# THINK BOX

Mahdiyah **THOKAN** | *1044193*

**M. Arch (Prof) Research Report**

**2022**

**An educational and community incubator to connect communities and the landscape of Benoni**

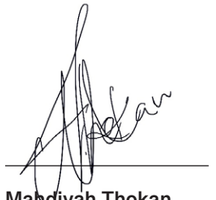
This document is submitted in partial fulfilment for the degree:
Master of Architecture (Professional) at the University of the Witwatersrand, Johannesburg, South Africa, 2020.

**Fig 0.1 :** Aerial Graphic of Benoni's landscape. (Author, 2021)

# Declaration

I, **Mahdiyah Thokan - 1044193,** am a student registered for the course Master of Architecture (Professional) in the year **2021**. I hereby declare the following:

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



**Mahdiyah Thokan**
**23 February 2022**




# Acknowledgements

The extent of my gratitude deserves more than this paper. Still, how lucky am I to have now inherited the exceptional thinking, ideas, and conversations you have surrounded me with.

**To my family,**
My late grandfather, who is the source of my endless supply of paper.
My mom, for your limitless love, humility, and strength.
You are my overwhelming source of inspiration.
My dad, my biggest supporter who taught me perseverance, in the end, I can always count on you to share a bowl of ice cream with and my brother, my personal IT and studio support. I love you all.

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A special thank you to Hilton Judin whose critique and support
for all my ideas - I value immensely.
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and whose critique and guidance shaped my thinking over the years.
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and encouraged me to draw more and more.

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Sameeha, who shared mutual struggles and accomplishments,
whose friendship I appreciate more than you know.
Bilqis, Charvana, Damon and Philisani,
for the anxiety phone calls and off topic chats and laughs.
A special thank you to Hashim, for your incredible inputs, thoughts, and direction.

# **paper** (noun)

pa·per

Definition of paper

1: *material made in thin sheets from pulp of wood or other fibrous substances, used for writing, drawings, or printing on*

(Merriam- Webster, undated)

2: *Paper is seen as a metaphor and sometimes a physical representation of the landscape, one that which guided the author to an appropriate design response*

(Author, 2021)

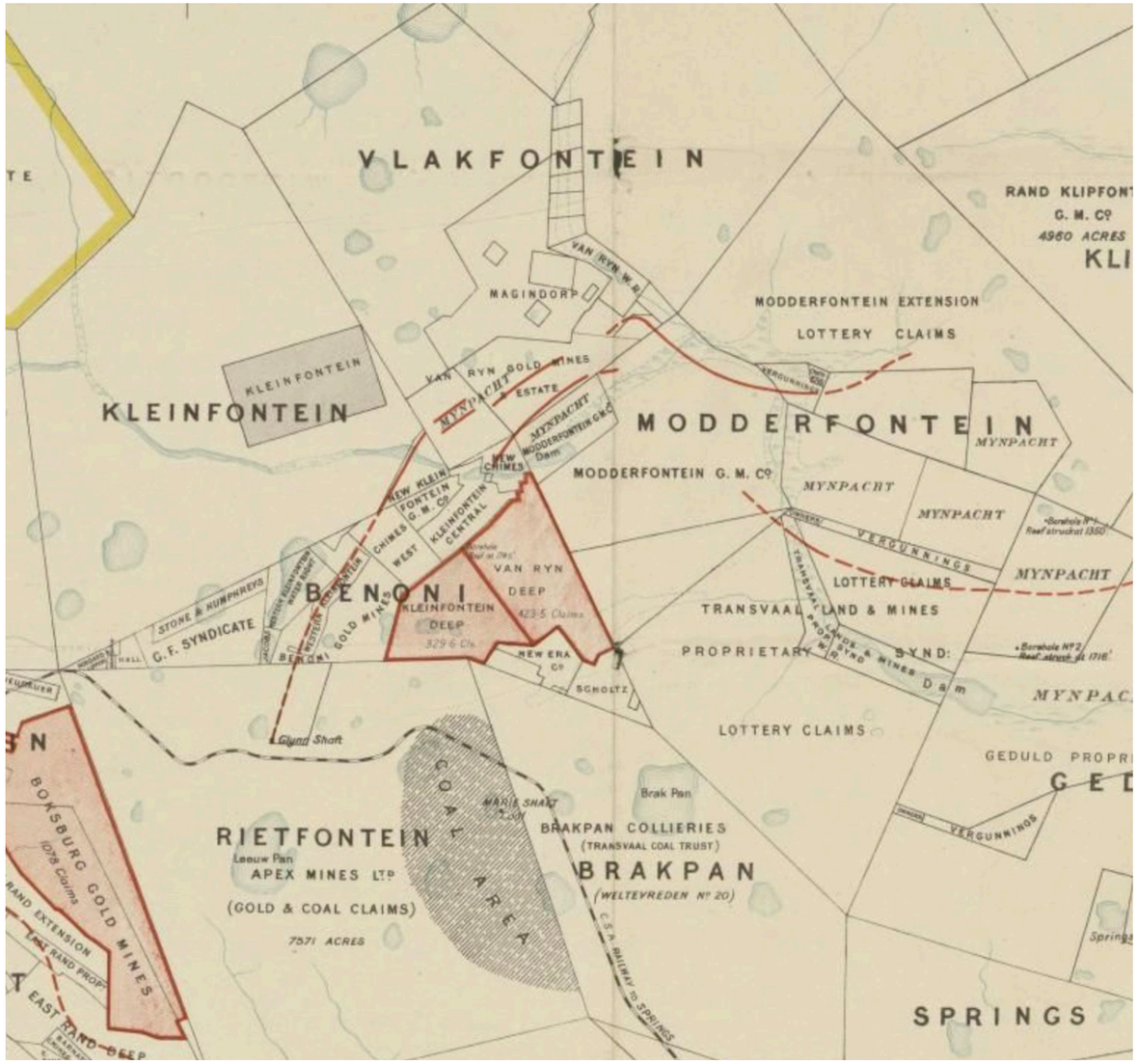



**Fig 0.2 :** Benoni's gold fields drawn on paper.
(General map of the Witwatersrand gold fields, 1903)

# Abstract

This architectural project is conceptualized over layering two histories of *paper* on Benoni's landscape.

When considering paper as inheritance; the first paper history that is unpacked, takes the form of the authors family legacy – a 65-year-old printing press born during apartheid that represents one form of creative energies translated into a creative industry as a means of survival. The second is the paper history that Benoni inherited i.e.. maps that were drawn, the planning of apartheid on paper, stories that were recorded and the consequences laid on the landscape, which essentially drew South Africa's unequal paper landscapes. Through this theme the author uses paper as a conceptual driver that filters throughout the project since paper is seen as a metaphor and sometimes a physical representation of the landscape. These unequal paper landscapes take the form of the natural terrain, extractive landscapes, and segregated communities, that locates the chosen site, *The Gap*.

Thus, making *The Gap* a scar that Benoni inherited, bound by the edges of marginalized, Indian, Black African and Coloured communities. In suspense of development, the architectural response seeks to erode the gaps presence as a divider, into a scar that connects them. Through unfolding and refolding the landscape, the intervention will programmatically function as a shared central incubator that accommodates for a diverse range of creative possibilities for curious minds.

The architectural form is seen as public space held together by support structures that house resources for different mediums of creative rituals. These creative rituals include, tinkering, making, commerce, sharing, performing, and reflecting that foster the germination and exchange of ideas, social cohesion, and provide recourses for skills development that encourages new networks that can influence the future of the larger landscape and the next generation.

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# 1

# locating the gap




**Fig 1.0 :** Author's late grandfather, Muhammed Sharif. (Sirkhot, 2008)



# Preface

A side from having attended school, played in the streets and grown up in Benoni. The gap is a route travelled daily, imprinted in memory and strangely comforting as it reminds me of a younger me. Site visits was met with sheer nostalgia as I am reminded that the long endless road, is still barren on either side, clouded in sunrays and smog as my mom rushes to drop my sibling and I at my granny and makes her way to work. Work too was inherited and takes the form of a printing press that my migrant grandfather started in 1950 as a means of income.

Printing tickets to the Saturday night cinema, celebratory invitations, to political posters printed at night for the resistence movement during apartheid are conversations still laughed at the dinner table. While these invites were inscribed in paper and seemed small it gave rise to community gatherings, wedding parties that lasted weeks and in the end the opposition party won.

Rituals were constructed from paper. I always appreciated the endless supply of paper and ink and access to craft my 'private projects', but I only understood its value later.

It was a symbol of hard work and only means of survival that later in my privilege granted me access and allowed me to pursue my studies today.

My intervention is a story that community members share too and looks to construct these stories and backgrounds through a shared public space that allows us to practice our art forms sustainably and help translate other creative energies into creative industries

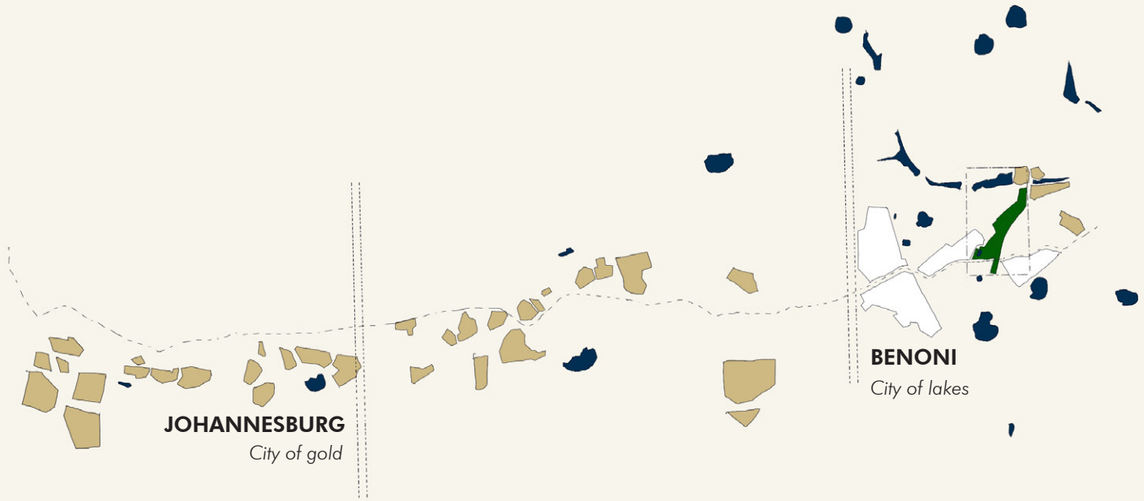



**Fig 1.1 :** Benoni in relation to Johannesburg, the mining belt, water bodies and Benoni's industrial landscape (Author, 2021)

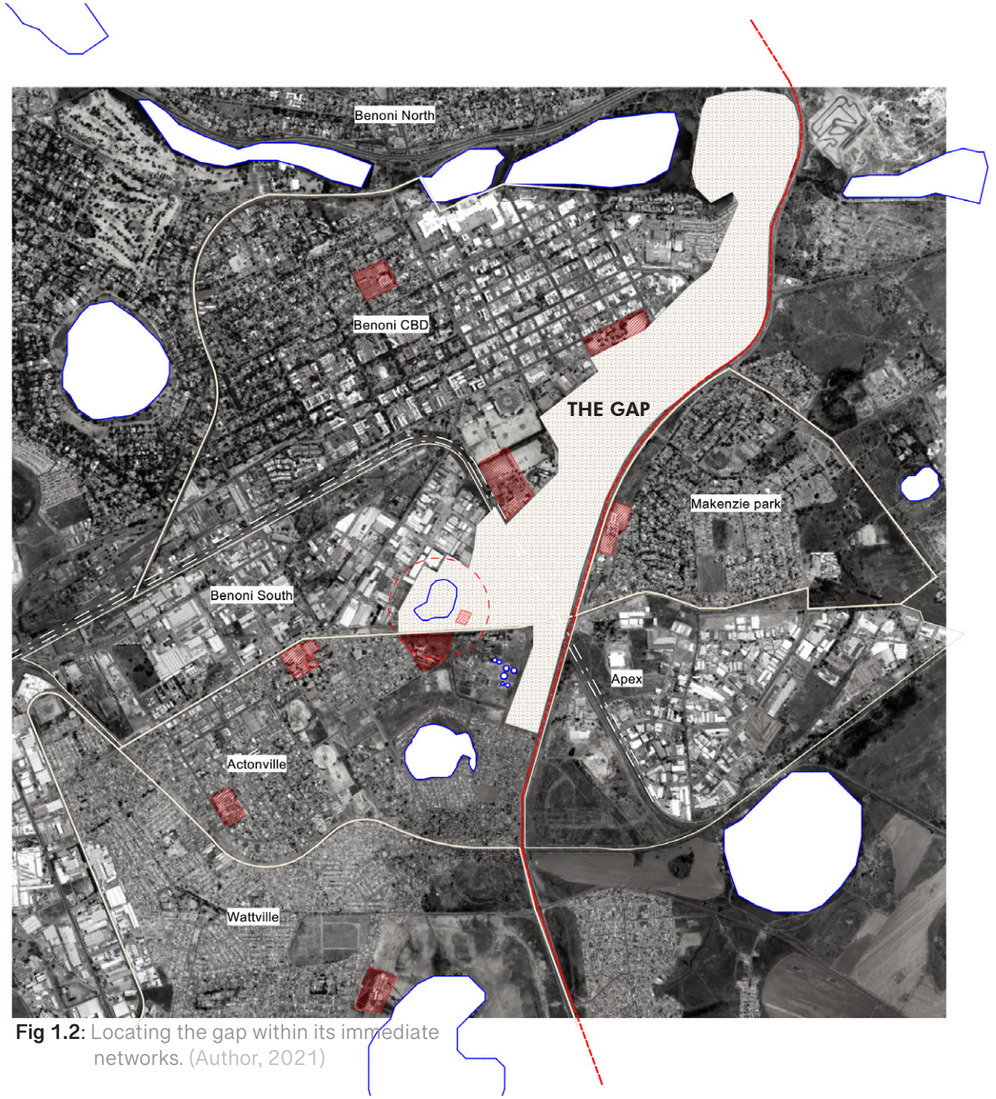



**Fig 1.2**: Locating the gap within its immediate networks. (Author, 2021)

## Site & Background

The site is located in a former mining town, Benoni. In recent years, the Kleinfontein mines have been reclaimed, its history scarred a physical barrier on Benoni's landscape that separates pockets of marginalized Indian, African and Coloured communities. I refer to this landscape as ***The Gap.*** Fig 1.1 shows Benoni in relation to Johannesburg and other scars inherited from the mining belt which includes Benoni's industrial parks and water-bodies that still act as buffer zones to separate the privileged communities up North, from marginalized communities, South. Fig 1.2 contextualizes the gap, within the immediate networks in which it boarders, highlighting the separated communities, industrial zones, roads, and rail.

My interest lies in the geographic location that the gap sits in and the opportunity to erode these barriers within our landscapes. The same landscapes, barriers and urban environments that were planned on paper. Paper becomes the conceptual tool and project driver that I use to unfold and rewrite the landscape to form a design response. primarily established through a shared public resource facility. Cultural activities and creative industries are nuanced to regenerate the landscape that creates social cohesion and a democratic space.

South Africa sees staggering un-employment rates and with less access to education, it further divides access for creative energies to be translated into creative industries. However, 'making' is a cultural ritual that has long been practiced in marginalised communities as a source of income and as an act of resistance. Today, these makings make up the valuable creative economy that can help fill in the access gap, presenting social and economic opportunities that naturally extends part of our larger heritage. Having said this, these resources and facilities tend to privilege the same people that hold much of the worlds institutional power, hence the need for such an intervention.



**Fig 1.3 :** Aerial view of landscape.
(Google Maps, 2021)

## Document Structure

This document contains several chapters in which paper is a threaded theme.

**Chapter 1** - locates the gap as point of interest.

**Chapter 2** - considers paper as a form of inheritance for both the author and Benoni's landscape and highlights two paper histories.

**Chapter 3** - interprets the historical events that underpin three unequal paper landscapes, i.e., the terrain, the industrial and the separated communities.

**Chapter 4** - maps out the existing paper landscape features.

**Chapter 5** - identifies an appropriate site within the gap and unfolds a programmatic respons.

**Chapter 6** - analysis of paper tectonics,

**Chapter 7** - highlights the exploration in the design development thus far.



# 2

# paper as inheritance

**“We Do Not Inherit the Earth from Our Ancestors; We Borrow It from Our Children”**

(Browner, undated)

**Introduction**

This chapter is inspired by the quote above and while the design process was certainly not linear its intention was always in my peripheral vision.

This chapter highlights a personal history and relationship to site, material (paper) and a landscape.




**Fig 2.0 :** Aerial view of The Gap. (Google Maps, 2021)

# inheritance (noun)

in·her·i·tance

Definition of inheritance

1 : something that is or may be inherited.

2a : the act of inheriting property.
b : the reception of genetic qualities by transmission from parent to offspring.
c : the acquisition of a possession, condition, or trait from past generations.

3a : TRADITION
b : a valuable possession that is a common heritage from nature.

(Merriam- Webster, undated)



## Paper inheritance

As an era ends for one, inheritance is comfort for the next. In our modern day inheritance in all its glory often takes the form of (paper) money passed down from one to another. However, this can also take the form of stories, cultures and genetics. These types of inheritance does not hold monetary value, but gives a sense of memory and identity. Much like my own paper inheritance, the legacy that I inherited holds more value than its monetary value. However, this unique type of inheritance can be crafted into artifacts and art forms as objects for trade as well as mean to share ones story with another.

Benoni's landscape is similar. Its scars, marks, boarders and geography is a result of the history that each era survived. In this project it is considered a paper landscape since plans and maps where physically drawn and marked out, planning its future. We are familiar with its history because of the Post Office that past down letters, the Benoni City Times who documented each day and the everyday train that carried those stories, cross pollinated struggles, backgrounds and cultures that Benoni inherited in order for it to exist today.

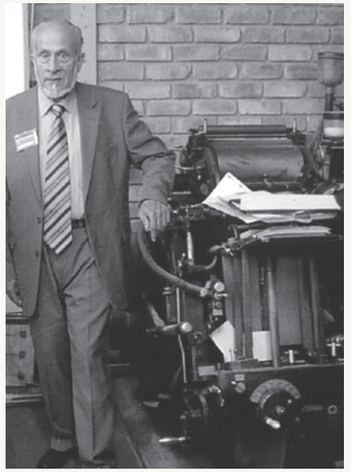



**Fig 2.1 :** Family Heirloom - Original Heildelberg Tiegel Platen Press (1958). (Sirkhot, 2008)

## 1958
## 8th Street, Actonville Benoni

Mohammed Sharif,
A passionate part time photographer, he ventured on capturing images onto print media. Starting off with hand fed Adana Letter Press, humbly housed in a tin roof shack in Asiatic Bazaar now known as Actonville.

2.2



## 1965

Bought a Platen Press into the business - Taj Printers. Business cards, leaflets and tickets became line items.

2.3



**Fig 2.2 :** Author's late grandfather, Muhammed Sharif. (Sirkhot, 2008)

**Fig 2.3 :** Family Heirloom – First Original Platen Press. (Sirkhot, 2008)

**Fig 2.4 :** Small printing room rented in Fazel Street. (unknown,1968)

## 1968
## 564 Fazel Street, Actonville, Benoni

Slow and steady growth resulted in the acquisition of an A3 Cylinder Letter Press, thereby adding A3 sized posters into productivity.

2.4



2.5




**Fig 2.5 :** Family Heirloom - Original Heildelberg Cylinder. (Sirkhot, 2008)

## 1970
## 415 Mayet Dr, Actonville, Benoni

The year started with the acquisition of an A2 Cylinder Letter Press, twice the capacity of an A3 Press. **Key alliances within the music industry such as Gallo Records** resulted in Taj Printers' first expansion – a second branch within close confines to primary operations.

2.6



2.7



**Fig 2.6 & 2.7:** Taj Printer's new residence. (Unknown, 1970)

## 1980s

Political turmoil in the country didn't go unnoticed. Defiantly choosing the side of the oppressed, the then **UDF found a home and a voice in Taj Printers'** still fledgling printing capacity. **"Comrades... money will come from Lusaka"** was an all too well known phrase used by the struggle veterans whose needs were dutifully met. Money was an unnnessary commodity when one buys into the struggle.

A select few remaining in the company would still recall the "uninvited" security forces raiding the company to find proof of printed political matter, on a regular basis. Giving voice to the oppressed was by no means tolerated by the Apartheid regime.

## 1993
## 564 Fazel Street, Actonville Benoni

A new political era on the rise, and our proudest moment, **having been instructed to print the pre-draft amendments to the interim constitution,** a simple 1 colour A4 book, held in the very hands on the future **"first democratically elected President of South Africa – Madiba"** addressing parliament with the foundations of equality and justice for all.

2.8



**Fig 2.8 :** Bounding interim constitution book (Sirkhot, 2008)

## 1994 | Elections

A sense of pride was inherent within the core of Taj Printers for having been part and parcel of this historic event, a small cog in a very significant machine, but not without hard work. The current managing director assuredly won't forget sleepless nights, taking print shifts in ragged overalls to meet ANC campaign deadlines. Full colour A1 **"Mandela for President"** run twice on an A1 Sord Z 2 colour Press.

The new democracy with its associated freedoms also raised the average workers voice – unions were now empowered to speak and bargaining for "better wages for all" was common talk. Taj Printers was the platform for the plethora of unions, **COSATU SARWHU /SADTU /NEHAWU / NUM / NUMSA** only to name a few, the go to printer for quick turnaround based on late hours and hard work, notwithstanding the fact that taking a stand against oppression was the very foundation Taj Printers was built on.

2.9




## 2005
## 12 Golden Drive, Morehill, Benoni

A sad year with the demise of an integral component of the business. My uncle, Shahid Ali Sharif's passing was a painful time for the family especially the workers who were fond of the soft and gentle soul.

**Fig 2.9 :** Presidential campaign poster for Nelson Mandela (African National Congress, 1994)

**Fig 2.10 :** Eight colour Heidelberg speed master (unknown, 2006)

## 2006

With the passing of one era, gave rise to the birth of another. Shakir Ali Sharif took the helm and smoothly steers the company into new waters and greater expansion than before. An eight (8) colour Heidelberg Speed Master propelled the company into a whole new game. Faster production with perfecting capacity implied that the company now became a printer to other printers too, broadening market share of a very intense market.

2.10



## 2008

The honourable **Cde Manne Dipico (First Premier of Northern Cape)** fondly recounted at Taj Printers 50th celebration held in 2008, the pivotal role Taj Printers played in the active support for freedom.

2.11



Taj Printers celebrates their 50 golden years

One of Actonville's oldest and best known companies, Taj Printers, celebrated its 50th birthday at a lavish function at its new premises, in Golden Drive, on Friday night.

In 1958 the company's current chairman, Mohamed Sharif, ventured away from the safe and familiar terrain of retail trading and invested in a hand-fed Adana letterpress printing machine -- heralding the birth of Taj Printers.

The company's reputation grew, due to the fact that it thrived on service excellence and traditional family values, a benchmark that still exists in the current operation.

Taj Printers endured many facets of the South African transformation process, having come from a previously disadvantaged background.

Over the years it affiliated with many projects and forums and has grown in both staff complement and production capabilities.

The business is now situated in Morehill's Golden Drive on new premises, totalling 1 020sq metres of floor space.

After 50 years the business still lives up to its original mission statement:

"To provide affordable quality printing, backed by professional service excellence".

2.12



## 2011 - 2020

Taj Printers acquired a 30m Heidelberg web for high volume printing of newspapers, magazines and leaflets, which has to be housed in a separate building adjacent to the current factory.

With the digital revolution the company had to keep up with technology and get a digital Ricoh which caters for our on demand printing clients.

**Despite time and technology advancement, paper was passed down and remained constant.**

**Fig 2.11 :** Taj Printers celebrates their 50 golden years article. (Benoni City Times, 2008)

**Fig 2.12 :** Web 600 Machine. (Unknown, 2019)

TODAY

# This project is inspired by the paper that I have inherited



**Fig 2.13 :** Authors handmade book and sketch (Author, 2019)




**Fig 2.14 :** Benoni Transvaal South Africa - drawn plan. (Unknown, 1925)

## 1887

Benoni's existence is primarily due to the **discovery of gold in 1887**. The mines were subsequently concentrated in Blesbokspruit Valley from the Kleinfonterin Dam eastwards towards Van Ryn and Modderfontein. At the time, the mining industry and supporting infrastructure attracted people from all over, including Europe, America, Australia as well as the local Boer, Black Africans, Coloreds and Indians and thus makes modern Benoni rich in diversity.

## 1885 -1898

The **'Four Farms of Benoni'**, namely; **Rietfontein, Kleinfontein, Vlakfontein and Modderfontein** farms were soon proclaimed as public diggings. The Four farms are integral to the history of Benoni since they largely included in the Benoni Municipal area and were intrinsically part of the great Gold-mining era that started it all.

The Google earth map of the area on the right has been overlaid with a pre-1900 map (prior to Benoni having been laid out as a township). The borders overlay many of the modern roads and boundaries, however the streams are not too accurately placed probably because they were less important than boundaries and so were not so carefully mapped as well as their being subjected to changes of course over the years due to floods and erosion causing changes to the natural environment.

2.15




**Fig 2.15 :** The Four "fontein" Farms surrounding Benoni (Unknown, undated)

## 1888 - 1893

The mines in the area were essentially 'outcrop' mining operations where the reef was followed at shallow levels and these early efforts were pretty crude with timber steps following the inclined reefs metres into the earth.

Difficulties arose in providing water, power, labour and materials to the mines and transportation since it was largely dependent on ox wagons

The water-supply too had been a problem but was solved by damming the Blesbokspruit in many places, and by 1895, there was a chain of dams built, which still exist, in the valley from the Homestead Dam eastwards, including the Kleinfontein dam.

## 1895

This map shows the extent of the **Gold Mining Claims** in 1895 prior to the laying out of the Benoni Township.

2.16




**Fig 2.16 :** Benoni Gold Claims. (Gibbons, 1895)

## 1899-1902

2.17



The **Second Anglo Boer War** took place. The mines were forced to close during this time and both Black and White Mine workers dispersed themselves homewards or to war.

**Fig 2.17 :** Anglo Boer War. (Unknown, undated)

## 1887

After the Second Anglo Boer War, the immediate concern to the victorious British and their newly assigned civil administration was that the now war-crippled economy of the defunct Transvaal Republic had to be reconstructed. As part of its efforts to resurrect the Gold mining industry on the Rand, he reluctantly sought and secured cheap indentured labour from China. The mine-owners and Chamber of Mines had been the chief protagonists of this strategy since they saw it as the only way to immediately re-constitute the mines and get the wealth rolling in again. The Black mine workers had been somewhat loathe to return to the mines after the "White-man's" war and the Chinese labour force had now also enabled the mines to lower wages across the board.

The earliest of these Chinese labourers arrived in May 1904 and within a year there were 34 000 and the number quickly increased to around 62 000 with thousands being deployed in Benoni.

While the Chinese workers certainly helped in the efforts to get the mines back into production again, they became a political disaster since they were seen as unnecessary threat to the social structure between the white workers and town folk. Motions was in place to repatriate the Chinese.
As the years passed, Black labourers were gradually encouraged to return to the mines and in 1907 the newly elected Botha Government of the Transvaal.

2.18



2.19



2.20



**Fig 2.18, 2.19, 2.20 :** The New Klienfontein Gold Mining Company. (Unknown, undated)

## 1903/4

After the war, Sir George planned and laid out the town in 1903/4 and the first plots were sold off by The Kleinfontein Estates and Township Company and Benoni Township was born.

2.21



The Town council was elected in 1907 and Clr. R. Dobson was elected mayor . Development started with sorting out the sewerage problems, laying on water (from the Rand Water Board, 1908) electricity (from the New Kleinfontein Power Company, 1911) and planting trees on a large scale.

## 1909

2.22




**Fig 2.22 :** Earliest known photograph of Benoni. (Unknown, 1909)

In 1906, Mr. H. T. Elliot of the Kleinfontein Estates and Township Company announced that there were over 200 houses and 600 inhabitants in the town of Benoni.

**Fig 2.21 :** Benoni's First Town Council. (Unknown, undated)

**Fig 2.23 :** The Post Office and Standard Bank. (Clay,1910)

**Fig 2.24 :** Benoni's First Municipal Offices. (Clay,1910)

## 1899-1902

With the Chinese now gone, the Mine-owners and the Chamber of Mines wished to run the mines at a profit and they proposed greater use of Black labourers at cheaper wages than they paid the Whites. This caused ongoing strife between the White workers Unions and the Administration.

At the same time, landmarks were developed such as the post office, the standard bank and Municipal offices.

2.23



2.24



## 1921

The **Benoni City Times** was established.

2.25




**Fig 2.25 :** Benoni City Times (Clay,1910)

**Fig 2.26 :** The New Kleinfontein Mine train ferries workers to Kleinfontein Station on the Kleinfontein spur, here crossing the present day Benoni-Apex line near Lancaster/Range-view roads. (Wood,1965)

## 1923

The South African **Railways line from Dunswart** through the Benoni station and on to Apex was opened. It included a halt called New Kleinfontein located near the intersection of Lancaster and Range-view roads.

2.26



A New Kleinfontein Mine train ferries workers to Kleinfontein Station on the Kleinfontein spur, here crossing the present day Benoni-Apex line near Lancaster/Range-view roads. (1965) (Courtesy Peter Wood)

## 1927 - 1936

As world trade slumped, demand for South African agricultural and mineral exports fell and also led to political upheavals. The sudden lack of demand destroyed prices on produce that was profitable to many Afrikaner farmers. A large portion of the agricultural industry was unable to repay mortgages on their over-capitalized farms and the National Party found itself losing favour with one of its largest constituencies—conservative, rural Boers.

South Africa was saved from a complete collapse by the gold mining industry as the price of gold rose rapidly. Growing gold exports compensated somewhat for the loss of other trade revenue; however, like the situation with the Boers, the National party lost support as the weak economy forced the gold corporations to replace white labourers with lower-paid blacks.

2.27



**Fig 2.27 :** The Kleinfontein mine-dump beyond Kleinfontein Dam. (Unknown,1920)

**Fig 2.28 :** Aerial view of Western Benoni in the 1930's. (Clay,1930)

**Fig 2.29 :** Benoni by the late 1930s.. (Wood,1930)

**Fig 2.30 :** The old Municipal building looking east down Princes Avenue (Clay,1930)

**Fig 2.31 :** Princes Avenue showing the gabled built in 1916 on the right (still stands) followed by the National Bank (still stands) & the Hotel Cecil on the corner of Rothsay Street. (Clay,1910)

## 1930

Benoni was being laid out and development was booming towards the city center.

2.28



Presently known Actonville was laid out in the map as the **"Location"**. It was split into three to cater for Black Africans, Indians and Coloured.

2.29



2.30



2.31



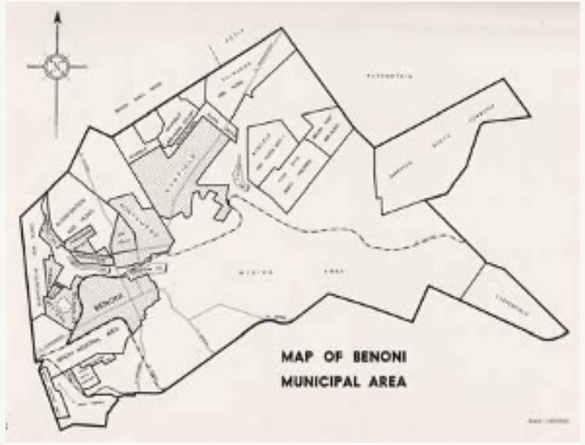
## 1955

Daveyton Township has been established. The railway line heading East, loops into where modern Morehill suburb stands. This was to serve the Van Ryn station, existing at the time. Farrarmere and Northmead extension and McKenzie-park do not exist yet.

## 1948 - 1994 APARTHEID

During the Apartheid Era, designated townships for Blacks were established, namely Daveyton and Wattville. The township of Actonville was established for the habitation of Indians, whilst inner Benoni was reserved for 'whites only'.

2.32




## 2001 - 2021

These various suburbs still remain, although the town is today integrated and all race groups are free to live anywhere they please.

**Fig 2.32 :** Benoni's First Municipal Area. (Wood,1955)

**Fig 2.33 :** The Gap. (Author,2021)

## BENONI TODAY

Today it is known as the city of lakes. Over time the gold mining has decreased in importance, which led to the mines being reclaimed. **This leads me to my chosen site.**

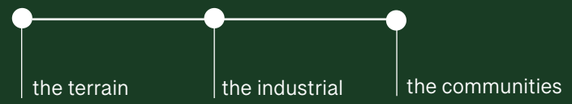
**THE GAP.**

Over the years the Kleinfontein mine dumps as well as the apartheid space planning have restricted the boom creating a gap or a buffer zone in the landscape between pockets of marginalized communities.

**What is the future of Benoni's missing landscape?**




2.33






# 3

# unequal paper landscapes

## Introduction

The previous chapter discussed the history of the site and through uncovering its beginnings it intuitively highlighted the importance of three landscapes: ***the terrain, the industrial and the communities.*** The author describes these landscapes as paper landscapes since paper is seen as a metaphor and sometimes a physical representation of the landscape.

**1.** The terrain references papers decaying form and is expressed as geography of the landscape.

**2.** The industrial references paper as a resource and material that is extracted from the earth.

**3.** The communities reference paper as a medium that documents stories, cultures and backgrounds.

The order in which the theoretical framework will be discussed references the order and conditions in which South African urban environments developed. These urban environments that accommodate for unequal landscapes.



**Fig 3.0 :** Unequal landscapes in Benoni. (GIS Ekhurhuleni, 2021)

## Paper Lexicon

*A lexicon is formulated to connect the broader concept of paper, to words used to describe the landscapes discussed in this theoretical framework depicting different 'phases' or 'forms' of the same material.*

**Creating space** – requires their planning on paper

**Storytelling** – traditionally paper-based books

**Blank zones** – blank pages

**Terrain** – expressed contour lines as folded paper and its raw material, earth – trees

**Industrial** – paper as a resource

**Capital** – paper money



**Fig 3.1 :** Unequal landscapes in Benoni. (GIS Ekhurhuleni, 2021)

## (Rewriting) The Terrain

Landscapes constantly change overtime and while urban fabrics made up of architectures and tar roads are one way to calculate its age, the terrain of the landscape is the first layer of history that can be mapped. The pre-colonial history of Southern Africa traces the lands use for hunting and gathering by the earliest inhabitants, the San, which was later appropriated for agriculture by the Boer (McDondald, 2015). Today, I use Benoni's terrain shown in **fig 3.2** to highlight how historical events changed its contours overtime.

The terrain was always manipulated for desired outcomes. It was used to trace out natural barriers - a familiar tool used under colonial rule and the apartheid regime or to extract resources that drove the industrial revolution. Leaving patches of landscape that are today either celebrated or abandoned.

The chosen site, The Gap, can be described as seemingly abandoned – where the landscape has been forgotten and left to its own in suspense of redevelopment. In his book Terrain *Terrain Vague: Interstices at the Edge of the Pale*, Patrick Baron (2014) describes these counterspaces - terrain vague as "containers of a fragmented shared history, that beams the imperfect process of memory that constantly attempts to recall and reconstruct the past." Much like the chosen site, this stems from the Group Areas Act, legislated under the apartheid regime, which authorized the creation of separate districts for Indians, Black Africans and Coloureds within Benoni, separated by a mining landscape dedicated to the idea of growth and development of an imagined society.

The gap appears in a peri urban interface. In its larger scale it encounters patches of natural and spontaneous vegetation, a brownfield where industrial and infrastructure occur around a fragmented urban void. In an attempt to explore imaginative ways of engaging these unprogrammed space created in the landscape, lies the objective to understand the value in these spaces, as they exists, but refuses the romantic view of leaving the site untouched.

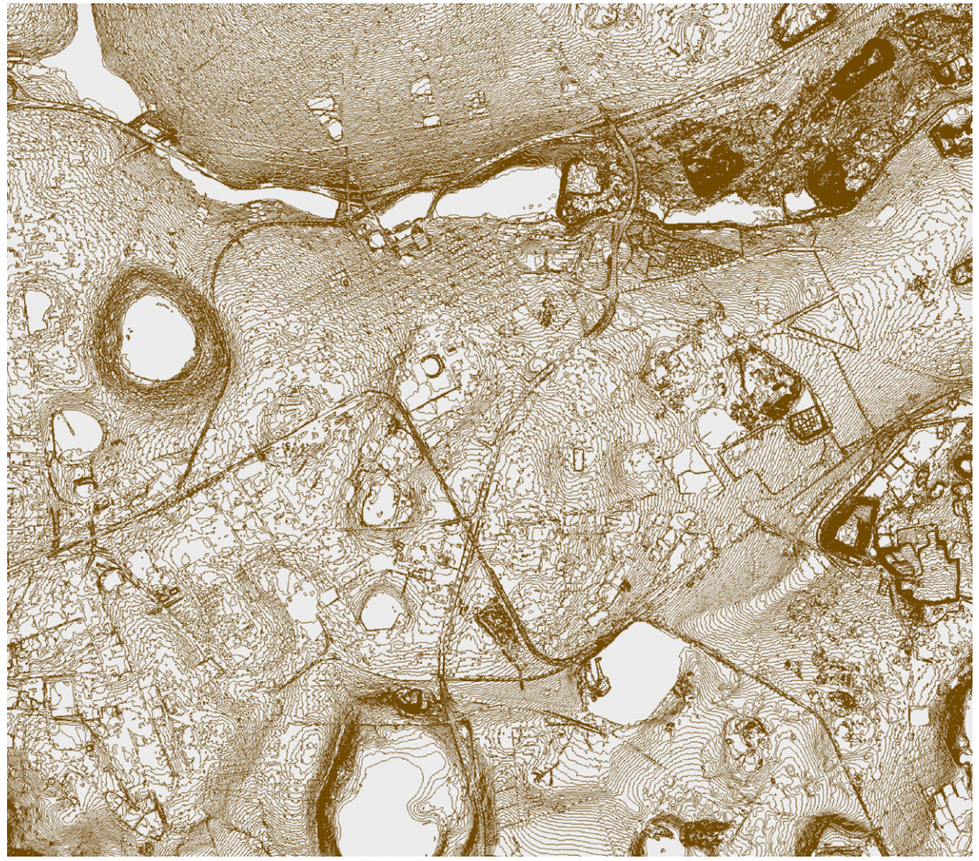


**Fig 3.2 :** Benoni's Geography 2021.
(GIS Ekhurhuleni, 2021)

This gives rise to re-ordering ownership, claim and use of the landscape.

The potential social values of terrain vague are not always easily perceptible from the outside but as urban geographer, Tim Edensor states, “they become useful ways in which one can criticize and cause one to question the normative ways of organizing urban life.” These types of spaces provide potential outlets for unexpected or spontaneous encounters and the nature of these landscapes naturally invite a range of people to make creative, unintended and unplanned uses of them (Franck & Stevens ,2007). This is seen through the lens that although these sites have been given a perceived notion of being derelict, large portions of the landscape are perceived in the surrounding communities as traces of the history of the area, therefore a landmark in itself. Which leads to the personal appreciation of heritage value based on fragmented memory. From this, it can be argued that local residents view this vague landscape as an integral part of their communities.

Very often this leads terrain vague to a cross roads of many, which leads to two opposing visions generally polarizing these spaces. According to writer, Luc Levesque (2012), the first decrees “the disorder they represent in the area.” It is seen as the antithesis to the utopian idea of the city, with futuristic apocalyptic movies often portraying entire cities in a state of terrain vague representing the eventual collapse of society as shown in **fig 3.3**. In an attempt to confront that uncertainty, traditional methods are overcome spatially, through architectures creation of order. (Clement, 2012).

In experimenting with series of utopian urban planning concepts, Le Corbusier imagined his visions of an ideal city through order. In 1925, he proposed the “Plan Voisin”, which essentially required the demolition of central Paris by replacing it with monolithic towers set within organized street grids. Le Corbusier believed that the efficient plan would transform society by raising the standard of living for all. However his “Plan Voisin” was rejected since it



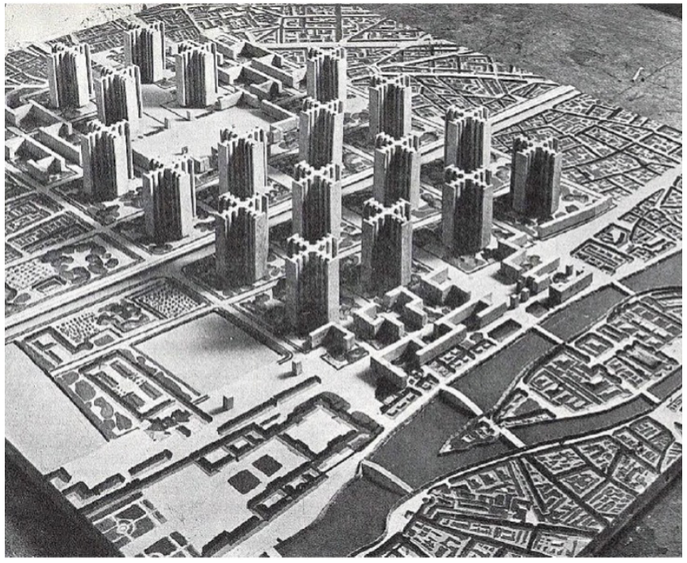


**Fig 3.3**: Architecture of the Apocalypse. (Unknown,2020)

**Fig 3.4:** Le Corbusier’s Plan Voisin for Paris. (Paris, 1922).

actually divided housing based on class, exposing flaws in his utopian aspirations. The frustrated architect later ventured outside Europe to spread his ideas.

The second, in contrast, highlights a potential interest, as spaces of freedom in an urban environment that is increasingly standardized and regulated (Lanters, 2017). The late architect, Ignasi de Sola -Morales' concept of the terrain vague expands on this idea of freedom and explains that the logic of the city and surroundings does not apply to its terrain vague. This is what makes them significant and even essential to the city and its inhabitants.

Sola-Morales went so far as to consider the value in these residual sites existence, to continue being empty, available and unengaged, without any institutionalized influence and therefore questioned the need for designers to program it. However, reluctantly, Morales' proposes one to "create architecture as a reflection of our vague wanderings through limitless spaces." Suggesting that the most appropriate response to these spaces, is to create interventions that take clues from the rhythms and flows of the landscape. This is since they reflect our own sense of alienation and marginality as well as a desire to escape the dominant spatial circuits of work, commerce and transit. Thus, programming it should still maintain its freedom of the natural landscape and challenge productive spaces against the normative sense. Allowing the architect and its inhabitants to fold in a new (paper) landscape.

Architectural and urban historian Margaret Crawford (2019) provides another antidote in her book, "Everyday space" as she does not dismiss the architects and urban designers role in designing these landscapes. Rather through clarification on how these spaces function, she explains that design can capture its everyday publicness. Similar to that of Barons (2014) work, as he focuses on the residuals existing "positive uses and prospects" in hopes to provide and advanced vision that's valuable, and a more hopeful vision than Sola-Morales implied.



My intentions lie closely to that of Crawford's (2019) and Barons (2014), since these vague spaces make up a significant part of our everyday surroundings. They contain complex resources that are often misunderstood that form part of the larger socio-spatial practices of the city that encourage us to forge connections we need as humans. Architects and urban designers have the capacity to impact our city's urban landscape in relation to the natural to enhance our increasingly complex everyday surroundings (Leach,2006). These findings will inform and guide my design markers. However, I will apply and simultaneously reflect on the hesitancy provided in Sola-Morales critique.

Architect, Krystallia Kamvasinou (2006), wrote a journal celebrating Sola Morales concept of the terrain vague and introduced the idea of *Vague parks : the politics of late twentieth-century urban landscapes*. Kamvasinou (2006) describes the terrain vague landscapes as representations of urban politics. Since the past memory of these landscapes are dominant over the present, it is as if the landscape expectantly waits for the project of Modernism to be completed (Clemens 2012). Much of this is evident through the juxtaposition of the planning grid and the location of the terrain vague.

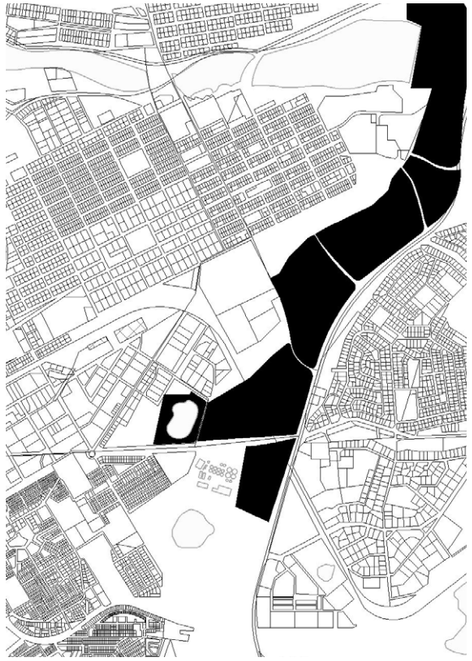


**Fig 3.5 :** Juxtaposition of the planning grid vs the location of the terrain vague. (Author,2021)

Landscape architects, Adrian Geuze and Matthew Skonsberg (2018) propose a more idealistic reclamation solution for terrain vague that builds a “second nature” out of them, in part, a combination of various landscape regeneration techniques and in part carefully allowing landscapes to later function as semi wild parks that can be seen as “cultivated or recycled earthwork art.” Using there project New Territories for the exiled, Gueze and Skonsberg analyse the landscape to fill and clean the voids to create a synergy between humans, organisms and urban environments. **(Fig 3.6)**

The gap is a terrain vague that is subsequently also colonized by nature and contributes to higher urban floristic diversity. It is a victim to an area abandoned by industry leaving patches of chemical toxicity on the landscape, a product of its mining and industrial history. Alkali waste and furnace slag release high alkalinity and lack nutrients, which support the establishment of rare species. Making reference to rare plant species, French




existing phase 1 vision

**Fig 3.6 :** Second Nature: New Territories for the exiled. (Geuze, A and Skjonsberg, M., 2010)

designer, botanist and writer, Gillies Clement (2011) cleverly expresses this phenomenon of abandoned areas as opportunity for a certain expression of diversity and allows one to transform brownfields to Greenfields.

These literatures agree that urban changes of the terrain vague lies in a range of counterspace, leveraging in publicness and experience. A response lies in firstly, rewriting the landscape’s future that contrasts the modernists planning. In addition, a public space, since they can easily be transformed to provide access to a variety of social groups, creative energies and for people passing through (Lanters,2017). For local communities, social cohesive areas are what creates a strong sense of community, attachment to place and promotes interactions between residents. For an individual, integration into a local community can be the first step to inclusion into a wider society contributing to social capital (Gehl,1987).

Lastly, terrain vague offer the possibility of a green space to communities who may otherwise have had none, subsequently allowing for some degree of escapism. These landscapes can help celebrate the break from urban monotony instead of falling in the trap of larger urban sprawl by proposing new design opportunities to reconnect our landscapes more organically (Lanters,2017).

## Industrial Scars

The Gap is a scar in the landscape that Benoni inherited. The larger Johannesburg context shares these scars too. Some larger, some smaller, all equally significant. **(Fig 3.7)** This essay will look at how extractive mining and industrial landscapes can be restored and integrated into the surrounding communities to begin eroding their current presence as barriers. According to historian and urban geographer Anna Storm(2014), these scars are “traces of twentieth century utopian visions of society.” In her book *Post Industrial Landscape Scars*, Storm (2014) references these polluted grounds as marks of sorrow and betrayal - “they relate to fear and resistance expressed by popular movements and to relations between industrial workers and those in power.”

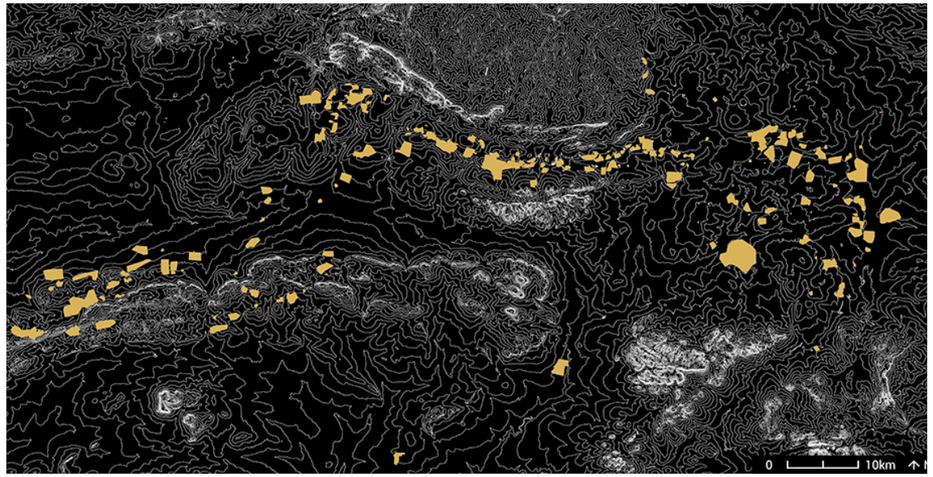



**Fig 3.7:** Johannesburg’s scarred landscape - gold mining. (Bobbins,2015)

However, she further adds that these landscapes also “bear the tales of communities and dreams, of achievements and resistance.”

While the word ‘scar’ is often associated in negative connotations, these wounds are often physical reminders of significance. Referring to bodily wounds such as self-inflicting scars to caesarian sections of a mother, Storm (2014) cleverly highlights scars as symbols of survival, resilience, and courage. The meanings of scars since needs to be understood because they become important in recognizing and understanding their physical structures that allow us to reconcile these landscapes in search for future hope.

The Klienfontein mines were once a source of crucial economic activity. However as a price, it has left significant negative impacts on the environment. Due to its nature, it inevitably leads to landscape degradation that includes changes in its topography, drainage, the air, soil and water quality, of all which directly impacts its surrounding communities. This, unfortunately is only a glimpse of South Africa’s mine waste inheritance.

Studies conducted by the South African Medical Research Council (2018) looked at the impacts of dust particles from mine dumps on community members and the results indicated higher levels of asthma, pneumonia, emphysema, chorionic bronchitis, wheeze and chronic cough among young and elderly people living close to mine dumps. This is a major cause for concern particularly given that communities living near mine dumps and industrial zones are growing and tend to be historically the marginalized poor **(Fig 3.8)**. In the last twenty years, this prompted the government to legislate severe environmental measures along with mine reclamation projects to protect these communities.

According to Barron (2014), “We should restore contaminated urban land and buildings to productive use, so that our children grow up next to parks, not poison.” The enacting of



**Fig 3.8:** Juxtaposition of mining scar and community. (Bobbins,2015)

severe environmental legislation along with public pressure, strengthened the attention around the possibilities of converting post-industrial sites into sustainable, multifunctional landscapes since they are an indispensable part of our urban history and memory (Hansen 2009).

However, in contrast to traditional ways of dealing with clean up, it is essential to explore creative ways to prevent them from becoming less interesting and more integrated with its surrounding context. It is a common design response that post-industrial interventions have naturally navigated the idea of 'greening' as a landscape remedy. One has to then acknowledge that although it is important to cut through these toxic environments through bio-indicators, it also becomes equally important to work with functioning industrial landscapes.



Architect, Jasna Cizlier (2014) agrees - "industrial heritage has social value as well as a memory component about the life of ordinary people." Cizlier (2014) highlights that factories were and still are everyday surroundings for generations of workers and an example of progress and pride for local communities. She further explores the alternative aesthetics of industrial ruins as well as functioning industrial zones and presents them as informal public spaces that encourage a number of activities free of charge without many restrictions. Activities such as gardening, exploring, and various creative activities brings back life into these harsh spaces.

This approach becomes advantageous in locations near city centres, situated along waterways, supported by existing infrastructure and adjacent to residential communities; much like the context *the gap* sits in.




**Fig 3.9 :** Unemployed painters, plumbers and tilers wait outside Builder's Warehouse in Johannesburg, South Africa, for job opportunities. (Verwey, 2012)

### *Integrating the industrial through the creative economy :* Ideas as Capital

We can look at our South African history as a scar under the apartheid regime, since residential areas were divided from one another by landscape features, some natural like that addressed in *the terrain* essay, some specially constructed. Features such as rail roads, industrial parks, highways, and water features were not only seen as extractive infrastructures and resources for political and monetary power but also used as boundaries because black South Africans were only

only tolerated as they were seen as sources of labor.

Apartheid polices maintained white supremacy in all economic, social, and political spheres. Black South Africans were displaced to townships that were disconnected from the economic and social opportunities. These economic opportunities existed in the central business districts (CBD) located close to white upper- and middle-class income areas but far from the black townships. Leaving these blank zones as boundaries and barriers that segregate. **(Fig 3.10)**

From this drew the strong relationship between the industrial parks, the black economy and labour which essentially suppressed the creative industries. This meant that under apartheid, skill development opportunities were systematically denied to black South Africans, leading to a legacy of skills underdevelopment among the majority of citizens. This is particularly so for artisanal work and skilling in South Africa, which suffers from an exploitative history, linking slavery as a social engineering tool under apartheid, and its seemingly considered low status in comparison to professional qualifications and work (Meyer,2016).

The first political, post-apartheid reference to the creative and cultural industries in South Africa was made in a national report titled: '*Creative South Africa: A strategy for realizing the potential of the cultural industries*' (Department for Culture, Media and Sport 1998). This was astounding, considering the South African democracy was still an infant and faced bigger challenges of restructuring housing provisions, financial models and deep social reconciliations that were promises the government wanted to deliver on quickly. However, the government later lacked the political commitment and suffered from an overburdened portfolio which led to these creative strategies only re-looked at in recent years.

Within the post-apartheid economic and labour market context, the South African government has now focused on initiatives to improve job creation, and also to raise the overall skill levels of

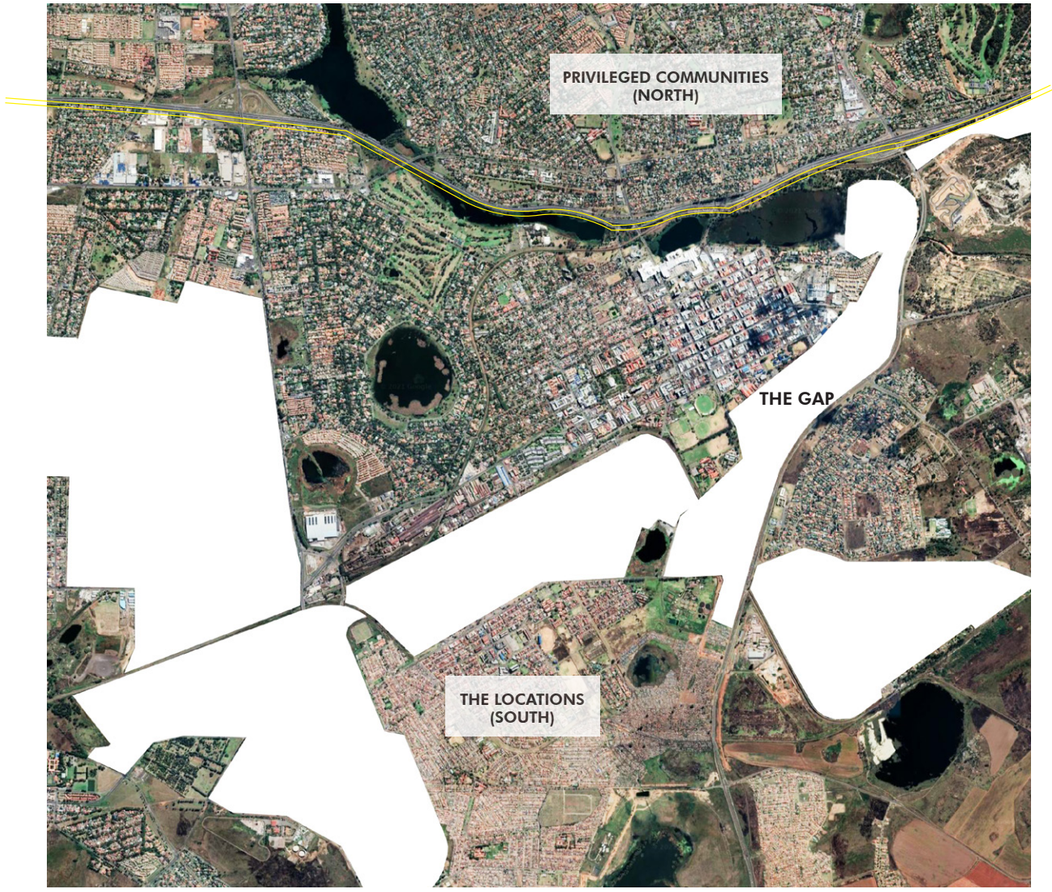



**Fig 3.10 :** Benoni's blank zones as a divider. (Author, 2021)

the country. In Edgar Pieterse and Kate Owens (2018) report, *Johannesburg: Confronting Spatial inequality*, they highlight the real constraints on economic growth in South Africa, of which the shortage of artisan and technical skills were identified as a critical. This needs to occur simultaneously to restoring life to these industrial landscapes that is considered in its current condition as blank zones. They become critical to achieving a liveable and equitable environment. If the extractive legacies of our landscapes are not addressed, they will continue to be obstacles that restrict the lands urban and social development, continuing the compounded legacies for generations to come (Bobbins, 2015).

The opportunities that the creative economy presents can help interrupt these stratified landscapes. The creative economy concept has been under wide discussion, and defining it is still a work in progress because it requires different cultural, economic and social context. In his book "How people make money from ideas" leading strategist on creativity and innovation, John Howkins (2013) coined the term 'creative economy'. Howkins (2013) states that: "Creativity is not new, and neither is economics but what is new is the nature of the relationship between them and how they combine to create extraordinary value and wealth."

For economic geographer, Allen Scott (2014) the creative economy is based on the capital of ideas and in the post-industrial landscape it is the "gold of the modern economy." This definition broadens its perspective and emphasizes that it spans much more than the creation of small cultural artefacts, and expressions but also as capital. This is done through harnessing these significant ideas into material. Which can subsequently transform a landscape *like the gap* from a landscape with no inspiration into valuable real-estate.

One of the richest and most important resources that our South Africa landscape has to offer is our diverse and dynamic arts and culture heritage that equally has the capacity to generate significant economic and social benefits. However in conjunction, South Africa suffers from staggering unemployment rates that stems from multiple political, social and economic circumstances that created poor access to; education and infrastructures for opportunity.

In the broader African context, the creative economy is less developed in Africa than any other region. If we consider that the African continent comprises of 35 out of 50 least developed countries in the world, it suggests that the development of creative economies should be considered as a high priory and urgent task not only for the preservation and promotion of African cultures, but also for combating poverty in the regions.

Mike van Graan (2014), President of the African Cultural Policy Network agrees and believes that "Africa has a deep pool of talent, but lacks the infrastructure and capacity to commercialise its creative talent and reap the vast fortunes that are lying in suspense." These ideas were at the same time promoted through the new African political discourse about the "African renaissance," through programme declarations of Nelson Mandela and Thabo Mbeki, which emphasizes that for facing development challenges of the continent, Africans must rely on their own resources and dynamic cultural values.

As an antidote, Gaan (2014) suggests that the emergence of creative 'hubs' have become the innovative response in mediating this access gap. These spaces fuel independent work and encourage self-employment and independently help cope with uncertain social, cultural and economic environments (Growing the creative economy of South Africa).

Creative hubs are not defined by a singular idea. They can be large ,small, physical, virtual or industry specific all of which is influenced by its local context and people. Visually, hubs can be demonstrated by the following figure

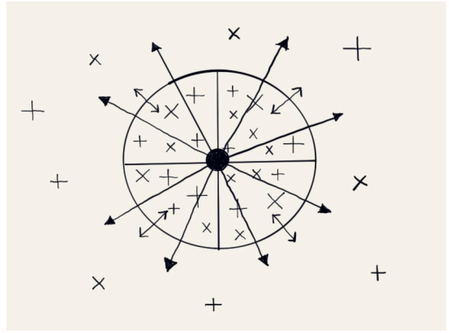


**Fig 3.11 :** Creative networks. (Author, 2021)

In this **(fig 3.11)**, consider the angled crosses as representations of different interactions. The large circle represents the imaginary boundary of a 'hub', it contains the areas where most interactions take place. The existence of the two way arrows illustrates the prevalence of frequent ideas and information exchange – not only from inside of the hub, but also from the minor concentration spots outside the hub. In this sense, the concept 'hub' goes beyond just an 'incubator' , but also facilitates a dynamic network flow in and out of the geographic boundary. Thus providing a highly encouraging and stimulating environment for creative ideas.

The creative economy acts as an opportunity to include its citizens by inserting them into the economic scene, through an asset that springs from background, culture and roots. Culture and economy have always walked hand in hand, since the interpretation of both concepts reflects an era and its values we tend to consume them without necessarily having the market intermediation. Creative industries can communicate both the heritage of South Africa as well as the idea of what it means to be South African in the twenty-first century. Thus provide an avenue for creating a South African identity while simultaneously creating employment that is essential for nation-building and political and social transformation.

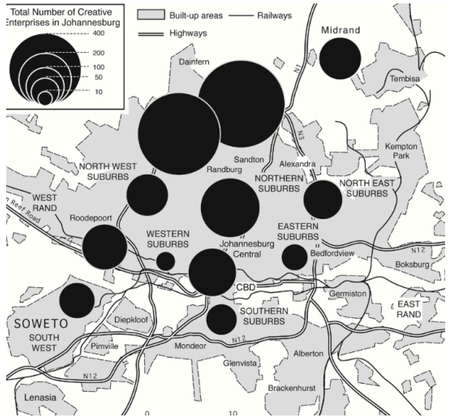
The creative economy can accommodate a diverse range of design and creative possibilities for the curious minds and incidental learning that are not offered in the surrounding communities to help bridge the gap that is leaving underprivileged communities behind because they do not have access to these types of infrastructures. The need for a central and shared incubator to form relationships, to encourage the exchange of ideas, working together and creating a network that influences the next generation is seen as crucial in the larger transformational process of our unequal landscapes and divided societies.

This dynamic expresses a relation to creativity as social capital. The above talks to 'relationships' which is essentially new links or networks between various factors that previously have not been connected. Interpreted in this way, creativity seems to be something that changes social values or networks, which in turn changes cultures, knowledge , communication and consumption. Thus, exerts a strong influence on all parts of society.

Much has been written about the geography of creative industries in the globalized north. These creative industries is said to the salient feature of contemporary post-industrial capitalism, that fuels innovation and investments, therefore making it possible for urban economic fortunes. Thus, creativity is now increasingly seen as a scholarly focus for urban and economic geographers that have become more and more crucial to urban planning and urban renewal as cities attempt to gain the status of world cities. The idea is to use creative approaches considering architectural, urban planning, art and community-orientated solutions as a means of addressing economic, social and environmental problematic legacies layered on industrial landscapes.

The geographical distribution of creative industries is therefore explored at a variety of scales and are not necessarily distributed across space but rather spatially concentrated in particular locations. Arguably, globally the dominant location have been seen towards large inner cities. According to urban geographer Christain Rogerson (2018) the geography of creative industries in Johannesburg are clusters that are strongly focused in suburban areas rather than the inner city and its fringe areas. Rogerson (2018)

Rogerson (2018) states this is due to the economic decentralization and capital flight away from the inner city to new decentralized suburban nodes. This came around the same time that the creative industries were identified as one aspect based for assisting the regeneration of the economy.




**(Fig 3.12)** maps out the overall spatial distribution of creative industries across different regions of Johannesburg and demonstrates the creative industries economy, is massively weighted away from the inner-city.

The Maboneng precinct provides a South African example of spatial transformation reshaped into hybrid urbanism. Maboneng is seen as a large urban regeneration project that has been attracting interest for its 'trendy' image and its new presence as a representation of the creative industries. This vision was inspired when, the city of Johannesburg announced its plans to remake its inner city into a 'World-Class African City'. According to writer, Isabel Marx (2018) the specific use of the term 'world-class' attracts people who link this term to European cities that are considered to be flashy.

Arguably, Johannesburg's strategy was to transform it into a world-class city that would mimic the booming of African metropolises like Lagos and Nairobi. This vision of transformation included ideas of gentrification, a process which is often criticised for failing to include or acknowledge the history of any city (Marx,2018).






**Fig 3 .13 :** "Everyday life looks markedly different outside the gentrified cocoon of Maboneng Island." (Oatway, 2019)

The term gentrification was first coined by sociologist Ruth Glass in 1964. It is the process that forces out existing residents from inner city neighbourhoods in order to attract more affluent inhabitants, creating what she calls "upper-class" ghettos that are "cleaned up" and transformed into expensive spaces for middle and upper class residents to make them desirable. Highlighting the unreality of the changes in Johannesburg for the poor and working people who struggle to survive around them depicting two different Johannesburg's, made up of different economies, histories and aspirations simultaneously inhabiting the same space (Ansell 2021). Architect, Mpho Matsipa (2021) argues that the word 'gentrification' might not be the

best term exercised on Maboneng since “it makes the forced removals of predominantly poor black people seem ‘new’ when in fact this practice is at least 100 years old, albeit using different mechanisms.”

In Maboneng’s attempts to represent the creative industries, it too divides its audience, as large rental incomes become less affordable for even new creative entrepreneurs. Simultaneously, its users do not require formal education, but require creative background and experience as a prerequiste to belong within the landscape , a luxury for most marginalized people, highlighting again two parts of Johannesburg co-existing.

The evidence presented regarding the spatial distribution of creative industries in Johannesburg provides a further case for re-positioning the suburbs in post-Fordist international debates around the creative industry economies and for re-examining neo liberal policies that give preference to inner city areas. In terms of local polices, currently Johannesburg’s influenced by mainstream international polices wedded to urban regeneration and city branding.

The results underline a need for re thinking the city’s spatial policy focus around creative industries in the inner city and for recognizing the decentralized landscape of creative industries across Johannesburg.



## Communities

The spatial geography of urban apartheid and its injustices are internationally known. The core of apartheid spatial policy and power revolved around land. It was an engineered tool to physically keep people apart. **(Fig 3.14)**

Sweeping reforms brought about with the election of Nelson Mandela changed many aspects of South African society. People of all races are now free to use public spaces and transportation and now have access to services that were once denied to black South Africans during apartheid. However, no specific urban planning legislations have been enacted to actually undo the geography of apartheid which means that the specialized landscapes created by apartheid planners are still in place leaving the landscape with major inequalities (Lanegran,2000).

The most neglected urban spaces during apartheid are still largely the most neglected spaces today (Dalson.R.,2011). As a result, communities that surround these fractured landscapes *like the gap* are still marginalized poor communities.

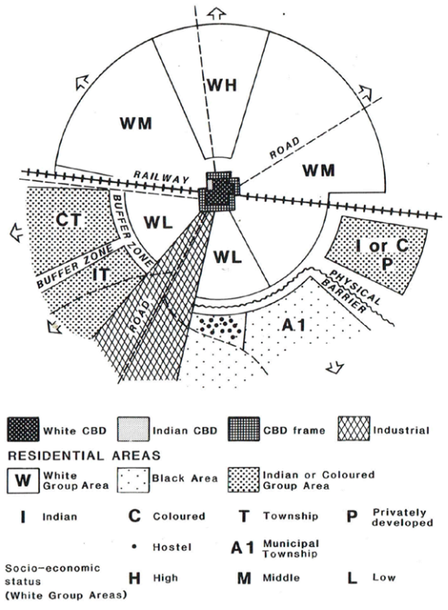



**Fig 3.14 :** Diagram of the model apartheid city. (Christopher, 1995)

After the first democratic government in 1994, the attitude towards urban areas that faced the realities of segregated areas were hard to overcome. These areas were faced with poor links and connections to surrounding communities, since urban

spatial organizations were used as a tool to control, and architecture lacked identity, variety and mixture.

As highlighted in the previous essay, the terrain is traditionally considered a relationship defined by landscape (Wylie, 2007). Starting in the nineteenth century, urban morphology was introduced in architecture and urbanism as an organised discipline. However, once urban planners seen a relationship between the two, urban morphology was then considered a landscape of its own kind it. This opened new ways of integration that focused more on connections rather than organization. Ever since, architects and urban planners have used creative problem solving with community interaction to connect landscapes that can start to reflect a South African identity (Hansen 2009).

An example of this kind of study for intervention was the 1996 proposal Baralink Redevelopment Project, a strategic parcel of land at the eastern entrance to Soweto, which aimed to better connect Soweto to Johannesburg.

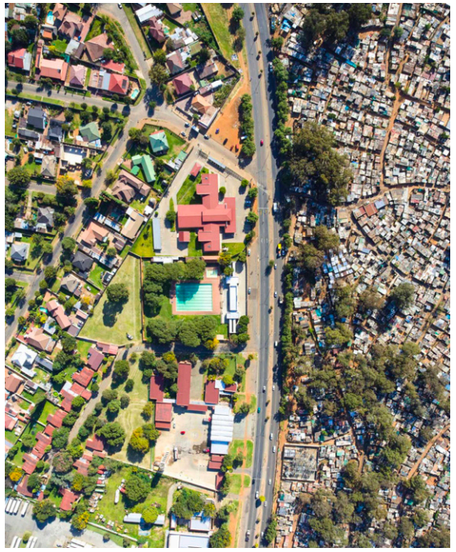


**Fig 3.15 :** TIME - The World's Most Unequal Country. (Miller, 2019)

The plan of Soweto, shown in **fig 3.16** is typical of so many former townships. It shows large tracts of vacant land used for industrial or mining purposes that acted as buffer zones to the surrounding 'white' neighbourhoods. It also shows a lack of access and connection to maximise control, which was important in ensuring the enforcement of apartheid planning.



**Fig 3.16 :** The Baralink Study Area. Baragwanath Hospital in the centre of image, Orland and Diepkloof to the north.Large portions of vacant land used as buffer zones between residential areas. (Urban Solutions, 1998)



**Fig 3.17 :** Baralink Urban Design and Development Framework Vision Plan. (Urban Solutions, 1998)

**Fig 00** shows the firsts steps towards normalisation. The focus was the creation of links, bridging buffer zones by utilising the vacant land portions to serve housing and public amenity needs; re-linking roads and broken connections to neighbouring areas and providing a larger variety of amenities for people to access with ease without having to commute to the city centre. The new vision also attempted to provide alternative modes of transport and for a spatial intervention offering a greater sense of orientation and identity. (Hansen, 2009)

The same process of investigation and attempts at re-linking was followed in all urban centres of South Africa. When looking back at proposals for Baralink, or Mamelodi and other similar areas suffering under the same conditions, the urban initiatives were romanticized. The spatial intentions attempted to resonate more broadly for diverse portions of the community and reflect the wants and need of the community in a meaningful manner. However ,many of these studies and proposals were just that, recommendations and proposals, seldom applied and followed through, largely due to the increased demand for immediate housing and basic services as mentioned earlier.

According to urban geographer, David Lanegran (2000), “The geography of apartheid cannot be undone with a stoke of a pen but the barriers between communities can be eroded.” Hansen (2009) comments align with of Lanegran (2000). He states that “we have to understand that our South African urban environments are fraught with tensions and disjunctions layered on varies levels and scales” and while we don’t always understand the complexities or necessary always have clear direction forward we can agree that our urban environments are man-made ecosystems. Much of the success of bridging of our divided landscapes requires diversity in order to sustain itself. Despite being heavily segregated our urban environments have a rich sense of diversity within their boundaries needs to be celebrated through infrastructure.



**Architecture and storytelling**

Storytelling is among the oldest and most fundamental forms of making and paper is historically seen as the medium for recording our stories. These stories are all around us, some take form of song lyrics, family recipe books, hand movements of a dancer or the strokes of a sculptor. They are symbols that form an integral part of our daily life. They leave clues within our landscapes on how to create space and transport us to place. The resultant ensemble forms a collective of ideas and narratives from many generations. This is also how urban environments with resonance are made and assembled over time.

Our urban environments are home to millions of migrants. These urban environments are sources of hope that enable the exchange of stories, ideas, information, friendship, culture, skills as well as psychological support. In search for better opportunities; social and survival strategies are in place. These survival strategies often take the form of outputs that are usually traditions passed down, that premise trade on relations based around ethnicity, culture or making use of what one possesses. These stories are materialized and practiced in small scale, either in the back of the house, garage or the dining room table.

Today’s makerspace movement is a globalized western invention that forms part of the creative economy. These spaces tend to privilege the same people that hold much of the worlds institutional structural power. Haitain -American writer, Edwidge Danticat (2013) explains in her book, *All Immigrants are Artists*, that “the working-class have not had the luxury of discovering making and tinkering; they’ve been doing it all their lives to survive - and creating exchange networks to facilitate it. Somebody across the street or down the road is a mechanic, or does tile work, and you can swap your own skills and services for that expertise.”

From this she highlights the idea that cultures do not emerge passively, or at random, but are shaped by the things we make and share. We express our cultural

identity and background through the things we do, which becomes a product of human creativeness. Thus reflects our history, in our legacy and by the way we express our thoughts and imagination. Through this, it enables us to relate to others. A key objective of the current focus on communities is the forging of new and different linkages between art, commerce and community to empower and bring visible the invisible (Eger,2003).

Through stories of her mother, Danticat describes the historical conditions that simultaneously necessitated and constrained creativity and locates her mother's seam-stressing in both material production, quotidian beauty, and dignity of survival. She quotes are mothers words: "If you can't afford clothes, but you can make them—make them. You work with what you have, especially if you don't have a lot of money. You use creativity and you use imagination."

It becomes important to note that Danticat does not recast her mother as a maker or use now popularized language of making to legitimate her capabilities. Rather, through what she calls "the prism of art", an everyday practice that was both enmeshed in racialized and gendered hierarchies and provided dynamic resources for her development as an artist. These revelations encourages us to recognize the skill and artistry demanded by the socio-political realities of migration, displacement and economic hardship that is evident in South Africa.

Having that said, the western notion of makerspaces, is still undoubtedly an open source of appropriate technology which encourages innovation through designs and blueprints that allow technology to be adapted to meet local developmental needs. It holds popular value due to its unique identities, stories and inventions that hold substance in a world of fast production. In more formal educational environments, making builds on a holistic 'constructivist' ideology which is a philosophical approach that revolves around the idea of learning through using the hands and observation (Kurti & Fleming,2014).This encourages a culture of recognizing the importance of design and creativity as ingredients for social and economic growth. Cohesion of cultures, ideas and stories, connect people and through sharing and exchange they can influence the next generation.

Many spaces match the image of the 'makerspace' held in popular imagination i.e. utilitarian rooms filled with high tech equipment, but they can also be spaces that can be attached and shared with museums, galleries, as well as spaces utilised for cultural events such wedding celebrations, performances and recitals. They are not just home to 3D printers and laser cutters, rather a public space and a public resource environment dedicated to sharing. This comes at a time when many communities do not have community space, public space and where civic life is often seen as a luxury, currently in decline.

A local example of a making space that was explored as an urban regeneration project is the recently constructed Victoria Yards. Victoria Yards presents a uniquely integrated urban complex in Johannesburg that celebrates social development as well as commercial enterprise. This making space is made up of artesian studios for local artisans who require space to create, share and work with others as well as an urban farming, agriculture project. These skills development is celebrated through a public space as a means for job creation as well as a source of income generating opportunities.



**Fig 3.18 :** Victoria Yards setting. (Ho, 2019)

Indian architect, Charles Correa, often spoke of a concept he called ‘episodic architecture’. This concept is based on a series of spaces and sequences unfolded gradually revealing space to tell a story of its place. He makes reference to temples that house sculptures that not only represent the belief stories of its context but anchor information regarding land ownership, the currency system and society. Architecture thus acts a visual storey teller, that strives to represent the community in its context, and intern it reflects society.

This element of interpretation wherein the architect acts as a conduit for a collective consciousness is very often overlooked particularly if one comprehends that the product of the architecture define popular expectations and ambitions for how we live in and around buildings for generations to come. Through this perspective one imagines stories which becomes the script of the building users in order to inform the spaces. The building then is designed as a ‘habitable sculpture’ and builds on a relationship between the spaces, the needs of the inhabitants and the emotions that are evoked by the space to create a new approach to architecture. This enhances the user experience through different engagements of the building. (Correa 1982)

Architecture can be narrated in different ways, it can physically reflect our stories or act as a vessel to house them, but it becomes a landscape of its own to relay them. The design than becomes constructed through a phenomenological approach towards an inspirational space, in this case drawing on the relationship between space and creativity. In the creative economy essay, creativity was seen through the lens of an outcome i.e. a solution to economic and social dilapidation. However, I now look at creativity as a physical process that can be spatialized in the built environment (Wallas,1926). A narrative that allows one to formulate a typology of creative spaces which can be categorize as: tinkering, reflecting, sharing, experimentation, making (memories), and performing. After identifying the functions of these spaces, the spatial qualities enable a creative narrative that leads to productive outcomes. This is seen through relationships with natural green environments, lighting conditions, material structure, connecting spaces, height and volume (Wiljesooriya,2018).

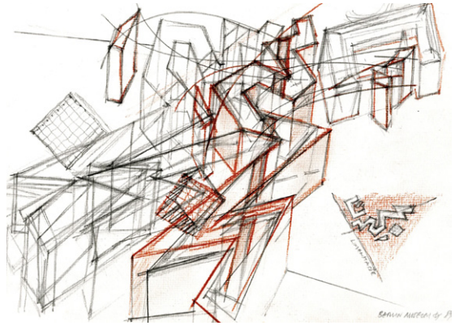
In her article, Architecture and Narrative, Sophia Psarra studies geometry and configuration of buildings and how these define visual fields of individuals inside these buildings. Psarras (2009) studies include well known buildings of different scales built for different purposes in different historical periods. On the one hand, she talks about the Parthenon and Barcelona Pavillion, because objects contained inside these buildings are completely integrated with their designs. On the other, she talks about museums whose primary purpose is to display objects arranged in space, which have their own narratives, and in a way ,they are places that collate and share human experiences. She makes reference to how architectural structures historically were designed to unfold a story and not just shelter.

This notion is shared with the rhythms and flows of the terrain vague, a space that is used , entered and unfolds differently for each user as there is no organized sequence. Architect, Le Corbusier’s notion of promenade architecturle to Daniel Libeskind’s Jewish museum in Berlin encapsulates narratives through routes that are twisted or layered to achieve spatial drama heightened by suspense.



**Fig 3.19 :** Promenade Architecturale -The outside ramp leading to the roof of Villa Savoye. (Le Courbusier ,1964)

**Fig 3.20 :** Conceptual sketch of the Jewish Museum in Berlin. (Libeskind ,1989)



Using any medium available to him, Libeskind's first design drawings were less about the buildings physical form but more about the story he aimed to tell. Through poetic narratives expressed through line and shade, this key process resulted in many of his iconic works to date.

Depicting how spatial narrative is not only used as a way to describe their buildings, but also the ways in which they design. The immersive nature of these types of architecture, transported and inspired its users. Architecture thus needs to be created as multiple stories that draws from personal experiences that are created around us, it connects its user to space , place and the larger landscape.

## Conclusion

In imagining a spatial intervention , the design intention is to rewrite the relation of the gap as a spatial connector as opposed to a divider. In the essay, I have largely discussed the unequal paper landscapes that we confront within out geographical, industrial and community landscapes. Moving forward, I will adopt a strategy that confronts these landscapes through unfolding or refolding these spatial relations that than become a set of design principles with which to guide the creation of the intervention

In the means of refolding the landscape, the intervention will programmatically function as a public space held together through resource support structures for a range of makings of different mediums i.e. through celebration, making, sharing, reflecting, commerce and performance. The relations between these paper landscapes will further be mapped and analysed and together with this argument , be used to imagine an appropriate architectural intervention.

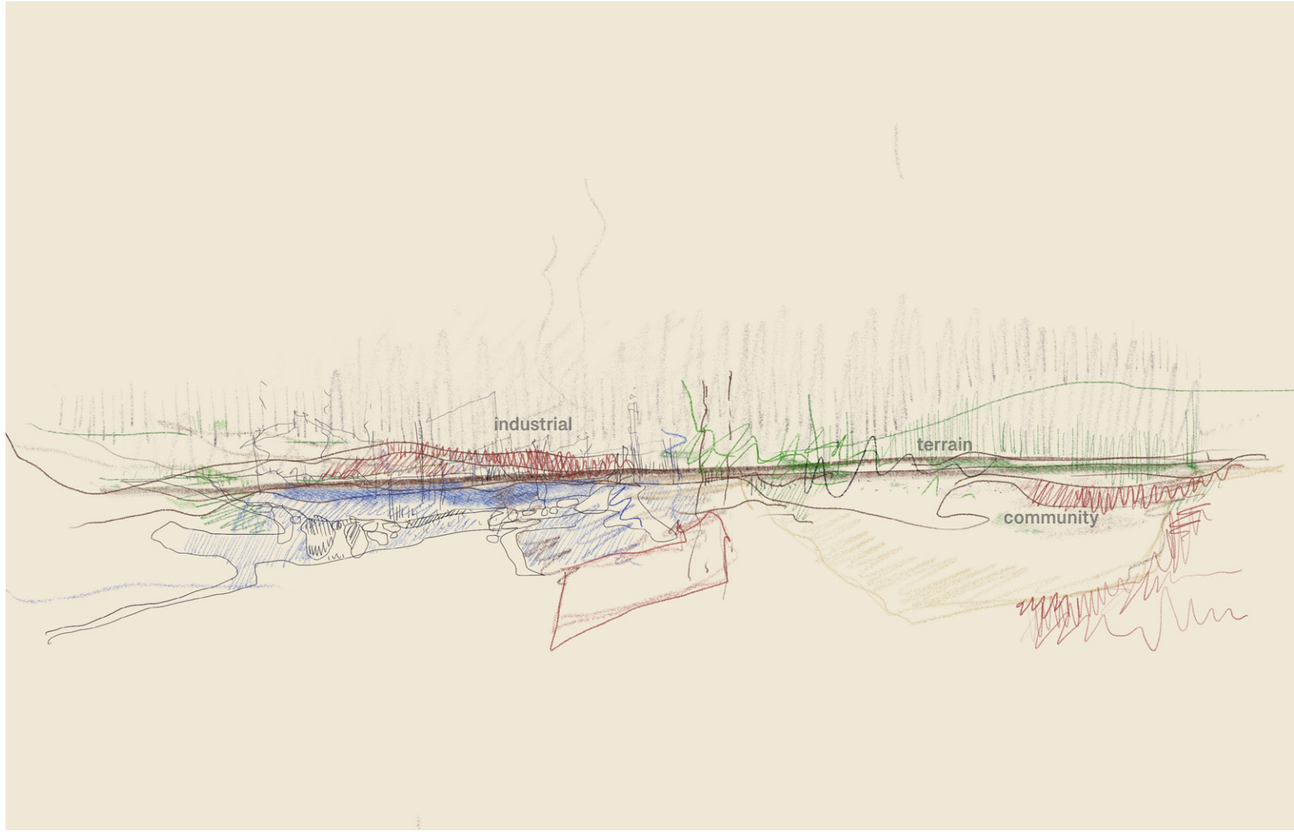
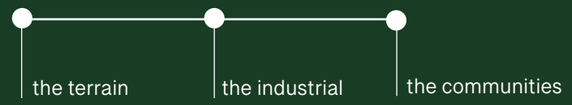



**Fig 3. 21 :** Paper landscape sketch (Author, 2021)






# 4

# moving stories

## Introduction

Traveler, David Miller (2014) writes, “every story is a physical map of how to travel from one place to another. Some places are physical; others are not.”

This chapter maps out the features of the site and its surrounding context. These features are captured through, photography, sketch, tracing, and research. The author is not describing a static place but a landscape in motion.



**Fig 4.0:**
**Foot prints,**
**Gravel pavement,**
**Tar road,**
**Tram track scars,**
**Paper boat**
(Author, 2021)

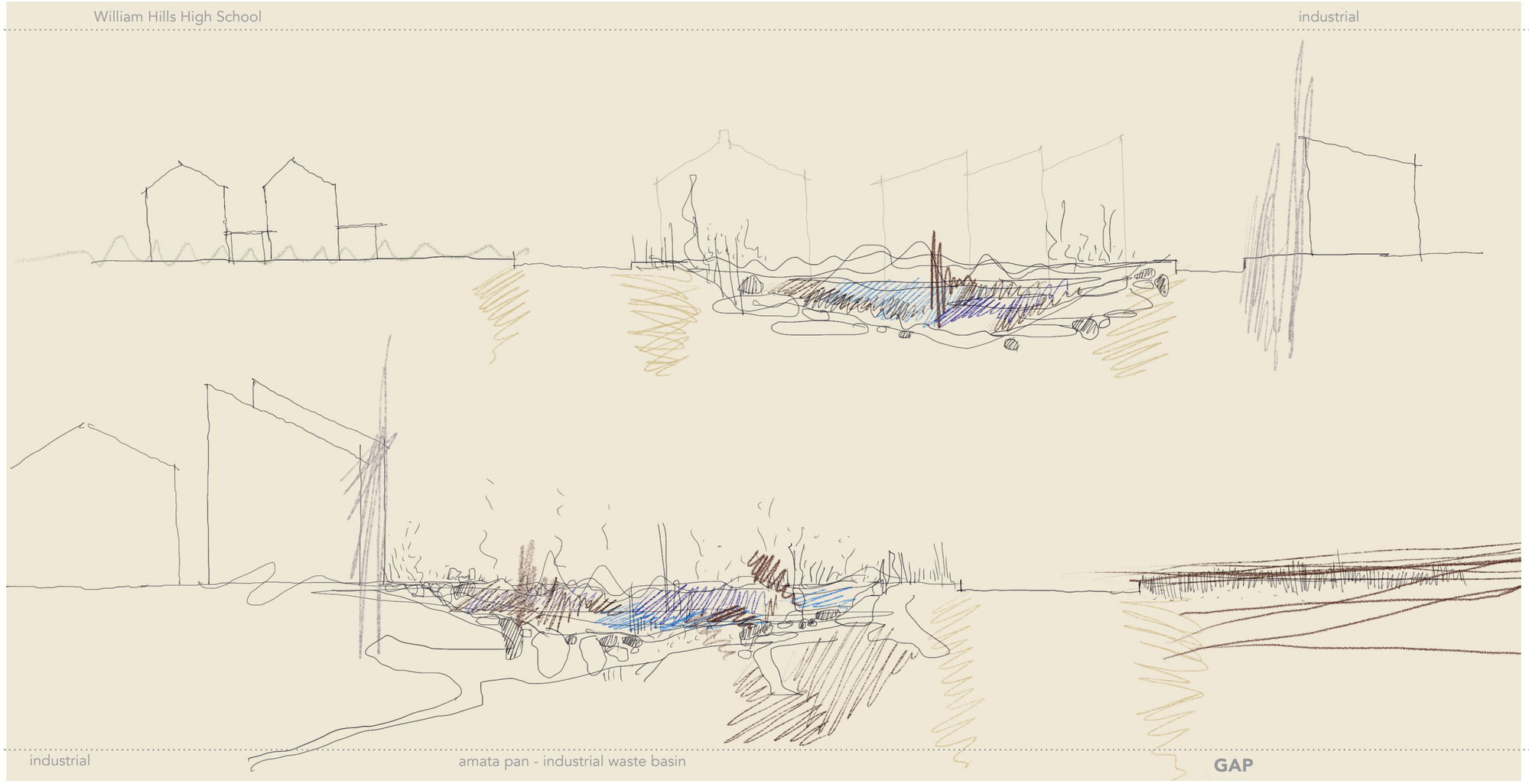



**Fig 4.1 :** Mapping the perceived feel of the site. (Author, 2021)

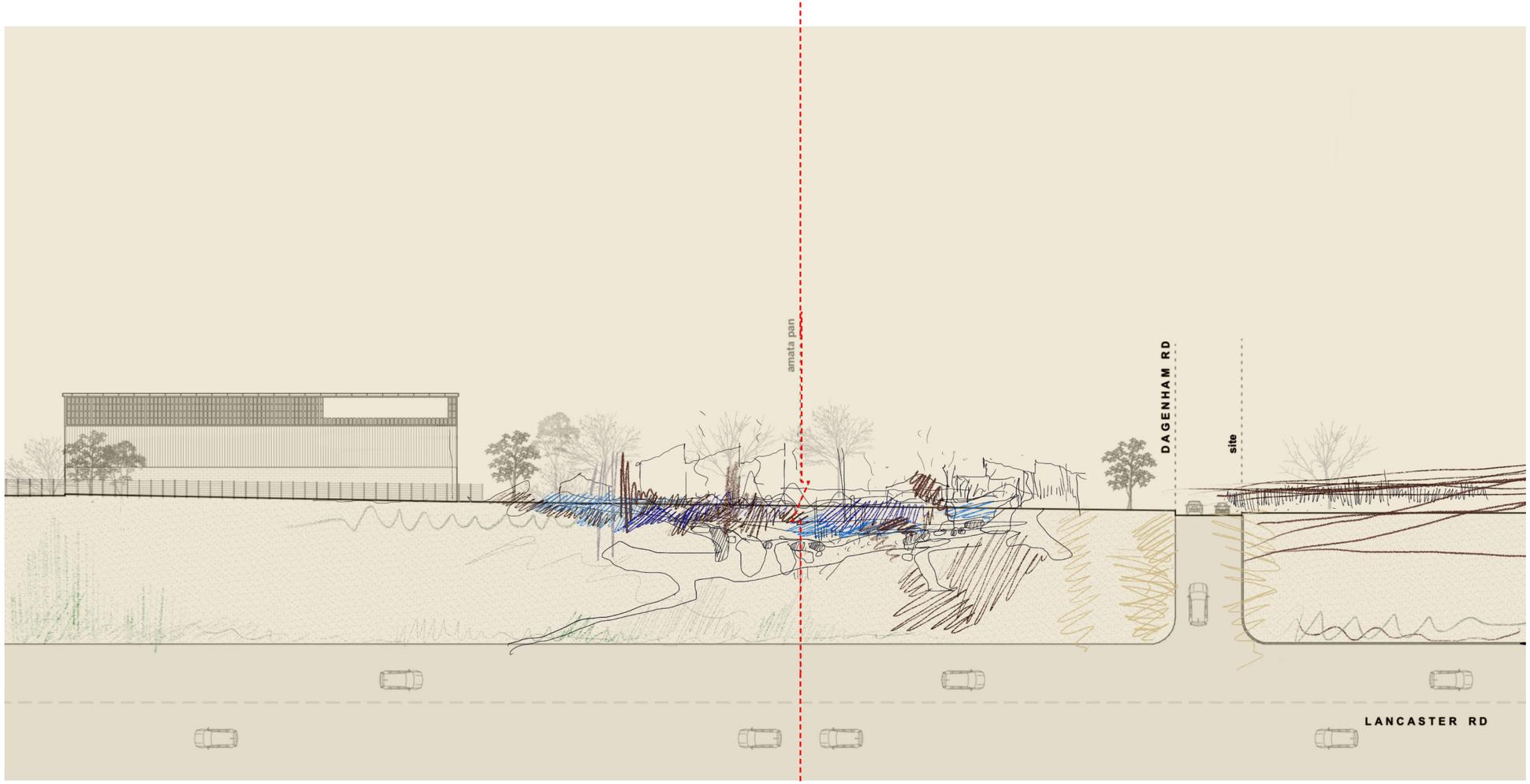



**Fig 4.2 :** The site is largely isolated with a 200 m width Amata Pan that separates the Gap to that of the industrial zone. The buffer zone is made up of overgrown veld and an unfenced pan that goes up to 3m deep. Scaled section of the sites context. (Author, 2021)

## Waterbodies in Benoni

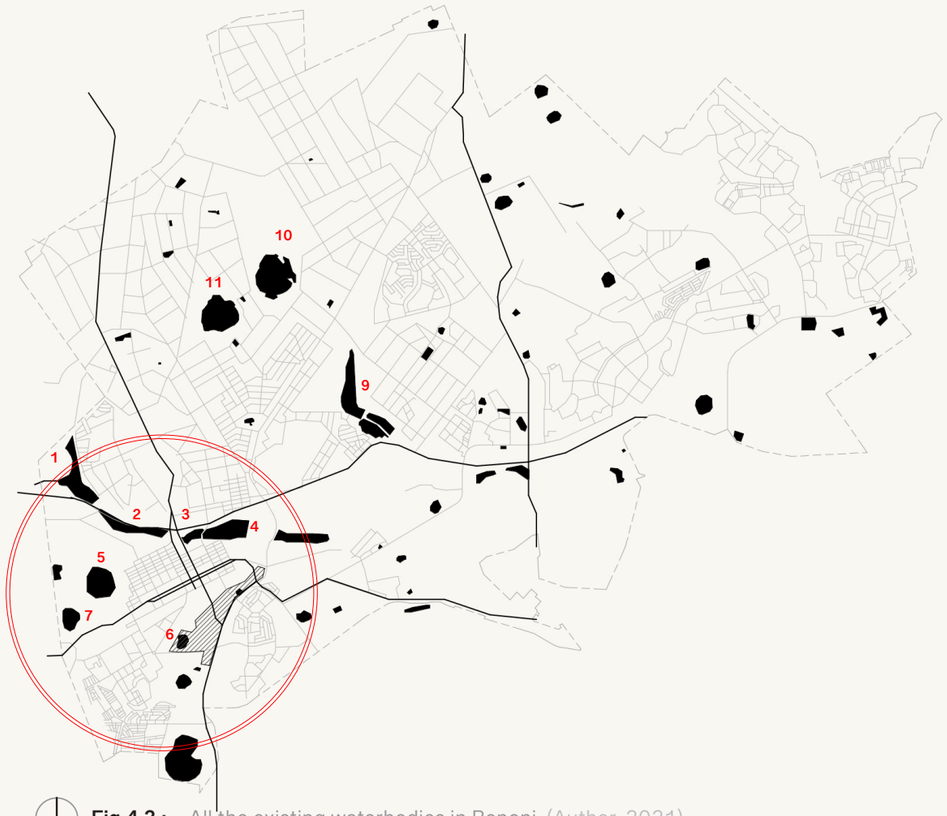



**Fig 4.3 :** All the existing waterbodies in Benoni. (Author, 2021)

Water was a secondary consideration to support Johannesburg's mining activity and at the time existed mostly as infrastructure. However today it is considered an integral part of Johannesburg's narrative and an important role in Benoni's history. Today this history, titles Benoni as the "City Of Lakes" with less importance to the gold. Benoni's landscape consists of four large man-made lakes, the Klienfontein, Middle, Homestead and Civic Lake. Highlighting again the manipulation of the landscape for desired resources.

Much of the waterbodies have been destroyed, however the city of Ekurhuleni has launched the rehabilitation of these natural features. With a renewed interest to protect them created a landscape that increasingly privatizes water presenting a separated society. Waterbodies now form part of gated communities or are governed by access control upon entry, which all present new forms of barriers in a post-apartheid landscape.

1 Homestead Dam + Recreation Park
2 Middle Lake
3 Civic Lake
4 Klein FonteinLake
5 Korsman Bird Santuary
6 Amata Pan
7 Glenshaft Pan
8 Leeupan
9 Vanryn Dam
10 Bulfrog Dam
11 Blaau Pan

## Green spaces




**Fig4.4 :** Benoni's green spaces. (Author, 2021)

One can tell a lot about our urban environments from the nature of its public spaces. Benoni's green spaces are fraught with the tensions of inequality.

**1 | Willowmoore Park** – is a multi-purpose stadium in Benoni. It is currently mostly used for cricket matches, otherwise throughout the year it is closed.

**2 | The Korsman Bird Sanctuary** is a central view to high income residents. Although this waterbody is not privatized it is further divided through access points that require your vehicle license plate number, name and cellphone number upon entry that encourages a gated community.

**3 | Benoni Lake Club** - is a luscious green patch that faces onto one of the four largest man-made lakes of Benoni, the Middle Lake. Access to this portion of the lake is privatized and requires monthly membership fees to recreational activities such as golfing, AstroTurf, Bowls, Squash and Tennis. High end pubs and restaurants, set along the water's edge encourages a luxury lifestyle set around watching the sunset, far removed from its surroundings.



4.5



4.6



4.7

**4 | Actonville islands** - in the last few years, the municipal leaders are transforming small islands between residential plots as fenced parks that hold a few jungle gyms for children to play.

**5 | Actonville Football Stadium -** this facility is largely used to host local schools' annual sports tournaments and soccer tournaments run by the community.

**6 | The Actonville Pools** is currently a depilated infrastructure that is no longer functional, however adjacent lies a small poorly constructed AstroTurf (that requires no entrance fee), used by children largely afterschool, on Friday and Saturday nights

Large portions of abandoned land sit next to a power plant facility. These grounds are poorly maintained resulting in tall patches of grass most year-round.

**7 | Homestead Lake** is one of the four largest man-made lakes of Benoni. It is surrounded by middle income residential communities. This public park has less access point stops upon entry and encourages picnicking, fishing, and water sports such as sailing.



4.8



4.9



4.10

**8 | Ebostse Golf and Country Estate** is a new highly privatized gated community that houses high income homeowners. This gated community is creating an environment where there become less reasons to leave its walls. Facilities such as a school, grocery store and recreational activities on its rehabilitated Vanryn Dam are part of this estate's future.

**9 | Benoni City Hall** is surrounded with shaded lawn and acts as a small lunch time relief spot for those working in Benoni Town.

**10 | Watville Cemetry** – Watville is a dense marginalized township. Its public space takes the form of a cemetery directly adjacent to residential plots.

**11 | OR Tambo Cultural Precinct** – to provide green public space in Watville, the OR Tambo Cultural Precinct was established, and gives back to its community through a public environmental education center, a craft trail, outdoor amphitheater for cultural events and the rehabilitation of the Leeupan Dam.



4.11



4.12



4.13



4.14

## Birds

This mapping was inspired by the pigeon. Historically pigeons are messenger birds that traveled across landscapes to deliver news.



**Fig 4.15 :** Messenger pigeon. (Golden, 2017)

However, in grounding this mapping exercise to its context, birds are also considered as excellent bio-indicators of the effects urbanization has on ecosystems and the environment. Healthy water bodies invite a diverse range of ecosystems and species. The following are only few out of hundreds birds spotted after the recently rehabilitated Korsman Pan just north of the site and highlight the positive effects of rehabilitation on our waterbodies.

**African Darter** 4.16



by Eugene Liebenberg

**Greater Flamingo** 4.17



by Brian Daniel

**Little Bittern** 4.18



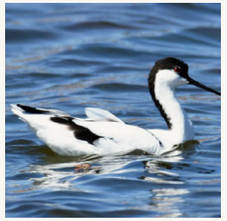
by Eugene Liebenberg

**Yellow -billed Stork** 4.19



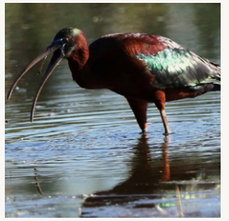
byunknown

**Pied Avocet** 4.20



by Eugene Liebenberg

**Glossy Ibis** 4.21



by Eugene Liebenberg

**Yellow - billed Ergret** 4.22



by Eugene Liebenberg

**White - backed Ducks** 4.23



by Werner van Goethem

**Whiskered Tern** 4.24



Chris Kotze

**Amethyst Sunbird** 4.25



byJane Trembath

**Levailant's Cisticola** 4.26



by Eugene Liebenberg

**Little Egrets** 4.27



by Eugene Liebenberg

**Pin-tailed Whydah** 4.28



by Prelena Owen

**White-throat Swallow** 4.29



by Eugene Liebenberg

**African Spoonbill** 4.30



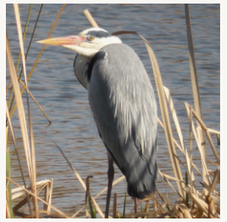
by Tom Stratton

**Goliath Heron** 4.31



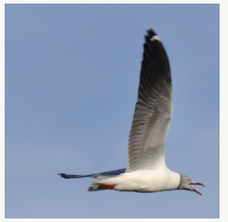
byJan de Beer

**Grey Heron** 4.32



byJane Trembath

**Grey-headed Gull** 4.33



by Jose Barbosa

## Landscape Features

The natural features of the gap are made up of trees, shrubs, wildflowers, overgrown veld and an unfenced pan that goes up to 3m deep. The terrain itself is rather flat piece of land covered in invasive plant infestations that choke the pan and reduce visibility. The presence of alien species such as the blue gum trees found in the landscape makes a sentiment to how living organisms were too displaced.



**Fig 4.34:** Bluegum Trees (Korsman Conservancy)

Eucalyptus Blue Gum tree is an alien species originally from Austrialia. It is widely grown and a source of timber, fuelwood, paper and nectar



**Fig 4.35:** Cotton wool grass (Korsman Conservancy)

Cotton wool grass in an ideal grass for wetlands. It protects the soil from erosion and is fast growing. The cotton wool grass is used for thatching ,making paper and fuel and attracts birds.



**Fig 4.36:** Willowtrees. (Korsman Conservancy)

The weeping willow are a medium to large size tree. These trees are an alien species that is a serious invader of grasslands

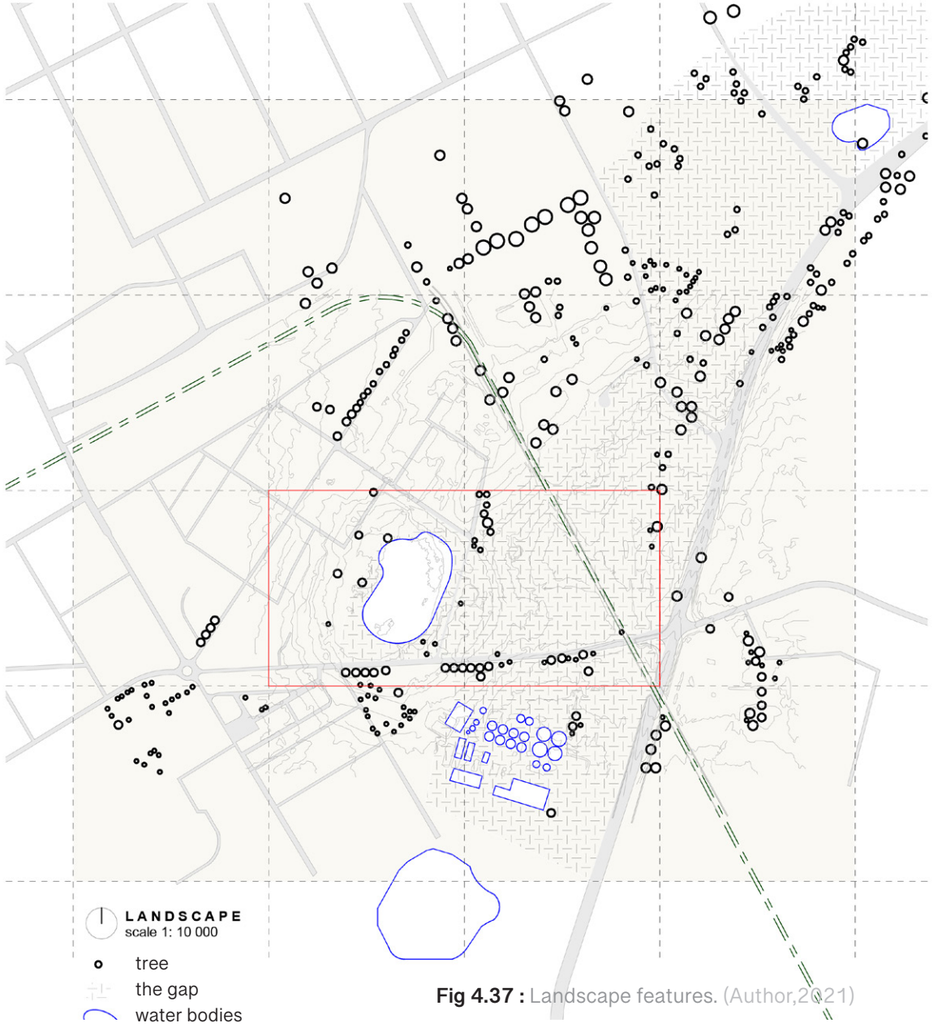



**Fig 4.37 :** Landscape features. (Author,2021)

## Travelling Stories

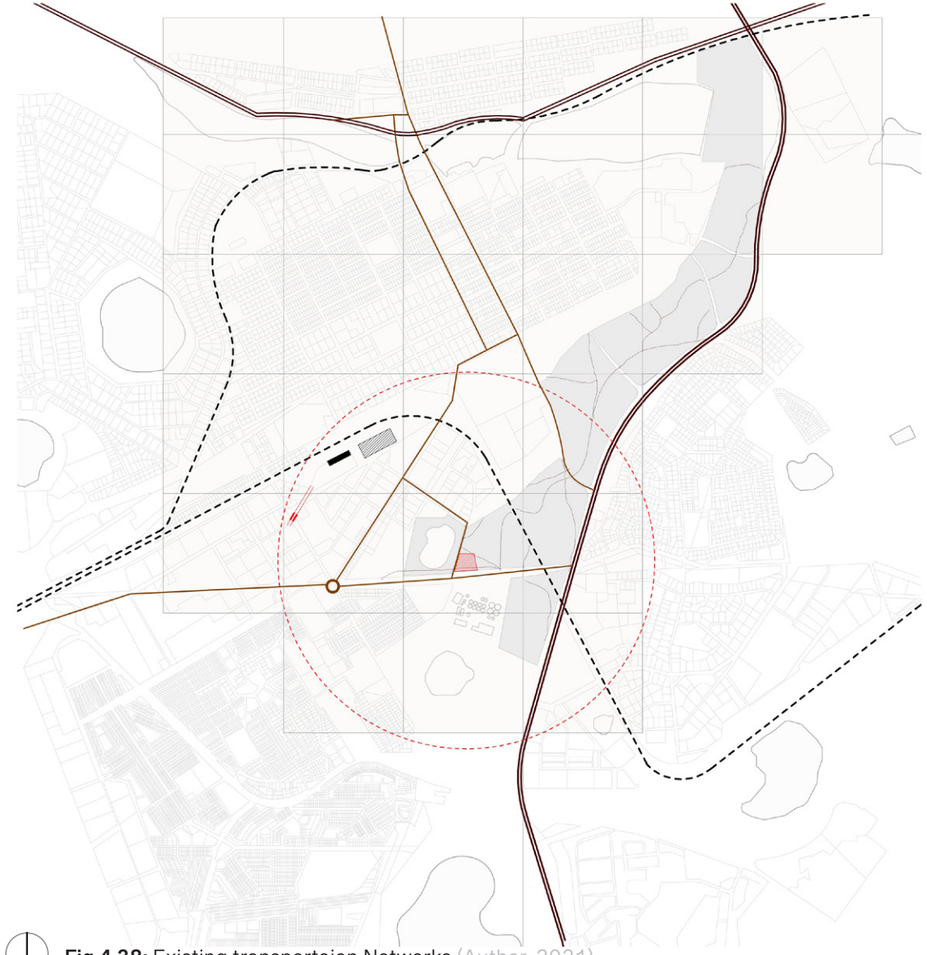


**Fig 4.38:** Existing transportaion Networks (Author, 2021)

People's everyday movements act as traveling stories that are not only represent the modes of transportation that exist but also express the exchange of information and ideas from one person to another from one place to another. These exchanges are mapped through the network of routes taken by train, foot, and car. These movement routes are also mapped through traces of forged pathways and rail track scars.

**Fig 4 .39 :** Johannesburgs Tramways (Spit, 2017)

**Fig 4.40 :** Light rail - Tram scars (Author, 2021)



- Main Roads
- Arterial routes
- Taxi Rank
- Rail
- Metrorail station
- Forged pathways
- Tram scars
- Site

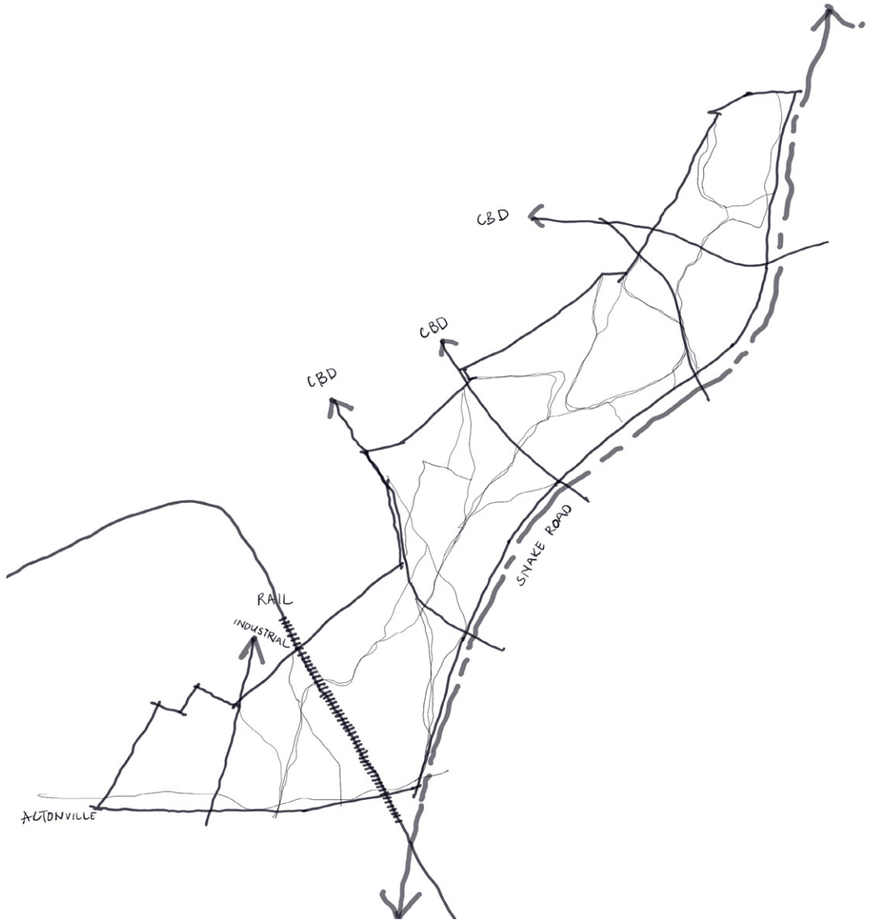



**Fig 4 .41:** Tracing the forged paths on The Gap.(Author, 2021)



**Fig 4.42 :**
Pathway traces.
(Google Maps,2021)



**Fig 4.43:**
Movement traces.
(Author, 2021)

## Bicycle

The introduction of Bike lanes in Johannesburg garnered more outrage than support. It was suggested that bicycle lanes were a luxury for the rich – even though most people who use bicycles to commute fall into the lower income brackets. This evident in Benoni, the common mode of transportation is the bicycle since it's cheap and affordable. The bicycle is also the most common form of recreational activity for children in the community, who commute to school and roam the streets after.

## Metrorail

The Metrorail infrastructure is also one that separates. It is the cheapest mode of transportation that allows movement of people all over Johannesburg. The station is located northwest of the site with a 1.5 km walk between the station and the new intervention.August 2020, Prasa issued a statement indicating a programme to rehabilitate the station in Ekurhuleni and its associated rail infrastructure. The Benoni station improvement is planned for the 2022/2023 financial year.



**Fig 4.44:** Bicycle (Author, 2021)



**Fig 4.45:** Vehicle (Author, 2021)



**Fig 4.46:** Metrorail (Author, 2021)

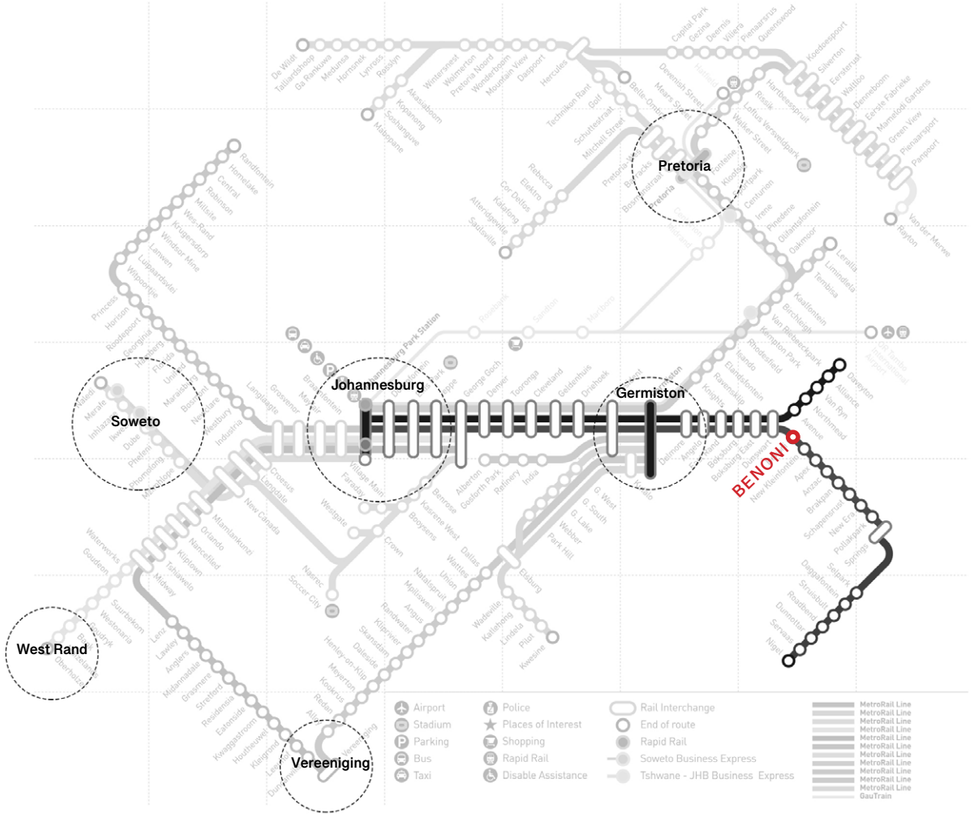



**Fig 4.47:** Existing Metrorail routes locating Benoni station (Author, 2021, After Metrorail ,2010 )




**Fig 4.48 :** Mapping thelarger industrial landscape on the East Rand. (Author, 2021)

## Metropolitan Ekurhuleni

In the most densely populated province of the country lies the Ekurhuleni Metropolitan Municipality. Ekurhuleni was formed as a unified entity only after the country's municipal elections which were held in December 2000. It is thus one of South Africa's newest metropolitan areas (Rogerson, 2005).

The new metropolitan area is organized around the regions previously known as the East Rand and Far East Rand. However, unlike other newly constituted South African metropolitan areas, Ekurhuleni does not represent the extension of an existing city. Instead, eight (8) cities that eventually merged into one sprawl of urbanized land, namely the six (6) East Rand centres of Alberton, Benoni, Boksburg, Edenvale, Germiston and Kempton Park which merged with the three Far East Rand centres of Brakpan, Nigel and Springs.

Prior to the 1970s these areas were a bastion of the gold mining industry. Structural economic change linked to the decline of gold mining and the rise of manufacturing resulted in these regions subsequently reborn and restyled as the country's national industrial workshop (Centre for Development and Enterprise, subsequently reborn and restyled as the country's national industrial workshop (Centre for Development and Enterprise, 1997).

Despite the large number of job losses incurred on the manufacturing economy during the 1990s the industrial sector remained at the heart of formal employment in Ekurhuleni by the early 2000s. Soon thereafter, the Ekurhuleni government positions launched an integrated municipal spatial developmental framework to regenerate these urbanized spaces. Its main goal is to re urbanize, re-industrialize and regenerate the municipality. (Rogerson, 2006)

By 2009 Ekurhuleni contributed an estimated 9 percent of gross value added which made it the third most important metropolitan area in South Africa in terms of economic output (South African Cities Network, 2011). Compared to Cape Town or Johannesburg, Ekurhuleni is distinguished by the continued significance of manufacturing in the local economy, within a diverse industrial base.

## Industrial




**Fig 4.49 :** Industrial Parks. (Author, 2021)



Adjacent to the gap lies buffer zones of light industrial factories and warehouses. This industrial landscape is primarily made up of construction materials that can be used to fix or construct small homes, machines, or cars. The industrial facilities are wholesale and retail timber, metals, brick and miscellaneous pieces and parts.

This industrial landscape is considered as the 'urban kit of parts and forms part of the larger library for the interventions workshops providing easy accessibility to material resources as a means of including the sites existing context with the new intervention.




**Fig 4.50 :** Industrial Service symbols. (Author, 2021)

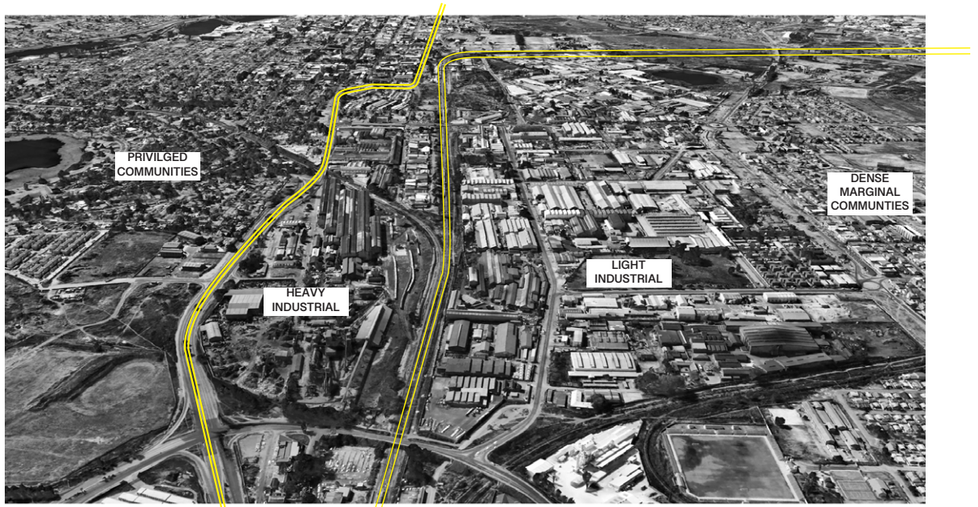



**Fig 4.51:** Barriers and Boundries of the urban fabric. (Author, 2021, after Google Maps, 2020)

# Industrial




**HARDWARE**
1. H Systems Hardware Store
2. Aleef Hardware &Plumbing
3. Astra Welong Supplies
4. Liverpool Stationary
5. Build it DTM
6. Tool Centre
7. Steel and Hardware Cash & Carry
8. Selvas Bolts & Nuts

**TIMBER**
9. East Rand Boards
10. Folding Box
11. Plywood Master
12. Fast Foot Packaging Store
13. PETIT Board
14. Bbb Boards
15. The Fx Group

**METALS**
16. 1 D Steels
17. L&P Springs
18. Flamingo Parts
19. Fabricated Fittings & Pipes
20. Cast Iron Products
21. Wire Ventures
22. Kale Steel Manufacturing
23. Tian Chrome
24. Astra Welding supplies
25. Frankwen Forge
26. Benoni Scrap Metals

**ENGINEERING SERVICES**
27. AS Engineering
28. Poplar Business Park
29. Vula Civil Engineering
30. Industrial Machines Knives
31. Frankwen Forge
32. Liverpool Business Park
33. Broadway Heat Treatment
34. Atlas Star Engineering

**TEXTILES**
35. Troy Textiles
36. Dubai Center

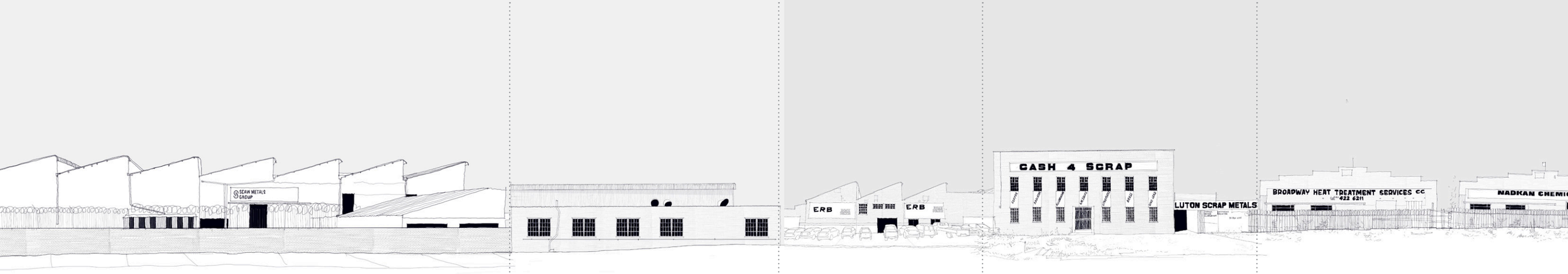
**ELECTRICAL**
37. Kin Electronics
38. First National Battery
39. Reliable Transformers

**RECYCLING**
40. Phepha Recycling
41. Shirleys Recycling & Waste

**AUTO MOBILE SERVICES**
42. FA Truck Body Builders
43. Wearpact Replacement Parts
44. Reliable transformers
45. Dunlop Industrial Africa
46. Ossies Motor repairs
47. Royal Buss and Truck Tyres
48. David Brown Gear Industries
49. CAS Autospares

**BRICKS**
50. Benoni Brick works

**Fig 4.52 :** Industrial urban kit of parts . (Author, 2021)




Metals | Cash for scrap | East Rand Boards | Scrap Metals | Metals

**Fig 4.53 :** Industrial library elevation. (Author, 2021)

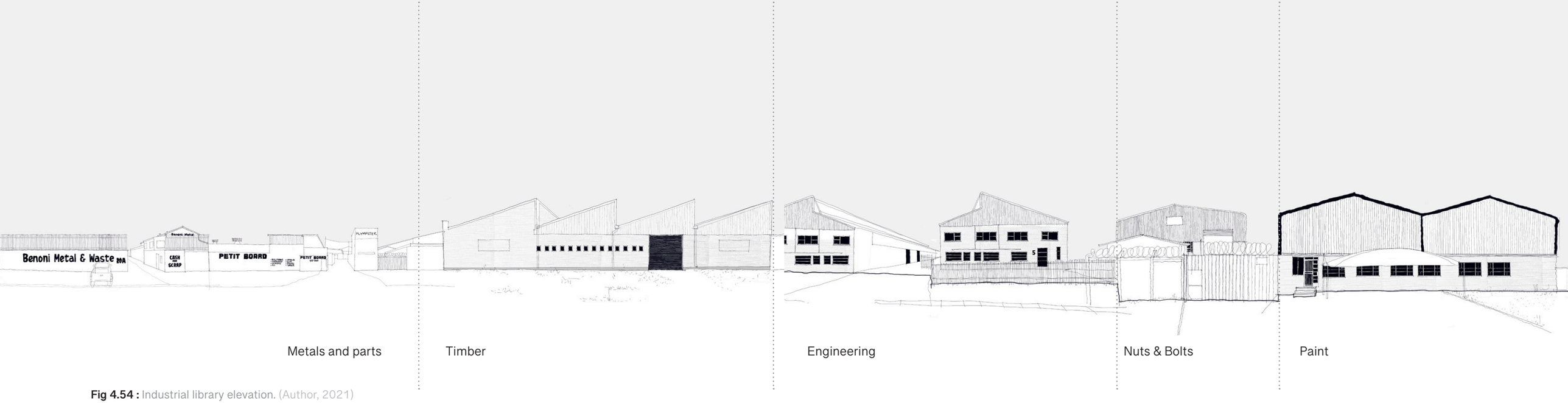



**Fig 4.54 :** Industrial library elevation. (Author, 2021)

## Communities




**Fig 4.55 :** Surrounding residential communities. (Author, 2021)

## Demographics

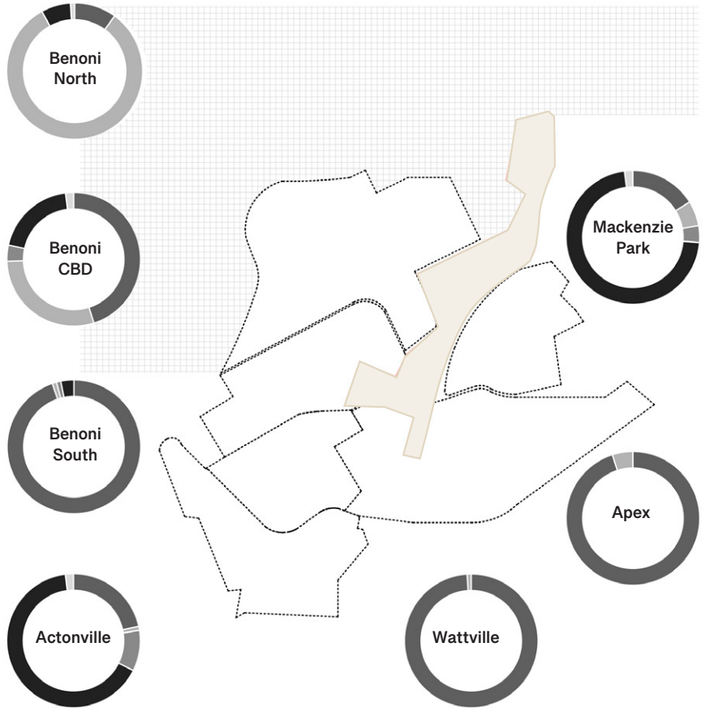
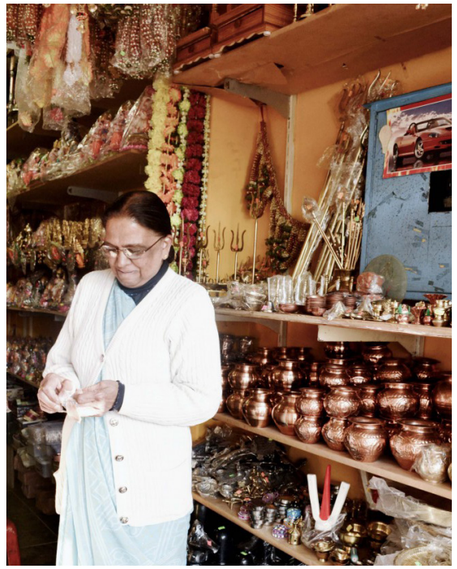



**Fig 4.56:** As mentioned previously, under apartheid people were segregated and much of that planning still exists. A quick statistical study highlights the demographics within the communities being the marginalized poor. (Author, 2021)

## Portrait's of Actonville

The Group Areas Act, tore up South Africa along race lines. People were displaced into single race spaces. From these spaces townships grew and tightly formed communities, bonded by history and struggle. Artist and photographer Hemesha Bhana (2014) explores the rich history of one such space, Actonville Benoni through her photography "Portraits of Actonville"

Bhana (2014) says "I use photography as a medium to create a platform where memory becomes a history for a lost/ hidden community. I use memory as a research method to understand a space as it stands in reality, referring to traces of the past that exist in real-time, creating an identity for a place and the people that once embedded that space."





Portraits of Actonville began as a series of smaller projects that sought to find exciting ways of collecting and presenting Actonville's history to the public and now has grown into a series of article, interviews and personal photographs. Bhana explains that "Through photography I am able to capture the essence of Actonville's history. Even though the place has changed, the stories still remain. This has allowed me to bridge the gap between the past and present, as both real and imagined."

**Fig 4.57, 4.58, 4.59 :** Portraits of Actonville. (Bhana,2014)



## Schools

Benoni is densely populated which gave rise to more than 10 schools located in close proximately from each other. This resulted in concentrations of up to 6000 students within a 5km radius. Like many schools', emphasis is made on academics such as mathematics, science, language, and business as economic drivers that culminates the success of the community's ability to grow.

Privileged schools today grant more opportunities to students through extracurricular activities and courses such as Information Technology, Arts, Woodworking, Engineering Graphics and Design, Computer Added Technology, Electrical, Mechanical and many more. These courses give privileged students not only basic life skills but also an advantage in mastering skills at an early age that open doors to jumpstarting their careers.

However, for schools located in poorer communities those opportunities are considered luxuries that set students back in the real world enhancing the divide between those who have access and those who do not.

The education department furthers this divide through policies such as feeder schools. Which essentially locates students to the nearest school based on there home address. Historically poorer community members spend all their lives in one place. This leaves less integration and interaction with students from different communities which restricts the culture of networking new ideas, skills, and resources between people from different backgrounds.

For the creative and curious students, less opportunities and resources shatter dreams and hopes for an imagined future that is stripped away purely based on an environment that they were innocently born into.

The value of opportunities and resources not only impacts the monthly income in a household but also instils a sense of pride and dignity of building one's future that becomes a legacy that can be passed down to future generations.

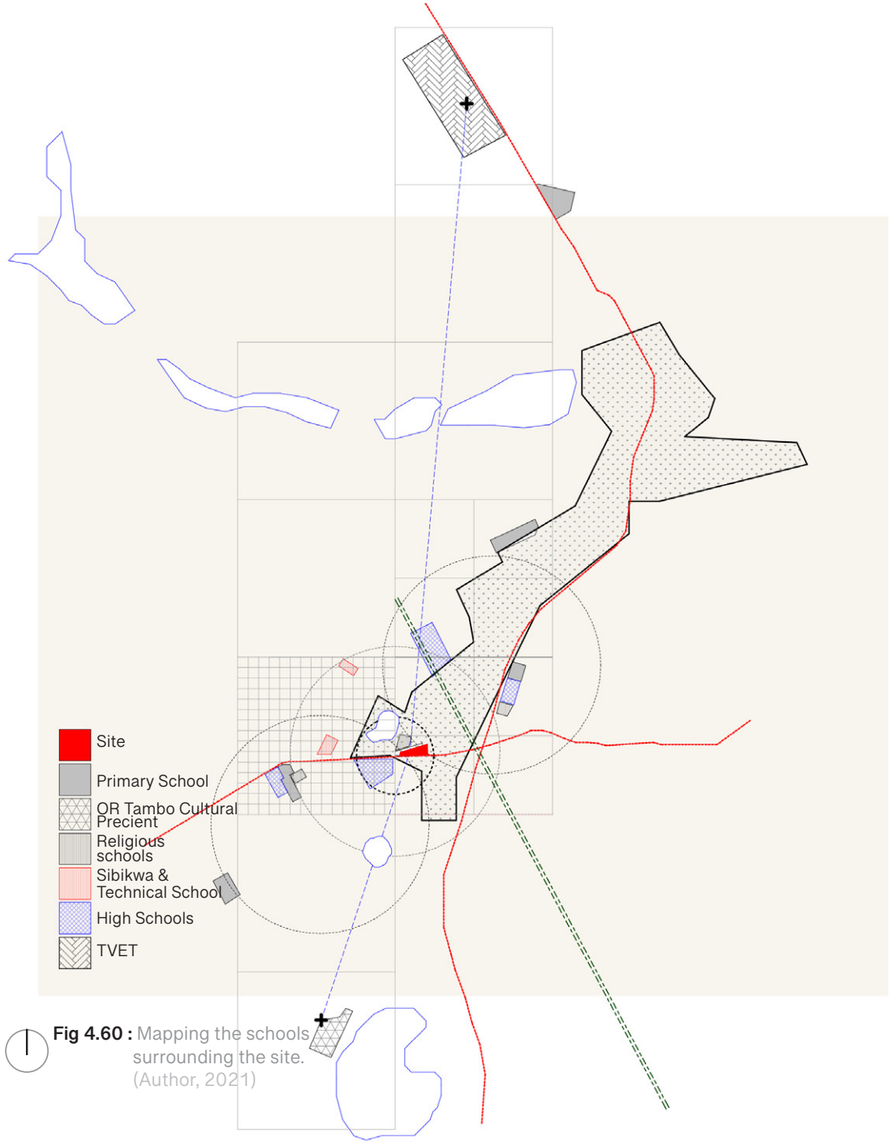



**Fig 4.60 :** Mapping the schools surrounding the site. (Author, 2021)

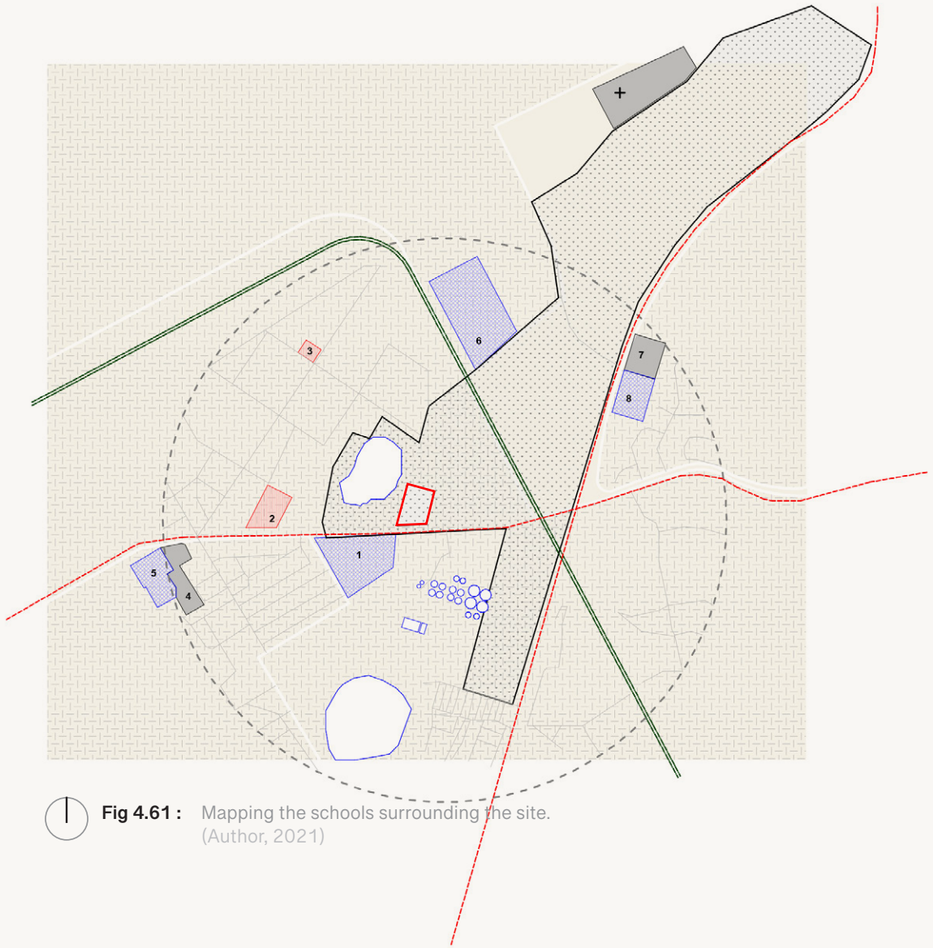



**Fig 4.61 :** Mapping the schools surrounding the site.
(Author, 2021)

## 1 | William Hills High



**Fig 4.62:** William Hills High
(Google Maps, 2021)

*Mathematics,*
*Language,*
*Science,*
*Business*

## 2 | SEIFA Training Center



**Fig 4.63:** SEIFA Training Center
(Google Maps, 2021)

Marketing
Human Resource Management
Financial Management
Electrical Engineering
Mechanical Engineering

## 3 | Sibikwa Arts Center



**Fig 4.64:** Sibikwa Arts Centre
(Google Maps, 2021)

Visual Arts,
Theater
Music

## 4 | Benoni Primary



**Fig 4.65:** Benoni Primary (Google Maps, 2021)

*Mathematics,*
*Language,*
*Science,*
*Business*

## 5 | Liverpool High



**Fig 4.66:** Liverpool High (Google Maps, 2021)

*Mathematics,*
*Language,*
*Science,*
*Business*
Tourism,
History

## 6 | Willowmoore High



**Fig 4.67:** Willomoore High (Google Maps, 2021)

Mathematics,
Language,
Science,
Business
*Engineering Graphics and Design (EGD),*
*Information Technology (IT),*
*Robotics, Mechanical, Electrical*
*Computer Applications Technology(CAT)*
*Debate, Chess Club,*
*Choir, Sports*

## 7 | 8 | Benoni Muslim Primary + High



**Fig 4.68:** Benoni Primary and High School. (Google Maps, 2021)

Mathematics,
Language,
Science,
Business,
Tourism,
History
Islamic Studies

## Ekhurhuleni TVET - East College

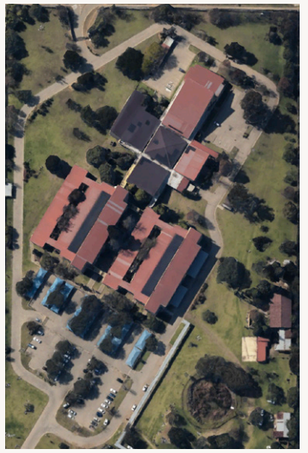


**Fig 4.69:** Ekhurguleni TVET. (Google Maps, 2021)

Marketing
Human Resource Management
Financial Management
Electrical Engineering
Mechanical Engineering

## OR Tambo Cultural Center



**Fig 4.70:** OR Tambo Cultural Center (Google Maps, 2021)

Narrative Centre,
Environmental Centre
and Craft Trail






# 5

# paper folds

## Introduction

This chapter discusses the process taken in formulating an appropriate site. After identifying the The gap as the larger landscape, a manageable site was needed to be constructed for the intervention.




**Fig 5.0 :** The Gap and its proposed sites (Author, 2021)



## Site 1 | March 2021

Early in the project The Gap was considered as a shortcut, with traces of pathways as evidence of people penetrating this buffer zone.

In the beginning this piece of land was chosen as a possible site since it was the smallest gap to bridge between the communities on the larger landscape.

However, it was quickly realized that although this site was considered the smallest gap to bridge, it was still too large, spanning around 450 meters in length. Its edges were noticeably harsh with a four-way crossing and no context on either side. Thus proving rather inappropriate.

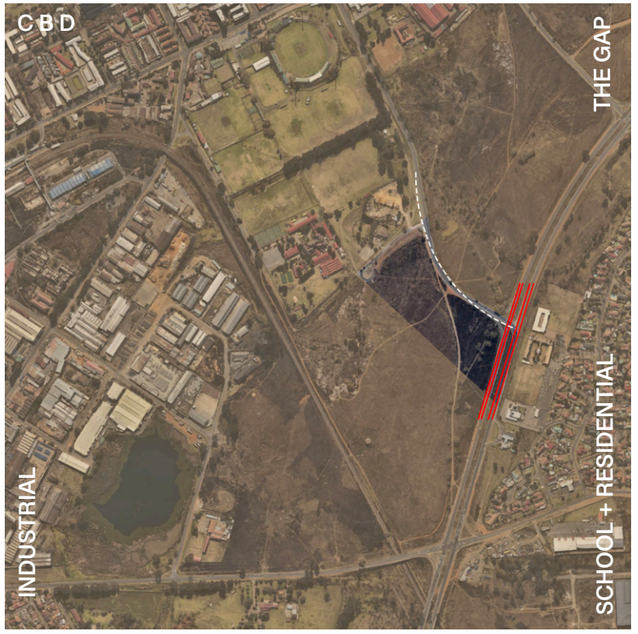



**Fig 5.1 :** Site 1, Aerial study (Author, 2021, after Google maps, 2020)

## Site 2 | April 2021

Later, Corner Lancaster Road and Dagenham seemed promising since unlike Site 1, this site connected more directly to a community and yet is still able to maintain outreach onto The Gap and surrounding communities. The main road is attached to a busy circle and the derelict Amata Pan proposed an interesting juxtaposition to the industrial landscape.

However, this corner piece was already occupied.

The building is privately owned by the Christian Teaching Center which houses a small creche and primary school. I tried to work with the existing building by slicing it diagonally shown in fig 00. In the coming months this seemed far-fetched. After researching the terrain vague, the sites nature was to go against normative organization. Hence the boundaries had to be reconsidered, and there was no need for modernist planning to be applied.

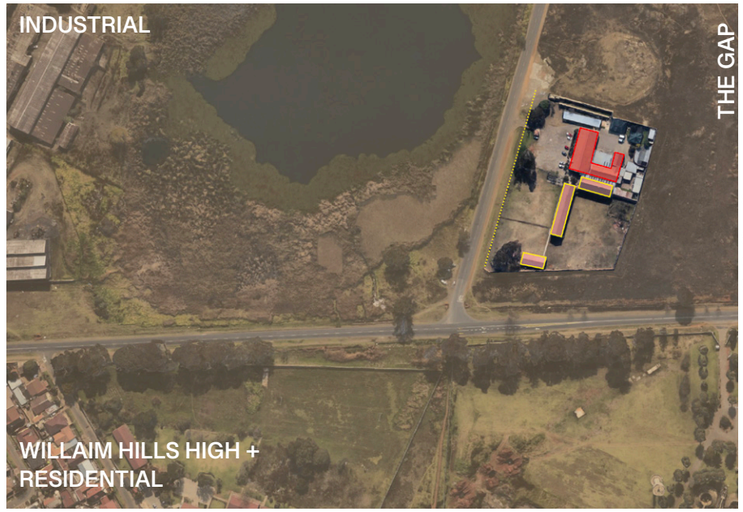



**Fig 5.2 :** Site 2, Aerial study (Author, 2021, after Google maps, 2020)




**Fig 5.3 :** Proposed site configuration (Author, 2021)




**Fig 5.4 :** Photo montage: Site (Author, 2021)

I then challenged the viability of thelocation of the primary school. To support my argument I questioned and critiqued the conditions that this school sits in:

1. An interview was conducted with a teacher from the school who confirmed its small nature. The school accommodates for around 300 students only, bearing in mind the average primary school houses around 1700 students. She further explained the school hopes to expand and accommodate for a high school.

2. Evidence from the mapping identified earlier, locates four high schools and six primary schools already present in a less than 3 km radius from each other.

3. Unlike other schools in the community this primary school's layout is governed by a series of add on buildings, made up of poor concrete and brick infill and already does not meet the requirements of a 'typical prototype school' layout.

4. The Amata pan is currently a toxic pan that is unfenced. The pan goes up to 3m deep; allowing for a crèche and primary schools is considered unsafe for the the school's further expansion. Should it expand further, naturally it will continue to isolate the Pan which contributes to urban decay.

5. Lastly, after inquiring further about the site's ownership and utilities present, it was noted that the Ekurhuleni Council still considers The Gap a farm portion. Thus, it is unclear how the building was constructed on unproclaimed land.

In Benoni, primary schools sits next to a high school. It has already been proposed that this primary school will therefore move across the road on William Hills High Schools unused land. This will ensure a healthier environment for the school since the land is legal. This land is already zoned for a school, and it is safer for children as it is more directly connected to a community which ensures eyes on the streets.

In the larger success and transition of the project, these students can attend primary school, thereafter, attend high school at William Hills High and as part of their skills development make use of the Think Box. facilities to jumpstart their own careers.

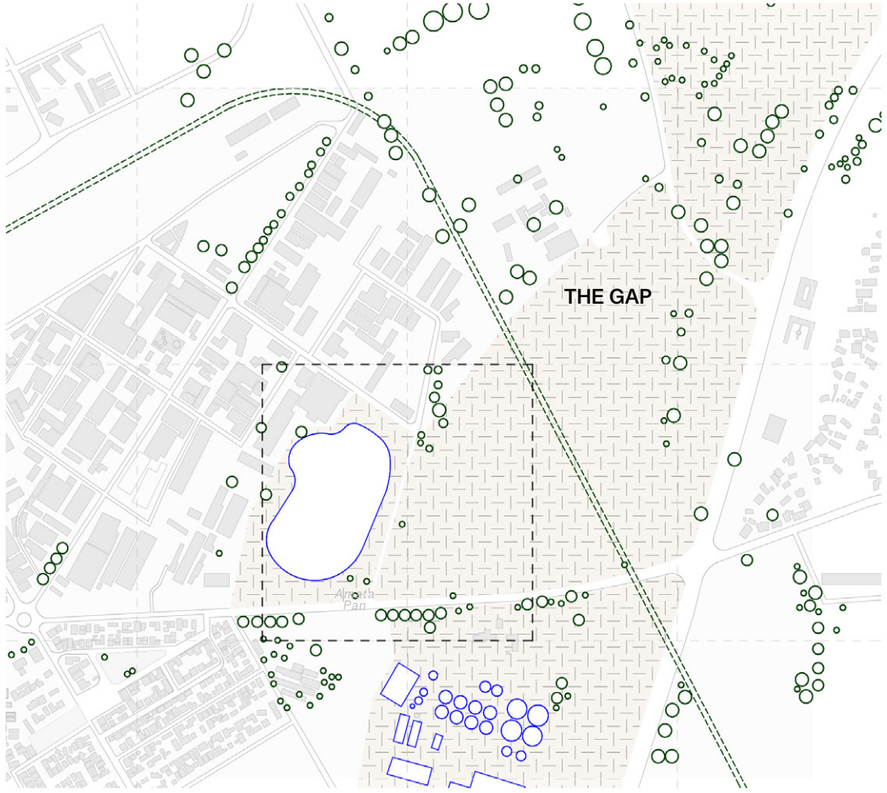



**Fig 5.5:** The final site. (Author, 2021)

## Programme

### JAWAHAR KALA KENDRA ART CENTER

Jaipur, India

Charles Correa

1986

The Jawahar Kendra Arts Center was designed in 1986 by Charles Correa. It was a commissioned piece of architecture designed to preserve Rajasthani Arts and Culture. The plan is inspired by Jaipurs original city plan, consisting of nine squares with the central square left open. My interest in this project is the programmatic response of the nine squares which correspond to real and imaginary planets, that become the symbolic representation of the setting.

Externally, the planets appear on the facades as symbols but at the same time , the plan configuration of the nine squares corresponds internally to the mythical qualities associated with each planet. Mars signifies power, so the place of Mars houses the administration block. Guru represents knowledge, and so it forms the museum, Venus represents the artistic sign, hence encloses the theater complex and so on. At the center of the universe lies the creative energy, manifesting in a stepped landscape, a reservoir of knowledge and confluence, of meeting , sharing and reflection.

This precedent study encouraged the ideas of marrying a metaphorical symbol to a programmatic and spatial response. From this I drew the rituals that paper gives rise to and translated it into a programmatic and spatial response that will be further elaborated in the following pages.



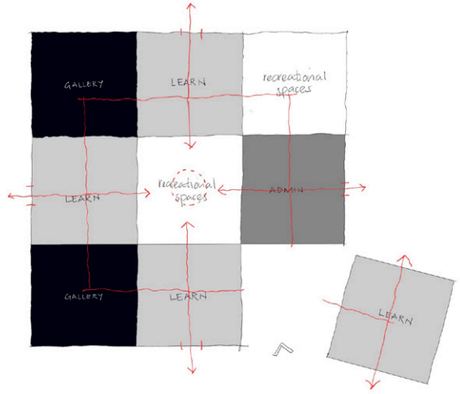



**Fig 5.7 :** Programme vs movement anaylsis. (Author, 2021)

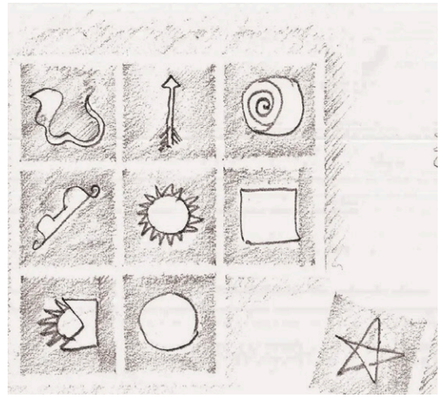


**Fig 5.8 :** Aligning the planets as symbols for programme. (Correa, 1986)

**Fig 5.6 :** Jawahar Kala Kendra Arts Centre – courtyard. (Author, 2021)



**Fig 5.9 :** Jawahar Kala Kendra Arts Centre – courtyard landscaping . (Sinh, 2020)

## Programme

The program was conceptually constructed from the rituals that surround paper and one that supports ‘making’ in a variety of mediums.

Thus, the intervention functions as a public space held together through these support structures:

| | | |
|---|---|---|
| **Public/park space** | – | pause, sharing & reflecting |
| **Workshops** | – | crafting |
| **Creative business studios** | – | capital |
| **Performance and events** | – | storytelling , celebrating & sharing |
| **Library** | – | tinkering,researching, learning |

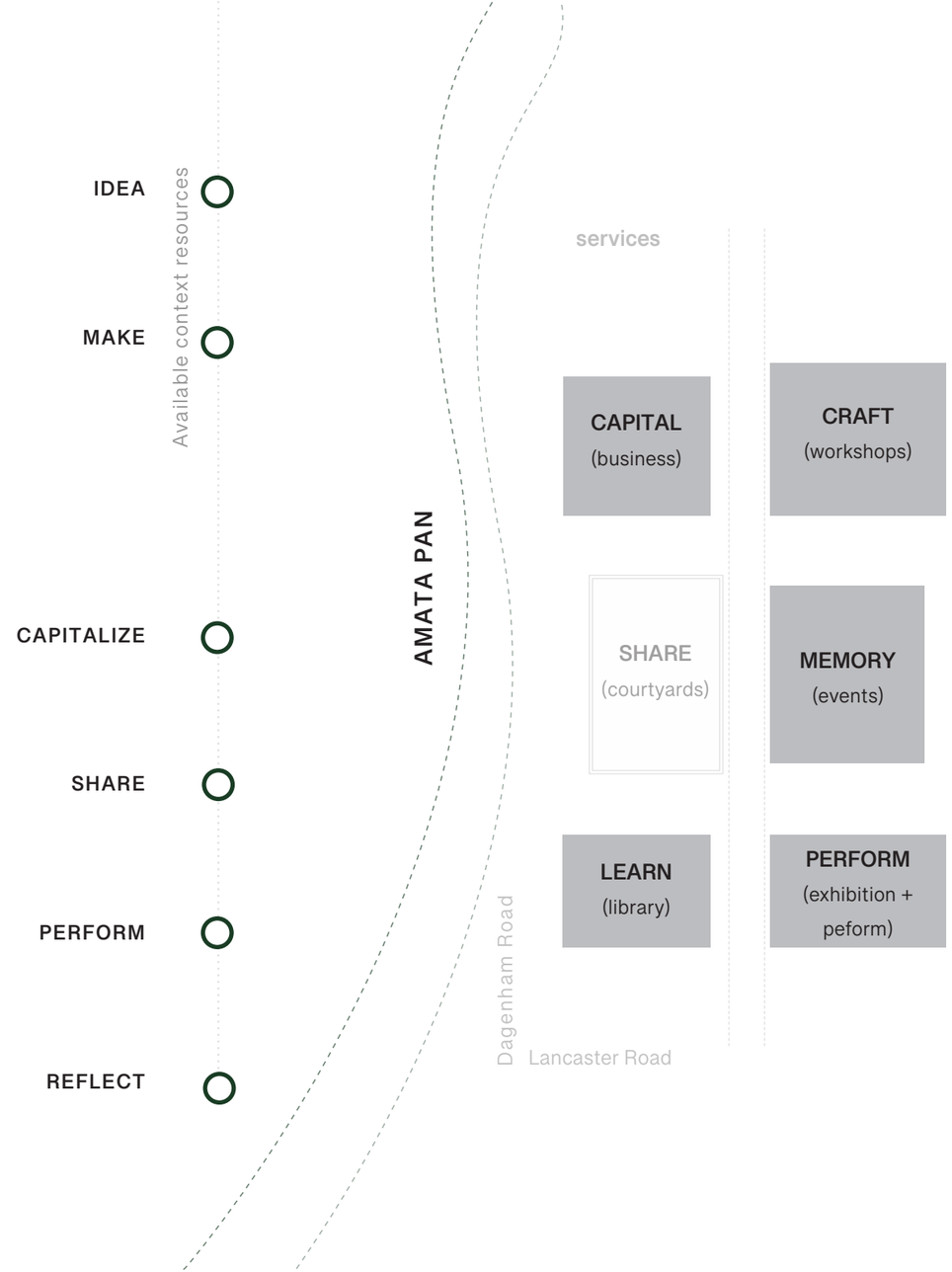



**Fig 5.10 :** Programme organisation.
(Author, 2021)

## BURNIE MAKERS WORKSHOP

Australia

Terroir

2009

The maker workshop is an investment in the post-industrial future of Burnie, a small town in Australia. Influenced by the massive waterfront pulp and paper mill alongside a busy port, the architecture is influenced by this towns paper heritage. The town has built up a reputation for its high quality handmade paper products. Through integration of contemporary design, community and space the architecture celebrates the process of crafting with paper through its programme.




**Fig 5.11:** illustrates the *making workshops, exhibition, café, gallery, admin and series of adjacent courtyards.* (Author,2021)



**Fig 5.12 :** Burnie Makers Workshop. (Broadman, 2009)

## Public space

The ground floor acts as a public space and sits adjacent to the rehabilitated Amata Pan. The rehabilitated pan will include public amenities such as shading, lighting, benches and taps that becomes relief space for the community. This space acts to draw people to the intervention.

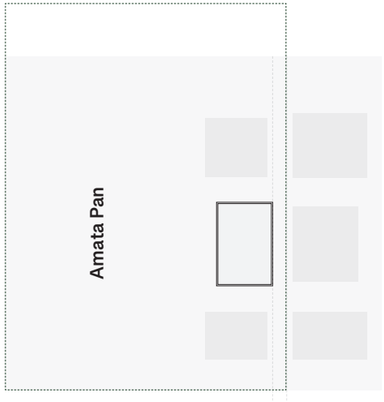
**Soft edges**
Trees & Landscaping

**Benches**
Pause & Reflection

**Taps**
Water

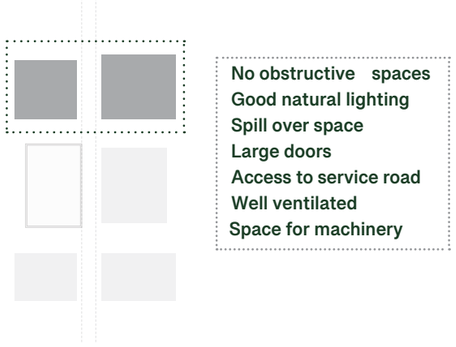
**Lighting**
Visibility & safe space

**Bins**
Reduce litter



## Workshops and Studios

Workshops and studios act as an incubator for small creative startup businesses. The democratization of shared resources also becomes important for including school going children and students. Enabling access to shared resources that can influence skills development of a technical and design nature. Crucial skills that the local schools are unable to offer. Thus becomes a resource to jumpstart careers and form new networks that influence the next generation.



No obstructive spaces
Good natural lighting
Spill over space
Large doors
Access to service road
Well ventilated
Space for machinery

**Wood workshop**
Up to 80 people
200 m2

**Metal workshop**
Up to 80 people
200 m2

**Pulp & Pottery Workshop**
Up to 50 people
150 m2

**Leather & Sewing Workshop**
Up to 50 people
80m2

**Storage**
80m2

**2 Makershops**
**Bike + repair shop | makershop**
Up to 10 people
160m2

**Rental studios**
80 m2
6 studios

**Meeting rooms**
40 m2

**Reception**
20m2

**Storage**
6 m2

**Kitchenette**
10 m2

**Admin offices**
12 m2
6 rooms

**WC ( x2 )**
Up to 6 people
+ 1 accessible
70m2



## Democratization of Tools, Information and Space

In his book, Makers Manifesto, Hatch (2016) talks about how the making revolution is riding out waves of the computer and the explosion of the Internet, and while these are essential components, the maker revolution is much bigger since it is physical. While the virtual world and the internet of things is an undeniable step into the future, in order for it to work it requires attachment to physical objects to function and leverages and reside in its very physicalness.

Having said that, the physical nature in which it resides can be reimaged through architecture. Hatch writes about the parts that are required in order to function programmatically (i.e. make, share, give, learn, tool up, play, participate and support). All of which can be spatialised into a democratized shared environment, thus arguing for appropriate space to inspire ideas, tinkering and creating.

Since the beginning of the industrial revolution until fairly recently, powerful tools of production were centralized. The tools of creation and production in many fields have remained the purview of those with access to capital. However with the democratization of computers, computer power and the Internet, the launching of software based companies has increased where the development is free for everyone to use, share and develop.

More slowly, the same developments is being made to hardware. Equipment has become relatively cheaper than before, more powerful and easier to use.

However, odds are, you cannot possibly afford all the tools you may want or need, either as a student making in your backyard or as a young creative business. The advantage of a well-equipped makerspace is that it attracts people with a widely diverse selection of projects, creating a beehive of activity, passion, knowledge and sharing. When a large and diverse set of tools are provided, a large and diverse group of makers comes out to live, work, and play and of course make.

## List of tools

- Laser Cutters
- CNC milling machine(s)
- Manual milling machine(s) with digital readouts
- Manual lathe(s) with digital readouts
- 3D printer(s), consumer and commercialgrade
- 3D scanner
- CNC (computer numerical control) waterjet cutter (4 × 8 foot)
- Vacuum forming system
- Heat strip bending system
- Injection moulding system
- Commercial grade sewing machine
- Overlock sewing machine (also known as a serger)
- Quilting machine (preferably CNC)
- Computer-controlled vinyl cutter
- Powder coating system (and large oven)
- MIG (metal inert gas) welders
- TIG (tungsten inert gas) welders
- Handheld plasma cutter
- Sheet metal spot welder
- Sheet metal brake (16 gauge × 50 inch)
- Rotary sheet metal punch
- Sheet metal corner notcher
- Sheet metal shear (6 gauge × 50 inch)
- Sheet metal roller (16 gauge × 50 inch)
- Sandblast cabinet
- Metal grinders and sanders
- Metal chop saw
- Metal horizontal band saw
- Metal vertical band saw
- Electronic testing and soldering equipment
- Large format color printer
- ShopBot CNC wood router saw (4 × 8 foot)
- Panel saw
- Wood planer
- Wood jointer
- Wood band saw
- Wood sanders
- Wood scroll saws
- Wood lathe
- Drill presses
- Granite surface plate with digital height gauges
- Compressed air throughout shop
- Compressed air hand tools
- Potter’s Wheels
- Clay Processors
- Drying/baking ovens
- 30 or more design computers - 30 or more copies of or licenses for Autodesk Inventor, Maya, 3D Max, 123D Make, AutoCAD software
- 30 or more copies of or licenses for Adobe Illustrator, Photoshop, Acrobat
- Wi-Fi



**Laser cuttering** 5.13



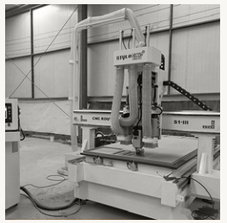
**3D Printer** 5.14



**Industrial Kiln** 5.15



**CNC Machine** 5.16



**Potters wheels** 5.17



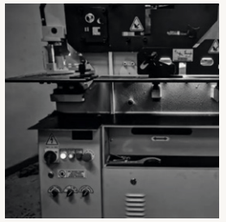
**Knee Mill** 5.18



**Welding** 5.19



**Iron Worker** 5.20



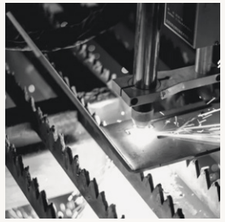
**Section Bender** 5.21



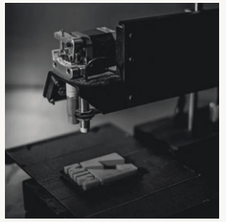
**CNC Router** 5.22



**CNC Plasma Cutter** 5.23

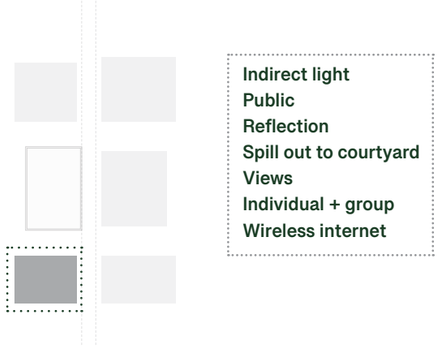


**3D Printing Farm** 5.24



## Library

The library space is the space that promotes ideas, tinkering, experimentation, failure, genius, and play. Libraries are continuing to evolve from simply repositories of knowledge stored only in books to shared spaces of access to 3D printers, 3D scanning, electronics and 3D design software




**Entrance & Front desk**
35 m2

**Coffee & Sandwich Kiosks**
120 m2

**Studying & Communal space**
80 m2

**Open Library Area**
Up to 50 people
75m2

**Photocopying Area**
6m2

**Librarians Office**
12 m2

**Computer lab**
Up to 20 people
60m2

**Research & Prototyping Space**
Up to 15 people
50 m2

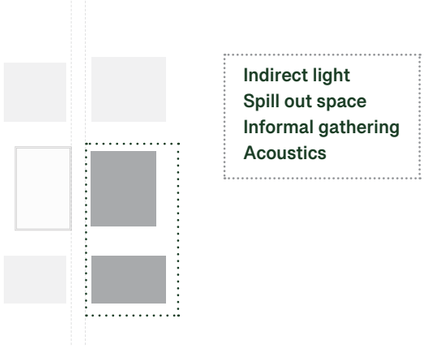
**WC ( x2 )**
Up to 6 people
+ 1 accessible
70m2



## Performance and Events

Architect and scenographer, Dorita Hannah (2011) views space as a performance to explore social, political, and economic issues. Thus, the creation of space itself is seen as a performance and a representation of the complex interrelationships between landscape, space, people, material, and light.

Performance and event spaces are enmeshed through different layers within the intervention. The first, as informal spaces that allow for people to come together and share and the second takes the form of formal spaces for celebrations of cultural events, exhibition, and performances




**Event hall**
Up to 300 people
-+ 800 m2

**Kitchens for catering**
Up to 12 people
80 m2

**Gallery/Exhibition space**
Up to 80 people
150 sqm

**Performance Space**
Up to 100 people
200 m2

**Practice rooms**
60 m2

**Music recording studio**
80 sqm

**Photography studio**
80 sqm

**Storage**
60 m2

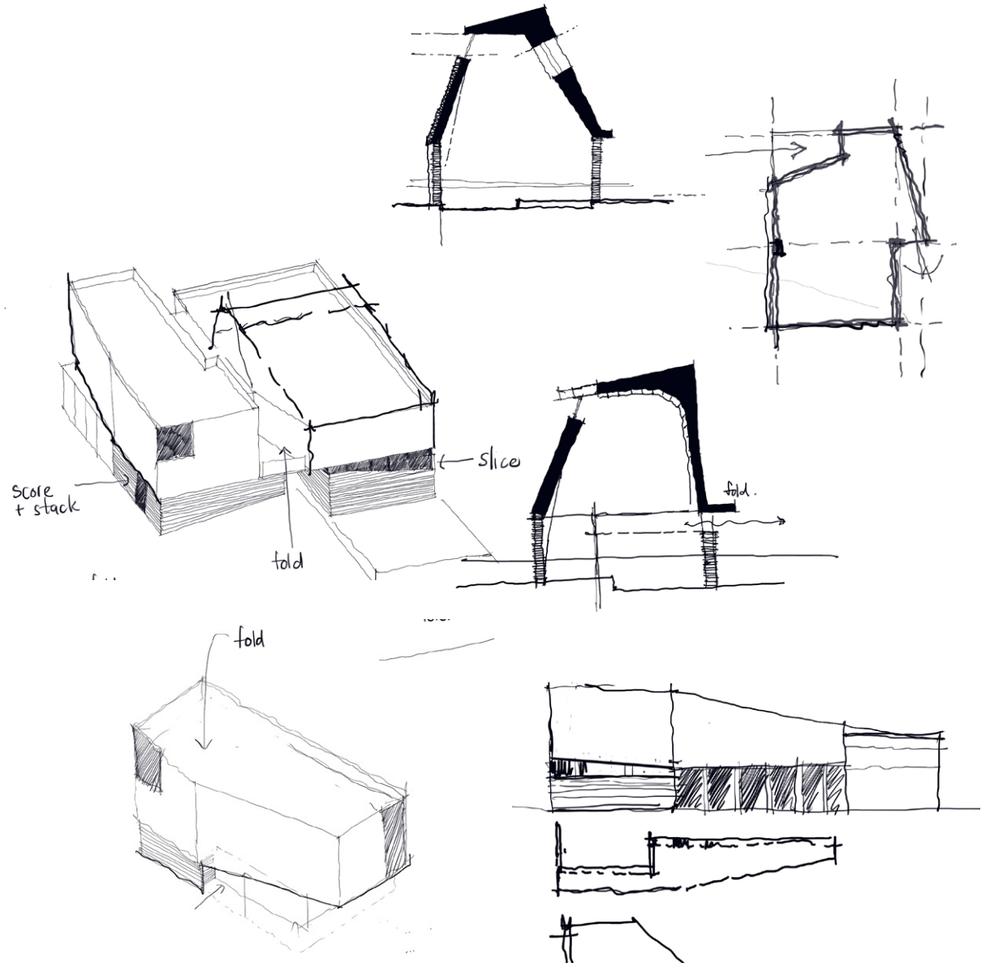
**WC ( x2 )**
Up to 6 people + 1 accessible
70m2




tectonic
expression

# 6

# paper tectonics




## FORM

Form was generated by what the extended surroundings presented and impart conceptualizing paper in the landscape to give me clues when the surroundings gave me none. This was since there is no immediate context for the architecture to relate to.

My back and forth process translated the spatial relations into material by analysing various architectural precedents as well as the charrette process that allowed me to translate explorations into tectonic forms. These explorations culminated the design of the building that is documented in this chapter.

**Fig 6.0 :** Sketch design exploration. (Author, 2021)

## Paper architecture

In this project, paper in architecture refers to conceptualizing ideas metaphorically as a project driver. However, to explore the possible outcomes of paper as architecture, I analyzed its potential in the built environment.

After the 1980s, emerged a new era of paper architecture. It was Japanese architect, Shigeru Ban who showcased paper as a building tool the best. The use of paper as the building material started off with complications that we face with every project, limited budget.

His aesthetic also wanted to reference wood which was basic materials used. This is since Bans manifestos lies in design that is sustainable and places importance on the relationship between nature and architecture.

Later Ban started to explore paper tubes as a structural element. After many tests to examine the properties of the material in different climates and technical conditions, Ban successfully erected many paper structures.



**Fig 6.1 :** Cardboard Cathedral. (Ban, 2013)



**Fig 6.2 :** Library of a Poet – made out of Paper Tubes. (Ban, 2012)

Structures like the Christchurch Cathedral in New Zealand to his Library of a Poet in Japan highlight and celebrate Papers place in the built environment. While the architecture is temporary in nature it showcases how paper lends itself to sculpt spaces that are not only functional for everyday use but also have a phenomenological approach to them that creates sensory meaning.

While Shigeru Ban is building architecture out of paper, architect, Zaha Hadid was famously also known as a ‘paper architect’, this was since her designs were too ahead of its time, making it avantgarde in its nature to move beyond sketch phase to be actually built.

**Fig 6.3 :** A painting of Hafenstrasse, Hamburg (Hadid, 1989)



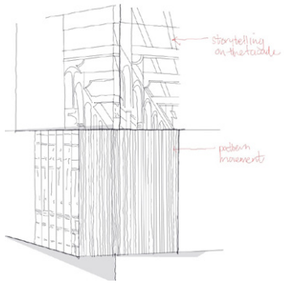
## MUSEUM FOR ARCHITECTURAL DRAWINGS

Berlin

Speech

2013

The Museum for Architectural Drawings is a successful example of storytelling through detail and tectonic. The building was inspired from stacks of paper that was translated into tectonic form. The facades are constructed from concrete with its surfaces engraved in relief drawings. The slight rotation allows for clever ways for natural light to enter the building and the pulling and pushing of façade engages with users on a public level without necessarily entering the building.



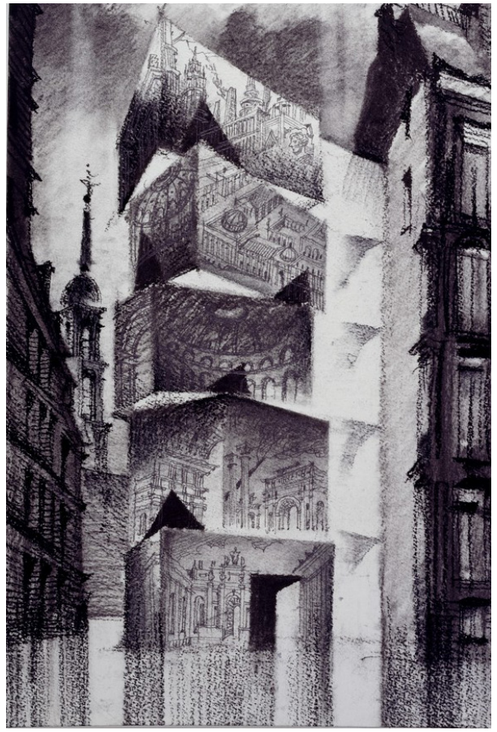



**Fig 6.4 :** Conceptual sketch for the buildings narrative. (unknown, 2013)

**Fig 6.5 :** Facade expression. (Author,2021)



## Charrette

The charrette process was done in two parts.

I attempted a few concepts in the starting of the year to carry throughout my research but after having exhausted its potential I moved on. In trusting the design process I continued to map the existing characteristics that my site presented.

This meant that when the charrette process was done in the beginning of the year I had no real direction. I relied on things I knew, and presented my personal innovation i.e. as a side hustle I create bags made of books



**Fig 6.6 :** Book Bag. (Author,2021)




## PART 1 | BOOK BAGS
**May 2021**

The concept behind the bag stems from retelling a new story through ‘unused’ books.

Every bag is constructed from parts such as screws, belts, material, magnets, and the cutting of paper. Each bag comprises of custom parts and unique cuts. During this charrette exercise the parts of the bags mimicked the existing industrial landscape that I identified as important. It was imagined as a library of parts that could service my intervention.

The bags were analyzed as a building and helped identify the key components for an intervention to function.

Although it did not help with design at the time, it later gave me clues of forming a kit of parts to craft a building.

I later realized the potential of paper as the main ingredient that allowed the book to be carved and form a bag.

**Fig 6.7 :** Book Bag for sale on Authors Instagram account. (Author,2021)

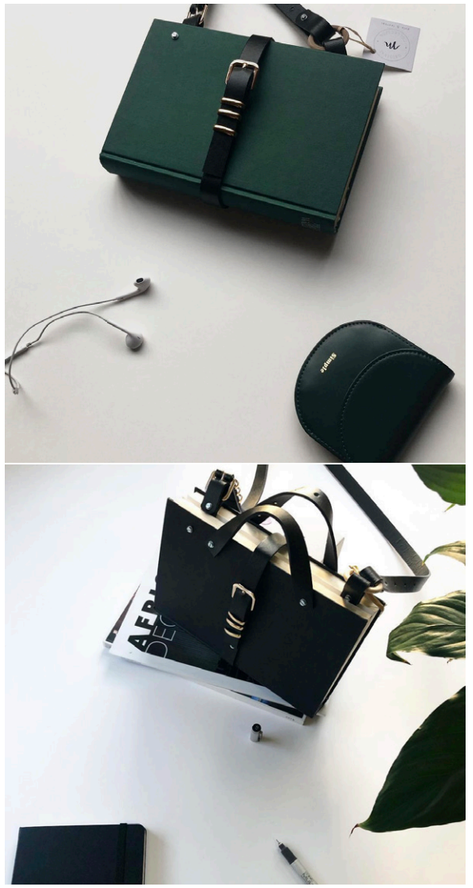


**Fig 6.8 :** Book Bags. (Author,2021)

The components that were identified were:

**THE SPINE -** narrative of the story as well the structure of connection

**THE BELT -** the connection between both book ends can be imagined as a green belt that stretched across landscapes to reach and connect

**THE SCREWS -** hold the pieces together and are crafted in order to create comfort creating moments of comfort

**THE FRAME -** the fiber of the pages that are cut and glued together mimics brick and mortar

**THE COVER -** made up of different colors which can be interpreted as paint and diversity of cultures

**THE INTERNAL FABRIC -** the function of space to store can be seen as multipurpose space to contain mold around objects

The theater of the bag is that it becomes a conversation starter and the performance lies in wearing and showcasing a functional bag.

## Part 2 | PAPER ORIGAMI
**August 2021**

Later in the year after conceptualizing paper as a project driver I was able to attempt the charrette process again. This time I played with paper origami.

Through cutting, folding, slicing and scoring, the exercise gave clues to constructing form, material and how the landscape should be treated vertically and horizontally.

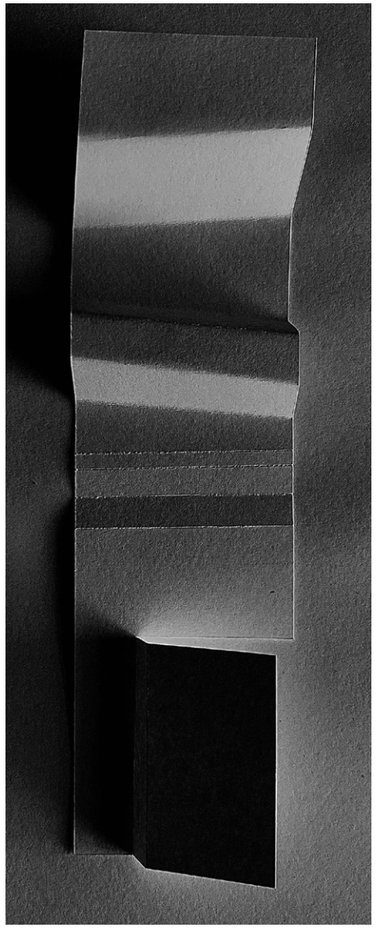


**Fig 6.9 :** Paper charrette. (Author,2021)

At this point in the project, ideas were becoming clearer so to continue the narrative, I came up with a set of rules to apply to the paper that not only became appropriate to the landscape but also imaginative enough for me to keep exploring its potential.

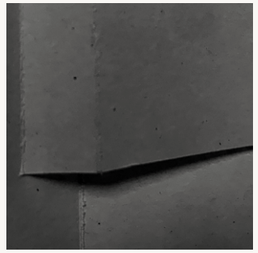
**Folding:**
Folding is the ability to bend and rearrange a flatter or compact shape. The site is rather flat, and its context is too far away for the architecture to relate directly, so the act of folding is exercised. When one folds paper, the natural response of paper is to unfold. This expresses a new topography to design on as well as a new story expressed on an old landscape.

**Scoring:**
The act of scoring is to create points that create a desired path for which a surface can bend. The points that usually are scored seem temporary before one makes the serious ‘fold’. Once it is applied it leaves a scar on the page no matter if one folded the paper in another direction. The gap can be described as a result of maps that were folded on the landscape and a score that left a scar.

**Slicing:**
Slicing is an act that closely resembles cutting, however the word slice is used in this project in a manner that I would describe as more considered and carefully planned to achieve a desired outcome. Slicing creates openings to new imaginative spaces and enables the control of light, form, and movement.

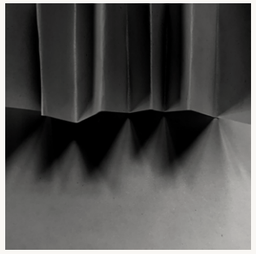
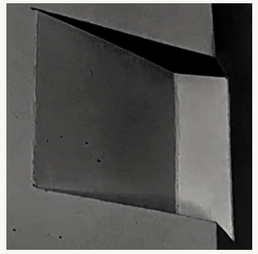
**Stacking:**
Stacking is the layering of objects on top of the other. In this project it is referred to the layering of the identified three paper landscapes to create a holistic program as well as stacking materials together to create a robust form.

slice

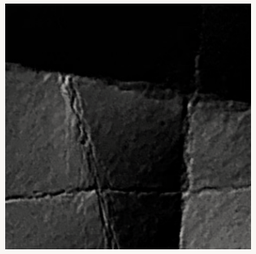
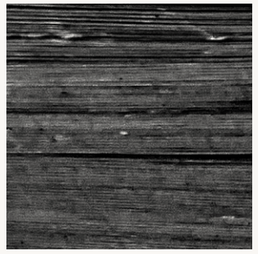




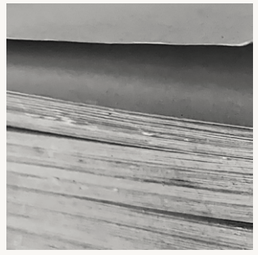
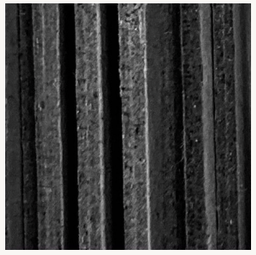
fold

score

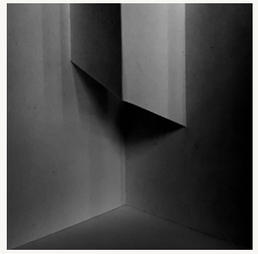
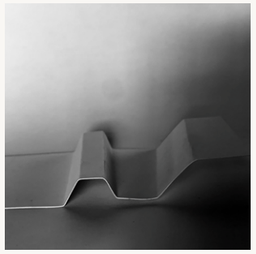
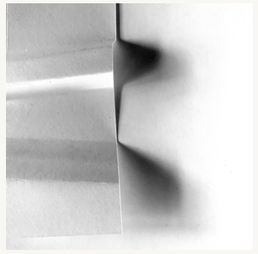




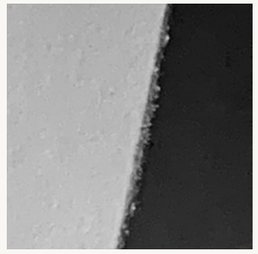
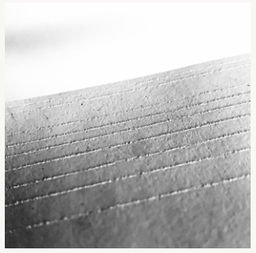
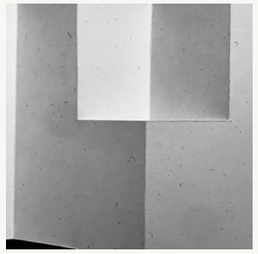
stack

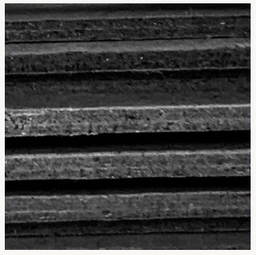
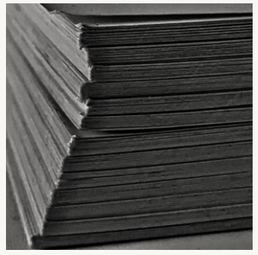







## Contextual Forms

As part of a form generator, my intentions were to go against the normative form typologies that my surroundings presented.

Considering that the program is a learning environment and workshop I analyzed the common forms that the typical school and factory/warehouse are made up of. These industrial forms purely exist based on efficient design for a particular function, quick and cheap construction. This is further expressed through materiality, i.e., the use of steel and corrugated sheeting that expresses that temporary nature.

In this context, anything that is made up of light and corrugated material is considered less. This speaks volumes when considering how well light structures in townships are maintained and insulted.

This exercise unfolded the need to enhance these forms into a successful envelope that is robust, to create an architecture that is public and one that belongs in the landscape.

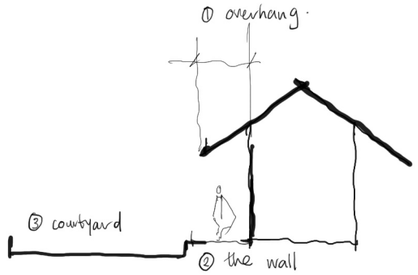



**Fig 6.10 :** School typology - Form study. (Author,2021)

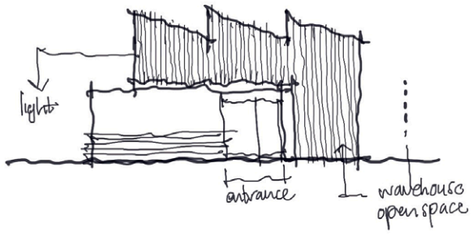



**Fig 6.11 :** Warehouse / Factory typology - Form study. (Author,2021)





## Material Tectonics

The project aims to insert a robust presence on to the landscape for the communities it surrounds. Brick and concrete are traditional local materials that this context is familiar with in terms of construction technology.

Brick and concrete tectonically are used to create heavy and bold architectures that can be assembled in rudimentary ways much like that which is often found in townships or can be imagined in a contemporary manner to celebrate the material and imagine new ways of experiencing space that is not only functional but inspiring for its users.

Since brick and concrete are materials that can tectonically lend itself to be sculptured in multiple ways, there was constant exploration between massing form to capture the concepts of folding, scoring, folding, and stacking.

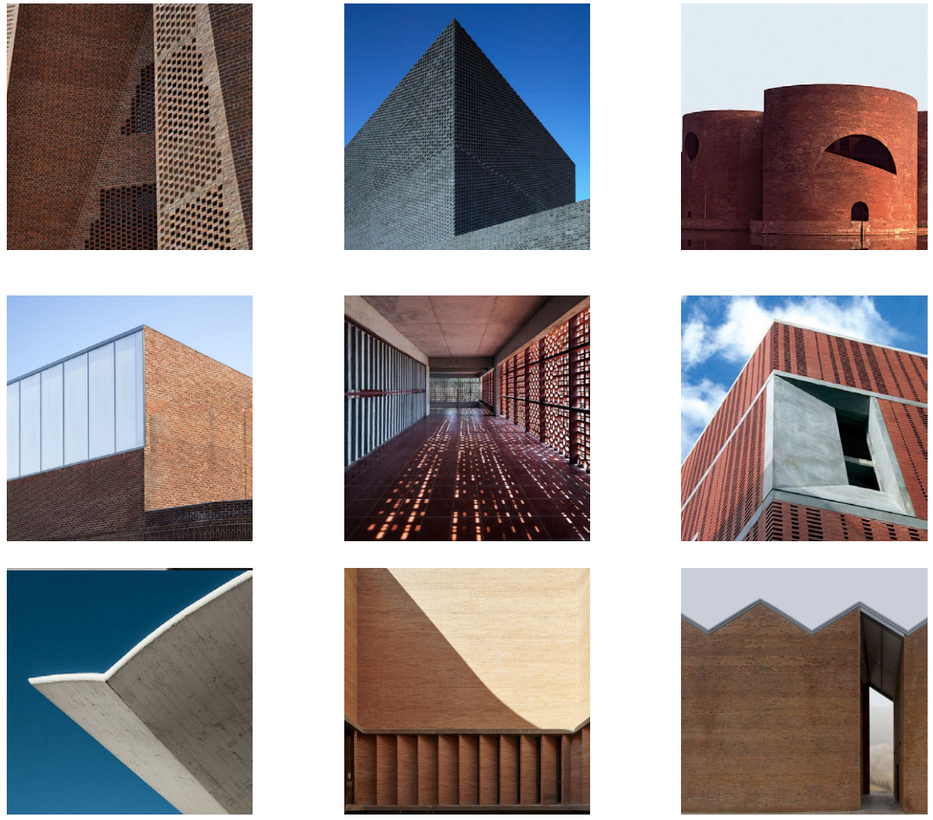


**Fig 6.12 :** Photo montage depicting the different tectonic expressions that can be achieved with brick in a contemporary setting. (Author,2021)

## KANORIA CENTRE FOR ARTS

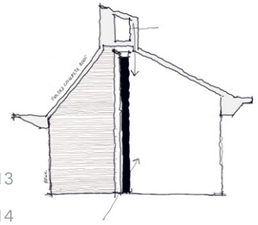
Ahmedabad

BV Doshi

1984

The Kanoria Center of Arts, located in Ahmedabad, provides students with tools, and access to an environment that foster the germination of ideas. It opened its doors to creative individuals in 1984 with the support of Architect, Balkrishna Doshi. My interest in this piece of architecture is the programmatic spatial response and the creative use of brick and concrete in a low-income social setting. For more than three decades this building is seen as a thriving creative hub.

The architecture rests in a nest of foliage, and at its center, houses studios, workshop spaces, a library, and a main administrative center which blur the definitions of interior and exterior. Made up of concrete frame and brick infill, the architect celebrates these materials by folding the concrete roofs and slicing openings, carefully crafted to inspire its users.



6.13

6.14



6.15







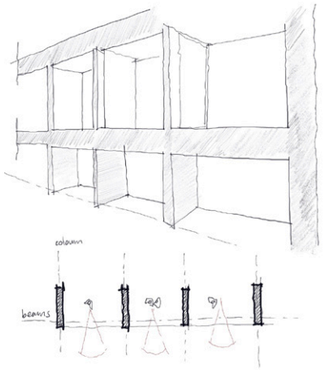



**Fig 6.16 :** Concrete structure is celebrated (Author,2021)

**Fig 6.13 :** Irregular folding of concrete roof (Author,2021)

**Fig 6.14 :** Aerial view of folded roof (Baan, 2016)

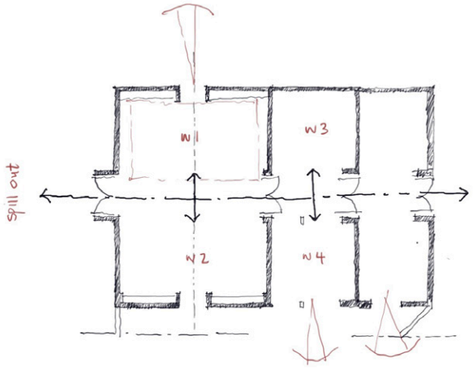



**Fig 6.15 :** Workshop space (Baan, 2016)

**Fig 6.17 :** Clear unobstructed workshop (Author,2021)

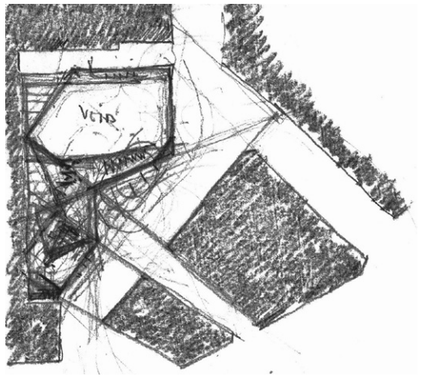
## SAW SWEE HOCK CENTER

London

O'Donnell and Tuomey

2014

The Saw Swee Hock Student Center is an example of how origami can be expressed through brick. Through interesting folds, it exploits the richness of the basic red brick on its façade. Like Japanese origami, the design is carefully assembled to make one coherent robust volume from a set of interdependent folded planes and though its robust form also allows light to penetrate and reflect through perforated brick patterns. These folded facades lines up with approaching streets. On ground level, walls angle inwards as a way to recess the public entrance and pulls pedestrian street life into and up the building.



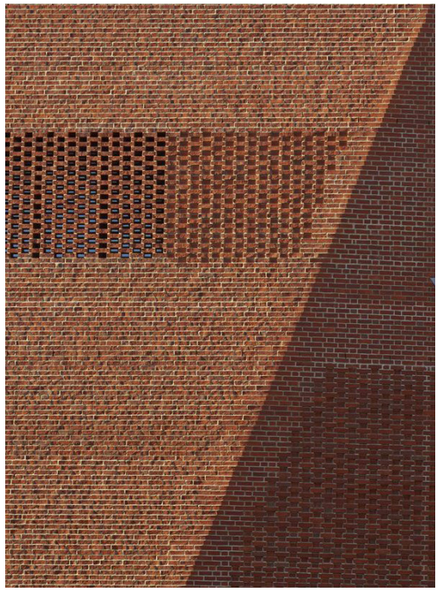



**Fig 6.18 :** Broader strokes to fold the facade according to edges . (O' Donnell & Tuomey, 2014)

**Fig 6.19 :** Folded Facade - Use of bricks . (O' Donnell & Tuomey ,2014)



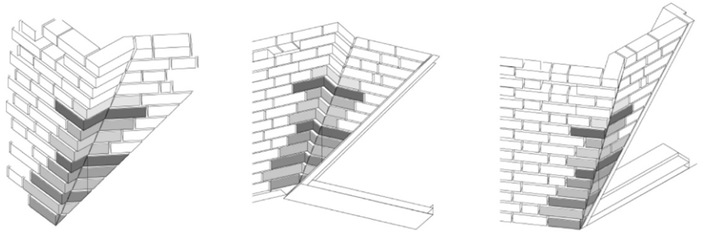


**Fig 6.20 :** Brick configurations that include special brick cuts to achieve folds (O' Donnell & Tuomey, 2014)

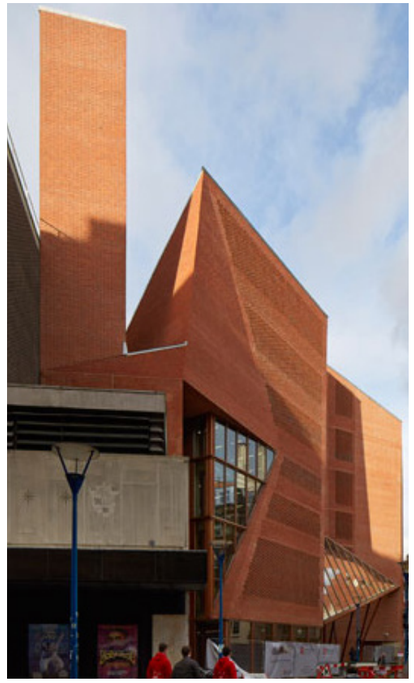
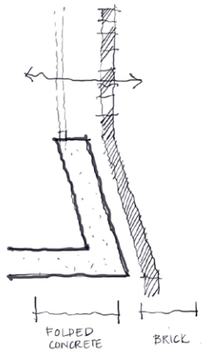
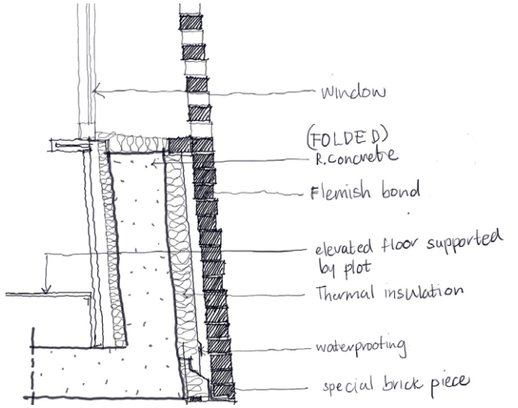


**Fig 6. 21:**
Facade on street level (O' Donnell & Tuomey, 2014)

**Fig 6. 22:**
Brick and concrete tectonics.
(Author, 2014)



## RED BRICK ART MUSEUM

Bejing, China

Dong Yugan

2014

Architect, Dong Yugan uses brick for interior and exterior cladding to form sculptural surfaces and playful structures at the Red Brick Art Museum in Bejing, China. These surfaces are folded spaces continued throughout the building.

My interest in this project lies in the use of brick that extend as architectural finishes, achieving clear functional spaces and aesthetic purpose which make an unquantifiable contribution to the perception of the beauty of buildings and structures. These folded spaces enable multiple interactions and encourage a range of sharing and gathering spots both inside the building and outside.

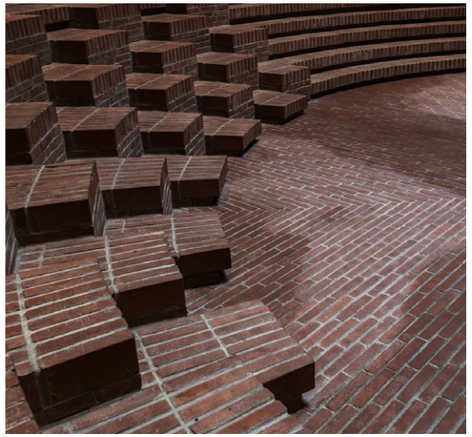




**Fig 6. 23** : Indoor sculptural surface (Griffiths, 2017)

**Fig 6. 24** : Outdoor sculptural surface (Griffiths, 2017)





**Fig 6. 25** : Indoor courtyard surface for gathering (Griffiths, 2017)

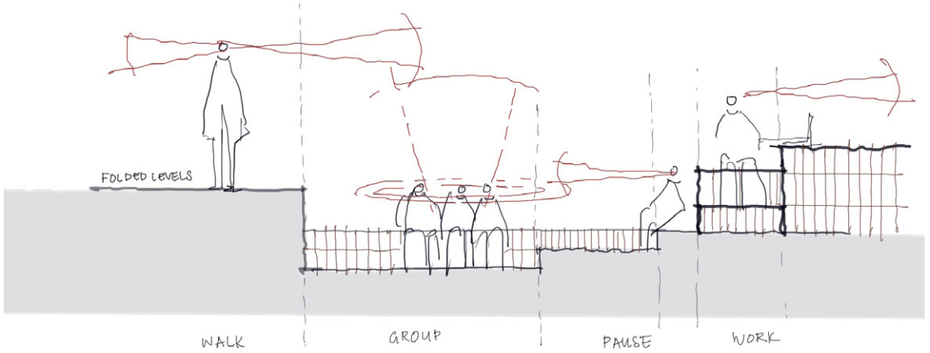



**Fig 6.26 :** Folded landscape. (Author,2021)

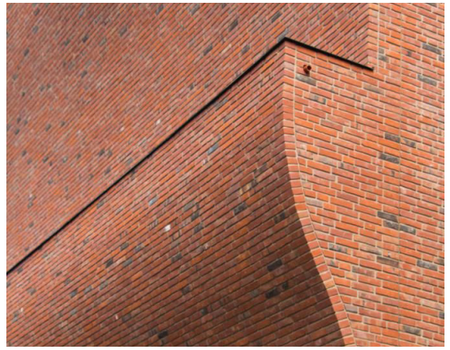
## SPORTS BLOCK GRONINGEN

Marlies Rohmer Architects & Urbanists

Netherlands

2014

The Sports Block in Groningen is a public building that whose façade acts as a public space. It encourages its users to sit on the building and cleverly folds over, providing shade and protection, while at the same time allowing light to filter through internally in more exciting ways. The walls thus are seen as more than just enclosure but act as a public space, which enables people to engage with the building even if they might not want to enter the building.



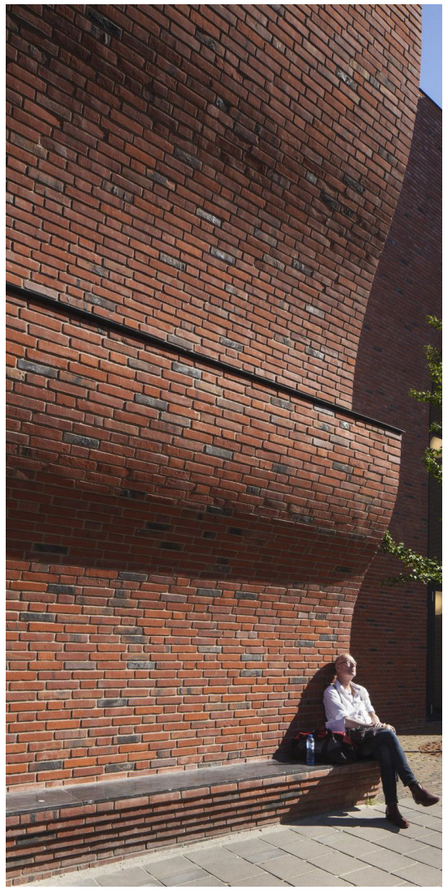
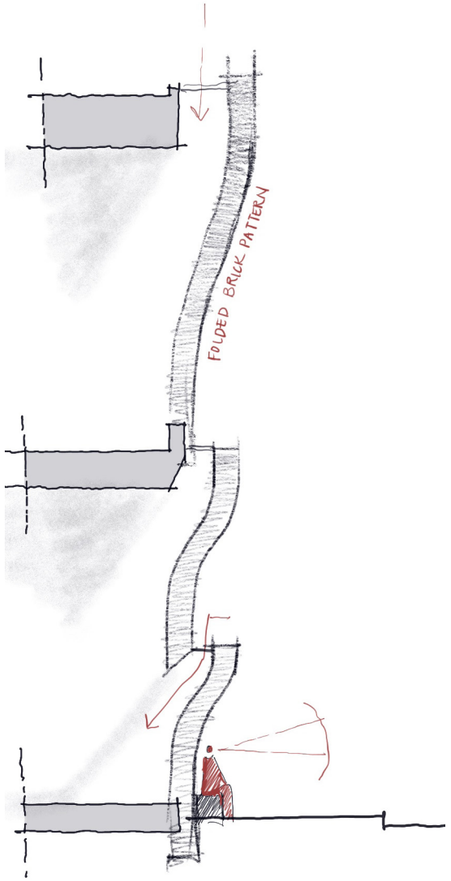






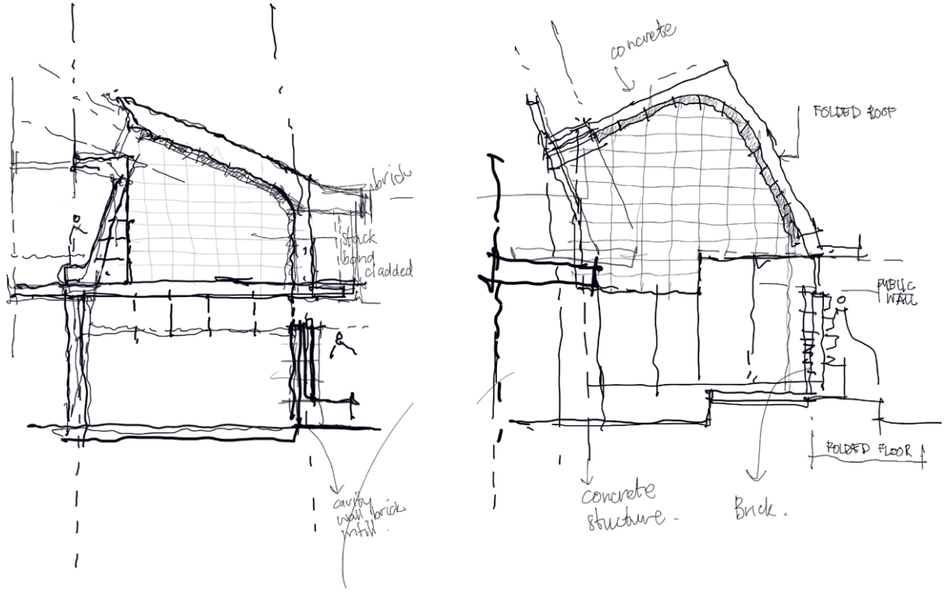
**Fig 6. 27, 6.28, 6.29** : Wall as a public space (Rohmer, 2014)

**Fig 6. 30** : Wall as a public space Brick Tectonics. (Author, 2014)



## CONCEPTUAL TRANSLATION

**Fig 6.31** Sketch plan illustrates the intentions of how the concepts of folding, scoring,stacking and slicing are applied to the building in section (Author,2021)






## Material Translation

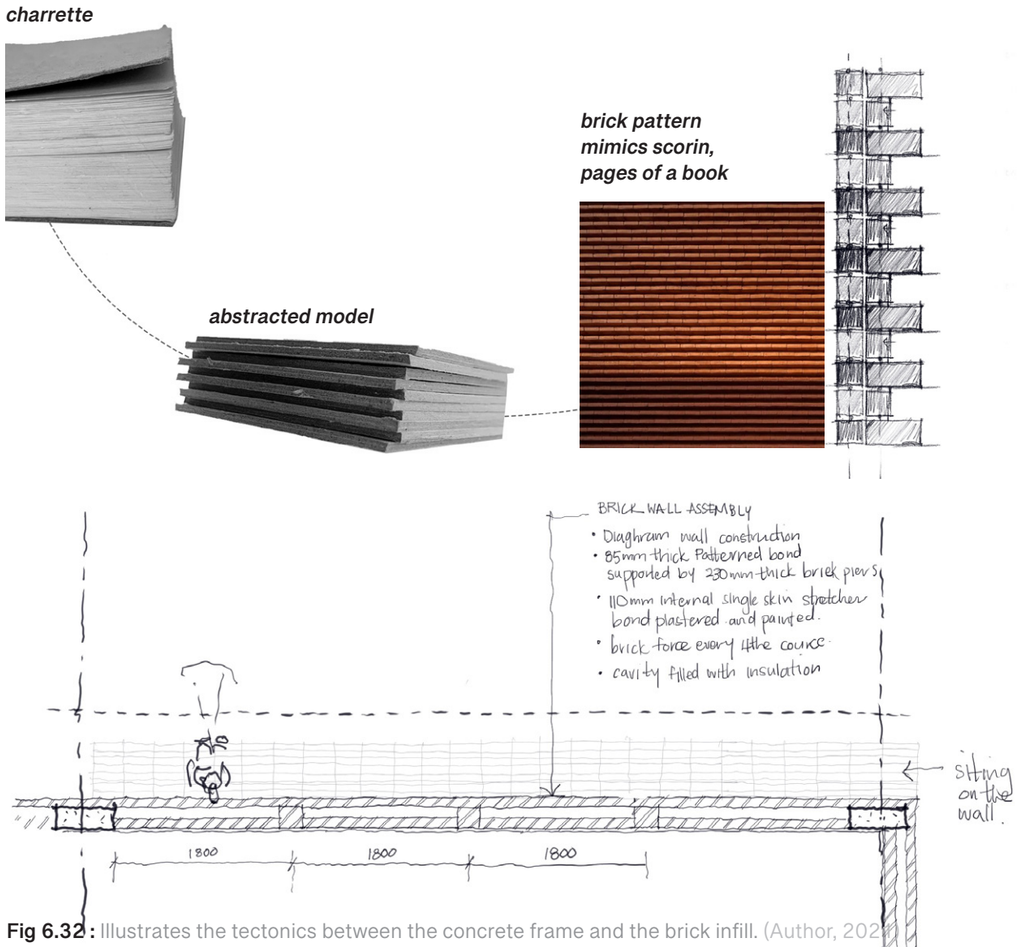



**Fig 6.32 :** Illustrates the tectonics between the concrete frame and the brick infill. (Author, 2021)

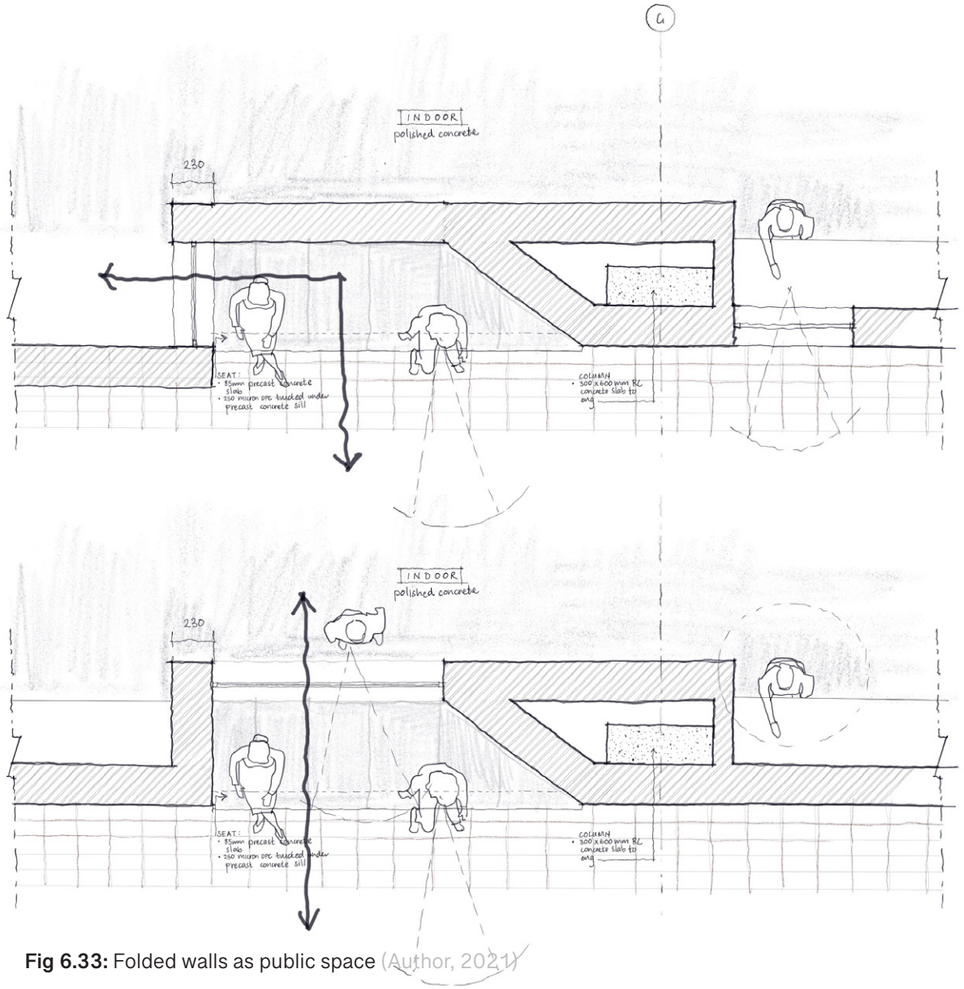
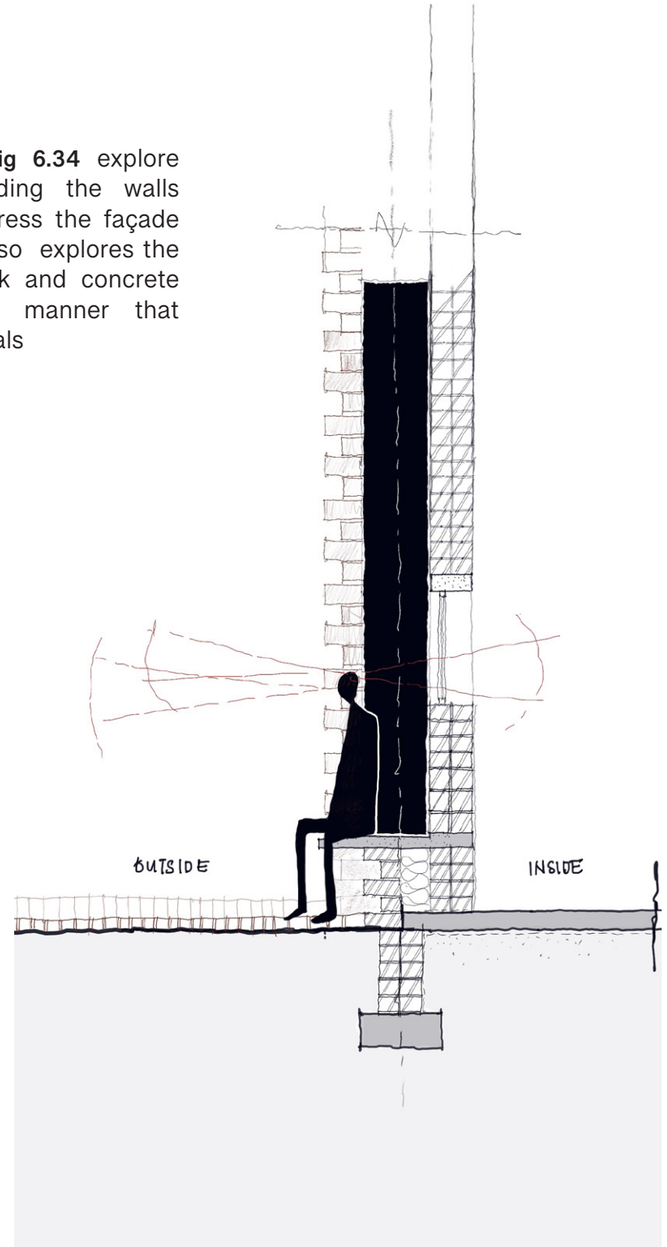



**Fig 6.33:** Folded walls as public space (Author, 2021)



The illustrations in **Fig 6.34** explore configurations of folding the walls and openings to express the façade as a public space. It also explores the tectonics of how brick and concrete work together in a manner that celebrates both materials



# 7

# paper cuts

## Organizing the site

When organizing the site, it become important to maintain the freedom that the larger landscape offers i.e. the free range of movement across the site.

Inspired by this movement led to fragmented buildings adjacent to courtyards that offers users to approach and engage with the building in any way they felt comfortable.

In creating a community of buildings that support each other allows one to break the institutionalized language of a building having a specific front. This also allows the architecture to draw you in at multiple points.

**Fig 7.0** highlights exploration through a quick sketch that played around with fragmented mass, courtyards, and movement.

However, in organizing program on the site, I had to draw out the larger context to anchor the appropriate placement of my buildings

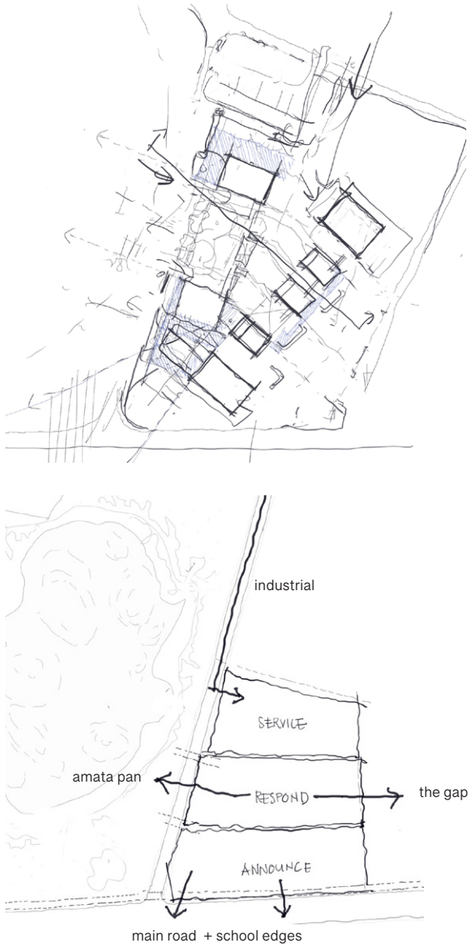
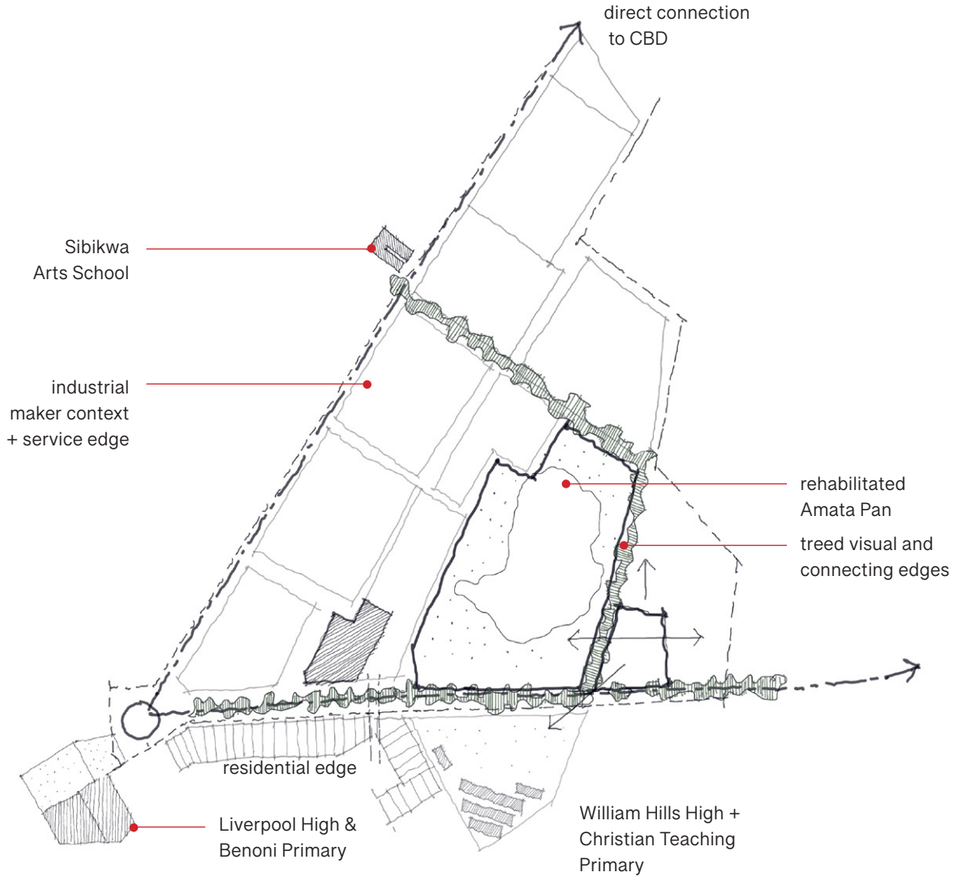
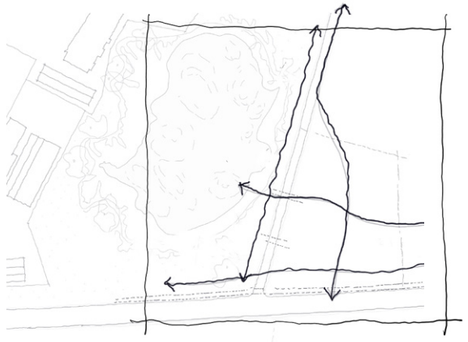



**Fig 7.1 :** Responding to the context. (Author,2021)

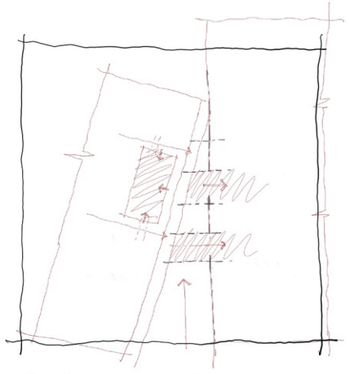



**URBAN RESPONSE**

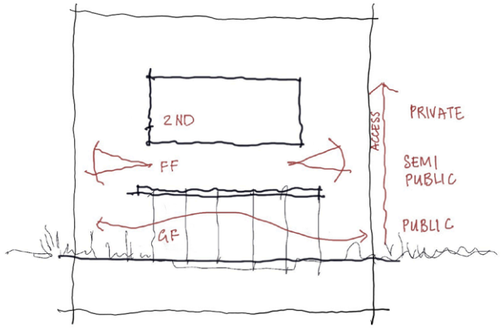
## Organizing the site



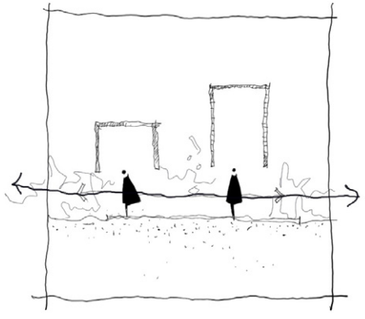
*Maintaining freedom of movement*



*Folding the terrain*




*Access*



*Blurring the lines between inside and out*

**Fig 7.3 :** Layout principals . (Author,2021)



### PLAN ITERATIONS

The sketches below illustrate the two iterations of the plan. While the planning incapsulates movement well, the exploration was still quite rigid,the rotation and position of the events hall was critiqued which meant I had to go back to the bigger stokes the sites edges implied.



**Fig 7.4 :** Early plan iterations . (Author,2021)

## PLAN ITERATIONS

The illustrations below draws the larger strokes that the edge of my buildings respond to. A grid system is established which then allowed me to pull and push the edges away and to add dimension.

The ground floor on the left explores the crafting of space within but not restricting the designed grid.

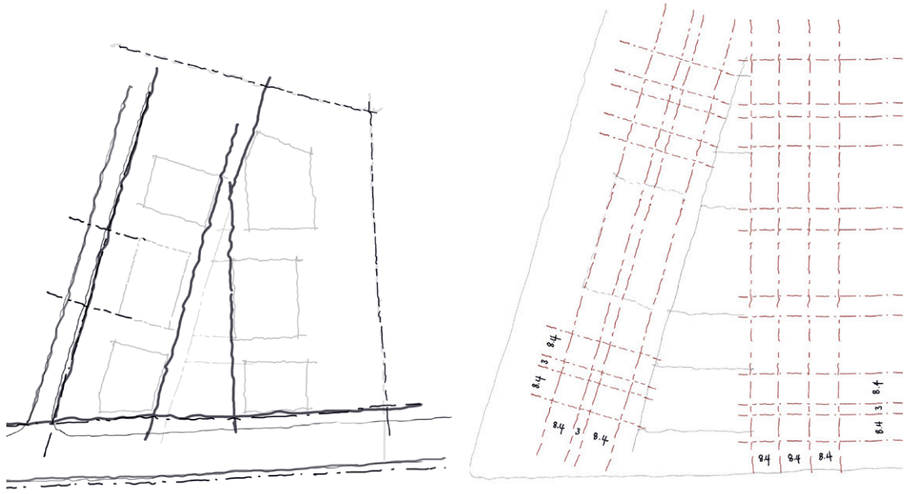


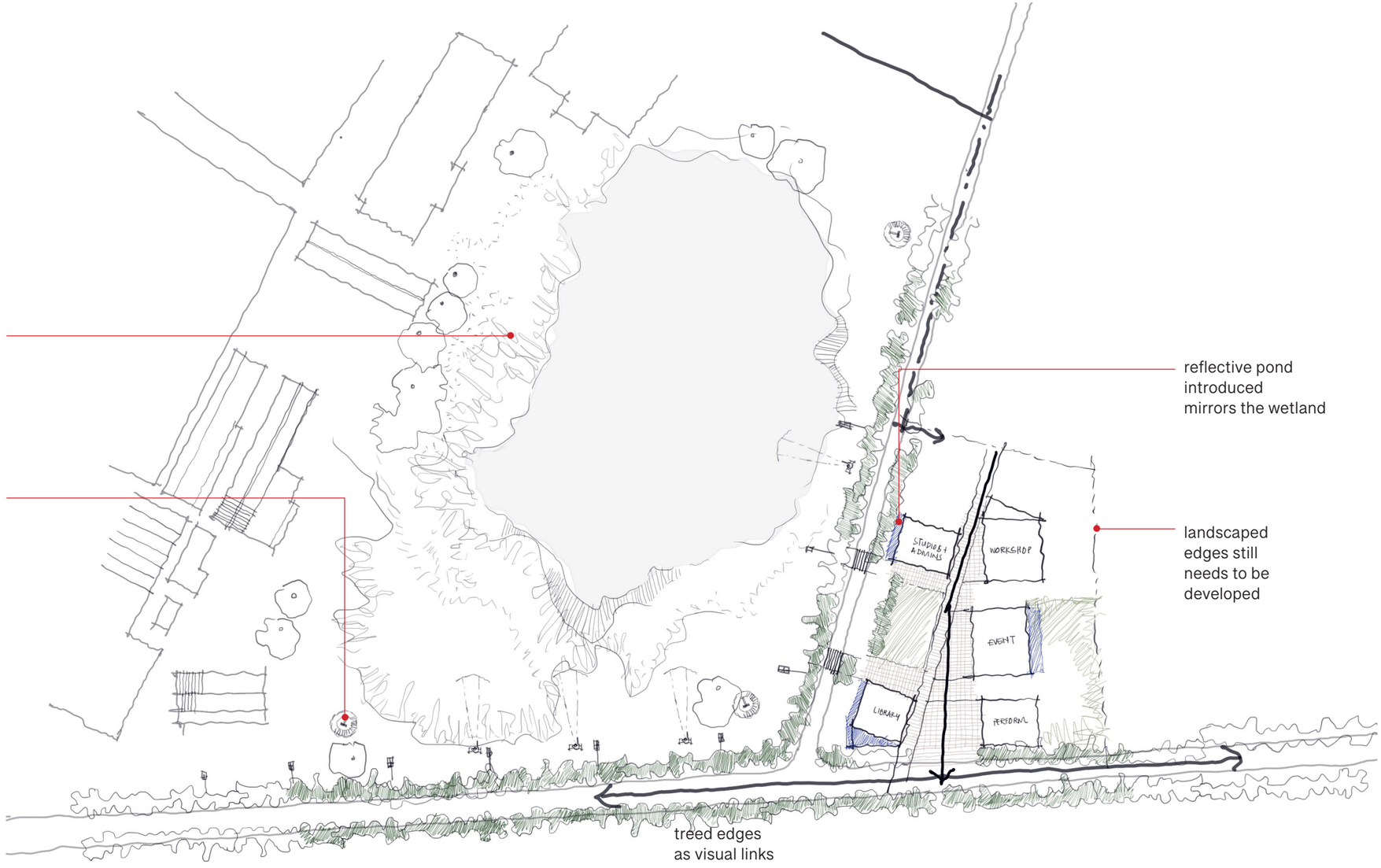
**Fig 7.5 :** Site's larger edge strokes and designed structural grid. (Author,2021)




EXTENDED GROUND FLOOR PLAN

## EXTENDED GROUND

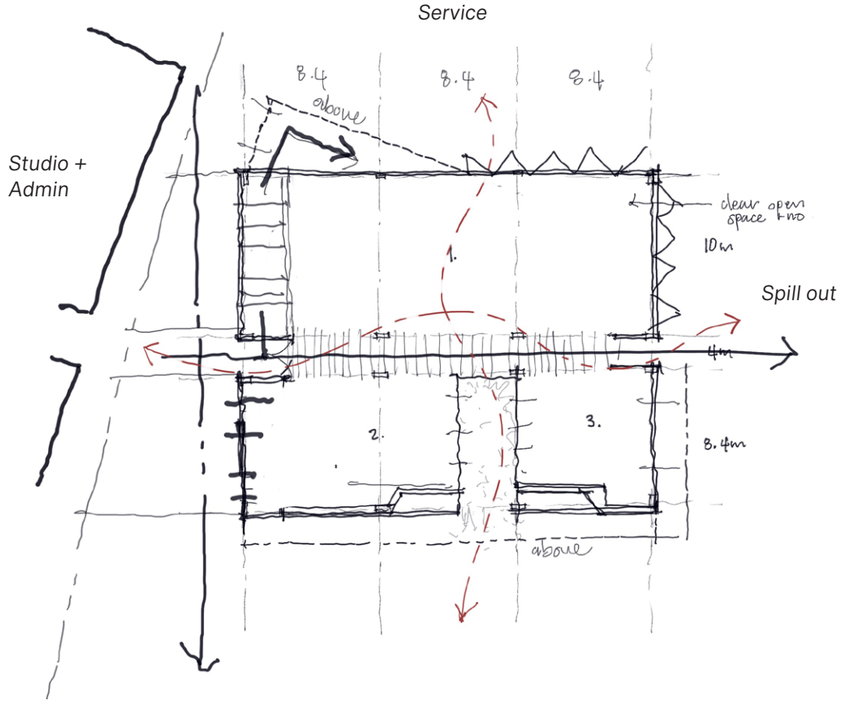
A sketch plan illustrates the intentions of the proposal on an urban level.
(Author ,2021)

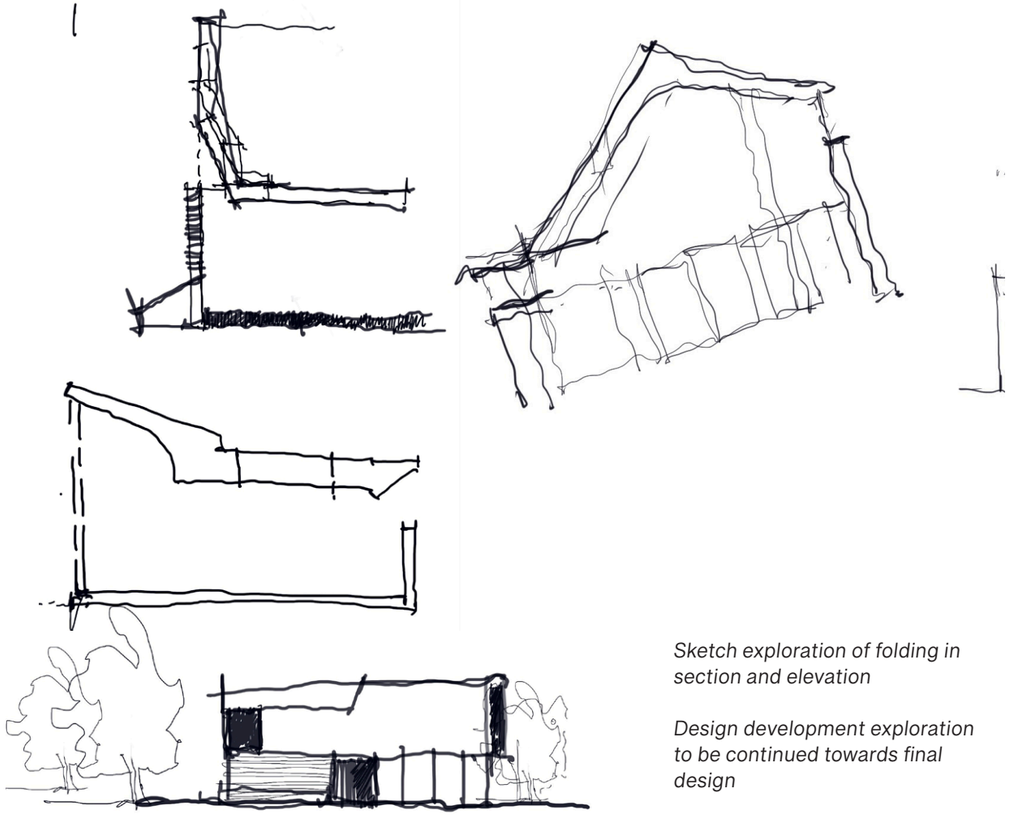



SITE PLAN

## WORKSHOPS

**Fig 7.6** illustrates how unobstructive spaces are crafted through the grid, which incorporate clear entrance and circulation spaces. This type of planning links adjacent building entrances and formulate visual links. It also encourages cross ventilation.



*Sketch exploration of folding in section and elevation*

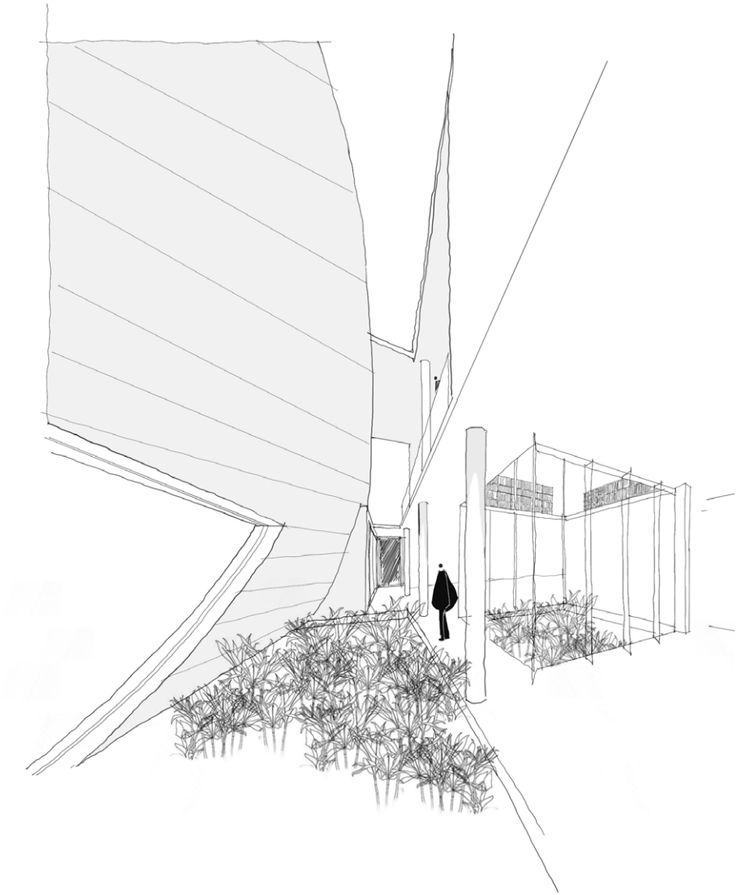
*Design development exploration to be continued towards final design*

Final
drawings

final
design

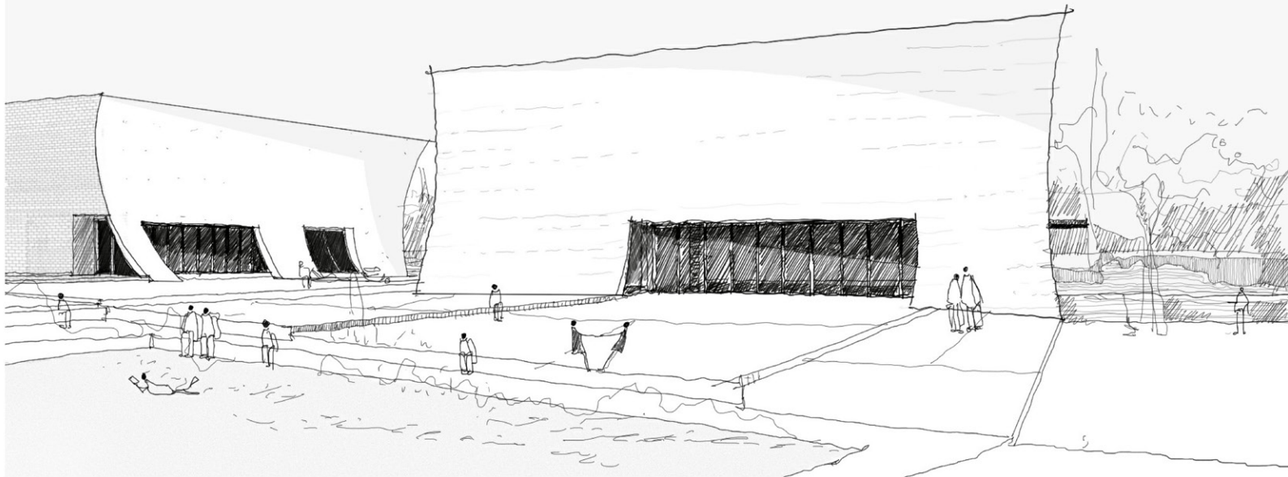
# 8

# paper architecture



Internal space of the library. Shows expression of indoor and outdoor

Sketch highlights the eastward view looking on to the celebratory hall vs outdoor space



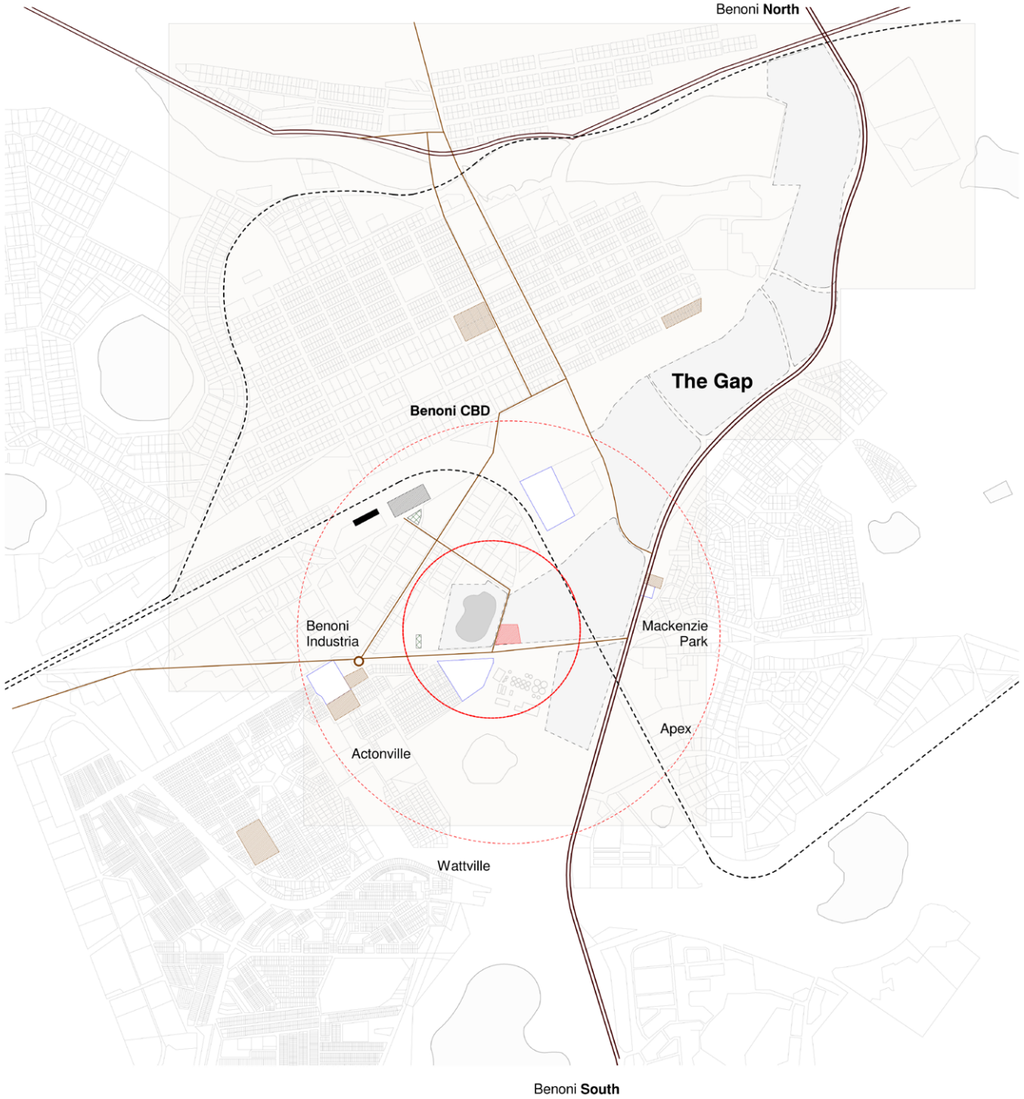
# THE GAP

Upon onset, the projects inquiry is rooted in the scar that Benoni inherited. Layers of history inscribed leaving a gap in the landscape. In envisioning a new landscape the intervention needed to be one that heals and connects the diverse disparate communities that it once divided.

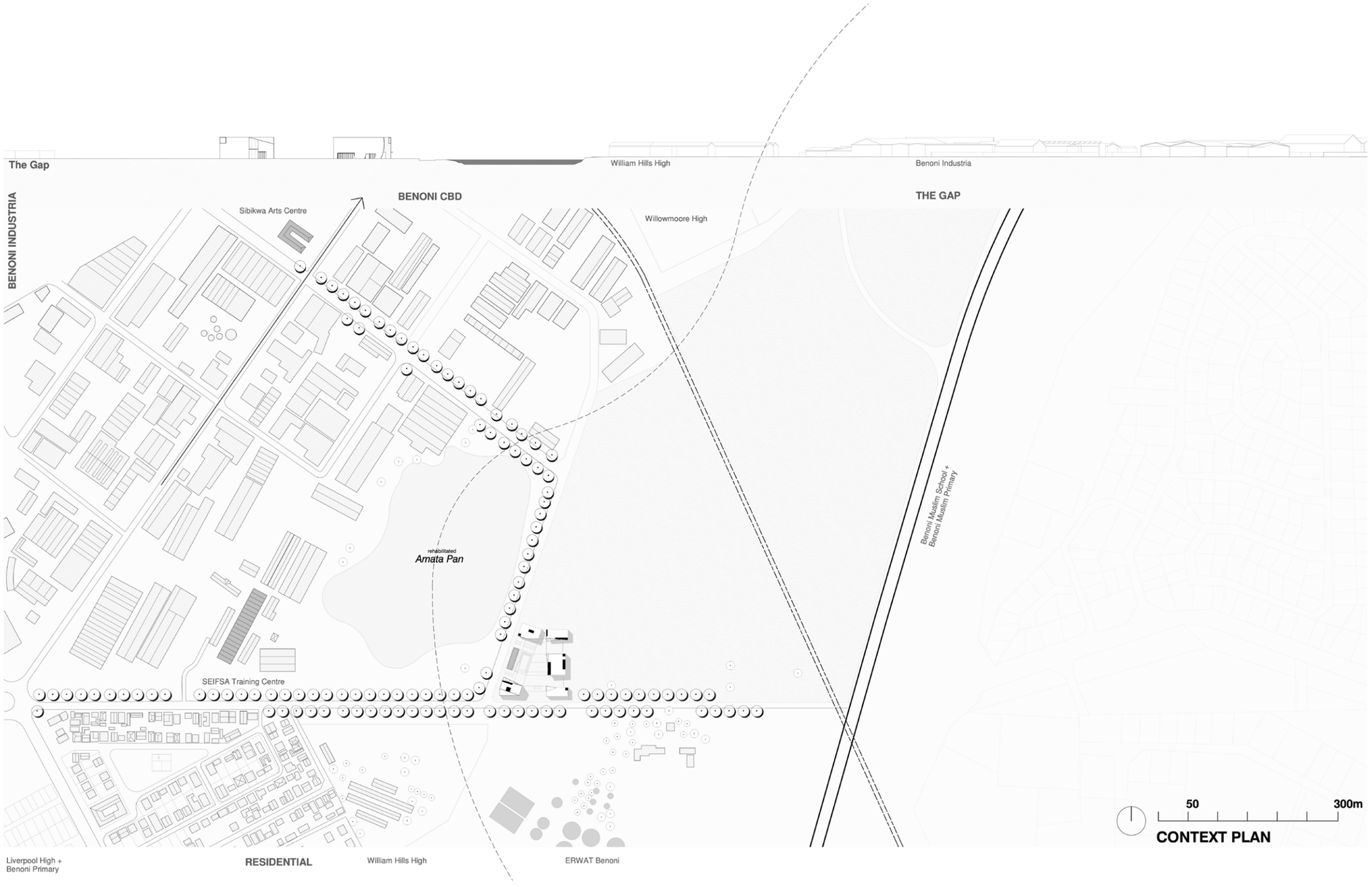
Pinning a site on the landscape was essential in having a direct connection to a community yet still allows for outreach. The site is layered alongside light industrial, residential communities, schools, Benoni CBD and the terrain vague. The intervention thus becomes a seed for imagining a new healthy landscape drawing from its adjacent networks, becoming a node that communities can take ownership of.

**THE GAP**
**social**
**urban**
**geographical**
**ecological**
**barrier**

**SITE**
High schools
Primary Schools
Creative & technical school
Main Road
Arterial Road
Railway
Metrorail Station
Taxi rank




**URBAN SCALE | SITE NETWORKS**


The Gap
William Hills High
Benoni Industria
BENONI INDUSTRIA
BENONI CBD
THE GAP
Sibikwa Arts Centre
Willowmoore High
rehabilitated
Amata Pan
Benoni Muslim School +
Benoni Muslim Primary
SEIFSA Training Centre
Liverpool High +
Benoni Primary
RESIDENTIAL
William Hills High
ERWAT Benoni
50
300m
CONTEXT PLAN

## BIO INDICATORS

The use of bio indicators has become a regenerative response to Benoni's toxic landscapes. These Bio indicators are living organisms such as plants, planktons and microbes which are nature's way of analysing landscapes. This is done to promote a healthier environment for surrounding communities. Recent municipal initiatives have been in place to protect and preserve Benoni's surrounding waterbodies like that of the conserved Korsmans pan, Leeupan and the four civic lakes along with the reclaimed mining landscapes.

These landscapes have been rehabilitated from infestations that devastated the grassland, reed and bulrush encroachment that chock waterbodies and reduce visibility.

Through correct identification of indigenous vegetation, the Amata Pan and my site becomes the seed for a larger healthier landscape that The Gap aspires to be. A landscape that not only connects communities through social investment but also through a diverse natural landscape.




### BIO INDICATORS TO REHABILITATE A DAMAGED LANDSCAPE

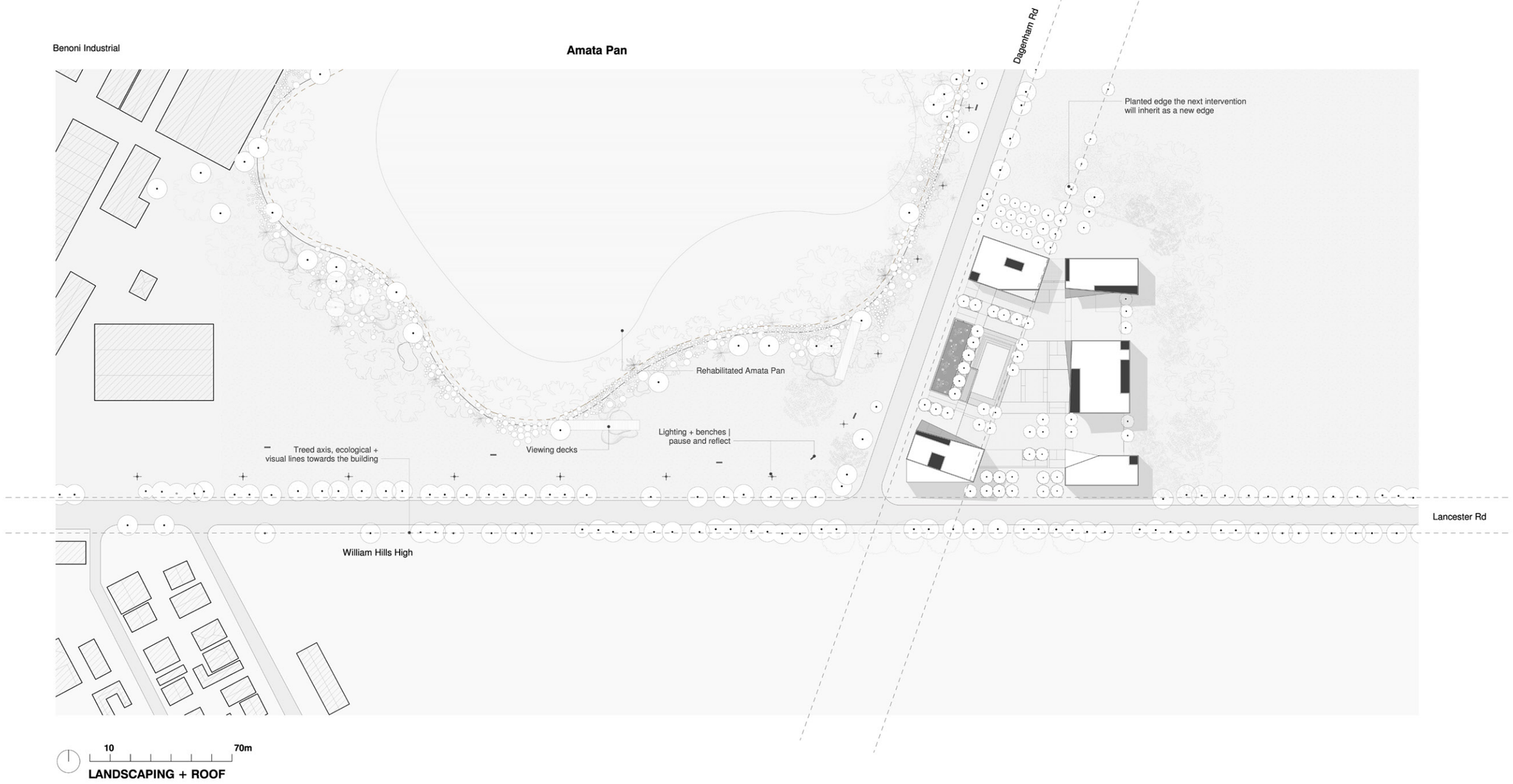
**Birds**
1 Grey headed Gull
2 Whiskered Tern
3 Yellow - billed Ergret
4 Little Bittern
5 White - backed Ducks
6 Grey Heron
7 Little Egrets
8 Greater Flamingo
9 Pied Avocet

**Insects**
10 Dragonflies
11 Coleoptera Beetles
12 Water wold spider Pirata Africana
13 Caterpillars
14 Moths
15 Butterflies
16 Bees

**Indigenous Trees**
A Wild olive,
B White and black karee,
C Red bushwillow
D Sweet thorn

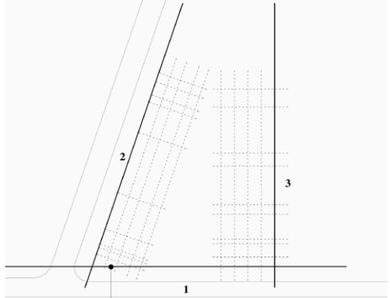
**Indigenous wild flowers, bulbs and shrubs**
a Chlorophytum cooperi
b Senecio consanguineus
c Cynoglossum lanceolatum
d Cyphia stenopetala
e Albuca shuawii

**Aquatic plants**
f Persicaria attenuata
g Persicaria decipiens
h Sedge Schoenoplectus corymbosus
i Sedge Cyperus fastigiatus


Benoni Industrial
Amata Pan
Dagenham Rd
Planted edge the next intervention
will inherit as a new edge
Rehabilitated Amata Pan
Lighting + benches |
pause and reflect
Viewing decks
Treed axis, ecological +
visual lines towards the building
Lancester Rd
William Hills High
10
70m
LANDSCAPING + ROOF

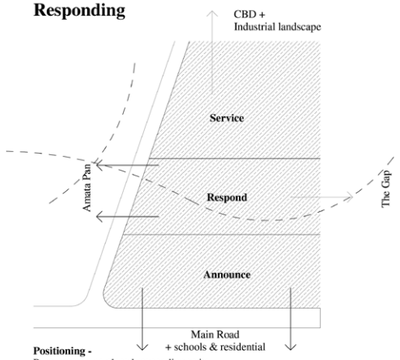
# reWriting the site

## Boundry strokes




**Boundry strokes-**
Boarder strokes were extracted from the site, a grid was designed. Form was pushed and pulled using these 3 strokes

## Responding



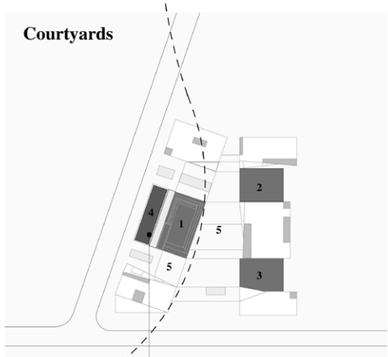

**Positioning -**
Programme was placed responding to its proximitiy of context

## Clusters



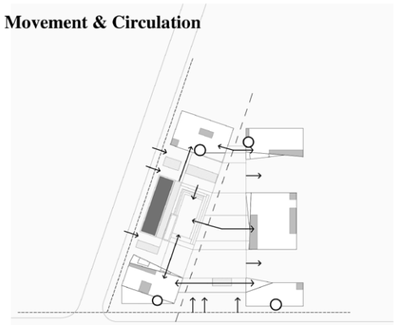

**Cluster of diverse buildings -**
represent comunnities coming together.
They reflect on to the gap and give a similar scale
1. Library
2. Performance
3 Events Hall
4 Workshop
5 Admin/rental studios

## Courtyards



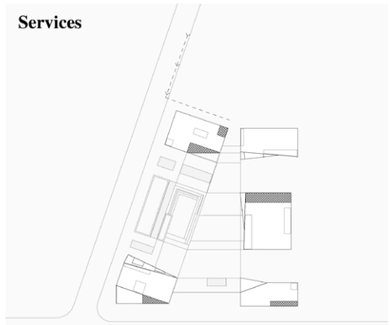

**Courtyards -**
distinct buildings allow for several courtyards and open spaces that work alongside individual building functions.
1. Gathering courtyard
2 . Making Courtyard
3. Exhibition Courtyard
4. Reflection pond
5. Movement, spill out, informal gathering

## Movement & Circulation

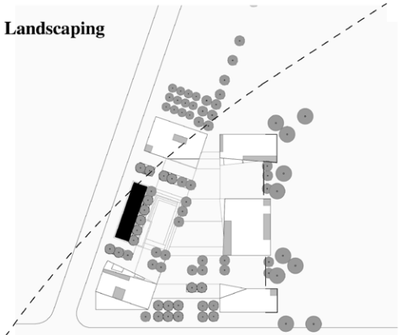


**Movement -**
Organization maintains the freedom of movement the Gap holds currently. The building therefore does not have a front and allows the user to choose how to move through space

## Services



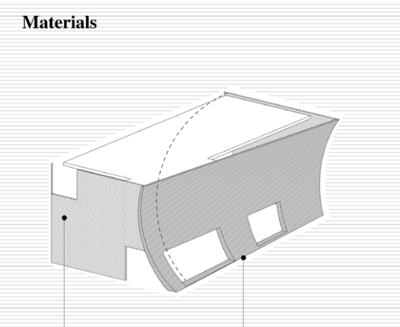
## Landscaping



**Landscaping -**
Landscaping is used to mark thresholds, heal the landscape and create spaces to pause and reflect.

Landscaping is used to protect the building and to create a new edge for the next building

## Materials



**red brick -**
familiar material
borrowed from the community

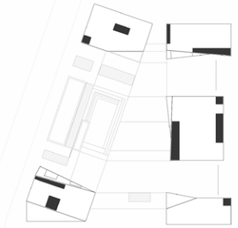
**bent concrete wall -**
robust presence
mimics fluid nature of the gape

# PAPER CONCEPTS

## 6 Rituals

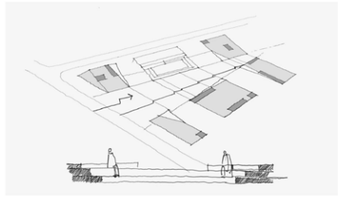
Program was inspired by different mediums that paper is represented in and opportunities that can connect the landscape

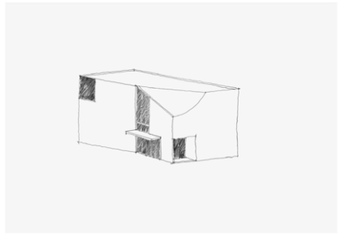
1. Library (learn)
2. Performance (share)
3. Events (Memory)
4. Workshop (Make)
5. Admin/ rental studios (capital)
6. Courtyards (gather, storeytelling)



## Fold





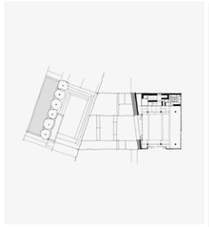


The ground plane was folded to allow for different thresholds of gathering.

Program such as the pottery, paper, pulp and leather workshops are folded into the ground since clay and fibre is connected back to the earth. It also allows for more awe inspiring ways to craft and showcase

Elements of the roof are pinched and folded and lends itself towards the user creating softer edges yet still remains a bold form

## Score



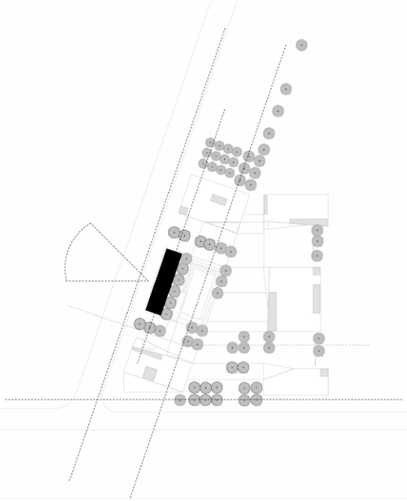
Scores can be seen as scars on a page that become markers - just like the gap being a scar on Benoni's landscape. Inspired by these marks, I designed the paving and tile patterns that act as secondary demarcated spaces that guide users to entrances, informal gathering and nuances the landscape.

These scores are also expressed through the brick and motar and the lines left behind the off shutter concrete



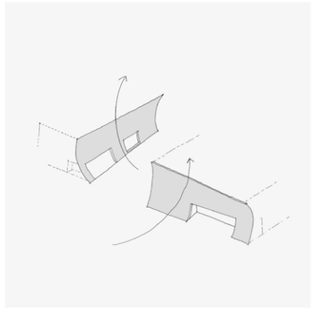
## Grow

The natural features not only represent papers raw and decaying form but also act an axis that visually guides the user through space



## Bend

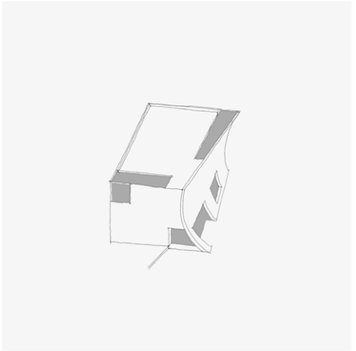


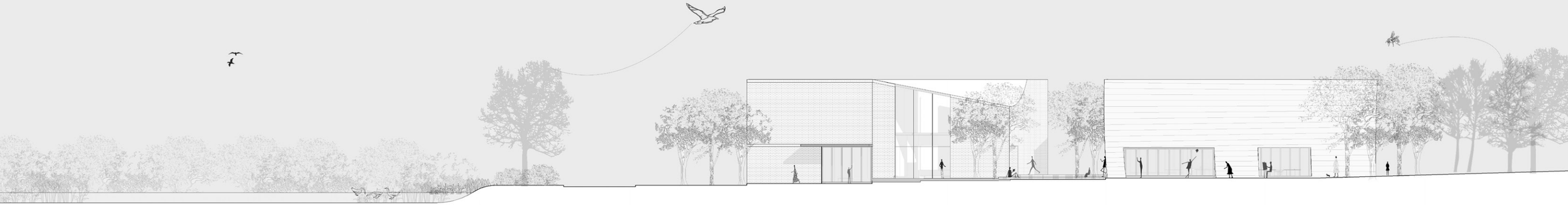


The Gap is a terrain vague whose interest lies in its fluid nature. The use of curves thus becomes symbolic. Not only does it capture this freedom it also captures the memory of some of the local cultures making it inviting and contrasting againist more rigid industrial, institutional, and municipal buildings.

## Slice

The architecture is one of a controlled nature. Each slice was strategic,allowing each space to be internally lit well through natural light while still maintaining the vision of a robust form





5 30m

**SOUTH ELEVATION | ADMIN, STUDIOS + WORKSHOP**

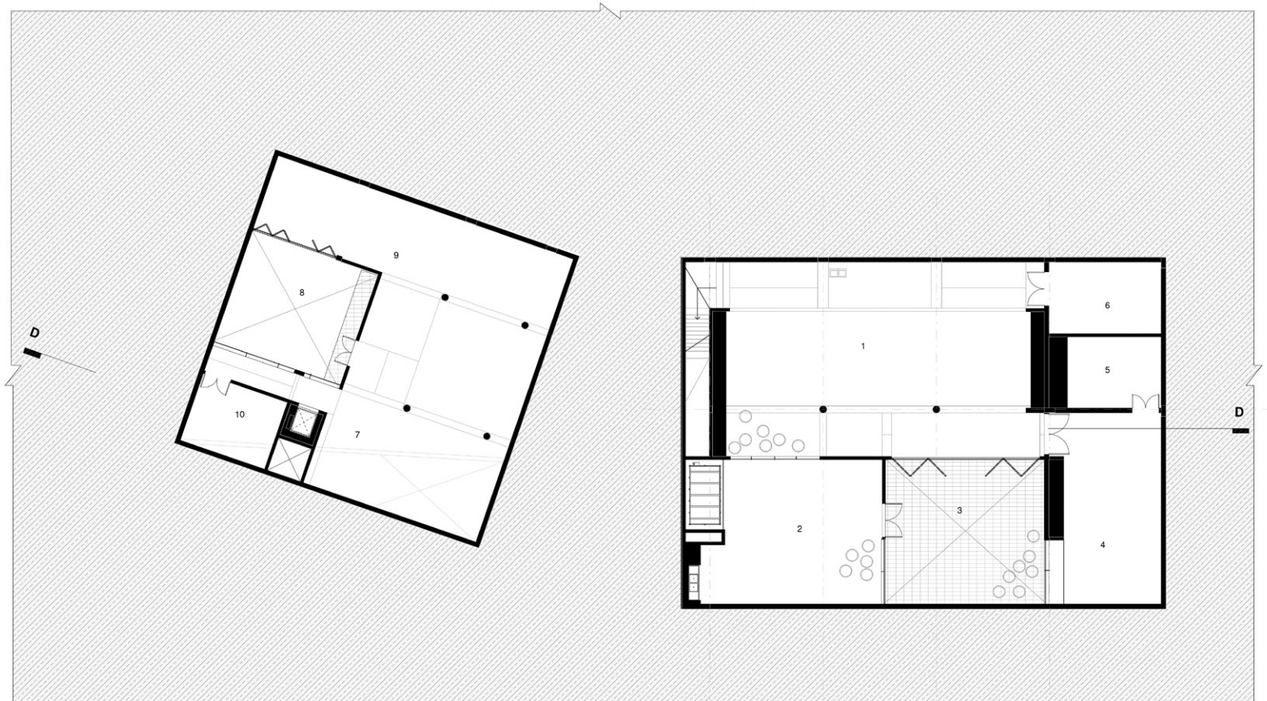
1 Paper, Pulp & Leather Open studio

2 Pottery & Ceramic Studio
3 Making Courtyard
4 Studio
5 Dark Room
6 Storage

7 Open Studio
8 Internal courtyard lightwell
9 Open Studio
10 Storage

5 20m

**-1 UG FLOOR PLAN**









**Key**

1 Library (learn)
2 Performace Gallery (share)
3 Events (Memory)
4 Workshop (make)
5 Admin Studio (capital)
6 Courtyards (storeytelling)

1 Gallery + Exhibition
2 Performance
3 Storage
4 Sound + Equipment
5 EXHIBITION COURTYARD

6 Events Hall- Open multipurpose space connects to performance gallery (1) and spill out courtyard (13)
7 Male WC
8 Female WC
9 Janitors Equipment
10 Kitchen
11 Storage
12 Cold Room

*Landscape*
13 GATHERING COURTYARD
14 Fire/Brasi Pit
15 Reflection Pond

16 MAKING COURTYARD

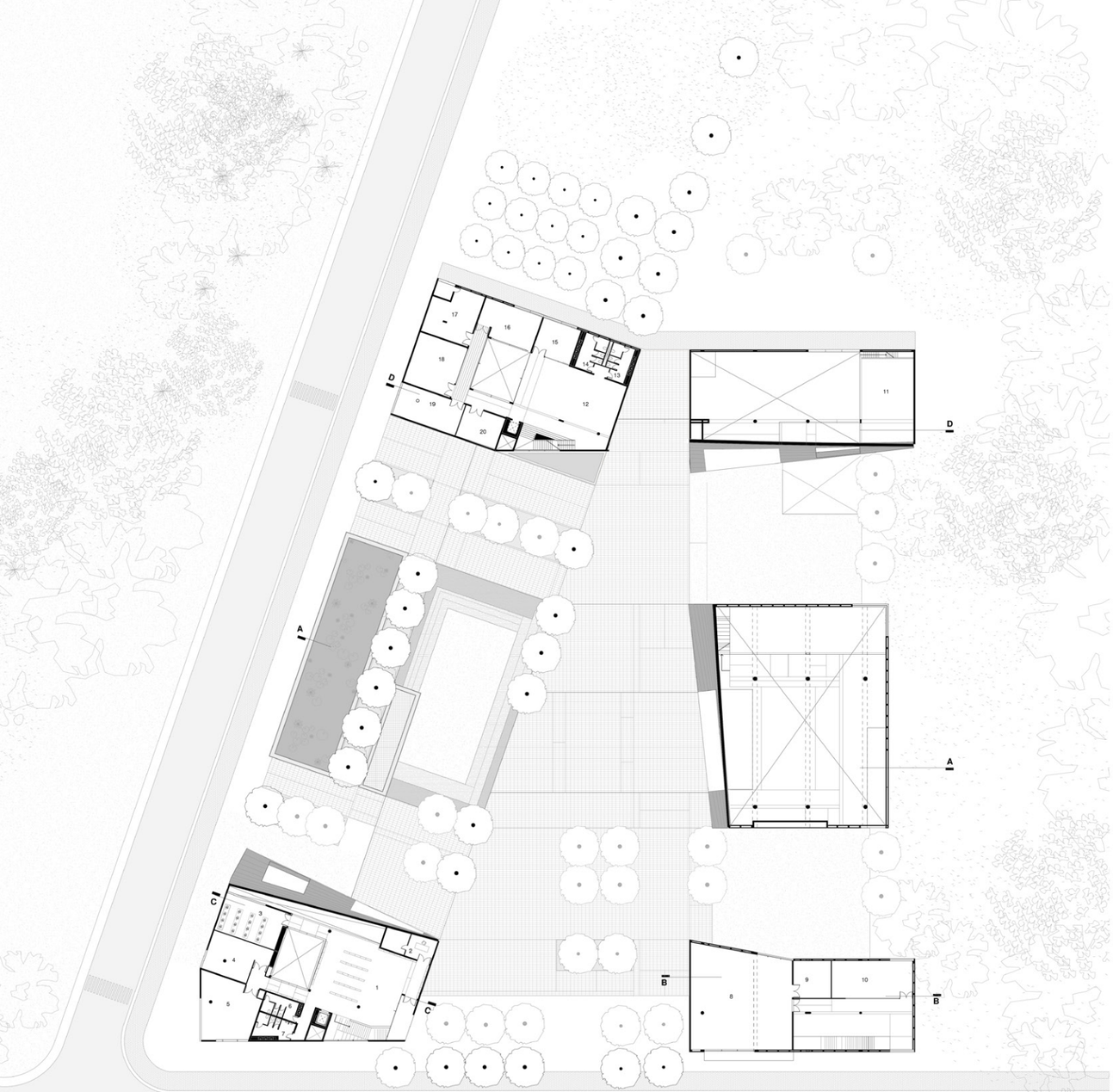
17 Timber & Steel Open plan workshop
18 Workshop manager
19 Tool library & storage
20 Studio

21 Temporary exhibition
22 Mens WC
23 Womens WC
24 Admin Office 1
25 Admin Office 2
26 Internal Courtyard
27 Bikeshop
28 Public workspace

29 Reception + Open library + public study/work space
30 Internal Courtyard
31 Womens WC
32 Mens WC
33 Coffee and Sandwich stand
34 Makershop

5 30m

## 0 GROUND FLOOR PLAN







**Key**

1 Library (learn)
2 Performace Gallery (share)
3 Events (Memory)
4 Workshop (make)
5 Admin Studio (capital)
6 Courtyards (storeytelling)

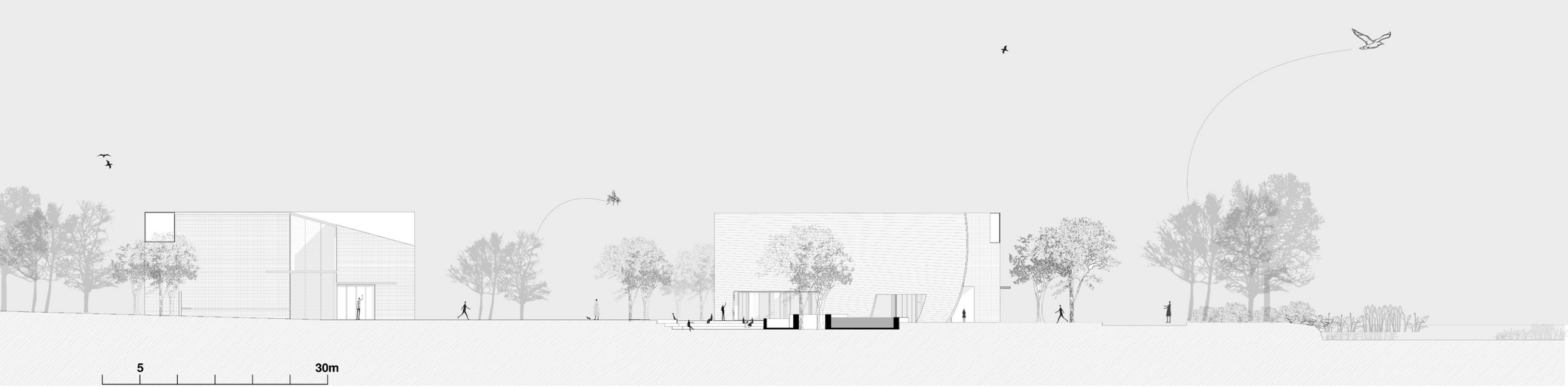
1 Open library + public study/work space
2 Librarians office
3 PC stations
4 Research Studio 1
5 Reseach Studio 2
6 Womens WC
7 Mens WC

8 Practice Studio 1
9 Equipment Room
10 Practice Studio 2

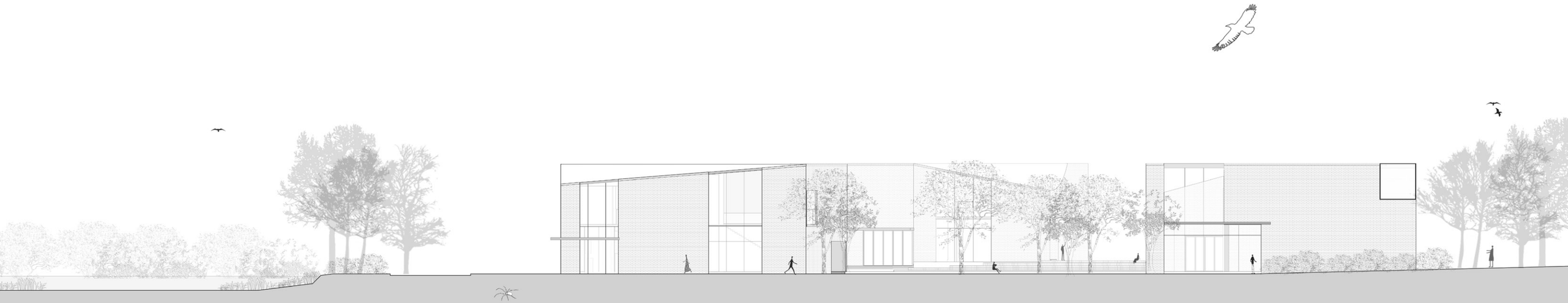
11 Printers Studio
12 Open collaboration
13 Mens WC
14 Ladies WC
15 Meeting room
16 Studio 1
17 Studio 2
18 Studio 3
19 Studio 4
20 Studio 5

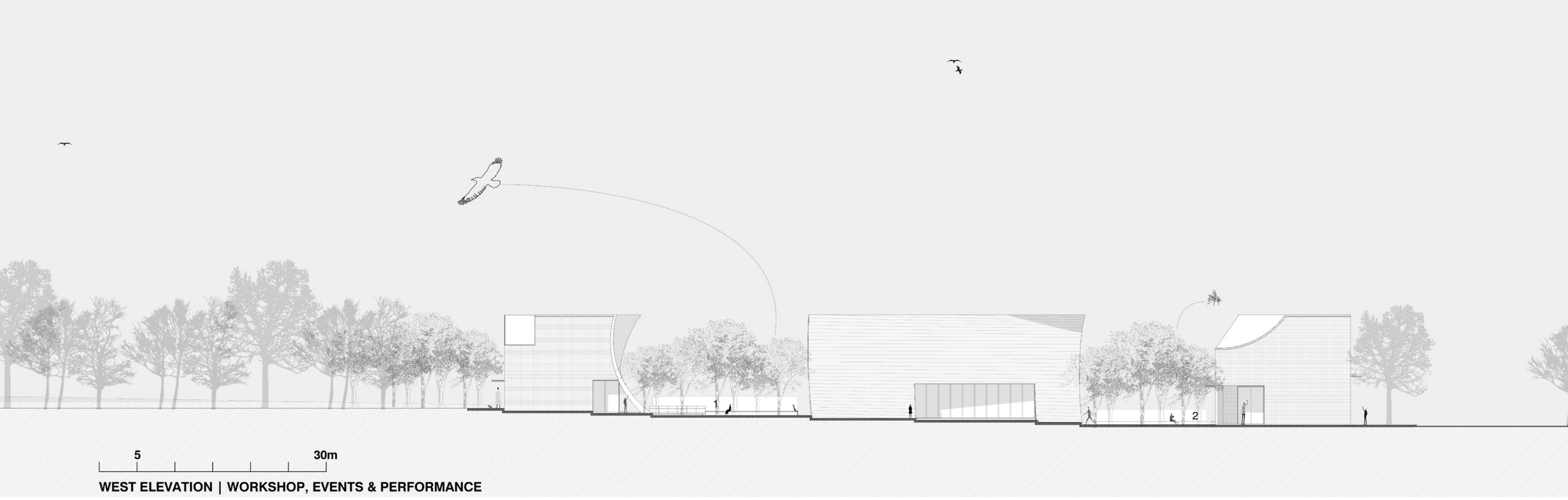
5 20m

**1 FIRST FLOOR PLAN**




NORTH ELEVATION | PERFORMANCE + LIBRARY

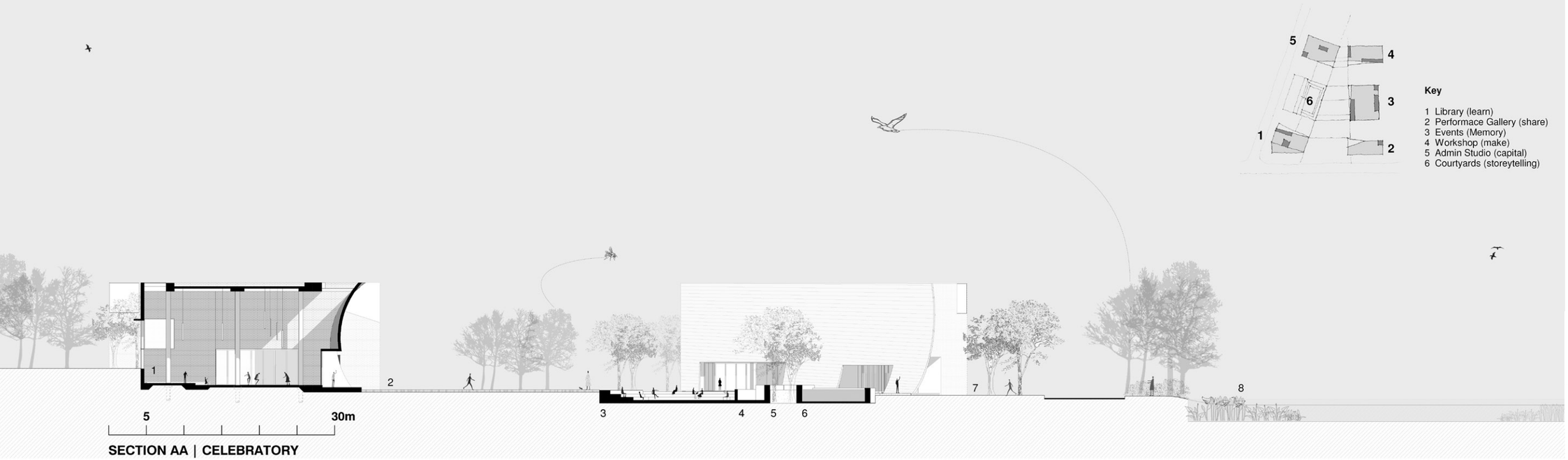





5 30m

**WEST ELEVATION | WORKSHOP, EVENTS & PERFORMANCE**

1 Making courtyard
2 Exhibition courtyard



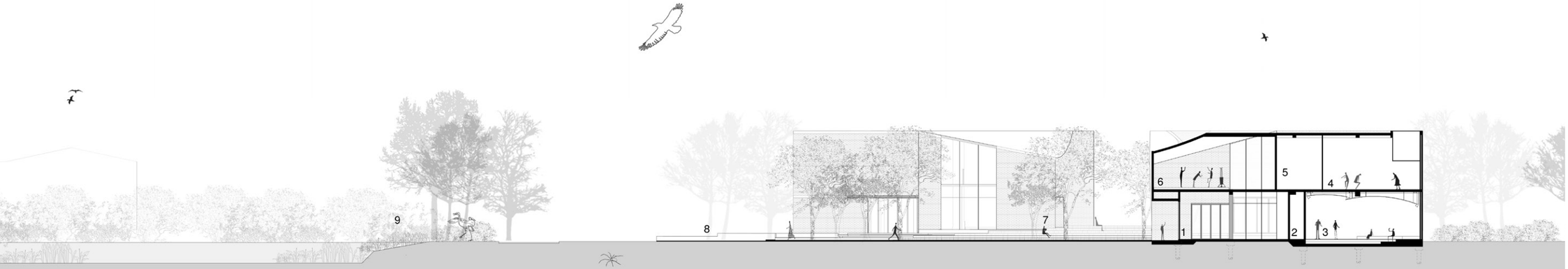

SECTION AA | CELEBRATORY



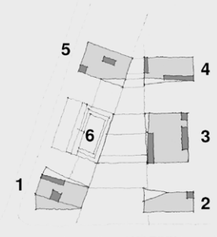

**Key**

1 Library (learn)
2 Performace Gallery (share)
3 Events (Memory)
4 Workshop (make)
5 Admin Studio (capital)
6 Courtyards (storeytelling)

1 Events Hall
2 Spill out
3 GATHERING COURTYARD
4 Braai/ Fire Pit
5 Landscaping
6 Reflection Pond
7 Library Block
8 AMATA PAN




1 Exhibition
2 Sound + Equipment
3 Performance Studio 1
4 Practice room
5 Storage + Equipment
6 Performance room 2
7 Admin + Studio Block
8 Reflection Pond
9 AMATA PAN




**Key**

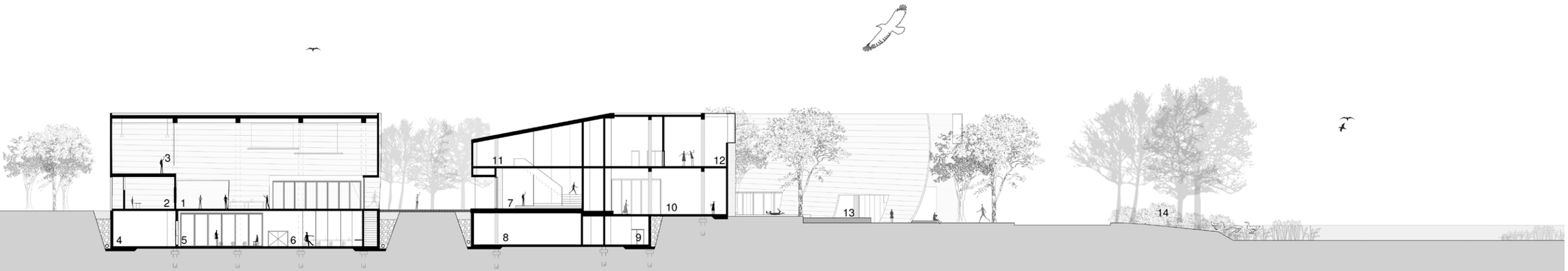
1 Library (learn)
2 Performace Gallery (share)
3 Events (Memory)
4 Workshop (make)
5 Admin Studio (capital)
6 Courtyards (storeytelling)




5 30m

**SECTION CC | LEARN & OBSERVE**

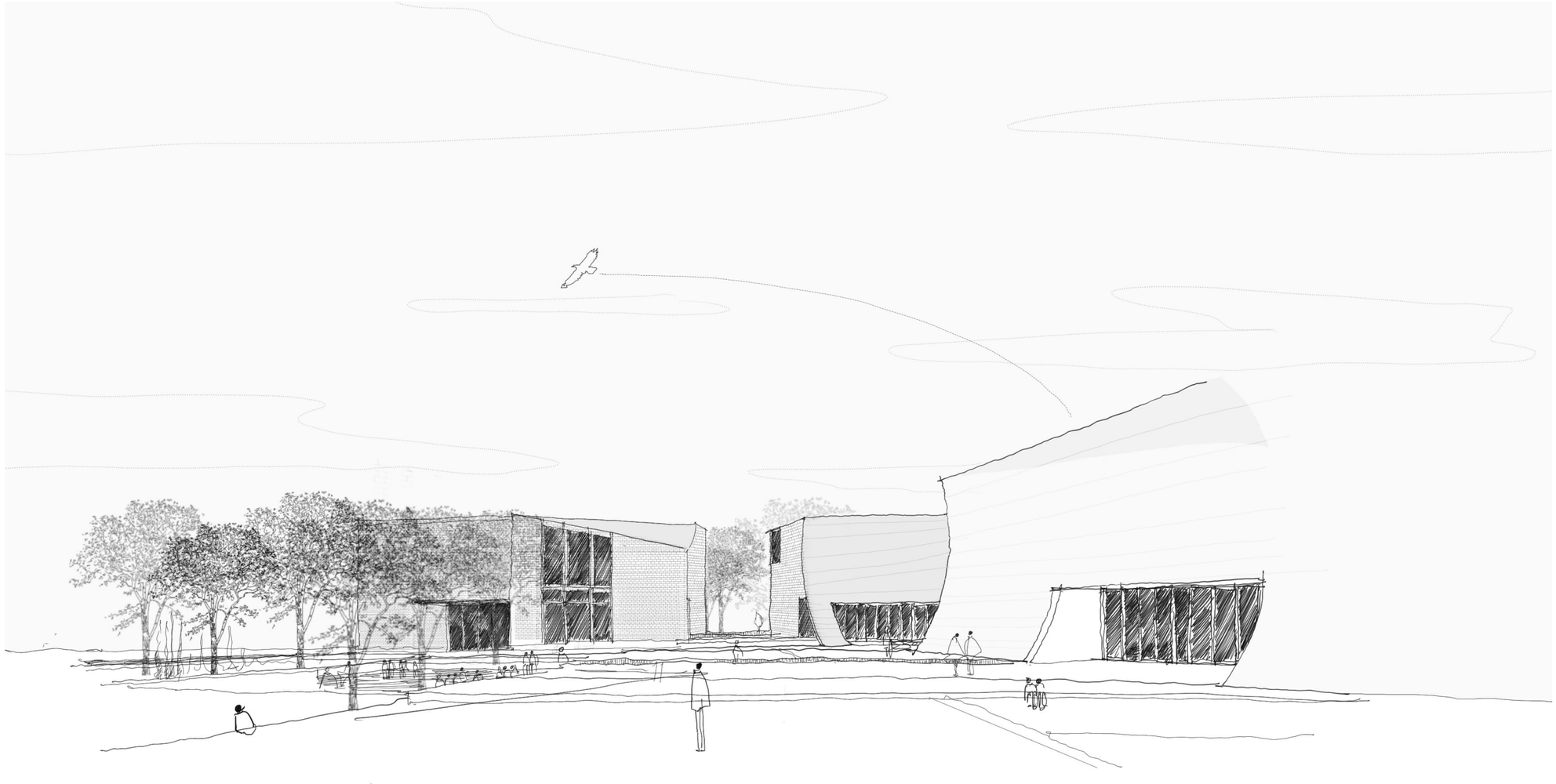
1 Entrance + Open library
2 Planted internal courtyard
3 Pause + reflect
4 Pause + escape balcony
5 Open library
6 PC/Research station
7 Landscaping
8 Performance Block
9 AMATA PAN




5 30m

**SECTION DD | MAKE & SHOWCASE**

1 Timber & Steel Open workshop
2 Workshop managers office
3 Printers studios
4 Studio
5 Paper, pulp & leather workshop
6 Pottery and ceremics workshop
7 Gallery
8 Controlled Studio
9 Storage
10 Exhibition
11 Open workspace
12 Rental Studio space
13 Library Block
14 AMATA PAN

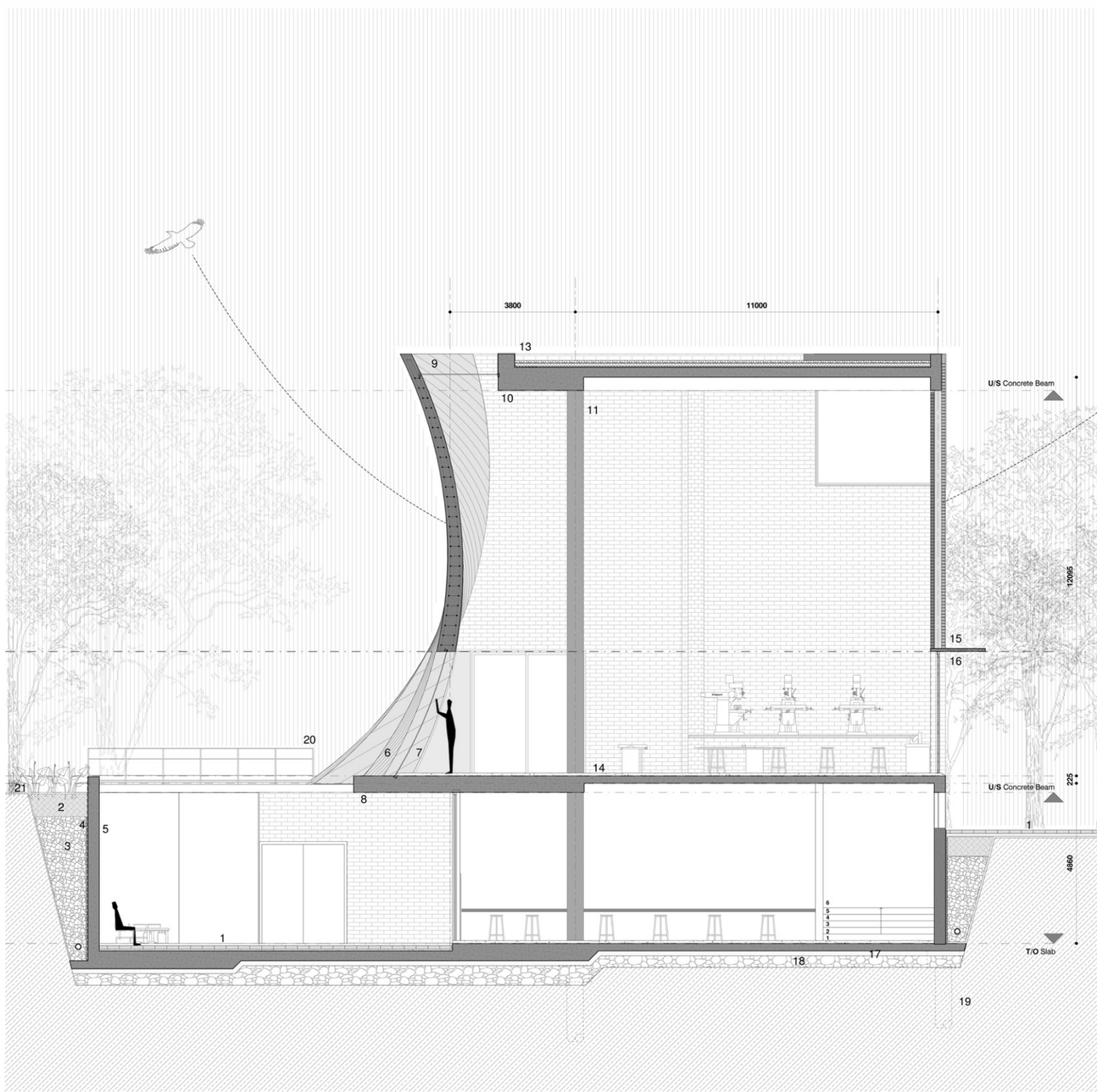


0.5 5m

# DETAIL

The intention is to highlight the structure in its pure form. Using brick and concrete to create a robust piece of architecture that not only showcases and creates an inspiring space to craft in but a space that is optimized spatially

1. 222 x 106 x 50 mm Corobrik Burgundy Piazza Paver laid in herringbone pattern. Laid at 1:80 fall away from structure
2. Graded and compacted fill in layers of 150 mm
3. Aggregate in bidem cloth to 160mm diameter HDPE agricultural drain to stormwater channel
4. 30mm thick softboard by Fibertex Geotextiles Africa against SP4 Debigum torch on waterproofing
5. Reinforced Concrete wall to structural engineers spec and detail
6. Reinforced concrete curved wall cast in to structural engineer's specs and detail. Form work made from Birch faced ply- matt finish, light timber grain expressed
7. 16 mm Bent Annealed laminated toughened safety glass sits on structural silicone steel which is fixed to 50 x 60 x 2.5 mm SHS welded in a 100 x 50 x 5 mm Channel
8. RC footing beam to structural engineers spec.
9. 16mm thick laminated glass skylight sit on structural silicone seal casted in 50 x 60 x 2.5 mm SHS that sits in 100 x 50 x 5 mm RHS
10. RC beam to structural engineers spec.
11. RC coloumn to structural engineers spec
12. 300 mm concrete slab with upstand beams. 20mm 45degree chamfers to corners. Reinforced to structural engineer's spec.
13. Mortarproof 610 / 601 with Postruct 599 Cemproof Fabric flashing. Keytech A6 Bidim , lap bidim up at all edges to full depth of stane ballast. Stone ballast to be 13 mm crusher stone , 60 - 70 mm deep 100 mm thick Hydroboard molded insulation board. Main waterproofing membrane 2x layer of 4mm NOVALPOL P180 plastomeric modified bitumen. Water proofing membrane. Class ii strength catergory 2 screed to fall to outlet, min 30 mm thick ,steel float finish
14. 85 mm polished concrete finish
15. Diaphragm wall construction. Corobrick Roan Satin FBX 115mm stretcher bond supported by 230 mm thick brick piers and tied back to structure using wall ties to eng spec. 110mm internal single skin stretcher.Brick force every 4th course. Stack bond tied back to structure using ties to eng spec
    Cavity filled with insulation to architects spec. Polystyrene
16. 85mm thick RC pre cast concrete slab
17. 150 mm sand blinding layer
18. Minimum 350mm aggregate layer
19. RC pile foundations to engineers spec and detail
20. Steel balustrade made up of 50 x50x2.5mm SHS
21. Indigenous landscaping such as Wild olive, White and black karee, Red bushwillow and Sweet thorn





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6.32 Author, 2021.

6.33 Author, 2021.

6.34 Author, 2021.

**Chapter 7**

7.0 Author, 2021.

7.1 Author, 2021.

7.2 Author, 2021.

7.3 Author, 2021.

7.4 Author, 2021.

7.5 Author, 2021.

7.6 Author, 2021.



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | SCHOOL OF ARCHITECTURE PLANNING

21 September 2021

**Faculty of Engineering and the Built Environment:**

**Ethics clearance letter:**

Dear Mahdiyah Thokan (1044193), this letter confirms that your ethics application has been cleared.
Your clearance/protocol number is SOAP032/2021

Yours sincerely

Lerato Nkosi

School of Architecture and Planning, Faculty of Engineering and the Built Environment, John Moffat Building, Wits, 2050, South Africa
Tel: +27 11 717- 7692| Email: lerato.nkosi@wits.ac.za | **www.wits.ac.za**