The Church of Healing

*A religious complex for the healing rituals
of St. John's Apostolic Faith Mission*

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of St. John's Apostolic Faith Mission*

by
Musa Dhlamini

Submitted in fulfilment of part of the requirements for the degree
Master of Architecture (Professional) in the
Faculty of Engineering, Built Environment and Information
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Declaration

In accordance with Regulation 4(c)
of the General Regulations (G.57)
for dissertations and theses,

I declare that this thesis,
which I hereby submit for the degree
Master of Architecture (Professional)
at the University of Pretoria, is my own work
and has not previously been submitted
by me for a degree at this or any other tertiary institution.

I further state that no part of my thesis has already been,
or is currently being, submitted
for any such degree,
diploma or other qualification.

I further declare that this thesis is substantially my own work.
Where reference is made to the works of others,
the extent to which that work has been used
is indicated and fully acknowledged
in the text and list of references.

....
Musa Ntombezile Dhlamini

Acknowledgments

To my parents,
Paseka and Maureen Dhlamini,
God knew what He was doing when He placed me under your care. Thank you for being my prayer warriors and forever encouraging me on this long journey. I thank you for your kind words, prayers, treats and calls.

My siblings,
Nonhlanhla, Mabandla and Sabelo,
Thank you for the constant care and assistance, the chats and lunches you all so lovingly provided, for forcing me to take a break when things got too much, and for being my emotional trustees.

My study leader
Johan Swart
Your input and constant patient has been invaluable in this process of self discovery. I appreciate your calmness and forcing me to think beyond what I thought I could.

To the greater St. John's Apostolic Faith Mission
(Meloding- Virginia and Umthambeka -Tembisa)
This has been a personal journey, full of discovery not only about myself, but an understanding and appreciation for what you are. Thank you for allowing me to use your space as my playground, to learn, to teach and to heal. May this project be a catalyst in starting the conversation about the future of our church.

My best friends,
Tatenda Mafana, Mpho Sefo and Silindzile Shongwe
The journey has been a roller-coaster and a half, but having you all in my life has made the ride worth it. I thank you for your prayers, visits, late WhatsApp messages, cheering me on and reminding me why I did this.

To the departed
My grandparents
Your love and prayers will always be missed. I finally made it !!

To the Creator of Heaven and Earth,
Modimo waka
I thank you for everything, the good, the bad, the ugly. It has all led me to this moment. May this be to your glory!!
Amen

Project Summary

Address:
Diepsloot 388-JR, 123/388-JR
Corner of proposed K54 Provincial Road and Ridge Road, Diepsloot

Co-ordinates:
Latitude 25°56'17.8"S
Longitude 28°01'21.0"E

Programme:
Religious Complex for St. John's Apostolic Faith Mission

Research Field:
Human Settlements and Urbanism
Heritage and Cultural Landscapes

Year Co-Ordinator:
Arthur Barker

Study Leader:
Johan Swart

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Abstract

The eastern edge of Diepsloot depicts a boundary condition of tension between human habitation and natural environments. This boundary condition allows for the opportunity to explore the potential manner in which the relationship between man-made and natural environments manifest as a symbiotic spatial construct within the context of an urban fringe.

Natural environments are not just amenities or mere resources, they play a vital role in human's mental, physical and social well-being.

This dissertation aims to critique the current manner in which rituals of St. John's Apostolic Faith Mission are performed and their spatial implication, while employing biophilic design principles as a foundation for the design process.

The architectural response would improve the community's daily rituals through the incision of education, civic, social and religious activities within the complex.

The proposed religious complex is located on an unused ecological site, along a proposed K54 provincial road and south of Tanganani Extension 4. It is near Diepsloot Mall, the commercial heart of the area. The facility is used as a generator for additional educational, recreational and spiritual activities.

Samevatting

Die oostelike rand van Diepsloot West toon 'n grens toestand van spanning tussen menslike bewoning en natuurlike omgewings. Dit grens toestand dit moontlik maak vir die geleentheid om die potensiaal wyse verken waarin die verhouding tussen mensgemaakte en natuurlike omgewings openbaar as 'n simbiotiese ruimtelike konstruksie binne die konteks van 'n stedelike oorgangsone.

Natuurlike omgewings is nie net geriewe of blote hulpbronne, speel hulle 'n belangrike rol in die menslike geestelike, fisiese, en sosiale welstand.

Hierdie verhandeling is daarop gemik om die huidige wyse waarop rituele uitgevoer en hul ruimtelike implikasies kritiseer terwyl in diens biophilic ontwerpbeginsels as 'n grondslag vir die ontwerp proses vir die rituele van St John's AGS. Die argitektoniese reaksie sou die gemeenskap se daaglikse rituele te verbeter deur die insluiting onderwys, burgerlike, sosiale en godsdienstige fasette binne die kompleks.

Die voorgestelde godsdienstige kompleks is geleë op 'n ongebruikte ekologiese terrein, langs 'n voorgestelde K54 provinsiale pad en suid van die Tanganani Uitbreiding 4. Dit is naby Diepsloot Mall, die kommersiële hart van die gebied. Die fasiliteit is gebruik as 'n kragopwekker vir bykomende opvoedkundige en ontspanningsaktiwiteite.

Table of Contents

INTRODUCTION
Setting the scene

1.1 INTRODUCTION

This dissertation presents the design of a biophilic religious complex with secular programmes such as housing, education, and workshop spaces. The primary function of this complex is to provide a healing space for the St. John's Apostolic Faith Mission for Diepsloot. The proposed site is located on the edge of Diepsloot, surrounded by a Trout farm, as well as Diepsloot Mall. It is currently zoned as ecological land.

With urban population on the increase, two-thirds of South Africans now live in urban areas, according to the South African Institute of Race Relations' (SAIRR). The gold rush in 1886 resulted in Johannesburg experiencing complex and diverse urbanisation demands. Over the century, the city has developed into the business and industrial hub of both South Africa and sub-Saharan Africa.

The rise of democracy in 1994 brought a need for a shift from previous apartheid planning. This resulted in spatial planning concepts such as "the need to break down the apartheid geography through land reform and more compact cities" (Laldaparsad, 2014). Most of this urban growth is concentrated in less developed regions that draw in the rural population and is an urban phenomenon that is concentrated on the fringe zone of developing cities. This transition is understood as a shift from rural to predominantly urban social structures. It represents an unprecedented consumption of earth's natural resources and the way in which people interact with the natural environment.

The effects of urbanisation affect the earth's resources the most as well as the way in which the population straddles between urban and rural environments (Pascale & Hannah, 2007). This transitional zone is important because decisions about the use of natural resources are affected by the "diffusion power of the urbanisation process, not just spatially but through the global economy, information spill-overs and social networks" (Allen, 2009: 12).

Boundaries between built and natural environments have become blurred. This dissertation argues that our conventional definition and perception of these boundaries have been altered by emerging landscapes, in terms of human settlements, with regards to their locality, structure, and context. Urban settlements within this transitional zone present a unique scenario, with an abundance of problems that impact the welfare of the people living in these areas. These problems include a lack of basic services and infrastructure and the destruction of natural environments.

Natural environments are defined by their characteristics, including geography, diversity, complexity, density, connectivity, and zoning. When these characteristics are transformed to accommodate urban growth, these environments become disconnected. Within this transformation, the built environment "needs to be recognised as a central component to the livability of the earth" (Rees, 1992).

A sustainable form of urbanisation depends on co-operation between different sectors. Allen (2001) outlines five factors influencing sustainable urbanisation: economic sustainability, social sustainability, ecological sustainability, political sustainability and the sustainability of the built environment. This dissertation utilizes a tripartite focus on the sustainability of the built environment, its successful integration with its natural context, and its integration into the local community.
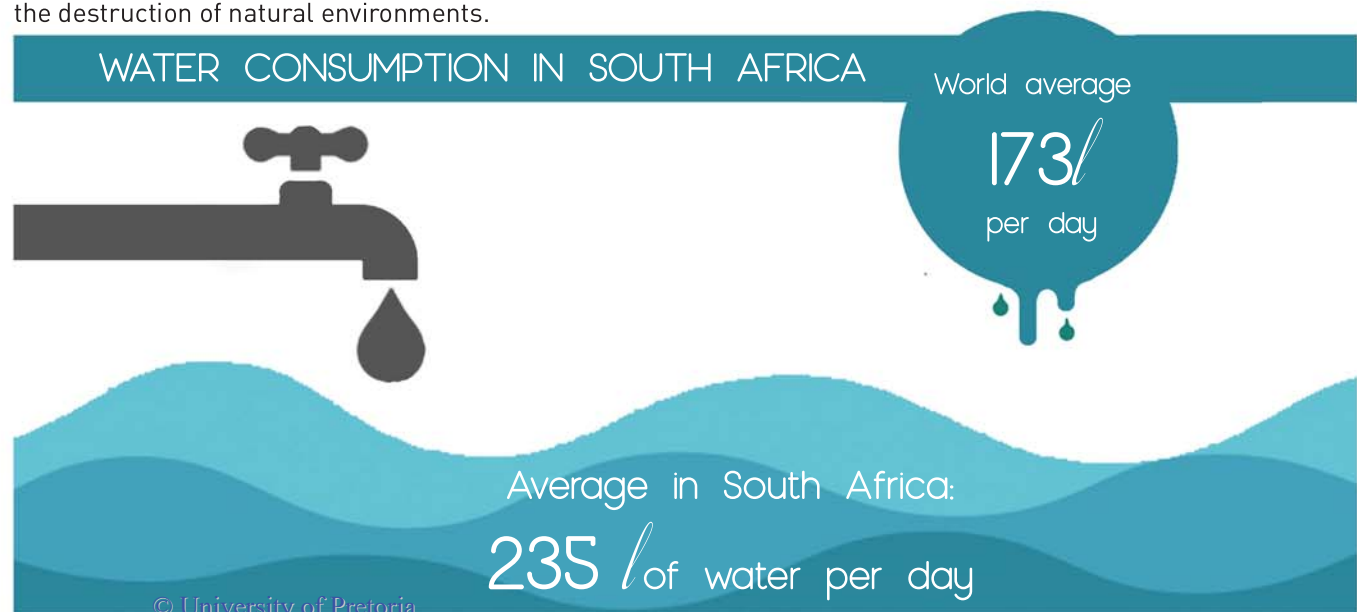

WATER CONSUMPTION IN SOUTH AFRICA

World average
173l
per day

Average in South Africa:
235 l of water per day

Figure 1.1. Water consumption in South Africa (Author, 2018)

1.2 CURRENT SITUATION; DIEPSLOOT

Diepsloot, an Afrikaans name meaning 'deep furrow or ditch', is a township situated north of the Johannesburg metropolitan area, It was established in 1995 when black South Africans were resettled from Zevenfontein, Alexandra, Tembisa and broader areas of Gauteng.

Diepsloot was planned prior to its establishment in the early 1990s as a temporary transit camp for people living in informal settlements. For many, it has become their permanent home. According to Bénit (2002), the vision for Diepsloot was to create a cluster of settlements, as the north counterpart for Soweto, – a 'Norweto' (North Western Townships).

It is ideally located on the triangle of land wedged between William Nicol Drive and the N14 freeway in northern Johannesburg, along the Johannesburg-Midrand-Tshwane growth corridor. In comparison to other impoverished settlements, it's located close to high-income estate developments such as Dainfern and Fourways, as well as commercial developments, such as business and office parks and shopping centres.

As a result of the spatial legacy of apartheid, the dense urban community of Diepsloot is faced with a myriad of socio-economic challenges, such as a lack of urban infrastructure, subsequently causing a range of socio-economic challenges, poverty-stricken households, and minimal economic growth (Joburg, 2011).

These circumstances have caused many community members to look to the church for answers. In fact, as many as two-thirds of the residents belong to a church or religious group (Community Agency of Social Enquiry, 2006: 12).

Figure 1.2: Entry into Diepsloot (Fourways Review, 2016)

According to Mahajan (2014: 145), Diepsloot has been acknowledged as a key zone for future development. The Johannesburg 2010 Urban Development Framework has devoted itself to improving the Diepsloot settlement's socio-economic circumstances and environment, as well as amalgamating the township into the City of Johannesburg.

The development strategy presents a conflict; it will alleviate some infrastructural challenges and many other issues within Diepsloot, yet it is in conflict with current trends within Diepsloot. One, in particular, is a future provincial road development that is planned to run through a servitude in Diepsloot, that currently hosts an informal settlement to the west of the Jukskei Tributary. It also hosts religious strip of informal churches (WSP, 2013: 36). If the development is realised, the informal churches will be left without a place for worship.

Diepsloot's location between the municipalities of the City of Johannesburg as well as the City of Tshwane, emphasizes it as a transitional zone. It has a wealth of natural resources, such as a natural wetland system, however, the development of this is lacking due to its more affluent neighbourhoods in which their management is prioritised more than that of the Diepsloot.

Diepsloot in its current location has the opportunity to become an urban gateway to Johannesburg and Pretoria, with a particular focus on its natural resource management. This, however, is not the case as there has been little or no development since its establishment, with lack of basic infrastructure.

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1.3. SOUTH AFRICAN PENTECOST

As a result of the second Anglo-Boer war, there was a surge of religious activities and missionaries sought to emphasize holiness, healing and baptism in the holy spirit with the religion they brought to South Africa. This was Pentecostalism in South Africa is divided into three sub-categories: Classical Pentecostal Churches, Independent Pentecostal Churches and Indigenous Pentecostal Churches. During the political unrest of apartheid, there was significant growth in the Pentecostalism, with Indigenous churches becoming the two most powerful movements to influence religion in the twentieth century in South Africa. This was because the church was used as a vehicle to voice the unjust policies which were occurring at the time.

Origins of Classical Pentecostalism in South Africa

At the forefront of religious activity in South Africa, two main figures emerged, namely John Wesley and John Dowie. The teachings of these two men started the origins of what is known today as Pentecostalism. Their teachings prohibited pork, smoking, alcohol and drugs, which have become a prominent feature in a majority South African religions. John Dowie wrote a publication named "Leaves of Healing", in which he investigated his interest in divine healing. Various religious scholars and leaders such as Pieter le Roux, Johannes Buchler and Edgar Mahon, read the publication. Le Roux went on to reject the teachings written by Dowie and went on to work in Wakkerstroom with his wife, where they baptised approximately 140 black Zionists using threefold immersion, some of which included the future leaders in various Pentecostal churches in South Africa.

In 1908, Thomas Hezmalhach and John Lake, who were missionaries from the American Pentecostal church, hold services in Doornfontein, Johannesburg, where the first headquarters for Apostolic Faith Mission was established, resulting in a new Pentecostal church. This newly formed church caused division in the Classical Pentecostal church.

From this division, the Apostolic Faith Mission church was born. It became popular amongst the black and white community, with church services initially being integrated but due to apartheid, certain rituals such as baptisms would be separate. Prominent leaders include Elias Letwaba of Apostolic Faith Mission and Nicholas Bengu of Assemblies of God.

The rise of Indigenous churches

A further split from the Apostolic Faith Mission occurred later as apartheid policies became more restrictive. The indigenous churches introduced ancestral elements within their worship and rituals while retaining some of the mission church influences, such as three-fold immersion, divine healing and rejected traditional medicine, alcohol, pork and tobacco.

This led to the establishment of a church in Wakkerstroom, called Zion Apostolic Church. Leaders belonging to this church include Elias Mahlangu (Zion Apostolic Church), Edward Motaung (Zion Apostolic Faith Mission), Job Chiliza (African Gospel Church), Engenas Lekganyane (Zion Christian Church), Christinah Nku (St. John's Apostolic Faith Mission) and Isaiah Shembe (amaNazareth). This sub-category will be discussed further in Chapter 2.

Independent Pentecostal Churches

Recent in their development, this category of churches can be traced to the 1980s and also referred to as Neo-Classical Pentecostal or Charismatic Churches. They have a strong western influence in their liturgy and leadership patterns, with many churches being lead by young members who are well educated. This category makes up 2.9% of the black population. Examples include Grace Bible Church, Victory Fellowship, African Gospel church and Rhema Bible Church.

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PIONEERS IN SOUTH AF

JOHN DOWIE (1847–1907)

-Started 'Holiness Movement'
-Launches Zion City in Chicago
-HQ: Christian Catholic Church in Zion, rules as Elijah III The Restorer
1874: Wrote Leaves of Healing

JOHANNES BUCHLER (1864-1944) ZION CHURCH

1895: Establish Zion Church
1897: Affiliates with Christian Catholic Church in Zion

PIETER LE ROUX (1865–1943) // [AFM]

-Rejects teachings of John Dowie | Works at Zion Church, Wakkerstroom
-Meets Daniel Bryant | Ordains le Roux as 'overseer' of CCCZ Pretoria

EDWARD MOTAUNG (1870-1959) // [AFM + ZAFM]

One of early leaders African Pentecostal leaders
Edgar Mahon's first converts

1910: Meets with Apostolic Faith Mission (Lake)
1912: Joins AFM (First AFM preacher, oversees Lesotho)
1912+: Leaves AFM to form Zion Apostolic Faith Mission (ZAFM)
1920: Joins Lekganyane (Lesotho)

Ministry: Healing

BEGINNINGS OF AIC's

ISAIAH SHEMBE (1

First AIC in Sout

1906: Contact with
1910: Under the i
develops a h
amaNazaret
1913: Vision: decla
1914: Purchases fa
1929: Church build
outside amo

1908:
-John Lake and Thomas Hezmalhach arrive from American Pentecostal missionaries-hold service in Doornfontein,
- Bree Street becomes Headquarters of Apostolic Faith Mission

ELIAS LETWABA (1870-1959) // [AFM]

One of first African Pentecostal leaders

1889: Joins Berlin Lutheran Mission, trains as preacher
1890: Joins Bapedi Luthern Church
1909: Meets John Lake | Receives Pentecostal baptism
1913: Starts own conferences for followers
1930: Establish Patmos Bible School for Blacks (Theology school)

Ministry: Healing and miracles

ELIJAH THE RESTORER

LEAVES OF HEALING
A WEEKLY PAPER FOR THE EXTENSION OF THE KINGDOM OF GOD
ZION AMONG THE ZULUS IN SOUTH AFRICA

CCCZ HEADQUARTERS

AFM, DOORNFONTEIN

LAKE | HEZMALHACH

PL LE ROUX

BRYANT

LETWABA

SHEMBE

LEKGANY

865-1935) // [AMANAZARETH]

n Africa | Nazareth Baptist Church

n Methodist Church | Member: African Baptist Church
nfluence of prophet Nkabinde, (Lutheran), Shembe
ealing ministry -led to the founding of "iBandla
h"
re church accepted Sabbath as God's holy day
rm on which establishes *Holy city of Ekuphakameni*
ng) : Ekuphakameni housed 8000 people | Worship
ng trees

(CHRISTINA(H) NKU (1894-1988) // [ST. JOHN'S AFM]

1st female founder of church

1906: Receives first visions
1924: Baptised at AFM by Elias Nketsing + Elias Ramoipone
1927: Near death experience | Unconscious for 3 days - visions
1932: Receives visions regarding church, liturgy and uniform
1936: Moves to Evaton to start performing healing miracles
1939: Establishes St. John's AFM
1952: Temple in Evaton (12 Doors) is completed
Biggest church in PWV urban area at the time
1972: Rift in Church causing split - St. John's Church of Prophecy
(Lazarus Nku) + St. John's Apostolic Faith Mission (Masango)

Ministry: Divine healing + laying of hands + preaching

NICHOLAS BENGU (1909-1985) // [AOG]

1929: Converts to Full Gospel Church (FGC) after politics
1934-1936: Attends Bible school | leaves after Pentecostal experience
1937: Ordained: Emmanuel Mission of the Assemblies of God (AOG)
1940: Becomes member of the first multi-racial executive council
1950: Opens Pilgrim Bible School | Est. Back to God crusades
1957: 15 00 members with 15 churches built |Biggest leader in AOG

Ministry: Strong independent mind/dignity /self confidence/healing
miracles

FRANK CHIKANE (1957-) // [AFM]

3rd generation African Pentecostal leader | Contrast with Letwaba and Ngidi

1972: Studies at University of North (Christian Movement Studies)
1975: Join Christ of All Nations (CAN) and AFM
Correspondence College (Theological studies)
1976: Given AFM congregation (Kagiso + West Rand) | Forms Youth in Christ Club
1980: Ordained
1981: Suspended from AFM due to strong political voice

Ministry: Preaching

ENGENAS LEKGANYANE (1865-1948) // [ZCC]

Started at Free Church of Scotland as evangelist

1908: Meets with P.L. le Roux and introduced to AFM |
Blindness from disease _ 1st vision: join church performing
3 fold immersion (baptism) | Joins ZAC
1916: Splits from ZAC | Starts own congregation from home
Rejoins ZAC (Tim Mamabolo)
1918: Takes over ZAC with Mahlangu after Mamabolo dies
Split: from Mahlangu | 2nd vision: founding large church
1920: Joins Motaung ZAFM
1924: Breaks away from ZAFM | Establish Zion Christian Church (ZCC)
1943: Purchases land 50km east of Pieterburg (MORIA)
1948: Death | Power struggles by sons
1950: Establish ZCC (Star) -Edward | St. Engenas ZCC (Dove)- Joseph

Ministry: Divine healing - laying of hands, blessed objects

JOB CHILIZA(1886-1963) // [AGC]

Founder: African Gospel Church (AGC)

1926: Joins Archibald Cooper (Full Gospel Church)
Strong congregation in Durban
1936: Split: suggests own governing body and
constitution independent from Cooper
Form alliances with Pentecostal Holiness
Church - changes to African Gospel League
1947: Leaves to form African Gospel Church

Ministry: Healing

RICHARD NGIDI (1921-) // [AFM]

Second generation leader of AFM

1956: Becomes member of AFM
1962: Attends Lerato Bible School
1965: Ordained | growth of AFM in KZN (Church of
Ngidi) | 212 churches with 175 workers

Ministry: Divine healing + Evangelism + fasting

MOSA SONO (1961-) // [GRACE BIBLE CHURCH]

Grew up under Dutch Reformed Church

1979: Received calling from God into ministry
1980: Attends Bible College (AFM Central Bible College, (Pretoria)
1981: Attends Rhema Bible Training Centre
1976: Assists Andre Knoetze at Rhema | Takes over: Knoetze
leaves
1984: Members move to Sabbatarian building |
Restriction using Rhema name - changes to Grace
1986: Moves to Soweto (Homemakers Ground White City)
1991: 3 200 Members in Soweto

Ministry: Divine healing,+ preaching

CHILIZA

BENGU

NGIDI

CHIKANE

SONO

NKU

YANE

Figure 1.3: Development of Pentecostalism in South Africa (Author, 2018)

1.4 DESIGN INTENTIONS

PROBLEM STATEMENT

"For many of us water simply flows from a faucet and we think little about it beyond this point of contact. We have lost a sense of respect for the wild river, for the intricate web of life that water supports" [Postal, 2003].

This has become especially true of the healing rituals of St. John's Apostolic Faith Mission. The dissertation is a critique of the current manner in which St. John's Apostolic Faith Mission rituals are disconnected from nature, as well as engagement with the immediate community on various levels other than religion. This dissertation investigates how architecture can lend itself to connecting current religious rituals with nature.

Outline Brief
It is common knowledge that the rural-urban fringe is a dynamic transformational zone between the edges of urban centres.

The dissertation proposes a religious complex in Diepsloot, north of Johannesburg. Diepsloot has an array of socio-economic challenges such as lack of housing, services, infrastructure, and overcrowding. It is clear that the community struggles with service delivery and many residents in the community have looked to the church for answers, in their various forms, informal and formal.

The main priority of this facility is a religious complex dedicated to the healing rituals of African Indigenous Churches (AIC's), within the larger precinct, with a particular focus on St. John's Apostolic Faith Mission on the selected site. Secondary functions will attempt to maintain residents way of life through the inclusion of secular functions such as education, social and civic to Diepsloot's ecological structure.

The envisaged complex attempts to be a catalyst for fostering an ecological connection, by creating a broad educational base on human habitation and its effects on natural environments. This gives an opportunity to explore the following issues:

Main:
The role of churches in creating sustainable communities in aspects relating to everyday living.

Urban:
Leftover spaces and their subsequent ownership. Also the placement of townships in relation to religious space.

Architectural:
The interchange between religious rituals and biophilic design, in order to create a healing environment for all users of the complex.

In order to address these issues, this dissertation undertakes a conclusive study by engaging the following theoretical approaches:
+ Architectural ecology;
+ Biophilic design;
+ Expressive space; and
+ Water infrastructure.

Figure 1.4: Thanksgiving festival, Thabong, Welkom (Author, 2018)

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1.4.1 MAIN ISSUE
ROLE OF SACRED WITH THE EVERYDAY

The focal point in the medieval European city was the cathedral with its spire dominating the cityscape, indicative of the centrality of religion in urban life. Sacred structures are places of prayer, meditation, and education and thus their design, decor and aesthetics work together to bring a person closer to the ideals relating to spirituality, community and place.

Historically, the church was centrally located in the development of towns, thus making it a significant place which provided stability and security, act as anchors to the communities in which they are places, act as fields of care, have symbolic lifelines and are invested with deep emotional meaning. Therefore, because of their central role in the lives of communities, secular rituals such as weddings, funerals, baptisms occurred.in such places.

Religious observance in the form of church attendance may affect time management, spatial movements and behaviour of believers. The human sense of belonging and well-being is depended on the response to certain landscapes, natural forms which are inherited as well as the evolution of the mind when faced with certain survivial behaviours.

According to Anderson, (1992:65) churches were places of significance that provided the holistic needs of their members, creating support networks such as schools run by them, adult literacy classes, burial funds, and financial assistance and were thus considered places of significance.

This relationship between the church and society has deteriorated over time due to various reasons. The dissertation aims to investigate the opportunity of the church to act as an agent connecting the sacred with the everyday in aspects relating to the following aspects; social, education and civic engagement and religious enrichment.
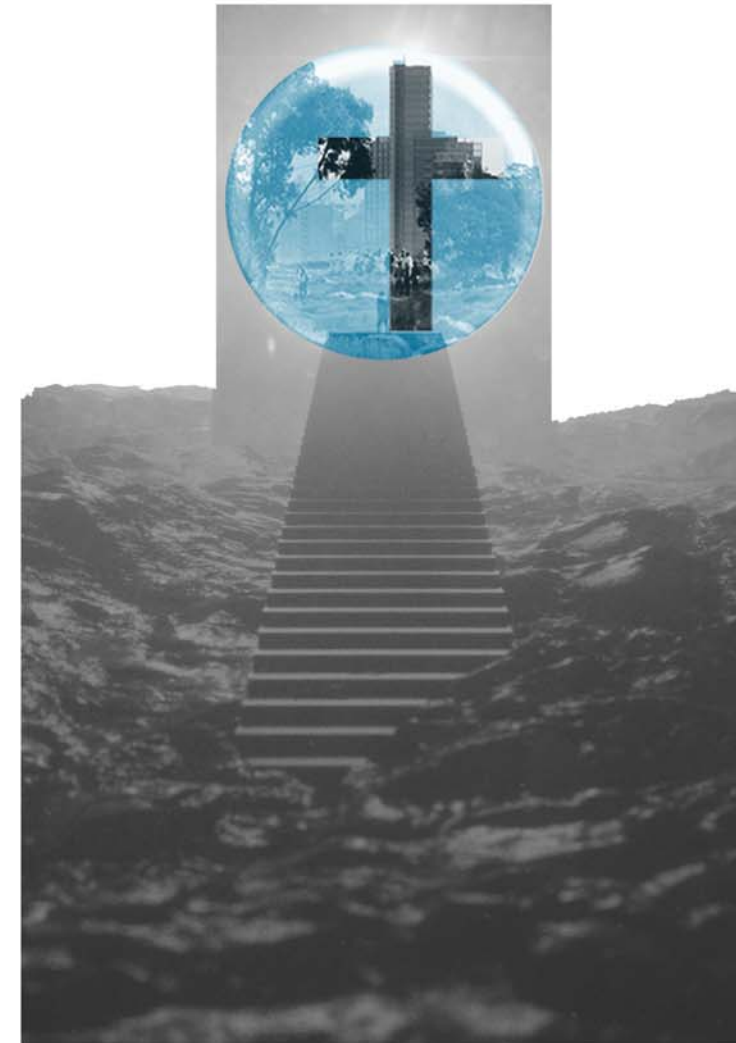
Figure 1.5: Relationship between the sacred and mundane (Author,2018)

1.4.2. URBAN ISSUE
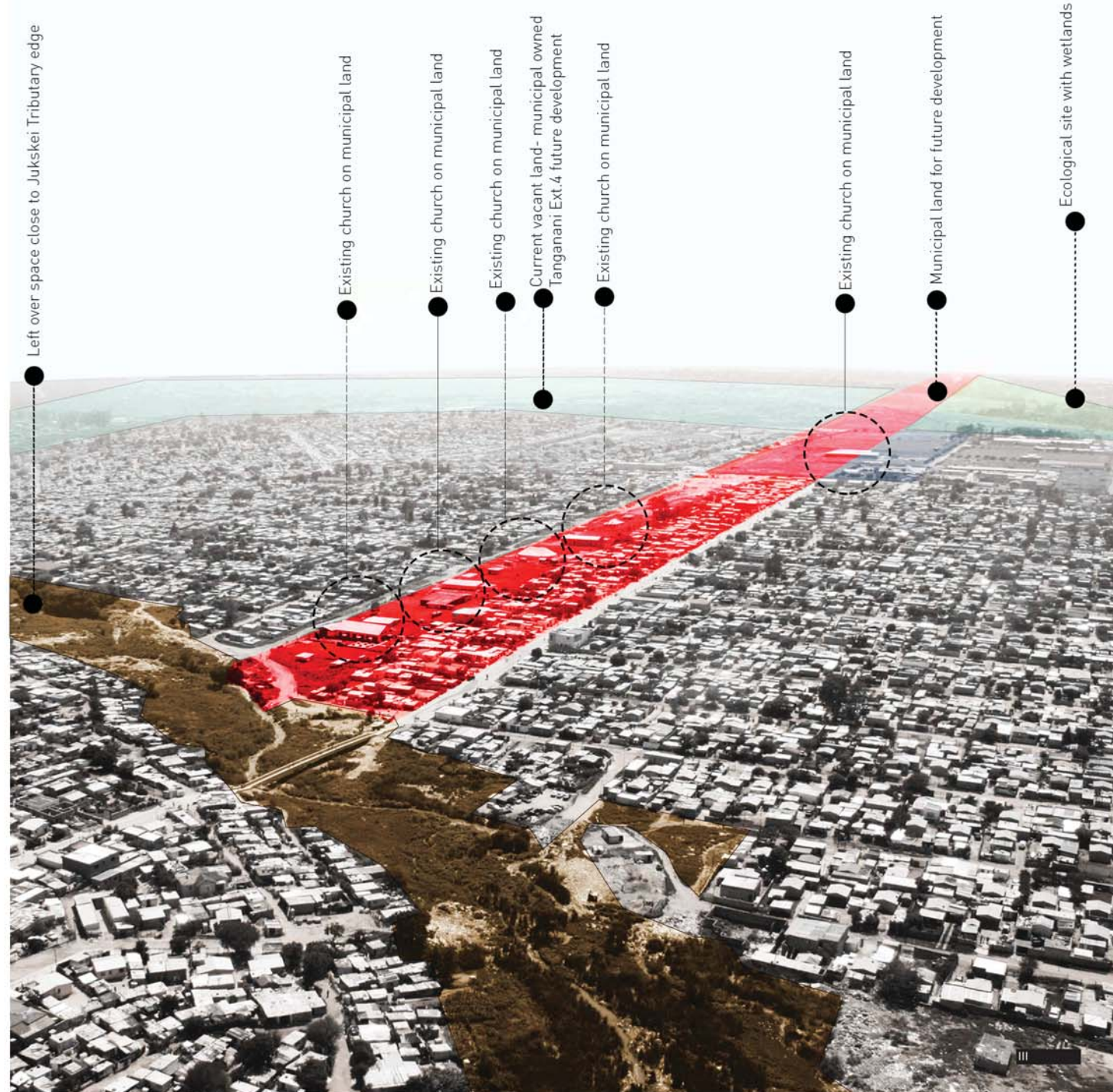### URBAN PLANNING VS. RELIGIOUS CENTRES

According to the City of Johannesburg (Joburg, 2011), there is an abundance of religious denominations among the inhabitants of townships, with churches scattered around the urban fabric. Some of these include Classical Pentecostal churches, Independent Pentecostal churches, and African Indigenous Churches.

The creation of leftover spaces is intrinsic to the planning system and the ordering, zoning and separating of the urban landscape. These leftover spaces are products of post-industrialism, They include dis-used train yards, closed industrial sites, empty lots and spaces at the edge of roadways and under bridges. According to De Sola-Morales (1995: 120), these 'strange places exist outside the city's effective circuits and productive structures', and from an economic point of view represent places, 'where the city is no longer.' Such interstitial, dis-used and marginal geographical spaces emerge in various urban locations. They lie outside the zones of official use and occupation, existing somewhere between commercial, recreational, residential and institutional zones.

Current spatial planning does not consider the placement of religious activity such as churches or their subsequent rituals within the urban fabric, more especially so in townships such as Diepsloot. As a result, churches are placed haphazardly within the urban context, with little relation to their rituals or surroundings.

The leftover spaces in the urban fabric present various opportunities for religious denominations. Their role can extend to become custodians of such spaces. This could be done in the cross programming of such spaces with religious activity, along with more public functions such as public space.

Figure 1.6: Relationship between left over spaces and religious spaces of Diepsloot (Author,2018)

Left over space close to Jukskei Tributary edge

Existing church on municipal land

Existing church on municipal land

Existing church on municipal land

Current vacant land- municipal owned Tanganani Ext.4 future development

Existing church on municipal land

Existing church on municipal land

Municipal land for future development

Ecological site with wetlands

1.4.3 ARCHITECTURAL ISSUE
BIOPHILIA IN HEALING RITUALS

Religion leaves an imprint on landscape, through culture and lifestyle" (Park, 2004)

In more recent times, man has become disconnected with nature, resulting in a chaotic life. Places of significance in African Indigenous space making include elements such as river, trees, lakes, mountains, etc. providing stability and security, act as anchors and are invested with deep emotional and religious meaning. (safcei.org.za, 2018)

E.O Wilson defines biophilia as "the innately emotional affiliation of human being to other living organisms." Therefore, it can be said that biophilic architecture is about ecosystems and the human psyche.

In a popular chorus of St. John's Apostolic Faith Mission, members sing:

"Rona re bana ba metsi, rona re buswa ke moya
(We are children of the water, we are led by the spirit)".

Hence water plays a vital role in the healing and life-giving rituals of St. John's Apostolic Faith Mission and African Indigenous Churches alike.

The dissertation aims to introduce biophilia into St. John's Apostolic Faith Mission and its healing rituals. It places these rituals on a potential ecological site, owned by the City of Johannesburg.

It can be argued that churches should be involved in the ecological ministry to save the land. (Masondo, 2018) He further goes on to argue that no development is worthy when the ecological integrity if the creation is impaired.

Therefore, the intervention will create a symbiotic relationship in which the healing rituals performed, assist in healing the site, while connecting man to nature, through the use of biophilic principles.
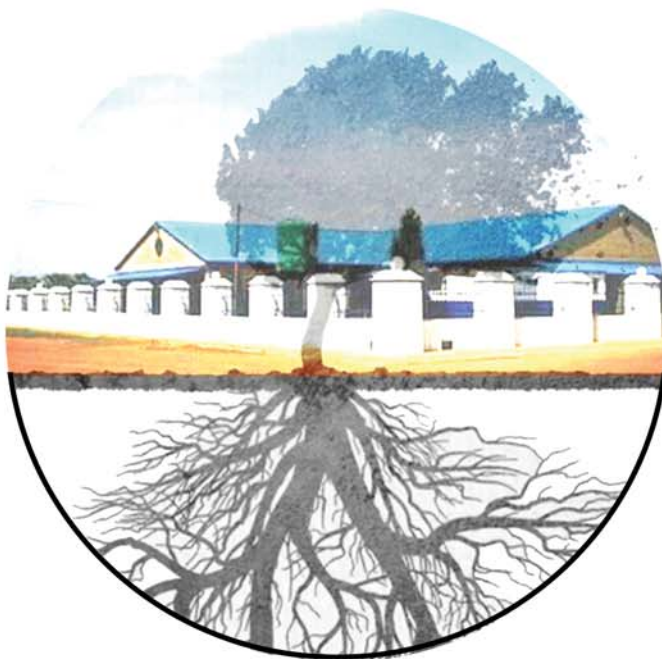
Figure 1.7: Biophilic relationship between nature and church (Author, 2018)

1.5 LIMITATIONS & DELIMITATIONS

ASSUMPTIONS

+ The site has already been developed according to the Newton Landscape Architects proposal for Tanganani Extension 14.
+ There is currently no St. John's Apostolic Faith Mission located in Diepsloot
+ Although the land is owned by the City of Johannesburg, there is the opportunity for the city of Johannesburg to possibly give the church incentives due to the nature of the church and its location within the K54 road development.

LIMITATIONS

Site visits will be limited as the site is dangerous. Plans and sections are not available for the existing buildings on the precinct.

DELIMITATIONS

The sub-category of African Indigenous Churches has more than 10 church movements which belong to it. Therefore, the research will be limited to AIC as a general concept, with a particular focus on the rituals and space making of St. John's Apostolic Faith Mission.

PROJECT INTENTIONS

The project will transform the site into a node to be adopted in the Tanganani Ext 14 and K54 Provincial Road development for Diepsloot. The project also intends on utilizing urban regeneration to re-activation and regenerate the site as a public space, with the help of religious architectural intervention.

1.6 RESEARCH METHODS

HISTORICAL RESEARCH
In order to gain an understanding of the African Indigenous Churches, St. John's Apostolic Faith Mission, its rituals and resulting architecture, historical research will be conducted to develop an appropriate approach towards the site and built fabric.

MAPPING
An analysis of the site and its surrounding context will be necessary to understand the urban and architectural issues, allowing for opportunities to be explored for the intended architectural intervention. Existing built fabric on site will be mapped through observation and historical maps.

LITERATURE REVIEW
A literature review will be done to gain insight into various architectural theories applicable to this dissertation. An understanding of biophilic, regenerative and resilience theory and its applications will be required to substantiate the work produced.

QUALITATIVE RESEARCH
This research will be done in the form of photography, sketches, and observation to gain an understanding of current site conditions.

CASE STUDIES
Precedents relating to theory will be studied in order to be applied to design, to initiate a biophilic architecture. Local precedents will also be studied to identify ways in which religious spaces can be re-interpreted. Existing St. John's AFM churches will be analyzed for their architectural and sensory qualities. Further research will be done through a combination of observation, photography, structured interviews and literature reviews regarding the church and its practices.

MAIN QUESTIONS:
+How can architecture act as a connector in order to restore the relationship between religious ritual and nature?

+How AIC's and St. John AFM operate in an urban context as generators for urban activity, while strengthening existing networks, to form a balanced ecosystem?

+How can set design rules regarding church identity be re-appropriated

SUB QUESTIONS:
+What are the rituals in the different African Indigenous Churches and their relationship with each other?

+How can architecture create space that can facilitate healing in its various forms, for both the environment as well as its users?

Figure 1.8: The cross adorn several areas in the sanctuary of St. John Apostolic Faith Mission Church, Alexandra Township. (Muhammed O, 2013)

OWNERSHIP
Land as informant

2.1. INTRODUCTION

South Africa's freedom of religion as enshrined in the constitution, has enabled South Africans to practice a variety of religions. 61% of the South African population belongs to the category of African Pentecostalism. The origins of this name trace back to the Day of Pentecost experiences depicted in Acts 2, where believers were filled with the Holy Spirit, resulting in miraculous acts. South African religion is divided into three sub-categories within the group of African Pentecostalism: Classical "Mission" Churches[1], Independent Churches [2] and Indigenous Churches. [3] A vast majority of South Africans belong to Indigenous Churches (AIC [4])(41% of total South African population, 60% black population), more commonly known as African Indigenous Churches or 'spirit churches'. These churches combine traditional ancestral belief and Christianity. (Country.southafrica.net, 2018).

AIC's embrace healing methods and adapt them to suite their particular Christian context. Through the rituals performed of healing and purification, people are able to respond to their existential needs and be empowered to realise their person-hood. (Molobi, 2011).

This article will explore how two churches in similar urban township contexts of Tembisa and Diepsloot, respond to urban change. The article will also discuss the role of the church in current issues of place making, urban land reformation and ownership.

Figure 2.1.: Early Medieval church St. James the Great, Westerleigh
(Westerleigh, St. James the Great, 2011)

2.2. THE ORIGINS OF CHURCH

The first time the church played a predominant role in society was in Rome, in the first few hundred years of the Common Era. The recently established Christianity had been brought to Rome by the Apostles from Judea, a Roman province in the Middle East (Myers, 1967). It was during this time that people flocked to the city in increasing numbers, particularly the poorer farming class who were ruined by large slave-worked estates, thereby creating a jobless, landless proletariat (Myers, 1967). The unhappiness and hopelessness of the people was reflected by their seeking of support from other religions (Myers, 1967).

During this stage of emergency the Romans, particularly the poor, turned to those Eastern religions which offered solace. The idea of a better life after death became the most alluring. By the Fourth Century, it was clear that Christianity was to supplant Rome as a unifying force, at least in the Western World (Myers, 1967). Here it is evident that the role of faith and the prospect of an improved life, even if it is something to expect after death, became a vital instrument in allowing the citizens to cope in a time of distress.

Medieval England is another example of where the church had a significant role in society. The churches and cathedral with its spire dominating the cityscape, is indicative of the centrality of religion in urban life. The church provided a place of sanctuary from life. The religious institutions also provided many of the roles which would be considered social services today, such as; temporary housing and food hand-outs for the poor or disabled, care of the sick, education, protective custody (sanctuary), and retirement homes.

The church played an important role in the survival of urban life in the Middle- Ages. Churches would be for public use, where values and ethics would be taught to the community. (Fletcher and Cordingley, 1961). Various rites of passage such as weddings, baptisms and funerals, as well as charitable activities for the poor also happened in churches, supervised by priest.

2.3. INDIGENOUS RELIGION

Indigenous belief systems have been altered with the introduction of Western secular culture and religious beliefs, resulting in many African traditions being lost or replaced. Initially, African indigenous practices relied heavily on oral traditions, knowledge and customs which were passed through the performance of various rituals and ceremonies, which were passed through generations, thus making them vulnerable to change over time. (Safcei.org, 2018)

Sacred environments were places where nature spirits dwell, spaces for learning about traditional and indigenous knowledge or where divination rites were performed to connect with ancestors. These spaces have now been transformed due to the exposure to the effects of urbanisation. Such effects include pollution, deforestation, commercial land farming, as well as the decay of natural water resources. As a result of both Western influence and urbanisation, indigenous African knowledge and belief systems are being forgotten, showing people's preference to western education which, over the centuries, has prioritised the individual over community.

Africans are commonly religious, implying that religion is a part of their daily lives, with little separation between secular and sacred. African religion, which includes ancestral rituals and ceremonies, emphasises the preservation of human wellbeing and promoting that which enhances life on earth.

Traditional African societies regard nature as a gift not to be abused as it hosts a variety of spirits, animals, trees, sacred forests, etc. hence serving as a reminder to communities to respect the environment and use it sustainably. (Safcei.org, 2018) Therefore, it is vital that people behave responsible in order to co-exist with other people, living creatures and natural objects, creating a harmonious and sacred web of life. Traditional spiritual values are attached to land and water as part of the African conservation ethic.

Water is considered a source of life and spirituality is important to African cultural practices, an essential life-giving force and an element of spiritual power. Water is also known to have guardian spirits, which are chased away by disrespectful actions or social disharmony, which results in degraded water bodies or the drying up of such bodies. The sacred role of water goes beyond a respectful relationship with water. (Bernard, 2001) Water spirits are known to call individuals to become traditional diviners and healers, passing on their knowledge and power, while also becoming custodians of traditional knowledge. They become mediators of the spirit world and their communities.

However, access to these spirits require access and the preservation of sacred rivers, wetlands and the sea to perform various rituals as a means of communication with the spirit world, as a way to transform people from one state to another on a spiritual and physical level. (Bernard, 2001)

Land ownership is a core value among Africans as it represents their link with the ancestors. God gave their land to the ancestors and their communities; therefore, people have a responsibility to look after it for future generations. (Safcei.org, 2018)

2.4. THE ROLE OF THE CHURCH IN URBAN TOWNSHIPS

In many South African communities, churches represent stable institutional presences, holding together the most fragile of places. Therefore, religious institutions can be considered as assets, contributing to community wellness and wellbeing. One needs to consider how churches engage with the urban townships in which they find themselves.

Churches placed in environments such as Diepsloot, rarely enjoy financial stability, with a majority of their congregants being poor and unemployed, resulting on the reliance of external assistance for survival. In comparison, churches located in urban suburbs which benefitted from historically unjust, socio-economic and political systems, are wealthy. This is because there is dis-investment in urban townships, resulting in unequal spatial equalities and limited local markets.

There is a discussion around the participatory role of the church in society. The church plays a vital role in shaping, reshaping and transforming role in society, therefore acting as an agent of transformation. Township churches have the potential to play a role in economic development, therefore it can be repositioned as an asset, in local communities as a means of community development.

2.5. THE ROLE OF DIEPSLOOT CHURCHES

Diepsloot has an ironic context: aside from houses, common building types include taverns and churches. Life in Diepsloot seems to revolve around these social establishments. The people of Diepsloot socialise when they go to pray, or when they go for a drink (Harber, 2011: 29–30).According to Joburg (2011), there is an abundance of religious denominations among the inhabitants, with churches scattered throughout the urban fabric (Joburg, 2011). The Zion Christian Church, International Pentecostal Church, as well as modern day Christians are among the religious establishments found in Diepsloot (Joburg, 2011). Churches range from large and developed, to an abundance of smaller churches that worship in living rooms, garages, tents, shacks, and open spaces.

2.5.1. SOCIAL

The churches in Diepsloot are the principle social organisations in the area (CASE, 2006: 76). They not only provide social space for meeting, praying, singing and dancing, but also provide social aid, which is economically valuable for the community (The Ethics & Religious Liberty Commission of the Southern Baptist Convention, 2008). The church manifests social capital. Social capital is recognised as having a noteworthy influence on communities and societies. It is the product of social networking, which encourages economic and social opportunities for communities—see case 1 (The Ethics & Religious Liberty Commission of the Southern Baptist Convention, 2008).

2.5.2. COMMUNITY SUPPORT

Churches help less-advantaged and vulnerable individuals improve domestic relationships, increase community participation, and indorse charitable contributions and volunteering. Churches help communities with vitally important social projects when governments are unable to. (The Ethics & Religious Liberty Commission of the Southern Baptist Convention, 2008).

2.5.3. EDUCATION AND CIVIC ENGAGEMENT

Churches provide educational support and training and also aid in civic engagement, networking, organising and participating in politics. Education and civic engagement nurtures great social and economic benefits for societies. (The Ethics & Religious Liberty Commission of the Southern Baptist Convention, 2008).

2.5.4. RELIGIOUS ENRICHMENT

The religious teachings of churches in Diepsloot teach the people about morality, which positively contributes to the community as a whole. The church provides a sanctuary for the community members who look to the church for answers when they face challenges.

2.6. URBAN IMPLICATIONS OF CHURCHES IN TEMBISA AND DIEPSLOOT

All three sub-categories of Pentecostalism display themselves differently architecturally, as well as in the urban landscape. Therefore, it can be said that churches are intimately connected to their social context.

Mission church architecture is very much about traditional religious architecture; churches are located in formal church structures, which comply with formal design rules, such the Methodist and Twelve Apostles churches, which are located along Diepsloot's Church Street.

In the case of African Independent churches, the church moves around as land becomes available or existing land becomes too small or unavailable for various reasons such as changing rental agreements, municipal interventions, changing land use and availability, etc. They also tend to occupy school halls and informal tents and storefronts, megachurches and mainline churches, causing a colonisation of secular buildings. This is especially true in Tembisa, where buildings such as crèches or schools operate between Monday to Friday and churches operate in these structures in the evening and Sundays, when the church assembles on the premises.

Rituals performed by various churches are repositories of meaning and knowledge systems. (Ribbens and de Beer, 2017) These allow inhabitants to make connections, community, culture and the spaces which they occupy. The churches in both townships display an innovative and flexible structural nature, but what is also interesting is the manner in which the various churches are clustered according to their sub-category in Diepsloot. This however, is not the case, no clear clustering or grouping can be found. The most vivid pattern is the clustering of Independent churches along Church Street, with Indigenous church (open-air and formal) located on the ecological site. The mission churches are scattered across the urban fabric.

2.6.1. CHURCHES OF TEMBISA
EXISTING CHURCH MAPPING

The following case studies are located in Tembisa, East of Johannesburg. Tembisa and Diepsloot face similar challenges, such as poverty, lack of safety, open public space, with limited urban land development.

Tembisa, an Nguni name meaning Promise, traces its origins as farming land, first owned by Mr JHM Meyer and Mrs MWZ van Wyk, using funding from the National Housing Commission and government loans.(Saha.org.za, 2018) The township itself was established in 1957 when blacks were resettled from Alexandra and other areas such as Edenvale, Kempton Park, Midrand and Germiston.

The mapping process identified a number of churches in Tembisa, within an area of 32 km². It also presented a unique and innovative expression of churches and their place-making activities. The case studies presented will only focus on St. John's Apostolic Faith Mission, as the basis for space and place-making of for the dissertation.

MUSLIM
APOSTOLIC
MISSIONS
ST. JOHN'S APOSTOLIC FAITH MISSION
ZION CHRISTIAN CHURCH
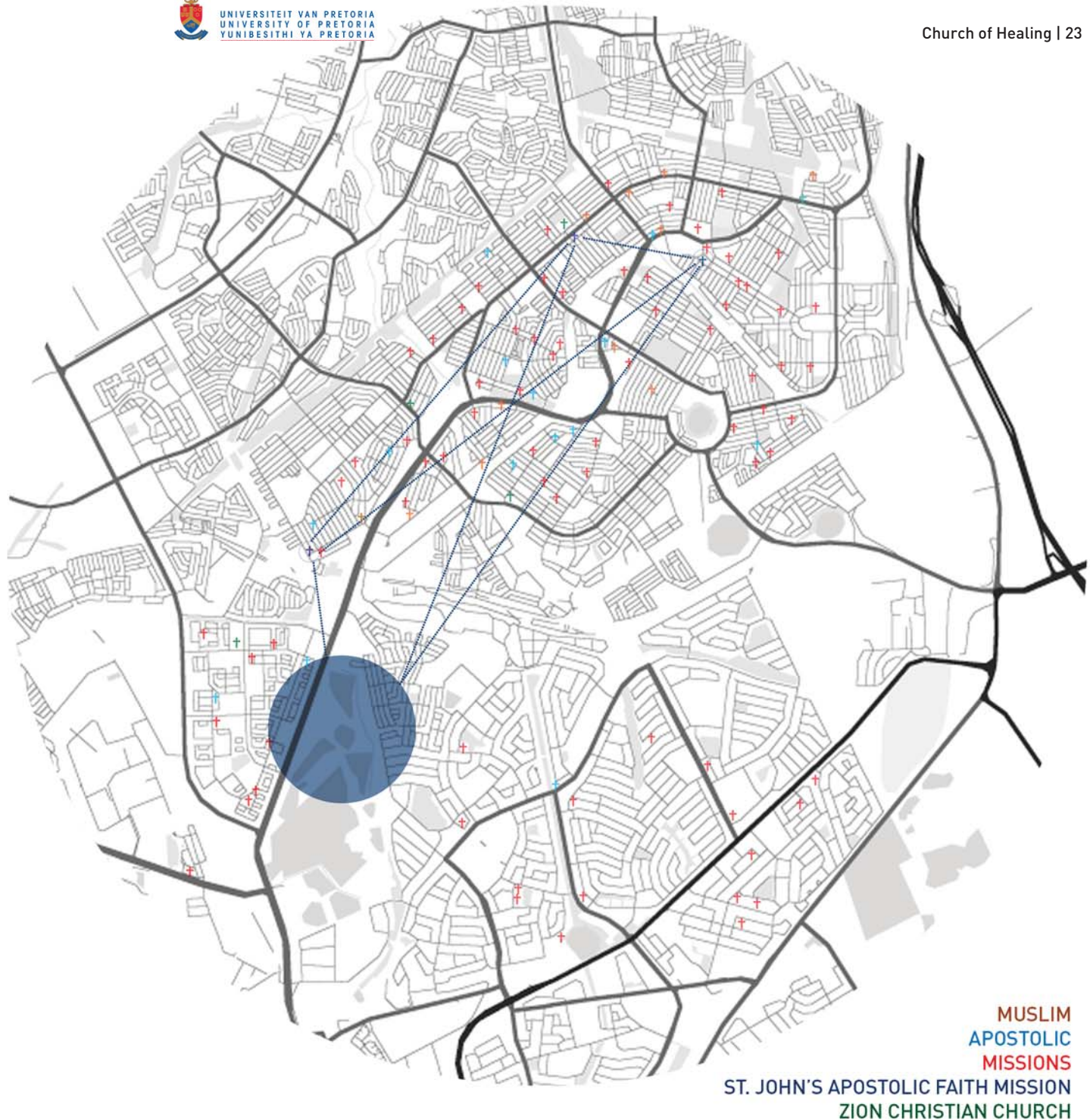
Figure 2.2: Church network in Tembisa (Author,2018)

2.6.2. ST. JOHN'S APOSTOLIC FAITH MISSION: OVERVIEW

The mandate of the church was to alleviate suffering of its congregants and its immediate community. The main practice of healing would initially occur on various sites around Johannesburg, as Nku did not have access to land. She worked from home, in the fields under a tree. The people she helped would offer her a shilling in return for the services she provided, which she would save and later used to buy land and built the church in Evaton, in 1950.

Together, Masango and Nku were able to build churches across various sites in South Africa, Zimbabwe, Namibia, Swaziland and Lesotho, all of which are owned by the church. Because of the relationship the church has had with government over the years, the church has been able to gain ownership of the sites which the various circuits occupy. This is vital in the church as it creates a sense of belonging to the community, which is always located at the corner to create a focal point, along with its blue and white walls call the community to the church for healing.

The process of gaining land ownership in for the construction and development of St. John's AFM churches, however, has not been easy, which Nku experienced herself in the early origins of the church. It can be said that land ownership played a major role in the development of different typologies of the church. Residents find themselves praying in homes, garages and shacks before built structures for the church are established.

2.6.3. CASE STUDY METHODOLOGY

The two case studies are focussed in Tembisa, which has similar urban fabric organisation as Diepsloot, as they were both started as relocation settlements. The methodology in the case studies looked at the space making and and place making of the various rituals performed by the church. The churches in themselves are a series of buildings arranged on the given site. The way in which they are placed and the various relationships between them is investigated as well. Materiality, form making, use of space and the relationship to the community were also aspects which were considered.

2.6.4. ST. JOH'S APOSTOLIC FIATH MISSION ARCHITECTURE AND PLACEMAKING

Architecturally, the spaces lend themselves to assist the various rituals as required by the church. In its built form, the architecture remains simple, but is placed as an object in isolation to its surroundings.

The materiality is made of either a painted or exposed masonry, along with the characteristic arched windows, which have clear and blue translucent glass, creating an effect similar to that of stained glass. They also emphasise the church's symbolism of spirit, purity and water. Typical roof coverings are corrugated sheet metal, which is painted blue or red.

The main church building is rectangular, or in the shape of a cross, always orientated to enable prayer happens facing east, therefore, the church is orientated along an east-west axis, allowing natural light to filter the spaces, with the inclusion of windows on the north and south facades.

Local churches are limited to one storey high building height, whereas headquarters typically are double storey, to accommodate the larger. This makes the scale of the local church relatable to congregants, while also placing emphasis on the headquarters as sacred places for spiritual renewal and rebirth, hence the difference in scales.

There are various symbolisms in the church; the circulation on the side aisles, which not only allows members to move between various points of the church with ease, but also enables easy movement for the angels, when they enter the church and bring their blessings to the congregants. The central aisle is left from seating and creates an axis, which emphasises the cross, therefore emphasising the role of Jesus and his death in the salvation of congregants. This also draws attention to the crosses at the centre of the church, which is visible at the pulpit, as well as lighting which is placed above the main central cross. This also emphasis the relationship to sky.

The special relationship in all typologies within St. John Apostolic Faith Mission is that churches can be described as a space within a space, similar to the original layout of the tabernacle. The architecture has a strong sense of visual connection, while very little connection with what happens beyond the interior spaces.

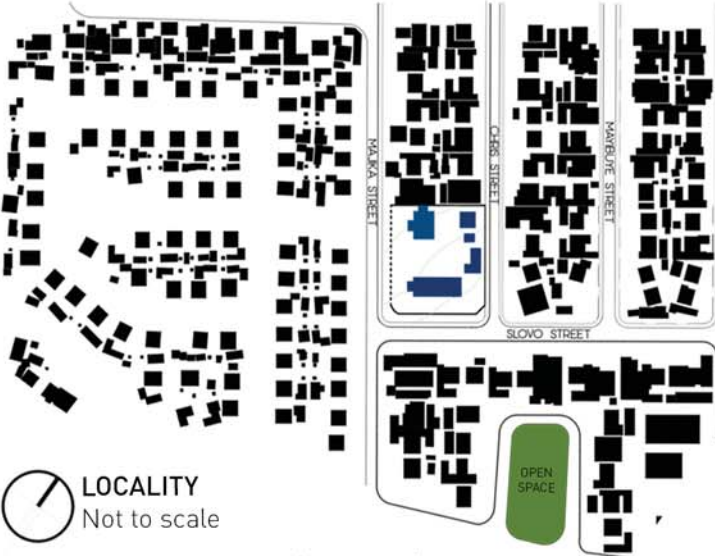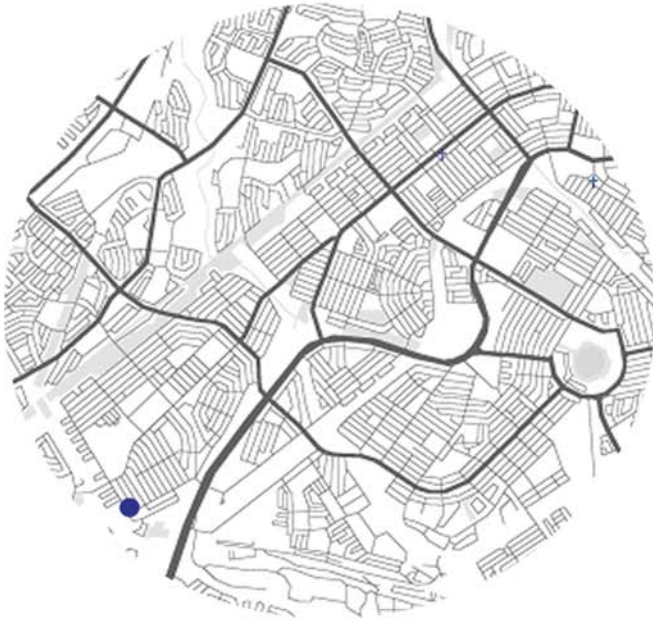# CASE STUDY 1:
SLOVO STREET, UMTHAMBEKA, TEMBISA

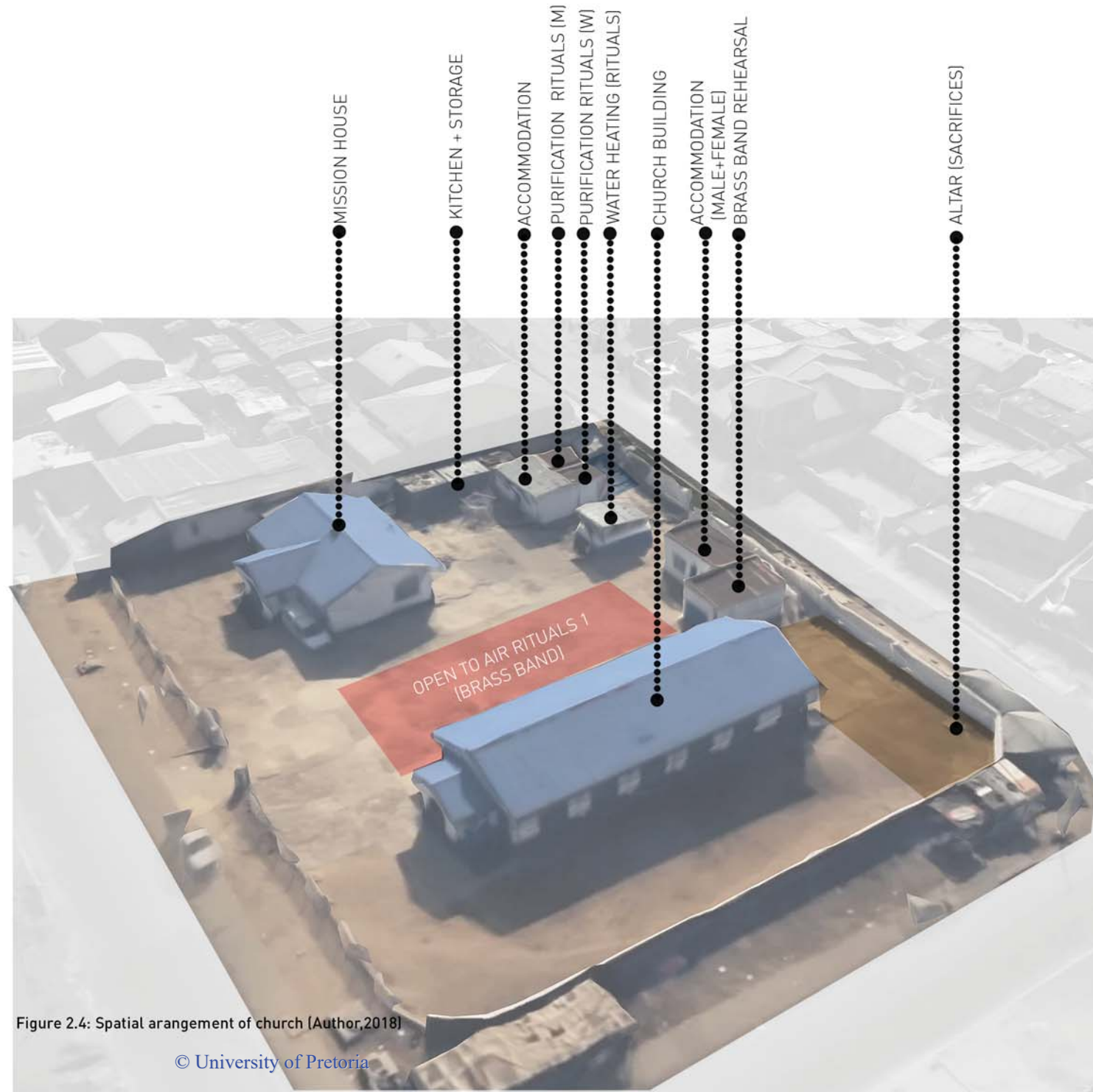Figure 2.3: Locality of church (Author, 2018)

LOCALITY
Not to scale

MISSION HOUSE

KITCHEN + STORAGE

ACCOMMODATION

PURIFICATION RITUALS (M)

PURIFICATION RITUALS (W)

WATER HEATING (RITUALS)

CHURCH BUILDING

ACCOMMODATION (MALE+FEMALE)

BRASS BAND REHEARSAL

ALTAR (SACRIFICES)

OPEN TO AIR RITUALS 1 (BRASS BAND)

Figure 2.4: Spatial arangement of church (Author,2018)

BED

BED KITCHEN

LOUNGE DINING

BATH

BED BED

MINISTER'S HOUSE

STORE C AIR

KITCHEN

MALE ABLUTIONS

ACCOMM FEMALE FEMALE
ABLUTIONS OPEN AIR

WATER HEATING FOR RITUALS

OPEN TO AIR RITUAL
(BRASS BAND)

FEMALE ACCOMM.

MALE ACCOMM.

BRASS BAND REHEARSAL

WATER ALTAR

MALE SEATING

OFFICE

FEMALE SEATING

OFFICE

SACRIFICES

ENTRANCE FOYER

CHURCH BUILDING

Figure 2.5 Existing layout (Author, 2018)

SACRIFICES ALTAR
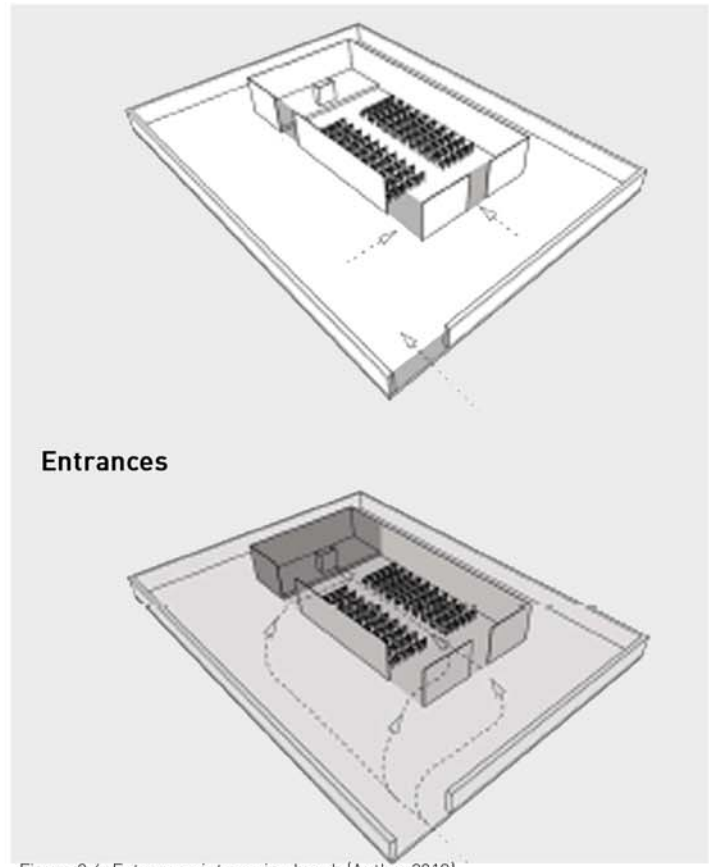
Entrances

Figure 2.6. Entrances into main church (Author,2018)

Entrances

The church has three possible entrances: in the back of the church, in the centre, in line with the aisle, or on the side at the back, or the side at the front.

This creates a transitional space from the exterior to the interior. The centre aisle creates a definite processional route to the pulpit.

Shape

Scale
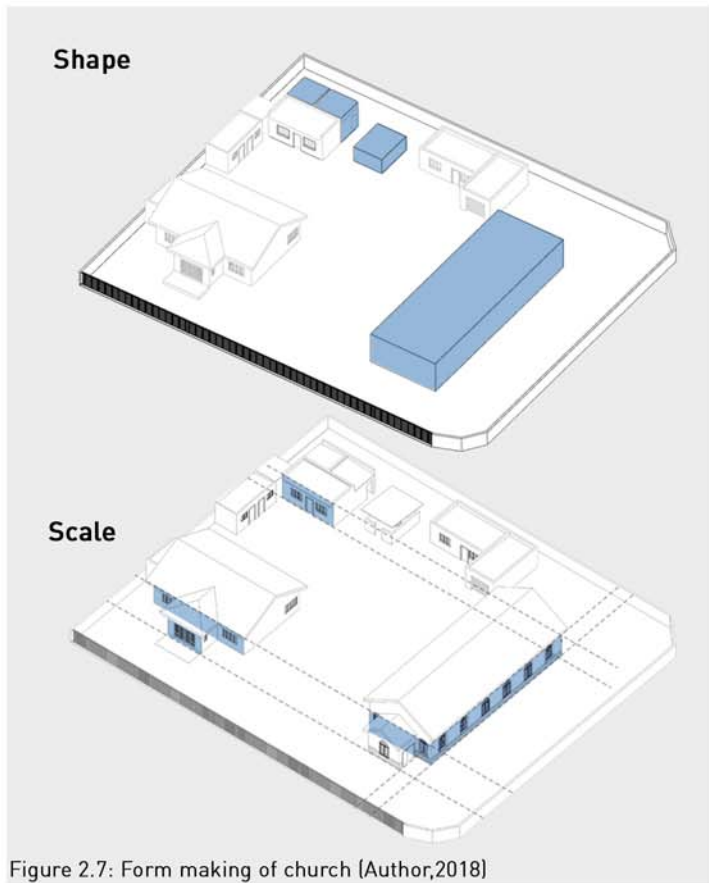
Figure 2.7: Form making of church (Author,2018)

Form

The main church building is rectangular in shape, with the healing ritual spaces square in shape.

The church and all building structures are one storey high and its proportions vary according to the size of the congregations. It is difficult to identify an informal church from its context because there is no real distinction in scale between the churches and other building types.

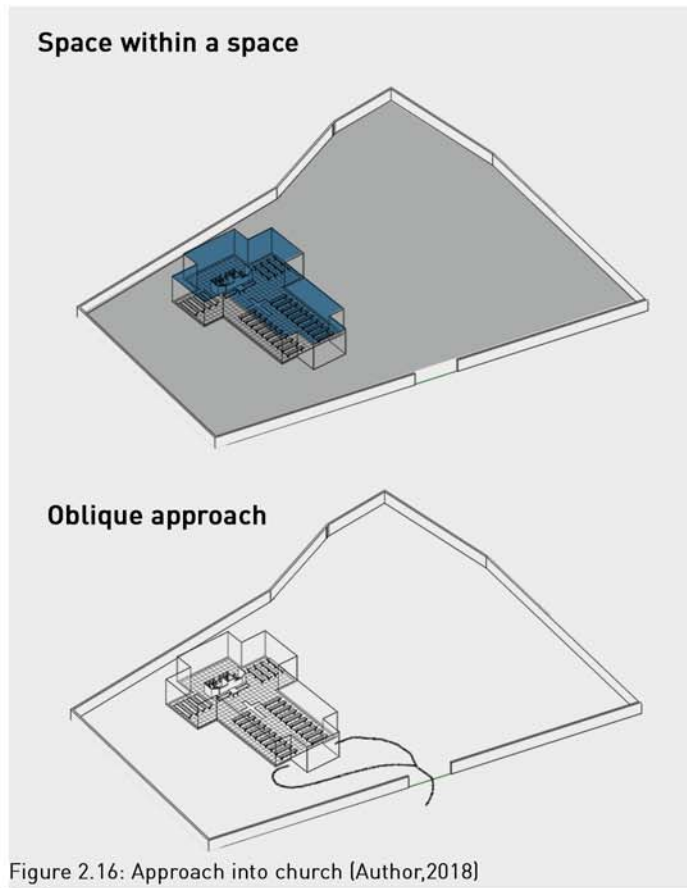## Space within a space

Oblique approach
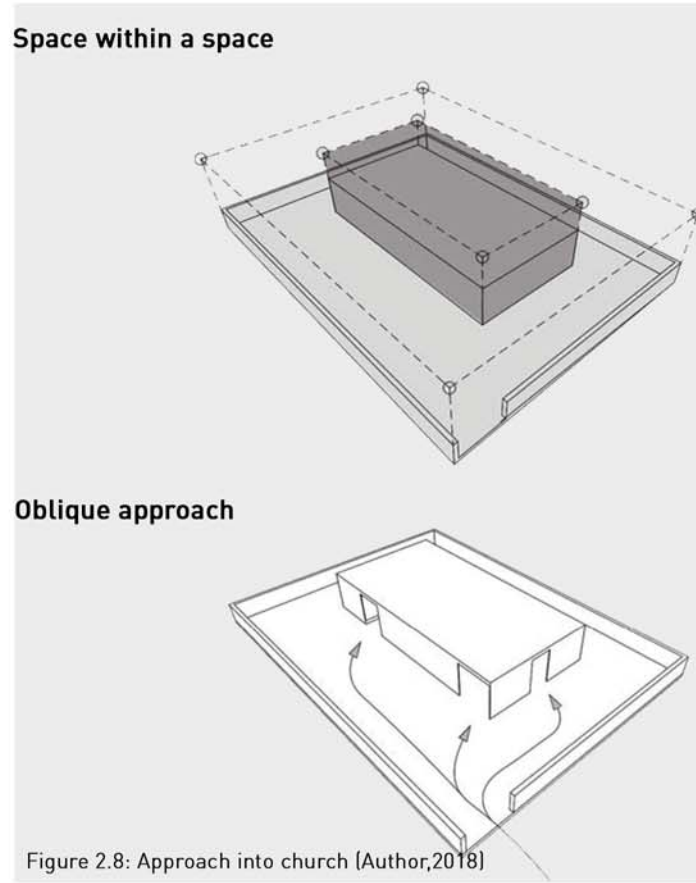
Figure 2.8: Approach into church (Author,2018)

Order

The special relationship in all typologies within St John Apostolic Faith Mission is that churches can be described as a space within a space.

The outer space is a gathering space, as well as a space in which various open air rituals occur for the brass band, sacrifice and some healing rituals, whereas the inner space is a worship space. The churches have an oblique approach when entering, which gives the user an experience of the form through a series of perspectives.

Arrangement
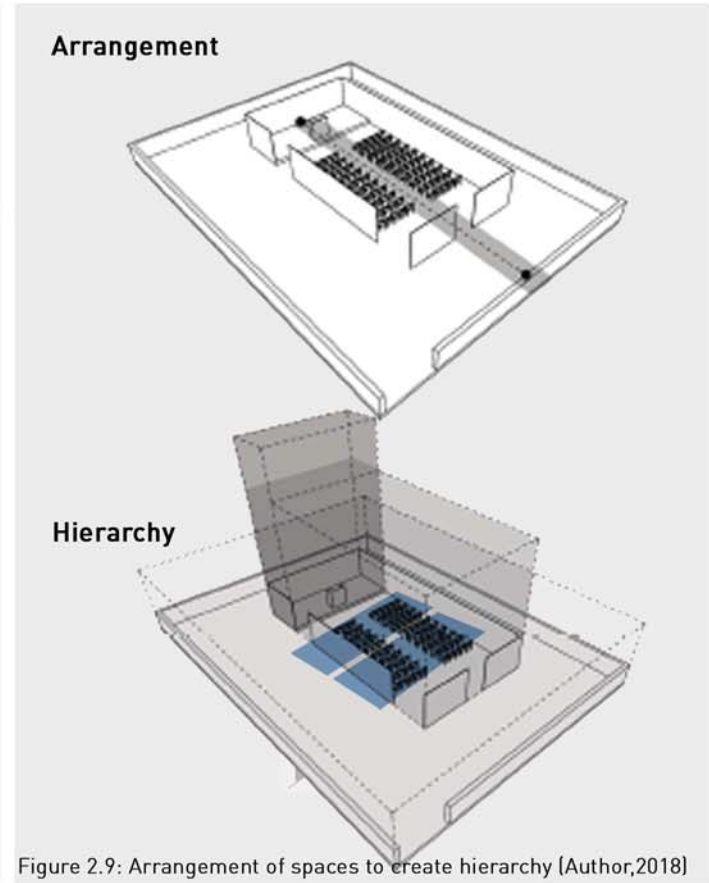
Hierarchy

Figure 2.9: Arrangement of spaces to create hierarchy (Author,2018)

Arrangement

All of the St. John's churches have a central axis; the aisle. The location of the entrance alters the termination of the central aisle. The aisle starts at the pulpit and terminates either in the interior space, or the exterior space.

Hierarchy

The seating arrangement is configured around the centre aisle. The chairs are movable for freedom of activity, and ease of storage for security. The hierarchy of space climaxes at the most interior space, the pulpit. The pulpit is the central focus of the combined spaces, where preaching, praying, singing, and dancing takes place.

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YUNIBESITHI YA PRETORIA

MALE FEMALE
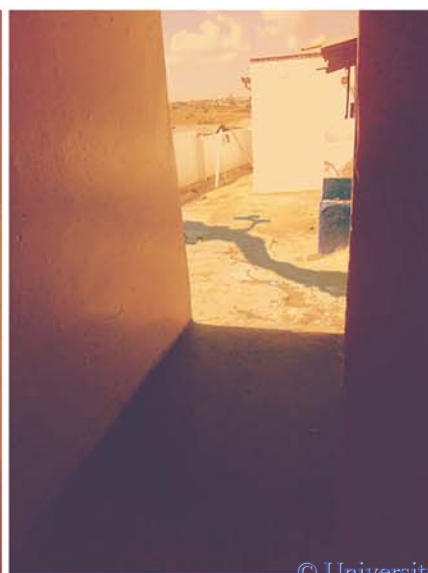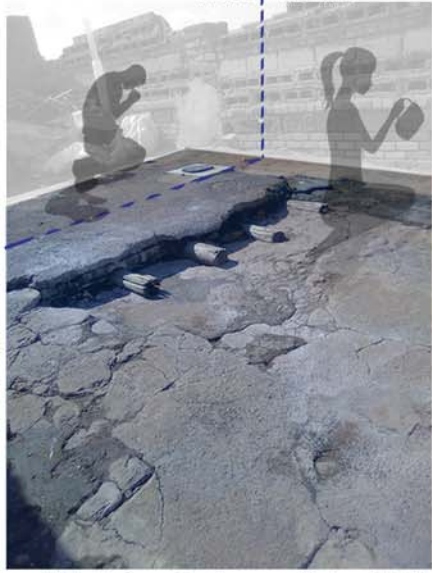
2.11. Various ritual spaces (Author, 2018)

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CASE STUDY 2:
MILKY WAY STRET, KOPANONG, TEMBISA

OPEN SPACE
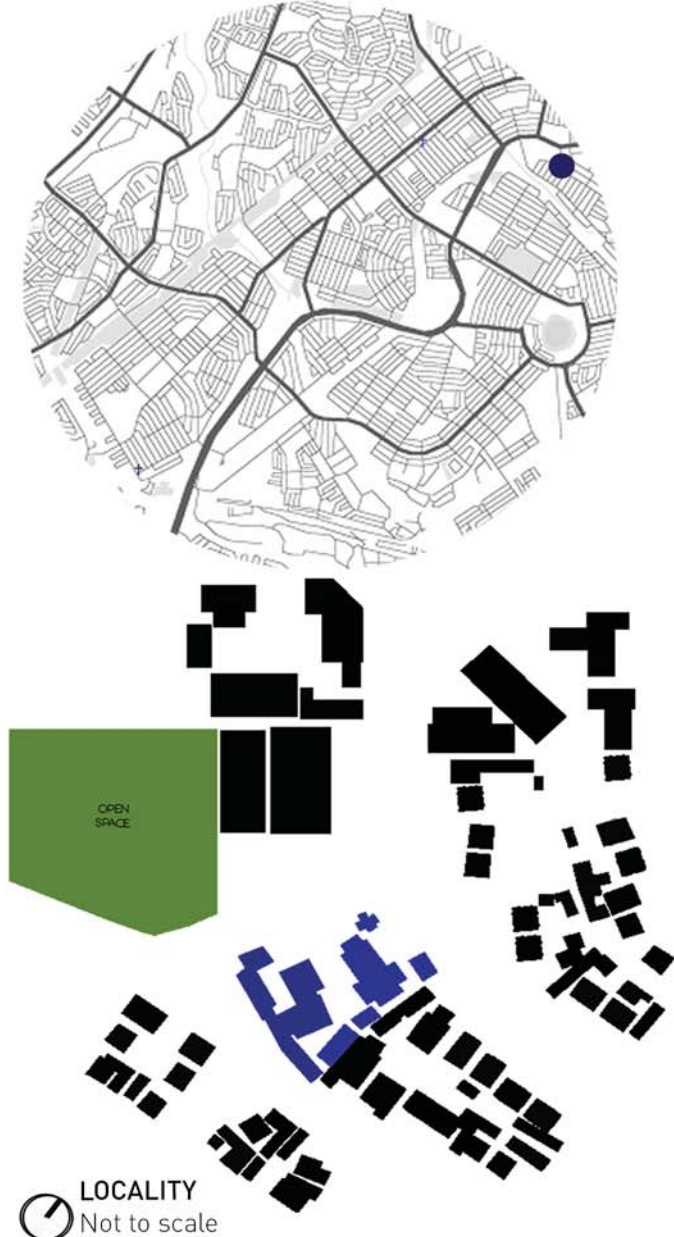
LOCALITY
Not to scale
Figure 2.11: Locality of church (Author,2018)

ALTAR OF OFFERING

BEL TOWER AND MALE ACCOMMODATION

WATER ALTAR

MALE ABLUTIONS

CHURCH BUILDING

WATER HEATING

MALE HOUSING + KITCHEN

MALE ABLUTIONS

FEMALE ABLUTIONS

MINISTER'S HOUSIE

FEMALE HOUSING

MALE ABLUTIONS

FEMALE HOUSING

OPEN TO AIR RITUALS 1
(BRASS BAND)

Figure 2.12: Spatial arangement of church (Author,2018)

BELL TOWER

ALTAR OF
OFFERING

ENTRANCE

ENTRANCE
FOYER

WATER
ALTAR

MALE
ABLUTIONS

BRASS BAND
RITUALS

MALE SEATING

FEMALE SEATING

MALE
ACCOMMODATION

KITCHEN

MINISTER'S
HOUSE

FEMALE
ACCOMMODATION

WATER HEATING (RITUALS)

MALE ABLUTIONS

FEMALE ABLUTIONS

Figure 2.13: Existing Layout (Author, 2018)

Entrances_ Leaders

Entrances _ Congregation
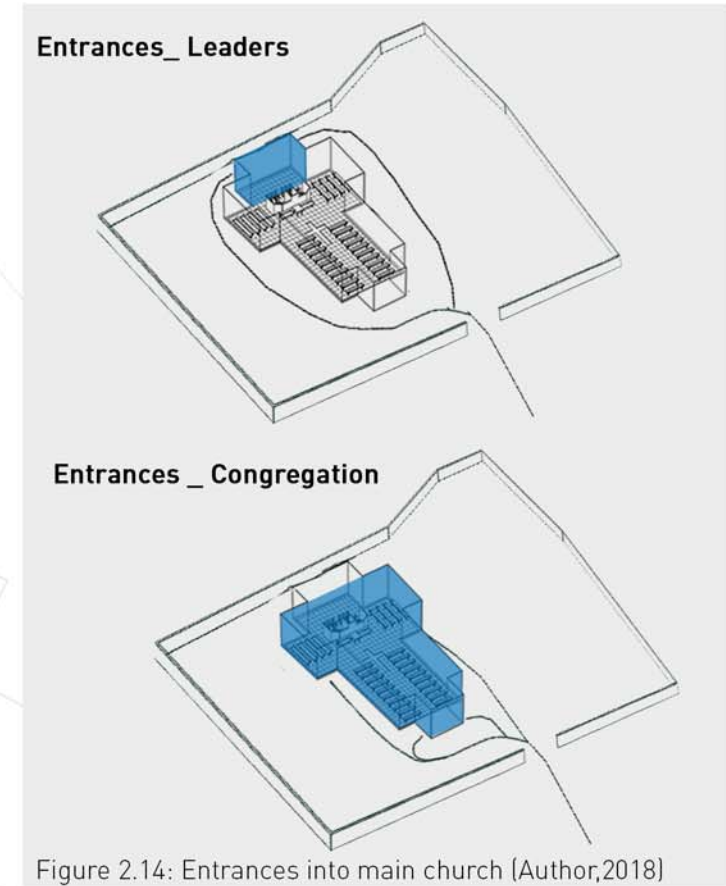
Figure 2.14: Entrances into main church (Author, 2018)

Entrances
The church has six possible entrances due to the separation of male and female entrances:
+ **Back** of the church for ministers,
+ **Side** of the cross for evangelists ,
+ **Main** entrance for the rest of the congregation.

Shape

Scale
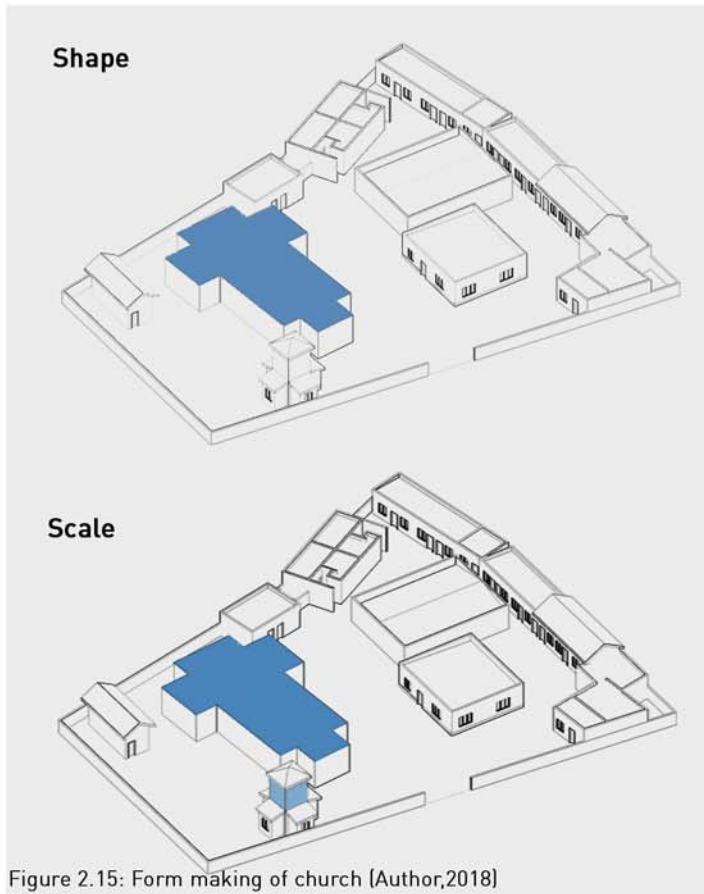
Figure 2.15: Form making of church (Author,2018)

Form

The main church building is in the shape of a cross, with the supporting support buildings such as the housing and ablutions arerectangular in shape.

The church and all building structures are one storey high, with the bell tower being two storeys high.

Space within a space

Oblique approach

Figure 2.16: Approach into church (Author,2018)

Order

The special relationship in all typologies within St John Apostolic Faith Mission is that churches can be described as a space within a space.

The outer space is a gathering space, as well as a space in which various open air rituals occur for the brass band, sacrifice and some healing rituals, whereas the inner space is a worship space.

Arrangement
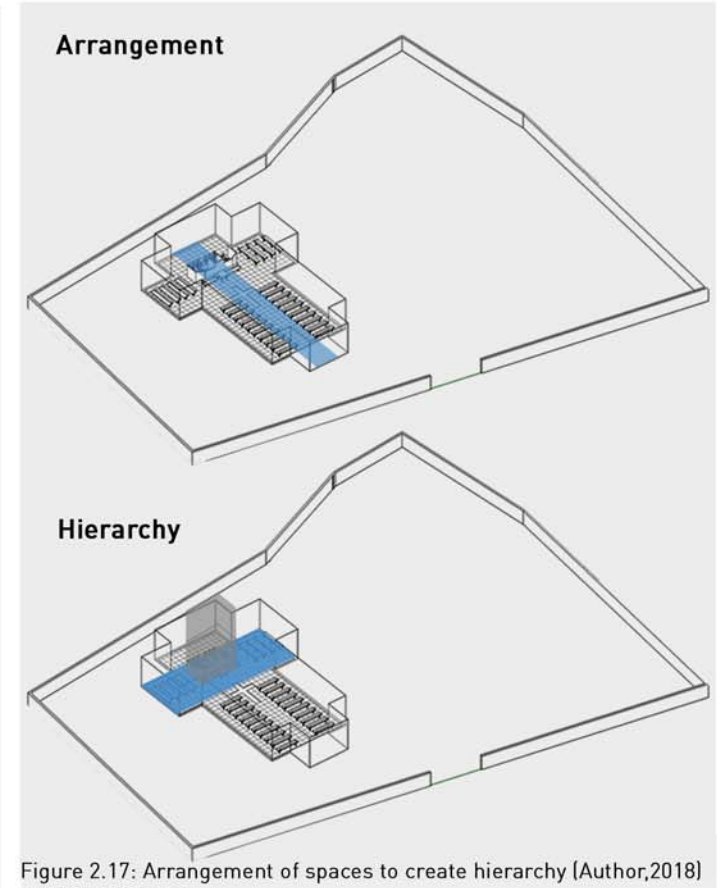
Hierarchy

Figure 2.17: Arrangement of spaces to create hierarchy (Author,2018)

Arrangement

All of the St. John's churches have a central axis; the aisle. The location of the entrance alters the termination of the central aisle. The aisle starts at the pulpit and terminates either in the interior space, or the exterior space.

Hierarchy

The seating arrangement is configured around the centre aisle. The chairs are movable for freedom of activity, and ease of storage for security. The hierarchy of space climaxes at the most interior space, the pulpit. The pulpit is the central focus of the combined spaces, where preaching, praying, singing, and dancing takes place.

Figure 2.18: View towards main entrance (Author, 2018)

Figure 2.19: Various ritual space (Author, 2018)

2.7. PLACE-MAKING IN RELIGION

Religion and its development has been influenced by geological factors such as space, place and location, where things happen and why they happen there. (Park, 2004) Park describes geography as a study of place and spaces and the movement between places. He further goes on to state that religion leaves an imprint on the landscape, through culture and lifestyle, therefore religious structures dominate the landscape.

Traditional indigenous rituals, such as baptisms in rivers as well rituals performed in the landscape, mark the natural and man-made landscape through physical appearance in the area. Religion and its associated rituals can be observed in user cycles relating to time, spatial movements and believer behavior. Sacred places and sacred spaces influence the movement of people as they encourage people to visit sacred places. Se⌧verine Deneulin and Carole Rakodi (2011) argue that there is an 'avoidable presence and importance of religion in the lives of people in developing countries.' Religion influences people's sense of belonging and community. (Deneulin and Rakodi, 2011:45)

In the 1960s, Henri Lefebvre reflected on the urban realities of France, which prompted him to formalise the 'Right to the city 'approach. This approach prohibited one from being excluded from participating in urban process because of segregation and discrimination. He calls for a new praxis in which inhabitants are encourage to influence and participate in the formation of urban space use and its production. Appropriation entails the right to access, occupy and using space, as well as creating new spaces to meet human need. (Purcell,2014) Lefebvre sees urban spaces as a collective narrative of all citizens that is embedded in daily living.

By considering this, one needs to think about the placement and participation of those who have been excluded from the city's moral and political agenda. Place-making is the process of shaping public spaces in a manner to make it more livable and meaningful to its users. An underlying question is if churches have the capacity to transform apartheid spaces.

Churches contribute to the sense of place-making without it being the intention. They are unable to find affordable spaces that is conveniently or strategically places for current and future members.

2.8. URBAN TOWNSHIP AND PLANNING: INTEGRATED URBAN DEVELOPMENT FRAMEWORK (IUDF)

African religion was discriminated against by missionaries as well as colonial and apartheid governments. (Masondo, 2018) It was because of this that knowledge systems declined and became an underground praxis. Africans were considered as inferior because of their lack of religion as initially thought by colonialists, hence the justification of the seizure of land and the oppression of Africans. (Masondo, 2018)

The apartheid legacy is most evident in land use unsustainable infrastructure and consumption patterns, as well as access to services. Inequality and segregation is most clearly illustrated in urban townships. The IUDF attempts to address integrated and sustainable human settlements. This is one of the major issues facing South Africa as there is an ever increasing demand for serviced shelter, well located public space and land for housing developments, as well as low densities of cities.

Although there have been neighbourhoods which have experienced significant changes since 1994, majority of urban township dwellers, in areas such as Diepsloot and Tembisa, still have little or no access to urban resources and thus can't participate as citizens part of the processes of transformation of city-making. This segregation is most evident in the increase of informal settlements, as well as gated communities on the others.

The IUDF has constructed a new ideal for South African towns and cities as a means to re-structure the spatial legacy of apartheid policies regarding urban development. (Department of Cooperative Governance and Traditional Affairs, 2016) One, however, needs to question if the ideals presented in this framework will be good and valuable to every user of city, including the more vulnerable and excluded populations.

Addressed in the framework are three important aspects in the transformation of urban townships; Policy Lever 1: Integrated spatial planning; Policy Lever 3: Integrated and sustainable human settlements, and Policy Lever 5: Efficient land governance and management. Efficient land governance and management is an aspect which is addressed and identifies challenges such as state land disposed at market related value, tenure, insecurity as well as slow land management and planning processes. This results in the poor having no access to land or housing in close proximity to economic hubs, as a result of the restrictive land costs, while public land is being sold to the highest bidder, rather than land being used as an investment for the urban poor.

Neither religion nor churches are mentioned in the framework, especially in describing urban areas and townships, let alone in shaping the urban futures of cities and townships. This is mainly as a result of churches in the urban realm. Empowered active communities (Policy Lever 7) is one of the most applicable to faith based movements. This section implies that empowered communities result in robust and sincere public participation process, which is important in order to improve the lives and environments of people. (Department of Cooperative Governance and Traditional Affairs, 2016)

As a critical framework for developing urban futures, the IUDF lacks the involvement of religious leaders and churches in the shaping of discourse as a means of addressing some of the priorities identified, as well as contributing to the policy framework in terms of its weaknesses strengths and gaps.

2.9. CURRENT URBAN SITUATION OF DIEPSLOOT

According to Mahajan (n.d.: 145), Diepsloot has been acknowledged as a key zone for future development. The Johannesburg 2010 Urban Development Framework has devoted itself to improving the Diepsloot settlement's socio-economic circumstances and environment, as well as amalgamating the township into the City of Johannesburg. The development strategy is currently a double-edged sword. It will improve infrastructural challenges and alleviate a lot of issues within Diepsloot, however it does conflict with current trends within Diepsloot. One in particular, is a future provincial road development that is planned to run through a servitude in Diepsloot that currently hosts a religious strip of informal churches (WSP, 2013: 36). If the development is realised, the informal churches will be left without a place for worship.

According to Harber (2011: 30), a large marquee or shack—the informal home of the church—is found in every available vacant space, packed completely to the brim on weekends. For the purpose of this dissertation, the informal church is classified as a church that does not have a formal site, in other words, it occupies land illegally or temporarily occupies municipal land. As a result, the informal churches are typologically temporary, which manifests a state of insecurity amongst churchgoers.

Usually in cases of contested religious space, sites would host a large marquee tent, which is able to move around, given the nature of the site. The tent would be located at the back of the site, removed from the street edges and therefore do not contribute to the urban fabric. Its volatile nature is further emphasised by the lack of services or even built-in seating. The church will have limited rituals as a result of not having privacy and security, especially for funerals and weddings. Temporal structures within the urban fabric are floating objects which are disconnected from their contexts.

Pentecostal churches are an invigorating expression of African Urban Christianity. (Anderson 1991:25) Because churches have been placed at various areas throughout Diepsloot, urban African Christianity characteristics are emphasised. These include a dissolved boundary between religious (church) activities and daily activities. (Anderson 1991:25) This could be further emphasised by creating religious anchor points throughout Diepsloot. These anchor points could act as a source of addressing specific concerns identified in Diepsloot, such as service infrastructure, housing, skills development, etc. Each of these anchor points could be linked with the function and liturgy of the associated cluster of churches.

The presence of diverse churches is vital in adapting to an evolving urban township environment. This, along with the eruption of small faith communities, early childhood centres, informal businesses and local social initiatives contribute to the local sense of place and assert a right to the city.

2.10. THE ISSUE ABOUT LAND OWNERSHIP

South African townships have a history of evictions, relocations and resettlements as part of their development. Both Tembisa and Diepsloot are a result of land policies which affected the most vulnerable residents of society.

The issue of urban land and ownership has always been a contentious one within South Africa. Urban land issues evident in the 1913 Native Land Act resulted in forced township removals in places such as Alexandra, Sophiatown, etc., as well as evictions by government and private developers in recent years. The act also prevented black Africans from land ownership, only allowing 7% ownership of land reserves. This impacted livelihoods considerably. This coupled with forced removals and segregation only further impacted on black neighbourhoods. This has created an ongoing cycle of economic difficulty, further restricting the residents of townships access to land and social equality.

Land is important in that it hosts human activities such as residential, religious commercial, open space and wetlands amongst others, all of which are further placed into sub-categories. South Africa has shown a bias in development and resource allocation, including land, which prevents resident's equitable access to services and livelihood opportunities. However, land access alone is not enough to create sustainable urban townships, but rather access to well located, affordable and serviced land. This is argued by Joseph, Mangi and Maree (2014:3), is an important catalyst in the creation of urban transformation.

In the search to find solutions to various questions regarding land, two distinct approaches can be applied: Land trust is a method of capacity building and land banking is an approach which safe keeps reserves of land until they are required according to need. This enables various stakeholders such as government, municipalities etc. to remove abandoned properties and sites from the market in order to convert them along with productive land use or keep them in the reserve for future planning uses. This approach is mainly used when there is a failure in the property market demand. (Alexander,2009:4)

Land and its associated resources are vital in creating economic opportunities. This becomes even more vital in townships in order to reduce not only inequalities created by apartheid land and urban planning policies, but also in creating lively and sustainable neighbourhoods.

The question of land, a highly politicised topic currently in South Africa, is mainly centred on who's right it is to own land and its use. Land, a highly politicised topic currently in South Africa, is mainly centred on who's right it is to own land and its use.

2.11. TH EROLE OF THE CHURCH IN LAND OWNERSHIP AND MANAGEMENT

Land as is, cannot sustainably support the opportunity of land. There are various scales at which these issues arise: land invasion occur on public land or quiet encroachments onto municipal land, which is the case in Diepsloot's "Church Street".

"Church Street" is made up of mainly religious activity from African Independent churches and informal settlement residents, which occur on municipal land owned by the City of Johannesburg. This places both of these activities under threat with the pending urban development proposal. Residents invaded these parcels of land in an attempt to settle into Diepsloot, placing a threat to planning and development, as a result of ineffective settlement upgrading and lack of proper housing infrastructure. Because of the limited economic opportunities present, a culture of shack farming became a trend in the informal parts of Diepsloot. This practice entails renting out a space for additional income. This practice was prohibited by the City of Johannesburg councillors, as occupants renting out the space had no formal rights to the land. This, however, does not apply in the more formalised areas of Diepsloot, in which residents are owners of the land which they occupy.

For many, the church plays a pastoral role, whereas in South Africa, the church was associated with being a colonising force. In contrast to the voluntary nature of Christianity in North and East Africa, South Africans turned to Christianity when they lost their independence. Therefore, if one asks the question, who played a role in the distribution of land ownership, the church played a major role. (Weideman, 2006) In South Africa, the joke is that as after Africans were left with the Bible in their hands and lessons about God and prayer, the coloniser left with the land.

Figure 2.20: Development of Diepsloot township (Chen, 2014)

Land has a central place in the history of the church and its development in the South African context. Large farms were acquired for missionary stands from which missionaries did their work, therefore the church owned large areas of land in rural area. (Weideman, 2006) Therefore, the church is a large landowner, although there is no clear record of church land ownership. This is true of the mother missionary churches which find themselves in developed urban areas, but it is the opposite of in the case of black churches, located in Diepsloot, which have little or no guarantee of the land which they occupy for their religious activities.

Diepsloot was established in 1994, with the resettlement of Zevenfontein residents to Diepsloot West. The Council expropriated the first piece of land to accommodate displaced families from Honeydew. A second expropriation was undertaken by Council in 1996 to resettle land invaders of the Far East Bank in Alexandra and displaced families from the Randburg area. The new residents were located in the newly created Diepsloot reception area, which is currently where a section of the informal settlement is located. (Himlin, Engel and Mathoho, 2014)

Diepsloot's origins as a resettlement township is reflected in the major housing crisis it experiences, rather than rural-urban migration. In 1997, Diepsloot was recognised as a permanent settlement and as a result, the then Northern Metropolitan Local Council initiated that the land be identified and developed to accommodate a de-densification of the settlement and transfer stands in Diepsloot West to legitimate tenants. Because council was unable to develop specific stands as part of the de-densification project, external developers were brought in to develop approximately 4000 stands.

The Development Bank of South Africa (DBSA) has identified Diepsloot as one of the areas for their pilot "Sustainable Communities Programme", which focuses on the augmenting the implementation basic infrastructure and services. (Himlin, Engel and Mathoho, 2014)

Diepsloot's location has resulted in the land in and surrounding the township being more valuable, especially for low cost housing development. This places pressure on land in Diepsloot, resulting in residents facing further relocations. The current housing situation requires more land to accommodate those currently living in the ever expanding informal settlements, but the question is whether or not residents will be the first priority in terms of receiving high value land to accommodate them. It is therefore of utmost importance that there be joint planning in finding solutions to benefit the poor. This is addition to the proper planning of services, schools and economic opportunities which should be catered to, but not in isolation of the upgrading of housing.

CONCLUSION

The churches in Diepsloot have diverse positive impacts on communities, including increased education and civic awareness, enhanced community outreach, economic growth, social wellbeing, spiritual wellbeing and social capital.

Lack of access to information regarding land issues is a priority in Diepsloot. This is especially emphasised in the attempt by residents to self-regulate land management process and therefore benefit economically from the access to land. It is very clear that the majority of Diepsloot residents are mere spectators in the decisions which affect their future, due to not being informed.

The role of the church and its importance has shifted over the years, in the development of urban areas. In the case of Diepsloot, churches play a vital role in the moral, social and civic regeneration. This role, however, can be extended to include the management of resources, as well as the planning of the urban development of Diepsloot, which has become fragmented and offers little economic opportunities.

Diepsloot as a settlement township requires a sense of belonging, which can be created by the inclusion of churches becoming more prominent in the urban fabric. Therefore, through the inclusion of churches in a participatory role, this could serve as a solution to prioritising the residents and their futures in Diepsloot.

Figure 2.21: African Indigenous Church as owners of land owners of open air worship space (Author, 2018)

CONTEXT
Place as informant

Figure 3.1: South African Provinces (Author, 2018)

0   125   250   500   Kilometres

Figure 3.2: Gauteng Districts (Author, 2018)

0   20   40   80   Kilometres

3.1 REGIONAL ANALYSIS

Gauteng has witnessed an increase in population migration in recent years (Housing Development Agency, 2013). As a result, Gauteng accounts for South Africa's largest population, 24% or 12 728 400 people (Statistics South Africa, 2013).

Diepsloot, meaning 'deep ditch' in Afrikaans, has a population of 350 000, making it the third largest township in the City of Johannesburg municipality. under Region A.

Diepsloot is made up of a combination of informal and formal settlements and it is demarcated into two wards; ward 95 and ward 113. The biggest population is located in the Reception Area of Diepsloot West, which is the primary informal settlement area of Diepsloot.

So, due to the influx of people into Gauteng, Diepsloot's population is drastically increasing, with migrants looking for a better life. As a result, Diepsloot is under extreme pressure to provide available land, clean water, energy and services (Joburg, 2011).

A household is considered multi-dimensionally poor (MPI poor) if the weighted score of indicators that are lower than desired outcome (cut-off) is at least 33.3%. The MPI indicates that Tembisa falls into the 11-18.9% and 19-32.4% categories.

The church plays a big role in aiding and addressing some of these issues, including education, social support and food security.

Figure 3.3: City of Johannesburg Region A Locality (Author, 2018)
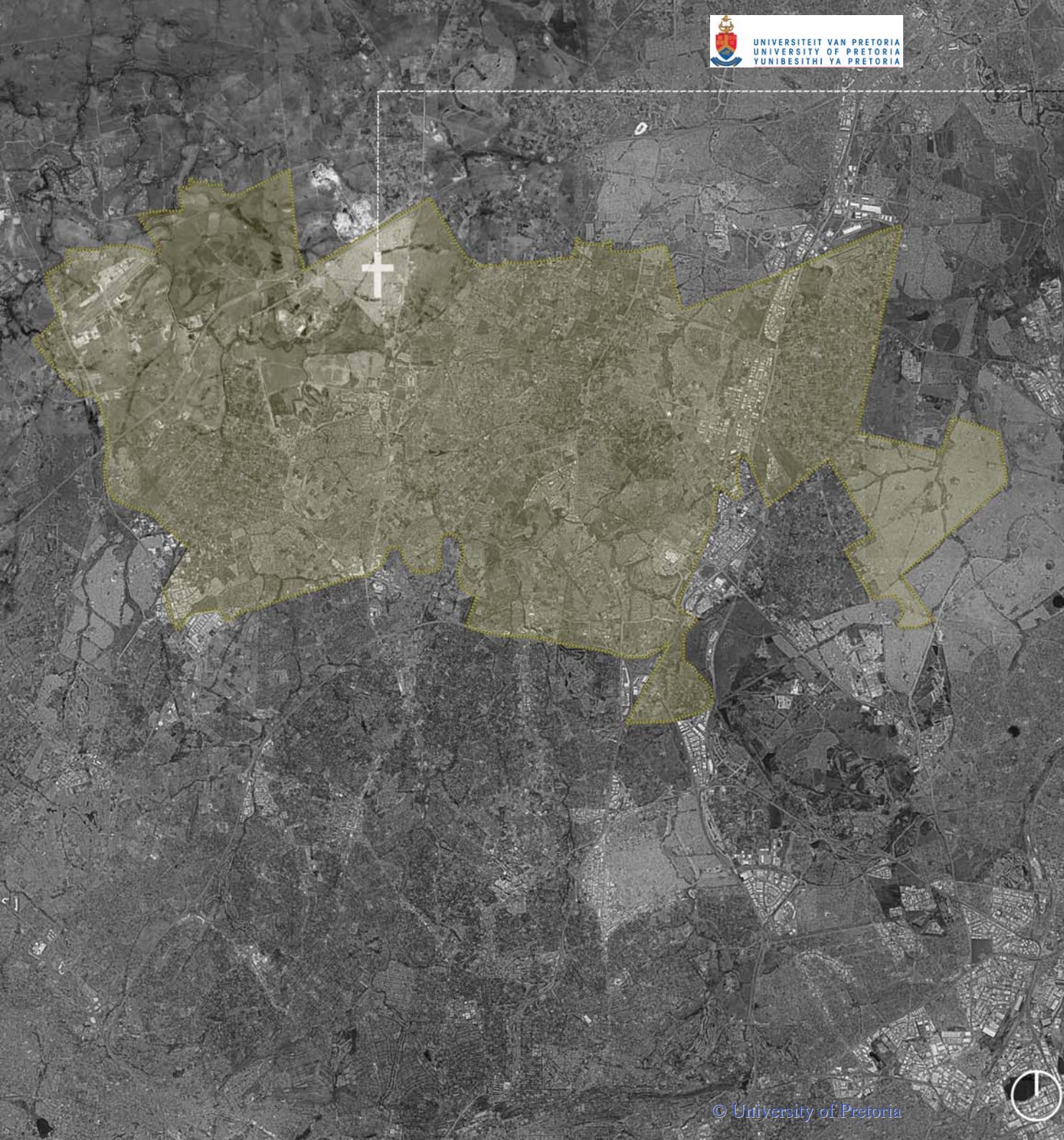
3.2. URBAN CONTEXT

3.2.1. Church Network
The informal churches in Diepsloot are located on three different types of unallocated land parcels:
1. Township edges
2. Water edges
3. Unused municipal land

3.2.2. Residential area
According to the Diepsloot East Residential Development Framework (2013), there are an estimated 24 737 shacks, and 8 000 RDP houses alongside more than 5 000 formal housing units. The most informal parts of Diepsloot (Extensions 1, 12 and 13) are densely developed with informally constructed shacks, constructed from corrugated iron sheets that are serviced through communal ablution facilities and water points, and dirt roads. Burst sewer pipes are common, which add to the deplorable conditions of the settlement. The more formal areas (Extensions 2, and 4 to 11) have RDP houses and bank-financed houses (in Tanganani), which have access to basic services and refuse removal once a week. The figure shows the formal lot layout of Diepsloot in relation to the informal layout. 76% of residents live in the indicated area. Many residents also live in backyard shacks within the formal settlement layout.

3.2.3. K54 and housing at risk
The proposed K54 road development is a dual carriageway, provincial road that will connect Midrand to Krugersdorp (WSP, 2013: 36). The road four-lane, 62m road reserve, with a 100 km/h speed limit, will run through Diepsloot (WSP, 2013: 36). The development of the K54 threatens the move of some houses that are currently in the way. The houses will have to be moved to their neighbours' properties (next to the current location that is currently at risk), and is therefore not an enormous location shift. The urban framework by Newtown Lansape Architects makes use of multi-storey dwellings. Thus, this proposal caters for the shift in location, while still maintaining neighbouring residential dwellings. This ultimately densifies the surrounding residential area to the K54 development.

KEY

- — — Proposed K54 road
- ·········· Township extension boundaries
- Informal settlement
- Houses and churches at risk
- Site
- ✝ Classical Pentecostal Churches
- ✝ African Independent Churches
- ✝ African Indigenous Churches

Figure 3.4: Mapping indicating the churches in relation to the residential area of Diepsloot. (Author, 2018)
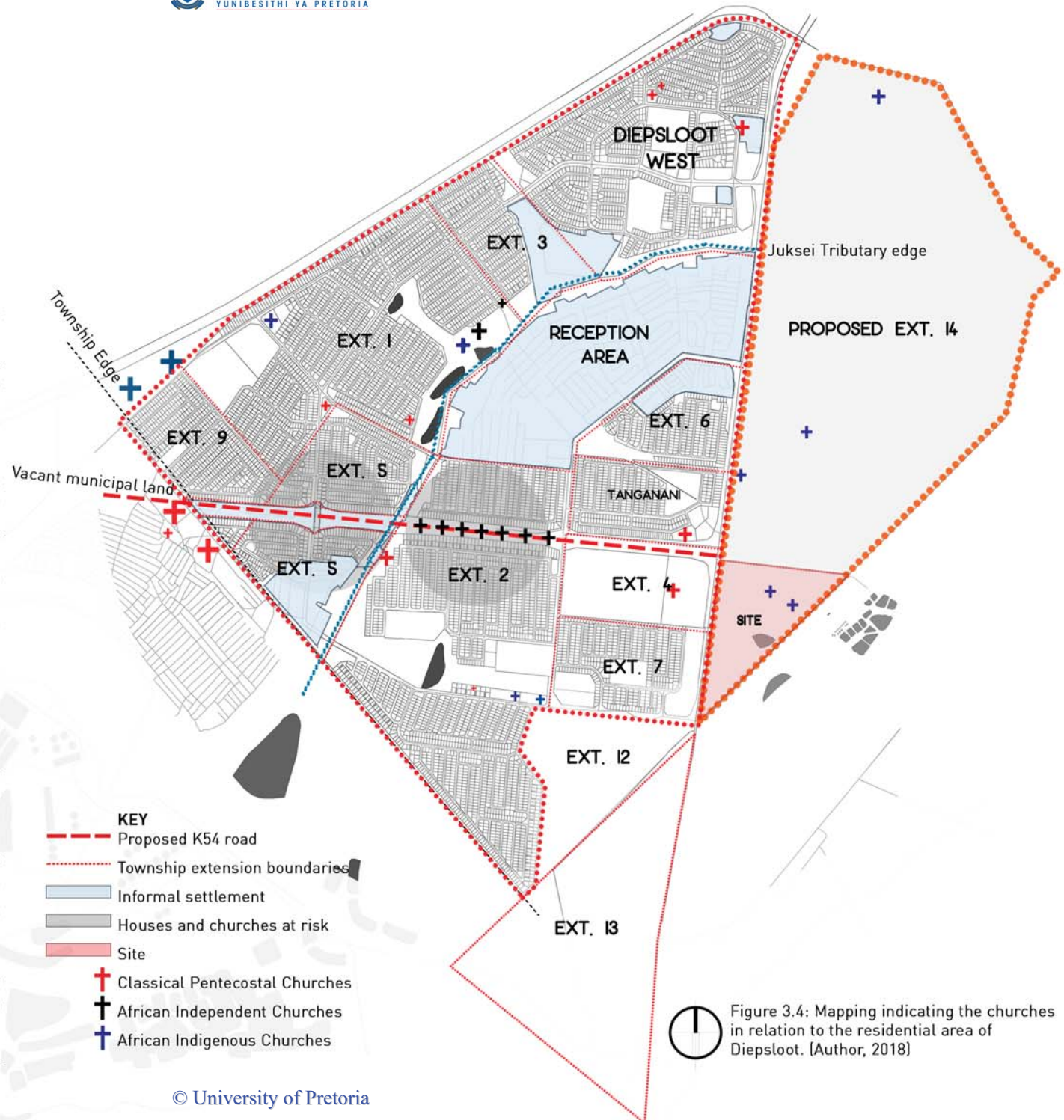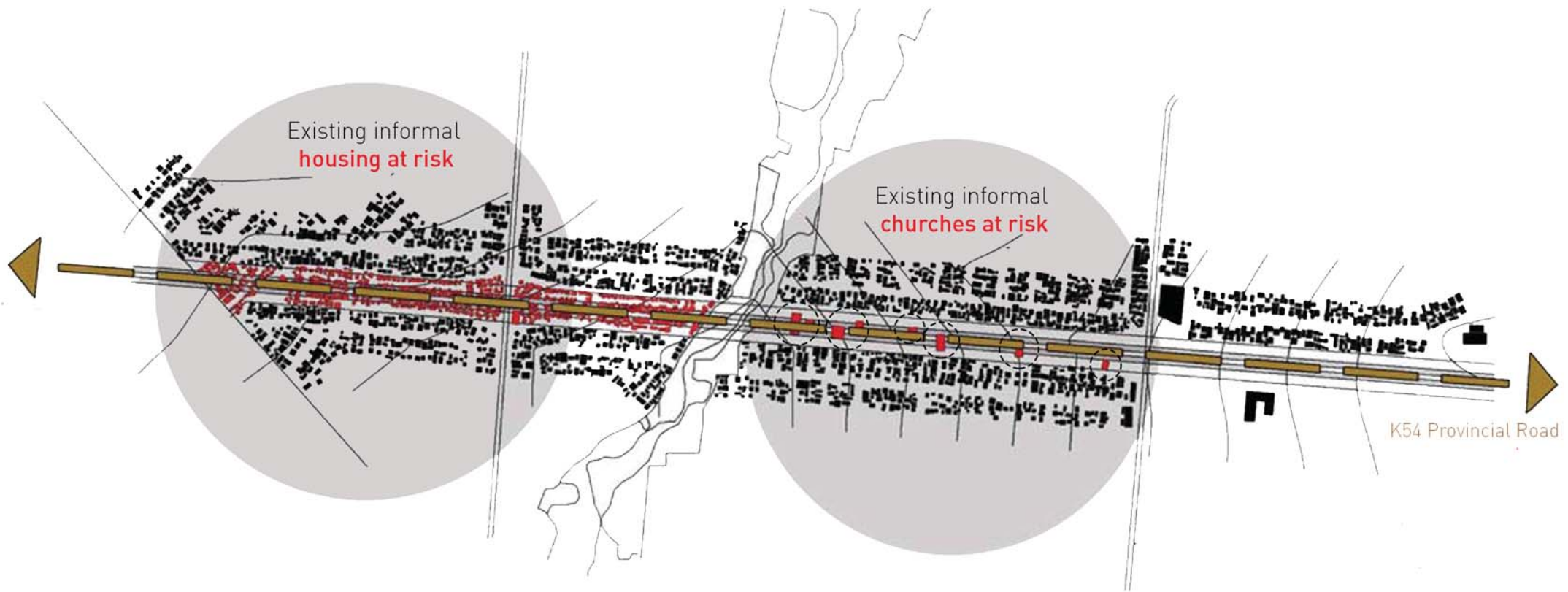
Figure 3.5: Houses and churches at risk as a result of the K54 provincial road development. (Author, 2018)

3.2.4 CONNECTIVITY_ROADS // PATHS // ACCESS

Ubuntu Road and Ngonyama Road are the two main roads for ciruclation in and out of Diepsloot, connecting to William Nicol Drive, whcih is currenlty being tranormed to accommodate a BRT system linking Pretoria to Johannesburg.

Diepsloot is a considerably pedestrian township as many of the residents do not have access to their own vehicles. Therefore, the major methods of transport include walking and taxis, with taxi ranks connecting to the main circulation routes.

The street acts as a social space for trade, with all the main access routes having a strong culture of informal trade along the street. Currently the streets are not designed to acommodate the long distances which residents have to wall. Very few areas are shaded using natural or man made elements, making walking unpleasant. In adition, the streets are not wide enough to accommodate for such activities, creating cramped walkways for trade activity, as well as for pedestrian movement.

The proposed K54 roadway cuts through the bottom half of Diepsloot West and serves to connect the current urban fabric, with the prooposed Diepsloot East development as well as Midrand and Krugersdorp. It will be a four lane road, with a 100km/h speed limit. A portion of this road, which lies on the west is occupied by squatter camp and a religious strip of churches which belong to the Independent movement of churches.

LEGEND
- Major threshold nodes
- Taxi rank
- Major access route
- Proposed K54 dissection

Figure 3.6: Connectivity nodes of Diepsloot. (Author, 2018)

3.2.5. Edges
A: Northern edge
The proposed church complex does not favour a development in a northern direction, because the Krugersdorp Highway would create an unwanted separation, which creates a safety threat for community members (Joburg, 2011). Furthermore, development to the north would cross over into the Tshwane Municipality.

B: Southern and western edge
Development to the south of Diepsloot is hindered by the exponential growth of private developments between Dainfern and Diepsloot itself. Such developments include Steyn City. The land has already been subjected to planning, and development is currently in underway (Joburg, 2011). Development to the west is not possible due to the Diepsloot Nature Reserve's location, and also expands to both sides of the Krugersdorp Highway (N14) (Joburg, 2011). The land parcel is currently utilised by Northern Waste Water Treatment Works, as well as the Diepsloot Cemetery.

C: Eastern edge
There are three issues with development in this direction. Firstly, the community will be separated by William Nicol Drive (R511), which is currently being upgraded to a dual carriageway—K46-route (Joburg, 2011). Secondly, the fusion of two informal settlements across two different municipalities.

Diepsloot is in the City of Johannesburg Metropolitan Municipality and Olievenhoutbosch is in the City of Tshwane Metropolitan Municipality (Joburg, 2006). Thirdly, an endangered species of African Bullfrog breeds in the area (Newtown Landscape Architects, 2013: 55).

Apart from these issues, the municipality has already planned for development to the east, and has made provisions for these concerns (Proposed Tanganani Extension 14 - Node B).
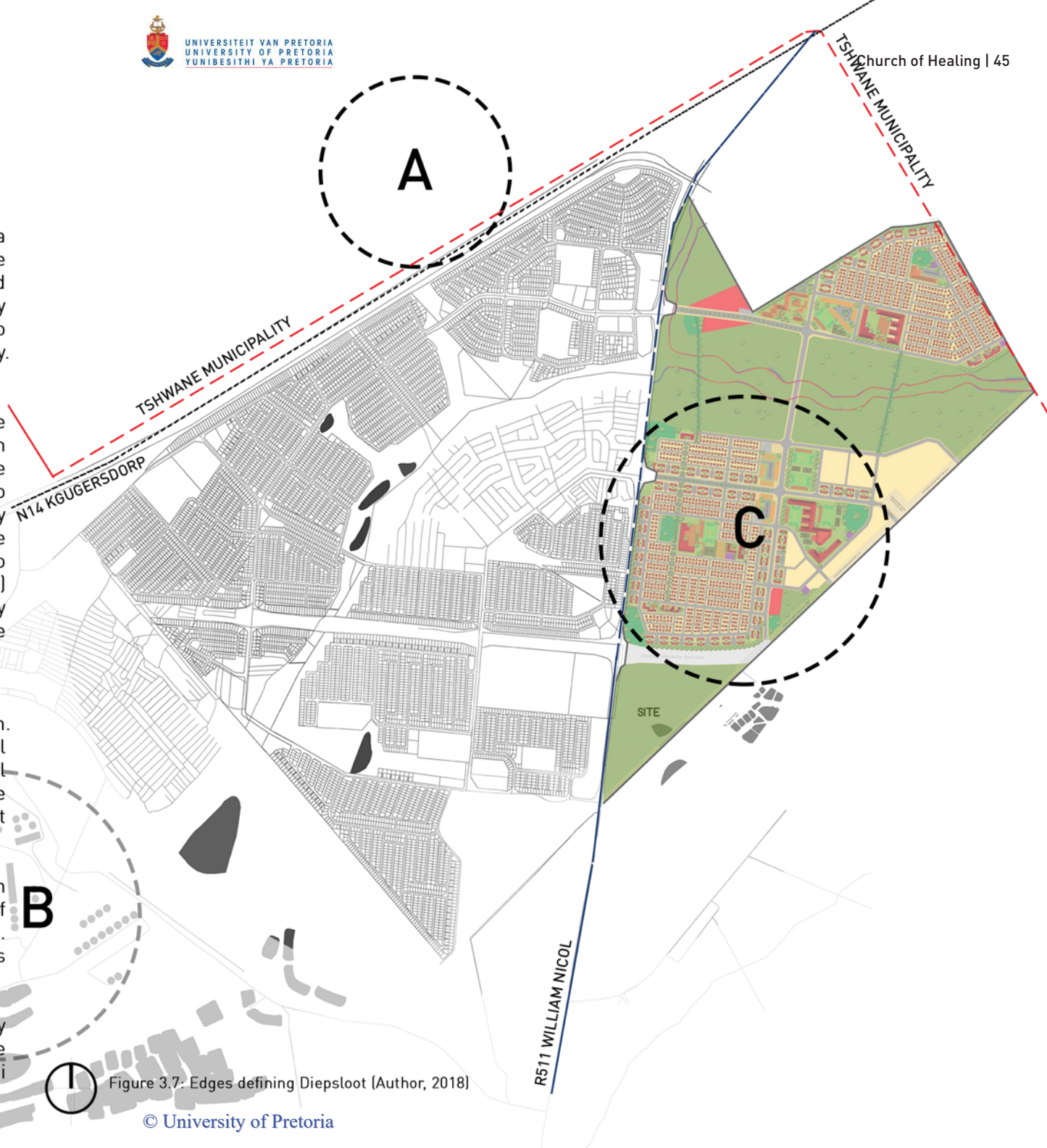
Figure 3.7: Edges defining Diepsloot (Author, 2018)

3.2.6. Public open space (green network)

The wetlands systems have been identified within Diepsloot (Lubber, 2013) and is exploited as a natural asset. Public open spaces are divided into three categories (Martin, 2013: 15):

1. Open space systems that are created by the layout and topography of the proposed housing units.
2. The natural wetlands system which forms part of a larger natural park system, and will link with the existing Diepsloot system. This space will serve as a combined conservation area and active park.
3. The Giant African Bullfrog Habitat area, which is proposed as an environmental education node.

The dissertation focuses on the third open space as an area that offers the opportunity to act as a catalyst for the connection process. This is accomplished by incorporating programmes that support a process of generating urban fabric, and blur the boundaries within this setting.

According to the Johannesburg Growth and Development Strategy 2040 (2014), the chosen site for the proposed design is zoned for environmental education and bullfrog conservation (UDF, 2013). The proposed site is situated on Portion 123 of the farm Diepsloot 388JR, and is characterised by open grassland: mainly flat with a gentle slope to the west. The site is surrounded by farmlands, and Diepsloot Mall located directly to the west, across the R511.

Diepsloot East   Diepsloot Extension 14   Giant bullfrog habitat

Figure 3.8; Giant bullfrog habitat. (Author, 2018)

KEY
- Site
- Excluded area
- Buffer zone
- Channelled valley bottom
- Dam
- Hillslope seepage
- Public green open space
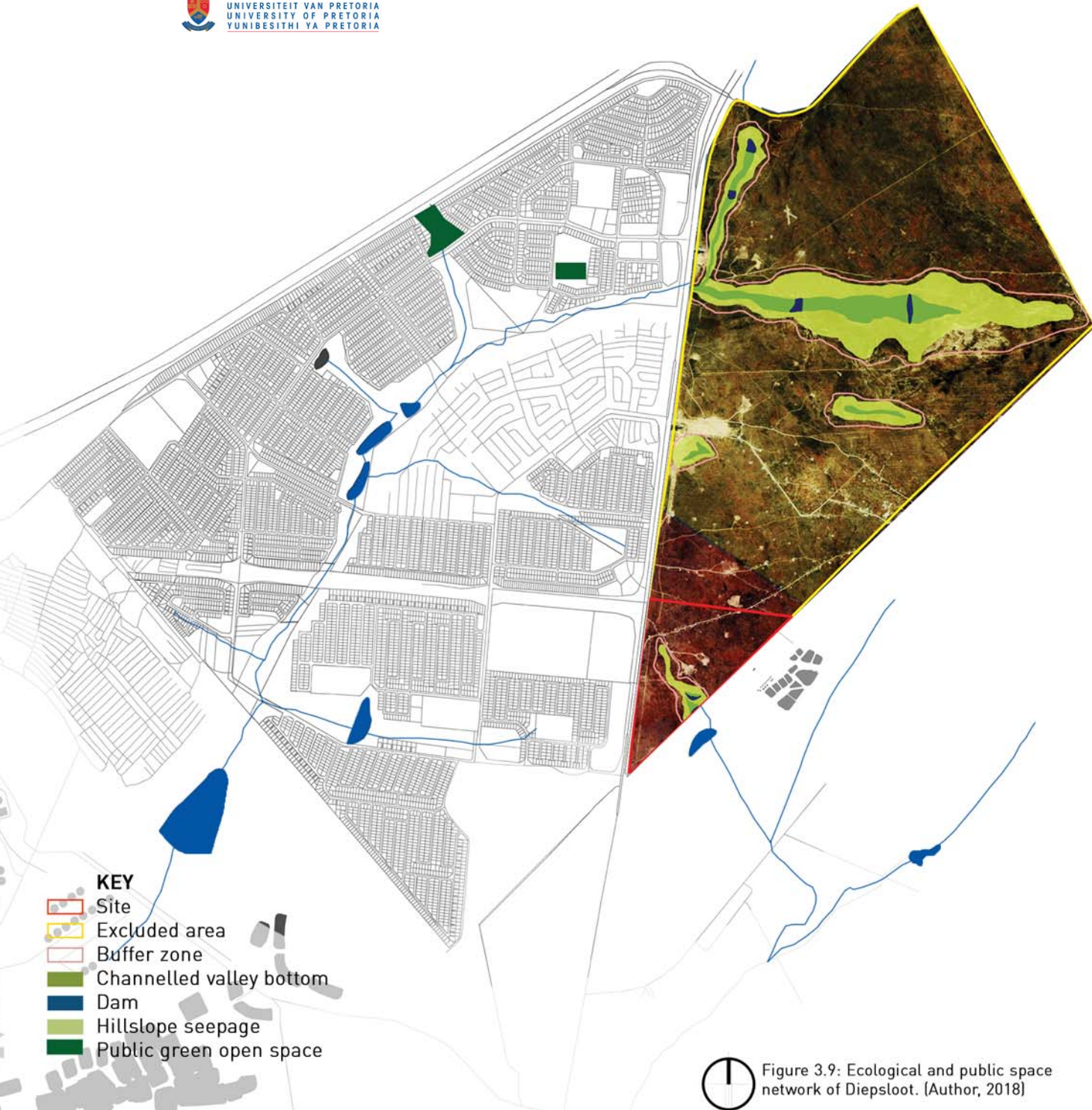
Figure 3.9: Ecological and public space network of Diepsloot. (Author, 2018)

3.2.7. Water Network

Diepsloot has a seasonal drainage line, with a highly disturbed watercourse that cuts through the settlement. It has a trellised drainage pattern whereby numerous seasonal streams feed into the main watercourse. The watercourse, with its surrounding wetland, forms a tributary of the Jukskei River and the open space structure running through the township.

The watercourse is highly disturbed by human habitation. Tarred roads, river crossings that cut across the wetland, footpaths, and illegal dumping in the river channels cause the river to dam up and increases flood vulnerability. During winter months, seasonal streams become dry ground and residents raise shacks along these areas. During summer months these streams flood and the newly built households become vulnerable to flooding.

Buildings close to these streams are also influenced by the waste that washes into dwellings due to illegal dumping in the river channels. Diepsloot is underlined by the Halfway Granite Dome. Tonnelat (2006) states that this geology is characterised by open structures and a relatively flat terrain. The soil is shallow, coarse, and nutrient-poor. When it rains, the soil drains quickly and saturates, producing high volumes of runoff.
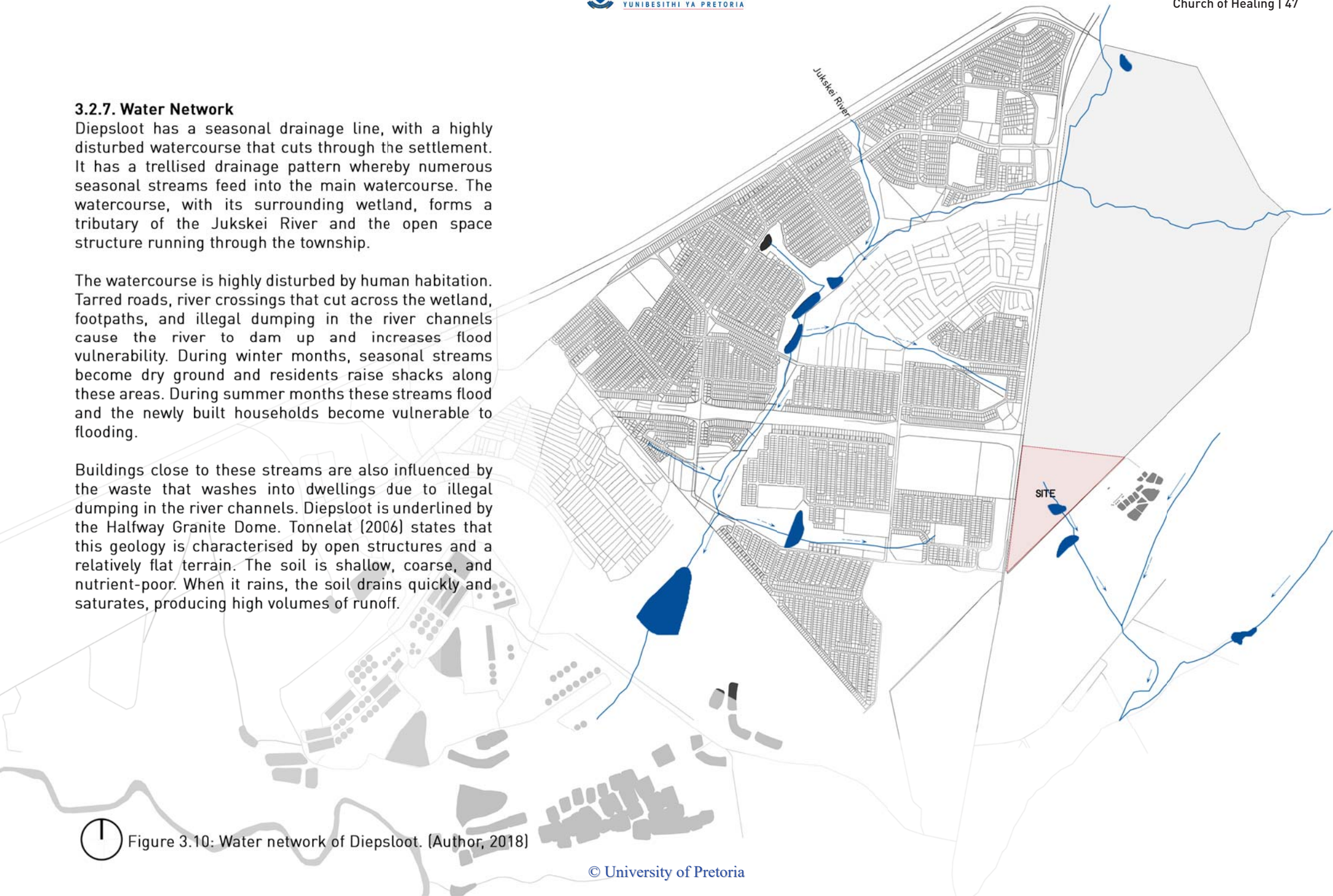
Figure 3.10: Water network of Diepsloot. (Author, 2018)

Figure 3.11: Genus Loci of Diepsloot. (Author, 2018)
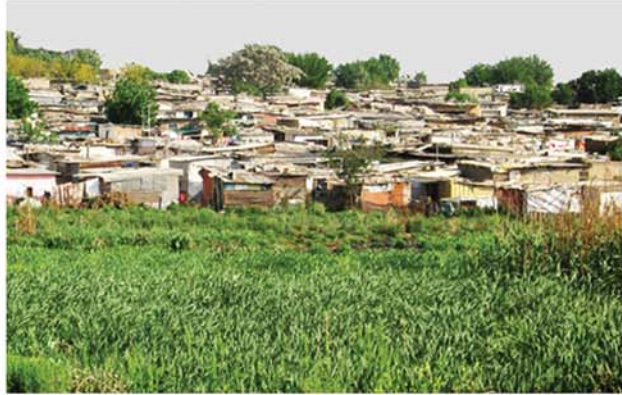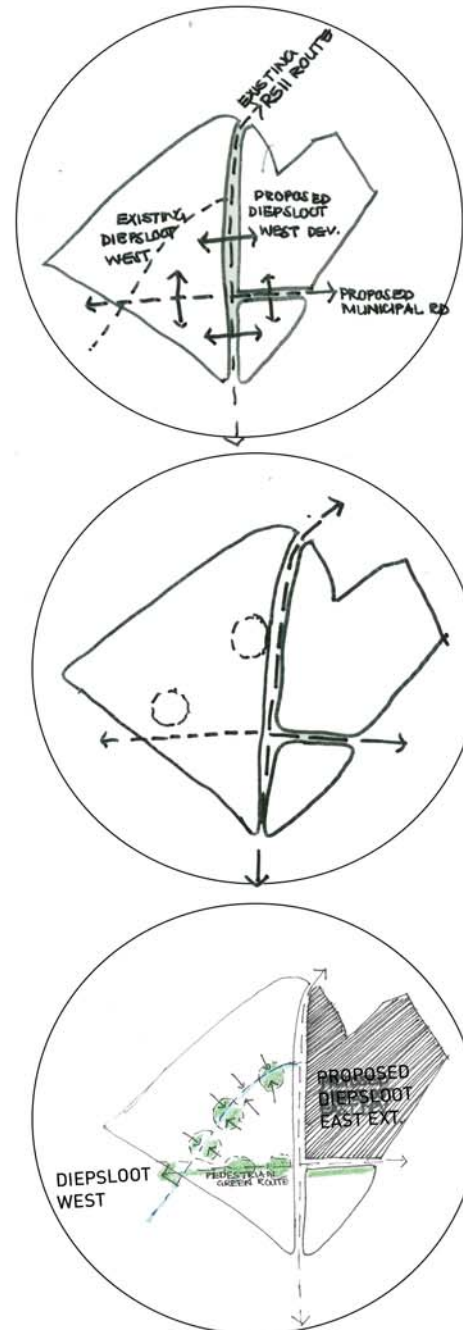
3.3. URBAN VISION STRATEGIES

3.3.1. CONNECTIVITY

Diepsloot West is currently divided by the Juksei Tributary. Further divisions will occur with the introduction of the proposed municipal road which will divide Diepsloot West and Diepsloot East into a upper and lower township portions. A pedestrian walkway network will be introduced as a means of connecting the various township portions, as well as the various religious groups which occur along church Street. in which different denominations are located.

3.3.2. PUBLIC SPACE

Diepsloot has limited public space currently, with only one green public space. Existing public space is taxi ranks and social service building, mainly made up of hard spaces . The green network serves to create a public space network, as well as utilising streets as public spaces for informal market trade.

3.3.3. GREEN NETWORK

Diepsloot is characterised by little trees in the entire township settlement. The introduction of trees and green public spaces act as buffer zones, with the inclusion of the water network to create different green spaces which residents can use as play spaces and parks, as well as green spaces for rituals.

Figure 3.12: **(Top)** Sketch showing connections between different areas of Diepsloot (Author, 2018) | **(Middle)** Sketch showing public spaces of Diepsloot (Author, 2018) | **(Bottom)** Sketch showing proposed green network as a means of connecting and creating public space in Diepsloot (Author, 2018)
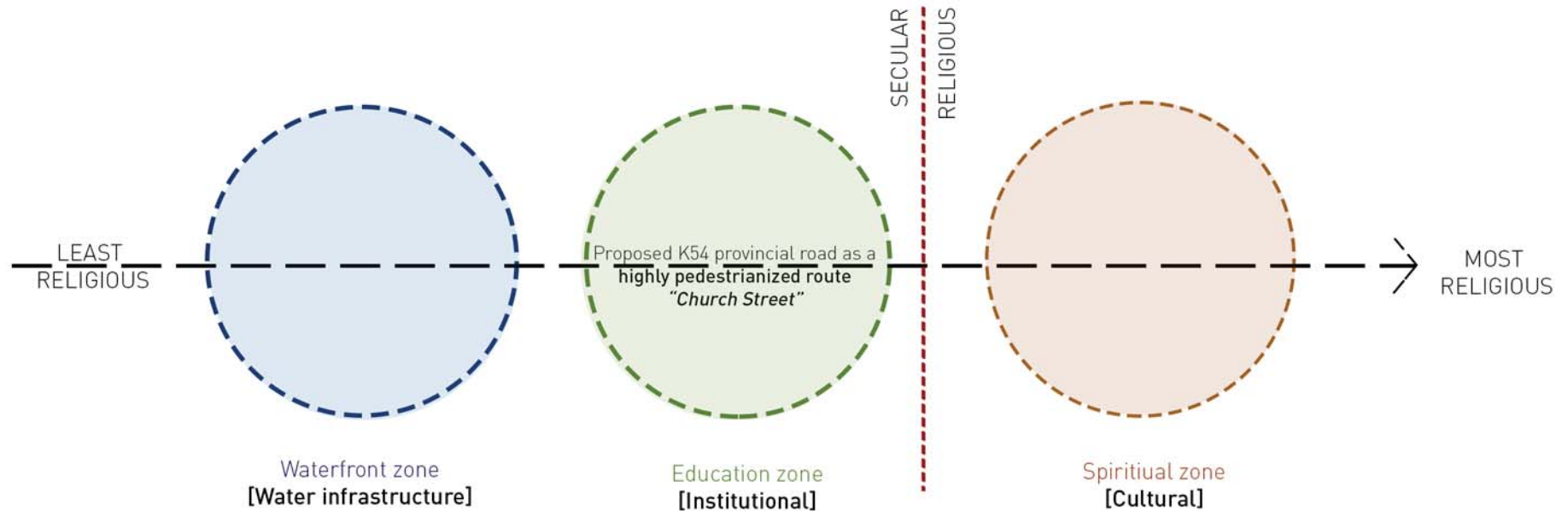
Figure 3.13: Diagram showing connection between various zone (Author,2018)

SITE INTEGRATION

The proposed church complex is located at the end of a religious pilgrimage route, consisting of various churches. It assists in the journey to the religious site as a whole, but in no way alters the existing African Indigenous Churches that are already located on site.

RELIGIOUS VERSUS SECULAR

The building complex has a definitive hierarchy. The religious hierarchy runs parallel with social hierarchy, from public/secular space, to semi-public/semi-religious space, to least public/most religious space. The various rituals occur in different buildings on the church premises, creating different levels of privacy and hierarchy. These sectors are defined by layering of various architectural elements. The three architectural elements are:

i. URBAN (SECULAR/PUBLIC)

The urban proposal is the most public and secular sector, responding to the man-made urban fabric. This is where the journey starts with urban bridging, a market space, a public park and walkways implemented in response to the future provincial road and various urban needs.

ii. SOCIAL (SEMI-PUBLIC/SEMI- RELIGIOUS SPACE)

The social sector houses all the secular activities that revolve around the church. Educational, civic, administrative and social facilities are housed in this sector, with an emphasis on multi-purpose church spaces. These structure are classified as semi-religious structures.

iii. RELIGIOUS (LEAST PUBLIC /MOST RELIGIOUS SPACE)

This sector houses all the religious activities of the church. Although this space is the most social, it is also the most religious, with a definite hierarchy. Due to the social nature of the religious space, no visual barriers are used, but rather a layering of architecture elements are used to differentiate the space. An emphasis on collective church space is important here.
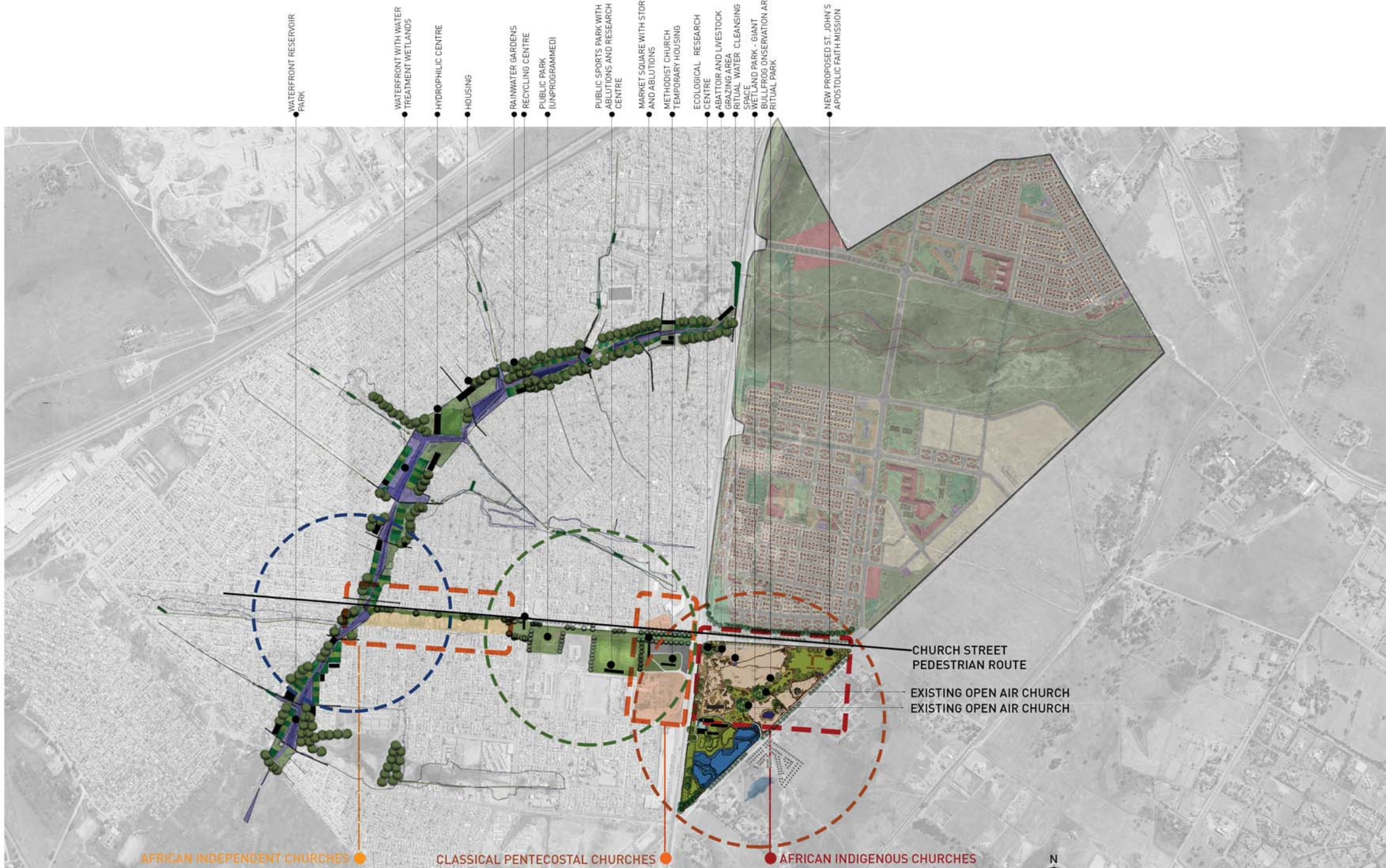
WATERFRONT RESERVOIR PARK

WATERFRONT WITH WATER TREATMENT WETLANDS

HYDROPHILIC CENTRE

HOUSING

RAINWATER GARDENS

RECYCLING CENTRE

PUBLIC PARK (UNPROGRAMMED)

PUBLIC SPORTS PARK WITH ABLUTIONS AND RESEARCH CENTRE

MARKET SQUARE WITH STORE AND ABLUTIONS

METHODIST CHURCH TEMPORARY HOUSING

ECOLOGICAL RESEARCH CENTRE

ABATTOIR AND LIVESTOCK GRAZING AREA

RITUAL WATER CLEANSING SPACE

WETLAND PARK - GIANT BULLFROG ONSERVATION AREA

RITUAL PARK

NEW PROPOSED ST. JOHN'S APOSTOLIC FAITH MISSION

CHURCH STREET PEDESTRIAN ROUTE

EXISTING OPEN AIR CHURCH

EXISTING OPEN AIR CHURCH

AFRICAN INDEPENDENT CHURCHES

CLASSICAL PENTECOSTAL CHURCHES

AFRICAN INDIGENOUS CHURCHES

Figure 3.14: Proposed Urban Vision (Author, 2018)

Waterfront zone
[Water infrastructure]

Education zone
[Institutional]

Spiritiual zone
[Cultural]

Figure 3.15: Zones within the urban precinct (Author,2018)

3.4. SITE ANALYSIS
3.4.1. North of the site

1. North of the site is the proposed Tanganani Extension 14 framework by Newtown Landscape Architects, which is made of different housing typologies within the development. The street edge is made up of three storey walk-up housing.

2. The site to the north of Diepsloot Methodist Church is currently vacant, with only a radio tower erected on the plot. The K54 road development will be passing through the northern part of this area. A portion of the site can potentially be used to aid in usable space for intervention.

3. Further north of the Diepsloot Methodist Church is an established Twelve Apostles Church. This church can potentially link with the intervention, and utilize the religious facilities if needed.
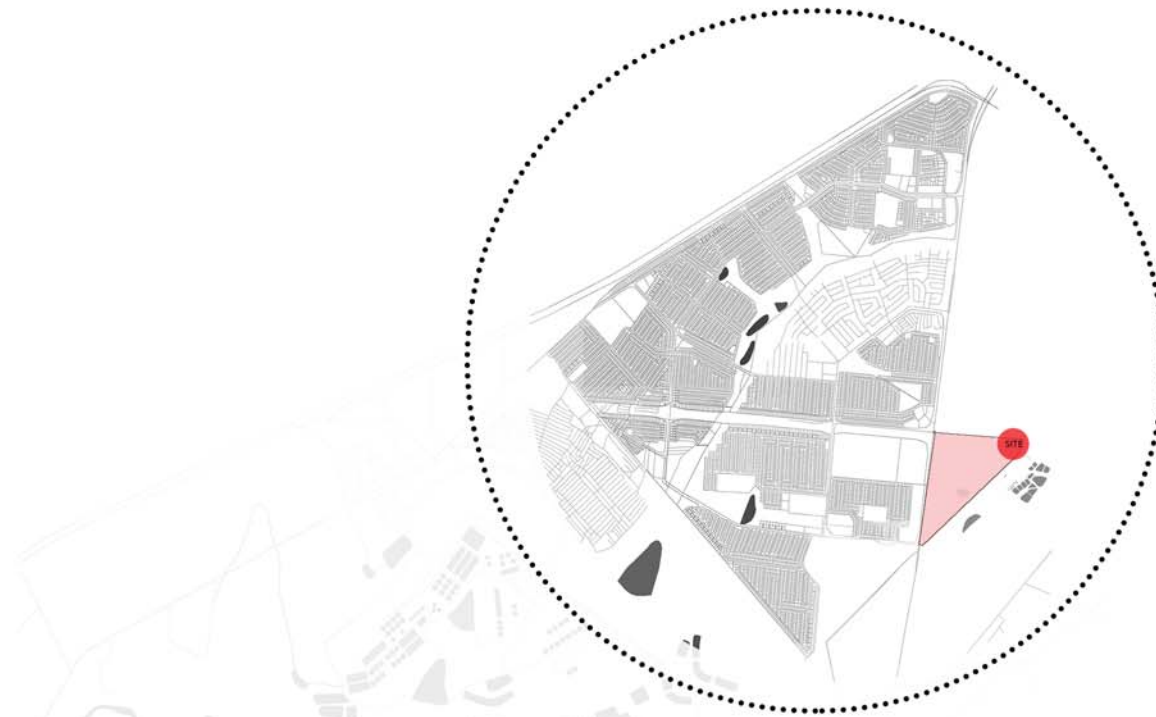
Figure 3.16. Precinct area within Diepsloot (Author, 2018)

Figure 3.17. North of site developemts (Author, 2018)

3.4.2. East and south of the site

1. Southeast of the site is a trout farm used for leisure, as well as a residential are, called Extension 8.

2. According to Diepsloot East Residential Development (Newtown Landscape Architects, 2013: 55), the area to the west of the Diepsloot Methodist Church is reserved for a future Giant Bullfrog conservation area. This makes it a sensitive environmental zone, therefore any development should be sensitive to the bullfrog habitat.

3. Two open air indigenous churches are currently located on the site precinct, therefore any development should consider their sacred religious space.

4. Southwest of the site is a dirt road leading to the trout farm which is to be utilised in the urban vision to create a secondary route leading to the religious complex.

3.4.3. West of the site

1. William Nicol Drive to the west of the site is a major pedestrian movement route into Diepsloot. As a result, a vibrant public street edge is established.

2. Dense residential housing and the Diepsloot Mall are located to the south of the Diepsloot Methodist Church's site.

3. Diepsloot Mall is a major nodal point in Diepsloot, with people and public transport moving in and out of the area. The Diepsloot Mall has a large area of secure parking, which can potentially be used in the event of insufficient parking at the chosen site, for example over Easter.

Figure 3.18. East and south of study area (Author, 2018)

Figure 3.19:. West of study area (Author, 2018)

Figure 3.20: Twelve Apostles Church (Author,2018)

Figure 3.21: Methodist Church radio tower (Author,2018)

Figure 3.22: Bullfrog conservation area (Author,2018)

Figure 3.23: Approach to trout farm on Ridge Road (Author,2018)

Figure 3.24:View from dirt road looking towards Diepsloot Mall (Author,2018)
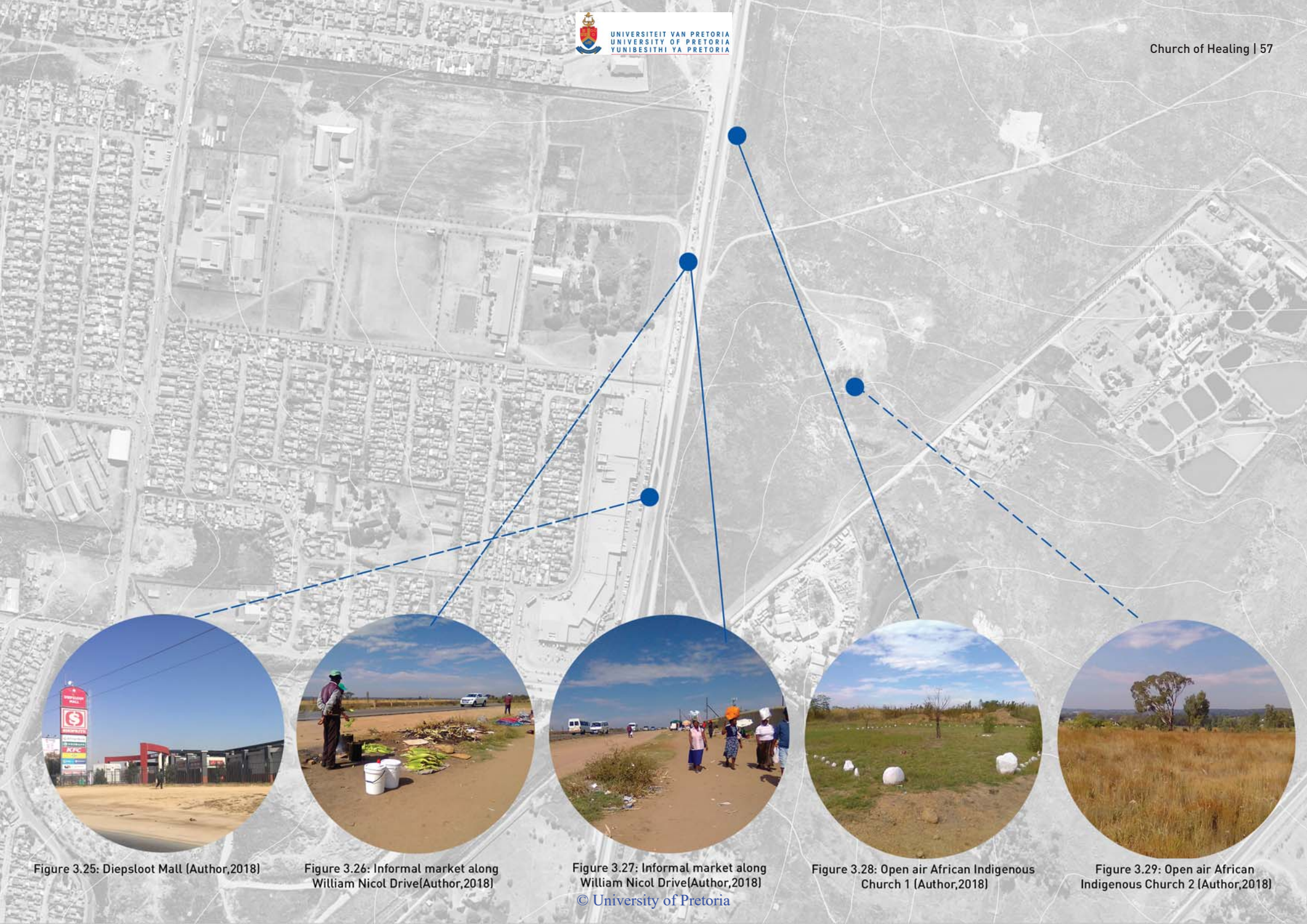
Figure 3.25: Diepsloot Mall (Author,2018)

Figure 3.26: Informal market along
William Nicol Drive(Author,2018)

Figure 3.27: Informal market along
William Nicol Drive(Author,2018)

Figure 3.28: Open air African Indigenous
Church 1 (Author,2018)

Figure 3.29: Open air African
Indigenous Church 2 (Author,2018)

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3.4.4. Vegetation

The site lies in the quarter degree grid square 2528CC (Centurion), which is classified as Egoli Granite Grassland. According to Mucina and Rutherford (2011), this type of grassland falls within a region that is strongly seasonal, with summer rainfall and very dry winters. This vegetation unit is endangered, with only 3% conserved in statutory reserves.

Figure 3.30: Vegetation on site _ 1: Eroded drainage line vegetation, 2: Burnt Hyparrhenia hirta (thatching grass), 3: Brachiaria serrata (perennial grass).4: Aloe greatheadii var davyana (spotted aloe), 5: Aloe littoralis (bergaalwyn). 6: Verbena bonariensis (purpletop), 7:Eucalyptus globulus (blue gum), 8: Sesuvium portulacastrum (perennial herb), 9: Typha capensis (perennial marsh herb), 10: Hyparrhenia hirta (thatching grass), 11: Schoenoplectus brachyceras (perennial reed), 12: Phragmites (common reed). (Author, 2018)

3.4.5. Animals

The occurrences of animals in this area are closely dependant on the type of habitat, in particular wetland-associated vegetation. Due to regular burning activities within the area, smaller mammals are deprived of both food and shelter. The amount of mammals in the area are low, and include species with wide habitat tolerances, due to the homogeneous nature of the site. The site has a low diversity of birdlife, which could be caused by the high level of disturbance (Rautenbach, 1978 & 1982)

Figure 2.31: Animals on site _ **1**: Cynictis penicillata *'yellow mongoose'*. (Fassen, F. 2014) _ **2**: Mus minutoides *'pygmy mouse'*. (Rudloff, K.2014) _ **3**: Brachiaria serrata (perennial grass) _ **4**: Lepus saxatilis *'scrub hare'* (Cheese, H.2013) _ **5**: Riparia cincta *'banded martin'* (Ouzman, L.2014) _ **6**: Chaetops frenatus *'cape rockjumper'* (de Kock, B. 2014) _ **7**: Pyxicephalus adspersus *'giant bullfrog'*. (Schuyl,M. 2014) _ **8**: Pachydactylus *'transvaal thick-toed gecko'* (Mouton, F. 2014) _ **9**: Phrynobatrachus (tremolo sand frog) (Gary, 2014) _ **10**: Aparallactus capensis *'cape centipede-eater'* (Holocene,2014).

3.4.6. Climate and geography

Diepsloot is located in the eastern plateau area of South Africa, in a geographical transitional area between the Highveld and the Bushveld, at an elevation of 1450m. A highland climate offers a sunny climate that is characterised by hot days, afternoon showers, and cool evenings in the summer. Winter months are characterised by dry sunny days, and cold nights. The following is a summary of Diepsloot's climatic and geographic conditions (Climatemps, 2014; SAexplorer,

Topography

The site has a gentle slope from north to south, with 5m intervals as indicated below.
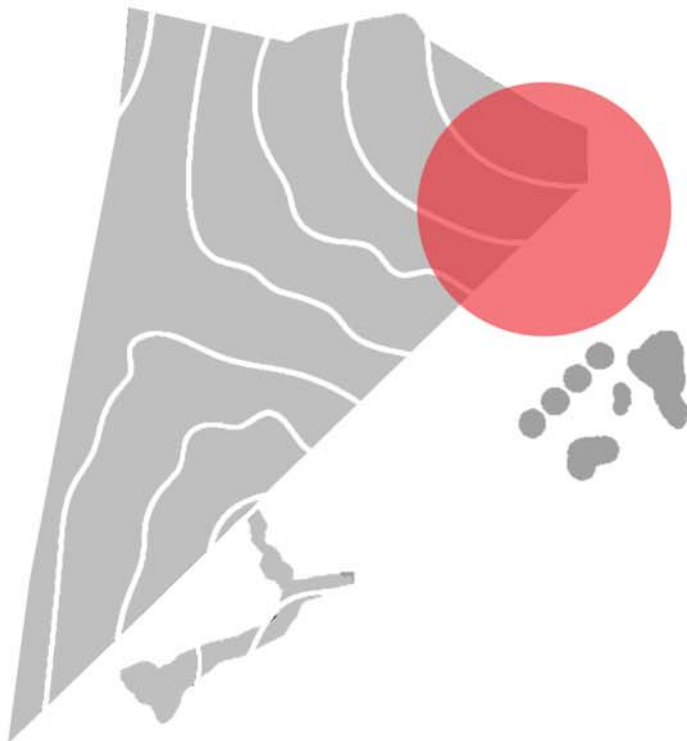
Figure 3.32: Site topography (Author, 2018)

Daylighting

[January and December]
During summer months, the sun rises at approximately 5:24 a.m. SAST, and sets at 6:20 p.m. SAST.

[March to May]
During winter months, the sun rises at approximately 6:30 a.m. SAST and sets at 6:30 p.m. SAST

[June to August]
During the equinox, the sun rises at approximately 6:20 a.m. SAST and sets at 5:00 p.m. SAST

Temperature

Summer minimum: 18°C (October)
Summer maximum: 27.8°C (January)
Winter minimum: 1.2°C (July)
Winter maximum: 16°C (May)

Rainfall

Diepsloot receives an average of 552mm of rain per year. The majority of rain falls during the summer months.
Lowest rainfall: 0mm (June)
Highest rainfall: 105mm (January)

Cloud cover

Cloud cover ranges between 50% in summer, and 10% in winter, with a yearly average of 30%.

Humidity

The average monthly relative humidity ranges between 47% in August, and can reach up to 71% in February.
Summer minimum: 48% (midday)
Summer maximum: 75% (morning)
Winter minimum: 29% (midday)
Winter maximum: 57% (morning)

Sun angles

Winter solstice: 40°
Summer solstice: 88°
Equinox: 65°

Wind

The prevailing wind is calm and generally blows in a NNW direction due to the areas geography (
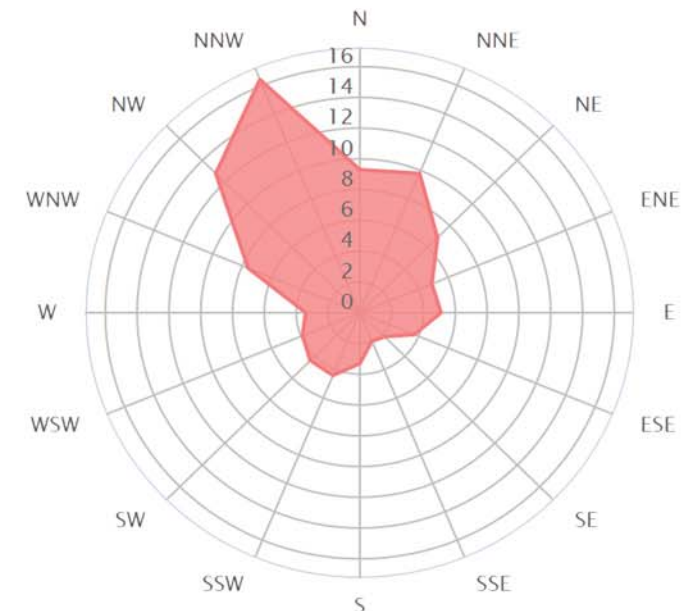
Figure 3.33: Wind rose of site (Author, 2018)

Trout Farm

Ridge Road

Diepsloot Mall

Site area

Existing open air AIC worship area

Existing open air AIC worship area

Figure 3.34: Current view from church site (Author, 2018)
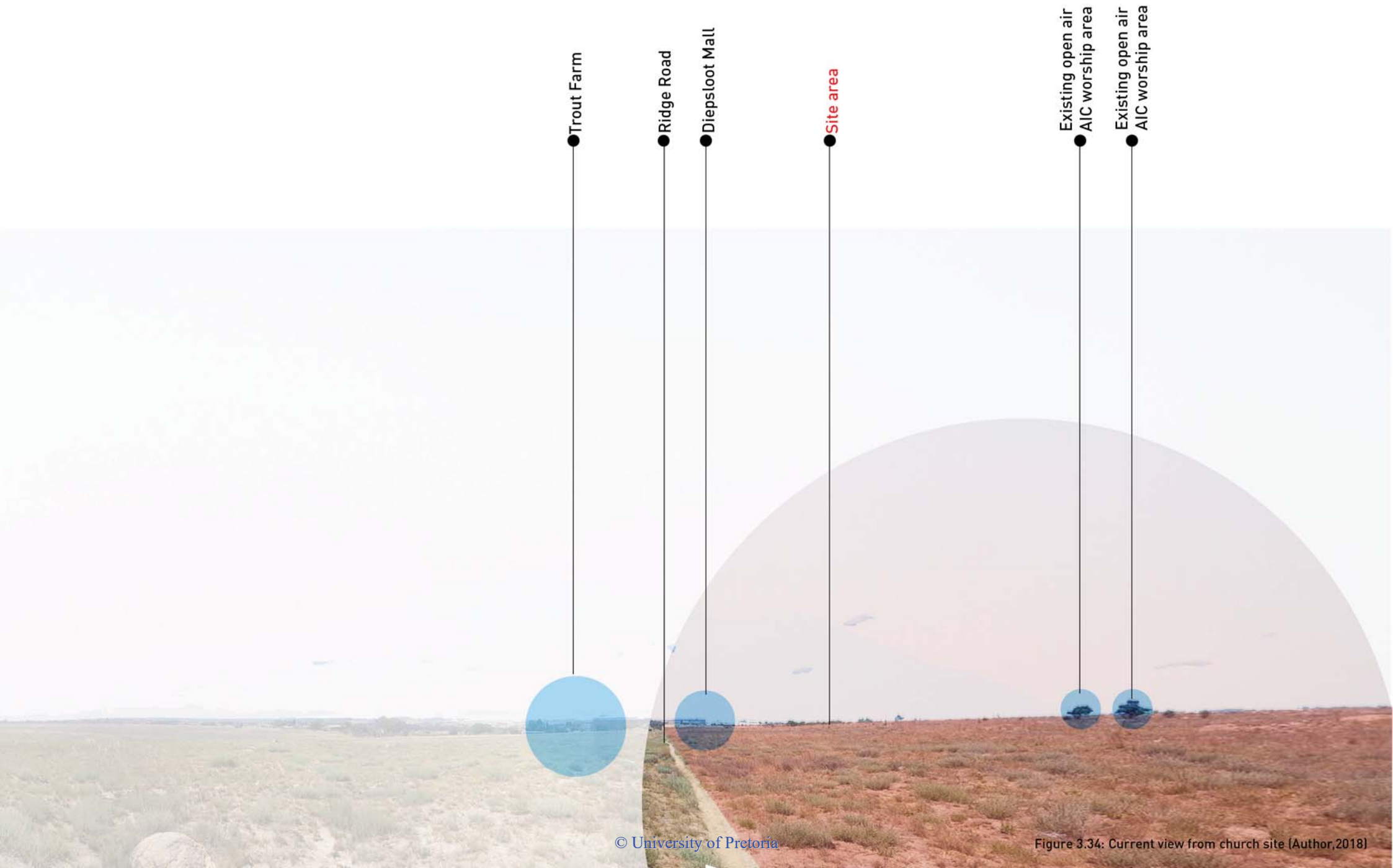
3.5. PRECINCT DESIGN

The Spiritual Zone sits at the end of the movement spine of the three zones. Because it considered an ecological area, the activities on site need to contribute and enhance current environmental features. Because African Indigenous Churches perform rituals which have a relationship with nature, such as slaughtering, ancestral ceremonies a d cleansing.

The proposed precinct incorporates existing activities of the two AIC churches that have been mapped, with a strong emphasis on movement throughout the site, leading to different areas where rituals can occur.

Figure 3.35: Spiritual zone for indigenous rituals (Author, 2018)

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- Area of focus
- Proposed K54 provincial road

Church Street
Pedestrian route linking zones

- Existing open-air AIC workship space
- Existing open-air AIC workship space

- Existing wetland (degraded)

N
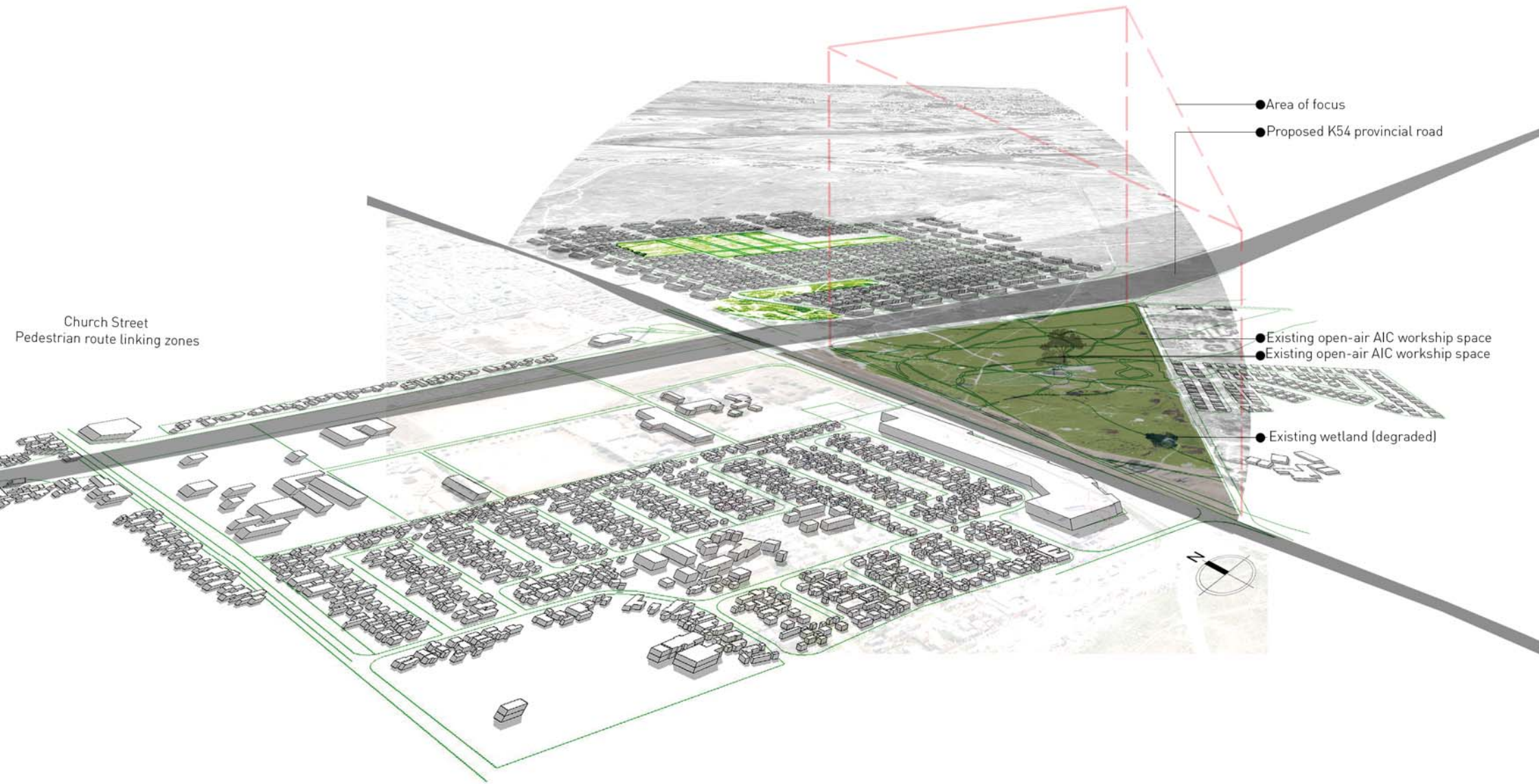
Figure 3.36: Current precinct situation (Author,2018)

A base map is prepared and existing features are plotted from aerial photographs and initial site visits. The following planning issues are singled out for consideration: the siting and relationship of the proposed facility; the natural entities that should be retained; the character and use of the existing wetlands structure; the location of existing and future developments.

1. Proposed site
2. Diepsloot mall
3. Future Methodist church development
4. Footloose trout farm
5. African Reptiles and Venom
6. Diepsloot West ext. 4
7. Diepsloot West ext. 7
8. Tanganani
9. Tanganani ext. 14
10. Future provincial road
11. Information node (environmental protection)
12. Giant Bullfrog conservation
13. Groundwater seepage and retention
14. Man-made dams
15. Future residential development

Once conceptual designs for the proposed facility are done, a site plan is designed to allow further design development of landscaping, parking, access, roads and walkways. The site plan guides further design development of buildings and landscaping

Staff vehicular movement and park maintenance
Guided/seasonal educational trails
Perennial stream
Public movement through park
Controlled pedestrian access points

Figure 3.37: Precinct development (Author,2018)

Figure 3.38: Movement through site (Author,2018)
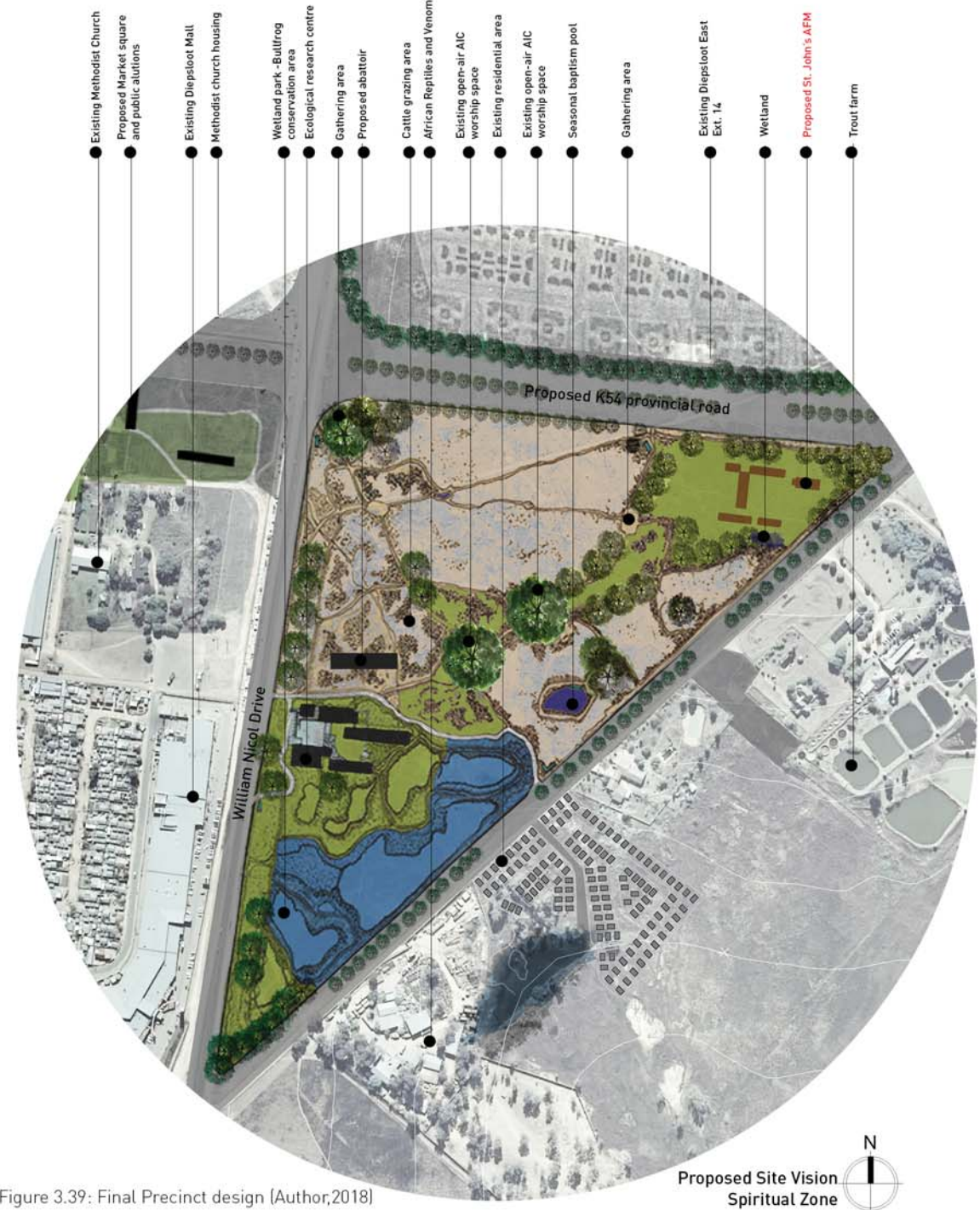
Figure 3.39: Final Precinct design (Author,2018)

Proposed Site Vision
Spiritual Zone

N

THEORY
Biophilia as informant

4.1. BIOPHILIC DESIGN

This chapter will frame the argument of the dissertation theoretically and intends to develop a framework for the qualities of the space and landscape that are to be explored and adopted in the making of religious architecture. Existing theories which are related to environmental preferences and restoration in architecture will be examined.

The chapter will also investigate the potential of architecture to connect man to the biophilic world. This will be done by proposing a creating a link between man's inherent connection to the natural world.

The concept of biophilia and the primary attributes of biophilic design are concepts vital to regenerative theory and will be discussed, followed by a critique in terms of aspects that form biophilic design, then how and in what context these theories can be applied.

4.1.1. THE DEVELOPMENT OF BIOPHILIC DESIGN

Most buildings prior to the twentieth century had some elements of the biophilic design principles present in their architecture, which is lacking in most twentieth and twenty-first century buildings. Biophilic design reduces stress, enhances creativity and clarity of thought, improve our well-being and expedite healing" (Browning, Ryan, & Clancy, 2014: 4).

Biophilia can be described as the "love of living systems." The term was coined by the Harvard Biologist, Edward Wilson in 1984, in an attempt to create design and space that is concerned with our need to interact with the natural world and the connection nature has with our emotions. The main emphasis of biophilia is also the healing effect it has on humans in the psychological and mental aspects. This was due to the paradigm shift which occurred during the Modernist period, which emphasised aesthethics above all.

A healing environment exists when humans become in touch with their feelings and emotions, therefore humans will want to be environments that reduce stress. This healing effect can be described in scientific and measurable geometric properties. William Reed and Ray Cole argue that a radical shift needs to occur in architectural thinking, incorporating biophilic and bio-inspired design in order for local ecosystems to be restored and thrive.

There are six guiding principles in biophilic design;
+ Using well recognised environmental features in spaces.
+ The use of natural shapes and forms, with minimal use of straight lines and right angles.
+ Create a sensory experience with various transitions and complimentary contrasts by utlising natural patterns and processes.
+ The use of light in a space to evoke a desired human interaction.
+ Design that has a cultural, spiritual, ecological and historical relationship to create a place-based relationship and;
+ Maintain strong connection with nature by incorporating an evolved human-nature relationship.(Terrapin Bright Green, 2012).

Biophilic design is organised into three main qualities: Nature in the space ; Natural Analogues and Nature of the space, which provide a framework for the incorporation of a rich diversity of strategies into the built environment (Terrapin Bright Green, 2012).
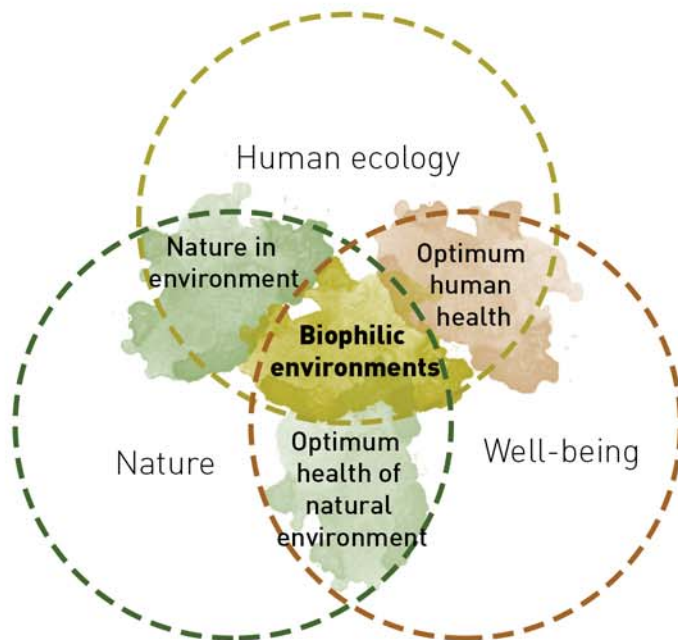
Figure 4.1: Proposed biophilic environment relationships. (Author, 2018)

4.2.1. NATURE IN THE SPACE

This category addresses the physical and ephemeral presence of nature in a space. This includes plant life, animals, water, as well as sounds, smells, and wind.

Memorable experiences are achieved when meaningful connections are created with these natural elements, particularly through multi-sensory interactions, movement and diversity.

Terrapin Bright Green defines Nature in the space to consist of the following biophilic design patterns:

1. Visual connections: a view to natural elements, living systems, and natural processes;

2. Non-visual connections: auditory, haptic and tactile stimuli;

3. Thermal and airflow variations: subtle changes in air temperature, airflow, humidity, and surface temperature;

4. Presence of water: enhances the experience of a place through the senses of touch, hearing and sight;

5. Dynamic and diffused light: varying light and shadow intensity changes over time to create conditions that occur in nature; and

6. Connection with natural systems: allows for an awareness of natural processes.

(Terrapin Bright Green, 2012).

Figure 4.2: Reflecting pool at the Pulitzer Foundation for the Arts by Tadao Ando, St. Louis (chaotic float/Flickr, 2014)

4.2.2. NATURAL ANALOGUES

This category addresses non-living, organic, and indirect evocations of nature. These include colours, shapes, patterns, objects, and materials found in nature. Natural materials that have been altered or processed, provide an indirect connection with nature: "while they are real, they are only analogous of the items in their 'natural' state" (Browning et al., 2014).

Natural analogues encompass the following biophilic design patterns:

1. Biomorphic forms and patterns: expressed in mathematical proportions. These include curves, angles of 120 degrees (Ching, 1996), right angles and straight lines (the Golden Angle), the Fibonacci series, and the Golden Mean (ratio of 1:1618)

2. Material connection with nature: through minimal processing, materials and elements create a distinct sense of place by reflecting the local ecology or geology. Spaces feel warm, rich, authentic, and stimulating when touched

3. Complexity and order: a space that feels information-rich and engaging, as an intriguing balance between overwhelming and boring. Rich sensory information adheres to a spatial hierarchy, which is similar to those encountered in nature.

"This is what I prayed for, a piece of land, not so very big, with a garden and near the house, a spring that never fails and a bit of wood to round it off."
Horace

Figure 4.3: Golden ratio stairs(Media Fury, 2018)

4.2.3. NATURE OF THE SPACE

This category addresses spatial configurations in nature. This includes the learned and innate desire to be able "to see beyond our immediate surroundings, our fascination with the slightly dangerous or unknown; obscured views and revelatory moments; and sometimes even phobia-inducing properties when they include a trusted element of safety" (Browning, Ryan, & Clancy, 2014).

A strong sense of nature of the space is achieved through the creation of engaging and deliberate spatial configurations. It encompasses the following biophilic design patterns:

1. **Prospect**: an unimpeded view over a distance;

2. **Refuge**: a place that allows withdrawal from environmental conditions or the flow of activity, in which individuals are protected;

3. **Mystery**: obscured views or sensory devices entice individuals to travel through the environment to acquire more information. A space should have a palpable sense of anticipation, offering the senses a denial and reward that compels exploration;

4. **Risk and peril**: a reliable safeguard that is coupled by an identifiable threat. A space with an implied threat feels exhilarating and these experiences play a role in developing risk assessment.

Figure 4.4: Stepping stones at the Fort Worth Water Garden, Fort Worth, Texas. (Raz, 2014)
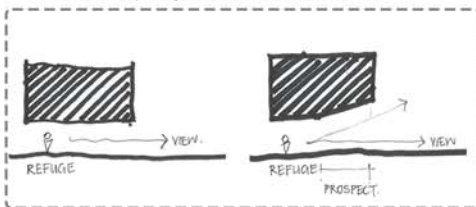
1. MOVEMENT AND VIEWS
Humans prefer a refuge witth a prospect (view) towards the outside. These views can be obstructed, hindered, or directed to elements, eliciting emotive responses
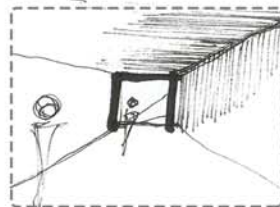
2. ENTICEMENT
The user's curiosity is triggered by parcially revealed features in the distance.
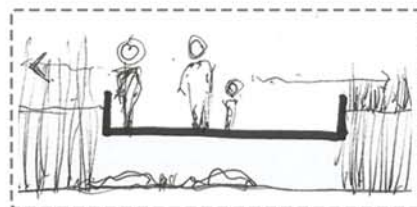
3. THRILL
Thrill encompasses a combination of fear and pleasure. The value of architecture is intensified by giving evidence of what it protects against.
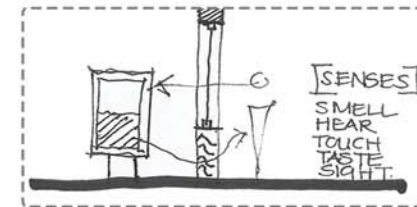
4. SENSORY EXPERIENCE
It is important to create sensory spaces by evoking the user's reality. Thus, to apprehend reality as fully as possible, it must be experienced it in as many ways as possible.
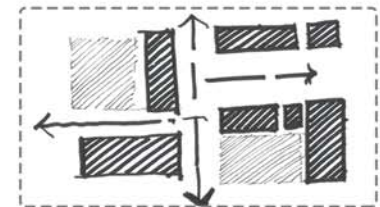
5. EXPLORATION
Users try to hypothesise what will coome next– they anticipate a variety of possibilities and this fascinates them.

Figure 4.5: Nature of the space characteristics. (Author, 2018)

4.3. APPLICATION OF BIOPHILIC DESIGN

The term biophilia can also sometimes be misused or misplaced. Biophilic design is not only limited to the aesthetics and presence of plants as a therapeutic element to induce healing.

Biophilic design is about relating humans with their place in nature and the natural world within the human environment. Alexander observed that the creation of biophilic spaces is not only beneficial for the occupant, but the designer as well, through the conception of these spaces. However, few architects incorporate biophilic design attributes in their designs, therefore missing out on the opportunity to engage with nature themselves.

The way of creating architecture on the basis of aesthetic appeal, formal concerns and short term economies has made humans defensive in the spaces in which they occupy rather than making them feel at ease. "A healing environment enables people to draw emotional support from their settings. It frees them to move around and interact unconsciously, to combine their lives with the lives of others." In utilising biophilia, there is an assumption of learning and being inspired by nature in the creation of spaces that are healing. By applying biophilia and living patterns to enhance humans' emotional and physical health, we apply nature's lessons to enhance creativity. Therefore, it can be said that biophilia is the human instinct which favours living things.

Edward Wilson developed eight points of the Biophilic Effect, which can be applied to help design buildings conducive to health.

These can be used as a rough design checklist for biophilic properties, to create health-inducing architecture. These include;

1. **Light,** in the form of natural light is essential to how we perceive spaces, but also vital in the functioning of our bodies;
2. **Colour** has the ability to affect our emotions and moods;
3. **Gravity** creates a natural balance of the natural world - heavier elements at the bottom and lighter elements at the top;
4. **Fractals**, present in various forms and scales in the natural world, surround us daily such as the nervous system, the circulatory system, and the lung's system of branching air passages. Hence we react positively to fractal forms because they are so common;
5. **Curves** exist more commonly in nature, especially in the biological forms such as animals and plants. Both fractals and curves give emotional pleasure by creating a natural balance;
6. **Details**: Humans are inclined to place emphasis on small details, which affects our sensory experiences;
7. **Water**: the presence of water is healing through the sensory experience it creates;
8. **Life**: contact with living forms is nourishing to humans, emphasising the meaning of biophilia.

The role of human always comes into question when considering ethics and the relationship humans have with nature. Humans are known to have dominion over nature, but current practices within the built environment have left little of the environment scarred, unchanged and still living in harmony. McDonough questions that how can humans have dominion not only over something that they have killed- in this case nature and its living systems, but also that dominion does not work without having some sort of stewardship towards nature.

Current methods of design and architecture reach far beyond what the environment can sustain, as we are currently creating a vast industrial machine that can no longer allow life to happen within it. He concludes by emphasizing that war isn't always about the mass killings that happen through human gun activity and bombing, but war is also about not enabling life to continue after your own existence.

Therefore, architecture should no longer be about designing killing machines, that not only kill living systems, but also human existence. We need to realize that in as much as we have some dominance over nature and the environment, we are actually at the mercy of the might and sacred forests and natural landscapes.

4.4. BIOPHILIC PRECEDENT: MAGGIE CANCER CENTRE, MANCHESTER, FOSTER + PARTNERS, 2016

Maggie's Centres are conceptualised to be a place of refuge where people affected by cancer can find emotional and practical support.

They place great value upon the power of architecture to lift the spirits and help in the process of therapy. The design of the Manchester centre aims to establish a domestic atmosphere in a garden setting and, appropriately, is first glimpsed at the end of a tree-lined street, a short walk from The Christie Hospital and its leading oncology unit. (ArchDaily, 2016)

The building occupies a sunny site and is arranged over a single storey, keeping its profile low and reflecting the residential scale of the surrounding streets. The roof rises in the centre to create a mezzanine level, naturally illuminated by triangular roof lights and it is supported by lightweight timber lattice beams. The beams act as natural partitions between different internal areas, visually dissolving the architecture into the surrounding gardens. The centre combines a variety of spaces, from intimate private niches to a library, exercise rooms and places to gather and share a cup of tea.

4.4.1. APPLICATION DESIGN PRINCIPLES

The materials palette combines warm, natural wood and tactile fabrics. Support offices are placed on a mezzanine level positioned on top of a wide central spine, with toilets and storage spaces below, maintaining natural visual connections across the building. (ArchDaily, 2016). The stereotomic and tectonic articulation creates a balance between form, while also emphasising gravity. The use of skylights creates a feeling of lightness on the mezzanine levels, while also allowing light to filter in through the space.

Figure 4.6.: Eastern entrance into centre (ArchDaily,2016)

Figure 4.7.: View of gardens (ArchDaily,2016)

Figure 4.8: Axonometric view of centre (ArchDaily,2016)

Figure 4.9: Skylight allowing light to fill circulation space (ArchDaily,2016)

Figure 4.10: Floor plan of centre (ArchDaily,2016)

Throughout the centre, there is a focus on natural light, greenery and garden views, which are central to the biophilic design framework. The rectilinear plan is punctuated by landscaped courtyards and the entire western elevation extends into a wide veranda, which is sheltered from the rain by the deep overhang of the roof, allowing a connection with living forms Sliding glass doors open the building up to a garden setting. Each treatment and counseling room on the eastern facade faces its own private garden.

The south end of the building, extends to embrace a greenhouse–a celebration of light and nature. The greenhouse provides a garden retreat, a space for people to gather, to work with their hands and enjoy the therapeutic qualities of nature and the outdoors. It will be a space to grow flowers and other produce that can be used at the centre giving the patients a sense of purpose at a time when they may feel at their most vulnerable.

Figure 4.11.: Waiting area with connection to exterior (ArchDaily,2016)

Figure 4.12.: Section ciew of centre(ArchDaily,2016)

4.5. AFRICAN RELIGION AND CONNECTION TO NATURE

"Nature is like an autobiography of God. He is encountered through it. God created the universe full of rocks, trees, mountains, valleys, rivers, lakes and oceans to show His very majestic presence in the world." Bakanja Mkenda

African spirituality and religion has always emphasised the direct and indirect healing power of nature and therefore, its preservation, health and harmony has always been of utmost importance. In many writings on biophilic design, Wilson and Kellert, the founders of biophilic design, don't relate biophilic design to cultural issues such as African spirituality, but rather emphasise place-making is important in a person affiliating themselves with nature.

The need for humans to be in contact with the living world is just as important as the need for food, water or air. Ancestors relied on the information from their environments, such as the savannas, with its grasslands, bushes, scattered trees, sunlight, water bodies and grazing animals to learn about lessons of survival. (SAFCEI, 2018)

Over time, we have lost traces of the savanna in our inherited memory and instincts, and thus our sense of belonging. Ancestors dwell in the savanna and savanna-like environments, therefore modern humans try to recreate such environments. These environmental elements included; abundance of trees, plants and animals; topographic relief where ridges were used for surveillance, caves for shelter, as well as cliffs and hills; lakes and rivers as a source for food and protection.

The connection with nature is genetically and culturally important, as there is a need to be tied closely with nature. Man has a need to believe in a higher power, therefore the need for religion and spirituality as a guiding element for human existence. Cultural beliefs, which also extend to religion and spirituality, are dependent on other forms found in the natural world. (SAFCEI, 2018)

Traditional cultures have built sacred spaces in which one experiences a high level of connection. Sacred spaces are nourishing to its occupants. This is achieved through the same process which underlay the biophilic phenomenon.

Those who love nature can form a transcending relation or communion with it; ancient religions refer to this as sacred communion with nature. By working with various design tools, buildings can be recreated to have the same intense degree of connection, resulting in the highest level of neurological well-being and nourishment.

4.5.1. BIOPHILIC DESIGN FOR ST. JOHN'S APOSTOLIC FAITH MISSION

In the case of St. John's Apostolic Faith Mission, biophilic design is most evident in the performance of healing rituals, which connect the congregates to nature. Purification rituals were performed in the open field, facing east as prayers and purification rites were performed. This made the congregates aware of the sun's movement, contrasting with the fields, which allowed the patient and their diviner to be camouflaged in their setting. This emphasised the oneness with nature. This also allows nature to absorb all of the waste produced by 'patient' using natural methods of decomposition. This cyclic process of purification rituals allowed a oneness with nature and a respect for it as a symbolic relationship of nature taking up and absorbing the sickness of the patient. This however, has no longer become the case as rituals are enclosed in spaces where waste no longer becomes a part of the healing process, but rather one with the municipal sewer system.

Humans feel most alive in their spiritual movements, therefore feeling connected to our environments in a deep sense of belonging to it and the universe creating an inseparable reality, allowing us to inhabit the material and spiritual worlds at the same time. Past religious architecture allows us to achieve a connective experience as originally intended. (SAFCEI, 2018)
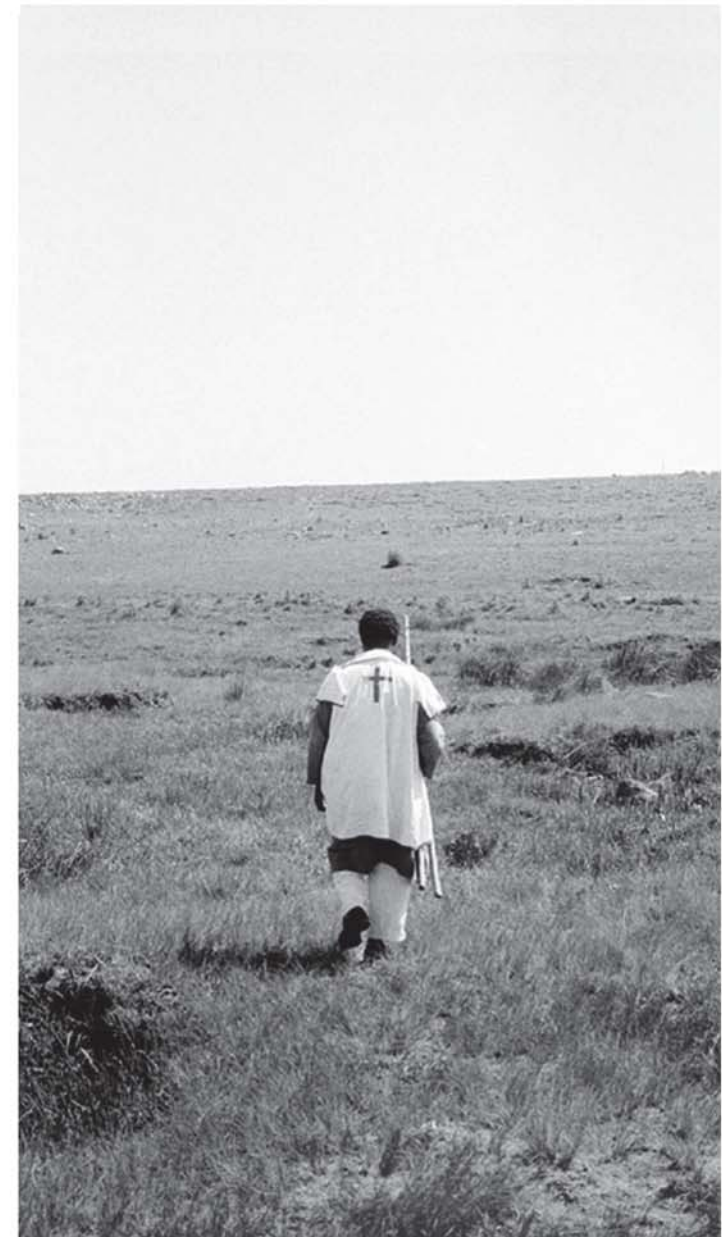
Figure 4.13: Dawn baptism and healing, north-west of Soweto (West, 1975)

4.6. PRINCIPLES TO APPLY

The prospect of creating emotional and cultural meaning is an appropriate vision for Diepsloot; "In environment that has the physical landscape but lacks meaningful public space" (Chung, 2010: 18).

In the context of this dissertation, the religious complex could optimistically act as a catalyst for meaningful community integration. The proposed facility should reflect the following biophilic design principles:

+ An emphasis on light quality of the various spaces;
+ The use of gravity in creating balance and hierarchy of spaces;
+ Use of water, which contributes to the religious and social needs of the church as well as the community, thereby addressing the potential for human experiences that connect communities to water;
+ Use of living forms in the form of vegetation and allowing the various living species identified in chapter 3 to engage with the landscape

New dams and collection ponds are introduced into the landscape and around buildings. This is accomplished by damming up portions of the water drainage path at predetermined locations, forming an integral connection between the natural and built environment. By integrating water throughout the complex, it plays an important role in sensory experience while contributing to climate control, reflectivity, sound, connectivity, boundary conditions, movement, water management, and interaction.

PROGRESSION OF THEORIES

14 PATTERNS OF BIOPHILIC DESIGN

Affliate with nature — Biophilic Design
Biophilic Hypothesis
Biophilia
Phenomenology
Ecological design

NATURE IN THE SPACE
1. Visual connection with nature
2. Non-visual connection with nature
3. Non-rhythmic sensory stimuli
4. Thermal and airflow variability
5. Presence of water
6. Lighting
7. Connection with natural systems

NATURAL ANALOGUES
8. Biomorphic forms and patterns
9. Material selection
10. Complexity and order

NATURE OF THE SPACE
11. Prospect
12. Refuge
13. Mystery
14 Risk / peril

Application of Biophilic patterns to design
Ritual + Narrative + Biophilic patterns
=
St. John's Apostolic Faith Mission Diepsloot

Figure 4.14: Summary of Biophilic design framework and intentions (Author,2018)

PROGRAMME
Ritual as informant

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5.1. RELIGIOUS PILGRIMAGE USERS

There are various churches which are located along the pilgrimage route and are made up of primary and secondary groups.

PRIMARY USERS

The primary users are the church groups that are located in the Diepsloot religious strip, who are in direct threat of losing their worship space due to the future K54 road development. These groups need permanent worship space immediately. These denomination groups are belong primarily to the African Independent Churches group. This also includes the new proposed St. John's Apostolic Faith Mission church, which is currently not located anywhere in Diepsloot.

The other users of the site are various African Indigenous Church groups which make use of the site for worship purposes.

SECONDARY USERS

The secondary users are the other church groups not located in Diepsloot religious strip and are not in direct threat of losing their worship space. The secondary church groups would use the facilities in the event that they may need a temporary worship space in the future. These groups are not in immediate need for worship space. The denomination groups include Charismatics, the ZCC, Methodists, and the Twelve Apostles' Church in Christ.

The following users are the primary and secondary church groups in the religious strip:

Site

Methodist Church

Twelve Apostles Church in Christ

Heavenly Gate Church of God

Army of Peace Ministries

Heritage of Faith

New Life Community Centre

Seventh Day Adventist

God's Will Faith Ministries

Figure 5.1. Users located along the pilgrimage route (GoogleWorldSat.org, 2018)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
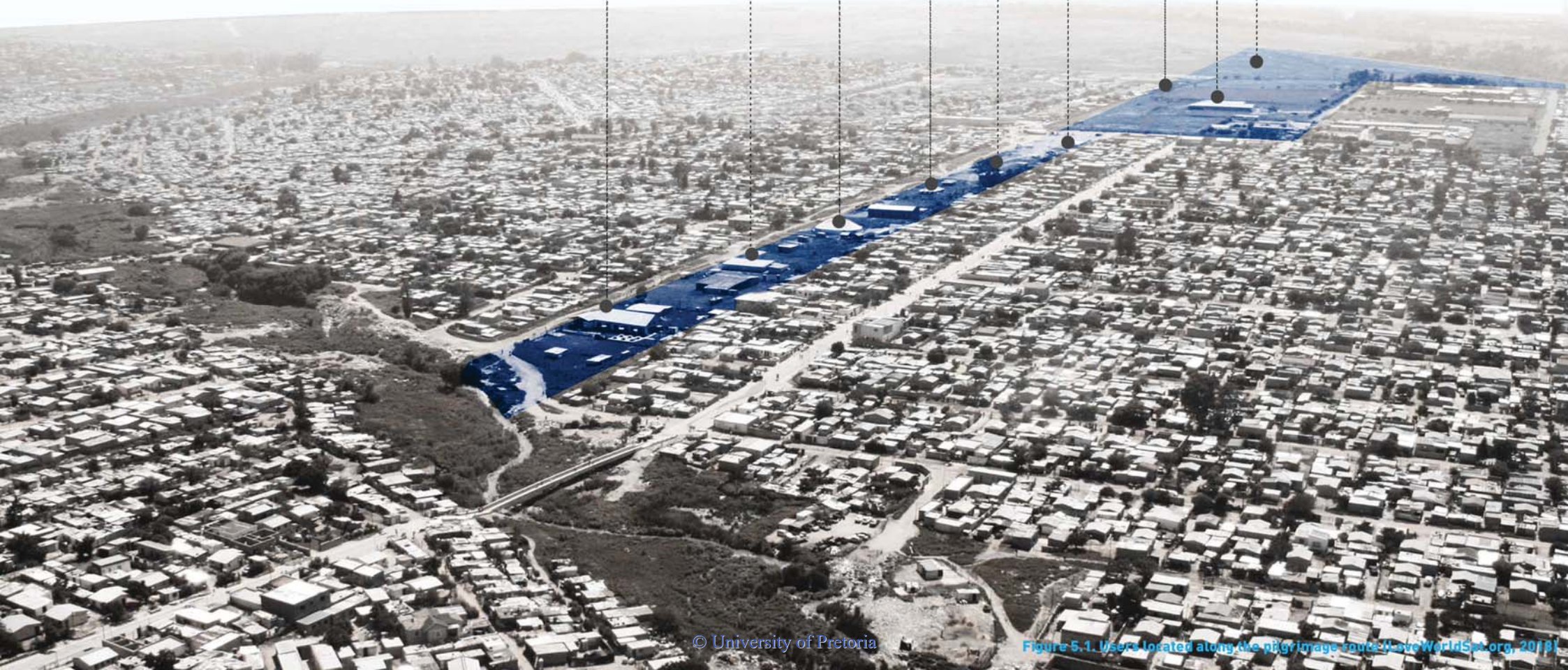
5.2. PROPOSED CLIENT

5.2.1. ST. JOHN'S APOSTOLIC FAITH MISSION

In 1906, a young Christina(h) Nku, received her first series of visions, (Landman, 2006). Acting upon a vision she believed came from God, Nku established her own church in 1933, known as St. John's Apostolic Faith Mission. It drew upon pre-colonial African religious practices and imported Christianity (Thomas L. 1999), with its origins traced to Apostolic Faith Mission which Nku attended under P Le Roux. It has become one of the largest and most prominent indigenous churches in South(ern) Africa, following other indigenous churches such as Zion Christian Church (ZCC) and Shembe churches.

5.2.2. LOCATION

Nku received visions of land where a church with twelve doors was to be built, on white owned land. While constantly praying for site, land become available after being rezoned for black housing, allowing her to make a purchase The Temple, as it is referred to, was built in 1950s in Evaton, south of Johannesburg and was the largest building in the Pretoria–Witwatersrand–Vereeniging (PWV) urban area at the time. It became the headquarter for all local circuits and a place for gathering for the church festivals held three times a year in March, August and November.

5.2.3. THE CURRENT SITUATION

The battles in attaining land ownership were evident in the early stages of the church. It is still an ongoing issue in current South African context of land ownership. The various local churches (circuits) and the land on which they operate, are owned by the headquarters, ensuring the proper use of the resources. However, they do not have much engagement with the context in which they are placed.

The organizational structure follows a top down approach: Archbishop, bishop, circuit minister, Evangelist, Healers(Basebeletsi), men and women of the congregation with uniform, men and women of the congregation without uniform.

This organisational structure is rigid, due to the church liturgy, however, in light of the proposed religious complex, can be reinterpreted to the various spaces within the complex.

The evangelists could take up the role of the educators, overseeing various aspects of education- religious education, education for the various technologies an systems used in Chapter 8.

The healers would then be responsible for the purification rituals and the spaces related to them such as the contemplation courtyard, or wetland system.

This is just a indication of how religious rituals can have a direct relationship with the organisational structure. Therefore, the church in Diepsloot, allows for all members of the church to be active participants in the various secular and religious rituals performed. The church in Diepsloot is an example of integrating biophilic design and nature within the spaces, and how these are managed to the benefit of the larger community.

1884: Christina Nku (Mokotuli) born in Botswana

1906: Petros Ndumbela Masango born | First visions of church (Nku)

1918: Joins Apostolic Faith Mission of PL le Roux

1924: Baptised by Elias Nketsing and Elias Ramoipone | Aquainted with PL le Roux

1932-1935: 7th series of visions : Liturgy /conferences/uniform

1936: Breakaway from Apostolic Faith Mission of PL le Roux | Starts healing people

1939: St. John's Apostolic Faith Mission established | Builds first church in Evaton

1940: Original church completed

1942: St. John's Apostolic Faith Mission Church of South Africa officially registered

1952: Temple building in Evaton completed (12 Doors)

1970: Masango elected as Archbishop | Nku's son breaks away from church

1972: New headquarters established in Katlehong | Nku's son establishes St. John's Church of Prophecy

1984: Masango dies | Built 74 churches at time of death

1988: Christina Nku dies

Figure 5.2: Timeline of the development of St. John's Apostolic Faith Mission

5.2.4 SOUTHERN AFRICAN FAITH COMMUNITIES' ENVIRONMENT INSTITUTE (SAFCEI)

SAFCEI aims to sustain the world through faith. Its main focus is to live in harmony on earth, in a sustainable manner, through the performance of various sacred and religious rituals. It also aims to reduce poverty as an ethical, social and environmental imperative, as well as protect and restore the earths ecological system, with particular focus on biological diversity and life sustaining natural processes. This is done through three categories:

Ecological spirituality
This is a concern for the earth while learning and expressing faith through rituals of worship, celebration and learning.

Custodianship of God's gifts
Looking after and saving resources such as water and energy, therefore creating faith communities of excellence

Local and global community action
The SAFCEI encourages its faith communities become eco-congregations that are more sustainable by being involved in community projects and lobbying for better environmental standards and practice.

5.2.5. JOHANNESBURG DEVELOPMENT AGENCY (JDA)

The Johannesburg Development Agency manages and helps developments that shape a sustainable, resilient city. The JDA focuses on creating robust and sustainable cities through the engagement of streets, public spaces, rivers, transport nodes, transport and buildings, ultimately improving the socio-economic issues and urban environment while creating a healthier city to live, work and play in (JDA, n.d).

The JDA is currently working on multiple projects in Diepsloot, including implementing bicycle lanes, street, lighting, furniture, landscaping, and road and pedestrian infrastructure like bridges across the Jukskei tributary. The JDA is also involved in developing the K54 and William Nicol nodes (Joburg, 2014).

The JDA can potentially aid the funding and the implementation of the urban intervention with urban infrastructure such as bridging, implementing a sustainable road development, and relevant urban elements that can improve the community instead of segregating it.

5.2.6. THE ROLE OF MULTIPLE STAKEHOLDERS
The role of having various clients is to create a relationship between various organisations who have a vested interest in not only St. John's Apostolic Faith Mission Diepsloot, but also those who work at a broader level. Various client are used because of the different expertise which they are able to present, therefore the decisions about land and the rituals which occur on them (religious and secular) would be taken from a holistic view, which creates a inclusive decision making environment for the community. The image on the opposite page illustrates the role which the various clients will have.

SUB- CLIENTS: PRECINCT SPECIFIC
\\ BAZALWANE*
*Term used by believers in South African religion
Religious corridor addresses needs of all religious movements
of Diepsloot

\\ JOHANNESBURG DEVELOPMENT AGENCY

\\ SOUTH AFRICAN FAITH COMMUNITIES
ENVIRONMENTAL INSTITUTE (SAFCEI)

MAIN CLIENTS: SITE SPECIFIC
\\ ST. JOHN'S APOSTOLIC FAITH MISSION

Figure 5.3. Summary of clients (Author, 2018)

5.3. RELIGIOUS RITUALS

Healing is one of the major attractions of African Indigenous Churches, especially in St. John's AFM. as all rituals are centred around healing in its different forms. Healing, through the use of holy water in different rituals plays a central role in the theology and practice of the church.
St. John's AFM has three categories of rituals; Healing, purification and church rituals.

5.3.1. HEALING RITUALS
Open-air rituals
*Baptism and water immersion (sewasho)
This ritual is the first ritual which new members undergo as a means of confirming membership. Baptism in St. John's AFM occurs in a pool, beginning with baptism then water immersion, which members partake in during the three quarterly festivals at the various headquarters. The space allocated for this ritual happens in open air in an area close to the church building.

*Sacrificial offerings (Altar of Offering)
The Altar of Offering is a small area in the more private area of the church premises where offerings are placed on a concrete space and burnt together with oil, salt and and candles. The ash generated from this ritual is then used in some of the purification rituals.

*Water altar
At the conclusion of a service or feast, bottles of water placed on a special area outside thee church, from all the congregants receive final blessing. by being sprinkled with holy water.

Interior rituals
* Water drinking
At the climax of every Sunday morning worship service and festival, is a healing ritual in which the congregants prepare to go to the lake (ichibi or letsha) This is symbolic language of the ritual of healing. This healing ritual unfolds through the singing of the hymn, Seteng seliba sa madi (There is a lake of blood)

5.3.2. CHURCH RITUALS
Church rituals occur in both the interiors of the church, as well as in allocated open air spaces on the church premises.

Open-air rituals
*Bell ringing
This ritual is performed at the start of services. One of the male elders rings the bell while praying. All members present on the church premises stand still and pray on the spot, then the service commences with singing. The bell is rung again at noon, with members inside the church, signaling praying time, in which members put their requests forward to God.

*Brass band
The brass band ritual commences after the ringing of the first bell, in the open-air space. This ritual is performed by certain members, symbolising the carrying of the ark into the church. The allocated space for this ritual is usually parallel to the church, with members entering the church in a clockwise direction.

Interior rituals
*Worship services
Worship services are free flowing and expressive. In addition to reading the Bible, prayer is interspersed throughout the entire service, where congregates make short prayers on their knees, in between preachers' or singing. During feasts, worship services take place in temporary structures such as tents, allowing for a larger congregation size.

*Eucharist and Feet washing
The Eucharist is conducted at feasts. It's symbolism stems from the time of day Jesus served His disciples, according to scripture.
Feet washing is done as to re-enact Jesus washing the feet of the twelve disciples and therefore serves as a symbol of being a servant of His community.

5.3.3. PURIFICATION RITUALS
Purification rituals are performed only on Wednesdays, Saturdays and Sundays, in which people who suffer from spiritual and physical sickness (ukugula) participate in healing and purification rituals. During this time, the church becomes its most public, as people who are not associated with St. John's AFM come to receive healing as well.

Open air rituals
*Vomitting

Interior rituals
*Enemas/ Cleansing bath/ Steaming
These rituals are done in either allocated open-air or enclosed spaces, limited to the ablutions area or adjacent spaces. The main focus of these rituals is the use of water as a purifying agent. It is mixed with certain substances, such as salt and or ashes from the Altar of Offering.

During these days, church services also occur, in which those who are present for the healing rituals participate in church services.
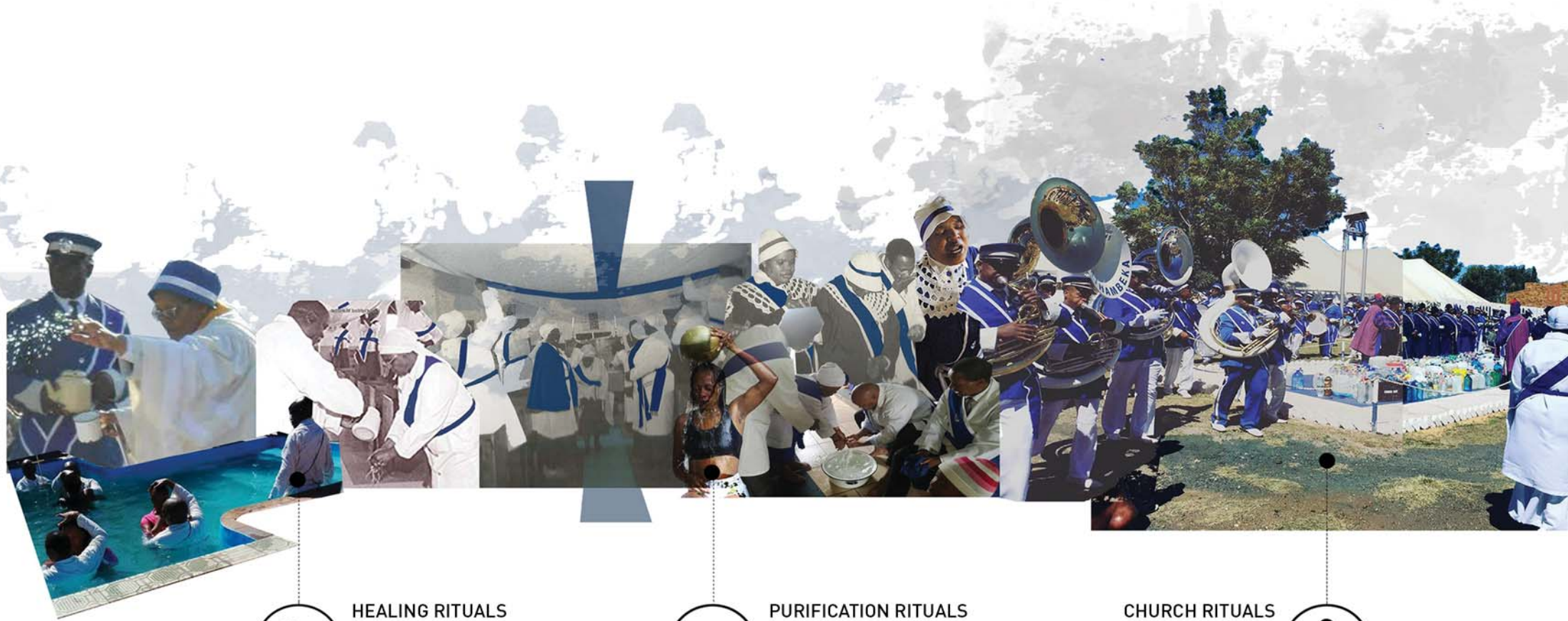
HEALING RITUALS
Water sprinkling
Hand washing
Water drinking
Baptisms
Water immersion(sewasho)
Sacrificial offerings

* Water rituals - use of holy water in various forms

PURIFICATION RITUALS
Self induced vomitting
Enemas
Cleansing bath
Ritual steaming

CHURCH RITUALS
Praise and worship
Preaching
Eucharist
Feet washing
Brass band

Figure 5.4. St. John's Apostolic Faith Mission rituals summary (Author, 2018)

5.4. ACCOMMODATION SCHEDULE

EXISTING CHURCH PROGRAMME
From the analysis of churches (discussed in Chapter 2) the current programme includes the following:

i. SACRED
Church
Bell Tower
Purification ritual spaces /ablutions
Water heating enclosure
Sacrificial spaces - Altar of Offering
Band rehearsal room and store
Male office / vestry
Female office / vestry
Water Altar

ii. SECULAR
Church temporary housing (Male)
Church temporary housing (Female)
Minister's house
Market space
Kitchen
Storage

RELIGIOUS COMPLEX
Outdoor worship space (1995 m²)
• Congregation space (1200 m²)
  - Adaptable space to cater for any larger function such as an Easter service, weddings, community meetings and events. The area will to provide for 1 000 people, with possibility for an increase of 500 people. This space will also be used as a market space during the quarterly feasts.
• Stage area, including the podium (220 m²)
• Outdoor baptism pool (15 m²)
• Church tower with visitor's and tap courtyard (200 m²)
• Water Altar (60m²)
• Water contemplation space (100m²)
• Consultation courtyard (200m²)

Main church (634 m²):
• Entrance foyer (85 m²)
• Congregational space (375 m²):
  - Collective, adaptable, congregational space. Caters for the largest church of 300 people with possible increase (1 person per m²).
• Male and female circulation (27 m² collectively)
• Pulpit (30 m²)
• Male and female vestry (27 m² collectively)
• Minister's Lounge (36 m² collectively)

Healing Rituals space (312m²)
• Ablutions (Healing: Male and Female) (27m² each)
• Bathing (Male and Female (50m² each)
• Drying space (Male and female) (75m² each)
• Stores (4m² each)

SOCIAL COMPLEX
Outreach Block (500m²)
• Foyer (140 m²)
• Training Kitchen (50m²)
•Cafe (84m²)
• Cold store (6m²)
•Dry storage (5m²)
•Storeroom (5m²)
•Office (10m²)
• Staff area (12m²)
• Dishwashing(10 m²)
• Yard (30 m²)
• Ablutions (8 m²)
•Workshop (50m²)
•Studios (20m²)
•Skills Training (50m²)
•Church Shop (20m²)

Education Block (650m²)
• Classrooom (60m²)
• Classrooom (85m²)
• 6x offices (24m²)
• Open office space (40 m²)
• Library and archives (200m²)
• Meeting room (30 m²)
• Ablutions (20m²)
• Pump room, Battery store, rainwater control (36 m²)
• Slush (6 m²)
• Sunken Courtyard (50 m²)
• Story- telling enclosure (100m²)

Housing Block (360m²)
• Male Accommodation (180m²)
• Female accommodation (180m²)

Figure 5.5. Church market space as public space (Author, 2018)

CONCEPT
Evolution of an idea

6.1 CONCEPTUAL APPROACH

By applying the intentions set out in Chapter One, a concept is developed for the design response that combines the informants gathered from the context and the theoretical premises.

This chapter aims to analyse, highlight and synthesize these informants on a site scale in order to develop appropriate responses to the design. The concept developed will be the guiding element in decisions regarding design from site scale down to technology & detail, discussed respectively in chapters seven and eight.

6.1. CONCEPTUAL GENERATORS
6.1.1. PILGRIMAGE

The issue of pilgrimage is important as it responds to the aim of the dissertation, whereby different informal and formal churches are linked on various sites, within one religious precinct. The site itself transcends into a communal holy site where a greater scale of congregation can journey to, as the culmination of the religious pilgrimage activity. Furthermore, the existing informal churches in Diepsloot have a definite typology of processional routes that need to be expressed and exemplified in the proposed new church complex.

Pilgrimage has a definite relationship with place, but not a lot is understood of the portrayal of architecture within these parameters. Pilgrimage is about the journey, but architecture has the potential to express significant moments in the narrative, especially the culmination of the journey.

The site for the proposed new church complex is not currently a location for pilgrimage. It is very naïve to think that the dissertation can carelessly create a destination of holy pilgrimage, as this is dependent on various historical and heritage values. This dissertation's aim is rather to evoke a sense of pilgrimage through architecture.

Architecture is obligated to provide a transcendent experience for reaching the climax of the journey as a reward for the adversities faced on route by the pilgrim. Davies et al. (2013: 1) asserts that there are certain elements that should be studied in order to understand the amalgamation of fundamental static and dynamic features of a pilgrimage and how translate these into an architectural resolution to enhance the pilgrim's journey

Figure 6.1.:Entire pilgrimage route at Ruta del Peregrino (Design Boom, 2012)

6.1.1.1 TYPES OF PILGRIMAGES

According to the Collins Dictionary (2015), pilgrimage is "a journey to a shrine or other sacred place". The two most common types of religious pilgrimages are:

1. **Long distance pilgrimage** – these are lengthy journeys to a holy site of significant importance, for example the ZCC have an annual mass pilgrimage to Moria.
2. **Mini pilgrimage** – a short journey to a local holy site within the immediate context (Davies et al., 2013: 3). The latter is more relevant to the dissertation. The act of penitence (renewal or rebirth) motivates pilgrimage in most faiths is the (Davies et al., 2013: 3).

6.1.1.2. PILGRIMAGE SITES

Even though holy land is of the greatest importance to Christian pilgrims, the approach to these places of interest are almost equally as important (Davies et al., 2013: 4). The use of smaller intimate sanctuaries along the approach or narrative route can potentially increase the religious significance of the journey's end (Davies et al., 2013: 5). The Ruta Del Peregrino, a prominent pilgrimage in Mexico, undertaken every Easter, has a series of smaller shrines and sanctuaries on route to the culminating church.

6.1.1.3. HOUSING PILGRIMAGE

An influx of pilgrims into a holy sanctuary results in the need for an influx in a variety of buildings. Besides the obvious importance of the holy place, various secondary buildings are needed. Historically, secondary buildings have housed workshops for candle-makers, silversmiths, souvenir makers and have also included housing travellers.

The primary objective of the holy sanctuary is to glorify the religious focal point and to emotionally touch on the pilgrim's experience of the culmination (Davies et al., 2013: 5). Holy sanctuaries must be capable of growth in order to accommodate the influx of pilgrims, which increases with popularity. The demand for space is imperative with the growth of large crowds (Davies et al., 2013: 6).

6.1.1.4. THE PILGRIM EXPERIENCE

Pilgrimage requires vivid imagery with an emphasis on the religious meaning. Everyday activities can enhance the experience, but everyday contextual details can contribute to the character of the experience of the religious act. (Davies et al., 2013: 11) The concept of pilgrimage is a narrative of change. The distinctiveness of the architecture from its surrounding context can aid in the transformation that is experienced in the pilgrimage (Davies et al., 2013: 12).

6.1.2. MOVEMENT

After destination, movement through space is the most important in the architecture of pilgrimage. Every journey entails a voyage from the pilgrim's home to a holy destination, characterised by dislocation and adversity on route (Davies et al., 2013: 8).

There are numerous ways in which the journey can be emotionally enhanced:
+ Ordinary activities, like bathing for religious cleansing, or a communal feast (Davies et al.,2013: 8).
+ Vertical movement, like climbing a hill to enhance the effort to culminate and to bring the journey closer to the heavens, or even descending into an underground sacred chamber (Davies et al., 2013: 8).
+ Slowing down the movement at the point of culmination to increase anticipation (Davies et al., 2013: 8). Public culmination, like a private journey to a public gathering reaches a climax (Davies et al, 2013: 9).

The movement of large numbers of pilgrims into a holy site can cause major safety issues. The site requires enough space to channel pilgrims and a church must have multiple doors to control ingress and egress (Davies et al., 2013: 9).

6.1.3. SHRINE AND ITS FUNDING

Pilgrimage has a great religious connotation, but there is also a commercial aspect to it. Pilgrims en-route to and at the destination commonly shop for various goods such as food or souvenirs. The religious sanctuary itself also has the potential to generate income (Davies et al., 2013: 11).

6.1.4. CONSIDERATIONS

Spatial articulation and architecture can influence and express the meaning of their journey to the pilgrim. This can be achieved by:

+ Creating narrative routes or processional routes with potential sanctuaries, to emotionally enhance the destination;
+ Emphasising certain movements through and into the religious site, to express the culmination;
+ Using and emphasising vivid imagery or relics through architecture, to establish pilgrimages;
+ Using contextual detail can create greater meaning for the journey.

Creating a distinction between the shrine and its context, to aid in the transformation of the journey.

+ Incorporating architecture that can host large congregations during quarterly festivals, and is capable of growth;
+ Incorporating architecture that is compliant with different cultures, or in the case of this dissertations;
+ Designing secondary buildings that have the potential to foster commerce.

Figure 6.2: Annual pilgrimage to Mispa, Claremont (Steve McCurrach, n.d)

6.2. A BOUNDLESS TRANSITION

The precinct and site approach seeks to create a shift in relationship from man placing himself above the 'natural environment' and ecosystem services, to man being a part of the dynamic ecosystem of the living world.

From the theoretical premises of biophilic design theories (as discussed in Chapter four), a process of extending nature into the built environment and its healing properties, in the creation of space, is applied to the architectural development of the site. The complete intervention aims to inspire, through an integrated system that nourishes, both the user and the natural environment.

he landscape is regarded as a transitional zone, an ongoing process that depicts the tension between human habitation and natural environments. These two environments are considered as isolated entities, but they are integrated as one, through the process of design. This boundary condition allows the exploration of the potential manner in which the relationship between man-made and natural environments manifest as a symbiotic spatial construct, dissolving the abrupt termination at the rural-urban interface.

The programme of a religious complex with secular functions is explored to establish a value-adding partnership between the user and the built and natural environment.

The core rationale of the design explores a shift from a predominantly visual architecture, towards a multi-modal, multi-sensory architecture that promotes a rich sensory experience; captivating and embracing the senses. This approach is structured around a design that embodies interactive, informative, and educational architecture, which enhances architectural space and promotes user participation.

A more detailed conceptual programming exposes the overlaps in common uses, which address the design concept of a boundless transition. A linked set of structures are zoned by activity, rather than designing completely separate buildings. The site's gradual east-west slope seems to provide a logical transitional axis between built and natural.

The conceptual response aims to define three relationships as design drivers (narrative, environment and programme). The architectural application of the processes identified as key to the evolution of life are discussed below:
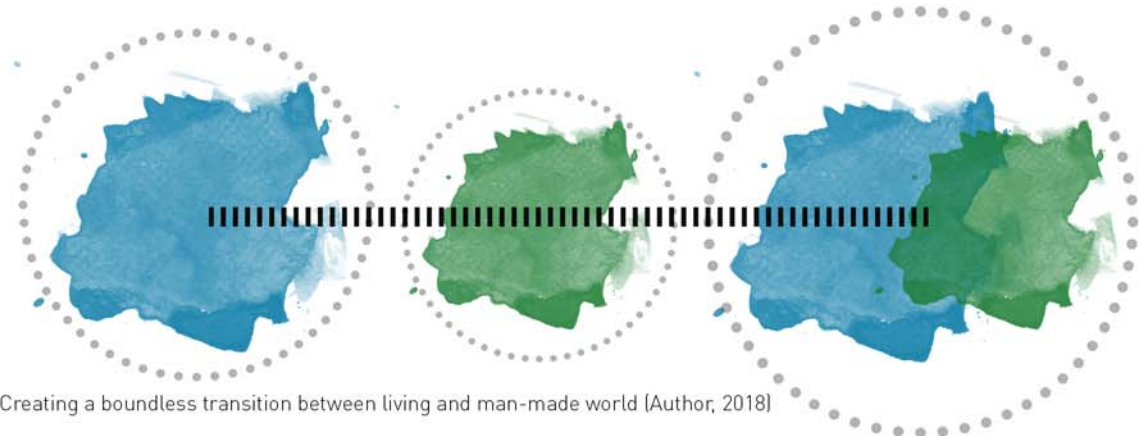
Figure 6.3: Creating a boundless transition between living and man-made world (Author, 2018)

6.3. DESIGN DRIVERS
6.3.1. NARRATIVE
The healing narrative of the church and its various rituals seeks to inform the space making of both sacred and secular functions, connecting the spaces through various thresholds.

6.3.2. ENVIRONMENT
Rehabilitation of the natural environment through the performance of various rituals, as it becomes integrated with the architecture, providing services the land is currently unable to, such as clean water. Specific climatic considerations are used as drivers in design decisions and iterations.

6.3.3. PROGRAMME
The nature of a religious complex, sacred in its nature, requires the inclusion of secular typologies, such as housing and a skills workshop, to facilitate the activity on the site in creating a sense of place. Light and thermal requirements, amongst others, play a vital role in these typologies, but they also require different spatial organisations. These will inform the technical resolution of the design.

NARRATIVE   ENVIRONMENT   PROGRAMME

Figure 6.4: Design drivers (Author, 2018)
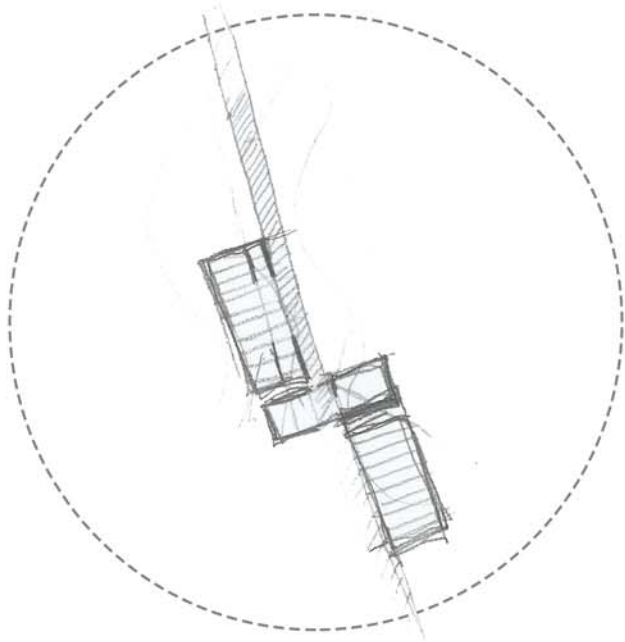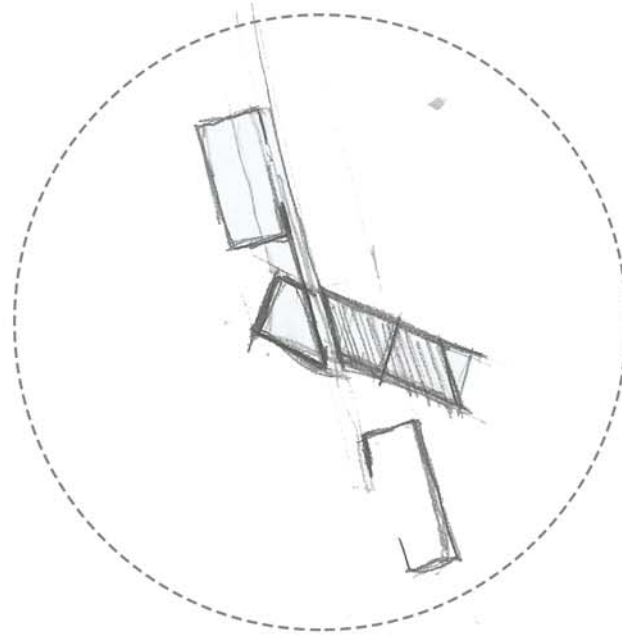
MUNDANE VS SACRED

MUNDANE VS SACRED BISECTED
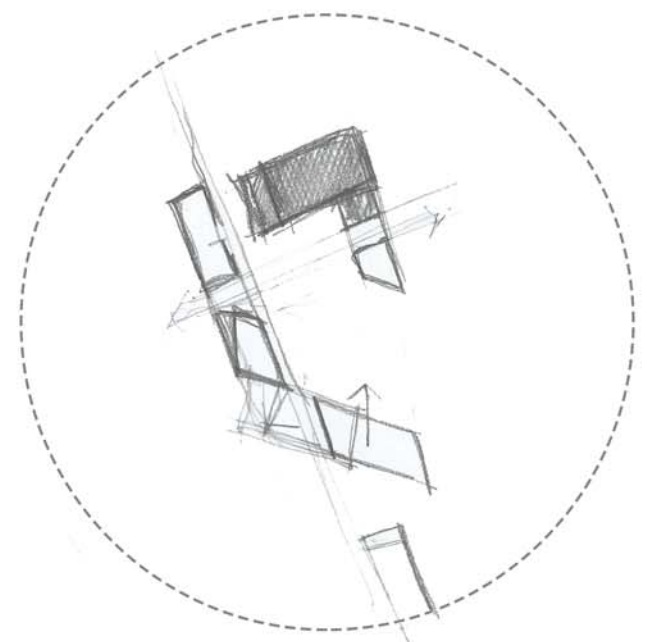
MUNDANE VS SACRED ENCLOSED
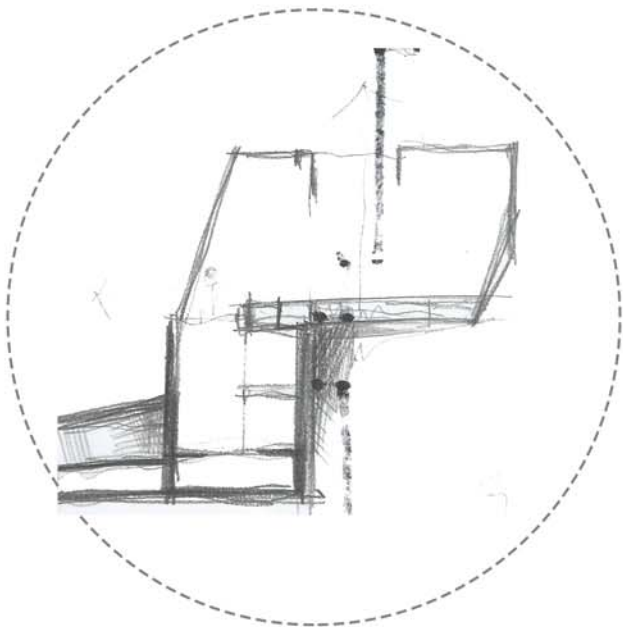
OPEN TO AIR RELATIONSHIP
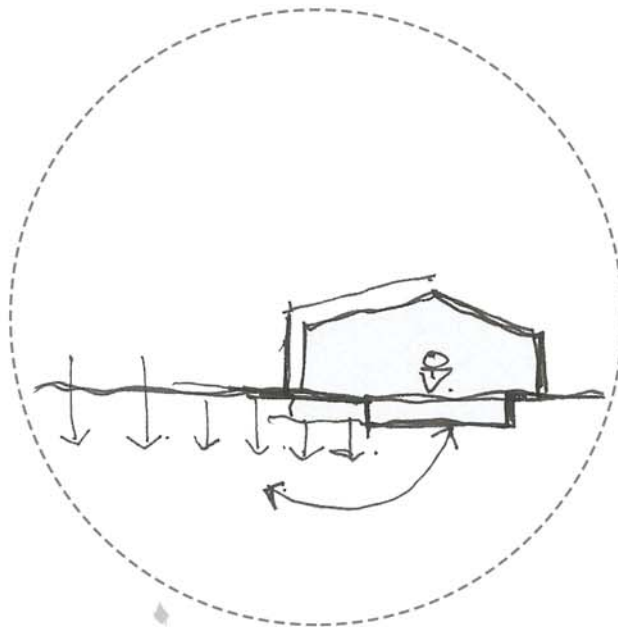
WATER TO NATURE VS WATER TO RITUAL
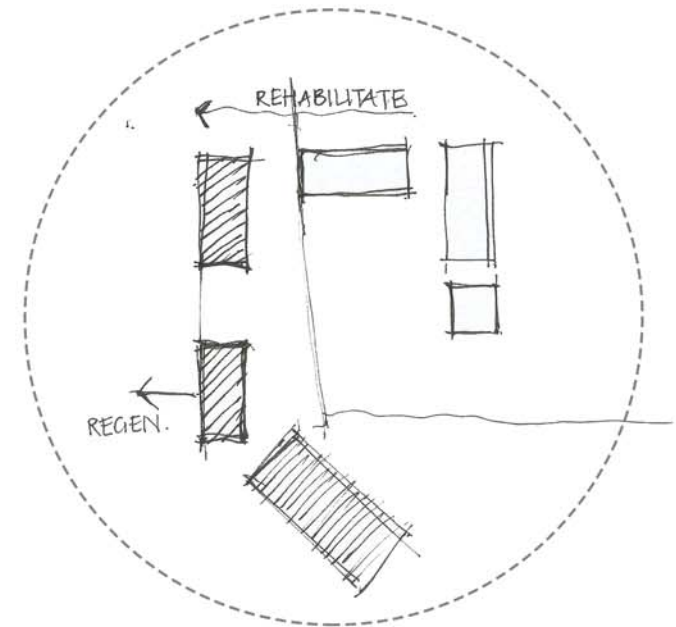
MUNDANE AS REHABILITATION VS
SACRED AS REGENERATION

Figure 6.5.: Conceptual intentions (Author, 2018)

DESIGN
Ritual into form

7.1 INTRODUCTION

This chapter documents the evolution of the design from four different approaches, each guided by one of the design drivers. The design was then synthesized and iterated into an appropriate response.

BIOSWALE   SECULAR/COMMUNITY PROG.   OUTDOOR WORSHIP (TENTED)   MAIN CHURCH.
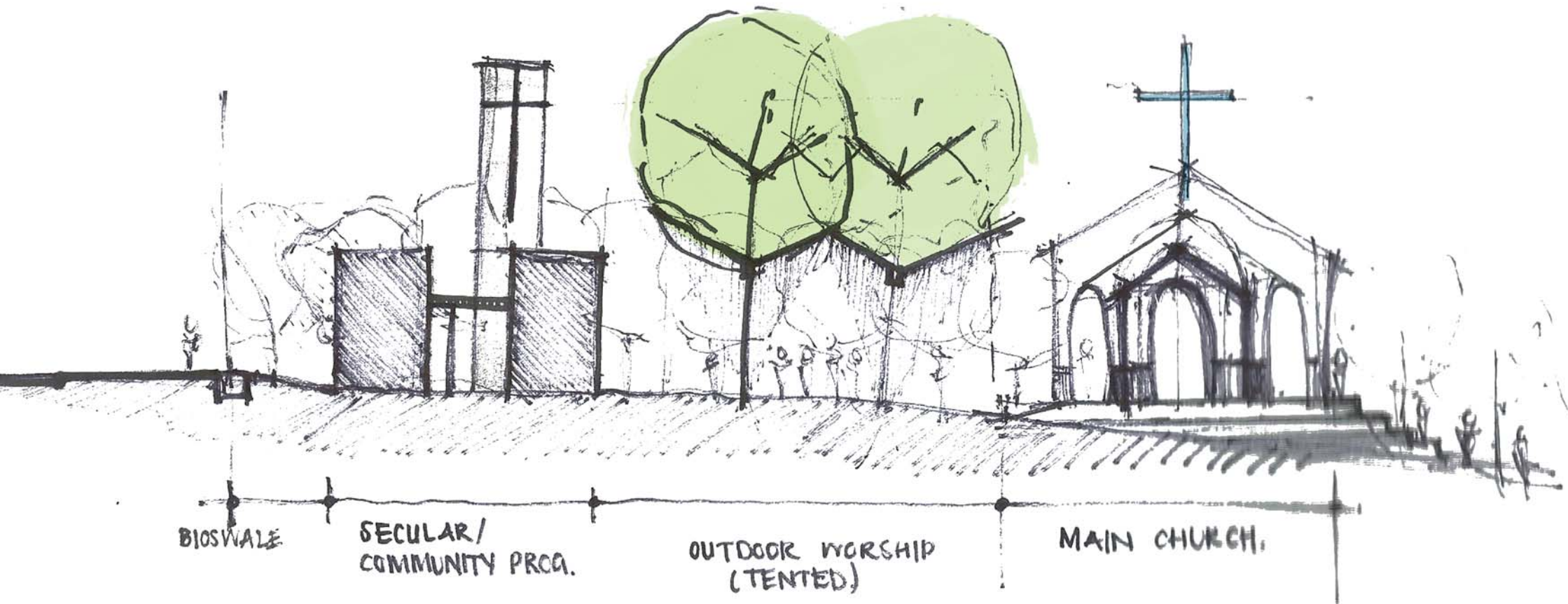
Figure 7.1.: Sketch indicating design intentions, synthesizing informants. (Author, 2018)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

7.2. DESIGN PRECEDENT

Figure 7.2.: Forecourt of Chapel of Light. (urba.co.za, 2018)
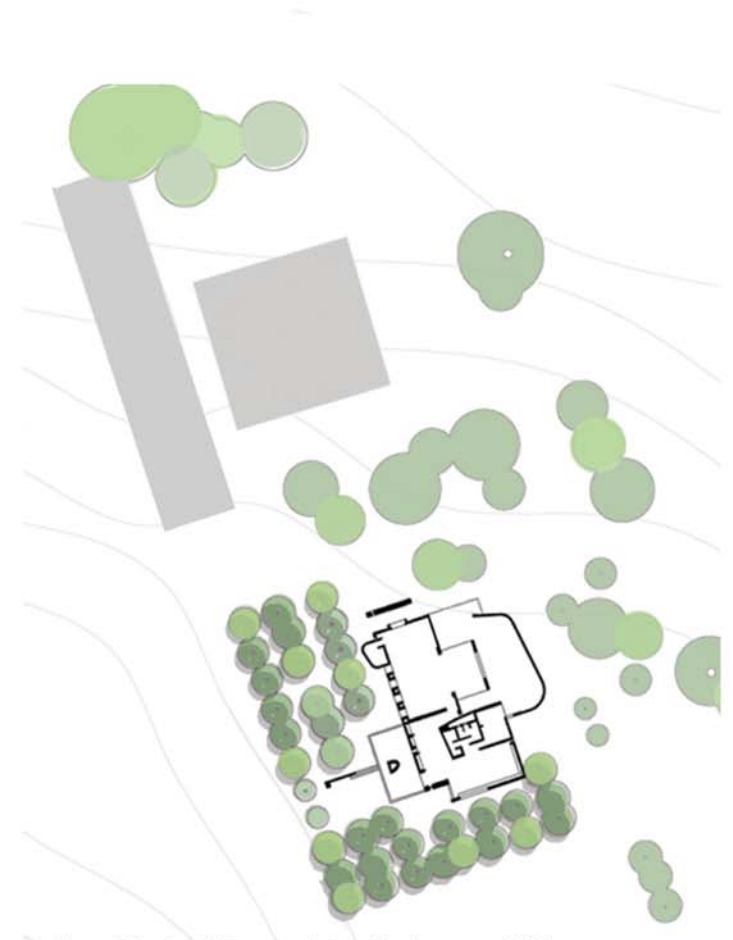
Figure 7.3.: Spatial layout of chapel (urba.co.za, 2018)

7.2.1. CHAPEL OF LIGHT

Architect: Comrie Wilkinson Architects and Urban Designers
Location: Vanderbijlpark, Gauteng
Completion: 2003

The widely published chapel was designed as a multi-denominational facility. The site is located on the fringes of a highly disjointed, low-density campus. The design response was for the chapel to create its own spatial anchors and sense of enclosure. It does this by extending walls into the landscape and establishing adjacent, open-to-sky walled courts that mediate between inside and out, in the African tradition.

Wilkinson Architects conducted a study on universal architectural principles that are common in spiritual buildings throughout the world. These principles have been processed and applied to the design of the Chapel of Light, in order to reflect spiritual qualities (Wilkinson Architects, 2009).Three main universal principles are applied (Wilkinson Architects, 2009):

1. Hierarchy of liturgical space:

The pivotal church tower is an enticing prospect upon embarking on a journey to the chapel. The forecourt gathering welcomes the worshipers and a purposely narrow and curved transition space is designed to lead worshipers into the internal chapel space. A private, more secluded courtyard proceeds the chapel space (Wilkinson Architects, 2009).

2. Hierarchy of materials

The use of material works in tandem with space to create hierarchy. There is a shift in the material palette, from the sun-baked red brick applied to the outer public areas, transiting and concluding to a whitewashed interior, which celebrates the sacred interior (Wilkinson Architects, 2009).

3. Symbolism expressed through light

The symbolic nature of light similarly works in tandem with the interior material palette. During the day, indirect natural light dances within the interior space, making its way through clerestories and narrow openings in the building envelope, and ultimately expressing the nave of the chapel (Wilkinson Architects, 2009).
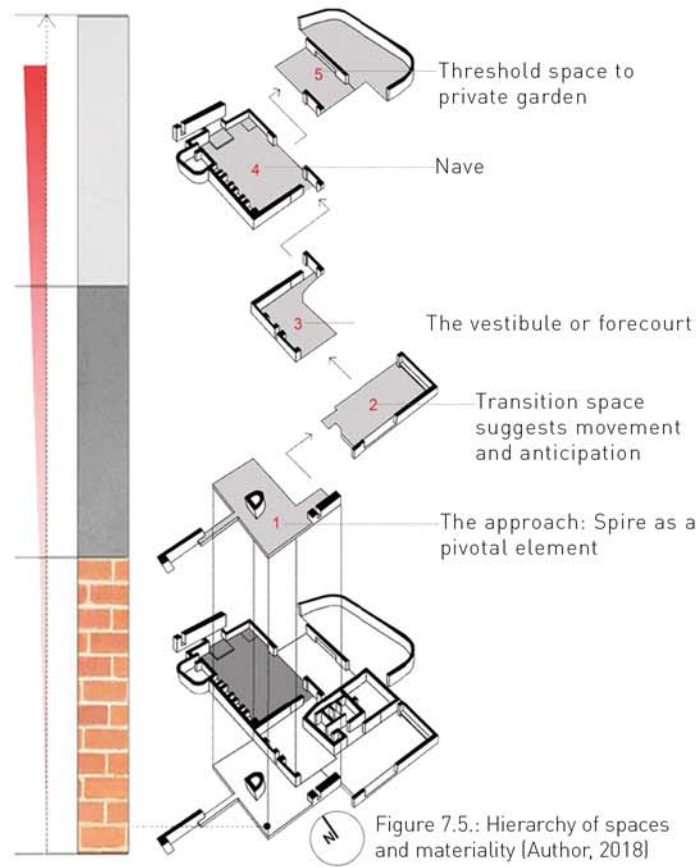
Figure 7.5.: Hierarchy of spaces and materiality (Author, 2018)

- Threshold space to private garden
- Nave
- The vestibule or forecourt
- Transition space suggests movement and anticipation
- The approach: Spire as a pivotal element

Aisle expressed as light shafts
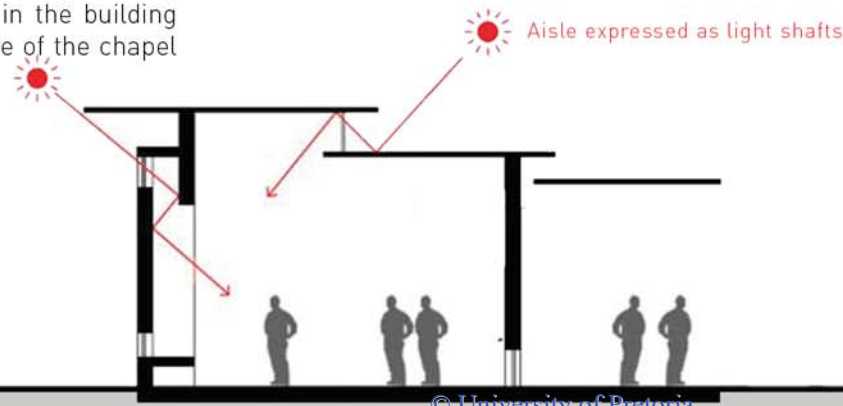
Figure 7.4.: Light symbolism (urba.co.za,2018)

The section of the modest, affordable structure comprising a heavy brick base capped by a floating, virtually flat roof was influenced by a preceding, un-built project for a visitors centre at the Union Buildings in Pretoria. The use of white-rendered and top-lit internal wall surfaces and the spatial gravitas of thick, u-shaped external walls are influenced by House Comrie here to view) which was in turn influenced by Louis Kahn's Escherik House in Philadelphia and by Carlo Scarpa's top lit Canova Plastercast Gallery. (urba.co.za,2018)

Considerations

The hierarchy of liturgical space, materials, and symbolism of light may be used to express and convey a religious space, while remaining neutral to any denomination within the Christian religion.

Architectural elements may be used to convey hierarchy of space or a journey, from a public-orientated church tower, to the more personal pulpit. This journey through space can be further exalted by an expression and distinction of materials and delicate glorification of natural light. Consequently, this physically leads the pilgrim through architecture, and spiritualty between the public secular, and the sacred private.

Figure 7.6: Interior view and light entry through roof (urba.co.za, 2018)

Figure 7.7.: View from entrance into seminary (KNIA Journal, 2011)
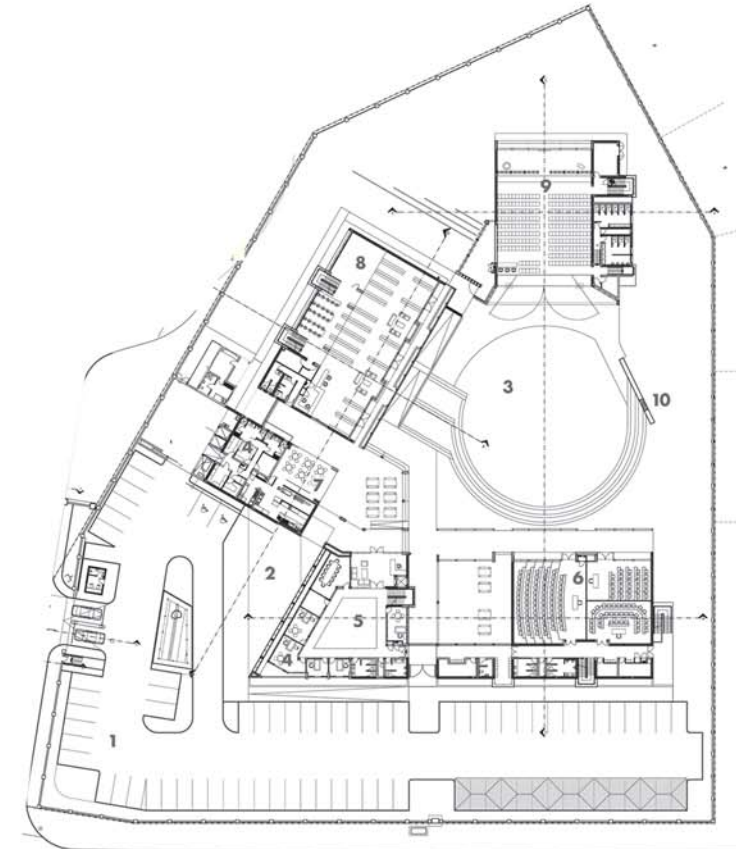
GROUND FLOOR PLAN

Figure 7.8.: Ground Floor layout (KNIA Journal, 2011)

7.2.2. SETH MOKITIMI METHODIST SEMINARY

Architect: Dewar van Antwerpen and Leon Witbooi (Boogertman + Partners)
Location: Pietermaritzburg, KwaZulu-Natal
Completion: 2009

The Seth Mokitimi Methodist Seminary is the largest inter-racial church in South Africa. Apart from being a church, the complex houses an educational sector (the seminary) and a training centre for Methodist ministers (McManus, 2014).

The seminary touches on many important architectural principles, but the most prevalent perhaps is how it treats the following:

1. Scale (both built form and congregation:

Conveying humility is the notion behind the seminary in relation to its site. The seminary is surrounded by a residential area, a school, and a building of historical significance. Thus, the ground plan and the seminary are depressed into the ground plain so as to be more respectful of the small-scaled context. If there is a shift in congregation size, the chapel can extend its space into the central amphitheater through large pivoting doors (McManus, 2014).

2. Relationship between the built form and the courtyard space:

The seminary revolves around a central amphitheater. The classrooms, library, and refectory spill out into the courtyard. The chapel space actually extends into the amphitheater, which is used when then congregation is too large to fit into the chapel (McManus, 2014)

3. Hierarchy of liturgical space:

Unlike traditional principles in spiritual spaces, whereby hierarchical preference is expressed vertically, the seminary has a horizontal hierarchy, culminating at the chapel. Consequently, a definite hierarchy is experienced while moving through the seminary, from a secular entrance to the sacred chapel (McManus, 2014).

Figure 7.9: Movement and spatial arrangement (KNIA Journal, 2011)

Figure 7.10: Arrival into courtyard (KZNIA Journal, 2011)

Figure 7.11: Interior of main worship space (KZNIA Journal, 2011)

Considerations

The Seth Mokitimi Methodist Seminary addresses the hierarchy of space similarly to the Chapel of Light, whereby the journey through the complex culminates at the most important space, the chapel. The central courtyard acts as the focal point onto which all buildings live out, and whereby the scale of the congregation can be addressed in respect of the chapel. The seminary addresses the small-scale context by depressing the ground plain and building itself to the sensitive surroundings.

7.12: Hierarchy of spaces (KZNIA Journal, 2011)

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7.13: View from main worship space to open courtyard space (KZNIA Journal, 2011)

7.3. DESIGN DEVELOPMENT

7.3.1. ITERATION 1

7.3.1.1. DESIGN DRIVERS
The composition of the programme and movement through the most important spaces identified, with a public or secular function, to the most intimate and religious function, guided this initial concept.

7.3.1.2. SUCCESSFUL ELEMENTS
The architectural language of small scale, to large scale creates a build up in the architectural experience. Also, the clustering of buildings, with small courtyard spaces allows for activity to spill out from inside buildings to the outside.

7.3.1.3. CRITIQUE
The movement spine has no anchor at the end of the route. Open courtyard towards the south is disconnected to the rest of the fabric. Requires more integration with the landscape.
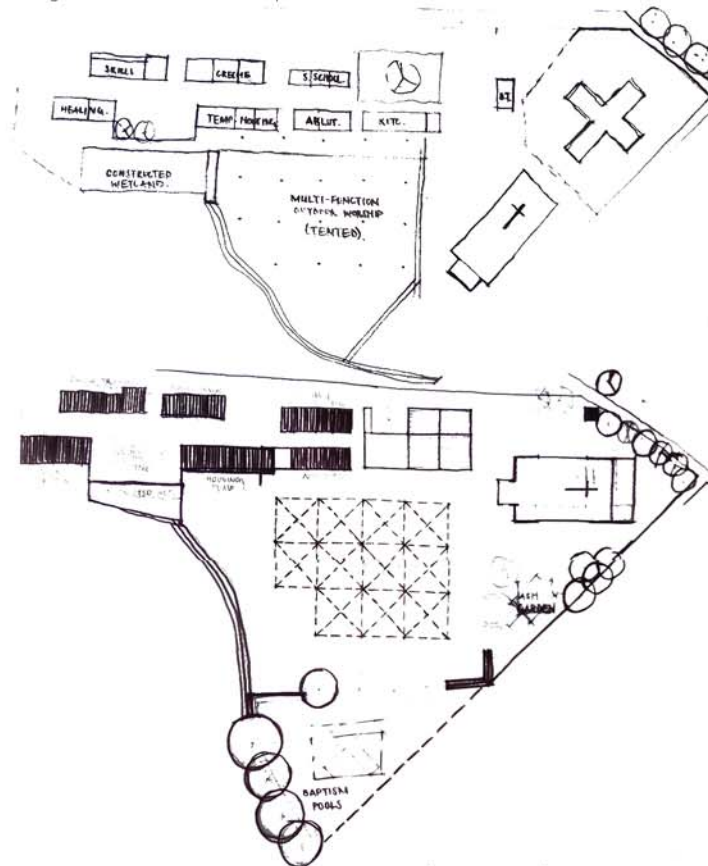
Figure 7.14: Design Iteration 1 and 2 of plan (Author,2018)

PUBLIC BUILDINGS: ARCHIVES | EDUCATION | WORKSHOP

MAIN MOVEMENT SPINE

PRIVATE BUILDINGS : HEALING RITUALS | HOUSING
BELL TOWER

OPEN TO AIR WORSHIP SPACE | MARKET SPACE
CHURCH
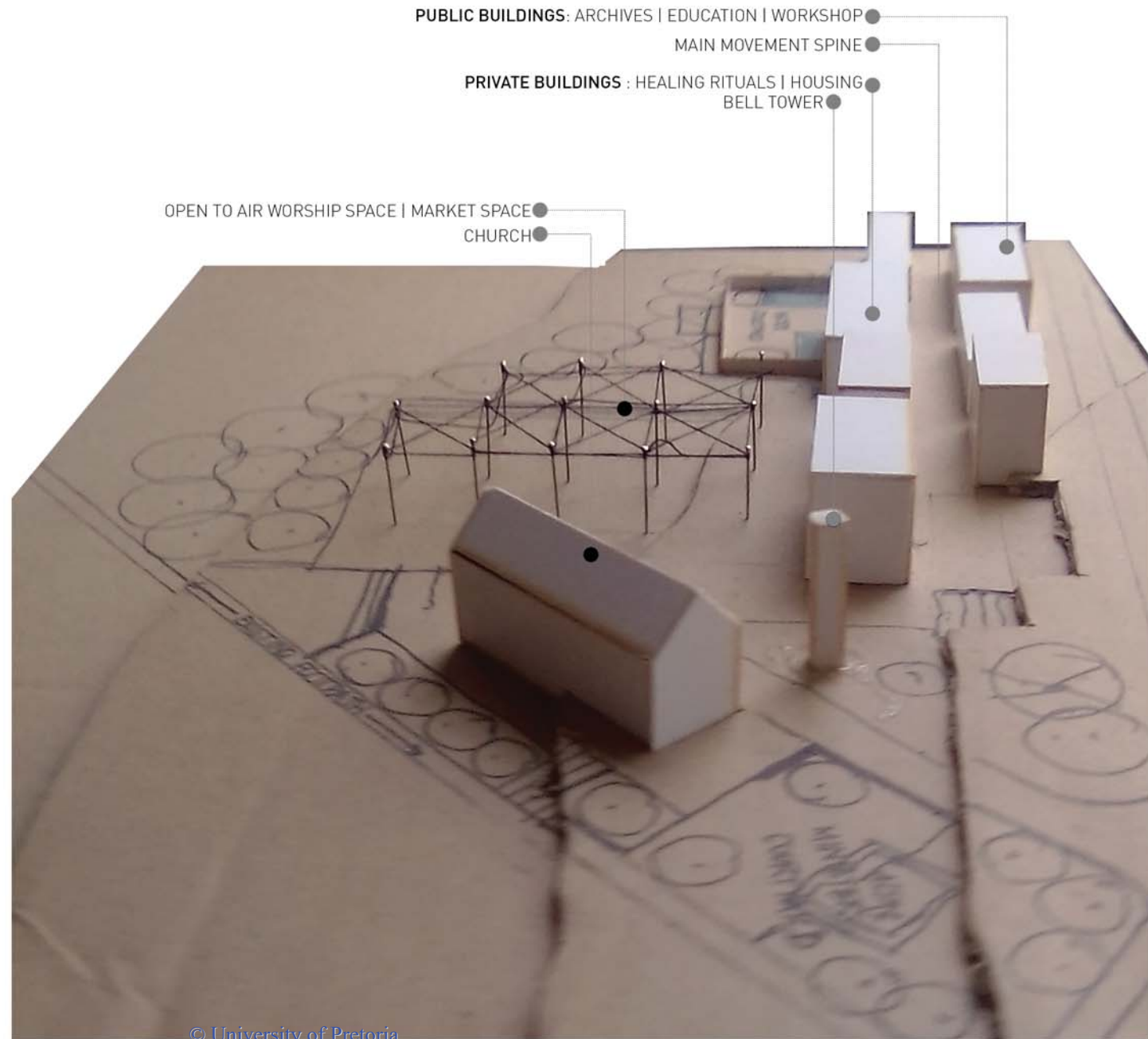
Figure 7.15: Design Iteration 1 (Author,2018)
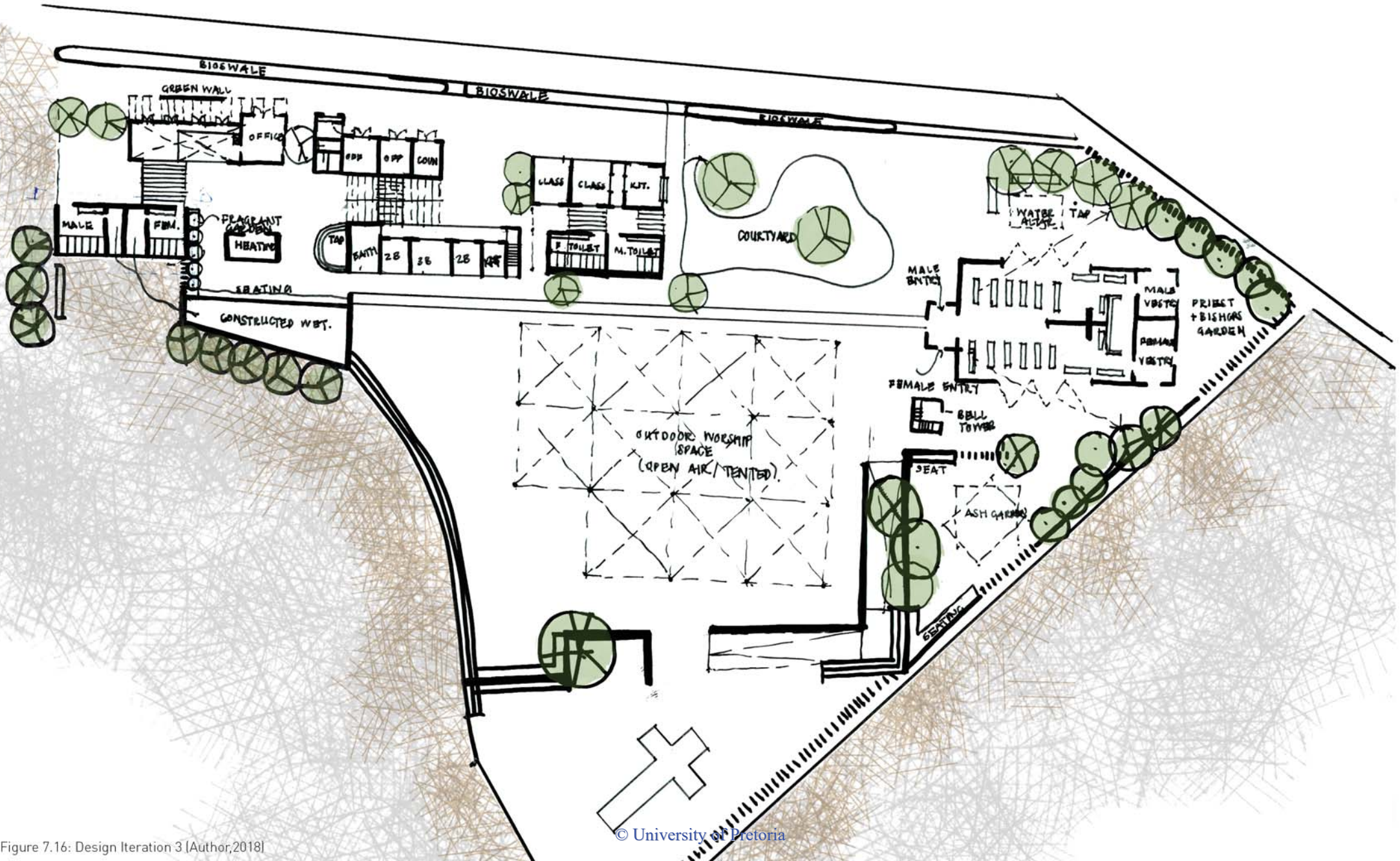
Figure 7.16: Design Iteration 3 (Author, 2018)

7.3.2. ITERATION 2

7.3.2.1. DESIGN DRIVERS

The composition of movement spine leading to the church and baptism pools as culmination of journey, emphasizes the spiritual journey which congregates undergo in joining the church.

7.3.2.2. SUCCESSFUL ELEMENTS

The use of scattered public buildings along the movement spine, The landscape become slightly more integral as it can be experienced at various moments in the movement spine. The introduction of steps, or ramps in the creation of thresholds to the various ritual elements. The bell tower acts as an anchor to the precinct, lighting up the church and the subsequent open air worship space.

7.3.2.3.CRITIQUE

The architectural language reads as heavy, which contrasts the light nature of the movement structure. A revised iteration which balances the functions with the movement will be considered. The roof language also needs to be reconsidered.
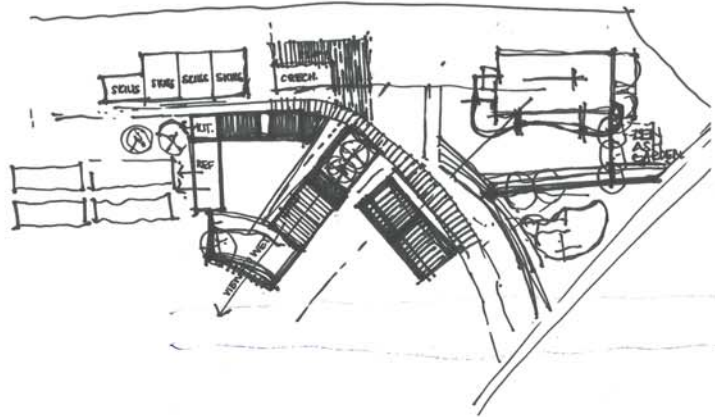
Figure 7.17: Design Iteration 2 Plan (Author,2018)

MAIN MOVEMENT SPINE
BELL TOWER
HEALING RITUALS AND ABLUTIONS
HOUSING (MALE AND FEMALE)
OFFICES AND ARCHIVES
WORKSHOP AND SKILLS TRAINING
CHURCH
OPEN AIR WORSHIP SPACE
MARKET SPACE
BAPTISM POOL
HEALING RITUALS COURTYARD
HOUSING FOOD GARDENS
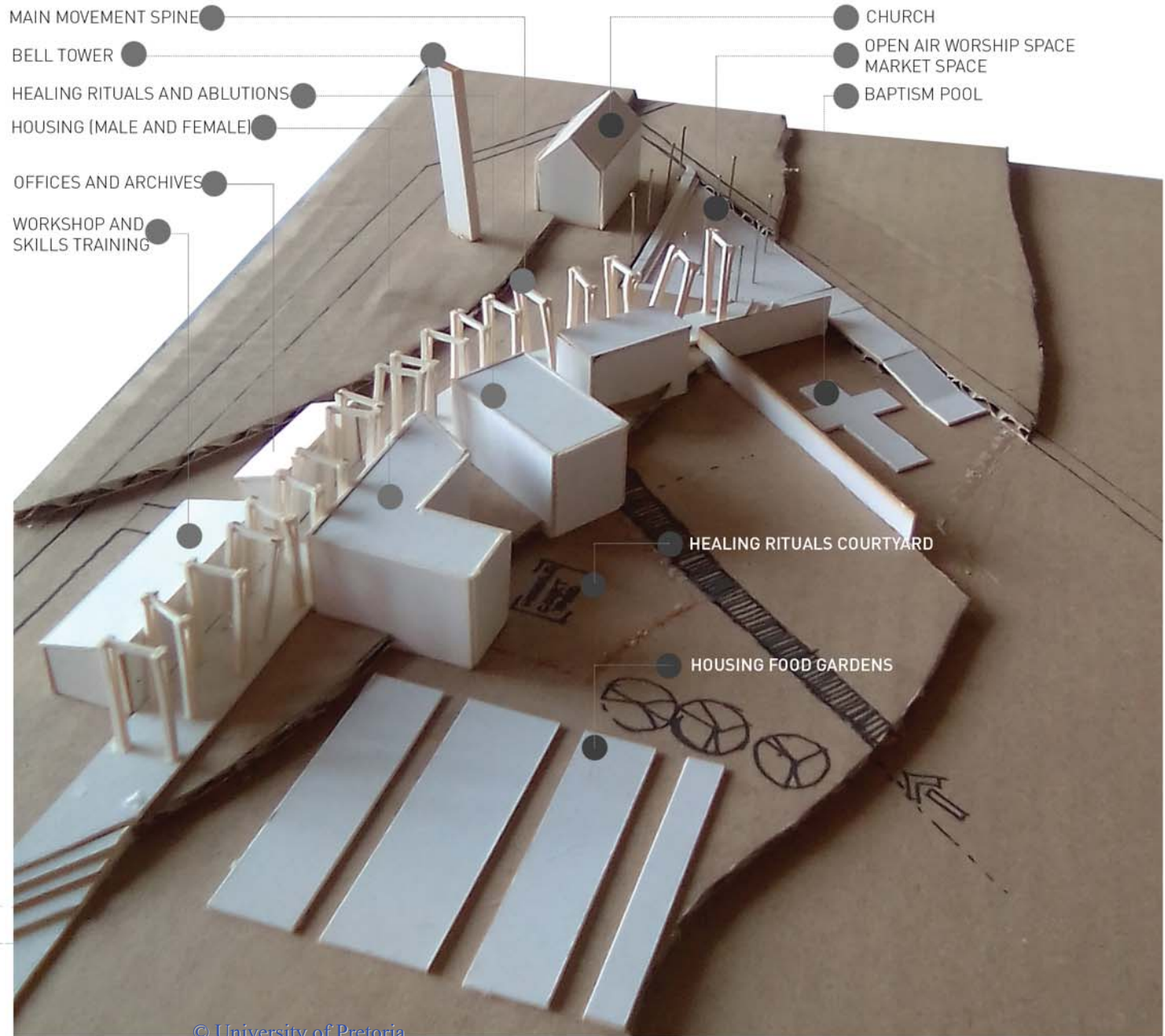
Figure 7.17: Design Iteration 2 model (Author,2018)

CHURCH

BELL TOWER

OFFICES AND ARCHIVES

SKILLS TRAINING
AND CLASSROOMS

WORKSHOP AND KITCHEN

HOUSING (FEMALE)

PURIFICATION RITUALS
AND ABLUTIONS

HOUSING (FEMALE)

Figure 7.18: Design Iteration 3 Model (Author,2018)
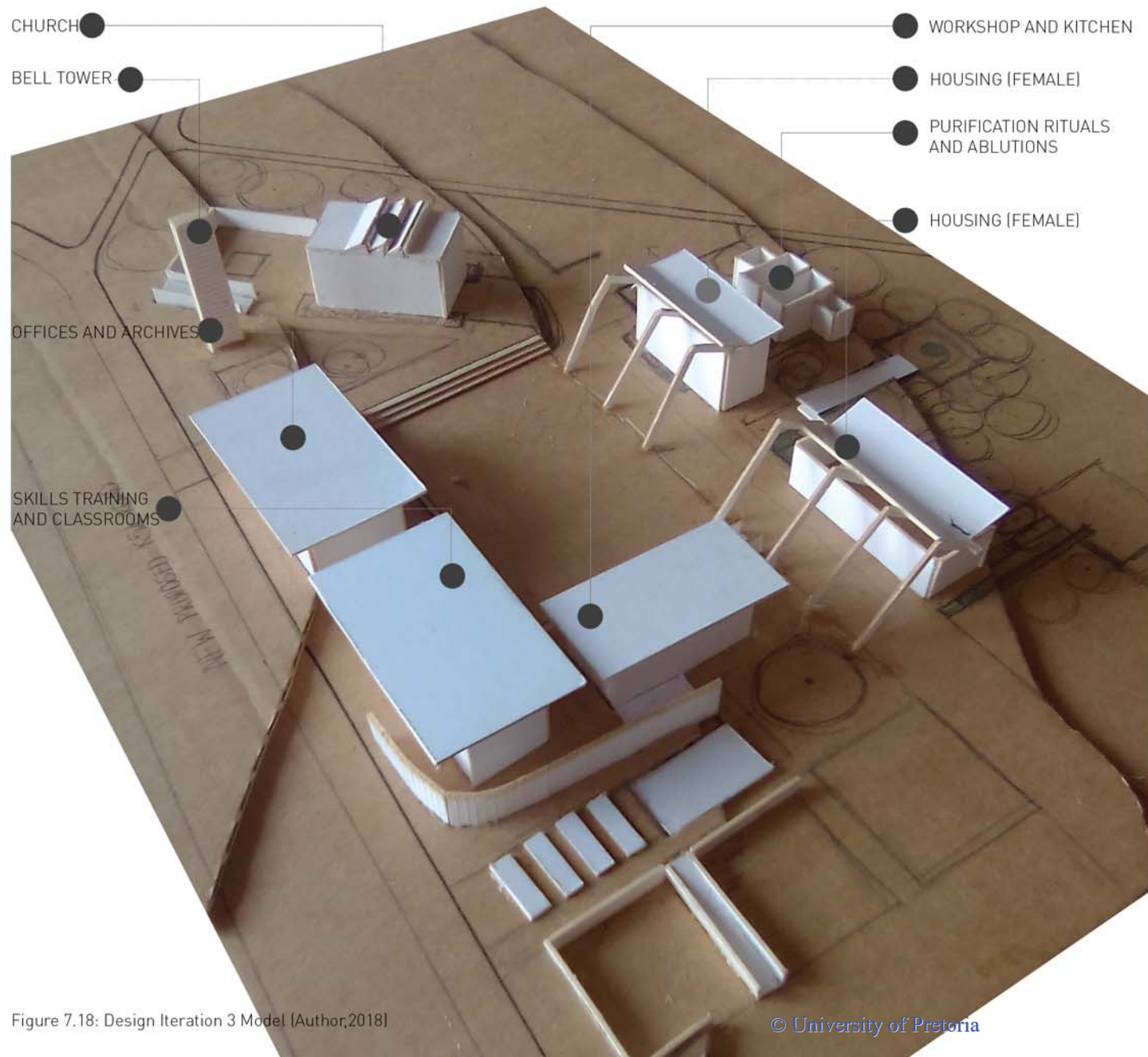
7.3.3. ITERATION 3

7.3.3.1. DESIGN DRIVERS

The composition of buildings around the central open air courtyard, creating various circulation movement routes, connecting the spaces.

7.3.3.2. SUCCESSFUL ELEMENTS

The introduction of curved walls leads the users to spaces. The always created a sense of constant movement throughout the precinct, giving hierarchy to certain spaces. This allows for the inclusion of natural elements in shading for the walkways and buildings.

7.3.3.3. CRITIQUE

The axis of the church needs to be reconsidered in light of the language of the entire precinct. The large roof spaces for the public buildings facing towards the K54 road and religious corridor, could extend further in order to create covered public spaces, in which activities could spill out onto. The roofs of the southern buildings (healing rituals and housing, needs to speak to the language of the precinct)
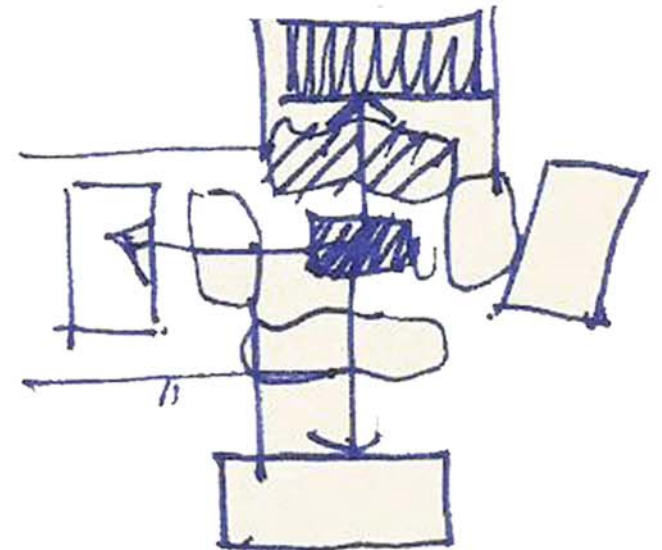
Figure 7.18: Conceptual diagram of relationship between spaces (Author,2018)

7.3.4. ITERATION 4

7.3.4.1. DESIGN DRIVERS
The composition of buildings around the central open air courtyard, which introduces a sensorium to the central courtyard space, using elements of water and vegetation.

7.3.4.2. SUCCESSFUL ELEMENTS
Through the use of a central open air worship space, the narrative of the church can be clearly defined in terms of the progression between spaces, leading from secular to religious function. This also acts to frame the main church building, while creating a series of threshold leading to it through the use of stairs and ramps.

7.3.4.3. CRITIQUE
The axis of the church needs to be reconsidered. The southern block for housing and purification rituals needs to be reconsidered in terms of scale and layout,.

Figure 7.18: Design Iteration 3 Model (Author,2018)

Figure 7.20: Design Iteration 4 Plan (Author;2018)

CLASS

CLASS

CLASS

OUTDOOR WORSHIP SPACE

REFACTORY

OFFICES

SUN ROOM

CHANCLE

HEALING BATHS

VOMITORIUM

HEALING BATHS

VOMITORIUM

FRAGRANT GARDEN

SUN ROOM.
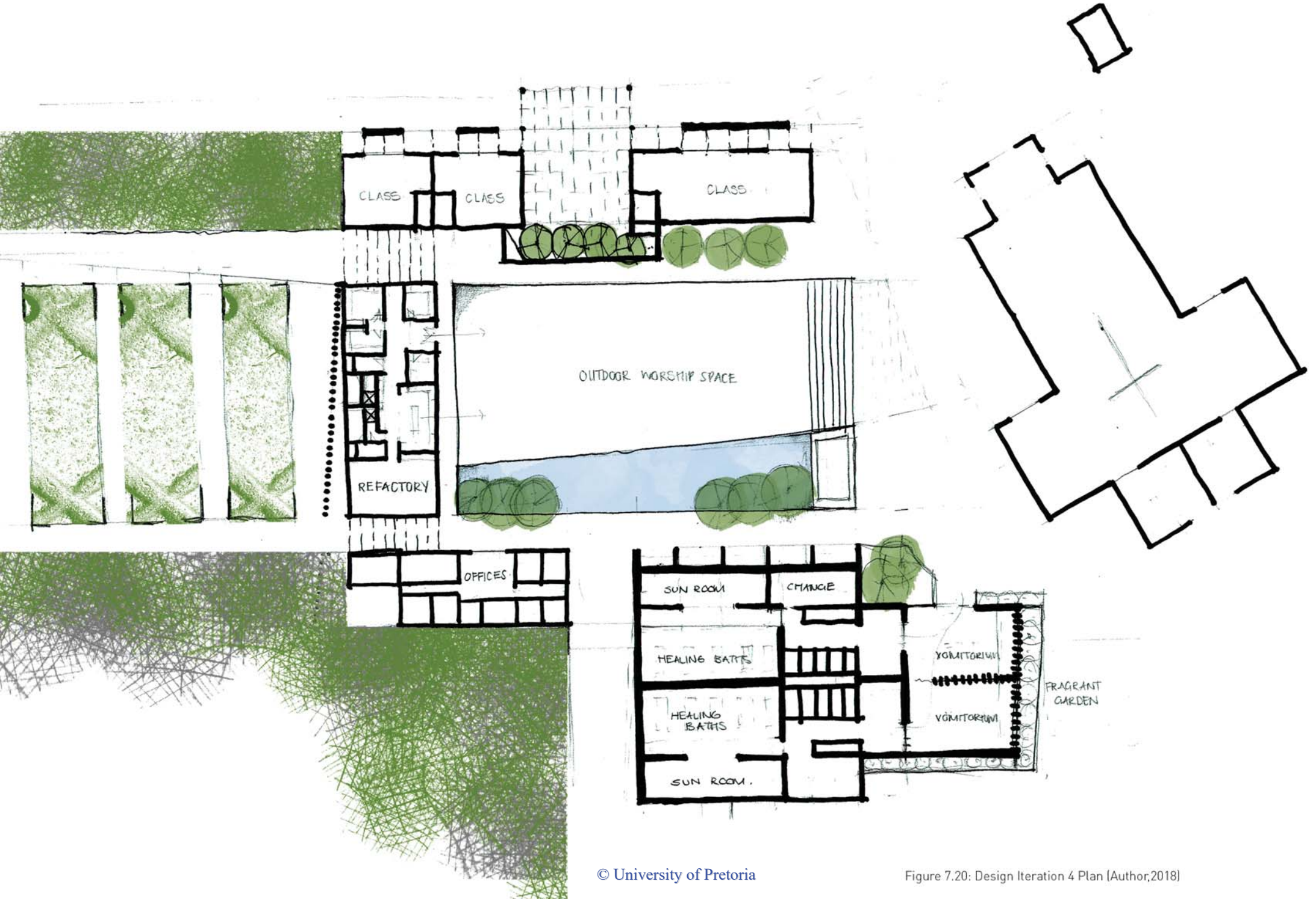
7.3.5. ITERATION 5

7.3.5.1. DESIGN DRIVERS

The composition of buildings around the central open air courtyard, creating various circulation movement routes, connecting the spaces.

7.3.5.2. SUCCESSFUL ELEMENTS

The introduction of curved walls with lower roof volumes creates depth and softens the scale, creating a transition between spaces. These volumes will be made up of green roofs, contrasting the materiality of the buildings which are places next to them. The inclusion of an organic route from the church to the wetland creates a contrast with the precinct. The axis of the church has been placed in a north facing manner, to serve as the anchor of the movement route from the religious corridor.

7.3.5.3. CRITIQUE

Further consideration needs to be made as to the lower and higher volumes and the language which they create. Furthermore, the roofs should be simplified in terms of their architectural language. This layout needs to consider the addition of biophilic elements such as water and vegetation- perhaps in the facade treatments as well as in the courtyard spaces.

CHURCH
OPEN AIR WORSHIP SPACE
BELL TOWER
PURIFICATION RITUALS AND ABLUTIONS
HOUSING (FEMALE AND MALE)
EDUCATION BLOCK
WETLAND
OFFICES AND ARCHIVES
NEW PROPOSED K5 ROAD
VEHICULAR ENTRANCE.
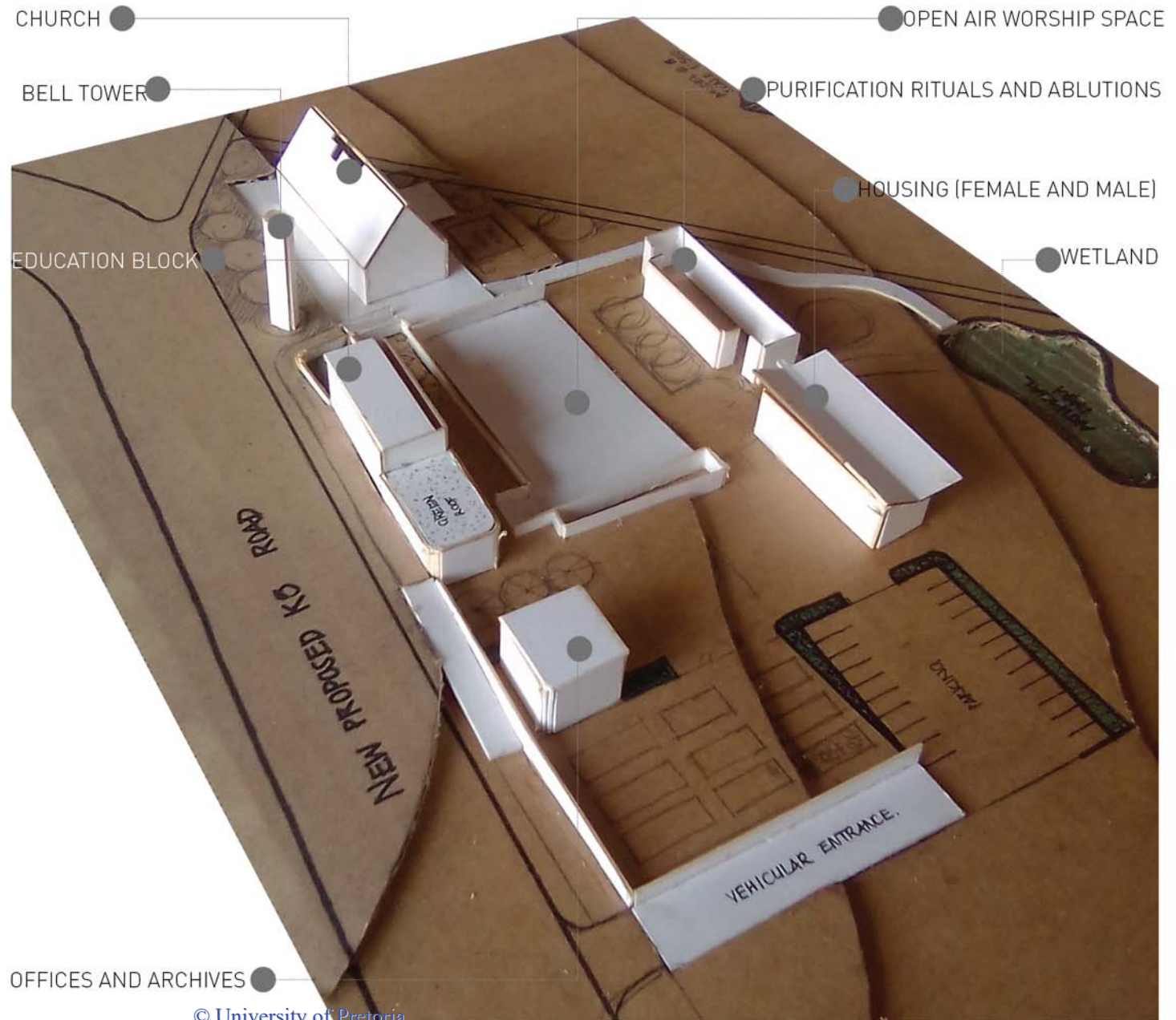
Figure 7.21: Design Iteration 5 Model (Author,2018)

7.4. DESIGN SYNTHESIS
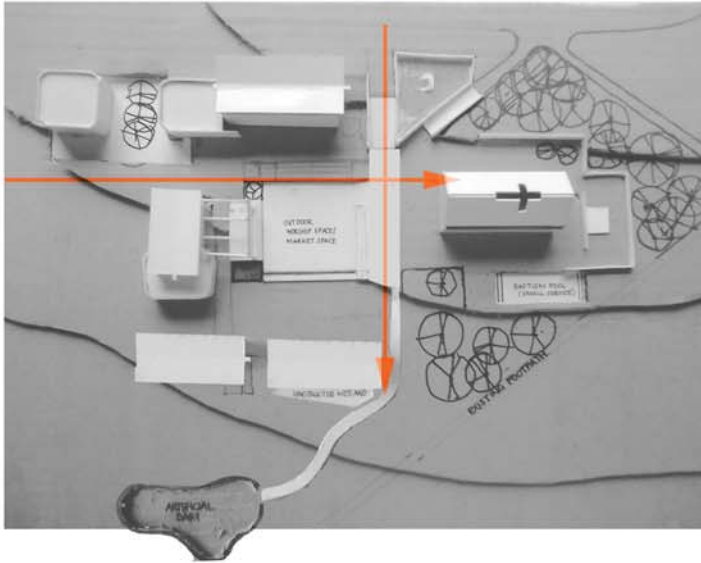
Figure 7.22: Synthesized design model emphasising links (Author,2018)

Figure 7.23: Synthesized design model framing specific rituals or spaces (Author,2018)

Figure 7.23: Synthesized design model indicating an integration with the landscape (Author,2018)

7.4.1. CREATE LINKS

The application of the conceptual approach to the site in the use of pilgrimage, creates a procession of activities along a 'narrative route' or axis, creating a transition from existing secular activities to the religious activities.

7.4.2. FRAMING OF RITUALS

By framing the certain ritual spaces, the architectural intervention continues the narrative of the church through the positioning of the education, housing, outreach blocks and purifucation ritual blocks, complimenting the church and the wetland and baptism pool area.

7.4.3. INTEGRATION

The various rituals and programmes located within the precinct can be integrated with the landscape in various forms- green facade, visual links, physical linkages, into order to create a language which emphasizes a relationship with the natural world.

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7.5. SPATIAL ARRANGEMENT

7.5.1. PROGRAMME

The programmes within the complex is made up of secular and religious programming in order to populate the site at all times.

The secular buildings such as the outreach, offices, archives and education blocks respond to a typical Diepsloot urban typology, whereby the architecture is pivoted around a central courtyard (open air worship space).

Diepsloot's harsh environment, enable the use of a communal courtyard as a practical way of creating a defendable space (Archdaily, 2010). When entering the site, a journey is conducted through the secular buildings into the courtyard, a place of arrival (pen air worship space).

According to Christopher Alexander (1977), buildings should always occur on the areas of the site that are in the worst state, so the area where the habitat has been most destroyed. The church placement is on an the highest point of the site and all other accommodations are formed from here.

EDUCATION BLOCK
+Classrooms for religious education (weekdays)
+Used for Sunday School and youth religious activities (weekend)

ARCHIVES AND LIBRARY
+Repository for information of church

OFFICE BLOCK
+ Offices for liturgy
+ Limited workspace - people in housing

BELL TOWER
+Announces services
+ Water point

MAIN CHURCH
+ Used daily for services at 9am (Wednesday and saturday) or daily 7pm services

HOUSING BLOCK
Male housing
Female housing

RITUALS BLOCK
+ Ablutions
+ Healing Rituals (baths)

OUTREACH BLOCK
+ Training Kitchens
+ Church Store
+ Sewing rooms
+ Skills Training / Computer Literacy centre
+ Electrical training
+ Candle making studio
+ Maker's studio- oil and ash packaging room

OPEN AIR WORSHIP SPACE
+Worship space for quarterly festivals
+Space used as informal market space (tented) during weekends

Figure 7.24: Programmatic arrangement of secular and religious
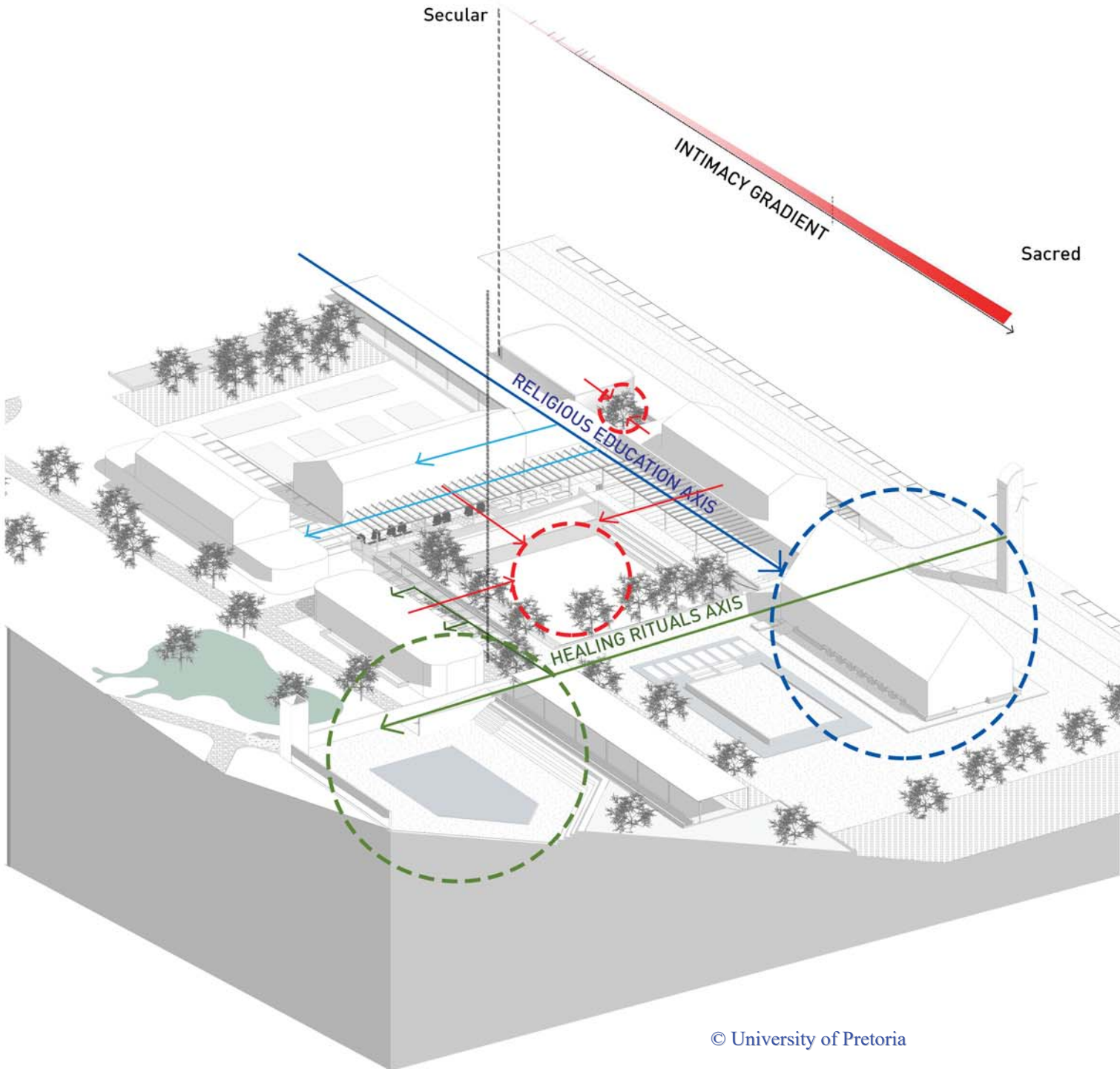
7.5.2. MOVEMENT

The rituals of the complex are placed along two guiding axis, namely the Religious Education Axis and the Healing Rituals Axis. These two defining axis relate to the various rituals which users undergo. The Religious Education Axis starts with the religious education that a congregate would undergo before being a member, ultimately leading to the church. The Healing Rituals Axis begins at the church and ends at the baptism pool on the lower end of the site, as the congregate begins with church attendance, then further learns about the church and its rituals. The two towers on the site acts as anchoring points in the Healing Rituals Axis.

The axes passes through a series of outdoor spaces that are layered from the most urban secular space, through to the most religious space. The use of these spaces aid in the approach of the narrative route, which increases the religious significance of arrival.

Figure 7.25: Site arrangement along religious and healing axes. (Author, 2018)

OFFICES AND ARCHIVES

EDUCATION BLOCK

FOOD GARDENS

OUTREACH BLOCK

OPEN AIR WORSHIP SPACE

MAIN CHURCH

HOUSING BLOCK

RITUALS BLOCK
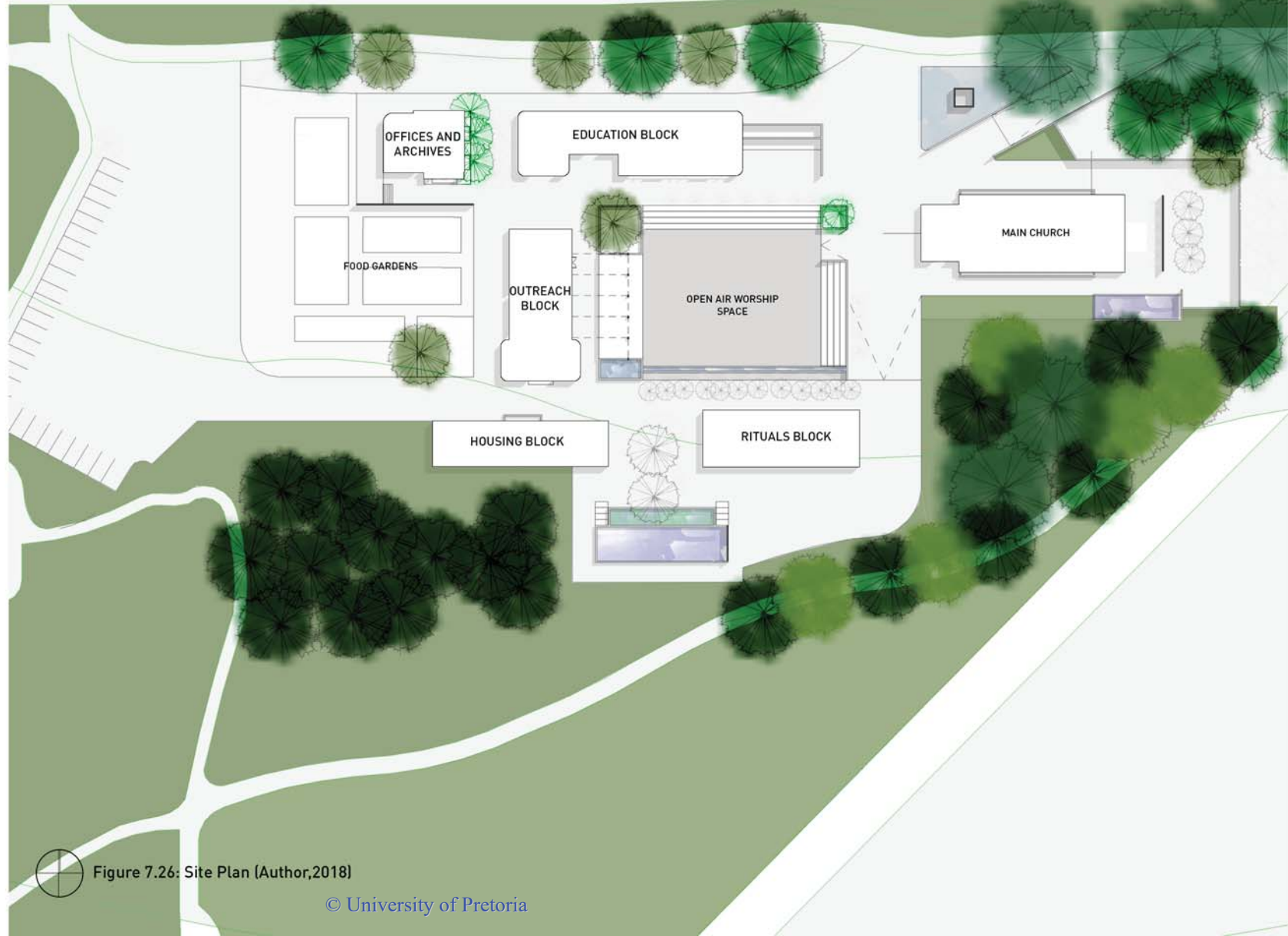
Figure 7.26: Site Plan (Author,2018)

Figure 7.27. Ground Floor plan,(Author, 2018)
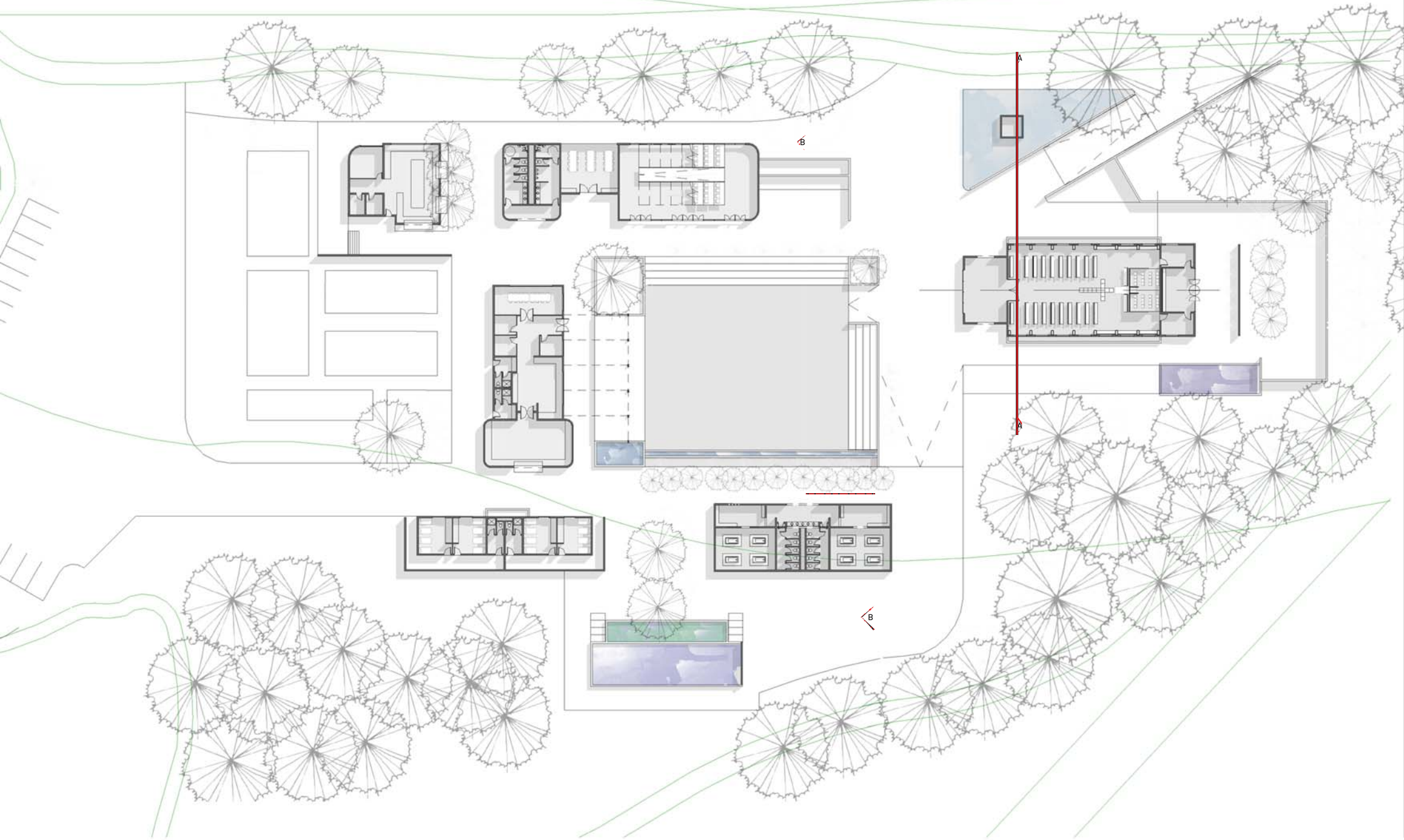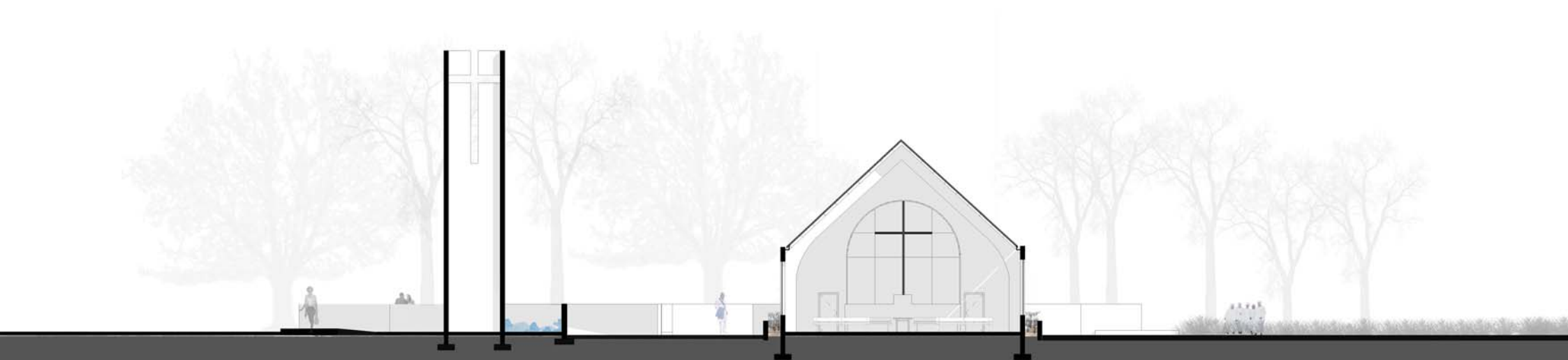
Figure 7.28. Section AA, June (Author, 2018)

Figure 7.29: Section BB (Author, 2018)
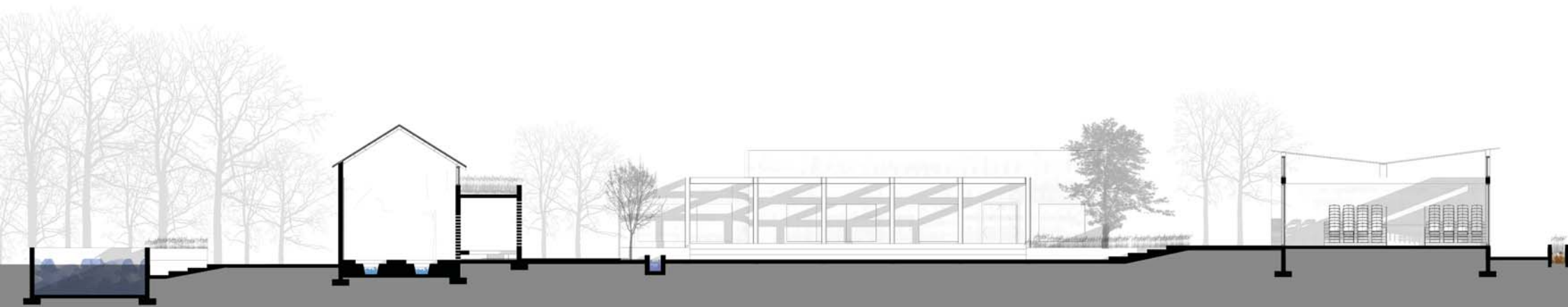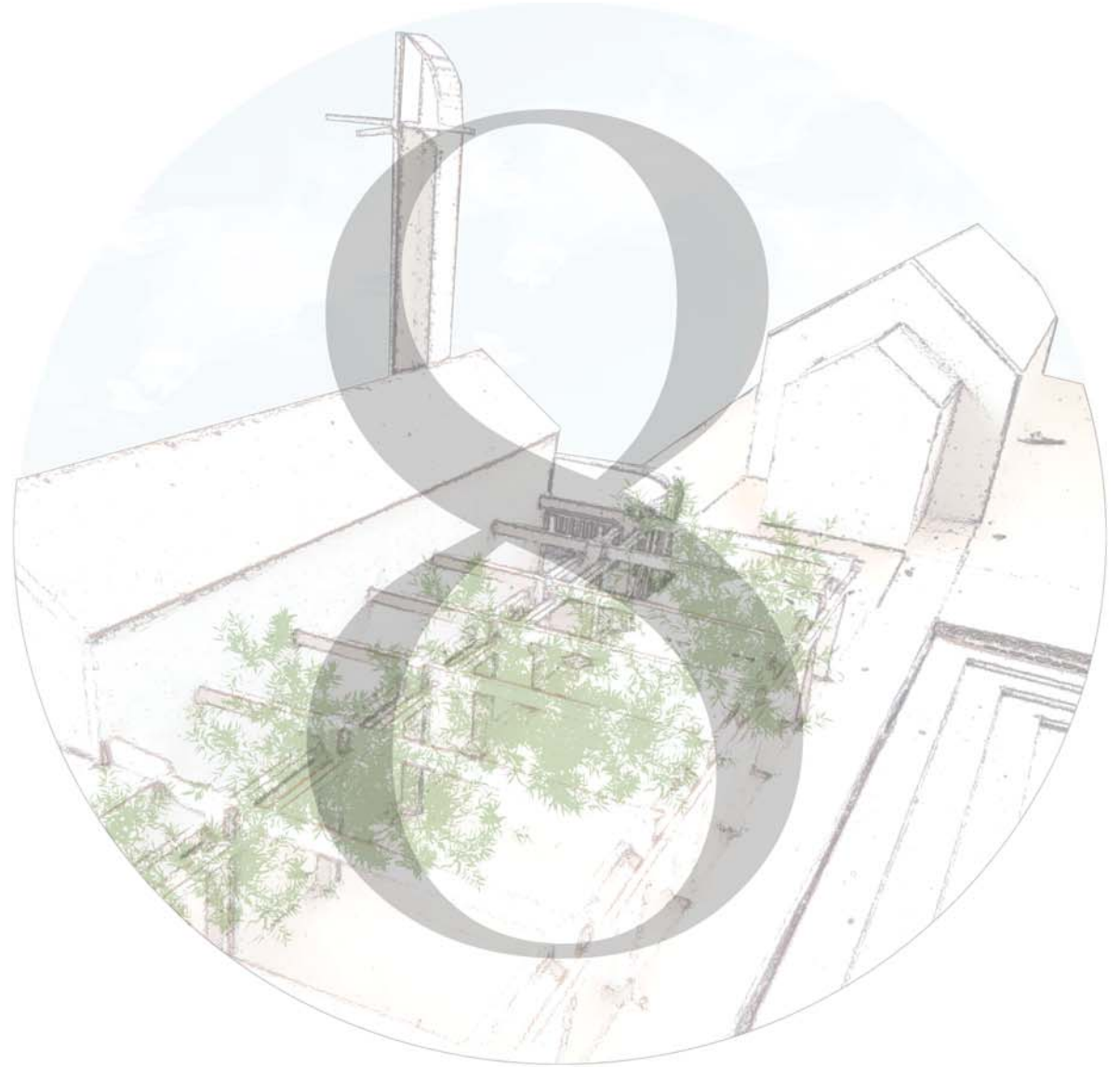
TECHNÈ
Evolution of technology

8.1 INTRODUCTION

The making of the religious complex is an extension of the dissertation intentions conceptual approach and design resolution.

This chapter will look at these informants as a means of guiding the technical concept, material selection, the primary, secondary and tertiary structure, as well as how the rituals come together in the complex. Also discussed are ventilation strategies, water and waste systems, as well as how the interior climate of the buildings is controlled through passive systems.

Figure 8.1.: Site model_View from Western block (Author, 2018)

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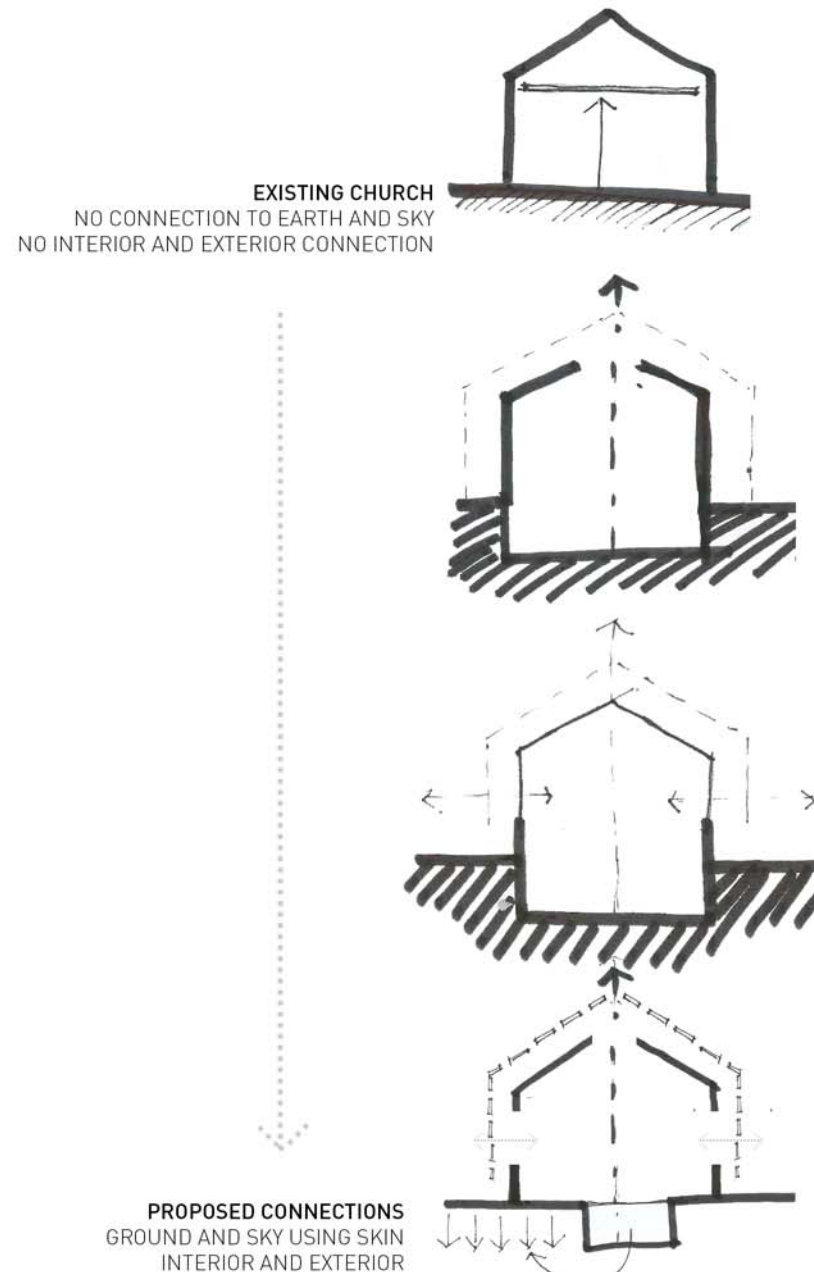
8.1. TECHNICAL CONCEPT AND INTENTIONS

The tectonic language is based on the dissertation intentions of tearing a relationship between building man and nature. This relationship is explored in building form through the materiality and technology, in order to create optimum conditions for the various programmes within the complex.

The technical concept is rooted in the relationship which indigenous practices and rituals have with the ground (earth) and sky(heavens).

The current condition of St. John's Apostolic Faith Mission church architecture and space making, creates an object in space, with little relationship to both ground and sky. The new technical concept creates an architecture which is rooted to the ground and creates a gradual transition to the sky.

The current material palette of the church typology utilizes masonry and steel construction. The proposed complex incorporates the use of natural and man-made materials in an attempt to emphasize this ground and sky connection through stereotomic and tectonic articulation.

The use of a secondary skin re-interprets the current facade treatment through the use of a portal system, connected to external cladding which acts as a means of connecting interior and exterior. It also acts a mediator between not only interior and exterior, but also between natural and man-made.

EXISTING CHURCH
NO CONNECTION TO EARTH AND SKY
NO INTERIOR AND EXTERIOR CONNECTION

PROPOSED CONNECTIONS
GROUND AND SKY USING SKIN
INTERIOR AND EXTERIOR

Figure 8.2.: Stereotomic and tectonic intentions (Author, 2018)

NATURAL [GROUND]

Figure 8.3.: Collage of technical intentions (Author, 2018)
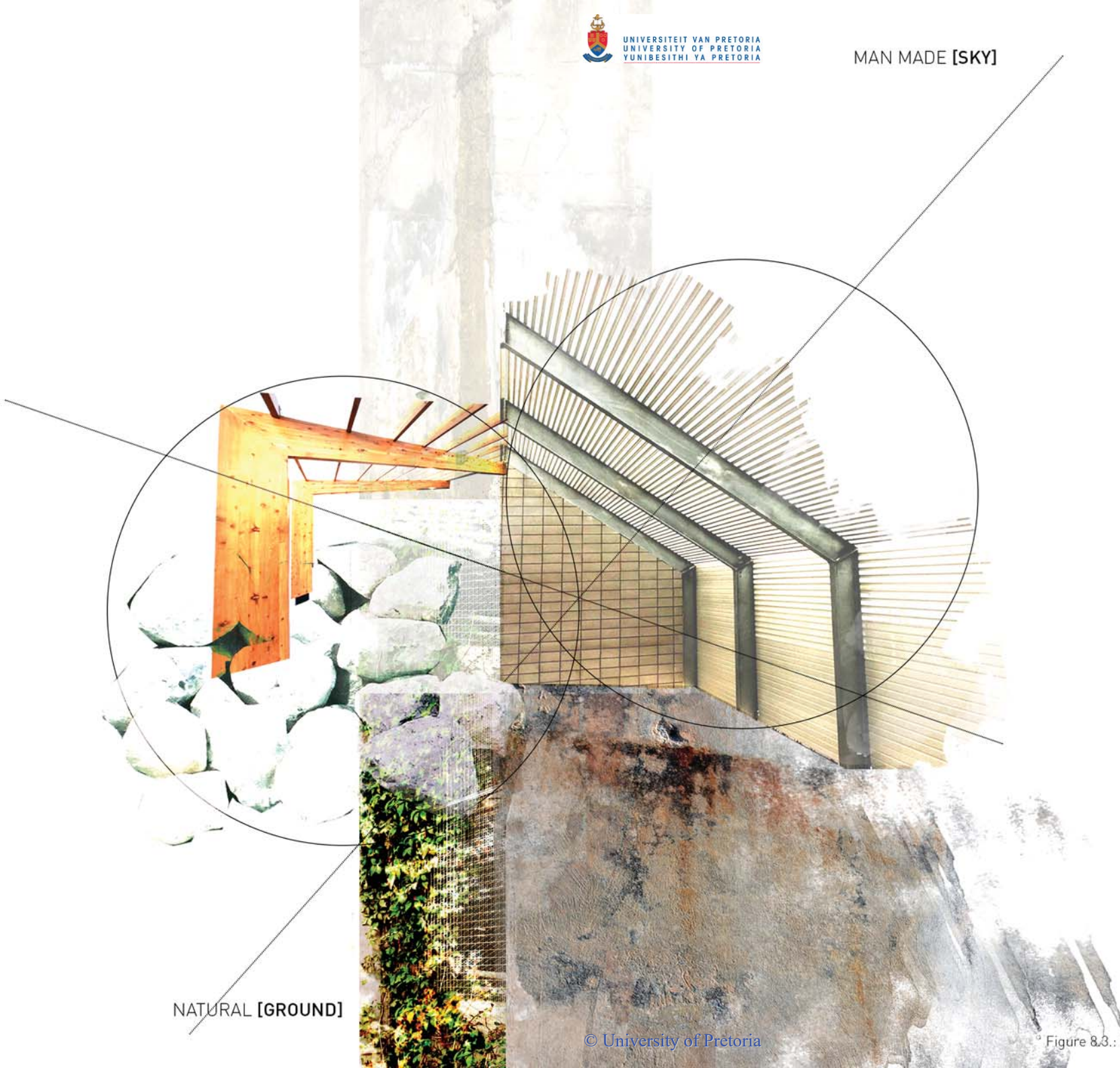
8.2. MATERIALITY

The material selection is vital in conveying the technical intentions through the use of natural, man-made and hybrid materials, as well as the various methods employed to join them to their various surfaces.

Their application and structural properties play a vital role in emphasizing the biophilic intentions of the dissertation, as well as enabling a sensory experience throughout the complex.

8.2.1. NATURAL MATERIALS

8.2.1.1. STONE
Stone is used for its stereotomic and retaining capabilities. It is also used to emphasize the direct relationship with nature, as well as assist with thermal massing strategy of the building.

8.2.1.2. CLAY AND SOIL
On-site soil will be excavated and used during the construction of the complex. It will also be used where additional soil compaction is required.

8.2.1.3. TIMBER
Plywood will be used in a variety of ways in the interior, as well as exterior to express the haptic qualities and a connection to nature.

8.2.1.4. VEGETATION
The use of vegetation will be applied to various facades, as well as productive green walls, in order to create a physical link to nature.

Figure 8.4.: Natural material palette (Author, 2018)

8.2.2. MAN MADE MATERIALS

8.2.2.1. STEEL
Steel has tectonic qualities and acts as a tensile device. It creates a contrast with the stereotomic materials, by emphasizing lightness.

8.2.2.2. HEMPCRETE
Hempcrete, a type of concrete, is a low maintenance, robust material that will be applied to the floors and roofs, as well as additional structural elements such as foundations. Advantages of hempcrete are its energy efficiency, its ability to increase in strength over time and its versatility.

8.2.2.3. POLYCARBONATE SHEETING
The building skin of various spaces will be utilize polycarbonate sheeting, to allow for diffused lighting to enter the internal spaces, while insulation the internal spaces against heat gain. This allows or energy savings and reduces the need for additional supporting structures because of its lightweight nature.
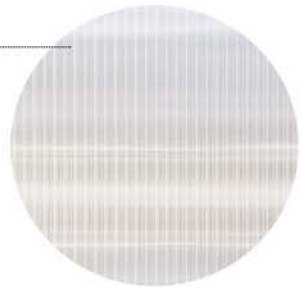
8.2.2.4. BRICK
Brick, as the main infill material, will be used in various forms throughout the complex: an off-white bagged finished will be used to create contrast between materials, as well as a natural, exposed brick, which will emphasize it warm properties.
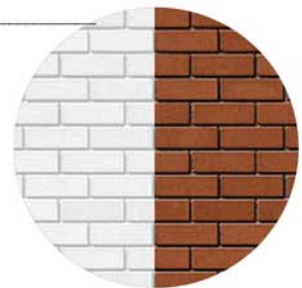
Figure 8.5.: Man made material palette (Author, 2018)

8.2.3. HYBRID MATERIALS

8.2.3.1. PERMEABLE PAVING
Permeable concrete will be used on external ground surfaces, by provide a hard surfaces for activities such as parking and pedestrian walkways, while allowing vegetation to grow in between the pavers. It will also facilitate the water filtration process by trapping solids.

8.2.3.2. BIO-CONCRETE
Bio-concrete enables the natural and enhanced growth of organisms such as fungi, mosses and micro-algae. The materials is able to absorb and reduce atmospheric CO_2 emissions, regulates internal thermal conductivity and has various environmental properties. The concrete is made of two layers: a structural concrete layer as well as a biological layer which can capture and retain rainwater through a coated layer which a reverse waterproofing layer that enables water and moisture to gather on it, enabling the growth of organisms.
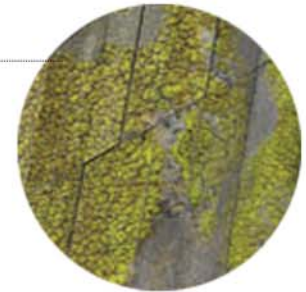
Figure 8.6.: Hybrid material palette (Author, 2018)

NATURAL TECTONIC

MAN MADE TECTONIC

NATURAL STEREOTOMIC

MAN MADE STEREOTOMIC

Figure: Stereotomic and tectonic intentions using materiality (Author, 2018)

8.3. STRUCTURE

The primary structure will be made up of a combination of timber, steel, soil, stone and brick for concrete foundations, floors and roof slabs. The secondary structure will consist of steel supporting frame, permeable concrete and brick paving. The tertiary structure will become the skin of the building and includes polycarbonate sheeting, as well as growing creepers and vegetation supported by the application of a steel mesh and cables. Timber cladding will be applied to some spaces (story-telling enclosure) as well as the interior of internal spaces for acoustical and aesthetic reasons.

8.3.1. PRIMARY STRUCTURE

The primary structure consists of 280mm cavity construction. This makes up the base of all builings within the complex, emphasising the technical intentions of creating a heavy base and the structure beccoming lighter the higher it goes. The masonry is exposed in orderto create a contrast between the base and upper levels, while also creaing a material contrast.

8.3.2. SECONDARY STRUCTURE

The secondary structure is made up of a laminated timber portal frame, with the structure spaced at 3m intervals. The infill is made up of lightweight structure (SA Pine plywood insulated walls.

The portal frame structure is used for its ability to support an 'overall skin' and accommodate independent spaces and elements on the inside.

8.3.4. TERTIARY STRUCTURE

The first element of the tertiary structure is the various roofs- flat concrete roof, as well as the pitched steel roof. A responsive skin including elements such as louvres, screens and services is used, depending on the use of the building. The treatment of the skin is important as it is vital for light and thermal control and can be manipulated by the user, deciduous planted elements or panels that can be removed or replaced.
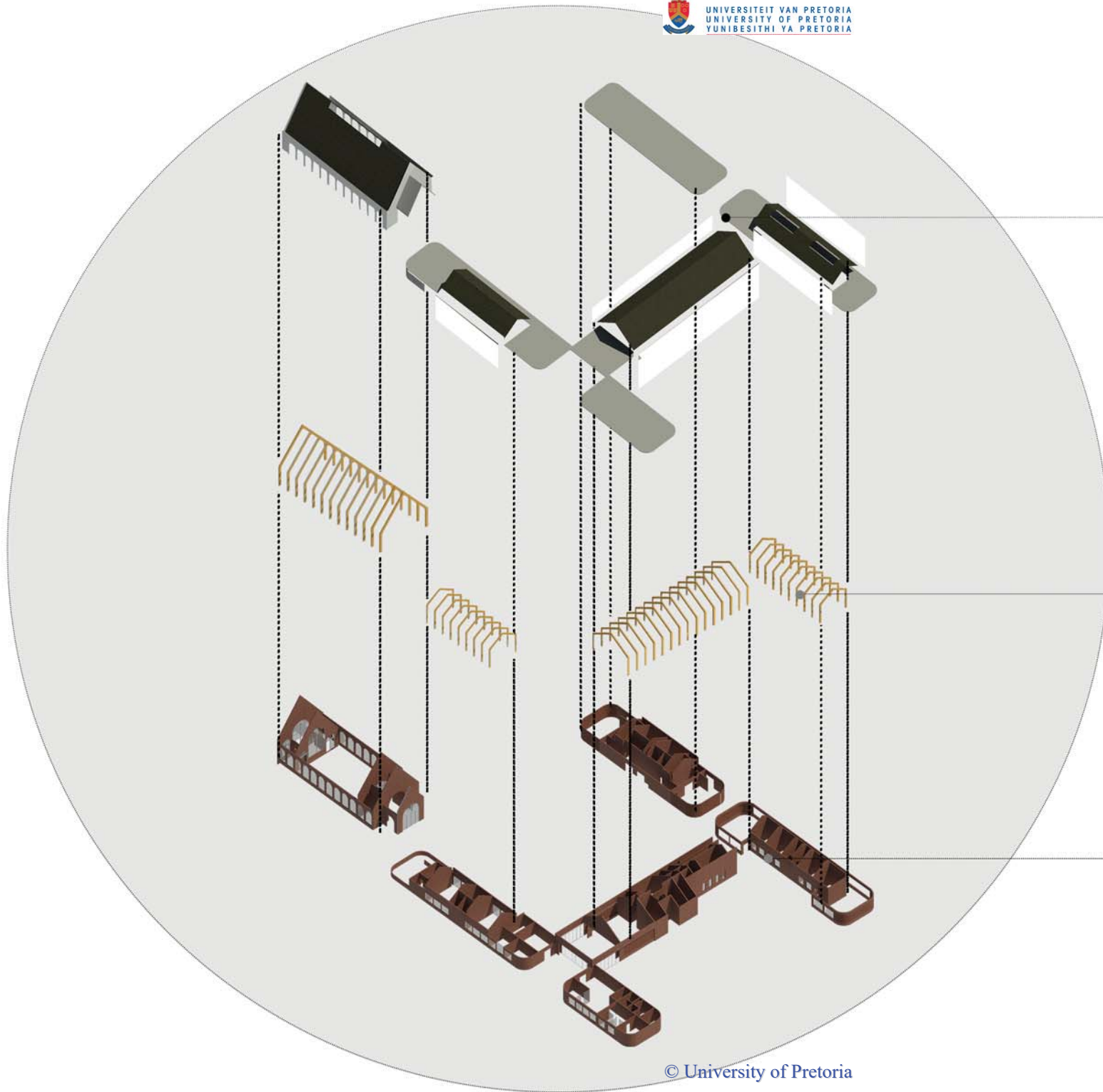
TERTIARY STRUCTURE
Skin : Roof coverings made up of sheet metal or concrete
Skin: Facade made up of timber or polycarbonate

SECONDARY STRUCTURE
Timber portal frame with lightweight wall construction (plywood) as well as timber floors

PRIMARY STRUCTURE
Masonry construction 280-400mm masonry and stone walls as base or ground floor construction and concrete floors

Figure 8.8.: Axonometric of structure (Author, 2018)

8.4. WATER

8.4.1. STORM AND GREY WATER

The storm and grey water treatment strategy involves the collection of site runoff into underground storage tanks where it will be purified and used for the watering of vegetation used in the church food gardens as well as for use in the water closets.

The first step in the process is to prevent large debris from entering the storm water channel, through the use of a mentis grid. From the channel, water is directed to an underground grease trap. All water from basins and showers are also piped to this tank. The grease trap acts to prevent all grease or oil from entering the next stages of the water purification system. From here, the water is pumped to another tank for use in water closets and for irrigation purposes.

8.4.2. RAIN WATER

The rainwater collection strategy involves collecting water from all roof surfaces of the complex. Before water enters the storage tanks, it goes through a first flush diverter that ensures that the initial water, is flushed away in order to collect the cleaner rainwater that follows. The rainwater will be purified by sending it through a bio-filter, comprising a sand, plant, gravel and stone filter.

Water that has been sent through the filter can then be stored underground from where it can be pumped through a UV filter to kill all pathogens still present in the water so that it can finally be used as drinking water, water for wash hand basins.

8.4.3. WATER FROM PURIFICATION RITUALS

The dye runoff water purification strategy involves similar steps to the rainwater purification strategy. The purification system is placed directly adjacent to the dye house in order to strengthen the conceptual approach of a new mutually beneficial relationship between industry and nature, as nature aids in the purification of the water.
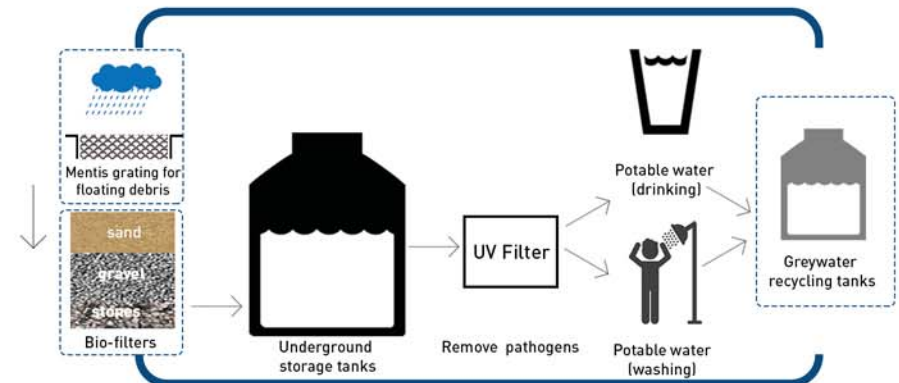
Figure 8.9.: Rainwater treatment strategy (Author, 2018)

RITUALS BLOCK

100 people | D: 18 180l p/m | Area : 435m² | 3x25m³ + 1x12.5m³

OUTREACH BLOCK

50 people | D: 47 430l p/m | Area : 762m² | 4 x 25m³

EDUCATION BLOCK

40 people | D: 8 370l p/m | Area : 727m² | 10 x25m³

HOUSING BLOCK

40 people | D: 36 270l p/m | Area : 661m² | 11x25m³

OFFICES BLOCK

15 people | D: 4 185l p/m | Area : 804m² | 7x 25m³

MAIN CHURCH

80 people | D: 8 680l p/m | Area : 745m² | 11x25m³

Rainwater runoff

Wetland

Water Altar

Bio-pool for baptism

1. Water is harvested from roofs and hard surfaces;

2. Water collected is filtered to remove floating debris through a trash trap filter

3. Filtered water is then stored in temporary tanks;

4. Stored water is then taken through oil and sedimentation filters;

5. Water is taken to wetland to dissolve minerals;

6. Treated water from wetland is used in biopool and irrigation;

7. Water for domestic use will then be treated with a UV filter to remove harmful pathogens, making it potable;

8. Potable water is used for drinking, cooking and washing

9. Greywater is collected from wash hand basins and showers

10. Collected greywater will be taken trough a fat trap, then stored in temporary tanks for storage (Repeat process from 3)

Figure 8.10.: Water system on site (Author, 2018)
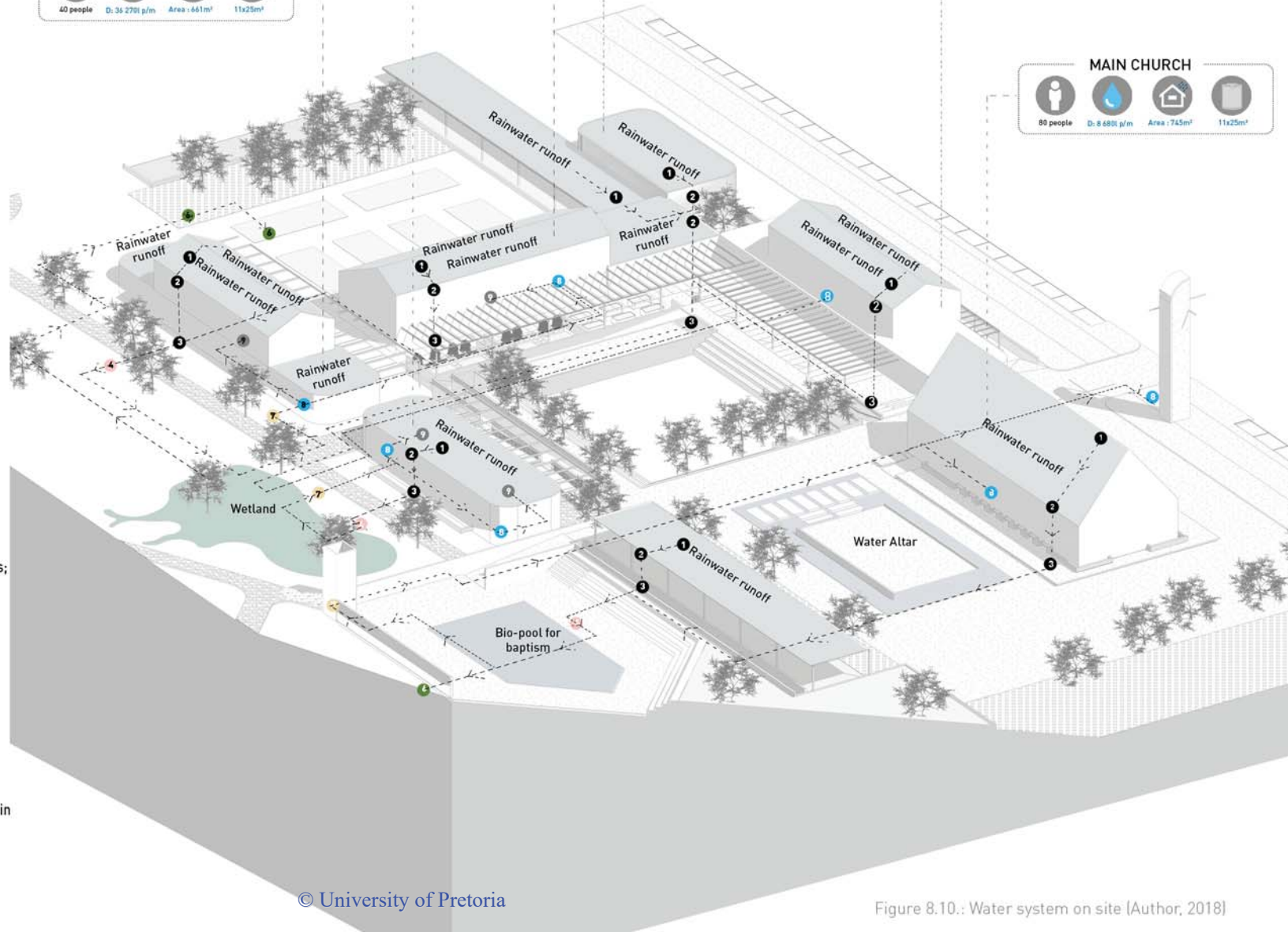
IRRIGATION DEMAND

Month	Planting Area (m²)	Irrigationdepth per week (m)	Irrigation depth per month (m)	Irrigation Demand (m³)
January	512.00	0.40	0.18	90.62
February	512.00	0.40	0.16	81.92
March	512.00	0.40	0.18	90.62
April	512.00	0.30	0.13	66.05
May	512.00	0.20	0.09	45.57
June	512.00	0.20	0.06	30.72
July	512.00	0.20	0.09	44.03
August	512.00	0.20	0.09	45.57
September	512.00	0.30	0.13	66.05
October	512.00	0.40	0.18	90.62
November	512.00	0.40	0.17	87.55
December	512.00	0.40	0.18	90.62
	512.00	0.32	1.62	829.95

Figure 8.11.: Irrigation demand calculations (Author, 2018)

DOMESTIC DEMAND

Month	No. of individuals	Water / capita / day (Litres)	Total water / month (Litres)	Domestic Demand (m³)
January	115.0	175.0	623 875	623.9
February	115.0	175.0	563 500	563.5
March	115.0	175.0	623 875	623.9
April	115.0	175.0	603 750	603.8
May	115.0	175.0	623 875	623.9
June	115.0	175.0	603 750	603.8
July	115.0	175.0	623 875	623.9
August	115.0	175.0	623 875	623.9
September	115.0	175.0	603 750	603.8
October	115.0	175.0	623 875	623.9
November	115.0	175.0	603 750	603.8
December	115.0	175.0	623 875	623.9
TOTAL	115.0	175.0	7345 625	7345.6

Figure 8.12.: Domestic demand calculations (Author, 2018)

TOTAL DEMAND

Month	Total Irrigation Demand	Total Domestic Demand	Total Demand
January	90.6	891.3	981.9
February	81.9	805.0	886.9
March	90.6	891.3	981.9
April	66.0	862.5	928.5
May	45.6	891.3	936.8
June	30.7	862.5	893.2
July	44.0	891.3	935.3
August	45.6	891.3	936.8
September	66.0	862.5	928.5
October	90.6	891.3	981.9
November	87.6	862.5	950.1
December	90.6	891.3	981.9
TOTAL	830.0	10 494	11 324

Figure 8.13.: Total site water demand calculation (Author, 2018)

YIELD (m³) = P x A x C
P = precipitation (m), A = area (m2), C = run-off coefficient

Surface	Area (m²)	Runoff coefficient
Roofs	5 116	0.9
Paving	16 247	0.8
Veld area and planting	8 750	0.4
TOTAL	30 113	0.7

WATER YIELD

Month	Precipitation (m)	Area (m²)	Runoff coefficient	Yield P(m) x A(m²) x C
January	0.133	30 113	0.7	2 803.6
February	0.085	30 113	0.7	1 791.7
March	0.088	30 113	0.7	1 855.0
April	0.052	30 113	0.7	1 096.1
May	0.012	30 113	0.7	0 253.0
June	0.008	30 113	0.7	0 168.6
July	0.004	30 113	0.7	0 084.3
August	0.006	30 113	0.7	0 126.5
September	0.025	30 113	0.7	0 527.0
October	0.073	30 113	0.7	1 538.8
November	0.104	30 113	0.7	2 192.3
December	0.108	30 113	0.7	2 276.6
TOTAL				14 713.4

Figure 8.14.: Total water yield from various surfaces (Author, 2018)

WATER BUDGET

Month	Yield from on site runoff (m³)	Total on site demand (m³)	Monthly Balance	Water in Tank / Resevoir
January	2 803.6	981.9	1 821.7	3 116.3
February	1 791.7	886.9	904.8	4 021.2
March	1 855.0	981.9	873.1	4 894.2
April	1 096.1	928.5	167.6	5 061.9
May	252.9	936.8	-683.9	-5 745.7
June	168.6	893.2	-724.6	-6 470.3
July	84.3	935.3	-851.0	-7 321.3
August	126.5	936.8	-810.3	-8 131.6
September	527.0	928.5	-401.5	-8 533.1
October	1 538.8	981.9	556.9	-7 976.2
November	2 192.3	950.1	1 242.2	0 000.0
December	2 276.6	981.9	1 294.7	1 294.7
Greatest volume in tank / resevoir at any given time is the minimum capacity of the tank				5 061.9
Safety factor			1.5	7 592.9

Figure 8.15.: Water budget calculations (Author, 2018)

Figure 8.16.: Baptism in pool (Author, 2018)

8.5. WASTE

Waste on site is generated in two ways: organic food waste from the training kitchen as well as solid human waste (ablutions). This will be necessary in the generating of biogas energy required for producing cooking gas for both the housing block as well as the training kitchen.

The waste will be directed to the central bio-gas digester system, located in the basement of the Outreach Block. These bio-gas digesters use aerobic bacterial process to convert waste from organic products and solid human waste into methane gas, as well as nutrient rich sludge. This sludge would require additional treatment in composting pits in order to be utilised as a fertilizer. The methane gas will then be redirected through a flame trap that is connected to the gas stoves in the kitchens in the outreach and housing blocks.

The management of this system will provide necessary employment for the members of the church.
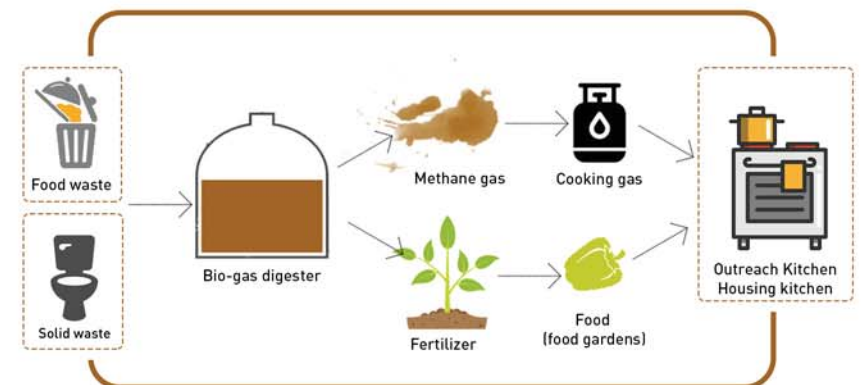
Figure 8.17.: Process of bio-gas digester producing gas (Author, 2018)

RITUALS BLOCK

100 people | Solid waste 189.5kg/ day | Food waste 0kg/day

OUTREACH BLOCK

50 people | Solid waste 35kg/ day | Food waste 10kg/day

EDUCATION BLOCK

40 people | Solid waste 28kg/ day | Food waste 0kg/day

OFFICES BLOCK

15 people | Solid waste 10.5kg/ day | Food waste 0kg/day

HOUSING BLOCK

40 people | Solid waste 70kg/ day | Food waste 8kg/day

Wetland

Water Altar

Bio-pool for baptism

INPUT GENERATED
TOTAL WASTE GENERATED =**189.5 kg DAILY**

INPUT REQUIRED
40kg MIN. WASTE FOR EFFICIENT USE
AGAMA PREFAB BIODIGESTER | (SIZE : 2,2m Ø x 2,5m)

189.5kg/40 = 5 BIODIGESTERS REQUIRED FOR ENTIRE COMPLEX

AREA REQUIRED: 2.2m x 5 = 11m²

40KG WASTE INPUT DAILY YIELD
0.8m³ LPG GAS WITH 4 HOURS BURNING TIME
3.5kWh ELECTRICITY

CURRENT INPUT DAILY YIELD
3.78m³ LPG GAS WITH 20 HOURS BURNING TIME
17.5kWh ELECTRICITY

GAS GENERATED TO BE USED OUTPUT:
COOKING (0.45m³ /h)
= 20/ 0.45
= 44.44 HOURS OF COOKING
= 45 MEALS PER DAY

Figure 8.18.: Solid and organis waste system on site (Author, 2018)

8.6. DAYLIGHTING

The complex is predominately orientated along the north axis. All the northern facade will require shading and deep edges in order to control the lighting. Southern light will be maximised as well as the use of clerestories, to facilitate natural light entering the spaces. Various courtyard and exterior spaces have been places throughout the complex to allow for a filtering of light, as well as to allow for a visual connection with nature.

Polycarbonate sheeting and its material properties will be used in the facade treatment a means to reduce glare on the northern southern of the building, creating a diffused light quality. The steel pergolas structure and the northern living facade will also allow vegetation to create a dynamic lighting effect.

8.6.1. SEFAIRA

The church located at the end of the west-east axis, is not ideally oriented with the longer facade facing north-east. The aim of iteration is to ensure as much natural light in both spaces, while retaining the geometric integrity of the design.

Sefeira ™, a performance based software tool, was used to determine the differences between iterations, aiming to improve the amount and quality of natural daylight, whilst illuminating glare factors.

8.6.1.1. Spatial daylight autonomy [sDA]:

This is the factor of natural light entering the space is evaluated based on the Spatial Daylight Autonomy (sDA) figure given. This indicates the percentage of area which received efficient amount of daylight to conform to the required lux levels (300 lux for church interiors).

8.6.1.2. Annual Sun Exposure [ASE]:

This factor helps to identify whether a space is over lit , which might lead to glare and visual discomfort.

8.6.2. Benchmark

The Leadership in Energy and Environmental Design (LEED) and the Green Building Council of South Africa benchmarks were used to assess the daylight performance.

Baseline iterations were performed of the existing churches as a baseline, to establish which strategies to apply in considering daylighting of new the church building within the complex,

Figure 8.19: Daylight analysis of Church 1 (Author, 2018)
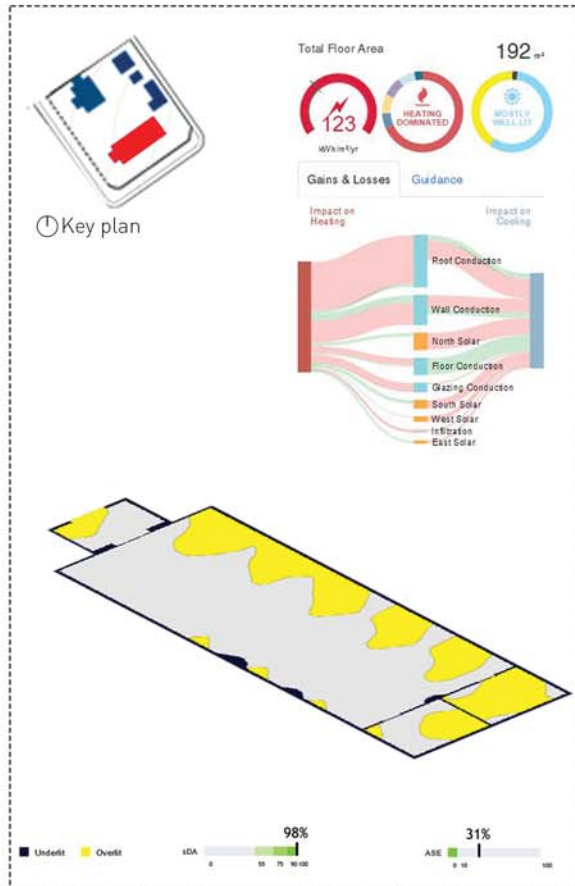
	Benchmark Value	Existing performance	Strategy
sDA	>75%	98 %	Maintain
ASE	<10%	31%	Decrease

8.6.3.1. BASELINE CHURCH 1
SLOVO STREET, UMTHAMBEKA

The sDA overperformed 13% over the desired benchmark of 75% and the ASE exceeded the maximum 10% benchmark by 21%.

Figure 8.20: Daylight analysis of Church 2 (Author, 2018)
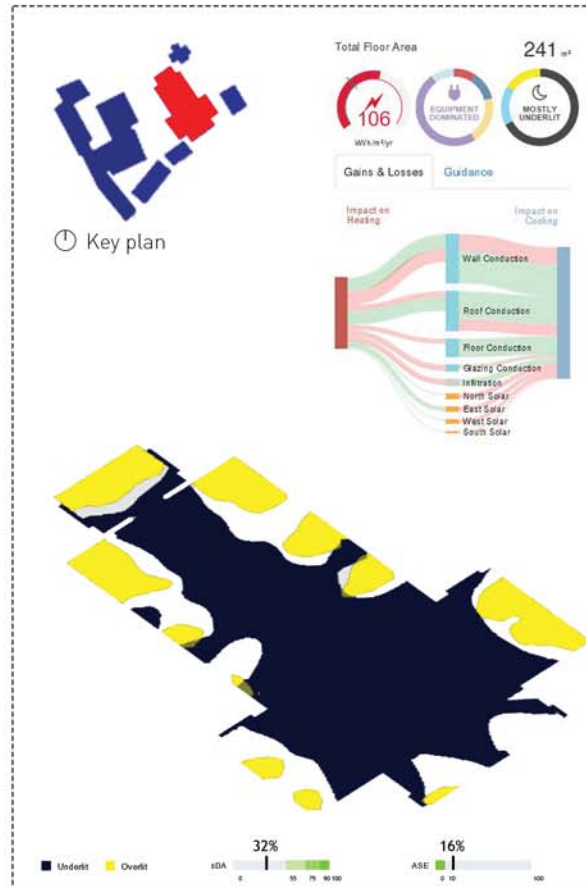
	Benchmark Value	Existing performance	Strategy
sDA	>75%	32%	Increase
ASE	<10%	16%	Decrease

8.6.3.2. BASELINE CHURCH 2
MILKY WAY, KOPANONG

The sDA underperformed 33% under the desired benchmark of 75% and the ASE exceeded the maximum benchmark by 6%, showing improvement from Baseline Church 1. The orientation along north-east axis seems to beneficial in decreasing the ASE.

Figure 8.21: Daylight analysis of proposed church (Author, 2018)
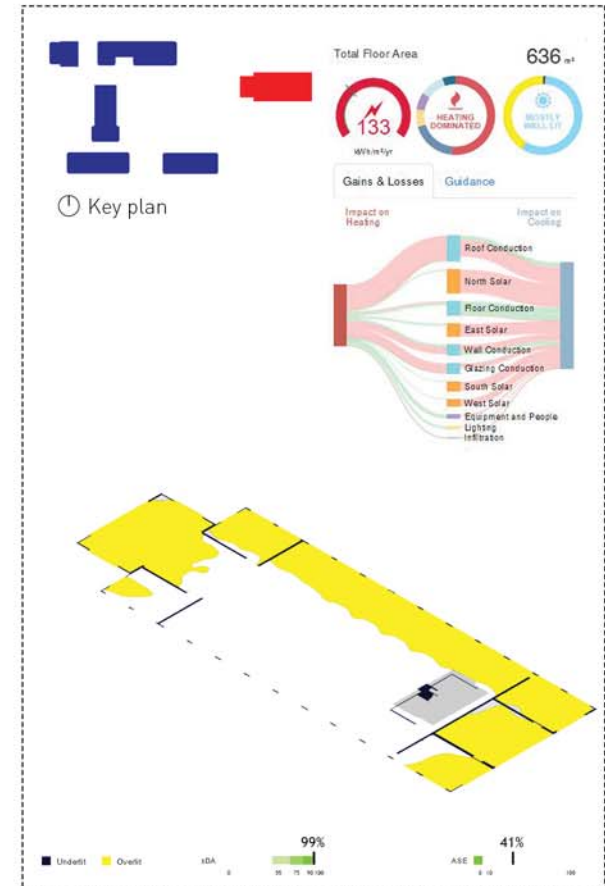
	Benchmark Value	Existing performance	Strategy
sDA	>75%	99%	Maintain
ASE	<10%	41%	Decrease

8.6.3.3. BASELINE CHURCH 3
NEW CHURCH, DIEPSLOOT

The sDA for the proposed design, produced results similar to the first baseline assessment; overperformed by 24% over the desired benchmark of 75% and the ASE exceeded the maximum by 31%.

8.7. VENTILATION

Thick walls with a high thermal mass are used for the northern and western facades in order to reduce the internal heat gain and control the internal comfort. The use of planted facades with misting and drip irrigation are placed along these facades to assist in creating a cooler and comfortable temperature through evaporative cooling.

The main church building makes use of stack ventilation. Stack ventilation is proposed as a means of ventilating the new building. Stack ventilation makes use of the differences in air temperatures to move air, from exterior to interior space.

RISING HOT AIR •••••   FRESH COOL AIR •••••
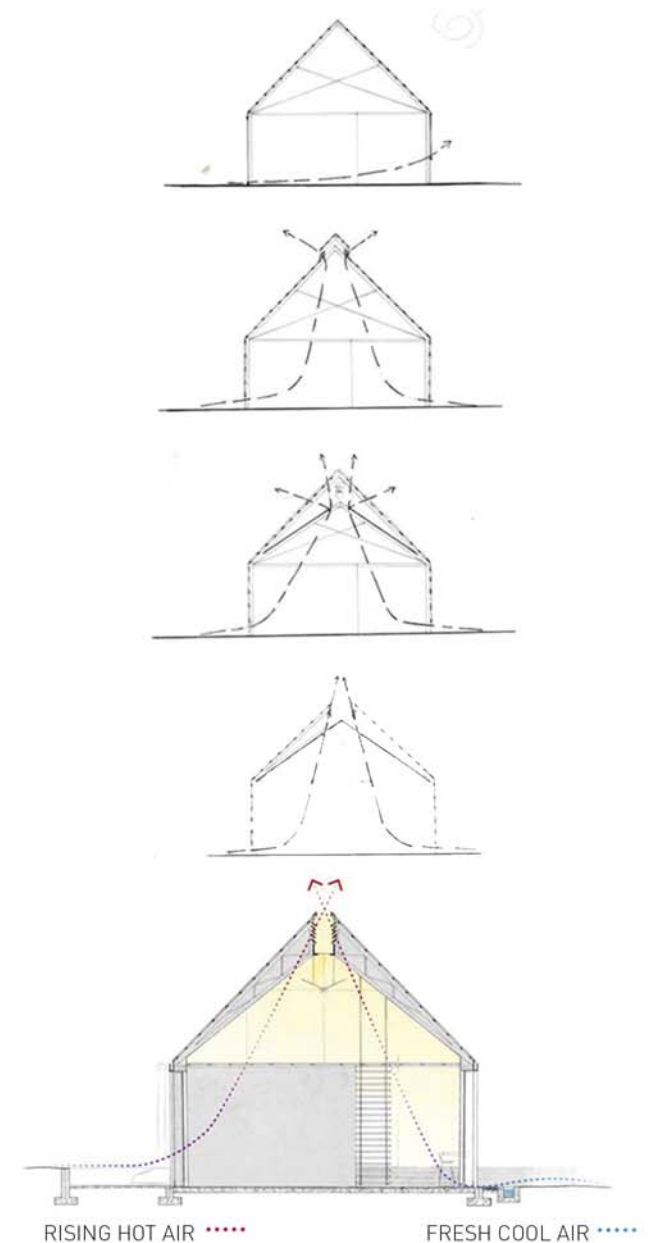
Figure 8.22: Diagram sketches for ventilation in church building (Author, 2018)

C

Figure 8.23: Ventilation of ritual bath space (Author, 2018)
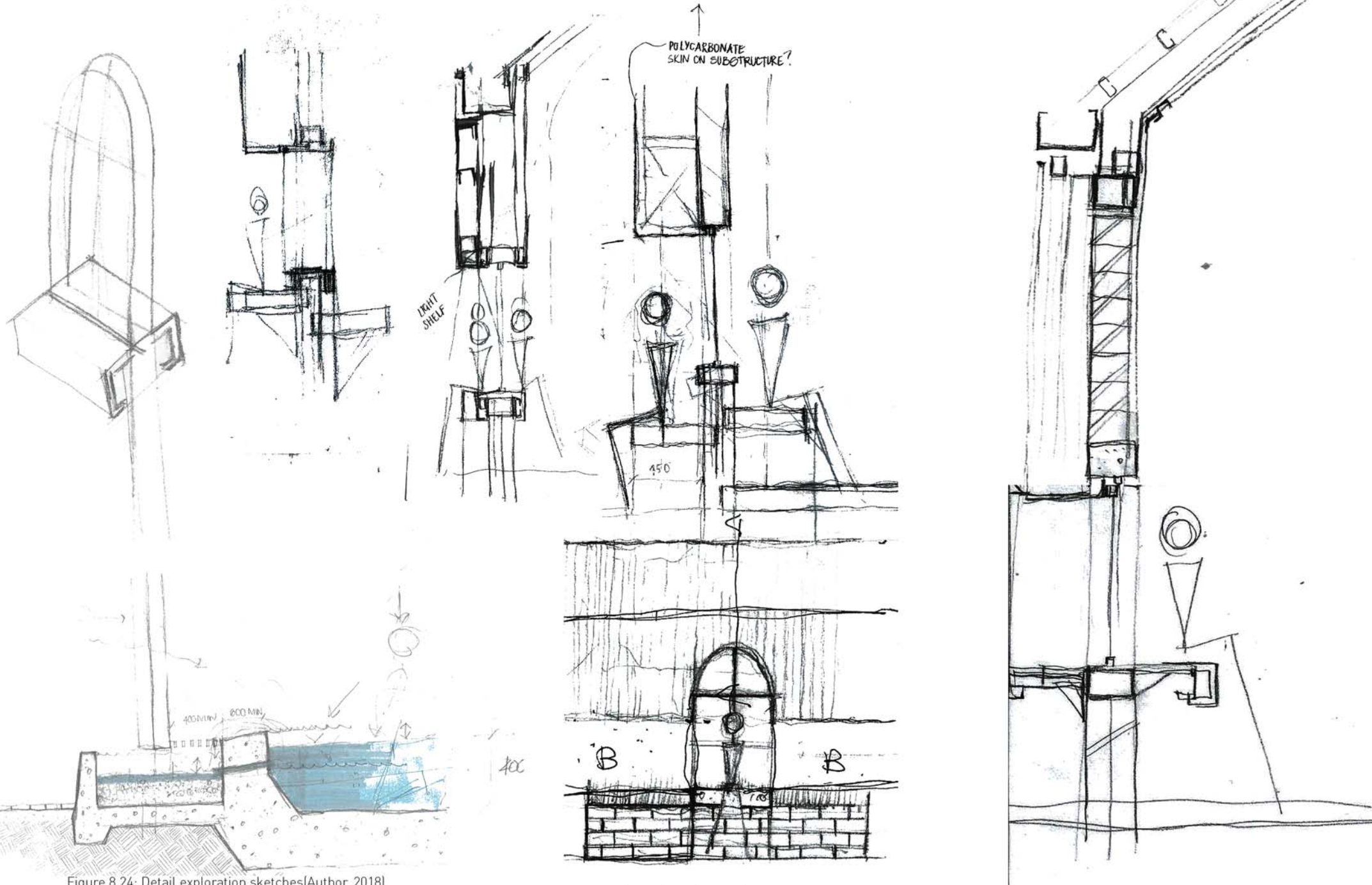
Figure 8.24: Detail exploration sketches (Author, 2018)

'BUTTRESSES' / EXPOSED / DOUBLE COLUMN SYSTEM FOR EXT. SEATING SPACE

-PERGOLA-LIKE SHADING FOR EXTERIOR SEATING

TIMBER LAMINATED COLUMN AS EXTENSION OF INSIDE CHURCH.

OUTSIDE

INSIDE.

0.4mm KLIPLOCK FIXED TO STEEL PURLINS

9.5mm GYPROCK RHINOBOARD

150x75x20x2mm COLD FORMED LIP CHANNEL PURLINS.

300x600 LAMINATED TIMBER COLUMN.

OUTSIDE

INSIDE

400 - 600.
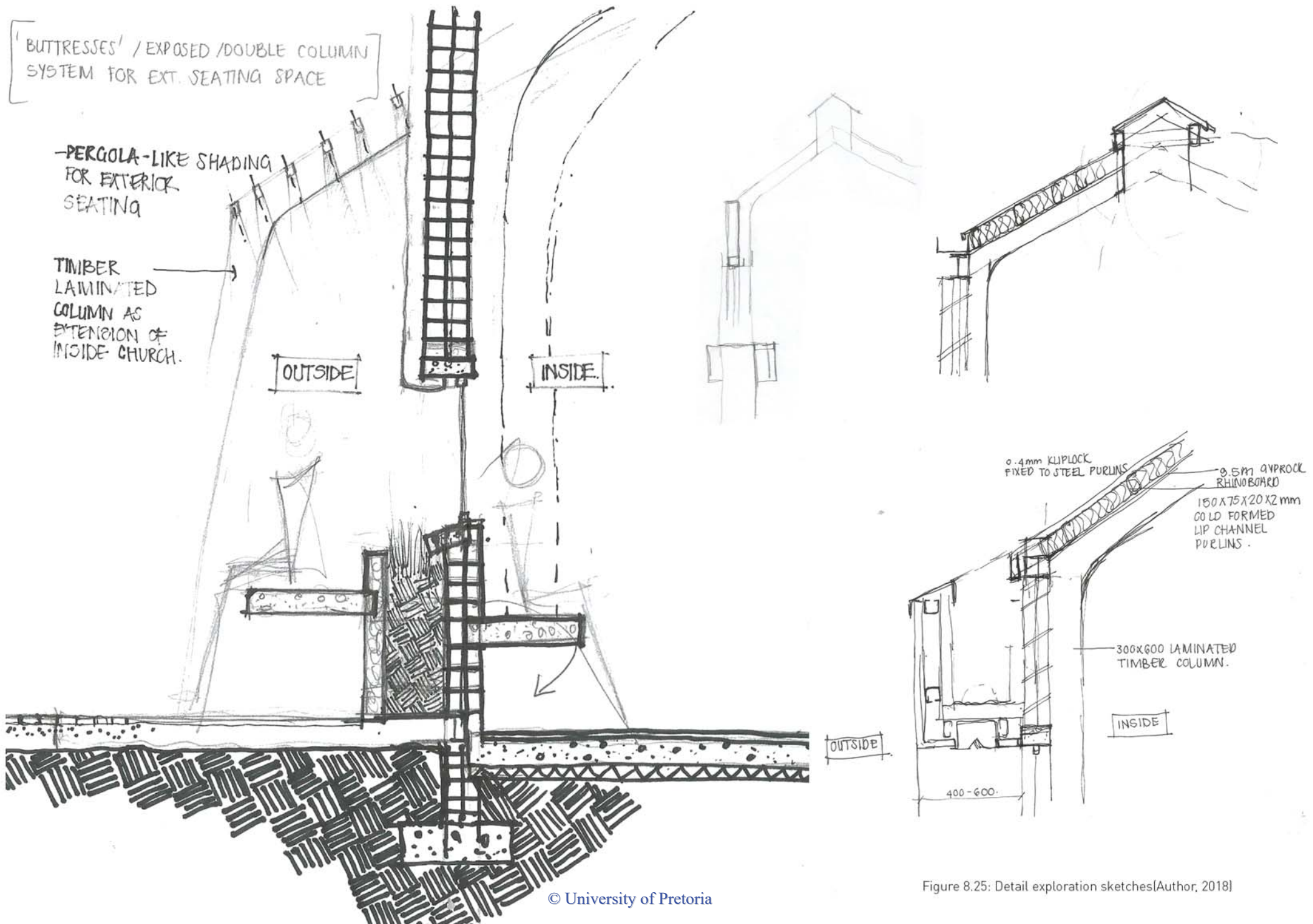
Figure 8.25: Detail exploration sketches (Author, 2018)

8.8. SBAT RATING

A Sustainable Building Assessment Tool (SBAT) study was completed in order to access the design and its sustainability in terms of Social, Economic and Environmental Factors. The overall score indicated a good score with factors such as water , Inclusion, Biodiversity, Transport and Resource Use being rated higher.

SB	SBAT REPORT	Achieved
		3.6

SB1	Project
	St. John's Apostolic Faith Mission - Diepsloot

SB2	Address
	Corner of Ridge Road and K54 Road, Diepsloot

SB3 SBAT Graph

SB4 Environmental, Social and Economic Performance	Score
Environmental	3.5
Economic	4.1
Social	3.2
SBAT Rating	3.6

SB5 EF and HDI Factors	Score
EF Factor	3.5
HDI Factor	3.6

SB6 Targets	Percentage
Environmental	70
Economic	81
Social	64

Figure 8.26: Report of the project generated by the Sustainable Building Assessment Tool (Author, 2018)

PROPOSED K54 PROVINCIAL ROAD

PROPOSED K54 PROVINCIAL ROAD

OFFICES

EDUCATION BLOCK

CHURCH

CHURCH FOOD
GARDENS

TRAINING
KITCHEN AND
WORKSHOP

OPEN-AIR WORSHIP SPACE

WATER ALTAR

HOUSING BLOCK

ABLUTIONS BLOCK

BAPTISM POOL

EXISTING TROUT FARM

N

Site Plan
Not to scale

Figure 8.27: Site Plan (Author,2018)

COVERED ENTRANCE WALKWAY

CHURCH FOOD GARDENS

Figure 8.29: First Floor Plan (Author, 2018)

Figure 8.30: Section A-A (Author,2018)

Figure 8.31 : Section B-B (Author, 2018)

170mm RC slab

450x150mm laminated timber column at 3000mm c/c

Precast concrete seat, with sub-structure, to fall

TIMBER CLADDING:
100 x 40mm stained composite timber cladding fixed to sub-structure

WALL CONSTRUCTION:
EXTERIOR: 21mm SA Pine plywood fixed to 38x114mm timber studs at 600c/c | 50mm insulation |

Roof flashing and counter-flashing

500 x 300mm custom galv. mild steel box gutter with 150 dia. downpipes, spaces at 6000mm c/c

ROOF CONSTRUCTION:
0.4mm Factory coated charcoal grey Klip-loc roof sheeting with 100mm insulation on 150x50mm timber purlins at 1200 mm c/c

20mm timber ceiling fixed to timber purlins

450x150mm laminated timber column at 3000mm c/c

Aluminium frame skylight

Figure 8.32 Detail Section [Author,2018]

450x300mm laminated timber portal frame at 3000mm c/c
fixed to galv. mild steel plate, fixed to floor

ROOF CONSTRUCTION:
0.4mm Factory coated charcoal grey Klip-loc roof sheeting with
100mm insulation on 150x50mm timber purlins at 1200 mm c/c

9.5mm Gyproc Rhinoboard ceiling fixed to timber purlins
spaced at 1200 c/c | Fixing to be done with Gyproc sharp point
scres

300 x 400mm custom galv. mild steel box gutter with 150 dia.
downpipes, spaces at 6000mm c/c

38x114mm SA Pine horizontal stud
Gutter guard

DPM

LIGHTWEIGHT WALL CONSTRUCTION :
16mm SA Pine plywood with 5mm cement plaster finish
(Interior side) | 100mm isotherm insulation | 21 mm SA Pine
pylwood (Exterior side)

Opal 12mm polycarbonate sheeting fixed to timber stucture |
50x114 sub-structure at 600mm c/c

38x228mm timber lintel

38x114mm timber top rail

Aluminium frame window

Figure 8.33: Detail 1 (Author,2018)

3579 Saint Gobain 90 deg. fullbore outlet to downpipe

100x45mm extruded composite cladding fixed at 100mm c/c to 50x76mm timber horizontal member, fixed to mild steel sub-structure

30x30mm mild steel angle section, bolted to 100x150mm mild steel column

INSIDE

INSIDE

80mm PVC rainwater downpipe to run through 100x100mm mild steel column

300x55mm preast concrete coping with 1:80 slope, grouted to top of wall

300mm stone plinth wall

600x100mm stormwater catchpot filled with rough aggregate to fall, to stormwater tank

Figure 8.34: Detail 2 (Author,2018)

160mm SA Pine plywood wall construction | Plaster and paint interior face
Plaster reveal
Drip joint
Sill flashing
Custom made aluminium frame arched window
100x100mm galv MS post
10mm plaster and paint
Precast concrete sill with Dovedail anchoring
DPC
Wall ties every 5th course | Horizontal at every 1000mm max. spacing | Vertical 500mm max. spacing
Concrete precast seat
230mm exposed facebrick wall
Precast concrete seat, with sub-structure, to fall
Y16 starter bars to be confirmed by eng.
40x40mm painted SHS MS frame
22x70mm Saligna decking profile timber members
280mm facebrick cavity wall
150x600mm Skirting tile
DPC
40x40mm painted SHS MS frame
600x600mm Floor tile on with 50mm screed to architect's specification
170mm RC slab to eng detail and specification

450

OUTSIDE

INSIDE

FFL

Permeable pavers

DPM

Figure 8.35: Detail 3 (Author, 2018)

Figure 8.36: View towards church from open air worship space. (Author,2018)

Figure 8.37: View from covered entrance (Author, 2018)

Figure 8.38: View towards open air worship space. (Author, 2018)

Figure 8.40: View from classroom (Author,2018)

Conclusion
Reflection

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CONCLUSION

The aim of the dissertation is to create a religioous complex for St. John's Apostolic Faith Mission, integrating biophilic design principles in the making fo the architecture.

Thesite presents contrasting layers from the dense, urban context, which generates an impression of distinction and sanctuary. The dissertation acknowledges this distinction by evoking a sense of pilgrimage, or journey from the introduction of an urban programme, responding to the road development and urban needs. The culmination of the programme responds to social needs and concludes with the religious apogee, whereby collective churches are transplanted, creating a sense of rebirth for the church and the selected site.

The dissertation addresses education, civic, social, and religious facets.The outcome of the intervention aids in the alleviation of the current and future needs for the development of Diepsloot in its entirety, thus improving the community's way of life.

This dissertation has afforded me the opportunity to explore architecture that opportunistically connect the environments we live in; architecture that reinvents itself within a rapidly urbanising environment. By designing in a natural landscape, I was able to explore the tactile qualities and components, and apply principles that not only conserve the existing landscape, also but enhance it. I also acquired an understanding of how sensory properties could be utilised as architectural components. These explorations have led

These explorations have led to a better understanding of the area's unique ecology and how architecture has to respond to its immediate environment. Its manifestation as a symbiotic construct offers a unique opportunity for ecological awareness and education.

This response could create awareness by involving the community to participate in the conservation of water and natural environments- the most valuable resource. Diepsloot West proved to be a dynamic and exciting area, with an abundance in design generators and opportunities.

The purpose of this dissertation is to act as a catalyst for the development of future infrastructural interventions, which could achieve social inclusiveness. The most challenging aspect of the design was exploring ways in which the building could become a functional hybrid construct, yet fit into its context in a phenomenological way.

Re hopola Mme Christina(h)
Mothebi wa St. John.
Difofu le dimumu
Bohle, dikgwahlapa;

Bohle, ba bone bophelo
Ka metsi, le sewasho.

Re na le mabanta
A bosweu le boputswa
Le dipele ka mefuta
Tsohle tsa St. John

Bohle, ba bone bophelo
Ka metsi, le sewasho.

We remember Mme Christina(h),
The founder of St. John;
The blind and mute,
The washed away;

All received life,
With water and ashes.

We have belts, of white and blue;
And pins of different kinds,
All of them St. John;

All received life,
With water and ashes.

Figure 9.1.: View of church interior (Author;2018)

PRESENTATION

The completion

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LIST OF FIGURES

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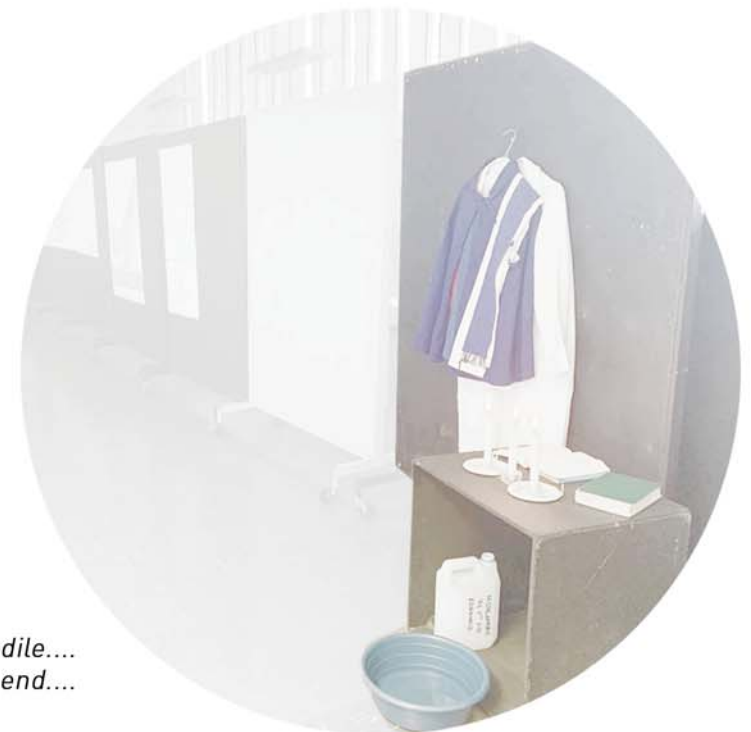
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Ho fedile....
The end....