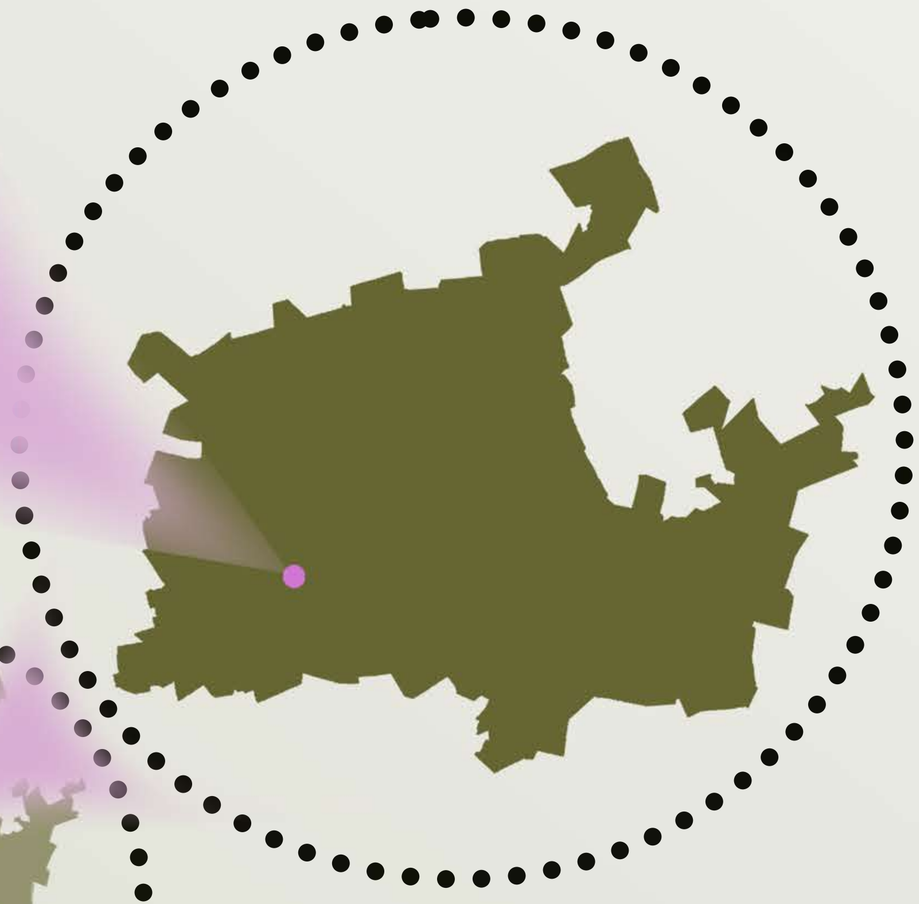
McClay Thikusho

The Revitalisation of the Caledonian Sports Ground: Green TVET and community Hub

SITE LOCATION

ARCADIA



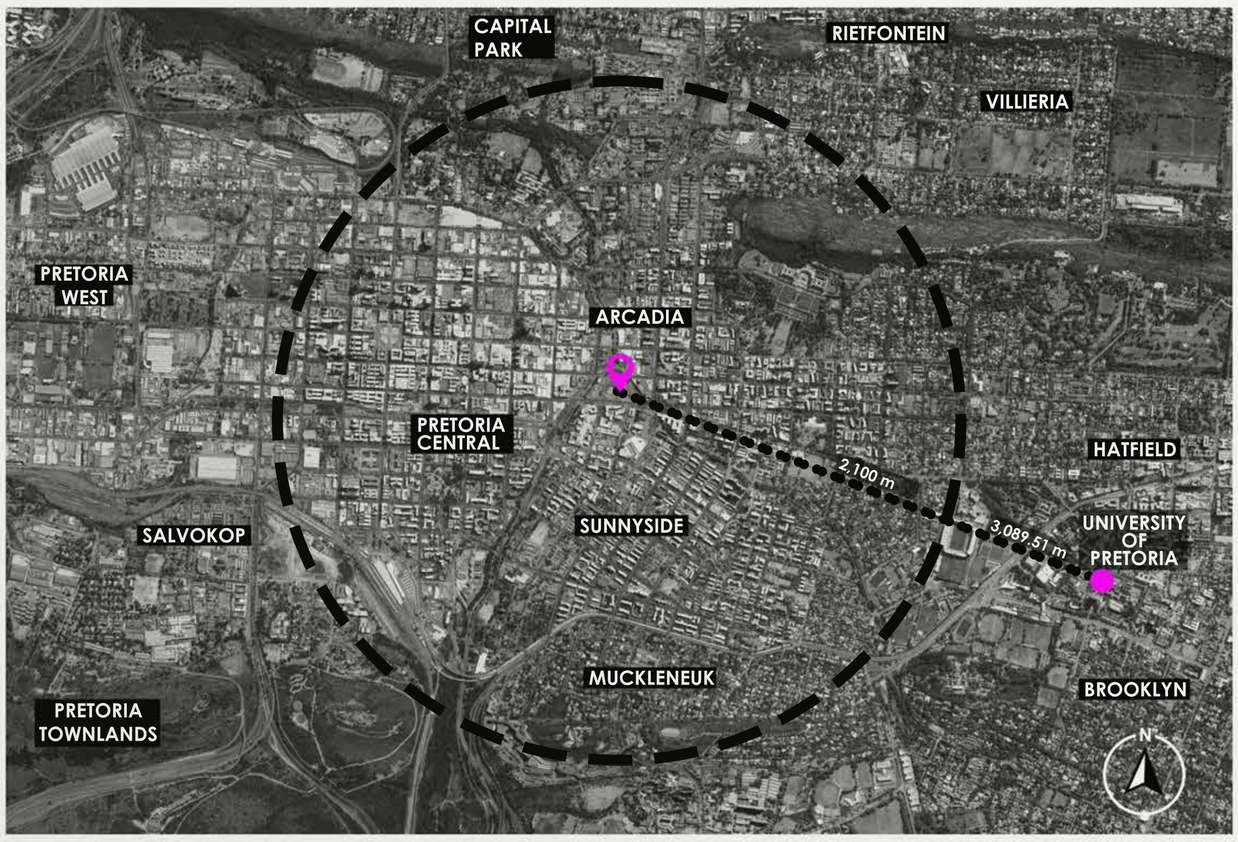
TSHWANE

SOUTH AFRICA

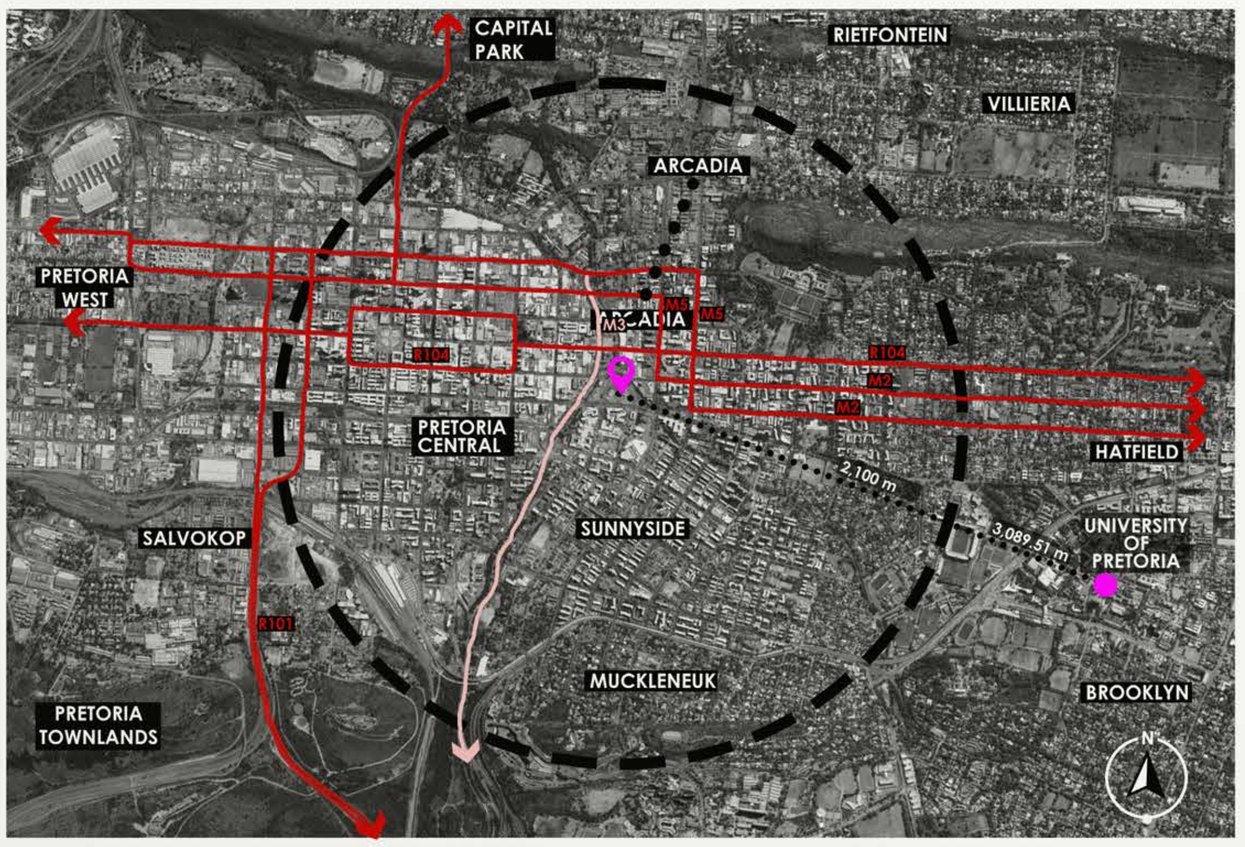
GAUTENG

MAPPING - MACRO

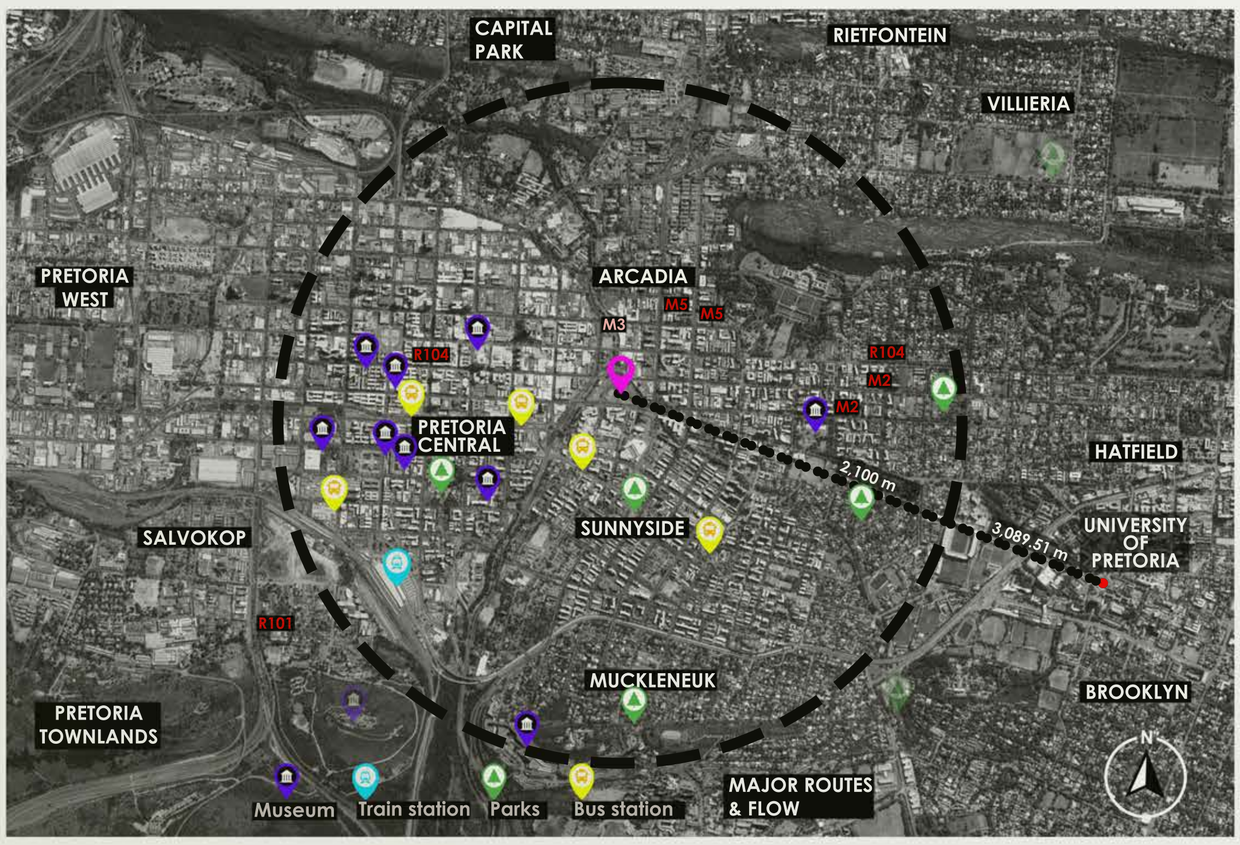
LOCATION: - Proximity to urban centers.
- Safe and secure area



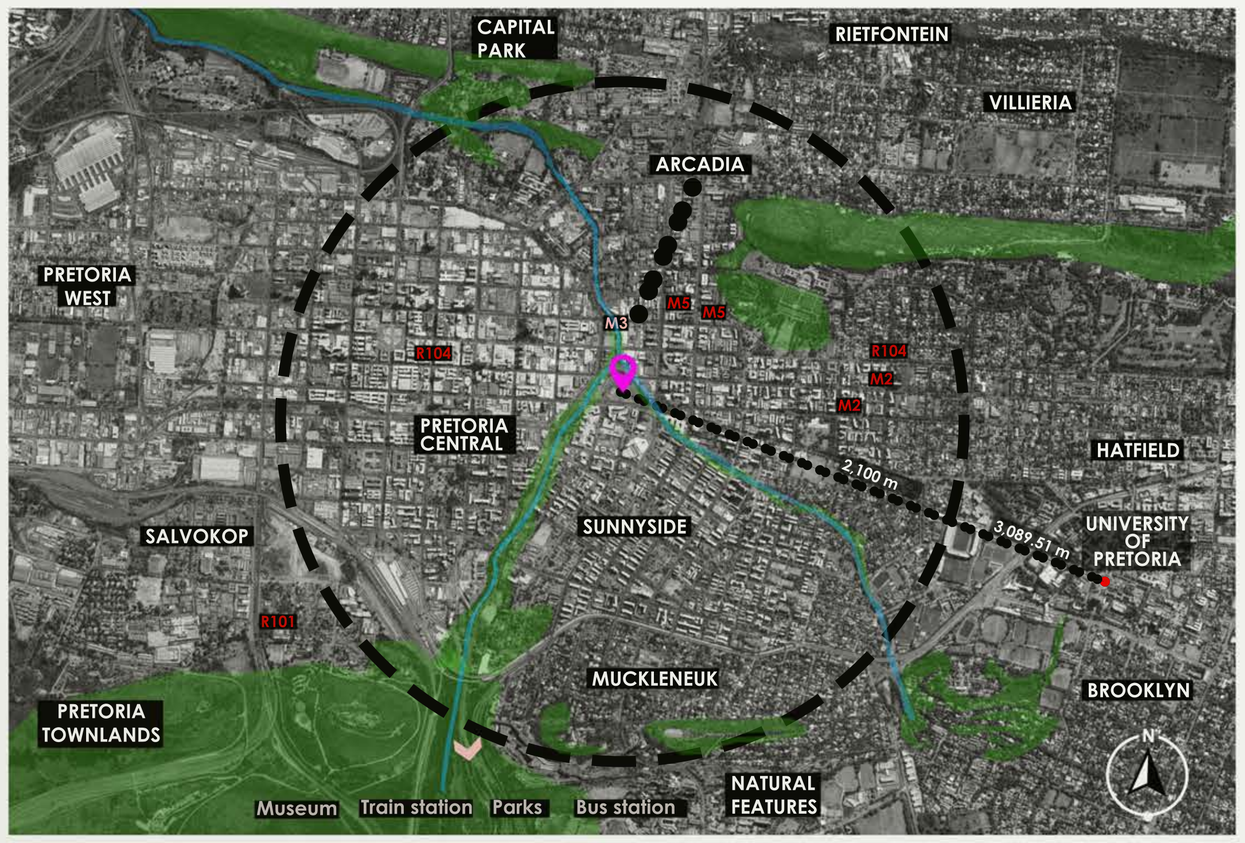
TRAFFIC FLOW



NODES



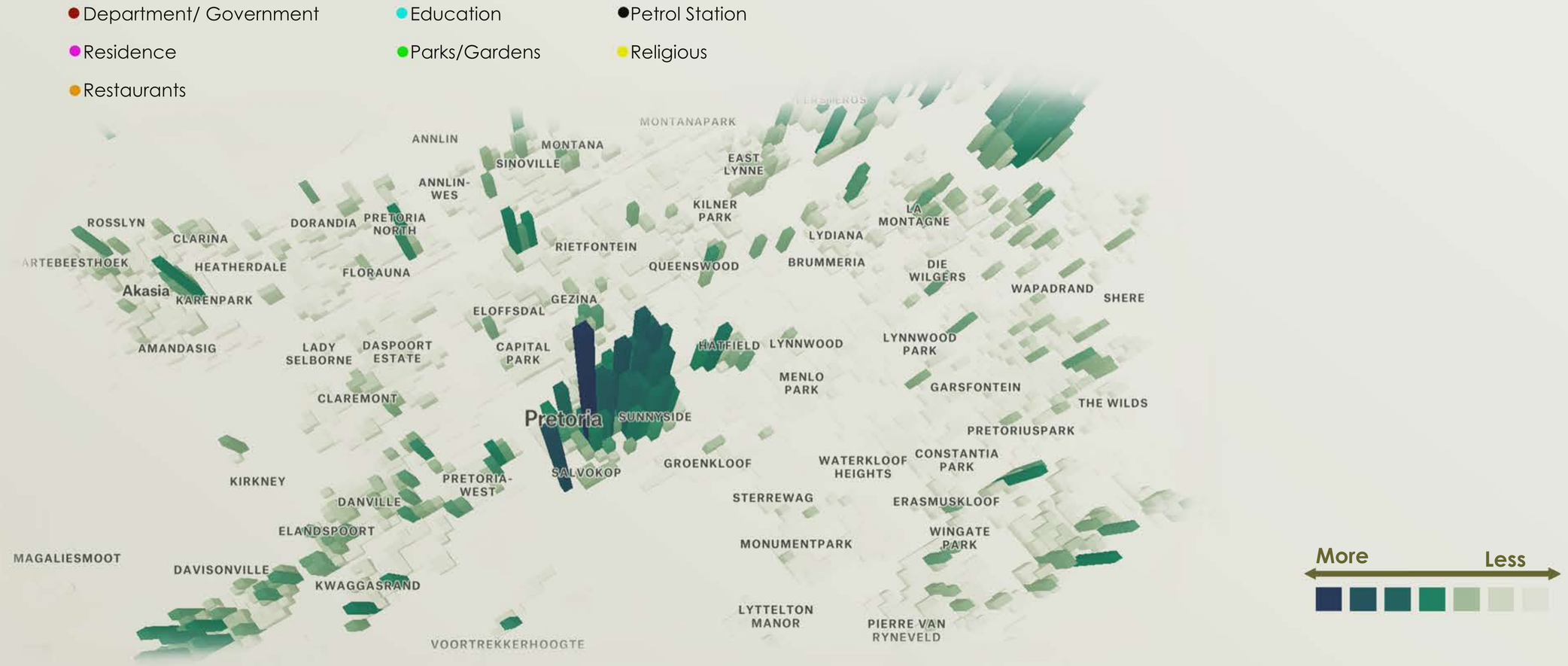
NATURAL FEATURES



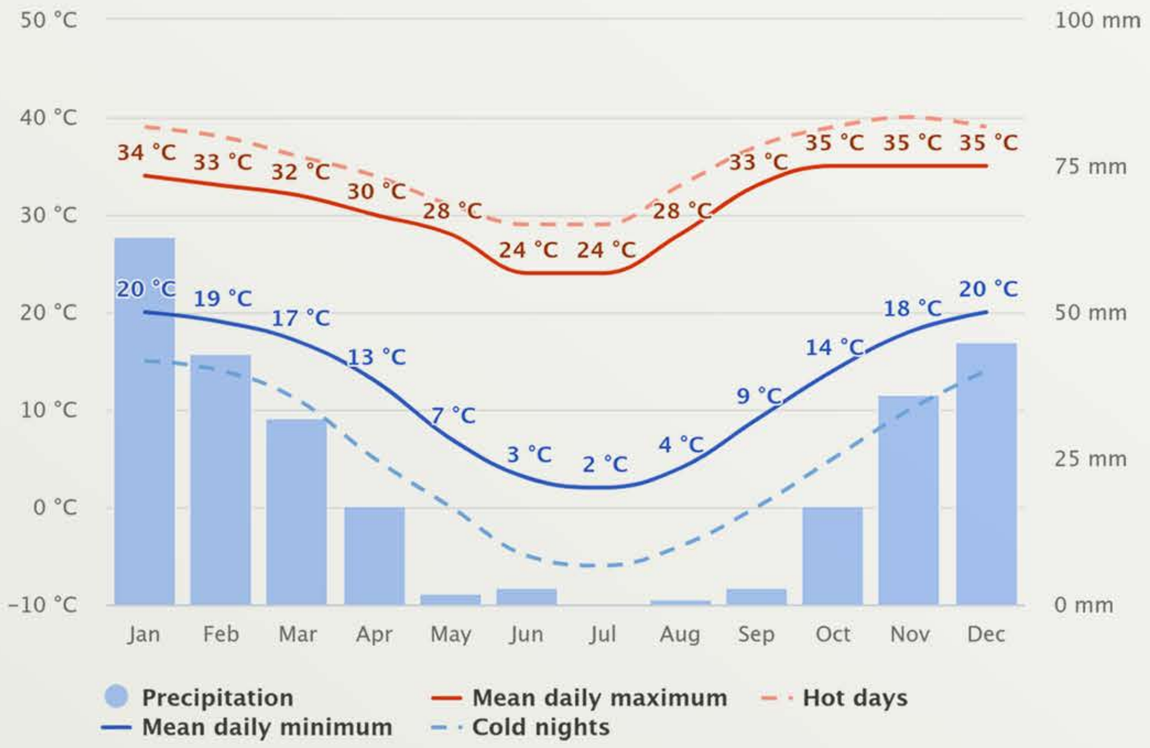
LAND USE AND BUILDING

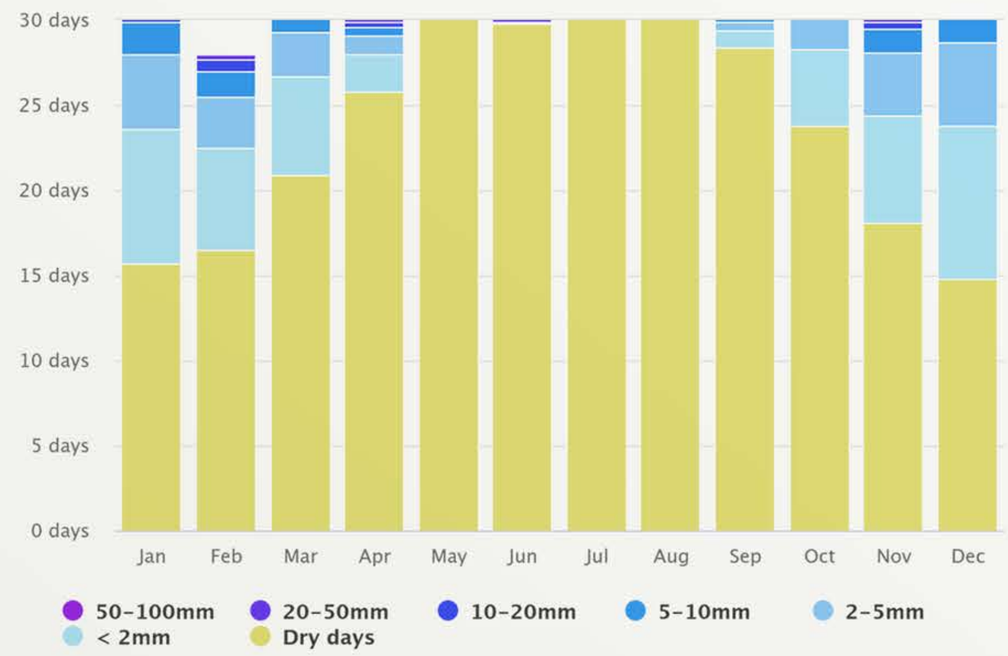
- Shopping
- Department/ Government
- Education
- Petrol Station
- Medical
- Residence
- Parks/Gardens
- Religious
- Museums/Art
- Restaurants

POPULATION

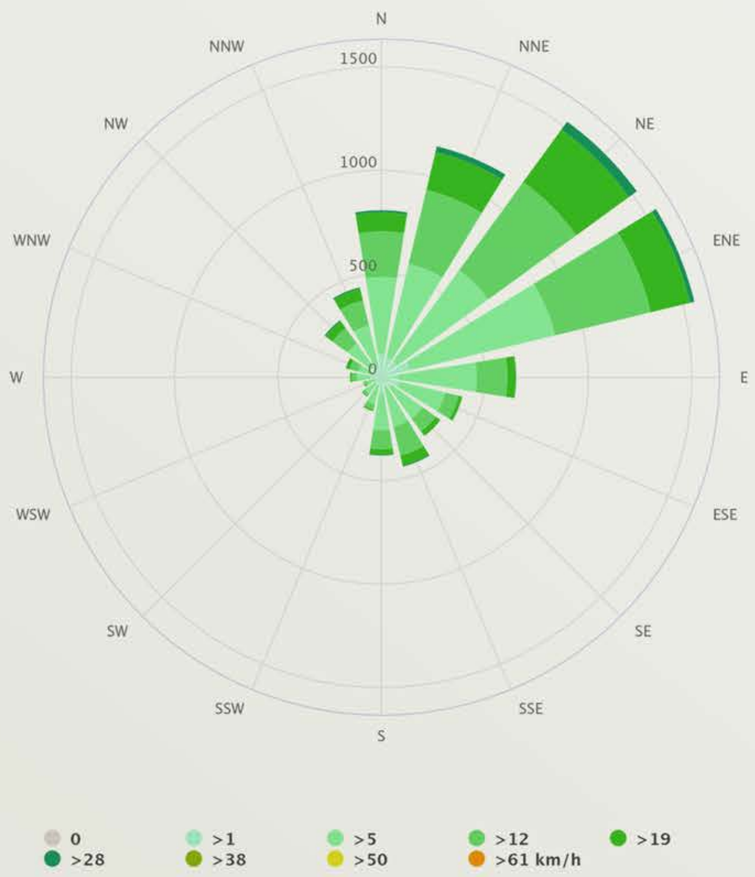


WEATHER DATA FOR TSHWANE

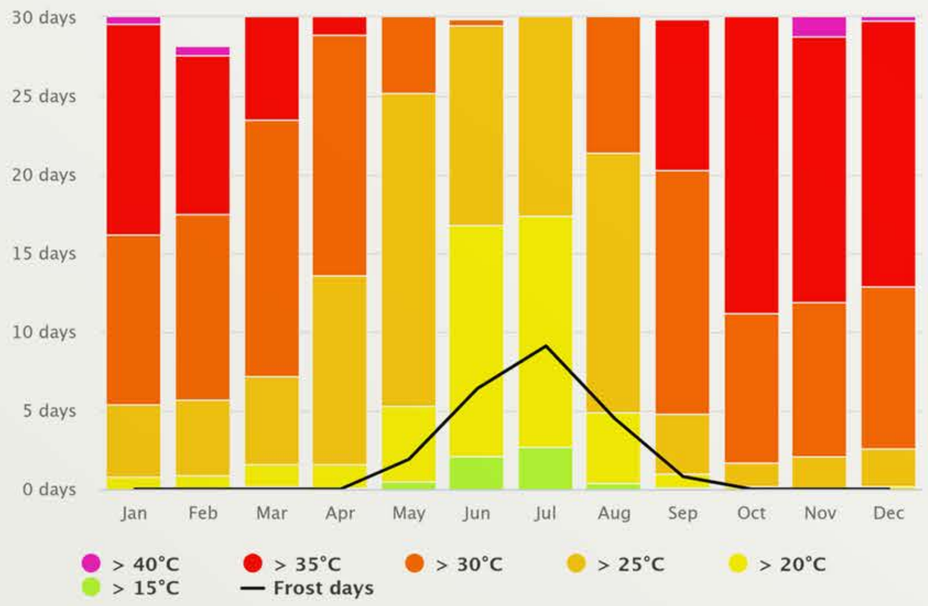




Temperature



Rain



Wind

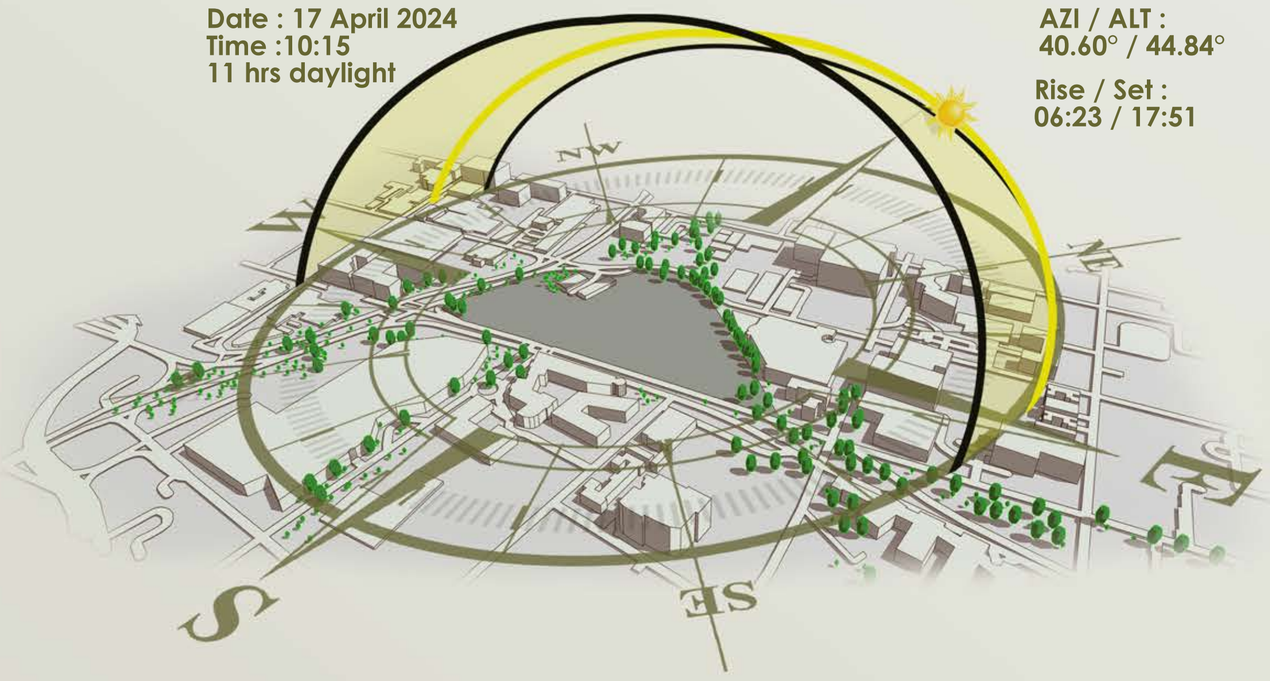
Max. Temp

SUN PATH AND SHADOWS

Date : 17 April 2024
Time :10:15
11 hrs daylight

AZI / ALT :
40.60° / 44.84°

Rise / Set :
06:23 / 17:51



Wind direction

Date : 17 April 2024
Time :10:15

HERITAGE ANALYSIS

1888

The Caledonian Sport Grounds were opened on 31 August 1888, a year before the Anglo-Boer War.

1903

The headquarters of the Football Association of Pretoria (FAP), or the Northern Transvaal Football Association has been located at the Caledonian Stadium since 1903 (Bührmann 2010).
The Arcadia Shepherds Football used the facilities of the FAP as their home ground for training and playing games.

1930

Stadium Construction for Team Competitions.
The stadium became the council's property after the club sold it to the council in 1937

1960

During the 1960's football in South Africa started to develop into a professional sport (Bührmann 2010). During this period the Arcadia Shepherds Football Club became the first professional club in South Africa (Bührmann 2010).

1970

The club once again made history in 1970's when they became the first club to include a black player (Vincent Julius) as part of the team (Fouche & Manna 2016). As a result of this and the Apartheid policy of the time they were banned from using the Caledonian Stadium (Bührmann 2010).

1987

City Lake Project Begins

- The City Lake Project was initiated. The City Lake Project was a proposed development plan by the City Council of Pretoria which aimed at transforming the area around a designated site into a public or recreational space.
- The site for the development was proposed to be rezoned by 1995 (Weavind and Weavind, 2009).

1997-1998

Meetings About Stadium Relocation

- Arcadia Shepherds Football Club (ASFC) and Football Association of Pretoria (FAP) held several meetings with the City Council.
- Three potential relocation sites for the Caledonian Stadium were discussed but ultimately not used (Weavind and Weavind, 2009).

1998-1999

Decision to Upgrade the Stadium

- The City Council informed Arcadia Shepherds Football and FAP that the stadium would not be relocated but rather upgraded as part of the City Lake Project.
- However, by August 1999, the Department of Planning announced that the City Lake Project would not proceed (Weavind and Weavind, 2009).

2000-2015

Lease Agreement Negotiations

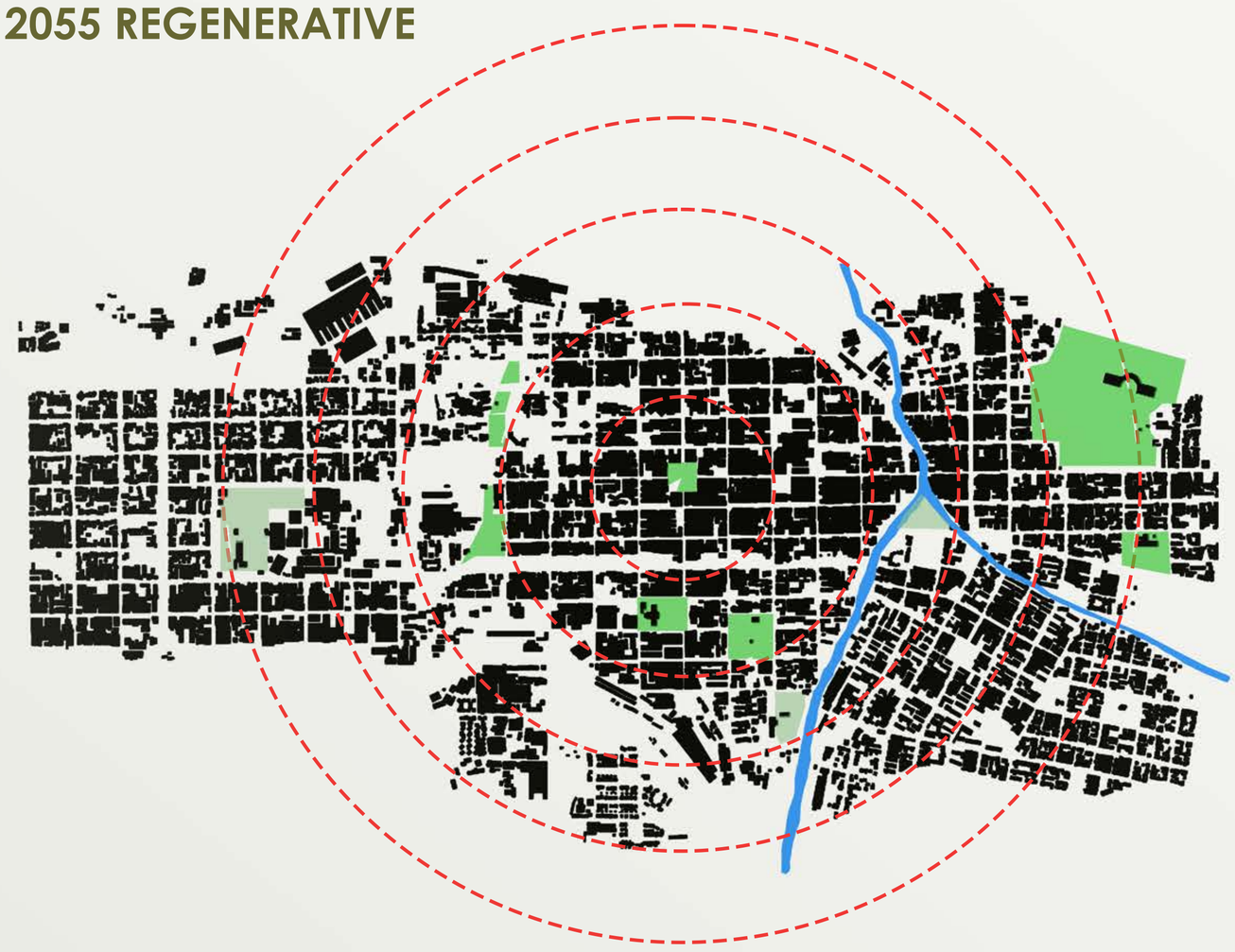
- Arcadia Shepherds Football engaged in multiple meetings with the City Council to finalize their lease agreement for the stadium.
- Proposals for stadium refurbishments were repeatedly rejected by Arcadia Shepherds Football due to various objections.

2016

Before the 2016 municipal elections, there were plans to demolish the stadium and turn it into a multi-purpose park. Due to the evolving political and governance landscape in South Africa, the site has fallen into disrepair.

The Caledonian Sports Ground has a rich history of hosting numerous sports events. The site has been currently left abandoned, this has left many citizens frustrated, as the once vibrant venue now stands derelict and neglected.

TSHWANE'S 2055 REGENERATIVE VISION



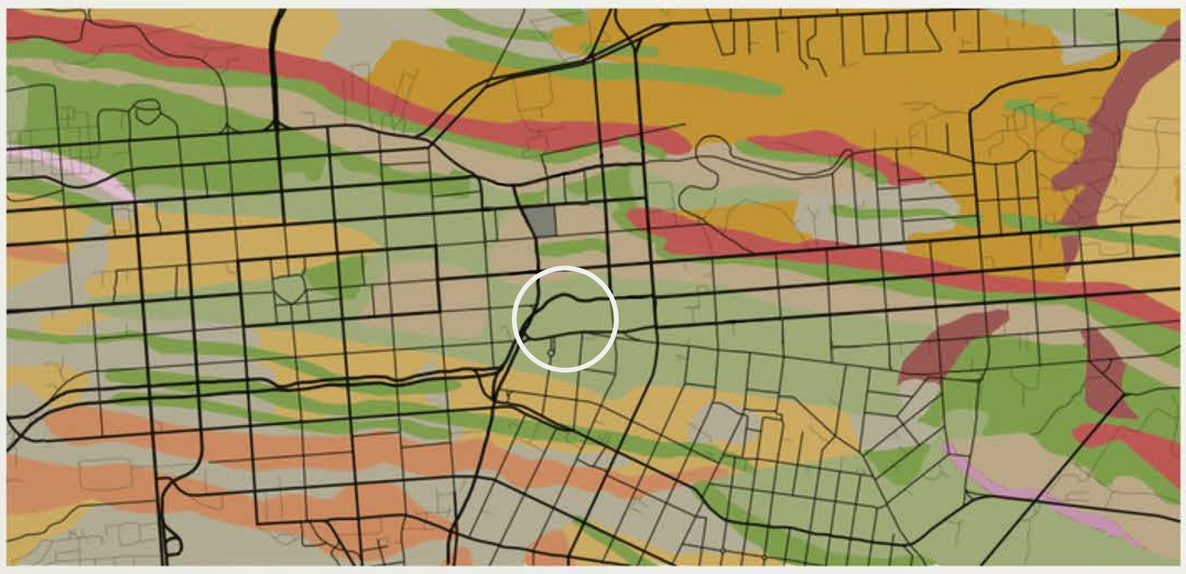
PUBLIC GREEN SPACE

PUBLIC (FENCED OFF) GREEN SPACE

South Africa's apartheid past, had an effect on the growth/ segregation on the cities we see today. Which has to led to the current insolation of the Pretoria CBD. The Tshwane 2055 vision incorporates new principles to create a
resilient city that starts to regenerate itself.
"In 2055, the City of Tshwane is liveable, resilient and inclusive whose citizens enjoy a high quality of life, have
access to social, economic and enhanced political freedoms and where citizens are partners in the development of
the African Capital City of excellence" (City of Tshwane: 2015).

Map of points of Tshwane's 2055 vision points of interest

ECOLOGICAL CONSIDERATION



Formation; Lithology

- ;Surface deposit, Alluvium
- Dwaalheuwel; Quartzite
- Boshoek; Quartzite
- ;Diabase
- Hekpoort; Volcanic rocks
- Daspoort; Quartzite
- Timeball Hill; Quartzite
- Silverton; Shale
- Strubenkop; Shale (ferruginous)
- Timeball Hill; Shale, Siltstone

Image adapted from: UNIVERSITYof WISCONSIN (n.d.). 1:250 000 geological series 2528 Pretoria. [online] collections.lib.uwm.edu. Available at: https://collections lib uwm edu/digital/collection/agdm/id/12337/

OPPORTUNITES PROVIDED

Nutrient-Rich Soils: Weathered volcanic rocks can produce soils rich in minerals such as iron, magnesium, calcium, and potassium. These nutrients are essential for healthy plant growth, making the soils fertile and suitable for agriculture.

Good Drainage: Soils derived from volcanic rocks often have good drainage properties, preventing waterlogging and creating favorable conditions for crop growth.

The channeled river with the open spaces

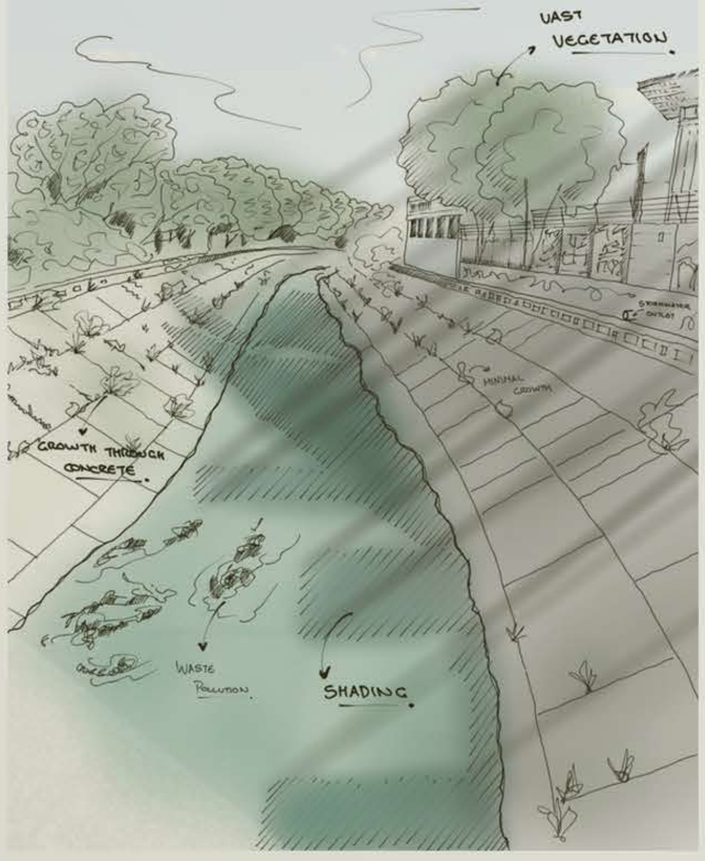
Open space, the river canals, tree corridors

Problems

Many open spaces in the urban environment are fragmented and deteriorated. The river, currently an unhealthy green corridor, requires rehabilitation.

Opportunities

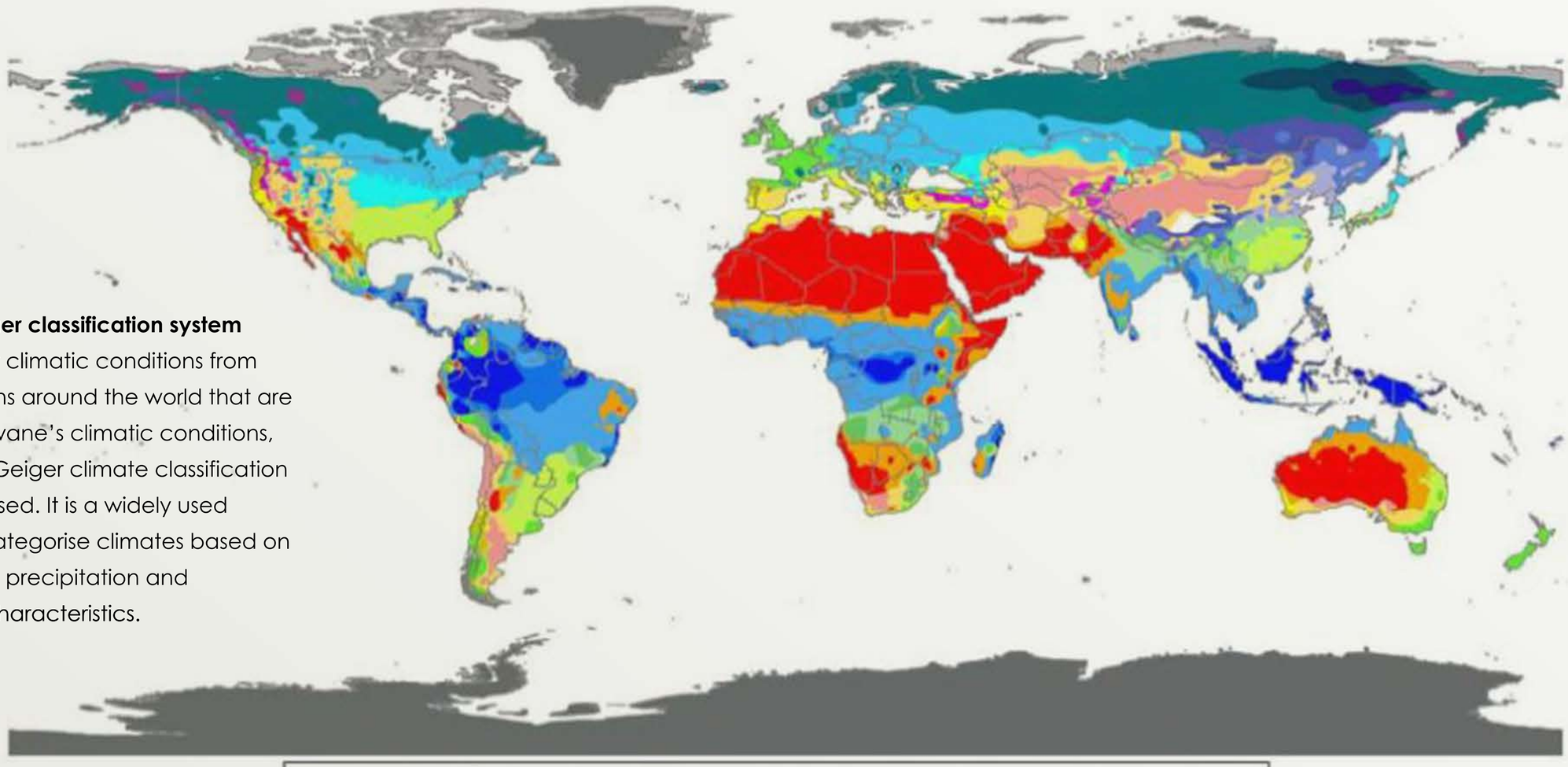
Opportunities exist to implement practical solutions such as creating green corridors, transforming the river into a vibrant green corridor, and linking open spaces. Strategic rehabilitation of the river at key locations can support future regeneration efforts.



Concerns

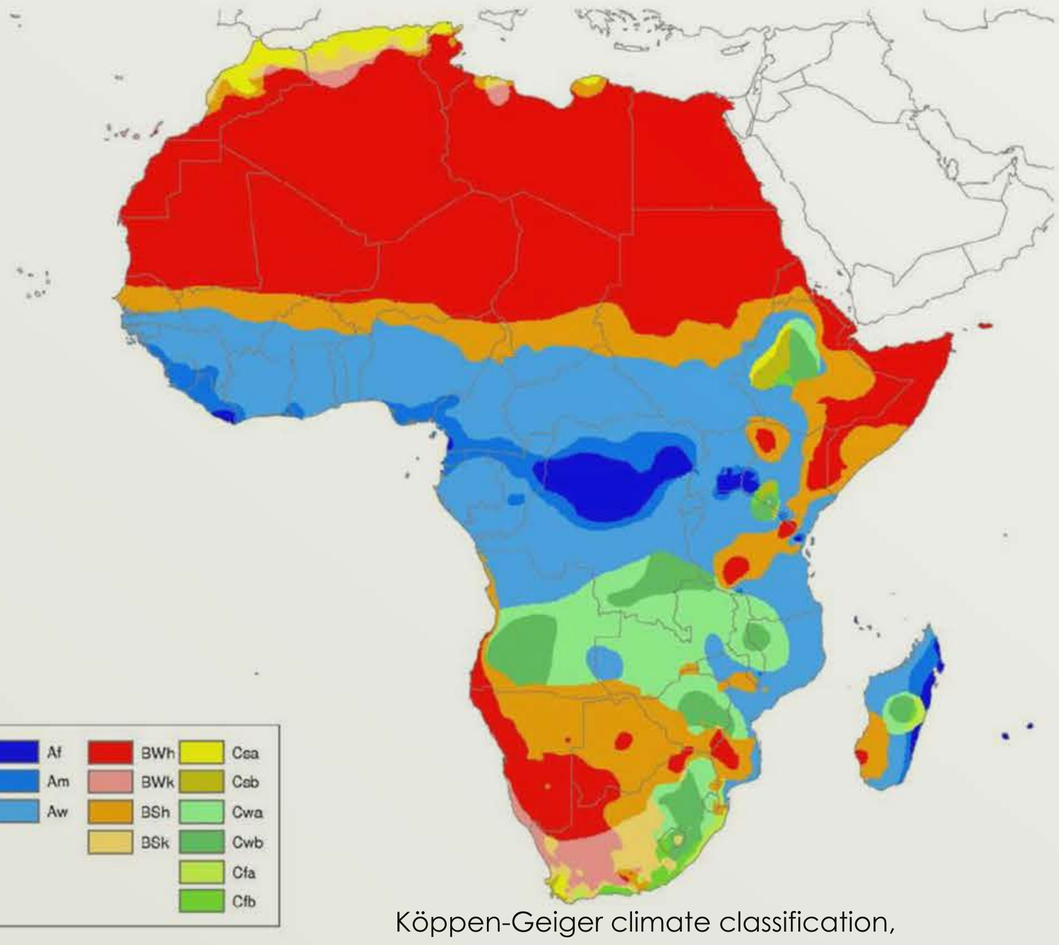
Solar shading on the existing river canal does not serve as a functional component to the river edge

THE CLIMATE SCENARIO



Köppen Geiger classification system
Is used to get climatic conditions from various regions around the world that are similar to Tshwane's climatic conditions, the Köppen Geiger climate classification system was used. It is a widely used method to categorise climates based on temperature, precipitation and vegetation characteristics.

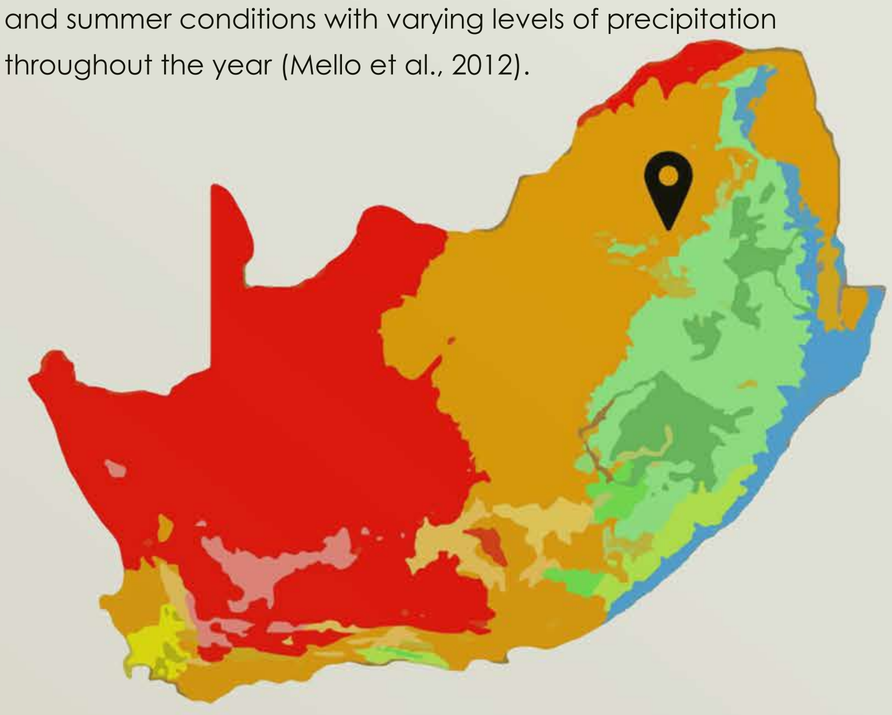
Köppen-Geiger climate classification, World map (Peel et al., 2007).



Köppen-Geiger climate classification, map of Africa (Peel et al., 2007)

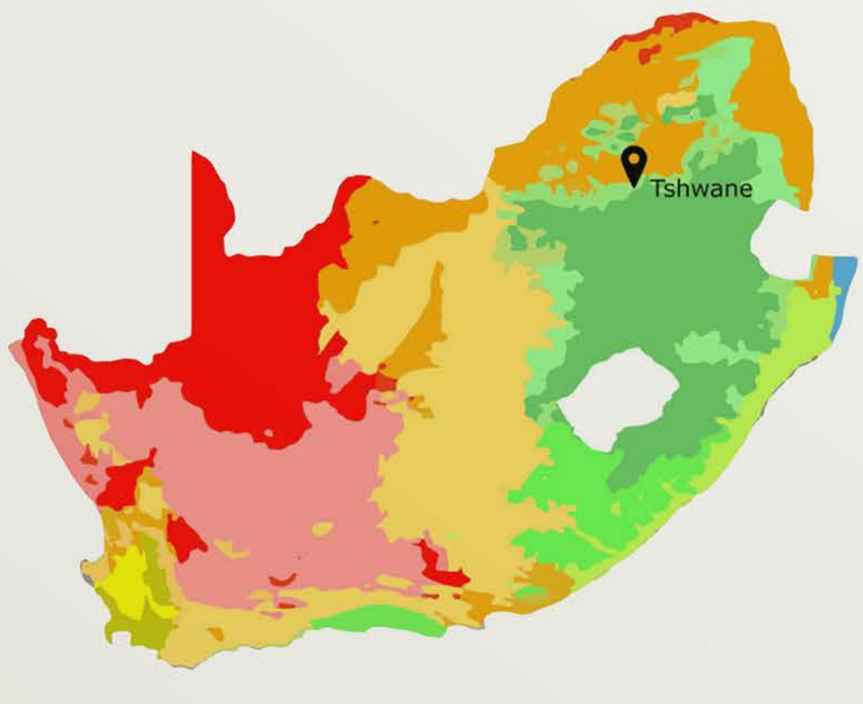
THE CURRENT CLIMATE

(ii) Cwb - (temperate dry winter, warm summer)
The Cwb climate classification, as per the Köppen-Geiger climate classification system signifies a temperate dry winter, warm summer. This classification points to regions known for temperatures and distinct seasons with cold and dry winters alongside relatively warm summers, which are characteristics found in the City of Johannesburg. The Cwb climate category is linked to regions that experience a contrast between winter and summer conditions with varying levels of precipitation throughout the year (Mello et al., 2012).



Köppen-Geiger Climate Classification map for South Africa (1980-2016) (Beck, et al., 2018).

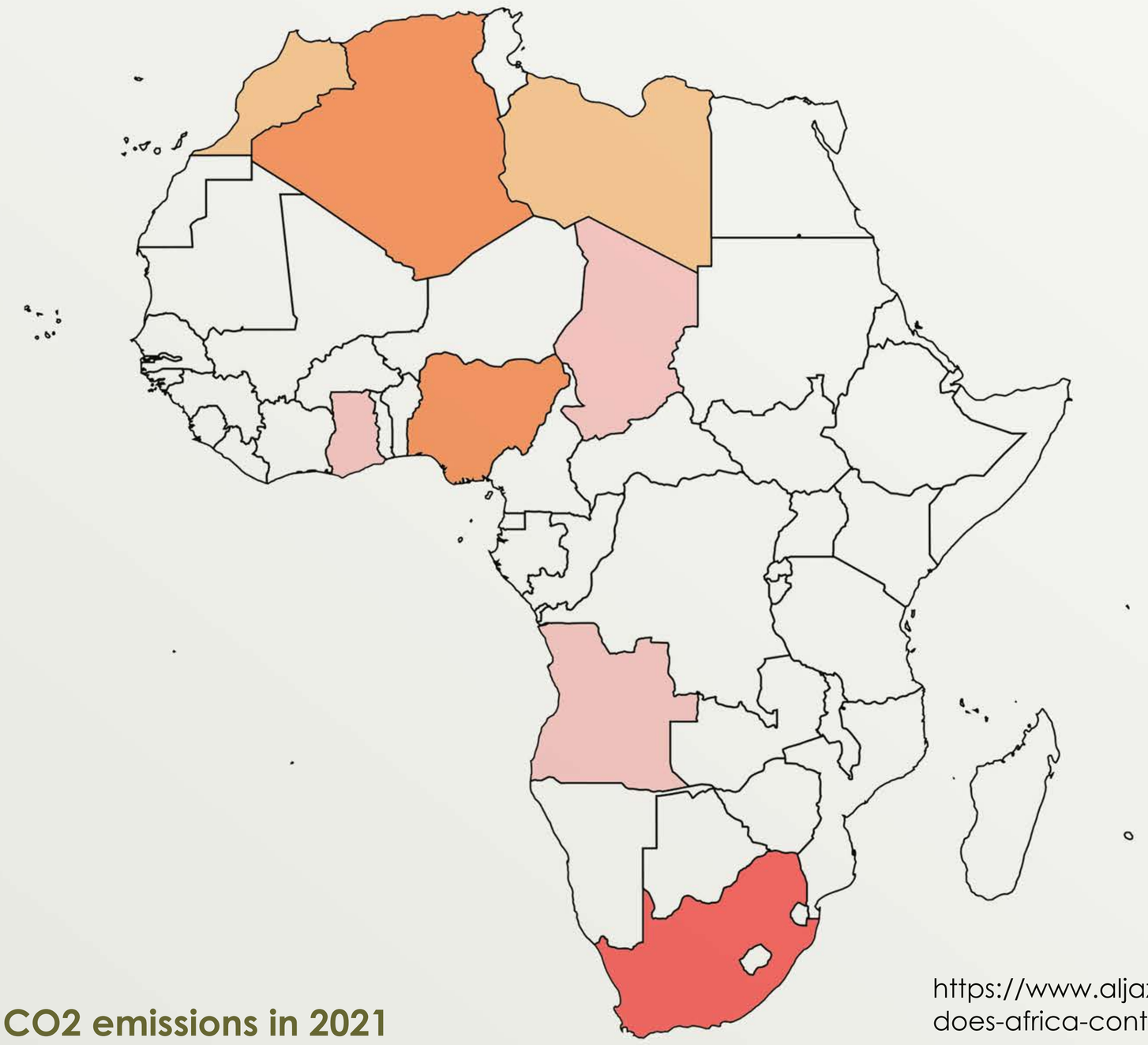
(i) Cwa - (Dry winter, hot summer subtropical)
The Cwa climate classification, as defined by the Köppen Geiger system represents a climate found in regions like Tshwane South Africa, characterised by dry winters and hot summers subtropical. This classification signifies a climate distinguished by moist summers along with arid winters typically receiving an average annual rainfall of about 1500 mm (Bueno et al., 2016). Regions categorized under Cwa encounter changes show significant variations between summer and winter conditions (Bueno et al., 2016). The Cwa climate type is commonly linked to characteristics indicating moderate temperature ranges throughout the year (Pietroski et al., 2013).



Köppen-Geiger Climate Classification map for South Africa (1980-2016) (Beck, et al., 2018).

THE FUTURE CLIMATE

(iii) Bsh - (hot semi-arid climate)
The BSh climate classification, according to the Köppen-Geiger system, represents a hot semi-arid climate characterized by warm temperatures and limited precipitation. This classification indicates regions with distinct seasonal variations, featuring hot and dry conditions, particularly during the summer months. The BSh climate type is associated with areas that experience arid to semi-arid conditions, with moderate temperature ranges and low humidity levels (Filho et al., 2020).



- South Africa is the largest contributor to carbon emissions in Africa (AJLabs 2023).

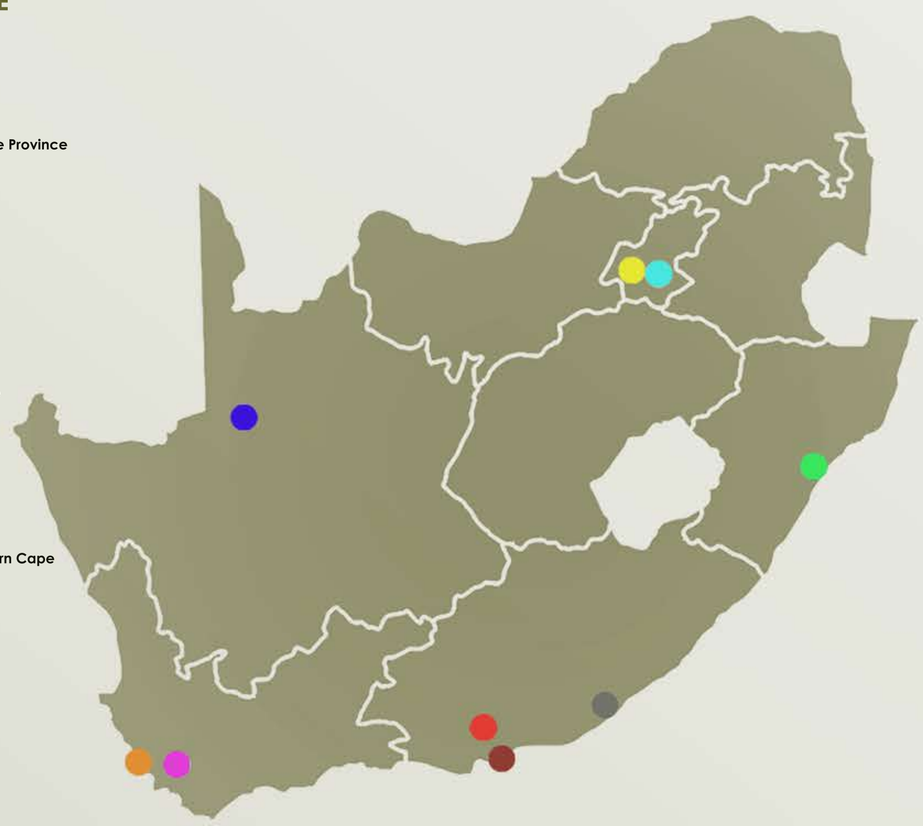
CO2 emissions in 2021

0 | 20m | 50m | 100m | 200m | 500m | 1B | 2B | 5B

https://www.aljazeera.com/news/2023/9/4/how-much-does-africa-contribute-to-global-carbon-emissions

PICTURE

GREEN TVET INITIATIVE



Northlink College
Bellville/ Cape Town, **Western Cape Province**

Boland college
Stellenbosch, **Western Cape**

Northern Cape Rural TVET College
Upington, **Northern Cape Province**

East Cape Midlands College
Uitenhage / Kariega, **Eastern Cape**

Port Elizabeth College
Port Elizabeth, **Eastern Cape**

Lovedale Public TVET College
King William's Town / Qonce, **Eastern Cape**

Goldfields TVET College
Randfontein, **Gauteng Province**

Central Johannesburg college
Johannesburg, **Gauteng Province**

Umfolozi College
Groutville, **Kwazulu Natal**

GREEN ECONOMY

- Aims at promoting sustainable development by reducing environmental risks, improving resource efficiency, and ensuring social equity. It focuses on low-carbon, environmentally friendly growth while creating jobs and improving quality of life. This economy integrates sustainability into all sectors, including energy, agriculture, transportation, and manufacturing, by encouraging the use of renewable resources, minimizing waste, and addressing climate change.

GREEN SECTOR

- Industries and activities that focus on environmental sustainability and resource conservation. It includes sectors like renewable energy, sustainable agriculture, green construction, waste management, and water conservation, which directly contribute to reducing environmental impact and promoting green jobs.

GREEN JOBS

- Roles that contribute to environmental sustainability by reducing the environmental impact of businesses, promoting resource efficiency, and supporting the transition to a low-carbon economy.

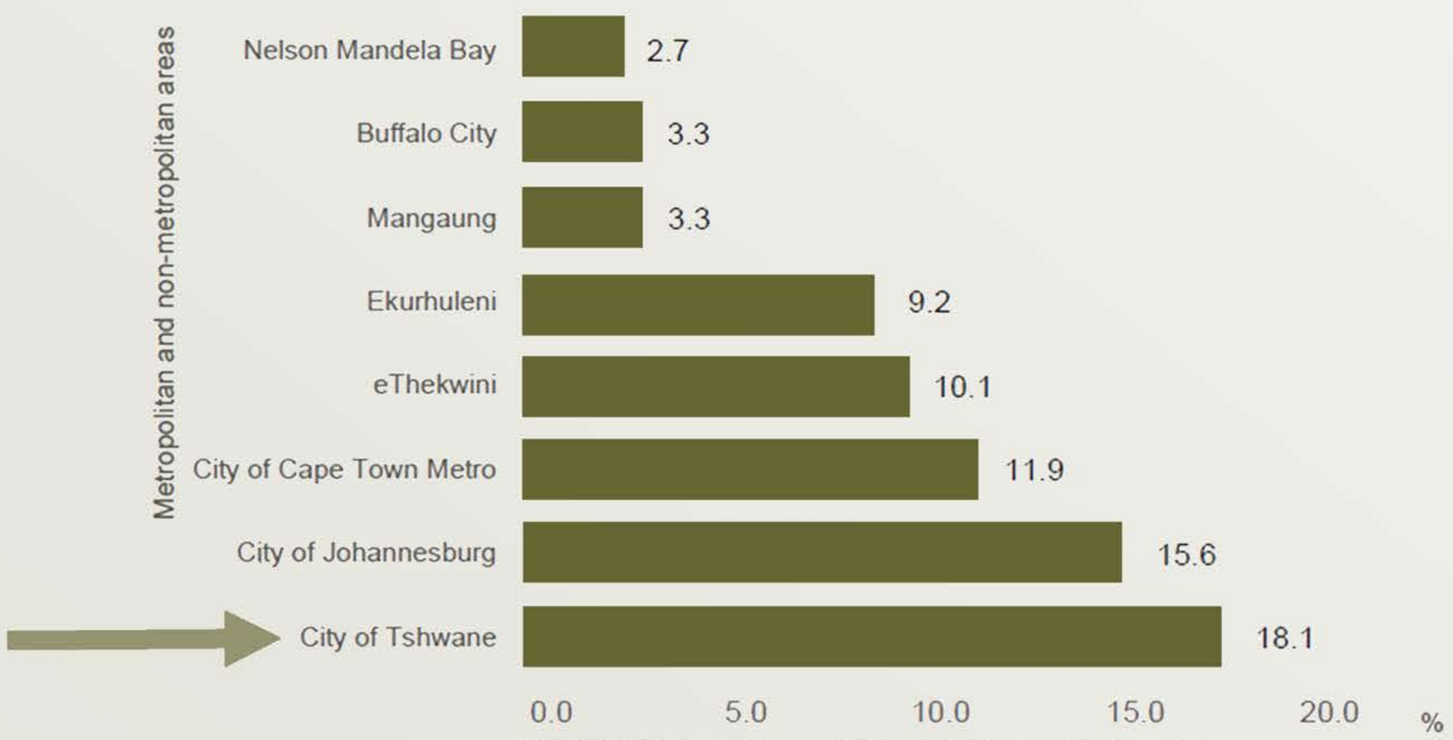
HIGH YOUTH UNEMPLOYMENT

South Africa, similar to many nations worldwide, grapples with significant issue of **high unemployment rate**.

According to Stats SA, the youth unemployment rate (for individuals aged 15-34) stands at 45.5%, significantly higher than the national average of 32.9% in the first quarter of 2024 (Stats SA, 2024).

HOMELESSNESS IN SOUTH AFRICA

Another issue that South Africa also grapples with, is the issue of **homelessness**, having recorded **55 719** homeless people in 2022 (Stats SA, 2024).



Percentage distribution of homeless persons by location; metropolitan areas, Census 2022

Although homelessness stems from various factors such as **substance abuse**, **mental health challenges**, **rising housing costs**, **lack of affordable housing**, s**ocial exclusion**, **limited access to healthcare and support services**, **domestic violence**, and **family breakdowns** etc.

The project aims to provide practical interventions that offer pathways to deal with high youth unemployment and homeless individuals at its economic roots. This approach is vital for long-term sustainability and helping individuals regain independence.

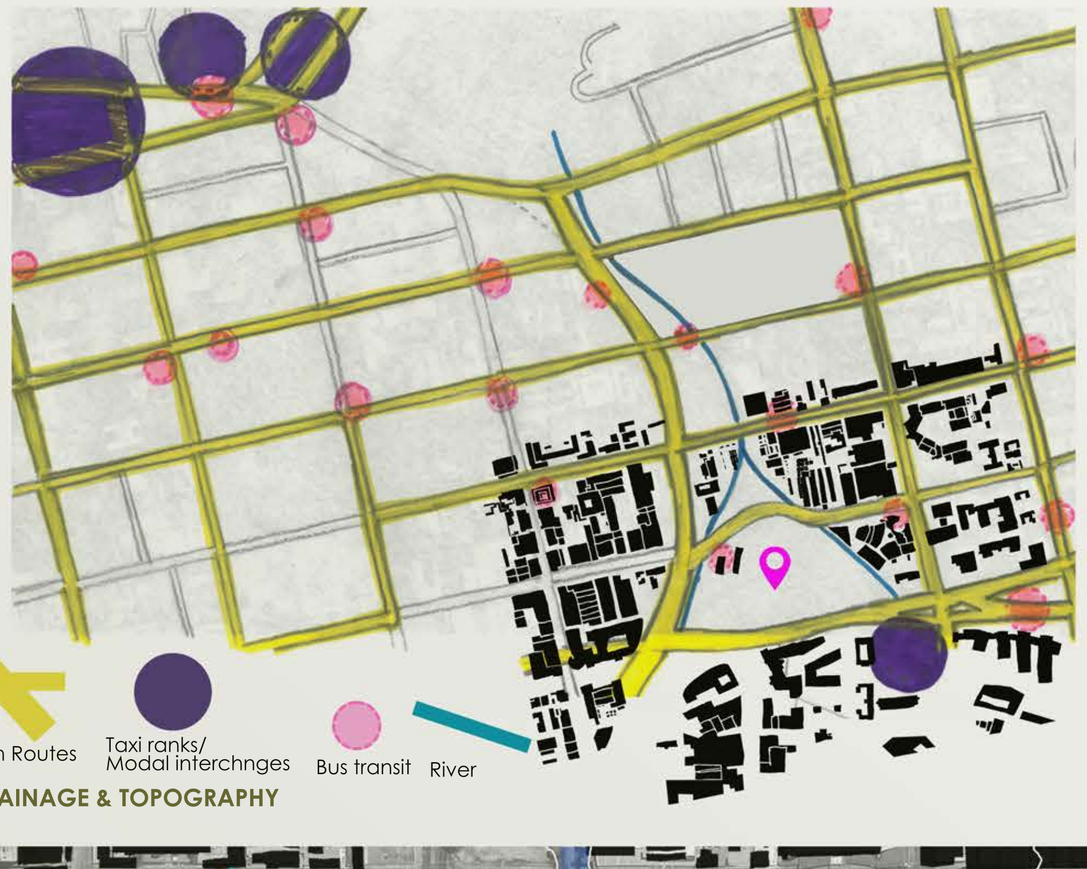
The project will specifically focus on individuals who are homeless due to **poverty and unemployment**.

These issues are significant, addressing the economic causes such as **creating employment opportunities** can have a profound impact. By concentrating on **poverty and unemployment**.

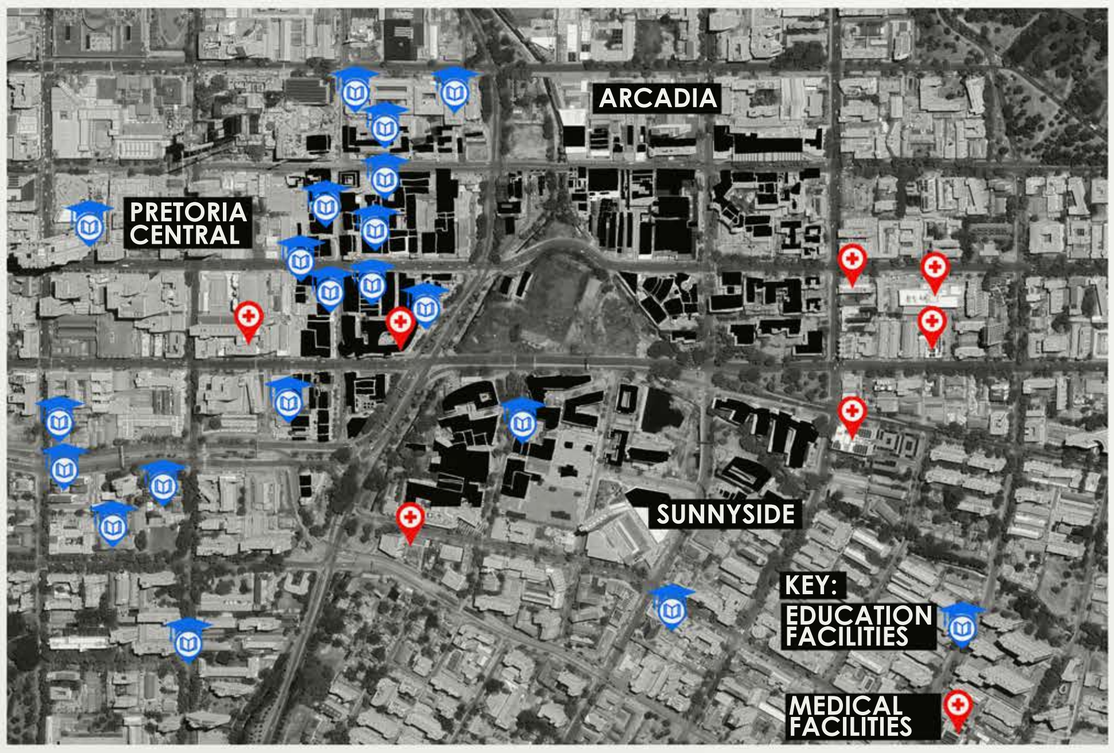
MAPPING - MESO

TRANSPORT ROUTE

PUBLIC TRANSPORT

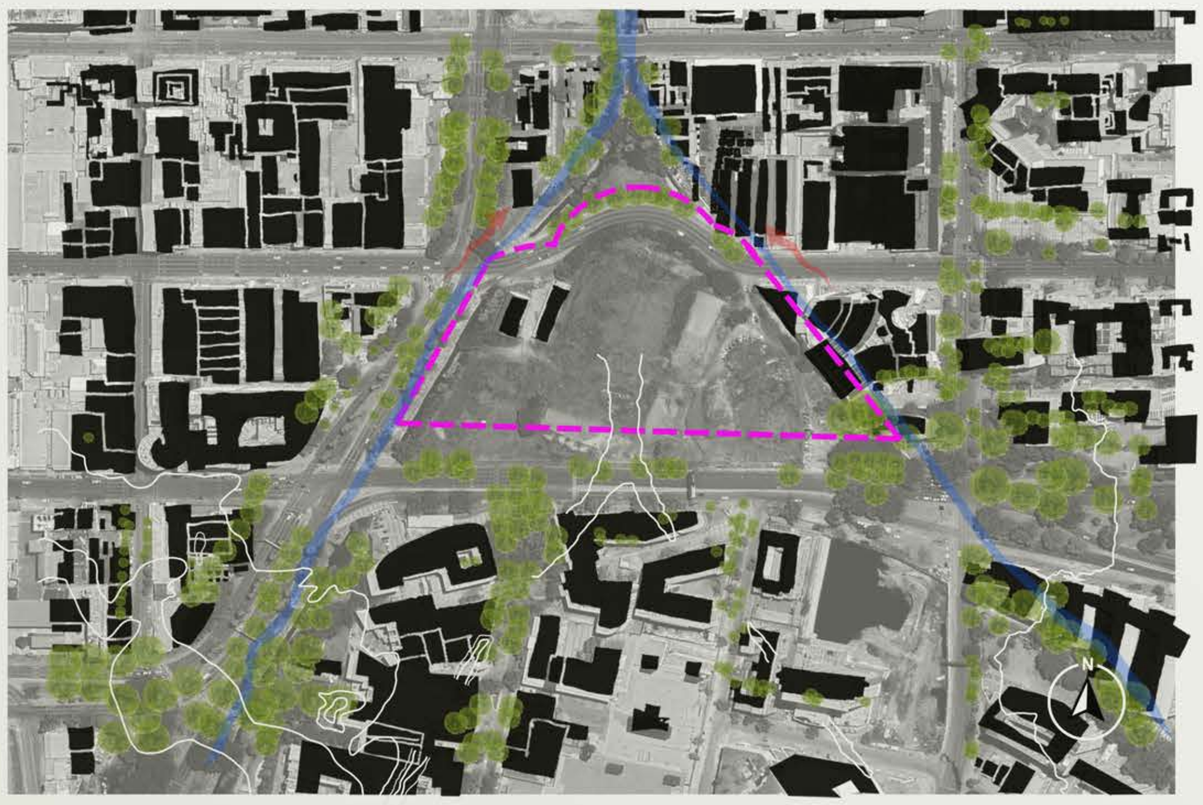


NODES

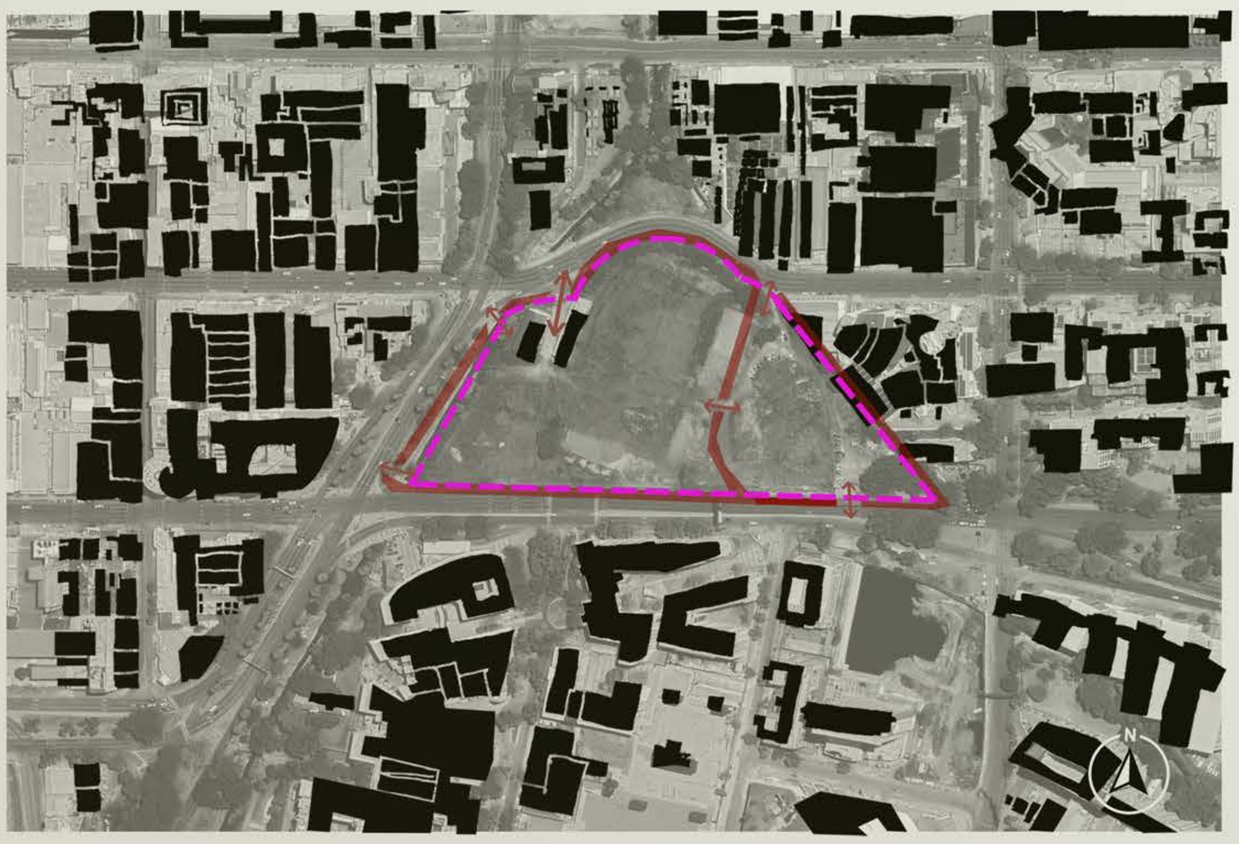


DRAINAGE & TOPOGRAPHY

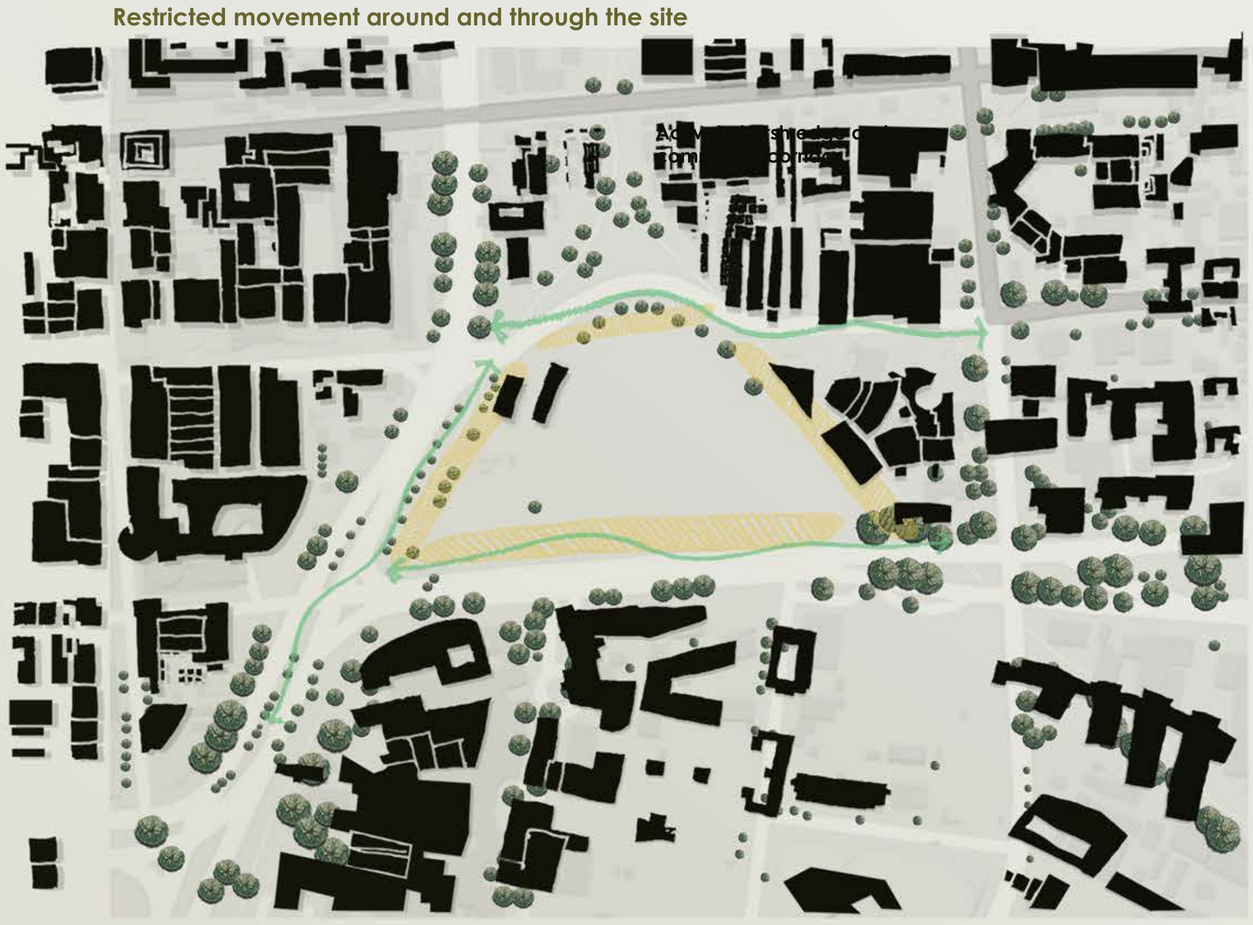
VEGETATION



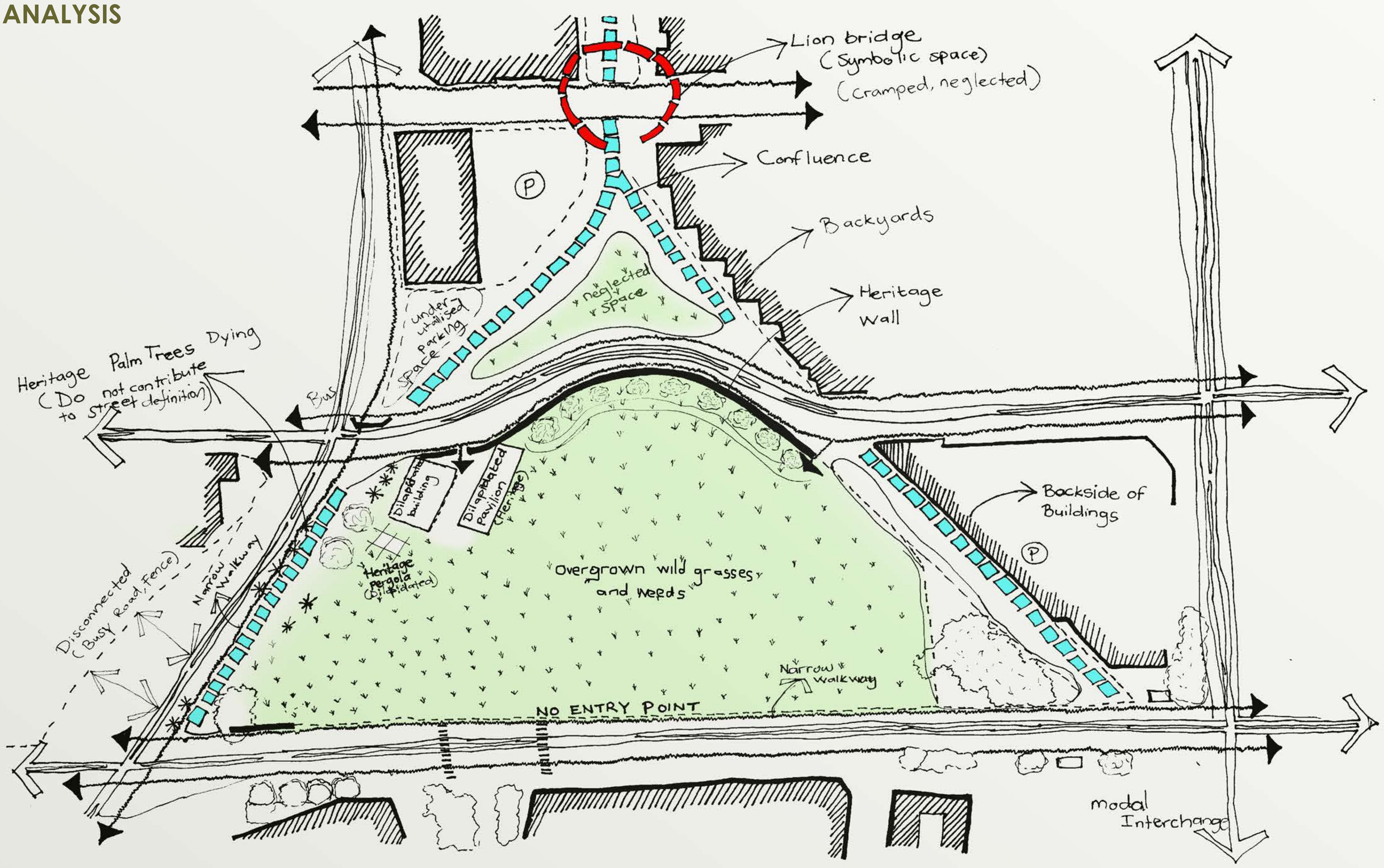
BOUNDARY AND ACCESS



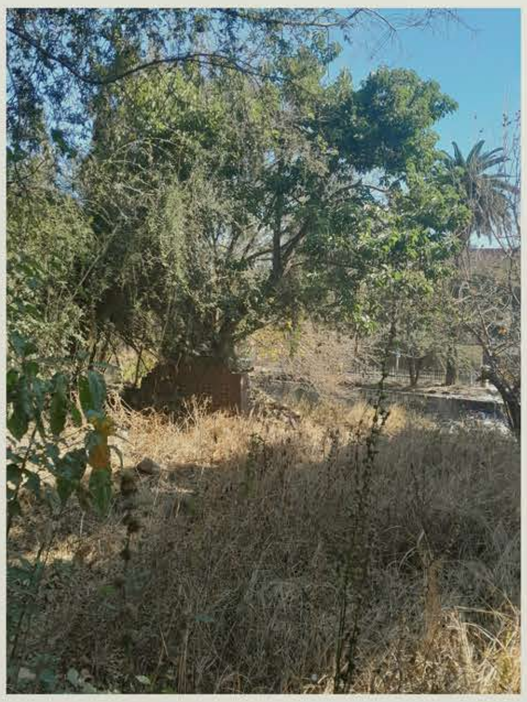
Restricted movement around and through the site



ANALYSIS



Harsh site edges



TYPOLOGIES

Government Pensions Administration Agency (GPAA)

Site Boundary wall

Mediclinic/ Hospital

Apiesrivier

Residential Building

Sterland Mall

Sterland Mall

Taxi Model interchnge

SAPS
Maupa Naga

Walker Spruit

Site edge

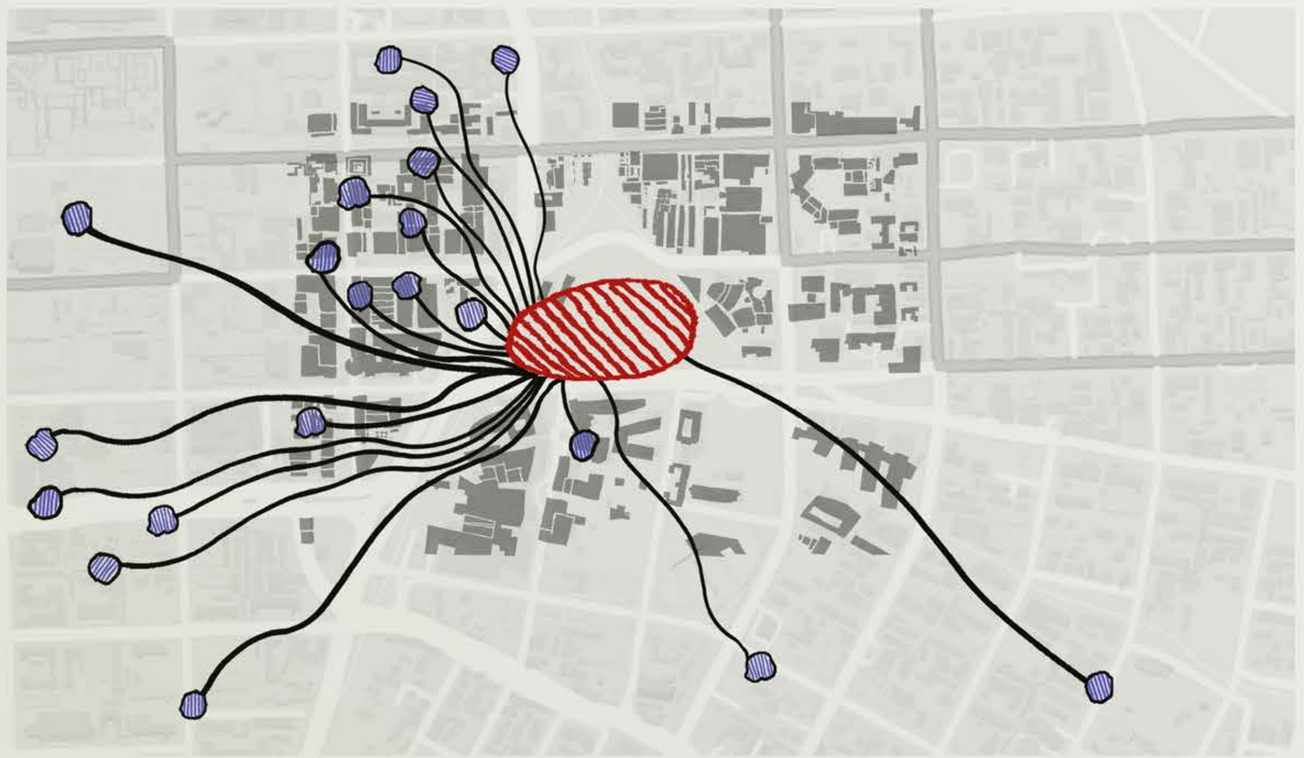
The Government Employees Pension Fund (GEPF)

Jacaranda Trees

Department of Tourism

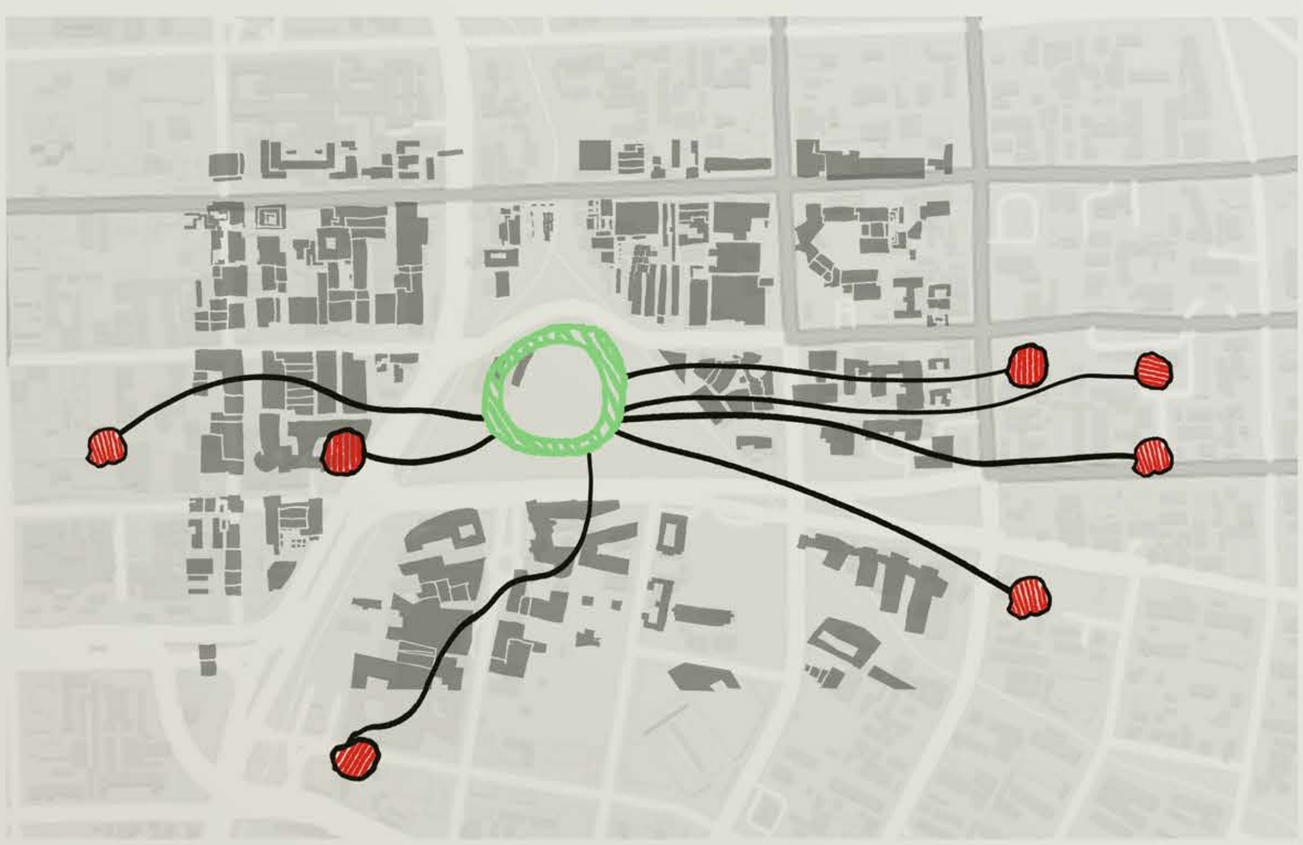
Riverside Apartments/ Residential

EDUCATION FACILITIES



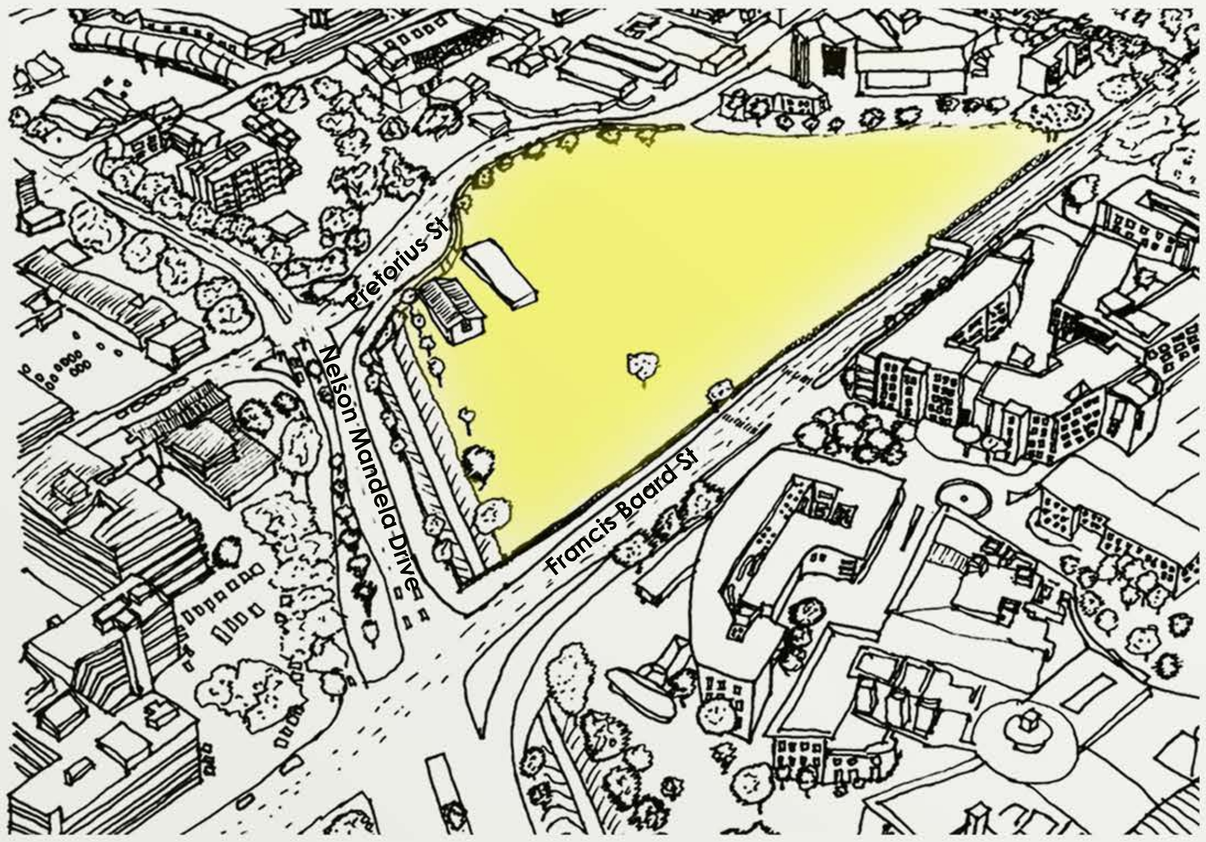
Connecting with other Education facilities

MEDICAL FACILITIES



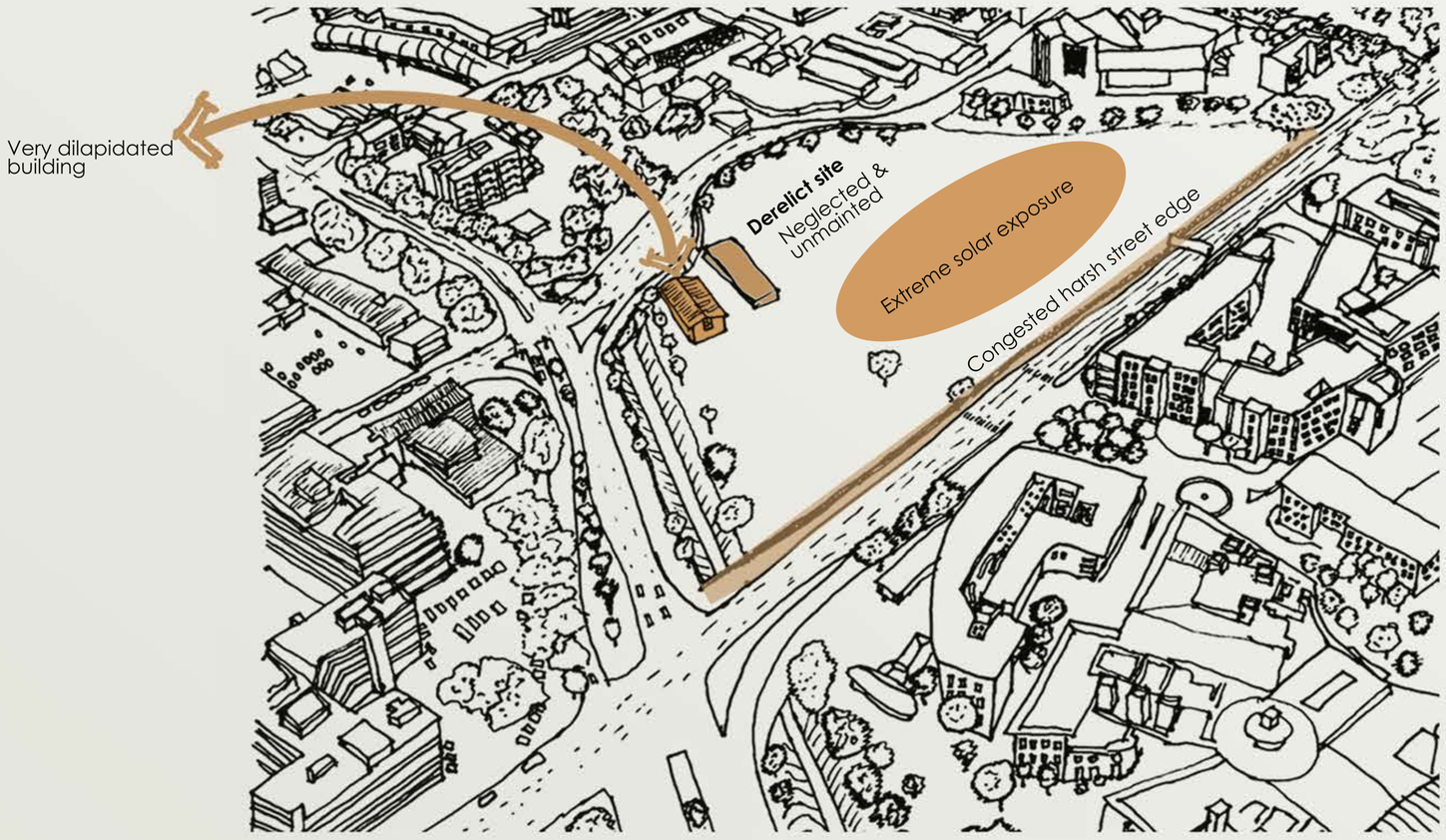
Park and sports facility providing tranquil space

SWOT ANALYSIS



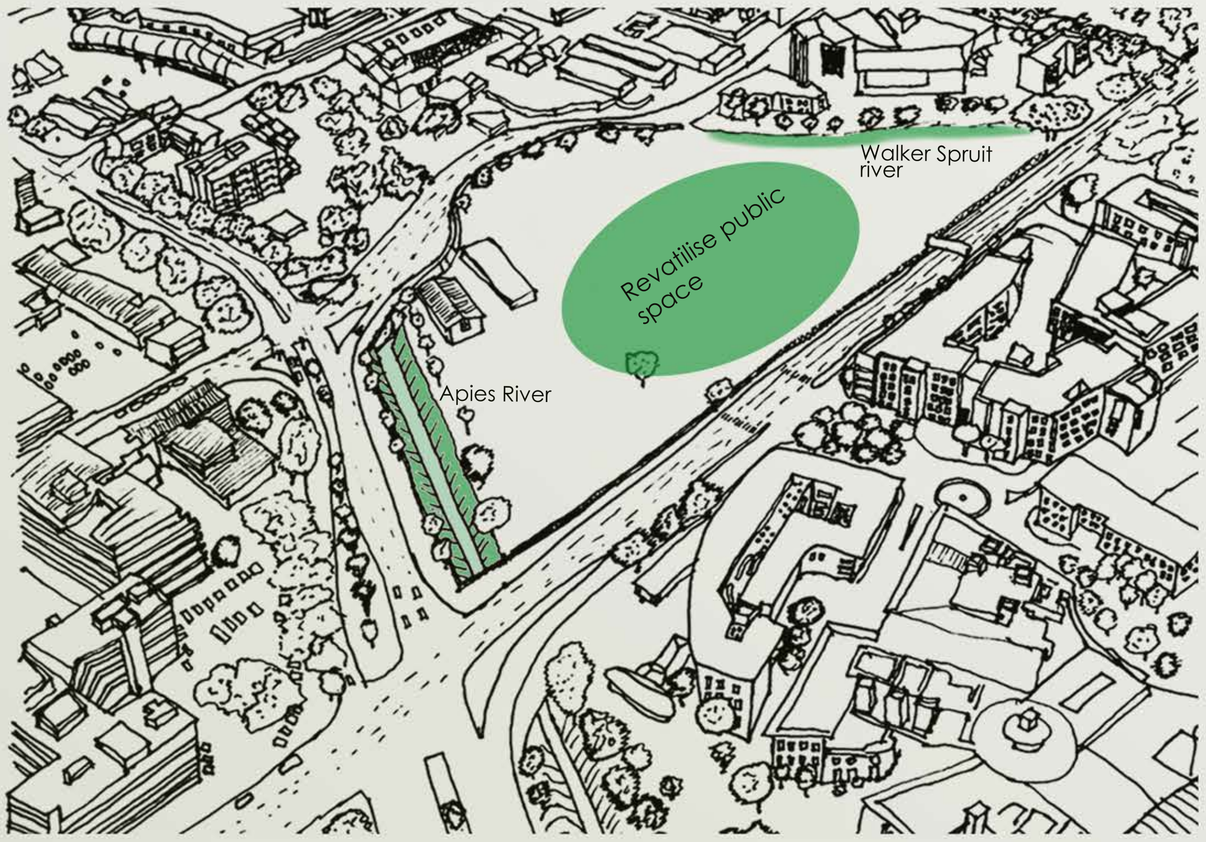
STRENGTHS

• The site occupies a strategic position within a busy area, nestled along prominent roads.
• The site benefits from its location in an area abundant with bus stops.
• The neighbourhood boasts natural features such as the rivers .
• The neighbourhood surrounding the site is home to numerous museums and historic landmarks, attracting a considerable influx of visitors to the area.
• The site is large and can accommodate vast number of programmes or buildings.
• There are several stakeholders in the neighbourhood contribute to facilitating convenient access to activities on the site.
• The local area stands out for its mix of features providing a variety of services such, as shops, restaurants, commercial establishments, and other offerings. This makes it easier to get services and goods and not need for long distance travels.



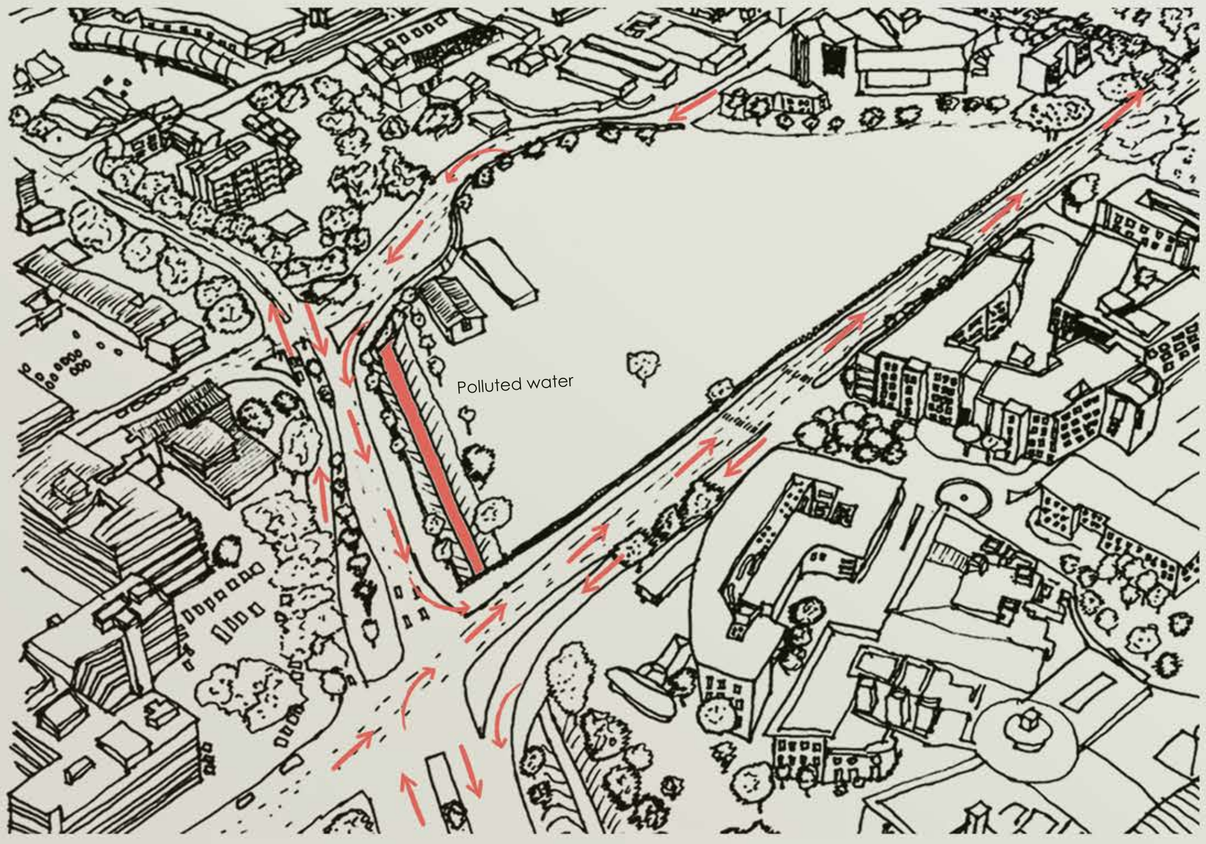
WEAKNESSES

• There is a narrow and harsh street edge along the site, creating an uncomfortable and uninviting environment for pedestrians.
• The severely dilapidated building can be demolished due to its extensive deterioration, which also disrupts the spatial organization of the site and detracts from its overall functionality and aesthetics.
• Access to the site is currently limited and restricted, as many of its boundaries are obstructed by high walls and fences, while others are inaccessible due to the presence of the Apies River.
• There's a recurring issue of dumping and littering in the neighbourhood, with some waste finding its way into the Apies River and the Walker Spruit. Without robust waste management strategies, this could potentially obstruct water flow and contribute to flooding.



OPPORTUNITIES

• Enhancing the Apies River flow by incorporating sustainable gardening and green infrastructure along the riverbank can help reduce flooding downstream, improve water quality, and enhance the aesthetic and ecological value of the site.
• The site is situated in close proximity to numerous colleges and TVET institutions, presenting an opportunity for synergistic collaboration with these establishments, which could complement the green TVET initiative effectively.
• The vicinity hosts numerous health facilities. Given this a park can provide access to a serene environment where patients and the community can relax and unwind.
• There is a significant opportunity to utilize water from the Apies River for irrigating plants on the site.
• There's a notable opportunity to filter water from the Apies River and the walker Spruit river tp provide unpoluted rivers.
• The site's massive size and positions plays a significant role in that, it can be used as a space for community gatherings and engagement.
• Segments of the site could serve for urban agriculture training initiatives, capitalizing on its size to address youth employment challenges, and supply the local vegetable vendors in the vicinity.

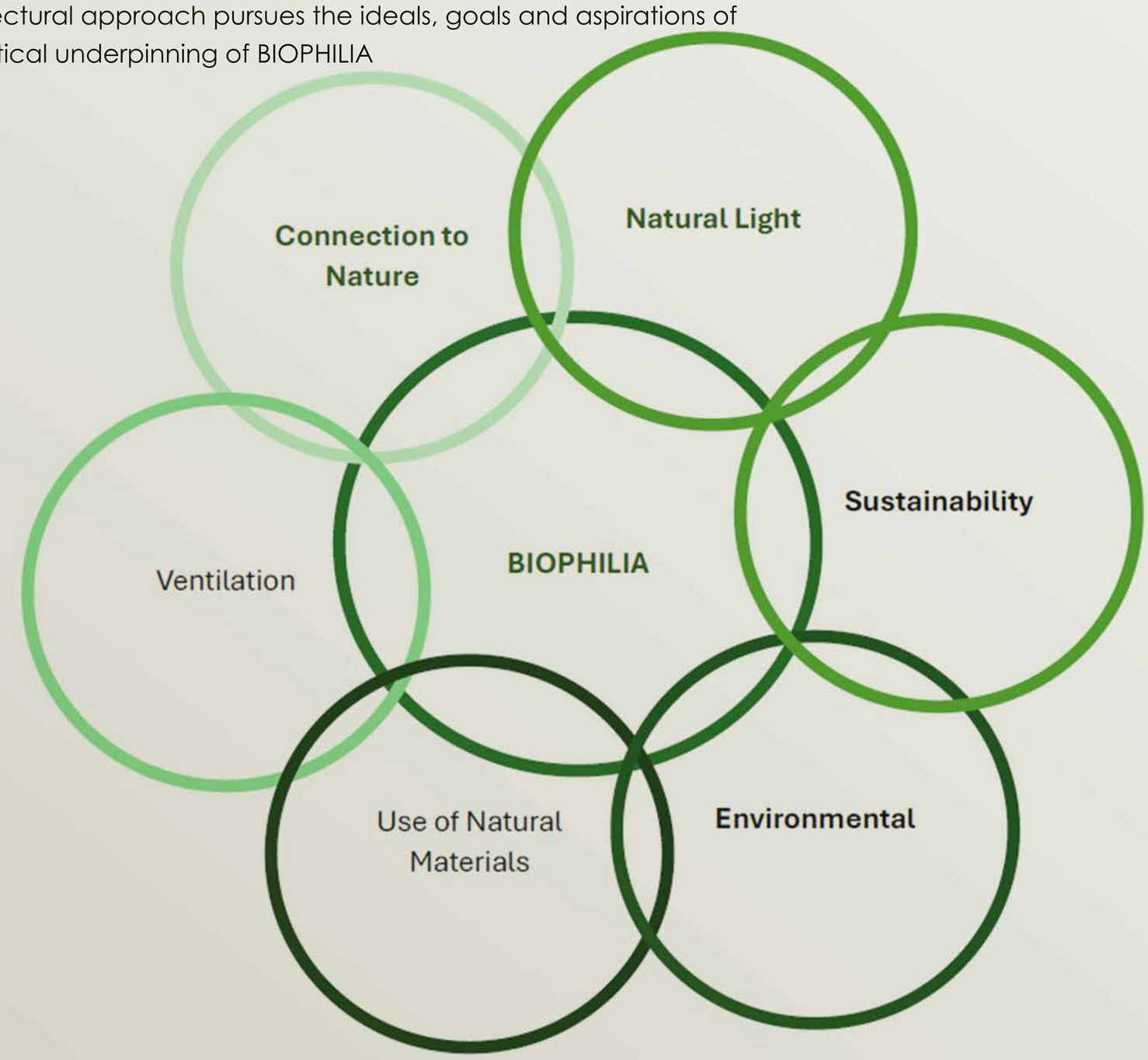


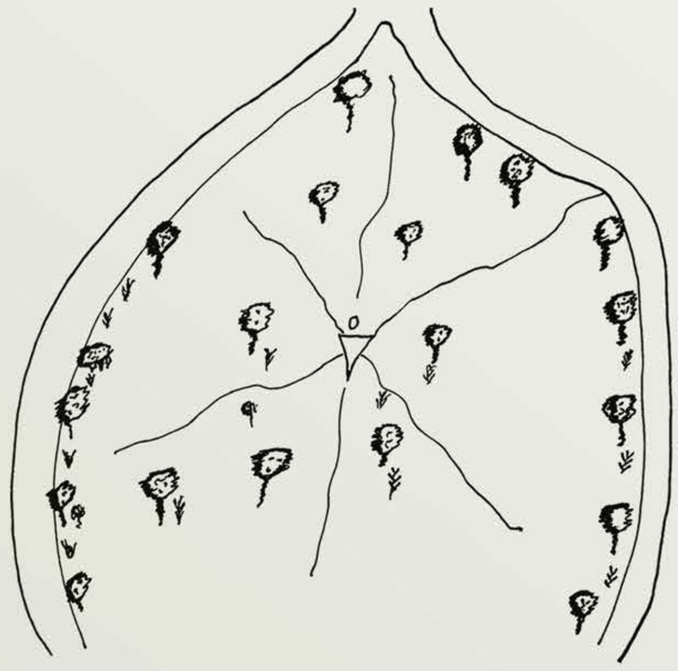
THREATS

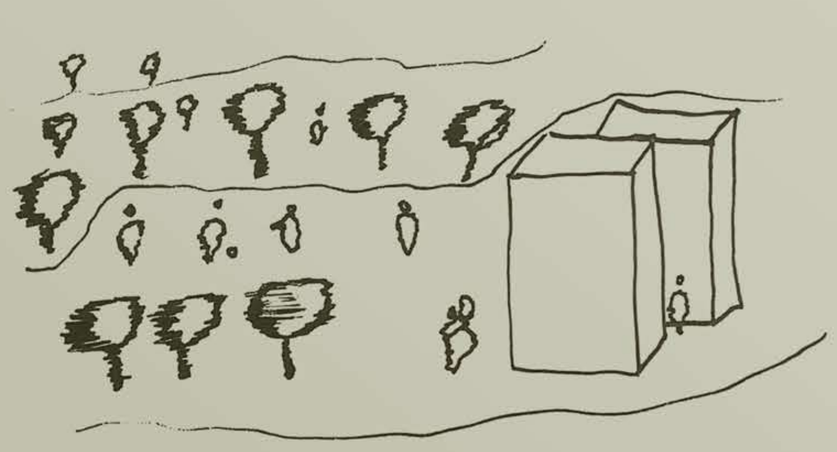
• The Apies River and Walker Spruit River, which flow near the site, are polluted, posing environmental and health risks.
• High-speed traffic along the street edge creates a hazardous and uncomfortable environment for pedestrians, impacting accessibility and safety.

CONCEPTUAL APPROACH

The architectural approach pursues the ideals, goals and aspirations of the theoretical underpinning of BIOPHILIA







The integration of Natural Elements is a key aspect of biophilic design, which emphasise the incorporation of plants, greenery, and water features into architectural
spaces. This is achieved through indoor plants, green walls, and gardens, fostering a sense of tranquillity and well-being (DeKay, 2012).
Natural Light Optimization focuses on maximizing daylight within interiors spaces through incorporation of large windows, and skylights. This approach not only illuminates spaces but also improves mood and productivity by reducing reliance on artificial lighting. Access to views of nature further enhances the connection to the outdoors, enriching occupant experience (Goharian et al. 2023).
Use of Natural Materials emphasizes sustainable, locally sourced materials such as wood or timber, and stone. These materials create warmth and authenticity, enhancing
sensory experiences. By prioritizing the use of natural materials, designers can create welcoming spaces that promote well-being while minimizing environmental impact (Yahia et al. 2024).
Biophilic design principles are important to help guide the design.

PROGRAMME, USERS + STAKEHOLDERS

STAKEHOLDERS

Department of Higher Education

higher education & training
Department: Higher Education and Training
REPUBLIC OF SOUTH AFRICA

City of Tshwane

CITY OF TSHWANE
IGNITING EXCELLENCE

USERS

Unemployed Youth

Vendors

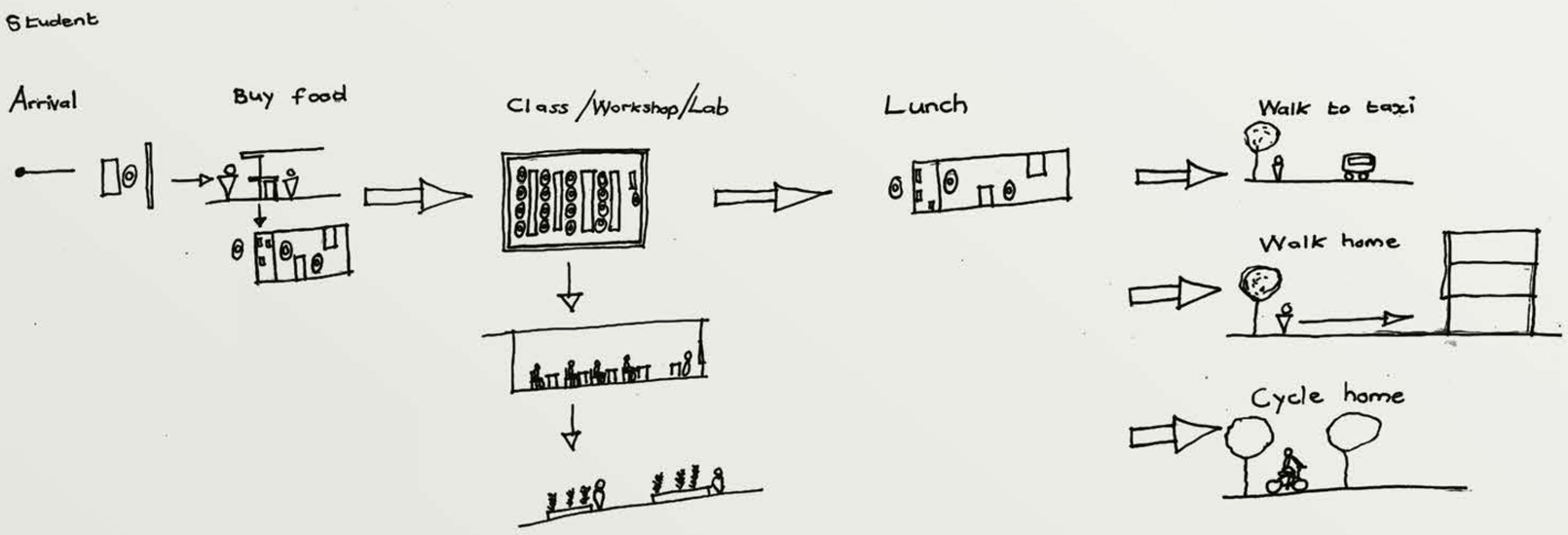
Leisure seekers

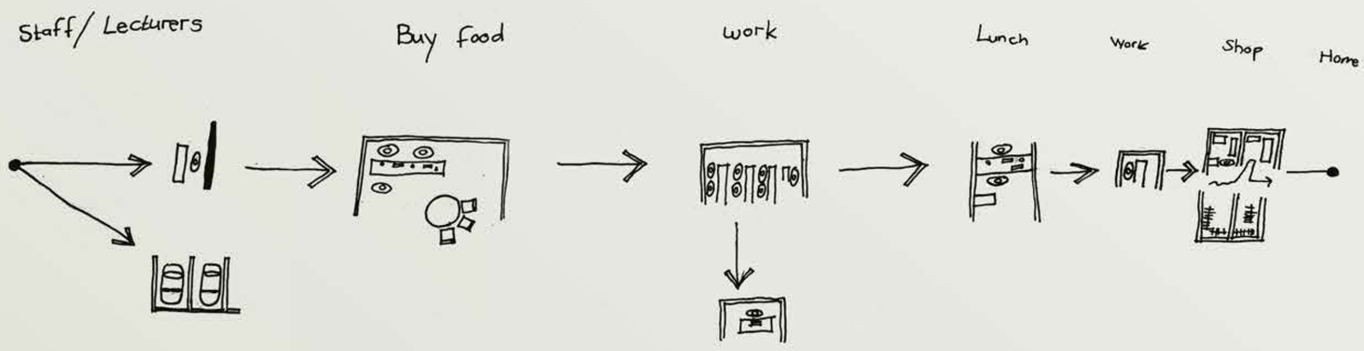
Homeless

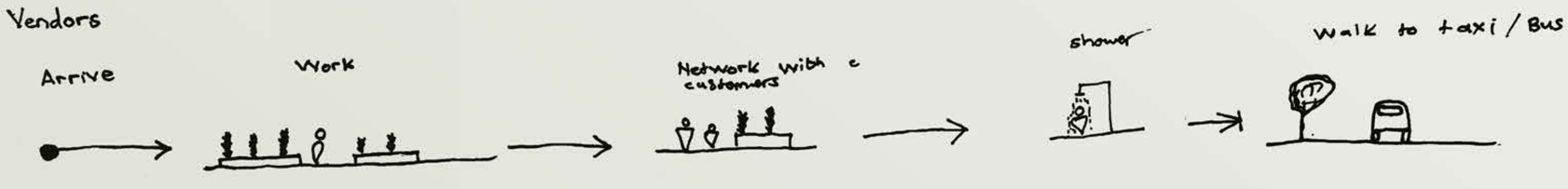
Commuters

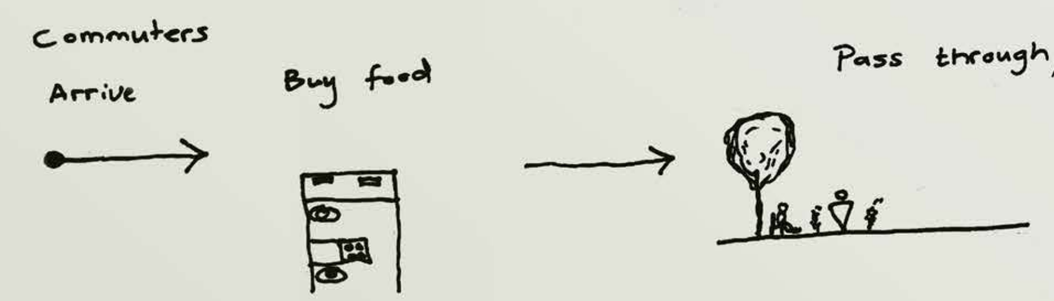
Sports Enthusiast

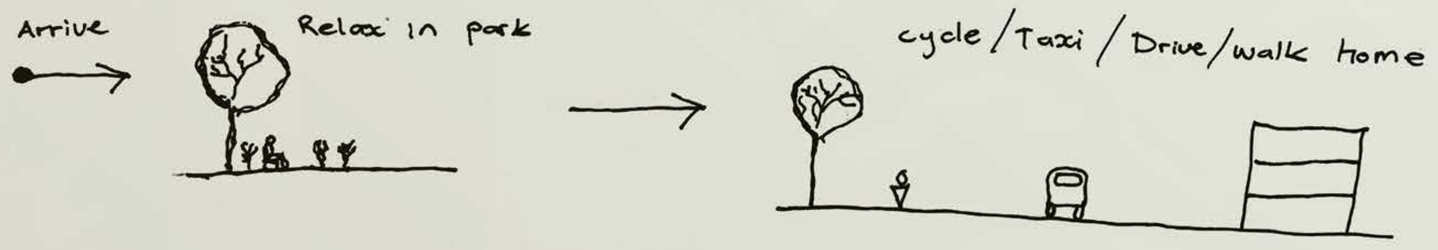
ARCHITYPES











PRECEDENT STUDIES

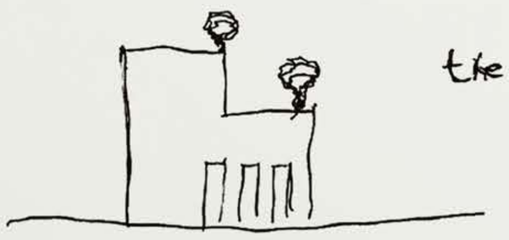
Precedent study 1

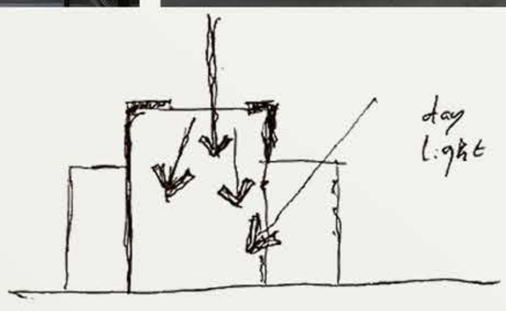
Gaia - Nanyang Technological University Singapore

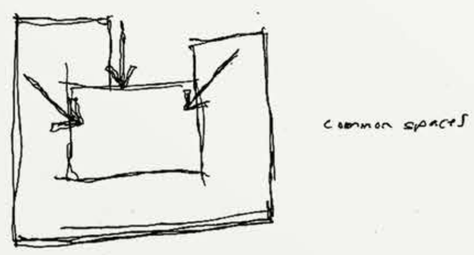
Architects: Raglan Squire & Partners, Toyo Ito & Associates









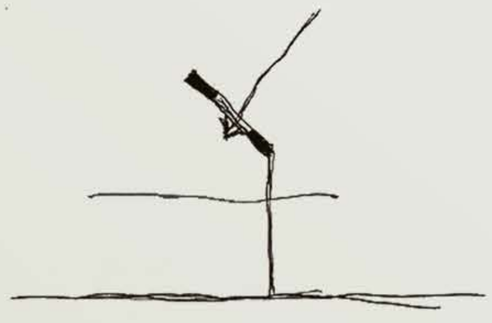
Precedent study 2

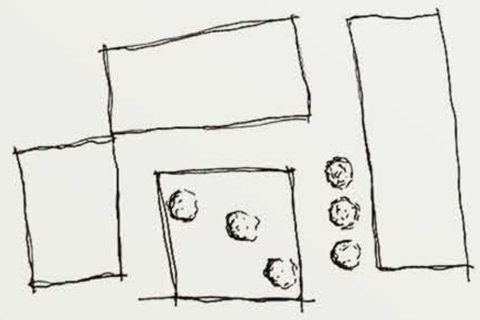
Sol Plaatje University Student Resource Center

Architects: Designworkshop



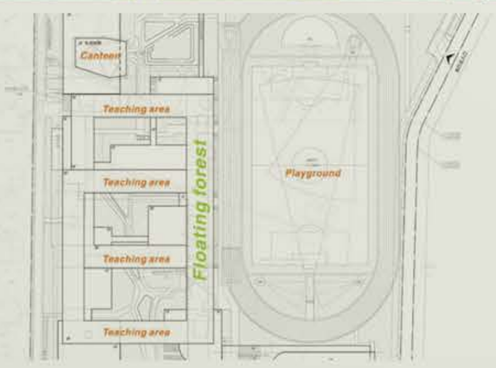


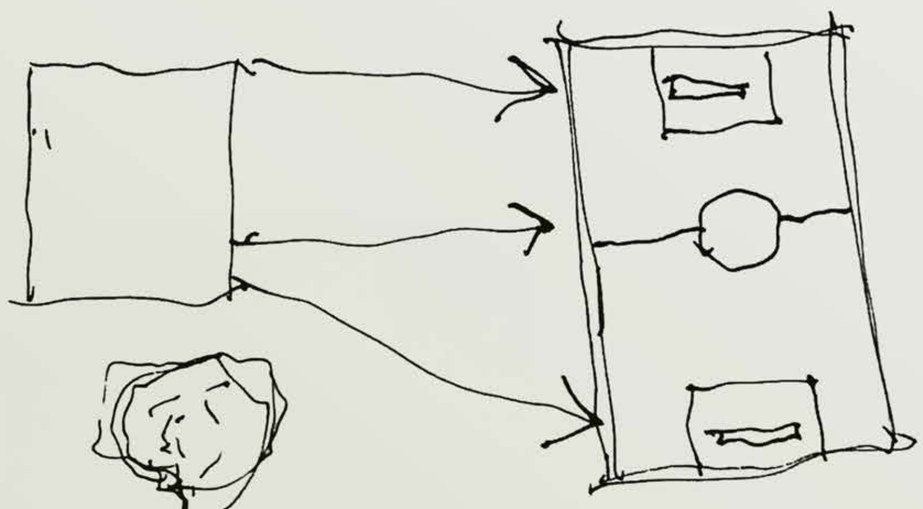


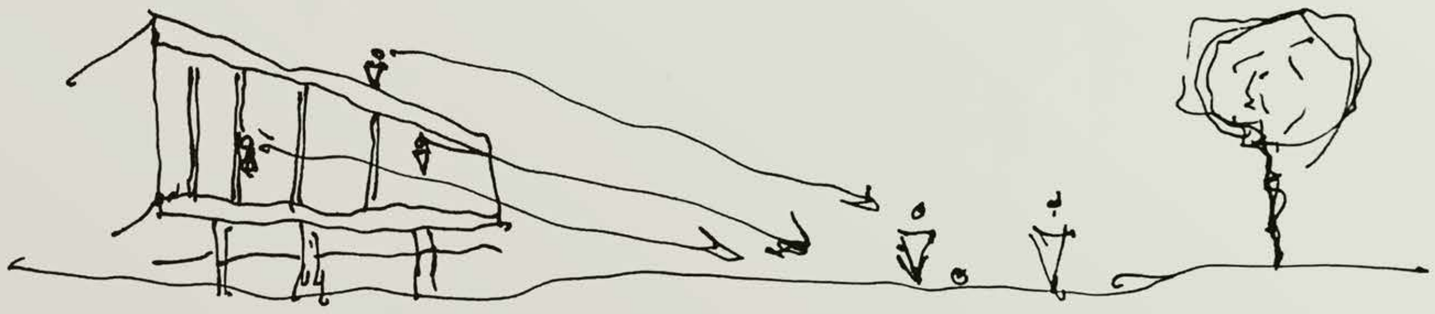


Precedent study 3

Weijang high school







PRECEDENT STUDIES

Precedent study 4

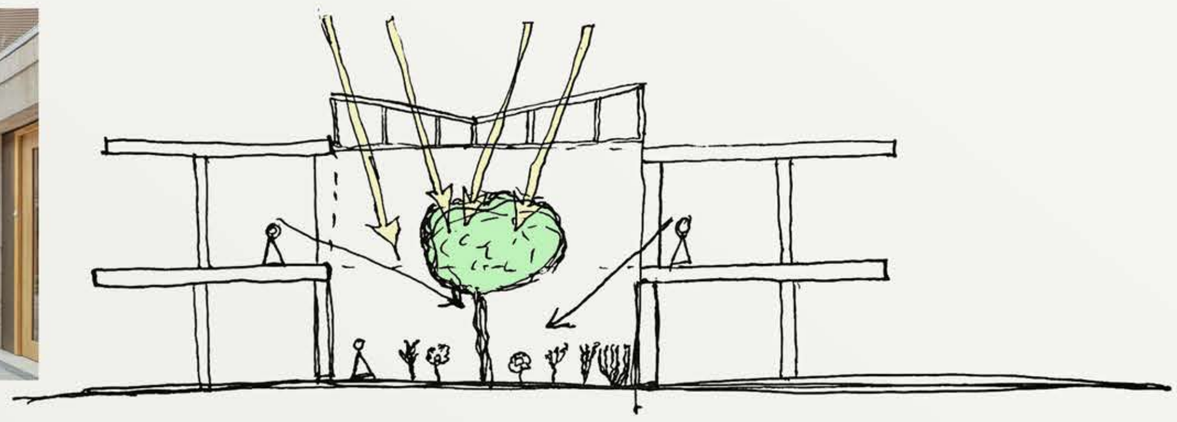
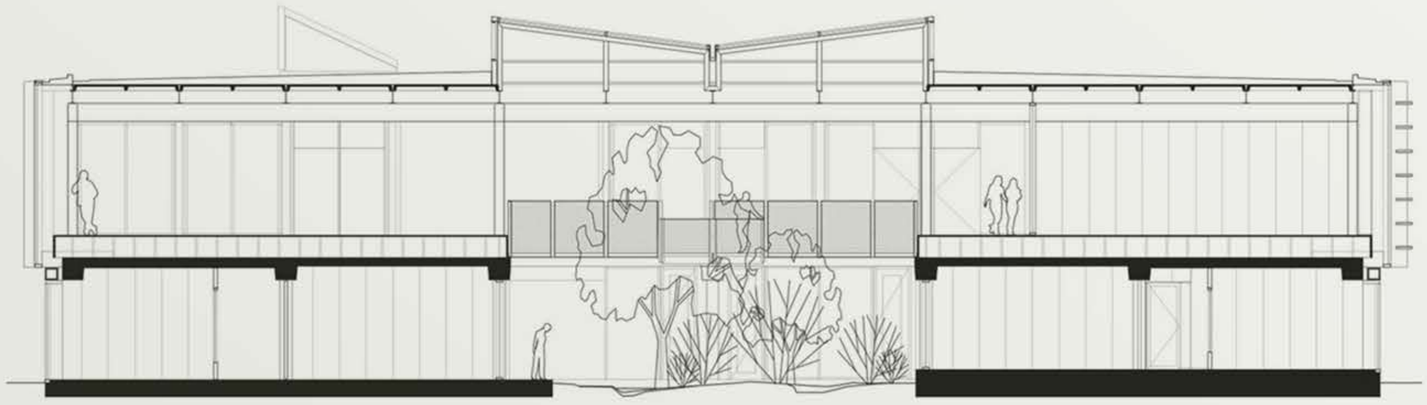
International Institute for Geo-Information Sciences - Architects: Civic Architects, VDNDP

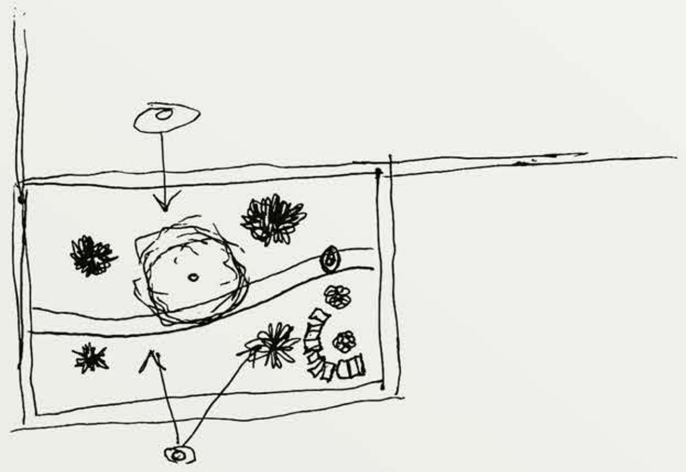








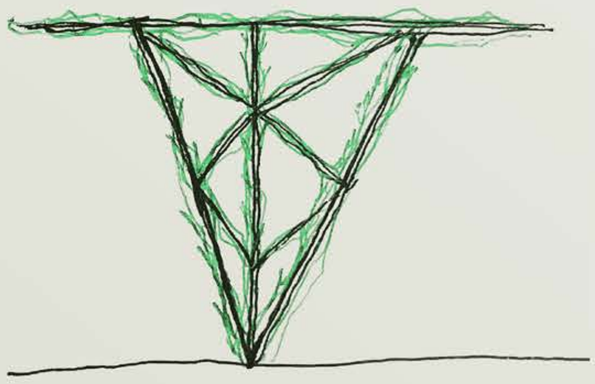
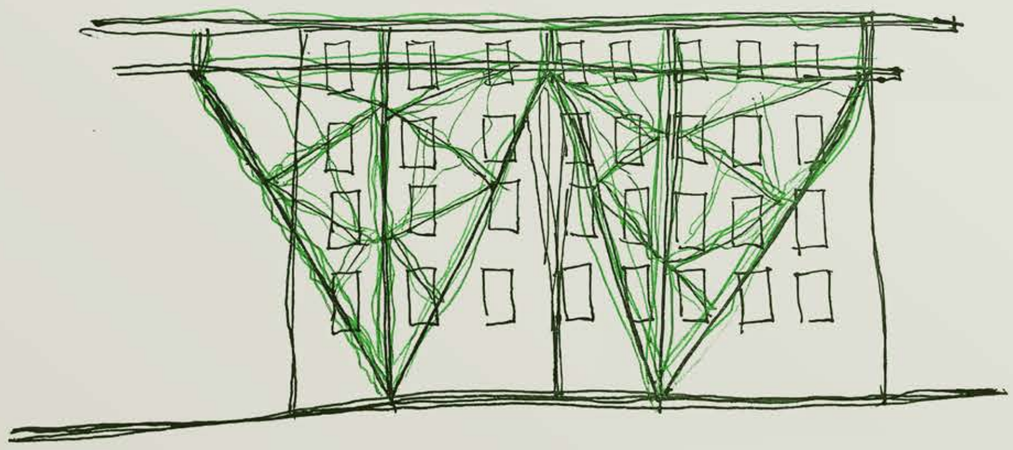
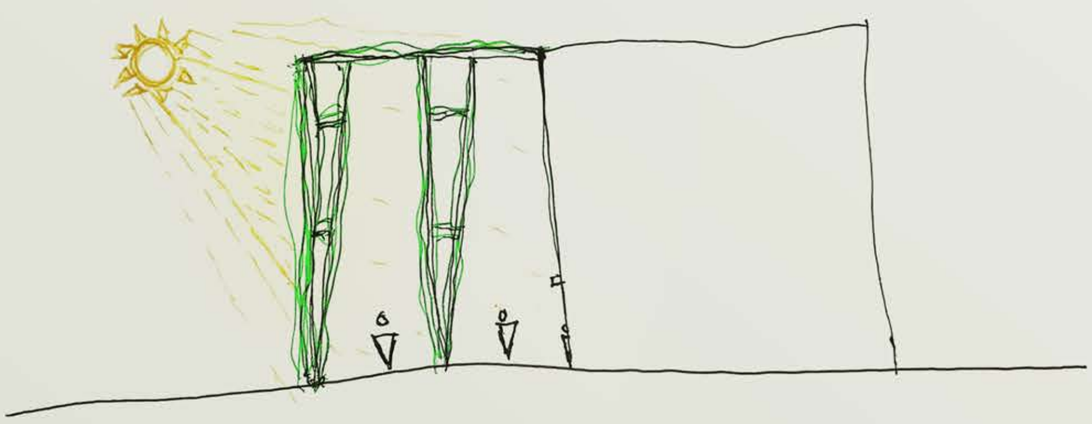


Precedent study 5

Zürich's MFO Park Architects: Burckhardt & Partners

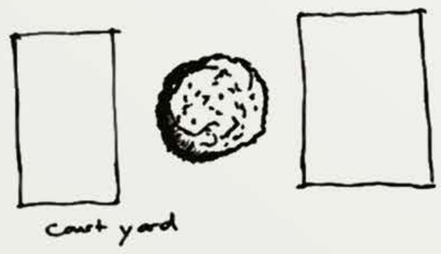


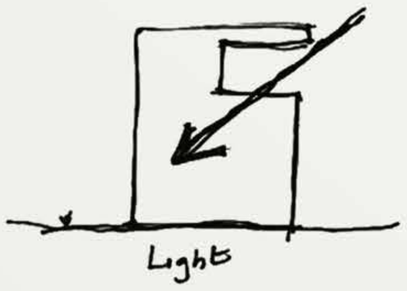


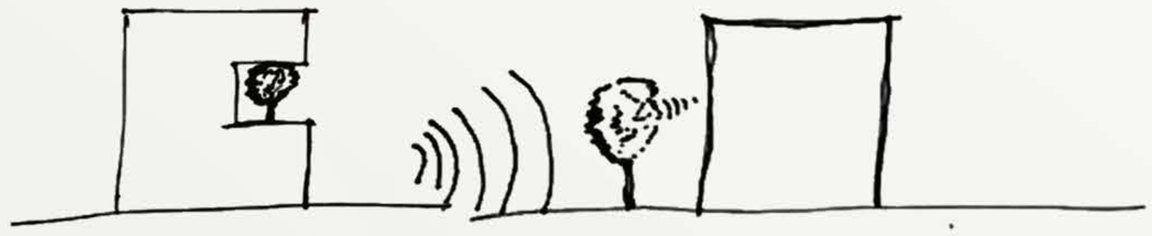





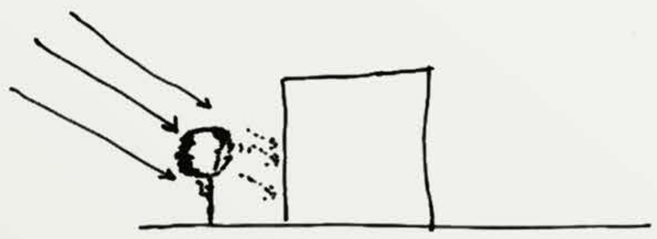
DESIGN MANIFESTATION

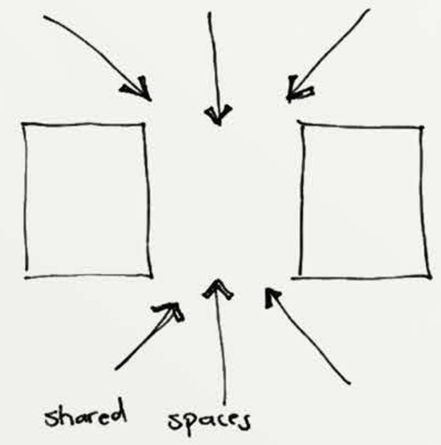
Spatial diagrams



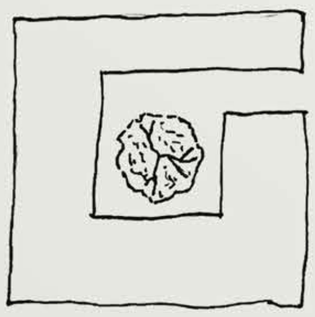


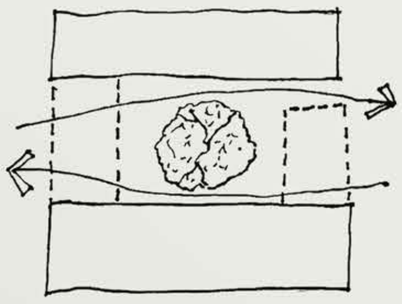




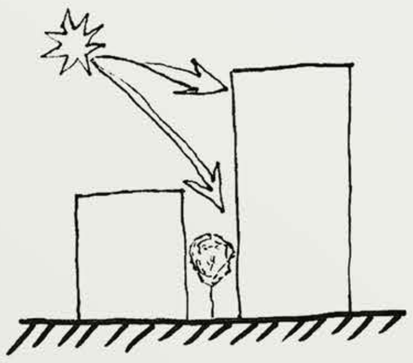


Design diagrams

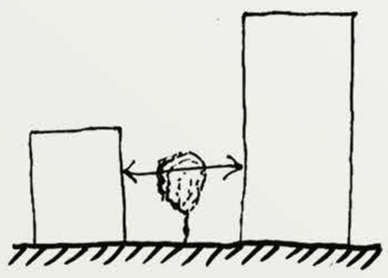




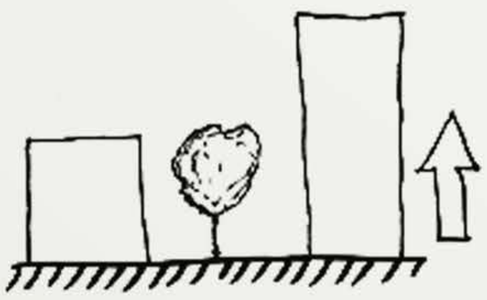
Courtyard Space



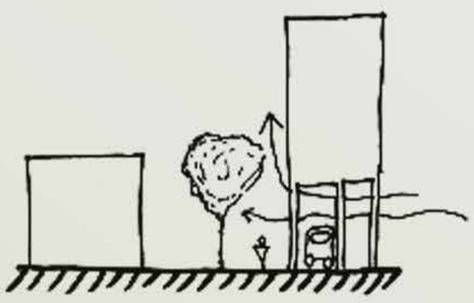
Heights



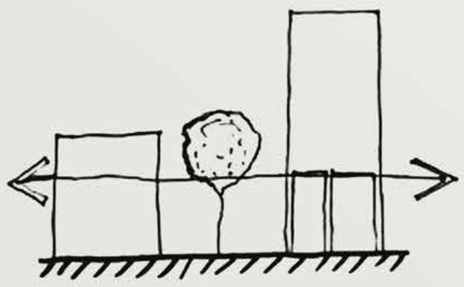
Space inbetween (1.5 x H)



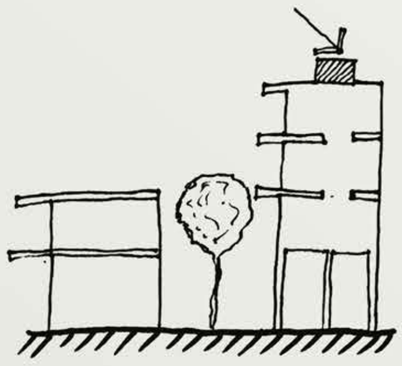
Raise



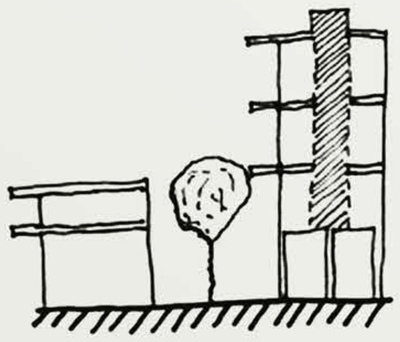
Parking



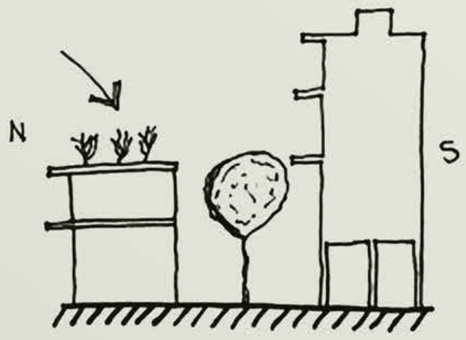
Public Space on ground



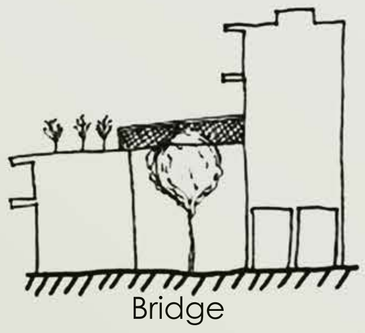
Sky light



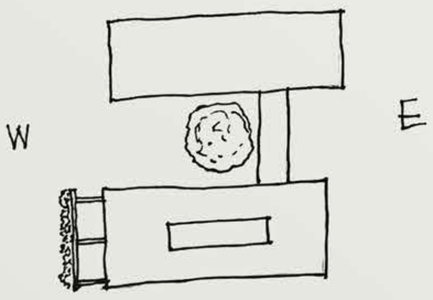
Void



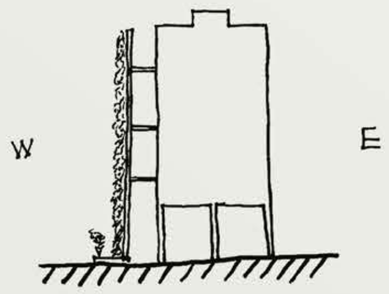
Green Roof



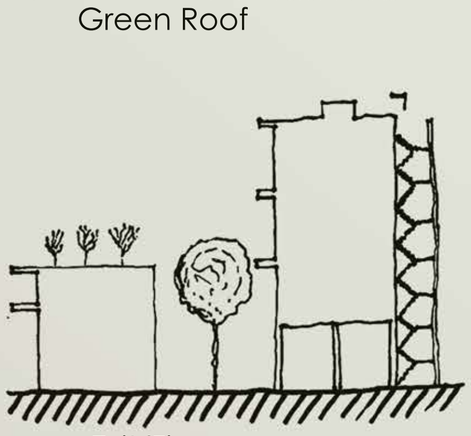
Bridge



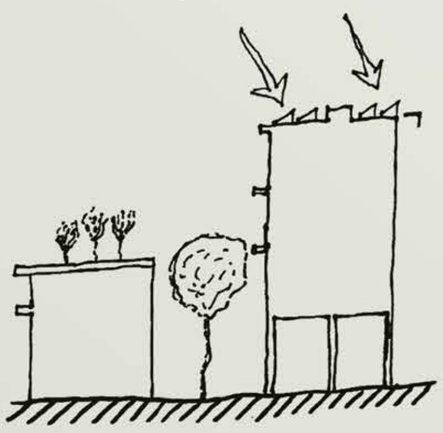
Double Skin Facade



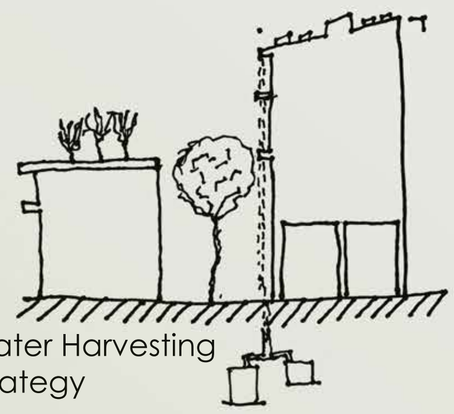
Double Skin Green Facade Elevation



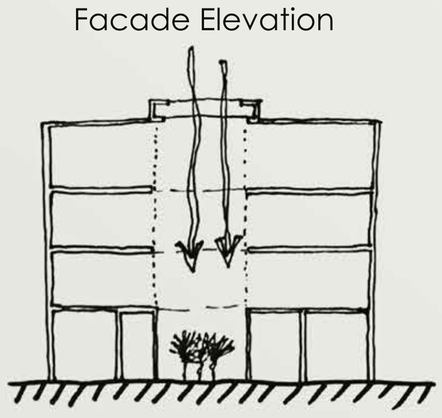
Exit/Fire escape



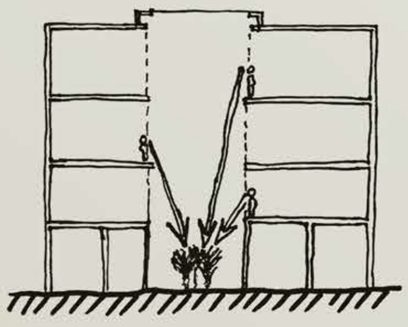
Solar Energy Strategy



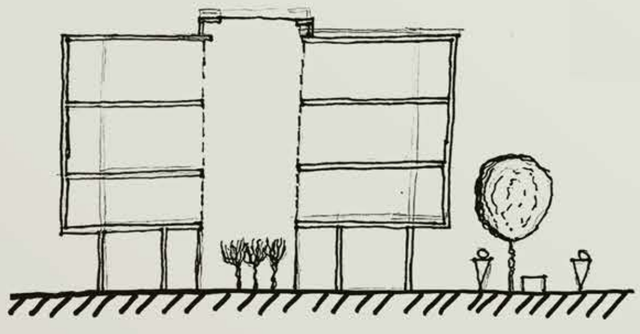
Water Harvesting Strategy



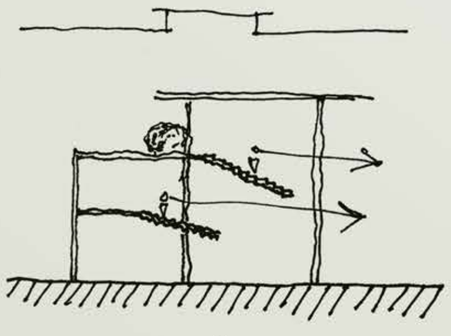
Light + Plants



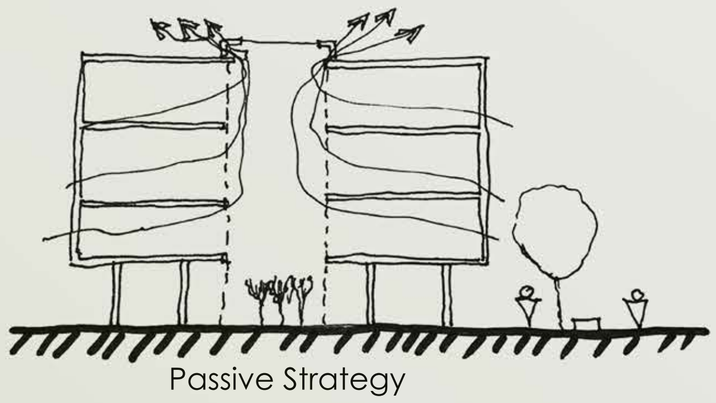
Views to Plants



Building Edges

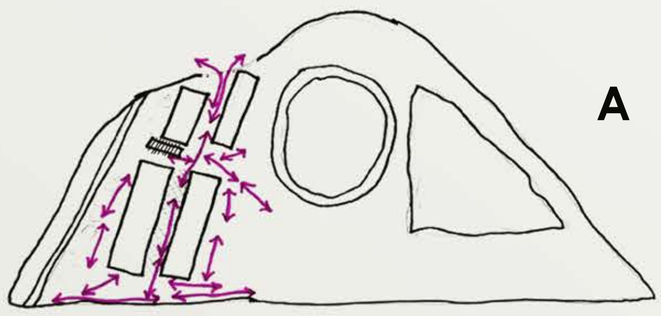


Pavilion



Passive Strategy

ITERATION SKETCHES



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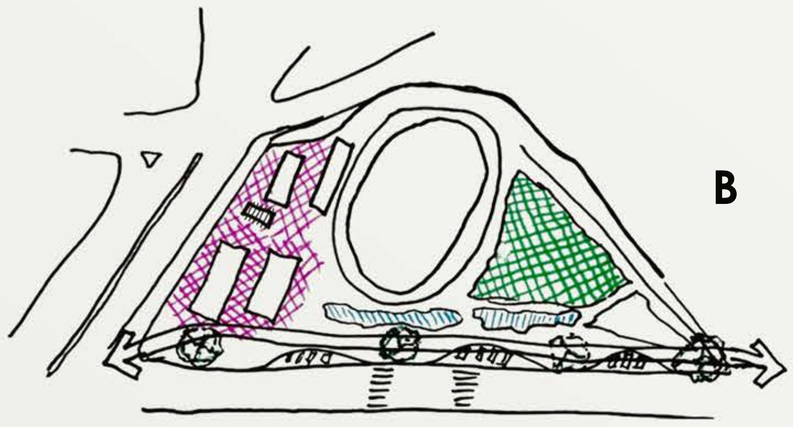

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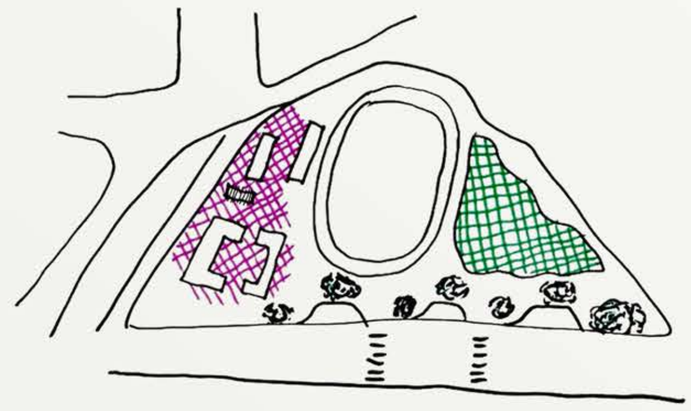

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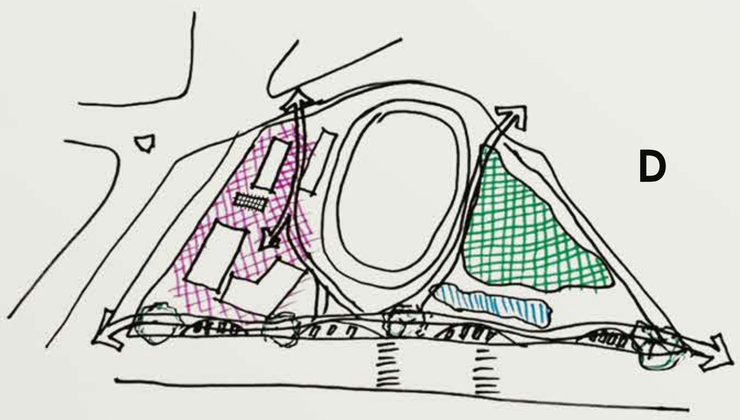

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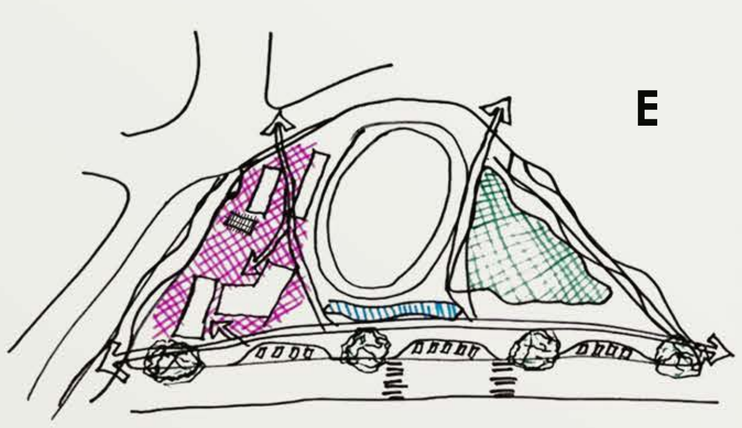

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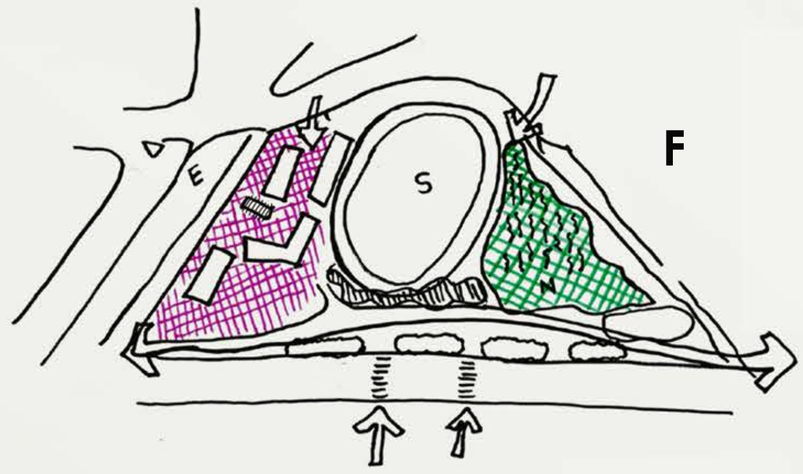

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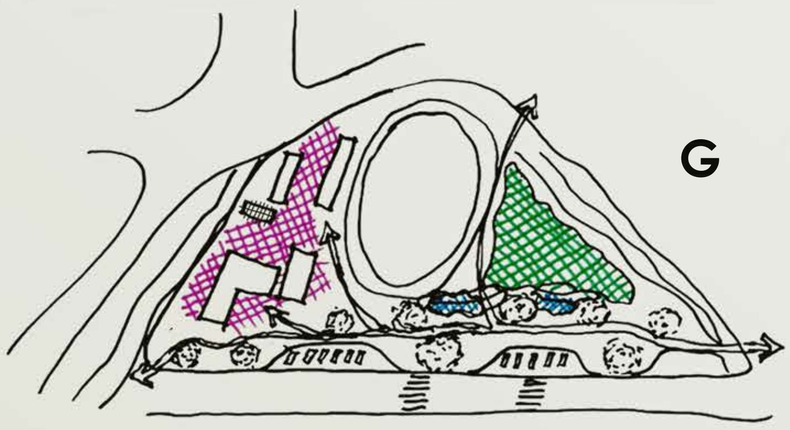

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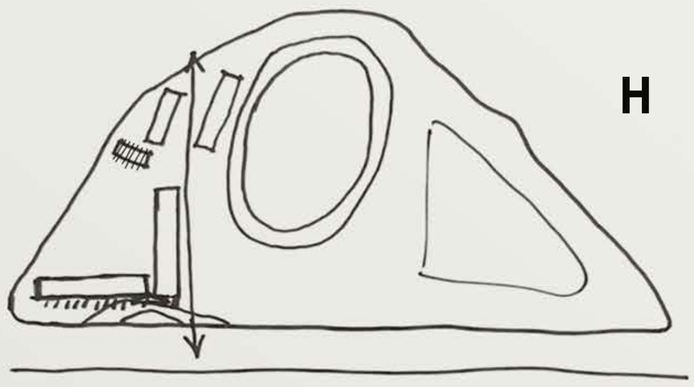

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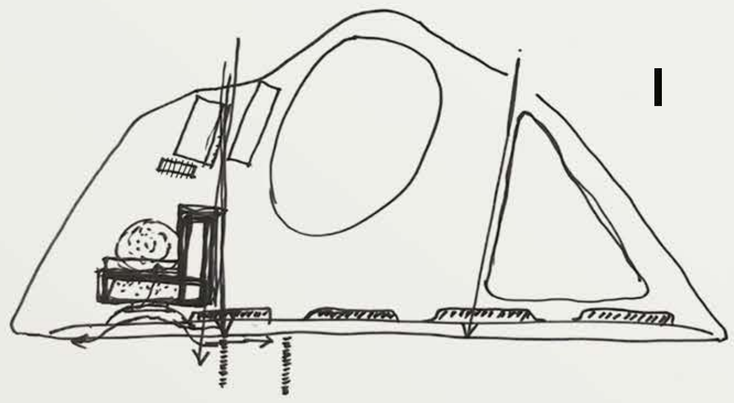
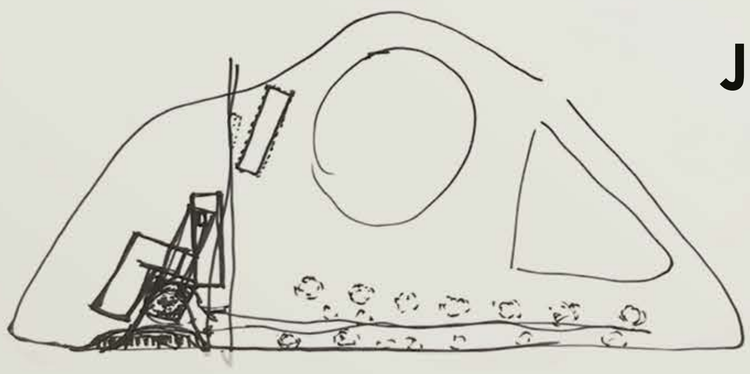
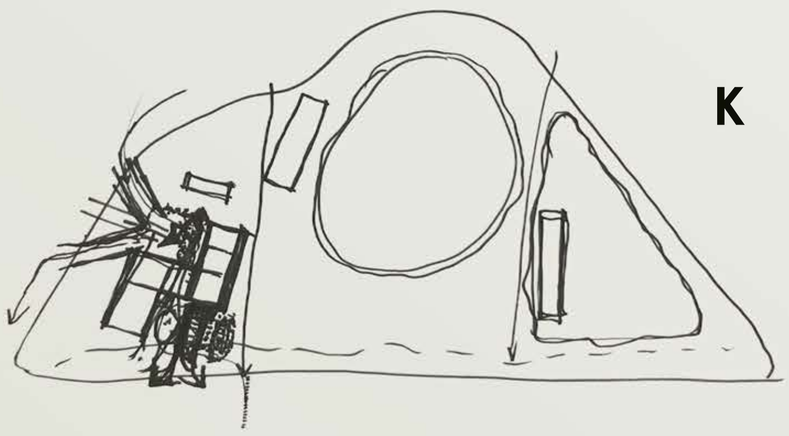


I



J



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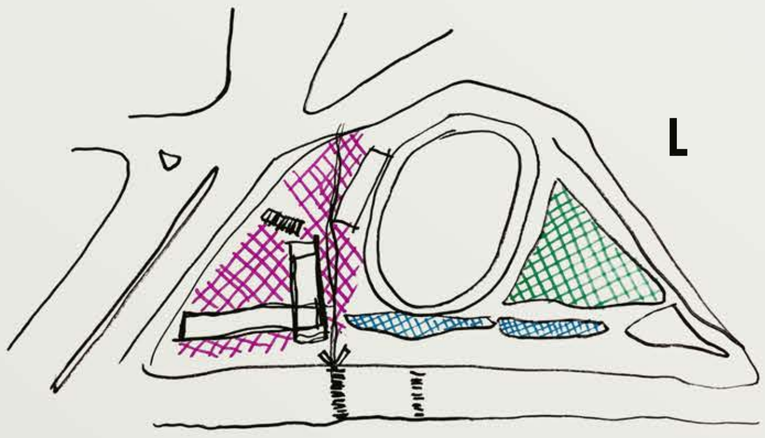

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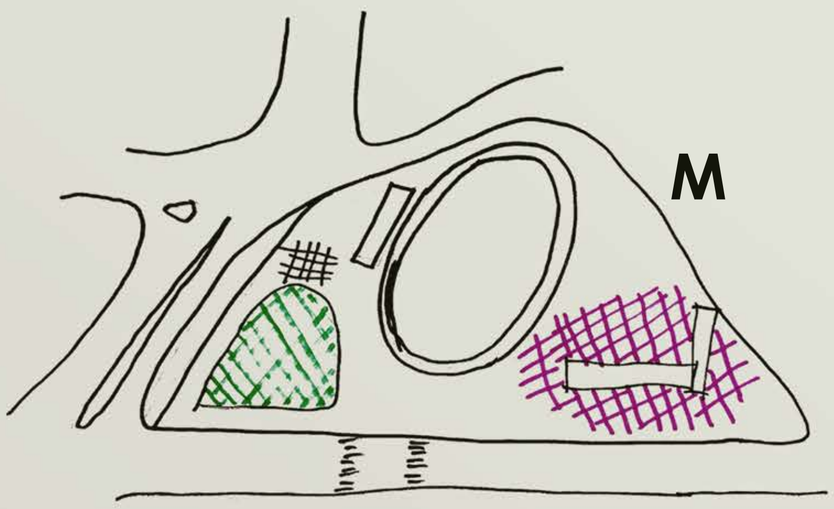

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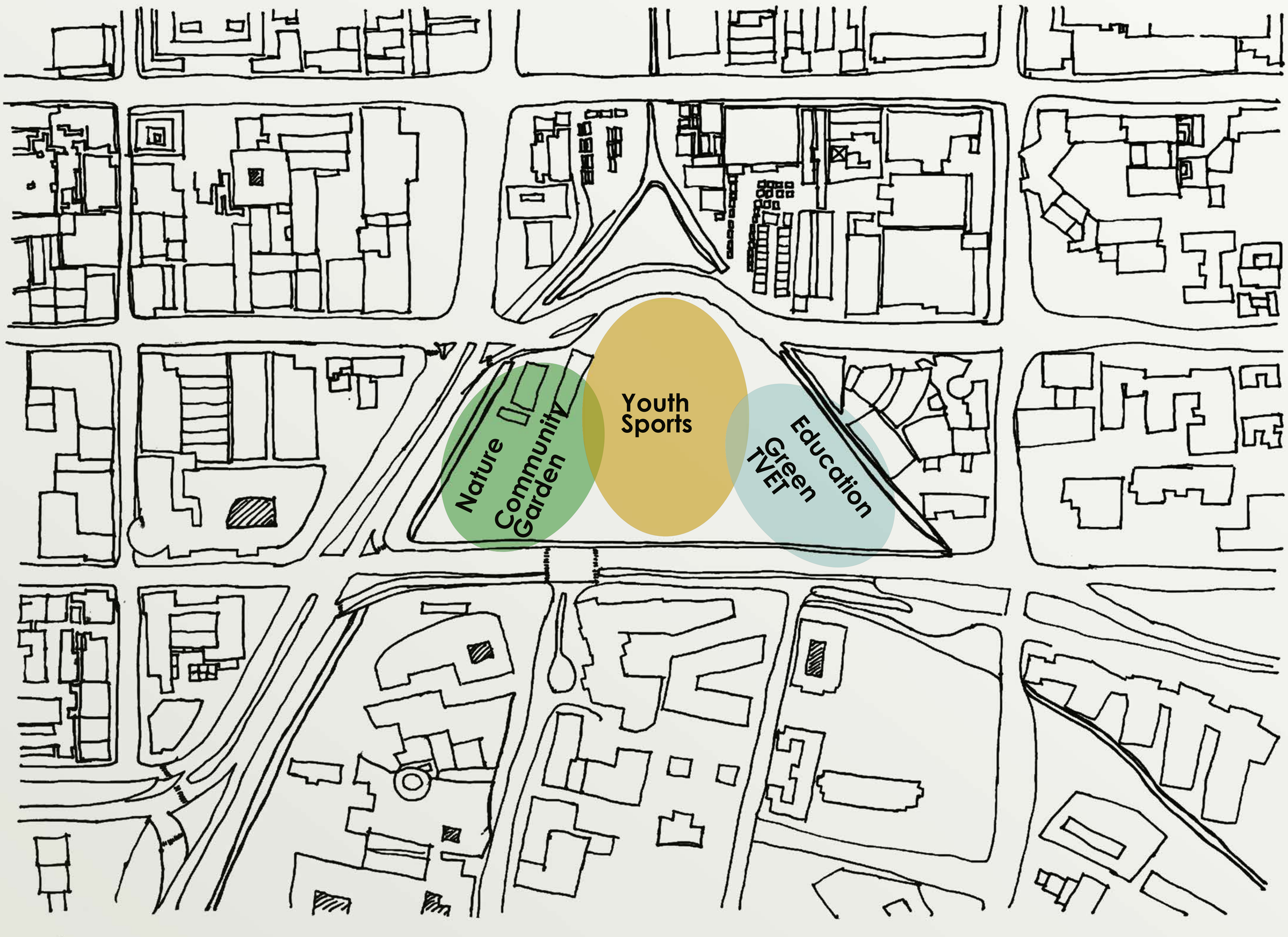
PROGRMME



1. Youth Sports:
- Youth Sports Program

2. Community Garden

3. Green TVET (Education):
- Green Building and Construction
- Renewable Energy Technology
- Environmental Management
- Water Management
- Green Technology and Innovation
- Green Business and Entrepreneurship
- Climate Change Adaptation and Mitigation

4. Park
Serve as recreational space for the community

These programs foster education, sustainability, and community engagement, creating a holistic environment for both learning and development.