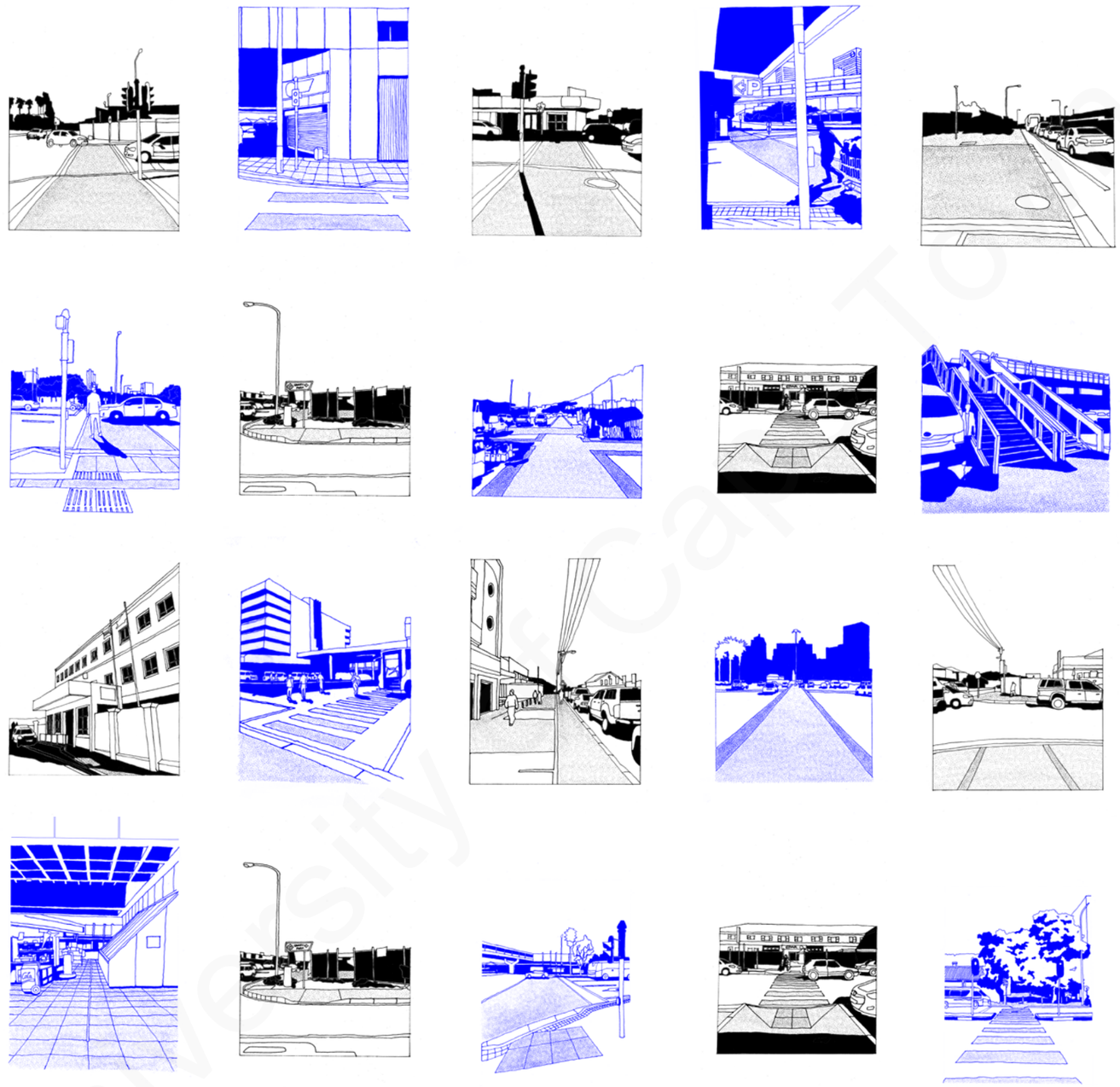

SEEING, SURFACING, PATTERNING:

A socially inclusive architecture for the blind.

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Design Dissertation | APG5088Z
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PLAGIARISM DECLARATION:

Name: Saskia de Bok
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Declaration:

I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

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Abstract:

Architectural design possesses the dual capacity to either inflict or transverse spatial barriers in our built environments, which prevent people from accessing and interacting with the built environment, and in turn imparts consequences on the social order of our cities.

This dissertation inquires into the manners in which the spatial configurations of our cities often adversely affect the social mobility of blind and visually impaired communities, leading to their exclusion from public social practices.

Instead, this dissertation intends to uncover architectural design strategies that would contribute to the social integration of persons with sight impairments in correspondence with the prominent Western Cape non-profit organisation The League of Friends of the Blind. Further, the concern is not merely with how buildings could be designed to better accommodate this community, but also shifts focus to how the ‘urban surface’ (Wall, 1999) within which these buildings are situated could do the same; extending the concept of enabling design beyond the confines of interior spaces into the public urban network.

KEY WORDS:
Social mobilization - Spatial barriers - Enabling architecture - Blind + Visually impaired community - Urban surface

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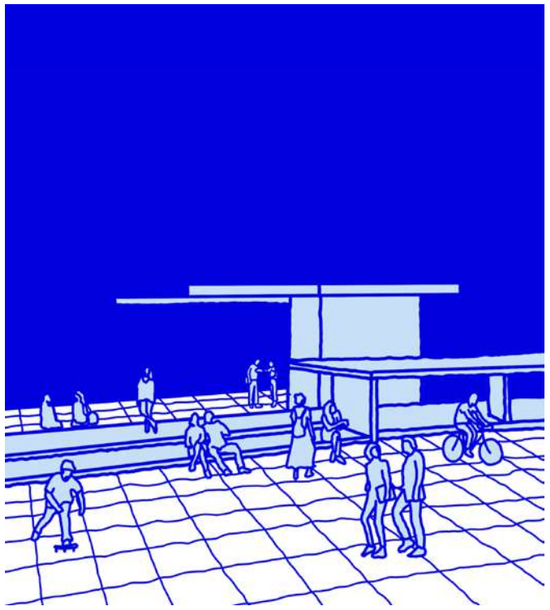
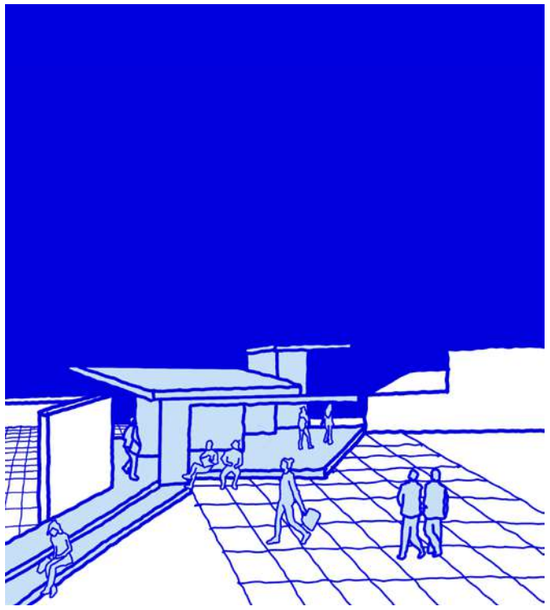
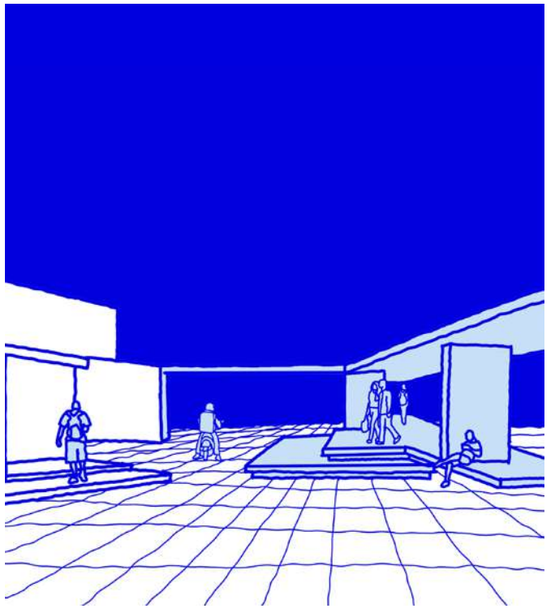
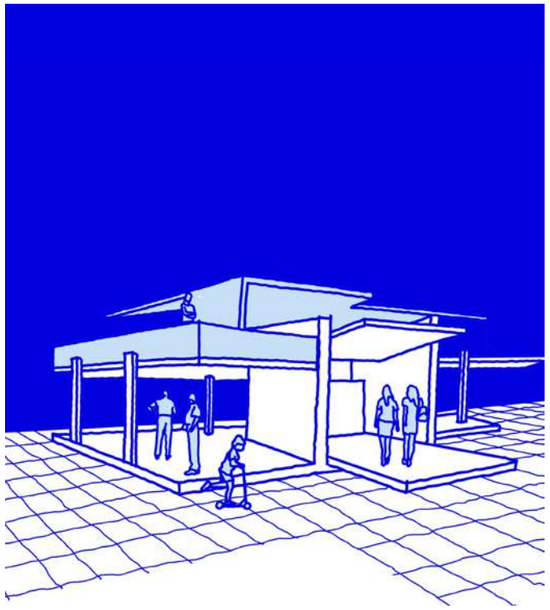








INTRODUCING

Architecture and/as barriers:

The understanding of our cities has shifted, as the world has become increasingly more globalised, to include not only the static objects in our built environment, but the dynamic processes, connections and relationships that exist between them. It is, therefore, not only the notion of 'place' but also 'interaction' that attribute to the significant social and cultural practices of a city (Jenson, 2013: 9), and the performance of a city could therefore be measured by its ability to facilitate these interactions.

However, the reality is that our cities are hindered with barriers that limit or obstruct social processes. Potentially, this could be an unintended consequence of spatial design which does not account for the significance of mobilisation, but in other cases this is in fact the intent – inflicted, through design to govern the flow of information and establishing a spatial order, which consequentially, (re)produces the social order (Steinfeld and Maisel, 2012: 12). According to Steinfeld and Maisel (2012: 1), although design has the capacity to impose these barriers "through physical boundaries, distance, and spatial organization", it is also the process with which we could address them, enabling the mobilisation of people in their engagement with the built environment.

It is this ability of spatial design to both inflict and remove the barriers that control the distribution of information, opportunities and privilege in society, which ultimately attributes to social justice (Soja, 2009). This correlation between barriers and design, and space and justice, is revealing of the immense – and somehow, underestimated – consequences of our profession. It is therefore essential to critically reflect on the barriers that spatial design imposes on our cities, and what consequences they impart on society as a result (Steinfeld and Maisel, 2012: 13).

> "Access is the prerequisite to using any space. Without the ability to enter or move within it, to receive and transmit information or goods, space is of no value, however vast or rich in resources."
> (Lynch and Hack, quoted in Jenson, 2013: 8)

But for no group is the correlation between justice and space more evident than people with disabilities, where discrimination and exclusion are built into our cities and its supporting infrastructures (Steinfeld and Maisel, 2012: 15). Although these discriminatory spatial practices are prohibited by laws and regulations, often the built environment still fails to adequately support and include these communities, due to a lack of consideration beyond minimum standards.

Due to the bias of visual perception in spatial design (Pallasmaa, 2005: 10), the focus of this inquiry is concerned with spatial design's tendency to negate the needs of blind and visually impaired persons. The intention is to form a deeper understanding of the spatial barriers imposed by design, that potentially restricts or limits the social participation of persons with sight impairments.

Barriers to the blind and visually impaired:

According to Lee and Mesfin (2023), visual impairment is described as an interference with one's ability to perform day-to-day activities due to decreased visual functioning. The term is used to capture a spectrum of sight impairments, ranging from low vision; where persons experience a decrease in their ability to perceive light that is not easily remedied by conventional medical interventions such as glasses, surgery or assistive technologies - to total blindness; referring to persons who are not able to perceive light at all (Lee and Mesfin, 2023). It is crucial to note that legal blindness differs from total blindness (See fig 01), as very few persons experience a complete loss of light perception.

South African census data (2011) reveals that sight impairments are the most prevalent disability experienced by South African citizens (see fig 02), affecting 1,7% of South African population. Notably, the more common causes of sight disabilities in South Africa (see fig 03) are preventable, if the person is able to access medical treatment timeously, which due to inequalities related to healthcare access in South Africa, is not always the case. For this reason, it is more likely that persons from disadvantaged communities are affected. Further, it is estimated that around 97% of South Africa's blind and visually impaired citizens are unemployed (see fig 04); however as sight impairments are more likely to develop with age (see fig 05), it is likely a large portion of pensioners are included in this value. Nevertheless, it does seem that sight impairments are to a degree associated with social inequities in the South African context.

According to the World Health Organization [WHO] (2022), the impact of sight impairment on a person's life varies depending on their access to treatment, rehabilitation and the built environment. Although the misconception exists that persons with impairments are "confined to institutions", and do not need to be accommodated in the urban spaces beyond these (Steinfeld and Maisel, 2012: 12), it is evident that a city which does not enable its visually impaired citizens, contributes to their social isolation (WHO, 2022).

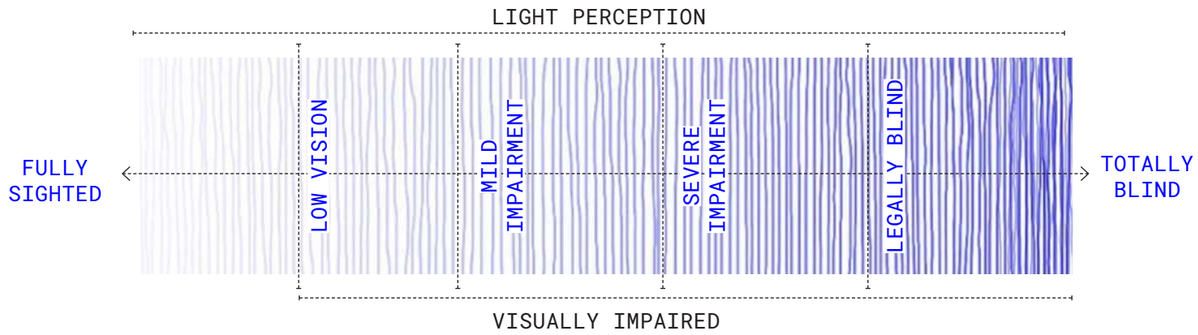


Fig. 01 (Author): Spectrum of sight impairment

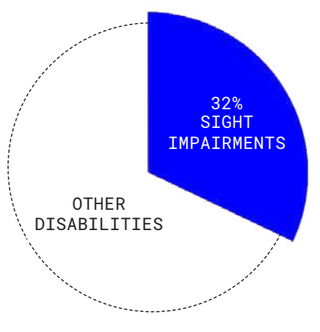


Fig 02 (Author): Prevalence of sight disabilities in South Africa

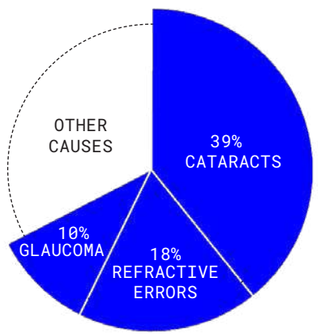


Fig. 03 (Author): Causes of sight impairments in South Africa

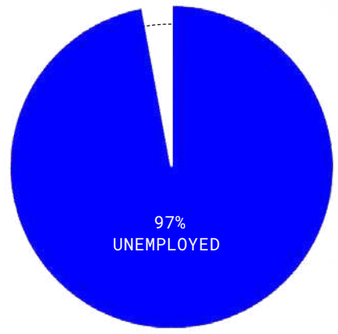


Fig. 04 (Author): Percentage of unemployment in persons with sight impairments in South Africa

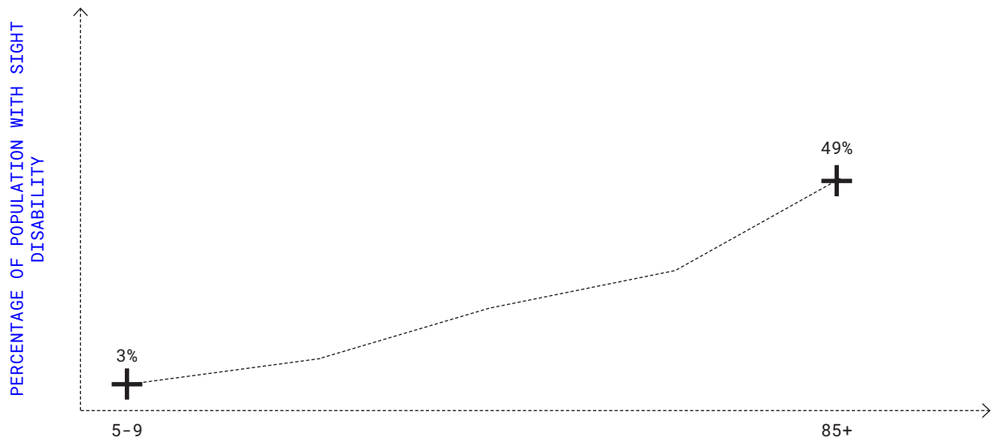


Fig. 05 (Author): Increased percentage of persons with sight ailments as age increases

00 INTRODUCTION

Influence of the initial interest:

The dissertation initially focused on exploring the intersection between software development and spatial design. Both industries are inherently creative (Florida et al. 2006), addressing the needs of their users through innovative problem-solving approaches.

The software industry's continuous technological advancements have made it increasingly relevant and valuable to society. It constructs innovative, advanced, flexible, and efficient virtual 'worlds,' adapting to emerging opportunities and offering progressive solutions to societal needs. Comparatively, software development appears to achieve this more effectively than traditional architecture in the context of the built environment, which is straining to meet the needs of its users. Perhaps, this difference arises from past architectural approaches aspiring to formality and permanence, resulting in scattered remnants of built fabric across the urban surface, which remain relevant to today's society but require resource- and labour-intensive efforts to reinstate their value. In contrast, software development operates with principles that embed adaptability, scalability, flexibility, and continuity into its products, achieved through the application of 'architectural' patterns throughout the program code.

This raised the question: could we potentially extract valuable insights from the discipline of software development to apply in the development and programming of physical space? In software development, the concept of architecture assumes significant importance, referring to a shift in focus from individual modules and components of the software to the overall structure that these components fit into (Florida et al., 2006). If we transpose this definition to the discipline of architecture, it could be interpreted as a shift in focus from the individual architectural artifacts within the built environment to the overall structure of the urban network that these buildings occupy. The aim of this shift is to identify opportunities for 'programming' aimed at improving the overall efficiency of the urban 'system.'

The inquiry, therefore, sought to build an understanding of the urban context as a network of spatial dependencies between different architectural 'entities.' To achieve this, reference is made to the Entity Relationship Diagram (see fig. 06), which is a fundamental aspect of software architecture, defined as a structural diagram used to model information or data in terms of the interrelationships of individual components (Song and Froehlich, 1995). By adopting this perspective, it becomes evident where relationships within the urban context are inhibited or inadequately supported by its architecture – thus indicating the need for additional programming and development to enhance the performance of the system as a whole.

The project, however, deviated from this initial inquiry when the League of Friends of the Blind was selected as a potential stakeholder, shifting the course of the topic. Nevertheless, the earlier exploration and work continue to influence the study. The chosen literature and overarching urban interest continue to embody aspects of this earlier inquiry to some degree.

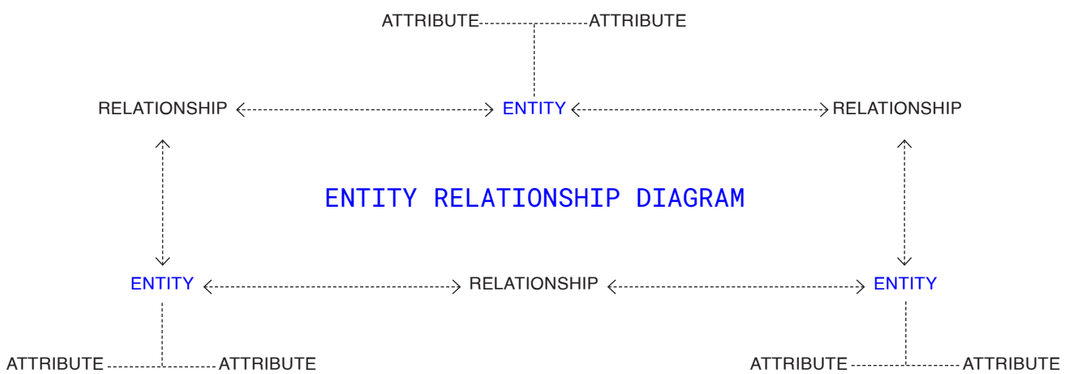


Fig. 06 (Author, 2023): Entity Relationship Diagram example

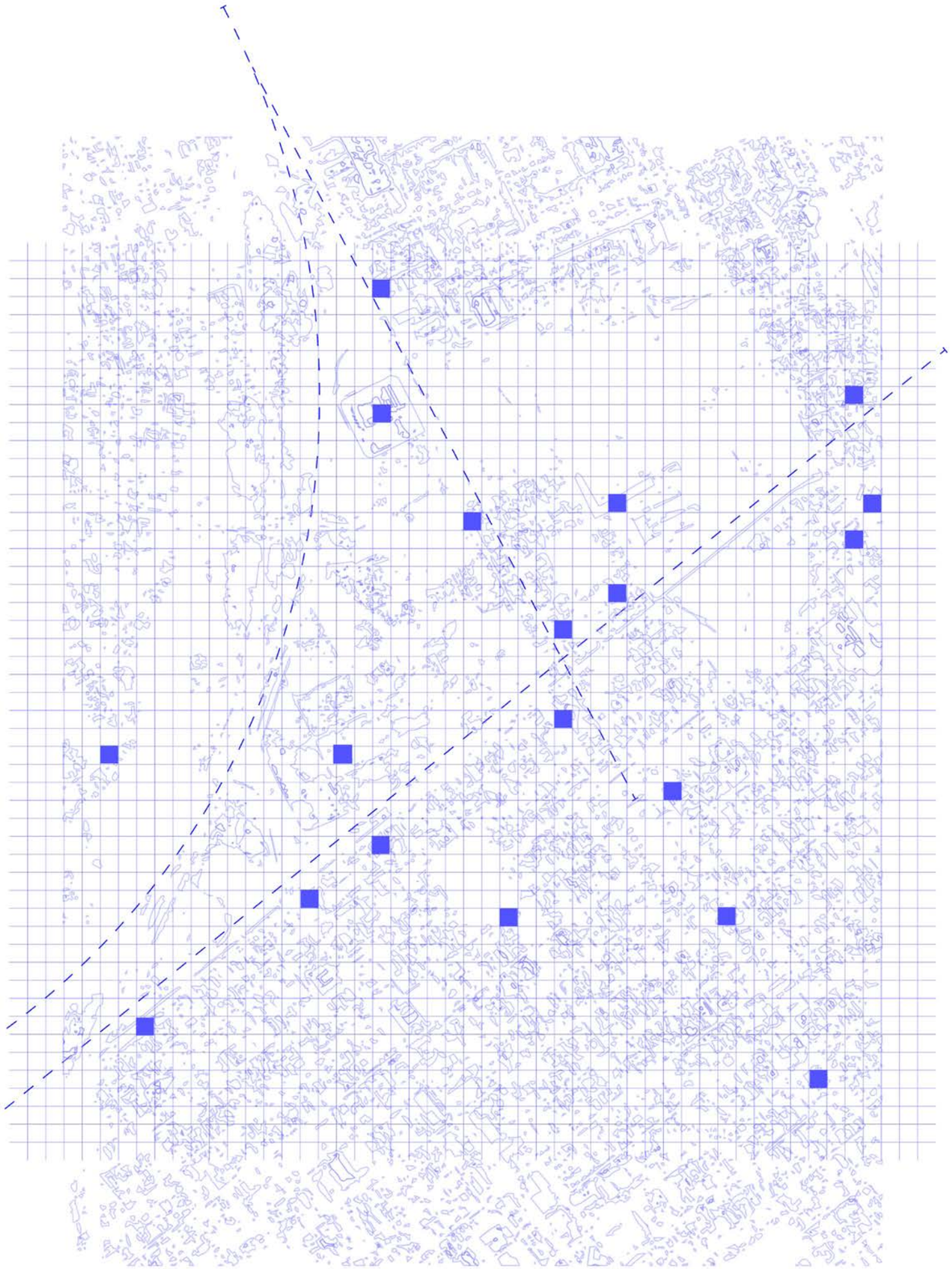


Fig. 07 (Author, 2023): Graphic of initial interest

00 INTRODUCTION

League of Friends of the Blind: A point of departure

The League of Friends of the Blind (hereafter referred to as LOFOB) is a registered Non-Profit and Public Benefit Organisation that offer a wide range or services aimed at enabling persons with visual impairments. Founded in 1933 by the late Isaac Jacobs and Reverend Arthur Blaxall, the organisation was established in response to the lack of educational opportunities that had been available for coloured and black visually impaired persons at that time. After Mr Jacobs himself was refused the opportunity to attend the only blind school in the Western Cape, which only catered to the white minority, the pair dedicated their lives to ensuring that disadvantaged persons with sight impairments receive equal access to the services and support systems that are made available to persons from privileged backgrounds (Booysen, 2023).

Ninety years later, the organisation continues to empower, employ and educate the disadvantaged blind and visually impaired community throughout the entire Western Cape province and occasionally beyond, through various outreach programmes, from their base in Grassy Park. This thesis is motivated by and anchored in the organisation's objective to integrate blind and visually impaired persons into society, and ultimately to change how society perceives these persons. Not only will LOFOB serve as a valuable resource to the research for this thesis, but act as the client to the project.

'We do not need to isolate the blind into a community of their own."
Philip Bam, LOFOB treasurer, (Booysen, 2023).

Fig. 08 (Author, 2023): LOFOB collage

i. Mission and Vision

The organisation aims to support and enable blind and visually impaired children, youth and adults and additionally, offer assistance to their family members and caretakers. The organisation envisions developing the independence of visually impaired persons to an extent where they are able to fully integrate into society (Booysen, 2023).

ii. Clients

LOFOB welcomes clients from around the Western Cape and occasionally from other parts of South Africa, and primarily focusses on extending their services to individuals from disadvantaged communities or backgrounds. They have around 75-100 active clients across a wide range of ages, each individually assessed and matched with a programme that best addresses their needs.

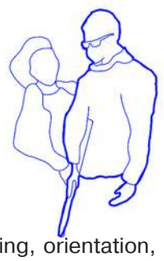
iii. Services

The organisation offer an extremely wide range of services aimed at enabling their clients to successfully integrate with society after their vision had been compromised. These services are provided by their notably small, yet qualified and enthusiastic staff members, along with their volunteers, for the most part at the Training Centre in Grassy Park, but occasionally at secondary locations.

CHILDREN

Pre-school programme + ECD
Orientation, mobility, skills, braille
Support BVI learners and educators
Support parents + home development programmes

ADULTS



Training, orientation, mobility
Home management skills
On site residences
Social work + occupational therapy

BUSINESSES

Reintegration of BVI into workplace
Offer assessments + training for staff and clients

SPORTS + RECREATION

Blind cricket, futsal, goal ball etc
Tandem cycling with sighted partner
Running
Table games every friday
On site swimming in summer

OUTREACH

'Blind Buddy' Awareness sessions at schools or other institutions
Fundraising events
Community and rural outreach programme

Fig. 09 (Author, 2023): LOFOB services diagram

00 INTRODUCTION

RESEARCH QUESTION:

The research question of this thesis is therefore the following: What are the spatial barriers that persons with sight impairments face when engaging with the built environment, and how can spatial design address these to better integrate and mobilize this community; not only within the bounds of buildings but also in the urban networks that exist between them?

METHOD + METHODOLOGY:

For the purpose of addressing this question, the following three strategies for gathering knowledge were identified: Seeing; referring to the application qualitative research methodologies in order to - as a sighted designer - form a deeper understanding of the spatial barriers that this community faces when engaging with the built environment. These methods include both empirical observations of the city, as well as interviews and focus group discussion with members of LOFOB. Secondly, surfacing relevant theories for social integration of the blind and visually impaired toward a new approach for addressing their needs. Finally, patterning, or rather working towards creating a catalogue of design strategies and technologies that could be applied and adapted to a variety of design briefs, with reference to Christopher Alexander's Pattern Language. The intention is for these three categories to serve as a toolkit for design, which would then be applied to the architectural design project. However, the hope is that this 'toolkit' may extend its usefulness beyond the scope of this project; that it could continuously be adapted, extended, and applied to an array of future projects toward considered, socially inclusive design with emphasis on persons with sight impairments.

THESIS STRUCTURE:

THEORY + TECHNOLOGY
Design 'toolkit'

DESIGN DISSERTATION
Design application

01 RESEARCH

SEEING ⟷ **SURFACING** ⟷ **PATTERNING**

Forming a deeper understanding of spatial barriers that are faced by BVI persons

1 Empirical contextual observation
2 Interviews with LOFOB respondents

Surfacing useful theories in order to frame a new approach for social integration of BVI

1 Towards social integration
2 Towards integration of blind + visually impaired

Extracting design strategies and technologies from

1 National standards
2 Case studies
3 Literature

02 DESIGN DIRECTION

DEFINING THE PROJECT

CONCEPTUALIZING AN APPROACH

LOCATING THE PROJECT

ANALYSING EXISTING CONDITIONS

IDENTIFYING KEY **INFORMANTS** FOR DESIGN

03 DESIGN APPLICATION

SITE-MAKING
Urban proposal

SPACE-MAKING
Architectural proposal

PLACE-MAKING
Material and technical proposal

CONTEXTUALIZING

The city and the periphery:

Before initiating the engagement with the stakeholders, it was deemed valuable for the author to get a better understanding of how accommodating Cape Town's existing urban fabric is to people with visual impairments. By means of walking-and-drawing exercise, based on empirical observation of existing urban infrastructures, the author set out to evaluate their capacity to mobilise persons with sight impairments at certain points along a loosely defined route through prominent public areas.

The exercise was undertaken both in the centre of the city of Cape Town, as well as along its periphery, in Grassy Park. This was decided, not only because the stakeholders are located in Grassy Park, but because Grassy Park forms part of the Cape Flats, and it was suspected that the exercise might be revealing of the City's diffusion of focus on public infrastructures in its peripheral areas. The areas that have been selected, in both the city and Grassy Park, are deemed to be 'structurally significant', or rather areas where people tend to spend a lot of time (Southworth, 2003), with focus on a density of public amenity, transport nodes and commercial opportunities.In central city, the Grande Parade and its surrounds were identified as meeting these criteria (see fig. 09), as it is adjacent to a critical public transport node (which includes the city taxi rank, Cape Town Station and the station for the Golden Arrow busses), with a concentration of surrounding public buildings (such as the Central Library, City Hall and Police Station to name just a few). Commercial activities occur throughout; from informal trading to large shopping malls.

Similarly, in Grassy Park, a site aptly named "Busy Corner" was selected (see fig. 10). In this location, you would find the Grassy Park taxi rank, Public Library, Police Station and Civic Centre, and similar (however, to a lesser degree than in central city), both formal and informal commercial activities are abloom along its street edges.In both these sites, the physical qualities of the identified 'points' along the route were evaluated with strong reference to the South African National Standards' document on design for persons with disabilities (or rather SANS 10400-S) in order to assess the degree to which they enable or limit the mobilization and social inclusion of people with visual impairment.

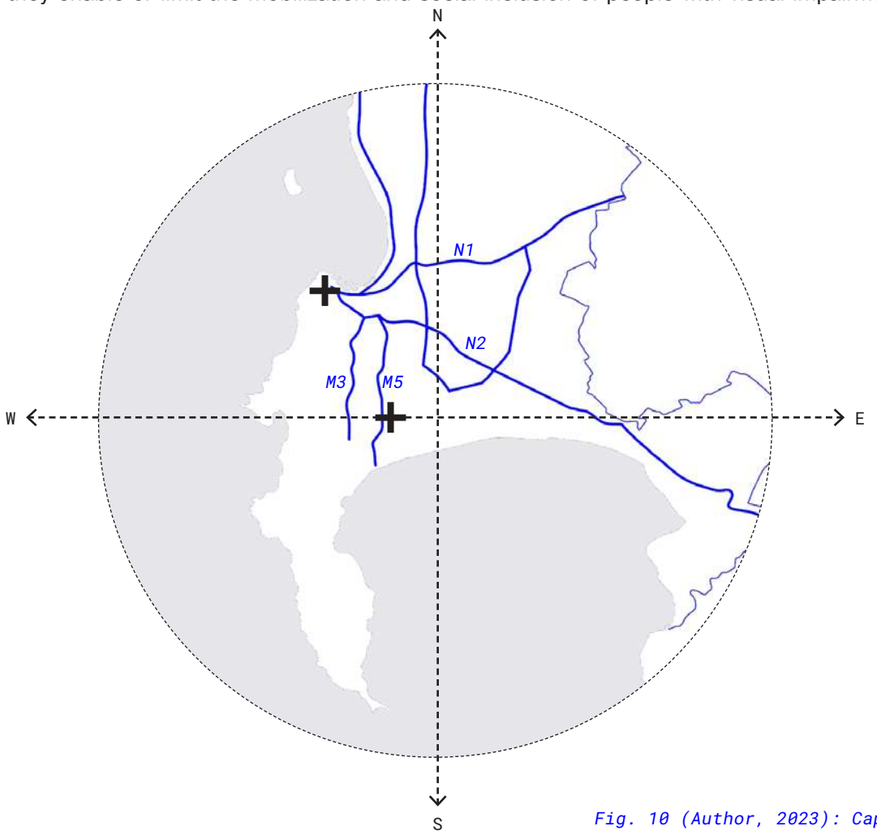


Fig. 10 (Author, 2023): Cape Town Diagram

Fig. 11 (Author, 2023): Grande Parade Plan

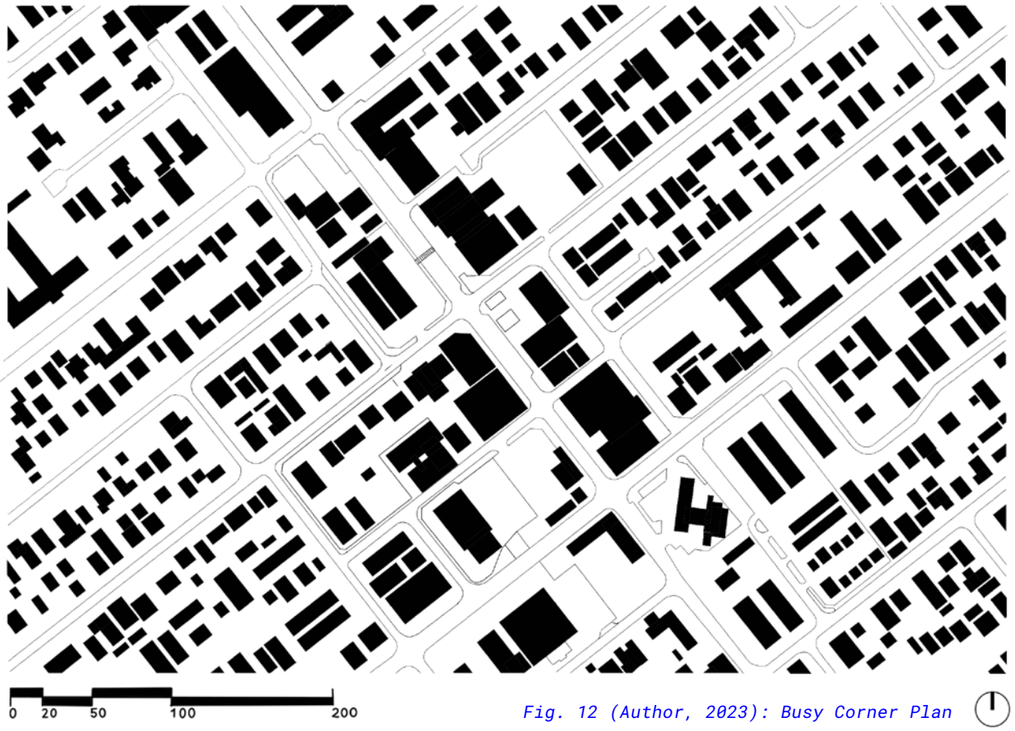


Fig. 12 (Author, 2023): Busy Corner Plan

THE CENTRE:
Grande Parade, City Centre

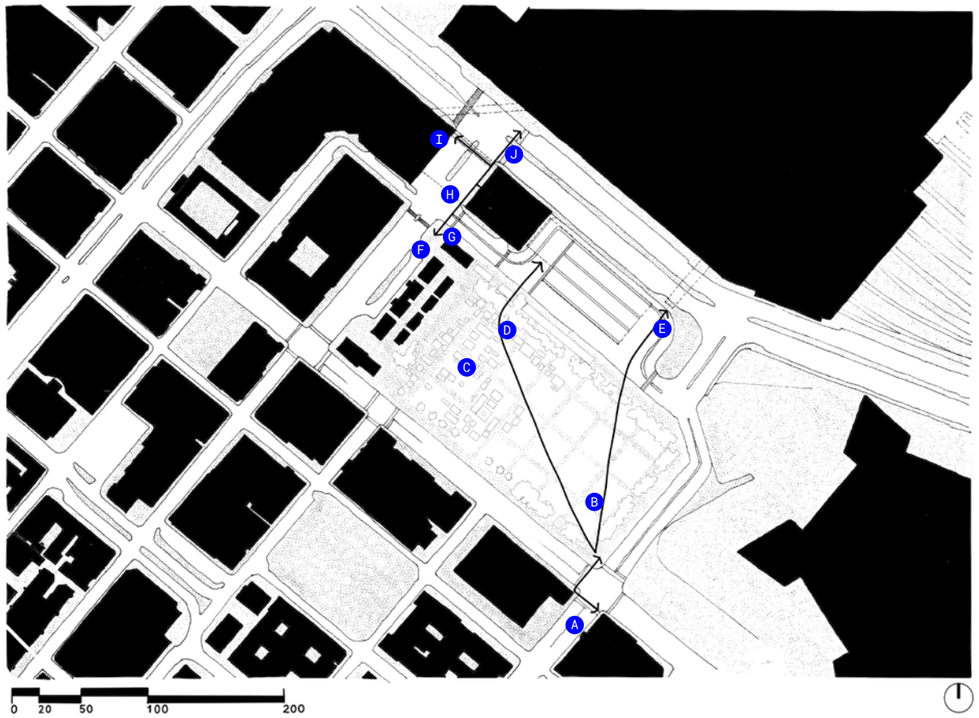


Fig. 13 (Author, 2023): Site 1, Grande Parade, Cape Town with routes and points

WALKING-AND-DRAWING, EXERCISE 1: ANALYSIS OF IDENTIFIED 'POINT' ALONG ROUTE:

A Tactile warning + directional pavers, audible + tactile call button (SANS 10400_S, 4.4.3.7)

B Orientation facilitated by contrasting pavers in large open space (SANS 10400_S C.2.5.)

C Balustrade + handrail + nosing on step non-compliant (SANS 10400_S 4.9.2 and 4.10)

D Markets do not obstruct the dominant travel routes

E No kerb-cut (SANS 10400_S 4.4.3.7) or visual indication of level change

F Zebra stripes, audible traffic light, no level change, edges of kerb painted

G Tactile warning pavers visible along the kerb cut

H Gap > 13mm along paving (see SANS 10400_S 4.5.3.), perpendicular to the travel direction

I Audible traffic light, kerb cut, tactile warning pavers and contrasting coloured paving

J Similarly equipped as I

The findings from this limited exercise revealed that the site in central city was, for the most part, impressively equipped with mobilising urban infrastructures in accordance with SANS 10400-S, such as tactile and audible traffic signals for pedestrian crossings and visual and tactile articulation of pedestrian edges and surfaces. However, it was noted that often these accessible routes were obstructed by the inhabitants (illegally parked vehicles and informal trade), which might reduce the efficacy of these infrastructures.

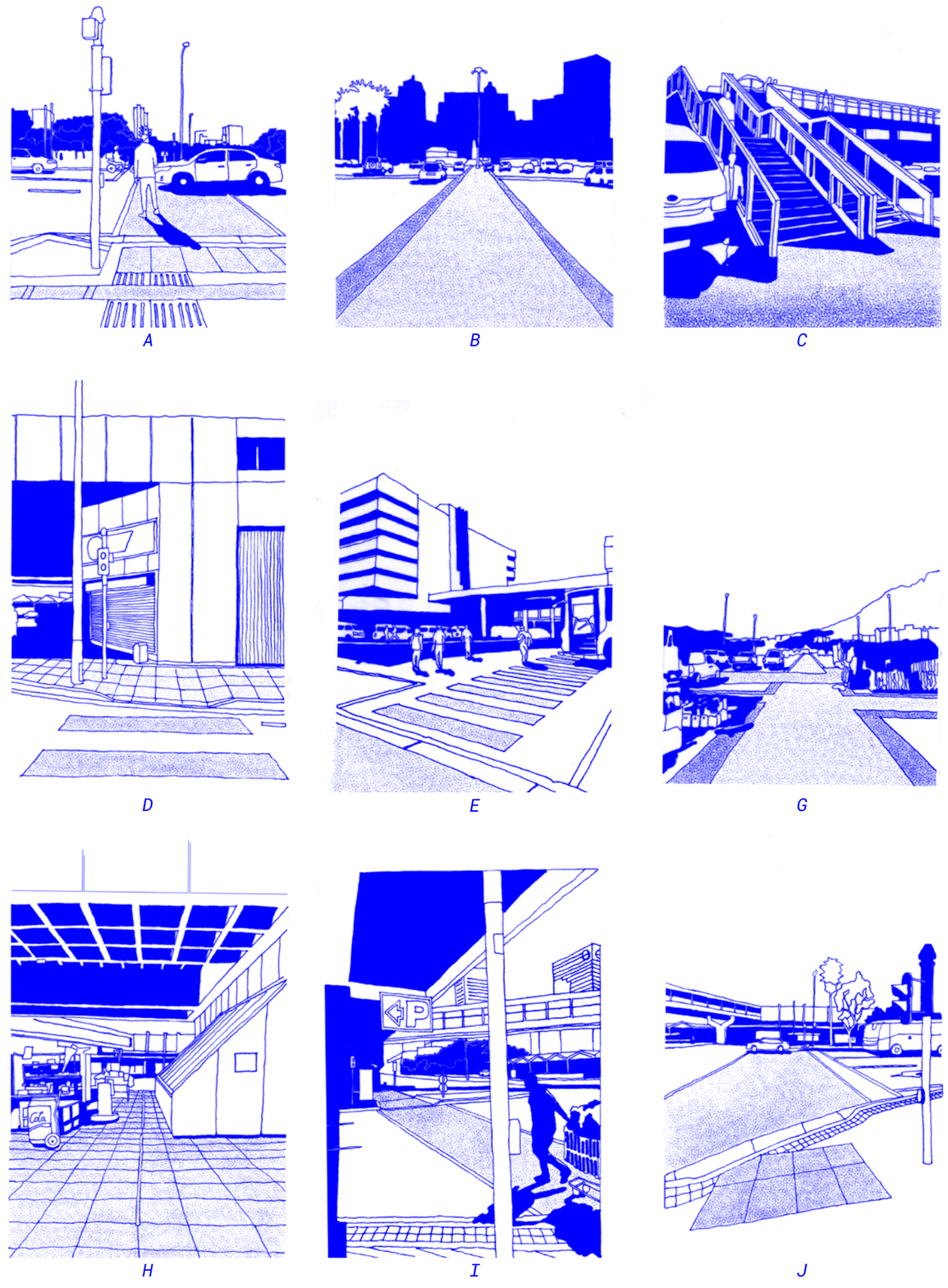


Fig. 14 (Author, 2023): Point Vignettes, Grande Parade

THE PERIPHERY:
Busy corner, Grassy Park

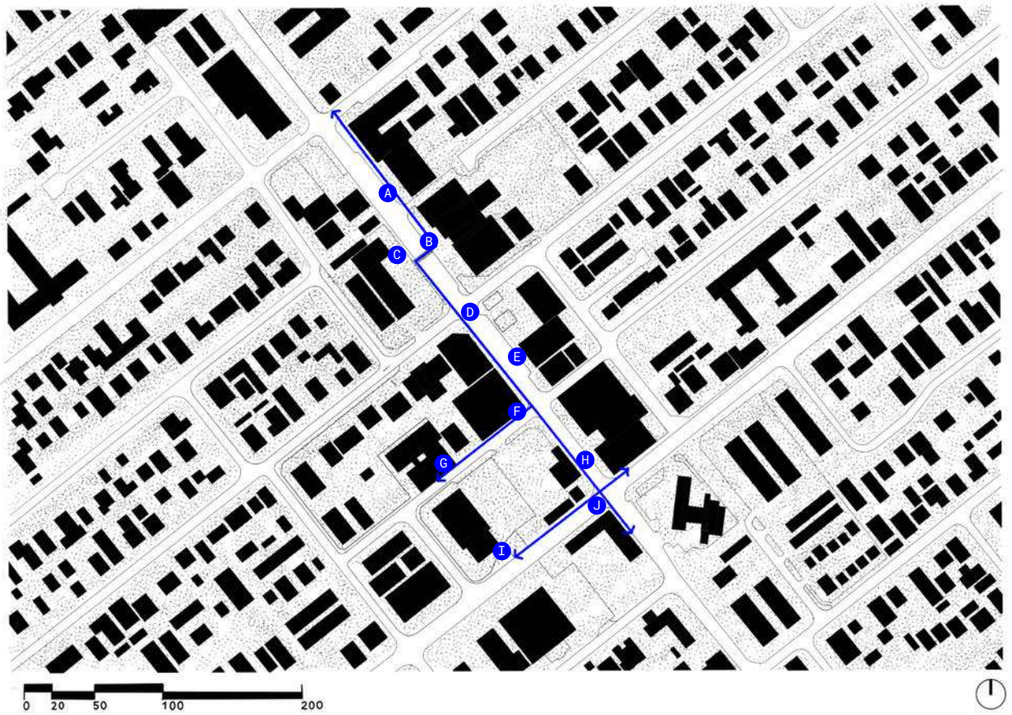


Fig. 15 (Author, 2023): Site 2, Busy Corner, Grassy Park with routes and points

WALKING-AND-DRAWING, EXERCISE 2: ANALYSIS OF IDENTIFIED 'POINT' ALONG ROUTE:

A Sidewalk surface emphasizes travel direction and entrances to stores (SANS 10400_S C.2.5.

B Kerb-cut (SANS 10400_S 4.4.3.7) at zebra crossing with tactile pavers

C Similar to B, leading to commercial stores

D Not every corner facilitates pedestrian crossings; no kerb-cut (SANS 10400_S 4.4.3.7)

E Similar to D, no crossing provided along route to police station and library

F Kerb-cut provided (SANS 10400_S 4.4.3.7) however no zebra stripes or indications for crossing

G Police station is accessible to wheel chairs but no notable efforts to accommodate BVI

H Side walk articulated toward library entrance (SANS 10400_S C.2.5.)

I Audible crossing at busy corner with articulated crossing surface

The site in Grassy Park, however, often lacked well-considered infrastructures, specifically around the public amenities in the area. The few cases of mobilising infrastructures and pedestrian surfaces occurred predominantly located around the street edges of commercial buildings (for example, the Spar and liquor store). However, while on site, the author noted more than one instance where community members stepped in to assist differently abled persons along their travels (including a person with visual impairment), where the infrastructures failed to enable them to navigate independently.

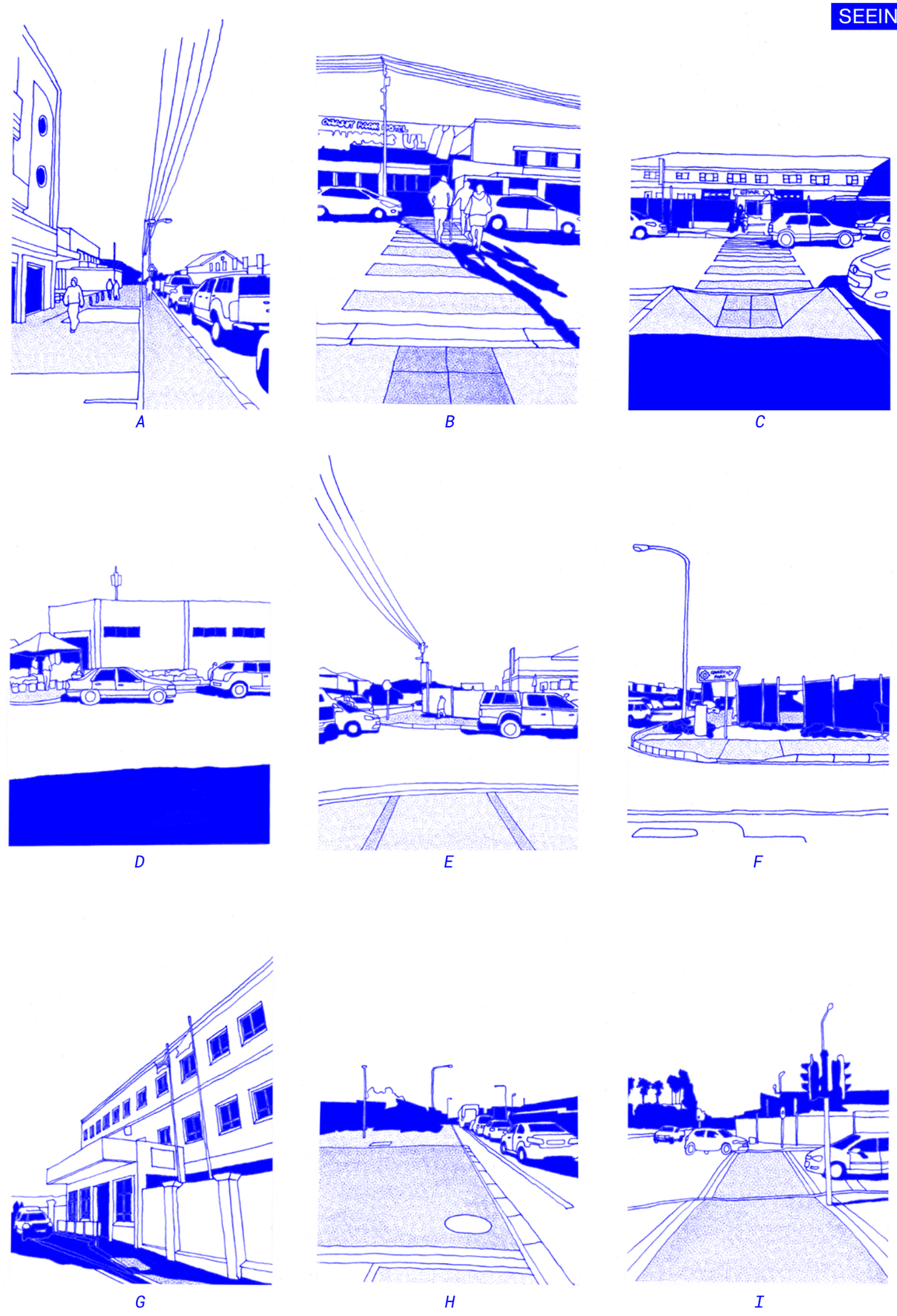


Fig. 16 (Author, 2023): Point Vignettes, Busy Corner

CONTEXTUALISING:
The city or the periphery?

According to the social model for disability, it is not a person's impairment that disables them, but the systems that create barriers to their social inclusion, in the built environment as well as in people's perception of difference. It appears that the built environment in Grassy Park lacks dignifying public infrastructures that embody an awareness of the needs of persons with impairment, to the same degree that its community already does. In contradiction, the city is well equipped, but lacking awareness. Therefore, the focus of the study shifts away from the centre - where public investments are abundant - to Grassy Park along the periphery of Cape Town, in proximity to the existing LOFOB Training Centre. The hope is that this project could meet the need of the Grassy Park community by introducing a dignified and enabling public space into the periphery, which could potentially welcome people from other parts of the city, and affect a greater change in the perception that impaired persons are not capable of engaging with society to the same degree as able-bodied people.

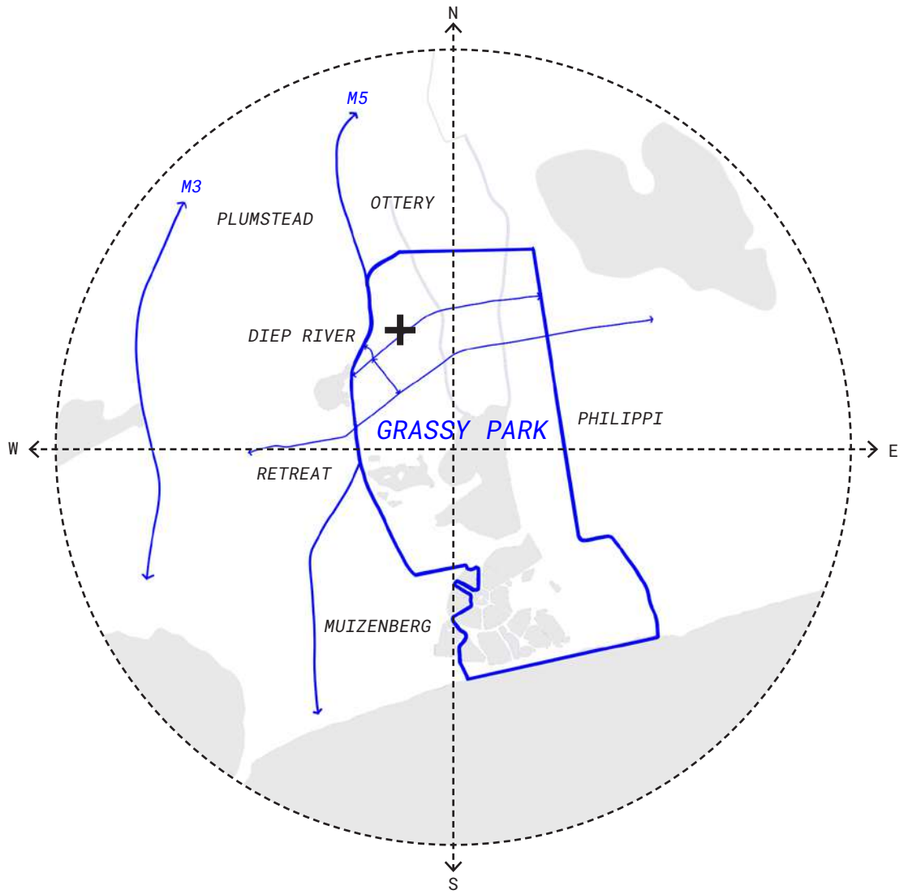


Fig. 17 (Author, 2023): Grassy Park location diagram

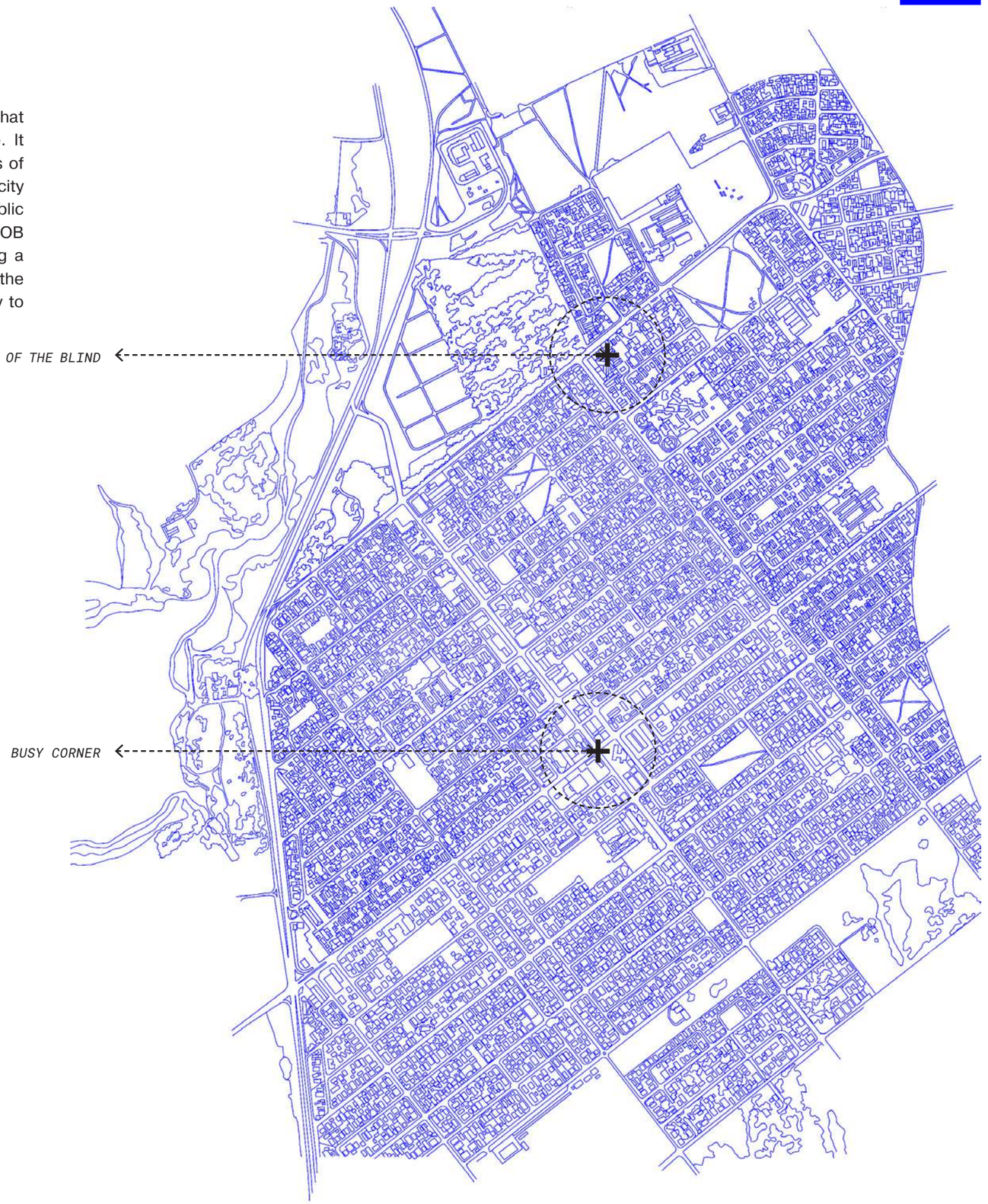


Fig. 18 (Author, 2023): Grassy Park context

CONTEXTUALISING:
Grassy Park

The suburb of Grassy Park sits on the western edge of the Cape Flats. It is separated from the Southern Suburbs by the M5 arterial highway, which runs from Milnerton in North to Muizenberg in the South, and connects to the city of Cape Town via interchanges with the N1 and N2. The suburb sits adjacent to the perennial wetland systems of Princess Vlei, Ronde Vlei and Zeekoei Vlei, and is cut off from its neighboring suburbs by a man-made channel, diverting excess water from the residential fabric.

Although the fabric consists primarily of low-density residential housing, public attractions are concentrated along the four primary arterial roads that run through the suburb. Victoria Road, 5th Avenue and Lake Road, houses the majority of the public, economic and religious activities in the suburb (most concentrated around Busy Corner, at the intersection of Victoria and 5th). Klip Road however structurally important to the suburb's circulation, finds itself slightly less activated, despite the great deal of city-owned facilities and welfare institutions situated along this stretch. These facilities – Klip Road Cemetery, the Cape of Good Hope SPCA and the LOFOB Training Centre – attribute to the attraction of visitors to the area that are not necessarily otherwise inclined to visit Grassy Park, however these visitors are thereafter not offered any reason to interact further with the suburb before returning to where they came from.

Some of the more notable places are highlighted below: Grassy Park Mosque (Sunni Masjid), at the corner of Victoria and Klip, which welcomes a large number of worshippers on religious occasions, the Busy Corner meat market on Victoria Road, the entrance of the Cape of Good Hope SPCA and the legendary and peculiar structure, whose elusive history remains a topic of debate among locals – perched on the large rock after which Klip Road is named.

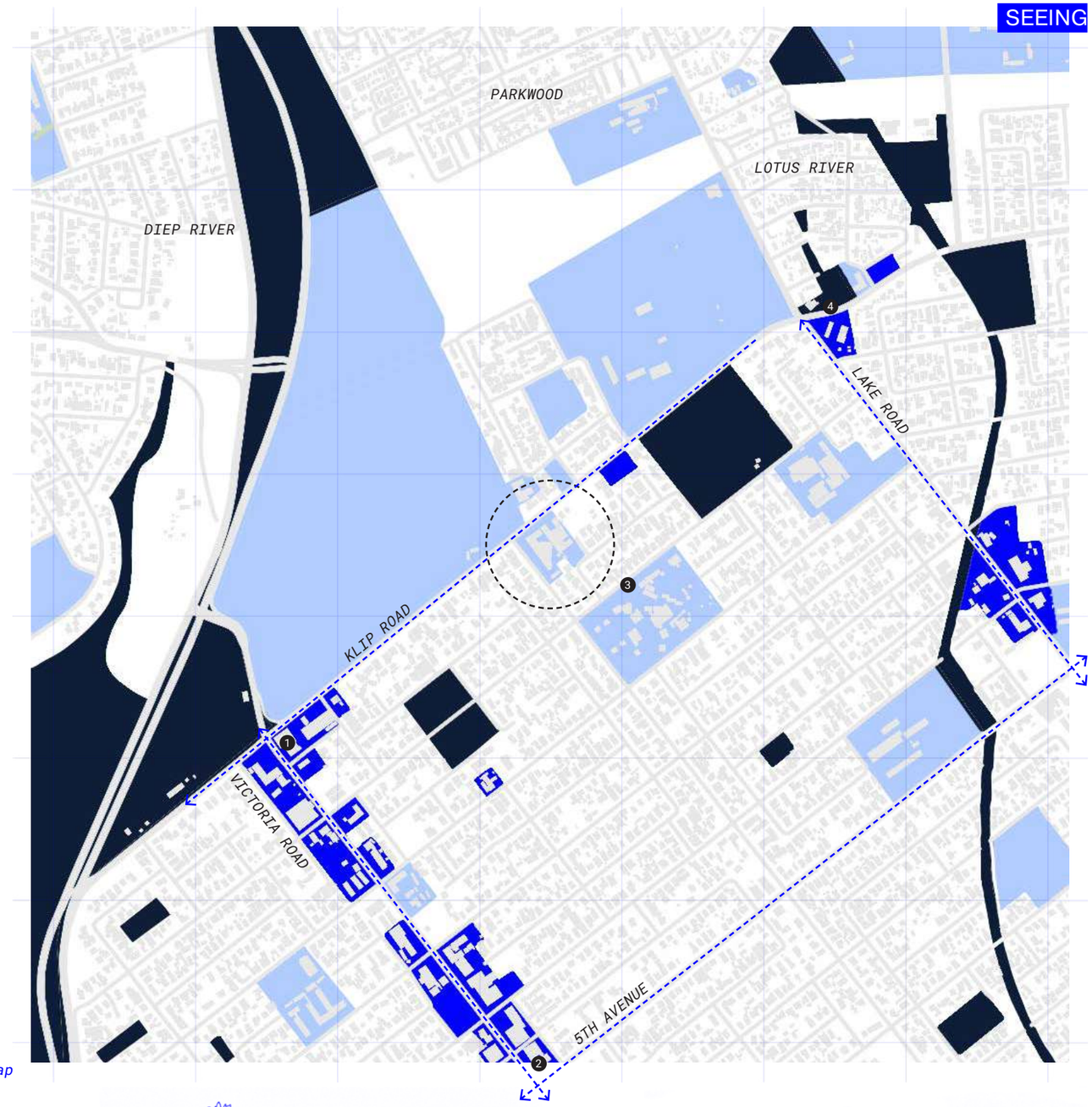


Fig. 19 (Author, 2023): Grassy Park map

Fig. 20 (Author, 2023): Grassy Park Mosque (Ahmedi Sunni Masjid)

Fig. 21 (Author, 2023): Busy Corner Meat Wholesalers

Fig. 22 (Author, 2023): Cape of Good Hope SPCA

Fig. 23 (Author, 2023): Acacia Suparette and 'The Klip'

CONTEXTUALISING:
Klip Road (M55)

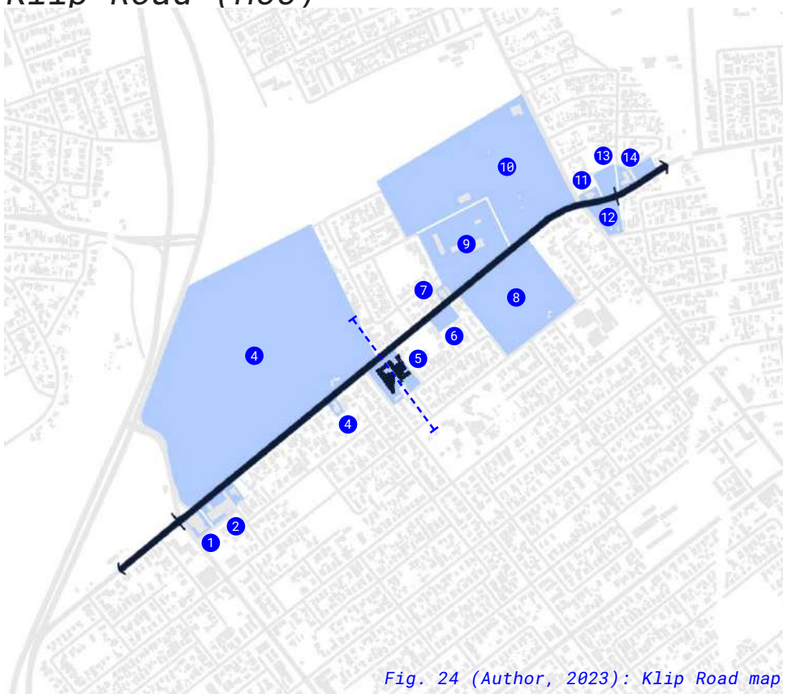


Fig. 24 (Author, 2023): Klip Road map

1 Klip Road Masjid
2 Caltex Petrol Station
3 Klip Road Cemetery
4 Spaza shop
5 LOFOB
6 Grocery store
7 Fish + Poultry store
8 Undeveloped Land
9 Fairmount Secondary
10 Fairmount Sports facility
11 Suparette
12 BP Petrol Station
13 Klip Road 'Ruins'
14 Lotus River Clinic

Klip Road, a significant east-west collector road in the area, extends from its intersections with the M5 in the west to Strandfontein Road in the east. Within Grassy Park, this approximately 1km section, centered around the LOFOB facility, hosts diverse activities.

The highest concentration of activities occurs at the junction with Victoria Road and the M5 offramp, where the Grassy Park Mosque and commercial establishments like a Caltex petrol station are located. These activities frequently extend into the street during the day, keeping it lively. On the north side of the road lies the Klip Road cemetery, which occupies nearly half of this stretch. Although the cemetery is busy on weekends, its activities are generally contained within its premises, apart from roadside parking. Moving eastwards, the fabric on the south side consists mainly of private residences, with occasional small-scale formal and informal trade interacting with the street edge. The LOFOB Training Centre, one of the most prominent structures on Klip Road, is fenced off with barbed wire. Along the final lengthy section leading to the Lake Road intersection, the street edge is deserted, with the Fairmount Secondary School fence on one side and a vast vacant property on the other.

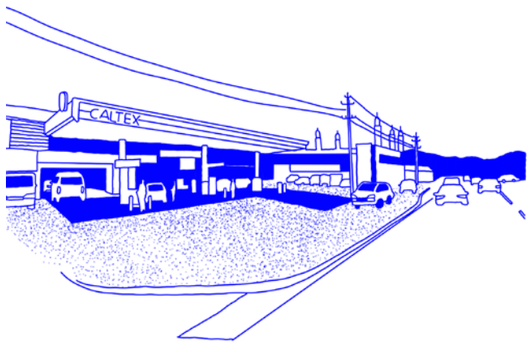


Fig. 25 (Author, 2023): Caltex + Masjid on Corner of Klip and Victoria Rd (1 + 2)

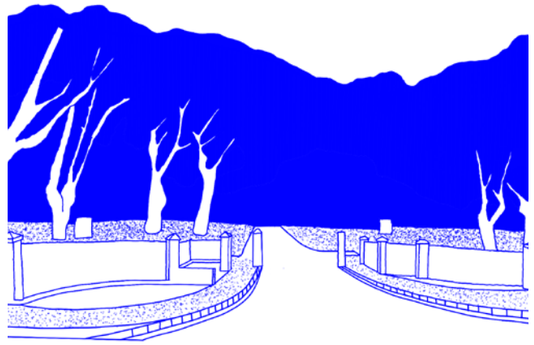


Fig. 26 (Author, 2023): Entrance to Klip Road Cemetery (3)

Fig. 27 (Author, 2023): Small scale, formal trading on street edge (4)

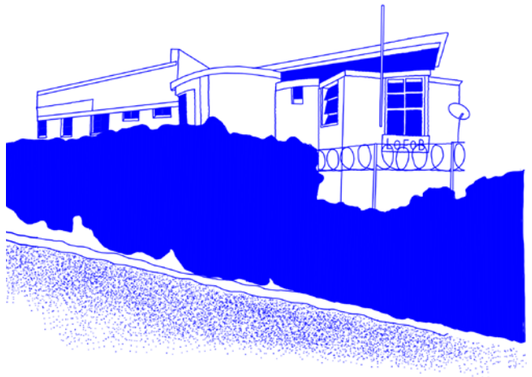


Fig. 28 (Author, 2023): LOFOB building (5)

Fig. 29 (Author, 2023): Fish and Poultry store with informal trading on street edge (7)

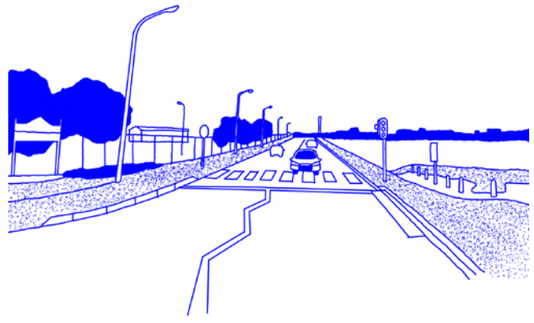


Fig. 30 (Author, 2023): Bounded property of Fairmount Secondary School (9) + large open lot (8)

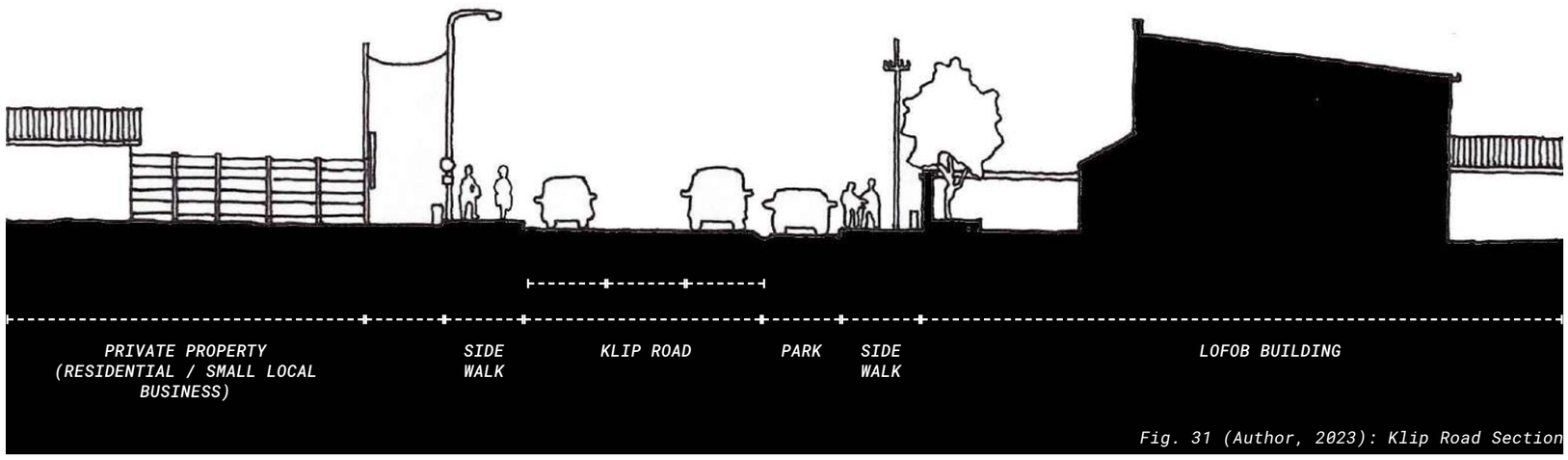


Fig. 31 (Author, 2023): Klip Road Section

CONTEXTUALISING:
League of Friends of the Blind

Due to its stature compared to the surrounding residential buildings, the LOFOB facility is a prominent figure at the corner of Klip Road and 1st Avenue. It can be accessed from either of these roads, with the pedestrian entrance opening to Klip Road, adjacent to the reception area and administrative offices. Along 1st Avenue, a vehicular access gate leads to the parking lot. Another pedestrian entrance is located along this edge, directly leading into the entrance of the building's rentable hall space. This space is often used for funeral 'after-tears' events, school examinations, or private functions.

Adjacent to the hall space are classrooms used for life skills development, and above them, on the first floor, there are staff office spaces in the east-facing wing. To the south of the offices, there is a large gym in the building, used by the clients, staff, and residents at LOFOB for fitness training. The on-site residence for clients is situated at ground level at the back of the property and opens up to the garden, which features a pool. The image below illustrates some of the specialized pedestrian infrastructures that has been erected along the street edge, which not only assists clients in arriving and departing safely from the facility, but is also used as part of independent mobility training,

1 Reception
2 Meeting rooms
3 Creche
4 Creche play area
5 Isaac Jacobs Hall entrance
6 Isaac Jacobs Hall amenity
7 Isaac Jacobs Hall
8 Skills classrooms
9 Offices + Gym
10 Residential eating hall
11 Residential dorms
12 Swimming pool
13 Parking area
14 Blind-friendly pedestrian crossing

Fig. 32 (Author, 2023): LOFOB Training Centre Roof Plan

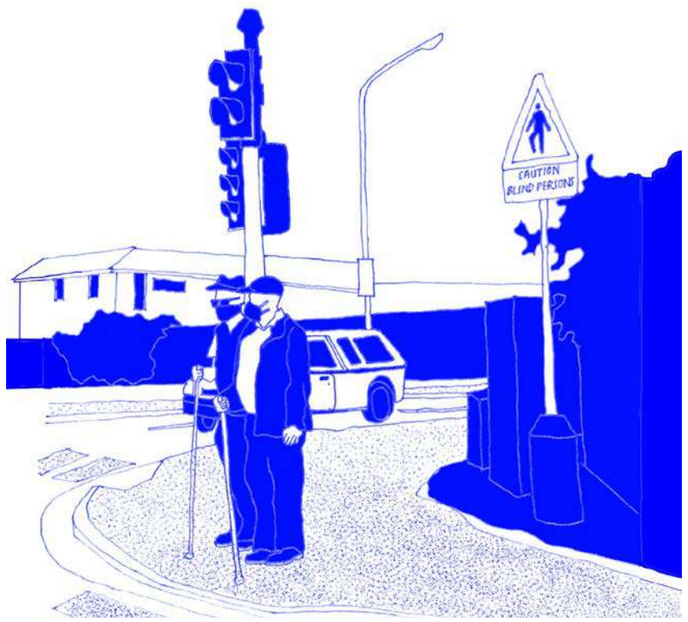


Fig. 33 (Author, 2023): Pedestrian crossing at Klip and 1st Road

Fig. 34 (Author, 2023): LOFOB Perspective

LEAGUE OF FRIENDS OF THE BLIND:
Interview data

Fig. 35 (League of Friends of The Blind, No Date): LOFOB Training Centre Image

Respondent introductions:

The panel of respondents comprised of three individuals with differing roles and relationships to the organization. The first respondent, Mrs. Benita Peterson, began her journey with LOFOB in 1998 as a trained occupational therapist, working within the Early Childhood Development and Independence Development departments. Over the years, she has risen to the position of manager of Youth and Adult Services at the organization. As a sighted, experienced professional with 25 years of tenure at LOFOB, Mrs. Peterson's contributions to the research are invaluable, particularly regarding the organization itself and the needs of its clients and staff members in relation to its operation and values.

The other respondents, who are blind and visually impaired themselves, offer critical insights into the lived experience of sight-impaired individuals. The first of these respondents, Mr. Tsheko Tlou, lost his vision as an adult while living in Soweto. After becoming blind, he isolated himself from the outside world and refrained from leaving his home for nine months. However, he eventually decided to venture out to the nearest shop as a first attempt at navigating the city without sight, but unfortunately collided with a slow-moving vehicle soon after leaving his property (thankfully, without injury). Feeling more despaired than ever, Mr. Tlou reached out to a local radio station to share his story and seek guidance on how to move forward. A listener referred him to LOFOB, and he soon became a client of the organization, residing at their on-site facility where he began rebuilding his life. Now, an independent and confident sight-impaired person, Mr. Tlou is completing a course on mobility training offered by the organization, with the intention of using his skills to help others adjust to a life without sight.

The final respondent, who chose to remain anonymous, shared that they lost their vision at a very early age. Their journey with LOFOB began when they joined the pre-school program offered by the organization. Throughout their youth and early adulthood, they were a client of the organization, and in 2018, they were employed as a facilitator, where they live out their passion as a helping hand, assisting others in learning braille and other critical skills that enhance their independence.

LOFOB PIPELINE:

Arrival at the organisation

Referrals received from:

1 Medical centres across Western Cape (primarly public)
2 Other blindness associations
3 Schools
4 Family members or individuals

Children + Youth

Early Childhood Development programme

0-3 **At home programmes to support parents**
3-6 **Pre-school programme:**
- i. In-house programme at LOFOB training centre
- ii. Individual community pre-schools (Providing support programmes to teachers and parents

6-18 **Formal schooling**
- i. School for blind and visually impaired (Athlone, Pinelands or Worcester): LOFOB assumes a distant role
- ii. Mainstream schooling : LOFOB maintains a direct role in supporting the individual, their teachers and parents

Adults

(Programme depends on the diagnosis and circumstances of individual client)

i **Newly blinded individuals:**
Rehabilitation, psycho-social adjustments, support groups, counciling, mentorships

ii **Independence development:**
Skills learning, mobility and orientation training, braille literature

iii **Adult learning and education:**
Supporting clients in completing their education (matric certification, diplomas or degrees)

iv **Readiness programme:**
'Life after LOFOB' six week programme for employment readiness and additional training

People of the organisation

Clients

Although the age range of the clients is quite vast, the majority of the clients are young - not only children, but young adults who have recently become blinded or visually impaired (often as a result of violence and trauma, unfortunately)

75 active clients, in total
15 pre-school students
12 permanent residents
temporary residents:
individuals who live far and travel back home during breaks between terms or individuals who reside in the residences throughout the weeks and return home over weekends

Note that there are also many inactive clients: persons in surrounding areas of Grassy Park, Parkwood, Lotus River and Retreat that do not visit the training centre often, other than for attending events and ceremonies.

Staff

The organisation, despite the enormous range of services that they offer, is supported by a rather small staff. The staff is comprised of:

Director
Coordination management + administrative staff
Social worker
Occupational therapist
Mobility officer
Braille instructor
ECD teacher and teching assistant
Drivers
Domestic support staff

Social integration through the organisation:

Mobility + orientation and integration:

From the interviews with the respondents, it is evident that social isolation could be a symptom of vision loss, to a certain degree. There are multiple potential reasons for this: the spatial and perceptible inaccessibility of the urban system, the scarcity of inclusive and accessible activities in our city, and ultimately, concerns for their own safety. However, the more capable and confident the person feels in their abilities to travel independently, the more likely they are to participate in social activities. Orientation and mobility training is, therefore, a critical aspect of a person's adjustment to life with vision loss and, therefore, it is no surprise that it is one of the primary services offered by LOFOB to both their younger and adult clients.

The mobility and orientation training programme is one of the few of the organisation that require the clients to move outside of the bounds of the training centre, and into the streets beyond. Depending on the individual client, their diagnosis, abilities and confidence level, they are guided along different routes toward certain destinations in order to simulate potential circumstances that they might face when navigating their own communities. This route starts at the intersection of Klip and 1st Road, and ends, in the case of a very confident and capable client, at Busy Corner which is more than a kilometer from the training centre.

Many clients, specifically those that reside either on the premise or in the surrounding areas, are confident enough to travel independently; making their way toward Busy Corner to access the community clinic, banks, police station, library or public transport. However, this is not the case for everyone. Although Mr Tlou is completely confortable in navigating the Grassy Park area independently, often even taking advantage of the public transport systems to travel to various locations within the city, our other respondent admits that they are more cautious of traveling without accompaniment, and prefers making use of applications such as Uber to visit destinations outside of the LOFOB premise.

It is apparent, from both the interviews and previous empirical studies, that most of the activities that might attract the clients and staff of the organisation are concentrated along Victoria Road toward Busy Corner, with limited recreational opportunities within a closer radius of the training centre. This disproportionate distribution of activity prevents the clients that are less confident in their abilities to navigate the urban system independently from engaging with the community, therefore contributing to their exclusion from social participation.

It is also emphasized that no one person has the same needs as another, especially in relation to vision impairment. Not only do different visually impaired persons perceive varying amounts of light, which may contribute to their ability to orient themselves, but people also vary in which mobility aids (if any) they prefer, and how they utilize them (Wayfindr, 2018: 23-30). In the interviews, the respondents shed light on the different techniques they prefer to navigate their environment but made it clear that a comprehensive design would account for all the different techniques that a person may rely on to orient and mobilise themselves.

Although not every person relies on a mobility device, long cane techniques become a crucial part of orientation and mobility training. The cane, depending on the technique that the person practices, contributes to the tactile and audible perception of the direct environment. Firstly, a person could either employ a constant contact or two-point touch technique (see fig. 37). A constant contact technique implies that the cane does not leave the surface of the ground while the person arcs the cane from left to right in order to detect any obstacles, barriers or change in incline and surface material (Wayfindr, 2018:23-30). In contrast, the cane is lifted from the ground in the application of the two-point touch technique, where the person only taps it to the floor surface at the ends of the arc in order to receive 'audio feedback' (Wayfindr, 2018: 23-30) on their environment.

Fig. 36 (League of Friends of the Blind, no date): Mobility and orientation training

Either of these could be utilised when practicing shorelining, which is a technique that allows a person to 'maintain a specific orientation while travelling through environments to arrive at a decision-making point' (Wayfindr, 2018:23-30) by following the edge between two different surface materials. Depending on the preference of the person, they could either follow an inner shoreline (at the edge of the floor and wall [see fig. 39]) or an outer shoreline (at the edge of the kerb and the pavement [see fig 38]) according to Wayfindr (2018: 23-30).

Contradictory to shorelining, where tactile feedback is received through the long cane from the ground surface, guiding the person along their desired route, trailing (see fig. 40) is a tactile technique where a person drags their hand along the surface of a wall in order to guide them in their desired direction (Wayfindr, 2018: 23-30). This technique, however, is less likely to be practiced in a public or unfamiliar place. It is critical for the spatial design of this project to consider and accommodate for these different techniques while keeping in mind that they are not necessarily sufficient in comprehensively addressing the needs of all visually impaired persons.

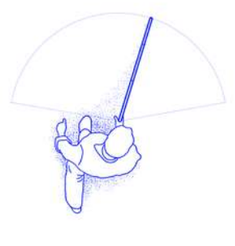


Fig. 37 (Author, 2023): Constant touch and two-point touch

Fig. 38 (Author, 2023): Outer shorelining

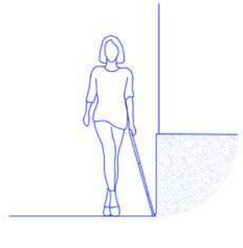


Fig. 39 (Author, 2023): Inner shorelining

Fig. 40 (Author, 2023): Trailing

Employability and integration:

Another imperative of the organisation is to ensure the employment readiness of their clients by providing them with the necessary skills and support systems to enter the workplace. Unemployment among visually impaired persons is alarmingly high despite the relatively high employability of persons with sight impairments, attributing to their social exclusion and isolation from society (Statistics South Africa, 2011).

"When you are facing povery and unemployment, your struggles become compounded when you or a member of your family has a disability like visual impairment."
Benita Peterson

Other imperatives of the organisation:

Educating willing individuals or groups on blindness and visual impairment, Working towards preventing blindness, Raising awareness to the cause:

Through initiatives like their Blind Buddy Campaign, the organisation spreads awareness on blindness prevention and its impact on the lives of children affected by it. Through hosting various events, like Blind Buddy Day, the Blind Buddies Ball and the Blind Buddies Run, the campaign aids in raising funds for the LOFOB pre-school and ECD programme, while simultaneously cultivating empathy and understanding among sighted persons.

Further, LOFOB undertakes bi-annual outreach programmes where they make their knowledge and resources available to rural areas around the Western Cape in order to assist in prevention and rehabilitation of blindness and visual impairment (LOFOB, no date).

THEORETICAL + TECHNOLOGICAL FRAMEWORK:

LITERATURE OVERVIEW:

In light of the inquiry, the key literatures selected to drive the research range in their explicit relation to the topic of sight impairments. Rather, sources were selected in response to the key concepts at hand: urban networks, social integration and spatial barriers. The intention of this research is not to address visual impairment through an architecture of care, but rather an architecture of dignity. Instead of a focus on designing well-considered institutions for persons with sight impairments, the intention is to respond to - and overcome - the architectural and urban barriers that disable this community, through design.

The selected sources aim to touch on the practicalities of designing for social inclusion across the urban, architectural and human scales, and doing so without relying exclusively on the visual sense. At the one end of the spectrum, A Pattern Language was selected, not only for its human-centered design strategies, but as an example of an approach to address a prevalent problem in cities through curating a 'pattern'. The following sources lend themselves to design which stretches beyond building, into the public realm, in a manner which increases a city's capacity for social interaction (including a contextually relevant example, situated in the city of Cape Town). At the end of the spectrum, the literature leans more to the specificities of designing for persons with sight impairments. The Eyes of the Skin is illustrative of how spatial perception is strengthened when the non-visual senses are addressed in architecture. Universal Design, more explicitly addresses the concept of enabling design, which does not only benefit differently abled persons, but all human beings in their interactions with the physical realm.

PATTERN BUILDING:

With reference to the conceptual and methodological framework A Pattern Language (Alexander, Ishikawa and Silverstein, 1977), this research aims to initiate the development of a collection of spatial design 'patterns' for the social integration of blind and visually impaired persons. These 'patterns' could be likened to design principles which aim to address a specific design problem, and provide a scalable solution that can be replicated and adapted to a broad range of project-specific scenarios and conditions. Similarly, the intention here is to create an assemblage of principles that are aimed towards creating spaces that facilitate social integration with a specific focus on the inclusion of persons with sight impairments – drawing these principles and technological approaches from qualitative research, theoretical discourse and strategies derived from relevant case studies. The objective is to assemble a set of principles that guide the creation of spaces facilitating social integration, with a particular emphasis on the inclusion of individuals with visual impairments. These principles and technological approaches are derived from qualitative research, theoretical discourse, and practical strategies extracted from relevant case studies.

The intention is for these patterns to extend beyond the scope of this dissertation, serving as a valuable resource for future spatial design projects and fostering a continuum of work aimed at addressing spatial barriers to social participation from the perspective of blind and visually impaired communities. It is important to note that a pattern is an evolving entity that should continually be refined and developed in response to feedback, additional insights, and changing contexts (Alexander, Ishikawa and Silverstein, 1977).

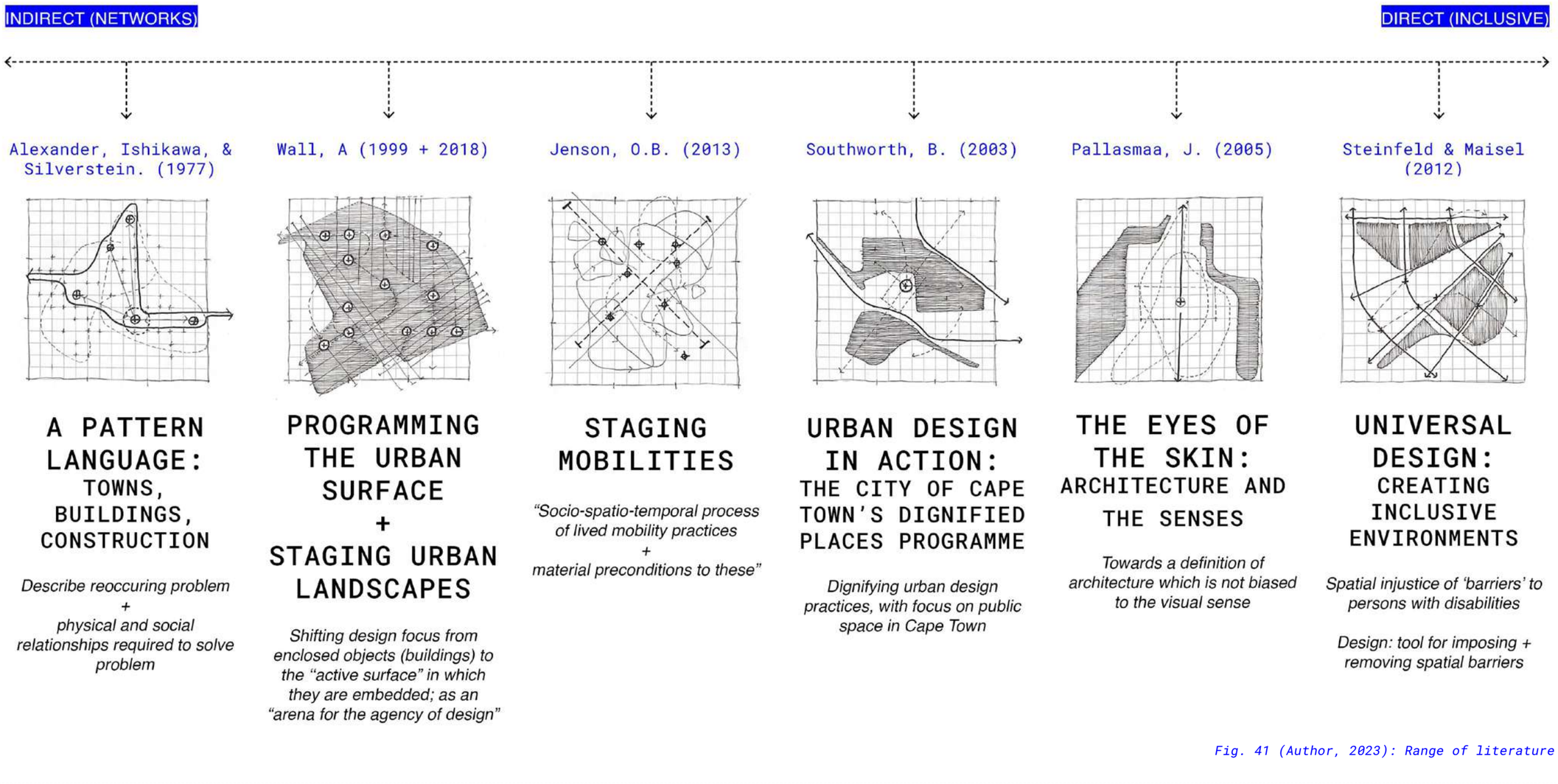


Fig. 41 (Author, 2023): Range of literature sources diagram

THEORETICAL + TECHNOLOGICAL FRAMEWORK:
1. PATTERNS FOR SOCIAL INTEGRATION

The spatiality of social integration:

The unequal conditions in South African cities vividly illustrate the relationship between justice and spatial practices. The citizens of Cape Town continue to suffer from the consequences of the Apartheid government's 'core-periphery spatial structures of privilege' (Southworth, 2003), which resulted in a sprawled and segmented city. These conditions are exacerbated by increasing privatization and structures of inaccessibility, leading to an unequal distribution of social and economic opportunities and privileges (Wolff, 2018).

Adopting a 'critical spatial perspective' (Soja, 2009) based on the spatial theories of philosopher Henri Lefebvre allows us to reflect on the 'urban externalities', or the unforeseen social consequences of urban formations (Wolff, 2018), that spatial practices have on our cities. This perspective can guide practitioners towards impactful spatial interventions that address and challenge the inherent inequities embedded in the spatial structure of our cities (Steinfeld and Maisel, 2012). Spatial practice has the capacity to both perpetuate and address these inherently social issues of 'inequality, fragmentation, and environmental degradation' (Southworth, 2003).

However, according to Harvey (2003), our cities are constructed – not only from the spatial interventions of architectural and urban practitioners – but by social, political and economic interactions of its citizens. In essence, the social consequence of our existing urban conditions is that in inhibits equitable social participation, which compromises the capacity of certain individuals and collectives to exercise their right to the city, and contribute to its social construction. Thus, without the integration of the marginalised communities in the social engagements that create our cities, the city would not be constructed to cater for their inclusion (Harvey, 2003).

Therefore, in pursuit of a 'qualitatively different kind of urban sociality' (Harvey, 2003), it is critical that spatial practice is aimed at increasing the capacity of the built environment – specifically in neglected urban sites – to support and sustain the social participation of marginalised people (Southworth, 2003).

The binary of the contained and connecting:

Pallasmaa (2005: 11), states that the primary imperative of architecture is both accommodation and integration, referring to this capacity of spatial design to contain and connect. Accordingly, we can deduct that our cities are composed of places and networks; static buildings and bounded sites, and the mobility networks that facilitate the movement between them (Jenson, 2013: 35). This duality can be understood in terms of Kevin Lynch's concepts 'enclave' (nodes) and 'armature' (line), or more simply put, the buildings and residual space, including (but not limited to) circulation networks of a city (Jenson, 2013: 35).

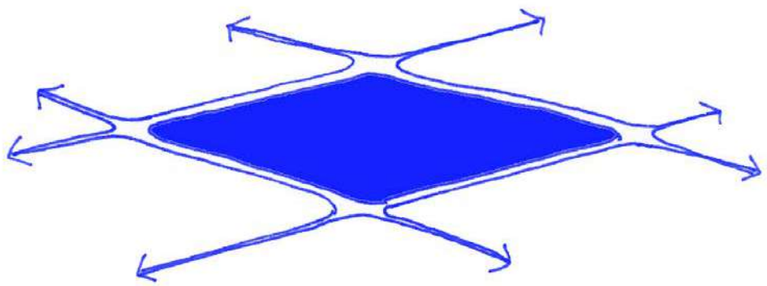


Fig. 42 (Author, 2023): Contained and connecting diagram

PLACES <----------> NETWORKS

STASIS <----------> MOVEMENT

ASSET <----------> ACCESS

According to Jenson, the distinction between these concepts has, in the past, assigned a hegemonic dominance to 'enclaves' over 'armatures' (2013: 37). Spatial design has tended to neglect the latter; producing representational objects that project their social meaning through their stylization (Wall, 1999). For this reason, our understanding of urbanity has revolved around these 'enclaves', but in the globalised world, our contemporary cities cannot be comprehensively understood as a collection of fixed and static objects. By omitting the dynamic flows of people, information and goods from this understanding, one cannot fully grasp the complexity of the social processes that constitute contemporary urban life (Jenson, 2013: 30). It therefore becomes necessary to challenge this hierarchy of understanding, and through the critical interrogation of the degree of connection or disconnection that exists between 'relevant empirical entities', foreground the systems that construct the social and spatial order of a city (Jenson, 2013: 37).

In the case of South Africa, our cities have been – and continue to – develop as a collection of concentric neighbourhoods (see fig. 43), where 'armatures', rather than establishing connection among these neighbourhoods, act as the divisive boundaries further attributing to urban fragmentation (Southworth, 2003). This is evident in the city of Cape Town, where the freeways barricade the lower income, sprawling neighbourhoods on the Cape Flats from the leafy suburbs and city centre around the base of Table Mountain. This segmentation is aggravated by a restriction on east-west mobilities, preventing the integration of the area with the rest of the city.

From this, it is clear that the connective dimension, or the 'armatures', has been neglected; resulting in a built environment which fails to actively engage with its urban surrounds and enable social mobilisation (Southworth, 2003). When the dialectic relationship between both the contained and connecting dimensions is foregrounded in spatial planning and design, an alternative conception of the 'urban surface' is unlocked, evoking an 'arena for the agency of design' (Wall, 2018).

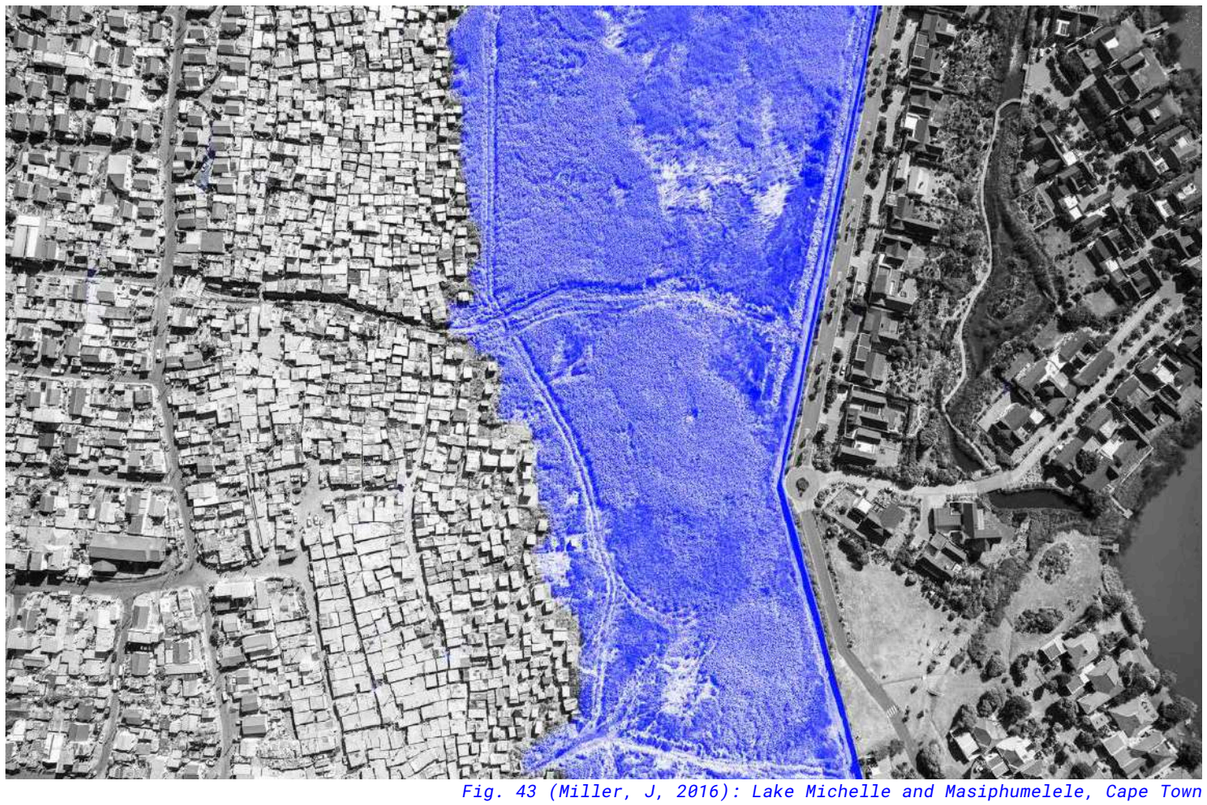


Fig. 43 (Miller, J, 2016): Lake Michelle and Masiphumelele, Cape Town

THEORETICAL + TECHNOLOGICAL FRAMEWORK:
1. PATTERNS FOR SOCIAL INTEGRATION

The 'critical surface':

Alex Wall's framing of the 'urban surface' reconstitutes the traditional perception of the ground surface and depicts a comprehensive and continuous 'field' to which both 'armatures' and 'enclaves' belong. The urban surface is the medium within which these static objects and dynamic processes are organised, staging the conditions for the fixed and flexible social activities of its inhabitants (Wall, 1999). The surface, therefore, presents the opportunity for spatial design to demonstrate its capacity as an enabler and facilitator of this social activity, by responsively and pre-emptively constructing the material conditions for social interaction (Wall, 1999). In this understanding, objects and spaces do not merely act as the backdrop to the social life of a city, but an integral part of it (Jenson, 2013: 46), imparting a degree of social agency to the disciplines of spatial design (Wall, 1999). According to Wall, it should be the imperative of designers to enhance the ability of the urban surface to accommodate and expand a diverse range of activities over time. This necessitates the extension its continuity and broadening of the scope of services it offers (Wall, 1999).

The ground-plane, when designed in this manner, becomes the field within which spatial design can foster social interaction and integration, acting as a 'collector and distributor' of social life (Wall, 1999). Programming social activities into the surface and staging the necessary material and temporal conditions to facilitate them are critical aspects of its activation. The process of crafting these 'mobile situations' (Jenson, 2013: 7) stimulates social participation, interaction, and exchange (Wall, 1999). However, the success of this approach relies on the density and diversity of activities it is able to accommodate. Therefore, it is crucial to articulate and modify the surface in a way that allows for adaptability, flexibility, and scalability, enabling its usefulness across a broader spectrum of people, activities, and situations (Wall, 1999). Furthermore, the surface is an expansive element, awarding it the ability to 'connect disparate fragments' of our urban landscapes (Wall, 1999). With this perspective, the surface becomes the integrative system through which we can address the fragmented condition of our cities. As a programmed and activated social field, a new network of mobilities and relationships is layered onto the urban partitions and segmented landscapes (Wall, 1999).

"It effectively integrates parts of the city, reduces the marginalization and segregation of certain social groups, and stimulates new forms of interaction." (Wall, 1999).

In the text 'Programming the Urban Surface', Wall delineates six strategies for the design of the urban surface (1999), that serve as valuable design strategies in the context of this inquiry; forming part of the 'pattern' for social integration:

A city for the collective:

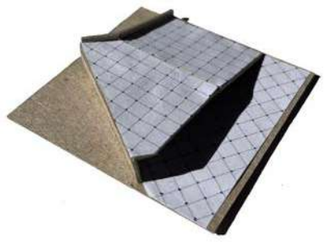
The urban surface, despite being a site for mobilities, possesses the potential to transform into a 'collective space' (Wall, 1999). According to Jenson, in the contemporary city, these 'armatures' serve as socially significant spaces for 'interaction and meaning' (2013: 68). This perspective illustrates how the 'armature' becomes public space and, conversely, how public space functions as an 'armature' within the city. Therefore, it becomes a 'legitimate and integrative component' of the urban surface (Southworth, 2003).

The public spaces in the city of Cape Town, particularly on its peripheries, have been subjected to neglect, resulting in undignified and underutilised 'public' sites scattered throughout the urban fabric (Southworth, 2003). In the past, spatial development of the city did not prioritize the improvement of its public spaces, underestimating their social value to urban life (Southworth, 2003). However, Southworth argues that as the primary sites for social engagement, invoking 'a sense of place, belonging, and orientation,' they cannot be ignored if the city aims to address its fragmented urban conditions (2003). Furthermore, improving these public spaces positively contributes to social conditions by facilitating social participation and fostering 'social coherence, empathy, and resilience' (Wall, 2018).

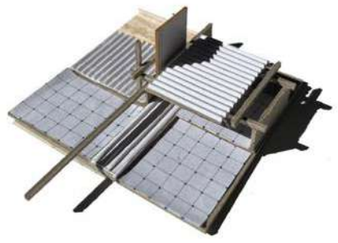
By integrating the concept of the urban surface with that of 'collective space,' a transformative and dynamic conception of the public realm emerges, where it evolves into an extensive network of social activity within the urban fabric of a city (Wall, 2018). In this context, the inhabitants are mobilised to participate in economic, political, and social information exchanges, asserting their right to the city (Harvey, 2003). Public space assumes the role of an agent for addressing urban segmentation, inserting itself at an 'interface between different communities or fragmented activities' (Southworth, 2003).

As part of the research-for-design process, this notion critically contributes to the author's approach to the siting and programming of the project. The urban design strategy of this project takes on a catalytic response rather than a comprehensive one (Southworth, 2003), drawing strong reference to the Dignified Places Programme. It views the urban aspect of this project as an 'armature' that is subject to reinterpretation, appropriation, and extension in accordance with its inhabitants' needs and desires (Southworth, 2003).

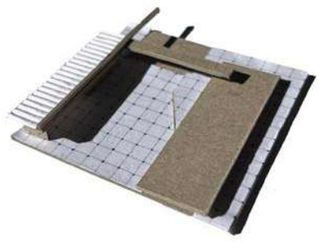
1. Thickening:
'Layering onto the surface a variety of functional usages' (Wall, 1999)



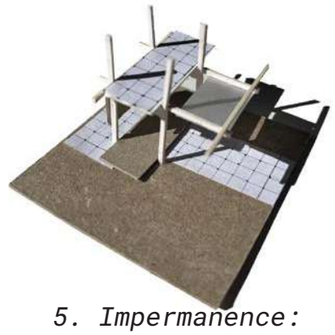
2. Folding:
'Establishing a continuous dialogue between exterior and interior spaces' (Wall, 1999)



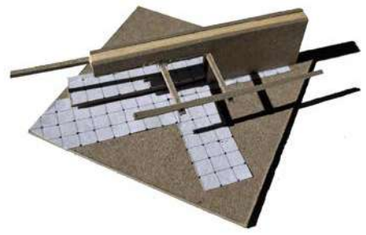
3. New Materials:
'Elicits new activities and functions' (Wall, 1999)



4. Non-programmed use:
'Spatial and functional appropriation facilitated by service infrastructures' (Wall, 1999)



5. Impermanence:
'Affording the accommodation of unforeseen activities' (Wall, 1999)



6. Movement
'Constructing the conditions for mobilisation' (Wall, 1999)

Fig. 44 (Author, 2023): Theory Maquettes, Programming the Urban Surface

THEORETICAL + TECHNOLOGICAL FRAMEWORK:

1. PATTERNS FOR SOCIAL INTEGRATION

Architecture as social infrastructure:

Despite the literature's occupation with the urban surface, the focus of this inquiry returns to the architectural scale, by questioning the extent to which 'buildings' within this 'connective matrix' (Wall, 1999) could support and attribute to the functioning of its urban counterpart. In the reading of the text 'Programming the Urban Surface' (Wall, 1999), much of the design strategies set out for the urban surface could apply to the design of architectural spaces as well. Terms such as rebuilding, connecting, intensifying, incorporating – describing both the physical qualities and the 'programmatic function' of an urban case (Wall, 1999) – are also relevant strategies for architectural design, that would presumably elicit similar consequences.

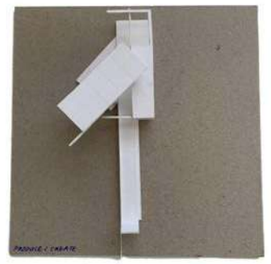
In order to test this, the author embarked on an exercise in which each of the terms above was examined as a spatial and architectural model, with the intention of assimilating the same 'enabling' effects as achieved by the urban project in the text. The models were assembled in three stages: the existing spatial condition, the architectural intervention and the affect on the urban surface.

This exercise tested the ability of architecture to 'unfold new urban realities'; becoming the supporting infrastructures to the urban surface. Whereas in Wall's Programming the Urban Surface the surface becomes the medium within which buildings are organised and accommodated, the exercise intends to shift this passive perception of architectural entities, rather awarding architecture the agency to structure, articulate and modify the urban surface (by means of contributing spatial definition and edge conditions) with the intention of strengthening its capacity to support social life. Hereby, we establish a nonhierarchic dialect between 'armature' and 'enclave', where both parties equitably and actively contribute to the social capacity of 'collective space' (Wall, 1999).

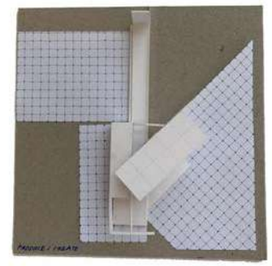
Another important offering that the introduction architectural entities present to urban surface, is its influence on the speed with which human subjects move through urban space. Architectural entities act as 'sites of friction'; reducing or halting the pace of the urban goer (Jenson, 2013: 37). Without this opposition to the constant flux of the urban surface, the social assemblage of people would not occur; limiting opportunities for social interaction and participation.

> 'A building is not an end in itself; it frames, articulates, structures, gives significance, relates, separates and unites, facilitates and prohibits' (Pallasmaa, 2005: 63)

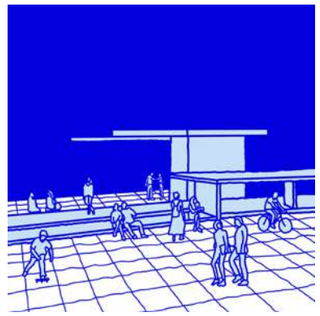
Rebuilding: existing condition



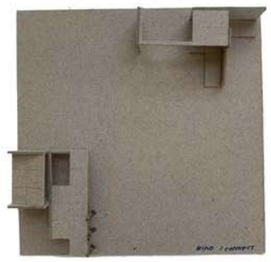
Rebuilding: architectural intervention



Rebuilding: resulting urban surface



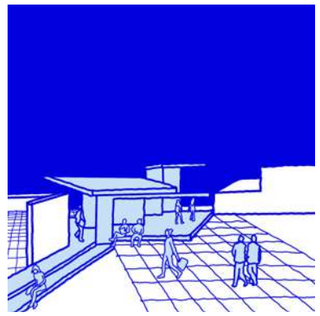
Rebuilding: inhabited



Connecting: existing condition

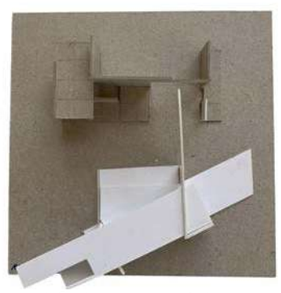
Connecting: architectural intervention

Connecting: resulting urban surface

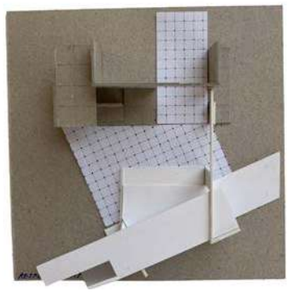


Connecting: inhabited

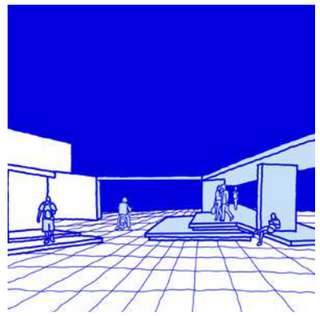
Intensifying: existing condition



Intensifying: architectural intervention

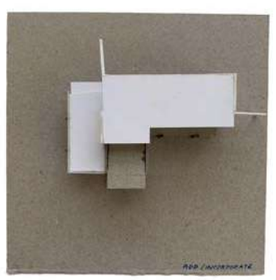


Intensifying: resulting urban surface

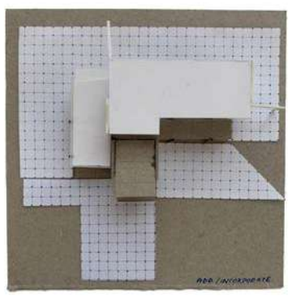


Intensifying: inhabited

Incorporating: existing condition



Incorporating: architectural intervention



Incorporating: resulting urban surface

Incorporating: inhabited

Fig. 45 (Author, 2023): Theory Maquettes, Architecture and the Urban Surface

THEORETICAL + TECHNOLOGICAL FRAMEWORK:
2. PATTERNS FOR INTEGRATION OF B+VI

Social integration for every[body]:

Designing for social integration implies supporting existing social structures while also facilitating the inclusion of specific minority groups. In the case of this project, the accommodation of differently abled persons, with a specific focus on the blind and visually impaired, takes precedence in the design imperative. However, it is crucial that the value and benefits of these accommodations are extended to everyone. If the design does not benefit society as a whole, it perpetuates the social isolation of persons with disabilities rather than working to overcome it. The concept of 'universal design' is proposed as an approach that addresses this limitation, defined as design for 'human diversity, social inclusion, and equality' (Steinfeld and Maisel, 2012: 28). The approach links together the notion of human-centered design and the social goals associated with human rights movements (Steinfeld and Maisel, 2012: 35).

Designing for social participation is a crucial aspect of universal design, aiming to achieve social integration, personalization, and cultural appropriateness (Steinfeld and Maisel, 2012: 162). According to Steinfeld and Maisel (2012: 163), this objective can be realized through design strategies that prioritize interpersonal interactions and enhance resource accessibility. These strategies include supporting human performance by considering factors such as anthropometry, biomechanics, perception, and cognition. They also involve utilizing a 'spatial proximity' and 'ringlike' (Alexander, 1988) spatial syntax, as well as employing 'sociopetal' arrangements that foster and facilitate interactions. Additionally, these design strategies consider the provision of and transitions between private, semi-public, and public spaces, while ensuring the dignified experience of inhabitants (Steinfeld and Maisel, 2012: 183-185). These spaces for social integration should encourage the participation of a larger and more diverse range of individuals while simultaneously accommodating individual differences (Steinfeld and Maisel, 2012: 166).

"Universal design is a process that enables and empowers a diverse population by improving human performance, health and wellness and social participation."

(Steinfeld and Maisel, 2012: 29)

Spatial perception and the body/mind:

A crucial aspect of universal spatial design, as previously mentioned, is 'human performance,' which encompasses perception and the processing of relevant data collected from our environment through our senses (Steinfeld and Maisel, 2012: 108). It is not solely the physical space itself but rather the perception of it that determines its value to society. Therefore, it is essential for designers to consider how the space will be perceived by its inhabitants. This becomes particularly crucial in universal design, as perception varies among individuals, especially those with sensory impairments. Spatial barriers are imposed through the limitation of physical access, as well as perceptible access, to the built environment (Steinfeld and Maisel, 2012: 108-110). Hence, it is imperative to design spaces that enhance perceptibility. To achieve this, it is necessary to understand how space is perceived by the body and mind.

Our senses actively seek out information from our surroundings, enabling us to gauge the qualities of 'space, matter, and scale' (Pallasmaa, 2005: 41). In spatial design disciplines, there is often a bias toward catering primarily to the visual sense, suppressing the other senses and creating objects solely for visual appeal. Pallasmaa argues that this 'ocularcentrism' (2005: 19) and the resulting 'fragmentation of the complexity of the perceptual system' (2005: 39) leave inhabitants of such spaces feeling detached and isolated, experiencing a sense of 'exteriority' (2005: 19). It is important to note that if this feeling of exteriority is experienced by a sighted inhabitant, a person with compromised vision—who would have even less perceptual access to the space—is completely excluded. To expand the perceptibility of space – not only to the benefit of the blind and visually impaired, but everyone - it is critical for designers to aim for the 're-sensualization' of architecture (Pallasmaa, 2005: 37), actively engaging with the 'haptic,' 'auditory,' 'taste-smell,' and 'basic orienting' systems in addition to the visual (Pallasmaa, 2005: 41-42).

But spatial perception is not merely a function of the senses, but also mind: employing 'situational awareness' in order to interpret the vast amount of information received (Steinfeld and Maisel, 2012: 108-109). A notable theory around this aspect of perception is the Gestalt Laws, or 'principles of perception', which argues that people tend to perceive patterns of individual objects as a singular entity. In the discipline of design, the application of these principles enhances spatial clarity and coherence (Steinfeld and Maisel, 2012: 111). It is important to note that these principles are applicable to all 'sensory modalities' and while primarily explored visually, they can serve as a guide for effectively incorporating of the haptic, auditory and smell-taste sensual systems (Steinfeld and Maisel, 2012: 115).

Fig. 46 (Steinfeld and Maisel, 2012: 111): Gestalt laws

Another insightful piece of literature on the perception of space – with particular focus on urban spaces – is 'Image of the City' by Kevin Lynch. Lynch emphasizes that the degree of perceptibility of a space (or its 'imageability') correlates to its legibility, which in turn affects how easily one is able to wayfind, orient and navigate throughout it, and states that a legible, perceptible and imageable space will allow its inhabitants to assigns their own 'meanings and connections' to it; allowing it to become a 'true place, remarkable and unmistakable' (Lynch, 1960: 92).

In order to achieve this 'imageability', Lynch uncovers the five critical elements that (when employed and articulated mindfully by spatial designers) could enhance and strengthen the 'imageability' of a place, namely paths, edges, districts, nodes and landmarks (Lynch, 1960).

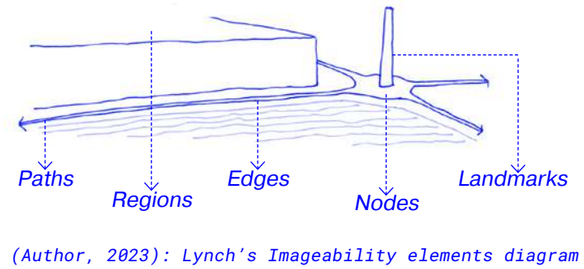


Fig. 47 (Author, 2023): Lynch's Imageability elements diagram

Wayfinding and perception:

It is clear that perception, and therefore, wayfinding, orientation and navigation through the built environment is vastly different for sighted persons as opposed to sight-impaired persons. When unable to rely fully on visual information to guide you through a space, the remaining sensory systems become critical in the perception of your direct environment – seeking information from your surrounds (Pallasmaa, 2005: 37) to navigate obstacles, barriers and boundaries while preserving your orientation to your desired destination (Wayfindr, 2015: 23).

In the discourse around wayfinding for blind and visually impaired persons, two elements are highlighted as critical informants to the process of orientation and navigation: Landmarks (in alignment with Lynch's Image of the City), here described as permanent and easily identifiable objects or spaces, and clues, which are more 'temporal' indicators like sounds and smells. These aid in guiding an individual along their route and confirming that they are pursuing the correct direction (Wayfindr, 2015: 27). Particularly in the case of sight impaired persons, the landmarks and clues which are utilized are more intricate than the visual landmarks and clues which would guide a sighted person; often comprised of multiple sensory cues, perceived consecutively (for example, combining a tactile landmark with an audible cue to confirm their approach to a desired destination [Wayfindr, 2015: 27]).

A sight impaired person, therefore, requires significantly more sensory information from their surroundings in order to navigate toward a selected destination. Pallasmaa's advocation for 're-sensualizing' architecture, therefore has a more practical (rather than phenomenological) directive in the context of this inquiry. Creating a space which invokes all of the human senses through the careful manipulation of material and technological conditions, the experience of the sight-impaired user would most likely be significantly improved.

However, it is critical that a space does not become over-coded with landmarks and clues in order to prevent overstimulation. Rather, each sensual landmark and clue should be intentional and carefully considered by the designer (Wayfindr, 2015: 27).

04. PATTERNING:

Minimum standards and the city:

Towards the twenty-first century, accommodating persons with disabilities in the built environment was no longer an option but a legal requirement. The National Building Regulations (SANS 10400-S) sets out an extensive list of considerations and adaptations that could increase the inclusivity of buildings and urban environments, some of which are mandatory. However, the majority of these minimum standards are 'deemed-to-satisfy' and functional requirements; meaning that they are not necessarily mandatory or fully specific on its constructions, dimension or materiality (SANS 10400-S, 2011). Despite this, non-building related legislative provisions, including the Promotion of Equality and Prevention of Unfair Discrimination Act as well as the Constitution of the Republic of South Africa, imply the necessity of a built environment designed to include persons with disabilities (SANS 10400-S, 2011).

What became apparent, from the walking-and-drawing exercise and the interviews with the legally blind respondents at LOFOB, is that even when these standards are incorporated into the design of a building, they do not necessarily address the needs of persons with disabilities comprehensively. This could be for a multitude of reasons, but often it is because these requirements are considered an 'afterthought' of the design and construction process rather than for what it is: a criticality to uphold the Constitution – the 'cornerstone of democracy' in South Africa (SANS 10400-S, 2011). For this reason, it is imperative that these form a part of the pattern, and that any design in light of this inquiry aims to, in the very least, comply with these requirements and are incorporated in a considered manner. In the pursuit of a universally designed built environment, it is required that the designer be more ambitious and innovative than the 'minimum threshold of compliance', and include the stakeholders in the process of design (Steinfeld and Maisel, 2012: 122).

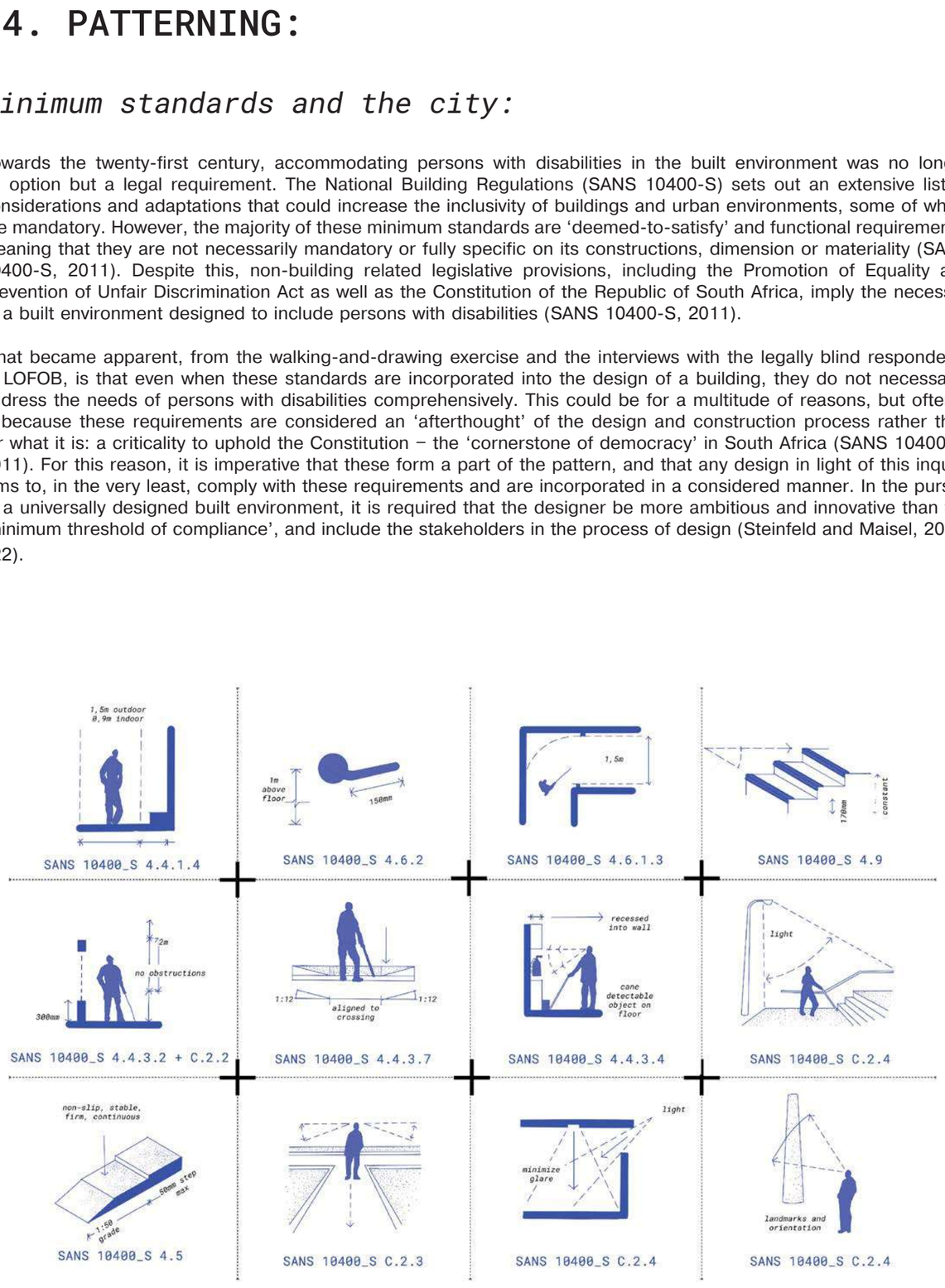


fig 48 (Author, 2023): Relevant extractions from national building standards

Building for the blind + visually impaired: case studies

In order to gain a better understanding of designing and constructing buildings and spaces for persons with sight impairments, notable cases were selected for study with particular attention paid to their facilitation of wayfinding, orientation and navigation, their success across the urban, architectural and human scale and their contribution to the integration of this community with society. Although not all of the cases succeed at addressing all of these factors, each case is deemed to be of value to this inquiry. From these studies, certain strategies employed to enable blind and visually impaired were extracted and analyzed in a catalogue of drawings, interrogating their spatial organisation, construction strategies and response to the senses, which serve as an informant for the pattern. Criteria for the selection of these cases include a preference for projects in the global south, and projects that were completed in the last 25 years.

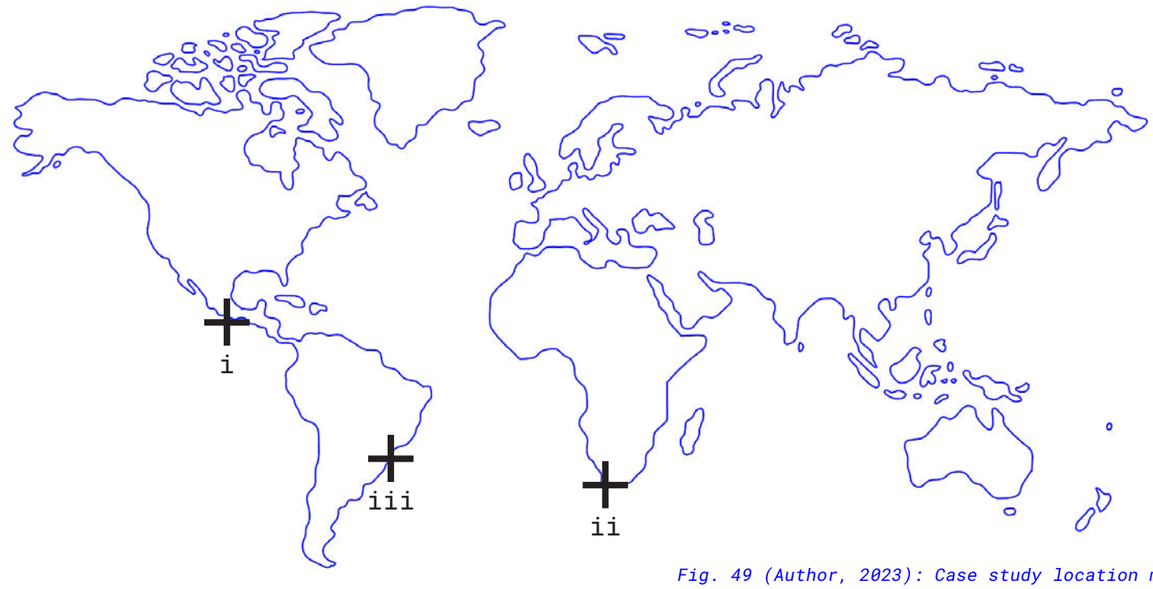


Fig. 49 (Author, 2023): Case study location map

i CENTRE FOR THE BLIND AND VISUALLY IMPAIRED:
Iztapalapa, Mexico City
2001
Mauricio Rocha

fig 50 (Carillo, 2020): Centre for the Blind and Visually Impaired

ii SOCIETY FOR THE BLIND,
Cape Town, South Africa
2007
Jakupa Architects + Urban Designers

fig 51 (Aragao, 2011): Society for the Blind

iii FRIENDSHIP PARK,
Montevideo, Uruguay
2015
M.Roux, G. Cuna, P.Roland, F. Lezama

fig 52 (ArchDaily, 2015): Friendship Park

CASE STUDIES:
i. CENTRE FOR THE BLIND AND VISUALLY IMPAIRED

PROJECT INTRODUCTION:
Aimed at serving the large population of blind and visually impaired people in the economically disadvantaged district of Iztapalapa, this large complex, designed by architect Maurico Rocha in 2001, is a valuable precedent for designing for individuals with sight impairments. Not only does it offer a thoughtful approach to engaging its inhabitants' senses, going beyond the visual sense while still considering it, but it also provides insights into how the spatial qualities were communicated to the visually impaired stakeholders during the design phase.

FACILITATION OF ORIENTATION, NAVIGATION, WAYFINDING:
Despite its size, the complex's spatial organization aids inhabitant orientation. The site is divided into three distinct "parallel bands" (Carrillo, 2020), of buildings, each catering to different activities, ranging from public to private. Different materials are used for each band, distinguishing the spaces and providing tactile cues. Varying degrees of natural lighting in each band reflect their respective programs. Public areas feature larger openings and a greater degree of natural lighting, as opposed to the private spaces, where shadows and contrast are employed to evoke a sense of intimacy. The architect enhances navigation between the building bands through engaging the inhabitants' senses of sound and smell. The central courtyard features channelled water, guiding inhabitants through the space with the sound of rippling water. The peripheral gardens are intentionally planted with aromatic flora, contributing to the inhabitants' understanding and memory of the space through the sense of smell (Pallasmaa, 2005).

DESIGN ACROSS SCALES:
To a great extent, the design revolves around human experience, and therefore is notably aware of the scale of the body in space, and much of the building is articulated to reflect this. However, from the resources available to the author, it does appear that much of the design is focussed on the scale of architecture: surface, material, opening, structure and spatial ordering. The blind wall bounding the complex – acoustically isolating it from its context – is the extent to which it appears the urban scale has been addressed.

SOCIAL INTEGRATION:
Despite the project being "[B]ounded by two great avenues in one of Mexico City's poorest peripheral neighbourhoods" (Carrillo, 2020), the complex is closed off to its context; isolating its inhabitants from the world beyond. Perhaps an opportunity was missed to extend the value of the project to the context beyond, and allow for social interaction and engagement with the sighted community.

CONCLUSSION:
The case reveals various well-considered strategies for the design of an enabling architecture for sight impaired persons. Specifically, the critical value of this case stems from its focus on the human senses, and the extent of their role in spatial perception, wayfinding and orientation.

> "By shifting that emphasis on the visual that pervades architecture, we began to understand that the force of a space comes from making the wind move so that it brushes the skin, or that the pupil of the eye dilates to perceive light differently. The rush of water becomes not only a reflection but a rhythm, that accompanies the vibrations of light and shadow with which we compose the visual. The space becomes complex, not through artifice, but because it enhances the phenomena of what already exists there, and what our bodies are capable of perceiving." Carrillo, 2020

fig 53 (Carillo, 2020): 'Blind boundary wall' acoustically isolates the centre from its context

fig 54 (Carillo, 2020): Entrance / threshold from context to the centre

fig 55 (Carillo, 2020): Floating concrete roof slabs over external passage

fig 56 (Carillo, 2020): Central 'filter' with guiding water feature

fig 57 (Carillo, 2020): Different material infill on vertical surfaces between concrete structural frame

fig 58 (Carillo, 2020): Steel frame circulation on first floor, suspended to avoid obstruction of ground plane

SPATIAL ORGANISATION

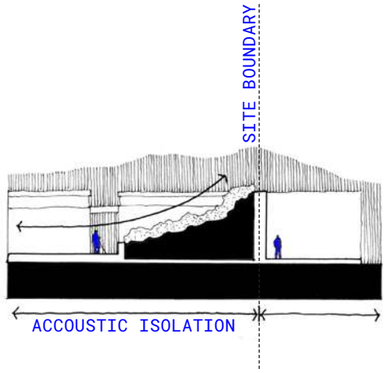


fig 59 (Author, 2023): Boundary wall: acoustic isolation

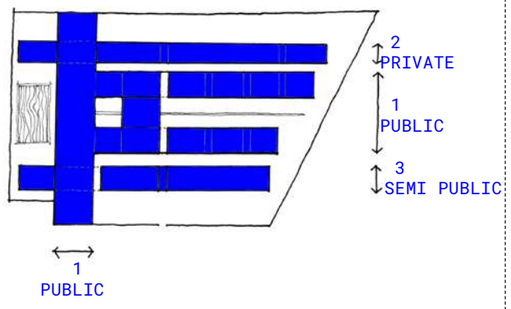


fig 60 (Author, 2023): Programmed "bands" of building

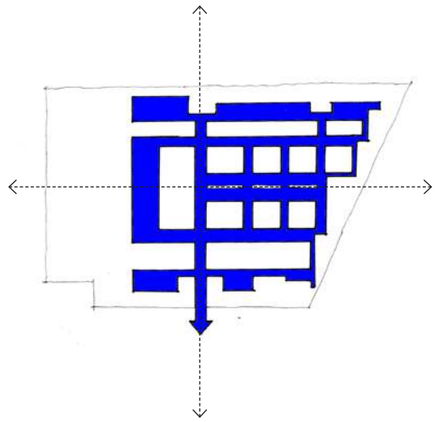


fig 61 (Author, 2023): Circulation axis'

CONSTRUCTION STRATEGIES

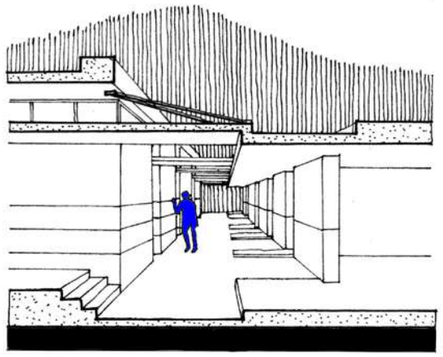


fig 62 (Author, 2023): Liberate ground plane from obstructions: suspended slabs

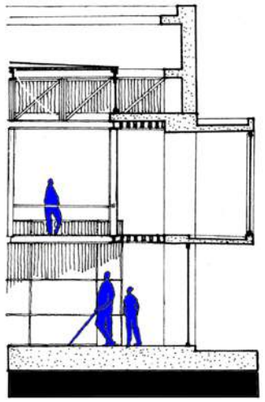


fig 63 (Author, 2023): Liberate ground plane from obstructions: suspended steel frame

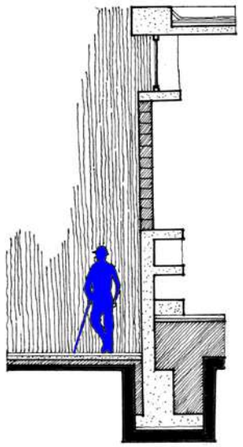


fig 64 (Author, 2023): Wall construction and human proportion

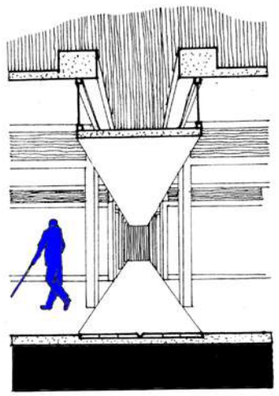


fig 65 (Author, 2023): Articulation of circulation corridors

HUMAN SENSES + NATURE

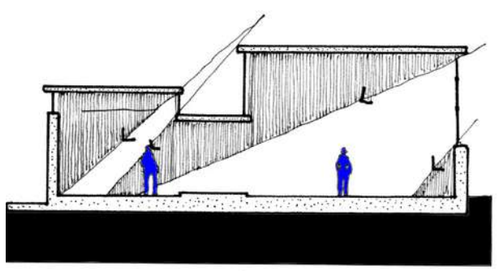


fig 66 (Author, 2023): Light and shadow: Public and private programmed spaces

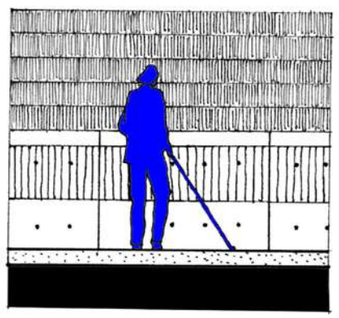


fig 67 (Author, 2023): Tactile vertical surface and wall articulation

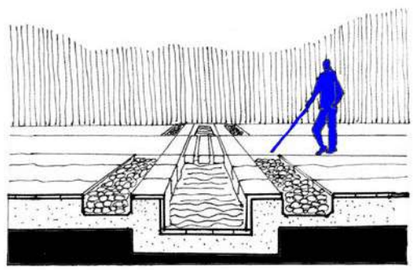


fig 68 (Author, 2023): Guiding water channel

fig 69 (Author, 2023): Retained gardens and aromatic planting

CASE STUDIES:
ii. CAPE TOWN SOCIETY FOR THE BLIND

PROJECT INTRODUCTION:
The Cape Town Society for the Blind, established by a group of women in 1929, has been dedicated to the skills development of blind and visually impaired persons for nearly a century. The organization have been operating from their premises in Salt River for almost 70 years, and in 2007, enlisted Jakupa Architects for the upgrade of their existing facilities and the addition of a new building at the center of the property.

The addition would replace existing structures which were described as disorienting and difficult to navigate by the visually impaired inhabitants. This new building accommodates additional workshop areas (where hand-made cane furniture is produced) and includes a functional water feature (for cane soaking) as well as additional staff parking (Aragao and Porter, 2011).

FACILITATION OF ORIENTATION, NAVIGATION, WAYFINDING:
A primary objective of the project was to address the disorienting nature of the existing structures, emphasizing the importance of spatial ordering in the design. To achieve this, the layout was carefully planned to enhance clarity and legibility. A continuous central circulation route was delineated, effectively connecting the new building to the existing structures on the site. This circulation route was given its own distinct surface material, setting it apart from its surroundings. Moreover, the design of individual workshop areas followed a simple grid system, contributing significantly to spatial clarity. This simplicity ensures that inhabitants can easily navigate and utilize both the existing and additional facilities on the site (Aragao and Porter, 2011).

DESIGN ACROSS SCALES:
Primarily, the focus of the project is (at least at this stage) concerned with the architectural scale. The additional building resembles a typological factory shed, in response to the industrial built fabric of the Salt River context. The acoustics within this ‘craft factory’ aim to capture the industrious energy of a traditional enclosed marketplace. Further, the project includes the adaptation and renovation of the existing buildings on site, contributing to the efficiency of movement throughout the facilities. (Aragao and Porter, 2011).

SOCIAL INTEGRATION:
Although the building is currently equipped with a perimeter fence and access-controlled vehicular and pedestrian gates, future plans are in place to enhance the building’s street interface (Aragao and Porter, 2011); improving the building’s integration with its surrounds and encouraging foot traffic, which is expected to increase the sale of the cane furniture crafted on site.

CONCLUSSION:
The case study’s local relevance, situated in Cape Town, makes it particularly pertinent to this study. It demonstrates the application of regional technologies that are both climatically and economically appropriate. Further, the design communication, which included the presentation of tactile models and braille annotations, serves as an essential reference for the pending focus group discussion with LOFOB, where initial design concepts will be presented.


fig 70 (Aragao, 2011): Ventilated doors (closed)


fig 71 (Aragao, 2011): Facade


fig 72 (Aragao, 2011): First floor, open


fig 73 (Aragao, 2011): Work stations


fig 74 (Aragao, 2011): Balcony, upper level


fig 75 (Aragao, 2011): Structural junctions

SPATIAL ORGANISATION

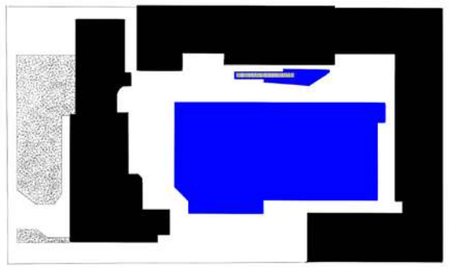


fig 76 (Author, 2023): Additional building and water feature in courtyard

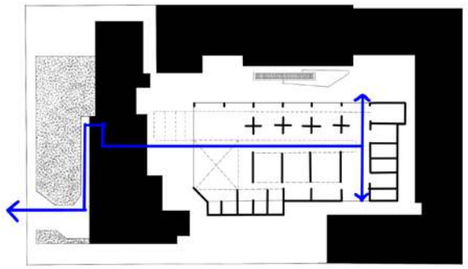


fig 77 (Author, 2023): Clear circulation

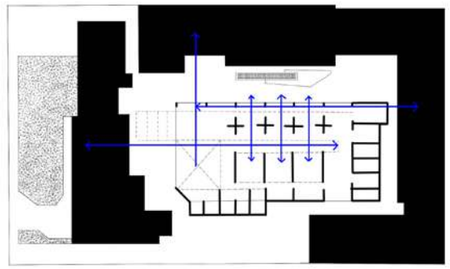


fig 78 (Author, 2023): Connection to courtyard and surrounding buildings

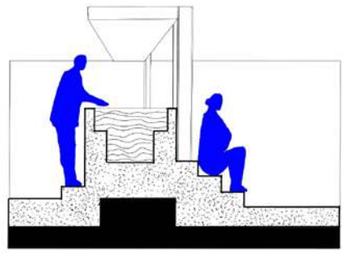


fig 79 (Author, 2023): Water feature for cane soaking

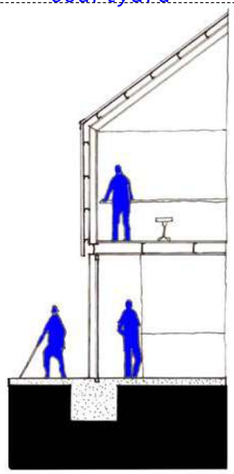


fig 80 (Author, 2023): Building strip section along courtyard

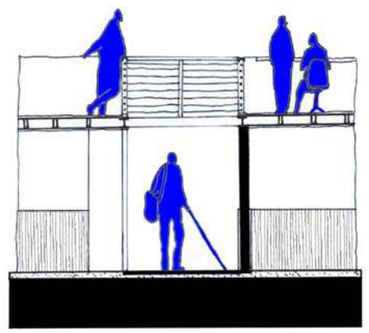


fig 81 (Author, 2023): Interior section, workshop ground and first level

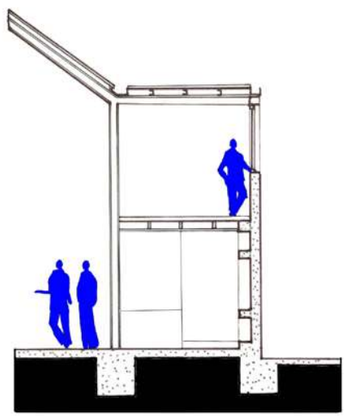


fig 82 (Author, 2023): Building strip section along parking area

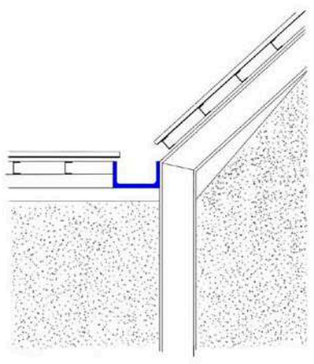


fig 83 (Author, 2023): Gutter between flat and pitched roof

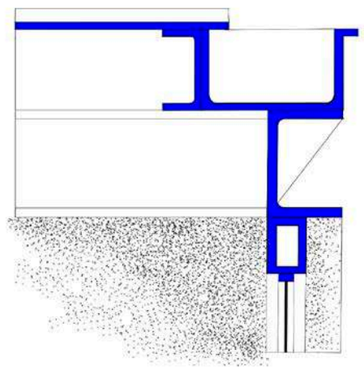


fig 84 (Author, 2023): Gutter on edge of flat roof

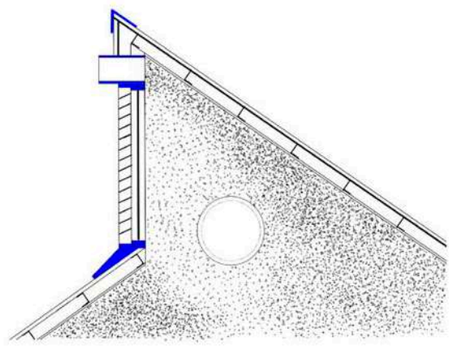


fig 85 (Author, 2023): Lighting and ventilation in workshop

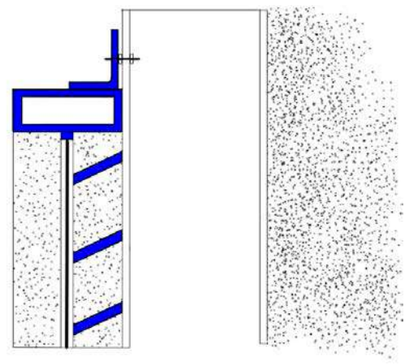


fig 86 (Author, 2023): Louvres to limit direct light and glare

CASE STUDIES:
iii. FRIENDSHIP PARK

PROJECT INTRODUCTION:
Located in Montevideo in Uruguay, this recreational space adjacent to the local planetarium is the first fully accessible park in the country, aimed to accommodate children, youth and adults 'regardless of their physical or cognitive abilities' (Roux and Cuna, 2015). It is a particularly relevant case as a publicly accessible example of universal design; not exclusively designed for the blind but accommodating of them nevertheless.

FACILITATION OF ORIENTATION, NAVIGATION, WAYFINDING:
The design of the park is well-considered across scale. Its urban organisation ensures that it is removed from the busiest intersection at the one corner of the site, while flush with the street and access point of the park at the other. The design is responsive to the spatial organisation of the planetarium and the sporting facilities on the site. The park is designed and organised to enable flexible and multipurpose use of the space – encouraging its use for a range of different events and ensuring its activation. Materials were carefully selected for their different tactile qualities and meticulously applied to distinguish certain elements and spaces from one another (Roux and Cuna, 2015). The design engages the tactile, auditory and aromatic senses through incorporating soft and hard surfaces, water features, as well as aromatic and colourful gardens. The designers employ detailed design to ensure the enabling of its inhabitants.

DESIGN ACROSS SCALES:
The design of the park is well-considered across scale. Its urban organisation ensures that it is removed from the busiest intersection at the one corner of the site, while flush with the street and access point of the park at the other. The design is responsive to the spatial organisation of the planetarium and the sporting facilities on the site. The park is designed and organised to enable flexible and multipurpose use of the space – encouraging its use for a range of different events and ensuring its activation. Materials were carefully selected for their different tactile qualities and meticulously applied to distinguish certain elements and spaces from one another (Roux and Cuna, 2015). The design engages the tactile, auditory and aromatic senses through incorporating soft and hard surfaces, water features, as well as aromatic and colourful gardens. The designers employ detailed design to ensure the enabling of its inhabitants, and thoroughly considered interactive and inclusive devices for playing are provided throughout the park, including technological equipment.

SOCIAL INTEGRATION:
It is the park's commitment to social integration that makes this case particularly valuable to this research. Designed to facilitate 'socialisation, inclusion and learning' of all persons across a spectrum of age and ability, the aim of the project is to elicit empathy and understanding; shifting the societal preconceptions around differently abled persons.

The flexibility of the space allows it to accommodate various events and activities, and its innovative manipulation of the urban surface acts in 'unfolding new urban realities' toward 'social and cultural transformation' in alignment with Wall's 'Programming the Urban Surface' (1999). Further, the spatial clarity and a barrier-free nature of the project serves as a powerful illustration of the value of universal design, enabling social integration and preventing the isolation of marginalised persons (Educating Cities, 2014).

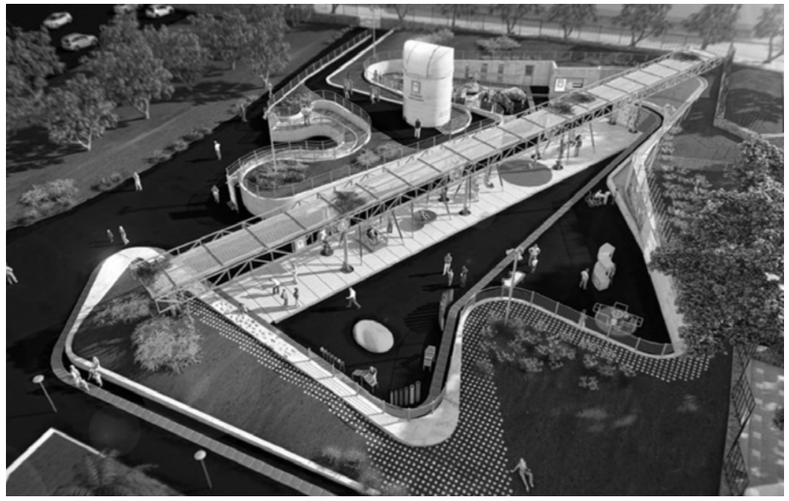


fig 87 (ArchDaily, 2015): Friendship Park, overhead render


fig 88 (ArchDaily, 2015): Flexible event space

fig 89 (ArchDaily, 2015): Pergola element: infrastructural datum


fig 90 (ArchDaily, 2015): Tactile, non-visual experiences


fig 91 (ArchDaily, 2015): Pergola element: shaded play area


fig 92 (ArchDaily, 2015): Labyrinth area and ramp

SPATIAL ORGANISATION

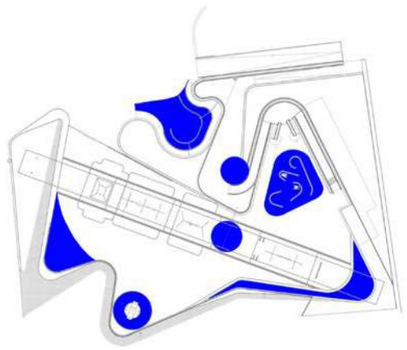


fig 93 (Author, 2023): Spatial organization and seven 'zones'

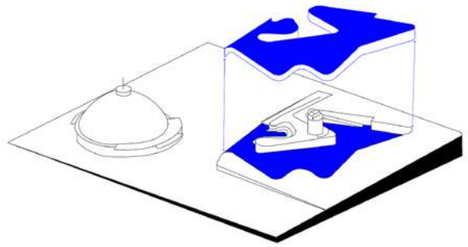


fig 94 (Author, 2023): Organic, sloped park floor surface

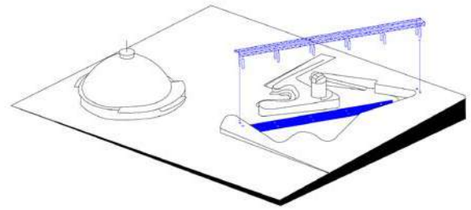


fig 95 (Author, 2023): Pergola: linear datum through site

CONSTRUCTION STRATEGIES

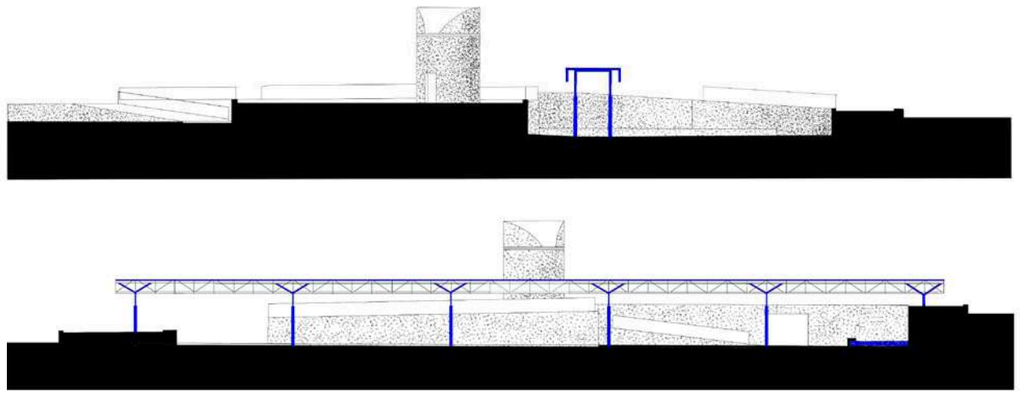


fig 96 (Author, 2023): Site sections: sunken from street level, pergola as datum, observatory as landmark

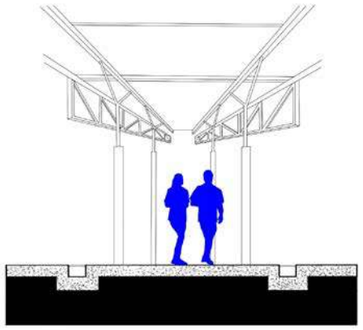


fig 97 (Author, 2023): Pergola construction

fig 98 (Author, 2023): Retaining walls as tactile elements

HUMAN SENSES

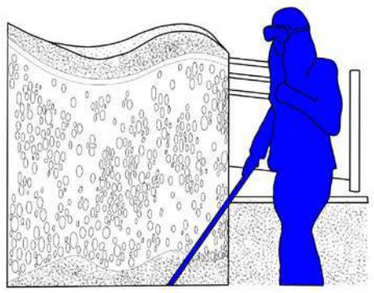


fig 99 (Author, 2023): Tactile, local art for non-visual experience

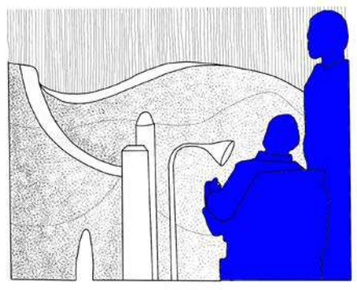


fig 100 (Author, 2023): Audible interactive elements for plan

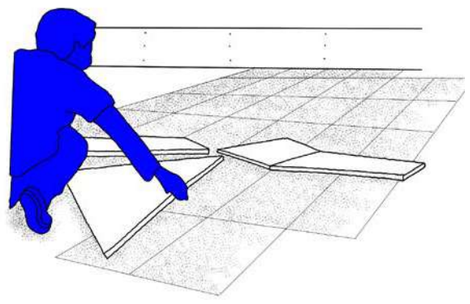


fig 101 (Author, 2023): Range of materials on floor surface

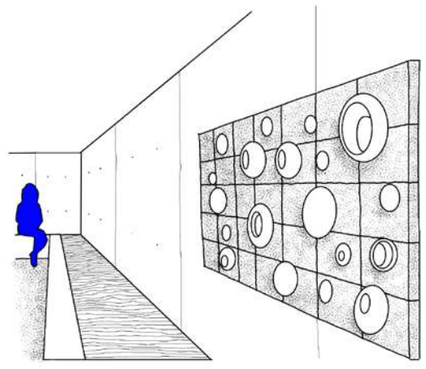


fig 102 (Author, 2023): Water feature, audible and tactile experience

SENSORY SYSTEMS AND TECHNOLOGY:

Below, each sensory system and their potential contribution to the project is considered, in terms of their ability to improve conditions for wayfinding, orientation and navigation.

VISUAL SYSTEM

As mentioned in the introduction to this body of work, there is a significant proportion of blind and visually impaired persons that are able to perceive light to a certain degree. Therefore, visual stimulus is not could not be considered irrelevant to the inquiry, but should include the incorporation of *light and shadow* and *colour and contrast*.

TECHNICAL STRATEGIES FOR DESIGN (Steinfeld and Maisel, 2012: 284)

Providing adequate natural daylight / 'daylighting' + Even distribution of light + favouring indirect light sources (natural and artificial)

Prevent direct and reflective glare (surface treatment and position of light sources; both openings for natural light and light fixtures)

Gradual transition between areas with different light levels

Artificial light sources: high colour rendering index

Improve legibility by 'colour-coding' surfaces (contrasting colours of elements or routes to their surrounds to make them more identifiable)

'Lighting for universal design is lighting that growns and shrinks as we do; it lives with us, and adapts to our needs.'
(Rizzo in Steinfeld and Maisel, 2012: 282)

HAPTIC SYSTEM

The tactile sensory stimuli are considerably relevant to perception of architectural and urban environments, allowing a person to 'read the texture, weight, density and temperature of matter' (Pallasmaa, 2005: 56).

TECHNICAL STRATEGIES FOR DESIGN

TACTILE: *Permanence and proximity*
(In direct contact with the person perceiving it)

- can only give clues to immediate surrounds
- often serve as landmarks (Wayfindr, 2015: 27).

1. VERTICAL SURFACES:
Relevant to trailing technique: person trailing hand along wall surface + inner shorelining cane technique along junction between wall and ground in order to guide self towards destination

2. HORIZONTAL SURFACES:
Relevant to constant contact cane techniques + shorelining along edges of a path in order to guide self toward destination

Critical to select appropriate vertical and horizontal surface materials in imparting tactile information.

AUDITORY SYSTEM

According to Pallasmaa (2005: 50), acoustics contribute to our perception and comprehension of a space; reflecting imperative aspects of its character and scale to our ears through its echo.

TECHNICAL STRATEGIES FOR DESIGN

AUDIO: *Temporal and transient; an 'active process' (Steinfeld and Maisel, 2012: 279).*
(Sounds received from various distances; a better indicator of the conditions further away from individual)

ORIENTATION, LOCATION IDENTIFICATION AND SITUATIONAL AWARENESS *(Steinfeld and Maisel, 2012: 279).*

Relevant to two-point touch cane technique, providing audio clues through echo (Wayfindr, 2015: 27).

Design to include 'signals' (warnings or alerts), 'keynotes' (identifiable background sounds) and 'soundmarks' (constant or predictable sounds eg. water features etc). (Steinfeld and Maisel, 2012: 279).

Strategic material selection of both vertical and horizontal surfaces to achieve desired acoustics of both interior and exterior spaces + careful manipulation of surface angles and proximity in relation to sound sources

Reducing 'noise' in environments

SMELL-TASTE SYSTEM

Although the smell-taste senses may seem less relevant to the architectural realm, it is the most memorable aspect of a space (Pallasmaa, 2005: 54), and, therefore, greatly contributes to a person's ability to navigate a space through recollection.

TECHNICAL STRATEGIES FOR DESIGN

Although subtle, consider smells of materials (wood or stone, in particular, emit notable odors).

Incorporate gardens with aromatic flora strategically to assist with orientation and contribute to a pleasant experience.

Consider strategic location of more aromatic programs (kitchens or restaurants), as these could potentially serve as important aromatic landmarks or clues.

Developing design pattern:
Consolidating research

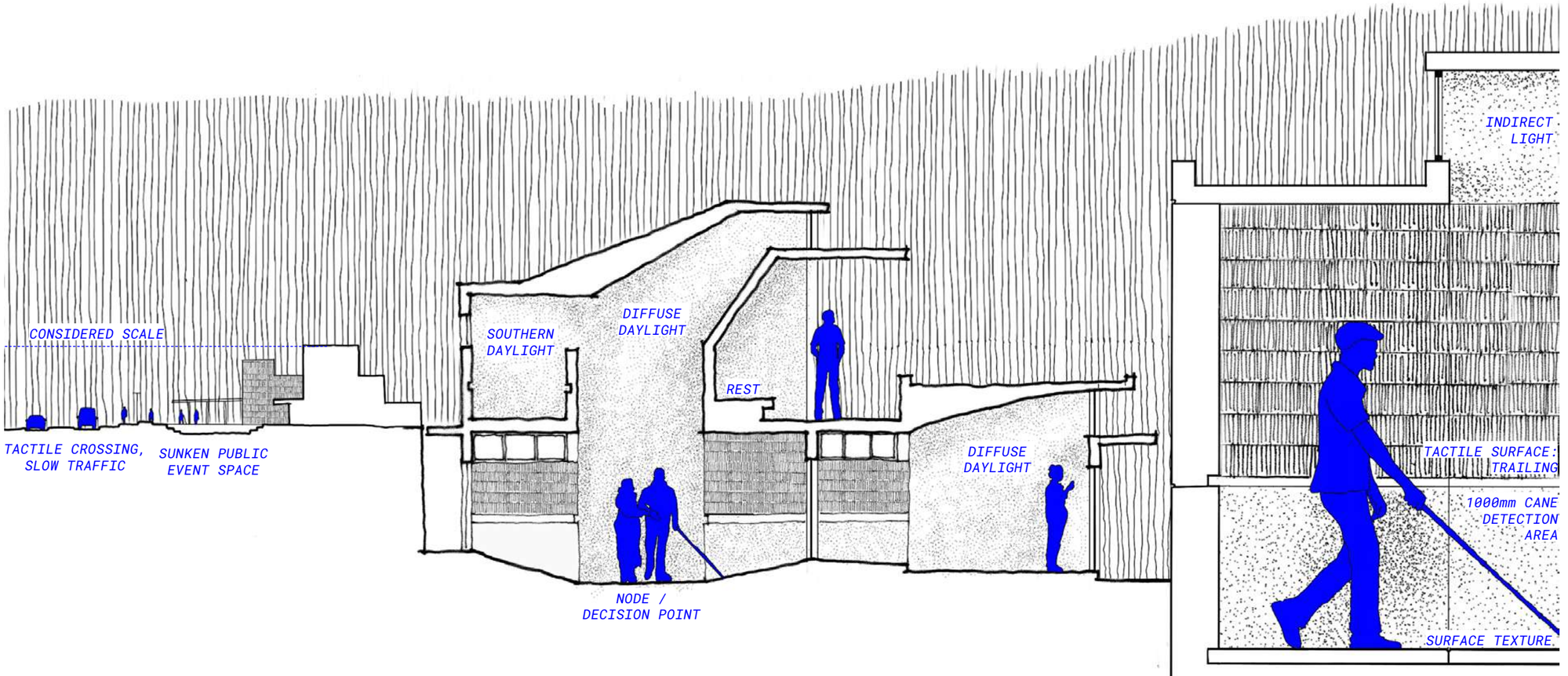
Throughout the research conducted in chapters Seeing, Surfacing, and Patterning, numerous strategies, principles, and concepts have been unveiled in response to the research inquiry, which is starting to construct a comprehensive toolkit for the subsequent design process. The conceptual section below aims to demonstrate how these strategies, principles, and concepts can be consolidated through spatial design, considering the urban (1:500), architectural (1:100), and human scales (1:25) due to the research's emphasis on designing across all scales (Southworth, 2003).

Regarding its urban context in Grassy Park, the project should adopt a modest vertical scale, aligning with the surrounding built fabric which is limited to two-storeys. However, considering the extensive stretches of undeveloped land along Klip Road, the project's footprint could be more expansive, serving as a 'connective matrix' that spans the apertures in the urban fabric. The project's interface with the street is crucial, and the section addresses how pedestrian movement along and arrival to the site from Klip Road can be facilitated, while also ensuring a clear distinction between pedestrian and vehicular areas for safety.

Furthermore, the section envisions spatial conditions that foster social mobilization and interaction, striking a balance between 'armature' (elements enabling movement, circulation, and connection; simultaneously gathering and distributing people [Wall, 1999]) and 'enclave' (elements that encourage the assembly of people). The goal is to create an activated space with the capacity to accommodate a diverse range of fixed and flexible programs (Wall, 1999). This involves providing both programmed and unprogrammed spaces, along with critical infrastructures that supports a wide range of activities, such as WIFI, electrical outlets, and water points, distributed throughout the space.

On the architectural scale, considerations of wayfinding, orientation, and mobility become paramount in the design. Enhancing the legibility of a building for both sighted and visually impaired individuals requires increasing the perceptibility of the space. The incorporation of 'landmarks' allow individuals to locate themselves within the building. Additionally, 'clues' also play a crucial role in facilitating wayfinding and orientation. These elements are strategically integrated into the design, attributing different sensual qualities to different rooms based on their associated programs and level of privacy. By employing different spatial arrangements and volumes, the section explores spatial hierarchy and aims to achieve varying light and acoustic conditions in each room. A key focus in the section is the diffusion of light to reduce glare in the interior, thereby improving visual conditions for inhabitants who are still able to perceive light.

The human-scale section focuses on critical dimensions based on the human body. Within this section, the first 1000mm above the surface level is designated as the 'cane detection' area, enabling individuals using canes for navigation to easily identify and avoid obstacles (SANS 10400-S, 2011). Above this zone, up to 2400mm, the space should remain clear of any obstructions to prevent collisions and potential injuries. While it is recommended to provide a clear dimension of at least 900mm for circulation, a passage width of 1500mm is preferred to ensure comfortable travel along the circulation path. Both horizontal and vertical surfaces play vital roles as tactile informants. In this section, the surface treatment of the circulation corridor differs from that of the rooms, allowing cane-users to apply either inner or outer shorelining as a means of navigating the space, while the wall surfaces provide tactile information for individuals using the trailing technique. To minimize structural obstructions, load-bearing walls and beams are favoured over free-standing columns



URBAN SCALE 1:500

ARCHITECTURAL SCALE 1:100

HUMAN SCALE 1:25

fig 103 (Author, 2023): Conceptual section

Defining the project:

he dissertation is aimed at the social integration of blind and visually impaired persons in partnership with the LOFOB, who are currently operating from their existing 'Training Centre' located on Klip Road in Grassy Park. The centre does extremely well to accommodate the majority of the organisation's services, specifically those aimed at rehabilitation and learning. Although, according to interview respondent, Mrs Peterson, it is important that some services are offered elsewhere, as to not confine their clients to the centre and rather prompt them to visit alternative locations, face different challenges and interact with different people. Therefore, it was determined that the project would be most valuable if it takes shape as an additional facility, outside and independent from the existing LOFOB Training Centre.

The Integration Centre:

The hypothetical project would be funded by a hypothetical large donation, gifted to the organisation for their 90th anniversary with the intention that the project would be complete and fully operational by the time the organisation celebrates their centenary. The project should showcase the organisation's values and goals by extending their social program to the public realm; a social space for the entirety of the Grassy Park community that serves as a scaled sample of a city where blind and visually impaired persons are completely socially integrated.

Philosophical values of the project:

01 Adding valuable public programmes, activities and amenities to Grassy Park

02 Removing spatial barriers that limit the social integration of blind and visually impaired persons

03 Creating a scaled sample of what a integrated and dignifying city could look like

Intention of the project:

01 Promote the organisation: raising funds and awareness, and inviting additional volunteers, donations, and partnerships

02 Staging social, educational, career and economic opportunities for the blind and visually impaired community (including but not limited to the active and inactive clients of LOFOB)

03 Staging interaction between the blind and visually impaired community and sighted people

04 Staging scenarios for orientation and mobility training and exercising everyday practices

Integration Centre programme:

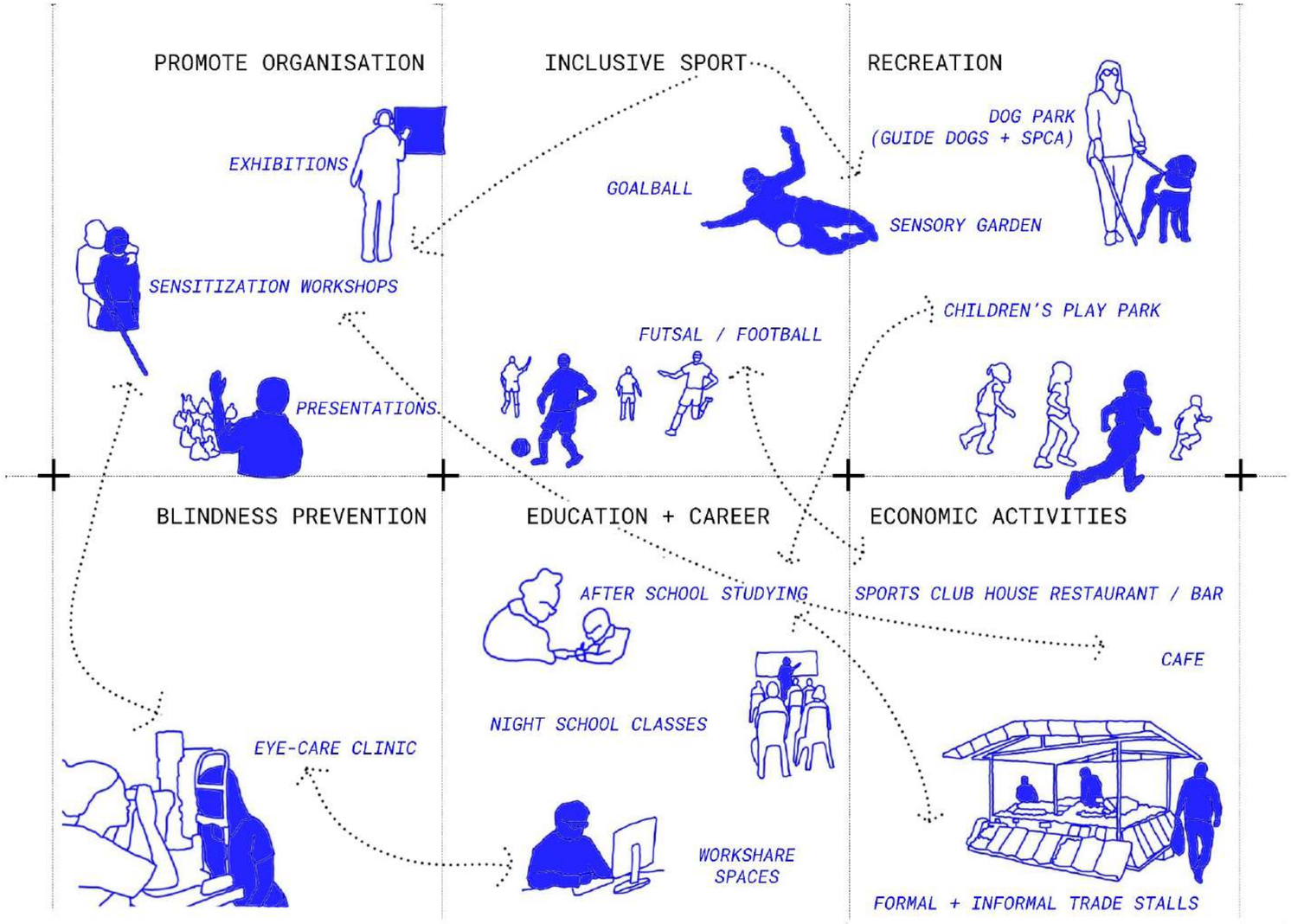
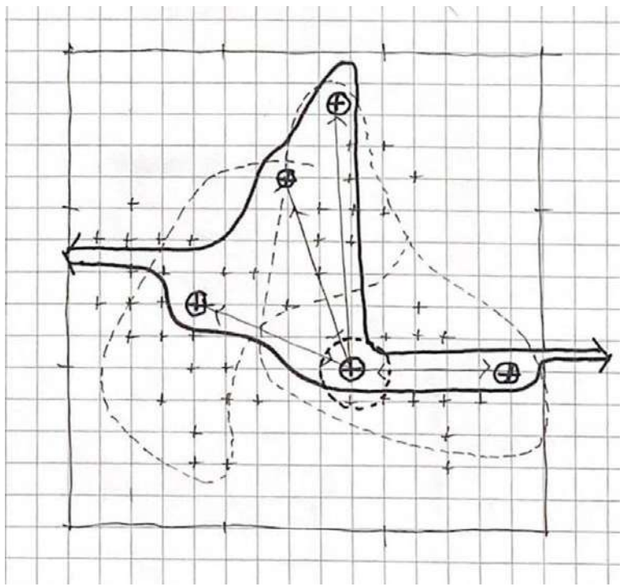


fig 104 (Author, 2023): Programme diagram

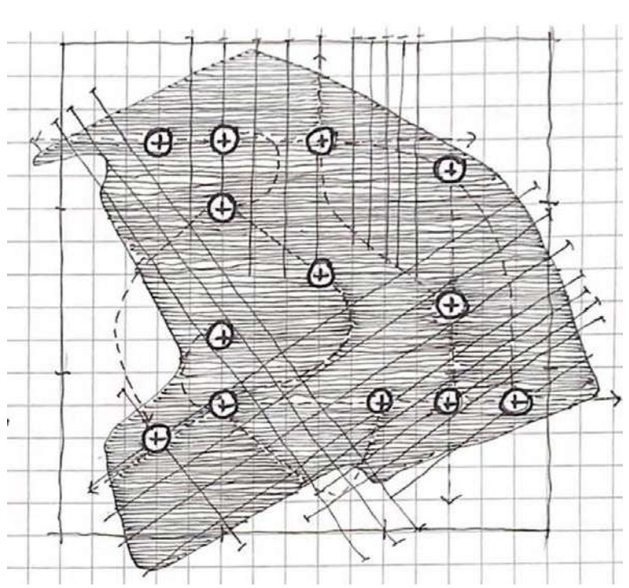
Conceptualizing a design approach



SEEING

Aiding spatial perception and establishing non-visual legibility, or ‘imageability’.

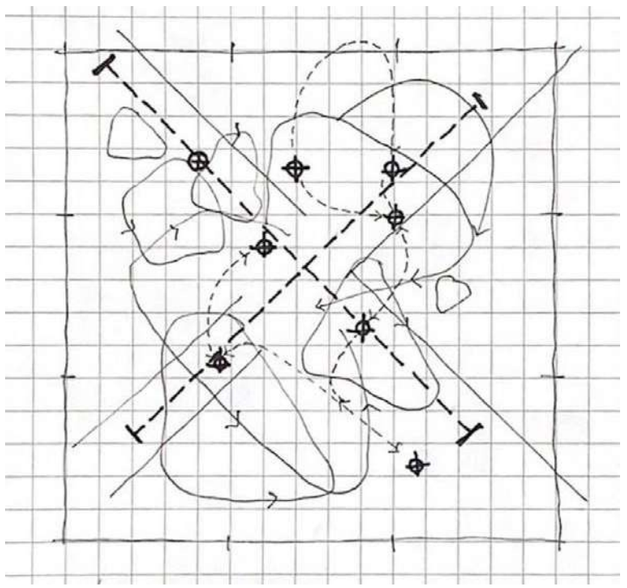
(LYNCH, 1960)



SURFACING

Site surface as extensive and continuous field of access and asset; structuring opportunities for interaction.

(WALL, 1999).



PATTERNING

Coding surfaces and planes with patterns of mobilising information and infrastructures; aiding wayfinding and navigation.

(ALEXANDER, 1977).

Site selection

The aforementioned large open lot, across from Fairmount Secondary School, is a tempting site for intervention as it is currently failing to add any value to its surrounds. In its current state, the vacant lot leaves its edge along Klip Road feeling unsafe to passing pedestrians, attributing to the disparity between Grassy Park and its adjacent suburbs, Lotus River and Parkwood. It is also advantageous that the site is located along Klip Road, and sits within a walkable 300-meter radius from the LOFOB Training Centre; connected by three different routes along three streets with differing degrees of vehicular traffic.

fig 106 (Author, 2023): Site Location Aerial Image

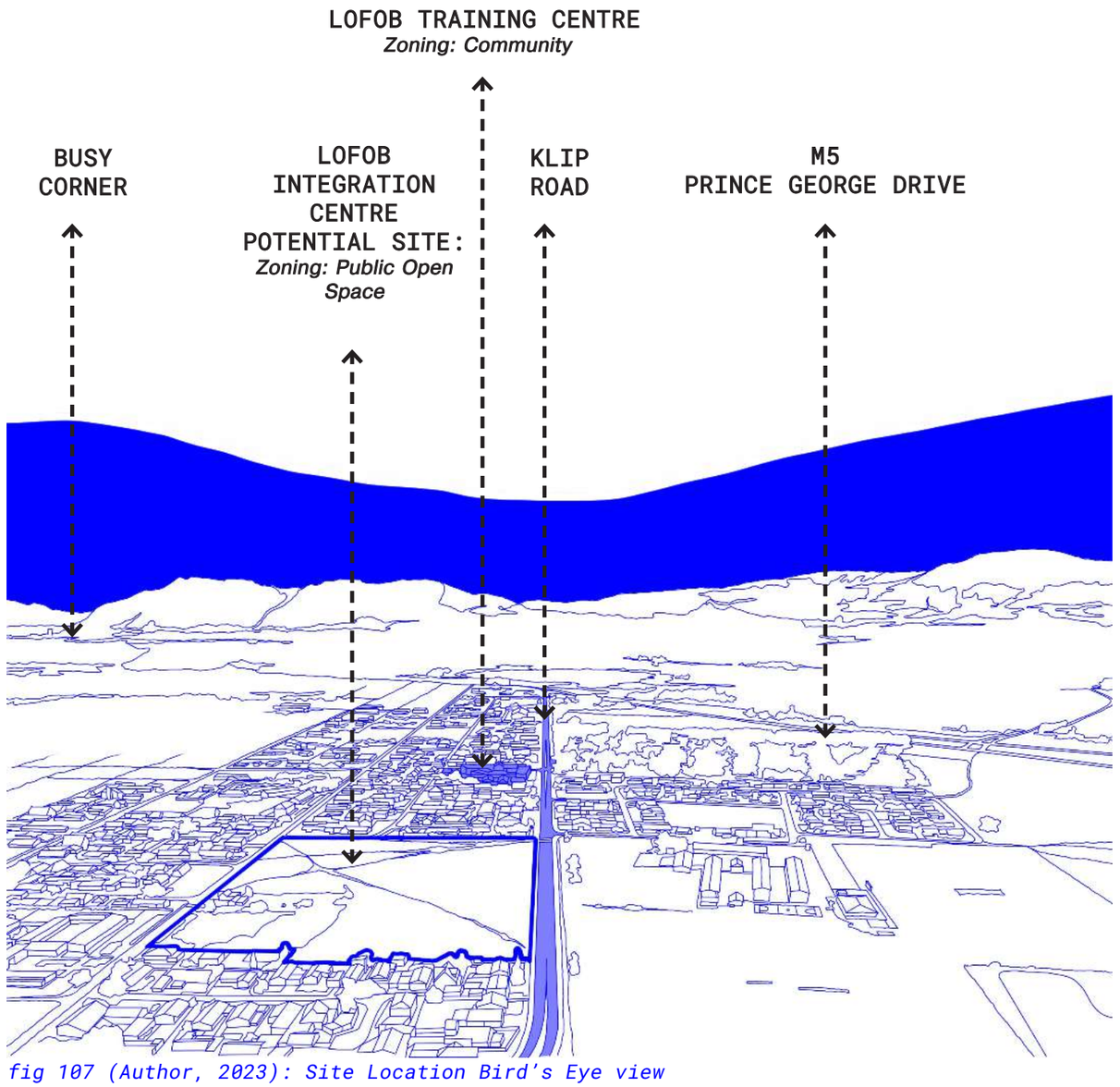


fig 107 (Author, 2023): Site Location Bird's Eye view

Analysis of existing conditions

The site is bounded on its North-Western side by Klip Road, and by 1st Avenue along the South-Eastern side. On the North-Eastern and South-Western edges, low-density residential properties look onto the site, with Fayker Road running into its South-Western side. ¬It is important to note that all three roads connect with the LOFOB Training Centre to the West, with 1st Avenue intersecting with 1st Street to the front entrance of the Centre, and Fayker Street connecting to its pedestrian gate at the back of the property.

The South-East corner, across from the Fairmount Primary School is currently used as an informal parking space for parents dropping off and picking up their children from school, with a sizable informal house at its edge (presumably occupied by a caretaker of the school property). Elsewhere along its edges, bollards restrict vehicular access to the site. The flora consists mostly of long grass, with almost no existing trees aside from along the edge of the informal residence.

fig 108 (Author, 2023): Site Image

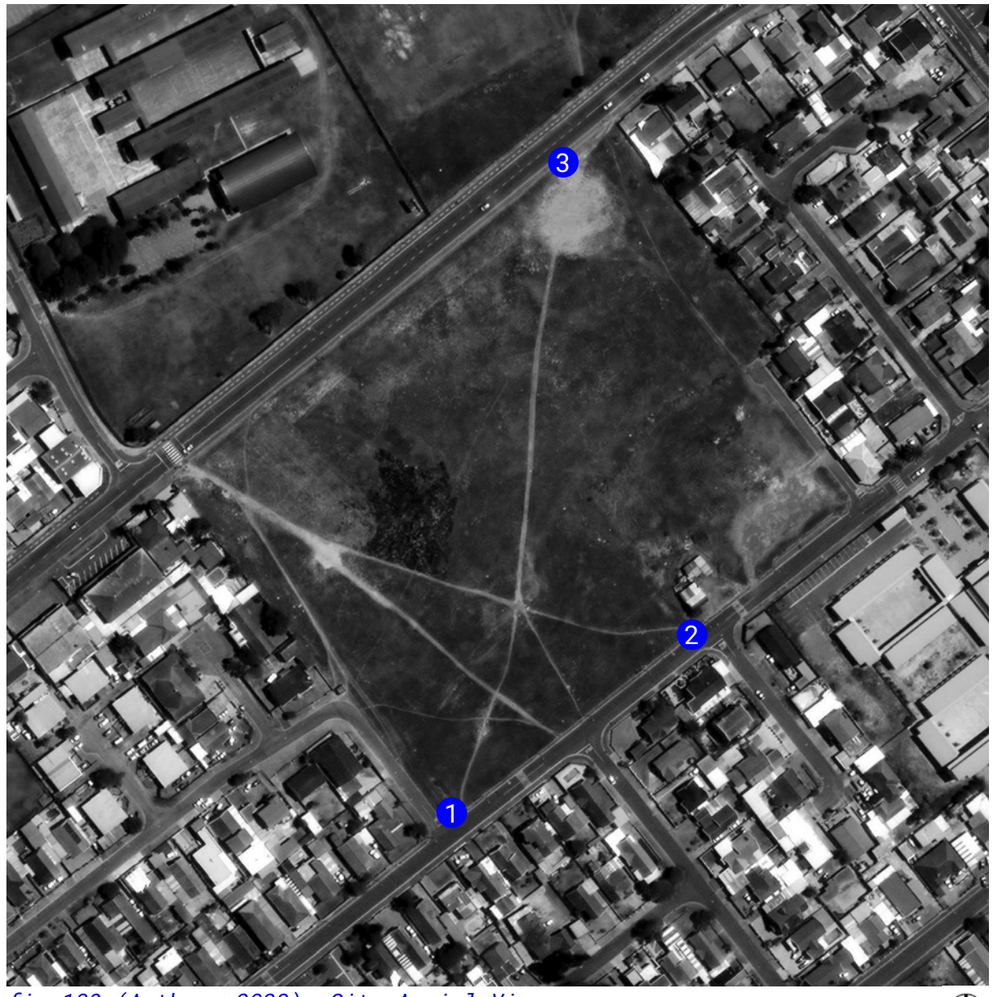


fig 109 (Author, 2023): Site Aerial View

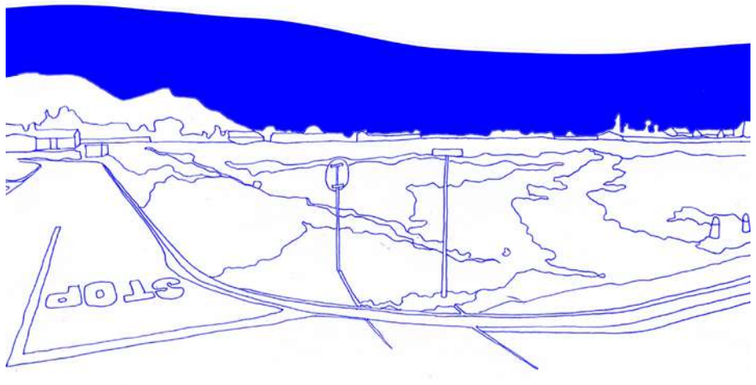


fig 110 (Author, 2023): Site perspective, 1

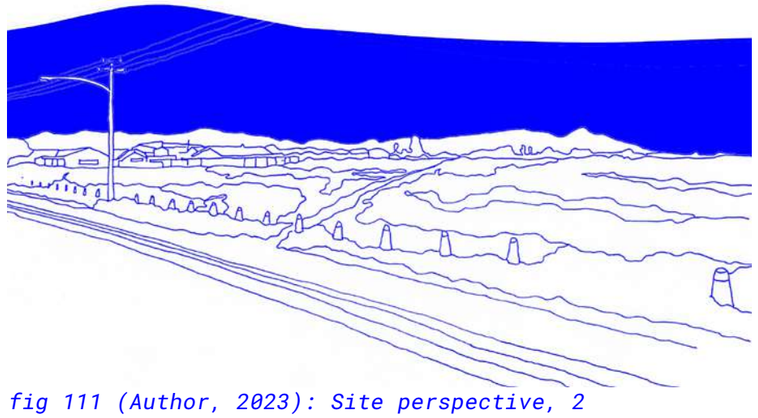


fig 111 (Author, 2023): Site perspective, 2

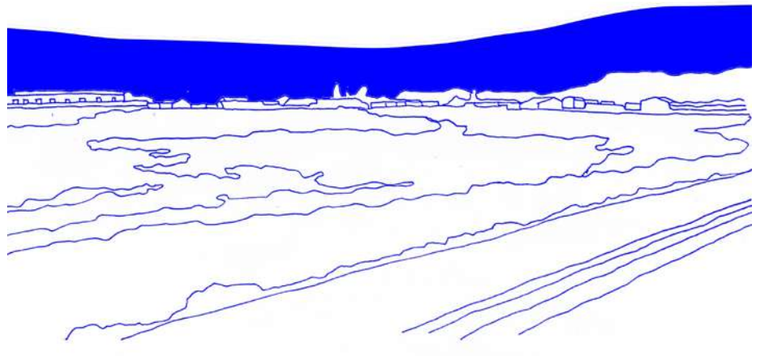


fig 112 (Author, 2023): Site perspective, 3

SITING:

Analysis of existing conditions

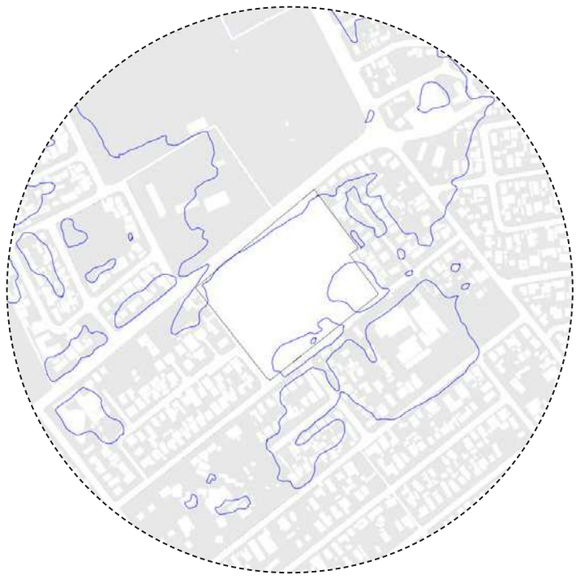


fig 113 (Author, 2023): Site 2m Contours

The site, similar to the rest of the suburb, sits on a mostly flat surface aside from a few 2m contours which indicate that the South-Eastern edge of the site sits slightly higher than the rest.

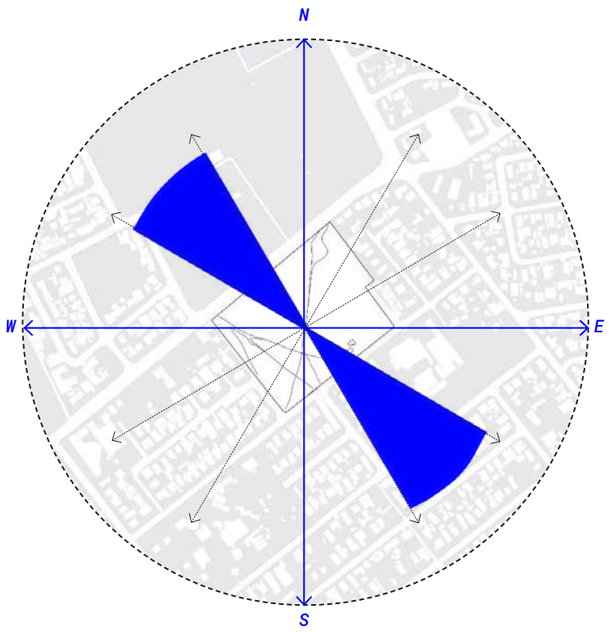


fig 114 (Author, 2023): Site Wind Direction

On the Cape Town periphery, the South Eastern winds are quite persistent, particularly throughout Summer months, whereas the wind in Winter most likely will come from a North Western direction; likely bringing the rain.

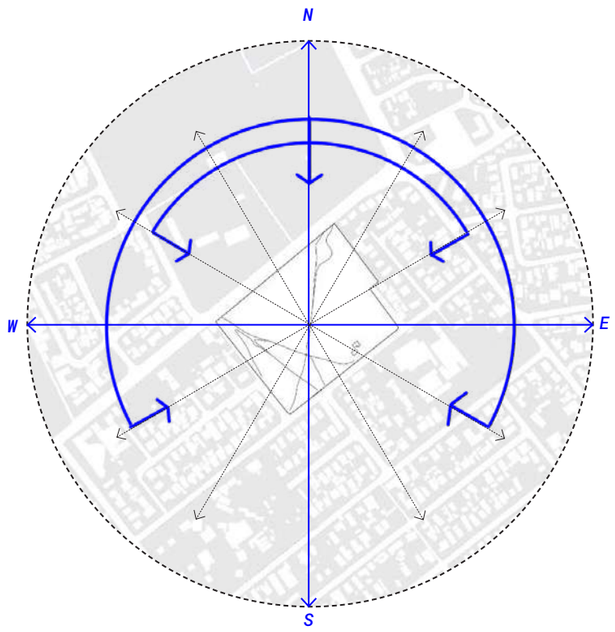


fig 115 (Author, 2023): Site Sun Angles

The site is oriented to the North West, facing the harsher afternoon sun.

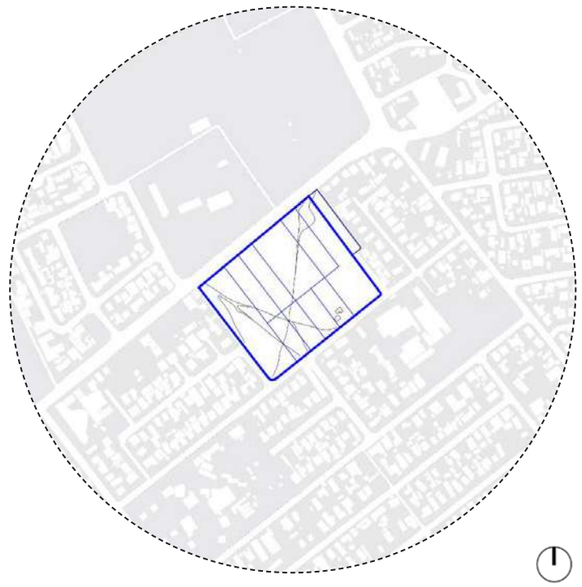


fig 116 (Author, 2023): Site ERFs

The site divided into eleven erfs, each zoned for private open space.

The section illustrates the scale of the residential buildings along the edge of the site, as well as its interfaces with the two streets that bound it; Klip Road, more populated and highly trafficed, compared to the more quiet 1st Road, which is mainly activated by traffic from Fairmount Primary School.

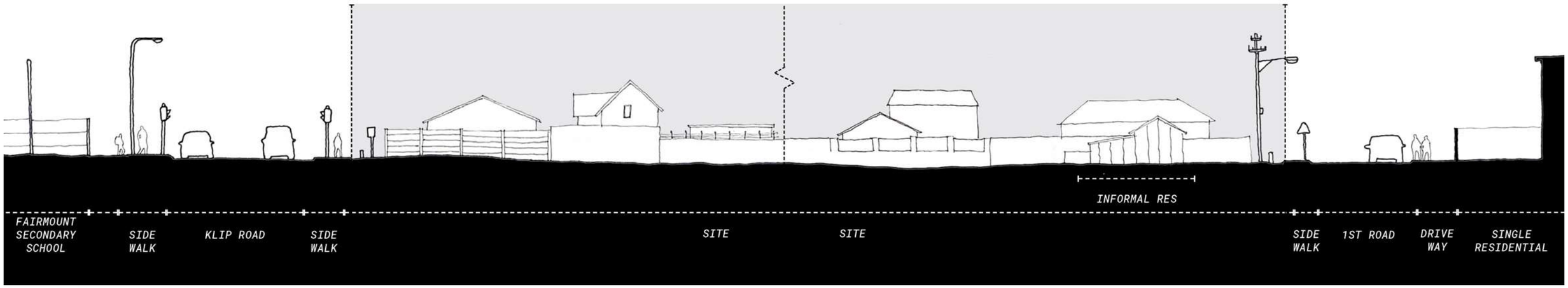
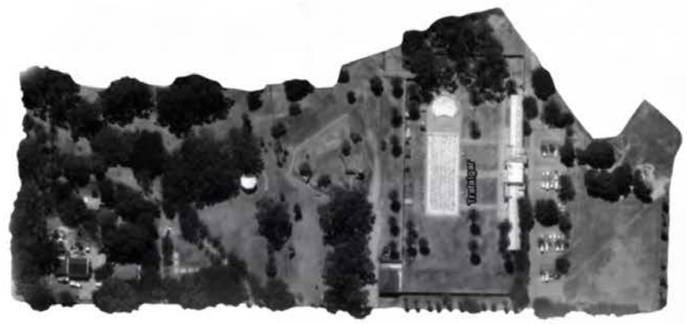


fig 117 (Author, 2023): Site section

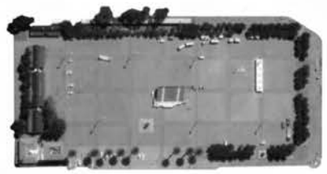
SITE MAKING:
Understanding scale

It is important to note that the site is extremely large, and in order to get a better understanding of its scale, the author compared it to other large public sites throughout the city. Although a generous site has its own advantages, it poses as many challenges. Primarily, safety concerns arise around transversing such a large site (not only for the risk of falling and succumbing to injury, but also general safety from crime as it would be tricky to properly activate and surveil the entire extent of the site).

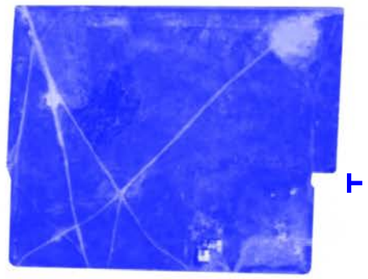
For this reason, it seemed useful to determine both the minimum amount of site needed to accommodate the array of public activities that form part of the Integration Centre programme in comparison to the site in its entirety. Although it does feel somewhat strange and arbitrary to divide the site, it was deemed advantageous to push its extents up to its South-Western edge, which sits closest to the existing LOFOB Training Centre and interfaces with the three streets which connect them.



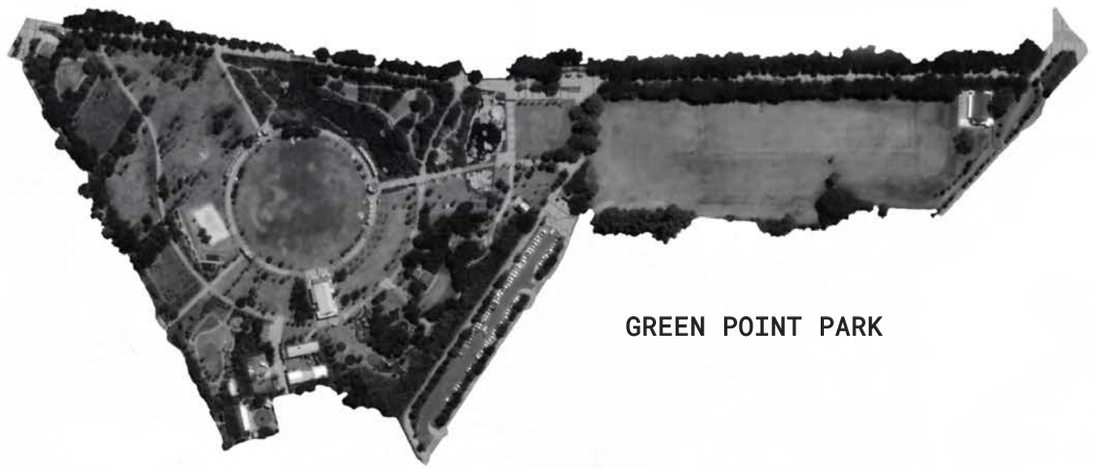
TRAFALGAR PARK



GRANDE PARADE



LOFOB INTEGRATION CENTRE
POTENTIAL SITE



GREEN POINT PARK

fig 118 (Author, 2023): Site scale comparison

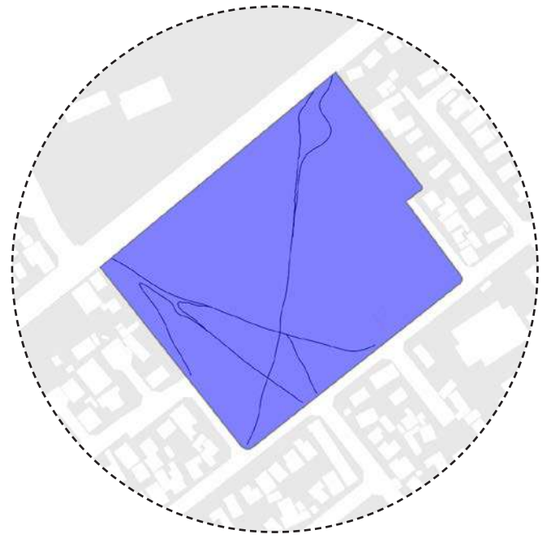


fig 119 (Author, 2023): Max site footprint

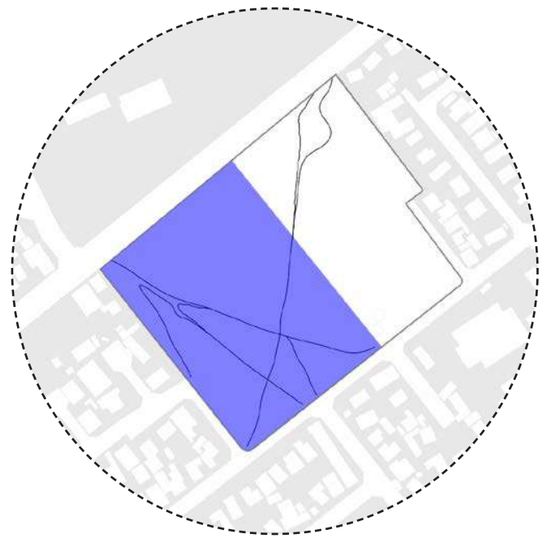
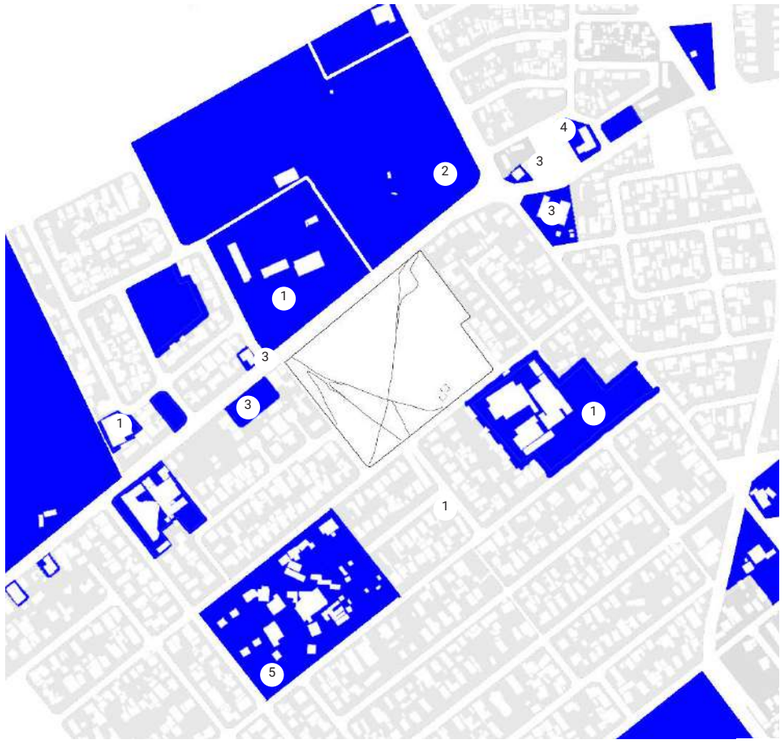


fig 120 (Author, 2023): Min Site Footprint

SITE MAKING:

Conceptual site understanding

In order to construct an urban surface on site which cohesively and seamlessly ties into the surrounding context, the site and its surrounds were critically analyzed for clues that would inform the structure of the matrix.



1 Education
2 Sport
3 Commerce
4 Health
5 Outreach

fig 121 (Author, 2023): Surrounding 'enclaves'

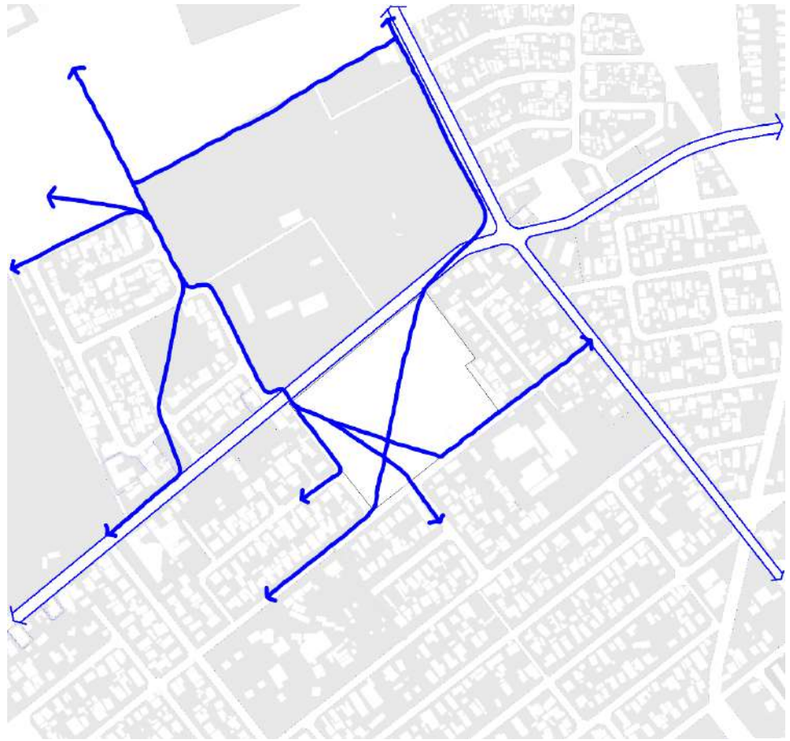


fig 122 (Author, 2023): Surrounding 'armatures'

Firstly, considering the nature of the 'static sites' or 'enclaves' (Jenson, 2013: 35) situated in the surrounds. Although the majority of the fabric consisting of low-density residential properties, the area accommodates various sites for education, sport, trade, health and outreach.

The site is situated between two prominent Grassy Park public schools; Fairmount Secondary to the North and Fairmount Primary to the South, with various smaller pre-schools and religious school scattered throughout the surrounding fabric. The Fairmount Sports Facility (primarily used for cricket and baseball) sits across from the site, towards the Lotus River suburb. Various sites for trade and commerce are scattered along Klip Road, on either side of the site, ranging from informal stalls trading along the sidewalks, to local grocers, superettes and petrol stations. The Klip Road Clinic offers various healthcare services with a focus on providing general HIV, STI and TB treatments, and 'outreach' sites referring to the Cape of Good Hope SPCA, which occupies a large property to the South of the site.

Secondly, considering the 'dynamic networks' or 'armatures' (Jenson 2013: 35) that exist in the context. Rather than focusing on the vehicular roads, the existing desire line networks were considered thoroughly. As it appears, the open site currently serves as an important connection between the fabric above and below Klip Road, with very few alternative routes connecting across Klip Road.

SITE MAKING:

Conceptual site making

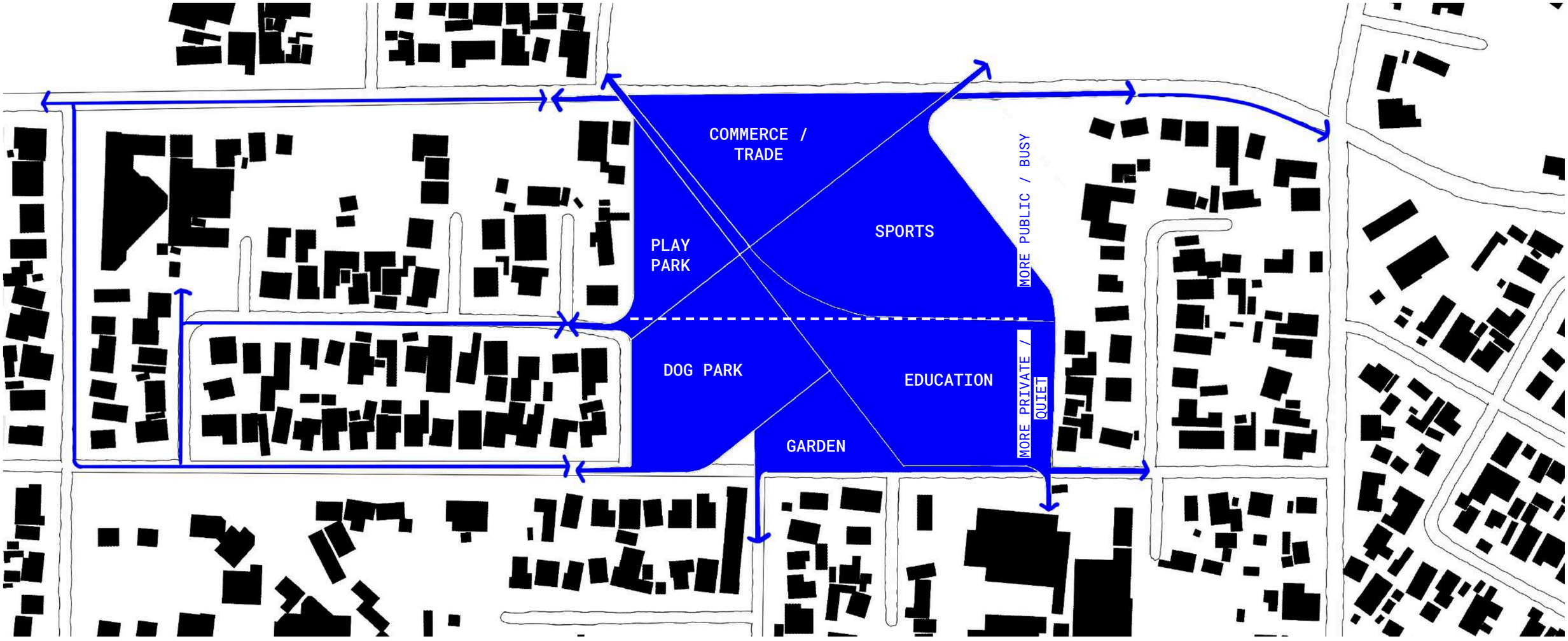


fig 123 (Author, 2023): Constructing the urban surface

In the initial stages of 'making the site', it was deemed important to retain the current permeability of the site along these key desire lines, preserving and strengthening the existing network of paths rather than introducing a new and orthogonal circulation network. These lines were therefore used to divide the large site into different 'districts' (Lynch, 1960), each assigned a programme that would correspond to the existing 'enclaves' in the surrounds, and consider their position on the site (whether they fall to the more private and quiet edge, or the more public and busy edge of the site).

Commercial activities would sit along Klip Road to capitalize on both the vehicular and foot traffic. The sporting activities would gesture toward the Fairmount Sports facility across Klip Road. The play park would sit to the edge; easily accessible from either Klip Road or Fayker Road, yet ensuring limited exposure to both these vehicular streets for safety. The dog park – deemed essential to accommodate any visiting guide dogs – would sit on the South-Western corner towards both the SPCA and the residential fabric. The garden would be placed at the center of the edge along 1st Avenue, and the educational district, although placed directly across from the primary school, would act as a corridor stretching across the site towards the secondary school across from Klip Road.

Further, it is important to note all three routes which connect the site with the existing LOFOB Training Centre. These routes could be utilized as part of their Mobility and Orientation training, with the route along Klip Road being reserved for the most confident of clients, the route along 1st Avenue (which experiences some traffic, but less that Klip Road) for clients that are building their confidence, and the route along Fayker Road (a very quiet, residential street) reserved for either the pre-school children or clients with low confidence to safely access the site.

SITE DEVELOPMENT:
Initial site response

1 Trade
2 Sport
3 Play park
4 Dog Park
5 Education
6 Garden

fig 124 (Author, 2023): Site divisions + programmed districts

As an initial response across the entire site footprint, Lynch's concept of city elements for imageability were employed in order to create a site with a high perceptibility. As previously mentioned, the existing desire lines informed the introduction of a network of paths onto the site, which divide the large site into separate and programmed 'districts' (Lynch, 1960).

Thereafter, to strengthen the edges between these districts, buildings were introduced along the primary pathways, which due to the diagonal orientation of these paths, now face in accordance with the solar cardinals. The buildings facing north would house the more important programmes (in accordance to the district the fall in) and the buildings facing east would house secondary programmes. All of these buildings, rather than acting as hard edges, act as seams between the districts; allowing for permeation between districts rather than completely severing them (Lynch, 1960). (Landmarks and nodes to be incorporated later on).

Further, these building 'seams' (Lynch, 1960) act as bookends, almost holding the center of the site. This is done deliberately to protect this interior of the site from the harsh winds from the South-East and North-West. To further protect this area, and distinguish it from the rest of the site kinesthetically, it is sunken into the earth by 1,2m, connected at various points to the rest of the site with ramps.

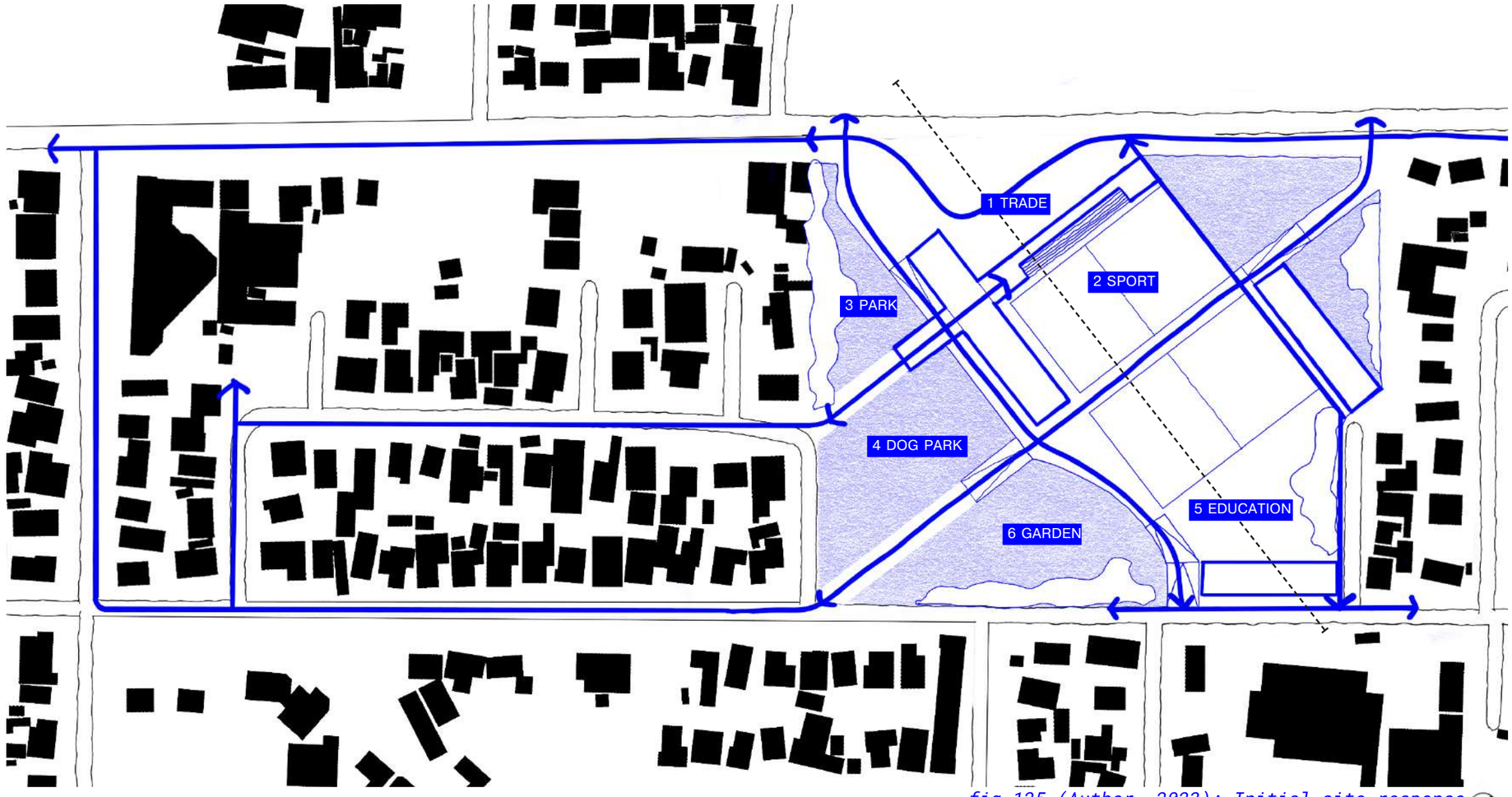


fig 125 (Author, 2023): Initial site response

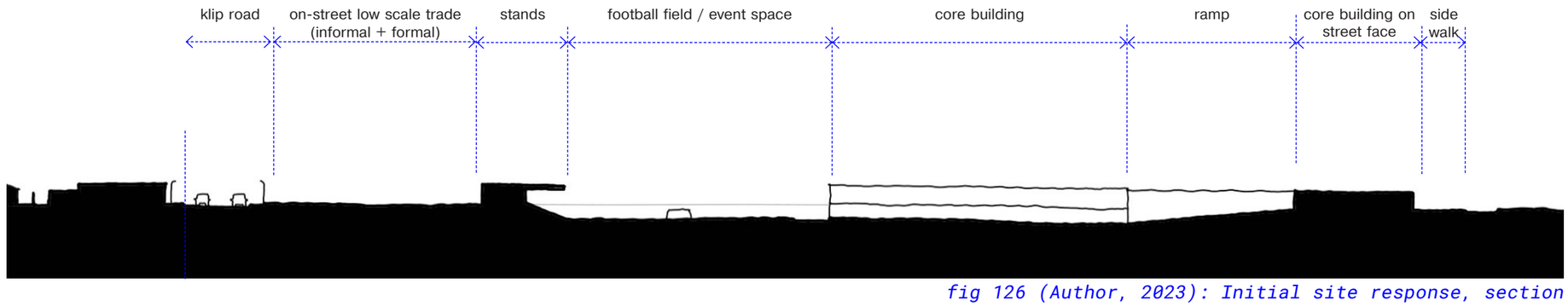


fig 126 (Author, 2023): Initial site response, section

SITE DEVELOPMENT:

Site plan: utilizing full site

Further development of the site plan:

ASSIGNING PROGRAMMES + LOOSE SPATIAL PLANNING:

The Visitor's Centre (the eye-care clinic on ground floor, and Blind Buddy Centre above) faces onto Klip Road, almost gesturing one to enter. Similarly, the formal trade stalls also face to the street, in order to capitalize off of the higher foot traffic in this area.

In the center of the site (sunken interior) sits the full-size football fields, oriented to North, with the grandstands and supporting facilities (changerooms, ablutions etc) facing onto it.

The play park to the side is easily accessed from Klip Road or Fayker Road, and is overlooked by the cafй (additionally connected to the Visitor's Centre), which would be rented out to a local entrepreneur.

The dog park and sensory garden, sits to the more residential edge, as recreational spaces for residents and visitors.

The after-school learning spaces and workshare spaces sit at the South-Eastern corner of the site.

After the development of this site plan, it became evident that the site should be somewhat reduced. Although the generosity of space does enable the project to offer various valuable activities and amenities, and additionally provide enough space that for mobility training within the site, it is simply too large. The individual programmes would have to be diluted in order to cover the entire footprint, navigating the site would be troublesome, and it would be difficult to ensure activation and surveillance of such a large space.

Instead of proceeding, it was deemed necessary to attempt a site plan exploration on what we determined the 'minimum site footprint' to be during the earlier site analysis.

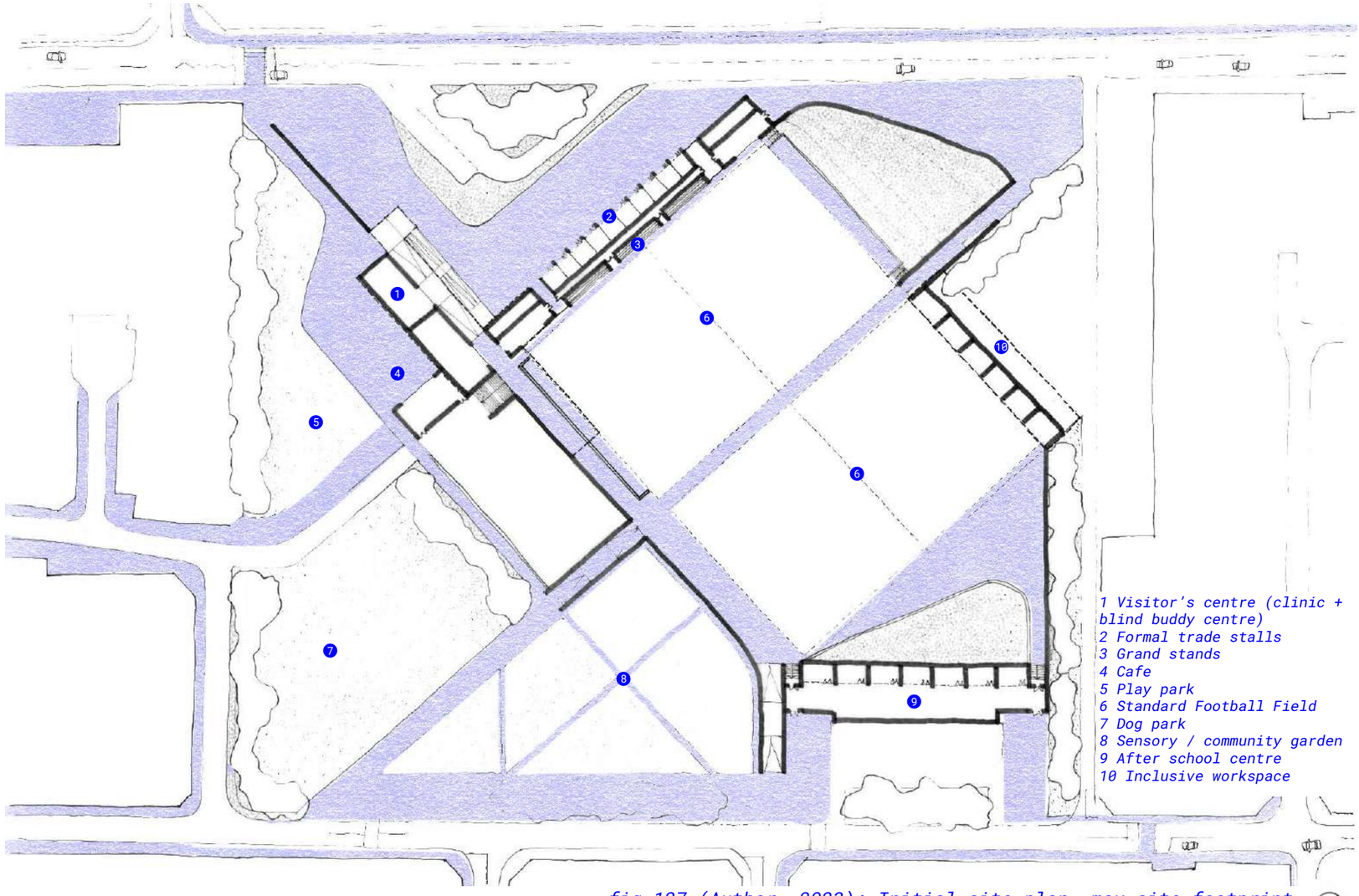


fig 127 (Author, 2023): Initial site plan, max site footprint

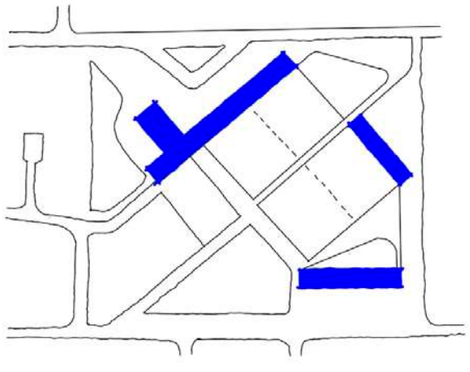


fig 128 (Author, 2023): Building as edge

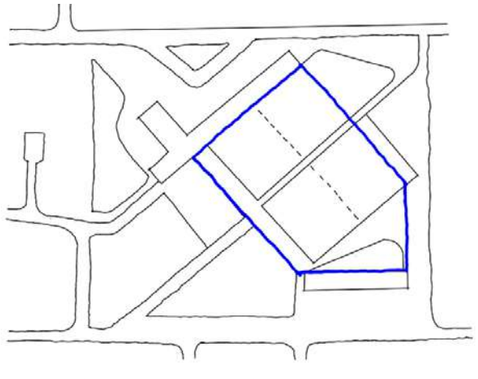


fig 129 (Author, 2023): 'Held' interior

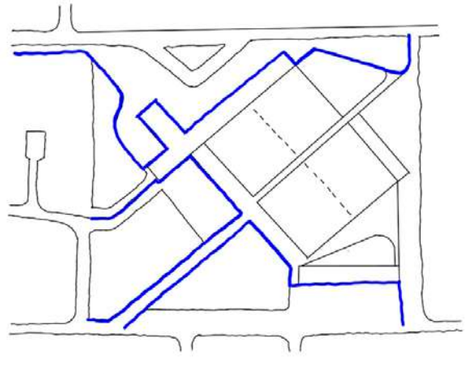


fig 130 (Author, 2023): Arrival edges

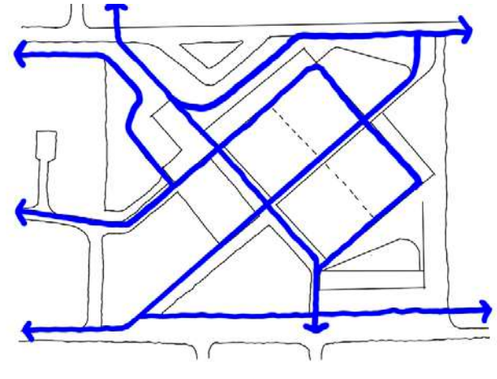


fig 131 (Author, 2023): Movement networks

SITE DEVELOPMENT:

Site plan: scaled down

Further development of the site plan:

ASSIGNING PROGRAMMES + LOOSE SPATIAL PLANNING:

Without having to manipulate the original site configuration too much, a similar design approach was applied to the smaller site footprint:

Visitor's Centre to the front, along with the formal trade stalls (now significantly less, which would more realistically get filled by local traders), the Cafй, still overlooking the park and connecting to the Visitor's Centre, and the 'Clubhouse' restaurant and bar at the corner of the site.

The football pitch – now adjusted for 7-a-side soccer instead, which also better suits the inclusive sport futsal (a 5-a-side sport) – with its overlooking grandstands and facilities at the center, along with the addition of goalball courts.

The play park, dog park and sensory garden remain in its original position, with the after-school learning facilities facing onto the gardens, and the workshare spaces shifted to sit above it, on the first floor.

The site is now much more compact, and many of the benefits associated with the original plain remain intact.

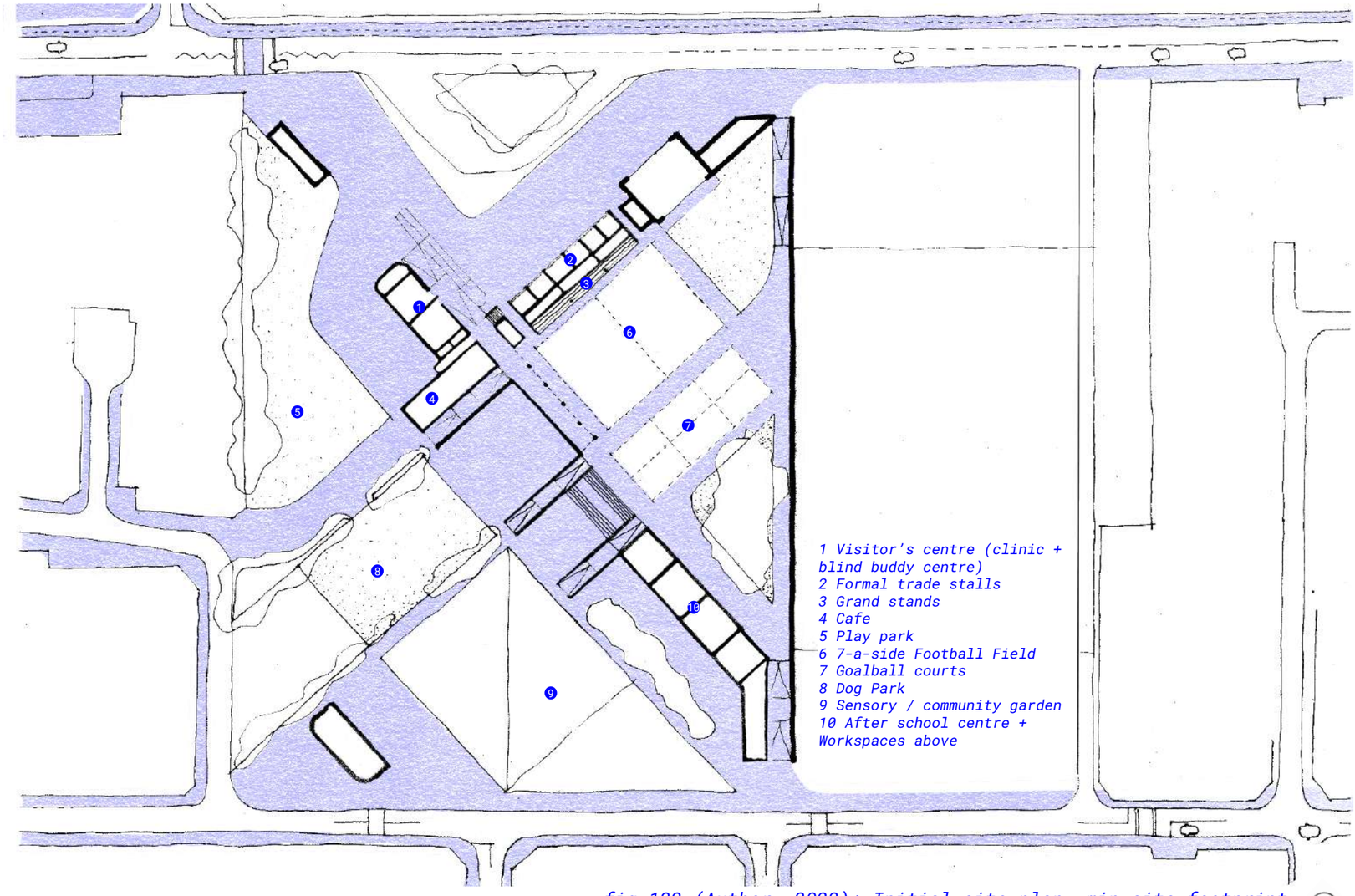


fig 132 (Author, 2023): Initial site plan, min site footprint

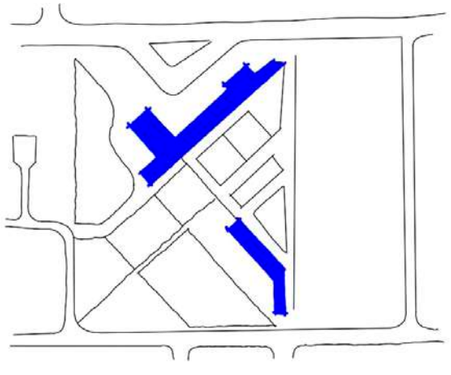


fig 133 (Author, 2023): Building as edge

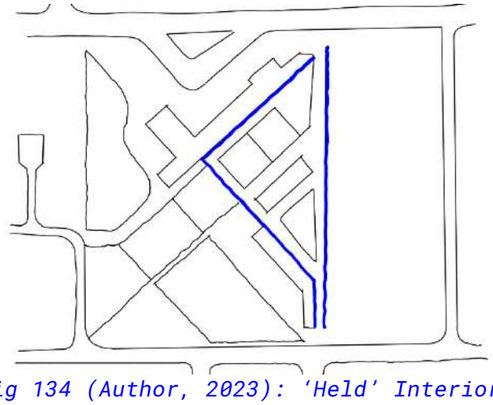


fig 134 (Author, 2023): 'Held' Interior

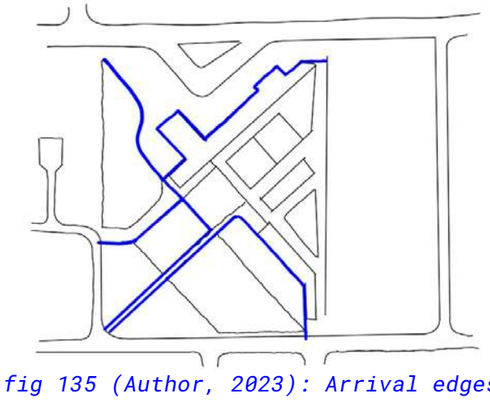


fig 135 (Author, 2023): Arrival edges

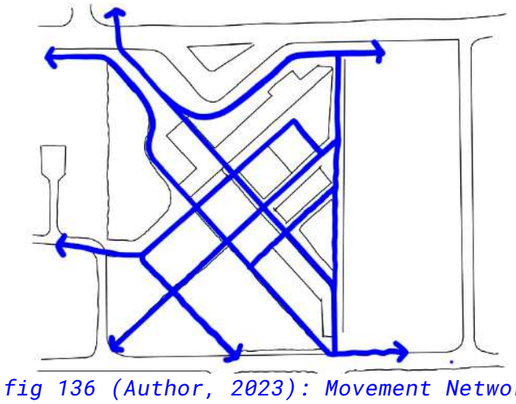


fig 136 (Author, 2023): Movement Networks

SITE DEVELOPMENT:

Future development in relation to site

In reducing the site footprint, the question arises of what would happen to the remaining portion of the open lot?

In accordance with David Crane's concept of 'capital designing' (where he encourages spatial planners to leave opportunities for other designers to benefit from their work, rather than proposing a comprehensive project [Southworth, 2003]), the remainder of the site is left open for future development.

Potentially, those developments would divide the remaining land into three strips: a general business development along Klip Road (which would allow for a continuity in the trade along the street interface), an educational development along 1st Avenue (in response to both the Fairview Primary School and the after-school learning spaces proposed on the site) with a continuation of residential housing in between.

The intention is that the project would offer these opportunities for development, drawing investment into the Grassy Park area.

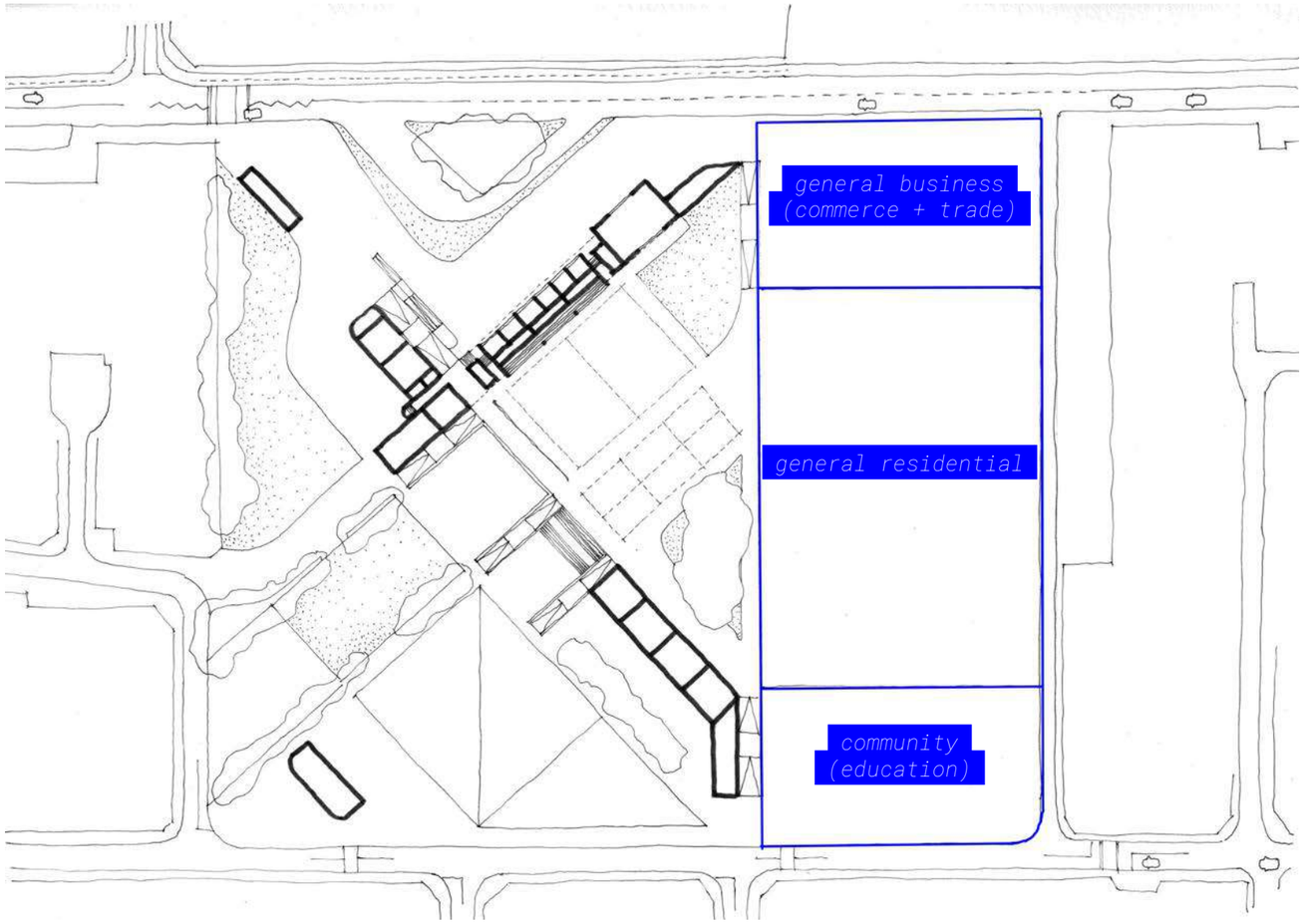


fig 137 (Author, 2023): Future development diagram

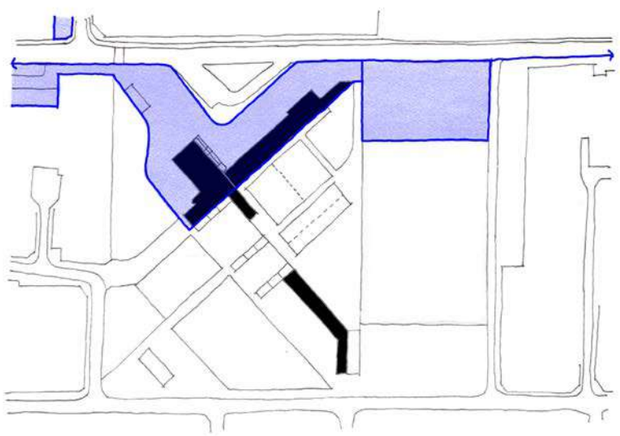


fig 138 (Author, 2023): Potential economic strip

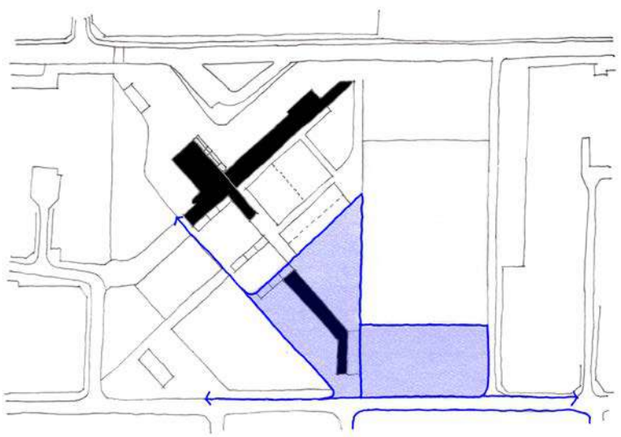


fig 139 (Author, 2023): Potential educational strip

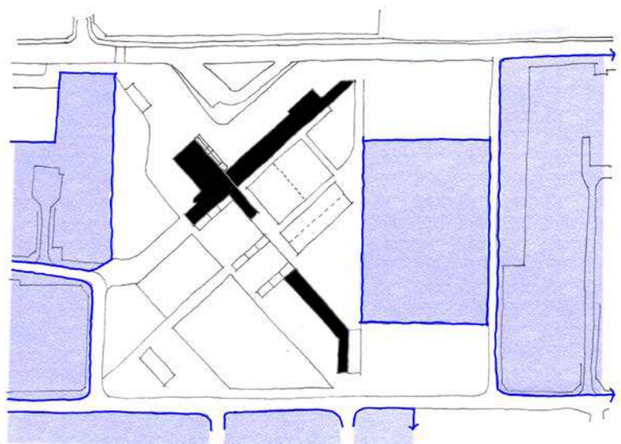


fig 140 (Author, 2023): Potential residential development

SITE MAQUETTE:

Site development model 1-1000

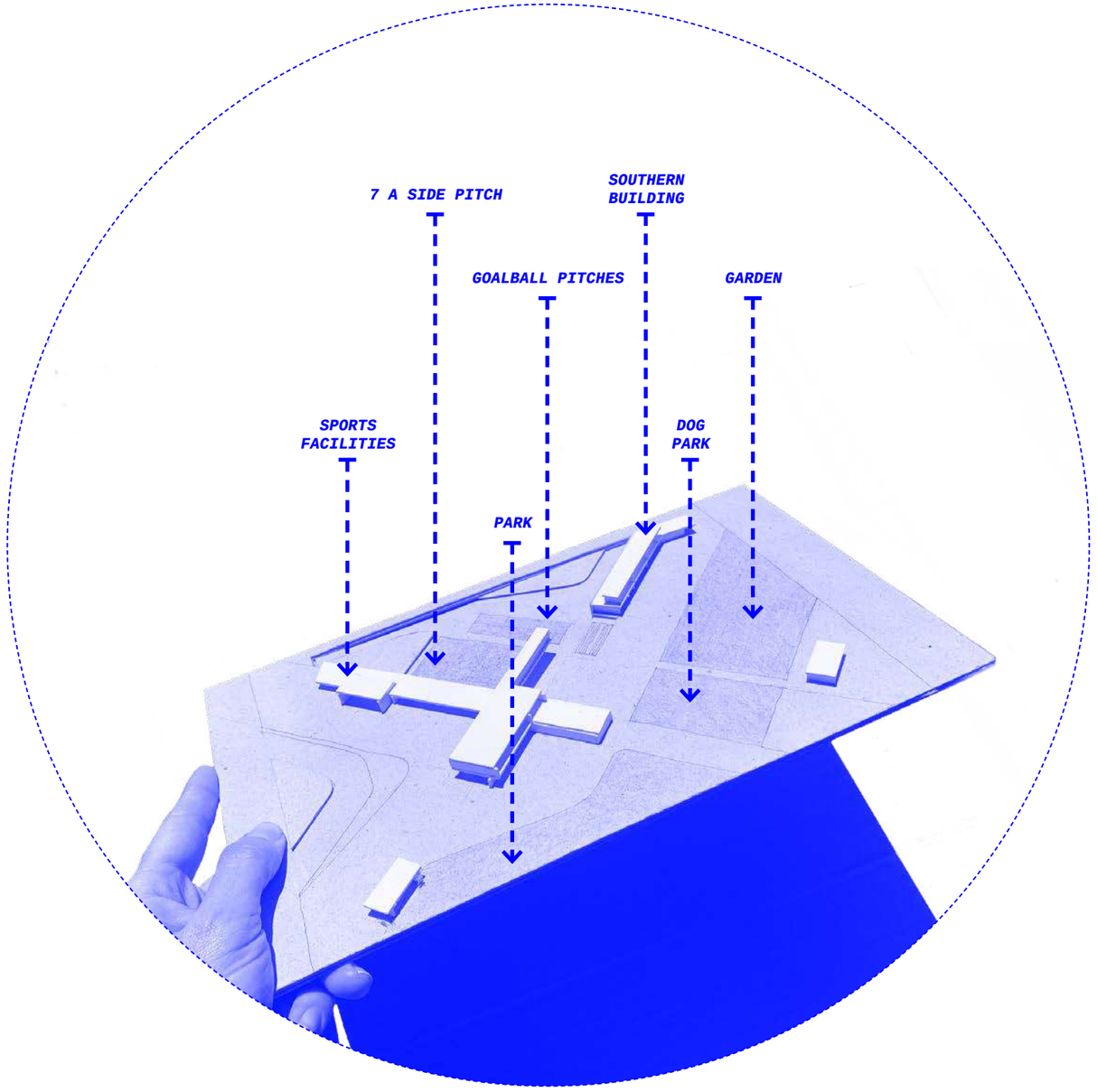


fig 141 (Author, 2023): Initial proposal maquette

This maquette explores how building masses can articulate and shape the urban spaces around it.

FINAL SITE CONFIGURATION

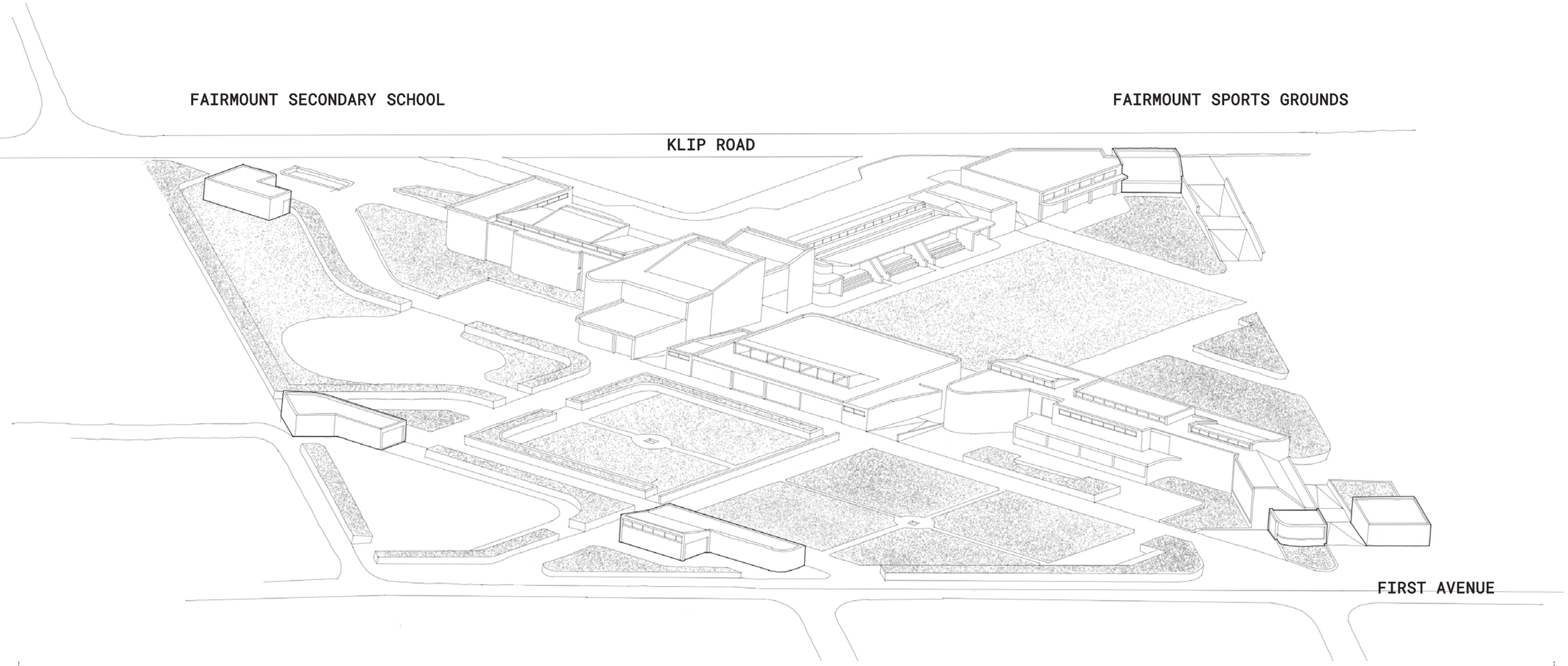
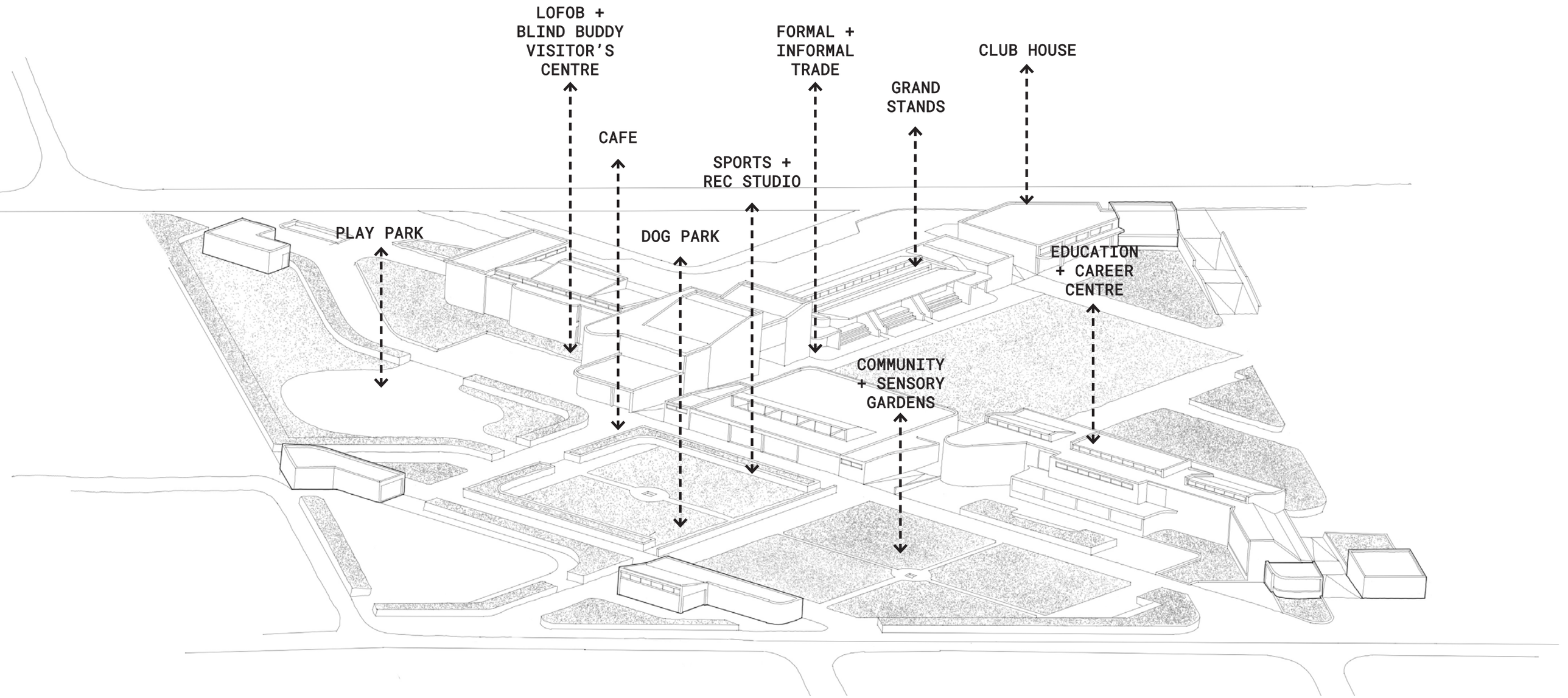


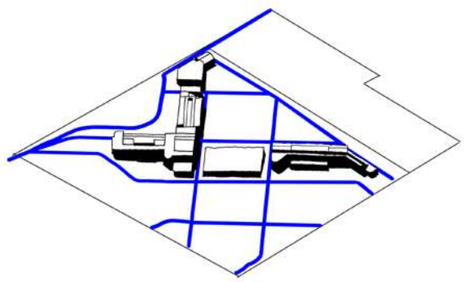
fig 142 (Author, 2023): Final Site Axonometric

The final site configuration may seem somewhat large and one might wonder if a larger site is the most appropriate response when designing for the blind, but unlike many other examples of buildings for the blind, this project does not revolve around the care, institutionalisation and isolation of the sight-impaired community. Rather, the large site offers them a generous public space that takes care to ensure that there are no spatial barriers which may restrict their comfort or dignity; allowing them to freely navigate and explore to their own comfort level. The project is, therefore, an urban intervention to which the architectural elements are critical in ensuring its success.

Lynch's elements of a city are employed in the configuration to ensure its non-visual perceptibility (see the following page) and the site consists of 'external' areas (street interfacing spaces) and a distinct 'internal' area, dropped 1,2m below the rest of the site, where the level changes are kinaesthetically experiences as one travels down the gradual ramps (ensuring individuals would be aware of their position, and express that they are entering a different kind of space).

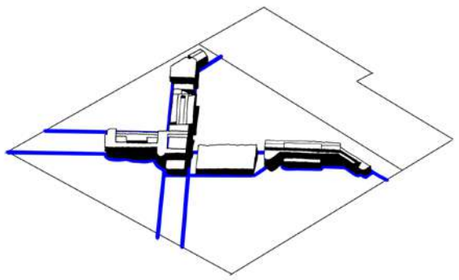
FINAL SITE CONFIGURATION





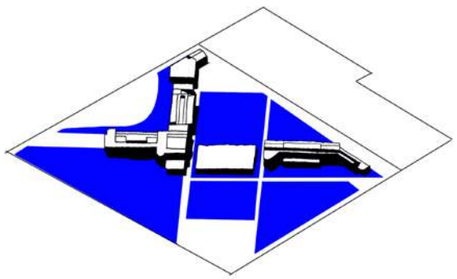
PATHS (LYNCH, 1960)

fig 143 (Author, 2023): Site paths diagram



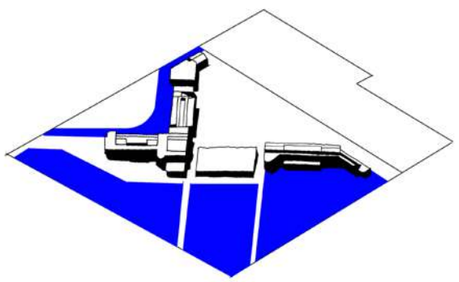
EDGES (LYNCH, 1960)

fig 144 (Author, 2023): Site edges diagram



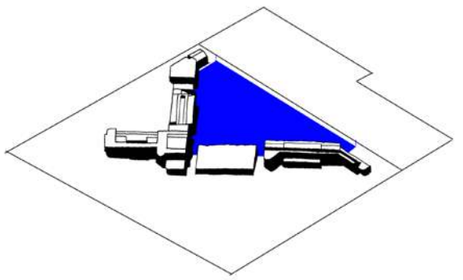
DISTRICTS (LYNCH, 1960)

fig 145 (Author, 2023): Site districts diagram



STREET INTERFACES

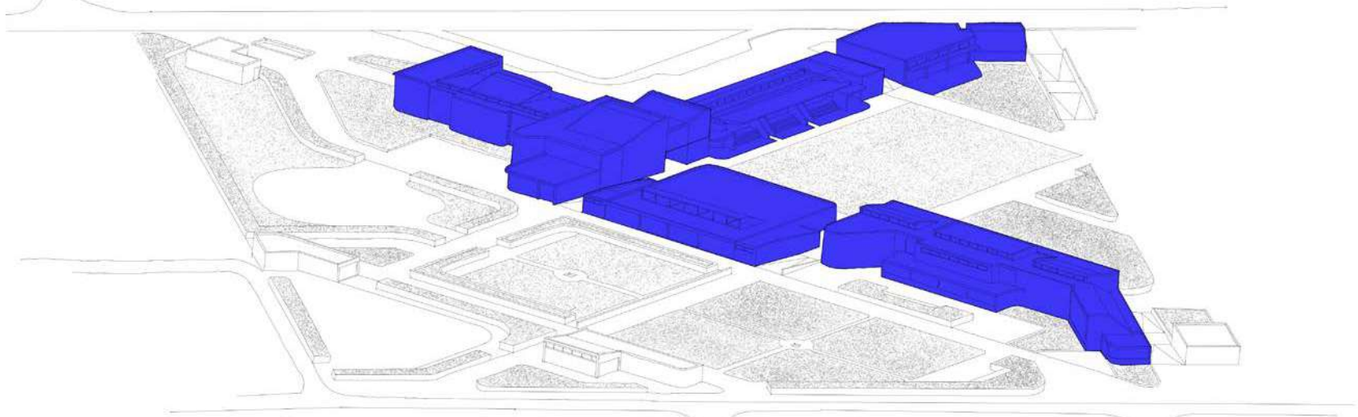
fig 146 (Author, 2023): Site street interfaces diagram



SUNKEN INTERNAL COURT

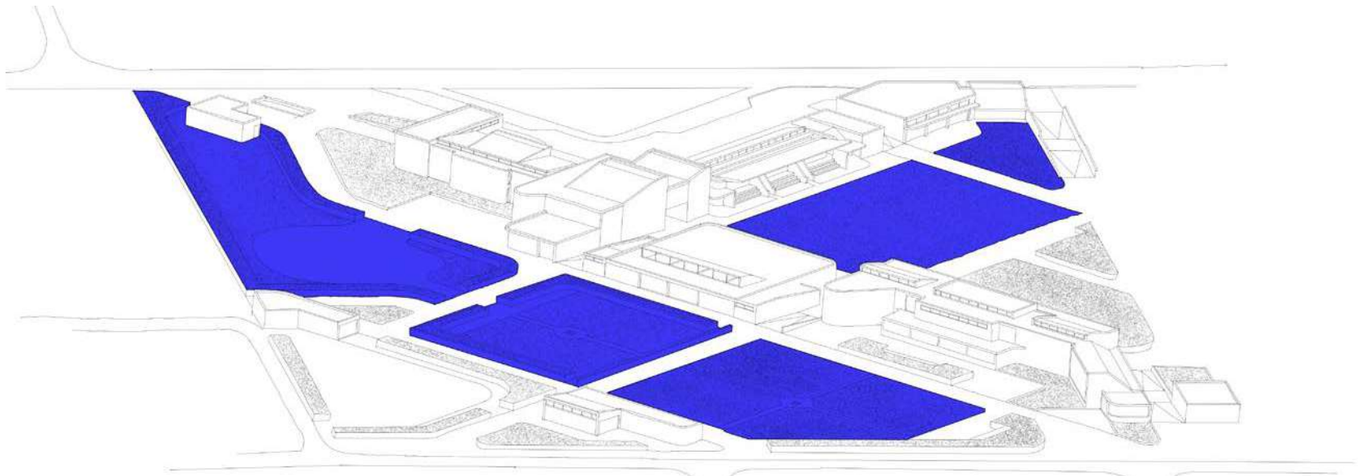
fig 147 (Author, 2023): Site interior diagram

FINAL SITE CONFIGURATION



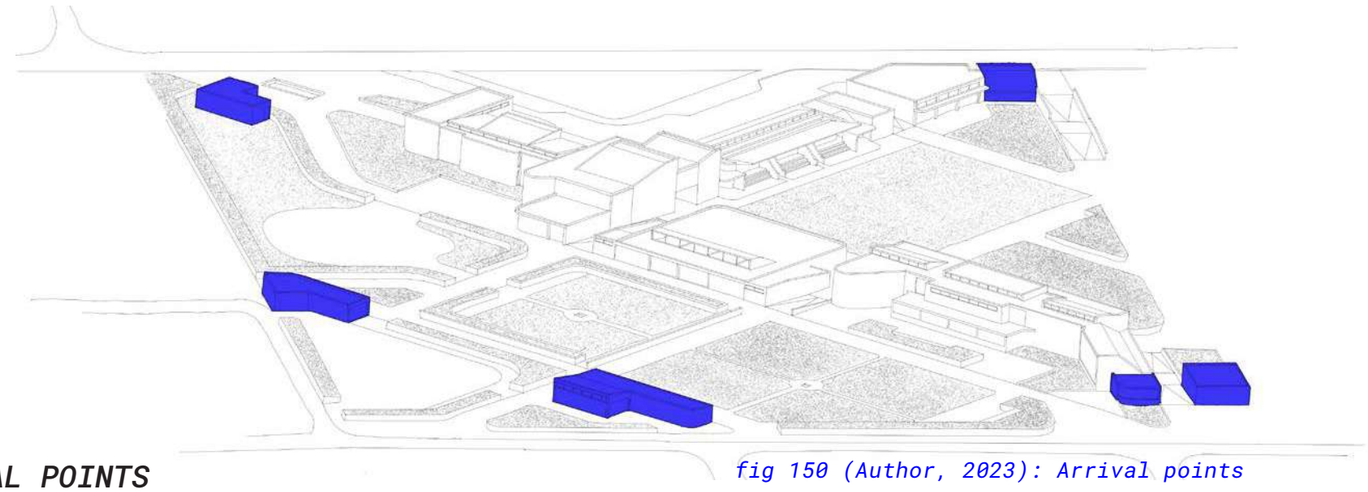
BUILDING MASSES

fig 148 (Author, 2023): Building mass diagram



PROGRAMMED LANDSCAPE

fig 149 (Author, 2023): Programmed landscape diagram



ARRIVAL POINTS

fig 150 (Author, 2023): Arrival points

The various entrance points ensure that each distinct ‘region’ or programme can be either easily accessed from the closest arrival area by individuals who may not be as confident in their abilities to navigate the space (including the elderly and young children). However, individuals who are more confident and willing to challenge and exercise their abilities to navigate through a larger urban space, are able to do so safely – the building arrangement ensuring that all areas of the site are well-surveyed, and places arrival points, that welcome and orient you once you enter or exit the site. These points would also be equipped with technological information in the form of a wayfinding application, guiding you throughout the site through your cellular device.

FINAL SITE PLAN:

Site plan in context 1-1000

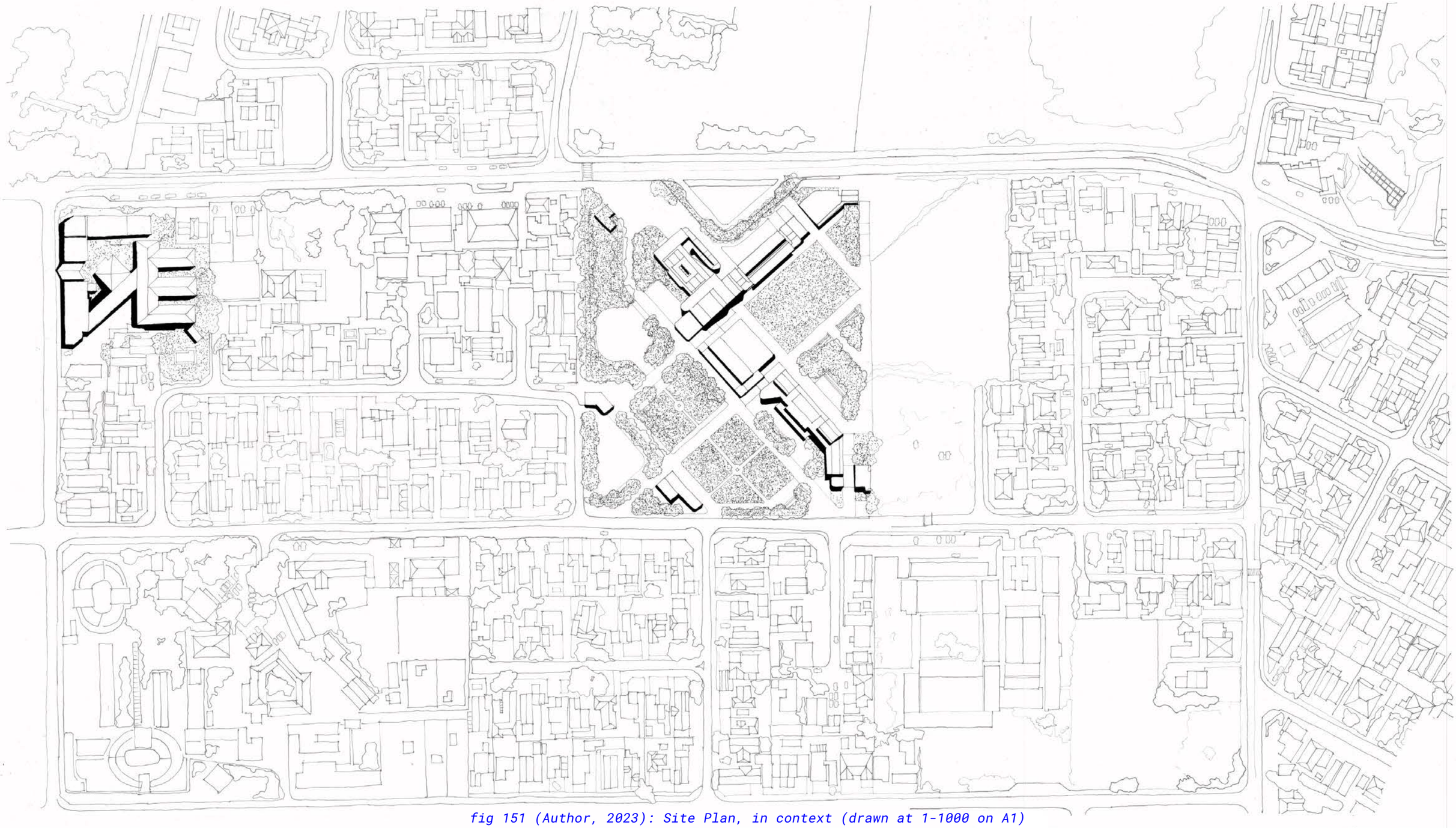


fig 151 (Author, 2023): Site Plan, in context (drawn at 1-1000 on A1)

SITE PLAN:

User networks

Although the project intends to open itself to the entire community, a few specific user groups were identified and their potential interactions with the site diagrammatized.

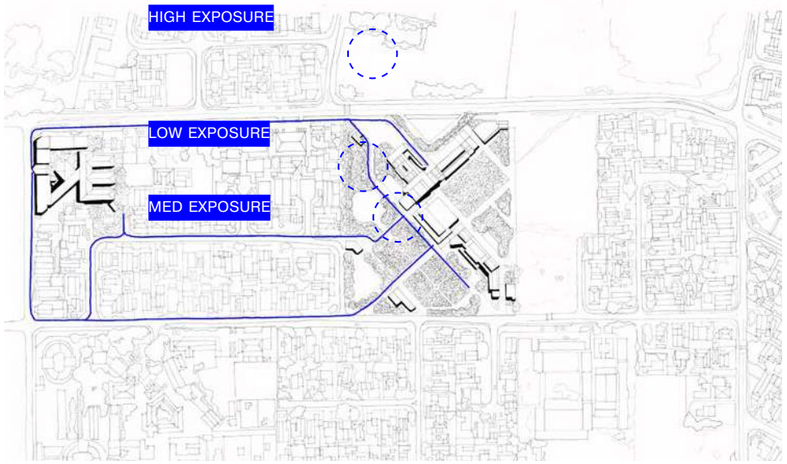


fig 152 (Author, 2023): LOFOB Clients mobility routes and arrival points

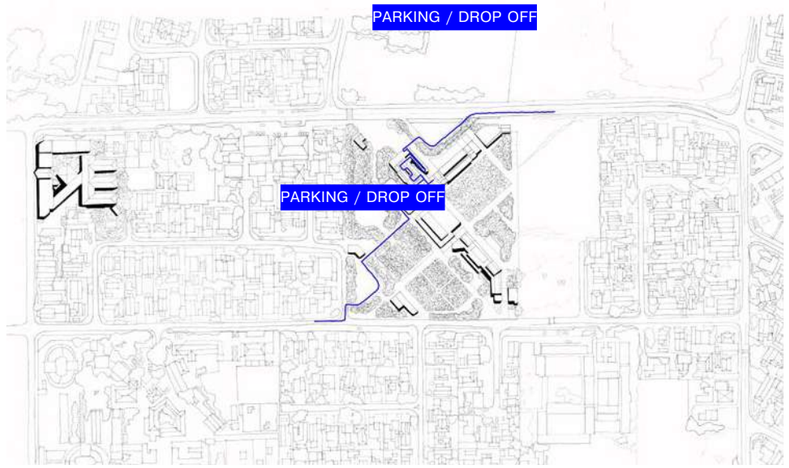


fig 153 (Author, 2023): Blind Buddy Centre visiting groups arrival, route and departure

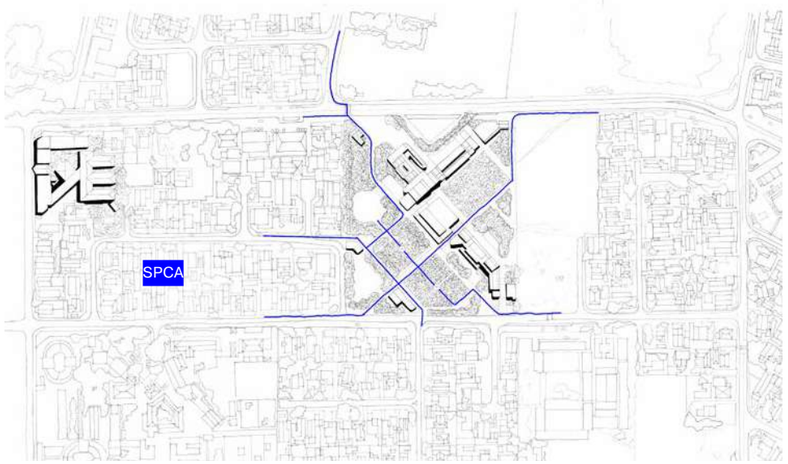


fig 154 (Author, 2023): Locals' recreational network(park, dog park, garden)

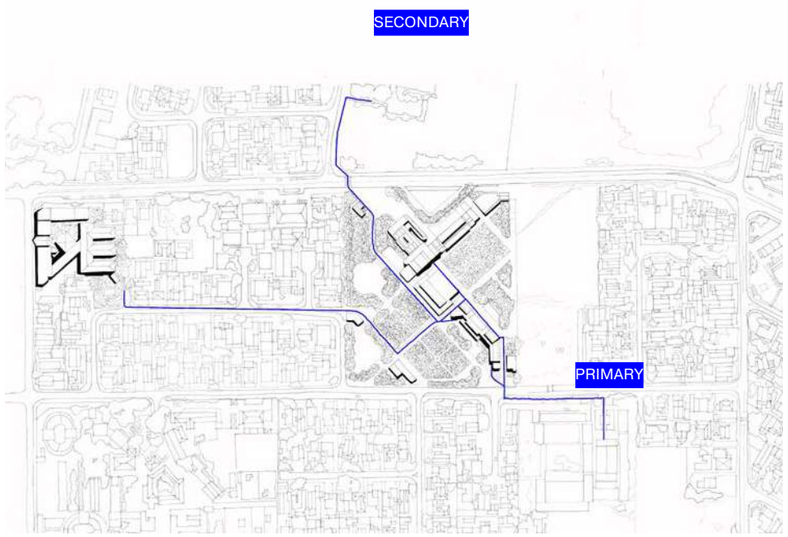


fig 155 (Author, 2023): School kids networks to learning centre

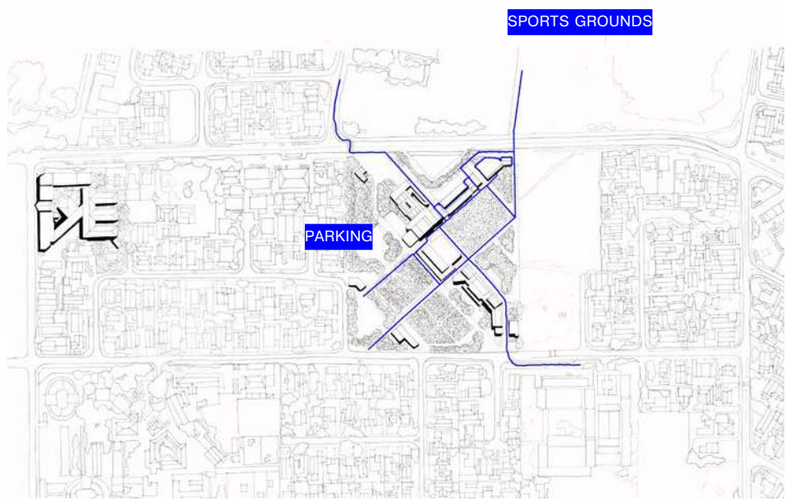


fig 156 (Author, 2023): Sporting spectator networks

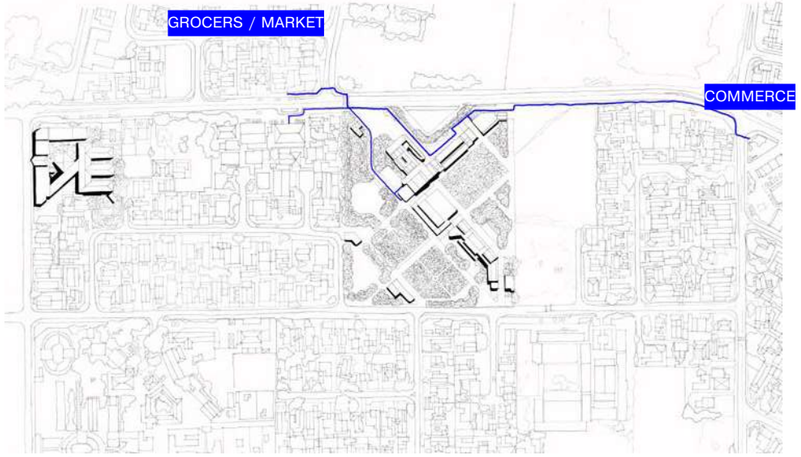
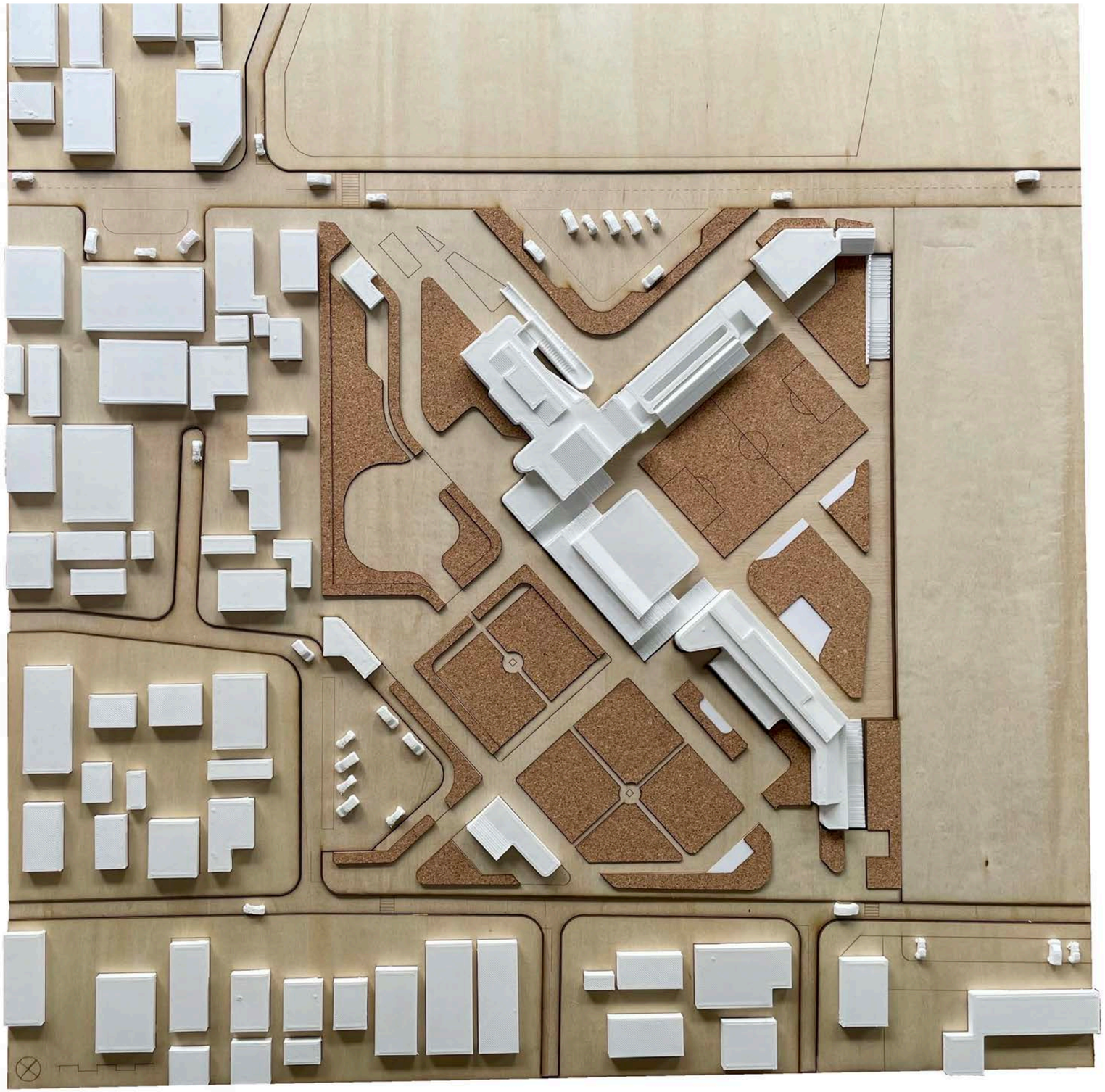
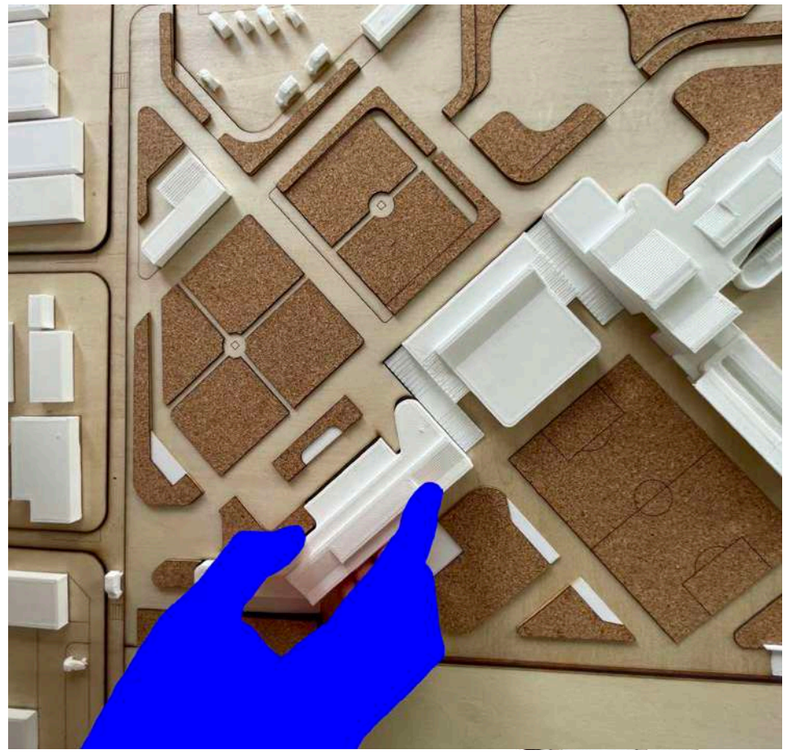


fig 157 (Author, 2023): Economic networks (trade + commerce)

SITE MODEL:

Site model 1-500





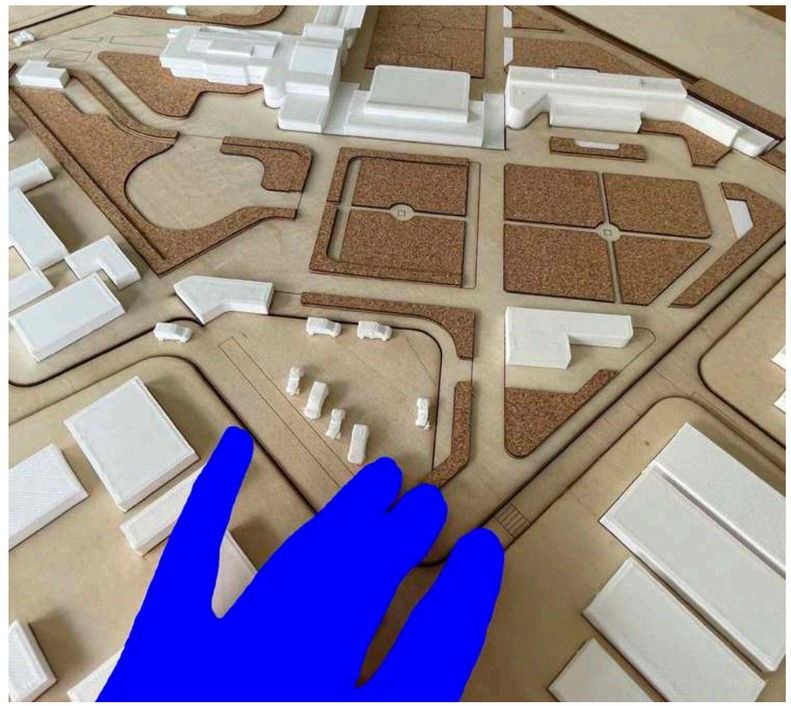
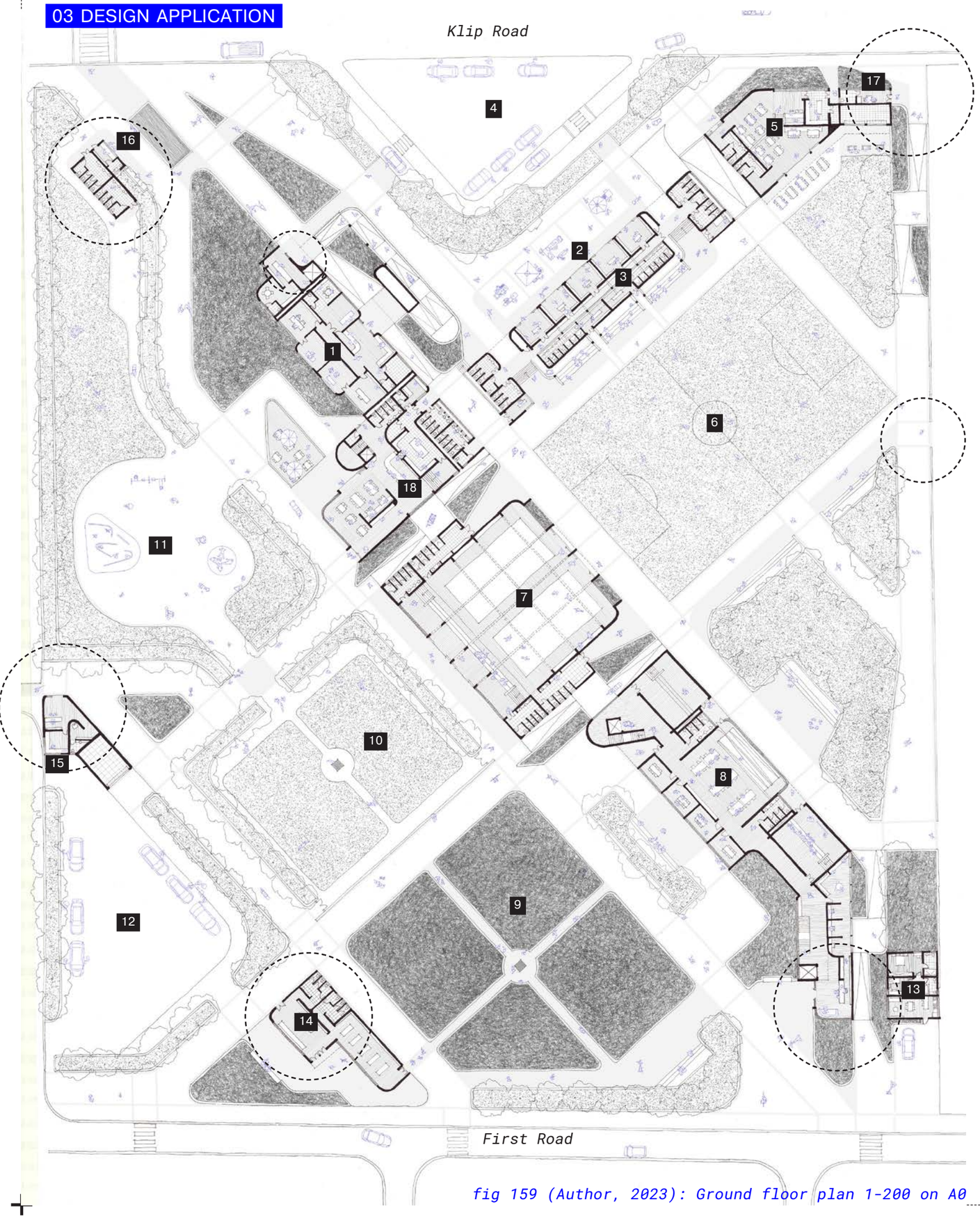


fig 158 (Author, 2023): Site model 1-500



1 Eye-care clinic (GF of Visitor's Centre)
2 Formal + Informal Trade
3 Grandstands
4 Parking + Drop off
5 Clubhouse restaurant + bar
6 7-a-side pitch
7 Indoor sports / culture studio (goalball / dance)
8 Learning Centre
9 Sensory Gardens
10 Dog park
11 Play park
12 Parking
13 Caretaker's residence
14 Garden Welcome area + seedling store
15 Security
16 Security
17 Sports facilities manager
18 Cafe

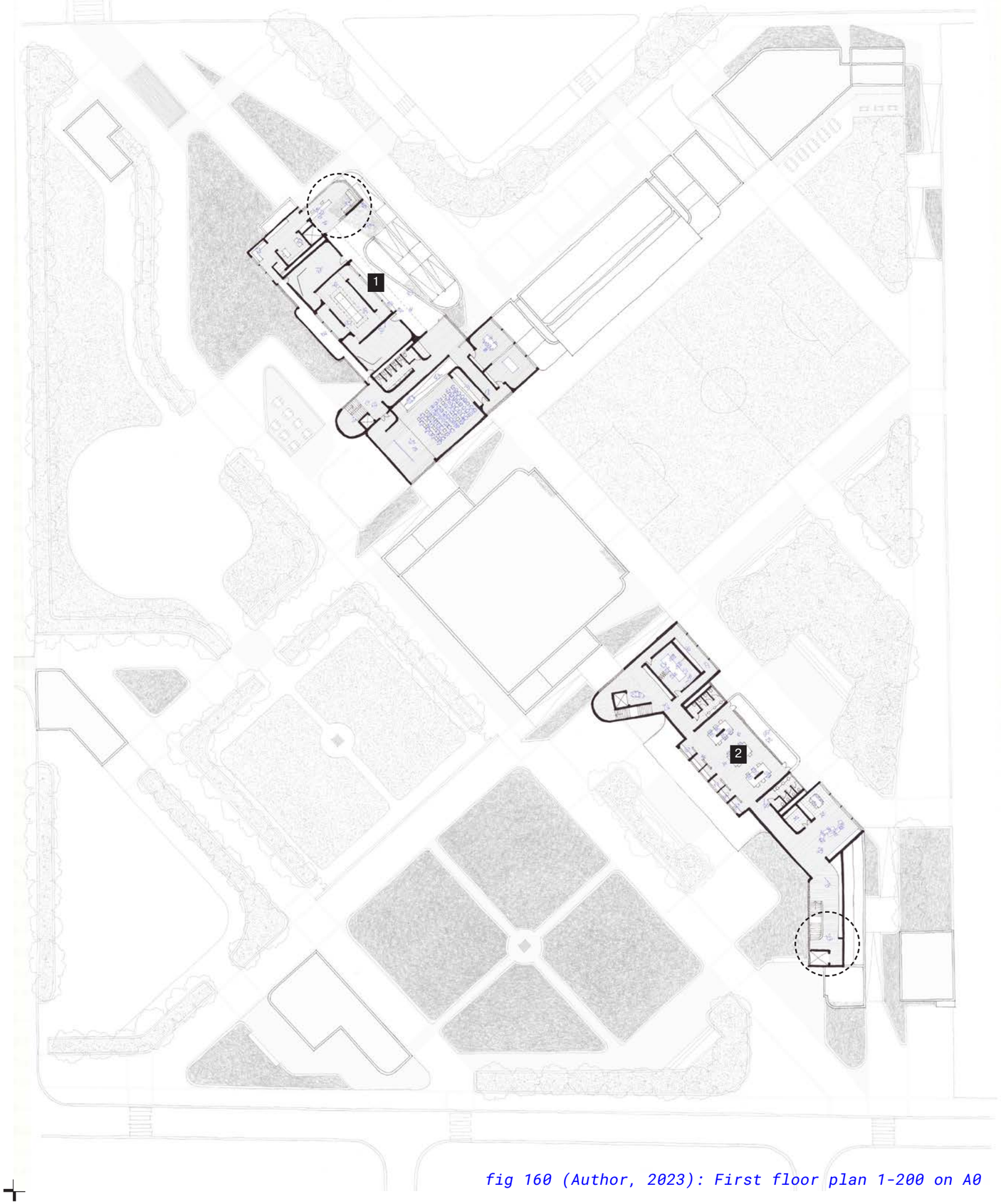
SEEING:
Articulating of nodes and paths
Consistent 6m grid

SURFACING:
Ensuring universal access, permeability throughout site and multiple options for choosing a route

PATTERNING:
Surface textures as indicators of movement direction, change in level and entrance locations
Aromatic planting around important nodes
Walls as guiding planes; curved shape easing movement through space

GROUND FLOOR PLAN 1-200 ON A0

fig 159 (Author, 2023): Ground floor plan 1-200 on A0



1 Blind Buddy Centre (FF of Visitor's Centre)
2 Workshare Spaces

SEEING:
Articulating of nodes and paths
Consistent 6m grid

SURFACING:
Ensuring universal access, permeability throughout site and multiple options for choosing a route

PATTERNING:
Surface textures as indicators of movement direction, change in level and entrance locations
Aromatic planting around important nodes
Walls as guiding planes; curved shape easing movement through space

FIRST FLOOR PLAN 1-200 ON A0

fig 160 (Author, 2023): First floor plan 1-200 on A0

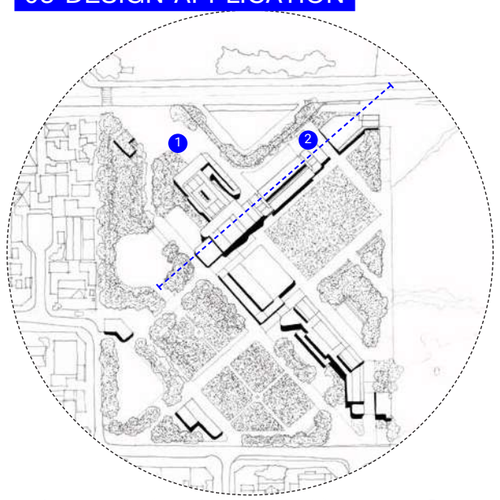


fig 161 (Author, 2023): Key plan

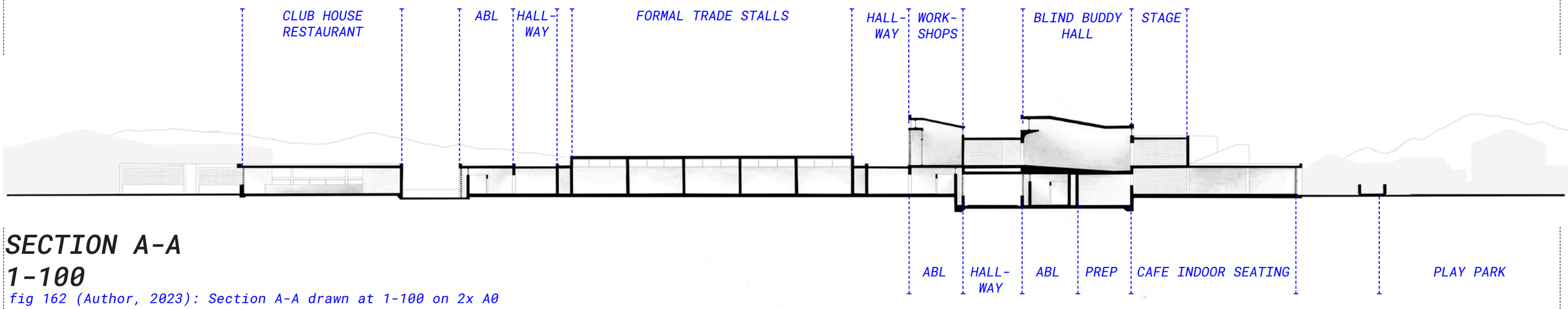
SPACE-MAKING

Continuous floor and wall surfaces: In accordance with SANS Part S, the site ramps down 1,2m, indicating kinesthetically a sense of arrival to attribute to imageability (Lynch, 1960). Floor surfaces are carefully considered to indicate direction of movement and articulate different spaces. Wall surfaces are critical elements for guiding the movement of a visually impaired user on site (through trailing or shorelining), and the curves aim to subtly lead users into and through spaces.

Staff spaces: As many staff members on site may be employed ex-clients of LOFOB, staff spaces are not overlooked; these spaces are considered as integral to the project as visitor spaces.

Blind Buddy Visitor Centre processional route: A visit to the Centre is considered as a processional experience, starting as one ascends up the ramp (or if one prefers, the lift) onto the balcony overlooking Devil's Peak. One then enters the 'dark' room and engages with a sensory exhibition (auditory, tactile and olfactory), whereafter one proceeds to the 'light' room with visual and art exhibition (see Section A) and exit through another 'dark' sensory space. From there, groups can proceed to the hall for presentations, or the studio spaces for workshops.

Roofscapes and light: In section, the concept of 'holding space' is pursued through manipulating the roofscape and openings; volume and echoes are considered to indicate the hierarchy of spaces kinesthetically, in addition to the degree of soft light permitted into the spaces (preferred above direct light to avoid glare).



SECTION A-A
1-100

fig 162 (Author, 2023): Section A-A drawn at 1-100 on 2x A0

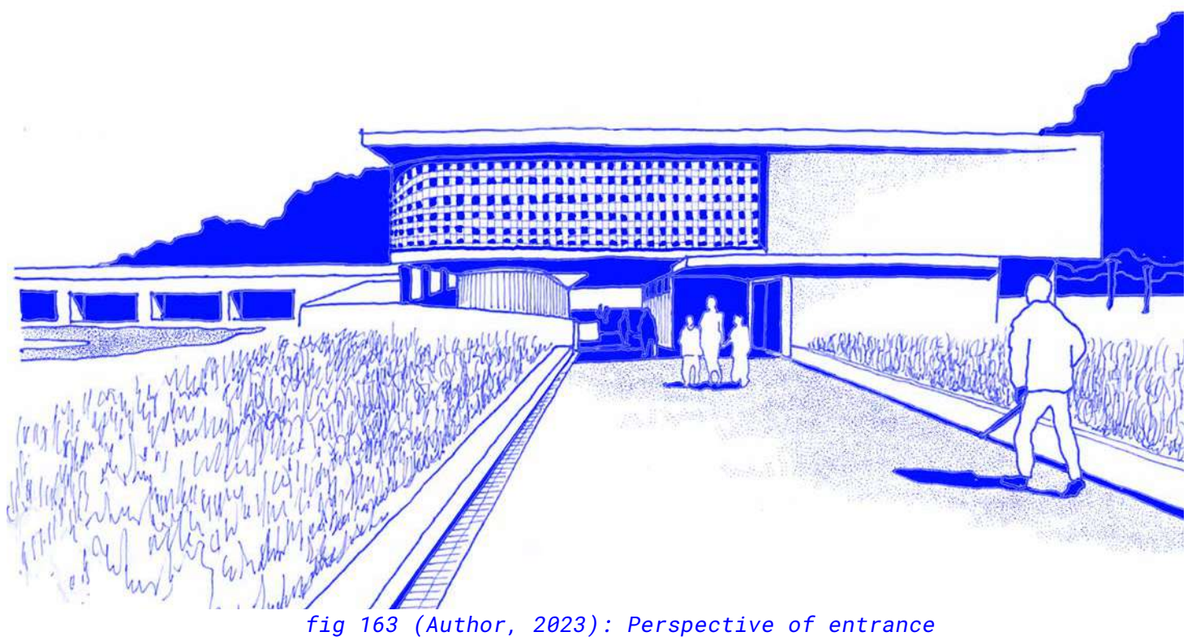


fig 163 (Author, 2023): Perspective of entrance

fig 164 (Author, 2023): Perspective of stalls

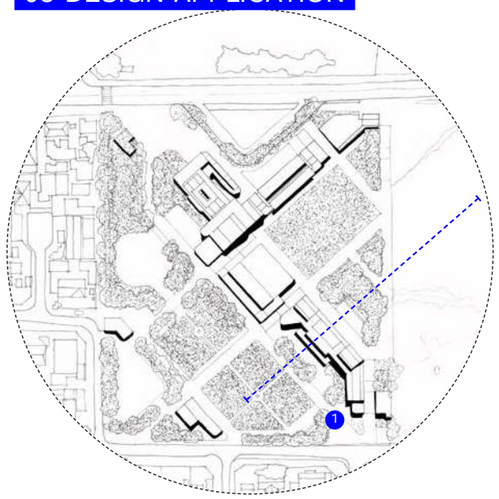
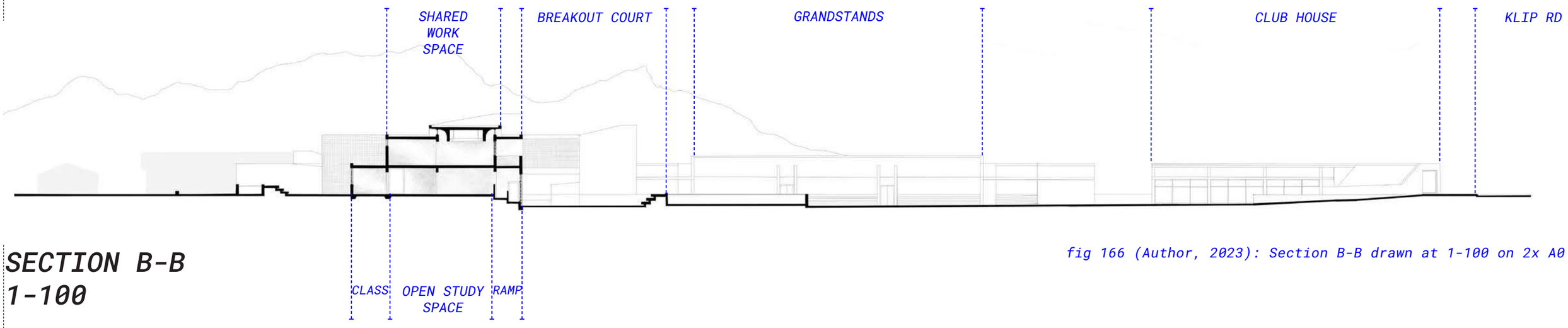


fig 165 (Author, 2023): Key plan



SECTION B-B
1-100

fig 166 (Author, 2023): Section B-B drawn at 1-100 on 2x A0

Acoustics and light: For education and work spaces like lecture rooms and individual meeting pods, acoustics ceilings are employed to ensure good quality of sound, and openings are limited along the faɜade facing the pitch in order to omit unwanted noise. In lecture rooms, natural light is not prioritized as projector screens may be necessary, and artificial lights would allow more control for different conditions. Soft light, however, is prioritised in other parts of this building; work and study spaces, meeting rooms and break rooms in particular.

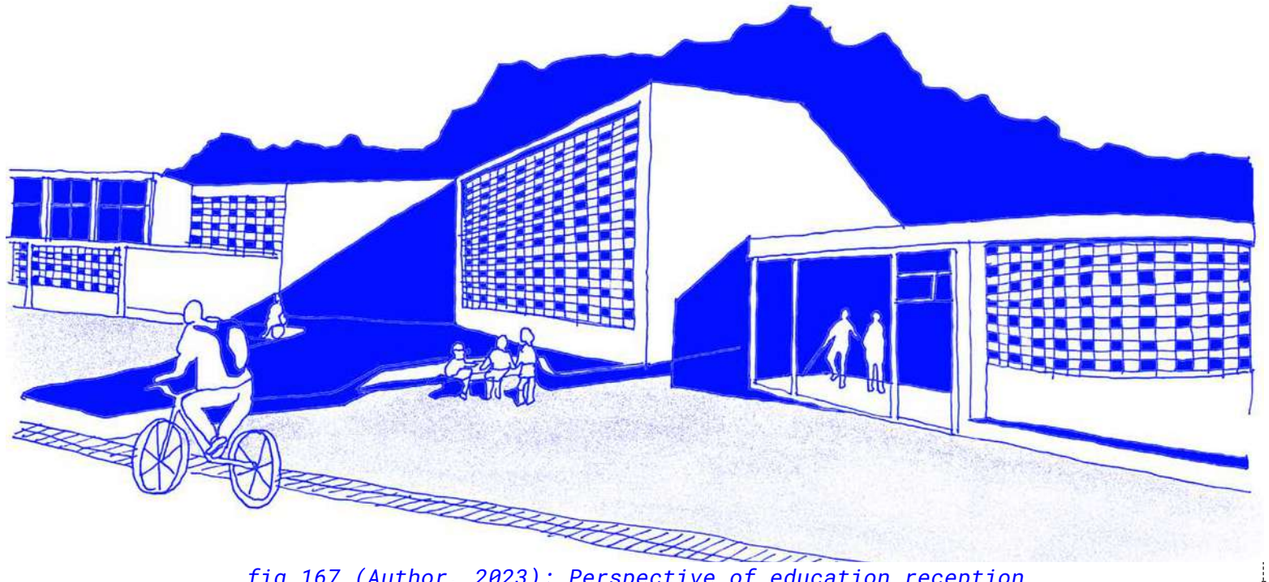
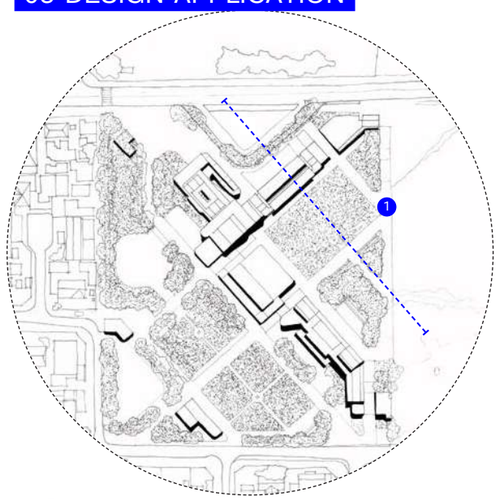


fig 167 (Author, 2023): Perspective of education reception



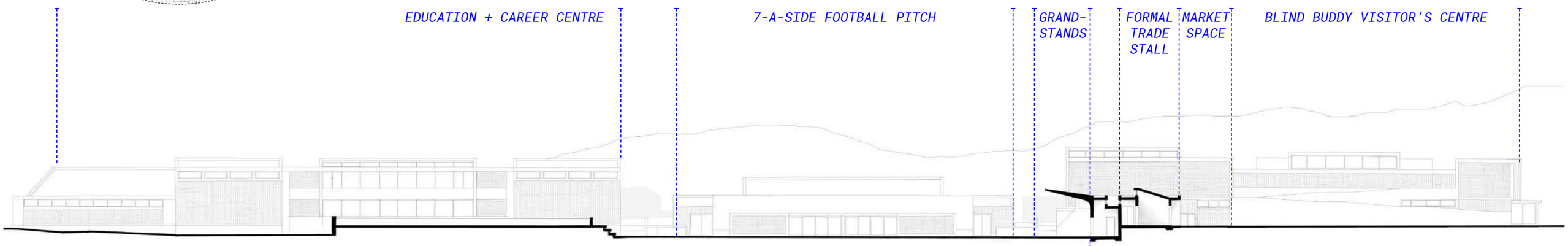


fig 168 (Author, 2023): Section C-C drawn at 1-100 on 2x A0

SECTION C-C
1-100

Universal access: As this building acts as the 'seam' (Lynch, 1960) between the existing ground plane and the sunken in interior portion of the site, it is important to ensure mobility challenged individuals can access the grandstands from either the top or the bottom. Similarly ablutions are allocation on both floors to ensure ease of access.

Permeability: Two corridors pierce through the building, ensuring it acts more as a 'seam' than a hard boundary along the site. Additionally, in order to allow emergency vehicles (ambulance) or service vehicles (delivery of equipment, maintenance, event set up etc) to access the pitch, a vehicular ramp is provided.

Trade: Formal 'lock up and go' trade stalls are available to rent for local entrepreneurs, and informal, serviced market spaces are made available on occasion, with storage located along the back corridor behind the formal stalls.

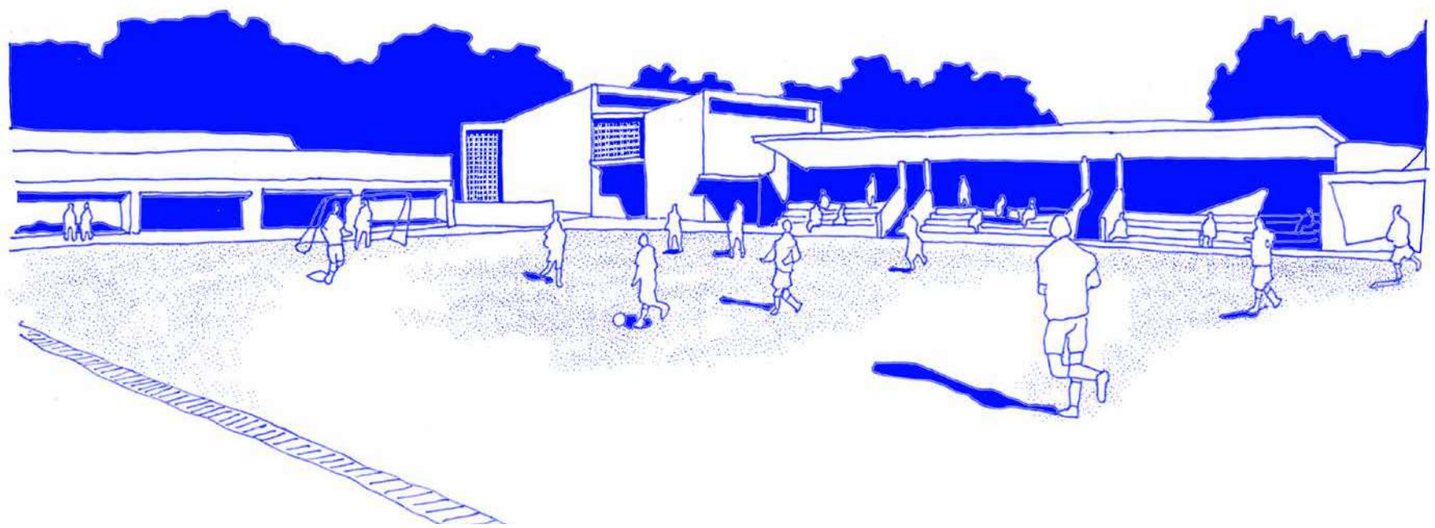
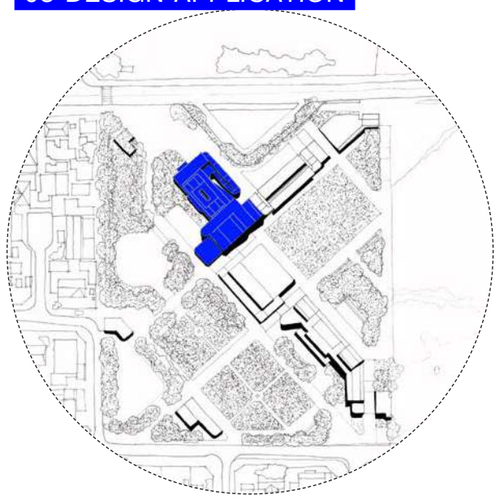


fig 169 (Author, 2023): Perspective of football pitch



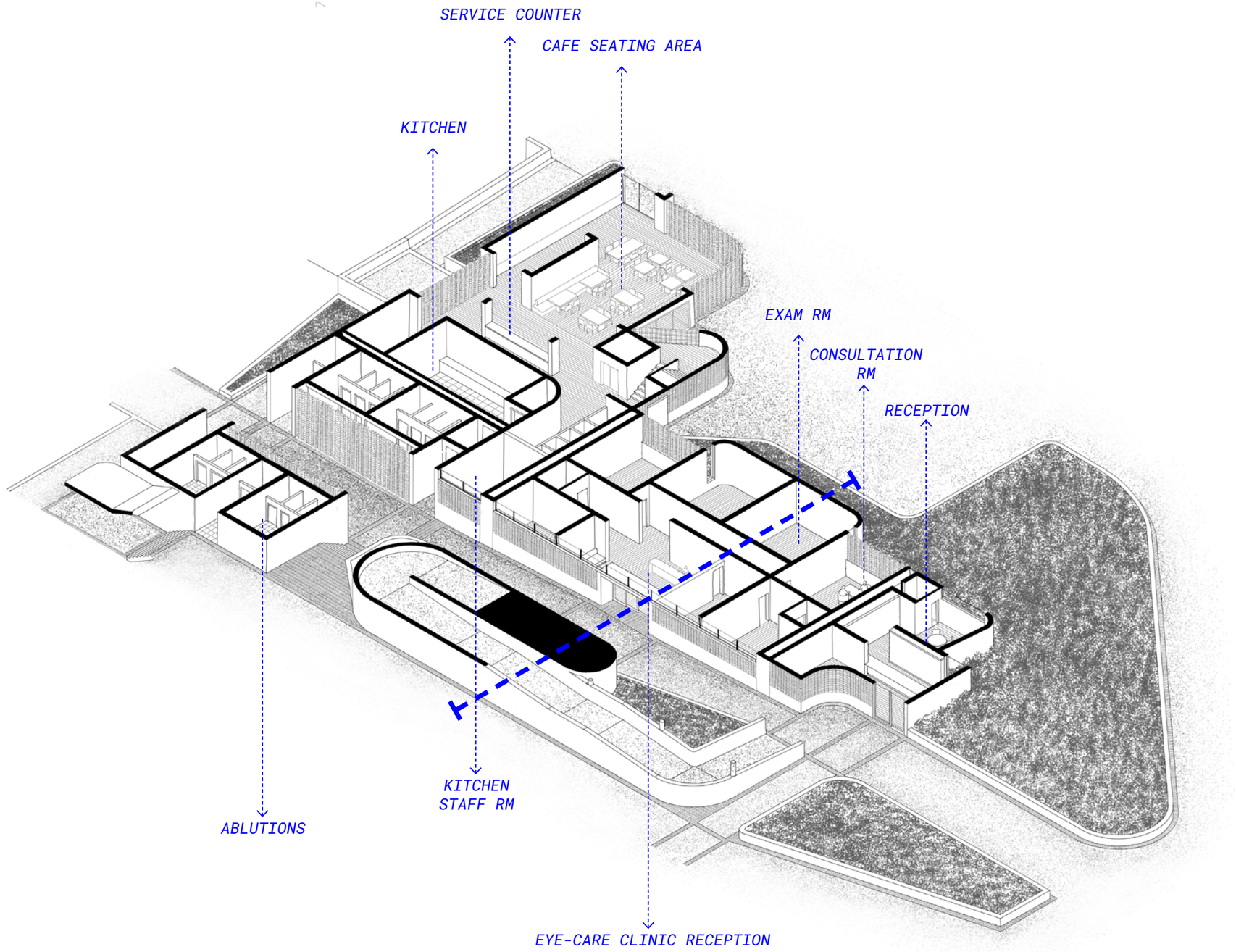
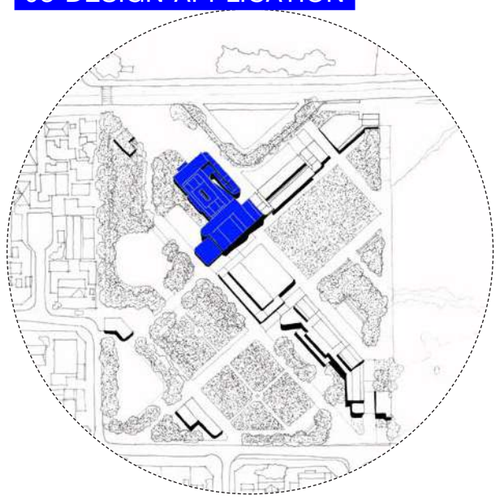


fig 170 (Author, 2023): Visitor's Centre Perspective

VISITOR'S CENTRE: GROUND FLOOR AXONOMETRIC



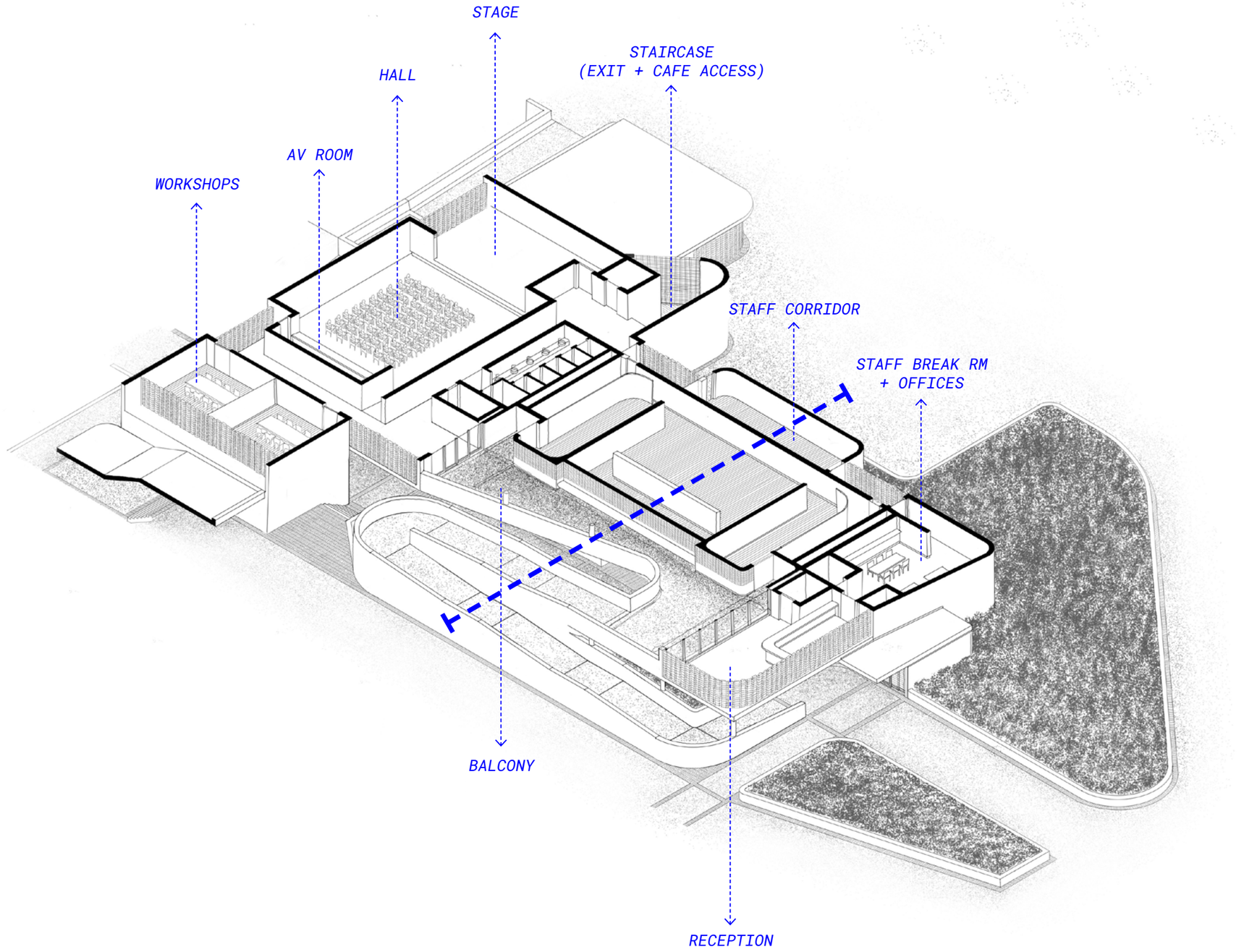
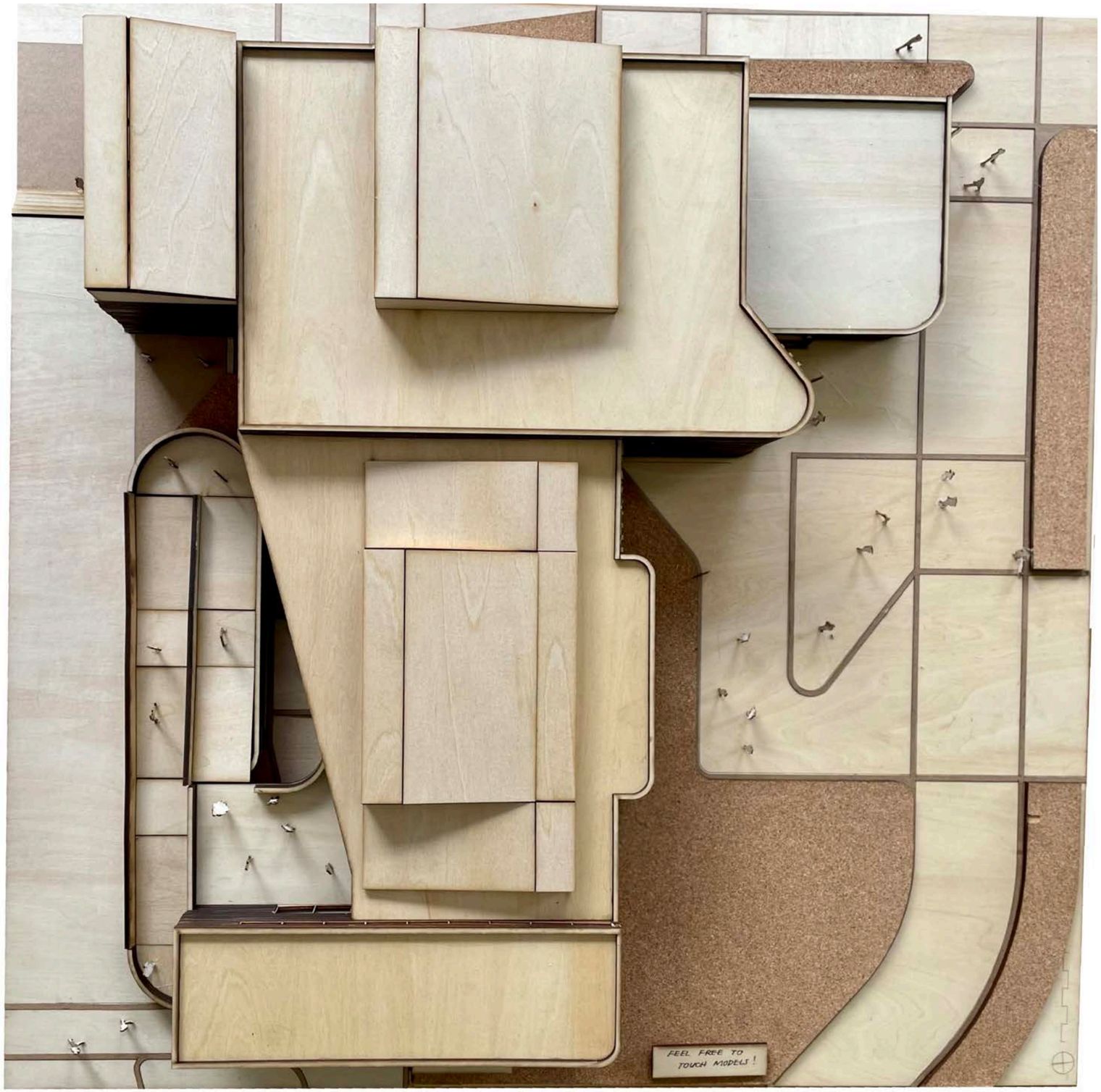


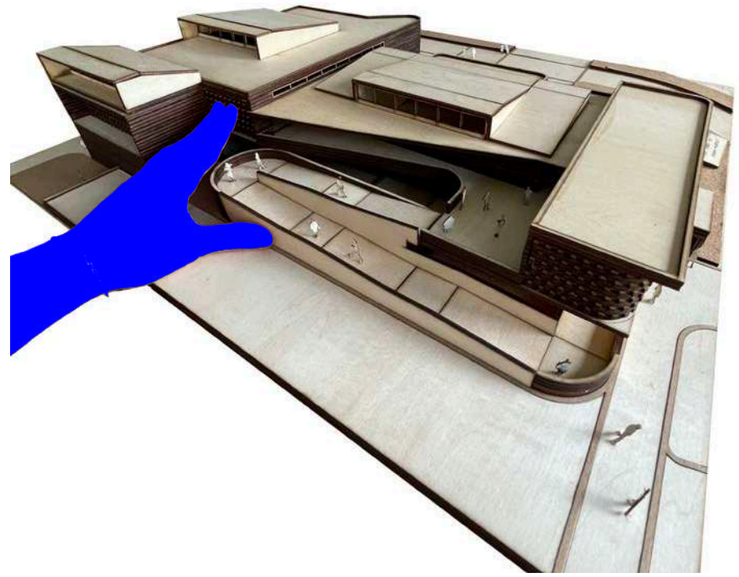
fig 171 (Author, 2023): Visitor's Centre Perspective

VISITOR'S CENTRE: FIRST FLOOR AXONOMETRIC

VISITOR'S CENTRE MODEL:

Building model 1-100





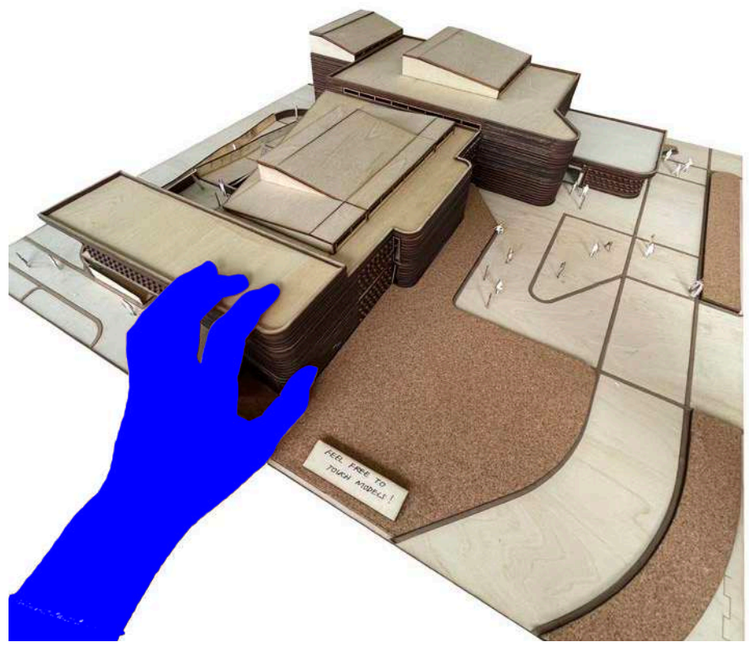


fig 172 (Author, 2023): Visitor's Centre Model 1-100

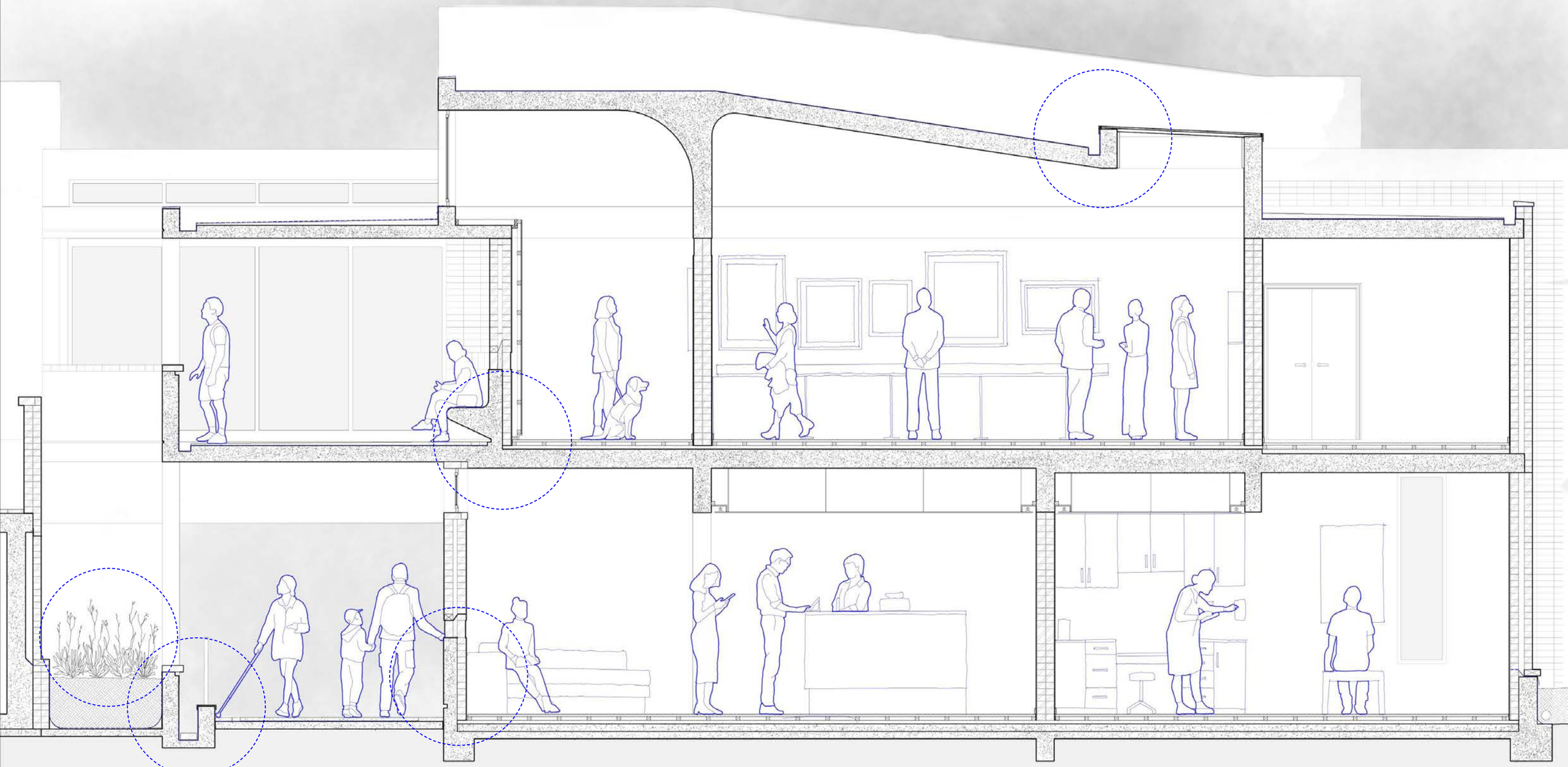
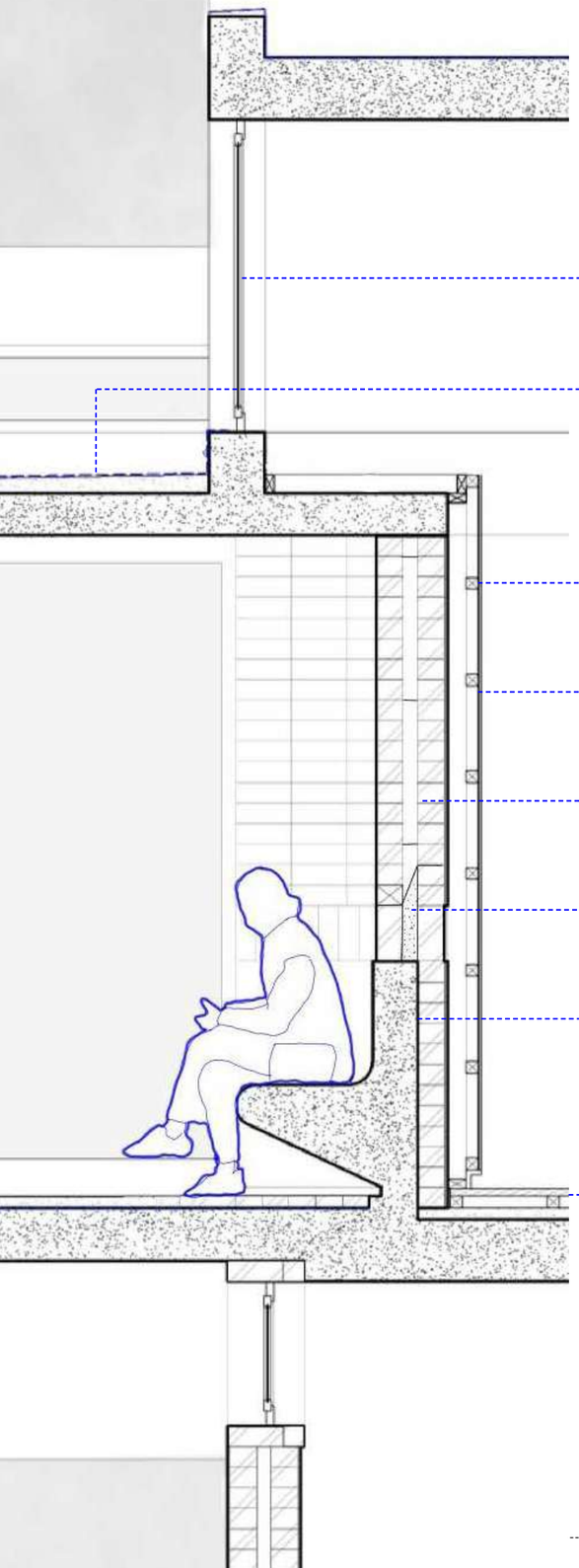


fig 173 (Author, 2023): Visitor's Centre Tech Section D-D at 1-25

VISITOR'S CENTRE: TECHNICAL SECTION 1-25



ALUMINIUM FRAMED HINGE WINDOW

255mm REINFORCED CONCRETE ROOF SLAB SPANNING 6m BETWEEN 300x300mm CONCRETE COLUMNS WITH WATERPROOFING ON MIN 25mm SCREED TO FALL TO GUTTER

50X50mm SA PINE BRANDERING

12mm GYPROC ACOUSTIC BOARD (NRC OF 0.55 - 0.9)

280mm FACE BRICK CAVITY WALL WITH GALVANISED BUTTERFLY WALL-TIES EVERY 7 BRICK COURSES

0,375 POLYOLEFIN DAMP PROOF COOURSE ON CEMENT FILLING

170mm CONCRETE WALL UP TO 1m WITH INTERNAL BRICK COURSE WITH ATTACHED IN-SITU CAST REINFORCED CONCRETE BENCH

22X150mm TONGUE-AND-GROOVE FLOORING FIXED TO 50X50 SA PINE BRANDERING, WITH 10mm EXPANSION JOINT AND HARDWOOD SKIRTING AT JUNCTION WITH WALL

VISITOR'S CENTRE: TECHNICAL SECTION 1-25

CONCLUSION:

This dissertation aims to capture a growing body of knowledge uncovered through both the research and design phases of this project on how to better design cities and places to not exclude persons with sight impairments, who often are forgotten by the architectural design discipline due to the visual bias of our field. Although not complete or conclusive, this body of knowledge could be applied to future projects and continue to develop through iteration and expansion, with the hope that any design I produce – regardless of its programme and context – would not pose spatial barriers to the blind and visually impaired community.

What became apparent throughout this process, is that it is not as complex to do so as we might assume, as many of the design strategies are simple and easy to execute and further more improves the spatial experience for sighted users as well. There is no reason that we should not design all buildings and urban projects with the sight impaired in mind, preferably in collaboration with members of the community, where they may act as consultants and provide input and feedback throughout the design process.

With that in mind, I would like to thank the respondents from League of Friends of the Blind, for allowing me to learn from their professional and lived experiences as well as extending helpful advice and feedback regarding the design of the project.

LEXICON OF TERMS:

BARRIER: *Physical, mental or symbolic obstacles that obstructs or hinders an individual's ability to freely move, understand, interact and participate with their environment (Steinfeld and Maisel, 2012).*

WAYFINDING: *The process which enables individuals to successfully navigate through or within their environment by extracting information from their surroundings in order to determine their location and direct themselves toward their destination (Wayfindr, 2015: 23).*

ORIENTATION: *The process which enables an individual to determine their position within an environment and familiarise themselves with the spatial arrangement of their surroundings (Wayfindr, 2015: 25).*

MOBILITY: *An individual's capacity to travel freely within their environment (Jenson, 2013: 4).*

UNIVERSAL DESIGN: *Designing objects, environments and experiences for 'human diversity, social inclusion, and equality' (Steinfeld and Maisel, 2012: 28), linking together the notion of human-centered design and the social goals associated with human rights movements.*

PERCEPTION: *The ability of an individual to form a comprehensive understanding of their environment*

LEGIBILITY: *Attributing to the clarity with which an object or environment is perceived (Steinfeld and Maisel, 2012: 289).*

LANDMARKS: *Prominent fixed objects or features in our environments that serve as a point of reference when orienting oneself or navigating toward a destination (Wayfindr, 2015: 27).*

CLUES: *Transient indicators within an environment that attribute to an individual's ability to orienting themselves or navigate toward a destination (Wayfindr, 2015: 27).*

MOBILITY AIDS: *Assistive 'devices' that enable mobility challenged individuals to navigate their environments. In the case of visual ailments, these include canes and seeing-eye dogs (Wayfindr, 2015: 24)*

LONG / WHITE CANE: *A mobility aid, used by individuals with limited vision to navigate their surroundings and avoid obstacles.*

TRAILING TECHNIQUE: *A mobility and orientation technique, practiced by persons with visual impairments, where they run their hand along a continuous wall surface in order to guide them in a desired direction (Wayfindr, 2018: 23-30).*

SHORELINING TECHNIQUE: *A mobility and orientation technique, practiced by persons with visual impairments, where a cane is used to 'maintain a specific orientation while travelling through environments to arrive at a decision-making point' by following either a kerbline (outer shorelining) or a wall (inner shorelining) along a route (Wayfindr, 2015: 26).*

CONSTANT TOUCH TECHNIQUE: *A mobility and orientation technique, practiced by persons with visual impairments, where the cane is kept in contact with the ground surface while arcing from left to right in order to detect obstacles along a route (Wayfindr, 2015: 26).*

TWO-POINT TOUCH TECHNIQUE: *A mobility and orientation technique, practiced by persons with visual impairments, where the cane arced from left to right above the ground surface, and merely tapped to the ground surface at each end of the arch to gather audio feedback from their surrounds (Wayfindr, 2015: 26).*

LIST OF REFERENCES:

1. Alexander, C. (1988). 'A City is not a Tree' in Thackara, J. (ed.) *Design after Modernism: Beyond the Object*. London: Thames and Hudson, pp. 67-84.

2. Alexander, C., Ishikawa, S., & Silverstein, M. (1977). *A Pattern Language: Towns, Buildings, Construction.* New York, Oxford University Press.

3. Aragao, M., Porter, K. (2011). 'Addition to Cape Town Society for the Blind', *A + Oficiana*, 23 June. Available at: https://mgcaragao.wordpress.com/2011/06/23/article-addition-to-cape-town-society-for-the-blind/ (Accessed: 29 June 2023).

4. ArchDaily (2015) *Friendship Park / Marcelo Roux + Gastyn Cuca.* 27 July. Available at: https://www.archdaily.com/770600/friendship-park-marcelo-roux-plus-gaston-cuna> ISSN 0719-8884 (Accessed: 29 July 2023).

5. Carrillo, G. (2020). 'Building for the Blind', *The Architectural Review*, 22 April. Available at: https://www.architectural-review.com/buildings/building-for-the-blind (Accessed: 12 June 2023).

6. Florida, R., Knudsen, B., Stolarick, K. and Lee, S.Y. (2006). *Talent and Creativity in the Software Industry*. Virginia: George Mason University.

7. Harvey, D. 2003. 'The Right to the City'. *International journal of urban and regional research*, 27(4), pp.939-941.

8. Jenson, O.B. (2013). *Staging Mobilities*. New York: Routledge.

9. League of Friends of the Blind, (no date). *Home*. Available at: https://lofob.org.za/ (Accessed: 30 February 2023).

10. Lee, S.Y, Mesfin, F.B. (2023). 'Blindness', *StatPearls*. Florida, StatPearls Publishing.

11. Lynch, K. (1960). *Image of the City*. Cambridge: MIT Press.

12. Pallasmaa, J. (2005). *The Eyes of the Skin: Architecture and the Senses*. John Wiley & Sons.

13. Soja, E. (2009). *The City and Spatial Justice.* University of California, Los Angeles.

14. Song, I. & Froehlich, K. (1995). *Entity-relationship modeling.* IEEE Potentials, 13(5): 29-34.

15. South African Bureau of Standards. 2011. *SANS 10400: Part S.* Pretoria: Government Printer.

16. Southworth, B. (2003). 'Urban design in action: The City of Cape Town's Dignified Places Programme - Implementation of new public spaces towards integration and urban regeneration in South Africa'. *Urban Design International*, vol 8, pp.119-133.

17. Steinfeld, E. & Maisel, J.L. (2012). *Universal design: Creating Inclusive Environments.* New Jersey: John Wiley & Sons.

18. Wall, A. (1999). 'Programming the Urban Surface' In J. Corner (Ed.), *Recovering Landscape: Essays in Contemporary Landscape Architecture*. New Jersey: Princeton Architectural Press, pp.233-249.

19. Wall, A. (2018). 'The Urban Surface: Shifting Fields for Curated Events' in Cannon Ivers, B (ed.) S*taging Urban Landscapes: The Activation and Curation of Flexible Public Spaces.* Basel: Birkhдuser, pp.38-45.

20. Wayfindr (2015). *Open-Standard.* Available at: https://www.wayfindr.net/open-standard (Accessed: 29 June 2023).

21. Wolff, H. (2018). 'Urban Externalities: Undoing Inequality of a City', *FA Lecture Series*, CEPT
University. Available at: https://www.youtube.com/watch?v=CtFuKGGguEo&t=3s (Accessed: 24 October 2022).

22. World Health Organization (2022). *Blindness and Visual Impairment*, 13 October. Available at: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment (Accessed: 12 June 2023).

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ETHICS APPROVAL:

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA · UNIVERSITEIT VAN KAAPSTAD

2023/06/06

EBE/00150/2023

RE: Research Ethics Committee Project Approval Letter

Dear Saskia De Bok,

Your application for ethics review of your project titled

Seeing, surfacing, patterning: Socially inclusive architecture for the blind

has been reviewed and evaluated by the

Engineering & Built Environment Committee.

You may proceed with your research project titled:

Seeing, surfacing, patterning: Socially inclusive architecture for the blind

Please note that should:

(i) any serious or adverse effects to participants occur and/or,

(ii) aspect(s) of your current project change and/or

(iii) any unforeseen events that might affect continued ethical acceptability of the project occur then you should immediately report this to the approving REC. You may be required to submit an amendment to this application, in order to determine whether the changed aspects increase the ethical risks of your project.

Based on the information supplied your application has been successful and is approved.

Please note the following additional conditions associated with this approval:

(i) No conditions, but the revierw noted that some of the questions in the Interview instruments document are not open-ended enough (e.g. re: how the institute helps the surrounding neighbourhood, or how design might be helpful for blind and visually impaired people). Regarding feedback, the reviewer asked if there might be perhaps a way to share the outcomes of research in a format different and more accessible than the applicant's final dissertation?

Regards,

Engineering & Built Environment Committee.