

# ASSEMBLING THE SOCIO-EDUCATIONAL SPHERES WITHIN CONTESTED URBAN ENVIRONMENTS

The Role of a Community Learning Hub in a Contested Urban Environment

The role of transformative learning in socio-economically divided urban communities.

“In the last analysis, human security means a child who did not die, a disease that did not spread, an ethnic tension that did not explode, a dissident who was not silenced, a human spirit that was not crushed...”

The above quote by Mahhub Haq, a Pakistani Economist and International Development theorist, strongly suggests a working together of all communities with local knowledge and skills to try and curb prevalent socio-economic and health ills besieging our communities.

By Dipuo Matena

## Declaration

In accordance with regulation 4(e) of the general regulations [G.57] for dissertation and theses, I declare that this dissertation, which I hereby submit for the degree of Masters of Architecture (Professional) at the University of Pretoria, is my own work and has not been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my dissertation has already been, or is currently being submitted for any such degree, diploma or other qualification. I further affirm that this dissertation is substantially my own work. Where reference is made to the work of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Dipuo Matena  
2020

Complete Site Address:

Woodlane Village, Moreleta Park, Pretoria East

25 49 34.4" S

28 18 46.0" E

The Main Function of the Site:

Community Transformative Learning

Program:

Community Opportunity-Learning Hub

The Client:

The Pure Hope Foundation and SA Cares for Life in collaboration with the Department of Education

Study Filed:

Human Settlements and Urbanism

Author:

Dipuo Matena

Study Coordinators:

Dr Carin Combrinck and Prof. Arthur Baker

Study Leader:

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Submitted in partial fulfillment for the requirements for the degree of Masters in Architecture (Professional).  
Faculty of Engineering, Built Environment and Information Technology (EBIT).

University of Pretoria at the Department of Architecture.  
Year: 2020

A very special thanks to the following:

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To God be the Glory!

My dearest Dr. Combrinck:

The words thank you will never be enough. I appreciate your relentless support, patience and belief in me.

My two favorite human beings, my grandmothers:

Mme Alina Matena and Nkgono Kagiso Maureen Mokoena for your constant and patient love and believing in my potential as a young woman.

My twin sister and fellow Philosopher Dimakatso Matena:

It has been such a blessing to have been doing my Masters together with you. Our very philosophical discussions have made me the intellectually complex person I am today.

To my beloved family members, dear friends and colleagues:

Thanks for all the relentless support and the belief in my capabilities!



Figure 1: Site Location

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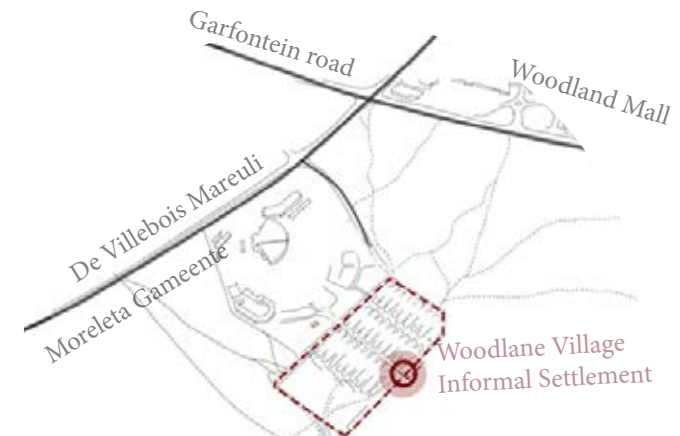
Dipuo Matena

**Study Coordinators:**

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**Study Leader:**

Dr Carin Combrinck



**Abstract**

Within the context of this dissertation, community transformative education is regarded as a pathway to an explicit community lifelong learning culture of learning. It aims to liberate marginalized communities from states of oppressive socio-economic status-quos within contested urban locations.

The dissertation explores the manner in which architecture can play as a networking tool, in a form of facilitating the social construction and distribution of local knowledge & resources within a contested urban location. Through the identification of global and local issues, new perspectives developed through the consideration and incorporation of local socio-educational networks act as crucial points of focus. The intention of these networks of focus is to use them as tools to improve the contextual circumstances of the contested urban location, through the empowering and transforming community learning.

The conceptualized architectural approach of this dissertation, is seen as a tool in which the relationships between communities of different socio-educational backgrounds in contested urban contexts are enabled and encouraged to collaboratively construct and employ their own local knowledge and skills in order to flourish together as one community. Local support is essential for community enablement- as every developmental progress hinge on it as foundation. It is therefore, access to local knowledge and resources that form the foundation of the social production of the explored space.

This in turn, has the ability to create an urban environment rich in livelihood-enriching programs and functions, aiming at improving the lives of its inhabitants, and consequently giving rise to atmospherically and spatially rich and improved urban fabric and inclusive learning environments.

## Dissertation Issues

**Context:** Woodlane Village

**Local Issues:** The lack of infrastructure to foster community development

**Global Issues:** The prevalent socio-economic inequalities in urban environments

**Global Intentions:** The promotion of access to structured forms of lifelong and community learning opportunities to all

**Local Intentions:** To strengthen local knowledge and resource-exchanges that foster community development in contested urban environments

**Project Intentions:** To create an explicit lifelong and community place-based learning culture- Local knowledge and resource-exchange relationships can be systematically and spatially encouraged by architecture

## 8 General Issue:

Our current society is facing an unprecedented social, economic, cultural and technological challenges affecting the concept of learning, and the role education plays in society (Cavero, Lellvot-Cavet 2018).

It is evident that spaces for learning in complex urban environments ought to be transformational and diverse in nature, in order to cater for the current knowledge/ resource exchange between varying socio-cultural and economically diverse populations.

### Urban Intentions:

Local knowledge networks as part of the educational system are crucial in shaping and defining societies. (Abaha, et al. 2015) asserts that local systems are better understood as personal, contextual and practical units which cannot be separated from the community, their environment (physical/spiritual), or the individual. The South African Government acknowledges the importance of the embedded local knowledge networks in defining communities, despite the inherent disconnect amidst them in the urban areas of the country. Therefore, there is a need for the fracturing of the traditional urban structures that create a chasm between communities of different backgrounds that ought to be creating, exchanging and distributing local knowledge and resources for the betterment of a cohesive learned urban society.



## Architectural Intentions

For this dissertation, the suggested school of thought concerning the design of learning spaces for these knowledge and resource-exchanges between communities in complex urban settings, is influenced by Kenneth Fisher (2014 & 2015) theories on The Pedagogy of Learning Environments, and Herman Hertzberger (2008) writings on Space and Learning. The attempt is to conceptualize a community-based platform for knowledge & Resource-exchange learning environment in a contested urban environment.

Presently, the South African education context is vastly fixated with offering learning infrastructure for formal learning to quantitatively meet necessity demands, and not so much for qualitative community education & development. Communities in contested urban environments, which mostly constitute disadvantaged young adults usually do not have communal infrastructure crucial for human development for improvement.

Therefore, a new Youth Community-Based learning facility model suitable for the contested urban environment is explored in this dissertation.

## Theoretical Premise

Contextually and on an urban-scale, the dissertation responds to the premise of spatial justice. This is in correspondence with the current spatial fabric that deliberately excludes the location of the informal settlement in focus, both systematically and physically, in terms of its proximity to community basic amenities. Concerning the location of focus, the idea of spatial legacy is specifically observed through the premise of urban geography, a sub-category of geography which looks into the aspects of

- 9 urban life and the built environment. Here, the quality of life and spatial fabric in which the 'informal settlement' is embedded, is of importance, in terms of relationship and proximity to basic necessities and resources.

## Client

The Pure Hope Foundation and South Africa Cares for Life in association with the Department of Education.

## Architectural Issue

The disjuncture between local Knowledge & Resource Networks of operations

The dissertation suggests that there is a disconnection between spaces that cater 'informal' communal learning programs for communities living in 'informal settlements initiated by non-governmental organizations and local knowledge and resource-sharing networks found in urban localities.

## Knowledge and Resource Distribution

The premise of the dissertation is that, every human being has something unique and distinct to offer the world. Every individual living in 'informal' settlement, is a 'carrier' of some complete knowledge about something that someone else could benefit from. Any knowledge about anything has potential to benefit someone and the whole community. Therefore, that is why the dissertation stresses the importance of knowledge distribution, which is the amalgamation of all knowledge of all individuals in a community, and the role that architecture can play in encouraging and strengthening local and resource-networks of a local

contested community.

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### The Responsible Personnel in these Distributions

The dissertation acknowledges that knowledge and resource distributors comprise a group of individuals who gather local and participate in the acquisition and exchange of knowledge/resources around a certain topic. This is either with obvious goals of building new knowledge, or less officially through common interest and practice.

The implications of having Learning Environments as hubs/centers for Knowledge and Resource Distributions.

By definition, learning environments are centers for knowledge distribution and sharing amongst communities and people of different backgrounds. The challenge is that, most of them are not designed to encourage and enhance the function and experience of the exchanges. If learning hubs are explicit in intending communities to share and create, then as facilities, they would become communal facilities, encouraging healthy relationships between the amenities and the communities they serve.

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# CHAPTER 1

## 1. INTRODUCTION

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# 1. Introduction

## 1.1. Background

Life in South Africa is characterized by multidimensional forms of oppression(s), with which the root is the aftermath of apartheid and failure of the succeeded political powers. Because of this, the country is captive to decades' old patterns of different kinds of oppression and discrimination after approximately 30 years since apartheid ended. Nationally, these old patterns of oppression have been set out to be eradicated by the Sustainable Development Goals (SDGs), which provides a framework of measurable targets settled across nations, (UNESCO, 2014). Of the 17 goals, Goal 4 refers to Education- which aims to assure quality and inclusive education and promotion of lifelong learning for all (UNESCO, 2014).

Now, because of these goals, urban environments across the globe have been further developed in order to reach and measure up to the SDGs worldwide. South Africa, amongst other developing countries, has one of the highest rates of urbanization (Teye 2018), where urban-migrant groups are in search of better educational and employment opportunities for improved livelihoods. The rates of urban migration in South Africa has been recorded as follows: 1950=37.7%, 1980= 41.3%, 2000= 53.8%, 2015= 61.6%, and 2050= 74.3% (UN-DESA 2014). It is observed that a 12.7% increment in the rate of urbanization within 35 years is expected. Although this rapid increase is caused by the natural increment of towns and re-classification of settlements into urban areas (Teye 2918), this migration leads to the creation of informal-settlements, where an unauthorized settling of individuals or communities settle on an open municipality-owned piece of land, hoping to find opportunities in the city, to rid poverty and unemployment.

Moreletapark, a suburb in the eastern part of the city of Tshwane, South Africa, is home to such an informal settlement called Woodlane Village, informally known as Plastic View. Woodlane Village is an example of a community causing land-contestation within an affluent urban environment of Pretoria-East in Tshwane. The informal settlers here are seeking better livelihood opportunities within the complex urban-scape. In cities, individuals either settle unauthorized on municipal-owned open land, in order to attain access to education, employment, and also a place to call home (Avis 2016).

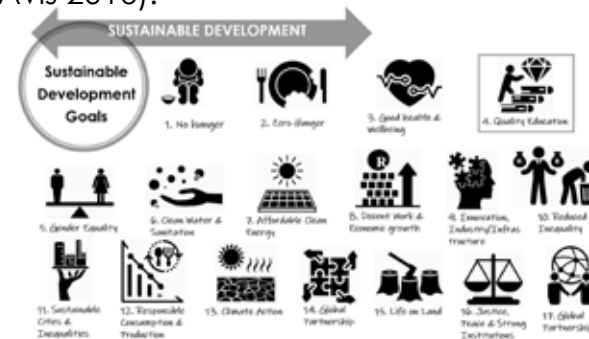


Figure 2: Sustainable Development Goals (SDGs) (UNESCO 2014)

REGIONS	YEAR				
	1950	1980	2000	2015	2050
Sub-Saharan Africa	10.7	22.4	30.8	37.9	54.8
Africa	14.0	26.7	34.5	40.4	55.9
Eastern Africa	5.6	14.5	20.6	25.6	43.6
Middle Africa	14.0	27.5	36.8	44	60.8
Northern Africa	26.0	41.3	48.4	51.6	63.3
Southern Africa	37.7	44.7	53.8	61.6	74.3
Western Africa	8.4	23.6	34.7	45.1	62.7

Figure 3: Regional Variations- Rate of Urbanization in Africa (UN-DESA 2014)

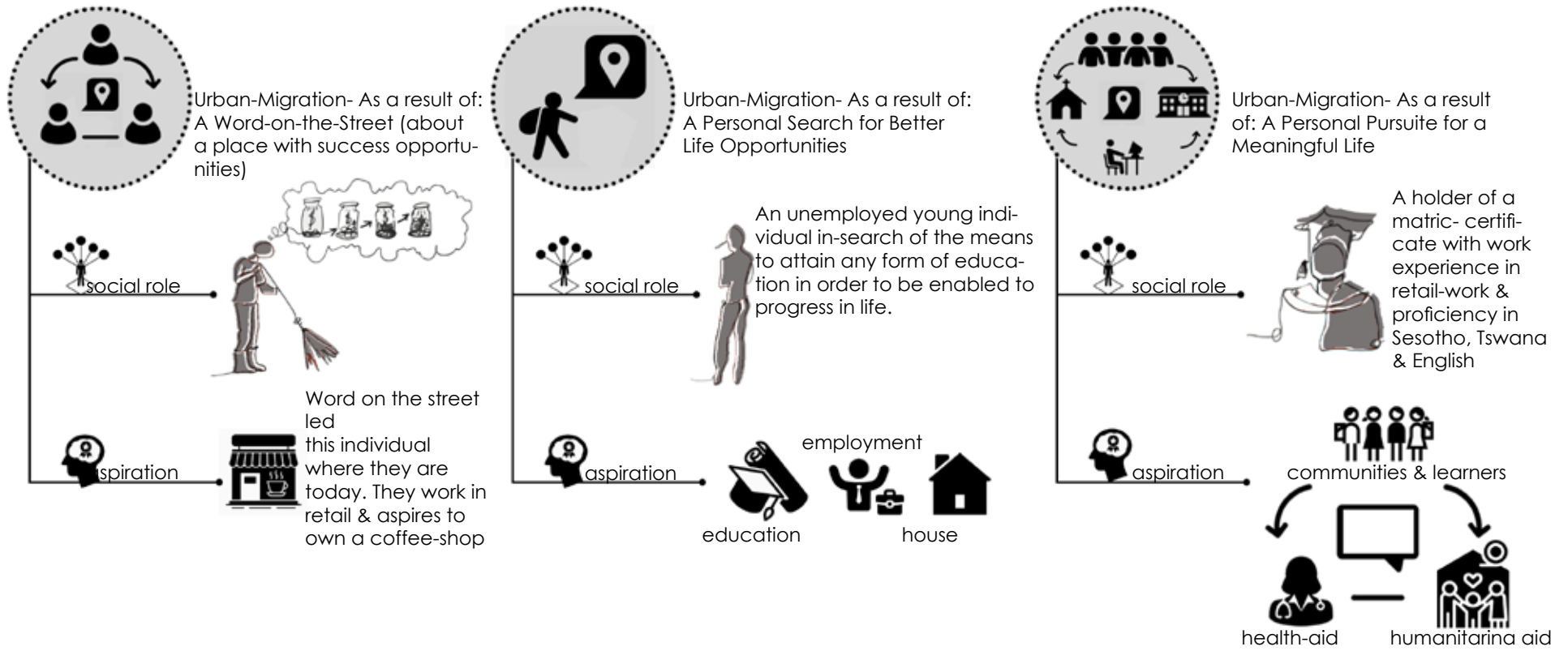


Figure 4: Illustration of Urban-migration & Reasons behind (Author)

According to the City of Tshwane Metropolitan Municipality (CoT15 Pretoria-East. 2019), the city's population growth rate was recorded at 2% per annum in 2019. The education status of individuals aged 20 years plus, showed that within the city's population, in 2011, 4.2% had no form of schooling to their record, and that record rose to 4.5% in 2016 (CoT 2019). In terms of higher education, only 23,4% in 2011 had access, and this percentage decreased to 19,8% in 2016 (CoT 2019). It is therefore apparent that the population growth in the City of Tshwane is rising, and the percentage of individuals aged 20 years-plus without any form of schooling is on the rise.

To strengthen this argument, Altbeker & Bernstein (2017) assert that South Africa is "no country for young people" to live and thrive. In 2016, the South Africa had just over 20 million young people (i.e., people aged between 15 and 34 years), with 7.5 million of them not being in school, without training or any type of employment (Altbeker & Bernstein 2017). This is viewed as being a major problem that leads to an unemployment crisis, which leads to ill-behaved actions such as misconduct, substance misuse and troublesome presences in local neighbourhoods (Altbeker & Bernstein 2017).

Woodlane Village as an 'informal' settlement, is home to many individuals described by the above statistics and socio-educational economic challenges. Because of the illegality of the eradication of such settlements in South African urban environments, under the Prevention of Illegal Eviction from Unlawful Occupation of Land Act of 1998 (PIE), the community of Woodlane Village is protected from being indiscriminately evicted without any arrangement for alternative humane accommodation (Commission 2018). As the settlement occupies Moreleta Park, a suburban area characterized by an affluent population and diverse property types, the community of Woodlane Village exists as an island in the face of the prevalent socio-educational and economically divided urban area in

Literature review shows that location discrimination plays a role in how much communities progress in life. It shows that when basic facilities are placed within the context with which the users are located, community development transpires. Edward Soja, through the concept of socio-spatial dialectic, emphasizes that there ought to be recognition that the geographies in which life happens, either have positive or negative implications on everything people do (Soja 2010). The Woodlane Village community exists within a spatial fabric that singles it out as 'informal' settlement amongst its affluent gated communities. There are no formal roads reaching and passing through the settlement, no public learning facilities and other basic amenities accessible immediately for the desolate community to call their own. These challenges are coupled with social and economic challenges, like unemployment and poverty characterising the community.

Foucault captured this idea by showing how the intersection of space, knowledge, and power can be both oppressive and enabling (Parson 2019), and in this case, Woodlane Village as an intersection of place and space, is oppressed. Furthermore, literature of Spatial Justice asserts that more problems that come with location discrimination are environmental problems (Soja 2010). 'Informal' settlements are known to be full of environmental hazardous waste that is high in water, land and air pollution, challenges that Woodlane Village face. And lastly, literature dealing with issues that impact learning, show that the physical environment in which learning takes place, contribute to the ability of learners to learn (Lippman 2010).

It is therefore proposed that, if more inclusive learning spaces are to be provided in complex urban environments, then the architecture would have to be exploratory innovative, in the manner that transformative spatial learning environment models represents sustainable and inclusive urban local communities.

This dissertation aims to show how urban environments may begin to offer young urban-migrant opportunities for 'informal' learning opportunities and employment actively sought for. The aim is to show how architecture can make a contribution to the gap experienced by the youth who are crippled by the country's education system in one way or another, in order to ensure equality, education inclusiveness and sustainable development for all.

The research will then investigate factors impacting access to and participation in the learning and employment opportunities in Moreleta Park urban environment by the community of Woodlane Village. The extent of Moreleta Park and Woodlane Village will be investigated in order to find out if the urban area supports and encourages the sharing and distribution of knowledge and resources prevalent in the area.

## 1.2. Project Statement

The inherited spatial legacy of location discrimination contributes to the role that different learning environments are set to play within the communities they are built. Roles such as the distribution of knowledge, and resource-sharing amongst communities of an unequal socio-economic standing, are being hampered by tangible and intangible barriers contributing to the apparent in-cohesiveness amongst them (Mtenga, et al. 2013). Learning environments in South African urban environments reflect this multifaceted socio-educational and spatial challenge in that provision is not equated amongst communities of different backgrounds, and if there is provision, the facilities do not meet the communities' multi-dimensional

16 learning needs.

Learning environments ought to engage the learner's every day setting, allowing the learner to construct their own meanings out of the knowledge conceptualized and gained, and prompt them to creatively apply the skills in their immediate context (Fisher 2013). It is crucial that the knowledge can be directly applied in immediate contexts where real life happens, and real needs are apparent. Research shows that when other communities have access to learning environments and are able to use that knowledge to benefit them in society, and other communities cannot do so because of location-discrimination, the socio-educational and spatial inequalities become apparent. The learning landscape set to serve a community, ought to represent the needs and desires of its users by being shaped by the social and spatial patterns embedded within the location.

## 1.3. Site Selection

A portion of Woodlane Village 'informal settlement' has been selected as the location for the architectural intervention. Woodlane Village is one of the two 'informal' settlements situated in Moreleta Park, with the other being Cemetery View. Both settlements occupy the city of Tshwane's post apartheid's urban environment, located further east from the Central Business District (CBD), but still comparatively distant from the previous formal Townships (Honors studio 2019). This site forms part of the greater Moreletapark Integration Project that the Department of Architecture Honors (4th year) Informal Forum Settlement studio (ISF) was involved with, under the supervision of Dr. Carin Combrinck, Mia Posthumus, and Jason Oberholster in the year 2020.



Moreletapark Integration Project was a project that aimed at gathering all the information on the two mentioned 'informal' settlements situated in Moreletapark. Woodlane Village, including Plastic View, was made available to the Architecture Department's Honors and Masters students of 2020 for research, mapping and observation. Woodlane Village was chosen as the location of focus based on the fact that access to site was made with ease, and more information regarding the settlement history and operation was already available. Despite all the available valuable data, the community of Woodlane Village is still not permitted to erect permanent homes, and most of them struggle to access necessary basic amenities.

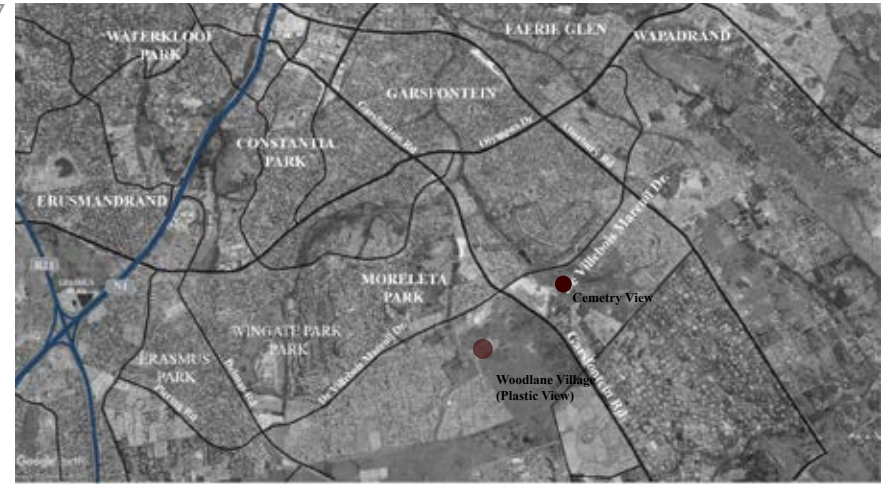


Figure 6: Situating Woodlane Village, (Plastic-View) with Moreletapark. (Author 2020)



Figure 5: Situating Woodlane Village, (Plastic-View) with a larger context. Honors ISF group (2020), edited by (Author 2020)



Figure 7: Community Interaction in Woodlane Village  
Photo by Author (2020)

### 1.5. Research Question

How can the socio-spatial production of a non-formal learning environment contribute to a place and community place making within a contested urban environment?

### 1.6. Research Intention

To explore architecture as a tool that foster knowledge and resource creation, and transfer between communities of different socio-economic backgrounds. The design aims to challenge boundaries of community-based learning and learning-hub design, by exploring an architectural model for learning environments in complex urban settings.

### 1.7. Delimitations

The study identifies opportunities to be explored in the informal and non-formal education systems by exploring the role architecture can play in the facilitation of socio-educational interrelations between communities of unequal livelihoods.

In the conceptualization of the explorable spatial suggestions, the social, educational and economic networks embedded in the spatial patterns found in the Woodlane Village settlement have been used as informants for the proposed intervention.

Woodlane Village grew from an organic spatial arrangement to a formalized and contained community. Within the settlement, people have the leverage of how they want their dwellings, external communal and private spaces to relate to one another and to the street, in order to suit immediate needs and means of making a living. The physical make-up of the structures is also responsive to the environmental and affordability challenges faced by the community on a daily basis.

19 The contained dwelling fabric sits on a relatively inclined topography, boarded by the Moreleta Gementee grounds to the north-western side. To the north-eastern and south-eastern sides, we find an otherwise unoccupied municipal land with indications of vegetation. The settlement is closest to the residences on its south-western side.

### 1.8. Limitations

The dissertation considers Pretoria East as a learning landscape. The focus zooms into Pretoria East and Moreletapark in order to find the plausible design suggestion or solution. The suggested design approach adapts to the 2016 MProf urban framework which was based on the StudioMAS Architects' urban framework development proposal for Woodlane Village in 2007 (2007).

The architectural response adopts the idea of an 'education corridor' suggested by Crocker (2016), by adapting the principle and applying it according to the theoretical conclusions of the dissertation. It is within this premise that the design proposal finds its urban response development.

### 1.9. Research Methodology

To respond to the issues set out in this dissertation, the following methods were used in order to find appropriate architectural solutions.

#### Research Purpose:

To provide a contextually based analysis in order to identify barriers to non-formal learning, specifically lifelong and community-based learning within a socio-economically divided urban environment.

## **Methodology:**

The extent of the research includes the individuals of Woodlane village, particularly individuals who have played some of the important social roles within the settlement. Interviews were conducted with those that are no longer school-goers because of varying challenges, individuals working for and with the NGOs, and entrepreneurs. Additionally, more interviews were conducted with some of the leaders of the instrumental NGOs aiming at improving the livelihood of the community. A delineated area in Pretoria East was studied as lifelong learning landscape.

The study was the combination of the author's research in conjunction with the University of Pretoria's Architecture Masters (Professional) (MProf 2020) and Honors year Informal Settlement Forum (Honors ISF) studio (2020) Quarter 1 and Quarter 2. The majority of the data was collected by Honors ISF studio (2020) through a project called the Moreletapark Integration Project (2020). The research process included on-site analysis, interviews, visual media, and Geographic Information System (GIS) data gathering framework system (Honors ISF studio 2020). The MProf 2020 group was initially involved in this research process, but later on went on individual route, only to later utilize the data collected by the Honors ISF 2020 studio.

## **The Research Process:**

The on-site analysis research gathering method entailed on-site sketching, unstructured conversations with the community members, and site observations via transect walks through the settlements. The interviews included pre-structured and spontaneous interviews, and recorded interviews. Visual media was collected through the use of a drone footage, post-site sketching, videography and photography were used. Lastly, the GIS as an information gathering system entailed Tshwane GIS, Quantum GIS (QGIS), Mappable, and Kobo toolkit

20 (Honors studio 2020). Kobo tool kit is an open-source software which entails a collection of apparatuses used to collect data in challenging environments (KoBoToolbox 2009).

The type of research implemented in this study is qualitative research. By explanation, qualitative research is to see the research topic from the interviewee's perspective, so that you can get to fully understand why and how they see matters pertaining to the topic the way they do (Cassell and Symon 2004).

## **Case study Research:**

This was a research strategy aimed at focusing on the immediate context within which Woodlane Village is located.

The Masters in Architecture Professional Degree (MProf) Informal Settlement Forum ISF group (2020) involved themselves deeply in the lives of the community on different occasions. Through the structured and unstructured interviews, transect walks and other methods described above, an understanding of the culture and living circumstances of the community of the Woodlane Village informal settlement live in was achieved.

Inquiry into the deeper understanding of the issues through various community members, the Managing Director (MD) of South Africa Cares for Life (SA Cares), a non-profit organization (NGO), and Informal Settlement Forum (ISF) representatives.

## **CHAPTER 2**

### **2. EDUCATION AND LEARNING CONTEXT**

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##### 2.1.2. Lifelong Learning

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##### 2.1.2.2. Where does Lifelong Learning Occur?

##### 2.1.2.3. Brief Reason for Lifelong Learning

#### 2.2. The Education Paradox

#### 2.3. The Knowledge and Resource-Exchange Platform

#### 2.4. General Issue

#### 2.4. General Intention

#### 2.5. Focus Group

## 2 EDUCATION AND LEARNING CONTEXT

### 2.1. Education Background

Education is a fundamental human right that encompasses educational development from pre-school to higher education and beyond (UNESCO 2019). Education in South Africa is governed by two national departments: Department of Basic Education (DBE) and Department of Higher education and Training (DHET) (Department of Basic Education SA), these departments have the mandate to ensure every person in the country has a place within the education landscape to enrich themselves (Education 2019).

#### 2.1.1. Access into the South African Education System

Millions of adults and children remain deprived of education opportunities because of social, economic and cultural factors (UNESCO 2019), across the world, including South Africa. According to The South African Department of Basic Education (DBE), everyone who lives in the country has the right to have access to education, this right is protected by the Bill of Rights, and the government is mandated to make it accessible through reasonable means (SA Government 2020). Although the country is in a better state than it was prior 1994, social and political rights of people are protected - education still lags behind, and unemployment and lack of investment characterizes the state of the country (Africa 2014). To eradicate these challenges, through the Department of Basic Education, the government issued a Medium-Term Strategic Framework (MTSF) for 2014-2019 (SA Government 2020). This framework highlights the fact that South Africa had commenced its first phase of democratic transition where the mandate of the election of the fifth democratic government is to deepen transformation and implement the National Development Plan (NDP) in order to fast-track progress, employment and investment in the country (Africa 2014) for the benefit of society.

22 With regard to the provision of school infrastructure as one of the ways to accelerate progress, the DBE is committed to providing adequate and appropriate basic education facilities to existing, and also new educational infrastructure (Government 2020) being built or restored in and around disadvantaged communities. The department has committed to the "Schooling 25"- the overarching plan to speeding up school infrastructure delivery, enhancing teaching and learning by ensuring access to high quality of teaching and learning materials (Government 2020), especially for the most vulnerable communities in the country.

To cater for the youth/adult learners, there are measures in progress to develop access to higher education and training which include an increased enrolment into technical and vocational education and training (TVET) colleges (Africa 2014). Government has committed to establishing associations between different parts of the post-school training and educational system- including the Technical and Vocational Education and Training (TVET) and the Sector Education and Training Authority (SETAs), and the relationship between these two institutions and the employment world. This is so that the country can afford young people diverse educational and economic opportunities (Africa 2014). Our country is in great need for a skilled and effective workforce, and since the third of the population of the country are youth (SA, 2019), it is important that they (the youth), wherever they are located, are enabled to not only participate in the economy, but to become active agents of change in their communities.

Whether situated within the townships, where social infrastructure is inadequate or non-existent, or in the city where money puts a restriction on access on learning, or even worse, in 'informal' settlements due to urban migration where nothing but hope is what drives individuals to strive for opportunities that will enable them to make a success of their careers, skills and talents.

A solution to all these challenges may be found in another different concept of education and learning, called lifelong learning. A learning concept that involves transformation in all aspects of life. Julius Nyerere once wrote that, individuals ought to develop themselves personally, a sense of pride and self-confidence cannot come from someone else, but the person himself. This entails self-development, decision making, and an understanding of what one is doing, and why they do what they do (Nyerere 1975).

### **2.1.2. Lifelong Learning**

Lifelong learning is classified as an ongoing learning through a continuous supportive process that inspires and empowers individuals to obtain and implement "the knowledge, values, skills, and critical understanding needed to confidently and creatively respond and rise to the challenges of a changing social, political and economic environment" (Aitchison 2008). This explanation is provided by the September White Paper, No4, A Programme for transformation of Further Education and Training.

Preparing for the twenty-first century through education, training and work is supported by this type education (Department of Education, 1998, Glossary). This form of learning is part of an open learning system and an integrated approach to education and training. This nature of education also allows people to learn what they want, in the form they prefer, to satisfy their cultural, spiritual, career, personal development and other

23 needs.

#### **2.1.2.1. Where does lifelong learning occur?**

Lifelong learning takes place at community facilities, workplaces, and in learners' and individuals' comfortable homes. Institutionally, there are manifold sites for lifelong learning, including 'cyber' institutions. Some learners use the internet to access learning via the web or network of providers who might be located far apart, and who need have no formal nor centralized structures.

#### **2.1.2.2. The Brief History of Life Long Learning in South Africa**

Lifelong learning came as a result in South Africa where young black people were determined to destroy the school system because of its identification with apartheid. This resulted in shortages of teachers, learning equipment and classrooms because of the vandalism in marginalized communities in the early 1990s. The Human Science Council commission aimed at modernizing South African Education as it recognized that the then existing crisis-ridden education system could not be expanded sufficiently to educate every individual (Aitchison 2008). The commission then regarded and employed non-formal education as a flexible, costs-effective and quick way of cultivating learning strategies in the conflict-ridden society. The (ERS) Education Renewal Strategy's non-formal learning was defined as 'planned' structured education, provided at or any other institution to obtain a qualification other than a degree, certificate or diploma instituted by any other law for formal education (Aitchison 2008). This implies the flexible capacity that non-formal education has in order to cater for society apart from restrictive rules of formal education.

Another definition by the ERS identified non-formal education with vocational training (Aitchison 2008), where adults are concerned about obtaining skills for preparation of self-reliant work (Olufunke 2013). The truth of the matter is that South African education is still in crisis mode of access to education today- and this crisis is incrementally intertwined with other socio-economic ills. Despite the number of individuals in education, the crucial questions concern the availability of flexible and cost-effective infrastructural provision for individuals hindered by the consequences of apartheid's education legacy and societal ills (Roodt 2018). Marginalized communities ought to be equipped for liberated progressive lives and prepared for a society that's constantly changing.

### **2.1.2.3. Brief reasons for Lifelong Learning**

Though an old reference, Freire (1968), a Brazilian educational theorist, believed that once a state of enlightenment is reached, a dominant restrictive education will no longer oppress any group, but will rather become an education of all people in the process of permanent liberation. Therefore, similarly to what is implied by Freire, enlightening marginalized individuals through education has the potential to create an education that belongs and benefits everyone and all peoples.

Lifelong learning as a concept means disrupting the current educational model by promoting learning opportunities throughout the lifecycle of individuals. The idea transforms the formal system in order to promote the joy of learning and prepare learners for an ongoing voluntary and self-directed learning (Aitchison 2008).

Amidst the urban regions, accessibility to lifelong learning in our contemporary society is restricted by individual or household affordability, geographic location, demographics, social status, relationship and accessibility to technology, and democratic injustices.

24 Making the right shift from the segmented and finite stages of learning to learning across life, educational systems ought to be linked and mind-sets transformed (UNESCO 2014). Likewise, the idea of learning being confined to a traditional one-room classroom, or an open-plan school propagates the idea of time and space-bound learning experiences. Lifelong learning suggests an engagement with the learner's everyday context, where the student constructs their own meanings out of the knowledge conceptualized and gained. This is referred to as constructivism, one of the pedagogical theories that argues that in order for good remembering and application of learning to occur, the knowledge ought to be situated in the student's lived world (Fisher 2013). Additionally, according to Freire (1968), this concept is likened to the idea of authentic learning constructed in social situations. Vygotsky (1978:57) asserts that higher functions of learning originate as social relationships.

Without an intervention by non-governmental organizations to try and alleviate the challenge of access to an education for poor communities, there remains no anticipation of a brighter future for desolate communities in our society.

This lack of access to education for everyone contributes to the problem of an uneducated society, which leads to an increment of poverty. This is what leads to city migration as the individuals ought to look for work and create a living for themselves and their families. At its basis, this dilemma questions access to adult education, and supporting architecturally adequate infrastructure in poor communities. An access that is independent from the limiting formal education system.



At the core, this dissertation has its focus on an adult/youth learner. The general definition for adult education is one that refers to an education of an adult person who has either halted their education due to various reasons, or have never been to school before, and only intends on learning how to basically read and write (Olufunke, 2013). This form of education is fundamental because it reflects people's values and enhances their livelihoods by reducing chances of being poor.

It is through this lens that a hypothesis is established regarding the need for the provision of infrastructure for adult learning programs organized by intervening non-governmental structures that try to alleviate the problem of access to adult education. This is due to the general understanding that the non-formal learning programmes initiated by non-governmental structures, serve as informants of this alternative and transformative education that is to be explored within the context of Moreleta Park, Pretoria East, for the desolate uneducated youth of Woodlane Village.

## **2.2. The Education Paradox**

One of the ways to improving the chances of gaining recognition within employment mainstream industry in South Africa is when one has beneficial social networks and relationships that can lead to opportunities of success (Burns, et al. 2010). With the employment or any opportunity-granting sectors being pre-occupied with giving first preference to graduates from higher education divisions, the side-lined individuals from poor backgrounds will remain the status-quo of perpetual poverty and stagnation (Bhorat, et al. 2012).

25 Therefore, it is imperative to acknowledge that the disadvantaged community of the Woodlane Village settlement require strong social and economic support to gain entry into the South African economy. This could be achieved through local socio-educational networks between them and organizations giving socio-economic and educational support to impoverished communities (Burns, et al. 2010). Additionally, this strategy alone, has great potential to act as a back-up plan for drop-out individuals, and those challenged economically, socially, psychologically, and even physically by the mainstream education and economic divisions.

## **2.3. The Knowledge and Resource-Exchange Platform**

Local knowledge networks or systems as part of the educational system are crucial in shaping and defining socio-educational and economic spheres of a society. Abaha, et al. (2015) asserts that local knowledge systems are better understood as personal, contextual and practical units which cannot be separated from the community, their environment (physical/spiritual), or the individual. This implies that for a community of learners to prosper as a unit, the local socio-educational and economic networks embedded within a community of people with differing backgrounds ought to have a common understanding of its overall community and environment's needs. The conventional trajectory for a typical South African learner is not the same for everyone. Many encounter challenges that halt or disrupt their educational progression, and are left to fall back on whatever their local community has to offer to help them progress and gain independence and economic participation locally.

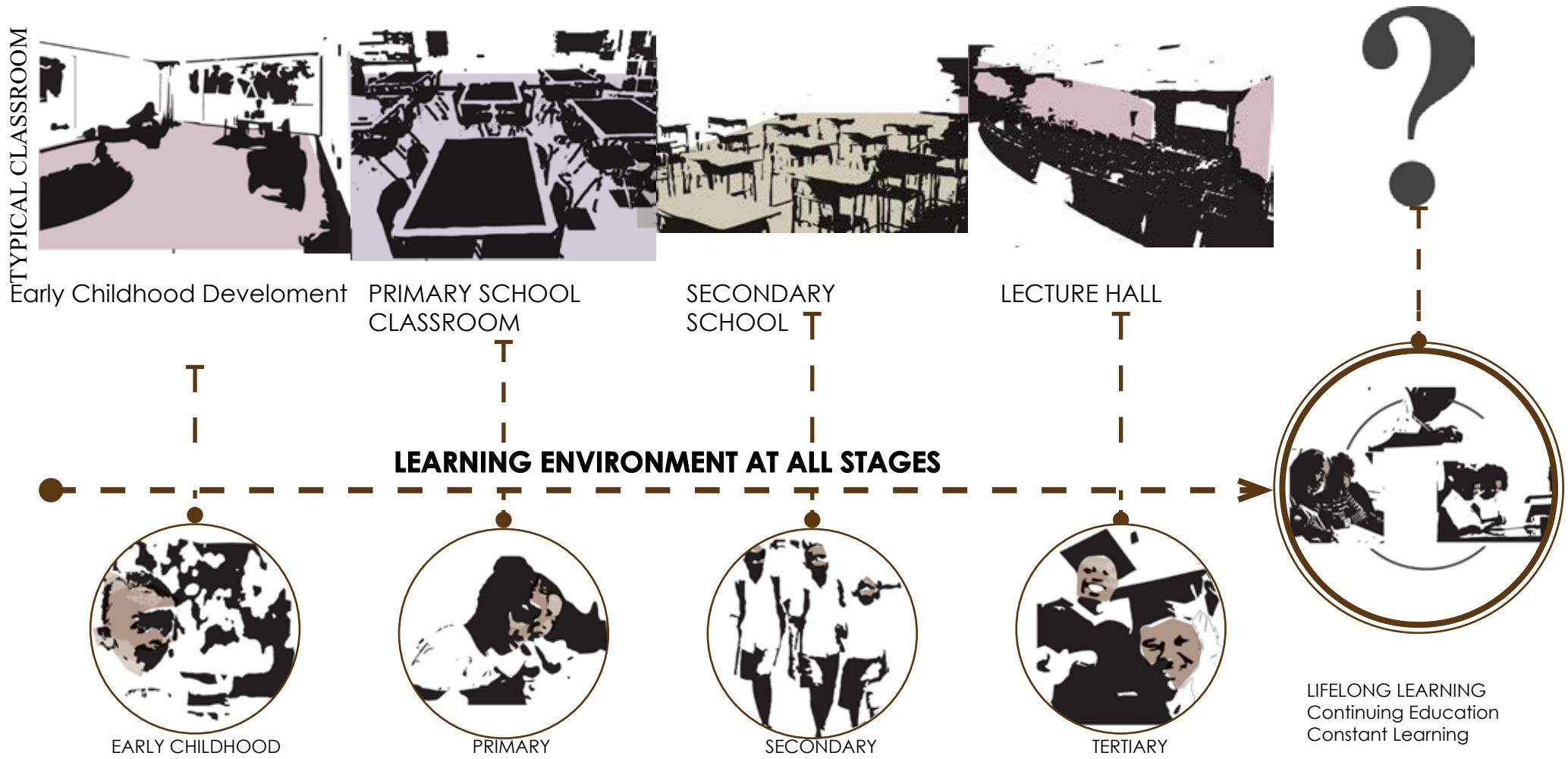


Figure 8: Levels of Learning (Author 2020)

LEARNING ENVIRONMENT

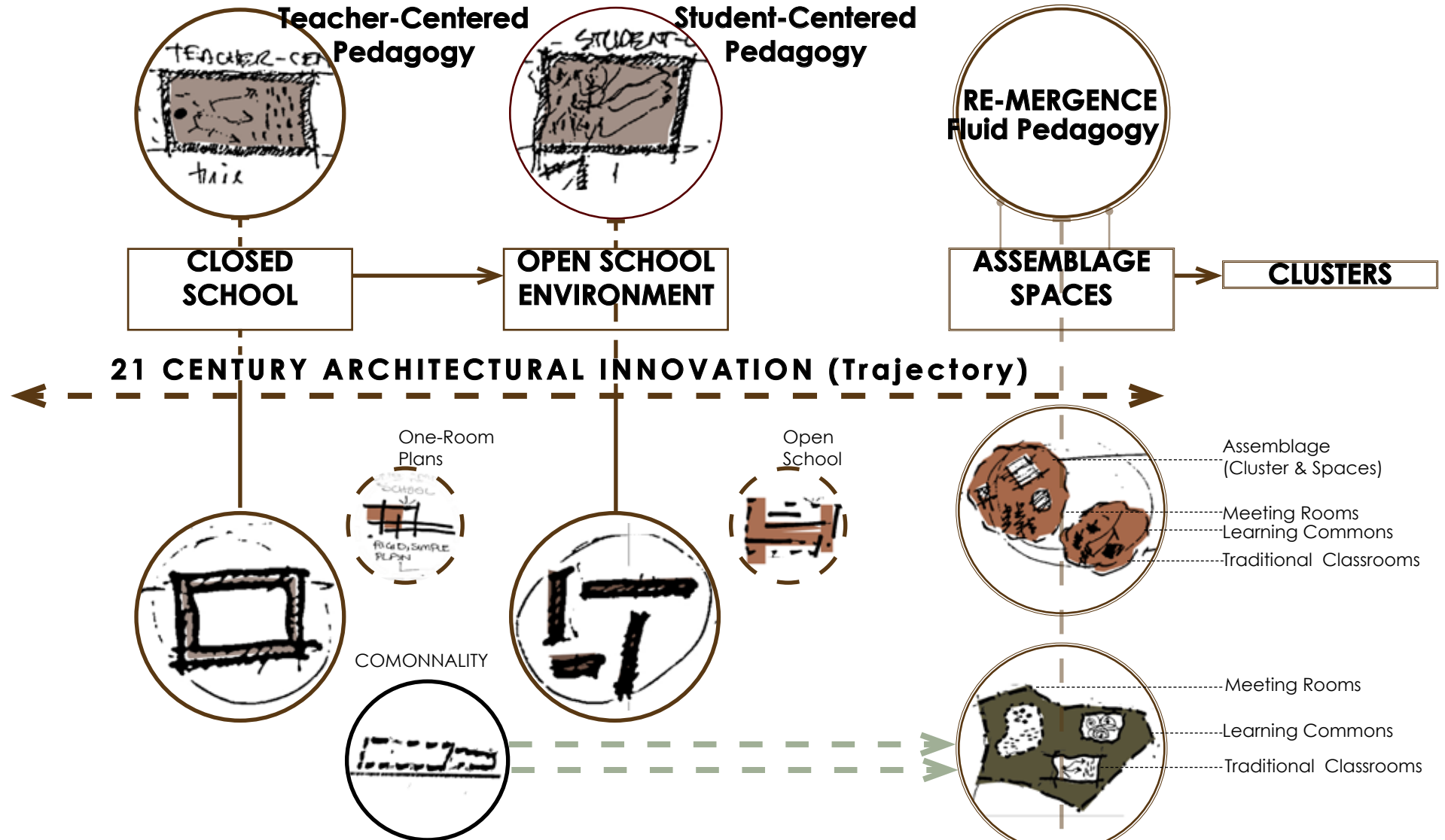


Figure 9: The Progression of Architectural thinking of educational spatial types (Author 2020)



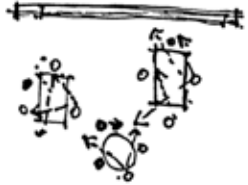

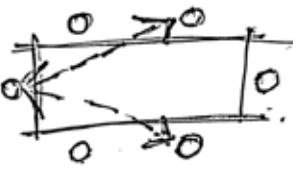



PEDAGOGICAL PRACTICE		BEHAVIORAL PREMISE	SPATIAL ARRANGEMENT	
Autonomous Learning Informed learning Dispersed knowledge Reflective & interpretive	COMMUNICATION	Knowledge sharing Provision of quick-exchange		
Semi-formal-Formal learning Passive/active learning Knowledge is shared Leader sets direction	DECISION MAKING	Make decisions		
<b>Independent Learning</b> Singular activities Hands-on research	DECISION MAKING	make decisions		

Figure 10: Pedagogical Theory & Spaces, Adapted from (Fischer 2015) by (Author 2020)

## Schools and Transformation

## Characteristics

Preface

19th century School

Large Classroom  
 Large Spaces  
 Based on Monitorial Model  
 Teacher in front  
 Teacher supported by Monitors  
 Monitors drilling knowledge set by teachers into learners



Figure:

Late 19th century

Large space sectioned into standard classroom type for 25 to 30 learners



Figure: Tuske Institute, History class

Early 20th century

Commencement of architectural educational innovation  
 A student-centred model of learning  
 School connected to the outdoor  
 An incorporation of laboratories, workshops, studios  
 'Open schools' trends



Figure: Open Air School in Suresnes France, by Marcel Lods, Eugène Beaudouin & Jean Prouvé

Post-World-war (1940s)

Modernist Movement  
 Rapid Increase in school infrastructure  
 Increase in number of learners  
 Traditional classroom- mass production



Modernist Classroom

Responses

Shift in pedagogies with substantial innovation in architecture

Figure 11 - The Progression of Architectural thinking of educational spatial types (Author 2020)

1980's	'Open Plan School' typology abandonment Segmentation of traditional classroom into classroom cells
Late 1980's	Open Plan School typology failure Disjuncture between typology and pedagogy
21st century	Re-occurrence of student-centred pedagogies

The idea of contextualized learning is further explored by Fisher (2005), stating that in order for constructive application of knowledge to occur, the learning ought to be situated in the learner's lived world. The South African Government acknowledges the importance of the embedded local knowledge networks in defining communities (Habiyaemye 2019). However, the traditional urban form that perpetuates spatial chasms between communities of differing backgrounds within complex urban environments, puts a restriction on communal knowledge/resource-sharing. There is still a need for explorative solutions to how these communities can assemble with one objective in mind. Therefore, the solution to this could be an idealized platform for the creation, exchange and a distribution of local knowledge and resources between the learned communities, in order for common academic goals and attitudes to be created for mutual flourishing.

South Africa has attempted to embrace and harness the capacity of knowledge and marginalized communities as means to facilitate its organized transformation (Habiyaemye 2019). In order for transformation in education to cease just being a concept, the process ought to include people. When the community is empowered through contextual-based education to become creators and reflectors of relevant knowledge that can help them progress as a community and also individually, challenges of exclusion from the mainstream education division could be mitigated. Additionally, faith in learning from the community could be restored, creating trust and common objectives among members, which will enable them to assemble with ease whenever there is a need.

The National Plan for Post-Schools Education and Training (NPPET), under the DHET has established that community education and training be contextually responsive, in order to contribute to the cultivation of community cohesion and the accumulation of social resources (Training 2020).

32 Through the provision of a platform that caters for academic, vocational guidance and support, and the establishment of the empowerment for entry in self-employment initiatives, individuals from impoverished communities can establish relationships with mainstream and entrepreneurial economic divisions.

#### **2.4. General Issue**

For the first time in history, the majority of the world's population resides in urban areas. This has led to the labelling of the 21st century as the first "metropolitan or urban century". Statistics indicate that cities occupy about 0.5% of the world's land, but they are responsible for 60% energy consumption, 70% of the world's economy, 70% global waste, and 70% greenhouse gasses (Avis 2016). It is no coincidence that more people would want to migrate to the city, to find more opportunities, and it is unfortunate that economic vulnerability is at the forefront of the reasons for urban migration.

This migration to the urban areas, for many vulnerable individuals, comes at high cost, leading to the springing up of informal settlements. The emergence of informal settlements are attributed to rural-urban migration, marginalisation of certain groups, economic vulnerability, weak governance in terms of policies and regulations, population growth, and many other factors (Avis 2016). These vulnerable communities seek educational and economic opportunities because where they are from, these chances are scarce, inadequate or non-existent.

However, despite the fact that systemic apartheid is



no longer regularized, extreme barriers to service-delivery and livelihood opportunities still exist. These barriers deter the efforts of poor communities to transcend multi-dimensional vulnerability, as they would spend more time, resources and energy, seeking compromised alternative means to provision of compromised quality and often of higher cost (Avis 2016). These compromised alternatives affect individuals and families in many different ways. Some of the most crucial ways is the hampering of access to an education. The youth do not end up completing higher education as they need to take care of their families within the conditions they grow up. In these conditions, formal education ends up being an obstacle, because the system is not at all flexible. Many then, fall off because they struggle to keep up, as their lives are constantly in a flux.

The Sustainable Development Goals outlines to accomplish a better and more sustainable future for all. It aims to challenge global issues such as poverty, inequality, environmental degradation, peace and justice (Nations 2011). UNESCO is in support of the national education authorities in developing coherent and robust strategies and managing their effective implementation all within the context of Sustainable Development Goal 4 (UNESCO 2019). Steps taken to resolve challenges of access to formal learning are innumerable and have always been given priority, however, not so much for unstructured forms of learning and education (Latchem 2014).

According to Hager (1998), the foundation is the perception that conventional educational structures have largely disregarded informal or non-formal learning. This is because informal education does not typically fit in perfectly with the restrictive and conservative view of knowledge that formal learning operates on.

There is an overall systemic disconnectedness between the

33 general objectives of dismantling barriers to opportunities for all in the South African spatially unjust urban environments that promote location discrimination against the urban-poor informal settlers.

This leaves the non-formal educational networks unresponsive and unsupportive of the existing relationships prevalent between the resource-poor and resource-rich communities in the country's urban environments (Hlalele, 2012).

### **2.5. General Intention**

The general intention is therefore, is to show through architectural lenses how our current society can face these unprecedented social, economic, cultural & technological challenges affecting the concept of learning, and the role education plays in society (Cavero, Lellvot-Cavet 2018).

It is evident that spaces for learning in complex urban environments ought to be transformational and diverse in nature, in order to cater for the current knowledge/ resource exchange between varying socio-cultural and economically diverse populations.

### **2.6. Focus Group**

The dissertation will have the user-group that South African education system side-lines as a focus. This is due to the potential that Lifelong and Community-based Education has in uplifting the urban poor seeking access to educational and employment opportunities in the city's urban environments. The user has the option of vocation courses, learning of new skills that complement their jobs, internships, apprentices, including the learning of new languages, sports, and art.

## **The People**

34

The user-group is primarily the youth staying in Woodlane Village. It is individuals that are already part of the skills and training programmes offered by the Non-Profit Organizations (NPOs) working with and within the area of Moreletapark.

## **The Chief Design Informants**

The intention of the dissertation was from the start set out to have its focus on the urban poor youth residing in informal settlements. Upon the process of site selection, and site visitation at the beginning of the year, urbanites who were notified to have devoted to a lifestyle of continuous learning, became the focus. These were individuals who decided to settle in Woodlane Village in search of opportunities that offer better livelihoods for both themselves and their immediate families, and extended families based elsewhere. The decision to keep this category as a focus-group, was strengthened by the data collected by the Informal Settlement Forum Honors group 2020, as discussed earlier. This group entailed individuals that either completed certain schooling levels, or have never been part of formal education. Most of them are also entrepreneurs in and around the settlement, some do domestic work around the surrounding affluent residents and retail stores. All aspire to be more than what they are at the moment, and believe that gaining any form of an education can bring one closer to their ambitions and aspirations.

## **CHAPTER 3**

### **3. CONTEXT**

35

3.1.1.Context Study and Urban Analysis

3.1.1.1.The History of Woodlane Village

3.1.1.2.Legality and Threats of Eviction

3.1.1.3.Community Support and Leadership

3.1.1.4.Non-Profit and Leadership

3.1.1.5.Community Skills and Learning Support

3.2. Summary and Conclusion



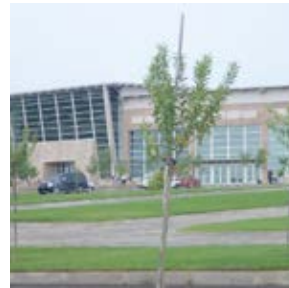
Figure 12: Locality Map



Menlyn Park



Woodhill Village



Moreletapark  
Congregation



Woodlane Village

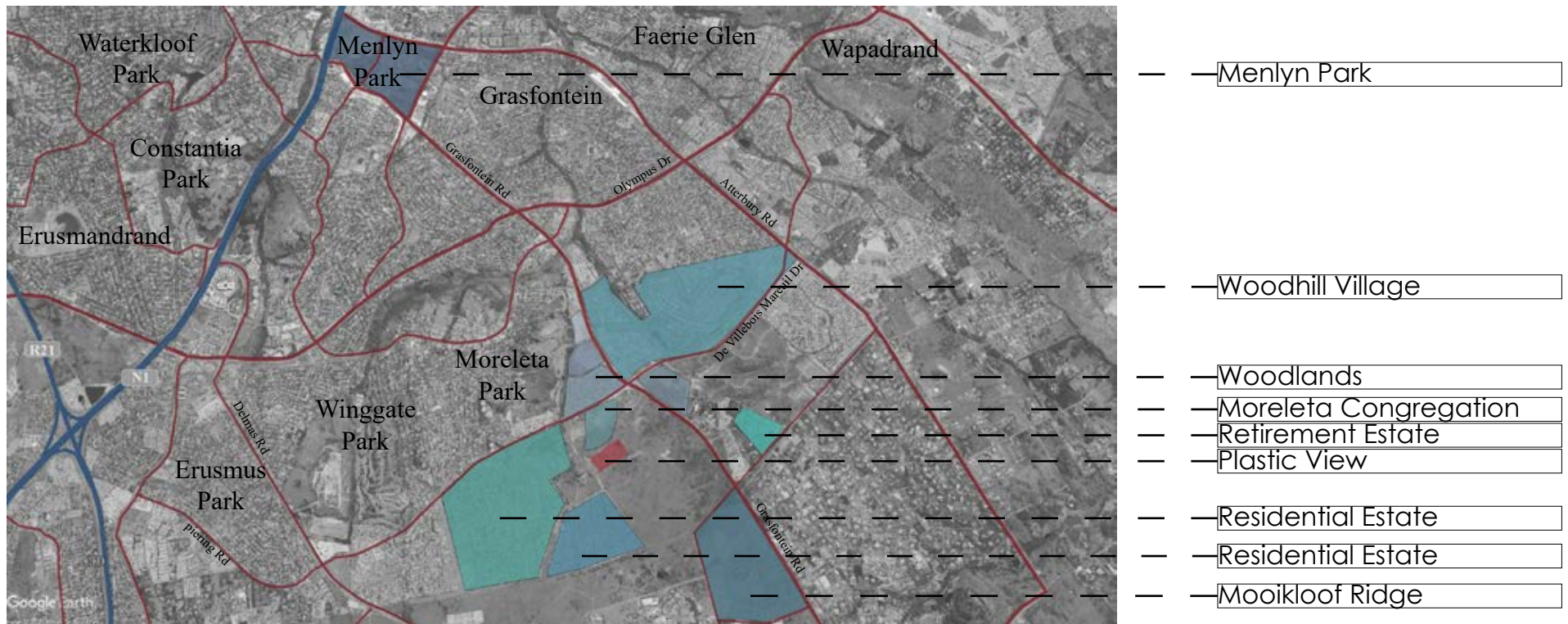


Figure 13: Contextualizing Woodlane Village in Pretoria-east (Author 2020)

### 3.1. Context Study and Urban Analysis

The following brief study of the Woodlane Village 'informal' settlement aims to understand the City of Tshwane's municipality's stance with regards to the larger challenges of urban migration and springing up of 'informal' settlements. The settlement in focus is found located in the city's post-apartheid region in Pretoria-East.

#### Macro Context Analysis

##### Figure 6: Population Density- 2016. Honors ISF group (2020)

Woodlane Village is situated in the eastern suburbs of the city, an area relatively far from further east of the Central Business District (CBD), but still comparatively distant from the previous formal Townships. A considerable increment of population has occurred since 1996, with the highest density noticed in the CBD, and areas of black populations (Honors ISF group 2020). The map shows the prevalence of economic barriers, such as sizes of land parcels and different historic residential zones (Honors ISF group 2020).

##### Figure 7: Demographics- 2016. Honors ISF group (2020)

Under the Natives Land Act of 1913, the Apartheid's regime, town planners implemented an unfair urban disproportionate planning system. This act has had an immense impact on the morphology of the South African urban areas (Newton and Shuemans 2013). The map showing the demographic situation in 2016, shows how the city's fabric has not changed, but has rather continued on the same morphological trajectory of the 1990's (Honors studio 2019).

##### Figure 8: Economic Density- 2016. Honors ISF group (2020)

The map shows that the majority with lower income brackets still reside far from the centres of economic activity, reinforcing the socio-economic imbalances, contributing to the emergence of 'informal' settlements.

##### 38 Figure 9: Migrant City

The problem in need of redress is not an informal resolution. It comes as a symptom of a broader, more complicated question that is continually caught in spatial justice. The problem is spatial inequality, and the informal settlement poses itself as a desperate alternative to those most vulnerable through the maintenance of the oppressive urban footprint of the legacy of economic disproportions (Honors ISF group 2020). Presented here, is figures illustrating the average cost of mini bus trip commute in the area of focus.

##### Figure 10: Transport Routes and Basic Facilities.

This map shows the rough estimates of how far the community of Woodlane Village travel to places which offer basic amenities. The only accessible public hospitals are Mamelodi Hospital and Steve Biko Hospitals, with a rough estimate of 30 minutes' drive away from the settlement (Honors studio 2019). Marabastad, a place where stock for spaza-shop runners is bought is situated about 33 minutes away drive. And lastly, for those who work in construction, it takes three hours to walk to work.

##### Figure 11: City of Tshwane Spatial Planning: 1990 till 2018 1990. Honors ISF group (2020)

European urban patterns for European use have been superimposed over colonised regions. During the 1950's, an increase in Pretoria's black population led to changes in spatial planning. (L. 2000) Segregationist legislation, such as the Land Acts of 1913 and 1936, confined black citizens to 13 percent of the overall land surface of the city, where their political rights were limited. With affluent regions similar to the central business district and neighbouring parts of the working class near to peripheral industrial areas (Honors studio

2020).

The Urban Areas Act of 1923 and 1945 took the black community closer to the city's homeland districts (L, 200). To compel residents to rely on public rail and other long-duration modes of transport to obtain access to employment opportunities. As evident in the locations surrounding Tshwane today, the influence of which is still there (Honors ISF group 2020).

### **Figure 12: Spatial Planning- 2018. Honors group (2020)**

Informal communities such as Woodlane Village have begun to emerge on land parcels within inner urban areas. Urban-migrants, homeless people and people from nearby townships, are now granted liberty to move into the urban zones, closer to educational and employment opportunities. From previous discriminatory urban planning, this is regarded as latent effect (Honors ISF group). The focus on public transport and granular planning from Tshwane's Regional Strategic Growth System (Makgata) reveals nodes linked by routes with potential plans to extend. Growing the city with the long-term objective of geographical, economic and ecological change in mind in 2030 for Tshwane (Makgata).

### **Meso Context Analysis**

Woodlane Village is situated between affluent suburban estates in Pretoria East, and these adjacent neighbourhoods remain strongly contested. This challenges what human dominant 'hip relationships to land, property, and heritage' could be (Salat, 2011).

### **Micro Context Analysis**

New projects such as gated communities seek to perpetuate isolation and spatial injustice, away from the current urban footprint. In an urban setting, there is a reciprocal reliance between each income bracket on each other, but not enough

39 allowance is made to plan for a number of different lands uses or suburban construction for a broader spectrum of income classes in the region (Honors studio 2019).

### **3.1.1. Contextual Spectacle**

The dissertation focuses on Woodlane Village (Plastic-View), a settlement situated in the east of Pretoria in Moreleta Park. Woodlane Village is positioned at a previously vacant land that sits next to the Dutch Reformed Church in Moreleta Park, opposite the Woodlands Boulevard shopping mall. This settlement, though physically and serviceably marginalized from its surroundings, it is also at close proximity to Parkview shopping Centre and Pretoria East Hospital.

#### **3.1.1.1. The History of Woodlane Village:**

The nature of the history of Woodlane village is one of an unstable and contested kind. The organic growth of Woodlane Village evidently dates back to the year 2001, this continued organically till the year 2009. Upon the initial municipal unapproved and unregulated occupation of the open space, the settlement-dwellers primarily sought shelter from the vegetation found on site at that time. There was a constant fear of eviction, and therefore the settled community refrained from using any physical materials which would draw the attention of the surrounding communities and the local police force. The surrounding gated-estates have so long been under the pressure of an ongoing decrease in property-value market of their estates. This in turn has since aroused multidimensional conflict of interests amongst the affluent communities surrounding the underprivileged community of Woodlane Village.

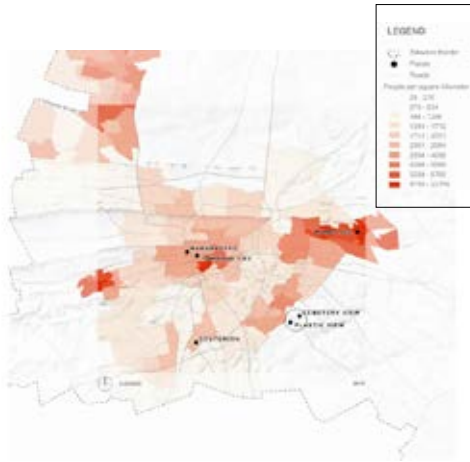


Figure 14: Population Density- 2016. Honors ISF group (2020)

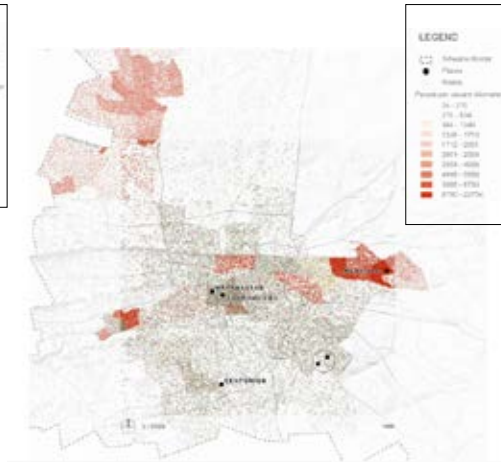


Figure 15: Demographics- 2016. Honors ISF group (2020)

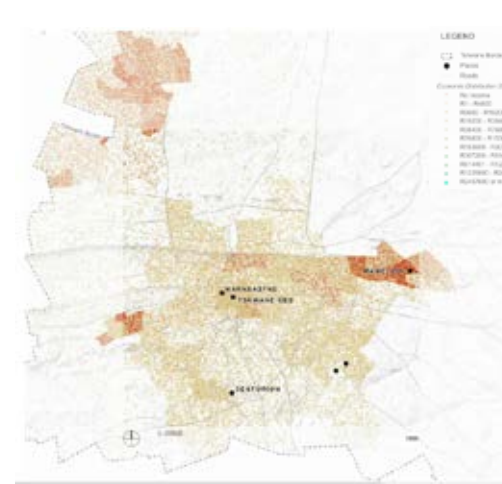


Figure 16: Economic Density- 2016. Honors ISF group (2020)



Figure 17: Demographics- 2016. Honors ISF group (2020)



Figure 18: Migrant City. Honors ISF group(2020)



Figure 19: Transport Routes and Basic Facilities. Honors ISF group(2020)



Figure 20: City of Tshwane Spatial Planning: 1990 till 2018 1990. Honors ISF group (2020)

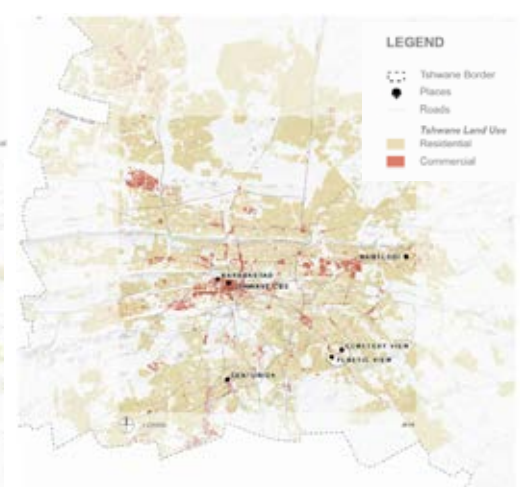


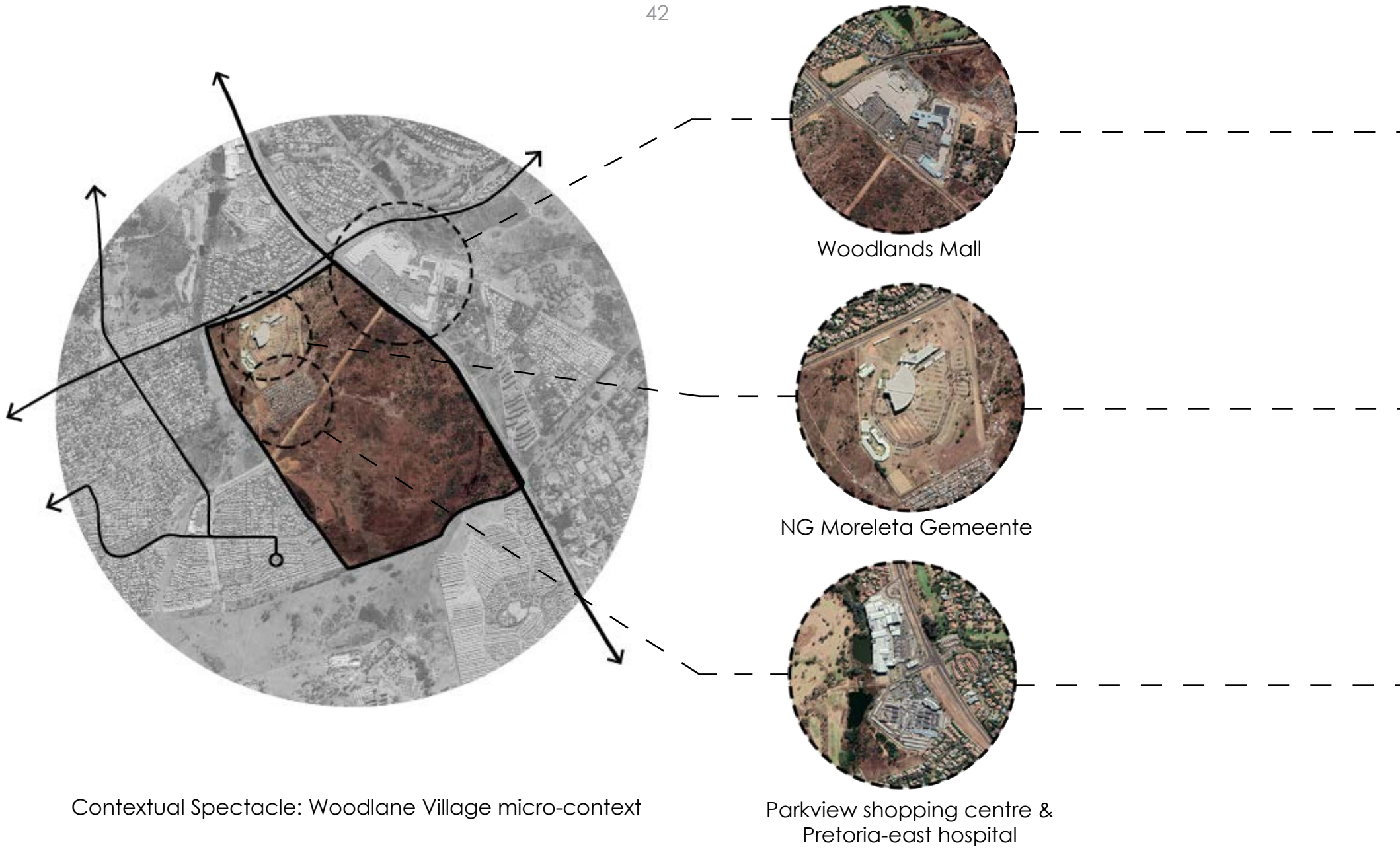
Figure 21: Spatial Planning- 2018. Honors group (2020)

Map data was obtained from Geographic Information System (GIS) Service and Tshwane Maps by the Honors ISF group (2020)





Figure 22: Situating Woodlane Village in Moreletapark



Contextual Spectacle: Woodlane Village micro-context

Parkview shopping centre & Pretoria-east hospital

Figure 23: Contextual Spectacle- Proximity to Amenities. Maps obtained from Google-earth. Author (2020)



Figure 23.1 - Woodlands Mall



Figure 23.2: Associated Open Public Space



Figure 23.4: NG Moreleta Gemeente



Figure 23.5: Woodlane Village



Figure 23.6: Open Public Space

The 'formal' establishment of Woodlane Village was through a local Non-Profit Organization called Tswelopele Step by Step meaning "moving forward step by step". This NPO was founded by a married couple named Colin and Denise Dredge in 2003. The couple recognized the initial settled community living in inhumane conditions, exposed to environmental threats in the then vacant land (Dredge 2013:2), and decided to lend them a helping hand.

The resources and support from Tswelopele fuelled the growth and progression of the settlement, which all then led to the temporary establishment of the organic community from 2005. It is reported that before 2009, Woodlane Village had no community, nor protective structure of any sort, and consequently unlawful acts of violence infringed on the community. The community was then re-arranged into a contained spatially-structured community. It was then that the name Plastic View- which signified the temporality of the community's stay and the only allowed building material for the physical structure of the dwellings inhabited, was formally changed to Woodlane Village (Dredge 2013:3).

### **3.1.1.2. Legality and Threats of Eviction**

The local municipality threatened to sell the land on which Woodlane Village was established in March 2015- this was to be carried through a public auction. Tswelopele contacted Human Rights advocates to pledge a court case against the auction then planned by government (National 2015). Tswelopele together with the lawyers from the Human Rights gained victory over the case, and the sale of the land was brought to a halt (Mudzuli 2015). This is the reason why Woodlane Village still remains standing today.

44 Regardless of the challenging historical development and threats faced by the community of Woodlane Village, it is the government's responsibility to recognize the settlement in terms of the provision and access to basic services and amenities as instigated by The Bill of Rights, which is said to be the cornerstone of a democratic South Africa. The aim of the Bill of Right is to ensure the preservation and protection of the rights of all the people living in the country. It confirms and encourages the democratic values of human equality, dignity and freedom (The Constitution of South Africa- Chapter 2 1997). In addition to this, the Spatial Planning and Land Use Management (SPLUMA) Act 16 passed by Parliament in 2013 emphasizes three essential components that need to be dealt with concerning the exclusion of communities like Woodlane Village. SPLUMA initiates the upgrading of informal areas and settlement, inclusion of people who were previously marginalized, and lastly, the redressing of past spatial imbalances and exclusions (SPLUMA 2013). The community of Woodlane Village fits this category. And so, this dissertation supports that is the government's mandate to fulfil the rights and initiatives laid out in the Constitution and SPLUMA, by ensuring that all-natural persons, including juristic bodies are equally respected, protected and helped.

### **3.1.1.3. Community Support & Leadership Networks**

Irrespective of the shortfalls by the local government in terms of servicing the marginalized community, Tswelopele remains the greatest support together with other non-governmental organizations managed by the Moreleta Park Congregation. Additionally, the community of Woodlane Village has a strong leadership structure in support of its existence and development. At the forefront of the

support and leadership serving the community, is the Informal Settlement Forum (ISF), a non-governmental organization established in 2018. The ISF acts as a leader, supporter and mediator between the local stakeholders and patronal partners, including varying departments from the local government. Under the ISF, amongst the four partners, is The Pure Hope Foundation, South

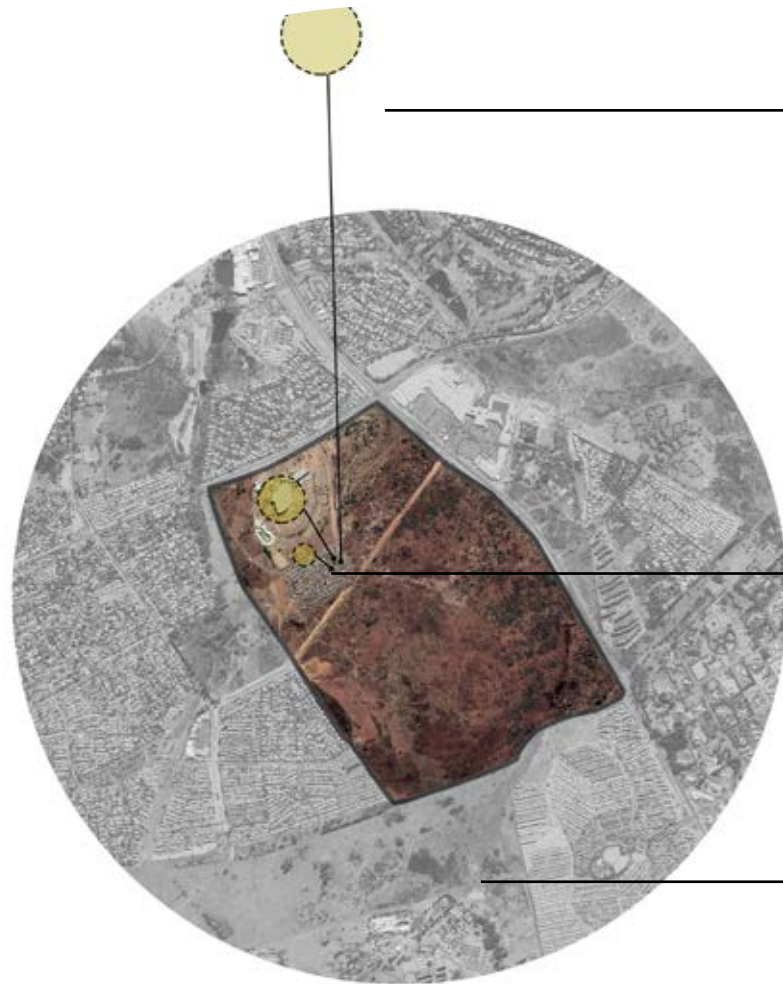


Figure 24.1 - SOUTH AFRICA CARES FOR LIFE NPO (SA Cares for Life). Google (2020)



Figure 24.2- - Pure Hope Foundation. Google (2020)



Figure 24.3 - The LIFT Community Woodlands Village Clinic. Google (2020)

Figure 24: Instrumental Non-Profit Organizations in Woodlane Village

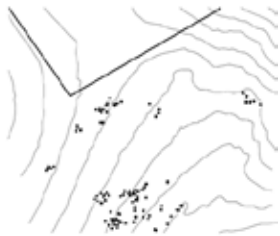


Figure 25.1: 2008 Spatial Arrangement

The settlement was occupied in an organic manner, with people scattered around



Figure 25.2: 2017 Spatial Arrangement

With aid from the Tswelopele foundstion, the settlement was spatially organized and became a formally recognized human inhabited piece or land

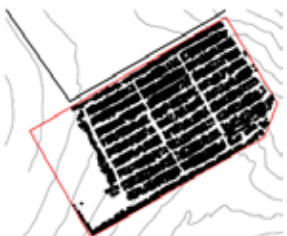


Figure 25.3: 2020 Spatial Arrangement

The settlement received more residents and eventually reached its expansion limit.

Figure 25: Woodlane Village Spatial Arrangement Evolution Adapted from Honors ISF group (2020)

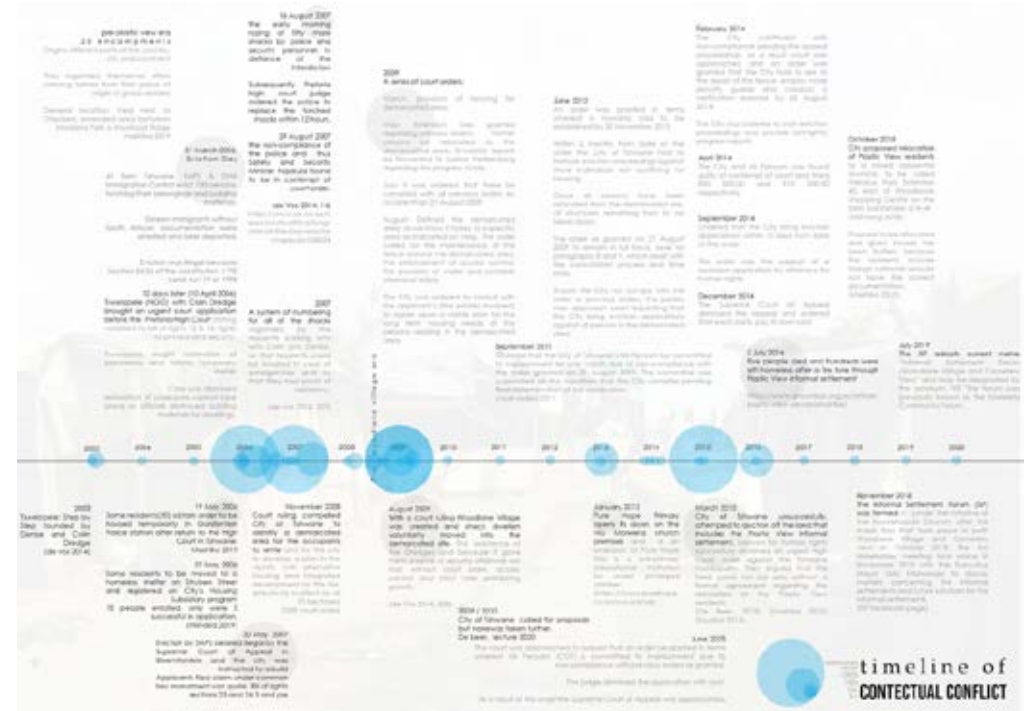


Figure 26: Contextual Conflict Timeline (Simenon 2020)



Figure 26.1- 2003



Figure 26.2- 2008



Figure 26.2- 2013



Figure 26.4- 2020

Life events characterizing the living conditions in Woodlane Village

Africa Cares for Life (SA Cares for Life) and The LIFT Community- the three most instrumental Non-Profit Organization initiatives with direct relationship to the community of Woodlane Village, and the leadership structure is made up of a chairperson and street representatives. This structure is directly managed by the group stakeholder from one of the affluent estates surrounding Woodlane Village- Woodhill Estate.

#### **3.1.1.4. Non-Profit Organizations & Leadership engaged with Woodlane Village**

Instrumental Learning Support Programs initiated to empower the community with lifelong learning include:

- **South Africa Cares for Life- A non-profit Organization** established 25 years ago with the aim of serving squatter camps across all nationalities. **The NPO focuses on:**
  - Specialized Care Programmes aimed as caring for children and women
  - Intervention Programmes aimed at protecting the rights of children
  - Lastly, Prevention Programs aimed at maintaining families
- **The Pure Hope Foundation- A non-profit Foundation** managed by the Moreletapark Gameente, a large church neighbouring the settlement. The foundation is rooted in the Christian faith, and is established with the primary goal of reaching out and ministering to the children. **The Programmes include:**
  - A pre-primary and primary school
  - Skills and development training programmes for the community at large
- **The LIFT Community Development-** A non-profit Organization established in 2016 to promote human dignity by teaching basic life skills, assisting people to gain access to health and food security, and creating employment by providing

47 practical support which allows disadvantaged individuals to establish promising futures for themselves (LIFT website). The project is run in a clinic accommodated in a shipping container which sits on the grounds of the Moreletapark Gammente adjacent to the settlement. The University of Pretoria's medical faculty partnered with the organization to provide free healthcare services to the community. **The projects include (LIFT website):**

- Art-LIFT
- Domestic worker training
- Support group
- Street Medicine
- Veggies for Life

#### **3.1.1.5. Community skills and learning support within Woodlane Village**

Specific to the settlement, the support and resources provided by Tswelopele, and the mentioned NPOs include the primary school founded by the Pure Hope Foundation on the Moreleta Park Congregation grounds. This school not only provides education to the children of the settlement at pre-primary to primary level, but also operates a feeding scheme as well as skills and development training programmes that help and enable community members in creating dignified livelihoods. SA Cares has several operational initiatives that include an on-site Early Childhood development Centre (ECD); Power of the Fathers, and Cluster Cares Workers (CCW).

In an informal interview with the MD of SA Cares, Power of the Father was said to aim at empowering father-figures of the settlement, impartation of knowledge on how to take leadership and protect the young children

and families in the settlement.

The CCW constitutes individuals who look after families, giving emotional and basic necessities to mothers and new born babies. Along with this, each worker of the CCW is trained in several themes which they then go and discuss with the families being cared for through this programme. The children's education, health and safety are also monitored through this system. The men that are part of Power of the Father initiative are also part of the Cluster Care Workers, and the fact that they reside in the settlement, helps with the sourcing and distribution of important information within the settlement (SA Cares MD 2019).

The Early Childhood Development Centre (ECD), initiated by SA Cares for Life, has a teacher training programme where identified women from the settlement were hand-picked to receive training in ECD (SA Cares MD 2020). Many of them had no prospects of finding jobs, yet still with a passion to make a difference in their own community (SA Cares). It is reported that in the first year of operation, no salaries were awarded to the then newly trained ECD employees, however the individuals remained enthusiastic about their then newly found employment opportunity (SA Cares MD). This ECD is situated within the settlement, but because no permanent structures can be erected because of land contestation issues, the ECD is hosted under a tent structure that is deployed by the employees on a daily basis for the operation of the ECD. Like the Pure Hope School, a feeding scheme provided is primarily for the toddlers, however the employees also benefit from the scheme too on a daily basis.

Lastly, the Moreleta Park Congregation through The Pure Hope Foundation is also instrumental in the dissemination of knowledge and skills to the youth of the community. This foundation provides access to non-formal education and vocational training programs to the marginalized community.

48 The training programs consist of volunteers from the surrounding estates who are experts in the specific skills and knowledge willing to assemble with the aim of sharing the knowledge with the community of Woodlane Village.

### **3.2. Summary and Conclusion**

(Crocker 2016) recognized the Moreleta Park Congregation site as a place of reconciliation based on the fact that it hosted or hosts the Pure Hope Foundation and skills development programmes. Thus, playing a significant role in the education and skills development of the settlement's community. To add to this observation and supposition, the dissertation views the very site of Woodlane Village, as also being a site of community-cohesiveness. This is because the existence of the settlement has prompted an assemblage of individuals of different backgrounds and social standing to intellectually and physically cohere with the aim of coming up with solutions to help the community in need. This observation is seen within the leadership in and around the settlement.

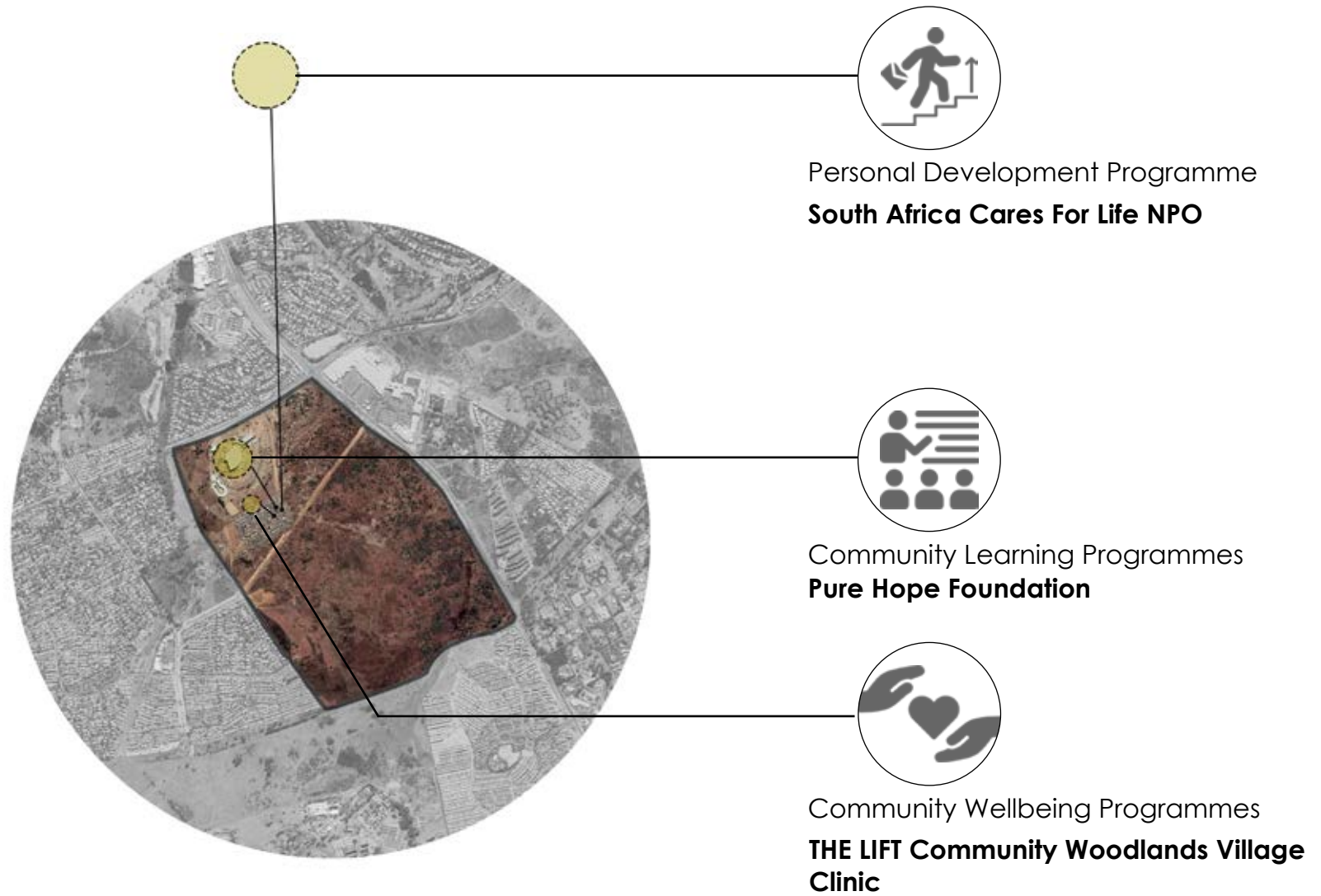
Therefore, as a result of the aforementioned educational and skills support received by Woodlane Village, a tightly-knit and expanding leadership structure that aims at reaching out and helping the community to create dignified livelihood is observed. Additionally, and probably most importantly, is the recent event of Covid-19, which has revealed the injustice of our social and economic systems. However, the leadership and patronal structures in support of the Woodlane Village community, have been faithful in being instrumental in assuring that basic knowledge and resources somehow reach the marginalized community.



## CURRENT EDUCATIONAL SUPPORT (PROGRAMMES) FOR THE COMMUNITY



Figure 27: Current Educational Support in Woodlane Village (Author 2020)



**Figure 28:** Non-profit organizations and Community learning Programmes presented in Woodlane Village. (Author 2020)

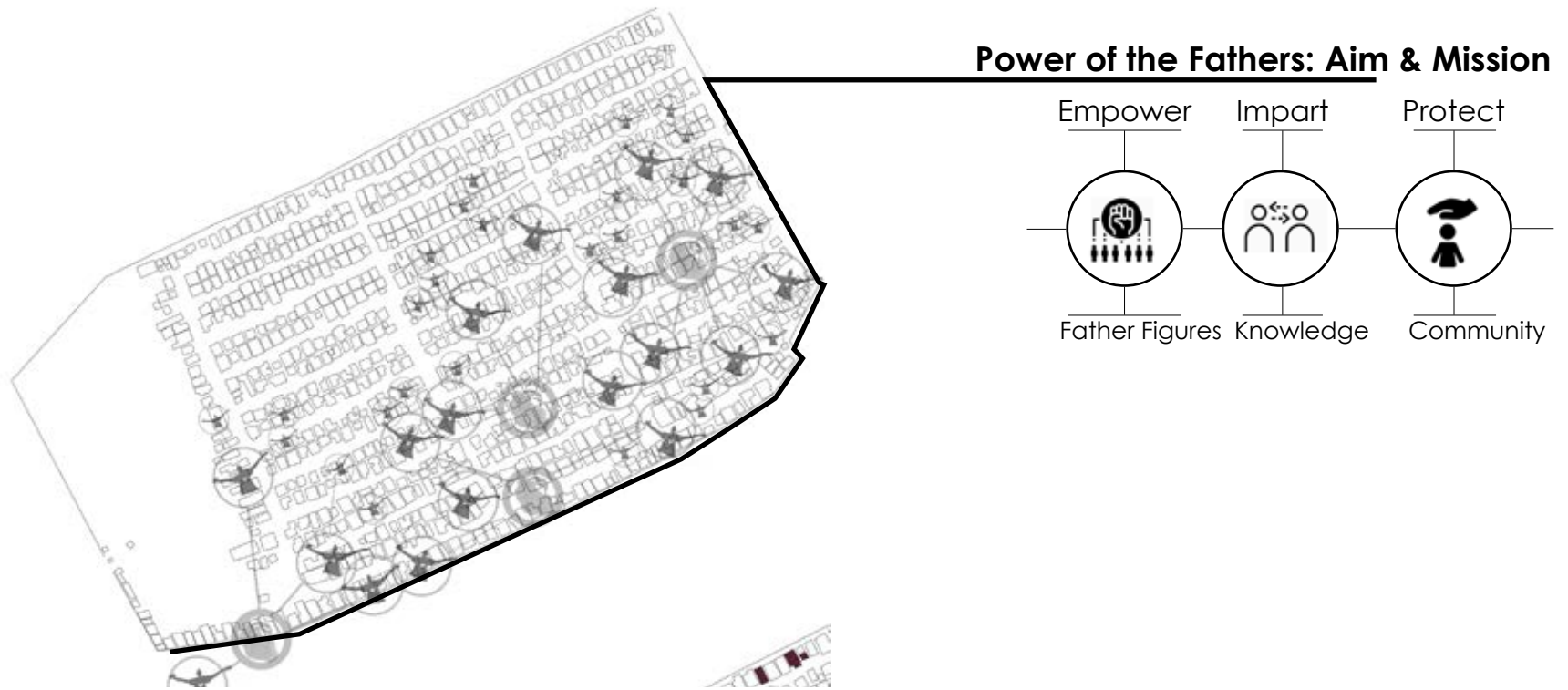
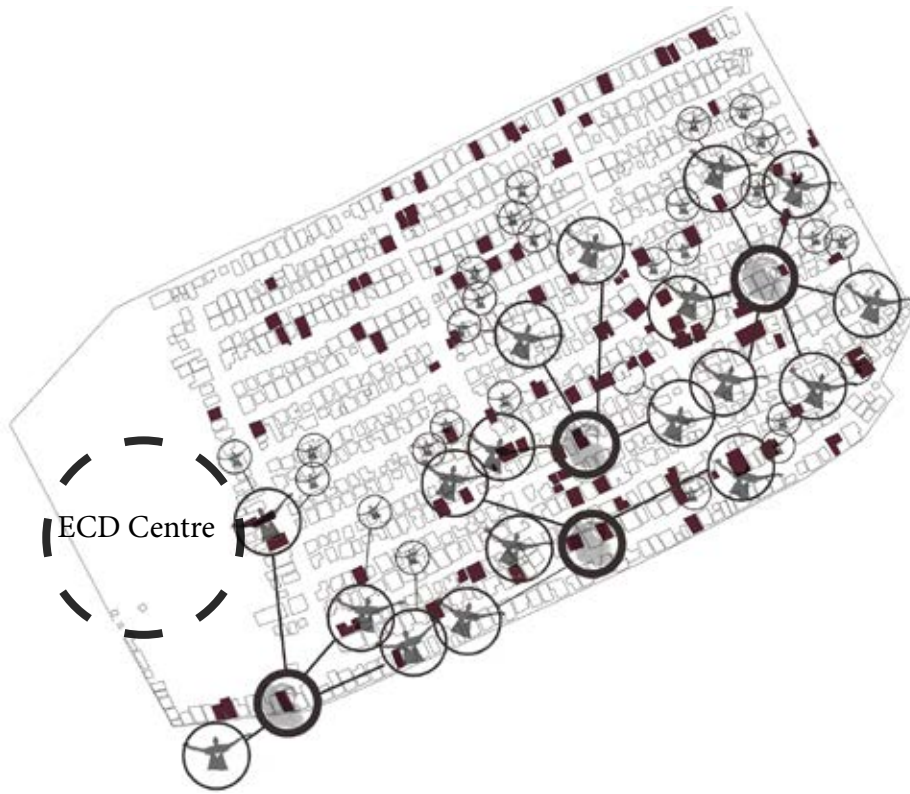
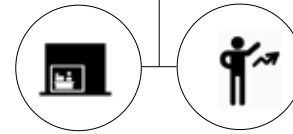


Figure 29: Power of the Fathers initiative. Adapted by Author (2020) from Honors ISF group (2020)

### Power of the Fathers



Community Influence = An Illustration of Networks of Influence  
Through locating Spaza shops & Homes of possible Street Leaders, a Network of influence is Observed



Entrepreneurship Leadership

Therefore: Spaza-Shops owners = Key Role players in the community



Places of business are places where ideas are shared and information is distributed



Community Leaders are seen as carriers of important information in the community

Figure 29.1: Power of the Fathers' Sphere of Influence within Woodlane Village. Adapted by Author (2020) from Honors ISF group (2020)



Figure 30.1: EDC Tent-down



Figure 30.2: EDC Tents, one deflated for pack-up

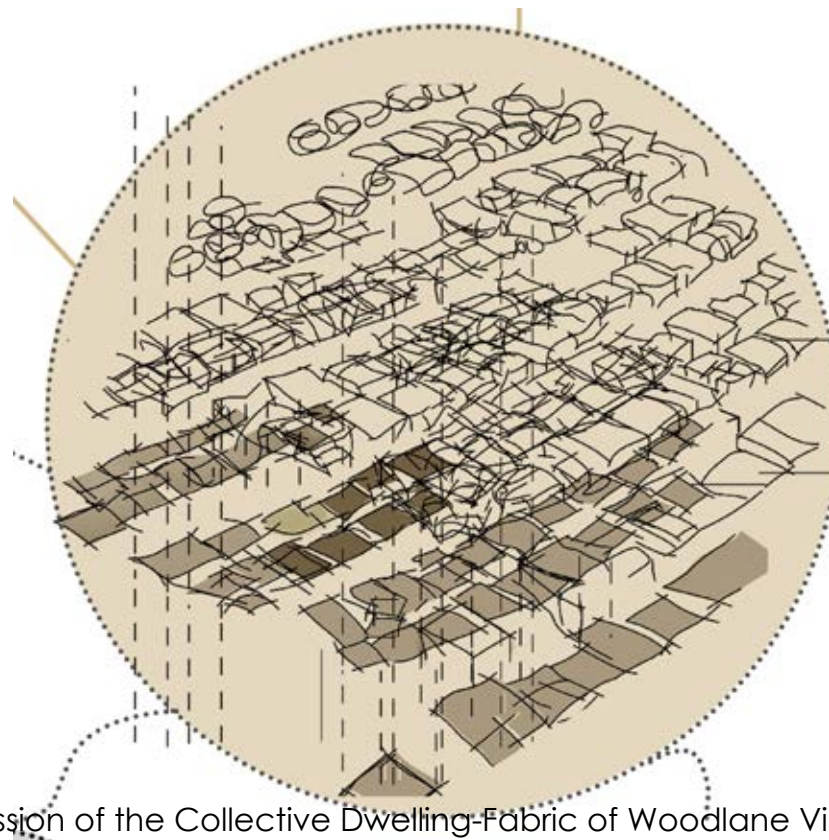


Figure 30.3: EDC workers & the MD of SA Cares

Figure 30: Early Childhood Development (ECD) Centre in Woodlane Village. Photos by Author (2020)

Both children, youth and adults remain beneficiaries of basic educational, humanitarian and vocational training initiatives offered by those who have the empathy and means to share with those that are without (SA Cares MD 2020).

The action taken by the assisting organizations satisfies one of the three listed essential components of the Bill of Rights and SPLUMA, namely: the inclusion of previously marginalized groups. The community is being considered as being important amongst the communities and in the urban fabric in which it is embedded. However, in terms of the plans for an upgrade and restoration of the spatial imbalances- nothing is currently being done.



*Somewhere in this chaos...lives a person, like you and I, with ample human potential...*

*a person with ample knowledge and skill to share, and the ability to improve and learn*

Figure 31: Impression of the Collective Dwelling-Fabric of Woodlane Village (Author 2020)

## **CHAPTER 4**

### **4. ARGUMENT**

54

- 4.1. Research and mapping
  - 4.1.1. Elements of Spatial Transformation
  - 4.1.2. Transport Oriented Development (TOD)
- 4.2. Urban Conclusion
- 4.3. Urban Intent
- 4.4. Urban Theoretical Informants
- 4.5. Case Study
- 4.6. Urban Development Theories
- 4.7. Theoretical Overview
- 4.8. Urban Conceptual Approach
- 4.8. Material informants
  - 4.8.1. Material Approach and Informants
- 4.9. Urban Vision

## 4. ARGUMENT

### 4.1. Research and Mapping

To gain more contextual understanding on the contested site in focus, the initial question concerns the spatial planning and land use of Moreletapark. This focus is supported by the Spatial Planning and Land Use Management (SPLUMA) Act No. 16 of 2013 (SPLUMA 2013). This act calls for an examination of the site in terms of spatial justice, sustainability and resilience- concepts rooted in spatiality (Barclay & Nel 2016). SPLUMA principles in application call for a look into urban settlement patterns, and how they give rise to incongruent spatial and social patterns within the complex urban environment of Moreletapark.

#### 4.1.1. Elements of Spatial Transformation:

Spatial Planning and Land Use Management (SPLUMA):

According to these principles, new developments ought to adhere to the following guidelines:

- The integration of transport and mobility
- Integrated sustainable human settlements
- Integrated infrastructure planning
- Inclusive economic development
- Efficient land governance and management
- Empowered active communities
- Effective urban governance

#### 4.1.2. Transport Orientated Development (TOD) (Treasury, 2017)

Transit-Oriented Development (TOD), by definition, is a form of residential development that involves a combination of housing, office, retail and/or other facilities built into a walkable neighbourhood, situated within 800 meters of quality public transport.

#### 55 TOD- Conceptual Principles include:

Neighbourhoods which encourage walking by:

- Prioritizing networks for non-motorized transport
- Establishing dense street networks and pathways
- Situating new development close to efficient public transport

In the case of Moreletapark area, Woodlane Village is not defined by the above spatial principles, as it is seen in its urban fabric. The area excludes the community of Woodlane Village from areas of opportunity- both systematically and physically. This observation is supported by the notion of spatial legacy concerning spatial justice, which according to (Soja 2010), entails an equitable spatial distribution of socially valued resources and opportunities needed by people. The lack thereof can incapacitate citizens from being active citizens. Soja (2009) asserts that the space where people live, can either have negative or positive implications in everything they do.

The examination of the chosen site is deemed crucial in terms of understanding the development principles and spatial patterns within which Woodlane Village is founded. The following figures serve as illustrations of the shortcomings of Moreletapark's urban fabric to accommodate Woodlane Village as part of it.

#### **The figures are as follows:**

- Figure 26: Illustration of location, size, and density of the 'informal' settlements in Pretoria East, mapped and illustrated by the UP Arch M(Prof) research group of 2016.
- Figure 27: Illustrates the basic amenities found within 2km and 4km from the settlement, illustrated by Honors ISF group (2020)
- Figure 28: Expected Development in the East of Pretoria illustrated by UP Arch M(Prof) research group of 2016
- Figure 29: Employment Opportunities, illustrated by Honors ISF group (2020)

#### **4.2. Urban Conclusion**

It is evident that Moreletapark lacks transformative qualities that could promote spatial justice, and thus elicits the implementation of SPLUMA and TOD developmental principles.

#### **56 4.3. The Urban Intent**

Woodlane Village has been identified to currently exist as an island amidst other gated communities. The proposed framework is an adaptation of the 2016 (ISF) MProf Informal Settlement Forum's urban framework proposal that was based on StudioMAS's 2008 urban development proposal. The (MProf 2016) group proposed basic amenities for their urban framework, which this dissertation also adopts. The idea of creating affordable housing that reflects a sustainable lifestyle was proposed (StudioMAS 2008). In the framework, the development of the precinct was to act as a node that supports a sustainable human settlement and the activities associated with it (StudioMAS 2008). This as a development strategy could encourage spatial transformation as discussed above in the Moreletapark area.

The conceptual urban intention is therefore, to create the first transit oriented (TOD) development that embodies sustainability principles at its core, i.e. built with local waste and resources that have been upcycled without a compromise on structural and aesthetic integrity and quality. The project could also become a pioneering scheme that encourages sustainable lifestyles for the communities, as intended by the StudioMAS's framework.

#### **4.4. Urban Development Theories**



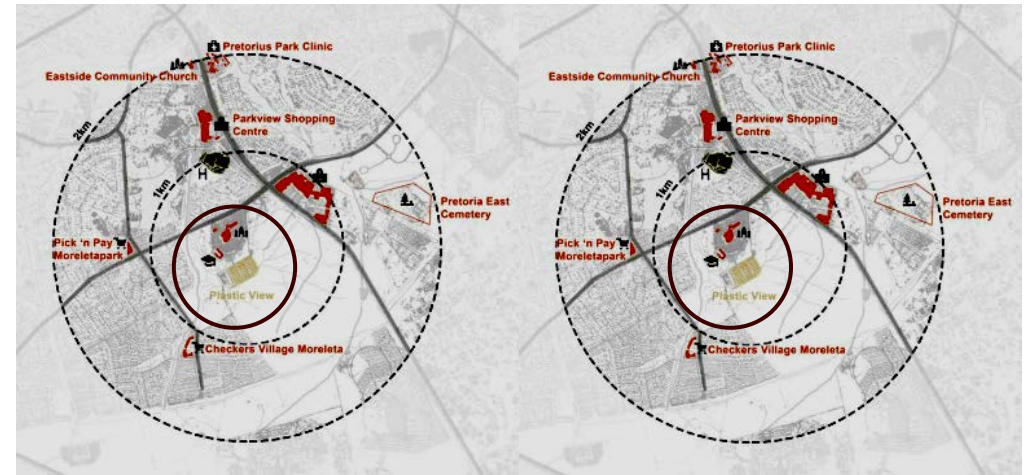
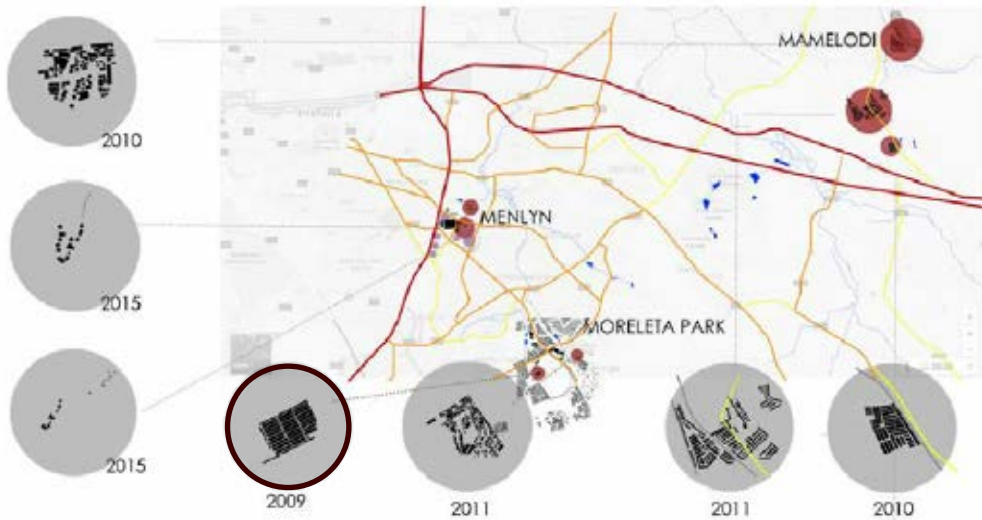


Figure 32: Illustration of location, size, and density of the 'informal' settlements in Pretoria East. UP Arch M(Prof) (2016)

Figure 33: Illustrates the basic amenities found within 2km and 4km from Woodlane Village. Honors ISF group (202)

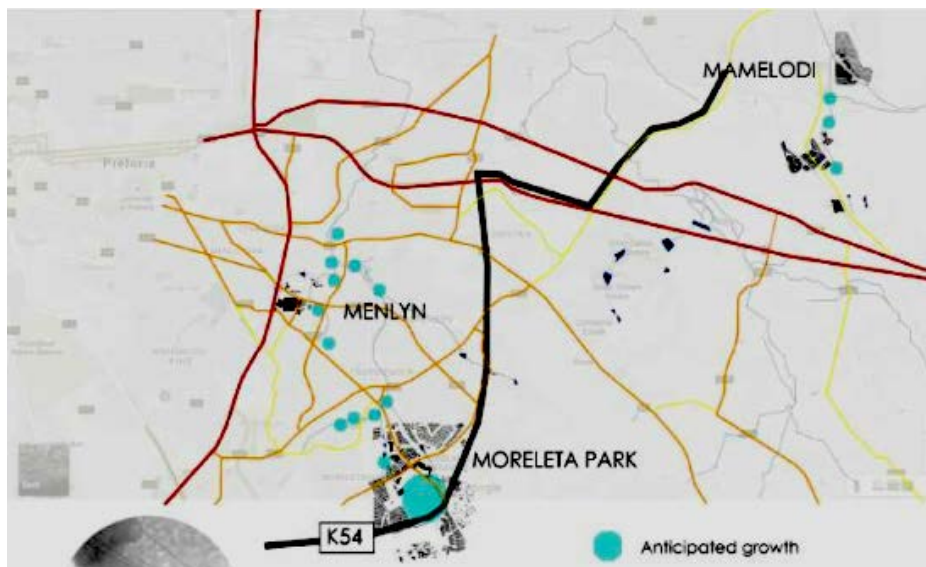


Figure 34: Expected Development in the East of Pretoria illustrated by UP Arch M(Prof) (2016)

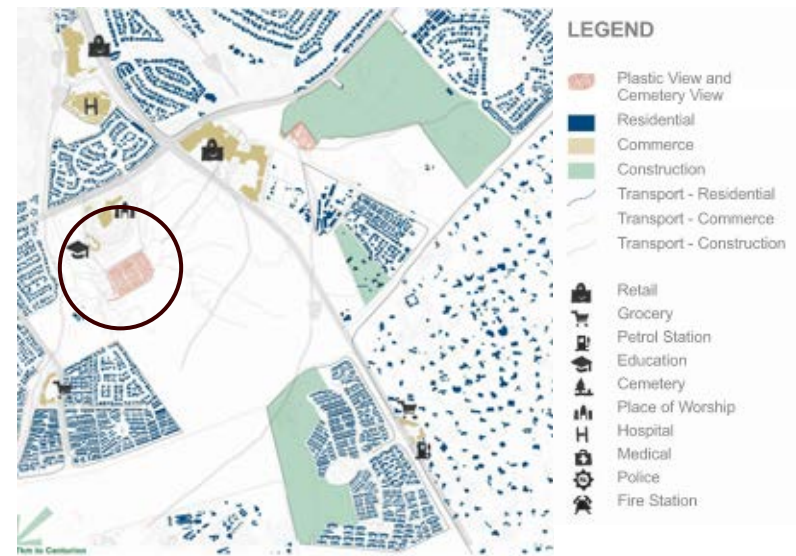


Figure 35: Employment Opportunities, illustrated by Honors ISF group (2020)

*"Imagine a world with no resource scarcity. A world where our resource consumption, production of materials, and buildings do not negatively impact our climate. A world where waste does not exist and economic growth and sustainability are each other's prerequisites – not opposites." Lendager Group, 2020*

According to the Lendager Group, a Denmark-based Architectural company, contemporary urban development's ought to consider sustainability and economy as each other's requirements. The idea is to foster a world where resources are in abundance, as the means to mitigate climate change (Lendager, 2020). This has the potential to foster a world where buildings, material consumption and production are the very means to reversing the consequences of climate change.

### **Why Climate Change Mitigation Strategy**

The beginning half of the twenty-first century was said to have been defined by the search for strategies to enhance and implement sustainable development strategies. This was done in order to establish a close relationship between sustainable development and the economic crisis of that time. The consequence of this surge was the conceptualization of 'green economies', an idea that encouraged the need to merge the economy with the built environment. Through this, an establishment of platforms for environmental stewardship and the need to eradicate the negative effects of climate change started to be put in place (Nhamo, 2011). Today is no different, the country is still experiencing a financial crisis, huge economic gaps are apparent between communities of un-equated social standing. South Africa as a country' that aspires to be a self-sustaining nation, putting the needs of its people first, and managing its ecological resources.

58 As a nation, there is no other option because, South African climate is said to be rapidly increasing. The temperature is expected to rise by more than 4 degrees Celsius over the country's interior by the year 2100 (Chersich & Wright, 2019). This is no good news because the city of Tshwane, like other cities, is still yet to be developed and redeveloped, as the majority of marginalized communities migrate to the city for better livelihood opportunities.

### **Climate Change and the Informal Settlements**

Research studies show that high ambient temperatures are having a significant impact on food availability, mortality rates, and an increment of diseases like malaria (Chersich & Wright 2019). Within the context of this dissertation, the focus is however on the negative impacts of global warming that are said to be harshly experienced by the communities in informal settlements. The implications of rising temperatures are harshly felt by these impoverished communities whose dwellings are constructed with salvaged materials like corrugated sheets, plastic and synthetic materials, as in the case of Woodlane Village. In addition to this, because informal settlements lack adequately designed public infrastructure that can withstand current and future temperatures levels, impoverished communities lack access to inclusive rejuvenate public spaces and facilities.

### **Which Climate Change Strategy is Suitable?**

By definition, climate change mitigation strategy generally entails reductions in human emissions of greenhouse gases.

The Mitigation process involves the reduction of heat-trapping greenhouse gasses (GHG) into the atmosphere by reducing the actions and sources that lead to the creation of these gasses. Research in greenhouse gas emissions in the building construction industry illustrates that “virgin” concrete, brick, cement and steel are found to have the most significant contribution to the embodied greenhouse gas emission (Yan, et al. 2009). It is therefore important that the 21st century-built environment practitioners reconsider construction materials and techniques that do not contribute negatively to the carbon footprint, but rather become better stewards of the environment, by building with the already available resources, and using the existing technologies to re-invent chemical-free upcycled building material.

### **New Developments as Part of the Solution and Not the Problem**

Modern cities are products of construction material abundance and skills development during past centuries. Most of the inhabited buildings seen, inhabited and dilapidated today, signify the era of resource abundance. Lendager (2017) asserts that old and natural materials of our urban fabrics seem to have been replaced by the “new and artificial” at a very high cost of 40% carbon emission. This is an amount that the built environment alone is responsible for in terms of the global carbon emission. Construction materials and buildings can become part of the solution through up cycling and recycling the used materials to their highest value possible (Lendager 2017). This as a climate change mitigation strategy, where the aim is to decrease the need for the production of “virgin” construction materials, by utilizing the locally available materials in varied applications, can reduce (locally and globally) the amount of greenhouse gasses usually produced by the production of conventional building material.

## 59 **How can this be done in architecture and construction?**

### **The Concept of Circular Economy**

Since the dissertation focuses on knowledge and resource exchange between communities of different socio-economic standings, the idea of the circular economy empowers disenfranchised communities through the optimization of limited resources to forge a healthier resource-exchange relationship with other communities. In simple terms, “empowering the poor to have more economic participation”.

This form of building can be set apart from the ordinary construction by building from waste. This implies the usage of strictly up-cycled materials, while not compromising on architectural aesthetics, quality and function. The percentage of carbon emissions produced from the construction materials can be reduced significantly when raw building resources are processed in such a way that they lose as little value as possible. Additionally, this also has the benefit of making the building energy-neutral.

### **The following precedents show how this paradigm shift is already happening both locally and globally.**

Applicable Regenerative Principles are:

- Biophilia- Improves the community’s access to the natural world within the environment by using nature. It is argued that this proposal has health, cultural, and economic benefits for building inhabitants and urban areas, with little disadvantages, both at the building and community level.
- And Circular Economy- A circular economy is a holistic solution to economic growth that is intended to support firms, society and the environment. A circular

economy is regenerative by nature, as opposed to the 'take-make-waste' linear paradigm, which seeks to eventually decouple productivity from the consumption of scarce resources (Bruangart & McDonough 2002).

#### 4.5. Precedent Studies

##### A Precedent showcasing the application of High Quality Upcycle and Recycle of Building Materials:

"From Waste to Architecture", Lendager

Project Year: 2017

Project Location: Danish Architecture Centre

Photographer: Rasmus Hjortshoj- COAST

##### Project Summary

This construction material exhibition project was curated by the Lendager Group in Association with the Danish Architecture Center in 2017 in Copenhagen. This exhibition project illustrates the possibility of a world where "waste does not exist", and sustainability and economic growth are each others' requirements. The exhibition took its starting point from the fact that local and global issues are growing at a very alarming rate. One of the ways that the exhibition illustrated this alarming growth, was to compare the rate to the growth of a village of 10, 000 inhabitants per hour (Lendager 2017).

The relevance of this exhibition is that it challenges built environment practitioners to play a crucial role in being part of the solution by prioritizing sustainable development based on the circular economy building strategy.

##### Conclusion for the Materiality Concept

Inspired by the "Wasteland. From Waste to Architecture". The approach to material ought to consider the sustainability and

60 economic state of the local context which the project is based. This implies the usage of locally available resources and materials. As seen with this material exhibition, through seeking not to continually produce "virgin" building materials, the built environment has great potential to assist in reversing the consequences of climate change, while simultaneously striking a balance between the economy and sustainability, both locally and globally.



Figure 36: Upcycled material exhibition (Lendager 2017)

**The following precedents showcase the application of this materiality concept and accompanied technological techniques.**

##### Local Precedent- Local Material Recycle

Silindokuhle Pre-School: Collectif Saga, Indalo

Location: Port Elizabeth, South Africa

Construction Year: 2015

## Background of the context

Joe Slovo is a township situated in the outer parts of Port Elizabeth. It is one of the informal settlements that were developed rapidly without proper planning for poor black and colored communities during the era of Apartheid. Service delivery is poor in this area, as many other informal settlements in South Africa. Land allocation to families is through the local municipality, with leverage to build as households please, however resources, water and electricity are scarce.

## The Project as result of a partnership between multiple Organizations

This project was a product of the coming together of the following collective of architects and other organizations: Collectif Saga, Love Story, and Indalo. The organizations have one thing in common, which is to act as key supporters for social development and change. The Collectif Saga acts as one of the inspirational collaborations between architects and community, where the architect's mission is not only to create beautiful and functional buildings, but to also share the knowledge of the built and natural environment, and the interactive process with links to the construction of local buildings.

## Doing More with less with the community

The aim of the project was to illustrate how an adequately sized public infrastructure could be achieved through an alternative construction method, with less resources as possible. The resultant product was a spacious, bigger, and more flexible building that offers users better learning and productive experiences. Efficient building techniques were established for the construction of the building. Most of the recycled materials used were either free and salvaged by the community or bought at a very low cost.

## Upcycling of the Locally Available Materials

The Saga and Indalo learnt from what the community built and

61 rebuilt everyday in order to determine which resources were locally available within the surrounding environment. The chosen available resources were corrugated metal sheets, palettes, tries and more. These were transformed into products with a new improved and high quality usage, to construct long-lasting, solid buildings with architecturally significant value for the community.

## Knowledge-Distribution

Simple and repeatable construction processes were also developed in order to be passed down to the community to learn from and use for their own personal developments in Joe Slovo. The architects shared the knowledge of how to use locally available resources to create beautiful, functional and spacious infrastructure. A knowledge that can assist community members as an affordable and quick solution to expanding the 32 sqm concrete block dwellings (RDP) provided by the government, which is mostly not enough as these families mostly entail two to three generations living in one dwelling.

It was a two-way knowledge exchange between professionals and a selected few from the community, individuals who were to then pass the construction knowledge to their fellow community members.



Figure 37: Silindokuhle Pre-School, Joe Slovo

#### 4.6. Theoretical Overview

The above theories and precedents outline a paradigm-shift and cultural redress of urban development and its current practices. The overarching principle is one that instigates the adoption of a circular economy and regenerative strategies that aim to not only do less harm to the environment, but to also add value and substance through urban development. The implementation of the TOD principles in the Woodlane Village precinct will initiate the beginning of the adoption of a regenerative paradigm as common practice in society.

The aforementioned theoretical standing highlights the importance of a walkable neighbourhood that is located near public transit. A development that is based on community-life, including a mixture of housing, retail, office, and basic community facilities. When a development is heterogeneous and has a multimodal system of transportation, it illustrates its ability to optimize its locally available resources, supporting the idea of a circular economy among individuals and making community knowledge and resource-exchange a possibility.

#### 4.7. Urban Conceptual Approach

The conceptual approach regarding the urban development aims to utilize the urban theoretical principles of Salat, Steyn initially applied to the StudioMAS formal framework by the 2016 MProf group, the circular economy and TOD; to illustrate how an urban spatial fabric can be instrumental in facilitating local communities into social, spatial & knowledge-exchange networks within which they are embedded. The idea of facilitation references one of the SPLUMA principles of empowering active communities through spatial transformation.

Therefore, the conceptual vision entails, the facilitation of the community of Woodlane Village into:

- Firstly, the spatial context of Moreletapark:  
Conceptually, this means breaking away from the traditional

62 urban form by switching from an architectural rationale to an ecological and infrastructural urban form that encourages larger spatial flows within the urban precinct to morph into one another.

This in turn will encourage knowledge and resource-centered spaces to be visible to the communities as a fractured spatial-zone that represents years of material-exchange relationship between the communities.

- **Secondly, the social context of Moreletapark**

When the relationship between the ecological and infrastructural urban forms is made apparent, strong ties between individuals, organizations and communities are anticipated to form and consequently enrich the existing material (physical/spiritual) exchanges. This relationship is crucial because it determines whether people are encouraged to participate in the exchanges crucial for community development or not.

- **Thirdly, the knowledge context of Moreletapark**

Social situations are influenced by contextual factors that in turn affect how people view each other, and feel towards one. This can implicate active participation in knowledge construction and distribution within communities of differing backgrounds and realities.

These three aspects serve as the focus points in a vision that is geared towards addressing spatial justice, inclusion, social cohesion and tolerance. In their article, titled "Space as Ritual: contesting the fixed interpretation of space in the African city", Rudolf Van Rensburg and Mary Anne Da Costa outline the principles of what could be conducive to realising spaces that allow for healthy co-existence and resource exchange between multiple heterogeneous groups. To achieve this, a society has to adopt their spatial production culture to one that fosters spatial ability to the previously disenfranchised in order to equip them to take up space and have more control over the space they produce and subsequently inhabit. Van Rensburg states that, space is "a realm of possibility", therefore more dynamic models for spatial production are proposed, which can allow for co-evolution between people and place.

Edward Soja's literature on social justice discusses the meaning of social justice, the causes and the possible remedies for social injustice. Soja (2009) states that changing our thinking about space as merely flat cartographic notions to an active force that influences social life, enables us to address social injustices that have resulted from past socio-political ideologies of segregation and hegemony. Soja (2009) explains that the common causes of social injustice are:

- Locational discrimination, where populations are separated by class and/or race
- Political organization through "redlining investments" and exclusionary zoning
- Poor distribution of resources amongst groups of a single population in one geography

The literature also refers to the principles discussed by Henri Lefebvre on taking back the city and discussions around public space which question the idea of ownership of space, place and spatial resources.

63 As the word justice can be defined as "achieving fairness and equality", the remedies to achieving social justice is about the redistribution of resources, inclusion, prioritizing the disadvantaged and their access to opportunities through spatial planning on a local, urban, national and global scale.

The Regeneration group advocates for the adoption of regenerative strategies within the built environment, in an attempt to realize a paradigm shift from a mechanistic worldview to an ecological one. A mechanistic world view has proven to be socially and environmentally destructive, thus an ecological one that is cyclical, closed-loop and sustainable, would be an ideal alternative. Therefore, an ecological worldview presents principles of dynamism, adaptability and affordability for co-evolution, which can enable the community of Woodlane Village possibilities of spatial abilities.

#### **4.7.1. Urban Vision**

The Urban vision is about making a place that prioritises the cross pollination and collaboration of Woodlane Village with the affluent areas that surrounds it. The urban vision sets out to achieve this by firstly disrupting the physical barriers that separate Woodlane Village from the affluent areas. The second idea is to close the gaps that exist between these settlements to link them in an explicit manner to clearly articulate their spatial relationships. Lastly, a precinct is proposed that is anchored by a pedestrian route, which acts as a social spine that will anchor and tie social spaces representing people from different socio-economic areas. These social relationships have potential to give rise to knowledge and resource exchange that could see the disadvantaged group gain more access to

opportunities for self-empowerment.

Through the implementation of these developmental principles, the proposed urban vision has potential to influence the social system of Woodlane Village for the better, and ensure that the community is afforded more resources by relevant stakeholders.

#### ACCESS & CIRCULATION

##### Vehicular Access Points

The development comprises of vehicular access point through the main arterial road that runs parallel to the pedestrian promenade.

##### Pedestrian Circulation

Limited Site boundaries and Delimited Block sizes enable easy pedestrian movement and circulation

##### Density

Compact, tightly arranged spaces maximize land area and walkability

##### Land Use

Mixed use developments ensure close proximity of amenities and thus easier access

##### Zoning

Zoning is established with the intention of creating an economic hub that can stimulate employment, educational and entrepreneurial opportunities

##### Hierarchy/Scale

Delimit scale of building heights along street edge to maintain activity on street level

#### 64 Density

The area is highly dense to create close knit intimate relationships between spaces and thus people

##### Corridor

The promenade anchors the space and acts as common denominator between individual spaces

##### Axis

The main axis of the site which runs along the promenade, connects the site to neighbouring areas, thus inviting people from those areas into the precinct

##### Ecology

###### Water Bodies

The nearby Stream is to be protected and conserved as per National Environmental Management Agency (NEMA), from human activity and waste

##### Indigenous plants

There are designated areas that the development cannot encroach on in order to protect and conserve the biodiversity that is located there.

##### Recreational Areas

Recreational spaces are delineated to complement and support the dense built areas.

##### Water Management

###### Municipal Water

###### Existing Water Supply

###### New Water Supply

##### Storm water

###### Existing Storm water channel

###### New Storm water channel



Sewer  
Existing Sewer Line  
New Sewer Line

65

#### **4.7.2. Material Approach and Informants**

An upcycle material selection and strategy:

The building culture of Woodlane Village comprises the use of salvaged materials. This will equally serve as informants for the material choice regarding the new development. The material selection therefore include: the salvaged corrugated metal sheets, plastics, paper and synthetic material.

## **CHAPTER 5**

### **5. PROGRAM AND CONCEPTUAL APPROACH**

66

#### 5.1. Main Programme

##### 5.1.1. The Formation of an Assemblage

##### 5.1.2. Programme, Function and User

##### 5.1.3. Programmatic Intention

#### 5.2. Contextual Influence on the Programme

#### 5.3. The Conceptual Formulation

#### 5.4. Programmatic Conclusion

#### 5.5. Architectural Intent

##### 5.5.1. The Client

##### 5.5.2. The Brief

## 5. PROGRAM AND CONCEPTUAL APPROACH

### 5.1. Main Programme

The aim of the program is to give the people of Woodlane Village a platform to re-invent themselves as a community. To provide a platform that reflects a +/- 15 years of knowledge and skill exchange between it and its surrounding neighbours. This will be done through a lifelong learning-centred environment, consisting of collated learning clusters that can accommodate various types of pedagogies and those that fall under the narrow range of learning and teaching. For clusters that cater for all types of pedagogies, there are learning 'commons' and 'outdoors'. And for clusters that are geared towards a narrower range of learning, these are street space, meeting and fixed spaces (Fisher 2013). The interconnections between the elements of these clusters looks at the manner in which they are assembled and the way space adapts from one practice to another- a phenomenon called a complex adaptive assemblage. The term assemblage is concerned with a 'layout' or 'alignment', whereas 'assemblage' suggests a dynamic process and diagrammatic spatiality. According to (Davey, 2010), assemblage theories are a meaningful way of re-thinking theories of 'place' concerning processes of identity formation and becoming.

#### 5.1.1. The formation of an Assemblage

An assemblage is an entity that forms from the interconnectivity and flows between constituent parts. It is also fundamentally, a product of social and spatial interconnections that form clusters in which personalities and meanings develop from the connections between them (Fisher 2013). A learning cluster is not a thing or a collection of things. It is the assembled connections between things (that were at once social and spatial) that is crucial.

#### 5.1.2. Program, Function, User and Programmatic Intention

67 The intention of the programme is to introduce a refreshing perspective on how a desolate community's wellbeing can be facilitated through an opportunity learning hub. The aim is to explore how architectural design and process can assist in mitigating the lack of harmony between the provision of basic learning infrastructure and the community's geographic positioning within an urban context of Pretoria East. Secondly, the intervention aims to illustrate how the urgent need and often transient nature of non-formal learning or lifelong learning in order to provide an education and economic enablement can be provided for a marginalized community of Woodlane Village.

The programme mediates between lifelong learning and vocational processes to create a sustained lifelong learning culture that promotes human development and social activism.

The programmatic intention is to create a platform that suggests a possible future of continuous knowledge, skill and resource exchange amongst individuals of the community of Woodlane Village, and also members of the surrounding communities. In this case active citizenship can be co-created and co-sustained by all citizens of different statuses and background. It is therefore proposed that a Community Learning Hub be a public multi-purpose community facility that aims to bring together individuals from the local communities, to offer a range of basic educational, vocational and basic-resource exchanges.

The program intends to inform the architectural response to re-imagine the thresholds and learning 'territories' as they sit inscribed in Pretoria East, through the inventive use of social spaces, and the

strengthening of the existing partnerships, fostering a culture of continuous learning in Moreleta Park. In turn, the standard of living could be improved and impact the consequential role of lifelong learning in the urban setting.

## 5.2. Contextual Influence on the Programme

The surrounding context is used as an informant in order to access the alienating spatial relationship between the chosen location and its surrounding basic learning facilities, the surrounding community, and the environment. This information was documented via a desktop study, with the aim of understanding where the city supports the notion of lifelong learning.

Pretoria was briefly evaluated as a city that supports lifelong learning, particularly post school learning in its four major economic centres of Tshwane. Figure 9 shows that there are more opportunities for post-schooling within the Central Business District (CBD). Mamelodi proved to have less in comparison to the CBD, while Menlynpark offers a few more opportunities for lifelong learning supporting facilities than Moreletapark.

The following figures ill shows lifelong learning facilities within 2km reach of the Woodlane Village community:

- Figure 10: Well Being and Communities Centers
- Figure 11: Educational Facilities Figure 12: Figure - Tertiary Facilities & Libraries
- Figure 13: Figure - Lifelong Learning Facilities & Transport Nodes
- Figure 14: Facilities in context of Moreletapark: Garsfontein Community Centre
- Figure 15: Learning Facilities in context of Moreleta Park: Glenstatia
- Figure 16: Learning Facilities in context of Moreleta Park: Pure Hope School

68 It was therefore, concluded that Woodlane Village does not have physical access to any of the basic learning facilities. This observation supports the idea that Woodlane Village is in need of an onsite lifelong learning facility, which will serve as a place and space for knowledge and resource exchange.

## 5.3. The Conceptual Formation

The Learning Environment as a Scaffold-Web: User-Centred Approach

- Supports ways in which individuals construct own meanings out of the possessed, gained and distributed knowledge and skills
- Facilitates self-motivated and reflective learning and teaching
- And, lastly facilitates collaboration between individuals

Lifelong learning activities were observed and unstructured interviews were conducted in Woodlane Village by the researcher.

The goal of the design is to focus on ways to grow, encourage and sustain current active learning and resource-exchange networks facilitated by the Pure Hope Foundation skills training programmes, and the knowledge and value upholding programmes run by the South Africa Cares for Life NPO, as identified earlier.



Figure 38: Post-Learning Landscapes in Major Urban Centers Centres (Author 2020)



Figure 39: Wellbeing Facilities and Community Centres in Moreletapark (Author 2020)

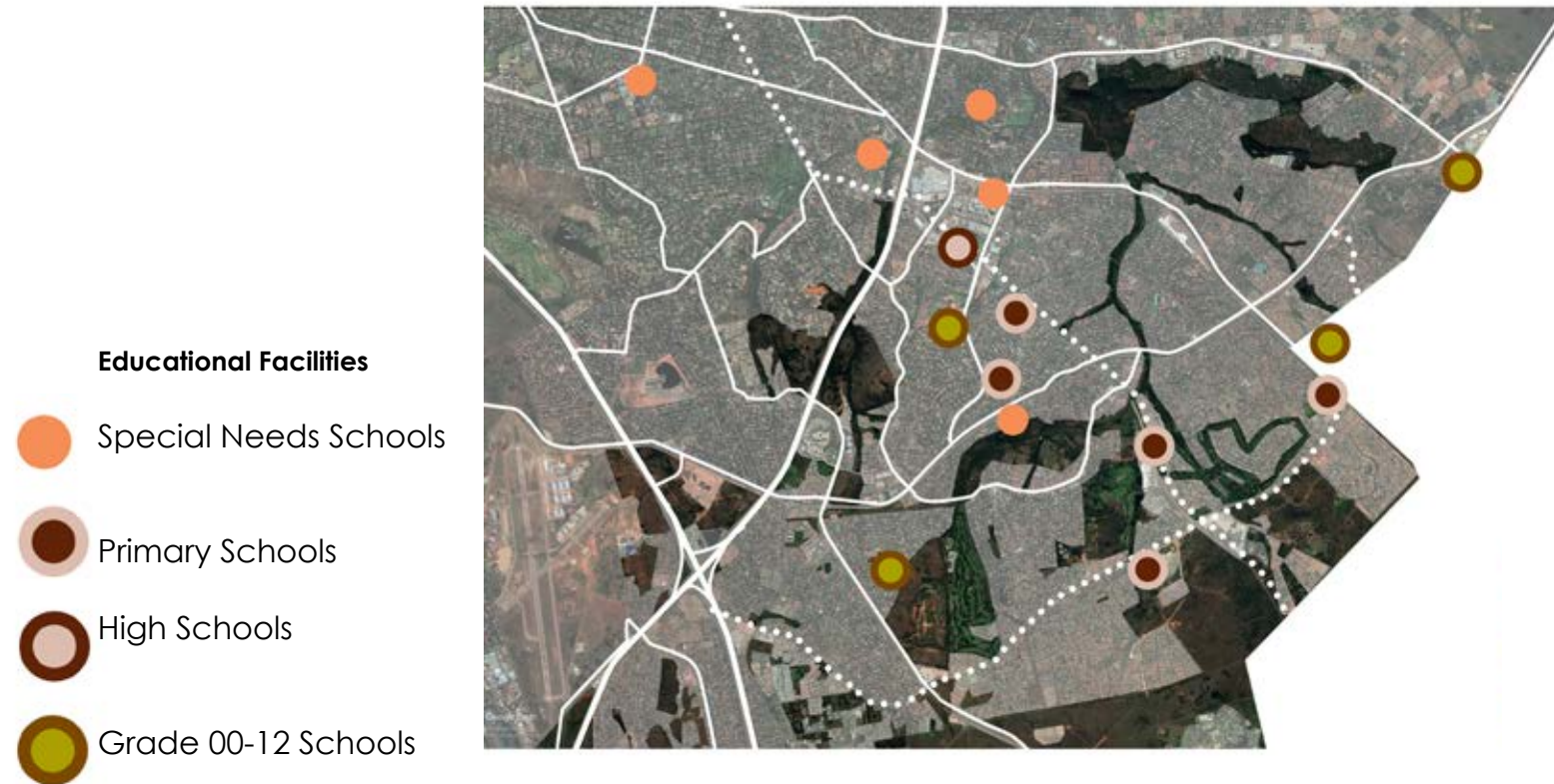


Figure 40: Education facilities in Moreletapark (Author 2020)



Figure 41: Tertiary & Library Facilities in Moreletapark (Author 2020)



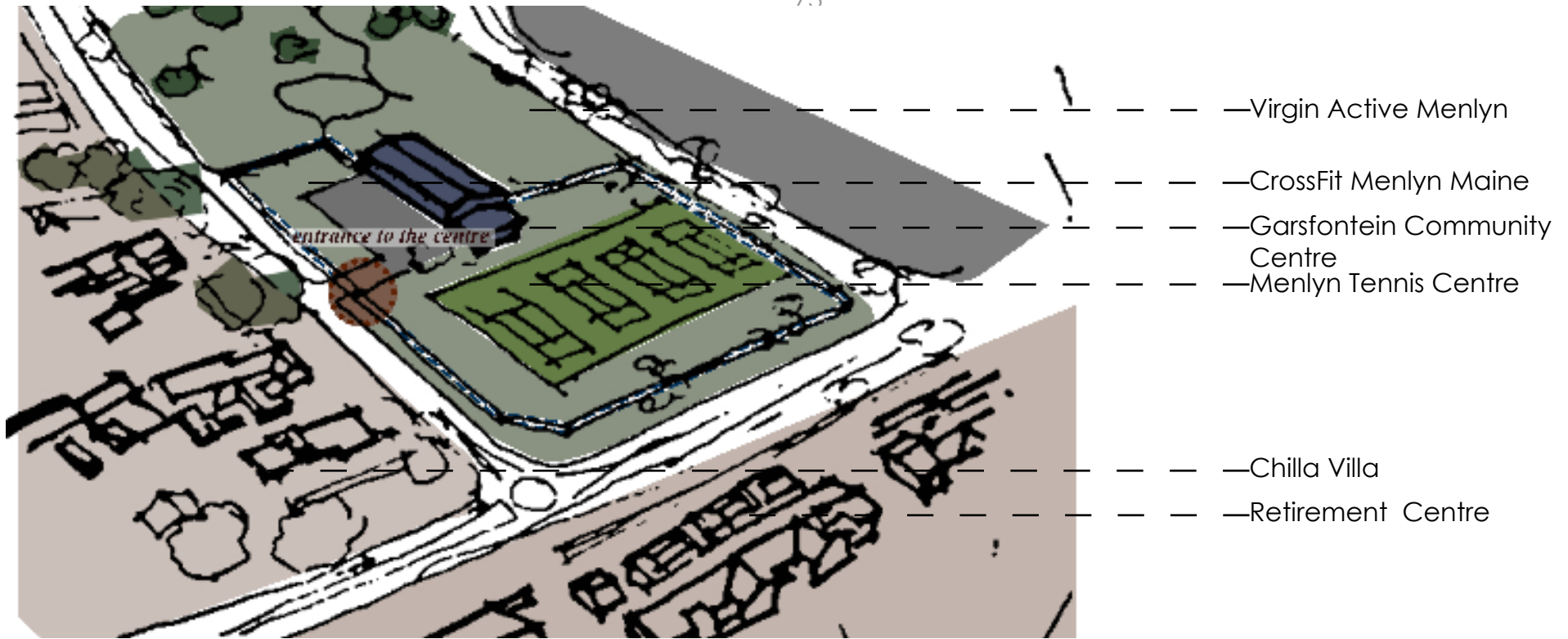


Figure43 - Garsfontein Community Centre (Author 2020)



Basic essential distribution

Creative Programmes

Product Making

Vegetation garden for the homeless

Active Programmes (Google 2020)

Learning Facilities in context of Moreleta Park



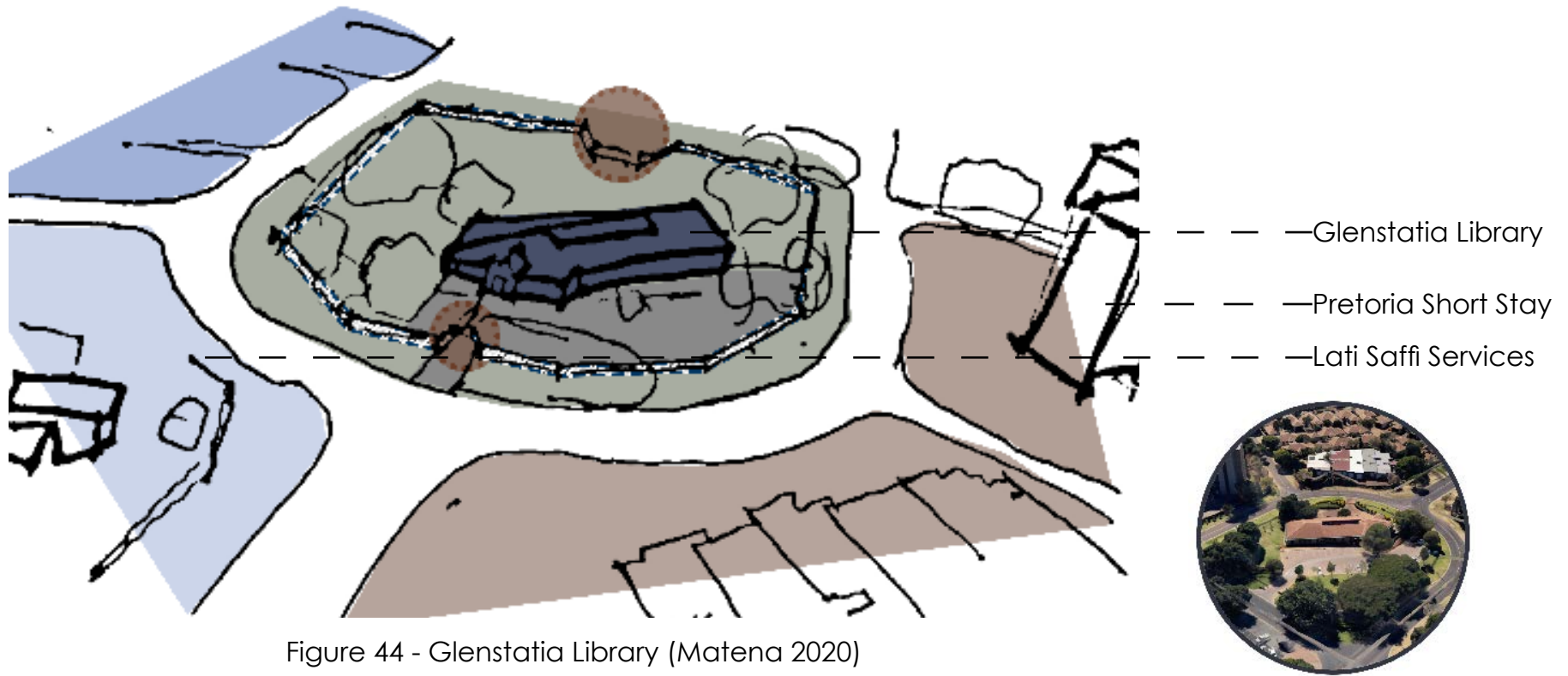


Figure 44 - Glenstatia Library (Matena 2020)



Communal Reading

Environmental Awareness

Creativity Programmes

Market

Active Programmes (Google 2020)

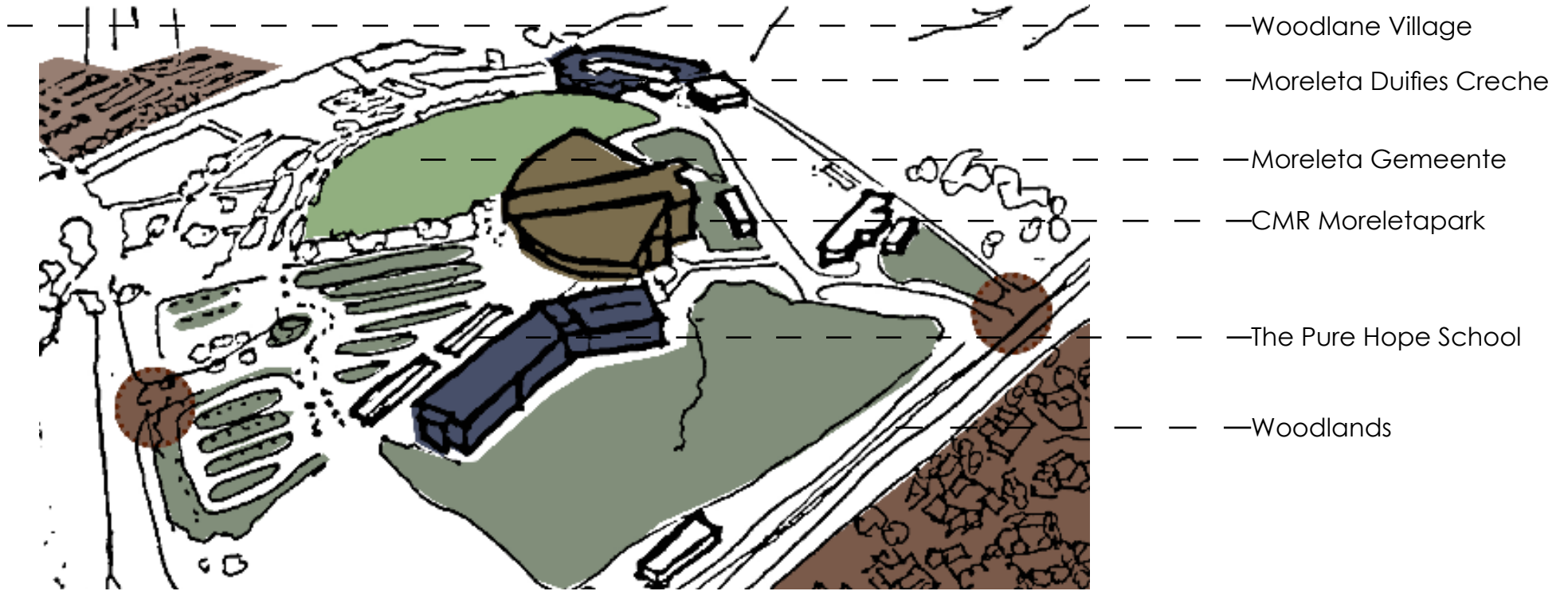


Figure 45 - Pure Hope School (Matena 2020)



Educational Activities



Community Sports



Cooking lessons



Active Learning Programmes (Google 2020)

### **The programmes include:**

- Entrepreneurship
- Skills and vocational training programmes

In addition to the skills and training programmes that mostly supports entrepreneurial ventures that concerns sewing and carpentry, the section discussing the manner in which Woodlane Village is supported by NPOs indicated a strong presence of educational programmes. These entail the training of individuals to be teachers, healthcare workers, and safety and security system for their own local community (SA Cares MD).

The aforementioned indicates active learning and skill exchange among the resource-scarce and resource-rich individuals and communities that can be facilitated and sustained in the community of Moreletapark. The dissertation therefore, proposes a Community Learning Hub (CLH) as a solution that could answer the research question. For this kind of infrastructure has potential to offer a participative and integrative platform at which on-going cycles of learning and resource-exchanges could be sustained and further encouraged.

### **Program**

#### Precedent Studies

This section aims to demonstrate through precedents and examples, the concept of learning environments as socio-spatial assemblage.

The following examples are case studies and precedents illustrating learning environments as socio-spatial assemblage. They demonstrate how architecture can act as a tool in linking pedagogy and space. The following two case studies have been analysed based on five themes which are seen as anchors for the learning environments.

76 The first theme concerns the context of the project, in relation to the learning environment, applicable pedagogies and the government. The second them is educational-thought; the third one, the relevant pedagogical activities; the fourth theme, the main planning and design characteristics; and lastly, the theme of evaluation of weaknesses and strengths of the projects.

### **Programmatic Precedents**

#### 1. Canning Vale High School

Architects:

Year of Construction: Year 2002

Location: Perth, Western Australia

Building Area: 11.34 m<sup>2</sup> per learner, and 1305 m<sup>2</sup> in total

Year groups: Eight to twelve grades

Theme 1: Context, Community and Government

Designed on a model of a 'town centre' school, this learning environment is said to have a shared vision of putting its learners' first. It comprises of blocks of commons forming the entire school and creating an intimate courtyard that forms the 'heart' of the school. The design was a product of a collaboration between community members, who were involved in the rigorous design development process that involved all the key features for the design of the entire school infrastructure.

Theme 2: Educational Thought

The Canning Vale School's philosophy is based on learner-empowerment. Learners are encouraged to critically reflect on the world and environment they live

Type of Learning Setting

meeting space

meeting & discussion space for groups of differing sizes

out-door learning

“backyard learning”= an outdoor room for group gathering or socializing

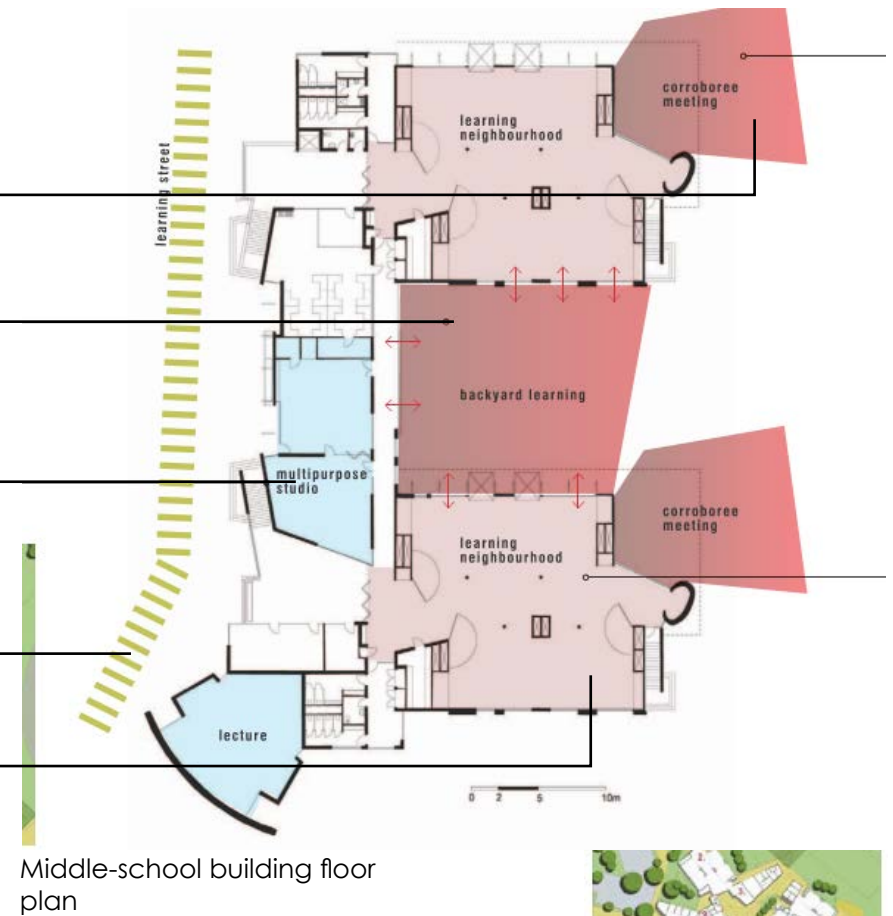
soecialized focus & wet areas

multi-purpose studio= specialized learning/project work section

learning street

student home base & group learning

learning cluster/neighborhood an open plan space that allows clusters of varying learning settings



Middle-school building floor plan



Site Plan

Figure 46: Canning Vale High School

and learn, acting and cooperating both individually and as a collective where necessary.

Spaces of learning:

The school is therefore, a product of flexible learning spaces that provide myriad opportunities of flexible learning techniques.

Theme 3: Relevant Pedagogical Programmes

The school's programmes are based on the nurturing of the learner's body, mind, and spirit. The learning is therefore, personalized to suite the learner's mode of learning.

Curriculum:

The main syllabus is supplemented by a curriculum framework developed through the identification of common learning inclinations of the learners.

Spaces of learning:

In order to cater for multiple pedagogies, the teaching and learning take place within a learning cluster, where teachers and learners are housed together. The cluster allows for the syllabus to be delivered in a learner-centered manner, with the focus and concerns on the participants.

Theme 4: Key planning and design characteristics

Due to the fact that the design process was a product of a collaborative effort between the community and the architectural experts, the brief was an organic one. Therefore, the ideas were to cater and encourage 'informal' and 'unprogrammed' learning activities and collaboration in different school subjects.

Characteristics of the learning spaces include:

- Circulation spaces act as social-spines, hinging socialising spaces and play areas for big and small groups within the school.

78 • The 'learning street' run along different learning cluster families.

- The learning spaces are customisable, empowering and stimulating learning processes.

Theme 5: Assessment of weaknesses and strengths of the project:

According to the case study, the project only had strengths.

The design was found to be a consolidative and responsive design and well calculated educational development. It was also prized for its implementation of cluster or neighbourhood based flexible learning typologies, complemented with unprogrammed learning spaces.

2. Mawson Lakes School

Architect: MGT Canberra, Russel & Yelland

Year of Construction: 2002

Location: Mawson Lakes, South Australia

Building Area: 6.7 m<sup>2</sup> & 2350 m<sup>2</sup> in total

Year groups: Pre-scholars up to year 7

Theme 1: Context, Community and Government

This learning hub aims to progress in the knowledge of the people it serves- the Aboriginal Heritage and Culture of the Kurna Plains People.

The hub uses advanced Information and Communication Technology (ICT) to enhance and develop its local people; expanding its syllabus nationally, internationally and on online platforms.

resource supply, store & collaboration incubator

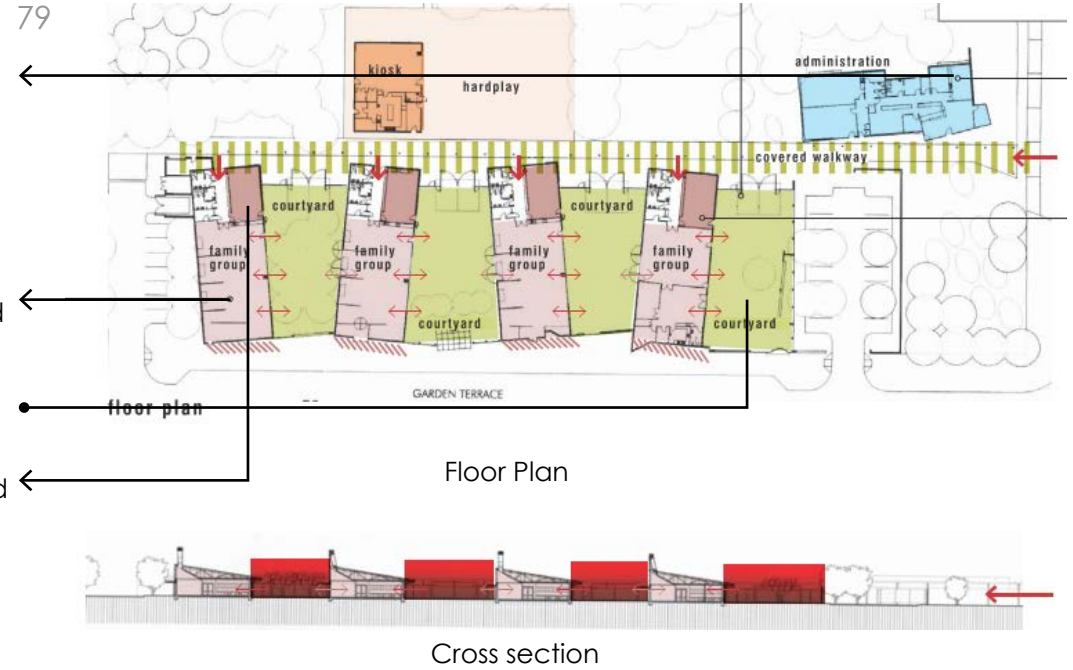
learner home-base & group learning

outdoor room

Staff area= spaces for storing resources and collaborating

Family Group= a flexible learning space that allows a multi-modal learning with partitioning elements and wet areas

focus zones= quiet spaces for concentrated studying



Mawson Lakes School, Google Earth image 2020



Mawson Lakes School GoogleSketch-up (<https://3dwarehouse.sketchup.com/> 2020)



Figure 47: Mawson Lakes School

## Theme 2: Educational Thought

At the heart of its philosophy, the Mawson Lakes School believes in the ability of its local people to attain a lifestyle of lifelong learning, learning how to learn and developing advanced thinking skills. The learners are facilitated into learning how to learn interdependently and independently, in a local, national and international setting as necessary.

The economic stability of Mawson Lakes is also at the heart of the vision of the learning centre. The hub is created to ensure that this city acts as a conduit for community creation and sustainability, where everyone's livelihoods are enriched.

## Theme 3: Relevant Pedagogical Programmes

The learning is part of the everyday life of the learners' activities. The learning programmes are prepared, monitored and managed on an individual base. The learning processes aims to enrich the learner as a whole, developing their physical, cognitive, emotional and creative interests.

## Theme 4: Key planning and design characteristics includes:

- The prominent design features include a covered social-spine that links the four main flexible learning spaces (home units).
- Learning spaces are provided with bay windows as nooks to retreat in small groups. The unique windows also allow views to the outside, ensuring the learners' connection to their surrounds.
- Each unit has its own directly accessible courtyard to the outside, where the landscape platforms encourage different types of play.

## Theme 5: Assessment of weaknesses and strengths of the project:

80 The facility puts emphasis and supports life-long learning, through its obvious link to the community at large. It's connection to the outdoor spaces and viability of the Environmentally Sustainable Design (ESD) features

## 3. Usasazo Secondary School in Khayelitsha

### Background

The school was commissioned by the Provincial Government with the brief that asked that the architecture to allow the school to be responsive to the Further Education and Training Legislation. A secondary school designed to enable the entrepreneurial economy of the community of Khayelitsha to thrive.

Designed to embrace the socio-education and economic context within which it sits and serves.

### The Context and the Educational Infrastructure:

The facility occupies a densely populated informal settlement, occupying the smallest possible site between other facilities and leaves the residual land for sports and productive agricultural use.

Educational facilities in areas like Khayelitsha are usually the first public buildings to be erected. They therefore play an important role in forming decent urban environments for its community.

The street character is formalized by the design intentions of the school.

Permanence and durability are of importance in the context like this.



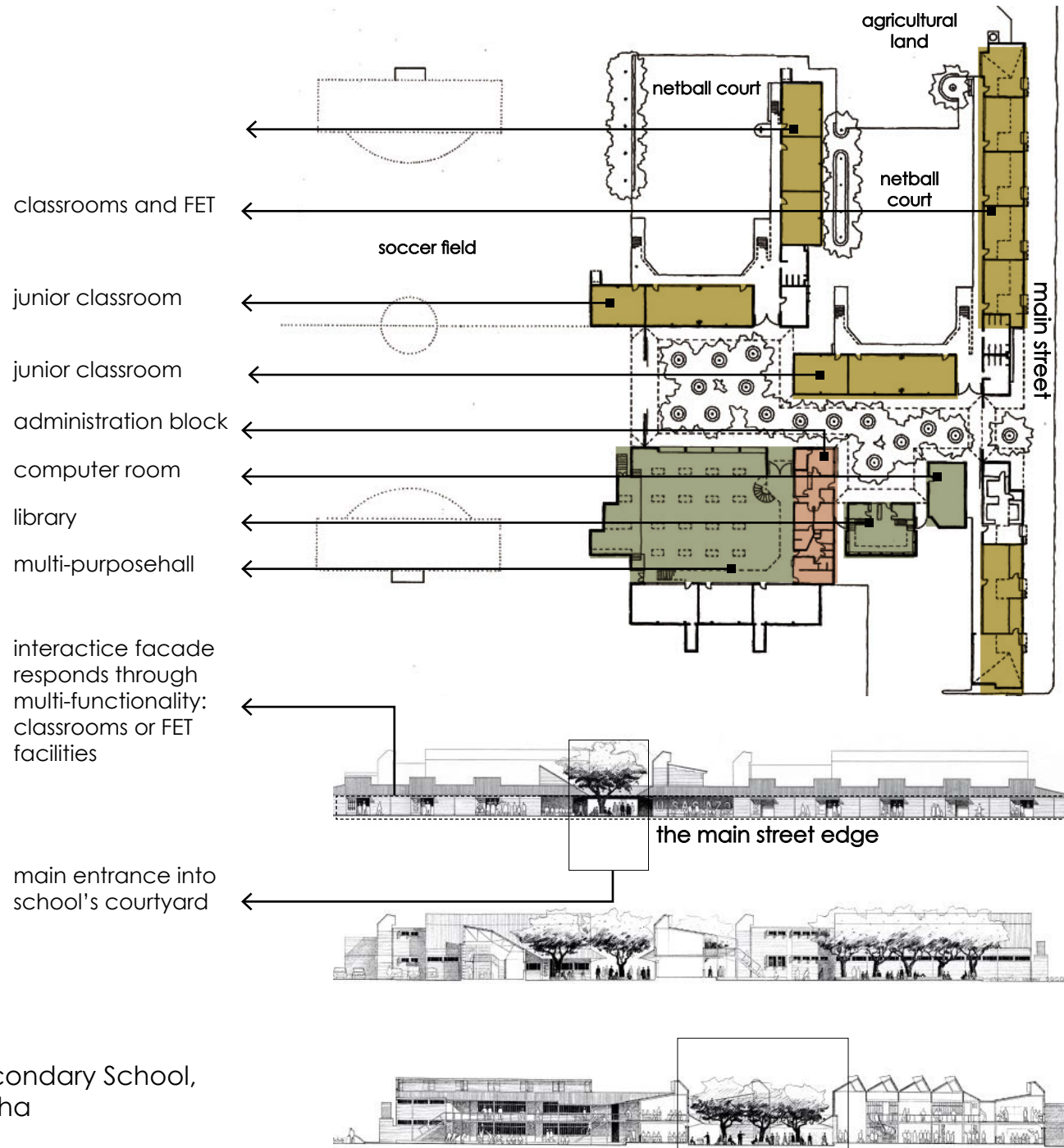


Figure 48: Usasazo Secondary School,  
Khayelitsha

### Internal Patterns and Spaces:

The organic urban spaces usually created in informal settlements are being represented by the school's undulating circulation space (courtyard). Trees and benches invite multiple users, whom are directed to various functional sections of the school.

### Programme and Space:

The internal courtyards not only allow learners and the staff to use, but also entrepreneurial individuals from the community to go and sell their goods to the school and build better relationships.

The programmatic space also includes:

- An administration block, 37 classrooms, a computer lab, and a multi-purpose hall
- Classrooms are positioned at the edge to encourage entrepreneurial learning and to encourage learners to interact with the public

### Sub-Programmes include:

Classrooms on the edge are hosts for selling food, hair care, vehicular and appliance repairs for the community

### Architectural Form:

The frontage form of the school is said to mimic the scale and character of the informal settlement around it. The order of the edge is accentuated to announce the character of the school as an institution.

### Architectural Form and Environmental Response:

- The L-shape of the classroom protects the internal courtyard from the prevailing wind and wind driven sand.
- The number of openings is minimized on the side exposed to the strong winds

- 82 • The shape of the roof lights is shaped to induce suction on the sheltered side & to improve natural ventilation in summer when the warmer south-easterly wind blows.

## **Programmatic Conclusion- Architectural Intent Informants**

Learning environments that aim to cater for different or fluid pedagogies ought to consist of 'blocks of commons' in order to cater for an environment that seeks to provide a balanced relationship between the teacher and the learner. This type of learning setting is said to support the needs of the 21st century learner.

A learning common should be designed with spatial zones supporting the evolving needs and interests of the learner. These spatial zones usually consist of multifunctional and flexible learning and teaching spaces. Mobile furniture, reachable storage spaces and zones for hands-on learning form important part of this type of learning environment. The following figure illustrates how a typical learning common looks like.

Multifunctional spaces enable learning environments to be responsive to different educational philosophies, including the constructivist philosophy or theory of learning, which aims to empower the learner in their entirety. Community learning is also given a consideration when learning spaces are designed with multi-functionality. A learning common idea consists of different learning settings, a factor that defines a multifunctional learning space.

Pedagogical programmes aimed at nurturing the whole learner, ought to consider the different learning modes of student, illustrated in the table below.

### **Therefore, the spatial characteristics that support varying pedagogical spaces should entail the following features:**

- Firstly, the whole facility should be a consolidation of cluster families, with flexible spaces for 'informal' and 'unprogrammed' learning activities.

- 83
- Secondly, the circulation spaces should act as social spines, anchoring meeting and social spaces.
  - Thirdly, a 'learning street' should run along cluster families, allowing learners and other community members' moments of visual and physical interaction.

The idea of a learning street has potential to build a strong community infrastructure of lifelong learning.

- And lastly, the learning spaces ought to be made customizable, with mobile furniture and equipment required.

## **The Conceptual Development of the Programme**

The proposed learning environment is conceptualized as a 'zone'- representing a setting that was once a social, spatial and informational "situation" within which knowledge and skills that exist can be connected with those that might be learned next (Fisher 2013). This suggests a learning environment as 'scaffolding'- a temporary framework that facilitates the social construction of knowledge. This 'scaffolding' is then removed as students become autonomous learners (Wood, Bruner & Ross 1976), self-motivated and reflective content creators and absorbers in their own community.

Thought Modules	Description
Interpersonal (Interaction)	Knowledge-sharing, interactions, and communication
Linguistic (Words)	Words spoken and articulated
Intrapersonal (Introspection)	Deep thinking, mental analysis, thinking things through
Mathematical/Logical (Rationalization)	Reasoning order, and preparation in scientific order
Visual/Spatial (Imagination)	"Seeing in the mind's eye"
Kinesthetic (Senses)	Physical movement, observation and experiential experience of the body

Figure 49: Table 3: The Seven Thought Modules. Adapted from Leaf (2018:130)

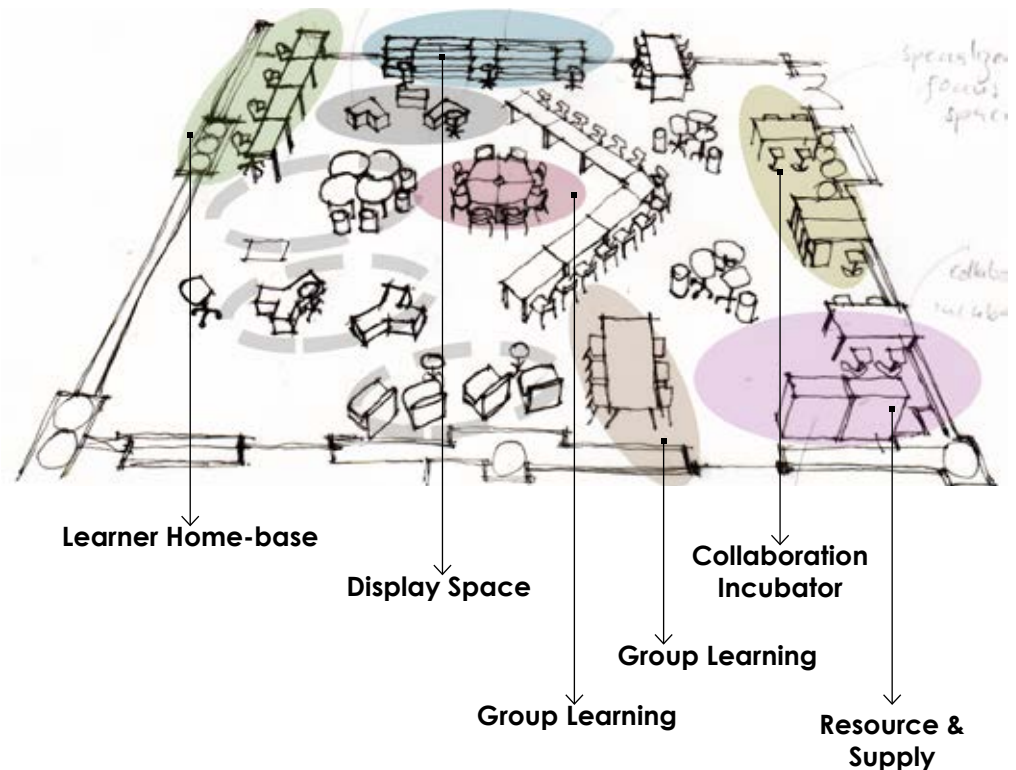


Figure 50: Learning Common and different learning settings. Author (2020)

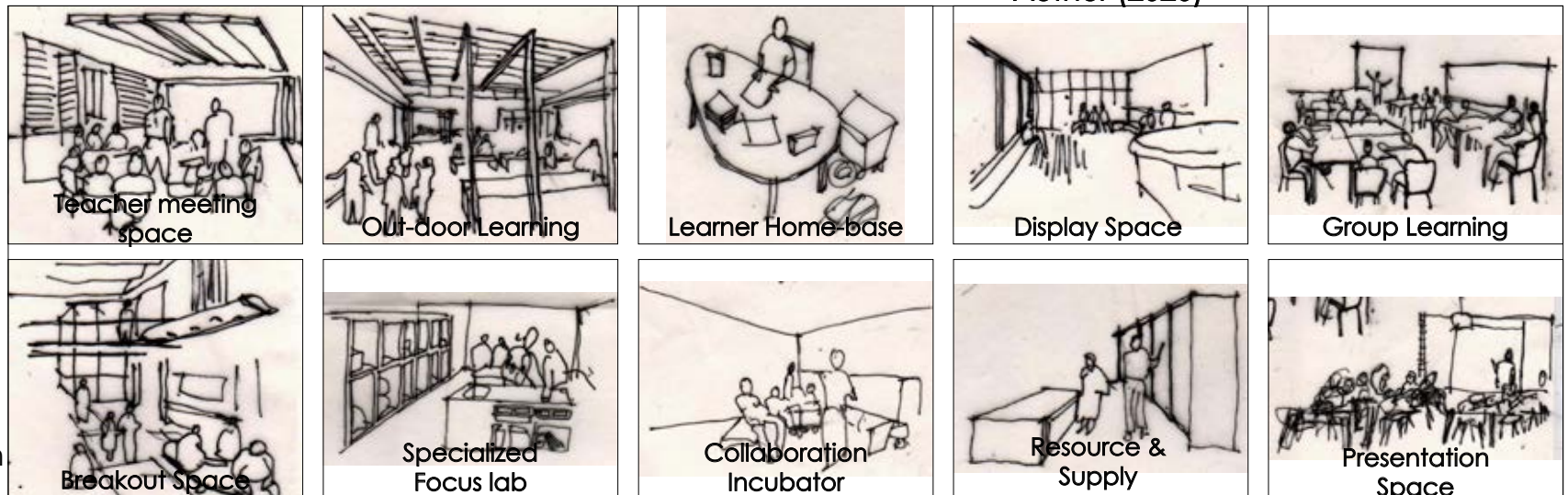


Figure 51: Learning Settings. Adapted from Fisher (2005)

**The Client:** The Pure Hope Foundation and SA Cares for Life in collaboration with The Department of Education

### **The Brief:**

1. Activities: The physical functions to be accommodated include the following pedagogical activities derived from the pedagogical theory of learning environments:

- Knowledge/ skill creation
- Knowledge/skill delivery to an audience
- Knowledge/skill application in real settings
- Knowledge/skill communication amongst individuals
- Individual and group decision making

(Fisher 2013) suggests that an assemblage is a product of people's livelihood, resources and concepts that define their communities. These are viewed as aspects that give a learning cluster its promising potential (Fisher 2013). Therefore, the CLH facility (Fisher 2005) comprises a cluster of spatial settings.

### **2. Relationships between function and space:**

Pedagogical activities and spatial type.

Each teaching and learning activity is associated with its own pedagogical attribute, process steps, behavioural premise and spatial type (Fisher 2013).

The learning setting in this Community Learning Hub comprise of the following spatial types suggested by (Fisher 2013) for the design of multi-pedagogical learning clusters:

- Collaboration incubating space
- Group learning space(s)
- Presentation space
- Teacher meeting space
- Individual spaces to think (pods)
- Breakout space(s)

- 85 ● Outdoor learning spaces
- Project space and wet areas
  - Specialized focus laboratory
  - Resource, and supply storage spaces

These multi-modal learning zones are to be assembled and clustered to allow individuals to move around different learning environments in order to suite the particular tasks (Fisher, 2013) and also learning style preferences. The aim is not to prescribe explicit learning activities, but the spatial design should be flexible in nature.

### **3.Priorities: Clients Hierarchy of needs and wants:**

- The knowledge of the importance of an education in society and in the community
- The ability of individuals to be self-sustaining
- The need for the community to be healthy and nourished
- And, lastly for the community's safety and security

### **4.The Clients Objectives: Needs and Wants:**

- The Pure Hope Foundation primary objective is to allow individuals (mostly young, but also adults) in the community to develop their full potential and eventually become responsible citizens with integrity and compassion for fellow human beings.
- The South Africa Cares for Life NPO objective is to provide the community with intervention programmes that build capacity of impoverished communities to sustain themselves (SA Cares MD).

### **5. Maintenance:**

Since the facility will be a product of socio-spatial assemblage of individuals in the community, the suggestion is that the congregated community will

develop maintenance strategies as part of the program of the facility. 86

### **6. Access and Circulation- main driver:**

The interconnections between spatial clusters acts as mediators of the spatial flows from one teaching and learning practice to the other (Fisher 2013). It is therefore the function of these interconnections between clusters that access and circulation spaces are positioned.

#### **Circulation spaces are to have the following characteristics:**

- They should integrate socialising, student display and large group meetings
  - The covered walkway circulations are at desired segments separate learning spaces from sporadic activity
  - Circulation is to also act as breakout spaces
  - The main circulation 'street' hall/court is to be framed by layered flexible learning zones (book cases and practical learning spaces)
  - Central circulation to act as a spine linking learning clusters and breakout spaces
- Other segments of circulation are to capture the flows of flexible groups.

# CHAPTER 6

## 6. DESIGN DEVELOPMENT

87

- 6.1. Concept
- 6.2. Iterations

## Project Parti Diagram(s) Development

### Odering Principles for Site Development

#### Project Parti Digram- Chosen Site

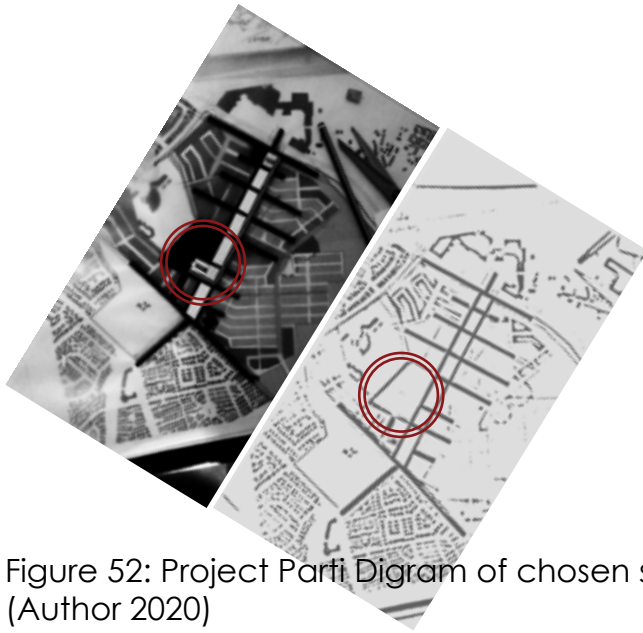


Figure 52: Project Parti Diagram of chosen site (Author 2020)

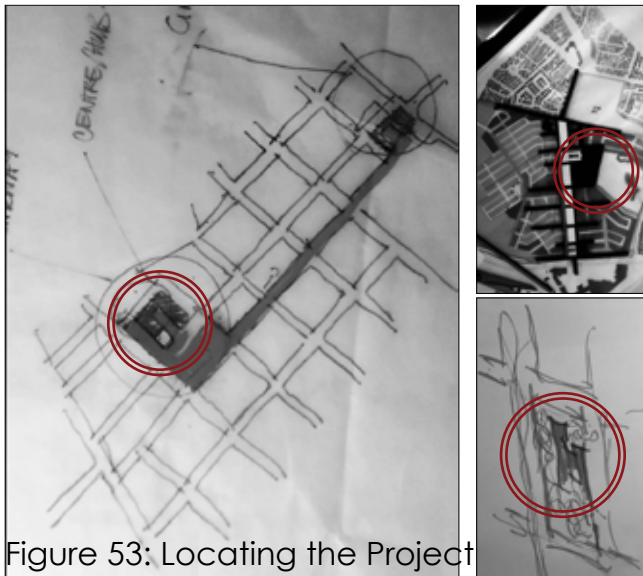


Figure 53: Locating the Project (Author 2020)

#### Axis

The grid contributes to the creation of the line with which forms, volumes, planes and elements responds to:

- Forms and volumes are arranged along the established points in a strategic manner

- There is a sense of symmetry, and interrupted symmetry with points of termination

#### Symmetry

Forms & volumes are arranged on both side of the axis

There's a balanced distribution of either volumes, platforms or elements within the fractures land-parcel

#### Hierarchy

The middle section of the development is designed to stand-out in order to draw attention:

- Centralized
- Size
- Placement

Compete for attention in relation to the other parts

#### Rythm

The site is divided by the use of axis going in different directions

Along these axis, there's pausing-moments created by nooks and crannies along the volumes

#### Datum

The grid system is used to create a colum and beam structure that helps to:

Organize, Measure, Gather spaces, volumes, and patterns

#### Transformation

The intentionality of the sizing of the grid, contributes to the manipulation of the architectural concept:

Vertical planes, structural elements and volumes are positioned strategically according to set dimensions according to the grid



Site Intentions

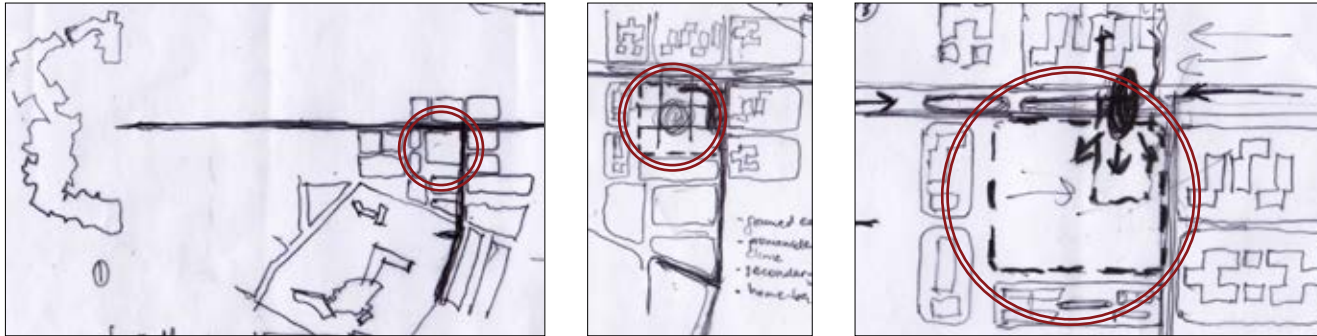
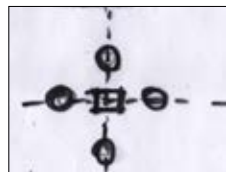
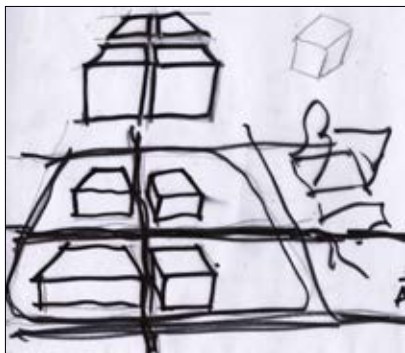


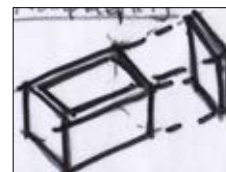
Figure 54: Architectural Intentions with regards to the chosen site



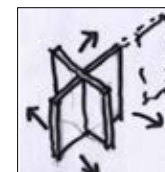
Axis



Flexibility



Adaptability



Expandability

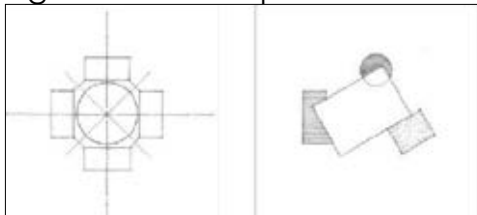
Ordering Principles for Building Development

Centralized form vz. Clustered Organization (Ching)

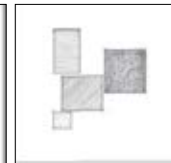
- A Centralized arrangement has a prominent geometric foundation for the ordering of its forms

Clustered arrangement assembles its forms and volumes according to the required size, proximity and shape of the space. However, there is no regularity in the geometry, but its flexible nature can incorporate various orientations, sizes and shapes as functional requirements. Clusters interlock and merges into singular volumes that create multiple faces. The Cluster forms are organized to relate to each other by proximity, in order to express the volumes as singular components

Figure55: Conceptualization of the clusters



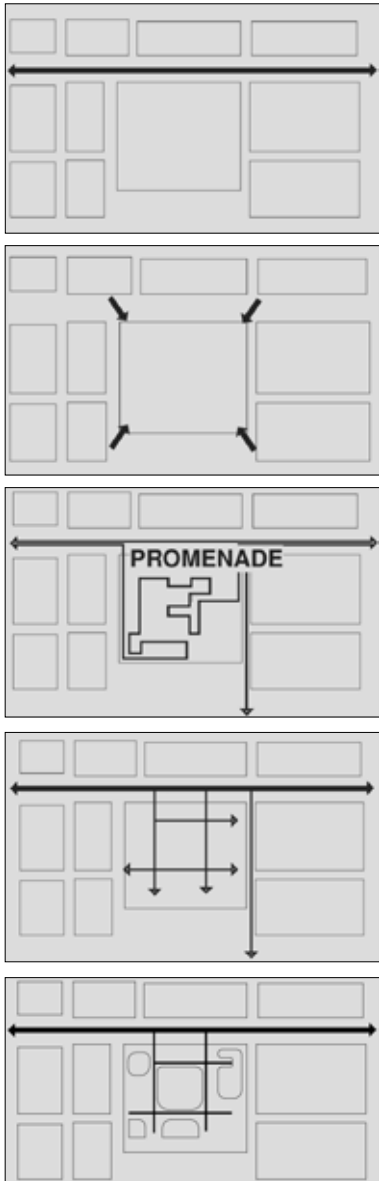
Form making principle (Ching)



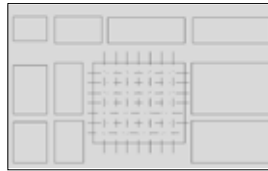
Cluster Form Organizing Principle

Cluster Organization Principles Applied for the Development of the Building

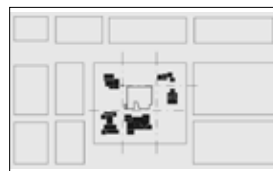
Site Intentions Applied



Axis



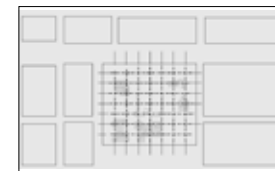
Hierarchy



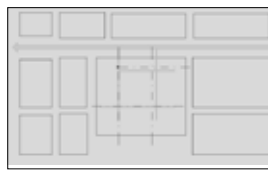
Rythm



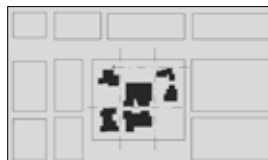
Datum



Transformation



Resultant Clustered Form



Resultant Clustered Form

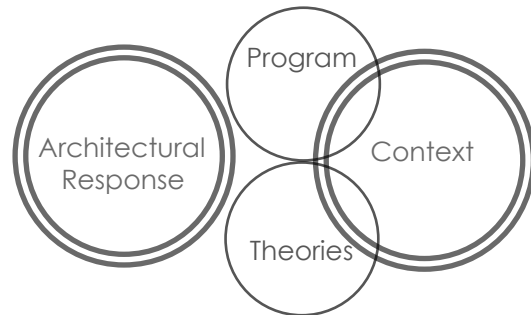


Figure 56: Application of Site Intentions

### Conceptual Principles for the Learning Space



Figure 57 : Re-interpreting the Victory Boogie Woogie (Author 2020)

#### Space & learning- Space as an a moulder & facilitator of local knowledge

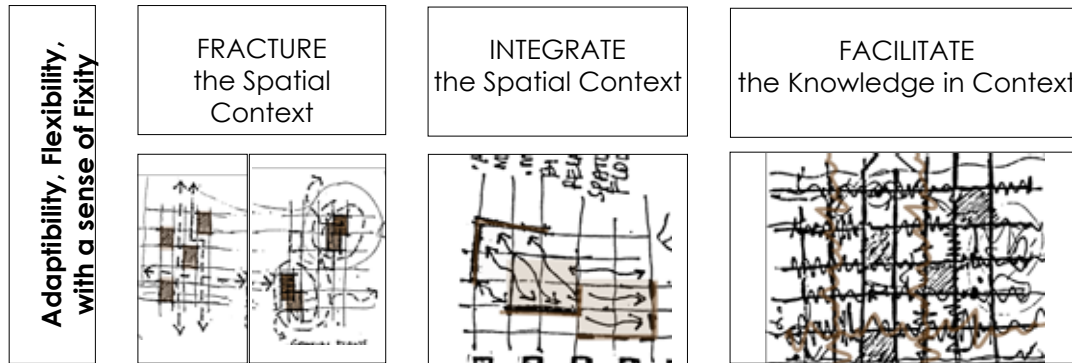
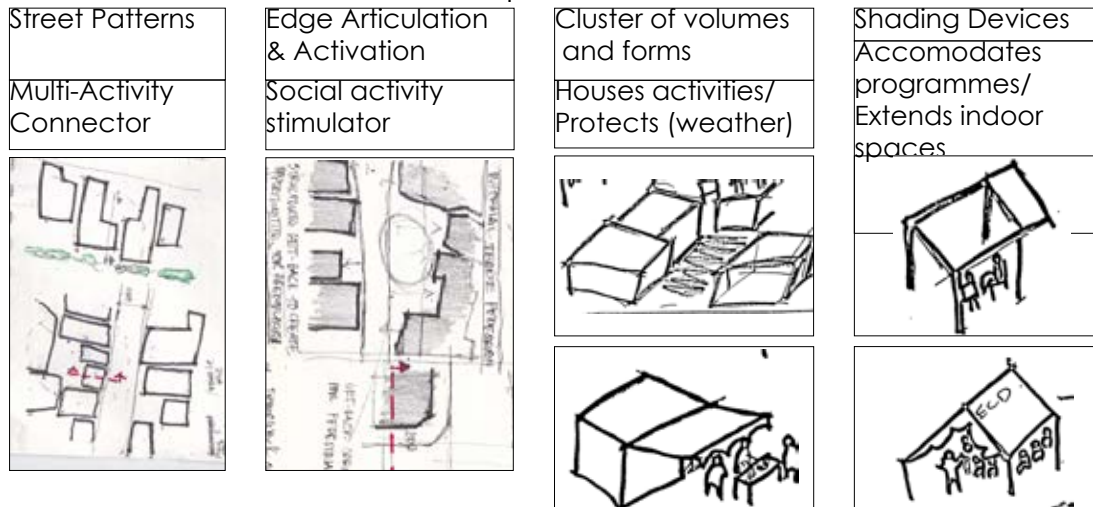


Figure 58 : The Conceptual Approach to combining knowledge and space (Author 2020)

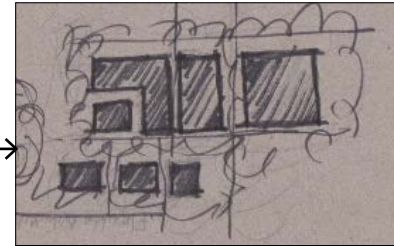
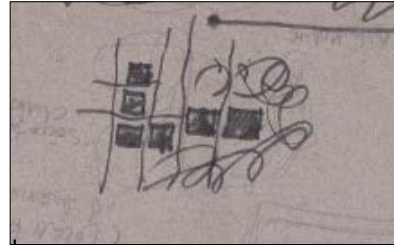
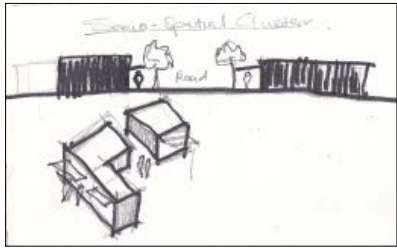
#### Socio-Spatial Clusters



Pedagogic Learning Environment to represent the embedded socio-spatial assemblages evident in local resources and knowledge sharing platforms

Figure 59 : Design Informants from Woodlane Village settlement

### Socio-Spatial Clusters/Assemblage Volume



Multi-Pedagogical Learning Environment

Fabric Scale

Fractured, Flexible Architectural Scale and Composition

Figure 60: Conceptual & Site Intention

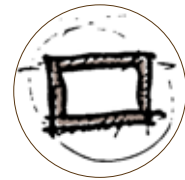
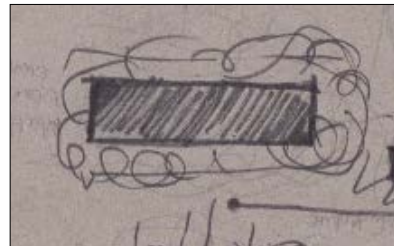
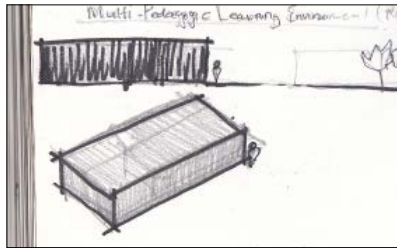


Figure 28: Fabric Scale

Singular Unit

Open Unit

Clustered Unit

The apparent multi-pedagogic typology

The Proposed multi-pedagogic typology

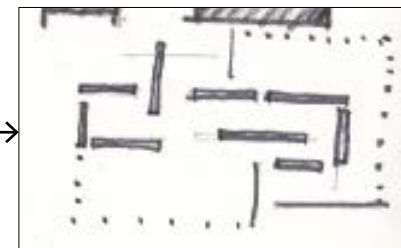
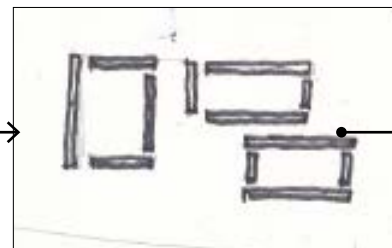
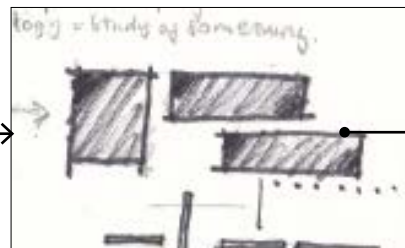
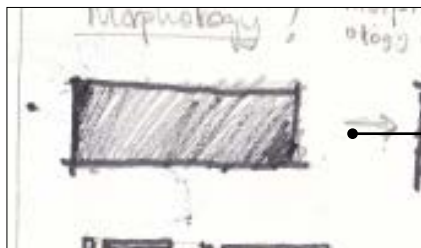


Figure 61: The Evolution of the Learning Environment -Architectural Innovation

Technical Concept

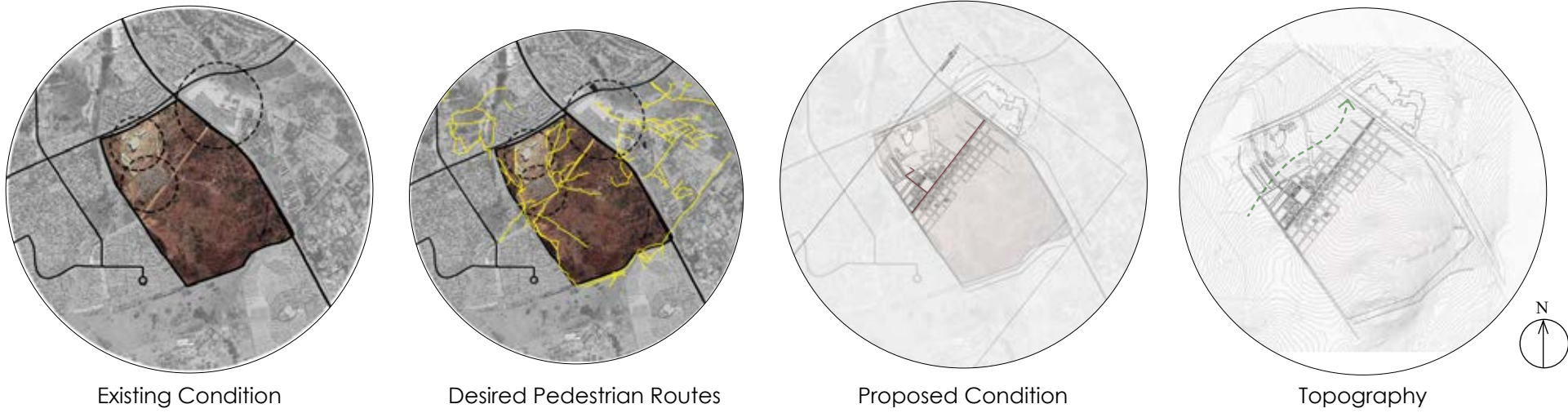


Figure 62: Contextual Design Informants

### Woodlane Village Knowledge and resource-sharing Platforms and Clusters

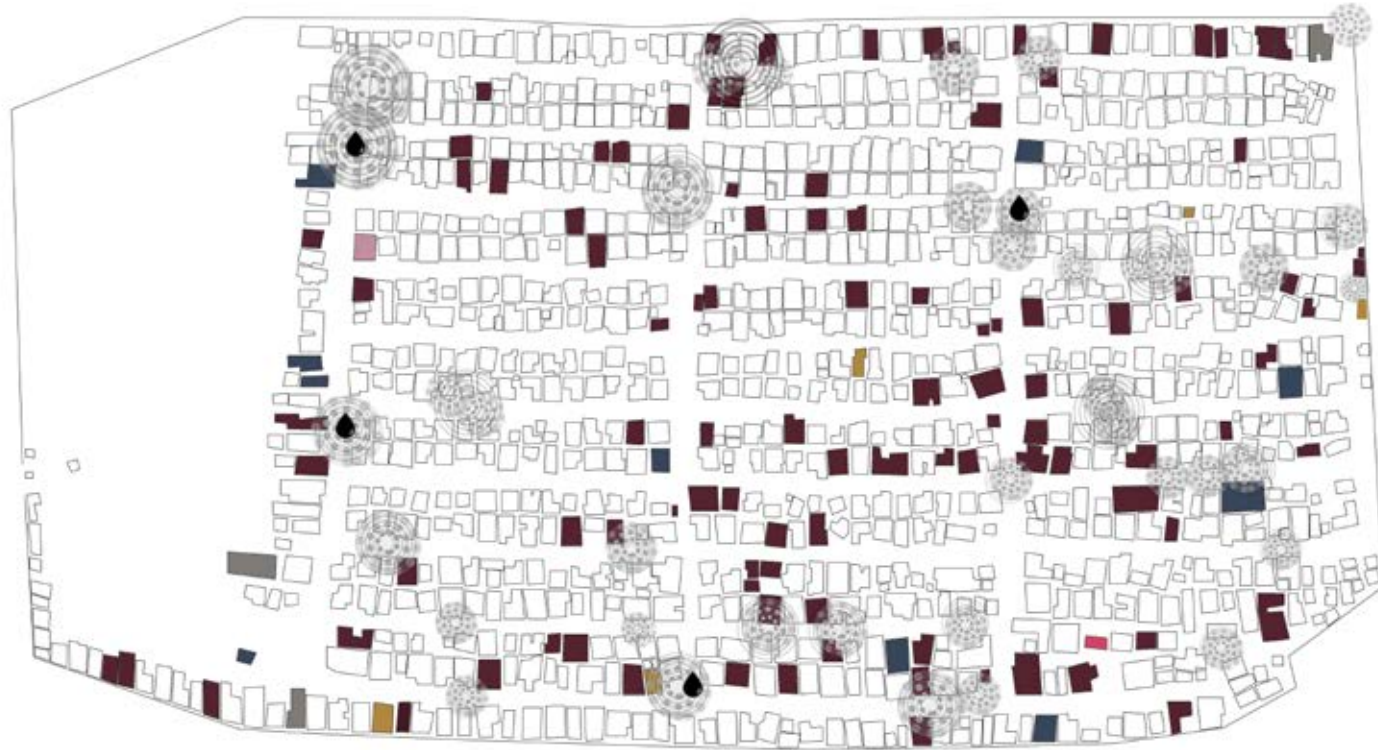


Figure 63: Connections between important social platforms of exchange

## Design Response

### Context and theory as Design Driver

The investigation commenced with resource-sharing/exchange investigating first driver of the project which was the lifelong learning culture of Woodlane Village. This lifelong culture includes all the local skills and knowledge, the local partnerships /networks dedicated to empowering the desolate community and all the humanitarian work being done. This driver lead to the investigation of the communitiee needs, lifestyles and creativity activities that supports their way of learning new skills for making a living and keeping mentally and physically healthy.

The second driver, the theory of the learning environment, investigated the Pretoria East's urban learning landscape for post-school learners. This was to gather an understanding of where the facilities are, who has access to them, and what relationships to these learning facilities have in the places they are embedded. The second factor to this driver, the concept of learning environment as socio-spatial assemblages. Consequently, the investigation led to an exploration of the settlement's social, economicl, and learning zones creating nodes. The conclusion was that these zones are spaces where individuals in the community gather to share, distribute, and even reflect on any new or old information around. Those zones act as important small nodes within the settlement because they act as social catalysts. The last component to this driver was the quest to understand the Pedagogical approach to learning and teaching. In this section, an understanding of pedagogy and its its different forms was sought. The relationships between the teacher and learner, the learning environment, and the activities deemed important, are key elements to shaping the proposed community learning environment.

95 For the sake of understanding the focus-group to the study, key principles to how the learning spaces should be designed were derived from the so termed socio-spatial assemblage 'zones'investigated in the settlement. Principle pattern ques were then applied to the design.

## The Scaffolding-Web System Concept

The scaffolding system as a conceptual theory is used as an idea for constructing a learner-centered learning environment. The term scaffold, denotes staging, and as an impermanent structure that provides support in the construction, maintenance and repair of buildings, bridges and other man-made structures. Here the scaffold is used to signify a constructive and supporting learning environment that provides support for its user-community. The community of learners in this environment are then made a spectacle, put on display, supported as they use the knowledge and resources defining their context. This, thus represents the process of supporting builders on the scaffolding during the construction, repair and maintenance of edifices. As simply put by (Wood, Bruner, Ross, 1976), when the scaffolding is removed, the learners become self-motivated, reflective and autonomous content creators and absorbers in the community.

## The Gestalt Theory

Gestalt psychology is a discipline of psychology that emerged in the early 20th century in Germany and Australia. The guiding principles include: continuation, similarity, proximity, closure, ground/figure, symmetry and order (Koffka 1935). The term 'Gestalt' is interpreted as 'configuration' or 'pattern'-principles that define the operation of a scaffolding. A scaffold supports structures that requires to be configured into a pattern that ensures stability, a sense of fixity. It comprises of similar elements that are connected creating a continued structural element that supports figures of platforms. The sense of stability is attributed to the orderly and symmetrical arrangement of the balanced closed system.

## 96 Driver 1: Context- Lifelong Learning Culture of Woodlane Village

Driver 2: Context- Lifelong Learning Culture of Woodlane Village  
The theory of the learning environment



1. Outdoor ECD

Established and ran by SA Cares for Life. Trained teachers are from the community

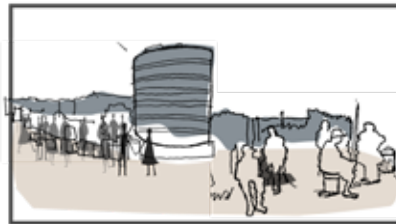
The ECD teachers, the children learners, volunteers from within the community, members of the non-profit organization(s)



2. Social Lounge & Water Point

Home-ran industries and water points are spaces where people gather

Man, woman and children are found here- highly sociable space



**Flexibility:** Teachers here can teach and learn fluidly. Learners are also able to adapt when the tent is not there and even to the different temperatures. The tent structure is put up and dismantled after class every day.

**Adaptability:** (Tent, furniture) The possibility of modification due to the needs at hand.

Fixity

Figure 64: Analysis of the Socio-Spatial Cluster- The ECD, water-point & social lounge

**Socio-Spatial Cluster Thresholds - Flexibility, Adaptability and fixity**

**4. Social Lounge/  
restaurant**

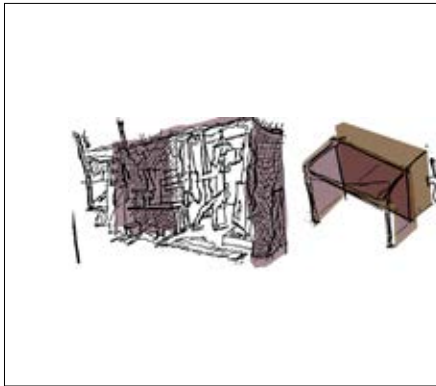
*Established and ran by SA Cares for Life. Trained teachers are from the community*

The ECD teachers, the children learners, volunteers from within the community, members of the non-profit organization(s)

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**Adaptability:** (Tent, furniture) The possibility of modification due to the needs at hand.

**Fixity**

Figure 65: Analysis of the Socio-Spatial Cluster- The Spaza-shops & home-operated restaurant

## 1. Outdoor ECD

Established and ran by SA Cares for Life. Trained teachers are from the community

The ECD teachers, the children learners, volunteers from within the community, members of the non-profit organization(s)



**Flexibility:** Teachers here can teach and learn fluidly. Learners are also able to adapt when the tent is not there and even to the different temperatures. The tent structure is put up and dismantled after class every day.

**Adaptability:** (Tent, furniture)  
The possibility of modification due to the needs at hand.

Fixity

Figure 66: Analysis of the Socio-Spatial Cluster- The Scrap-yard

ACTIVITY ASSEMBLAGES  
ACTORS

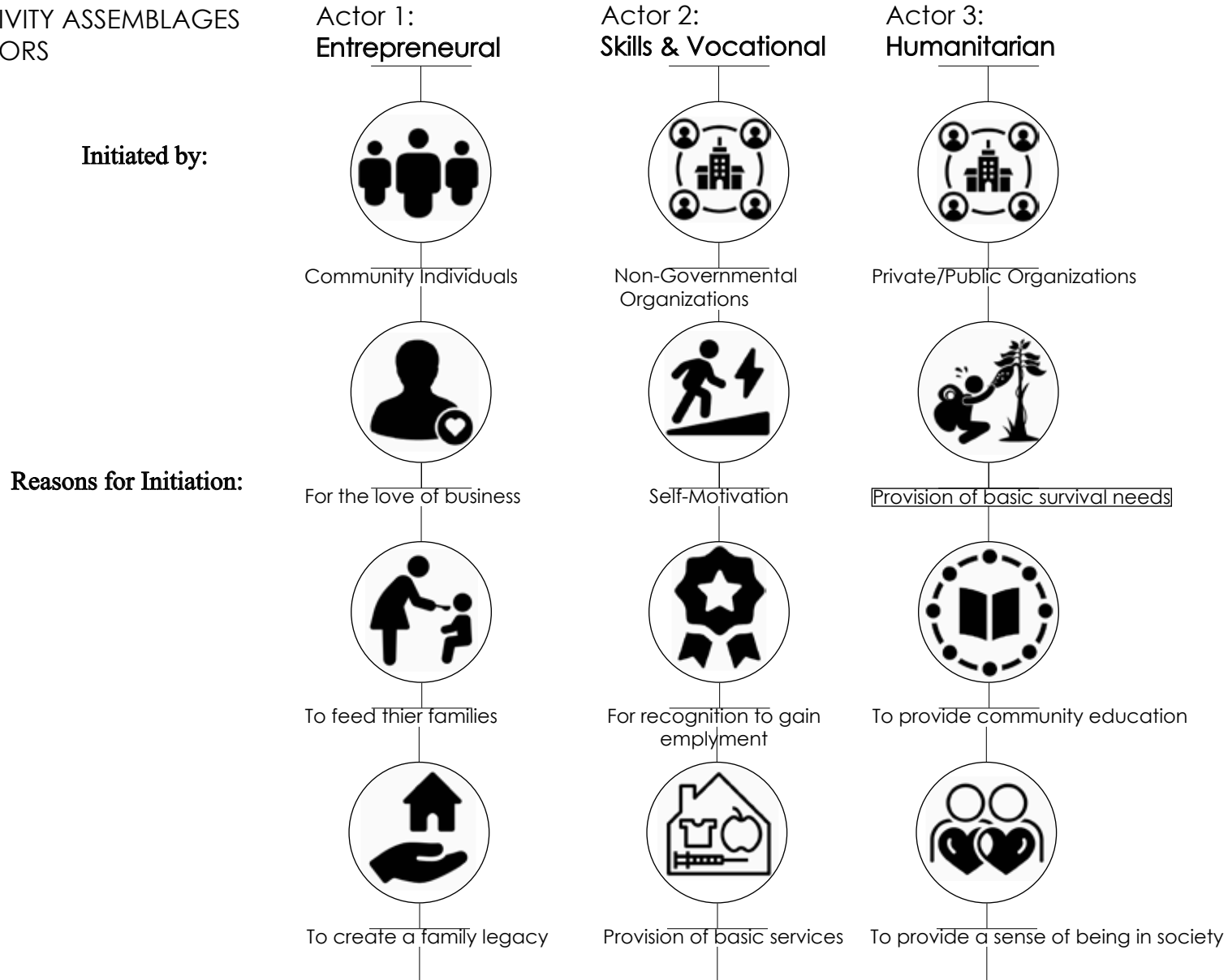


Figure 67: Lifelong Learning Activities in the Lives of people of Woodlane Village (Author 2020)

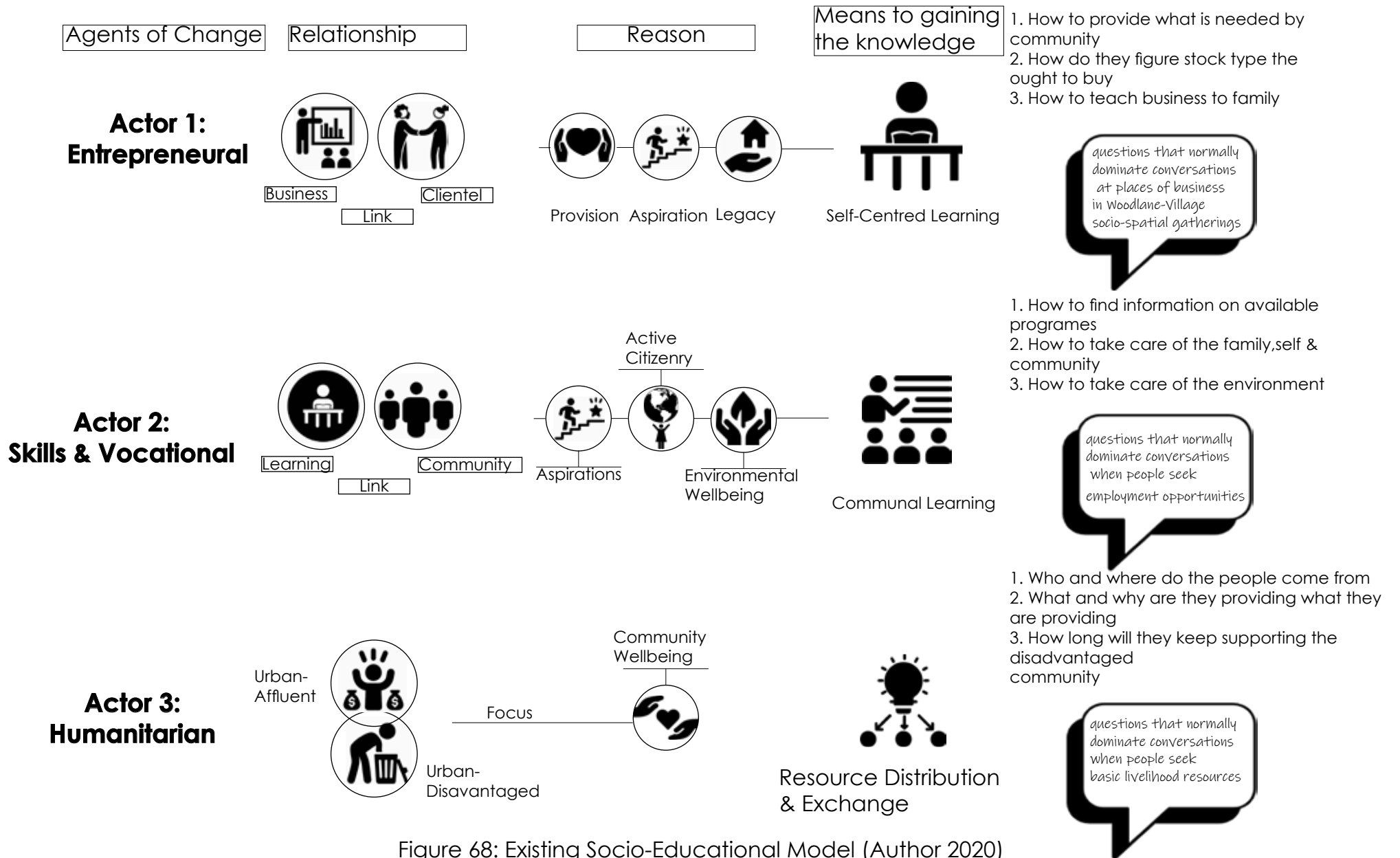


Figure 68: Existing Socio-Educational Model (Author 2020)

## Design Development

The following is a succession of design iterations that illustrates the evolution and exploration of the development of the appropriate design solution to Woodlane Village. At the core, the solution aims at integrating the notion of lifelong communal learning into the proposed Community and Opportunity Centre for the community of the new Precinct. An approach is set out in order to mediate the new precinct with the existing context, being the neighbouring affluent communities. This approach serves as a strategy of devising the appropriate programmatic intervention that will serve the community in diverse ways.

In order to address the need for the provision of communal lifelong learning opportunity in Woodlane Village precinct, the concept of the learning environment as a social, spatial and informational 'zone' (Fisher, 2013) is used. This idea is used as main lens to explore the demarcated area that's in proximity to Woodlane village as it stands currently, surveying the socio-spatial and informational characteristics that impact the lives of the community of the settlement. This corresponds with the investigation done in previous chapters. The social, vocational, humanitarian and entrepreneurial opportunities were identified in order to inform both the programmatic and spatial intervention as solution.

In order to create a social relationship with learning, the design concept of 'occupy', 'extend', and 'connect' discussed in the Conceptual Approach chapter, materially expresses itself as an entity situated on a 'zone', fractured, integrated and facilitated into an adaptable, flexible but fixed space. This physically expresses itself as a socio-spatial 'assemblage', whereby the relationship between the spatial form and structure are crucial; and the distinctions of the learning modes are blurred (Fisher 2013: 161).

102 Within these 'assemblages' or 'clusters' regarded as spatial zones, the spatial-flows that circulate and collide strengthens the relationship between learning, learners, pedestrians, and the environment as a whole.

This provides opportunity for the processes of learning and varying pedagogical practices that are part of the everyday life of the community. Pulling the public's attention to the importance of collective lifelong learning, and the social and economic impact that it can bring into complex urban environments. This has potential to inspire individuals with differing socio-educational, pulling them together into an ever-evolving learning platforms that can help individuals reflect on their role in society.

It is of utmost importance that these learning spatial zones be designed in such a way that social lingering opportunities are provided in a form of 'social-spines' (Nair 2005), in a form of spacious nooks and crannies. Outdoor learning and meeting spaces are also important considerations, as they are seen as crucial spatial complements to indoor learning spaces and activities. The proposal of this scaffold-web-of-share is proposed as prominent feature in the community that will emphasize place emphasis on lifelong learning and community learning, and the multifaceted challenges of pedagogies affecting people's personal lives and the ever-evolving society as a whole. The importance of the design is however, placed on the production of the knowledge to be learnt, taught and reflected, within the context of which the learners and spaces are situated, at a personal, social and communal level in order to ensure a sustained lifelong learning culture.

Therefore, the design exploration and development are evaluated through every iteration on the basis of their impact to the urban fabric, educational, social, and economic contributions, including the sustainability of the resources.

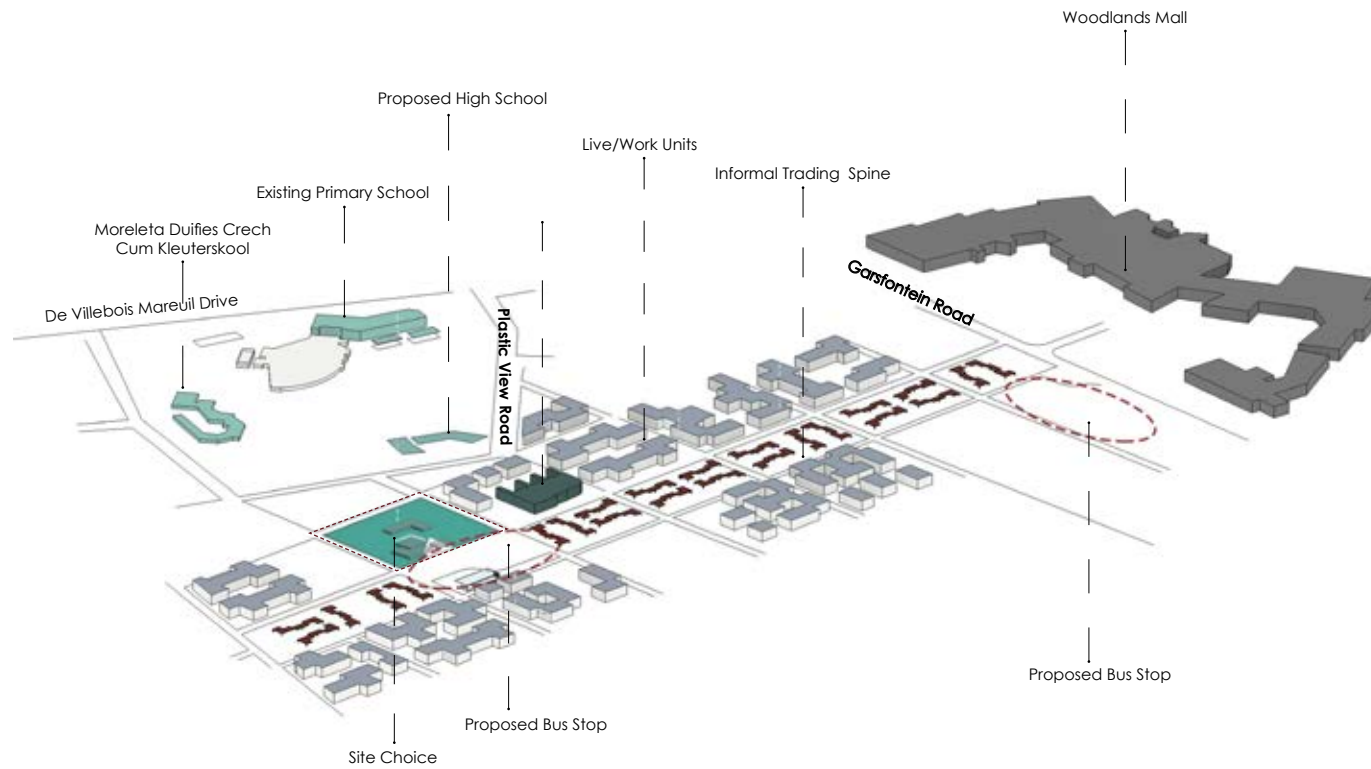


Figure 69: Site Programmatic Layout: Adapted from (Crocker 2016) individual research proposal

## The Initial Design Attempt

The starting point of the design, aimed to explore the best manner in which the project in conception could be situated within Moreleta Park. This was done by adopting the framework done by the 2016 MProf Architecture students adapted from the existing official framework by StudioMAS Architects for the development of Woodlane Village location. The conceptual urban vision then took on a form of conceiving the Promenade (pedestrian only street) that celebrates the trading spine suggested in the 2016 MProf urban framework. This trading spine connects the Woodlands Boulevard with Moreleta Park extension sectional title security estates. According to the StudioMAS framework, the chosen site was zoned as a larger stand adjacent a green area (park), and another as a parcel for Walkups. Since the chosen site sits facing the trading spine, it was suggested that the site become one of the two gateways of the new precinct, with the other being near the Woodlands Boulevard mall.

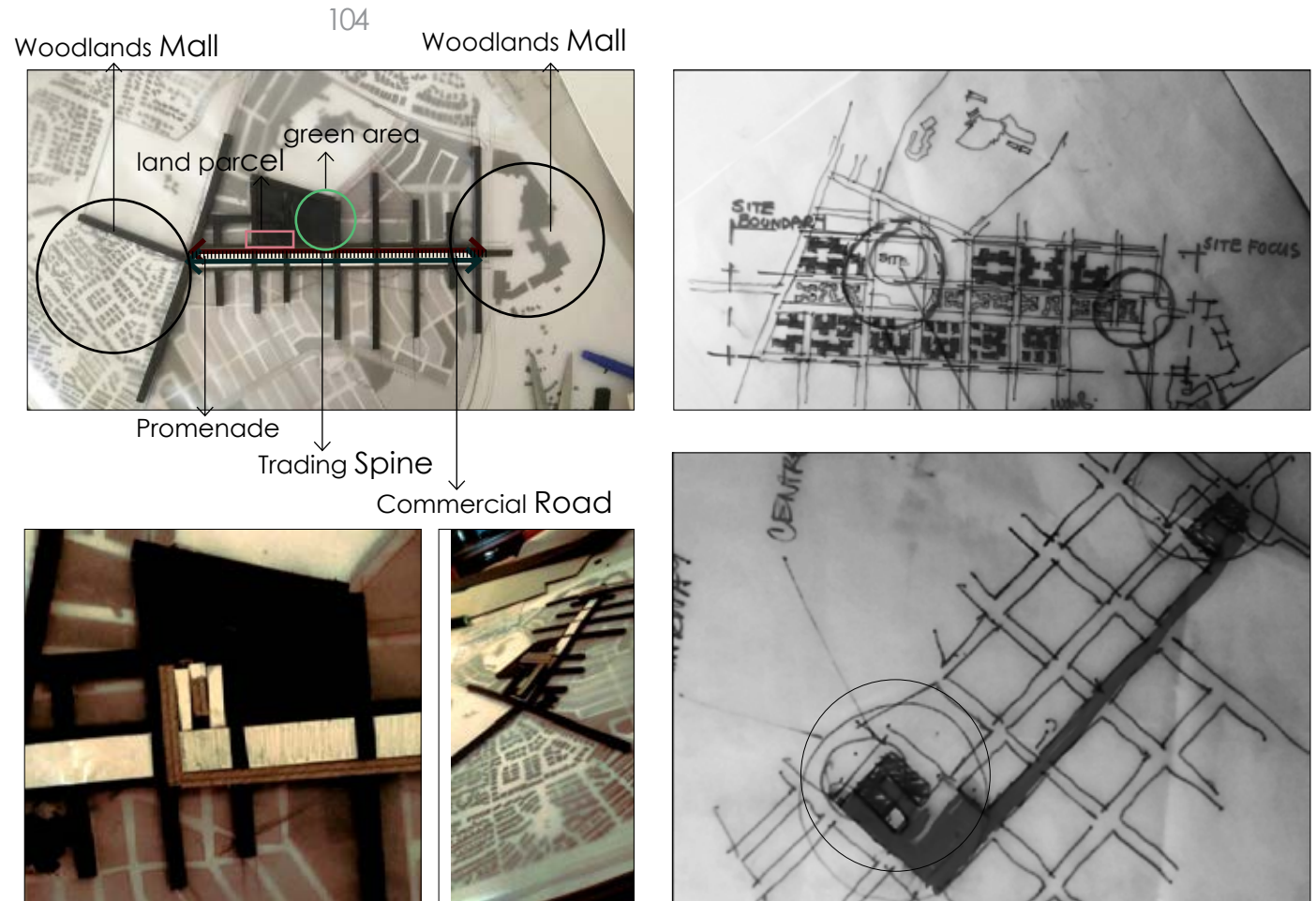


Figure 70: Initial Design Attempt- Situating design on site (Author 2020)



### Proposed Site Development Intention

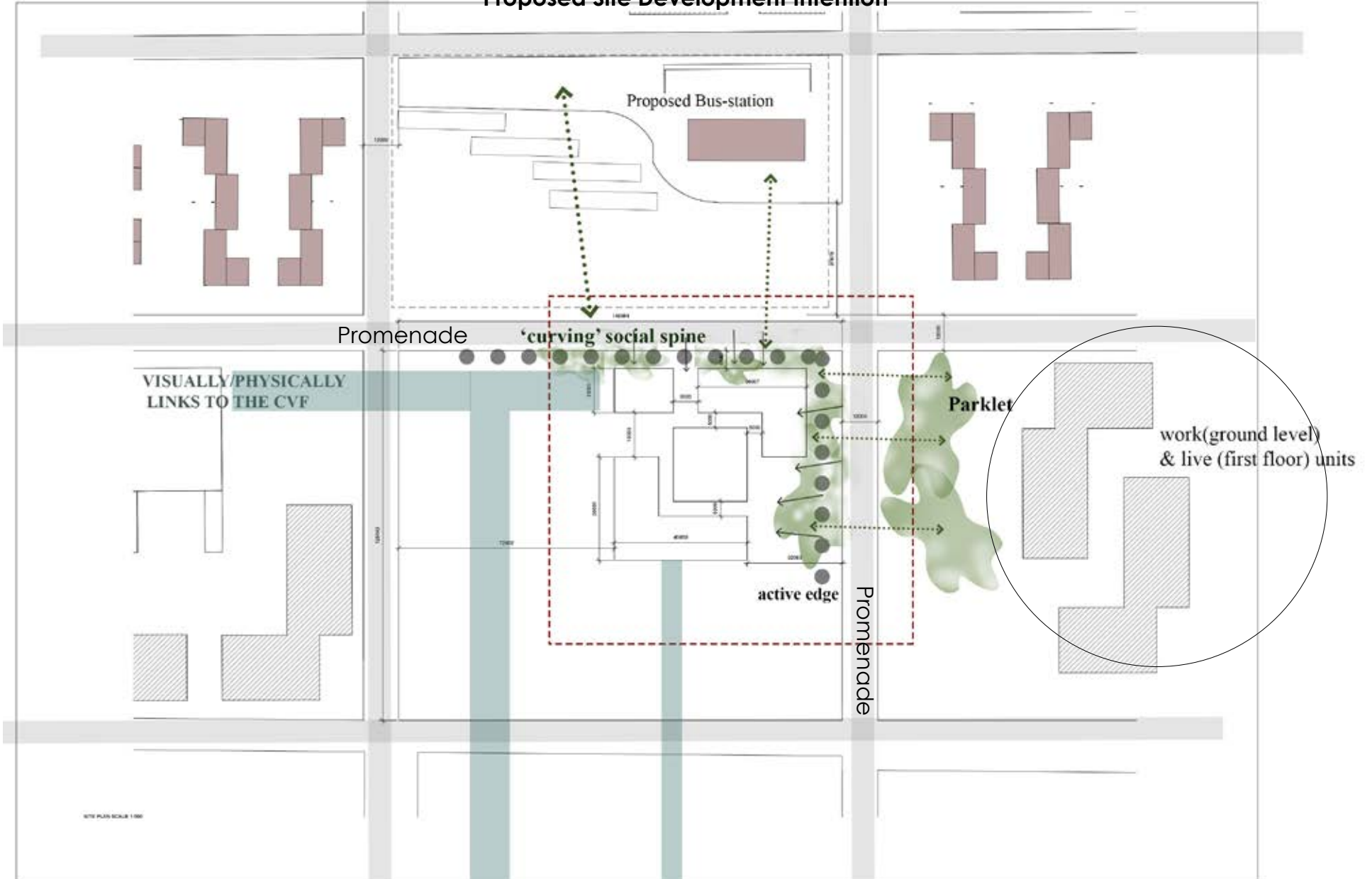
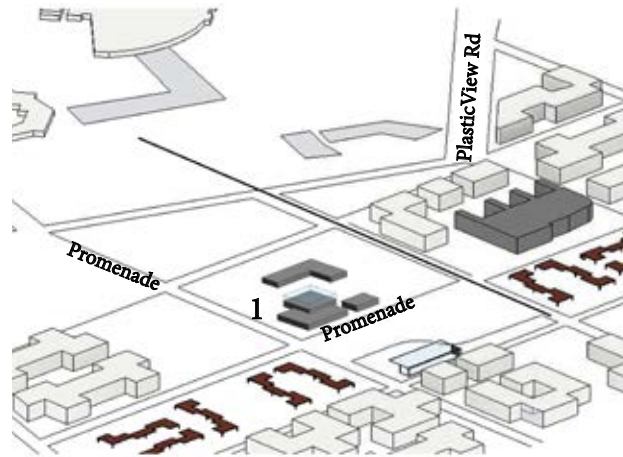


Figure 71: Initial Design Attempt - Site Intentions (Author 2020)

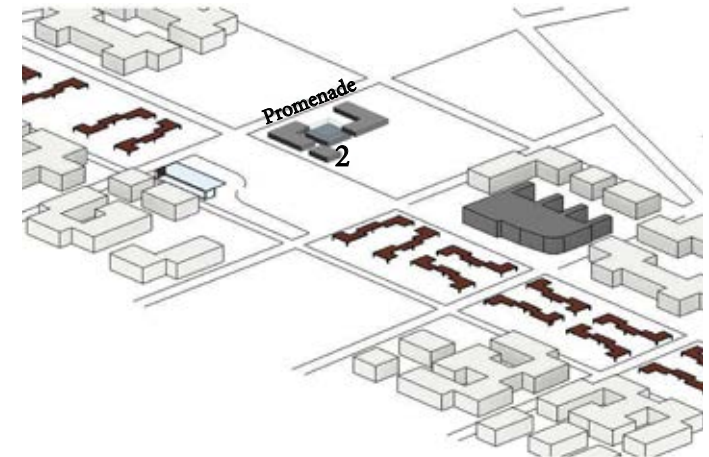
LINKS TO THE PROPOSED HIGH-SCHOOL      LINKS TO THE LEFT VILLAGE COMMUNITY CLINIC

## ACTIVITY AROUND CHOSEN SITE: VIEW 1

- Facing the edge of the proposed site- the edge is framed by a social-spine aimed at drawing people into the site
- The new road connects the chosen site to the existing village community clinic, the connection will also be achieved through pedestrian and cycling paths suggested in the urban framework
- Secondary links running through the building are also envisioned as means to feeding the site
- Almost to the center of the building is the home base- a central space aimed at drawing activity in



View 1



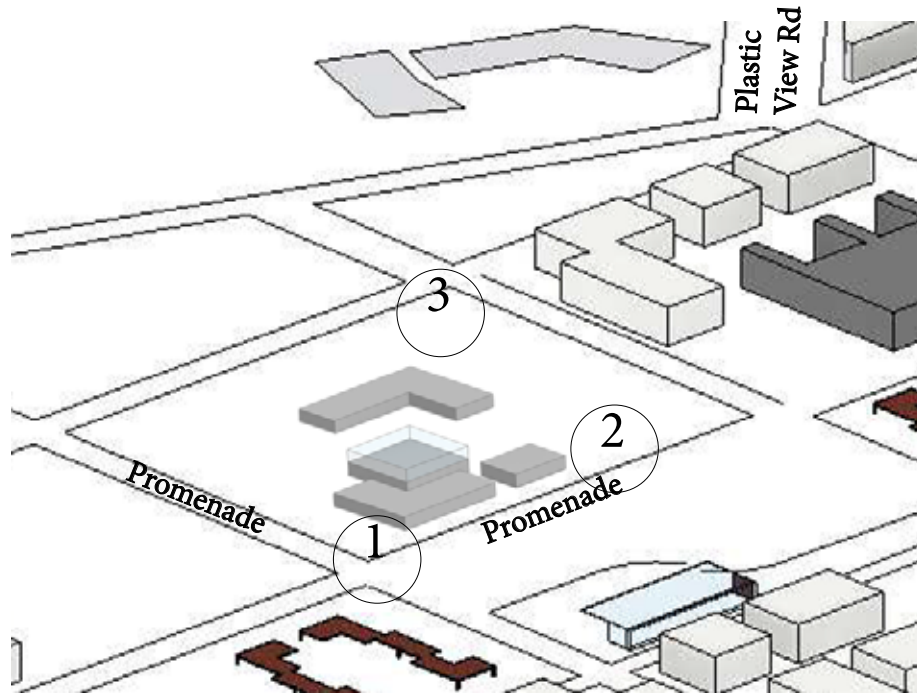
View 2

Figure 72: Initial Design Attempt- Edge Intentions (Author 2020)

## ACTIVITY AROUND CHOSEN SITE: VIEW 2

### Facing the proposed bus-stop

- Facing the proposed site, is a bustop that acts as a gate-way into the precinct
- The bus-stop aims to draw communities surrounding the site of choice to experience the 'new' precinct through the use of the communal transit



### EDGE & THRESHOLD CONDITIONS FOR CHOSEN SITE

- Edge Condition 1: Part of the 'social-spine' that aims to slow movement down and feed the facility. This edge faces a parklet of a work/live residential block. This edge is active, and privacy is created by physical elements and vegetation.
- Edge Condition 2: Responds to the open public space that mediates the 2016 proposed CVF and the project of this dissertation, in connection to edge 3...
- Edge Condition 3: Forms aims to form both a visual/physical connection between the proposed facility, the school(s) and clinic existing on Moreletapark grounds and the proposed facility.

### ARCHITECTURAL IMPLICATIONS OF THE INTERVENTION IN THE WOODLANE VILLAGE PRECINCT

Spatially, the site of intervention and the building translates into a spatial conditions that does not act in isolation but integrated the urban environment's fabric from the inside-out. On edge-1, the site pulls pedestrians in by diverging paths into the site, and creating terraces on the street-edge to slow down movement.

Flexibility and adaptability of programme, structure, and spaces (inside/outside) becomes inevitable, as they mirror a society that is constantly evolving. All the live/work units are situated on the ground floor, forming flexible and adaptable programmatic and spatial relationships with the urban edge. The frontage of the units accommodate bicycle-stands, seating, and water-drinking fountains. This kind of street fabric affords opportunities for bringing communities together.

Because the urban response intention is to demonstrate how a ruptured urban context could be created, the idea of a miniature city as an encapsulated mini-city within a city manifests itself as an entity integrated into street fabrics.

Figure 73: Initial Design Attempt- Edge Intentions (Author 2020)

## Programmatic Intent

In response to the theory by Lefebvre (1987), the exploration and development of the architecture is informed by the concept of the social production of space. This concept supports Fisher (2013) idea of a learning environment as a socio-spatial assemblage. The idea entails the transformation of learning environments to innovative learning spaces termed 'learning streets', 'meeting spaces' and 'outdoor learning' Fisher (2013: xx). In order for the city to be a place for young people to thrive, the place where learning happens ought to reflect their values, needs and aspirations, qualities that are usually expressed on the streets and social spaces where individual meet and socialize on a daily basis. Those spaces and places are what are seen as the socio-spatial assemblages in this project. In response to this, a bus stop was consequently proposed Infront of the chosen site, as means to ensure that people from various surrounding areas and far could get to the facility to exchange knowledge and gain opportunities.

The opportunities of social and educational exchange observed and documented within the context included personal vocations, and entrepreneurs of the people of Woodlane Village, and the humanitarian works initiated by the NGOs. These activities of knowledge and resource-exchange were seen as opportunities that prompt the community to assemble with one common goal, which was to learn and exchange knowledge and resources.

## 108 Critique:

Programmatically, the project started as an assembly of different learning spaces that sought to form a cluster. The cluster comprised of a 'civic realm ', a 'home-base', 'home-extension-base' and 'outdoor-learning' space. At this stage, it was not clear yet what kind of a learning environment the facility was to be. After consulting with the literature on the learning pedagogy by Fisher (2013), supported by the theory on Place and Community-based learning Smith and Sobel (2010), the latter prompted a further investigation in the means in which the community Woodlane Village exchanged ideas, knowledge and resources with each other, an investigation which supports what place and community-based learning is about- the learning tactics of the local people in order to avoid the disjuncture between the community of learners and the environment within which they learn (Smith and Sobel 2010). The investigation prompted further definition of the three mentioned important components of the learning cluster or the 'assemblage' in order to undo the disjuncture between learning and context.

common core activities (outdoor-learning research.org)

**DESCRIPTIONS**

**SPACES REQUIRED**

**Outdoor Learning:**

- Outdoor seating
- school grounds play
- environmental education
- recreational & adventure activities
- community development> team building

Extensions of the indoor

Organized for various types of activities

Outdoor equipment & games

**Learning Streets:**

- The social-spine of the learning environment
- space for informal meetings, spontaneous meetings & deliberately slow movement

Social-spine      Nooks & crannies

Ample daylighting      Spaciousness

**Meeting Spaces:**

Space set aside to get together for:

- Formally/informally to discuss issues, priorities to be set & decisions to be made

Conference hall

Meeting rooms

**Spatial Flows:**

- Location/Position spaces
- Interaction between spaces
- Movement of People within
- Services

**Spatial Overlaps:**

- Overlapping spaces between intersection spaces
- The overlaps will bring together spaces of varying qualities sizes and qualities

designing for the future of learning(Nair 2005)

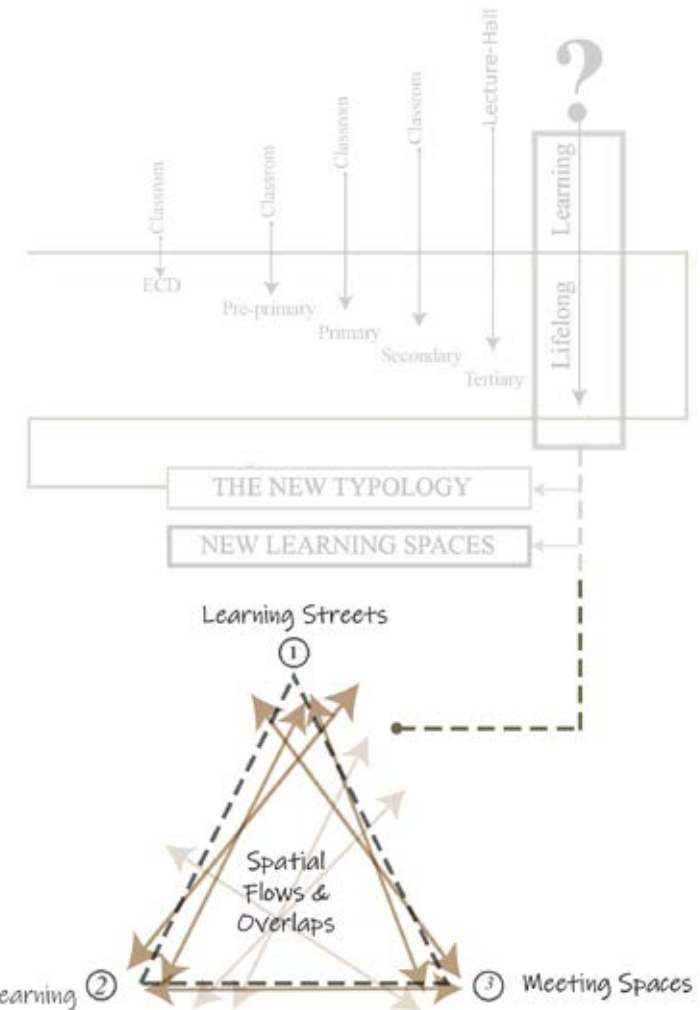


Figure 73: Criterion for new learning spaces (Author 2020)

## Communal Learning and Architectural Intent

The furthered definition of the cluster, which can also be referred as the socio-spatial assemblage, entailed the definitions of a) 'civic realm', b) 'home-base', c) 'home-base extension' and d) 'outdoor-learning' space. Literature by Fisher (2013), an architectural precedent called the Women's Opportunity Center by Sharon Davis Design Architects, and an interview with a vocational worker and a member of one of the instrumental non-profit organisations working with the community of Woodlane Village, shed some light into how and why the new learning spaces being conceptualized ought to be structured.

Firstly, the 'home-base' was regarded as the 'core' of the project in conception, as it acted as space to welcome both the community of learners and its patrons in a multi-pedagogical learning space. This was to take into consideration that learning is a social event that needs to be supported by social spaces, in order to fashion a mutual agreement amongst the users of the building and the surrounding community, consequently reconciling learners with their local context (Smith and Sobel 2010).

Secondly, the 'home-base extension', intuitively was conceived as spatial interjected between the 'home-base' and the 'civic realm' would wrap around the 'core' space. By further extrapolation, and the idea of reconciling the learner to their context (Fisher 2013, Smith and Sobel 2010), pedagogically the 'home-base extension' was conceived as Practical-Based Learning and Self-Directed and Informal Learning.

And lastly, the 'outdoor learning' space was conceived as space for instructional learning.



Figure 74: Conceptual Development- The Scaffold-Web of Share (Author 2020)

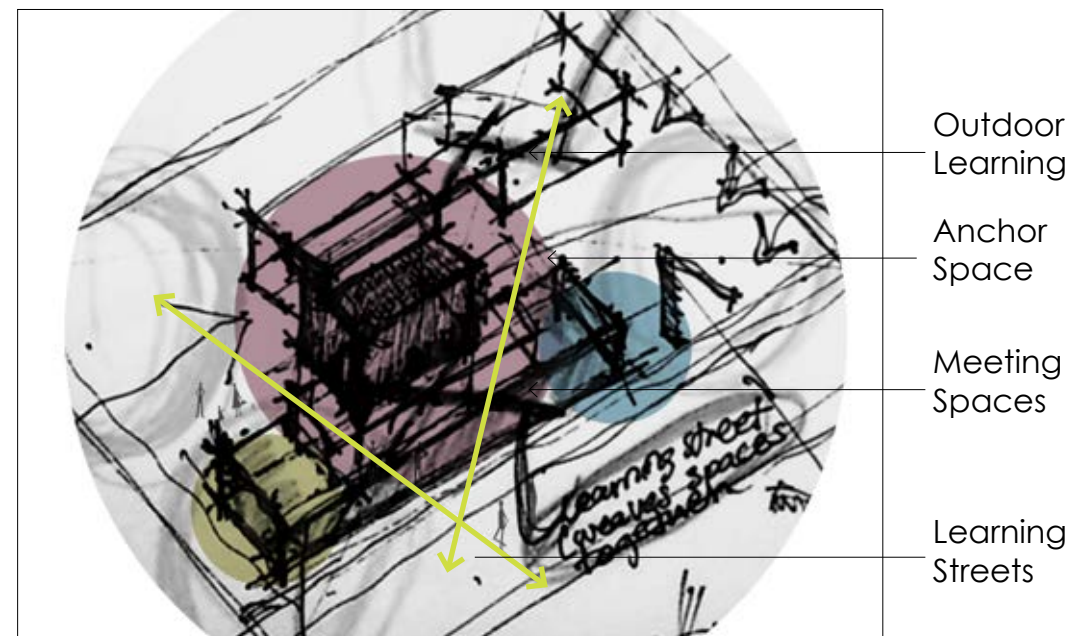


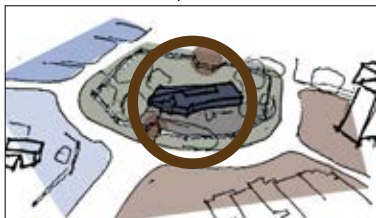
Figure 74.1: 3-D Conceptual Development (Author 2020)

**Critique:**

Preceding the documentation of three community facilities that supposedly supports lifelong and community learning within the vicinity of the chosen location, the following conclusion was drawn. Moreleta Park, and Pretoria East extent, seemed to have a great deal of neighbourhood markets, resource-sharing/exchange, communal learning, and creative vocational activities. These programmes surveyed from The Pure Hope Foundation, Garsfontein Community Centre, and the Glenstatia library, shared a common ground- the notion of embracing place-based community learning. Therefore, the idea of a Socio-Educational model was derived. The critique of the architecture that houses these activities was that all of them supported a teacher-centred pedagogy, perpetuating a hierarchical relationship between teacher and learner, and un-engages the learner with their context to a great extent- a disjuncture between learner and context. The design of the buildings corresponds with a learning environment typology called a 'closed school' or otherwise called 'closed learning environment' in the context of this dissertation. This means that the facilities comprise of 'single built units'- a typological issue that reacts against the possibilities of socio-spatial production of space in the urban environment.



The Pure Hope Foundation



Glenstatia Library

Figure 78: Teacher/Instructor Centered Pedagogy- 'Closed Learning Environment'

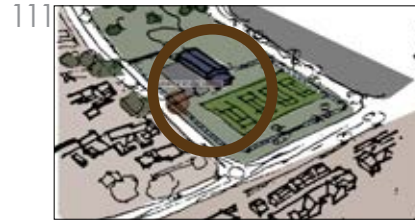
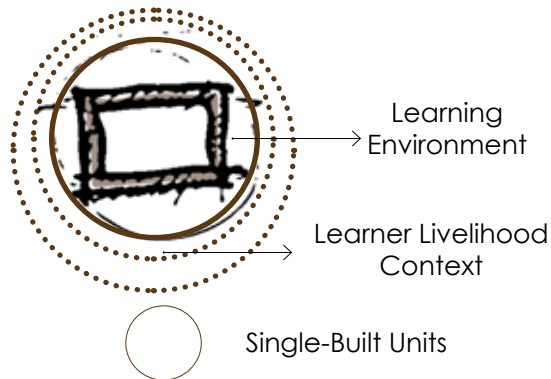


Figure 75: Garsfontein Community Centre, Pretoria-east (Author 2020)

Figure 76: Pedagogies & Built Unit/Fabric

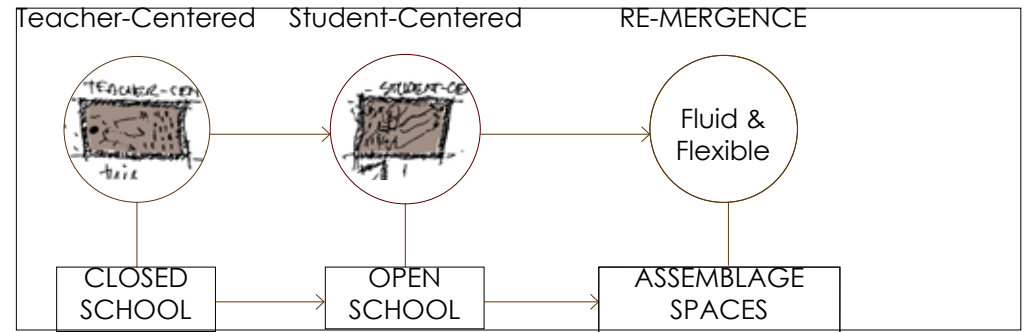
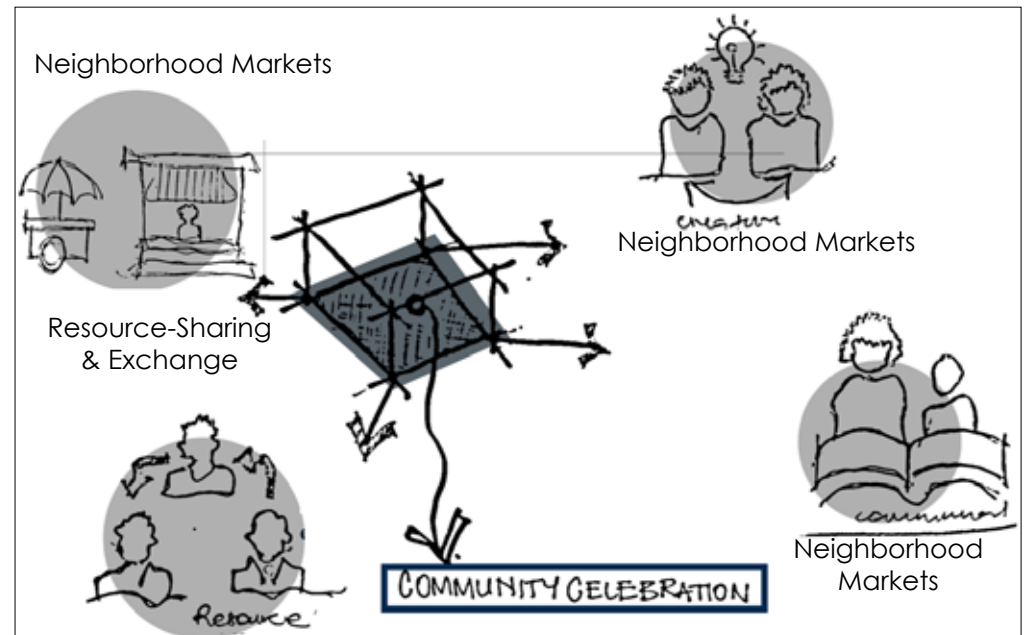


Figure 77: The Socio-Educational Model (Author 2020)



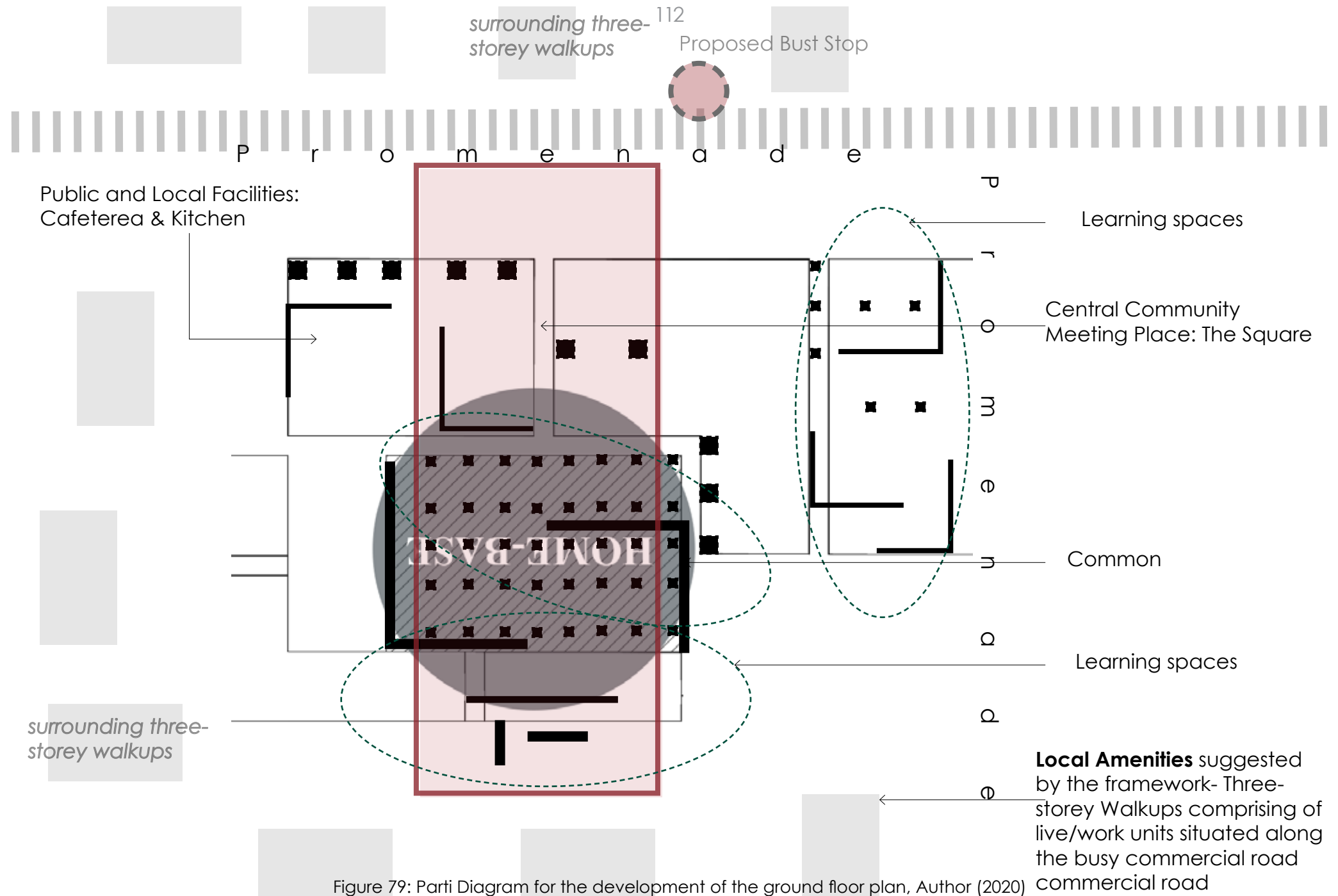


Figure 79: Parti Diagram for the development of the ground floor plan, Author (2020)



The following illustrations shows how the evolution of the iteration process of the programmatic formation for the chosen site.

Figure: Programmatic Formation diagram

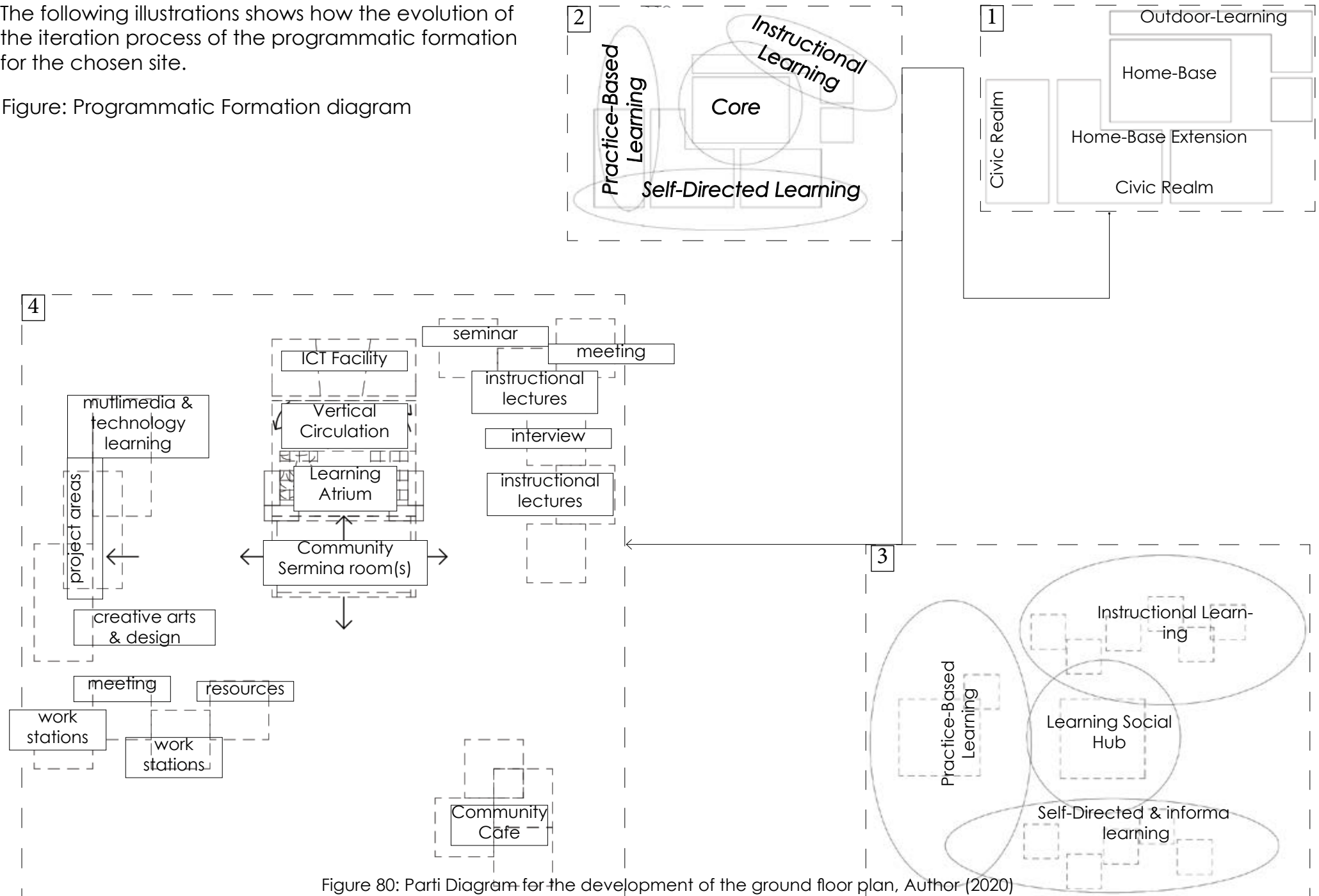
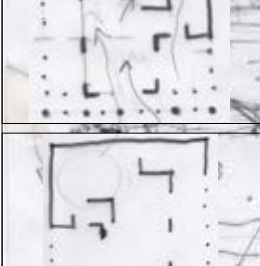
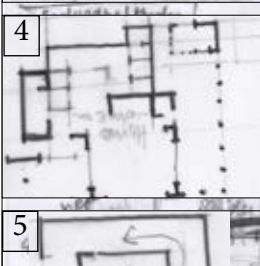
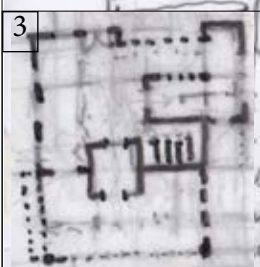
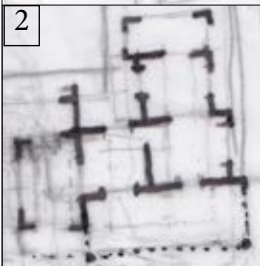
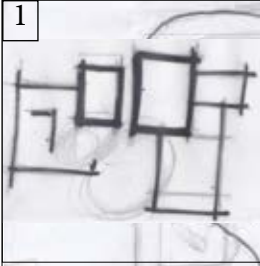
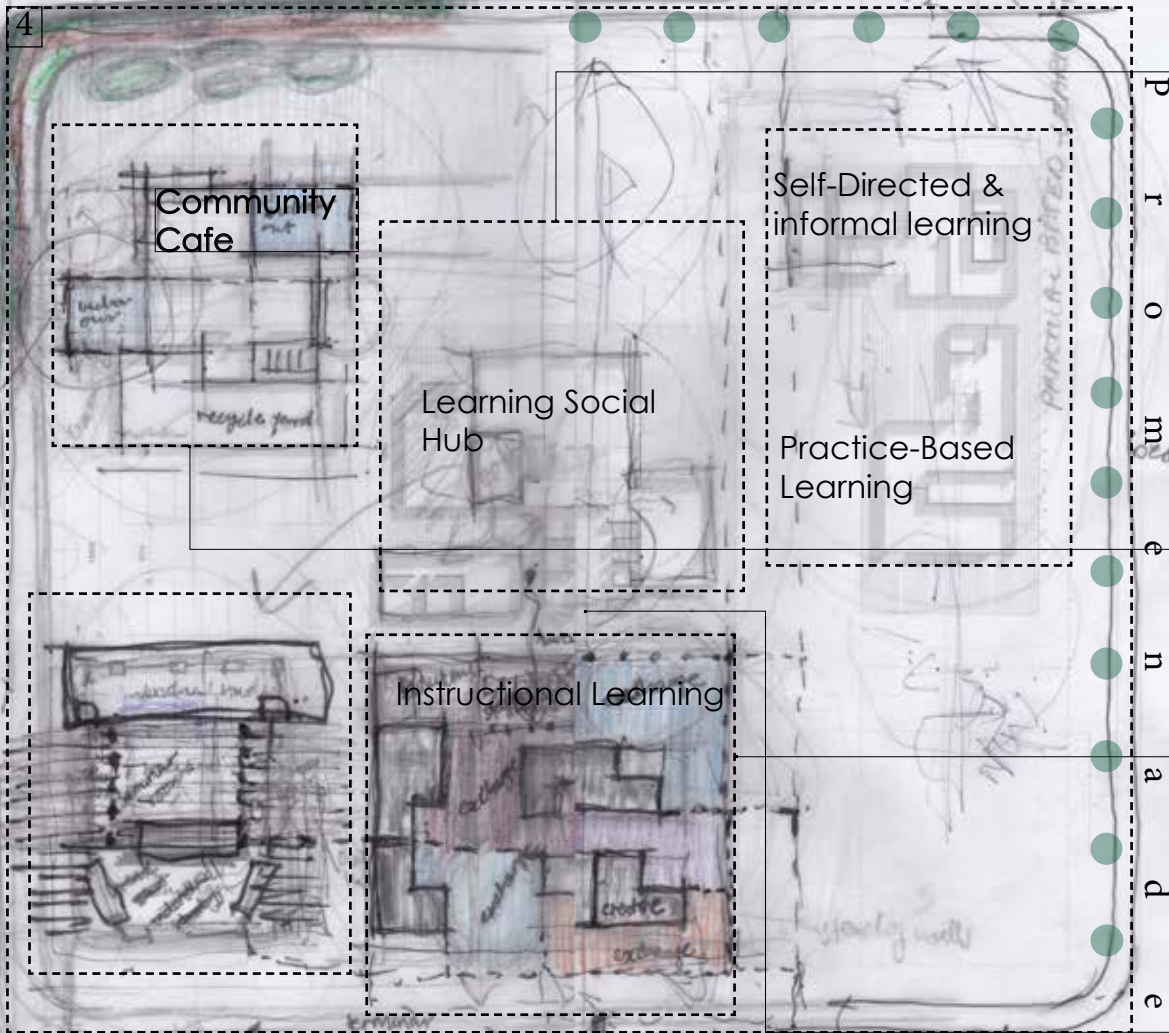


Figure 80: Parti Diagram for the development of the ground floor plan, Author (2020)

# The Socio-Educational Model Development

Informal Trading Spine

P r o m e n a d e



exploration of parti diagrams

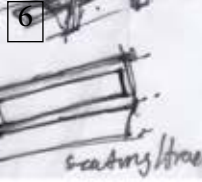
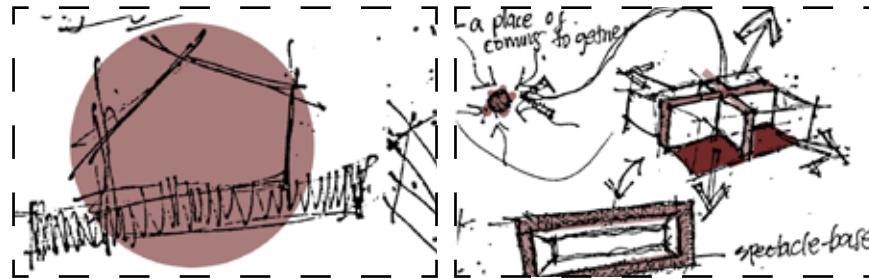


Figure 81: Parti Diagram for the development of the ground floor plan, Author (2020)

**Spatial and Structural Characteristics**

Home-base

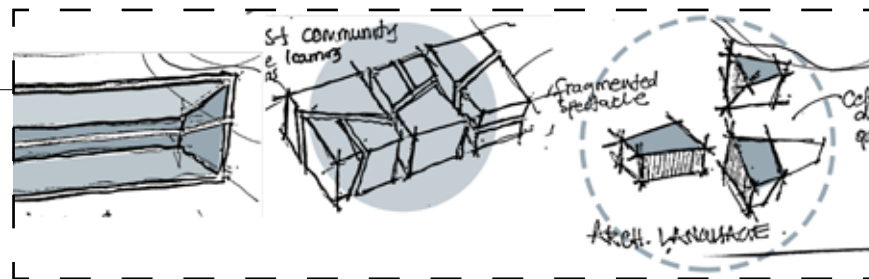


**Common Community Learning building**  
Where learners, community and patrons assemble

Important Discriptions

- This part of the building anchors all activities that contribute to lifelong learning and community-based learning programmes for the whole facility.
- Acts as a *spetacle-base* to permit views
- Acts as space for forming meaningful relationships and partnerships

Home-base extension

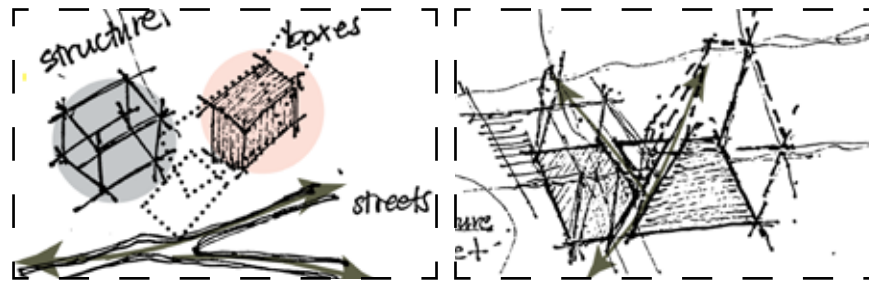


**Self-Directed & informal learning**

**Practice-Based Learning**

- The spaces hosts practical community learning activites
- Human-scale fregmented flexible cubes

Home-base extension & Meeting spaces



**Instructional Learning**

- The spaces hosts instructional community learning programmes

- Floating/flowing learning streets
- Contextualizes learning
- Weaves outdoor spaces together

Figure 82: Parti Diagram for the development of the ground floor plan, Author (2020)

## Architectural Intent- From spatial ordering to the Architecture Ordering

The initial architectural exploration was an instinctive reaction of how the cluster comprising the a rich 'civic realm', a 'home-base/core', 'home-base-extension' and 'outdoor-learning' could physical materialize responding to the theories of Fisher (2013) and Hertzberger (2008). The two theories respond to the school of thought saying learning space and pedagogy supports the idea that in order for meaningful learning and socialization to take root within community, the communal meeting (assembling) spaces should encourage a mutual relationship between the users of the building and the surrounding community.

Conceptually, figure is a sketch illustrates how the idea of having a 'core'/home-base can be situated, as a prominent part of the cluster, with a balanced relationship to the rest of the volumes forming part of the cluster. The sketch shows how the volume signifying the 'core' has a 'solid' nature, that is disjointed, and has obvious relationship with the other parts completing the cluster.

The conceptual sketches start explore how the cluster or the building can start to be divided into different sections that cater for different pedagogical activities requiring different spatial types. According to Fisher (2015), different pedagogical behavioural premise requires different spatial types (Fisher 2015). The spatial and structural nature of the 'home-base': Initially conceived as a communal meeting and learning space for learners, entrepreneurs, prospective and active patrons of the programmes. The initial spatial concept shows the three spaces divided and sharing the central common space that allow movement through. The spaces were to have transparent partition walls facing the common space, strengthening visual connection. The three segmented spaces would then be bordered with individual pods forming part of the wall screens to the spaces.

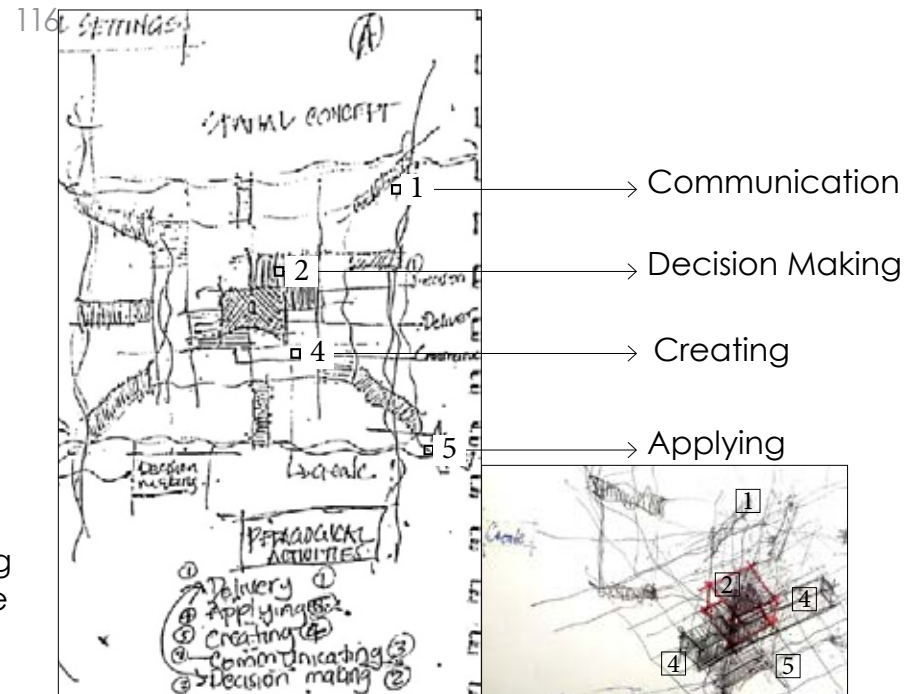
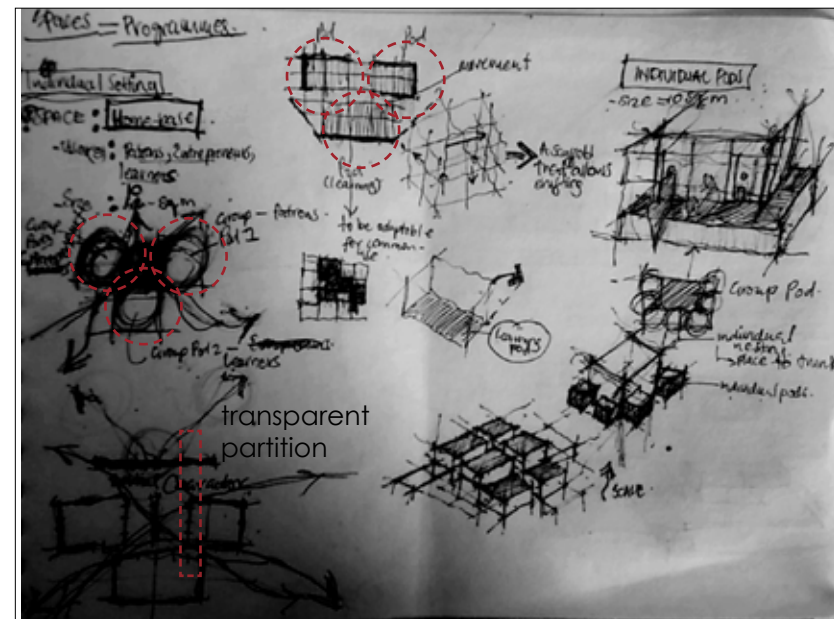


Figure 83: Conceptual sketches exploring the pedagogical-ordering of the Cluster



The spatial and structural nature of the 'home-base extension':

This part of the cluster was conceived as a space to cater for individual to group-based learning activities. The spaces were to be paired with spaces where resources for activities are positioned, where facilitator and the facilitated could have a balanced teaching and learning relationship. The idea of having a raised or visual platform for the facilitator was dismantled. The idea of dismantling the hierarchical relationship between the one facilitating or teaching and the one receiving the knowledge was also explored vertically, in terms of floor level-change.

Collectively, the whole cluster or building intends to explore how to the different parts can start to relate to one another as different volumes without losing the sense of being a collective.

### The Development of the Maquettes

#### Maquette 1: The Vertical Cluster

The initial maquette commenced as a building comprising of three volumes, with one of them placed in the middle as an element that holds the other two together. The one volume sat closer to the promenade, while the other is off-set from it. The building was oriented to have its longer side face and embrace the informal trading spine, the promenade, and the bent-social-spine, which is basically a curving landscaping element dedicated to the passing pedestrian on the promenade. In response to the conceptual sketch that explores the pedagogical-ordering of the cluster, the maquette, the decision-making activities are hosted in the volume that sits in the middle, representing the 'home-base, while other pedagogical activities radiates outward the core.

117 To explore the vertical scale, through the reflection of the research, theory and concept, the intention was to create a cluster that reflects a scaffold. Which would have been a design that symbolized the idea of learning as a social construction of knowledge amongst members of the community sharing a common interest.

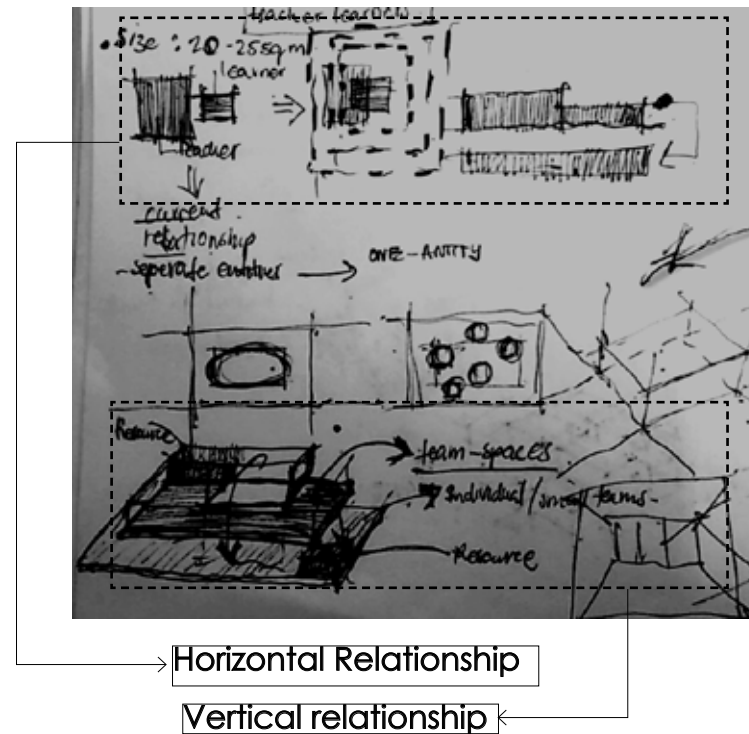


Figure 84: Initial Cluster internal spatial arrangement exploration(2020)

## Maquette 2: The Vertical Cluster

A different manner of how to create a vertical cluster was explored. The concept further developed into an idea of having a 'solid core with frayed edges. This idea, seemed to still be experienced vertically. The main core still remained as the 'home-base' of the entire cluster. As a result, two courtyards were created on both sides, while the promenade was celebrated by the long façade.

## Maquette 3

This maquette explores an I-shaped typology for the cluster. As seen on the second maquette, the interstitial spaces were rather created at an undesirable part of the model, as they did not consider the edges of the building. Here, the idea of a centralized gets strengthen by the shape embraces the common outdoor space, and the surrounding panoramas. This typology would also have the benefit of cross-ventilation.

## Maquette 4 and 5

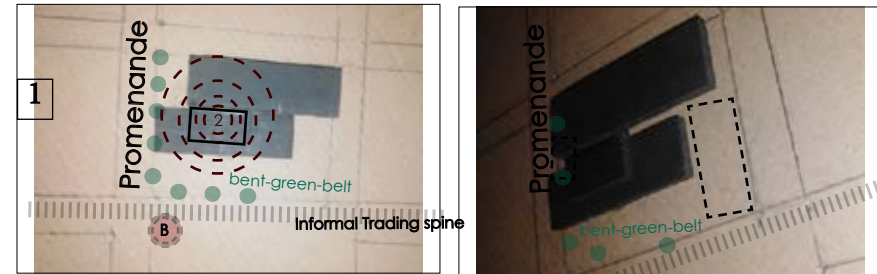
The following maquettes took further the idea of a 'solid core and frayed edges', and explored them through the typologies expressed in maquette 2. The vertical elements of maquette 5 were extruded to create a sense of exterior surface layering and stepped back surface to encourage interaction on street level. This model introduced some of the spatial principles observed in Woodlane Village.

## Maquette 6

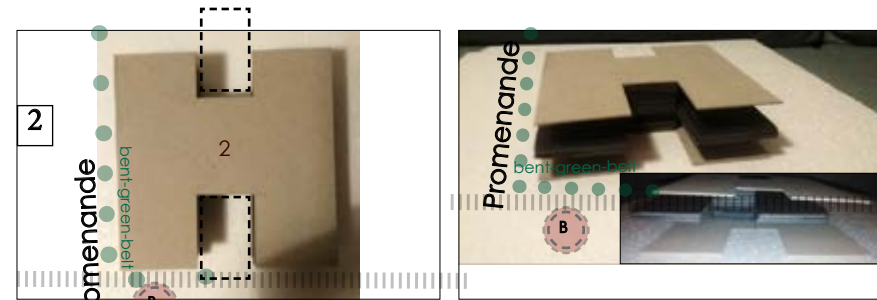
Maquette 6 is the amalgamation of all the above explored options, and became what was initially presented to the external examiners for the first design crit. The decision was made to keep the cluster as one entity, although typologically, it aimed to

118 have distinctive volumes that forms the entire cluster. The promenade was still embraced on the two sides, and the building positioned in such a manner that all activities are visible to the rest of the community.

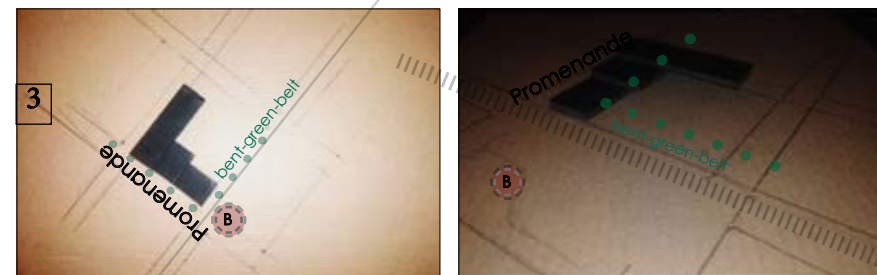
## ITERATIONS- The Development of the Maquett



Maquette 1: The Vertical Cluster



Maquette 2: The Vertical Cluster



Maquette 3

Figure 85: Maquette 1 & 2 exploration

## Critique- Maquette 6

Based on the theory of learning environment, the evolutionary trajectory of the architectural innovation of pedagogical spaces, suggests that the re-emergence of the fluid pedagogy ought to take place in an assemblage of spaces called 'clusters' (Fisher 2015). Volumes making up this cluster are tightly put together, and the suggestion from the examiners were that the volumes should be pulled apart to allow for a visible relationship between the clusters. This suggestion came in handy as it meant that the 'learning streets' would not only be 'floating streets', but also streets on ground level that would create thoroughfares within and through the whole facility. Internally, the clusters or assemblage or programmatic spaces, would be explicitly part of the spatial flow, meaning class rooms, meeting rooms, and learning commons would be clearly distinguishable using architectural elements.

Based on the mid-year feedback on the manner in which the structure was tightly put together, further explorations led to the exploration of the building technology of the proposed facility. This led to the use of high-tech architectural solution, in trying to architecturally illustrate how community learning could take place in a fluid pedagogical building designed as an assemblage of learning clusters. By nature, as discussed in the precedents for the structural intention of the building, one of the high-tech architectural solution goals were to embody the idea of flexibility, adaptability and openness.

The application of the high-tech architectural aesthetic: Figure i and u, shows the tight arrangement of the clusters. Through reflecting on the principles aforementioned, the proposed structure is seen expressed as platforms on different levels, connected by a staircase and a wrap. The whole structure is held together by the rigid scaffold framework, used to illustrate how an assemblage of clusters can be held together but still

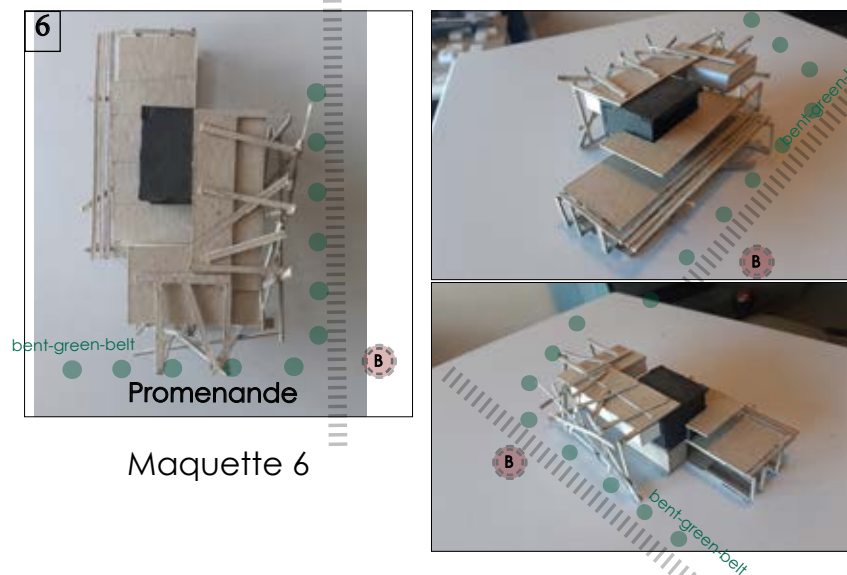
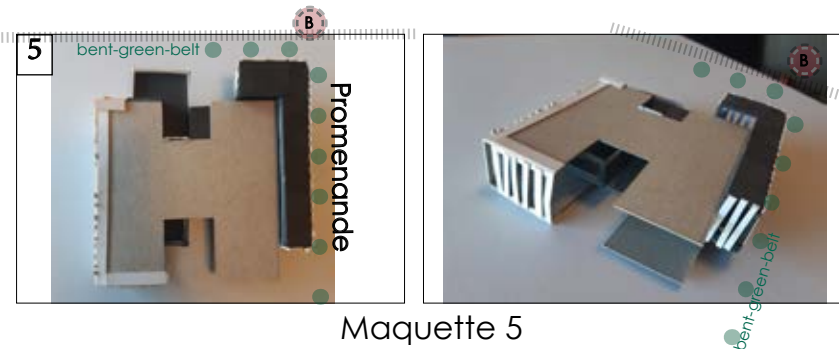
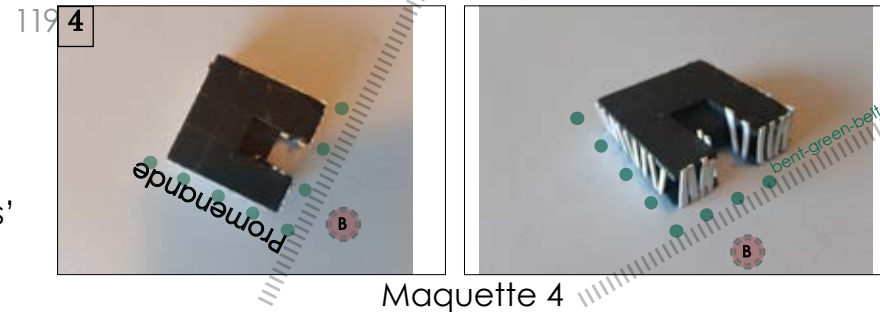


Figure 86: Maquette 4,5,6 exploration

allow the flexibility of position and adaptability with a unifying framework. The gaps between the platforms are expressed as 'learning streets', some on-ground level and some 'floating'. The core volume where the home-base associated programmes and spaces are hosted, together with a staircase and an elevator for vertical circulation remains illustrated at the same position, anchoring the other volumes completing the cluster.

At this stage of the design, the sketch in figures, the lines signifying the volumes are drawn in dotted lines to illustrate the intention of volumes to be open and transparent, creating a spectacle of all the learning activities happening in and around the building. Responding to the characteristic of the high-tech architectural language, the intention was to clearly communicate the changeable nature of the spaces inside the clusters. Creatively exhibiting the functional nature of the services and the building elements, became the secondary aim of the projects regarding for the building.

### Response to Place-making

With the meeting spaces facing the promenade and the informal trading spine, the edge facing the 'bent green-belt' allows for social and lively spaces to develop. The next step was to introduce human scale facades that would allow people to approach, occupy, and interact with the edge(s) of the building to create a sense of community ownership.

The meeting spaces aligned with the 'work spaces' according to the Programmatic Formation diagram, spatially creates a strong section in the urban fabric prevents the façade of the volume facing the promenade from being non-interactive with the pedestrian. This also compliments the mixed-density development of the proposed urban frameworks, the three-storey walkups with lower-ground live/work units. Pulling apart the platforms to create thoroughfares through the building, allow for a better

response to human scale. The volumes will not form over-powering elements in space, but provide opportunities for multiple multifunctional breaks as the user journey through the entire facility.

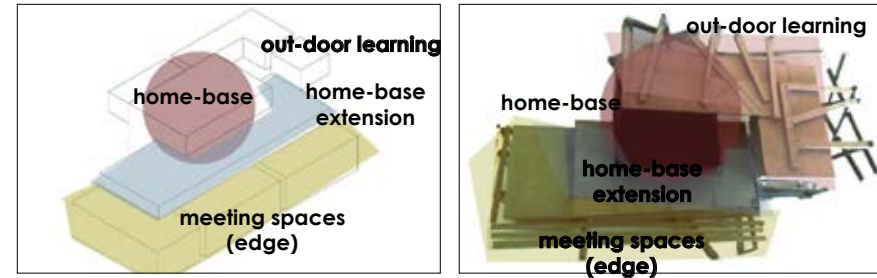


Figure 87: Cluster of assemblage of volumes

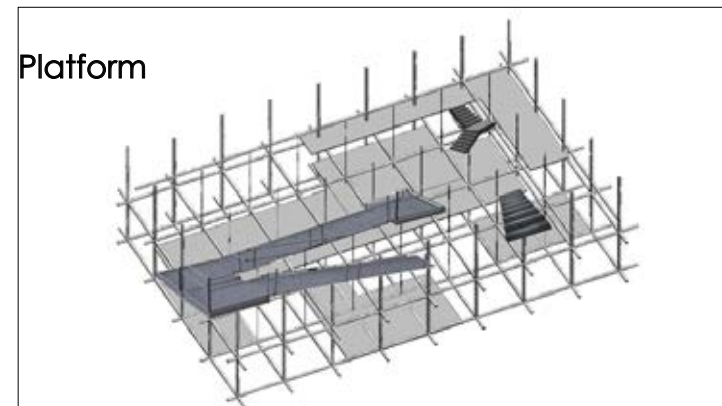


Figure 88: Levels connected by vertical circulation

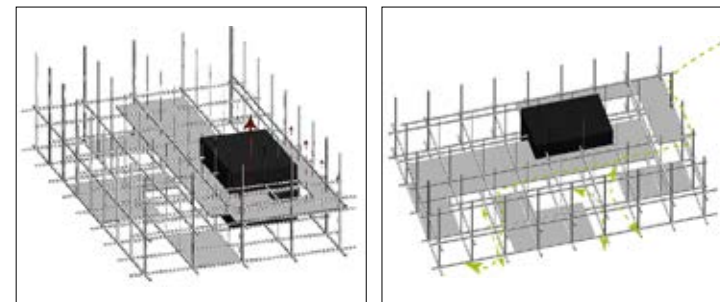


Figure 89: Vertical Circulation Horizontal Circulation



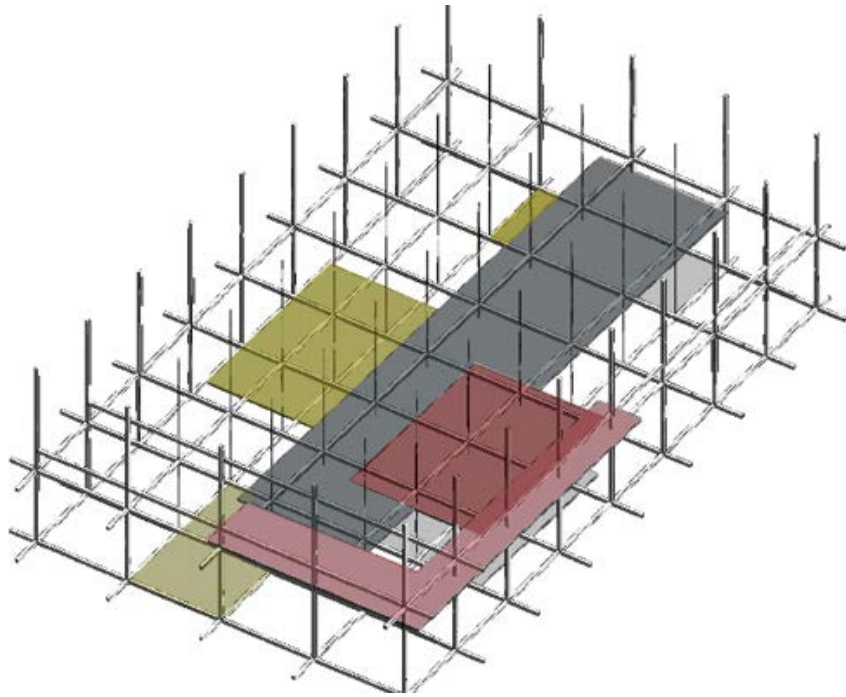


Figure 90: Platforms of Varying Spatial Types

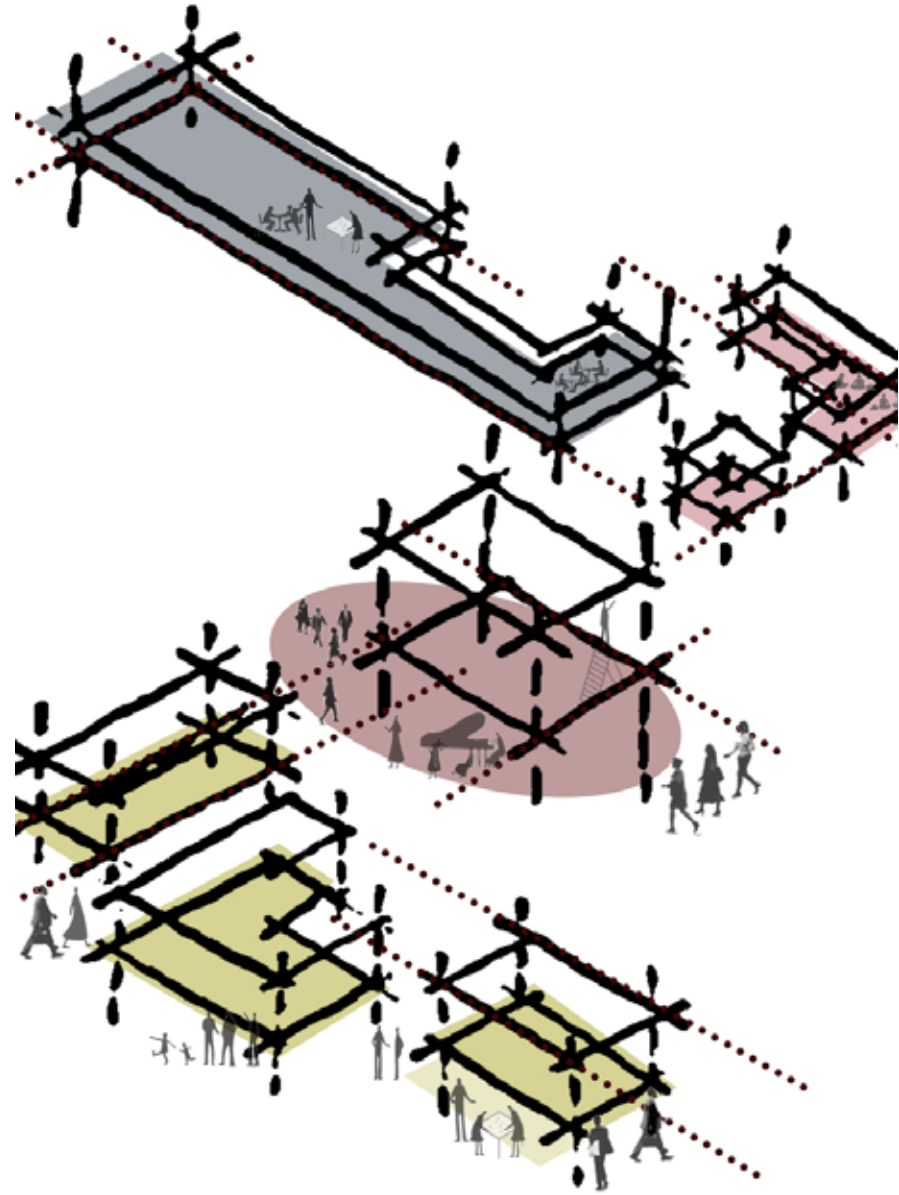


Figure 91: Exploded Cluster illustrating Platforms, Volumes, Streets and Movement of People

## First Model Iteration

### The Context and Learning:

As previously discussed, the Learning and Opportunity Center (LOC) aims to cater for all operational learning opportunities carried out at the Moreleta Gameente church. These learning opportunities are seen as having the potential to boost vocational and entrepreneurial activities the community of Woodlane Village have initiated themselves as a means to make a living. Therefore, the learning programmes, entrepreneurial and vocational opportunities documented forms part of the main programmatic drivers for the facility. Through this iteration, specific programmatic requirements for each cluster are explored spatially.

### Context and Infrastructure:

Precedent studies have shown how a learning facility aimed at uplifting a local community can play a huge role of forming a decent urban environment by becoming the first public facility in its setting.

### Programme and Space:

It is important that the learning and workshop spaces forms the edges of the facility, in order to encourage public interaction and prompt entrepreneurial activity and vocational curiosity.

### Street character:

In its land parcel, the proposed internal streets are formalized by the built-fabric of the project.

### Critique:

#### Programme and Space:

The internal streets should be designed to include courtyards where learners, staff and community can interact and exchange. These can also provide street vendors an opportunity to use the learning spaces as place for growing their businesses,

122 knowledge and gain meaning relationship that can benefit their livelihood.

### Internal Patterns and Spaces:

Organic urban spaces documented in from the informal settlement, are not clearly represented in the internal circulation space yet.

### Architectural Form:

The frontage form of the building should respond to human scale and represent the scale of the informal settlement. Generally, the edge of an institutional building is accentuated to announce itself as a civic building. However, this building aims to announce its character with the facility in the middle. At this point, the model does not communicate this relationship between programme and form.

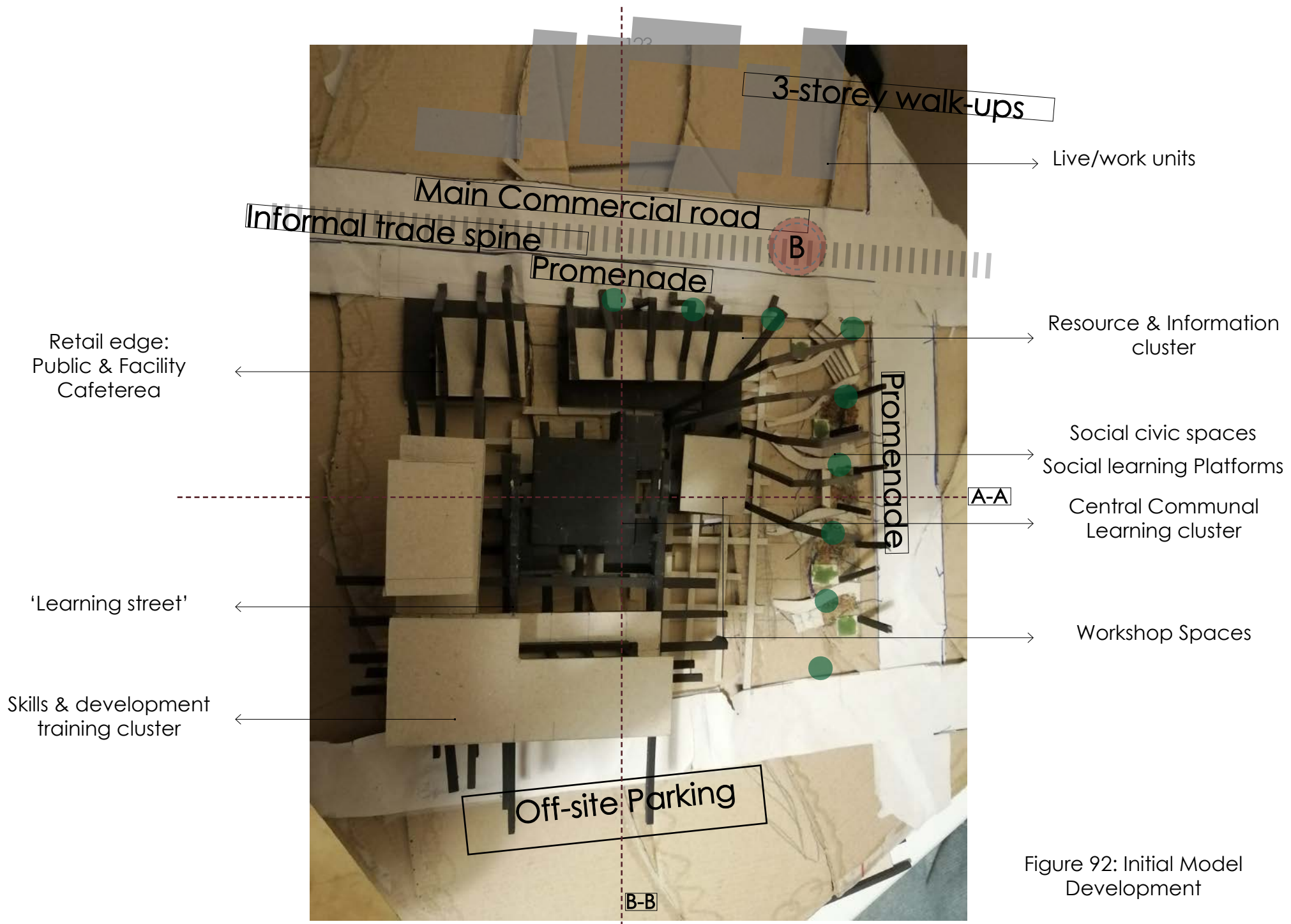


Figure 92: Initial Model Development

## First Conceptual Sections:

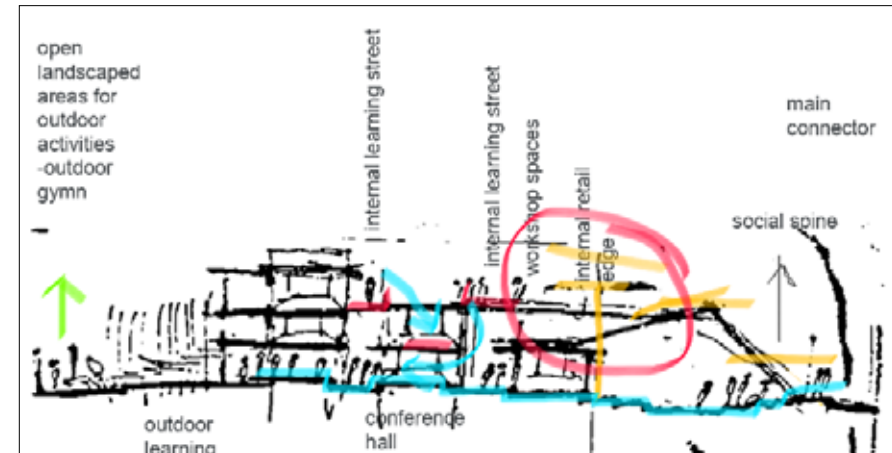
124

### Architectural Language: Roof

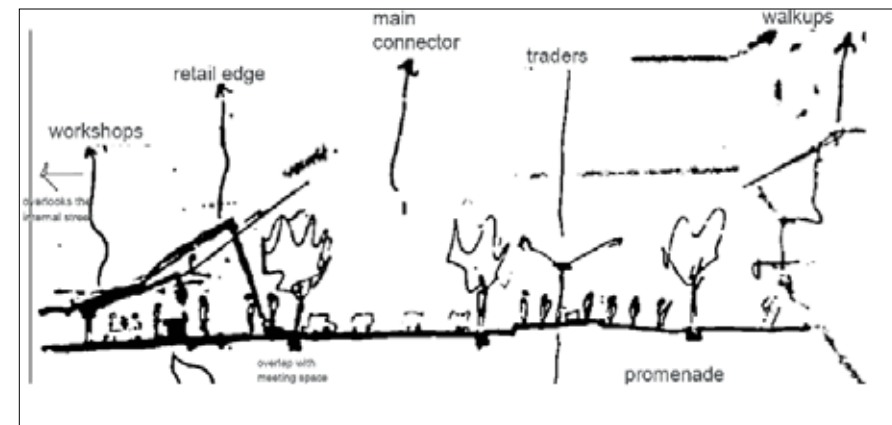
The intention with the first conceptual sections was to design the roof as a defining element- molding the inside and outside spaces where people walk and interact. Internally, the idea is that the roof provides an industrial aesthetic, that speaks of the high-tech architectural character. Externally, the roof's height aimed to de-scale in order to respond to human -scale.

The roof was being explored in such a way that it permits visual contact with the surroundings of the facility and also acts as an 'energy farm', accommodating solar panels and permitting natural ventilation. Particularly, for the clusters at the edge of the campus, the roof form aims to act as an articulator of the internal spaces, and forming a connection to the middle cluster by creating covered walking and spaces of interaction.

Figure 93: First Conceptual Sections



Section A-A



Section B-B

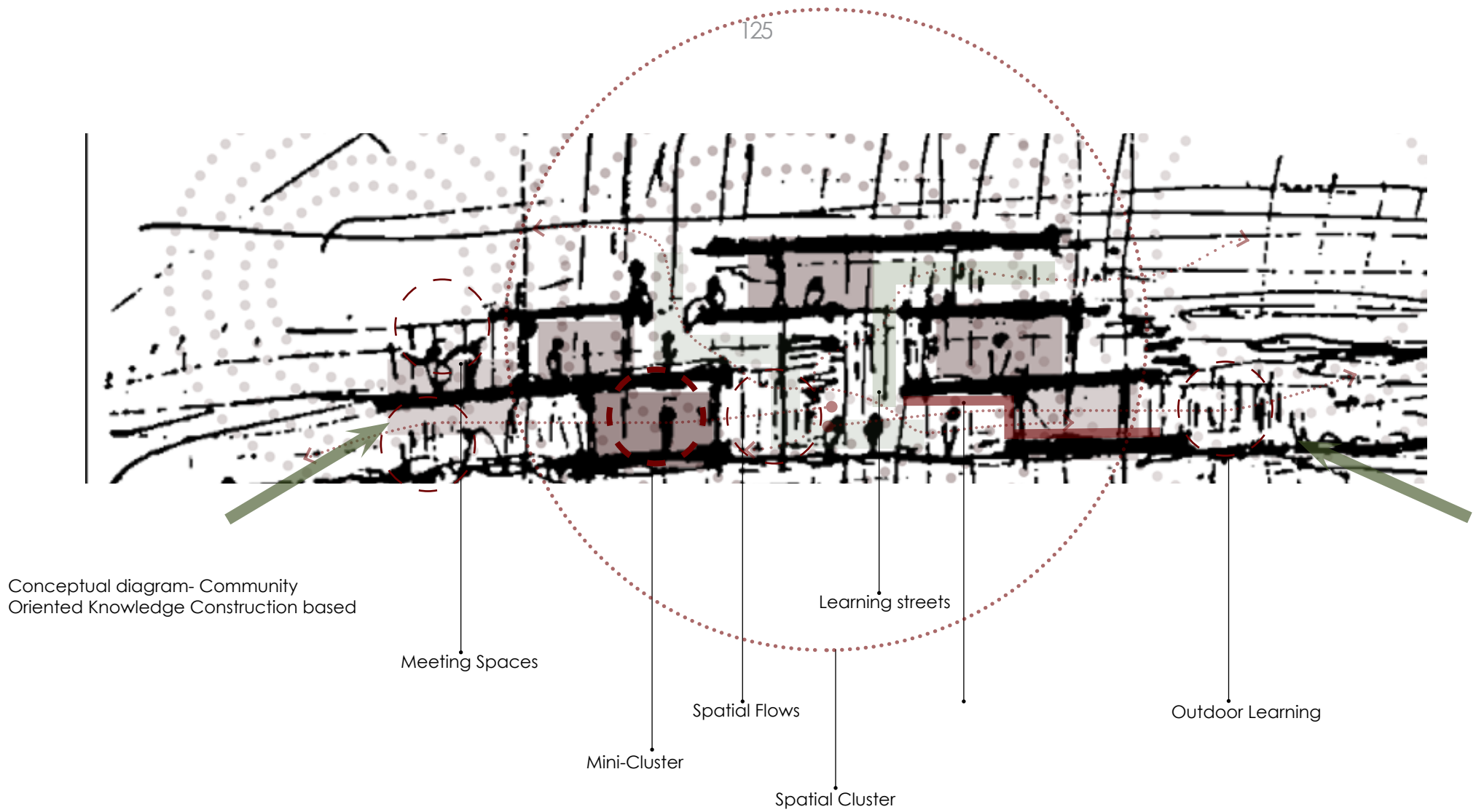


Figure 93: Conceptual Section with design intentions

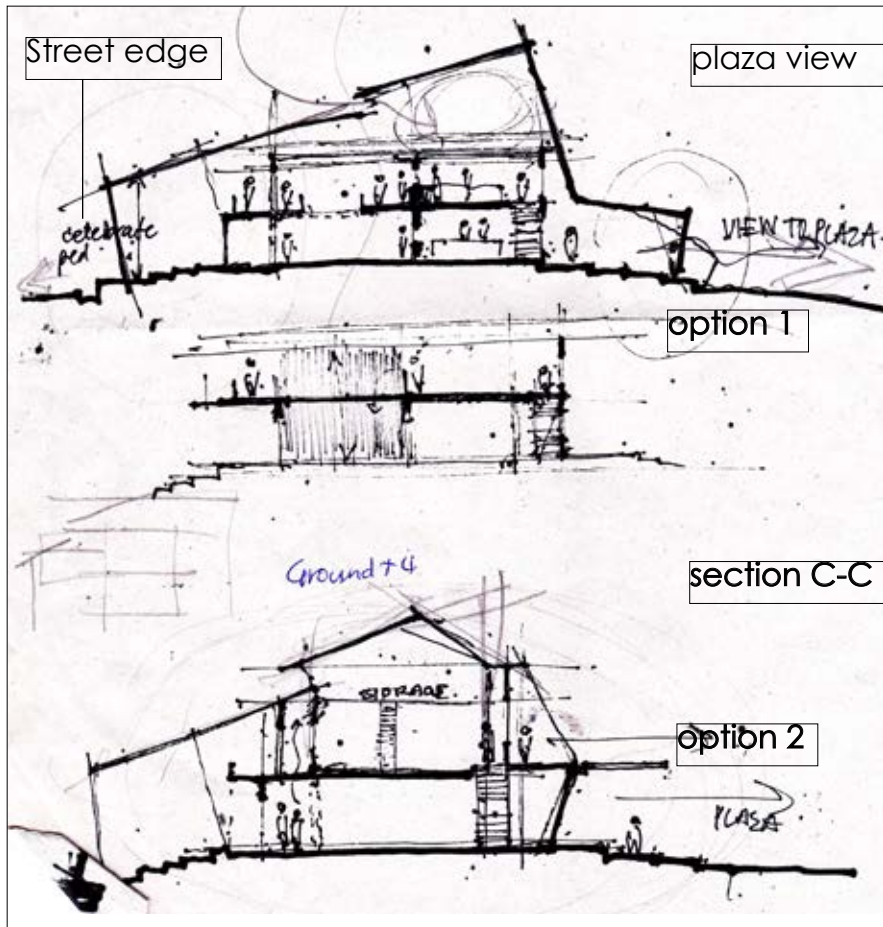
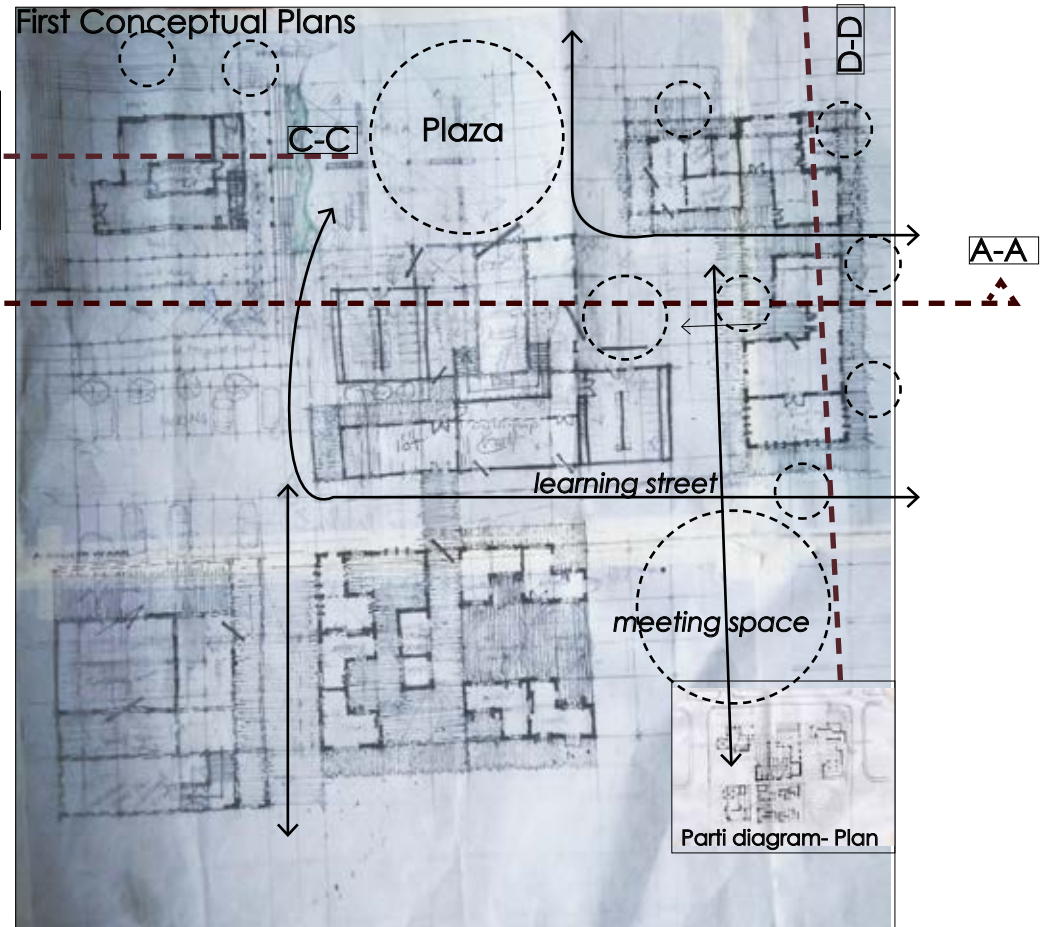


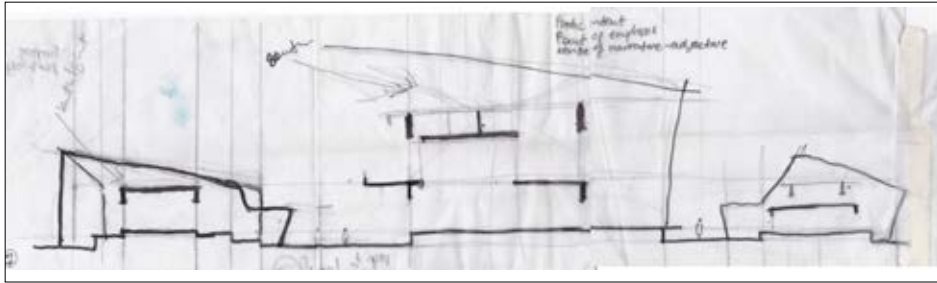
Figure 94: Typical roof language for a single cluster

Roof as a defining element- Depicting the relationship between indoor and outdoor

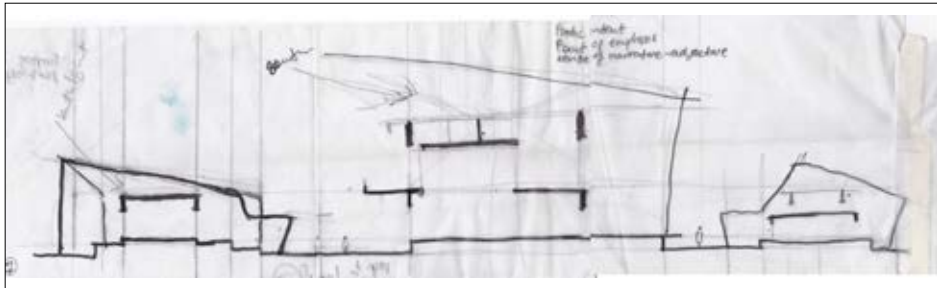


'Learning streets' and 'meeting spaces' dictate the fabric and lay-out of the clusters for the facility

Figure 95: Initial ground floor plan



Section A-A



Section A-A



Figure 96: Development of the Longitudinal Section, Section A-A

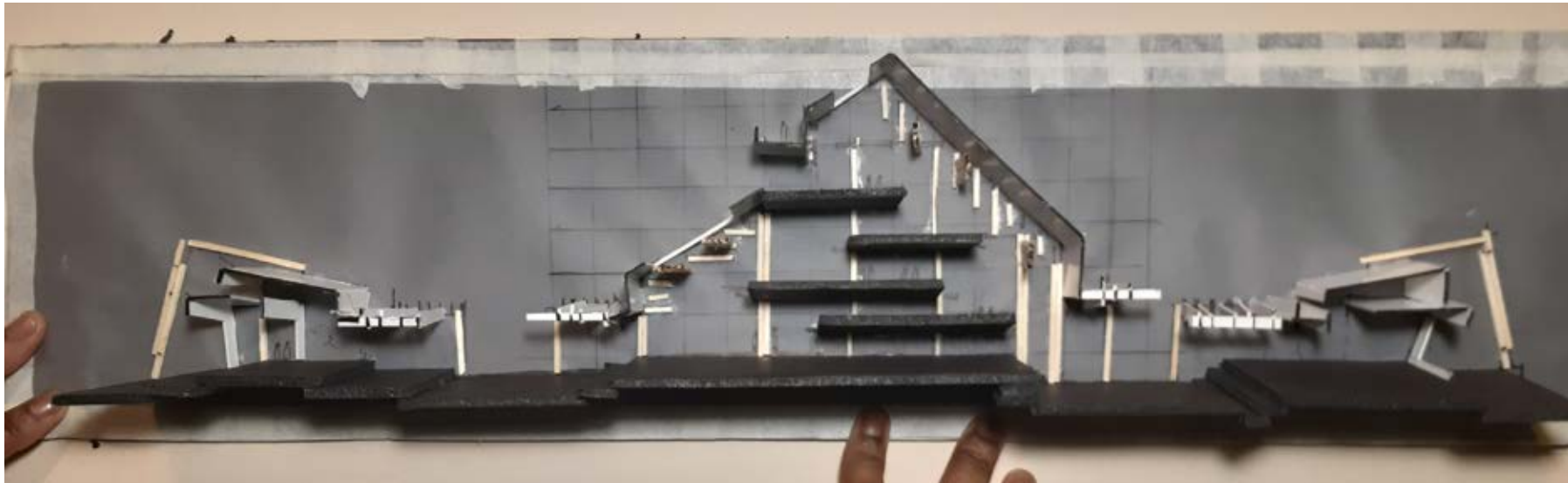


Figure 97.1: Sectional Model of the Longitudinal strip section, Section A-A

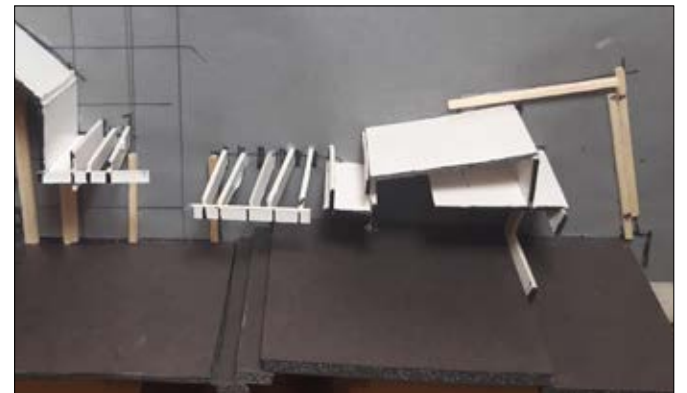
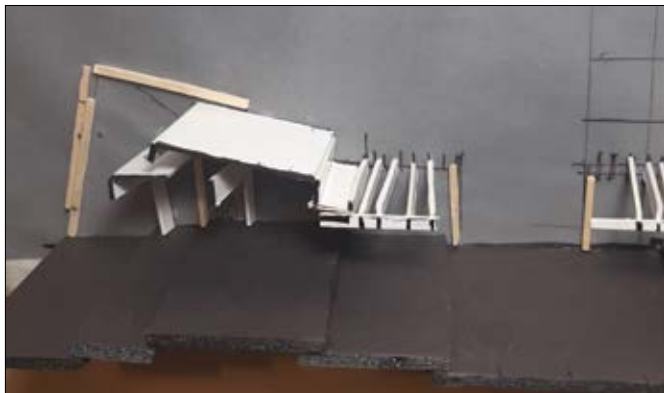


Figure 97: Final Spatial Section Trip Model (Working)



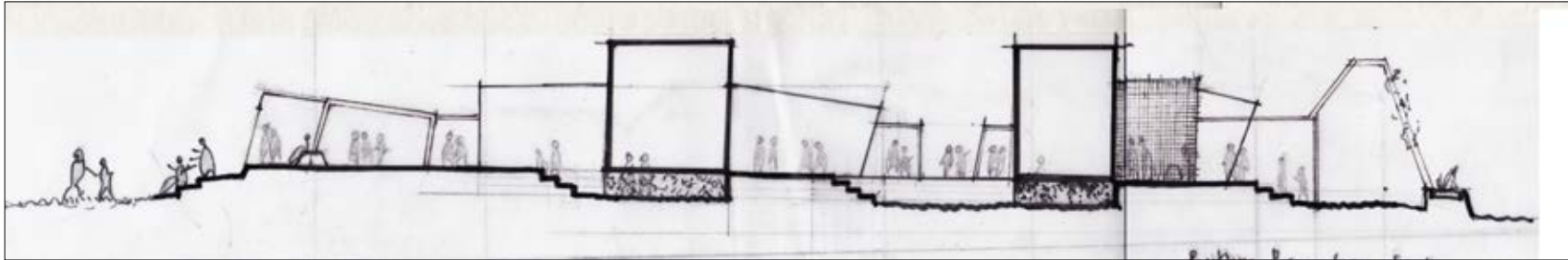


Figure 98.1: Section D-D, illustrates volume articulation

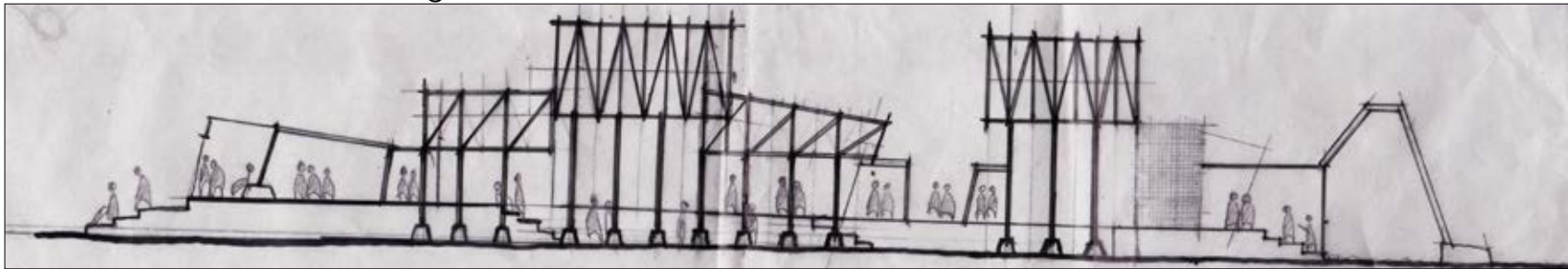


Figure 98.2: Section D-D, illustrates volume and roof language

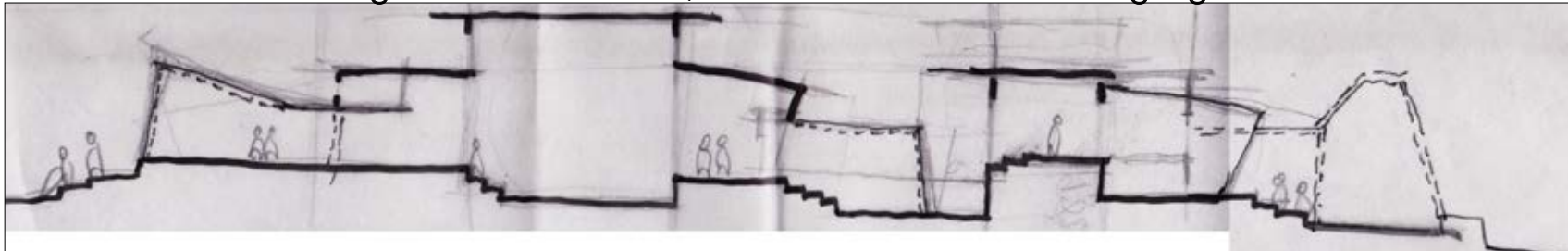


Figure 98.3: Section D-D, parti intention

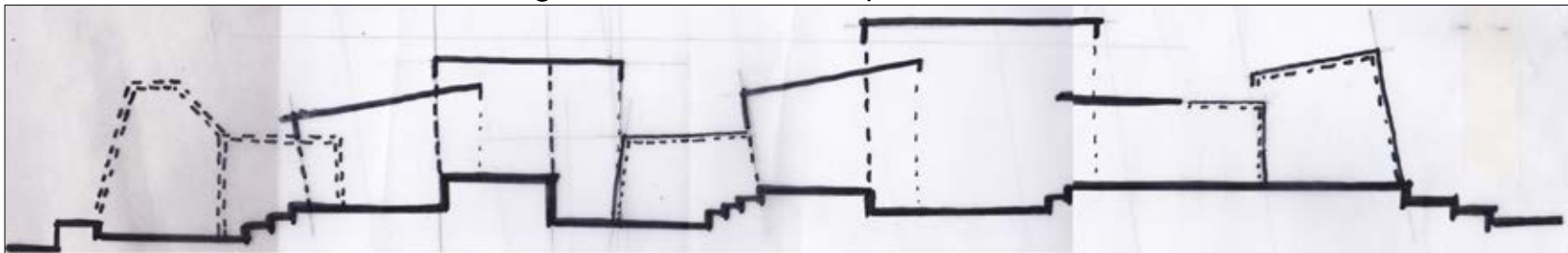


Figure 98.4: Section D-D, final parti diagram

Figure 98: Section D-D Development

Figure 98.5: Parti diagram- Edge Articulation final intention

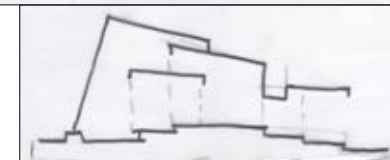




Figure 99.1: Revit Model Development, 3-d

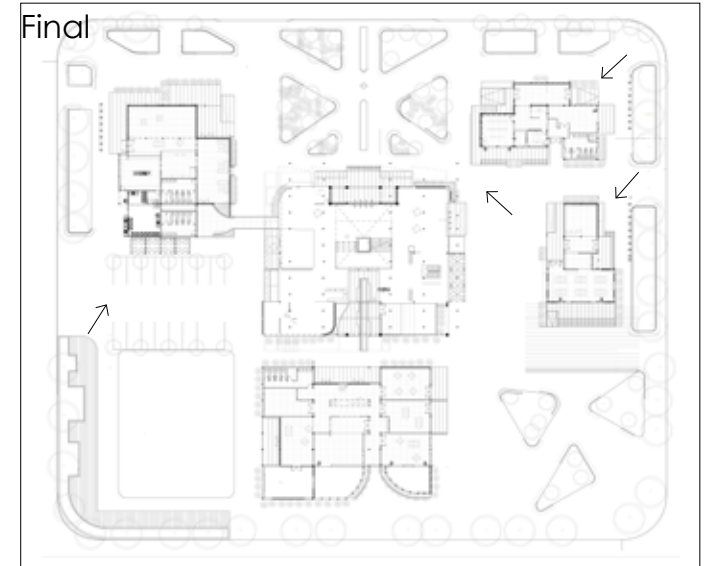


Figure 99.2: Revit Ground floor plan development

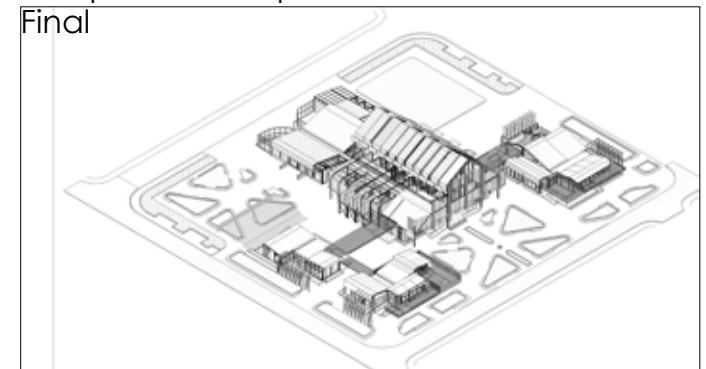
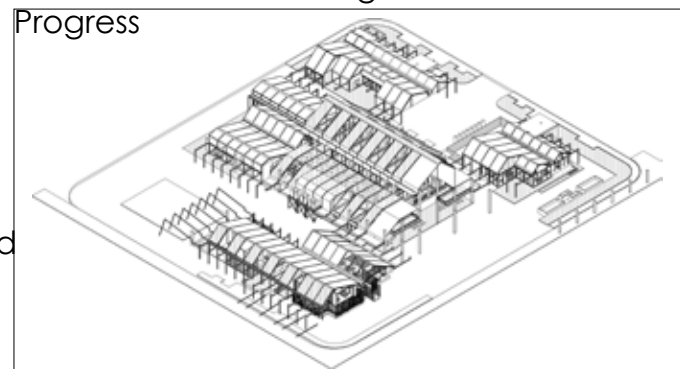


Figure 99.3: Revit 3-d development

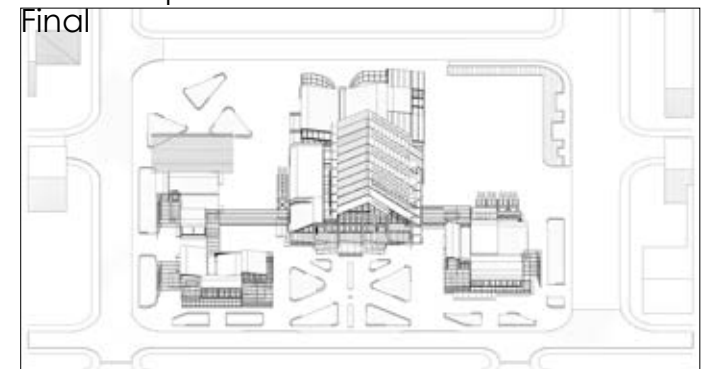
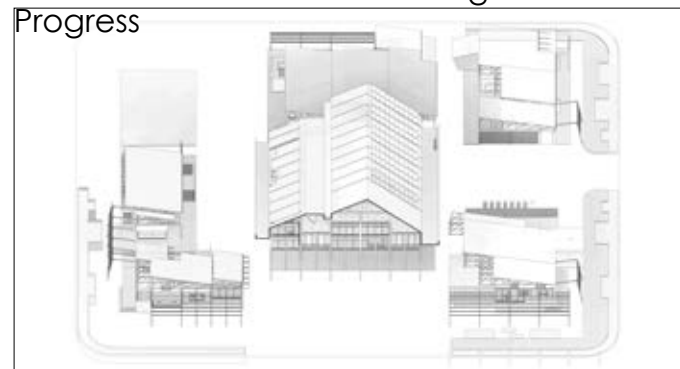


Figure 99: Revit Model Development

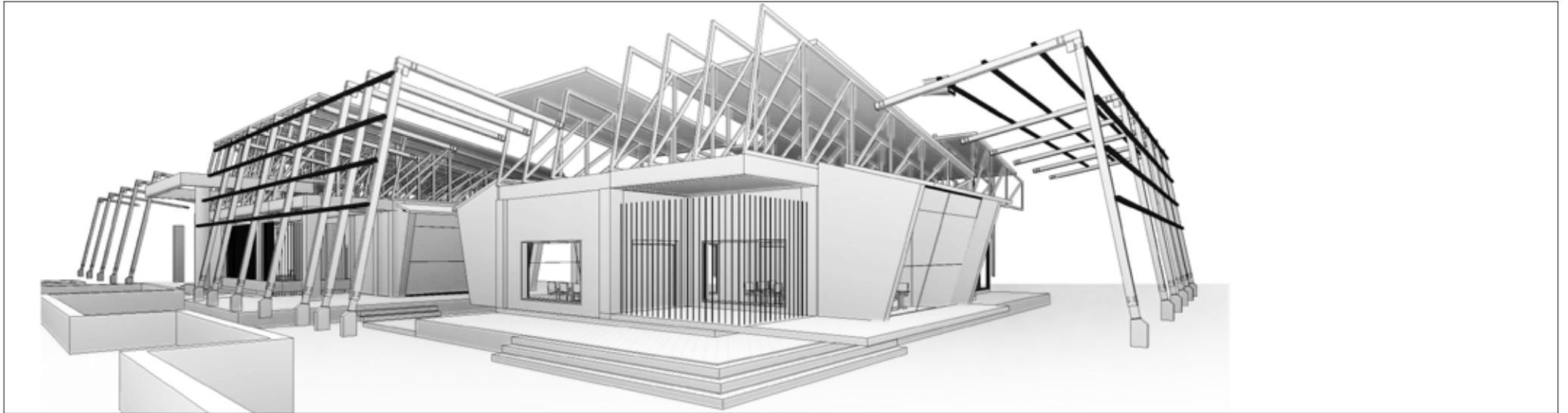


Figure 100: Progress model edge condition exploration

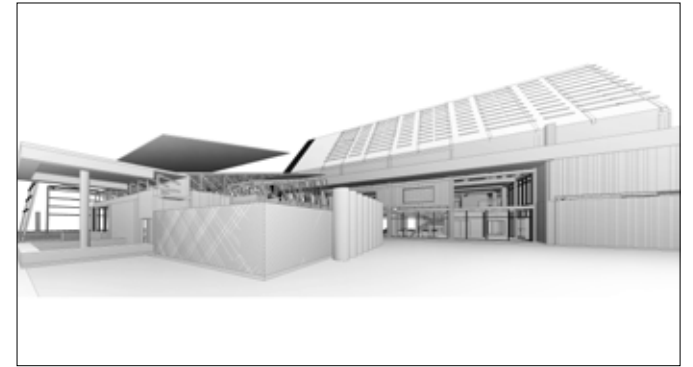
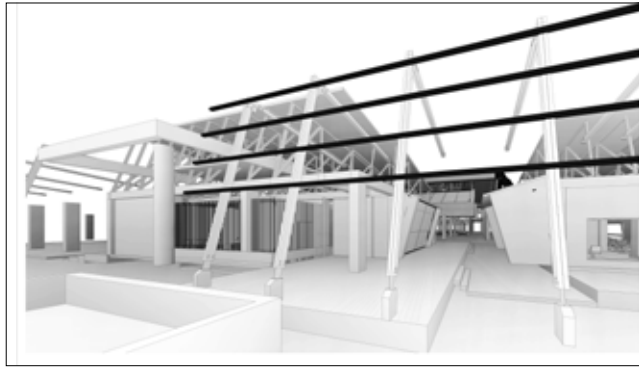
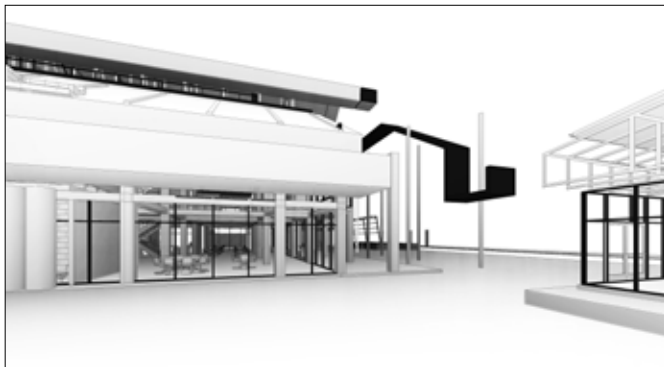
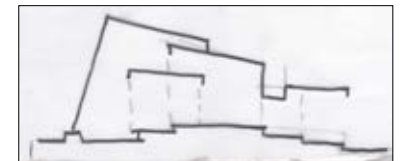


Figure 100: Progress model- edge condition exploration

Figure 98.5: Parti diagram- Edge Articulation final intention



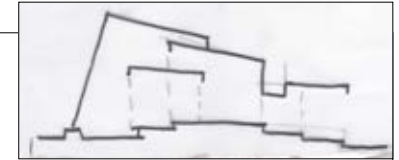


Figure 98.5: Parti diagram- Edge Articulation final intention

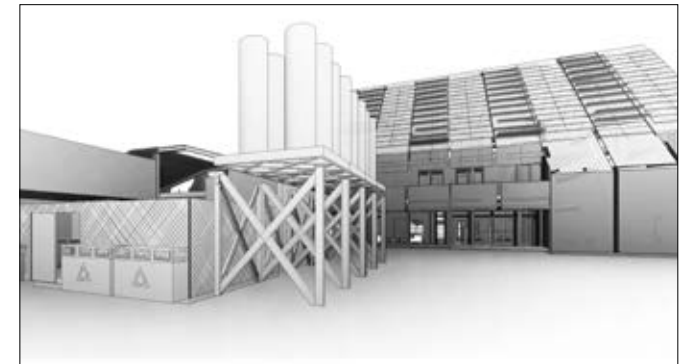
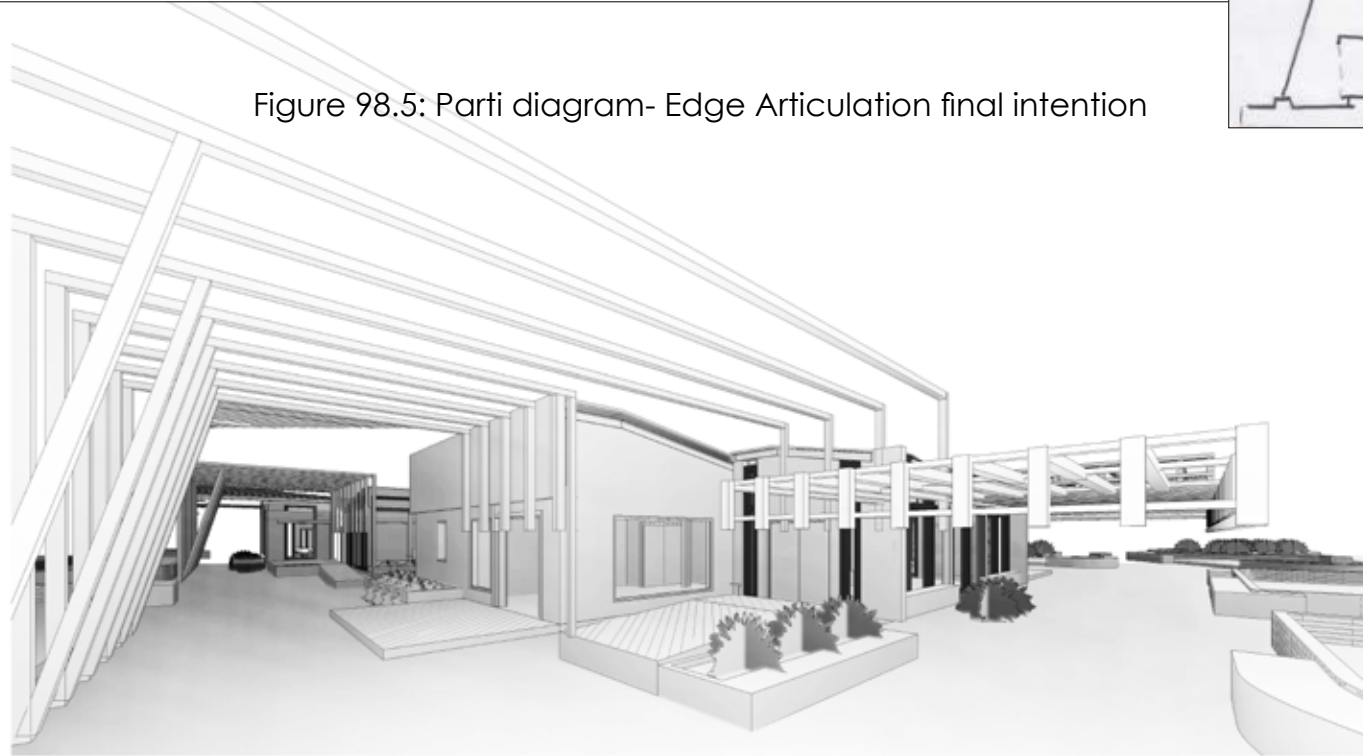


Figure 101: Final model- edge condition

## **7. CHAPTER 7**

### **TECHNICAL RESOLUTION**

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7.1. Structural Intention

7.2. Structural Composition

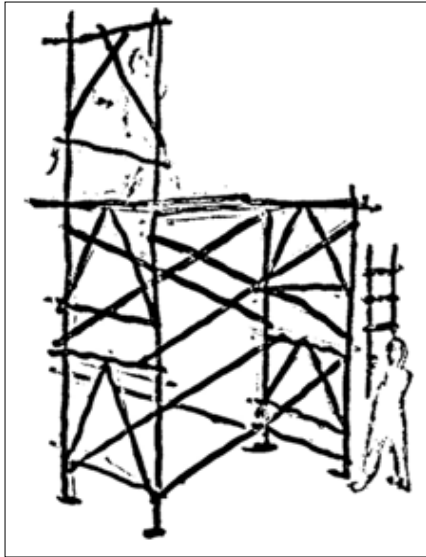
7.2.1. Structure

7.2.2. Technologies

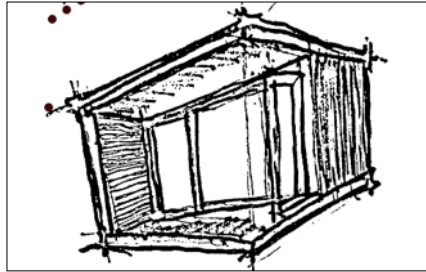
7.2.3. Materials

7.3. Systems

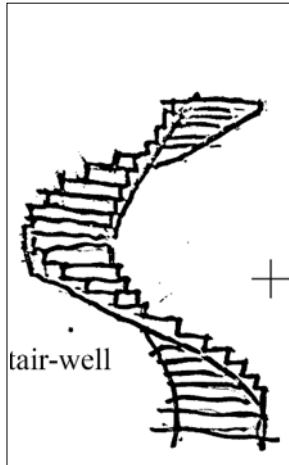
7.4. Sustainability



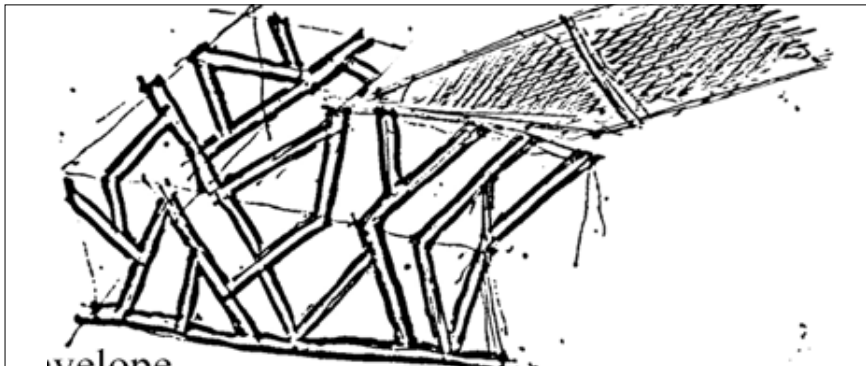
Construction Scaffolding



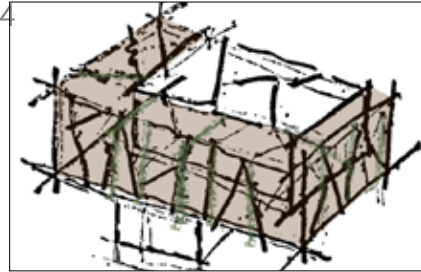
Economic Pods



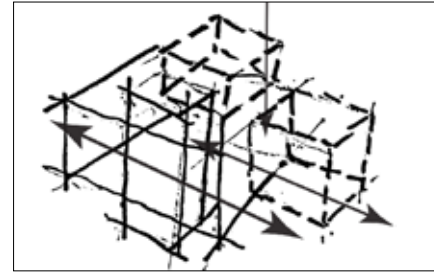
Living Staircase



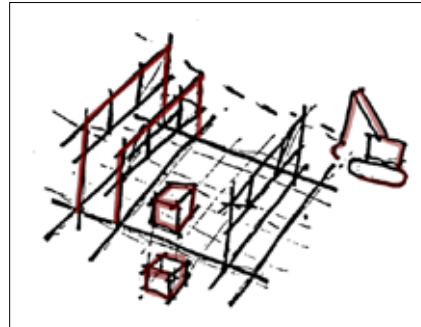
Empathetic Envelope and Roof



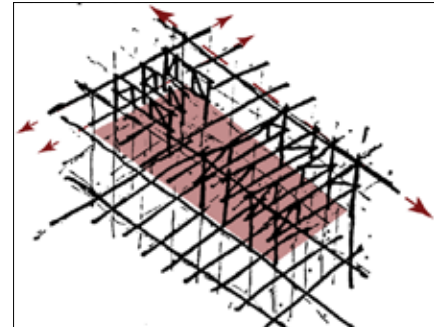
Green Facade & Production of renewable energy



Expandable Flexible Future-Proof & Adaptable Pods



Demountable Building System- Steel & Concrete



Parametric Structural design

Figure 102: Building Technical Intentions

Accordingly, the material decisions for Woodlane Village development are upcycled, this suggests an infusion with a sense of contextual history, the idea is to source materials from buildings that are being torn down, and also sourcing off-cuts and surplus materials from nearby industries. Materials infused with a sense of history and sustainability significance of place. The following Upcycled Materials will be sourced:

- **Upcycled Concrete:** This will be used for all the floor slabs of the buildings within the new Woodlane Village Precinct. Upcycled concrete is no ordinary concrete. This means the concrete used could come from concrete waste from new (and old) developments around the city or neighbouring provinces. This is based on the fact that upon the production of “virgin” concrete in new developments, tons of it also gets wasted- well not anymore.
- **Wood:** This material will be applied for trellises and shading devices, including anywhere else desirable. The wood will be sourced from nearby wood producing and wood-product manufacturing firms. These wood surpluses and offcuts are usually thrown away or burnt once discarded.
- **Metals (steel and aluminium):** To be used for all roofing structures
- **Glass:** The reuse of available windows for donations, with two-layered glazing
- **Paving:** All paving to be permeable to allow for healthy soil and natural drainage systems

## Project Intentions- City in Miniature

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Within this city, the community is facilitated into social, spatial, and knowledge networks within which they are embedded in.

Structurally, this translates into habitable spaces with multiple layering that define where movement and pausing is permissible.

Facilitate the Knowledge in Context

To successfully facilitate the local community into the learning spatial-zone that represents their collaboration and culture of sharing, the created space needs to be systematically created in order to encourage socio-economic participation. This will afford individuals to regain confidence and control over their livelihoods within the urban environment.

Therefore, the structural system.

Structurally, this translates into a series of vertical elements defining spaces and thresholds, horizontal elements creating covered walkways over learning streets and spill-out spaces. Seating platforms where pause spaces (nooks and crannies) under natural elements.

The Activity Mode: Spectacle-Base- allows access to important views Structure and spatial organization that allows for short-stays, partnership operations spaces to foster important relationships and communication.

The Anchor-Extension: Anchor-Spectacle box(es) Flexible cubes to host intimate community learning, group presentations vocational training

The Learning streets: Contextualizes learning: Weaves outdoor-learning spaces together Connects indoor-learning with the outside



Figure 103: Conceptual Project Intentions

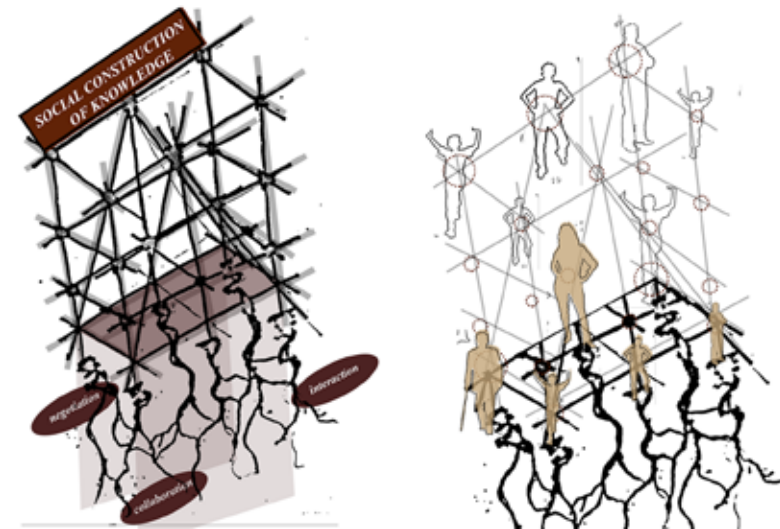


Figure 104: Conceptual Structural Intention



A reconceptualised idea of what the Boogie Woogie illustrate is adopted as a concept for the physical composition of the proposed infrastructure. To allow for flexibility and adaptability of the civic realm of the learning infrastructure, the spaces would be designed in such a way that they allow for adaptability & flexibility while retaining a sense of fixity needed to anchor the community of users it caters for. The space aims to renounce the general conception of what a community learning environment is, while ensuring the possibilities of what the environment could become for the generation beyond the 21st century.

To illustrate how local models of learning environments can be disrupted by being fractured in order to encourage the production and distribution of resources the community has developed (individually and collectively) over time.

In order to rupture the isolated architectural models of learning environments, the aim must be to realize the presence of spatial flows that foster learning, calling for the realization of the need for more complexity and accommodation of spatial clusters that can accommodate scalable groups as knowledge society differentiated increases (Herman 2008)

To successfully facilitate the local community into the learning spatial-zone that represents their collaboration and culture of sharing, the created space needs to be systematically created in order to encourage socio-economic participation. This will afford individuals to regain confidence and control over their livelihoods within the urban environment.



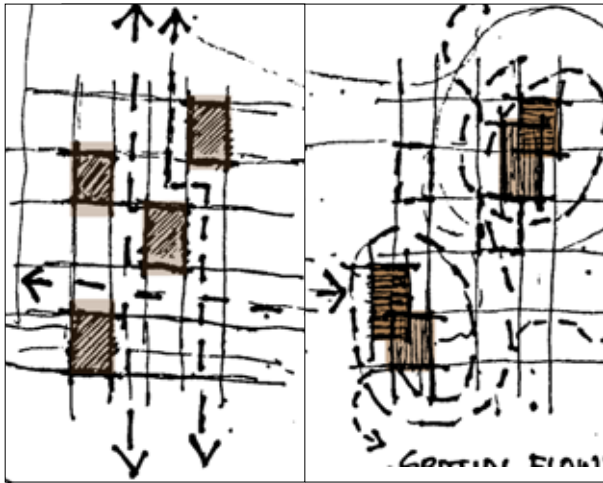
Figure 105: Victory Boogie Woogie, Hertzberger (2008)



Figure 106 : Re-interpreting the Victory Boogie Woogie (Author 2020)

A reconceptualized idea of what the Boogie Woogie illustrate. The spaces would be designed in such a way that they allow for adaptability & flexibility while retaining a sense of fixity needed to anchor the community of users it caters for. The space aims to renounce the general conception of what a community learning environment is, while ensuring the possibilities of what the environment could become for the generation beyond the 21st century.

**RUPTURE**  
the Spatial Context



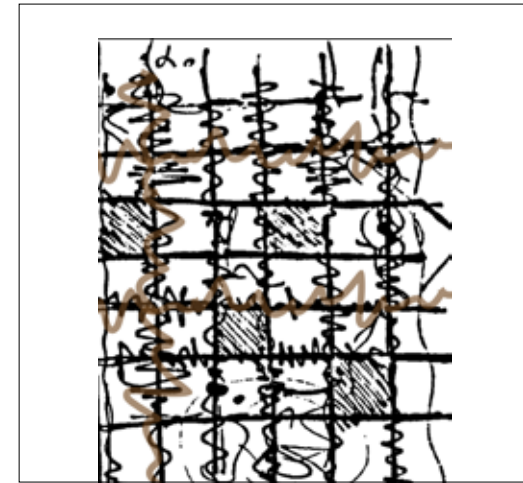
To illustrate how local models of learning environments can be disrupted by being ruptured in order to encourage the production and distribution of resources the community has developed (individually and collectively) over time.

**INTEGRATE**  
the Spatial Context



In order to rupture the isolated architectural models of learning environments, the aim must be to realize the presence of spatial flows that foster learning, calling for the realization of the need for more complexity and accommodation of spatial clusters that can accommodate scaleable groups as knowledge society differentiated increases (Herman 2008)

**FACILITATE**  
the Knowledge in Context



To successfully facilitate the local community into the learning spatial-zone that represents their collaboration and culture of sharing, the created space needs to be systematically created in order to encourage socio-economic participation. This will afford individuals to regain confidence and control over their livelihoods within the urban environment.

Figure 107 : The socio-educational conceptual approach (Author 2020)

Intention 1: The “Solid Interior”- The “Home-Base”

**Intention 2: The “Frayed Edge”**

- Primary Structure

Vertical and horizontal elements: A demountable building system made from upcycled precast concrete columns and slabs produced by using reusable mould/form to cast concrete in, which is then cured in a controlled environment, and transported to site when ready. The columns are spaced and placed in a grid system of 6 meters by 6 meters dimensions- a measurement derived from the width of the vehicular roads in the informal settlement, as well as the general spanning distances that can be adequately supported by efficient concrete beam and columns sizes.

The combination of the vertical and horizontal elements signifies the provision and invitation for individualized space-making by the tenants.

Constructive framework: as load-bearing (where needed) as structural framework system

- Secondary Components

Walls

Infill Strategies:

- Tertiary Components

Finishes

### Technical Concept

The technical expression of how man creates spaces in Woodlane Village: form making, surface articulation and assembling of construction materials and elements act as the technique inspiration focus of the dissertation.



Figure 108: A concrete and slab demountable system



Figure 109: Initial building concept- a demountable system

Technologically, the dissertation aims to explore an architecture that regenerates the lost and damaged natural systems of the site- utilizing them as key-stones in the forming of the architecture that responds empathetically to its site. Upon site investigation and experience, the intangible noticeable natural aspects were water, air and earth - there was an uncomfortable presence of dirty water, uncomfortable odour and unhealthy ground surface. Therefore, the intention of the technical exploration is to illustrate how architecture can respond empathetically to these conditions, ushering the community into a future that is humane, sustainable and regenerative.

The material of the fabric of the site has been investigated in correspondence to how they contribute to the experience of the user. Through investigation, materials that are mostly used include: plastic sheets, timber elements, fabric/cloth, brick/stones, and metal sheets. According to the community members, these materials are salvaged from the dumping sites, recycled and upcycled to be reused for other structures within the informal settlement. The selection of materials will be determined by the author's desire to illustrate how new technologies that use the same materials can be utilized to offer better built fabrics of the architecture that will contribute to the recycling and up-cycling industries of the very same materials being used inadequately or under dire circumstances by the community. This technical conceptualization will then adapt strategically this way: adapt, re-apply and regenerate. That is: modify found materials for new use and purpose; reapply the materials in a new situation, and restore site conditions to an improved state. The construction will aim to explore where man meets new regenerated and regenerative spatial thriving conditions, and the architecture changes according to the needs of the environments, activities and weather conditions.

## ENVIRONMENTAL AND TECHNICAL INTENTIONS

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The environmental intention of the dissertation is to reconcile the human to his own mind through the empathetic characteristics of natural elements- nature. According to Louv, nature-deficit disorder is not the presence of an anomaly in the brain; it is the loss of connection of humans to their natural environment. Staying close to nature improves physical, mental, and spiritual well-being. It makes us feel alive from the inside, and we should not compromise it solely for maximizing development return on investment (ROI) profits.

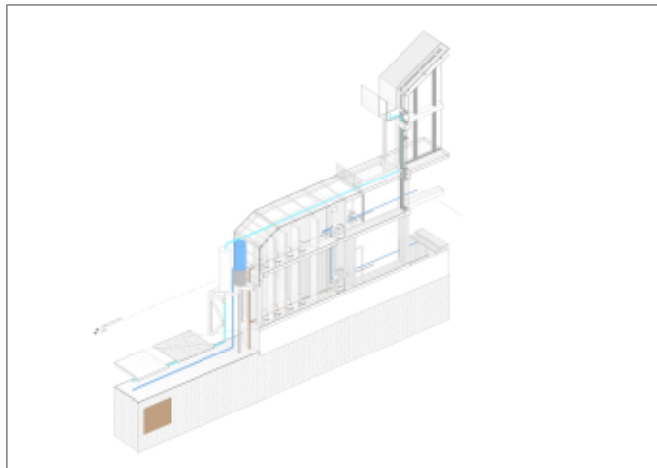


Figure 110: Water System (Author 2020)

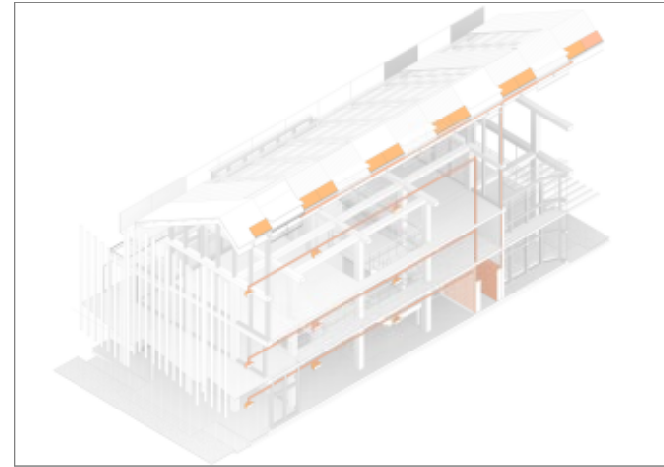


Figure 111: Energy System (Author 2020)

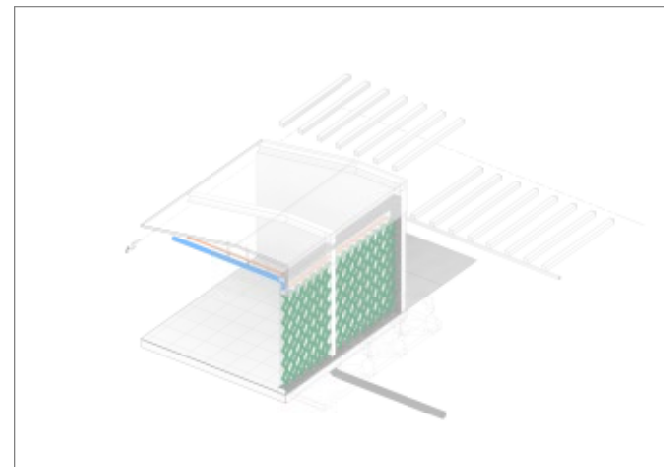


Figure 112: Algae System (Author 2020)

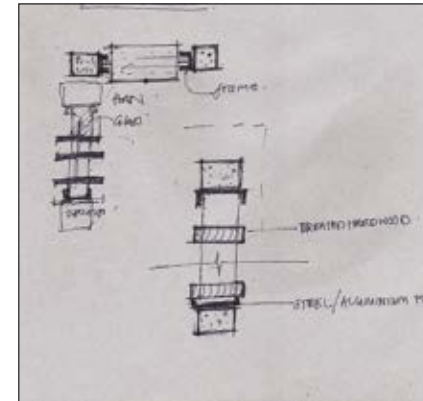
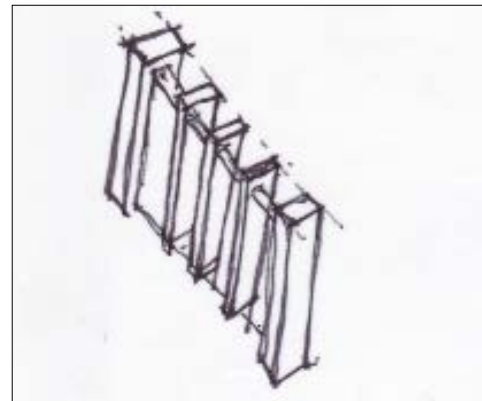
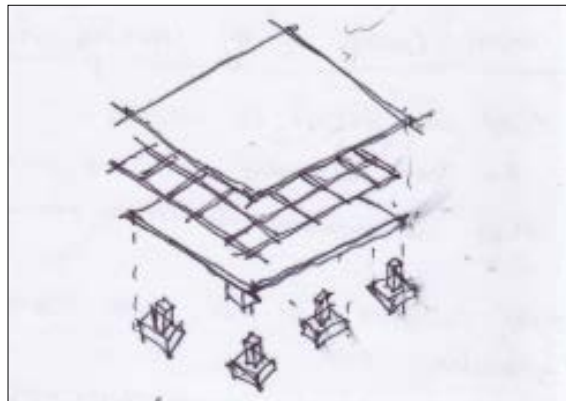
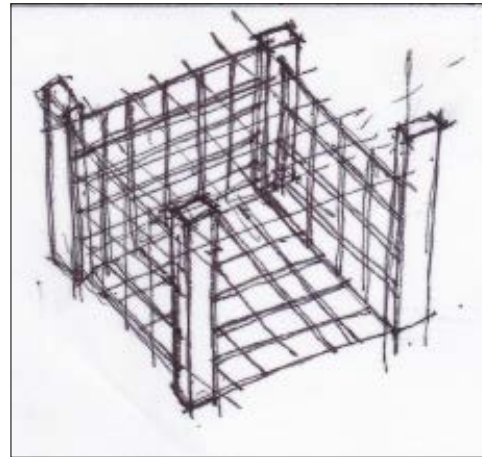
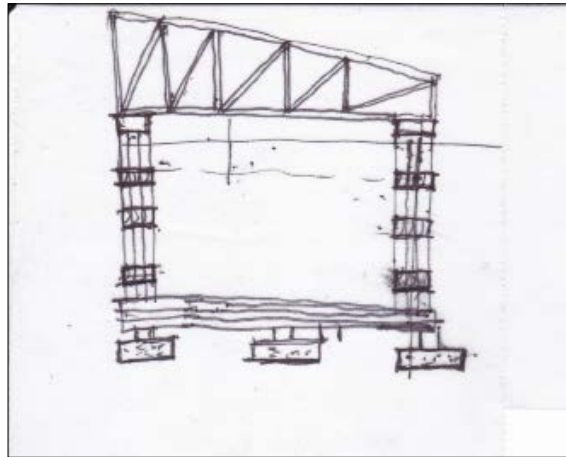
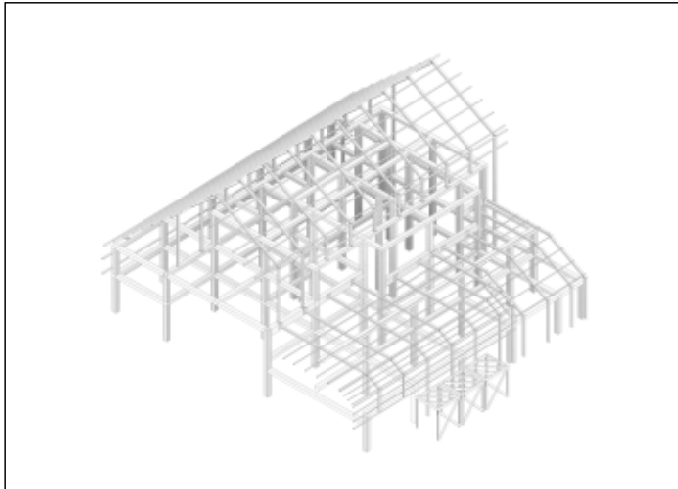
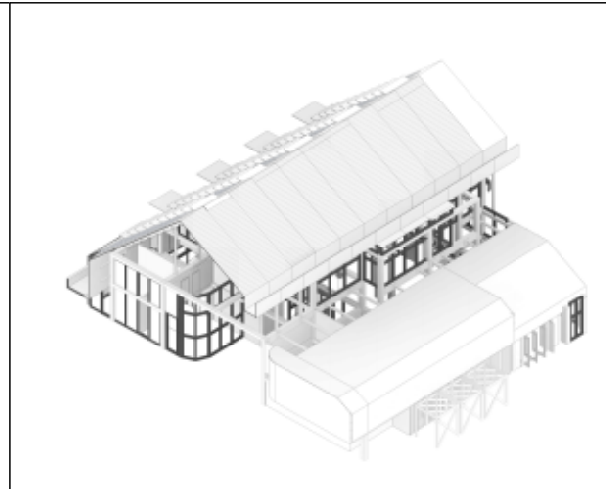


Figure 119: Building Technology Exploration (Author 2020)



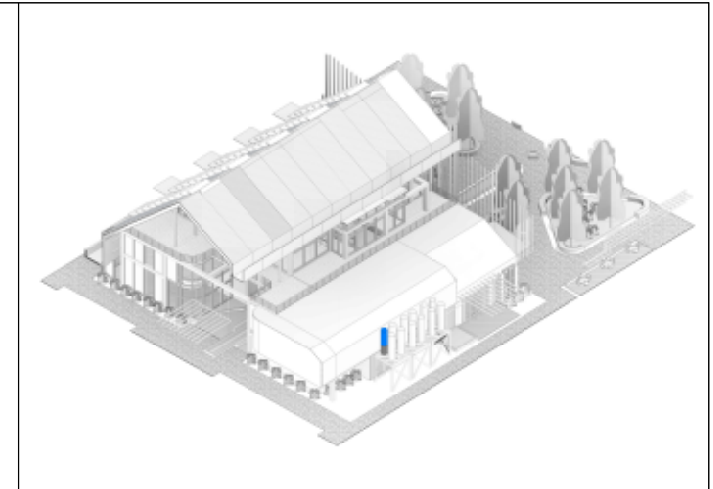
**Figure 113: Primary Structure (Author 2020)**

Consists of Reinforced Concrete Columns and beams & a structural steel framing



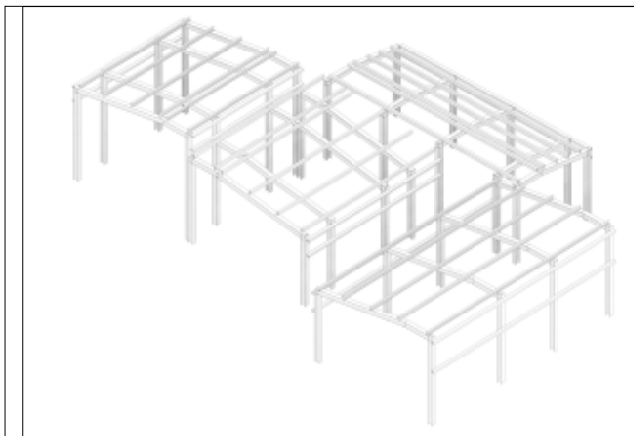
**Figure 114: Secondary Structure**

The Infill Steel Sheeting, Plaster board walls, Aluminium Frame Curtain Walls & Metal Roof Sheetting



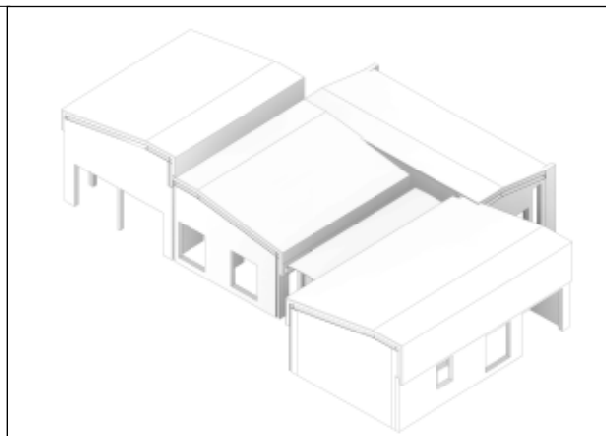
**Figure 115: Tertiary Structure**

Consists of the envelope finishes that are applied over the secondary structure for various sealing, tactile properties



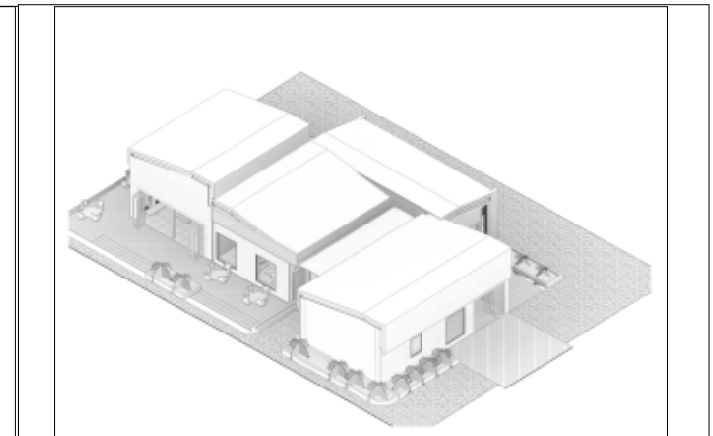
**Figure 116: Primary Structure**

Consists of Structural Steel I-Section Portal Frames, fixed to the the ground via concrete pads



**Figure 117: Secondary Structure**

Consists of lightweight walls made of plasterboards and plywood sheeting.



**Figure 118: Tertiary Structure**

Floor, Wall and Roof finishes to seal and protect the building's underlying elements

## 8.2 Structural Composition

### Structure

High-Technology

Roof as Solar-Farm

An internal structure that allows an infill over time

An energy-generating envelope as resource

Fundamentally functional concrete structure: columns and beams

### Materiality

High approach to the construction application of upcycled and recycled materials

Infill material: acoustic and solar controlling properties

Sophisticated specialized synthetic materials (engineered products)

### Building Technology

**Keywords:** held and framed spaces, interrupted, connections, heavy and light, integrated

### Top three principles include:

- Held and Framed Spaces
- Heavy and Light Structural Elements with/through interconnected structural elements

### The Centre speaks of:

- Solid interior and frayed edges

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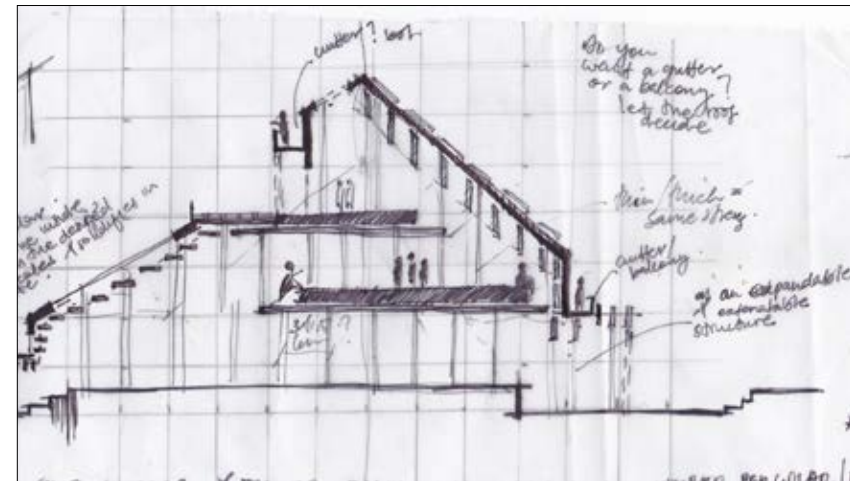
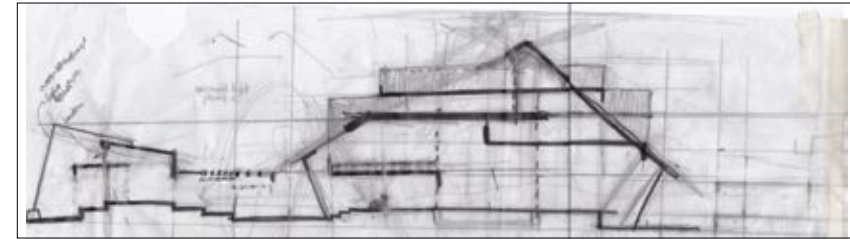
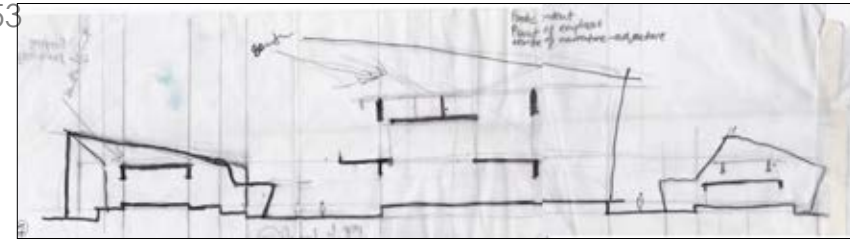
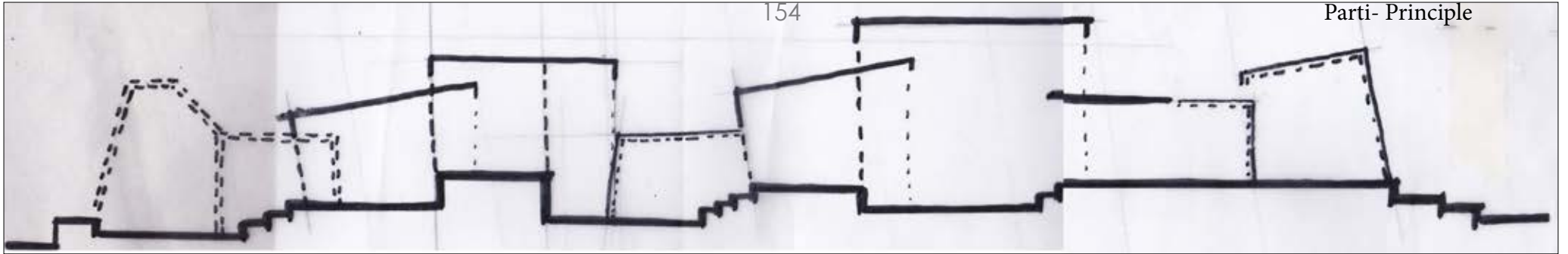


Figure 96: Development of the Longitudinal Section, Section A-A





Rythm, Proportion, Scale  
 Spatial Elevation Exploration- Platforms, Surface Alteration

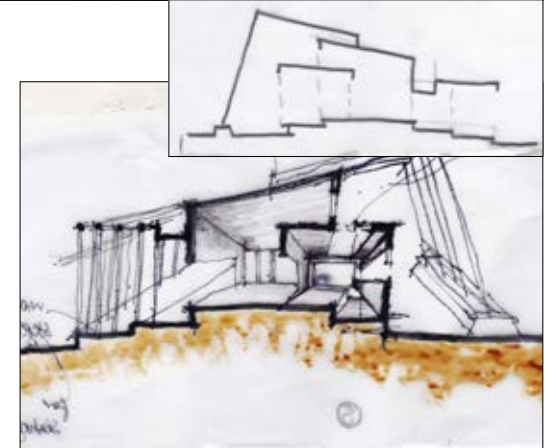
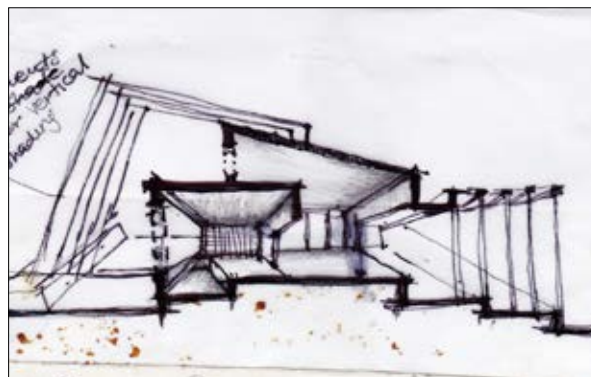
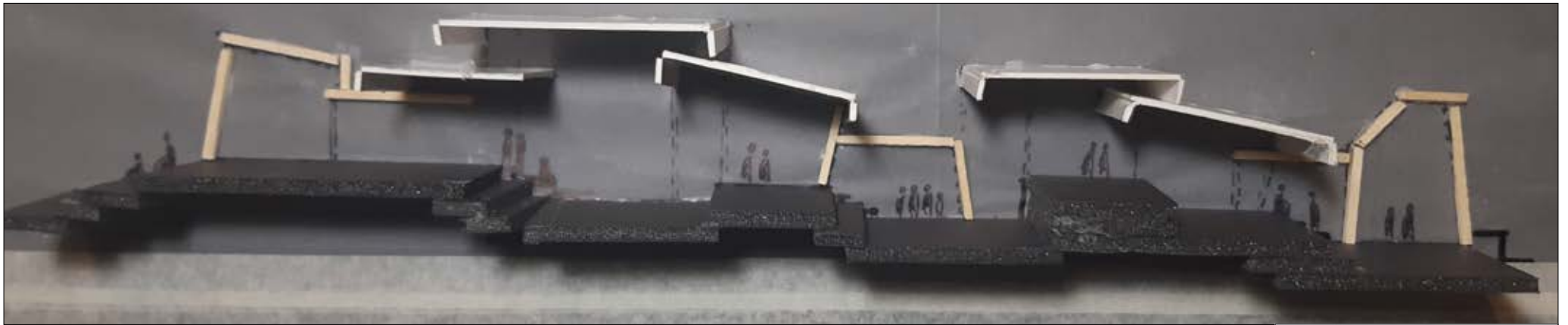


Figure 98: Section D-D Development- edge exploration (Author 2020)

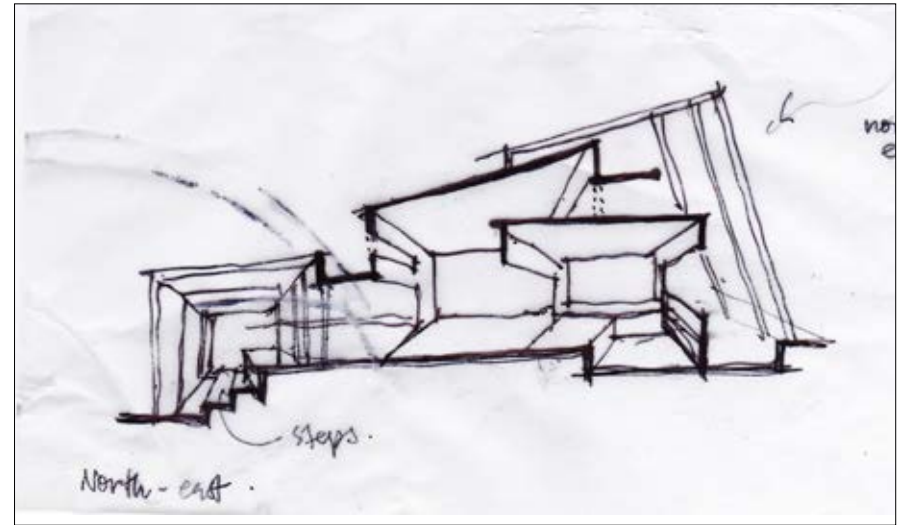
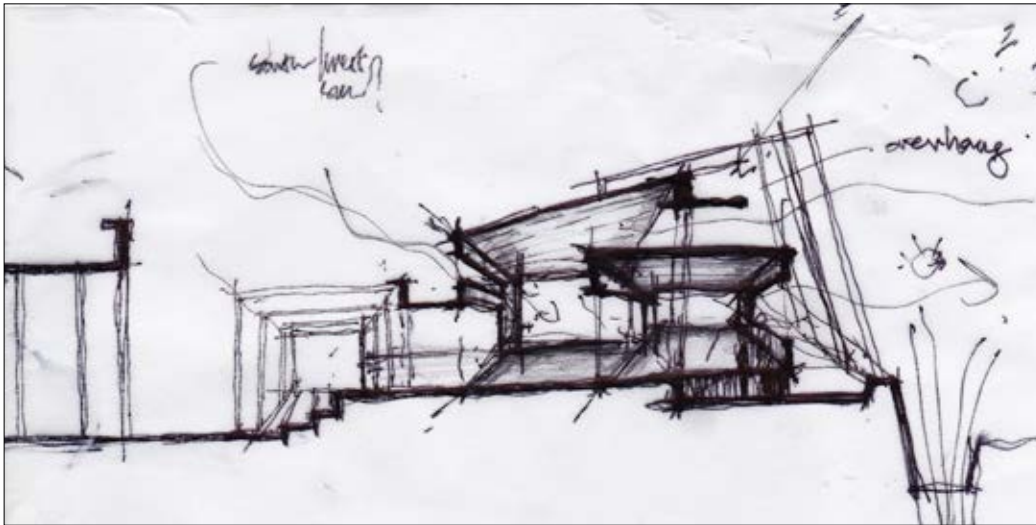
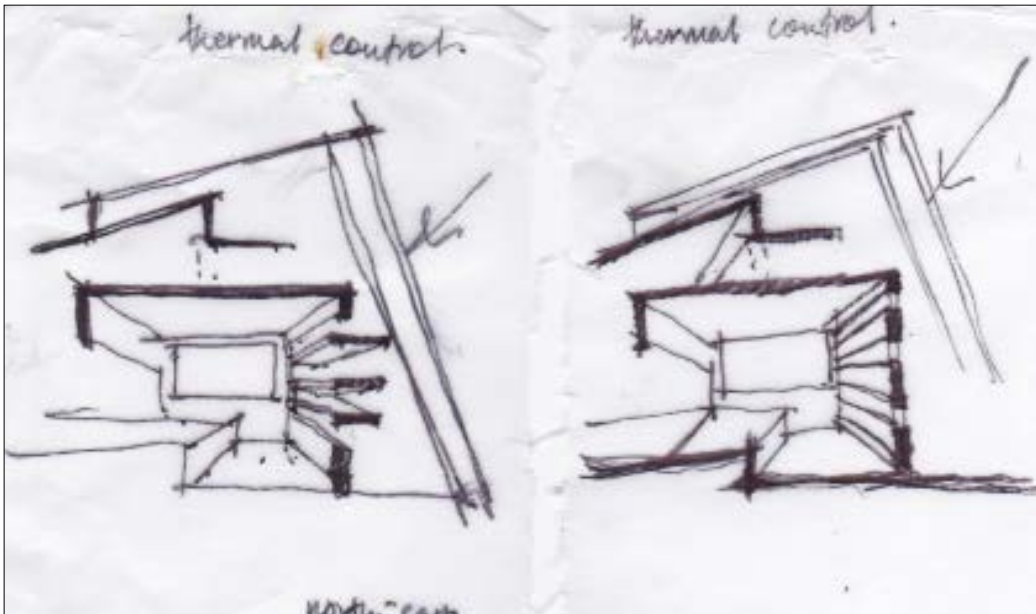


Figure 120: Edge condition Exploration (Author 2020)



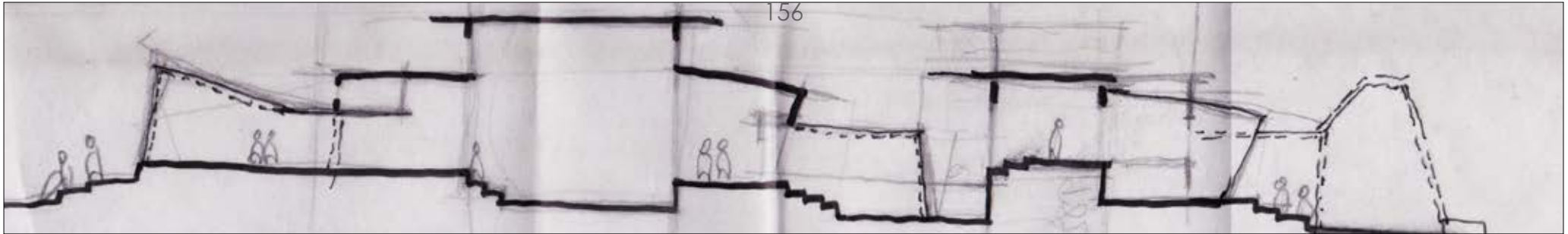


Figure 121: Rythm, Proportion, Scale  
 Spatial Section Exploration- From Pergola, Roof, Wall, Surface Manipulation

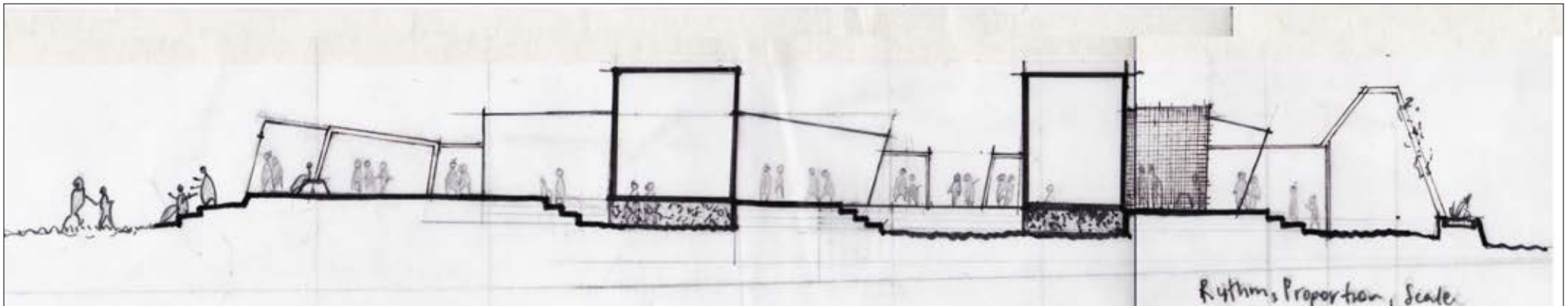


Figure 122: Rythm, Proportion, Scale  
 Spatial Elevation Exploration- Platforms, Surface Alteration

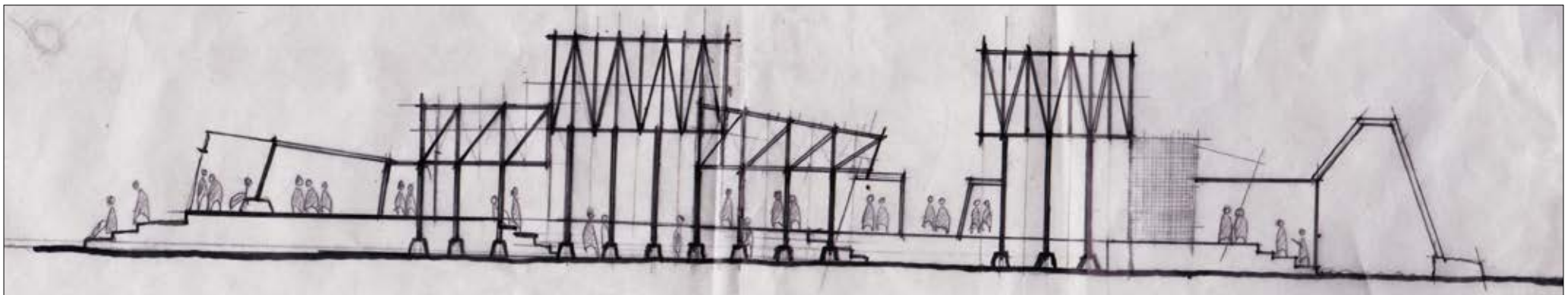


Figure 123: Rythm, Proportion, Scale  
 Spatial Elevation Exploration- Roof Structure & Pergolas

### 8.3 Systems

In response to the building's intention to conceive a building that is sustainable and self-sufficient, passive systems (temperature regulation, electrical energy & water systems), proved to be the most appropriate and viable options.

#### Temperature regulation System

- **Orientation** – the building's orientation is also influenced by the sun path, so as to limit the sun's radiation into internal spaces, to reduce internal heat gain and increased as desired
- **Overhangs** – cover parts of the vertical envelopes and reduce envelope and internal solar gain through radiation.
- **Louvres/Brise-Soleil** – This feature provides shade on the edge of the buildings and also reduce solar heat gain
- **Passive ventilation** – the building's openable fenestration is arranged to maximize cross-ventilation, this is done by placing large openings parallel to each other and placing them perpendicular to the strongest wind direction of Pretoria, which is North East. This arrangement allows the incident wind to be at 90 degrees and allows it to affect the internal wind speed and thus cooling the interior space.
- **High R & U value materials** – Materials such as insulated glass, Aluminium, Clay bricks, metal sheeting, Mineral Wool & Polyurethane insulation, improve the building's capability of regulating internal temperature.
- **Highly insulated envelope** – The building's envelope is composed of rigid foam filled cavity walls that reduce convection and conduction, Cavity Aluminium Frames and Raised, floors which are insulated as well.
- **Reflective Surfaces** – Covering metal sheeting for walls and roofs to be painted with light, reflective paint colours to increase reflective capacity of building envelope.
- **Clerestories** – As internal hot air rises through the building's central staircase atrium, the clerestories and openable skylights

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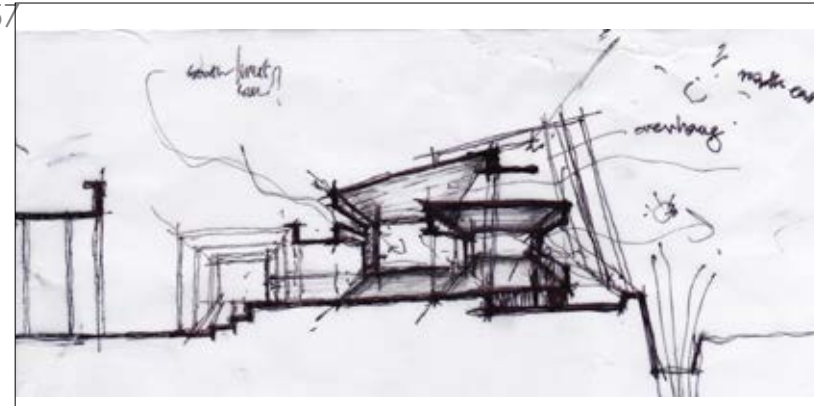


Figure 124: Edge exploration (Author 2020)

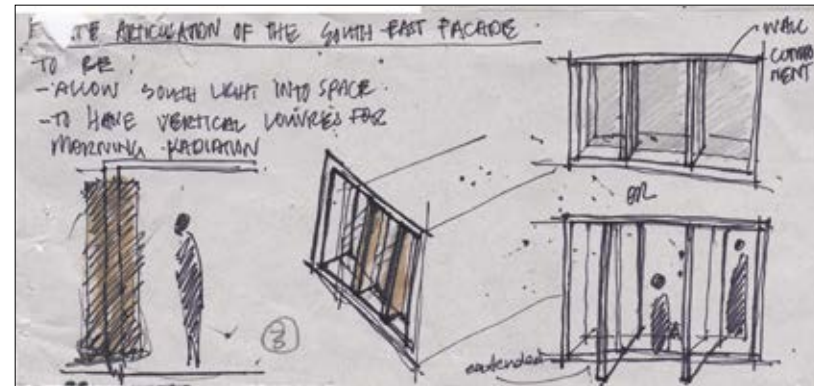


Figure 125: South-east facade articulation (Author 2020)

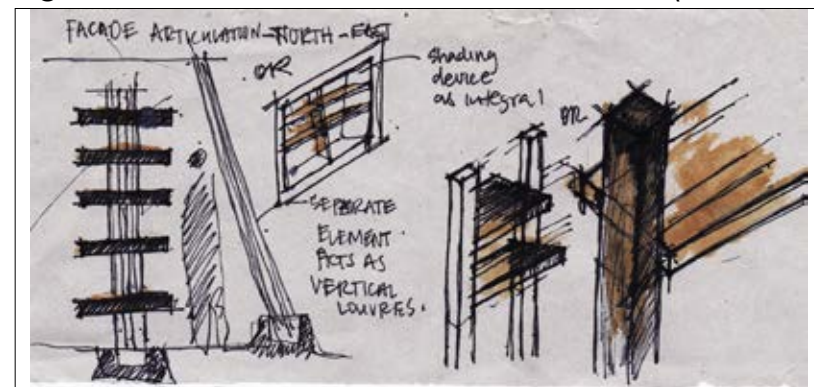


Figure 126: North-east facade articulation (Author 2020)

## 1. Cross Ventilation

Cross Ventilation is the passage of natural air draughts through building openings that removes the accumulated heat gains caused by human bodies, electrical equipment heat load, etc. It is maximum when a building's openings are perpendicular to the air strongest wind direction and minimum when openings are parallel to wind direction

## 2. Stack Effect

Stack Effect is the rise of hot air in buildings. This is caused by the buoyancy effect due to internal hot air having less density than external colder air, the air escapes at higher opening such as clerestory windows, chimneys, etc. since its low density causes it to rise. The greater the difference in high between the inlet and outlet openings, the greater the effectiveness of the stack effect

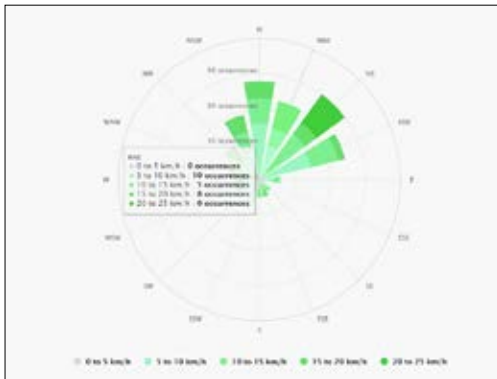


Figure 127: Wind Rose

The wind rose diagram above indicates the direction and intensity of Pretoria winds. As the diagram indicates, most of the winds are from the South and South-West towards the North and North-East respectively.

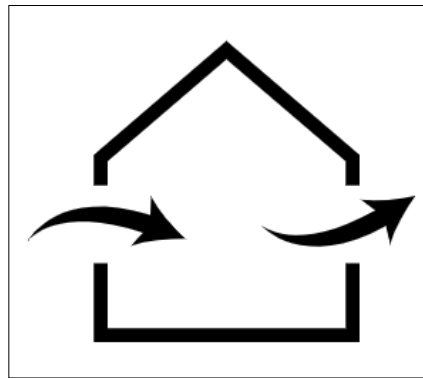


Figure 128: 1. Cross Ventilation

Pretoria's Wind Rose indicates that the strongest and most frequent wind direction is from South West to North East direction. In order to maximize this natural phenomenon, the building's openings were positioned perpendicular to the wind direction, there by allowing maximum airflow between opposing openings.

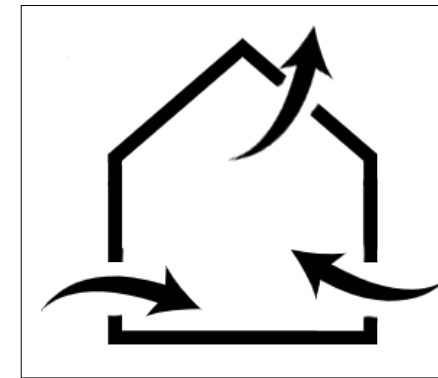


Figure 127: 2. Stack Effect

The building has 3 floors (ground, 1st and 2nd), the second floor has a ceiling twice as high as the first two floors. This high ceiling with louvre air-outlets at the top, allow hot air to rise and escape through clerestory windows, doors and louvres, thus keeping the occupied spaces below cool

## Heat Load

Source of Heat

$$Q = \text{KWh/day}$$

$$U = \text{U-value of insulation (W/m}^2\text{.K)}$$

Temp Out = Temperature Outside

Temp In = Temperature Inside

A = Surface Area

24 = 24 hours a day

1000 = converts watts to Kilowatts

Transmission

$$Q = U \times A \times (\text{Temp Out} - \text{Temp In}) \times$$

$$24/1000$$

$$= 0.28 \times 113\text{m}^2 \times (30 - 23) \times 24/1000$$

$$= 5.31 \text{ KWh/d}$$

People

$$Q = \text{People} \times \text{Time} \times \text{Heat}/1000$$

$$= 10 \times 5 \times 270/1000$$

$$= 13.5 \text{ KWh/d}$$

Lights

$$Q = \text{Lights} \times \text{Time} \times \text{Wattage}/1000$$

$$= 3 \times 4 \times 100/1000$$

$$= 1.2 \text{ KWh/d}$$

Equipment (Machines)

$$Q = \text{Equip} \times \text{Time} \times \text{Wattage}/1000$$

$$= 3 \times 14 \times 200/1000$$

$$= 8.4 \text{ KWh/d}$$

Total = 28.4 x Safety Factors

$$= 28.4 \times 1.2$$

$$= 34.08 \text{ KWh/d}$$

## Cross Ventilation

Air Flow Rate = V

Coefficient of Effectiveness = K

Net Free Area of Inlet Opening = A

Outdoor Wind Speed = v

$$V = KAv$$

$$A = V / Kv$$

$$A = 2.78 / 0.6 \times 0.8$$

A = 5.79 m<sup>2</sup> (Area Size of Casement Window)

Casement windows were selected because they have a 90% free opening area relative to their gross area.

### Stack Ventilation

Air Flow Rate = V

Coefficient of Effectiveness = K

Net Free Area of Inlet Opening = A

Outdoor Wind Speed = v

$$V = KAv$$

$$A = V / Kv$$

$$A = 2.78 / 0.6 \times 0.8$$

A = 5.79 m<sup>2</sup> (Area Size of Casement Window)

Casement windows were selected because they have a 90% free opening area relative to their gross area.

on the highest level of the building draw and remove the hot air 160 through pressure differentials.

- Vegetation – Vegetation on the site provide shade, thereby contributing to the reduction of the solar heat gain of the hardscape surfaces and building facades.

### Electrical Energy System

Solar Farm – The building's solar farm is oriented to the north-east, which gives it significant daily exposure to the sun, this is crucial since this is the primary source of the building's electrical energy. The system operates through capturing solar energy via the Photovoltaic panels, then it is transferred to a series of inverters, which convert that energy into alternating current, which is then fed to the electrical loads. Calculations of the energy load determined the number of solar panels required. Surplus energy is directed and stored in batteries, in the building's energy room which can be drawn if there is cloud coverage or rain and the solar panels are unable to produce sufficient energy. Energy efficient electrical fixtures & equipment – equipment with high energy efficiency are selected to reduce the energy demand of the building and also reduce the heat they produce which contributes to the internal heat load. Algae System – An algae façade system is used to generate extra energy and is also used as a didactic tool for the educational purposes of the public about alternative energy production.

### Water System

Rainwater harvesting – Rainwater is collected through the roof, gutter and tank system, which is then used for service applications such as cleaning, irrigation and washing. Some of the water is used to supply the ablutions for flushing the toilets. This water is not used as drinking water as it is not approved and cannot be deemed safe.

Water recycling – water from service use except flushing toilets, can be recycled and treated through the algae system to and water treatment tank and then used for irrigation.

## Energy Sources

### Energy

3 Electrical Saw = 1.25 KW/h x 3 = 3.75 KW/h x 8 hours = 30 KW/h  
1 Kettle = 3 KW/h x 2 hours = 6 KW/h  
1 Microwave = 1.5 KW/h x 2 hours = 3 KW/h  
1 Fridge = 2 KW/h x 24 hours = 48 KW/h  
LED Light Bulbs = 0.0025 KW/h x 14 hours = 0.035 KW/h  
Stove = 9 KW/h x 14 hours = 126 KW/h  
Printers = 0.05 KW/h x 8 hours = 0.4 KW/h  
Computers = 0.3 KW/h x 8 hours = 2.4 KW/h  
Special Equipment = 0.5 KW/h x 8 hours = 4 KW/h

**Total** = 220 KW/day

### Light Sources

Offices Average Reading & Writing : 50 - 75 foot Candles  
Offices Rooms with Computers : 20 - 50 foot Candles  
Auditorium : 15 - 30 foot Candles  
Libraries : 50 - 100 foot Candles  
Workshops : 50 - 100 foot Candles  
Dining : 5 - 20 foot Candles  
Kitchen : 50 - 100 foot Candles  
Lobbies : 0 - 20 foot Candles

Building 1 : 27 500 Lumens  
Building 2 : 6 160 Lumens  
Building 3 : 5 050 Lumens  
Building 4 : 20 440 Lumens  
Building 5 : GF(16 920) + FF(35 430) + SF(46 300) = 98 650 Lumens

**Total** = 157 800/1600 lumen LED light bulb = 99 LED light bulbs required

99 x 1600W = 1782/1000 = 1.78 KW/h x 14 = 25 KW/day



### Solar Power

1 Solar Panel  
produces 1.5 KW/h x  
5 hours = 7.5 KW/day

245 KW/day / 7,5  
KW = 33 Solar Panels  
needed

Figure 128: BIG First Algae Bioreactor Facade

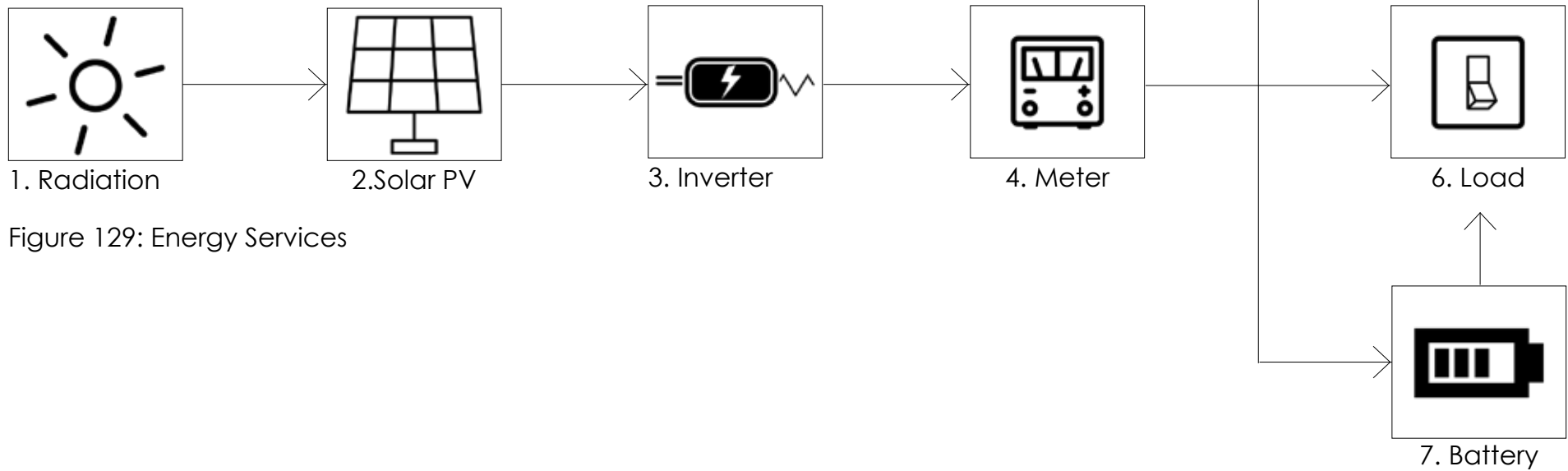


Figure 129: Energy Services



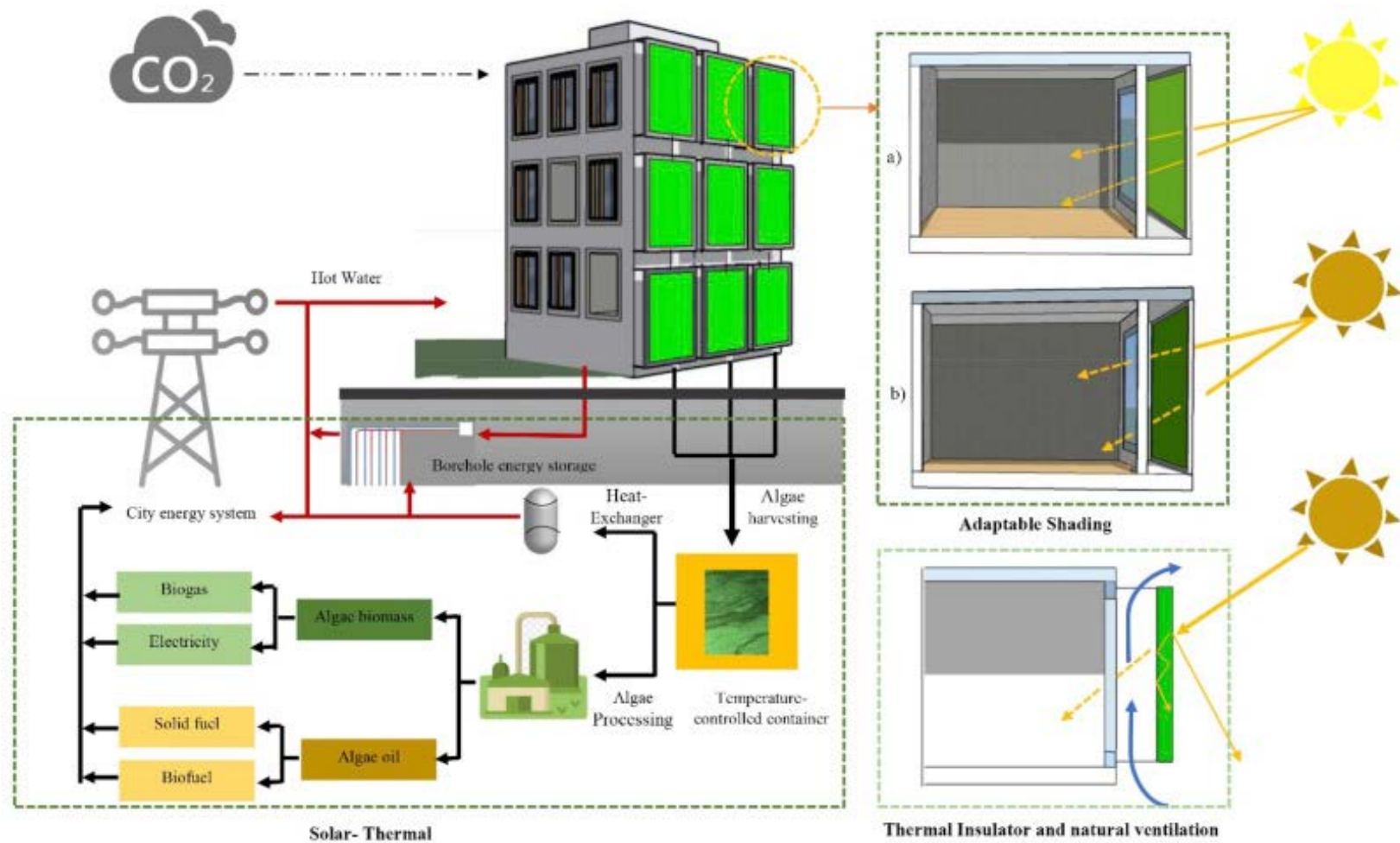


Figure 130: The diagram illustrating the operation of a Micro-Algae Facade System

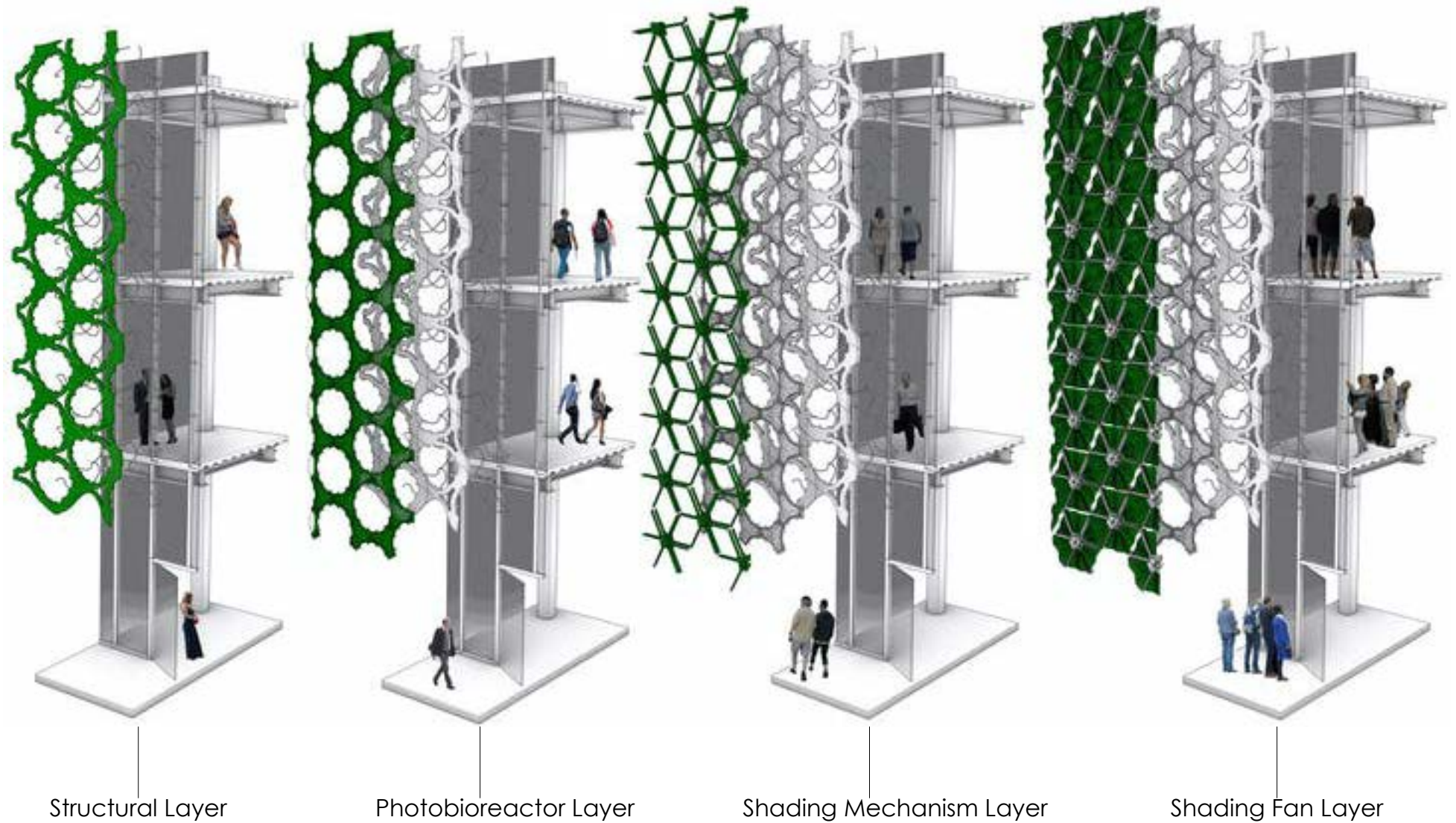


Figure 131: An example of a structural assembly of the micro-algae facade system

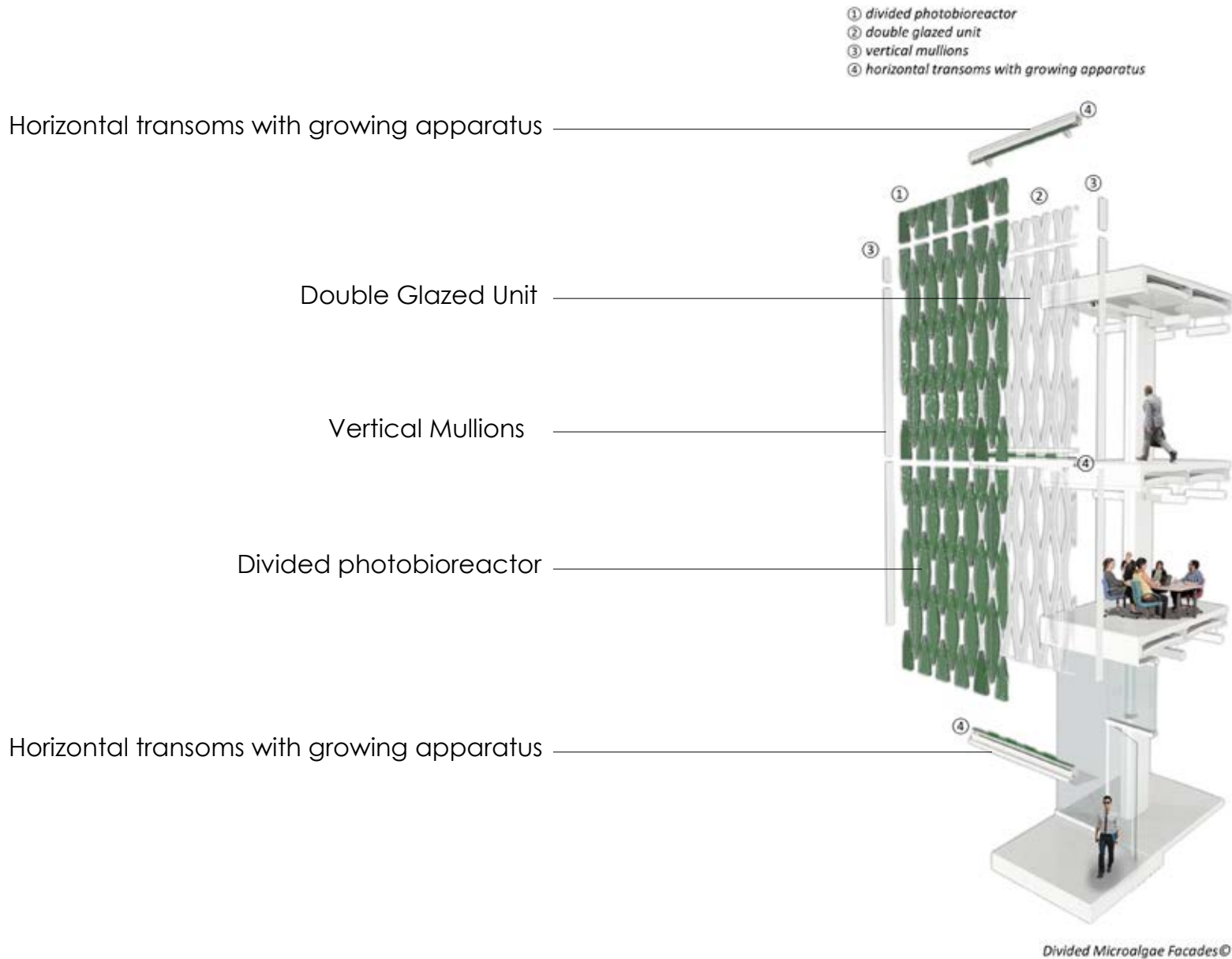
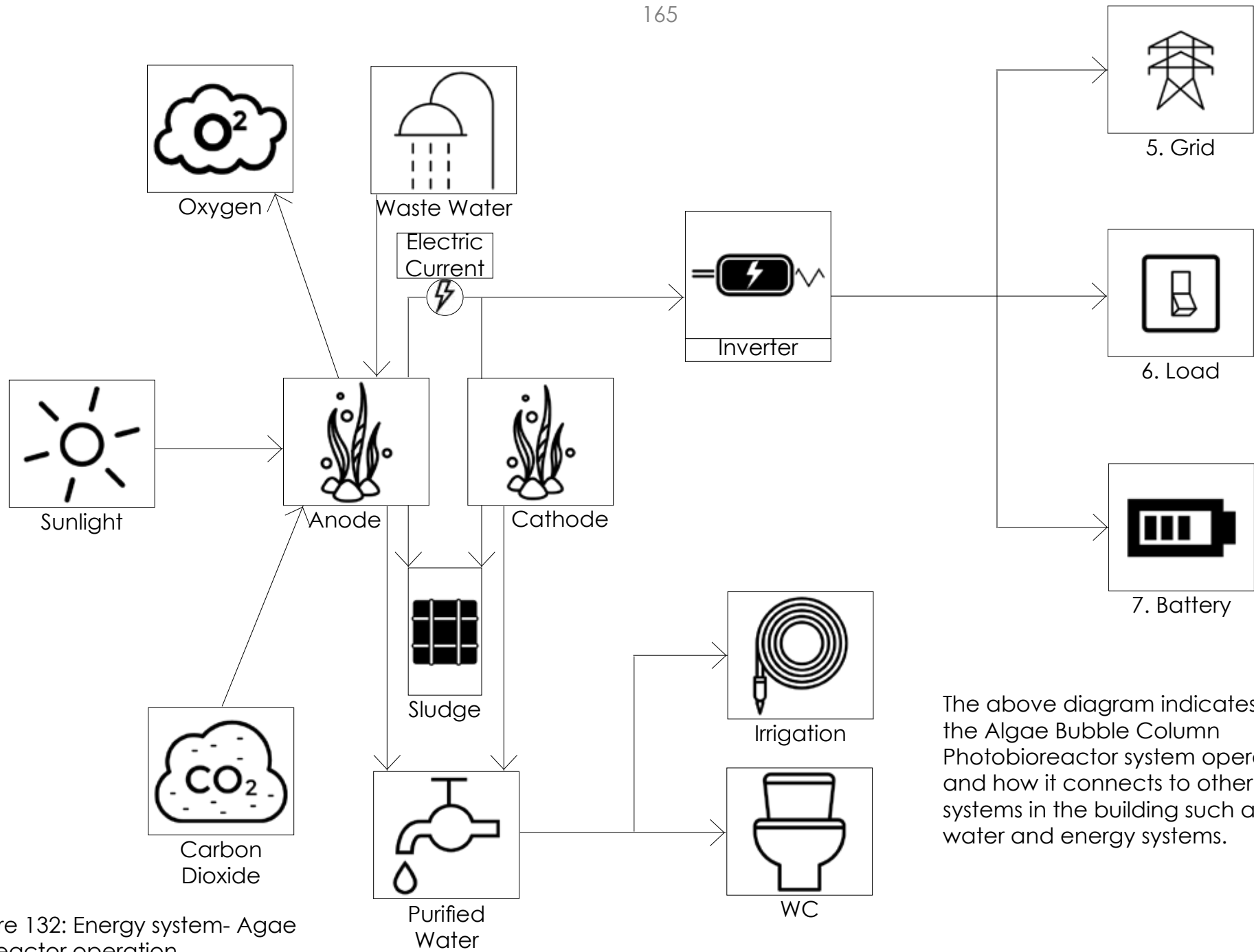


Figure 131.1: The assembly of the micro-algae facade system



The above diagram indicates how the Algae Bubble Column Photobioreactor system operates, and how it connects to other systems in the building such as the water and energy systems.

Figure 132: Energy system- Algae bioreactor operation

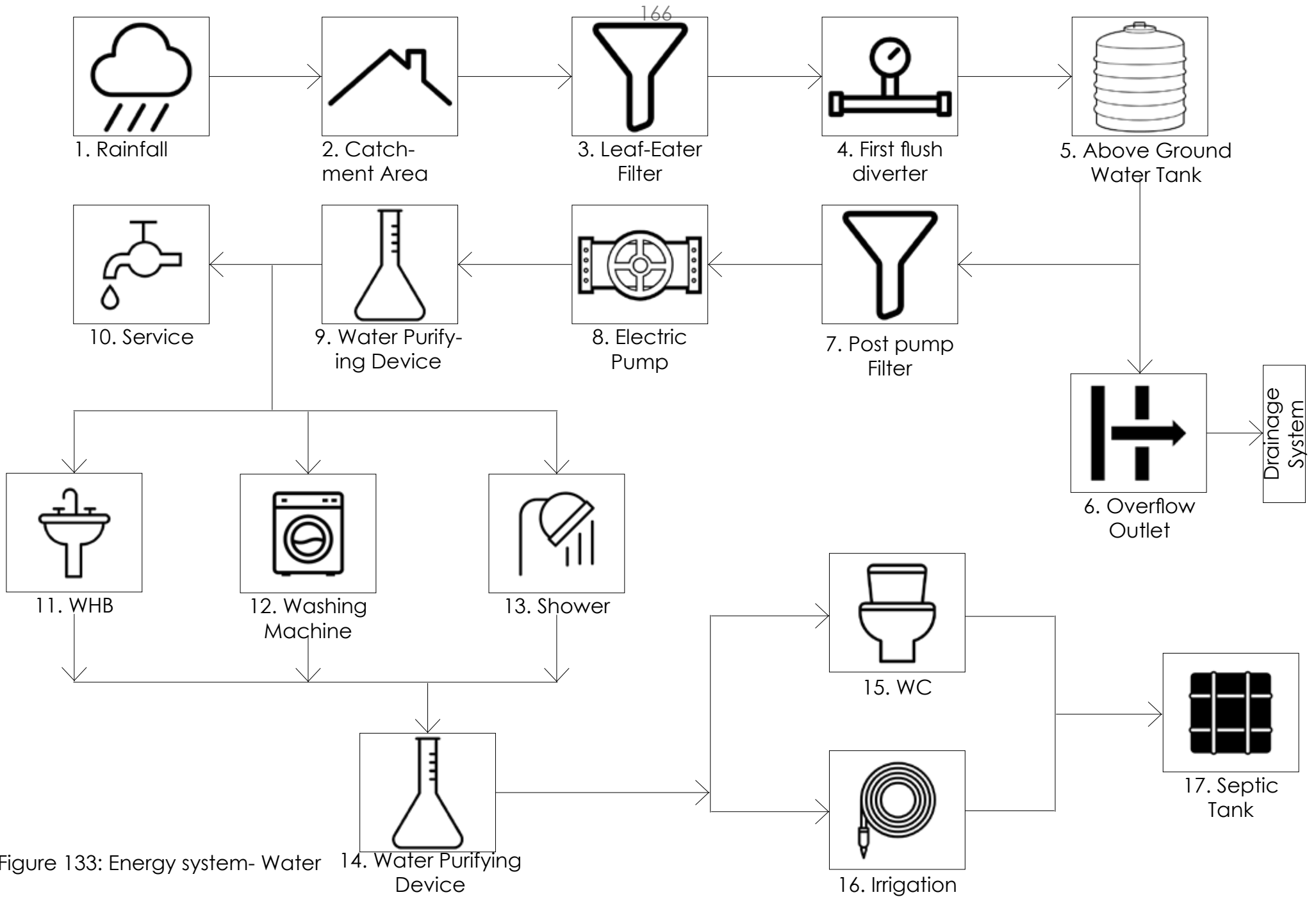


Figure 133: Energy system- Water

## Water Usage

### The population of the building

#### WCs

Total population = 1421

every person uses the WC and WHB once.

$1421 \times 6 \text{ litres every flush} = 8\,526 \text{ litres a day}$

244 litres of water required for each toilet a day

#### WHBs

$1421 \text{ uses} \times 3.7 \text{ litres} = 5\,257$

188 litres of water required for every basin

#### Sinks

$6 \text{ sinks} \times 37 \text{ litres per use} = 222 \text{ litres a day}$

#### Irrigation

2000 litres of irrigation water

#### Drinking Water

$1421 \times 3 \text{ litres} = 4\,263 \text{ litres}$

Total Water Required = 20 268 litres a day

### Sources of water?

Municipal Ground Water = 50% (10 134 litres a day)

Rainwater = 10% (2 026.8 litres a day)

Borehole Groundwater = 40% (8 107,2 litres a day)

The Rainwater harvesting system diagram above indicates how water is collected using designated catchment areas on the building, to how it is filtered and stored in water storage tanks, to eventually being used in building through WCs, WHBs, showers, etc. This system is implemented to supplement the mains water system that is connected to municipal water supply which primarily uses ground water supply. This ensures that the building constantly has water even during droughts, water supply equipment maintenance and water contamination. The system is reliant on the local rainfall patterns and capacity, considering Pretoria receives x litres of rain annually, and the projected water requirement of x litres in the building, the rainwater harvested water should be able to provide x percent of the total water requirement.



Sources of water?

Rainwater = 10% (2 026.8 litres a day)

## 8.4 Sustainability Response

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The building's envelope composition is based on the principles of ensuring the control of interior space conditions without excessive reliance on artificial cooling/heating by HVAC systems. Insulation properties of these upcycled materials mentioned above will be assessed to determine how they will perform under extreme conditions. Materials which offer the required R and U values, which have a low embodied energy (energy required to source, process and deliver the final product/upcycle the product), will be selected.

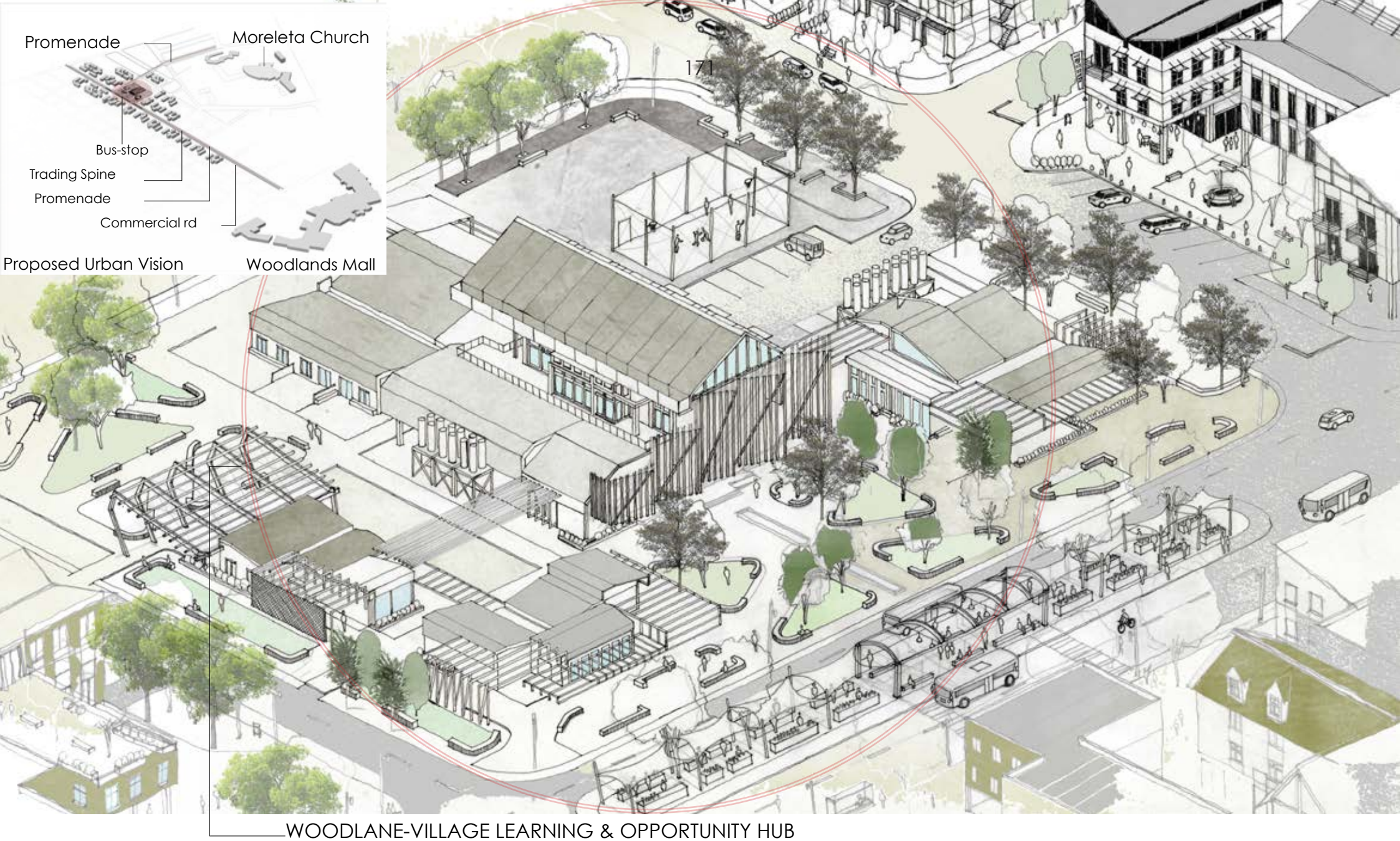
As conditions are highly volatile, the flexibility and adaptability of the envelope composition will allow for easier alteration, in response to emergence of new conditions, naturally or culturally. This will allow the building to continuously evolve with place and people, and retain its high sustainability ratings. Since sustainability is defined differently at different times (What was understood as sustainable 30 years ago, might not be sufficient in the next 30 years), the continuous evolution of the building's material, envelope, form and spatial ordering is essential. The SANS Part XA is the base for the understanding and execution of the sustainability aspect of the building, but the design does not only set out to meet these minimum requirements, but to far exceed them.







Figure 134: Render of the view to the facility entrance (Author 2020)



WOODLANE-VILLAGE LEARNING & OPPORTUNITY HUB

Figure 135: Hand sketch of intervention in context  
(Author 2020)

INTERVENTION MODEL IN CONTEXT:

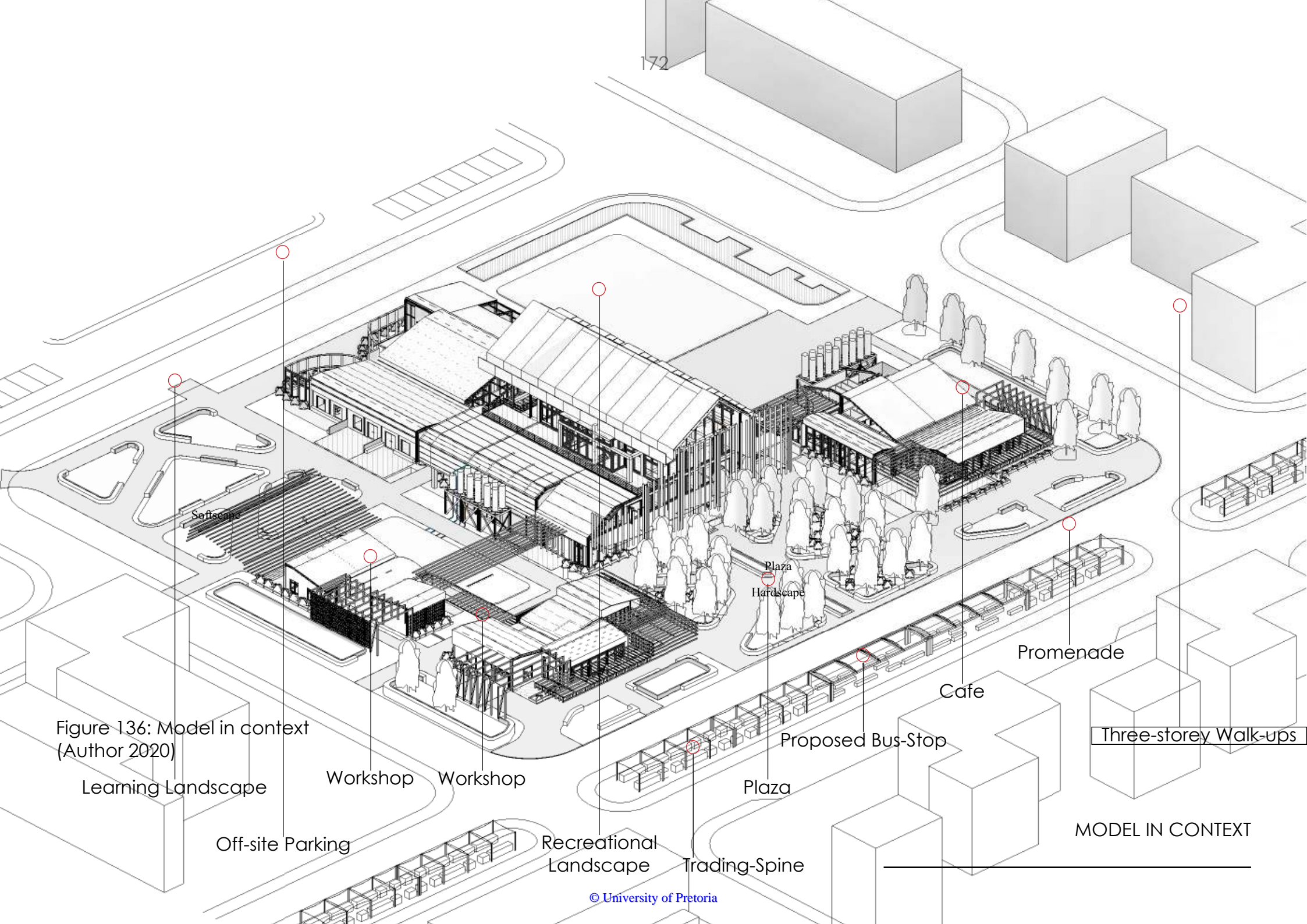
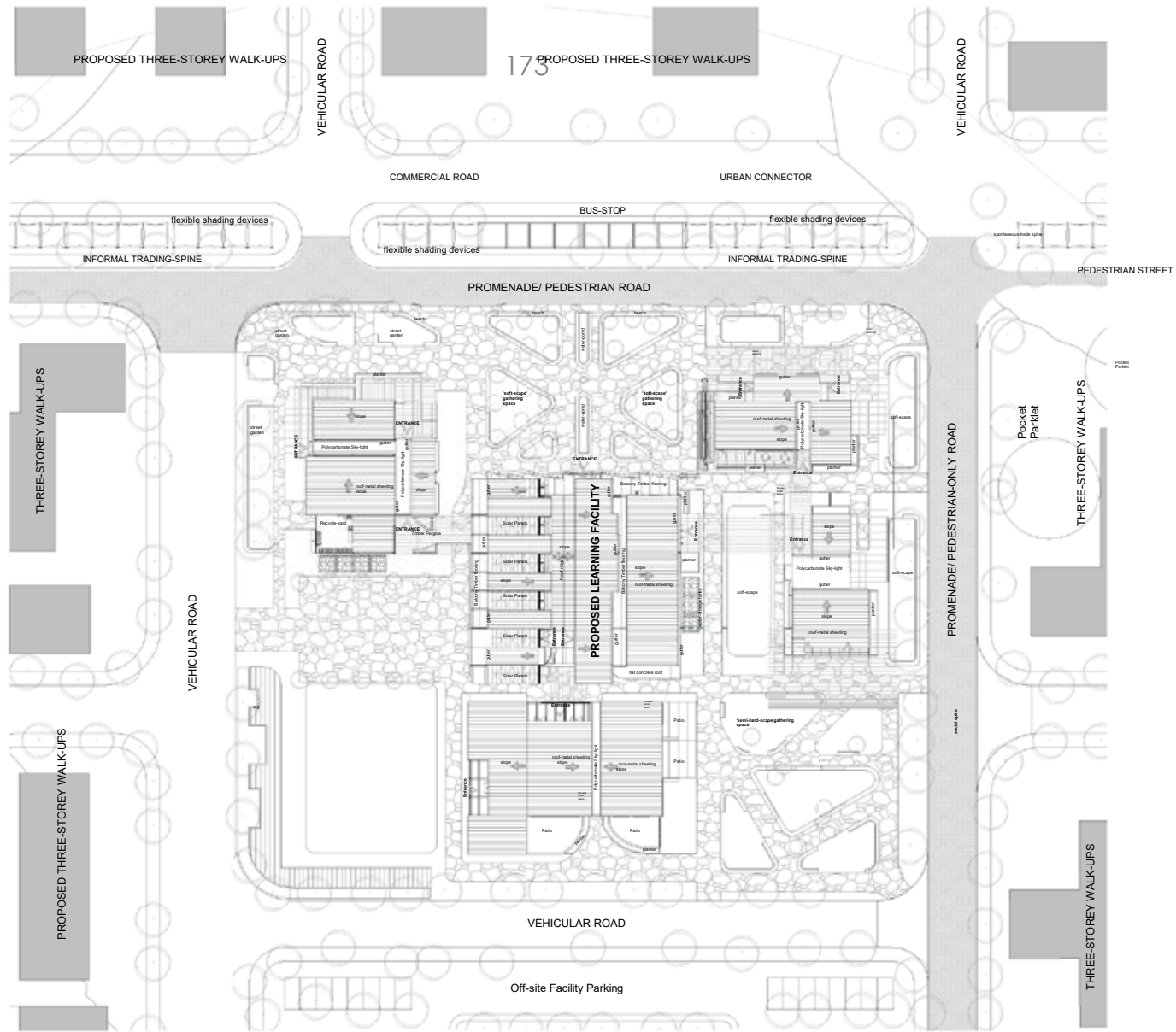


Figure 136: Model in context (Author 2020)



1 002 - Site Plan  
1 : 500

Site Plan

Figure 137: Site Plan (revit)  
(Author 2020)

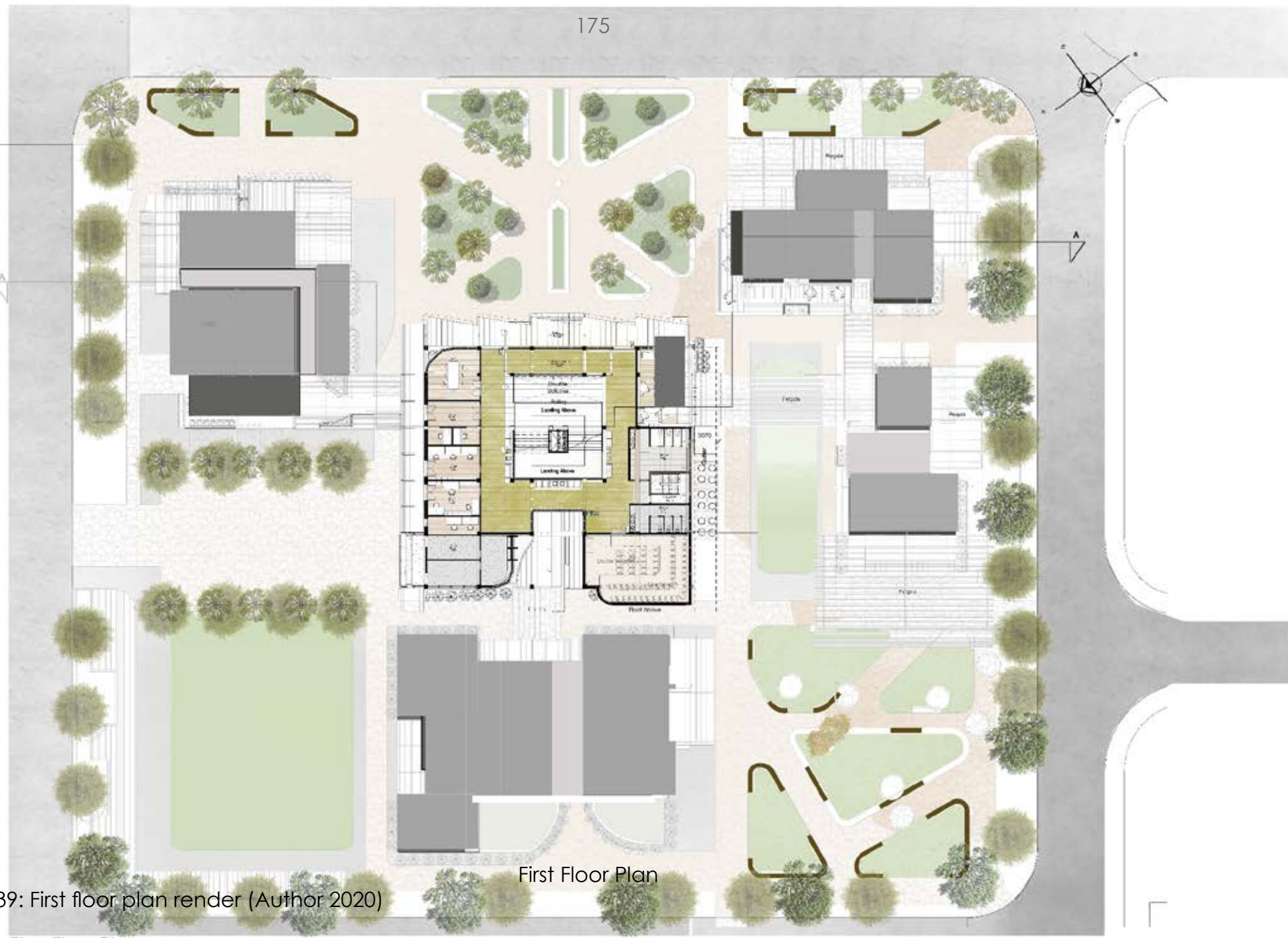


Ground Floor Plan

Figure 138: Ground floor plan render (Author 2020)

Ground Floor Plan

Scale 1:200

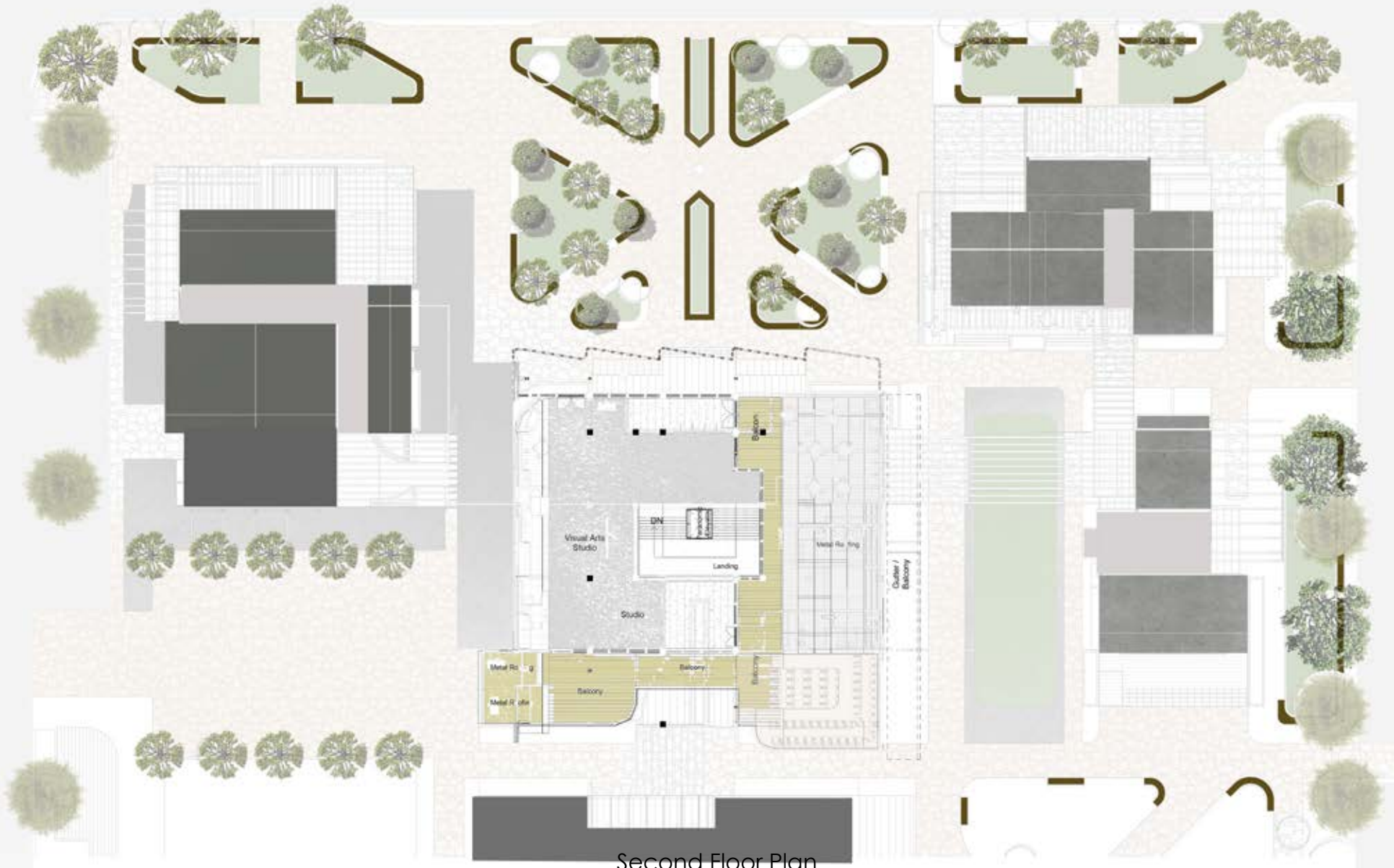


First Floor Plan

Figure 139: First floor plan render (Author 2020)

First Floor Plan

Scale 1:200



Second Floor Plan

Figure 140: Second floor plan render (Author 2020)

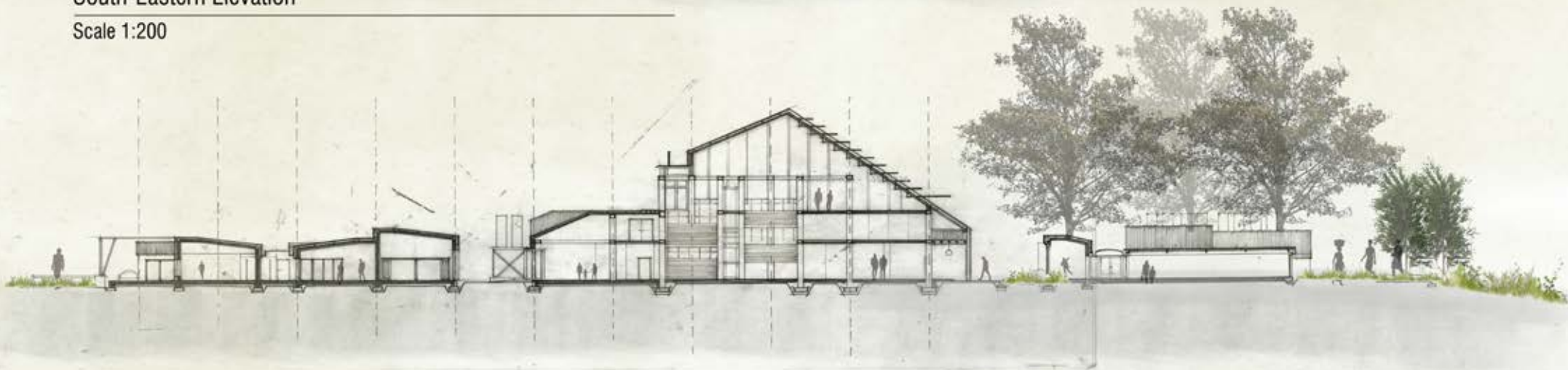
Second Floor Plan

Scale 1:200



South-Eastern Elevation

Scale 1:200



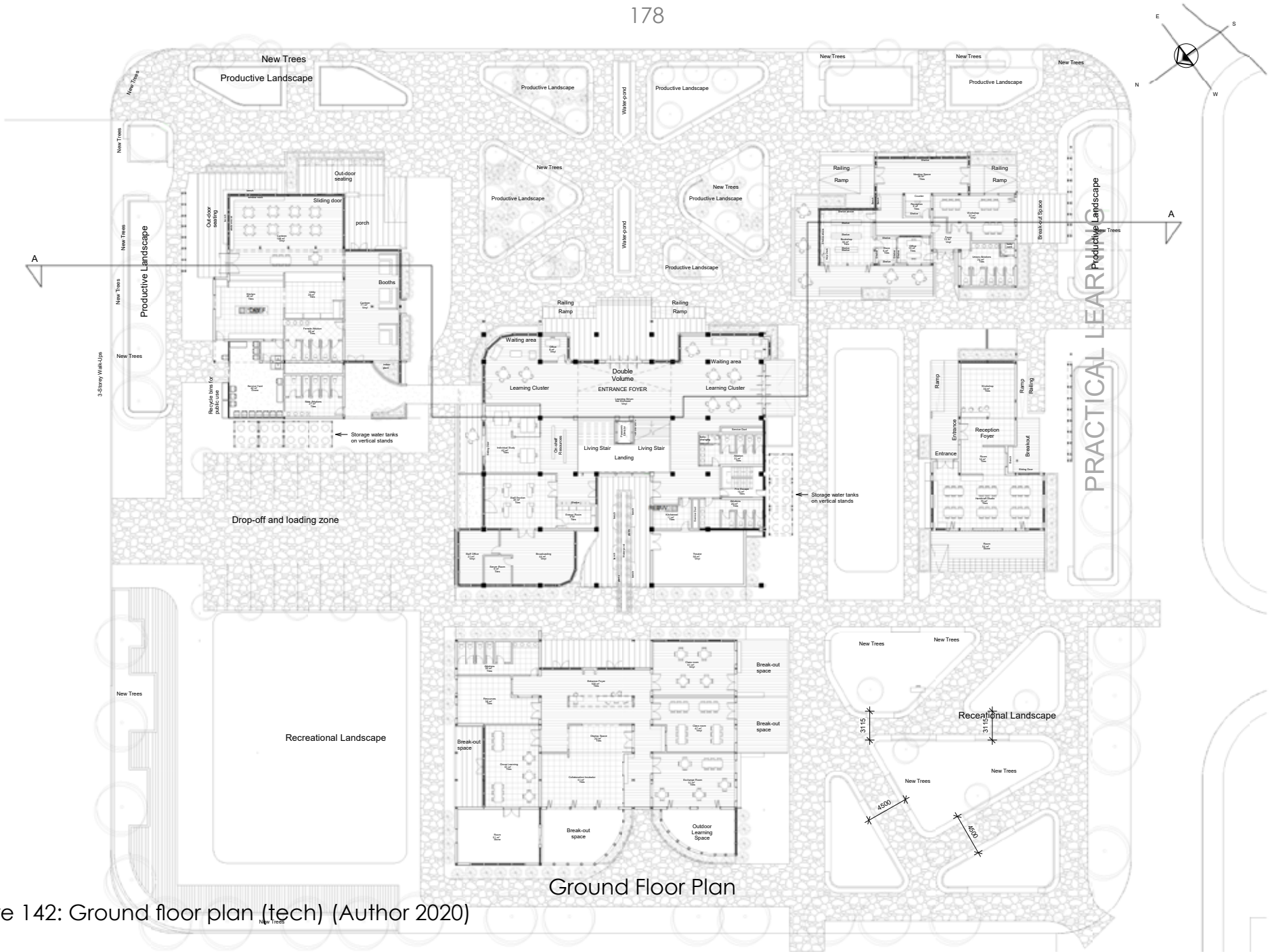
Section A-A

Scale 1:200

Critical Elevation and Section

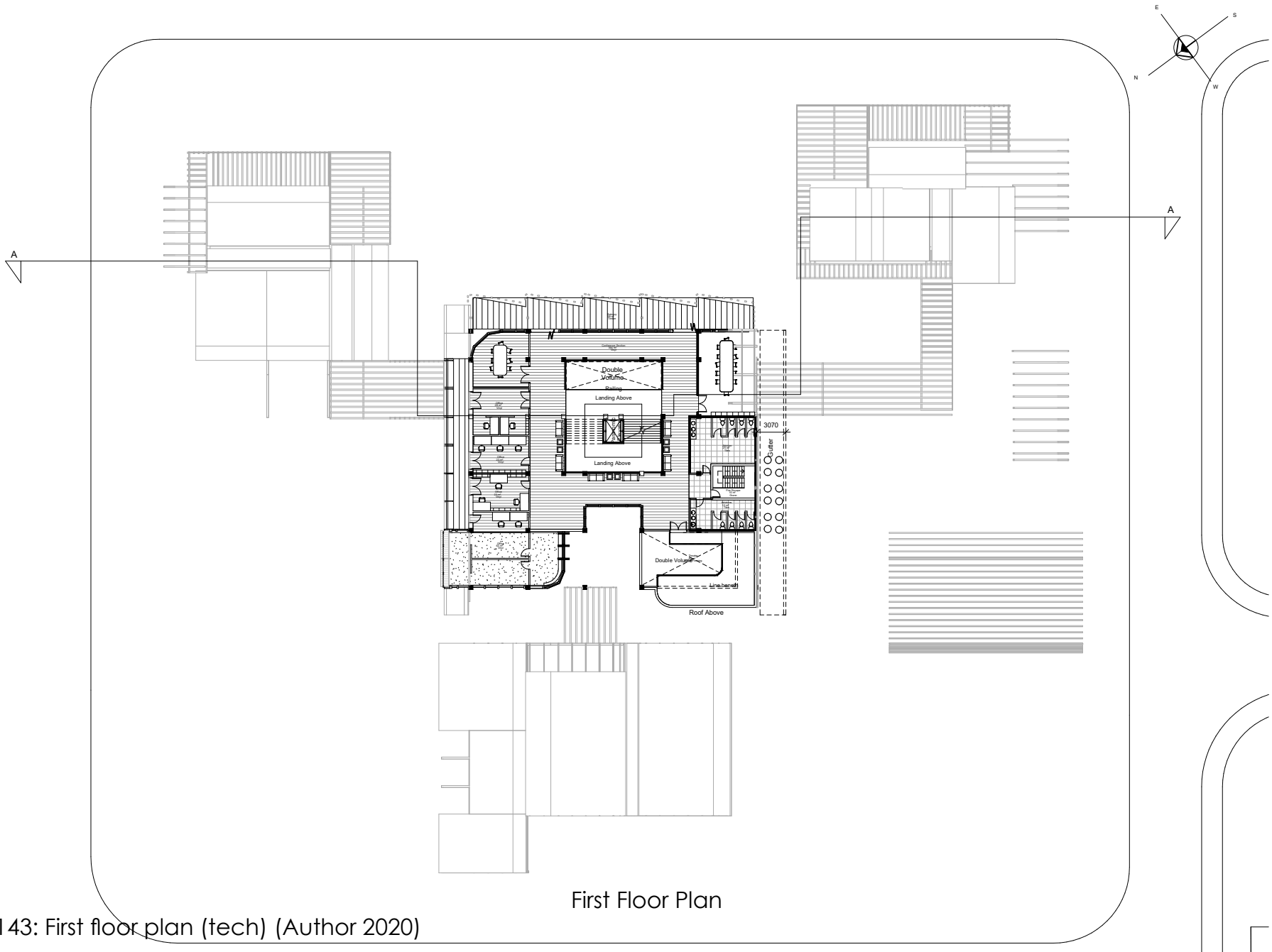
Figure 141: Strip elevation & section render  
(Author 2020)





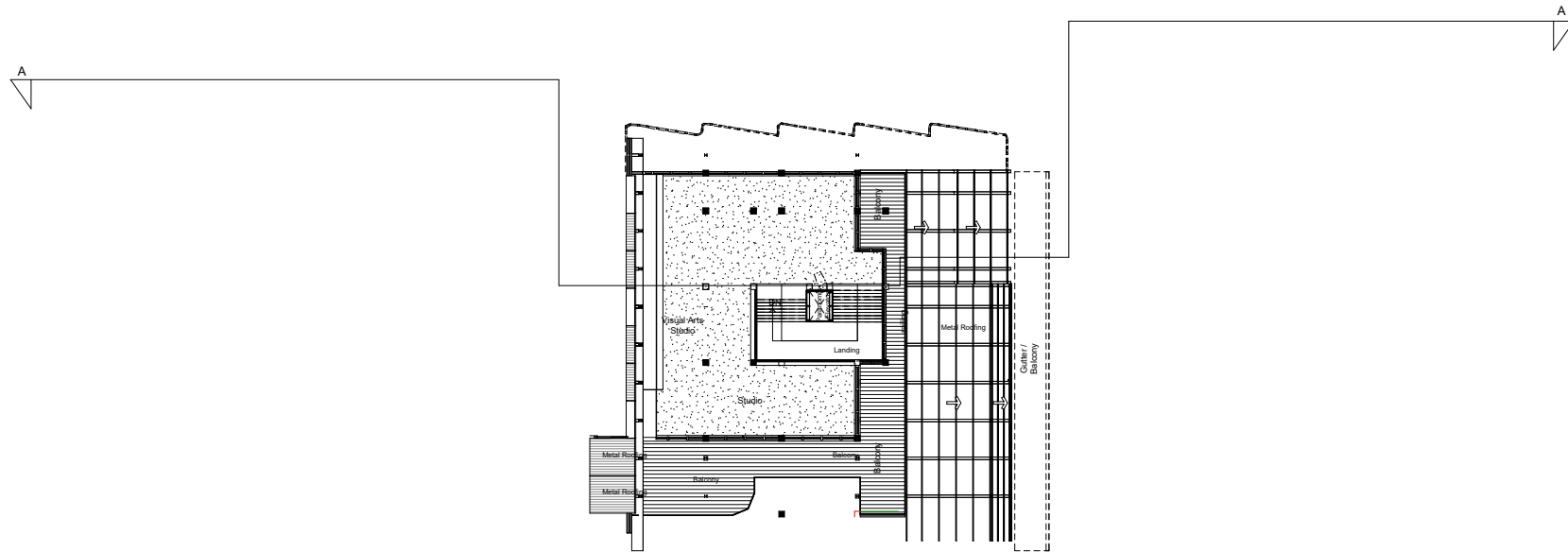
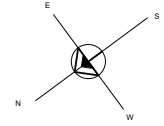
Ground Floor Plan

Figure 142: Ground floor plan (tech) (Author 2020)



First Floor Plan

Figure 143: First floor plan (tech) (Author 2020)



Second Floor Plan

Figure 144: Second floor plan (tech) (Author 2020)

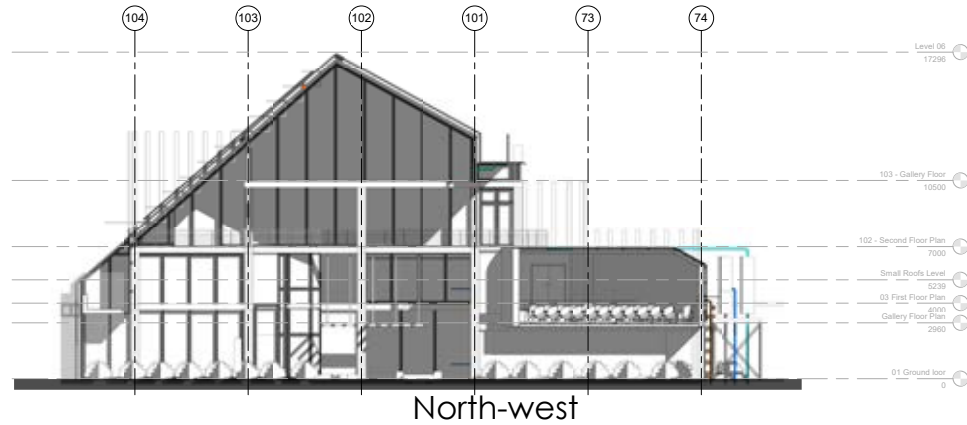
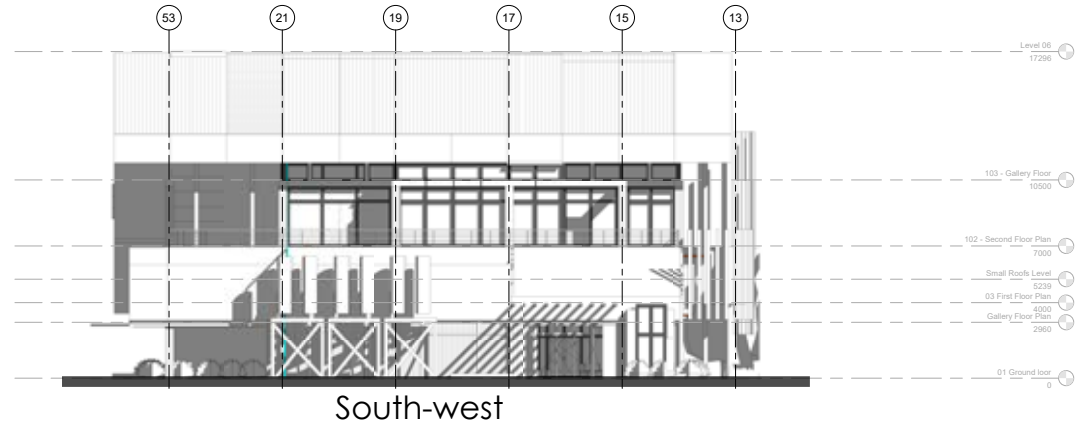
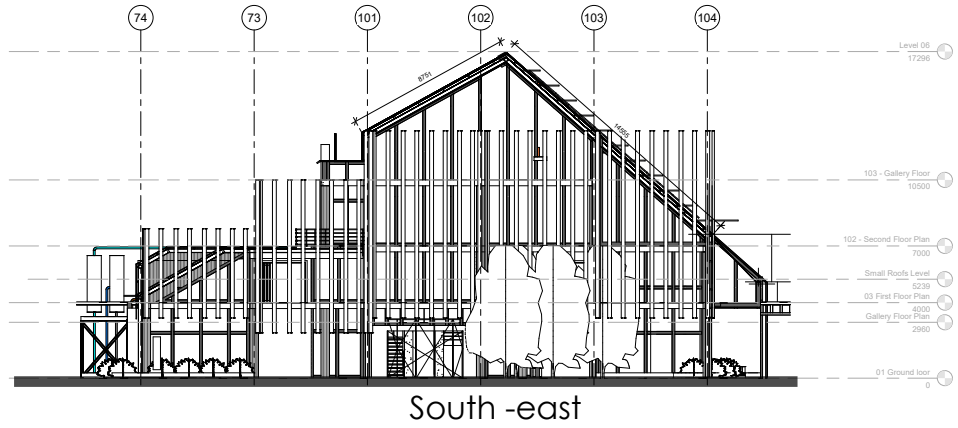
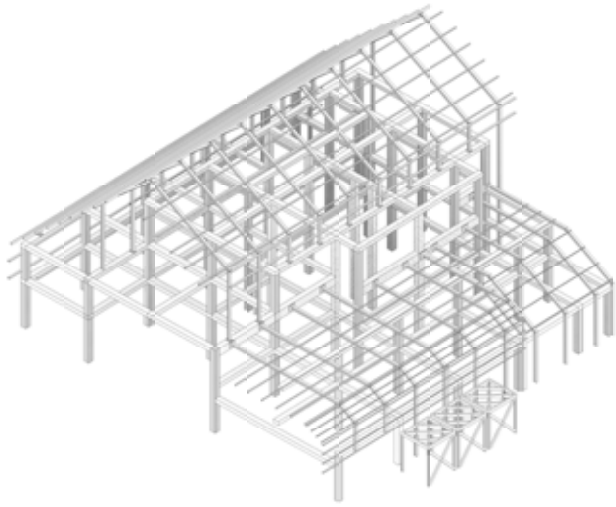


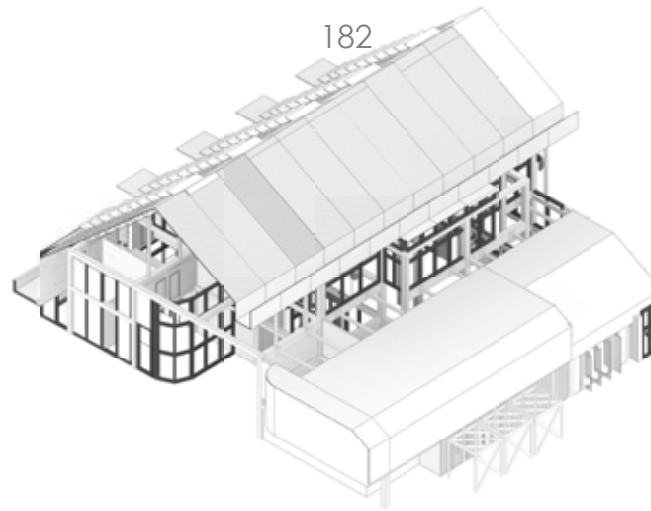
Figure 145: Home-base Cluster Elevations (tech) (Author 2020)

HOME-BASE ELEVATIONS



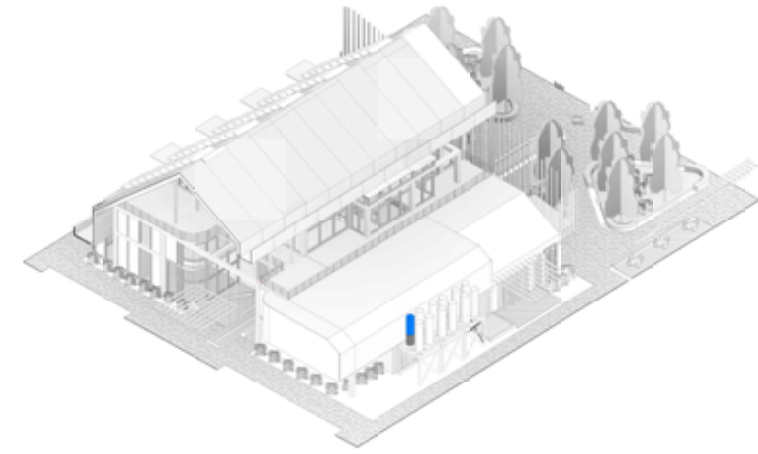
Primary Structure

- Structure is composed of post and lintel Concrete components
- supported by concrete footings
- Fire proof and thus less liable to collapse when under siege from fire.
- Portal frames form the top part of the building and the roof
- Members are bolted to the concrete post and lintel
- Lightweight
- Frees up internal and external space making and changing
- Easy to construct
- Structure has long lifespan



Secondary Structure

- Lightweight structure
- Curtain walls made of aluminium frames with air gaps and double glazed windows with laminated glass
- Curtain wall frames provide lateral support
- Double skin cavity brick walls, plastered and painted
- Metal sheets fixed to portal frames and insulated with heat propagation reducing qualities and sound attenuation
- Roof is galvanized zinc sheeting, with translucent polycarbonate sheeting.



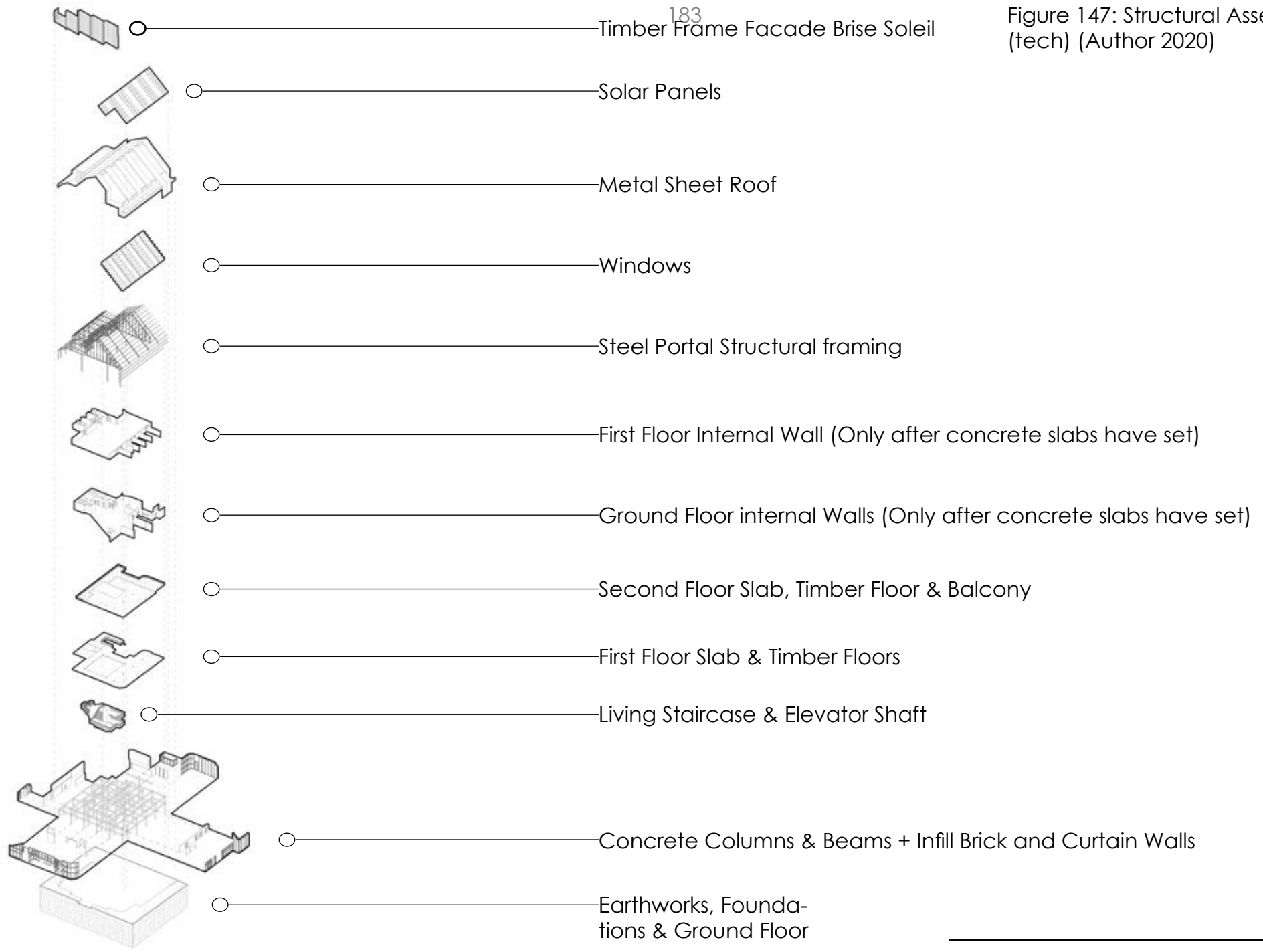
Tertiary Structure

- Finish cladding
- Light colour painting
- Protective paint on roof sheeting
- Protective paint on steel structural steel members
- Epoxy resin used to seal all gaps between members

Figure 146: Structural system-A (tech) (Author 2020)

STRUCTURAL SYSTEM - A

Figure 147: Structural Assembly (tech) (Author 2020)



ASSEMBLY



**Recycled Concrete**

**Sourcing** : Nearby demolished buildings  
**Processing** : Crushing and re-mixing  
**Physical Properties** : high compressive capacity, Fire proof, Durable, Waterproof, Supple  
**Poetic Qualities** : Takes on many shapes, Ages gracefully, Seamless, Heaviness



**Fibre Cement Boards**

**Sourcing** : Local Suppliers  
**Processing** : Mixing, Forming  
**Physical Properties** : lightweight, fireproof, waterproof, modular  
**Poetic Qualities** : lightweight, seamless



**Polycarbonate**

**Sourcing** : Local Supplier  
**Processing** : Synthetic chemical process  
**Physical Properties** : lightweight, transparent,  
**Poetic Qualities** : Filters light



**Recycled Brick & Stone**

**Sourcing** : Nearby demolished buildings  
**Processing** : Baked under high temperatures  
**Physical Properties** : High Compressive Strength, modular, robust, fireproof  
**Poetic Qualities** : Pattern, natural, warm, heavy



**Lipped Channels**

**Sourcing** : Local Steel Suppliers  
**Processing** : Moulding under high temperatures  
**Physical Properties** : High Tensile Strength, lightweight, modular, Malleable  
**Poetic Qualities** : Lightweight, Long Spans



**Plywood Sheets**

**Sourcing** : Local Timber Suppliers  
**Processing** : Cutting, binding  
**Physical Properties** : Lightweight, easy installation  
**Poetic Qualities** : Lightweight, warm, natural, variety of grains & colours



**Structural Steel**

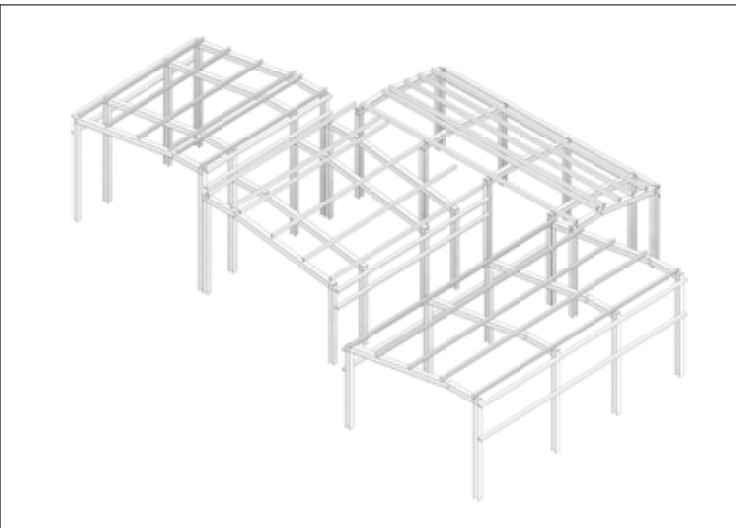
**Sourcing** : Local Steel Suppliers  
**Processing** : Moulding under high temperatures  
**Physical Properties** : High Tensile Strength, lightweight, modular, Malleable  
**Poetic Qualities** : Lightweight, Long Spans, natural, indestructible



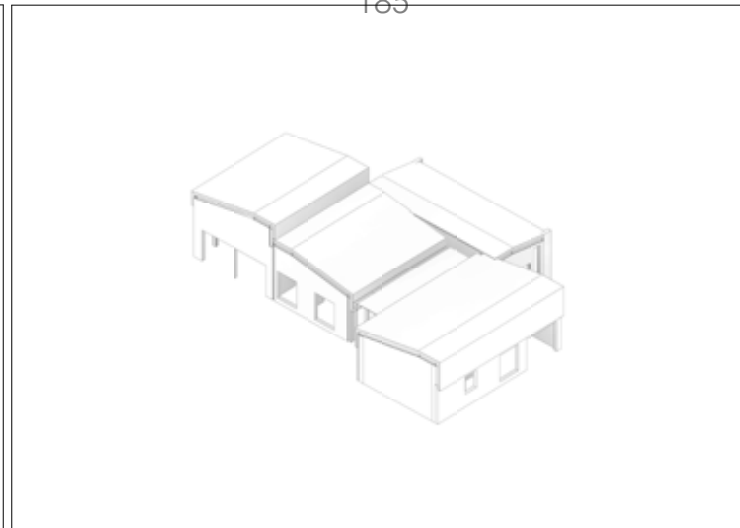
**Galvanized Zinc Sheeting**

**Sourcing** : Local Steel Suppliers  
**Processing** : Moulding under high temperatures  
**Physical Properties** : High Tensile Strength, waterproof, long spans, lightweight  
**Poetic Qualities** : Lightweight, natural, robust, seamless

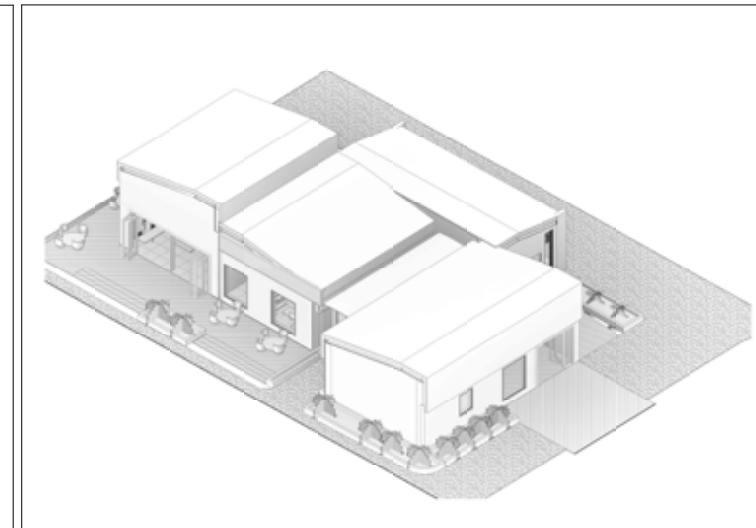
Figure 148: Materiality (tech) (Author 2020)



Primary Structure



Secondary Structure



Tertiary Structure

- Structure is composed of Structural Steel Portal Frames
- supported on concrete footings
- Coated with Fire retarding coating and thus increasing less liable to collapse when under siege from fire.
- Structure easy to construct & alter
- Members are braced to increase lateral support and stability
- Structure is relatively Lightweight
- Frees up internal and external space making and changing
- Structure has long lifespan with correct steel maintenance
- 75% of Steel Structure is made from recycled steel

- Lightweight structure
- Curtain walls made of aluminium frames with air gaps and double glazed windows with laminated glass
- Curtain wall frames provide lateral support
- Portal frames are cladded with Fibre Cement Plaster-board
- Metal sheets fixed to portal frames and insulated with Mineral wool
- Roof is galvanized zinc sheeting, with translucent polycarbonate sheeting

- Finish cladding
- Light colour painting
- protective paint on roof sheeting
- Protective paint on steel structural steel members
- Epoxy resin used to seal all gaps between members
- Finishes sourced from recycled materials as much as possible
- Crazy paving from recycled stone and pavement blocks
- Composite cladding panels made from recycled materials

Figure 149: Structural system-B (tech) (Author 2020)

STRYCTURAL SYSTEM- B



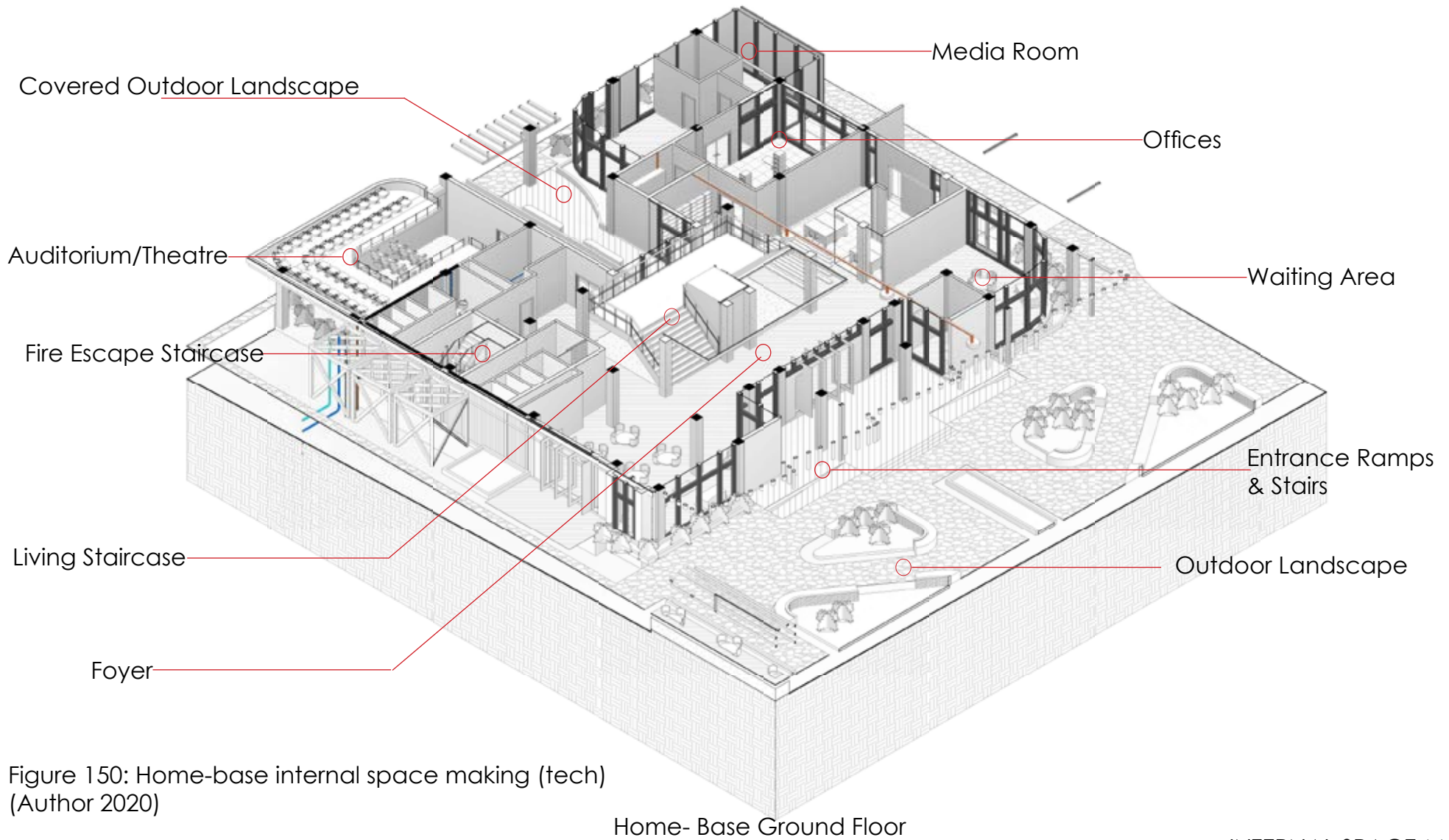


Figure 150: Home-base internal space making (tech)  
(Author 2020)

INTERNAL SPACE-MAKING

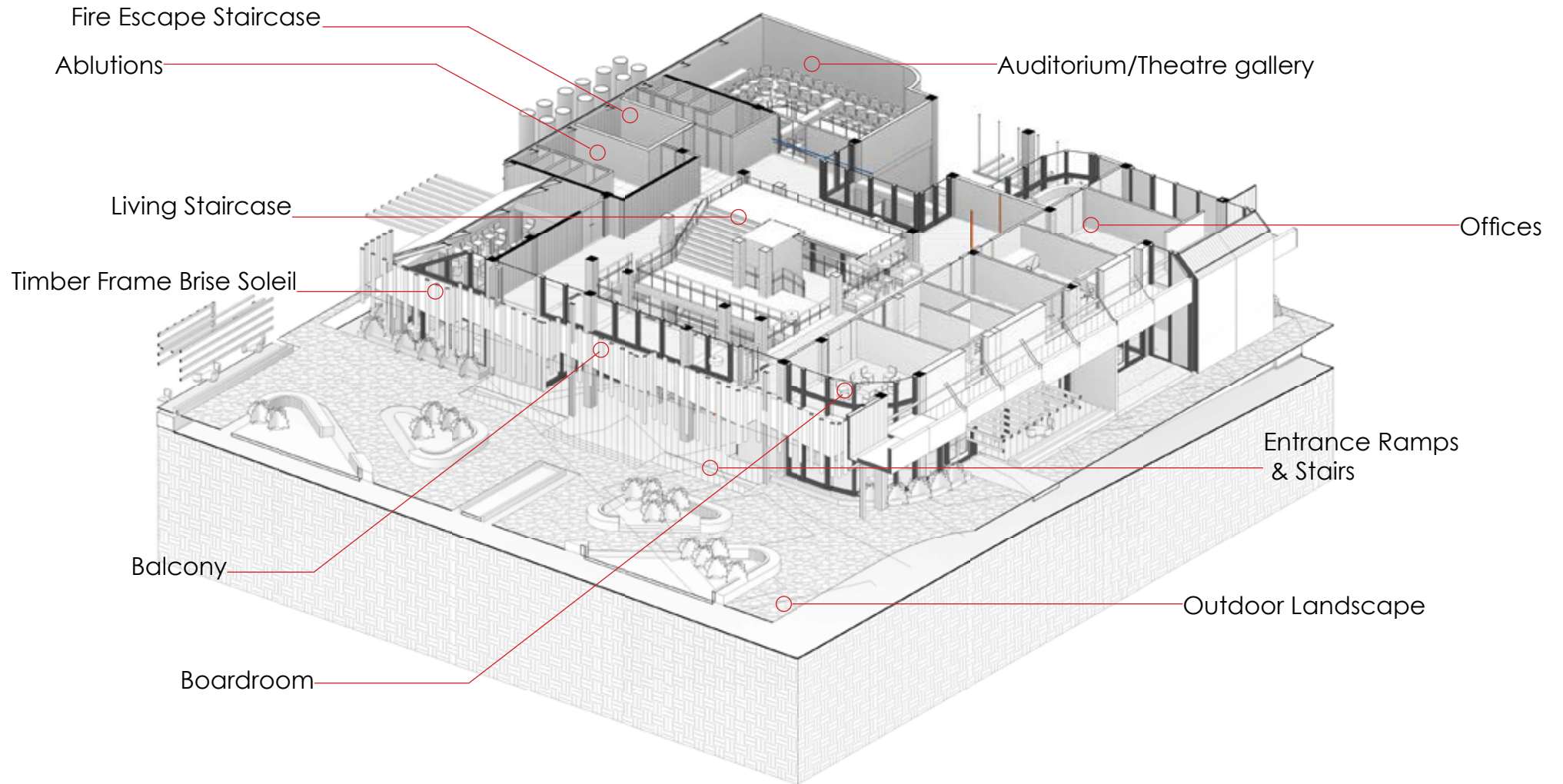


Figure 151: Home-base first floor internal space making (tech) (Author 2020)

INTERNAL SPACE MAKING

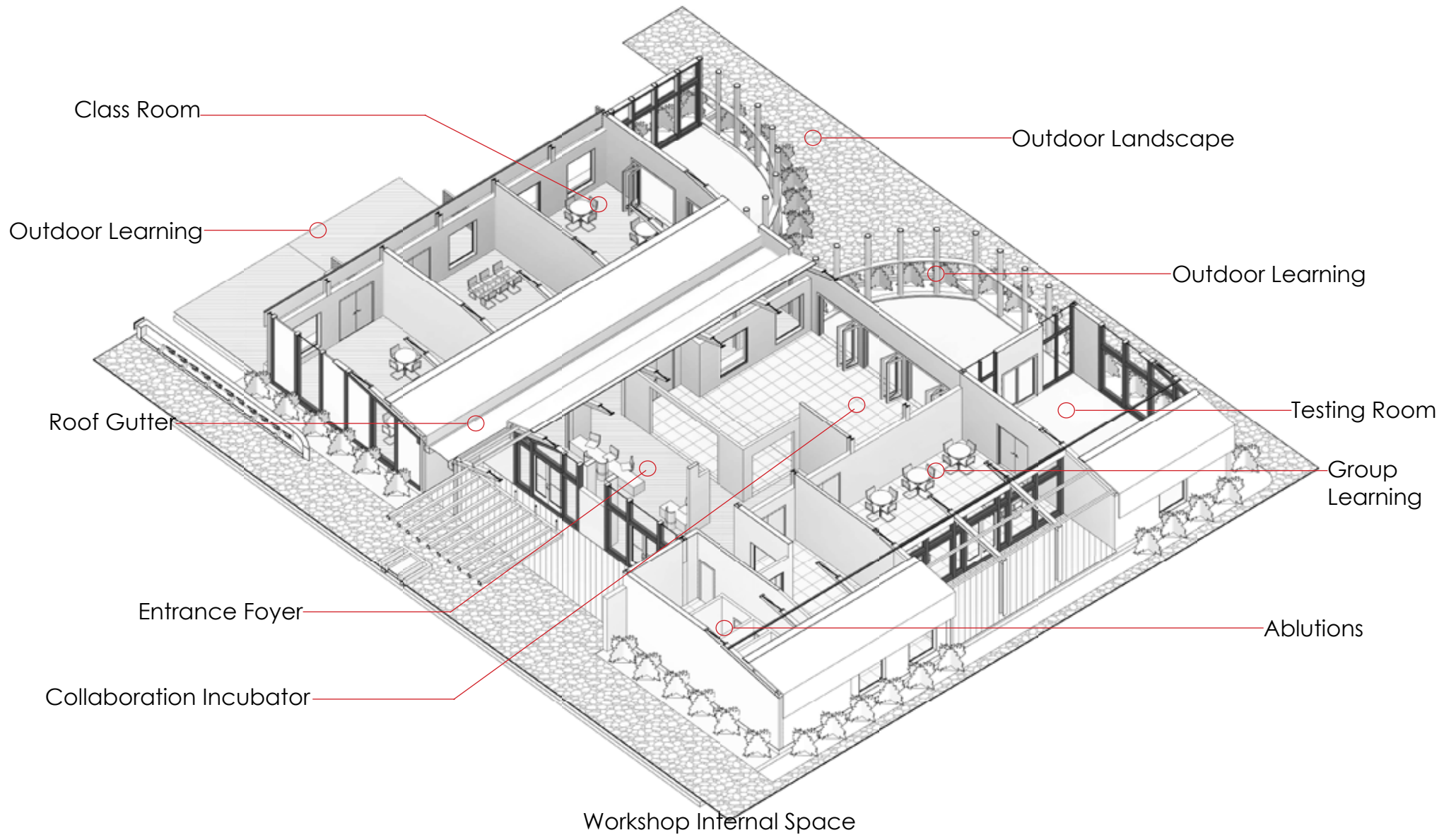


Figure 152: Workshop 1 internal space internal space-making (tech) (Author 2020)

INTERNAL SPACE MAKING

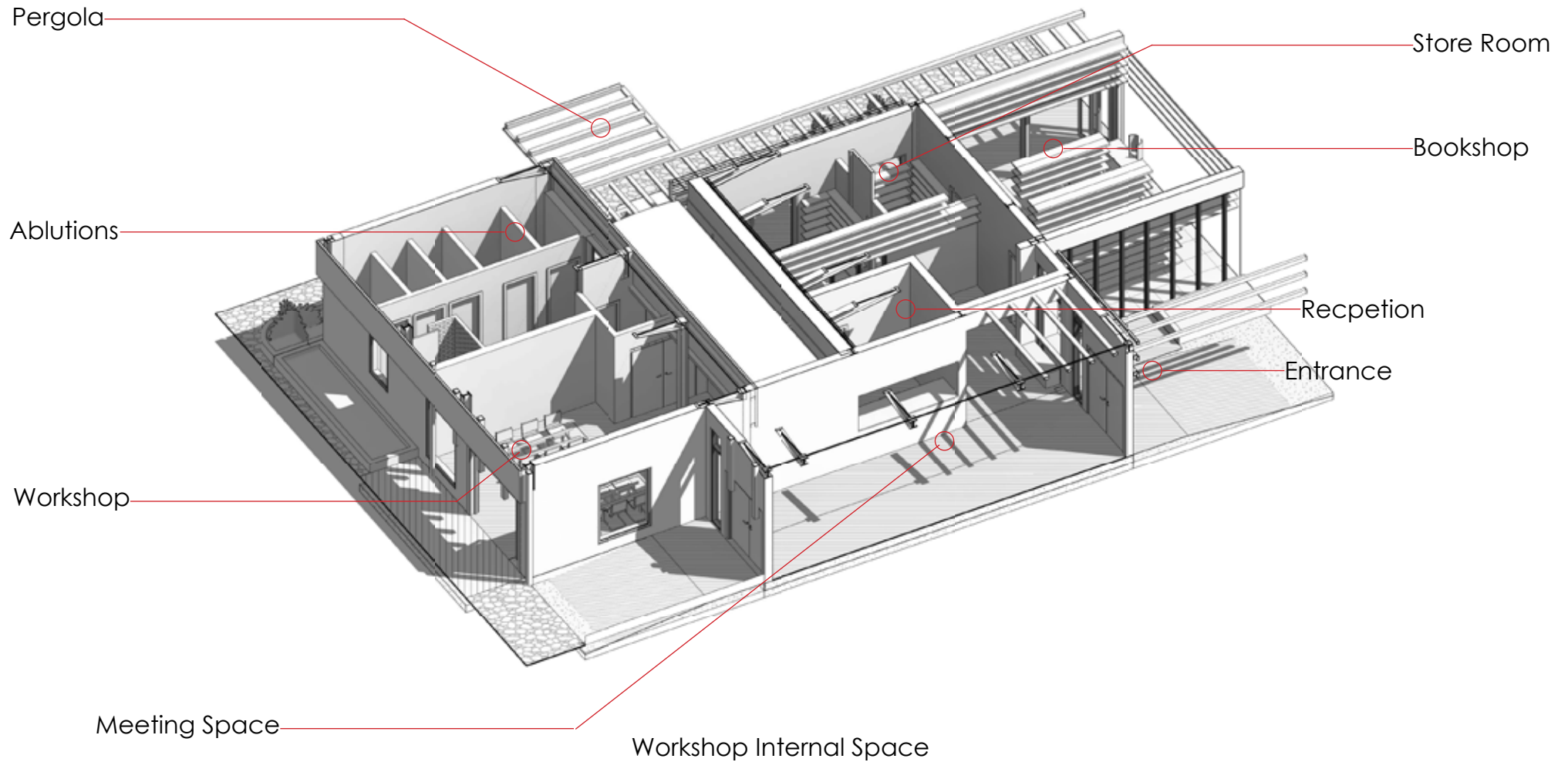


Figure 153: Workshop 2 internal space  
internal space-making (tech) (Author 2020)

INTERNAL SPACE MAKING

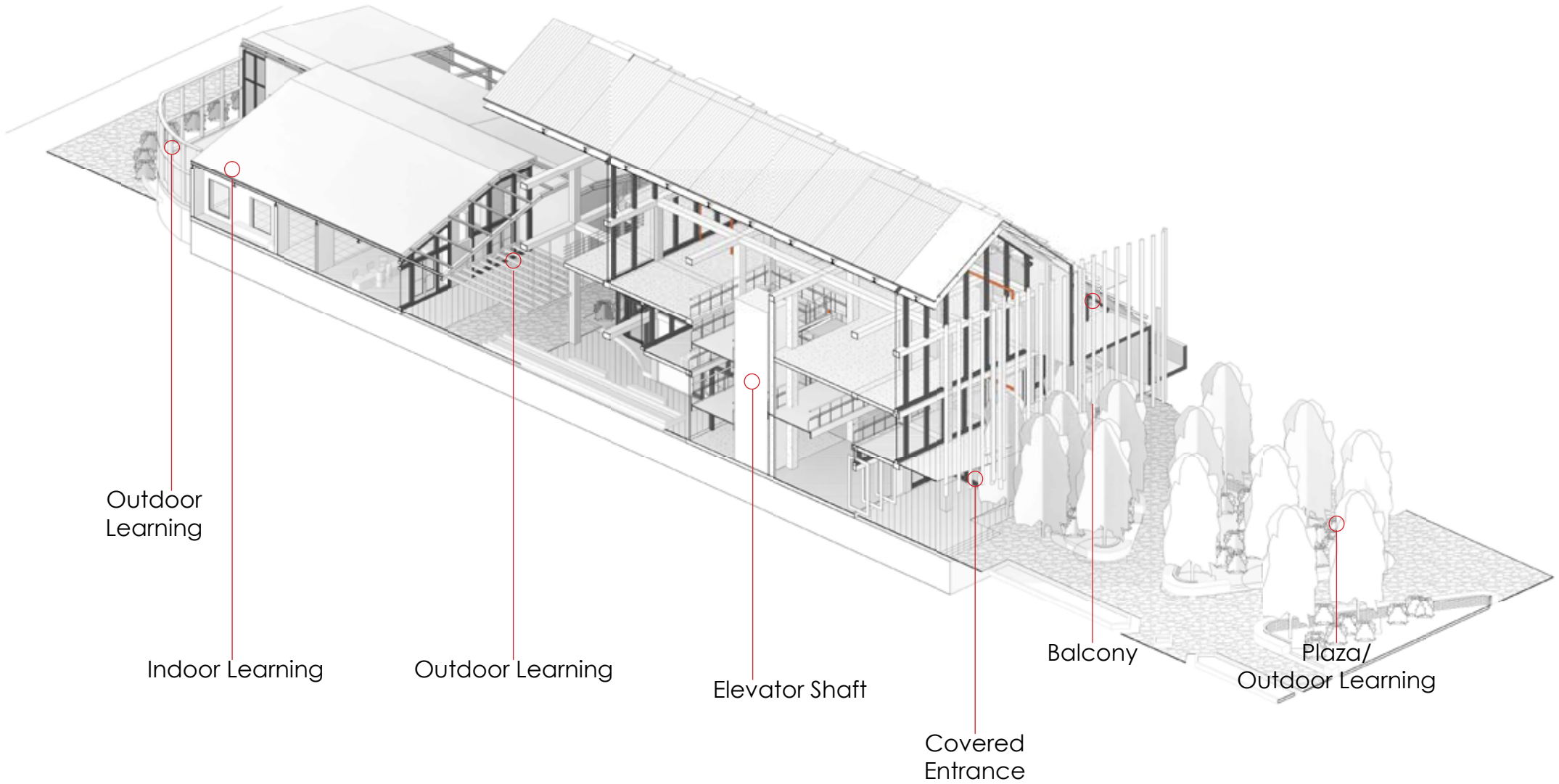


Figure 154: External space making (tech) (Author 2020)

INTERNAL SPACE MAKING

The Rainwater harvesting system diagram above indicates how water is collected using designated catchment areas on the building, to how it is filtered and stored in water storage tanks, to eventually being used in building through WCs, WHBs, showers, etc. This system is implemented to supplement the mains water system that is connected to municipal water supply which primarily uses ground water supply. This ensures that the building constantly has water even during droughts, water supply equipment maintenance and water contamination. The system is reliant on the local rainfall patterns and capacity, considering Pretoria receives x litres of rain annually, and the projected water requirement of x litres in the building, the rainwater harvested water should be able to provide x percent of the total water requirement.

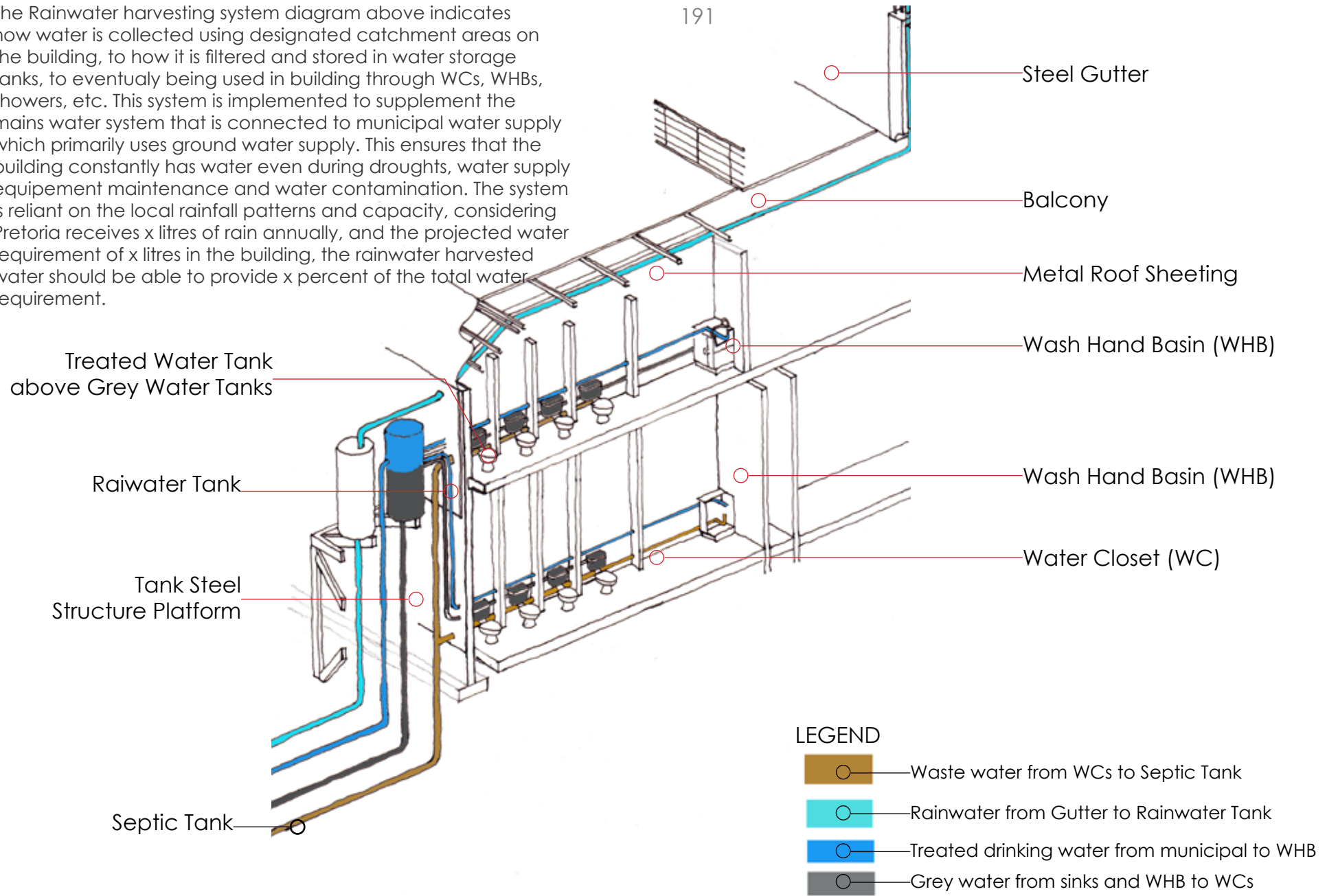
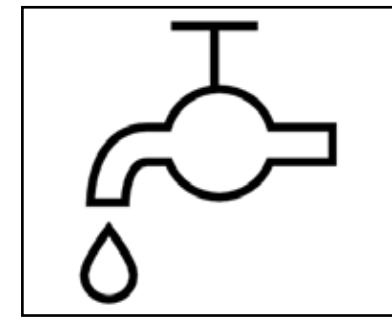
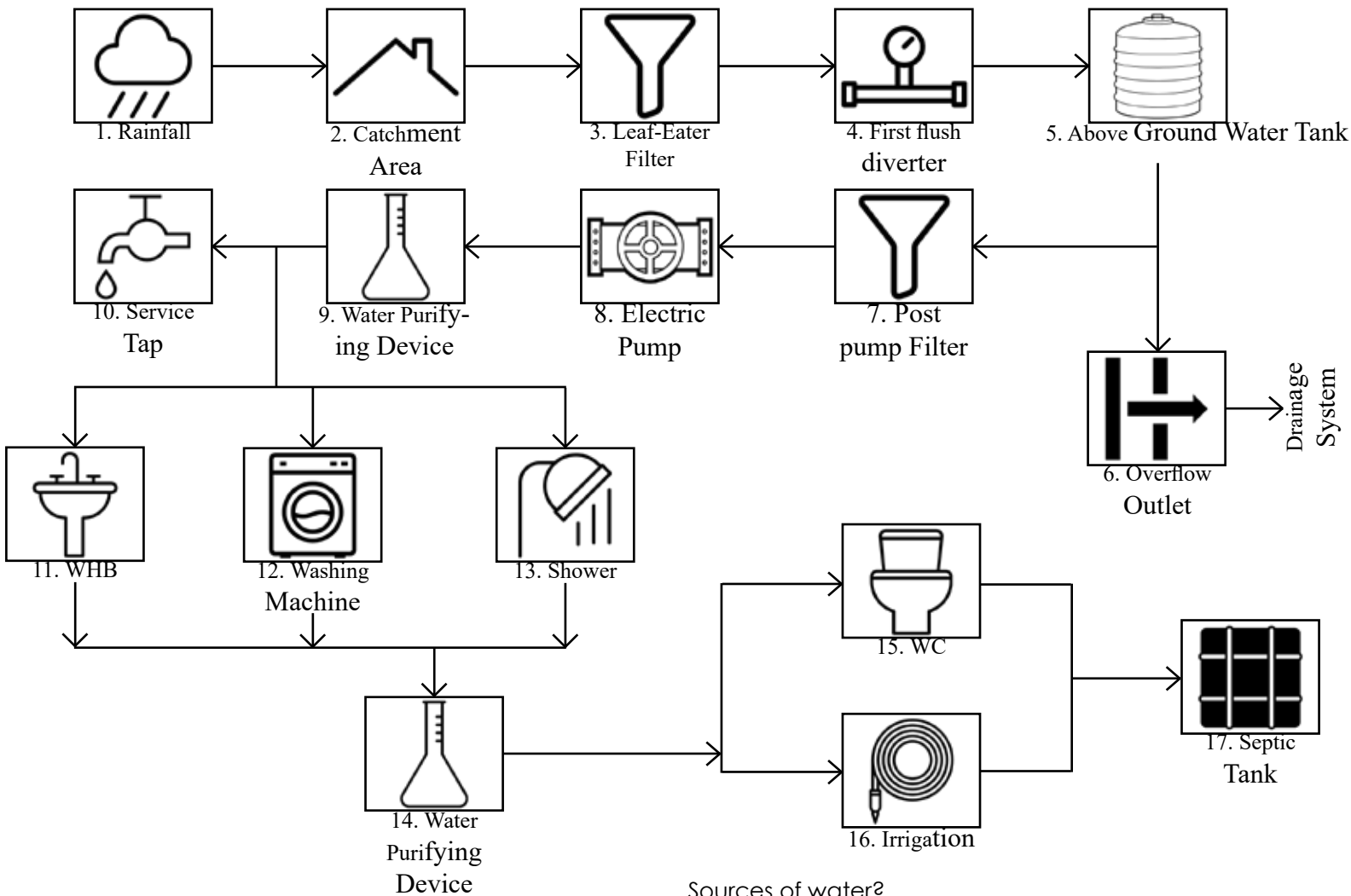


Figure 155: Services- Water system (tech) (Author 2020)



Water Usage

The population of the building  
 WCs  
 Total population = 1421  
 every person uses the WC and WHB once.  
 $1421 \times 6 \text{ litres every flush} = 8\,526 \text{ litres a day}$   
 244 litres of water required for each toilet a day

WHBs  
 $1421 \text{ uses} \times 3.7 \text{ litres} = 5\,257$   
 188 litres of water required for every basin

Sinks  
 $6 \text{ sinks} \times 37 \text{ litres per use} = 222 \text{ litres a day}$

Irrigation  
 2000 litres of irrigation water

Drinking Water  
 $1421 \times 3 \text{ litres} = 4\,263 \text{ litres}$

Total Water Required = 20 268 litres a day

Sources of water?

Municipal Ground Water = 50% (10 134 litres a day)  
 Rainwater = 10% (2 026.8 litres a day)  
 Borehole Groundwater = 40% (8 107,2 litres a day)

Figure 156: Water system(tech) (Author 2020)

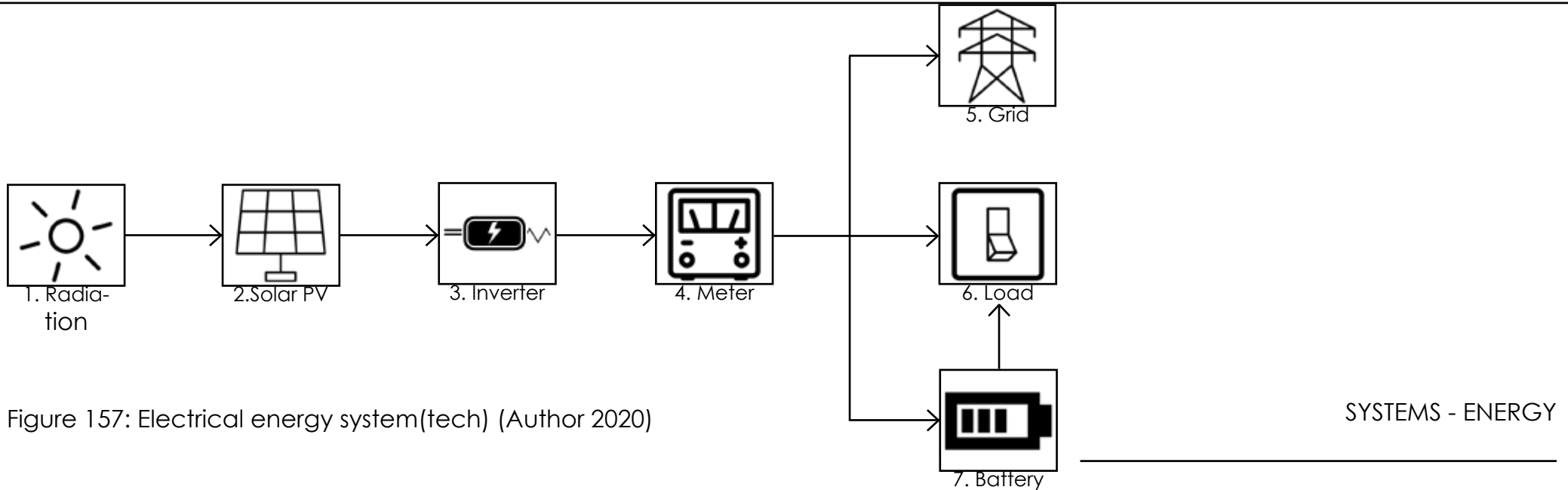
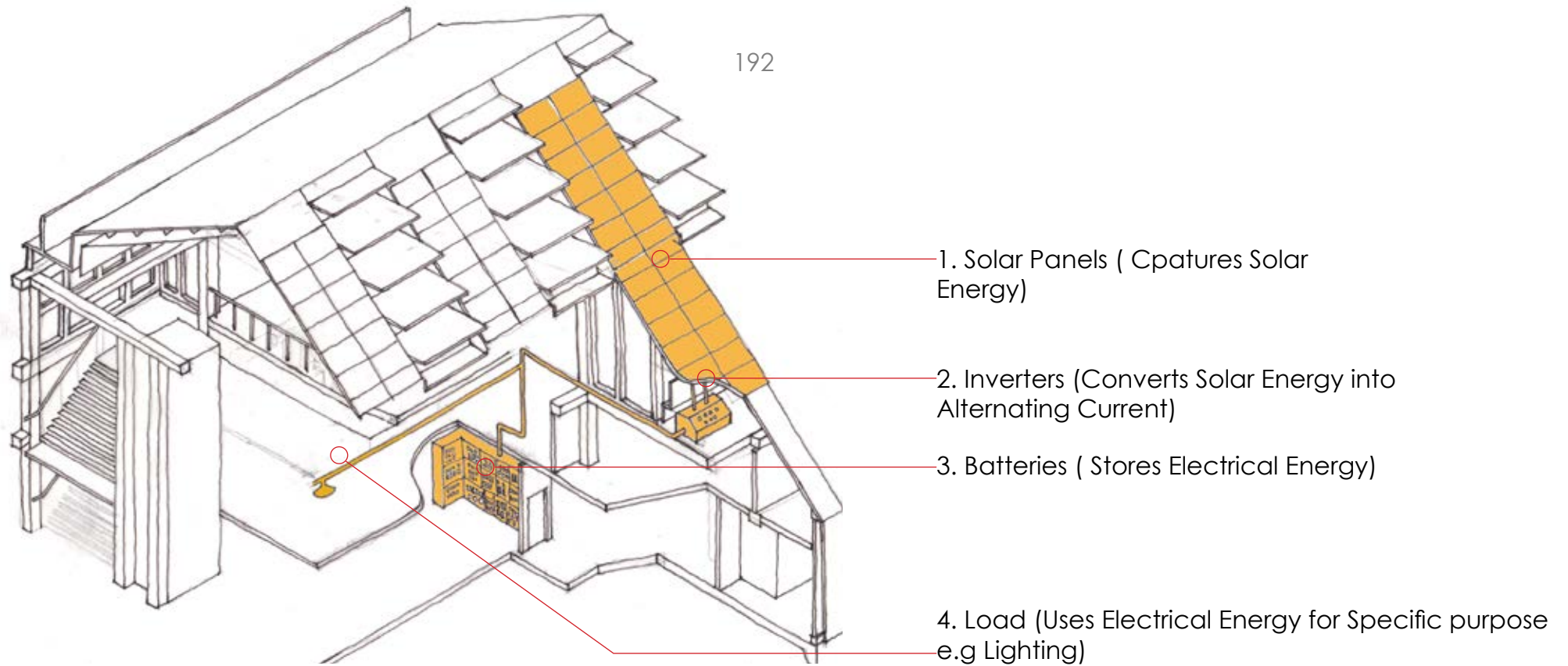
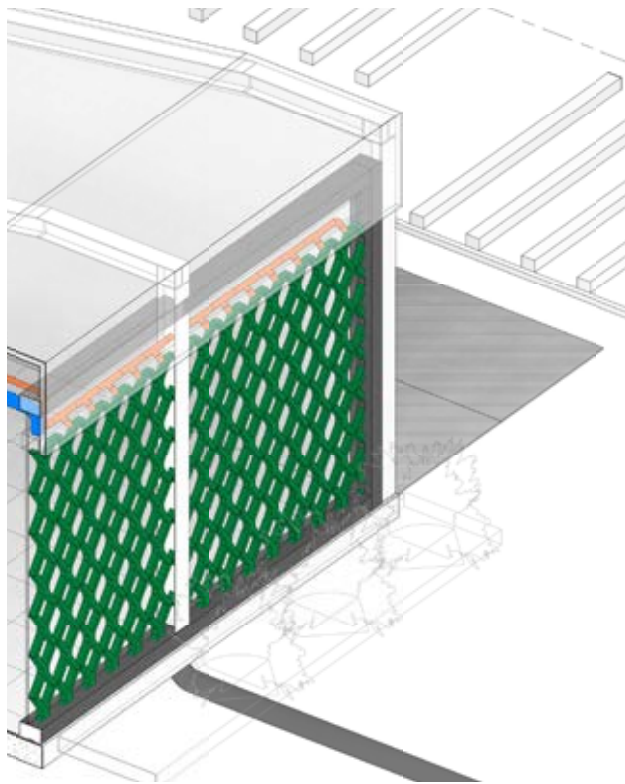


Figure 157: Electrical energy system(tech) (Author 2020)





The above diagram indicates how the Algae Bubble Column Photobioreactor system operates, and how it connects to other systems in the building such as the water and energy systems.

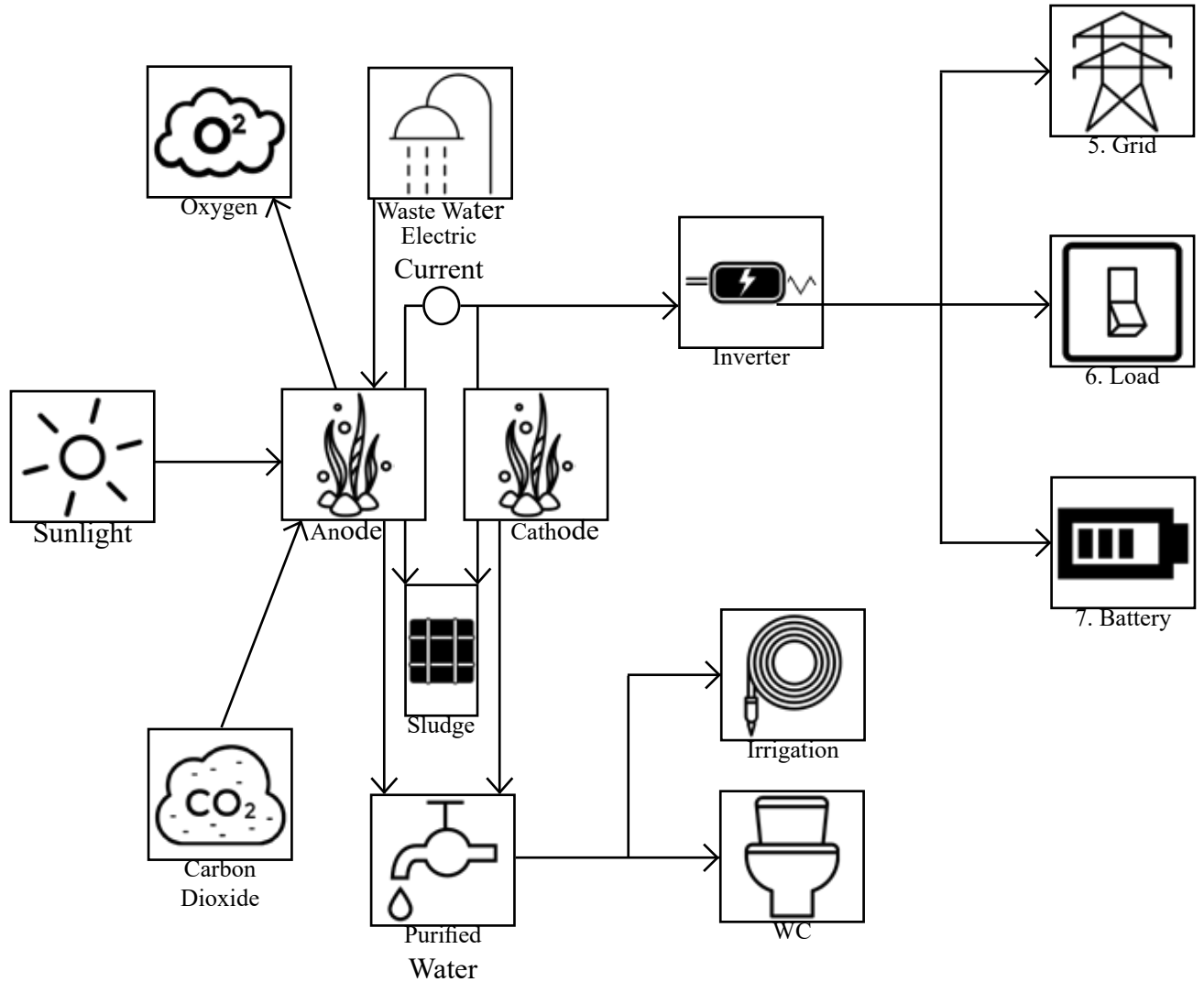
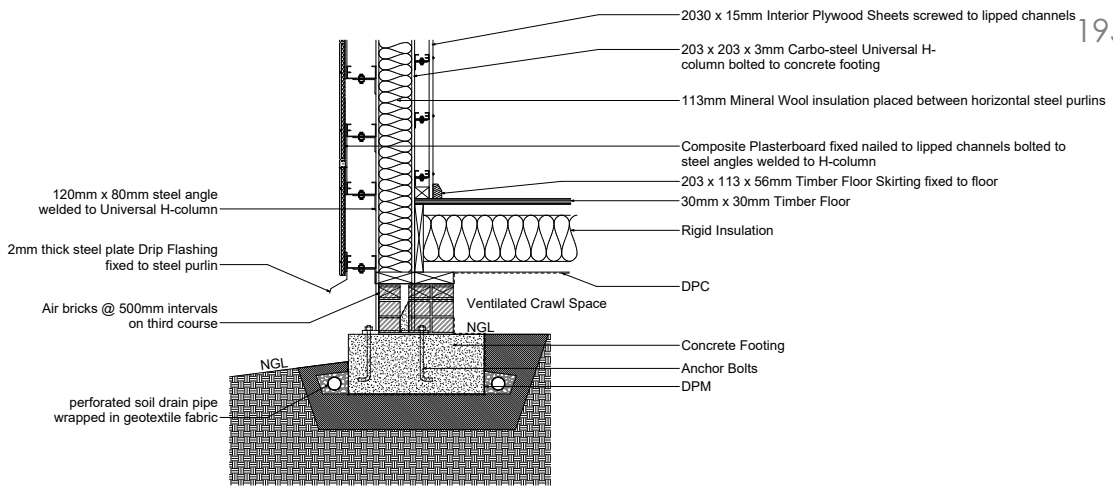
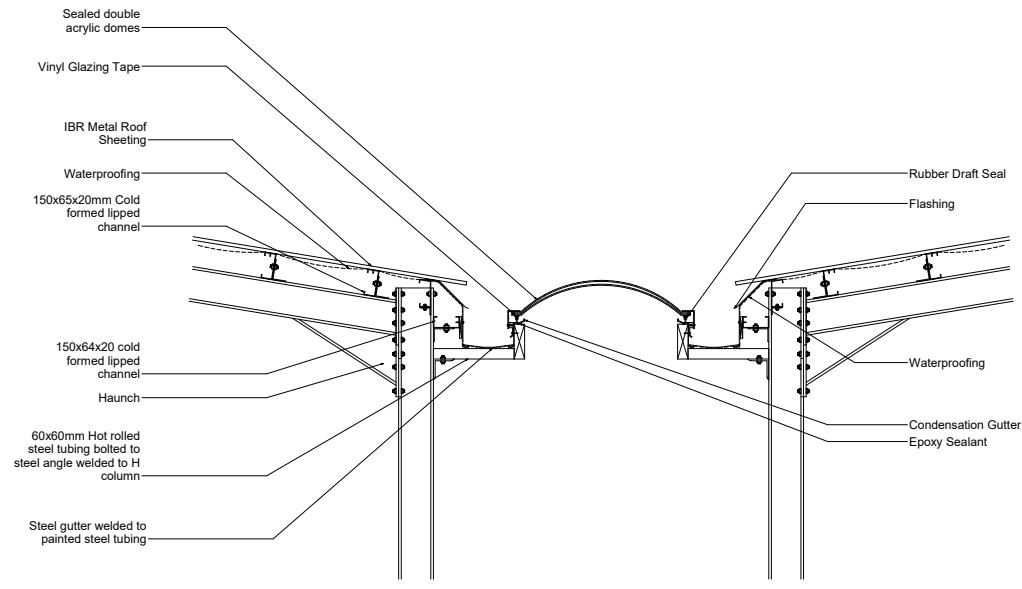


Figure 157.1: Electrical energy system(tech) (Author 2020)

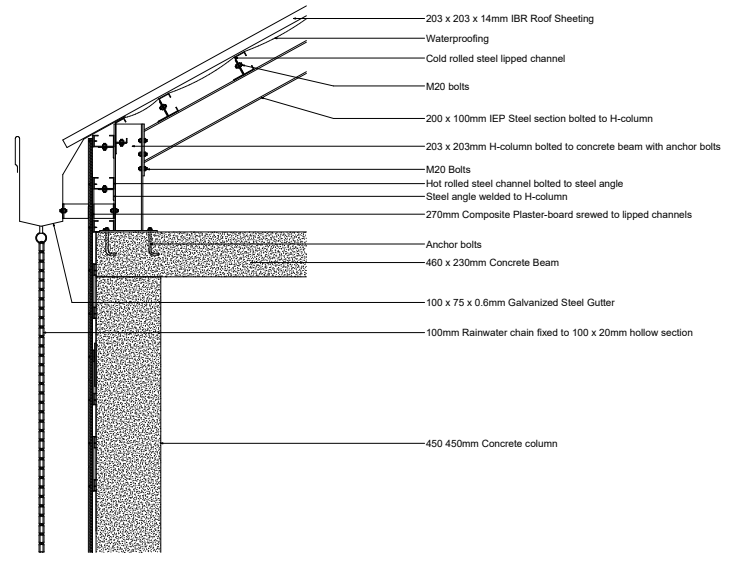




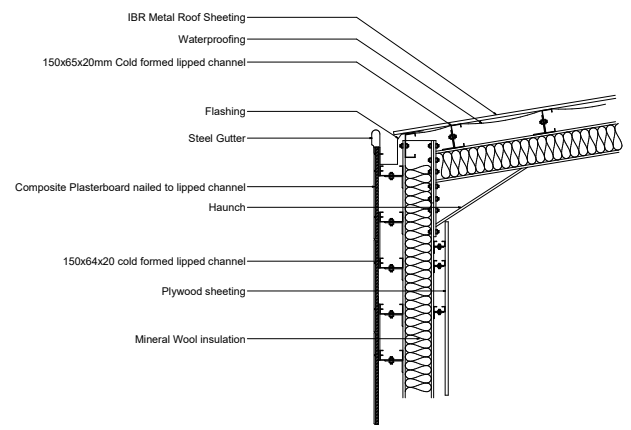
Detail A



Detail B



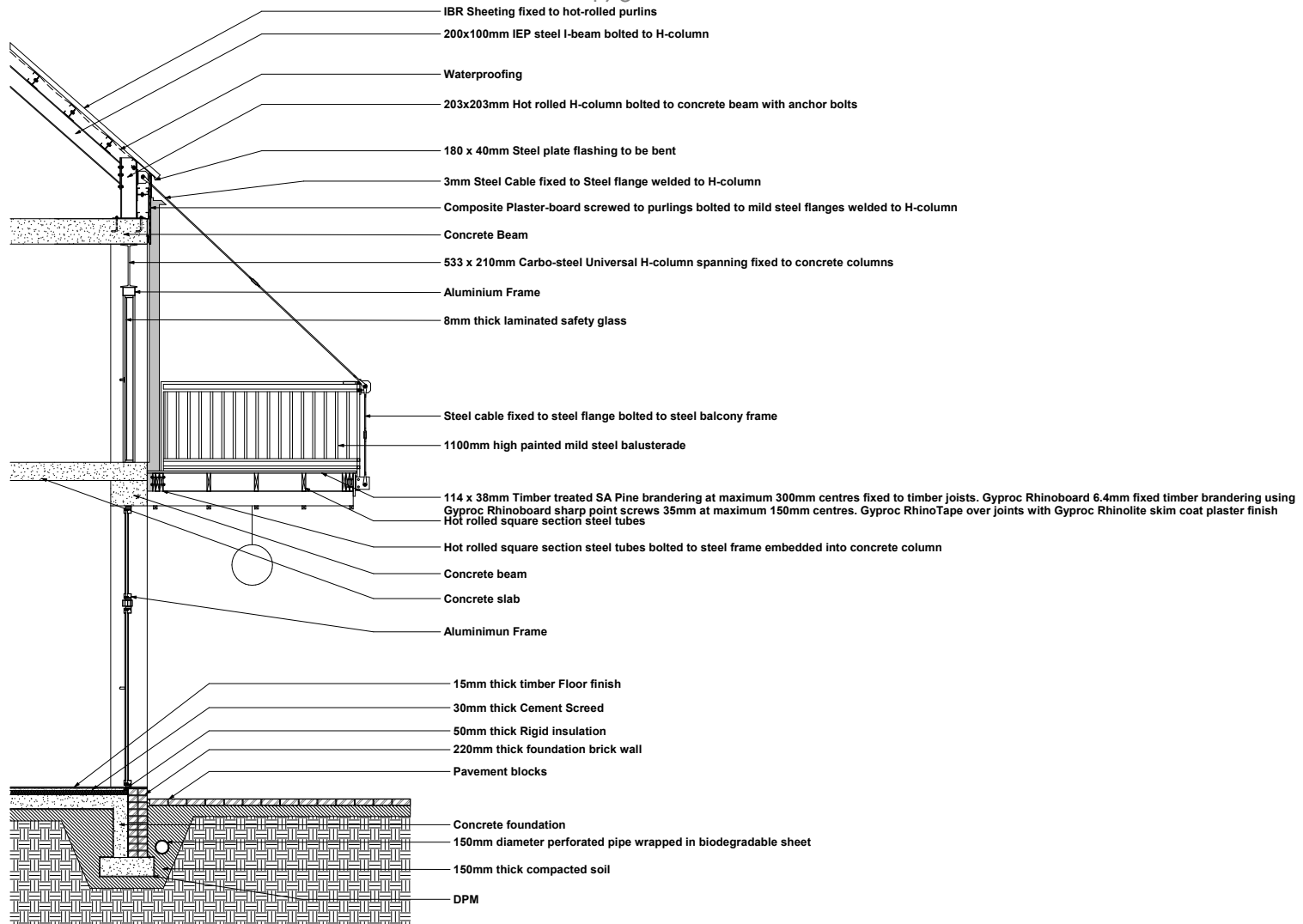
Detail C



Detail D

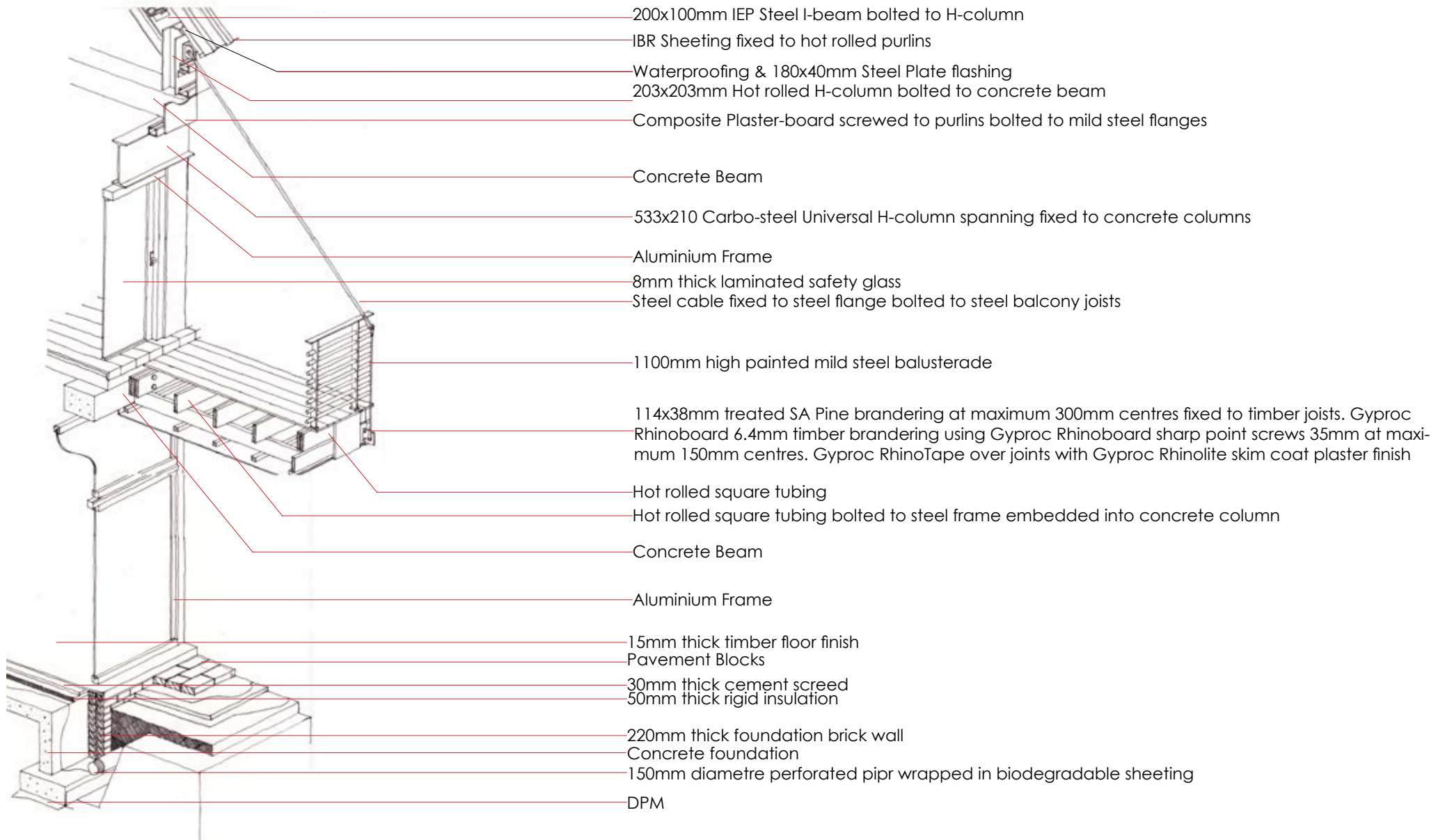
TECHNOLOGY

Figure 159: Details (tech) (Author 2020)



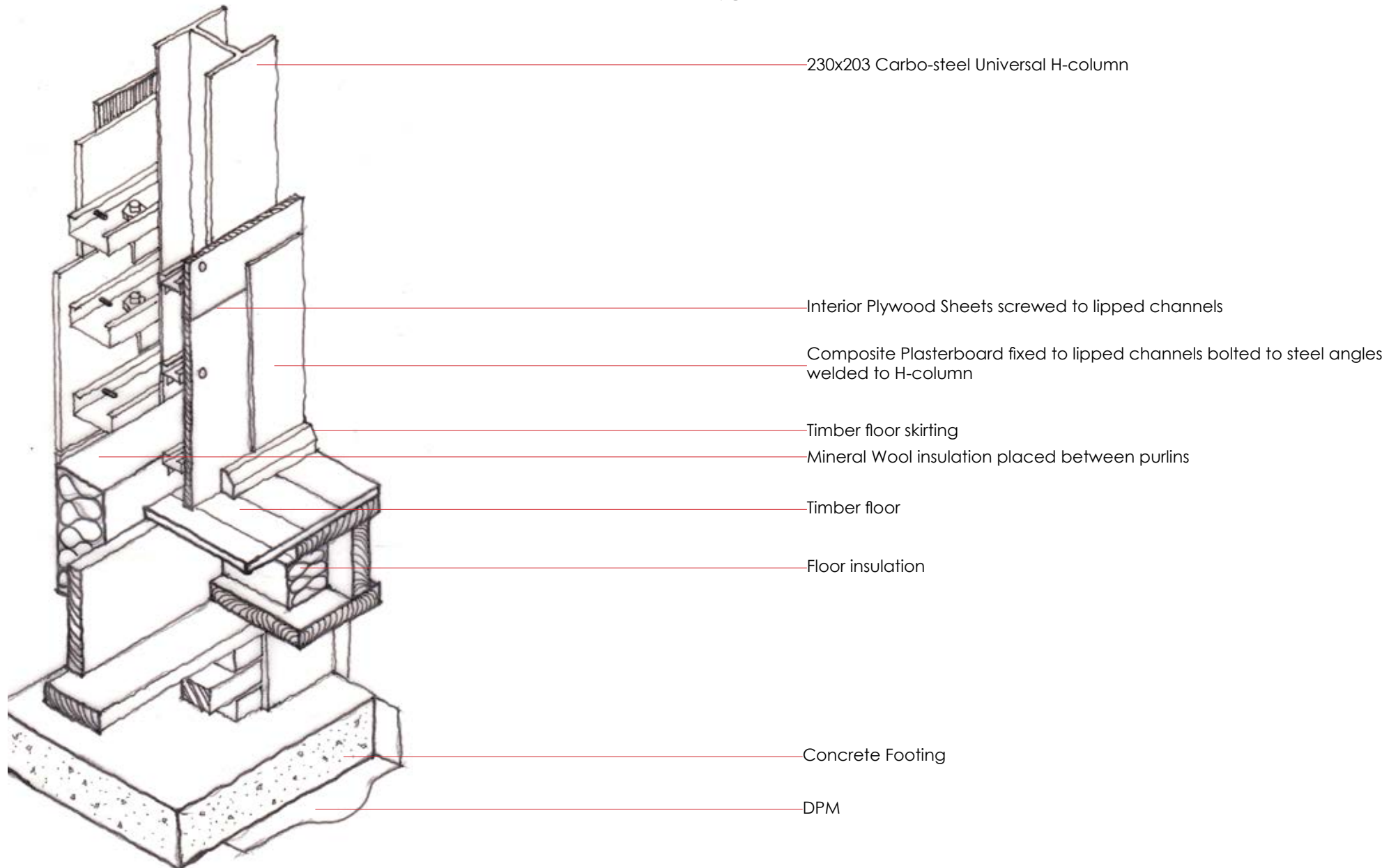
# Detail E

Figure 160: Wall Detail E(tech) (Author 2020)



## Detail E - 3D

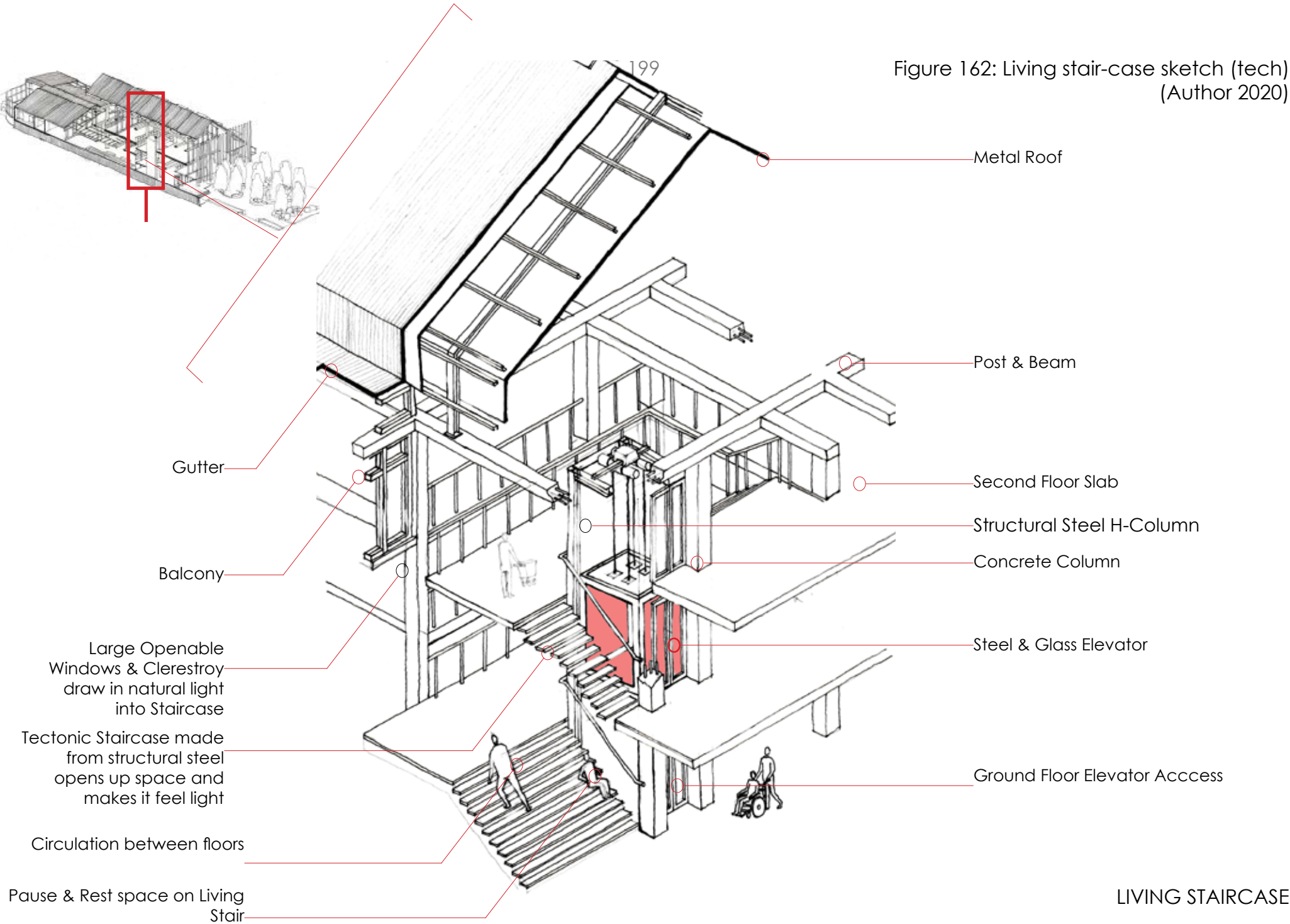
Figure 160.1 : Wall Detail E-3d (tech) (Author 2020)



## Detail A - 3D

Figure 161: Wall assembly Detail A (tech) (Author 2020)

Figure 162: Living stair-case sketch (tech)  
(Author 2020)



LIVING STAIRCASE



Figure 163: View to the workshop edge (render) (Author 2020)





Figure 164: View to the workshop edge & community garden(render) (Author 2020)



Figure 165: View to the community cafe & community garden(render) (Author 2020)



Figure 166: View to the covered outdoor landscape (render) (Author 2020)

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