overlapping narratives of the overall community.

When we analyse the community zones, we see different narrative plot points emerging. These nodes that form part of the narrative of the individual and the community. Places such as churches, schools and sports facilities start to tell stories of knowledge, faith, victory, adventure, and tragedy. From nursery schools to old age homes to graveyards, we almost have the full story of a human life within this contextual neighbourhood narrative. Birth, however, seems to be missing from this story...

Figure 3.23: Mapping of social and community facilities



Ecology

The site falls between two bodies of water - the Natspruit river and the Alberton dam. This creates wetland areas that are classified as Wetland Ecological Support Areas (ESA), Terrestrial Ecological Support Areas (ESA) and Terrestrial Critical Biodiverse Areas (CBA). CBA areas hold high biodiversity significance and should remain in a natural state to avoid further ecological deterioration. ESA area ensures connectivity between CBAs and is crucial for the ecological infrastructure. These areas need to be kept in a semi natural or natural state (Hawley, Desmet and Macfarlane, 2020). The wetland area surrounding the Alberton Dam stream is classified as an ESA with a “priority for restoration”. This aims to improve “ecological function” and create “climate change resilience” (Hawley, Desmet and Macfarlane, 2020).

These aspects of conservation, support and restoration of biodiversity speak to a healing nature. This relates to the healing and caring nature of my proposed intervention. Stormwater management of the site and surrounds could be designed to support the wetland areas.

Figure 3.24: Ecology Map, redrawn from reference

The Site

Erf 941 Florentia

The analysis now shifts to the site itself. Through multiple site visits and site mappings, the site was analysed with the human scale context in mind. This final analysis was to gain an understanding of the site conditions and the experience of the site.

Erf 941 Florentia is a large vacant plot of 37,392.04 sqm and has remained undeveloped since the town's inception. The site has street frontage on all sides. It is enclosed by Clark Street on the East, Fick Road to the South and Grewar Road to the North. The area is a low density, low rise residentially suburban neighbourhood.

The suburb of Florentia was established in the 1930s and expanded in 1945. The streets were named after members of the first town council from 1936 (Alberton Heritage Society, n.d). Some of the surrounding properties and buildings might have heritage value or significance.

The site itself does not hold any known historical or cultural significance. The site has never been developed. The site is located near two cemeteries, the Alberton Cemetery, and the Meyer Graveyard. The latter holds important significance to Alberton's historical heritage relating to the founding families.

Figure 3.25: Map of erf 941 Florentia, edited image





Figure 3.26: Pictures from Site Visits

Site Visit and First Impressions

It was a warm sunny Saturday afternoon. After a busy morning of exploring sites in Alberton, this was the final site on my list. I parked across the field in an empty parking lot and started exploring this site.

I traversed the field and found a small pedestrian path running east-west through the field. Standing in the centre of the site, I was greeted by the breathtaking panoramic views. The space felt tranquil and free, despite being in the middle of the suburbs. The surrounding suburb offers the space a layer of protection. As I explored the field, I found a discarded woven basket. This basket reminded me of a cradle, reinforcing this site as a suitable place for a birth centre.

I took a stroll around the site and noticed that all the trees are on its perimeter. The most trees are on the North edge, along Grewar Road and the largest trees on the East edge, along Clark Street. The largest trees are close to stormwater drains. These trees provide shade to pedestrians walking along Clark Street. There is a small park across the field with larger trees and a playground.

I learnt that this field is being maintained by the municipality but not utilized by the community. This is surprising since the rest of the community has such a rich narrative of outdoor activities with parks, sports facilities, and even graveyards nearby. This is why I chose my site to be a place of beginnings.



Figure 3.27: Pictures from Site Visits

Erf	Erf 941 Florentia Ext 1
Current Owner	Dept Of Infra Dev-Education
Current Value	R 917 000
Size	37,392.04 m ²
Current Use	Vacant

Table 1: Property Information

Zoning	Community Facility
Primary Rights	Places of Instruction, Places of Education, Social Halls, Places of Public Worship, Libraries, Childcare Facilities, Sport, and Recreation Clubs, Sports Grounds, Monasteries, Convents
Building Lines	5m
Height restriction	3
Coverage	50%
Density	Determined by Municipality

Table 2: Current Zoning Rights

Site Information

The applicable town planning scheme for the site is the Ekurhuleni Town Planning Scheme 2014. Other relevant information was sourced from the Ekurhuleni GIS Portal and the Ekurhuleni Valuation Role 2021.

The RSDF framework has indicated that this site should be used for municipal and social infrastructure such as education, health, community, or parks (GIBB, 2015:70,79).



Pedestrian and Vehicle Movement

The highest amount of vehicular traffic is along Clark Street with other streets feeding into this street. The corner of Fick and Clark is the busiest because of the commercial and office buildings on those corners. The southeast corner of the site is also being used as an informal parking lot. Most of the traffic heading north is towards the high school and the traffic heading south towards second avenue is towards CBD and main roads. Due to the lack of public transportation within Alberton, most households are dependent on motor vehicles or taxis.

Most pedestrian movement is along Clark Street. Pedestrian prefer using Fick Road on the South of the site rather than Grewar Road. A dirt pedestrian pathway runs through the middle of the field. Pedestrian traffic consists of people walking to work, students walking to the school, people exercising and trash pickers. The intersection of Clark and Second Avenue is a taxi stop.

Despite the pedestrian traffic, the area is not pedestrian friendly and does not have any formal sidewalks. The field has a 5m strip of grass around the perimeter of the site being maintained by the municipality which has potential to become a formalised pedestrian sidewalk.

Figure 3.28: Movement Mapping



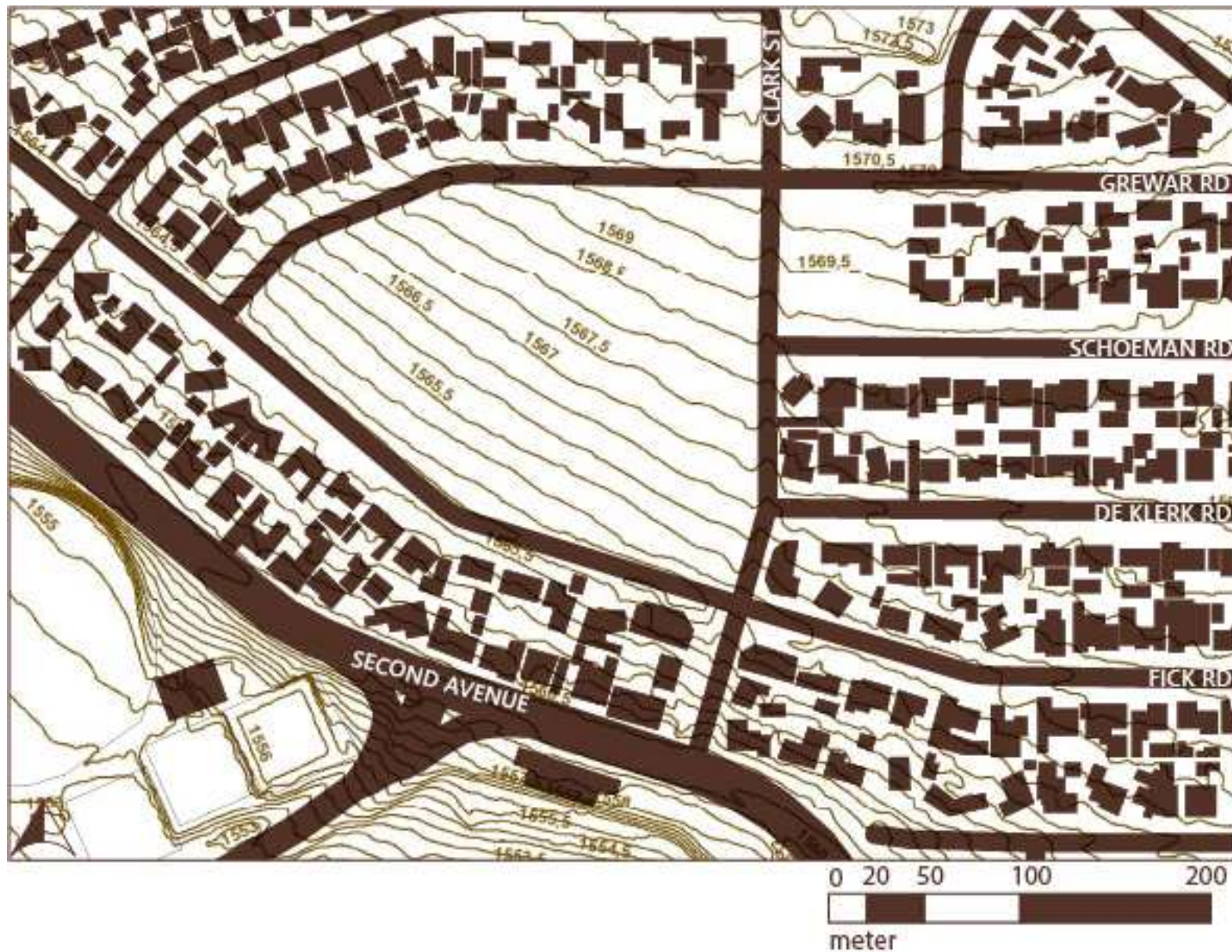
Vegetation

The site is in a semi-natural state with grassland vegetation covering most of the site. The vegetation type is classified as “Tsakane Clay Grassland”, which is considered endangered but does not have protection (Hawley, Desmet and Macfarlane, 2020:15,18). The vegetation consists of a mixture of short dense highveld grasses and the soil type is basaltic lava. The soil type is viable for various species of herbs and wildflowers. Urbanisation is one of the main threats to this grassland biome (Mucina et al., 2006: 398).

Majority of trees are on the North and East perimeter of the site within a 5m grassed zone maintained by the municipality. The large trees on the south-east corner provide shading to the informal parking area. There is a clear difference in temperature and feel between the shaded perimeter and the middle of the field.

The neighbourhood is quite rich in trees and greenery. East of the site is a small park and playground with a few large trees. South of Second Avenue is various sports fields and sports facilities. The site can benefit with creating an ecological protection zone by extending the park to create a green corridor in the neighbourhood.

Figure 3.29: Vegetation Mapping



Topography

This site does not fall within a dolomite zone. The site does not have any significant geological features or level changes. The site topography has a gradual fall towards the Natalspruit southeast of the site. Rain and stormwater from the site will have an impact on the ecological systems near the site. The RSDF framework also mentions the management of stormwater in residential areas (GIBB, 2015).

The topography of the site gives opportunity to creating terraces on the site, and having the building follow the slopes of the site.

Figure 3.30: Site Contours, overlay from reference

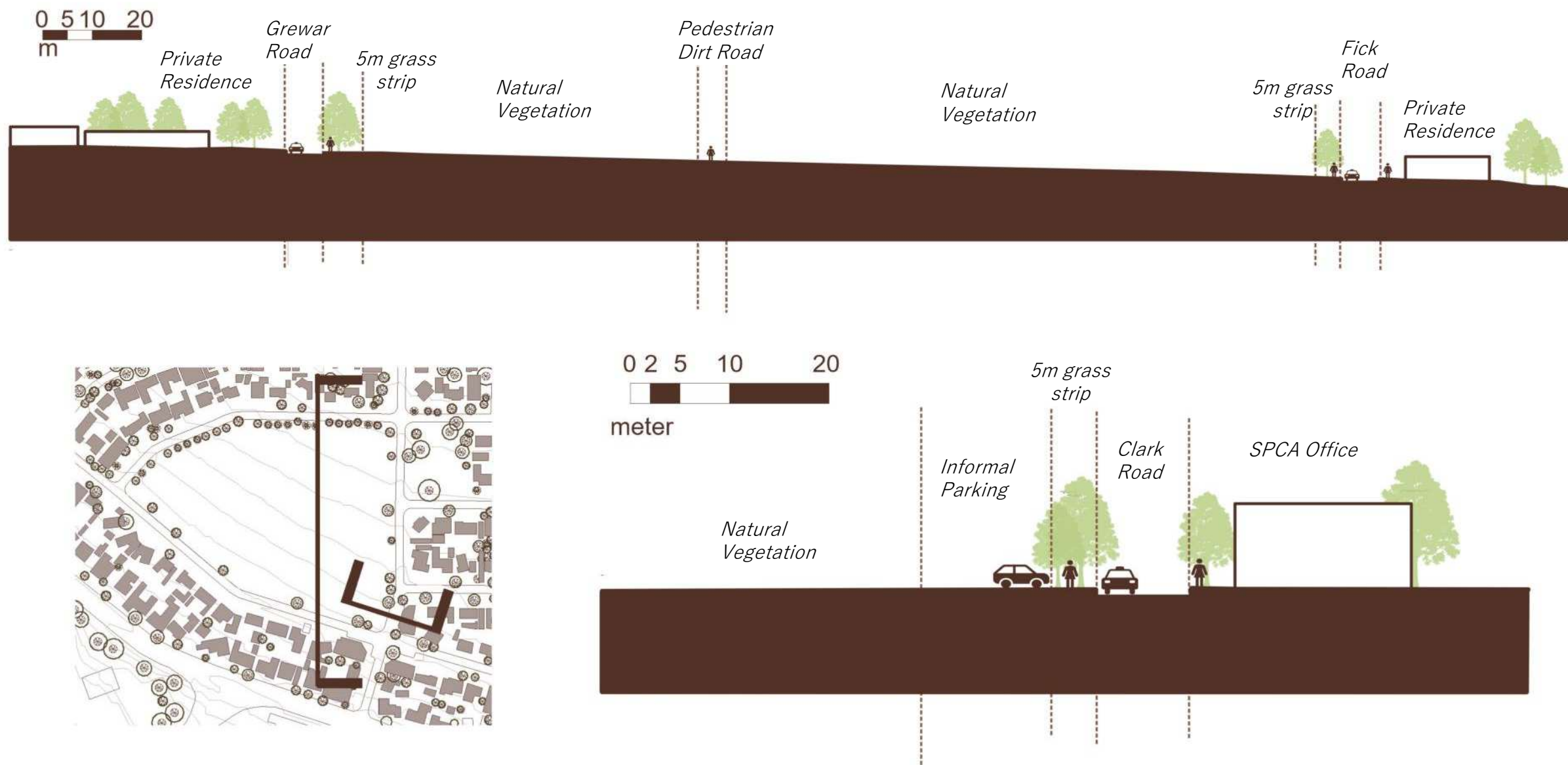
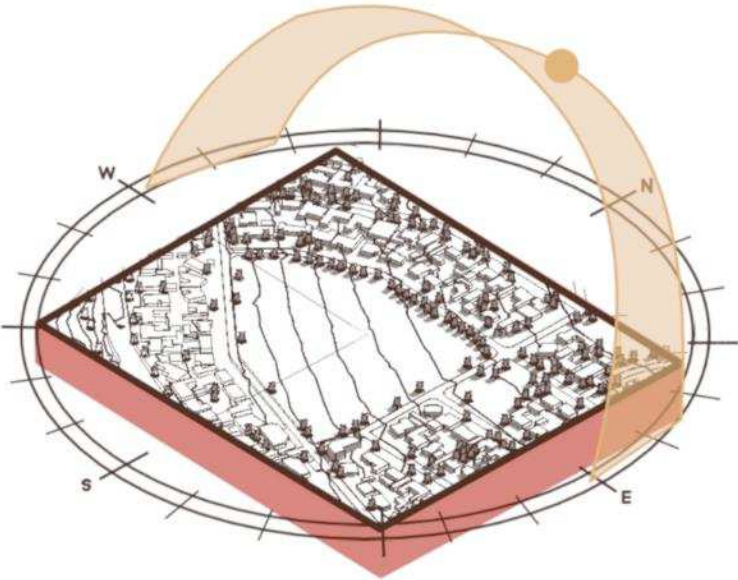


Figure 3.31: Site Topography and Thresholds

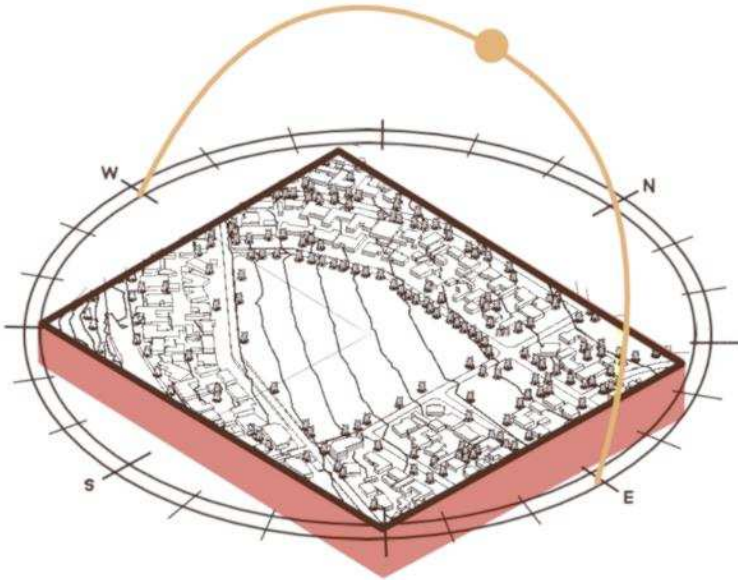
Figure 3.32: Solar Study Winter



Winter Solstice

Sun Angle: 40.32 degrees
Daylight times: 06:54 -17:24
Daylight Hours: 10:29 Hours

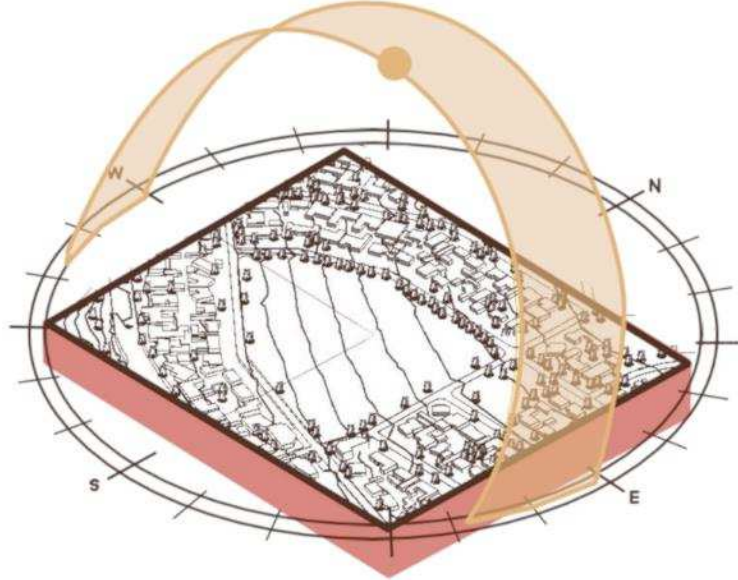
Figure 3.33: Solar Study Equinox



Solar Equinox

Sun Angle: 63.24 degrees
Daylight times: 05:57 -18:06
Daylight Hours: 12:05 Hours

Figure 3.34: Solar Study Summer



Summer Solstice:

Sun Angle: 86.94 degrees
Daylight Times: 05:11 – 18:59
Daylight Hours: 13.47 Hours

Source: (Marsh, 2014)



Figure 3.35: Strategies for Building Development

Overall Summary from analysis

After a thorough analysis of the site and context, the following strategies will be used in the design.

- 1 The **building** will be located on the Southeast corner of the site with the highest volumes of vehicle and foot traffic.
- 2 Building form will be informed by the **topography** through a series of terraces.
- 3 The **pedestrian desire line** is to be developed into a formal pathway.
- 4 The North portion becomes **an extension of the existing park** with the aim of preserving green space in the neighbourhood. This includes the North perimeter trees.
- 5 Urban intervention to create **a pedestrian sidewalk** along Clark Road and Fick Road.
- 6 The south corner will be developed into a **parking area** to serve both the building and the commercial businesses on the corner of Clark and Fick.
- 7 Remainder space can be used for **potential expansion** or other community development

Chapter 4

Changing Narratives

Figure 4.1: Narrative Introduction

Introduction

Narratives of childbirth

In this chapter I explore the narratives of maternity.

This chapter is divided into three sections.

The first section reflects on the past and explores how maternal healthcare has changed over the course of human history. This section aims to regain past knowledge to integrate into the birth centre.

The second section studies the present. This section contains a series of precedents and case studies exploring the design drivers that has been identified in the theoretical section.

The third section explores the future. This section starts to piece together the information to create a brief for the birth centre. It includes the project scope, viability and programming that will guide the design of the final building.

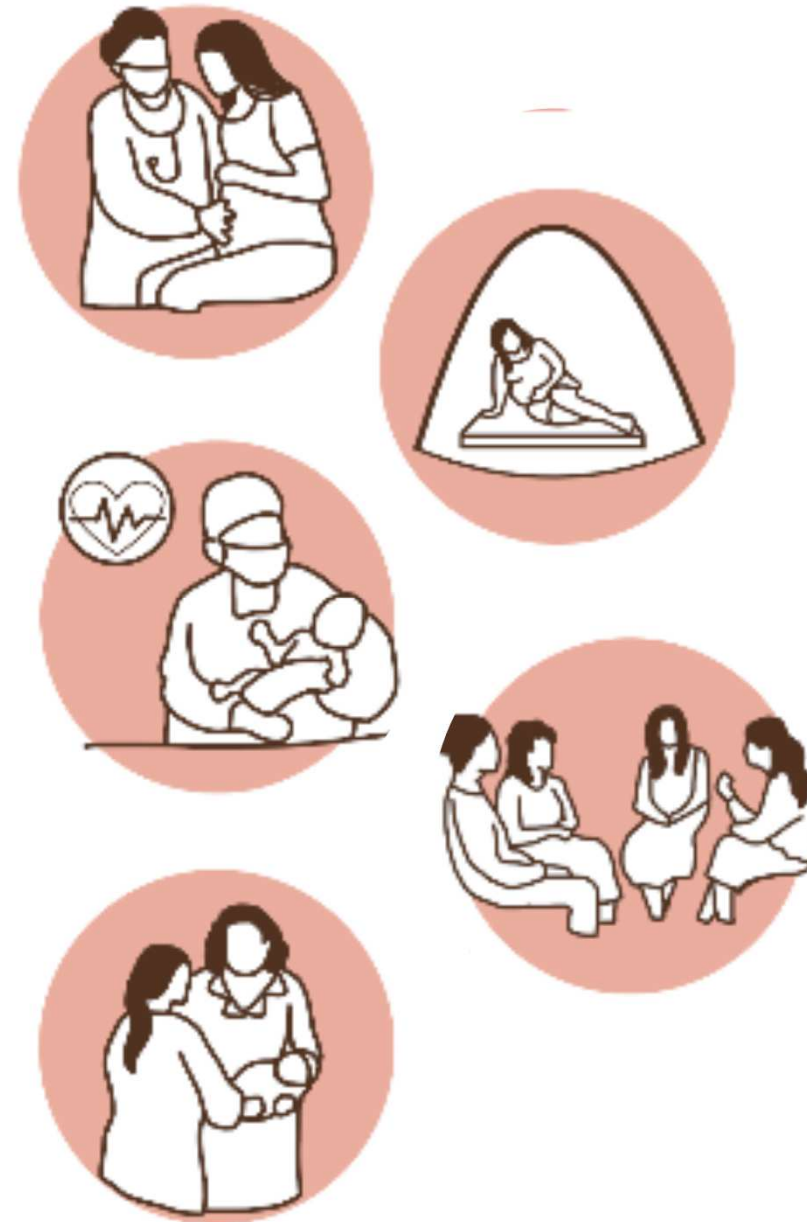


Figure 4.2: Pregnant Women

The Past

Historical Narratives

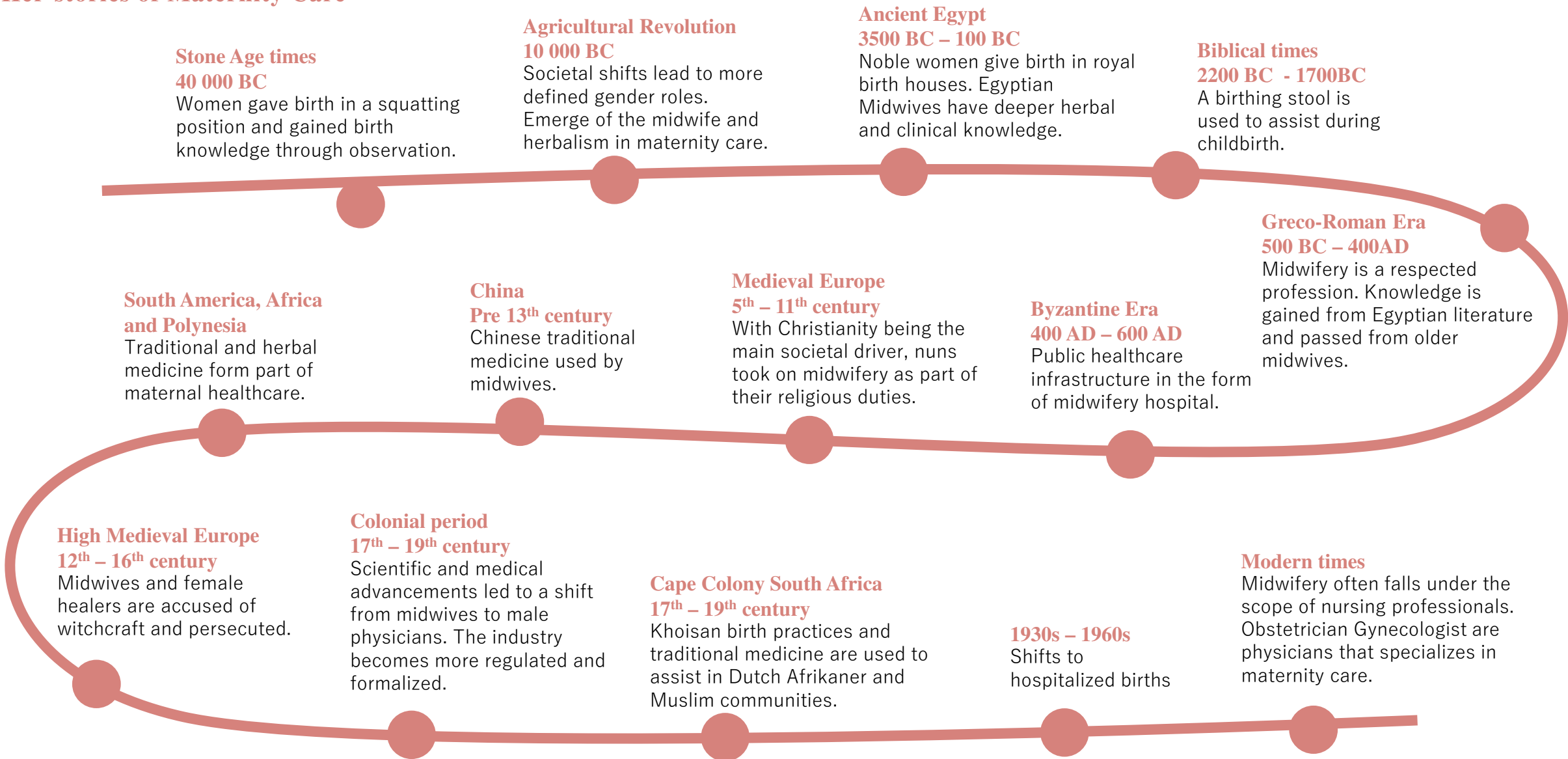
The past contains a collection of her-stories.

The history of pregnancy and childbirth contains a rich narrative of traditions and knowledge that tells how pregnancy and childbirth has changed throughout human existence. With major strides in the field of medicine, childbirth has become much easier and safer for women. However, these changes are not uncomplicated. These strides and changes have been accompanied by injustice, marginalisation and abuse against women.

Different practices surrounding childbirth holds knowledge, heritage and significance. Some women might choose to incorporate cultural practices into their pregnancy and delivery journey. It is important to be aware of the practices so that it could be accommodated by the birthing centre. The centre needs to form part of the community and therefore reflect the diversity of the community.



Her-stories of Maternity Care



Various Sources:
(Barnawi et al, 2013)(Burns, 2000)(Dayyabu et al., 2019) (Deacon, 1998)
(Ehrenreich and English, 1973) (ICM, 2022) (Shewamene, Dune and Smith, 2017)

Figure 4.3: Histories of Childbirth

Marginalisation of women in the birthing space

Women and midwives have experienced marginalisation and discrimination throughout history. There has always been some form of control to keep women subservient to men. Religion and law were used as a form of control against women in the Middle Ages. Midwives with medical, herbal, and obstetric knowledge that conflicted with church doctrine were declared witches performing witchcraft (Ehrenreich and English, 1973).

Throughout history women have often faced barriers to formal education and training. Instances of this have been recorded as far back as the Greco Roman Era and the Byzantine Era (Barnawi et al, 2013:116-117). By gatekeeping medical knowledge and training, male physicians claimed superiority over midwives (Barnawi et al, 2013) (Deacon, 1998). The exclusion of women in healthcare education led to the male physicians invading the midwife industry. This invasion of the male midwife was an attempt to gain “greater power over female bodies”(Deacon, 1998:272) and described by Foucault as “the birth of the clinical gaze”(Deacon, 1998:272).

Men used law and regulations to push women and midwives to the sidelines. In the 1750s, male physicians introduced formal regulation by implementing midwife licensing to regulate women entering the profession (Barnawi et al, 2013:118). In 19th century South Africa, Cape doctors started to regulate the midwife market by implementing training and licensing to women they deemed suitable. The training disregarded traditional folk methods, excluded Black women and disrupted informal training apprenticeships to women (Deacon, 1998:275-276). This license ensured that midwives were subservient to male physicians. The aim of the midwife training was to regulate the practice and create “respectable midwives”, who also served as regulators for morality – reporting illegitimate children, refusing abortions and reporting unmarried mothers (Deacon, 1998:278,290).

With the advancements and victories of feminism, women are now able to freely practise as physicians and midwives. This empowerment should extend to the birthplace to make the space a place of empowerment.

Shifting Spaces

Before the introduction of modern medicine in the twentieth century, most women gave birth at home. Since the 1930s, there was a large shift in developed countries from home births to hospital births. Consequently, this shift led to substantial decrease in the maternal and perinatal death rate (Dayyabu et al., 2019). South Africa also saw a large shift to hospitalized births. By the 1960s most women gave birth in a clinical setting and by 1989, most births were managed by medical doctors rather than midwives (Burns, 2000:1).

There is an increasing trend in developed countries to return to the home births (Coddington, Catling and Homer, 2020) (Dayyabu et al, 2019). This is due to increased clinical nature of medical births, over applications of medical interventions and hospital policies restricting autonomy. (Coddington, Catling and Homer, 2020) (Stone et al, 2023).

Studies have shown that in the case of a low-risk pregnancies, a home birth attended by a skilled attendant lead to a better birth experience for the mother. The experience of privacy, autonomy and the home environment are beneficial for the mother's holistic well-being (Alcaraz-Vidal et al., 2021) (Coddington, Catling and Homer, 2020) (Stone et al, 2023). The availability of profession medical intervention in case of emergencies makes this a safe option for women in developed countries (Alcaraz-Vidal et al., 2021).

However, there is a stark difference between having a home birth in developing countries and developed countries, where healthcare is more accessible. It is estimated that half of the world's births are home births and most of these are unattended home births are in developing countries - mainly in Sub Saharan Africa, which maternal mortality rate is the highest in the world. The main reasons for this due to a lack of access to quality healthcare and cultural preferences for home births (Dayyabu et al, 2019).

The success of a homebirth depends on the pregnancy risk, presence of a skilled attendant and access to quality healthcare.

Figure 4.4: Precedent Map, Edited graphic

The Present

Precedents and Case Studies

In this section I look at the current state of birthing facilities and aspects surrounding childbirth. This section contains a series of case studies that holds relevance to my design concept and the design drivers. For each project, I highlighted the focus and relevance to my project and analysed the aspects of the design relating to the design drivers identified in chapter 2. The seven chosen precedents are located in different parts of the world, each with unique contexts and circumstances. The common theme among all these precedents is the aspect of care.



Birth Places, Models of Care and Attendants

Hospitals have dedicated maternity units run by medical professionals such as obstetricians and midwives (Stone, Thomson and Tegethoff, 2023:482). A hospital offers full obstetric services to cater for low to high-risk births. This includes facilities such as obstetric theatres and inpatient antenatal care. It will also include more specialised neonatal care services (IUSS Task Team A:06, 2014). Maternity units typically follow one of the following models of care (International Health Facility Guidelines, 2017:4):

- LDR is the labour, delivery and recovery model is where the process of labour, delivery and recovery happens in one room, whereafter the patient is moved to an inpatient room before being discharged.
- LDRP, the labour, delivery, recovery and postpartum model, is where the entire birth process and postpartum stage takes place in one room.
- GPSC, the General Practice Shared Care Model is where patients are moved between areas for different stages of the birth process.

A **Home Birth** is a birth that takes place at a woman's own home and usually assisted by a skilled attendant (Stone et al, 2023:482).

A **Free-standing birth centre** is midwife run birth units that are separate from hospitals (Stone et al, 2023:482). Birth centres can be combined with community health centres. Community Healthcare centres cater more to low-risk births and typically has facilities for delivery, well-baby care, inpatient postnatal care and outpatient services (IUSS Task Team A:06, 2014).

The **Birth Attendant** is dependent on the birth facility and can range from medical practitioners such as Obstetricians, and General Practitioners to Obstetric Nurses and Midwives. Some women may also opt to use a lay midwife or traditional birth attendant. Traditional birth attendants often provide critical support where medical services are not present and are keepers of Indigenous knowledge and traditional medicine. (International Health Facility Guidelines, 2017) (Department of Science and Technology, 2019) (Stone et al, 2023:482)

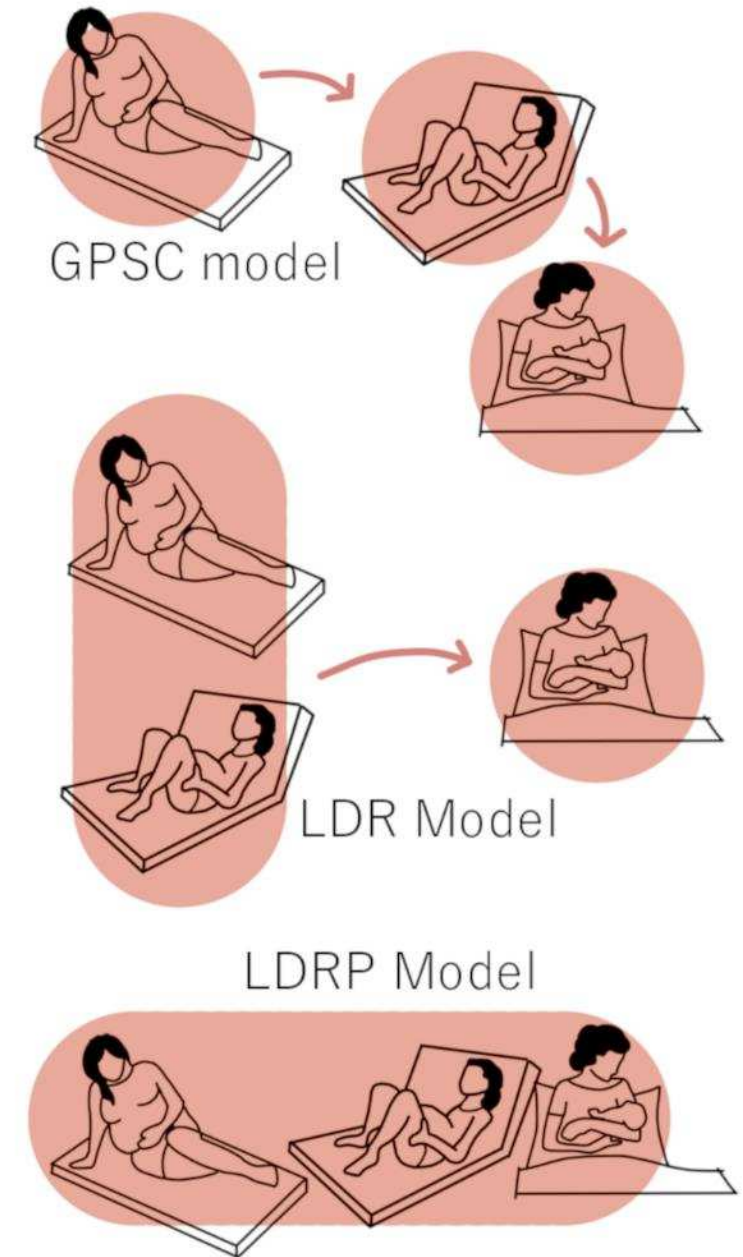


Figure 4.5: Models of Care

Interview with a local midwife

An interview with a Johannesburg midwife with experience in public and private healthcare. She has experience in midwife-led care and currently runs an independent midwifery practice.

Q: What type of setting do you typically work in when dealing with patients and during childbirth?

A: “With the COVID-19 pandemic the demand for homebirth increased as clients wanted to avoid birthing in hospital settings. They felt that that's where the sick people are and in pregnancy they were not sick and did not want to expose themselves or their baby to the disease. Parents also felt that they would be birthing alone due to the isolation and pre-admission Covid-19 testing protocols as occasionally they would not get the results in time for their birthing partner. Some clients also wished to escape unnecessary interventions such as planned inductions of labour or planned caesarian sections due to this fact.”

“I opened a home birthing centre to meet the growing demand of my clients to have a safe home birthing experience. I then mostly moved away from hospital-based births and primarily did births at my birth centre.”

Q:What are the benefits of giving birth in a home birth environment vs hospital environment?

A: “The current body of research indicates that moms who labour and birth in a home-based setting experience less anxiety than in a hospital-based setting, most clients I have met feel very anxious about the prospect of being in a hospital setting due to past medical experiences by themselves or their family members.”

“A home like setting with lower lighting also helps promote the body's natural release of essential hormones during the labour and birthing setting such as oxytocin and endorphins. This is due to lower stress levels. Less adrenaline = more oxytocin. More oxytocin likely means that mom will have effective contraction, thus needing less augmentation/induction of labour through artificial means.”

“Parents are not separated from their baby at birth and we have higher rates of longer periods of skin-to-skin contact after the birth.”

Q:What are the drawbacks of giving birth in a home birth environment vs hospital environment?

A: “I would say the biggest drawback is when having complications your resources for managing that complications is limited to what you have available to you in birth centre or the patient's home.

We have extensive resuscitation equipment and tools that we setup for each birth in case of an emergency, as well as medications and stock to manage a variety of complications. Our goal at a home birth environment is to treat and stabilise patients before transferring them to a higher level care facility such as a hospital.”

“Occasionally getting an ambulance to come timeously (especially a government ambulance) is also a source of stress. Delays can range between 45mins-2hours.”

Q: How can the birth environment be improved for both the mother, child, and health care practitioner?

A: “...we need such in depth health reforms in our country to improve maternity care access to all of its citizens. The system is inundated with so many patients, back logs, unhappy demoralised staff (both private and public). Facilities are dilapidated and poorly maintained. Cleanliness of facilities leave much to want. Staff are not well paid despite risks in the work place and hours worked. Your experience and skills are undervalued and undermined by senior staff. HCP (Healthcare Practitioners) are not rendering evidence based care based on the latest body of research. You will require serious upskilling initiatives for HCPs that have been in the industry for a long time.”

(full interview in appendix)

Midwives Opinions on the Birth Space



Figure 4.6: Midwives

Common birth Positions and Pain Management methods

The following data has been extracted from “Planned homebirth in Catalonia (Spain): A descriptive study” (Alcaraz-Vidal et al., 2021). This study took place between January 2016 and December 2018 and to study the outcomes and safety of midwife assisted homebirths. The study group consisted of 750 women who planned to give birth at home. The study includes data on comfort measures, adverse events and hospital transfers. (Alcaraz-Vidal et al., 2021:2).

The comfort measures in a home setting uses natural remedies and alternative medicine to relieve pain (Alcaraz-Vidal et al., 2021:6). Repositioning is the most common comfort remedy, which emphasizes the need for flexibility and movement in the birth space. Immersion in hot water and application of heat also shows a benefit for a tub in the birth space, even if the woman is not planning on a water birth. There is also a large shift from the typical recumbent position used in hospitals to vertical positions. (Alcaraz-Vidal et al., 2021:5)

Figure 4.7: Most common birth position during home births, (Alcaraz-Vidal et al., 2021).

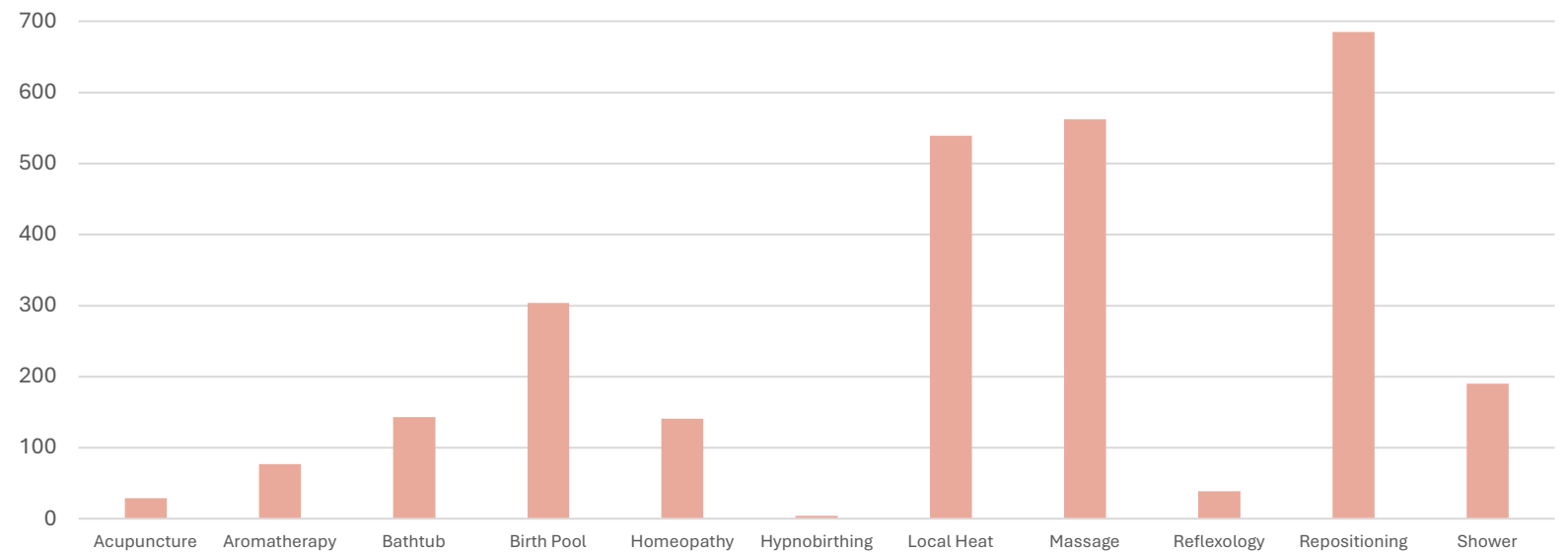
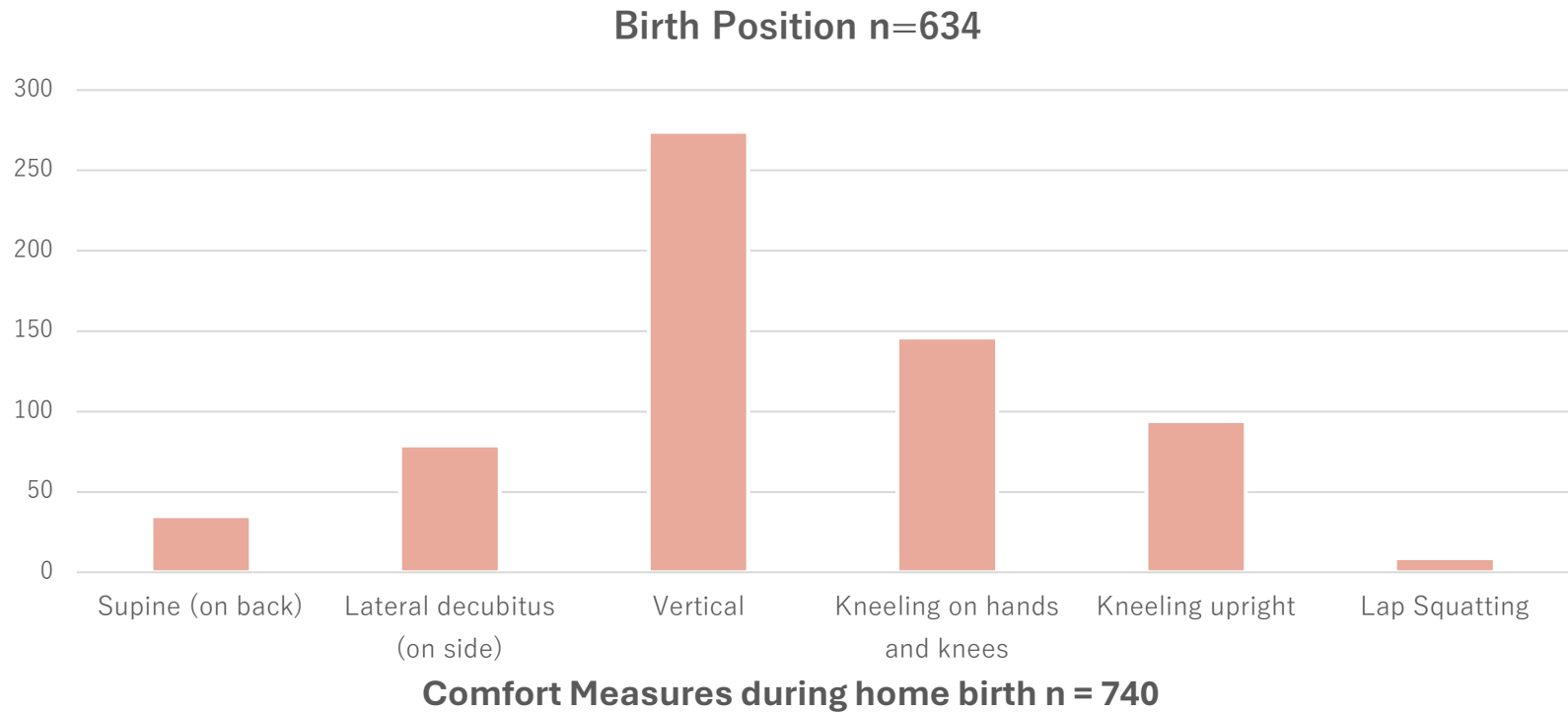


Figure 4.8: Popular comfort measures during home births, (Alcaraz-Vidal et al., 2021).

Safety of Homebirths

Most of the planned homebirths progressed naturally with no medical intervention required. 108 out of 750 woman transferred to hospital during labour and a further 17 transferred after birth. Women are reluctant to transfer to hospital if the midwife is not allowed to accompany them. The main reasons for transfers are for emergencies which requires specialised care or interventions. (Alcaraz-Vidal et al., 2021:6).

Figure 4.9: Birth Type, (Alcaraz-Vidal et al., 2021).

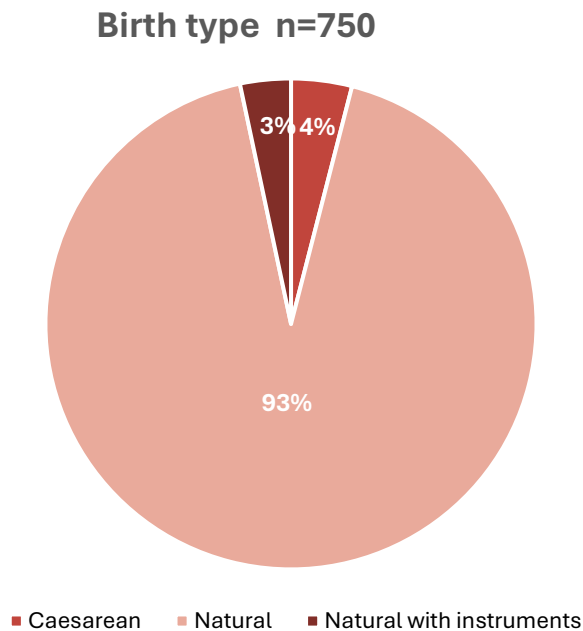


Figure 4.10: Frequency of Hospital Transfer, (Alcaraz-Vidal et al., 2021).

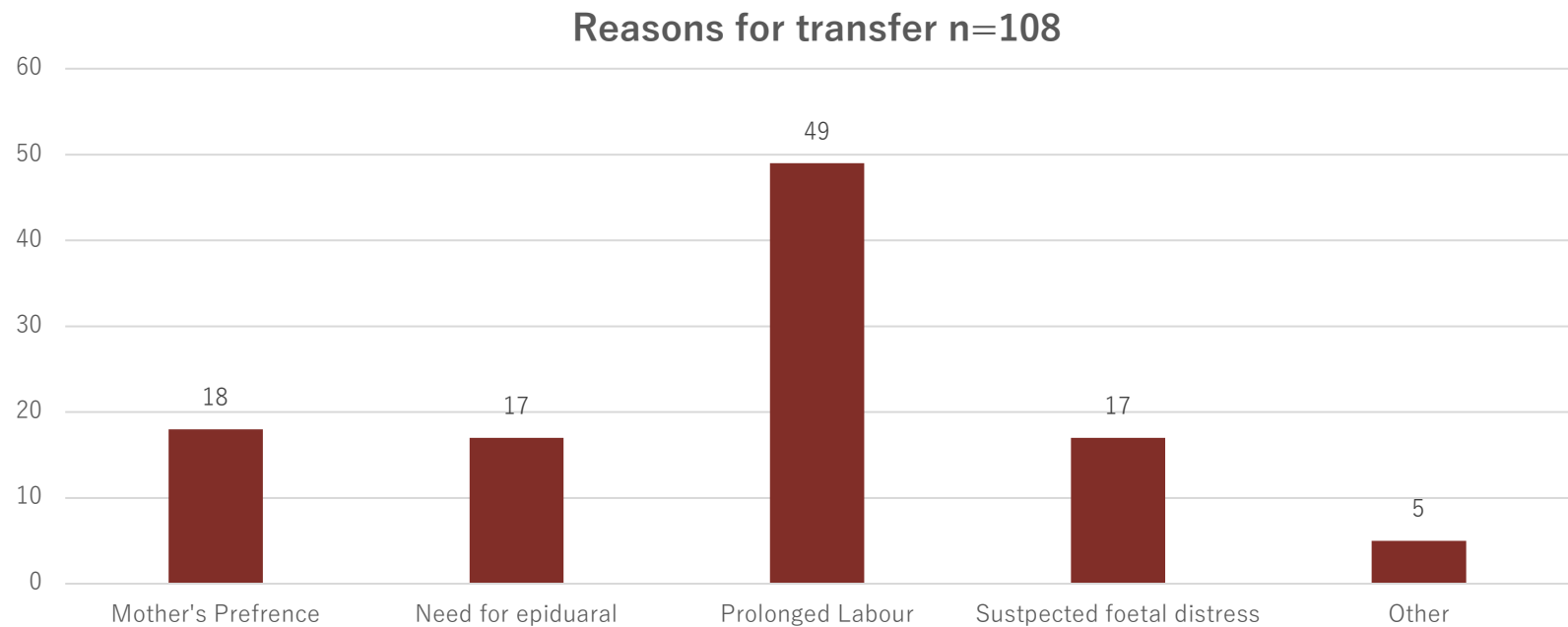
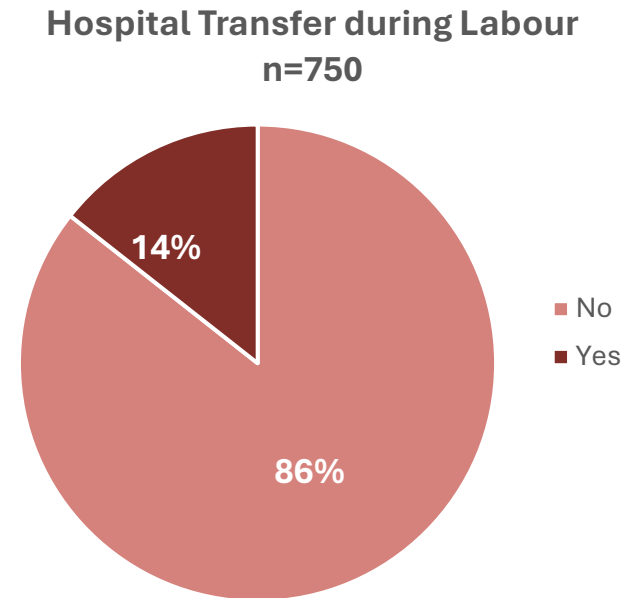


Figure 4.11: Reasons for Hospital Transfer, (Alcaraz-Vidal et al., 2021).

Adverse Birth Events

There are some adverse events that can happen during a homebirth. These adverse events include postpartum haemorrhage, perineal trauma, perinatal shoulder dystocia, perinatal death, etc. (Alcaraz-Vidal et al., 2021:7)

From the study and the low rate of adverse events, we can conclude that home birth are generally safe and uncomplicated. Perineal trauma incidence is the highest among adverse events, however incidence rates of perineal trauma is higher in hospital births. (Alcaraz-Vidal et al., 2021:8)

These statistics and rates prove that a homebirth assisted by a qualified midwife has good medical outcomes and a high degree of safety. (Alcaraz-Vidal et al., 2021:9)

Figure 4.12: Maternal Adverse Events , (Alcaraz-Vidal et al., 2021).

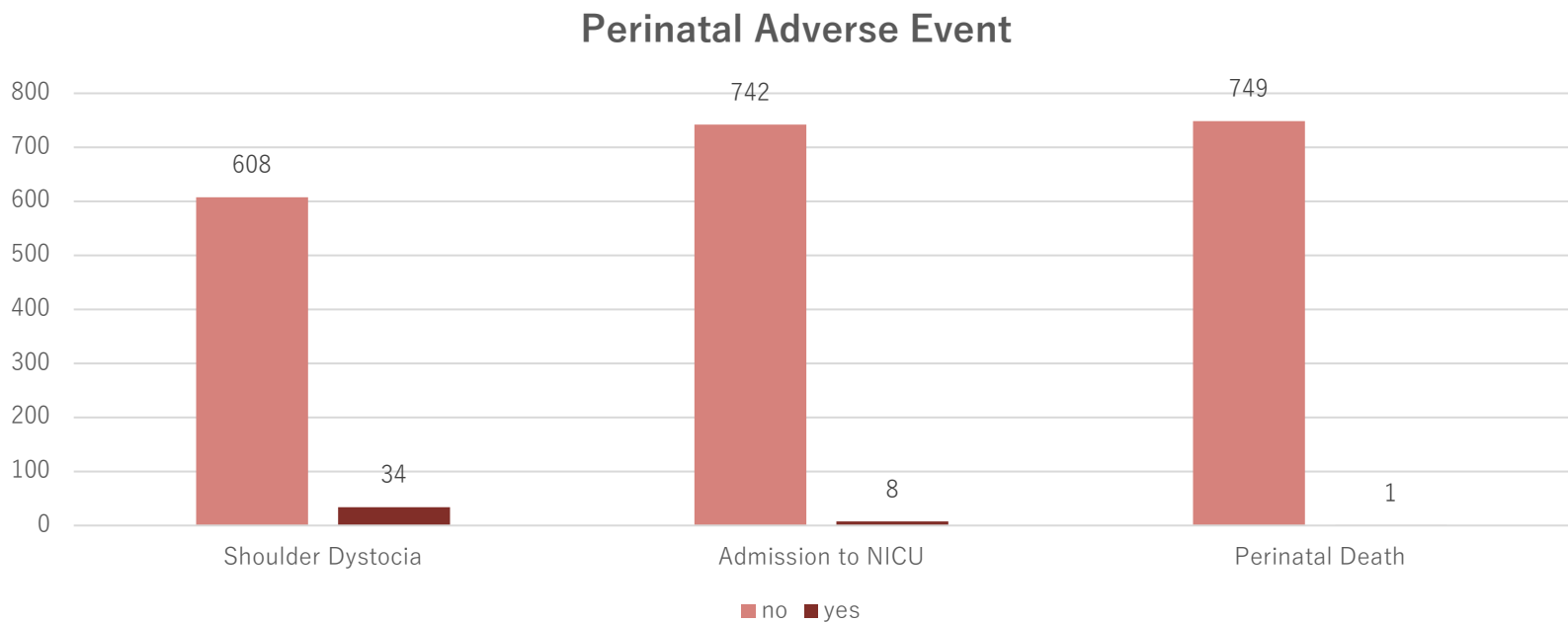
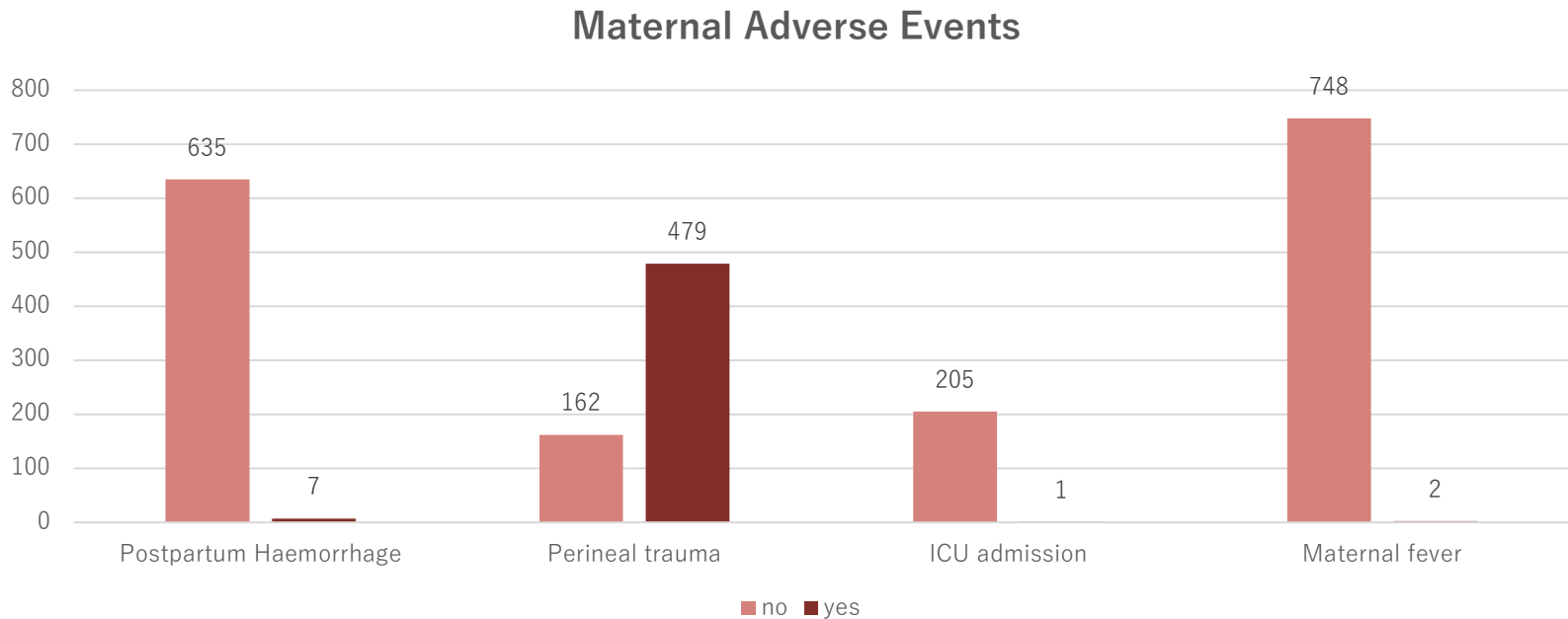


Figure 4.13: Neonate Adverse Events, (Alcaraz-Vidal et al., 2021).

Patient Satisfaction in Private Midwife led facilities

The difference between public and private healthcare is visible through patient satisfaction surveys. These surveys investigate factors such as good quality care, pain management, staff interactions, information, and recommendation. (Khumalo and Rwakaikara, 2020: 4-5) (Van Heerden, 2017: 49)

This first study took place at a private midwife-led facility. The study surveyed 55 women between January 2016 and August 2016. (Van Heerden, 2017:40) The results of the patient surveys were overwhelmingly positive. Thirty-three out of the 55 patients had a natural birth (60%) and only six of the 33 experienced perineal trauma (18%). (Van Heerden, 2017: 46). Eight out 55 infants were admitted to NICU (15%). The low rate of adverse events is a good measure of safety of midwife-run units.

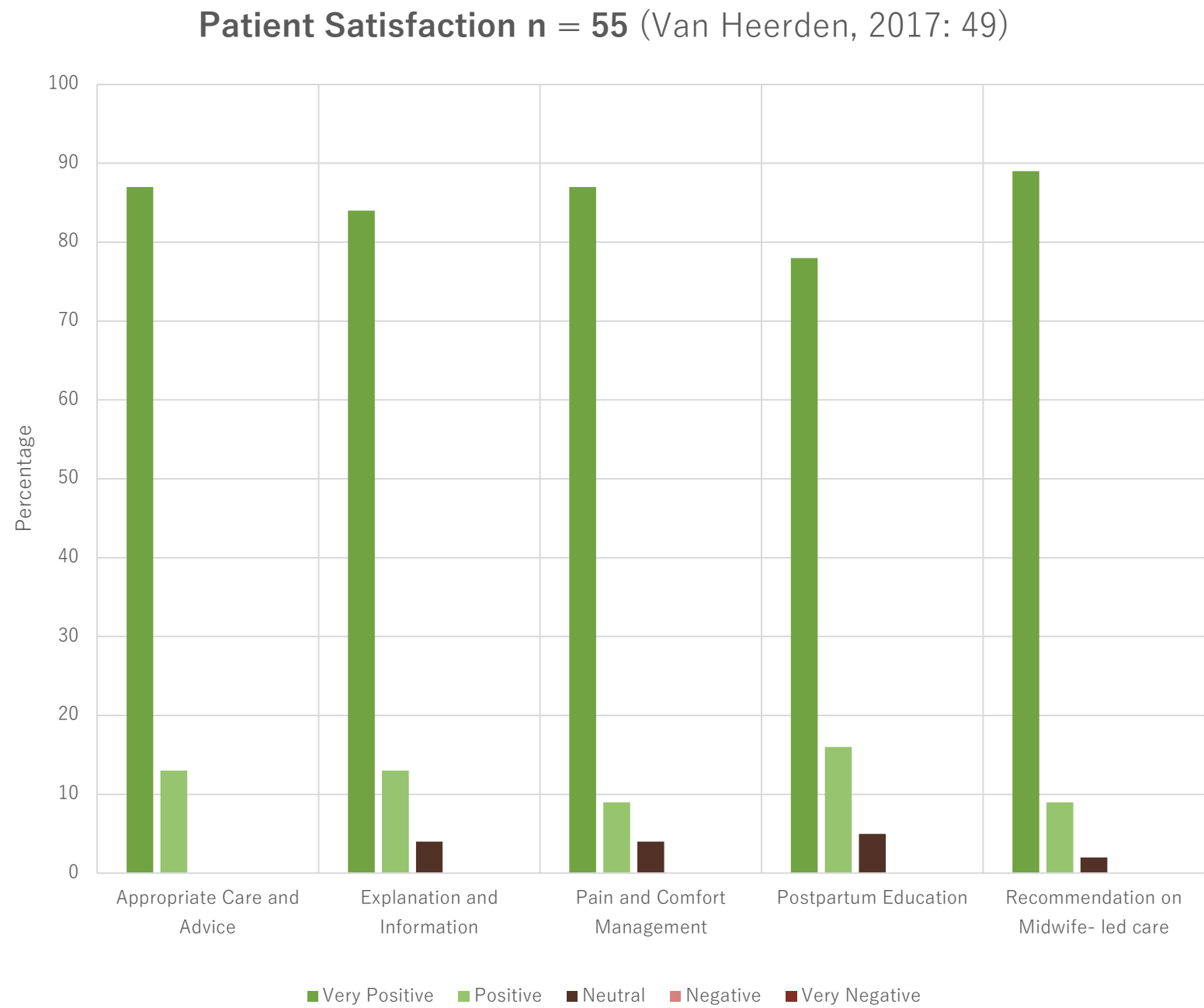


Figure 4.14: Patient Satisfaction for Private Midwife Run Birth Unit, (van Heerden, 2017:49)

Patient Satisfaction in Government maternal facilities

The following study took place at Bertha Gxowa District Hospital, one of the facilities near Alberton (see page 33). This study from 2020 surveyed 260 women to measure patient satisfaction at a public healthcare facility (Khumalo and Rwakaikara, 2020: 1).

The result of this study showed mixed experiences and varying levels of satisfaction. Aspects such as cleanliness, privacy and consent had high satisfaction rates, while aspects such as pain management and patient involvement had lower satisfaction rates (Khumalo and Rwakaikara, 2020: 4-5).

An issue of communication is highlighted in the study. Patients communicated more easily with midwives who spoke the patient’s language compared to doctors who used complicated medical jargon (Khumalo and Rwakaikara, 2020: 6)
This study highlights the gaps within public healthcare that can be addressed to improve patient experience.



Figure 4.15: Patient Satisfaction for Government hospital Maternity Unit, (Khumalo and Rwakaikara, 2020: 3-4)

Reflection on Interviews

A key takeaway from the interview and other discussions is that in a home setting, the woman has the most control, comfort and autonomy. The benefits of individual care between the mother and midwife creates a mutual relationship of trust and improved communication. The home birth environment is associated with less anxiety and higher satisfaction.

Data shows that home births for low risk pregnancies are generally safe and adverse events are rare. Midwives are usually trained to handle complications and stabilise a patient in case a transfer to a hospital is required.

There are benefits and drawbacks to both homebirths and hospital births – mainly a trade-off between comfort and specialised care. The transition between these spaces in case of an emergency is a source of great stress for the mother and midwife. This is where a dedicated birth centre can be the compromise between these two spaces.

These discussions also show the limitations of architectural interventions. Systemic and organisational interventions are needed to ensure that facilities are maintained and staff are upskilled. Problems such as overcrowding, lack of resources, poor management as well as underpaid, overworked staff will lead to a negative environment for all parties involved.

My design aims to integrate the advantages of both home and hospital settings to mitigate the shortages and drawbacks associated with each. This creates a space that balances safety and comfort, contributing to an overall positive experience.

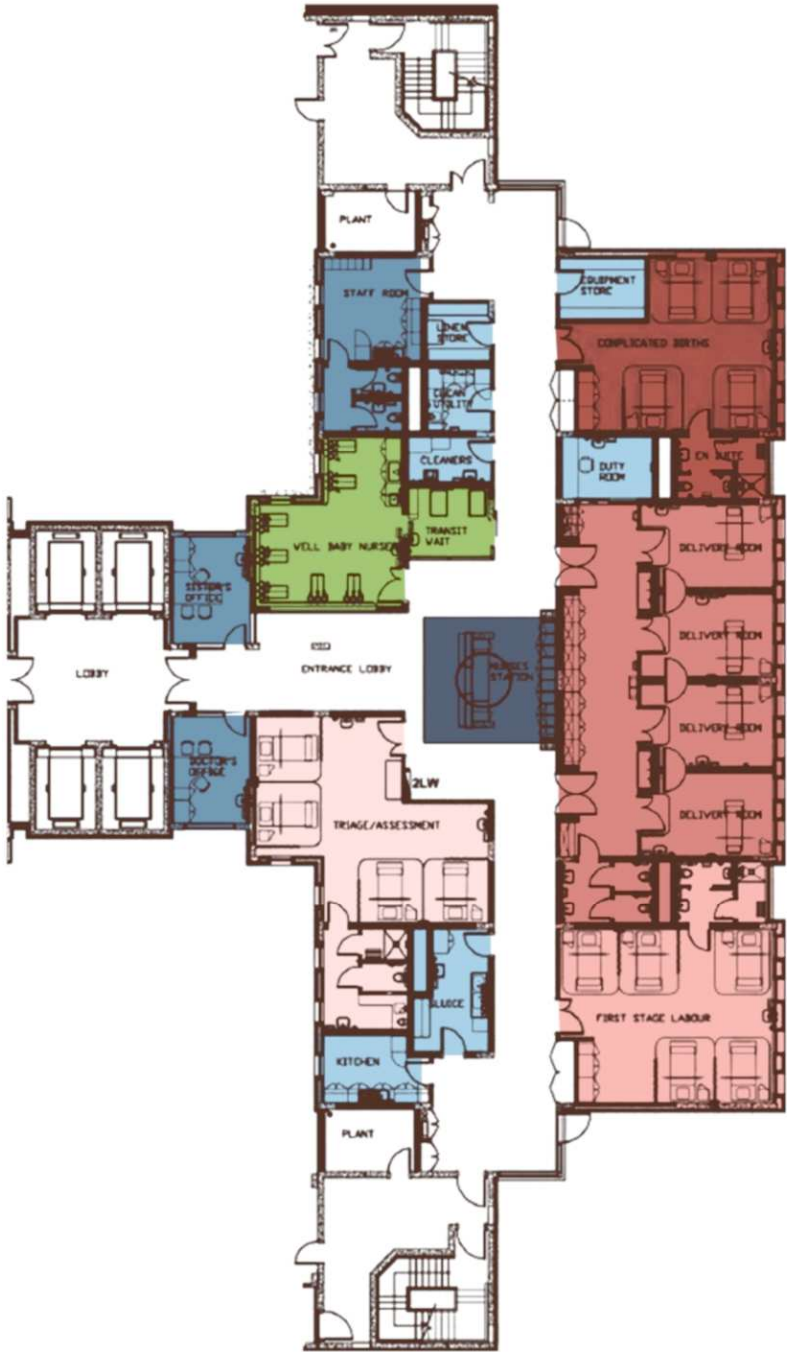
Figure 4.16: Mitchells Plain Maternity Unit, edited image

Case Study: Mitchells Plain Hospital
Maternity Unit

The following case study is based on the principles and guidelines set out in the Infrastructure Unit Support Systems (IUSS) Project for Maternity Care Facilities. (IUSS Task Team A:06, 2014) This document sets out guidelines and requirements for maternity wards and will be consulted continuously throughout the design process. This document will be consulted in conjunction with other documents such as Units International Health Facility Guidelines for maternity units and clinical services. Using the Maternity Unit of the Mitchells Plain Government Hospital in Cape Town, South Africa as a case study (IUSS Task Team A:06, 2014: 67), the program and functionality of a typical public hospital setting in South Africa starts to emerge.

The case showcases the centrality of the nurse station that serves as the heart of the unit, controlling access and monitoring patients. There is a clear flow for the patient to different rooms for different stages of birth. Patient wards are shared spaces while delivery spaces are more controlled and private spaces.

Other important aspects of a maternity care not visible in this case study include waiting spaces for families, emergency surgical care and bereavement spaces. (IUSS Task Team A:06, 2014)



- Triage/Assessment Room**
Assessment room to determine state of patient and stage of labour. Must be equipped for labour in case of emergency
- Antenatal Ward**
Medical ward for patients awaiting labour. Contains beds and en-suite facilities. Must be located near delivery rooms.
- Delivery Rooms**
The delivery room is where labour and delivery takes place. Mother is monitored throughout the labour process. Newborn assessment also takes place here.
- High-dependency Unit**
Inpatient unit for mothers who require a higher level of care. This is for patient who experience complications during birth and monitoring recovery of patients
- Baby Nursery**
Neonatal nursery dedicated to the care of newborns. Provides care facilities for babies away from the mother's bed.
- Nurse Station**
Central point of unit to control access to unit and monitor all aspects of the maternity unit.
- Offices and Staff rooms**
Administrative offices and staff spaces
- Support Spaces**
Storage rooms, clean and dirty utility rooms, cleaners room, ward kitchens.

(IUSS Task Team A:06, 2014: 36 - 52)

Figure 4.17: Maternity Waiting Village, edited image

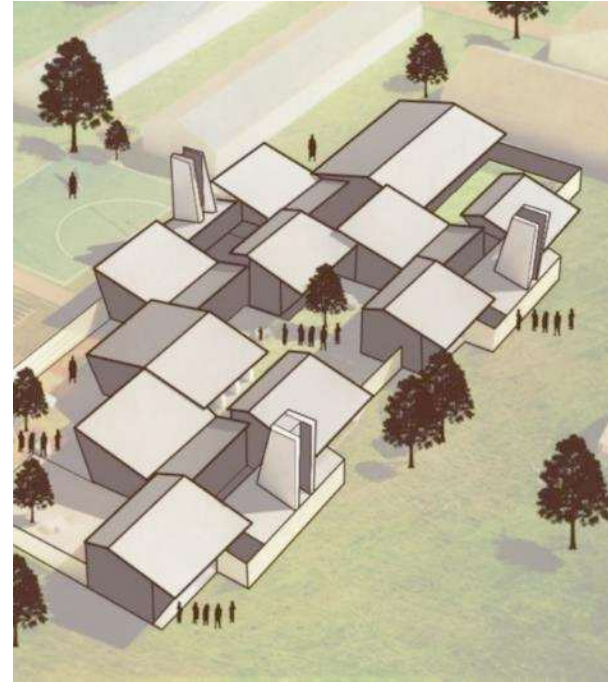


Figure 4.18: Maternity Waiting Village, edited image



Maternity Waiting Village

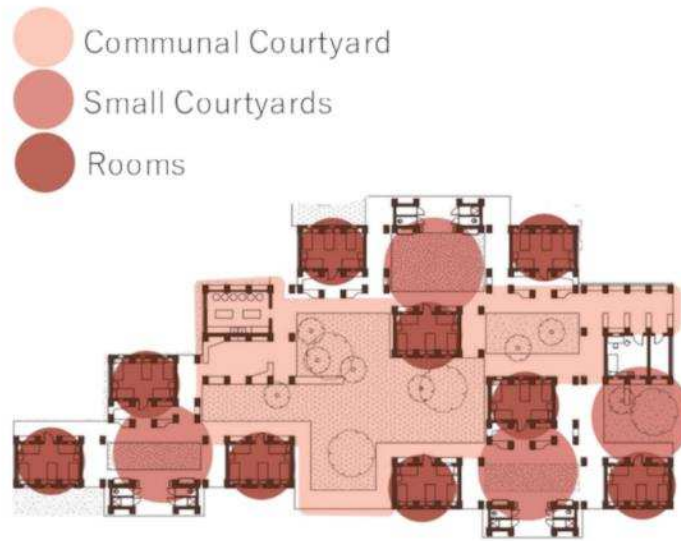
-  Kasunga, Malawi
-  MASS Design Group
-  2015
-  670 sqm
-  Women's Spaces, Community Space

Malawi has a high maternity mortality rate of 381 deaths per 100 000 live births (UN MMEIG, 2023). 85% of Malawi's population live in rural areas and have limited access to healthcare. The concept of a maternity waiting homes aims to promote maternal healthcare by providing boarding facilities close to healthcare service for expectant mothers in their final weeks of pregnancy (Abdel, 2020) (The Plan, 2016).

The initial prototype for the waiting centre was a single large room. This prototype failed due to its lack of privacy and poor living standards. MASS designed a new typology in collaboration with medical professionals and expectant patients. The vernacular architecture of Malawian Villages and family compounds was the inspiration for the design of the waiting village. (Abdel, 2020)

The relevance of this design lies in its antenatal facilities and communal spaces.

Figure 4.19: Programming Diagram, edited from reference



The layout of the building resembles the layout of a village. The waiting village can be broken down into three major components – rooms, small courtyards and large courtyards. The arrangement of building clusters creates a series of public and private spaces. The larger communal courtyard spaces are used for education and activities such as prenatal and postnatal care workshops, and handicraft workshops. The smaller spaces are more intimate and encourages the exchange of knowledge between first time mothers and experienced mothers (Abdel, 2020). The communal living spaces foster a sense of community and solidarity among the expectant mothers.

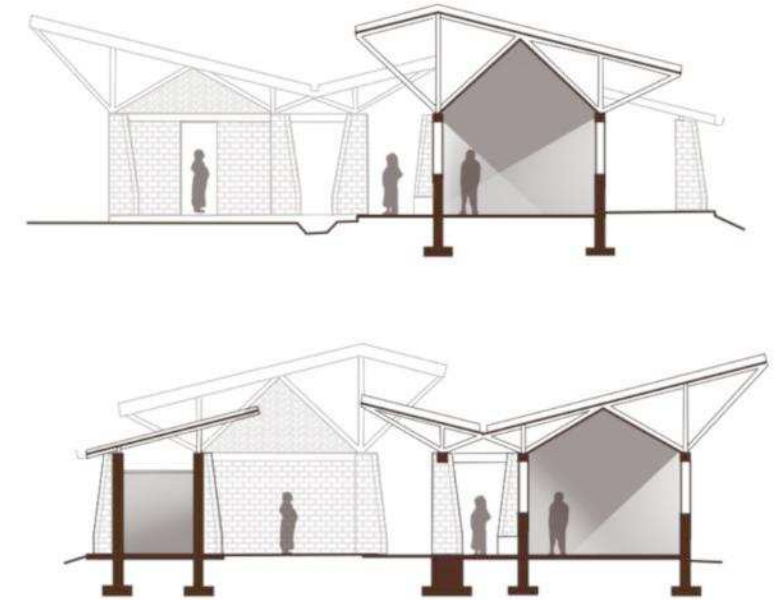
Figure 4.20: Seating Diagrams, redrawn from reference



A key feature of this building is the abundance of seating spaces integrated into the design of the building. This includes elements such as built-in benches, ledges, stairs and platforms. These spaces reinforce the concept of “waiting” and reduces the need for moveable furniture in the building.

The building has a repeating alcove feature throughout the building. This alcove element is multivalent and used as building structure, storage spaces and seating spaces. This creates spaces for interaction and exchange between women. It also creates a threshold between the interior and exterior spaces.

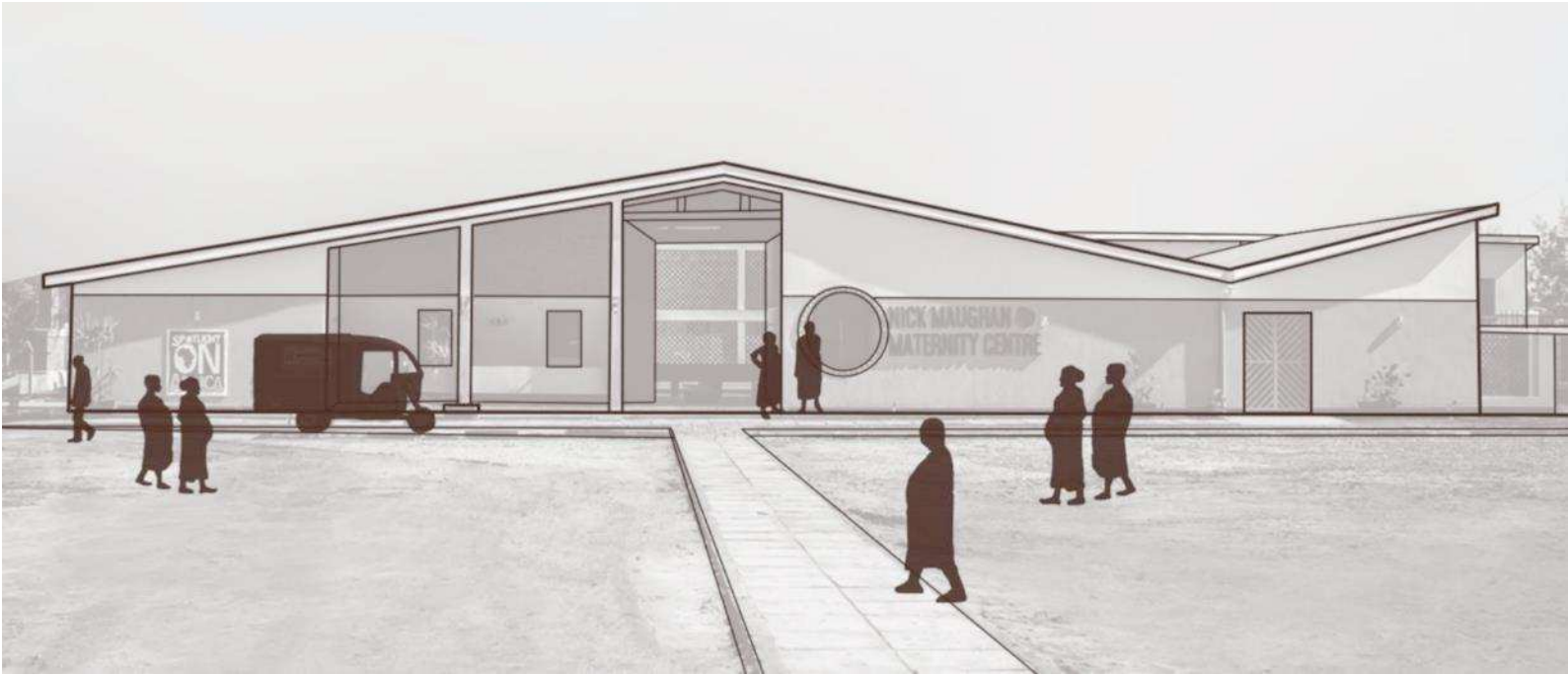
Figure 4.21: Interior Quality, edited from reference



Sleeping spaces are optimized for infection control, privacy, comfort and health of the mother. MASS used passive strategies such as natural ventilation and daylight, as well as earth blocks for thermal regulation of rooms (Abdel, 2020). The large roofs overhangs provide shaded thresholds, captures rainwater and protects the earth walls from rain (The Plan, 2016).

The use of the vernacular models and inspiration of the village gives a sense of domesticity and that evokes a feeling of comfort and familiarity for women. The environment contributes to a positive birth experience for the mother.

Figure 4.22: Maternity Hospital, edited image



Bukasakya Maternity Centre

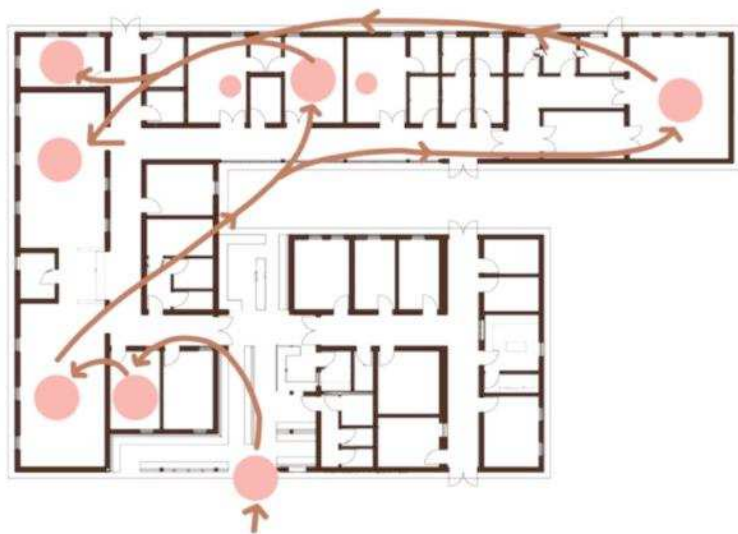
-  Mbale, Uganda
-  CAUKIN Studio
-  2022
-  900 sqm
-  Community Health, Maternity Care, Typology

For most of rural Africa, a lack of access leads to high rates of unsafe home births (Dayyabu et al, 2019) therefore it is important to note that this intervention within the context of Africa is to create an immediate improvement from an unsafe home birth environment to a safe environment. It is crucial that these spaces are designed to facilitate holistic healing and respect the rights of the mother.

Like Malawi, Uganda has a high Maternal Mortality rate of 284 deaths per 100,000 live births (UN MMEIG, 2023) because of the high unattended home birth rate. To combat the high mortality rate, UK charity, Harpenden Spotlight on Africa (HSOA), worked with both government and the community, to establish The Bukasakya Health Centre in November 2017 and later a dedicated Maternity Centre designed by CAUKIN Studio (Pintos, 2023).

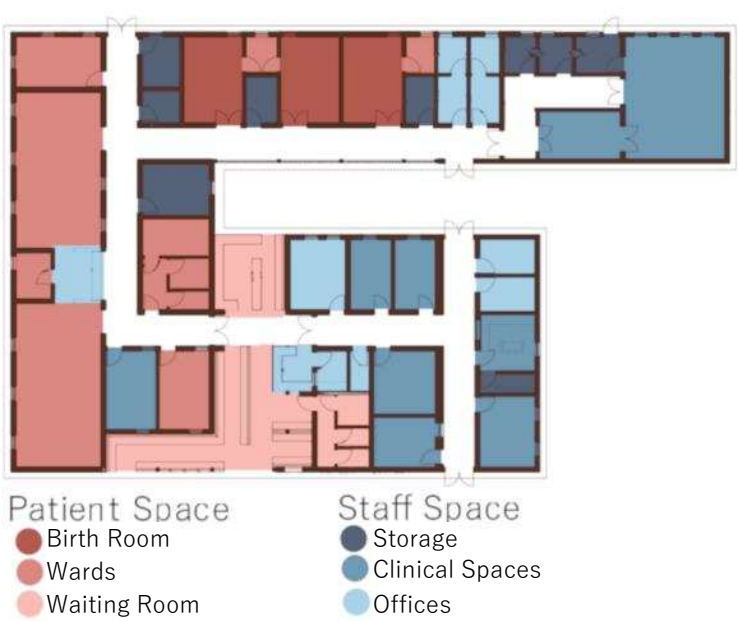
The relevance of this precedent lies in the typology and layout of a clinical setting.

Figure 4.23: Movement mapping, edited from reference



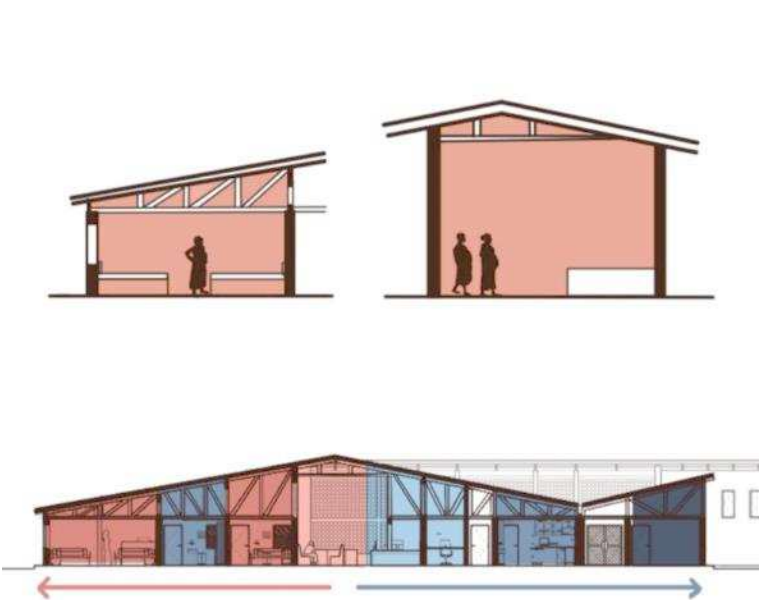
The centre has a very clinical nature and is optimized to serve as many patients as possible. The layout of the clinic follows the GPSC model where patients are moved to different rooms and wards for various stages of labour and delivery. There are dedicated spaces for pre-delivery and post-delivery with dedicated birth rooms. There is a theatre for emergency procedures and a recovery area within the post delivery room. This design prioritizes functionality and a solution to the immediate maternal mortality crisis.

Figure 4.24: Programming Diagram, edited from reference



The building facilitates interaction between patients and staff. While some spaces are more patient orientated, others are more medical orientated. Both these spaces have varying degrees of privacy. Waiting rooms are the most public, wards are semi-private and birth rooms are the most private. A shared ward offers a dissimilar experience in terms of privacy and healing than a private room. The medical spaces include staff spaces, medical treatment rooms and storage rooms. Everything is located around a small central courtyard that provides a connection to nature (Pintos, 2023).

Figure 4.25: Sections, edited from reference



The height and lighting of the waiting room aims to create a bright and well-ventilated space to welcome visitors into the building(Pintos, 2023). The roof design and ceiling heights create a hierarchy of spaces. The higher parts being the main waiting area and circulation spaces. The roofs start to differentiate between public zones and patient zones using different heights. The lower roofs in wards provide a sense of coziness, comfort and domesticity.

Figure 4.26: Terra Alta Birth House, edited image

Terra Alta Oberkirch Maternity Hospital



Oberkirch, Switzerland



Dolmus Architekten



2013



465 sqm



Private Birth House, Non-clinical
Setting, Postpartum Care

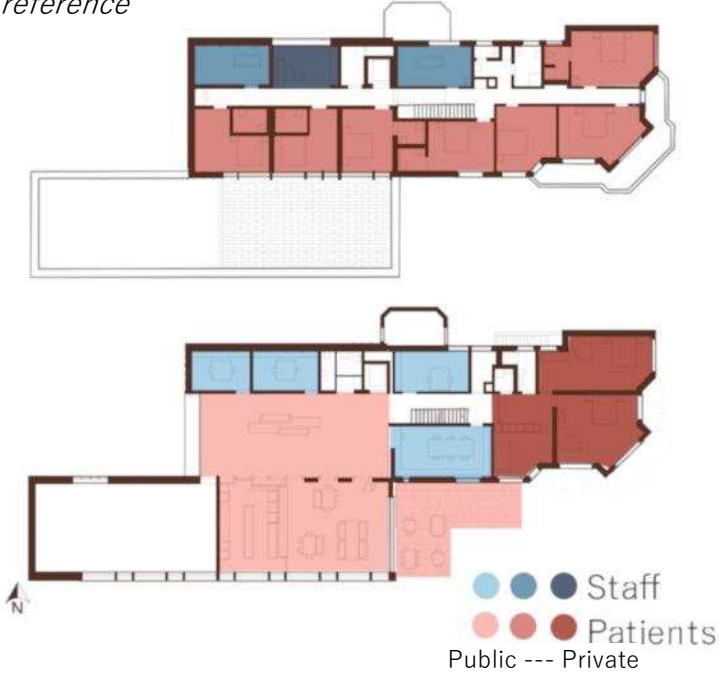


This next precedent looks at an alternative birth environment in a context where healthcare is available and accessible.

The Terra Alta Oberkirch Maternity Hospital is located in Switzerland where the maternal mortality rate is only 7 deaths per 100,000 live births (UN MMEIG, 2023). Terra Alta Oberkirch is a midwife run facility that offers individual care and support. In addition to offering natural birth facilities, this centre also provides postpartum boarding facilities. Terra Alta puts emphasis on the intimacy of the birth experience and the transition to parenthood (Terra Alta, 2024). The architects were tasked to create a birthplace that resembles a domestic setting rather than a medical building. The interiors, light timber materials and lighting of the building was designed to create a more domestic aesthetic (Archdaily, 2017).

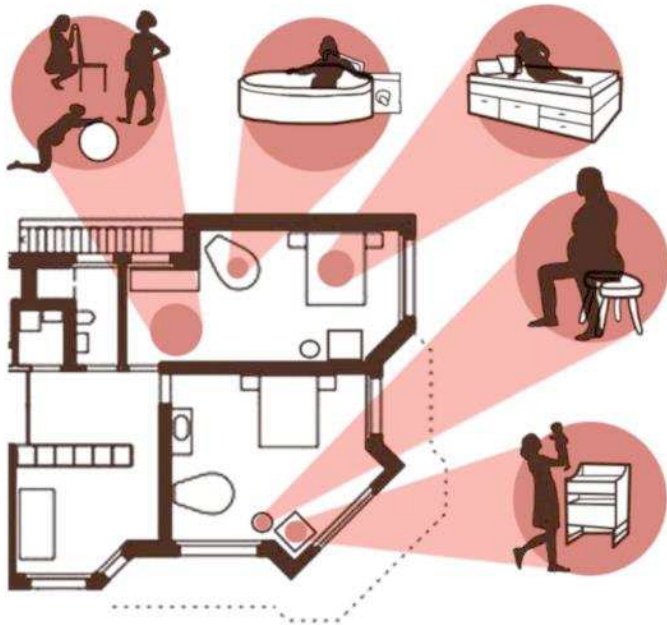
The relevance of this precedent is to explore alternative birth settings and domestic environments.

Figure 4.27: Programming Diagram, edited from reference



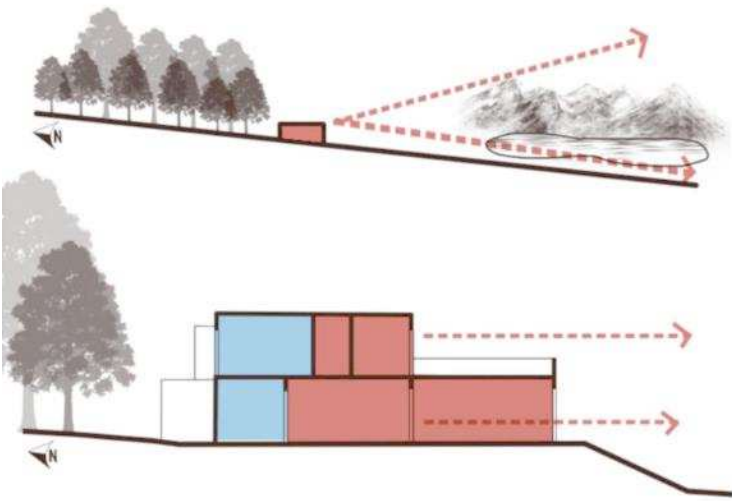
This birthing house uses the LDP model. Labour, delivery and postpartum stage take place in birth rooms on the ground floor. Thereafter the parents move to the recovery rooms on the first floor for at least three nights. A team of professionals are available to support the new family and give the mother time to recover. Communal lounge and dining spaces are located on the ground floor (Archdaily, 2017) (Terra Alta, 2024).

Figure 4.28: Birth rooms, edited base drawing from reference



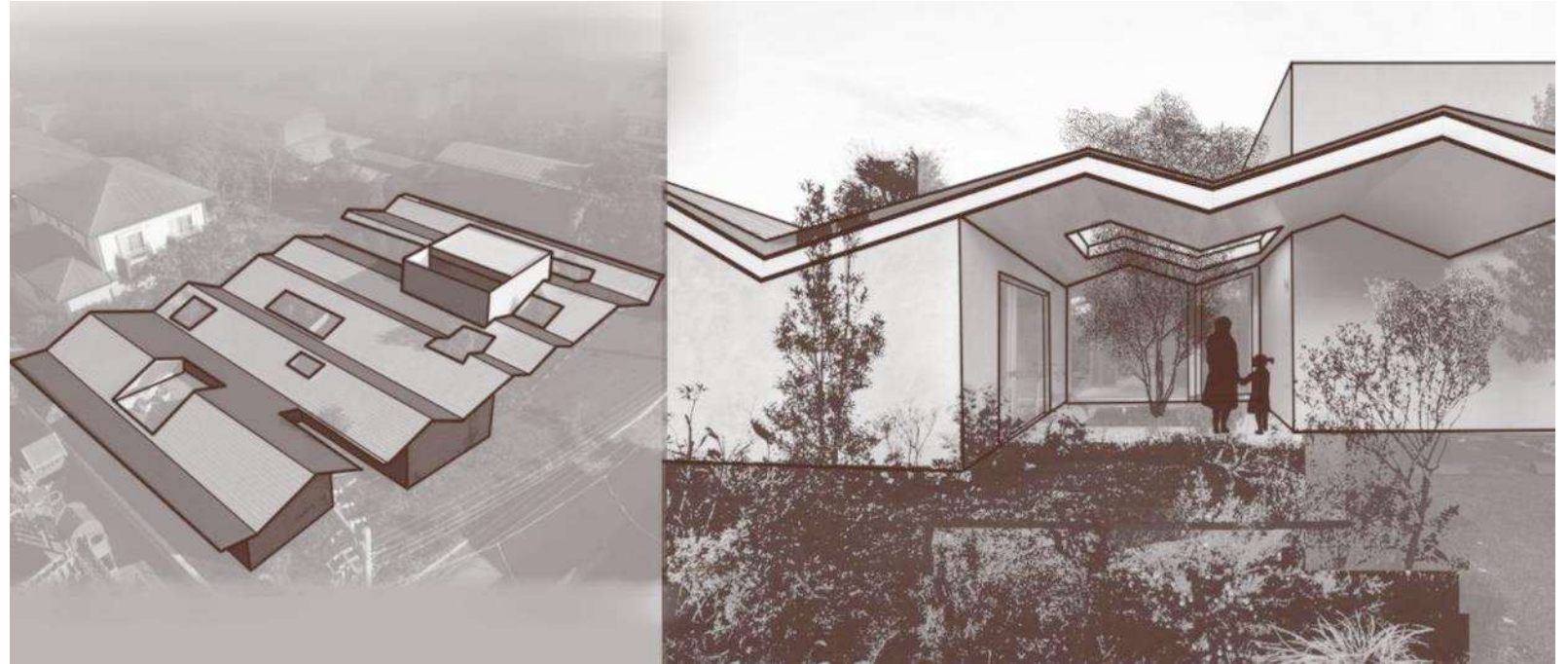
The birth room's design enables a positive birth experience. It provides enough space for the mother to move around, is equipped with birthing equipment such as birthing stools and a birthing tub and has a connection to the outside. This space empowers the mother by providing freedom, flexibility and agency during the labour stage.

Figure 4.29: Views and Connection Diagram, redrawn from reference



As discussed earlier, views and a connection to nature is a beneficial aspect of healing architecture (Simonsen, Sturge and Duff, 2022). The building has a strong connection to nature. The centre is built on the edge of a forest. The dark timber facade mimics the colour of the forest (Archdaily, 2017). The patient spaces are located on the south side of the building and receives good natural light. The building has a view of mountains and a lake (Archdaily, 2017).

Figure 4.30: Clinic in the Woods, edited images



Clinic in the Woods



Niiza, Japan



Takashige Yamashita Office



2020



299 sqm



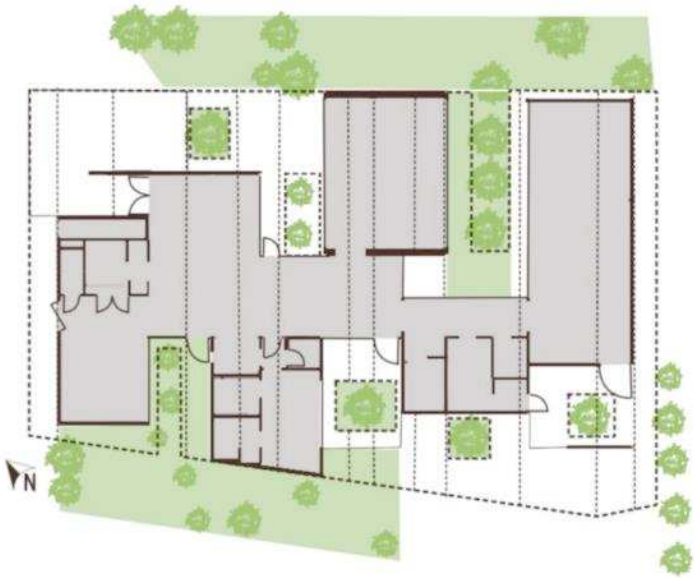
Green Spaces, Healing Architecture

The cold sterile atmosphere of a medical environment can cause a sense of unease and anxiety to patients and visitors (Belitardo, 2024) (Pallasmaa, 2012). Therefore, there is an increased interest in humanizing the healthcare environment to promote recovery and wellbeing. One of the strategies to improve the healthcare environment to create a connection with nature through views, greenery, and light. This has proven to reduce stress, improve recovery and convey a feeling of care. (Belitardo, 2024)

A good example of healing architecture this paediatric dental & orthodontic clinic in Japan. The clinic takes the existing trees from the site and integrates it into the design of the building. This creates a building with a series of calming green spaces to soothe the anxiety of children treated at the clinic. (Abdel 2021)

The relevance of this precedent lies in healing architecture and holistic wellbeing.

Figure 4.31: Green space diagram, redrawn from reference



The building introduces a series of gardens throughout the building. There is a seamless integration between building and landscaping, acting as natural privacy screens between areas and enhancing the mental and physical experience of patients (Abdel, 2021). These green spaces give the building a more natural feel and contributes to aspects of healing.

Figure 4.32: Threshold Sections, base redrawn from reference



The roof shape resembles a traditional gable roof, mimicking the surrounding neighbouring houses (Abdel, 2021) which adds to a feeling of domesticity. The roof also has a series of cuts and opening to allow sunlight to into the building and into the garden spaces spread throughout the building (Abdel, 2021). The aspect of natural light helps create a more natural environment and distracts from the artificial clinical setting. The garden thresholds have a direct relation to the waiting areas and treatment spaces.

Figure 4.33: Threshold Detail, redrawn from reference



The roof penetrations and garden spaces start to blur the thresholds between inside and outside. The tectonics of the roof – the edges, volumes, offsets, cuts – creates unique spaces throughout the building. The playful nature of the building enhances its function as a calming space for young patients.

The Garden Library for Refugees and Migrant Workers



Tel Aviv, Israel



Yoav Meiri Architects



2010



50 sqm



Community Space, Care Ethics,
Accessibility

Figure 4.34: Garden Library, edited image

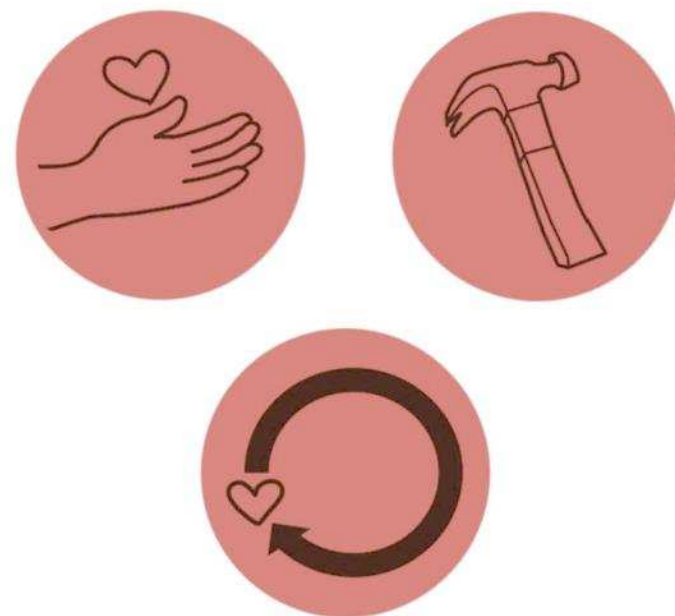


In a healthcare setting, care defines a relationship between the doctor and the patient. Care in an architectural sense, is the architect caring for the users of their space. (Cohen and Fenster, 2021) Architecture and the spaces it creates can facilitate social activities that constitute mutual care for other.

The Garden Library is a “social-artistic urban community project”(Archdaily, 2011) that provides unrestricted access to books. It consists of two shelves, a shelf for adults and a shorter shelf with children's books (Archdaily, 2011). It is aimed at refugees and migrant workers and contains 3500 books in sixteen languages. It serves as a community space for people from diverse backgrounds and difficult circumstances (Project For Public Spaces, 2015).

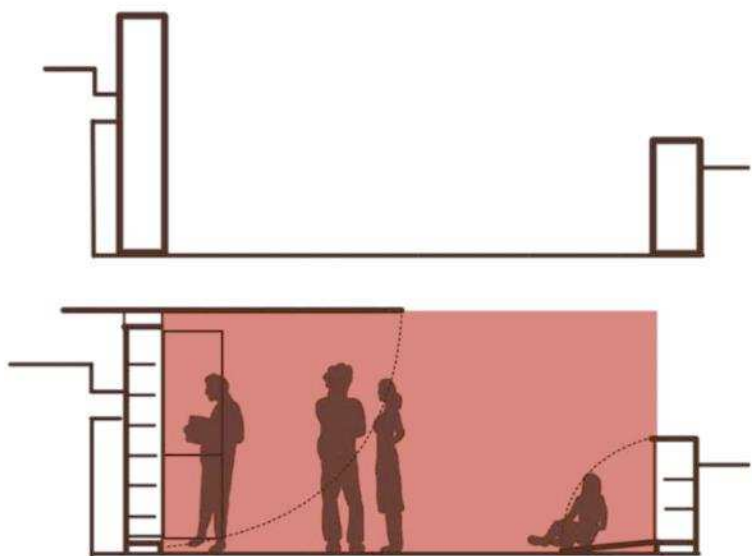
The relevance of this project lies in care ethics, urban design and community projects.

Figure 4.35: Ethics of Care Diagrams



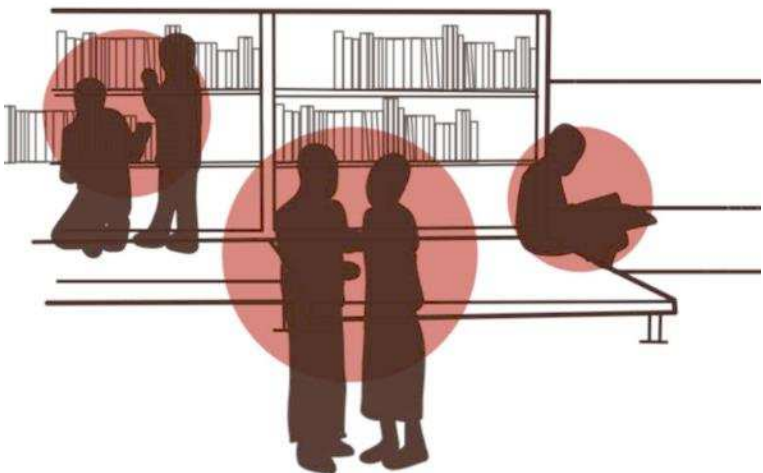
The library reflects characteristic of care ethics. This project addresses a need ignored by the government and private sector. The architects' intent shows an aspect of “reaching out” and “repair” by creating a spatial intervention for a marginalized community and address a social problem. The architect's commitment for further social interventions constitutes “continued care.” (Cohen & Fenster, 2021)

Figure 4.36: Spatiality Sections, redrawn from reference



The library has no walls or doors. Instead, it is simply two cabinets. The adult cabinet opens to form a canopy that provides shelter for sun and rain. The children's cabinet folds down and provides a platform for children to sit on. The relationship between these two shelves creates a public space. (Archdaily, 2011) (Cohen & Fenster, 2021)

Figure 4.37: Community Activity, redrawn from reference

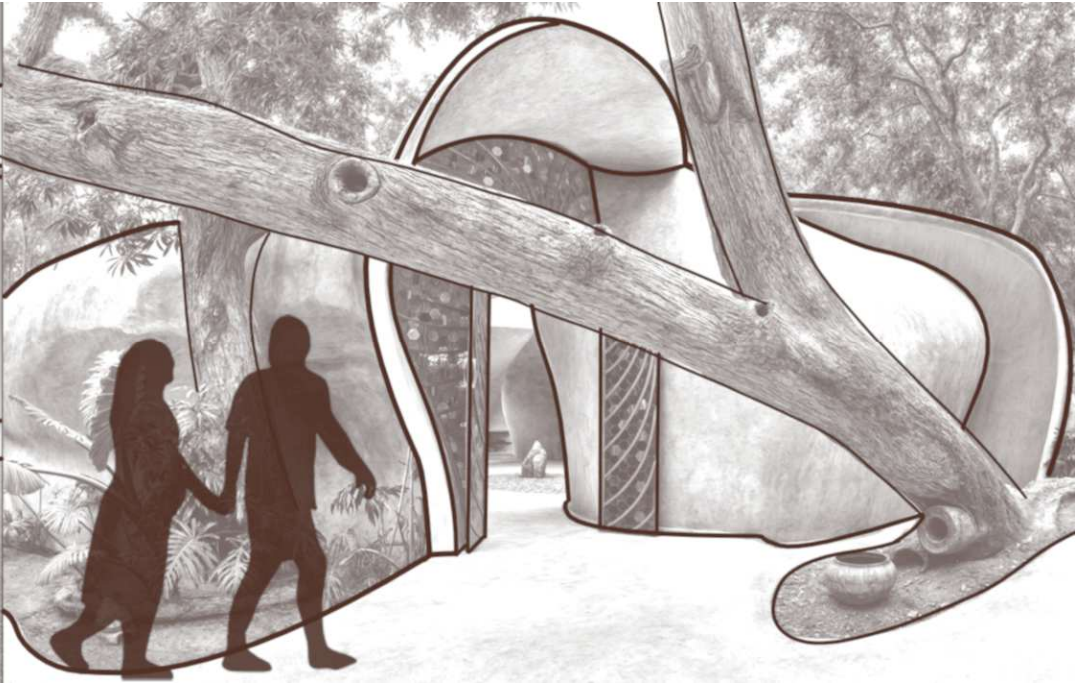


The library promotes access to education and community spaces. The intervention challenges the idea of the traditional library and brings it to the people. The open-air, park environment creates a space to browse, read and interact (Archdaily, 2011). The library serves as a meeting place for marginalized communities and unite people through a common love for reading (Project For Public Spaces, 2015).

Figure 4.38: Tarasana Healing Center Interior, edited image



Figure 4.39: Tarasana Healing Center Exterior, edited image



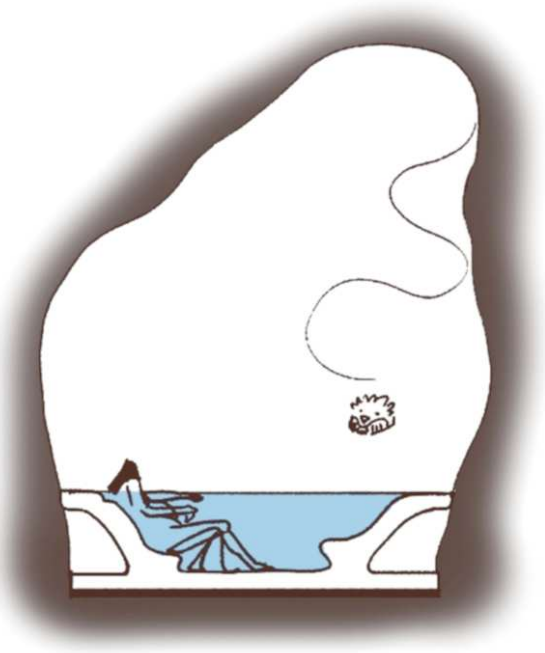
Tarasana Healing Center

-  Yelapa, Mexico
-  MA Estudio
-  2022
-  300 sqm
-  Holistic Healing Space, Biophilic Design

Tarasana Healing Center creates a unique holistic healing birth space. In contrast with the hospital setting of the Bukasakya Maternity Centre or the domestic environment of Terra Alta, Tarasana creates a heterotopic approach to the birthspace.

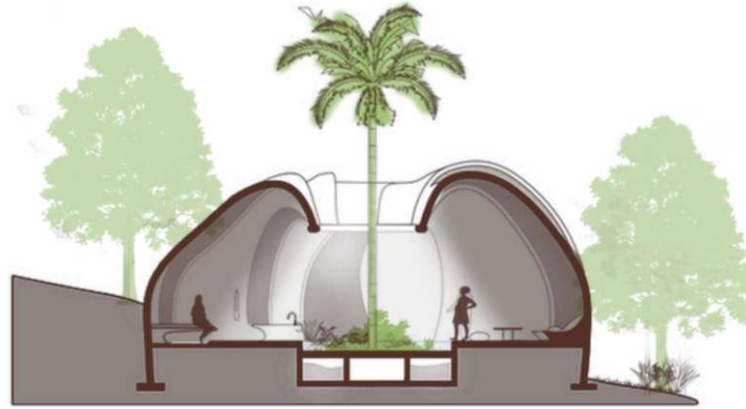
The Tarasana Healing Center is a holistic healing hub in the Yelapa jungles of Mexico. It offers natural childbirth services and creates a healing environment that fosters a connection between parent, child and nature. Tarasana creates a sanctuary for physical and spiritual healing by fostering connection between parent and child. Its uniqueness lies in biophilic design and Sacred Geometries to create a space where nature and spirituality meets. (Al Koshta, 2025) One of the key features of this facility is bathtubs and their waterbirth services. (Tarasana, no date)

Figure 4.40: Spatiality of Birth tub. Edited image



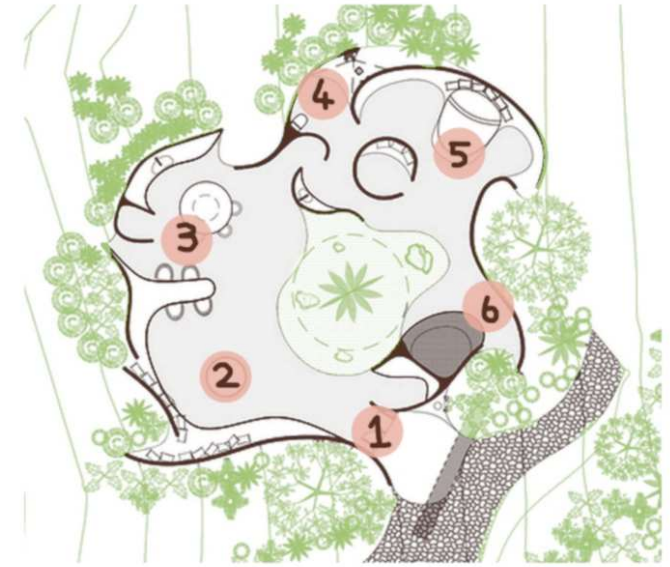
The birth tub is a space that emulates the safety and warmth of the womb (Al Koshta, 2025) and promotes the healing effects of water. (Tarasana, no date) Waterbirths have an analgesic effect that reliefs pain. The water reduces vulnerability by creating a sense of intimacy and privacy by fully submerging the body. The submersion in water also is beneficial to postural changes and maternal pushing during labour. (Tarasana, no date)

Figure 4.41: Biophilic Section, edited drawing



The doughnut shaped form of the building creates a central opening that introduces natural light and nature. The biophilic design principles blurs the lines between inside and outside, creating a direct link to nature. The curved womb like shape creates a spiritual womblike experience. (Al Koshta, 2025)

Figure 4.42: Program diagram, edited drawing



The unit is submerged in nature and contains nature, creating various of layers of nature and building. This unit mimic a domestic space in its programming and uses the curvature of the walls to create designated spaces. The building furniture such as the bed, tub, tables and counters is integrated into the architecture and forms part of the building.

1. Entry
2. Living
3. Kitchen and Dining
4. Bathroom
5. Bedroom
6. Birthtub

Conclusion

The case studies and precedents hold significance for the success of the project. All the projects incorporate themes of care and wellbeing. This includes physical, emotional and mental wellbeing.

Hospitals such as the Mitchells Plain Hospital in Cape Town and Bukasakya Health Centre in Uganda provide base knowledge on the functional aspects of maternity care in the public sector. Their significance lies in the programming and layout which create functional facilities.

Alternatively, Terra Alta in Switzerland and Tarasana in Mexico offer a private and intimate approach to childbirth. Their focus on privacy and individual care creates an experiential space that mimics the comforts of home.

The Maternity Waiting Village in Malawi and the Garden Library in Israel emphasize the importance of community participation and education. Spaces that allow people to gather, exchange knowledge, and share experiences are crucial for building lasting support structures.

The importance of thresholds and a connection to nature are key design features of the Clinic in the Woods in Japan. This connection to nature, views and greenery is also prevalent in the design of Terra Alta and Tarasana.

The key principles explored in the theoretical section are successfully implemented in various projects that have a real-life impact on the experience of childbirth. My project aims to further develop these principles and integrate them seamlessly to create a space of comfort and safety.

Figure 4.43: Narrative Panels

The Future

Scope, Feasibility and Programming

The future looks at a design solution to the research question.

How can healing architecture holistically influence the physical and mental experiences of childbirth and women's reproductive wellbeing?

After my analysis of theory, site and precedent, these findings will guide the design development of the final building. This section looks at the scope, feasibility, and programming of my proposed intervention.

The birth centre aims to create a node of new beginnings. The aim of the intervention is to design a prototype building that facilitates aspects of safe motherhood and women's reproductive health. This vision materializes as a community healthcare centre and midwife-led birthing facility. The space, nestled within the community, creates an alternative environment for childbirth that combines the safety and standards of a clinical setting with the intimacy of a home birth. The intervention aims to give women greater autonomy over their reproductive health and enhances their freedom of choice.



Figure 4.44: Mother's Journey

Narrative Exercise 1: A Mother's Journey

The narrative of pregnancy is reminiscent of a Hero's Journey (Campbell, 1973). The woman leaves a place of familiarity, experiences a transitional event and at the end returns to society, having undergone a change (MacLellan, 2020:3566). (from chapter 2)

This narrative explores the typical pregnancy, starting with the positive pregnancy test that sparks a woman's transition to motherhood. This storyboard is the starting point for the scope of the maternity centre.



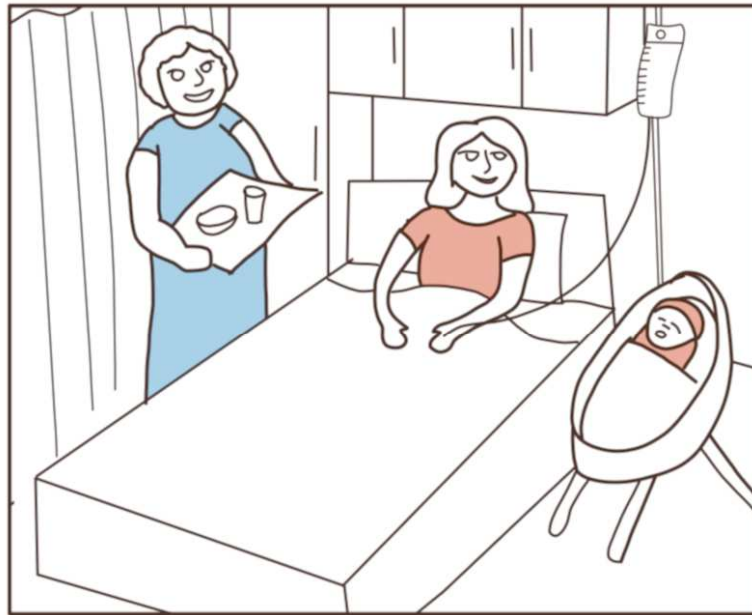
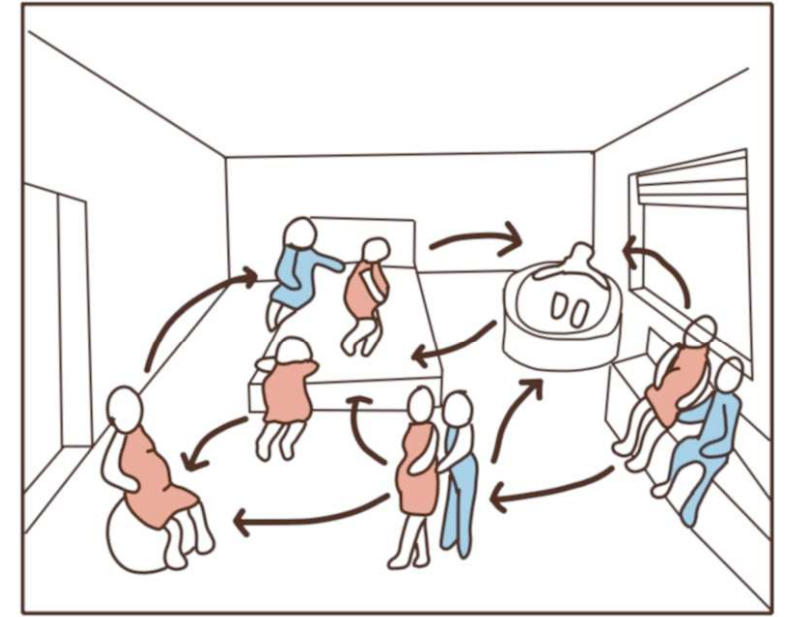


Figure 4.45: Mother's Journey Storyboard

Figure 4.46: The Waiting Room

Narrative Exercise 2: The Waiting Room

Not every pregnancy is as easy and perfect as the one illustrated in the first narrative exercise. Pregnancy and childbirth pose various challenges, risks or complications that can cause feelings of anxiety and fear. This anxiety is not only for the pregnant woman but also her caregivers, friends and family.

The next narrative explores the anxiety of the waiting room, a place where three narratives converge for a moment of time. This narrative explores the emotional impact of pregnancy. This inspires a concept of waiting spaces and medical environment that fosters a sense of empathy and calm.



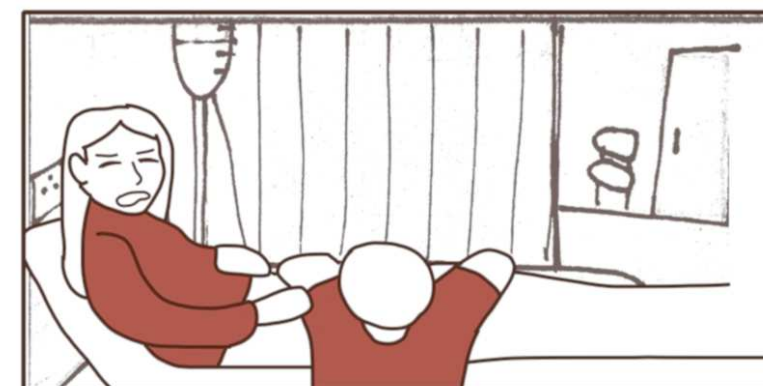
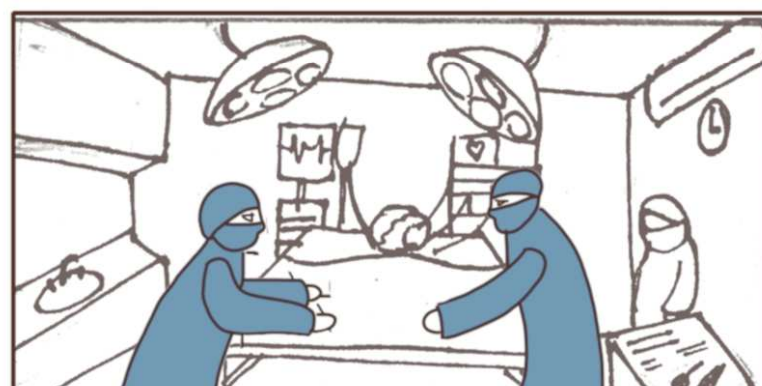
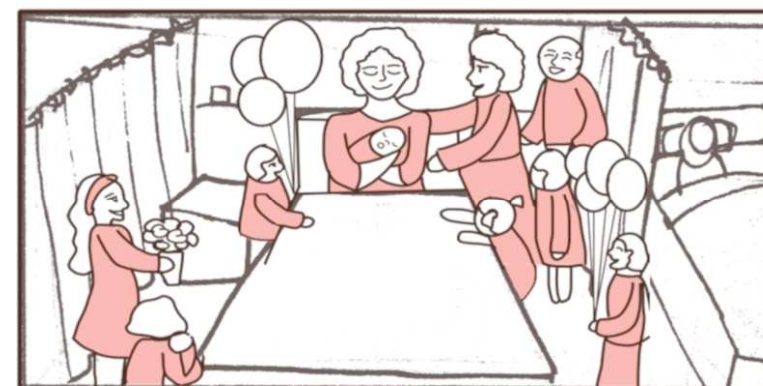


Figure 4.47: The Waiting Room Storyboard

Narrative Exercise 3: Story Tree

A pregnancy is not a linear storyline, it is a complex narrative of different choices, decisions, and outcomes. There are many of factors that introduce twists and unexpected ends to a pregnancy. These aspects include unwanted and unintended pregnancy (Statistics South Africa, 2020:17), abortive intervention for ectopic pregnancies and miscarriage, intrapartum complications such as congenital abnormalities and infections (National Department of Health, 2021:5) and healthcare challenges such as hypertension, diabetes, HIV, tuberculosis, etc (National Department of Health, 2021: 4-5)

This network of narratives can be represented in a story tree . This story tree will have a direct influence on the programming and services offered by the birth centre. Each of the narrative outcomes have a place in the programming of the final building brief.



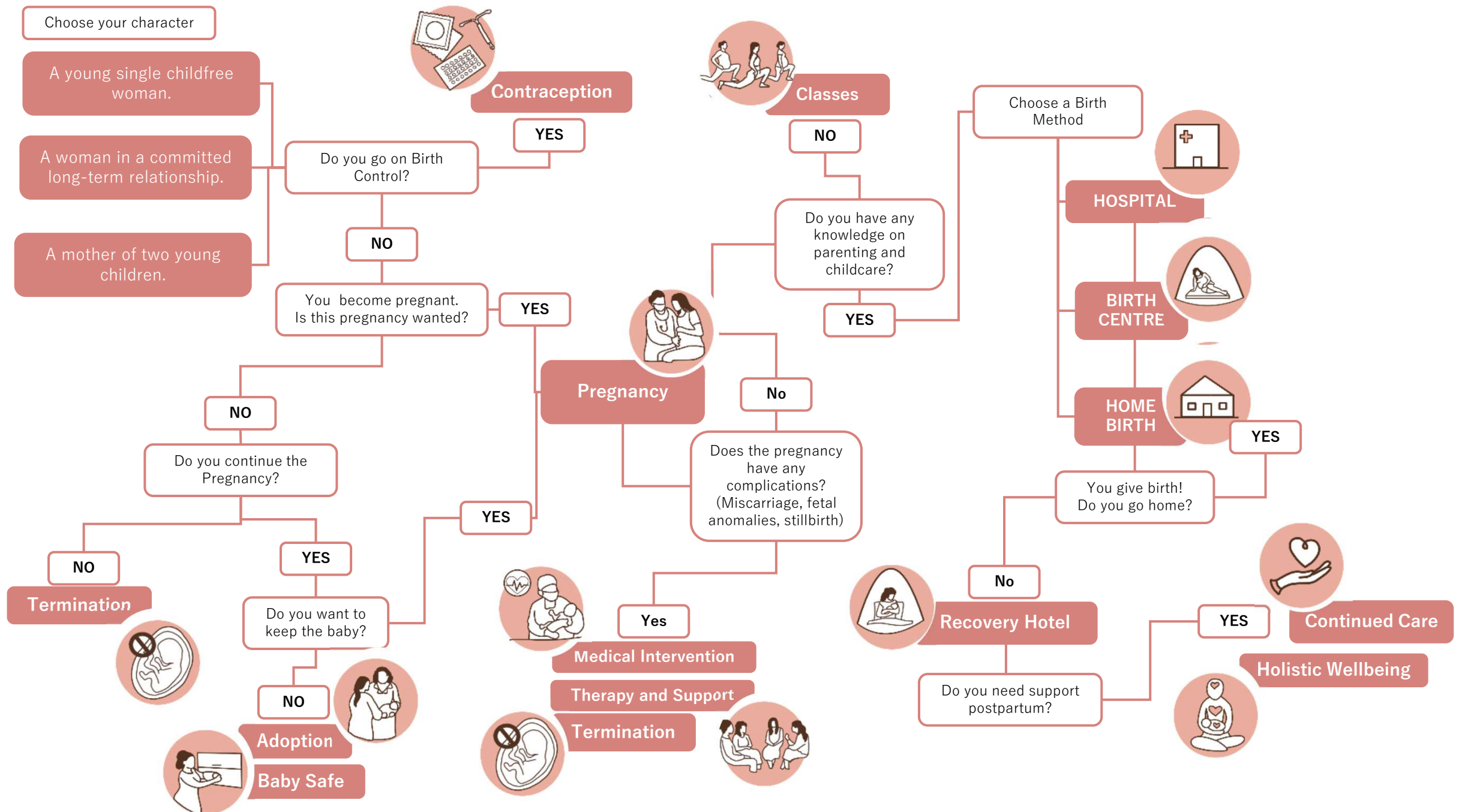
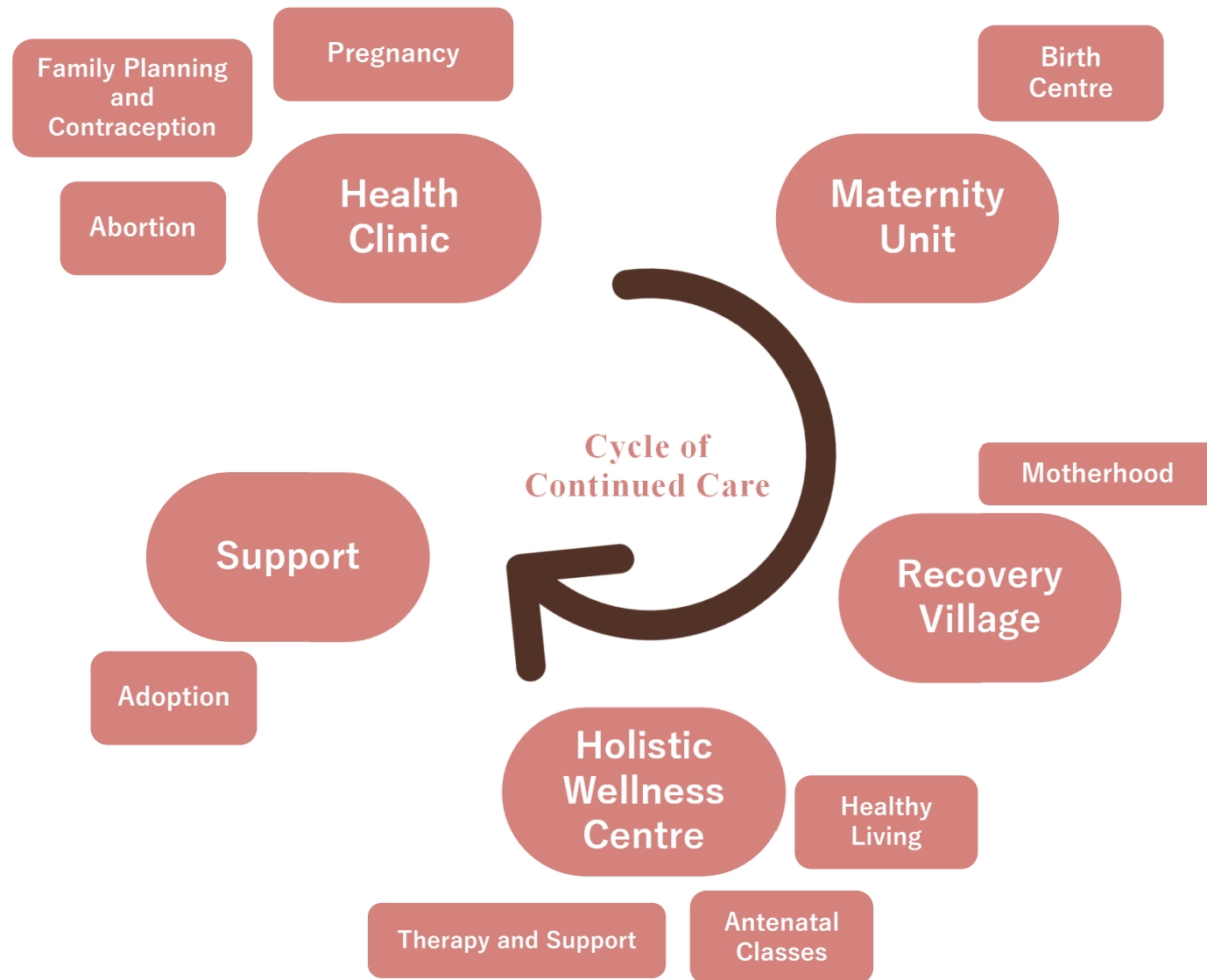


Figure 4.49: Story Tree



Design Brief

The design incorporates philosophies of healing and care ethics to create a soothing and intimate atmosphere for women. The building contains a mix of healthcare and community care spaces. This is based on the concept of continuity of care, which will provide support before, during and after a woman's pregnancy. This includes learning spaces, healing spaces and support spaces. The building will promote a healing environment using philosophies of patient centred care and phenomenological theory. Incorporation of green spaces in the building, reinforces the idea of birth being a natural process of life, and enhances the birth experience for expectant mothers.

The birth centre consists of different components relating to stages and choices associated with maternal health and pregnancy. This can be broken down into five main components.

- **Health Clinic** – medical checks, family planning, abortions, risk assessment.
- **Maternity Unit** – labour and delivery
- **Recovery Village** – postpartum recovery
- **Holistic Wellness Centre** – therapy, support groups, education, healthy living, food gardens
- **Support** – social services, adoption, administration, childcare, volunteer spaces.

Figure 4.50: Outcomes of Story Tree and their relation to Programming

Health Clinic

The clinic plays an important role in the overall well-being of women before, during and after pregnancy. The clinic offers various services such as contraceptive care, prenatal screenings, risk assessments, postnatal care, and infant vaccinations. The clinic also provides specialized services such as physiotherapy, dental care and mental health services. The aim of the clinic is to provide a centralised point of care and promote holistic well-being.

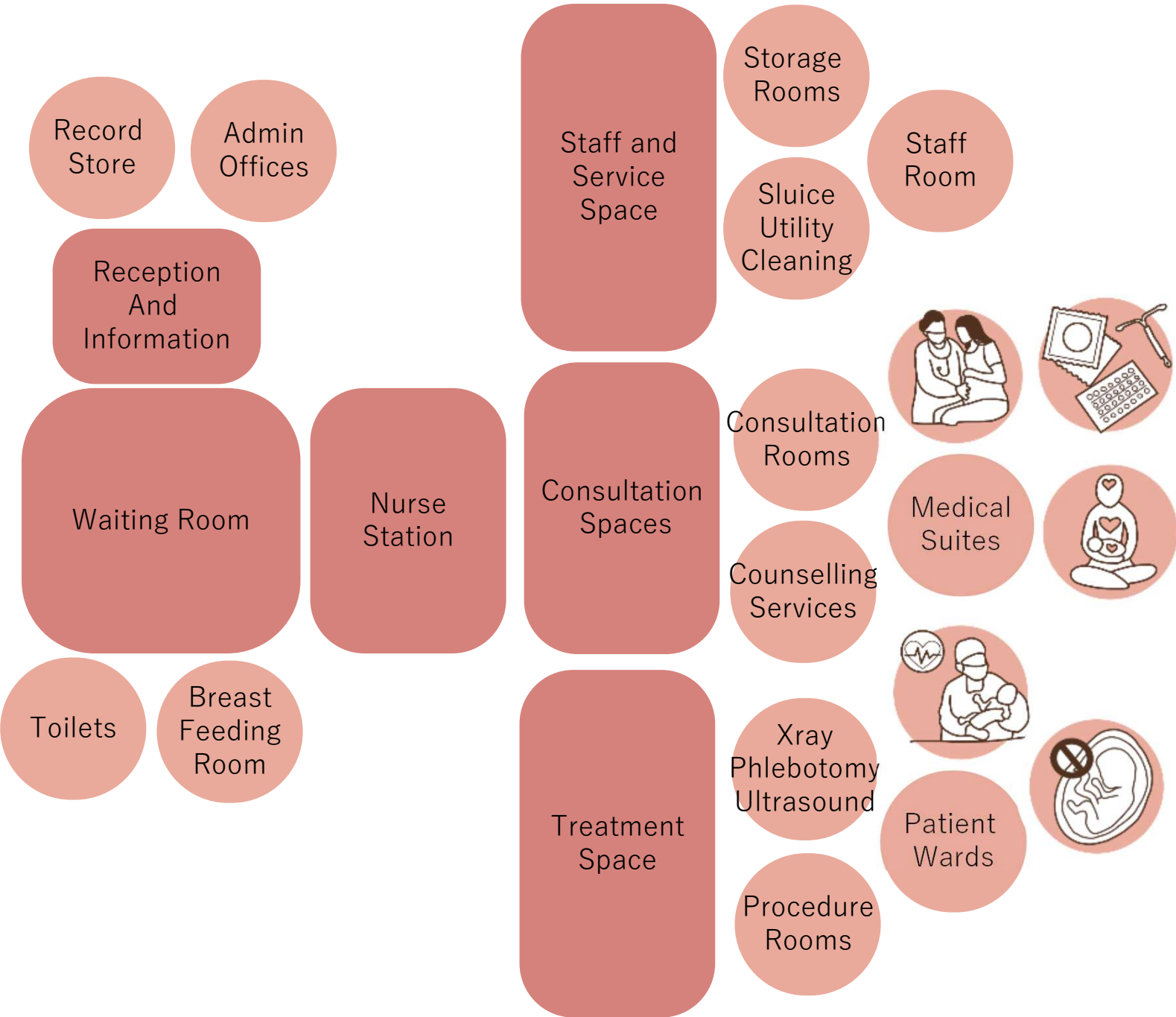


Figure 4.51: Health Clinic Program Diagram

Maternity Unit

The maternity unit is an alternative birth space that combines the comforts of a home birth environment with the safety of a hospital environment. This unit aims to give women autonomy and control of the space. The birth space have an emphasis on privacy, dignity and closeness to nature to foster a sense of well-being, The birth rooms are designed according to the principles of care, healing architecture, and phenomenology to create an intimate space for a positive birth experience.

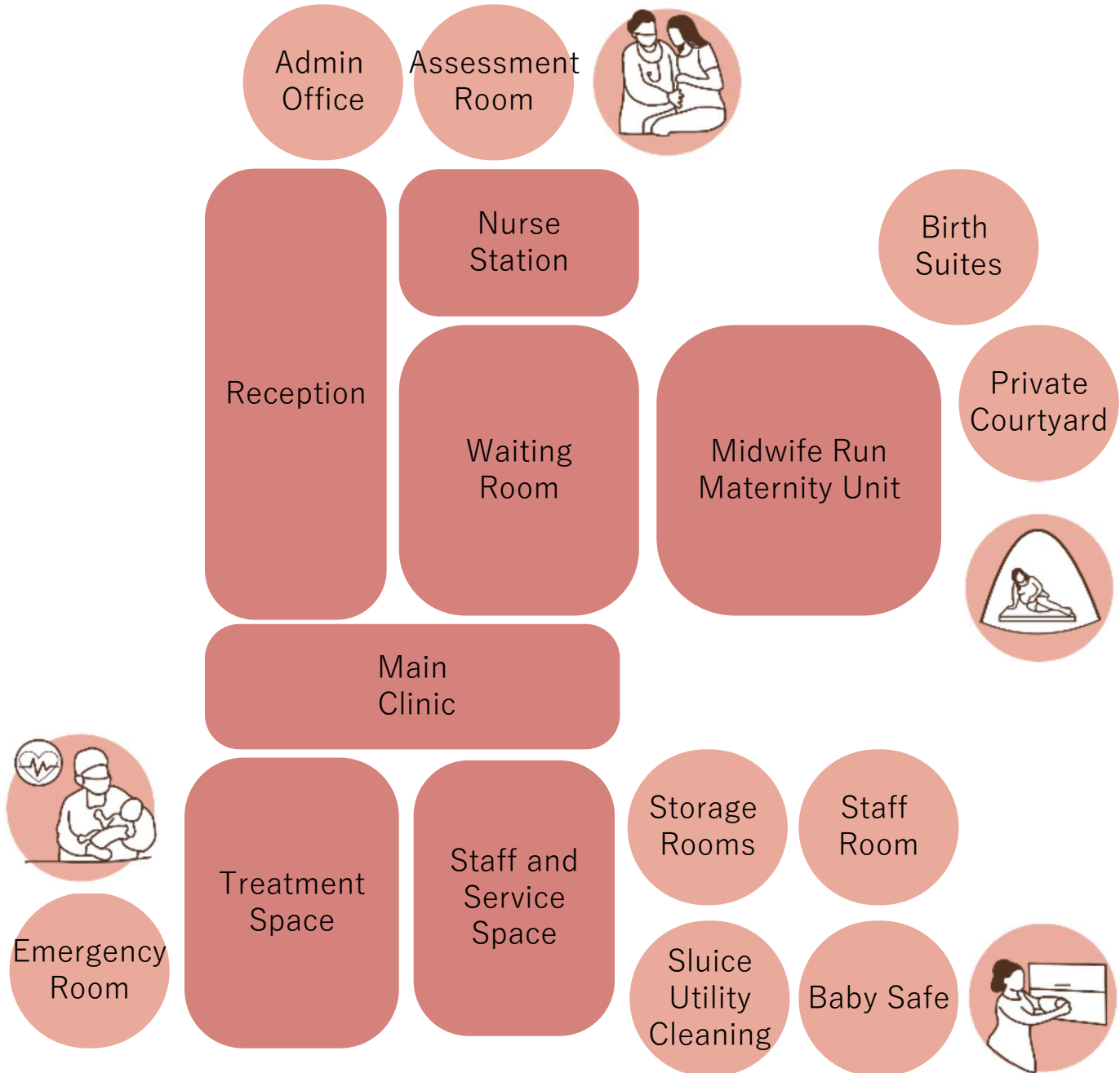


Figure 4.52: Birth Unit Program Diagram

Recovery Village and Holistic Healthcare Centre

The recovery village is a boarding facility where women can recover and adjust to motherhood. The aim of the village is to aid in postpartum recovery by offering support such as meals, advice, and childcare. This is a place for new mothers to gather, establish a support network and create lasting relationships. The space creates a sense of solidarity among new mothers.

The Holistic Healthcare Centre is a space that encourages continued learning and healthy living. The centre includes facilities such as a health restaurant, exercise studios, and a seminar space. This space represents continued care and promotes holistic well-being which encourages women to return to the centre.

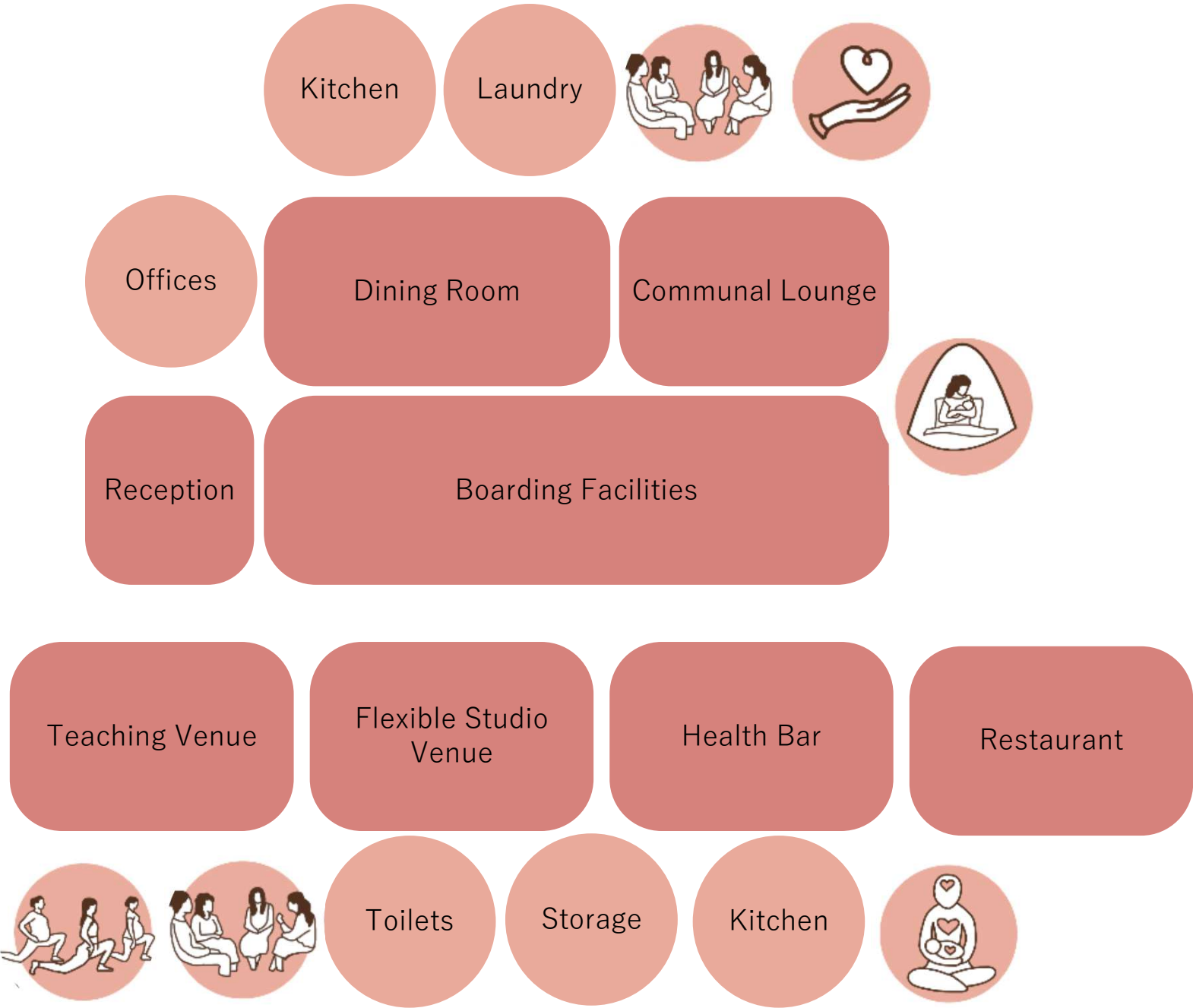


Figure 4.53: Maternity Village and Wellness Centre Program Diagram

Support and Administration

The support and admin block contain spaces required to run the building on a management and function level. This includes office space and boardroom space. Additionally, this section offers childcare facilities, social services and a pharmacy.

Full programming brief in appendix C.

References: *the IUSS Health Facility Guides: Maternity Care Facilities, IUSS Health Facility Guides: Outpatient Facilities* and *Part B – Health Facility Briefing & Design including Functional Planning Units*

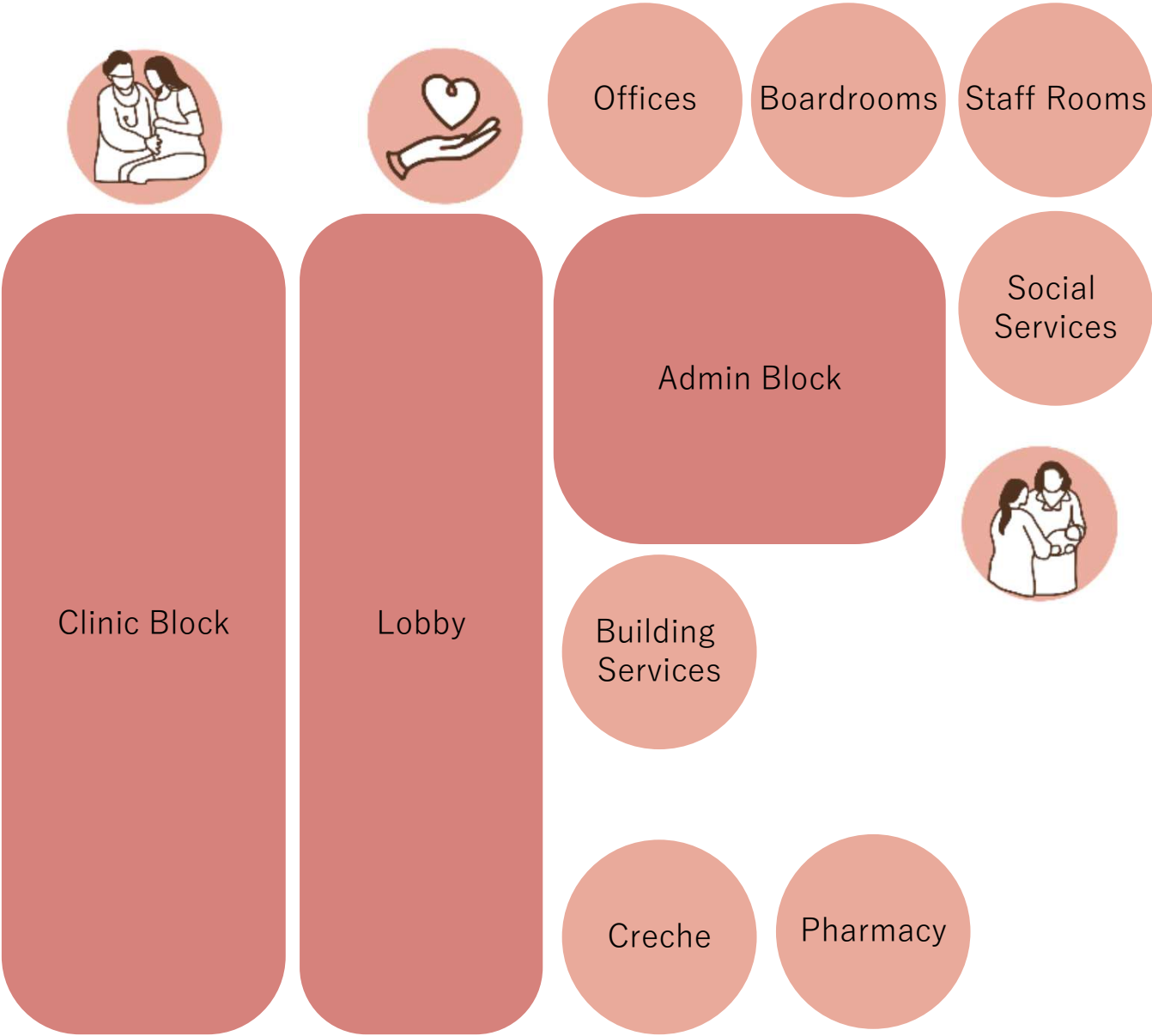


Figure 4.54: Support Program Diagram

SWOT Analysis

Strengths

- Integrated holistic care including obstetric care, ultrasound and screenings, prenatal and postpartum care, physiotherapy, dental, dietary advice, vaccinations, dental and mental health services
- Personalized services regarding birth plans and needs of women.
- Simulated home environment that contributes to a positive birth experience

Weaknesses

- Professional staff and skills shortages
- Limited range of service limited to suburb of Florentia and surrounds
- Not suitable for high-risk pregnancies or specialized neonatal care

Opportunities

- Public-private partnerships that creates accessible maternal care to all women.
- Opportunity to integrate birth units and recovery sections into existing municipal clinics.
- Community outreach and collaboration to provide maternal care and education.

Threats

- Competition with nearby Alberton Netcare hospital and other midwife services.
- External public funding required to keep facility operational and affordable.
- Infrastructure challenges such as water outages, sewage problems and load shedding.

New Zoning	Social Services
New Rights	Hospitals, Clinics, Libraries, Police Stations, Law Courts, Fire Stations, Municipal and Government Offices, Institutions, Places of Public Worship, Places of Instruction, Childcare Facilities, Social Halls, Old Age Home
New Building Lines	5m on all sides
New Heights	Determined by Municipality
New Coverage	Determined by Municipality
New Density	Determined by Municipality
Parking	Hospitals and Clinics: 1 parking space per bed/ 6 spaces per 100m² Social Halls: 10 parking per 100m²

Rezoning

The current zoning rights for community facilities do not make provision for medical uses. The site therefore needs to be rezoned to social services. A rezoning application and a fee of R4 959.73* will be required to the City of Ekurhuleni. Due to the size of the site.

*(City Of Ekurhuleni, Tariffs: City Planning Tariffs, 2023/2024)

Table 3: New Zoning Rights

Building Section	Estimate sqm	Estimate Cost
Health Clinic	604.5	R 16,648,550.00
Maternity Unit	504.5	R 15,141,350.00
Recovery Village	420	R 4,368,000.00
Holistic Health	590	R 12,134,000.00
Support	345	R 4,099,500.00
	2464	R 52,391,400.00

Cost Estimate

Based on the Aecom 2022/2023 guidelines for costing, an estimate for the building costs can be calculated.

Alberton has a predominantly private healthcare system, and a lacking public health sector. Consequently, individuals lacking the means to afford medical aid or private care often find themselves unable to access essential healthcare and having to travel long distances to government hospitals. The goal is to create an affordable and quality healthcare facility that alleviates the pressure of the current medical system.

The initial funding for the building will come from government bonds and loans. The building being a public-private partnership and healthcare centre, will receive government funding from the health department and the NHI. Additionally, the building will generate income through medical services not covered by the NHI or health department. In addition to this, the centre has rentable venue spaces for events, seminars, and classes.

Table 4: Cost Estimates

Market Feasibility

Client

The client is a public private partnership involving the Department of Health and Municipal Health Departments.

Users

The users of the building include staff, patients, and visitors.

Building staff include medical personnel such as nurses, nurse assistants, midwives, birth attendants, counsellors, and medical officers. Other staff includes administration workers such as receptionists, IT, finances, administration, etc. and support staff such as cleaners, housekeeping, and maintenance.

Patients to the building include pregnant persons in various stages of pregnancy, pregnant persons in labour and postnatal patients, as well as people seeking reproductive healthcare. Other patients include members of the community.

Visitors to the building will visit for two reasons, to support the pregnant person or to visit the community facilities.

Technical Implications

Professional Team

The professional team consist of the Project Architect, who will assume the role as the Principal Agent, and a body of design professionals, including but not limited to structural engineers, electrical engineers, mechanical engineers, civil engineers, fire specialists, urban planners, and landscape designers.

The team will be advised by medical professionals and midwives on the needs and functionality of the building to suite both staff and patient wellbeing.

Site Preparation

The site is a greenfield site. It has no major trees, rocks or existing features that need to be cleared before construction. Access to site is available from all sides. Extra caution will be needed to fence off and secure the site during construction. Minimal disturbance to the pedestrian footpath running though the site and the existing trees on the perimeter to be taken in account.

Materials

The project will source building materials from local clay brick manufacturers. Any prefabricated or manufactured components will be sourced from the local industrial market of Alrode in Alberton. Materials imported from long distances or overseas will be avoided unless necessary, i.e. special equipment or fittings.

Labour

The construction will use local labour and employ local tradesmen such as plumbers and carpenters. Even though the centre aims to remove the clinical nature of medical facilities, contractors need to have experience in medical facilities to achieve a safety and clinical standard. The building will not have any complex technical systems that require highly skilled labour, this building must be able to employ members of the community.

Chapter 5

Design Development

Figure 5.1: Bread Dough Exploration

Material & Form Exploration Design Charette

The material and form exploration charette was a quick exercise in testing ideas using a material or art medium. The brief was to create a series of quick models and sketches to explore ideas and concepts.

What started out as a joke, the classic pregnancy pun of “a bun in the oven”, turned out to be the basis of my exploration. There is a concept of malleability and shaping associated with bread dough. There are similarities in the qualities of bread dough and clay, a common building material. The first batch of material exploration of this project used bread dough as a medium.

Bread dough was chosen over clay due to the biodegradable nature of bread, cost effectiveness of ingredients and for more control over the material than with store bought clay. The process of making, shaping and baking the dough also gives a greater sense of control and ownership over the material. Following and adapting a basic recipe of flour, yeast, salt and water (Mckenney, 2020), four batches of material experiments were conducted.



The act of molding and creation

The act of moulding and creation holds a historical, cultural, social, scientific, technological, and economic significance.

Clay is a useful commodity used in construction and art – used to make bricks, tiles, pottery, statues throughout history and in the current day. It is a natural and renewable resource.

In various cultures, religions and mythology, there is a narrative of “creation of life from clay” and metaphors of birth through “divine craft”. Sumerian and Babylonian myths such as the Epic of Gilgamesh, Epic of Atrahasis and Sumerian myth of Enki and Ninhursag, a deity of Fertility, have various narratives of humans created from clay. In Greek Mythology, the Greek god of fire- Prometheus used water and earth to mould men. African cultures such as the Yoruba, Efé, Songye and Dinka have narratives of deities creating humanity from clay. Similar narratives and stories are found in Asian, Polynesian, Mesoamerican and Native American culture and religions. (Wikipedia contributors, 2024)

Abrahamic religions also have the aspect of creation from the earth. The Book of Genesis refers to the formation of man from dust. The word Adam is also a reference to “red earth” in Hebrew. The Qur’an also has a narrative of creation from clay. (Wikipedia contributors, 2024)

With all these narratives, myths, and beliefs around clay as foundation of creation, scientific studies show evidence that clay minerals might have played a role in the origin of life. The scientific makeup of clay minerals possesses several advantageous properties such as the ability to concentrate organic materials. Clay minerals have the ability to catalyse reaction and could have played a crucial role in the abiotic processes that led to emergence of life on earth. (Brack, 2013)

There seems to be an inherent human connection to aspects and properties of clay and the physical act of moulding. There is a poetic quality of using hands to mould and create an object from a malleable medium using earthly elements such as water and earth, and letting it set using air and fire. There is a similarity between clay and bread in terms of properties and processes, as well as the poetics of its use of natural elements and materials.



Figure 5.2: Images of Moulding with Clay



Figure 5.3: Bread Batch 1: Knotting and Twisting

Batch 1: Knotting, Weaving, Twisting

The aim of this iteration was firstly to assess the use of dough and bread as an exploration method. Secondly, it explored aspects of weaving, twisting, and folding using a malleable medium to create an object or artefact to inspire architectural forms.

Ingredients:

7g Instant Yeast.

Pinch of Salt

2 cups of brown bread flour

1 cup of warm water

1. Mix all the dry ingredients together and add the water gradually to form a ball of dough
2. Knead the dough with hands for 10 minutes.
3. Let the dough rest and rise for 1 – 2 hours.
4. Shape the dough. Create different models by weaving, twisting, knotting the dough. Document the raw loaves of bread before baking.
5. Bake the loaves for 20 minutes at 180 degrees. After baking, document the baked loaves.

Observation:

Due to the size of the loaves, too little resting time and type of flour, the bread did not rise and expand significantly during the baking process. The loaves did however become hard and refined the twisted shapes made in its malleable stage. The result is a very dense brown bread on the inside, and a hard, pale exterior.



Figure 5.4: Bread Batch 2: Cutting

Batch 2: Cutting and Scoring

The aim of this iteration was to explore how cuts influence the form of the loaves.

Ingredients:

7g Instant Yeast.

Pinch of Salt

2 cups of brown bread flour

1 cup of warm water

1. Mix all the dry ingredients together and add the water gradually to form a ball of dough.
2. Knead the dough with hands for 10 minutes.
3. Let the dough rest and rise for 1 – 2 hours.
4. Create round loaves of bread. Using a knife, score the bread in various patterns. Document the raw loaves.
5. Let the loaves rest and rise for another hour.
6. Bake the loaves for 30 minutes at 180 degrees.
After baking, document the baked loaves.

Observation:

The additional resting time between the shaping and baking had a greater effect on the final shapes of the loaves. The cuts came out deeper and more defined. The cuts create an effect of shadows and openings within the dough. The loaves are hard and dense with a very dusty floury exterior.



Figure 5.5: Bread Batch 3: Organic Form

Batch 3: Organic Forms

Experiment 3 required a more malleable dough than the two previous attempts. For this iteration, a finer type of flour was used and no yeast added. This dough is more clay like and explores a more playful and organic shaping of the dough using the human hand.

Ingredients:

2 cups of self raising flour. (Expired)

1 cup of warm water

Pinch of Salt

Pinch of Baking Powder

1. Mix all the dry ingredients together and add the water gradually to form a ball of dough
2. Knead the dough with hands for 10 minutes.
3. Break of pieces of the ball and create forms by squeezing, shaping and indenting the dough using the palm, knuckles, fingers, fingertips and hand. Document the raw models.
4. Bake the models for 35 minutes at 180 degrees. Document the baked loaves

Observation:

Due to the lack of yeast and type of flour, the loaves did not rise further in the oven and maintained their pale appearance. Baking solidified the organic shapes. The shapes have a very organic appearance and have similarities to objects in nature. Some objects have very jarring and sharp geometries while others create beautiful curves, shadows and indentations.



Figure 5.6: Bread Batch 4: Deconstruction

Batch 4: Deconstructing a Loaf

This experiment was firstly to study the interior quality of a loaf by sectioning it. This led to further sectioning of the loaf and a gradual deconstruction of the loaf.

Ingredients:

7g Instant Yeast.

Pinch of Salt

Pinch of Sugar

2 cups of brown bread flour (sieved)

1 cup of warm water

Olive Oil

1. Mix all the dry ingredients together and add the water gradually to form a ball of dough
2. Knead the dough with hands for 10 minutes.
3. Let the dough rest and rise for 1 – 2 hours.
4. Create a round loaf of bread and let rest for another hour.
5. Glaze the dough with a little bit of olive oil.
6. Bake the loaves for 30 minutes at 180 degrees.
7. Start cutting and sectioning of pieces of the bread. Document this process.

Observations:

The expectation of a fluffy and airy exterior was not met. The experiment thus explored cutting up and dividing the bread. This created individual shapes to explore. This iteration had a less organic quality to it and less freedom in shaping.



Sketching the loaves

Following the baking process, each loaf was studied and sketched. Using the loaves as guides and inspiration, interesting forms started to emerge. These forms used in different scales create interesting spaces and evoke different feelings. Some curved models give a sense of awe and wonder, while others are quite jarring and harsh. Some of these shapes were used to inspire the shapes and forms of the birth centre, especially the roof designs in the technical development chapter of this book.

Figure 5.7: A Series of Sketches following Baking

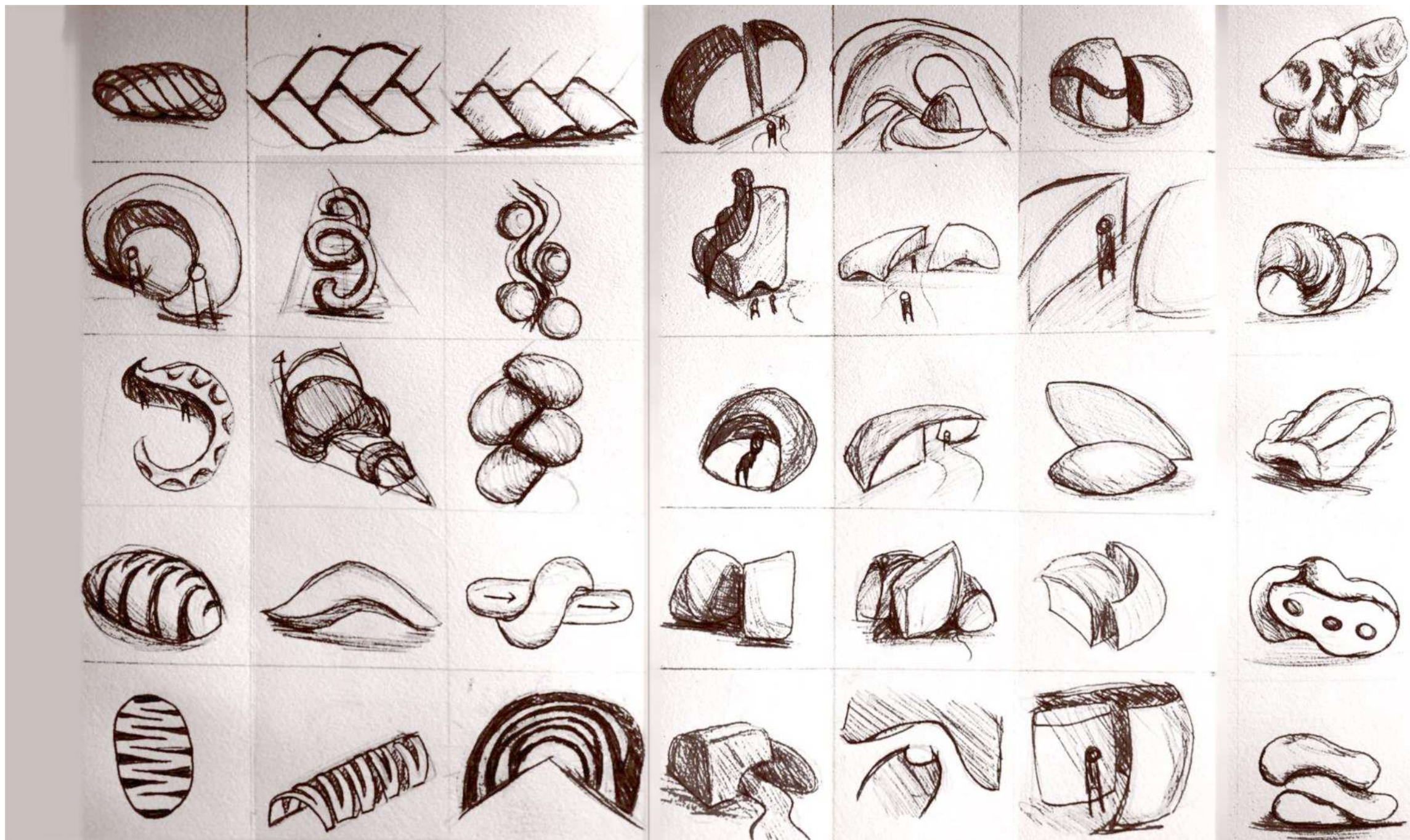


Figure 5.8: A Series of Sketches following Baking

Figure 5.9: Strategies for Building Development from Chapter 3

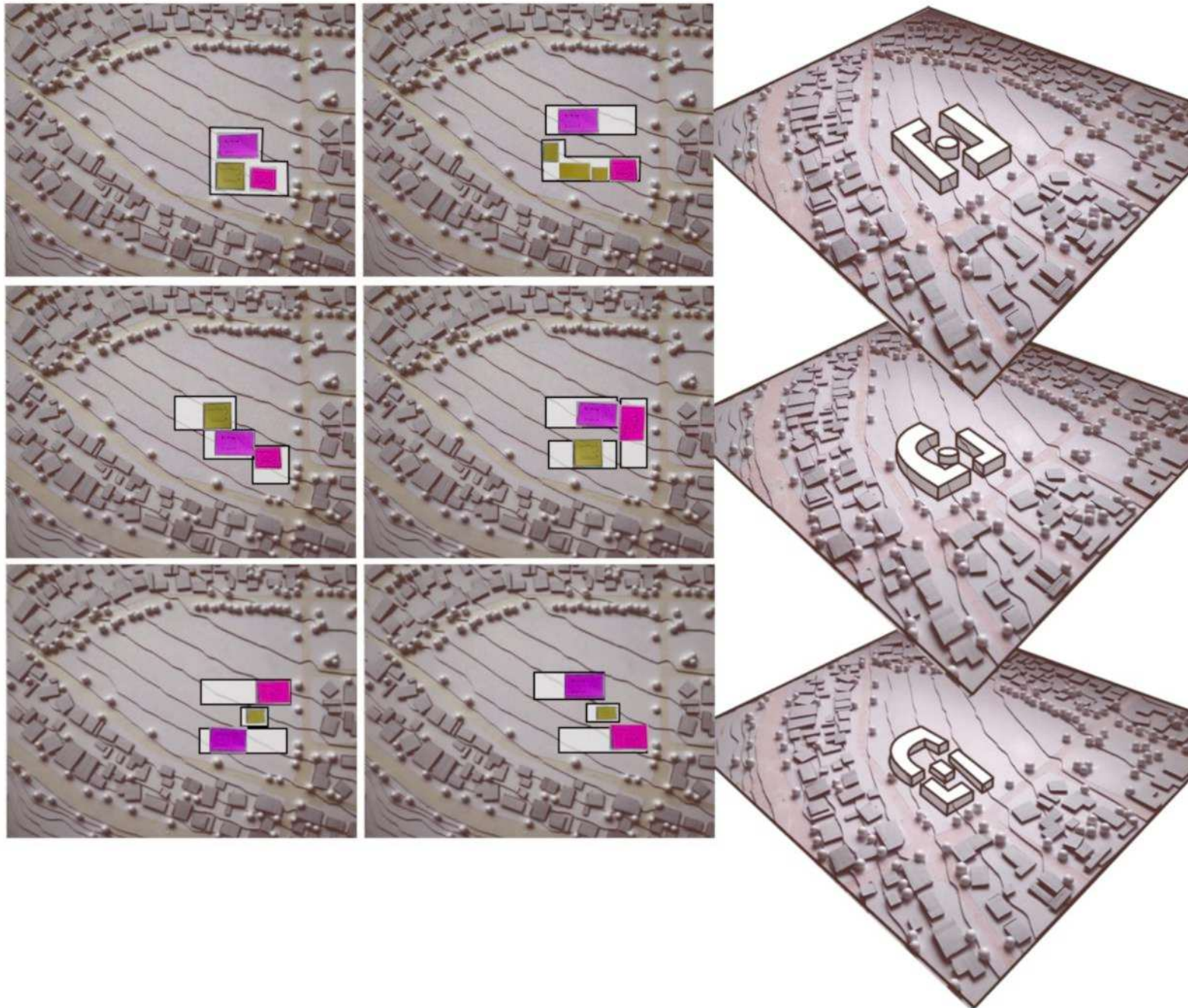
Design Development

First Design Iteration

The starting point for the first design is using the site strategies developed from the site analysis from chapter 3. The goal first design iteration is to use the gained from the analysis and research to create a functional building.

1. Building Location
2. Topography
3. Pedestrian Desire Line
4. Extension of Park
5. Development of Sidewalk
6. Parking Lot
7. Future Expansion

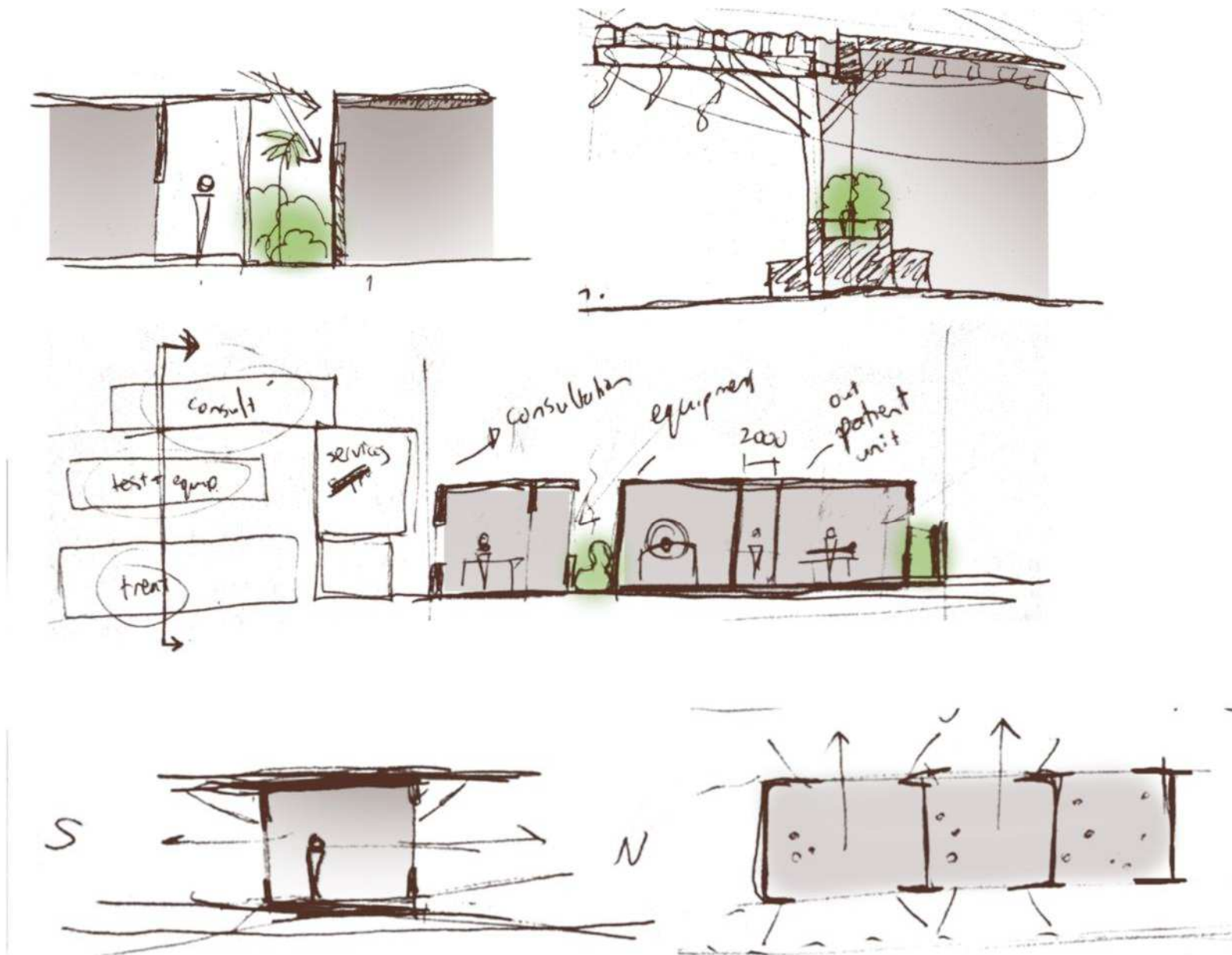




Form and Layout Exploration

The first step in my design process was to explore form and layout of my building. These first iterations were a process of deconstruction and experimentation of positions of the clinic, birth unit and health centre. At this stage, the concept of a recovery village was not yet part of the concept.

Figure 5.10: Physical Exploration of form through sketches, site model and paper.

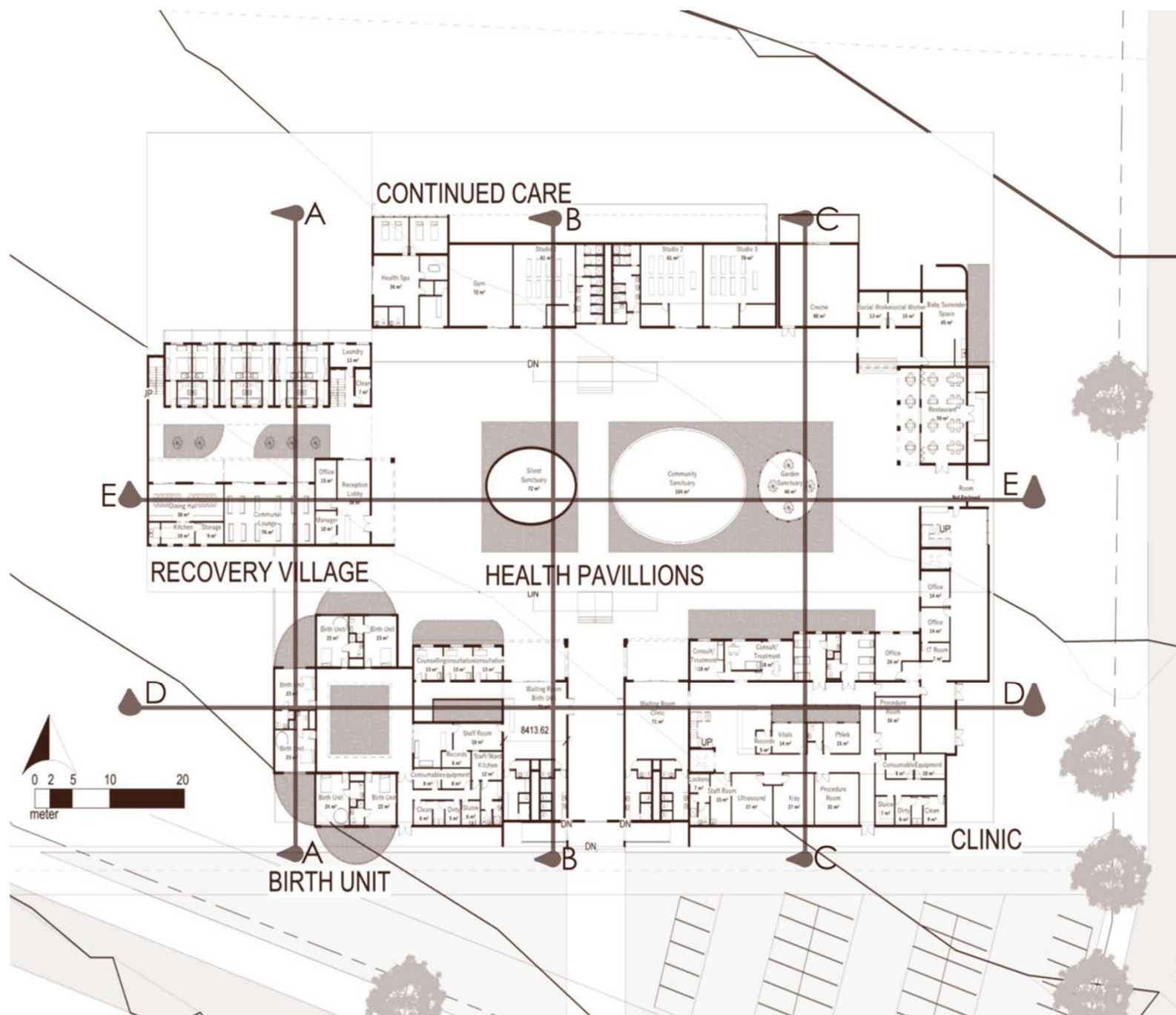


Conceptual Designs

Conceptual sketching explores the first ideas of spatiality, thresholds, and connections to the outside. These concepts relate to the drivers of healing architecture and phenomenology. The thought behind these sketches was to create spaces with various levels of privacy. I explored how to create a connection to nature through views and green spaces.

Inspired by the “Clinic in the Woods” from the precedent studies, I explored the idea of creating garden spaces between the buildings, serving as sound barriers and light wells. The idea of a waiting room that flows to the outside was also explored. Studio and community spaces open to the outside to create larger spaces for community and health programs.

Figure 5.11: Conceptual Sketching



Functionality

The aspects of patient centred care and continued care are developed through functionality, layout and planning of the building. I used the guidelines from *the IUSS Health Facility Guides: Maternity Care Facilities*, *IUSS Health Facility Guides: Outpatient Facilities* and *Part B – Health Facility Briefing & Design including Functional Planning Units* to guide the programming, sizing and layout. (see appendix A)

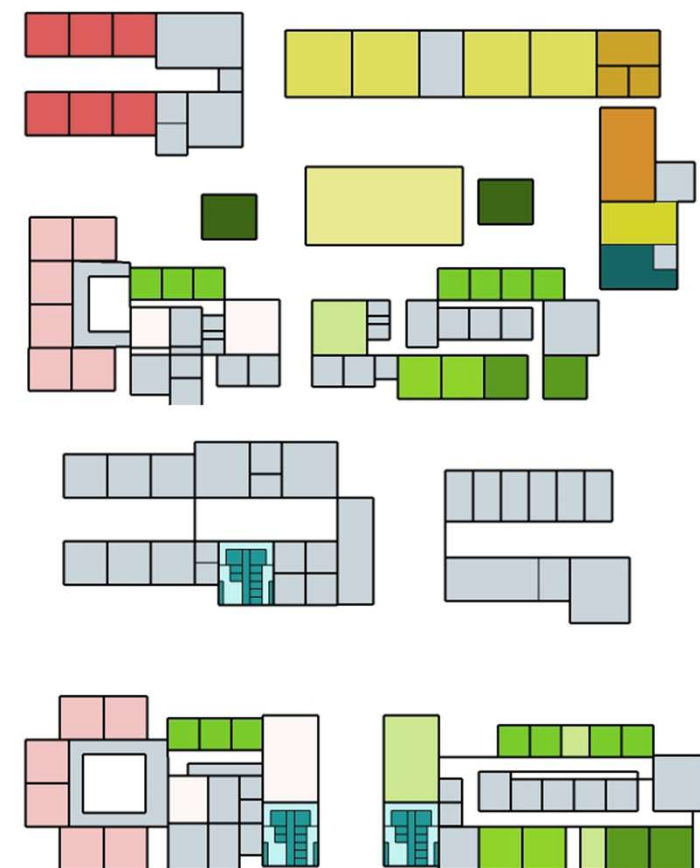
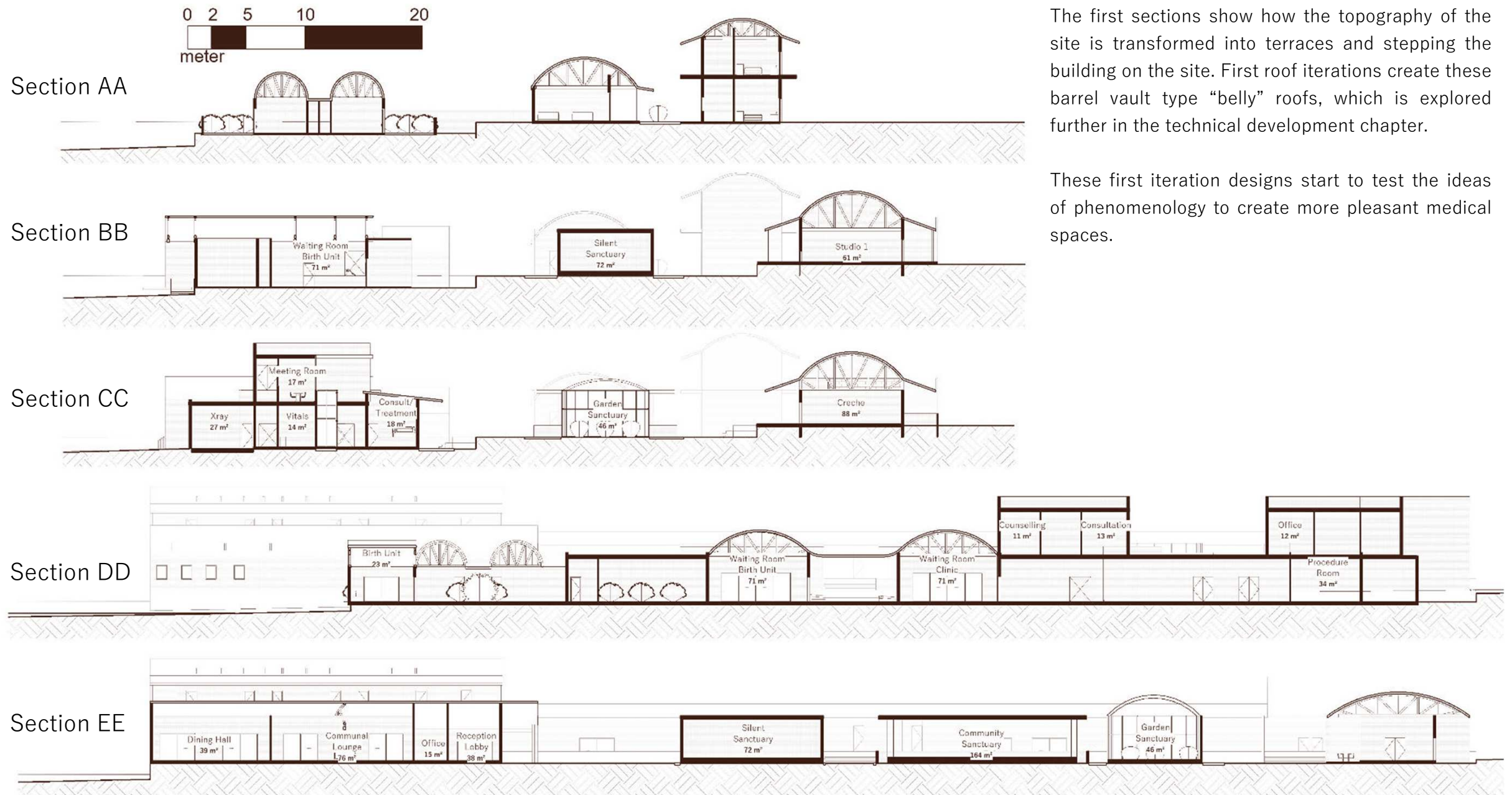


Figure 5.13: Sketchup Diagrams, Process work



First Sections

The first sections show how the topography of the site is transformed into terraces and stepping the building on the site. First roof iterations create these barrel vault type “belly” roofs, which is explored further in the technical development chapter.

These first iteration designs start to test the ideas of phenomenology to create more pleasant medical spaces.

Figure 5.14: First Iteration of Sections for Birth Centre

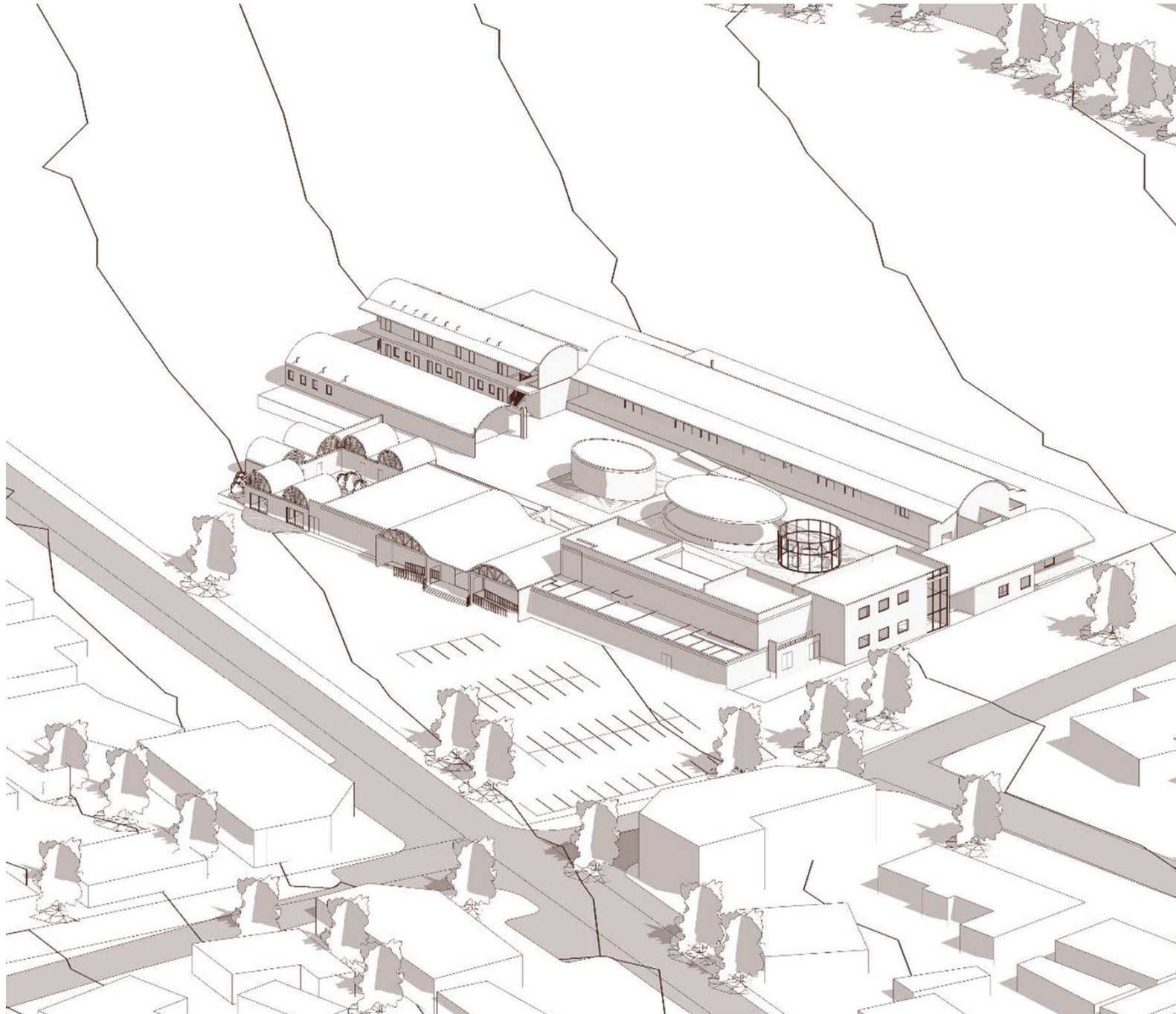


Figure 5.15: 3D Birdseye view of Birth Centre

General Feedback

The first iteration design was presented to a panel for critique during the June examination period. The building was deemed functional but still very clinically orientated. The orthogonal nature of the building still represents a typical medical typology. The advice was to move away from the orthogonal nature and open up the building more. Another critique was to play with the garden spaces, making it flow throughout the building.

The roofs of the building started to give a sense of space and experience. This feature would be explored further in following building iterations. The roofs should be a design driver and a top down methodology should be considered. Different types of vaults and barrels as well as materiality of the roofs should be explored.

The feedback was overall positive and the critiques will guide the next design phase.

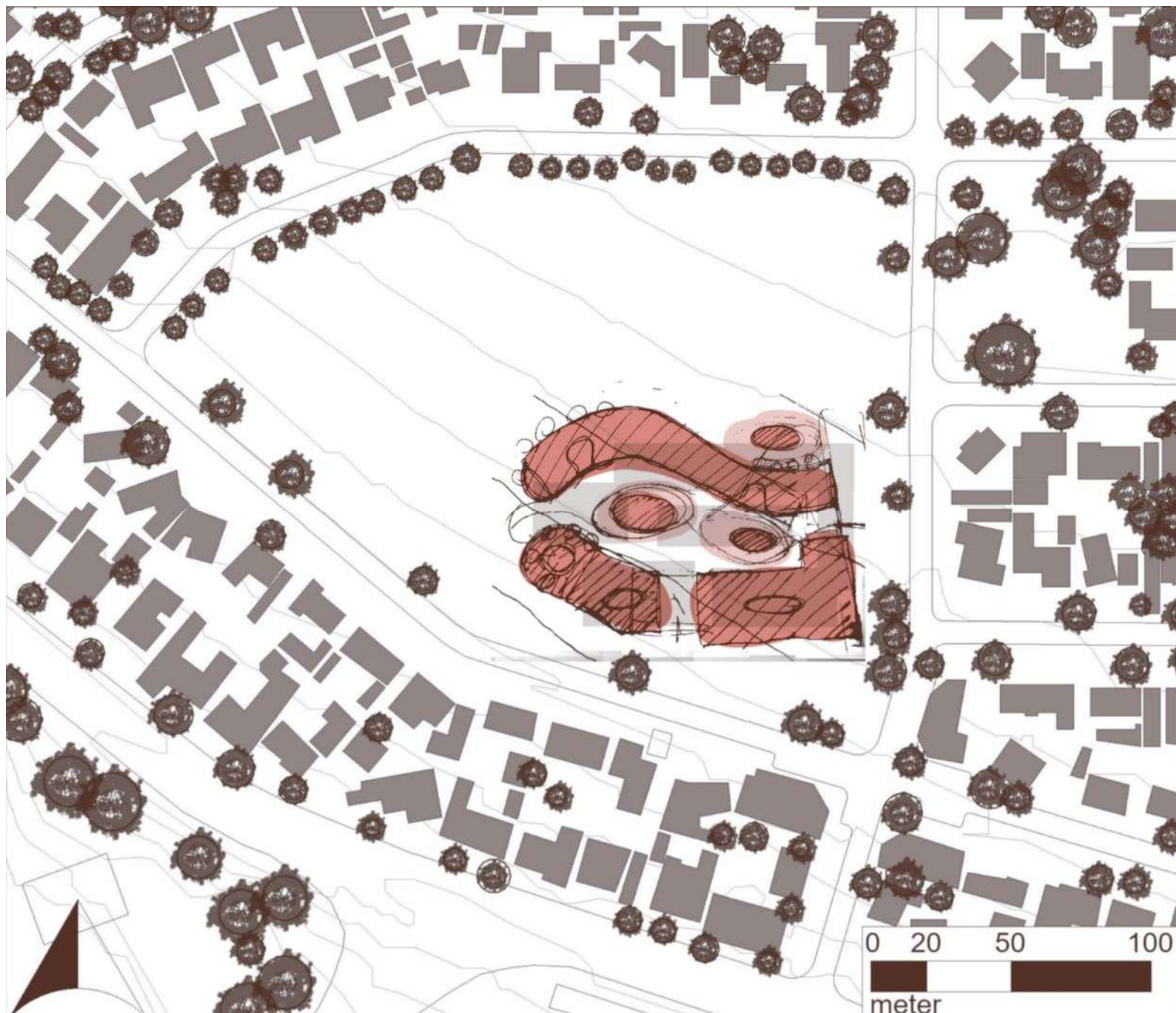


Figure 5.16: Conceptual Sketch for next phase of design

The Next Step

The next step of the project is to develop the building further in both function and form. These strategies include making the building less rigid and incorporating green spaces more organically. Since the building aims to promote natural childbirth, the building needs to represent a more natural and comfortable environment.

The building will be orientated and redesigned to flow with the topography of the site. The landscaping needs to be a connecting element. The landscaping should provide a connection between the different parts of the building as well as interaction between patients and the environment. The aspect of nature reinforces the driver of holistic healing and healing architecture.

Reworked Concept Sketches

Following the feedback from the June Exam. The design underwent major redesigning in terms of form. Keeping the functionality of the initial design, the building explored more organic forms to create a less clinical environment.

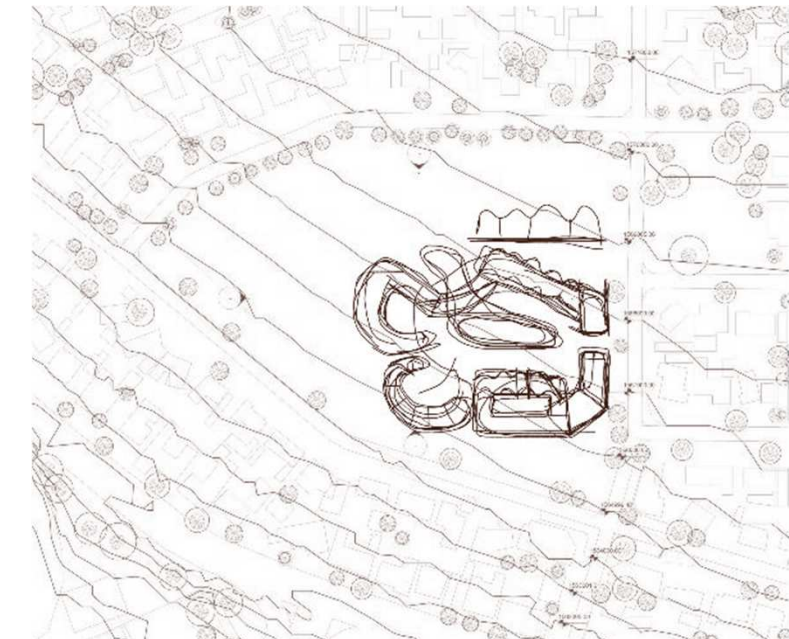
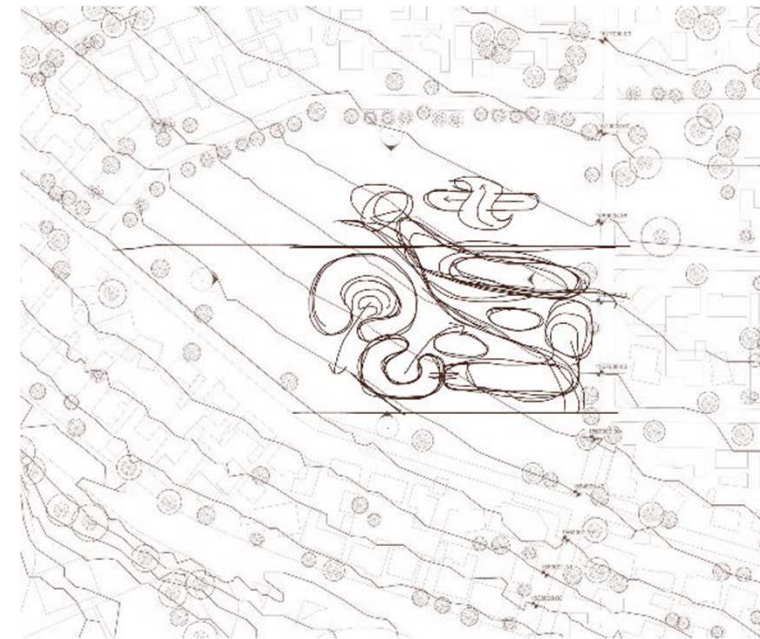
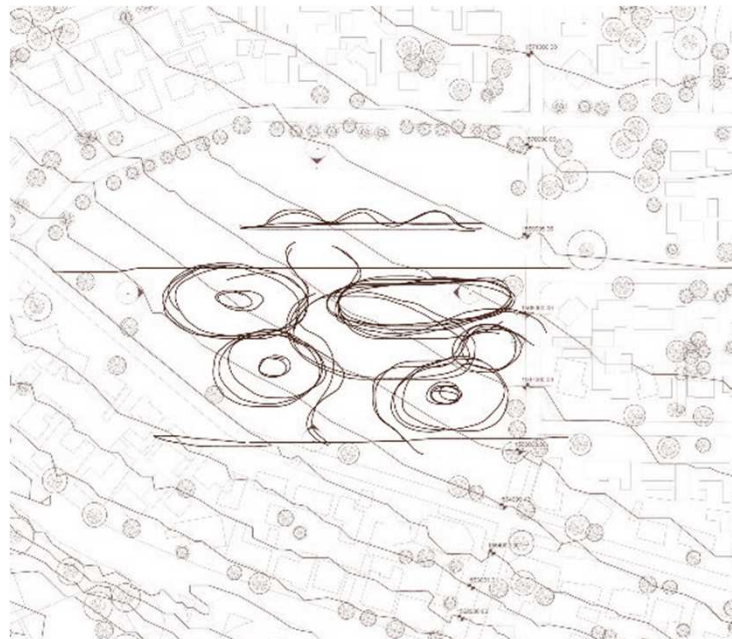
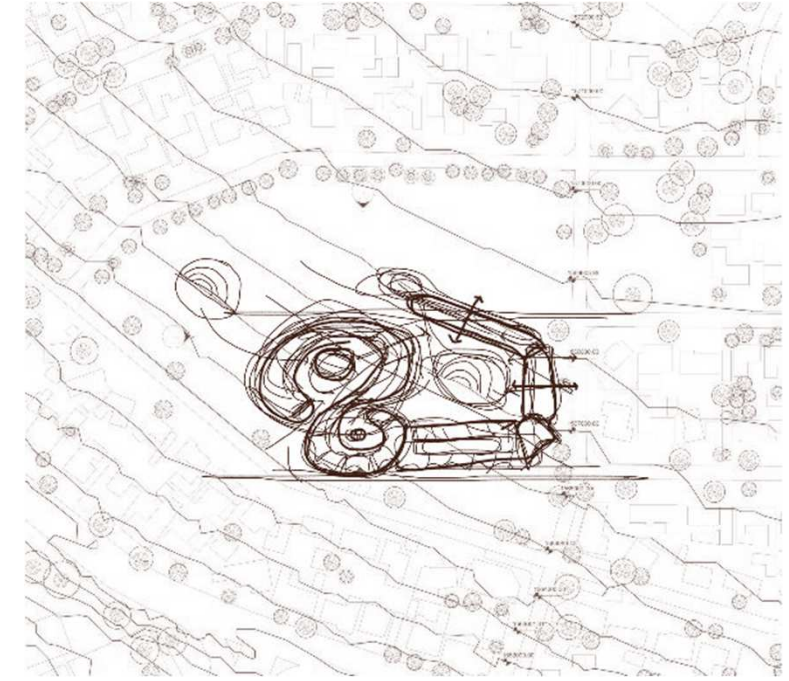
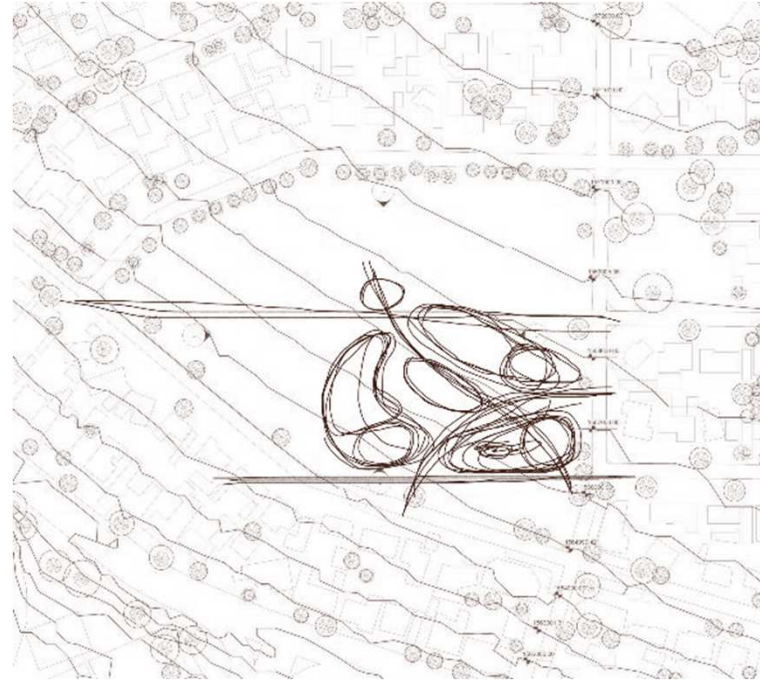


Figure 5.17: Reconceptualization of building design Sketches

Figure 5.18: Concept Sketch

Design Development

Following a series of concept sketches, the building starts to transcend the functional rigidity into something more organic and experiential. The building starts to flow more naturally with the topography of the site. There is a greater exploration of movement, thresholds and a connection to nature. The curvaceous nature of the design creates an embrace that evokes feelings of comfort, safety and intimacy.

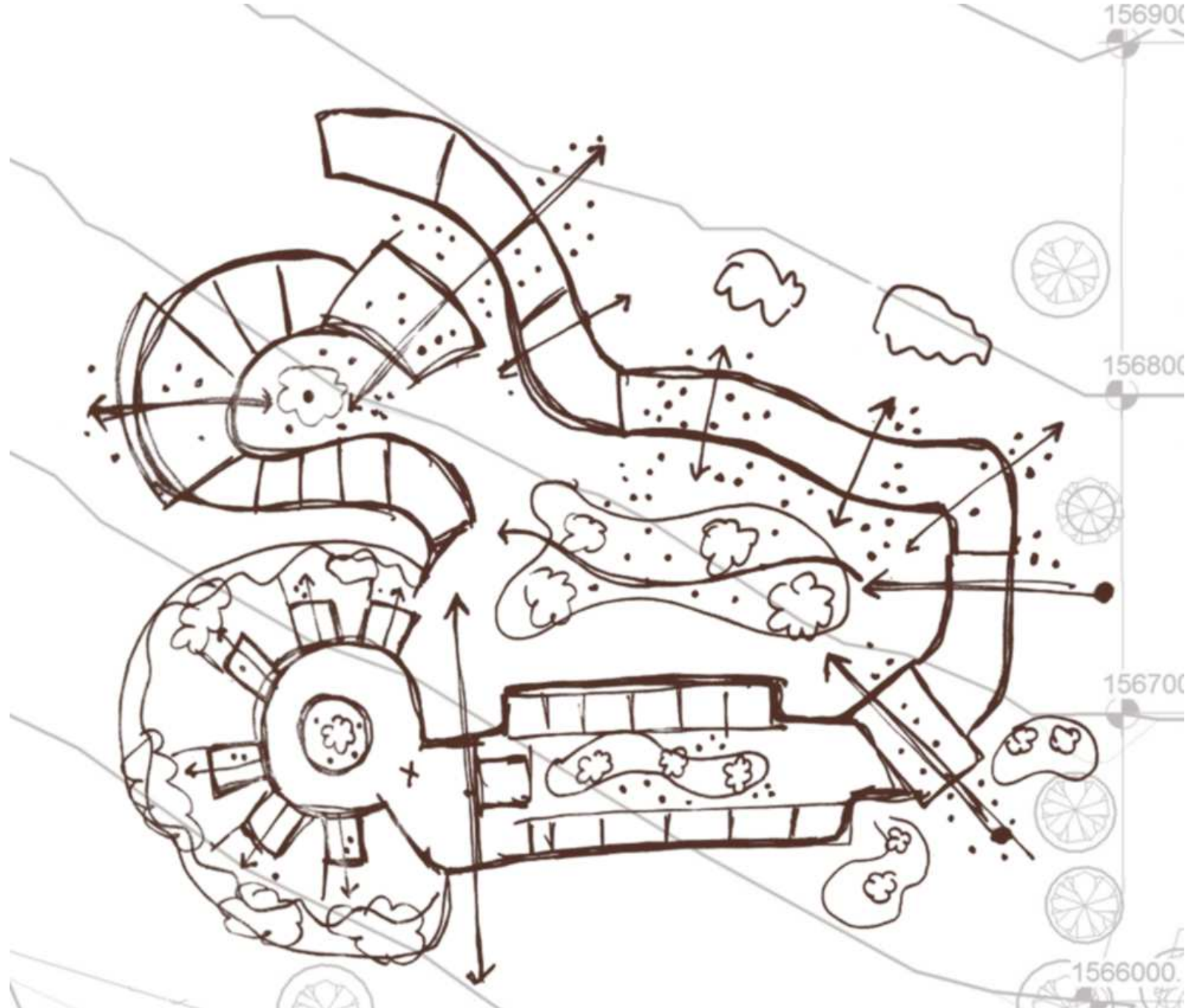
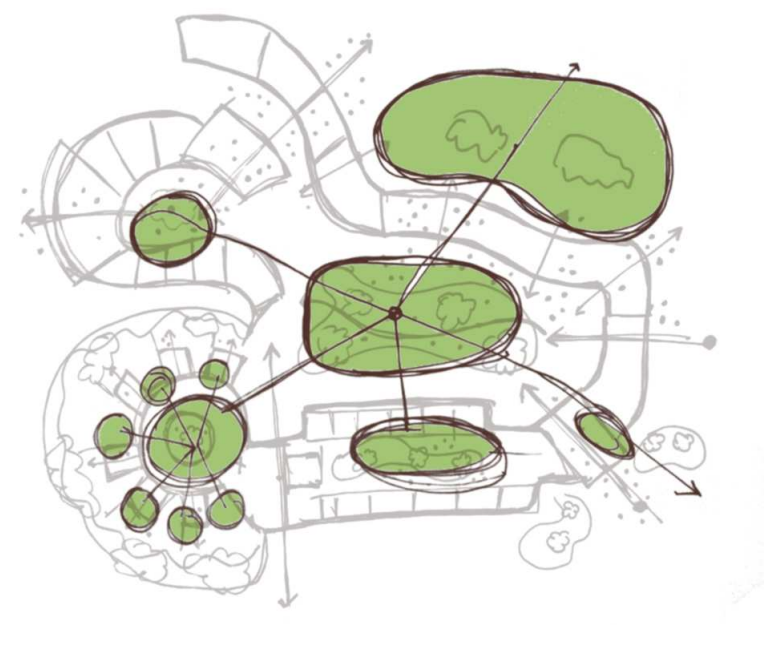


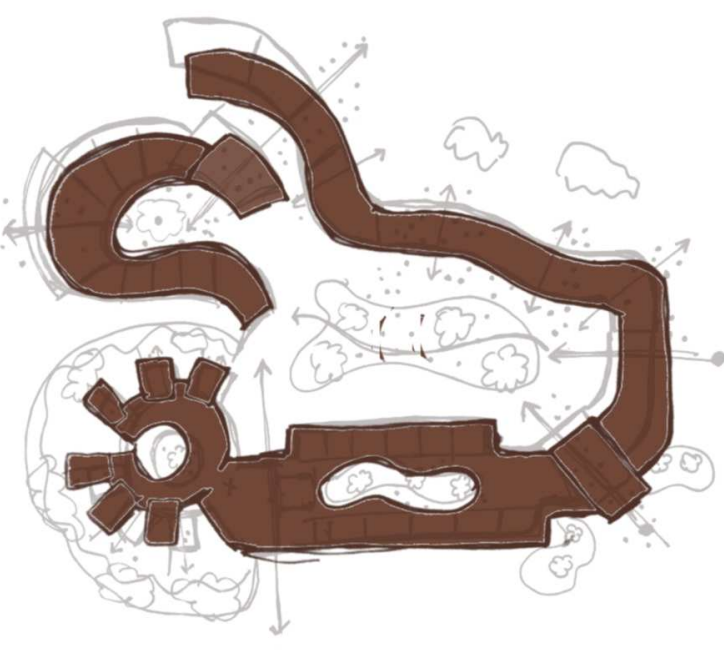
Figure 5.19: Courtyards Concept Diagram



Courtyards and Green Space

A diagrammatic breakdown of the courtyards and green spaces shows how the spaces relate to each other. The green spaces are tied together by one large central courtyard that encourages community and public participation while smaller courtyards offer various levels of privacy and intimacy.

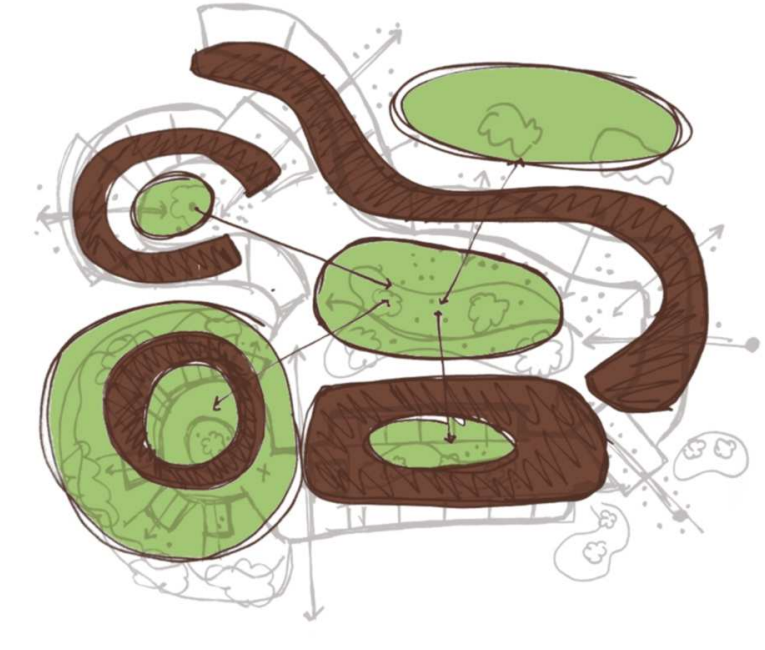
Figure 5.20: Built Space Diagram



Built Space

The built space of the building combines functionality and form using solids and voids. Private spaces are enclosed while public spaces are more open. The building is not entirely enclosed to embody the concept of continued care which continues after a person has left the centre.

Figure 5.21: Layers of Inside/Outside Diagram



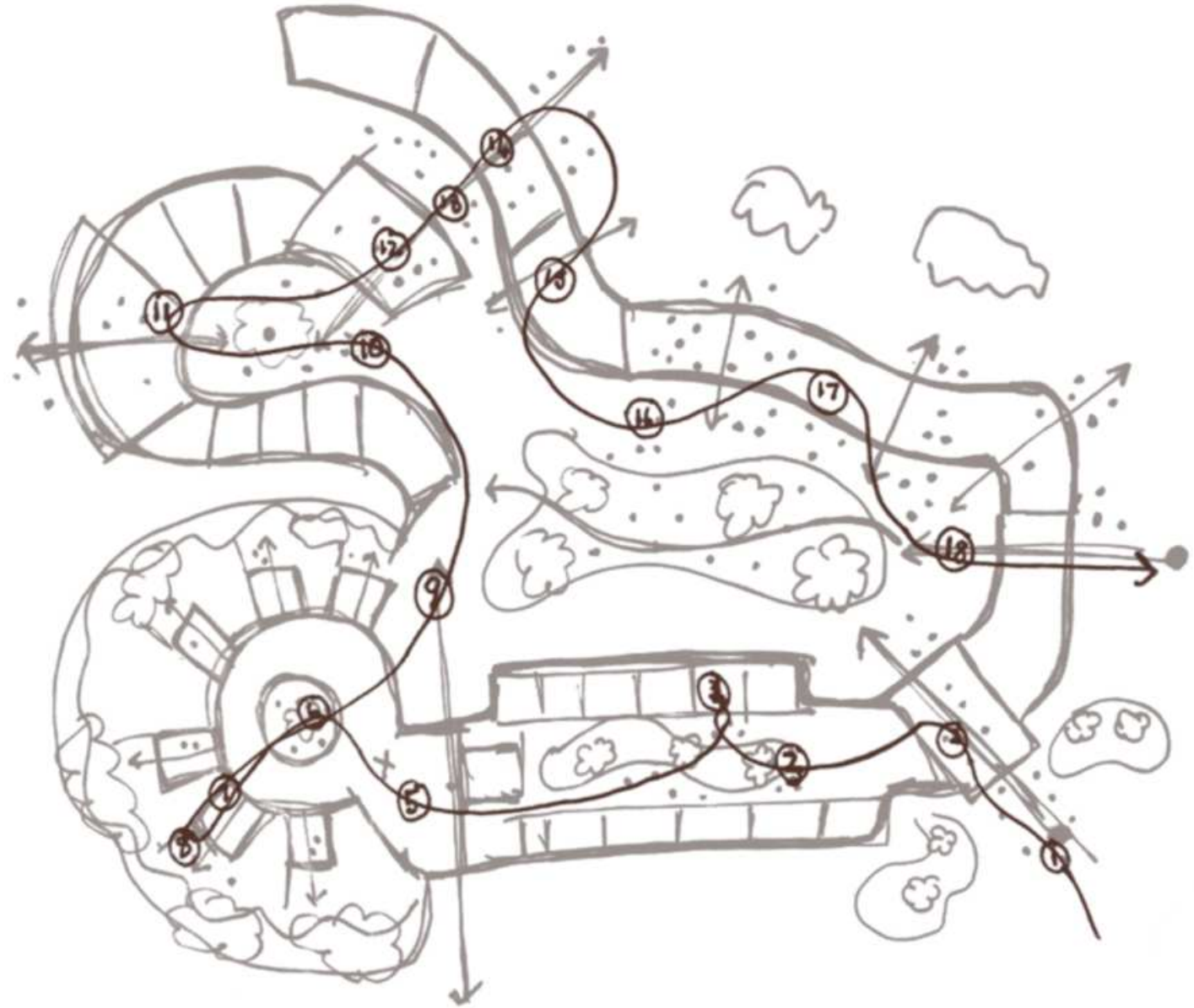
Layers of building/nature

The combination of the green space and built space diagrams create an abstraction of layers representing the interaction between inside and outside. Both green and built spaces are used as enclosure to create spaces of privacy and intimacy in different spaces of the building.

Figure 5.22: Serial Vision Route Diagram

Serial Vision

The design concepts and design development of spaces are explored using storyboards and serial visioning. By creating a path through the building, an exploration of the user experience is visualized and drawn. The serial vision expands on the narrative theme of the project by combining the explored design concepts, the programming needs and users into drawings. This is an exploration between the interaction of users, space and greenery that aids in holistic healthcare and a positive user experience.



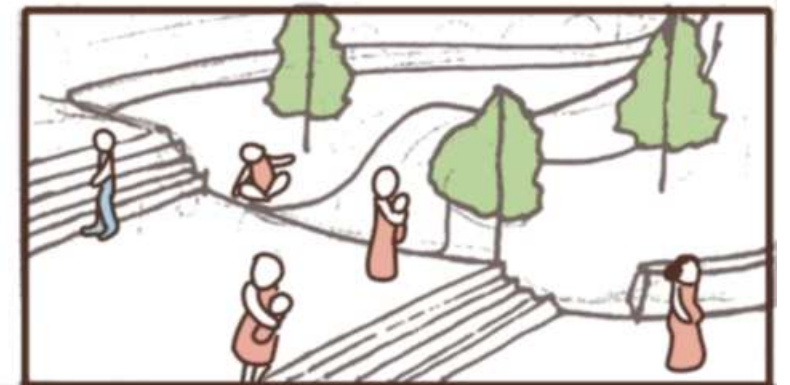
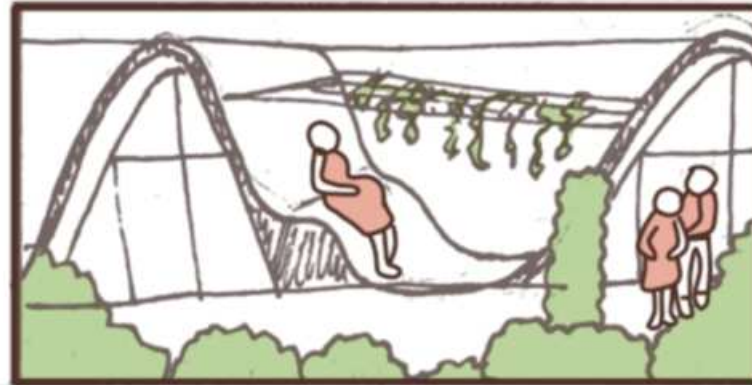


Figure 5.23: Serial Vision Part 1

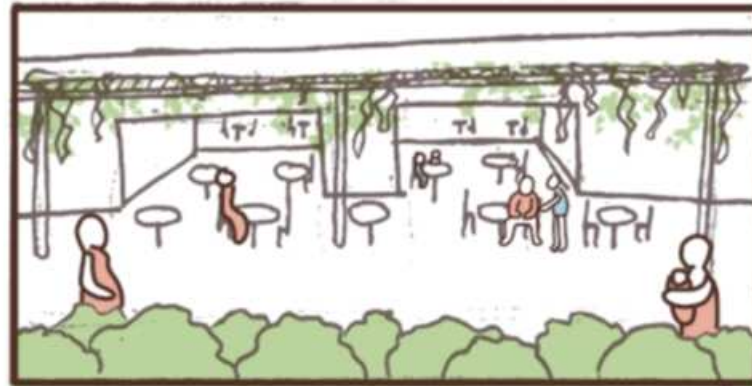
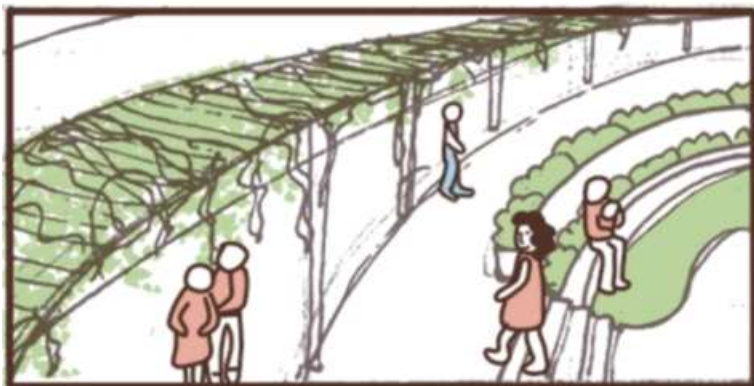
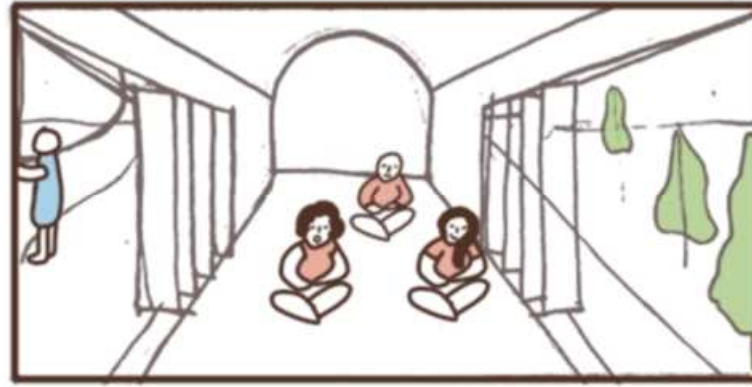
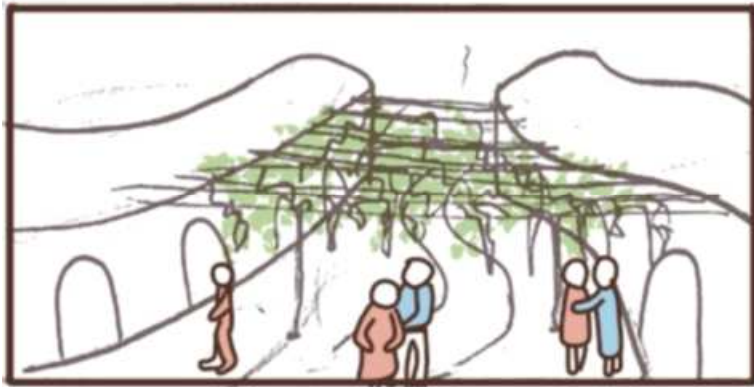
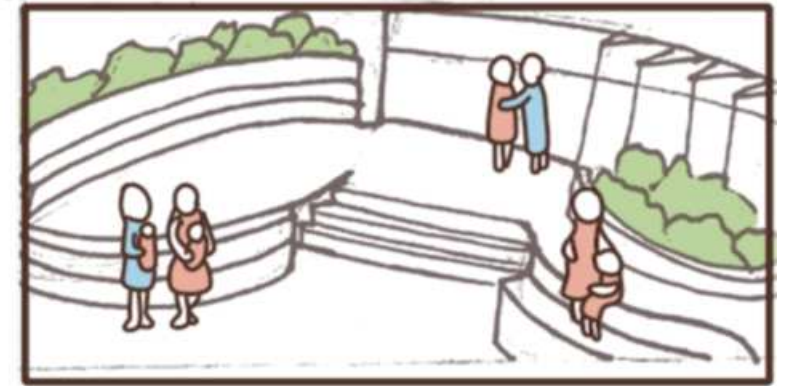
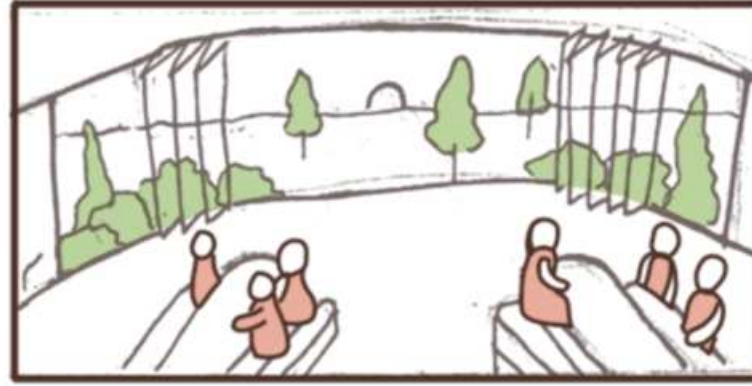


Figure 5.24: Serial Vision Part 2

Conclusion

The design development forms a crucial part of the design process and how the final design of the building develops. The design starts out purely abstract, through the charrette models and initial sketching. This first step created form, shapes and concepts that guided the whole design process.

The first iteration of the design was intended to create a functional building. This iteration is rigid and clinical but serves as a starting point for the final design. The first iteration captures the clinical nature of healthcare. Further design development challenges the rigid, geometric nature of healthcare.

Through serial visioning and diagrammatic exploration, the design develops to become a space that balances function and form to create a space of safety and comfort.

Chapter 6

Technical Development

Figure 6.1: New Conceptual Design for Birth Units

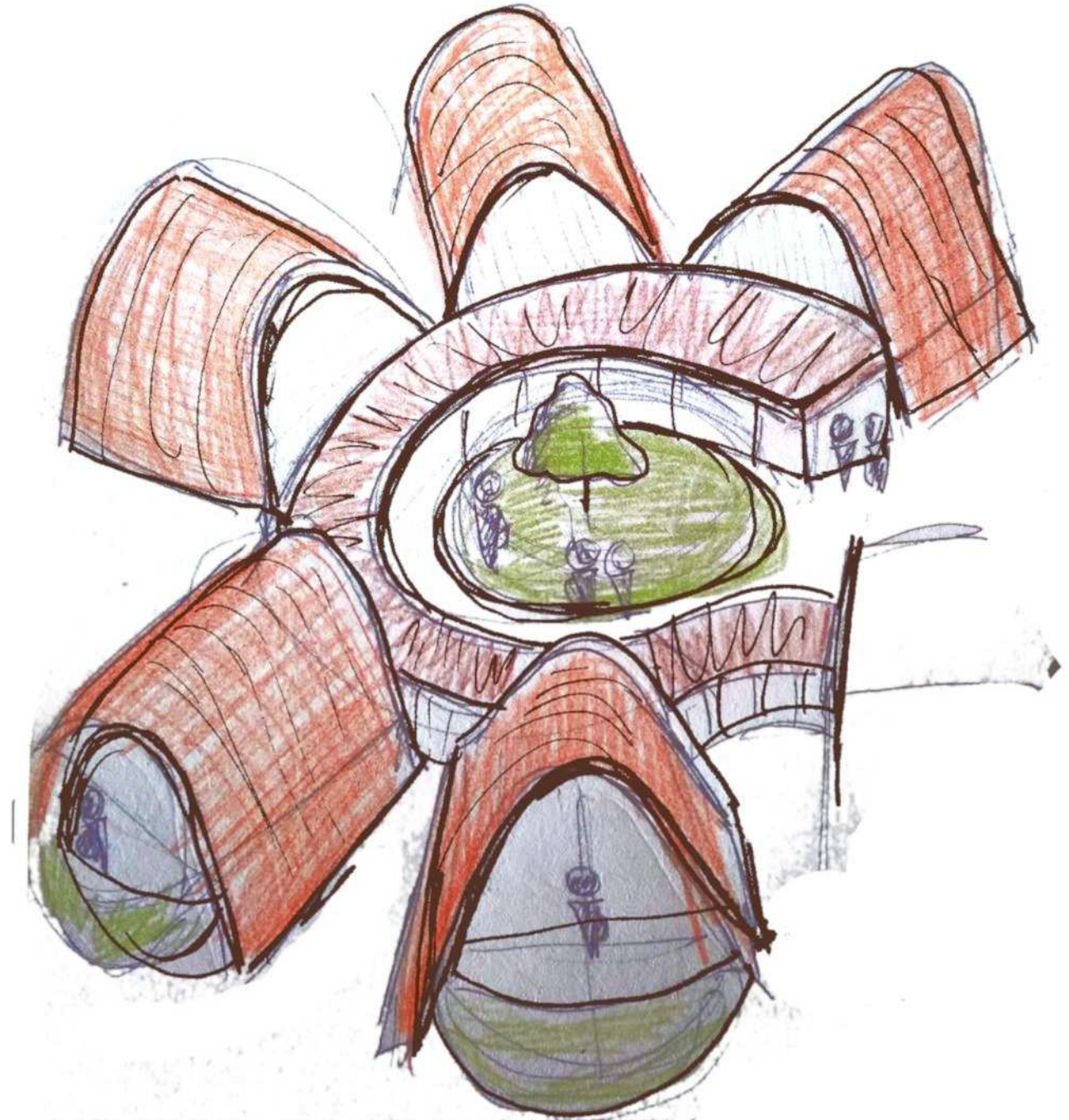
Technical Development

The Birth Chamber

A roof is a symbol of protection. A roof offers refuge from the elements. The roof is often a symbol for its typology. Pitched, gable roofs often represent domesticity. A flat concrete roof often associated with institutional typologies. There is a lot of symbolism and experiential discussion to be made around the associations with roofs and the spaces they create.

I choose to focus on the roof systems of the birthing system and to make the roof part of the space, not just a covering of the building. The protective nature of the roof resembles the womb, protecting the inhabitant. The morphology of a pregnant belly can be a poetic driver for the tectonics of the roof system.

As part of this exploration, I have looked the Nubian Vault and Mapungubwe National Park Interpretive Centre by Peter Rich as part of my research and inspiration for the technical design development. Furthermore, I explore the mathematics behind this shape and the structural impact of the shape. A narrative of the technical process emerges through an exploration using sketches, models, design and technology.



Research: The Nubian Vault

The Nubian Vault is an ancient Nubian vernacular building technique originating from Upper Egypt or Ancient Nubia (The Nubian Vault Association, 2015). It was rediscovered and redeveloped by Egyptian Architect Hassan Fathy (Bertini, 2020). It is known for its use of mud earth bricks and thermal comfort qualities (The Nubian Vault, no date) (The Nubian Vault Association, 2015).

The foundations and load bearing walls are a crucial factor to the structural stability of the vault to transfer and support the loads from the vault to the ground. The Nubian Vault is constructed from locally sourced and produced materials such as earth brick and mortar. The foundation must be sturdy, at a depth of between 300mm to 900mm and a minimum width of 700mm. The buttress walls must be a minimum of 600mm thick. Any openings in these loadbearing walls must have arched lintels and must not exceed a width of 900mm wide. To construct the vault, a guide cable is used. No formwork or shuttering is used when constructing the vaults. These vaults do not exceed a span of three meters. The buttresses that form part of the load bearing walls can be used to create flat roof terraces. A modern addition to the vault is a plastic tarp for waterproofing, which is covered with a 50mm layer of earth mortar. The vault needs to have infill between the buttress and vault for structural stability. (The Nubian Vault Association, 2015)

The vault is not expressed in the exterior architecture of the building. This vault technique focuses on internal experiential quality and thermal comfort of the vault. The construction method and architectural language corresponds to the climate and culture of the vault. The Nubian Vault holds significant cultural, environmental, and technological value (The Nubian Vault, no date). The relevance lies in the construction and engineering knowledge that can be implemented into modern designs.

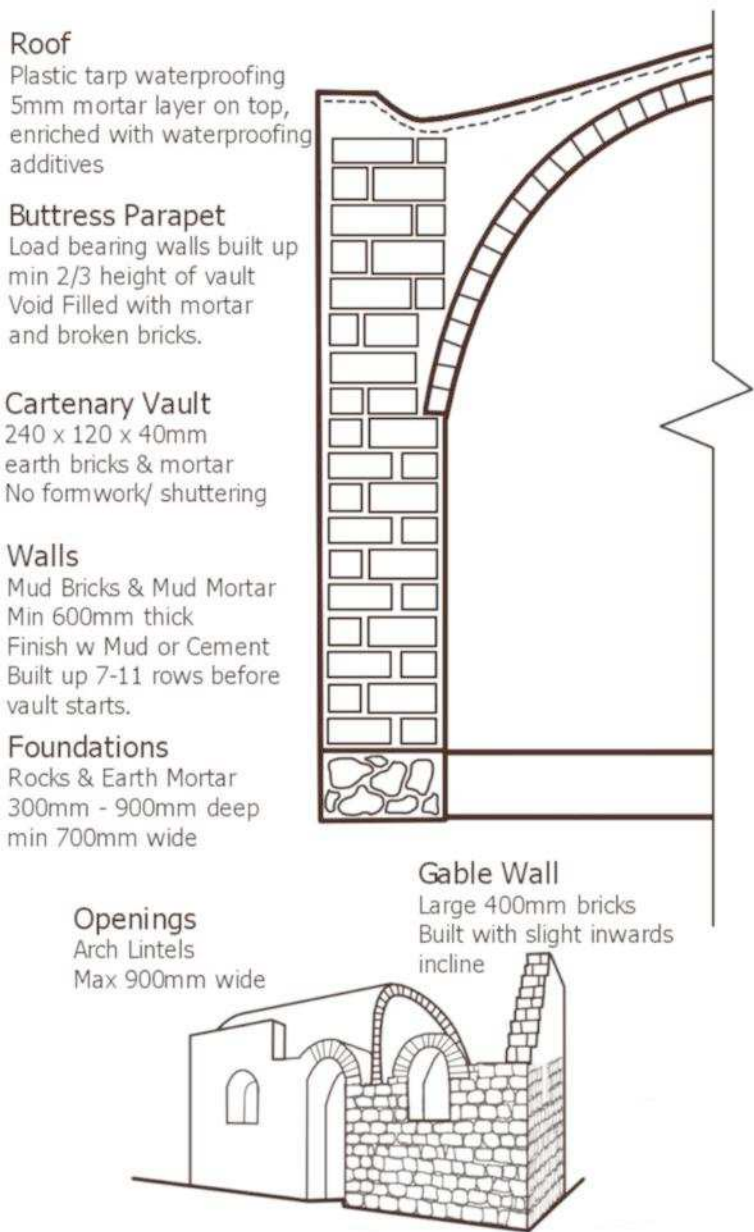


Figure 6.2: The Nubian Vault, redrawn from reference
(The Nubian Vault Association, 2015)

Research: The Mapungubwe Interpretive Centre

Mapungubwe is a UNESCO World Heritage Site with a rich cultural and natural heritage. It represents the site of one of Africa's most complex societies in southern Africa. The centre is representation of ancient construction techniques and sustainable construction (ArchDaily, 2010).

The Mapungubwe Interpretive Centre is famous for its load bearing masonry domes and vaults. The largest vault has a thickness of 300mm and spans an astonishing 14.5 meters, without any reinforcements to the masonry (Ramage, Ochsendorf and Rich, 2010).

The iconic masonry structures were designed using “equilibrium methods based on graphic statics” (Ramage, et al, 2010: 1515) to calculate the structural forces of the form. Development of the design saw changes from “single curvature barrel vaults” to more parabolic forms. The main forces in play here are compression forces and the lateral forces of the vaults carrying the loads from the spans. To compensate for the lateral loads of up to 400kN, reinforced concrete buttresses are used to support the vaults. The engineering research also used “Heyman’s safe theorem of limit analysis for masonry” (Ramage, et al, 2010: 1516) and found that the vaults are more stable if the gravitational loads are greater than the wind loads, meaning that adding local stones on top of the domes added both structural stability and architectural poetics. (Ramage, et al, 2010)

This construction method used a lightweight framework and reduced reinforcements, and local labourers were trained to construct the vaults. Local material resources were used, and labour-intensive methods instead of heavy machinery to reduce the environmental impact of construction. (Ramage, et al, 2010: 1515)

This is relevant to my project to prove viability of concept of using masonry to create large spanning parabolic structures rooted in scientific and engineering concepts. The viability of the structure lies in the accuracy of mathematical geometric forms.

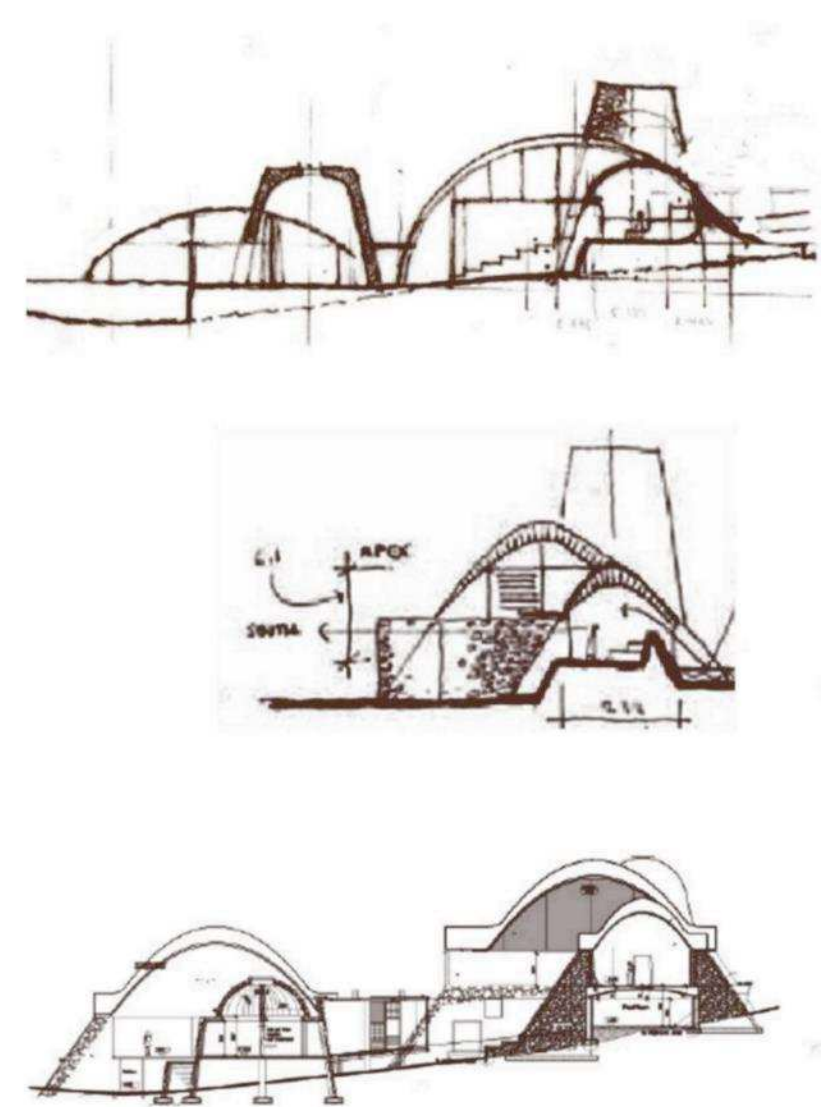


Figure 6.3: Development of Mapungubwe Structural Form. (Ramage, Ochsendorf and Rich, 2010) 128

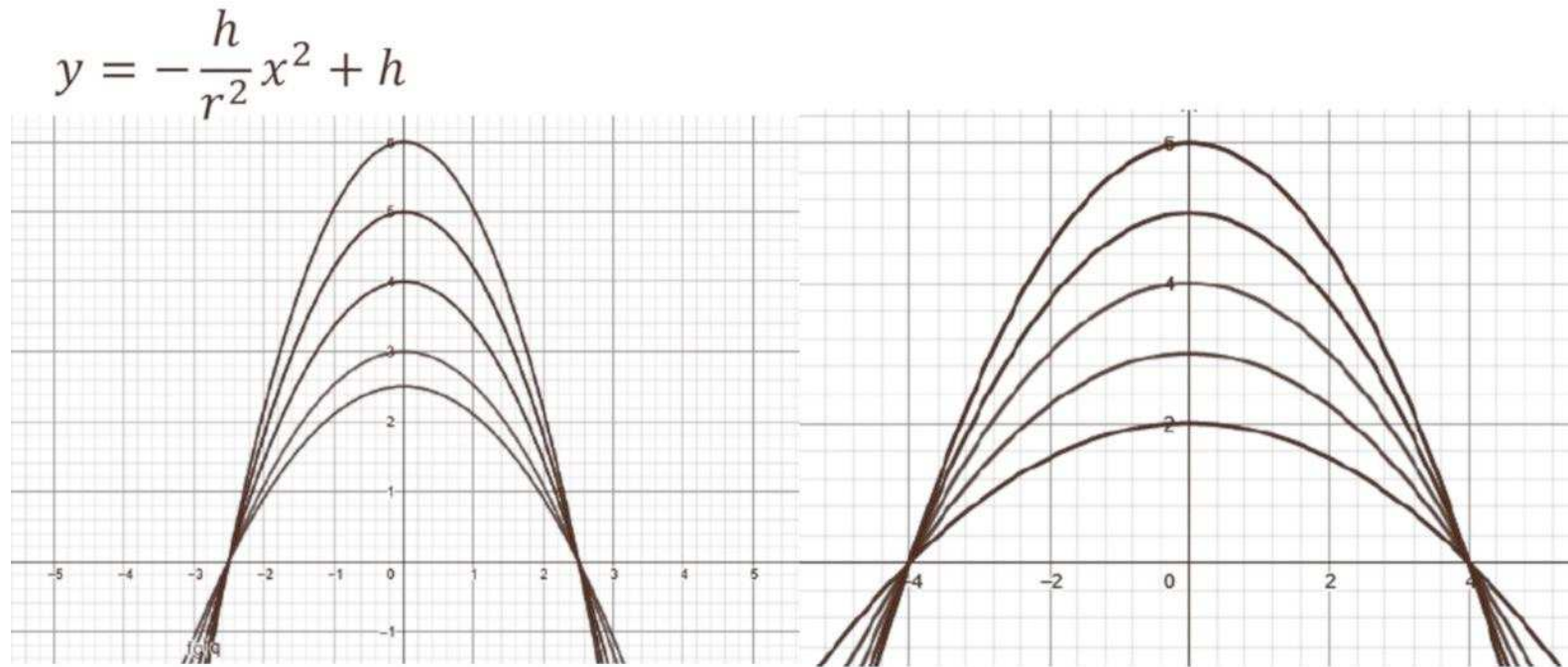


Figure 6.4: Parabolic forms generated with Geogebra

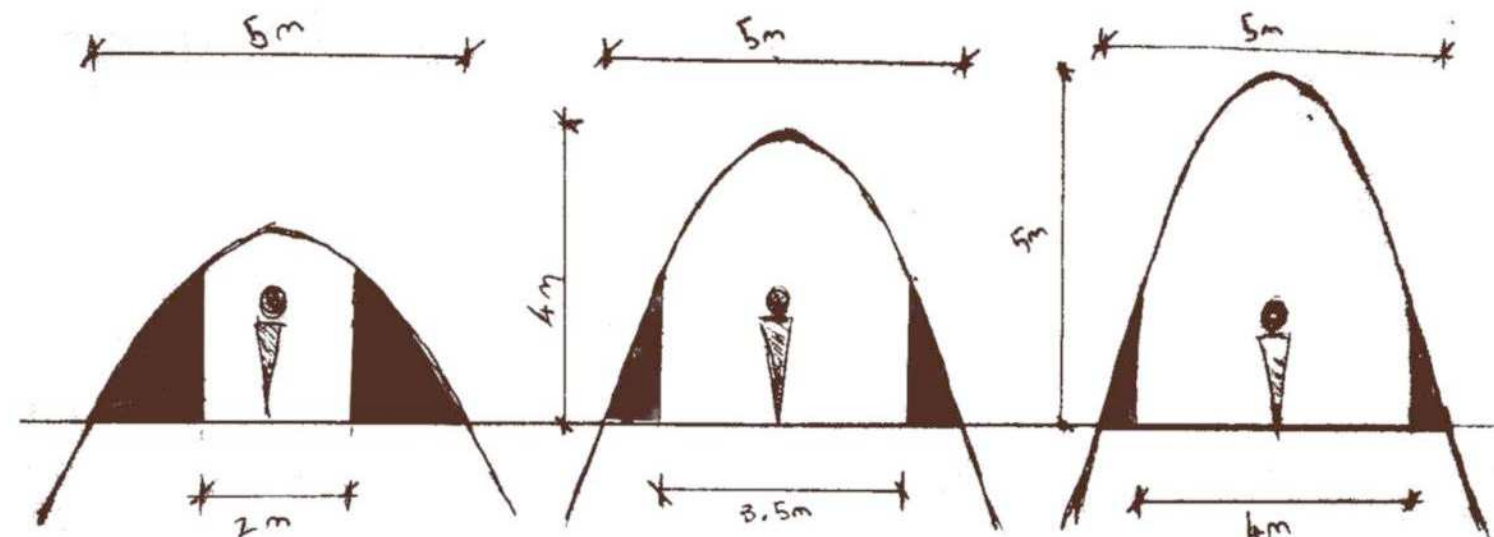


Figure 6.5: Sketches of Parabolic Structures

Mathematics

The parabolic arch is a strong structural form due to its uniformly distributed load (Brake, no date) (Doss, 2023). The main force on the arch is the compression force. The arch performs well in resisting lateral loads such as wind. (Doss, 2023) The engineering of the Mapungubwe Interpretive Centre used mathematical theory in calculating the loads of the structure. (Ramage, Ochsendorf and Rich, 2010)

The concept of vaults and parabolic structures are rooted in mathematical theory. The beauty of the parabolic arch lies in the quadratic function (Northridge University, no date):

$$y = ax^2 + bx + c$$

The aim is to create a function that keeps the parabola symmetrical around the y- axis and change the height of the parabola whilst keeping the roots constant. This leads to the function:

$$y = -\frac{h}{r^2}x^2 + h$$

where h denotes the height of the parabola and r the roots of the parabola, i.e. (width of parabola divided by 2).

Using this function, we start to combine maths, parametrics and design.

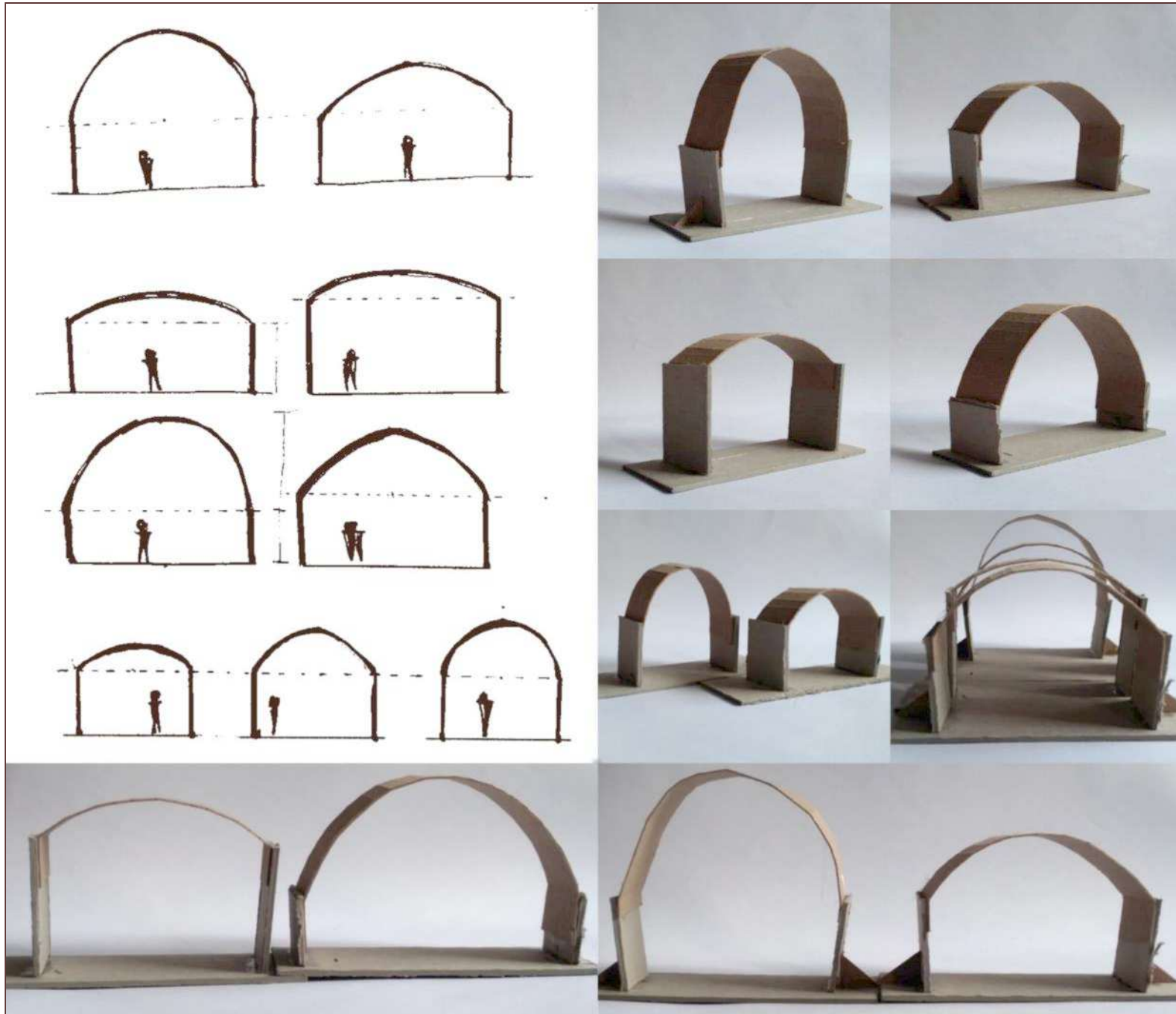


Figure 6.6: Sketches and Models testing ideas

Exploration and Scale

Using sketches and models, the concept of vaults was explored in various ways. Changing the height and width of elements result in interesting forms and proportions that evoke different feelings. The physical models displayed the outward forces of the vault and need for buttresses to support walls.

Conceptual sketches explored how the vault can form part of the design of the birth centre, exploring the orientation of the vaults and the resulting spatial implications. These conceptual sketches form the basis for the design of the birthing space and consequent roof design concepts.

Further design sketching explored how the parabolic structure can be incorporated into unique design configurations. These configurations started to create a design cohesion in planning and spatiality. Design and construction details started to emerge.

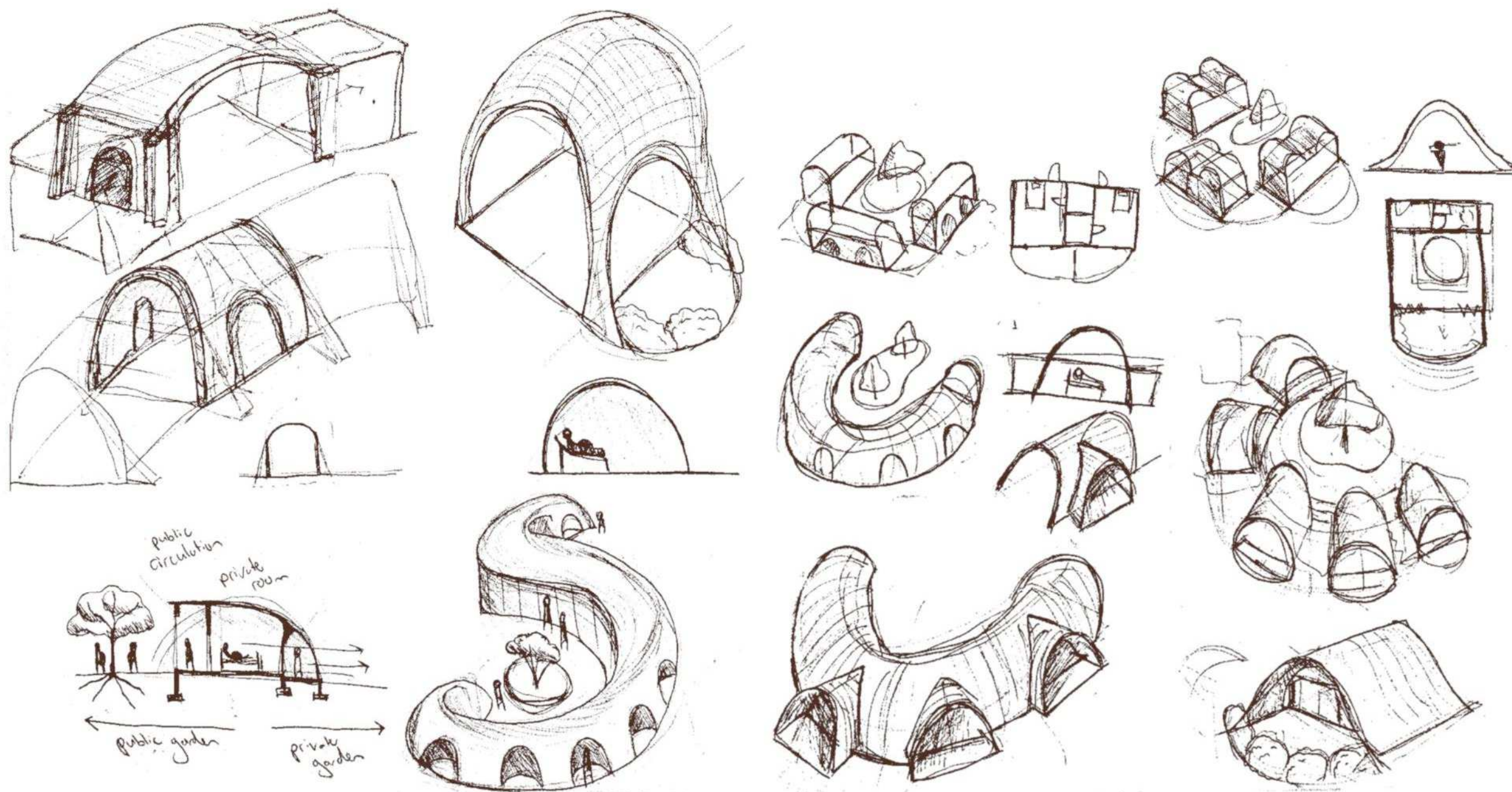


Figure 6.7: Conceptual Sketching

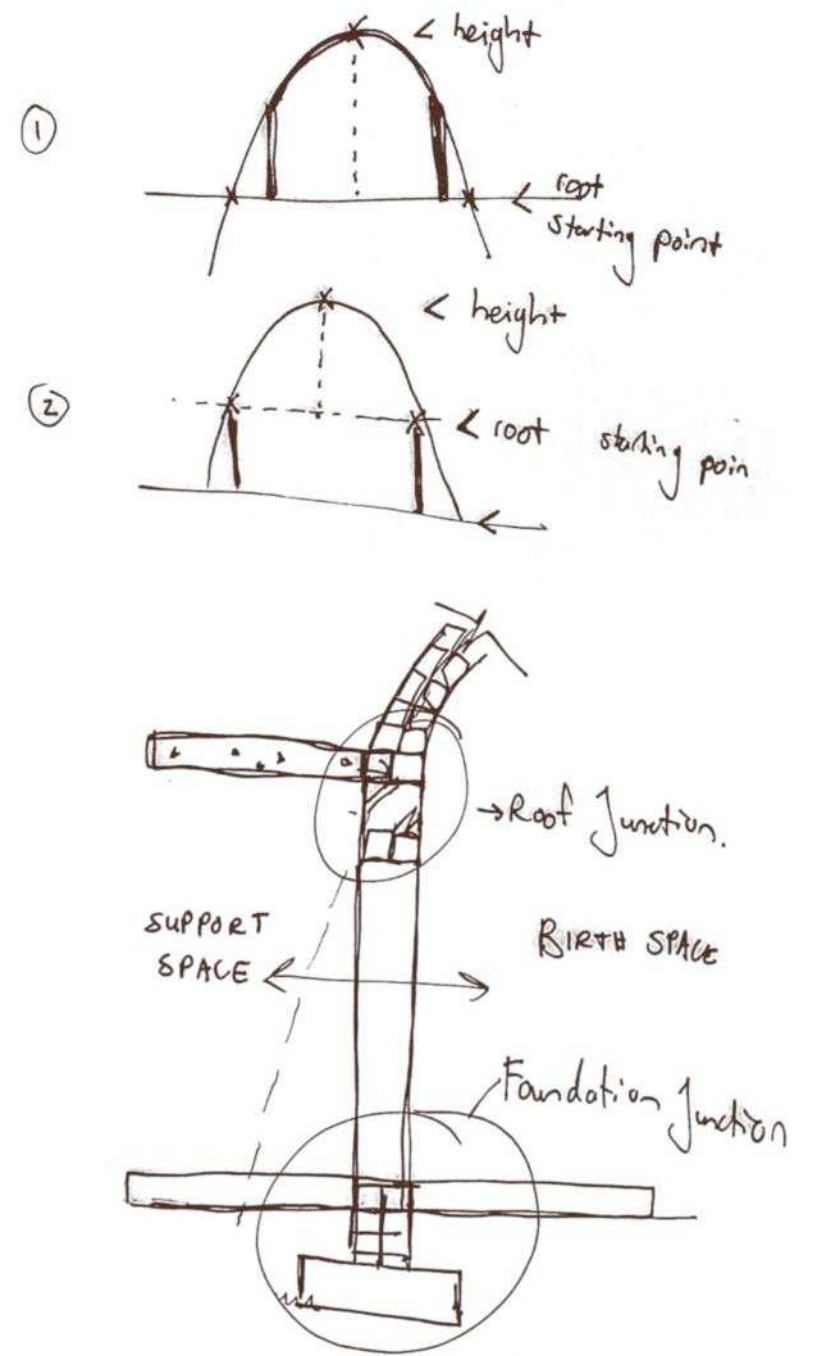
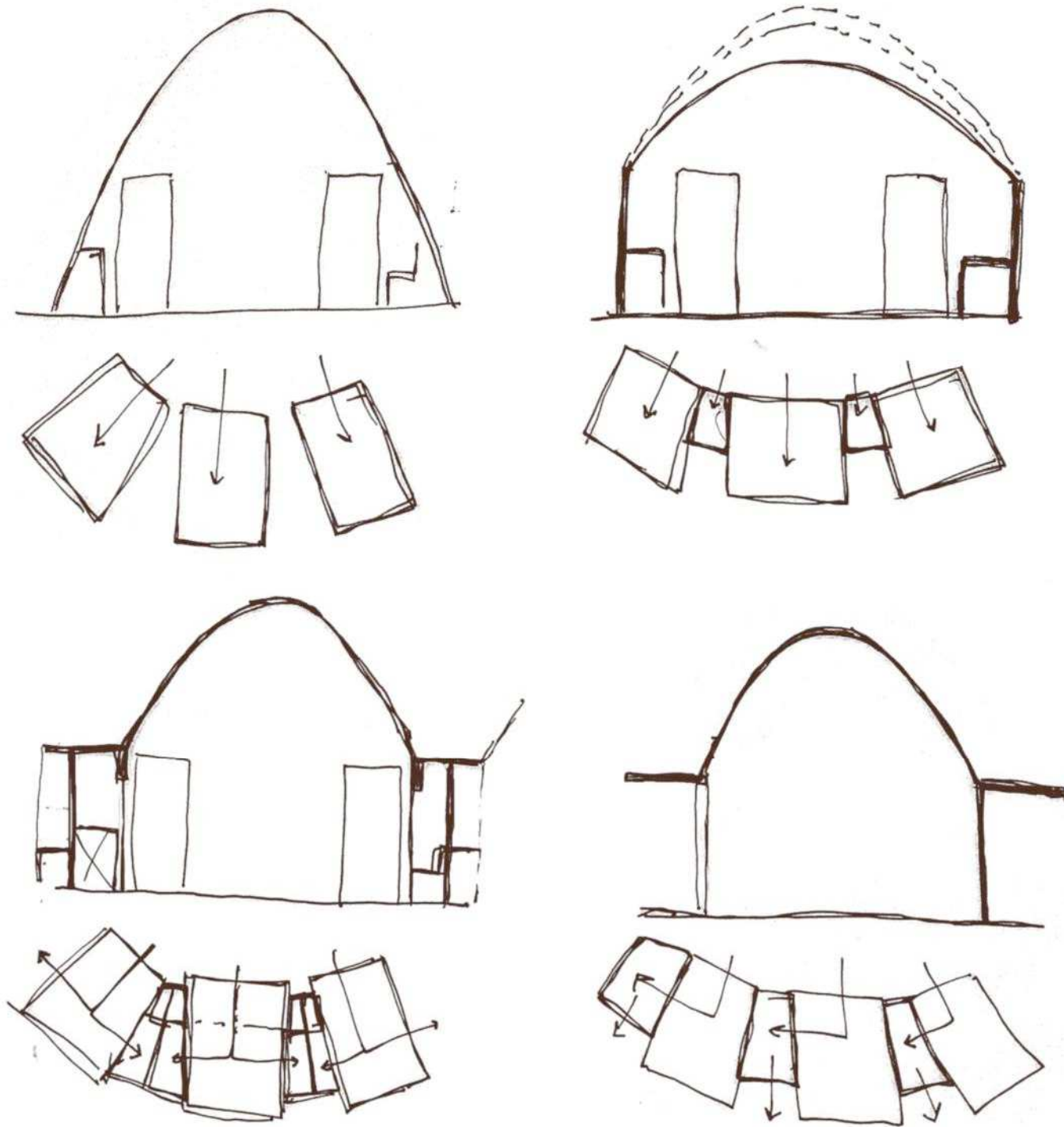


Figure 6.8: Design Development Sketching

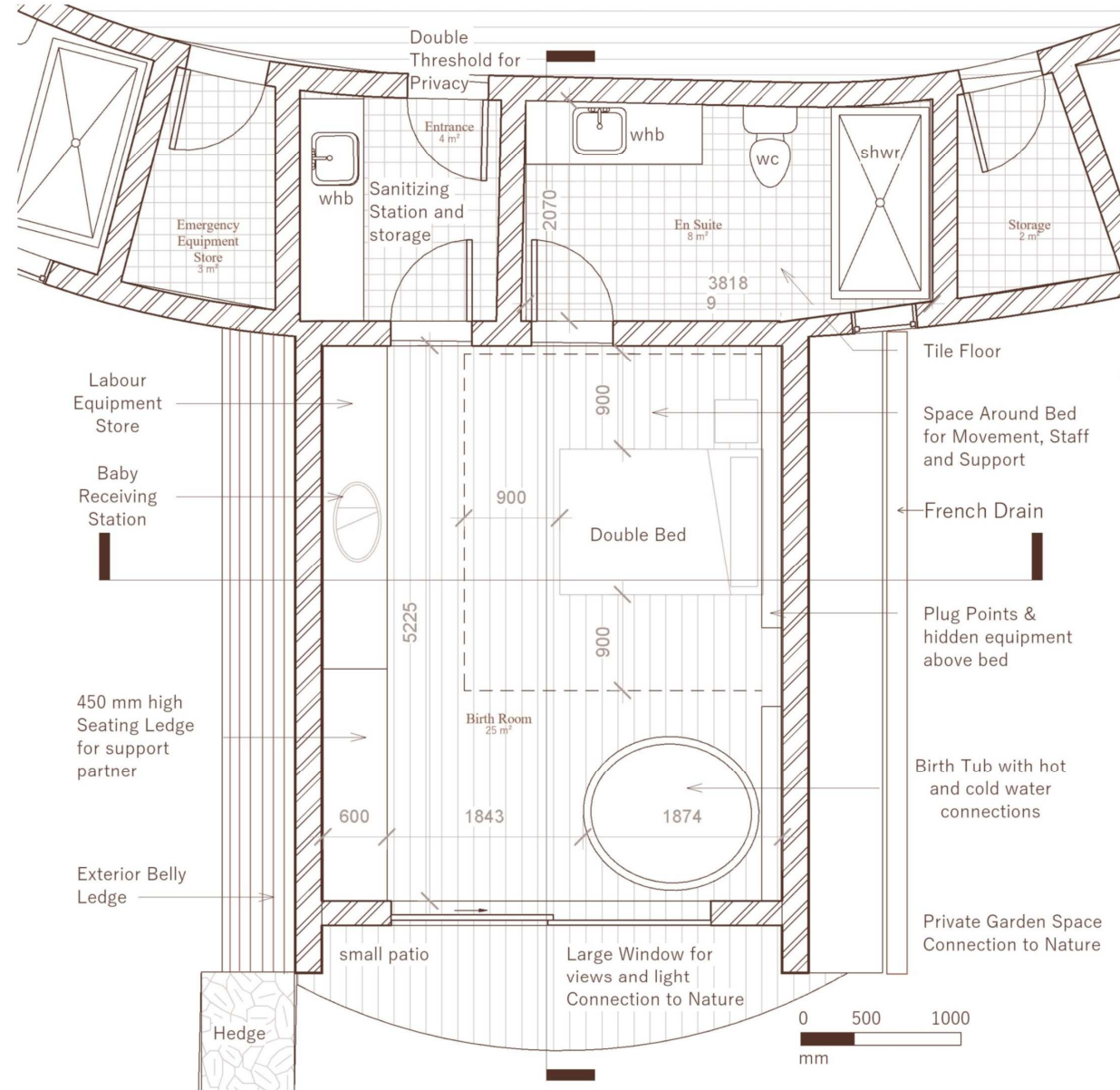


Figure 6.10: Detail Development of the Birth Space with the Design Drivers in Mind

Designing the Birth Space

The birth space embodies the four main design drivers – patient centered care, continued care, healing environment and phenomenology. The space is large and flexible for moving around the space. Thresholds and private gardens create privacy and a connection to nature. The unit is equipped with the necessary equipment and services to ensure medical safety standards.

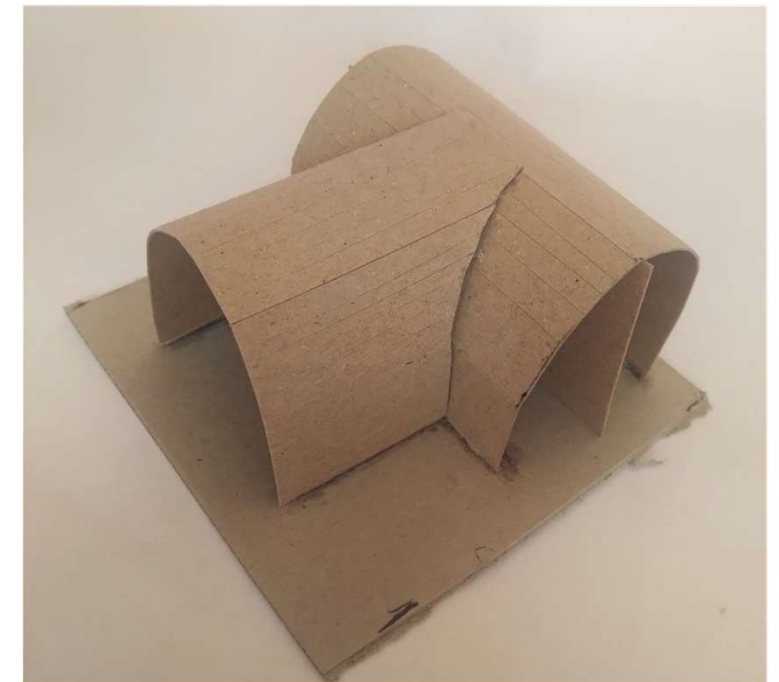


Figure 6.11: 3D Model of the Birth Space

1. 230mm Brick Parabolic Vault

Protea Travertine FBS with Flush 10mm mortar joints

EXT: Exposed facebrick

INT: Primed and Plaster

2. Timber Pergola

228 x 50 mm SAP Rafters

Attached to Vault with steel connectors
Supports Vines and Plants

3. Storage and Counter

Timber Frame Casework with Granite Countertops and Timber Slats door for Ventilation

4. Surface Bed and Floor

R/C to Eng. Specs- See detail drawing 1

5. Passive Ventilation System

INT: Louvre Panels

EXT: Brick Breezeblock

Brick Sill, Lintle and Overhang for waterproofing

6. Timber Bench

Timber Slat bench on brick Buttress

7. French Drain

For water collection redirected from vaulted roofs. See detail drawing 1

8. Strip Foundation

R/C to Eng. Specs, see detail 1

9. Rainwater Gutter

10. Rainwater Downpipe

Redirects water to french drains

11. Equipment Shelves

Timber Frame Casework

12. Built in Bedframe

Timber Framed bed structure with additional storage space

Section 1

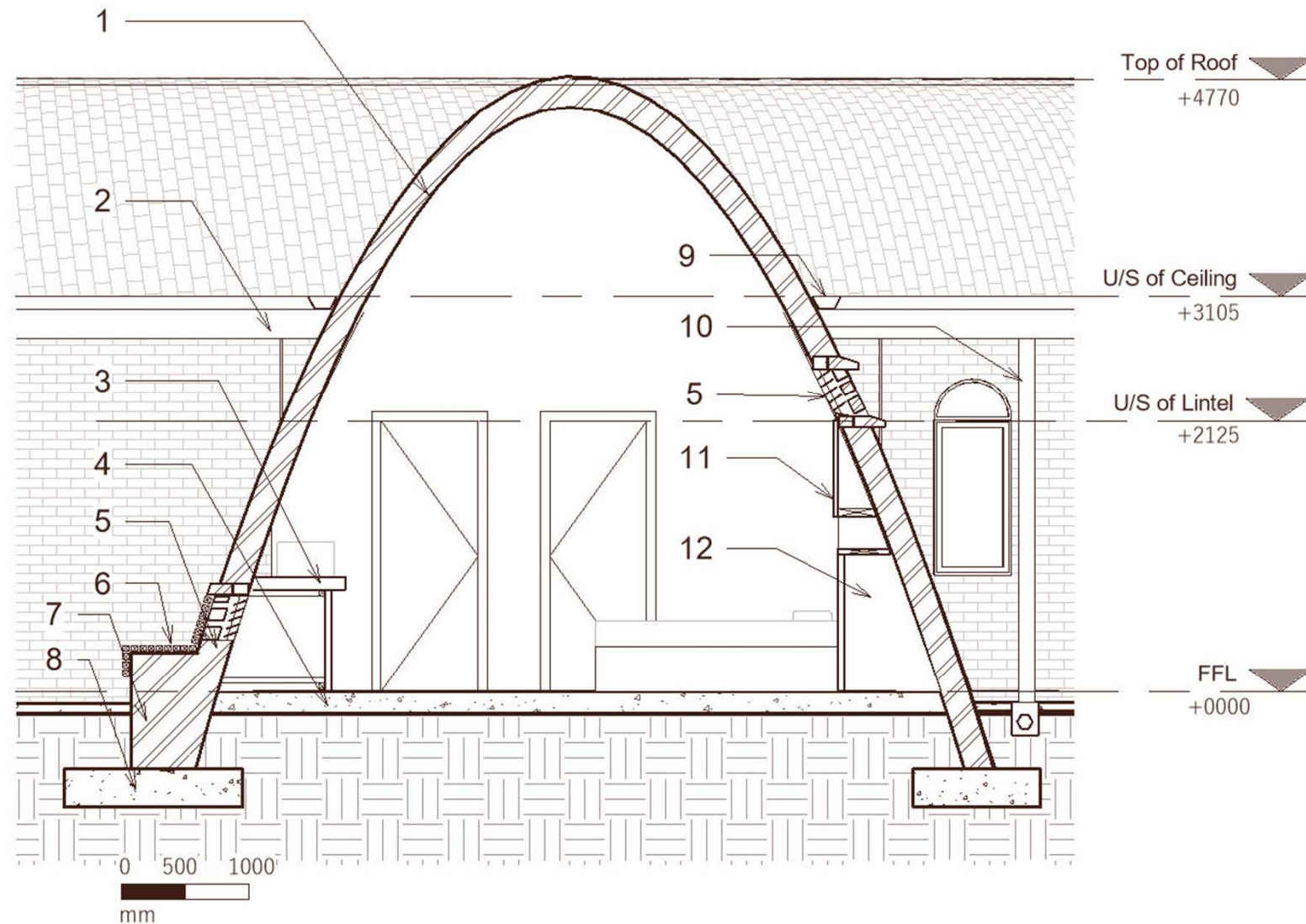


Figure 6.12: Section exploring detail development and sustainability

Section 2

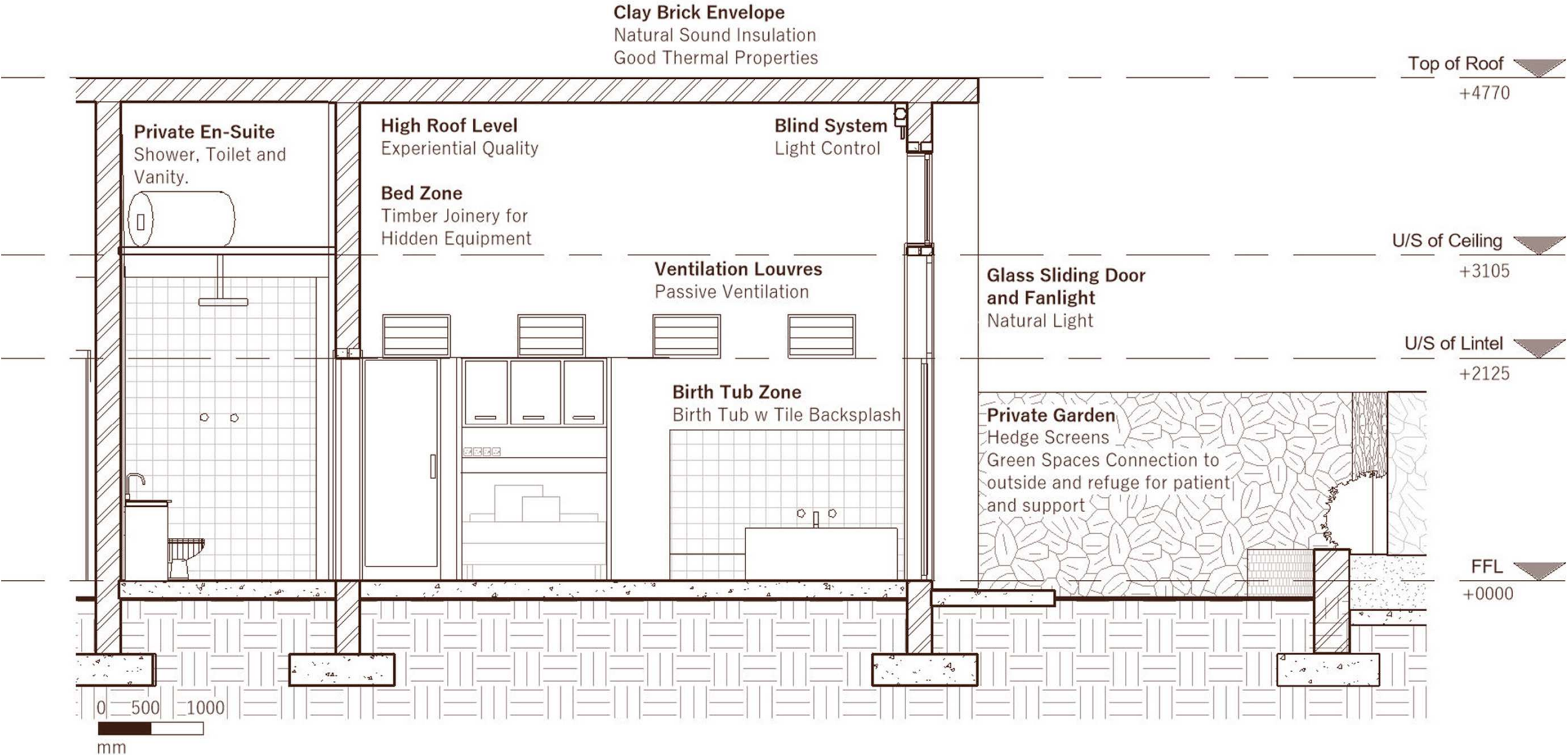
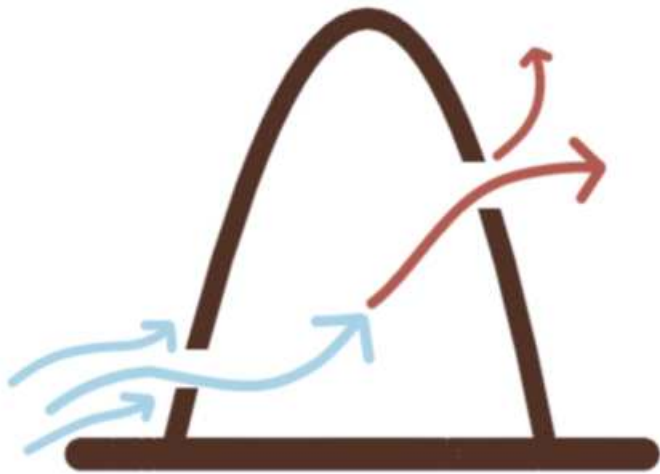


Figure 6.13: Section exploring detail development and sustainability

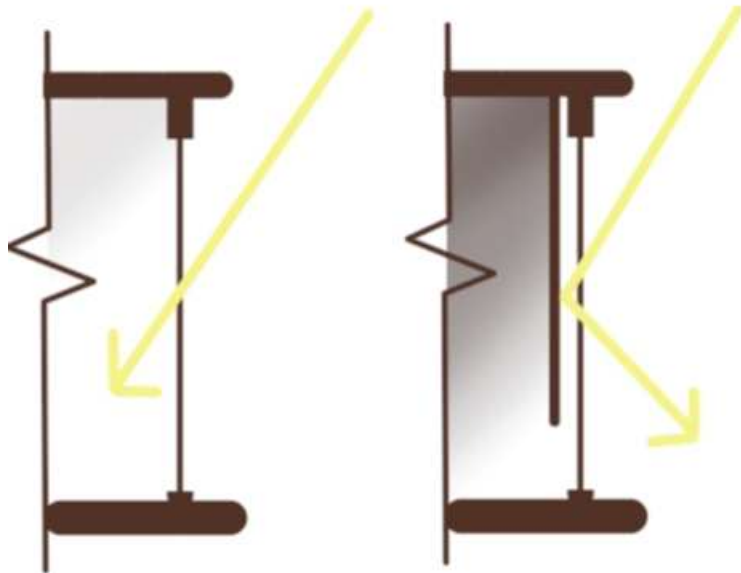
Figure 6.14: Sustainability diagram for ventilation and indoor quality



Passive Ventilation

The combination of air bricks and louvres creates a system of passive ventilation within the birth space. This allows fresh air to circulate throughout the space. This ventilation system serves as a passive cooling method that controls the temperature and interior quality of the space.

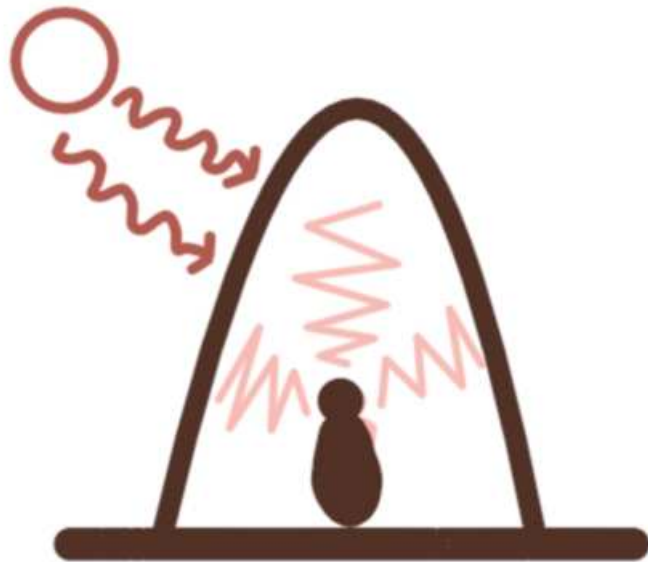
Figure 6.15: Sustainability diagram for light



Light Control

The large window and sliding door allow views of the outdoors and bring natural light into the space. A blind system is used to control the light quality within the space. The earthy colours of the birth space and the use of warm dimmable lighting contribute to the light quality of the space to improve comfort and the overall experience.

Figure 6.16: Sustainability diagram for material properties



Material Choice

The vault is constructed of clay brick, which is a material with excellent thermal and acoustic properties. The brick vault has strong structural properties which requiring minimal reinforcement. The clay bricks are sourced locally to reduce transport costs and minimize carbon emissions.

Rainwater Collection Foundation Detail 1

The parabolic and vaulted shapes of roof are excellent for rainwater harvesting. Using French drains along the building, water can be collected and stored for use around the building. Water are also collected from gutters and redirected to French drains for water collection.



Figure 6.17: Sustainability diagram for water collection

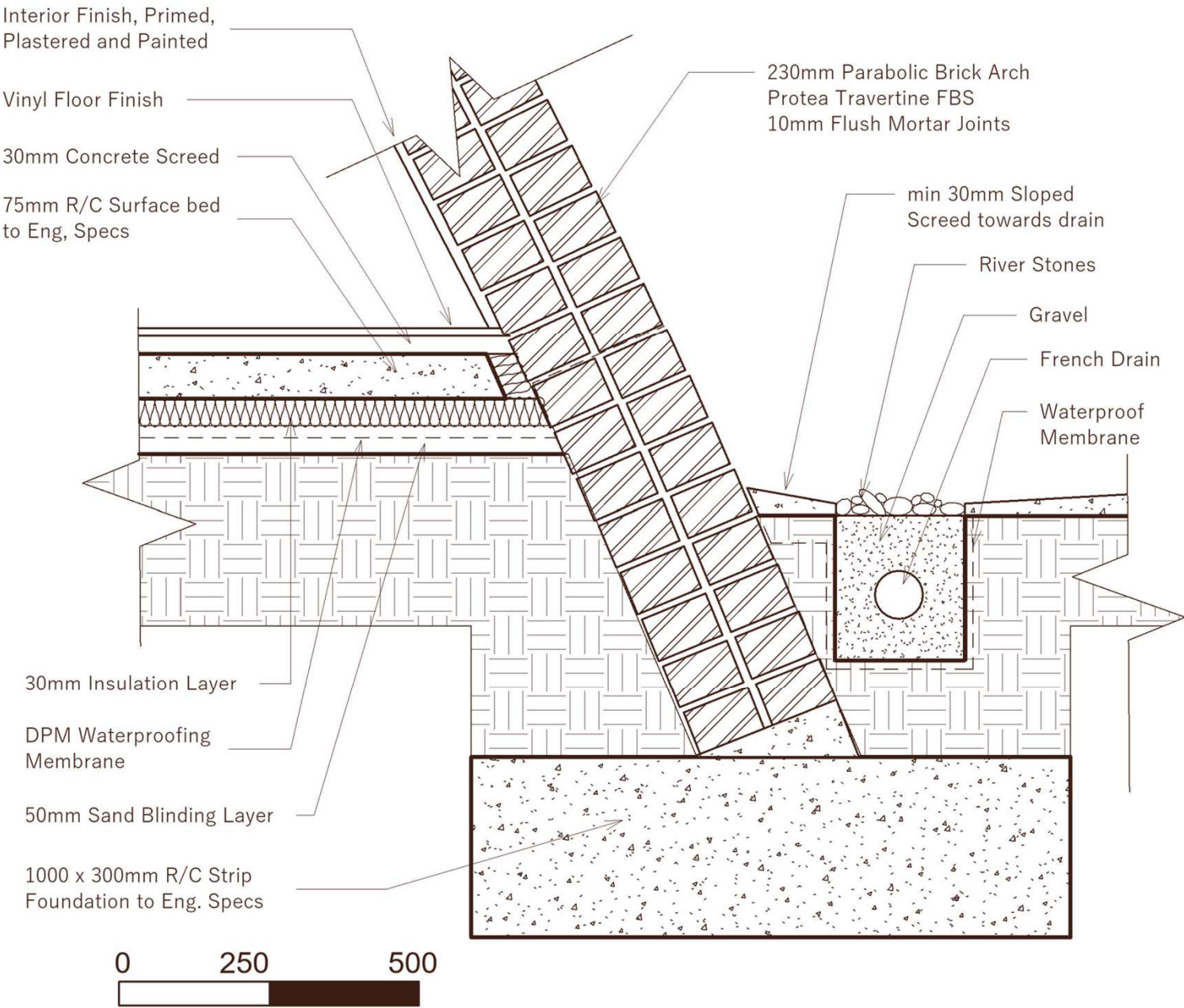


Figure 6.18: Detail drawing of foundation and drainage

Technical Section for Clinic

The building is constructed of brickwork, a soft pink brick – specifically Protea Travertine FBS. Brick columns on the exterior hide steel columns that help reinforce the floors, roofs and barrel vaults of the building.

The use of clay brick is symbolic as a natural material and because of the symbolism that comes with clay. Natural materials in the building is used to celebrate childbirth in a natural setting over clinical, synthetic settings.

The reinforced structure allows for heavy loads on the roof for rainwater collection and solar panels.

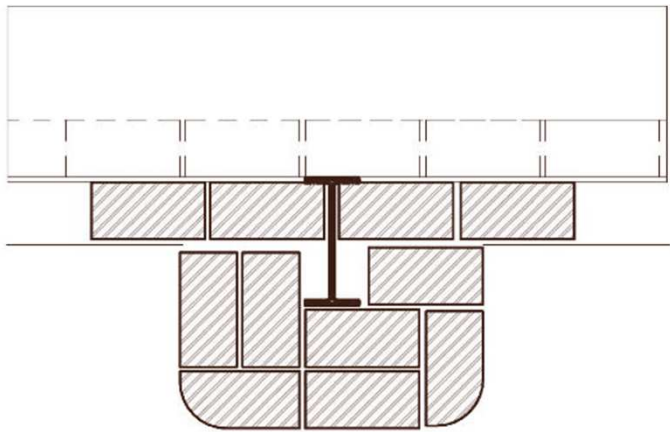


Figure 6.19: Column Plan Detail

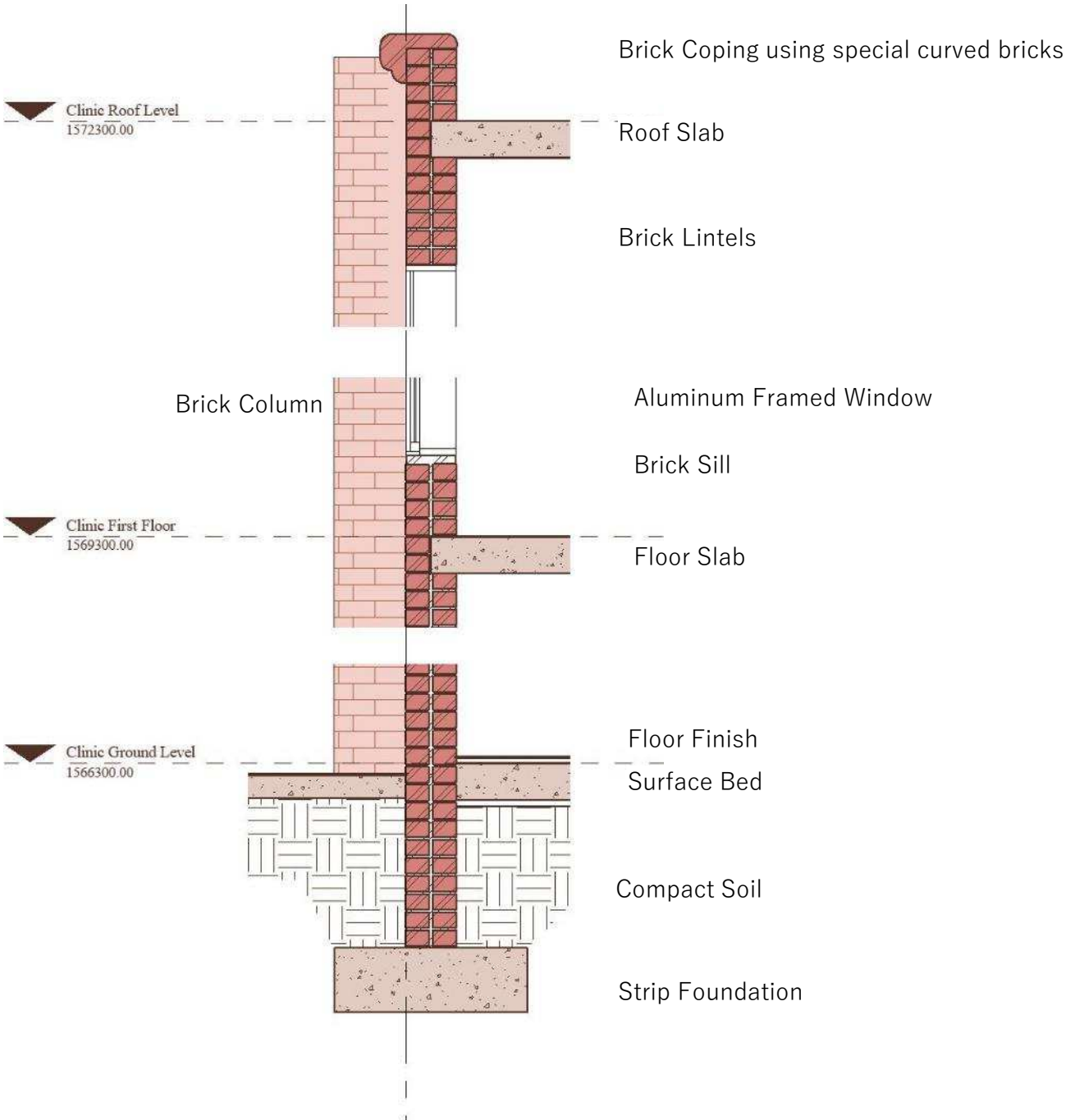


Figure 6.20: Perimeter Section

Conclusion of Research Section

This research has expanded my knowledge of the experiences and practices surrounding childbirth. I have learnt the importance of spaces that facilitates care, healing and autonomy. My analysis of theory, site and precedent creates a collection of knowledge that will serve as a guide for the next phase of the research project.

The design development and technical development starts to incorporate these drivers and strategies into a tangible design. The theory is easy, it is in the design where the difficulties lie. The architectural cohesion of functionality, form and poetics is crucial for the next step of the project.

Chapter 7

Final Design Drawings

Introduction

The Maternity Centre

The maternity centre emerges from months of research and design. The main feature of the design is the birth units, that embody aspect of feminism, healing and architecture into a special space that facilitate the transition to motherhood.

However, labour and childbirth is only a small part of the story. The maternity centre is designed to reflect the full complex narrative of a woman's journey to motherhood. The whole building works together to form a complete cycle of care.

Figure 7.1: Birth Room and Private Garden

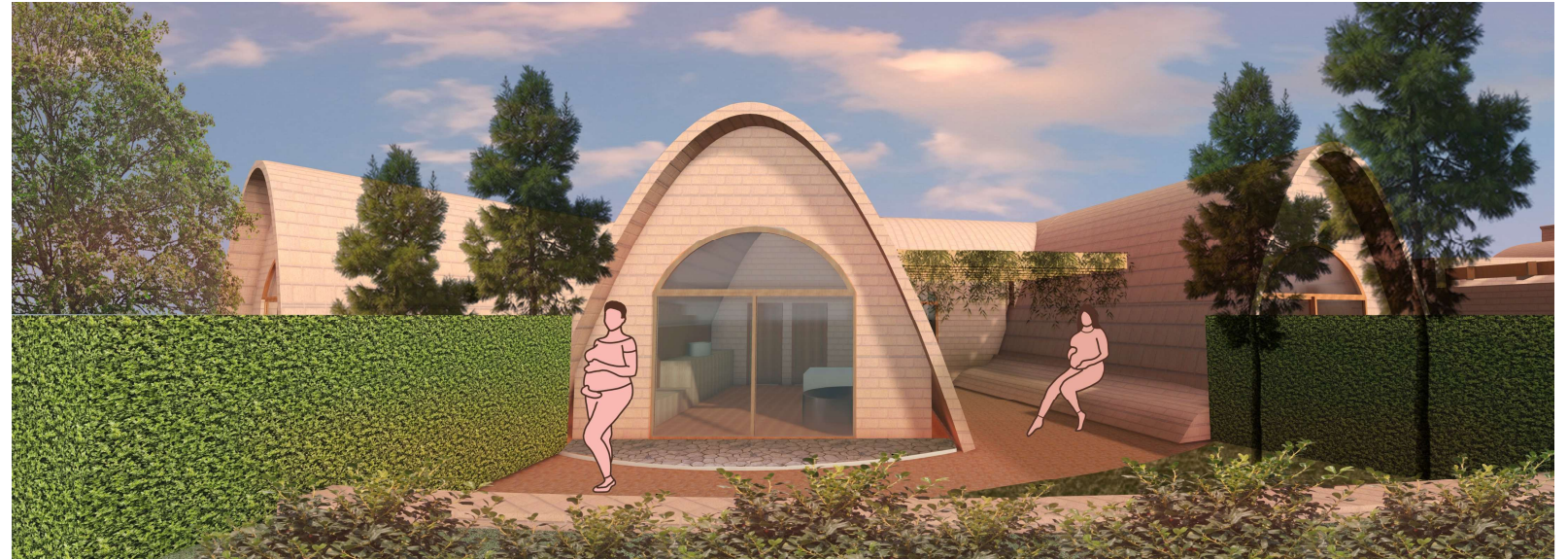
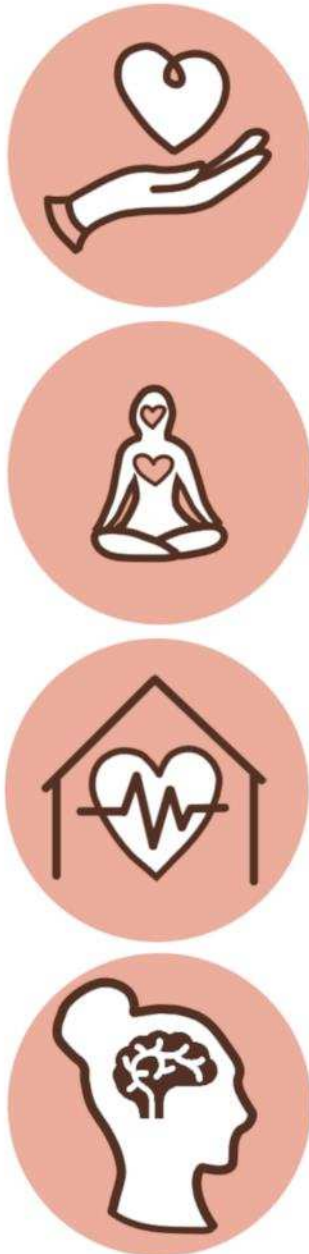


Figure 7.2: South-East Approach to Clinic Main Entrance

Recap of Design Drivers



1. Care Ethics and Patient Centered Care

- Respect for the patient's needs, values, and preferences
- Coordination of care and integrating services
- Communication and education between patient and provider (informed consent)
- Physical comfort
- Emotional Support
- Involving family and friends (the community)

(Gerteis et al., 1993:2).

2. Continued Care and Holistic Wellbeing

3. Healing Architecture

- Comfort and control
- Privacy
- Views of nature and outdoors
- Interior spatial quality
- Legibility of spaces and programming
- Allowance for flexibility
- Support spaces

(Simonsen, Sturge and Duff, 2022)

4. Phenomenological Experience

Figure 7.3: Design Drivers from Theoretical Section

Site Drivers and Strategies

The following contextual factors play a key role as physical design drivers.



Building form set on terraces that follow natural topography of site.



Preservation and development of pedestrian desire line.



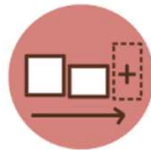
Expansion of current park to create a natural green corridor.



Development of a pedestrianized zone along the edges of the site.



Conversion of existing informal parking space on the South-East corner to formal parking for centre and surrounds.

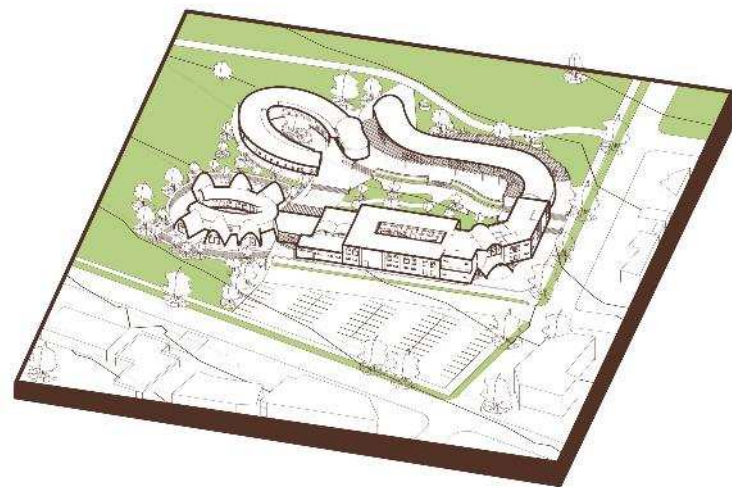


Potential future expansion of centre such as maternity waiting villages, midwife schools or long-term recovery lodgings.

Figure 7.4: Site Plan and Roof Plan of Maternity Centre



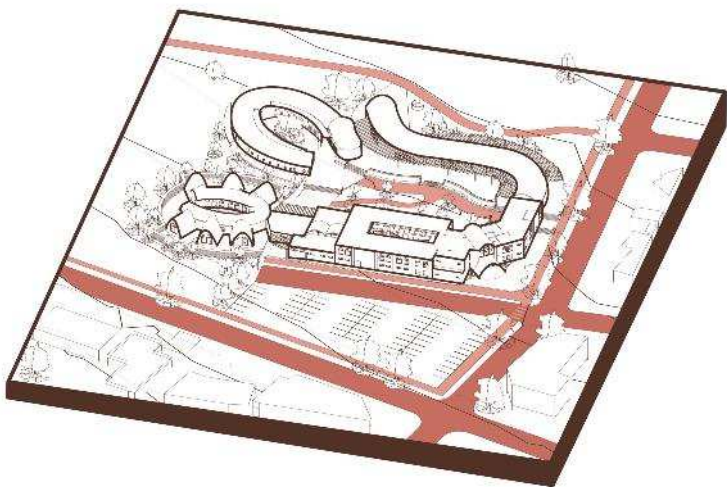
Figure 7.5: Nature Diagram



Connection to Nature

The building aims to create a close connection to nature by rehabilitating the natural environment of the site and creating green barriers between the road and the site. This creates an aspect of healing and environmental sustainability.

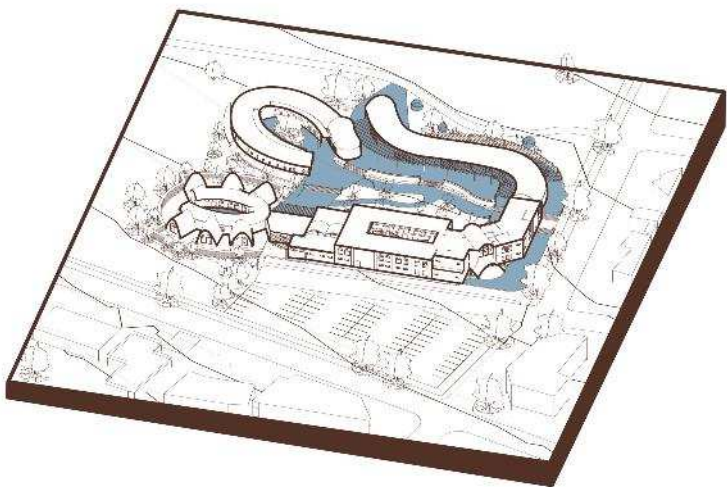
Figure 7.6: Connection Diagram



Connection to Space

The building aims to create a close connection to nature by rehabilitating the natural environment of the site and creating green barriers between the road and the site. This creates an aspect of healing and environmental sustainability.

Figure 7.7: Public Space Diagram



Connection to Each Other

The building creates various public gathering spaces to promote a sense of community and connection to each other. Within the suburban context, this space aims to foster community relations and support, giving the building a sense of safety and community.

Sustainability

The building adheres to sustainability principles. The building maintains social sustainability through community engagement and participation. The design creates a public space for the community.

The project rehabilitates an unused vacant land into a public green space and introducing more greenery to the neighborhood.

The primary construction material is brick, which has good thermal properties and lower carbon emissions.

Passive ventilation systems ensure fresh air circulation and temperature control.

The roof design aids in rainwater collection by redirecting water with the vaulted shapes towards collection points. The flat roof of the clinic is suitable for solar panels for energy sustainability. Water and solar interventions support the building in case of municipal infrastructure failure.

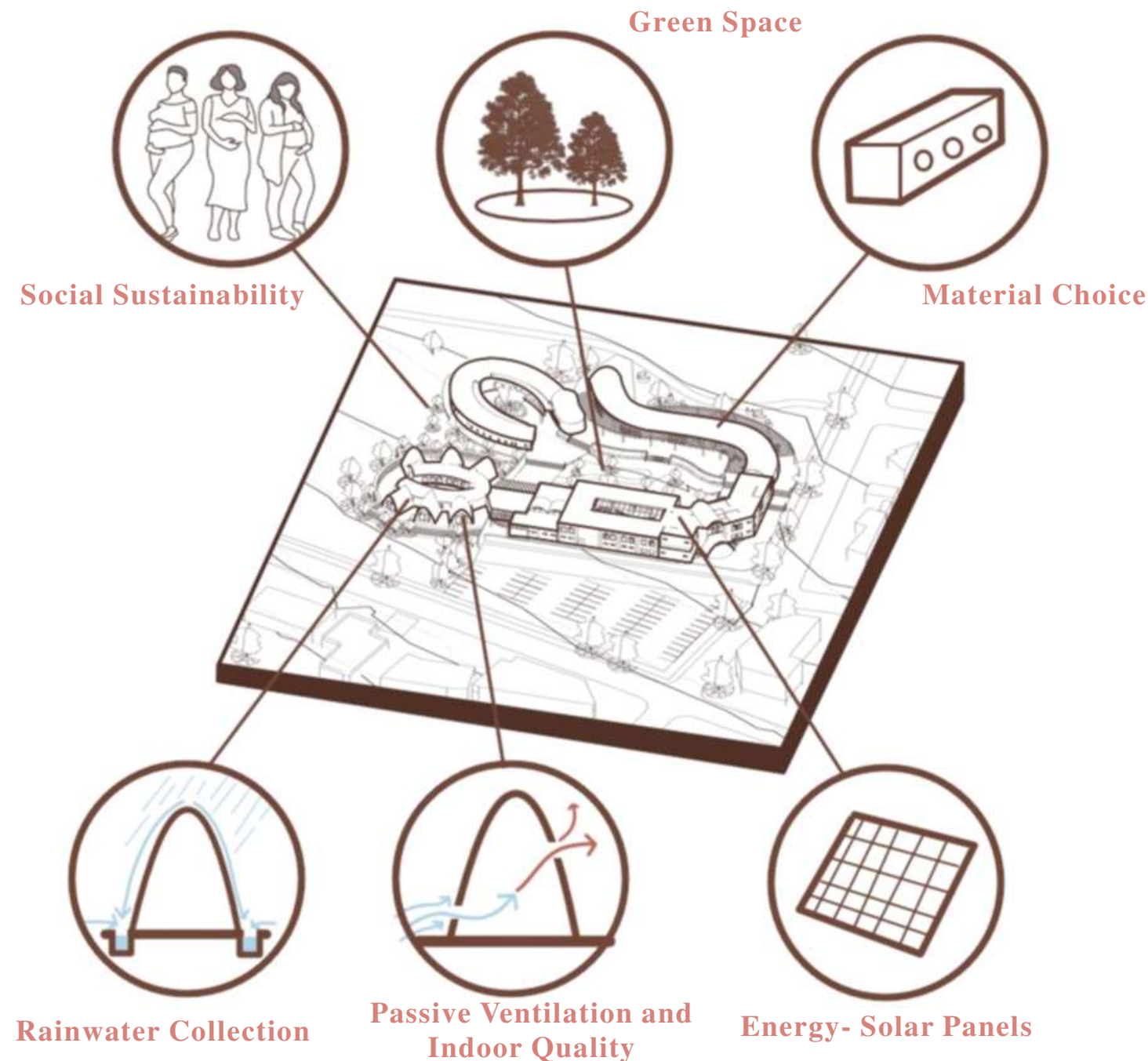


Figure 7.8: Sustainability Diagram

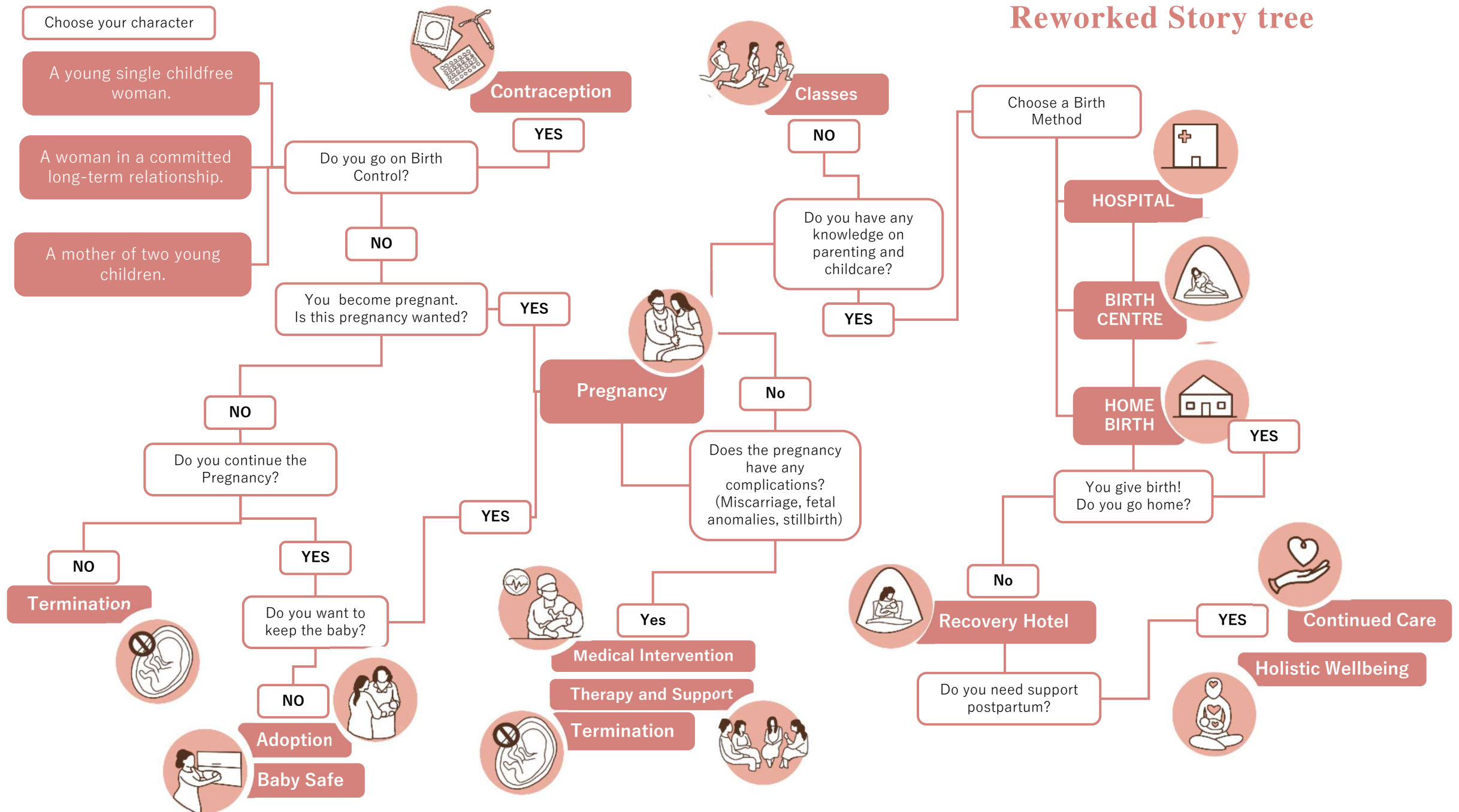


Figure 7.9: Story tree with Icons

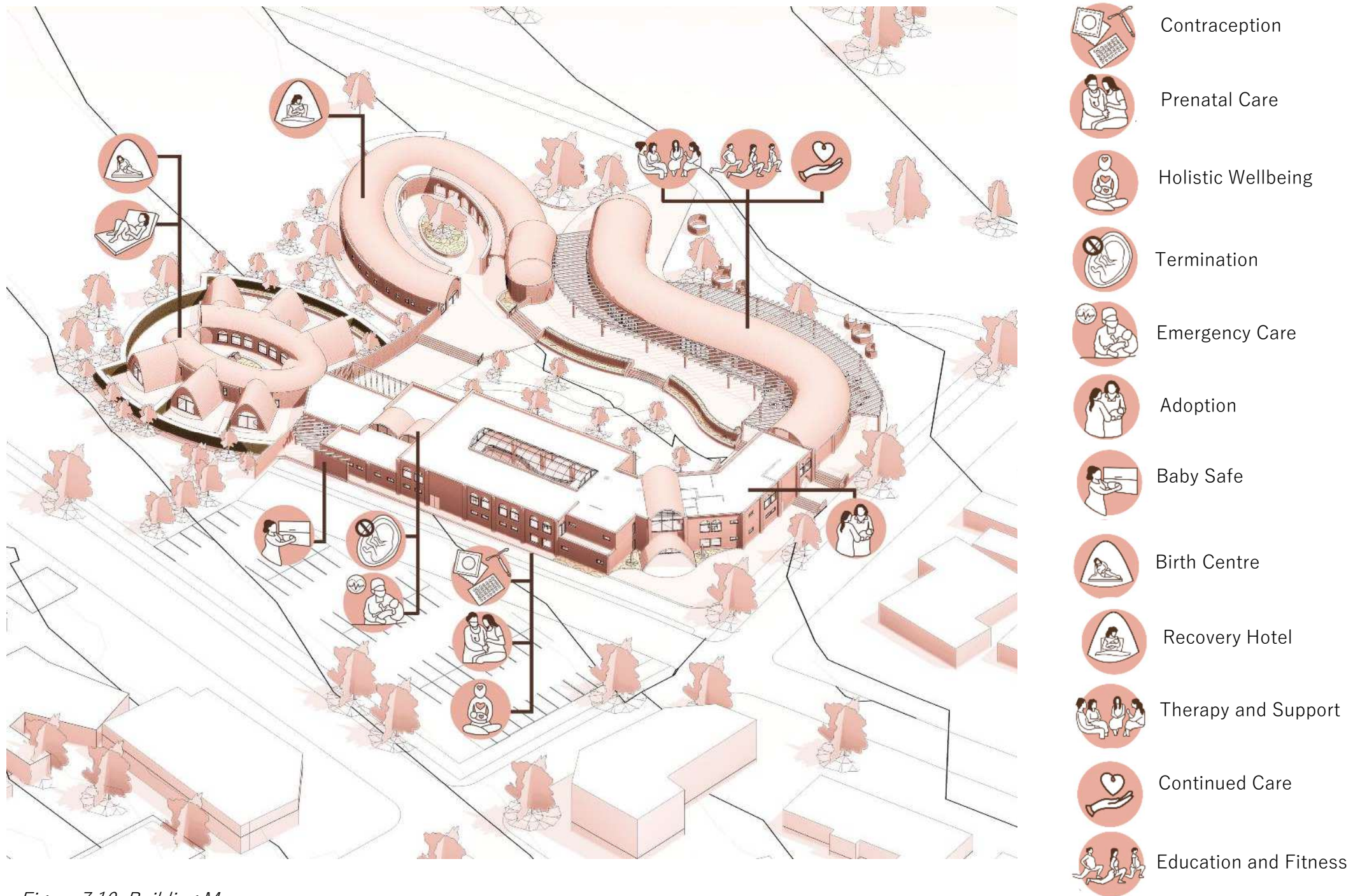


Figure 7.10: Building Map

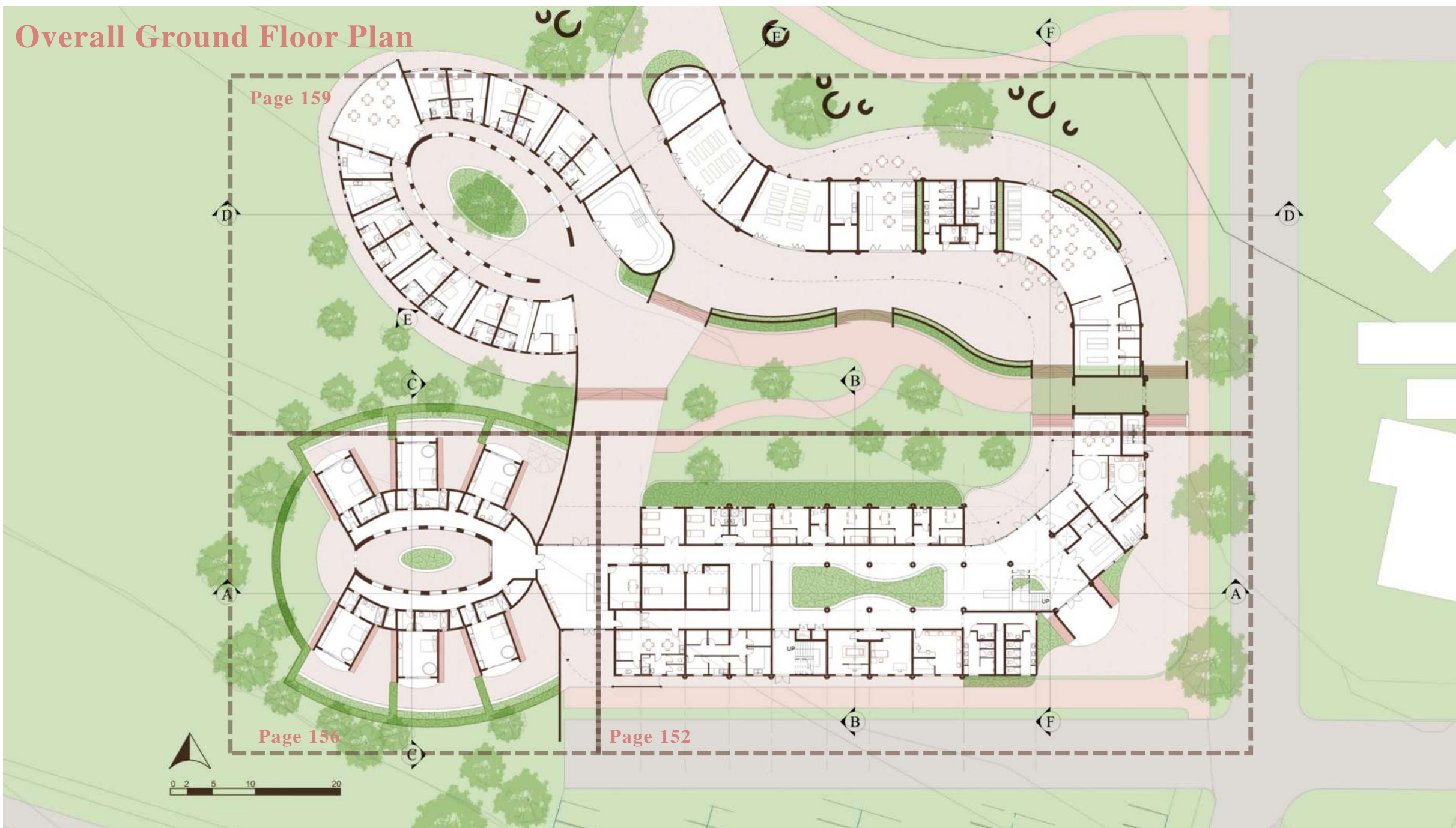


Figure 7.11: Ground Floor Plan

Figure 7.12: Building Circulation Diagram

Circulation Diagram

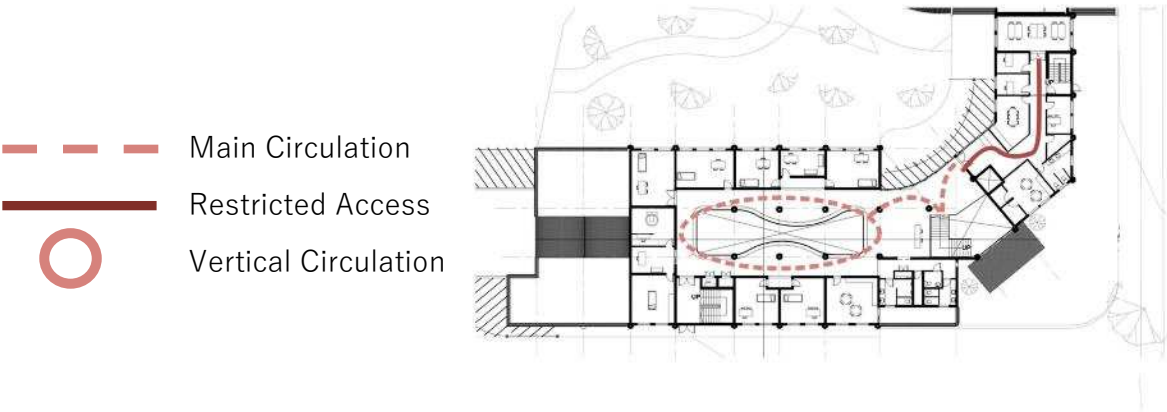
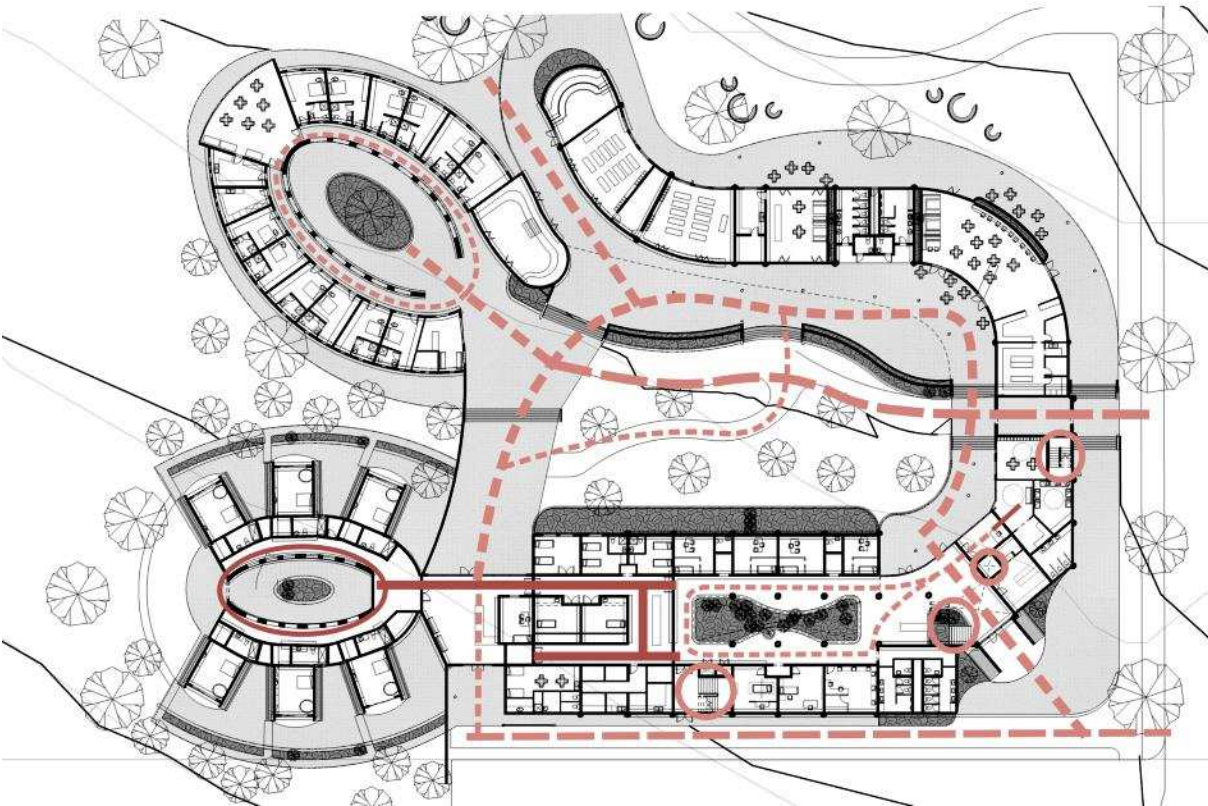
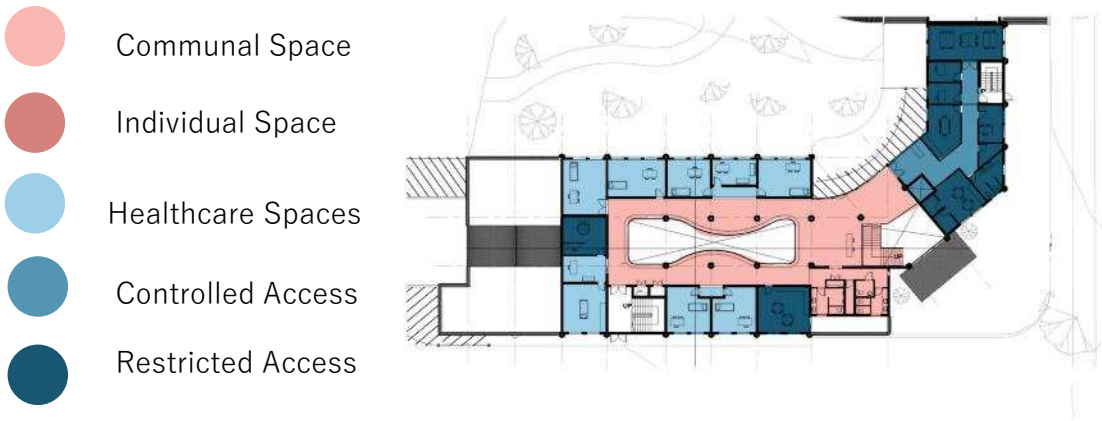
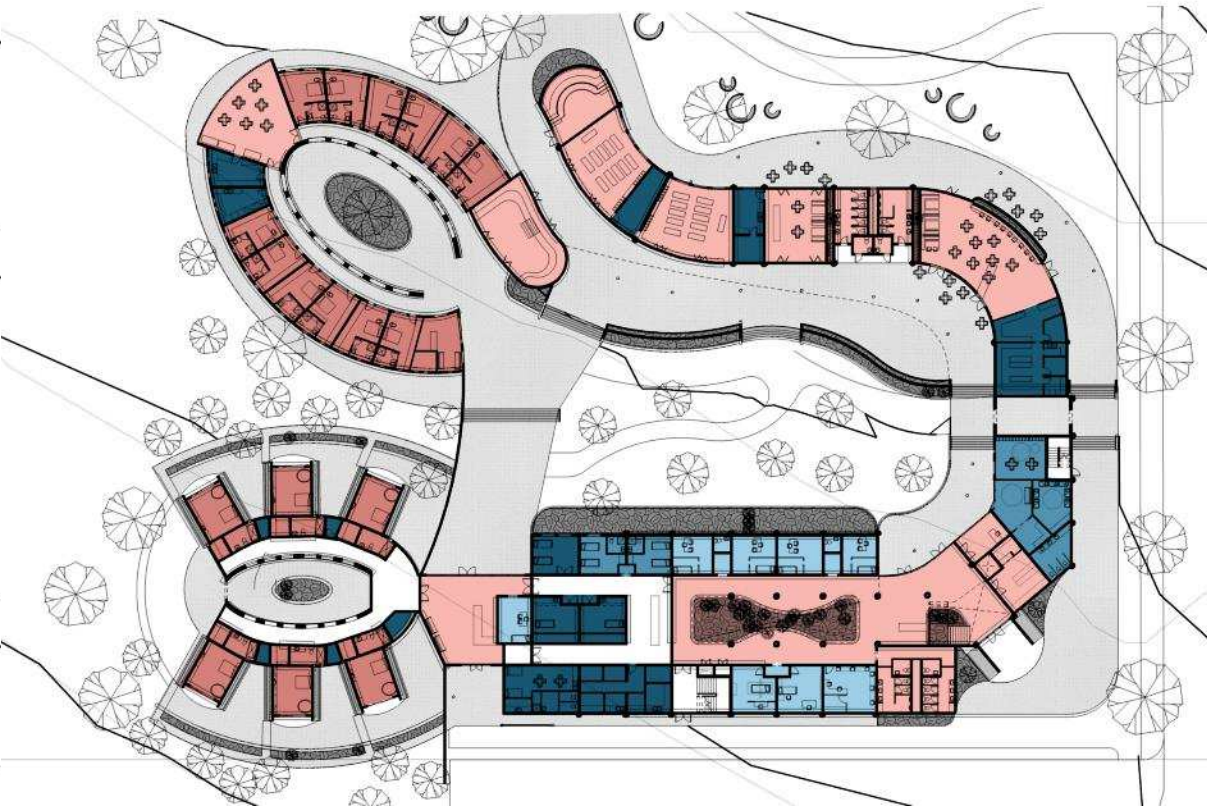


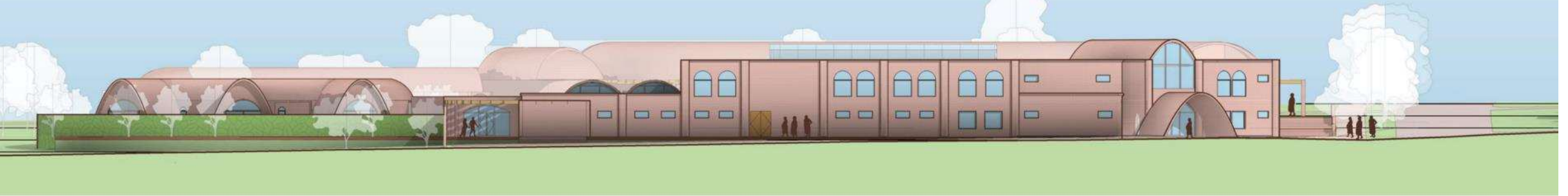
Figure 7.13: Building Privacy Diagram

Access Diagram



Elevations – The experience of the Building

Approaching from the South, you would see the health clinic with its soft rounded brick piers, arched windows and brick vaults.



The East elevation shows the transition from the geometric clinical section to the more organic, wellness section.



The North Elevation is experienced from the park extension and pedestrian walkway and fully shows the softness of the wellness centre.

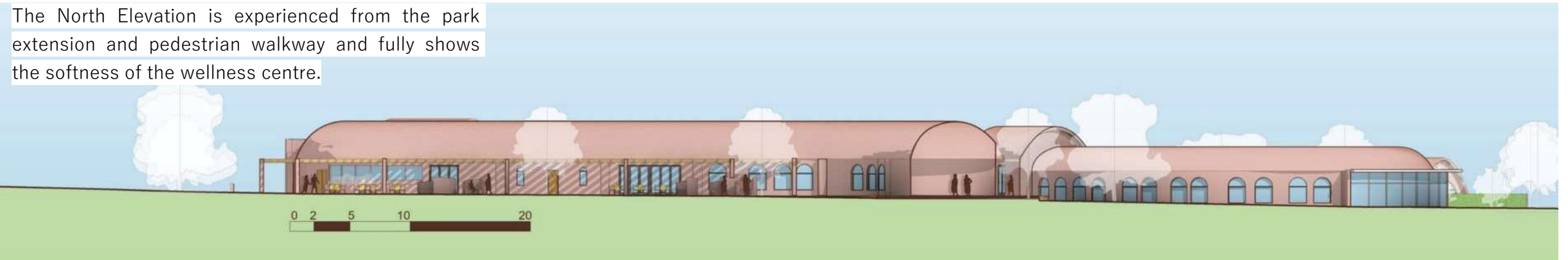


Figure 7.14: Elevations

The Clinic

The clinic would be the typical first part of a pregnancy journey. Entering on the South East corner of the site, patients are met with a large double volume lobby with a vaulted roof. The clinic provides reproductive healthcare to woman ranging from contraception, to prenatal and postnatal care.

Figure 7.15: Main Entrance and Approach



Figure 7.16: Main Lobby and Foyer

Clinic Ground Floor Plan

The ground floor of the clinic offers general services such as medical consultations and services such as specimen collection, xrays and ultrasound. An operating section is also located on ground floor for minor procedures and emergency c-sections.

1. Main Lobby

2. Reception Desk

3. Pharmacy

4. Creche and Nursery

5. Consultation Rooms

6. Inpatient Unit

7. Phlebotomy and Lab Pickup

8. Sonar Room

9. Xray Room

10. Waiting Atrium

11. Nurse Station

12. Operating Theatre

13. Bereavement Room

14. Staff Room

15. Baby Saver Box

16. Fire Escapes

17. Storage and Utilities

a. linen, consumables, equipment

b. Sluice. c. dirty utility

d. Cleaning room e. clean utility



Figure 7.17: Clinic Ground Floor Plan

Clinic First Floor Plan

On the upper floors are more specialised services such as counselling, physiotherapy, dentistry and more. The admin section and social services are also located on this floor.

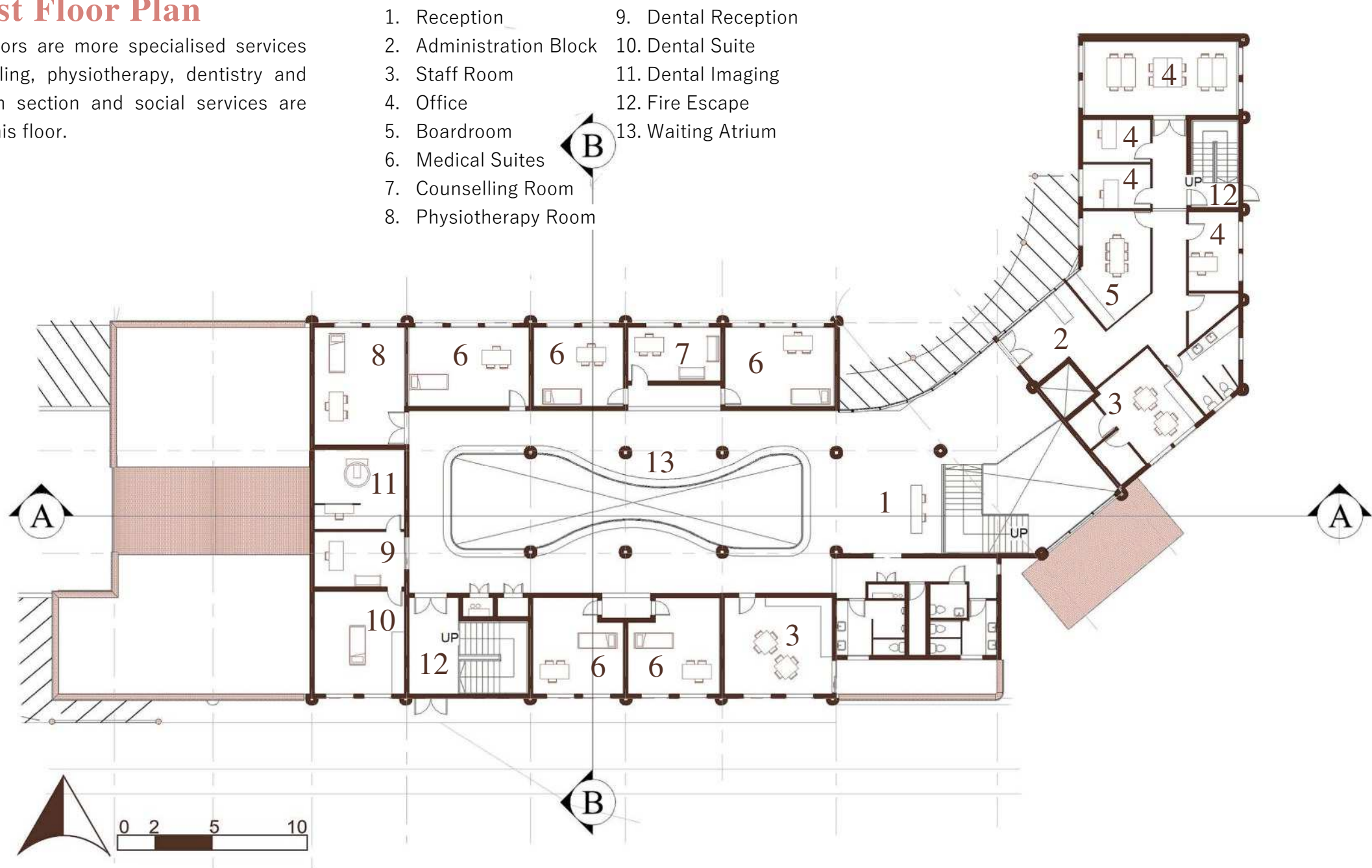
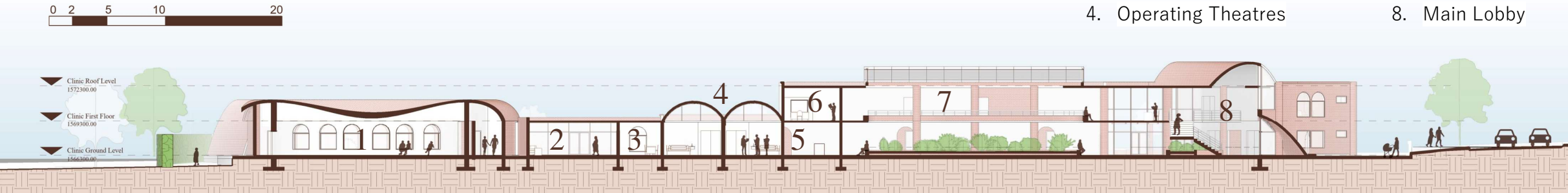


Figure 7.18: Clinic First Floor Plan

Figure 7.19: Building Section showing connection between clinic and birth unit

Section AA



An important feature of the clinic is the deconstruction of the waiting room into a waiting atrium, bringing natural light into the space. Plant spaces create a connection to nature. Consultation rooms on the north ground floor are buffered by plant beds to create a layer of privacy. The double volume spaces also continue the theme of the barrel-vaulted roofs.

Section BB

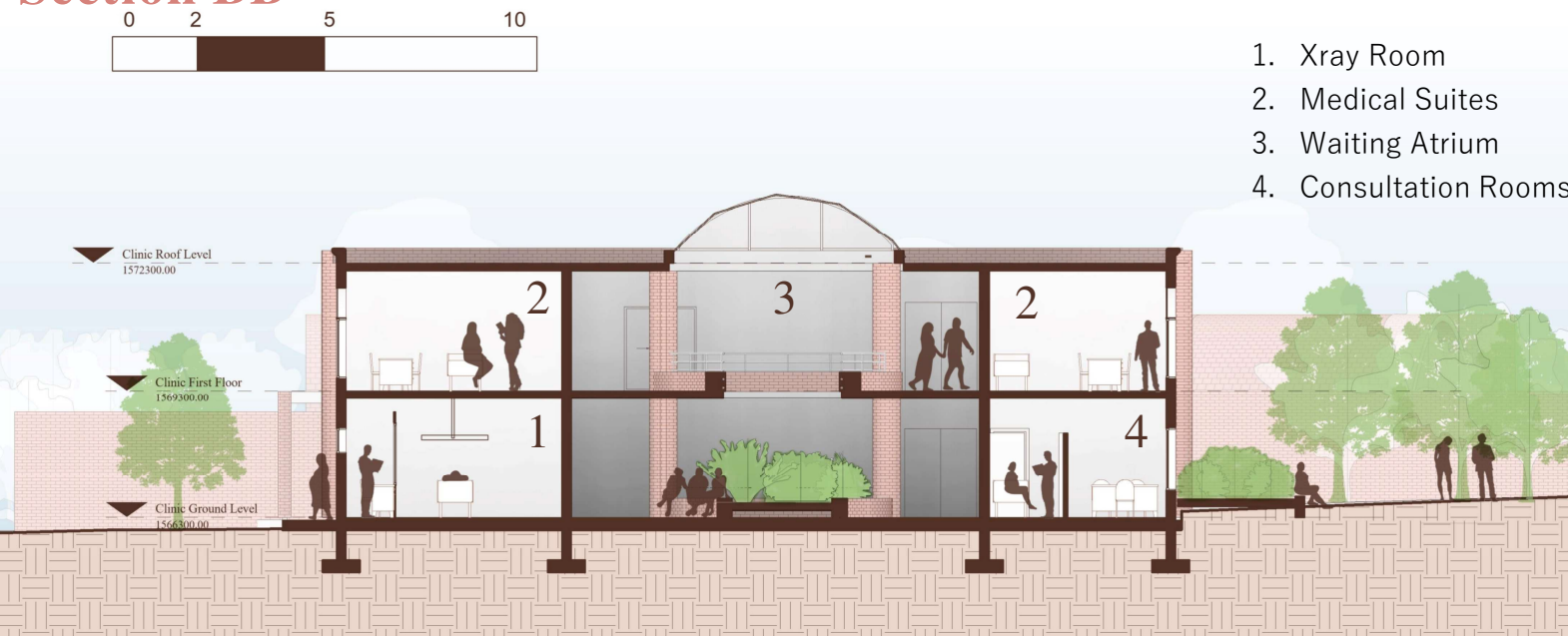


Figure 7.20: Building Section showing the waiting atrium



Figure 7.21: 3D render of waiting atrium.

Birth Unit Floor Plan

When a woman goes into labour, she checks into the midwife run maternity unit. Here she receives a private birth room with an en suite bathroom and private garden, screened with hedges. This area is restricted to the general public with allowance for support persons for the labouring woman.

The Birth Unit prioritises the comfort, needs and privacy of the person giving birth. The enclosed nature of this section has an emphasis on intimacy and individuality to support a woman during this transition to motherhood. It manifests aspects of patient centered care into a physical form to create an architecture and experience of healing and care.

1. Birth Unit Reception Lobby
2. Midwife Office
3. Internal Circulation
4. Birth Unit
5. Private Gardens
6. Semi Private Courtyard
7. Storage
8. Semi Private Garden

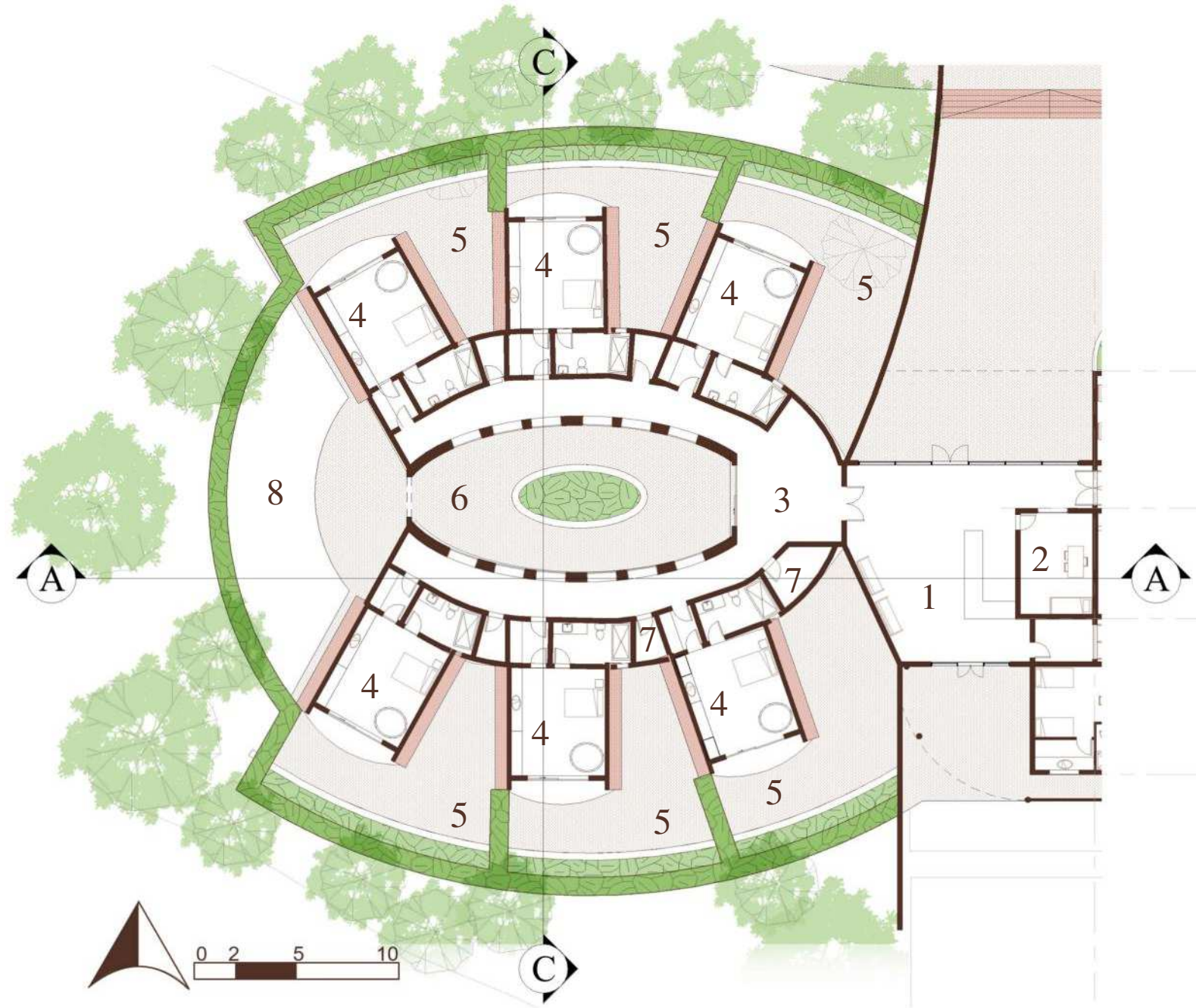


Figure 7.22: Birth Unit Floor Plan

Figure 7.23: Birth Unit Axonometric Diagram

Birth Unit Floor Plan

The birth rooms are connected to a main corridor surrounding a courtyard. This is the first threshold of privacy. Each room has a small lobby that serves as a sanitation station, and privacy barrier. This is the second threshold.

The rooms have ample space for free movement around the room. There is space for a double bed and a birth tub as well as various birth equipment such as stools. A small ledge provides a space for a support partner to relax and wait. Cabinets hide the equipment needed by the midwife.

Rooms have an en-suite bathroom. The bathrooms have built in ledges in the shower and a view of the private garden.

Each Unit has a private garden to create a connection and view to the outside. These gardens are guarded by hedges to ensure complete privacy of the unit.

The high ceilings and large window bring natural light into the space, creating a unique space for a special experience.

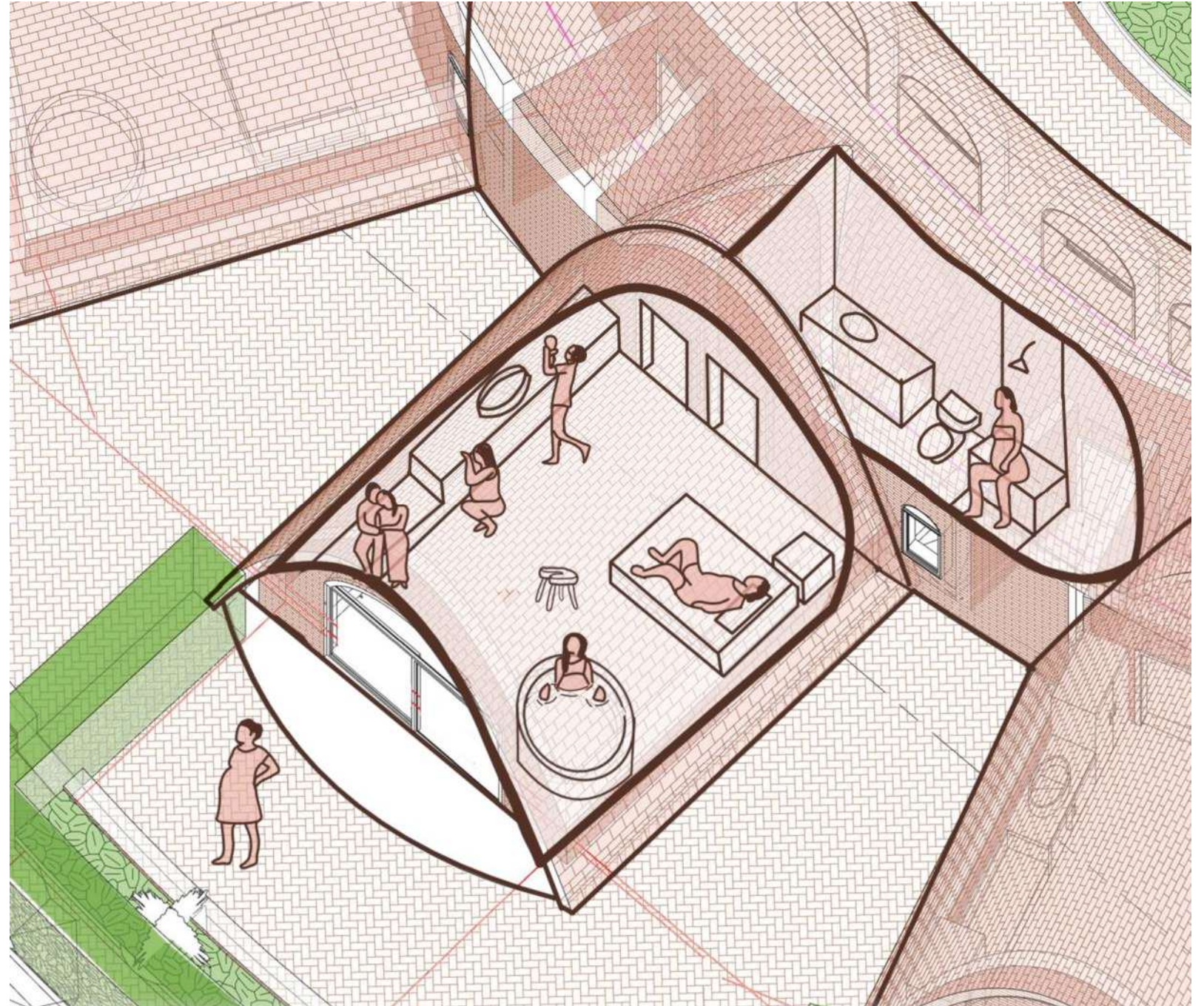
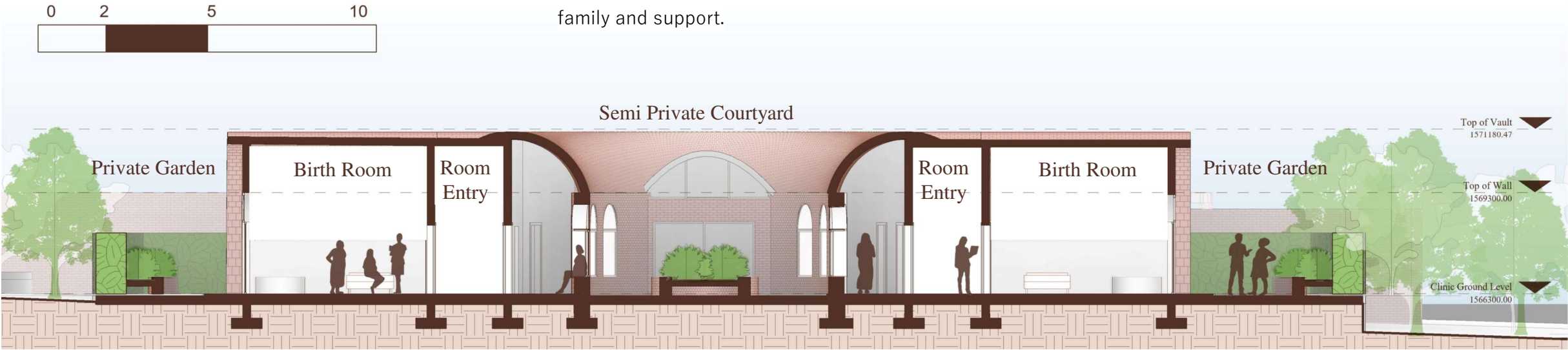


Figure 7.24 Birth Unit Section

Section CC



The maternity unit emphasizes the intimate and personal nature of childbirth, and focuses on the individual needs of the woman. Layers of threshold are in place to ensure absolute privacy of the space. The woman is in control of her space and of the people in her space. The corridors and small courtyard outside the rooms offer a refuge to family and support.



Figure 7.25: Birth Unit Courtyard



Figure 7.26: Birth Room interior



Figure 7.27: Birth Room exterior

Figure 7.28: 3D renders of continued care section

Recovery Hotel and Continued Care

So now a woman has given birth and has a tiny little human to take care of. If she feels she needs more time to recover or needs support in these first few days, she can choose to stay at the recovery village for a few days, where she will gain support from midwives and other mothers. Women can also visit the wellness centre and educational classes to aid in their recovery and ensure holistic wellbeing.

This part of the building focusses on recovery after birth and continued support after leaving the birthing space. The open planning has an emphasis on communal support and learning. The open courtyards and connection between venues is to encourage interaction between new mothers and experienced mothers.



Figure 7.29: 3D render of view to park



Figure 7.30: 3D renders of restaurant

Figure 7.31: Recovery Hotel and Continued Care Floor Plan

Continued Care Floor Plan



Figure 7.32: Section showing the community interaction

This space emphasizes aspects of community care and support. The courtyard and colonnade are designed to encourage interaction, exchanges and support between women. This creates a sense of community and solidarity among mothers and builds up a support network: creating a village to raise a child.

The wellness centre contains seminar space, exercise studios and restaurant spaces that look both inward to the courtyard but also outward towards the park in the north. This is a space of community where people can gather. The vaulted brick roofs are inspired by the warmth and safety of the womb and the gentle curves of the building creates an embrace and sense of comfort.

Figure 7.33: 3D render of courtyard



Figure 7.34: 3D render of Dining Room



Section EE

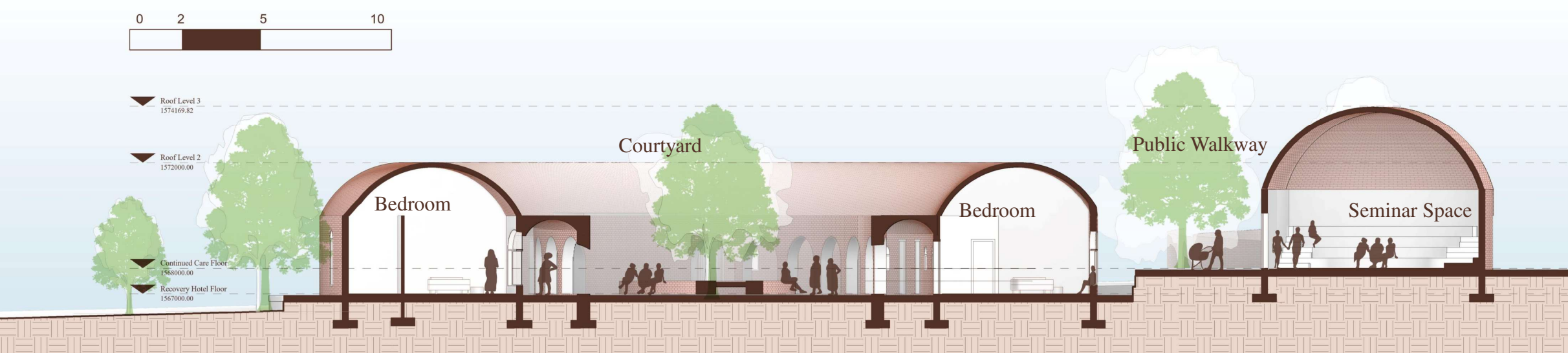


Figure 7.35: Section showing the courtyards and walkways

Waiting Space

The natural topography of the site creates a series of terraces. These terraces continue the theme of deconstructing the waiting area, turning the whole site into a series of waiting spaces. The building embraces a large central green space that contains herbal and food gardens that supports health and healing.

Section FF

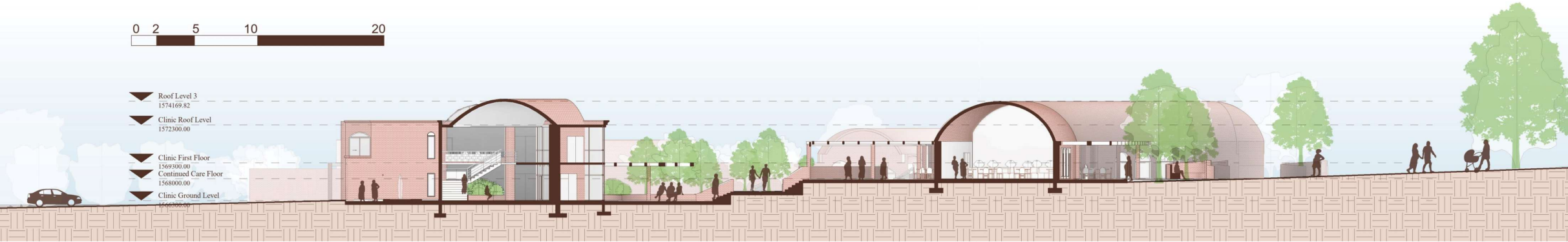


Figure 7.36: Site Section showing the terraces and outdoor gathering spaces



Figure 7.37: 3D render showing public space



Figure 7.38: 3D render showing public space

The project was presented for examination in November of 2024. The presentation was carefully laid out to follow the narrative of the project.

The project was presented for examination in November of 2024. The presentation was carefully laid out to follow the narrative of the project.

The image consists of two side-by-side photographs of a 3D architectural model. The model is constructed from white, rectangular blocks and is mounted on a white base. It features a central rectangular building with several smaller, curved structures attached to its sides. The left photograph shows the model from a perspective that highlights the central building and the curved structures on its left side. The right photograph shows the model from a different angle, emphasizing the curved structures on the right side and the central building. The overall design is modern and minimalist.

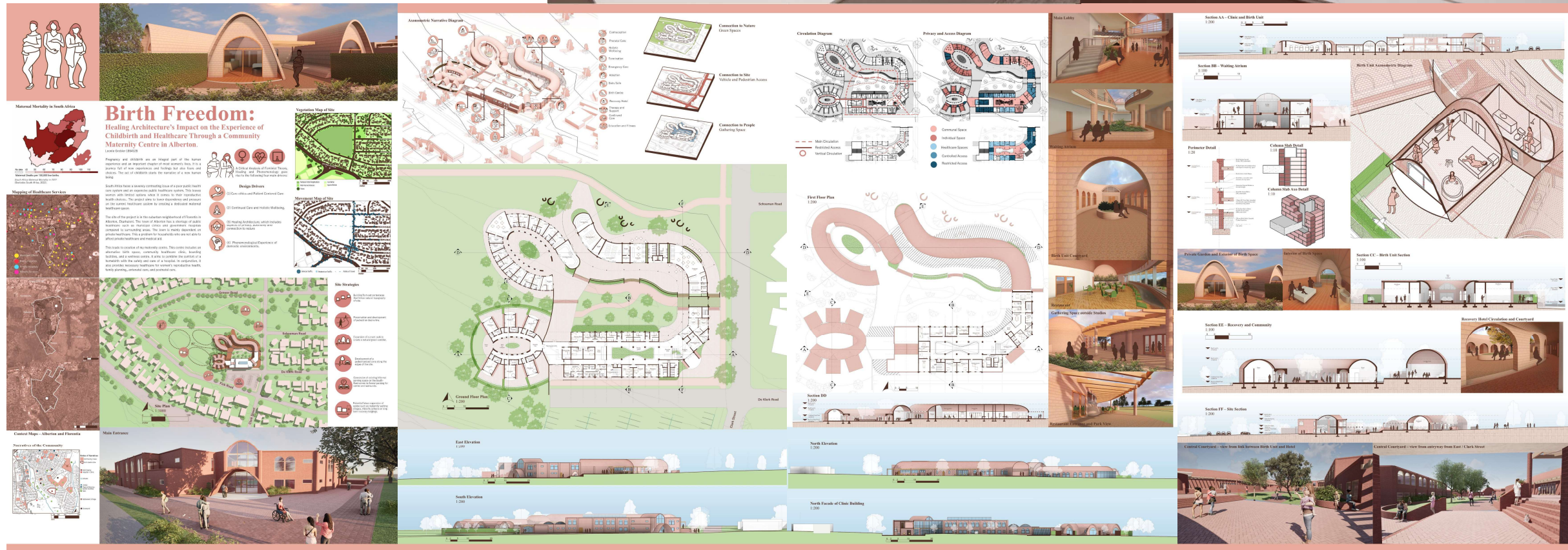


Figure 7.40: Final Exam Presentation presented during November 2024 Examinations

Conclusion and Final Thoughts

I started out this journey with a question - how can healing architecture holistically influence the physical and mental experiences of childbirth and women's reproductive wellbeing?

By combining the theories of feminism, healing architecture and phenomenology, I was able to create an environment that caters to the physical and emotional aspects of childbirth. My building creates a space that respects the needs, safety and autonomy of a woman. My design choices prioritise privacy, flexibility, connection to nature and other holistic design principles that creates an environment that is less clinical in nature, lowers anxiety and improves medical outcomes. This in turn creates an improved physical and emotional experience for woman during a time of vulnerability.

This research could be enhanced by exploring how the birth unit can be integrated into existing medical facilities to lessen demand and improve access to quality care. Another topic that can be further explored is the inclusion of boarding facilities for women awaiting birth to lessen travel time and stress to facilities. A final point of focus for future research is an in-depth investigation of biophilic design and its impact on healing and architecture.

This research has taught me to remember the intimate and vulnerable moments in our lives. The social, physical and emotional experiences within a space creates lasting memories and associations that can evoke positive and negative emotions. I hope to take this lesson and apply it to all my future designs, to use function and form to aid in holistic wellbeing in aspects of architecture.



Figure 7.41: Master's Exhibition Board

Link to Exhibition Website:

<https://accounts88636.wixsite.com/masters/projects-1/leonie-grobler>

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Appendix A: Full Interview with Midwife

Some Information have been redacted or left out to maintain anonymity and confidentiality of the participant.

What type of setting do you typically work in when dealing with patients and during childbirth? (hospital, homes, birthing centres, clinics)

“When I started my private practice, I worked mostly out of [redacted] and only did a few homebirths. This was during the time [redacted].

With the COVID-19 pandemic the demand for homebirth increased as clients wanted to avoid birthing in hospital settings. They felt that that's where the sick people are and in pregnancy they were not sick and did not want to expose themselves or their baby to the disease. Parents also felt that they would be birthing alone due to the isolation and pre-admission Covid-19 testing protocols as occasionally they would not get the results in time for their birthing partner. Some clients also wished to escape unnecessary interventions such as planned inductions of labour or planned caesarian sections due to this fact.

I opened a home birthing centre in [redacted] to meet the growing demand of my clients to have a safe home birthing experience. I then mostly moved away from hospital-based births and primarily did births at my birth centre. This trend continues in my practice until today.”

What are the benefits of giving birth in a home birth environment vs hospital environment?

“The current body of research indicates that moms who labour and birth in a home-based setting experience less anxiety than in a hospital-based setting, most clients I have met feel very anxious about the prospect of being in a hospital setting due to past medical experiences by themselves or their family members. (reduction in tocophobia)

This often leads to quicker, easier and less painful births which in turn leads to better outcomes for both mom and baby.

A home like setting with lower lighting also helps promote the body's natural release of essential hormones during the labour and birthing setting such as oxytocin and endorphins. This is due to lower stress levels. Less adrenaline = more oxytocin.

More oxytocin likely means that mom will have effective contraction, thus needing less augmentation/induction of labour through artificial means.”

What are the benefits of giving birth in a home birth environment vs hospital environment? (continue)

“Homebirth-like settings also have a higher satisfaction rate for moms as they are often cared for in a one-on-one care model. They also have higher rates of exclusive breastfeeding because they get more assistance with breastfeeding before discharge due to this model of care. Clients are also more closely followed up after birth.

Clients in a homebirth setting can always have their desired birth partner with them to help support them during the labour and birthing process as strongly recommended by the World Health Organization and the Lamaze principles for birth. This support is immensely helpful to how a mom copes during labour and the eventual outcome of her birth.

Parents are not separated from their baby at birth and we have higher rates of longer periods of skin-to-skin contact after the birth.

Resuscitation of the newborn can occur at the bedside with the umbilical cord left intact to do delayed cord clamping, thus acting like an auto resuscitator. In the midwifery model of care delayed cord clamping on average is about 5mins long.”

What are the drawbacks of giving birth in a home birth environment vs hospital environment?

“I would say the biggest drawback is when having complications your resources for managing that complications is limited to what you have available to you in birth centre or the patient's home. We have extensive resuscitation equipment and tools that we setup for each birth in case of an emergency, as well as medications and stock to manage a variety of complications. Our goal at a home birth environment is to treat and stabilise patients before transferring them to a higher level care facility such as a hospital.

This process of transferring a client before, during or after the birth is often very stressful, for both the parents and myself as I am not always allowed to accompany the client to the facility they are being transferred to.

Occasionally getting an ambulance to come timeously (especially a government ambulance) is also a source of stress. Delays can range between 45mins-2hours. Mostly clients are transported in a private vehicle to the facility where they are going to be cared for to try and reduce this delay for transfer.

When they are received at the other facility they are occasionally met by rude or unhelpful staff that do not communicate effectively, they do not obtain consent before invasive procedures (such as a vaginal exam) and there are often longer waiting times before being attended to despite having transferred the client with all of their records and notifying the staff at the receiving facility of the clients arrival (nursing staff and doctor on-call).”

What are the drawbacks of giving birth in a home birth environment vs hospital environment? (Continue)

“When birthing a client in a hospital environment you trade off the home like feel for a more medicalised environment, There is less personalisation and on-on-one care. The only benefit in a hospital environment is you have a readily available operating theatre in case of emergency c-section or need for theatre. Access to neonatal ICU and paediatrics that are readily available, on call and willing to come and assist when there is an emergency. A maternity ICU in cases where mom requires specialised care before, during or after the birth. The OBGYN can also be called to come and attend to the mother in case of an emergency.”

How can the birth environment be improved for both the mother, child, and health care practitioner?

“I find this the hardest question to answer because we need such in depth health reforms in our country to improve maternity care access to all of its citizens.

The system is inundated with so many patients, back logs, unhappy demoralised staff (both private and public). Facilities are dilapidated and poorly maintained. Cleanliness of facilities leave much to want. Staff are not well paid despite risks in the work place and hours worked. Your experience and skills are undervalued and undermined by senior staff. HCP are not rendering evidence based care based on the latest body of research. You will require serious upskilling initiatives for HCPs that have been in the industry for a long time. Governing bodies need to consistently take action against practitioners that are harming patients by going rogue. Unnecessary procedures being booked for convenience and monetary gain not for the best health and interest of mother and child.”

Appendix B: Ethics Clearance

Appendix C: Full Programming



20 August 2024

Leonie Grobler

1864528

TO WHOM IT MAY CONCERN

RESEARCH ETHICS APPROVAL

Birth Freedom: Healing Architecture's Impact on the Experience of Childbirth and Healthcare Through a Community Maternity Centre in Alberton.

This letter serves to confirm that the Ethics application for the above titled study has been approved. The researcher has been granted clearance to proceed with the research study or project.

Protocol/clearance number is: **SOAP021/03/2024**

Yours sincerely

Motsei Choabi

Senior Administrative Manager | School of Architecture and Planning

E: motsei.choabi@wits.ac.za

T: +27 11 717 7727

W: www.wits.ac.za/soap/

	A	B	D	E	F	G	H	I	J	K	L
1	Category	Programming	Estimate Size	Amount	Total sqm	OC	Functional Requirement				Designers Notes
2							SA IUSS standards	pg guide	ihFG standards	pg guide	
3	Main Entrance	Lobby	40	1	40	A1			entry clearly identified with signage. Universal access for wheelchairs, prams and low mobility.	p5-p6 CHU	Lobby for general public entry to site, main threshold from street to site, calm entrance for pedestrians, visitors and community
4		Info Desk	15	1	15	G1					
5		Admin Offices	15	6	90	G1					first floor private staff space. For management, admin and staff
6		Boardroom	30	1	30	G1					first floor private staff space. For management, admin and staff
7		Staff room	30	1	30	G1					Kitchenette and lockers for cleaning staff. Broom closet and supplies room.
8		Staff toilets	0	1	0						
9		Public Toilets	0	1	0						
10		gift shop	30	1	30	F2					
11		restaurant	50	1	50	A1					Neufert this shit
12		Pharmacy	30								
13											
14											
15	Medical Unit	Lobby	30	1	30	A1			entry clearly identified with signage. Universal access for wheelchairs, prams and low mobility.	p5-p6 CHU	Medical and emergency Lobby, due entrance from courtyard and parking lot, transitions to different medical sections.
16	Clinic Section	Waiting Room	50	1	70	A1	see above notes				
17		Play area	2	1	2	A1					
18		Breastfeeding Room	15	1	15	A1	private area off the waiting area, with pram space, comfy chairs and whb	p54 MCF			
19		Public toilets			0		universal access with baby changing facilities, space for prams and wheelchairs.	p54 MCF			
20		Reception	15	1	15	G1					
21		Records Room	10	1	10	G1					
22		Office	15	2	30	G1	offices needed for head nurse or unit manager, dedicated workspaces for admin staff and managers, IT system.	p49 OF			
23		Nurse Station	10	1	10	E2	central hub to unit with view of suite and subwaiting areas	p49 OF			
24		Patient vitals/prep room	32	1	32	E2	Nurse assessments before doctors consultation, mother and child vitals. Requires whb, spaces for various equipment, run by midwife//// 32sqm with shared vitals area and toilet (wheelchair accessible). Run by nurse, used to check weight, height, urine test, blood pressure and pulse. must have whb, storage and worktops. 2 chairs per assessment point, equipment.	p54-55 MCF /// p41-42 OF			
25		Consultation Rooms	15	6	90	E2	Consultation for interviewing, consultation and examination. Close to prep/vitals room. Doors to allow space for prams, trolleys and equipment. Natural light and views. Suitable space for to conduct examination. /// standard consultation rooms. Suitable space for consultations and examinations. full height walls and doors, no curtained sections. must be able to accommodate caregiver, trolleys, wheelchairs and prams. approx. 13.5 sqm. see diagram of p45 OF	p56-57 MCF/// p43 -45 OF	Family Planning and sexual health services in conjunction with general practioners and counsellors. Education seminars also useful (see studio venues)	p6 CHU	
26		Counselling Rooms	15	1	15	G1	Counselling room for therapy support and education. Space for practioner, patient and support person.	p45 OF			
27		OT/ PT and Family Therapist	15	2	30	E2			Occupational therapy spaces requiring small consult rooms and a treatment space. Open treatment and patient equipment. Also spaces for Psychology and Social work	p6-7 CHU	

	A	B	D	E	F	G	H	I	J	K	L
1	Category	Programming	Estimate Size	Amount	Total sqm	OC	Functional Requirement				Designers Notes
2							SA IUSS standards	pg guide	IHFG standards	pg guide	
28		Procedure Rooms	30	2	60	E2	treatment rooms for procedures such as dressings, wound care, IUD, pap smears. Proximity to sluice room. 16 - 20sqm with a min 4.3m wall length. Screening facilities if more than one couch. Requires good lighting, whb, curtains around cubicle, etc /// space for examination couch or theatre table. used for minor procedures only requiring local anaesthesia, no general anaesthesia such as suturing wounds, IUDs and pap smears, termination of pregnancies, dressings.. min wall length of 4.3m and 25 to 30sqm, space needed for equipment and elbow action whb.	p57-58 MCF/// p46-47 OF			
29		Recovery Ward	30	2	60	E2	Recovery Room for outpatient after minor procedures with min 4 beds	p66 MCF			
30		Ultrasound Room	15	1	15	E2	Suitable lighting, screen curtains for dressing privacy, equipment nearby, toilet nearby.	p60 MCF			
31		Phlebotomy	15	1	15	E2	Room for blood samples for lab testing, run by nurse. Equipment such as chairs, worktops, fridge and disposal. Calming environment needed.	p55-56 MCF			
32		specimen collection toilet	6	1	6	E2					
33		sputum booth	2	1	2	E2					
34		Staff room and lockers			0						
35		resuscitation trolley bay	1.5	1	1.5	J3					
36	service support	Sluice Room	12	1	12	E2	Sluice Room for cleaning and disinfecting of bowls, receptacles, bed pans, sputum, mugs, wash basins and other. Also used for cleaning medical instruments, disposal of patient specimens. Soiled linen also rinsed here before bagged and moved to dirty utility.	p50 OF			
37		Utility Room	10	2	20	E2	Clean and dirty utility rooms for storage of dirty and cleaned objects	p50-51 OF			
38		Storage Equipment	15	1	15	J3					
39		Storage	10	3	30	J3	Linen, medical store, consumables				
40		Cleaners Room	19	1	19	J3	cleaning room with cleaning machines and materials	p51 OF			
41											
42											
43	Birth Unit	Reception	15	1	15	G1	Reception desk, attached to admin offices, Two heights (standing and wheelchair patients), counterspace for computers and workspace, comfortable chairs, used for administrative functions and coms. Adjacent to waiting area	p36 MCF	Access control point ensuring security of unit.	BU 5	
44		Records Store	10	1	10	J3	Storage facilities for secure records	p36 MCF			
45		Offices	15	1	15	G1	Unit Manager Office, Clinical Admin Space.	p44			
46		Public Toilets		1	0		Universal Access Toilets. Consider gender neutral and family toilets due to smaller size of unit. Include wheelchair accessibility and baby changing stations.	p38 MCF			

	A	B	D	E	F	G	H	I	J	K	L
1	Category	Programming	Estimate Size	Amount	Total sqm	OC	Functional Requirement				Designers Notes
2							SA IUSS standards	pg guide	IHFG standards	pg guide	
47		Family Waiting Room	50	1	50	A1	Waiting area for visitors and patients, close to reception desk. Requirements and considerations incl: adequate seating, pram and wheelchair parking, nearby ablutions (Universal Access), natural light and good ventilation, interior design welcoming and calming. Seating Clusters and layout to accommodate flow. Consider children's play area	p36 - 37 MCF			
48		Birth Suites	30	6	180	E2	Room for labour process for low risk natural births. Minimum of 22 sqm. Proximity to nurses station, separate from waiting area, easy access for mobile equipment. REQUIREMENTS: good quality light, elbow action whb, examination equipment, baby receiving area equipment, air conditioning, space for equipment, decor to be domestic, safe for mother and child, safe storage for belongings, ensuite bathroom facilities. Bed access on both sides and foot of bed, allowance for space for partner, midwife and other support staff, standing space not to compromise walking space, allowance for equipment, baby receiving space and equipment. (ideally 4.2m x 5.2m) see diagram p 42.	p39 - 42 MCF	Using the model of LDRP (Labour, Delivery, Recovery, Postpartum)//// ensuite includes toilet and shower, bath optional. Acoustic privacy crucial, water birthing pool can be fixed or removable. /// privacy - screening from corridor, temperature control, walking space and support, soothing music and aromas, pain relief methods such as leaning and sitting spaces. bathtubs need steps, rails and lifting. Acoustic privacy of space for outside noise and birthing noise and baby noise, natural light, privacy and decor to reduce institutional atmosphere. wheelchair accessibility. appropriate finishes, concealed equipment, space for equipment and fittings	p4 BU// p6 BU// p10-11 BU	Allow space in some rooms for a birthing tub, or flexibility for a portable tub. Allow space for wheelchairs or emergency gurneys in case of emergencies. Separate access for ambulances and emergency transfers away from other patients and waiting room. See healing architecture readings for design of spaces. (Snoezelen reading)
49		Water Birth Pool			0				The surface must be non slip. Grab rails needed for patients. Medical gases and equipment nearby. Staff access to help patient out. Ongoing cleaning and disinfection	p6 BU	Consider a separate unit with a dedicated pool and experience. Allow for flexibility in other units
50		Consultation Room	15	3	45	E2	Consultation / Assessment Room for checkups and consultations, require storage space for consumables, desk, etc.//////Consultation for interviewing, consultation and examination. Close to prep/vitals room. Doors to allow space for prams, trolleys and equipment. Natural light and views. Suitable space for to conduct examination.	///p56-57 MCF			
51		resuscitation trolley bay	1.5	1	1.5	J3					
52		baby Resuscitation Room/ special care nursery	12	1	12	E2	Room away from birthing room for emergency resuscitation. Emergency equipment for baby. Include support equipment incase transfers are needed.		Special Care Nursery with special conditions to care for baby while awaiting transfer	p7 BU	
53		Counselling Room	15	1	15	E2	Counselling room for therapy support and education. Space for practitioner, patient and support person.	p45 OF			
54		Nurse/ Midwife Station	10	1	10	E2	Central Hub for nurses and midwives in unit.	p39 MCF			
55		Bereavement Room	15	1	15	E2	Bereavement room for woman who lost child. Away from other mothers and newborns. Place while awaiting discharge or transfer to other facility. Bed, table, lounge chairs,	p50 MCF			
56		Staff Room	25	1	25	E2	Staff Lockers, Overnight accommodation, change facilities	p44 MCF			
57		Staff Bathrooms		1	0		Showers and toilets	p44 MCF			

	A	B	D	E	F	G	H	I	J	K	L
	Category	Programming	Estimate Size	Amount	Total sqm	OC	Functional Requirement				Designers Notes
1							SA IUSS standards	pg guide	IHFG standards	pg guide	
2											
58	(support spaces)	Clean Utility	10	1	10	J3	Clean and dirty utility rooms for storage of dirty and cleaned objects				
59		Cleaners Room	19	1	19	J3	cleaning room with cleaning machines and materials				
60		Dirty Utility	10	1	10	J3	Clean and dirty utility rooms for storage of dirty and cleaned objects				
61		Storage rooms - linen, consumables, medicine	10	3	30	J3	Linen, medical store, consumables				add storage for placentas for disposal or to return to patient for personal/ cultural reasons
62		Storage Equipment	15	1	15	J3					
63		Ward Kitchen	15	1	15	J3					
64		Sluice Room	12	1	12	J3	Sluice Room for cleaning and disinfecting of bowls, receptacles, bed pans, sputum, mugs, wash basins and other. Also used for cleaning medical instruments, disposal of patient specimens. Soiled linen also rinsed here before bagged and moved to dirty utility.				
65											
66											
67	Recovery Village	Check-in Reception	10	1	10	H1					
68		Public toilet		1	0						
69		Communal Lounge	50	1	50	H1					Large communal lounge for socialization between family, friends and recovering mothers for interaction. Social space, lively space
70		Dining Room	40	1	40	H1					Large communal dining room for healthy meals for parents. Could perhaps also prepare meals to order for mothers not staying in the hotel. Meal prep, healthy foods, utilises site garden
71		Kitchen	20	1	20	H1					
72		Rooms	30	10	300	H1					Rooms to include space for mother and support partner and baby. Dining space included for room meals Ensuite bathroom with shower and tub. Small lounge and coffee corner, with private garden space.
73		Laundry									
74		Cleaning									
75											
76											
77	Health Centre	Smaller venues / studios	70	3	210	A1					
78		Gym	60	1	60	A1					
79		Social Services	15	1	15	G1					
80		Social Services Nursery	15	1	15	G1					
81		Storage - furniture equipment	20	1	20	J3					
82		health spa	50	1	50	H1					
83		Creche / Nursery	50	1	50	A1					
84											
85											
86	Building Services	IT room	15	1	15	G1					
87		Generator	5	1	5	D4					
88		Plant Room	20	1	20	D4					
89		Waste/ recycle zone	8	1	8	D4					
90		Medical Waste Zone	8	1	8	D4					
91		battery store	5	1	5	D4					
92		water storage and filtration	5	1	5	D4					
93											
94											
95	Healing Pavilions	Small Pavilion - solitude	40	1	50	A1					Silent Pavilion for reflection, prayer, mourning, etc
96		Large Pavilion - community	200	1	200	A1					Large Pavilion for community gatherings, events, classes