LIFE IN DEATH

**ADDRESSING HETEROTOPIC BURIAL SPACES BY RE-INTRODUCING
BURIAL RITUALS INTO THE INNER-CITY OF PRETORIA**

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

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 provided.

Liam G. Ullrich
January 2021

Submitted to fulfil part of the requirements for the degree of Master of Architecture (Professional), Department of Architecture, Faculty of Engineering, Built Environment, and Information Technology (EBIT), University of Pretoria

University of Pretoria, 2020

LIFE IN DEATH:

ADDRESSING HETEROTOPIC BURIAL SPACES BY RE-INTRODUCING BURIAL RITUALS INTO THE INNER-CITY OF PRETORIA

AUTHOR:

Liam G. Ullrich

STUDY LEADER:

Cobus Bothma

COURSE COORDINATORS:

Prof Arthur Barker
Dr Carin Combrinck
Catherine Karusseit

RESEARCH FIELD:

Heritage and Cultural Landscapes

CLIENT:

City of Tshwane
Metropolitan Municipality
Passenger Rail Agency
of South Africa (PRASA)
South African Heritage
Resources Agency (SAHRA)
Pretoria Central Burial Society

PROGRAMME:

Alternative Burial &
Contemplative Centre

MACRO CASE-STUDY AREA:
Pretoria Central

MESO CASE-STUDY AREA:

Salvokop-Station Precinct

MICRO CASE-STUDY AREA:

Old Pretoria Railway Station Forecourt
Bounded by Scheiding Street, the
extension of Paul Kruger Street, and the
drop-off through road to the South and
West of the Forecourt.

CO-ORDINATES:

25° 45' 27.1692" S, 28° 11' 21.4152" E

ABSTRACT:

Burial spaces within the City of Pretoria have become inert, fenced-off islands – restricting death rituals and their intrinsic value to society. The lack of urban burial space within Pretoria has resulted in the propagation of urban sprawl, and the bereaved are required to bury the deceased in cemeteries outside of the city. Burial spaces were once part of the range of vital public facilities within historical cities, and death rituals are argued to be central to cultural and individual identities. In order to address this predicament of the removal of burial rituals from the City, the dissertation proposes re-introducing a public commemorative burial space within the City of Pretoria. The dissertation challenges the notion of the heterotopic modern burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm in order to preserve its sanctity. The overarching intention of the research is to develop a prototypical approach for the introduction of a commemorative burial space which can support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities.

KEYWORDS:

Heterotopic Space, Burial, Ritual, Narrative, Mediation, Memory

"PAS DE CIMETIÈRE, PAS DE CITÉ!"
"NO CEMETERY, NO CITY"

~

Cry of Parisian protesters when Georges-Eugene
Haussmann proposed closing the cemeteries of central
Paris in the late nineteenth century.

DEDICATED TO MY DAD,

DIETER ULLRICH

1962/03/31 ~ 2020/10/22

TABLE OF CONTENTS

01

INTRODUCTION

MOMENTO MORI

1.1

GLOBAL PREDICAMENT

The Western City has become progressively
less accommodating of the dead. The negative
associations of death, and the large tracts of land
required for in-ground burial have resulted in
these spaces being pushed to the periphery of
urbanity (Johnson 2008: 781). Individuals living
within cities are required to migrate beyond the
city-limits to fulfil their burial processes (Worpole
2016: 5). Consequently, cultural death rituals and
the spaces reserved for the expression of grief
have been removed from the city. Burial spaces
were once central to the commemoration and
representation of cultural and individual identities
within the city, and were part of the vital range of
public civic institutions (Johnson 2008: 787–788).
A well-designed burial space was considered to
reflect the current ideals and economic status of
a particular city (Johnson 2008: 787). Currently,
town-planning authorities of international cities
are seeking alternative solutions to cope with
the lack of urban burial space (Rugg 2016;
Worpole 2016). This is especially evident within
developing nations' cities experiencing rapid
population growth (Atkins 2017: 43; Steyn 2007:
62). This predicament can be compared to the
situation within South Africa's major cities.

1.2

URBAN ISSUE

Custom-designed alternative solutions for burial
spaces have been implemented within some cities
in South Africa, each responding to the cultural
and socio-economic context in a particular manner
– however, no developments have been completed
within Pretoria (Wilkins 2011: 24). Traditional
burial infrastructure, within the urban context of
Pretoria, has developed into an environmentally
unsustainable practice. From the list of thirty-four
registered cemeteries within the City of Tshwane,
fourteen are inactive, eleven require over a fifty-
year wait for burial, and nine require a twenty-
five-year wait for burial (City of Tshwane 2014:
22). Between the years 2009 and 2013, there was
a thirty per cent decrease in the number of burials
and cremations occurring within the city (2014:
22). Pretoria's cemetery blocks have become
underutilised, neglected, fenced-off islands within
the city. The city's main alternative practice to
in-ground burial, cremation, is a contested taboo
within many of Pretoria's cultural and religious
groups (Atkins 2017: 36; Wilkins 2011: 22; Fisher
& Clarke 2010a: 69–70). The city of Pretoria is no
longer able to accommodate for the fulfilment of
the majority of cultural death rituals and processes
undertaken by its citizens. This is most evident
amongst the African-Initiated Church, the largest
religious group in Pretoria, whose members are
required to travel outside of the city limits to fulfil
their death rituals and burial processes (Statistics
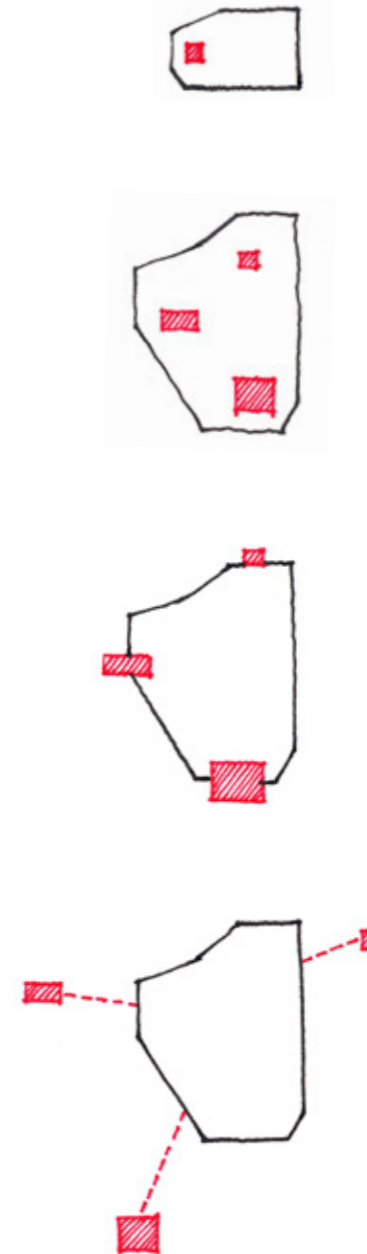South Africa 2016: 17; Baloyi 2014: 1; Wilkins
2011: 24, 30).

*Fig. 1.1: Diagram of active burial sites progressively
moving to the periphery of inner-cities (Ullrich 2020)*

1.3

RESEARCH QUESTION

How can the architecture of new burial spaces, within the Inner-City of Pretoria, be designed in order to address the heterotopic qualities that impede modern urban burial spaces from positively contributing to society?

DETAILED QUESTIONS

1. How can architecture accommodate grief and sacred burial rituals within an urban city context?

2. What types of spaces can architecture provide to accommodate and facilitate the various death rituals of Pretoria?

3. How can architecture commemorate the memory of the deceased and contribute to the repository of cultural memory within the city of Pretoria?

4. How can the architecture accommodating burial rituals contribute to urban place-making activities?

5. How could the architecture incorporate environmentally sustainable burial methods, whilst being inclusive of local religious and cultural burial rites, and abide by the municipal by-laws?

1.4

ARCHITECTURAL INTENTION

The dissertation challenges the notion of the heterotopic modern burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm in order to preserve its sanctity. The overarching intention of the research is to develop a prototypical approach for the introduction of a commemorative burial space which can support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities.
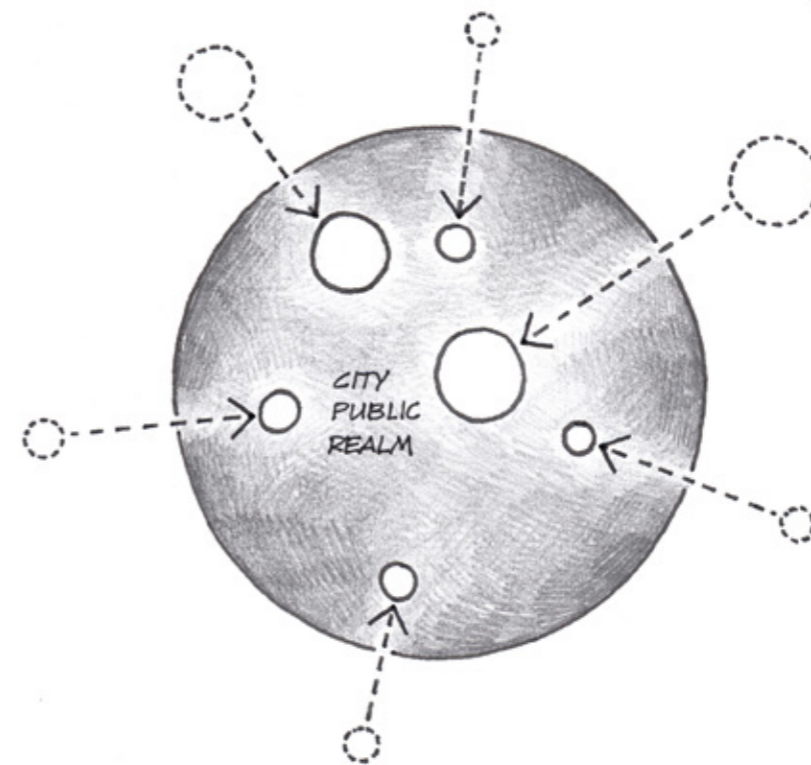

Fig. 1.2: Reincorporating burial spaces into the city public realm (Ullrich 2020)

1.5

RESEARCH METHODOLOGY

The methodological paradigm which most appropriately describes the dissertation is interpretivism (du Toit 2014: 63). Interpretivism aids one in understanding and interpreting the subjective nature of an individual's experience within their contextual setting (Kivunja & Kuyini 2017: 33). This research is based on a relativist ontology, meaning that the studied situation has multiple, non-singular realities. The outcome of this research will present a balanced axiology, in order for the design informants to accommodate the various value systems of the multi-cultural landscape (Kivunja & Kuyini 2017: 34).

1.6

RESEARCH LENSES

Two lenses of enquiry guided the dissertation's data collection and investigation processes, namely the *sacred ritual lens* and the *quotidian ritual lens*. The *sacred ritual lens* examined the current condition of burial spaces within the city, the programmatic requirements of these spaces, and the exploration of possible future conditions and spatial solutions to accommodate these sacred rituals. The *quotidian ritual lens* examined the 'everyday' rituals of individuals within the city of Pretoria, and the spatial architectural qualities which accommodate these everyday narratives on a city, precinct, and site-specific scale.

1.7

RESEARCH METHODS

1.7.1 CASE STUDIES

Ethnographic case-study research was utilised for primary research data collection. A case study is an "empirical inquiry that investigates a phenomena or setting" (Groat & Wang 2013: 418). The ethnographic research emphasised the reliance on observation of these phenomena as a primary mode of data collection. This active role of observation took the form of site visits to burial spaces, and the chosen intervention site within the inner-city of Pretoria. The researcher recorded empirical data at the site visits with "audio-visual materials" (Creswell 2009: 180) in the form of note-taking, diagrammatic drawings, and photographs. This approach was utilised in order to gain a deeper understanding of the manifestation of the architecture that supports the ritual events that define these spaces, and an individual's processional experience through these spaces. Julie Rugg's (2000) four thematic categories for defining urban burial spaces helped to define preliminary categories for collecting site information:

1. Physical Characteristics

2. Boundaries & Circulation (changed from "Ownership & Purpose")

3. Sacredness & Ritual Accommodation

4. Memory of Individuality

Additionally, "ancillary sources" were utilised after the site visits to collect primary and secondary data (Groat & Wang 2013: 226). Archival material, journal articles, and statistical information were retrieved to support the findings of the site visits, and to investigate possible solutions.

1.7.2 DATA ANALYSIS

A set of steps were adapted from Creswell's (2009: 185) approach to analysing qualitative research (Fig.1.3). The approach supports an inductive development of findings – stemming from the local condition within Pretoria. Once the raw data was collected, it was organised and compiled into a format to prepare it for analysis. Once prepared, the author examined the information to obtain a general understanding of the contents, and the architectural issues and intentions were refined. The information was hand-coded, and new thematic trends and associations could be developed. A set of thematic trends were established which functioned as the components of the conceptual approach for the dissertation, and as research categories for further investigations.
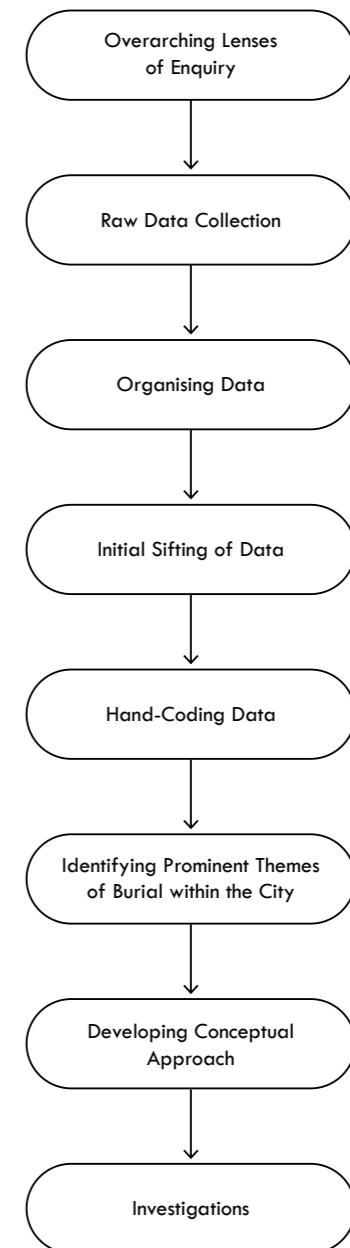

Fig. 1.3: Approach to analysing qualitative research (Ullrich 2020, adapted set of steps from Creswell 2009: 185)

Fig. 1.4: Schematic diagram of methodology process (Ullrich 2020)

1.8

DELIMITATIONS & ASSUMPTIONS

The case-study research and design intervention proposed by this dissertation is focused on the particular urban conditions of the Inner-City of Pretoria. Portions of the theoretical and design framework could function as a prototypical model for future critique and adaptation for an intervention elsewhere within Pretoria. The extent of socio-cultural variance with regards to burial practices indicates that the findings will be less applicable to other South African cities. During the dissertation's data collection process, the Government of South Africa enacted the Disaster Management Act (2020) to mitigate the spread of the Coronavirus disease (COVID-19). The restricted access to civic public spaces and travel restrictions resulted in the adjustment of the planned research process. It is acknowledged that these regulations primarily affected the observations recorded during the Forecourt area site visits, as movement patterns were affected. The data collection therefore utilised historical GPS traces for the site (OpenStreetMap 2020), and multiple visits to the site throughout the 2020 Academic Year, in order to identify differentiated activities during lockdown.
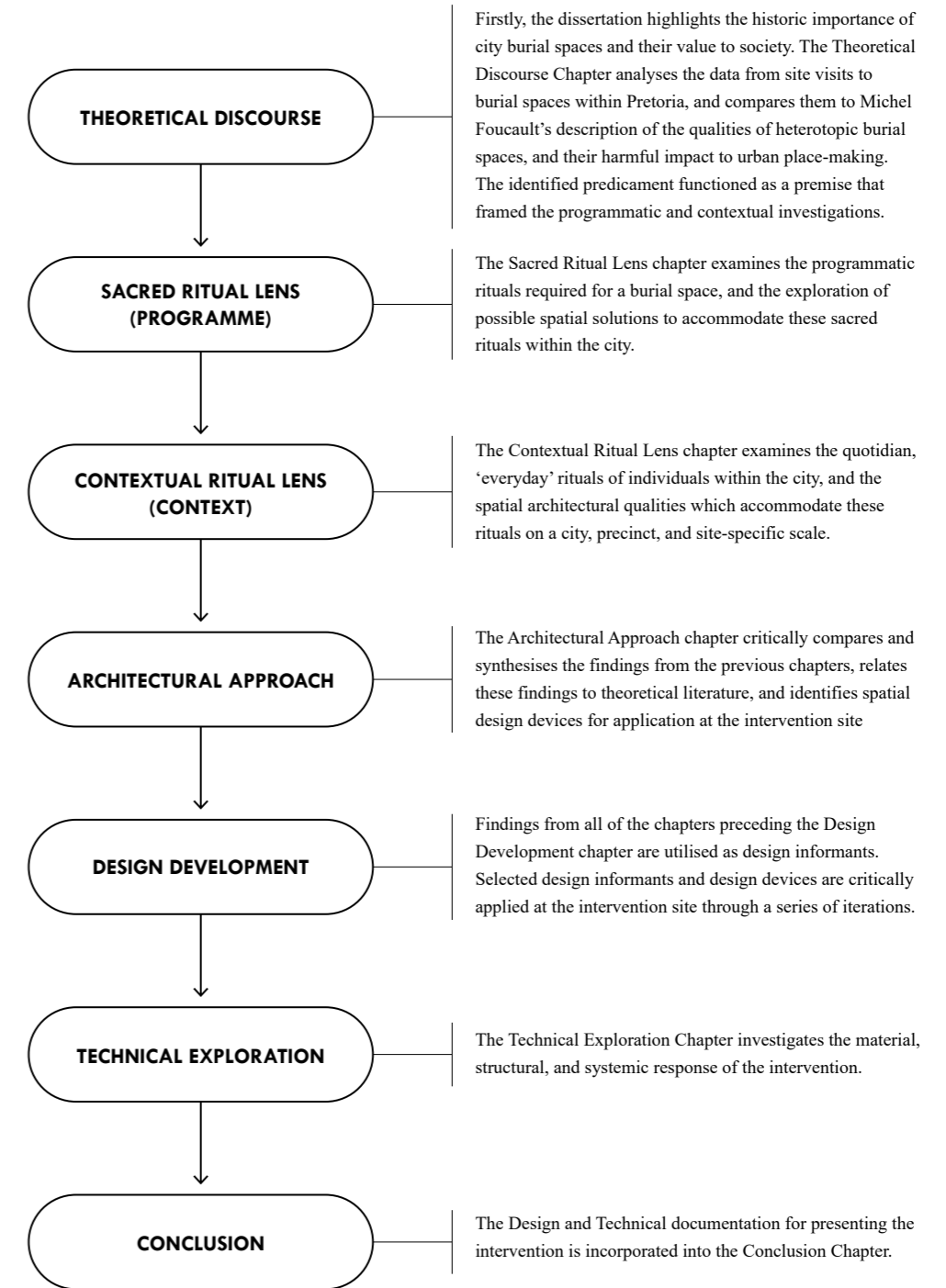
1.9

ROADMAP

Firstly, the dissertation highlights the historic importance of city burial spaces and their value to society. The Theoretical Discourse Chapter analyses the data from site visits to burial spaces within Pretoria, and compares them to Michel Foucault's description of the qualities of heterotopic burial spaces, and their harmful impact to urban place-making. The identified predicament functioned as a premise that framed the programmatic and contextual investigations.

The Sacred Ritual Lens chapter examines the programmatic rituals required for a burial space, and the exploration of possible spatial solutions to accommodate these sacred rituals within the city.

The Contextual Ritual Lens chapter examines the quotidian, 'everyday' rituals of individuals within the city, and the spatial architectural qualities which accommodate these rituals on a city, precinct, and site-specific scale.

The Architectural Approach chapter critically compares and synthesises the findings from the previous chapters, relates these findings to theoretical literature, and identifies spatial design devices for application at the intervention site

Findings from all of the chapters preceding the Design Development chapter are utilised as design informants. Selected design informants and design devices are critically applied at the intervention site through a series of iterations.

The Technical Exploration Chapter investigates the material, structural, and systemic response of the intervention.

The Design and Technical documentation for presenting the intervention is incorporated into the Conclusion Chapter.

Fig. 1.5: Schematic diagram of Dissertation's roadmap (Ullrich 2020)
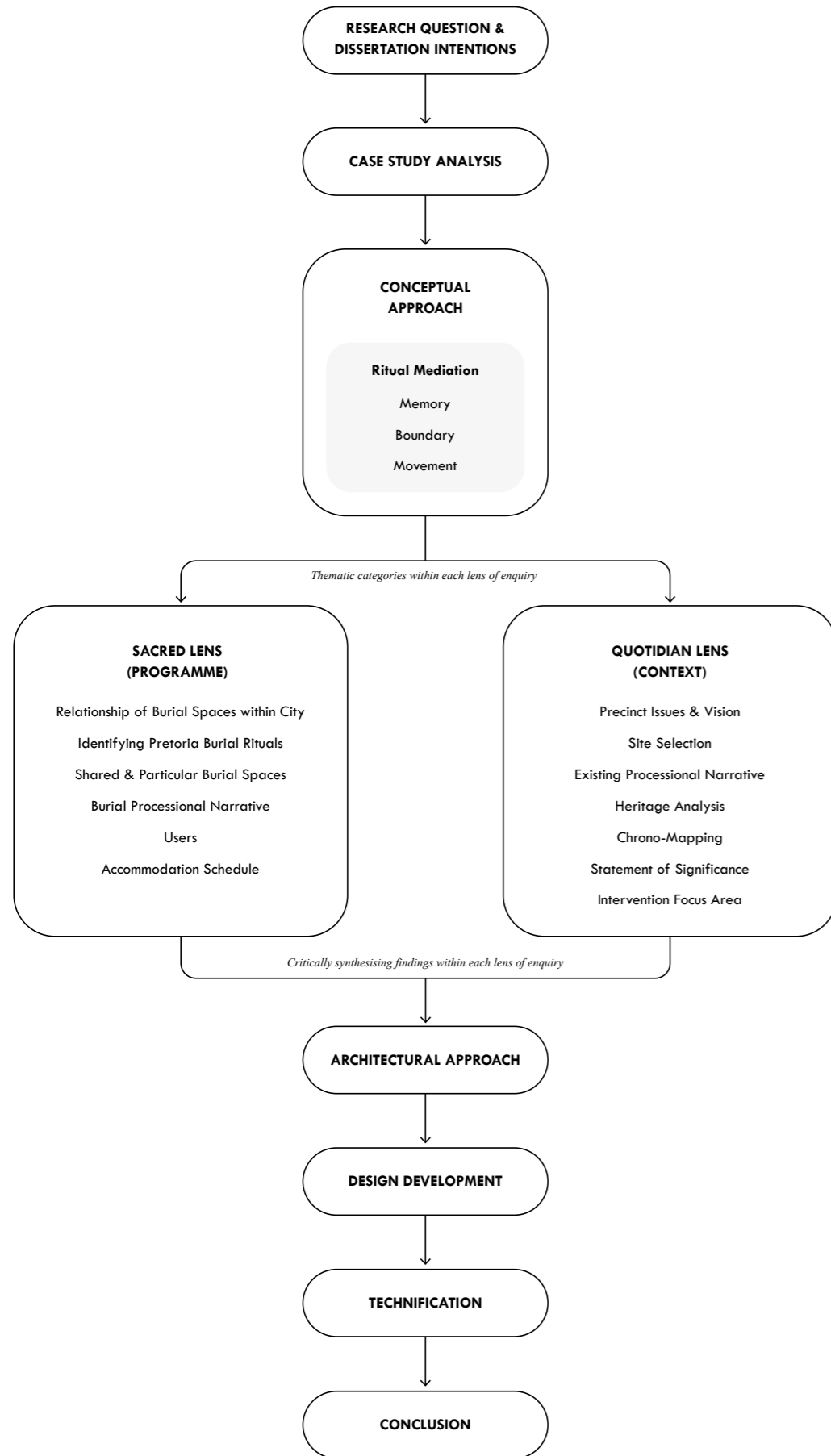
02

THEORETICAL DISCOURSE

THE HETEROTOPIC PREDICAMENT

2.1

SACRED SPACE

At its most basic interpretation, Wightman (2007: 904) states that the function of the sacred space is to provide a locus of interaction between the divine and the everyday worlds of existence. The high-value placed on this transcendent system can be understood as 'the sacred' (2007: XVI). Sacred space can encompass a multitude of different kinds of spaces, depending on the religious, cultural, or individual's context – as different interpretations of high-value meaning are ascribed to a place. Sacred spaces can therefore be constructed – such as a mosque or *temenos* – or it may be a naturally occurring phenomena – such as a cave or the mythology of the *Aurora Borealis*. Despite the variance in the interpretation of sacred space, Mircea Eliade (1961: 37) refers to a system of concepts which are prevalent in all traditional societies, which he calls the *System of the World*, as the primordial process for establishing sacred space (1961: 11). This primordial process is explored in order to gain a deeper understanding of the initial manifestation of sacred space for local cultural groups within Pretoria.

Firstly, sacred space arises from the primordial desire for the non-homogeneity of space, and the desire to reach a transcendental state (Eliade 1961: 37). This found or constructed demarcation is differentiated from the world around it in order to maintain its significance and sacrality. This space is referred to as the *imago mundi* (1961: 52). Within this space, an *axis mundi* is identified or constructed, which symbolises the transcendental connection between the three cosmic levels: the

heavens, the terrestrial plane, and the underworld – with the latter being associated with the realm of the deceased (Wightman 2007: 916). The *axis mundi* functions as a reference to presuppose all future orientation, and a locus of mediating between the realms.

2.2

QUOTIDIAN SPACE

The space that is not within this sacred demarcation is regarded as the profane. Eliade (1961: 14) refers to the sacred and profane as two opposite modes of being within the world. Within the profane experience, one does not have true orientation, as the fixed point is established with the needs of the day, and space is uncontrolled (Eliade 1961: 23). It is therefore "religious man's desire to live in the sacred" space as opposed to the profane (1961: 28). The dissertation recognises the importance of balancing sacred space and profane space within society, and the interdependency of the two realms.

2.3

RITUAL

The various kinds of interactivity with the sacred are referred to as ritual. The interaction of architectural space and ritual have the ability to form a sacred experience. Within this dissertation, the definition of ritual activities is broadened to include Kostof's (2009: 21) explanation of ritual, where ritual is the "transcendence of function" to become a "meaningful act". This encompasses Kostof's (2009: 41) description for public architecture's ultimate intention – to be a "setting for ritual" activities, that give meaning to and a sense of belonging to individuals. The dissertation therefore defines the series of "meaningful acts" habitually followed by someone to form part of a ritual.

The threshold is the boundary between the sacred and the everyday space. It has the paradoxical function of separating the two realms, and, at points, providing a passage for moving between the two realms. The threshold is therefore a space of heightened importance in burial spaces, and movement across it is often accompanied by numerous burial rites.
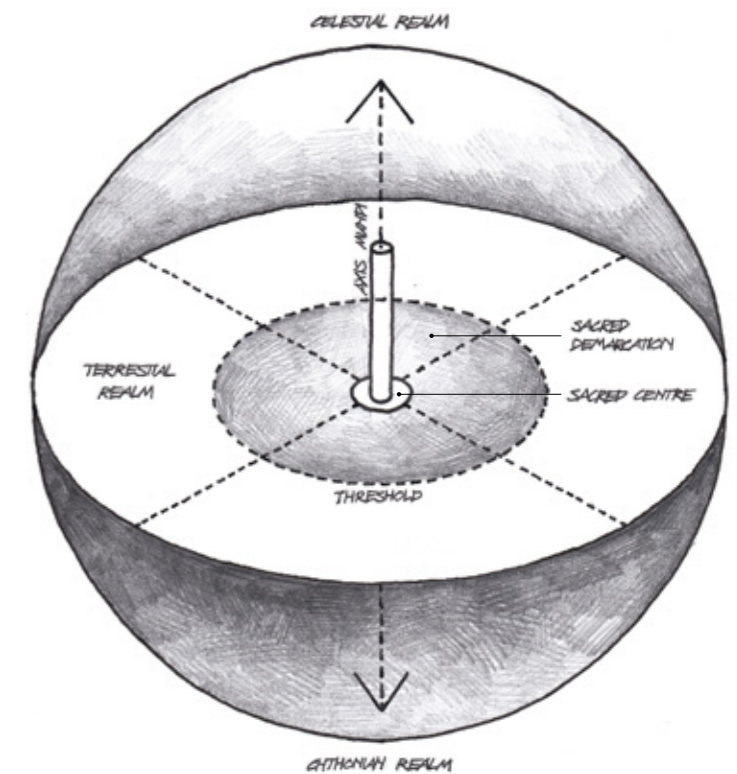

Fig. 2.1: Axis mundi and the demarcation of Sacred Space (Ullrich 2020, adapted from description by Wightman 2007: 916)

2.4

IMPORTANCE OF BURIAL SPACE

Fig. 2.2: Island of the Dead: 'Basel' version; an idealistic, Greek mythology interpretation of the oarsman, Charon, peacefully transiting a recently deceased soul to the island of the afterlife; the painting features traditional funerary elements (Bocklin 1880)

Portions of burial space are considered as sacred space within numerous cultures, however, within the modern urban context, burial spaces have the function of being predominantly "secular institutions that aim to serve the entire community" (Rugg 2000: 7). Urban burial spaces have the dual responsibility of being civic, secular institutions, whilst having the ability to contain sacred space. They have the ability of being a fixed locus of significance within urban areas under a constant state of change and flux (Worpole 2003: 198). The site of burial can be understood as an axis mundi. The grave-marker or vessel often acts as the iconic physical representation of the point of communication between the realm of the living and the realm of the deceased (Worpole 2003: 160). The space for communal burial is usually demarcated, in order to differentiate the sacred space from the world of the living, and provides a setting which accommodates for grief and refuge (Rugg 2000: 261). Cultural and religious rites of eschatology, or rituals of death, performed at funerary ceremonies, are generally believed to allow for the deceased's journey into the afterlife to be as comfortable as possible (Davies 2005: 22). For agnostic funerals, the ritual performance may focus more on the commemoration of the memory of the deceased, which aids the comforting of the bereaved (2005: 65). After funeral ceremonies, the sacredness of the site can be sustained by pilgrimage visits to the burial space – this can be for the commemoration of the memory of the deceased, a political commemoration, or for a recreational experience (Rugg 2000: 7).

2.5

HETEROTOPIC SPACE

The principles of heterotopic space can act as a useful tool for analysing the current "institutionalised demarcation of structures of power" (Leach 2005: 329) within the city, and highlight the harmful constituents that threaten public space. Heterotopic spaces, as elaborated by philosopher Michel Foucault in his text titled *Of Other Things* (1967), are microcosms within societies that reflect the world outside of them, yet, simultaneously, present the outside world in a strange and disturbing manner. These spaces are neither utopian – perfected versions of society – nor dystopian – versions of society where everything is bad (Villet 2018: 18). Heterotopic spaces are where things are of the "other" – strange, differential spaces. These spaces are found on the periphery and just outside of urban areas (Ots 2010: 121).

These differential spaces can include gated communities, libraries, amusement parks, Disneyland, and modern cemeteries (Ots 2010: 121). Foucault has outlined six main principles of heterotopic spaces (Foucault & Miskowiec 2012):

1. They are present within all communities, and there is no universal form for a heterotopic space.

2. Every heterotopia has a particular function, which can change over time.

3. They're able to contain several incompatible types of spaces within a single place and juxtapose them.

4. They challenge the understanding of time by containing multiple notions of time within a single place.

5. Their system of access is highly regulated, unlike a public space.

6. Heterotopias exist by their relational difference to their surrounding context (Hetherington 2002: 43). This differentiation is usually expressed by the meticulous arrangement and compartmentalisation of real space within the boundary.

Their Otherness deviates from socio-cultural and historical space-making norms, and is either in excess of or incongruous to these norms (Hetherington 1997: 8).

2.6

HETEROTOPIC BURIAL SPACES

Within Des Espaces Autres, (2012) Foucault discusses the traditional garden cemetery as an example of manifesting the physical attributes of the heterotopic principles.

A major theme of illness, caused by the miasma of the dead, spread within urban areas during the eighteenth century (Johnson 2008: 781). This idea, that death brings illness to the living, was related to the dead being buried adjacent to homesteads, churches, and sometimes within the middle of streets, and the onset of contagious illnesses within urban areas (Foucault & Miskowiec 2012: 25). The proximity of the dead was responsible for propagating more death. At the onset of the nineteenth century, town planners began locating cemeteries to the borders of cities and towards the suburbs for reasons of health and hygiene (Worpole 2003: 94). As a result, cemeteries were no longer the sacred heart of the city, but a dislocated "other" space that had the negative connotations of disease and illness (Foucault & Miskowiec 2012: 25). These town-planning models have a resemblance to the treatment of disciplinary and institutional sites, in terms of location, spatial distribution, and isolation (Johnson 2008: 981).

It is argued that Pretoria's sacred burial spaces have morphed into heterotopic burial spaces. A deductive comparison was made between Foucault's general principles of heterotopic spaces and the current condition of Pretoria's burial spaces – as indicated from the analysis of the data collected during the case-study site visits.
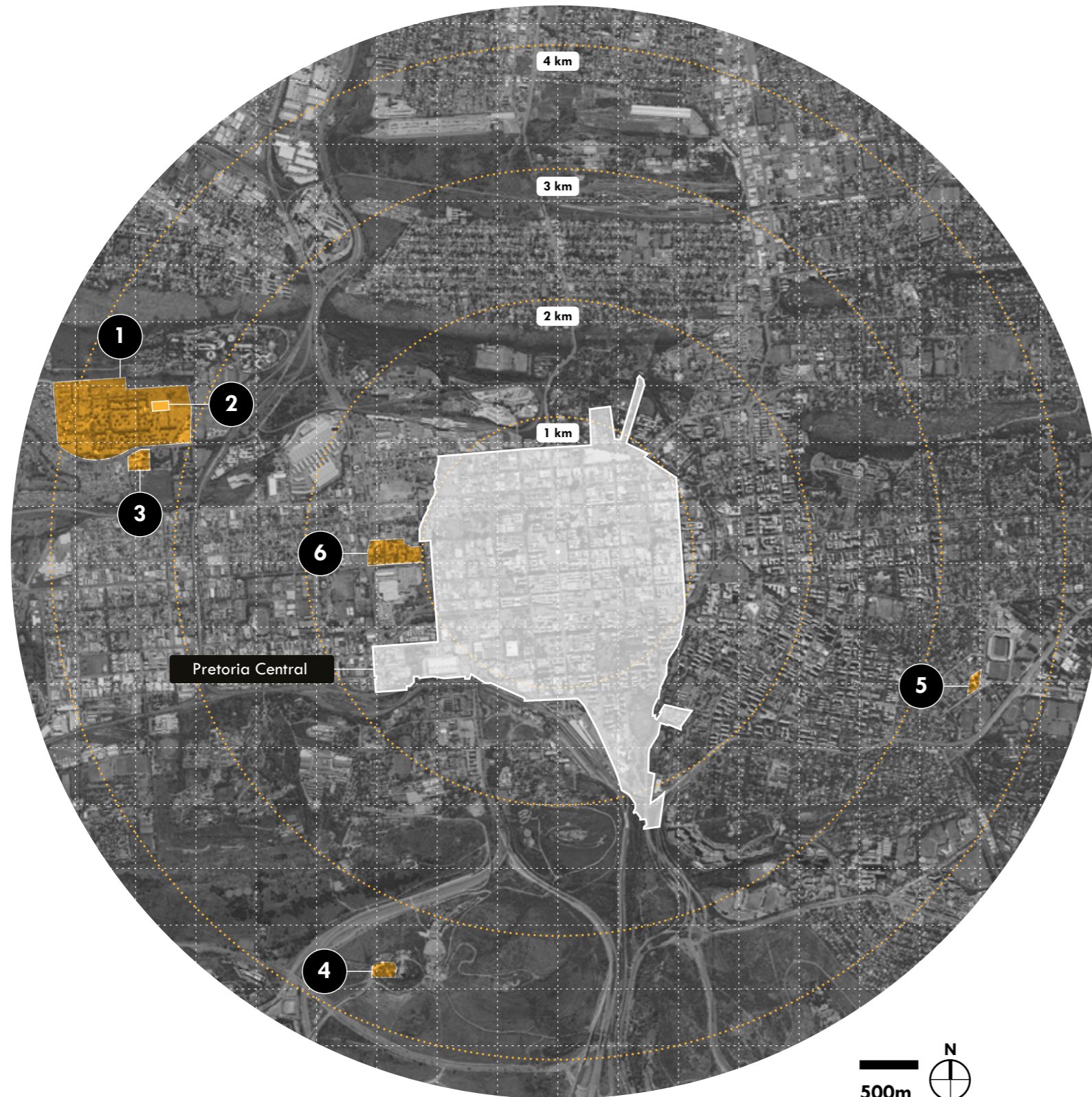
Fig. 2.3: Locations of the six case-study sites within Pretoria (Ullrich 2020).

2.7

CRITIQUE OF PRETORIA'S BURIAL SPACES

Six registered burial sites, closest to the inner-city of Pretoria, were used as case studies to further understand the current condition of burial spaces within Pretoria, and the architectural manifestation of elements within these spaces.

1. **REBECCA STREET CEMETERY**

2. **OLD HINDU CREMATORIUM**

3. **PRETORIA WEST CREMATORIUM**

4. **VOORTREKKER GARDEN OF REMEMBRANCE**

5. **OOSKERK GARDEN OF REMEMBRANCE**

6. **HEREOS' ACRE CEMETERY**

2.7.1

REBECCA STREET CEMETERY

LOCATION:	OPENED:	VALUE TO RESEARCH:
Junction of Rebecca Street and Staatsartillerie Road, Philip Nel Park, Pretoria 25° 44' 12.8688" S, 28° 8' 59.7768" E	1904	Identifying spatial issues contributing to the neglect of the cemetery space

Rebecca Street Cemetery is currently the largest cemetery in the City of Tshwane (City of Tshwane 2014). Established in 1904, the cemetery was the second official cemetery for the city, established on the outskirts of Pretoria (City of Tshwane 2014: 22; L'Abbé, Steyn & Loots 2008: 194). Public access to the cemetery is restricted, as its main entrance gate is monitored by security guards. The gate prioritises vehicular access, as there is no dedicated pedestrian pathway. The perimeter fencing, installed primarily for the prevention of vagrant access, ultimately restricts public access and the use of the cemetery as a public space. From the entrance, wide-tarred roads function as the primary routes of movement throughout the cemetery, which fail to accommodate the intimate human scale required in order to accommodate grief.

The modular grave size has determined the scale of the Cartesian grid-like planning. The layout is intended to ease the process of locating a gravestone, however, as one walks through the rows of gravestones, the monotonous layout, combined with the lack of a distinctive landmark or axis mundi, results in the wanderer feeling displaced within the landscape.

The cemetery has segregated sections for different religious, cultural, and ethnic groups. These areas can be identified by their natural or artificial boundaries, the religious or cultural iconography on the gravestones, as well as the form of the gravestones. Within these areas of shared identity, individual memory has been inscribed on the gravestone with the name of the deceased, their

birth date, and date of passing. The degradation of some gravestones can be attributed to poor municipal maintenance, vandalism, and the lack of visitors. Within certain burial sections, such as the Native Pauper Section, very few headstones have been erected. In order to find the exact location of a gravestone within this section, one must utilise the detailed surveyor's map, held by the Office of the Senior Administrative Officer - not publicly available - and utilise surveying methods (Nienaber & Steyn 2002).

Native black South Africans were buried within the cemetery from 1904 to approximately 1965 (L'Abbé et al. 2008). With the intensification of the Apartheid system in the 1960s and segregated town-planning schemes, the Mamelodi Cemetery was established outside of the city limits for native Black South Africans. This is an example of Apartheid's contribution to urban sprawl, and the establishment of civic institutions away from the city centre. Various buildings within the cemetery aid the death ritual process – the most notable spaces are the Jewish chapel (Fig. 2.6) and the Islamic prayer space. Currently, the demarcated Jewish section and the Islamic burial grounds have been maintained – to an extent. This condition can be associated to the Islamic and Jewish burial societies securing private caretakers who tend to the allocated gravestones and surrounds. This emphasises the importance of having a society that is dedicated to maintaining the burial space and facilitating the ceremonial rituals, in order to contribute to and sustain the cultural identity.
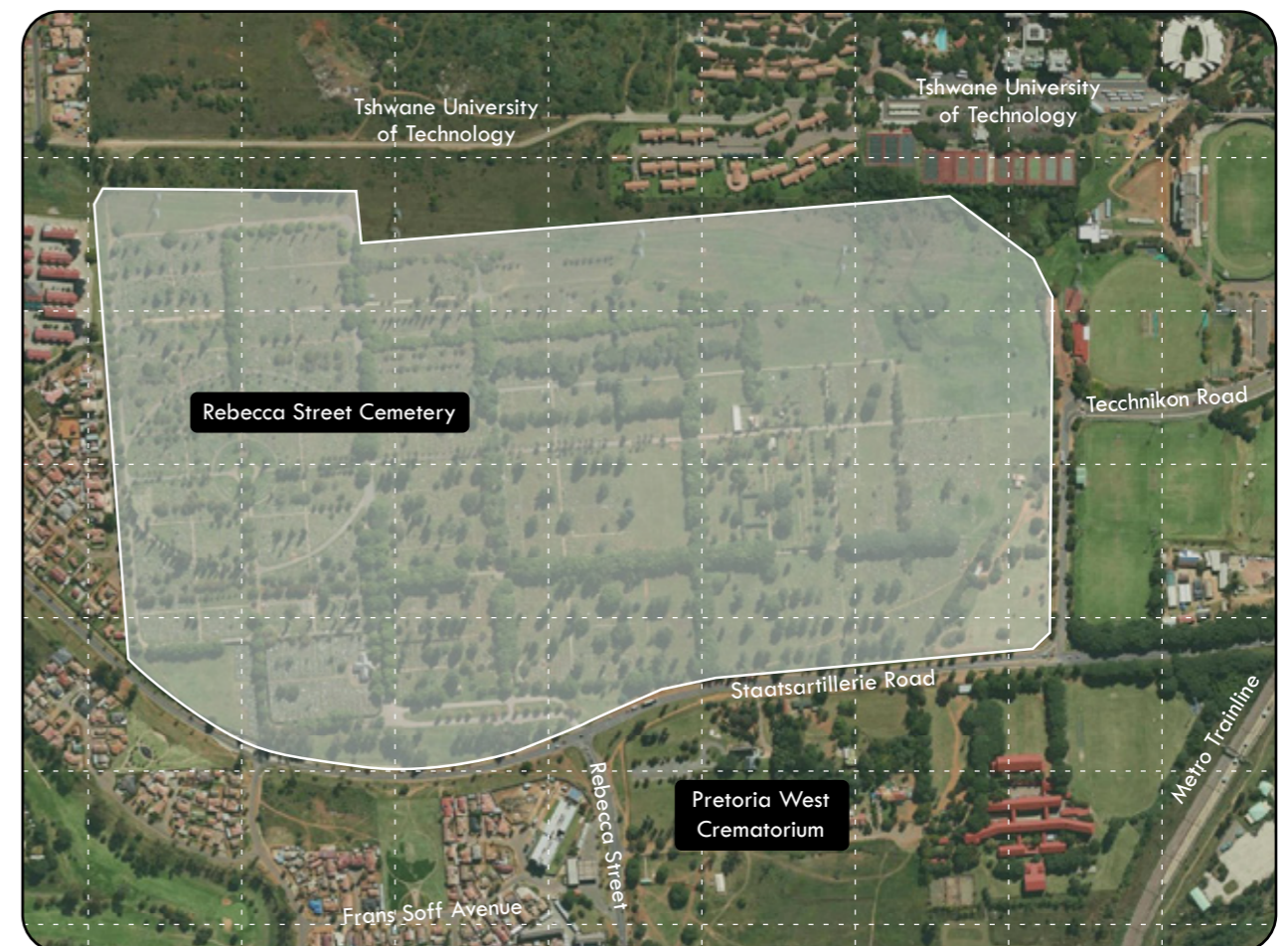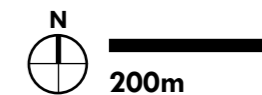

Fig. 2.4: Rebecca Street Cemetery within its context (Ullrich 2020)

Isolated, fenced boundary - single-point access for authorised personnel; restricting public access

Preference to vehicular access - no pedestrian entrance

Cross-shaped Ironmongery – reference to Christian liturgy and less accommodating of other groups
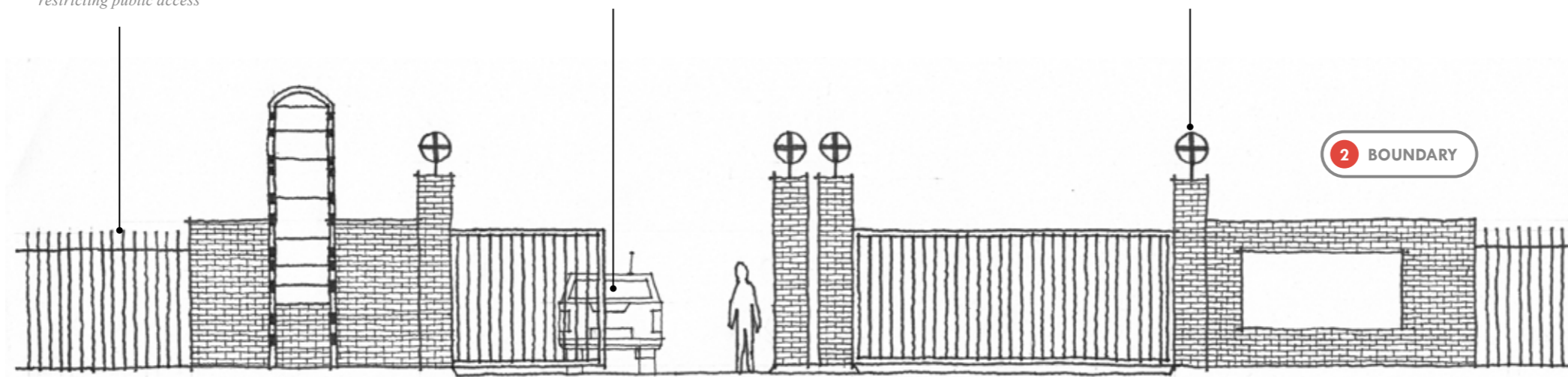
2 BOUNDARY

Fig. 2.5: Main entrance gate to Rebecca Street Cemetery (Ullrich 2020)

Islamic prayer structure

Arterial movement route

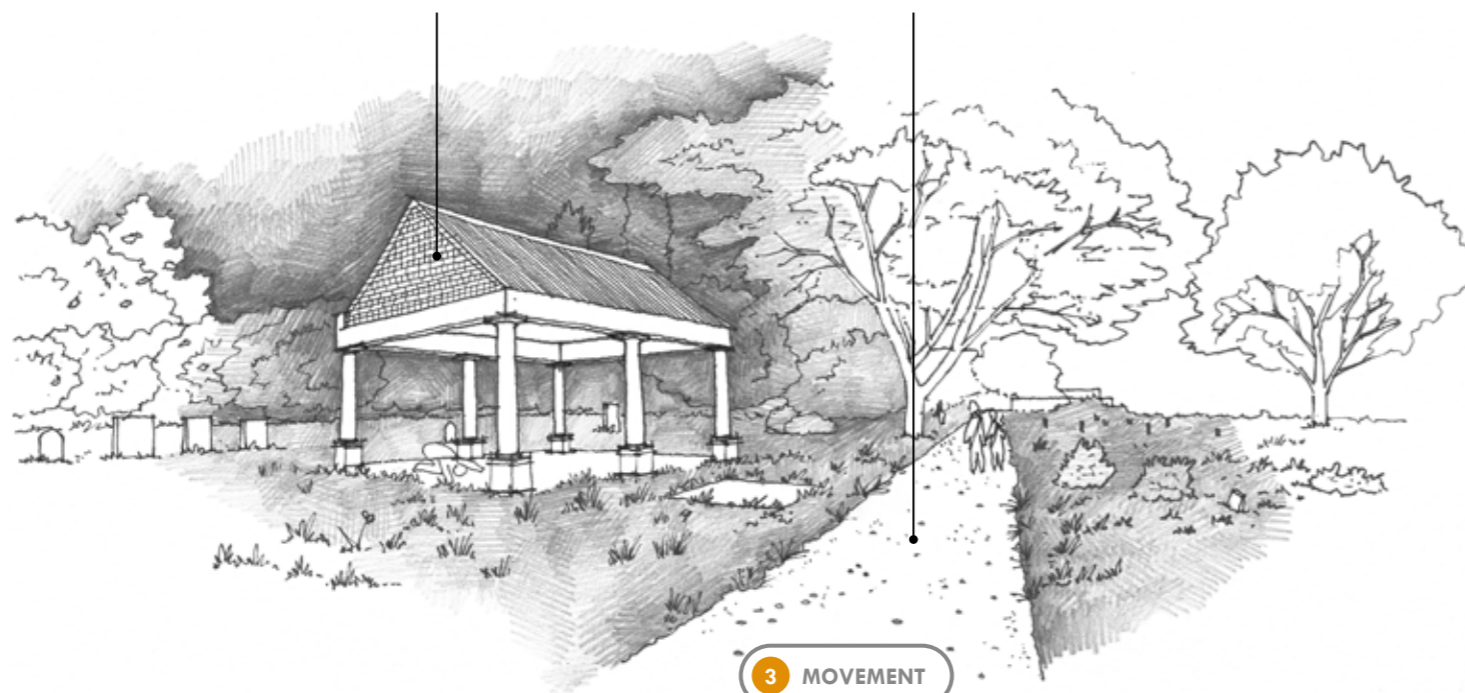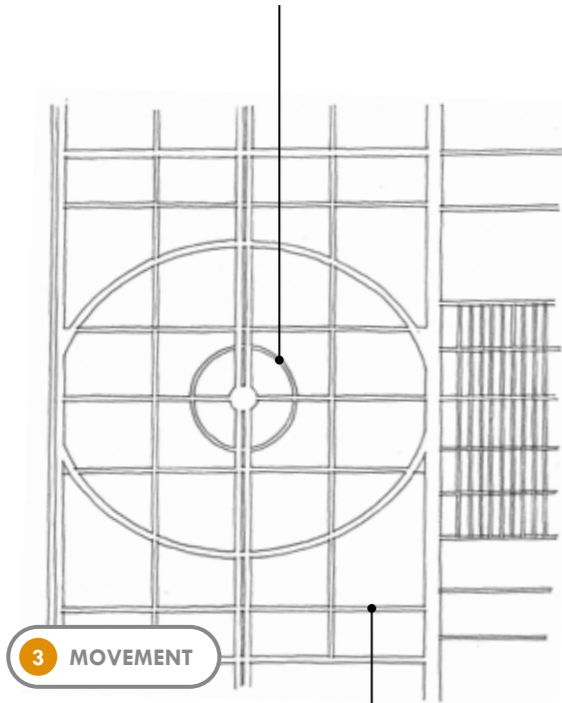Chapel structure primarily to facilitate Jewish burial process

3 MOVEMENT

Fig. 2.7: Islamic prayer shelter adjacent to pedestrian route (Ullrich 2020)

1 MEMORY

Fig. 2.6: Small chapel, currently locked (Ullrich 2020)

Coursed stonework invokes a sense of permanence and an anchoring of memory

Ring-road attempts to create central axis-mundi – no central element, only intersection

Axial routes defined by vehicular movement, not to human scale

Religious iconography associates area with cultural group – belonging and exclusion

2 BOUNDARY

1 MEMORY

3 MOVEMENT
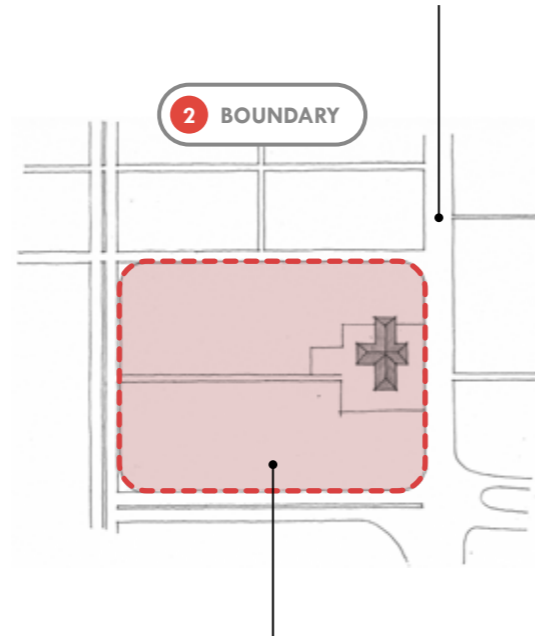
Jewish section with fence and hedge boundary – isolation from surrounding

Lack of maintenance and vandalism results in erosion of inscribed memory

Cartesian cemetery layout reminiscent of Loudon's European Model

1 MEMORY

Korean Gravestone for multiple family members

Methodist Gravestone

Methodist Gravestone for infant or young person
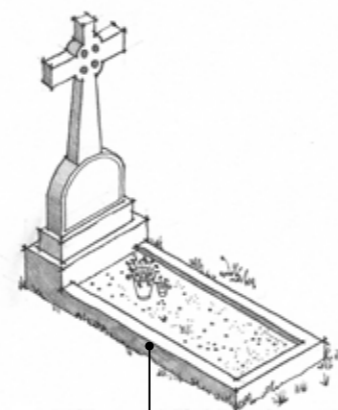
Celtic Christianity Gravestone
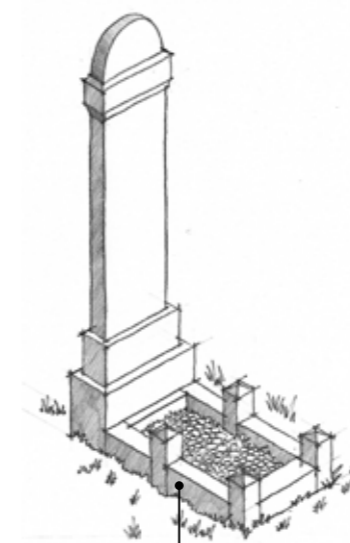
Jewish Gravestone

Monumental Catholic Tombstone for multiple family members
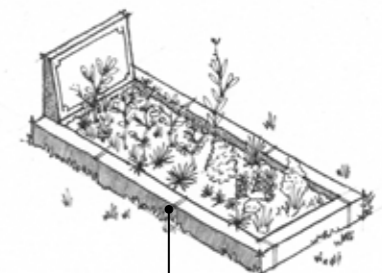
Islamic gravestone

Clockwise from top-left:

Fig. 2.8: Layout of Rebecca Street Cemetery (Ullrich 2020)

Fig. 2.9: Placement of isolated Jewish section (Ullrich 2020)

Fig. 2.10: Damaged and neglected gravestones (Ullrich 2020)

Fig. 2.11: Star of David on Jewish Burial Society building (Ullrich 2020)

Fig. 2.12: Axonometric drawings of gravestone types found at Rebecca Street Cemetery (Ullrich 2020)

2.7.2

OLD HINDU CREMATORIUM

The site is located within the Rebecca Street Cemetery, and, upon approach, can be identified by the tall brick chimney which is visible above the canopy of trees. The site features the first crematorium constructed within Pretoria, built by the Pretoria Hindu Social Service League in 1943 (Pretoria Hindu Seva Samaj Community 1980: 8). The site once allowed for the open-pyre method of cremation, which particularly accommodated the Hindu community within Pretoria. The furnace structure can be understood as an adaption of the first brick-built crematorium in Africa, located in Brixton, Johannesburg (Artefacts 2020).

The site is enclosed by a thick clay-brick wall, which provides privacy and demarcates the sacred space, and access into the space is gained by passing through the archway entrance to south of the site. Hindu iconography (the Om symbol, symbolising the Divine Absolute and a syllable that is chanted before certain rituals) and the name of the site are inscribed onto the entrance archway – establishing a sense of place for the visitor (Elion & Strieman 2002: 68).

The memory of the deceased is celebrated through the burial ritual acts, which are accommodated by the structures surrounding the furnace. The pyre is placed between the two stepped platforms in front of the doorway to the furnace, which aid the community in constructing the pyre (Fig. 2.19). The prayer space and community hall accommodate communal prayer rituals, whilst more private refuge can be sought within the private room located to the East of the site. After the cremation process, the remaining ash is spread at a water source or place of importance to the family (2002: 80). The crematorium is currently not being utilised for its original function. Open-pyre cremation is no longer practiced within South Africa (Elion & Strieman 2002: 81), and the minimum requirements for crematoria and the disposal of human remains impede this practice (Department of Health 2013, para. 18).

It is evident that vagrants have utilised the space for shelter, resulting in a change in its original purpose. The effect of time and the lack of maintenance has resulted in the structures becoming dilapidated, with cracked plaster, roof leakages, and overgrown vegetation. Despite its dilapidated state, the overgrown vegetation has softened the austerity of the chimney and the boundary wall.

Fig. 2.13: Old Hindu Crematorium within its context (Ullrich 2020)

N

50m

Vegetation has reclaimed portions of structure and softened austerity of chimney tower

Low brick wall with central planting space –sedentary boundary for privacy with vegetation softening edge

2 BOUNDARY
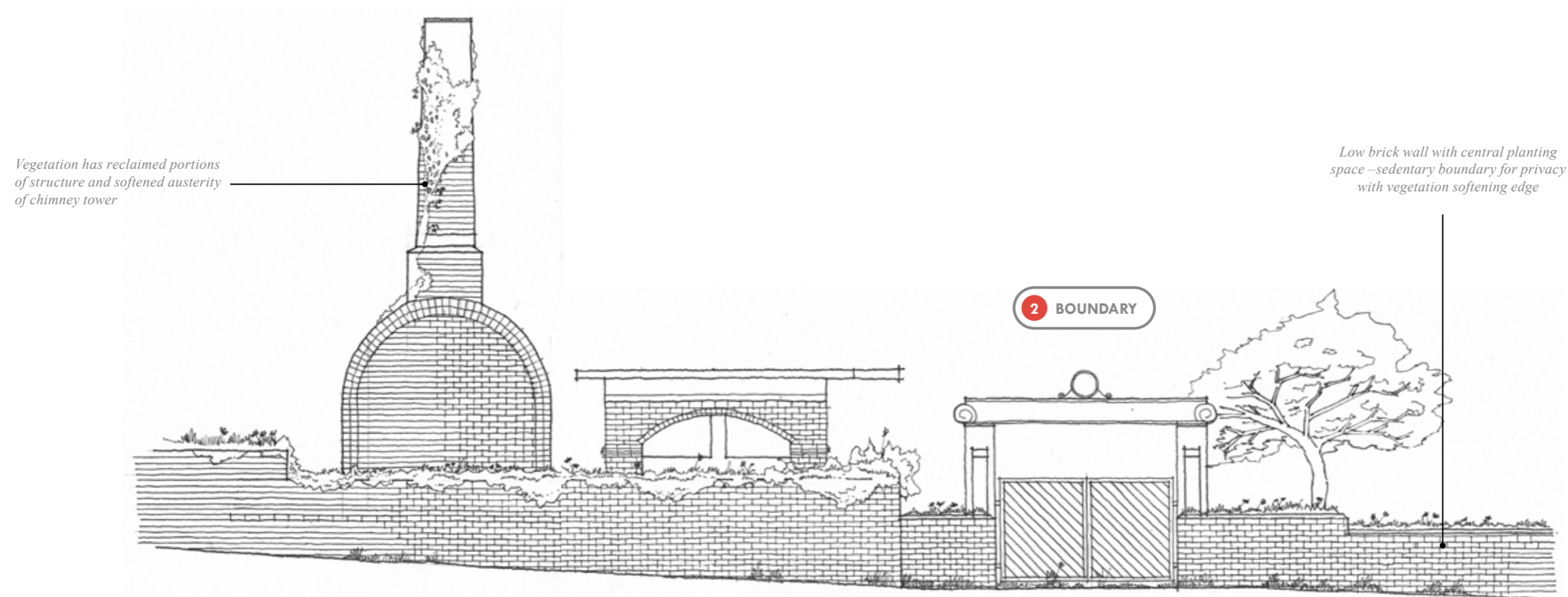
Fig. 2.14: South elevation of Old Hindu Crematorium complex (Ullrich 2020)

3 MOVEMENT

Processional route leading to Old Hindu Crematorium entrance
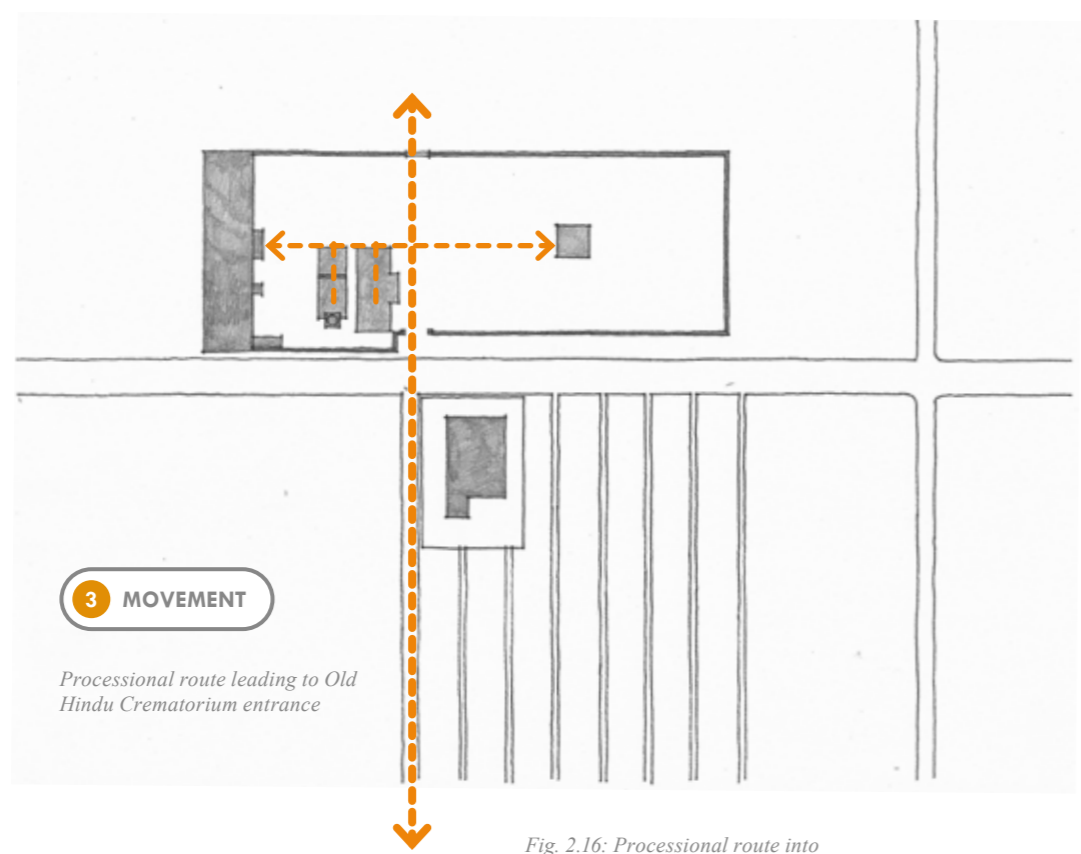
Fig. 2.16: Processional route into crematorium complex (Ullrich 2020)

3 MOVEMENT

Programmes branch off of main arterial route
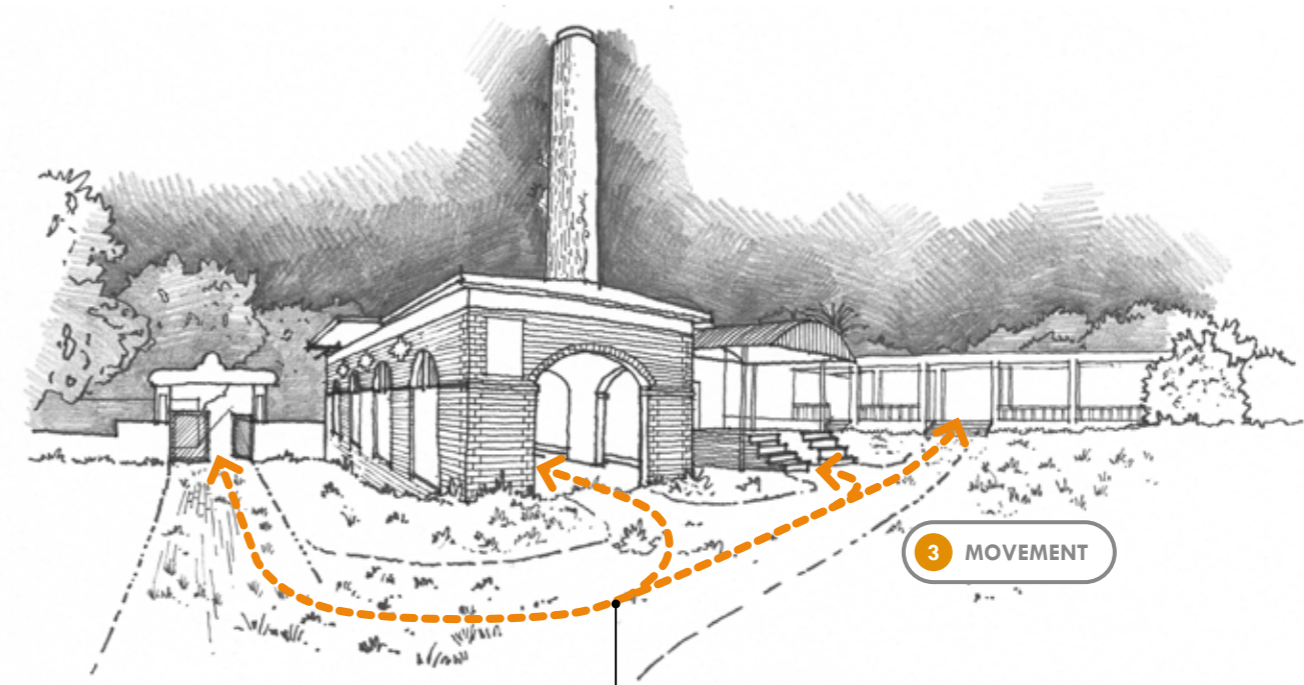
B *Fig. 2.15: Processional route within crematorium complex (Ullrich 2020)*

Brick detailing imbues a sense of the human scale and human construction

1 MEMORY

Hindi iconography (Om symbol) integrated with entrance archway – threshold into Hindi sacred space

1 MEMORY

Hindi iconography (Om symbol) visible during burial rituals
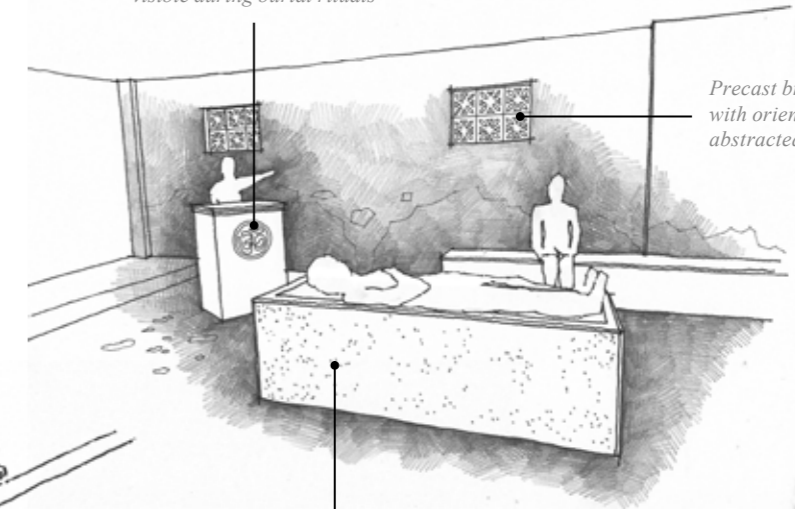
Precast breezeblocks with oriental pattern – abstracted iconography

2 BOUNDARY

A *Fig. 2.17: Entrance gate of crematorium complex (Ullrich 2020)*

Stone-clad platform of anthropomorphic proportions – indicative for laying of deceased individual

D *Fig. 2.18: Depiction of funeral ceremony within western building (Ullrich 2020)*

N

Memory of deceased incorporated through activities of ritual
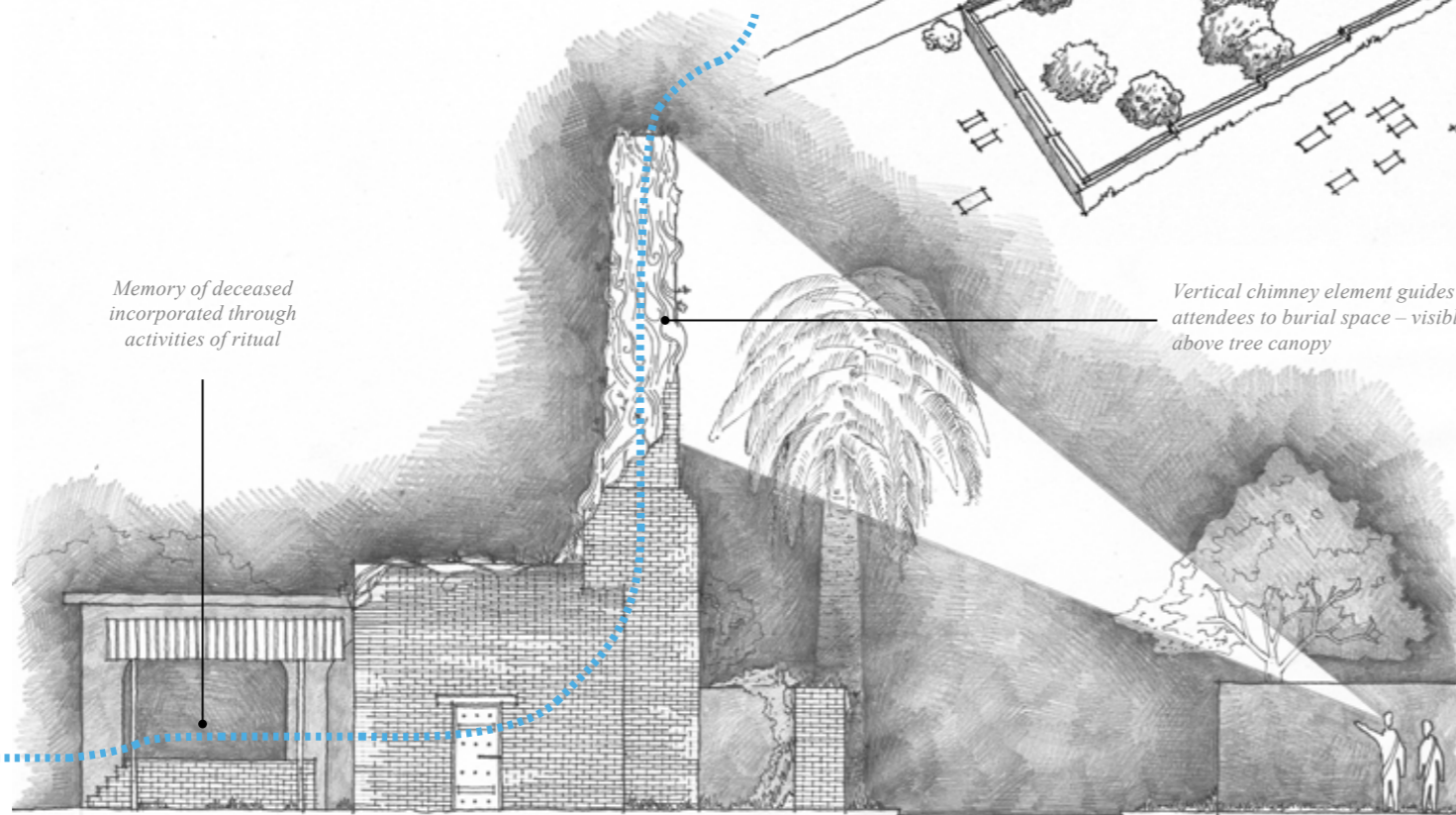
Vertical chimney element guides attendees to burial space – visible above tree canopy

Fig. 2.21: Aerial perspective of crematorium complex (Ullrich 2020)

Adjacent blocks hide austerity of metal pyre framework, and provide platform for placing food and gifts onto the pyre

1 MEMORY

1 MEMORY   *Fig. 2.20: Western elevation of crematorium (Ullrich 2020)*   **3 MOVEMENT**
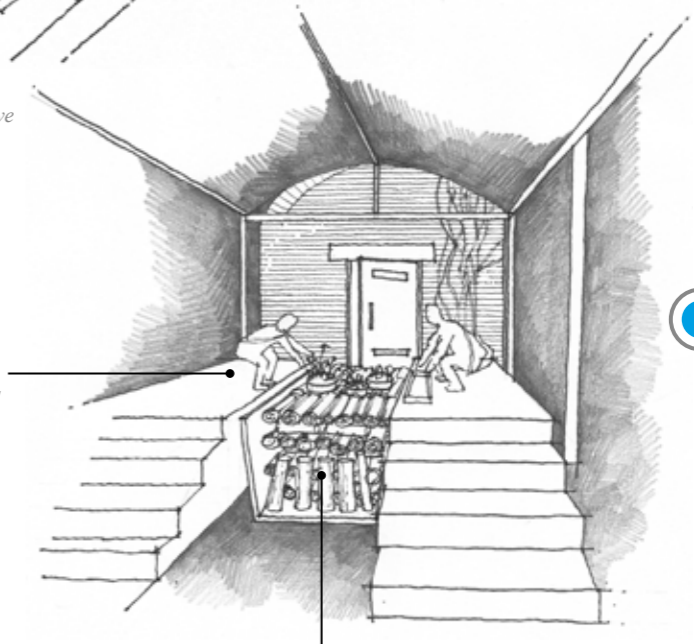
Memory imbued through the ritual of the attendees constructing the pyre for cremation

C *Fig. 2.19: Depiction of preparing the pyre (Ullrich 2020)*

2.7.3

VOORTREKKER MONUMENT GARDEN OF REMEMBRANCE

LOCATION:	OPENED:	DESIGNER:	VALUE TO RESEARCH:
Monument Street, VTM Nature Reserve, Groenkloof 358-Jr, Pretoria 25° 46' 32.52'' S, 28° 10' 25.14'' E	2009	Maree Els Architects	Critique of monumental commemoration

In 1918, Gerard Moerdijk, the principal Architect for the Voortrekker Monument, pushed for the adoption of cremation within South Africa and those within the Nederduits Gereformeerde Kerk. The Garden of Remembrance, constructed 60 years after the inauguration of the Voortrekker Monument, serves as an appropriate response to Moerdijk's original idea of the Monument housing the remains of Afrikaners (Fisher & Clarke 2010a: 77). The nature reserve is accessed through a securitised entrance, with access granted after an entrance fee. This restricted access is, according to the Monument's official website, said to be a contributing factor to the Garden of Remembrance's "safety" (VTM 2020).

The Garden of Remembrance, covering the area to the West of the Monument's Laager wall, consists of a columbarium wall burial garden, memorial walls, and a chapel, all interconnected by paved pathways. The funerary procession starts at the chapel, after which the bereaved can proceed down the pathway towards the columbarium wall. The slope of the terrain and tree canopies allow for the memorial walls to be gradually revealed to the visitor as they proceed along the pathways. Large pillars mark the entrance into the columbarium area. The pathway undulates between the walls, housing the remains of the deceased, and the central water features. The canopy - formed by the acacia trees - and the thick burial walls, provide the visitor with a sense of refuge and privacy – accommodating the bereaved and those expressing grief.

The urn, containing the ashes of the deceased, is placed within a niche in the columbarium wall, and covered with an inscribed granite block. The inscription of the deceased's name on the block allows for the recognition of the individual's identity amidst the shared identity of the Voortrekker Garden of Remembrance. These granite blocks allude to the granite structure of the Voortrekker Monument – which is almost always visible just below the tree canopy. Initially part of the Afrikaner Nationalist Project (Fisher & Clarke 2010b), the omni-visible landmark acts as a reminder of the Afrikaner heritage, and establishes a sense of place for the Afrikaner visitor. The Monument's official website states that the columbarium is a "culture friendly environment," and the "safest in South Africa" (VTM 2020) - which could also be interpreted as being an isolated burial site for the Afrikaner culture – protected from vandalism, vagrants, and the 'unsafe' world beyond the surrounding perimeter fence. The site becomes a location of pilgrimage for bereaved families, where commemoration of the individual and Afrikaner heritage overlap.
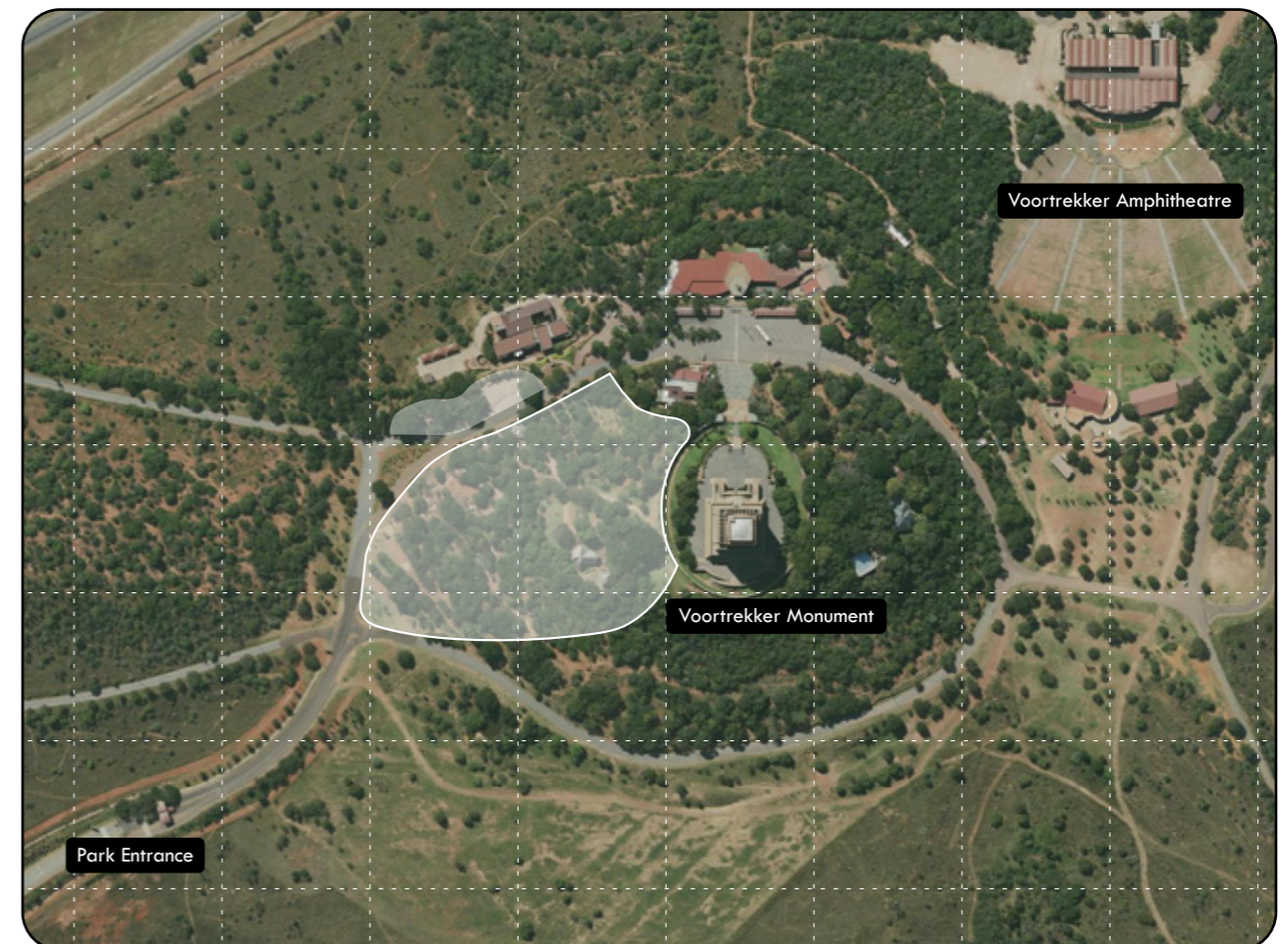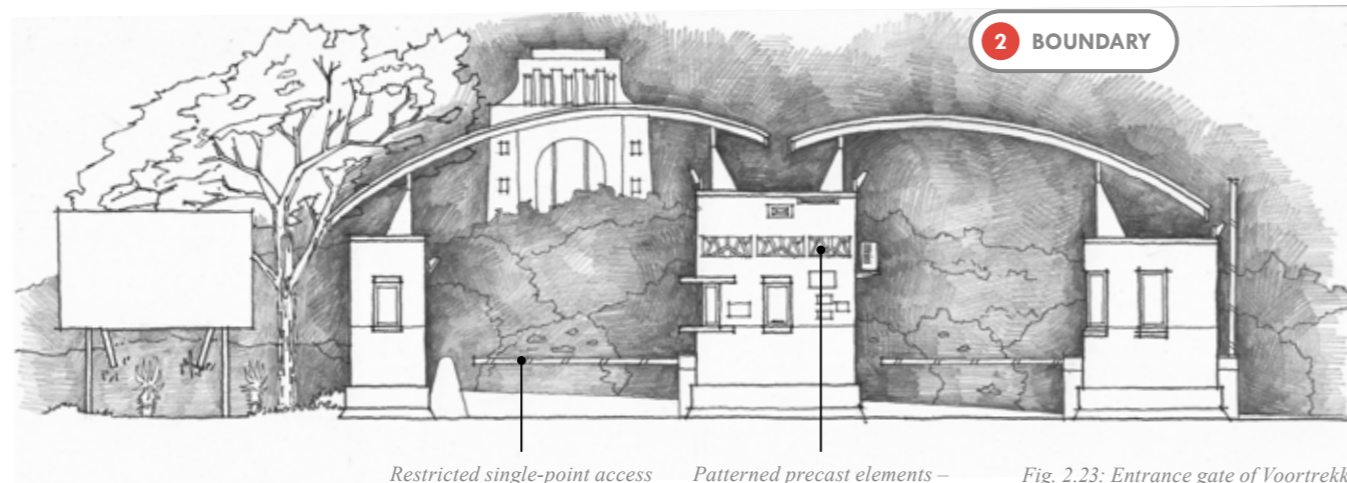

Fig. 2.22: Voortrekker Monument's Garden of Remembrance within its context (Ullrich 2020)

2 BOUNDARY

Restricted single-point access –authorized personnel and paying visitors

Patterned precast elements – superficial ornamentation

Fig. 2.23: Entrance gate of Voortrekker Monument Nature Reserve (Ullrich 2020)
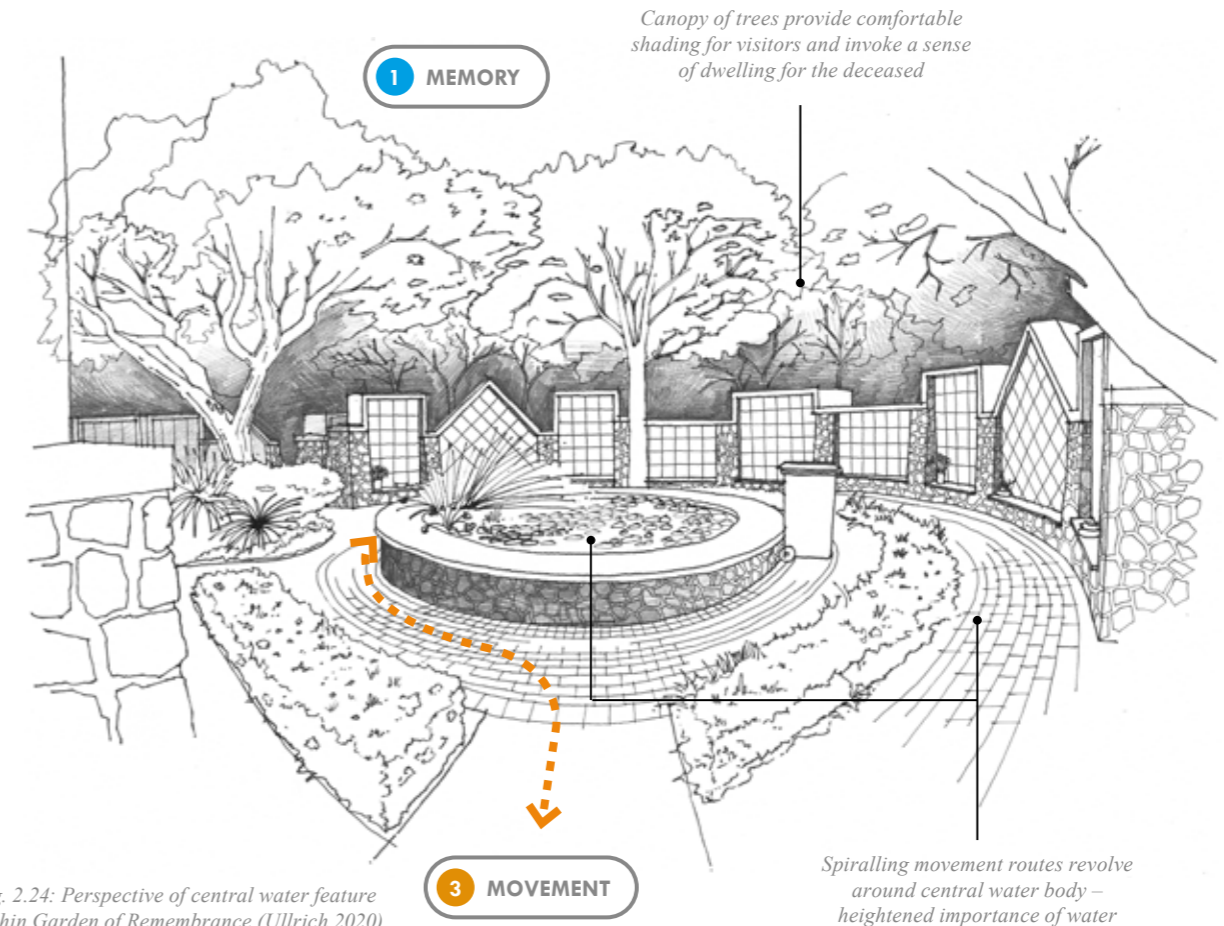
Canopy of trees provide comfortable shading for visitors and invoke a sense of dwelling for the deceased

1 MEMORY

3 MOVEMENT

Fig. 2.24: Perspective of central water feature within Garden of Remembrance (Ullrich 2020)

Spiralling movement routes revolve around central water body – heightened importance of water

1 MEMORY

Memory inscribed through various monuments and remembrance walls

3 MOVEMENT

Accommodation of movement and rest for in grief process and visits
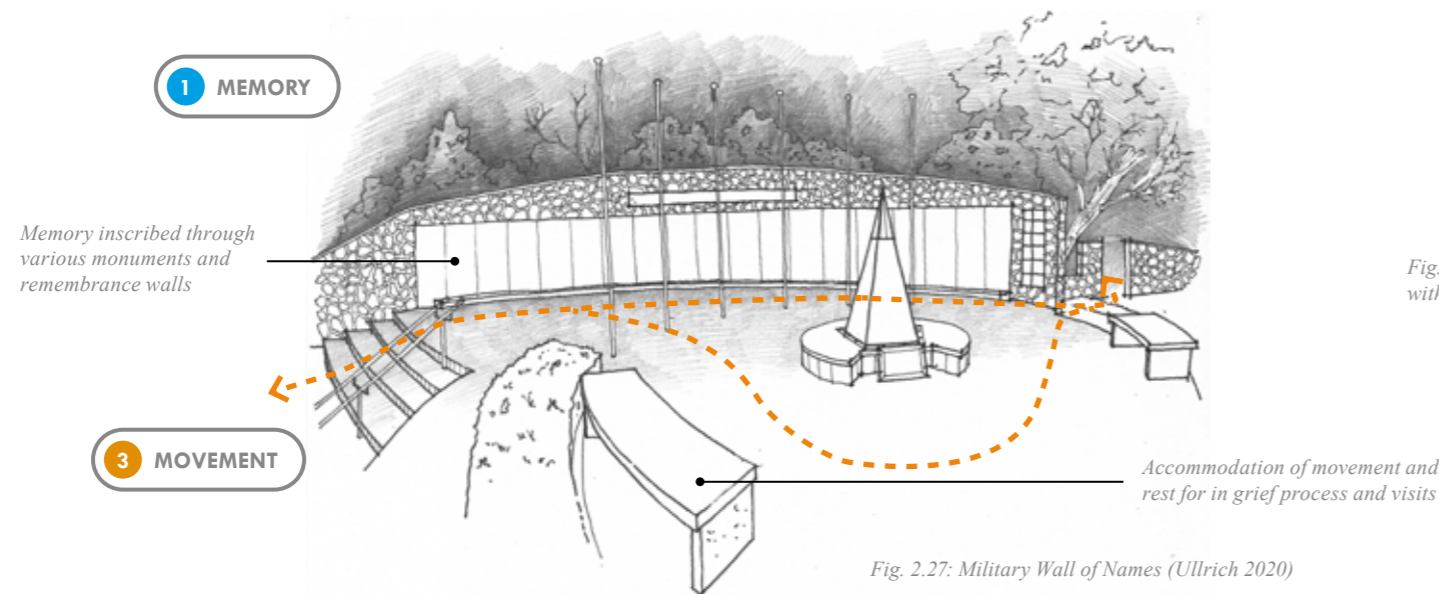
Fig. 2.27: Military Wall of Names (Ullrich 2020)

Structure to house families' watering cans and plant vases – accommodating memory and movement

Chapel facilitates death ceremony, however, process disrupted by cremation process, which occurs off-site

3 MOVEMENT

Chapel accommodates Christian liturgy and eschatology with basic axial plan layout – void of iconography, more inclusive
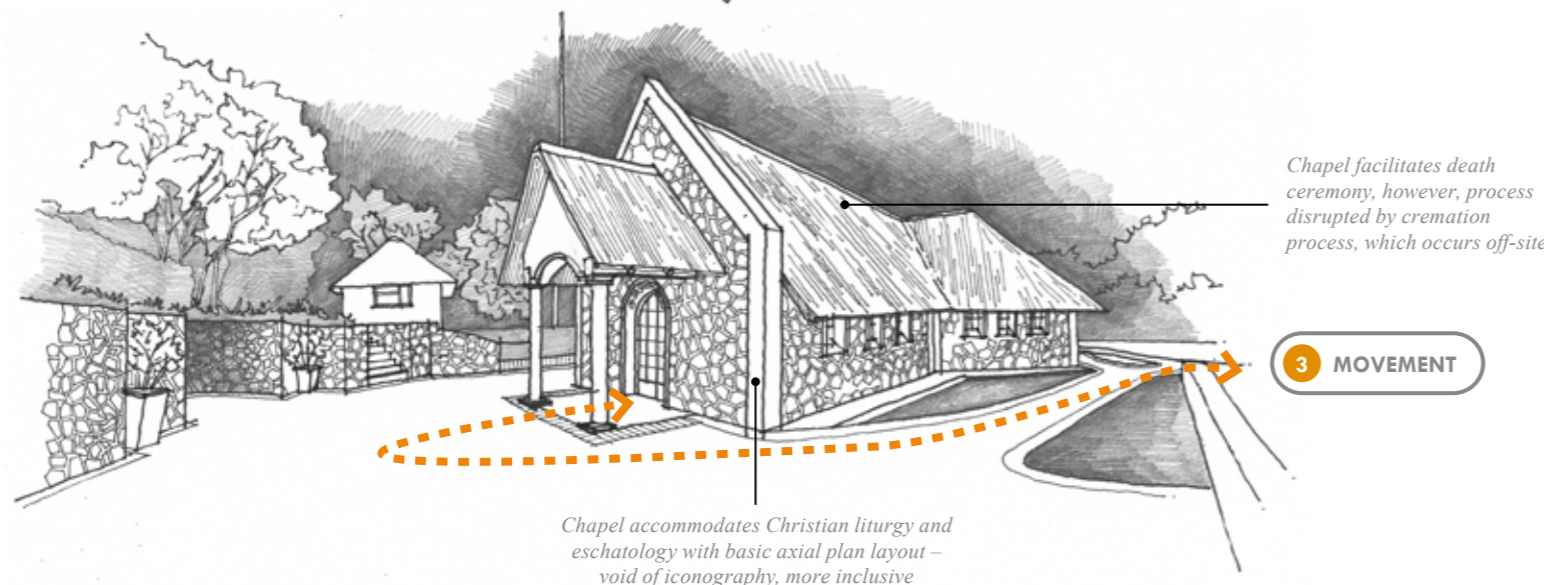
Fig. 2.26: Chapel structure (Ullrich 2020)

Awkwardly positioned bench - seating and rest not integrated with architectural structure
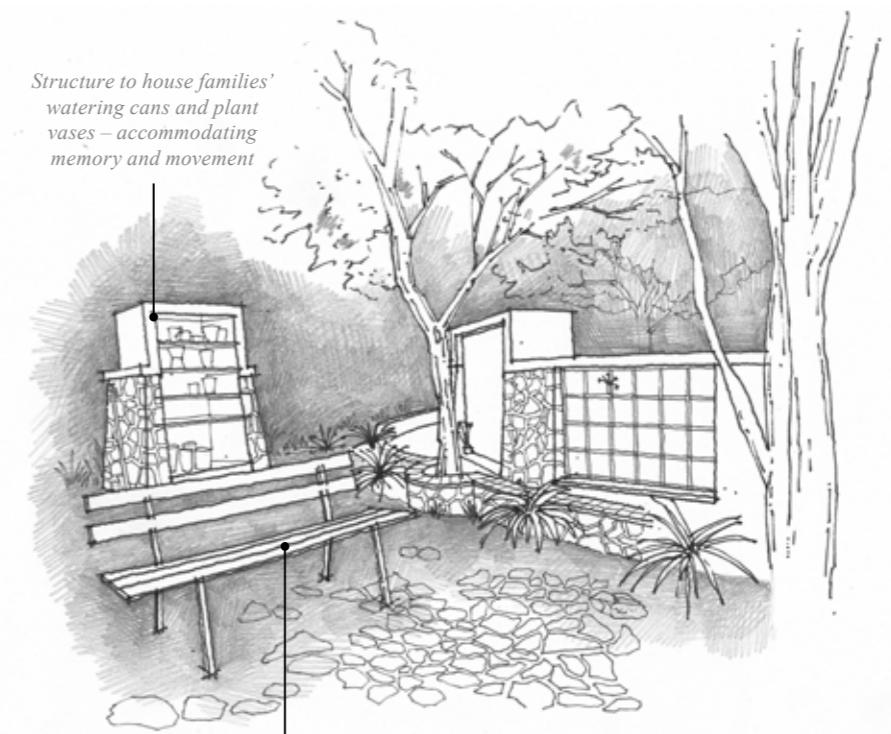
Fig. 2.25: Seating and garden storage (Ullrich 2020)

Omnipresent landmark of Voortrekker Monument

Steel cups for flowers fixed with (plaque) mounting screws

Quartzite stone - haptic, sensual texture; locally sourced from quartzite ridge; sense of permanence and anchoring site

Shelf for placing flower vases

Fig. 2.28: Details of columbarium wall with background of Vootrekker Monument (Ullrich 2020)

Precast cinder block used as primary element for grid layout

Modules of urn dictates grid-layout of spacial planning

Memory of deceased inscribed on granite stone

Fig. 2.29: Exploded axonometric of columbarium wall components (Ullrich 2020)

1 MEMORY

Vertical elements mark entrance to columbarium

Wall section dedicated to single family – shared individuality occupying a small a mount of ground space

1 MEMORY

Fig. 2.30: Elevation of wall section and entrance pylon (Ullrich 2020)

1 MEMORY

Voortrekker Monument omnipresent above canopy of trees –provides individual spacial reference point, and sense of Afrikaanernationhood and belonging
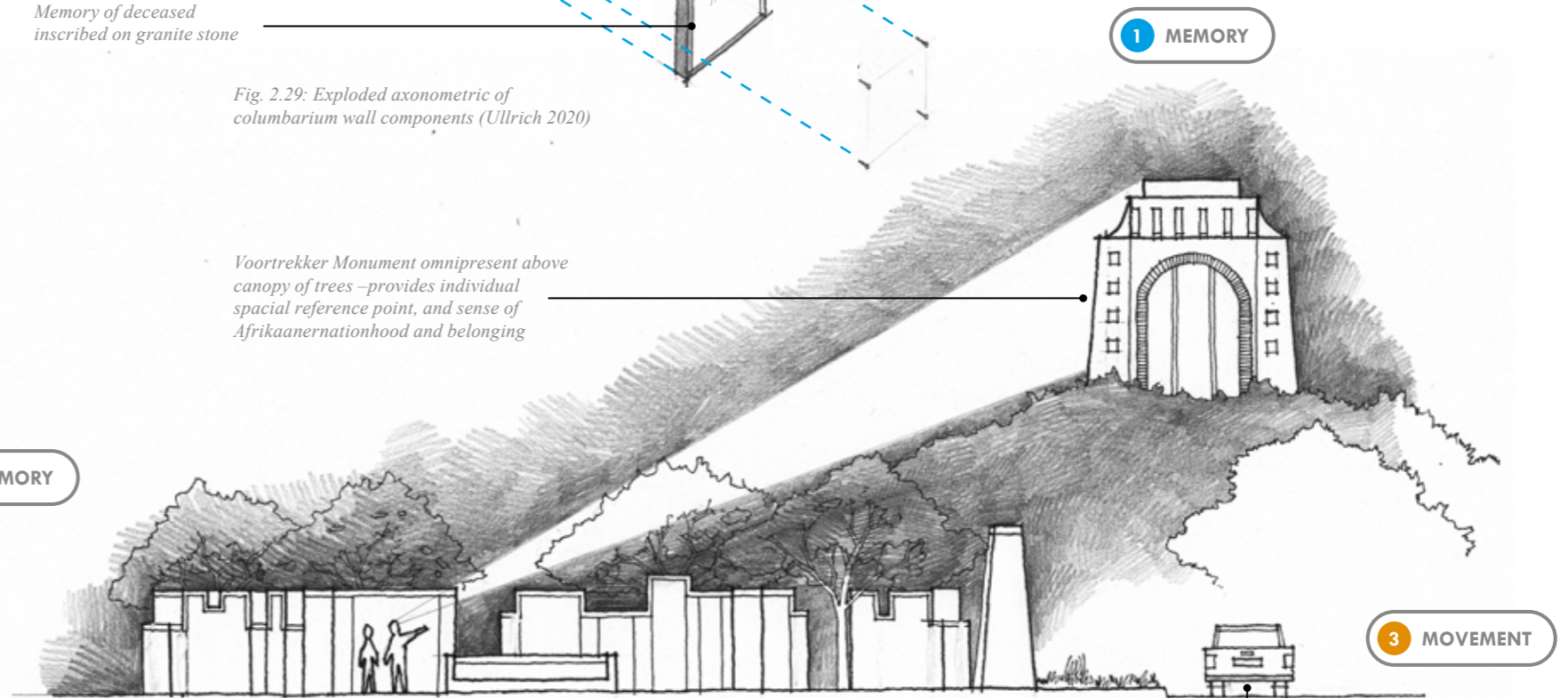
3 MOVEMENT

Fig. 2.31: Elevation of Garden of Remembrance and Voortrekker Monument (Ullrich 2020)

Sites accessed by vehicle – module of vehicle dictates width of arterial movement routes around nature reserve; no pedestrian movement routes from entrance

2.7.4

OOSKERK GARDEN OF REMEMBRANCE

LOCATION:	OPENED:	DESIGNER:	VALUE TO RESEARCH:
Corner of Jorissen Street and Kirkness Street, Clydesdale, Pretoria 25° 45' 21.90" S, 28° 13' 16.2" E	Church completed in 1927	Maarten Venter Landscape Architects	Critique of boundary as a threshold and to provide refuge within urban realm

The Nederduitse Gereformeerde Ooskerk, designed by Gerard Moerdijk in 1927, is accompanied by the addition of a garden of remembrance columbarium wall (Fisher & Clarke 2010a: 76).

The wall forms a curved barrier against the corner of Jorissen Street and Kirkness Street – defining the threshold between the sacred church space and the everyday street space. The Ooskerk site is now surrounded with an electrified fence, which covers the top of the columbarium wall. This creates a dissonance between the peaceful notion of the garden of remembrance and the accommodating nature of the Church, and those with 'unauthorised' access belonging to the outside world.

The central focus of the Byzantine Revival form (2010a: 76) of the church is continued into the landscape with the continuation of the axes (Garden of Remembrance 1999: 2-5). The original pedestrian entrance to the garden of remembrance was from the corner of Kirkness and Jorissen Street, through the centre of the columbarium wall (Fig. 2.33). The original processional route from the sidewalk moved one through the pedestrian gate of the wall, down the steps, through the garden of remembrance, and to the church (Fig. 2.37). This route encouraged one to contemplate the memory of the deceased, with the iconic symbolism of the church as a final destination – alluding to the Christian belief in eternal life after death. This entrance is currently locked, and one must now enter through the gate to the North of

the site, where security can regulate access. This route prioritises vehicular access, and one must walk through the parking lot of vehicles before approaching the church – ignoring the garden of remembrance.

The niches of the columbarium wall can contain up to two urns, and therefore both names can be inscribed on the granite plaque – allowing for a shared identity. The wall has reached maximum capacity, and families who are on a waiting list are required to wait for another family to give up their niche space. The design of the wall lacks the ability to adapt to change – in this case, its inability to accommodate more of the deceased.

Fig. 2.32: Ooskerk Garden of Remembrance within its context (Ullrich 2020)

N
50m

Alternative vehicular entrance used with direct access to parking lot –closer to guard house and loss of processional route

3 MOVEMENT

Security risk - old vehicular and pedestrian entrances not used anymore

2 BOUNDARY

B Fig. 2.35: Elevation of old entrance gate (Ullrich 2020).

Old pedestrian entranceway procession through Garden of Remembrance

Fig. 2.33: Processional routes to the Ooskerk (Ullrich 2020)
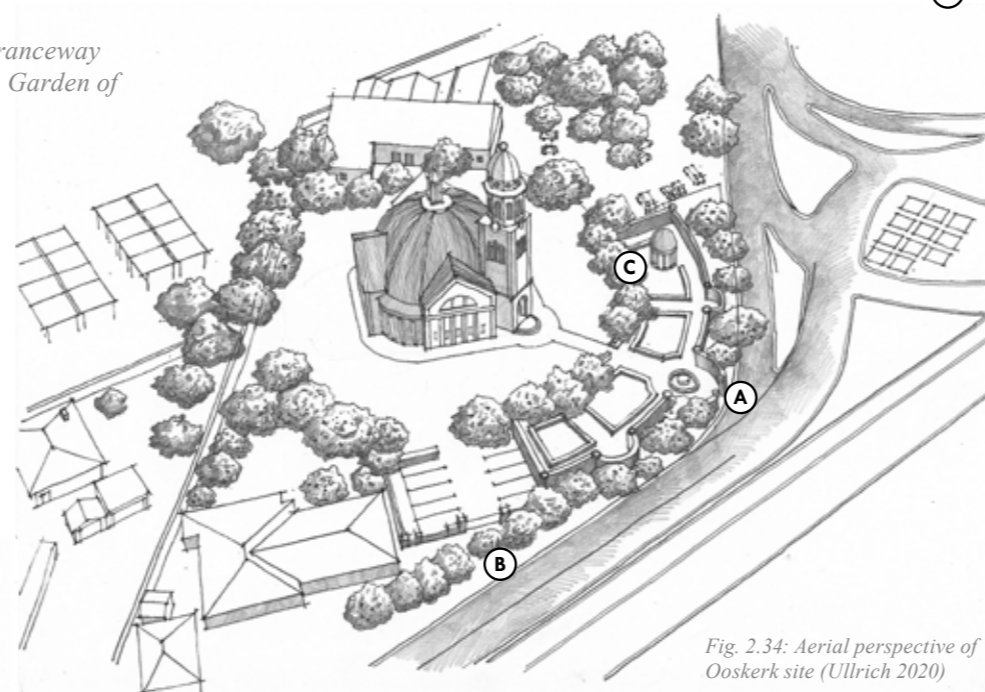
Fig. 2.34: Aerial perspective of Ooskerk site (Ullrich 2020)

Percival Lowell mausoleum, Arizona, USA

Mausoleum-type structure at Ooskerk used as a space of refuge

C Fig. 2.36: Comparison of Percival Lowell mausoleum and the mausoleum-type structure at Ooskerk (Ullrich 2020)

1 MEMORY

Omnipresent bell-tower presides over columbarium

Omnipresent bell-tower presides over columbarium and visitors – Christian reminder of afterlife and the axis mundi of refuge

Electrified fencing –dissonance between place of peace and harming trespassers

2 BOUNDARY
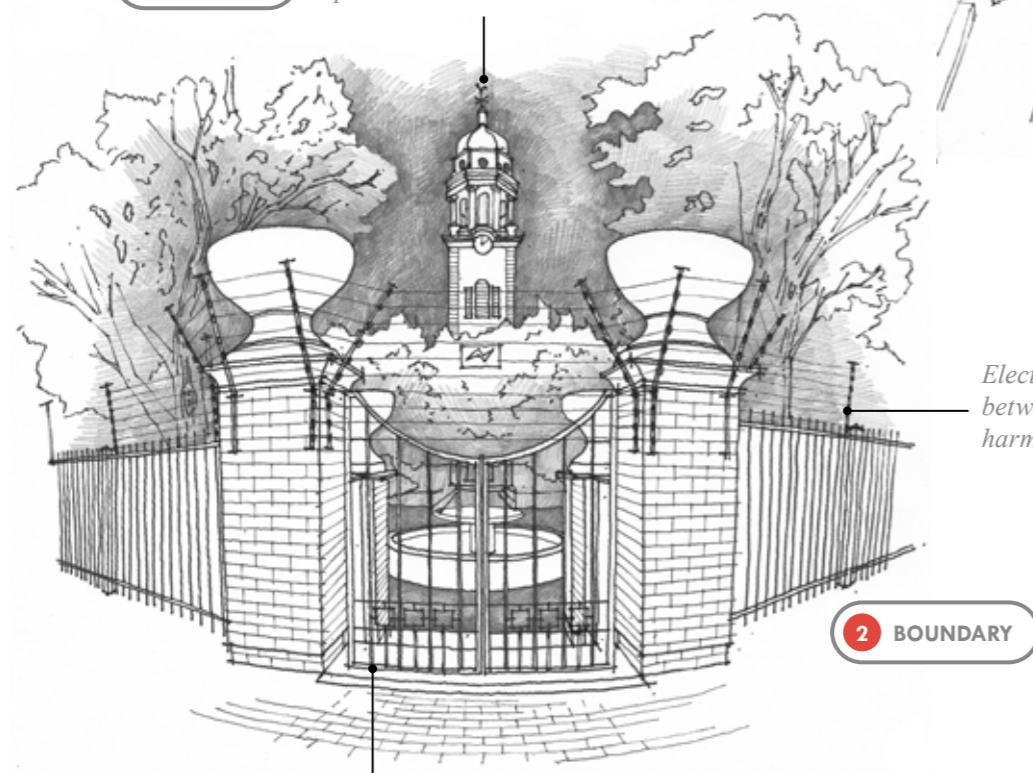
Old pedestrian entrance provided a linear processional route to church – not used anymore and columbarium is less frequently utilised

A Fig. 2.37: Securitised, locked, pedestrian entrance for Garden of Remembrance (Ullrich 2020).
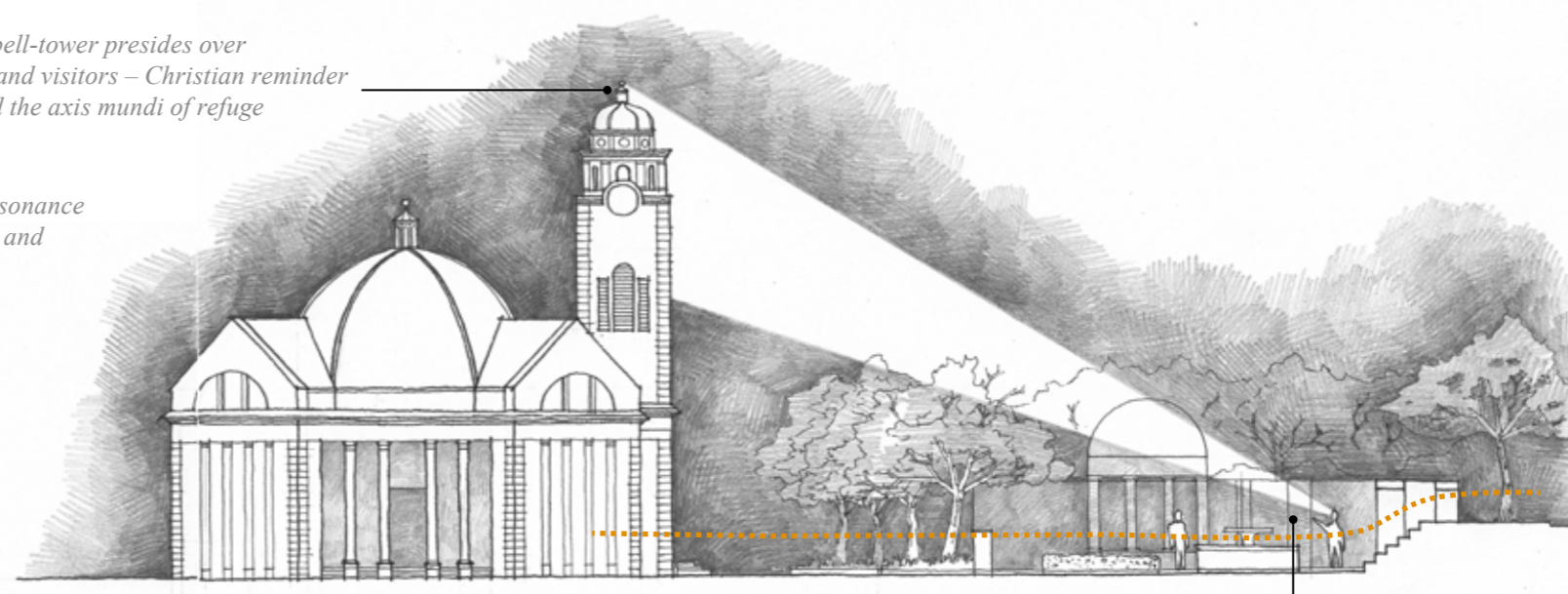
Fig. 2.37: Elevation of Ooskerk and Garden of Remembrance (Ullrich 2020).

3 MOVEMENT

Old pedestrian entranceway allowed for procession through garden of remembrance prior to church entrance – reminder of the deceased and the afterlife

# 2.7.5

PRETORIA WEST CREMATORIUM

LOCATION:

Corner of Jorissen Street and Kirkness Street, Clydesdale, Pretoria
25° 44' 23.59'' S, 28° 9' 20.02'' E

VALUE TO RESEARCH:

Value of refuge within subterranean realm and critique of modern crematoriums

The vandalism of the columbarium wall is noticeable upon entry into the Pretoria West Crematorium site – granite stones covering niches have been broken, and urns have been removed. Subsequently, the site now has two securitised access points, and a perimeter fence.

The columbarium wall – a thick, clay brick structure, with a uniform array of niche spaces to accommodate the storage of urns or burial vessels for cremated remains – defines two Garden of Remembrance areas. According to the municipal by-laws (City of Tshwane 2015: 18), the niche must be covered with either a granite or marble plaque. The niche is then fastened to a concrete block which is cemented to the wall. Individual identity is made solely by inscriptions on the plaque. The older Garden of Remembrance, located on the northern area of the site, is hunkered down, and contained by the retaining columbarium walls and an overhead tree canopy. The space provides a sense of solace for the bereaved. This space is in contrast to the southern Garden of Remembrance, which has little accommodation for grieving visitors, and one feels more exposed within the open space. Through the canopy of Witstinkhoud trees, glimpses of the crematorium chimneys appear. The chimneys are stark and austere – with the main concrete chimney visible throughout the site. Upon seeing these chimneys, associations can be made with the factor of the industrial process of cremation – austere and lacking the necessary comforts of the bereavement process.

The chapel or ceremonial building is void of direct religious or cultural iconography. Rows of benches flank a central nave-like route from the building's main entrance to the podium. The crematorium furnaces are located on the eastern portion of the building. Undertakers can utilise the northern entrance of the site, which leads to a private cul-de-sac for the body to be transferred to the eastern rooms. The preparation of the deceased for cremation, the combustion process, and the collection and processing of ashes, occur within these rooms. This process is not visible to or accessed by the attendees – the smoke rising from the chimneys is the only visual communication of the process. The cremation process is detached from the death ritual process of the bereaved. The product of this process – a vessel containing the ashes – is returned to the bereaved. This process is more appropriate for the contemporary Christian eschatology, and fails to address the ritual requirements of some groups within Pretoria – such as the Hindu open-pyre cremation process, or the Islamic act of lowering the body into the ground. The cremated remains can either be dispersed in the Garden of Remembrance, taken home within a vessel by the bereaved, or interred within the columbarium wall. This level of versatility is important, as it accommodates a wider array of preferences and ritual customs.

Fig. 2.40: Pretoria West Crematorium within its context (Ullrich 2020)

N

100m

Separate entrance for
undertakers and services

3 MOVEMENT
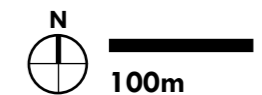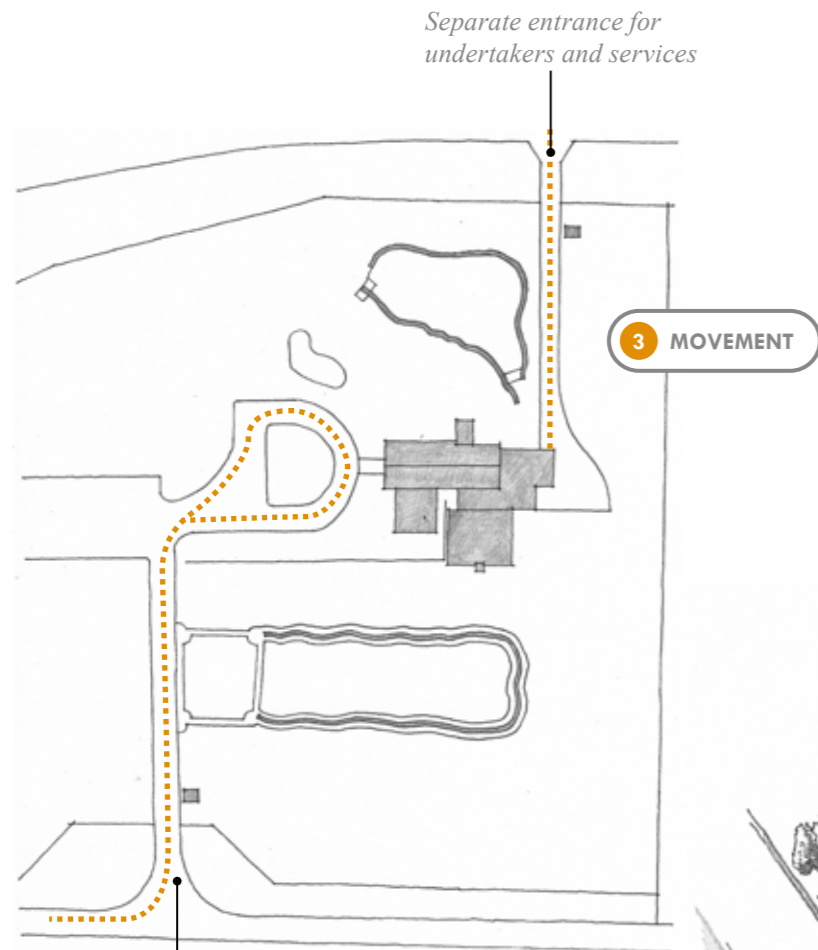
Main visitor entrance
No pedestrian route from
entrance gates

Fig. 2.41: Processional routes
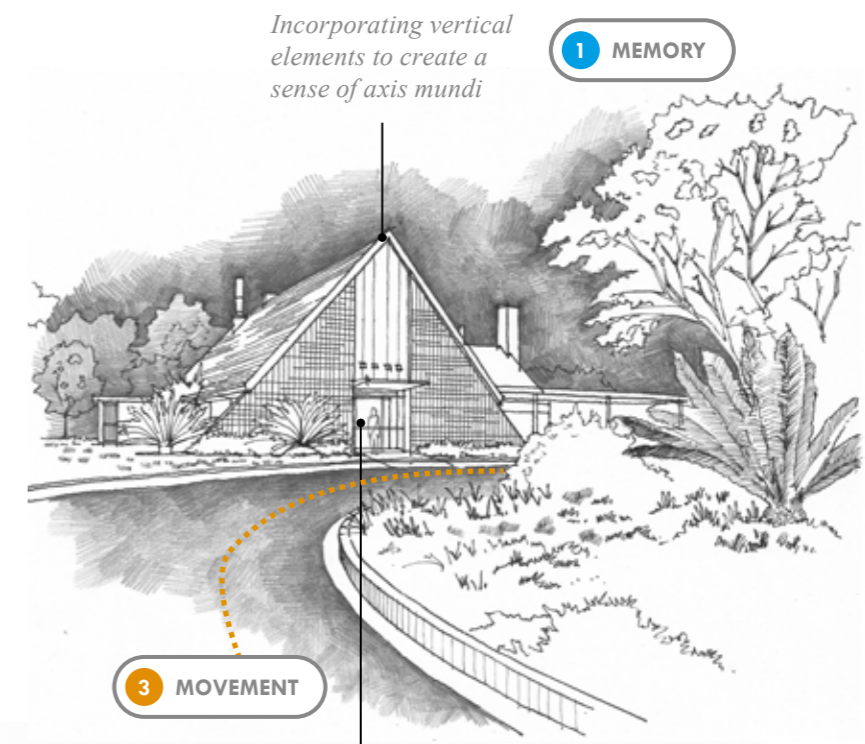into crematorium for funeral
services (Ullrich 2020)

Securitised access to reduce
on-site vandalism of plaques

Superficial
archway element

2 BOUNDARY
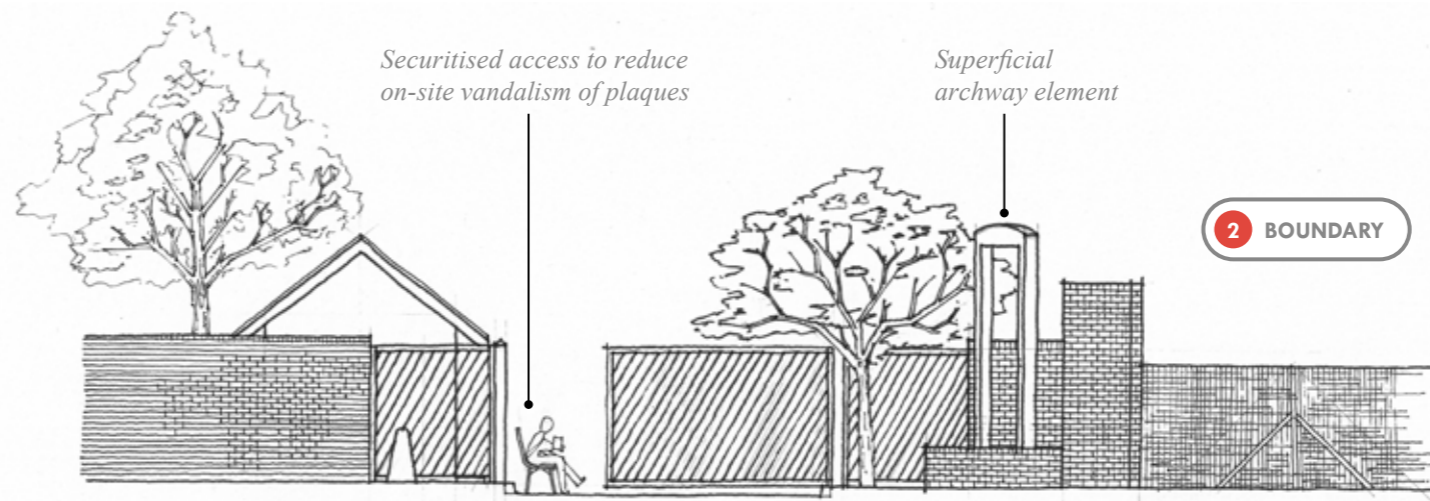
Fig. 2.42: Elevation of main entrance gate of crematorium complex (Ullrich 2020)

Incorporating vertical
elements to create a
sense of axis mundi

1 MEMORY

Chapel structure accommodates
both ceremony and the
cremation process, allowing for
the fulfilment of a death ritual

Fig. 2.45: Aerial view of Pretoria West
Crematorium site (Ullrich 2020)

3 MOVEMENT

Ceremonial structure functions
as a chapel, void of direct
iconography –more inclusive

Fig. 2.43: Perspective of
approach to chapel entrance
(Ullrich 2020)
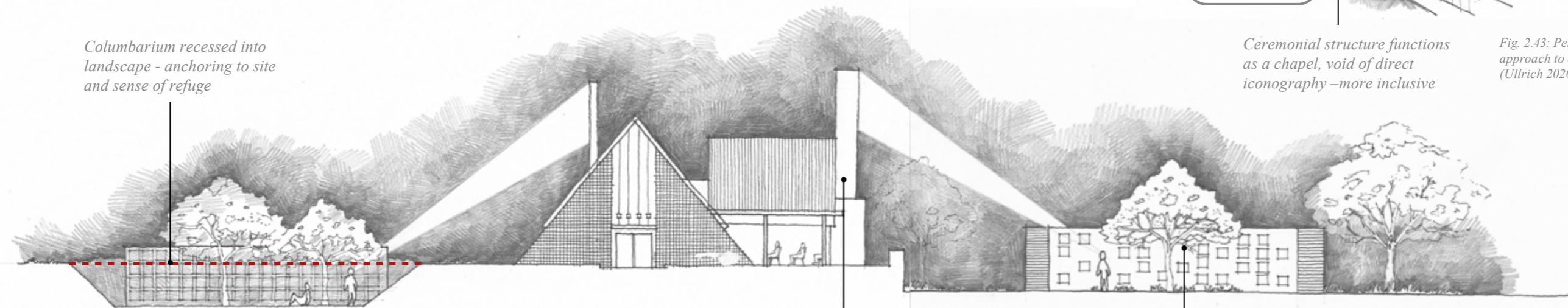
Columbarium recessed into
landscape - anchoring to site
and sense of refuge

2 BOUNDARY

1 MEMORY

Omnipresent chimneys are
austere and allude to industrial
process of cremation

Trees haven't made an
adequate canopy – no
provision made for
resting or seating

Fig. 2.44: Elevation of chapel, crematorium,
and two columbarium areas (Ullrich 2020)

2.7.6

HEROES' ACRE CEMETERY

LOCATION:	OPENED:	VALUE TO RESEARCH:
53 WF Nkomo St (Church Street), Asiatic Bazaar, Pretoria 25° 44' 48.62" S, 28° 10' 32.26" E	1863	Critique of an unaccesible repository of memory within the inner-city of Pretoria

The Steenhoven Spruit formed a natural barrier for the western edge of the original town-planning scheme for Pretoria in the 19th century. Church Street Cemetery, the first official cemetery for the town (City of Tshwane 2013a), was demarcated just to the West of this boundary – a threshold to the city. The cemetery has reached its burial capacity, and is currently declared "inactive" (City of Tshwane 2014: 22). Due to gravestone vandalism and to aid the management of the cemetery, the city has erected a perimeter fence. In 2019, in order to further prevent trespassers, an additional fence was erected around the site. The site is currently inaccessible by members of the public, and a permit for visitation is required. Public access to the heritage of this site is now only possible through existing literature and Internet websites. The site is a rich repository of cultural memory for Pretoria, and is currently on the City of Tshwane's Heritage Buildings List (City of Tshwane 2013a). A portion of Church Street Cemetery has acquired the name Heroes' Acre, as it is the resting place for several former presidents and notable military officials. The cemetery features a cartesian grid layout, with a central pathway running from the North to the South portion of the site – in alignment with the historic Old Jerusalem Street. Pathways extend from the central path, and aid the subdivision of the cemetery. Vandalism is evident on many gravestones, predominantly former Afrikaner political figures. Initial attempts to curb this vandalism are evident, as these gravesites are surrounded by a low fence. The segregated policies of the society at the time are reflected in the segregated sections of the site, which represent the prominent religious and cultural groups of Pretoria.

Fig. 2.48: One of the first memorial stones within Heroes' Acre Cemetery (Josling 1907)
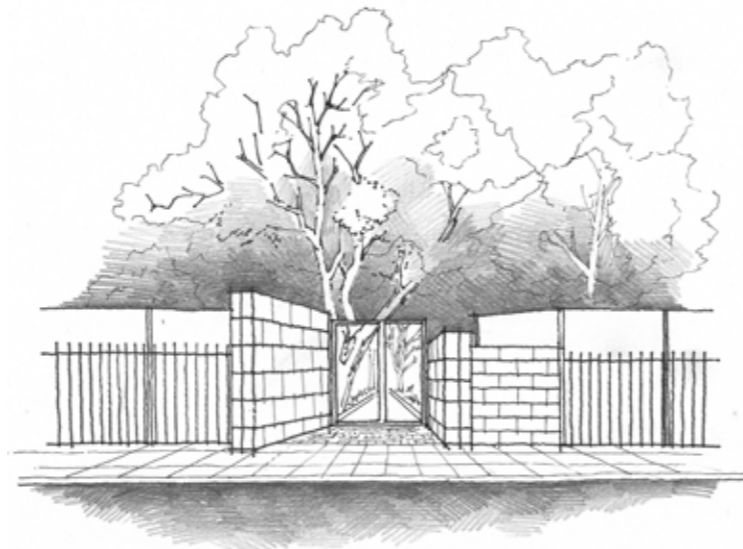
Fig. 2.47: Fenced off entrance of Heroes' Acre Cemetery (Ullrich 2020)

Fig. 2.46: Heroes' Acre Cemetery within its context (Ullrich 2020)

N
50m

2.8

ADDRESSING PRETORIA'S HETEROTOPIC BURIAL SPACES

The analysed burial spaces exhibit qualities associated with the principles of heterotopic spaces. This analysis aids the identification of these methods by which burial spaces have become closed-off from civic life.

It is evident that some of the burial spaces' primary function has changed since their establishment. For example, the Old Hindu Crematorium is now inactive, and functions rather as a more secluded shelter for vagrant individuals. The burial spaces are able to contain several incompatible types of spaces within a single place, and juxtapose them. The Ooskerk site contains the church structure, and, within close proximity, the columbarium wall – celebrating life, and mourning for the deceased. This juxtaposition aids the religious connotation of the celebration of life after death. These spaces form part of the civic, secular institutional spaces of the city, and at the same time attempt to contain and maintain sanctified space (Rugg 2000: 7).

The everyday linear conception of time is challenged by the notion of the afterlife, and unrestrained sacred time (Nicholas-Schmidt 2009). Religious funerary processes aid the bereaved and the deceased in mediating this transition from quotidian time, to the time of the afterlife.

The sites are all fenced-off, and have a system of regulated access at a specific point in the boundary. The result is that these sites are not freely accessible like a public space. The intentions of restricting access are shared, and vary in tandem with the extent of restrictiveness. The main intention is to manage and protect the site – in some cases, the shared identity of a particular religious or cultural group - from the vagrants, vandals, crime, and the 'unauthorised' individuals of the 'outside world'.

The burial spaces are noticeably incongruous to the outside socio-cultural and spatial norms. These spaces contain elements that are meticulously arranged, numbered, and perfectly compartmentalised, as opposed to the surrounding irregular natural landscapes, and patchwork of layered urban planning (Foucault & Miskowiec 2012: 27).

By analysing the urban burial spaces of the city of Pretoria through Foucault' heterotopic principles, it can be proposed that these spaces have undertaken a role of reinstating specific structures of power and control through various, sometimes insidious, methods. The rationale for creating these enclaves, whether for the fear of crime, class elevation, protection of shared identity, and the right to exclude, can ultimately be characterised as "rights of privilege" (Hook & Vrdoljak 2002: 212). The result is that these spaces have deviated from being park-like public spaces, and are unable to openly share their values with society.
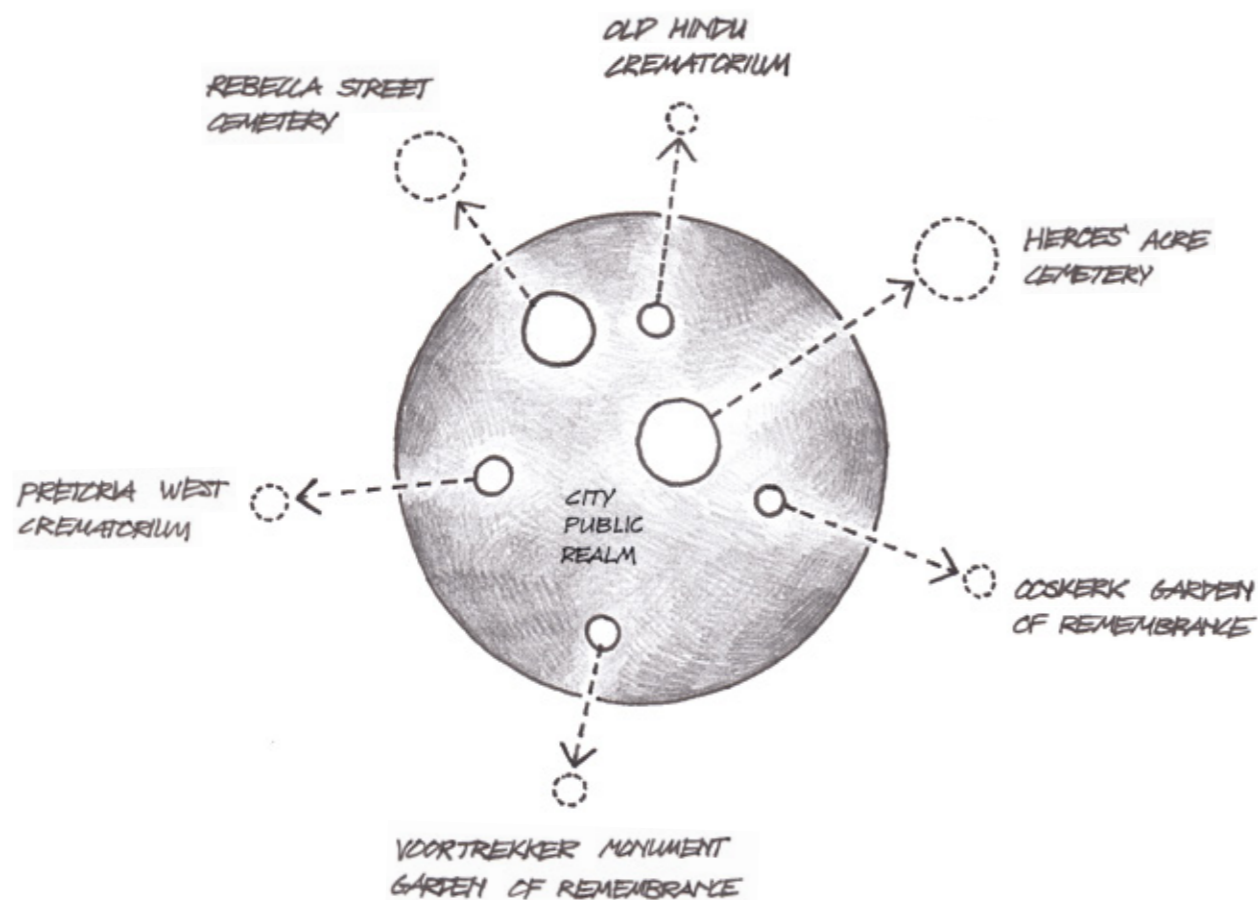
Fig. 2.49: Isolating Pretoria's heterotopic burial spaces from the public realm (Ullrich 2020)

2.9

ARCHITECTURAL POSITIONING

In this dissertation, the architectural positioning stems from the design intentions of the Dutch design team of Projectburo Almere in 1975 (Rugg 2003: 109). The team was responsible for reintegrating burial processes into the central urban town of Almere-Haven, Netherlands, through a cemetery design that would be integral to the urban fabric and public space (2003: 109). The team advocated a mixed-use approach to town-planning, and intentionally challenged the rigid separation of functional zones espoused by the modern movement (Clayden & Woudstra 2003: 200). The design is worked around a central arterial movement route, which forms a link between the town square, church, and adjacent neighbourhood, which enables the cemetery to be entwined with daily civic life. By being integral with daily civic life, the cemetery maintains a sense of security and upkeep due to its relevance (2003: 201). The cemetery as a civic institutional node, entwined with daily public life, and located within the inner-city district, can be understood as a return to pre-Enlightenment notions of the urban burial space[1]. This dissertation attempts to continue the ideas of Projectburo Almere, by challenging the modern town-planning schemes of isolating burial spaces.

[1]   See timeline of Burial Spaces & the City, and the positioning of the design intentions of Projectburo Almere team within the continuum.
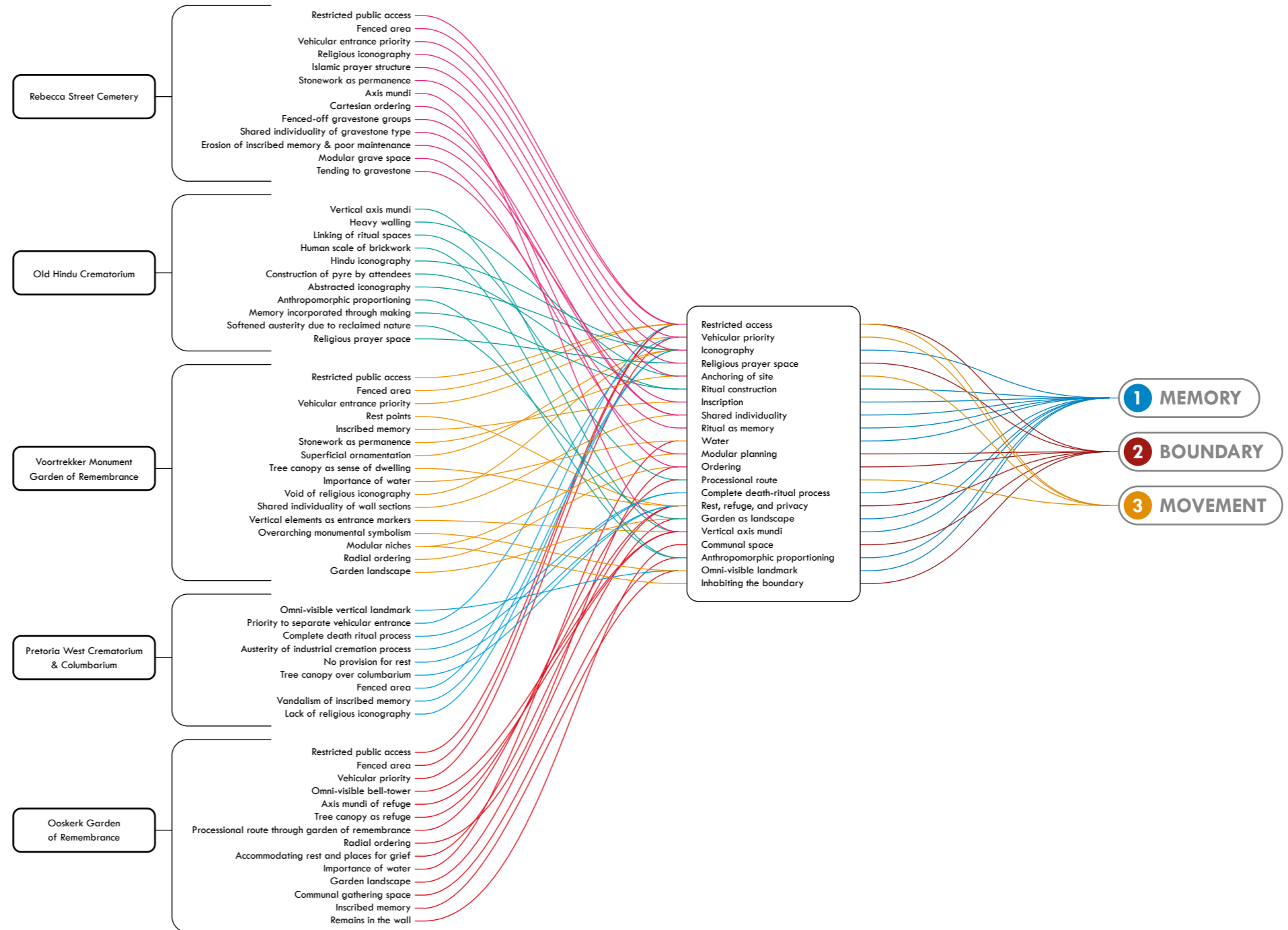
Fig. 2.50: Diagram showing the development of the three thematic categories from the data analysis (Ullrich 2020)

2.10

RITUAL MEDIATION
AS CONCEPTUAL APPROACH

An overarching, conceptual, architectural approach will be required to define the main intention within the field of enquiry, and to establish order for the explorations of the dissertation (Porter 2004: 27). The concept will act as the sustaining driving force for the dissertation – binding the components of exploration, and the reservoir for supplying the project's purpose.

From the analysis of the data collection, it is evident that a schism exists between the burial spaces of Pretoria, and the everyday activities of the city of Pretoria itself. The lenses of enquiry, the Sacred Ritual Lens and the Quotidian Ritual Lens, explore the domains on either side of this schism. In order to re-integrate burial rituals within the inner-city of Pretoria, the conceptual approach will focus on mending this schism. The notion of Mediation is utilised as a conceptual approach to redevelop and reintegrate this narrative between the city and the death process. According to Wightman (2007: 933), Mediation is a form of transition, with its purpose specifically regulating access through to the most sacred parts of a structure (2007: 941), or to mediate an approach to the divine (2007: 932). Mediating movement and activities from the quotidian realm to the most sacred realms are imperative to ensuring that the experience is organised in a manner that demonstrates and maintains the significance of sacrality (2007: 933).

The findings from the case-study research identified three overarching informants which contributed to the manifestation of the architectural experience of the burial spaces within Pretoria, namely: Boundaries, Memory, and Movement (Fig. 2.51). This dissertation utilises these three thematic categories as the primary components of the architectural concept of Mediation. The three components are not mutually exclusive, but, if successfully employed, can work in tandem with one another to generate a burial narrative, or mediation, between the quotidian and sacred realms. The three components provide a framework to more easily identify and compare relationships on the macro, meso, and micro scales of investigations, and between the two lenses of enquiry.
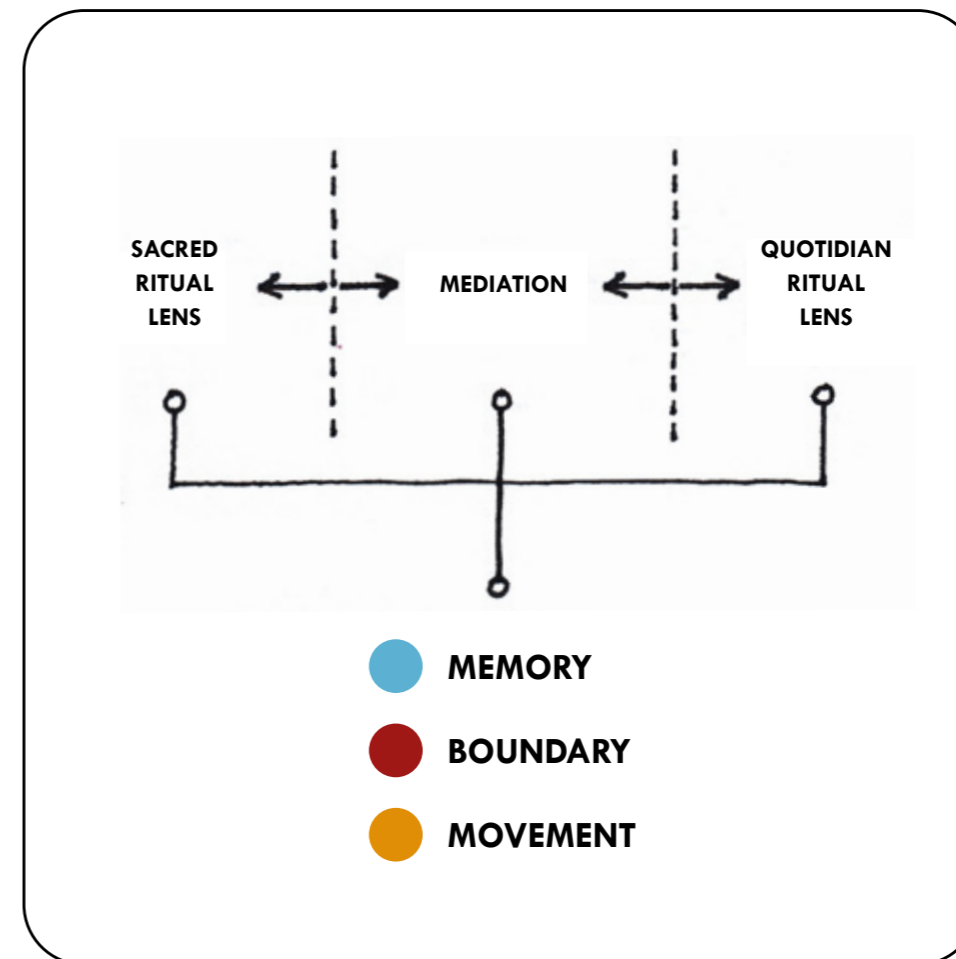
Fig. 2.51: Schematic diagram of Mediation as a conceptual approach (Ullrich 2020)
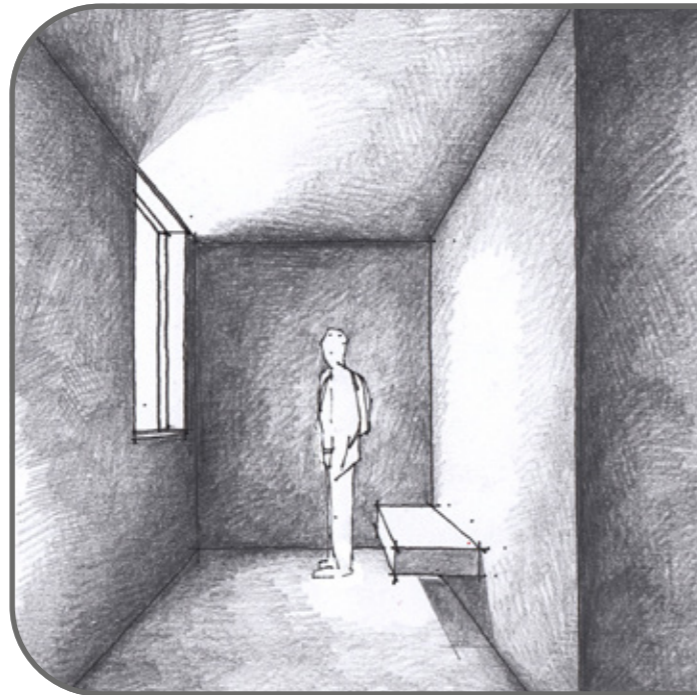
03

PROGRAMME

SACRED RITUAL LENS

3.1

OVERVIEW OF BURIAL RITUALS IN THE CITY

As burial spaces become increasingly removed from the city, the city becomes less accommodating of the practice of burial rituals. Within Western cities, burial rituals were once intertwined with daily civic life.

From the Middle Ages until the late eighteenth century, the deceased in European cities and towns were mainly buried adjacent to churches, monasteries, and overcrowded graveyards within urban boundaries (Malone 2017: 1). Attempts to reform urban burial practices within Europe were feeble and ineffectively adopted (Curl 2006: 161). A major theme of illness, caused by the miasma of the dead, spread within urban areas during the eighteenth century (Johnson 2008: 781). This idea, that death brings illness to the living, was related to the onset of contagious illnesses within urban areas, and the dead being buried adjacent to homesteads, churches, and sometimes within the middle of streets (Foucault & Miskowiec 2012: 25). The proximity of the dead was believed to be responsible for propagating more death.

European funerary practices substantially changed in the nineteenth century, primarily due to the impact of the Enlightenment. Emphasis was shifted on creating burial spaces of perpetuity and celebrating individual remembrance (Atkins 2017: 39). The proximity of the deceased to the living was no longer perceived as being spiritually beneficial (Foucault & Miskowiec 2012: 25). The modern cemetery space was ultimately shaped by the culmination of Enlightenment ideals, English landscaped gardens, the necessity of burying the dead in a respectable and hygienic way, and the Napoleonic Decree of 23 Prairial of France in 1804. Bonaparte's imperial decree codified burial practices for French cemeteries. The decree only allowed single-grave burials, where multiple bodies were not allowed to be buried on-top of one another, and prohibited further burials within the boundaries of French cities. The decree acted as an ideal model for many other European nations, and, consequently, impacted colonial town-planning in foreign nations.

At the onset of the nineteenth century, town planners began locating cemeteries at the borders of cities and towards the suburbs for reasons of health and hygiene (Worpole 2003: 94). Cemeteries were therefore no longer the sacred and perpetual heart of the city, but a dislocated "other" space that had the negative connotations of disease and illness (Foucault & Miskowiec 2012: 25). These town-planning models of the cemetery space pushed to the periphery of society has resemblance to the treatment of disciplinary and institutional sites, in terms of location, spacial distribution, and isolation (Johnson 2008: 981).

The adoption of Eastern ideas within Western society included the introduction of novel burial paradigms. The introduction of cremation as a possible alternative disposal process was appealing, especially with Britain's Victorian-era desire to emulate the classical Greek and Roman cultures (Atkins 2017: 41). However, cremation was largely prohibited by the Church, and impeded its adoption as a viable alternative. Since the mid-nineteenth century, the development of the modern city has involved many cemeteries being developed over, or remains being removed from prime, inner-city districts, and reinterred on the periphery of the city (Green & Murray 2005: 10). The development of burial sites belonging to the 'unacknowledged' dead, which usually occupy a large portion of city land, has presented a challenge to the development of the modern city. Historically, burial spaces have had the potential to act as public civic institutions with the intention to provide solace to the bereaved (Worpole 2016: 23), and to express, sustain, and store the shared cultural memory and identity of a group, and the deceased individual (Malone 2017: 2). Despite the recognised importance of burial spaces amongst researchers, the urban spatial issues of accommodating burial rituals have been largely understudied (Basmajian & Coutts 2010: 306).

Fig. 3.1: "Death's Dispensary"; sketch portraying the impact of the first cholera epidemic in St. Petersburg (Pinwell 1866)

3.2

BURIAL RITUALS IN THE SOUTH AFRICAN CITY

Within Southern Africa, the marginalisation and oppression of indigenous groups and their beliefs occurred with the arrival of colonial activity in the 1650s (Atkins 2017: 45). Indigenous individuals who converted to Christianity, or who became indentured slaves, were allowed to be buried within their own demarcated section in a formal cemetery. However, those who were neither converted nor indentured were buried outside of the cemetery walls in unidentified graves (Low 2008: 33). With the segregation of communities based on racial and cultural profiling, in accordance with the Group Areas Act of 1950, cemeteries were also dispersed to accommodate individual community areas (Atkins 2017: 45). Town-planners placed these cemeteries on the periphery of segregated communities, usually adjacent to affordable land, such as municipal refuse depots, sewage works, airports, and railway lines (2017: 45) – for example, the Bloemfontein South Cemetery is located adjacent to a landfill site. This enhanced their isolated, heterotopic nature from the city, and propagated urban sprawl and decentralisation of civic amenities from the inner-city.

Currently, many South Africans experience difficulty in accessing burial spaces and their cultural repositories of memory. This is primarily due to difficulties in travelling long distances, their ruinous condition due to vandalism, their lack of maintenance (Wilkins 2011: 30), and their restrictive access or physical concealment from public interaction.

Burial spaces in South Africa cities have predominantly followed European town-planning trends, and occupy large tracts of land (Atkins 2017: 47). These principles have not been adapted to local conditions or indigenous belief systems – and they lack the ability to adapt to societal and environmental change, as indicated by Blake Wilkins (2011), in his observations of the current dilapidated state of burial spaces in South Africa. An easily accessible database for the planning of future burial spaces within South Africa does not exist (Wilkins 2011: 22), nor are there any governmentally issued frameworks for environmentally sustainable urban burial schemes for future implementation. The statistical data provided in the governmental *Statistical and Tariff Handbook* (2014) is a quantitative source which provides figures for further analysis and interpretation of the current state of cemeteries within Tshwane - however, this information has not been updated since 2014.

Fig. 3.2: Chief More's Funeral procession in GaMogopa, North West Province (Mofokeng 1989)

Contextualisation

- 70000 BCE - Earliest ritual funerals at Neanderthal burial sites
- 8000 BCE - Cremation in China
- 2600 BCE - Oldest known use of embalming
- 1500 BCE - Mycenae first tholoss tombs
- 1100 BCE - Greeks utilise individual tombs and graves
- 600 BCE - Cremation becomes dominant form of disposal for Greeks & Romans
- 450 BCE - Roman decree promotes extramural cremation, and prohibits cremation within city walls
- 432 BCE - Construction of Parthenon, Athens, completed
- 210 BCE - Emperor Qin Shi Huang buried with terracotta soldiers in mausoleum
- 200 BCE - First Roman catacombs, response to shortage of land and overcrowding
- 177 CE - Romans persecuted Christians in Lyon - cremation of maryrs' bodies to mock Christian eschatology
- 313 CE - Edict of Milan - Christianity liturgy no longer outlawed
- 381 CE - Burial and cremation prohibited within city walls of Rome
- 400 CE - Emperor Constantine prohibits cremation - focus on body as sacred object
- 534 CE - Legal Code of Justinian - prohibition of all burials within cities; opting of municipal cemeteries outside of cities, and for all burials to use individual coffins or sarcophagi
- 960 CE - China cremation peaks in popularity
- 1347–1353 CE - The Black Death - 1.5 million die during plague, a third of the world's population; 'plague pits' utilised to bury the dead

Period

| 2000 BCE | 1500 BCE | 1000 BCE | 500 BCE | 500 CE | 600 CE | 700 CE | 800 CE | 900 CE | 1000 CE | 1100 CE | 1200 CE | 1300 CE |

Year

Bronze and Early Iron Age | Classical Antiquity | Middle Ages

Prominent Work

- *1479 BCE* — Senenmut's Mortuary Temple of Hatshepsut
- *1250 BCE* — Treasury of Atreus
- *1200 BCE* — Kerameikos Cemetery
- *350 BCE* — Satyros & Pythius of Priene's Mausoleum at Halicarnassus
- *250 CE* — Appia Antica Catacombs
- *700 CE* — Saint Rupert Hroudbert's St Peter's Abbey Churchyard
- *1303 CE* — Manikarnika Ghat

Identified Archetype

MONUMENTAL PROCESSION | THOLOS TOMB | PROCESSIONAL GRAVEYARD | GREEK MAUSOLEUM | CATACOMB | CHURCHYARD | CREMATION GHAT

Relationship to City

- Situated within the Teban Necropolis - a city for the dead, located adjacent to the city for the living, on the western riverbank of the Nile river. Large, monumental structures to signify the importance of the dead.
- The mound is intended to be a visible landmark for travellers entering the city, as it flanks the main road to the citadel of Mycenae. Functioned as a reminder for travellers of the Ruler's political legacy.
- The cemetery flanks the Sacred Way road into the Athens city. The evolution of the society is reflected in various forms of commemoration - a narrative of heritage that functions as a gateway threshold for the city.
- Its monumental scale and city-centre position contributed to its function as a civic landmark and political statement.
- Due to Roman law prohibiting interment within the city walls, persecution against Christians, and as a response to overcrowding and land-shortage, subterranean passageways were created below the prominent Appian Way entrance to Rome.
- The churchyard became a desirable space for burial due to its close proximity to the church - a site of sacred significance. The churchyard placed the deceased and funerary activities at the centre of towns and cities - a civic institution of ritual activities.
- Open-pyre cremation processes occur adjacent to the Ganges river at one of two ghats - a flight of stairs leading down to the river. The caste of 'Untouchables' perform the cremation process. The ghats are located on the outskirts of the city - with the activities of the 'untouchables' separated from the rest of civic life.

Degree of Interaction with Civic Life

- ■ Embedded within civic life
- ■ Periphery of civic life
- ■ Outside of civic life

1500 CE - Protestants detach burial grounds and the church; desire to physically separate the dead from the living

1804 CE - Napoleonic Edict of Saint-Cloud - prohibited all burials within French cities, allowed only single-grave burials, and codified burial grounds which spurred the formation of the modern cemetery

1842 CE - John Claudius Loudon published "Principles of Landscape-Gardening applied to Public Cemeteries", which largely spurred the Garden Cemetery Movement, and modern cemetery design

1876 CE - First modern crematorium in Pennsylvania, United States of America

1886 CE - Pope Leo XIII prohibits cremation for Roman Catholics; impedes adoption of cremation as a viable burial alternative for cities

1902 CE - Cremation process legalised within Great Britain

1940 CE - Nazi Germany organised the systematic mass murder of Jewish population and 'undesirables' - predominantly using gas chambers

2004 CE - Freedom Park, South Africa, built to commemorate national heritage and ancestors

2016 CE - Vatican increases tolerance for cremation and states cremration guidelines for Roman Catholics

2020 CE - Coronavirus outbreak restricts funerary practices and increases utilisation of mass interment

| 1400 CE | 1500 CE | 1600 CE | 1700 CE | 1800 CE | 1900 CE | 1950 CE | 1975 CE | 2000 CE |

Age of Reform

Age of Discovery

Age of Industry

Atomic Age

Architectual positioning

1762 CE
Cemetery of the 366 Fossae

1804 CE
Père-Lachaise Cemetery
Alexandre-Théodore Brongniart

1919 CE
The Cenotaph of London
Sir Edwin Lutyens

1928 CE
Golders Green Crematorium
Sir Ernest George

1975 CE
Almere-Haven Cemetery
Christian Zalm

1994 CE
Igualada Cemetery
Enric Miralles & Carme Pinos

2004 CE
Freedom Park

COMMUNAL VAULTS

GARDEN CEMETERY MOVEMENT

WAR CENOTAPH

MODERN CREMATORIUM

CENTRAL PARK CEMETERY

BROWNFIELD REHABILITION

COMMEMORATIVE PARK

As church spaces became overcrowded within inner-city districts of Italy, cemetery spaces were increasingly moved away from the city centre. The Cemetery of the 366 Fossae accommodates both mass burial for the lower-income classes, and appropriate Christian eschatology, such as in-ground burial. The site is located on the edge of the city, and its sacrality is maintained by its high boundary wall.

Originally built on the outskirts of the city of Paris, in a direct response to the Napoleonic decree which prohibited burial within all French cities. The landscape was designed and used as a picturesque civic park space. Père-Lachaise is understood as a prototype for the Garden Cemetery model which influenced John Claudius Loudon's principles for garden cemeteries, and the development of the modern cemetery on the periphery of cities. The growth of the city has absorbed the cemetery as a civic park-like space.

The attachment of the body and the individual grave as the symbolic representation of identity could no longer be sustained after the World Wars. The Commonwealth War Graves Commission continues to commemorate over one million Commonwealth dead of the First World War. Half were buried within marked graves, whilst the rest were buried anonymously, with their names being inscribed on memorial plaques and cenotaphs. The national, collective memory, could be represented through the construction of memorial cenotaphs.

The crematorium is located on the northern edge of London - with the original desire to build London's first crematorium within easy reach of the city centre. The site is now easily accessible by city users with the London Underground, and is surrounded by the retail and residential suburb of Golders Green. The crematorium gardens are utilised as a civic park-like space for Londoners.

The Dutch design team of Projectburo Almere attempted to reintegrate burial processes into the centre of the town of Almere-Haven, Netherlands. The cemetery has become an integral civic node, and is entwined with daily civic life. The team advocated a mixed-use approach to town-planning, and intentionally challenged the rigid separation of functional zones espoused by the modern movement.

The Igualada Cemetery revitalised an old quarry space, far outside of the city of Barcelona. From the city, a train ride to the area takes over an hour. The landscape is manipulated to form an undulating experiential pathway, where the architecture utilises materials from the surrounding landscape. The organic architecture approach for healing an abandoned industrial landscape, away from the chaotic urban environment, influenced a new generation of burial spaces outside of the city.
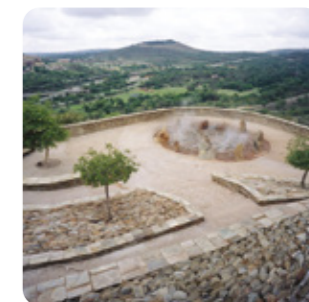
Located on the Salvokop ridge, the Park is located on the southern periphery of the city of Pretoria, and is visible to travellers entering from the South. Its location and access fee results in the site not being entwined into daily civic life, despite the site accommodating multiple forms of commemoration and functioning as a rich repository of South African heritage.

Fig. 3.3: Timeline - Burial Rituals and the City (Ullrich 2020)

3.4.1

FREEDOM PARK
ISIVIVANE & SANCTUARY

LOCATION:	OPENED:	DESIGNER:	VALUE TO RESEARCH:
Salvokop Ridge, Pretoria, South Africa 25° 45' 21.90" S, 28° 13' 16.2" E	2008 (Phase 1)	GAPP + Mashabane Rose Architects + MMA + Newtown Landscape Architects	Precedent for a burial planting strategy, and the requirements of an urban, South African, multi-faith, sacred site

Freedom Park was constructed with the intention of commemorating South Africa's heritage, and memorialising those who contributed to South Africa's liberation against the Apartheid system. The cultural park narrates this story of South Africa to visitors through a series of architectural and landscape interventions upon the Salvokop Ridge.

The processional movement pathway, the Mveledzo, binds the various interventions on the site (Jethro 2016: 452). Among these interventions is the Isivivane space – a sacred resting space for the ancestors. As one approaches the space, the Mveledzo route splits - encouraging independent decision-making, and the option of whether to enter into and participate within the sacred space, or to move around it.

The design narrative of the space is intended to be "open" (Young & Vosloo 2020: 89), as no singular identity could be expressed, as is intended to be used for all recognised faiths and cultural groups in South Africa (2020: 90). Symbolism within the space is abstracted, in an attempt to have a cross-cultural understanding of a place meant for commemoration and healing (Young 2011a: 11). The cleansing pool, and the hand-washing basins at the exits of the Isivivane, are incorporated to aid the cleansing and healing water rituals found within the majority of South African belief systems (Wepener 2013: 262). This is especially relevant within African traditional beliefs, where one must wash one's hands after interacting

with the ancestors (Jethro 2016: 453). The water features contribute to the tranquillity of the space, by focussing the visitor's attention on the sound of falling water, as opposed to the distant noise of the urban landscape.

Upon entry into the sacred space, signage instructs individuals to continue barefoot. If one couldn't read or didn't notice the sign, it could mistakenly result in one entering into the sacred space without realising. The lack of a distinctive threshold highlights the importance of the universal understanding of a boundary threshold into a sacred space.

The most sacred area, the Lesaka, consists of a circular demarcation of paved stone - hand-laid with Salvokop quartzite collected from the site - and nine boulders circulating the space. 'Lesaka' refers to a burial space or shrine where multiple generations of a family are buried (Serote 2014: 42). Prior to its construction, a series of cleansing, healing, and 'return of spirits' ceremonies occurred at conflict sites within South Africa and internationally (Young 2011b: 7). Soil from some of these sites were brought to the Lesaka as part of the process of laying the spirits to rest. Each of the nine South African provinces provided a boulder from an important location within their province, and were transported to the site (2011b: 7). These ideas emphasise the symbolic importance of the construction of the site considered as a sacred ritual in itself. It could be argued, however, that a similar ritual could have been created with

boulders found locally, and the unsustainable transportation and expenditure could have been avoided.

Adjacent to the Lesaka is a semi-circular seating wall positioned around a Buffalo Thorn (uMlahlankosi) tree. This meeting space is symbolic of a traditional meeting space, or Lekgotla. The Lekgotla functions as a central, public space for discussing important matters within the village or community, or it can be utilised as a quiet space for refuge or for grieving. Within traditional African burial practice, the branches of the Buffalo Thorn are used as a medium to transfer the spirits of the ancestors from the place of death, or the gravesite, to the home of the deceased.

The Sanctuary space, located at the centre of Freedom Park, accommodates memorial events and funeral ceremonies. Two thick boundary walls define the interior of the Sanctuary space, with the northern commemorative wall consisting of stone-clad plaques with inscribed names. The two walls diverge towards the western side of the space, where the visitor's focus is placed on the exterior eternal flame – a symbol of remembrance for unsung heroes and heroines (Prinsloo 2010: 75). At Freedom Park, the Wall of Names expresses remembrance through enduring physical inscriptions, whilst the Isivivane focuses on incorporating memory into the ritual narratives that it supports (Connerton 1989: 72–73).

The South of the Sanctuary incorporates a dark, narrow walkway – reminiscent of the tunnel-like spaces of the inner-sanctum at the Motouleng Cave. The walkway allows for the lighting and placement of candles against the southern wall (Prinsloo 2010: 75) – with the light being reflected off of the copper-clad walls.

The Park incorporates a traditional kitchen that can be used for animal sacrificial slaughtering rituals. The circular layout focuses the attention of the user to the centre where the animal sacrifice takes place. The area's drainage, easy-to-clean surfaces, wash troughs, and its exposure to direct sunlight, provide a space that is hygienically appropriate for the preparation of meat for consumption.

Freedom Park's location, its highly-regulated access, and its relatively high entrance fee, exacerbate the issue of the commemorative site being isolated from the daily city-life of Pretoria. By prioritising and strengthening accessibility between Pretoria Central and the Salvokop precinct, the dissertation's Precinct Vision proposal attempts to create a commemorative linkage between Church Square, Pretoria Station, and Freedom Park (pp. 76).

3 MOVEMENT

Lekgotla meeting area and movement corridor

Traditional kitchen adjacent to Lekgotla and sanitary facilities
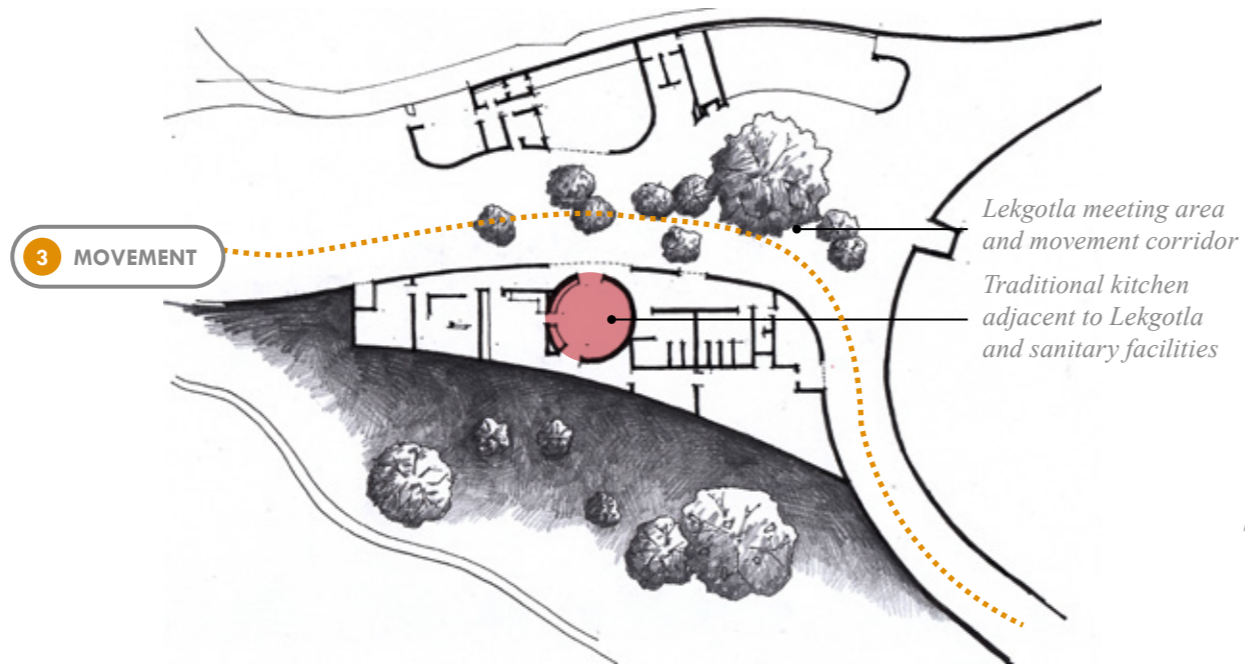
Fig. 3.6: Plan of traditional kitchen (Ullrich 2020)

Removable ceiling panels

Traditional Kitchen Space

Space for an open fire, and for slaughter

Sanitary fixtures & adequate floor drainage for slaughter
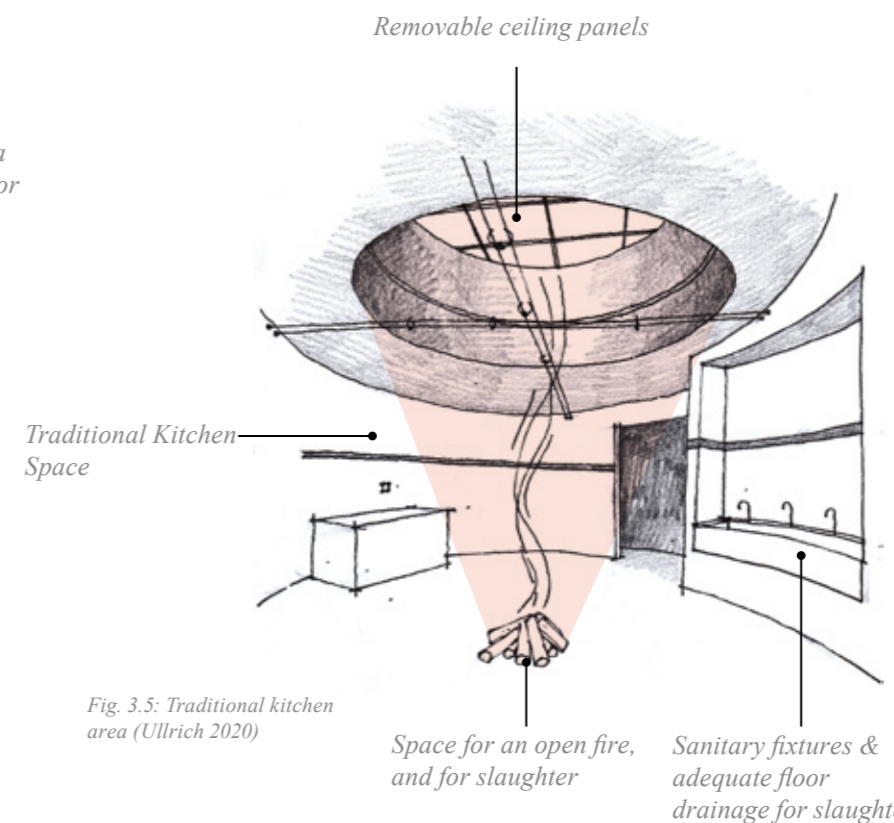
Fig. 3.5: Traditional kitchen area (Ullrich 2020)

Branches of tree used to carry spirit of ancestors

Isivivane sacred space

2 BOUNDARY

3 MOVEMENT

Legkotla Space - meeting space & refuge

Route options allows for choice to participate

Natural, rough materiality - local quartzite
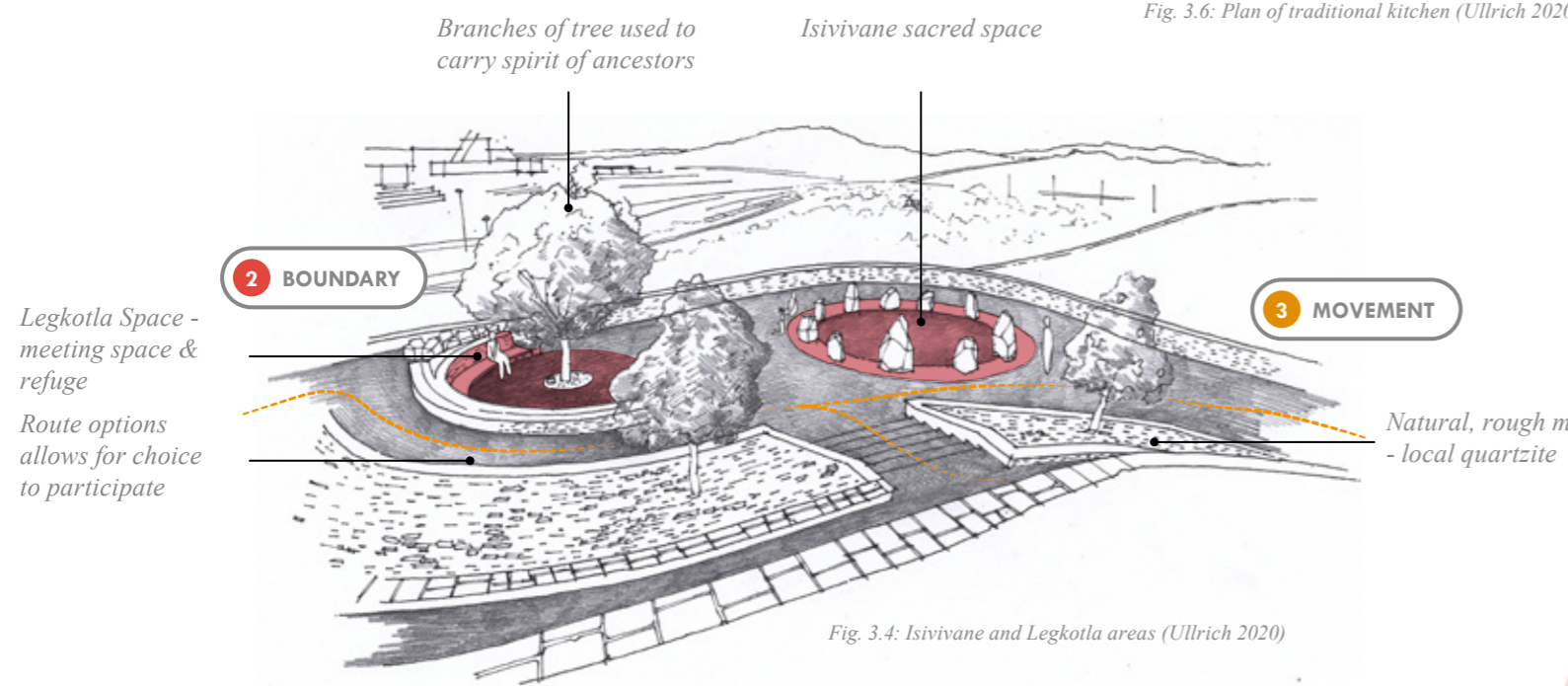
Fig. 3.4: Isivivane and Legkotla areas (Ullrich 2020)

Sanctuary for memorial & funerary services

Route options allows for choice to participate

Central focus on eternal flame

Narrow sacred space for candle-lighting & prayer
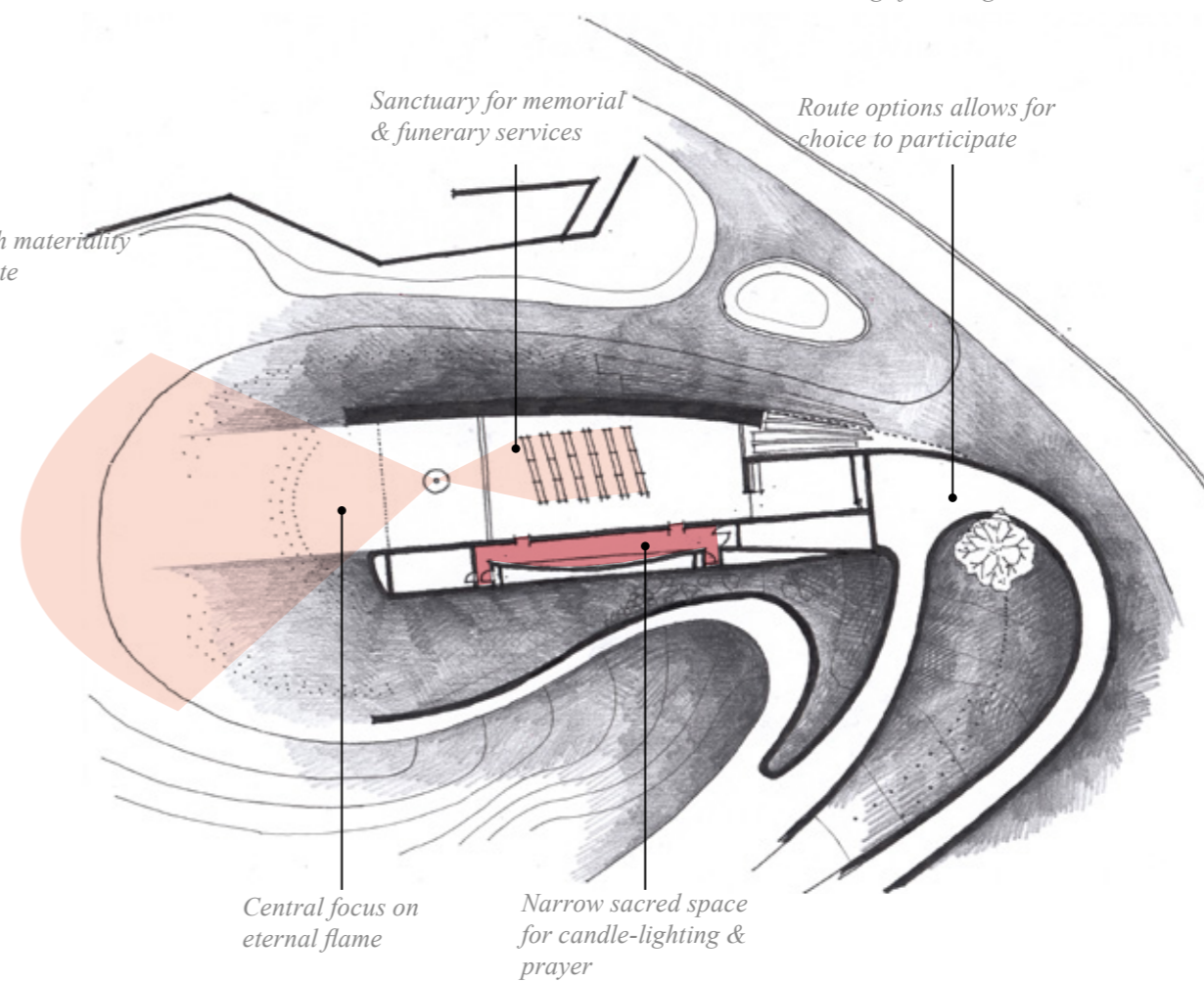
Fig. 3.7: Plan of Sanctuary area (Ullrich 2020)

2 BOUNDARY
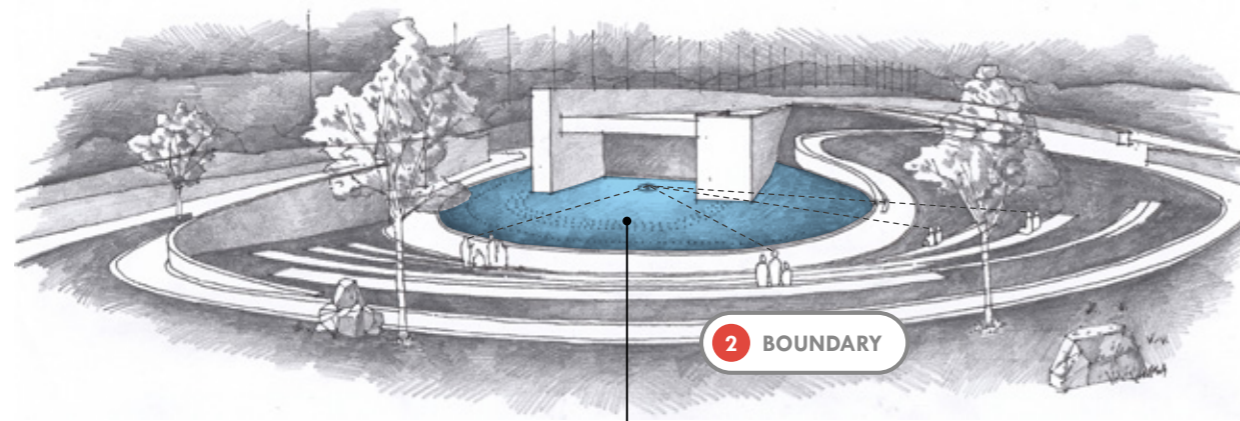
Fig. 3.8: Water body as spiritual cleansing feature, physically separating Sanctuary and Amphitheatre (Ullrich 2020)

3.4.2

MOTOULENG SACRED CAVES

The Motouleng Caves are a site of spiritual pilgrimage utilised for various initiation and funerary rites. The analysis of the site aids the understanding of the dialogue formed between the spatial attributes of the site, and the ritual burial activities performed at the site.

The outer area of the cave is demarcated by a mound, formed by fallen limestone from the rockface above - forming a natural boundary between the sacred space of the cave, and the outside world. The outer area is where public activities occur which facilitate the sacred ritual, such as meal areas, animal enclosures, and accommodation space for pilgrims. During the daytime, the area is bathed in sunlight that is reflected off of the rockface ceiling.

Mediation with the ancestors is believed to be eased as one moves further into the cave, closer to the darker, more confined, cooler space of the inner-sanctum (Ouzman 2003: 40). Within the inner-sanctum, individuals are encouraged to speak and sing loudly to the ancestors, and one experiences the reverberation of voices off of the cave walls. The reverberation creates an atmosphere that amplifies the experience of 'communicating' with the ancestors.

A large stalagmite formation forms an alter that is used for the placement of candles, offerings, and prayer. The ritual of lighting a candle is a commemorative act that is practiced within many cultural groups. It is a ritual that signifies remembrance, and promotes reflection.

The walls of the cave feature individuals' names that have been carved into the limestone face – a form of sgraffito that reveals the lower layers of rock. This process of sgraffito incorporates the notion of attempting to store memory through *inscription*, and the ephemeral activity of *incorporating* memory into the ritual activity itself (Connerton 1989: 72–73).

The rituals practiced at the cave are diverse. The space accommodates a universal notion of faith, as well as highly particular, traditional practices. Water rituals have an important role within many of these belief systems. Water seeps from the back of the cave walls, and is collected for its curative properties. During the summer, this water forms a rill that extends from the inner-sanctum, into the outer-space, and towards the river adjacent to the cave. This water forms part of cleansing rituals, where one can spiritually and physically wash oneself after interacting with the deceased's body, or by washing the blood off of one's hands after a slaughter.
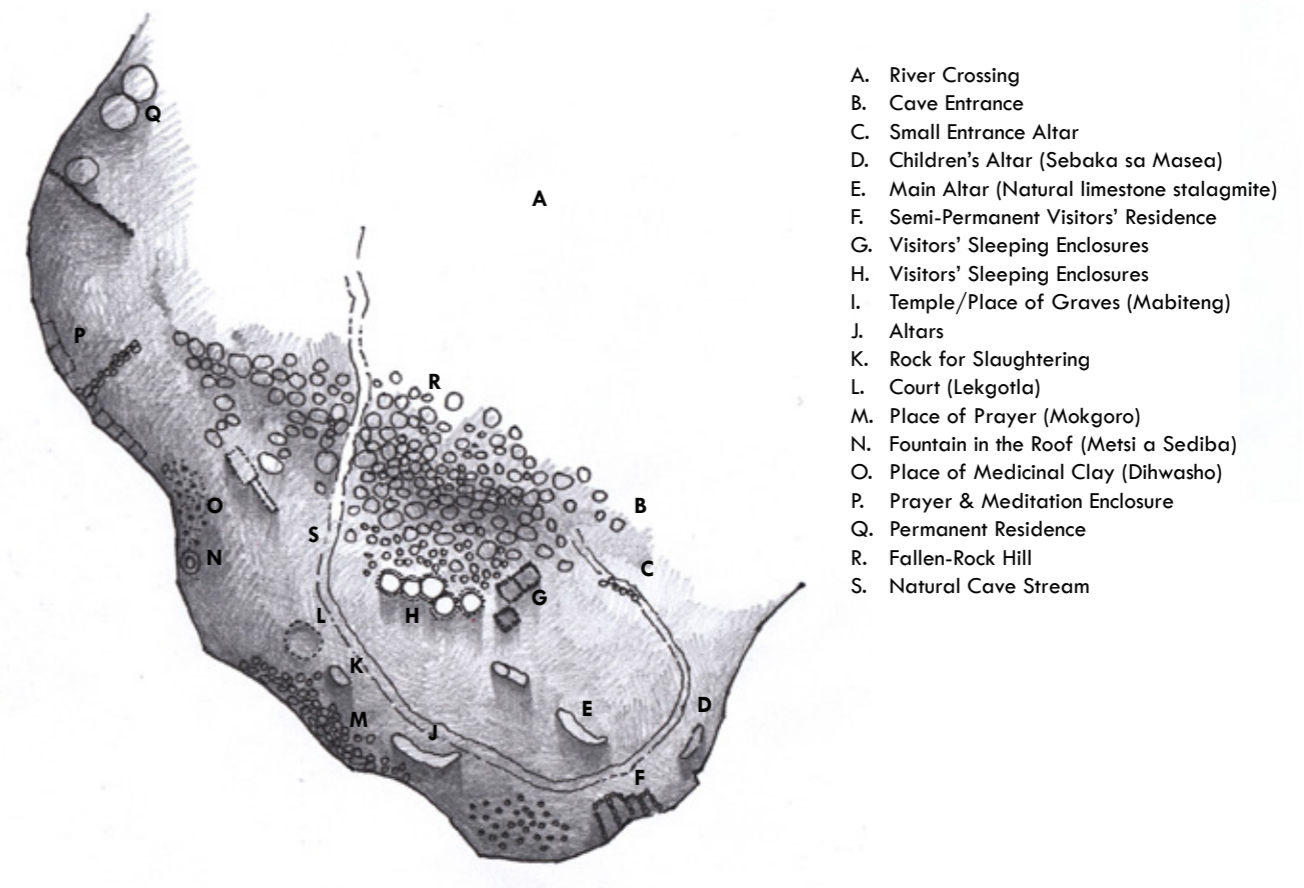
A. River Crossing
B. Cave Entrance
C. Small Entrance Altar
D. Children's Altar (Sebaka sa Masea)
E. Main Altar (Natural limestone stalagmite)
F. Semi-Permanent Visitors' Residence
G. Visitors' Sleeping Enclosures
H. Visitors' Sleeping Enclosures
I. Temple/Place of Graves (Mabiteng)
J. Altars
K. Rock for Slaughtering
L. Court (Lekgotla)
M. Place of Prayer (Mokgoro)
N. Fountain in the Roof (Metsi a Sediba)
O. Place of Medicinal Clay (Dihwasho)
P. Prayer & Meditation Enclosure
Q. Permanent Residence
R. Fallen-Rock Hill
S. Natural Cave Stream

Fig. 3.9: Plan of Motouleng Sacred Cave, developed from author's site-visit walkthrough (Ullrich 2020, and adapted from descriptions by du Plooy 2016)

Low walls demarcate
sacred space

Opening for users &
water stream - priority of
water rituals

Tunnel between structures - sacred
route & rite of passage

2 BOUNDARY

Fig. 3.11: Boundaries and thresholds (Ullrich 2020)

Crawling through
sacred tunnel space

Retaining wall regulating
entrance access

Crouching through
doorway - yielding to
sacred space

3 MOVEMENT

Fig. 3.10: Section of the tunnel space (Ullrich 2020)

Light refracted through smoke
and reflected off of ceiling

Natural boundary
to sacred cave

Crouched space of
inner-sanctum - most
sacred

Sgraffito / Names of
ancestors on walls

Staligmite
alter

Low wall
boundary

3 MOVEMENT

More public residence

Fig. 3.12: Section of the Motouleng
Sacred Cave (Ullrich 2020)

1 MEMORY

Fig. 3.13: Wall of Remembrance inside the Motouleng Cave Sanctum, Clarens, Free State (Mofokeng 1996)

Sgraffito, Wall of Names - names of deceased ancestors

Sacred inner-sanctum to communicate with deceased

2 BOUNDARY

Fig. 3.14: Prayers at the stalagmite altar (Ullrich 2020)

Stalagmite alter holds candles

Recess - envelop oneself in sacred site during prayer

AIC groups often wear traditional attire of specific church

Red material at entranceway - blood of Christ for Passover

Lower, less regulated threshold

Packed local limestone rubble - larger rubble at the base
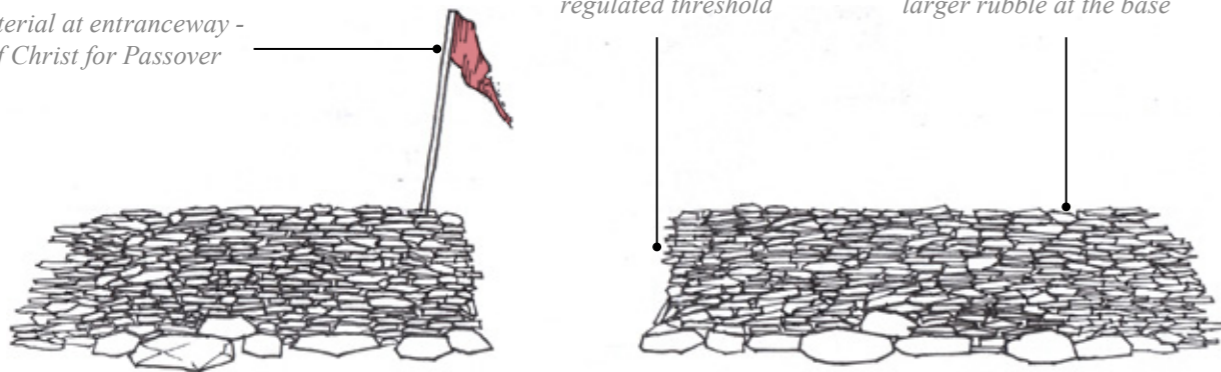
Fig. 3.15: Coursed ashlar stone wall (Ullrich 2020)

Requires crouching to enter - yield to sacrality

2 BOUNDARY
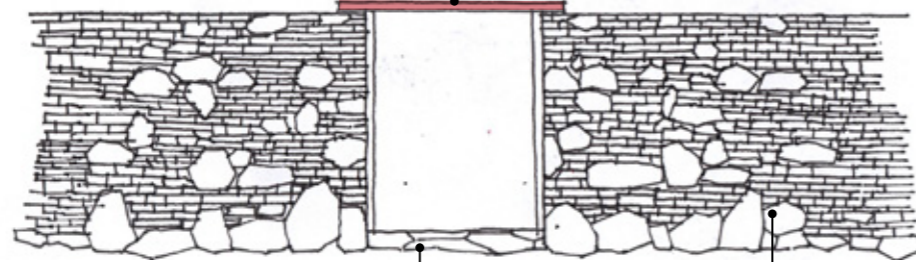
Fig. 3.16: Packed rubble stone wall (Ullrich 2020)

Paved interior - neat & well-maintained for ancestors

Random coursed ashlar limestone - more formal space

1 MEMORY

Fig. 3.17: Mthunzi and Miesie Making Supplications to the Ancestors inside the Motouleng Cave Sanctum (Mofokeng 1996)

3.4.3

INAGAWA CEMETERY
CHAPEL & VISITOR CENTRE

LOCATION:	PLANNER:	YEAR OPENED:	PROGRAMME:	VALUE TO RESEARCH:
Inagawa, Hyōgo Prefecture, Japan	David Chipperfield Architects	2008	Multi-faith funeral chapel, contemplative space, and meal area	Precedent for providing privacy within a public space

The chapel and visitor centre are placed at the base of the Inagawa Cemetery, which is terraced over the Hokusetsu Mountain Range (David Chipperfield Architects 2017). A flight of steps bisects the cemetery terraces, forming a direct axial link and counter-point between the visitor centre, and the shrine at the highest point. This axis provides a central reference point for visitors moving through the site.

Water as a design element is integrated into the architecture, and forms part of the ritual activities at the site. A rill carries water from the top of the mountain, directly down the centre of the axial staircase (David Chipperfield Architects 2017). As the water approaches the lower part of the staircase, it starts to pool and slow down. It is collected within a trough, and is channelled under the site to another trough at the entrance of the centre, and to the nearby canal. Water rituals are therefore inextricably linked to the central movement route, and enhance its function as a central, binding axis.

The centre's structure has a monolithic appearance, primarily due to the floors, walls, and roof being constructed from the same, thick, red-coloured concrete outer-shell. This sedentary appearance anchors the site within its surroundings, and provides a sense of solace for the bereaved. The furniture within the space, however, is not fixed, and can be re-arranged for particular occasions.

Initial entrance into the centre is marked by a wide, framed, threshold opening along the main movement axis (Fig. 3.24) – alluding to the centre's function as a threshold between the outer world, and the inner contemplative space. The rooms of the visitor centre open out onto the central courtyard, whilst the chapel is visibly secluded. The chapel is a quiet, unadorned room, offering a non-denominational contemplative space. Indirect sunlight is filtered into the space from the two enclosed garden courtyards that flank the chapel, and sunlight is rebounded off of the walls behind the alter (Fig. 3.21). The visitor is provided with visual and audible privacy, whilst focus is placed on the ceremony and the natural rhythms of fluctuating daylight and seasonal changes in the garden. The structure is able to filter out certain elements of the outside world without isolating the space from it.

The centre is placed under a single sloping roof, following the sightline from the entrance up towards the shrine. At the visitor centre, the more private, intimate rooms, for family commemoration ceremonies and memorials, are positioned at the lower-end of the roof. Where the roof is at its highest, a more informal, communal eating and resting space is located.
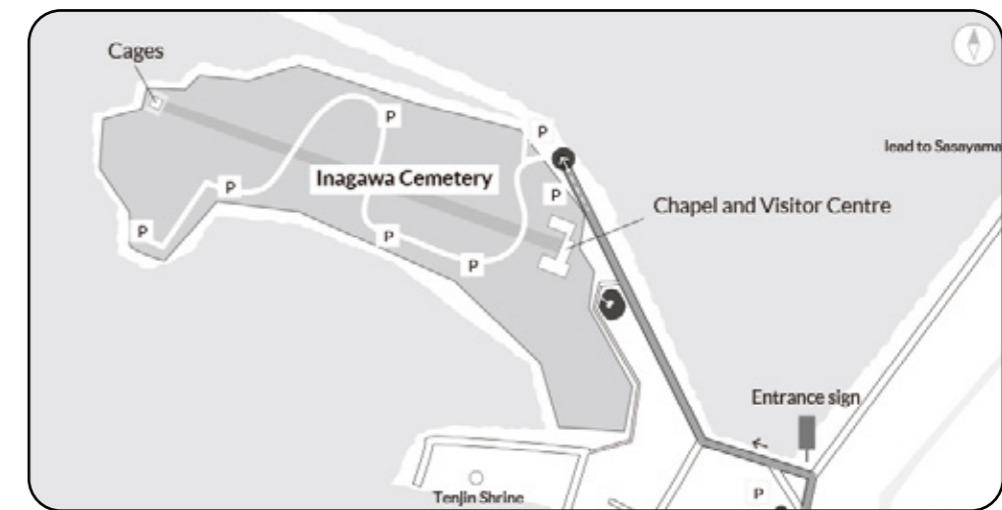
Fig. 3.18: Location of Chapel within the cemetery (Ullrich 2020)

Visual linkage - anchoring terminal structures of route
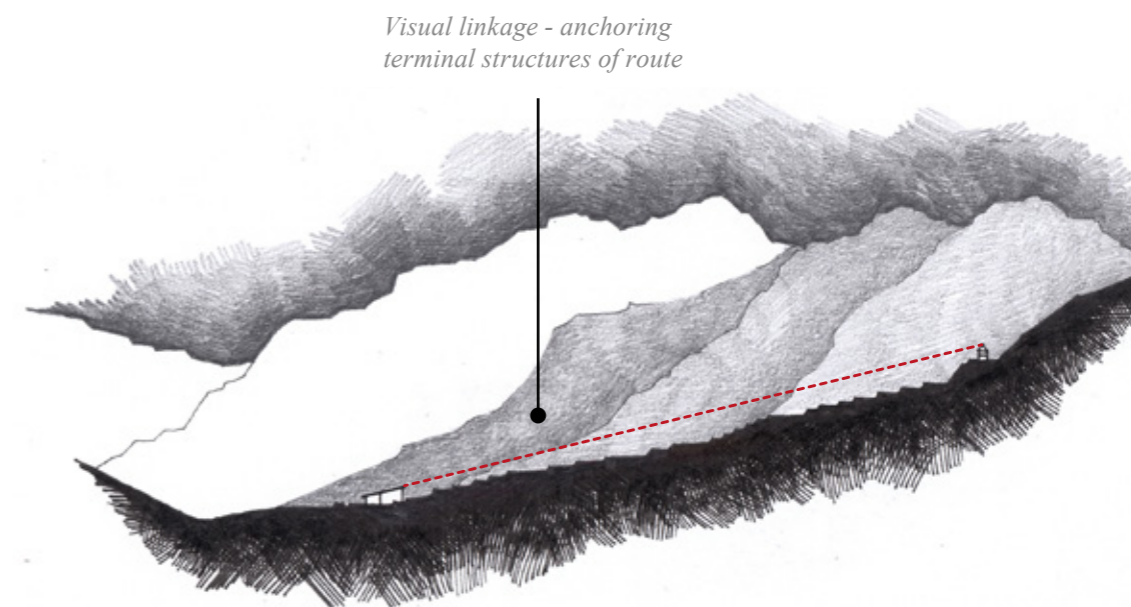
Fig. 3.19: Longitudinal elevation showing visual and physical connection between Centre and shrine (Ullrich 2020)

3 MOVEMENT
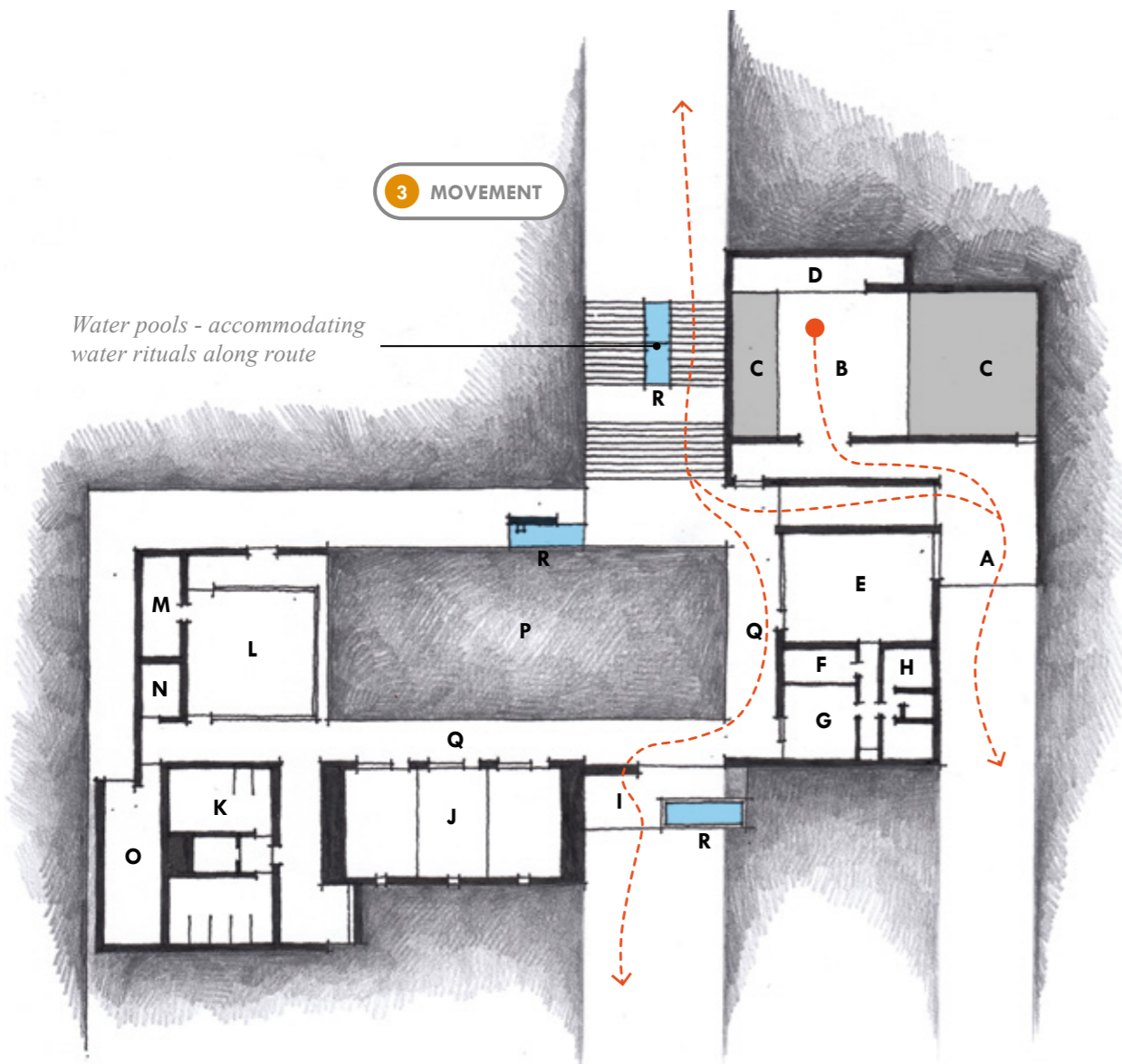
Water pools - accommodating water rituals along route

A. Entrance from car park
B. Chapel
C. Contained Tree Garden
D. Altar
E. Reception
F. Archive
G. Staff Room
H. Staff Changing Room
I. Entrance
J. Memorial Rooms
K. Visitor Lavatory
L. Visitor Lounge
M. Vending Machines
N. Pantry
O. Plant Area
P. Wildflower Garden
Q. Walkway
R. Water Point

Fig. 3.20: Labelled plan of Centre, indicating processional funeral routes (Ullrich 2020)

Water body at entrance threshold

Roof reciprocates sight-line of hill-top shrine

Filtered indirect sunlight - focus on internal space; light guides focus

2 BOUNDARY
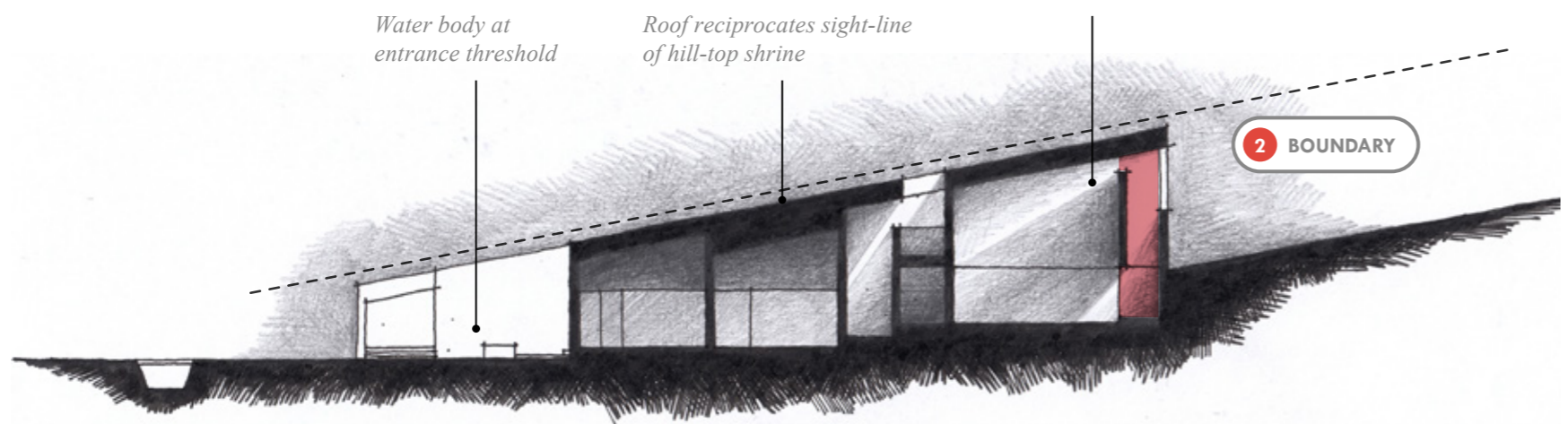
Fig. 3.22: Section through chapel and visitor centre (Ullrich 2020)

Contemplative space

Light opening & seating invites refuge
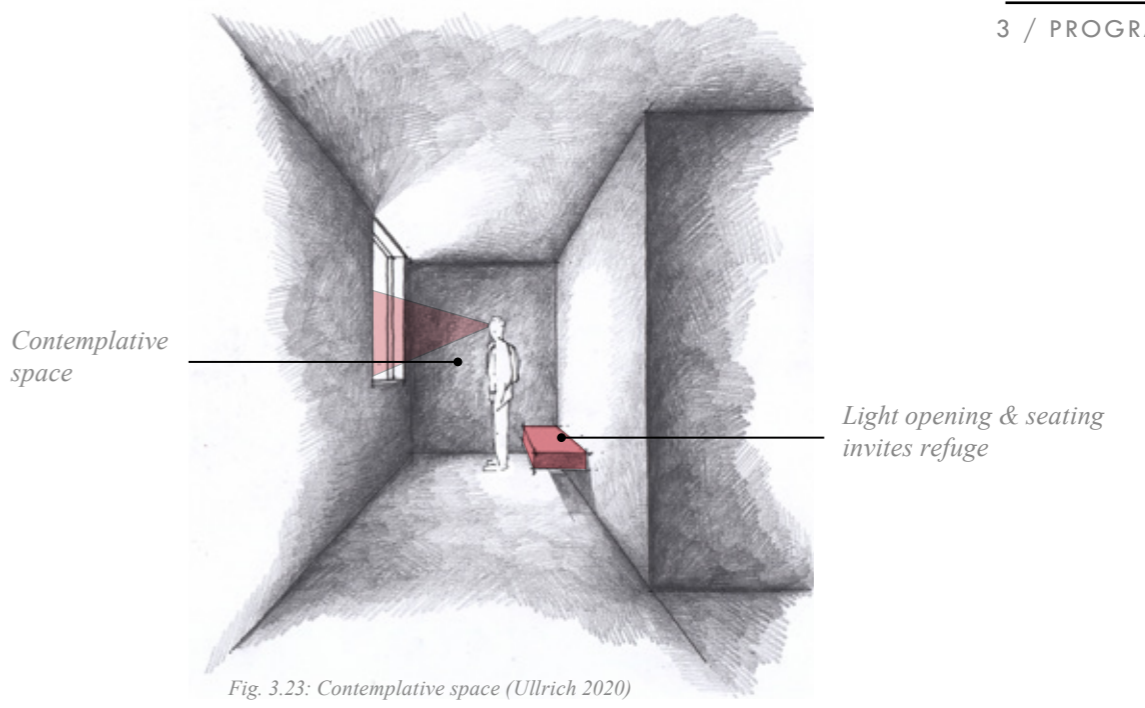
Fig. 3.23: Contemplative space (Ullrich 2020)

2 BOUNDARY

Walled gardens - indirect sunlight; maintaining focus on alter
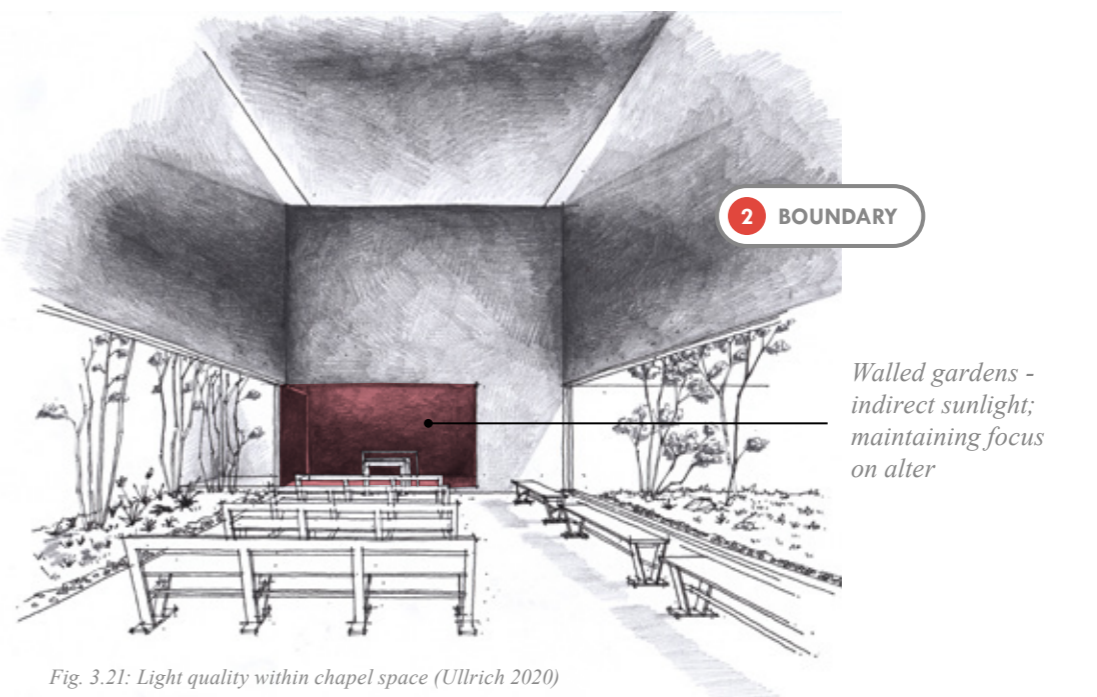
Fig. 3.21: Light quality within chapel space (Ullrich 2020)
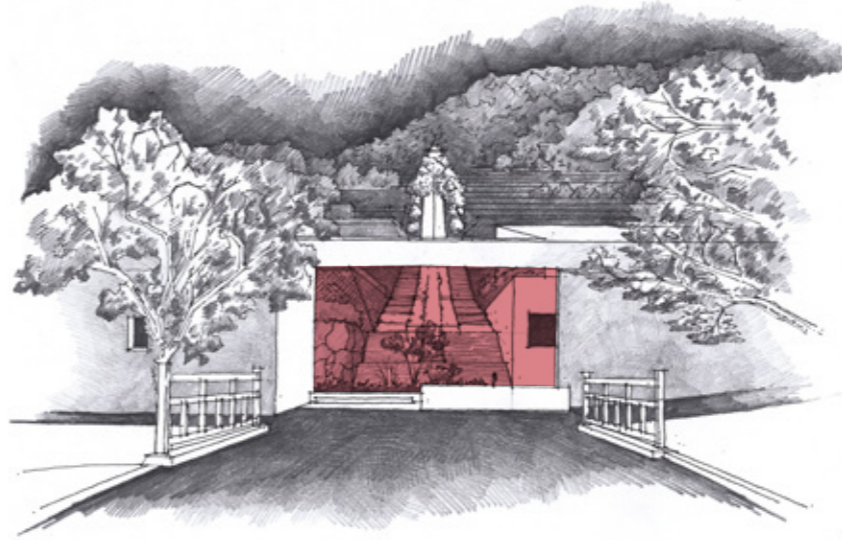
Fig. 3.24: Main entrance (Ullrich 2020)

3.5

DEVELOPING A BURIAL PROGRAMME
FOR PRETORIA'S INNER-CITY

It is evident that a universal death ritual for Pretoria would not be possible (Rugg 2016), as the city contains an array of diverse cultural and religious groups. It is important, however, for the dissertation's intervention to be inclusive of the death rituals and cultural groups within Pretoria, and representative of the principles of a Democratic South Africa.

The funerary and commemorative rites of the African-Initiated Church (AIC) group were chosen as a point of departure for the development of an inner-city burial programme. The AIC group is the largest Christian group within Pretoria, and the largest religious group in South Africa (Statistics South Africa 2016: 16–17). The group was chosen due to its large presence within the city, and due to the inner-city being unable to accommodate for the fulfilment of the AIC death rituals, as the group has a preference for in-ground burial (Elion & Strieman 2002: 47).

By identifying the death-ritual activities of the AIC group, and the corresponding spacial requirements of those activities, a core burial programme for the AIC group could be schematically represented on a diagram. Using the same process, the ritual and spatial requirements of other prominent groups within Pretoria were schematically drawn adjacent to the AIC programme. From this diagram, shared ritual spaces could be identified, as well as where the AIC ritual deviated from other burial practice (Fig. 3.28). Where deviations occurred, it was further explored whether other shared

spaces, not part of the AIC eschatology, could be introduced, in order to accommodate other groups' death rituals. It is important to note that agnostics, and individuals who do not ascribe to a religious belief system, are the second highest group within Pretoria (Statistics South Africa 2016: 16–17). Despite not having an ascribed religious death eschatology, the individuals of this group may form part of a cultural group who partake in certain funerary customs. In order for shared spaces to be inclusive for a multitude of cultural practices, the design must encourage a non-prescriptive interpretation of space, which promotes a multiplicity of experiences for the user (Porter 2004: 107; Zumthor 1999: 28).

These shared spaces could accommodate similar burial activities, whilst still accommodating their nuanced variations in practice. Some of these shared spaces included the burial area, congregational ceremonial spaces, vigil spaces, mortuaries, meal areas, private mourning spaces, and 'cleansing' spaces.

The more particular practices of the AIC funerary ritual require particular spaces, with few other groups sharing these spaces for similar activities. These ritual activities include the ritual animal slaughter – undertaken during a vigil, funeral, and a 'home-bringing' service (ukukuzwa) (Oosthuizen 1990: 469) – the cleansing process after this slaughter, and the evening vigil ceremony. The slaughtering process, for example, may not be favoured by other cultural groups, or even individuals within the AIC group (Ngubane

2012: 92), and it is therefore important that these rituals and spaces deviate from the main burial route. The intervention incorporates the design principle of 'choice' (When Families Grieve Team 2010: 15) – always providing an individual with the choice to participate in activities or a certain burial process.

76%
OF SOUTH AFRICANS ARE CHRISTIAN

Fig. 3.25: Pie chart indicating the proportion of followers for different religious groups within South Africa (Ullrich 2020)

29%
OF CHRISTIANS BELONG TO THE
AFRICAN-INITIATED CHURCH GROUP

Fig. 3.26: Pie chart indicating the proportion of followers for different Christian groups within South Africa (Ullrich 2020)

3.6

AIC BURIAL NARRATIVE

1 · Visitations

- Family, friends, and burial society members attend ceremony
- Contributions to family donation
- Evening prayer sessions until date of funeral
- Emphasis on communal sharing of grief

2 · Mortuary

- AICs usually allow for the embalming process, organ donations, and the storing of the deceased at the mortuary until the date of the funeral
- The deceased's body is usually stored for a period of about 7 to 14 days until the funeral

3 · Night Vigil

- Night vigil called the umlindelo or moletelo
- Usually occurs at household of bereaved for the entire night
- Prayers, preaching, singing, and condolences are made
- AIC minister and members may lead proceedings
- Slaughtering of a white goat during the evening

4 · Procession to Burial Site

- Traditionally occurs on a Saturday morning before the sun rises
- Procession to grave site follows an undulating route, with thorned branches placed on the route, in order to prevent bad spirits from following the procession

5 · Rite of Committal

- Traditionally occurs on a Saturday morning before the sun rises
- AICs use a coffin; traditionally the hide of an animal (uhlenka) is used
- Grave-side singing and prayers
- Preference for in-ground burial
- Portion of grave soil collected in bottle

10 · Home-Bringing

- Short ceremony of condolence marks the end of this period - ukukuzwa
- Traditionally a grave-visit takes place, prayers are made, and the deceased's spirit returns home with them
- The 'end of mourning' rituals are a symbolic reintegration of the family back into the community after the turmoil of death

9 · Mourning Period

- A month of mourning is observed
- Fasting is observed
- Jovial behaviour is restrained

8 · Funeral Meal

- The sacrificed animal forms part of the meal
- Usually lasts the remainder of the day
- The meal is jovial and celebratory in remembering the life of the deceased

7 · Cleansing

- Washing of hands after burial in order to cleanse oneself with the 'impurity' of the corpse and the grave
- Some traditions require cow dung mixed with water; or pieces of aloe within the water
- Blood, animal's bile, mthelezi leaves, and water, used to clean shovels used for ground-burial

6 · Sacrifice

- Slaughtering of animal, ideally an ox or cow
- Forms part of the post-funeral reception meal

Fig. 3.27: African-Initiated Church burial ritual process narrative (Ullrich 2020)

RELIGIOUS SPACES WITHIN PRETORIA CENTRAL

Fig. 3.28: Spaces within Pretoria Central dedicated to religious activities (Ullrich 2020)

DUTCH REFORMED CHURCH
ANGLICAN CHURCH
CATHOLIC CHURCH
METHODIST CHURCH
PRESBYTERIAN CHURCH
ORTHODOX CHURCH
JEWISH SYNAGOGUE
ISLAMIC MOSQUE
HINDU TEMPLE

500m

N
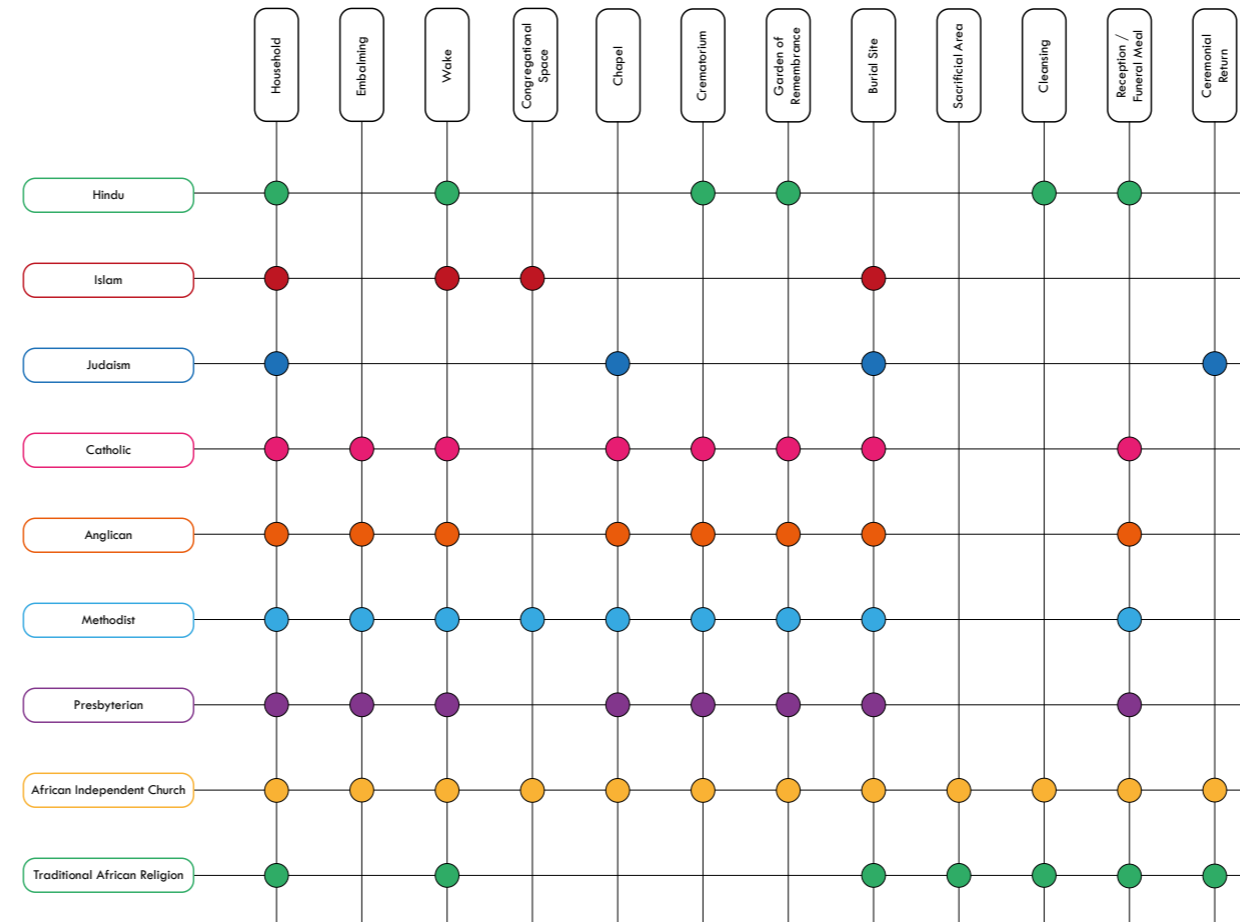
BURIAL RITUAL SPACES

Fig. 3.29: Matrix of burial spaces utilised for predominant cultural and religious burial rituals within Pretoria (Ullrich 2020)

Majority of groups do not partake in sacrificial process
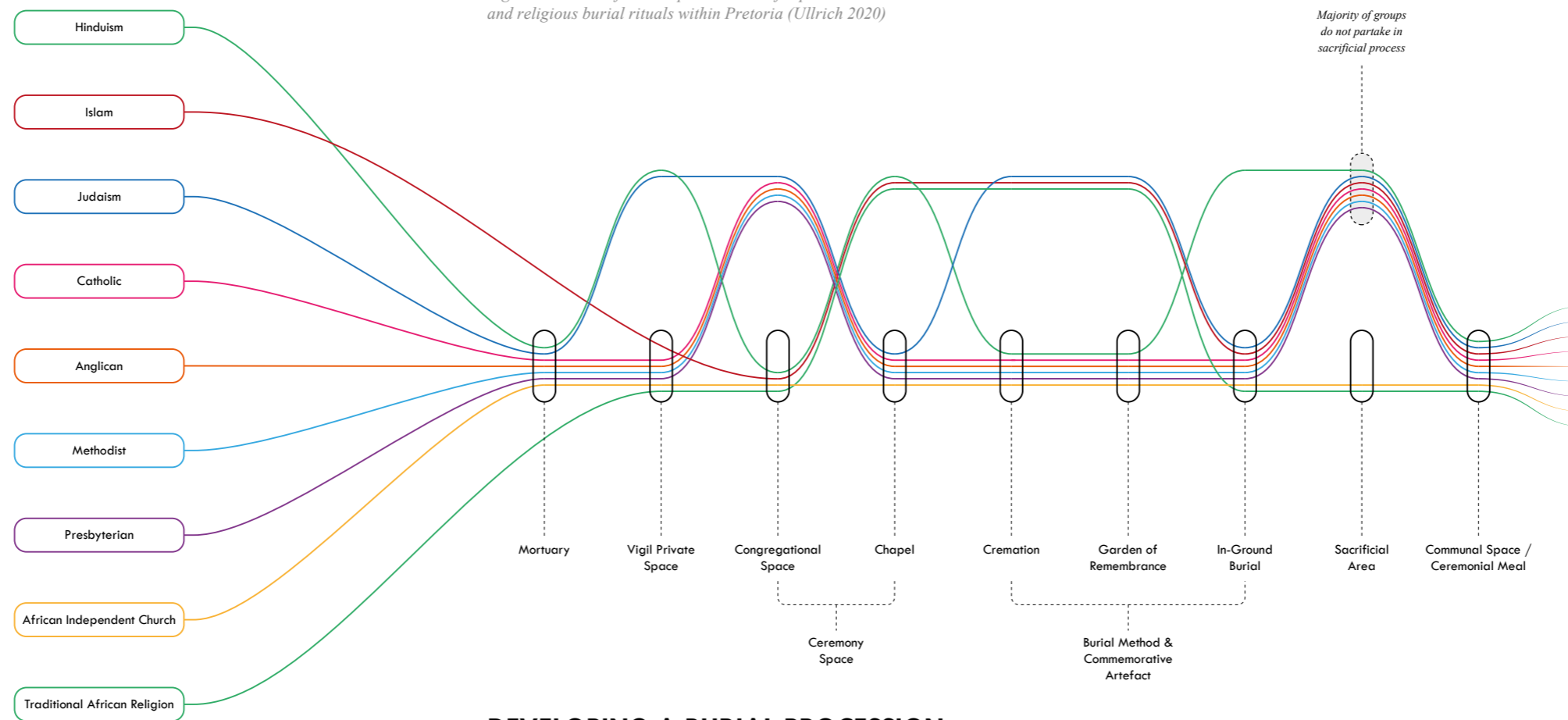
DEVELOPING A BURIAL PROCESSION

Fig. 3.30: Developing an accommodating core burial ritual programme (Ullrich 2020)

3.7

BURIAL SOCIETY

Community burial societies are organisations which provide assistance and financial support for the deceased's family. Within South Africa, there is estimated to be a few thousand burial societies, with a total membership of six million members as of 2010 (Semenya 2013: 2; Oosthuizen 1990: 464). Within the challenging socio-economic conditions that a majority of South Africans find themselves in, burial societies provide much-needed security, and alleviate the organisational and financial burden caused by the requirements of an African funeral ceremony (Oosthuizen 1990: 471). Emphasis is placed on the communal sharing of the burden of grief, and mutual assistance in organising the funeral proceedings according to cultural demands (Oosthuizen 2000: 468). Ecumenical burial societies have the ability of transgressing denominational and ecclesiastical barriers. The societies are formed from members of mainline churches, African-Initiated Churches, and the African Traditional Religions.

A range of burial societies exist within South Africa, with some societies (or specific individuals within a society) having the responsibility of providing for a specific aspect of the funerary process: the coffin, animal-provision, drinks, grocery, and cooking societies are the most common (Semenya 2013: 2). Membership to these societies is usually secured by a monthly contribution to the society, attendance of funerals and meetings, and the completion of delegated responsibilities. Funeral services are usually arranged for Saturdays, and meetings are usually scheduled for Sundays (Semenya 2013: 3).

Due to the success of traditional burial societies within communities, models for funerary aid support have been 'formalised' by the financial and insurance market sectors. However, it is evident that there is still a large preference for traditional burial societies, as these formalised businesses have been critiqued for their lack of understanding of the complex functions of the informal burial societies (Semenya 2013: 2). Within Tshwane, other burial societies for non-ecumenical groups exist, fulfilling a similar function within these cultural communities, such as the Tshwane Central Muslim Burial Society and the Jewish Chevra Kadisha Pretoria Society. For this dissertation, burial societies can be recognised as having a communal significance of high-value within Pretoria. In order to promote cross-cultural inclusion, the intervention's programme will accommodate the burial societies' funerary events.
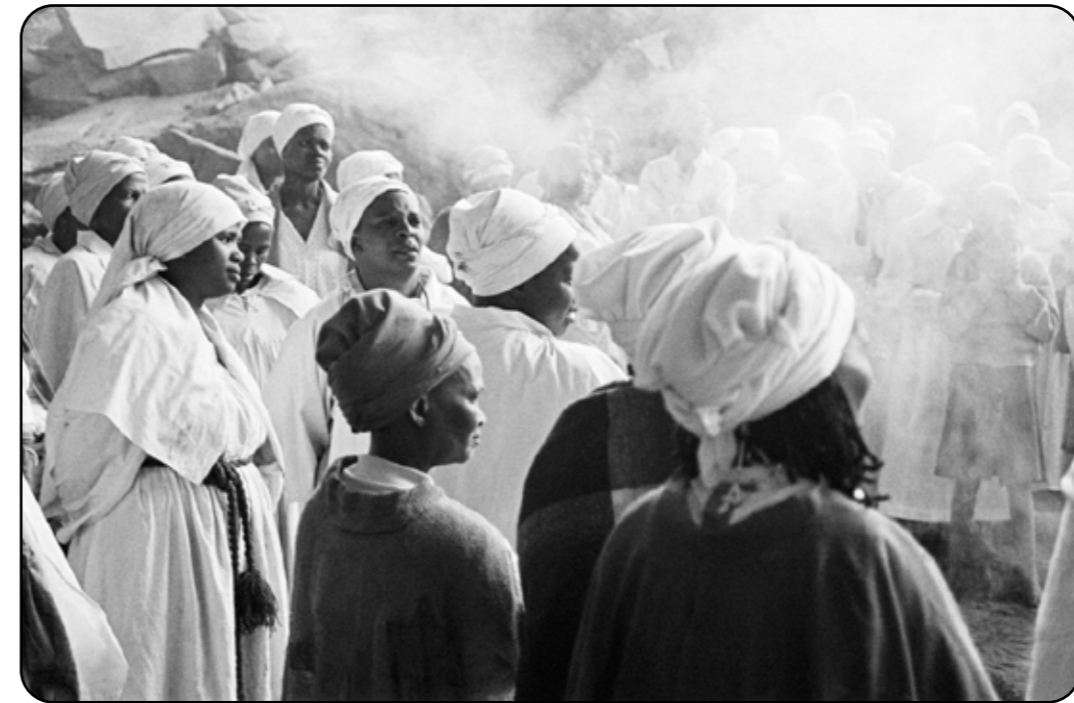
Top to bottom:

Fig. 3.33: Easter Church Service at the Motouleng Sacred Caves, Clarens, Free State (Mofokeng 1996)

Fig. 3.31: A tent structure for an African-Initiated Church, opposite the entrance to the Pretoria West Crematorium (Ullrich 2020)

Fig. 3.32: Inside the Jesus Can Life Centre Ministries AIC tent structure (Ullrich 2020)

3.8

SITE USERS

In accordance with the municipal by-laws for burial spaces (2015b) and Section 9 of Equality of the Bill of Rights (The Department of Justice and Constitutional Development 1996, chap. 2), the space will be publicly available to all individuals, and will not be restricted to any particular religious, ethnic, or cultural group, nor the burial of certain groups. The design will account for the municipality's responsibility in respectfully burying the remains of destitute individuals who have died within the area of jurisdiction of the Municipality (City of Tshwane 2015b, chap. 6). To inform the design process, the research has identified the primary users that the intervention will cater for. These user groups using the site could be understood as being either mourners, general citizens using the site as a public space, or travellers.

Mourning

The Funeral-Attendee — Participating in the burial process

The Returner — Returning to burial site for ceremony / To pay respects to deceased individual

Citizens

The Recreational User — Utilising park activities for leisure activities

The Solace Seeker — Seeking consolation or comfort in times of distress / Seeking a quiet, peaceful space amidst busy city environment

The Child — Attending a funeral with parents / Utilising park space for recreational use

The Elder — Participating in the burial process / Burial route as contemplative exercise route / Communal space for social interaction

The Homeless — A safe and public space for shelter and refuge / Utilising the park facilities for leisure

Travellers

The Daily Commuter — An interim space of rest between modes of transport / An alternative, pleasurable through-route

The Tourist / Migrant — Opportunity to learn about local cultural heritage and societal values

Fig. 3.34: Intervention's targeted site users (Ullrich 2020)
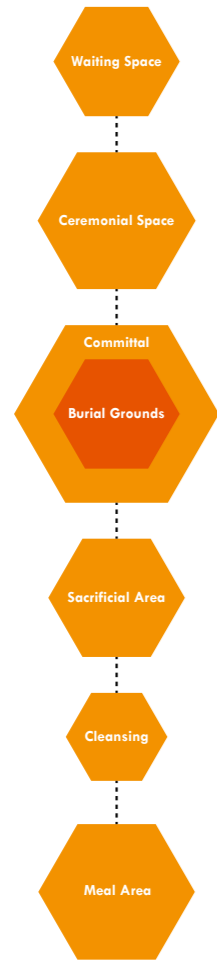
STEP 1:
CORE BURIAL
PROGRAMME

Fig. 3.35: Step 1: Core burial activities (Ullrich 2020)
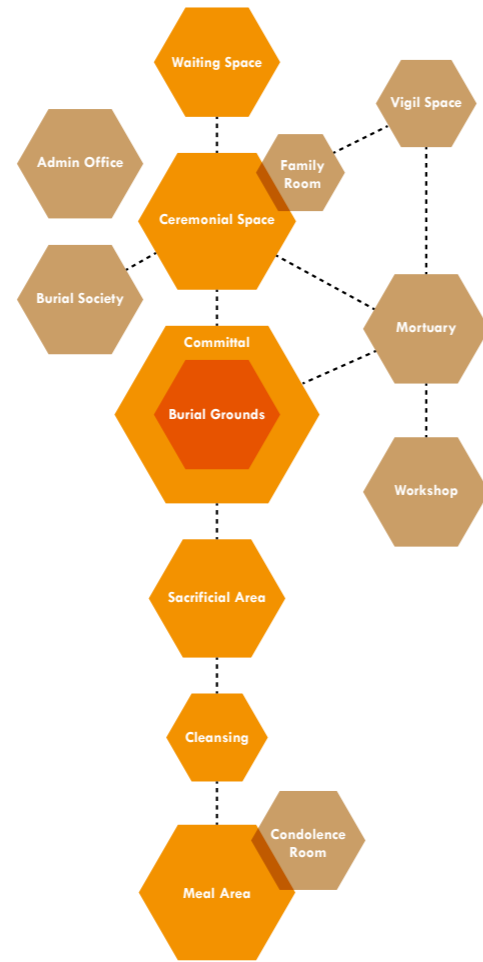
STEP 2:
ADDITION OF SUPPORTING
ACTIVITIES

Fig. 3.36: Step 2: Addition of supporting activities (Ullrich 2020)
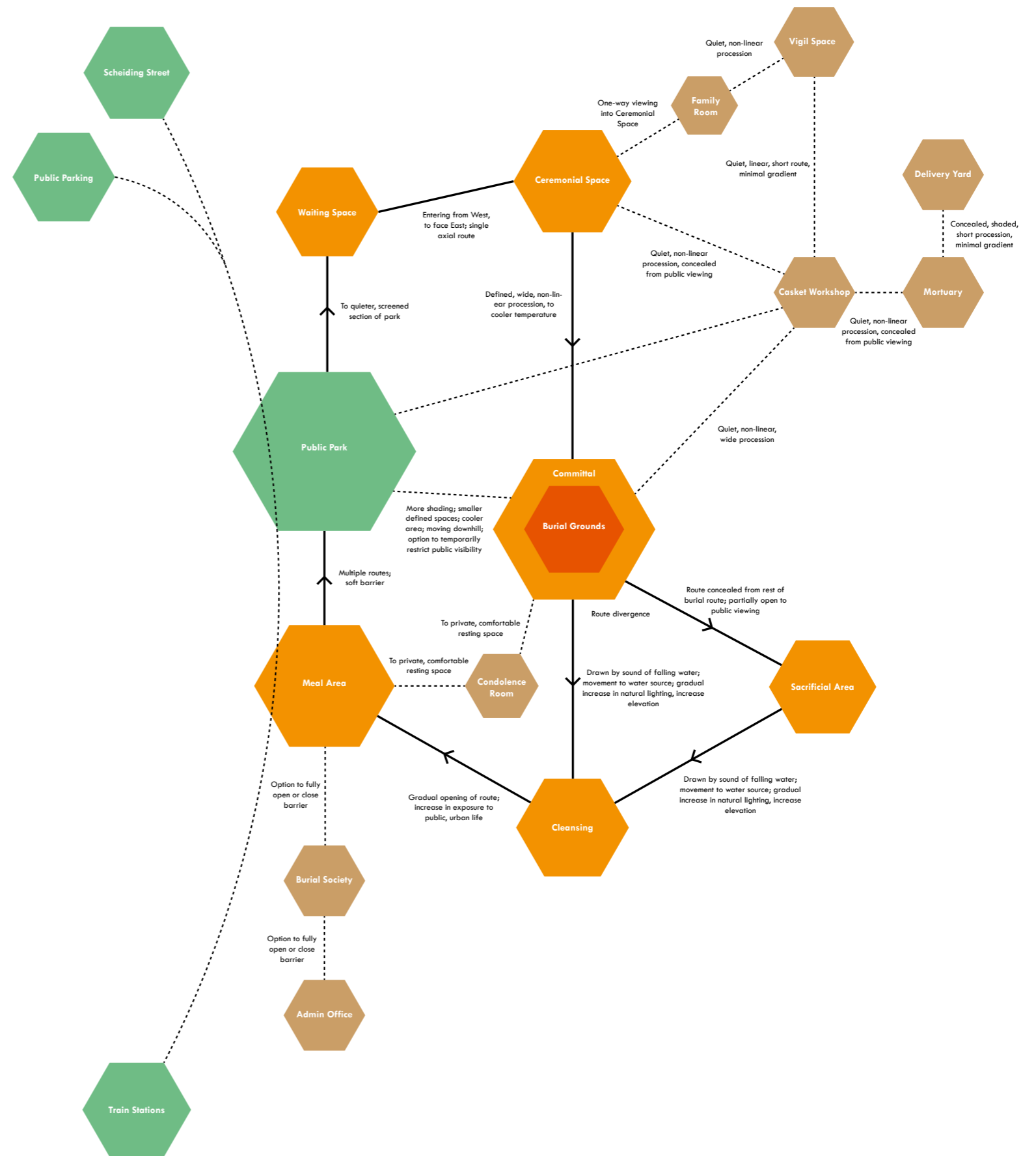
STEP 3:
CONTEXTUAL NETWORK

Fig. 3.37: Step 3: Contextual network of activities (Ullrich 2020)

MORNING TO EVENING

EVENING TO MORNING
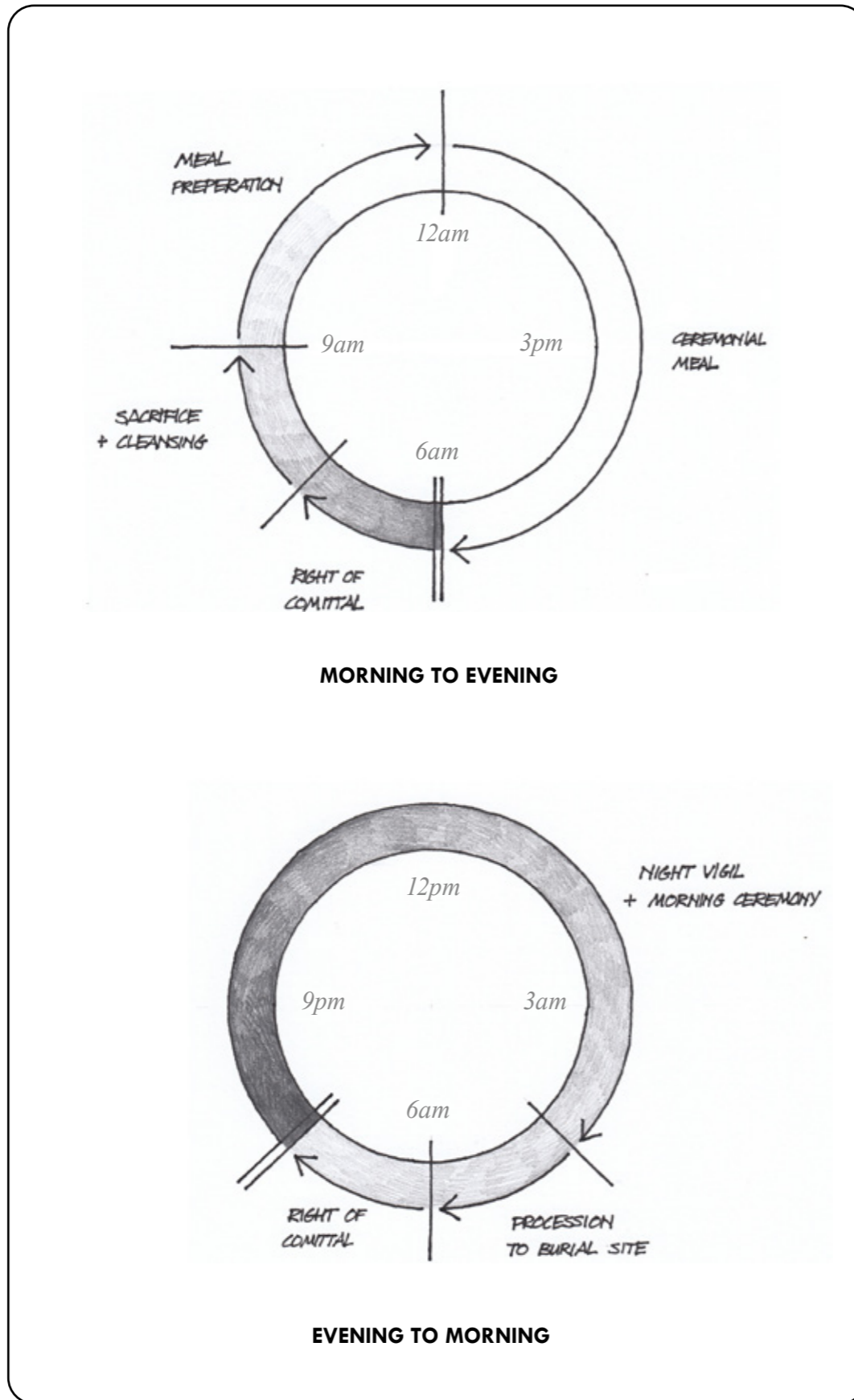
HOURLY RITUALS AT SITE

*Fig. 3.38: Hourly programme for AIC
funeral ceremony (Ullrich 2020)*
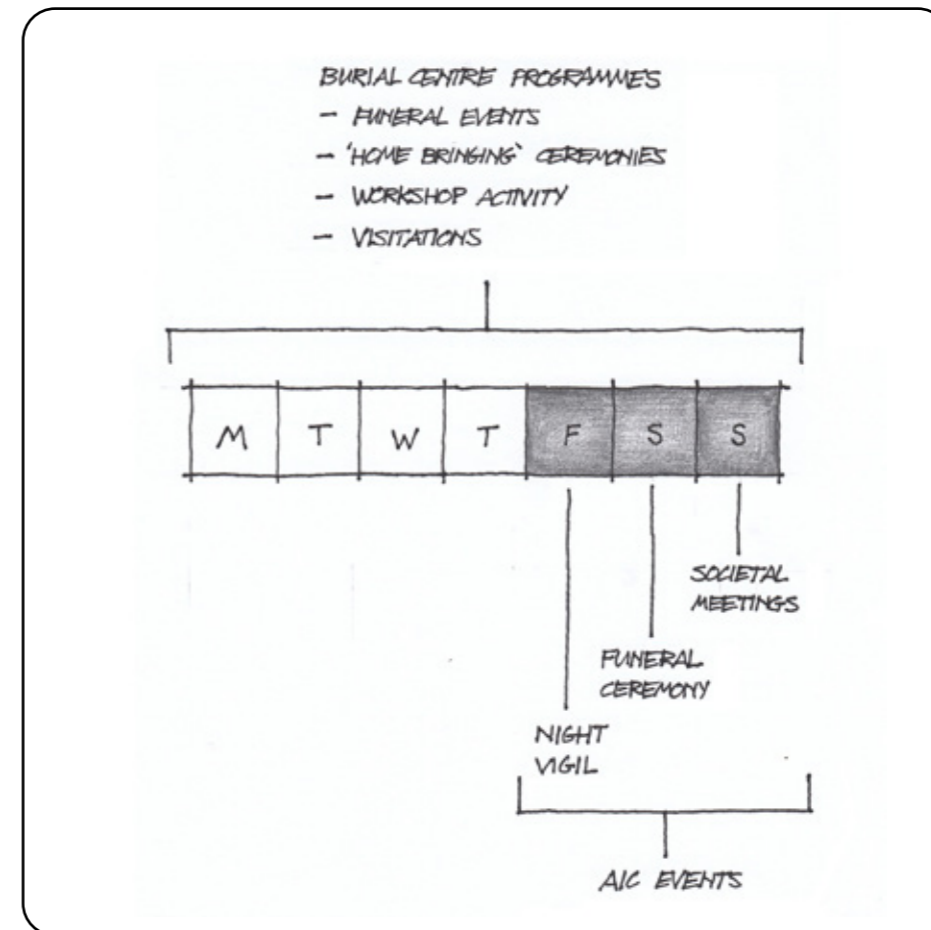
DAILY ACTIVITIES AT SITE

*Fig. 3.39: Week timetable for Burial
Centre (Ullrich 2020)*

3.9

ACCOMMODATION SCHEDULE

CORE BURIAL RITUAL PROGRAMME

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
Private Vigil Space		Night vigil ceremony; family room		Enclosed quiet space; soft natural lighting; privacy; controlled ventilation	General interior 150 min. lx, 25 max. UGR, 80 min. Ra		30	2	30	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The staff member
Mortuary	Examination and post-mortem area	Hygienic storage of deceased and preparation for burial ceremony		Easy to clean, well-lit environment	- Preparation room for human remains - Facility for the washing and cleansing of equipment inside the building - Facilities for the loading and unloading of human remains - Room for back-up batteries in the case of power failure - Concealed space to prevent outside persons from seeing into the space (DOH, 2013:16) - Vapours and obnoxious odours to be adequately removed from the space - 500 min. lx.; 19 max. UGR; 90 min. Ra for room (SANS 10411-1) - 5000 min. lx.; 19 max. UGR; 90 min. Ra for dissection and examination tables (SANS 10411-1) - Greater than 16m² for first examination table, and 8m² for each additional table - At least one wash basin for each table - Flexible hose able to reach all corners of the room - Temperature in mortuary between 2 - 12°C, controlled and maintained by HVAC system - Floors must have an impervious, smooth, and easy to clean finished surface	DOH 2013 SANS 10411-1	40	1	40	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member
	Refrigeration cells	Refrigeration facility for individual body storage		-	- Usual area dimension of Refrigeration cell: 2200 x 3500mm - Temperature in mortuary between 2 - 12°C - Controlled and maintained by HVAC system		7.7	16	123	-
Ceremony Area	Waiting Area	Prior to entering ceremonial commemoration space		External and enclosed space; semi-shaded; loud space	-		30	1	30	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder
	Ceremonial Commemorative Space	Prayer; congregational commemoration; singing; eulogies; sermons		Controlled sound, lighting, and ventilation	General interior 150 min. lx, 25 max. UGR, 80 min. Ra Chancel, choir, lectern area: 200 min. lx, 22 max. UGR, 80 min. Ra 100 seats and 100 standing places		190	1	190	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member The Homeless
	Private Family Room	Enclosed space for family members within the ceremony space; privacy from congregation, but able to view casket and be a part of the ceremonial process		Quiet; warm; soft lighting; private space	Provides visability of the casket and funeral proceedings from within the space, but provides minimal visibility into the Family Room from the congregation area		20	1	20	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder
	Condolence Room	An annexed area to the burial space and meal area for grieving and for private words of condolence to the bereaved family		Quiet; warm; soft lighting; private space	Minimal visibility into the space from outside		20	1	20	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder
Burial Space (Recomposition Process)		Area of soil for excavation and interment; soil composition accelerates the decomposition process; able to remove bone remains without the appearance off 'digging up' the topsoil		External space; natural shading; natural materiality;	18 670 deaths in Tshwane in 2016 17% increase in mortality rate between 2010 and 2060 32 970 (2011 Pretoria Central) x 9.3 deaths/1,000 population (2018 est.) = 307 deaths per year If 307/12 = 26 deaths per month. Complete decomposition within 2 months. 26 x 2 = 52 gravesites to accommodate Pretoria Central. Intervention can accommodate 1/2 of Pretoria Central monthly deaths, with ability to expand to demand	City of Tshwane Cemetery and Crematorium By-Laws (2015)	3.75	55	206	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member
Garden of Remembrance	Wall of Remembrance	Sacred space to accommodate the bereaved and individuals seeking solace; accommodate the commemoration of the deceased as a collective and as individuals; accommodate the placement of grave headstones and stone mementos (notion of traditional Isivivane Wall)		External space; natural shading; natural materiality with vegetation; quiet; private space for small groups or individuals; sacred space; cool temperature	Placement for stone mementos & grave headstones: 307 x 20 years = 6140 stones 6140 x 0.04 m² (200mm dia. stone) = 245.6 m² wall area	City of Tshwane Cemetery and Crematorium By-Laws (2015)	-	-	246	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member The Daily Commuter The Tourist/Migrant

● MORE PUBLIC
● MODERATE
● MORE PRIVATE

Fig. 3.40: Accommodation schedule for core burial programme, supporting programmes, and temporal programmes (Ullrich 2020)

CORE BURIAL RITUAL PROGRAMME

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
	Healing & Izintelezi Garden	Portion of garden dedicated to the growing and picking of plants for spiritual protection and burial ritual ceremonies		Portions of garden to be partially shaded; comfortable resting space; various fragrances as one moves through the garden	Planting Strategy to determine the contextual and burial ritual value of existing and intervention plant groups		1495	1	1495	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
Sacrificial Space		Sanitary space with drainage and water supply for ritual slaughtering		Focus on centre of space; hygienic; cool area; privacy for large congregation groups	Sacrificial area: 150 min. lx, 25 max. UGR, 60 min. Ra / Bleeding area: 200 min. 25 max. UGR, 60 min. Ra / IP protection for lighting / Adequate drainage and water hose for washing area after slaughter; materials easy to clean		80	1	80	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder
Ceremonial Washing Area		Washing with water (in the presence of aloes) after slaughtering ritual; prior to social gathering and meal		External space; tranquil; hygienic; natural materiality; warm space	Water purification system; pump for water circulation; material finish easy to clean; adequate seating for rest and drying after cleansing process		100	1	100	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder
Meal Area	External seating	Final resting space for the burial procession; accommodates seating for the ceremonial meal and space for dancing and group singing		External space; warm; partially shaded; even, hard walking surface; easy to hear individuals within space	Moveable seating and tables for 100 individuals; even, hard, non-slip flooring adequate for dancing		150	1	150	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
	Internal seating	Final resting space for the burial procession; accommodates seating for the ceremonial meal and space for dancing and group singing		Internal space, openable to outside to merge with outdoor seating; warm; shaded; even, hard walking surface; easy to hear individuals within space	Multi-purpose hall area: 300 min. lx, 22 max. UGR, 80 min. Ra / Moveable seating and tables for 100 individuals; even, hard, non-slip flooring adequate for dancing		150	1	150	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
	Braai Area	Space for the traditional place-making activities of barbequing and group socialising around a central fire pit		External space; hygienic; warm; smell of food; comfortable seating; partially shaded area; easy to hear individuals within space	Space for food preparation, temporary storage of food and cooking equipment, fire pit; fire grill; wash trough sink with water outlet; 9 kg DCP fire extinguisher; semi-circular seating around central fire pit for clear visibility of individuals within group; clear open area above fire pit for adequate ventilation		20	3	40	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Recreational User
	Meat Preparation Room	After the sacrificial slaughter, the animal can be prepared for cooking within the room; close to the cooking area and separated from fish preparation		Functional, hygienic, cold space; well-lit	300 min. 25 max. UGR, 80 min. Ra / Finished surfaces easy to clean, non-corrosive surfaces to SAHPRA standards; / In compliance with Certificate of Acceptability of Food Premises and Health Inspection by local authority	SAHPRA	10	1	10	The Staff Member
	General Cold Preparation Kitchen	Preparation of cold foods for serving or cooking; organic off-cuts and waste is disposed of at the Composting Yard		Functional, hygienic, temperate space; well-lit	In compliance with Certificate of Acceptability of Food Premises and Health Inspection by local authority	SAHPRA	40	1	40	The Staff Member
	Hot Preparation Kitchen	Preparation of foods that require heating and cooking		Functional, hygienic, warm space; well-lit	500 min. lx, 22 max. UGR, 80 min. Ra / Mechanical extractor canopy system for air extraction out of exhaust stack; 3 x commercial gas hob and oven units with fixtures in compliance with SANS 10087-1:2013 for a Certificate of Conformity; mechanical HVAC system for automatic humidity and temperature control; 2 x 9 kg water mist fire extinguisher for electrical and chemical induced fires in compliance with SANS 10400-T:2011.	SANS 10087-1 SANS 10400-T	40	1	40	The Staff Member
	Cold room	Storage and access of food products that require storage below room temperature (20° C) or require freezing (0°C)		Functional, hygienic, cold space, easy to navigate and identify products	200 min. lx, 22 max. UGR, 80 min. Ra / Non-corrosive surfaces to SAHPRA standards; mechanical HVAC system for automatic humidity and temperature control / Cold room to provide enclosed areas below room temperature (20°C) or require freezing (0°C) / Reliance on geothermal cooling system for cooling of room	SANS 1385	8	1	8	The Staff Member

🔴 MORE PUBLIC
🟡 MODERATE
🔵 MORE PRIVATE

Fig. 3.40: Accommodation schedule for core burial programme, supporting programmes, and temporal programmes (Ullrich 2020)

CORE BURIAL RITUAL PROGRAMME

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
	Dry-Food Storage	Storage and access to shelf-stable foods		Functional, hygienic, cool space, easy to navigate and identify products	200 min. lx, 22 max. UGR, 80 min. Ra. Enclosed, dry room, cooled to ±10°C; located on southern side of building for minimal exposure to sunlight; adequate shelving; surface finishes easy to clean	SANS 1385	8	1	8	The Staff Member
	Scullery	Washing, cleaning, and drying of kitchen crockery, cutlery, and equipment		Functional, hygienic, well-lit space	300 min. lx, 22 max. UGR, 80 min. Ra	SANS 1385	20	1	20	The Staff Member
	Cleaning equipment storage	Storage and easy access to cleaning equipment and chemicals		Functional, enclosed; hygienic space	Adequate shelving; located close to scullery; 2 x 9 kg water mist fire extinguisher for electrical and chemical induced fires in compliance with SANS 10400-T:2011.	SANS 10400-T	2	1	2	The Staff Member
	Head Chef's Office	Administrative duties of Head Chef		Transparent barrier between kitchen and office; hygienic; well-lit room	200 min. lx, 22 max. UGR, 80 min. Ra. Enclosed room; transparent barrier between kitchen and office; hygienic; access to outside;		10	1	10	The Staff Member
	Bar counter & Barista Preparation Area	Preparation of cold and hot beverages.		Functional, hygienic, well-lit space	300 min. lx, 22 max. UGR, 80 min. Ra		10	1	10	The Staff Member
	Bar Drinks Storage	Storage and access to cold-drinks and alcoholic beverages		Secure, enclosed, cool space	300 min. lx, 22 max. UGR, 80 min. Ra. Enclosed room; securable entry; adequate shelving for storage; cooling fridge	SANS 1385	20	1	20	The Staff Member
	LPG Enclosure	Easy access to the storage and maintenance of gas bottles and fixtures		Functional; clean space	In compliance with SANS 10087-1:2013 for a Certificate of Conformity.	SANS 10087-1	3	1	3	The Staff Member
	Staff Locker Rooms	Storage of personal belongings for staff personnel		Functional; privacy from external view	200 min. lx, 25 max. UGR, 80 min. Ra. Lockable storage units for staff personnel		4	1	4	The Staff Member
	Public Ablutions	Public water closets and ablution facilities		Hygienic space; enclosed; privacy from external view	200 min. lx, 25 max. UGR, 80 min. Ra. Surfaces easy to clean. Calculations for highest sanitary requirements according to SANS 10400-P: Public Ablutions for northern buildings. Staff use: 30 staff members on site. Public use: Estimated peak visitors at 400 (200 park visitors and 200 congregational users) Total of 430 people, with 215 people per gender. Male = 2 WCs, 4 URs, 2 HWB; Female = 4 WCs, 4 HWBs. Unisex Wheelchair Accessible = 1 WC, 1 HWB.	SANS 10400-P SANS 10400-S	90	1	90	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member The Daily Commuter The Tourist/Migrant The Homeless The Recreational User
Processional Pathway		A contemplative route which links the narrative procession between the core burial activities; unifies the components of the space, and links the burial procession to the urban context		Undulating experiential route with visual, haptic, temperature, and audible cues for mediating the threshold of the site's spaces	For public pathway with medium-volume traffic 3 lx min. average horizontal illuminance. Universally accessible route, complying with SANS 10400-S:2011 - especially with reference to ramp gradient, hand-railing, and non-slip ground surfaces	SANS 10400-S	760	1	760	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member The Daily Commuter The Tourist/Migrant The Homeless The Recreational User

Fig. 3.40: Accommodation schedule for core burial programme,
supporting programmes, and temporal programmes (Ullrich 2020)

● MORE PUBLIC
● MODERATE
● MORE PRIVATE

SUPPORTING PROGRAMMES

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
Burial Society	Societal Meeting Space	Burial Society members' weekly meeting space; organisation and societal management; can be used for presentations		Controlled space: sound, ventilation, lighting	Clear visibility and audibility of speakers; focus podium space; wall space for visual projections, temporary posters, or temporary drawings; able to seat 80 persons		60	2	120	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member
	Societal Safe Room	Safe-keeping of documentation		Enclosed secured space; controlled lighting	Lockable enclosed room		10	1	10	The Staff Member
	General Storage Room	Safe-keeping of equipment for Society events		Enclosed secured space; controlled lighting	Lockable enclosed room with adequate shelving for ease of equipment storage		20	2	40	The Staff Member
	Ablutions	Public water closets and ablution facilities		Hygienic space; enclosed; privacy from external view	Min. 1 unisex wheelchair accessible bathroom (min. 1.8 m x 1.8 m) in accordance with SANS 10400-Part S / 1 WC, 1 HWB per cubicle / Grab rails provided at side and back of toilet / Door of cubicle to have a clear opening of 900 mm minimum	SANS 10400-S	3.24 min.	2	6.48	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
Administrative	Information Reception	Funeral bookings; information area		User comfort; controlled light, ventilation	Reception desk: 300 min.lx. 22 max. UGR, 80 min. Ra		20	1	20	The Funeral-Attendee / The Returner / The Solace Seeker / The Staff Member
	Administrative Office	Funeral bookings; event planning; park maintenance programme		User comfort; controlled light, ventilation	Office: 500 min. lux, 19 max. UGR, 80 min. Ra / 3 workstations / Stationary storage room with printer and photocopier; archival room for site burial and mortuary history		30	1	30	The Staff Member
	Staff Lounge & Kitchenette	Communal staff eating, washing, and social space		User comfort and social space; controlled light, ventilation; openable shaded stoep area for warmth	Lounge: 200 min. 22 max. UGR, 80 min. Ra / Kitchenette: 500 min. lx, 22 max. UGR, 80 min. Ra / Kitchen to be easily cleanable and utilise non-corrosive surfaces according to SAHPRA standards; adequate overhead extraction or natural ventilation for stove; appropriate class fire extinguishing equipment	SANS 1385	5	1	5	The Staff Member
	Ablutions	Bathrooms for staff personnel		Hygienic space; enclosed; privacy from external view	Calculations for highest sanitary requirements acc. to SANS 10400-P: / Staff use: 3 staff members in adminstation building / 1 Bathroom = 1 WC, 1 HWB	SANS 10400-P	1.8	1	1.8	The Staff Member
Public Park Programme	Food Take-Away Counter	Provides takeaway meals for park visitors and travellers		User comfort; controlled light, well-ventilated	Attached to main kitchen; adjacent to public movement corridor and park area		8	1	8	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
	Picnic Area	Communal resting area		Shaded; comfortable space; shielded from vehicular noise	Shaded grassed area with tables and seating, sanitary soap dispenser, water outlet, and refuse dustbin		1280	1	1280	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
	Bus Stop Facility	Shelter and seating for bus stop; integrated into burial space narrative - liminal space between waiting and being transported		Shaded; comfortable space; visibility of roadway and surrounding landscape	Sheltered waiting area with sufficient seating; positioned close to entrance of Ceremony Area - ideal for visitors to arrive at by bus		37	1	37	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Homeless / The Recreational User
	Parking Facilities	Street parking spaces; limited parking with pedestrianised city in mind for Tshwane Vision 2055		Partially shaded area; open visibility of parking area to parking-lot users and passers-by (identifying vehicle and for security)	Metered and limited public parking close to Burial Centre (focus on using public transport facilities to travel to and from Station)	SANS 10400-S	-	-	-	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Recreational User
	Candle & Momento Shop	Commercial shop where visitors can purchase momentos or perishable products to utilise within the Burial Centre		Well-lit space with indirect natural lighting; open public space	Open to public movement corridor and has a Public street interface; products can be manufactured at the Burial Centre's Manufacturing Workshop; revenue helps to sustain entrepreneurs and maintenance of Burial Centre		25	1	25	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Recreational User
	Floristry	Commercial shop where visitors can purchase bundled funeral plants and flowers to utilise within the Burial Centre		Well-lit space with indirect natural lighting; open public space	Open to public movement corridor and has a Public street interface; products can be manufactured at the Burial Centre's Manufacturing Workshop; revenue helps to sustain entrepreneurs and maintenance of Burial Centre		25	1	25	The Funeral-Attendee / The Returner / The Solace Seeker / The Child / The Elder / The Staff Member / The Daily Commuter / The Tourist/Migrant / The Recreational User

🔴 MORE PUBLIC
🟡 MODERATE
🔵 MORE PRIVATE

Fig. 3.40: Accommodation schedule for core burial programme, supporting programmes, and temporal programmes (Ullrich 2020)

SUPPORTING PROGRAMMES

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
Manufacturing Workshop	Sawing, cutting, and machining area	Workshop space for the repair and manufacturing of burial structures; machining of material to correct sizing		Functional space; controlled lighting, ventilation, and sound; hygienic and easy to clean	IP dust and flame protection for artificial lighting elements; prevent stroboscopic effects with lighting; 350 min. lx, 22 max. UGR, 80 min. Ra		25	1	25	The Staff Member
	Assembly area	Assemblage and finishing of burial caskets and burial structures		Functional space; controlled lighting, ventilation, and sound; hygienic and easy to clean	350 min. lx, 22 max. UGR, 80 min. Ra		25	1	25	The Staff Member
	Finished goods storage	Storage of finished caskets and burial structures		Functional space; controlled lighting, ventilation, and sound; hygienic and easy to clean	100 min. lx, 25 max. UGR, 60 min. Ra		15	1	15	The Staff Member
	Raw materials storage	Storage of raw timber elements prior to machining; storage of construction materials for ground's maintenance or burial structures		Functional space; controlled lighting and ventilation; hygienic and easy to clean	100 min. lx, 25 max. UGR, 60 min. Ra Adequate shelving and stacking space for ease of storage and material identification;		10	1	10	The Staff Member
Garden and maintenance equipment storage		Storage of maintenance equipment		Functional space; controlled lighting and ventilation; hygienic and easy to clean	100 min. lx, 25 max. UGR, 60 min. Ra Adequate shelving and stacking space for ease of storage and equipment identification		8	1	8	The Staff Member
Undertaker Delivery Area		Area for delivery vehicles and hearses to park close to mortuary; the deceased can be transferred to or from the mortuary		Shaded; cool; private, screened-off area	Vehicular loading area close to mortuary; accommodate hearse vehicle (6.5m x 2.1m); radius of turning circle to be greater than 9.5m		70	1	70	The Staff Member
Refuse & Composting Area		Sorting and temporary storage of waste material; organic matter to be composted and used for garden beds and the Recomposition burial chambers		Shaded; cool; private, screened-off area	Vehicular loading area; accommodate refuse truck (8.6m x 2.4m); radius of turning circle to be greater than 10m; accommodate 20 refuse bins (720 mm x 580mm x 1000mm for 240l unit); no steps to provide ease of movement of bins; 1x water trough with water outlet faucet and hose access		25	1	25	The Staff Member
Accessible Service Corridor		Easy access to serviceable conduits and pipework for technicians		Shaded; cool; private, screened-off area	900mm min. wide; providing easy access to serviceable conduits and pipework		20	1	20	The Staff Member
Fire Escape Route		To be used in case of emergency.		Functional space; controlled lighting and ventilation	Min. 2 escape routes shall be provided in accordance with SANS 10400- T 50 lx on a horizontal plane, 100 mm above the floor. The travel distance to the nearest escape door is at max 45m Where the population of a room exceeds 25 persons the width of the escape route and exit door shall be min 800 mm. Enclosing walls of emergency route shall have a fire resistance of min. 120 minutes The floor finish shall have a slip resistant surface. No ramp shall have a gradient exceeding 1 in 8.	SANS 10400-T	-	-	-	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member The Daily Commuter The Tourist/Migrant The Homeless The Recreational User
Small flat for Groundskeeper		Comfortable residence for Groundskeeper		Comfortable; private; controlled lighting and ventilation	Bedroom space; wardrobe; kitchenette with sink, gas stove and oven, fridge, and food preparation area; bathroom with sink, toilet, and shower; outdoor partially shaded patio space Night vigel house.		200	1	200	The Staff Member
Greenhouse		Rehabilitation of small plants and the protection of certain small plants from excess seasonal cold or heat, or unwanted pesticides		Interior filtered sunlight; controlled lighting and ventilation; transparent, enclosed space	Operable window openings; system to control direct sunlight exposure; water supply faucet with hose; drainage channels and sufficient drainage outlets; transparent boundary for sunlight exposure and for visibility into space		25	1	25	The Staff Member

TEMPORAL PROGRAMMES

Spaces	Component Spaces	Activity Description	Level of Privacy	Quality of Space	Quantitative Requirements	Special Legislative Compliance	Individual Size (m²)	Quantity of Units	Total Size (m²)	Targetted User
Weekly Soup Kitchen		Kitchen takeaway counter functions as collection point of wholesome meals for those in need; AIC Church Groups and Burial Society organise event; temporal set-up of seating		Comfortable space; music; socialising; well-lit; partial screening to avoid embarrassment by passers-by; formalised dining space	Adequate moveable seating and tables; food collection station; washing drop-off station; utilises kitchen facilities		85	1	85	The Staff Member The Homeless
Year-End Burial Society Celebration		AIC Church Groups and Burial Society members able to have an annual celebration meeting		Comfortable space; music; socialising; well-lit; formalised dining space; separated from more private Burial Area	Adequate moveable seating and tables; food collection station; washing drop-off station; utilises kitchen facilities		530	1	530	The Funeral-Attendee The Returner The Solace Seeker The Child The Elder The Staff Member

● MORE PUBLIC
● MODERATE
● MORE PRIVATE

Fig. 3.40: Accommodation schedule for core burial programme, supporting programmes, and temporal programmes (Ullrich 2020)

04

CONTEXT

QUOTIDIAN RITUAL LENS

4.1

THE OLD RAILWAY PRECINCT

The Old Railway Precinct is located on the border of the inner-city of Pretoria, and the Salvokop area. During the early twentieth century, the precinct played an important role in the industrial and agricultural growth of Pretoria and northern South Africa (Bakker, Le Roux & Young 2003: 1). For the last century, the precinct can be understood as functioning as a gateway into and out of the city, with numerous transport hubs being located in the area - particularly the Old Pretoria Station, the Tshwane Rapid Transit Bus Station, Bosman Railway Station, and Bosman Taxi Station.

The expansion of the railway line resulted in an increased schism to form between the inner-city of Pretoria, to the North of the line, and the Salvokop Village, to the South of the line. Salvokop Village is recognised as a century-old, urban railway town, that formed part of the broader socio-economic process that led to industrial development within the city of Pretoria (Bakker 2003: 4). The Salvokop suburb has been assessed as being a Regional Heritage Site by the South African Heritage Resources Agency, with the Freedom Park development, located on the ridge of Salvokop, holding a National Legacy Site status (Bakker & de Jong 2003: 5).

Large portions of the precinct have been demolished in the last century (Bakker 2003: 5). The most notable demolition was of the railway workshop sheds and the high-density residential area of terrace houses of northern Salvokop – which the National Party government believed to be promoting "slum formation" (2003: 5). A large tract of scarred, open landscape now separates the railway line, and the Salvokop Village houses. Despite the loss of a large portion of heritage fabric over the last century, some remnants of the first railway buildings in the area still remain. A large portion of these heritage artefacts are currently difficult to access from the inner-city, as the site is only accessible by a single foot-bridge, which provides pedestrian movement across the railway lines - between the Old Pretoria Station and the Salvokop Village. The first pedestrian bridge, built in 1909, once existed at Bosman Station, however, this has since been demolished. The current single access is not sufficient for a major urban renewal of the area.

The dissertation attempts to propose a precinct development framework for the Salvokop Railway Precinct that frames the dissertation's meso and micro design intervention strategies. The Freedom Park National Legacy Project (Bakker & de Jong 2003: 3) proposed the creation of a "ceremonial route" between Church Square and Freedom Park with an extension of Paul Kruger Street, however, this plan was never realised. This intervention still has the potential to physically reintegrate the Salvokop Precinct with the inner-city, and it functioned as a springboard for the precinct development strategy.
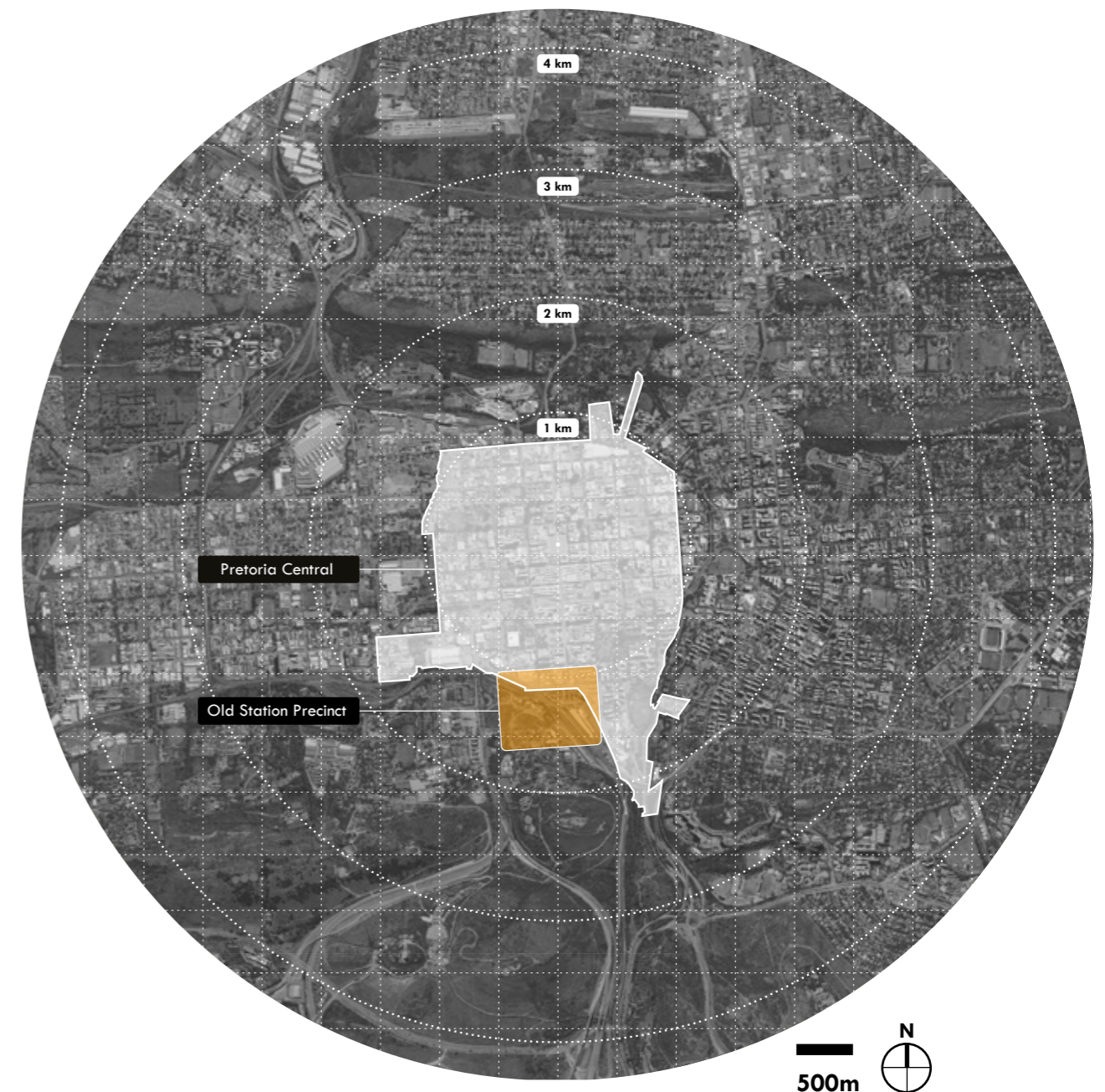
Fig. 4.1: Location of Old Station Precinct relative to Pretoria Central (Ullrich 2020)

City Hall

Paul Kruger Street

Bosman Street

Thabo Sehume Street

Burgers Park

Railway Line

Army HQ

Bosman Station

Scheiding Street

Pretoria Main Road

Old Marshalling Yard

Pretoria Station

Salvokop Village

Railway Line

Freedom Park
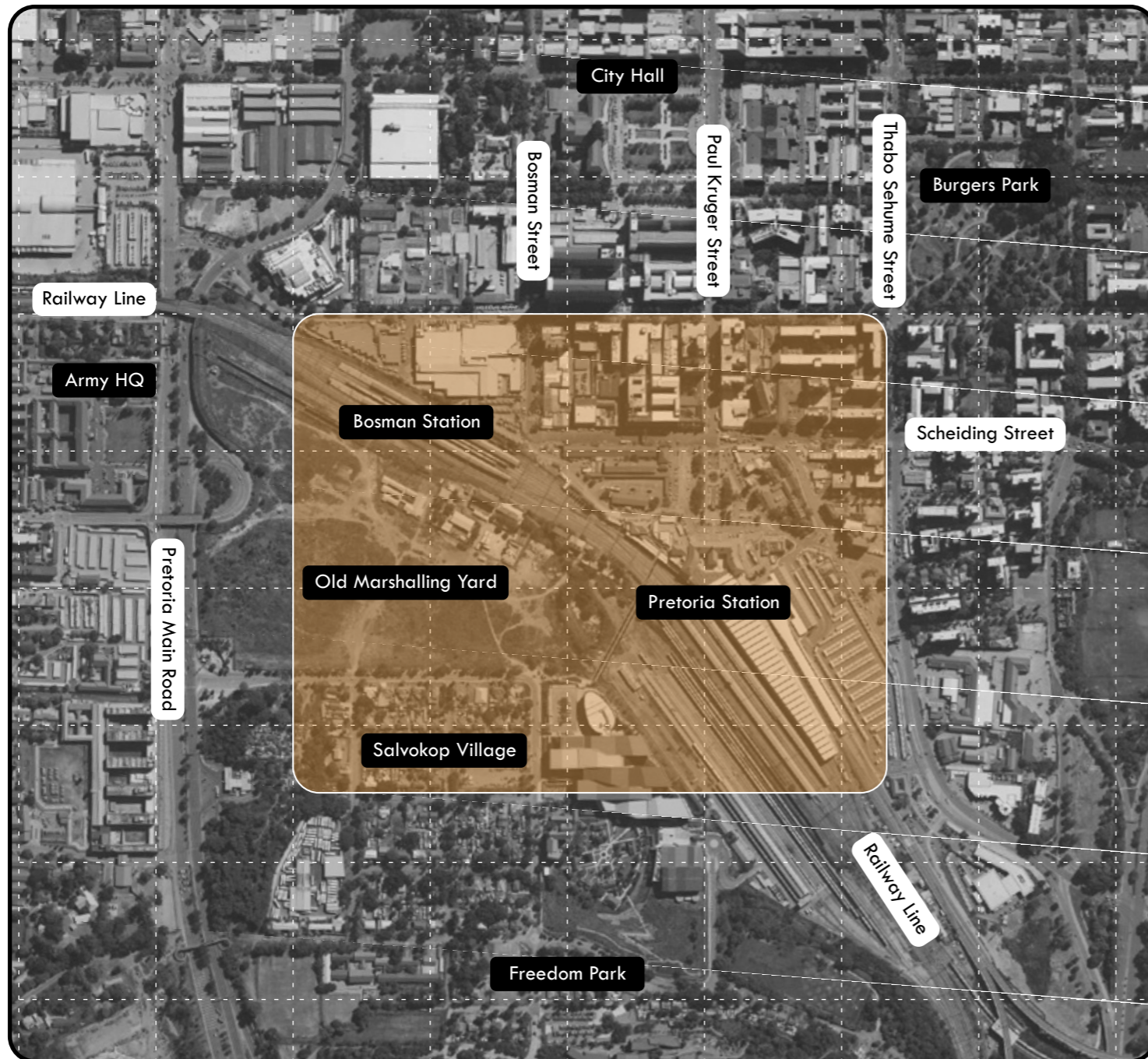
Fig. 4.2: Notable landmarks within and surrounding the Old Station Precinct (Ullrich 2020)

N

200m

Fig. 4.3: Metro railway platforms (Ullrich 2020)

Fig. 4.4: Forecourt garden with background of Victoria Hotel and Paul Kruger Street (Ullrich 2020)
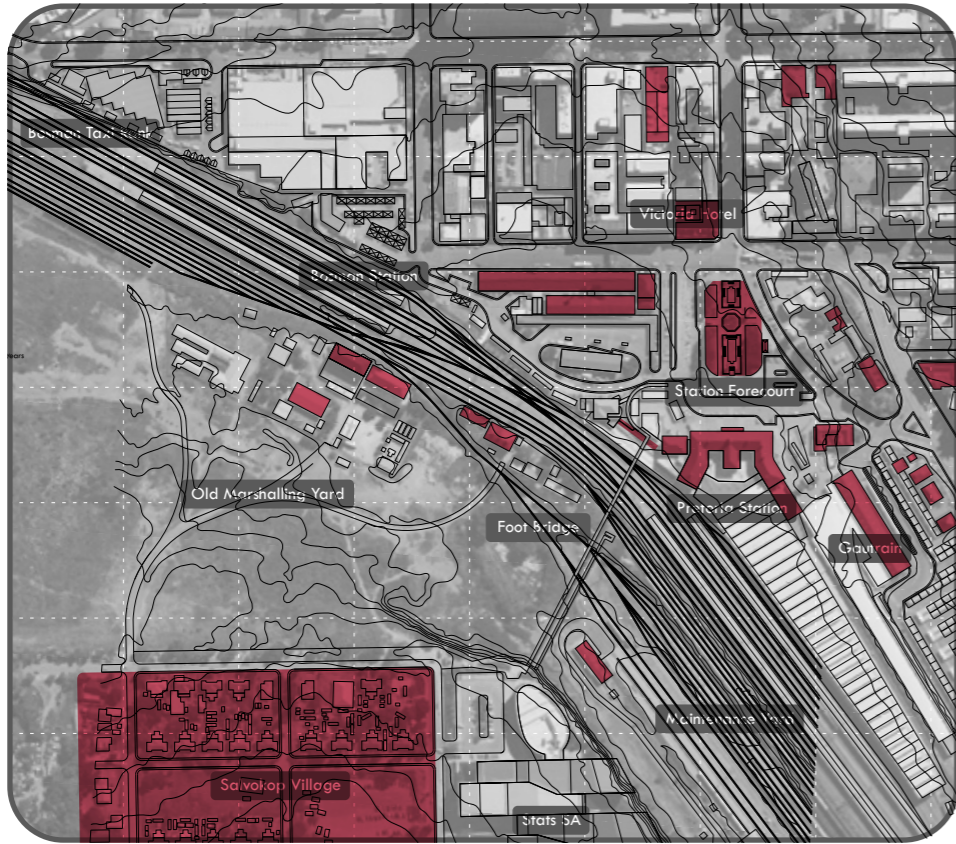
BUILDINGS OLDER THAN 60 YEARS

Fig. 4.5: Buildings older than 60 years (Ullrich 2020)
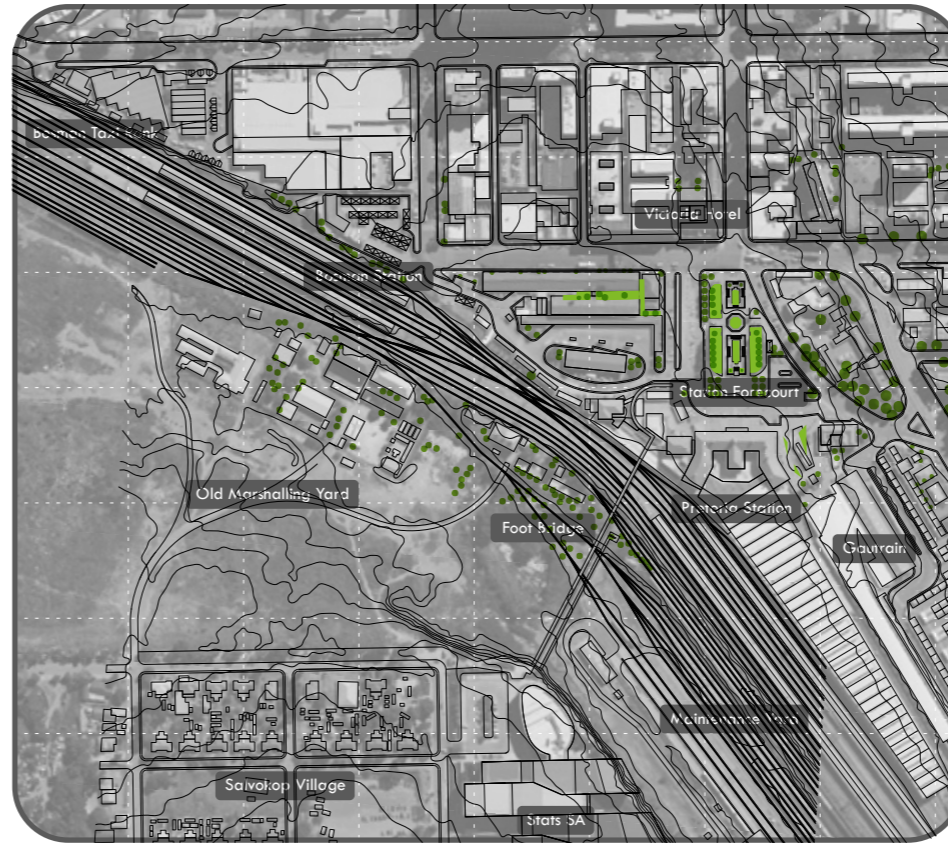
GREEN PUBLIC SPACE & TREES

Fig. 4.6: Green public spaces & trees (Ullrich 2020)
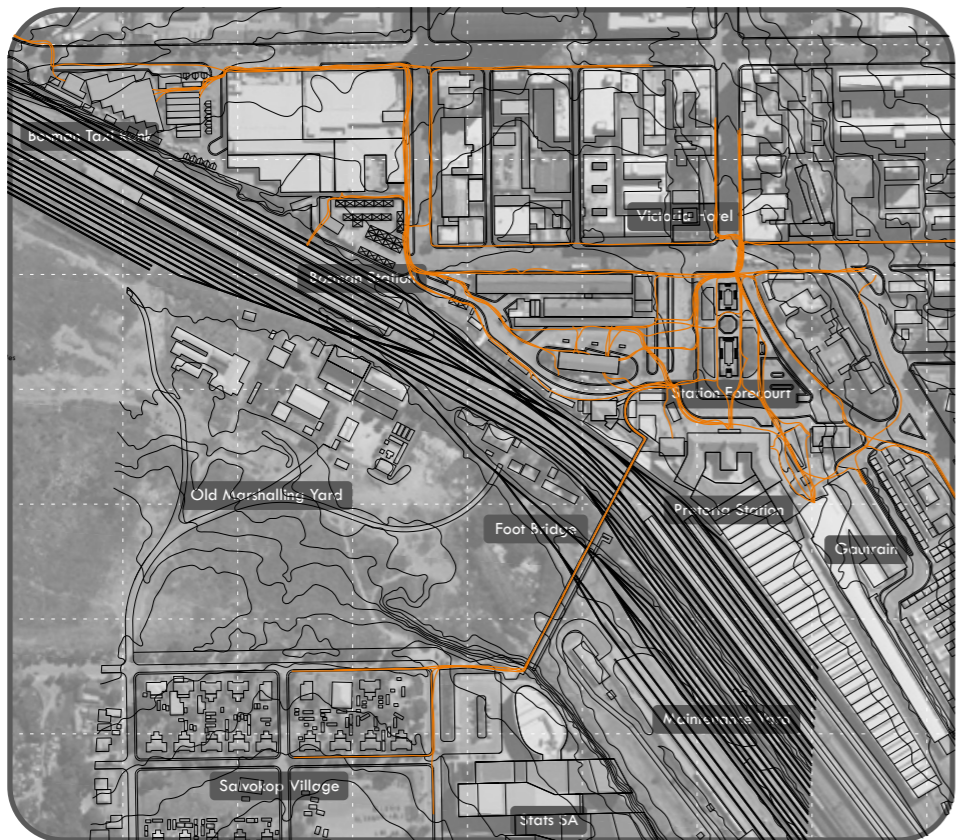
PEDESTRIAN MOVEMENT ROUTES

Fig. 4.7: Predominant pedestrian movement routes (Ullrich 2020)
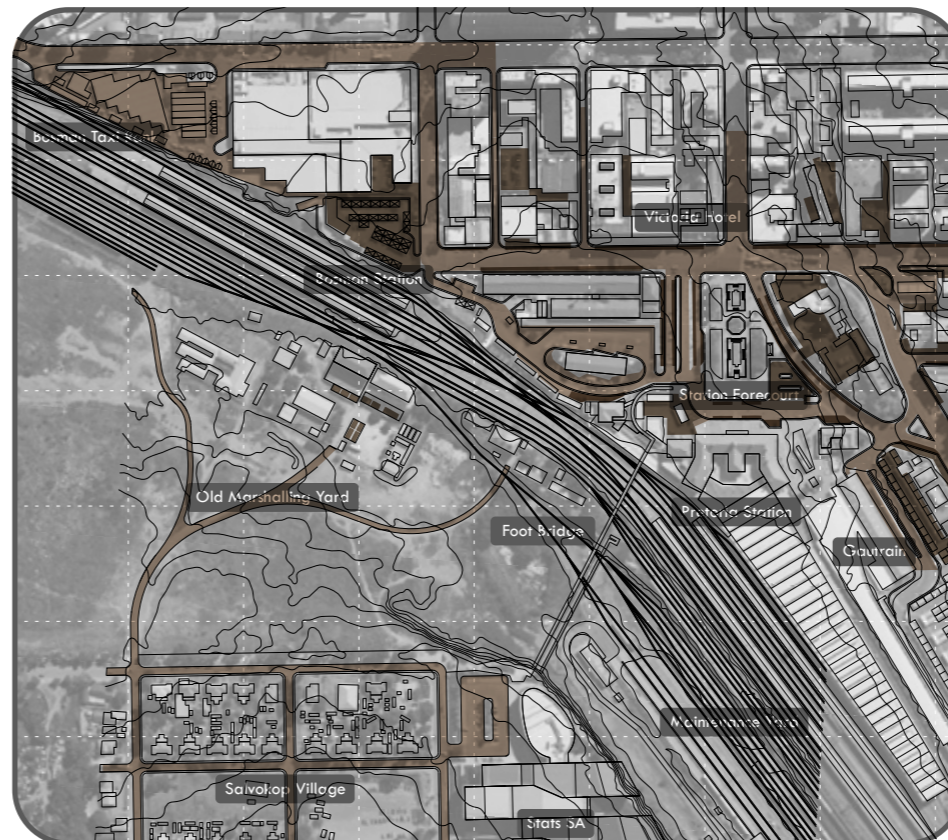
ROADS & PARKING SPACE

Fig. 4.8: Roads and parking (Ullrich 2020)

4.2

SUMMARY OF PRECINCT ISSUES

1. Lack of accessibility from the inner-city of Pretoria to Salvokop Heritage Precinct

2. Lack of a movement hierarchy within the precinct to support regeneration

3. Lack of direct pedestrian movement routes between transport nodes

4. Large amounts of parking and road not being utilised as public space

5. Brown site of demolished Old Railway Workshops not being effectively utilised

6. Lack of publicly accessible green space

7. Underutilised interstitial space between buildings

8. Lack of a prominent movement route from the inner-city to the heritage site of Freedom Park

4.3

PRECINCT VISION

4.3.1 PRINCIPLES

A set of principles were developed to function as design guidelines for future development within the Salvokop Railway Precinct. The principles were adapted from existing spatial development strategies for inner-cities, as well as recognised urban-design literature that focused on transport hubs within the city. It is assumed that the City of Tshwane's 2055 Urban Vision will be implemented as a guide for future development schemes (City of Tshwane 2013b). The dissertation therefore incorporates these guidelines for the planning of the Precinct Vision. The following principles attempt to address the underlying issues of the precinct, as well as sustain and enhance any positive place-making qualities that are currently present:

Critical Filter:
Context of Station-Salvokop Precint

African Urbanism Principles
Gerald Steyn (2007)

Our Cities Ourselves: Principles for Transport in Urban Life
Walter Hook & Jan Gehl (2011)

A Pattern Language:
Towns, Buildings, Construction
Christopher Alexander (1977)

Transit-Oriented Development Principles
Department of National Treasury
Department of South Africa (2017)

1. SHIFT

Regulating parking and road use
Increasing individual mobility
Limit driving during peak traffic periods
Treat the street as a public space

2. WALK

Prioritise pedestrian activity
Encourage ground-level pedestrian activity and spaces of refuge
More convenient and appealing pedestrian routes

3. CYCLING

Prioritise cycling networks for safety and convenience
Demarcated bicycle parking sites adjacent to active street edge
Vehicular-free greenways and through-routes

4. PUBLIC TRANSPORT

Establish efficient, high-capacity transit services along arterial routes within the city
Routes to be direct
Promote densification along transport corridors

5. PUBLIC NODES

Orient city-users through the use of landmarks and thresholds
Emphasis on main gateways into/out of the city
Buildings placed to create public squares for the convergence of activities

6. MIXED-USE

Balance of housing, commerce, and public services
Rich interaction of diverse programmes
Street as a mixed-use public space
Co-locate housing and businesses for short commutes

7. GREEN SPACE

Provide green corridors and nodes to create a more appealing, natural city environment, to encourage walkability
Reduce carbon footprint of public space
Promote a healthy ecological relationship between the local floura, fauna, and its natural and built environment

Fig. 4.9: Urban precinct principles (Ullrich 2020)

4.3.2 INTERVENTION STEPS

1 TRANSPORT NODES AS PUBLIC SQUARES

a. Existing transport nodes are re-connected by a direct promenade
b. Forecourts/Squares as market space, mixed-use public programmes
c. Convergence points of routes
d. Landmark architecture as a manifestation of the axis mundi public space, and as a destination

Fig. 4.10: Step 1: Pedestrian Promenade to Link Transport Nodes (Ullrich 2020)

2 PEDESTRIAN PROMENADE TO LINK TRANSPORT NODES

a. Direct green corridor linking Pretoria Railway Station, TRT Bus Station, Bosman Railway Station, and Bosman Taxi Rank
b. Prioritisation of cycling and walkability - alternative to vehicular transport
c. Identifying nodes on the route for rest and elevated viewing of surrounds
d. Trade shopfronts along route
e. Promenade as a catalyst for adjacent architecture

Fig. 4.11: Step 2: Reconnecting Salvokop with the Bridge (Ullrich 2020)

3 RECONNECTING SALVOKOP WITH THE BRIDGE

a. Expansion of East Bridge (pedestrian & cycling)
b. Re-introducing the West Bridge (pedestrian, cycling, & vehicular) to reconnect and extend Koch Street with the city
c. Both routes reconnect the users of the inner-city with the isolated heritage precinct of Salvokop and Freedom Park, and establish a ceremonial route from Paul Kruger Street to Freedom Park

Fig. 4.12: Step 3: Transport Nodes as Public Squares (Ullrich 2020)

4 EXTENDING SALVOKOP VILLAGE ALONG BOSMAN STREET

a. Reconnecting Bosman Street with Koch Street of Salvokop
b. Promoting retail and residential development around Koch Street, and sustaining a ceremonial route to Freedom Park
c. Extending Salvokop Village into Old Maintenance Yard area
d. Promoting interstitial green space between residential plots for pedestrians

Fig. 4.13: Step 4: Extending Salvokop Village Along Bosman Street (Ullrich 2020)

N

4 / CONTEXT
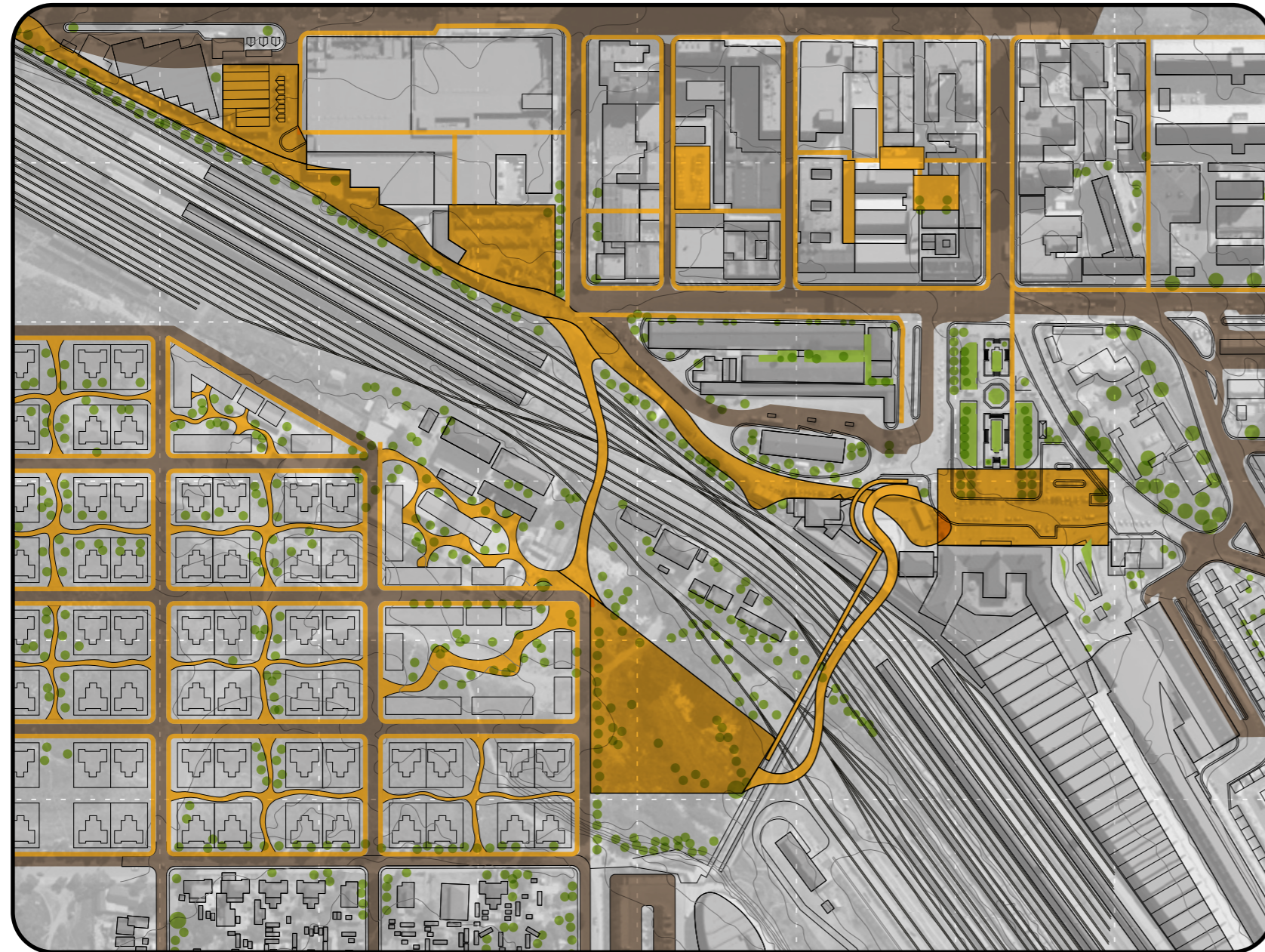
PRECINCT VISION PLAN

*Fig. 4.15: Precinct vision plan. Extending Salvokop Village
Along Bosman Street (Ullrich & Greyling 2020)*

● **VEGETATION**   ● **BUILDING**

● **ROAD**   ● **PUBLIC ROUTE / NODE**

N

200m

*Practical application of
business management skills and
burial society management*

Bosman Station
Entrepreneurial Development Centre

Old Pretoria Railway Station
Burial Centre & Contemplative Centre

*Harbouring skills into a
sustainable business model*

*Crafting commemorative artefacts,
such as caskets; Movement route
between Freedom Park, Salvokop AIC
Church, and funerary space*

Salvokop North
Timber Skills Development Centre

PROGRAMME INTERDEPENDENCY

Fig. 4.14: Programme interdependency (Nemasetoni, Greyling, & Ullrich 2020)
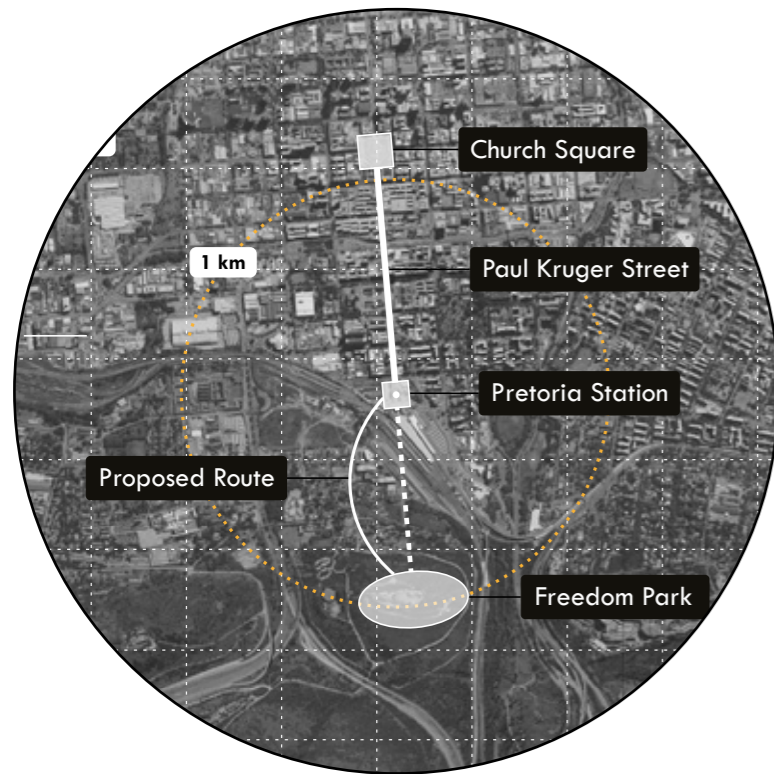
COMMEMORATIVE LINKAGE

Fig. 4.17: Intention of creating a commemorative linkage amongst the heritage sites of Church Square, Pretoria Station, and Freedom Park (Ullrich 2020)

Church Square

Paul Kruger Street

1 km

Pretoria Station

Proposed Route

Freedom Park
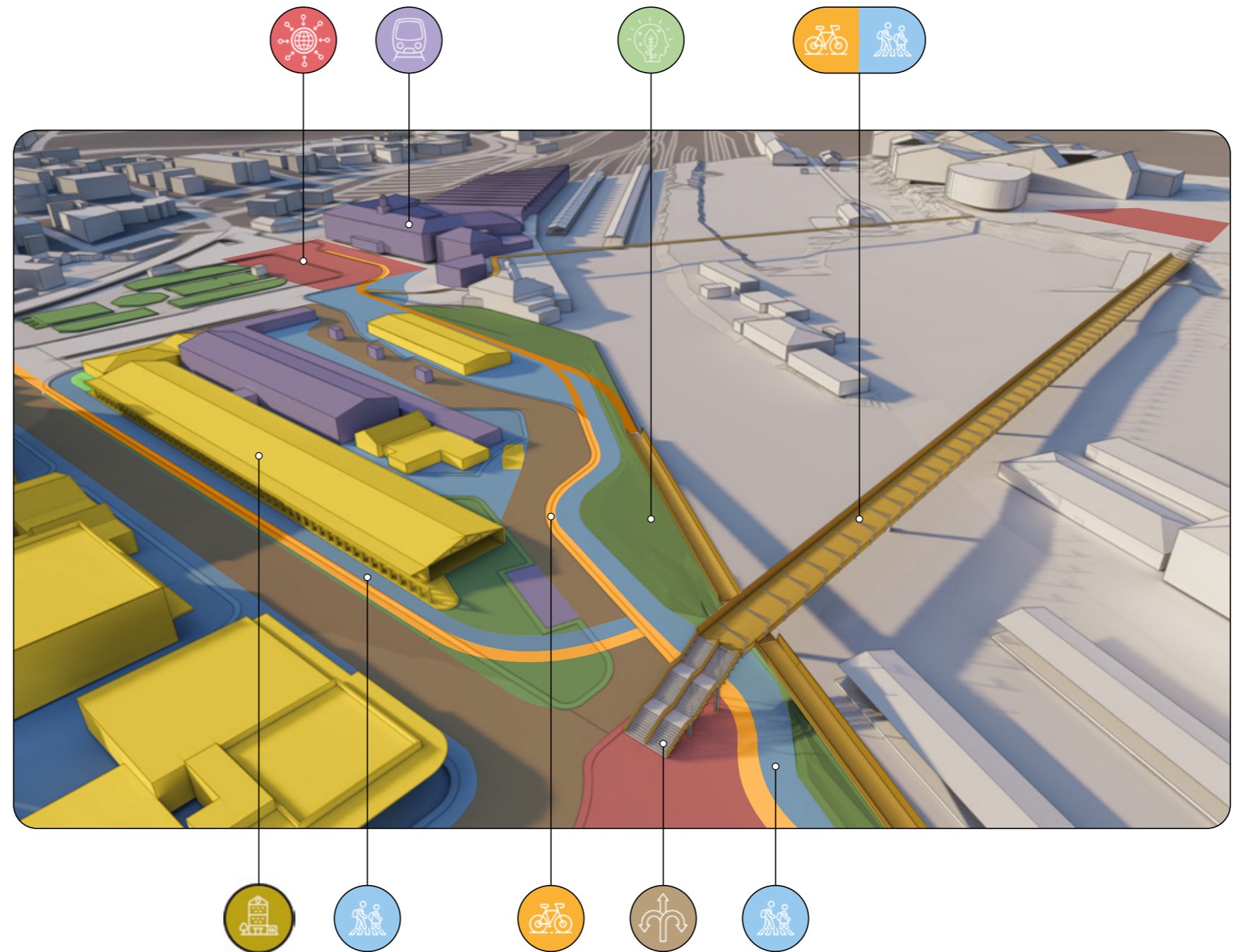
SHIFT
WALK
CYCLING
PUBLIC TRANSPORT
PUBLIC NODES
MIXED-USE
GREEN SPACE

APPLICATION OF PRINCIPLES

Fig. 4.16: Aerial perspective of precinct showing application of principles (Greyling & Ullrich 2020)

4.4

4.4.1 SITE SELECTION PROCESS

A case-study site was chosen in order to investigate and propose how a burial space could be integrated into a public, underutilised space within the inner-city of Pretoria. In order to challenge the notion of the modern burial space being isolated and removed from the public eye, the proposal investigates the re-introduction of a civic burial space within close proximity to a prominent node or movement route, and within the public eye. It is acknowledged that a portion of a burial site requires a form of privacy and demarcation in order to retain a sense of sanctity, however, these spaces have the ability to be better intertwined into daily public life, as opposed to an abrupt separation from civic public life. Potential sites within the inner-city of Pretoria were initially selected based off of the following criteria:

- Under-utilised built-fabric, forgotten space, or brown site

- Within close proximity to the inner-city of Pretoria

- Close proximity to a prominent public node

- Close proximity to an arterial movement route

- Existing, under-utilised, heritage artefacts or commemorative artefacts

- Diverse existing programmes to incorporate into proposal

- Space is preferably not associated with belonging to a religious group

These requirements were identified by the author in order for the intervention to respond to a rich amalgamation of existing socio-cultural connections, historical artefacts, and public movement corridors.

Fig. 4.18: Location of possible sites for intervention (Ullrich 2020)

Fig. 4.19: TPA Block (Ullrich 2020)

TPA HEADQUARTERS BLOCK

- The block contains a number of historically significant artefacts, including the Poynton's Building, Reserve Investment Building (Café Riche), Ou Nederlandsche Bank, Capitol Theatre, and the old Transvaal Provincial Administration Headquarters Building.

- The majority of the block is vacant, and lacks existing programmes to respond to.

- The block has the potential to connect with Church Square, and the surrounding prominent arterial routes.

Fig. 4.20: Old Staatsmuseum (Ullrich 2020)

OLD STAATSMUSEUM

- The museum was positioned adjacent to the zoo in order for the two civic institutions to develop in tandem with one another – providing an area for public leisure and education (Swart & Proust 2019: 110–111).

- Commissioned by the ZAR in 1899, and completed by the British after the South African War (1899-1902).

- Despite being on the periphery of the inner-city, it is located at a popular public intersection.

- The building's entrance and façade face the northern terminus of Thabo Sehume Street, and the building is positioned adjacent to the entrance of the National Zoological Gardens on Boom Street.

- Currently desolate and requires extensive repair.

Fig. 4.21: Volkstem Building Block (Ullrich 2020)

VOLKSTEM BUILDING BLOCK

- The Volkstem Building is the oldest and only surviving newspaper building of the nineteenth century in South Africa.

- The block is within close proximity to Church Square.

- Volkstem Avenue throughway connects the interior of the block to prominent arterial routes – Pretorius Street and Francis Baard Street.

- The Avenue is a quiet throughway, with mainly government buildings, and minimal programmatic activity to respond to.

- The small courtyard within the block – potentially the main area for development – is hidden from the public eye.

Fig. 4.22: Didacta Building Block (Ullrich 2020)

DIDACTA BUILDING BLOCK

- South African Agency for Science and Technology located within Didacta building – historically significant artefact.

- Block primarily consists of residential complexes.

- Minimal active street interface around the block to respond to.

- Central parking space area, opportunity to develop. Site can be accessed from Nana Sita Street, however, this space is hidden from the public eye.

- Adjacent to prominent north-south axis of Paul Kruger Street and east-west arterial route of Nana Sita Street.

Fig. 4.23: Pretoria Railway Forecourt (Ullrich 2020)

PRETORIA STATION FORECOURT

- Square contains numerous historically significant artefacts of high-value.

- Diverse pop-up shops within bus station building, food shops within the Pretoria Station, and a McDonald's within historical building adjacent to Gautrain Station.

- Forecourt mediates pedestrians from/to multiple transport nodes, including the bus station, the Pretoria Railway Station, and the Gautrain Station.

- Under-utilised parking space adjacent to forecourt – potential for site to integrate with surrounding movement routes.

- Can be understood as a transitional threshold space into or out of the inner-city of Pretoria.

4.4.2
OVERVIEW OF PRETORIA STATION FORECOURT

The Pretoria Station Forecourt, designed by Sir Herbert Baker in 1910, was chosen as the focus area for the intervention. The site currently functions as a transient space between the gateway of the Old Pretoria Station, and the inner-city of Pretoria. Despite the large amounts of foot-traffic moving through the site, the site is contained by large fragments of under-utilised public space, consisting of parking space and wide roadways adjacent to the gardens of the Forecourt. The site's public exposure, underutilised public space, and existing artefacts of cultural significance, provide a suitable space for the dissertation to manifest its intentions of expressing and sharing commemorative, cultural memory with the public realm.

LANDMARK STRUCTURES

Fig. 4.24: Labelled aerial drawing of Station Precinct (Ullrich 2020)

1. Victoria Hotel
2. Bosman Street Market (Old SAR Sick Fund)
3. TRT Bus Station (Old SAR Drawing & Staff Offices)
4. Medical Clinic
5. Long Distance Bus Terminal
6. Old Pretoria Station Forecourt
7. Old War Memorial
8. Old Bus Stop Structure (Rebuilt 2010 as a kiosk)
9. SAR Parking
10. PRASA Offices
11. Autopax Head Office (Old Station Master's House)
12. Autopax Head Office (Old Printing Works Building)
13. Belgrave Place Hotel

14. McDonald's (Old Audit Building)
15. Old SAR Housing
16. Gautrain Parking
17. Gautrain Bus Station (Old Coach Washing Shed)
18. Gautrain Train Station
19. Gautrain Forecourt
20. Blue Train Ticketing & Offices
21. PRASA Platform
22. Pretoria Station Main Building
23. PRASA & Shosholoza Meyl Platform
24. Station Annex
25. Shosholoza Meyl Head Office
26. Police Station

27. Railway Lines
28. Pedestrian Bridge
29. Old Pedestrian Bridge
30. Guardhouse for Blue Train Shunting Yard
31. Transnet Capital Projects (TCP) Site Office
32. Signal Relay Building & PRASA Engineers' Office
33. Transformer Room
34. Steam Hammer Workshop
35. Remnants of Old Maintenance Yard
36. POP-Up Upliftment Programme and Training Facility
37. Original Engineer's Office
38. Bosman Station Platforms
39. Bosman Station Entrance & Parking

PERCEPTIBLE ENVIRONMENT NOISE

- MODERATE VEHICLE NOISE
- HIGH VEHICLE NOISE
- HIGH PEDESTRIAN VOICE

N

50m
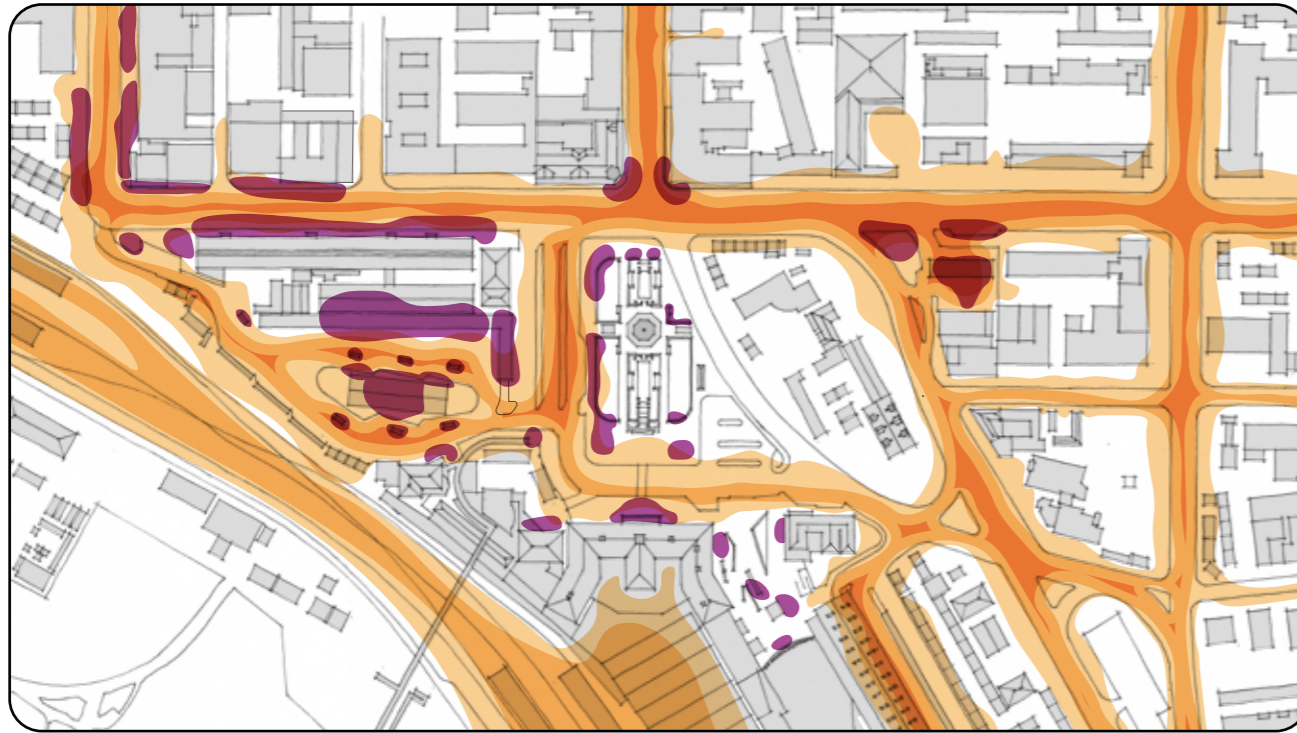
Fig. 4.25: Perceptible environment noise levels (Ullrich 2020)
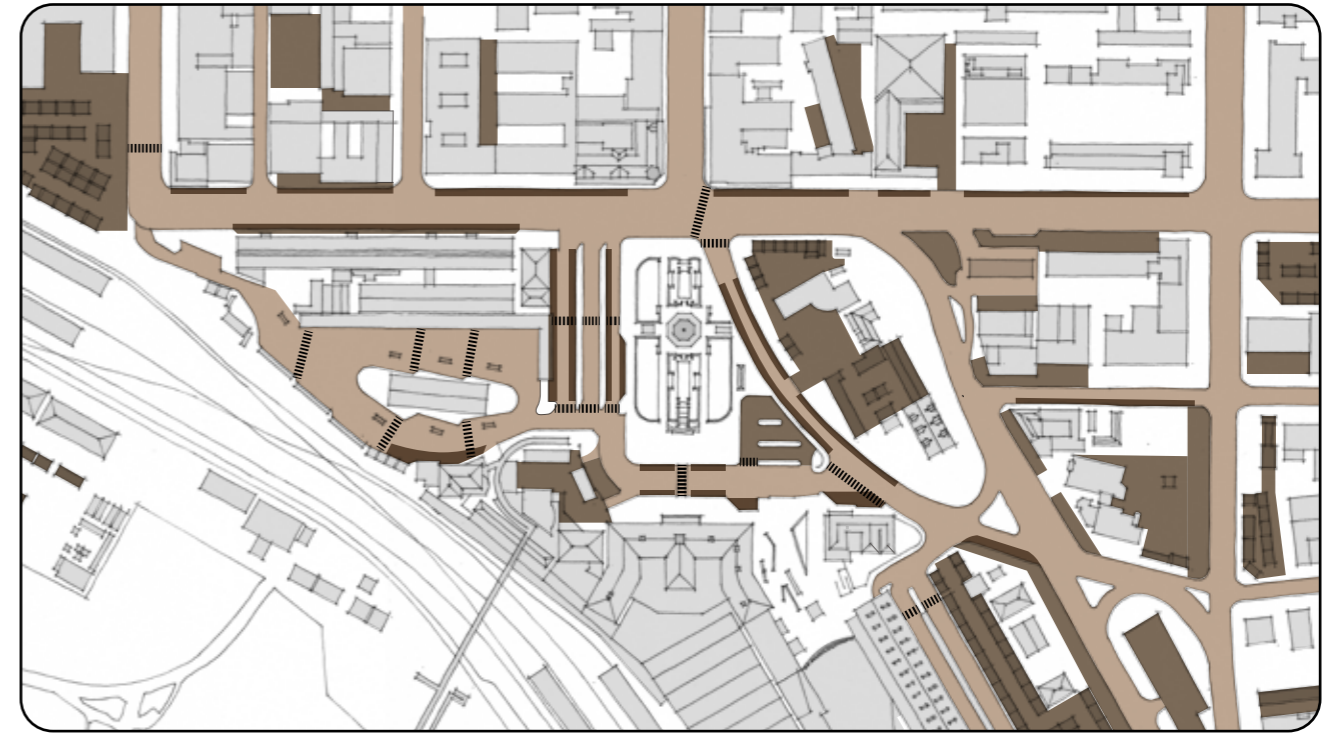
ROAD & PARKING SPACE

- TARRED ROAD
- PARKING
- PEDESTRIAN CROSSROAD

N

50m

Fig. 4.26: Road and parking space (Ullrich 2020)

INTENDED ZONING

- PUBLIC OPEN SPACE
- SA RAILWAY
- BUSINESS
- SPECIAL FUNCTION
- RESIDENTIAL
- MUNICIPAL

N

50m

Fig. 4.27: Intended zoning (Ullrich 2020)

PERCEIVED BOUNDARY

- GENTLE THRESHOLD
- MODERATE THRESHOLD
- BARRIER

N

50m
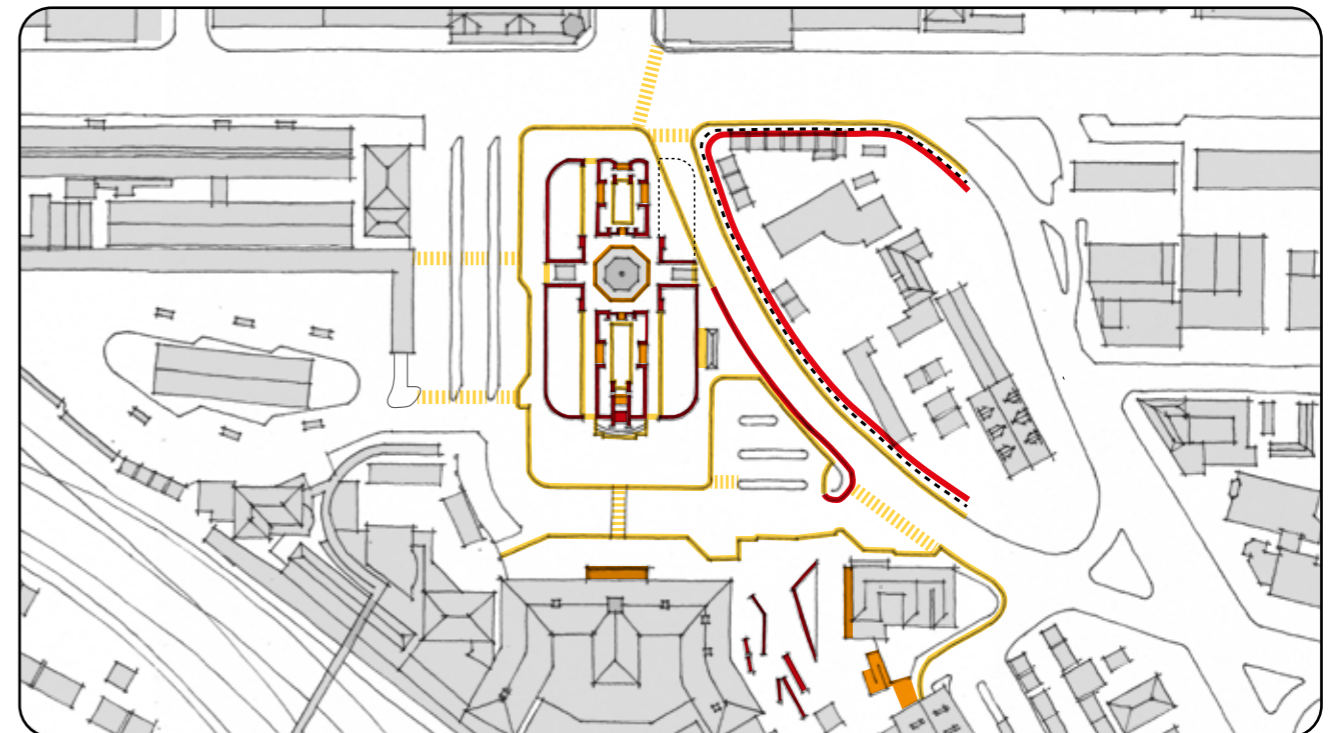
Fig. 4.28: Degree of perceived boundary (Ullrich 2020)
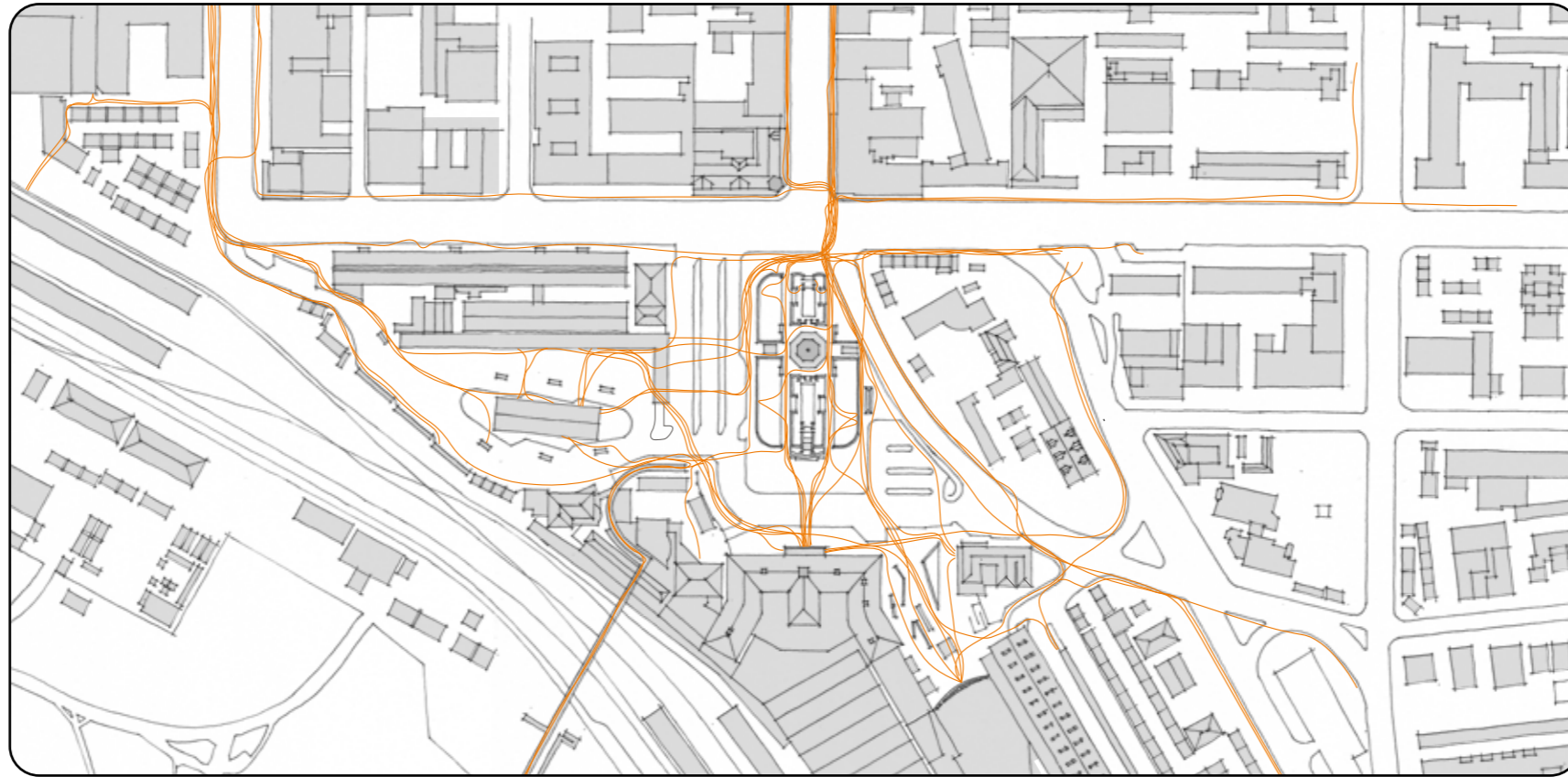
PEDESTRIAN MOVEMENT ROUTES

Fig. 4.29: Pedestrian movement routes (Ullrich 2020)

N
50m

To Paul Kruger / Taxi Rank
To TRT Buses
To Salvokop Village / Bosman Station
To Metro
To Residence
To Gautrain
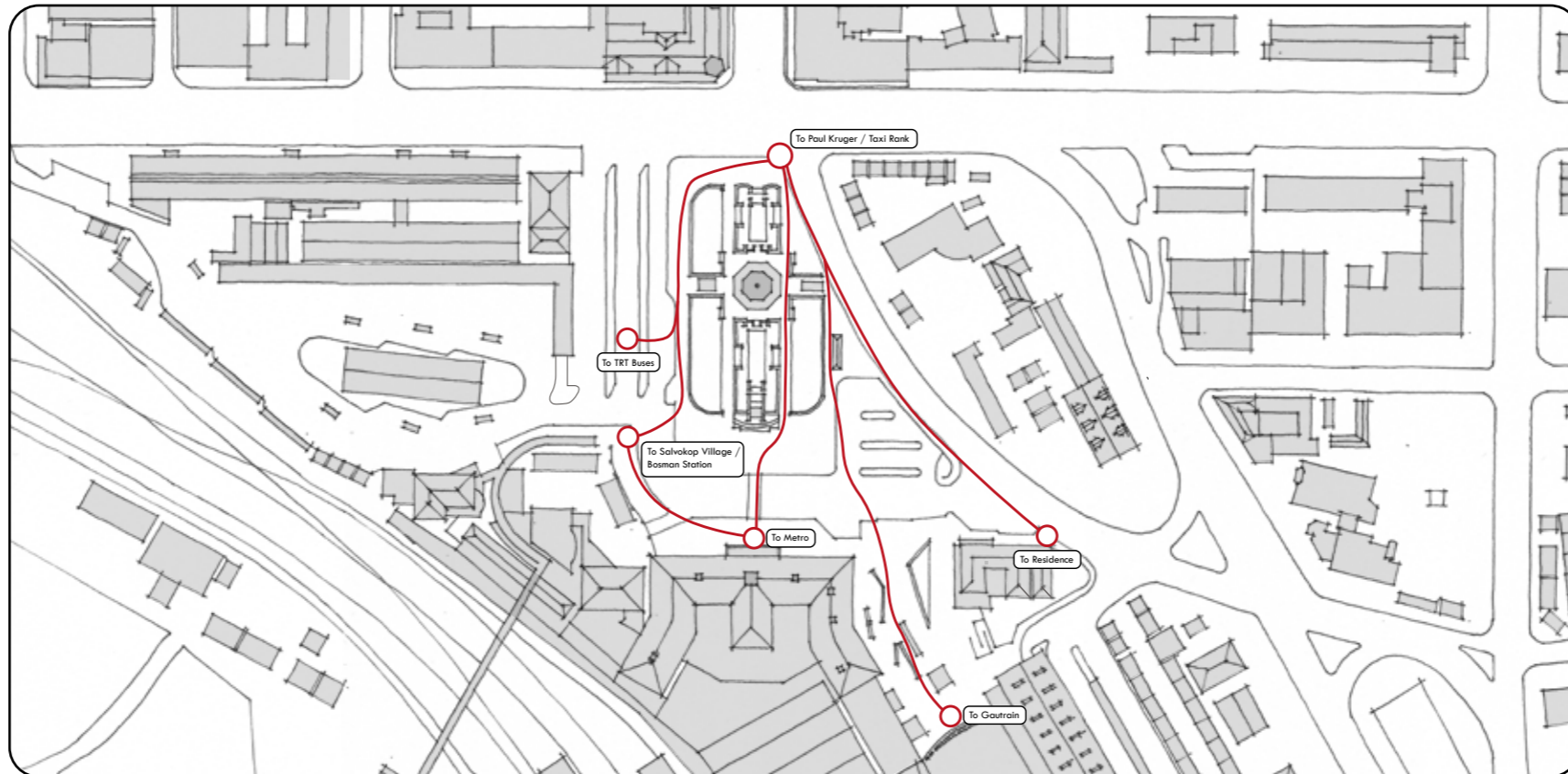
MAIN PEDESTRIAN ROUTES

Fig. 4.30: Main pedestrian movement routes around Forecourt (Ullrich 2020)

N
50m
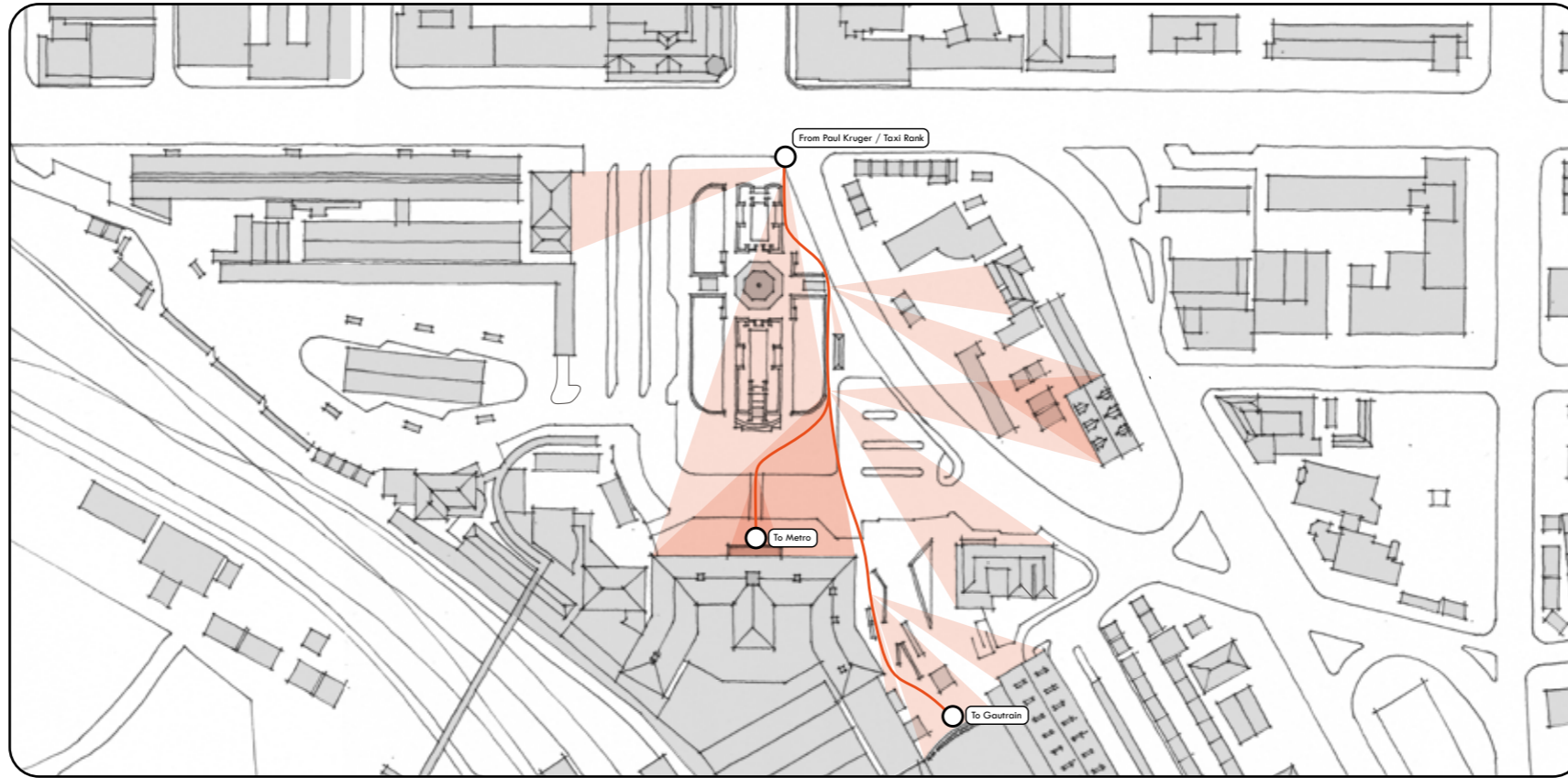
SIGHTLINES TO MAINTAIN - NORTH TO SOUTH

Fig. 4.31: Major sightlines of artefacts – walking from the North to the South of the Forecourt (Ullrich 2020)

N
50m
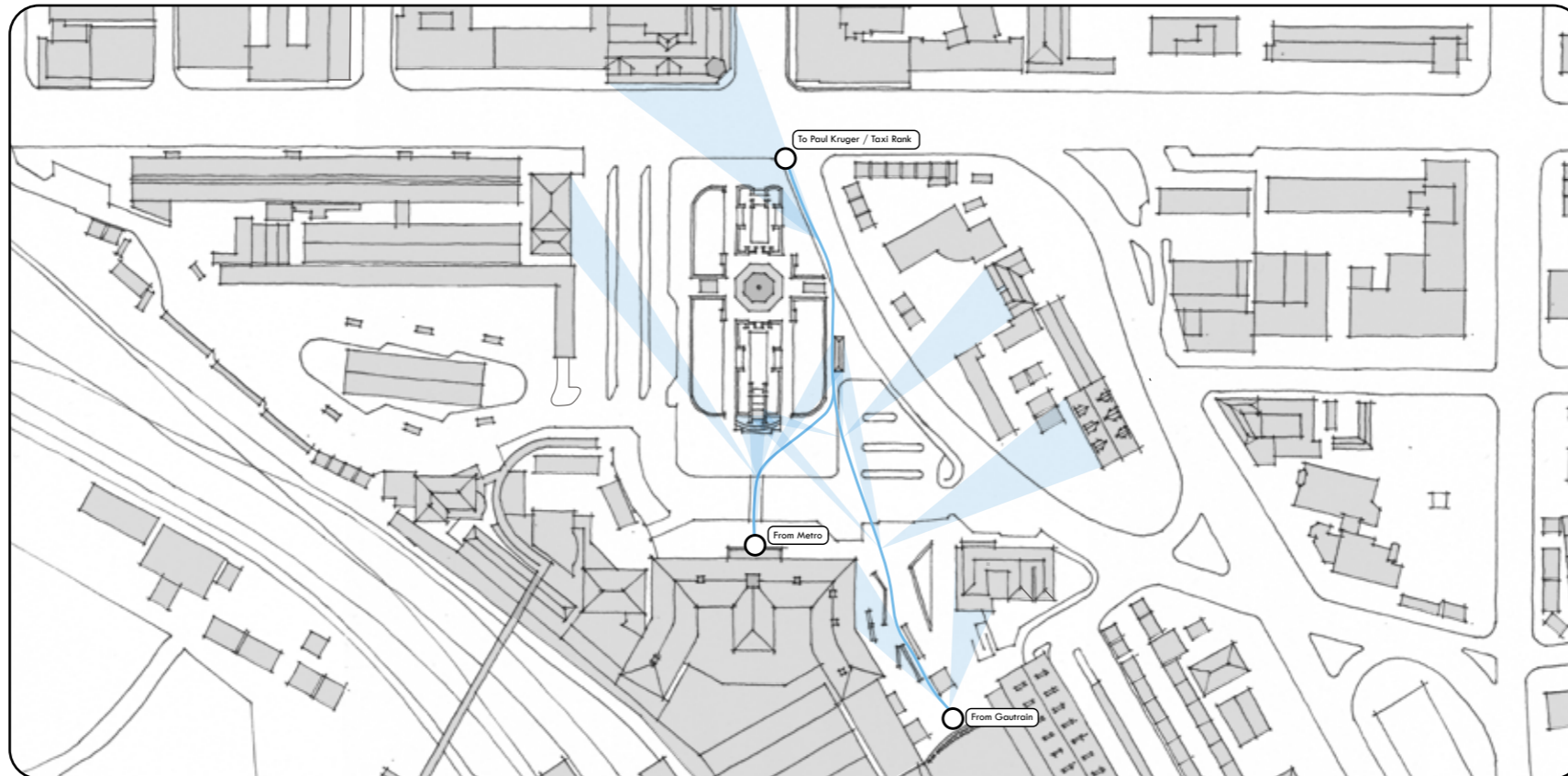
SIGHTLINES TO MAINTAIN - SOUTH TO NORTH

Fig. 4.32: Major sightlines of artefacts – walking from the South to the North of the Forecourt (Ullrich 2020)

N
50m

1

Palm trees - from original forecourt garden; allude to palm trees of Pretoria public parks; hierarchy and sense of place

Mobile Kiosk Store - obstructs pedestrian movement across the site

Printing Works - view of original NZASM building, and historical origins of station

Central hexagonal plinth - relocation of Paul Kruger statue has resulted in a spacial void; lack of defining central datum element for forecourt planning

Slate-stone retaining wall separating movement route and grass, resting area

Removal of fourth forecourt quadrant - results in undefined space, and detraction from significance of forecourt

Freestanding advertisement board - detracts from cultural significance of place

Fig. 4.33: View 1 (Ullrich 2020)

2

McDonald's signage pylon - landmark defines destination point; competes with Station's

Retaining wall - long barrier between movement routes

Old Bus Shelter - overhang defines movement route

Fig. 4.34: View 2 (Ullrich 2020)

PEDESTRIAN NARRATIVE - NORTH TO SOUTH

● **MEMORY**
● **BOUNDARY**
● **MOVEMENT**

3

Telkom Tower - sightline of contextual landmark

UNISA Winnie Madikizela-Mandela Building - sightline of contextual landmark

Gautrain Station - sightline of destination station; does not compete with historical structures

Old Pretoria Station Clock Tower - landmark and time visible above trees

Old War Memorial - gates block through-way

Stone retaining walls act as boundary between movement and stasis space

Old Audit Building - currently a McDonald'; a popular fast-food diner for pedestrians en-route

Fig. 4.35: View 3 (Ullrich 2020)

4

Old Maintenance Shed - currently utilised as shelter for bus station; part of collective of original NZASM structures

Gautrain Station - transparent, glass facade, reflects surrounding context; does not compete with historical structures

Blue Train Entrance - arched structure alludes to the historical monumental arches at Church Square and the Pretoria Station along Paul Kruger Street; keystone motif a recurring element amongst surrounding station buildings

Empty planting boxes - unappealing for seating; lack of shading and vegetation

Fig. 4.36: View 4 (Ullrich 2020)

5

Shadowed void - contrast to facade; dynamism of changing shadows

Classical hierarchical facade - more slender colonnade supported by sedentary 'plinth', and supporting the pitched roofing

Arcade of porte cochère marking the main point of entry

Clock Tower - physical vertical structure of axis mundi; indicating Station's entrance and Pretoria's point of access/exit

Trabeated colonnade of coupled columns - classical order and rhythm to facade, influences classical layout of forecourt

Keystone motif of archway

Rusticated sandstone masonry - sedentary base; providing a human-scale rough texture

Bollards - utilising railway track profile; barrier contributing to sense of place

Pedestrian crossing - raised level; minor attempt to 'prioritise' pedestrian movement

Fig. 4.37: View 5 (Ullrich 2020)

PEDESTRIAN NARRATIVE - NORTH TO SOUTH

● **MEMORY**

● **BOUNDARY**

● **MOVEMENT**

6

McDonald's pylon signage dominating skyline; lack of distant vertical landmark structure

Empty planting boxes - unappealing for seating; lack of shading and vegetation

Water feature not functioning; could accommodate seating

Fig. 4.38: View 6 (Ullrich 2020)

7
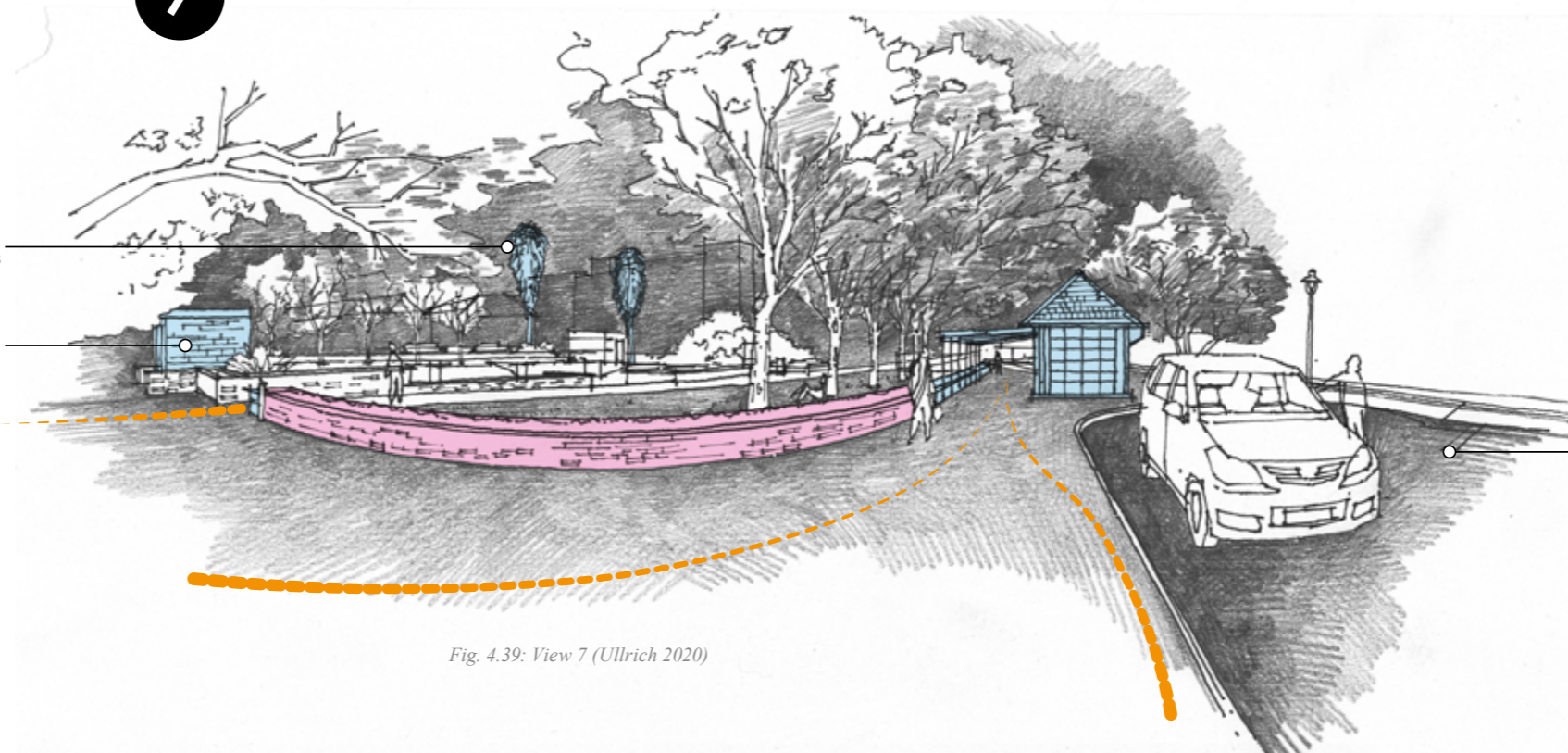
Reminder of War Memorial - unable to access due to gates

War Memorial - inscribed reminder of death and country's history; unable to access due to gates

Pedestrians move through parking space from Gautrain Statio; shortest route; occupied by taxi cab vehicles

Fig. 4.39: View 7 (Ullrich 2020)

MEMORY

BOUNDARY

MOVEMENT

PEDESTRIAN NARRATIVE - SOUTH TO NORTH

8

Old Bus Shelter - overhang defines movement route

Natural shading for refuge area

Fever trees provide natural soft shade for grass area; public park-like space for rest and refuge for travellers

Slate-stone retaining wall - separating movement route and grass, resting area

Fig. 4.40: View 8 (Ullrich 2020)

9

Sightline of Victoria Hotel

Minimal space for pedestrian movement to pedestrian crossing

Paul Kruger Street to Church Square

Sunken garden - seldom used, despite being a public space; corners provide spaces for refuge, especially homeless

Boomed-off extension of Paul Kruger Street cutting through forecourt area

Historical slate-stone retaining walls - boundary for linear movement route

Cycads - part of original garden planting; emphasise threshold entrance into forecourt

Fig. 4.41: View 9 (Ullrich 2020)

PEDESTRIAN NARRATIVE - SOUTH TO NORTH

MEMORY

BOUNDARY

MOVEMENT

4.5

HERITAGE ANALYSIS OF FORECOURT

The dissertation will require the analysis and identification of heritage resources at the Forecourt, in order to determine the possible extent of an intervention, and its ability to retain, and, where possible, enhance these resources and the character of the place (Republic of South Africa 1999: 3, 43). The research follows the four analytical steps defined by Wessel de Jonge and Marieke Kuipers (2017: 72–98) as a guide for analytically mapping heritage sites, synthesising the findings, and graphically communicating the findings to others. These steps have been adapted for the dissertation, and the stages of analysis can be summarised into the following:

1. Chrono-Mapping - The chronological evolution of the heritage site towards its current state

2. Valuation – Initially identifying and classifying the site's heritage artefacts according to a particular set of valuation parameters, and further analysing artefacts of a high-level of significance.

3. Levels of Significance – Differentiating the identified heritage artefacts into three levels of heritage significance, which synthesise the relevant facts, built fabric, and values, into a graphic visualisation.

4. Position Statement – Based on the outcomes of the previous three stages, an outline is made regarding intervention opportunities, conservation obligations, and critical dilemmas for the heritage of the site.

1825 - King Mzilikazi Khumalo arrives in the Transvaal region.

1837 - The Matabele and Mzilikazi tribes are defeated by the Voortrekkers - forced to flee area.

1840 - First permanent Voortrekker settlers in Pretoria area.

1892 - Victoria Hotel (Originally Station Hotel) built with the intention to accommodate railway travellers. It is representative of the South African Republican style (Eclectic Wilhelmiens) (Allen, 1971: 127-130; Le Roux, 1993: 27-28).

1899 - Cavalry ceremony at the Pretoria Station for the arrival of Paul Kruger from the Bloemfontein Conference.

1902 - Old Pretoria Station Coronation Archway constructed at the southern terminus of Market Street (Paul Kruger Street) by Imperial Military Railway (IMR) employees.

1909 - Construction of a new station was decided upon by the Transvaal Government with surplus revenue that it did not want to transfer to the new Union cabinet.

1938 - Great Trek centennial campaign to move Kruger's Statue. City Council received thousands of petition letters.

1947 - Royal Family arrives at Pretoria Station for the Royal Tour. Royal Family walks around the Kruger Statue, before being driven down Kruger Street towards Church Square.

1953 - Prime Minister D.F. Malan laid the cornerstone of the new pedestal at the centre of Church Square.

1954 - Kruger Statue relocated from Pretoria Railway Station to Church Square, including the four sentinel statues.

2001 - Pretoria Railway Station main building fire, destroying the roof structure and damaging the clock tower.

2010 - Forecourt restoration and upgrade by kwpCREATE Architect.

2011 - Pretoria Gautrain Station, flanking the East of the Old Pretoria Station building, commences operations.

1855 - Pretoria founded by Marthinus Pretorius.

1860 - Pretoria becomes capital of Transvaal region.

1893 - Arrival of the first train at the Old Pretoria Railway Station.

1902 - South African War concludes with the signing of the Peace of Vereeniging Treaty at Melrose House, Pretoria.

1909 - Herbert Baker commissioned as Architect to design Pretoria Station and Station Forecourt.

1910 - New Pretoria Railway Station building completed.

1910 - Pretoria becomes administrative capital of South Africa.

1912 - Operations started at the Herbert Baker Pretoria Railway Station building.

1925 - Prime Minister J.B.M. Hertzog unveils the Paul Kruger Statue (on the pedestal moved from Church Square) at the centre of the Pretoria Station Forecourt.

1928 - Small office building constructed on the eastern side of the main Station building - called the Audit Building.

1936 - Kruger Committee met with over 20 000 of its members to pressure the Mayor into moving the Kruger Statue to Church Square. The City Council did not address the campaign.

1939 - City Council agrees to relocate Kruger Statue from the Pretoria Station to Church Square.

1939 - Last tram trip made from Church Square to the Station; Replaced by trolley bus system, and tracks were subsequently removed or built over.

1994 - Inauguration of president Nelson Mandela at the Union Buildings.

2001 - During restoration, a swastika symbol was discovered on the plasterwork above the clock-tower (Davie 2002).

2002 - Restoration of roof structure completed.

2020 - Coronavirus (COVD-19) pandemic - lockdown restricts functioning of public transport facilities at Old Pretoria Station.

Fig. 4.42: Timeline of the Old Pretoria Station Block (Ullrich 2020)

1889

Fig. 4.43: Figure-ground of station - 1889 (Ullrich 2020)

1889

1889
1901

1901

Fig. 4.44: Figure-ground of station – 1901 (Ullrich 2020)

1889
1901
1911

1911

Fig. 4.45: Figure-ground of station - 1911 (Ullrich 2020)

1889
1901
1911
1967

1967

Fig. 4.46: Figure-ground of station - 1967 (Ullrich 2020)

4.5.1 CHRONO-MAPPING

2005

⚫	1889
🔴	1901
🟠	1911
🟡	1967
🟢	2005

N
50m

Fig. 4.47: Figure-ground of station - 2005 (Ullrich 2020)

2009

⚫	1889
🔴	1901
🟠	1911
🟡	1967
🟢	2005
🔵	2009

N
50m
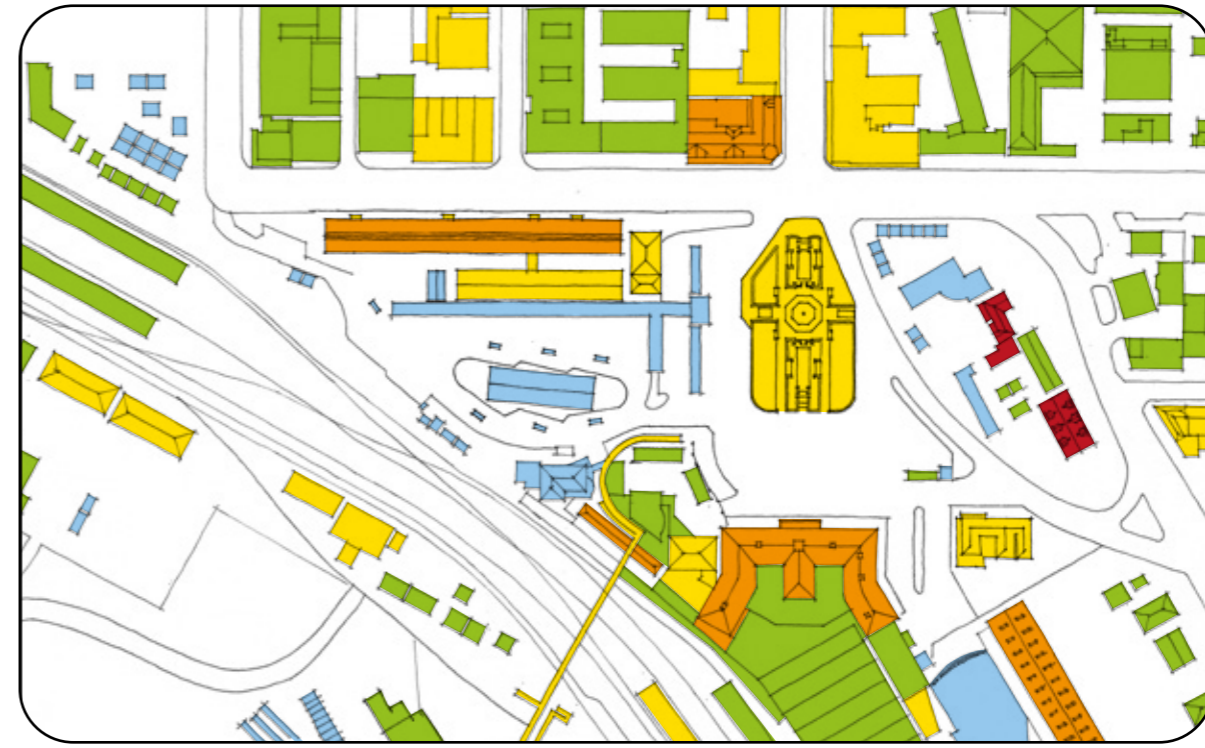
Fig. 4.48: Figure-ground of station - 2009 (Ullrich 2020)
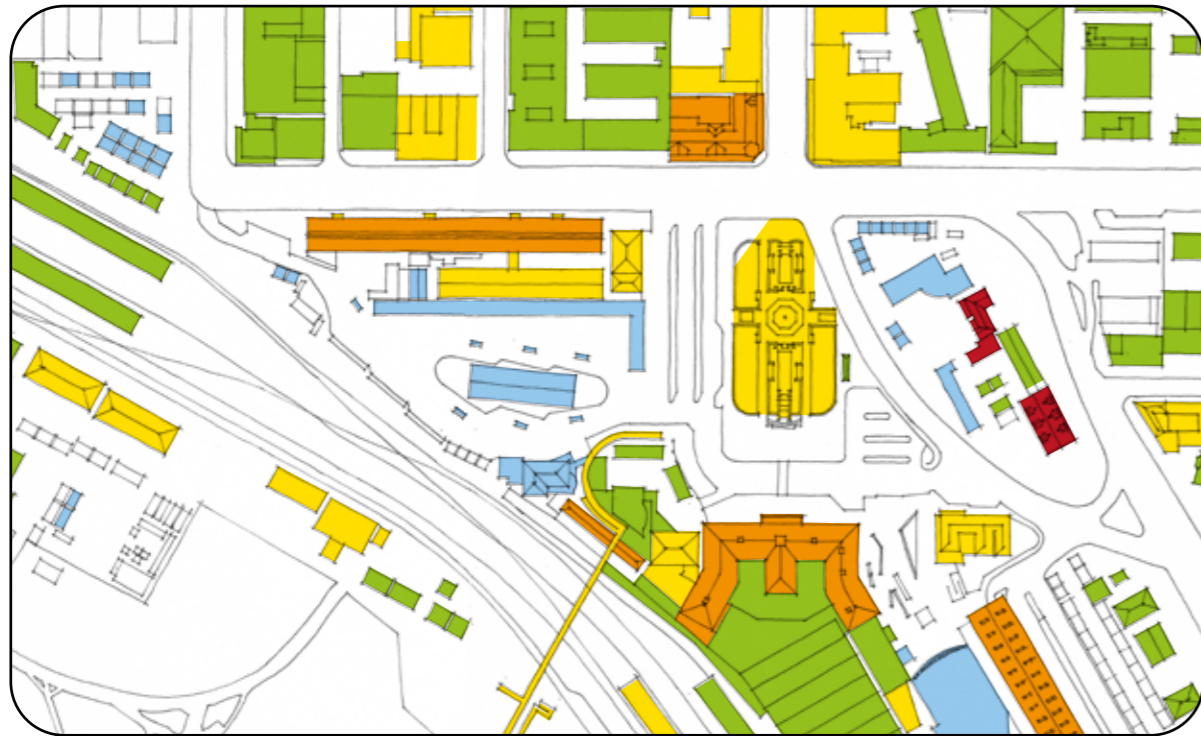
2020

⚫	1889
🔴	1901
🟠	1911
🟡	1967
🟢	2005
🔵	2009
⚪	2020

N
50m

Fig. 4.49: Figure-ground of station - 2020 (Ullrich 2020)

4.5.1 CHRONO-MAPPING

4.5.2 VALUATION

The dissertation initially identified and classified the site's heritage artefacts according to a particular set of valuation parameters. Artefacts classified with a general high-level of significance were further analysed, in order to sufficiently inform the response of the design intervention. For the initial valuation, a value-matrix was developed, which utilised an adapted set of Rieglian values on the horizontal axis, and the various built artefacts, within and surrounding the Forecourt site, on the second axis. The artefacts, in their present state, are directly evaluated within these Rieglian parameters, and graded according to collected data. As argued by Kuipers & de Jonge (2017: 85), many available criteria used for conservation do not always accommodate for the adaptive re-use of a space, and what aspects are vital in order to allow for the space to function within a continuously changing environment – a challenge for heritage buildings within the urban context. Alois Riegl's (1903) parameters were selected due to their recognition of present-day values and historical commemorative values – an antipodal theme incorporated in the dissertation's research (Fig. 4.49). As suggested by Kuipers & de Jonge (2017: 86), Riegl's values have been added to with the addition of three columns. A 'Rarity' column – which aids the identification of endangered aspects of cultural heritage (Republic of South Africa 1999, sec. 3) – a column which identifies 'Spatial Potential for Adaptive Re-Use', or the potential of replacing the current function – an option that Riegl did not explicitly address

within his parameters (Kuipers & de Jonge 2017: 87) – and a column for additional information that adds value to the analysis. Value within the parameter was colour-graded, with green for aspects of high value, yellow for aspects of moderate value, and empty cells being of a low or negligible value.

From the valuation-matrix table (Fig. 4.50), it was identified that the Pretoria Station Main Building, the Forecourt Formal Garden, and the Old Bus Shelter within the Forecourt, required further analysis due to their high-level of significance and their contribution to the spirit of place for the block and surrounding context.

From the available legislation and guidelines for heritage resources management, the dissertation will utilise the South African National Heritage Resources Act (1999) and the Burra Charter (2013). South Africa has incorporated the use of the Burra Charter as a guide for "basic principles and procedures" for heritage management, which align with the regulations outlined in the National Heritage Resources Act. The Burra Charter utilises four overarching types of values to aid the identification and management of culturally significant heritage resources, namely: Aesthetic, Historic, Scientific, and Social (ICOMOS 2013: 2). These categories have been used to further analyse the significance of the above-identified artefacts – including an overall summary of the block as a whole. The values are not mutually exclusive, and to aid readability, the aesthetic and social category have been merged.
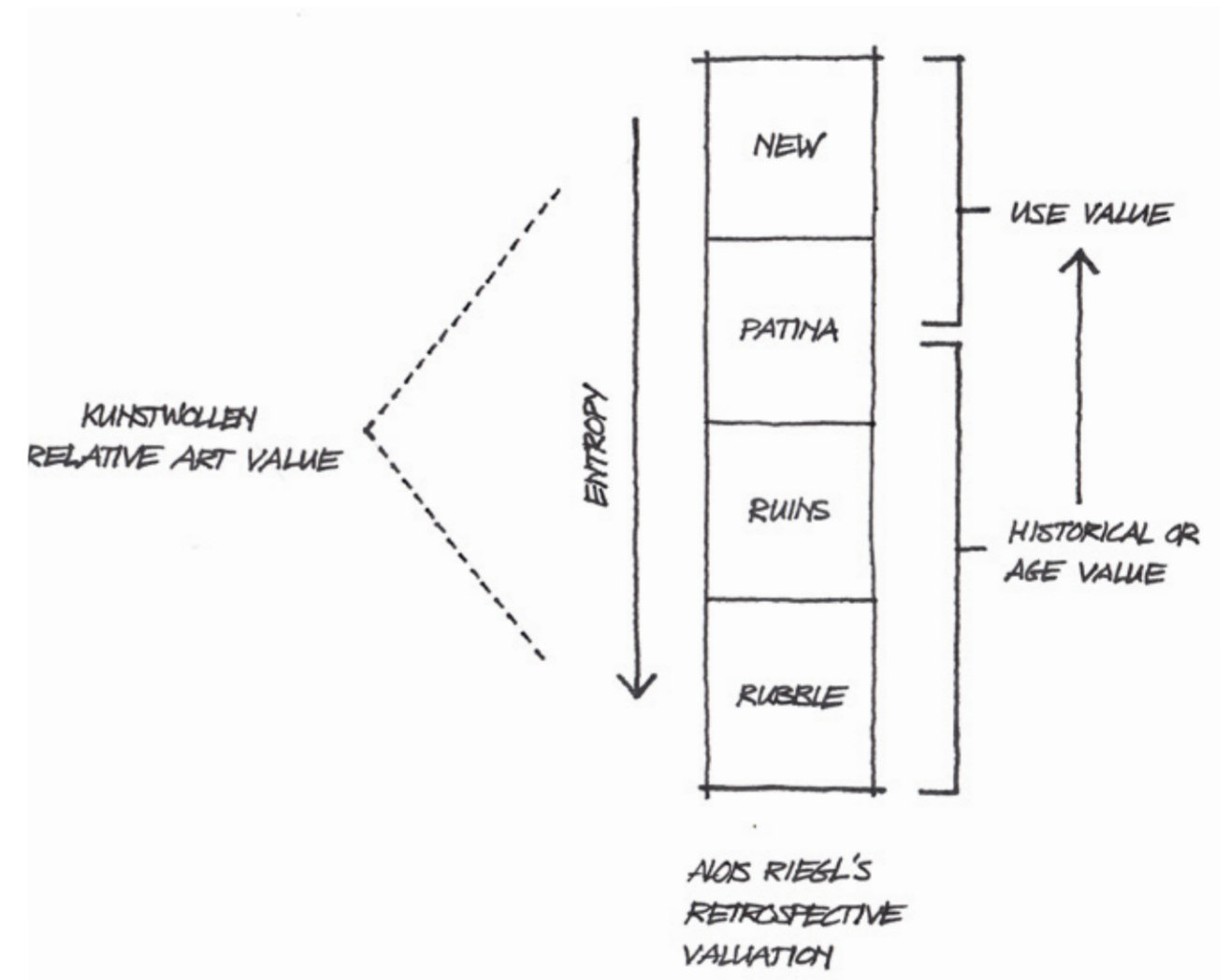
Fig. 4.50: Alois Riegl's Retrospective Valuation (Ullrich 2020, adapted from Clarke & Kuipers 2017)

Site Features	Commemorative Values			Present Day Values					Requires Further Analysis	Other Information
	Age Value	Historical Value	Intentional Commemorative Value	Current Usage	Spatial Potential for Adaptive Re-use	New-ness Value	Art (Relative) Value	Rarity Value		
Pretoria Station Main Building	High	High		High			High	High	☑	- Functions as a prominent gateway into the city for train commuters - Belongs to the corpus of work of Herbert Baker's civic buildings in South Africa, and a precedent for the Union Buildings - Accommodates tens of thousands of travellers everyday - Restored in 2011 - Functions as a historical axis mundi for the precinct and the city
Gautrain Station Main Building				High		High				- Functions as a prominent gateway into the city for train commuters - primarily aimed for middle to upper-income earning individuals - The building is representative of the drive for Gauteng and the City of Tshwane to prioritise 'efficient' public transport use - Accommodates thousands of travellers everyday
Gautrain Station Bus Shelter	High	Moderate		High	High			High		- Structure originally used for the train shunting yard - Adaptively reused to accommodate the Gautrain Bus facilities - One of the few industrial structures of this period remaining within Pretoria
Old Audit Building	High	High		High	Moderate	Moderate	High	High		- Built to facilitate the Railway Station administrative processes - Design language can be understood as a continuation of the Station's main building design - Re-used as a McDonald's fast-food restaurant - intervention is respectful of external design elements, despite large McDonald's pylon signage which detracts from the landmark sightline of the Station's main building
Forecourt Formal Garden	High	High	High	Moderate	Moderate	Moderate	High	High	☑	- Original formal garden designed for the main station building, and is reminiscent of the building's formal qualities - Slate-stone retaining walls, formal planting, and symmetrically planted palm trees, part of the original Herbert Baker design - Formal garden elements adhere itself to the body of formal public parks within Pretoria constructed during the early 20th century - Commemorative War Memorial as southern entrance to the garden - currently closed-off
Forecourt Parking				Moderate	High					- Used as a parking space for staff personnel of the railway station or offices to the East of Paul Kruger Road - Taxi cabs park in this area
Paul Kruger Road Addition				Moderate	High					- Currently only restricted access with boom-gate on either end of the street - Primarily used for vehicular parking space for staff personnel of the railway station or offices to the East of the road - Removed the North-East quadrant of the formal forecourt garden
Old Bus Shelter Structure	Moderate			High	High	Moderate		Moderate	☑	- One of the first bus shelter structures within Pretoria - Dismantled, and rebuilt in 2011 - Relocated to be adjacent to the forecourt formal garden - Currently used as a technology appliance kiosk store
Fast-Food Containers				Moderate	Moderate					- The mobile facilities currently cater for fast food sales - The units replace the informal trade which occurred on the site, which is now prohibited, and replaced with formal multi-national corporation fast-food businesses and mobile structures - Despite the structures having the ability to be easily relocated, they can be argued to be detracting from the 'spirit of the place' by globalised fast-food iconography.
PRASA Office				Moderate	Moderate					- A corporate office building that originally functioned as a South African Police station, currently functions as a PRASA office - Lack of significant heritage links and value - Disrupts the sightline of the Pretoria Station main building from Scheiding Street
Printing Works Building	High	High		Moderate	Moderate		High			- Constructed in 1896 for stationary and goods storage for the railway station - Has been through numerous restorations - Simon van der Stel Foundation prevented its demolition in 1969, and a subsequent restoration by the SAR took place - Used to house important goods during Anglo-Boer War (1899-1902) - Mainly an administration building for the station from 1942 - Currently functions as the Autopax office
Station Master's House	High	High		Moderate	Moderate		High			- Typical of the Wilhelmiens architecture of the period - Part of the original family of Station buildings - Distinguishing stoep (verandah) and stickwork decoration of the period - replaced with steel posts and timber beams - Representative of the type of housing for NZASM employees, designed by Johannes Rienk Burg - Type of housing built adjacent to the railway track, primarily within towns, and continued on the line to Komatipoort - Currently forms part of the PRASA offices

HERITAGE VALUE MATRIX

Fig. 4.51: Heritage value matrix (Ullrich 2020)

● HIGH VALUE
● MODERATE VALUE

4.5.2.1
SIGNIFICANCE OF
STATION BLOCK

Historical

In 1892, Pretoria's first railway station was established at the southern terminus of Market Street (now Paul Kruger Street), which provided a direct axial link between the heart of the city, Church Square, and the Station. Built by the Netherlands-Southern Africa Railway Company (NZASM), the station functioned as the western terminus of the trainline to the coastline of Mozambique (Transnet Freight Rail 2018). A number of the original station buildings are still present adjacent to the train track.

Paul Kruger Street has formed part of a historic processional route between the Station and Church Square, accommodating everyday travellers, as well as historic ceremonial events – such as The Royal Tour of 1947.

A pedestrian foot-bridge currently extends from the South-West of the Station block, across the railway lines, to Salvokop – this bridge is the only direct connection for pedestrians between the inner-city and Salvokop.

Social & Aesthetic

The block can be understood as a threshold gateway into or out of the inner-city, with commuters using one of the transport facilities within the Station block, such as the Metrorail train, the Gautrain, the Blue Train to Cape Town, the bus-stop, or the taxi-rank. For many commuters, the Station block forms an important part of their daily ritual – facilitating their experience of crossing the boundary into the city. A cultural, social, and physical link has developed between the Station and the city centre, Church Square. The Station and the Forecourt have been symmetrically designed along the axis of Paul Kruger Street, which accentuates its sense of place within the city.
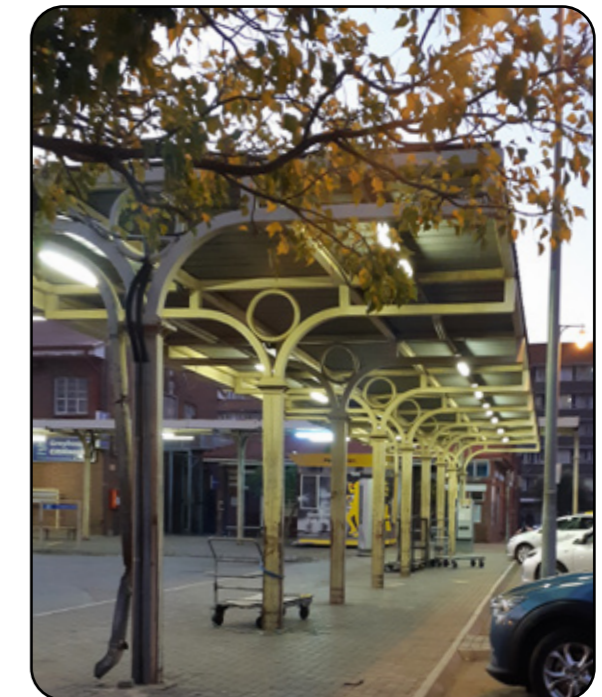
Clockwise from top:
Fig. 4.52: Forecourt Garden with background of Old Station Building (Ullrich 2020)
Fig. 4.53: Old War Memorial with historic tram line (Ullrich 2020)
Fig. 4.54: Bus Station canopy structure (Ullrich 2020)
Fig. 4.55: The Royal Family ambulating around the Paul Kruger Statue (Atom Repository 1947)

4.5.2.2
PRETORIA STATION
MAIN BUILDING

Historical & Scientific

The Pretoria Railway Station, built in 1908 with excess funds by the Transvaal Colony government, was Sir Herbert Baker's first public civic building designed and constructed within South Africa (Greig 1970: 167). Some of the architectural techniques and materials used on the Station were applied and further developed for use on the Union Buildings. The Pretoria Railway Station can be understood as a prototype for Sir Herbert Baker's spatial and material explorations, in order to assess their appropriateness for the climatic conditions of Pretoria (1970: 172). The building was intended to accommodate the multiple train lines passing through and terminating in Pretoria, with the trainlines forming an angle of thirty degrees to the axis of Paul Kruger Street. The Station's façade and main entrance perpendicularly face Paul Kruger Street, whilst the platforms and wings of the building run parallel to the terminal and through-going tracks. As of 1992, the Station was granted as a Provincial Monument by the South African Heritage Resources Agency, and is currently granted Provincial Protection according to the National Heritage Resources Act (1999). In 2001, the main station building experienced extensive rooftop fire damage (Davie 2002). A restoration of the entire roof was required, as well as general maintenance for the entire building. Baker's initial drawings were utilised to aid the restoration of the roof to its original design.

The finances and effort spent on the restoration of the Station (Davie 2002) is indicative of the building's high-value of significance as a heritage resource to the community, and the authorities' acknowledgement and support of this significance.

Social & Aesthetic

Since the construction of the Pretoria Railway Station in 1910, the building has functioned as a vertical, physical landmark, an axis mundi, as one looks southwards along Paul Kruger Street. The Station is a reference of entry into the city, and a final destination for departure from the city for over seventy-thousand travellers crossing the threshold of the Station every day (Davie 2002).

Fig. 4.56: Porte cochère of the Old Station entrance (Ullrich 2020)

Fig. 4.57: Entrance facade of the Old Station (Ullrich 2020)

4.5.2.3
FORECOURT GARDEN

Historical

The original layout of the forecourt was designed by Sir Herbert Baker, and functioned as a public garden that complemented the main station building. The current formal garden is the fourth iteration of the original design, and features compartmentalised flower beds, slate-stone retaining walls, and palm trees. Numerous alterations have enhanced, as well as detracted from the original design. The tram-route, originally moving through the centre of the garden along Paul Kruger Street, was later moved to ambulate around the Forecourt. The tracks defined the boundary around the garden, and subsequently resulted in its island-like placement, and the rounded corners of the outer quadrants.

Since its construction in 1910, a series of alterations to the Station's Forecourt have resulted in large fragments of under-utilised public space. The biggest alteration was the extension of Paul Kruger Street, cutting through the eastern portion of the site to merge with Railway Street, in order to facilitate the one-way vehicular movement plans for the city. The through-route extension is currently utilised as parking space, and a popular pedestrian movement route. The original North-East quadrant of the Forecourt, defined by slate retaining walls, was removed during the extension. The removal of the fourth quadrant has detracted from the garden's symmetrical layout and its historical significance.

The North-West stone walls were additionally removed to aid traffic flow into the block. During the garden's restoration and upgrade in 2010, the North-West quadrant was restored, however, the North-East quadrant remained vacant. All informal trading activities were prohibited from the site, and encouraged to take-place within the market building to the North-West of the site on Scheiding Street (kwpCreate 2011). The Forecourt Garden therefore lacks informal trade or diverse programmatic activities. The site is rich in layers of cultural memory, with a number of commemorative and historically significant artefacts found within and adjacent to the site. The Paul Kruger Statue, unveiled in 1925, once stood at the centre of the Forecourt on its plinth, before it was relocated to Church Square in 1953 (SAHA 2019). The raised plinth currently functions as a central feature to the garden, and as a remnant of the statue's old position, resembling a link between the Station's Forecourt and Church Square. The World War II Memorial once functioned as a threshold entrance into the southern end of the Forecourt garden, however, in recent years, the space has been gated – forming a small-scale example of a gated commemorative site within the city, and restricting the Forecourt's central movement route. The central, sunken portions of the garden, defined by the slate-stone retaining walls, once contained water pools - which have been removed and replaced with lawn.

Social & Aesthetic

During rush-hour periods, the Forecourt pathways facilitate movement through the space. The quadrant walls accommodate seating whilst one waits for transport, as well as define areas of lawn and tree shade which are used for refuge during meal-times. The central, sunken portions of the garden are occasionally used by commuters. The sunken gardens provide pockets of privacy and refuge within a busy area of the city, and the private alcoves defined by the walls provide ideal resting spaces for homeless individuals.

Fig. 4.58: Forecourt slate-stone retaining wall (Ullrich 2020)

Fig. 4.59: Aerial photograph of first Forecourt layout and tramline (Atom Repository c1925)

4.5.2.4
OLD BUS SHELTER

Historical

The structure was one of the first bus shelters within Pretoria. Prior to the Forecourt's restoration and upgrade in 2010, the shelter was located to the South-East of the block, at the junction of the parking space and Paul Kruger Street. During the restoration, the structure was dismantled and rebuilt adjacent to the North-South longitudinal pedestrian path to the East of the Garden (Fig. 4.60).

Social & Aesthetic

According to the architects responsible for the restoration, the structure was intended to become an information kiosk, SAPS information counter, and a ticket sales office (kwpCreate 2011). Currently, the structure is used as a shop for digital products. The shop does not engage with the pathway, nor does it contribute to the spirit of the place. The structure's pitched roof with clay tiles, and the industrial steel-framed window panels, ascribe it to the rare body of early railway buildings within and around the block.

Fig. 4.60: Old Bus Shelter currently functioning as a cellular repair store (Ullrich 2020)

4.5.3
LEVELS OF SIGNIFICANCE

DEGREE OF HERITAGE SIGNIFICANCE

N
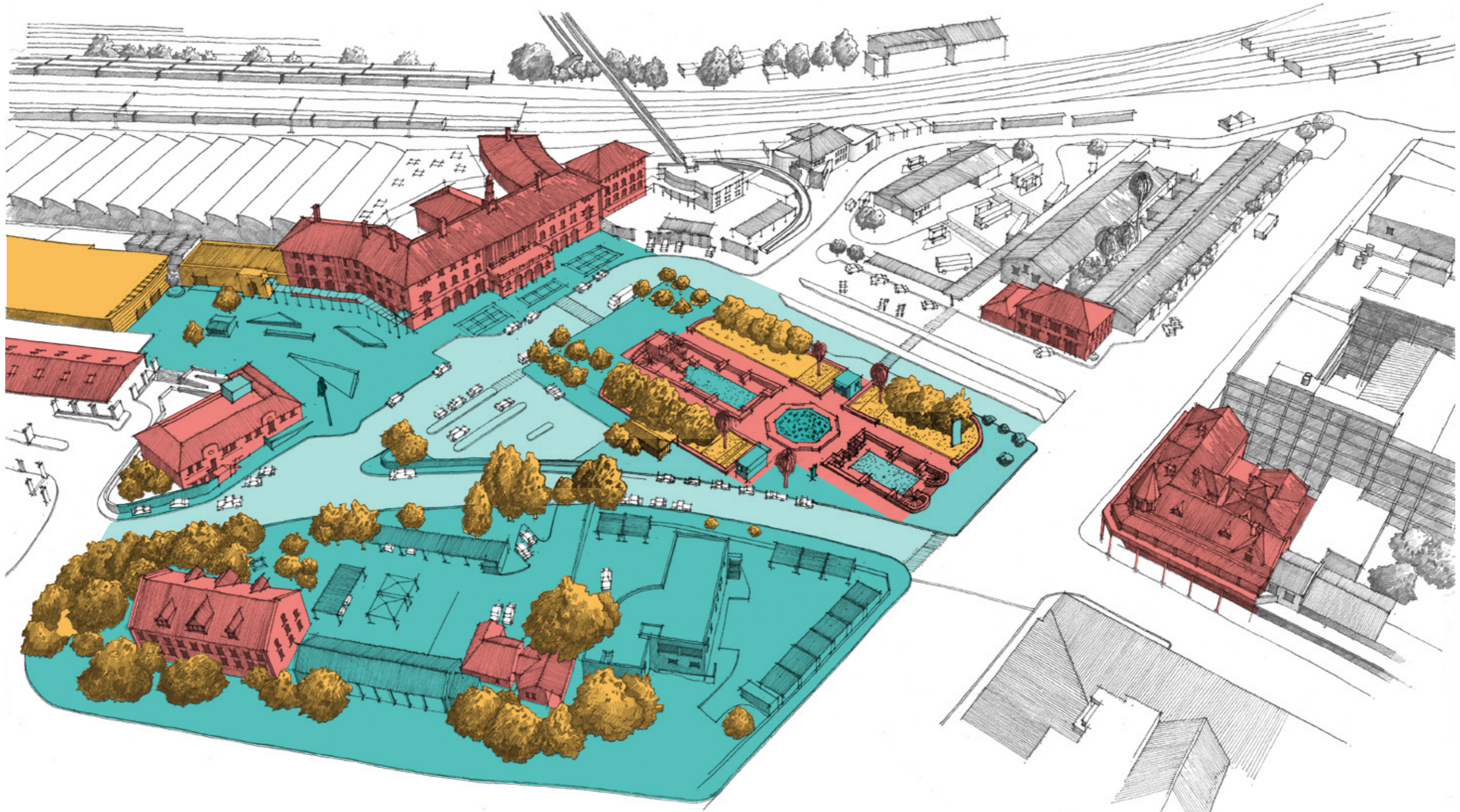
50 m

● HIGH-LEVEL SIGNIFICANCE   ● LOW-LEVEL SIGNIFICANCE

● MODERATE-LEVEL SIGNIFICANCE   ○ NEGLIGIBLE / OUTSIDE SCOPE

Fig. 4.61: Aerial drawing indicating degree of heritage significance of artefacts (Ullrich 2020)

4.5.4
STATEMENT OF SIGNIFICANCE FOR FORECOURT AREA

For over a century, the Railway Station block has functioned as a reference of entry into the city, and as a final destination for departure from the city. The Old Station Building and its Forecourt have accommodated this activity of transitioning between the city and the outside world, and their design is intrinsically linked to the arterial movement routes that helped to define the development of the city of Pretoria.

The Old Station Building forms part of the corpus of work of Sir Herbert Baker, and acts as a physical precedent to the Union Buildings. The symmetrical classical layout of the Forecourt, with its compartmentalised flower beds, slate-stone retaining walls, and palm trees, ascribe the space to the corpus of culturally significant park spaces found within Pretoria. The intervention must sustain the qualities of this park-like space, and the historic stone walls that define it. The Old War Memorial acts as a physical artefact of collective commemoration for victims of combat, and the historic significance of South Africa's involvement in the War and its membership to the Commonwealth. The plinth of the Paul Kruger Statue is a reminder of the historic link between the Station and Church Square. It is pertinent for the intervention to retain the site line of the Old Station's 'Baker Style' façade from Paul Kruger Street, and for the proposal to retain or enhance its historic link with Church Square by means of Paul Kruger Street. The sightlines of the surrounding, early railway buildings must also be retained.

Fig. 4.62: Arrival of train at Old Pretoria Station (UPSpace c1899)

Fig. 4.63: Paul Kruger Statue at the centre of the Forecourt (Hilton c1925)

Fig. 4.64: Panorama looking down Paul Kruger Street from centre of Forecourt (Ullrich 2020)

4.5.5
CONTEXTUAL INTENTIONS

In response to the site's Statement of Significance, the dissertation highlights possible site opportunities for an intervention, by sustaining, enhancing, or altering existing aspects of the contextual fabric:

• Sustain the existing movement routes and prominent desire-paths through the site

• Sustain sightlines of the historic NZASM Railway buildings

• To engage the under-utilised historic NZASM Railway buildings with the public space

• Enhance existing refuge spaces, and incorporate quieter communal spaces into the area

• Sustain the classical park-like qualities of the Forecourt, with its compartmentalised flower beds, slate-stone retaining walls, and palm trees

• Reintroduce and enhance the Forecourt's street interface with Scheiding Street and the through-ways

• To restore the Forecourt's symmetrical planning by reintroducing the demarcation of the fourth quadrant, and reinterpret its programmatic role

• To re-purpose the void of the plinth that once displayed Paul Kruger's Statue

The Statement of Significance and Contextual Intentions helped to define a focus intervention area.

4.6

SITE DEFINITION

The intervention primarily locates itself adjacent to the Paul Kruger Street through-route – working within the underutilised wedge that is defined by the public streets to the North, East, and South of the area, and the Forecourt wall to the West. The site provides the opportunity to develop a private, sacred, internal space, whilst reacting to and contributing to the dynamic urban activities around it.
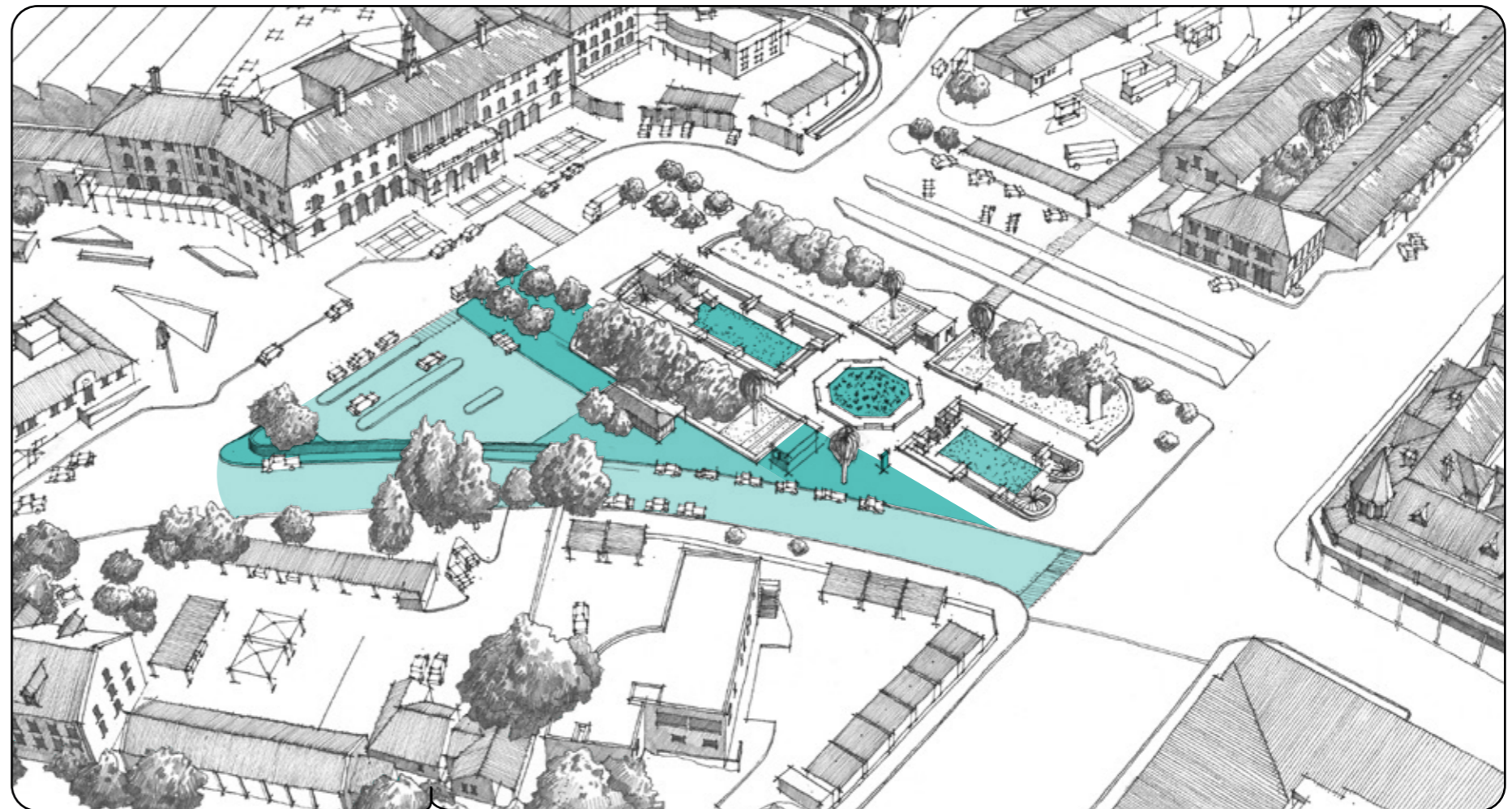
SITE INTERVENTION AREA

N

50 m

● **INTERVENTION AREA**

Fig. 4.65: Aerial drawing indicating intervention focus area (Ullrich 2020)

Fig. 4.66: Funeral for a coronavirus victim at a Mosque in Cape Town (Longari 2020)

Fig. 4.68: Empty Gautrain bus station, as security guard closes gate (Ullrich 2020)
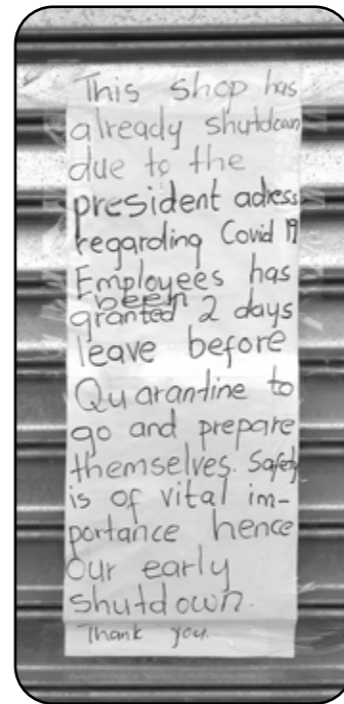
Fig. 4.67: Shop shutdown notice at Old Pretoria Station (Ullrich 2020)

4.7

A NOTE ON DISASTER MANAGEMENT & RITUAL

During the dissertation's data collection process, the Government of South Africa enacted the Disaster Management Act (2020) to mitigate the spread of the Coronavirus disease (COVID-19). The restrictions on access to civic public spaces, travelling, and the size of communal gatherings, heavily impeded the burial ritual processes of all cultural groups. Attendance at funerals was limited to fifty individuals, whilst after-funeral events and night vigils were prohibited - as they impeded on curfew hours (South African Government 2020, sec. 11B). Regional travel restrictions restricted the bereaved from burying the deceased outside of the city. Within Pretoria, bereaved families were required to either use an alternative burial method – that may not have been appropriate for their cultural burial tradition – to utilise an illegal cemetery space, or to store the deceased at a mortuary and wait for the lifting of travel restrictions. The pandemic has contributed to the demand for alternative, sustainable burial solutions for inner-city districts. In light of the pandemic, these spaces are required in order to cope with the increased mortality rate of dense urban regions – which have been the most critically affected - and in order to provide a space for the enactment of funerary rituals, especially during travel restrictions. It is imperative for cultural ritual traditions to be sustained during difficult periods in order to provide solace and a healthy grieving process.

05

ARCHITECTURAL APPROACH

RITUAL MEDIATION

5.1

ARCHITECTURAL APPROACH

The Architectural Approach critically assessed the research of the sacred lens and the quotidian lens, and synthesised the two research streams in order to develop an architectural approach for the design development. In order to provide focus for the reader, the approach is explored within the three thematic trends of the dissertation.

5.2 MEMORY

In Paul Connerton's How Societies Remember (1989), the author distinguishes between two social practices of representing memory: through the "inscription" (1989: 73) of memory onto physical objects, in order to hold onto information beyond an individual's lifespan; and the "incorporation" (1989: 72) of memory through ephemeral, physical activities and interactions. The dissertation places importance on both of these practices of imbuing memory within commemorative activities. The importance of inscribing memory onto an enduring object provides the bereaved a locus for commemorating the deceased, a tangible repository of identity, and, according to Pallasmaa (1994: 43), contributes to our understanding of the continuing development of heritage. Incorporating memory through activity is essential in sustaining ephemeral funerary rituals and interactions that define a cultural identity. It is proposed that the two forms of memory, described by Connerton (1989: 72–73), could be utilised simultaneously, in order to mutually enhance one another and enrich the layering of memory at the

site - the dissertation defines this process as ritual construction. The sgraffito process – the physical activity of inscribing or etching away at a surface - can be incorporated at the site (Leatherbarrow & Mostafavi 2005: 211). The process incorporates both the inscribed, 'storage' of memory onto an artefact, and the incorporation of memory through the ritual activity of carving onto the artefact. The intervention would need to sustain the existing Forecourt artefacts of cultural significance. There is the opportunity to reintroduce artefacts of cultural significance that have been removed from the site, such as the North-East Forecourt quadrant, and the Paul Kruger Statue. The intervention can redefine and repurpose these spaces as a means of commemorating the lost urban fabric at the site, and creating a meaningful locus for revisitation and refuge within the inner-city (Ouzman 2003: 33).

1 SUSTAINING SIGNIFICANCE
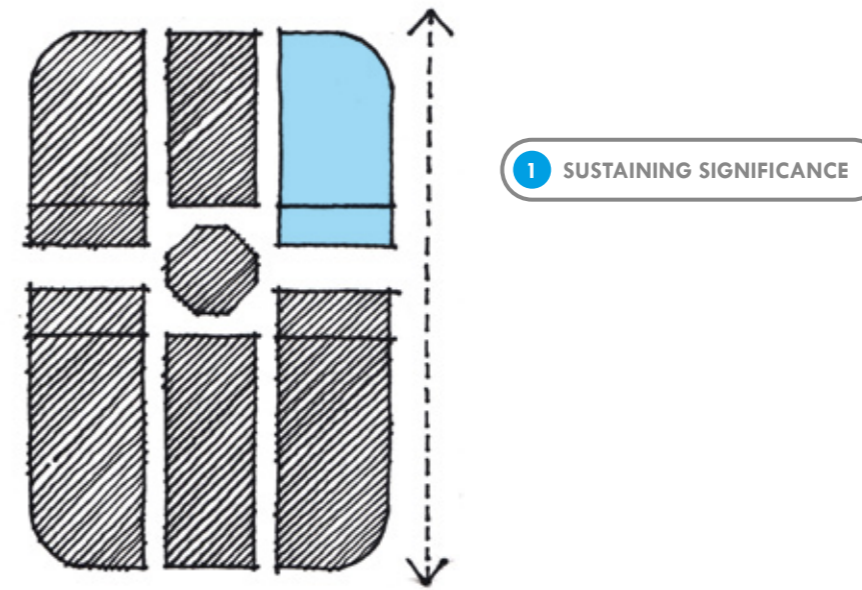
Fig. 5.1: Sustaining Significance of Forecourt (Ullrich 2020)

2 RITUAL CONSTRUCTION
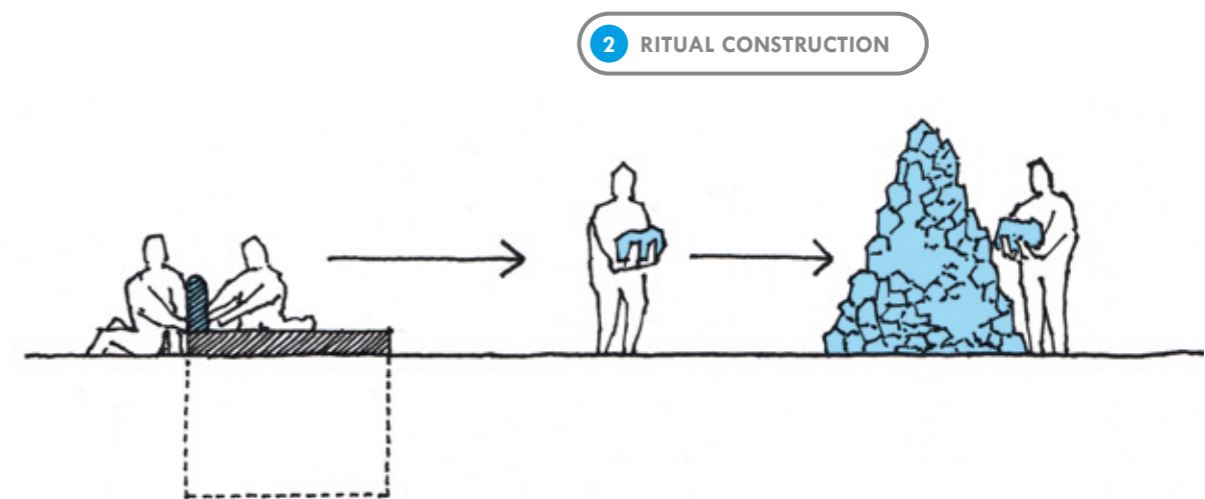
Fig. 5.2: Ritual construction process (Ullrich 2020)

5.3 BOUNDARY

The interface of a boundary can define an enclosed space, and intensify an individual's perception of the contrast between the outside and inside (Boettger 2014: 46). This demarcation of space can employ the different forms of human interface, discussed by Juhani Pallasmaa (1994), in order to define the hierarchy of the sacred realm. This entails the scale of physical material boundaries, the materiality of these boundaries, the fragrant smell of scent, and the quality of light within the space (1994: 42). By utilising multiple forms of human interface, the design acts to counter the modern hegemony on the reliance on sight as the sole sense for reason and experience (Ouzman 2003: 13). A large factor of burial rituals rely on the unseen, the imagination, and particular belief systems. By utilising different human interfaces to define the layers of a boundary, these experiences can be sustained and enhanced. The architectural space requires the boundary wall to gradually filter out the external, quotidian, public realm, as one moves into the more sacred areas. The boundary wall could be utilised as a 'sensual filter' – able to filter out certain elements, without abruptly isolating the individual from their context. This effect is achieved at the Inagawa Cemetery, where the boundary walls filter the ceremony space from direct visibility, and provide a sense of privacy, without sacrificing indirect sunlight into the space, and completely isolating the space from its context. These boundaries can provide a sense of 'shared privacy', where suspended walls can provide visible privacy, yet allow for mutual

amenities and interactions (Fig. 5.1). The body's exposure to coolness and heat is an important aspect to AIC rituals (De Heusch 1987: 539), with coolness being associated with sacrality, and aiding communication with the ancestors, whilst heat is associated with public life. This aspect is evident at the sacred Motouleng Caves as one moves further into the cooler, darker, more confined inner-sanctum of the cave. This notion is epitomised by the constructed tunnel space that connects two huts – as one must crawl through this tunnel to reach the other side and complete the rite of passage. The design intervention explores this sensation of transitioning to a 'cooler', more confined space. As one moves into the more private area of the burial space, the intervention could move the user into the subterranean realm. The design explores the hierarchy of demarcating subterranean spaces for the more private, intimate activities, and the ground-level and above-ground level realm for the more public activities. The indigenous space-making process of the Isivivane wall can be utilised for the intervention. The Isivivane wall is a symbolic memorial site, consisting of a stone pile that flanks a long pathway, where individuals can add stones to the wall during performative acts of memory (Noble 2011: 234; Ngubane 2003). The Isivivane boundary wall can help to define the primary processional movement routes through the space, act as a defining threshold, and contain commemorative objects placed within the wall during ceremonies.

Fig. 5.3: Sensual filtering (Ullrich 2020)
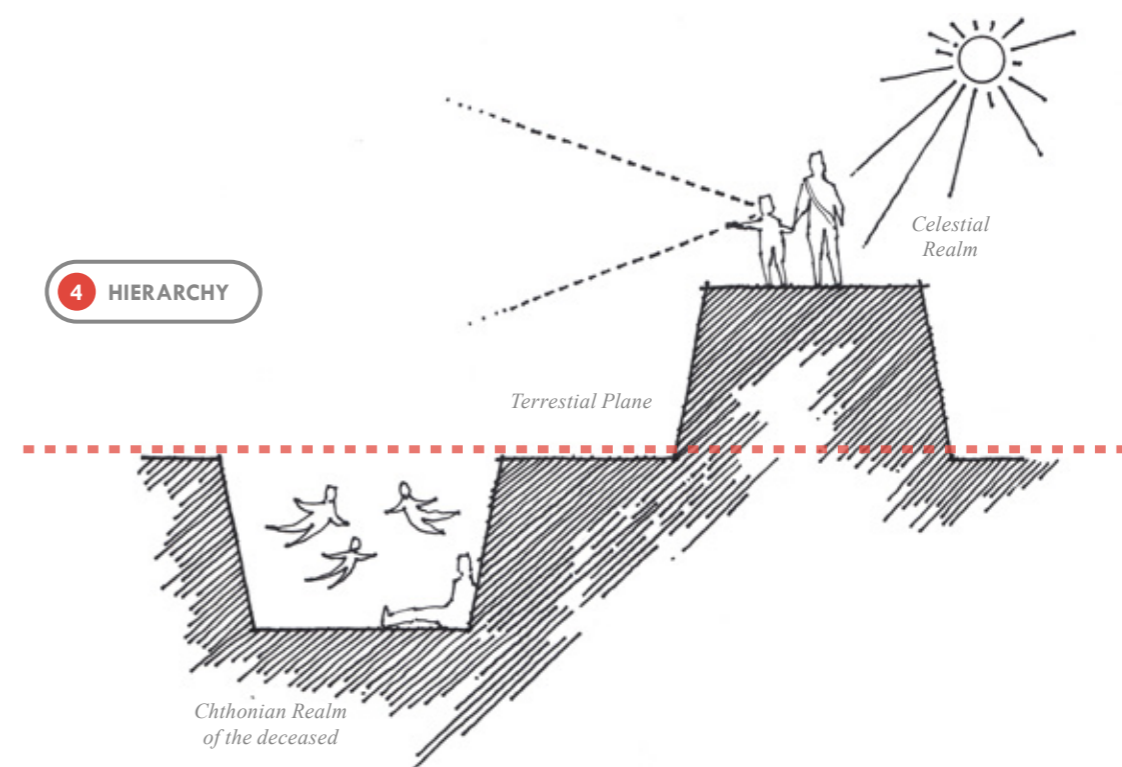
Fig. 5.4: Hierarchical realms (Ullrich 2020)

5.4 MOVEMENT

The Forecourt can be understood as a transient space – accommodating individuals moving into or out of the inner-city. Linear pathways currently accommodate heavy foot traffic through the site, whilst the outer-walls of the Forecourt define internal lawn spaces for refuge and individuals in a state of limbo – waiting for their train or bus to arrive. The intervention further utilises this existing tension between areas of movement and stasis as a design tool to define the architectural narrative.

Tom Porter (2004: 138) describes architectural 'stasis' as moments of repose and "states of equilibrium". These spaces of stasis can be used to create an auditory and perceptive experience of tranquillity – helping to provide solace to those experiencing grief (Pallasmaa 1994: 43). Pallasmaa (2007: 197) argues that the modern condition of the accelerated rate of daily consumption provokes a "cultural amnesia", and threatens our cultural remembrance. The more private spaces of the design are therefore designed with the intention of slowing the user's movement and focusing their sensual experience. As one progresses through the layers of thresholds, from the most public to the most private space, the cadence and pace of movement can be reduced. The space of highest repose, and slowest movement, is the burial area – as the sensual qualities are filtered to allow for contemplative focus, and highlight the "stillness of death" (Porter 2004: 138).

Processional space is an ordering principle often employed for ritual ceremonies. It responds to the movement of individuals, involved in a ceremony, processing through a space in an orderly succession, accompanied by a series of architectural events (Porter 2004: 108). The intervention establishes processional space to organise the succession of ritual programmes and link with subsidiary movement routes at the site – following a similar function to the processional pathways at the Inagawa Cemetery and at Freedom Park.

Due to the surrounding development, the Forecourt has evolved into an island surrounded by wide roadways – prioritising vehicular movement. The dissertation proposes approaching the street edge as a shared public space, and reprioritising human movement through the site and to the surrounding context (Jan Gehl 2011).

5 PROCESSIONAL ORDERING
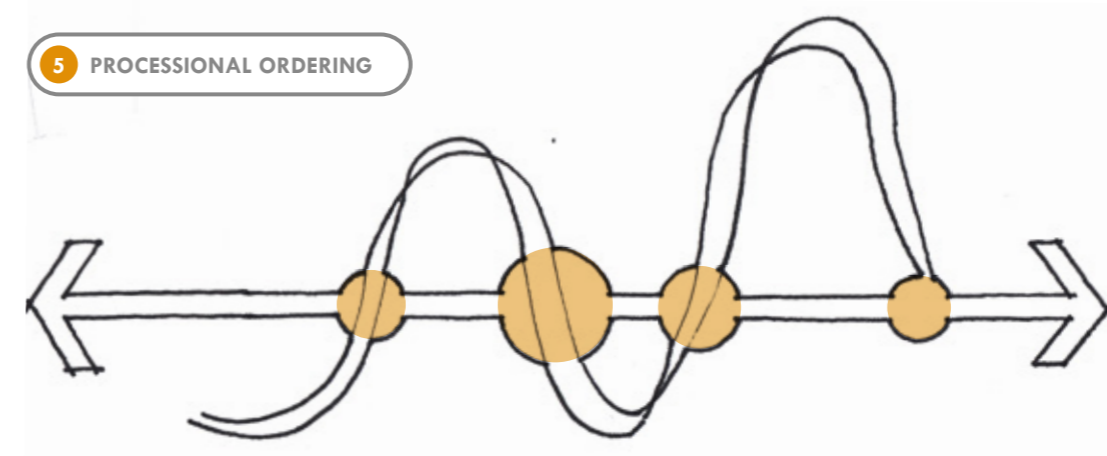
Fig. 5.5: Processional ordering accommodating architectural events (Ullrich 2020)
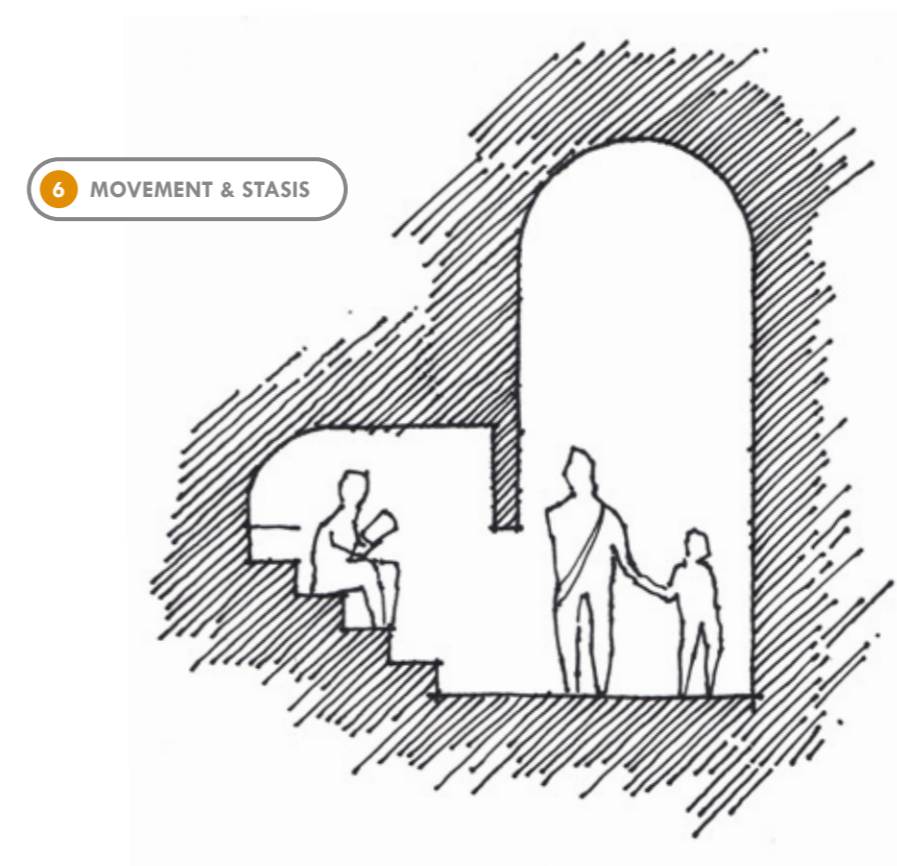
6 MOVEMENT & STASIS

Fig. 5.6: Movement and stasis (Ullrich 2020)
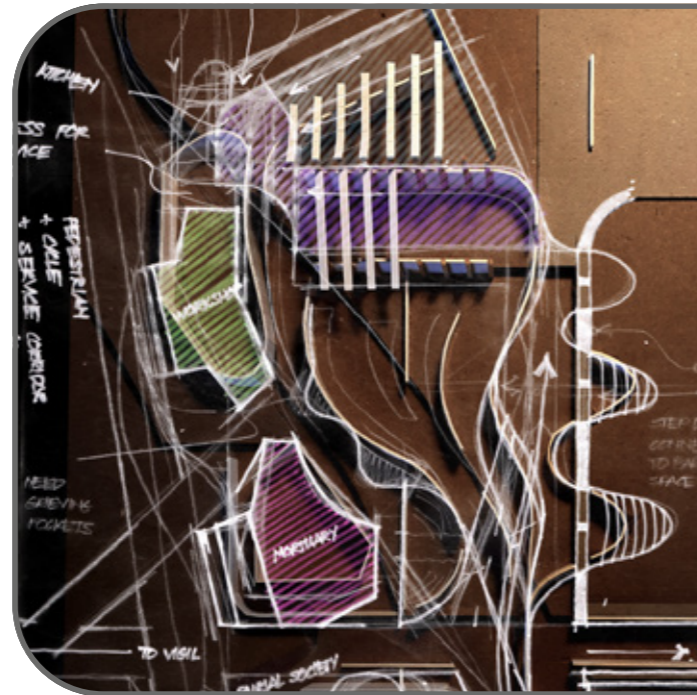
06

DESIGN DEVELOPMENT

BURIAL RITUAL AT THE FORECOURT
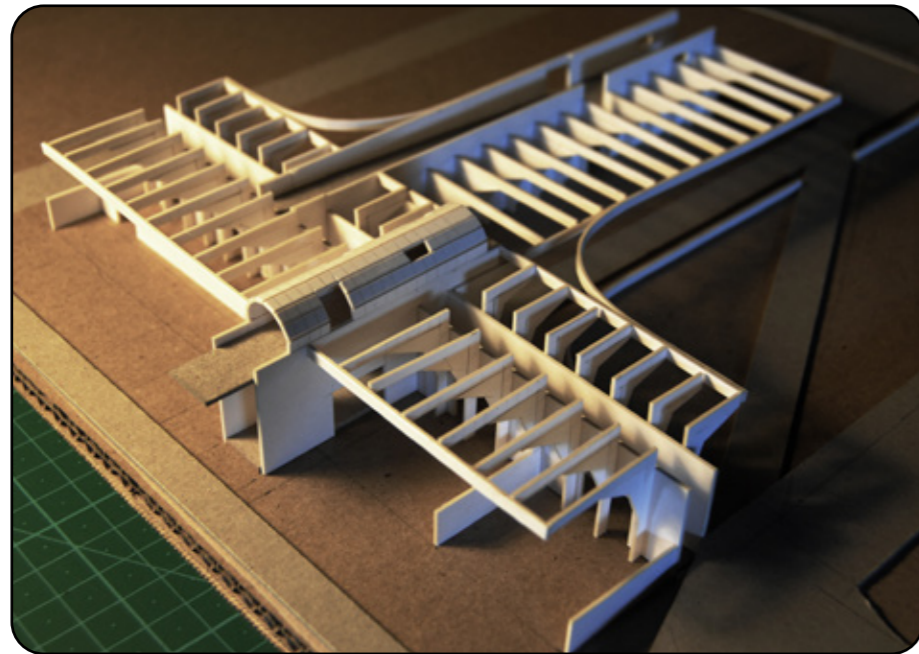
Fig. 6.1: Maquette of northern entrance and street interface (Ullrich 2020)
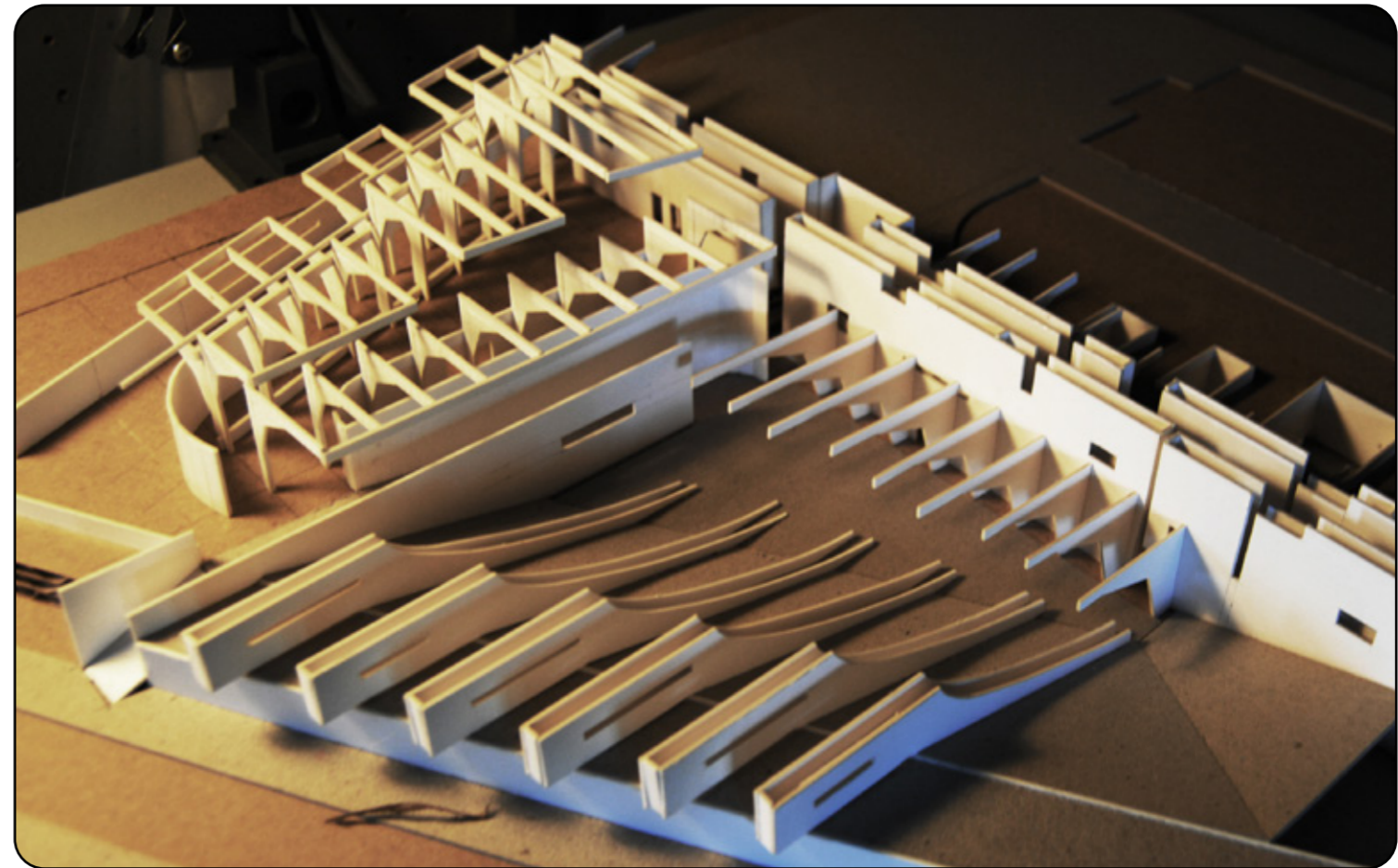
Fig. 6.2: Maquette of Ceremonial Area, Burial Garden, and Wall of Remembrance (Ullrich 2020)

6.1

MAKER STUDIO

The dissertation focuses on the human experience of dynamic ritual procession. The design process focussed primarily on descriptive writing, drawing, and physical modelling processes as creative tools to curate the built form that supports the ritual procession.

The descriptive writings aided the development of the intentions of the sensible and intelligible components of the design. This initial descriptive process is carried out in the work of Maya Lin, where the built, pragmatic forms are "withheld" until the intentions of the design have been developed (Lin 2000).

The making of physical maquettes, and their interaction with light sources, aided the construction of a dynamic experience.

Three iterative design stages can be identified, which focus on the development of a particular aspect of the intervention.

Fig. 6.3: Integrating Ritual Procession (Ullrich 2020)

Fig. 6.4: The Isivivane Wall (Ullrich 2020)
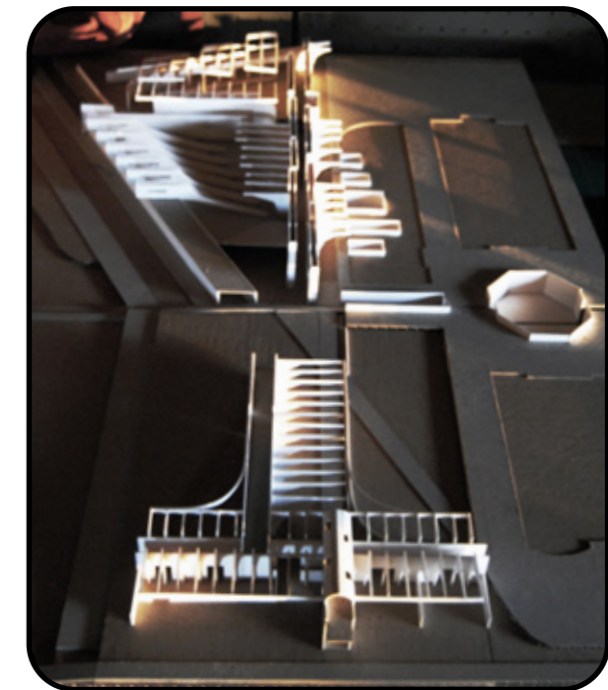
Fig. 6.5: Interstitial Interiority (Ullrich 2020)

FIRST ITERATIONS
INTEGRATING RITUAL PROCESSION

SECOND ITERATIONS
THE ISIVIVANE WALL

THIRD ITERATIONS
INTERSTITIAL INTERIORITY

6.2

FIRST ITERATIONS
INTEGRATING RITUAL PROCESSION

The processional routes, and the corresponding spaces to support the performed rituals, were initially identified. The programmatic and positional relationships amongst the burial spaces, and the existing spaces of the Forecourt, were pivotal in sustaining a burial narrative, providing certain areas of privacy, and for the burial activities to contribute to urban place-making activities. The northern area of the site was understood to be a louder, more public area of the site – adjacent to Scheiding Street and the convergence of pedestrian movement routes. The public street interface and the meal area were positioned here. The South-Eastern portion of the site was identified as being the most quiet area of the site, ideal for the more private activities and the burial area.

The Meal Area and Ceremony Area were positioned as the two anchor locations for the site – with the Meal Area on the northern end of the route, and the Ceremony Area on the southern end of the route (Fig. 6.21). The anchor sites defined the thresholds for the in-between ceremonial routes. The burial route intervention was intertwined with the existing North-South public route.

Ritual activities particular to the AIC group occur primarily within the centre of the Forecourt garden, where the route deviates from the main burial route. In order to be sensitive to the existing significance of the Forecourt layout and movement routes, a below-grade tunnel connects the ceremonial route to the central podium

area – similar to the function of the tunnels at the Motouleng Caves. This central, recessed area, reinterprets the historic commemorative podium as a site for ritual commemoration where sacrificial rituals can occur.

Traditionally, processional space involves both the processors and spectators. However, due to the privacy required in some areas at the burial park, 'spectatorship' or public visibility of a funeral procession is limited to the more public activities – such as the cleansing process and meal ceremony. Communal activities of a sensitive nature, such as the sacrificial process, occur below-grade at the centre of the Forecourt – allowing for the public to have the choice to approach the ground-level balustrade to observe the process. The ritual space is therefore not sidelined, and its significance is sustained with its prominent position, whilst being sensitive to public passersby.

Ritual cleansing traditionally occurs after the sacrificial process by AIC members. The cleansing pools are therefore ideally positioned adjacent to the sacrificial space. The two central courts, once defining the Forecourt's water features, are therefore used to reintroduce water pools for ritual cleansing (Fig. 6.8 & 6.12). These spaces can be accessed from the sacrificial area, as the ceremonial route moves individuals back to the ground-floor plane of the 'living'.
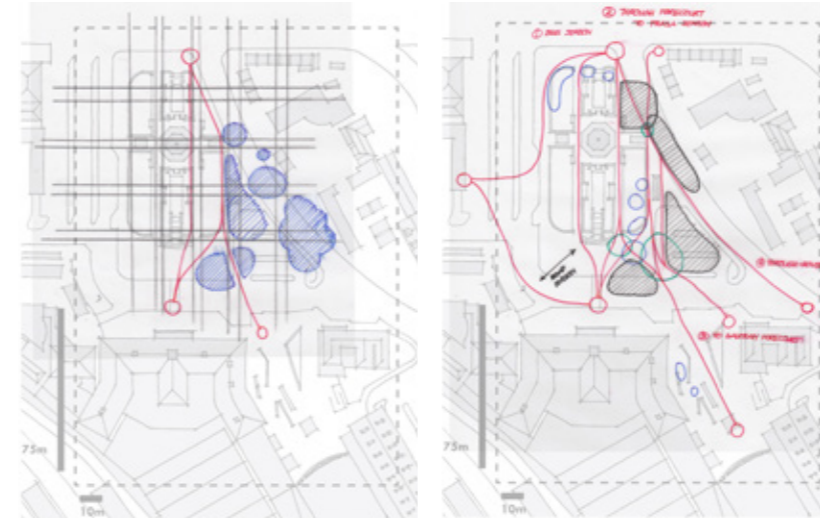
Fig. 6.6: Quiet regions of the site (Ullrich 2020)

Fig. 6.7: Possible intervention areas (Ullrich 2020)
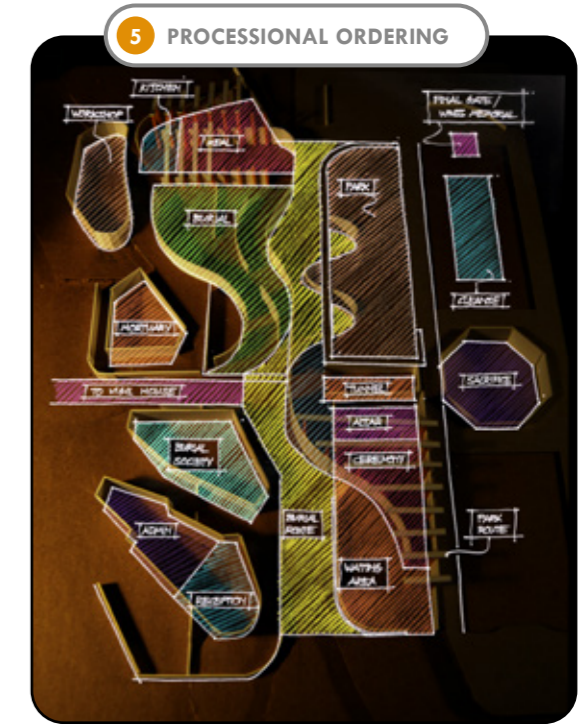
Fig. 6.3: Programmatic layout (Ullrich 2020)
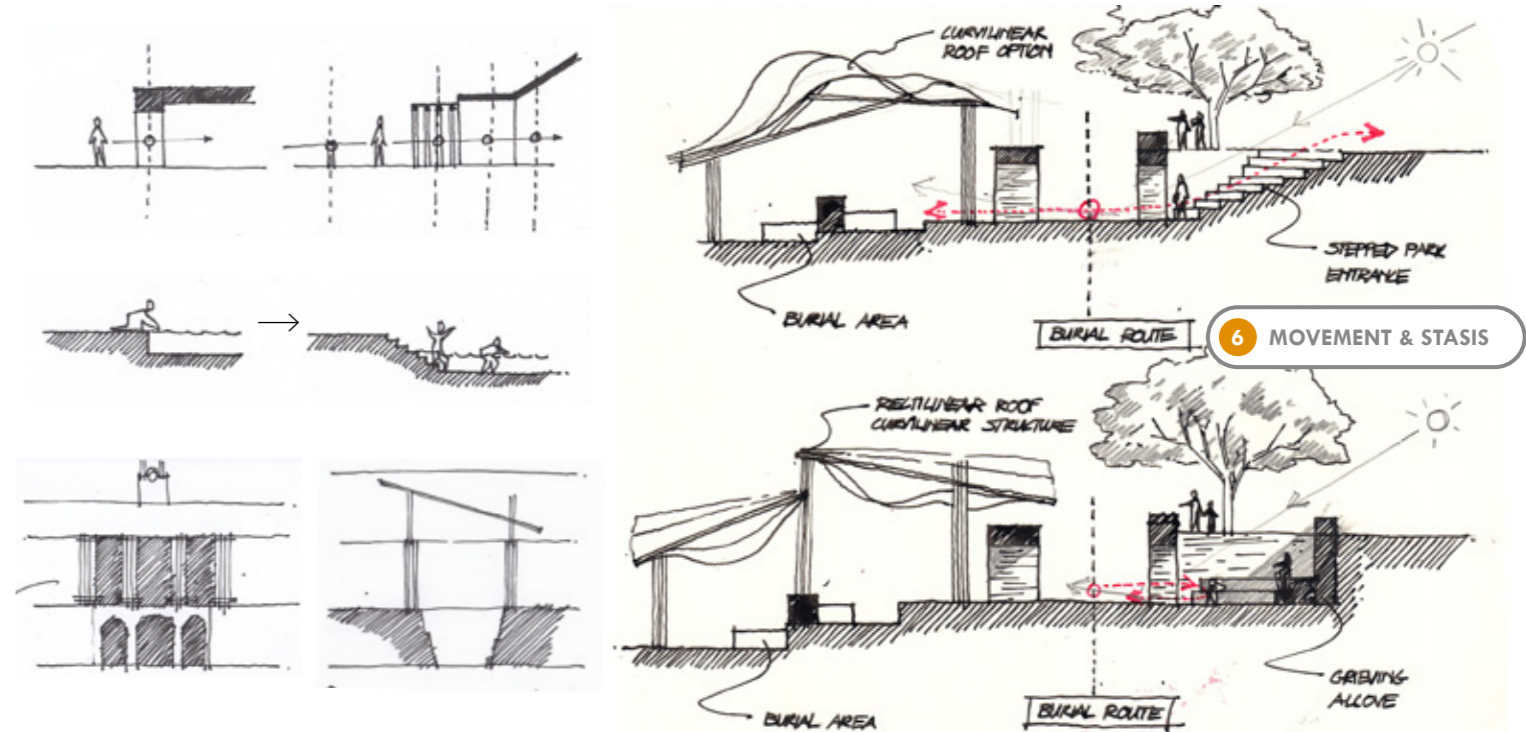
Top to bottom:
Fig. 6.8: Layering thresholds (Ullrich 2020)
Fig. 6.9: Steps into cleansing pools (Ullrich 2020)
Fig. 6.10: Structural hierarchy of intervention (Ullrich 2020)

Fig. 6.11: Cross-section iterations of the Burial Area (Ullrich 2020)

1 SUSTAINING SIGNIFICANCE
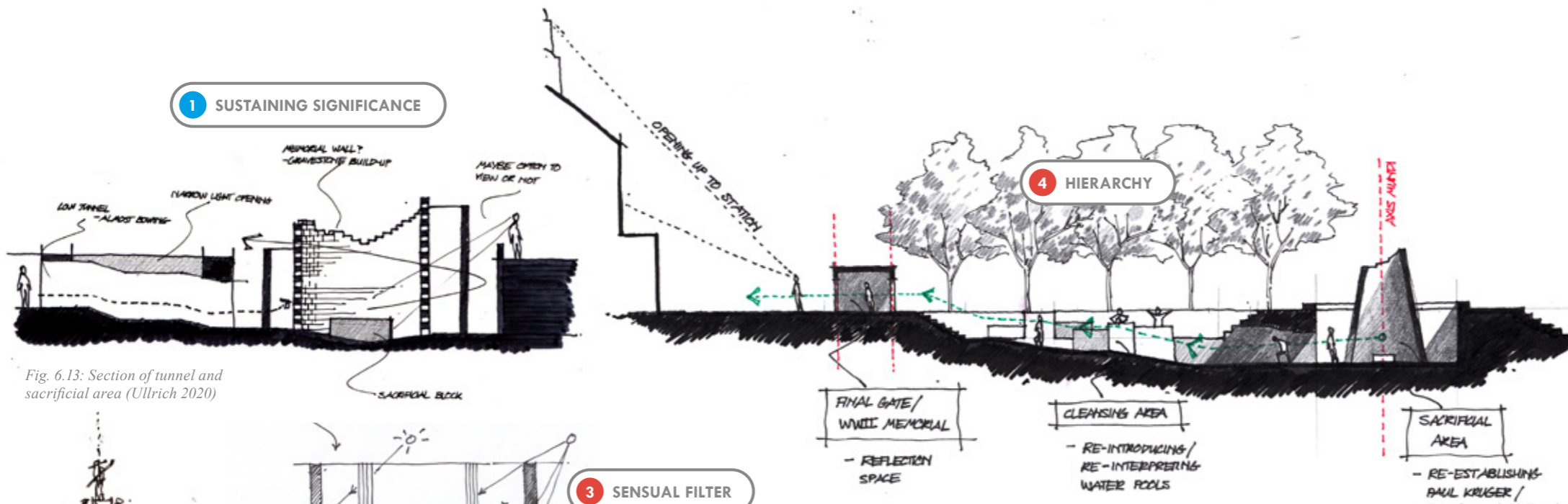
4 HIERARCHY

Fig. 6.13: Section of tunnel and sacrificial area (Ullrich 2020)

3 SENSUAL FILTER

FINAL GATE / WWII MEMORIAL

– REFLECTION SPACE

CLEANSING AREA

– RE-INTRODUCING / RE-INTERPRETING WATER POOLS

SACRIFICIAL AREA

– RE-ESTABLISHING PAUL KRUGER / ANCESTOR AXIS MUNDI
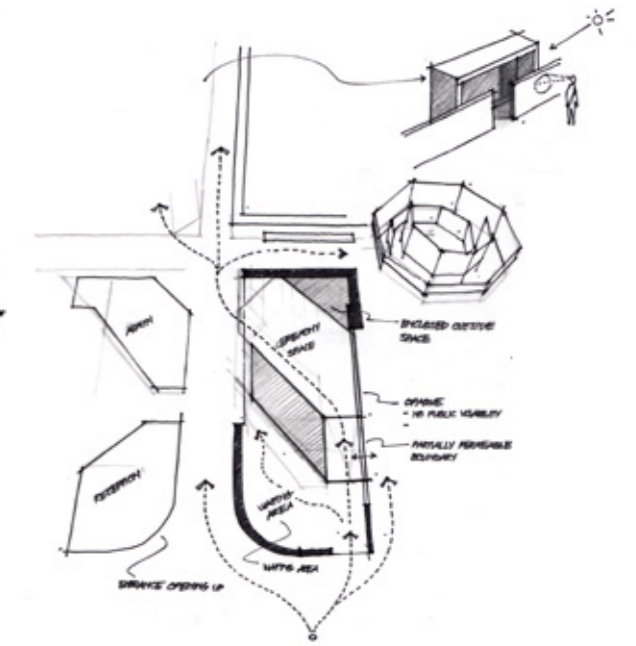
Fig. 6.12: Cross-section of pathway out of sacrificial area to water pools (Ullrich 2020)
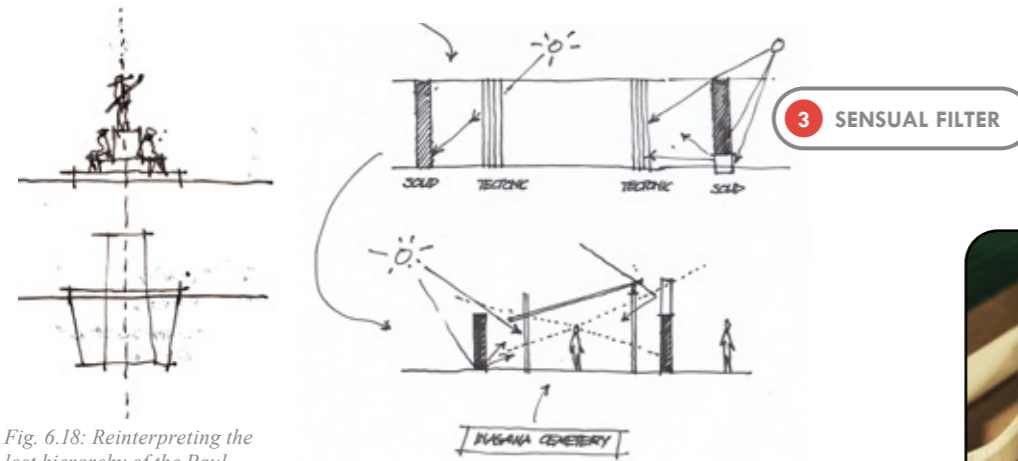
Fig. 6.18: Reinterpreting the lost hierarchy of the Paul Kruger Statue (Ullrich 2020)

Fig. 6.17: Creating privacy and filtering light (Ullrich 2020)
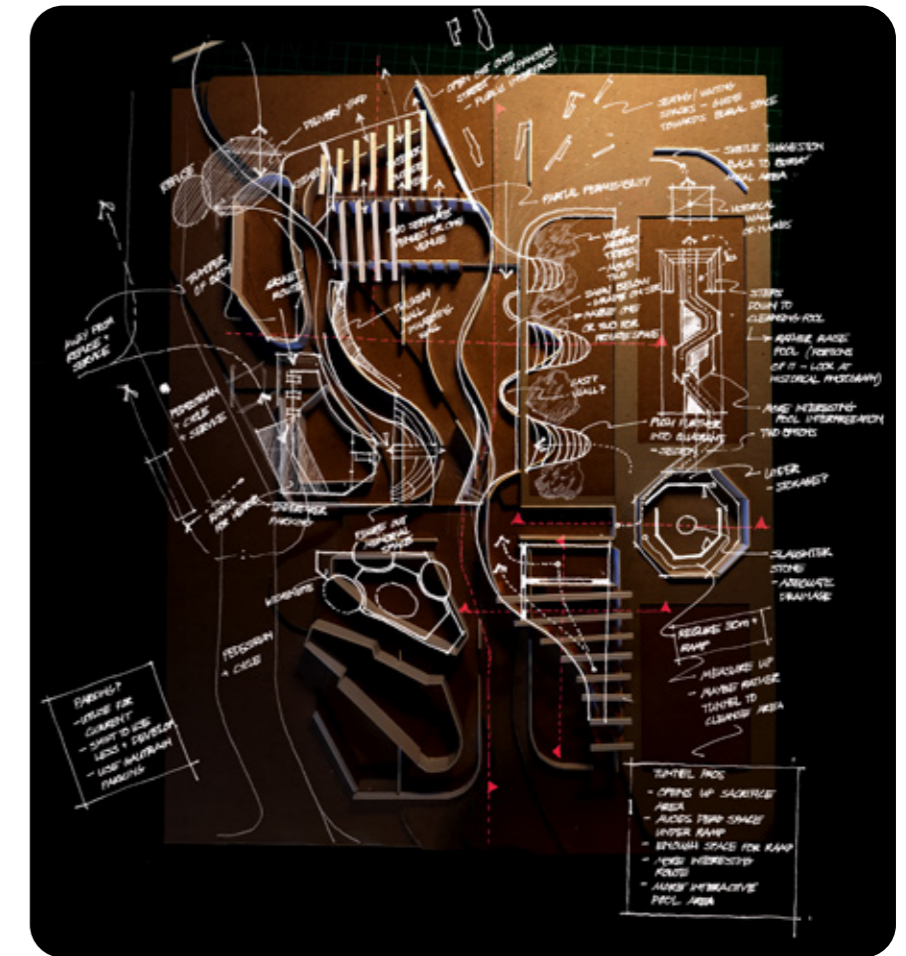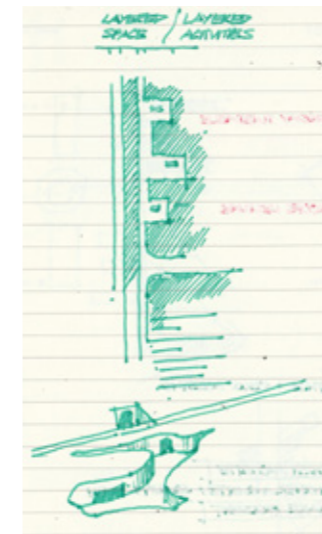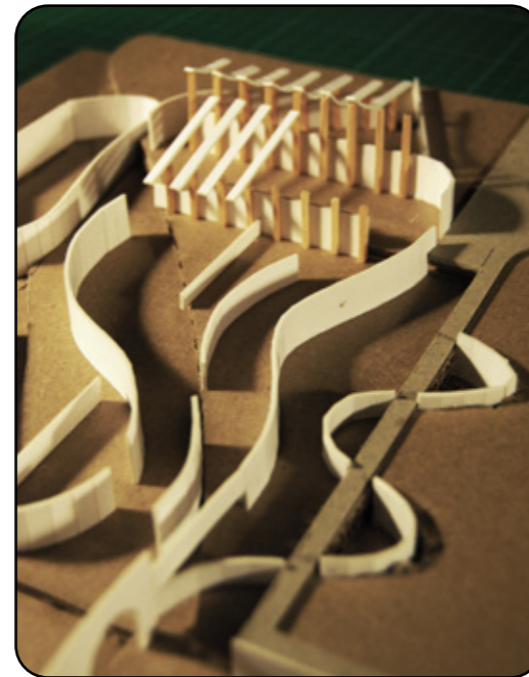
Fig. 6.14: Maquette process work (Ullrich 2020)
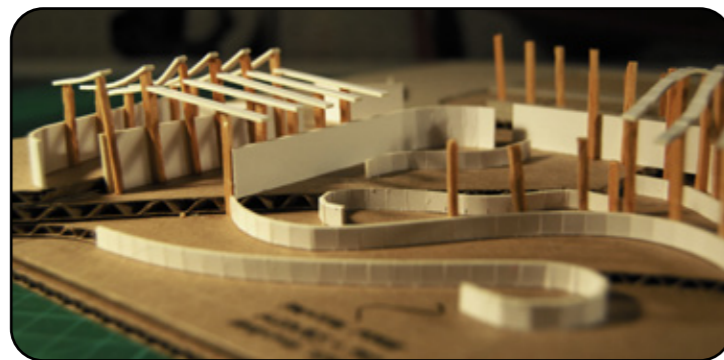
Fig. 6.15: Burial Area and Ceremony Area (Ullrich 2020)
Fig. 6.20: Burial Area routes (Ullrich 2020)
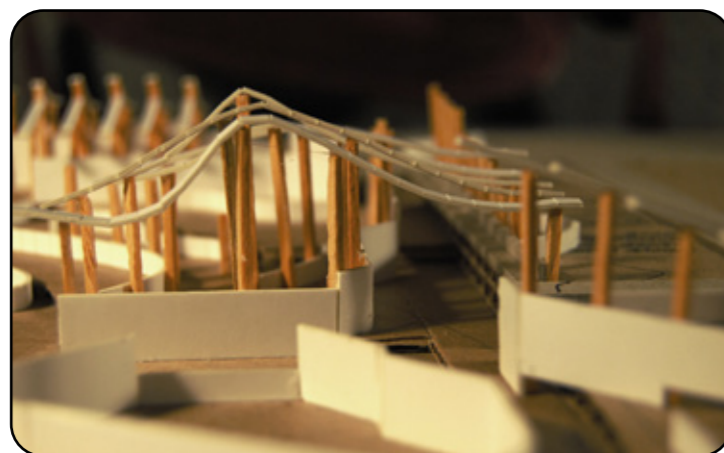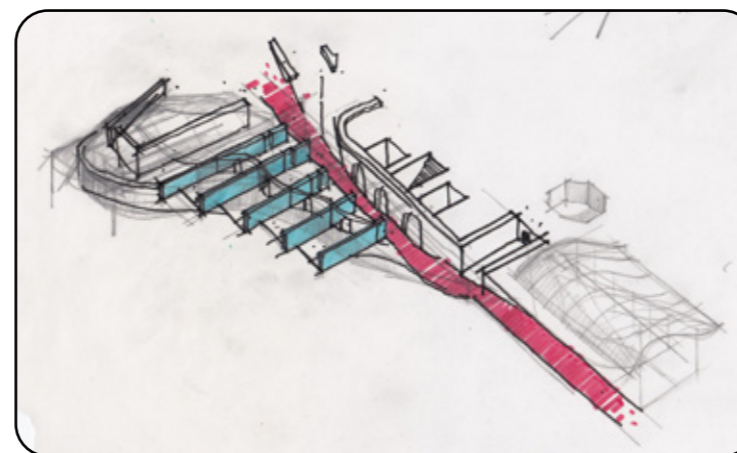
Fig. 6.16: Processional pathway to bind architectural events (Ullrich 2020)
Fig. 6.19: Private spaces adjacent to processional route (Ullrich 2020)
Fig. 6.21: Binding processional route (Ullrich 2020)

6.3

SECOND ITERATIONS
THE ISIVIVANE WALL

The North-South processional route required further definition as a boundary of hierarchical importance. The Burial Wall functions as a landmark that guides users through the site, acts as a threshold between public and more private spaces, and acts as a core service wall from which adjacent buildings can stem from. The Burial Wall incorporates the traditional space-making process of the Isivivane wall, and flanks the main public pathway through the site. The Wall is designed to store physical memorial objects, and its construction can be intertwined with burial rituals, such as the placement of headstones and urns within the wall framework. The design of the Burial Wall is further explored within the Technification Chapter. The diagonal Paul Kruger Street, used as a prominent route through the existing site, was sustained as a pedestrian route and service road – defining the eastern edge of the site. The eastern embankment forms an angle of sixty-two degrees to define this route, and to form a dialogue with the angle of the sixty-two degree railway line and old Station Precinct buildings. A horizontal pathway bisects the site at the centre, connecting the site to the Night Vigil House (the old Station Master's House), the north-eastern taxi stop, and the Sacrificial Area at the centre of the Forecourt. Two triangular regions were defined. The northern portion of the site, containing the burial shops, workshops, and kitchen, can be understood as a more open, public area, whilst the southern portion of the site, containing the burial garden, ceremony space, burial society, and mortuary, can be understood as a more quiet, enclosed public space.
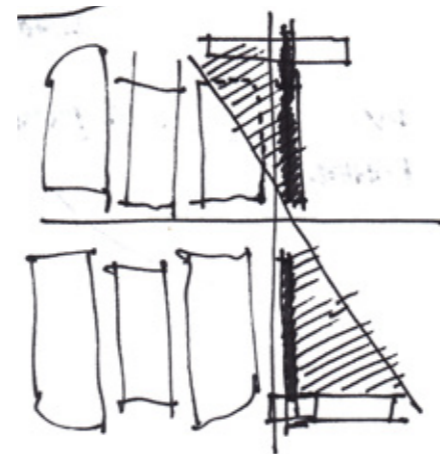
Fig. 6.34: A more public and a more private region (Ullrich 2020)
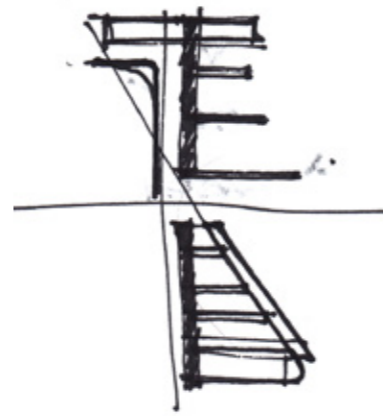
Fig. 6.35: Parti diagram of site (Ullrich 2020)
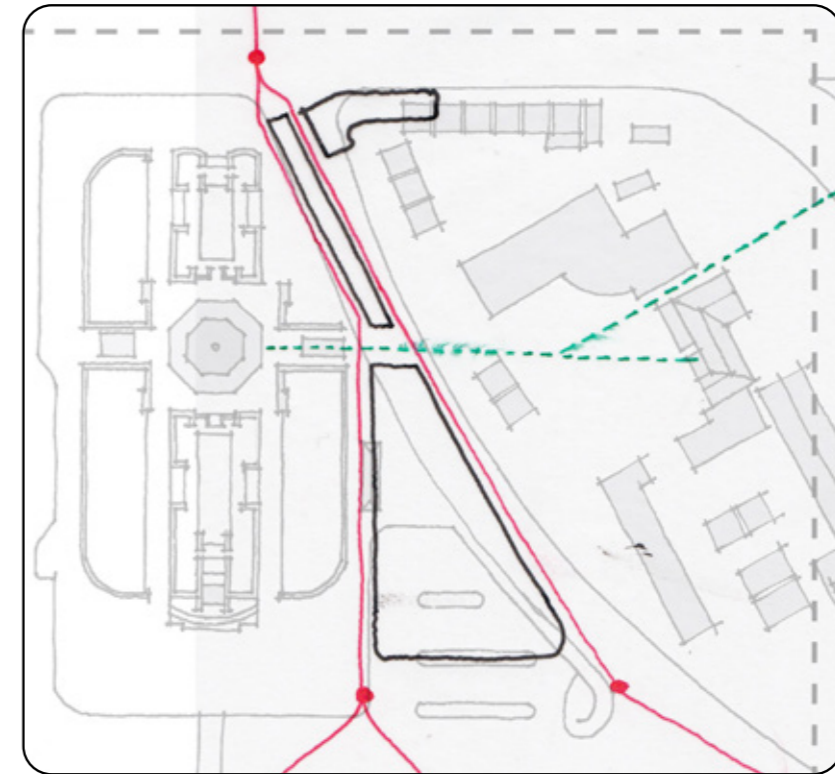
Fig. 6.22: Contextual routes defining intervention (Ullrich 2020)
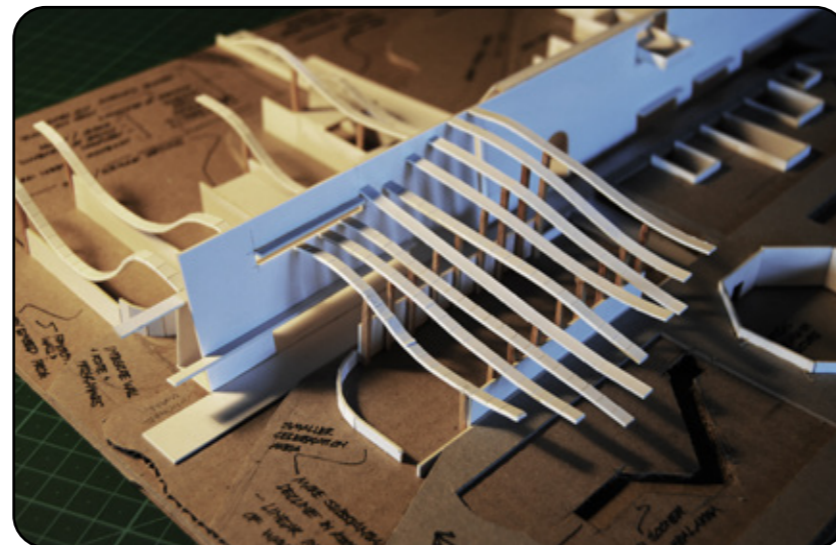
Fig. 6.25: Structures subtending from Burial Wall (Ullrich 2020)

5 PROCESSIONAL ORDERING

Fig. 6.26: Permeability of Burial Wall (Ullrich 2020)
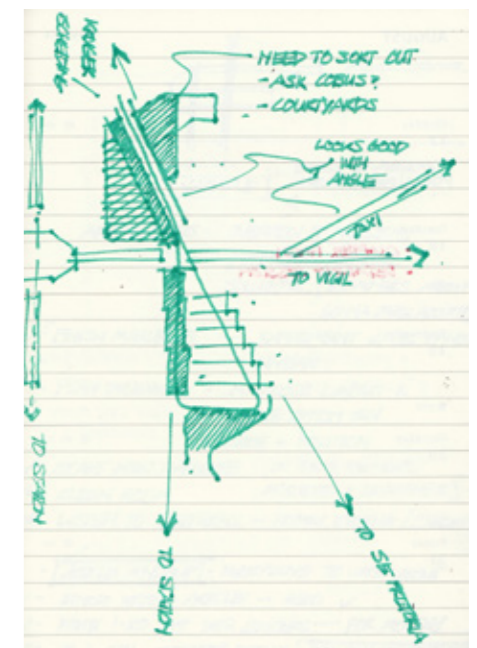
Fig. 6.27: Accommodating the angle of the existing through-route (Ullrich 2020)
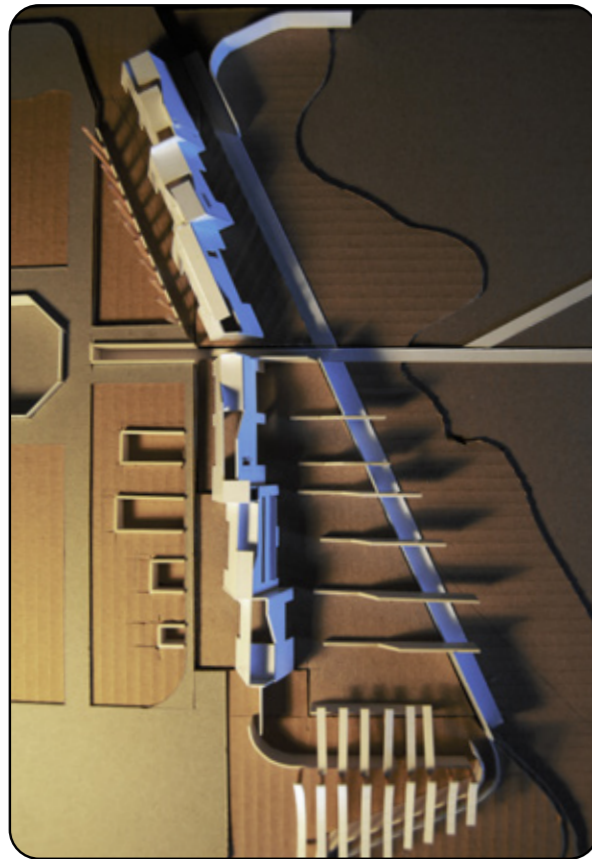
Fig. 6.23: Structures defining processional route (Ullrich 2020)

3 SENSUAL FILTER
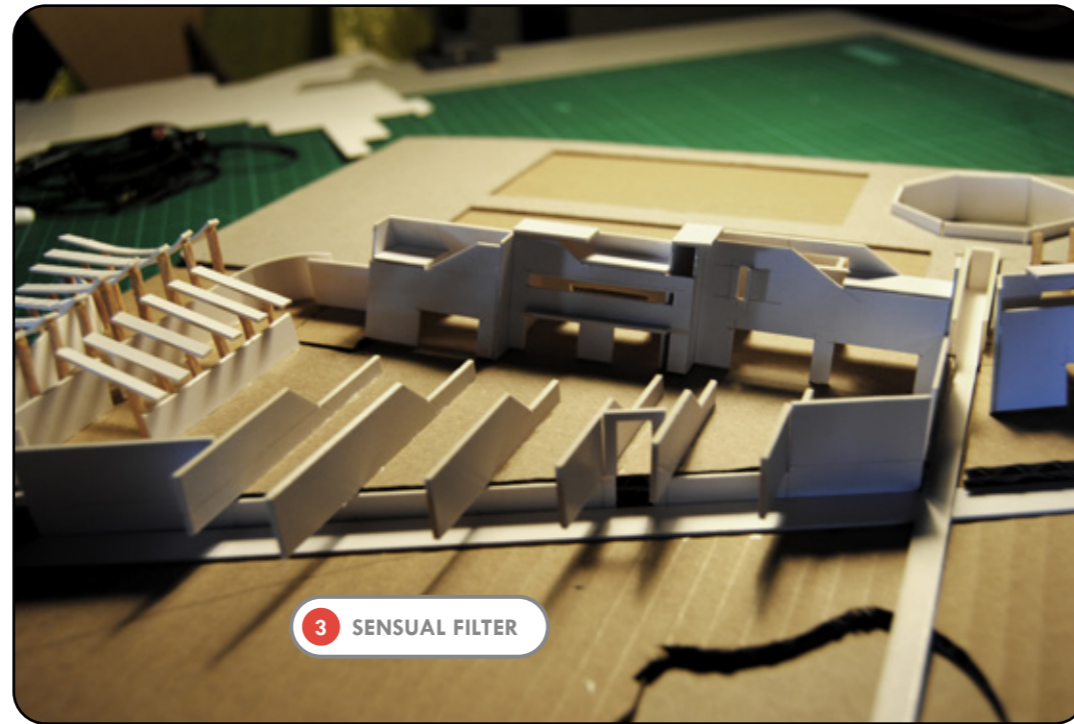
Fig. 6.24: Divisions of Burial Area providing privacy and focus (Ullrich 2020)
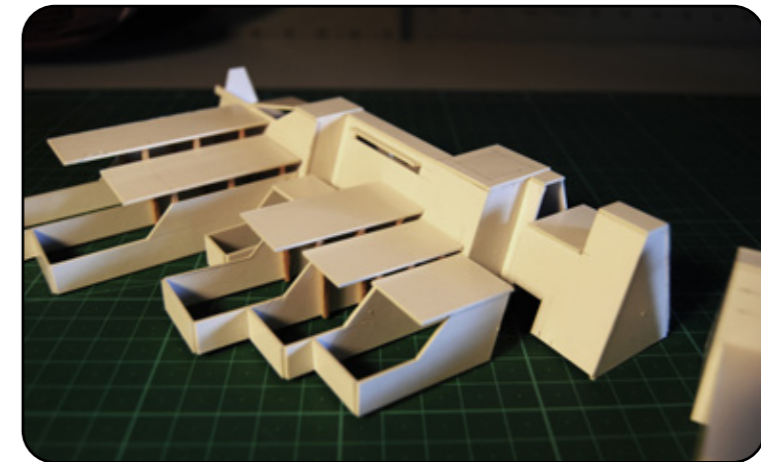
Fig. 6.29: Subtending shelter from the Burial Wall (Ullrich 2020)
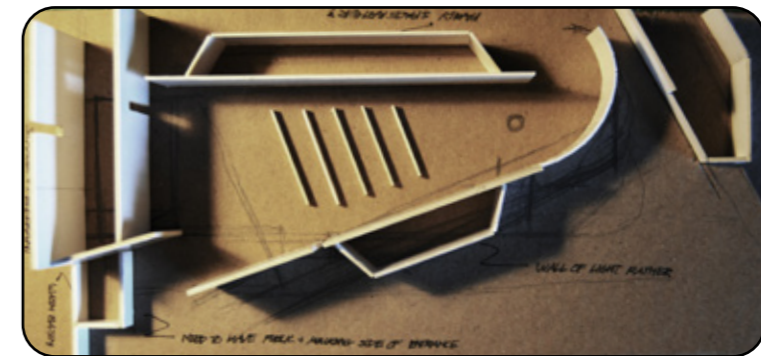
Fig. 6.30: Layout of Ceremony Area (Ullrich 2020)
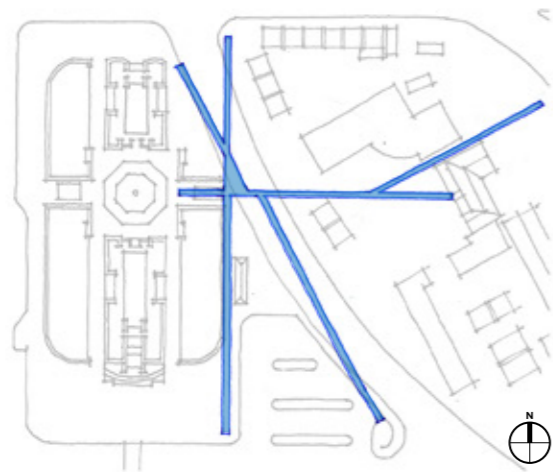
Fig. 6.31: Step 1: Processional routes (Ullrich 2020)
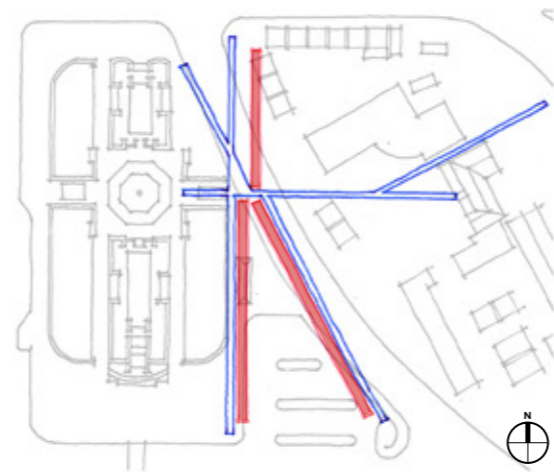
Fig. 6.32: Step 2: Defining the edge with
Wall of Remembrance (Ullrich 2020)
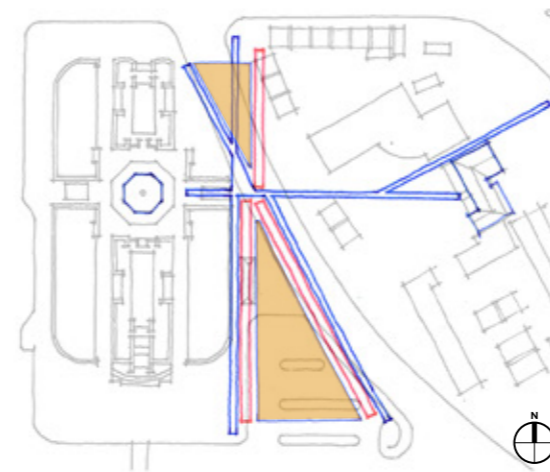
Fig. 6.33: Step 3: Defining public
and private regions (Ullrich 2020)
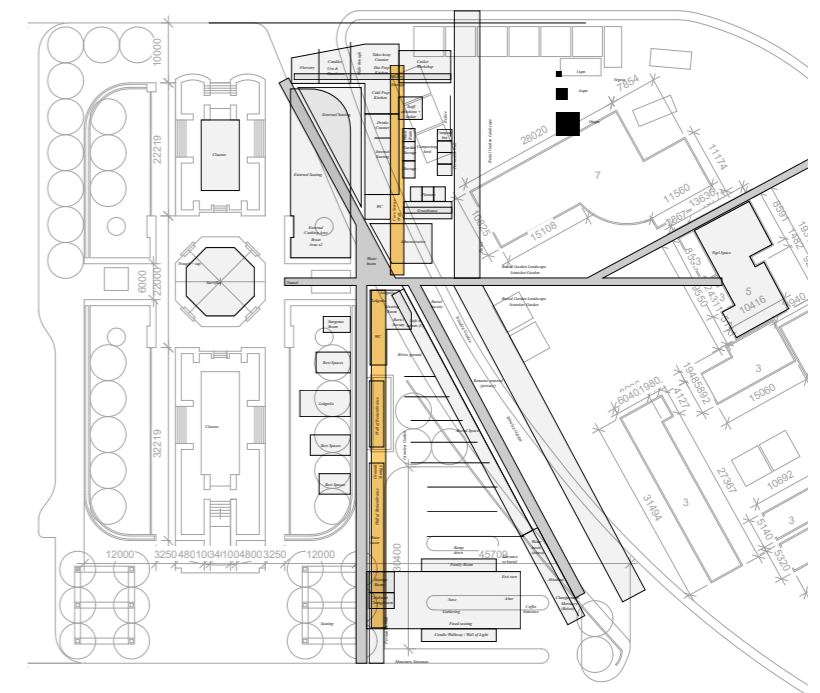
Fig. 6.28: Process plan (Ullrich 2020)

6.4

THIRD ITERATIONS
INTERSTITIAL INTERIORITY

The canopy structures within the Station Precinct, as well as the experiential procession at the Motouleng Caves, were used to initially inform the design intentions and form of the burial site. At the Station Precinct, the existing canopy structures primarily define spaces of public refuge or entry. At the Motouleng Sacred Caves, the low roof of the more private, inner-sanctum, creates a space of closeness for those who are grieving. Within the burial area, the canopy structure provides a shaded area of refuge and privacy for individuals below it. The design of the canopy structure has an ethereal, floating appearance, as it is cantilevered and supported by the core burial wall (Fig. 6.44). The canopies form elevated, horizontal planes, responding to the levelled, horizontal planes of the Forecourt, and which function as public gathering spaces and as viewing platforms for burial processions. As the form was refined, the canopy utilised an arched bracing element to support the cantilever. This responded to the arch elements of the surrounding buildings, whilst creating a sense of 'closeness' nearer to the threshold of the burial wall, similar to that of the cave (Fig. 6.43). The cantilevered planes, and their arched support from the core burial wall, aided the formation of the site's design language. This design language was able to be critically explored and adapted for the northern, street interface, as well as for the roof planes of the Ceremony Area. The structural and material characteristics of this design are further iterated in the dissertation's technification.

Fig. 6.36: Exploring shadows of Burial Wall (Ullrich 2020)
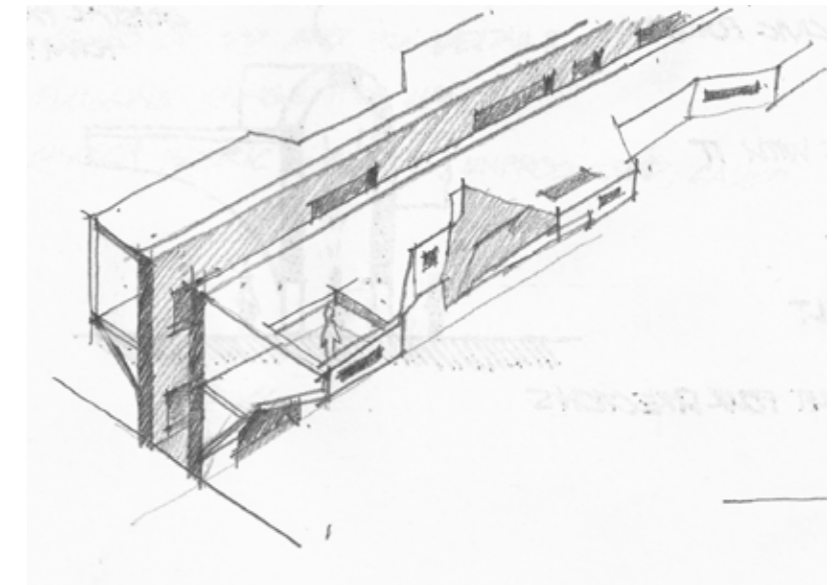
Fig. 6.40: Axonometric of Burial Wall spaces (Ullrich 2020)

Fig. 6.38: Burial Wall forming a canopy (Ullrich 2020)
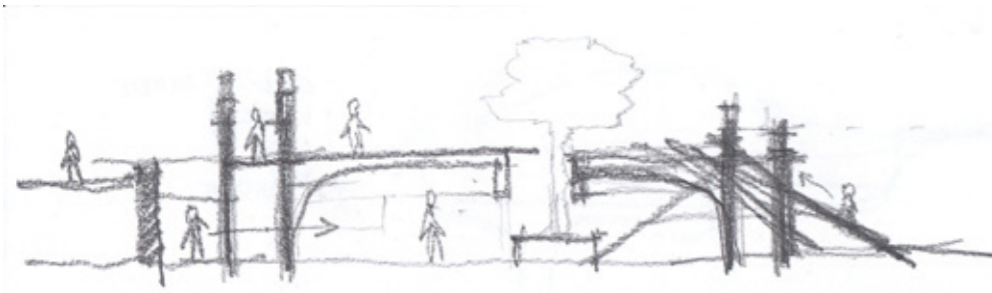
4 HIERARCHY
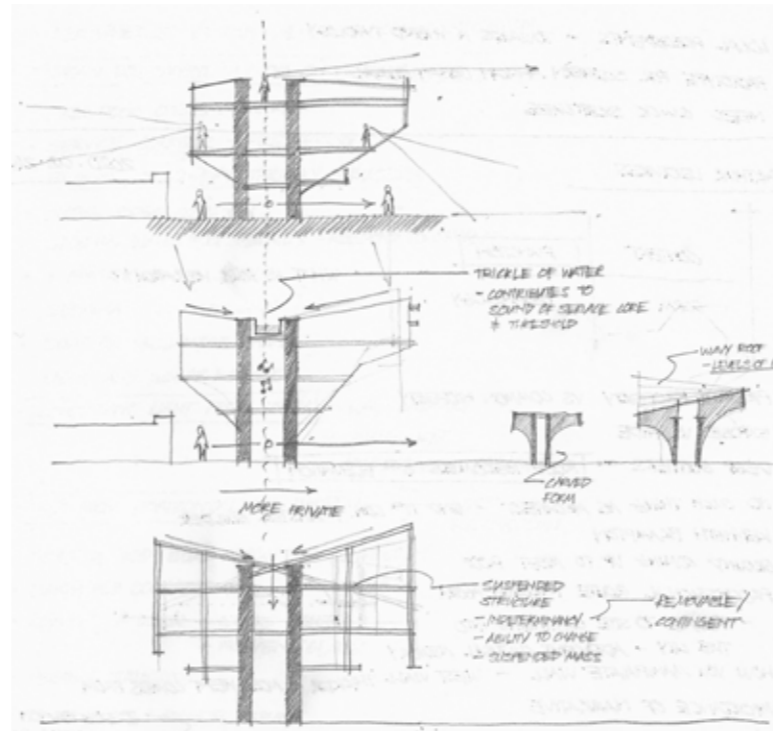
Fig. 6.41: Iterations of canopy structure over Burial Area (Ullrich 2020)

4 HIERARCHY
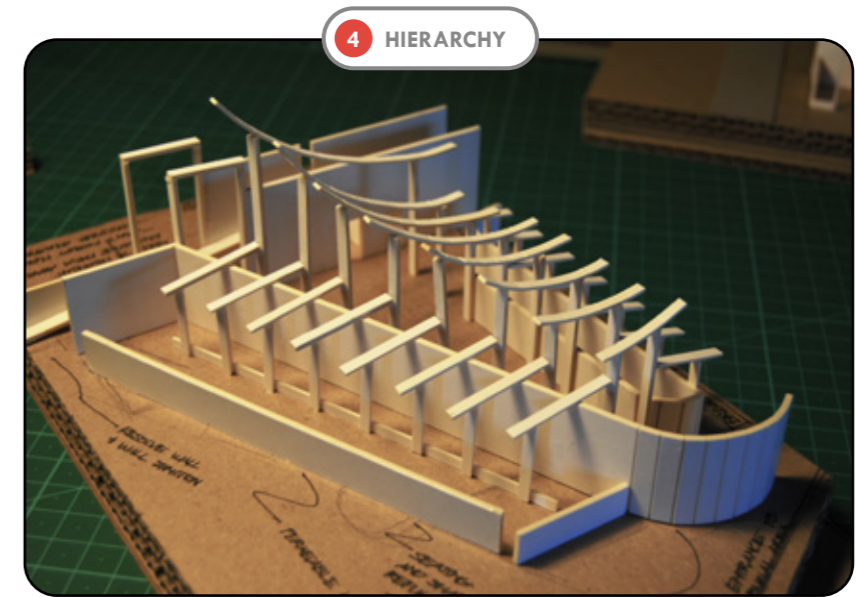
Fig. 6.37: Ceremony Space roof iteration (Ullrich 2020)

4 HIERARCHY
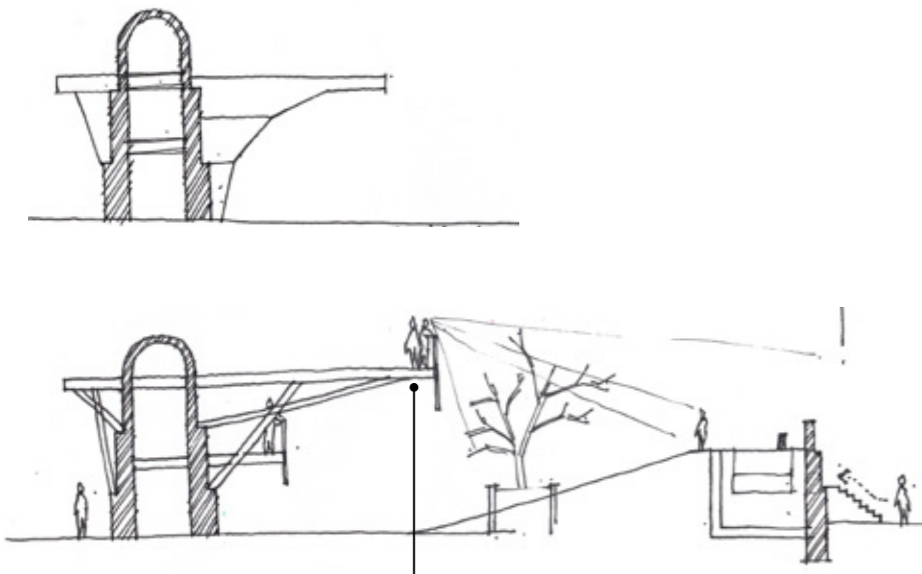
*A viewing
platform for burial
processions*

Fig. 6.39: Section diagrams of Burial Wall suspending spaces (Ullrich 2020)

3 SENSUAL FILTER

4 HIERARCHY
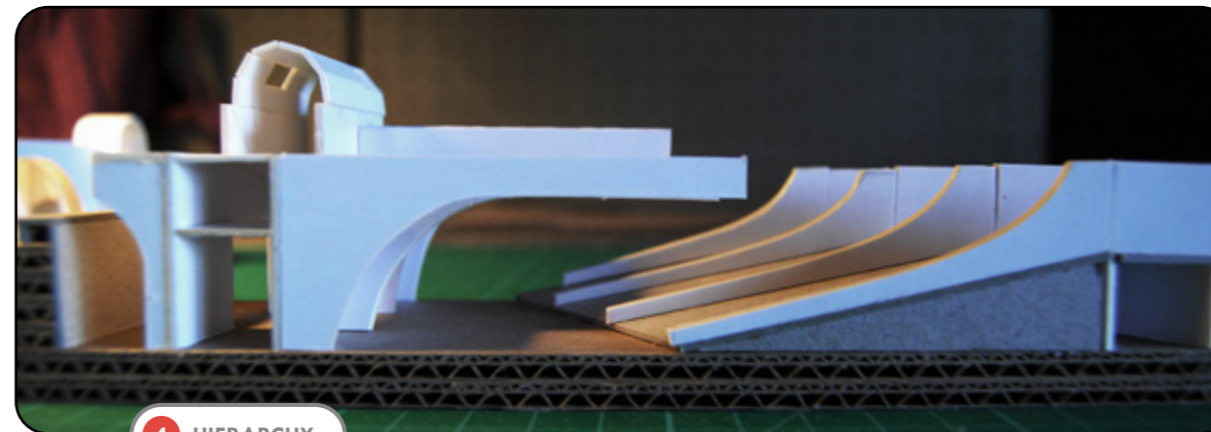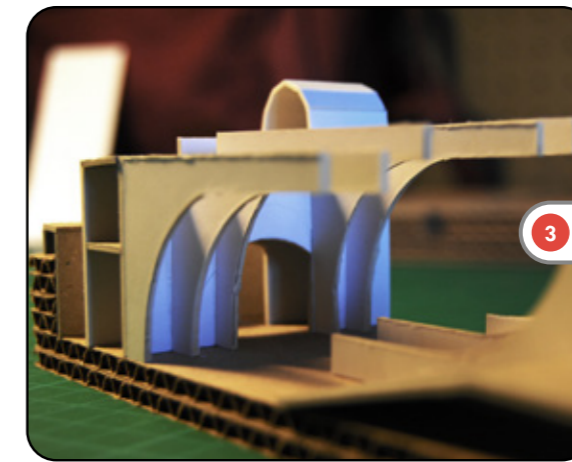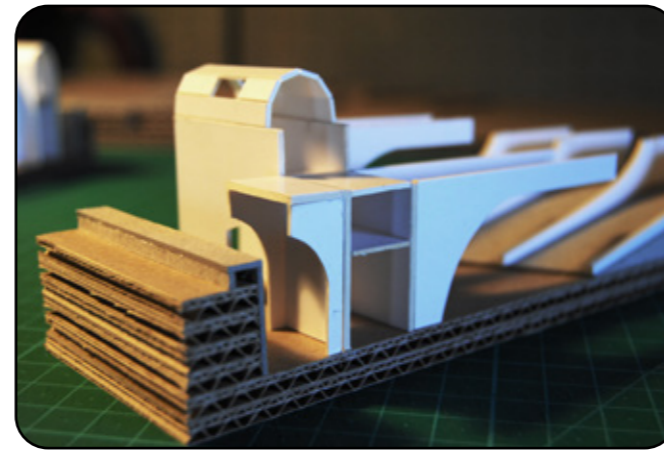
Clockwise from top left:

*Fig. 6.42: Iterations of Burial Wall –
Threshold of Burial Wall (Ullrich 2020)*

*Fig. 6.43: Iterations of Burial Wall –
Canopy over pathway (Ullrich 2020)*

*Fig. 6.44: Iterations of Burial Wall –
South section (Ullrich 2020)*

Floristry
Momento Shop
Inside Eating Area
Cleansing Pool
Outside Eating Area
Sacrificial Area
Rest Spaces
Wall of Remembrance
Cleansing Pool

Kitchen
Service Road
Compost Pile
Greenhouse
Casket Workshop
Pathway to taxi stop
Bathrooms
Admin
Burial Society
Mortuary
Burial Garden
Viewing Deck
Night Vigil House
Ceremony Space
Old Bus Shelter

5 PROCESSIONAL ORDERING

N

SITE PLAN
PROCESSIONAL ROUTES

25m

Fig. 6.46: Funeral routes through site (Ullrich 2020)

● **PEDESTRIAN THROUGH-ROUTES**
● **CASKET ROUTE**
● **BURIAL CEREMONY ROUTE**
● **AIC CEREMONY DIVERGENCE**
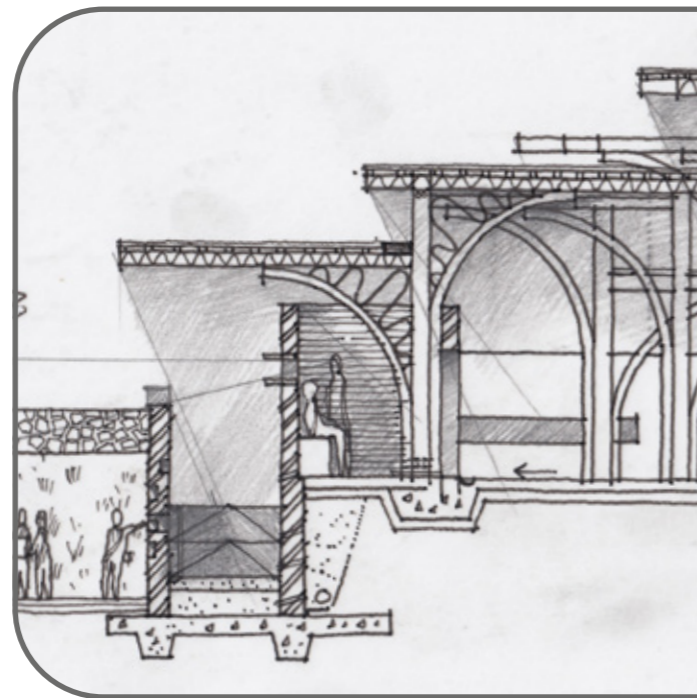
07

TECHNICAL DEVELOPMENT

STRUCTURE & MATERIALITY

7.1

STRUCTURES OF CONTEXT

7.1.1 ARCHES

The arch openings of the Station Precinct can be considered as a defining characteristic of the area. The openings were briefly analysed – identifying the notable arches, the type of arch, the materiality of construction, and its function. The archway entrances signify and invite public entry. In some instances, the semi-circular arch opening functions as a fanlight for sunlight – increasing internal solar exposure at the threshold. For the intervention, archways are utilised to aid the identification of threshold points for visitors.
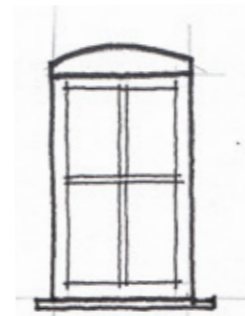
Fixed Sash Window
Old Stationary Storage Building

Double Side-Hung Window
Old Stationary Storage Building
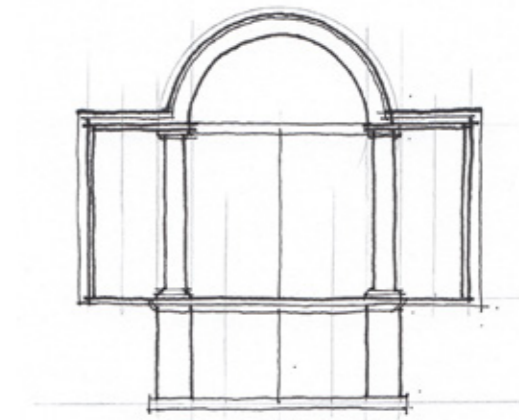
Palladian Window
Old Pretoria Station Building
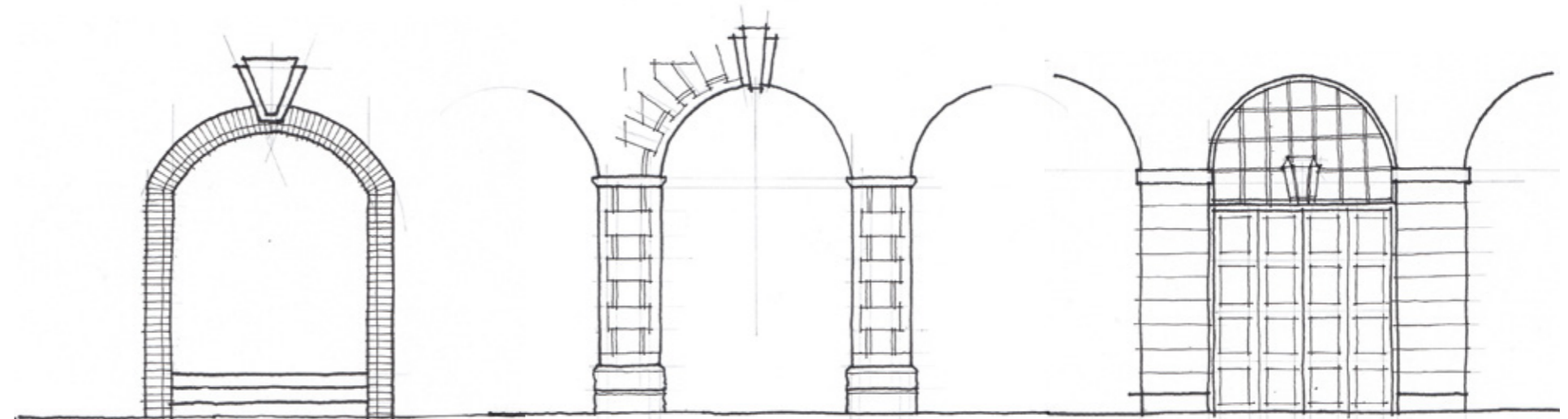
Segmental Arch Entrance
Blue Train Building

Semi-Circular Arch Entrance
Old Pretoria Station Building

Semi-Circular Arch Entrance
Old Pretoria Station Building

Fig. 7.1: Exploration of arch openings at the Old Station Block (Ullrich 2020)

7.1.2 CANOPY STRUCTURES

The canopy structures at the Station Precinct can be regarded as a defining structural characteristic of the area. The canopy structures are primarily constructed with painted steel sections – a building material that defines the historic, industrial structures of the Old Railway Station and the Old Maintenance Yard of Salvokop. A notable design motif of the structures – especially the Bus Stop Shelters and the Gautrain Bus Shelter – is a quarter-arched, bracing element. On plan, this quarter-arch motif defines the corners of the Forecourt retaining walls. The use of this quarter-arch motif has formed part of the intervention's canopy structure, and is further explored in the technification iterations.

Gautrain Exterior Shelters

Railway Overhead Contact Lines

Metro Platforms

Bus Stop Shelters

*Gautrain Bus Shelter
(Old Railway Maintenance Shed)*
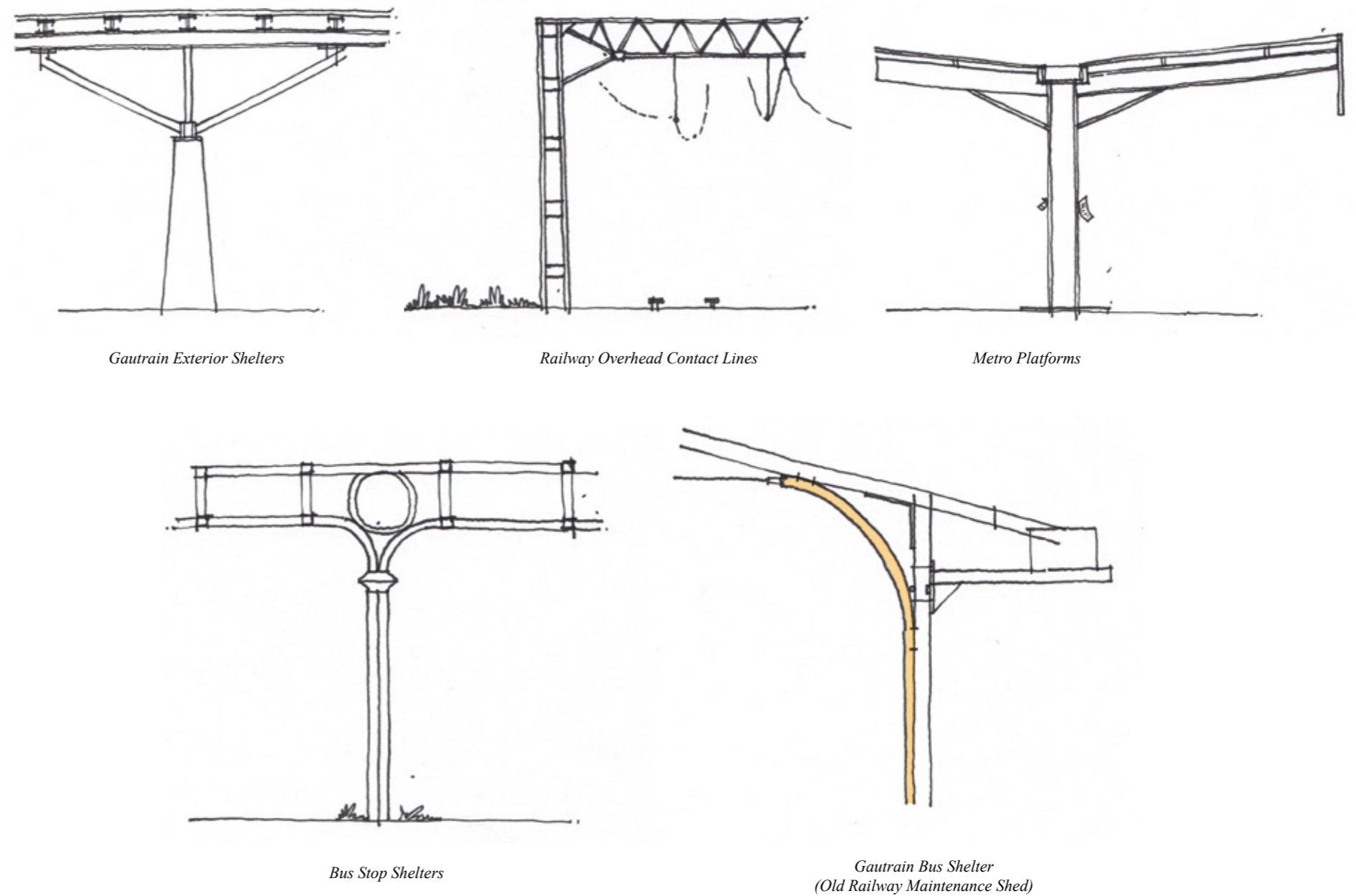
Fig. 7.2: Exploration of the canopy structures at the Old Station Block (Ullrich 2020)

7.2

MATERIALITY OF CONTEXT

The materials found within and around the intervention area can be organised into four main categories: steel, stone, clay, and cement. Through the design and technification iterations, the intervention responds to these existing contextual materials. The intervention's materials can be organised into three categories, which correspond to the hierarchy of the structural system.

Steel Sections

Concrete

Clay Brickwork

Brick Floor Paving

Random Rubble Stonework

Coursed Slate Stone

Klompie Brick Pavers

Rounded Red Clay Roof Tiles

Free State Sandstone

Fig. 7.3: Materiality of Old Station Block (Ullrich 2020)

CONTEXTUAL MATERIALS

Corrugated Iron Steel Roof Sheeting

- Corrugated iron sheeting associated with industrial buildings of Railway Precinct
- Red roof paint relates to the appearance of the clay roof tiles and clay brickwork at the site

Steel Framework

- Industrial steel structures of historic Railway precinct
- Used for below-grade load-bearing walls
- High Historical Significance
- Steel sections of Old Railway Shed and Bus Stop Shelter
- Exposed bolted connections

Random Rubble Stonework

- Assorted rubble stone with mortar joint
- Audit Building & Old Stationary Storage Building
- Likely used for foundation base

Coursed Slate Stone

- Coursed slate stone used for Forecourt retaining walls
- Material ascribes to the corpus of park spaces within Pretoria which use the material predominantly for garden walls

Buiskop Sandstone

- Sandstone from Buiskop, Limpopo, used for ground-floor storey of Old Station Building
- Sandstone for the Union Buildings was obtained from the Buiskop farm
- Use of sandstone ascribes the building to the corpus of historic civic building in Pretoria

Clay Brickwork

- Older brickwork structures likely used Kirkness clay bricks - manufactured 2km from the site at Groenkloof

Klompie Brick Pavers

- SAR replaced wooden parquet floor tiles in the entrance hall of the Station with more durable klompie brick tiles
- Klompie pavers replicate herringbone pattern of original parquet floor

Rounded Red Clay Roof Tiles

- Old Station and Audit Building roofs
- Restoration of roof (after fire) required purpose-made roof tiles to replicate original
- High value significance
- Association with appearance of red clay Kirkness bricks

Brick Floor Paving

- Various types of concrete pavers used for Station walkways
- Differentiation in patterns and colour help to define covered areas and walkways

Concrete

- More recently constructed planter boxes and benches
- Concrete benches located throughout Pretoria within public park-like spaces

STEEL STONE CLAY CEMENTITIOUS

PRIMARY MATERIALS

Concrete

- In-situ cast concrete foundation functions as a plinth for the intervention walls
- Raised portions of the plinth accommodate seating, whilst recessed pockets accentuate the connection of the steel columns to the base
- Raised base helps protect adobe brick wall from rainwater splash-back and pooling

Steel Mesh

- Steel structures of Salvokop reinterpreted as a more ephemeral, welded steel mesh
- 2.5mm galvanised welded steel mesh with 50 x 50mm block size
- Used as framework enclosure for in-fill material

Steel Sections

- Steel sections form primary framework for secondary and tertiary materials

SECONDARY MATERIALS

Adobe Brick Walls

- Excavated soil from site reused for adobe brick manufacturing
- Production utilises affordable, readily available materials
- Requiring high labour force for brick production and laying
- Desirable deterioration of in-fill walls promotes ritual maintenance
- Non-masonry wall shall achieve a min. total R-value of 1.9 for Climatic Zone 2 (SANS 10400-XA)
- 300mm thick adobe wall R-value = ±3.8 > 1.9 (Zone 2)

Random Stone In-Fill

- Stone in-fill within steel mesh enclosures - incremental build-up of structure
- Integrating burial ritual into ritual construction of site - placement of headstones within enclosures
- Relates to the traditional Isivivane wall, a long memorial wall of rocks which are added to over time

TERTIARY MATERIALS

Klompie Brick Pavers

- Interior spaces utilise Klompie brick pavers in a basket-weave pattern
- Brick module relates to anthropomorphic proportioning
- A more durable interpretation of the wattle-and-daub walls in a basket-weave pattern at the Motouleng Cave
- Extension of Klompie brick pavers used within Station entrance hall

Grass Block Pavers

- Response to brick pavers of Forecourt walkways, but incorporate plant growth
- Used for exterior walkways
- Reduces soil erosion

Steel Roof Sheeting

- Steel roof sheeting creates a louder audible experience during rainfall
- Allows for a low-pitched roof slope

Composite Decking

- Composite decking material for lightweight, elevated roof planes
- Durable to withstand the support of high-traffic public spaces

INTERVENTION MATERIALS

MATERIAL DIALOGUE

Fig. 7.4: Dialogue between contextual and intervention materials (Ullrich 2020)

7.3

EDOARDO TRESOLDI'S STEEL MESH STRUCTURES

The architectural dialogue, between the memory of the past and the present structure, is explored by Edoardo Tresoldi in his ethereal architectural sculptures. His reconstruction of historical buildings on their original sites can be understood as reinterpretations of the ephemeral nature of the ruins – forming a framework, void of 'matter', evoking a mental projection of what has disappeared. The structures primarily utilise welded steel mesh as a framework, which defines the boundary of the form. Portions of the framework structure are given mass by utilising local stone as an in-fill – filtering the space with an opaque boundary. Steel mesh segments provide lateral stability to the structure at regular intervals, and the horizontal mesh segments provide a platform for the placement of stones. This results in certain mass segments, containing stones, having the ethereal appearance of 'floating' within the steel mesh structure. The structural wire enclosures are lightweight, and can be easily placed into position on-site without machinery. For this dissertation, the steel mesh enclosures are explored as a boundary framework that can be incrementally in-filled with a massing material. The incremental construction contributes to the 'layering' of commemorative memory at the site, and utilises burial rituals as a means of defining the structural fabric of the site.

LOCATION:

Borgo Valsugana, Italy
Riyadh, Saudi Arabia
Dubai, United Arab Emirates

VALUE TO RESEARCH:

Material and structural precedent for the ritual construction of commemorative built artefact

Fig. 7.6: Layout of layers (Tresoldi et al. 2019)

. rete metallica
. verde
. acqua
. architettura
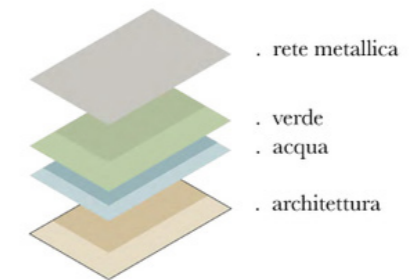
Fig. 7.7: Stratification of layers (Tresoldi et al. 2019)

At the proposed Italian Pavilion for the Expo Dubai 2020, the design concept of Stratification results in the wire mesh structure being utilised for the upper level walls and roof canopy of the pavilion.

Fig. 7.8: Gharfa Diriyah Oasis, Riyadh, Saudi Arabia (Conte 2020)

② RITUAL CONSTRUCTION

Fig. 7.9: Wall of Gharfa Diriyah Oasis (Conte 2020)

Fig. 7.5: Longitudinal section (Tresoldi et al. 2019)

7.4

TECHNICAL ITERATIONS

Two focus areas are highlighted for the technical iterations: the Burial Wall & Burial Garden, identified by the sectional cut A-A, and the Ceremony Area, identified by the sectional cut B-B.

7.4.1 WALL OF REMEMBRANCE & BURIAL GARDEN

Within the Burial Garden, the 'final committal' service and interment process take place. The space is submerged below-grade, and privacy is created by the Burial Wall threshold, defining the western edge, and the embankment defining the eastern edge. On section, the space progresses from the most public walkway, through to the most sacred burial area.

The eastern embankment and burial chamber is designed to facilitate the interment process (Fig. 7.22). Visitors can move up the embankment – which alludes to the final strain of walking up a veld ridge before arriving at the burial area. The embankment accommodates for in-ground burial, and the water-trough walls provide privacy, and accommodate for cleansing rituals. The water-troughs are cascaded, allowing for the sound of trickling water within the Burial Garden to help mask the urban noise of traffic. In order to prevent the appearance of 'digging up' the grave – an activity that is frowned upon in many of the cultural and religious groups within Pretoria – a groundskeeper can rather access the burial chambers from the lower-level, on the eastern walkway, through a latch door. This allows for the grave recycling process and the Recomposition process (pp. 156) to occur.

SECTION A-A

WALL OF REMEMBRANCE

BURIAL AREA

SECTION B-B

CEREMONY SPACE
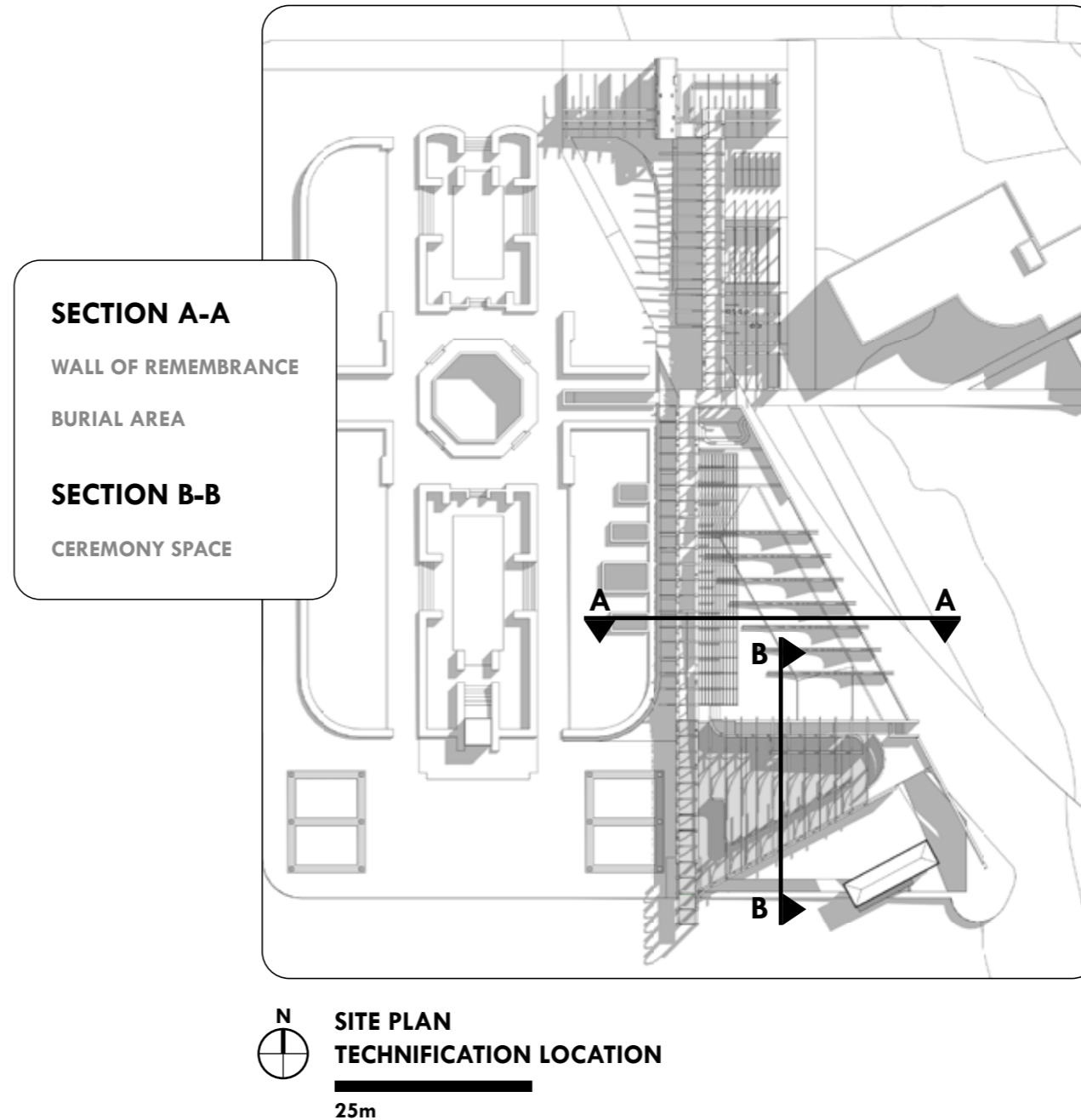
SITE PLAN
TECHNIFICATION LOCATION

25m

Fig. 7.10: Focus sections for technification (Ullrich 2020)

Arched bracing member - sense of cave-like interiority

Member stems from base - continuity of structure

4 HIERARCHY
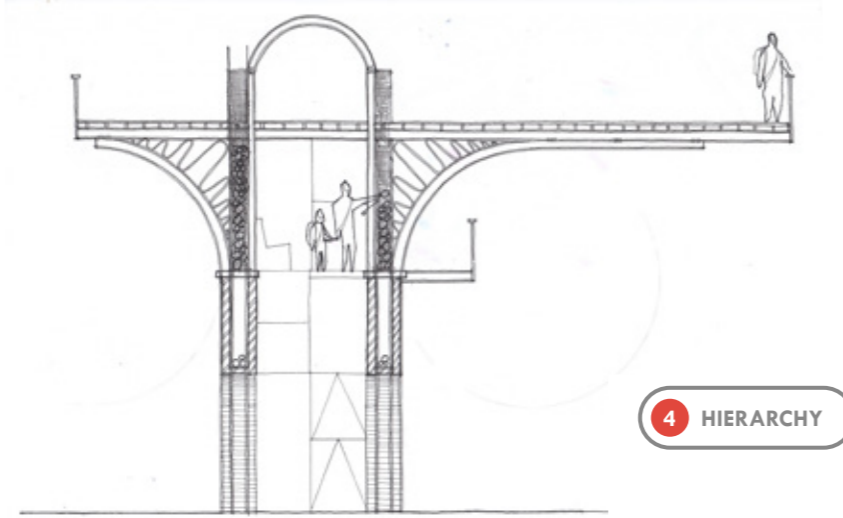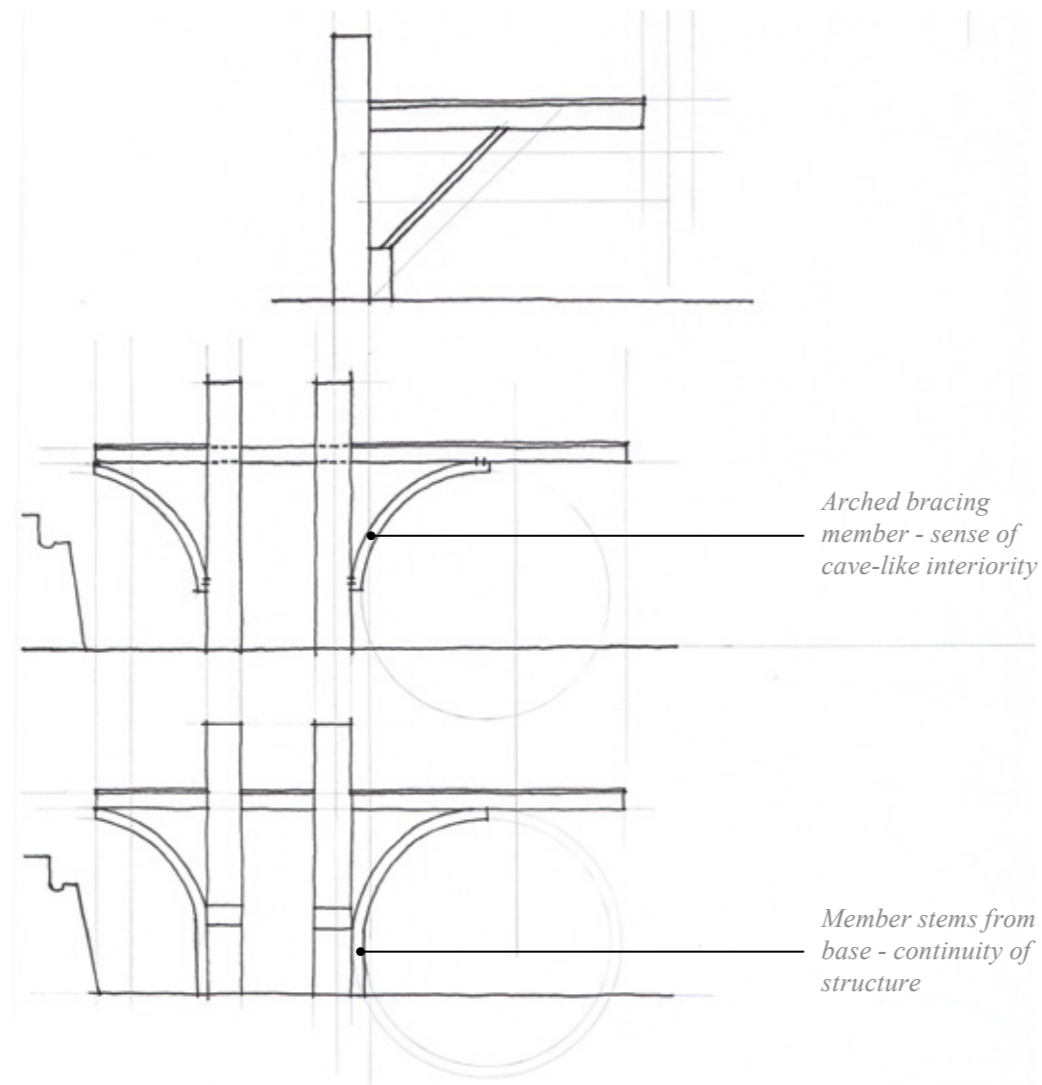
DEVELOPING THE ARCHED CANOPY

Fig. 7.11: Developing the canopy structure (Ullrich 2020)

Fig. 7.21: Section of Burial Wall (Ullrich 2020)

PLATE GIRDER

DOWELLED LATTICE BEAM
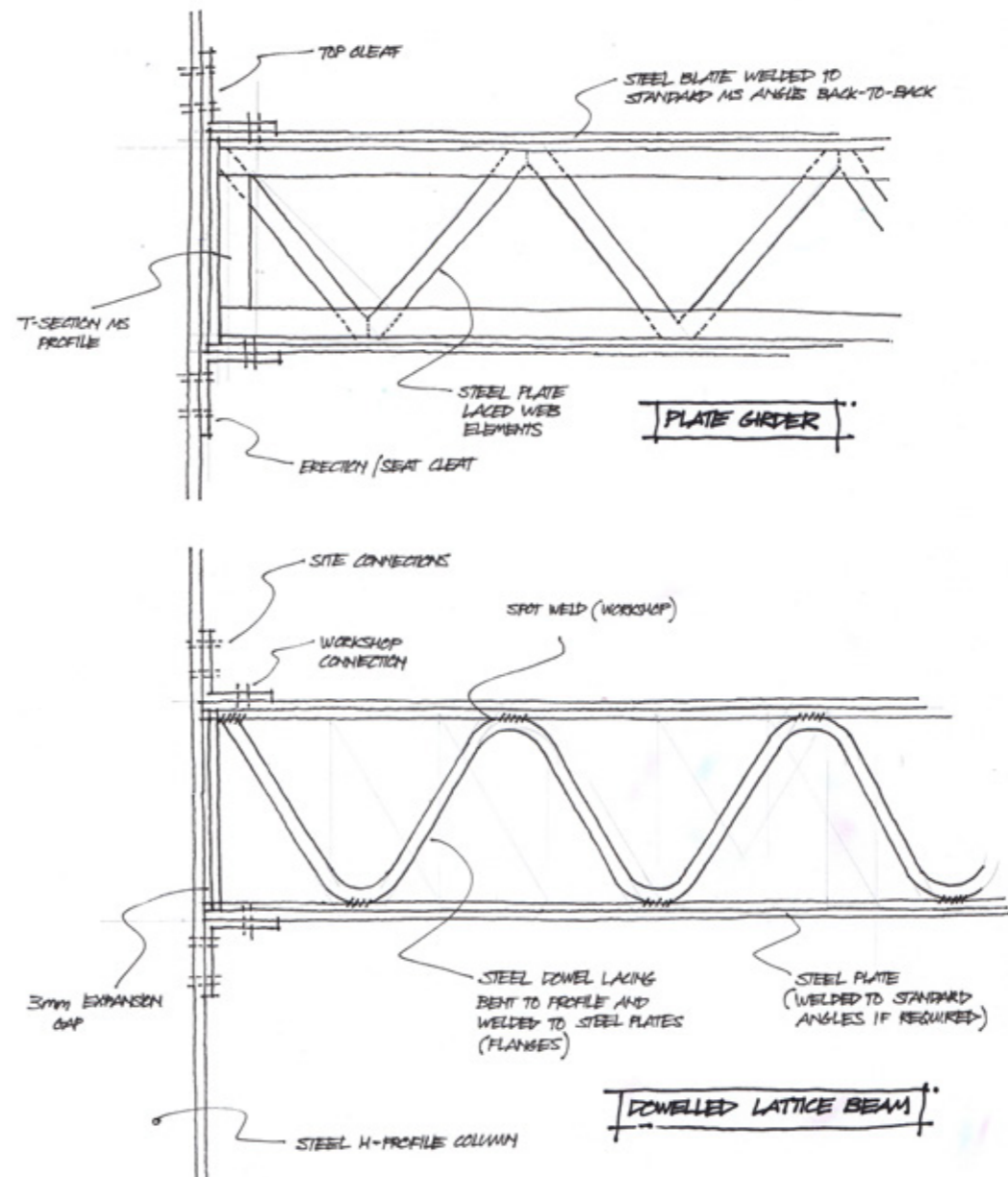
DOWELLED LATTICING

Fig. 7.12: Developing the dowelled-lattice beam (Ullrich 2020)

STEEL DOWEL LACING
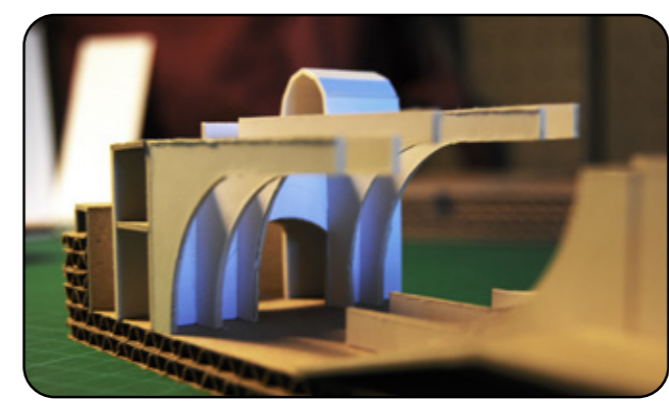
Fig. 7.13: Section maquette of canopy (Ullrich 2020)

Columns creating
intervals - responding
to Forecourt grid

2 RITUAL CONSTRUCTION

FIER RESTRICTS
THERMAL BRIDGING
ON GROUND FLOOR
- WASTE OF
CONCRETE
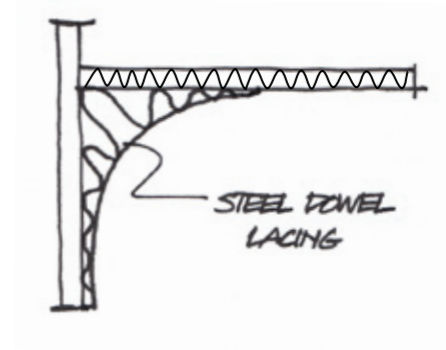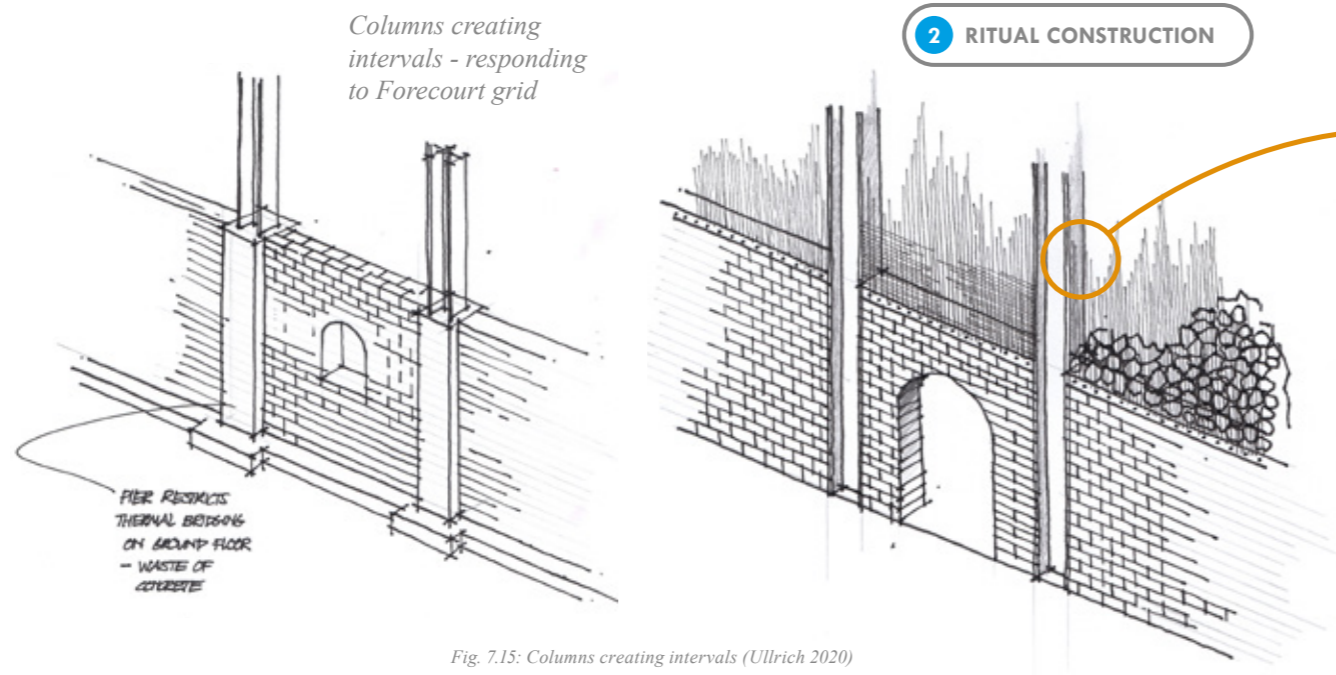
Fig. 7.15: Columns creating intervals (Ullrich 2020)
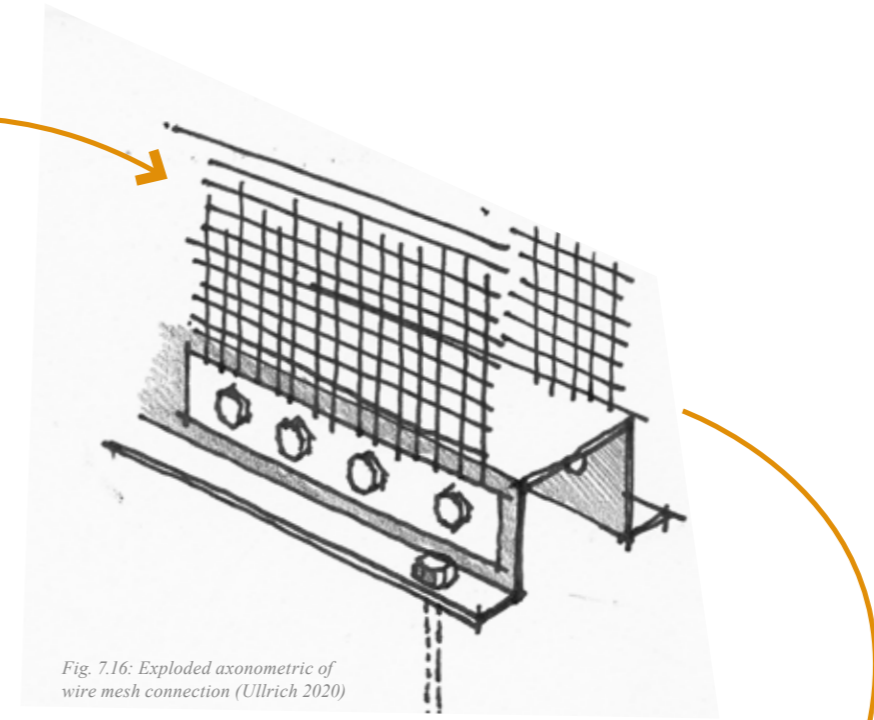
Fig. 7.16: Exploded axonometric of
wire mesh connection (Ullrich 2020)

4 HIERARCHY

Welded steel mesh
framework fixed to steel
columns and wall

Incremental stone in-fill
of mesh framework

Adobe brick in-fill be-
tween steel columns;
utilising excavated
soil from site

356mm x 356mm x
129kg/m H-section hot
rolled steel column
bolted to base

Fig. 7.17: Wire mesh base connection (Ullrich 2020)

Fig. 7.18: Components of Burial Wall (Ullrich 2020)

WALL OF REMEMBRANCE
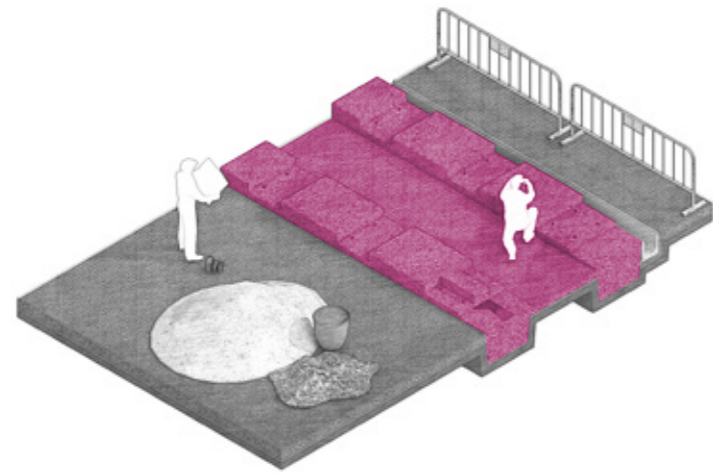
(1) CONCRETE FOUNDATION
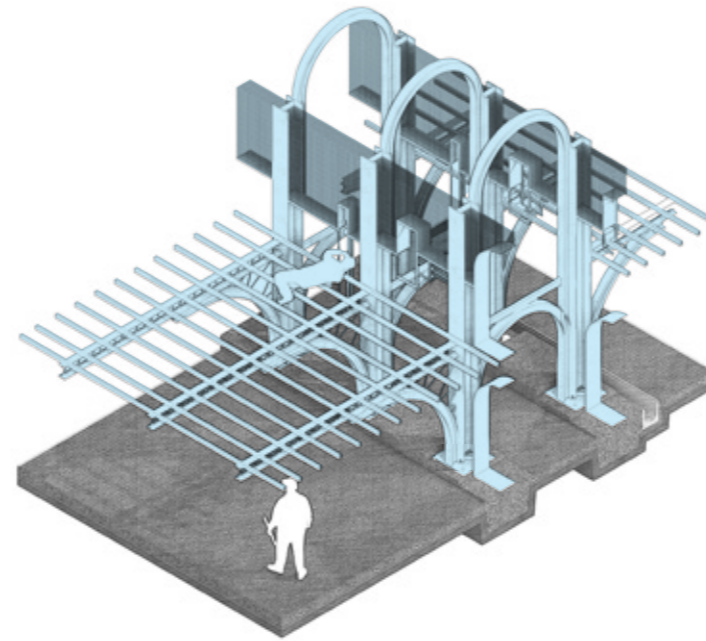
(2) STEEL FRAMEWORK
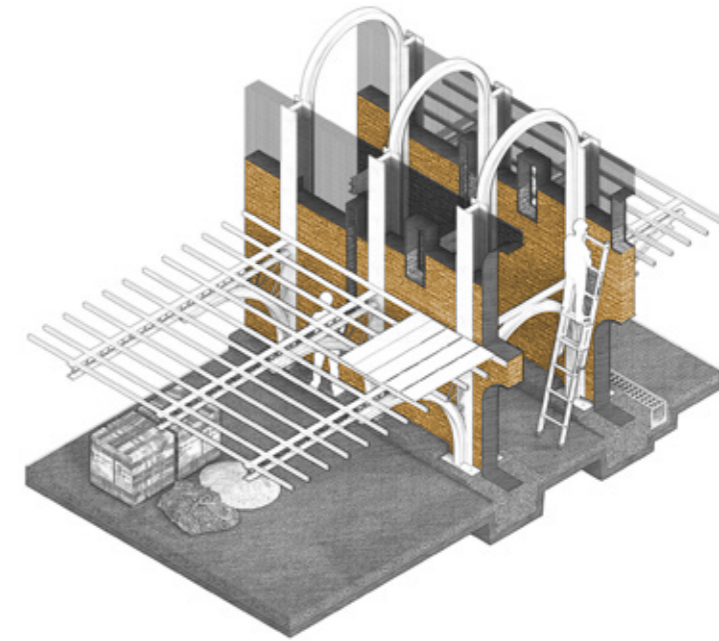
(3) ADOBE BRICK IN-FILL
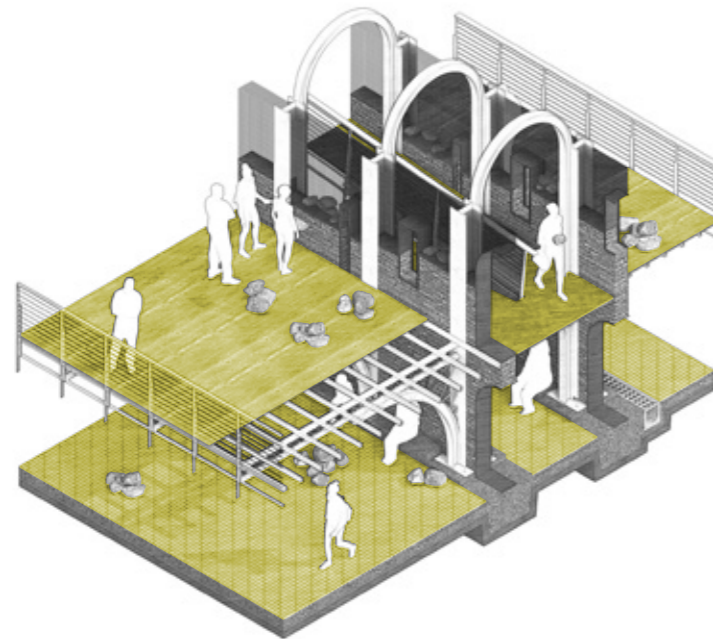
(4) HORIZONTAL PLANES
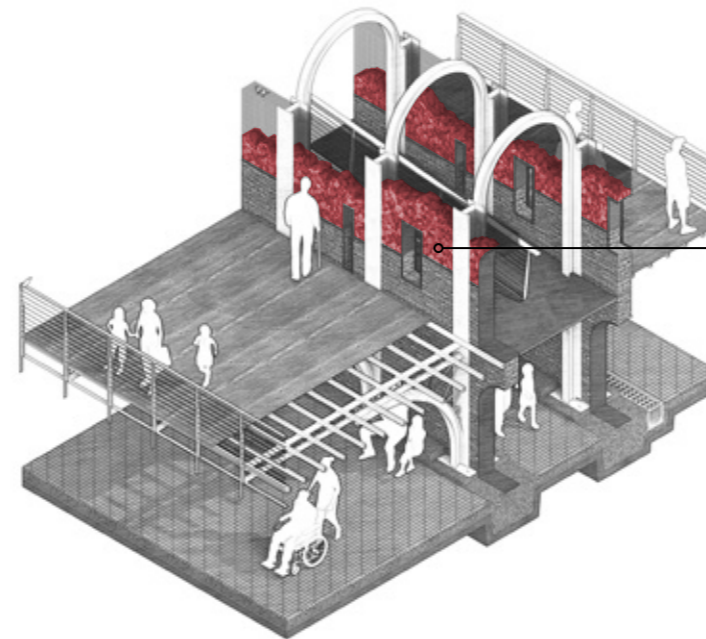
(5) INCREMENTAL STONE IN-FILL
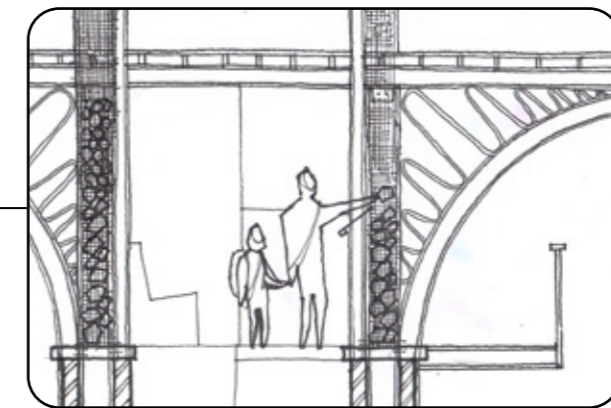
**PLACING STONE INTO
WALL OF REMEMBRANCE**

Fig. 7.20: Section of Burial Wall (Ullrich 2020)

DEVELOPMENT OF STRUCTURAL SYSTEM

Fig. 7.19: Build-up of Wall of Remembrance (Ullrich 2020)

7.4.2 RITUAL OF CONSTRUCTION

A hierarchical structure aids the design intentions of the intervention. The primary structure defines the framework of the burial site, utilising steel as a defining material – a contextual material that defines the historic, industrial buildings of the Railway Precinct of Salvokop. The structural steel sections and welded steel mesh enclosures provide the framework for the secondary and tertiary structural systems. The steel framework is placed at regular intervals, corresponding with the intervals of the Forecourt and Station layout, and provides sufficient support for the calculated load. The curved design language of the site is manifested in the detailing of the structure. To lighten the material load of the steel beams forming the cantilever, the project explored the design of plate-girders (Fig. 7.12). Iterations of the plate-girder resulted in the beam incorporating a dowelled lattice, which provided sufficient structural rigidity against shear forces, whilst incorporating the curved design language. At junctions, exposed, bolted steel connections were utilised to manifest the indigenous place-making concept of Ubuntu, where visitors are able to identify the importance of components at the site, and how these components work in tandem in order to form an integral whole.

The secondary structure responds to the existing Forecourt's slate-stone retaining walls and clay brick walls, by utilising stone and adobe bricks to define vertical boundary walls. The adobe brick forms part of the lower level of the structure (Fig. 7.19). The soil that is excavated for the recessed burial area is reused for the adobe brick manufacturing. The upper portion of the structure consists of a wire mesh framework with a stone in-fill – using the steel mesh structures of Edoardo Tresoldi as a precedent. The incremental build-up of the stone in-fill is integrated with the burial rituals at the site. Ritual construction relates to the formation of the traditional Isivivane wall – a memorial stone wall adjacent to a pathway. During the home-bringing ceremony, the bereaved family can place a grave headstone into the burial wall's steel framework – moving it from the grave to the wall. Over time, the wall would fill up, resulting in the site becoming a repository for individual and collective memory. This activity, of visitors adding a stone to the wall, incorporates both ritual commemoration and the physical repository of memory.

The tertiary structure consists of a range of elements forming the horizontal, public planes. The lightweight, elevated, horizontal plane of the canopy consists of a composite decking. The decking helps to define a shaded area below the canopy, whilst being durable enough to withstand the dynamic load of a high-traffic public space.

1 PRIMARY STRUCTURE

1 CONCRETE FOUNDATION   **2** STEEL FRAMEWORK

2 SECONDARY STRUCTURE

3 ADOBE BRICK IN-FILL   **5** INCREMENTAL STONE IN-FILL

3 TERTIARY STRUCTURE

4 HORIZONTAL PLANES
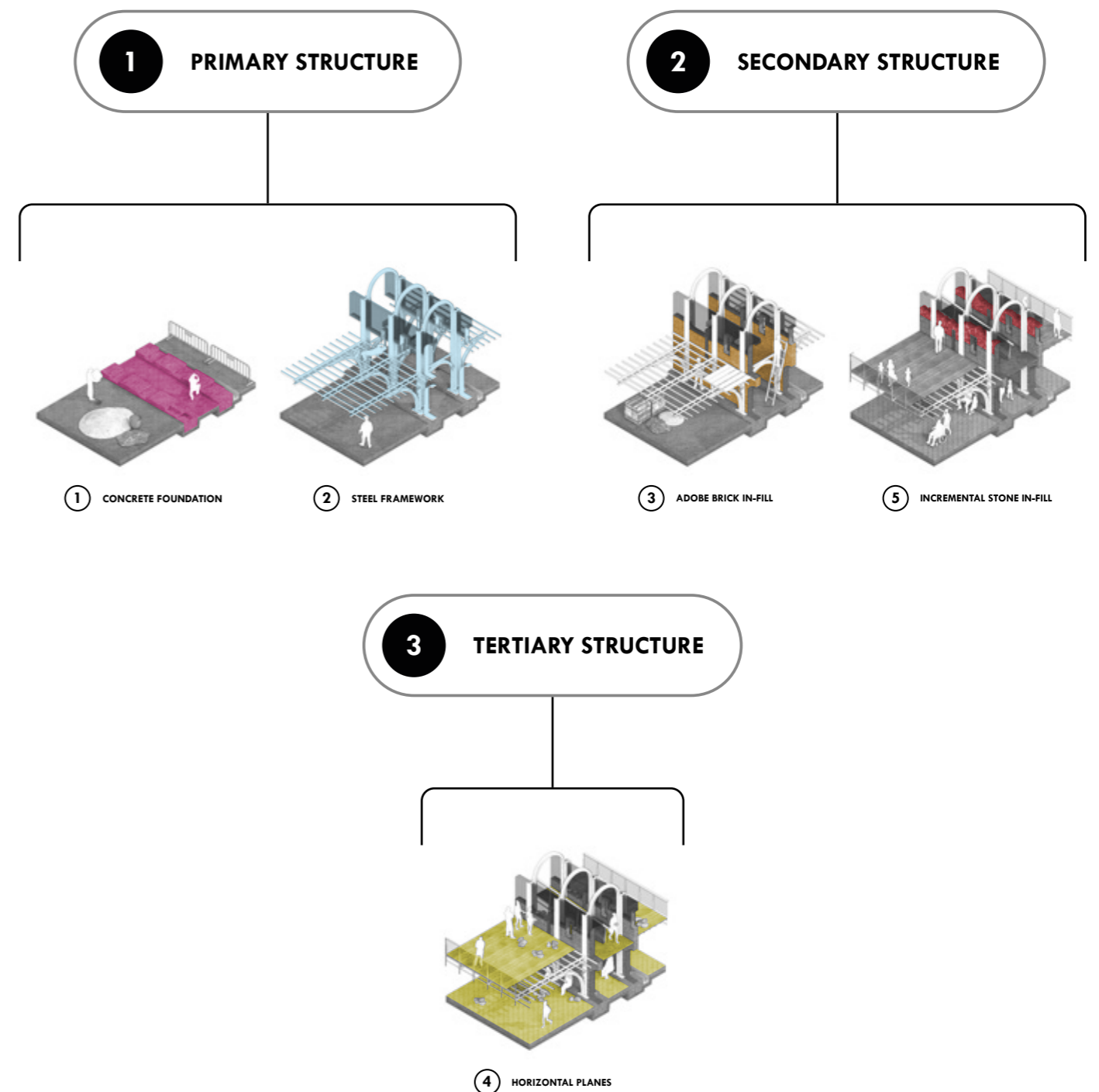
STRUCTURAL HIERARCHY

Fig. 7.21: Structural hierarchy (Ullrich 2020)
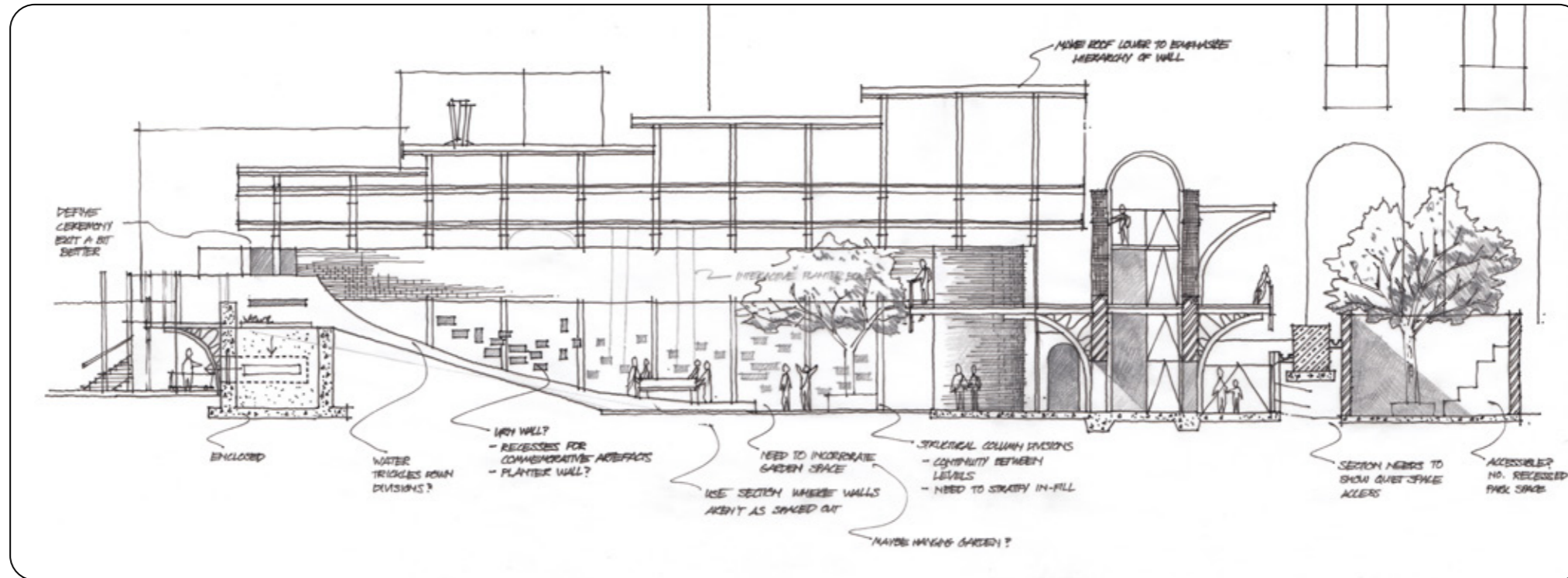
SECTION A-A
TECH SECTION - ITERATION 1
N   5m

Fig. 7.22: Iteration 1 – Section A-A (Ullrich 2020)
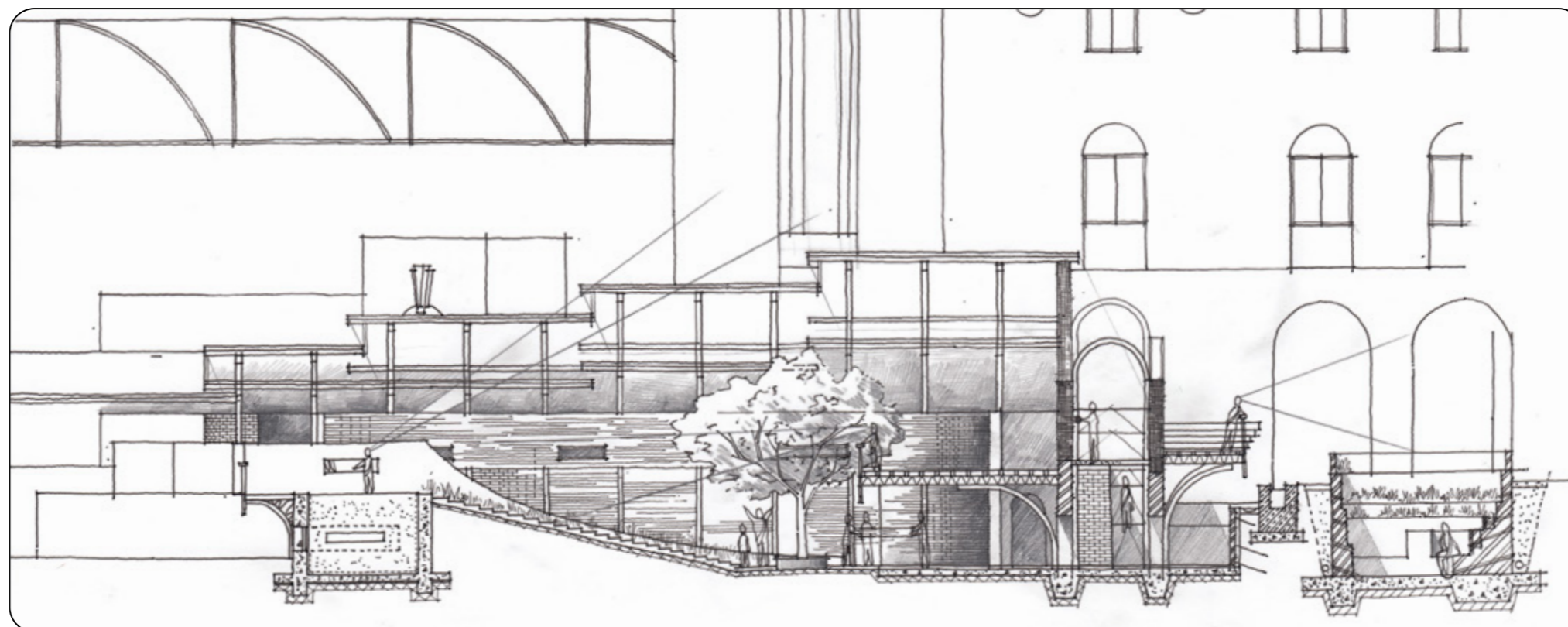
SECTION A-A
TECH SECTION - ITERATION 2
N   5m

Fig. 7.23: Iteration 2 – Section A-A (Ullrich 2020)

7.4.3 CEREMONY AREA

The Ceremony Area is the first main gathering space for funeral ceremonies. The Burial Wall is used as the entrance threshold into the Ceremony Area – initially establishing the importance of the Burial Wall as the main threshold into the more sacred and quieter region of the site.

The roof structure is intended to define the ground-floor ritual activities and movement, whilst opening up to consist, southern light to allow for congregants to easily read text during ceremonies.

Facing eastwards during prayer, *ad orientem*, is significant within Christian liturgy, and is accommodated by the orientation of the Ceremony Area (Elion & Strieman 2002). In the design and technical iterations, light is explored as a guiding element to provide focus for congregants moving through the space (pp. 142-143). Focus and movement is directed towards the eastern side of the space, with the casket and celebrant being located on the eastern side during ceremonies. The structural framework converges towards the eastern side, and the eastern, curved wall, guides congregants towards the descent into the burial area (Fig. 7.27).

The horizontal layering of roof canopies allow for indirect northern light to fill the space, whilst opening up to consistent southern light – ideal for reading text and avoiding eye discomfort. The canopy structure incorporates the quarter-arched, bracing element, which helps to define the 'closeness' of the interiority of the space (Fig. 7.24).
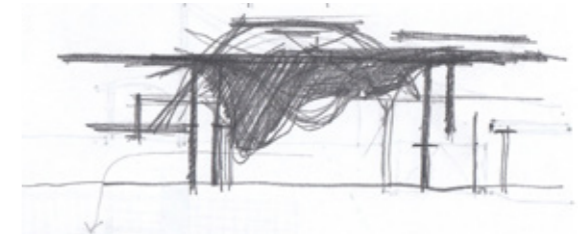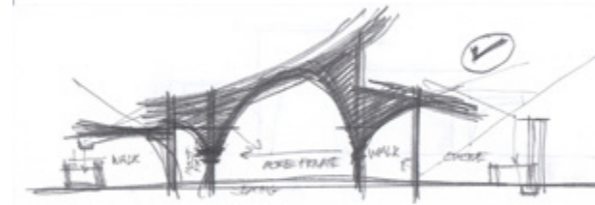
Horizontal roof planes integrated better with planes of Forecourt, whilst allowing for an undulating, intimate interior
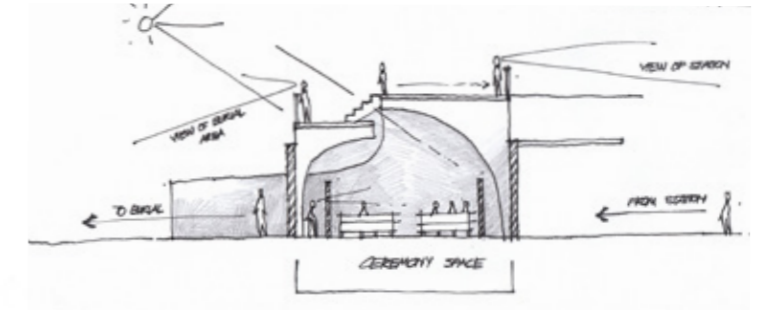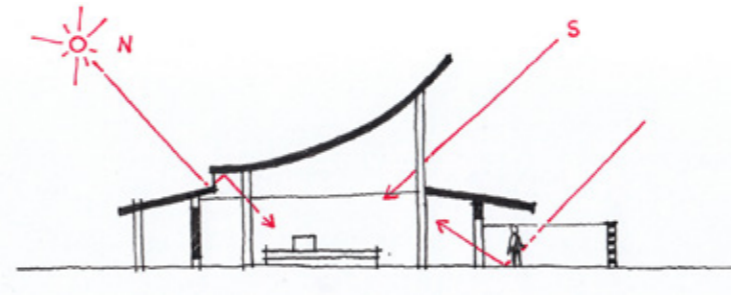
Fig. 7.24: Developing a roof structure (Ullrich 2020)

PRIVACY WITHIN CEREMONY SPACE

Fig. 7.25: Louvres within Family Area providing privacy from congregation (Ullrich 2020)
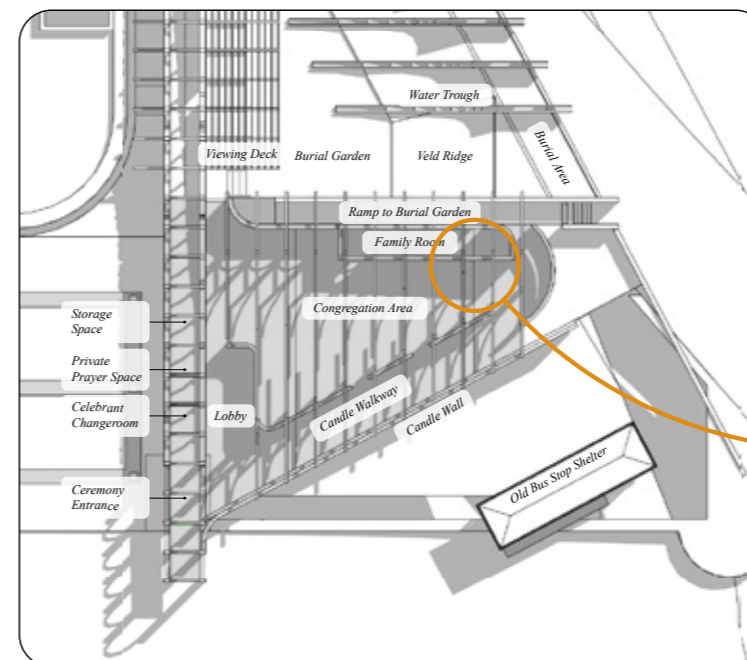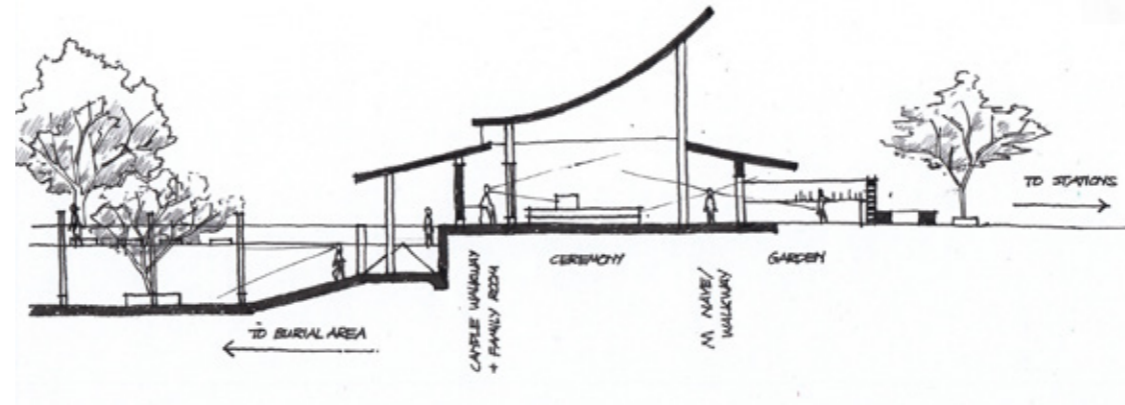
Vertical louvres provide privacy from congregation, whilst providing visibility of service
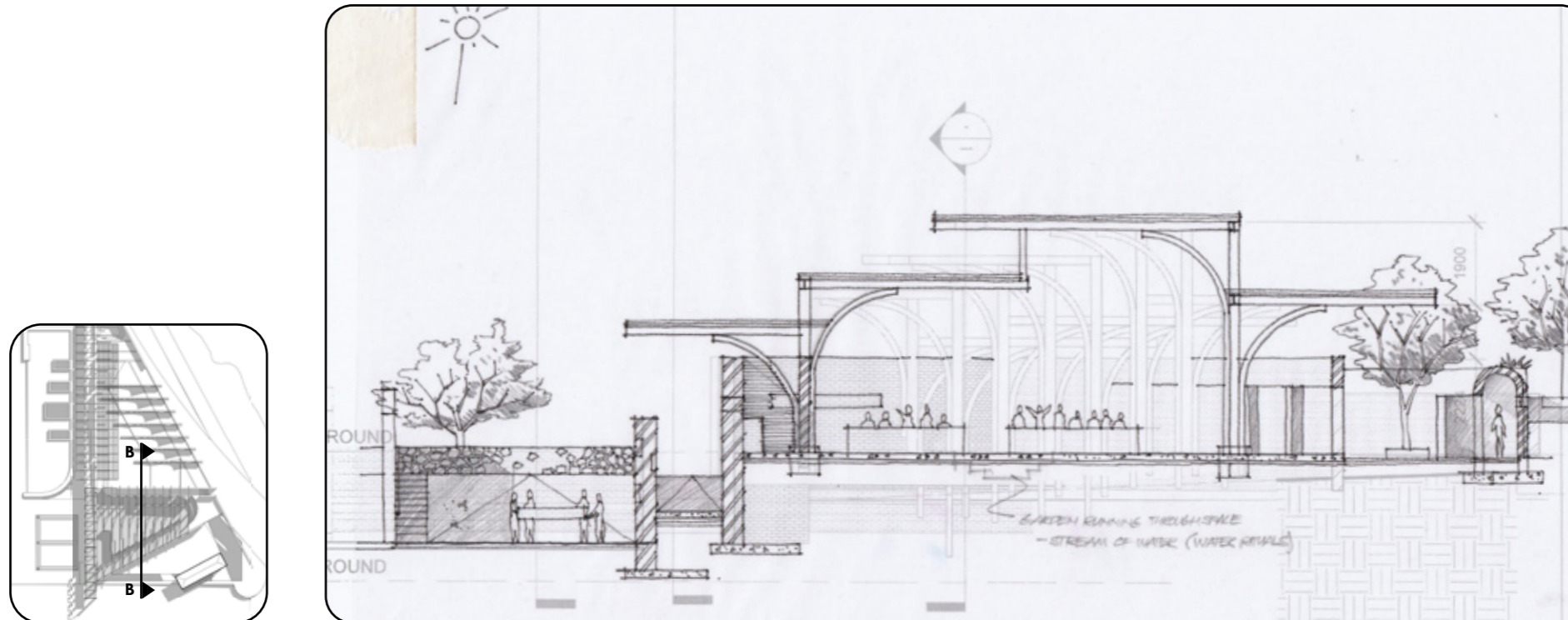
SECTION B-B
TECH SECTION - ITERATION 1

5m

Fig. 7.26: Iteration 1 – Section B-B (Ullrich 2020)
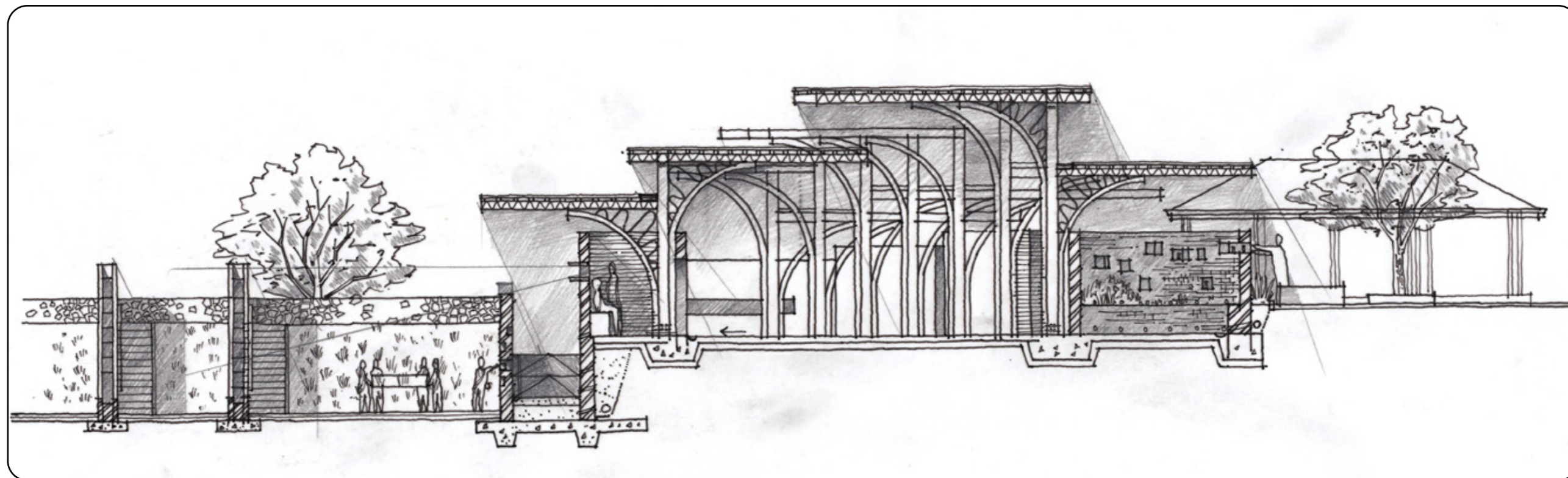
SECTION B-B
TECH SECTION - ITERATION 2

5m

Fig. 7.27: Iteration 2 – Section B-B (Ullrich 2020)

CEREMONY & BURIAL AREA
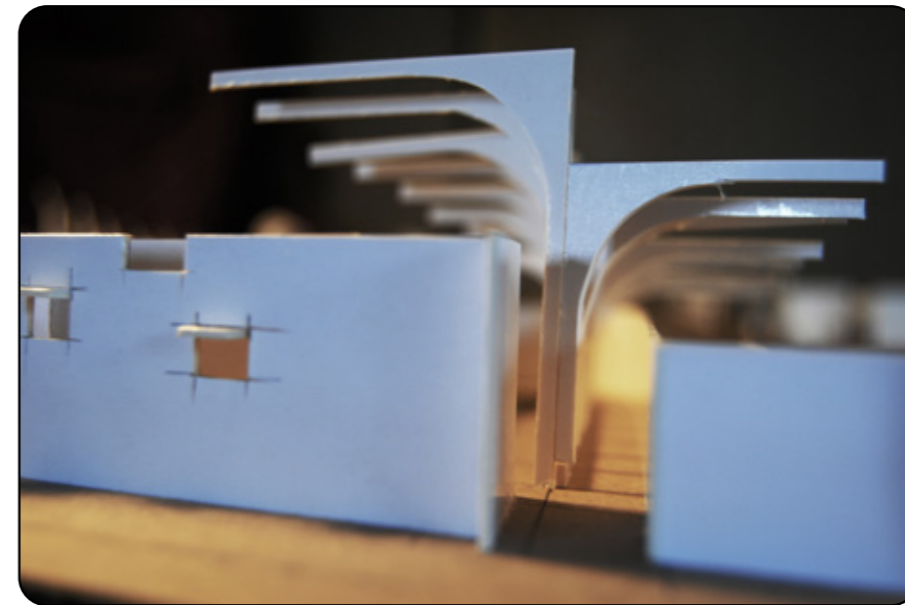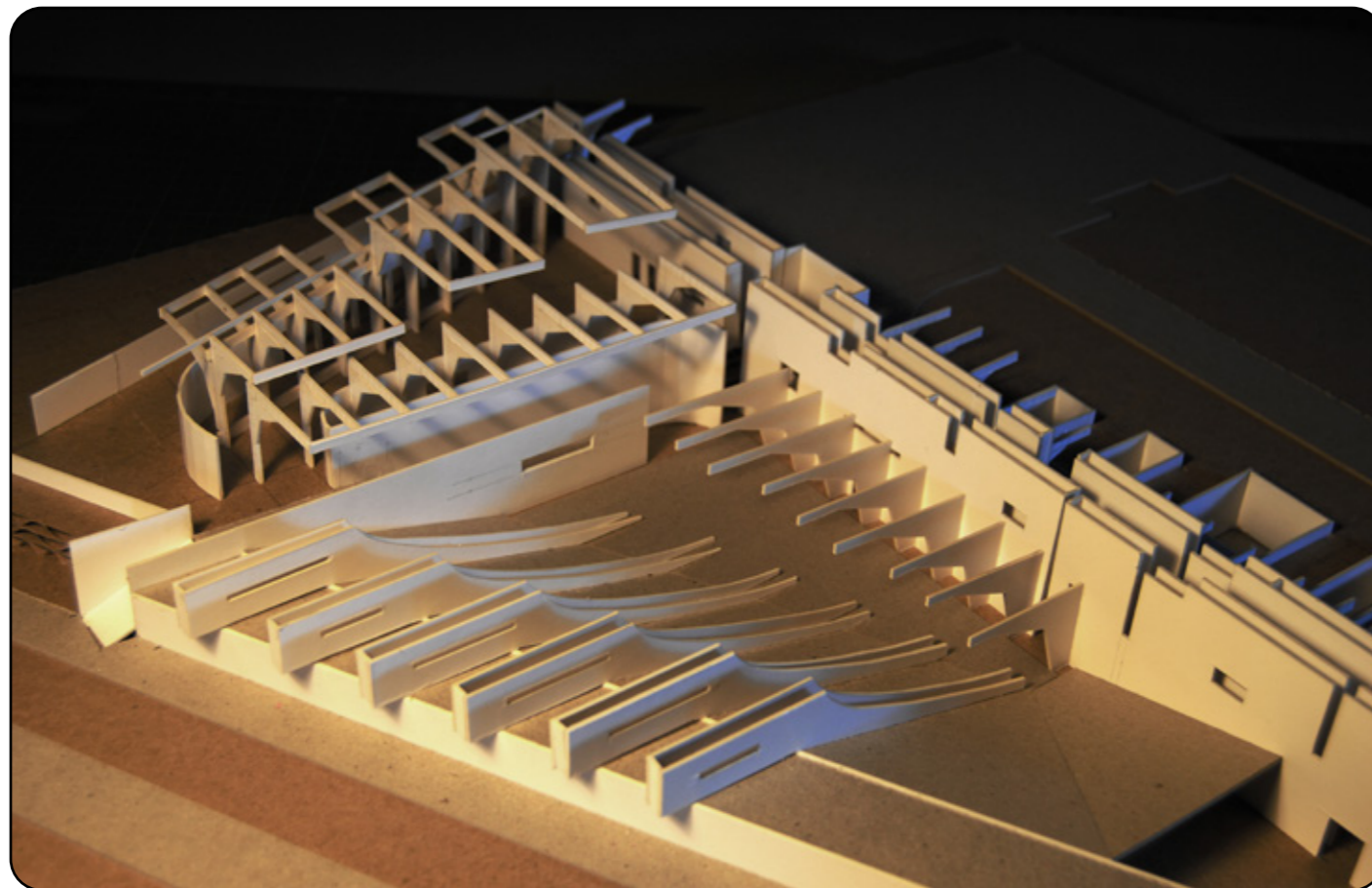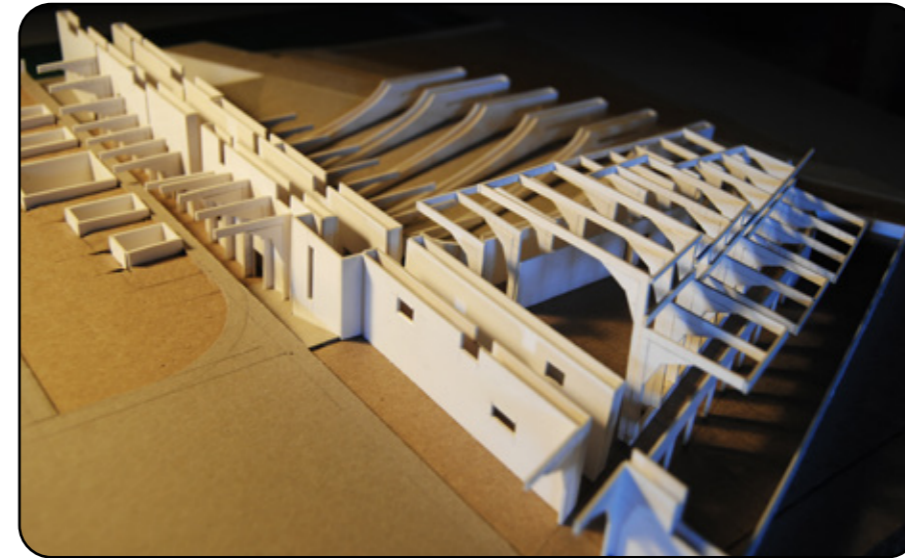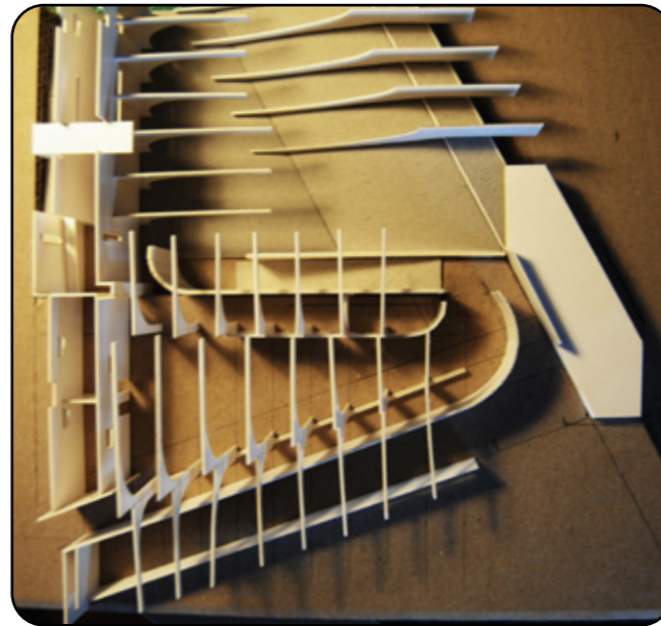
Clockwise from top left:

Fig. 7.28: Plan of Burial Area and Ceremony Area (Ullrich 2020)

Fig. 7.29: South-western aerial (Ullrich 2020)

Fig. 7.31: Entrance to Ceremony Area (Ullrich 2020)

Fig. 7.30: North-eastern aerial (Ullrich 2020)

7.4.4 NORTHERN PUBLIC SPACE

The northern portion of the site provides an active street interface, and redefines the once-existing North-East quadrant of the Forecourt as a public space. The restaurant, candle shop, and floristry open out onto the street sidewalk. The entrance structure steps out onto the sidewalk and indicates entry, reminiscent of the *porte cochère* at the entrance of the Old Pretoria Station. The quadrant is defined by the active retail shops, workshops, and eating area. The existing pathway through the quadrant is sustained in the intervention – responding to the existing pedestrian traffic at the crosswalk.

At the northern portion of the site, the Burial Wall separates the public activities, on the western side, from the more private, service-focused activities, on the eastern side. The eastern service road provides easy access for service vehicles to the eastern spaces – such as the composting area, greenhouse, ablutions, casket workshop, and the mortuary. Transverse walls, stemming from the main Burial Wall, primarily function as accessible service ducts and structural supports for the roof canopies.
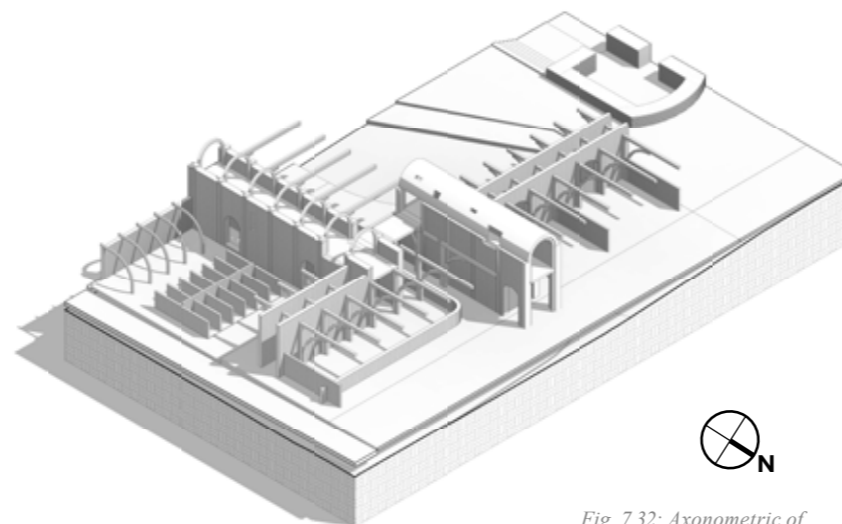
Fig. 7.32: Axonometric of Northern Public Area from North-East (Ullrich 2020)
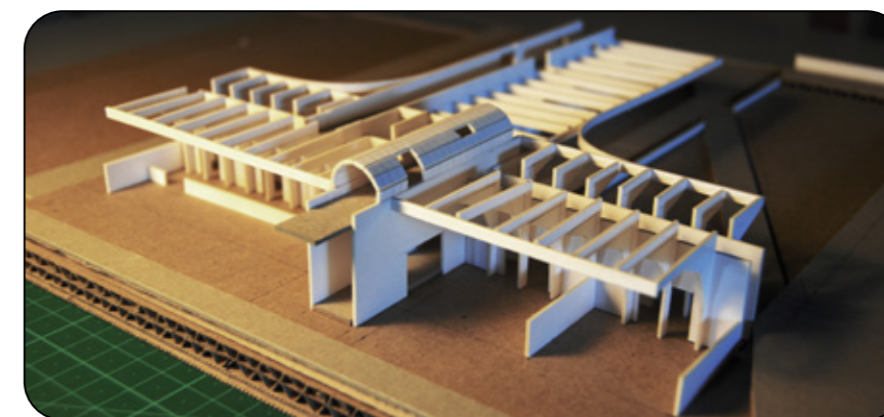
Fig. 7.33: North-western aerial (Ullrich 2020)

NORTHERN PUBLIC AREA

Fig. 7.34: Axonometric of Northern Public Area from South-West (Ullrich 2020)

7.5

DAYLIGHTING ITERATIONS

For the interior of Ceremony Area, technical iterations and daylighting simulations aided the design in achieving the desirable user comfort and ritual requirements. A baseline analysis was initially completed in order to critically assess current daylighting condition, and to develop alterations to address the problem areas.

Two simulations were completed for each of the four design variations within the Sefaira software - the annual internal daylight analysis, and the daylight factor analysis.

The annual internal daylight was analysed through a visual simulation, which identified horizontal workplane surfaces receiving too much direct sunlight or inadequate daylighting, and the Spatial Daylight Autonomy (sDA) value. The sDA is the percentage of floor area receiving sufficient daylighting exposure – which conforms to the required illuminance (lux) levels (Poudel 2020). The Green Star Council recognises a satisfactory sDA percentage as falling between sixty and ninety percent of the floor area (Hugo 2019: 13). The Average Daylight Factor (DF) provides a value for the ratio of the interior illuminance (lux), to the exterior illuminance, on a workplane surface height of 760mm (Poudel 2020). Therefore, the higher the DF, the more natural daylight within a room. The LEED certification (Leadership in Energy and Environmental Design) considers a DF ratio of between 2 and 5 to be adequate, for seventy-five percent of the occupied space used for critical visual tasks (LEED 2020) (SANS 204 and SANS 10400-XA don't expand

upon ideal Daylight Factor values). A lower ratio would signify an underlit room, which requires artificial lighting, and a high ratio could result in users experiencing glare, and increased internal solar gain, which could cause user discomfort. The iterations attempted to achieve daylighting values that fell within the optimum range. For ritual purposes, it was ideal for the floor of the eastern curved wall to be slightly overlit, in order to bathe the casket in daylight during ceremonies, and to create a focal point within the space. The exit routes of the Ceremony Area were also aimed to be slightly overlit, in order to highlight the threshold openings, and to guide users through the space.
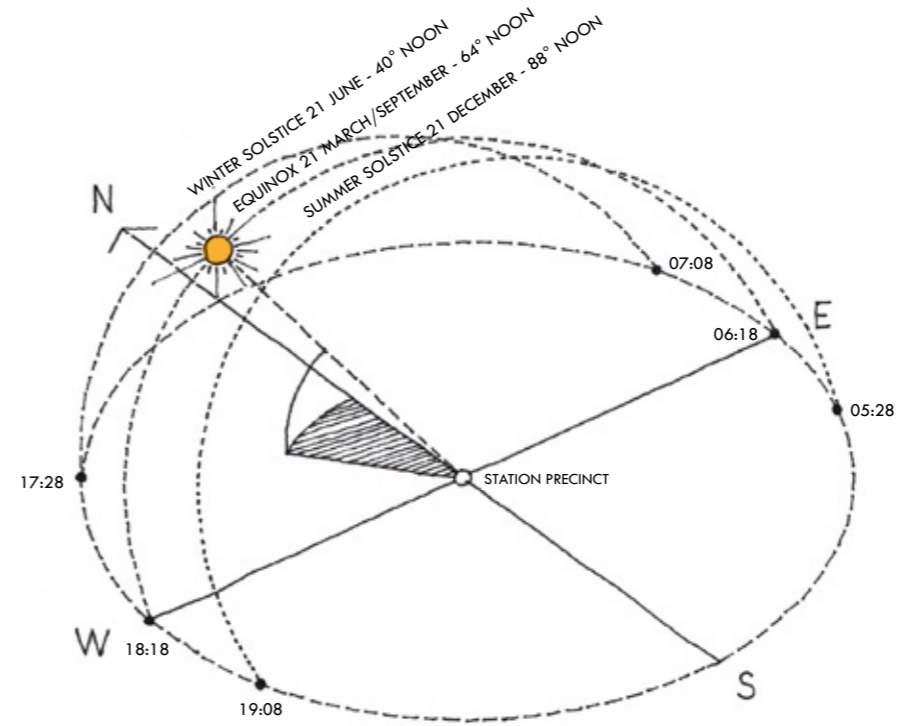
PRETORIA SUN DIAGRAM

Fig. 7.35: Pretoria sun diagram (Ullrich 2020)
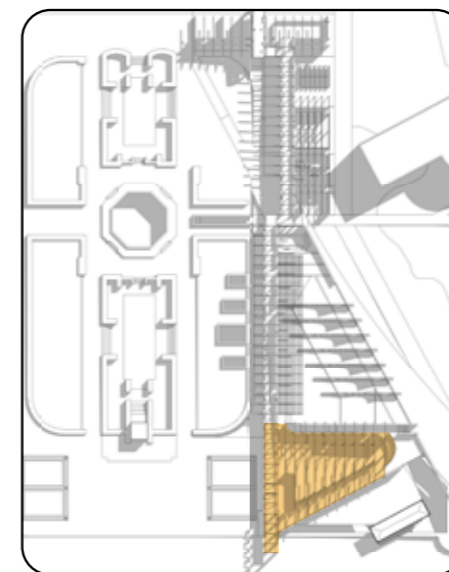
DAYLIGHTING STUDY AREA

Fig. 7.36: Daylighting study area (Ullrich 2020)

Calculated, horizontal-louvred window openings allowed for taller window openings - better interior illumination and vista opportunities

Overhang calculations accommodated movement corridors and outside refuge areas

$P = TAN\ \theta \times H$

$P = 0.48 \times H$

$P = 0.48 \times 2.8m$

$P = 1.4\ m$

TO COMPLY WITH SANS XA

PRETORIA LATITUDE (°S) = 25.73

$TAN\ \theta = 0.48$

OR $\theta = (90 - 25.73)$

$\theta = 64.27°$

P = 1.4m

H = 2.8m

65 °
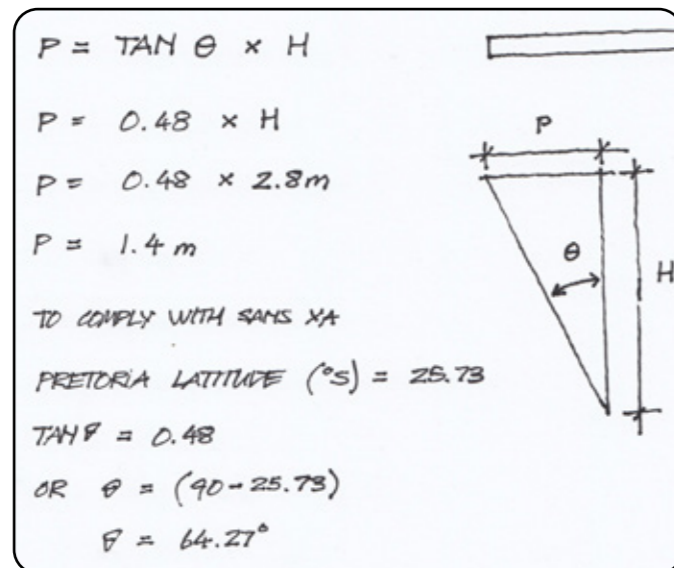
ROOF OVERHANG CALCULATION

Fig. 7.37: Example of overhang calculation for Pretoria climate according to SANS 10400-XA (Ullrich 2020)
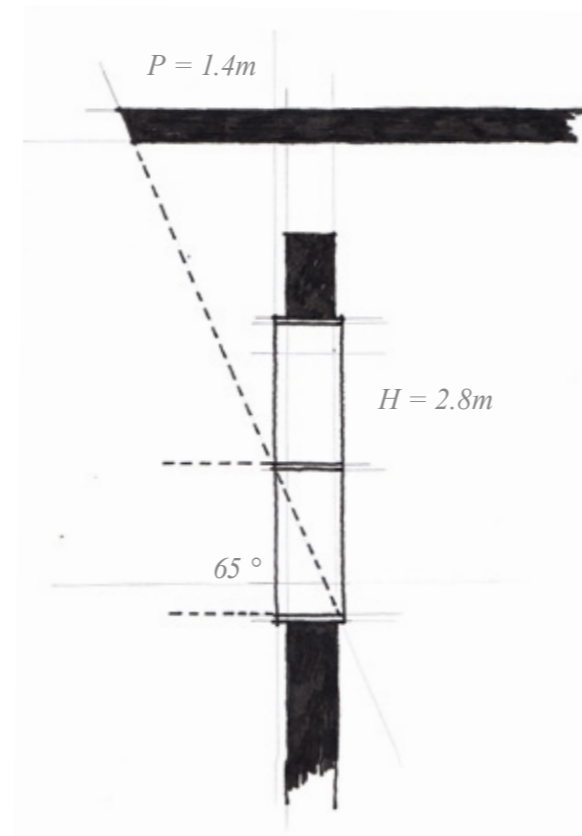
SHADING WALL OPENINGS

Fig. 7.38: Diagram of sun angles and overhang calculation for window opening (Ullrich 2020)
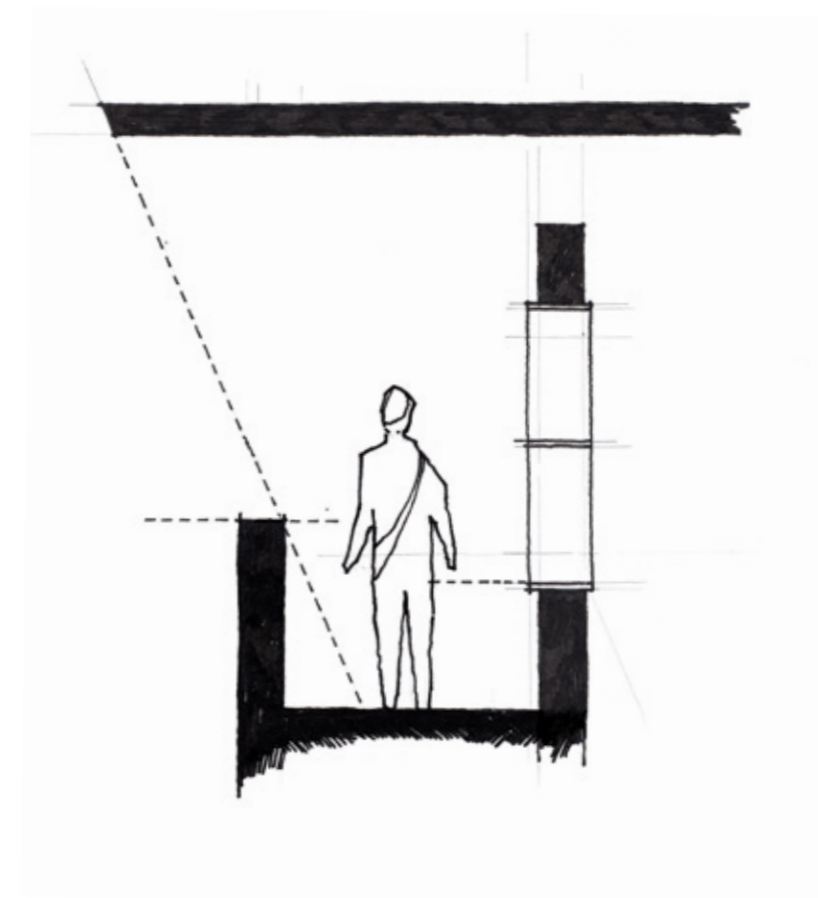
SHADING PROCESSIONAL ROUTES

Fig. 7.39: Diagram of sun angles and overhang calculations for processional route (Ullrich 2020)

PERSPECTIVE	OVERLIT & UNDERLIT AREAS	DAYLIGHTING FACTOR
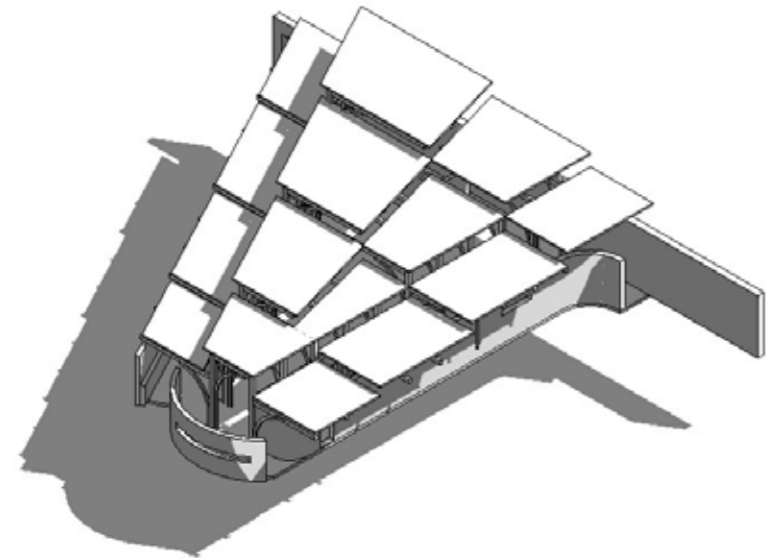
A - BASELINE ANALYSIS

Fig. 7.40: A - North-eastern aerial (Ullrich 2020)
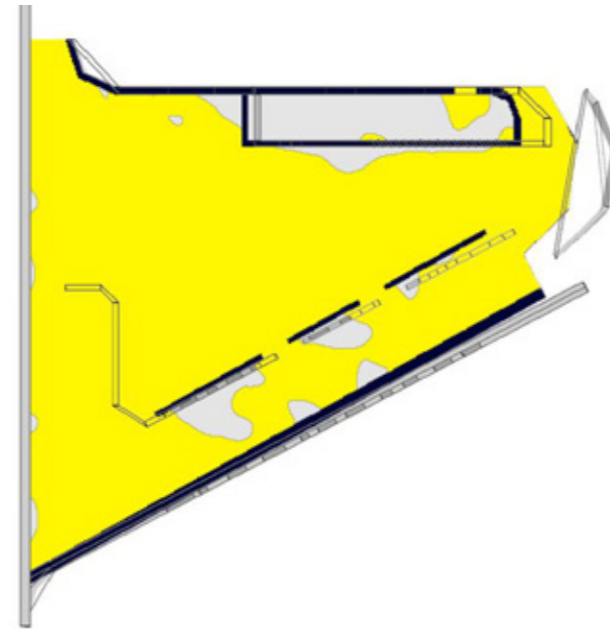
1. Over 1000 lux of direct sunlight for more than 250 occupied hours in a year
2. Less than 300 lux for more than 50% of -the occupied hours in a year

Fig. 7.41: A – Plan showing overlit & underlit areas (Ullrich 2020)

3. The LEED requires a minimum Daylight Factor ratio of 2 to qualify for LEED-NC IEQ credit 8 for daylighting in occupied spaces. The horizontal surfaces upon which the measurements were recorded were at a desk height of 850mm.

AVERAGE DF
13.17%

Fig. 7.41: A – Plan showing daylight factor (Ullrich 2020)
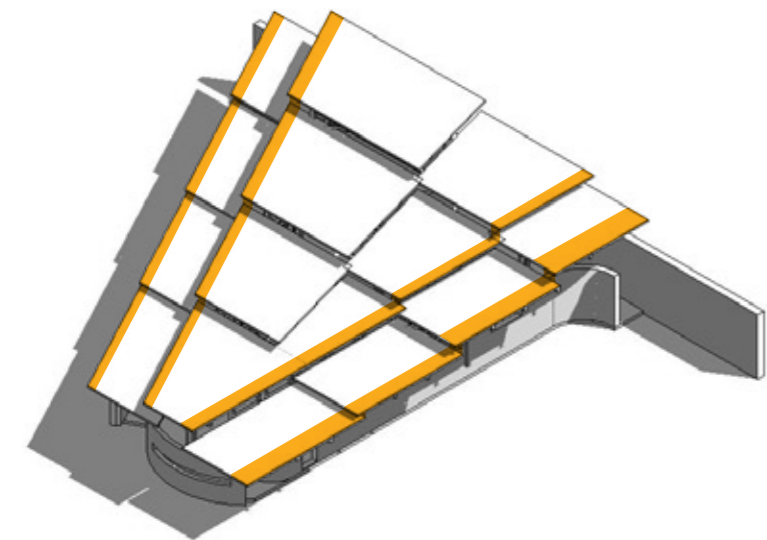
B - FIRST ITERATION ROOF OVERHANG

Fig. 7.45: B – Plan showing daylight factor (Ullrich 2020)

98%
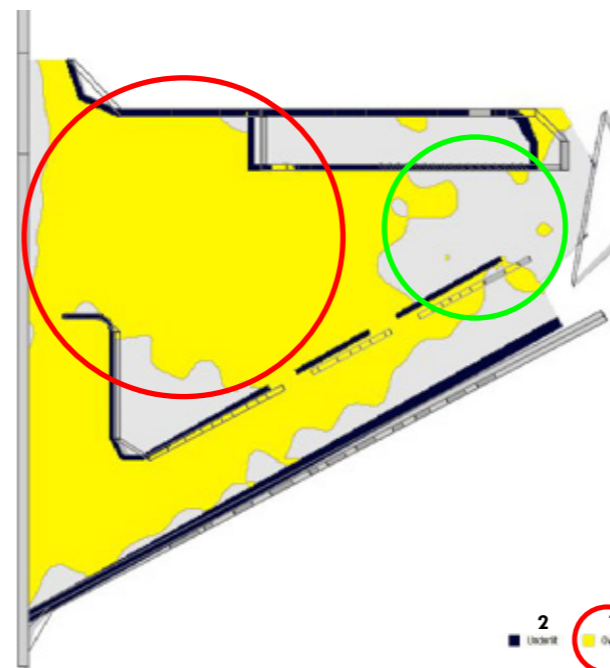
Fig. 7.44: B –Plan showing overlit & underlit areas (Ullrich 2020)
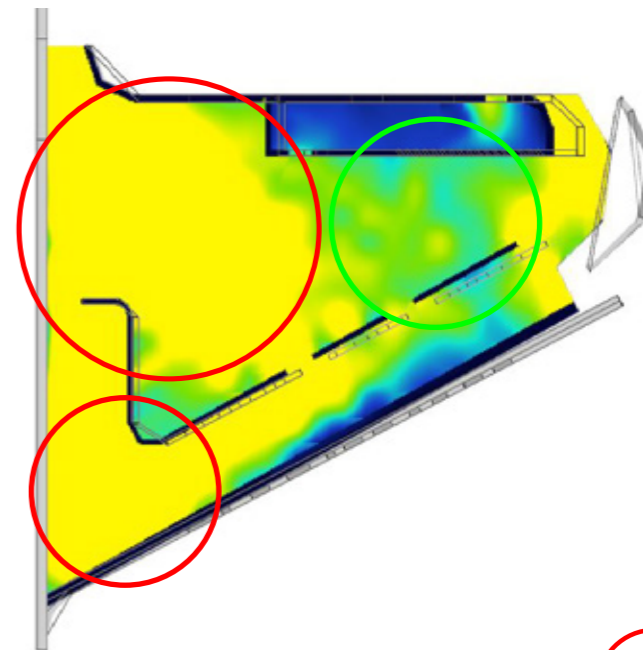
AVERAGE DF
8.14%

Fig. 7.43: B - North-eastern aerial showing overhang extension (Ullrich 2020)

PERSPECTIVE

OVERLIT & UNDERLIT AREAS

DAYLIGHTING FACTOR
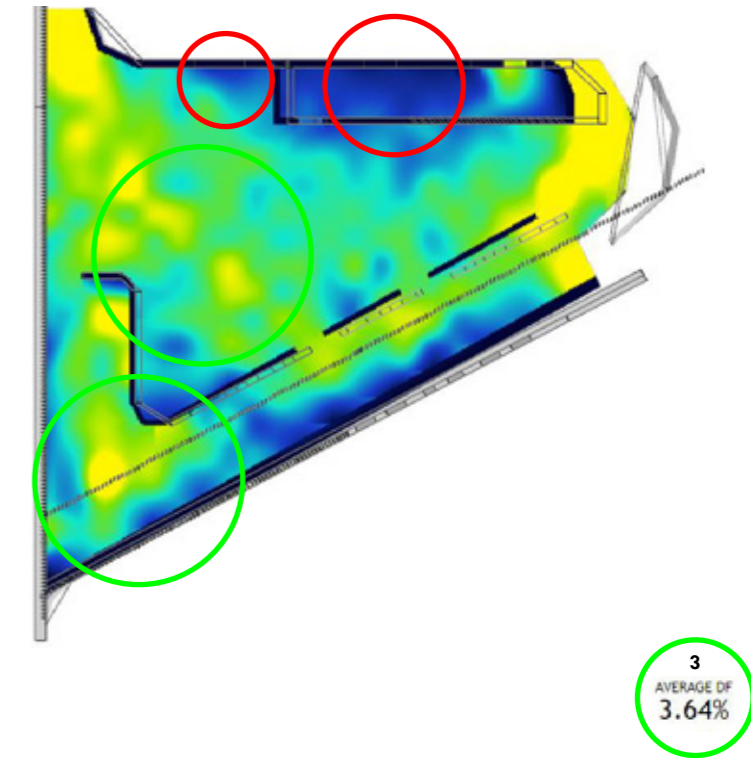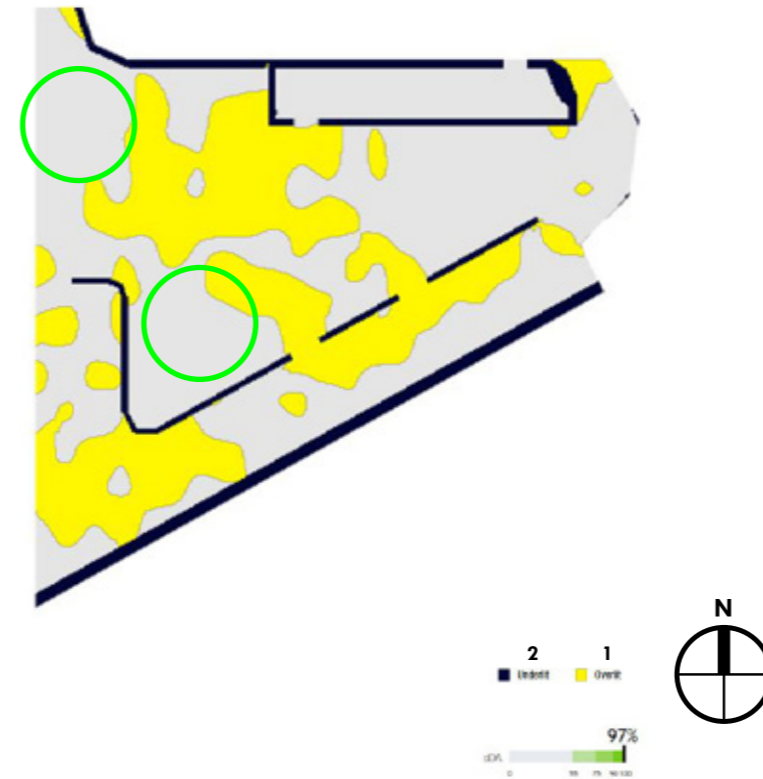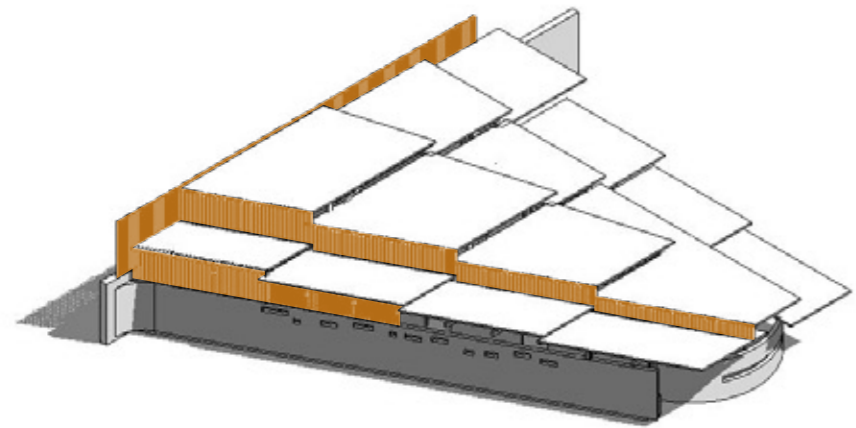
C - SECOND ITERATION
EAST & WEST PROTECTION

Fig. 7.46: C – South-eastern aerial showing vertical louvre placement (Ullrich 2020)

97%

Fig. 7.47: C – Plan showing overlit & underlit areas (Ullrich 2020)

3
AVERAGE DF
3.64%

Fig. 7.48: C – Plan showing daylight factor (Ullrich 2020)
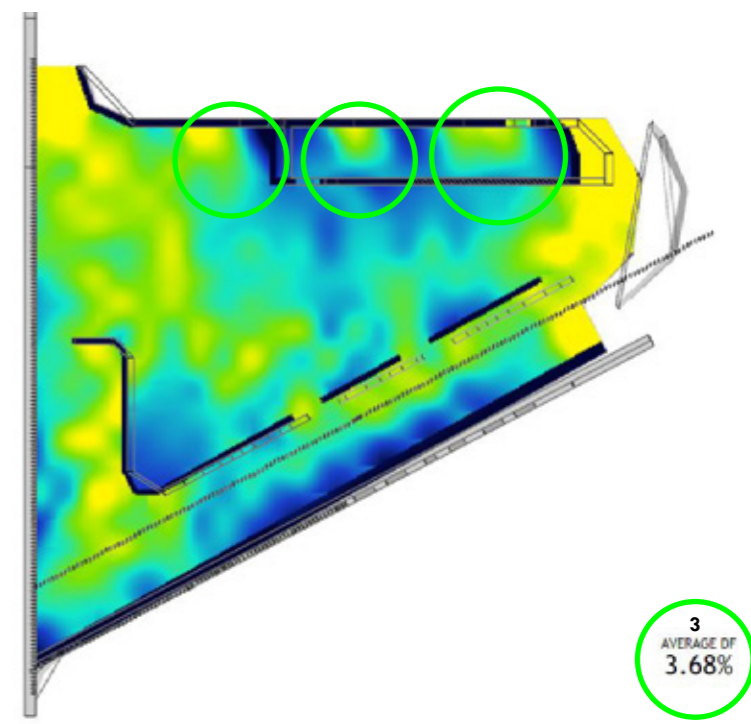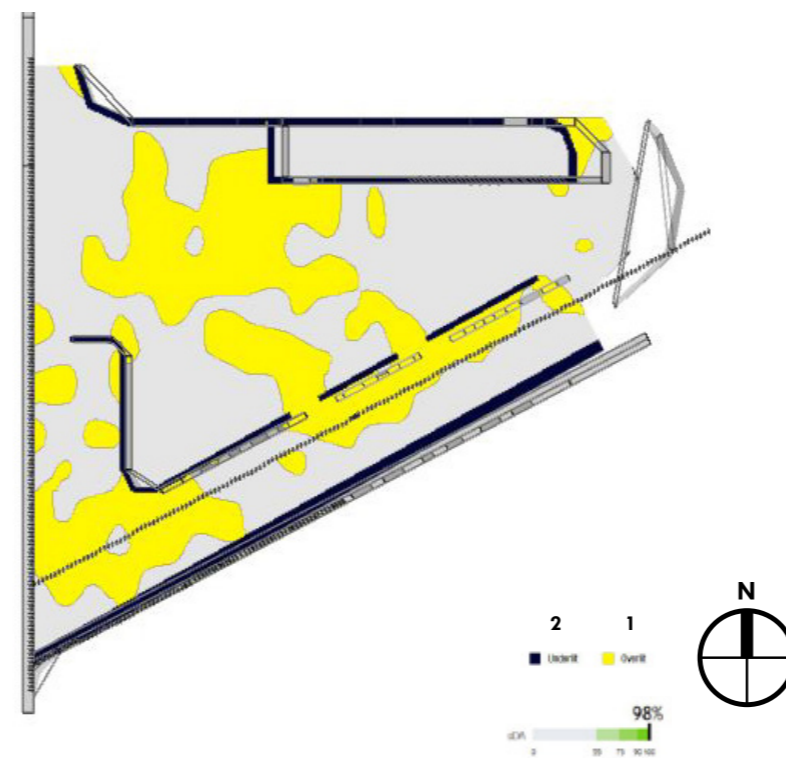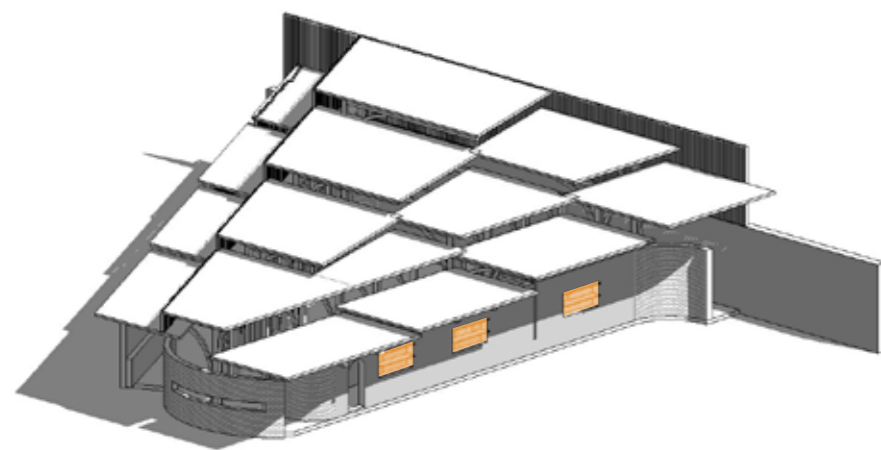
D - THIRD ITERATION
NORTHERN WINDOWS

Fig. 7.51: D – Plan showing daylight factor (Ullrich 2020)

98%

Fig. 7.50: D – Plan showing overlit & underlit areas (Ullrich 2020)

3
AVERAGE DF
3.68%

Fig. 7.49: D – North-eastern aerial showing North-facing window openings and horizontal louvre placement (Ullrich 2020)

7.6

VENTILATION ITERATIONS

A cross-sectional ventilation simulation, with north-eastern prevailing winds (Fig. 7.52), aided the preliminary analysis of airflow velocity within the Ceremony Area. The intention was to provide cross ventilation that did not result in high-velocity airflow at ground level for the congregation, which could result in paper unintentionally turning. This passive approach reduced the building's reliance on HVAC equipment and electricity consumption. The final ventilation iteration highlights the successful, combined effect of horizontal cross-ventilation, and vertical, air-buoyancy-driven ventilation from the stack effect (Fig. 7.56). More buoyant, heated air, from the congregation area could be efficiently flushed out of the space without causing high-velocity airflow at the ground level. The placement of low windows on the northern façade, and higher, larger windows on the southern façade, resulted in air moving diagonally across the space, rather than moving past occupants. Top-hung opening casement windows on the northern façade are able to further deflect airflow over occupants in the seated position (Napier 2000: 55).

If there is minimal wind, the stack effect can still allow for vertical air ventilation. The height of the structure, and the temperature differential between the cooler, shaded floor area, and the warmer roof surface receiving direct solar insolation, aid the pressure differential and vertical airflow between the bottom air inlets and top air outlets, and the 'flushing' of warm air out of the building (Napier 2000: 52).
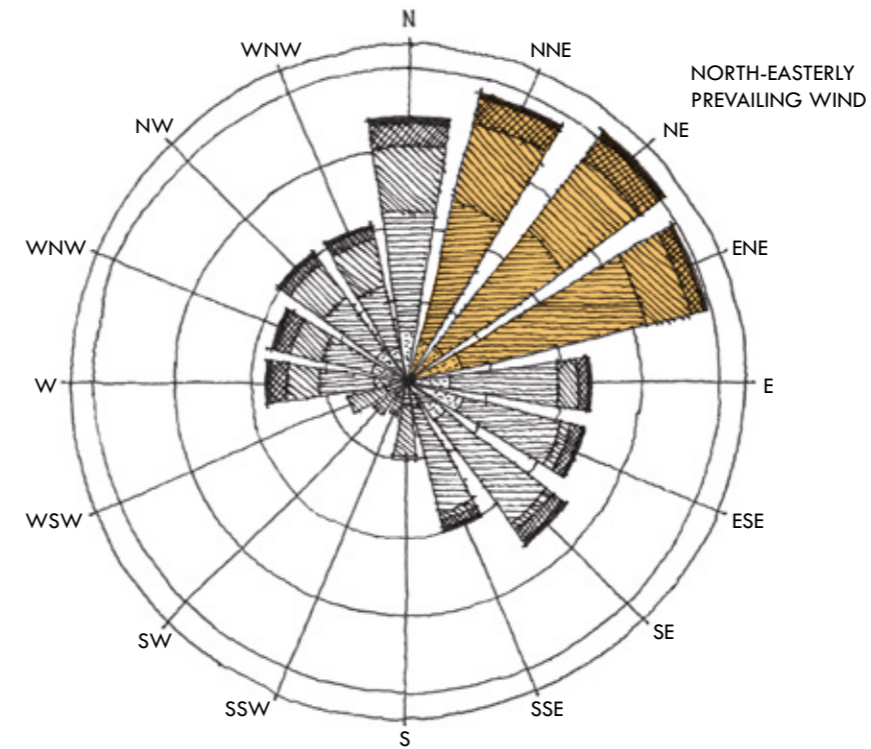
PRETORIA WINDROSE

Fig. 7.52: Pretoria windrose (Ullrich 2020)
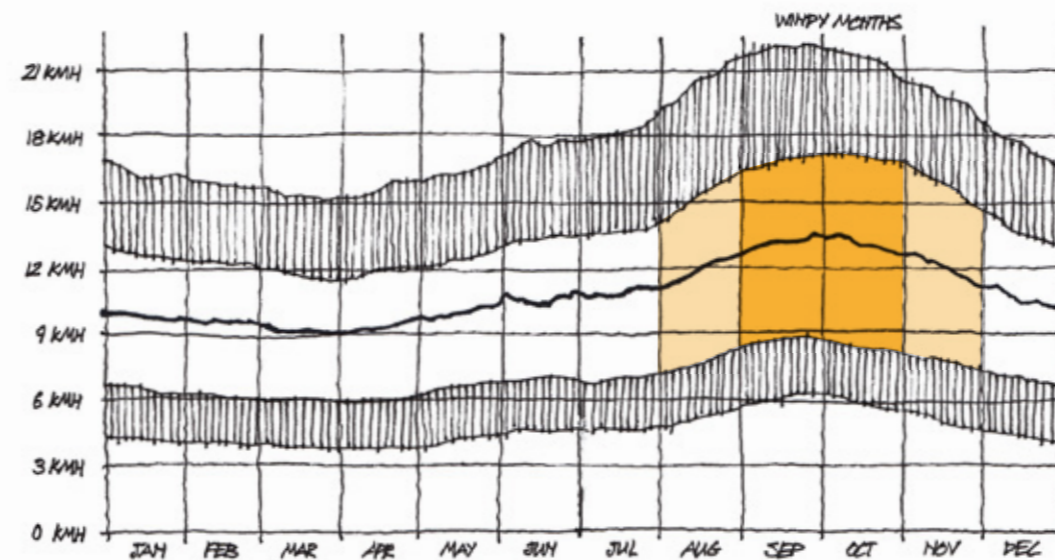
PRETORIA MONTHLY WIND SPEED

Fig. 7.53: Pretoria monthly wind speed (Ullrich 2020)

VENTILATION INTENTIONS:

- Reduce air velocity for congregation
  - prevent pages from turning
- Ventilate interior heat of roof
- Create cool ground floor level - cool
  space is ideal for ritual belief system
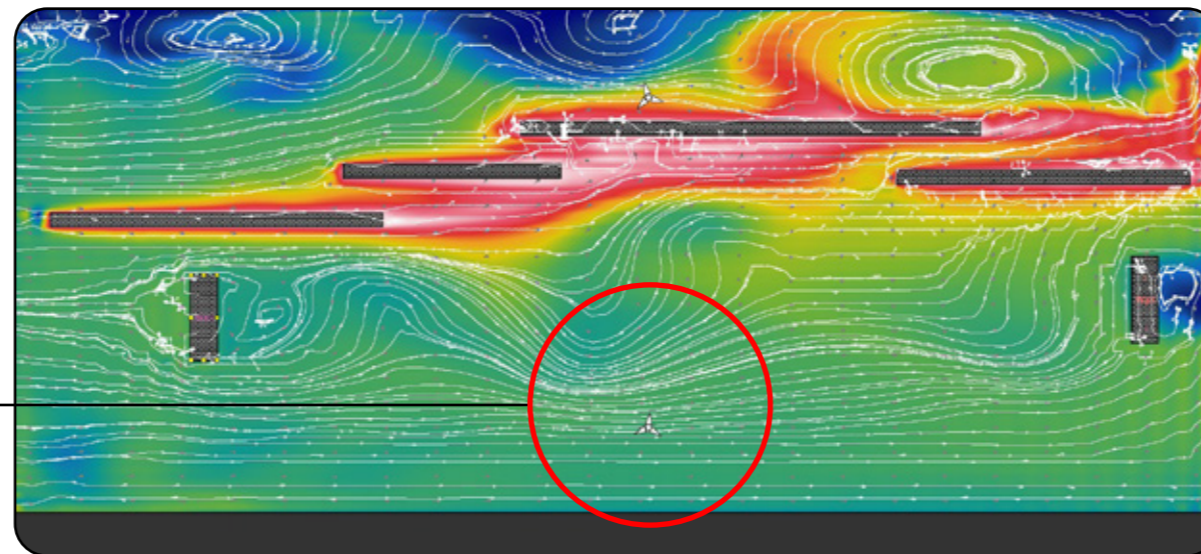
Unwanted high cross-ventilation winds at congregation level
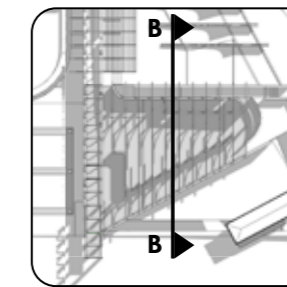
BASELINE

Fig. 7.54: Ventilation Analysis - Baseline (Ullrich 2020)

N

Lifting roof planes; larger southern top openings create a higher negative pressure differential to draw air out of the space; diagonal cross-ventilation is aided by the heat of the roof surface drawing warmer air upwards through the space
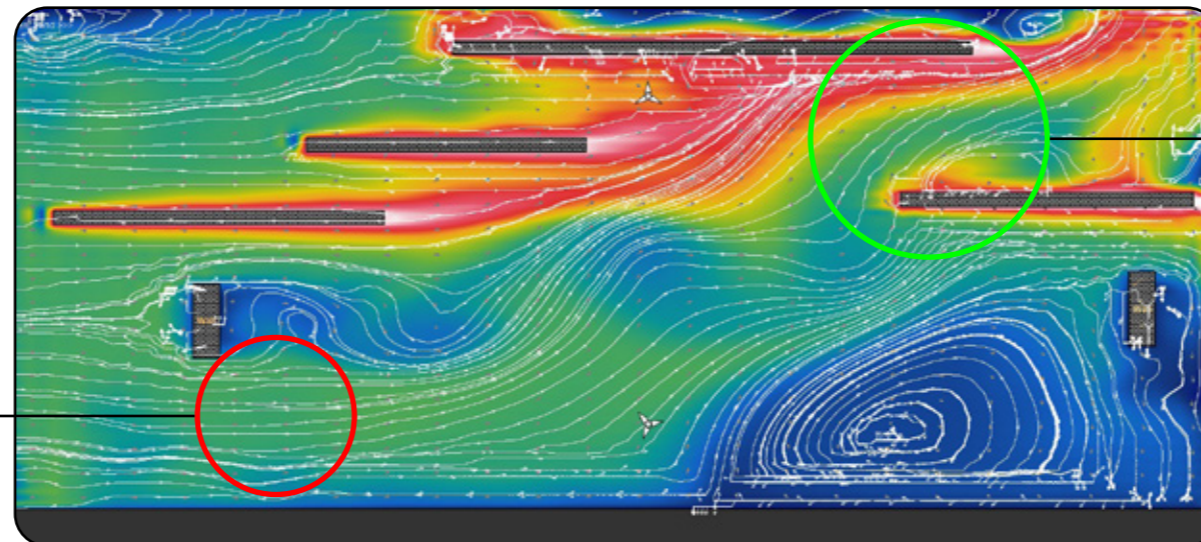
Unwanted lateral ventilation at ground-floor level; cooler outside air from the shaded burial area

ITERATION 1

Fig. 7.55: Ventilation Analysis - Iteration 1 (Ullrich 2020)

N

Low air velocity for congregation, with warmer air drawn upwards, and the space remaining cool
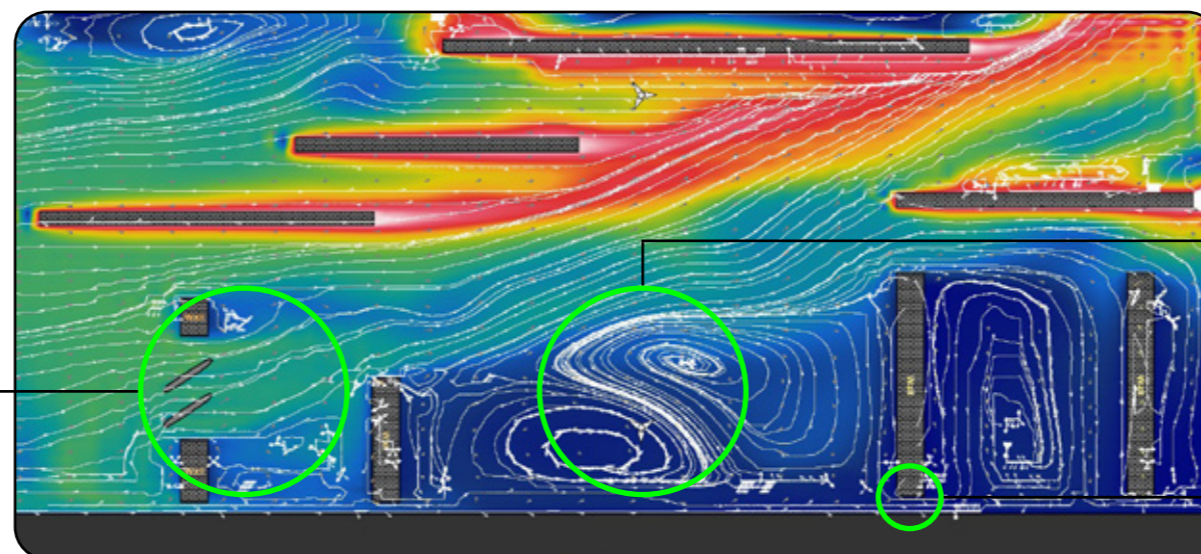
Top-hung pivot window openings deflect air upwards, away from congregation; window openings adjustable at two levels (Napier, 2000:55)

Bottom-wall cold air inlet supplying cooler air to aid the differential of the buoyancy force drawing warmer air upwards (Napier, 2000:53)

ITERATION 2

Fig. 7.56: Ventilation Analysis - Iteration 2 (Ullrich 2020)

N

7.7

BURIAL RITUAL AS SYSTEM

The sub-systems at the site work in tandem with one another to form an interdependent system. The ultimate intention of the integrated system is to facilitate the burial ritual narratives through environmentally sustainable processes. Four main sub-systems form the integrated system, namely the water system, the composting system, the photovoltaic system, and the geothermal HVAC system.

The dissertation presents a more detailed analysis on the functioning of the water system, due to the high importance of water-cleansing rituals at the site, and the irrigation of flora within the garden - with the flora being utilised during burial ritual ceremonies.
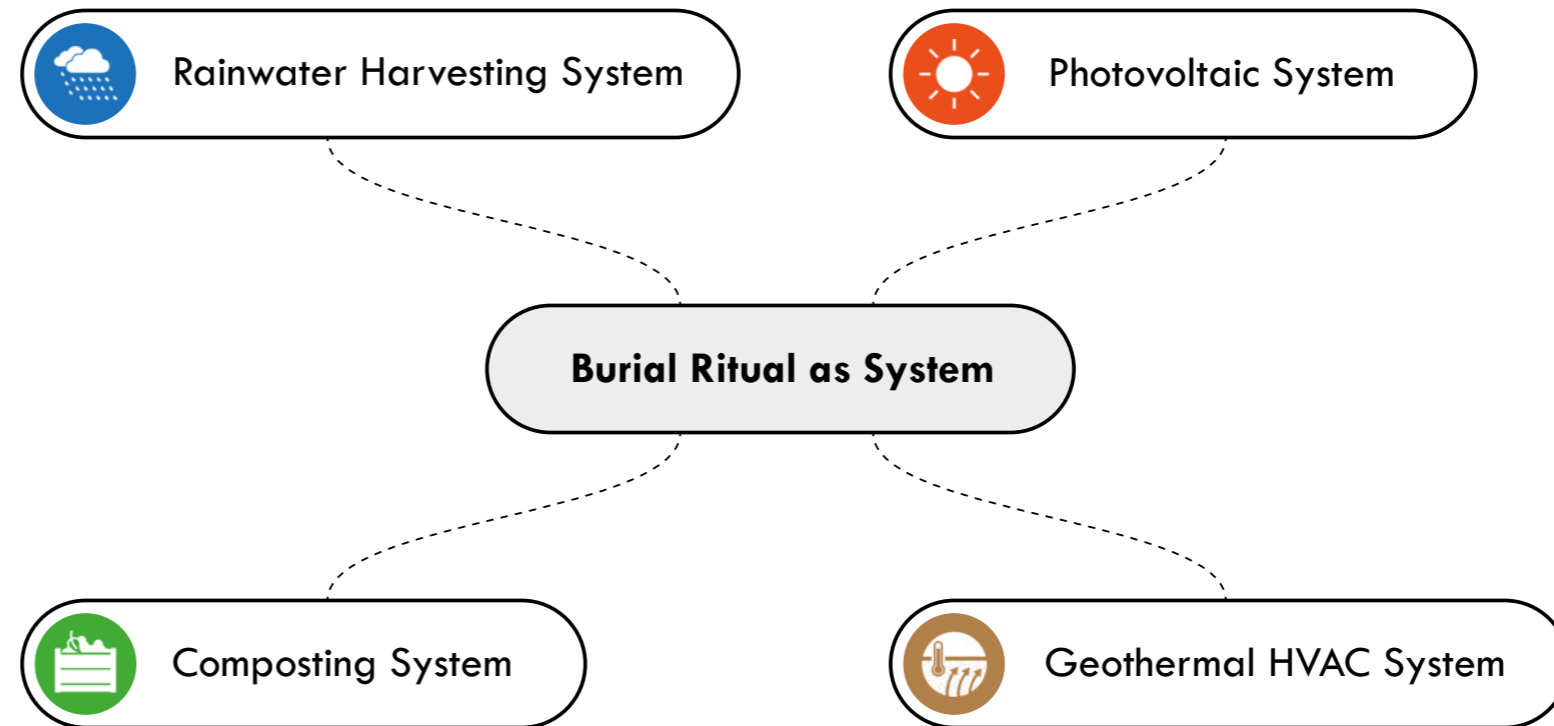
Fig. 7.57: Components of the integrated system (Ullrich 2020)
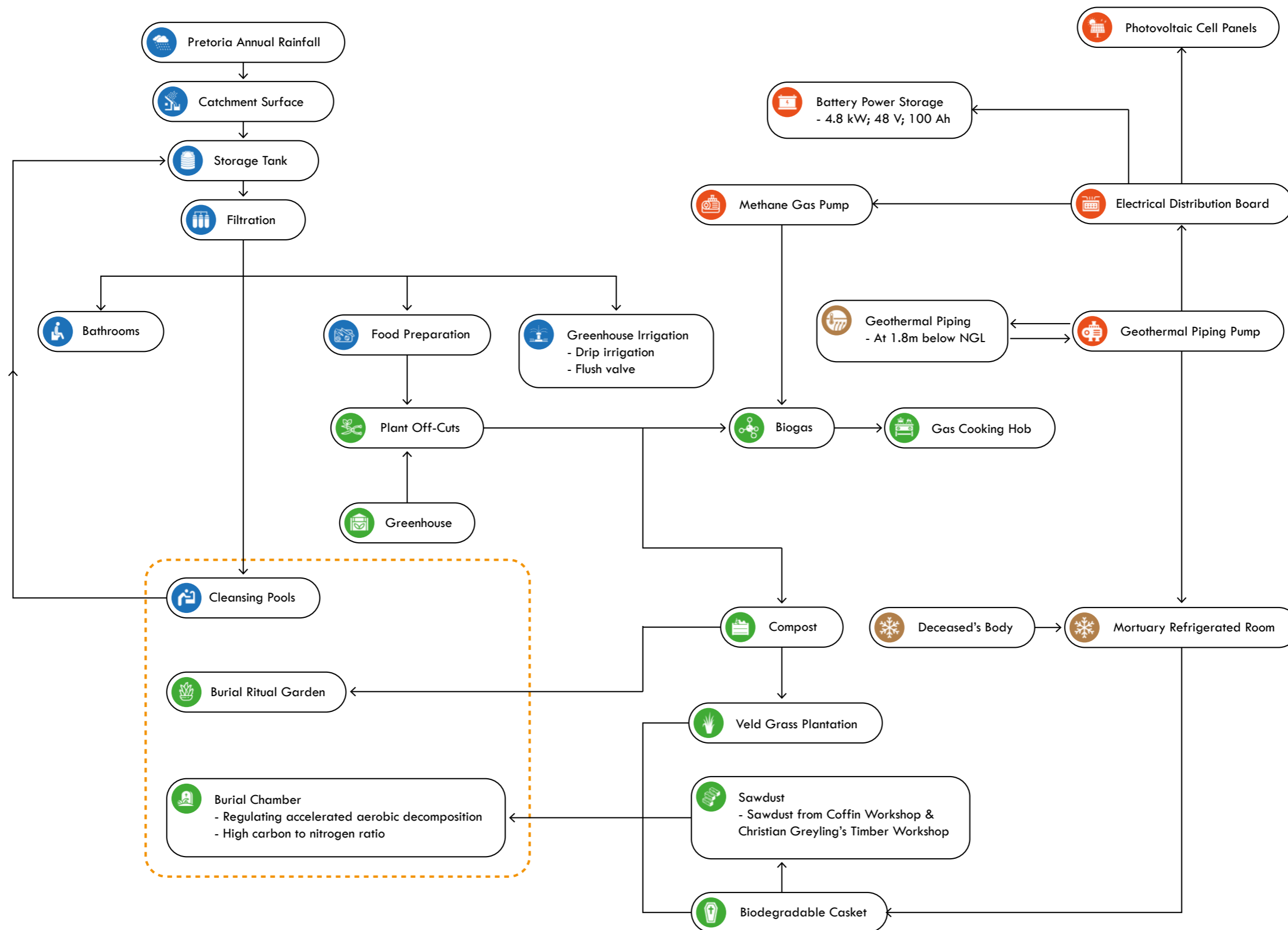
INTEGRATED SYSTEM

Fig. 7.58: Inter-dependency of integrated system (Ullrich 2020)

Composting System

Food Wholesalers & Organisations

Flower Shop

Greenhouse

Gas Cooking Hob

Food Preparation

Plant Off-Cuts

Pressure Gauge

Organic Waste

Gas Pump

Anaerobic Digester Chamber

Aerobic Digester Pile

Desulfuriser

Biogas

Burial Ritual Garden

Compost

Biodegradable Casket

Sawdust
- Sawdust from Coffin Workshop &
Christian Greyling's Timber Workshop

Veld Grass Plantation

Burial Chamber
- Regulating accelerated aerobic decomposition
- High carbon to nitrogen ratio

Ashes for Spreading

Nutrient-Rich Soil
- For Salvokop Old Railway
Yard landscape restoration

Composting System

Fig. 7.59: Composting system schematic diagram (Ullrich 2020)

Sunlight Photons

Photovoltaic Cell Panels

Current Inverter
- DC to AC

Electrical Distribution Board

Current Inverter
- AC to DC

Battery Power Storage
- 4.8 kW; 48 V; 100 Ah

Water Pumps

Geothermal Piping Pump

Methane Gas Pump

Photovoltaic System
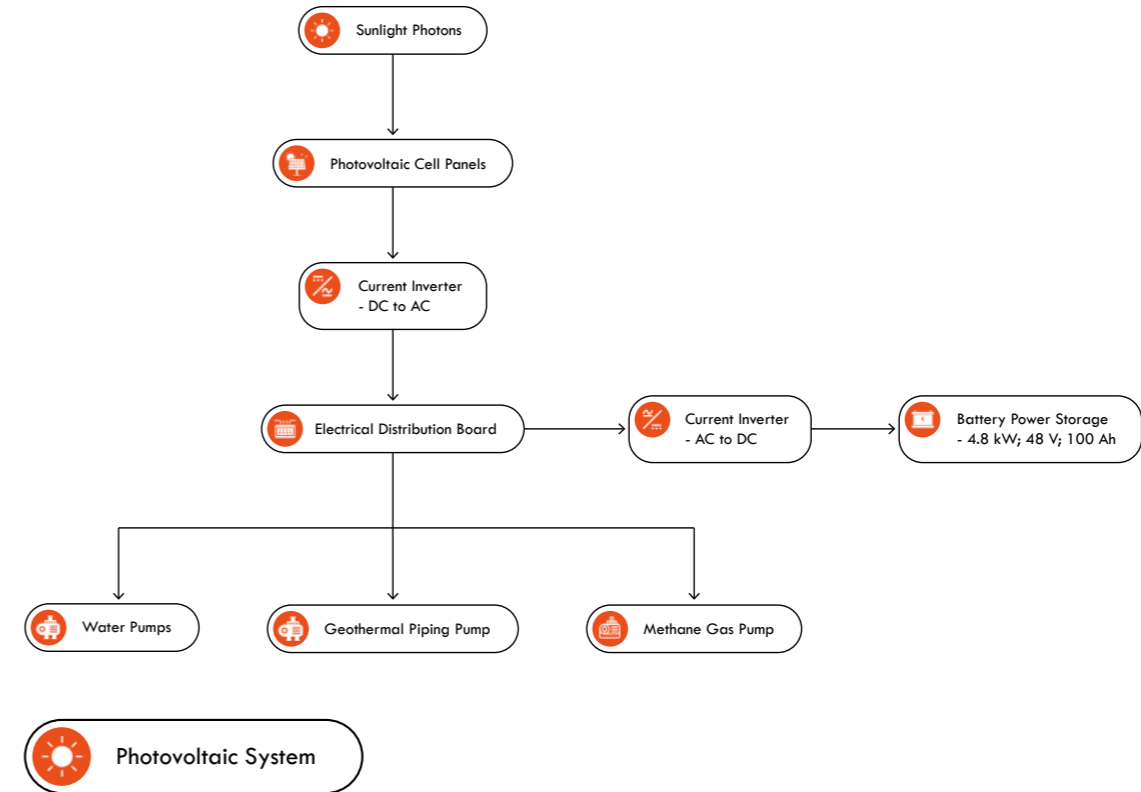
Fig. 7.60: Photovoltaic system schematic diagram (Ullrich 2020)

Electrical Distribution Board

Geothermal Pump

Air Circulation Pipes

Mortuary Refrigerated Room

Geothermal Piping
- At 1.8m below NGL

Geothermal HVAC System
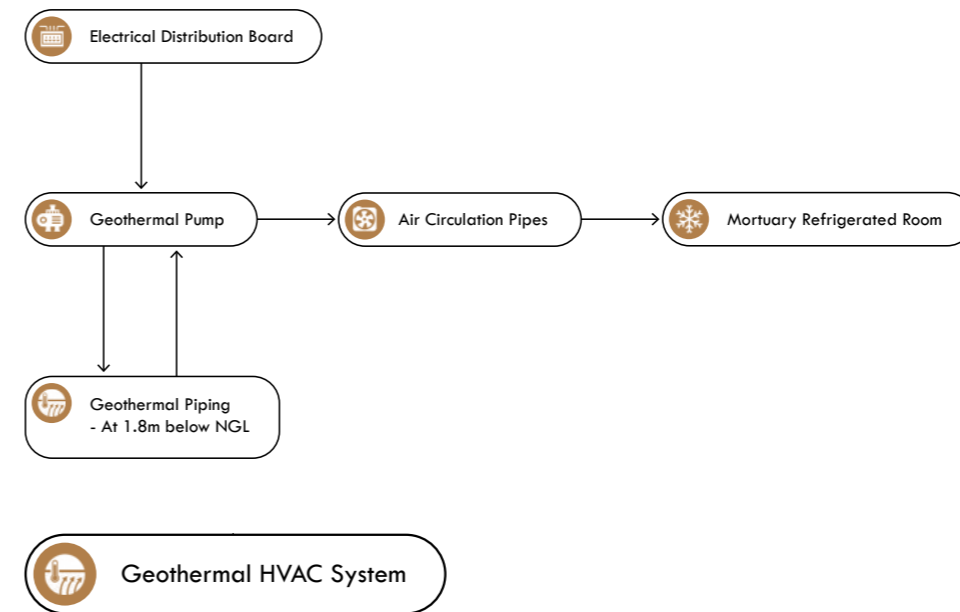
Fig. 7.61: Geothermal HVAC system schematic diagram (Ullrich 2020)

Fig. 7.62: Rainwater Harvesting system schematic diagram (Ullrich 2020)

7.8

WATER SYSTEM

Rainwater is harvested from the canopy rooftops and paved walkways, and directed towards stormwater channels. After preliminary filtration processes, the water is pumped to elevated storage tanks. The water is either distributed for 'outdoor' use, or 'indoor' use (Schmidt & Pinheiro 2013: 173). For indoor purposes, the water is processed through a carbon filter, sediment filters, and a UV steriliser – which, due to its germicidal ability, sterilises bacteria in the water. After this filtration process, the water is suitable for human consumption and use, and is used at the site for food preparation and at the cleansing pools. Water from the cleansing pools is recirculated through the system, in order to prevent any stagnant water, and the build-up of parasitic and bacterial growth. Water for outdoor use is filtered through a sediment filtration system, and distributed for the irrigation of the burial garden and greenhouse.

ROOF RAINWATER HARVESTING AREA

Fig. 7.63: Roof rainwater harvesting area (Ullrich 2020)
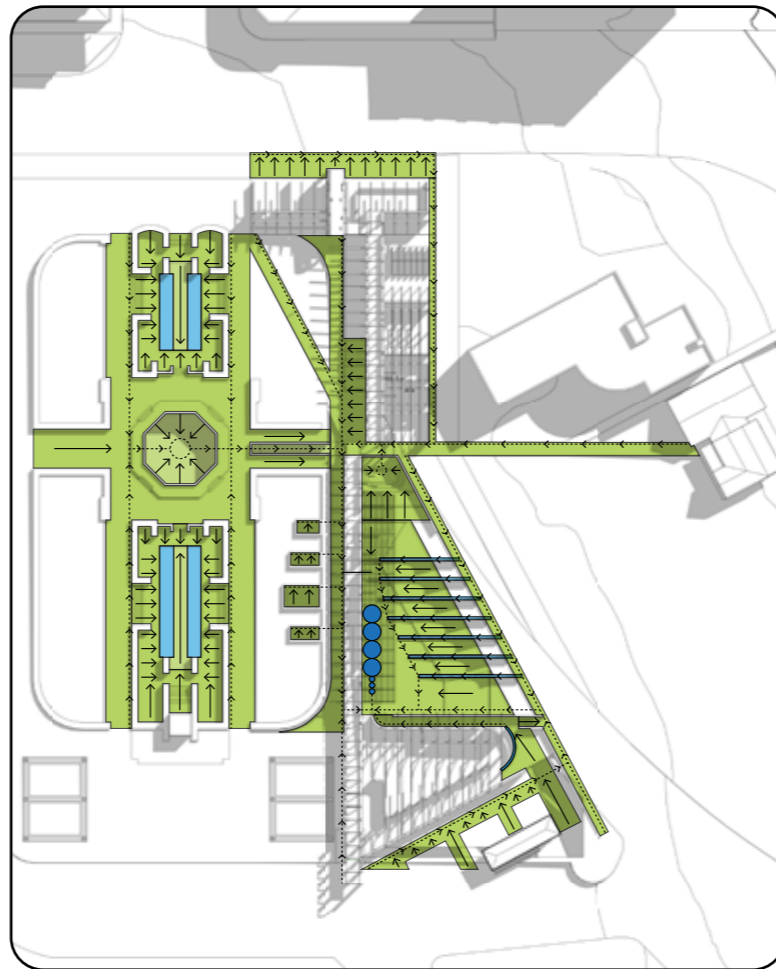
PAVEMENT HARVESTING AREA

Fig. 7.64: Pavement rainwater harvesting area (Ullrich 2020)
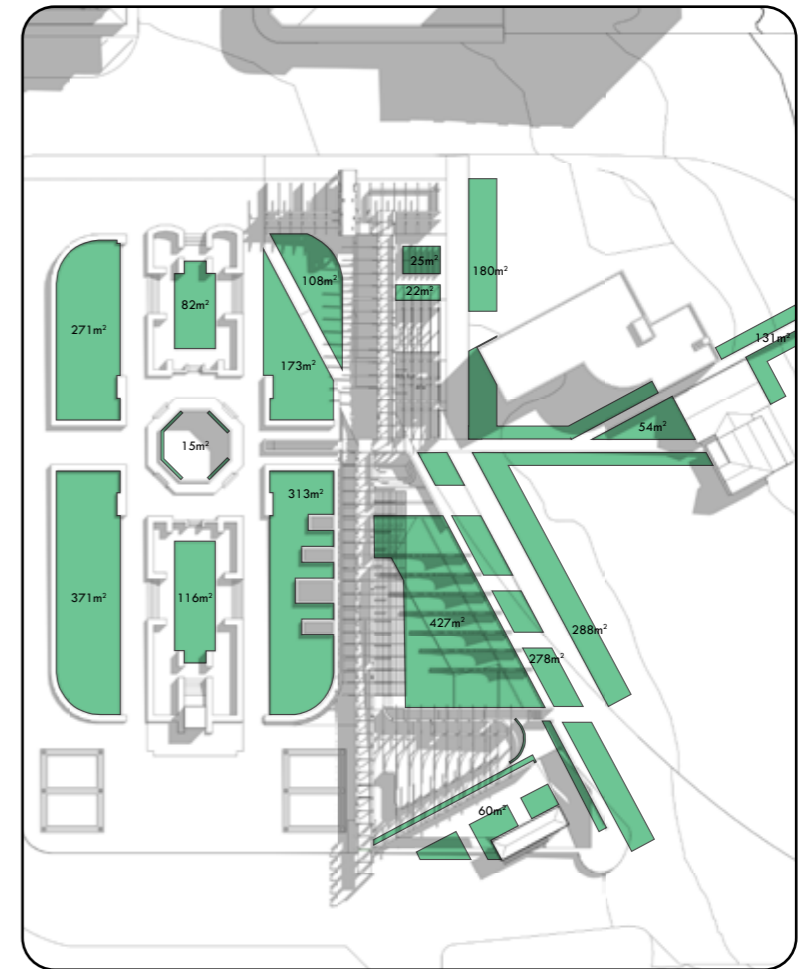
IRRIGATION AREA

Fig. 7.65: Irrigation area (Ullrich 2020)

WATER HARVESTING & IRRIGATION AREA
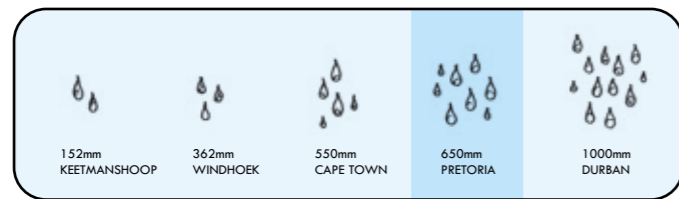
AVERAGE ANNUAL PRECIPITATION

Fig. 7.66: Average annual precipitation for South African cities (Ullrich 2020)

PRETORIA MONTHLY PRECIPITATION

Fig. 7.67: Pretoria monthly precipation (Ullrich 2020)

Space	Area (m²)
Cleansing Pools	198
Greenhouse	22
Compost Pile	25
Burial Garden	360
Ceremony Area Garden	80
Pathway Garden	810
Total Irrigation Area (m²)	**1495**

IRRIGATION AREA

Fig. 7.68: Irrigation area for rainwater harvesting system (Ullrich 2020)

Surface Type	Space	Area (m²)	Run-off Co-efficient	Effective Catchment (m²)
Permeable Paving	Burial Garden (N)	193	0.4	77.2
		193		
Paving	Burial Walkways (N)	950	0.85	2479.45
	Meal Service Area (N)	30		
	Forecourt Walkways (E)	1405		
	Burial Society (N)	85		
	Sacrifical Area (N)	96		
	Garden Niches (N)	41		
	Bus Stop Entrance Walkway	310		
		2917		
Metal Roof / Waterproofed Surface	Meal Area & Shops (N)	350	0.95	1760.35
	Burial Wall (N)	275		
	Service Buildings (N)	170		
	Ceremony Area (N)	410		
	PRASA Building (E)	395		
	Night Vigil Building (E)	210		
	Old Bus Stop Shelter (E)	43		
		1853		
Pools	Forecourt Cleansing Pools (N)	198	1	230
	Garden Hand-Wash Pools (N)	32		
		230		
			Total Effective Catchment (m²)	**4547**

CATCHMENT AREA

Fig. 7.70: Calculated catchment area for rainwater harvesting system (Ullrich 2020)

Month	Pretoria City Rainfall (m)	Effective Catchment Area (m²)	Yield (m³)
January	0.154	4547	700.238
February	0.075	4547	341.025
March	0.082	4547	372.854
April	0.051	4547	231.897
May	0.013	4547	59.111
June	0.007	4547	31.829
July	0.003	4547	13.641
August	0.006	4547	27.282
September	0.022	4547	100.034
October	0.071	4547	322.837
November	0.098	4547	445.606
December	0.15	4547	682.05
		Annual Total	**3328.404**

MONTHLY RAINWATER YIELD

Fig. 7.69: Monthly rainwater yield for rainwater harvesting system (Ullrich 2020)

ORIGINAL WATER POOLS

Fig. 7.90: Original water pools at the Forecourt, currently lawn area (TOPI c1980)

WATER CALCULATIONS

Month	Persons Drinking	Demand (Drinking & hand-washing / person / day) (m³)	Total Demand (m³/month)
January	100	0.003	9.3
February	100	0.003	9.3
March	100	0.003	9.3
April	100	0.003	9.3
May	100	0.003	9.3
June	80	0.003	7.44
July	80	0.003	7.44
August	80	0.003	7.44
September	100	0.003	9.3
October	100	0.003	9.3
November	100	0.003	9.3
December	100	0.003	9.3
		Annual Total	106.02

DRINKING FOUNTAIN DEMAND

Fig. 7.71: Drinking fountain demand (Ullrich 2020)

Month	Irrigation Requirement (m/month)	Irrigated Area (m²)	Irrigation Volume (m³/month)
January	0.16	1495	239.2
February	0.16	1495	239.2
March	0.16	1495	239.2
April	0.16	1495	239.2
May	0.16	1495	239.2
June	0.125	1495	186.875
July	0.125	1495	186.875
August	0.125	1495	186.875
September	0.16	1495	239.2
October	0.16	1495	239.2
November	0.16	1495	239.2
December	0.16	1495	239.2
		Annual Total	2713.425

IRRIGATION DEMAND

Fig. 7.72: Irrigation demand (Ullrich 2020)

Month	Evaporation Rate (Monthly Average/m³)	Open Water Area (m²)	Evaporated Water to Replenish (m³/month)
January	0.15	238	35.7
February	0.15	238	35.7
March	0.15	238	35.7
April	0.15	238	35.7
May	0.15	238	35.7
June	0.15	238	35.7
July	0.15	238	35.7
August	0.15	238	35.7
September	0.15	238	35.7
October	0.15	238	35.7
November	0.15	238	35.7
December	0.15	238	35.7
		Annual Total	428.4

POOL EVAPORATION DEMAND

Fig. 7.73: Pool evaporation demand (Ullrich 2020)

Month	Water Demand
January	284.2
February	284.2
March	284.2
April	284.2
May	284.2
June	229.975
July	229.975
August	229.975
September	284.2
October	284.2
November	284.2
December	284.2
Annual Total	3247.725

TOTAL DEMAND

Fig. 7.74: Total water demand (Ullrich 2020)

MONTHLY RAINWATER DEMAND

Month	Harvest Yield (m³)	Demand (m³)	Monthly Balance (m³)	Tank Balance (Accumulative) (m³)
January	700.238	284.2	416.038	975.294
February	341.025	284.2	56.825	1032.119
March	372.854	284.2	88.654	1120.773
April	231.897	284.2	-52.303	1068.47
May	59.111	284.2	-225.089	843.381
June	31.829	229.975	-198.146	645.235
July	13.641	229.975	-216.334	428.901
August	27.282	229.975	-202.693	226.208
September	100.034	284.2	-184.166	42.042
October	322.837	284.2	38.637	0
November	445.606	284.2	161.406	161.406
December	682.05	284.2	397.85	559.256
Total Annual Amount	3328.404	3247.725	80.679	

Maximum water volume in the tank

In order to calculate the optimal tank capacity required for the site (without discarding excess water), the tank was set to 0 for the start of the rainy season

WATER BUDGET WITH STORAGE

Fig. 7.75: Water budget with storage(Ullrich 2020)

The minimum tank size (without discarding any excess water) required for the demands of the site is equal to the maximum water in the tank when the tank is set to 0 at the start of the rainy season.

Maximum volume = 1120.77 m³
= 1 120 770 litres

The water tanks can be distributed around the site. Fourteen 20 000 litre underground tanks can be placed below the Burial Wall. The remaining 841 m³ can be stored underground on the eastern side of the block.

Fig. 7.76: Graph of monthly water storage and water demand for one year, starting with an empty tank in October (Ullrich 2020)

1 Pretoria Annual Rainfall

2 Catchment Surfaces

Cascaded rooftop catchment area has two primary gutter channels, which converge towards the eastern side, and are guided into a water trough.

Water trough provides an area for cleansing rituals for funeral attendees and visitors, whilst providing a rainwater outlet for the downpipes.

3 Distribution Control & Pump

6 Cleansing Pools

Visitors can undertake water cleansing rituals before and after interacting with the deceased; the trough wall allows for a 'shared' cleansing space, whilst providing increasing privacy as one approaches its highest point.

4 Filtration

Water filtered for indoor use or outdoor use, and distrusted to allocated storage tank.

Paving is sloped towards stormwater channels adjacent pathways in order to prevent pathways becoming inundated with stormwater run-off.

5 Storage Tank

Filtered water distributed amongst storage tanks, which are buried below Wall of Remembrance intervention at the lowest area of the site.

Legend

— ABOVE-GROUND CHANNEL
- - - SUBTERRANEAN PIPE
- - - GROUNDWATER FLOW
- - - PAVEMENT RUN-OFF

Supply water remains at a lower temperature as it is circulated underground - the 'cool' water is a desired quality for spiritual cleansing (De Heusch, 1987:539).

Groundwater flows down terraced landscape and collected by subterranean geopipe; run-off water can move through the permeable paving at the bottom of the terrace, and be collected by the geopipe.

WATER CIRCULATION PERSPECTIVE

N

Fig. 7.77: Rainwater system perspective (Ullrich 2020)

Pretoria located in Zone 2 according to SANS 10400-XA

CLIMATIC ZONE

Fig. 7.78: South Africa region of intervention (SANS 204-2 2008)
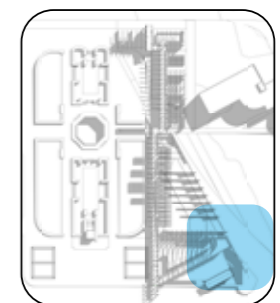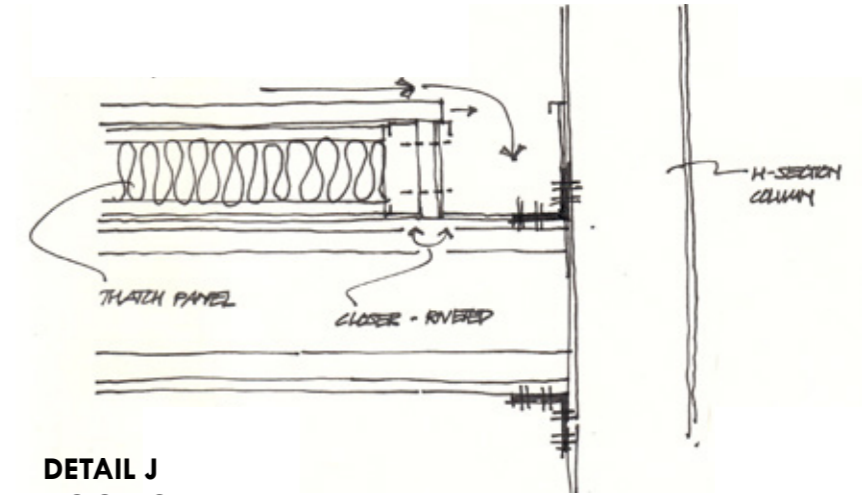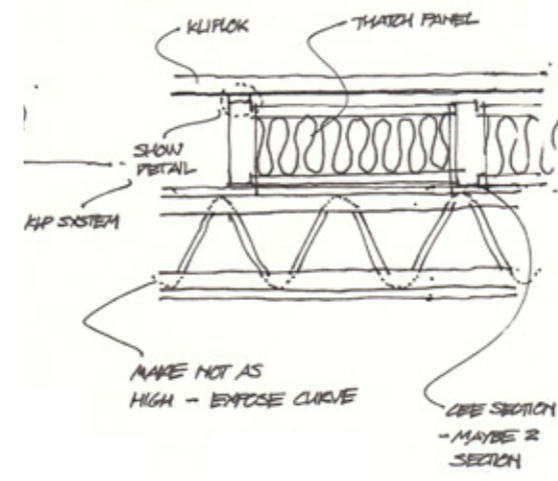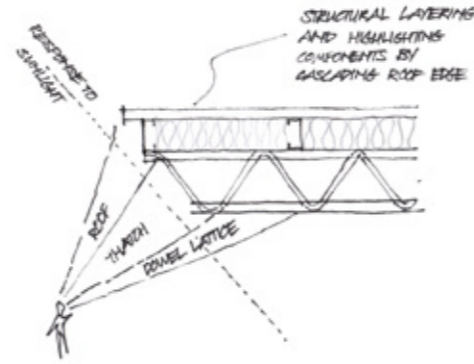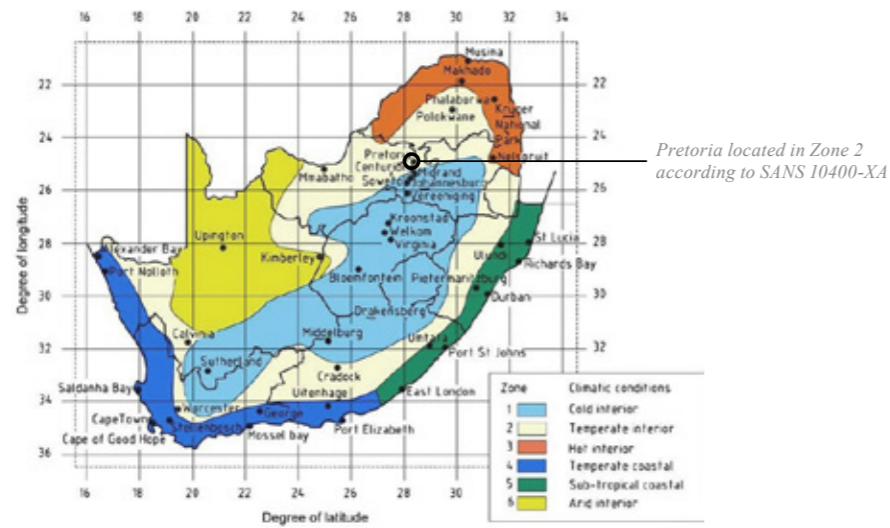
DETAIL J
ROOF GUTTER

Fig. 7.80: Detail H - Roof Intersection (Ullrich 2020)

Fig. 7.82: Axonometric of underside of roof (Ullrich 2020)

Climatic Zone	Zone 2 (Pretoria - Temperate Interior)		
Min. required R-value (m².K/W) (for roof solar absorbance of more than 0.55)	3.2		
Direction of heat flow	Up		
Estimated total R-value (m².K/W) of roof and ceiling materials	0.35 - 0.40		
Estimated min. added R-value of insulation (m².K/W)	2.30 - 3.35		
Type of Insulation	**Density Kg/m³**	**Thermal Conductivity W/ (m.k)**	**DTS Product (mm)**	**RB System (mm)**
Cellulose Fibre Loose-Fill	27.5	0.04	115	95
Flexible Fiberglass Basket	10-18	0.04	115	95
Rigid Expanded Polystyrene (EPS) SD	15	0.035	100	80
Rigid Expanded Polystyrene (XPS)	32	0.028	80	65
Packed Thatch Panel	110	0.056	179	120
			DTS - Deemed-to-satisfy min. thickness (mm) of insulation product only	RB - Min. thickness of bulk insulation if insulation system includes addition of Radiant Barrier over rafters (mm)

ROOF INSULATION CALCULATION

Fig. 7.79: Roof insulation table (Ullrich 2020)

The steel roof is coupled with a ceiling consisting of a packed thatch panel. The thickness of the thatch panel, combined with a radiant barrier and fire retarder membrane, satisfied the SANS 10400-XA insulation requirements for Pretoria. The Casket Workshop would utilise dried grass for the manufacturing of biodegradable caskets. The thatch panels would therefore be manufactured on-site at the workshop, as they would follow a similar manufacturing process.
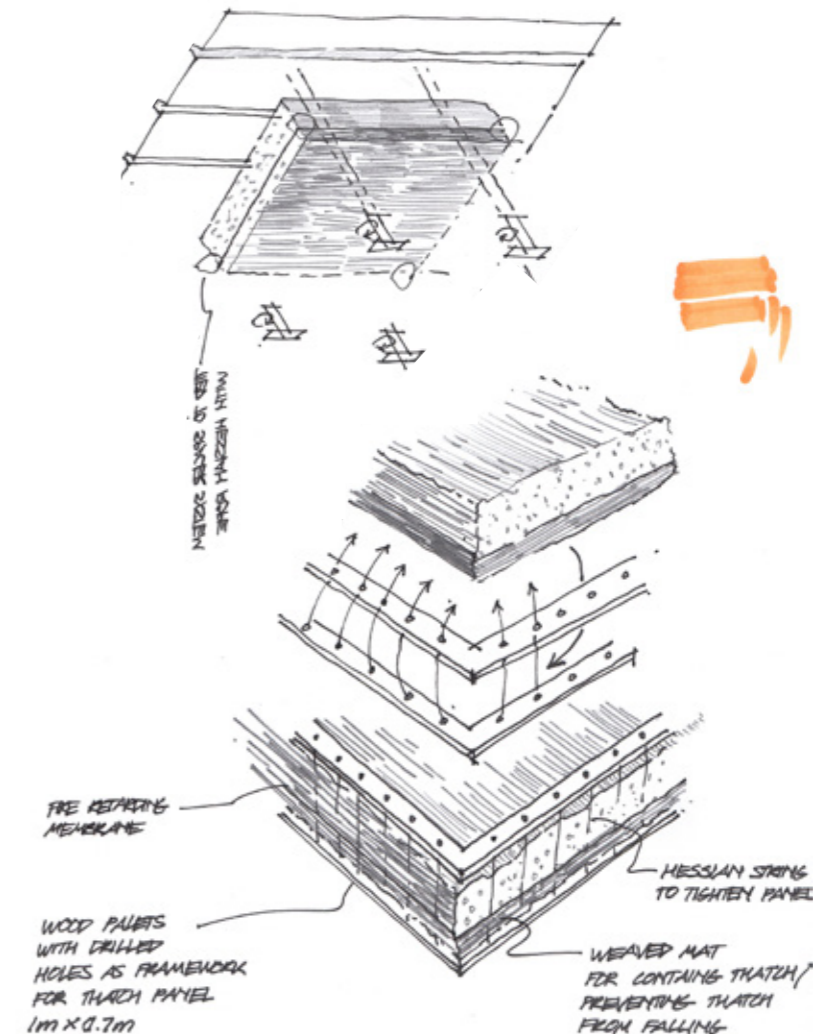
DETAIL K
INSULATION PANEL

Fig. 7.81: Detail I - Insulation Panel (Ullrich 2020)

NOTE:
Roof plane accessible
from Wall of Remembrance
for servicing

0.8mm Aluminium mill finish Safloc® 700 roof sheeting at 3° slope towards gutter on 0.8mm Safloc® baseplate screw-fixed to purlin with Fixtite® waferhead self-tapping screws; 75 x 200 x 2mm galv. steel C-channel purlins fixed to cleats with 4 x M6 bolts, cleat fixed to beam flange with 2 x M6 bolts, purlins spaced at 1200mm c.c. interval acc. to roof eng. spec.

160 x 180 x 1mm profile-rolled Zincalume® steel gutter solid riveted to adjacent C-channel purlin at 1:500 fall towards stormwater catchment pool (see Water System Section)

254 x 146mm purpose-made steel beam with steel dowel formed to drawing profile, MIG welded to 50 x 50 x 8mm equal angles, with angles MIG welded to 10.9mm deep x 146mm wide flanges acc. to eng. spec.; beam fixed to quarter-arch steel I-section flange with pairs of M10 bolts (Grade 8.8) at 450mm intervals, and H-section steel column with two 100 x 100 x 10mm steel cleats (top and bottom flange) fixed with 4 x M10 bolts (Grade 8.8) for each connection

1150mm wide x 150mm thick x 2000mm long purpose-made insulation panels (see Detail H & I) consisting of 120mm min. thick packed thatch layer upon a 20mm thick woven-thatch ceiling mat with perimeter fixed to timber frame with hessian string with double overhand knot (see Detail H) with the top of the thatch covered with 315 micron thick Sisalation FR405 Fire Retardant and Radiant Barrier laminate sheet (compliant with SANS 428 protocol and SANS 10177 Part 5 & 10) with panel components sandwiched between two timber frames and fastened with hessian string, with panels positioned between C-channel purlins end-to-end and fastened to purlins every 100mm with hessian rope double-overhand knot through shop-drilled holes in purlin, and allowing 25mm airspace to roof sheeting surface (panel insulation thickness in acc. with SANS 10400-XA Table 1 min. R-values for roof insulation for Zone 2)
Note: Woven mat will sag under load of thatch packing

146 x 160mm x 43kg/m primed and painted steel I-section manufactured to quarter-arch form (1650mm radius) of drawing, fillet-welded to mild steel baseplate and fixed to flange of H-section column with pairs of M10 bolts (Grade 8.8) at 450mm intervals and to flange of beam with 8 x M10 bolts (Grade 8.8); Ø20mm primed and painted steel dowel formed to drawing spec. and MIG fillet-welded to flanges at contact points (see Detail I)

DETAIL L
ROOF INTERSECTION

Fig 7.83: Detail L - Intersection at Roof

Detail L

GUTTER SIZE CALCULATION

Fig. 7.85: Gutter size calculation (Ullrich 2020)
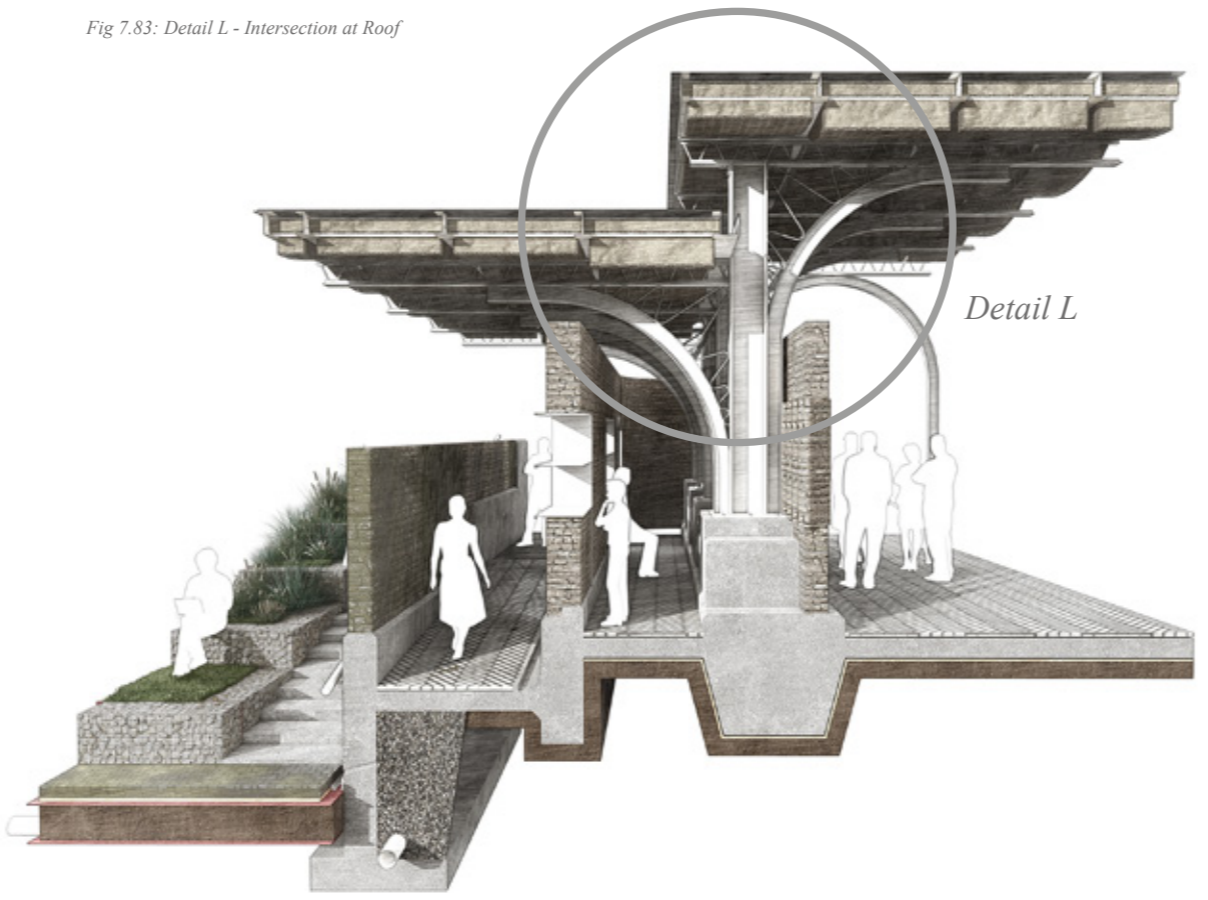
Fig 7.84: Detail Perspective B (Ullrich 2020)

7.9

7.9.1 ALTERNATIVE BURIAL METHOD

A gap in the discourse is evident in developing sustainable guidelines for the integration of alternative disposal technologies within the city of Pretoria for the allocation of new burial spaces. An environmentally sustainable burial method will firstly require a high likelihood of social acceptance amongst the religious or cultural groups of Pretoria (Wilkins 2011: 22). The expenditure required for the initial cost of the decomposition facility, or the maintenance thereof (Wilkins 2011: 25, 30), should also be relatively low, in order to accommodate and service the large proportion of lower-income earning groups within Pretoria (City of Tshwane 2013b: 21; Leuta & Green 2011: 3). The burial method needs to be economical and efficient with its land-area requirements, due to limited developable land and high economic land value within the inner-city. It is preferable if the method is currently practiced within South Africa, or is not legally prohibited within the City of Tshwane. The decomposition method should be relatively environmentally sustainable, yielding minimal or no by-products which could pollute the surrounding environment. From the reviewed literature, a selection of burial disposal practices were identified and analysed (Fig. 7.81).

7.9.2 RECOMPOSITION METHOD

The process of 'Recomposition', or accelerated composting, was identified as a potential burial alternative. The process incorporates in-ground burial, and it is therefore ideal for the AIC group, who have a preference for lowering the deceased body into the soil (Elion & Strieman 2002: 47). In-ground burial is also favoured by other groups in Pretoria, such as Islamic, Judaic, Christian denominations, and Traditional African Religions (Leuta & Green 2011).

The Recomposition process can be likened to the agricultural practice of carcass composting for the management of farm mortalities (Kalbasi, Mukhtar, Hawkins & Auvermann 2005). The process accelerates the natural decomposition of human remains to within a period of two months under the correct conditions1 (Kalbasi et al. 2005: 182). The soil composition is maintained at a high carbon to low nitrogen ratio (ideally a 1:30 carbon to nitrogen ratio), and a low to moderate moisture-level content (2005: 181). Organic matter with a high carbon level can be used to maintain the soil composition – this can be achieved by packing sawdust or veld grass around the casket within the grave. With the presence of the human body in the soil, the accelerated decomposition occurs with the thermophilic microorganisms heating up the soil, digesting the corpse, and removing most of any present pathogens (2005: 181). The process allows for grave recycling after the two-month period1, which is ideal for the efficient use of ground area within a dense urban environment.

The City of Tshwane's Cemetery & Crematorium By-Laws (2015a) do not specifically outline the legal parameters and limitations for Recomposition. The by-laws do state, however, that the grave recycling process is allowed once the appropriate applications have been made. The Recomposition process could therefore be framed as an accelerated grave-recycling process, and comply with the municipal by-laws.

After the two-month decomposition period, the product consists of 'ash', or bone fragments, and a nutrient-rich soil. The ash component can be spread, stored, or buried to the deceased family's preference. The design intervention incorporates this post-burial activity into the programme, especially with the incremental construction of the Wall of Remembrance. The nutrient-rich soil, on behalf of the deceased's family, can be donated to the Salvokop redevelopment effort. The nutrient-rich soil can be spread at the old Railway Maintenance Yards of Salvokop, and used to continue the regeneration of the agrarian habitat and local plants of the scarred landscape.

BURIAL METHOD SELECTION MATRIX

Fig. 7.86: Matrix of burial methods to criteria (Ullrich 2020)
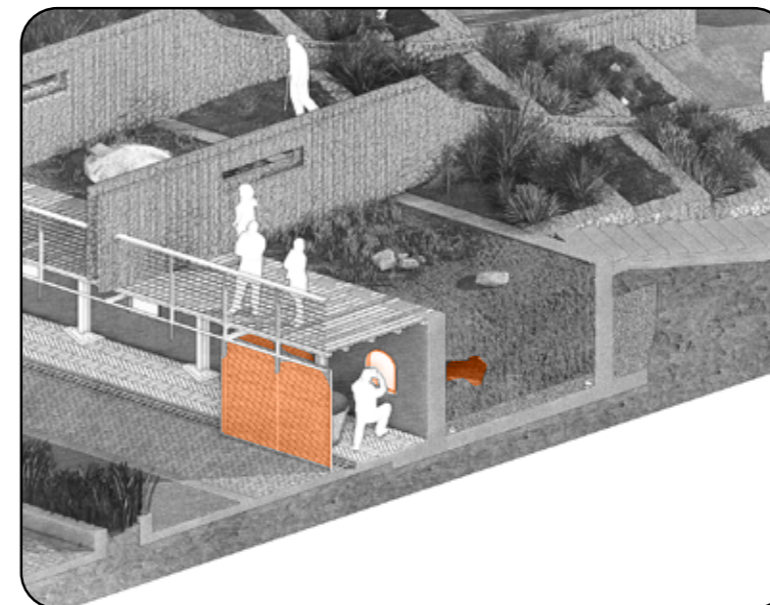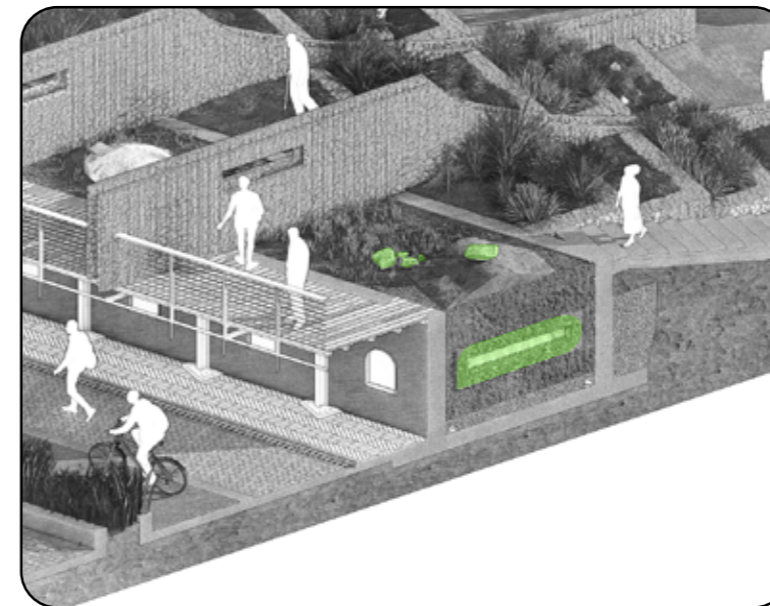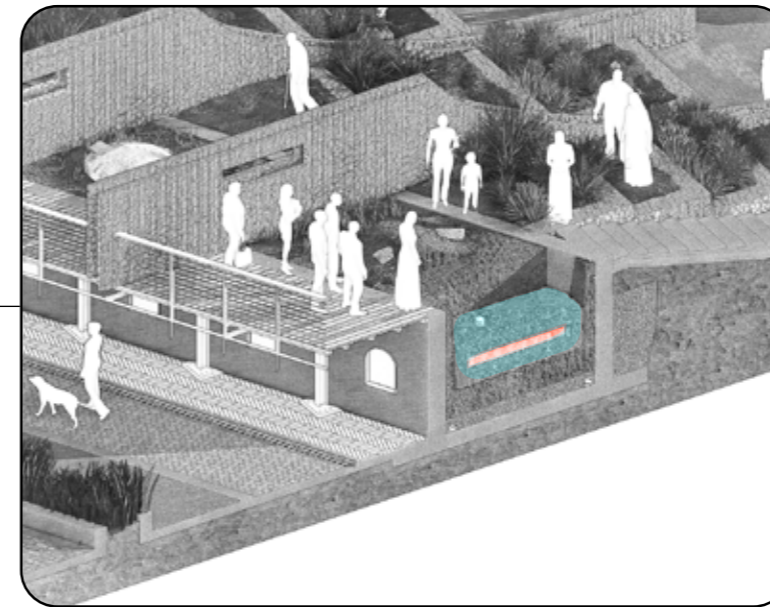
Fig. 7.87: Process of casket being placed into ground and remains removed (Ullrich 2020)

① RITE OF COMMITTAL

- Allows for in-ground burial process
- Casket manufactured on-site from woven veld-grass mats - high carbon content and biodegradable
- Casket surrounded with layer of dried veld grass from site (or organic matter of high carbon content)
- Allows for placing of artefacts of significance onto the casket

② ACCELERATED DECOMPOSITION

- Headstone or cairn placed on top of the burial mound
- Ideal 1:30 nitrogen to carbon ratio allows for decomposition of organic matter to take 2 months
- Bereaved able to visit the site during mourning period

③ DISCRETE GRAVE RECYCLING
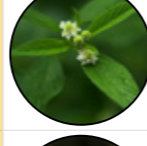
- Groundsman able to discretely remove remains on lower-level
- Prevent visually digging-up grave
- Remains processed at mortuary, and returned to bereaved as 'ashes'
- Headstone Moved to Wall of Remembrance by bereaved during Home-Bringing Ceremony

7.10

PLANTING STRATEGY

A planting strategy was developed in order to assess the maintenance of certain existing flora at the site, identifying the types and planting locations of newly introduced flora, and how the newly introduced flora could contribute to the performed burial rituals in the area. Existing flora that contributed to the *spirit of the place* and the heritage of the site was sustained within the intervention. Newly introduced flora was selected based on the plant's value for the burial rituals within Pretoria, its value for the Station Precinct, and its appropriateness for the Pretoria climate. The planting location of a new plant was determined by its quantitative growing requirements, and its benefit to certain performed rituals and activities within its proximity.

Plant information adapted from SANBI (2020), Hutchings (2007), and Young (2020); historical planting strategy of Forecourt retrieved from Forecourt Planting Strategy (1978) from the Boukunde Archives.

Planting Key	Planting Area	Image of Plant	Plant Name	Latin Name	Existing / Intervention	Quantitative Requirements	Contextual Value	Burial Ritual Value	Maturation & Flowering Period
A	Close to water cleansing areas		African Aloe	Aloe africana	Intervention	Full sun Well-drained, sandy, loam soil Drought resistant	Flowers rich in nectar- attract birds and bees	Cut aloe leaves are mixed with water and used to cleanse hands after a funeral to remove any misfortune	2 - 4 m high at maturity Flowering period: Yellow flowers from July to September
B	Close to water cleansing areas		Pretoria Aloe	Aloe pretoriensis	Intervention	Full sun Well-drained, sandy, loam soil Drought resistant	Flowers rich in nectar - attract birds and bees Indigenous to Salvokop Ridge	Cut aloe leaves are mixed with water and used to cleanse hands after a funeral to remove any misfortune	1 m high at maturity Flowering period: Red flowers during July and August
C	Close to water cleansing areas		Aloe cryptopoda	Aloe cryptopoda	Intervention	Full sun Well-drained, sandy, loam soil Drought resistant	Flowers rich in nectar - attract many birds and bees. Indigenous to Salvokop ridge.	Cut aloe leaves are mixed with water and used to cleanse hands after a funeral to remove any misfortune	0.8m high at maturity Flowering period: Orange and yellow flowers during July and August.
D	Burial Area terraces		Weeping love grass	Eragrostis curvula	Intervention	Full sun to semi-shade Well-drained, acidic, sandy, loam soil Drought-resistant It should be grazed or cut regularly Controlled burning improves stand density, yield, and herbage quality Requires high-nitrogen fertiliser	Used as a cover crop to prevent erosion Ability to stabilise slopes Good frost tolerance	Used for summer pastures and hay-making Used to make baskets, brooms, ropes, woven caskets, and candles Used as a charm in funeral practices	0.12 - 0.18 m high at maturity Grows from August to March Perennial
E	Burial Area terraces		Cape thatching reed	Elegia Tectorum	Intervention	Full sun Sandy, loam soil Wet sites Treatment with smoke increases germination	Good feature plant / ornamental grass Good frost tolerance	Used for roof thatching and woven caskets Used in flower arrangements	1 - 1.5 m high at maturity Flowering period: Brown flowers from March to April. Perennials
F	Lawn of Meal Area		Bermuda Lawn	Cynodon dactylon	Intervention	Full sun Well-drained, sandy soil. Drought resistant Best planted at spring	Fastest growth rate of warm season grasses Indigenous	Ideal for refuge for after-funeral gatherings	1.2 - 6 cm (cut) Perennial
G	Existing lawn within Forecourt quadrants		Kikuyu Lawn	Pennisetum clandestinum	Existing	Full sun Well-drained, acidic, sandy, loam soil Drought-resistant Requires high-nitrogen fertiliser	Used for summer pastures Forms a dense carpet Fast growth rate Good frost tolerance	Ideal for refuge for after-funeral gatherings	10 cm - 15 cm (cut) Evergreen
H	Adjacent to water cleansing areas		Umsuzwane Fever Tea tree	Lippia Javanica	Intervention	Full sun to semi-shade Grows in most soil types	Anti-odour, anti-pollutant, and insect repellent properties Common garden herb. Large number of moth and butterfly species are attracted to the rich nectar flowers.	Leaves are used to wash hands and tools before and after a funeral ceremony Used to drive evil spirits away and speak to ancestors Stems and leaves are used to sweep and weed grave sites Production of mosquito-repellent candles	1 - 2 m high at maturity Flowering period: Small cream flowers from October to March Evergreen
I	Adjacent to water cleansing areas		Imphepho	Helichrysum spp.	Intervention	Full sun to semi-shade Well-drained soil	Anti-microbial, anti-fungal and insect repellent properties.	Used as incense - burnt to induce trance Burnt to purify air for ancestors, and to safeguard home against evil spirits Used in cleansing rituals to purify body and mind to aid sleeping Harvested by traditional healers as a ritual	Known as 'Everlastings' - flowering period is long-lasting Evergreen

PLANTING STRATEGY TABLE
PART A

Fig. 7.88: Planting strategy table (Ullrich 2020)

Planting Key	Planting Area	Image of Plant	Plant Name	Latin Name	Existing / Intervention	Quantitative Requirements	Contextual Value	Burial Ritual Value	Maturation & Flowering Period
J	Adjacent to pathways		Red Paintbrush	Scadoxus puniceus	Intervention	Semi-shade Well-drained, sandy, loam soil	Flowers rich in nectar - attract bees and birds Non-invasive roots	Used for healing and cleansing: treats coughs, gastro, and ulcers	0.5 - 1m high at maturity Flowering period:October to November Deciduous
K	Adjacent to pathways		Chrysanthemums Mums	Chrysanthemum	Intervention	Full sun Well-drained, sandy, loam soil	Flowers rich in nectar - attract bees and birds Commercial selling value	Funeral flower: White chrysanthemum blooms are reserved for funeral ceremonies and placement on graves A token of comfort, grief, or bereavement	0.3 m - 0.9 m high at maturity Flowering period: September to April Perennial
L	Adjacent to pathways		Flowering Peace Lily	Lilium Candidum	Intervention	Full sun to semi-shade Well-drained, loam, sandy soil	Flowers rich in nectar - attract bees and birds Commercial selling value	Funeral flower: Lilies symbolise that the soul of the deceased has returned to a peaceful state of innocence	1 - 1.2 m high at maturity Flowering period: November to January Perennial
M	Adjacent to pathways		White Roses	Rosa Korbin	Intervention	Full sun Well-drained, loam, sandy soil Plant food or fertisiliers required	Flowers rich in nectar - attract bees Commercial selling value	Funeral flower: White roses are a symbol of spirituality, purity, and innocence	1 m high and 1.2 m wide at maturity Flowering period: October to March Deciduous
N	Within Forecourt alcoves		South African cycad species	Encephalartos	Existing	Well-drained, loam, sandy soil Drought resistant Fruit is poisonous Endangered to critically endangered	Attracts birds Fast growth rate Good feature plant / ornament Good frost tolerance	-	Fruiting period: September to March.
O	Within Forecourt quadrants		Fever Tree	Vachellia Xanthophloea	Existing	Full sun Sandly, clay, or loam soils Found mainly at wet sites	Attracts bird species and bees Important to the heritage of Pretoria Station - part of existing forecourt landscape	-	15 - 25m high at maturity Flowering period: Yellow flowers from August to November Pod Bearing Deciduous
P	Within Forecourt quadrants		Lala palm tree Molalla tree	Hyphaene Coriacea	Existing	Full sun Sandy, clay, loam soil Found at wet sites	Original trees of first Forecourt garden Tree features within a number of Pretoria parks Due to its hard white seed kernels, the Lala Palm is used to make trinkets and ornaments Palm fronds used to make baskets and mats Different parts of palm used by various insect and bird species	-	5 - 15m high at maturity Flowering period: October to March Fruits take two years to grow, and a further two years to fall
Q	Close to gravesite, Burial Society meeting area, and Night Vigil House		Umphafa (African tree of life) uMlahlankosi tree Buffalo Tree Blinkblaar-wag-'n-bietjie	Ziziphus mucronata	Intervention	Full sun to semi-shade Indicator of underground water Plants easily raised from seeds and cuttings Grows in most soil types	Pleasant shade tree Red berries used to make porridge Ecological importance: leaves and fruit support many animal species Flowers produce abundant nectar Located at Isisivivane of Freedom Park	Branches are broken from the tree and used as a medium for taking the spirit of the dead back home Branches placed on graves of chiefs Used to drive evil spirits away Healing plant: Acts as a painkiller and to treat dysentery	3 - 10 m high at maturity Flowering period: Small, yellow flowers from October to January Fruiting period: November to February Deciduous
R	Periphery of Forecourt island		Wild Olive tree	Olea Europaea subsp. Africana	Existing	Full sun Sandy, loam, clay soil Drought resistant Invasive root system	Flowers produce large amounts of nectar Fruit attract birds Part of existing Forecourt garden landscape	-	12 m high at maturity Flowering period: October to February Fruiting period: March to July Evergreen

PLANTING STRATEGY TABLE
PART B

Fig. 7.88: Planting strategy table (Ullrich 2020)
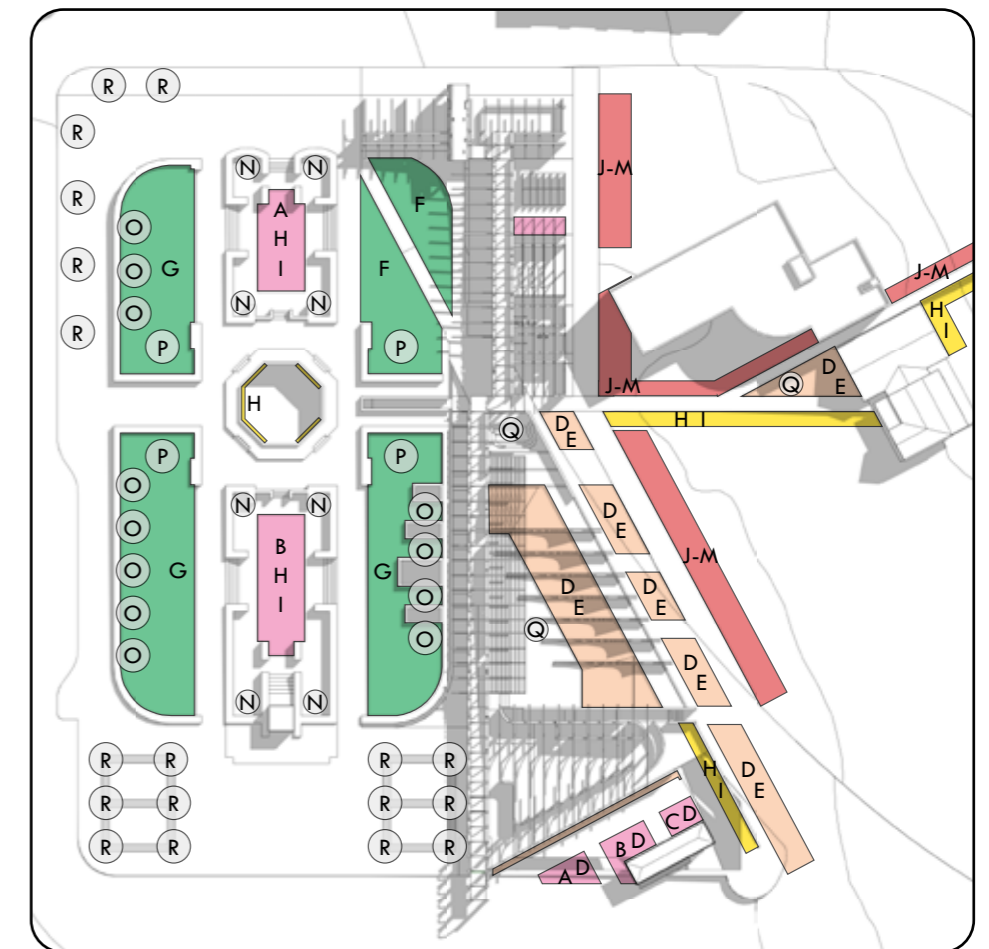
PLANTING LAYOUT

Fig. 7.89: Planting layout (Ullrich 2020)

08

CONCLUSION

RESPAIR

8.1

RESPAIR

This dissertation challenged the notion of the heterotopic, modern, burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm. The overarching intention of the research was to develop an approach for the introduction of a commemorative burial space which could support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities. In order for architectural space to accommodate grief and sacred burial rituals within an urban city context, the investigations were guided by analysing the ritual experience of everyday city users, and the ritual experience within sacred burial spaces. These two research streams were critically compared in order to generate an approach that would aid the mediation of individuals between the city environment and the burial space. The dissertation focused on the themes of Memory, Movement, and Boundary to guide the design of incorporating both spaces of refuge and ritual procession. The architectural approach sustained aspects of cultural significance, and commemorated lost artefacts of significance by reintroducing or reinterpreting their built form. The less private activities of traditional burial rituals were intertwined with the everyday public interface to generate spaces that contributed to urban-placemaking. The dissertation recognises that traditional, in-ground burial methods are predominantly environmentally unsustainable for the city. By proposing an alternative, sustainable, in-ground burial method, the dissertation hopes for the adoption of these methods by other religious and cultural groups who have a preference for in-ground burial.

The architectural approach undertaken for the design of the Burial Centre at the Forecourt can function as a prototypical model for future application and adaption for other latent city blocks within the inner-city of Pretoria. The prototypical approach contributes to our societal acceptance of the inevitability of death, and by commemorating the deceased and artefacts of cultural significance, it can positively contribute to urban placemaking and the layering of a collective identity for Pretoria.

Victoria Hotel

Cleansing Pool

Tunnel Ramp from
Sacrificial Court

Sacrificial Court

Cleansing Pool

Old War
Memorial

Old Pretoria
Railway Station

Street Interface Shops

Meal Area

Casket Workshop

Vigil House

Pathway to Taxi Stop

Burial Society Meeting Area

Mortuary

Burial Garden

Wall of Remembrance

Ceremony Area

Old Bus Shelter
(Repurposed)

Fig. 8.1: Site plan (Ullrich 2020)

**SITE PLAN
STATION FORECOURT**

25m

To Bus Station

Tunnel to Sacrificial Court

To Viewing Platform (Above)

Lekgotla Meeting Area 35m²

To Night Vigil House

Vigil House

Sacrificial Court 9.5m²

Pedestrian Corridor (Below) 130m²

Mortuary Rooms (Below) 40m²

Entrance to Mortuary

Funeral plants for burial rituals

Tunnel to Cleansing Area

Quiet Alcove

Burial Area

Remembrance Field and area for future expansion (Existing Parking)

Pedestrian Corridor (Below)

Quiet Alcoves (Below)

Cycle Lane

Service Road

Pedestrian Corridor

Pedestrian Corridor

Cycle Lane

Water Troughs

Deck Viewing Area (Above)

Deck Viewing Area (Above) 170m²

Pedestrian Corridor

Cleansing Plants

Deck Viewing Area (Above)

Burial Area

Deck Viewing Area (Above)

Cleansing Pools 100m²

Quiet Alcove

Existing Lawn

Terraced Ridge

Garden of Remembrance

Existing War Memorial

Pedestrian Corridor (Below) 130m²

Ramp to Burial Garden

Funeral plants for burial rituals

To Bus Station

Ramp for Wall of Remembrance 130m²

To Deck

Family Room 15m²

Water Trough

Storage 8m²

Casket

Change Room 7m²

Ceremony Space 190m²

Candle Walkway 70m²

Movement Corridor to Station

Prayer Room 4m²

Lobby Area

Kitchenette 8m²

Transport Shelter

Waiting Area

Existing edge of Paul Kruger through-way

Ceremony Entrance

Funeral plants for burial rituals

To Pretoria South

Pedestrian Crossing to Train Stations

Cycle Lane

GROUND FLOOR PLAN
SOUTHERN AREA

N

5m

Fig. 8.2: Ground-Floor Plan - Southern Side (Ullrich 2020)

Scheiding Street

Pedestrian
Crossing to Paul
Kruger Street

Cycle Lane

Pedestrian
Corridor

Funeral Flower
Garden

Drinks
Counter
6m²

Take-Away
Counter

Floristry
25m²

Memento Shop
25m²

Hot Prep

Kitchen
37m²

Storage
2m²

Storage
2m²

Corridor
20m²

Cold Room 4m²

Pantry 4m²

Scullery
2m²

Cold
Prep

Refuse 4m²

Quiet
Alcove

Cleansing
Pools
80m²

Existing
Cycads

Scullery
6m²

Outside
Seating
40m²

Garden
Storage
4m²

Compost Bins
25m²

From
Sacrificial
Court

Internal
Seating
40m²

Greenhouse
25m²

Cycle
Lane

Service
Road

Cleansing
Plants

Lawn Picnic
Area
110m²

Funeral
plants for
burial rituals

Existing
PRASA
Offices

Quiet
Alcove

Casket
Workshop
47m²

Accessible
WC
4m²

Material Storage
7m²

Tunnel to
Cleansing
Area

Braai Area
30m²

Female
WC
16m²

Accessible Service Duct
7m²

Male WC
16m²

Lockers
30m²

Archive
3.5m²

Printing Store
3.5m²

Sacrificial Court
95m²

Safe
Room
4m²

Admin Office
30m²

To Bus
Station

Kitchen
4m²

To Taxi
Stop

Tunnel to
Sacrificial Court

To Night Vigil
House

Lekgotla
Meeting Area
35m²

Pedestrian
Corridor

Cycle
Lane

Service
Road

Old Paul
Kruger Statue
Podium

Movement
Corridor to
Station

Pedestrian
Corridor
130m²

Ramp for Wall of
Remembrance
130m²

N

**GROUND FLOOR PLAN
NORTHERN AREA**

Fig. 8.3: Ground-Floor Plan - Northern Area (Ullrich 2020)

5m

Old Pretoria Station

Gautrain Entrance

Blue Train Entrance

1 358 885 +6 885

1 352 510 +510

1 352 510 +510

1 349 960 -2040

Eastern Entrance Staircase

Grave Recycling Hatch

Viewing Deck

Burial Chamber

Water Cleansing Troughs

Ceremony Area

Buffalo Tree

Viewing Deck

Wall of Remembrance

Pedestrian Corridor

Existing Forecourt Wall

Lehaha Tunnel

Private Alcove

Existing Lawn Area

SECTION A-A

5 m

N

Detail Perspective C

Detail Perspective A

Fig. 8.4: Section A-A(Ullrich 2020)

PRASA Offices
(Old Stationary
Store Building)

Old Bus
Stop Shelter

1 358 460
+6460

1 349 960
-2040

X 1352000
+0

Water Cleansing
Trough

Steps to
Burial Area

Buffalo Tree

Terraced
Ridge

Ramp from
Ceremony Area
to Burial Garden

Family
Room

Ceremony
Area

Candle
Walkway

Bus Stop
Waiting
Area

Detail Perspective C

Detail Perspective B

SECTION B-B

N

5m

Fig. 8.5: Section A-A (Ullrich 2020)

254 x 146mm purpose-made steel beam with steel dowel formed to drawing profile, MIG welded to 50 x 50 x 8mm equal angles, with angles MIG welded to 10.9mm deep x 146mm wide flanges acc. to eng. spec.; beam fixed to quarter-arch steel I-section flange with 6 x M10 bolts (Grade 8.8) and H-section steel column with two 100 x 100 x 10mm steel cleats (top and bottom flange) fixed with 4 x M10 bolts (Grade 8.8) for each connection (see Detail I)

135mm x 25.5mm x 5800mm bamboo-polyethylene composite I-Series Evalast® decking with 5mm spacing between planks, fixed with proprietary S9 HULK hidden clips and Z-point clip screws to mild steel purlins at interval of 450mm c.c. to manufacturer's spec.

50 x 76 x 4mm primed and painted rectangular mild steel purlins MIG fillet-welded to beam top-flanges at 450mm c.c. intervals to eng. spec.

Ø50mm x 4mm thick primed and painted mild-steel circular handrail fillet-welded to 50 x 4mm mild-steel balustrade post plate at 1000mm intervals between posts and extended by 300mm at ramp and staircase terminals (compliant with SANS 10400-S handrails for the physically impaired)

1050mm high primed and painted mild-steel balustrade posts fixed with 4 x M6 bolts to two 50 x 50 x 8mm equal angles; horizontal braided stainless steel cables at 100mm intervals fixed to vertical posts with double-sided turnbuckle threaded bolts at 1000mm intervals

400 x 400 x 100mm permeable grass-block pavers on 20mm no-fines bedding aggregate (25mm dia.)

Well-compacted earth in layers no more than 150mm thick; compacted to comply with 93% Modified AASHTO standard

200mm deep no-fines basecourse aggregate (20 – 60mm dia.), wrapped in Polytex PT115 geotextile, with base sloped at 1:80 towards Ø160mm uPVC geopipe at 1:250 slope towards centrifugal pump (to pump to filtration system and water storage tanks for irrigation purposes)

370mm wide x 400mm deep precast concrete stormwater drainage channel with 1:80 slope towards sediment filter and centrifugal pump (to pump to filtration system and water storage tanks for irrigation purposes); channel covered with easily removable 300 x 40 x 1000mm inset Mentis Grating (40 x 40 x 40mm Rectagrid pattern)
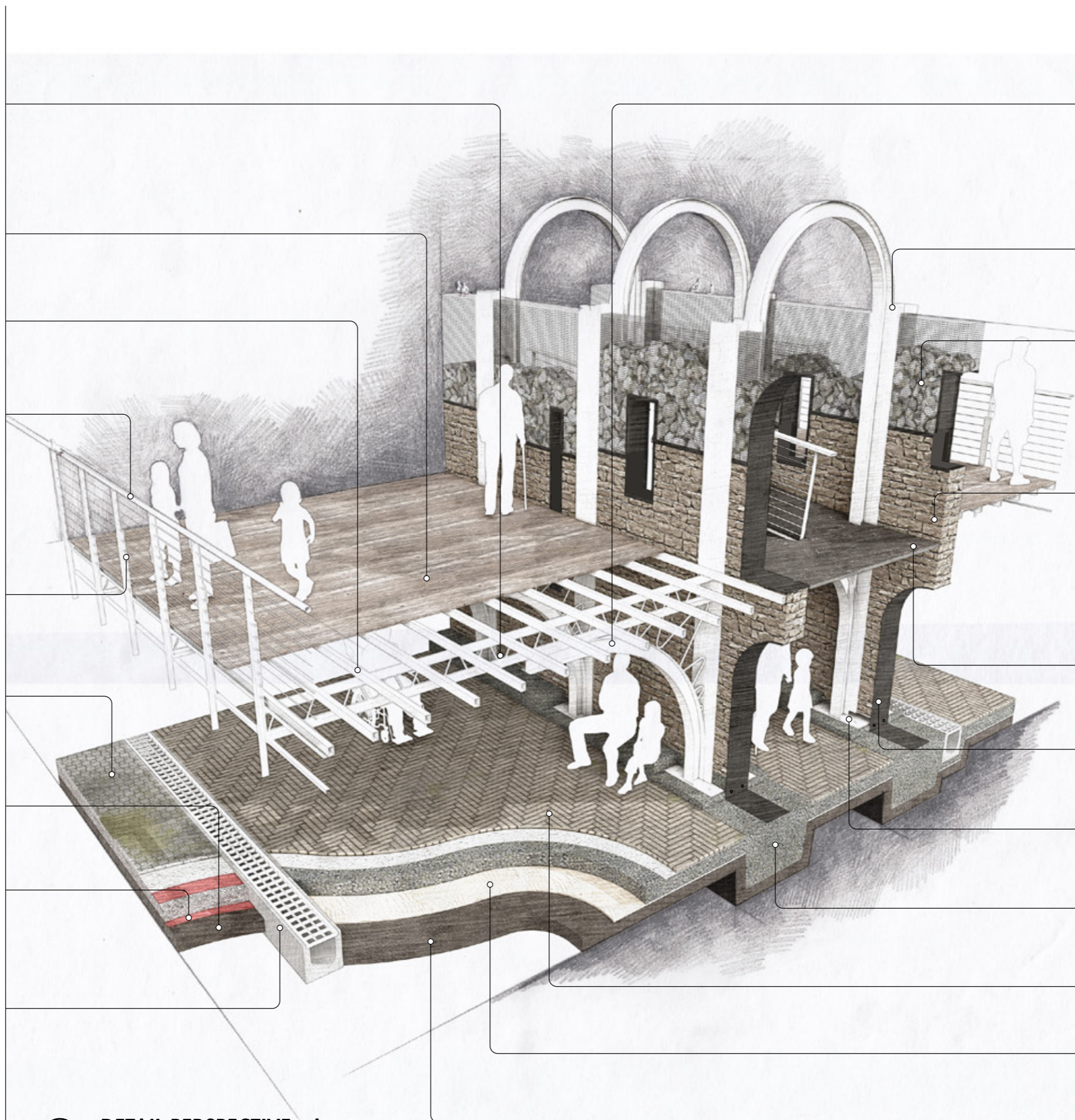
146 x 160mm x 43kg/m primed and painted steel I-section manufactured to quarter-arch form (1650mm radius) of drawing, fillet-welded to mild steel baseplate and fixed to flange of H-section column with 6 x M10 bolts (Grade 8.8) and fixed to flange of beam with 6 x M10 bolts (Grade 8.8)

356 x 356mm x 129kg/m primed and painted H-section steel columns fillet-welded to baseplate; 146 x 160mm x 43kg/m primed and painted steel I-section manufactured to semi-circle form (1680mm radius) of drawing, fixed to both H-section columns with pairs of M10 bolts (Grade 8.8) at 450mm intervals acc. to eng. spec.

Ø2.5mm zinc-galvanised wire mesh steel (25 x 25mm square aperture openings) volumes formed to drawing profile and secured to mild steel framework with M6 bolts at 200mm intervals along perimeter according to detail; steel door openings to allow for stones (dia. 25 – 280mm) to be placed within steel mesh volume

300mm thick non-loadbearing adobe brick wall with cement (5%) : fine sand (50%) : gravel (30%, between 5 – 20mm dia.) : water (15%) ratio, and mixed to achieve desired structural durability standards of at least 5 MPa at 28 days (SANS 10400-K), with 10mm thick (or as necessary to accommodate irregularities in the brick units) mortar joints of same adobe brick mixture; brickwork set on 375 micron thick damp proof course membrane (through wall width) to prevent the rise of capillary moisture into base of wall

10mm thick recycled rubber mat secured with Mentis Grating G-Clip to 2000 x 1000 x 40mm profiled Mentis grating grid (40 x 40 x 40mm Rectagrid pattern) for ramp and landing areas; ramp at 1:15 gradient with going of 10m between landings (SANS 10400-S)

400 mm wide x 5 mm thick primed and painted mild steel sheets fillet-welded to form arched door frame, frame fixed to concrete foundation base on both jambs with 2 x M12 anchor-bolts acc. to detail drawing

720 x 720 x 10mm primed and painted mild steel baseplate fixed to concrete foundation with 4 x M18 anchor bolts (Grade 8.8, full threaded)

1050mm wide x 900mm deep in-situ cast concrete foundation (1:3:2 20MPa) with BASF Rheomix 630s plasticiser for mixing (for reducing water requirements by 10%) to eng. spec. with raised above-ground seating between baseplates to drawing spec.

225 x 35 x 75mm Klompie brick paving with 3mm joint spacing (filled with masonry sand), set on 10mm thick mortar bed with 1:80 fall to stormwater drainage channel, on 170mm thick 20 MPa in-situ cast reinforced concrete surface bed

20mm thick sand-blinding layer

Well-compacted earth in layers no more than 150mm thick; compacted to comply with 93% Modified AASHTO standard

DETAIL PERSPECTIVE - A

Fig. 8.6: Detail Perspective - A (Ullrich 2020)

0.8mm Aluminium mill finish Safloc® 700 roof sheeting at 3° slope towards gutter on 0.8mm Safloc® baseplate screw-fixed to purlin with Fixtite® waferhead self-tapping screws; 75 x 200 x 2mm galv. steel C-channel purlins fixed to cleats with 4 x M6 bolts, cleat fixed to beam flange with 2 x M6 bolts, purlins spaced at 1200mm c.c. interval acc. to roof eng. spec.

300mm thick non-loadbearing adobe brick wall with cement (5%) : fine sand (50%) : gravel (30%, between 5 – 20mm dia.) : water (15%) ratio, and mixed to achieve desired structural durability standards of at least 5 MPa at 28 days (SANS 10400-K), with 10mm thick (or as necessary to accommodate irregularities in the brick units) mortar joints of same adobe brick mixture; brickwork set on 375 micron thick damp proof course membrane (through wall width) to prevent the rise of capillary moisture into base of wall

1100mm wide x 380mm treads x 100mm risers in-situ cast concrete staircase with adjacent Ø80mm in-situ cast stormwater channel at 15° slope towards stormwater outlet

1150mm wide x 150mm thick x 2000mm long purpose-made insulation panels (see Detail H & I) consisting of 120mm min. thick packed thatch layer upon a 20mm thick woven-thatch ceiling mat with perimeter fixed to timber frame with hessian string with double overhand knot (see Detail H) with the top of the thatch covered with 315 micron thick Sisalation FR405 Fire Retardant and Radiant Barrier laminate sheet (compliant with SANS 428 protocol and SANS 10177 Part 5 & 10) with panel components sandwiched between two timber frames and fastened with hessian string, with panels positioned between C-channel purlins end-to-end and fastened to purlins every 100mm with hessian rope double-overhand knot through shop-drilled holes in purlin, and allowing 25mm airspace to roof sheeting surface (panel insulation thickness in acc. with SANS 10400-XA Table 1 min. R-values for roof insulation for Zone 2)

380mm wide x 900mm deep gabion walls to enclose terraces, manufactured with Ø2.5mm zinc-galvanised wire mesh steel (25 x 25mm square aperture openings), with Ø100 – 250mm stone in-fill (unweathered, and rock density of 2.6ton / m3, in acc. with SANS 1200 suitability and durability tests), with basket wrapped in Polytex PT115 geotextile to allow for water movement and prevent top-soil runoff

400 x 400 x 100mm permeable grass-block pavers on 20mm no-fines bedding aggregate (2 5mm dia.)

200mm deep no-fines basecourse aggregate (20 – 60mm dia.), wrapped in geotextile, with base sloped at min. 1:80 towards Ø160mm uPVC geopipe at min. 1:250 slope towards centrifugal pump (to pump to filtration system and water storage tanks for irrigation purposes)

254 x 146mm purpose-made steel beam with steel dowel formed to drawing profile, MIG welded to 50 x 50 x 8mm equal angles, with angles MIG welded to 10.9mm deep x 146mm wide flanges acc. to eng. spec.; beam fixed to quarter-arch steel I-section flange with pairs of M10 bolts (Grade 8.8) at 450mm intervals, and H-section steel column with two 100 x 100 x 10mm steel cleats (top and bottom flange) fixed with 4 x M10 bolts (Grade 8.8) for each connection (see Detail I)

160 x 180 x 1mm profile-rolled Zincalume® steel gutter solid riveted to adjacent C-channel purlin at 1:500 fall towards stormwater catchment pool (see Water System Section)

146 x 160mm x 43kg/m primed and painted steel I-section manufactured to quarter-arch form (1650mm radius) of drawing, fillet-welded to mild steel baseplate and fixed to flange of H-section column with pairs of M10 bolts (Grade 8.8) at 450mm intervals and fixed to flange of beam with 6 x M10 bolts (Grade 8.8); Ø20mm primed and painted steel dowel formed to drawing spec. and MIG fillet-welded to flanges at contact points (see Detail I)

400 mm wide x 5 mm thick primed and painted mild steel sheets fillet-welded to form window frame, cill with min. 14° slope towards exterior, and overhanging drip edge to drawing spec.; side jamb plates extended and fixed to concrete retaining wall on each plate with 45 x 45 x 5mm equal-angle mild steel section and 2 x M12 anchor-bolts

225 x 35 x 75mm Klompie brick paving with 3mm joint spacing (filled with masonry sand), set on 10mm thick mortar bed with 1:80 fall to stormwater drainage trough, on 170mm thick in-situ cast reinforced concrete surface bed (1:2:4, 20MPa)

20mm thick sand-blinding layer

Well-compacted earth in layers no more than 150mm thick; compacted to comply with 93% Modified AASHTO standard

356 x 356mm x 129kg/m primed and painted H-section steel columns fillet-welded to baseplate

230mm wide in-situ cast concrete stormwater drainage channel (forming part of floor concrete floor slab) collecting wall rainwater runoff with min. 1:80 slope towards stormwater drainage and centrifugal pump

Rubble filled behind wall wrapped with Polytex PT115 geotextile (impermeable to silt) with Ø160mm uPVC geopipe at 1:250 slope towards centrifugal pump

300mm thick in-situ cast reinforced concrete retaining wall with BASF Rheomix 630s plasticiser for mixing (for reducing water requirements by 10%), with Ø50mm PVC pipe weepholes at 1m2 intervals, with a 110 x 35mm key construction joint on footing for stem wall, with toe and heel footing dimensions acc. eng. spec.

DETAIL PERSPECTIVE - B

Fig. 8.7: Detail Perspective - B (Ullrich 2020)

2600 x 2000mm interior cavity for accelerated-composting burial system, interior lined with Sika® Cemflex® (mixed with Portland cement and water in ratio of 5:17:5) and Cemflex® Fabric with min. 50mm overlaps, with two coats slurry applied acc. to manufacturer's spec. (for subterranean waterproofing); 300mm deep course aggregate at base of cavity wrapped in Polytex PT115 geotextile, with two Ø160mm uPVC geopipes at min. 1:250 slope towards wastewater outlet

300mm thick x 2100mm high in-situ cast reinforced concrete retaining walls, with 110 x 35mm key construction joint at base and Sika® Westec® Chemically Resistant Waterstop, 300mm thick reinforced concrete footing slab to eng.. spec.

1100mm wide x 380mm treads x 100mm risers in-situ cast concrete staircase with adjacent Ø80mm in-situ cast stormwater channel at 15° slope towards stormwater outlet

150mm layer of topsoil with planting according to Planting Strategy

380mm wide x 900mm deep gabion walls to enclose terraces, manufactured with Ø2.5mm zinc-galvanised wire mesh steel (25 x 25mm square aperture openings), with Ø100 – 250mm stone in-fill (unweathered, and rock density of 2.6ton / m3, in acc. with SANS 1200 suitability and durability tests), with basket wrapped in Polytex PT115 geotextile to allow for water movement and prevent top-soil runoff

Buffalo tree planted according to Planting Strategy, with a 1500mm deep BioBarrier® root-control membrane along perimeter of planter cut to spec. (see Section A-A)
Note: High temperatures and direct sunlight can reduce effective product life - install and cover with soil BioBarrier within 12 hours after opening packaging

430mm thick water-trough wall, consisting of 230mm thick in-situ cast reinforced concrete water trough (20Mpa, 1:2:4, mixed with Sika®-1 liquid waterproofing admixture) to drawing form, with cascaded, cast channels to fall towards drainage channel, and two 100mm thick welded steel mesh volumes of Ø2.5mm zinc-galvanised wire mesh steel (25 x 25mm square aperture openings) with form to drawing spec., with Ø30 – 100mm stone in-fill (with stone in acc. with SANS 1200 suitability and durability tests), fixed to concrete wall with M8 bolts and mild steel plates, with plates spaced at 900mm intervals along wall

400 x 400 x 100mm interlocking permeable grass-block pavers on 20mm bedding aggregate (2 - 5mm dia.)

200mm deep no-fines basecourse aggregate (20 – 60mm dia.), wrapped in geotextile, with base sloped at min. 1:80 towards Ø160mm uPVC geopipe at min. 1:250 slope towards centrifugal pump (to pump to filtration system and water storage tanks for irrigation purposes)

DETAIL PERSPECTIVE - C

N

Fig. 8.8: Detail Perspective - C (Ullrich 2020)

DETAIL B
H-SECTION CONNECTION

Fig. 8.10: Detail B - H-Section Column Connection (Ullrich 2020)

DETAIL C
RAMP SUPPORT

Fig. 8.11: Detail C - Ramp Support (Ullrich 2020)

DETAIL E
BALUSTRADE ASSEMBLY

Fig. 8.13: Detail E - Balustrade Assembly (Ullrich 2020)
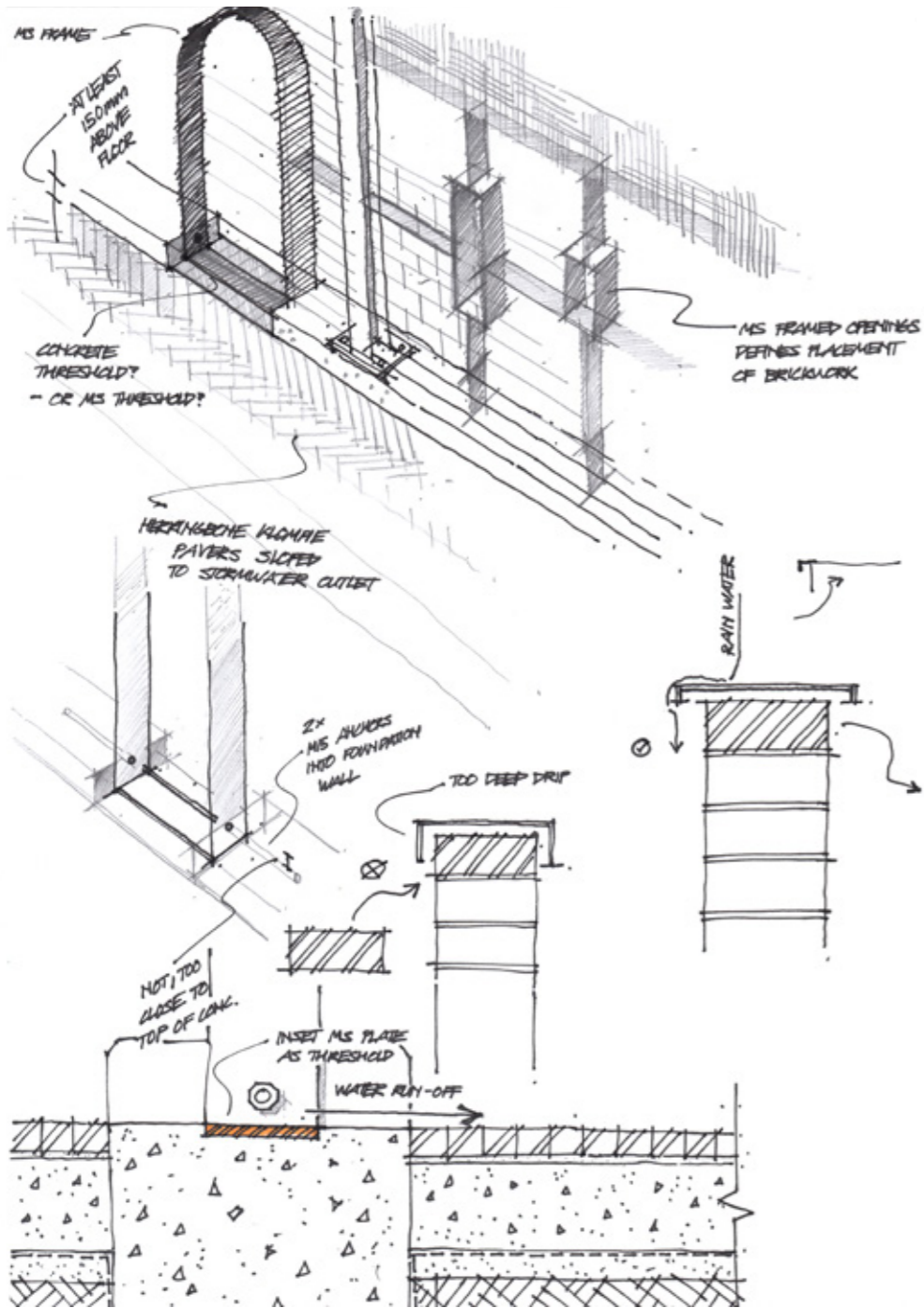
DETAIL A
WALL STEEL FRAMEWORK

Fig. 8.9: Detail A - Wall steel framework (Ullrich 2020)
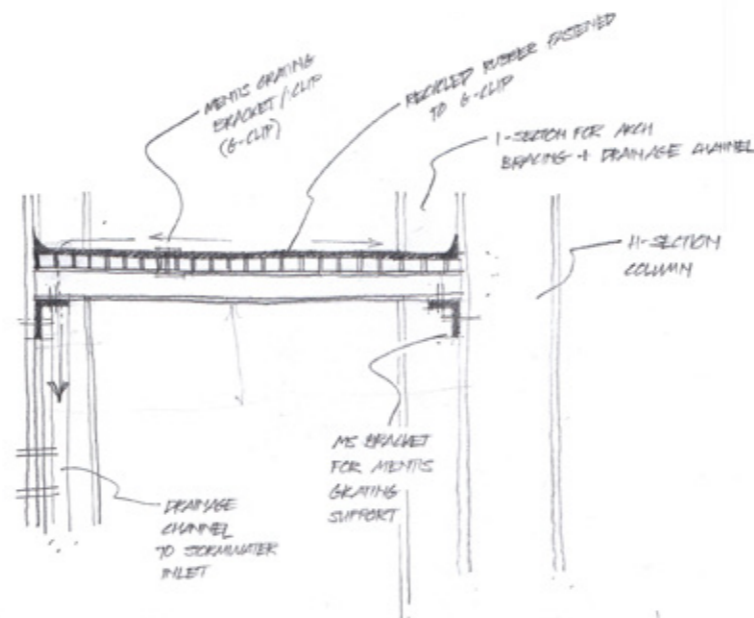
DETAIL D
RAMP CONNECTION

Fig. 8.12: Detail D - Ramp Connection (Ullrich 2020)
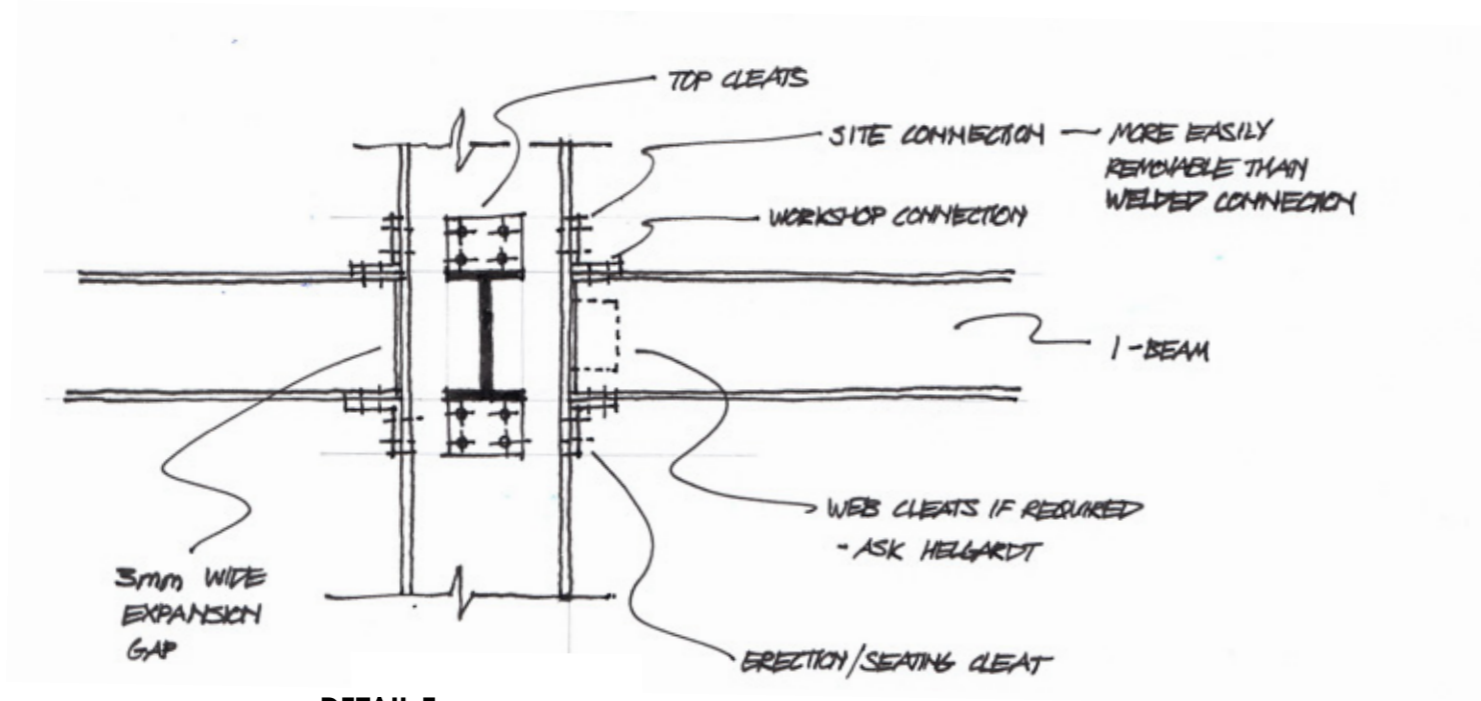
DETAIL F
CONNECTION OF BEAM TO COLUMN

Fig. 8.14: Detail F - Connection of Beam to Column (Ullrich 2020)

Anchorage for new concrete retaining wall - anchor below historic Forecourt wall foundation (sensitivity towards historic artefacts)
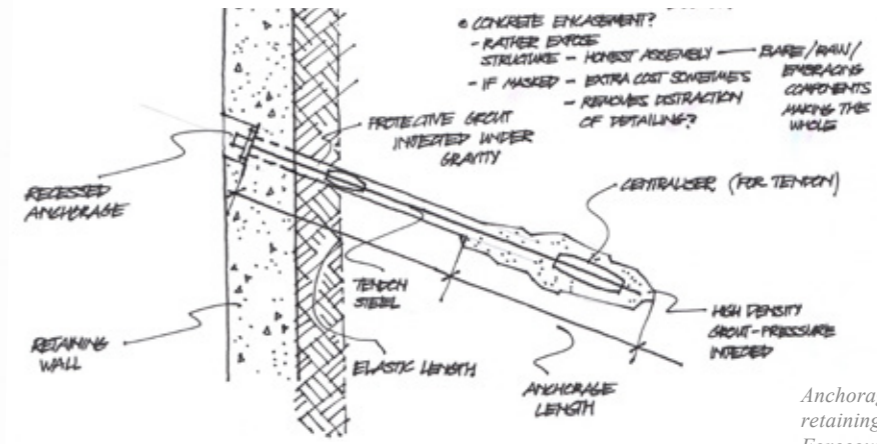
DETAIL H
RETAINING WALL ANCHOR

Fig. 8.16: Detail F - Retaining Wall Anchor (Ullrich 2020)
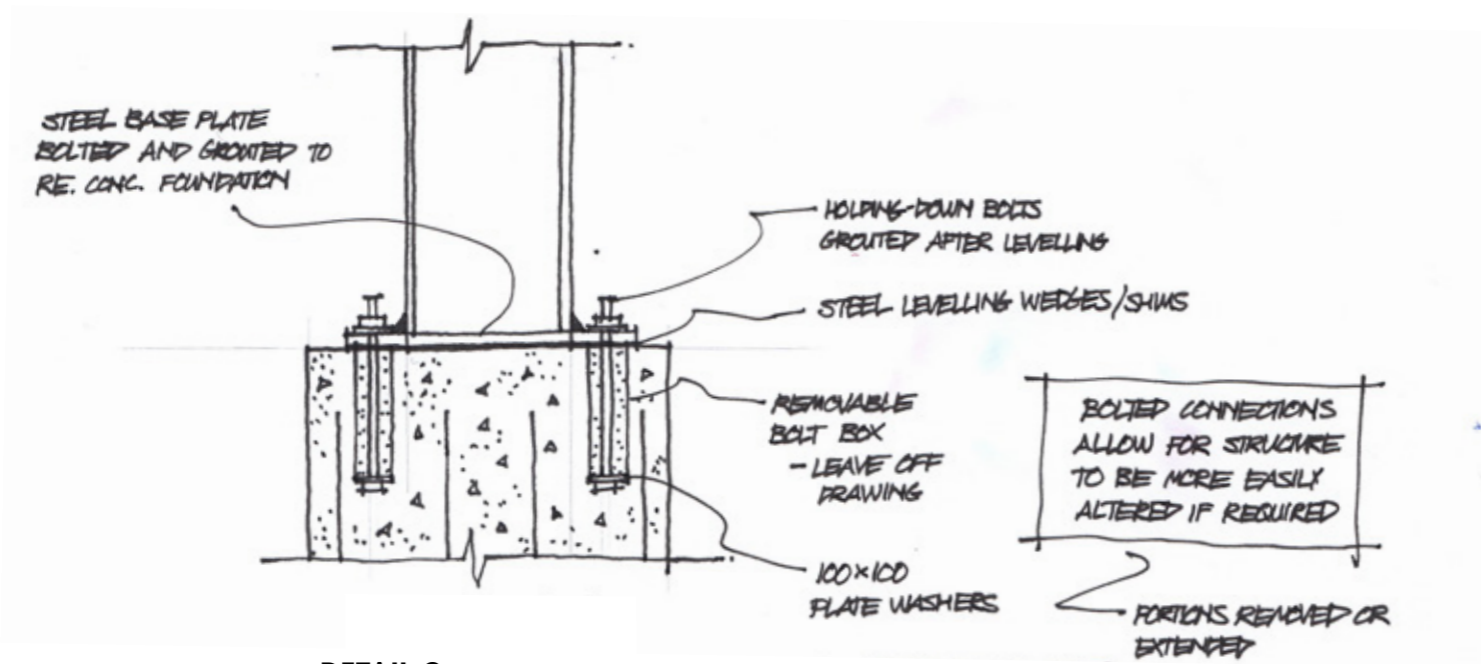
DETAIL G
CONNECTION OF H-SECTION TO PLINTH

Fig. 8.15: Detail G - Connection of H-Section to plinth (Ullrich 2020)

300mm thick adobe brick wall
- Non-masonry wall shall achieve a min. total R-value of 1.9 for Climatic Zone 2 (SANS 10400-XA)
- 300mm thick adobe wall R-value = ±3.8 > 1.9 (Zone 2)

375 micron thick damp proof course membrane (through wall width) to prevent the rise of capillary moisture into base of wall
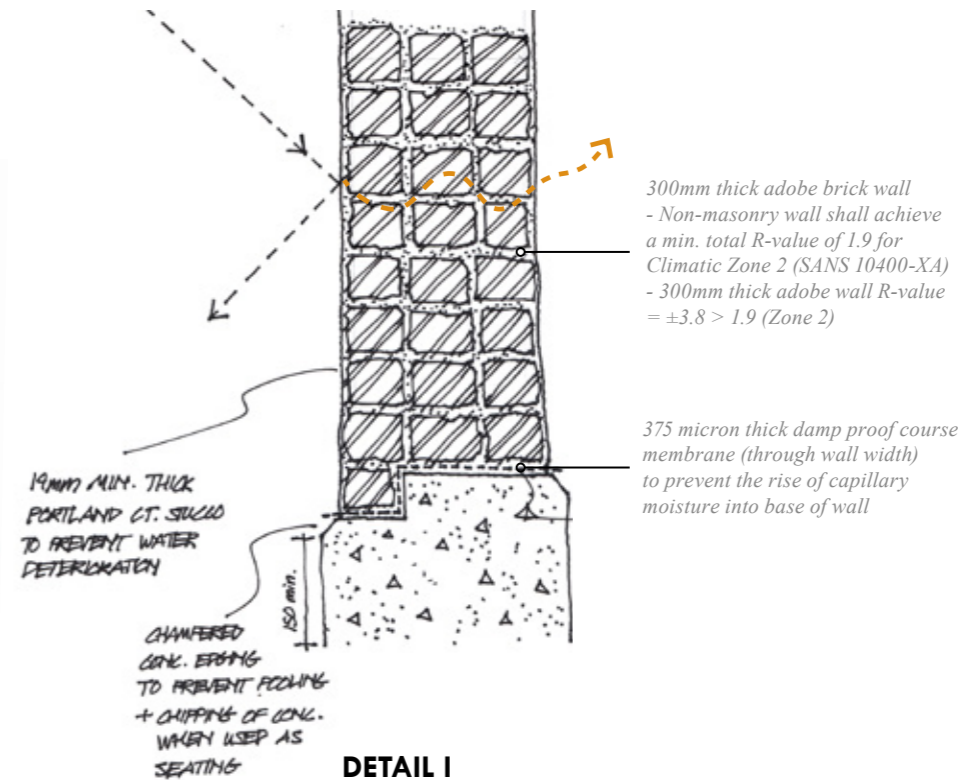
DETAIL I
ADOBE BRICK WALL BASE

Fig. 8.17: Detail I - Adobe brick wall base (Ullrich 2020)

A - SOUTHERN ENTRANCE

Fig. 8.18: A - Southern Entrance (Ullrich 2020)
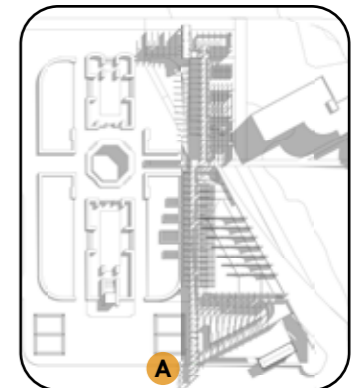
B - CEREMONY AREA LOBBY

Fig. 8.19: B - Ceremony Area Lobby (Ullrich 2020)
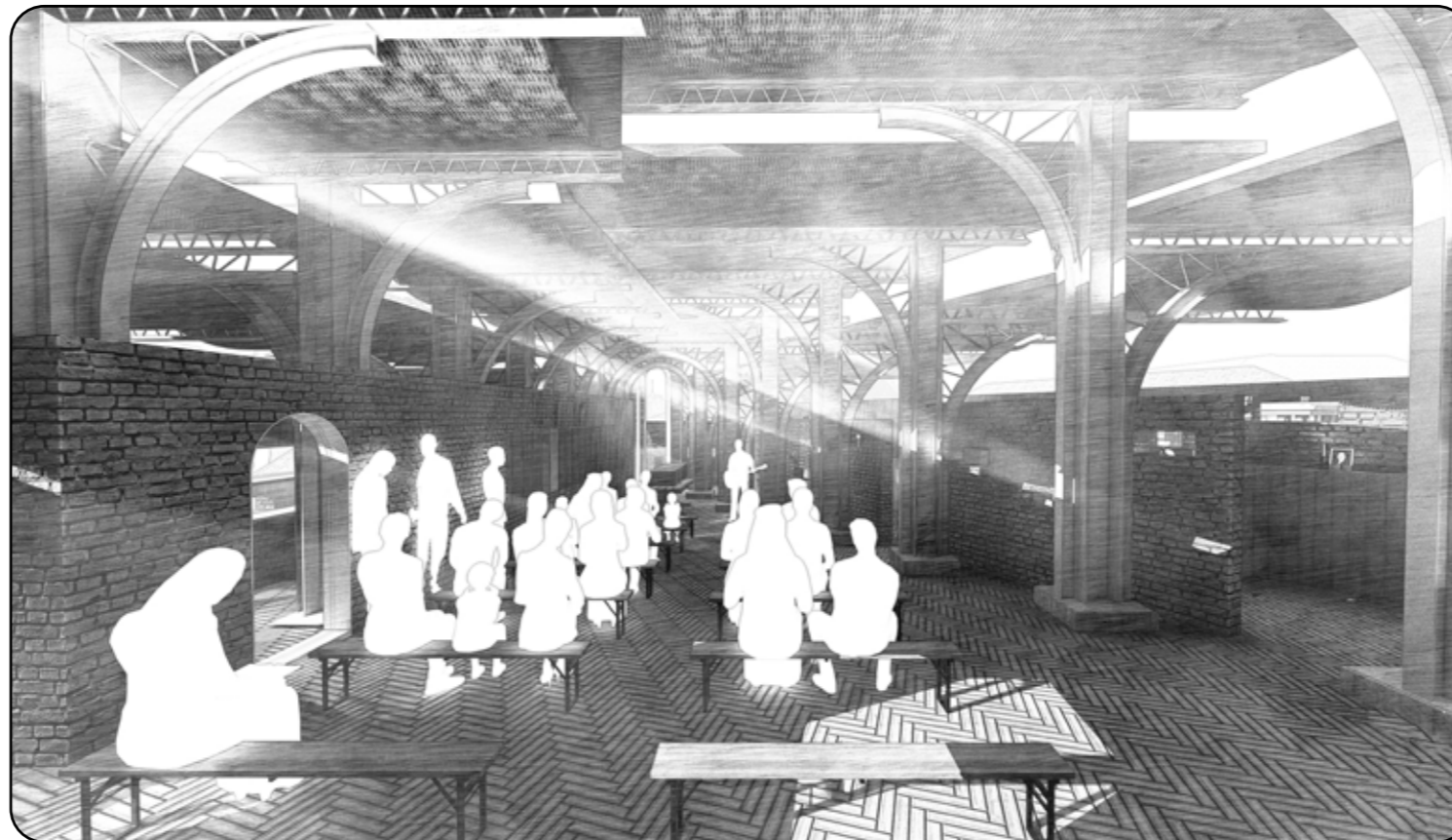
C - CEREMONY AREA

Fig. 8.20: C - Ceremony Area (Ullrich 2020)
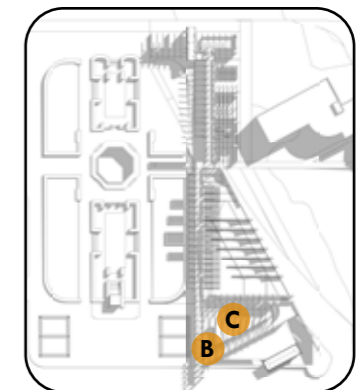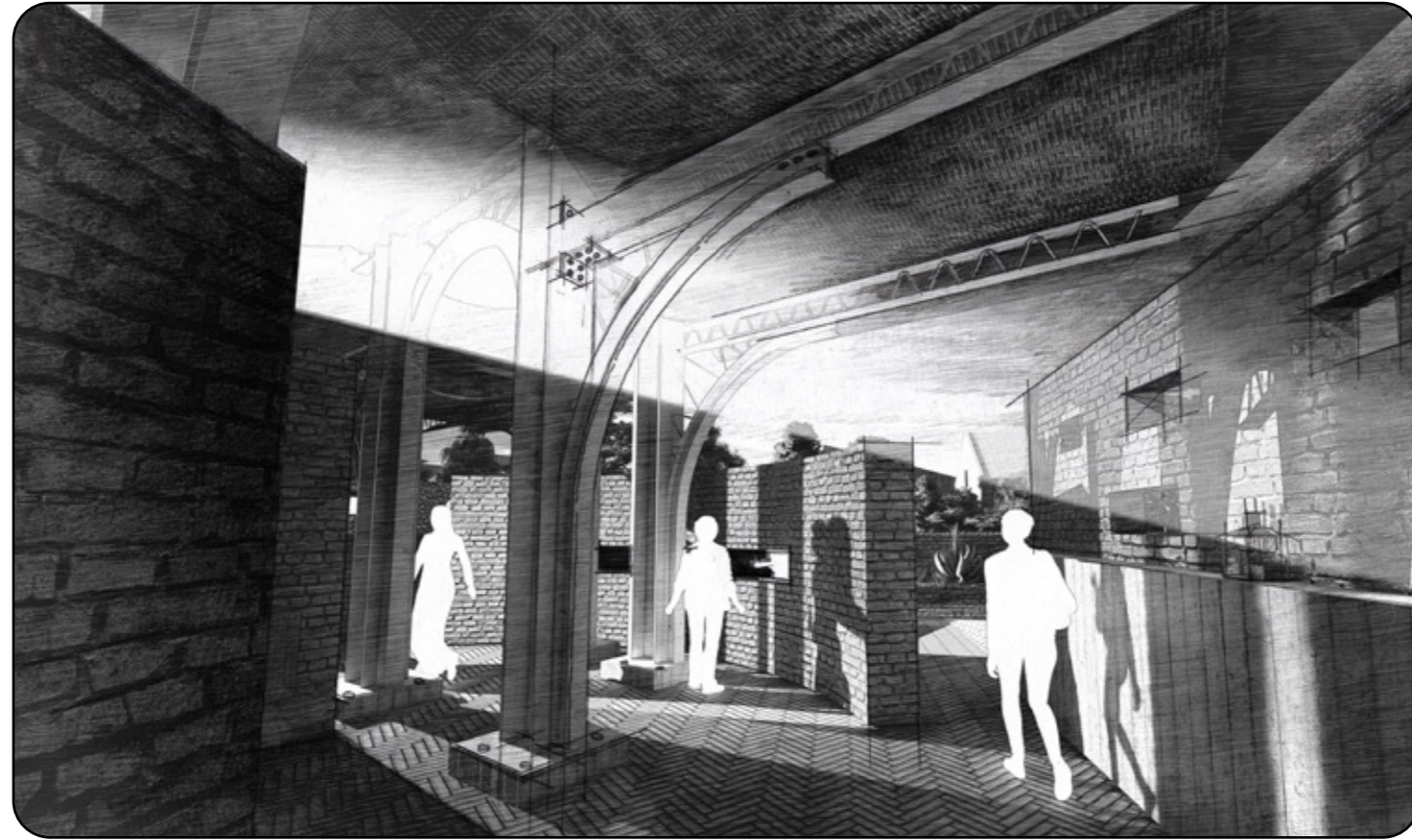
D - EXITING CEREMONY AREA & WATER TROUGH

Fig. 8.21: D - Exiting Ceremony Area with water-trough wall (Ullrich 2020)
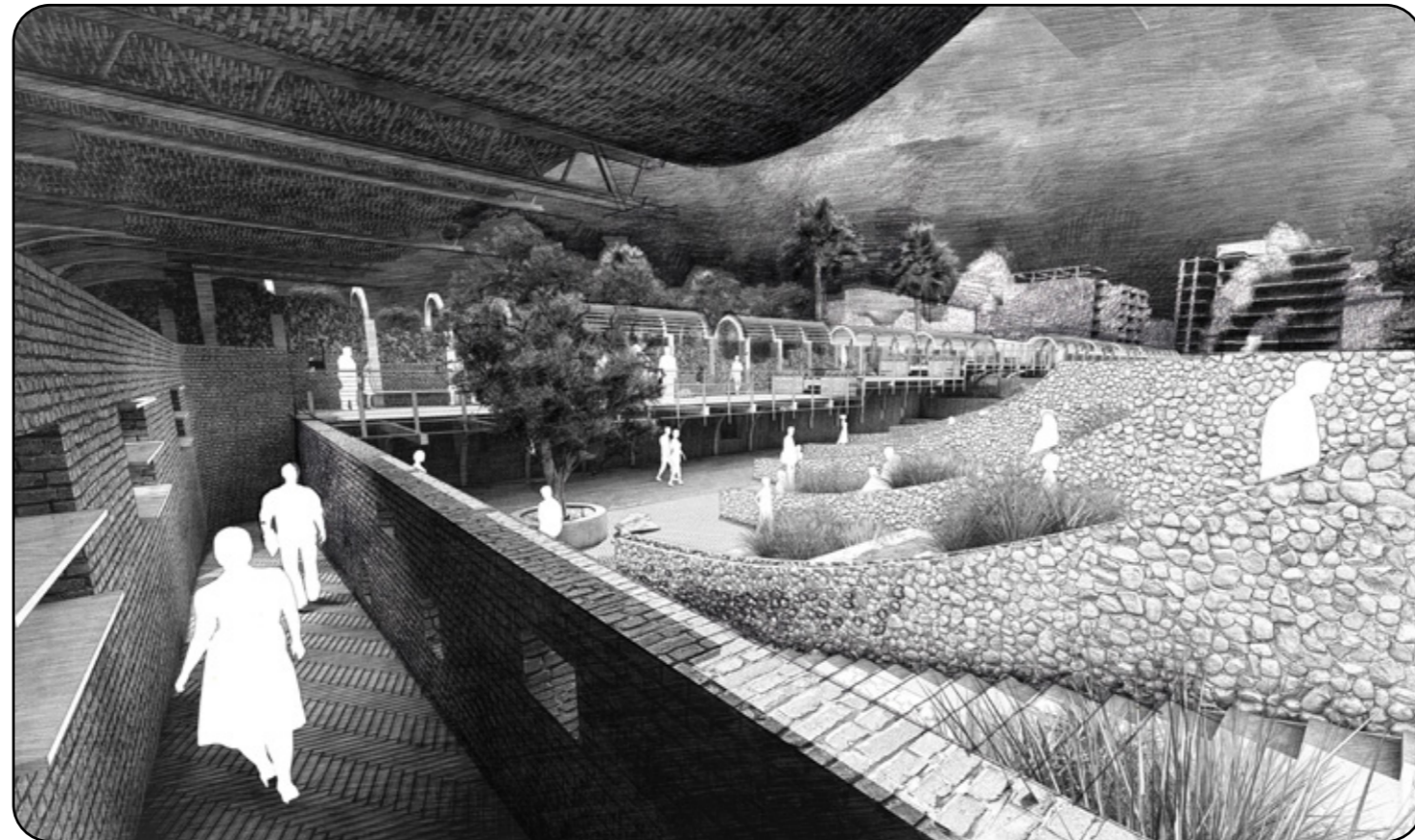
E - RAMP TO GARDEN OF REMEMBRANCE

Fig. 8.22: E - Ramp from Ceremony Area to Garden of Remembrance (Ullrich 2020)
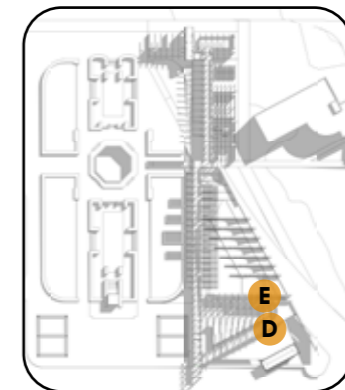
F - GARDEN OF REMEMBRANCE FROM VIEWING DECK

*Fig. 8.23: F - Garden of Remembrance from Viewing Deck
with background of Old Station buildings (Ullrich 2020)*
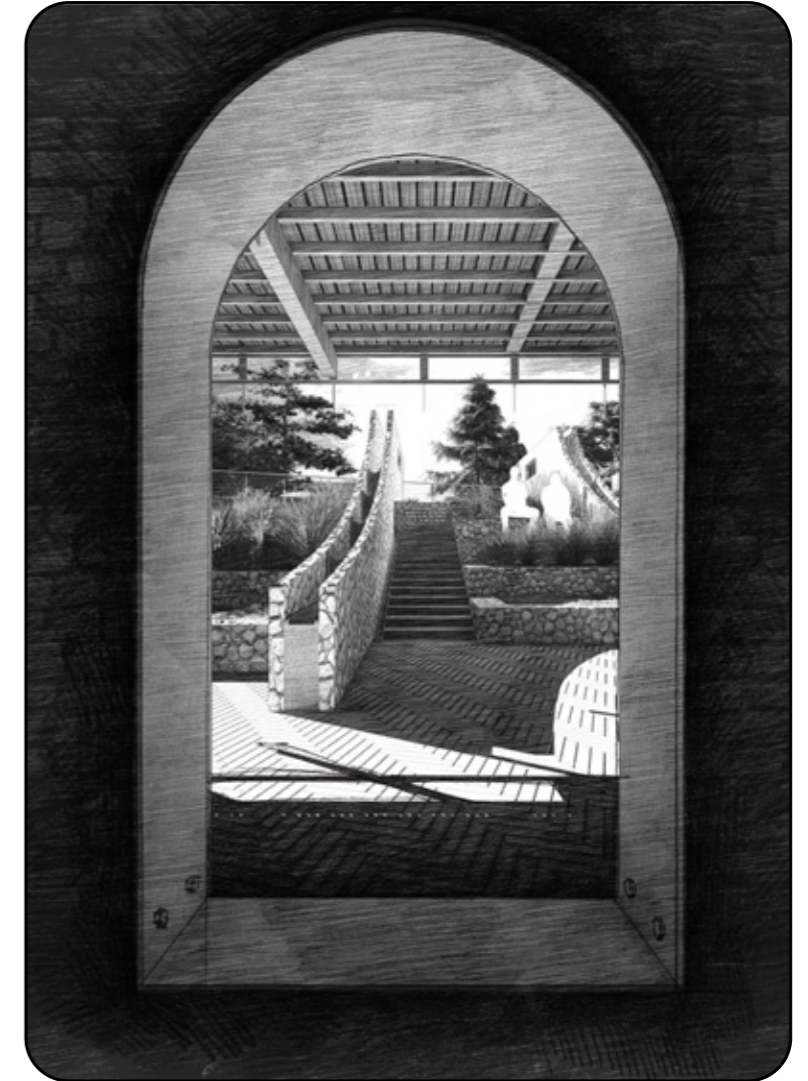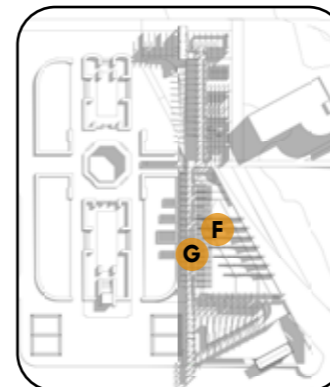
G - EXITING GARDEN

*Fig. 8.24: G - Exiting Garden of
Remembrance through Wall of
Remembrance (Ullrich 2020)*
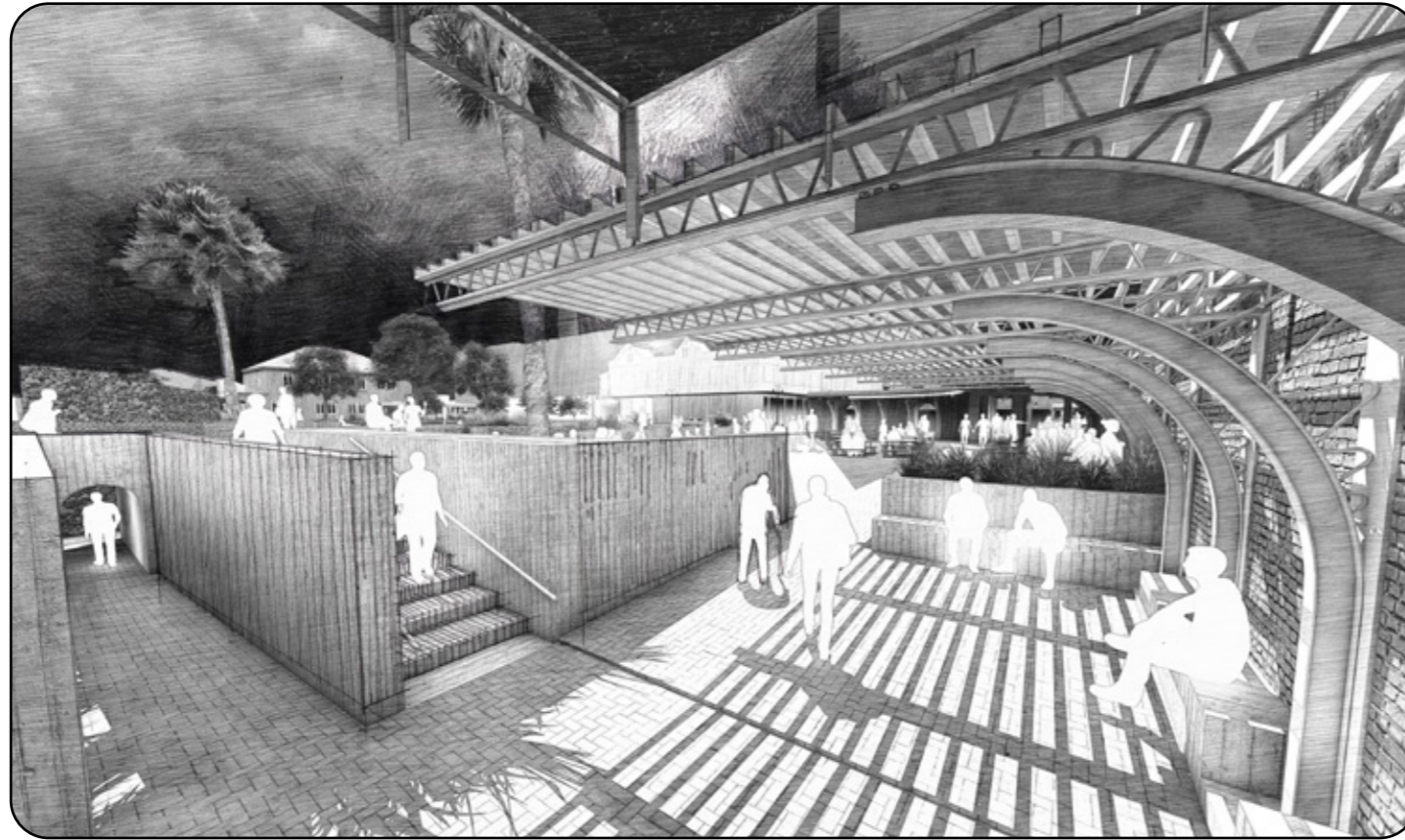
H - CENTRAL INTERSECTION

Fig. 8.25: H - Central Intersection of Burial Centre with tunnel to Sacrificial Court on the left and pathway to Meal Area on the right (Ullrich 2020)
Fig. 8.26: I - Tunnel to Sacrificial Court (Ullrich 2020)
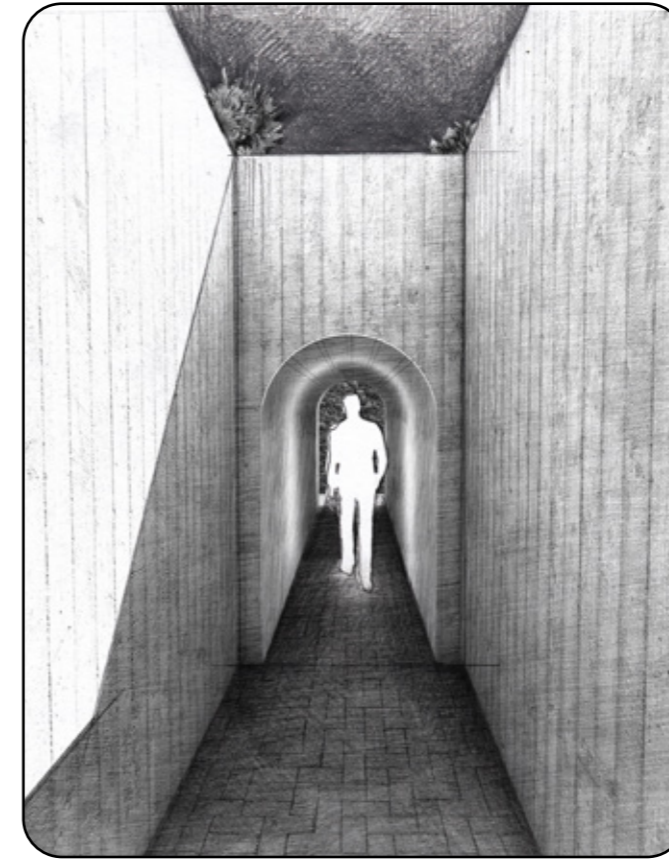
I - TUNNEL TO SACRIFICIAL COURT
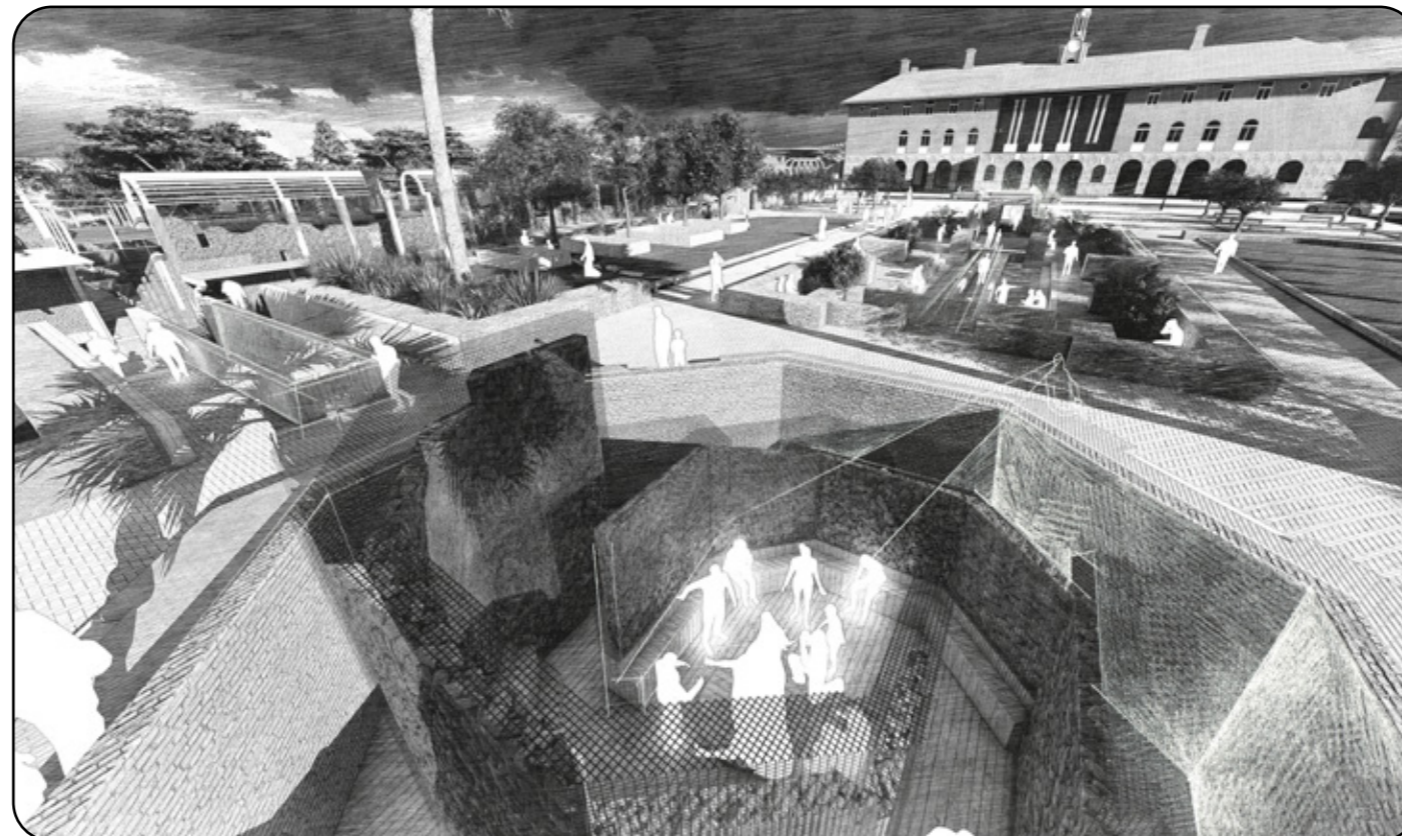
J - SACRIFICIAL COURT & CLEANSING POOLS

Fig. 8.27: J - Sacrificial Court with background of Southern Cleansing Pools, War Memorial, and Old Pretoria Station (Ullrich 2020)
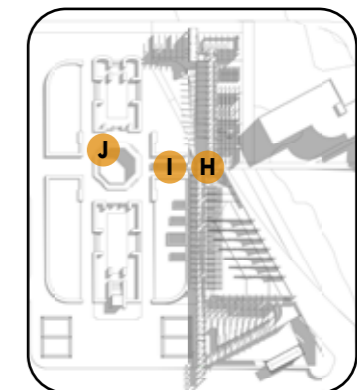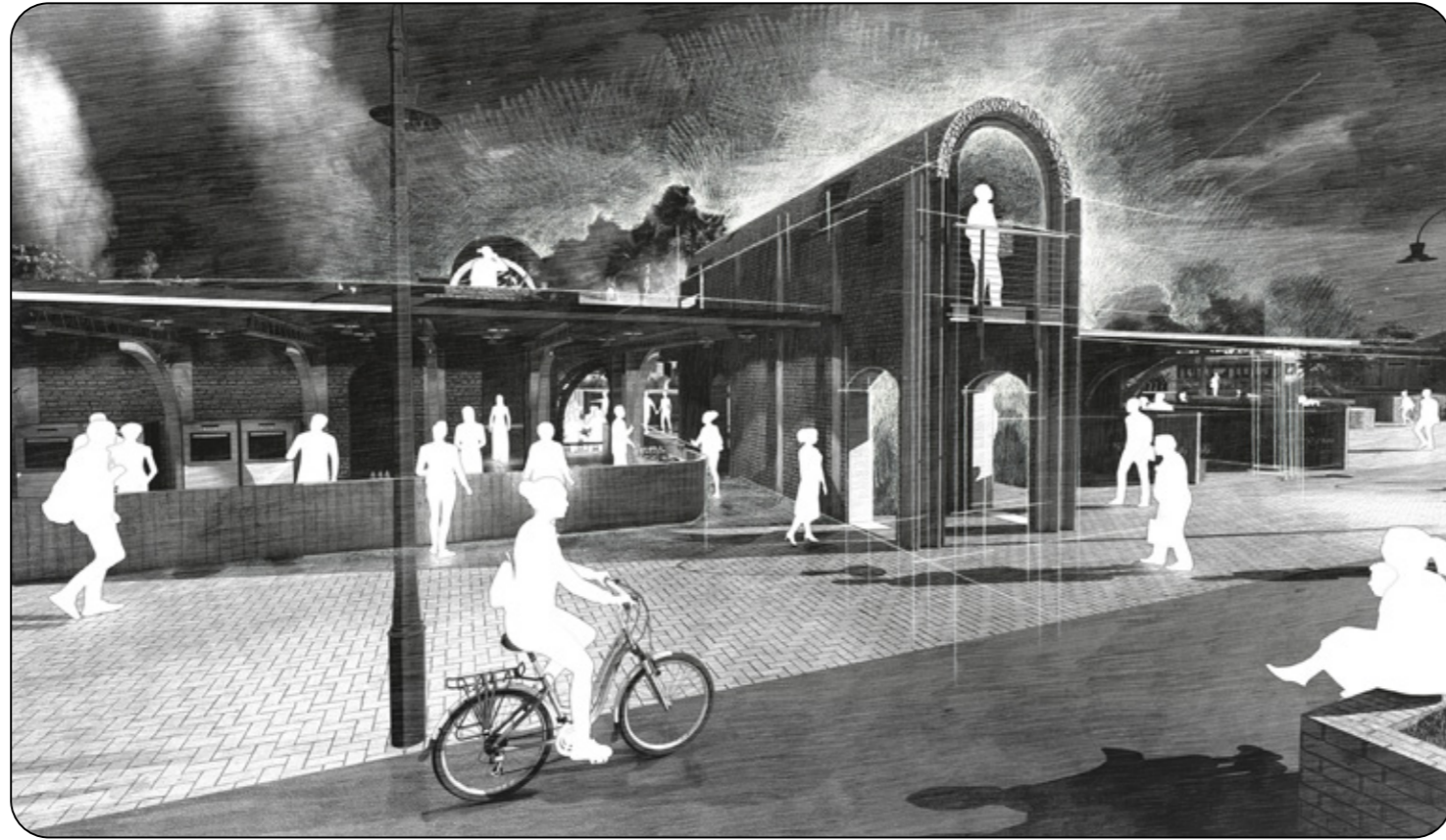
K - NORTHERN ENTRANCE

*Fig. 8.28: K - Northern Entrance
from Scheiding Street (Ullrich 2020)*

L - TAKE-AWAY COUNTER

*Fig. 8.29: L - Take-Away Counter
at Kitchen Area (Ullrich 2020)*
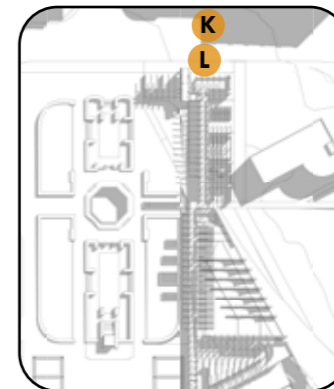
M - STREET INTERFACE

Fig. 8.30: M - Northern aerial view of street shops with background of Old Station Buildings (Ullrich 2020)
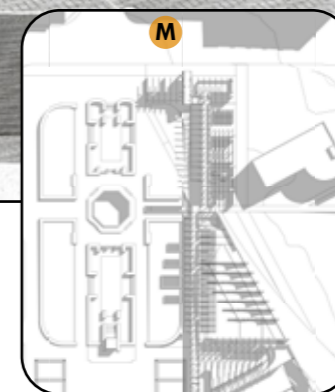
N - AERIAL OF FORECOURT INTERVENTION

Fig. 8.31: N - Northern aerial view of
Forecourt Intervention (Ullrich 2020)

8.3   LIST OF REFERENCES

1. Atkins, C. 2017. Transforming the architecture of death: monument vs. anti-monument. South African Journal of Art History. 32(1):35–56. Available from: https://univofpretoria.on.worldcat.org/oclc/7473748763.

2. Bakker, KA. 2003. Preserving Intangible Heritage Resources: Examples from South Africa. Victoria Falls, Zimbabwe. Available from: http://openarchive.icomos.org/520/.

3. Bakker, KA & de Jong, R. 2003. Salvokop Development Framework: Heritage Report A and B. Pretoria: Cultmatrix CC.

4. Bakker, KA, Le Roux, SW & Young, GA. 2003. Urban design education as integral to "real-time" urban revitalization processes: Salvokop, Pretoria. Urban Design International. 8(3):161–178.

5. Baloyi, ME. 2014. Distance no impediment for funerals: Death as a uniting ritual for African people - A pastoral study. Verbum et Ecclesia. 35(1):1–7. doi.org/10.4102/ve.v35i1.1248.

6. Basmajian, C & Coutts, C. 2010. Planning for the Disposal of the Dead. Journal of the American Planning Association. 76(3):305–317. doi.org/10.1080/01944361003791913.

7. Boettger, T. 2014. Threshold Spaces Transitions in Architecture. Analysis and Design Tools. Basel: Birkhäuser.

8. City of Tshwane. 2013a. Heritage Site Listing. Available from: http://www.tshwane.gov.za/Services/ArtsCultureandHeritage/Pages/Heritage-Site-Listing.aspx.

9. City of Tshwane. 2013b. Tshwane Vision 2055: Remaking South Africa's Capital City. Pretoria. doi.org/10.4161/cc.6.11.4278.

10. City of Tshwane. 2014. Statistical and Tariff Handbook. (June):1–244.

11. City of Tshwane. 2015a. City of Tshwane Cemetery and Crematorium By-Laws. South Africa: City of Tshwane Promulgated By-Laws.

12. City of Tshwane. 2015b. City of Tshwane Metropolitan Municipality Cemetery and Crematorium By-Laws Definitions, Establishment and Control. 1–24.

13. Clayden, A & Woodstra, J. 2003. Some European approaches to twentieth-century cemetery design: continental solutions for British dilemmas. Mortality. 8(2):189–208. doi.org/10.1080/1357627031000087424.

14. Connerton, P. 1989. How Societies Remember. Cambridge: Cambridge University Press. Available from: http://catdir.loc.gov/catdir/toc/cam022/89007070.html.

15. Creswell, JW. 2009. Research design: qualitative, quantitative, and mixed methods approaches. 3rd ed. Los Angeles: Sage.

16. Curl, JS. 2006. A Dictionary of Architecture and Landscape Architecture. Oxford: Oxford University Press.

17. David Chipperfield Architects. 2017. Inagawa Cemetery chapel and visitor centre. Available from: https://davidchipperfield.com/project/inagawa-cemetery-chapel-and-visitor-centre [Accessed 1 May 2020].

18. Davie, L. 2002. A swastika , Herbert Baker and the Pretoria Station. Available from: http://www.theheritageportal.co.za/article/swastika-herbert-baker-and-pretoria-station [Accessed 29 April 2020].

19. Davies, DJ. 2005. A Brief History of Death. Oxford: Blackwell Publishing. doi.org/10.1002/9780470776193.

20. Department of Health. 2013. Regulations Relating to the Management of Human Remains. Staatskoerant. 22 May: 3–51.

21. Eliade, M. 1961. The Sacred and the Profane: The Nature of Religion. Virginia: Harper & Brothers.

22. Elion, B & Strieman, M. 2002. Clued up on culture: a practical guide for all South Africans. 3rd ed. Cape Town: One Life Media.

23. Fisher, RC & Clarke, NJ. 2010a. Death, cremation and columbaria in the culture of Dutch Christian Calvinist South Africa. South African Journal of Art History. 25(2):69–80. Available from: https://repository.up.ac.za/handle/2263/15835 [Accessed 11 May 2019].

24. Fisher, RC & Clarke, NJ. 2010b. Gerard Moerdijk - death and memorializing in his architecture for the Afrikaner nationalist project. South African Journal of Art History. 25(2):151–160. Available from: https://repository.up.ac.za/handle/2263/15836 [Accessed 11 May 2019].

25. Foucault, M & Miskowiec, J. 2012. Texts / Contexts of Other Spaces. Diacritics. 16(1):22–27. doi.org/10.2307/464648.

26. Green, L & Murray, N. 2005. Life Space and Burial Space in the Post-Apartheid City. Journal for Islamic Studies. 24 & 25:1–14. doi.org/10.4314/jis.v25i1.39937.

27. Greig, DE. 1970. Herbert Baker in South Africa. Cape Town; New York: Purnell.

28. Groat, LN & Wang, D. 2013. Architectural Research Methods. 2nd ed. New Jersey: Wiley.

29. Hetherington, K. 2002. The Badlands of Modernity. London / New York. doi.org/10.4324/9780203428870.

30. Hook, D & Vrdoljak, M. 2002. Gated communities, heterotopia and a "rights" of privilege: A 'heterotopology' of the South African security-park. Geoforum. 33(2):195–219. doi.org/10.1016/S0016-7185(01)00039-2.

31. Hugo, J. 2019. Daylight Analysis & Principles. Pretoria: University of Pretoria.

32. Hutchings, A. 2007. Ritual cleansing, incense and the tree of life - observations on some indigenous plant usage in traditional Zulu and Xhosa purification and burial rites. Alternation. 14(2):189–217.

33. ICOMOS. 2013. The Burra Charter: the Australia ICOMOS charter for places of cultural significance. 2nd ed. Burwood: Australia ICOMOS.

34. Jan Gehl, WH. 2011. Our Cities Ourselves: Principles for Transport in Urban Life. Institute for Transportation & Development Policy. Available from: https://www.itdp.org/wp-content/uploads/2014/07/OCO8principles_ITDP.pdf [Accessed 5 May 2020].

35. Jethro, D. 2016. 'Freedom Park, A Heritage Destination': Tour-guiding and visitor experience at a post-apartheid heritage site. Tourist Studies. 16(4):446–461. doi.org/10.1177/1468797615618099.

36. Johnson, P. 2008. The modern cemetery: a design for life. Social & Cultural Geography. 9(7):777–790. doi.org/10.1080/14649360802383154.

37. Kalbasi, A, Mukhtar, S, Hawkins, SE & Auvermann, BW. 2005. Carcass composting for management of farm mortalities: A review. Compost Science and Utilization. 13(3):180–193. doi.org/10.1080/1065657X.2005.10702239.

38. Kivunja, C & Kuyini, A. 2017. Understanding and Applying Research Paradigms in Educational Contexts. International Journal of Higher Education. 6(5):26–41. doi.org/10.5430/ijhe.v6n5p26.

39. Kostof, S. 2009. A History of Architecture: Settings and Rituals. 2nd ed. V. 39. Oxford: Oxford University Press. doi.org/10.2307/1424785.

40. Kuipers, M & de Jonge, W. 2017. Designing From Heritage: Strategies for Conservation and Conversion. Delft: TU Delft - Heritage & Architecture. Available from: https://books.bk.tudelft.nl/index.php/press/catalog/view/isbn.9789461868022/529/170-1 [Accessed 5 May 2020].

41. kwpCreate. 2011. Pretoria Station Forecourt Restoration. Landscape SA. (January).

42. L'Abbé, EN, Steyn, M & Loots, M. 2008. Life expectancy of the 20th century Venda: A compilation of skeletal and cemetery data. HOMO - Journal of Comparative Human Biology. 59(3):189–207. doi.org/10.1016/j.jchb.2008.04.002.

43. Leach, N. 2005. Rethinking Architecture: A reader in cultural theory. New York: Routledge. doi.org/10.1017/CBO9781107415324.004.

44. Leatherbarrow, D & Mostafavi, M. 2005. Surface Architecture. Massachusetts: Mit Press.

45. LEED. 2020. Daylight: Indoor Environmental Quality. Washington D.C.

8.3   LIST OF REFERENCES

46. Leuta, T & Green, C. 2011. Exploring sustainable burial practices in South Africa: Potential challenges and opportunities. In: National Cemeteries Conference. Johannesburg: Institute of Environment and Recreation Management (IERM).

47. Malone, H. 2017. Architecture, Death and Nationhood. doi.org/10.4324/9781315597485.

48. Napier, A. 2000. Enviro-friendly Methods in Small Building Design for South Africa. Durban: Alaric Napier.

49. Ngubane, H. 2003. Research Paper on the African Understanding of the Concept of Memorial. Pretoria.

50. Ngubane, S. 2012. Death and Burial Practices in Contemporary Zulu Culture. Mankind Quarterly. 53(1):91–109. Available from: https://search.proquest.com/docview/1037385475?accountid=14717.

51. Nicholas-Schmidt, M. 2009. On the Border: an architectural inquiry into the sacred and quotidian. UWSpace. Available from: http://hdl.handle.net/10012/4420.

52. Nienaber, WC & Steyn, M. 2002. South African Archaeological Society Archaeology in the Service of the Community: Repatriation of the Remains of Nontetha Bungu. The South African Archaeological Bulletin. 57(176):80–84. doi.org/10.2307/3888858.

53. Noble, JA. 2011. African Identity in Post-apartheid Public Architecture: White Skin, Black Masks. (Ashgate studies in architecture series). Farnham: Ashgate Publishing Limited.

54. Oosthuizen, GC. 1990. Ecumenical Burial Societies in South Africa: Mutual Caring and Support that Transcends Ecclesiastical and Religious Differences. Missiology: An International Review. 18(4):463–472. doi.org/10.1177/009182969001800406.

55. Oosthuizen, GC. 2000. The African Independent Churches in South Africa: A History of Persecution. Emory International Law Review. 14(2):1089–1120. Available from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/emint14&div=33&id=&page=.

56. Ots, E. 2010. Decoding Theoryspeak: An Illustrated Guide to Architectural Theory. New York: Taylor & Francis.

57. Ouzman, S. 2003. Radiant Landscapes and ancient mindscapes: Archaeology and Architecture in harmonious counterpoint. Nine Landscapes: essays on landscape in south africa. 7–34.

58. Pallasmaa, J. 1994. An Architecture of the Seven Senses. In: Questions of Perception: Phenomenology of Architecture. Tokyo: A+u Publishing. 29–37.

59. Pallasmaa, J. 2007. Space, place, memory and imagination: The temporal dimension of existential space. In: Nordic Architects Write: A Documentary Anthology. London / New York: Routledge. 188–201.

60. Porter, T. 2004. Archispeak: an illustrated guide to architectural terms. London: Taylor and Francis.

61. Poudel, N. 2020. An Introduction to Sefaira Daylighting. Available from: https://bit.ly/2HORoMQ [Accessed 25 October 2020].

62. Pretoria Hindu Seva Samaj Community. 1980. History of the Pretoria Hindu Seva Samaj 1932-1980. Pretoria. Available from: https://repository.up.ac.za/handle/2263/22142 [Accessed 10 March 2020].

63. Prinsloo, H. 2010. Freedom Park – South Africa's flagship heritage precinct. Essays Innovate. (5):1–3.

64. Republic of South Africa. 1999. National Heritage Resources Act, No. 25 of 1999. V. 406. South Africa.

65. Riegl, A. 1903. The modern cult of monuments: Its character and origin. In: Stanley-Price, N., Talley, M., Vaccaro, P. (1996) Historical and philosophical issues in the conservation of cultural heritage. Los Angeles: Getty Conservation. 69–83.

66. Rugg, J. 2000. Defining the place of burial: What makes a cemetery a cemetery? Mortality. 5(3):259–275. doi.org/10.1080/713686011.

67. Rugg, J. 2003. Introduction: Cemeteries. Mortality. 8(2):107–112. doi.org/10.1080/1357627031000087361.

68. Rugg, J. 2016. Body Count. Architectural Review. 240(1436):78–82. Available from: http://search.ebscohost.com.uplib.idm.oclc.org/login.aspx?

69. SAHA. 2019. Dr D.F. Malan unveils the statue of Paul Kruger on Church Square, Pretoria. Available from: https://www.sahistory.org.za/dated-event/dr-df-malan-unveils-statue-paul-kruger-church-square-pretoria-0 [Accessed 19 October 2020].

70. Schmidt, S & Pinheiro, D. 2013. Architective: Building Construction Standards for South Africa. 1st ed. Mondeor, Johannesburg: Architective Publications/Daniel Pinheiro.

71. Semenya, DK. 2013. Burial society versus the church in the black society of South Africa: A pastoral response. Verbum et Ecclesia. 34(1):1–9. doi.org/10.4102/ve.v34i1.698.

72. South African Government. 2020. Disaster Management Act: Regulations to address, prevent and combat the spread of Coronavirus COVID-19: Amendment. V. 657. Republic of South Africa. Available from: https://www.gov.za/sites/default/files/gcis_document/202003/4314825-3cogta.pdf.

73. Statistics South Africa. 2016. Provincial Profile: Gauteng - Community Survey (Report number 03-01-09). Pretoria. Available from: http://cs2016.statssa.gov.za/wp-content/uploads/2018/07/Gauteng.pdf.

74. Steyn, G. 2007. Types and Typologies of African Urbanism. South African Journal of Art History. 22(2):49–65. Available from: http://repository.up.ac.za/upspace/bitstream/2263/10387/1/Steyn_Types(2007).pdf.

75. Swart, J & Proust, A. 2019. Hidden Pretoria. Cape Town: Struik Lifestyle.

76. The Department of Justice and Constitutional Development. 1996. Chapter 2: Bill of Rights. The Department of Justice and Constitutional Development. doi.org/10.1159/000144207.

77. du Toit, J. 2014. Research Design. In: The Routledge Handbook of Planning Research Methods. E.A. Silva, P. Healey, N. Harris, & P. Van den Broeck, Eds. New York: Routledge. 61–73.

78. Transnet Freight Rail. 2018. 150 Years of Rail in South Africa. Available from: http://www.transnetfreightrail-tfr.net/Heritage/150years/150YearsRail.pdf [Accessed 28 April 2020].

79. Villet, C. 2018. South Africa as postcolonial heterotopia: The racialized experience of place and space. Foucault Studies. (24):12–33. doi.org/10.22439/fs.v0i24.5523.

80. Wepener, C. 2013. Water rituals as a source of (Christian) life in an African Independent Church: To be healed and (re)connected. Dutch Reformed Theological Journal. 54(1 & 2):13. doi.org/10.4102/hts.v67i2.930.

81. When Families Grieve Team. 2010. When Families Grieve. New York: Sesame Workshop. Available from: sesameworkshop.org.

82. Wightman, GJ. 2007. Sacred Spaces: Religious Architecture in the Ancient World. A. Sagona, Ed. (Ancient Near Eastern studies: Supplement). Leuven: Peeters Publishers.

83. Wilkins, B. 2011. Afterlife Spaces. Urban Green Files. 16(2).

84. Worpole, K. 2003. Last landscapes: the architecture of the cemetery in the West. 1st ed. London: Reaktion Books.

85. Worpole, K. 2016. Housing The Dead. Architectural Review. 240(1436):4–8.

86. Young, GA. 2011a. The significance of African cultural symbolism in the planning and design of Freedom Park, Tshwane, South Africa. In: Landscape Architecture Education and Practice in Africa. Nairobi: IFLA Symposium.

87. Young, GA. 2011b. Transforming place , transforming perception: Freedom Park - A Landscape of Emancipation. Durban: 2nd LARASA Congress.

88. Young, G & Vosloo, P. 2020. Isivivane, Freedom Park: A critical analysis of the relationship between commemoration, meaning and landscape design in post-apartheid South Africa. Acta Structilia. 27(1):85–118. doi.org/10.18820/24150487/as27i1.4.

89. Zumthor, P. 1999. Thinking Architecture. C. Scheiber, Ed. Basel: Birkhauser.

8.4   LIST OF FIGURES

8.4   LIST OF FIGURES

8.4   LIST OF FIGURES

8.4 LIST OF FIGURES

CHAPTER 8

8.5 ADDENDUM

SB	SBAT REPORT	Achieved
		4,7

SB1 Project

Burial Centre

SB2 Address

Old Pretoria Station Forecourt, Scheiding Street, Pretoria, South Africa

SB3 SBAT Graph
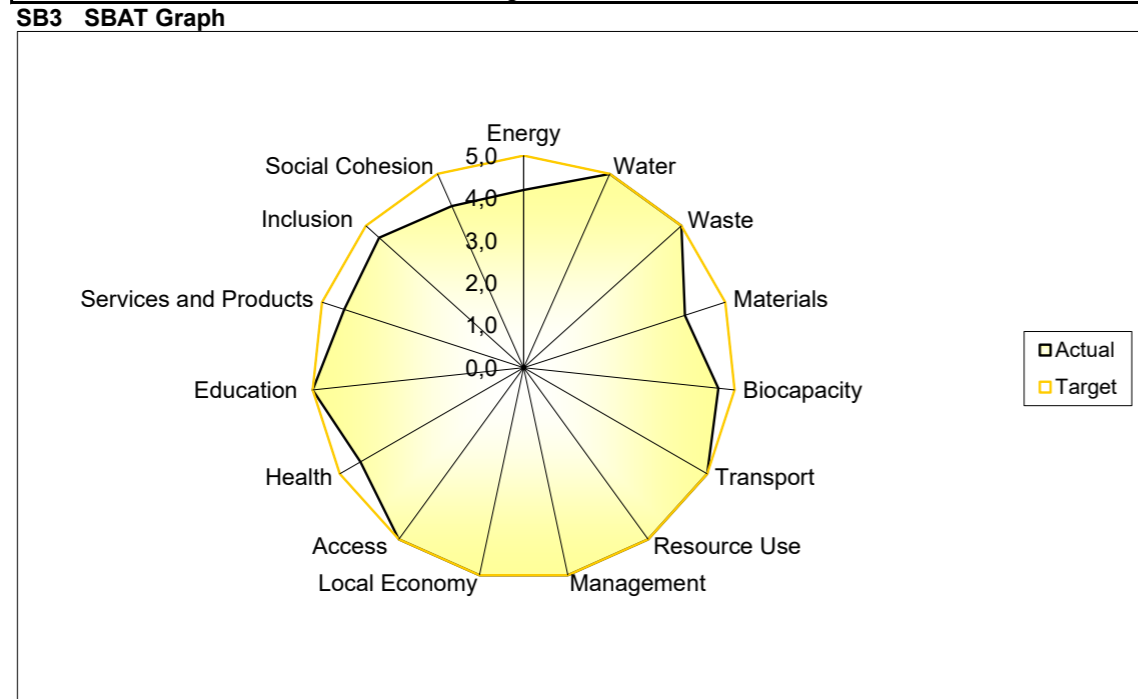
SB4	Environmental, Social and Economic Performance	Score
Environmental		4,6
Economic		5,0
Social		4,5
SBAT Rating		4,7

SB5	EF and HDI Factors	Score
EF Factor		4,6
HDI Factor		4,8

SB6	Targets	Percentage
Environmental		91
Economic		100
Social		91

SB7 Self Assessment: Information supplied and and confirmed by

Name Liam Gabriel Ullrich		Date	2020/10/13
Signa L. G. U.			

BI	Building Information	Target	Achieved
		5,0	4,7

BI 1	Building Targets	Target	Achieved
EN	Energy	5,0	4,2
WA	Water	5,0	5,0
WE	Waste	5,0	5,0
MA	Materials	5,0	4,0
BI	Biocapacity	5,0	4,6
TR	Transport	5,0	5,0
LE	Local Economy	5,0	5,0
MN	Management	5,0	5,0
RE	Resources	5,0	5,0
SP	Services and Products	5,0	5,0
AC	Access	5,0	4,4
HE	Health	5,0	5,0
ED	Education	5,0	4,4
IN	Inclusion	5,0	4,6
SC	Social Cohesion	5,0	4,2

BI 2	Priority Key (Not Performance Key)	
VH	Very High	5,0
HI	High	4,0
ME	Medium	3,0
LO	Low	2,0
VL	Very Low	1,0
NA	None / Not Applicable	0,0

BI 3 Project Name

Burial Centre

BI 4 Address

Old Pretoria Station Forecourt, Scheiding Street, Pretoria, South Africa

BI 5	Site Area	6600 m2
BI 6	Gross Floor Area (GFA)	3000 m2
BI 7	Gross Internal Area (GIA)	1350 m2
BI 8	Number of Useable Rooms	20
BI 9	Number of Bedrooms	0

BI 10 Architect

Name	Liam Gabriel Ullrich
Co	University of Pretoria

SUSTAINABLE BUILDING ASSESSMENT TOOL

Fig. 8.32: SBAT Analysis (Ullrich 2020)

Origin	Religious or cultural practice	Requirement	Death Process								Preference of non-ground burial
			1	2	3	4	5	6	7	8	
Eastern	Hindu	Activity	Wake / Funeral at family home	Mukhagni — Cremation ceremony	Wash	Reception	Shraddha				Cremation necessary for soul to leave the body – allowing it to transcend towards mukti
		Space	Household	Crematorium	Washing area	Household	Bank of water body				
	Islamic	Activity	Collective bathing of body	Enshrouding	Body transported directly to funeral space / mosque	Funeral held outside a mosque	Body and all attendees must face Mecca	After prayers, body to burial site in silent procession	Burial		The Quran prohibits cremation
		Space	Household	Household	Gathering space	Gathering space	Gathering space	Burial Site	Burial Site		
European	Jewish	Activity	Washing (rechitzah), ritual purification (taharah), and dressing (halbashah)	Gathering of mourners	Funeral Service	Funeral procession to cemetery	Burial Procession	Nichum Aveilim	Shiva	Stone-Setting	Torah prohibits leaving a body or body part unburied
		Space	Mortuary	Synagogue or Memorial Chapel	Synagogue or Memorial Chapel	Burial Site	Burial Site	Burial Site	Shiva Household	Burial Site	
	Catholic	Activity	Embalming — Occurs before vigil	Vigil	Funeral	Rite of Committal	Reception				Burial is favoured as the pious custom due to the resurrection of the body. Cremation is recently accepted (2016)
		Space	Mortuary	Chapel	Church or chapel	Columbarium (after cremation)	Reception Area				
	Anglican Church of England	Activity	Embalming	Viewing service	Funeral	Burial or cremation	Reception				Both burial and cremation are accepted according to the Anglican faith
		Space	Mortuary	Chapel or Church	Traditionally a church or burial site	Cemetery or Gardens of Rest	Space accommodated by church or family home				
	Methodist	Activity	Embalming	Viewing service	Funeral	Burial or cremation	Post-funeral reception				Both burial and cremation are accepted according to the Methodist faith
		Space	Chapel or Church	Traditionally at church, chapel, or burial site	Crematorium or grave site	Space accommodated by church or family home					
	Presbyterian (Reformed)	Activity	Embalming	Viewing service	Funeral	Interment					Burial is preferred. Greater acceptance of cremation and interment in columbarium with the NG Kerk in Pretoria
		Space	Mortuary	Household or church	Church	Grave site or columbarium					
	African Independent Church	Activity	African Traditional Religious beliefs in the Western expressions of Christianity								Burial is preferred
		Space	Household	Household	Burial Site	Burial Site	Cleansing	Funeral Meal			
Southern African	Traditional African Religion	Activity	Family visitations	Day before funeral	Night vigil / mxistato / umlindelo	Body moved to place of burial	Burial (Umngcwabo)	Cleansing	Funeral meal	Home-bringing	Burial is preferred
		Space	Household	Household	Household	Burial Site	Burial Site	Washing Area	Communal space / Household	Burial Site	

PRETORIA'S BURIAL RITUALS

Fig. 8.33: Table of Pretoria's predominant burial rituals (Ullrich 2020)

Burial Sites		Voortrekker Monument Garden of Remembrance	Rebecca Street Cemetery	Old Hindu Crematorium	Pretoria West Crematorium	Ooskerk Columbarium	Heroes Acre Church Street Cemetery
Location		Groenkloof 358-Jr, Pretoria	322 Rebecca St, Philip Nel Park, Pretoria -25.736908, 28.149938	Within Rebecca Street Cemetery 322 Rebecca St, Philip Nel Park, Pretoria -25.736364, 28.155861	6930 Nic Van Vuuren Place, Philip Nel Park, Pretoria	467 Kirkness St, Clydesdale, Pretoria	53 WF Nkomo St, Asiatic Bazaar, Pretoria
Type		Columbarium & Memorials	Cemetery	Crematorium	Crematorium & Columbarium	Columbarium	Cemetery
Constructed		2009	1904	1943		Ooskerk constructed in 1927	1863
Designer		Maree Els Architects, Johan Els as project architect		Built by Shree Pretoria Hindu Seva Samaj		Maarten Venter Landscape Architect	
Origin		Serves as an apt response to Moerdijks injunction of 1918 - original idea of Afrikaners's remains being kept in a columbarium edifice.	Second official cemetery in the city of Pretoria	Council allowed for the erection of a Hindu crematorium. Hindu community built the crematorium using private funds. The City funded public cemeteries. Erected by the Pretoria Hindu Social Service League. The site was acquired in 1935, and construction completed in 1943.		-	The oldest registered cemetery within Pretoria. Contains the graves of renowned local individuals and political figureheads who are buried predominantly in the centre of the cemetery, known as The Heroes Acre. British war graves occupy a large portion of the cemetery, and are predominantly laid around the perimeter. Listed as a Heritage Site. Resting site for many Afrikaans
Status		Active	Inactive	Inactive	Active	Active	Inactive
Initial Analysis (Adapted from Rugg 2000)	Physical Characteristics	Columbarium walls curved around central circular water feature. Cube niches with inscribed granite plaques. Varying heights and openings of walls. Exposed granite stone walls. Steel cups, for holding flowers, mounted onto granite plaque. Storage for water vessels - water collected from central pools. Canopy of acacia trees. Opening in canopy to reveal Voortrekker Monument as background. Pathways to various memorial sites to the West of the Voortrekker Monument. Initially part of the Afrikaner Nationalist project. As its website states, the memorial site is secluded and comforts the bereaved by being a safe haven.	Contains 48 Commonwealth war graves of individuals from the First World War, and 134 graves from the Second World War. Contains sections for particular cultural and religious groups. Christian, Jewish, Chinese, and Islamic burial grounds. Cartesian grid-plan layout. Wide vehicular roads. Dilapidated state. Avenue of trees. Minimal seating areas (?). East-facing graves, except for Islamic section, which are perpendicular to the direction of the Qibla (i.e. Mecca).	Dilapidated building. Homeless individuals using the covered prayer space as shelter. Furnace allows for pyre to be moved into space. Large entrance doors. Sheltered space adjacent to furnace for pyre. Sheltered space for mourners to be seated. Archway entrance to crematorium grounds. Small sheltered space at far eastern-end of site - perhaps a more private mourning space for the bereaved. Perimeter wall around crematorium for separation from the rest of the cemetery space and for privacy. Thick perimeter wall features embedded planting cavities - softens the top of the boundary.	Dilapidated state of columbarium walls. Empty niches in wall due to vandalism - now security guards monitor gate access and patrol site throughout the week.	Extends the axial geometries of the church architecture. Post-modern styling. Landscaping contribution. Seating area within alcoves, benches. Seating area with Mausoleum-like structure - familiar visual characteristic of cemetery garden.	Central axis in-line with the Old Jerusalem Street. Tall trees on either side of central path. Christian cemetery, and therefore the graves are oriented to face eastwards. Single road running from the Eastern entrance on Es'kia Mphahlele Drive to the old ground keeper's house (???), now for security personnel. Some graves of significance are protected with a small fence around them. Tombstones have been clearly vandalised, and therefore the city has erected two fences around the site to restrict all pedestrian access. No seating or communal gathering space. Large stone crosses as tombstones a prominent feature of the cemetery.
	Accessibility & Circulation	Paid-access to fenced-off nature reserve. Vehicular access to parking. One walks along road to columbarium, memorials, and chapel. Paved route from Voortrekker Monument, chapel, and columbarium.	Single access point from Rebecca Street. Gated entrance and fence around perimeter of cemetery. Currently being utilised as a through-route from Rebecca Street to Morkel Street East or Diplomandi Crescent. Wide tarred primary route for vehicular access. Secondary paved routes for pedestrian access. Little restriction for tombstone size - monumental memorials and grave structures. Fenced-off Jewish cemetery - limited accessibility. Wide axial routes through subsections. Difficult to access certain graves due to overcrowding. Cartesian grid-like grave layout eases grave locating.	Single access point from Technikon Road within Rebecca Street Cemetery. Enter underneath archway. Archway has lettering with the name of the crematorium. One walks past the furnace to reach the covered pavillion.	Single access vehicular entrance point for visitors and the bereaved. Securitised gate and guard. Back entrance gate on Rebecca Street for funeral undertakers, road just outside furnace room (?). Front gate open for funeral processions.	Forms a focus and protective barrier to Kirkness Street. Access used to be through axial entrance on Kirkness Street. One used to walk through the gate opening, and first through the columbarium before entering into the church. Pedestrian access fenced-off with electric fence. Access only through security controlled vehicular entrance - one walks through parking area before accessing church.	Perimeter with double security fencing as a response to vandalism and tombstone defacing. Pedestrian access is not allowed, and security personnel monitor the site.
	Accommodation of Ritual	Paved linear route from chapel to columbarium. Cremation occurs off-site. Independent design of columbarium, with only linear paved route primarily for vehicular access.	Covered Islamic prayer space. Water source for Jewish section. Wide tarred roads for hearse access to various sections of cemetery - priority given to vehicular access. Various sections of cemetery accommodating various cultures and faiths - identifiable with religious symbols and motif on tombstones. Linear Cartesian grid-like layout of graves allows for linear routes and processions to grave site.	Open-pyre method of cremation. Spaces adjacent to furnace for the pyre and the bereaved to be seated. Long covered space as gathering space.	Distressful for bereaved to see vandalised columbarium wall.	Axial procession from church nave to columbarium. Recessed landscape allows for increased privacy.	Central axis in-line with the Old Jerusalem Street, which reached the Old Church at the Daspoort Sanitation Plant (SOURCE 3RD YEAR). Processional route from Old Church to cemetery. Old entrance on Church Street and onto central axial path.
	Celebrating Individuality	Granite niches with individual's name, birth date, date of passing, and bible verse. Space for partner. Family portions and walls. Family name indicated on side.	Sections of cemetery reserved for religious and cultural groups. Religious symbols indicate the religious or cultural association. No grave size restrictions - monumental gravestones evident, especially within catholic area. The deceased's name, birth date, day of passing, and a quote or religious scripture is inscribed on the gravestone plaque. Individuality is inscribed and represented with the grave stone.	Ashes are collected and spread at a water body or a place of importance for the family or deceased. The individual is celebrated through the act of ritual - of the community or family and friends building the pyre, making the food, or attending the ceremony.	Niches with inscribed granite gravestone. Stone marks the individual, their birth date, day of passing, and a quote or bible verse. Due to recent vandalism, some gravestones have been removed and the metal box of ashes has been removed. The columbarium walls to the North of the crematorium have been better maintained and protected from vandalism. The first burial sites on the property are located along the northern boundary of the property. Urns have been buried with a gravestone marker as commemoration.	Urns containing cremated remains placed within wall niches. Wall niche has enough space for two urns. Inscription of the deceased's name and the optional inscription of a Bible verse. Niche can accommodate two urns - allowing for a partner or parent. Inscriptions have a common format and use the same granite - a collective and individual identity.	Military personnel have common grave stone markers, and are laid in rows adjacent to each other. No restrictions for grave stone size, and therefore monumental stones are featured for prominent statesmen and public figures.
Drawings	Experiential Vignettes + Highlighted Photographs	Filtered light with central water feature Seating added post-construction + water vessels Materiality - stone work, anchoring	Damage of gravestones Avenue of trees in old section - define old route Chapel for ceremony			Birds-eye view of layout Highlighted Mausoleum in garden with tower Axial perspective of entering	
	Parti Diagrams	Entrance gate & fence Plan diagram - central water feature Compartmentalising wall sections with family name Components of niche enclosure Canopy of trees Processional route from chapel Connecting priority to road Vertical monument as overarching element - framed above trees	Entrance gate & fence Road priority with cartesian layout of pathways Patchwork of gravestone types - typical style of gravestone for group Defined Jewish area and Islamic area	Entrance archway & wall Site circulation & layout Movement of the deceased through site Boundary of site Ritual as memory - rich ritual process	Entrance gate & fence Site circulation + movement of visitors, bereaved, and deceased Hunkered down columbarium area + tree canopy + Chimney always visible above canopy Explosion of wall and niches	Old pedestrian gate & vehicular gate Intended movement & current movement Hunkered down columbarium wall + tree canopy + visible bell tower above canopy Explosion of wall niche Radial axiality into wall alcoves and integrated seating Diagram for burial route and accessibility Comparison of mausoleum to mausoleum-like structure in garden	

INITIAL ANALYSIS OF CASE-STUDY SITES

Fig. 8.34: Table of data input for case-study site visits (Ullrich 2020)

Burial Method	Conventional Burial	Traditional African Burial	Immurement	Cremation	Resomation	Promession	Recomposition	Sea Burial	Sky Burial
Practiced in Pretoria	Yes	Yes	Yes	Yes	No	No	No	No	No
Legally Accepted in Pretoria	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No
Disposal Location	Cemetery; church yard	Cemetery; private property; farm land	Mausoleum; tomb	Columbarium; urn; ashes spread	Columbarium; urn; spread as fertiliser	Columbarium; urn; spread as fertiliser	Columbarium; urn; spread as fertiliser	Ocean	Field or mountaintop
Preparation	Embalming if viewing casket	Body or coffin is wrapped in an animal's hide (ATR body, AIC coffin)	Embalming if viewing casket	Embalming if viewing casket; pacemakers are removed (as they can explode in the heat), as well as prostheses and silicone implants; the body is placed within a flammable casket or container, usually made from plywood, pine, or cardboard	Embalming if viewing casket	Embalming if viewing casket	Pacemakers, prostheses, and silicone implants are removed. Body placed within a biodegradable casket.	Various	Rogyapas, or 'body-breakers', are responsible for disassembling the corpse for the vultures.
Disposal Process	Casket is buried under two meters of soil. Decomposition is slow - more than a century. Two main reasons: Casket buried below active soil layer, and a very small amount of organisms are present to promote decomposition. The casket is made from materials which reduce the rate of decomposition. Harmful chemicals used in the embalming process and the manufacturing of the casket can also leach into the soil and surrounding water.	Men carry the body to the grave, and after the grave has been filled, thorns and stones are placed on top Buried facing home Undergo natural decomposition Process is prolonged if body is within a casket and buried two meters below the ground level with backfill soil	Corpse is placed within a hermetically sealed coffin The body decomposes in the presence of oxygen The decomposition generates heat and moisture, which can increase the internal pressure, and sometimes cause the coffin to break open (Wakely 2008)	Two-step taphonomic process Combustion, vaporisation, and oxidation of corpses to basic chemical compounds Corpse first slid into cremation casket and slid into cremation chamber Propane or natural gas used as fuel for incineration Bone fragments are reduced to ashes by rotary blade processor Chamber referred to as a 'retort' Family can begin cremation process by pressing a button	Corpse is submerged into liquid nitrogen at a low temperature (-196C). The process is called freeze-drying, where the corpse is rapidly frozen, followed by high vacuum where ice is removed by sublimation. The corpse becomes very brittle, and the chamber is mechanically vibrated, causing the corpse to shatter into a granulated powder.	Utilises water and alkali compounds. Breaks down the body in a process called hydrolysis. Occurs within a resomator unit.	The process accelerates the natural decomposition of human remains to within a period of two months under the correct conditions (Kalbasi et al. 2005: 182). The soil composition is maintained at a high carbon to low nitrogen ratio, and a low to moderate moisture-level content (2005: 181). With the presence of the human body in the soil, the accelerated decomposition occurs with the thermophilic microorganisms heating up the soil, digesting the corpse, and removing most of any present pathogens (2005: 181). The body is placed in a vessel or grave surrounded by wood chips and straw, in order support the high carbon to low nitrogen environment.	Disposal of human remains into an ocean, usually from a ship or boat vessel. Regularly performed by navies. The ceremony may include the burial of an urn, scattering cremated remains, burial sewn in sailcloth, or dropping a casket into the ocean.	Process of excarnation. Flesh and organs are removed from the body during the burial process. In sky burials, the corpse is placed on a mountaintop, sometimes on a stone platform structure called a Dakhmas. The body decomposes due to exposure to the natural atmosphere and birds of prey (Batt 2001).
Product	Natural decomposition process due to exposure to organic matter. Decomposition of an embalmed body within a coffin can take decades. This process is dependent on the soil conditions, the depth of the casket, the type of wood used, and the chemicals used in the embalming process.	Natural decomposition process due to exposure to organic matter. An unembalmed corpse, with no coffin, requires about eight to twelve years to decompose to a skeleton. In dry conditions, the bone can last for centuries.	Natural decomposition process due to exposure to oxygen.	Homogeneous fine ash	Proteins are broken down into amino acids and peptides. Fats are converted to fatty acids and glycerol. Product is a brownish liquid of amino acids, peptides, fatty acids, sugar, and salts. The consistency is oily with suspended pieces of skeleton. The remains can be stored within an urn or used as fertiliser. It is a three-hour process. (Davies & Rimble 2012).	Granulated, organic, odorless material. Can be mixed with water to produce nutrient-rich water.	After the two-month decomposition period, the product consists of 'ash', or bone fragments, and a nutrient-rich soil.	Depending on the form and site of disposal, the rate of decomposition varies. Mainly the depth, temperature, and abundance of sea life impact the rate of natural decomposition.	When the skeleton remains, it is crushed and mixed with barley flour. This finer product is fed to other birds of prey, such as hawks and crows (Batt 2001).
Relative Sustainability	Large tracts of land required - not ideal for dense urban cities. Cemeteries are inactive or there is a long waiting list. Embalming process and casket contain toxic materials which can leach into soil and water systems.	Large tracts of land required - not ideal for dense urban cities. Less land required than conventional, casket burial process. Cemeteries are inactive or there is a long waiting list.	Require large tracts of land like conventional burial. Mausoleums are usually freestanding above-ground structures built to house the tomb or coffin.	More sustainable than coffin burial Natural gas is used to reach 900C for 45 to 90 minutes Greenhouse gases emitted Chemicals present in the body, such as mercury from tooth fillings, dioxins, and furans are released	Product can be used as a fertiliser, and no unsustainable by-products are emitted from the process. It is not a financially appropriate solution to the South African context, as a single resomator costs around R6 500 000 (Davies & Rumble 2012).	No nutrients are lost during the process	The process allows for grave recycling after the two-month period. No unsustainable by-products are emitted from the process. Soil condition requires continuous maintenance.	Relatively sustainable if no harmful chemical additives are applied for embalming or for the construction of a casket. Not legal within South African waters. Fuel price and renting a vessel may result in the process being financially inappropriate. Difficult for in-land communities to utilise the process, and requires migration.	Sustainable practice and provides source of food for local fauna. Not legal within South Africa.

BURIAL METHOD ANALYSIS

Fig. 8.35: Table of burial methods and their descriptive process (Ullrich 2020)
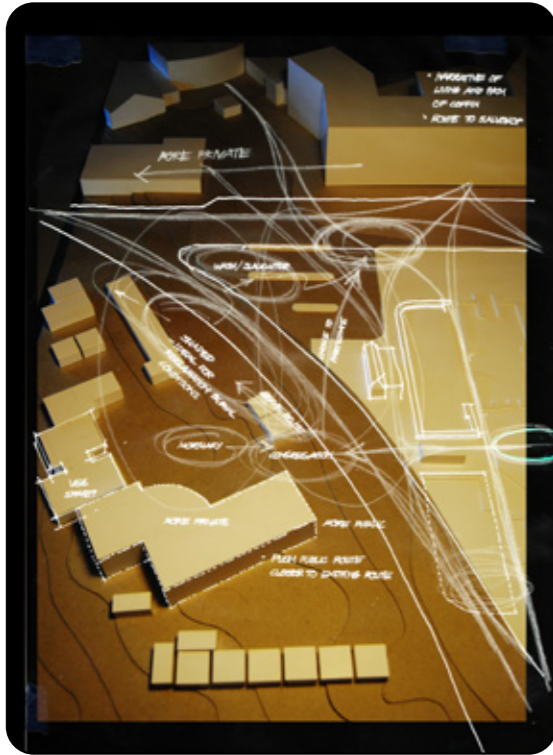
Fig. 8.36: Site layout development (Ullrich 2020)
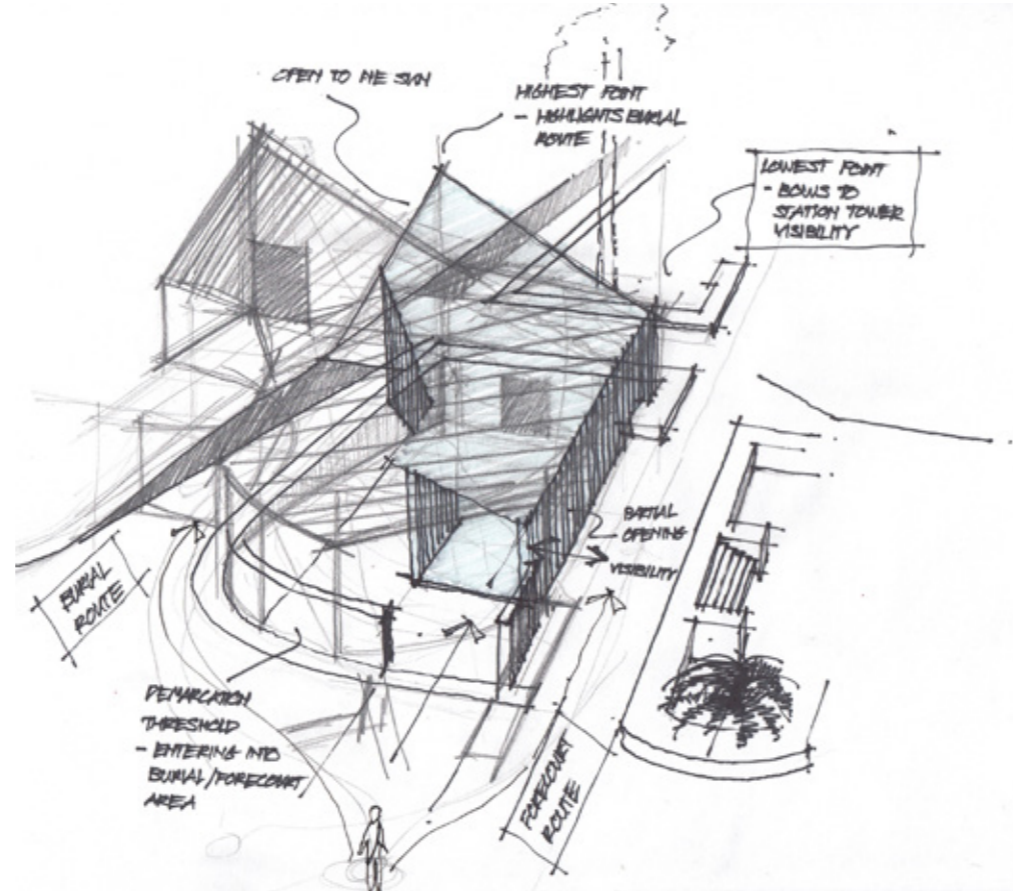
Fig. 8.37: Ceremony Area process (Ullrich 2020)
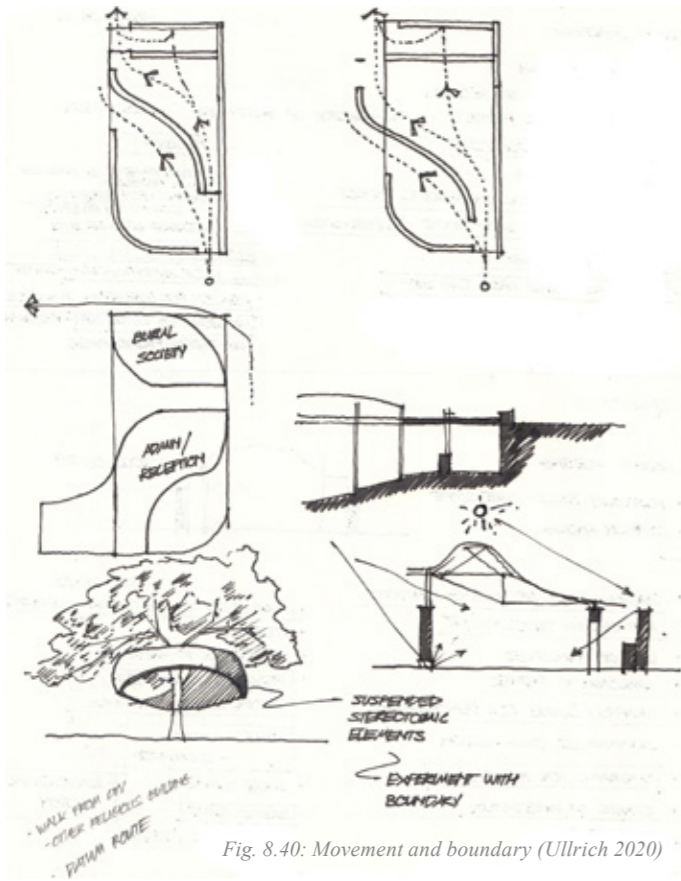
Fig. 8.40: Movement and boundary (Ullrich 2020)
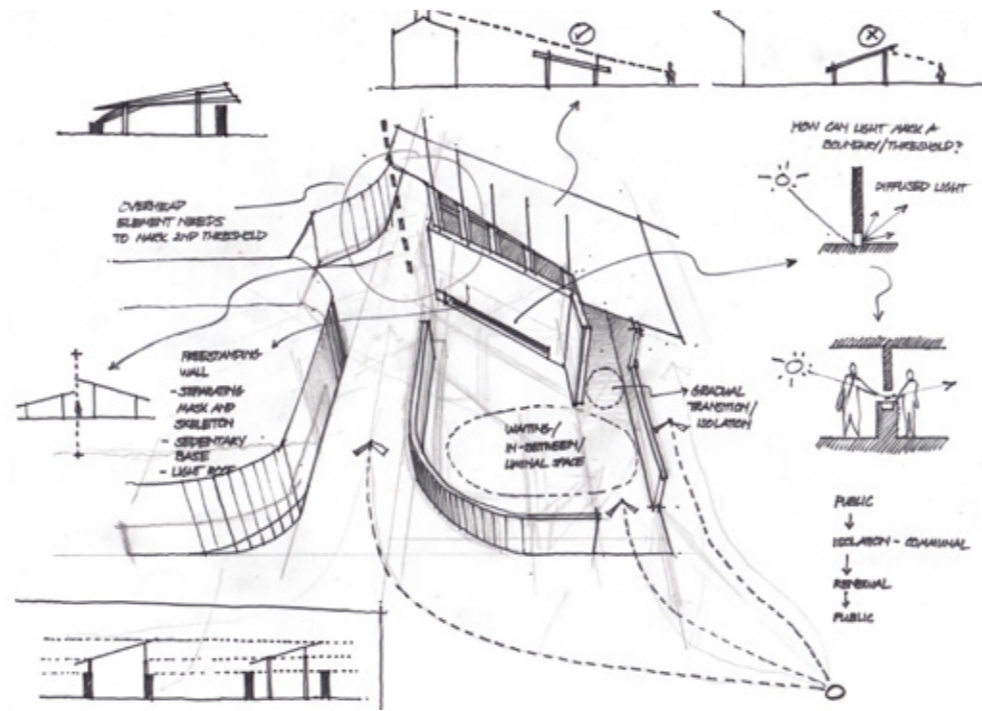
Fig. 8.39: Ceremony Area movement (Ullrich 2020)
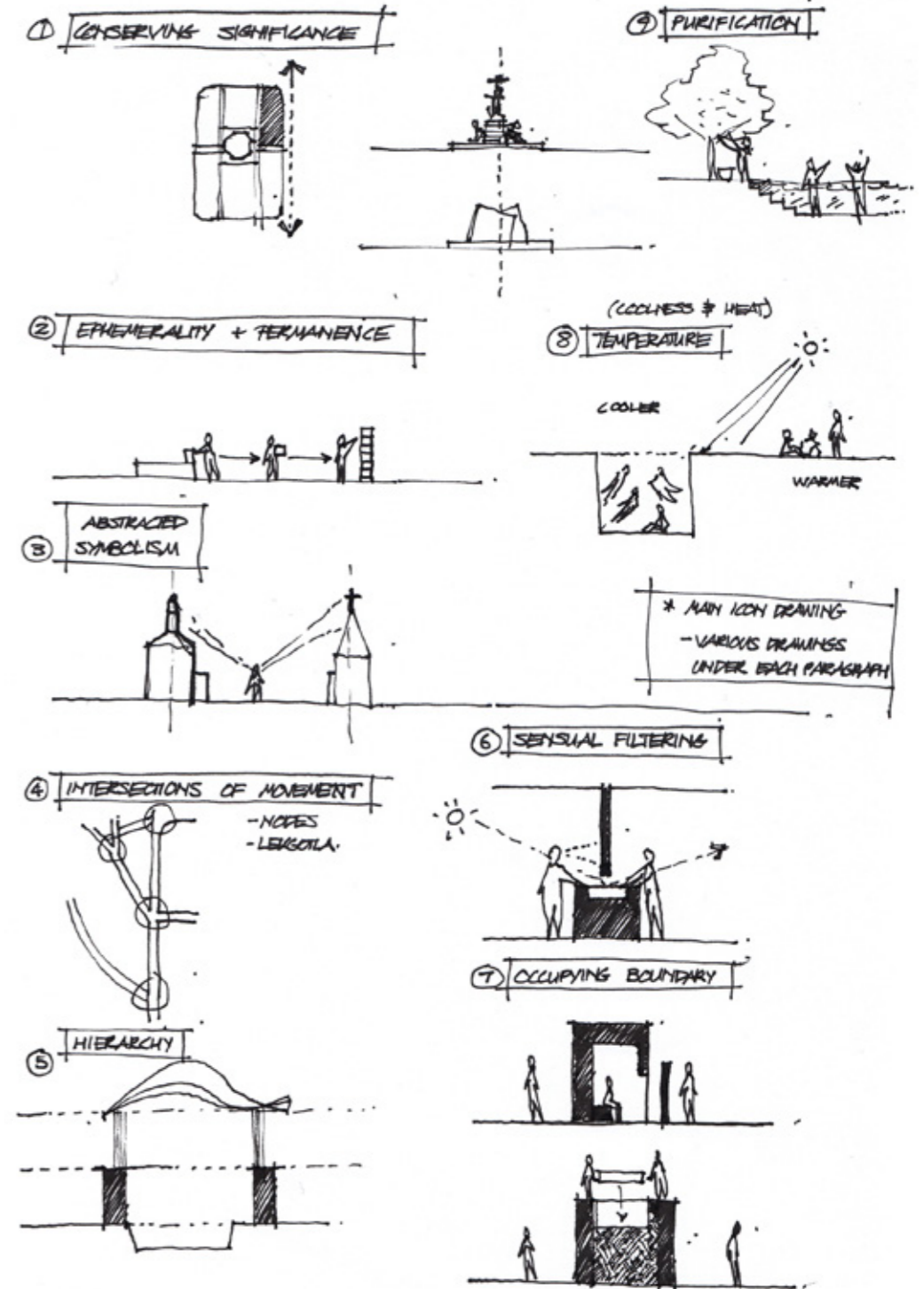
Fig. 8.38: Architectural principles development (Ullrich 2020)

PROCESS DRAWINGS

Fig. 8.42: Layout of northern area (Ullrich 2020)

Fig. 8.41: Service Area development (Ullrich 2020)
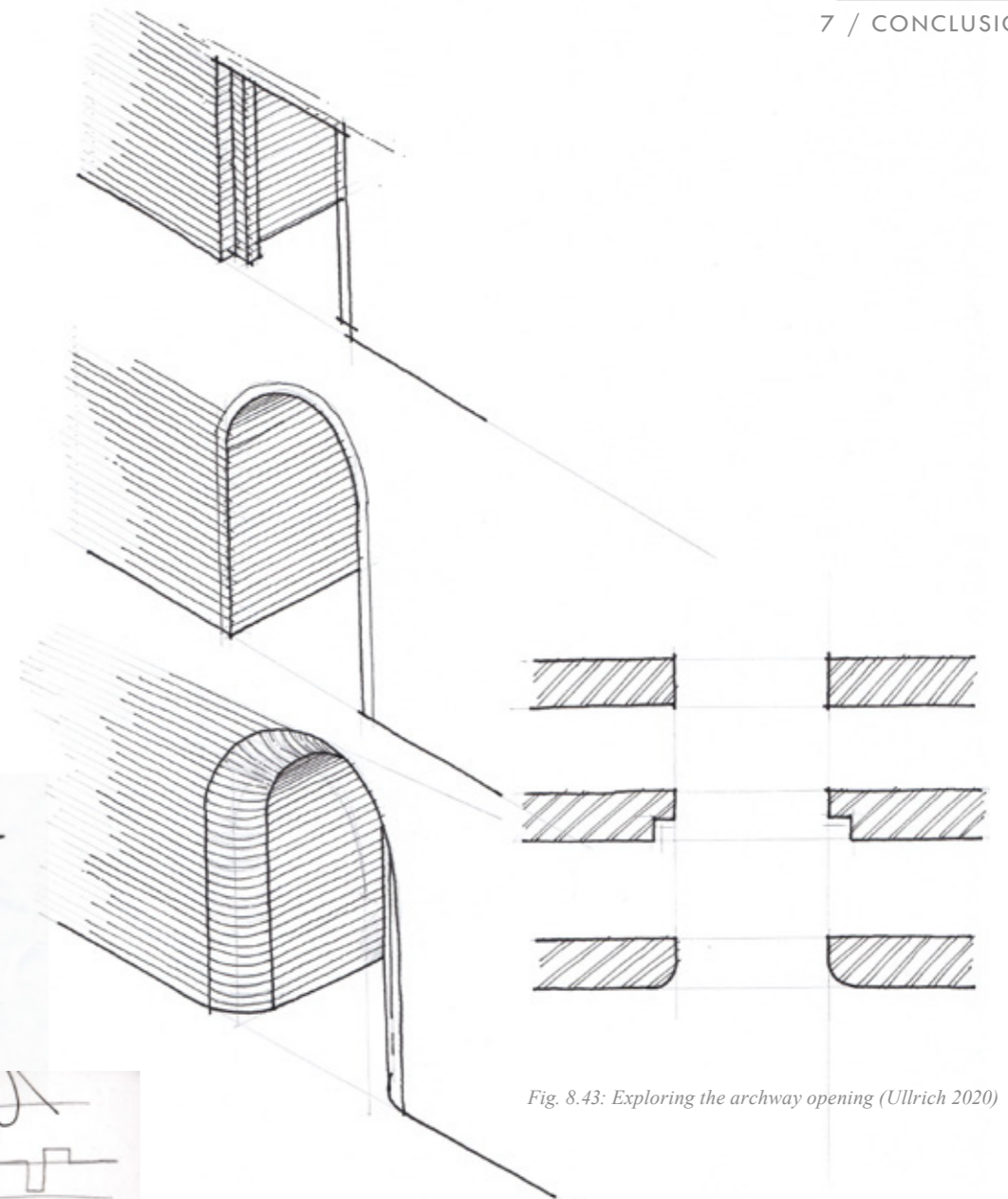
Fig. 8.43: Exploring the archway opening (Ullrich 2020)
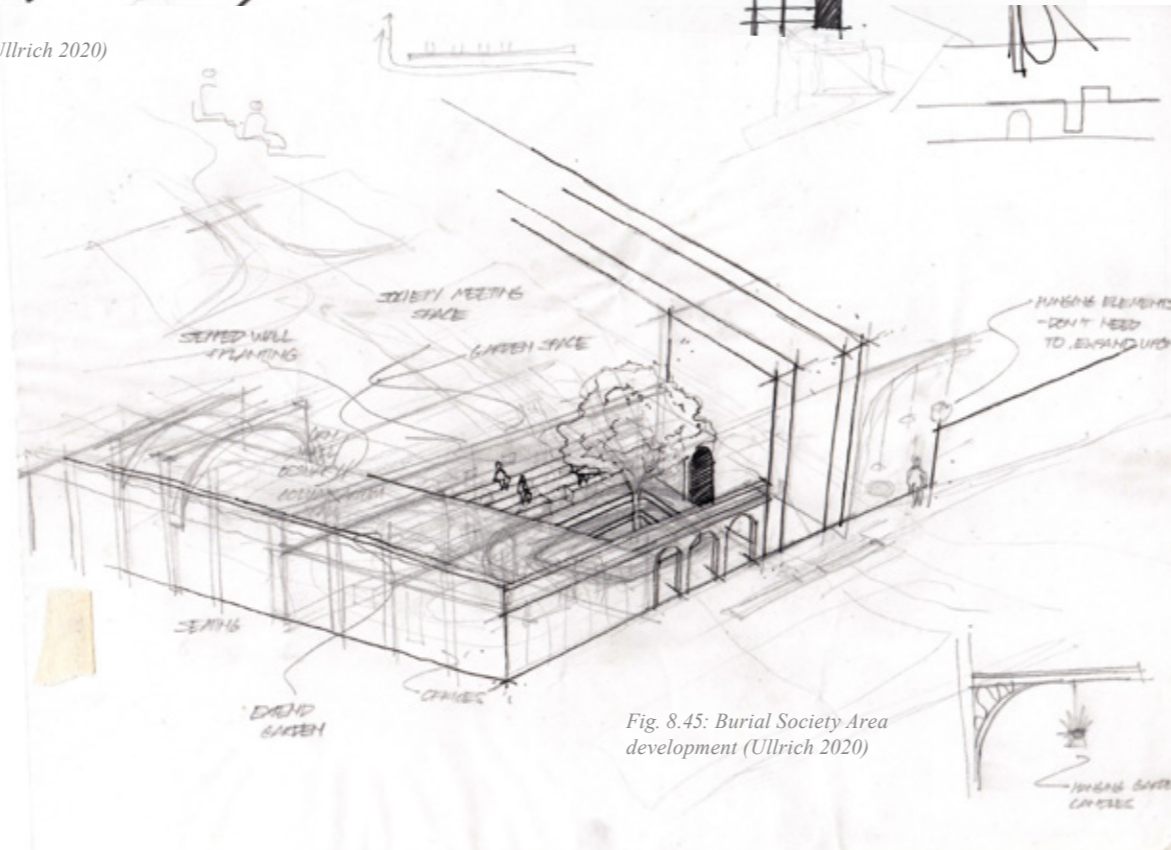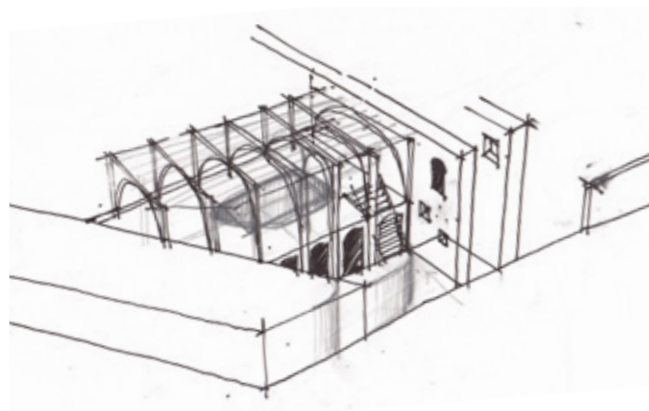
Fig. 8.45: Burial Society Area development (Ullrich 2020)
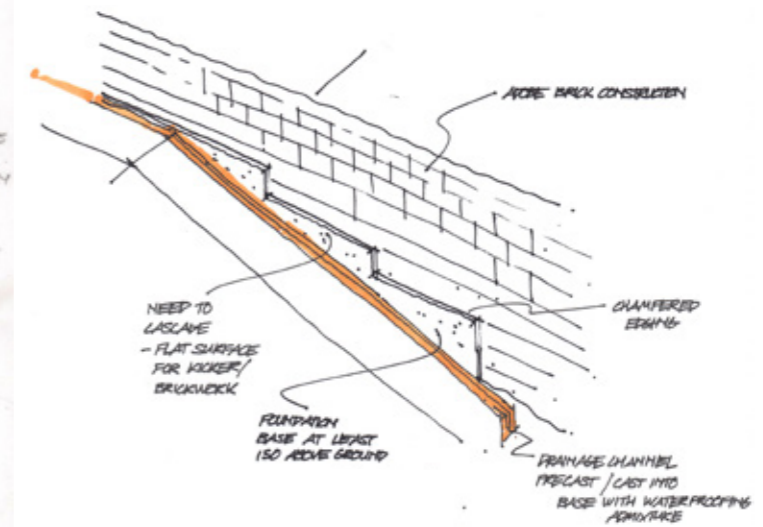
Fig. 8.44: Stepping the concrete plinth for the adobe brick wall (Ullrich 2020)

PROCESS DRAWINGS
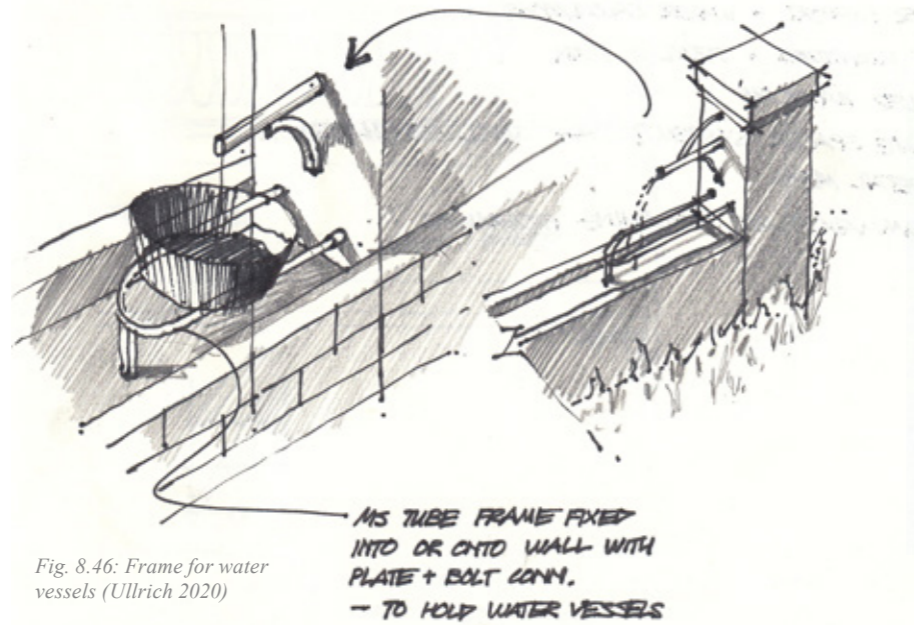
Fig. 8.46: Frame for water vessels (Ullrich 2020)
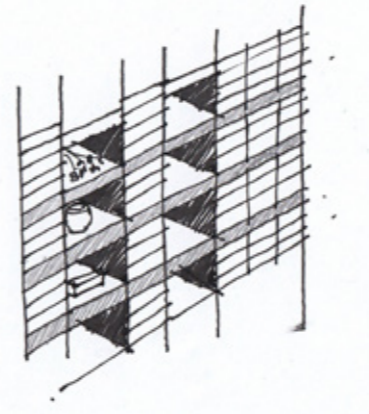
Fig. 8.47: Niches within the Burial Wall (Ullrich 2020)
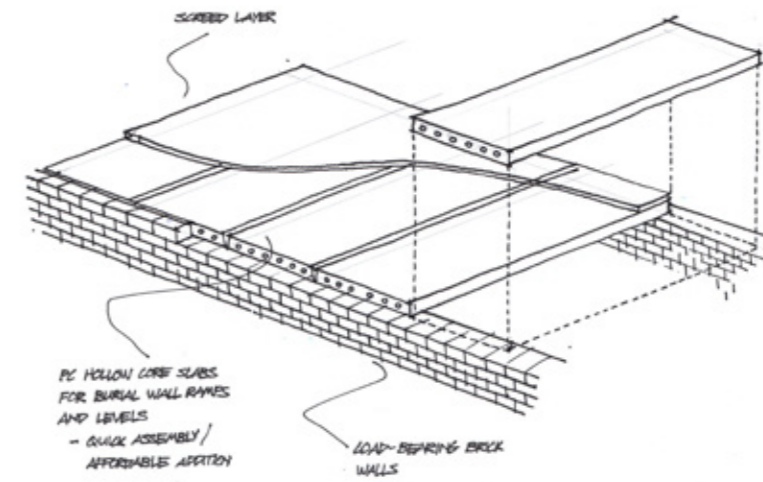
Fig. 8.48: Ramp development (Ullrich 2020)

Fig. 8.51: Base connection process (Ullrich 2020)
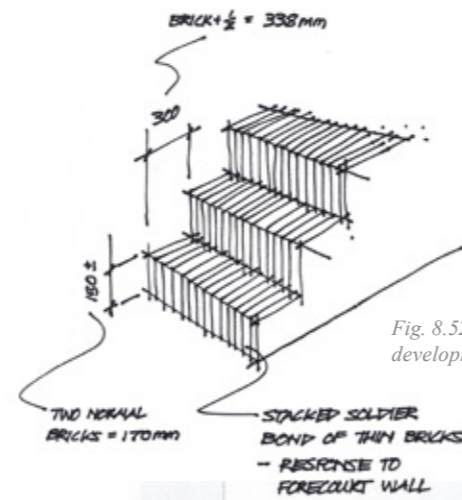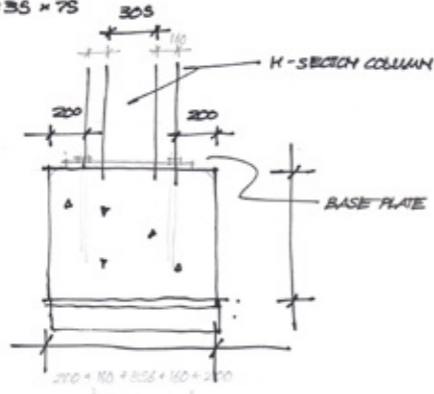
Fig. 8.52: Stairway development (Ullrich 2020)
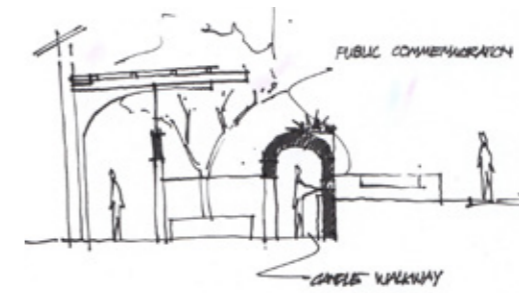
Fig. 8.49: Candle Walkway development (Ullrich 2020)
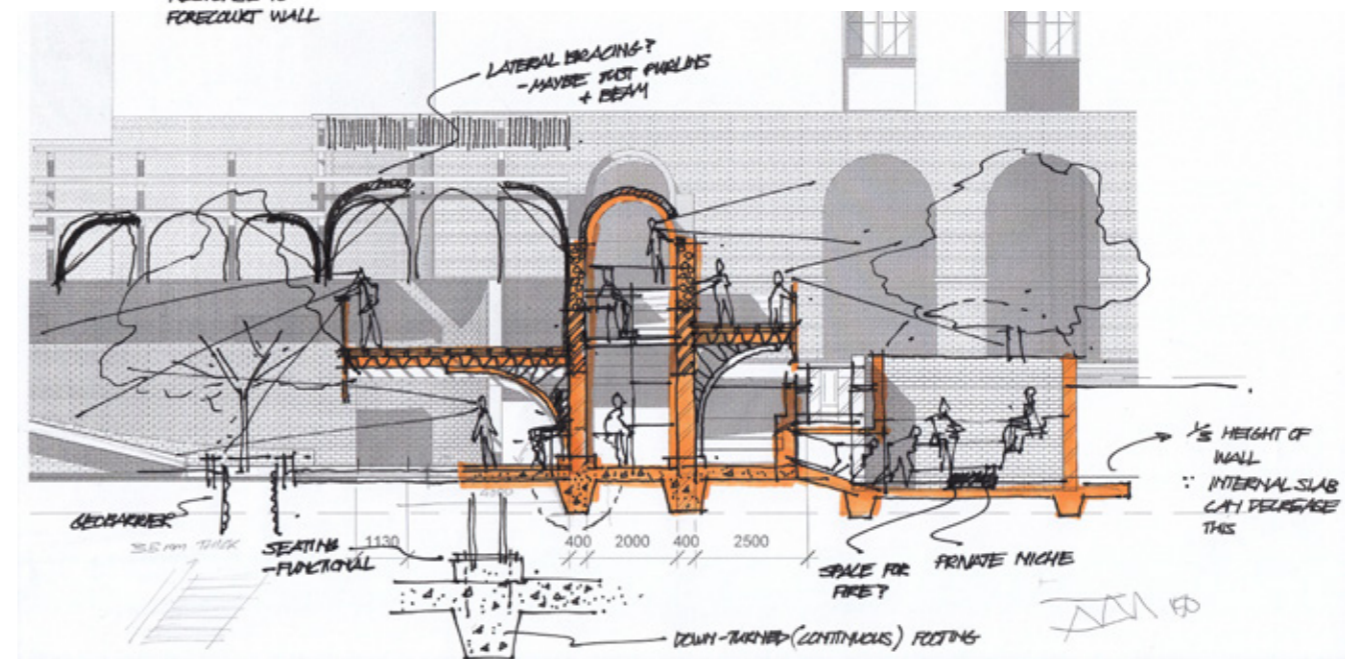
Fig. 8.50: Developing Section A-A (Ullrich 2020)
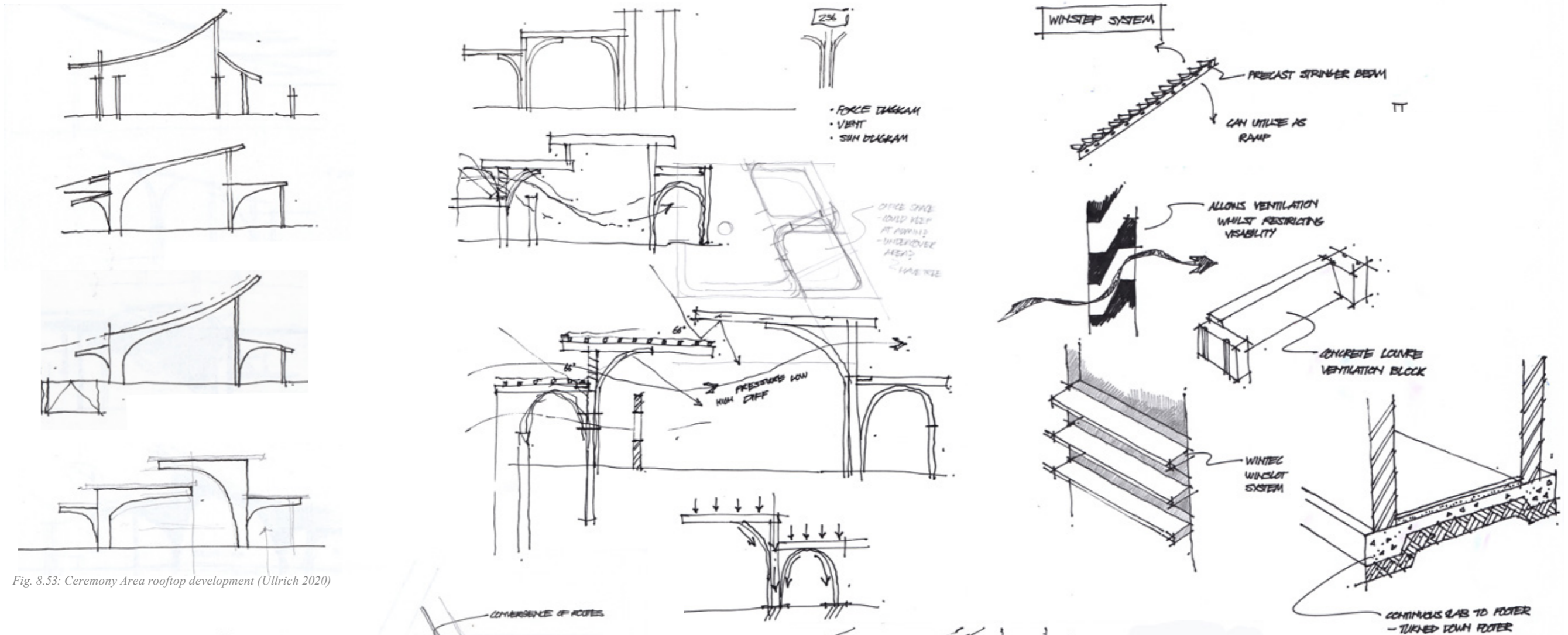
PROCESS DRAWINGS

Fig. 8.53: Ceremony Area rooftop development (Ullrich 2020)

Fig. 8.54: Concrete components (Ullrich 2020)
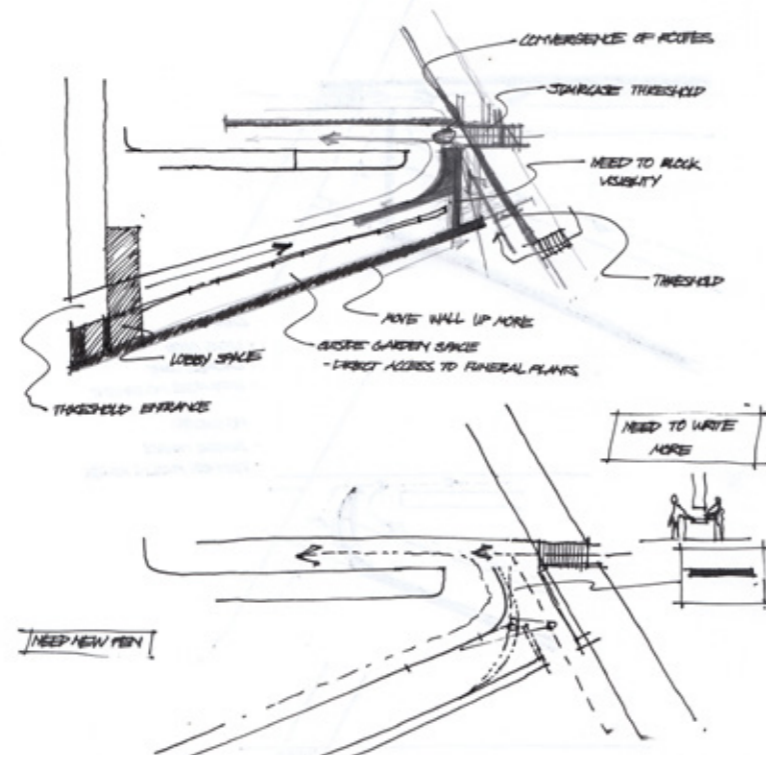
Fig. 8.56: Ceremony Area procession development (Ullrich 2020)
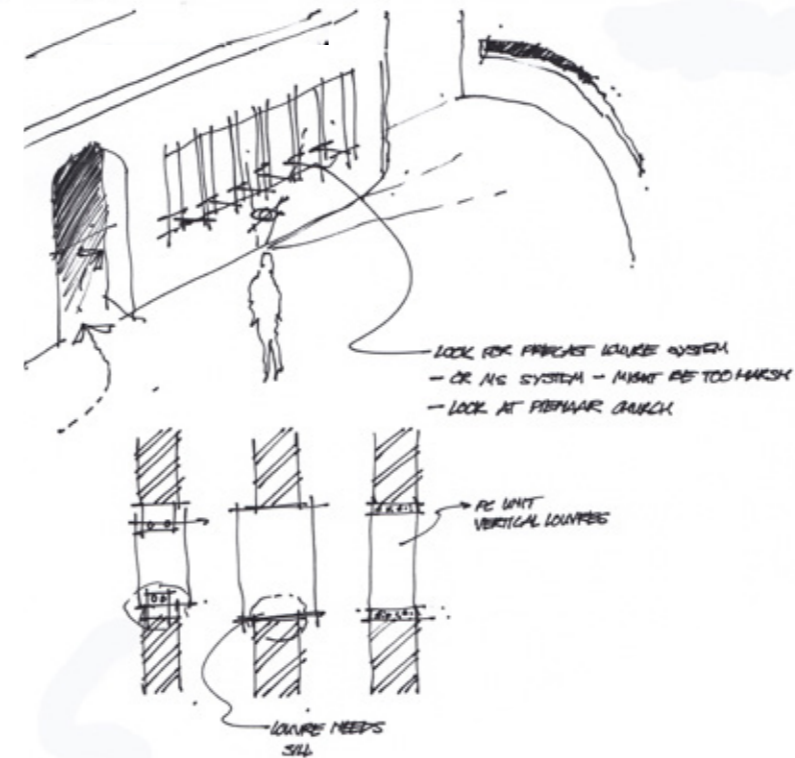
Fig. 8.55: Vertical louvres inside Ceremony Area (Ullrich 2020)

PROCESS DRAWINGS
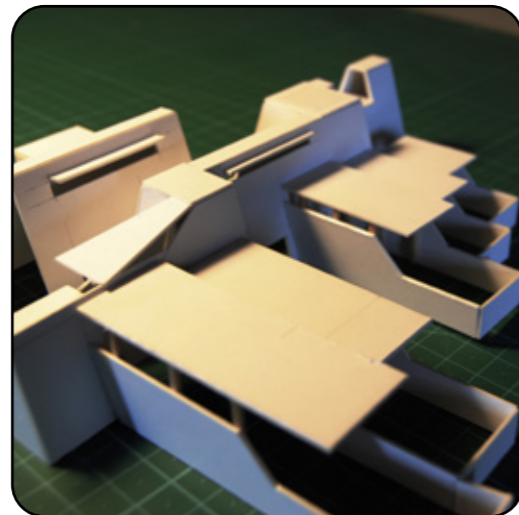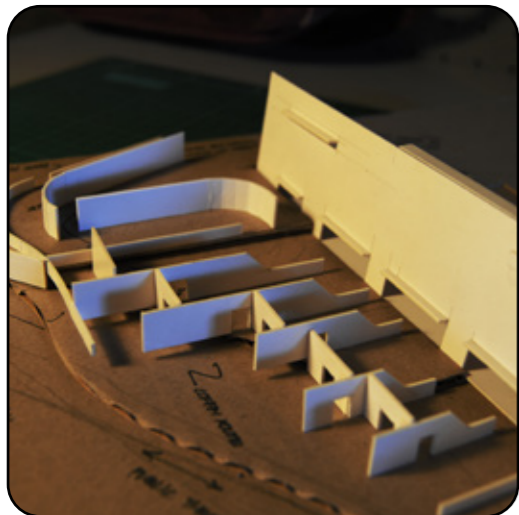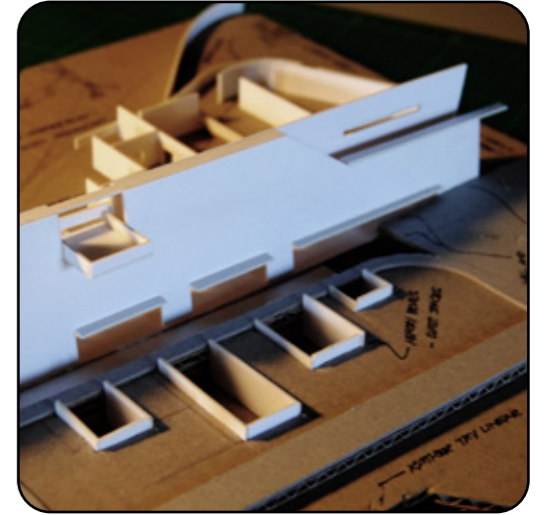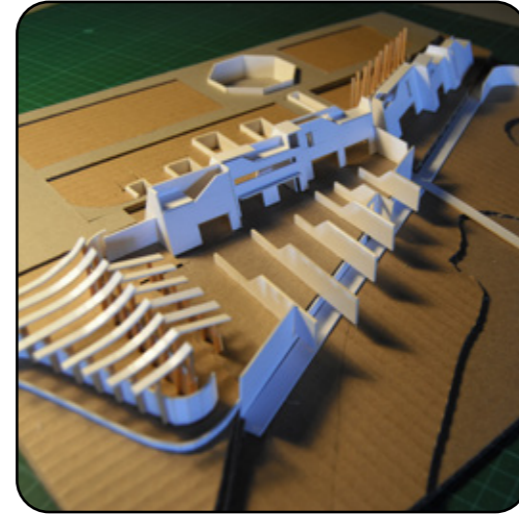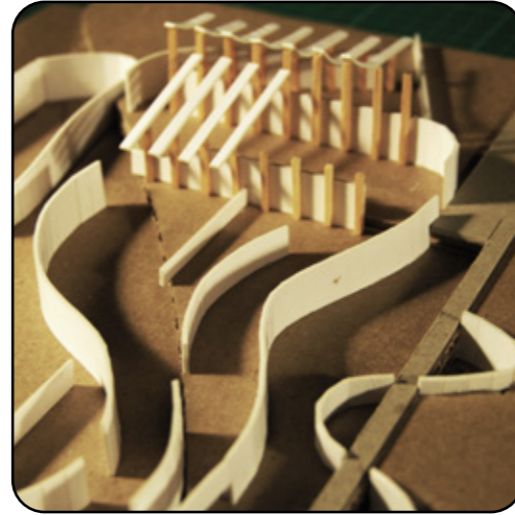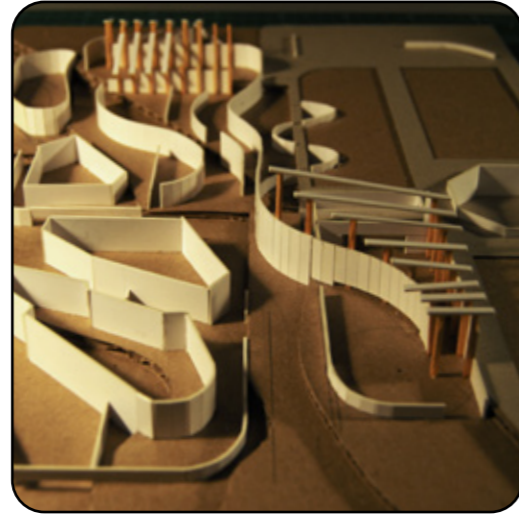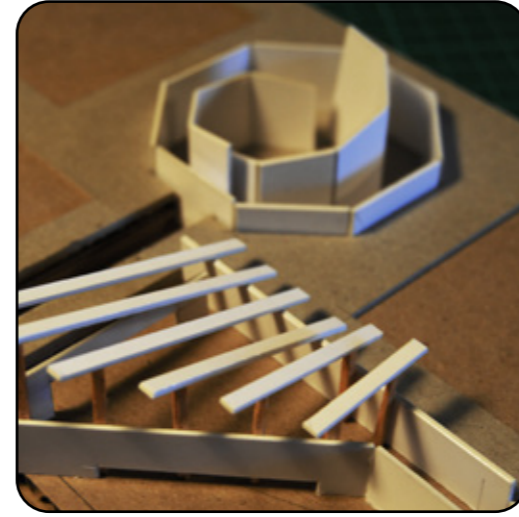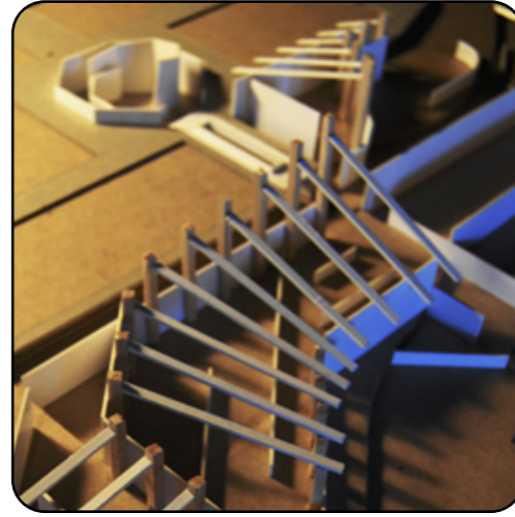
MAQUETTE DEVELOPMENT

Fig. 8.57: Maquette development series (Ullrich 2020)

ACKNOWLEDGEMENTS:

LIFE IN DEATH

ADDRESSING HETEROTOPIC BURIAL SPACES BY RE-INTRODUCING BURIAL RITUALS INTO THE INNER-CITY OF PRETORIA

—

AUTHOR:

Liam G. Ullrich

STUDY LEADER:

Cobus Bothma

KEYWORDS:

Heterotopic Space,
Burial, Ritual, Narrative,
Mediation, Memory

ABSTRACT:

Burial spaces within the City of Pretoria have become inert, fenced-off islands – restricting death rituals and their intrinsic value to society. The lack of urban burial space within Pretoria has resulted in the propagation of urban sprawl, and the bereaved are required to bury the deceased in cemeteries outside of the city. Burial spaces were once part of the range of vital public facilities within historical cities, and death rituals are argued to be central to cultural and individual identities. In order to address this predicament of the removal of burial rituals from the City, the dissertation proposes re-introducing a public commemorative burial space within the City of Pretoria. The dissertation challenges the notion of the heterotopic modern burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm in order to preserve its sanctity. The overarching intention of the research is to develop a prototypical approach for the introduction of a commemorative burial space which can support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities.

A GLOBAL ISSUE:

The Western City has become progressively less accommodating of the dead. The negative associations of death, and the large tracts of land required for in-ground burial have resulted in these spaces being pushed to the periphery of urbanity (Johnson 2008: 781). Individuals living within cities are required to migrate beyond the city-limits to fulfil their burial processes (Worpole 2016: 5). Consequently, cultural death rituals and the spaces reserved for the expression of grief have been removed from the city. Currently, town-planning authorities in major international cities are seeking alternative solutions to cope with the lack of urban burial space (Rugg 2016). This is especially evident within developing nations' cities experiencing rapid population growth (Steyn 2007: 62). This predicament can be compared to the situation within South Africa's major cities.

AN URBAN ISSUE:

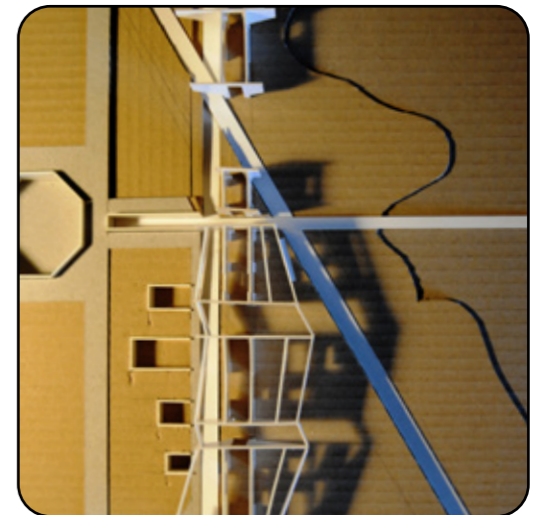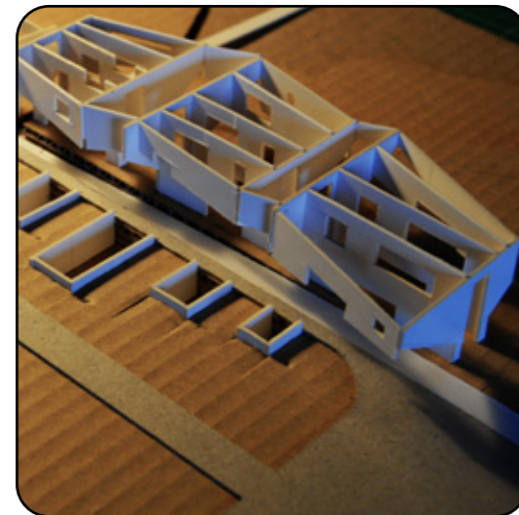Custom-designed alternative solutions for burial spaces have been implemented within some cities in South Africa, each responding to the cultural and socio-economic context in a particular manner – however, no developments have been completed within Pretoria (Wilkins 2011: 24). Traditional burial infrastructure, within the urban context of Pretoria, has developed into an environmentally unsustainable practice. From the list of thirty-four registered cemeteries within the City of Tshwane, fourteen are inactive, eleven require over a fifty-year wait for burial, and nine require a twenty-five-year wait for burial (City of Tshwane 2014: 22). Between the years 2009 and 2013, there was a thirty per cent decrease in the number of burials and cremations occurring within the city (2014: 22). Pretoria's cemetery blocks have become underutilised, neglected, fenced-off islands within the city. The city's main alternative practice to in-ground burial, cremation, is a contested taboo within many of Pretoria's cultural and religious groups (Atkins 2017: 36; Wilkins 2011: 22; Fisher & Clarke 2010a: 69–70).

The city of Pretoria is no longer able to accommodate for the fulfilment of the majority of cultural death rituals and processes undertaken by its citizens. This is most evident amongst the African-Initiated Church, the largest religious group in Pretoria, whose members are required to travel outside of the city limits to fulfil their death rituals and burial processes (Statistics South Africa 2016: 17; Baloyi 2014: 1; Wilkins 2011: 24, 30).

*Fig. 1: Reincorporating burial spaces
into the city's public realm (Ullrich 2020)*

ARCHITECTURAL INTENTION AND CONTRIBUTION:

The dissertation, which forms the basis of this article, challenges the notion of the heterotopic modern burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm in order to preserve its sanctity. The overarching intention of the research is to develop a prototypical approach for the introduction of a commemorative burial space which can support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities.

RESEARCH METHODOLOGY:

Two lenses of enquiry guided the dissertation's data collection and investigation processes, namely the sacred ritual lens and the quotidian ritual lens. The sacred ritual lens examined the current condition of burial spaces within the city, the programmatic requirements of these spaces, and the exploration of possible future conditions and spatial solutions to accommodate these sacred rituals. The quotidian ritual lens examined the 'everyday' rituals of individuals within the city of Pretoria, and the spatial architectural qualities which accommodate these everyday narratives on a city, precinct, and site-specific scale.

Ethnographic case-study research was utilised for primary research data collection. A case study is an "empirical inquiry that investigates a phenomena or setting" (Groat & Wang 2013: 418). The ethnographic research emphasised the reliance on observation of these phenomena as a primary mode of data collection. This active role of observation took the form of site visits to burial spaces, and the chosen

intervention site within the inner-city of Pretoria. The researcher recorded empirical data at the site visits with "audio-visual materials" (Creswell 2009: 180) in the form of note-taking, diagrammatic drawings, and photographs. This approach was utilised in order to gain a deeper understanding of the manifestation of the architecture that supports the ritual events that define these spaces, and an individual's processional experience through these spaces. Julie Rugg's (2000) four thematic categories for defining urban burial spaces helped to define preliminary categories for collecting site information:

1. Physical Characteristics

2. Boundaries & Circulation (changed from "Ownership & Purpose")

3. Sacredness & Ritual Accommodation

4. Memory of Individuality

Additionally, "ancillary sources" were utilised after the site visits to collect primary and secondary data (Groat & Wang 2013: 226). Archival material, journal articles, and statistical information were retrieved to support the findings of the site visits, and to investigate possible solutions.

HISTORIC IMPORTANCE OF BURIAL SPACES WITHIN WESTERN CITIES:

Until the end of the eighteenth century, the cemetery space was located at the heart of the town or city within Western societies – usually adjacent to the church (Malone 2017: 1). In some instances, the cemetery space was located at the entrance to the city, acting as a threshold gateway into the

city – such as at the Kerameikos Cemetery (c1200) located at the Athens city wall (Garland 1985: 7).

With the onset of the Age of Enlightenment, societal focus shifted to reason, hygienic concerns, and the individual body (Malone 2017: 10). More attention was placed on the remains of the dead body, and less attention was placed on the belief of the immortality of the soul and resurrection of the body (Foucault & Miskowiec 2012). A major theme of illness, caused by the miasma of the dead, spread within urban areas during the eighteenth century (Johnson 2008: 781). At the onset of the nineteenth century, town planners began locating cemeteries to the borders of cities and towards the suburbs for reasons of health, hygiene, and economic land-value (Worpole 2003: 94). Cemeteries were therefore no longer the sacred heart of the city, but a dislocated "other" space that had the negative connotations of disease and illness (Foucault & Miskowiec 2012: 25). These town-planning models of the cemetery space pushed to the periphery of society has resemblance to the treatment of disciplinary and institutional sites, in terms of location, spacial distribution, and isolation (Johnson 2008: 981). Due to new burial spaces being pushed to the periphery of urban settlements, death ritual ceremonies and spaces dedicated to mourning have been removed from inner-city districts.

Historically, burial spaces have had the potential to act as public civic institutions with the intention to provide aid and solace to the bereaved (Worpole 2016: 23), and to express, sustain, and store the shared cultural memory and identity of a group, and, simultaneously, the deceased individual (Malone 2017: 2). Despite the recognised importance of burial spaces amongst researchers, the urban spatial issues of burial spaces have been largely understudied (Basmajian & Coutts 2010: 306).

SOUTH AFRICAN CITIES AND BURIAL:

Within Southern Africa, the marginalisation and oppression of indigenous groups and their beliefs occurred with the arrival of colonial activity in the 1650s (Atkins 2017: 45). Indigenous individuals who converted to Christianity, or who became indentured slaves, were allowed to be buried within their own demarcated section in a formal cemetery. However, those who were neither converted nor indentured were buried outside of the cemetery walls in unidentified graves (Low 2008: 33).

With the segregation of communities based on racial and cultural profiling, in accordance with the Group Areas Act

of 1950, cemeteries were also dispersed to accommodate individual community areas (Atkins 2017: 45). Town-planners placed these cemeteries on the periphery of segregated communities, usually adjacent to affordable land, such as municipal refuse depots, sewage works, airports, and railway lines (2017: 45) – for example, the Bloemfontein South Cemetery is located adjacent to a landfill site. This enhanced their isolated, heterotopic nature from the city, and propagated urban sprawl and decentralisation of civic amenities from the inner-city.Burial spaces in South Africa cities have predominantly followed European town-planning trends, and occupy large tracts of land (Atkins 2017: 47). These principles have not been adapted to local conditions or indigenous belief systems – and they lack the ability to adapt to societal and environmental change, as indicated by Blake Wilkins (2011), in his observations of the current dilapidated state of burial spaces in South Africa. Currently, many South Africans experience difficulty in accessing burial spaces and their cultural repositories of memory. This is primarily due to difficulties in travelling long distances, their ruinous condition due to vandalism, their lack of maintenance (Wilkins 2011: 30), and their restrictive access or physical concealment from public interaction.

Burial spaces in South Africa cities have predominantly followed European town-planning trends, and occupy large tracts of land (Atkins 2017: 47). These principles have not been adapted to local conditions or indigenous belief systems – and they lack the ability to adapt to societal and environmental change, as indicated by Blake Wilkins (2011), in his observations of the current dilapidated state of burial spaces in South Africa.
An easily accessible database for the planning of future burial spaces within South Africa does not exist (Wilkins 2011: 22), nor are there any governmentally issued frameworks for environmentally sustainable urban burial schemes for future implementation. The statistical data provided in the governmental Statistical and Tariff Handbook (2014) is a quantitative source which provides figures for further analysis and interpretation of the current state of cemeteries within Tshwane - however, this information has not been updated since 2014.

BURIAL SPACES OF INNER-CITY PRETORIA:

Six registered burial sites, closest to the inner-city of Pretoria, were used as case studies to further understand the current condition of burial spaces within Pretoria, and the architectural manifestation of elements within these spaces.
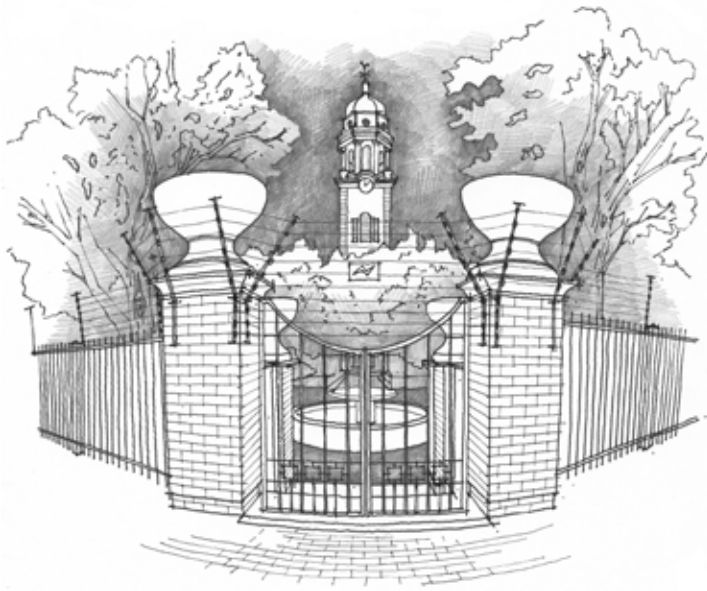
Fig. 2: Securitised, locked, pedestrian entrance for Garden of Remembrance at the Ooskerk, Clydesdale, Pretoria (Ullrich 2020)

Fig. 3: Restricted, single-point access entrance gate of Voortrekker Monument Nature Reserve, Groenkloof, Pretoria (Ullrich 2020)
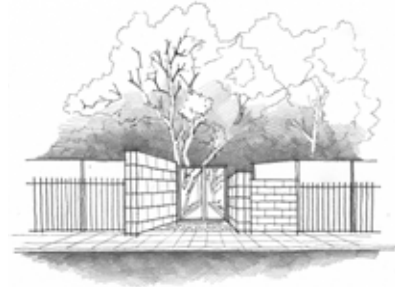
Fig. 4: Fenced-off entrance of Heroes' Acre Cemetery, Asiatic Bazaar, Pretoria (Ullrich 2020)

The sites are all fenced-off, and have a system of access that can both make the sites penetrable, and isolate them. The result is that these sites are not freely accessible like a public space. The points of access vary in restrictiveness – from security-monitored gates that are open during certain hours, such as at Rebecca Street Cemetery, to sites which are permanently closed for public access, such as at Heroes Acre Cemetery. The main intention of this restrictiveness is to manage and protect the sacred associations of the site from vagrants, vandals, crime, and the 'unauthorised' individuals of the 'outside world'. These boundaries, with limited access, are additionally used to demarcate and protect the shared identity of religious and cultural groups (Doi & Villet 2018: 18; Atkins 2017: 45). This ranges from the hedge and fence surrounding the Jewish section in Rebecca Street Cemetery, to the electrified fencing and security cameras enclosing the Ooskerk Church and Columbarium site. Michel Foucault's Principles of Heterotopic Spaces were used as a tool to critically analyse the observations made at Pretoria's burial spaces (Foucault & Miskowiec 2012). Heterotopic spaces, as elaborated by philosopher Michel Foucault in his text titled Of Other Things (1967), are microcosms within societies that reflect the world outside of them, yet, simultaneously, present the outside world in a strange and disturbing manner. These spaces are neither utopian – perfected versions of society – nor dystopian – versions of society where everything is bad (Villet 2018: 18). Heterotopic spaces are where things are of the "other" – strange, differential spaces. These spaces are found on the periphery and just outside of urban areas (Ots 2010: 121). By analysing the urban burial spaces of the city of Pretoria through Foucault' heterotopic principles, it can be proposed that these spaces have undertaken a role of reinstating specific structures of power and control through various,

sometimes insidious, methods. The rationale for creating these enclaves, whether for the fear of crime, class elevation, protection of shared identity, and the right to exclude, can ultimately be characterised as "rights of privilege" (Hook & Vrdoljak 2002: 212). The result is that these spaces have deviated from being park-like public spaces, and are unable to openly share their values with society.

ARCHITECTURAL POSITIONING:

In this paper, the architectural positioning stems from the design intentions of the Dutch design team of Projectburo Almere in 1975 (Rugg 2003: 109). The team was responsible for reintegrating burial processes into the central urban town of Almere-Haven, Netherlands, through a cemetery design that would be integral to the urban fabric and public space (2003: 109). The team advocated a mixed-use approach to town-planning, and intentionally challenged the rigid separation of functional zones espoused by the modern movement (Clayden & Woudstra 2003: 200). The design is worked around a central arterial movement route, which forms a link between the town square, church, and adjacent neighbourhood, which enables the cemetery to be entwined with daily civic life. By being integral with daily civic life, the cemetery maintains a sense of security and upkeep due to its relevance (2003: 201). The cemetery as a civic institutional node, entwined with daily public life, and located within the inner-city district, can be understood as a return to pre-Enlightenment notions of the urban burial space1. This paper attempts to continue the ideas of Projectburo Almere, by challenging the modern town-planning schemes of isolating burial spaces.

Fig. 5: Developing an accommodating burial ritual programme (Ullrich 2020)

DEVELOPING A BURIAL PROGRAMME FOR THE CITY:

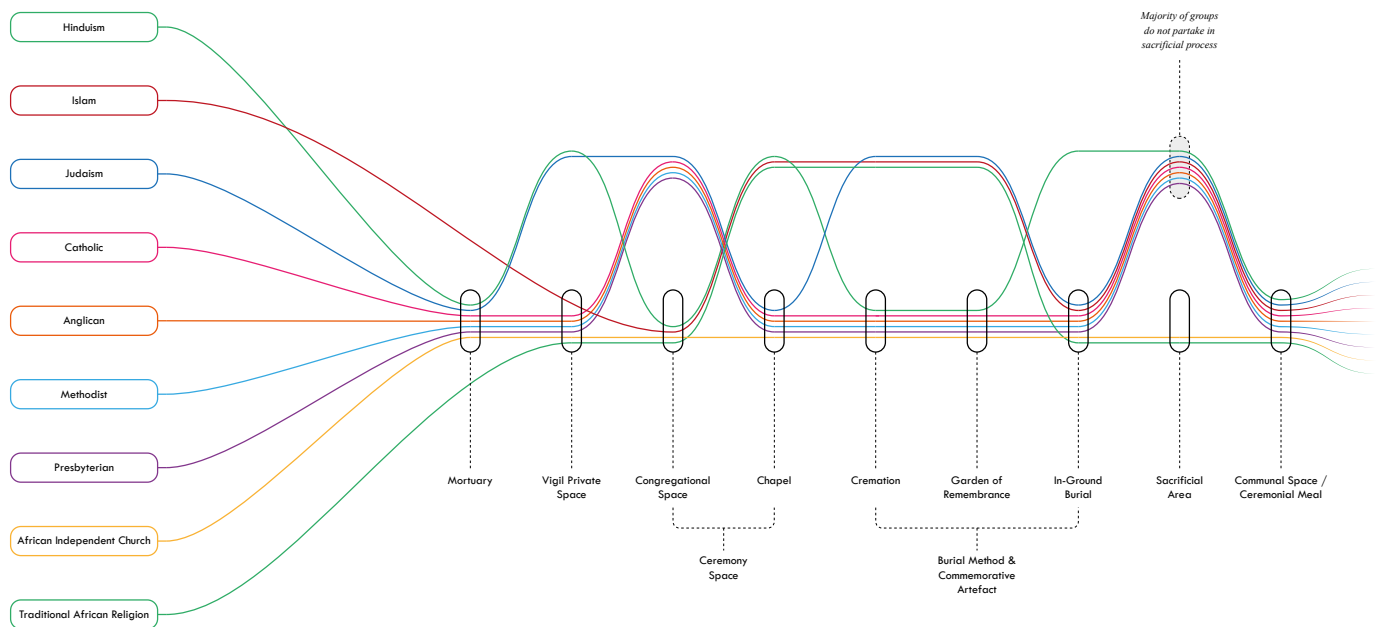It is evident that a universal death ritual for Pretoria would not be possible (Rugg 2016), as the city contains an array of diverse cultural and religious groups. It is important, however, for the proposed intervention to be inclusive of the death rituals and cultural groups within Pretoria, and representative of the principles of a Democratic South Africa. The funerary and commemorative rites of the African-Initiated Church group were chosen as a point of departure for the development of an inner-city burial programme. The AIC group is the largest Christian group within Pretoria, and the largest religious group in South Africa (Statistics South Africa 2016: 16–17). The group was chosen due to its large presence within the city, and due to the inner-city being unable to accommodate for the fulfilment of the AIC death rituals, as the group has a preference for in-ground burial.

By identifying the death-ritual activities of the AIC group, and the corresponding spacial requirements of those activities, a core burial programme for the AIC group could be schematically represented on a diagram. Using the same process, the ritual and spatial requirements of other prominent groups within Pretoria were schematically drawn adjacent to the AIC programme.

From this diagram, shared ritual spaces could be identified, as well as where the AIC ritual deviated from other burial practice. Where deviations occurred, it was further explored whether other shared spaces, not part of the AIC eschatology, could be introduced, in order to accommodate other groups' death rituals. It is important to note that agnostics, and individuals who do not ascribe to a religious belief system, are the second highest group within Pretoria (Statistics South Africa 2016: 16–17). Despite not having an ascribed religious death eschatology, the individuals of this group may form part of a cultural group who partake in certain funerary customs. In order for shared spaces to be inclusive for a multitude of cultural practices, the design must encourage a non-prescriptive interpretation of space, which promotes a multiplicity of experiences for the user (Porter 2004: 107; Zumthor 1999: 28).

These shared spaces could accommodate similar burial activities, whilst still accommodating their nuanced variations in practice. Some of these shared spaces included the burial area, congregational ceremonial spaces, vigil spaces, mortuaries, meal areas, private mourning spaces, and 'cleansing' spaces.

The more particular practices of the AIC funerary ritual require particular spaces, with few other groups sharing these spaces for similar activities. These ritual activities include the ritual animal slaughter – undertaken during a vigil, funeral, and a 'home-bringing' service (ukukuzwa) (Oosthuizen 1990: 469) – the cleansing process after this slaughter, and the evening vigil ceremony. The slaughtering process, for example, may not be favoured by other cultural groups, or even individuals within the AIC group (Ngubane 2012: 92), and it is therefore important that these rituals and spaces deviate from the main burial route. The intervention incorporates the design principle of 'choice' (When Families Grieve Team 2010: 15) – always providing an individual with the choice to participate in activities or a certain burial process.

ALTERNATIVE BURIAL METHOD:

A gap in the discourse is evident in developing sustainable guidelines for the integration of alternative disposal technologies within the city of Pretoria for the allocation of new burial spaces. An environmentally sustainable burial method will firstly require a high likelihood of social acceptance amongst the religious or cultural groups of Pretoria (Wilkins 2011: 22). The expenditure required for the initial cost of the decomposition facility, or the maintenance thereof (Wilkins 2011: 25, 30), should also be relatively low, in order to accommodate and service the large proportion of lower-income earning groups within Pretoria (City of Tshwane 2013b: 21; Leuta & Green 2011: 3). The burial method needs to be economical and efficient with its land-area requirements, due to limited developable land and high economic land value within the inner-city. It is preferable if the method is currently practiced within South Africa, or is not legally prohibited within the City of Tshwane. The decomposition method should be relatively environmentally sustainable, yielding minimal or no by-products which could pollute the surrounding environment.

The process of 'Recomposition', or accelerated composting, was identified as a potential burial alternative. The process incorporates in-ground burial, and it is therefore ideal for the AIC group, who have a preference for lowering the deceased body into the soil (Elion & Strieman 2002: 47). In-ground burial is also favoured by other groups in Pretoria, such as Islamic, Judaic, Christian denominations, and Traditional African Religions (Leuta & Green 2011).

The Recomposition process can be likened to the agricultural practice of carcass composting for the management of farm mortalities (Kalbasi, Mukhtar, Hawkins & Auvermann 2005). The process accelerates the natural decomposition of human remains to within a period of two months under the correct conditions1 (Kalbasi et al. 2005: 182). The soil composition is maintained at a high carbon to low nitrogen ratio (ideally a 1:30 carbon to nitrogen ratio), and a low to moderate moisture-level content (2005: 181). Organic matter with a high carbon level can be used to maintain the soil composition – this can be achieved by packing sawdust or veld grass around the casket within the grave. With the presence of the human body in the soil, the accelerated decomposition occurs with the thermophilic microorganisms heating up the soil, digesting the corpse, and removing most of any present pathogens (2005: 181). The process allows for grave recycling after the two-month period1, which is ideal for the efficient use of ground area within a dense urban environment.

The City of Tshwane's Cemetery & Crematorium By-Laws (2015a) do not specifically outline the legal parameters and limitations for Recomposition. The by-laws do state, however, that the grave recycling process is allowed once certain applications have been made. The Recomposition process could therefore be framed as an accelerated grave-recycling process, and comply with the municipal by-laws. After the two-month decomposition period, the product consists of 'ash', or bone fragments, and a nutrient-rich soil. The ash component can be spread, stored, or buried to the deceased family's preference. The design intervention incorporates this post-burial activity into the programme, especially with the incremental construction of the Wall of Remembrance. The nutrient-rich soil, on behalf of the deceased's family, can be donated to the Salvokop redevelopment effort. The nutrient-rich soil can be spread at the old Railway Maintenance Yards of Salvokop, and used to continue the regeneration of the agrarian habitat and local plants of the scarred landscape.

CONTEXT:

A case-study site was chosen in order to investigate and propose how a burial space could be integrated into a public, underutilised space within the inner-city of Pretoria. In order to challenge the notion of the modern burial space being isolated and removed from the public eye, the proposal investigates the re-introduction of a civic burial space within close proximity to a prominent node or movement route, and within the public eye. It is acknowledged that a portion of a burial site requires a form of privacy and demarcation in order to retain a sense of sanctity, however, these spaces have the ability to be better intertwined into daily public life, as opposed to an abrupt separation from civic public life. The Pretoria Station Forecourt, designed by Sir Herbert Baker in 1910, was chosen as the focus area for the intervention. The site currently functions as a transient space between the gateway of the Old Pretoria Station, and the inner-city of Pretoria. Despite the large amounts of foot-traffic moving through the site, the site is contained by large fragments of under-utilised public space, consisting of parking space and wide roadways adjacent to the gardens of the Forecourt. The site's public exposure, underutilised public space, and existing artefacts of cultural significance, provide a suitable space for the dissertation to manifest its intentions of expressing and sharing commemorative, cultural memory with the public realm.

The site is rich in layers of cultural memory. A number of commemorative and historically significant artefacts are

Fig. 6: Porte cochère entrance of Old Station Building, designed by Sir Herbert Baker, 1911 (Ullrich 2020)

Fig. 7: Intention of creating a commemorative linkage amongst the heritage sites of Church Square, Pretoria Station, and Freedom Park (Ullrich 2020)

found in and adjacent to the site. The Paul Kruger Statue once stood at the centre of the Forecourt on its plinth, before it was relocated to Church Square in 1953. The raised plinth currently functions as a central feature to the garden, and as a remnant of the statue's old position, resembling a link between the Station's Forecourt and Church Square. The vacant plinth provides the opportunity for a new form of public commemoration – one that could functionally and symbolically aid the reintroduction of commemorative rituals within the city.

The World War II Memorial once functioned as a threshold entrance into the southern end of the Forecourt garden, however, in recent years, the space has been gated – forming a small-scale example of a gated commemorative site within the city, and restricting the Forecourt's central movement route.

Since its construction in 1910, a series of alterations to the Station's Forecourt have resulted in large fragments of under-utilised public space – especially parking space adjacent to the sunken classical gardens of the Forecourt. The biggest alteration was the extension of Paul Kruger Street through the site. The through-route extension is currently utilised as parking space, and a popular pedestrian movement route. The original North-Eastern quadrant of the Forecourt, defined by slate retaining walls, was removed during the extension. The removal of the fourth quadrant has detracted from the garden's symmetrical layout and its historical significance.

The intervention primarily locates itself adjacent to this through-route – working within the underutilised wedge that forms between the public streets of the North, East,
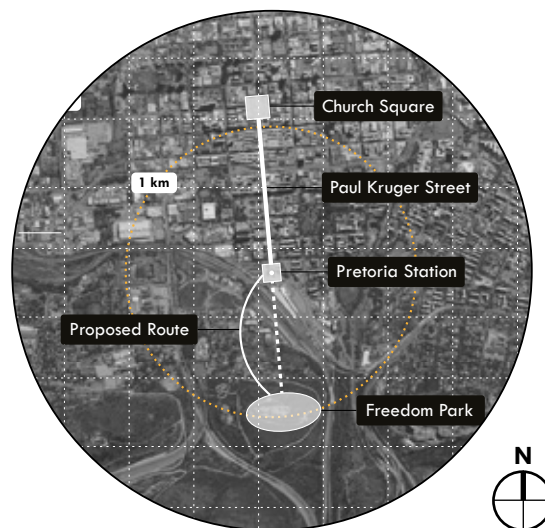
and South, and the Forecourt garden to the West. The site provides the opportunity to develop a private, sacred internal space, whilst reacting to and contributing to the dynamic urban activities around it.

STATEMENT OF SIGNIFICANCE:

For over a century, the Railway Station block has functioned as a reference of entry into the city, and as a final destination for departure from the city. The Old Station Building and its Forecourt have accommodated this activity of transitioning between the city and the outside world, and their design is intrinsically linked to the arterial movement routes that helped to define the development of the city of Pretoria. The Old Station Building forms part of the corpus of work of Sir Herbert Baker, and acts as a physical precedent to the Union Buildings. The symmetrical classical layout of the Forecourt, with its compartmentalised flower beds, slate-stone retaining walls, and palm trees, ascribe the space to the corpus of culturally significant park spaces found within Pretoria. The intervention must sustain the qualities of this park-like space, and the historic stone walls that define it. The plinth of the Paul Kruger Statue is a reminder of the historic link between the Station and Church Square. It is pertinent for the intervention to retain the site line of the Old Station's 'Baker Style' façade from Paul Kruger Street, and for the proposal to retain or enhance its historic link with Church Square by means of Paul Kruger Street. The sightlines of the surrounding, early railway buildings must also be retained.
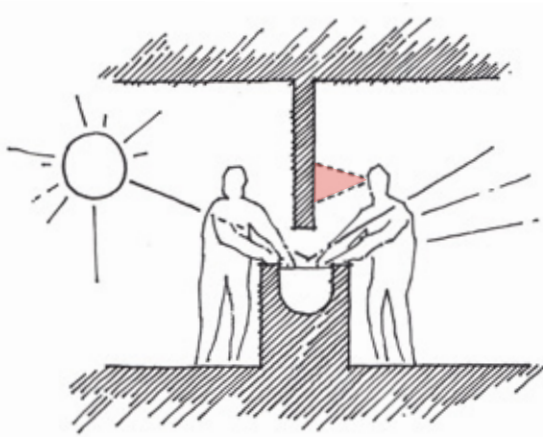
Fig. 8: Sensual filtering (Ullrich 2020)

Fig. 9: Ritual construction process (Ullrich 2020)

Fig. 10: Processional ordering accommodating architectural events (Ullrich 2020)

ARCHITECTURAL APPROACH:

The notion of Mediation is utilised as a conceptual approach to redevelop and reintegrate this narrative between the city and the death process. According to Wightman (2007: 933), Mediation is a form of transition, with its purpose specifically regulating access through to the most sacred parts of a structure (2007: 941), or to mediate an approach to the divine (2007: 932). Mediating movement and activities from the quotidian realm to the most sacred realms are imperative to ensuring that the experience is organised in a manner that demonstrates and maintains the significance of sacrality (2007: 933).

The findings from the case-study research identified three overarching informants which contributed to the manifestation of the architectural experience of the burial spaces within Pretoria, namely: Boundaries, Memory, and Movement. This dissertation utilises these three thematic categories as the primary components of the architectural concept of Mediation. The three components are not mutually exclusive, but, if successfully employed, can work in tandem with one another to generate a burial narrative, or mediation, between the quotidian and sacred realms. The three components provide a framework to more easily identify and compare relationships on the macro, meso, and micro scales of investigations, and between the two lenses of enquiry.

These three identified constituents are analogous to Till Boettger's (2014) parameters for analysing threshold spaces, namely Delimitation (spatial definition or boundaries), Sequence (spatial movement), and Topography (landscape of memory). Boettger proposes that these
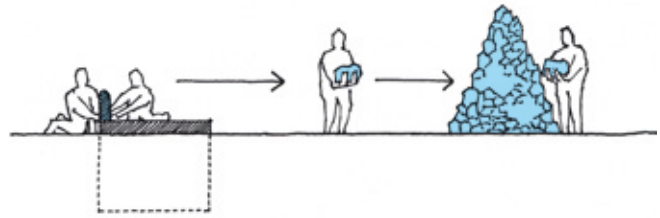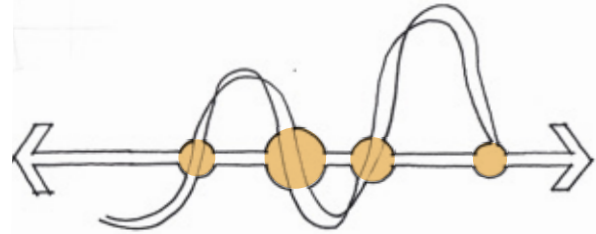
parameters can be applied within a spectrum of application. This bipolarity for spatial parameters accommodates the variance in transitioning between the quotidian and sacred space.

MEMORY:

In Paul Connerton's How Societies Remember (1989), the author distinguishes between two social practices of representing memory: through the "inscription" (1989: 73) of memory onto physical objects, in order to hold onto information beyond an individual's lifespan; and the "incorporation" (1989: 72) of memory through ephemeral, physical activities and interactions.

The dissertation places importance on both of these practices of imbuing memory within commemorative activities. The importance of inscribing memory onto an enduring object provides the bereaved a locus for commemorating the deceased, a tangible repository of identity, and, according to Pallasmaa (1994: 43), contributes to our understanding of the continuing development of heritage. Incorporating memory through activity is essential in sustaining ephemeral funerary rituals and interactions that define a cultural identity. It is proposed that the two forms of memory, described by Connerton (1989: 72–73), could be utilised simultaneously, in order to mutually enhance one another and enrich the layering of memory at the site - the dissertation defines this process as ritual construction. The sgraffito process – the physical activity of inscribing or etching away at a surface - can be incorporated at the site (Leatherbarrow & Mostafavi 2005: 211). The process incorporates both the inscribed, 'storage' of memory onto an

artefact, and the incorporation of memory through the ritual activity of carving onto the artefact.

The intervention would need to sustain existing artefacts of cultural significance. There is the opportunity to reintroduce artefacts of cultural significance that have been removed from the site, such as the North-East Forecourt quadrant, and the Paul Kruger Statue. The intervention can redefine and repurpose these spaces as a means of commemorating the lost urban fabric at the site, and creating a meaningful locus for revisitation and refuge within the inner-city (Ouzman 2003: 33).

BOUNDARY:

The interface of a boundary can define an enclosed space, and intensify an individual's perception of the contrast between the outside and inside (Boettger 2014: 46). This demarcation of space can employ the different forms of human interface, discussed by Juhani Pallasmaa (1994), in order to define the hierarchy of the sacred realm. This entails the scale of physical material boundaries, the materiality of these boundaries, the fragrant smell of scent, and the quality of light within the space (1994: 42). By utilising multiple forms of human interface, the design acts to counter the modern hegemony on the reliance on sight as the sole sense for reason and experience (Ouzman 2003: 13). A large factor of burial rituals rely on the unseen, the imagination, and particular belief systems. By utilising different human interfaces to define the layers of a boundary, these experiences can be sustained and enhanced.

The architectural space requires the boundary wall to gradually filter out the external, quotidian, public realm, as one moves into the more sacred areas. The boundary wall could be utilised as a 'sensual filter' – able to filter out certain elements, without abruptly isolating the individual from their context. This effect is achieved at the Inagawa Cemetery Chapel by David Chipperfield, where the boundary walls filter the ceremony space from direct visibility, and provide a sense of privacy, without sacrificing indirect sunlight into the space, and completely isolating the space from its context. These boundaries can provide a sense of 'shared privacy', where suspended walls can provide visible privacy, yet allow for mutual amenities and interactions.

The body's exposure to coolness and heat is an important aspect to AIC rituals (De Heusch 1987: 539), with coolness being associated with sacrality, and aiding communication with the ancestors, whilst heat is associated with public

life. This aspect is evident at the sacred Motouleng Caves as one moves further into the cooler, darker, more confined inner-sanctum of the cave. This notion is epitomised by the constructed tunnel space that connects two huts – as one must crawl through this tunnel to reach the other side and complete the rite of passage. The design intervention explores this sensation of transitioning to a 'cooler', more confined space. As one moves into the more private area of the burial space, the intervention could move the user into the subterranean realm. The design explores the hierarchy of demarcating subterranean spaces for the more private, intimate activities, and the ground-level and above-ground level realm for the more public activities.

The indigenous space-making process of the Isivivane wall can be utilised for the intervention. The Isivivane wall is a symbolic memorial site, consisting of a stone pile that flanks a long pathway, where individuals can add stones to the wall during performative acts of memory (Noble 2011: 234; Ngubane 2003). The Isivivane boundary wall can help to define the primary processional movement routes through the space, act as a defining threshold, and contain commemorative objects placed within the wall during ceremonies.

MOVEMENT:

The Forecourt can be understood as a transient space – accommodating individuals moving into or out of the inner-city. Linear pathways currently accommodate heavy foot traffic through the site, whilst the outer-walls of the Forecourt define internal lawn spaces for refuge and individuals in a state of limbo – waiting for their train or bus to arrive. The intervention further utilises this existing tension between areas of movement and stasis as a design tool to define the architectural narrative within an urban city context.

Tom Porter (2004: 138) describes architectural 'stasis' as moments of repose and "states of equilibrium". These spaces of stasis can be used to create an auditory and perceptive experience of tranquillity – helping to provide solace to those experiencing grief (Pallasmaa 1994: 43). Pallasmaa (2007: 197) argues that the modern condition of the accelerated rate of daily consumption provokes a "cultural amnesia", and threatens our cultural remembrance. The more private spaces of the design are therefore designed with the intention of slowing the user's movement and focusing their sensual experience. As one progresses through the layers of thresholds, from the most public to the most private space, the cadence and pace of movement can be reduced. The space of highest repose, and slowest

movement, is the burial area – as the sensual qualities are filtered to allow for contemplative focus, and highlight the "stillness of death" (Porter 2004: 138).

Processional space is an ordering principle often employed for ritual ceremonies. It responds to the movement of individuals, involved in a ceremony, processing through a space in an orderly succession, accompanied by a series of architectural events (Porter 2004: 108). The intervention establishes processional space to organise the succession of ritual programmes and link with subsidiary movement routes at the site.

Due to the surrounding development, the Forecourt has evolved into an island surrounded by wide roadways which prioritise vehicular movement – a feature defining many of the underutilised, latent blocks within the inner-city of Pretoria. The dissertation proposes approaching the street edge as a shared public space, and reprioritising human movement through the site and to the surrounding context (Jan Gehl 2011).

CONCLUSION:

This dissertation challenged the notion of the heterotopic, modern, burial space occupying a peripheral site, out of the public eye, and completely insular to the public realm. The overarching intention of the research was to develop an approach for the introduction of a commemorative burial space which could support the burial rituals of the cultural groups of Pretoria, publicly express civic cultural memory, and contribute to urban-placemaking activities. In order for architectural space to accommodate grief and sacred burial rituals within an urban city context, the investigations were guided by analysing the ritual experience of everyday city users, and the ritual experience within sacred burial spaces. These two research streams were critically compared in order to generate an approach that would aid the mediation of individuals between the city environment and the burial space. The architectural approach sustained aspects of cultural significance, and commemorated lost artefacts of significance by reintroducing or reinterpreting their built form. The less private activities of traditional burial rituals were intertwined with the everyday public interface to generate spaces that contributed to urban-placemaking. The dissertation recognises that traditional, in-ground burial methods are predominantly environmentally unsustainable for the city. By proposing an alternative, sustainable, in-ground burial method, the dissertation hopes for the adoption of these methods by other religious and cultural groups who have a preference for in-ground burial.

The architectural approach undertaken for the design of the Burial Centre at the Forecourt can function as a prototypical model for future application and adaption for other latent city blocks within the inner-city of Pretoria. The prototypical approach contributes to our societal acceptance of the inevitability of death, and by commemorating the deceased and artefacts of cultural significance, it can positively contribute to urban placemaking and the layering of a collective identity for Pretoria.

———

WORKS CITED:

1. Atkins, C. 2017. Transforming the architecture of death: monument vs. anti-monument. South African Journal of Art History. 32(1):35–56. Available from: https://univofpretoria.on.worldcat.org/oclc/7473748763.

2. Baloyi, ME. 2014. Distance no impediment for funerals: Death as a uniting ritual for African people - A pastoral study. Verbum et Ecclesia. 35(1):1–7. doi.org/10.4102/ve.v35i1.1248.

3. Basmajian, C & Coutts, C. 2010. Planning for the Disposal of the Dead. Journal of the American Planning Association. 76(3):305–317. doi.org/10.1080/01944361003791913.

4. Boettger, T. 2014. Threshold Spaces Transitions in Architecture. Analysis and Design Tools. Basel: Birkhäuser.

5. City of Tshwane. 2013. Tshwane Vision 2055: Remaking South Africa's Capital City. Pretoria. doi.org/10.4161/cc.6.11.4278.

6. City of Tshwane. 2014. Statistical and Tariff Handbook. (June):1–244.

7. City of Tshwane. 2015. City of Tshwane Cemetery and Crematorium By-Laws. South Africa: City of Tshwane Promulgated By-Laws.

8. Clayden, A & Woudstra, J. 2003. Some European approaches to twentieth-century cemetery design: continental solutions for British dilemmas. Mortality. 8(2):189–208. doi.org/10.1080/1357627031000087424.

9. Connerton, P. 1989. How Societies Remember. Cambridge: Cambridge University Press. Available from: http://catdir.loc.gov/catdir/toc/cam022/89007070.html.

10. Doi, CV & Villet, C. 2018. South Africa as postcolonial heterotopia: The racialized experience of place and space. Foucault Studies. (24):12–33. doi.org/10.22439/fs.v0i24.5523.

11. Fisher, RC & Clarke, NJ. 2010. Death, cremation and columbaria in the culture of Dutch Christian Calvinist South Africa. South African Journal of Art History. 25(2):69–80.

12. Foucault, M & Miskowiec, J. 2012. Texts / Contexts of Other Spaces. Diacritics. 16(1):22–27.

13. Garland, R. 1985. The Greek Way of Death. Ithaca: Cornell University Press.

14. Groat, LN & Wang, D. 2013. Architectural Research Methods. Second Edi ed. (Architectural Research Methods). New Jersey: Wiley.

15. Hook, D & Vrdoljak, M. 2002. Gated communities, heterotopia and a "rights" of privilege: A 'heterotopology' of the South African security-park. Geoforum. 33(2):195–219. doi.org/10.1016/S0016-7185(01)00039-2.

16. Jan Gehl, WH. 2011. Our Cities Ourselves: Principles for Transport in Urban Life. Institute for Transportation & Development Policy.

Available from: https://www.itdp.org/wp-content/uploads/2014/07/OCO8principles_ITDP.pdf.

17. Johnson, P. 2008. The modern cemetery: a design for life. Social & Cultural Geography. 9(7):777–790. doi.org/10.1080/14649360802383154.

18. Kalbasi, A, Mukhtar, S, Hawkins, SE & Auvermann, BW. 2005. Carcass composting for management of farm mortalities: A review. Compost Science and Utilization. 13(3):180–193.

19. Leach, N. 2005. Rethinking Architecture: A reader in cultural theory. N. Leach, Ed. New York: Routledge. doi.org/10.1017/CBO9781107415324.004.

20. Malone, H. 2017. Architecture, Death and Nationhood. doi.org/10.4324/9781315597485.

21. Oosthuizen, GC. 1990. Ecumenical Burial Societies in South Africa: Mutual Caring and Support that Transcends Ecclesiastical and Religious Differences. Missiology: An International Review. 18(4):463–472. doi.org/10.1177/009182969001800406.

22. Ots, E. 2010. Decoding Theoryspeak: An Illustrated Guide to Architectural Theory. New York: Taylor & Francis.

23. Ouzman, S. 2003. Radiant Landscapes and ancient mindscapes: Archaeology and Architecture in harmonious counterpoint. Nine Landscapes: essays on landscape in south africa. 7–34.

24. Pallasmaa, J. 1994. An Architecture of the Seven Senses. In: Questions of Perception: Phenomenology of Architecture. Tokyo: A+u Publishing. 29–37.

25. Porter, T. 2004. Archispeak: an illustrated guide to architectural terms. London: Taylor and Francis.

26. Rugg, J. 2003. Introduction: Cemeteries. Mortality. 8(2):107–112. doi.org/10.1080/1357627031000087361.

27. Rugg, J. 2016. Body Count. Architectural Review. 240(1436):78–82.

28. Statistics South Africa. 2016. Provincial Profile: Gauteng (Report number 03-01-09). Pretoria. Available from: www.statssa.gov.za.

29. Steyn, G. 2007. Types and Typologies of African Urbanism. South African Journal of Art History. 22(2):49–65. Available from: http://repository.up.ac.za/upspace/bitstream/2263/10387/1/Steyn_Types(2007).pdf.

30. When Families Grieve Team. 2010. When Families Grieve. New York: Sesame Workshop. Available from: sesameworkshop.org.

31. Wightman, GJ. 2007. Sacred Spaces: Religious Architecture in the Ancient World. A. Sagona, Ed. (Ancient Near Eastern studies: Supplement). Peeters.

32. Wilkins, B. 2011. Afterlife Spaces. Urban Green Files. 16(2).

33. Worpole, K. 2003. Last landscapes: the architecture of the cemetery in the West. 1st ed. London: Reaktion Books.

34. Worpole, K. 2016. Housing The Dead. Architectural Review. 240(1436):4–8.

LIST OF FIGURES:

Ms C Karusseit
Department: Architecture
University of Pretoria
Pretoria
0083

Dear Ms C Karusseit

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Masters Professional Dissertation in Architecture, Landscape and Interior Architecture" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval
Approved based on the summaries provided.
Applications from each student (including application forms and all necessary supporting documents such as questionnaire/interview questions, permission letters, informed consent form, etc) will need to be checked internally by the course coordinator/ supervisor. A checklist will need to be signed off after the checking.
All of the above will need to be archived in the department and at the end of the course a flash disc / CD clearly marked with the course code and the the protocol number of this application will be required to be provided to EBIT REC administrator.
No data to be collected without first obtaining permission letters. The permission letter from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY