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LIMINALITY AT THE EDGE

Architecture as Catalyst for Bridging Landscapes of Marginality in Swakopmund, Namibia
A Vertical Urban Aquaponics Farm and Research- Development Centre for Swakopmund Municipality

ACKNOWLEDGEMENT

I would first like to thank my thesis advisor Dr. Madelein Stoffberg of the Department of Architecture and Spatial Planning. The door to Dr. Stoffberg's office was always open whenever I ran into a trouble spot or had a question about my research or writing. She consistently allowed this paper to be my own work, but steered me in the right the direction whenever he thought I needed it.

I would also like to acknowledge Mr. Jens Wiedow of the Department of Architecture and Spatial Planning as the second reader of this thesis, I am gratefully indebted to his for his very valuable guidance throughout the development and production of this thesis.

I would also like to thank the auxilliary staff at the Department of Architecture and Spatial Planning who were involved in the development stages and critiques for this research project: Phillip Lühl, Gabi Hansen, Professor Samson Ummene, Sophia van Greunen and Oliver Quarmby. Without their passionate participation and input, the reesarch project could not have been successfully conducted.

Furthermore I would like to thank my industry mentor Ms. Karen Miller, for your guidance and assistance during data collection and synthesis of the thesis.

My life Partner. You've never given up on me, thank you for believing in me.

My parents, Lydia, Walter, Clifford and Jasmine. Without your support, your interest and care, I would not have been able to reach these heights.

dedicated to my daughter Hayden Sienna Lyners.

never cease to dream.

“Our focus on promoting the green economy in Namibia is motivated by the need to improve and create a harmonious balance between the well-being of our people and the imperative of industrialisation, job creation, the utilisation of our natural resources for the benefit of our people and the need to ensure sustainability and environmental conservation.”

– Hifikepunye Pohamba, 2nd President of the Republic of Namibia

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A Vertical Urban Aquaponics Farm and Research- Development Centre for Swakopmund Municipality

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Submitted in partial fulfillment of the requirements for the degree of Master of Architecture, at The Namibia University of Science and Technology 2019.

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ABSTRACT



Swakopmund, once the industrial hub and port town for the German colonialist regime has today developed into a fully functional holiday resort as dictated by the Treaty of Versailles. Located in the limen between the hot Namib Desert and the cold Atlantic Ocean, the town's unique character and spatial qualities have undergone many sequential changes during its existence.

Namibia's history of segregation and inequality is greatly entrenched within the development of Swakopmund, and therefore perpetuates spatial, cultural, socio-economic segregation within the built fabric. Colonial and apartheid ideologies of socio-economic segregation continue to exist through capitalist driven interventions,

privatising the public domain and informing a cellular, low density urban fabric propagating marginalisation of previously disadvantaged inhabitants. Despite Namibia gaining independence in 1990, the persistent imbalance of society disrupts social cohesion and inclusion, limiting access to education and economic opportunities. In Swakopmund the fragmented urban fabric augment these legacies and emphasise the need for change. Architecture could act as a catalyst to bridge these prevalent landscapes of marginality.

The theory of liminality, edge conditions and in-between spaces provide the framework around which the architectural design is informed. The limen at the centre

of the research exists on an existing industrial fringe between the water's edge and the urban extents of the former black township, Mondesa. The research proposes to provide a solution that would weave fragments of the urban fabric by strengthening cultural mobility. This could be achieved through a proposed building programme that facilitates knowledge transfer, inclusive economic practices and social condensing towards equality and spatial transformation in Swakopmund. Within a re-imagined urban block, the proposed vertical urban farm becomes a key corridor that acts as a condenser of human, agricultural, social and economic capital.

Hypothesis

Providing an architecture that would facilitate social cohesion, the transfer of knowledge, access to equitable socio-economic opportunity and stable food security by creating a platform where former and contemporary marginality can be bridged.

An aerial photograph showing a coastal town with a grid-like street pattern, a river or canal winding through it, and a desert landscape with dunes in the background. The town is densely packed with buildings, and the river is a prominent feature. The desert is characterized by rolling sand dunes and sparse vegetation.

“Diluted design responses are in favour of the consumerist developer and through this ignore contexts of history.”

CHAPTER 1: INTRODUCTION

1.1 Background to the Study

Swakopmund is slowly but surely growing into an acknowledged urban and densely populated environment. Recent boosts in the economy of the town and its surroundings, such as the uranium rush and Walvis Bay- Trans-Kalahari Corridor development, have brought about major developments along its coastline. Shopping centres, short and long-term housing, commercial and other retail developments have also been birthed as a response to the rising need. This has led to areas being earmarked for urban redevelopment, led by local developers and the municipality, to establish key activity hubs within town and especially around the popular beachfront environs and in particular the “mole” beach. This edge within the town as noted by Battersby (1988), had once been a popular social space; it is well located with strong linkages to its surroundings, and has a rich cultural and historic background (Kössler, 2003). The problem however is that current redevelopment seems to ignore such, with current interventions aimed at catering only for the tourists, the financially able and higher ranked members of the society, completely disregarding the cultural importance of the site, the town and local inhabitants.

Current functionality of space within these locales lack appropriateness, to effectively endorse these spaces as public or owned by public, by removing basic public amenities. Diluted design responses are in favour of the consumerist developer and through this ignore contexts of history. Accessibility- both functional and spatially, alienates the contemporary architectural space from the site's history and culture and moreover the inhabitants who had once owned, shaped and determined it. Much of this could also be attributed to the existence and in fact continuation of the apartheid modernist design legacies of town planning. These have and were of course intended to, by design, fragment suburban, township and commercial centres from each other, by barriers created by infrastructural development within in-between spaces causing isolation between these sites that informs a cellular, low density urban fabric. Because of this, the sites located around the popular waterfront beach, the CBD, the industrial fringes and township extents are gradually losing their significance. These areas can be described as a hybrid- scape or a container of water; memory; geological, human, landscape and architectural infrastructure, a threshold between land and water.

1.2 Aim

Liminality seek to not merely embrace the past and present along the water's edge, but rather rearticulate the components of history, design and culture into such that it may provide potential integration into interventions for the present and unforeseeable future. The research would therefore through analysis seek possible architectural and urban design solutions, which could address the relationship between the historic, social and cultural background of the site and the context, to exist symbiotically for new social, cultural and future historic potential to be developed.

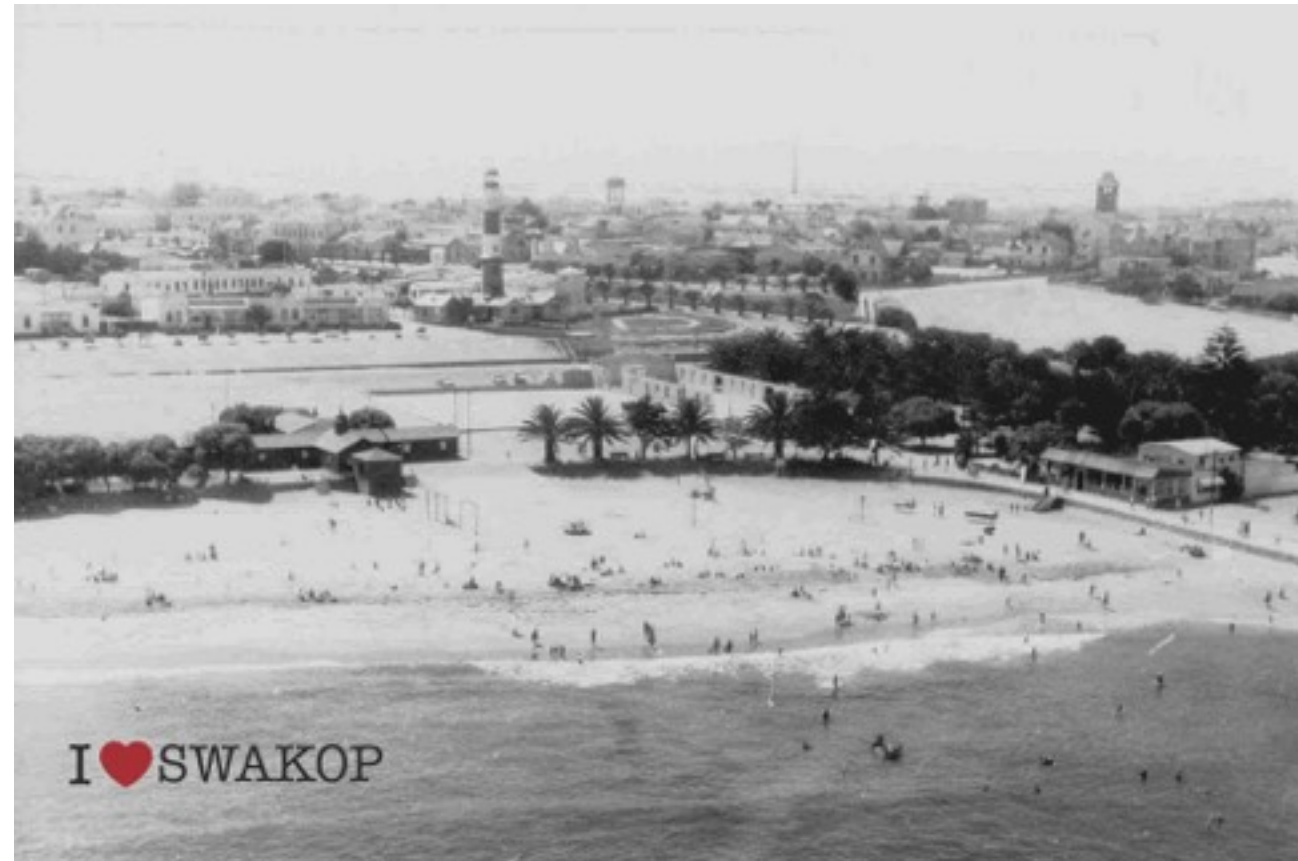
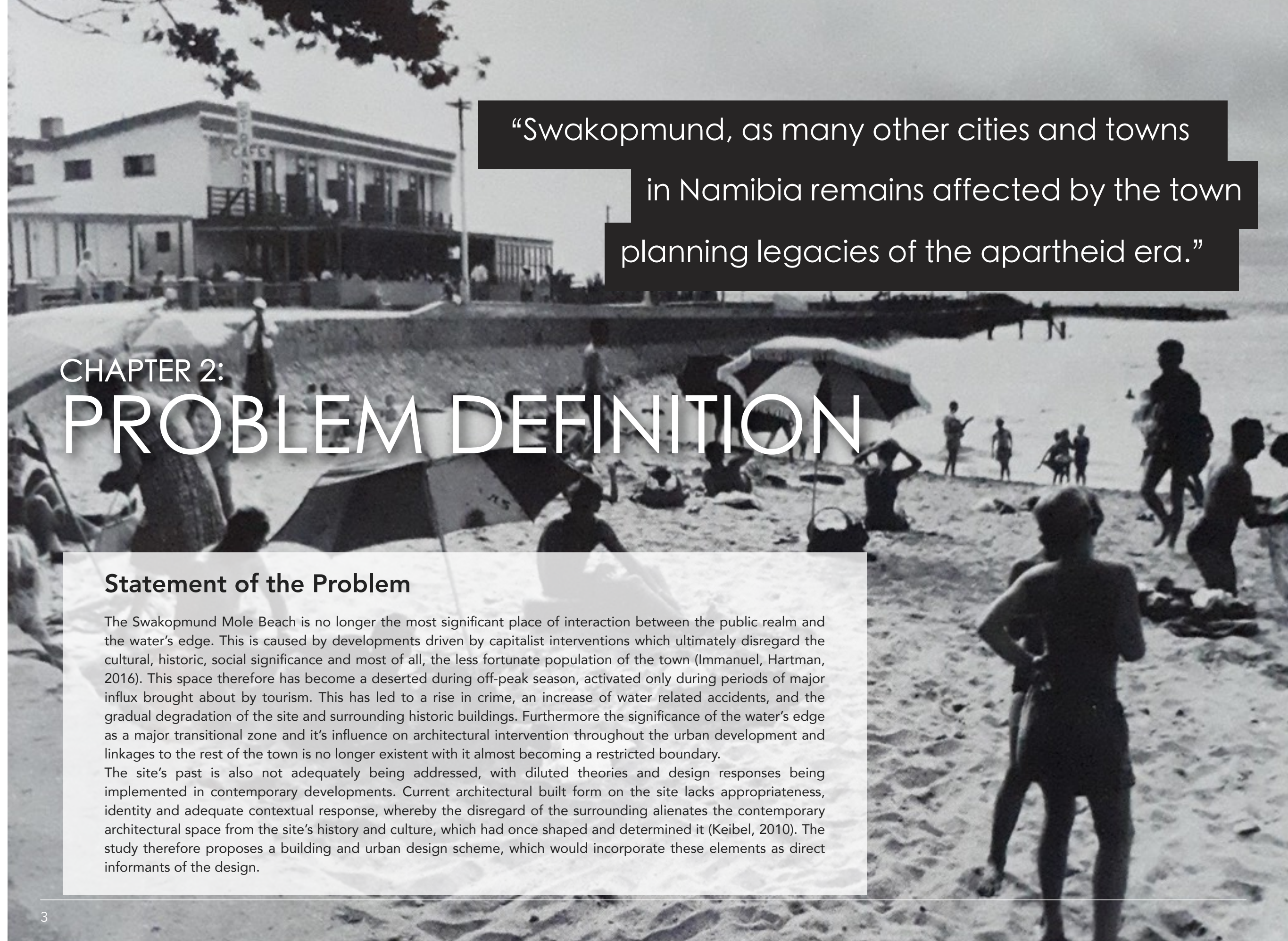


Figure 1: the site



Figure 2: An artists rendition of a new Proposed



“Swakopmund, as many other cities and towns in Namibia remains affected by the town planning legacies of the apartheid era.”

CHAPTER 2:

PROBLEM DEFINITION

Statement of the Problem

The Swakopmund Mole Beach is no longer the most significant place of interaction between the public realm and the water's edge. This is caused by developments driven by capitalist interventions which ultimately disregard the cultural, historic, social significance and most of all, the less fortunate population of the town (Immanuel, Hartman, 2016). This space therefore has become a deserted during off-peak season, activated only during periods of major influx brought about by tourism. This has led to a rise in crime, an increase of water related accidents, and the gradual degradation of the site and surrounding historic buildings. Furthermore the significance of the water's edge as a major transitional zone and it's influence on architectural intervention throughout the urban development and linkages to the rest of the town is no longer existent with it almost becoming a restricted boundary.

The site's past is also not adequately being addressed, with diluted theories and design responses being implemented in contemporary developments. Current architectural built form on the site lacks appropriateness, identity and adequate contextual response, whereby the disregard of the surrounding alienates the contemporary architectural space from the site's history and culture, which had once shaped and determined it (Keibel, 2010). The study therefore proposes a building and urban design scheme, which would incorporate these elements as direct informants of the design.

2.1 Synthesis of the Problem

Swakopmund, as many other cities and towns in Namibia remains affected by the town planning legacies of the apartheid era. In context, Swakopmund also still holds strong remnants of the German colonial rule, and is rudimentally dubbed as a “little Germany” by visitors. Swakopmund, apart from being the first port town for the German colonial regime, is also home to the victims of a German led genocide which occurred between 1904 and 1908, which in recent years has sparked uproar amongst indigenous inhabitants of the town and the rest of the country, perpetuating an existing racial divide amongst citizens.



Figure 3:

Because Swakopmund was declared a resort town within the treaty of Versailles much of the structure and development of the town was focused around accommodating local and international tourists. Most of the public space was established around the old town centre, the water's edge, and other geographic features of the surroundings. Today the old town centre still has a distinct German architectural language and is protected by heritage policies, within which a conservation area has been identified specifically to uphold this character. During apartheid the local indigenous communities had been subjected to the segregationist policies, which saw them separated spatially from key business centres, popular public spaces, the water's edge, and the ability to reside within sought-after suburbs. The townships in which the suppressed locals resided, were often separated by infrastructure such as extensive highways, railways and industrial areas, and were dense overly populated zones, with low sanitation and ridden with poverty, characteristics, which still exist today. Furthermore access to health, education, socio-economic opportunities, recreation and leisure activities were spatially limited by

predetermined routes, which would ensure surveillance over the dissociated locals. One of the key routes that still existent is the main focus of this study. This route links the ever-sprawling township of Mondesa to the old town centre (CBD) and the water's edge and is used daily by low- income labourers, scholars and informal business people. The route has become a crucial nexus for informal trade, public engagement and mobility within the urban fabric.

Three identified urban voids, stretching from Mondesa, the fringes of the industrial area and on the water's edge at the popular Mole public beach become transitory zones within this corridor. Each of these are urban spatial connectors, facilitating daily pedestrian traffic and has become an incubator for informal businesses, facilitates mobility through public transport (taxi's) and remains an important linkage for those residing in the township. It remains a means of access to socio-economic opportunities, but the vestiges of apartheid in the form of large highways, dead street edges and crime make it less favourable as a movement corridor. Although many amenities exist within the township due to decentralisation, the formerly disadvantaged communities remain socially, spatially and economically excluded from development of the CBD and the rest of the town. This excludes them from participating in new developments due to their financial position, background or education, further alienating the local population from each other.

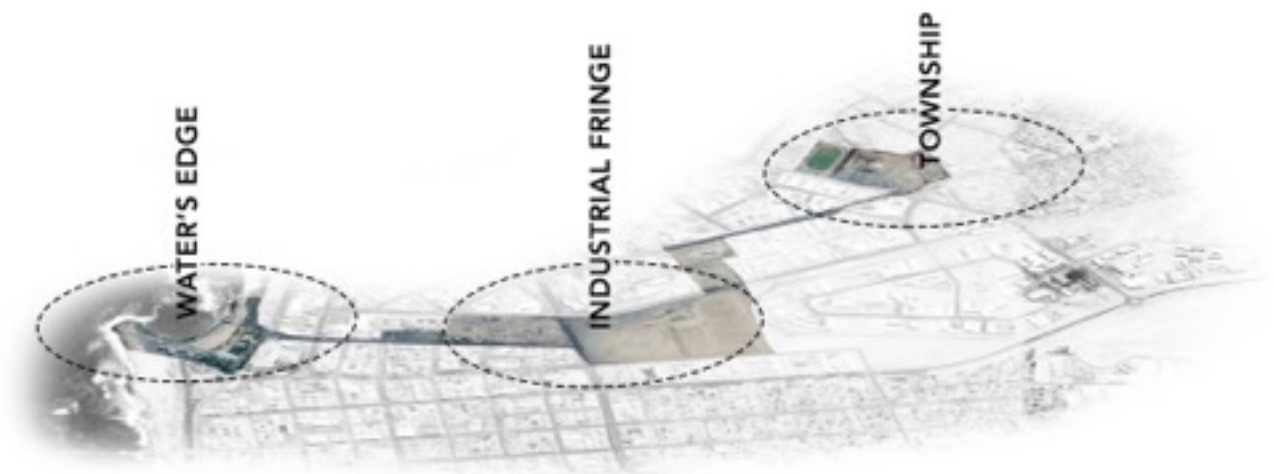


Figure 4:



Figure 5

CHAPTER 3

OBJECTIVES

The research aims at providing an architectural and urban design intervention, which could:



- [1] Reconnect fragmented suburbs and townships to the water's edge and CBD,
- [2] Rearticulate the model of social, historic and cultural inclusion on site as a contextual approach.
- [3] Establish the limen of the corridor as a major point of transition, and define its character as the design language to be carried through into the architectural intervention.
- [4] Integrate and facilitate informal and formal economies.
- [5] Establish a point of equity and knowledge transfer.
- [6] Introduce Productive Industries as a catalyst to facilitate equalisation and spatial transformation

CHAPTER 4

LITERATURE REVIEW

4.1 Preface

The literature review has been divided into three sections to highlight the significance of the research topic. First, the investigation and analysis of various themes and concepts provide a spatial link to the three identified case study areas in Swakopmund which collectively form part of a movement network or corridor, stretching from the water's edge at the Mole Beach, to the heart of Swakopmund's former black township, Mondesa. Secondly, the concept of liminality is investigated to understand the contextual relationship of elements such as the water's edge to built form, perception of local trans-migrational borders stemming from segregationist planning, the public domain and broader contexts. Finally, the environmental conditions of the case study areas are investigated including secondary factors such as identity, social, cultural and historic constituents of the case study areas; responses of current developments and intended solutions, which will be analysed by looking at existing examples.

4.2 Limen or Liminality

The term liminality is rooted in the Latin word “limen”, which refers to threshold and refers to the middle phase of “social rites of passage,” described by cultural anthropologist Arnold van Gennep in his book Rites de Passage (1960). Van Gennep describes that during these rites the user inhabits a state of in-between. These rites are a three-phase system namely, “pre-liminal rites (rites of separation), liminal rites (rites of transition) and post-liminal rites (rites of incorporation)”, which are a description of human behaviour and cultural rituals, but could be used as a narrative. Because each stage is expressed as a clear state of being, the liminal could be referred to as a negotiation and transition between pre- and post-liminal phases; a phase, which needs to be bridged in either direction for the rite to be completed. By adopting this rationale as a context for design, one is able to identify two states of being and experience that mediates between them in a meaningful and contextually responsive manner.

The implementation of the theory and concepts of liminality can provide the foundation on which to approach the design of architectural and urban design spaces (Tucker, 2012). It could form the basis to understand why the significance of the water's edge and the contexts of the other identified trans-migrational sites has been lost within current interventions. Through this approach, the debate on appropriate architectural solutions could be guided. The concept of liminality also provides insight into the proposed design intervention, as three separate phases, which need to be, developed to adequately integrate with each other.

By defining the contextual phases of each site, as a form of linear connectivity, places of memory, transition and attachment could be provided. Georg Simmel (1994) refers to a bridge over water as this linear connection, but compares it to the door, which can be seen as a more organic connection.

“While it makes no difference in which direction one crosses a bridge, there is a total difference of

intention between going in and out of a door”
(Simmel, 1994).

The door from the onset therefore seem to be the appropriate comparative object, as it expresses freedom and prospect, as opposed to the bridge, which expresses rationality, and refuge. The door as an object narrates the in-between, threshold or transitional zone as it could directly lead to the water's edge, whereas the bridge provides lift and detachment from it, a barrier both physically and mentally perceived, representative of the contemporary issue within this movement network or corridor. In their book In Search Of The New Public Domain, Hajer and Reijndorp (2001) support the opposing liminal qualities of the door and the bridge by humanizing and synthesizing a narrative of the threshold or border as a space, which would allow for physical contact if crossed.

“The new public domain does not only appear at the usual places in the city, but often develops in and around the in-between spaces in the archipelago of homogenous and specialized islands, that belong to different social, economic and cultural landscapes. These places often have the character of ‘liminal spaces’: they are border crossings, places where the different worlds of inhabitants of the urban field touch each other.”
(Hajer and Reijndorp, 2001)

4.3 Edge, Margins and Thresholds

In response to these in-between spaces, thresholds or transition zones, Kevin Lynch in his book The Image of the City has defined these as nodes, edges, paths, landmarks and districts (1962). Kevin Lynch (1962) describes edges as boundaries between two places.

“Edges are the linear elements not used or considered as paths by the observer. They are the boundaries between two phases, linear breaks in continuity: shores, railroad cuts, edges of development, walls. They are lateral references rather than coordinate axes. Such edges may be barriers, more or less penetrable, which close one region off from another; or they may be seams, lines along which two regions are related and joined together”. (Lynch, 1962)

In context to liminal rites, the edge spatially becomes a point of connection, between two different zones, a space embodying prospect and potential to both separate and connect, but providing the opportunity to confront the unforeseen. The edge also becomes a point that defines the site, which can run concurrently with memory, space and integration, by providing a feature enticing enough to seam together, visually, structurally and mechanically. In a talk by Richard Sennet on “Open Cities” (Sennet, 2006) he highlights a case study, of an intervention executed by his firm, whereby an opportunity arose to develop a market in the Spanish Harlem District in New York, which he describes as one of the poorest in the City. He critically states that the chosen position of the market, in the centre of the community had been a key fault in this intervention, in that this poor community is bordered by a contrasting affluent district of New York. He goes on to describe how removing the chance for different spheres of society to fuse at this critical edge could have allowed for spatial and socioeconomic equality. Conversely, lessons attained from this project allowed preceding developments to use this as an exemplar to justify development on this edge. Developing catalytic

interventions that would over-time blur the boundaries that existed between the two districts (Sennet, 2006). Similarly various edges along the movement network or corridor bordering districts in Swakopmund become the initial focus of this research, as they are currently detached from social, historic and cultural contexts; but therefore it could also become the point of stitching these together. Simmel (1994) noted both the limiting and de-limiting natures of man. Whereby containing himself within a space, behind a door limits him from the free natural external environment, but by de-limiting himself by providing this threshold which can be crossed should he feel inclined towards such. This could be contextually appropriated by arguing that perhaps the water's edge and access to it could be used as a limiting factor by himself, or could mean that with enough prospect and vision he could potentially cross this edge and become one with it. Which begs the question: whether the obstructions between the man and the water's edge are as conducive and tempting as his urge to pass through a door? Or are those the exact reasons for him not able to see prospect to attempt such a transition.

"The door frees us from those fixed points and has to match the wonderful feeling of casting one's eyes over heaven and earth against the dullness produced by daily habit. While the bridge as a line traced between two points prescribes absolute direction with certainty." (Simmel, 1994)

Furthermore, relating the geographic position of Swakopmund, as a liminal space between the Namib Desert and the Atlantic Ocean exists the condition of tourism, whereby these contexts form the basis of attraction. Additionally the zone between two contrasting identities or characters of the town also lay within a liminal zone, and is often part of this power of attraction, whereby visitors are drawn to these transitional zones bordered by the remnants of colonial and apartheid planning legacies. In his thesis investigating the promotion of tourism as a catalyst for

urban redevelopment in Florida, anthropologist John Collins notes:

"The areas in cities inviting tourists to wonder about may not be places normally inhabited by tourists at all; they may be transitional neighbourhoods or zones where people on the margins of urban society – ethnic minorities, non-whites, immigrants, poor people – may live and work". (Collins, 2004)

This statement signifies the importance of these sites in Swakopmund, which lay within, between and beyond this transitional zone as critical points of intervention, which could sever physical and perceived divisions beyond merely the inhabitants of Swakopmund but also between visitors and the local community, by allowing for condensation of various landscapes of culture and socio-economies endemic to the town.

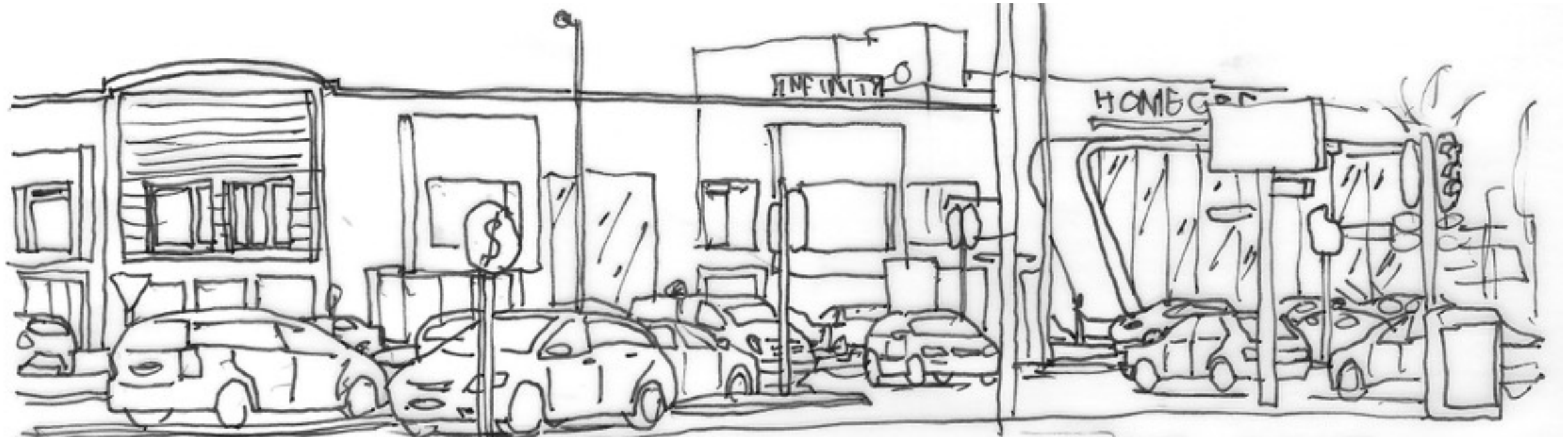
4.4 Contexts and Landscapes: Hybrid- Landscape

The term hybrid-landscape arises from the need to define the scope of the working area, referring to it as a container of water and memory; geological, human, landscape, architecture and infrastructure. It also relates to defining the future of ecological studies within an urban context, but in this instance the synthesis of these largely different elements, which have over time become one, as the site had developed. The existence of the site and its current state is a progressional development of these elements. It is imperative however to determine whether these elements have grown together holistically, or whether a shift in the history or the present of the site could have enhanced it. In her book *Unearthed*, Karen M' Closkey (2013) notes:

"The fact that sites and systems are fundamentally open to change their uses, meanings, and materials continually evolving—has led to a de-emphasis on form (seen as too fixed) and experience (seen as too subjective) and in some cases resulted in

dubious correlations among nature, landscape, and liberty. The presumption is that landscapes will naturally evolve to be more complex and more diverse, both physically and culturally, than at their inception."

While referring to landscapes and their evolution she also refers to the significance of the study of urban ecology and how this study has affected how spaces are designed, experienced and remembered. This implies that landscape design contributes toward providing culturally adequate spaces, which include all factors of the hybrid- landscape, including those beyond the water's edge. To provide a sustainable hybrid-landscape, one need to connect the various elements by establishing a relationship amongst these to determine hierarchies. In addition, interaction that fosters interdependency should be kept to invoke a sense of responsibility for further growth and maintenance over time.



CHAPTER 5

PROPOSED RESEARCH DESIGN

The core setting of the research had been selected upon a reaction to recent developments in the contemporary production of space in Swakopmund and how it affected spatial equalisation and transformation. Contemporary Swakopmund, as with many other towns and cities in Namibia still remains affected by the legacies of colonialism and apartheid, despite Namibia gaining independence in the year 1990. Disparity continues to exist within the societal realm, especially for those stemming from a previously disadvantaged background. The provision of land, access to employment, quality education and food security are often contemporary issues that arise because of this. This inference is made by personal observation, but also by references in academic literature and the media.

A research strategy was therefore developed to firstly confirm whether these issues do exist, to what extent they exist and whether a framework or model can be developed within which they could be addressed differently in future. Key methods of data collection

include firstly investigating case studies of similar themes by critically analysing theories, concepts, models and their outcomes, as a point of take off for research.

This unearths a gap in existing literature, which validates the research outcome and eventual architectural design intervention. Secondly, by looking at archival data, to analyse and compare historic imagery and literature. Thirdly, by developing through surveying and looking at existing cartographically mapped data to define the case study area, to locate and relate architectural, environmental and geographic features of the site to public realms, and determine thresholds, edges, liminal spaces and barriers. Furthermore carrying out a general observation of day-to-day activities of users, through methods of photography, sketching and making field notes to understand contemporary activities and functions of the research problem site. Finally by conducting interviews through physical interaction and opinion-based surveys in the form of questionnaires to gain undocumented knowledge of research site, user

identified problems, suggestions, experiences and memories that may inform outcomes and design solutions.

Ethical issues that may arise from research could include but are not limited to the subject matter, because of the history of Namibia regarding colonialism/ segregation.. Therefore the subject matter may be considered as contentious, sensitive upsetting to participants. The participants may be under age of 18 years old, and therefore ethical consent will be required, which could limit inputs. Regarding confidentiality, participants may be uncomfortable to disclose background etc. and lastly covert photographic documentation of "participants" infringes on their privacy, especially since the case-study area, is primarily a recreational public space.

The following table describes the various forms of data the author aims to collect, how they will be analysed and their relevance to the research questions.

METHOD	ANALYSING STYLE	INTENDED OUTCOME
Case Studies Analysis of theories, concepts and models	Data Evaluation: Critical analysis of outcome, and impact of intervention in relation to context and theories etc.	Provide a basis from which research can take- off, to unearth gaps. Validate the Research outcome and Eventual architectural design intervention. Draw comparisons and relationships between collected data and research context.
Archival Historic analysis of case study site and contextual (historic imagery/ literature)	Using maps and other graphically pleasing diagrams.	Understand the tangible and intangible history of the research context, (social/ cultural constructs, physical environment, etc.) Draw comparisons between historic vs. contemporary issues, disclose developmental patterns.
Mapping Visual representation of Artefacts, Buildings and environment, surrounding context	Using maps and other graphically pleasing diagrams.	To define the research problem site, identify networks of movement and scope or scale of intervention. Locate and relate environmental and geographic features of site to public realms, determine existing thresholds, edges and barriers.
Observation Analysing day-to-day activities of users	Making field notes, taking photographs and interpretive sketching.	To provide understanding of contemporary activities and functions of research site, to incorporate or make provision for observed "unknowns" in research outcome. Finding the genus loci of research site, track change of climatic conditions, which may inform orientation, form, structure etc. of intervention.
Interview Physical contact with users, stake voice recording, noting responses to open – ended and structured questions and invoked dialogue. Holders.	Scrutinising collected data, drawing comparisons, etc.	To gain "undocumented" knowledge of research case study site, user identified problems, suggestions, experiences and memories, which may inform outcomes and solutions.
Questionnaire A set of printed or written questions with a choice of answers.	Scrutinising collected data, drawing comparisons, etc.	To gain information to understand role, background, age group of the participant/ users. Gain information such as suggestions, experiences and uses, which will directly influence outcomes, based on questions uncovered by research process.

5.1 Significance/Contribution

The research first aims to investigate historic and contemporary literature pertaining to the socio-economy, culture, colonialism, apartheid, architecture and urban development within the study area of Swakopmund. This aims to uncover discrepancies existent in contemporary life and how it may influence current production of space, planning principles and policies within this study area, to inform the nature of contemporary architectural design. Secondly to provide a basis on which social and cultural biases contained within such can be eradicated, and potentially become one, which is more inclusive. Lastly the research aims to produce an architectural and urban design intervention scheme, which could break stigmas of archetypical barriers, edges and thresholds. Currently an imbalance exists within the case study area, perpetuating marginalisation of certain members of society, based on their heritage. Access to socio-economic opportunities, education and stable food security, amongst others continues to be hindered by policy that ensures for a one-size-fit all approach to service delivery. This disrupts social mobility, inclusion, and cohesion. The study therefore seeks to bridge these perceived barriers, by providing an architecture within which these problems could be adequately addressed, by providing a platform in which various aspects, backgrounds and skillsets could exist symbiotically.



1899

Development in interior Namibia, increased rapidly, increasing ship traffic, and the need for a harbour. First Foundation laid for Mole.



1909

Opening of Private rail company, Otavi Rail, to transport ore from Tsumeb to coast. Trolley/ Tram and extensive town rail system developed.



1892

Establishment of Harbour, first beacons set up at Mole and lighthouse location, due to availability of potable water source (Swakop River) - breaks in dune ridges.



1904

Mole silted up. By 1904 Tugs and boats could only enter basin at high tide, timber jetty constructed, 100m south of Mole.



1915

After WWI broke out, town evacuated due to bombing from coast. When inhabitants returned, commercial economy had collapsed. Walvis Bay becomes main port.

CHAPTER 6

HISTORIC OVERVIEW

1923

Under Treat of Versailles, Mandate to develop Swakopmund into Holiday Resort, Educational Centre and to become residential suburb of Walvis Bay.



1967-70

Tarred road between Windhoek/ Walvis Bay and Swakopmund complete. Municipal bungalows, hotels guesthouses on the rise.



1930

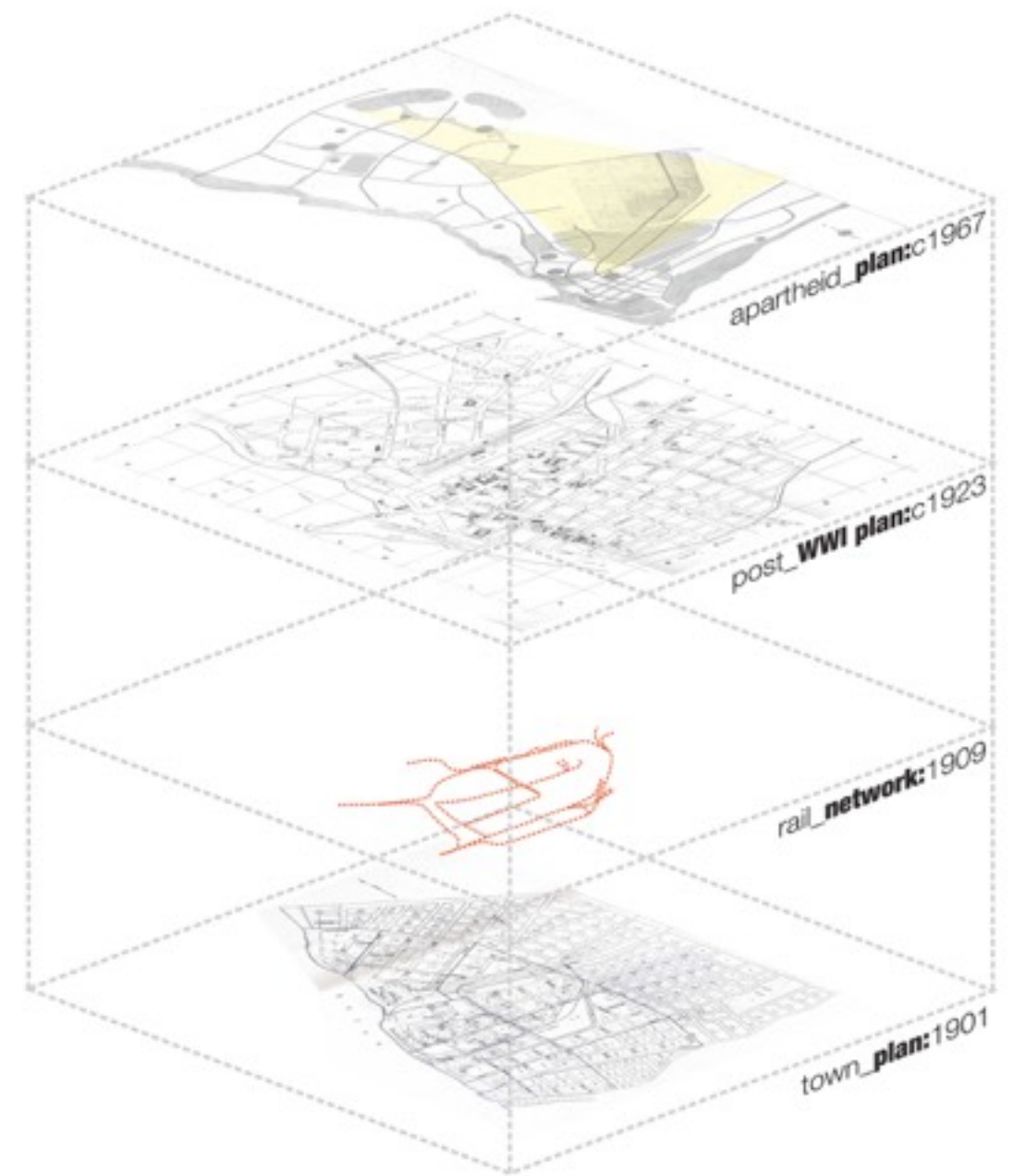
Mole Basin and beach developed into swimming beach and recreational centre, with cafe, swimming pool, tennis courts and children's play park



1970

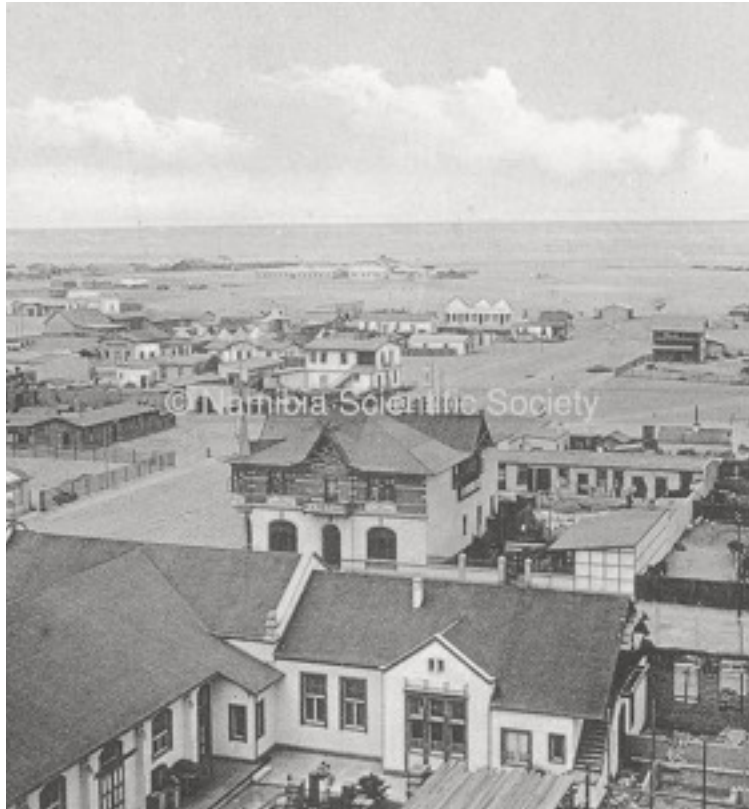
Development of Industry, in the wake of mine expansion, new masterplan developed under apartheid regime, segregating indigenous townships from CBD and suburbs

6.1 Timeline of Swakopmund's Development



6.2 layering_history

the town's unique character and spatial qualities have undergone many sequential changes during its 127 years of existence which have been informed by mutations and fluctuations of its early industrial development, the transformation into a modern-day holiday resort, the establishment of uranium mines outside of the town.



6.3 Swakopmund, Shaping the City

Swakopmund is located on the west coast of Namibia, approximately 33km north of Walvis Bay, and about 380km west of Windhoek, to which rail and the national road link it. The town originated at the mouth of the Swakop River, with a deep riverbed, forming a slight delta carved out of the rock formations just south of the town. Unconsolidated deposits such as sand, gravel, clay and evaporites (salt and gypsum deposits) can be expected in the riverbed, and their poor carrying capacity may pose significant foundation problems for heavy construction projects that are erected around the expanse of the river. The rocks that are found in the immediate vicinity of the town are mainly granite, covered by a layer of fine sand. However, this rock floor has been found to be quite irregular and often site investigations to determine the thickness of the floor bed cover are advised by council before major construction projects are planned. Swakopmund was originally developed as a port town. However with the establishment of better facilities at Walvis Bay, the port at Swakopmund was closed. The old harbour wall has been retained and is today a well-known gathering place for beach going residents and tourists. Although the retirement of the port has brought about much functional change and disposition, much of the old architectural character of the town has been retained and is still visible today.

In 1928, uranium was discovered at Rossing, 70 km outside the town. This led to the establishment of the world's largest opencast uranium mine and consequently had a major impact on all development and daily life in Swakopmund, facilitating expansion and development of the infrastructure of the town.



Figure: The Initial Town plan of Swakopmund, of which many remnants style exist today.

6.4 Understanding Apartheid Planning Legacies

Throughout its history Swakopmund has been shaped by a number of factors including racial segregation and industrial development. The old non-white residential areas that consisted of an indigenous and a coloured township have had a definite influence on Swakopmund's urban fabric. These, together with the industrial area, have formed a wedge that penetrates the town's structure from the north to reach the CBD; consequently, the only alternative direction for expansion was to the north and eastern side. No expansion towards the west could occur due to the locality of the town along the coast of Namibia. Extension southwards was also restricted due to the Swakop River forming the southern boundary line of the town.

Although the coast line prevents development in a westerly direction, it is still considered a major attraction encouraging development along the coastline, which is clearly demonstrated by the existence and popularity of suburbs such as Vineta, Vogel strand, Ocean View and Mile 4, and public beaches not only among holiday makers but also by permanent residents and commercial/ retail entities. The locus of the industrial precinct, the railway line and station complex also had a determining influence on the existing town structure of Swakopmund.

During apartheid it served as a buffer between white suburbs, CBD and non-white residential townships, and has then and in contemporary times remained a barrier, limiting freedom of movement, and accessibility, especially for pedestrians within the town.

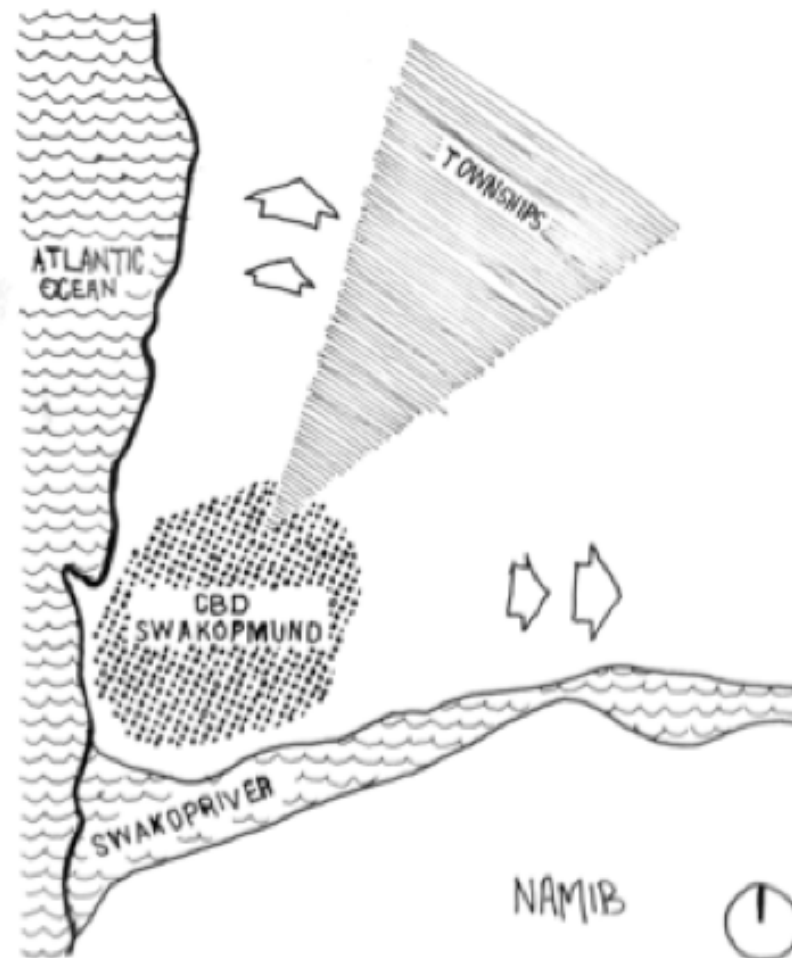


Figure: Segregation Emphasized by town plan indicating Former Black and Coloured Townships, in relation to CBD and Intended growth direction. Evident also is how access to CBD seemed to be funneled, to control movement.

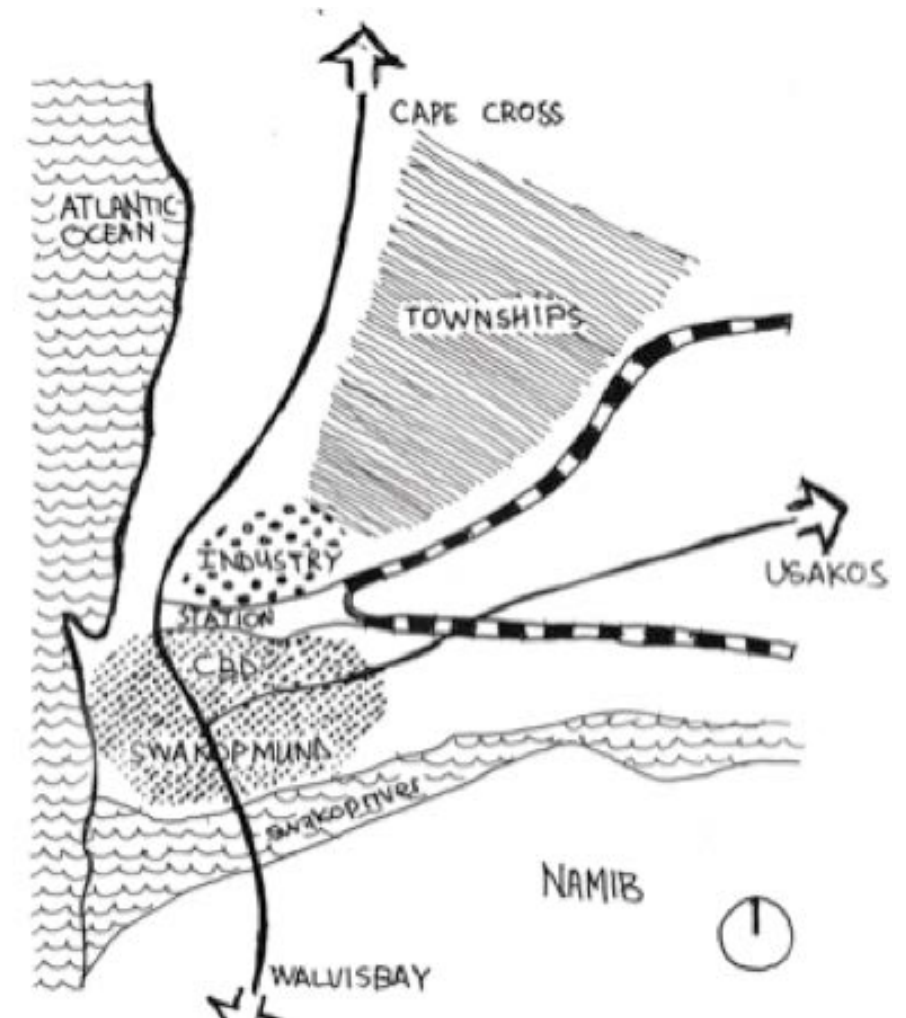
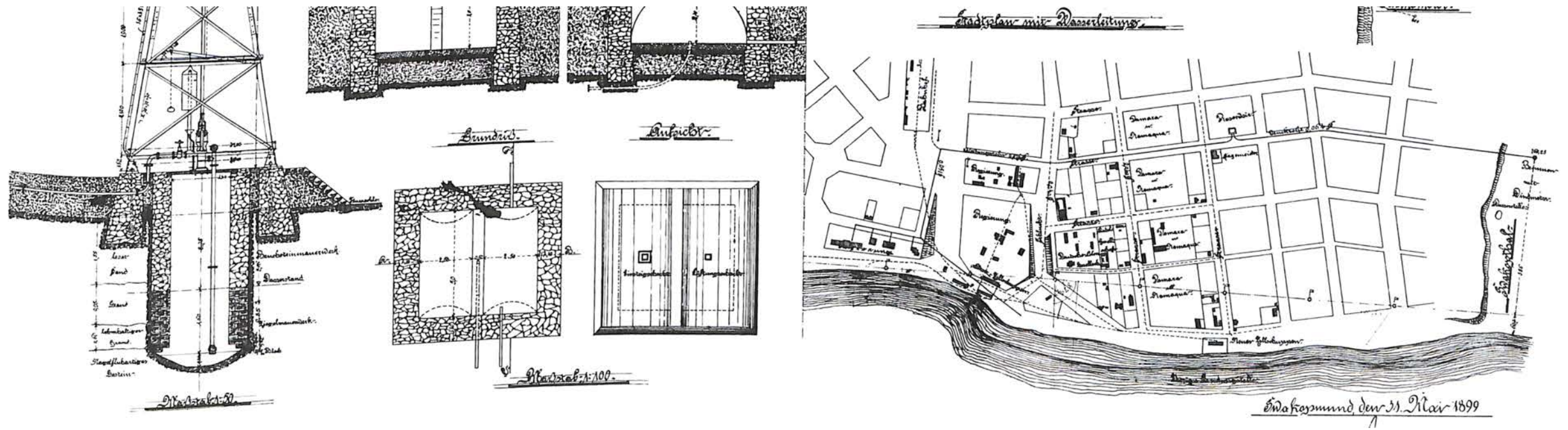


Figure: Birth of Urban Corridor, Indicating the incidence of Former black and Coloured Townships, in relation to CBD, industrial Area (as Buffer) between former white Suburbs and CBD. Also Evident are the deliberate boundaries caused by rail and road infrastructural edges.



CHAPTER 7

THEORETICAL INVESTIGATION

7.1 Addressing Spatial and Socio-economic Exclusion

In the writing “Social Exclusion and Opportunity Structures in European Cities and Neighbourhoods” Murie and Musterd (2011) investigate and unravel the dynamics of social exclusion in urban locales on a macro level, and neighbourhood locales on the micro level. Although there exist various definitions and dimensions to the term ‘social exclusion’, the most relevant to me as outlined by (Walker, 1997) “a term used to refer to a dynamic process which shuts people off from the benefits enjoyed by a full citizen.” In Namibian towns and cities, this could be said to be an existent characteristic of urban development. Severed by the conceptions and perceptions of segregationist infrastructure rooted in apartheid laws and planning the development, growth and modernisation of urban areas in Namibia continually seem to birth facilities, services and amenities which seem to be allocated only to a certain strand of the population, “full-citizens”.

The authors continue to note that more than this form of social exclusion which seems to be driven by political and capitalist powers, expanded levels of exclusion may be existent within the local “neighbourhood” or in Namibian context the “township”. They therefore aim to uncover whether:

1. A concentration of disadvantaged, excluded households exist because the neighbourhood or “township locale” does not provide them with ample opportunity for inclusion, or in complete contrast to this,
2. Whether these concentrations of disadvantaged, excluded households exist because the “township locale” supports and facilitates their existence, and more over,
3. Do the greater urban locales or inner-city districts provide opportunities for disadvantaged, excluded households, and what they would be?

Evidently, the post-colonial, post apartheid African town/ city is structured differently, in that policy and law initiated the existence of concentrated realms of disadvantaged “township- locales”. These spaces however have within themselves over the years mutated and seemingly “flourished” as a result of this grouping. People take responsibility and action for themselves. They have flourished in that people of similar backgrounds and ethnicities have been grouped and that has perpetuated inclusion on a local level, but has structurally blocked them off from the rest of the urban field and scope. The existence of social mobility within the township, the formation of networks and inclusion does not transcend beyond its borders. Instead it is contained and removed from the urban field and so further severs social mobility. The exclusion is both mentally and physically and spatially perceived, because in the “essential – post apartheid” city there should exist no boundaries, however the power of policy, capital and accessibility now perpetuates this

exclusion in that, consumerist, clinical environments provided for tourists and the financially able members of the community do not provide amicable opportunity for low-income, excluded, disadvantaged households and persons to benefit from. Further mutated forms of segregation such as surveillance and racial profiling enhance and maintain the cycle of social exclusion.

In response to such environments and spaces, Margaret Crawford has identified the labelled “pseudo-public” spaces, which are those commanded by the spectacles of leisure and consumption, a typology grounded in the theme-park development model. These spaces she notes are “distinguished by consumption, surveillance, control and endless simulation”. This character is obviously also rife in our own contexts of Swakopmund and Namibia at large, where old “public” spaces and new ones are developed to contain people instead of exposing them, to each other, to the environment, and to the public domain. Those who can afford to be there mix and mingle, but majority of the population, from the township are left out. She continues to state the narratives of urban design, with their nostalgic ideologies grounded in the golden ages of city and urban development such as the Greek agora, Parisian coffee houses and Italian Piazza, have become irrelevant typologies in new, contemporary urban public domains. It is also relevant to understand that these typologies bare no significance within the African context, where “every-day” space or “in-between” no-man’s land becomes the basis of interaction. The existing premise that Africa thrives off of informality comes into play here, and existent practices from my analysis, even in Swakopmund support this idea. More over, Crawford makes an important statement in reference to Los Angeles, USA as a case-study, whereby she notes,

“Trivial, and commonplace, vacant lots, side- walks, front yard, parks and parking lots are being claimed by new uses and meanings by the poor, the recently immigrated, the homeless and even the middle class”,

“They contain multiple and constantly shifting meanings rather than clarity of function”.

This therefore becomes a point of take- off.



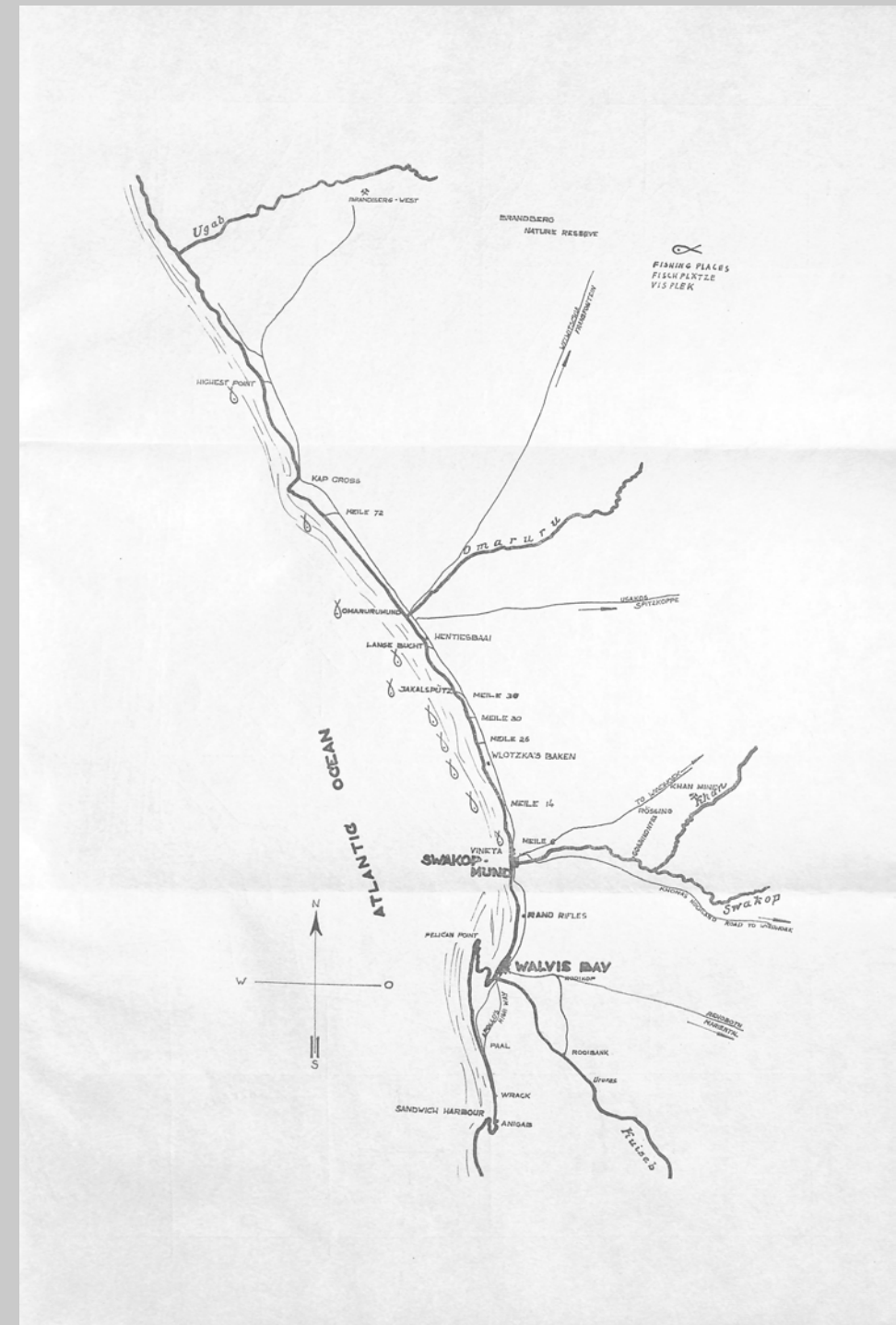
Figure:

7.2 Architecture as Catalyst for Bridging Landscapes of Marginality

The synthesis of architecture, agriculture and social condensement are key to the outcome of this research. These aspects are to symbiotically come together as the platform through which inherited and contemporary marginalisation of society is to be addressed. The research highlights a key corridor that in its structure becomes an amalgamation of different realms existent in the urban fabric of Swakopmund. Stretching from a former black township, across a buffer zone, containing the industrial operations of the town, into the commercial centre and finally to the water’s edge, a zone containing the foundation of the town’s existence. Architectural design has the potential to bridge

landscapes of marginality and aid as a catalyst in the pursuit toward socio- economic and spatial transformation in post- apartheid Namibia. When we consider these objectives we look at what is currently being done to achieve them to develop a hypothetical framework around which these could be integrated within the architectural design process. Currently the State and local Municipal Councils are tasked with service delivery facilitating spatial equalisation, which would ensure that each Namibian citizen has considerable access to land, employment, water and sanitation, quality education and health services. (Hartman, 2017) This is inline with the goal’s set out by the President Dr. Hage Geingob’s vision of “one Namibian House” and the Harambee Prosperity Plan, which declares that Namibians should share prosperity equally. (Geingob, 2017) It is imperative however to realise that the on-going model of the top-down approach is not substantial enough to achieve spatial equalisation and inclusivity alone, and therefore calls for the process to be augmented by integrating the converse processes of the bottom- up approach of social condensement, to provide a platform on which a fundamental change from inequality and segregation toward spatial equalisation can occur. A key argument to substantiate this need could be corroborated by the fact that the contemporary distribution and urban development predominantly occurs in environments of existing opportunity. Although primarily private, this also occurs within the public sector, neglecting locales of marginality that lack infrastructure and opportunity in favour of capitalism. Therefore to initiate development within marginalised zones and for architecture to effectively aid transformation in providing a socially and spatially equitable urban fabric a paradigm shift is required within the public mind-set from perceived spatial, cultural and socio- economic segregation toward equality.

In the following subchapters, the research critically examines how architecture performs as a catalyst in the afore-mentioned top-down and bottom-up approaches of spatial equalisation and production in marginalised locales in Swakopmund.



7.3 Critical Analysis of Quotidian Praxis of Spatial Production in Swakopmund - Top Down Approach

When looking at urban development and architecture as a catalyst for change, to serve as a point of reconciliation of society, of culture and of space, the premise would lay in severing the legacies of inequality and segregation inherited by our former colonialist and apartheid heritage. The aim is to rearticulate the current production models of spatial, socio-economic and cultural inclusion. Contemporary practice currently provides for a top down approach, often led by the state and its subsidiaries to ensure, effective, inclusive, efficient and supposed equality. One could argue that seemingly the top down approach of today has developed into a more inclusive means of production of space, whereby each citizen is considered and should be allowed to equal opportunities in the urban environment. Access to socio- economic opportunities, education, health systems, housing, work and other amenities is the order of the day, but is developed without the individual consideration of people on the ground, a one-size-fits-all typology, where each participant is thought of to require identical tools to live an equal and successful life. This brings about spaces that are generic, the theme parks of contemporary cities, (Crawford, 2011) with ideologies similar to that of culturalist Camillo Sitte's, security and happiness.

When reverting and considering, the design and development legacies of apartheid have led to a "cellular" development pattern of our cities and towns. These development patterns ensured the segregation of population groups within the urban context and more importantly propagated the exclusion of indigenous inhabitants within these urban environments from socio-economic opportunities. (Friedman, 2000) Furthermore these development principles allowed single-use domains, within a decentralized urban core of opportunities, predominantly within the CBD zoned areas of cities and towns in Namibia. In reference to Swakopmund, these zones have become touristic enclaves, supporting largely the function of

accommodating tourists and well to do members of the local society.

This has also in post-apartheid times become the main space of interaction and engagement between people of different backgrounds within the town. The mono-cellular residential suburbs and townships have over years of growth become more accommodating to functions that would reduce travelling distances for basic needs. The placement of such functions often occurs on the fringes of these locales bordering with other suburbs and townships. Economically this increases the yield and reach of such facilities for the proprietor but more often than not limits who is actually able to participate within these locales. Socially these become the spaces where urbanites from the lower-income sector are able to initiate informal trading and where the urban poor and homeless seek refuge and prospect. By examining the production of space within the spaces and how the constructs of socio-economic activities, blurring of boundaries take place within these, one is able to critically analyse the spatial relations that these spaces provide or develop. (Low, 2014) notes that spatialising culture

"provides a powerful tool for uncovering material and representational injustice and forms of social exclusion".

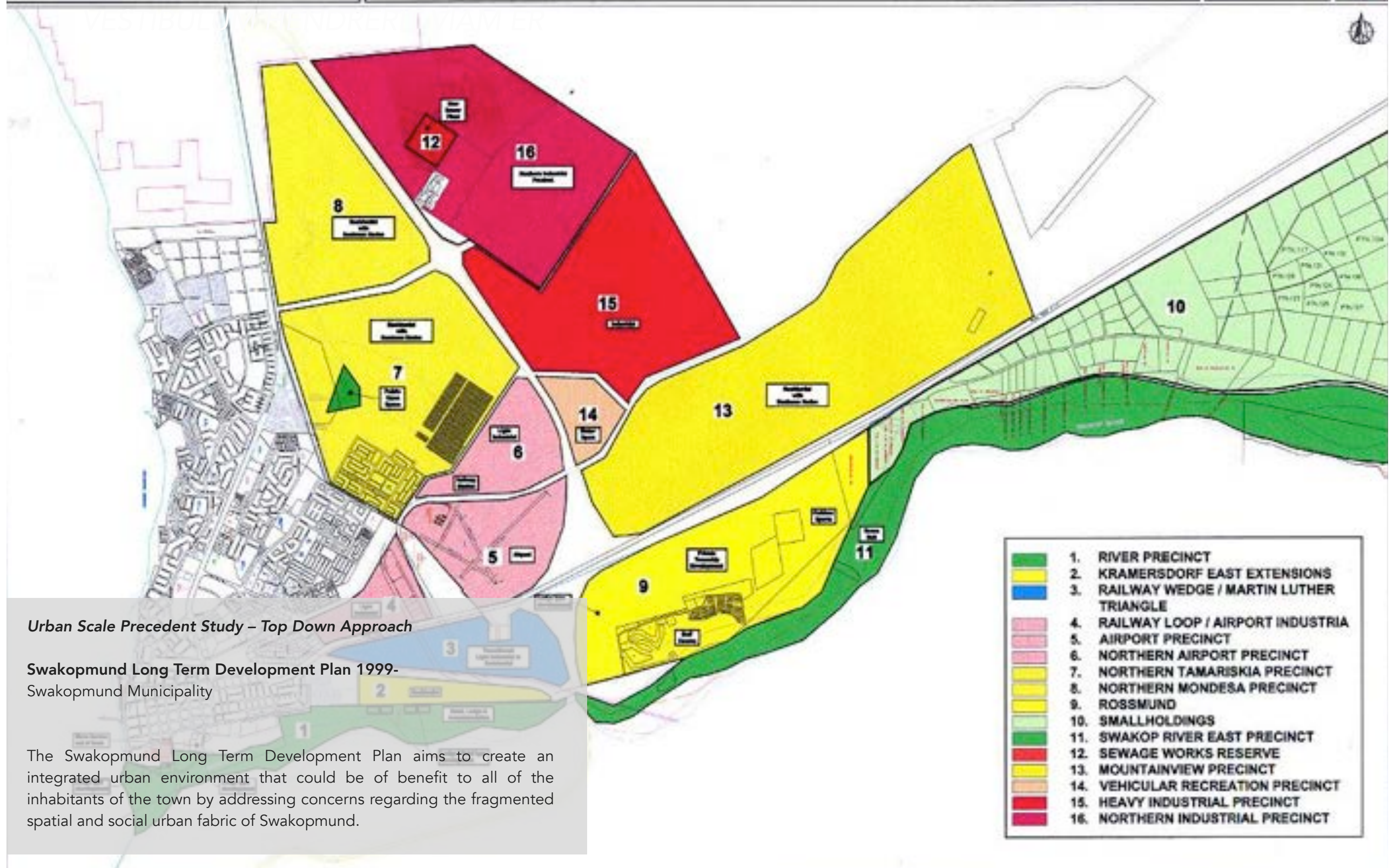
The variety of participants becomes critical in the production of the space. This is essential in considering growth and sustainability of urban environments over time. It is well known however that much of the contemporary urban planning practice still perpetuates the legacies born in apartheid by the aspects of segregation, expansive infrastructure, mono-functional blocks and zones. This therefore becomes the starting point of inquiry. By establishing a neutral ground or zone where these mono-functionalities could be merged. Strategies need to be developed which would outplay the current trend of suburban and township

development models, by reducing the development of firstly inward facing precincts which further isolate these

from their surrounds as a point of take off. Catalytic interventions need to be positioned as such to promote development and economic growth within key areas, bridging vital boundaries or borders. Furthermore reducing the implosion of architecture to the inside caused by planning for the motor-car and other constructs needs to be turned inside out to allow for justice of space and engagement which will improve social and cultural mobility.

Production of space toward spatial equalisation and transformation occur on both the town/city scale and that of the building scale.

On the town/city scale Integrated Urban Spatial Frameworks strive toward creating equitable, integrated inclusive and sustainable urban environments. The aspirations of top down projects in Swakopmund are assessed and analysed on the following pages.



Urban Scale Precedent Study – Top Down Approach

Swakopmund Long Term Development Plan 1999-

Swakopmund Municipality

The Swakopmund Long Term Development Plan aims to create an integrated urban environment that could be of benefit to all of the inhabitants of the town by addressing concerns regarding the fragmented spatial and social urban fabric of Swakopmund.

On the building scale the top- down approach aspires to act as a catalyst in the pursuit toward spatial socio-economic equitability. Architectural principles that enable this potential include:

1. **Siting** – Proximity of building to or within a formally marginalised area
2. **Programming** – Providing necessary infrastructure, public amenities and spaces of socio- economic opportunity; Cross programming to combine various activities, inviting citizens from different backgrounds into a core space and facilitate social mobility and cohesion.
3. **Identity** – Using architectural expression as a means of enhancing and supporting the character of the context
- 4.
5. **Incrementalism/ Catalyst** – Providing a platform from which supporting and by-product industries could be established; creating economic legitimacy within a formerly marginalised space; as a ripple effect

The following analysed example embraces these principles.

Building Scale Precedent Study – Top Down Approach Multi-purpose Centre, Swakopmund, Namibia

Karen Miller Architect, 2015

The Mondesa Multi-purpose centre is located in the former marginalised township of Mondesa and provides a platform for the local community to engage in business development, access to the use of a media centre with a library and Internet access. The centre also boasts a large public hall, a restaurant, and after school care centre small office space and SME business units and a gym which accommodates squash and boxing facilities. The building was erected by the municipality, to empower the community of Mondesa, but also to provide programmes that people from different backgrounds could also



benefit from. The provision of this building allows citizens to engage with different people, while gaining access to knowledge and maintaining a healthy lifestyle, a privilege in former times primarily enjoyed within the CBD and more affluent suburbs of Swakopmund. By locating the centre in close proximity to a transport interchange and SME business park, accessibility and significance of the space is accelerated. The design of the centre is centred around a courtyard spaces onto which various activities live out, becoming the core space of meeting and lingering during the day. This improves the spontaneous interaction amongst users of the facility and could facilitate stronger connections and social mobility. The facility is accessed via openings adjacent to street edges allowing pedestrians to permeate into activity spaces.



Figures: Overview of the Mondesa Multi-purpose Centre.

7.4 Social Condensing as Guiding Principle for Liminal Space in Architecture – Bottom Up Approach

One of the main priorities and outcomes of the research is to reconnect fragmented suburbs and townships to the water's edge and traditional CBD area of Swakopmund. This motive originates from the persistent development of towns and cities in Namibia still following a similar configuration as that of the apartheid segregationalist era. During this period indigenous people and people of colour were isolated within townships, reducing direct access to spaces of socio-economic opportunity, and were rationed to specific areas of education, health and recreation.

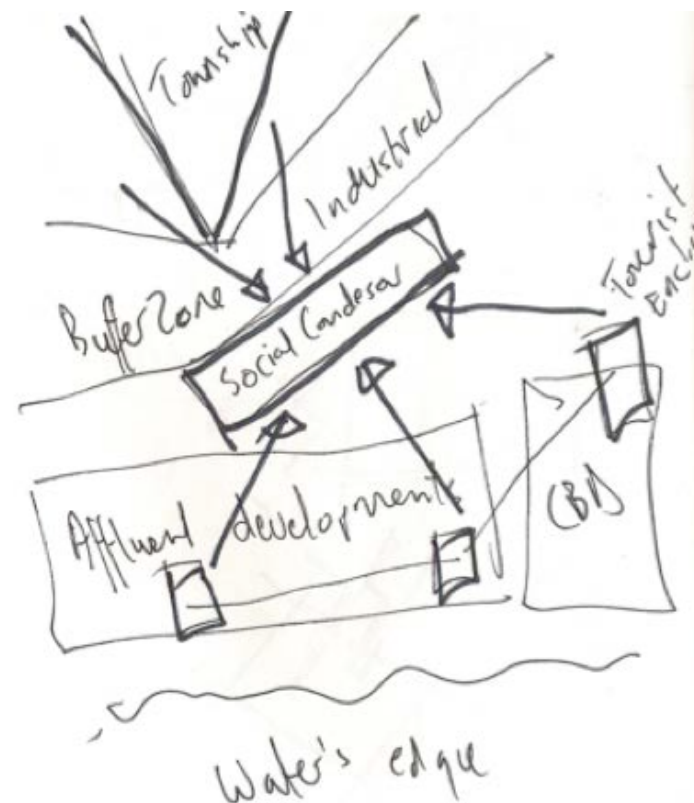
Industrial compounds, road networks, telecommunications and rail infrastructure was used to create a barrier between these areas and its inhabitants from the traditional CBD areas the former "white" residential suburbs, which ensured that non-white citizens would not have access to social, cultural, economic opportunities. Today, a certain level of tolerance however can be observed amongst the post-independent generation inhabitants of Swakopmund and Namibia at Large. Children and the youth from all creeds and colour are now exposed to one another more often within realms of education, social gatherings and are therefore on the forefront of breaking through the former boundaries of division. It is at this point or limen, where a need therefore arises to align the development of the public domain and architecture to support this typology of societal and cultural condensation.

Social condensation finds its roots within Soviet Constructivist Theory as a spatial idea practiced in architecture. A fundamental notion of a social condenser is its belief that architecture is able to influence social behaviour with a key objective to sever perceived social hierarchies to create socially equitable spaces. The design principles laid out that built form of a social condenser would include the overlapping and intersection of programs within a space through

circulation, (Kopp, 1970) and contemporarily is also defined by Rem Koolhaas as:

"Programmatic layering upon vacant terrain to encourage dynamic coexistence of activities and to generate through their interference, unprecedented events." (Koolhaas; McGettrick, 2004)

In the context of Swakopmund, a social condenser would be a "hybrid-landscape" or space that through its public domain and circulation would allow members of society who have formerly been separated due to segregationalist law but also due to different interests, socio-economic status' and culture to now engage, interact and permeate through perceived boundaries. Social condensation facilitates social cohesion by providing an architecture that would sever exclusion and marginalisation, to create a sense of belonging and promote social mobility for inhabitants.



Precedent Study – Social Condenser Langstrand Tidal Pools, Walvis Bay, Namibia

The Long Beach tidal pool is a space often shared by people of different socio-economic class, race and cultural background and performs as a social condenser. The facility is located in centralised location or liminal zone between the town's of Swakopmund and Walvis Bay, and is frequented by locals and tourists who often reside within the adjacent chalets, campsite or caravan park. The site provides braai facilities, which are free for use, a childrens playground, a restaurant, a jetty bar and a small kiosk. Through personal observation it seemed that although people do not physically engage with one another the harmonious shared use of the space by different people instills a sense of belonging. The space is not bound by any archetypical barriers such as a security gate or fence and is accessible during all hours of the day, allowing freedom of movement in and out of the space. It is designed for leisure and recreation by offering functions that are not usually open and free for use within the towns of Swakopmund and Walvis Bay. Beyond these dynamics the location of the site in liminal space between the Namib Desert as a backdrop allow the functional space to spill over into the Atlantic Ocean creating a serene, calm and naturally beautiful setting.



Figure: A view of the tidal pools from the Namib Desert (Xpedite Aviation)



Figure: A view of the tidal pools from the Namib Desert (Xpedite Aviation)

7.5 Architecture Facilitating Socio- economic and Cultural Equality though the Public Domain as a Social Condenser

Linking back to the argument of public domain as a social condenser, Hajer and Reijndorp (2002) define the public domain as spaces of shared experiences and interchange between people from different backgrounds or dissimilar interests. Key to the argument is the notion that public space and public domain exist in stark contrast to one another, whereby the public domain does not necessarily contain formal public spaces such as squares, but instead become the realm or sphere in which society is formed. The public domain contains the other or in-between physically undefined character of the urban realm, a space where spontaneous urban activities are sparked, beyond mutual ties of origin, family, friends or work. The public domain provides socio- economic and cultural equality by facilitating cultural mobility, where a space, the town, or a street is shared equally amongst all inhabitants and visitors, which as noted by John Collins, in relation is quite similar to the model of European cities, where “extremes of segregation, crime, racial tensions and social problems” are not as rife, allowing the visitor to be “absorbed” into the urban fabric emphasising the “harmonious development of the city.” (Collins, 2004)

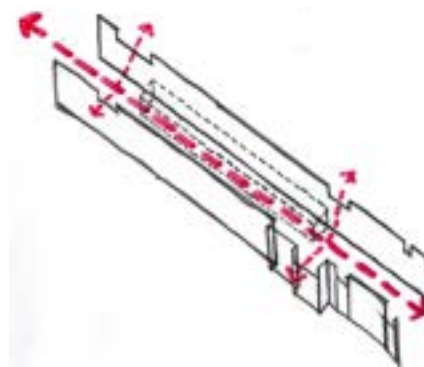
An example of public domain exists within the following precedent study, located in Cape Town, South Africa.

Precedent Study

Dreyer Street Market - Claremont Cape Town, South Africa

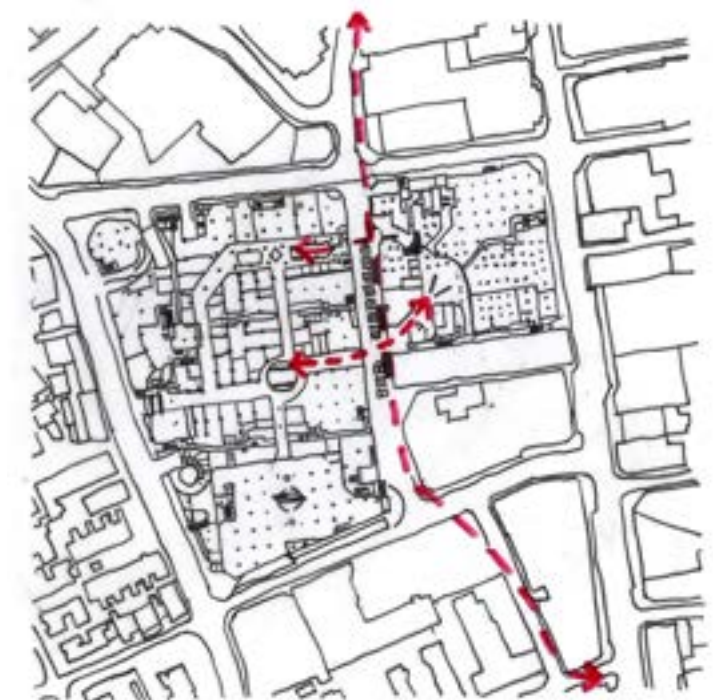
The Dreyer Street Market was birthed as co-operative intervention within the CBD of Cape Town, between Old Mutual Holdings Limited and the City of Cape Town, and exists within a street linking two buildings on opposite ends, with the popular Cavendish Square Mall as a central anchor. It can be considered an example of public domain within which people of different backgrounds and interests share and experience a variety of spaces, related but also unrelated to their needs. When Understanding the CBD demographic of

Cape Town's inhabitants the Street lends itself to be a container, one which provides shelter for the homeless in the evening, an energetic vein for business men and women scuffling to work in the morning, and a space where informal traders set up stalls for their daily sustenance. This facilitates cultural between visitors and users of the space who would otherwise not be exposed to each other, allowing people from different walks of life to share equity of the space, socio-economy and culture. Beyond this the market space is kept alive during the day by commerce, formal and informal retail, and after hours by its many bars, café's and restaurants, providing several layers of access to the equity stake contained within the strip. The market is framed along a street or corridor by tall buildings, sprawling vegetation, and is announced by a canopy, encapsulating the user, providing a more intimate in-between or liminal experience.



The following list of architectural and urban design principles have been derived from this case study and will be implemented within the design scheme, to further support the theory of liminality, and encourage social condensing in which the idea of the in-between really starts taking ground:

1. Dismantling the idea of either public space or private space – Providing an in between character.
2. Consciously located in a trans-migrational zone, not associated with a limited group of individuals or functions, but rather bound by dense architecture and urban fabric accommodating a broadened scope of urban functions.
3. Enhancing the vibrance of African identity in the urban setting by allowing people from different social status, ethnic backgrounds etc. to take part and share equally.



7.6 Enhancing Industry - Introducing Productive Industries into the Urban Fabric

“Namibia’s potential for crop production is severely limited by climatic and soil conditions, as well as its relatively scarce water sources.”

- Namibia Future Farming Trust

Climate change and the effects of El Nino have grossly affected Namibian ecology over the past few years. Namibia has experienced one of the most severe droughts in decades. This in turn has severely affected the agriculture industry of the country forcing government to declare a state of Emergency, and implementing water cuts of up to 30%. Typically only 2% of Namibian soil receives enough rain to grow crops. (Goddek, Keesman, 2017) This reduces the potential for traditional agriculture in the country and therefore increases the need to import fresh produce. This is especially pertinent to the case of Swakopmund with its semi-arid desert climate, low annual rainfall figures and salty soil conditions. According to the Nutrition Action Group 2015 Namibian Demographic Health Survey, 26% of minors below the age of 5 are stunted, 8% are severely stunted, 13% are underweight and 6% are wasted. The survey further notes that children who are stunted are more likely to become unproductive adults with a decreased earning capacity over their lifetime than children who are not stunted. (The Namibia Ministry of Health and Social Services and ICF International, 2016) According to the World Health Organisation (WHO & Weise, 2014) stunting is the impaired growth and development of children who have poor nutrition, repeated infections and inadequate psychosocial stimulation. As our population grows and the rate of urbanisation continues to rise in Namibia, the issues of food security, access to education housing, access to clean water and sanitation should rapidly be addressed.

Drawing from Swakopmund’s industrial heritage and its role in the establishment of the town, it has become pertinent that contemporary urban industrial development should contribute to the well-being of

each member of society. Potential exists for contemporary architecture to re-integrate productive systems of industry within urban environments to reduce the challenges faced by formerly marginalised groups of society, amongst others. The introduction of urban agriculture is to aid as a catalyst toward spatial equalisation, access to socio-economic opportunities and stable food security. The research therefore aims to find a suitable means of integrating the urban environment into the realm of a productive industry. Swakopmund was birthed out of necessity to create a harbour for the Imperialist German Administration. The town quickly sprouted and after the discovery of uranium, allowed the town to flourish facilitating further growth and expansion. Years later, now with the decline in demand for uranium and other commodities, a new sustainable model is to be developed for the future of the industry. Supplemental industries are to be looked at as potential models for redevelopment and integration. The agriculture industry has great potential for job creation, skills transfer and could contribute greatly to the GDP of the country, as it is a largely untapped market within the national bounds of Namibia and Swakopmund in particular.

A key concept of the Architectural research project is to provide a platform where access to socio-economic activities can occur, and therefore vests itself within the realms of plant based food production and fish harvesting. This process is known as Aquaponics and is the conglomeration of aquaculture and hydroponics. Aquaponics is an integrated aqua-agriculture system that makes use of a recirculating aquaculture system in which fish are bred, and a hydroponics system that is a soilless plant production method. Aquaponics as a method for urban agriculture is well suited, as it can be done within a controlled indoor environment, it requires 90% less water than traditional agriculture, due to the recirculation and aeration of water, and therefore it is less dependent on idyllic climatic conditions. (Goddek,

Keesman, 2017) Furthermore the yield produced by an aquaponics system is significant higher, because it can be done throughout the year, without being seasonally dependent and any pests and infestations could be easily removed and the system flushed, which greatly improves the rapid scalability of in the for commercial development. These factors enhance its significance within the Namibian productive industries and facilitate objectives set out by the Fifth National development plan, which aim to create employment, while considering the environmental sustainability of energy and water efficiency. At this stage Namibia still imports more than 60% of its fresh produce from neighbouring countries, predominantly South Africa. Statistics show that 96% of fruit sold in Namibia were imported during the 2017/2018 financial years. (Tjitemisa, 2018) Ideally the establishment of research facilities around this problem could accelerate growth of the agricultural industry locally, whereby contextually based studies could be undertaken. The facility could aid as a catalyst for industry development not only in Swakopmund, but nationally too.

“It is well-established that Namibia produces what it does not consume and consumes a great deal of what it does not produce”- NDP 5



Figure: Harvesting Leafy Greens at Afritree, a Local Hydroponics Farm at the Swakopmund River Plots

“Swakopmunds beautifully preserved buildings
reflect its imperial past as the hub of
German South West Africa”

- Amin, Willetz and Shah, 1994

CHAPTER 8

CONTEXT STUDIES

8.1 Location

Swakopmund, was established on the west coast of Namibia, adjacent to the Swakop River, which informs the southern boundary of the town. The town is approximately 355kms west of the capital city Windhoek, 35kms north of Walvis Bay and 70kms south of Henties Bay, by road. The town was founded as the main port for German South West Africa. Swakopmund forms part of the Erongo region, and is the second largest town in this region after Walvis Bay. The town is located adjacent to the Namib Naukluft Park to the east and the National West Coast Touristic Recreation area to the north making it an environmentally sensitive region.

The preservation of the towns unique character and spatial qualities were facilitated by early settlement and eventual transformation into a holiday resort.





8.2 Geographic features and climate

Due to Swakopmunds proximity to sensitive geographic features, spatial expansion is limited towards the north. The town is bounded on the west by the Atlantic Ocean, on the east by the Namib Desert, which forms part of the Namib Naukluft Park, and on the south by the mouth of the Swakop River, which flows into the Atlantic Ocean.

The urban topography is considered to be fairly featureless and flat. As a result of Swakopmunds unique position in the limen between two contrasting climatic zones, the town experiences a hyper arid desert climate, with less than 20mm of rainfall occurring annually and average annual temperatures ranging between 15oC and

25°C. The cold Benguella current provides moisture over the coastal region, and dispenses thick fog for approximately 180 days a year. This moisture ensures for sustenance for fauna and flora in the Namib Desert.

Source: (Aurecon & SLR, 2014)

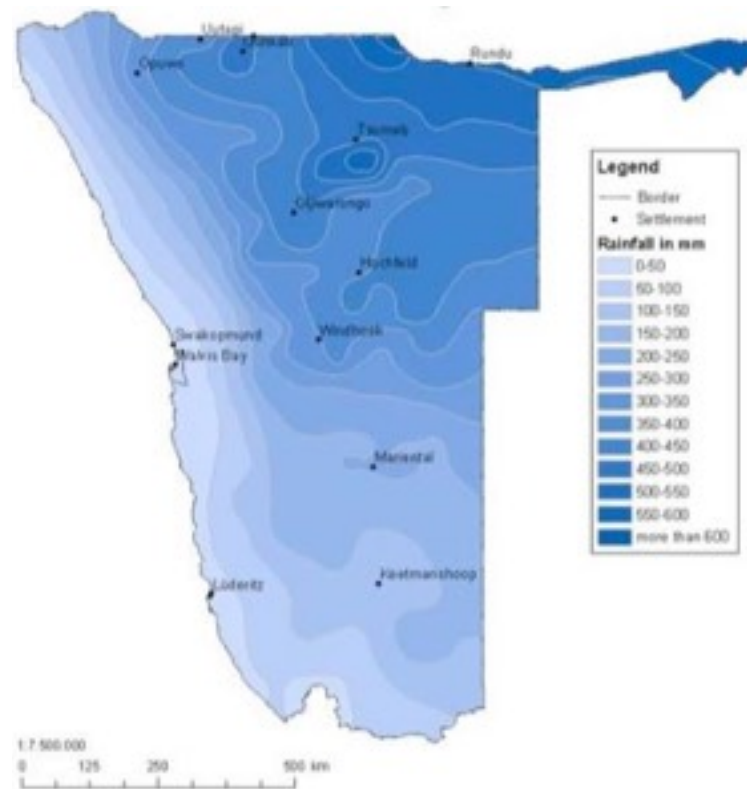


Figure: Average Annual Precipitation

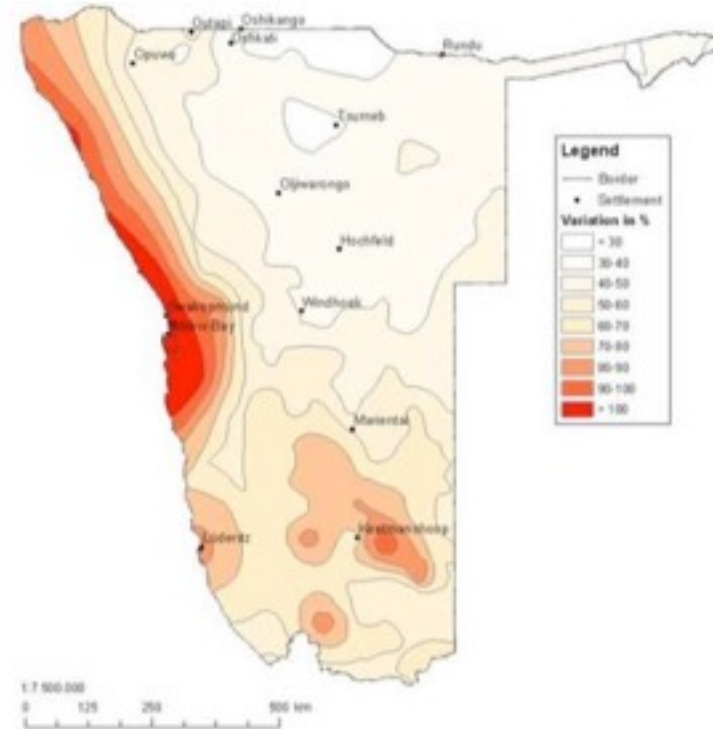


Figure: Rainfall Variability

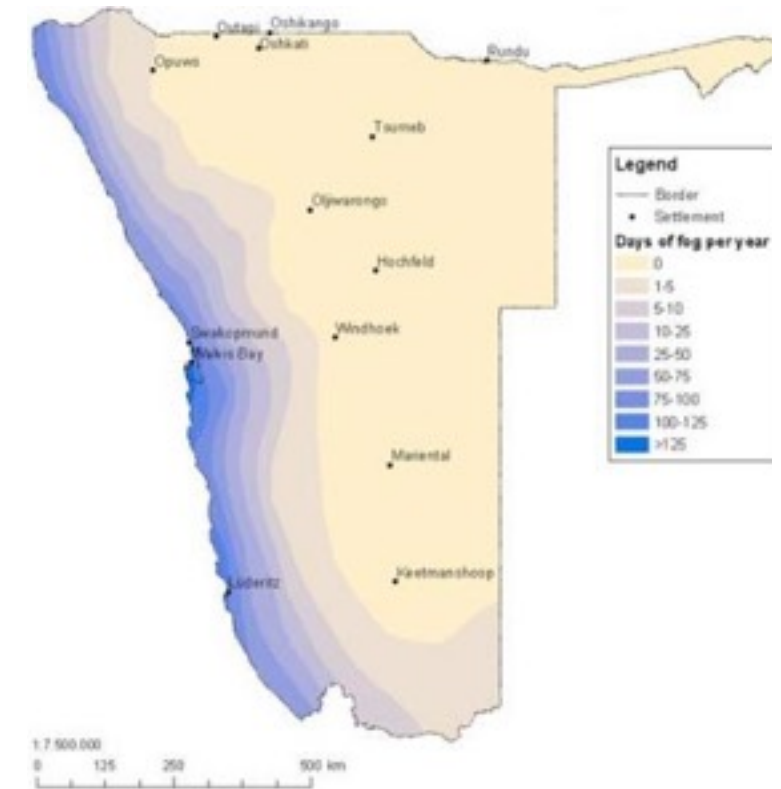


Figure: Average Annual Number of Days of Fog

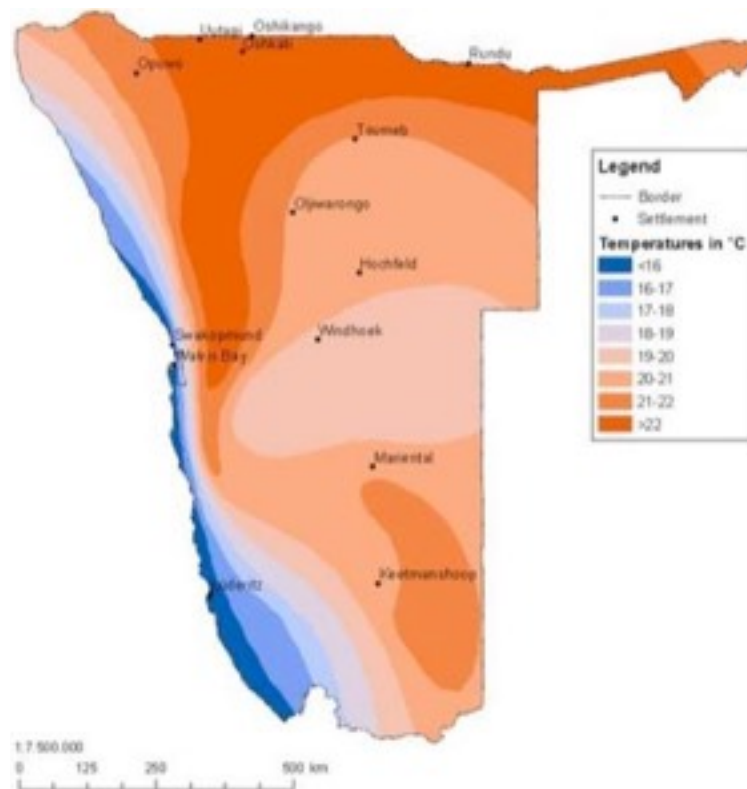


Figure: Average Annual Temperature

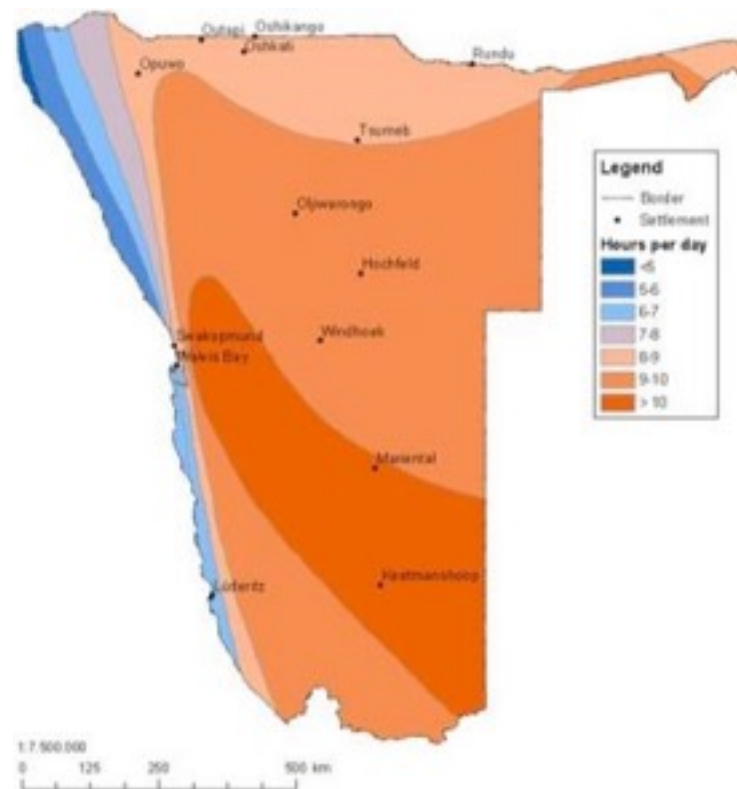


Figure: Average Annual daylight Hours

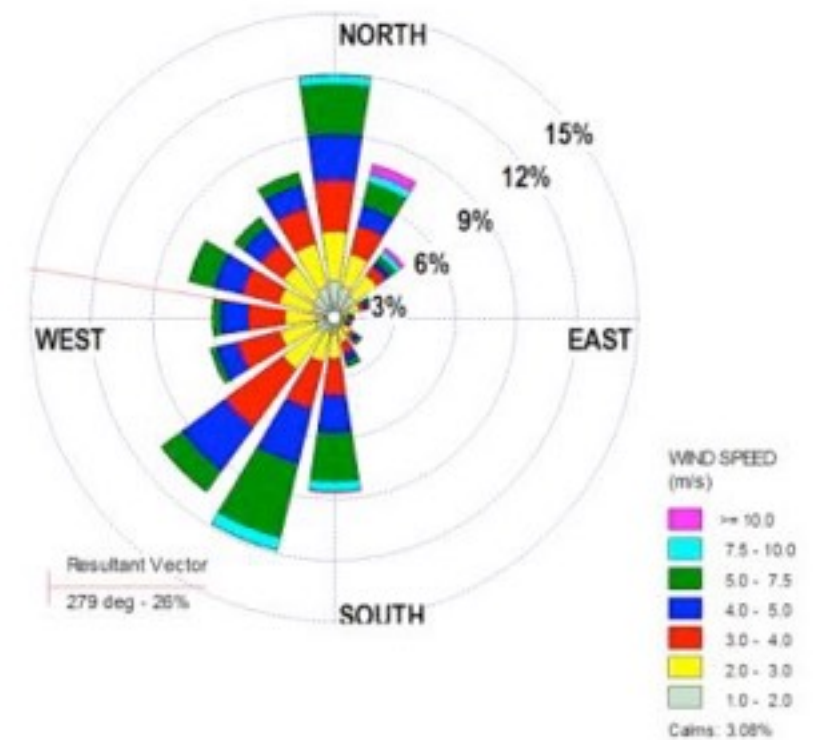


Figure: Diurnal Winds Rose Recorded between 2001-2007

8.3 Demographics

Swakopmund is entirely urban, according to the 2011 National census, Swakopmund had a population of approximately 44 700 inhabitants and estimated at 55 000 in 2017 a figure which is said to more than double during the peak holiday season. (Aurecon & SLR, 2014) Middle to high income residential suburbs are along the Western edge of the town with low-income and informal settlements on the eastern edge, sprawling towards the north. Mondesa, the former black township, has smaller plot sizes and is therefore more densely populated, in comparison to the middle and high-income suburbs. The Democratic Resettlement Community (DRC) is the only informal settlement in Swakopmund and was established in 2001 to temporarily host inhabitants waiting on subsidised housing supply. Currently more than 20 000 people reside within the DRC informal settlement, accounting for nearly 50% of Swakopmunds population. (de Klerk, 2014) Basic services such as prepaid water collection points, refuse removal and ablutions are dotted across the settlement, and are provided by the municipality. Since the beginning of 2015, mass-housing rollout has started within the DRC, however due to corrupt practice within the industry many of these houses are still incomplete and unoccupied. (Hartman, 2018) According to the Namibia Labor Force Survey of 2016, the Erongo region had the lowest unemployment rate in the country, at 21.9%. (NSA, 2016)

8.4 Economy

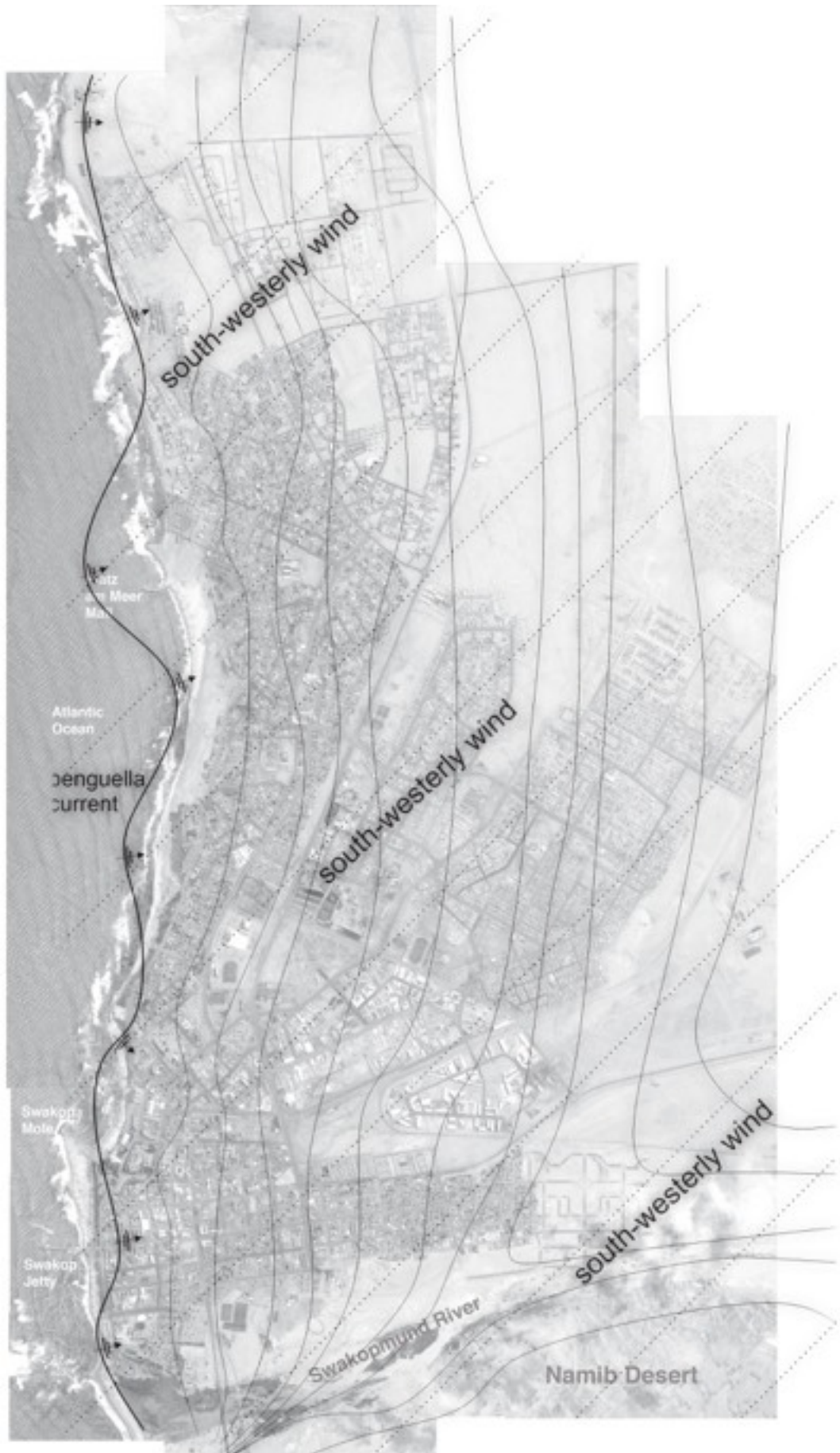
Swakopmunds economy is largely based on tourism and mining activities around the town. The development of the Walvis Bay-Trans Kalahari Corridor has also contributed to the development of a new industrial area in Swakopmund, which mainly provides jobs for semi-skilled labourers. Thus, the population consists of a slightly higher percentage of males than females (23 700 to 21 000 respectively), due to the inward migration of men seeking employment in the mines and supporting industries. More than 80% of the population over the age of 15 is economically active, and is considered part of Swakopmunds potential work force. Of these, over 19 000 people are employed, while over 6 600 are unemployed, accounting for an unemployment rate of 13% in 2014. (Aurecon & SLR, 2014)





road_networks





urban fabric_ **density**

8.5 Genus Loci

The town can be characterised by its very laid back atmosphere for most of the year. The old town center which lays within a heritage conservation zone, has kept most of its aesthetic and spatial character. The grid block system, makes the inner city comfortable for pedestrians, with many small, quaint spaces such as eateries, book stores, and other amenities are well located along key pedestrian zones within the CBD, providing for a very vibrant urban setting, with constant interaction of the public realm, with architecture and intimate courtyards spaces.

The sea front is linked by a promenade, often used by tourists, cyclists and other fitness enthusiasts, it has been fragmented however by the new Strand hotel development, which essentially blocks visual connection with the water's edge. The beachfront's are mostly quiet during off-peak season, which can be tranquil at times, however also could make the area potentially prone to crime.





CHAPTER 9

BRIEF AND ACCOMMODATION

9.1 Brief Development

Access to quality education, socio-economic opportunities, stable food security and leisure and recreation still remains a key problem for the urban poor, low and middle- income citizens. Additionally, the prevalence of apartheid models of inequality continues to hinder equality and spatial transformation. This study seeks to amend this perpetuated marginalisation of the above-mentioned inhabitants of Swakopmund through the application of knowledge gained from the theoretical investigation. The fundamental aim is to provide an urban design scheme that would formalise the urban corridor identified in chapter 5, and to provide an architectural solution that would facilitate social cohesion, the transfer of knowledge, access to equitable socio-economic opportunity and stable food security. The architectural design project is to fundamentally integrate the theories and principles derived from the theoretical investigation within the scheme.

In 2017 the Swakopmund Municipality initiated an urban Gardening Project that facilitates knowledge development around urban agriculture at local schools and formally marginalised communities. The project is intended to act as a means of individual development, self-sustainability and knowledge transfer to aid food security, facilitate sustenance, access to socio-economic opportunities and education supporting existing trends of trade within these locales. Conversely, this also holds strong benefits for much of the urban landscape, which can often be characterised as brownfields due to the deterioration and eventual dismantling of old transport and industrial infrastructure brought about during the German colonialisation and apartheid eras. Furthermore as an on-going Long Term Plan for urban development of Swakopmund, a key objective is to weave fragmented zones of the urban fabric by providing platforms where citizens from all supposed classes and tourists are able to exist symbiotically, facilitating public engagement, transfer of knowledge, money and goods, to create an environment which breaks the perceptions of apartheid, segregation and the socially excluded. The Community Skills Development Foundation (COSDEC), an umbrella body for community skills development centres in Namibia, supports these objectives, with a mission to:

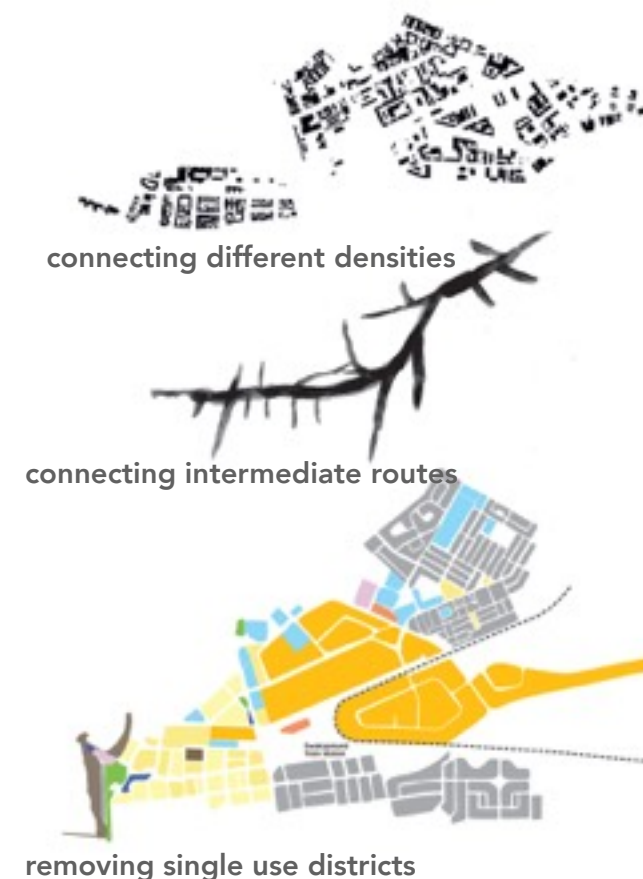
“Assist communities to address the training needs (technical, vocational, business, entrepreneurial and workplace essential skills) and SME support requirements of marginalised Namibians lacking these skills.”
(Hartman, 2018)

Other objectives of COSDEC include:

“To increase the income-earning capacity of Namibia’s marginalized populations – unemployed youth, women and low skilled adults by developing their entrepreneurial and essential skills and enhancing their participation in micro and small enterprises.”

The 3 identified urban voids within the corridor are to act as social condensers, which would embrace these aforementioned qualities of spaces, informed by the theories and concepts of liminality. Furthermore the architecture developed in these urban voids are to become public condensers (absorbing the public realm from within the social space) which would host an array of multi- faceted programs to further facilitate this engagement and transfer of these elements. The core focus site of the study exists in the liminal space between the township and the CBD and water’s edge, it acts as a hinge, on the fringe of the industrial area and links primary, secondary and tertiary routes of the city. The development of an urban master plan is required as the site is a large void within the urban fabric, with a rich history of connectivity. It once hosted the train yard for the main station, which is now a redeveloped luxury hotel, the existing presence of the historic layer and it’s position within the corridor should inform the design, with emphasis on connectivity, socio- economic opportunity, public spaces, while also integrating the municipality led initiative of urban agriculture. Thus a suitable position is to be identified

for a public building which would act as a condenser of public and different programs, while a being platform for engagement, and exchange. Access to basic public amenities should be considered as the building blocks of the urban design and architecture and grounds to expose true informality of African public space should exist symbiotically with the formal to enhance insight into the inner- functionalities and workings of local culture and traditions for the touristic footprint.



Making use of architecture to entice movement can be done on various scales. Architecture could become the main facilitator of movement through urban, local and pedestrian scaled spaces. An existing artery of movement which exists out of necessity has become the focus on an urban scale, as it already embodies the understanding of behavioural and circulatory patterns of the once segregated inhabitants. Large open spaces within this artery, discourages interaction between users and promotes anti-social behaviour. By allowing the user to become a participant in the circulation of space, a more comprehensive sense of place can be established.

9.2 Brief

The brief calls for a two-pronged approach, firstly to develop an urban master plan within an identified sector of the urban corridor, which would allow for the interlacing of the fragmented urban fabric and to formalise this spine to facilitate future catalytic interventions; and to provide an architectural design solution and programme that would allow architecture, agriculture and social condensement to act as the symbiotic platform for socio-economic opportunities and spatial equalisation to occur.

The objective of the Swakopmund Municipality Vertical Urban Aquaponics Farm and Research- Development Centre is to contribute toward obtaining knowledge of contemporary urban farming methods and to act as a research centre toward the understanding of alternative methods of urban agriculture in different environments and to promote stable food security and socio-economic development as a means of severing marginalisation. The Centre will hold the following functions:

- Concentrated food production growing area
- Seed germination and development laboratory
- Lecture Rooms and Study areas
- Library
- Auditorium
- Mixed Market space
- Food Distribution Centre
- Public Space and Service Walkways
- Storage Facilities for Traders and Operations

9.3 Client

The main client has been identified as the Swakopmund Municipality in partnership with the Namibia Future Farm Trust and the Community Skills Development Foundation (COSDEF) as key stakeholders. This would facilitate a public- private partnership and share of equity. Furthermore this partnership would be able to collaborate with academic and state departments to further the foothold of research and development within the country.

The roles and involved departments are as follows:

Swakopmund Municipality – (Community Development Services/ Engineering Department and Health Services Department)

Responsible for amenities, public facilities and economic development; preservation of the environment and to uphold standards of quality and hygiene)

COSDEF - Course Development, skills development and training, food production and distribution

Namibia University of Science and Technology – Department of Agriculture and Natural Resource Sciences)

Research and Programme Development

Ministry of Agriculture, Water and Forestry – “to realise potential of agricultural, water and forestry sectors toward promotion of efficient sustainable socio-economic development.”

Namibia Future Farming Trust – As a recognised body for research and solution development of aquaponic growing centre in Namibia; research and grass roots implementation.



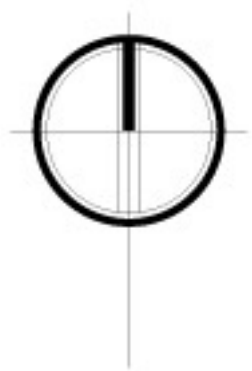


CHAPTER 10 SITING AND ANALYSIS

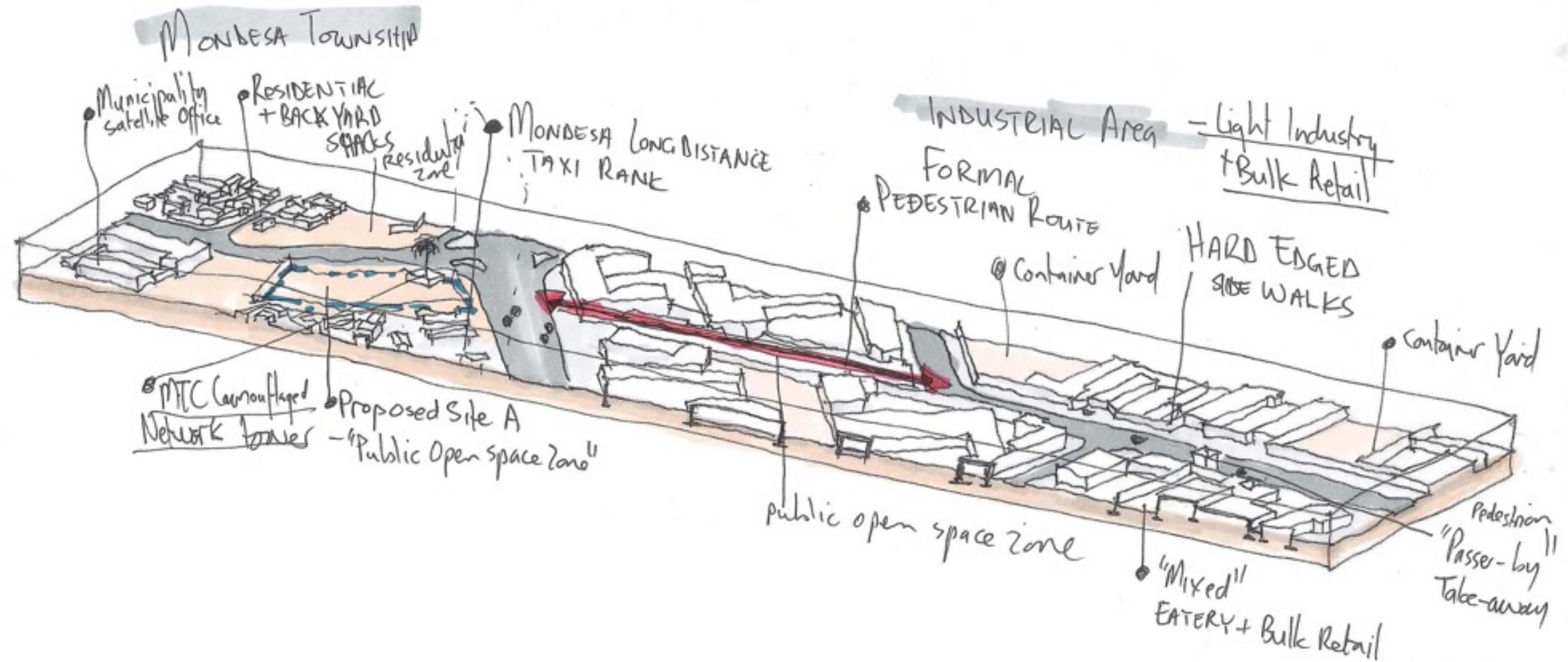
10.1 Meso Analysis - The Urban Corridor

As highlighted in chapter 5, the “Urban Corridor” was established on the foundations of the Group areas act of 1955. This separation of townships and suburbs within which non-white residents resided forced these inhabitants to commute via a wedge that penetrated the town’s structure. This corridor is still utilised today as a key pedestrian artery through the industrial area toward the CBD, and essentially provides access to most socio-economic opportunities within the town. Students and employees make use of this passage to their institutes of education and places of work. Similarly many informal entrepreneurs use this as their main trading locale, being flexible enough to move to and fro along the route to capture high frequencies of clientele along the way, during the day. The corridor can be divided into three key zones and exists as a liminal space between Mondesa, Industrial area and the CBD. The significance of the corridor exists within the various layers of history encapsulated within, being one of the earliest pedestrian spines from the township, to spaces of socio-economic opportunity. Moreover the route today has several networks branching from it, allowing flexible movement to several of the old and new extensions of suburban Swakopmund.





- Movement Corridor
- Primary Spatial Structure
- Secondary Spatial Structure
- - - Proposed Urban Sites



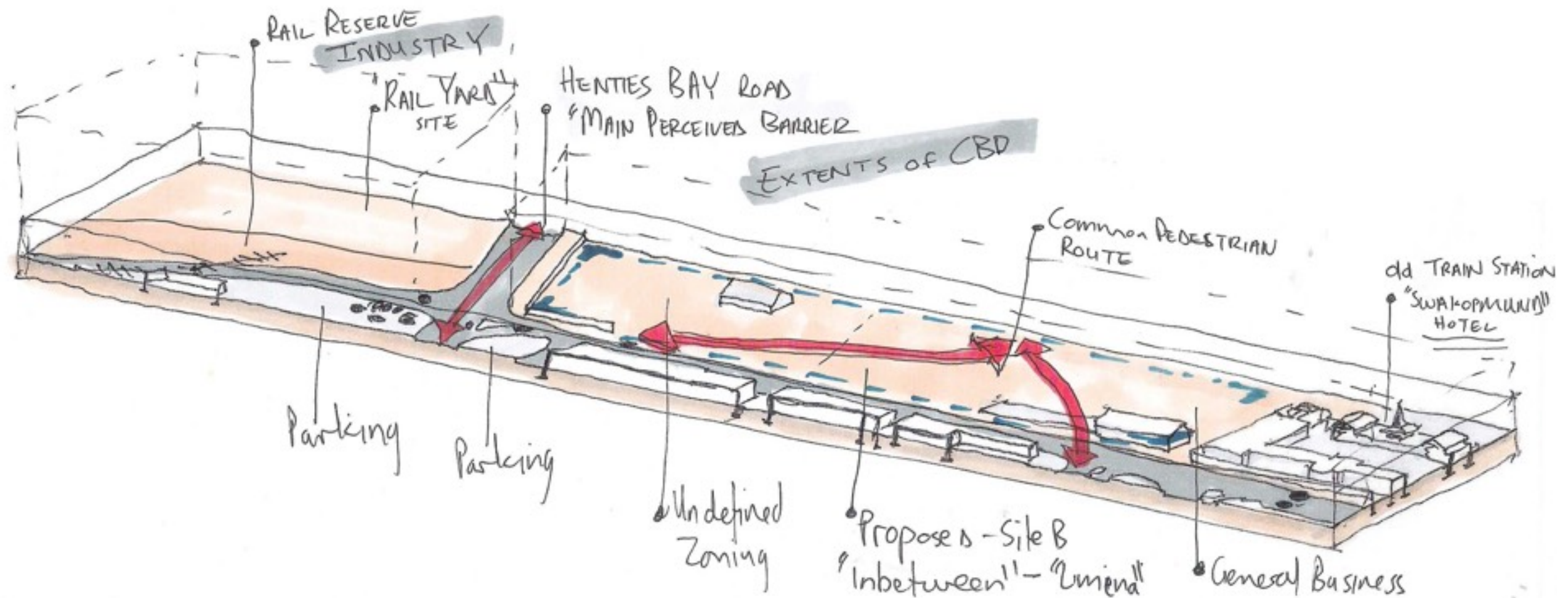
10.1.1 Zone 1- Mondesa

Mondesa is primarily a residential township and can be characterised by its compact built fabric, with a high density of houses, shops, taverns and informal trading spaces in close proximity to each other. Shebeens, tuck-shops and hair stylists amongst others are located amongst houses and contribute to the vibrant culture and bustle of activities within the township throughout the day. Manufacturing of items of collected from landfill, second hand electronics and clothing, car repair workshops and traditional cuisine is often traded with off

the street on the sandy sidewalks of the corridor, making up the main public domain within the area. Many of the existing dwellings were constructed in the early 1970s as social housing for the non-white residents, and resemble the matchbox typology of those in Katutura, Windhoek's former black township. Small informal structures line the boundaries of erven, accounting for a total maximisation of space and contributing to a well-utilised urban fabric. The absence of formal public space across the strip allows residents to innovate and utilise the full potential of

in-between spaces for a variety of daily activities. The informality of structures existent in Mondesa expresses the cultural identity its inhabitants with applications of local building techniques and materials used to construct many of their trading and recreational spaces.





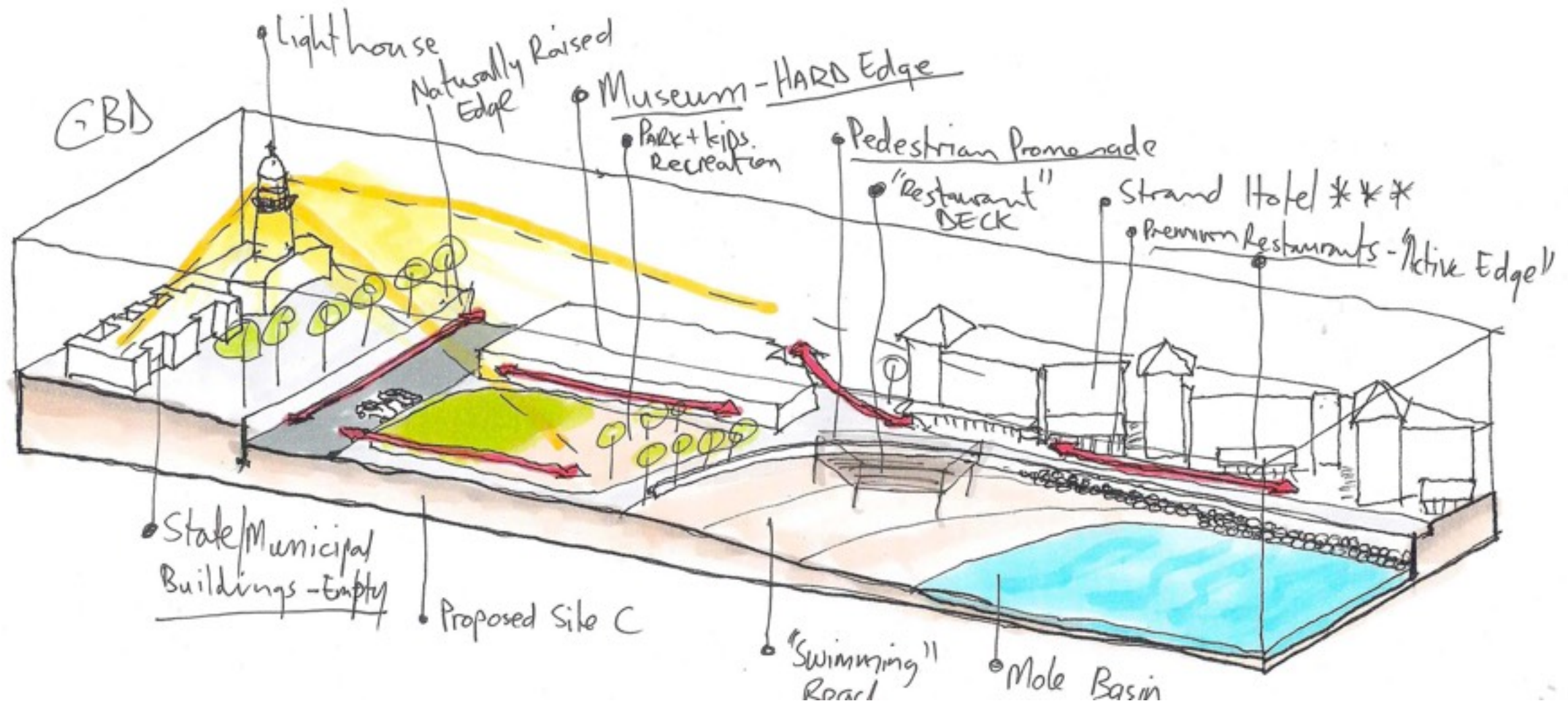
10.1.2 Zone 2- Industry

The old industrial area of Swakopmund was consciously positioned as such to buffer the township from the CBD. It can be characterised by its vast plot sizes, industry grade equipment, container yards and tall lifeless boundary walls, often enabling anti-social behaviour and crime after dark. Wide dual carriage roadways intended for use by heavy goods vehicles inform a large division between these areas and the CBD. Narrow sidewalks obstruct fluent pedestrian traffic through the corridor, limiting the ability to cross streets safely.

In recent years a passage was constructed between the built fabric, to ease pedestrian mobility into the industrial area, from Mondesa, affirming the significance of the corridor by the municipal council. Moreover the wedge has enabled informal traders to set up permanent stalls within interstitial spaces along the route, selling a variety of consumables to satisfy the need of the pedestrians. Spatially the dense urban fabric contained within Mondesa and the CBD dissipates into extensive city blocks of the industry increasing the distance between nodes of interest. However contemporary mutations

within this zone include the emergence of numerous smaller scale super markets, bulk retailers and small to medium scale eateries that live out onto the route. This has reduced the need for some to travel vast distances to acquire daily essentials or trading stock for tuck shops and other small- medium enterprises within the township.





10.1.3 Zone 3 – CBD and Waterfront Environs

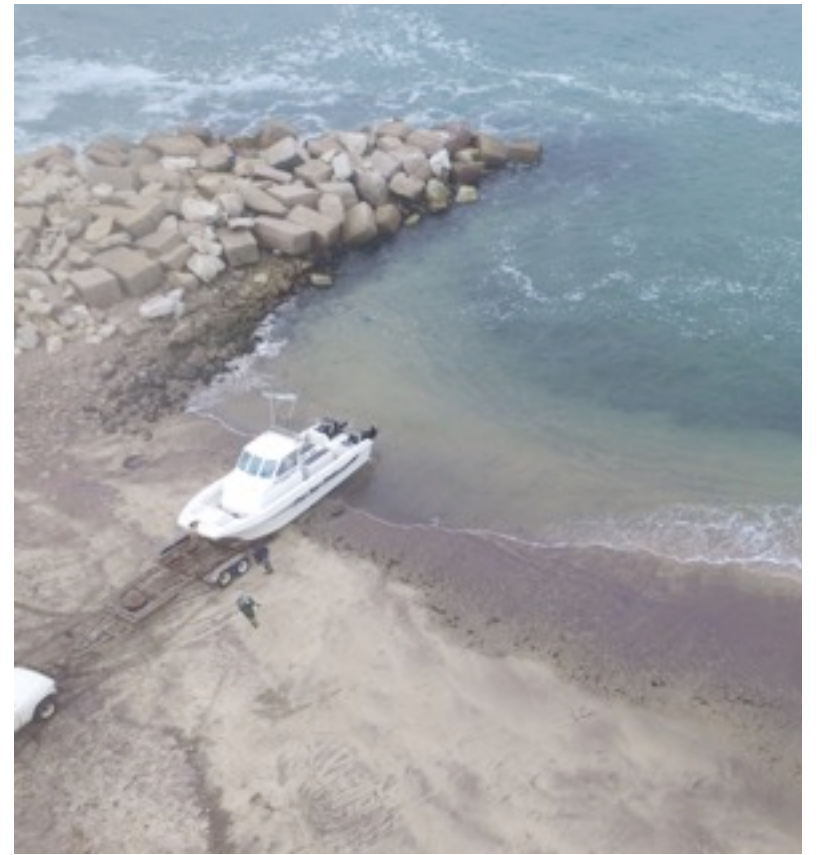
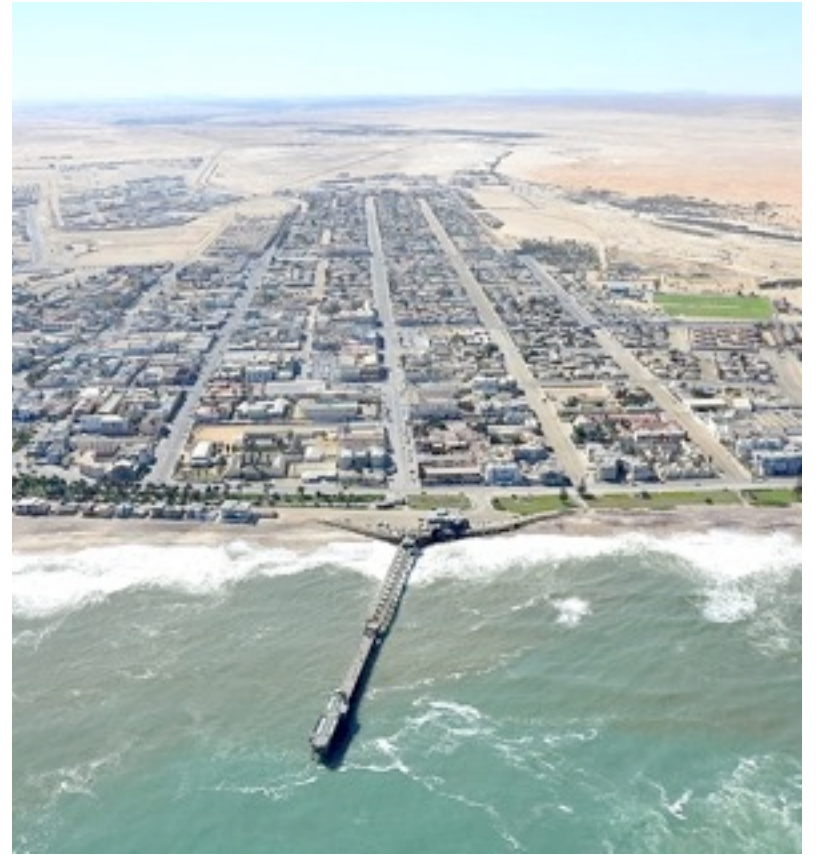
As with many post-apartheid towns and cities, the historic town centre often houses the majority of socio-economic opportunities, quality education and health facilities, retail and commercial hubs and public spaces. The old town centre of Swakopmund is no different.

One of Swakopmund's most notable qualities are its beautifully preserved buildings, gardens and public facilities. (Amin, Willetz and Shah, 1994) The CBD can be characterised by its many interstitial spaces, the logical street grid and the vast sandy beaches along the coastline. The built fabric of the CBD exists as a multi-faceted, densely populated one stop shop, often populated with scores of residents and tourists alike. Café's high-street retailers and bookshops live out on to

the sidewalks, livening up the public realm and is resemblant of historic European cities. Much of Swakopmund's identity is encapsulated within the CBD and in the early 2000's motivated the municipality and heritage council of Namibia to establish a conservation area around the historic town centre after the city started undergoing a development boom. This demarcation limits building construction to conform to certain aesthetic and architectural guidelines that would ensure the protection and longevity of the town's character. The heritage area was born out of fear that historic buildings would be destroyed, as many of them exist within the most valuable square mile of the town. This has however led to contemporary buildings erected within the area often being criticised by experts and inhabitants as being

watered down examples of the authentic German architectural language and as mere facadel pretence of historic sensitivity. (McNamara, 2010)

In recent times, the development of decentralised retail and commercial nodes has affected the significance of the historic town centre as a premier shopping and commerce destination in Swakopmund. Establishments in closer proximity to the suburbs and township are now more equitable and have shifted the surge of development toward the periphery of the town. This has led to the built fabric of the CBD to be dotted with vacant buildings and open lots, reducing the economic value of the CBD. Moreover this has inflated rent and building costs in the CBD in favour of cheaper land on the periphery. (Collins, 2017)



10.2 Theoretical Siting Requirement

The building and urban block masterplan is located within one of the identified urban voids within the urban corridor. The desired location and programme of the site was made based on the findings and architectural principles yielded during the literature review and theoretical investigation of the research paper. The extracted guidelines are as follows:

1. Proximity of building to or within a formally marginalised area/ Consciously located in a trans-migrational zone, not associated with a limited group of individuals or functions, but rather bound by dense architecture and urban fabric accommodating a broadened scope of urban functions.
2. Providing necessary infrastructure, public amenities and spaces of socio- economic opportunity;
3. Cross programming to combine various activities, inviting citizens from different backgrounds into a core space and facilitate social mobility and cohesion.
4. Using architectural expression as a means of enhancing and supporting the character of the context
5. Providing a platform from which supporting and by-product industries could be established; creating economic legitimacy within a formerly marginalised space; as a ripple effect
6. Dismantling the idea of either public space or private space – Providing an in between character.
7. Consciously located in a trans-migrational zone, not associated with a limited group of individuals or functions, but rather bound by dense architecture and urban fabric accommodating a broadened scope of urban functions.
8. Enhancing the vibrance of African identity in the urban setting by allowing people from different social status, ethnic backgrounds etc. to take part and share equally.

With these strategies as the guiding framework, the decision was made to develop the central site, on the fringe of the industrial area and the CBD. The site conforms to the character of an in-between trans-migrational zone, which is not associated with a specific group of people. The site also has the greatest potential to weave the fragmented urban fabric together, as a seaming point and in terms of design has the opportunity to have its own identity drawn from its diverse context and heritage. The site is located in the liminal zone between the township and the CBD and would therefore always be a point of negotiation between the pre- and post liminal rite.

10.3 Micro Analysis - Industrial Fringe Site

Amongst the hustle and bustle of the CBD lays the former trainyard of the Swakopmund Railway Station, entrenched with the industrial heritage of the former administrations.

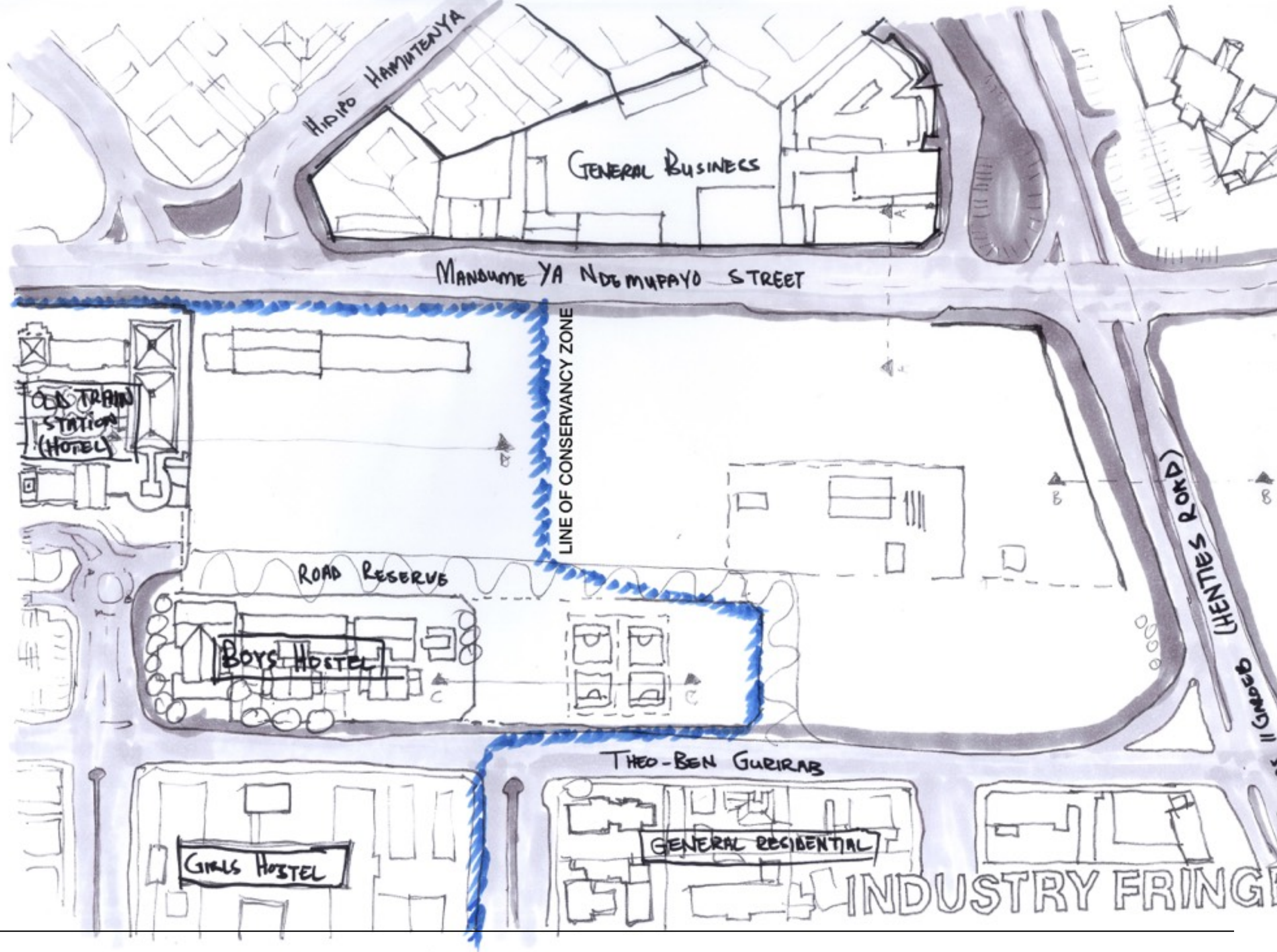
The former trainyard has been selected as the site for urban re-integration due to its significant locality within the urban corridor. The site lays in the limen between the township and the CBD on the fringes of the industrial area of Swakopmund and has the potential to become an essential core in aiding spatial equalisation and social transformation in the town. Development of the site will facilitate the weaving of the fragmented urban fabric of Swakopmund and serves as a natural entry point into the historic CBD of the town. The layers of history are embedded on the site, from being a crucial link between the former marginalised township of Mondesa and spaces of socio-economic opportunity and the water's edge, to its significant role played in transporting goods and people across the vast Namibian landscape.

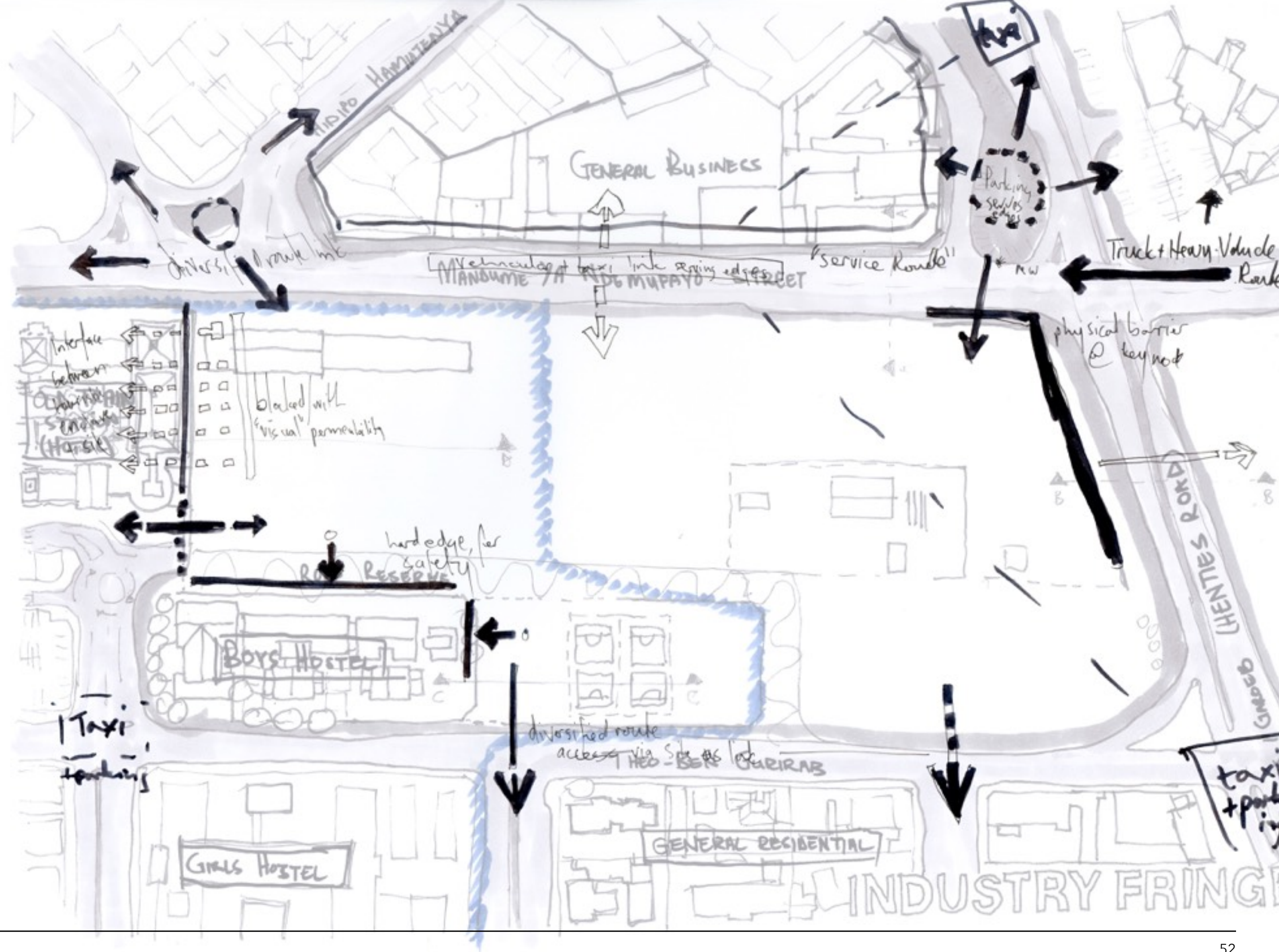
Contrary to the densely populated built fabric of the town centre that engulfs the site, it lay bare open and deserted. This contrast however is slightly broken by the remnants of and old train yard shed and a more recently established car wash. Adjacent to the site stands the majestic, Swakopmund hotel and casino, in the building of the former train station terminal, whose architecture is reminiscent of Romanic with a trace of Renaissance elements. The site lends itself to that of an urban hinge, allowing movement of people, cars and goods into various locales of the town. These movement patterns are engraved on the surface of the site and therefore become a focal point of the corridor development. Moreover the site is bordered by one of Swakopmund's busiest arterials, and is often dotted with taxicabs, informal traders and jobseekers, looking to grab the attention of motorists.

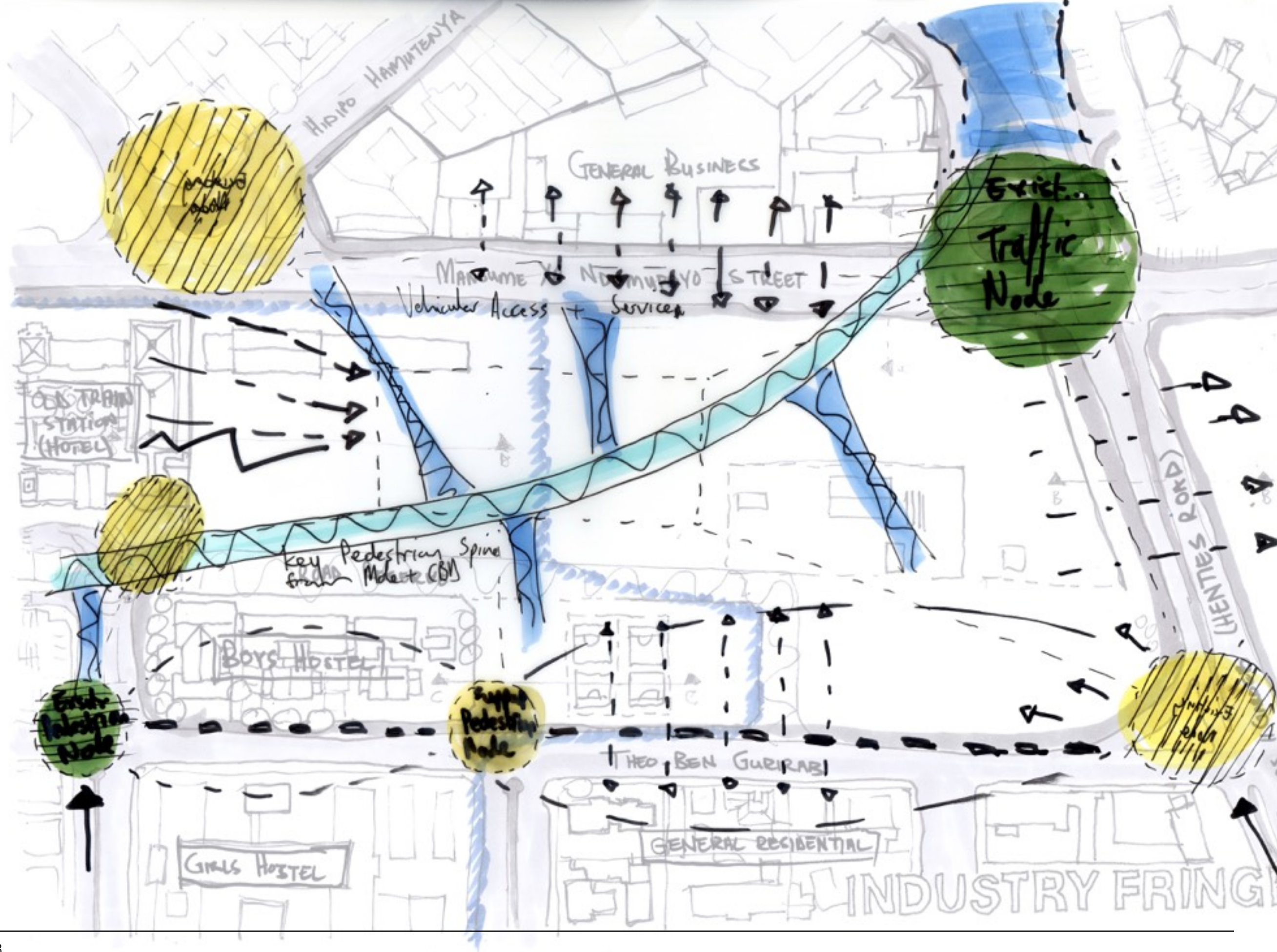


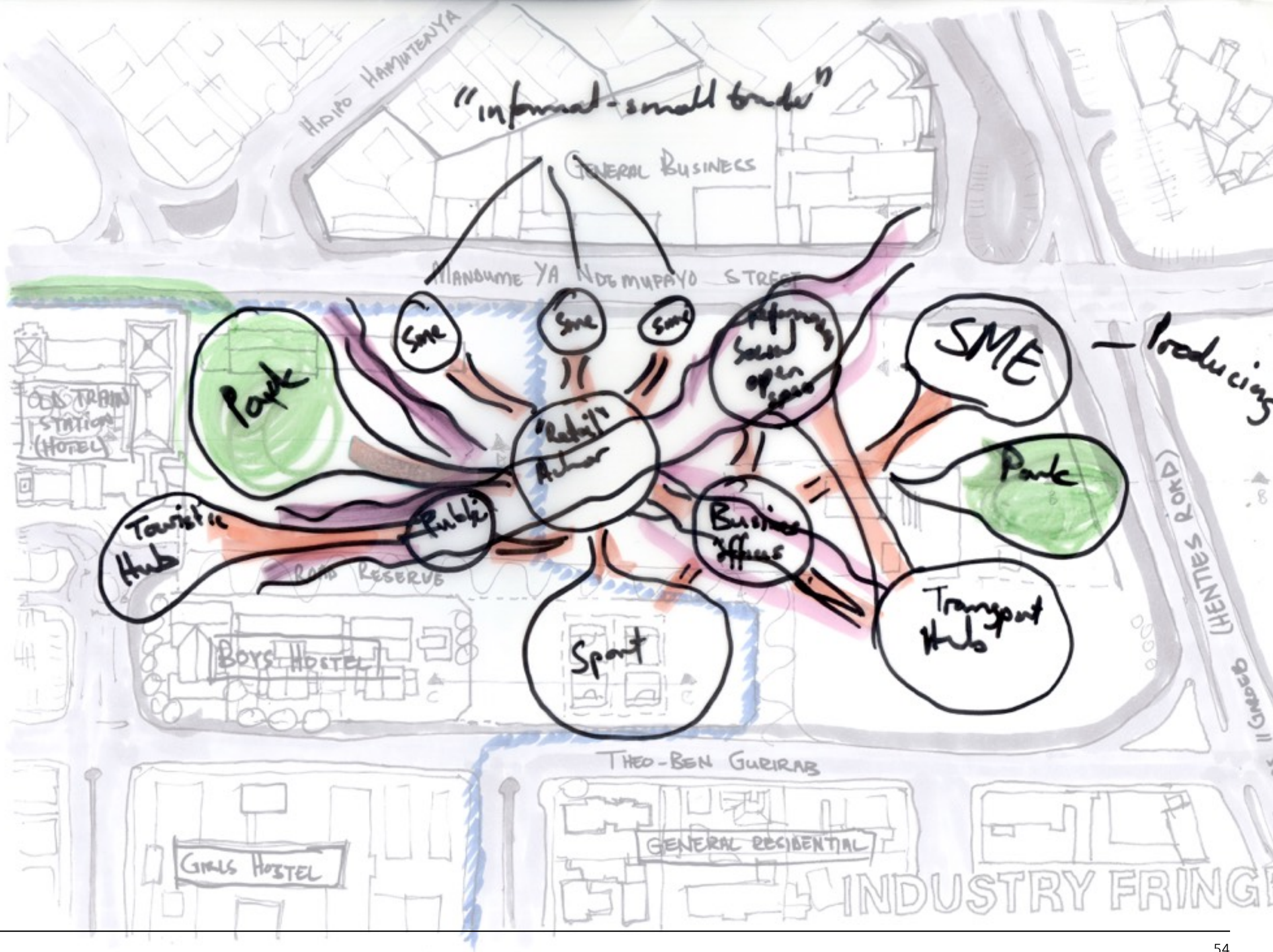
Figure: The Site in relation to the context.











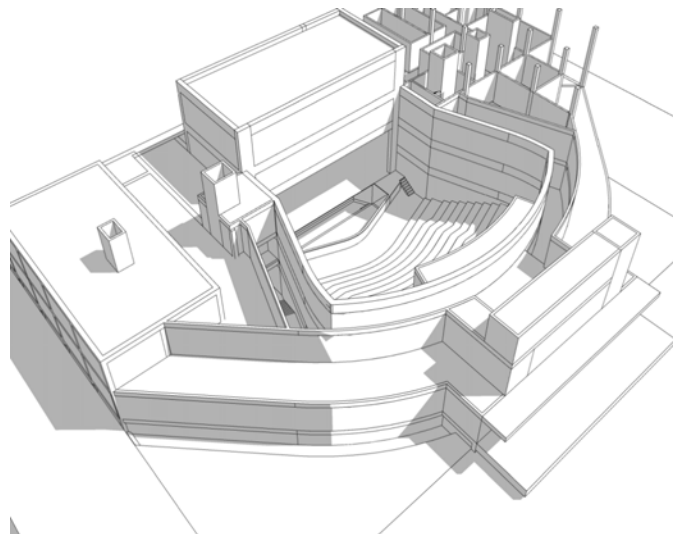


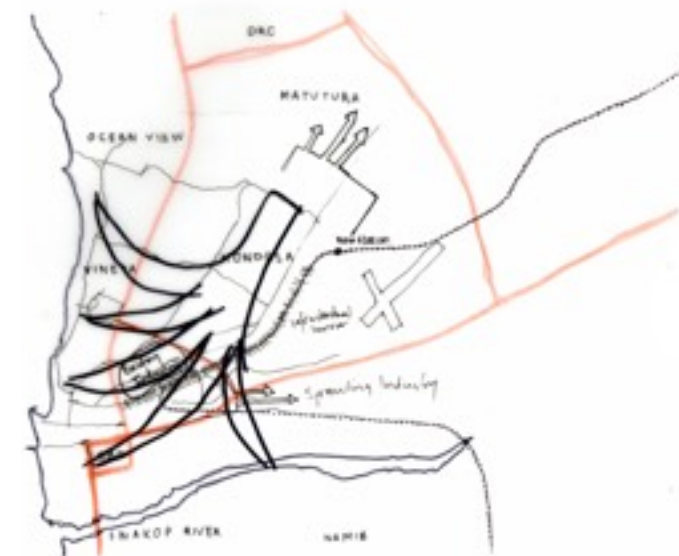
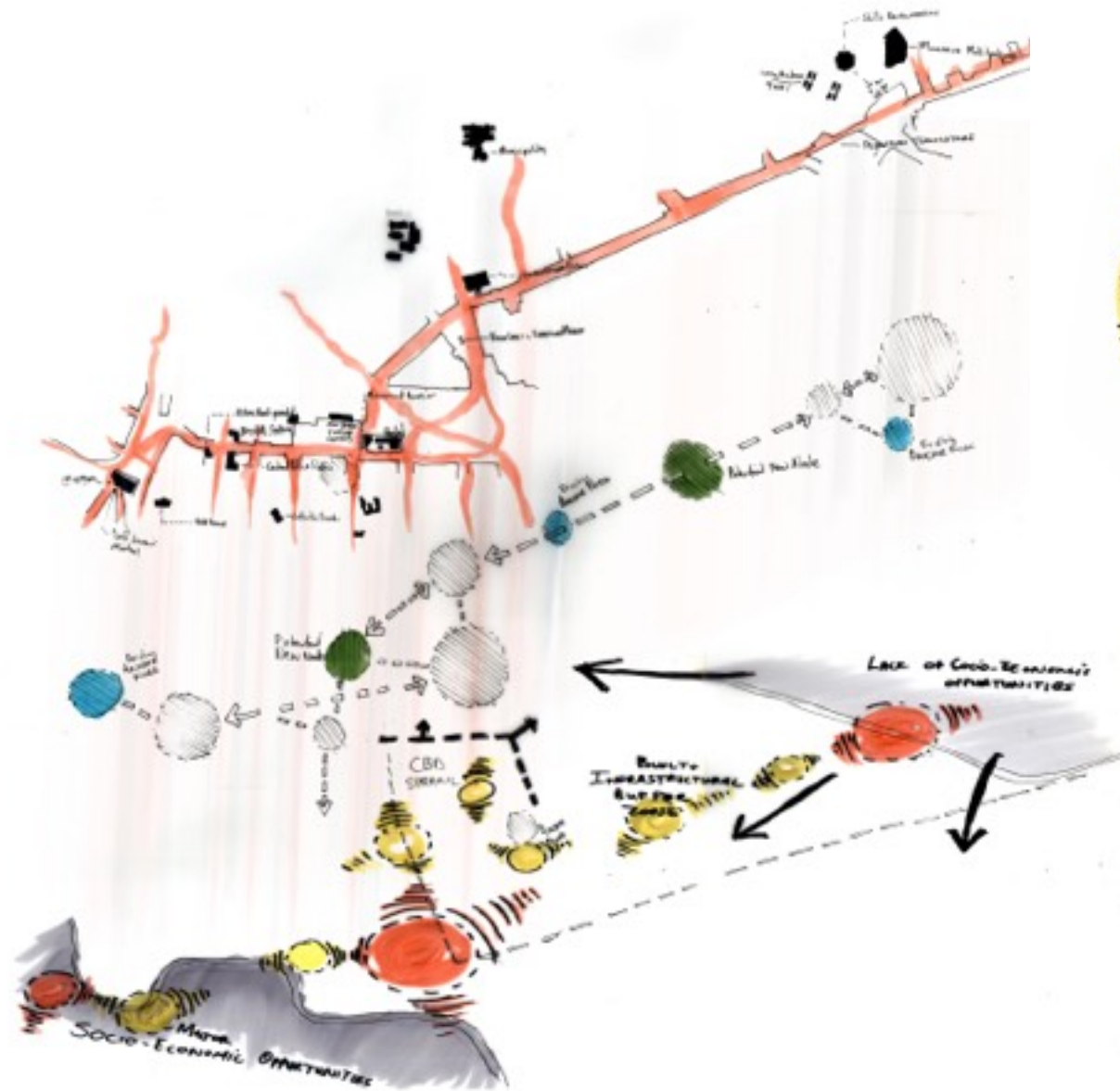
10.4 Existing Site Proposals

Swakopmund Lifestyle Centre Proposal Karen Miller Architect, 2011 (Unbuilt)

The intentions of the lifestyle centre development were to create a completely self sufficient and self-contained centre for living, working, wellness, entertainment and fine dining which is close to the CBD.

The intended programme aimed to create a public accoustically designed theatre. The building would include boutique shops, wine bars and fine dining, a gym and wellness centre. Buildings will vary in height from 3 to 4 storey buildings. Conforming to a "New Urbanist" approach to the development of the property.





10.5 Urban Corridor Program Development

In anticipation and rehabilitation of the various sites, key problem areas were assessed to determine the typological programme of the urban design scheme. The urban design is to provide a platform for marginalised groups of people to be able to share in the equity of the urban realm or public domain. Key problems assessed were based on what had been withheld during the apartheid era, and what is still withheld or unreachable today. This therefore, would determine the programme of the urban design scheme on macro and micro scales.

Most commonly access to socio - economic opportunities remain a hurdle, access to quality education especially on tertiary level is also not easily attainable. The recognition

of informal trade by the state and municipal council as a means of subsistence puts strain on the livelihoods of those participating, as they receive no support to further and grow their undertakings. Socially a huge gap still exists amongst the residents of the town especially between those of a different background, and ethnicity. Lastly the mobility within the corridor ought to be safer and should be supported, as it could also provide opportunity for the generation of different economies, and activities,

The corridor ought to be able to aid in the development of the town and its people by allowing small catalytic interventions to take place, in order for the legitimacy of the corridor to improve and to be recognized as a

significant desire line for pedestrians of the town. This could improve cultural tourism and expose the cultures and traditions of locals to tourists and the rest of the world.

CHAPTER 11

PRECEDENT STUDY

Analysed Projects

[11.1] Urban - Liminal Infrastructure

- 11.1.1 Magnets - Cedric Price
- 11.1.2 Johannesburg Approach

[11.2] Architecture - Social Condenser

- 11.2.1 Studio Muoto - Paris Saclay University - Public Condenser
- 11.2.2 Design Studio Cape Town CC - Elsenburg Agricultural College Extension
- 11.2.3 SOA - France Pavilion Competition Entry 2015
- 11.2.4 XTU Architects - France Pavilion Milan Italy 2015



11.1.1 Magnets - Cedric Price

“Magnets” by Cedric Price is a series of short life urban interventions for cities that want to alternate the movement patterns and uses of space by the public. The Magnets were installed on sites that were not usually considered open, accessible or public, such as across highways, within streets, on lakes and railways. The Magnets are designed to give the user a new perspective of the city, unlocking views that were not possible to see before, create a playful urban environment and providing safe new localities within the city. The projects range from eclectic playfulness to deeply rooted contextualised interventions, where built form becomes more than a one- use destination. The project introduces a concept of “liminal public infrastructure” whereby the user negotiates between pre- and post liminal rites, by not focussing on the built form itself but rather imagining what experience it can provide.

Principles Derived

- 1. In- Between Character
- 2. Integration of “non- public” space
- 3. Regenerating and legitimising movement spines
- 4. flexibility, movability and adaptability of built form
- 5. Spatial equalisation and transformation



11.1.2 Johannesburg Approach

Providing Public Infrastructure

Yeoville, Johannesburg, South Africa

Edgars, Shoprite and other large commercial



“the Joburg Approach”:

Johannesburg, known for its informal trader and market spaces, a city largely inhabited by migrants from surrounding areas and countries required a solution to reduce conflict between market traders, street traders and large retail and commercial entities. studies found however that although these entities may be perceived to be in competition they also facilitate business toward each other. the study takes place within the linear markets within the inner city, which set a precedent and a basic typology, which is seen all over the city and other large centre such as Cape Town.

The municipality together with large corporations took to providing basic infrastructure which would support 3 tiers of the economy, street traders market traders and large retailers. the 3 tiers of economy co-exist as symbiotic organisms, and are catalysts for business and similar developments around the city

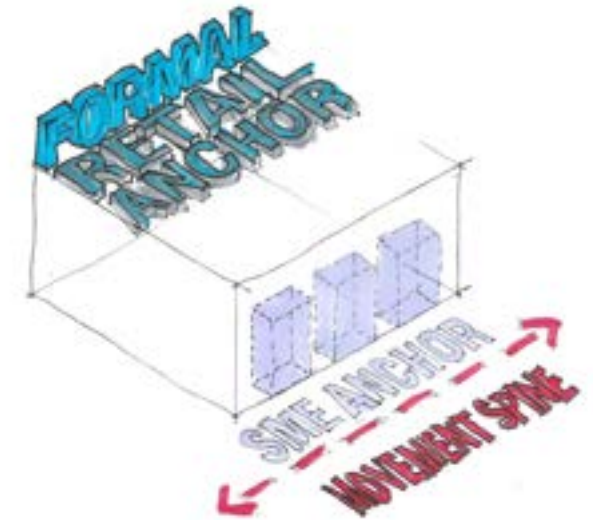
Principles Derived

1. In- Between Character
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3. Regenerating and legitimising movement spines
4. Access to socio- economic oppurtunity
5. Spatial equalisation and transformation

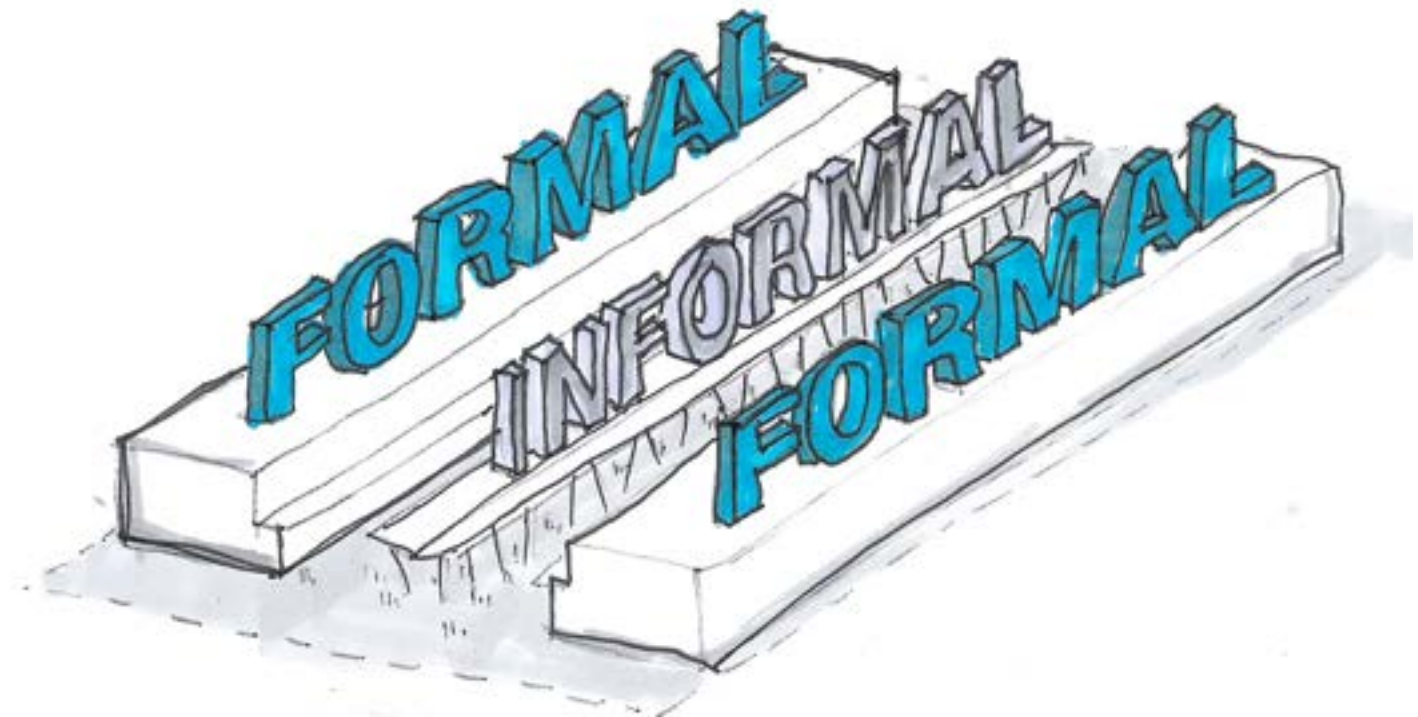


Figure: Kerk Street, Johannesburg

- informal and street trade, incorporated within formal movement zones
- informal and street trade, incorporated within a formal retail & commerce building



-2m2 plots are leased either on short or long term at a rate for market traders. Street traders also pay a fee to trade however they are able to move and are not limited to a specific site



11.2.1 Studio Muoto - Public Condenser

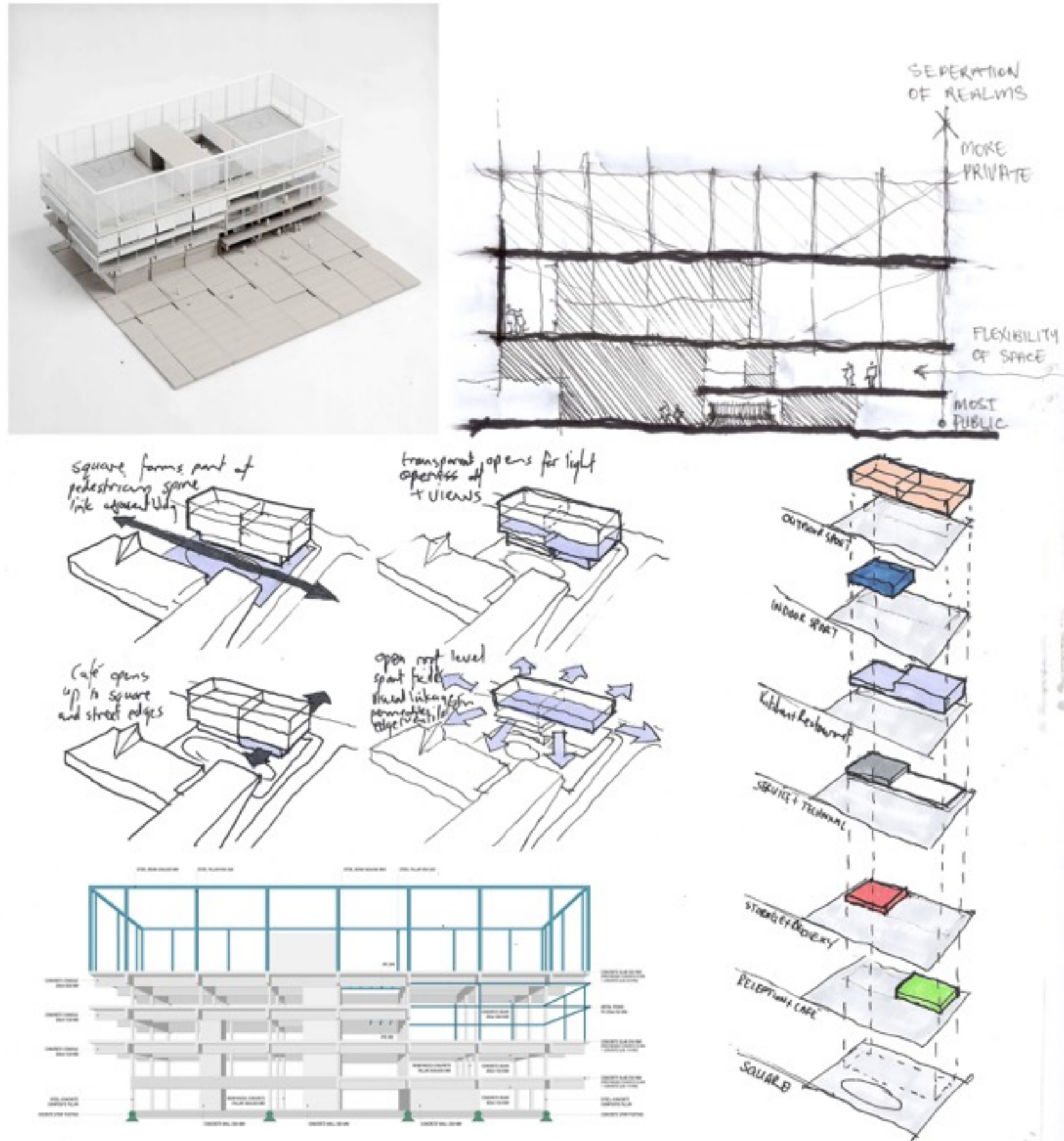
Low-cost flexible university building

the concept:

"Usually in architecture we work the other way around, developing everything from the program. One visualizes the space and gives it a name. But why do we have to assign a specific function when a room can be anything? Everybody needs space – and if you give it to them they will find a way to use it. We want to leave the use up to the users!"

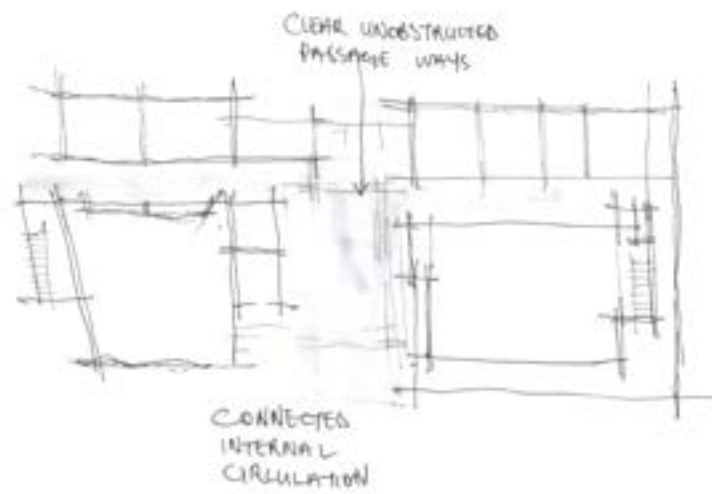
Gilles Delalex

The building is an "urban shelf" that stacks a variety of flexible- use spaces on top of one another. The building is accessible by anyone at any point of the day, and always for a frange for activities to take place at any given time.

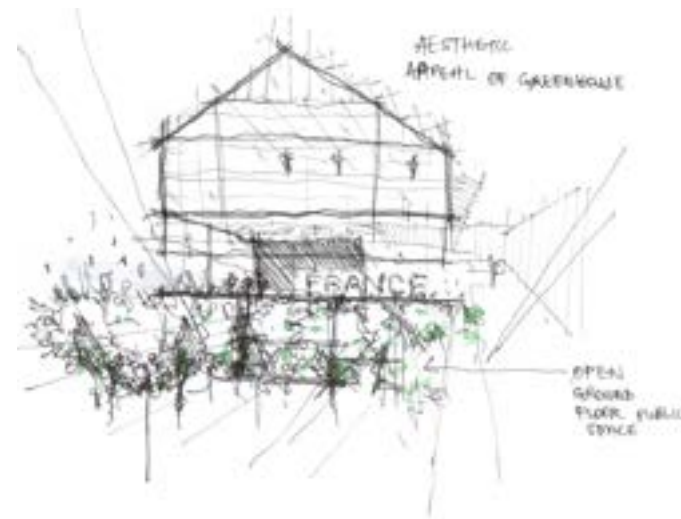


11.2.2 Design Studio Cape Town CC - Elsenburg Agricultural College Extension

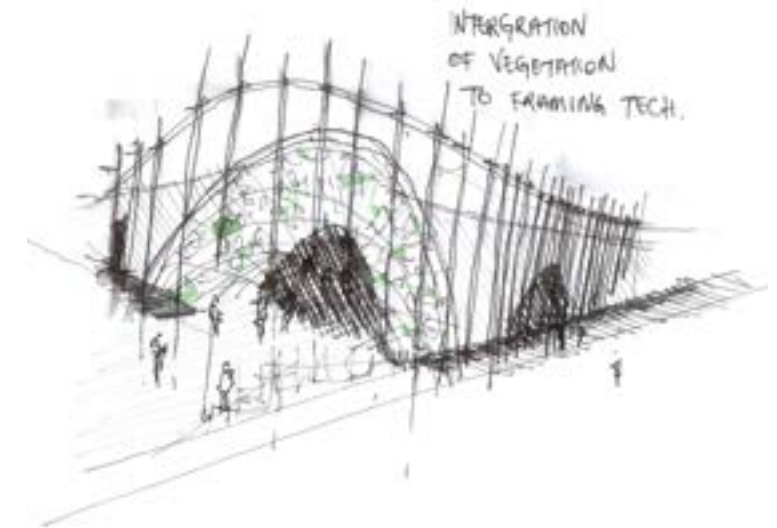
The Elsenburg Agricultural College has increased its student intake and required an extension of their infrastructure to support the increased intake. The building is located on a farm and allows for the circulation to live out onto this surface. This project was looked at to understand the dynamics of an institutional building could be better integrated into its surrounding as the typological function usually calls for secure close, intimate spaces.

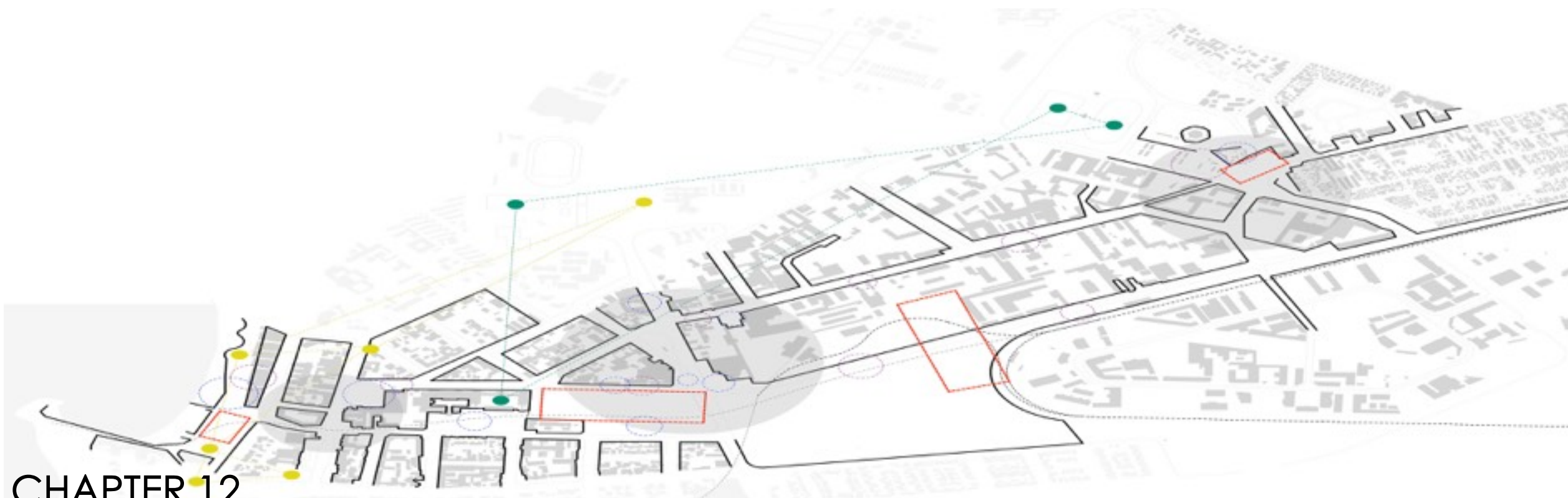


11.2.3 SOA - France Pavilion Competition Entry 2015



11.2.4 XTU Architects - France Pavilion Milan Italy 2015





CHAPTER 12

DESIGN DEVELOPMENT

Synthesis

[12.1] Urban

- 12.1.1 Urban Corridor Development
- 12.1.2 Schematics and Informants - Master Plan
- 12.1.3 Master Plan - Design Concept 1
- 12.1.4 Master Plan - Design Concept 2 - Chosen

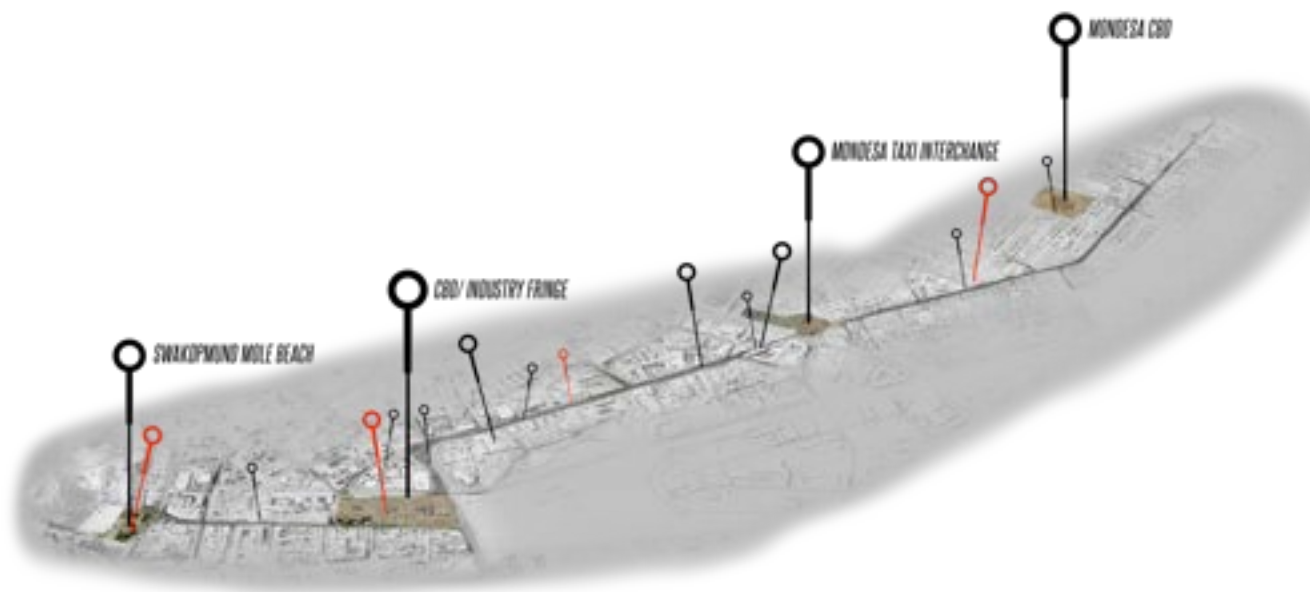
[12.2] Architecture - Vertical Urban Aquaponics Farm and Research- Development Centre

- 12.2.1 Building Schematics and Informants
- 12.2.2 Design Concept 1
- 12.2.3 Design Concept 2- Chosen

12.1.1 Urban Corridor Development

In anticipation of development and integration of the various voids within the urban corridor, the objective is to provide a basis or platform to aid as catalyst for such. The intervention will take the role of physical and organisational structure for the anticipated development but will also support and draw in existing praxis of the corridor. The chosen site for the masterplan, or the liminal core becomes the energy harness which pulls activity through the corridor and aids future potentialities.

The concept would be to provide liminal infrastructure which would provide structural sheltering, leading of circulation through sites, provide basic amenities contributing to the existing movement and activities on site. By inserting liminal infrastructure in strategic spaces along the corridor it would highlight the significance of the context. The infrastructure is to respond to each individual context in a way that its flexibility opens a platform for variety of different activities to take place, inherent to the site. The infrastructure would as a structural and organisational element which conglomerates the activities along the route as a group of inter-connected functions which generate and facilitate the sustenance and maintenance of each other over time.



Precinct Development

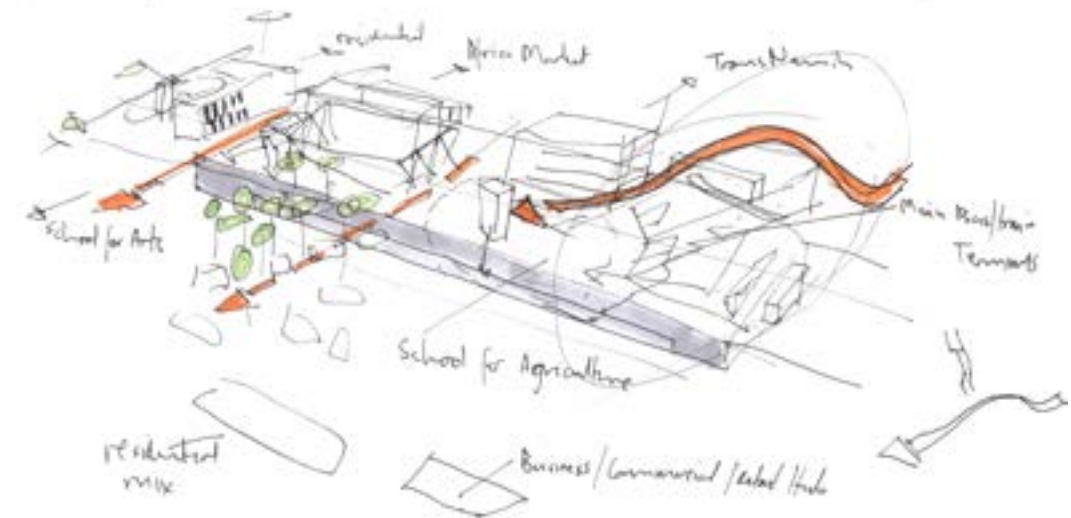
- Incorporating fine grain of Context Density
- Including both vehicular + Pedestrian Networks (1 way, 2 ways, shared-Restricted)
- Providing first Public green space beyond water's edge
- Allowance of informal trading (provided leaseable land)
- Providing permeable covered spaces to allow for sun to seep through
- Providing parking within space
- Improving circulation to, and through and from site
- Providing Terminals for Multi-Modal Transit
- Responding to Environmental Conditions
 - ↳ Sustainable Technologies (to-Fog Collection)
 - ↳ Glazed Southern edges for soft Natural light
 - ↳ Roof Pitches to allow Northern Winter sun
 - ↳ Bldgs to Guard from S W wind

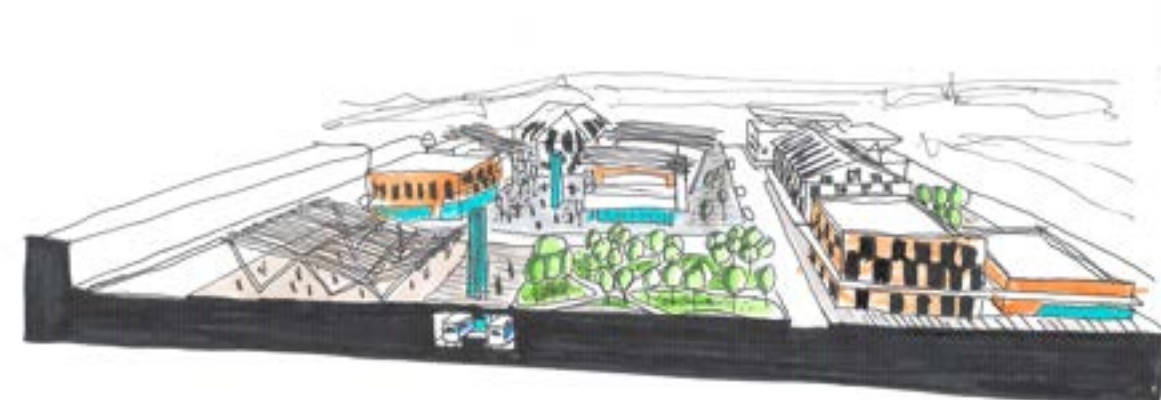
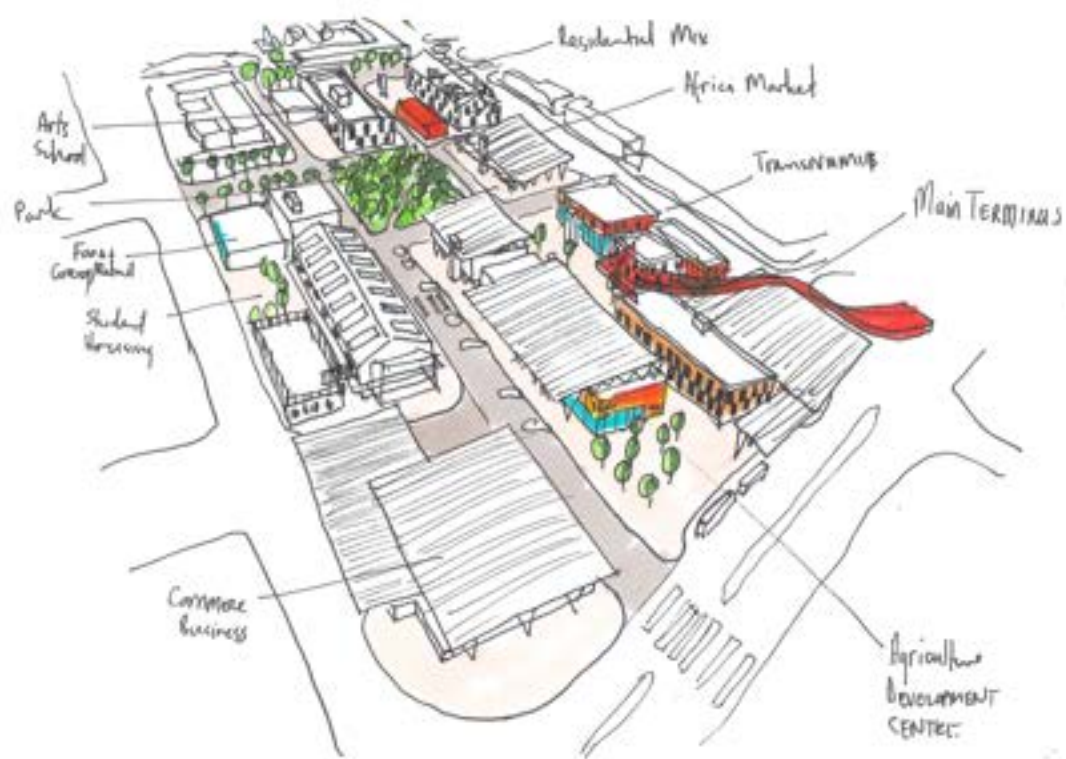
ARCHITECTURAL GUIDELINES

- ↳ Development of New "Architectural Language" Merging Vernacular + Swakop
- ↳ Maximum Bldg Height - 16 m
- ↳ Robust Materials that are low Maintenance
- ↳ Natural Material Usage
- ↳ Scales + Uses Responding to adjacent context
- ↳ All bldgs Mixed Use, with 1 main use
- ↳ Public Integrated Open space Network
 - ↳ supported by trading
- ↳ Defining site edges + corners

infrastructure?

- (Multi-modal)
- ↳ Integrated Bus + train + taxi Terminals
- ↳ Community Arts Centre (School + Theatre)
- ↳ Agriculture Development + Research Centre







ENTERTAINMENT CENTRE & HOTEL

RESIDENTIAL MIX

CITY MARKET

TERMINUS & ADMIN

FORMAL FLEXIBLE TRADE SPACE

FORMAL FLEXIBLE TRADE SPACE

ART GALLERY

LEISURE MIX

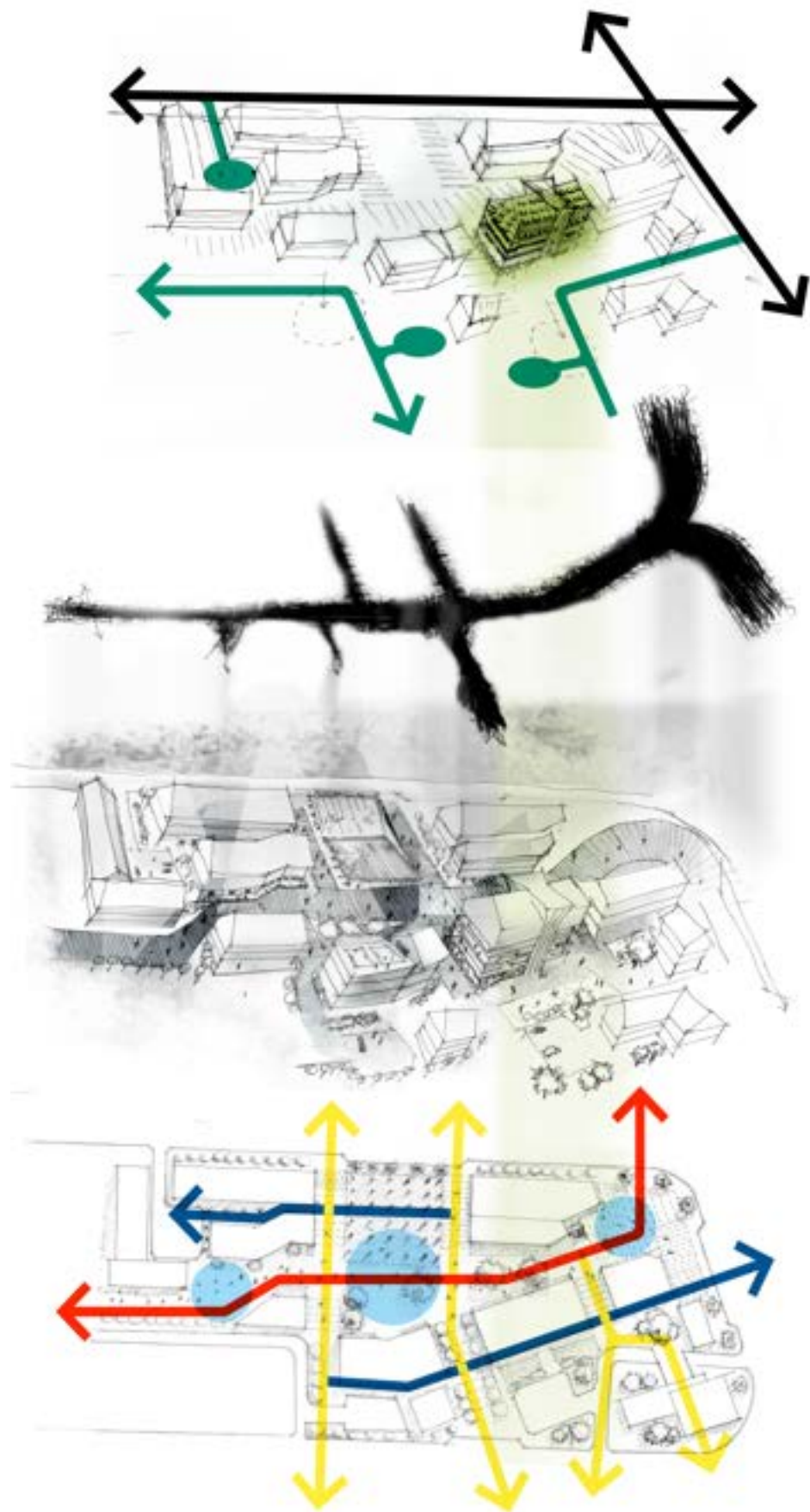
RETAIL ANCHOR

FORMAL FLEXIBLE TRADE SPACE

PROPOSED AGRICULTURE INSTITUTE

COMMERCE/ BUSINESS MIX





[12.2] Architecture - Vertical Urban Aquaponics Farm and Research- Development Centre

12.2.1 Building Schematics and Informants

Emerging Technology

Consolidated food from production research

of form part of a large scale urban strategy to migrate and expand the core of development with fringe areas and the outside edge.

response marginalised communities by providing publicly accessible shared facilities + specialist research platforms

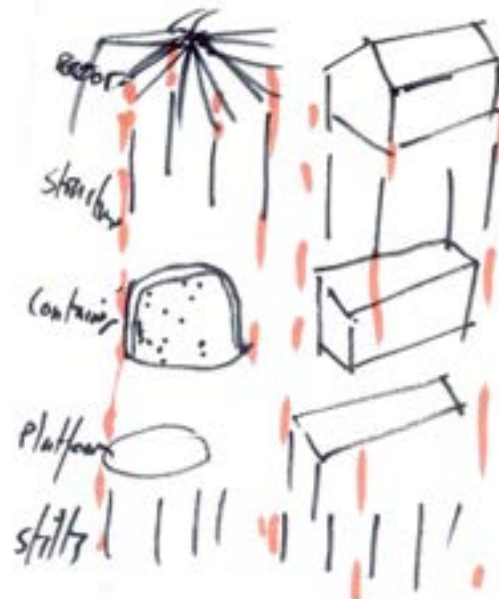
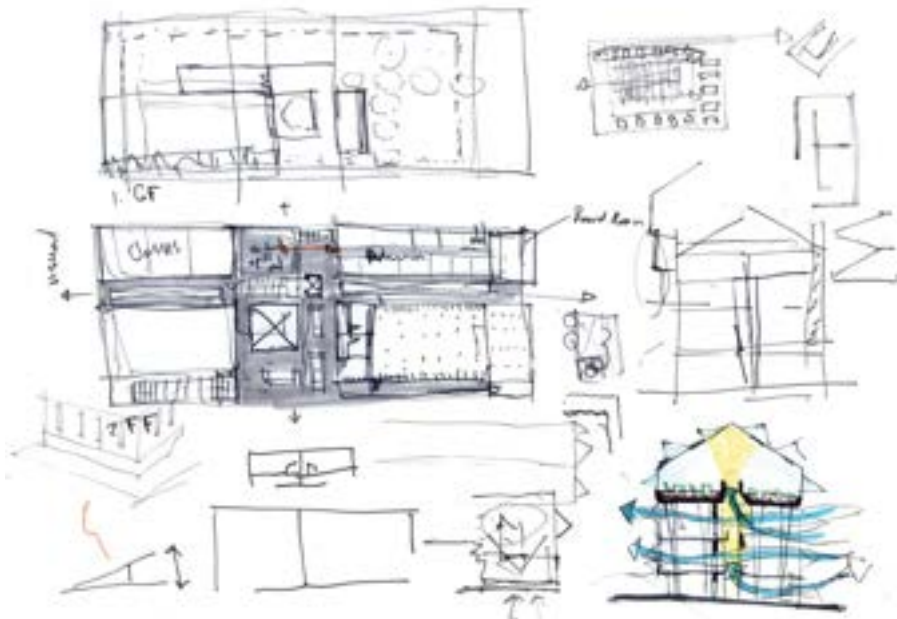
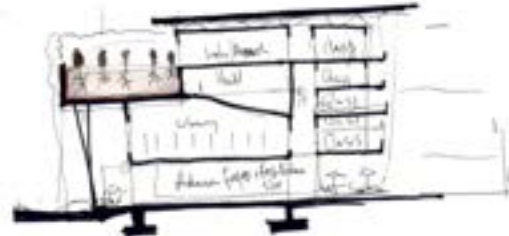
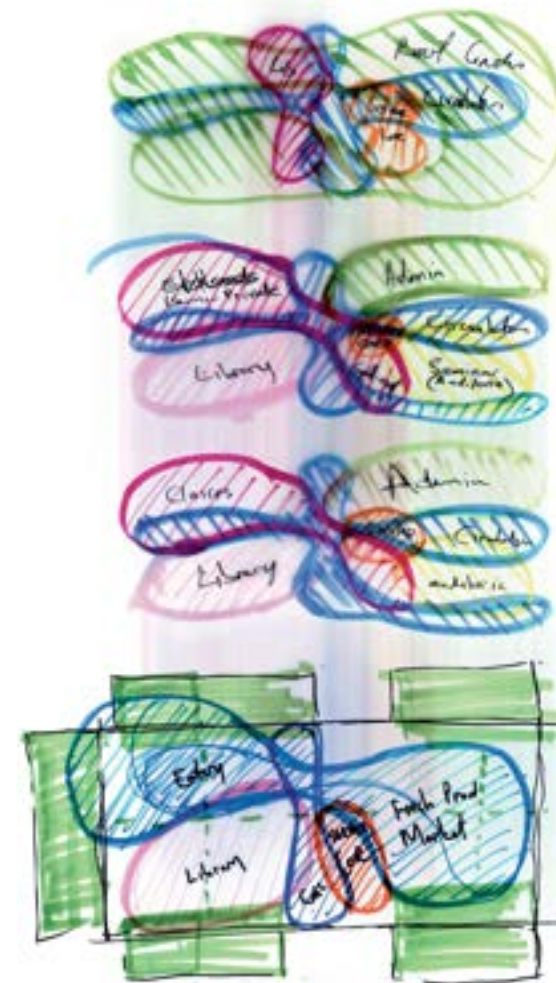


Brief

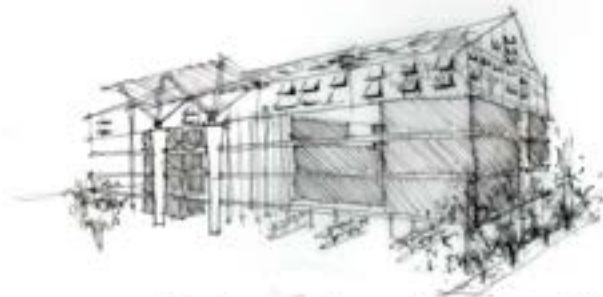
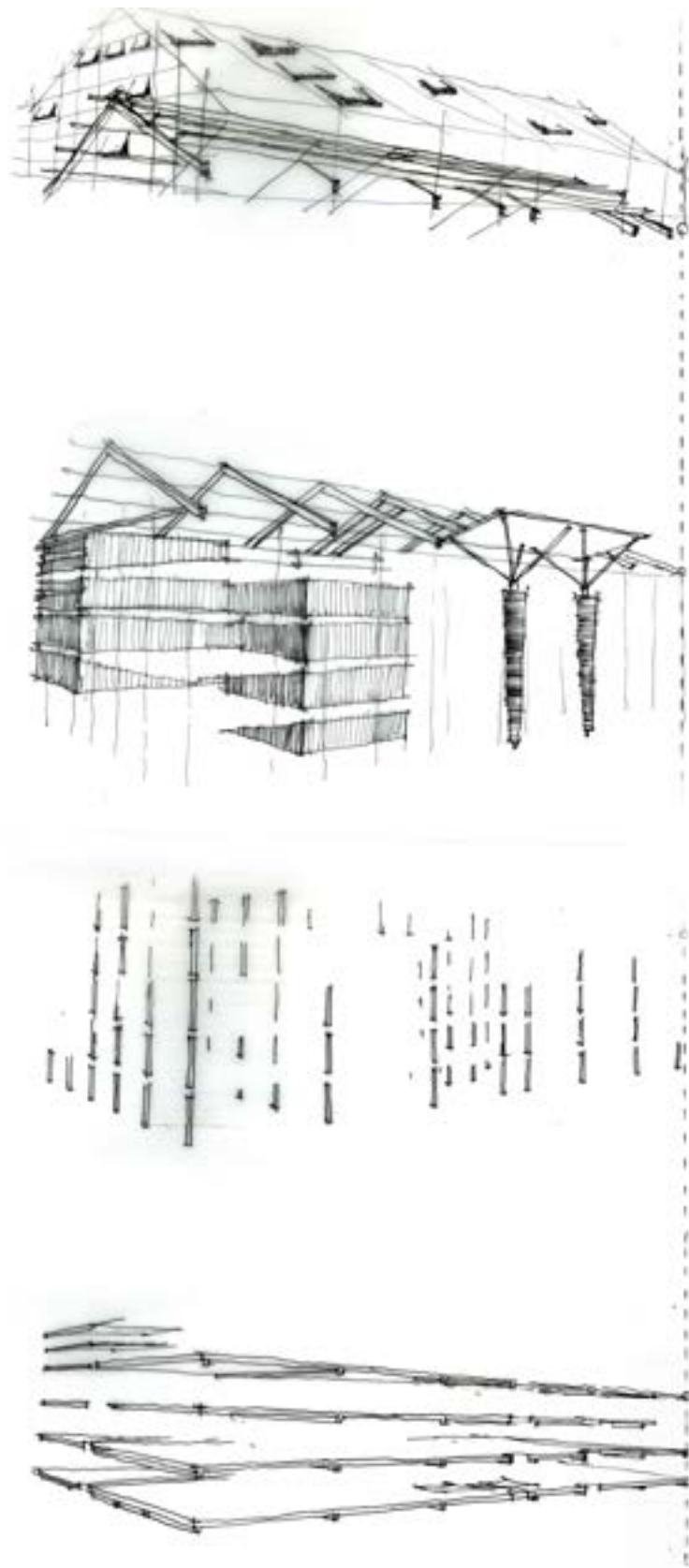
- Provide a public institutional building which would allow the user, passerby etc to take part in various levels, flexibility
- Provide a program that would address an emergent field of inquiry, which would allow the engagement and sharing of knowledge obtained from different spheres
- Reimagine a brown fields site, by integrating vegetation both for consumption/trading/educational - foster a human-nature relationship
- Develop an Architectural Language + scale encompassing (German) indigenous infrastructure
- Incorporate the informal trade as key design program and link with formal
- Include technologies which could support the longevity + sustainability of the structure

Program

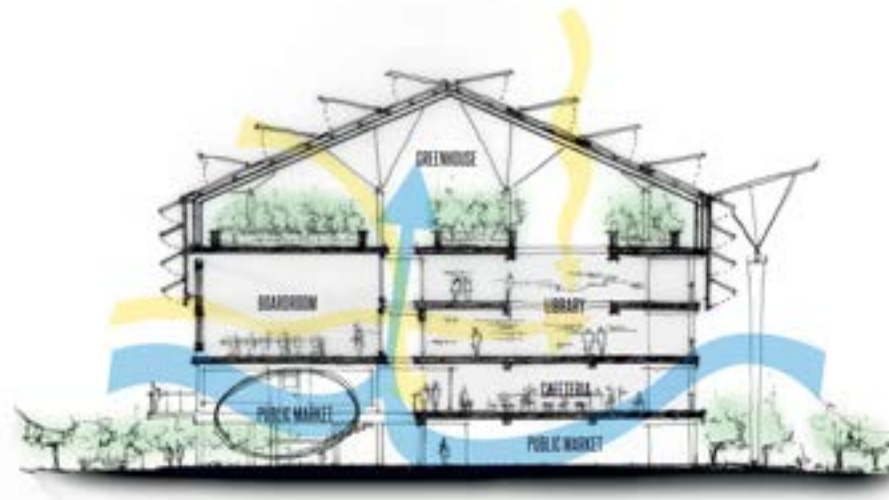
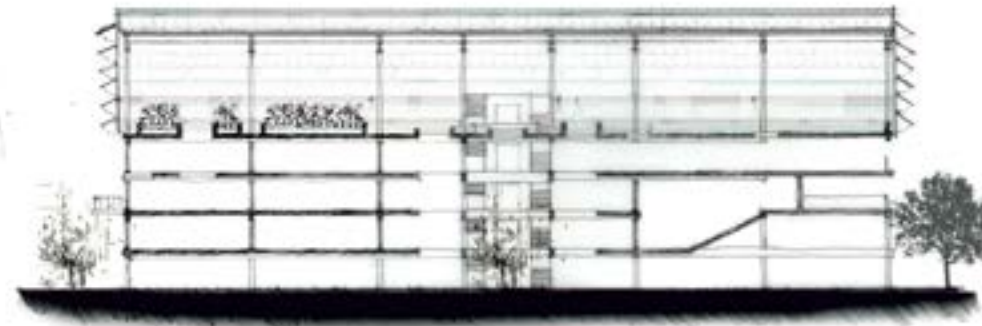
- Admin
- 8x offices
- 8x lecture offices
- Library
- 1x auditorium
- 6x classes - 6 classes
- 2x cafeteria
- 1x kitchen
- Laboratory x2
- Technical + Bio Biology
- Arable space
- Computer lab



12.2.2 Design Concept 1



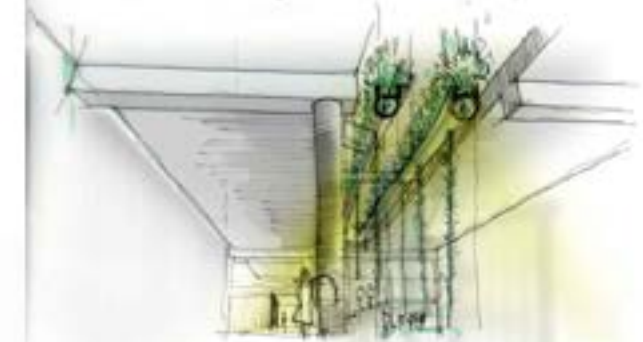
conceptual sections & elevations



SOUTH-EASTERN PERSPECTIVE



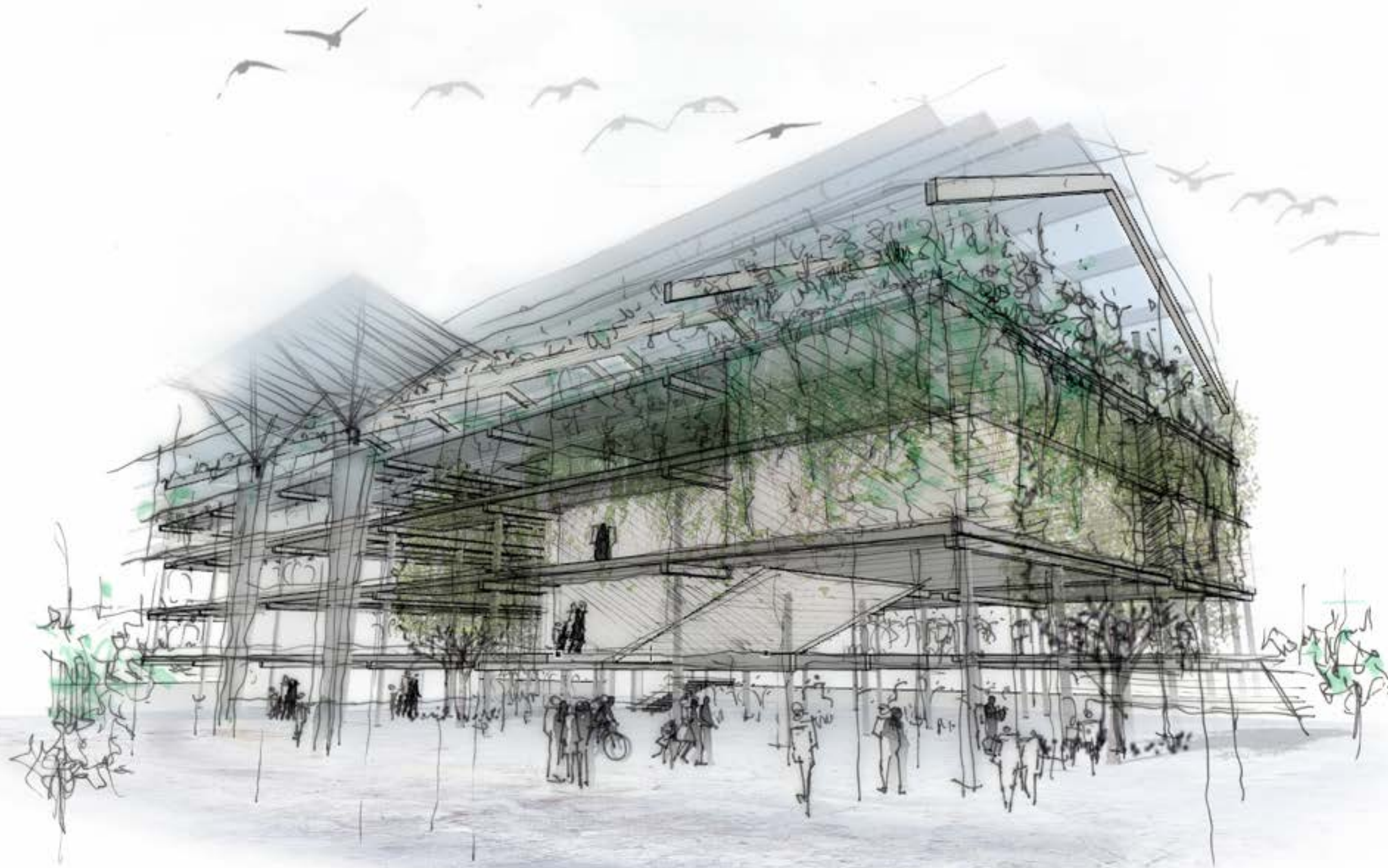
VIEW INTO MOVEMENT SPINE FROM PUBLIC BALCONY



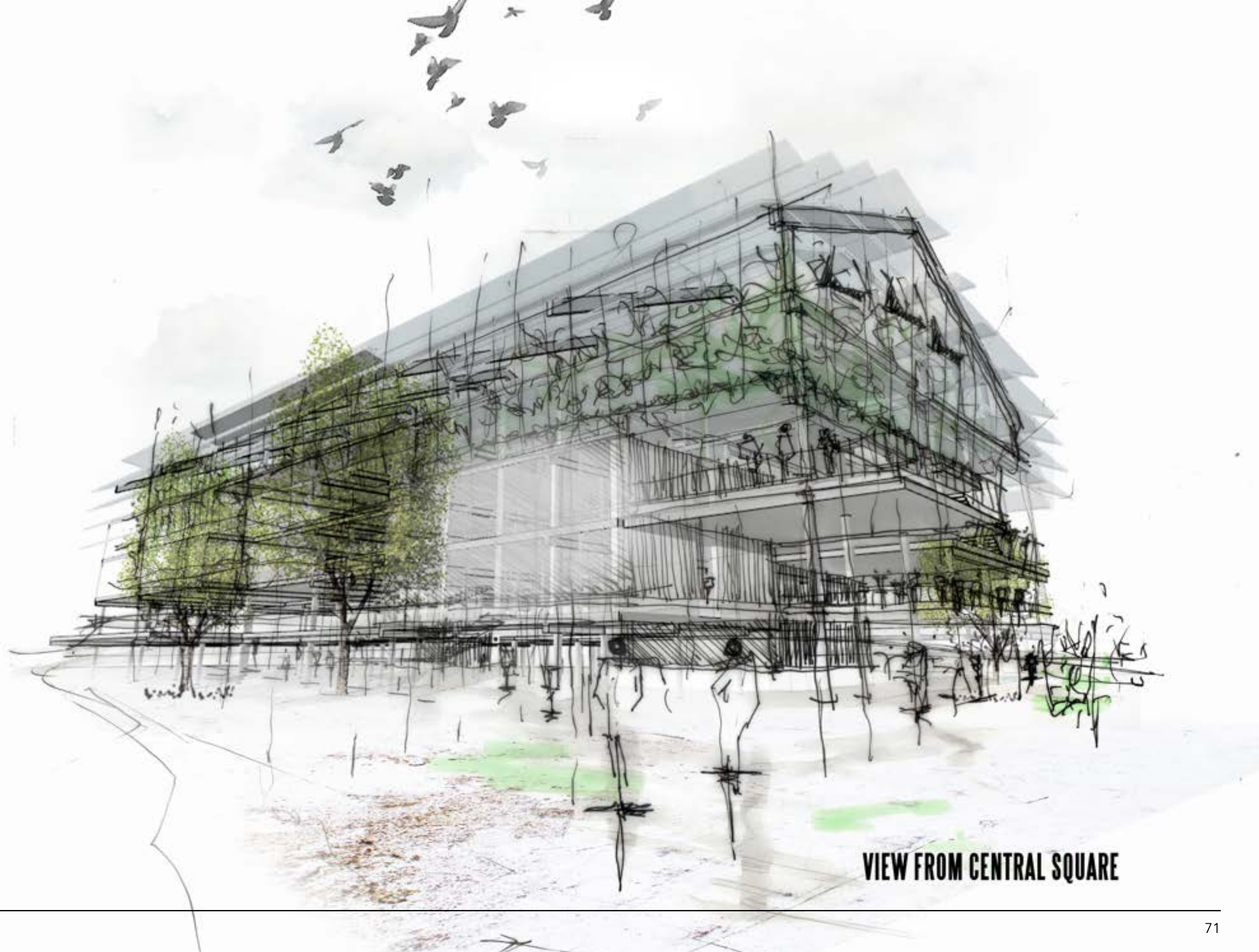
VERTICAL HYDROPONIC GARDEN WITHIN LIGHT WELL



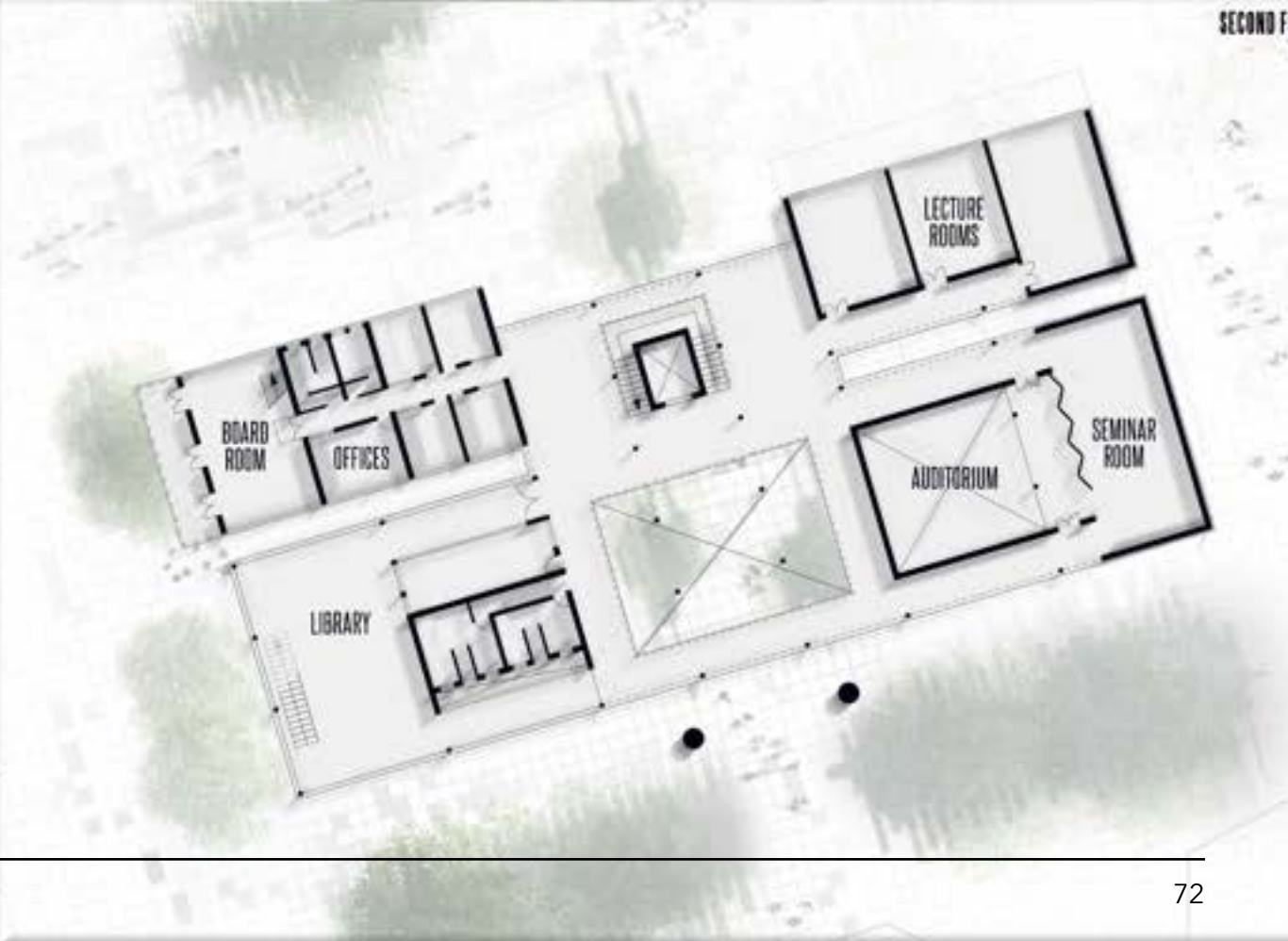
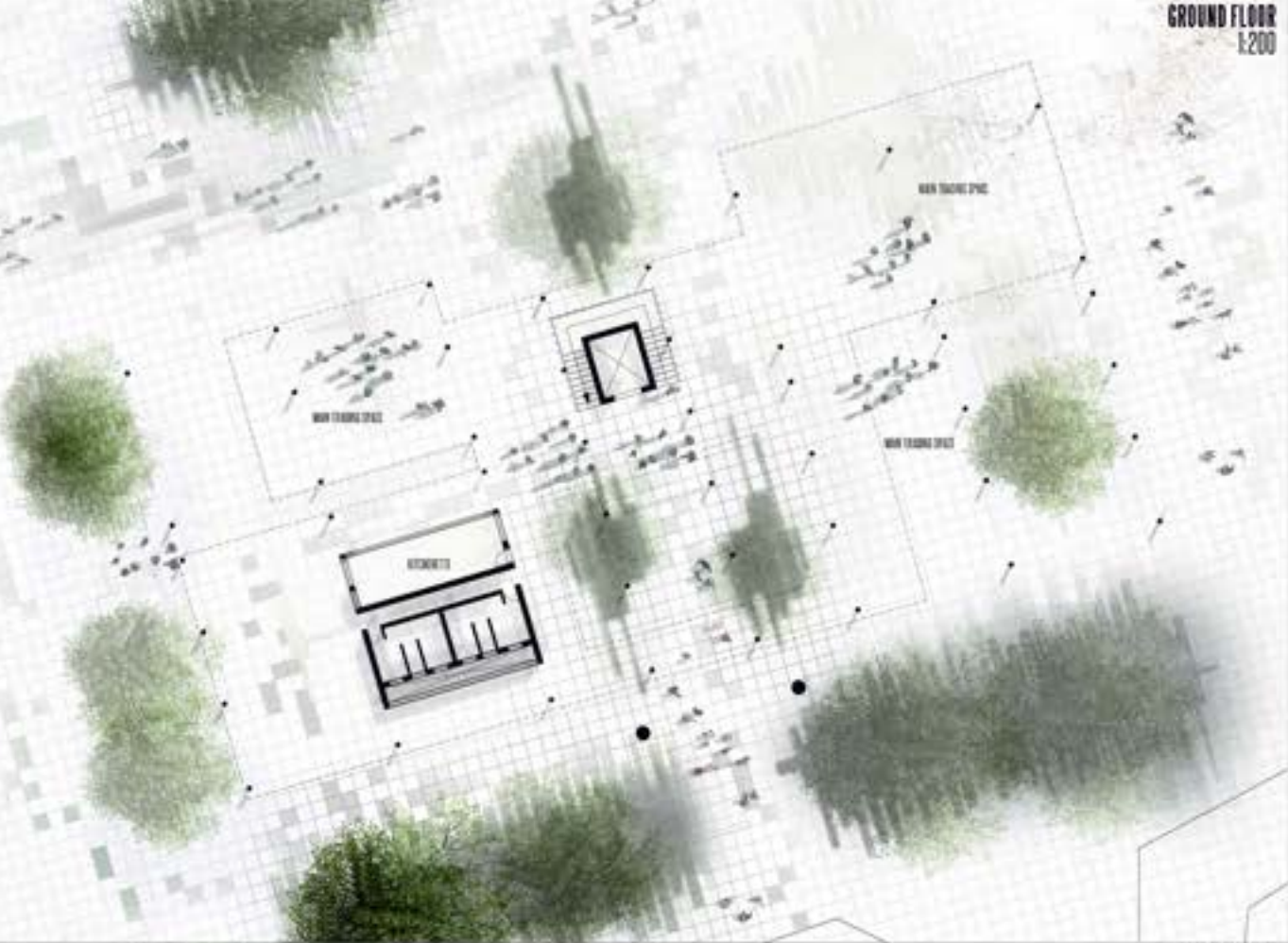
MARKET SPACE BELOW ADDITION



SOUTH- EASTERN PERSPECTIVE

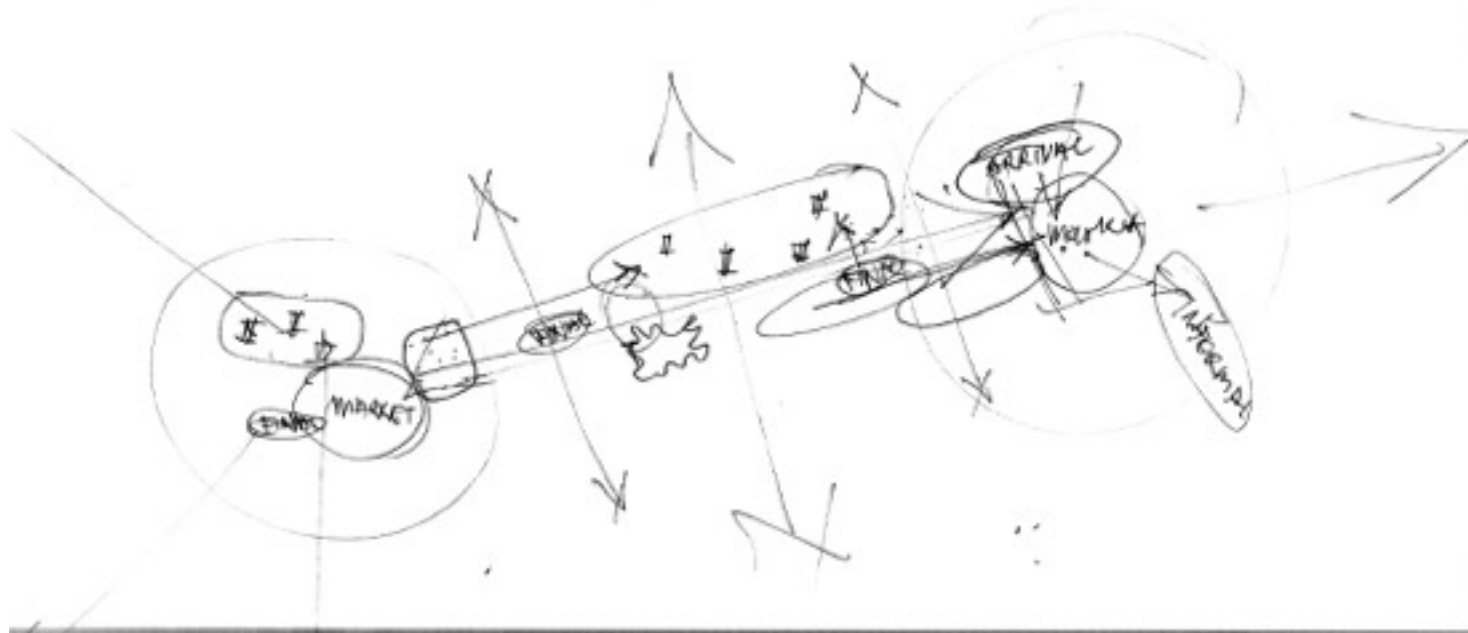


VIEW FROM CENTRAL SQUARE



[12.2] Architecture - Vertical Urban Aquaponics Farm and Research- Development Centre

12.2.3 Design Concept 2- Chosen



3 LAYERED BUILDING

- GREENHOUSE (AQUAPONICS)

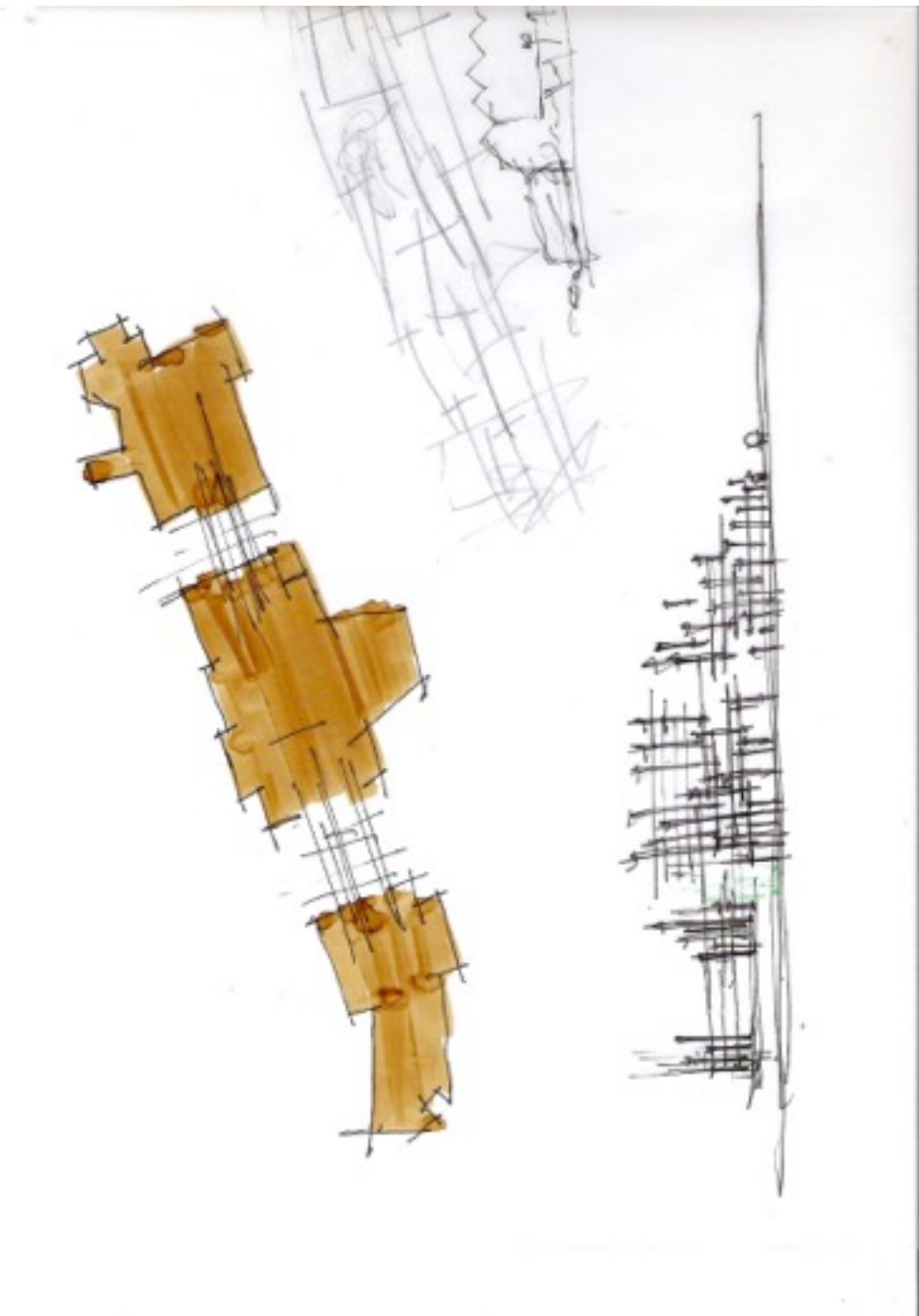
- ↳ RAFT SYSTEM (movement)
- ↳ PVC PIPES (gutter)
- ↳ Bato basket system (vertical)

- RESEARCH COMPONENT

- ↳ LABS FOR SEED
- ↳ Mechanical systems
- ↳ classrooms

TOURIST, PUBLIC

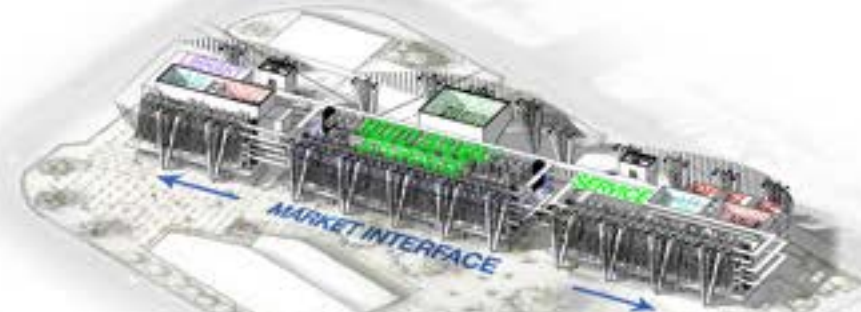
- ↳ Traditional type of market
- ↳ Cafe (services)
- ↳ grocery shop
- ↳ Auditorium Flexible space



GF - MARKET



3F - PRODUCTION



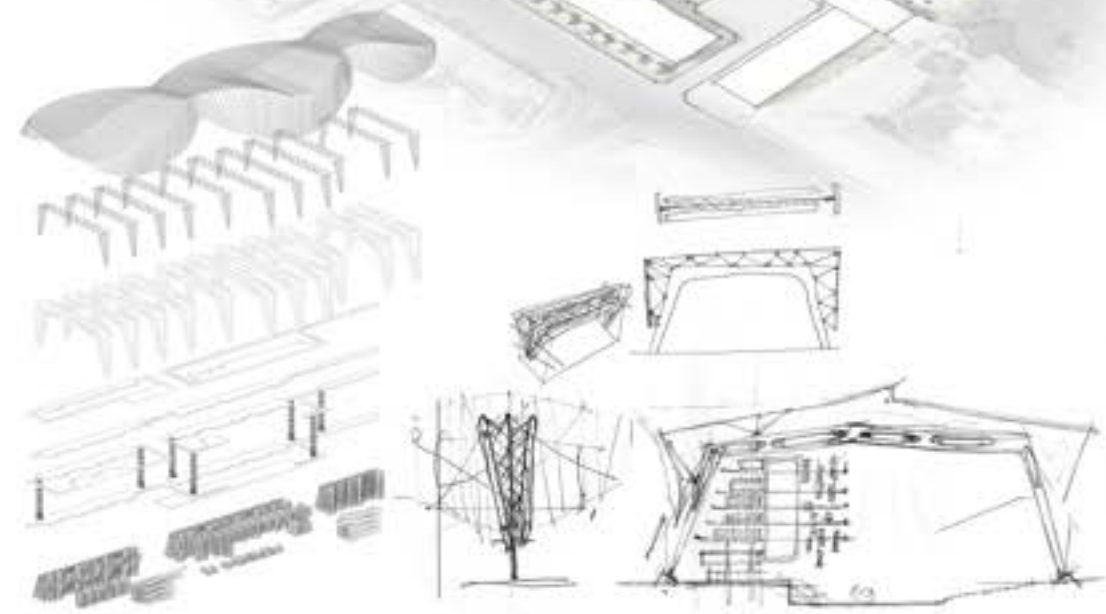
1F - ADMIN



IN CONTEXT



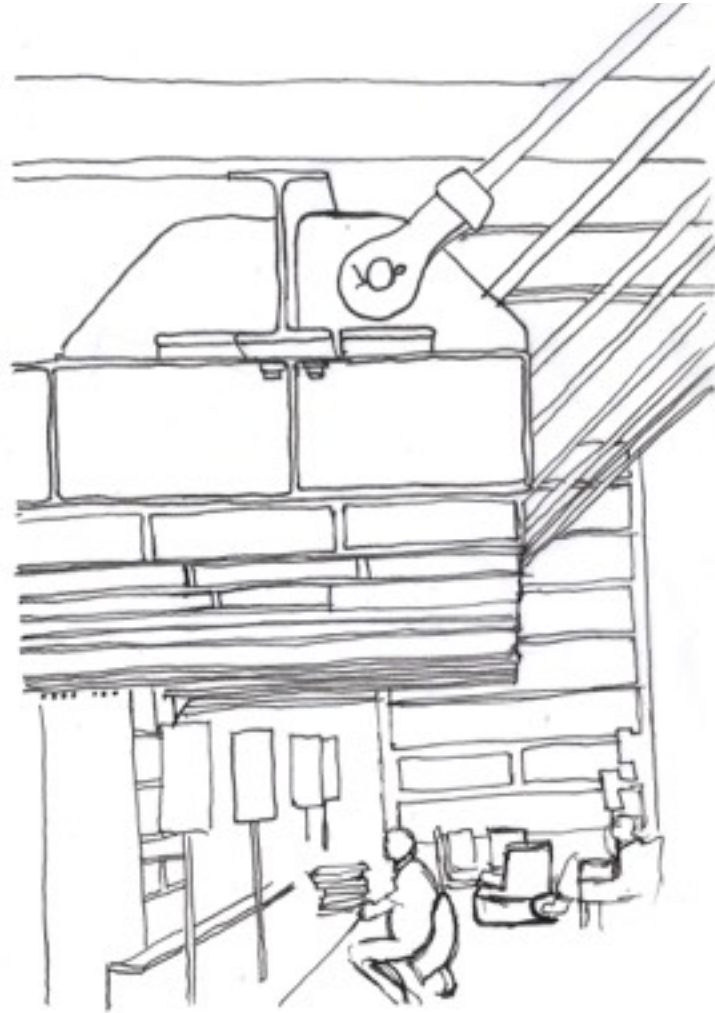
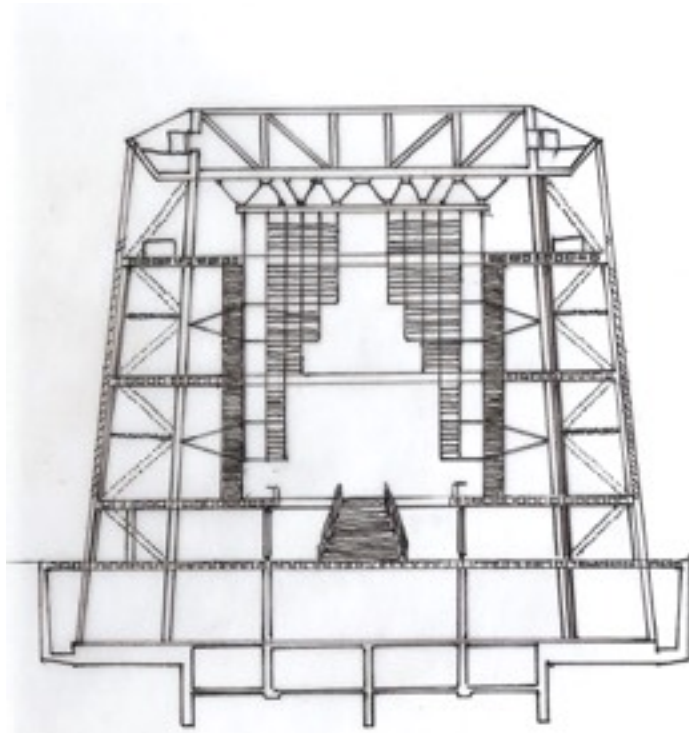
2F - TRAINING



CHAPTER 13

TECHNICAL REPORT

13.1	Structural Precedent
13.2	Building Morphology
13.3	Growing Installations
13.4	Roof/ Skin
13.5	Aqua farm
13.6	Services
13.7	Circulation
13.8	Drawings



13.1
Structural Precedent - Vasconcelos
Library

13.2 Building Morphology

The final design scheme was initiated by integrating the layers of mobility and connectivity as constituents of design. The design also rigorously conformed to the contextual geometries that bound the site, so as to create an uninhibited movement spine. Programmatic functions were opened toward the spine but also onto the edges of the site, to facilitate entry from various adjacent nodes.

Accommodation

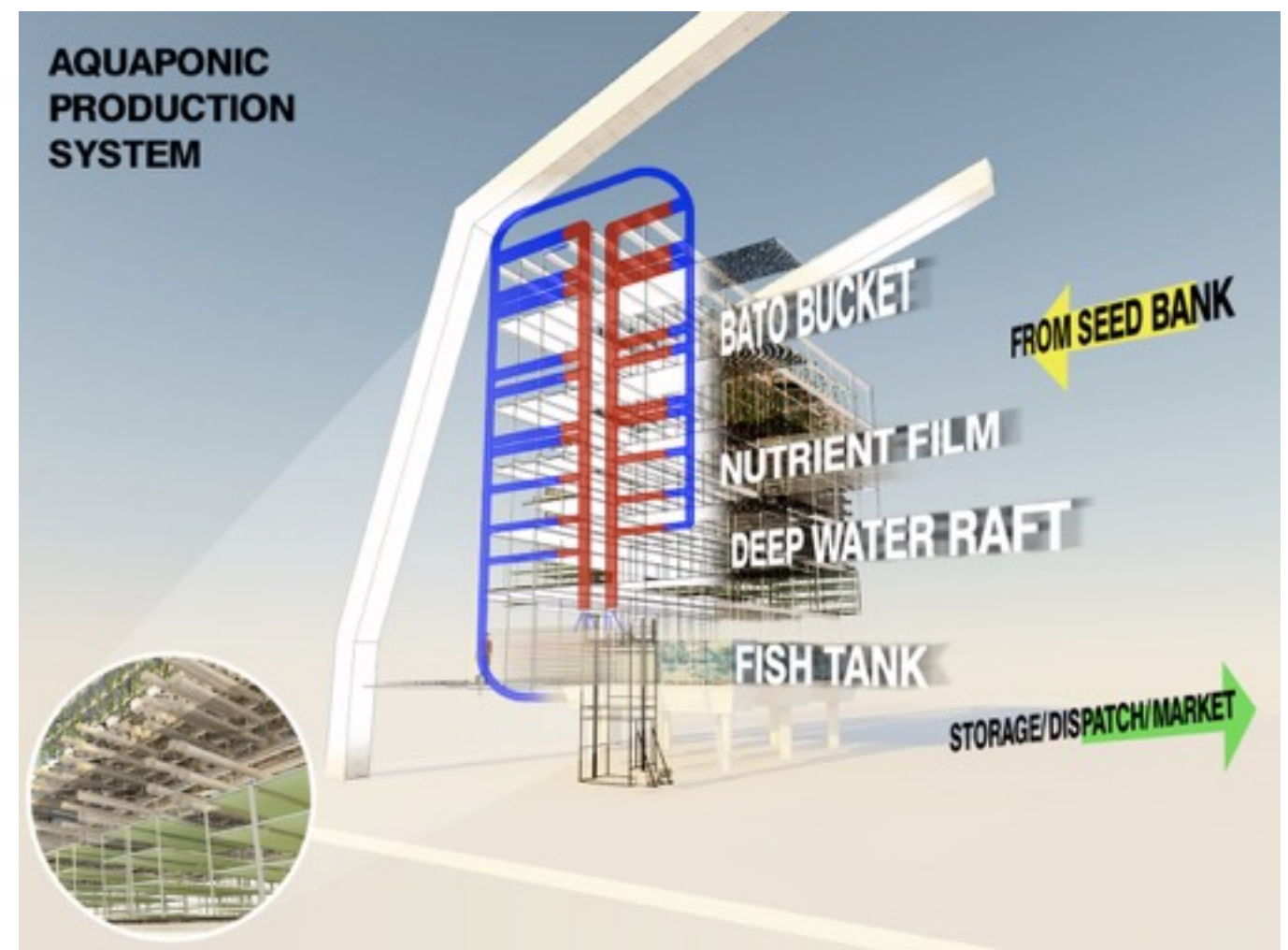
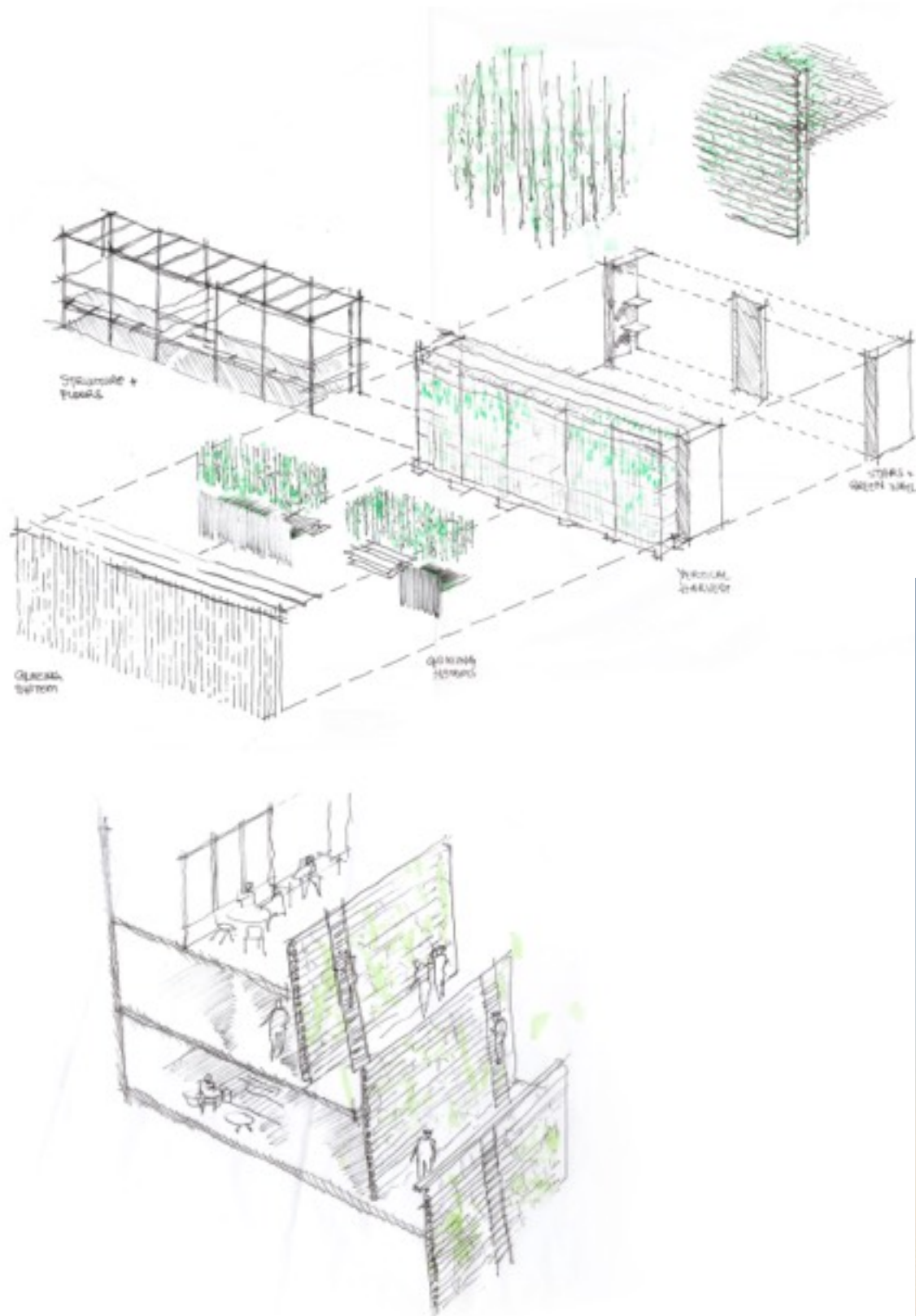
The determining factor informing the building size and area provided to growing beds was based on the decision to be able to produce on a commercial scale with an annual production target of 500 tonnes. The determining crop used to calculate this yield was the tomato, as it is the most resource intensive with water, sunlight, weight, width and height because it is a vining crop. (Somerville, 2015) The crop yields approximately 51.7kg/m² in an aquaponic system. (Agrilyst, 2016) This therefore means that to produce 500 tonnes annually approximately 10 000m² of growing bed space is required. In Namibia

approximately 2771 domestic tonnes of tomato were formally traded during the 2015/ 2016 financial year. (AMTA, 2016) Therefore the building would be able to produce 18% of the annual traded domestic tonnage of the 2015/2016 financial years.

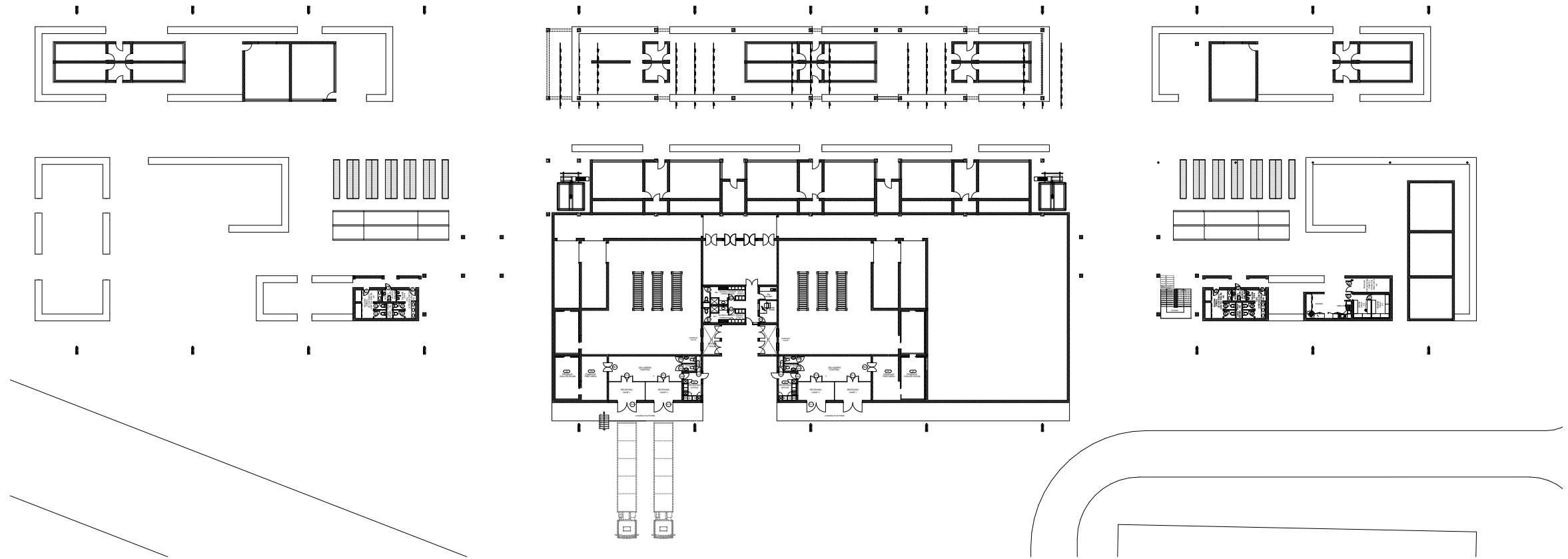
The growing house is divided into two growing sections using two different growing methods namely, (the top two growing floor levels) - the Bato bucket system which is require for vining crops and the Nutrient Film Technique for Smaller leafy plants and (vegetables on the bottom growing levels.) The rationale behind this decision was to allow for more natural light to filter through the building. Further more the fish tanks are placed on the first floor level of the building for re-circulated water to be aerated by gravity as it return flushes into the fish tanks. Seed incubation rooms are provided on each growing floor level, and the area provided would be ¼ of the growing floor area, as the crops are harvested in 4-week cycles. One control room per floor is also provided, to coordinate the operations on each level, including

administrative offices for the auxiliary functions of the building. Additionally each floor has space for auxiliary storage of harvested crops, and is either moved down into the ground floor market space or into the distribution house. The distribution house is located on ground floor and is linked to the growing house and auxiliary storage, seed incubation rooms and control rooms by means of service elevators. The distribution house is divided into 3 sections:

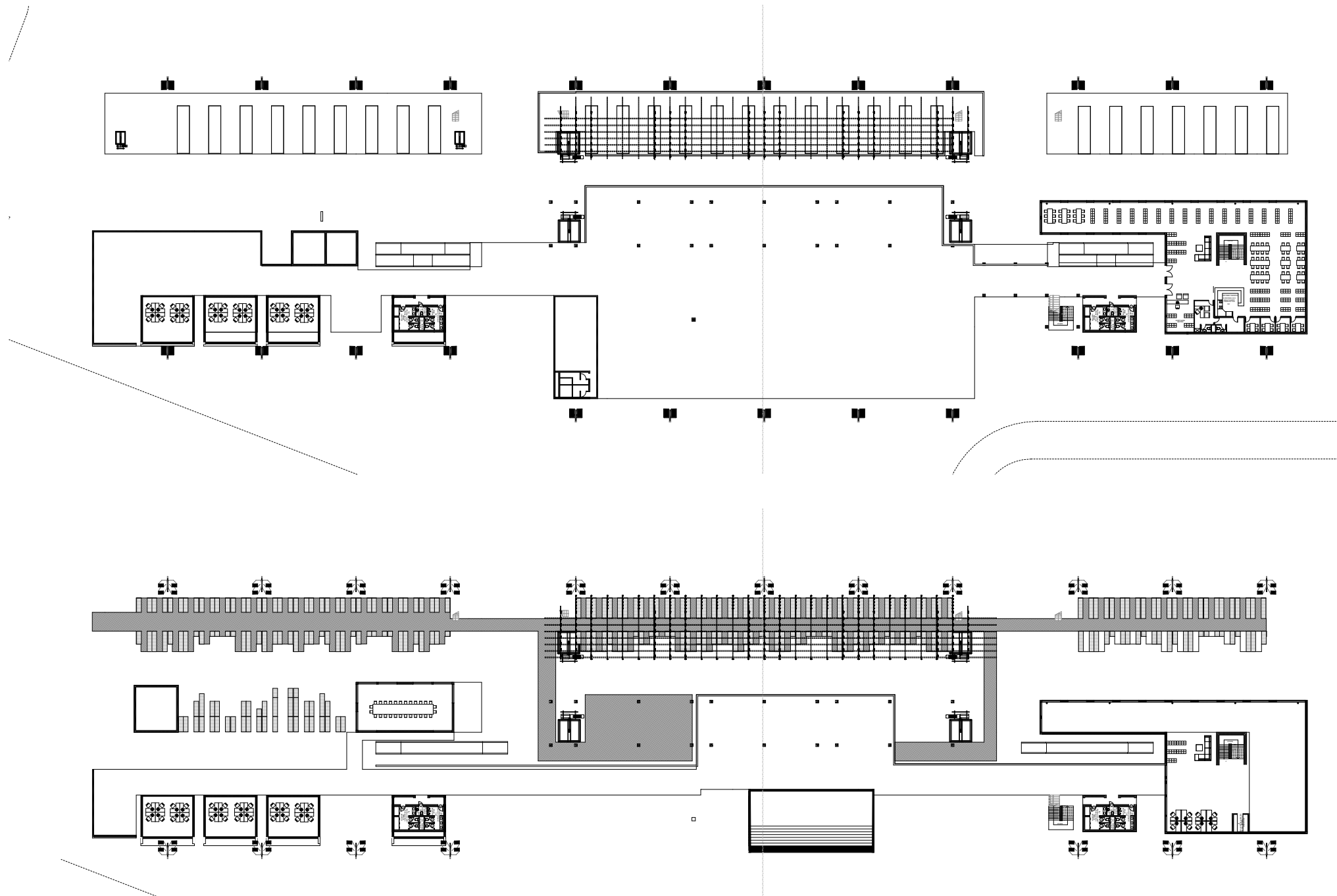
1. Receiving and Storage
2. Fish Dispatch
3. Fresh Produce Dispatch



13.2 Growing Installations



13.4 Drawings



CHAPTER 14

CONCLUSION

CHAPTER 15

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