EPHEMERAL [RE]URBANISM:

A Vacant Automobile Dealership Adapted to an Urban Informal Market

DUREN MOODLEY

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

By Duren Moodley

Department of Architecture University of Pretoria
2019

Study Leader : Catherine Karusseit
Course coordinator : Catherine Karusseit

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree of Masters of Interior Architecture (Professional) at the University of Pretoria, is my own work and has not previously 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 declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Duren Moodley

PROJECT INFORMATION

DISSERTATION TITLE
Ephemeral [Re]Urbanism: A Vacant Automobile Dealership Adapted to an Urban Informal Market

PROJECT DESCRIPTION
Urban renewal by method of ephemeral adaptive reuse of a vacant automobile dealership in Arcadia.

PROGRAMME
Urban Informal Market

SITE DESCRIPTION
One of two vacant automobile dealerships that occupy an entire urban block consisting within a socio-economically active, mixed-use precinct of Arcadia.

SITE LOCATION
The Southern-West corner of Arcadia

ADDRESS
330 Du Toit Street, Arcadia
Latitude -25.749635 Longitude 28.198448

RESEARCH FIELD
Housing & Urban Environments

KEYWORDS
Interior Architecture, Urban Decay and Renewal, Ephemerality, Adaptive Reuse, Public Interior, Arcadia

CHOSEN CLIENT & USERS
A local businessman who currently owns the remaining vacant dealership. Local Urban Informal Traders, Commuters, Formal Trade Employees and the General Public

PRIMARY RESEARCH QUESTION
How can the ephemeral adaptive reuse of a vacant automobile dealership restrain urban decay in Arcadia?

INTERIOR ARCHITECTURAL APPROACH
An ephemeral ‘public interior’ intervention as method towards restraining urban decay.

ABSTRACT

Observation of Pretoria's current urban condition has revealed a network of vacant automobile dealerships left in the wake of a national decline of new vehicle sales. Among which are two vacant dealerships that occupy an entire urban block within a socio-economically active district of Arcadia. With prolonged vacancy and an indefinite future, the onset of 'Urban Decay', wherein former functional city segments descend into decrepitude, is inevitable. Furthermore, dealership building typology is mono-functional, dictating difficult appropriation and costly retrofit, inhibiting the potential for alternative tenant occupation and use. This factor, together with the current economic climate, results in vacant dealerships contributing significantly towards a 'negative' urban condition.

As a strategy towards restraining urban decay, an intervention is proposed in the form of the ephemeral adaptation of one dealership into an urban informal market. The informal market is in response to the field research observations. The site is situated along a high frequency pedestrian corridor, which revealed a dynamic informal trade economy that is present on the dealership's Western edge.

A set of design criteria and guidelines inform the markets' design. The criteria and guidelines are primarily informed by field research and the conclusions drawn applying guidance towards the secondary informants. The secondary informants are derived from theories of urban decay and renewal, semi-permanent adaptive reuse and developing urban informal trade, along with international precedents and a local case study.

The intention of the urban informal market is to sensitively support urban informal trade by providing the minimum infrastructure for trade to occur, allow and promote growth, flexibility, and appropriation. To convey the ephemeral nature of the intervention and, in turn, render a once mono-spatial pragmatic structure sculptural, scaffolding is employed as a design medium to 'sculpt' space. The aim of the impermanent intervention is the reintegration of the vacant dealership into Arcadia's fabric, contributing towards a positive urban condition.

Keywords:
Urban Decay and Renewal, Ephemerality, Adaptive Reuse, Public Interior, Urban Informal Market

TABLE OF CONTENTS

CHAPTER FIVE.

PRECEDENT AND CASE STUDY

CHAPTER SIX.

DESIGN DEVELOPMENT

CHAPTER SEVEN.

TECHNICAL DEVELOPMENT

CHAPTER EIGHT.

REFLECTION

LIST OF REFERENCES

APPENDIX

LIST OF FIGURES

INTRODUCTION

CHAPTER ONE.

1.1 INTRODUCTION

The current economic climate of South Africa has resulted in the decline of new vehicle sales, prompting a national downsizing of automobile manufacturers' dealership networks. As a result, once active dealerships stand vacant. Further compounding the problem, dealership vacancy is prolonged as a consequence of the mono-functional typology of dealership architecture, which primarily serves to display vehicles to passing vehicular and foot traffic. Dealership design approaches do not allow for future occupation or alternative use other than the sale of vehicles, proving appropriation by retrofit costly. The culmination of the current economic climate and the mono-functional architectural typology results in prolonged vacancy, inevitably inducing urban decay.

The intention of this study is to restrain urban decay by implementing a model of urban renewal, in the form of urban informal market. The model is the result of applying a 'public interior' design approach, where the scale and techniques of interior architecture are applied to the design of public space within the urban realm. The result is an adaptive reuse intervention that is ephemeral, concentrated within one of the two vacant automobile dealerships in Arcadia[1]. The intervention aims to reintegrate one of the vacant dealerships into the existing urban condition, restraining otherwise inevitable decay and creating a positive impact on the existing urban condition of Arcadia.

The chapter serves to establish the background to the study and includes: the problem statement and research questions; study objectives; significance; delineations and limitations; and description of the research methods and design.

1.The largest dealership, positioned on the northern end of the block, has been purchased by the Mediclinic Medical Forum located in the opposing block. Information received from a Mediclinic Medical Forum representative revealed that future development plans have been proposed for the vacant site. The exact details of development are proprietary information. The vacant dealership, positioned on the southern end of the block, has been selected for the intervention.

1.2 BACKGROUND

South Africa's current economic climate has resulted in the nationwide downsizing of automobile manufacturers' dealership networks. As a consequence of this factor, a number of dealerships stand vacant in Pretoria's Central Business District. Furthermore, the mono-functional architectural typology of automobile dealerships translates into difficult and costly appropriation for alternative use. Arcadia is one of Pretoria's suburbs that host several vacant dealerships. Located east of the CBD, Arcadia consists of medium density, mixed used development, with a diverse demographic of users in low, middle and high-income brackets, such as students to the working professional. The context of the study is situated in the socio-economically active, southwestern precinct of Arcadia. Two vacant automobile dealerships occupy an entire urban block, which is rendered an island, bound on each side by a high traffic metropolitan road, the M2 (Nana Sita Road) and the two high vehicular traffic streets of Francis Baard and Du Toit Streets. A SWOT (strengths, weaknesses, opportunities and threats) analysis identifies the primary strength of the current urban condition. The SWOT analysis is conducted through a combination of observation and mapping (c.f. Chapter 2). The primary strength exists in the active edge conditions of the block, which demonstrate high frequency pedestrian movement. This is a consequence of site orientation, which lies along a main axis of entry towards Pretoria's CBD. A secondary strength, an organic effect of the high frequency pedestrian movement is thriving informal trade economy. A network of informal traders, providing goods and services to the pedestrian movement and the nearby residents, constitutes the informal trade.

1.3 PROBLEM STATEMENT

In 2018, The National Association of Automobile Manufacturers of South Africa (NAAMSA) reported a two percent decline of all new vehicle sales (NAAMSA, 2018), prompting a nationwide downsizing of manufacturers' dealership networks. Left in the wake of the downsizing, is the vacancy of once active dealership buildings, with indefinite futures, embedded within urban fabrics. The prolonged vacancy of buildings within an urban fabric induces the socio-economic issue of 'Urban Decay', resulting in former functional segments of a city descending into decrepitude (Andersen, 2018: p5). Due to mono-functional architectural typology of the now redundant dealerships the problem is further aggravated. The consequence of this building type is difficult appropriation or costly retrofit by potential tenants wanting to introduce a different retail typology or functional programme. Situated in a socio-economically active precinct of Arcadia, are two such vacant automobile dealerships that occupy an entire, triangular-shaped city block, rendered an island, bound by a high traffic metropolitan road and two active streets. The edges of the dealership block experience high frequency pedestrian movement, which has drawn informal traders to occupy the blocks' southeastern edges. Additionally, a small business owner, of a retail store opposite to the vacant dealership, has recognized the potential of the site. He has subsequently purchased one of the vacant dealerships with the intention for a future economic insertion. At present, the site is host to temporary food stall positioned in the entrance of the dealership. The scale of the vacant mono-functional buildings has resulted in an urban void, which the current, thriving socio-economic activity is in conflict with.

1.4 RESEARCH QUESTIONS

Grounded within the aforementioned issue of urban decay as a result of prolonged vacancy and the potential of an ephemeral adaptive reuse as a strategy towards urban renewal, the following research questions were formulated:

Primary Research Question

- How can the ephemeral adaptive reuse of vacant automobile dealerships restrain urban decay in Arcadia?

Secondary Research Questions

- How can the combination of adaptive reuse and ephemeral design strategies restrain socio-economic issue of urban decay?

- What effect has the urban block, the site of the two vacant automobile dealerships, had on the surrounding area within the precinct of Arcadia?

- How can a public interior design intervention, consisting of the ephemeral adaptive reuse of the mono-functional architecture typology of a vacant automobile dealership into an urban informal market, contribute towards urban renewal?

1.5 AIM & OBJECTIVE

The aim of the study is to restrain urban decay, onset by prolonged vacancy, by implementing a model of urban renewal consisting of an ephemeral adaptive reuse intervention, concentrated in one of the two vacant automobile dealerships in Arcadia. The model is achieved through a combination of the proposed urban vision of Arcadia (c.f. Chapter 2) with the ephemeral adaptive reuse strategy as identified by the theoretical foundation presented in Chapter Three, and further supported in Chapter Six. The overarching objective of the study is the reintegration of the now redundant automobile dealerships towards a significant contribution to the current urban condition.

1.6 STUDY SIGNIFICANCE

The significance of this study lies in the role of the discipline of interior architecture within the field of urbanism. The extension of the practice of adaptive reuse commonly associated with heritage conservation, as method with which to restrain urban decay.

The theoretical and design approach of the study outcome contributes towards the emerging research field of 'urban interiorism'. Urban interiorism refers to the scale and techniques of interior architecture and how they are applied at an urban design scale. This involves a multi-scalar and multi-discipline approach toward the design of urban spaces. Additionally, urban interiorism challenges traditional interior design requirement of a permanent, architectural enclosure or envelope as the condition that defines an interior space. Interior urbanism, thus, questions architecture as a prerequisite to interiors (Attiwill, 2004: 4). 'Interiors' are designed without the overarching dominance of architecture, mediating the relationship between the 'interior' and 'exterior' (Attiwill, 2007: 4).

The study contributes towards the practice of adaptive reuse, particularly within the urban context, and not the common association with heritage conservation. The design proposal responds to the argument that as population's increase, cities densify and resources diminish, new methods of space making need to be explored (Yale, n.d). Cities are obligated to consider how to adapt, alter and reuse existing structures and reconfigure interiors to grow inward (Yale, n.d).

1.7 RESEARCH METHOD

The context study and theoretical investigation are synthesized to establish a model for urban renewal. This model defines an ephemeral approach to adaptive reuse. Field research is adopted as the primary informant and driver for the design intervention as a response to the identified contextual and programmatic issues. The model is a result of a qualitative methodology, specifically, a multi-method approach, with the focus on interpretation and meaning of the collected data in its context (Groat and Wang 2013:219).

Research methods include:

- An analysis of the context of Arcadia, to understand the urban characteristics, consisting of the mapping, observation and documentation the current tangible, such as built fabric, and intangible, such as social activity, factors that contribute towards the urban condition of Arcadia. Additionally, the analysis will aim to identify the needs of site, informing a programme. The analysis also includes the architectural envelope's existing condition, identifying limitations and opportunities.

- Informal interviews with current stakeholders, such as local business owners, informal traders and citizens are conducted towards understanding the demographic of Arcadia through documentation and creating user profiles.

Note: Informal interviews are structured to comply with ethical requirements as stipulated in the M(Prof) blanket ethics approval (c.f. Appendix A)

- A literature review of is conducted limited pertinent published works on theories of urban decay, urban renewal, urban interiorism, adaptive reuse and semi-permanent design strategies. The literature review endeavours to develop a theoretical foundation and framework, identifying principles for urban renewal through adaptive reuse in urban interiorism.

- A case study, as well as international and local precedents that display related fields of study are conducted to inform a design approach of urban renewal by adaptive reuse and ephemeral design strategies. Groat and Wang (2013:418) define a case study as an empirical enquiry that investigates a phenomenon or setting. As part of the case study approach, the review of precedent studies during the design process attempts to assess the knowledge gained by others, rather than to conduct research in the strict definition of the term (Groat and Wang 2013:68). The case studies and precedents selected are done so by means of the relevance to the problem.

1.8 DELINEATIONS & LIMITATIONS

The study is limited to practice within the discipline of interior architecture and interior urbanism with appropriate and relative architectural interventions. Furthermore, the interventions proposed are of an ephemeral nature, allowing for the site to return to its prior condition.

- The building's envelope is resolved in technical detail, with the design focus, resolution and intervention of the study limited to the structures' interior and the immediate urban realm of the site, such as the envelopes edge conditions, which falls within the realm of interior urbanism.

- The interventions are designed and resolved technically to be ephemeral, as to allow for the site to return to its condition prior to the implementation of the interventions.

1.9 ASSUMPTIONS

Due to the proprietary nature of information regarding the site of the intervention, some dimensions and construction details are made on informed assumptions of standard construction detailing and design.

1.10 OVERVIEW

Chapter One serves as an introduction to the study, the statement of the problem and research methods.

Chapter Two consists of a context study of the site, including mapping, documentation and analysis.

Chapter Three presents the client and users of the proposed urban informal market by way of substantiation for the intervention.

Chapter Four establishes a theoretical foundation, by means of a literature review, including theories on urban decay, urban renewal, adaptive reuse and semi-permanence.

Chapter Five presents and analyses precedents and a case study as informants towards the design intervention.

Chapter Six presents the design development of the intervention that consists of the design approach, design concept, concept statement and the design.

Chapter Seven illustrates design resolution through technical investigation, iteration and detail resolution.

Chapter Eight concludes the study with an elaboration on the contribution of the design proposal to the discipline of interior architecture, which includes an ephemeral public interior design approach within the process of urban renewal. Recommendations for further study are made.

CONTEXT & SITE

CHAPTER TWO.

Figure 2.1.1 - Site aerial photograph (Google Earth).

Figure 2.1.2 - Approach of site (Author, 2019)

2.1 INTRODUCTION

The identified site is located on Du Toit Street in Arcadia. The Chapter aims to understand the context of the proposed intervention, by employing multiple methods to investigate the site conditions on a macro- and micro-scale. Beginning on a macro-scale, the urban morphology and the historical development of Arcadia over time are explored.

The existing site conditions are analysed through information gathered from site mapping and resultant conducted site visits. The data gathered is then interpreted in the form of a SWOT analysis. Towards the site of the interior intervention, the micro-scale, the existing urban condition and the architectural envelope, where the main point of intervention is located, are thoroughly investigated. Lastly, the study is further supplemented with an investigation of the solar conditions.

2.1.1 MACRO CONTEXT

The following component illustrates the macro context, with a series of aerial maps, to the micro context with a series of site photographs. The identified site is then presented from the vantage point of its prominent corner (Figures 2.1.3-2.1.10).

Figure 2.1.3 - Gauteng province locality.(Mapsland, n.d)

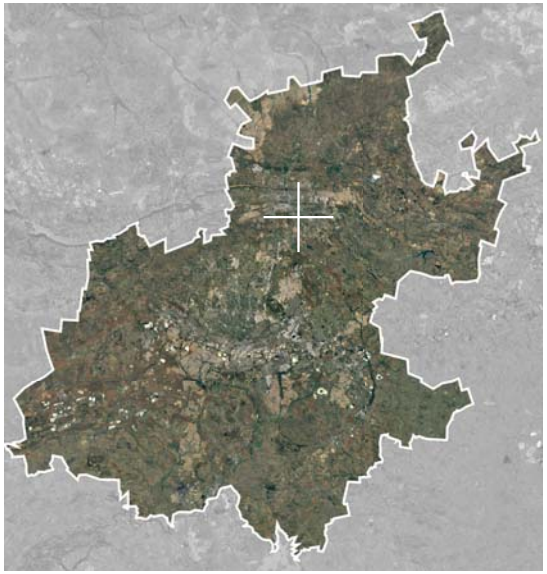


Figure 2.1.4 - Gauteng Province border with Pretoria locality (Google Earth)

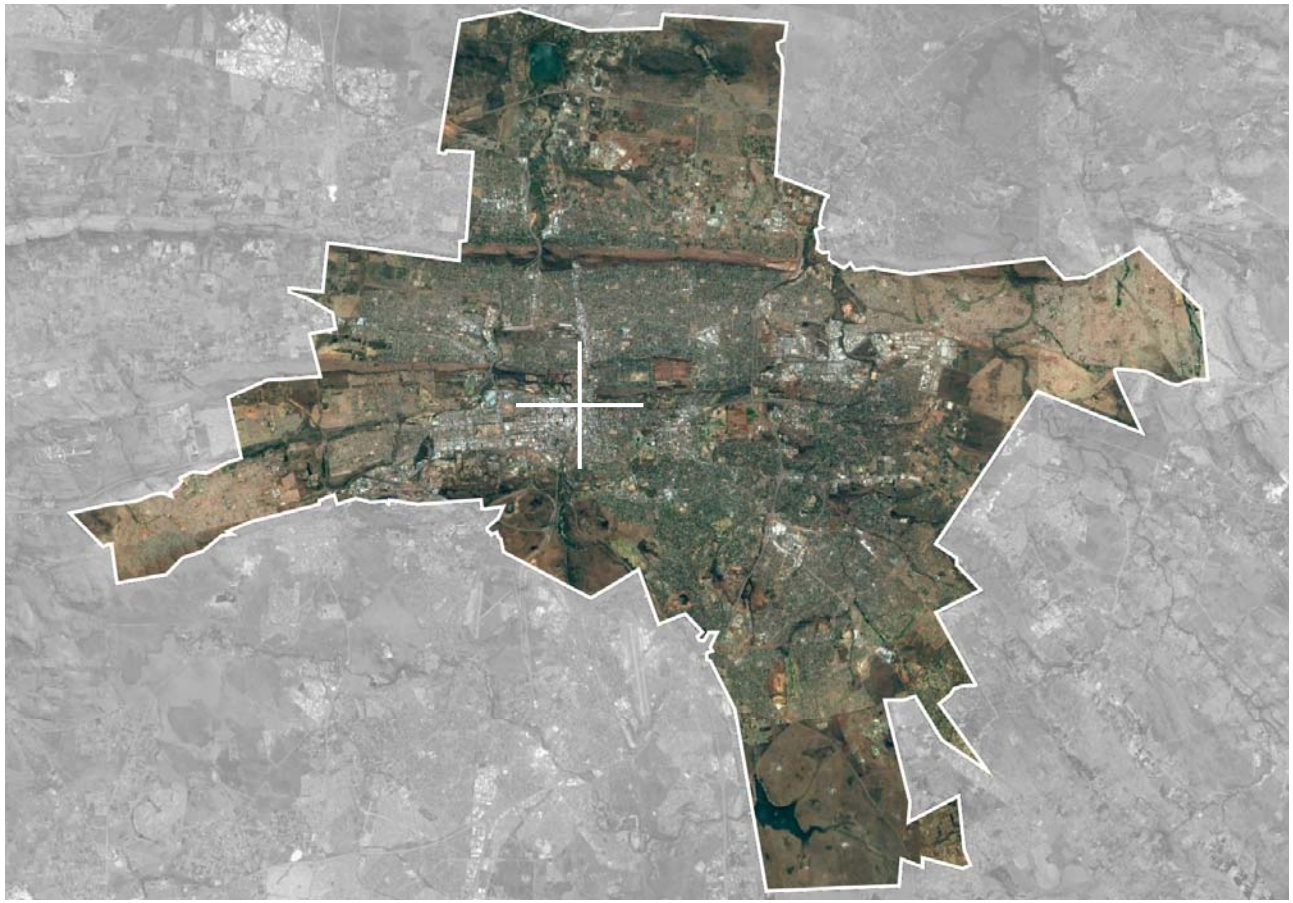


Figure 2.1.5 - Pretoria border with Arcadia locality (Google Earth)

Figure 2.1.6 - Arcadia border with site locality (Google Earth)

Figure 2.1.7 - Aerial Photograph of Site (Google Earth)

Figure 2.1.8 - Site approach (Author, 2019)

Figure 2.1.9 - Corner of vacant dealership site with observed informal trade and pedestrian movement (Google Earth)

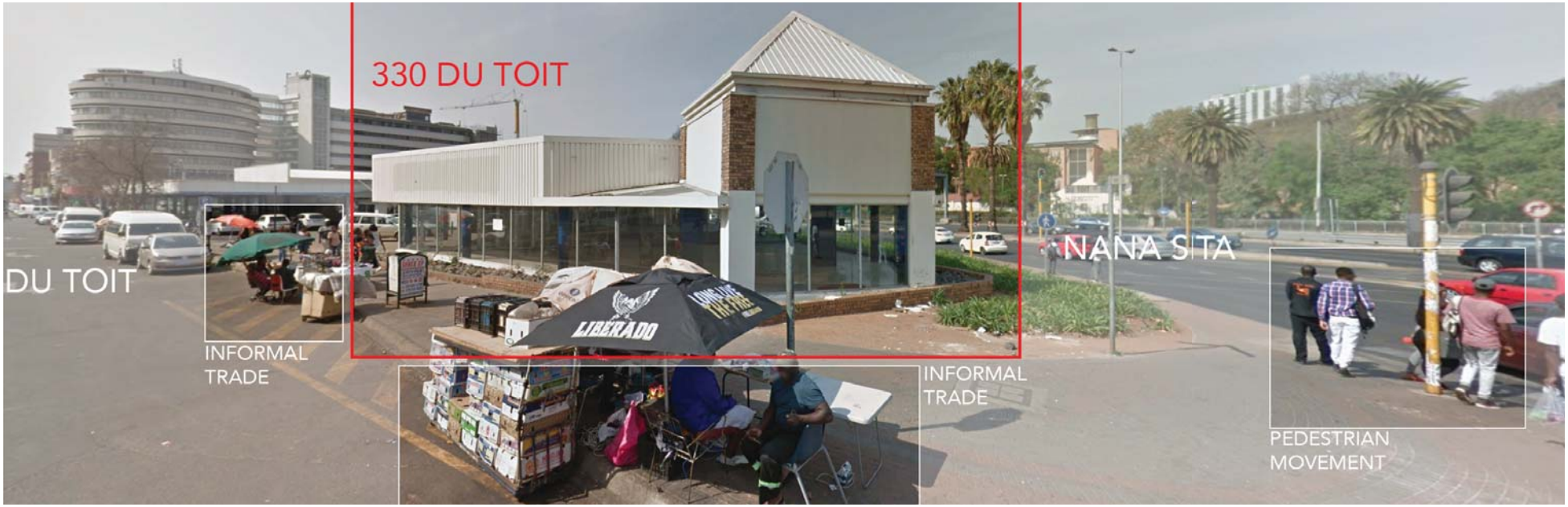


Figure 2.1.10 - Vacant dealership from Du Toit Street with observed informal trade and pedestrian movement (Google Earth)

Figure 2.2.1 - An aerial view of Arcadia, displaying the multiple scales of tower blocks, apartment blocks, retail, services and mixed use complexes (Arcadia City Improvement District, n.d)

2.2.2 ARCADIA

Arcadia is Pretoria's oldest established suburb, demarcated in 1889, by Pretoria's first magistrate, Andries Francois du Toit (SA History Online, 2011). The name 'Arcadia' refers to the portion of the 'Elandspoort' farm, east of the Apies River, which was acquired by du Toit in an exchange of a pony (Artefacts, n.d). Arcadia began as a suburban development, with early homes constructed of brick with corrugated iron roofs and a characteristic verandah, which created an interface to the early streets, some of which remain in the present urban fabric (Ball, 2015). When Pretoria was elected to be the South African Republic's administrative capital, the character of Arcadia was altered by the presence of the newly built Union Buildings (1910), which attracted wealthy business owners and professionals of the time to construct large homes nearby (SA History Online, 2011). In 1923, with the Native Urban Areas Act, only the country's white demographic were allowed to own land the area. During the modernist phase, the residential nature of arcadia was threated by an influx of embassies and businesses. High density, modernist residential flats, set back from the street and lifted on 'stilts', to accommodate parking, with curtain walls and balconies that dominate the facades, are now known as typical 'Arcadia' blocks of flats (Artefacts, n.d)

Figure 2.2.2 - Urban morphology time line adapted from Burger, 2019 (Author, 2019)

To understand the spatial structure and the urban characteristics of Arcadia, the patterns and development process were investigated. Arcadia, as discovered, was primarily formed as a result of the natural flow of the Apies River and Walker Spruit[2]. The flowing waters form a natural boundary between three city districts, Pretoria's Central Business District (CBD), Arcadia and Sunnyside. The Walker Spruit is one of the watercourses around which Pretoria was planned and built, running from the suburb of Waterkloof through to the suburbs of Brooklyn, Sunnyside, Clydesdale and Arcadia to join the Apies River in Pretoria central (*figures 2.2.1 & 2.2.2*).

2.'Spruit' for a small watercourse that is typically dry except for the rain seasons.

2.3 ARCADIA MAPPING

The following segment serves to understand and analyze the existing site conditions of Arcadia, highlighting phenomena that are consequence to the identified site and study. The mapping efforts consist of: building use, vehicular realm and pedestrian realms were conducted. The data gathered is discussed and then interpreted in the form of a SWOT analysis. The extents of the mapping effort limited, as indicated by figure 2.3.1. The mapping, SWOT analysis and urban vision of Arcadia was undertaken as a group effort with Duard Burger (u10132946) and Pieter Minnaar (u10025384).

Figure 2.3.1 - Border of the extents of mapping conducted (Google Earth)

2.3.1 BUILDING USE

Governmental Function | Retail/Service | Mixed Use
Residential | Education | Religious

Findings:

- Diversity in building use within the extents of mapped area
- Large scale governmental functions, occupying large blocks
- Predominantly retail/service use
- Residential use concentrated to the east of the site
- Site is surrounded by retail/service uses and mixed use

2.3.2 VEHICULAR REALM

Findings:

- Wide road widths for vehicular traffic.
- Relative 'high' traffic speeds on wide roads inhibit pedestrian freedom of movement and pedestrian lingering
- Pedestrian movment is only supported at designated crossing points
- Large block sizes
- Promotion of vehicular use rather than commuting on foot
- Promotion of vehicular use results in edge conditions used as for parking

2.3.3 PEDESTRIAN FREQUENCY

High frequency Medium frequency Low frequency

Node

Findings:

- High pedestrian movement
- Activated street edges promote pedestrian movement
- Wide sidewalks promote pedestrian movment and lingering
- Higher movement intensity where there is diversity in building use
- Presence of multiple public courtyards accessible from the street

2.3.4 LAYERED MAPPING

Findings:

- Diversity in building use within the extents of mapped area
- Site is surrounded by retail/service uses and mixed use
- High pedestrian movement
- Activated street edges promote pedestrian movement
- Wide sidewalks promote pedestrian movment and lingering
- Higher movement intensity where there is diversity in building use
- Large block sizes
- Presence of multiple public courtyards accessible from the street

2.3 MAPPING FINDINGS SWOT

S

STRENGTHS:

High Pedestrian Movement

Activated Street Edges

Higher user intensity where there is diversity in land use

Mixture of high, middle and low income groups

Presence of multiple public courtyards accessible from the street

Wide Sidewalks

WEAKNESSES:

Vehicular road widths

Scale of blocks

Lack of public green spaces

High rent on ground floor retail space

Informal parking on public sidewalks/green spaces

North/South streets are distant from primary public activity are unsafe

Multiple vacant sites are used for illegal dumping and or overgrown

W

O

OPPORTUNITIES:

Diverse economic and social integration

Increase the density of the built fabric

Reduce vehicular traffic speeds to increase the pedestrian's willingness to linger

Vacant sites available for potential development

THREATS:

Slow rate of development

Large block sizes

Crime Rate

T

2.4.1 URBAN CONDITION OBSERVATIONS

The urban conditions within the immediate vicinity of the site were observed as follows:

MOVEMENT

The site is located along a corridor of pedestrian movement, which serves as a linkage between the suburb of Sunnyside to the CBD (*Figure 2.4.1*). The frequency of movement is a result of times of day creating a 'pulse' effect. The corridor experiences its highest frequencies during the morning, as urban citizens are on their way to work in Central Pretoria, lunchtime, as citizens are on a lunch break and the evening, when citizens use the linkage to return from whence they came.

INFORMAL TRADE

"…informality is often not a mere survival strategy, but has the potential of motivating development, as it informs the needs of place and spatial appropriateness."

(Jenkins P. & Andersen J.E. 2011: 5)

Figure 2.4.1 - Site with observed pedestrian movement (Author, 2019)

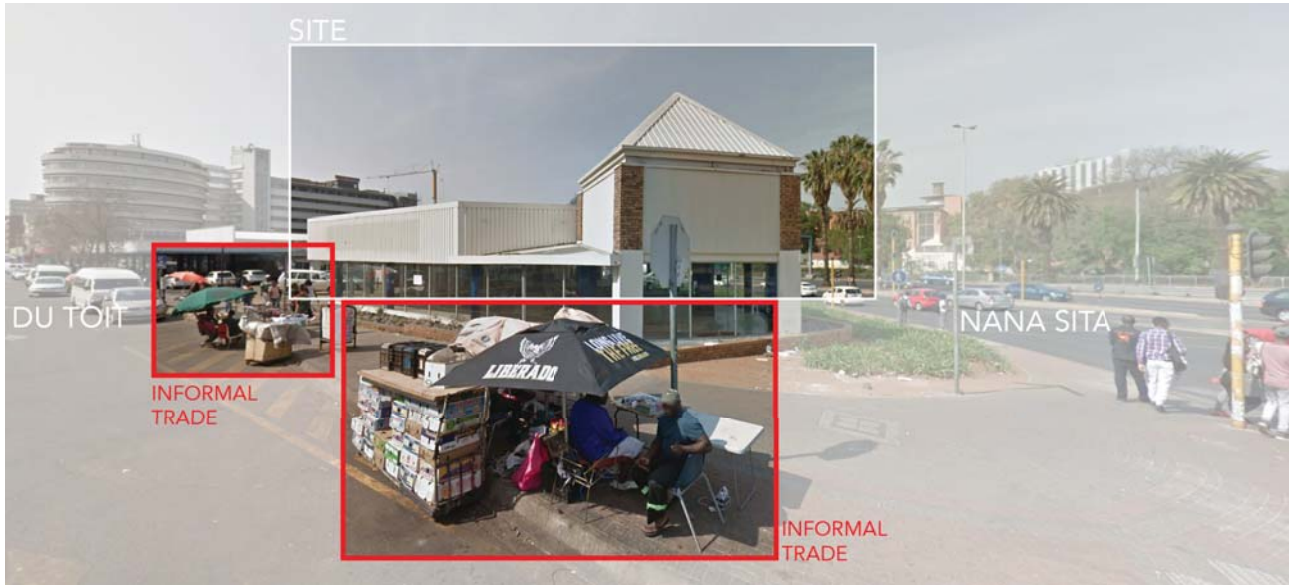


Figure 2.4.2 - Site with observed informal trade (Author, 2019)

A thriving informal trade economy has spawned off the movement discussed above (*Figure 2.4.2*). The economy primarily consists of the sale of fresh fruit and snacks, such as packets of crisps. Further investigation into the type of trade that occurs on site, has revealed the term 'fast-moving consumer goods' (FMCG's) or consumer packaged goods (CPG's) (*Figures 2.4.3*). Terms which refer to products that are highly in-demand, sold quickly, and affordable. The nature of the goods are directly in relation to the nature of interaction of sale between consumer and trader. As the consumers are citizens within the movement pattern of the identified 'pulse', the goods are 'fast' selling as a response.

The infrastructure of the trade consists of galvanised steel trestle tables. Interviews with the traders on site found that the trestle table is the most pragmatic solution towards self-provided infrastructure for trade to occur, this is further discussed and elaborated in (c.f. Chapter five). The galvanised steel trestle table is portable, durable and relatively affordable for a trader.

Fortune, 32, has been trading on the same 'spot' for 10 years now. He sells fruits and snacks, all purchased wholesale from Tshwane Market. Fortune arrives every morning at six o' clock to set out his goods.

Similarly, Kenny, 24, has been trading on the same 'spot' for 10 years now *(Figure 2.4.3)*. He sells fruits and snacks, all purchased wholesale from Tshwane Market. Fortune arrives every morning at six o'clock to set out his goods.

On one of the occasions of going to site to spend time with Fortune and Kenny, Fortune was unable to start trading at six o' clock as a result of passing rain that morning *(Figure 2.4.3 & 2.4.12)*. However, Kenny was able to trade as he possesses a portable folding gazebo. Amongst other challenges faced by urban informal traders, such as theft, this instance was an example of how the natural elements play a major impact towards allowing for informal trade to occur (c.f. Appendix B).

Figure 2.4.3 - Kennys' informal trade stall (Author, 2019)

Figure 2.4.4 - Informal trade stalls on edge of site (Author, 2019)

Figure 2.4.5 - Pedestrian movement maquette exploration with layering of red string to show pedestrian movement and frequency, with the red pin indicating the informal trade position along movment (Author, 2019)

Figure 2.4.6 - Informal trade along sites edge, along the high frequency pedestrian movement (Google Earth)

Figure 2.4.7 - Informal trade positioned in site (Author, 2019)

Figure 2.4.8 - Kennys' trade stall prior to a gazebo. Umbrellas are used to shade the harsh sun and plastic vegetable crates are used as table legs (Google Earth)

Figure 2.4.9 - Kennys' trade stall after the purchase of a gazebo (Author, 2019)

Figure 2.4.10 - Trade stalls occupying the sites edge (Google Earth)

Figure 2.4.11 - Trade stalls occupying the sites edge (Author, 2019)

Figure 2.4.12 - Fortune unpacking goods after a rainy morning (Author, 2019)

2.4.2 ENVELOPE ANALYSIS

Further investigation into understanding the design of the site, revealed that the design of car dealerships have stemmed from *"The Planning of Automobile Dealership Properties"* by General Motors, 1948 (*Figure 2.4.13*)(Swartz, 2016)

> *"In 1948, the postwar boom was in full swing. After almost 20 years of Depression and wartime rationing, people were buying – cars, homes, TVs, you name it. And commercial construction was finally taking off as well, to serve burgeoning demand. The people at GM knew this meant a lot of dealers would be building new dealerships, and they produced a remarkable book to help them come up with state of the art facilities. Planning Automobile Dealer Properties was the result, a book that has no equal before or since" (Swartz, 2016).*

• The book begins with practical information about siting, lot size, and the treatment of the different operating areas such as new cars, used cars, service, and parts (Swartz, 2016).

• The book is thorough, providing guidelines for the design of arranging car displays in relation to traffic quantities and frequency and even advertising displays, which is based on ergonomic information on field of vision of pedestrians (Figure 2.4.15-2.4.16).

• The designs were based on a different program, or set of requirements a dealer would likely have. There were designs for corner locations, for dealers who also sold gas, urban dealers, and dedicated truck dealers (Swartz, 2016).The following page (Figures 2.4.17-2.4.22) provides a comparison between the identified site, when in use as a Suzuki dealership, and the principles from *The Planning of Automobile Dealership Properties*.

Figure 2.4.13 - Planning Automobile Dealer Properties cover (General Motors, 1948)

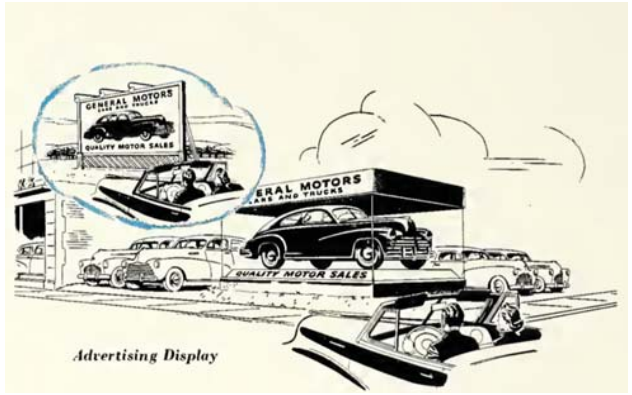


Figure 2.4.14 - The design of advertising displays (General Motors, 1948)

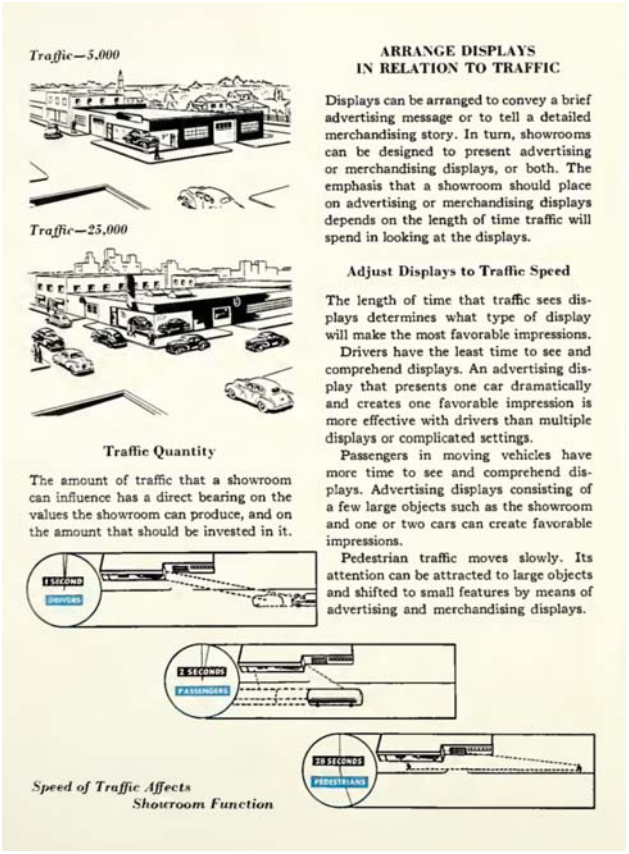


Figure 2.4.15 - Arranging displays in relation to traffic quantity and traffic speed (General Motors, 1948)

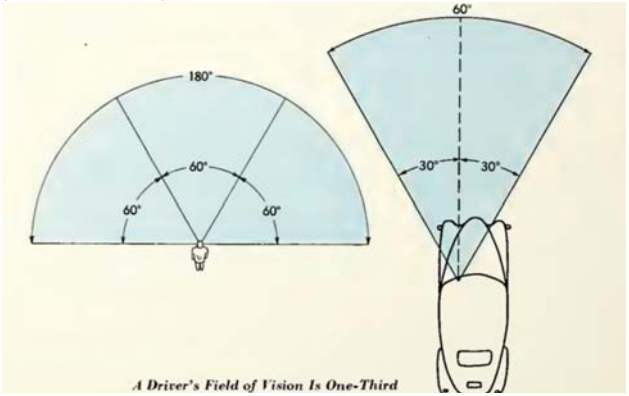


Figure 2.4.16 - Pedestrians field of visions compared to vehicular traffic field of vision (General Motors, 1948)

Figure 2.4.17 - Photograph of site in 2009 occupied by a Suzuki dealership. The corner location and the dealership design exposes the dealership multiple pedestrian and vehicular traffic streams (Google Earth)

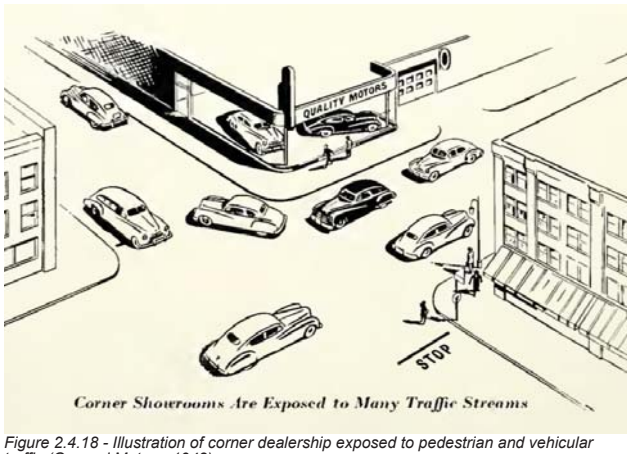


Figure 2.4.18 - Illustration of corner dealership exposed to pedestrian and vehicular traffic (General Motors, 1948)

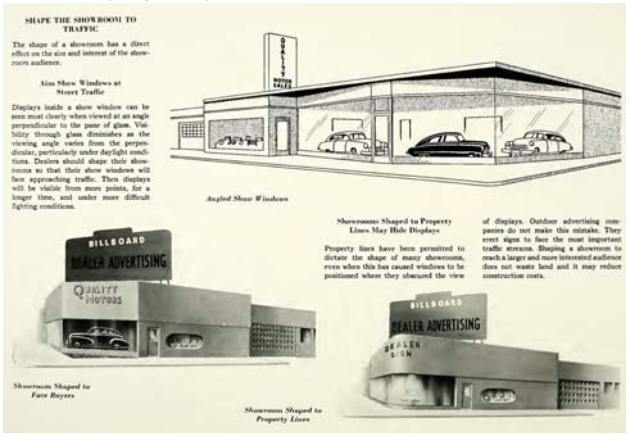


Figure 2.4.19 - Illustration of how dealerships shaped to traffic and property lines (General Motors, 1948)

Figure 2.4.20 - Photograph of site in 2009 occupied by a Suzuki dealership. The pyramid hip roof is used as to create an urban 'landmark' and the branding is strategically placed according to the movement of traffic (Google Earth)

Figure 2.4.21 - The dealership is shaped to face traffic and according to the orientation of displaying vehicles (Google Earth)

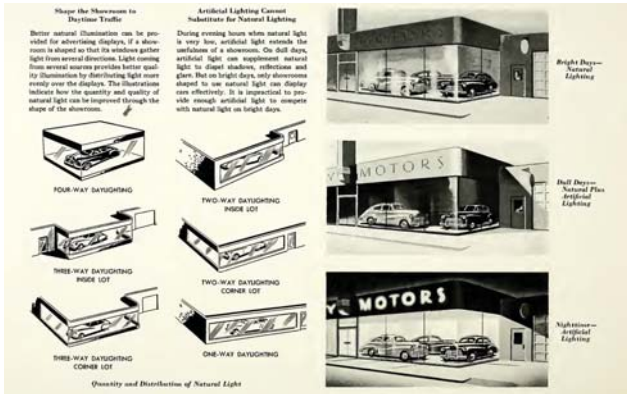
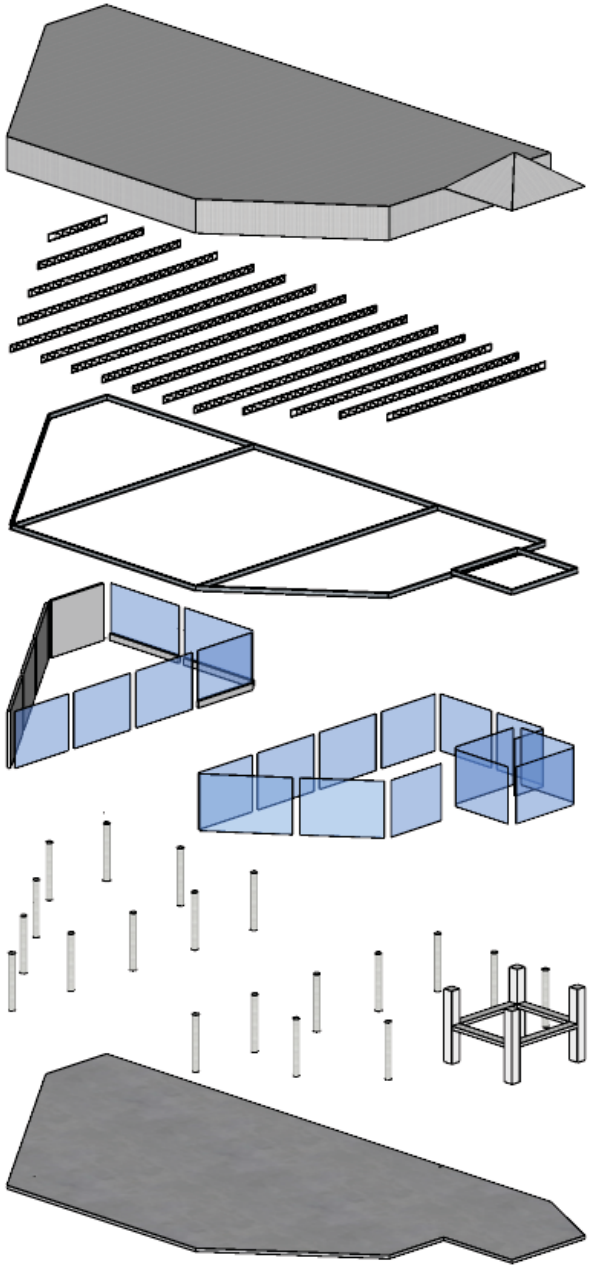
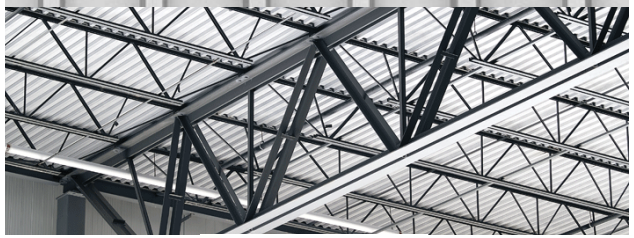


Figure 2.4.22 - Dealership design according to natural lighting and artificial lighting (General Motors, 1948)



WHITE IBR ROOF SHEETING

STEEL GIRDER TRUSSES



GALVANIZED STEEL I-BEAM

GLAZING

CONCRETE COLUMNS

CONCRETE FLOOR

Figure 2.4.23 - Exploded isometric illustrating the structure to skin composition of the vacant dealership (Author, 2019)

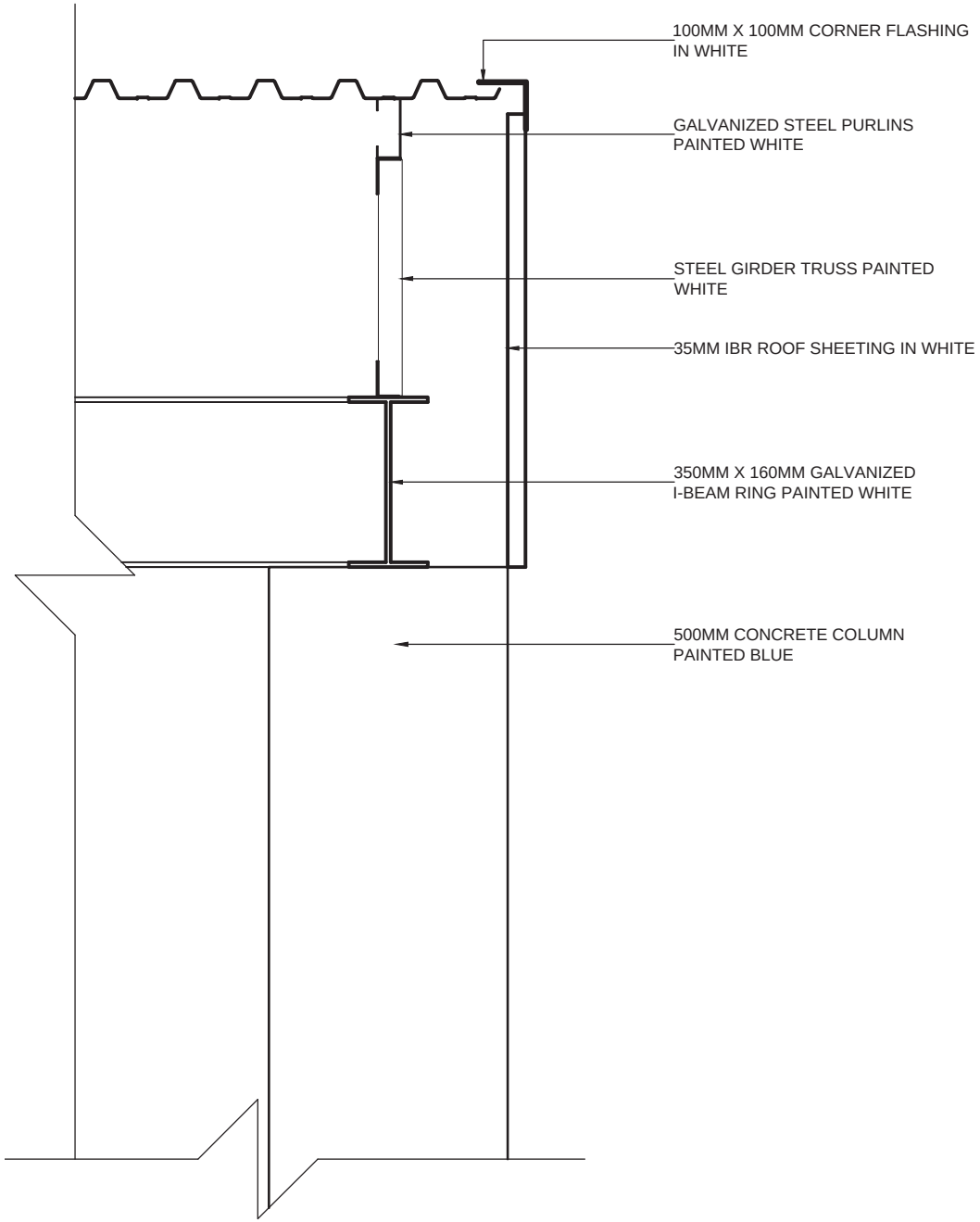


Figure 2.4.24 - Construction detail of dealership roof (Author, 2019)

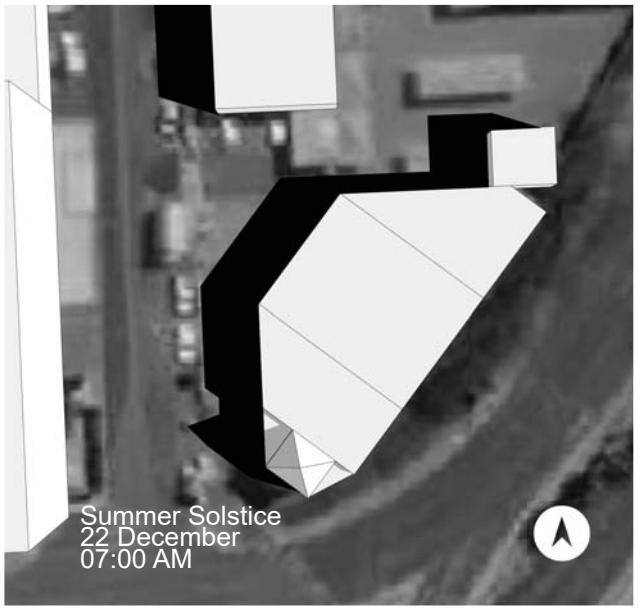
2.4.3 EDGE CONDITIONS

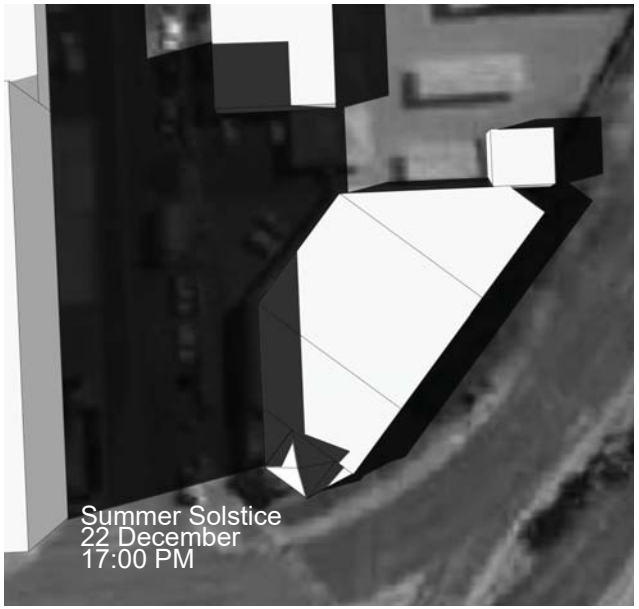
Figure 2.4.25 - Edge conditions observed from northeastern site corner. Edge consists of concrete paver sidewalks with concrete curbs (Google Earth)

Figure 2.4.26 - Edge conditions observed on western facade. Edge consists of washed concrete sidewalk and a poured concrete curb cut for vehicular access (Author, 2019)

Figure 2.4.27 - Edge conditions observed on eastern facade. Edge consists of vegetation and concrete paver sidewalk with concrete curb (Author, 2019)

2.4.4 SOLAR ANALYSIS





2.5 CONCLUSION

In conclusion, this chapter has presented the conditions of the site on the macro and micro scales with the outcome of understanding the context of the proposed intervention. On the macro scale, Arcadias urban morphology and historical development were discussed, followed by mapping of building use, vehicular realm, and pedestrian frequency. The mapping findings were then presented in the form of a SWOT analysis to conclude the analysis of the macro scale. Toward the micro-scale of the site, two primary urban condition observations were made. The site's location along a high-frequency pedestrian movement corridor and the thriving informal trade economy that has spawned off the movement. Following the observations, the envelope was analysed by understanding the design rationales of an automotive dealerships. To understand the construction of the envelope an exploded isometric of the dealership was created, along with a envelope construction detail. Concluding the aim of the chapter and understanding the micro context, an edge condition analysis, and a solar study was completed

CLIENT, PROGRAMME & USER

CHAPTER THREE.

3.1 INTRODUCTION

Chapter Three identifies the client, the programme and the users of the intervention. The Chapter presents the argument towards the programme of an urban informal market. Furthermore, the Chapter describes the client, who is also the owner of the vacant building. Finally, user profiles a provided.

3.2 CLIENT

The client, Nwankosi, is a local businessman who is affectionately referred to as Baba by his staff, regular customers and the local community. Nwankosi is the building's recent new owner, with two existing businesses located opposite, to the West of the building (*Figure 3.2.1*). 'Nwana Nkosi Superette' is a small convenience store, which Nwankosi has been operating since the early 2000's (*Figure 3.2.2*). The superettes primary customer draw is the local community of Du Toit street and its surrounds, providing basic and common groceries such as bread and milk. After identifying the need for a local liquor store, Nwankosi began the difficult procedure of applying for a liquor license. In early 2010, Nwankosi had finally been granted a liquor license and opened 'Nwana Nkosi Liqours' (*Figure 3.2.3*). Since acquiring the building in 2017, Nwankosi has started a small ice manufacturing business; 'Nwana Nkosi Crystal Ice' is located in the 'office' portion of the building (*Figure 3.2.4*).

Figure 3.2.1 - Locality of Nwankosi's small businesses (Google Earth)

Figure 3.2.2 - Nwana Nkosi Superette (Google Earth)

Figure 3.2.3 - Nwana Nkosi Liqours (Google Earth)

Figure 3.2.4 - Nwana Nkosi Crystal Ice Advertisement (Facebook)

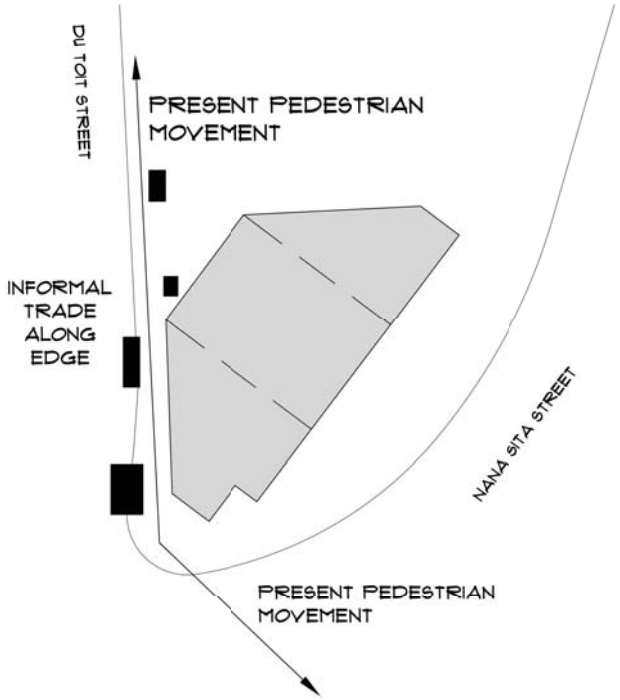
3.3 PROGRAMME:
THE URBAN INFORMAL MARKET

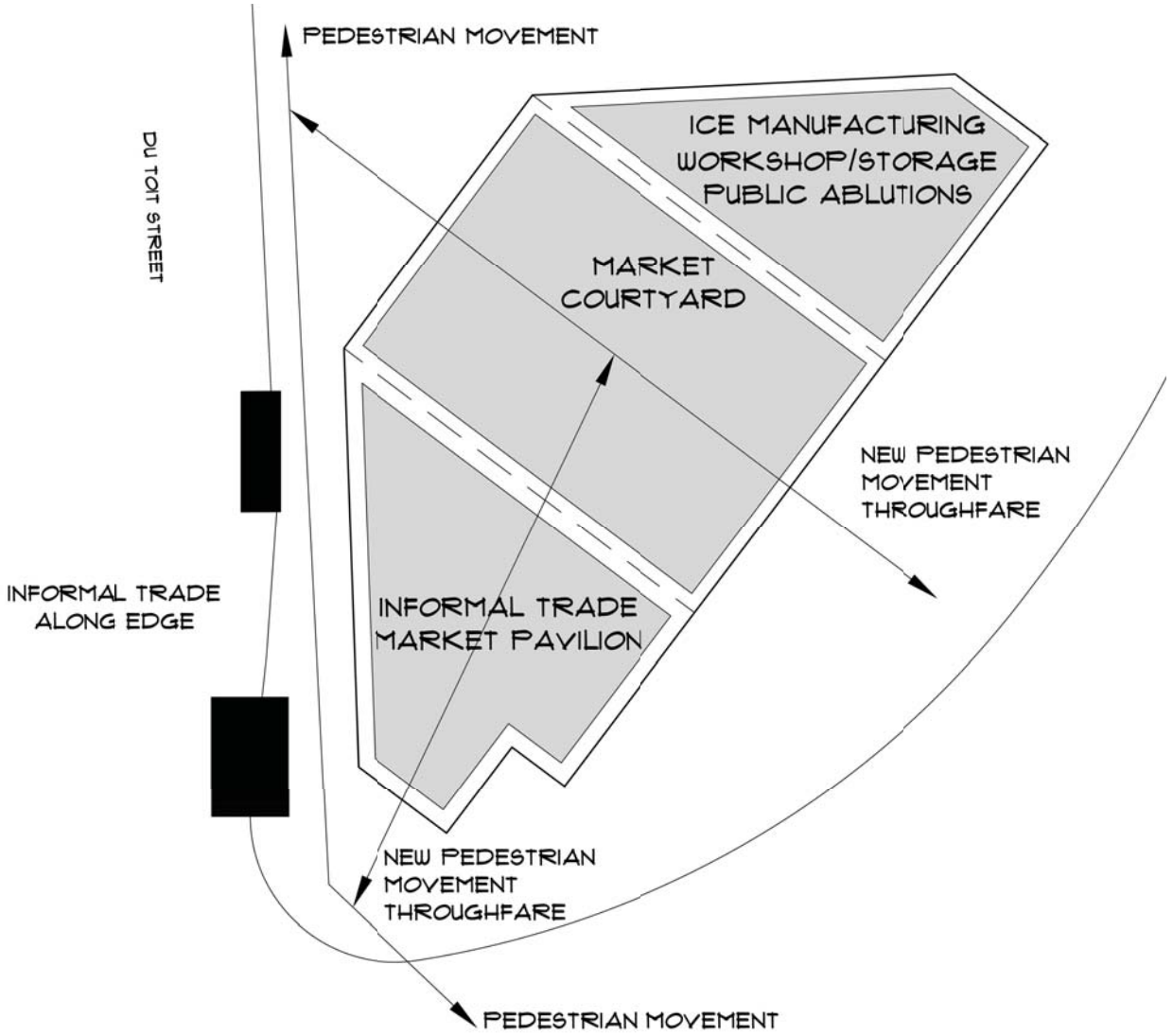
Driving the argument towards the primary programme of an urban informal market are the current site conditions of the informal trade economy that has spawned off the high-frequency pedestrian movement (*Figure 3.3.1*).

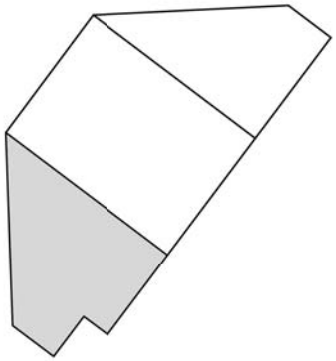
Anderson and Jenkins (2011: 5) argue that informality is often not a mere survival strategy, but has the potential of motivating development, as it informs the needs of place and spatial appropriateness. Worldwide, the economies of urban informal markets thrive, however, these markets are situated in chaotically congested streets and compete unfairly with local businesses, thereby limiting the hope of marginalised populations (Projectforpublicspaces.org, 2014). The Project for Public Spaces (PPS), a nonprofit organization that is dedicated to creating and sustaining public spaces and building strong communities, argues that urban markets can provide a structure and a regulatory framework that helps cultivate small businesses, preserve food safety and create an attractive destination for consumers.

Supporting the programme of the urban informal market are secondary, supporting programmes: market courtyard, public ablutions as well as a workshop and storage facility for the market infrastructure. The market courtyard is introduced as a transitory public space to support the market space and as a thoroughfare that dissects the site to promote movement through the site by urban commuters. Public ablutions are added to provide sanitation facilities for the users, such as the traders who are on-site throughout the day, and urban commuters, who pass through the site and for whom the new programme presents a variety of reasons to linger. Additionally, a baby changing and nursing facility is provided in the public ablutions to serve the sanitary needs of infants of the informal market traders and urban commuters. Lastly, a workshop and storage space is included for the maintenance and repair of the market infrastructure, such as the trader trolleys and service columns (c.f. chapter 6)

Figure 3.3.1 - Informal trade stalls along edge of site (Google Earth)

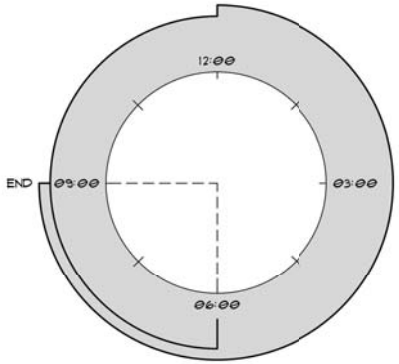

DU TOIT STREET
PRESENT PEDESTRIAN MOVEMENT
INFORMAL TRADE ALONG EDGE
NANA SITA STREET
PRESENT PEDESTRIAN MOVEMENT


PEDESTRIAN MOVEMENT
DU TOIT STREET
ICE MANUFACTURING
WORKSHOP/STORAGE
PUBLIC ABLUTIONS
MARKET COURTYARD
NEW PEDESTRIAN MOVEMENT THROUGHFARE
INFORMAL TRADE ALONG EDGE
INFORMAL TRADE MARKET PAVILION
NEW PEDESTRIAN MOVEMENT THROUGHFARE
PEDESTRIAN MOVEMENT



INFORMAL TRADE
MARKET PAVILION

6 AM - 9 PM

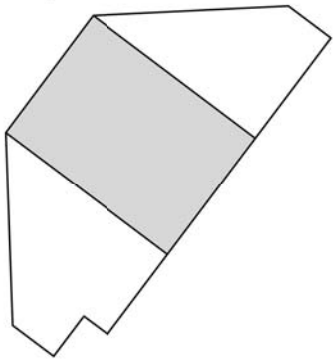


PRIMARY USERS:

INFORMAL TRADERS

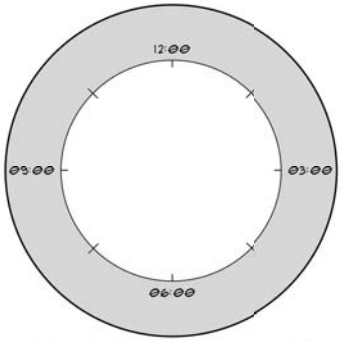
SECONDARY USERS:

URBAN COMMUTERS
LOCAL RESIDENTS
GENERAL PUBLIC



MARKET COURTYARD

24 HRS

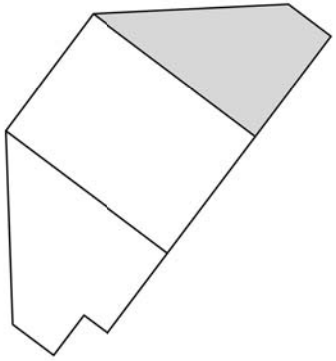


PRIMARY USERS:

URBAN COMMUTERS
LOCAL RESIDENTS
GENERAL PUBLIC

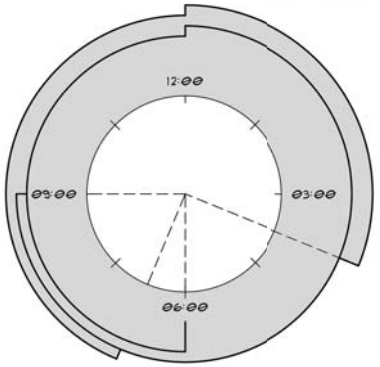
SECONDARY USERS:

INFORMAL TRADERS



PUBLIC ABLUTIONS
6 AM - 9PM

ICE MANUFACTURING
7:30 AM - 16:30 PM



PRIMARY USERS:

URBAN COMMUTERS
GENERAL PUBLIC

ICE MANUFACTURING STAFF

SECONDARY USERS:

INFORMAL TRADERS
LOCAL RESIDENTS

Figure 3.4.1 - Identified users (Author, 2019)

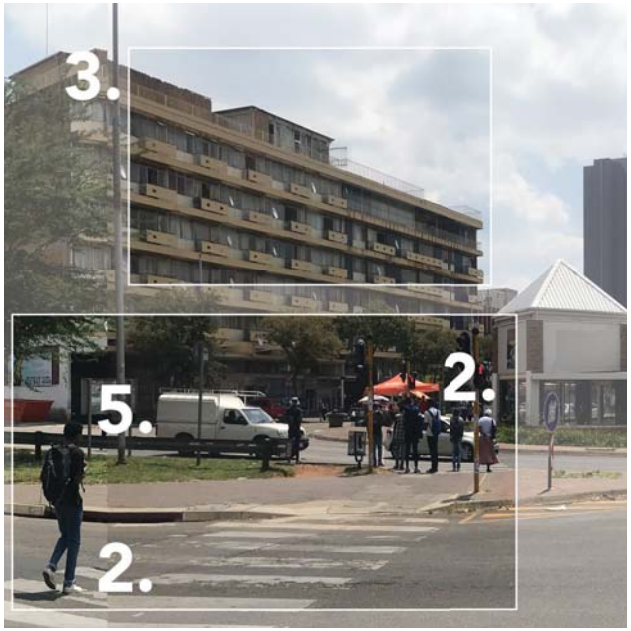


Figure 3.4.2 - Identified Users (Author, 2019)

Figure 3.4.3 - Identified Users (Author, 2019)

3.4 USERS

Derived from the context study, the following users have been identified:

1. The local urban informal traders are idenified from the field study (c.f. Chapter Two & Appendix ?) as the primary users of the intervention. See Figures 3.4.4-5 for the main findings.

2. The urban commuters whose movement patterns (c.f. Chapter Two) influenced the current trade economy present on site and dictated the type of goods consumed (FMCG's and CPG's). The activity of the urban commuters are found to be in flux, as commuters move along the sites edge in the morning to the CBD, break during lunch time, spilling out in Arcadia in search of food, and return to whence they came in the late afternoon and evening. The informal traders respond to this flux, setting up their stalls from six o' clock every morning, to feed off the morning movement and begin packing up at nine o' clock in the evening when the pedestrian activity comes to a halt.

3. The local residents - due to the mixed-use nature of the site (c.f. chapter two) residents of the block of flats opposite and surrounding the site are identified as users.

4. The employees from the ice manufacturing facility, Nwana Nkosi Crystal Ice - there are currently four employees, two delivery van drivers and two employees who are on site manufacturing the ice for delivery. Deliveries occur throughout the day. Occasionally particularly large orders come in, which means the ice makers need to assist with the delivery.

5. The general public - either visiting the market as a destination, or simply passing through.

Figure 3.4.4 - Trader findings (Google Earth)

Figure 3.4.5 - Trader findings (Author, 2019)

3.5 CONCLUSION

This chapter has outlined the client, programme and the users of the renewal intervention. The client is the current owner of the building, who has social and economic investment within the area in the form of the three businesses described. The primary programme of the intervention is an urban informal trade market, informed directly by the current urban conditions of the site, predominantly the informal trade economy that has spawned off the high frequency pedestrian movement. The users of the intervention were identified, with the primary users being the informal traders and their consumers. In conclusion, this chapter principally argues towards the programme of an urban informal market as a direct response to the current urban conditions of the site.

THEORY

CHAPTER FOUR.

4.1 INTRODUCTION

The following chapter investigates theories on urban decay and renewal, informality and urban informal trade, adaptive reuse, public interiors and ephemerality in an endeavour to establish a theoretical framework for a design intervention employing interior architecture as the means for urban renewal. The intention is for the strategy to be tested on the identified site, a vacant car dealership in Pretoria's CBD. Moreover, it has the potential to serve as a model for the adaptive reuse of similar sites.

Urban decay theory provides an understanding of the negative impact of vacancy on the city, while urban renewal theory provides the antidote. Findings from the field research, conducted during the mapping stage (c.f. Chapter 2), led to exploration of theories on informality and urban informal trade. Out of the discipline of interior architecture theories on adaptive reuse provide guidelines for the re-design of mono-functional architecture. The proposed programme of an urban informal market, as point of confluence between the 'interior' and the 'urban', determined the fourth theory, namely public interiors. Finally, the notion of ephemerality informed the concept, design and subsequent technical resolution. In investigating current literature, it was found that intersections exist between the theories, such as urban informal markets as a means of urban renewal.

Relevant literature was sourced from the University of Pretoria library, including books, unpublished dissertations and peer-reviewed journal articles. The outcome of the theoretical investigation provides a point of departure for and informs the design approach, namely urban renewal through the design of a public interior. Thereafter, intersections are identified and an overarching approach that synthesizes all four theories and associated aspects is outlined, thereby concluding the chapter.

4.2 URBAN DECAY & RENEWAL

Urban decay, also known as urban rot and urban blight, is the sociological process by which a previously functioning segment of a city falls into disrepair and decrepitude (Iannone, 2014: 135). The term was predominantly associated with Eastern European, North American and British regions that were ravaged by war, natural disasters, disease and fluctuations in the economy (Andersen, 2003: 4). However, since the primary association of the term, almost all countries worldwide have faced decay of urban areas.

Urban decay primarily manifests itself on the periphery of a city or CBD, as is the instance in the identified site. Despite peripheral decay, city centre remains occupied and retains its functioning condition (Andersen, 2003: 4). Urban decay has no single cause and may be due to combinations of interrelated socio-economic conditions, such as deindustrialization; economic breakdown and failure of businesses; abandoned buildings and infrastructure; depopulation by migration to suburbs; the poverty of the local population and high local unemployment; or crime (Grogan and Proscio, 2008). In the context of this study, the prolonged vacancy of a building is identified as the primary cause of urban decay. The conditions of urban decay are evident from abandoned buildings, unkept streets of litter and refuse, and a desolate urban landscape (Iannone, 2014: 135).

Urban renewal refers to the deliberate process that aims to reverse urban decay (De Beer, 2018: 2). Urban renewal is the upgrading of decaying urban areas, breathing 'life' into 'dying' urban areas, or reconstructing what is broken (De Beer, 2018: 2). There is no universal definition to describe urban regeneration. Weaver (2001) defines urban renewal as the attempt to reverse urban decline by both improving the physical structure and, more importantly, the economy of those areas, emphasizing the physical and economic urban conditions. Roberts (2000: 17) provides an inclusive description of urban regeneration, namely comprehensive and integrated vision and action which seek to resolve urban problems and bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to an urban renewal intervention.

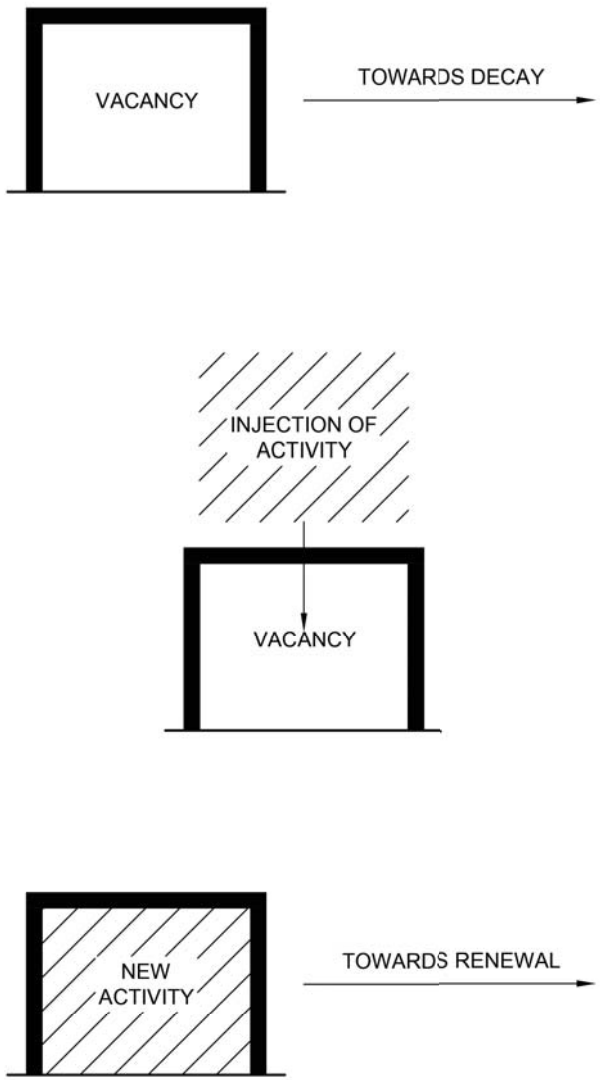


Figure 4.2.1 - Urban decay causes by vacancy and urban renewal by injection of new activity (Author, 2019)

4.3 INFORMALITY & URBAN TRADE

The sustainable growth of South Africa's informal sector is due to rapid urbanization caused by; steady migration into central urban areas, the formal sectors failure to provide supporting infrastructure, service provision and employment (Peel, 2015: 79). Furthermore, rapid urbanization has led to the in-formalisation of work in the informal sector (Peel, 2015: 79).

The formal and informal co-exist in a complex system of interdependency in the urban environment and not as separate aspects (Peel, 2015: 79). Anderson and Jenkins (2011: 169) argue that informality is often not a mere survival strategy, but has the potential to stimulate development, as it informs the needs of the place and spatial appropriateness. Informality constantly emerges as a dynamic and flexible entity, moving between and adapting to needs and opportunities (Mills, 2012). With the use of available materials, informal activity fosters makeshift structures and or infrastructure, that attaches to, or re-appropriates existing, formalised structures and/or infrastructure (Peel, 2015: 79). While the formal remains static, informal activities are resilient, adapting to change (Cardosi, 2011: 88).

This informal approach possesses the solution to formal development shortcomings, consisting of defining the identity and characteristic of a place by responding intuitively to socio-economic needs and opportunities (Peel, 2015: 79).

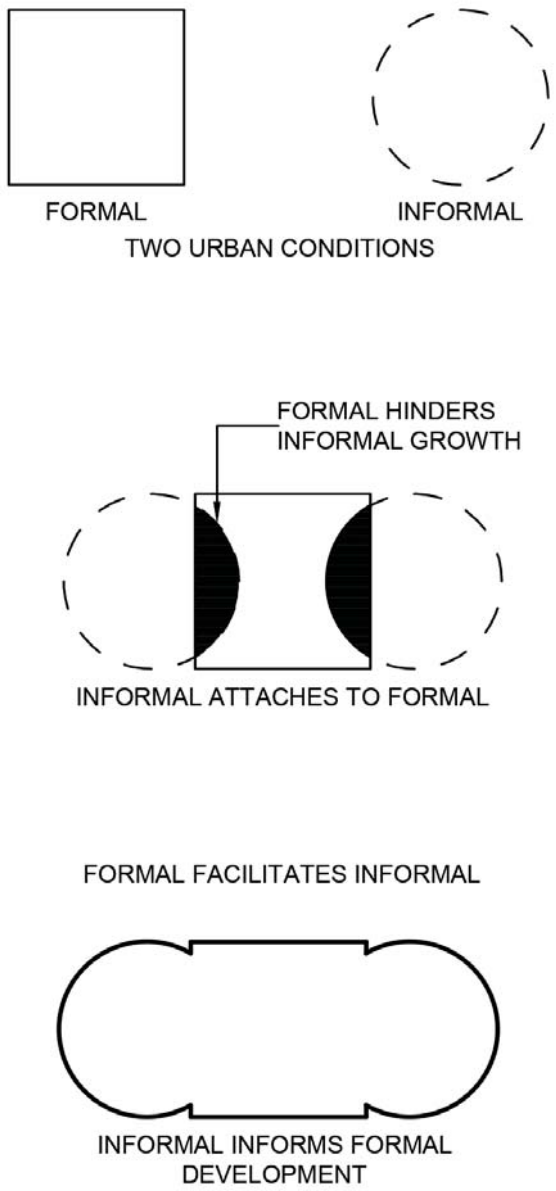


Figure 4.3.1 - Informal informing forming development adapted from Peel, 2015: 80. (Author, 2019)

4.4 THE PUBLIC INTERIOR

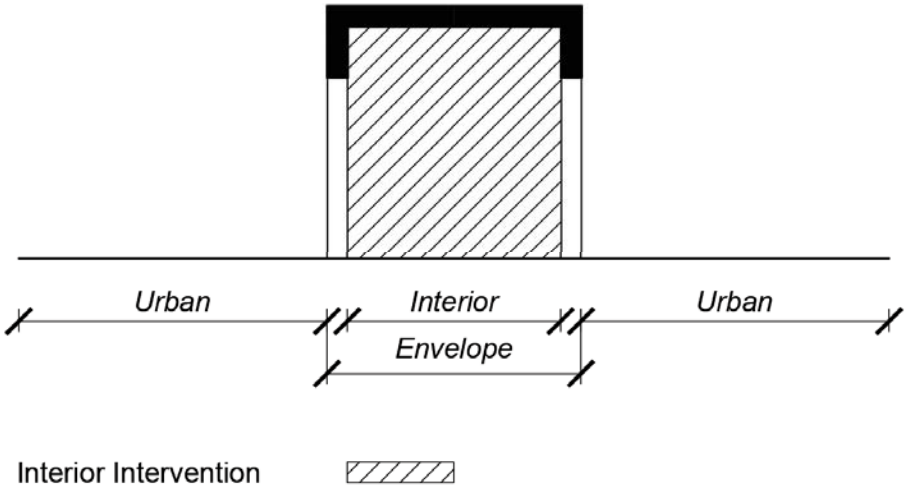
Informed by the proposed programme of an urban informal market (c.f. 3.3), a theoretical inquiry into the concept of 'public interior' is undertaken.

"In recent decades, the amount and proportion of public space within buildings has steadily increased, with much of it forming part of a larger interior and exterior pedestrian network. Meeting places in the contemporary city are increasingly less limited to the traditional streets and squares as an ever-greater number of buildings possess conditions that allow claim to be internal public spaces." (Harteveld 2007: 65)

Public interiors are 'places' that are used as public spaces, although may belong to a private owner. Such examples are libraries, hospitals and shopping malls, however, included within the concept of the 'public interior' are also publicly owned spaces such as arcades, passages and inner courtyards, as well as outdoor public areas that provide shelter, such as bus shelters (*figure 4.4.1*) (Poot, Van Acker and De Vos, 2015: 44). In the context of the public interior, 'public' refers to two partially overlapping issues of accessibility and ownership. The term 'accessibility' denotes that these spaces are open to all. However, 'accessibility', understood as permeable and being able to enter a space without he
of a public interior, may r
for practical reasons (Poo
Often with the public inter
signifier of an 'entrance
allowing the urban fabric
interior space and the int
the urban (Poot et al, 201

The growing intersectio
concepts of 'public' and
the complex relationship b
interior conditions. Phen
the interior spaces can b
direct impact upon the u
and the urban scale af
of interior spaces (Poot
The evolution of the dis
architecture additionally
concept of the public int
of interior architecture
exclusively on the design
is now concerned with th
exterior relationship (Poot
The public interior appro
potential of public interior
within the city's physical ne
physical and social conn
spatial coherence within th
to urban cohesion (Poot et

Figure 4.4.1 - The 'urban room' of the Salt Lake City Public Library by Safdie Architects is an example public interior (Safdie Architects, n.d)



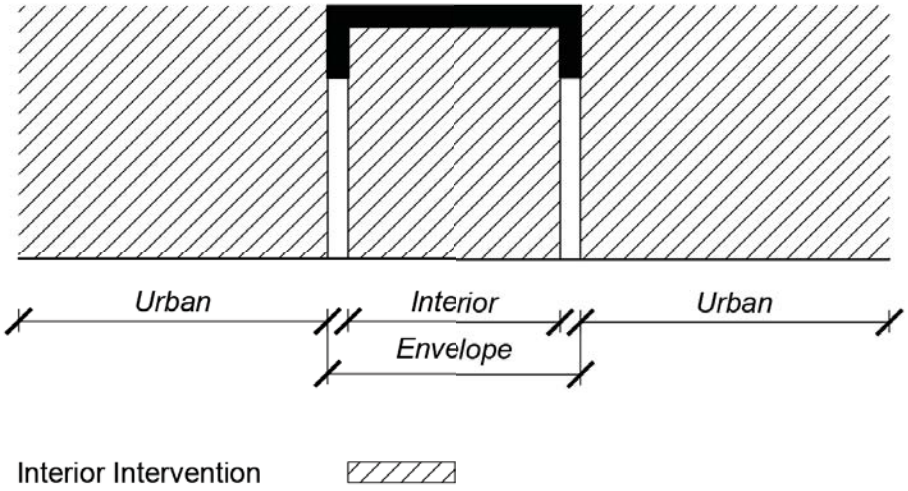


Figure 4.4.2 - The affect of the interior on the urban (Author, 2019)

4.5 ADAPTIVE REUSE

Within the discipline of architecture, adaptive reuse is generally defined as the process by which older, historic or heritage buildings are re-developed for architectural, social, cultural and historical value while receiving economically, socially and culturally viable new functions. This is achieved through processes such as refurbishment, renovation of existing elements, internal space reorganization, service upgrades or replacement and restoration (Bullen and Love, 2010: 215). In the context of this study, the application of adaptive reuse is re-conceptualised. In the proposed design intervention of the vacant dealership adaptive reuse acquires the unconventional condition of ephemerality.

The processes of adaptive reuse, within the practice of interior architecture, consists of determining new functional programs, necessary structural interventions and space allocations (Camocini and Nosova, 2017: 1560; Cordan et al, 2014: 2). The emerging topic of ‘re-functionalization’ has recently become popular, together with the term ‘temporary city’ by Bishop and Williams (2012). Both confirm the need for the propagation of impermanent adaptive reuse interventions within the urban environment. Camocini and Nosova (2017: 1560) argue that impermanent strategies do not intend to alter the primary features of existing fabric. As such, methods of renovation and/or re-development within the discipline of architecture, and more specifically the practice of adaptive reuse. Rather, interventions related to the discipline of interior architecture, are characterized by unobtrusive and reversible design strategies without necessitating alterations to the existing fabric Camocini and Nosova (2017: 1652),. Camocini and Nosova (2017: 1564), argue the benefit of impermanent strategies. Impermanent interventions allow for the testing of new or innovative functions within an urban context, or to interpret local contextual needs, or may be decidedly responsive and able to efficiently update upon requirement. In addition, the value of semi-permanence, within the strategy of adaptive reuse, rests within the awareness of the intended limited duration.

Camocini and Nosova (2017: 1564), conclude that impermanent strategies aid the structure to become candid to new possibilities, even through unexpected occurrences of events. Semi-permanent approaches expose a site’s accessibility and visibility, revealing potential to develop new ideas or directions for possible use that is able to be tested within real time.

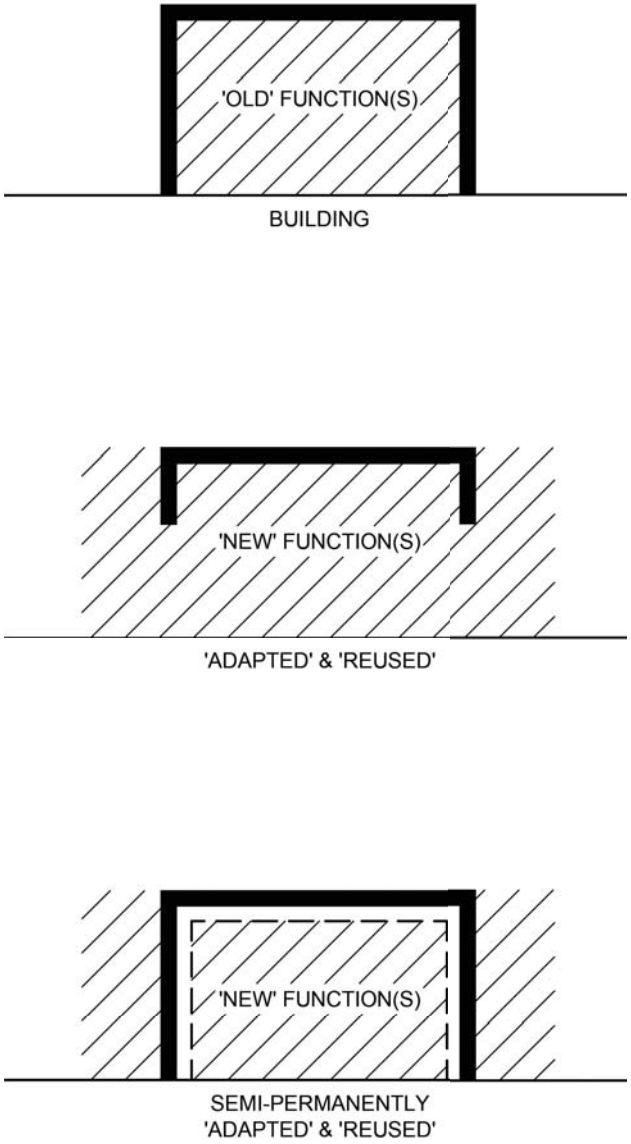


Figure 4.5.1 - Adaptive reuse and semi-permanent adaptive reuse (Author, 2019)

4.6 EPHEMERALITY

Investigation into impermanence has revealed the concept of ephemeral architecture. Buildings are among the heaviest and most enduring objects of humankind (Kronenburg, 1998:1), historically striving towards permanence and monumentality (Armada, 2012: 5). The problems inherent in a static and inflexible approach to creating buildings and space has become increasingly apparent, such as waste of natural and man-made resources and environmental pollution. The built environment is commonly perceived as relatively slow and static, with change occurring incrementally over years, decades and lifetimes (Kronenburg, 1998: 1). In a society that makes stringent demands on the physical environment and where the surrounding economic, social and cultural climate is in constant and dramatic flux (Kronenburg, 1998: 1) and in an age of rapid technological advancement, buildings are quickly rendered obsolete (Armada, 2012: 5). Buildings are designed to be replaced or updated, and that which is no longer useful or relevant is demolished. A form of architecture that can respond to change and sensitive to widely differing needs is required (Kronenburg, 1998: 1).

Ephemeral architecture has the ability to mediate between aspired permanence and inevitable change (Armada, 2012: 5). Ephemerality is seen as primarily a conceptual architectural proposition, the condition of being ephemeral resides in the techniques of construction and the concept of materiality that is embedded in it (Krstic, 1998: 31). The construction of an ephemeral building signifies not only its fluctuating nature as urban furniture, but also as a dynamic marker of place and time. A building designed to disappear can foster a powerful communal memory. The momentary experience created by ephemeral architecture can serve an instructive purpose. (Armada, 2012: 5).

Temporary architecture labeled as purposely short-lived structures, exhibitions and programmes that create experimental sites for interaction and engagement. Contemporary temporary architecture deals with fundamental questions of living, working and playing. Although short-lived, ephemeral architecture is designed to invest and embed themselves in a community and or public space. Opening up possibilities, testing scenarios and disrupting the preconceptions or urban environment and user behaviour within. Not purely pop-ups and pavilions, ephemeral architecture can be subtle, involving diverse participants and stakeholders, working together with deeper social ambitions for shared public spaces (Diguet and Zeiger, 2017: 2; Kronenburg, 1998:1).

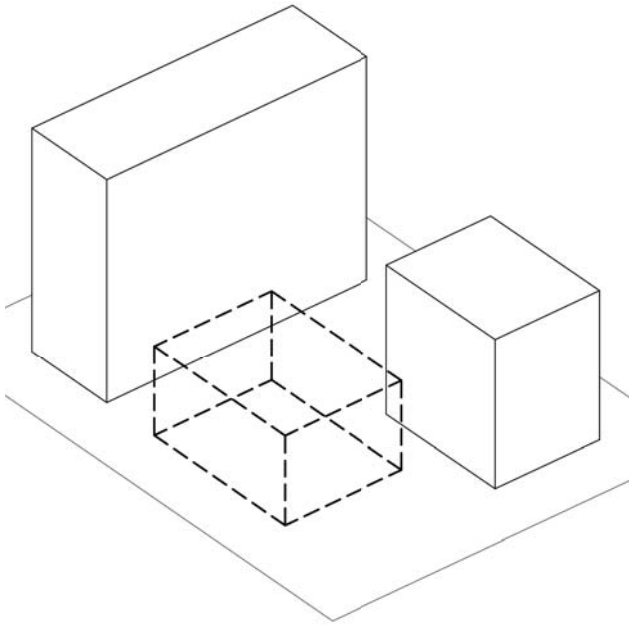


Figure 4.6.1 - An ephemeral intervention (Author, 2019)

4.7 FINDINGS

In relation to the identified Real World Problem and Architectural Issue, the theoretical inquiry revealed that prolonged vacancy can result in inevitable urban decay. Moreover, due to the location of the site on the periphery of the city centre, it is more prone to decay. Conversely, the process of urban renewal, by injecting activity into an area of decay, as in the primary aim of the proposed intervention, can restrain decay. Informing the proposed programme for the intervention, already existing and thriving on the site, is a robust informal trade economy.

The inquiry into informality has revealed the potential of this approach towards motivating development. Informality can inform the needs of place and appropriateness of interventions, such as the needs for FMCG's (c.f. Chapter Three). Additionally, the coexistence and interdependency of the formal and informal is already evident (c.f. Chapter Three), which further supports the theory of informality.

As the nature of the intervention falls within the public realm, a public urban market which is a privately owned, the inquiry into public interiors revealed that there is a complex relationship between urban and interior environments. The design of interior spaces directly impact the urban environment and the urban scale directly impacts the design of interior spaces. Therefore, the public interior has the potential to create a node within a city's physical network, creating urban scale physical and social connections.

In context of the intervention, the conventional architectural practice of adaptive reuse is re-conceptualised in the proposed adaptation and reuse of a vacant dealership. The theoretical inquiry leads to finding the propagation of impermanent adaptive reuse interventions within the urban environment, such as is the intention of the proposed intervention. Furthermore, it was found that impermanent interventions allow for testing of new or innovative functions within an urban context and or to interpret local contextual needs, such as the intervention's intention to test the functional programme of an urban market that responds to the sites needs. Finally, the theoretical investigation into impermanence revealed the concept of ephemeral architecture, mediating between permanence and change.

4.8 CONCLUSION

The intention of the chapter was to investigate theories on urban decay and renewal, informality and urban informal trade, adaptive reuse, public interiors and lastly, ephemerality, in order to establish a theoretical framework for an urban renewal strategy in the form of an urban informal market. The theoretical investigation and subsequent findings supports the design strategy for urban renewal through the adaptive reuse of a mono-functional building into a public interior in the form of an urban informal market. Adaptive reuse acquires the additional condition of ephemerality, which in turn serves a conceptual driver for proposal and technical resolution.

PRECEDENT & CASE STUDY

CHAPTER FIVE.

5.1 INTRODUCTION

Driven by the proposed programme of an urban informal market, the following chapter examines precedents of urban markets. The objective of the enquiry is to extract tangible and intangible design informants toward the design intervention for an urban informal market.

The process of reviewing precedents provides an assessment of knowledge gained by the practice of others, rather than the strict definition of research (Joroff Morse as cited in Groat & Wang 2002: 68). The identified precedents provide examples of the following themes: urban market implemented as a form of urban renewal; minimum infrastructure provision for trade; spatial organization of markets; market spaces shaped by the local context and finally, a bottom-up, user centred design approach.

Figure 5.1.1 - Precedent one, Besiktas Fish Market (Eren, 2013)

Figure 5.1.2 - Precedent four, Market Land Village (Poonphol, 2017)

Figure 5.1.3 - Case study, Warwick Junction (The KwaZulu-Natal Institute for Architecture, n.d)

5.2 PRECEDENT ONE

Besiktas Fish Market, Besiktas, Turkey.
Gokhan Avcioglu & GAD Architects
2010

Description

Urban Interior / Urban Renewal / Formal Market / Architectural Icon / Permeability with Free Flowing Space / Programme & Circulation

Reference: Archdaily, 2010.

Discussion

The Besiktas Fish Market is a popular and iconic place (*Figure 5.1.1*); located in one of Istanbul's most populated and diverse neighbourhoods. The fish market occupies a triangular site (*Figure 5.1.2*) in the heart of the Besiktas neighbourhoods' commercial district. The popular market is where locals and visitors come daily to purchase fresh fish (*Figure 5.1.3-4*). As the 'old' fish market's structure was in poor condition, a 'new' market was needed with the objective toward neighbourhood revitalization. To meet the project's intended strategy and goals, Gokhan Avcioglu and GAD Architects worked directly with the local municipality and the local seafood merchants. The design outcome of the project is a triangular shaped concrete shell that covers the entire site, with large openings at street level (*Figure 5.2.1 & 5.2.5*). The porous shell provides a column-free interior space optimizing programmatic needs (*Figures 5.2.3 & 5.2.4*).

Figure 5.2.1 - Market 'shell' (GAD, 2010)

Figure 5.2.2 - Porous form creates wide entrances and column-free interior space (Eren, 2013)

Figure 5.2.3 - The column-free interior space (Eren, 2013)

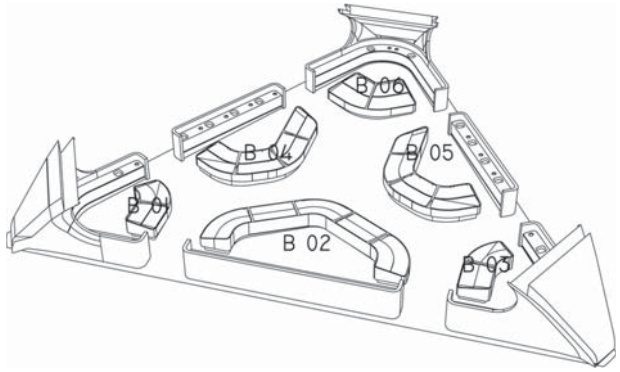


Figure 5.2.4 - Potential layout of fish counters (GAD, 2010)

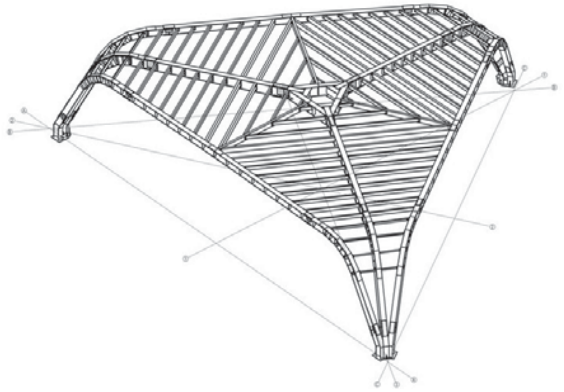


Figure 5.2.5 - Isometric of the concrete shell steel form work (GAD, 2010)

Figure 5.2.6 (GAD, 2010)

5.3 PRECEDENT TWO

Boston Public Market, New York City, USA.
Architerra
2015

Description

Urban Renewal / Formal Market / Adaptive Reuse / User Experience / Flexible Infrastructure / Spatial Layout / Vendor/ Visitor Interaction / Permeability / Urban Destination / Signage & Lighting

Reference: Arch20, 2015.

Discussion

Boston's public market is the result of the adaptive reuse of the ground floor of a vacant office building into a vibrant market destination. Moreover, it provides an anchor for an emerging market district. Seven entrances are introduced, permeating the envelope, to draw the public in. Large-scale signage, exterior lighting elements, and window decals are purposeful interventions that announce the market as the heart of the district (*Figure 5.3.1*). The interior design of the market reconciles the existing site constraints, such as a central artery of ventilation shafts, with the complex infrastructure needs of a market. As the existing space had neither a ceiling nor basement, overhead utilities were threaded through an entanglement of existing infrastructure that serve the offices above (*Figure 5.3.2*), while under-floor utilities were located in a raised floor-slab. The layout of the market's aisles are designed to maximize rentable areas and encourage trade. An inventive system of rental modules, signage supports and 'plug-and-play' utility service connections eases vendor start-up and supports flexible change over time (Figures 5.3.3-4 & 6).

Figure 5.3.1 One of seven entrances (Choi, 2015)


Figure 5.3.2 Market seating (Dipalma, 2018)


Figure 5.3.3 Rentable market modules and exposed services (Choi, 2015)

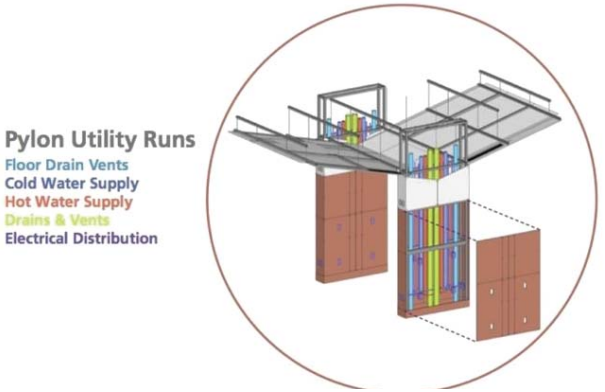


Figure 5.3.4 Exploded axonometric of market system utility pylons that deliver services to rented market modules (Architerra, 2015)

Figure 5.3.5 (Choi, 2015)

5.4 PRECEDENT THREE

City Market, Lusaka, Zambia
Unknown Architect
1997

Description

Urban informal market / Africa / Formalising the informal / Spatial layout / Self-organization

Discussion

Serving as the central market in Lusaka's city centre, the market is a large architecturally utilitarian building filling two city blocks completely. The building consists of a grid of uniform market stalls under a repeating domed sheeted-roof (*Figure 5.4.2-3*). The market was constructed in an effort to formalise peripheral informal market activities that took place around the site prior to its construction (Gantner, 2009: 2). The precedent is selected less for the tangible architecture and more for the intangible impact that is a result of the architecture. With no formal allocation of stalls present, the vendors have been left to arrange themselves within the market space as they please. As a result, vendors have grouped themselves according to similar merchandise into distinctly identifiable areas. This self-organization of groups has allowed vendors social support and assistance and the ability of self-regulation (Gantner, 2009: 3). Additionally, the vendors were found to work in mutually beneficial syndicates to purchase larger volumes from wholesalers, creating a location of larger stock range, consequently drawing in larger numbers of customers (Gantner, 2009: 3). According to architect, Garret Gantner, this form of self-organization would not be possible in a building with constrained trading areas (Figure 5.4.3-4).

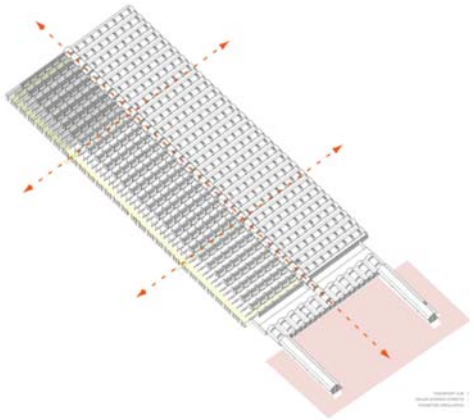


Figure 5.4.1 (Gantner, 2009)

Figure 5.4.2 The repeating domed roof of the City Market (Gantner, 2009)

Figure 5.4.3 The entrance of the City Market (Lusaka Times, 2017)

Figure 5.4.4 (Zambian Watch Dog, 2017)

5.5 PRECEDENT FOUR

Market Land Village, Bangkok, Thailand
AOMO
2017

Description
Extension / Open-Air Urban Market / Natural Ventilation & Light / Urban Beacon / Extension of Urban Fabric to Interior

Reference: Archdaily, 2017

Discussion
The market is an extension of existing open-air market that trades food and clothing in the local community. The design intention of the market was to utilize the most possible natural ventilation, which is critical in the tropical climate, as well as natural light, shading and rain protection. The roof of the extension captures northern light along with glass louver walls, alternating between translucent and coloured glass panels, conducting the hot air out on the top (*Figure 5.5.2*). Due to the climate, the majority of the locals shop in the evening. The glass panels illuminate, acting as a lantern and draw in customers from the existing market and the street's edge (*Figures 5.5.1 & 5.5.3*). The market is significantly shaped by local context, climate and user behaviour, resulting in a simple architectural form, contrasting with the busy activities inside (*Figures 5.5.4-6*).

Figure 5.5.1 The 'lantern' affect of the Market Land Village in the evening (Archdaily, 2017)

Figure 5.5.2 The permeable interface of the between market and its context (Archdaily, 2017)

Figure 5.5.3 The 'lantern' affect of the Market Land Village in the evening (Archdaily, 2017)

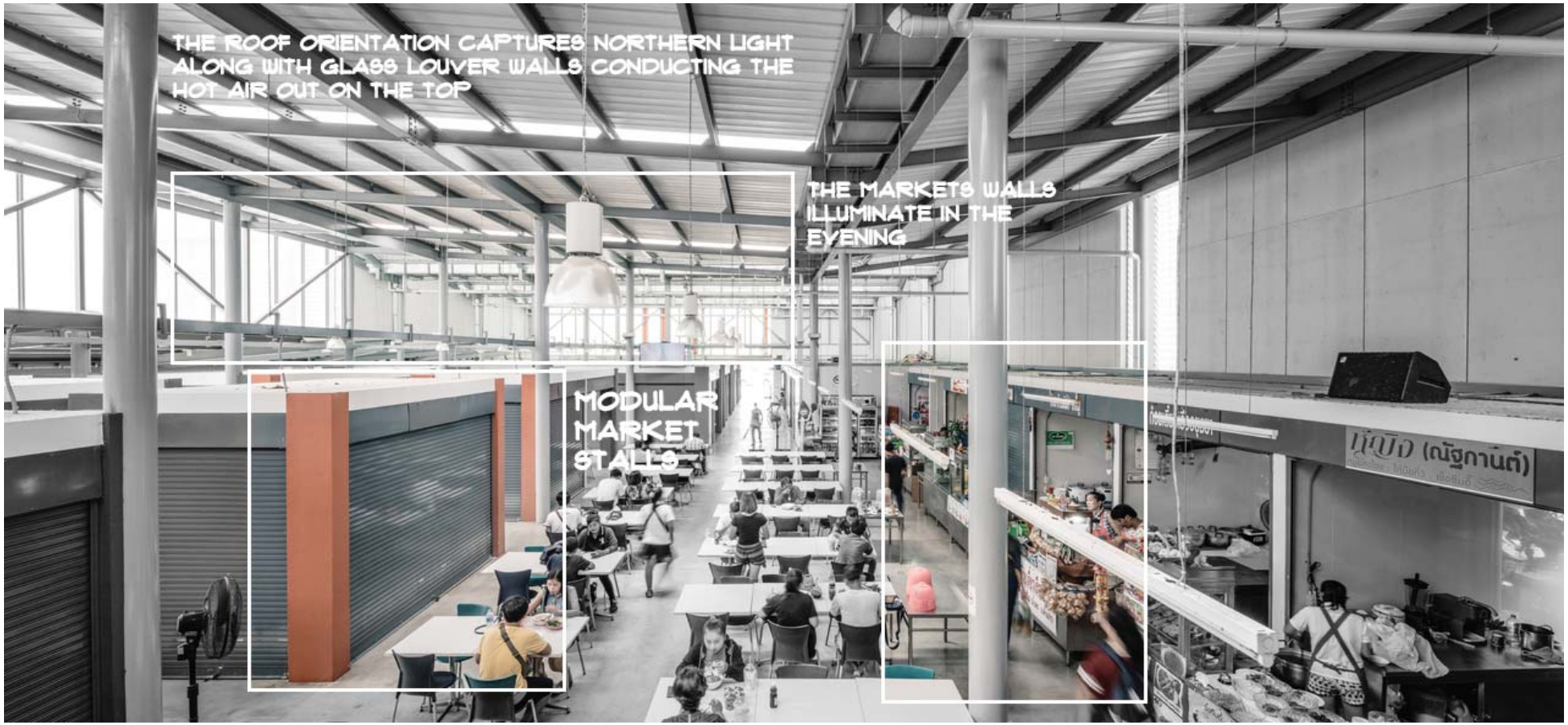


Figure 5.5.4 (AOMO, 2017)

Figure 5.5.6 (AOMO, 2017)

5.6 CASE STUDY

Warwick Junction, eThekwini Metropolitan (Durban), Kwa-Zulu Natal, South Africa.
Various architects co-ordinated by Asiye eTafuleni.
1997 to Present.

Located in the 'Warwick Triangle', the junction serves as point of entry and primary transport node for an estimated 460 000 commuters travelling by bus, mini-bus, or train daily into the Durban CBD (*Figures 5.6.2-3*). The junction itself is a mixed use area of residential and commercial activities, adequately supported by health, religious and educational facilities.

Due to the movement, Warwick Junction is the prime position for informal trade, supporting the highest densities of vending in the eThekwini Metropolitan area, facilitating

Figure 5.6.2 Aerial photograph of Warwick Junction Markets (Design with the Other 90%, 2011)

5 000 to 8 000 vendors. According to Caroline Skinner, a senior researcher at the African Centre for Cities at the University of Cape Town, Warwick Junction is acknowledged as a model of the sensitive integration of informal trader into the urban realm (Skinner, 2009: 101).

Prior to its success, Warwick Junction was historically the scene of frequent and, at times, violent confrontations between the local police and traders. Since 1997, Warwick Junction has been the focus of the municipal Warwick Junction Urban Renewal Project. The project, which continues to this day, focuses on improving provided services, maintaining health standards, regulating and self-regulating the market traders, as well as social and economic empowerment by working with and encouraging initiatives from existing vendor social organization. Over the course of a decade working with the trader organizations, such projects included the protection of market areas from vehicular intrusion by the installation of bollards and the provision of alternate parking facilities for mini-bus taxis, which were competing with vendors for pavement space, provision of water and sanitation facilities and increased police presence (Skinner, 2009: 105).

Figure 5.6.1 Warwick bridge muthi market (The KwaZulu-Natal Institute for Architecture, n.d)

Figure 5.6.3 Trade stalls under highway flyovers (The KwaZulu-Natal Institute for Architecture, n.d)

Figure 5.6.4 Warwick bridge muthi market
(The KwaZulu-Natal Institute for Architecture, n.d)

The Warwick Junction Precinct is a conglomeration of diverse markets, grouped by market sectors, with each major sector large enough to create customer draw. The Warwick Junction area has been a centre of trade since the 1880s. Since then it has supported a vast diversity of traders. Currently, this includes: fruit, fish, meat, spice, vegetable, lime/ochre, cooked mielie (corn), iMphempo (incense herb) and bovine-head vendors. iziNynga (herbalists) sell muthi (traditional medicine), izangoma (spiritualists) can be consulted and gold-tooth fitters (*Figures 5.6.1 & 5.6.4-5*) (Badsha, 2011: 6).

Social organization and internal co-operation among vendors in the Warwick triangle has presented itself to be strong amongst the diverse groups of vendors, with many sharing vending areas and taking turns to return to the rural areas to re-stock raw materials and visit family. Formalised social groups provide members with basic public education and has organised groups of volunteers to clean the street for up to three hours a week, creating a sense of pride and ownership (Skinner, 2009: 105).

A significant aspect of the renewal project was the formal recognition of the street as a legitimate market space through the demarcation of pavement spaces to individual vendors (*Figures 5.6.1 & 5.6.4-5*). The recognition allowed traders a sense of security, allowing entrepreneurs to buy larger volumes of stock, and create business plans in a more stable environment, while allowing regulation of health and safety standards through engagement of authorities with known communities. Vendors pay rent on these spaces as they would with any market stall and are therefore legally recognized and legitimised. Subsequently, the local police are able to provide market security, rather than clashing with the market participants. The demarcated spaces allow a movement corridor on the sidewalks where pedestrians are safe from passing vehicular traffic (Dobson and Skinner, 2009; 10).

Figure 5.6.5 Warwick Junction herb market
(The KwaZulu-Natal Institute for Architecture, n.d)

The use of Levels

In specific areas, the markets are multi-levelled. The change in level defines a change in formality, with the elevated levels attracting businesses with an increased level of formality which are able to create a greater customer draw. The ground planes are generally open, with formality increasing with height. The change in level change is also used to define a change in sector (Snow, 2011: 50).

Sanitation

With a high rate of toilet blockages, the provision of sanitation facilities was problematic. As a result, it was proposed that a market group would run the sanitation facilities. The sanitation facilities are used at a small fee. The fee supports an attendant responsible for the cleanliness, basic maintenance, and the provision of toilet paper (Snow, 2011: 50).

Figure 5.6.6 Early Morning Market vegetable stalls (Design with the Other 90%, 2011)

Figure 5.6.8 Victoria Street Market (Victoria Street Market, 2018)

Figure 5.6.10 Clothing trade stalls (Asiye eTafuleni, 2014)

Figure 5.6.7 Herb Market underneath highway flyovers (Asiye eTafuleni, 2014)

Figure 5.6.11 Multiple levels of trading areas and sheltered stalls (Asiye eTafuleni, 2014)

WARWICK JUNCTION STREET FURNITURE

Traditionally, heavy, indestructible furniture is provided for the markets. However, the furniture creates an environment that is difficult to clean, unintentionally provided hiding spots for criminals and were relatively inflexible to change and adaptation (Mkhize and Quazi, 2016). A study on street furniture in Warwick Junction by Mongezi Ncube (2016) sought to investigate self-built tables by informal traders to understand the design rationales behind the infrastructure created and used by informal traders. Ncube (2016) put forth the question of allowing for traders to be the shapers of their own space and infrastructure, rather than professionals and governing authorities. The field research conducted on the identified site in Arcadia revealed that the simple trestle table offered traders flexibility and is used to extend city infrastructure. The construction of the trestle table allows for expansion, unlike the traditional market furniture, thereby accommodating stall growth. Similarly, the trestle tables at Warwick Junction are favoured over radical, formalised design solutions (products), often designed without user-input (Mkhize and Quazi, 2016). In both cases the trestle table allows the trader agency as they are able to make the necessary incremental changes as their stall grows, or to accommodate requirements for merchandise-specific display (*Figures 5.6.12-13*) (Mkhize and Quazi, 2016).

Figure 5.6.12 A Warwick Junction trestle table (Mkhize, 2016)

Figure 5.6.13 The local carpenter of Warwick Junction who designs and constructs the trestle tables with minimal waste output (Mkhize, 2016)

5.7 FINDINGS

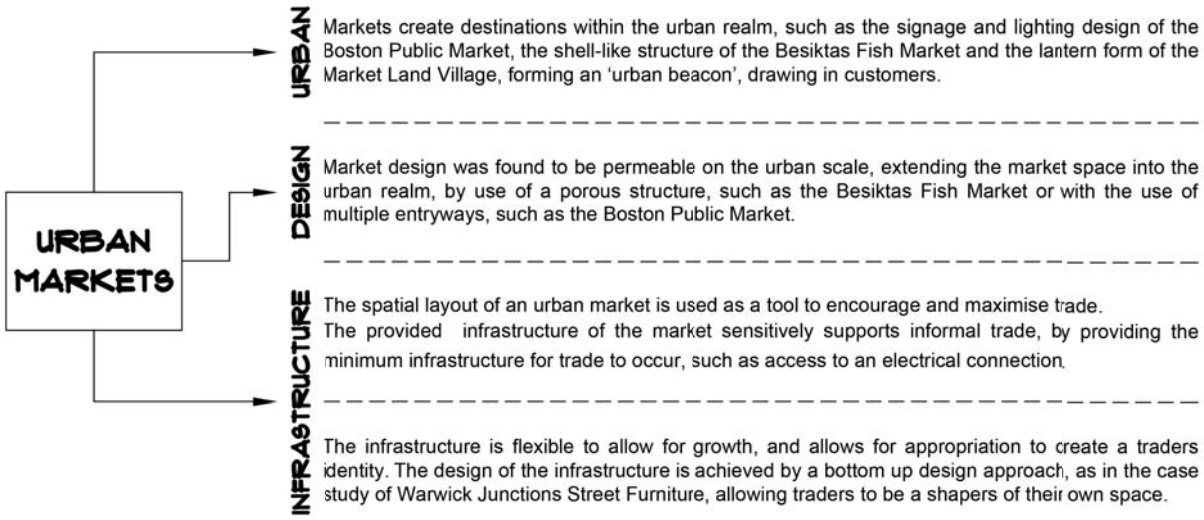
> *The significance of the market as an urban element is not exclusively the built architectural fabric as an object, although this is not unimportant, the intangible social configuration and cultural influence [of the market] on the surrounding urban fabric is significant (Gantner, 2009: 2)*

Further supporting the intervention of an urban informal market, the precedents analysed provide insights into formal and informal urban markets. Markets were found to create destinations within the urban realm, such as the signage and lighting design of the Boston Public Market, the shell-like structure of the Besiktas Fish Market and the lantern form of the Market Land Village, forming an 'urban beacon', drawing in customers.

The design of the markets were found to be permeable on the urban scale, extending the market space into the urban realm, by use of a porous structure, such as the Besiktas Fish Market or with the use of multiple entryways, such as the Boston Public Market. The spatial layout of an urban market is used as a tool to encourage and maximise trade.

The provided infrastructure of the market sensitively supports informal trade, by providing the minimum infrastructure for trade to occur, such as access to an electrical connection. The infrastructure is flexible to allow for growth, and allows for appropriation to create a traders identity. The design of the infrastructure is achieved by a bottom up design approach, as in the case study of Warwick Junctions Street Furniture, allowing traders to be a shapers of their own space.

The significance of the market as an urban element is not exclusively the built architectural fabric as an object, although this is not unimportant, the intangible social configuration and cultural influence [of the market] on the surrounding urban fabric is significant (Gantner, 2009: 2)



5.9 CONCLUSION

The precedents and the case study discussed and analysed contribute towards design informants that guide intervention (c.f. chapter six). The findings discussed presented insights into formal and informal markets. Primarily found, in relation to the study, was that the creation of an urban market can restrain urban decay by creating destinations within the urban realm. Additionally, the design of markets discussed encourage and maximise trade and allow for trader growth, appropriation and expression of identity.

THE DESIGN OF THE NANA SITA MARKET

CHAPTER SIX.

6.1 INTRODUCTION

The following chapter constructs the design development of Nana Sita Market, the title of the proposed interior intervention in the vacant automotive dealership. The chapter begins by setting forth the urban renewal strategy that answers the primary research question of how an interior architecture intervention can restrain urban decay in Arcadia. Following the renewal strategy, the inclusive approach of the design intervention is presented. Toward the conceptual development of Nana Sita Market, design informants are presented that have been generated from the previous chapters. The spatial planning process is illustrated, followed by the iterative design process. Concluding the chapter is the presentation of the final design iteration of Nana Sita Market.

6.2 URBAN RENEWAL STRATEGY AND DESIGN APPROACH

6.2.1 URBAN RENEWAL STRATEGY

The primary aim of the study is to restrain urban decay, onset by prolonged vacancy, by implementing an urban renewal strategy, reintegrating the vacant dealership to significant contribution to the current urban condition. The strategy is achieved through a combination of the proposed urban vision of Arcadia (c.f. Chapter 2) and the ephemeral adaptive reuse of the designated vacant automobile dealership into an urban informal market, titled Nana Sita Market. The context study has revealed the dynamic urban informal trade economy which has been selected as the driver towards the programme of an informal market. This is further supported by the interviews conducted with the local traders, which revealed the need for shelter from the natural elements, such as the harsh summer sun and rain. Supporting the intervention of an urban informal market, the precedents analysed provide insights into formal and informal urban markets. Markets were found to create destinations within the urban realm, such as the precedents of the Boston Public Market, the Besiktas Fish Market and the Market. The design of the markets were found to be permeable on the urban scale, extending the market space into the urban realm, by use of a porous structures and or with the use of multiple entryways. The spatial layout of an urban market is used as a tool to encourage and maximise trade and the market infrastructure sensitively supports informal trade, by providing the minimum infrastructure for trade to occur, such as access to clean water and electricity. The activation of the vacant site, by the urban informal market, can restrain the inevitable urban decay

The urban informal market is named after Nana Sita (1898 - 1969) who was involved in the Indian Passive Resistance Movement (Sahistory.org.za, n.d.). Nana Sita was also the Secretary of the Pretoria branch of the Transvaal Indian Congress and later on became the President. Born in Gujarat India in 1898, Nana Sita moved to South Africa and lived in Pretoria to study book-keeping and was active in the religious and social welfare work in the small Indian community in Pretoria (Sahistory.org.za, n.d.). After meeting Mahatma Gandhi, Nana Sita took influence by resisting injustice and suffering the consequences. Nana Sita worked in his uncles fruit and vegetable business and then started his own retail grocery business. For this reason, naming the market after Nana Sita is appropriate as Nana Sita himself is associated with trade and even the envisioned trade of fruits and vegetables Figures 6.2.1 & 6.2.2 illustrate the site location on Nana Sita Street.

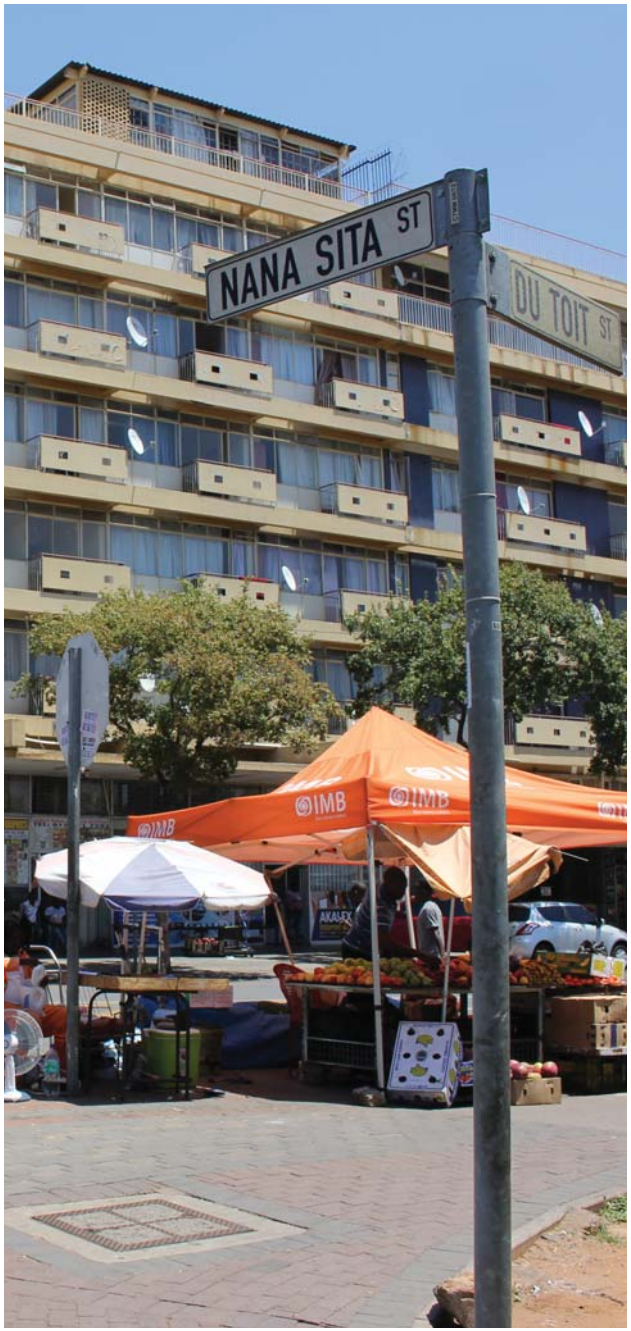


Figure 6.2.1 - Nana Sita Street sign (Author, 2019)

Figure 6.2.2 - Nana Sita Street (Google Earth)

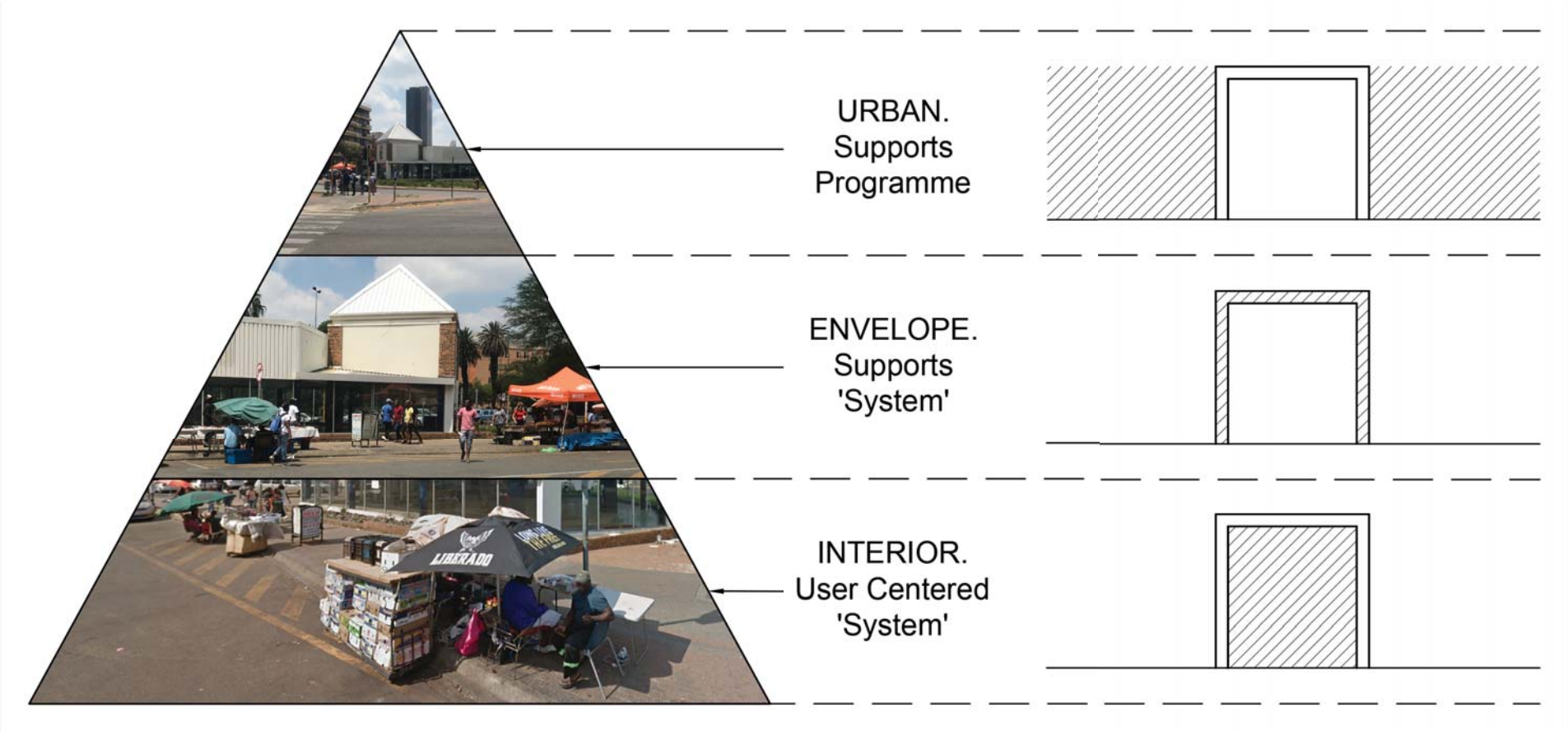


Figure 6.2.3 - Design approach illustrated (Author, 2019)

6.2.2 DESIGN APPROACH

Findings have proven that urban market elements such as the spatial layout and provided infrastructure are used as tools to encourage and maximize trade. Together with the markets intention to sensitively support informal trade, a bottom up design approach has been identified. The approach concentrates and attends to the local traders needs, such as shelter from the elements and flexibility to allow for growth, found from the field research efforts, theoretical framework, precedents and the case study. Additionally, the approach is also used on the architectural scale, as the sites urban realm supports the adaptation to the existing envelope and the adapted envelope supports the interior intervention Figure 6.2.3 Illustrates a ‘bottom up’ design approach in relation to the site, while Figure 6.2.4 serves to support the argument for this approach with photographic reference to the case study of Warwick Junction (c.f. 5.6).

Figure 6.2.2 - 'Arguing towards the bottom up design approach is an image of trader stalls from Warwick Junction. The city provided trade infrastructure does not seem the needs of the traders (users) as the traders have resorted to constructing their own infrastructure. (The KwaZulu-Natal Institute for Architecture, n.d)

6.3.1 CONTEXT, PROGRAMME AND USER AS INFORMANT

(Chapter Two/Three.)

• Dynamic urban informal trade economy informed programme.

• The typology of goods sold, 'fast-moving consumer goods' (FMCG's) or consumer packaged goods (CPG's).

• Field research has informed users needs, primarily the need for shelter from the elements, as poor weather can hinder the ability to trade (c.f. 2.5.2)

• The high frequency

Figure 6.3.1 - Collage of context figures (Author, 2019)

6.3.2 THEORY AS INFORMANT

(Chapter Four.)

• The process of urban renewal, by the injection of activity into an area of decay, as in the primary aim of the proposed intervention, can restrain decay.

• Informality motivates 'formal' development (c.f. 4.3)

• The design of permeable public interior spaces directly impacts the urban environment and the urban scale directly impacts the design of public interior spaces (c.f.4.4).

• Impermanent interventions allow for testing of new or innovative functions within an urban context and or to interpret and respond to local contextual needs (c.f. 4.6 & 4.7).

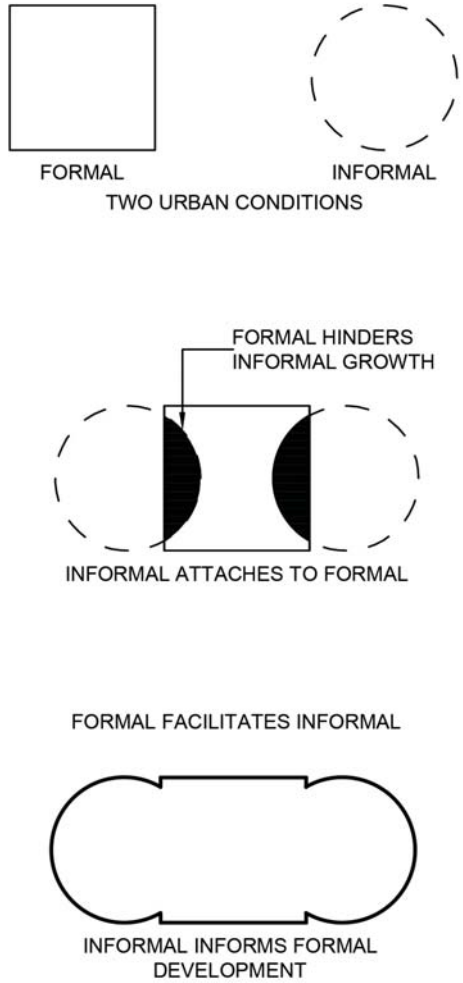


Figure 6.3.2 - Informal informing forming development adapted from Peel, 2015: 80. (Author, 2019)

6.3.3 PRECEDENTS AS INFORMANT

(Chapter Five)

• Permeable on urban scale, extending the market space into the urban realm, by use of porous structure or multiple entryways (c.f. 5.9).

• The creation of a market as an urban destination (c.f. 5.3).

• Market designs and spatial layouts used as tools to maximise and encourage trade.

• Provision of infrastructure to support trade (c.f. 5.9).

Figure 6.3.3 - Collage of precedent figures (Author, 2019)

6.3.4 CASE STUDY AS INFORMANT

(Chapter Five)

• Succesful sensitive integration of informal trade into the urban fabric.

• Urban trade spaces fosters sense of ownership of trading spaces.

• Infrastructure is flexible and allows for growth and appropriation to create a trader identity.

• Social and economic empowerment achieve through the provision of services that allow for and encourage trade (c.f. 5.6).

Figure 6.3.4 - Collage of case study figures (Author, 2019)

6.4 CONCEPT DEVELOPMENT

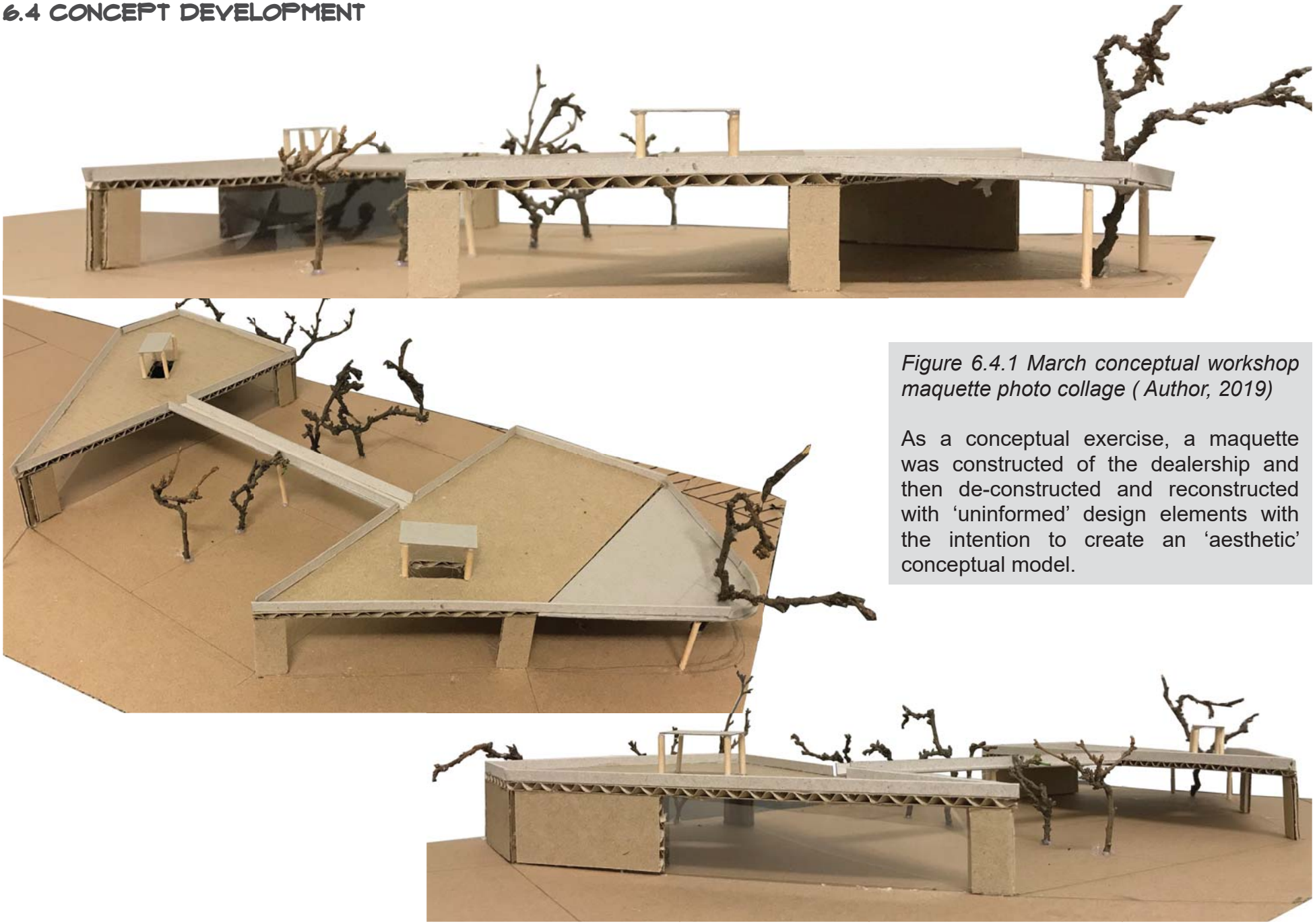


Figure 6.4.1 March conceptual workshop maquette photo collage (Author, 2019)

As a conceptual exercise, a maquette was constructed of the dealership and then de-constructed and reconstructed with ‘uninformed’ design elements with the intention to create an ‘aesthetic’ conceptual model.

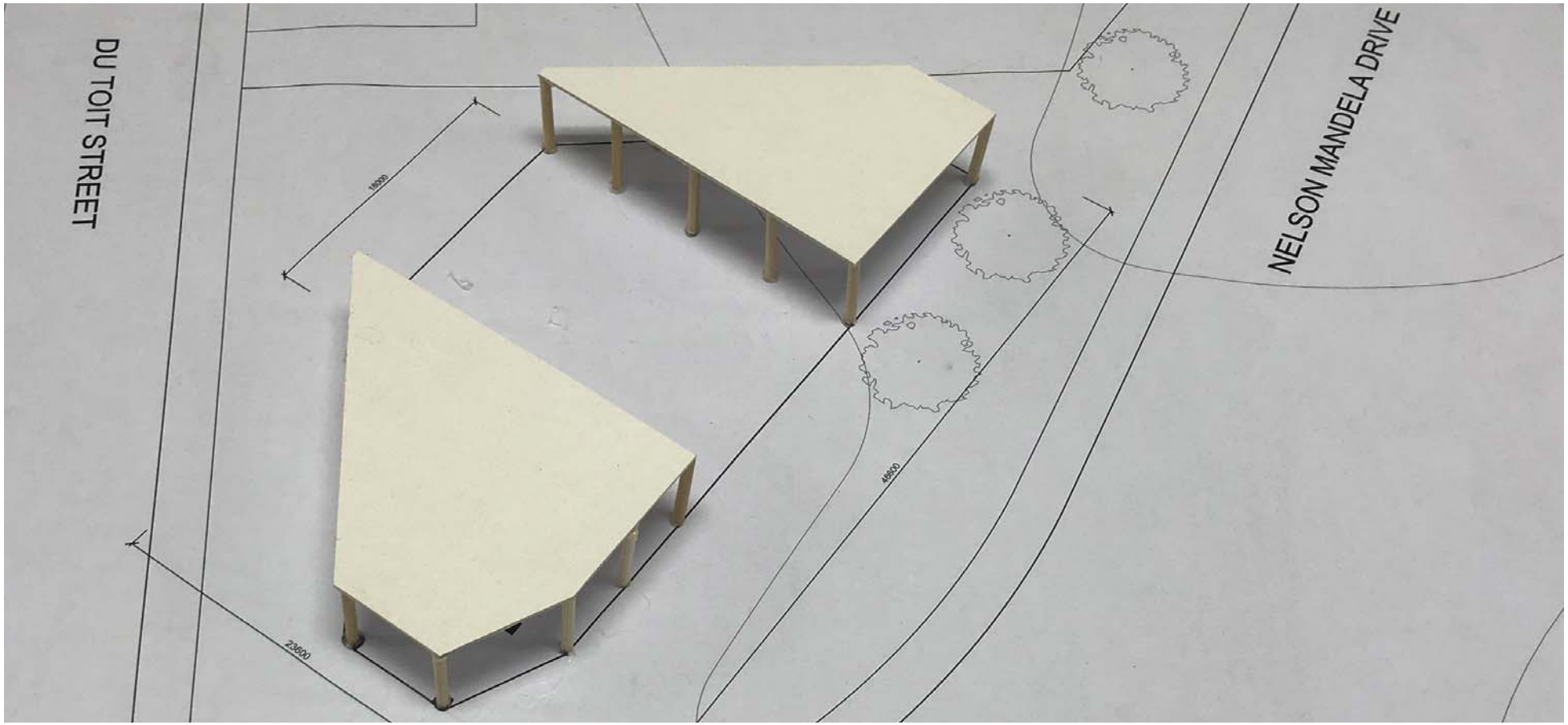


Figure 6.4.2 - Marquette 'pavillion' exploration (Author, 2019)

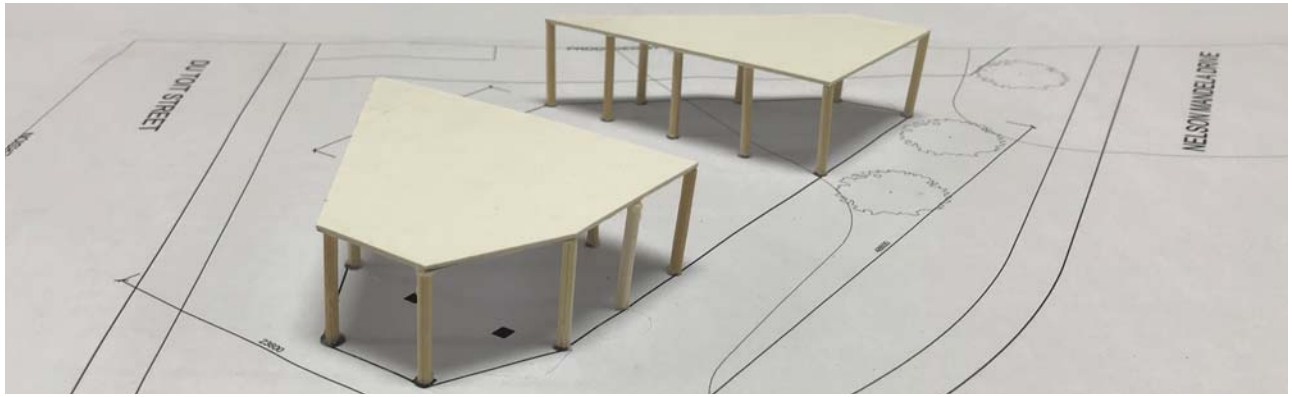


Figure 6.4.3 - Marquette 'pavillion' exploration (Author, 2019)

Figure 6.4.2 & 6.4.3 from the conceptual maquette exercise, a design taken forward is to reduce the form of the dealership into two permeable 'pavilions', extending the interior into the urban realm.

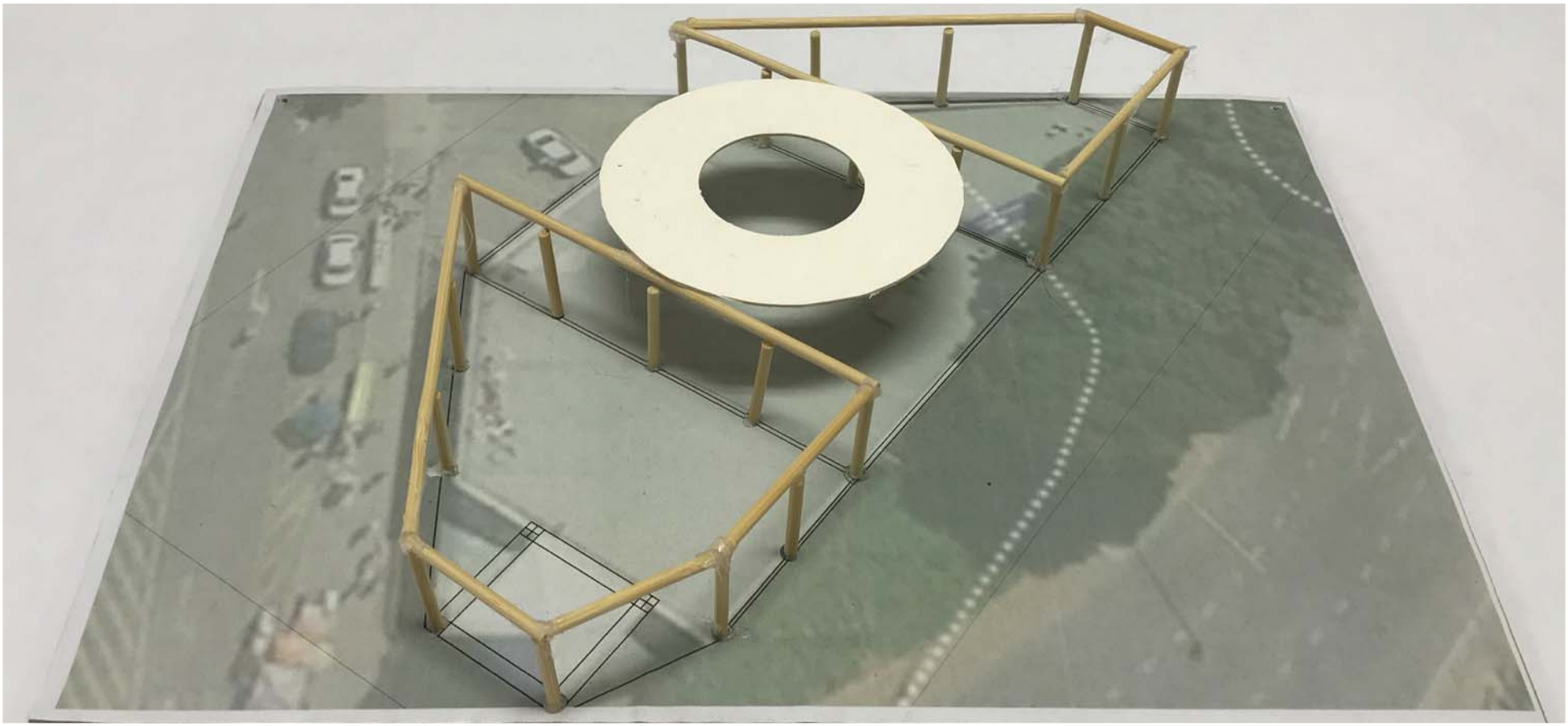


Figure 6.4.4 - 'Circular' marquette exploration (Author, 2019)

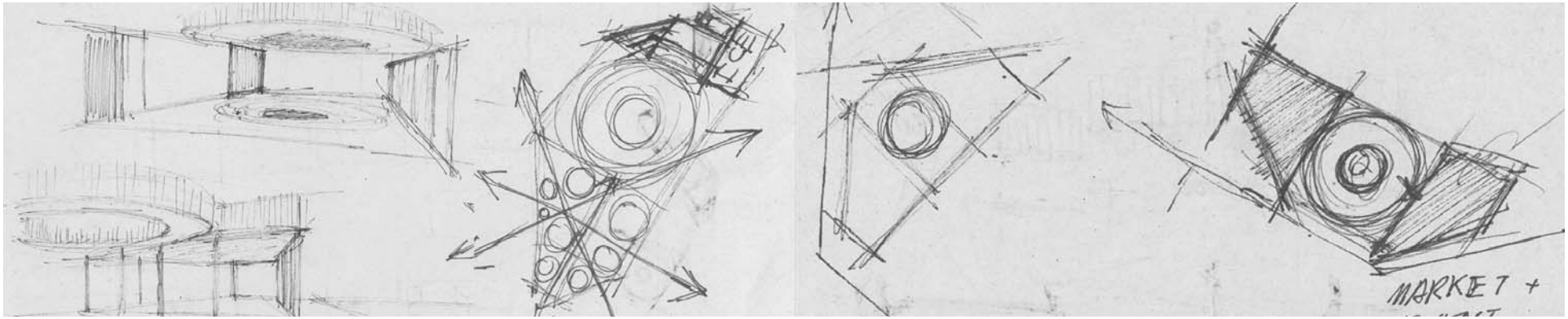


Figure 6.4.5 - Sketch exploration of 'circular' exploration (Author, 2019)

Figure 6.4.6 - 'Circular' concept section digital visualization (Author, 2019)

Figure 6.4.7 - 'Circular' concept public space digital visualization (Author, 2019)

Figure 6.4.8 - 'Circular' concept market space digital visualization (Author, 2019)

6.5 SCAFFOLD

To convey the ephemeral nature of the intervention and, in turn, render a once mono-spatial pragmatic structure sculptural, scaffolding is employed as a design medium to 'sculpt' space. The use of tubular steel scaffolding was identified as a medium through the investigation of ephemeral interventions. The Temporary Visitors Pavilion in Glòries, Barcelona (*Figures 6.4.1.1-2*) and Kibera Hamlet School, in Kibera, Nairobi are presented as precedent of scaffold-constructed, ephemeral interventions.

Figure 6.4.1.1 - The temporary visitors pavilion in Glòries Square, Barcelona (Dezeen, 2016)

Figure 6.4.1.2 - The illumination design of the pavilion during evening times (Floor Nature, 2016)

Figure 6.4.1.3 - The pavilion polycarbonate interior skin (Archdaily, 2016)

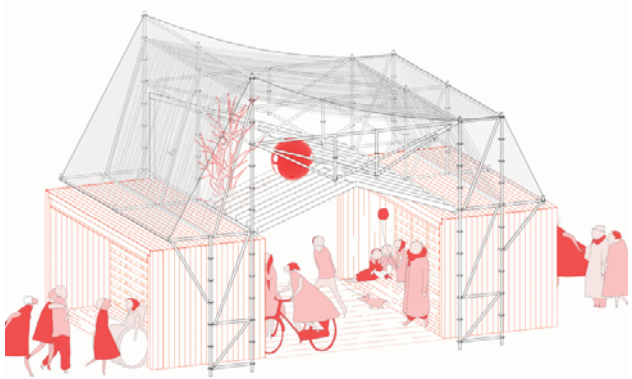


Figure 6.4.1.4 - Pavilion section graphic visualization (Peris + Toral Arquitectes, 2019)

Temporary Visitors Pavilion, Glòries Square, Barcelona.
2015
Peris + Toral Arquitectes.

In essence: a placeholder for future development.

The 'Information Point', was a temporary pavilion that consisted of a visitor centre facility, information point, exhibition space and an electric bicycle rental point. For three years, the pavilion was located at the intersection of two pedestrian paths, with the long dimension of the pavilion that functioned as an axis across the site (Gibson, 2016) in the Glòries urban re-development and revitalization project zone, that allowed for use during construction (ArchDaily, 2015). The project intended to transform the sprawling under-utilised space formerly occupied by elevated roads and a colossal roundabout into pedestrianised public space with parks (Gibson, 2016).

• The ephemeral nature of the pavilion, that could be removed and reused, determined the structural system choice, tubular steel scaffolding, additionally, the use of scaffolding responded to its construction site context (ArchDaily, 2015).

• The pavilion made use of standard scaffold joint and connection assembly components (Gibson, 2016), was layered with polycarbonate sheeting and wrapped in netting and metal mesh (*Figure 6.4.1.3*).

• The three layers of 'skins' that are composed of wire mesh, nylon shade fabric and translucent polycarbonate panels (Gibson, 2016). The outer protective skin of the building was formed by draping wire mesh used for construction fences. Below this outer skin is a layer of nylon shading mesh that filters sunlight into the 'interior' of the structure (Gibson, 2016). The inner most skin consists of rigid water proof translucent polycarbonate panels that serve as roof and walls defining and protecting the activity spaces within (*Figure 6.4.1.4*).

• The illumination of the pavilion was a major design feature. During the day, the pavilion attracts attention through its transparent permeable skin and the iconic red spheres that hang within it (ArchDaily, 2015). Light sources were placed at ground level, between the polycarbonate and the shading mesh to illuminate the interstitial space, making the light sources invisible and the coverings to act as diffusers creating a halo effect.

• The intervention demonstrates an innovative design for a building that will be dismantled and can be reused, an ensemble from steel scaffolding, an ephemeral structural system, along with inexpensive and lightweight manufactured materials (Gibson, 2016).

Kibera Hamlet School, Kibera, Nairobi, Kenya.
2017
Collaboration between the Louisiana Museum of Modern Art in Copenhagen, Madrid practice SelgasCano, young New York architecture studio Helloeverything, Kenyan architect AbdulFatah Adam, architectural photographer Iwan Baan and London creative workplace Second Home

In essence: the reuse of a pop-up pavilion from Denmark as a school in Kenya.

Initially designed and constructed a pop-up that was part of the Denmarks' Louisiana Museum of Modern Art's exhibition "Africa: Architecture, Culture, Identity' and institution's sculpture garden, the structure, titled Louisiana Hamlet, was made from colourful standard scaffolding components and hard plastic sheets and served as a viewing space for short films (*Figure 6.4.1.6*). After its intended use, the structure was dismantled and transported in shipping containers to Kenya, Kibera, the largest urban slum in Africa (Fairs, 2016). The structure was reassembled, with help from a team of 20 local labourers (Fairs, 2016), to replace a dilapidated school made of scavenged corrugated iron and timber. Kibera Hamlets School, founded in 2004 to provide children with an education despite having no drainage, toilets, electricity or adequate roof to keep out the frequent rain (Fairs, 2016). The scaffold structure has now become a landmark for the local community (*Figure 6.4.1.5*). As well as creating a school that children love, it has become a venue for evening and weekend events, as well as a focal points for donors and charities (Fairs, 2016).

Figure 6.4.1.5 - The Kibera Hamlet School in context (Iwan Baan, 2016)

Figure 6.4.1.6 - The interior of the scaffold and polycabonate pavilion (Iwan Baan, 2016)

Figure 6.4.1.7 - Construction of the new school structure by locals (Iwan Baan, 2016)

Figure 6.4.1.8 - Scaffold and polycarbonate interio (Iwan Baan, 2016)

Figure 6.4.1.9 - Interior of the the first floor (Iwan Baan, 2016)

The school is made of cheap and durable materials including chipboard, polycarbonate plastic and standard scaffolding components.

The 150-square-metres features a dozen classrooms for nursery, primary and secondary pupils, new offices, toilets and a cooking area. The classrooms are stacked two high with the two levels connected by a broad wooden staircase that can double as auditorium seating.

The classrooms, offices and toilets are housed in hut-like structures clustered beneath an arching canopy of yellow-painted scaffolding clad in translucent polycarbonate.

Rows of standard plastic containers filled with water are used both to anchor the structure to the ground and to provide bench seating around the school's perimeter See Figures (*6.4.1.7-10*).

Figure 6.4.1.10 - In the evenings, the lighting design of the new school creates a landmark (Iwan Baan, 2016)

6.4.2 SCAFFOLD CONCEPTUAL VISION

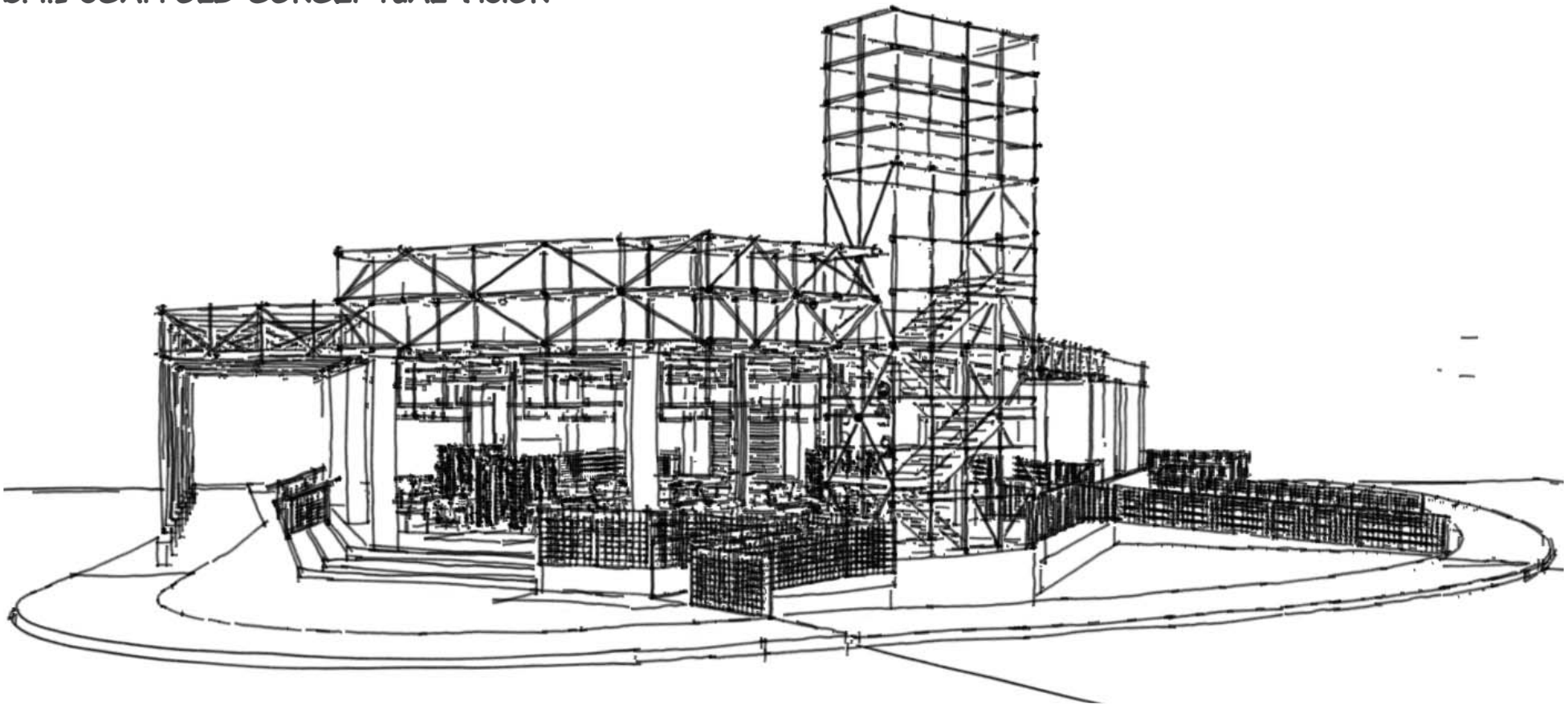


Figure 6.4.2.1 - Digital sketch visualization scaffold application (Author, 2019)

Figure 6.4.2.2 - Sketch of scaffold application (Author, 2019)

Figure 6.4.2.3 - Sketch of scaffold application overlaid on photograph of site (Author, 2019)

Figure 6.4.2.4 - Digital visualization collage of the scaffold application with colour alternatives (Author, 2019)

6.6 DESIGN ITERATIONS

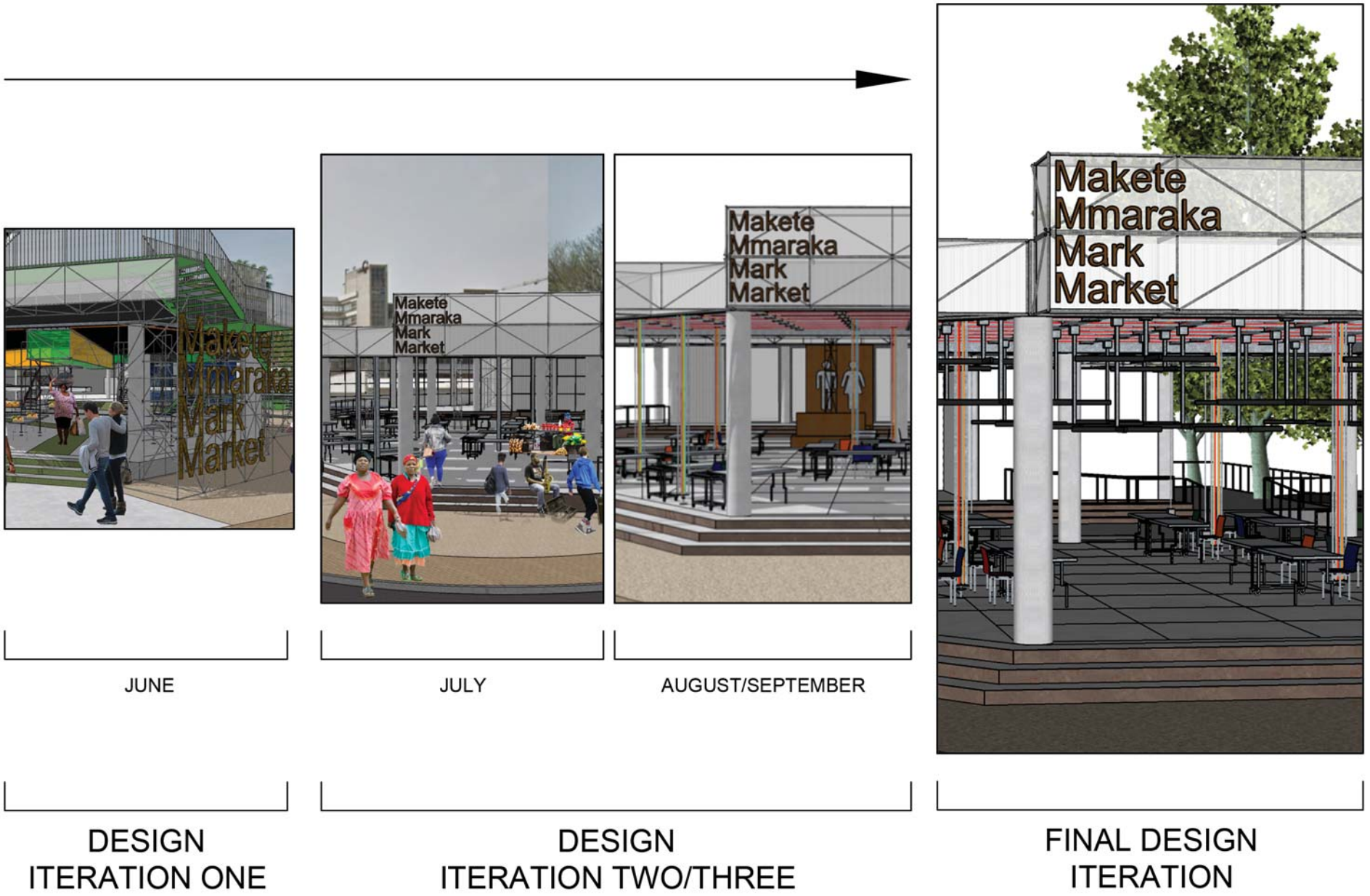


Figure 6.6 - Design iterations timeline (Author, 2019)

6.6.1 DESIGN ITERATION ONE

Figure 6.6.1.1 - Desire path maquette exploration from May (Author, 2019)

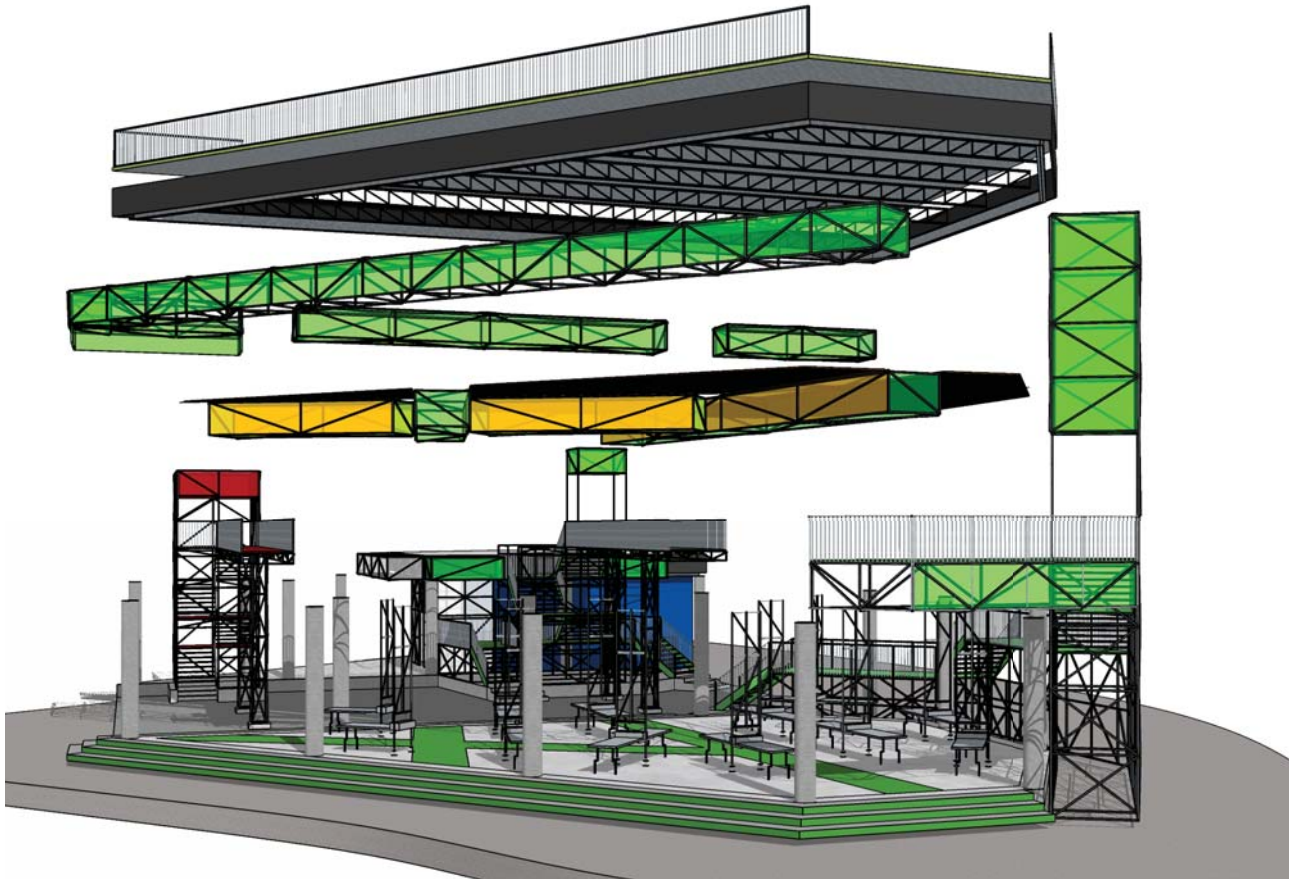


Figure 6.6.1.2 - Exploded view of iteration one (Author, 2019)

Figure 6.6.1.3 - Digital visualization of market entrance (Author, 2019)

ITERATION ONE OVERVIEW

The first design iteration began with maquette exploration of the current movement on site. This lead to investigation ‘desire paths’ and the mapping of desire paths to inform the spatial planning. Intersecting desire paths on the site print informed spatial planning.

From the desire path study, the concept of reducing the existing envelopes form into two pavilions was retained, with the interstitial space between the ‘new’ market and ablutions/ice manufacturing pavilions designated as a thoroughfare, allowing access across the site and potentially more consumers.

The new ‘pavilions’ walls are removed and reduced to only the existing concrete columns and roof structure, with the new programmes inserted underneath.

New scaffold and coloured polycarbonate shading canopy elements ‘dress’ the pavilions.

As the roof footprint of the dealership was seen as being potential active, a rooftop market was introduced. Access to the roof market was created by standard steel staircases enclosed in a scaffold and polycarbonate envelopes. The heights of the envelopes were extended beyond the top of the staircases as to create towers to act as urban beacons.

Large scale signage at eye-level and vehicular traffic level were added to identify the market.

A scaffold and polycarbonate bulkhead and floor pattern in the market space designated movement paths and trading spaces within the market..

The entrance of the public ablutions featured a shared public hand wash basin, within a scaffold and polycarbonate ‘foyer’ .

From the design informants (c.f. 6.3) a fold down trading stall system, which made use of standard scaffold joints and components, was the infrastructure designed for the market space. The fold down system carried identified services to be used by the trader. Additionally, a similar system using the same standard joints and connections, can be used to create unfixed trader stalls that can be positioned anywhere on or off site.

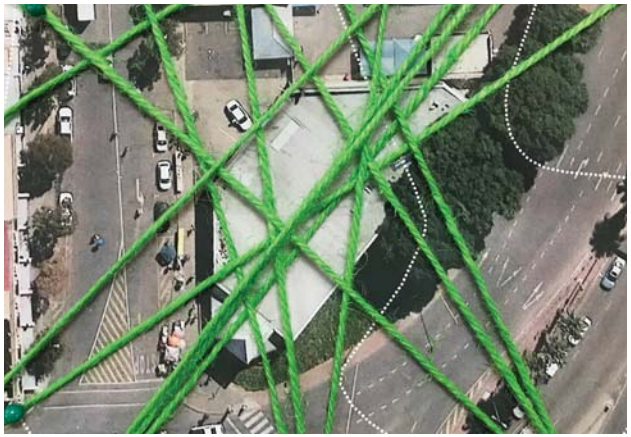


Figure 6.6.1.5 - Desire path maquette exploration from May (Author, 2019)

Figure 6.6.1.4 - Digital visualization of market interior with trade infrastructure (Author, 2019)

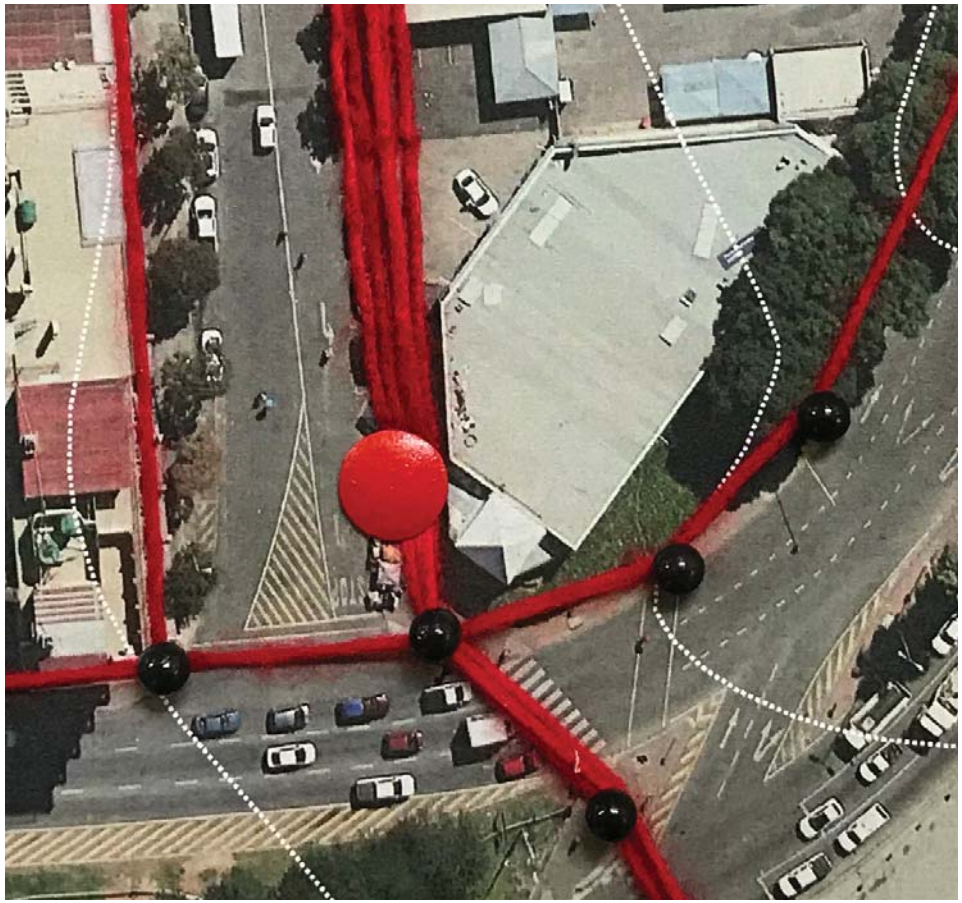


Figure 6.6.1.6 - Pedestrian movement frequency and trade locality maquette (Author, 2019)

Figure 6.6.1.7 - Informal trade locality on site (Author, 2019)

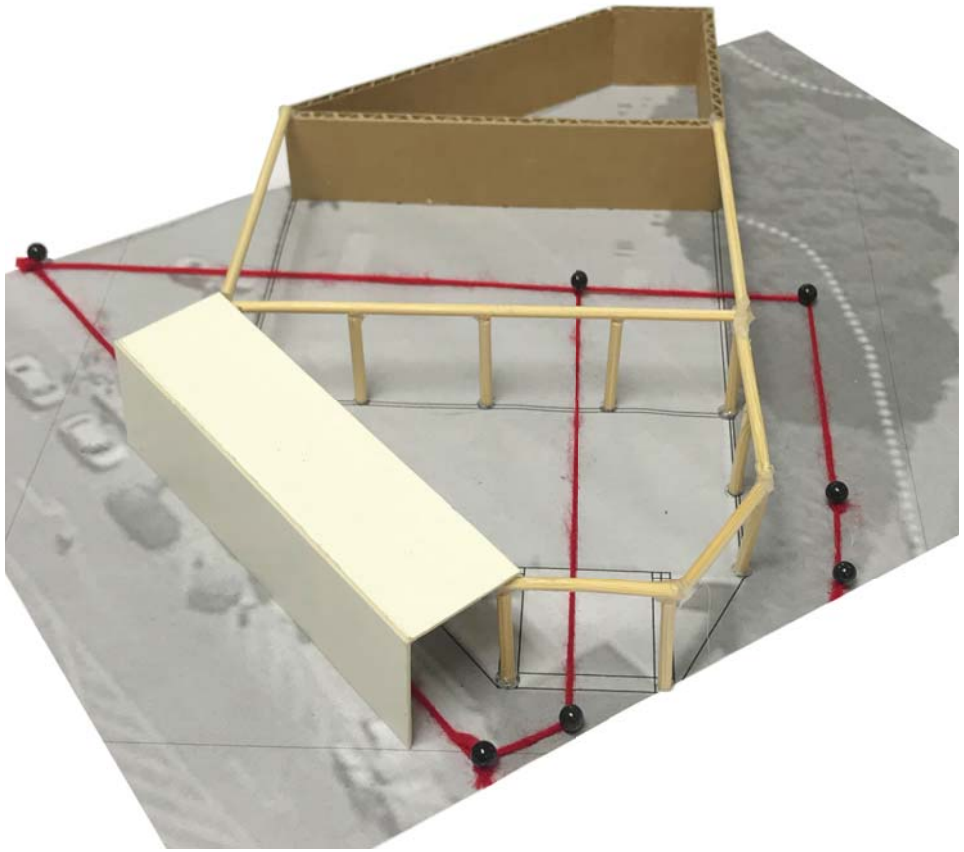


Figure 6.6.1.9 - Pedestrian movement maquette exploration, the introduction of a canopy to create ambiguity between the interior and the urban (Author, 2019)

Figure 6.6.1.8 - Digital collage of the pedestrian movement maquette exploration overlaid on Google Earth image of the site (Author, 2019)

When investigating the subject of urban movement, ‘desire paths’ were discovered in the discipline of urban planning. Desire paths are ‘short cuts’ that run contrary to designated pedestrian pathways (figure 6.6.1.11), representing the shortest or easiest navigable route between an origin and destination (Kohlstedt, 2016).

At the Michigan State University, no pathways were cast after construction, rather, the desire paths of the students between buildings informed the position to cast pathways (figure 6.6.1.12).

As a conceptual generator, a desire path exploration maquette was created, to identify desire paths that dissect the site. The outcome of the exploration was the spatial planning of the sites footprint (figure 6.6.1.10 - 15), with the specified programmes from chapter three.

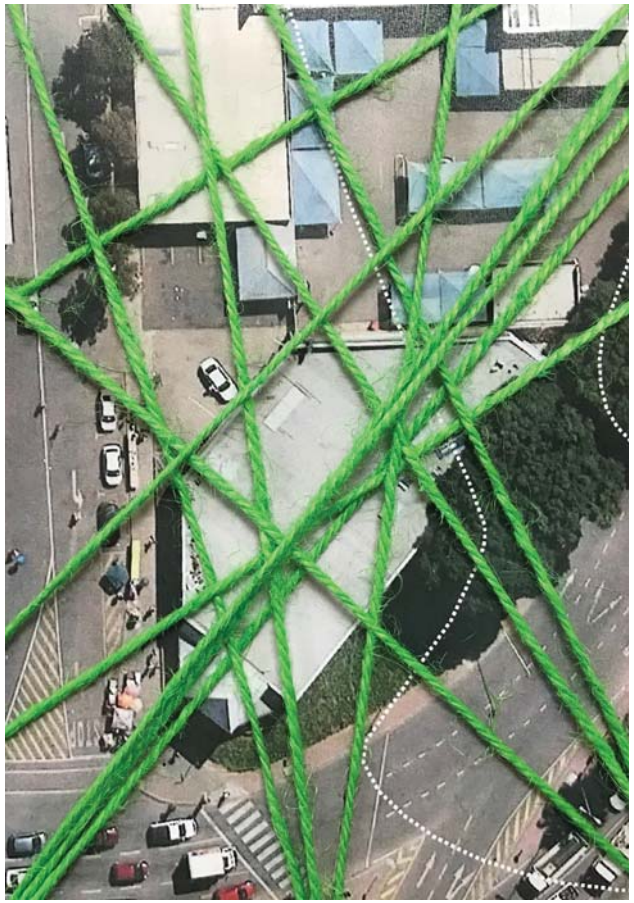


Figure 6.6.1.10 - Desire path maquette exploration from May (Author, 2019)

Figure 6.6.1.13 - Informal presentation of study presented to Jeffrey Shumaker, an urban planner and designer from New York City (Author, 2019)

Figure 6.6.1.11 - Desire path example (Author, 2019)

Figure 6.6.1.12 - Desire paths of Michigan State University (Google Earth)

Figure 6.6.1.14 - Digital visualization of desire paths overlaid on conceptual spatial planning exploration collage (Author, 2019)

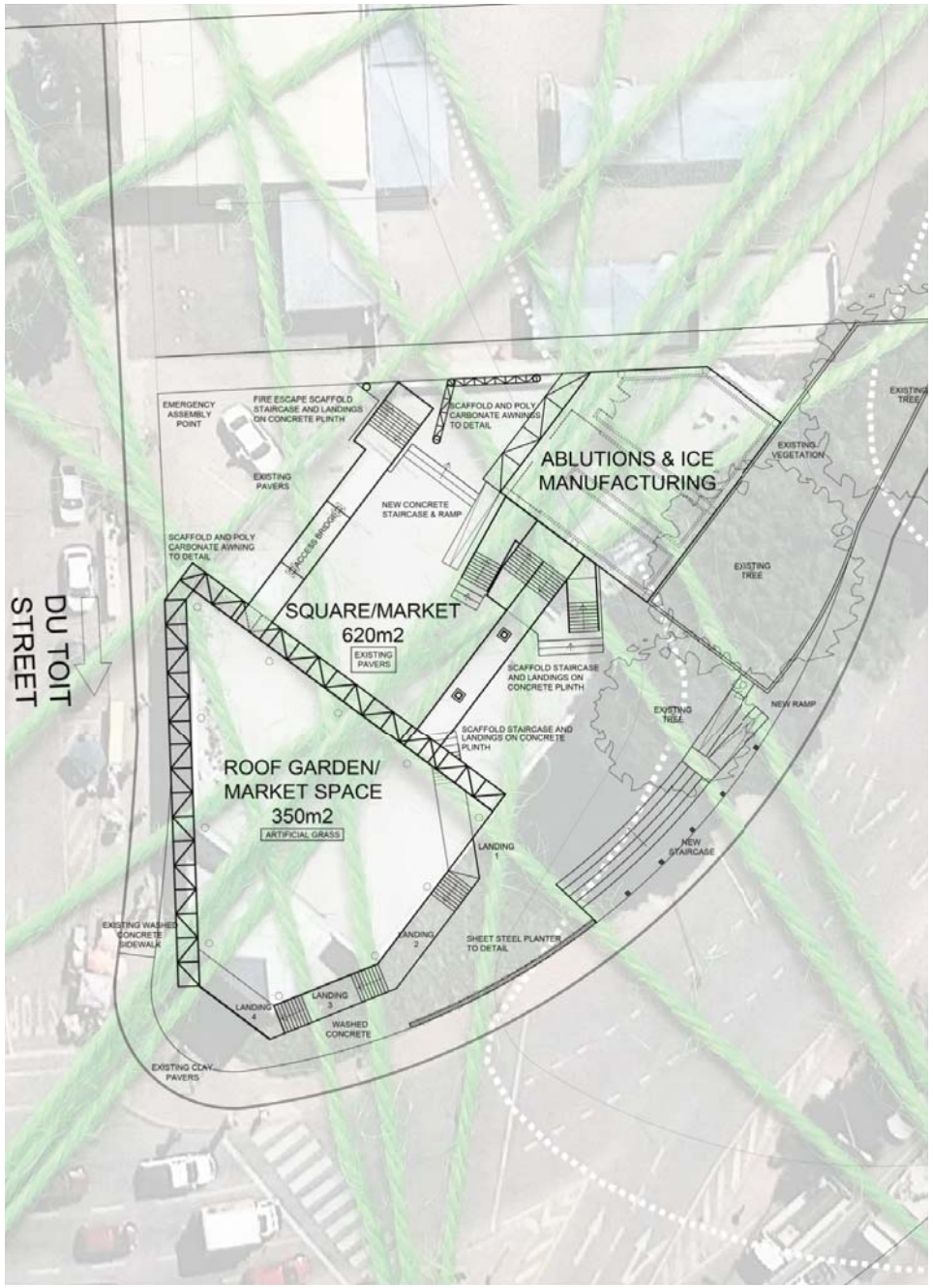


Figure 6.6.1.15 - Digital visualization of desire paths overlaid on plan of iteration one (Author, 2019)

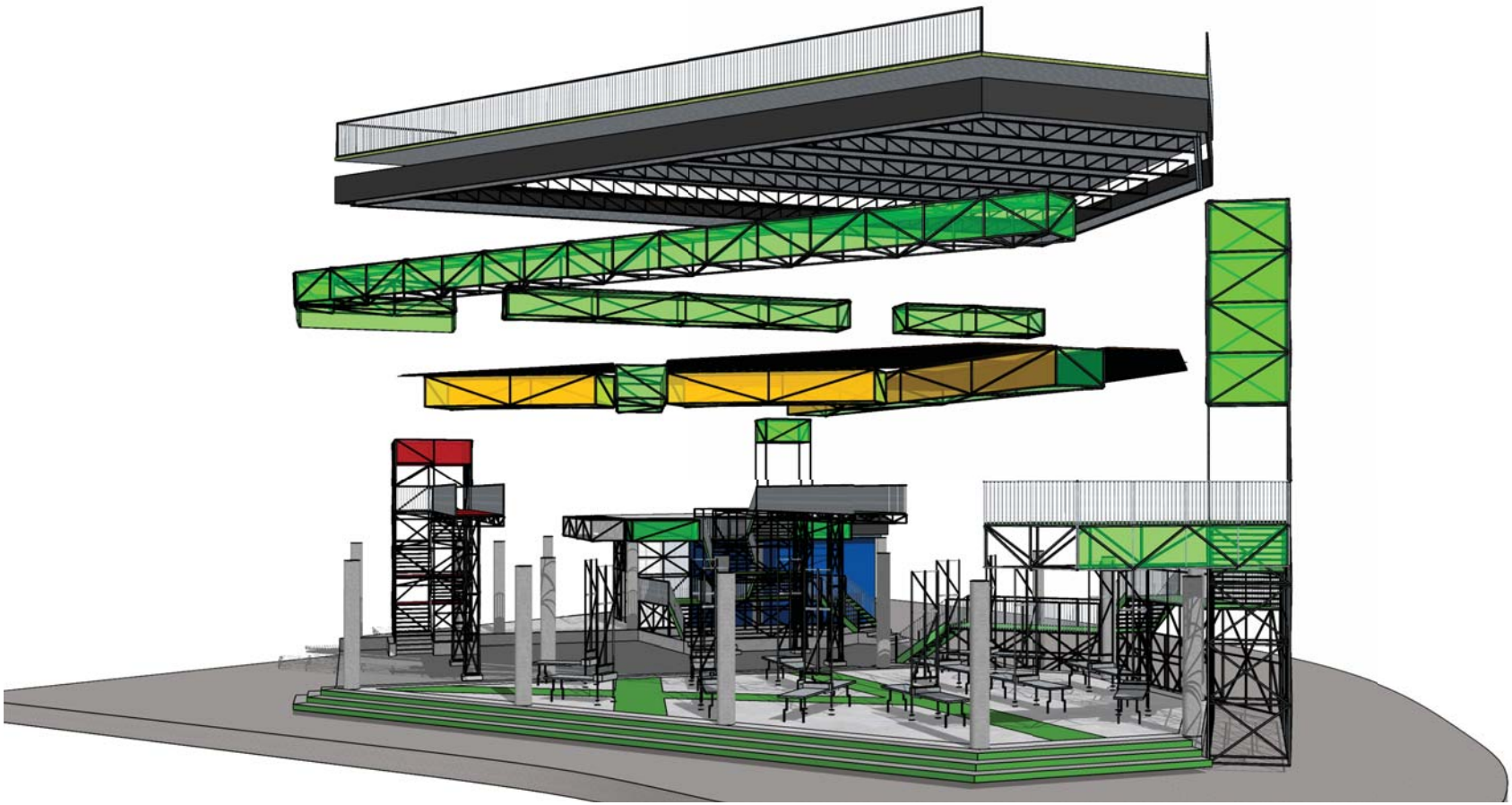


Figure 6.6.1.16 - Exploded view of iteration one (Author, 2019)

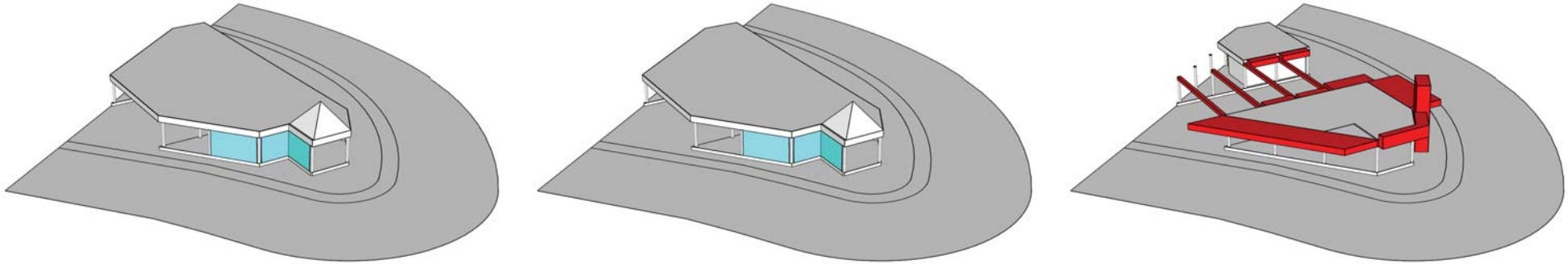


Figure 6.6.1.17 - Iteration one process (Author, 2019)

Figure 6.6.1.18 - Digital visualization of market courtyard with mobile trade infrastructure (Author, 2019)

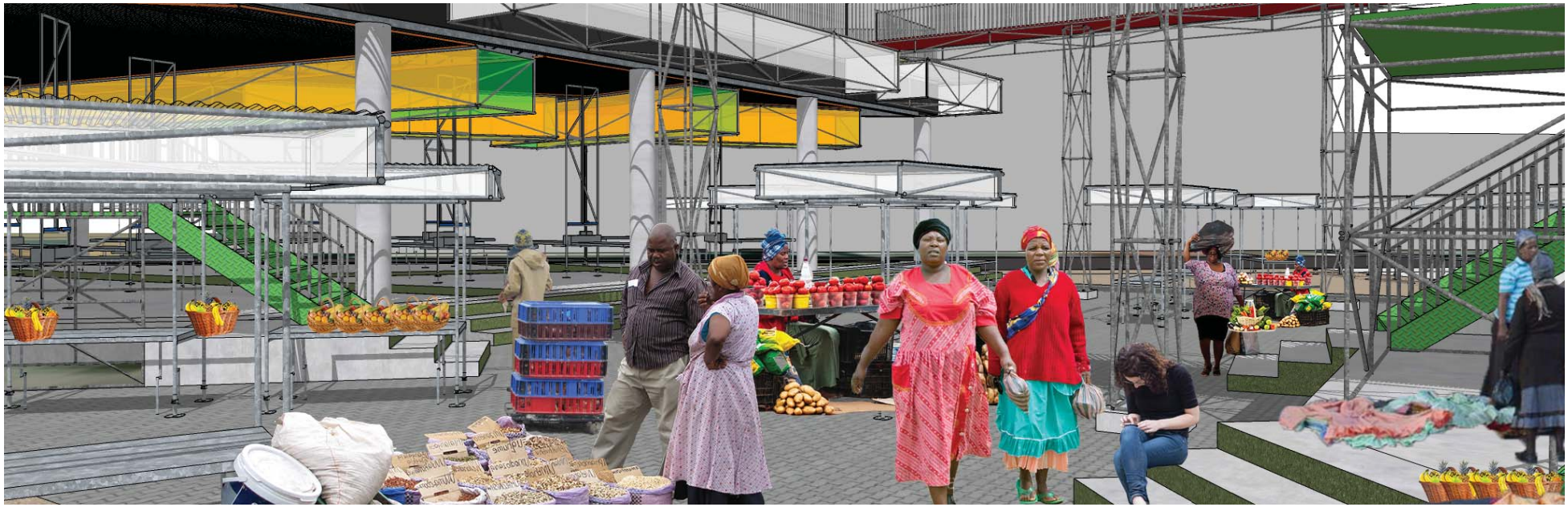


Figure 6.6.1.19 - Digital visualization of market courtyard with mobile trade infrastructure (Author, 2019)

Figure 6.6.1.20 - Iteration one site plan (Author, 2019)

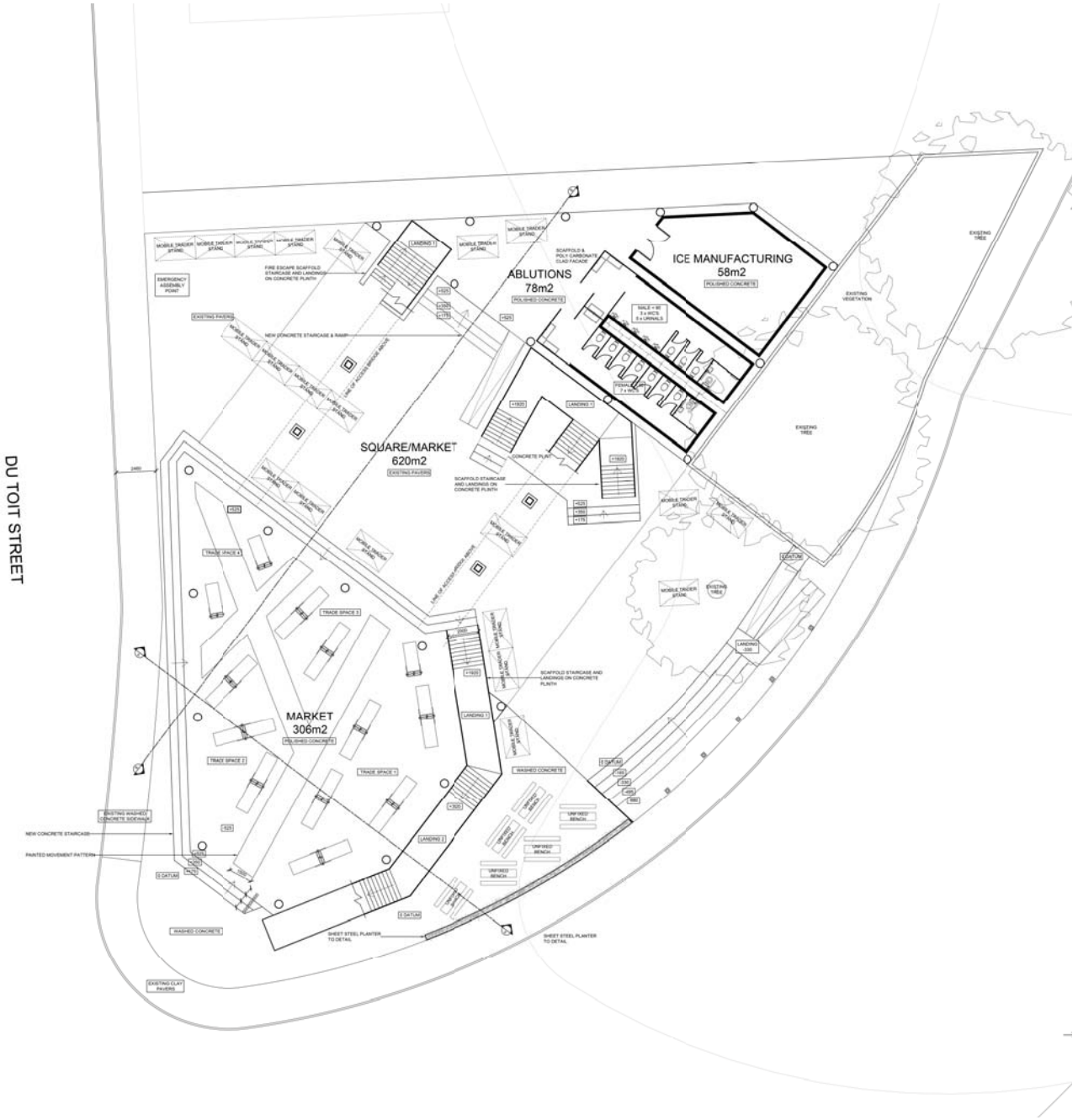


Figure 6.6.1.21 - Iteration one floor plan (Author, 2019)

Figure 6.6.1.22 - Iteration one section A-A (Author, 2019)

Figure 6.6.1.23 - Iteration one section B-B (Author, 2019)

Figure 6.6.1.24 - Trader infrastructure on site (Google Earth, 2019)

Figure 6.6.1.25 - Sketch analysis trader infrastructure on site (Author, 2019)

Figure 6.6.1.26 - Maquette exploration of trader infrastructure on site (Author, 2019)

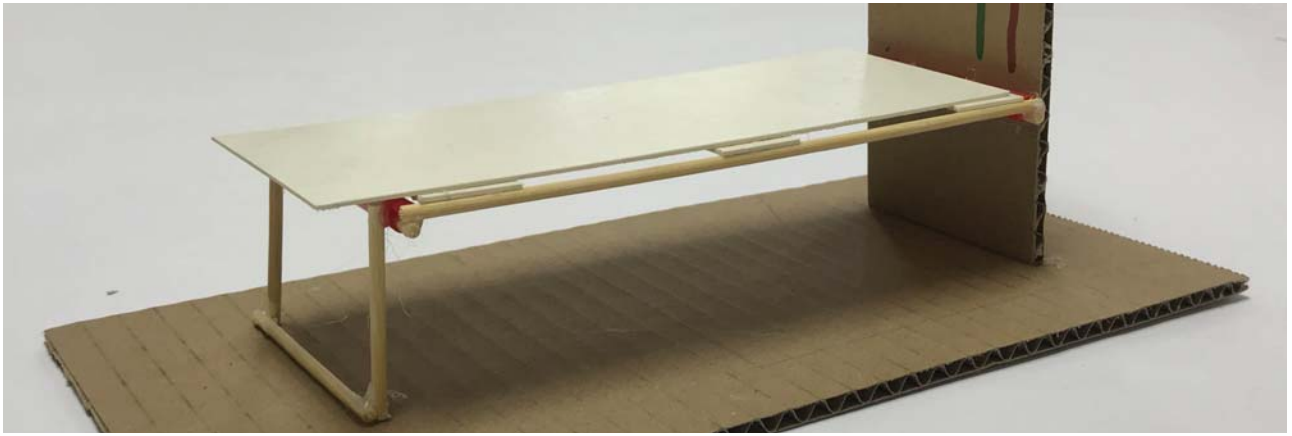


Figure 6.6.1.27 - Maquette exploration of fold-away trestle table and service partition trader infrastructure (Author, 2019)

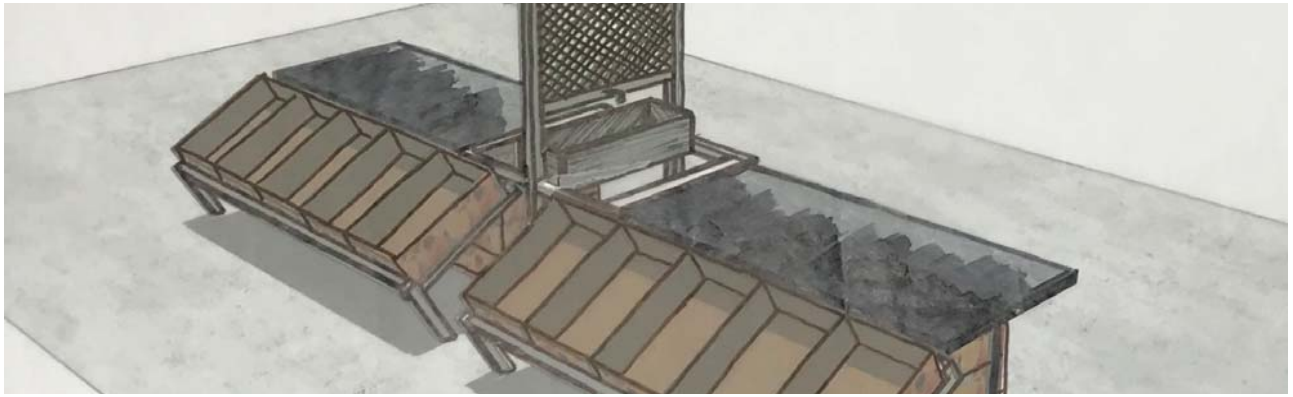


Figure 6.6.1.28 - Sketch exploration of fold-away trestle table and service partition trader infrastructure with adaptation to accommodate standard fruit and vegetable cardboard boxes (Author, 2019)

Figure 6.6.1.29 - Maquette exploration of fold-away trestle table in up-right position (Author, 2019)

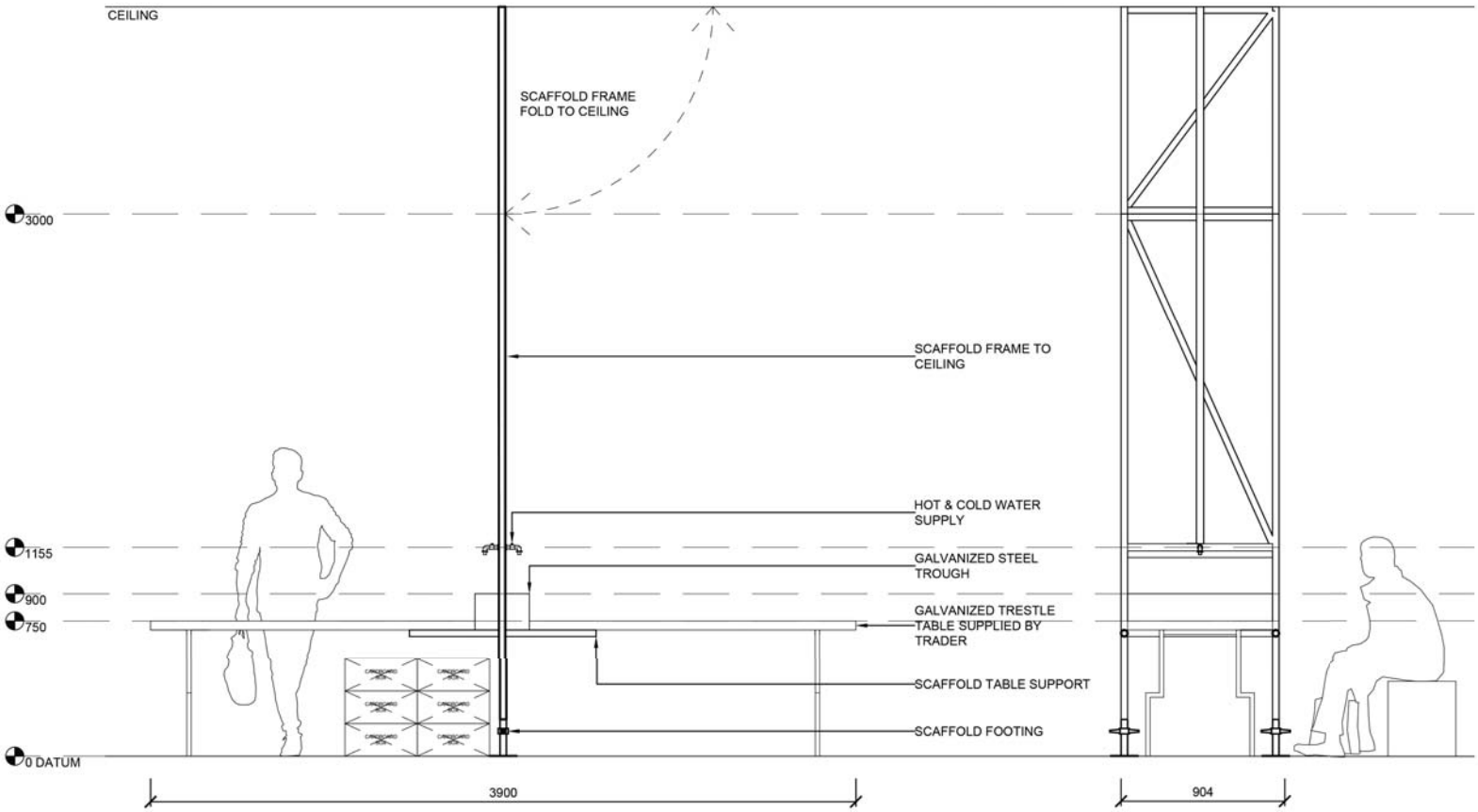


Figure 6.6.1.25 - Technical detail of fold-away trestle table and service partition (Author, 2019)

Figure 6.6.1.4 - Digital visualization of market interior with trade infrastructure (Author, 2019)

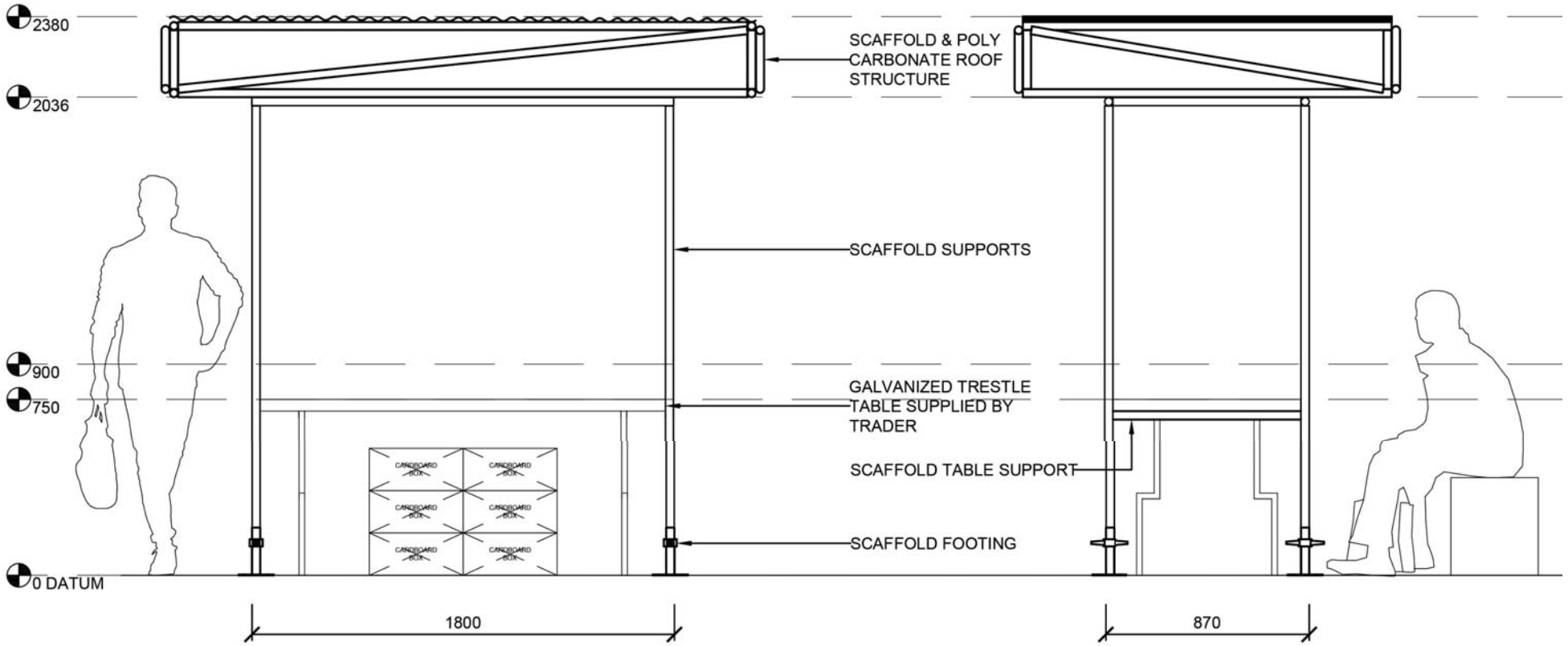


Figure 6.6.1.30 - Technical detail of mobile trader stall constructed of tubular steel scaffold (Author, 2019)

Figure 6.6.1.31 - Digital visualization of market courtyard with mobile trade infrastructure (Author, 2019)

Figure 6.6.1.32 - Current mobile trade infrastructure on site (Author, 2019)

STRENGTHS

• The induced permeability by reducing the dealership form to create pavilions.

• The use of levels to create hierarchy.

• Spatial planning of programmes in response to movement and desire paths.

• Creation of an urban beacon by use of scaffold and polycarbonate

WEAKNESSES

• Scale of scaffold elements are too large for the urban scale.

• Colours of polycarbonate are uniformed.

• Trader system only flexible to a certain extent, more flexibility is needed.

• Trader system is cumbersome, and does not allow for appropriation by user.

• Unfixed trader stalls are cumbersome and inefficient.

• Market planning does not allow for trader self organisation.

• Creation of roof market is unnecessary as the fast moving trade does not require large spaces for trade.

• The square/market is not a cohesive space between the market and ablutions pavilion.

• Ablution block form is inefficient.

• Placement of accessibility ramps inefficient

OPPORTUNITIES

• The sensitivity of the intervention can be refined.

• The ephemeral intention can be communicated more effectively.

• The interventions relation and interaction with the urban realm can greater.

• The intention of the flexible market space.

• Urban beacon intention can be refined.

• Signage can be an integral design element.

• The square/market can become an integral space between the two pavilions rather than an interstitial space.

• Integration of accessibility ramps.

THREATS

• The scale of the intervention can be threatening to users.

• Scale of scaffold elements could be intrusive on urban scale.

• Inflexibility hinders use of market space.

• The intervention is insensitive towards the current condition.

• Market becomes under utilised as does not meet traders needs

S W O T

6.6.2 DESIGN ITERATION TWO/THREE

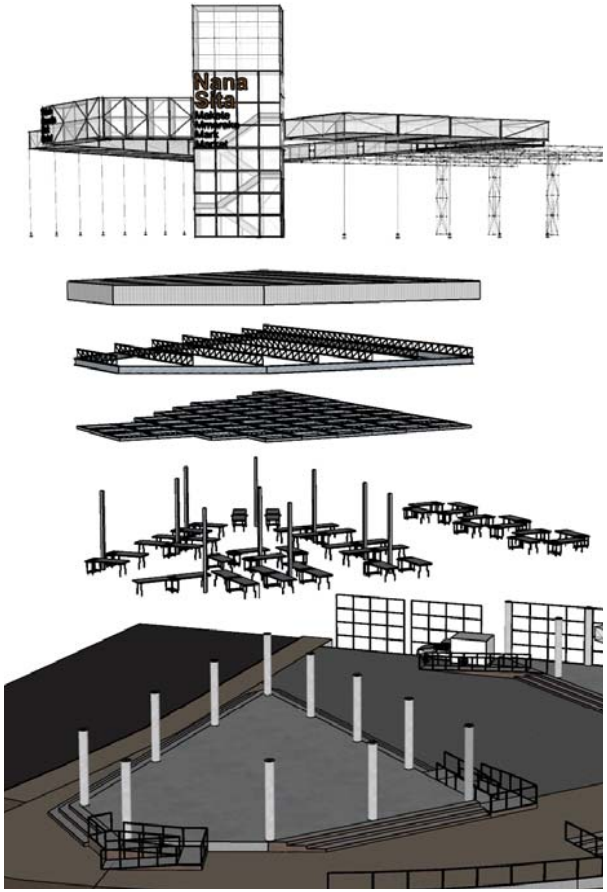


Figure 6.6.2.1 - Exploded view of iteration two (Author, 2019)

Figure 6.6.2.2 - Digital visualization of market entrance (Author, 2019)

Figure 6.6.2.3 - Digital visualization of market courtyard (Author, 2019)

ITERATION TWO/ THREE OVERVIEW

Intervention has become more ‘reserved’ from iteration one. The extent of scaffold elements has been reduced to portray the ‘sensitive’ nature and intuition of the design.

Form remains as two pavilions, with a new scaffold and polycarbonate elements that span over the market square. The accessibility across the site has been improved by implying the staircase and ramp from Nana Sita road.

The roof top market has been removed, as the scale of trade square meterage did not respond to the quick trade nature the site. Additionally, skylights have been added to the markets roof to increase natural light, due to the proportions of the market itself

A single scaffold and polycarbonate tower has been added, reinterpreting the function of the pyramid hip roof. The tower conceals a steel service staircase to access the roof for maintenance and repair purposes.

The scaffold and polycarbonate elements have been refined, such as the canopy over the sites eastern edge, which hosts the high frequency pedestrian movement, to create ambiguity between the market interior and the urban realm.

The trader system has been revised from iteration one, becoming more lightweight and flexible. The system comprises of a trolley, service column and ceiling panels. The trolley is designed to work with existing trader infrastructure, such as a trestle table, and accept modules depending on trader needs, such as a gas hob or a basin and tap. Additionally, the trolley can be used off-site. The service column is designed to supply service connections, to trader positions from the modular ceiling panels above which carry the services in a network overhead.

Figure 6.6.2.4 - Evening lighting design digital visualization of market as an urban beacon (Author, 2019)

Figure 6.6.2.5 - Maquette exploration of pedestrian movement frequency (Author, 2019)

Figure 6.6.2.6 - Pedestrian movement maquette exploration, the introduction of a canopy to create ambiguity between the interior and the urban (Author, 2019)

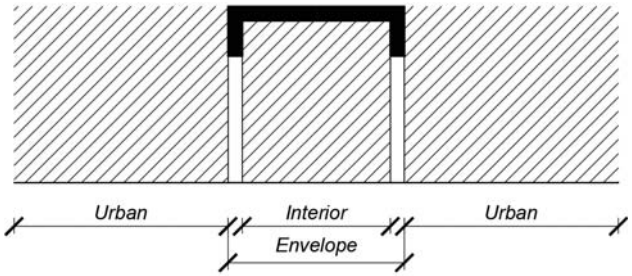


Figure 4.4.1 - The affect of the interior on the urban (Author, 2019)

Figure 6.6.2.7 - Digital visualization of market canopy constructed of tubular steel scaffold and polycarbonate infill (Author, 2019)

Figure 6.6.2.8 - Digital visualization of market infrastructure (Author, 2019)

Figure 6.6.2.9 - Digital visualization of market infrastructure, trader trolley, trestle table and service column (Author, 2019)

Figure 6.6.2.10 - Digital model of trader trolley (Author, 2019)

Figure 6.6.2.11 - Iteration two site plan (Author, 2019)

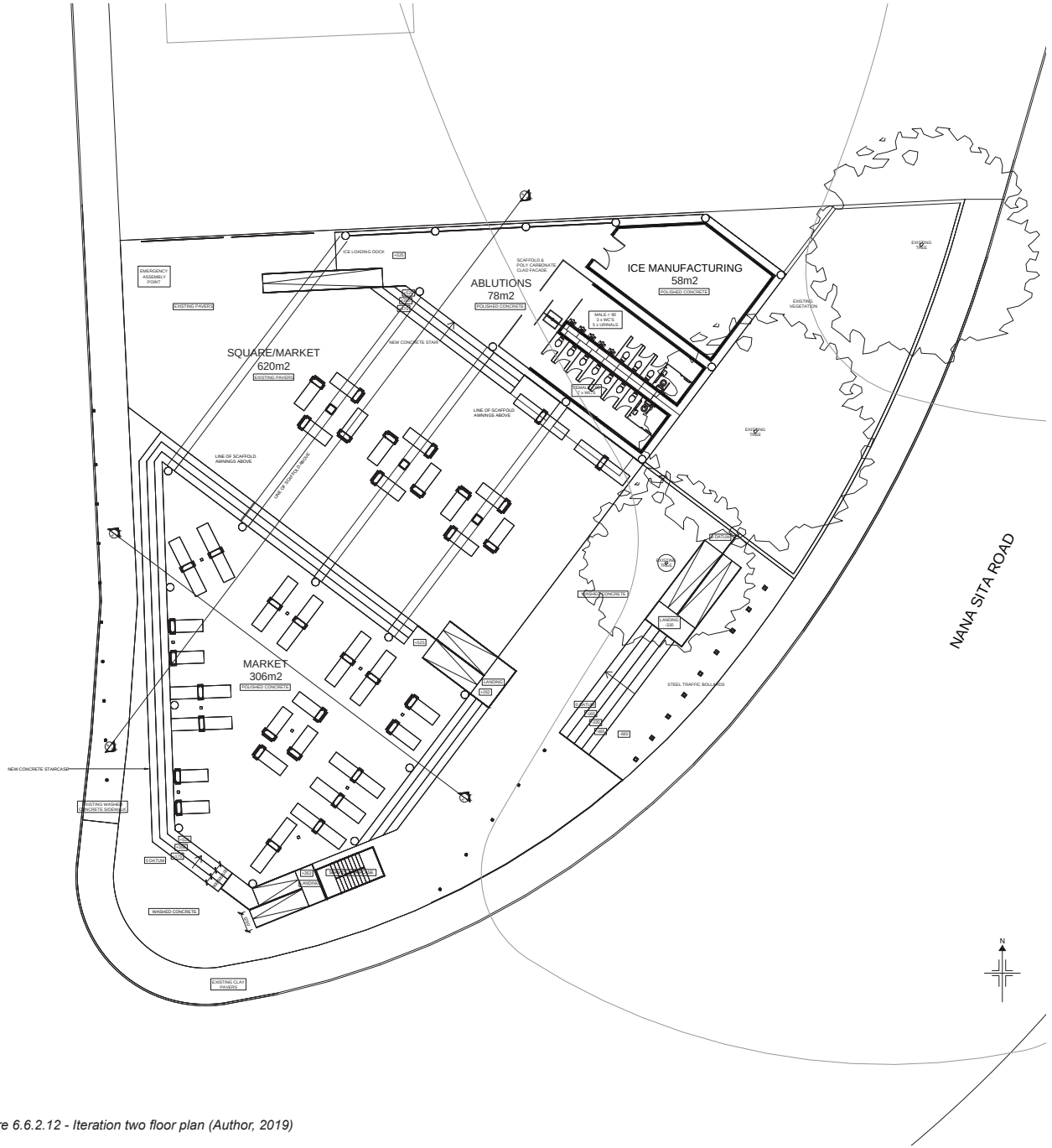


Figure 6.6.2.12 - Iteration two floor plan (Author, 2019)

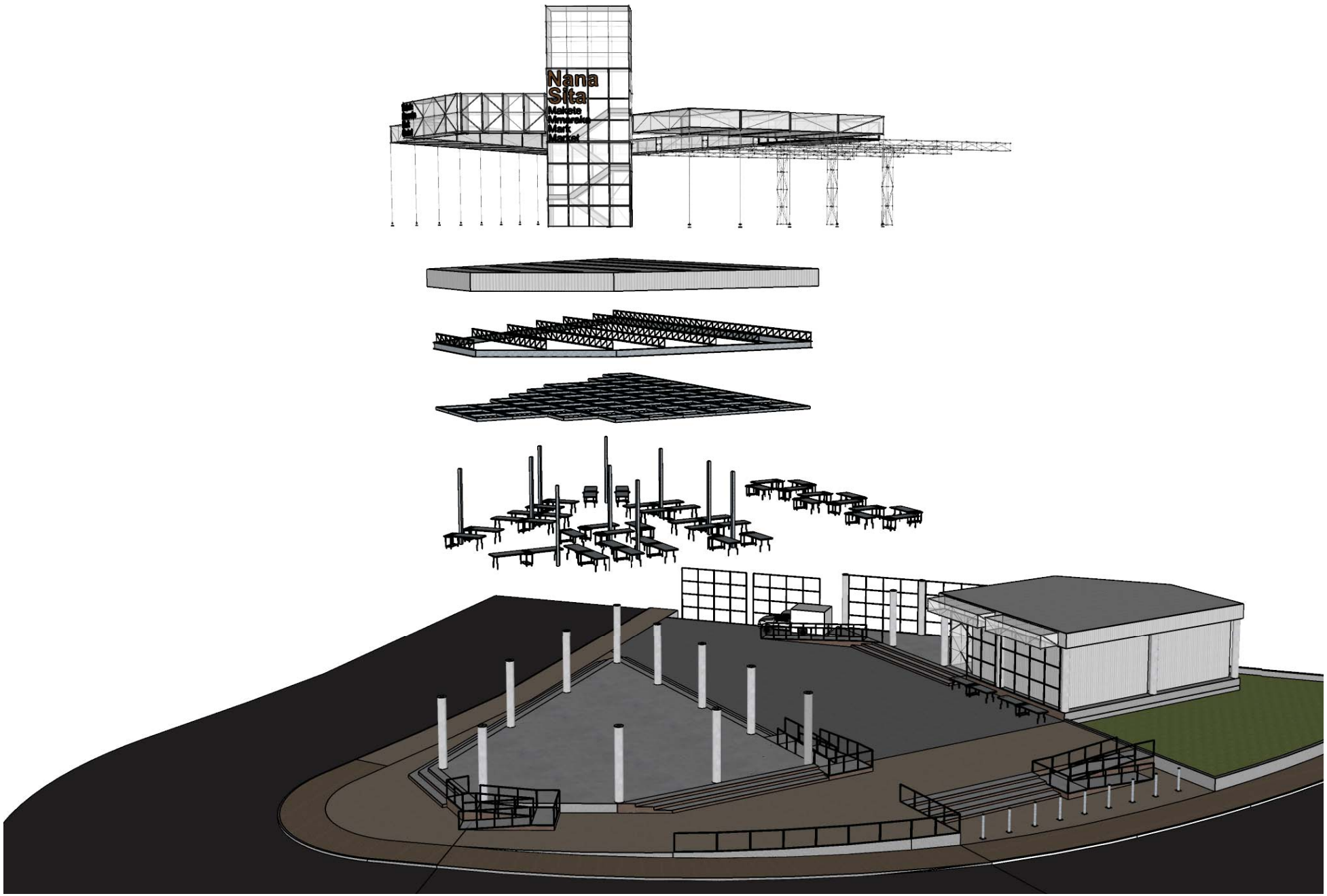


Figure 6.6.2.1 - Exploded view of iteration two (Author, 2019)

The physical layout of a market can affect the performance by; spatial marginalization, length of selling runs and width of circulation space (Dewar and Watson, 1990: 38-52).

Spatial marginalization is formed by unused or abandoned stalls, areas in a market where stallholders generate low profit relative to other stallholders and areas avoided by customers (figure 6.6.2.14 - 15)(Dewar and Watson, 1990: 38). Spatial marginalization is caused by the physical layout insufficiently diffusing pedestrian movement, creating 'dead spots'.

The length of unbroken runs of adjacent stalls affect market performance (Dewar and Watson, 1990: 49). The run of stalls must be long enough to facilitate comparative buying, vibrancy and activity (figure 6.6.2.15), but not too short to dissipate activity levels (figure 6.6.2.16)

The optimal width of a market circulation channel is when a consumer is able to engage with vendors on both sides of a circulation space (Dewar and Watson, 1990: 52). If the circulation is too wide, consumers concentrate on one edge of the channel only, causing the two sides to operate independently (Dewar and Watson, 1990: 52).

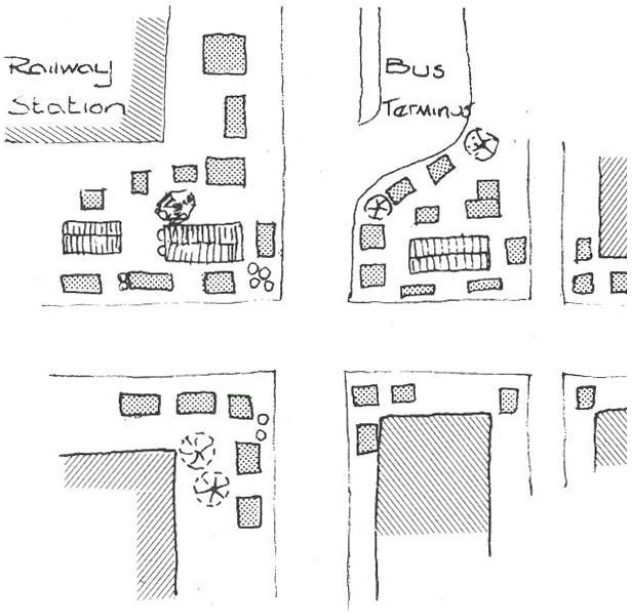


Figure 6.6.2.13 - Informal market spatial organization (Dewar & Watson, 1990)

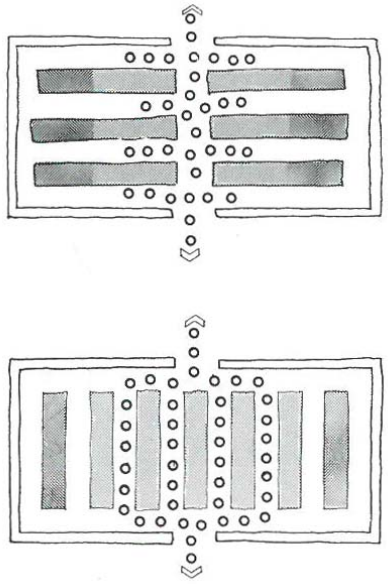


Figure 6.6.2.14 - Illustration of spatial marginalization (Dewar & Watson, 1990)

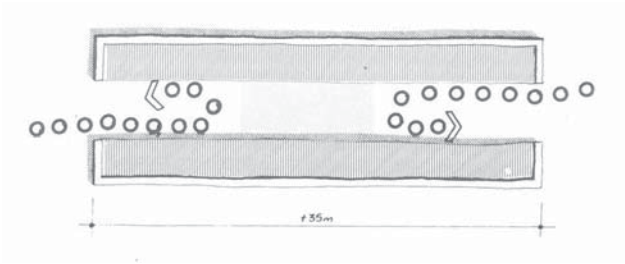


Figure 6.6.2.15 - Illustration of spatial marginalization on long stall run (Dewar & Watson, 1990)

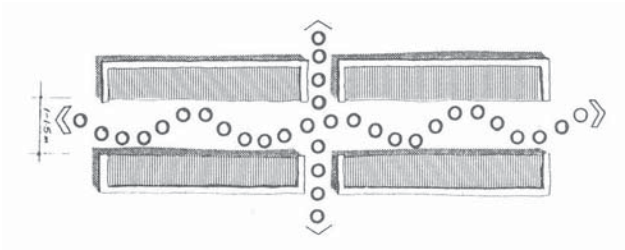


Figure 6.6.2.16 - Illustrated ideal long run of stalls (Dewar & Watson, 1990)

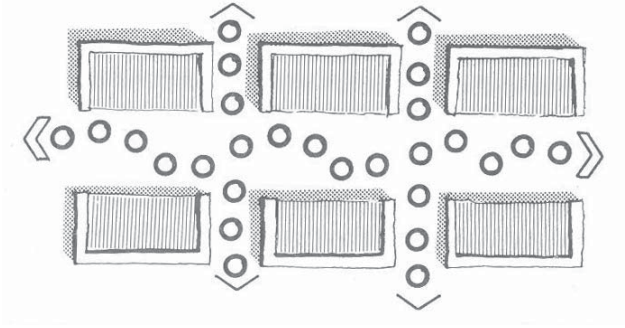


Figure 6.6.2.17 - Illustrated shirt run of stalls (Dewar & Watson, 1990)

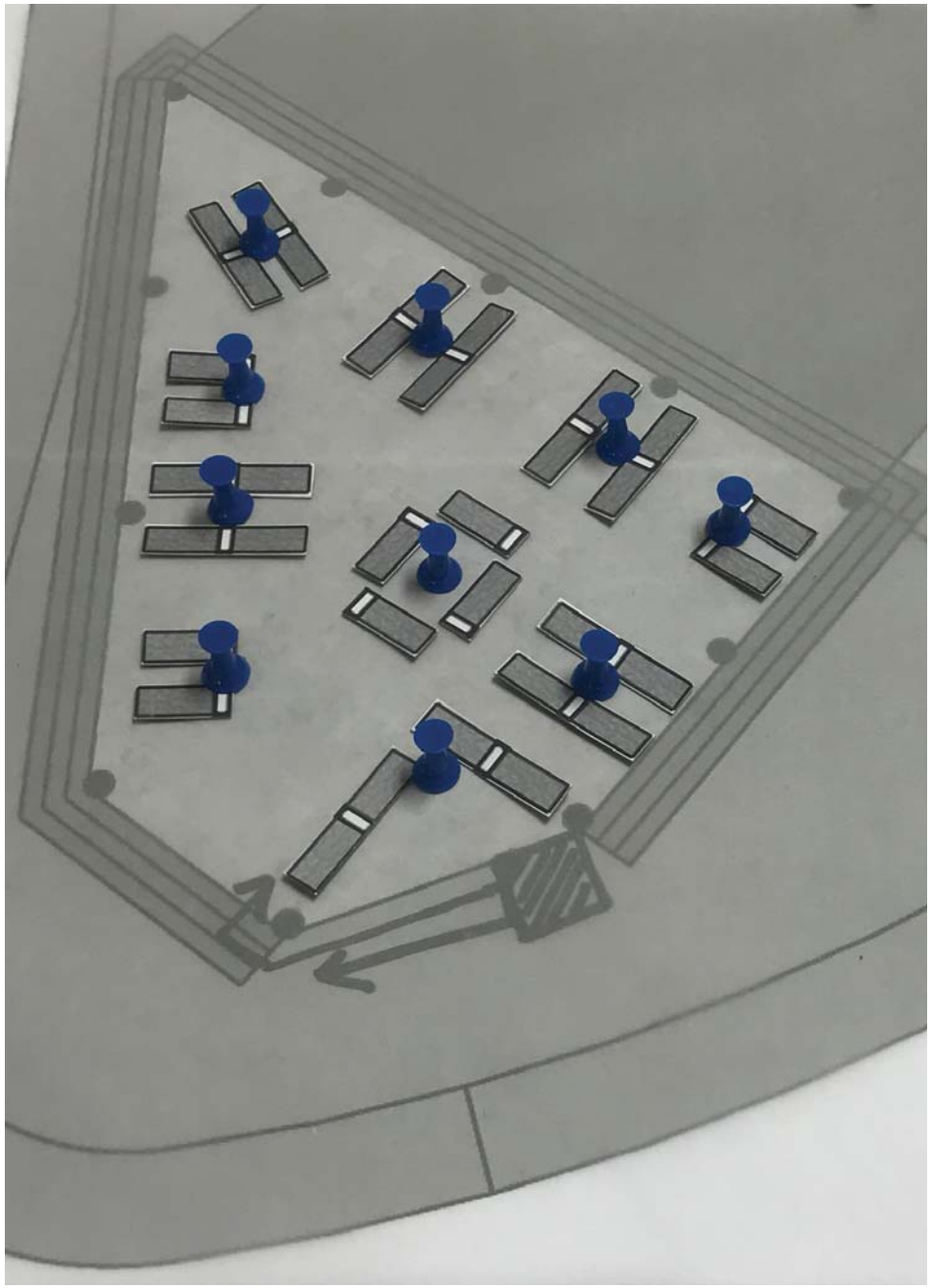


Figure 6.6.2.18 - Maquette exploration of market spatial planning (Author, 2019)

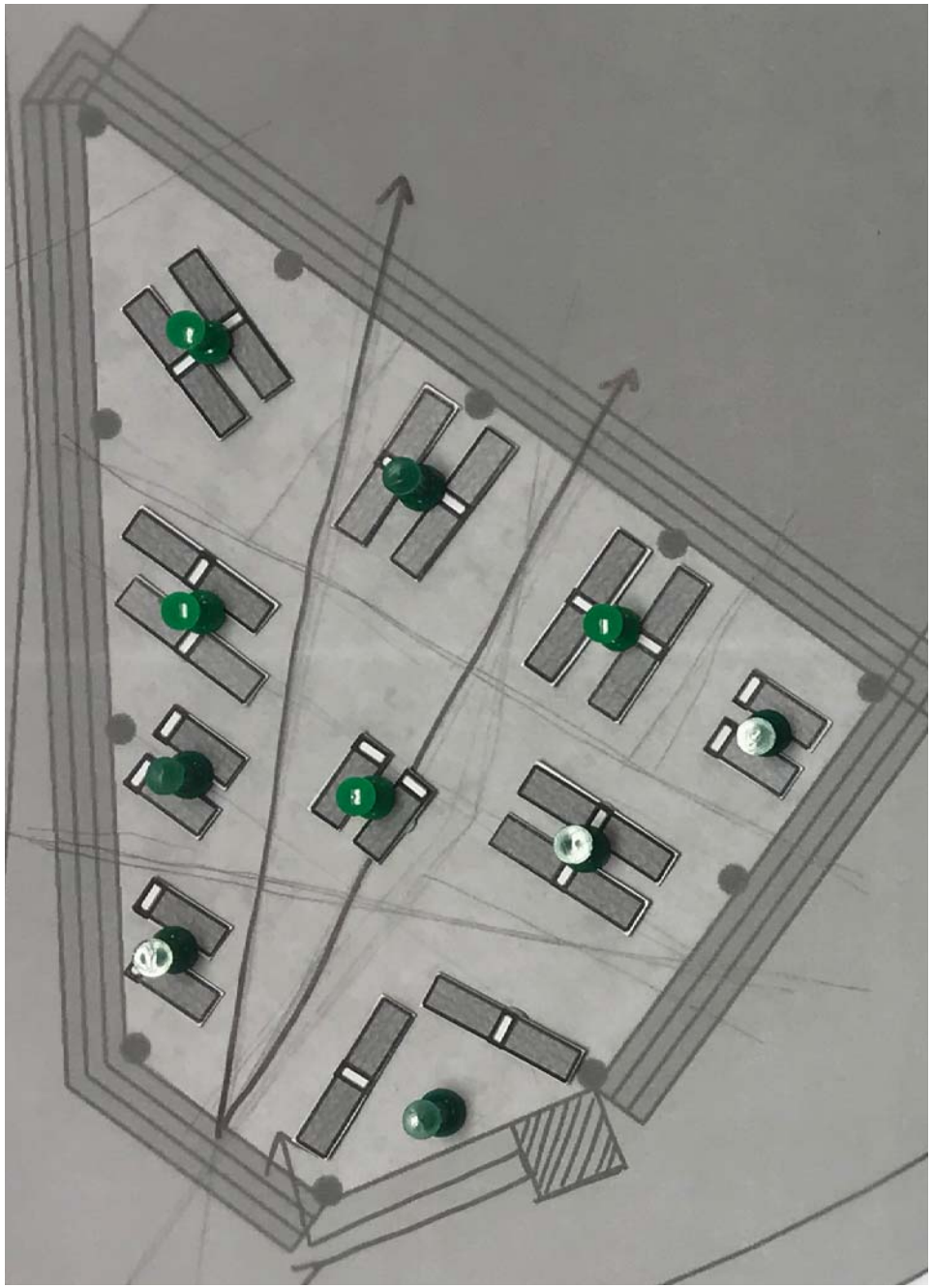


Figure 6.6.2.19 - Maquette exploration of market spatial planning (Author, 2019)

Figure 6.6.2.20 - Iteration two South Elevation (Author, 2019)

Figure 6.6.2.21 - Iteration two East Elevation (Author, 2019)

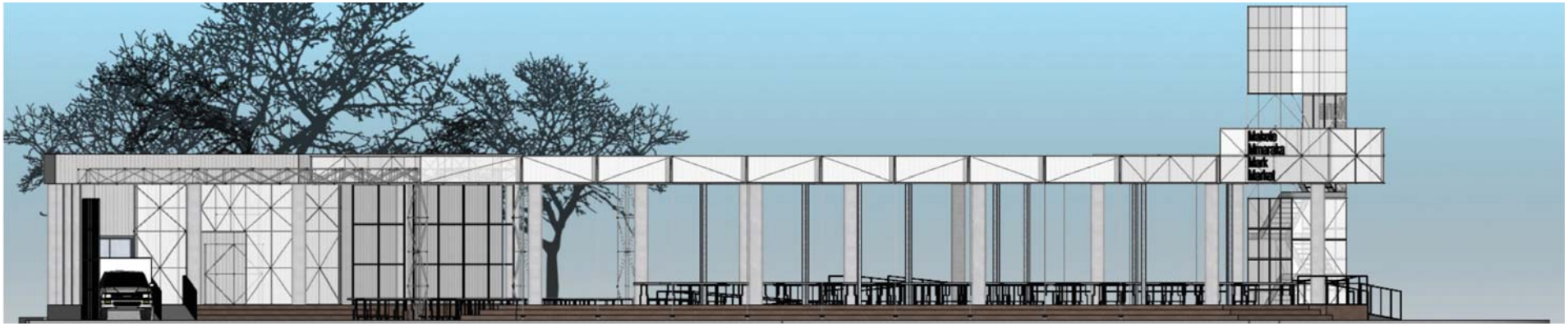


Figure 6.6.2.22 - Iteration two West Elevation (Author, 2019)

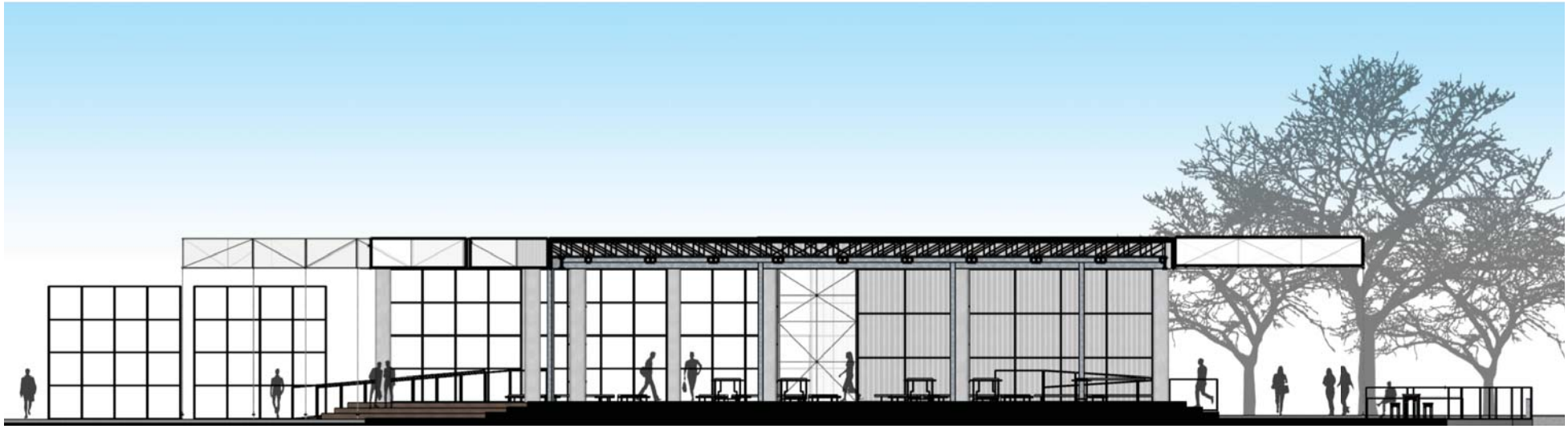


Figure 6.6.2.23 - Section A-A (Author, 2019)

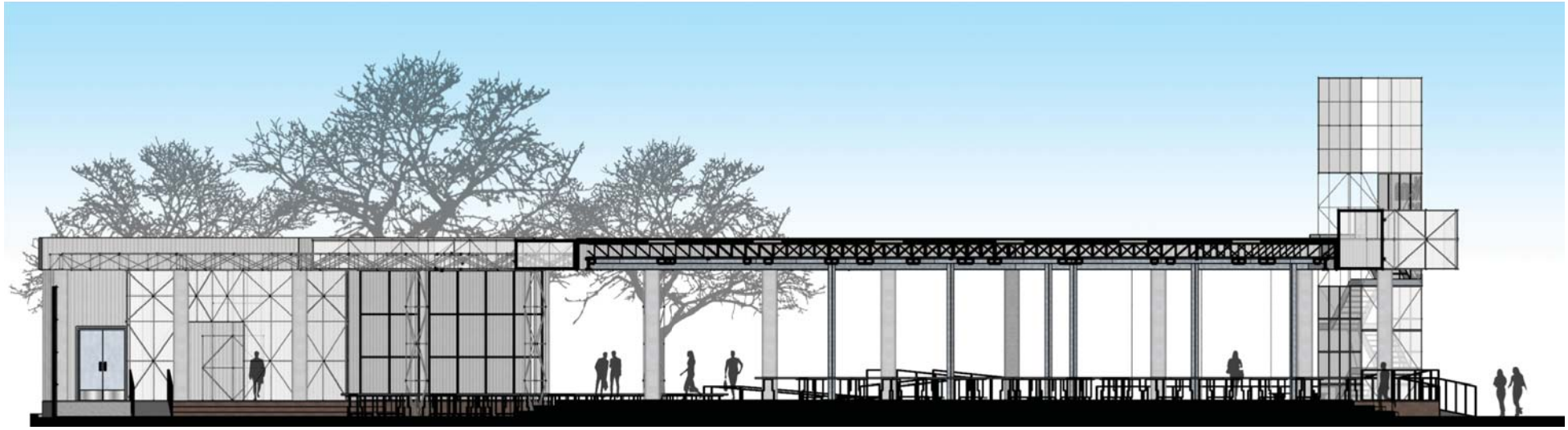


Figure 6.6.2.24 - Section B-B (Author, 2019)

Figure 6.6.2.25 - Axonometric view of trader trolley (Author, 2019)

Figure 6.6.2.26 - Orthographic projection of trader trolley (Author, 2019)

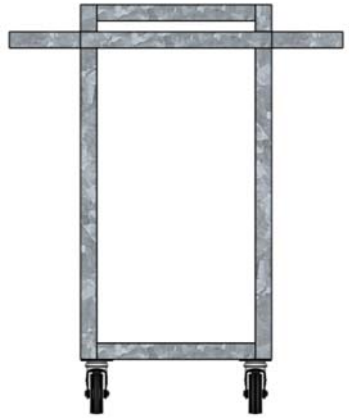


Figure 6.6.2.27 - A standard shopping basket trolley adapted to a cooking grill by a trader in Warwick Junction (Open City Projects, n.d)

Figure 6.6.2.28 - Trolley used on site for transportation of goods (Google Earth)

Figure 6.6.2.29 - Trolley used as trading infrastructure near to sites location (Author, n,d)

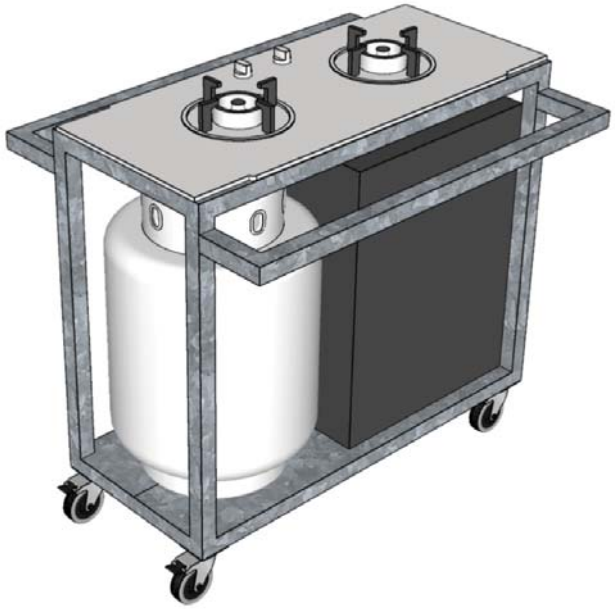


Figure 6.6.2.30 - Trolley adapted for food preparation, with cooking 'modules' inserted (Author, n.d)

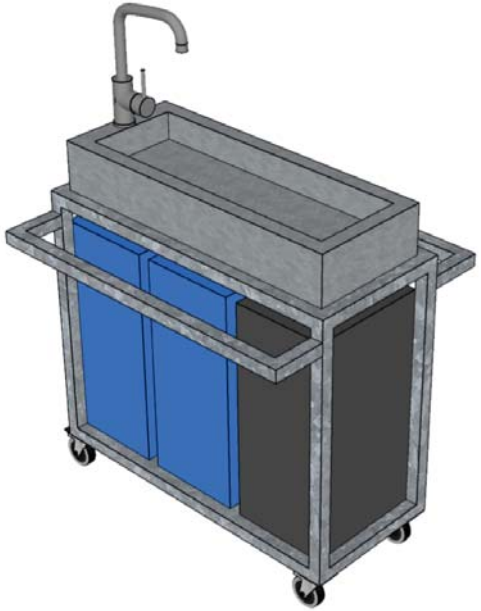


Figure 6.6.2.31 - Trolley adapted for food preparation, with washing 'modules' inserted for washing of fruits and vegetables (Author, n.d)

Figure 6.6.2.32 - Visualizations of trolley use scenarios (Author, n.d)

Figure 6.6.2.33 -Visualization of trolley used as support for the trader preferred trestle table and or 'make-shift' table scenario of timber door and plastic crates (Author, n.d)

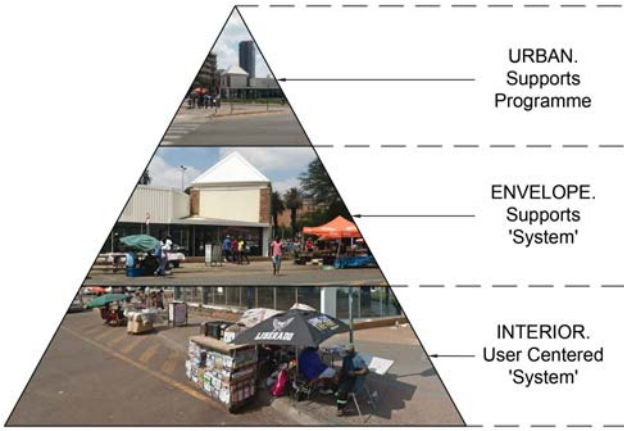


Figure 6.6.2.34 - Design approach (c.f. 6.2.2)(Author, n.d)

Figure 6.6.2.35 - Boston public market service infrastructure (c.f. 5.3)(Choi, 2015)

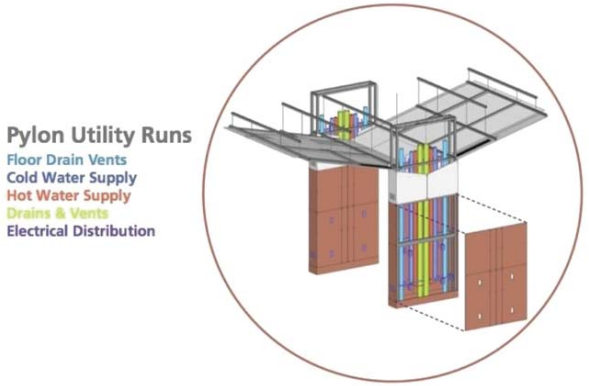


Figure 6.6.2.35 - Exploded axonometric of market system utility pylons that deliver services to rented market modules (c.f. 5.3)(Architerra, 2015)

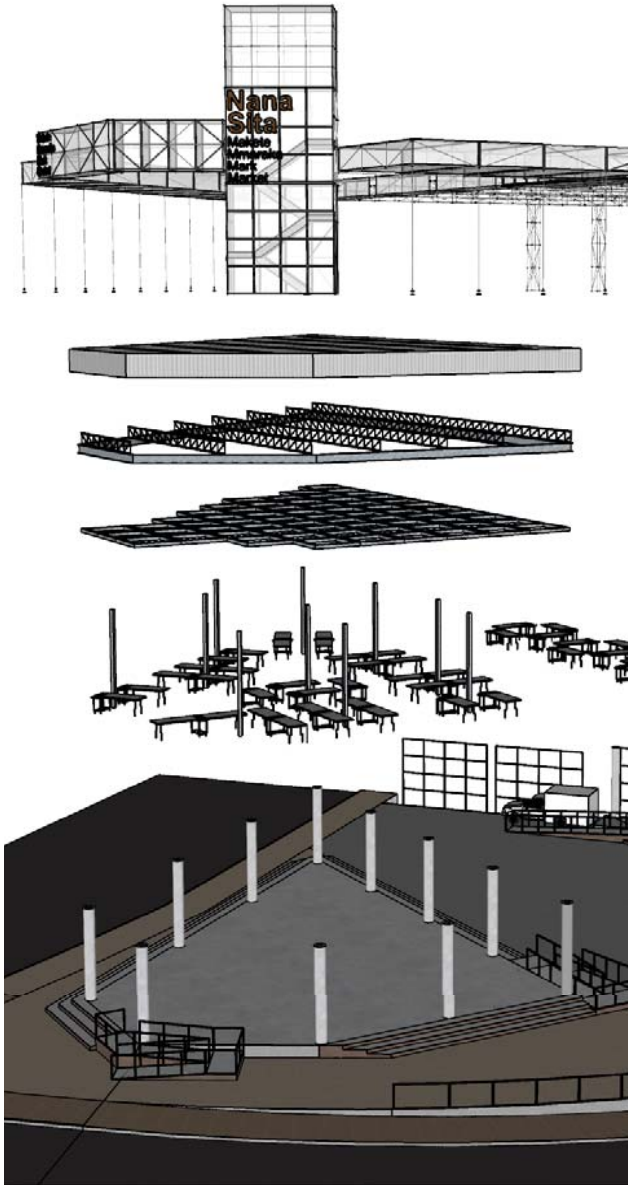


Figure 6.6.2.36 - Exploded view of iteration two (Author, 2019)

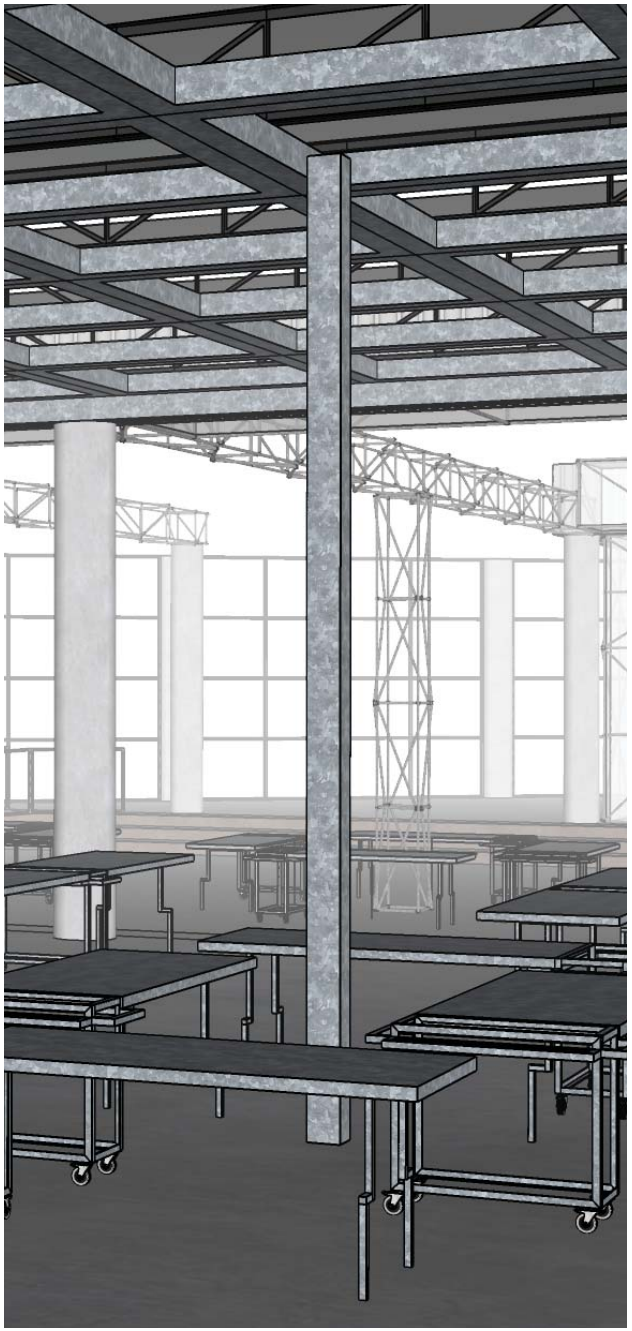


Figure 6.6.2.37 - Market Service column and ceiling modules (Author, 2019)

STRENGTHS

• Increased sensitivity and respect to urban context iteration one.

• The singular tower that creates an urban beacon.

• Shading canopy over active edge to allow the market interior to merge into the urban realm.

• Position and integration of signage onto the ‘tower’.

• Positioning of accessibility ramps are now more efficient.

• Modular trader system in market space allows for trader self organization.

• The trader trolley as a pragmatic solution to creating flexibility for traders.

• Trade can be conducted off site as the trolley is mobile.

• Trader trolley modules that can meet traders needs.

• Service column that delivers services to trades a pragmatic solution.

WEAKNESSESS

• Spaces portray a clinical atmosphere.

• The square/market is a hard, uninviting landscape.

• Ablution block form is inefficient and is disconnected from the square and market space.

• The square/market is not a cohesive space between the market and ablutions pavilion.

OPPURTUNITIES

• The use of clear polycarbonate allows for lighting installation and advertising opportunities.

• The square/market can become a cohesive space between the market and ablutions pavilion.

• Scaffold over the market/square can become a design element.

• Softening of the urban landscape

• Preservation of existing vegetation on site to soften the interventions landscape

THREATS

• Clinical atmosphere hinders user attraction and use.

• Intervention possibly too sensitive and becomes unnoticed.

• Market becomes under utilised as does not meet traders needs.

S W O T

6.6.3 FINAL DESIGN ITERATION

Figure 6.6.3.1 - Digital visualization of market courtyard (Author, 2019)

FINAL DESIGN ITERATION OVERVIEW

The intervention scale has now become more reserved than iteration two, such as preserving the sites existing vegetation and the use of a gentle slope for access from Nana Sita road, rather than large staircase and ramp

The interstitial space between the market and ablutions pavilion is now labeled as market courtyard , rather than a square, to convey a more transitory connotation as a thoroughfare.

The courtyard receives scaffold and polycarbonate canopy, that covers the entire footprint, providing shelter from the elements. Drinking fountains had been added for users and ground level water features to soften the hard urban landscape.

The spatial planning of the ablutions has become more efficient, with the entrance facing into the market courtyard, oriented so as to efficiently capture pedestrian movement through the courtyard. Additionally, a baby changing and nursing facility is provided in the public ablutions to serve the sanitary needs of infants of the informal market traders and urban commuters.

A newly added programme to the ablutions pavilion is a workshop and storage space, intended for the maintenance and repair of the market infrastructure, such as the trader trolleys and service columns.

The lightweight and flexible market system has been refined. The modular ceiling panels and service columns have been resolved pragmatically to accommodate the specific services required from traders. The design of the traders trolley has been iterated to be constructed from slotted angles, allowing for modularity, in turn enhancing flexibility. Additionally, a chair is specified as human interface of the market infrastructure.

The final design is technically resolved in

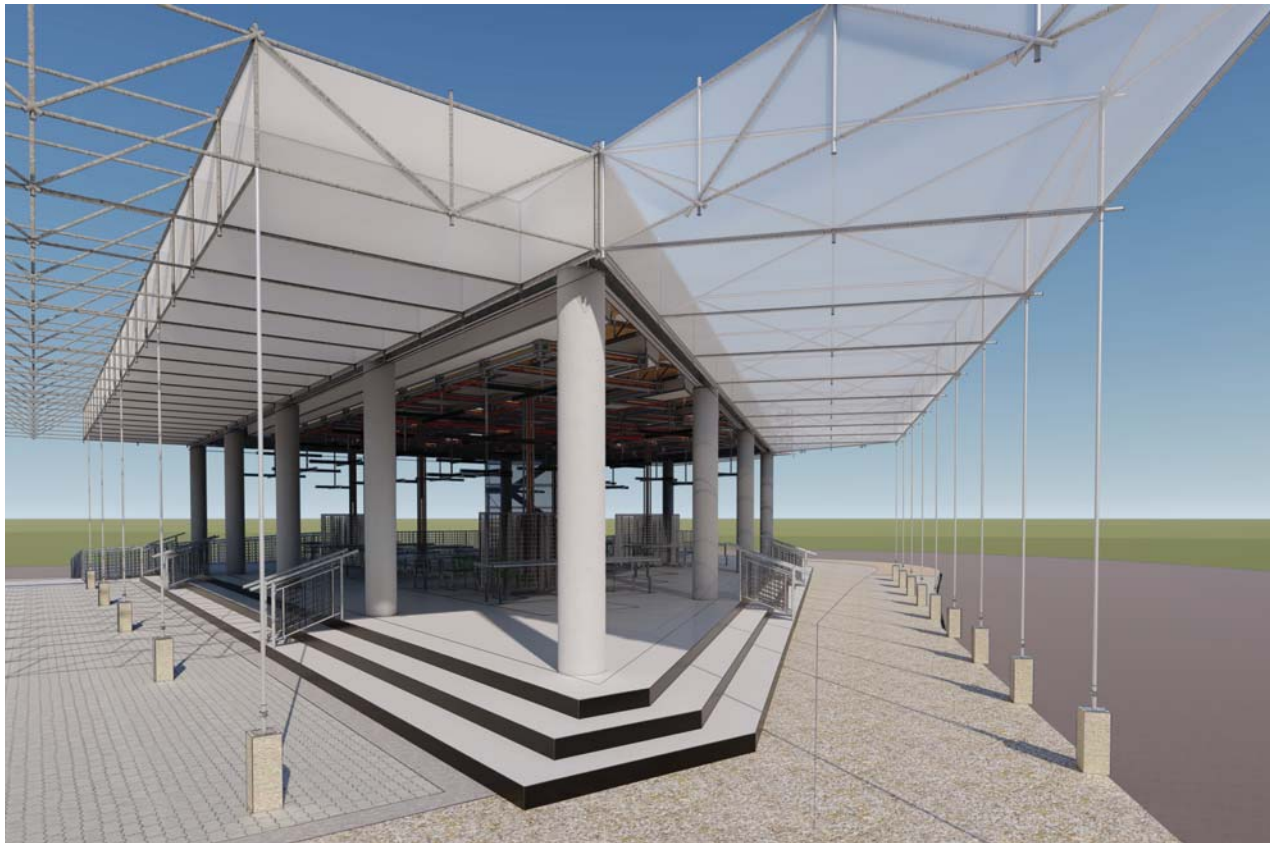


Figure 6.6.3.2 - Digital visualization of market corner (Author, 2019)

Figure 6.6.3.3 - Final Site Plan NTS (Author, 2019)

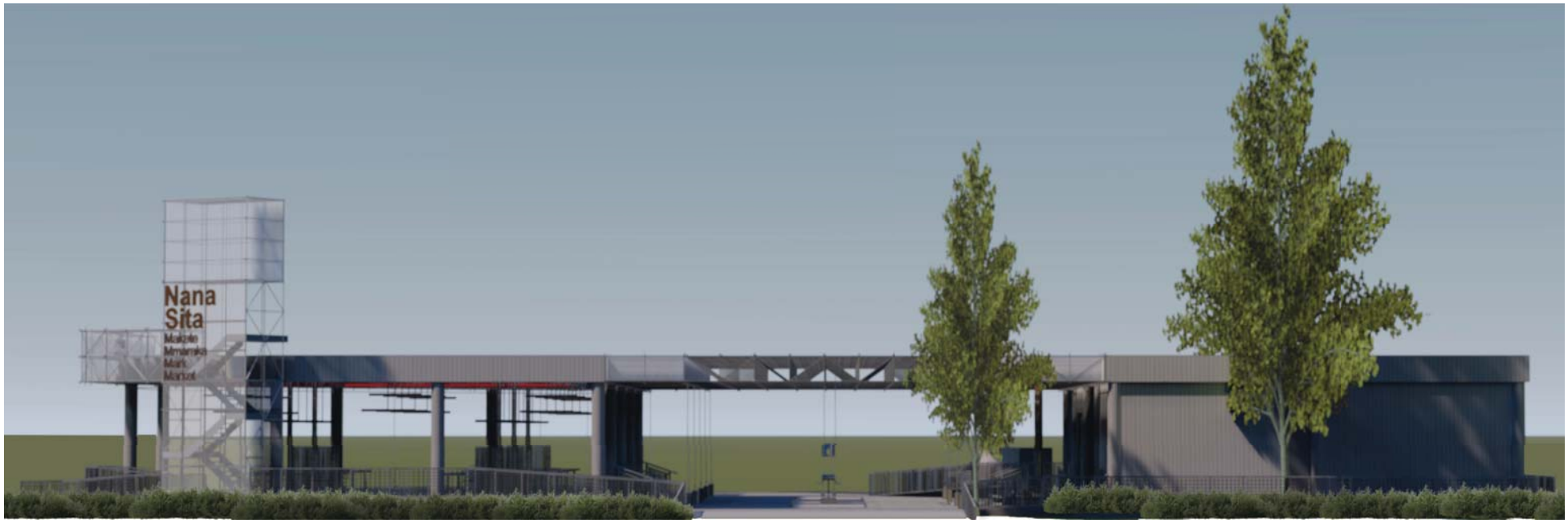


Figure 6.6.3.4 - Rendered Elevation on Nana Sita Street (Author, 2019)

Figure 6.6.3.5 - Rendered Elevation on Du Toit Street (Author, 2019)

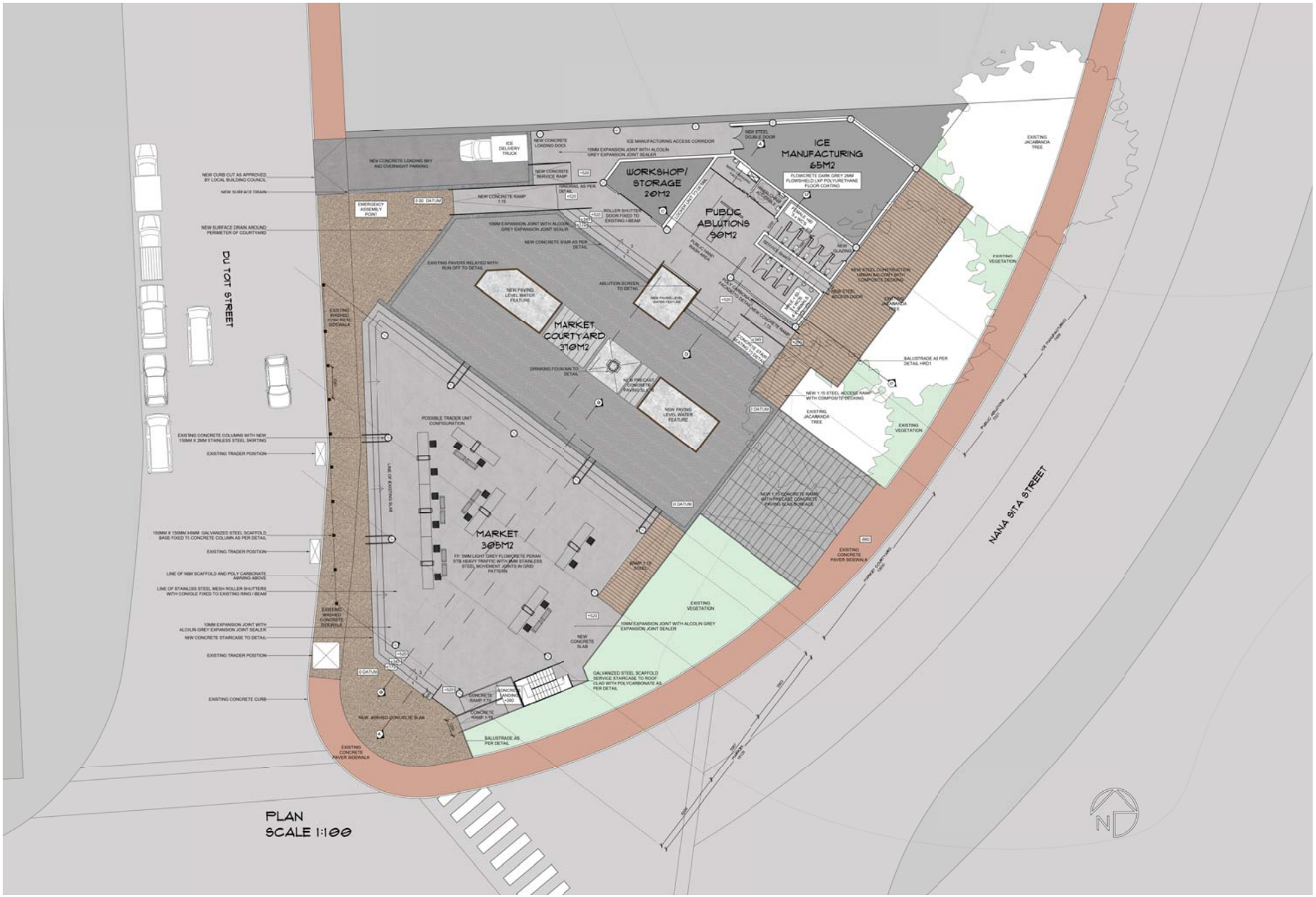


Figure 6.6.3.6 - Floor Plan NTS (Author, 2019)

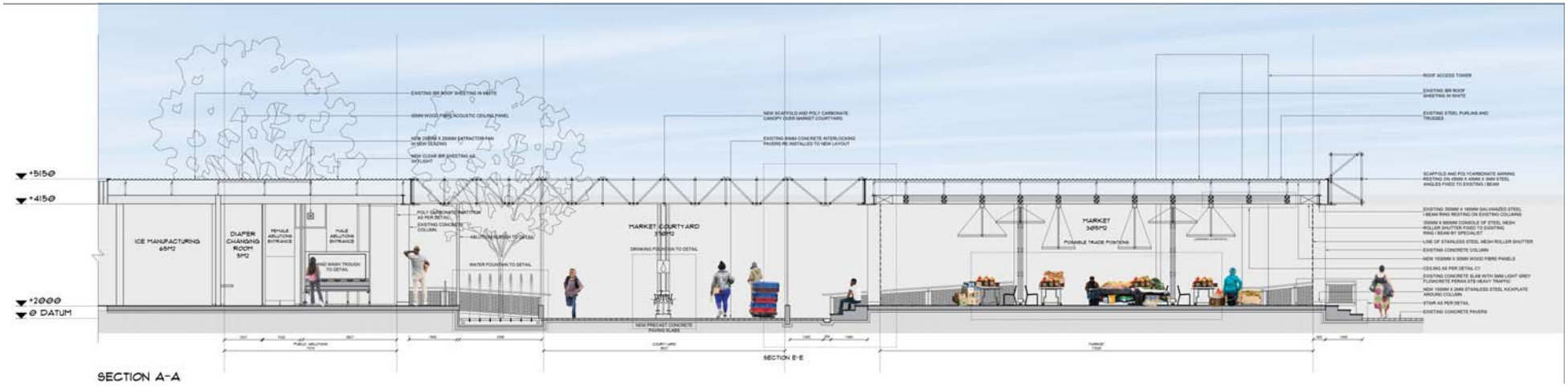


Figure 6.6.3.7 - Section A-A NTS (Author, 2019)

Figure 6.6.3.8 - Digital Visualization of Market Courtyard and Ablutions Pavilion (Author, 2019)

Figure 6.6.3.9 - Digital Visualization of Market Courtyard and Ablutions Pavilion (Author, 2019)

Figure 6.6.3.10 - Section B-B NTS (Author, 2019)

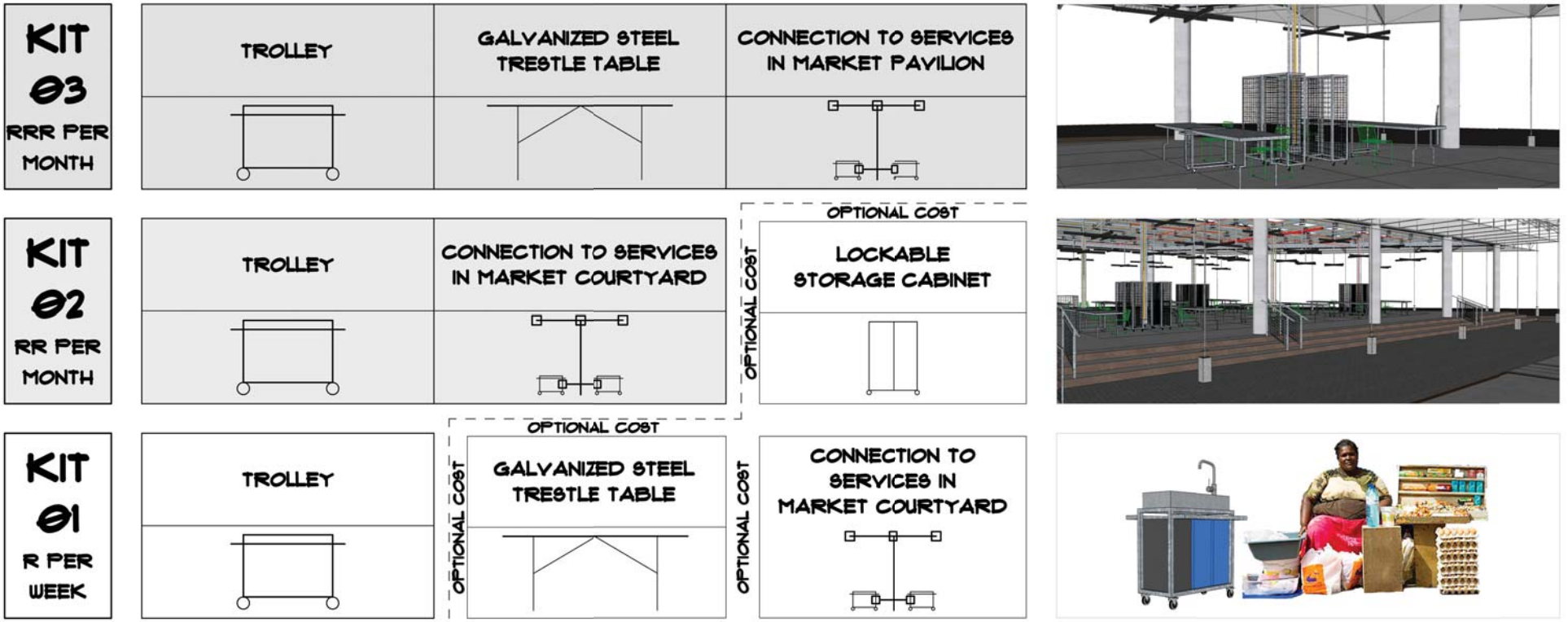


Figure 6.6.3.11 - Trade infrastructure rental strategy (Author, 2019)

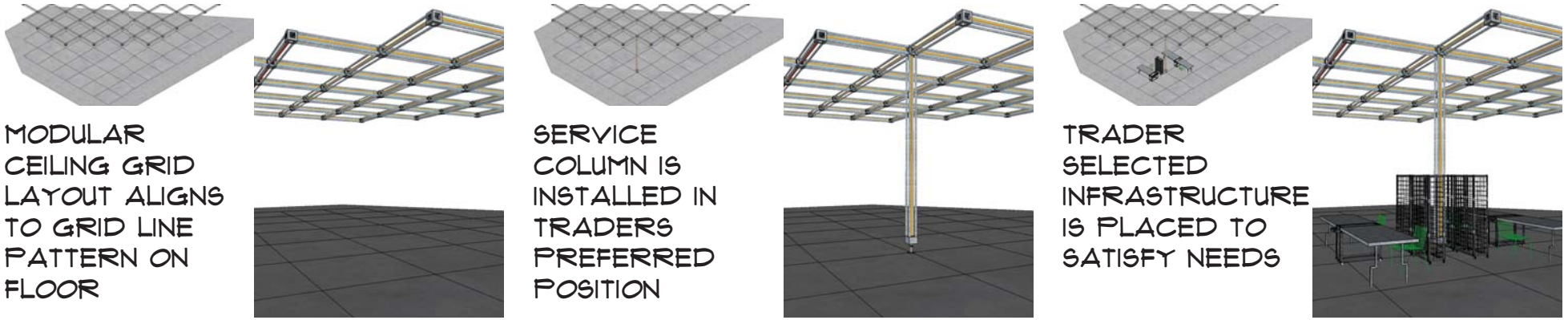
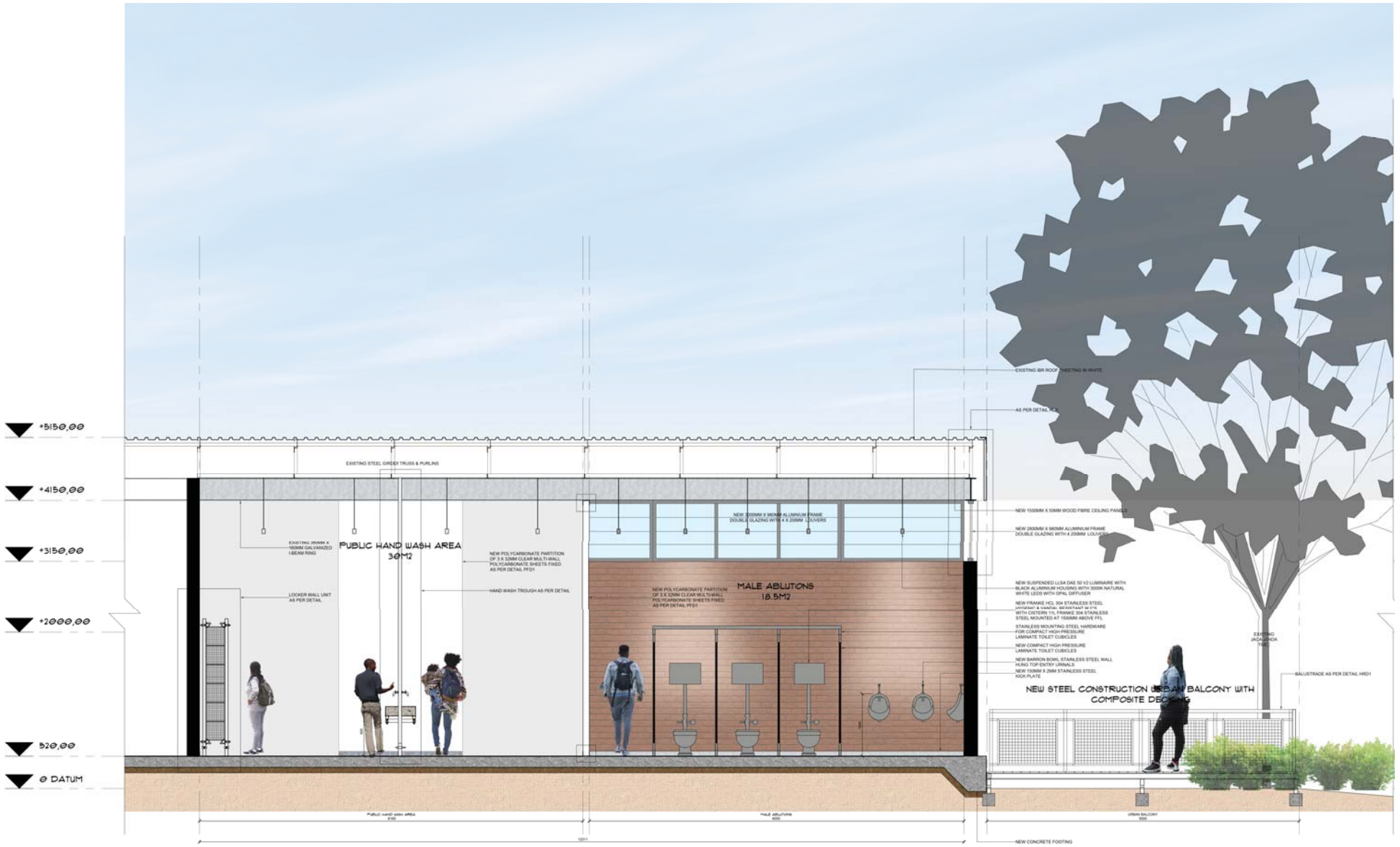


Figure 6.6.3.12 - Trade infrastructure installation process (Author, 2019)

Figure 6.6.3.13 - Trade infrastructure in Market Pavilion (Author, 2019)

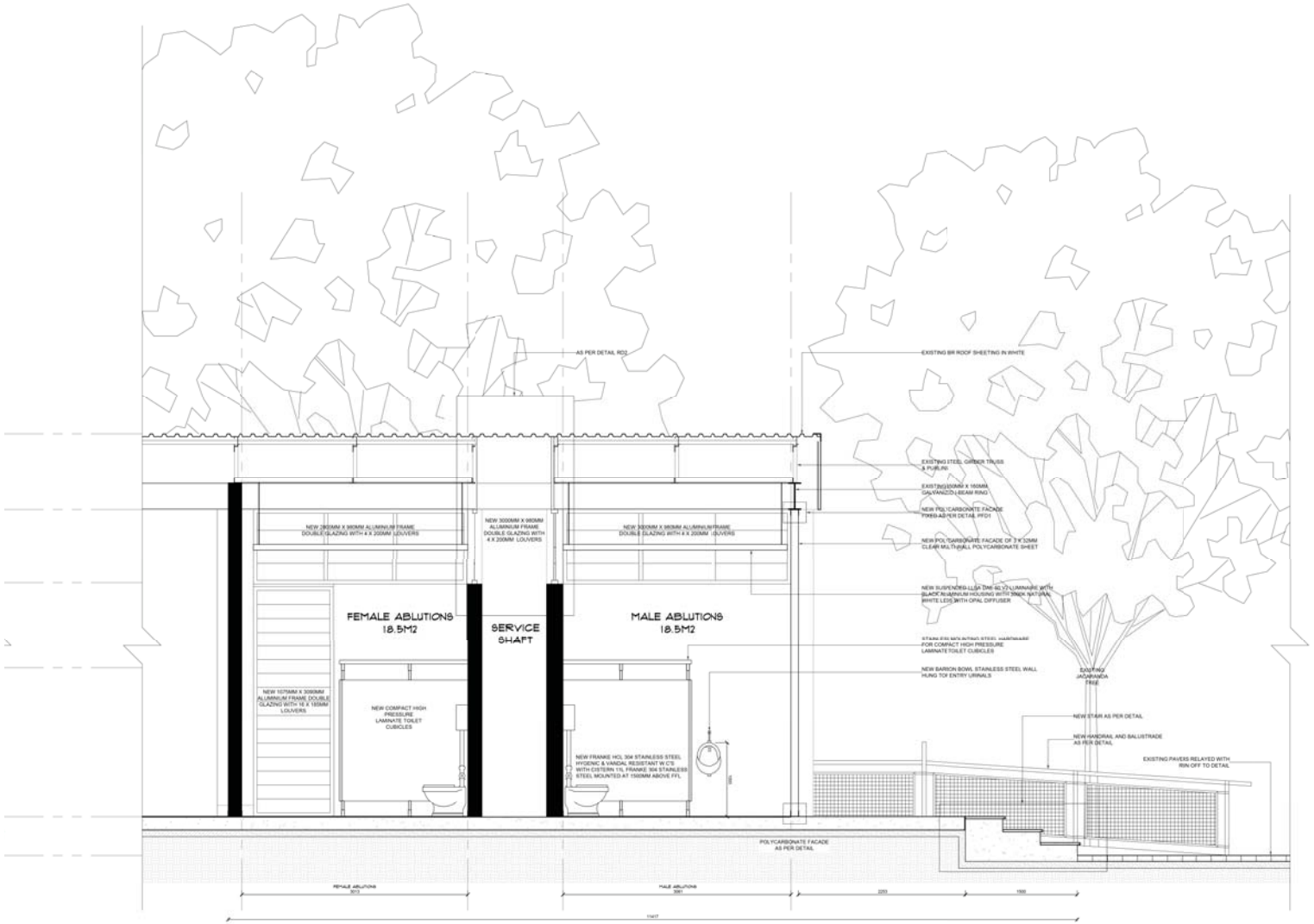
Figure 6.6.3.14 - Trade infrastructure in Market Courtyard (Author, 2019)

Figure 6.6.3.15 - Trade infrastructure on Du Toit Street Edge (Author, 2019)



SECTION C - C

Figure 6.6.3.16 - Section C-C NTS (Author, 2019)



SECTION D - D

Figure 6.6.3.17 - Section D-D NTS (Author, 2019)

6.7 CONCLUSION

This chapter illustrated the design development of Nana Sita Market. Chapter six presented the design development Nana Sita Market. The chapter began by setting forth the urban renewal strategy and the bottom-up design approach, emphasizing the focus on trader needs. The findings from the previous chapters were then presented as design informants followed by conceptual maquette and digital visualisation exercises. Precedent and conceptual visualisations introduced the addition of tubular steel scaffold as a design medium to convey the ephemeral nature of the market. From the concepts presented, the iterative design process was conducted with three iterations completed and analysed by method of SWOT before presenting the final design iteration of the Nana Sita Market.

TECHNICAL INVESTIGATION

CHAPTER SEVEN.

7.1 INTRODUCTION

The following chapter introduces the technical development of Nana Sita Market and primarily focuses on the introduction of the pragmatic approach towards the construction and detailing of the design intervention without losing the theoretical intention. In response to the proposed interventions ephemeral adaption of the designated vacant dealership, the technical development is driven by ephemeral architecture principles. The principles establish a 'technical normative' informing the technical development framework and methodology, applied to the adaption approach of the intervention and the varying scales of the urban, the envelope and the interior. The outcome of the technical development chapter is the technical resolution of the primary and secondary technical investigations put forth.

7.2 RESEARCH QUESTIONS

Primary Technical Investigation

How can scaffolding, as an ephemeral construction method, facilitate an efficient, lightweight and flexible intervention?

Secondary Technical Investigation(s)

How can the three principles of ephemerality be applied to all elements of the intervention?

How can the ephemeral intervention be constructed and detailed to be reversible and unobtrusive to the existing site?

How can 'efficiency in form' and 'lightweight in materials' be used to create flexible interventions?

The primary outcome of the technical chapter is the resolution of the above questions with the technical framework and methodology informed by the principles of ephemeral architecture.

7.3 FRAMEWORK AND METHODOLOGY

Theoretical investigations into ephemerality and related ephemeral intervention precedents have revealed three distinct principles (Kronenburg, 1998: 2):

- ***Efficiency of form***
- ***Lightweight in materials***
- ***Flexibility in purpose***

The principles are applied to establish a 'technical normative' informing a framework and methodology towards the process for the technical resolution of the intervention.

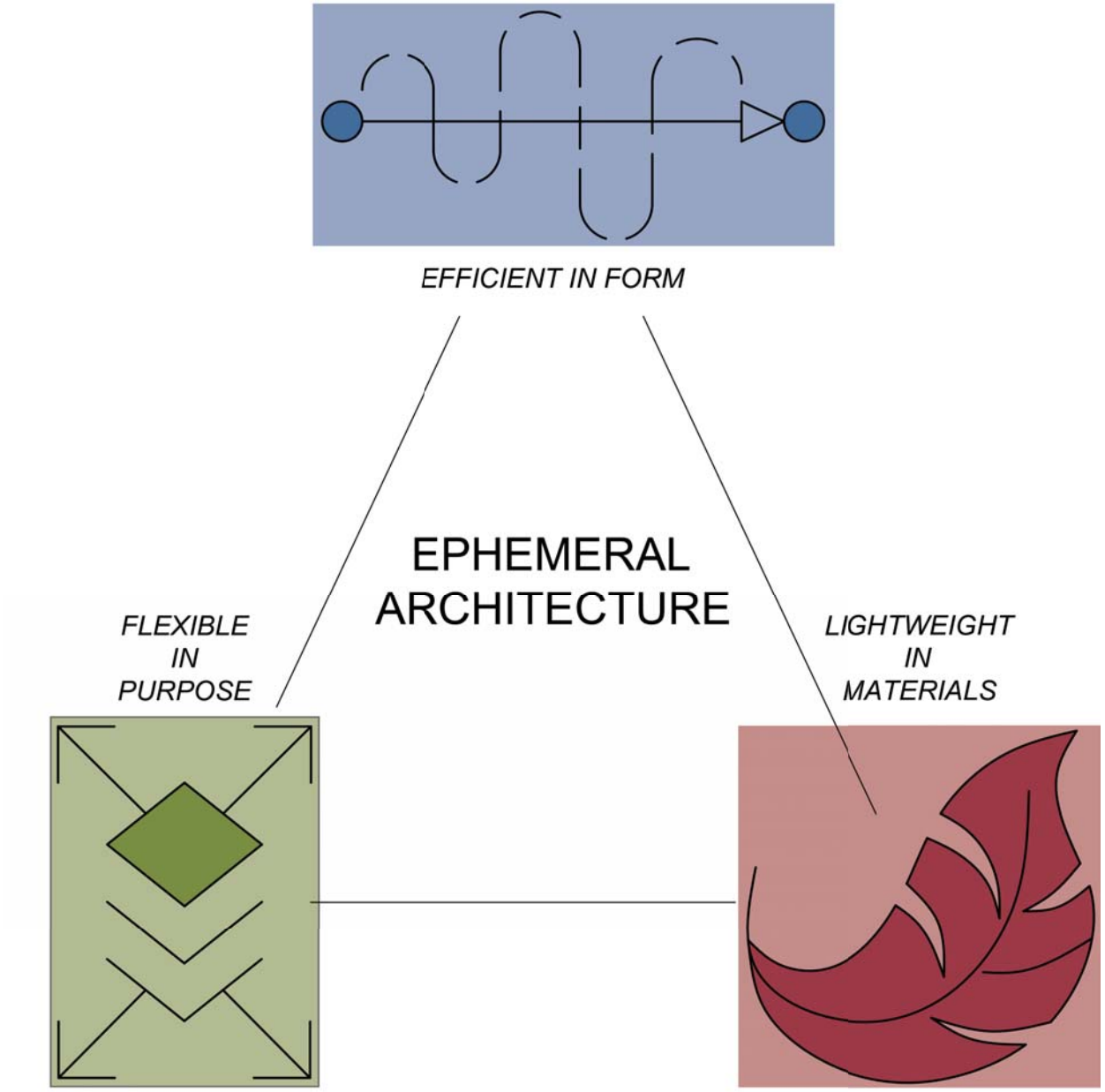
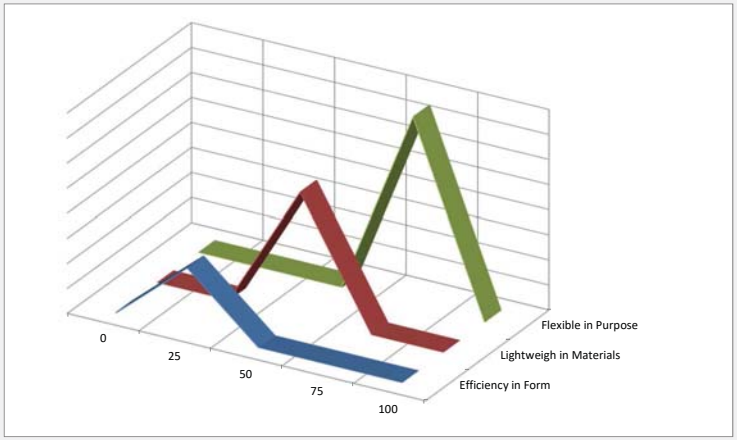


Figure 7.3.1 - Principles of ephemeral architecture (Author, 2019)

ELEMENT					
	Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form		25			
Lightweigh in Materials			50		
Flexible in Purpose				75	



Criteria

Principle: Efficiency in Form					
The Efficiency of the Elements Form					
	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials					
Weight of Elements Materiality					
	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose					
Purpose of Element is Flexible in Use and or Allows Promotes Adaptation					
	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

Figure 7.4.1 - Example of ephemerality investigative tool (Author, 2019)

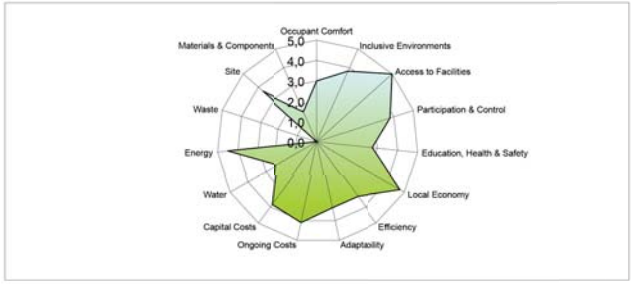
7.4 INVESTIGATIVE TOOL

For testing the applied framework and methodology, a tool was derived from the SBAT model. The ephemeral investigative tool makes use of similar formulas to quantify and assess the technical investigation.

Efficiency in form, lightweight in materials and flexible in purpose are quantified into percentages and presented for each element.

The Sustainable Building Assessment Tool (SBAT) has been selected as an assessment tool, as the tool has been designed to be especially appropriate for use in developing countries. The tool assesses the performance of a building in relation to economic, social and environmental criteria.

Project title: Nana Sita Urban Informal Trade Market
Location: 330 Du Toit Street
Building type (specify): Public/Small scale commercia
Internal area (m2): 800m2



Social	3,7	Economic	3,9	Environmental	2,4
		Overall	3,3		

Figure 7.4.2 - SBAT findings of final design (Author, 2019)

7.5 AREAS OF RESOLUTION

The following areas have been investigated and resolved:

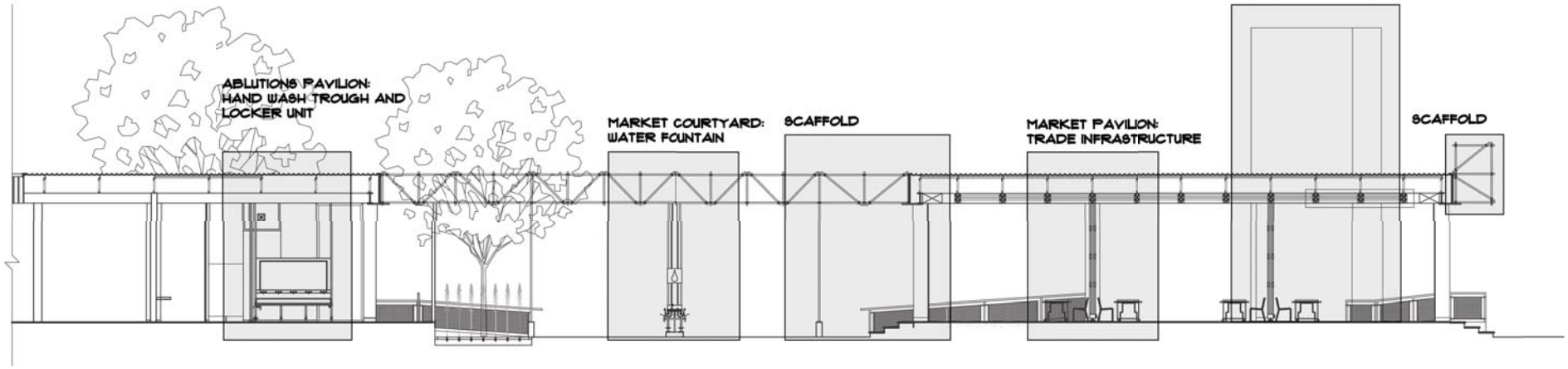


Figure 7.5.1 - Areas of resolution (Author, 2019)

7.5.1 SCAFFOLD

As discussed in chapter six (c.f. 6.4.1), to convey the ephemeral intention of the intervention, tubular steel scaffolding is employed as a design medium. The extents of the scaffold elements include scaffold shading canopies with polycarbonate infill that trim the market and ablutions pavilions with scaffold trusses spanning the footprint of the market courtyard.

Figure 7.5.1.1 - Night visualization of illuminated polycarbonate and scaffolding elements (Author, 2019)

Figure 7.5.1.2 - Scaffold and polycarbonate on market pavilion (Author, 2019)

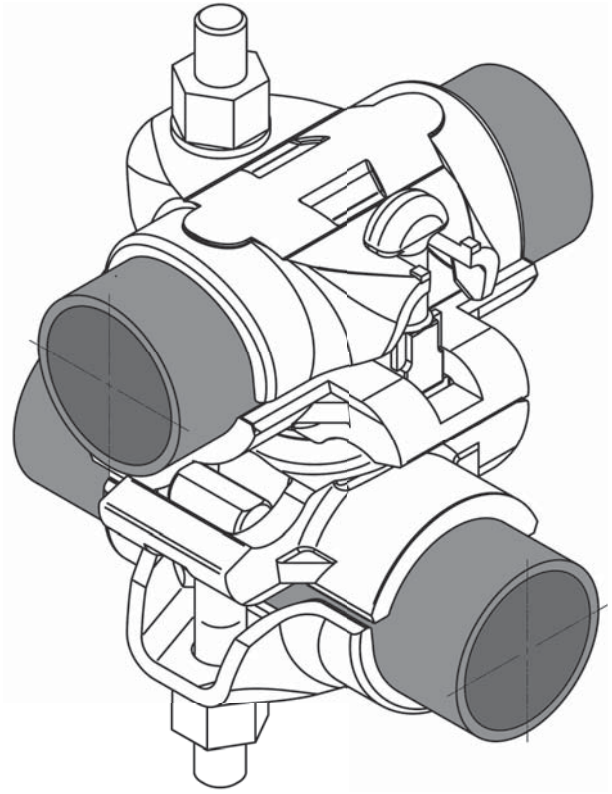


Figure 7.5.1.3 - Illustration swivel coupler with tubular steel scaffold (Ferro Met, n.d)

Figure 7.5.1.4 - Forged steel swivel coupler (Form Work Solutions, 2019)

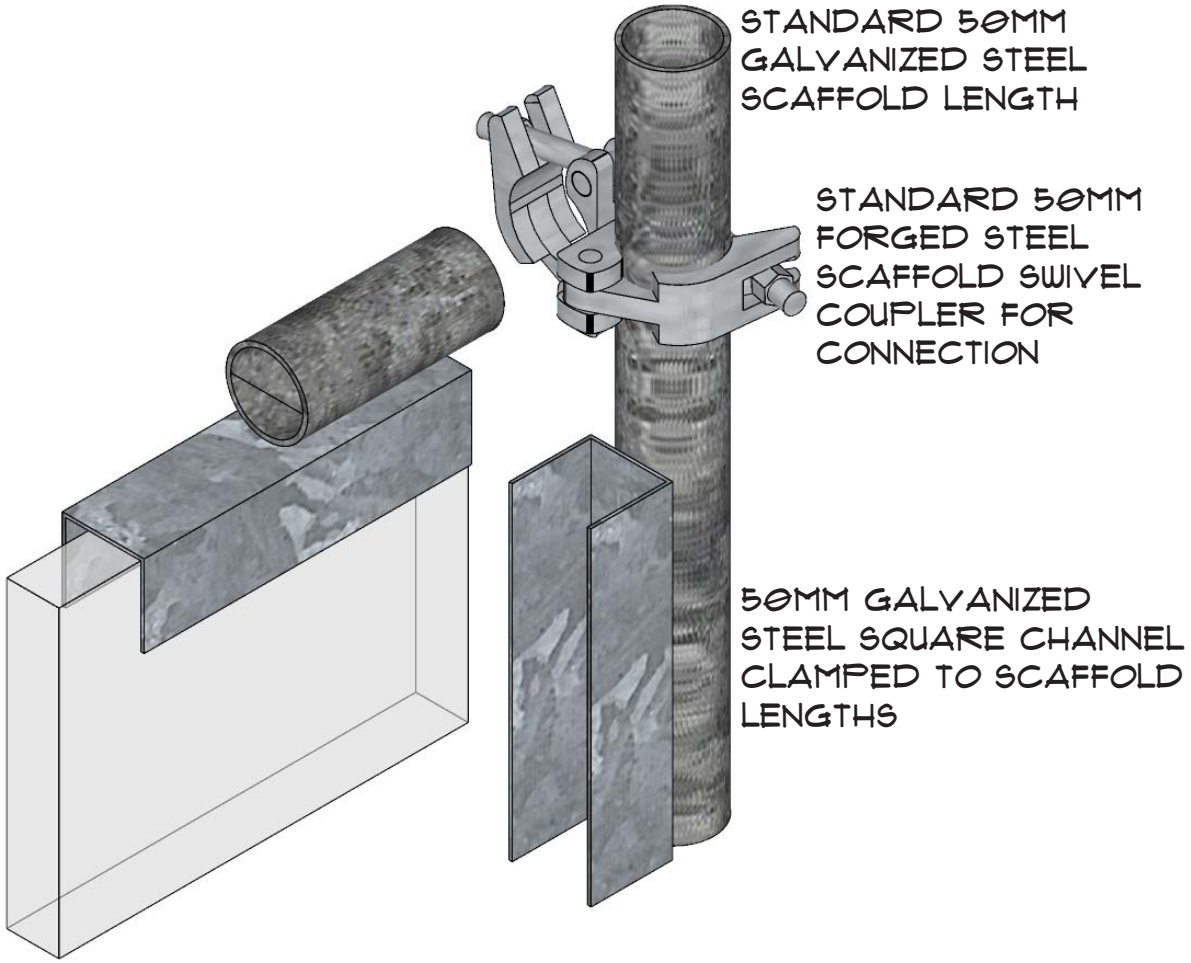
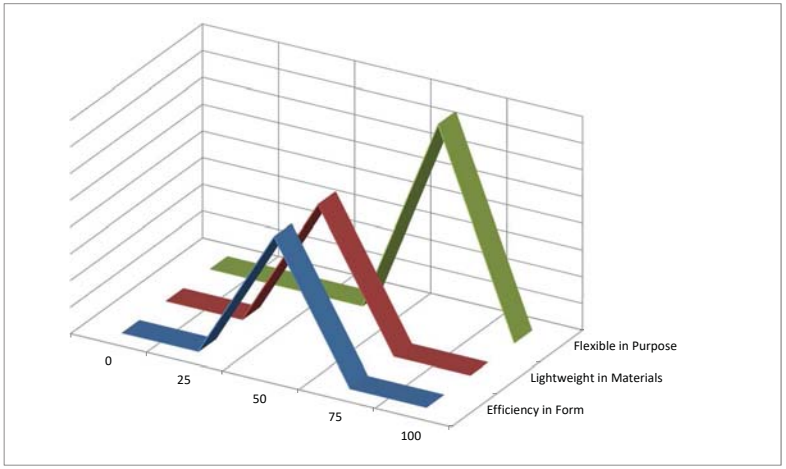


Figure 7.5.1.5 - Scaffold and polycarbonate connection system exploded isometric (Author, 2019)

SECTION E-E

Figure 7.5.1.6 - Scaffold strip section (Author, 2019)

SCAFFOLD					
	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form			50		
Lightweight in Materials			50		
Flexible in Purpose				75	



Criteria

Principle: Efficiency in Form					
The Efficiency of the Elements Form					
	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials					
Weight of Elements Materiality					
	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose					
Purpose of Element is Flexible in Use and or Allows Promotes Adaptation					
	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

7.5.2 MARKET PAVILION

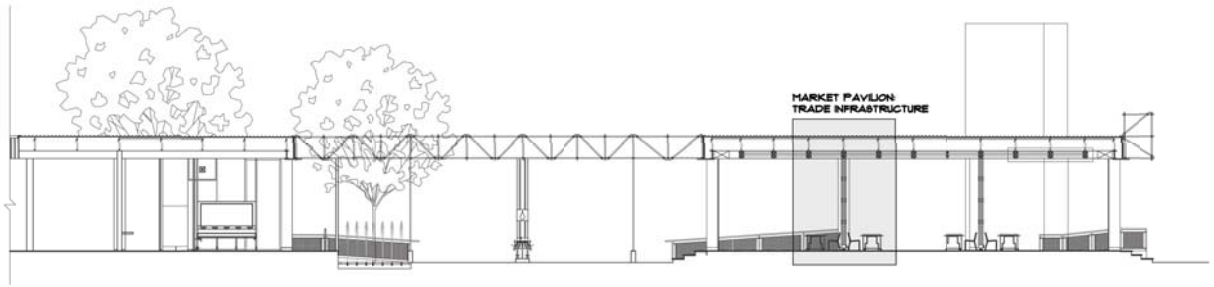


Figure 7.5.2.1 - Market pavilion infrastructure (Author, 2019)

MODULAR CEILING

- Grid structure of ceiling modules allow for flexible placement of service columns, allowing for self organization of traders.
- Modules are constructed of standard 48.3mm diameter steel scaffold lengths inserted into galvanized steel junction box
- Connection junction boxes between ceiling modules are service column connection points.

SERVICE COLUMN

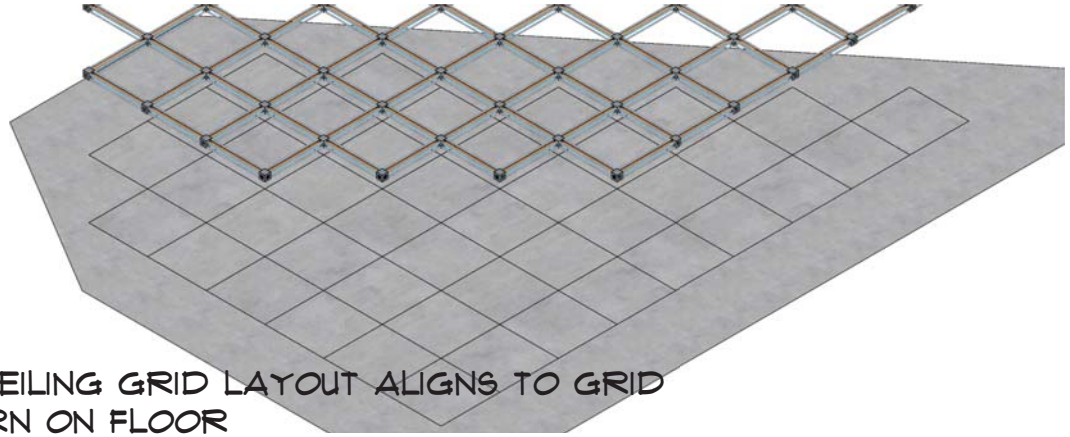
- Delivers the connection to the trader and or trade stall.
- Constructed of standard 48.3mm diameter steel scaffold lengths and connectors.
- Services are terminated at footing.

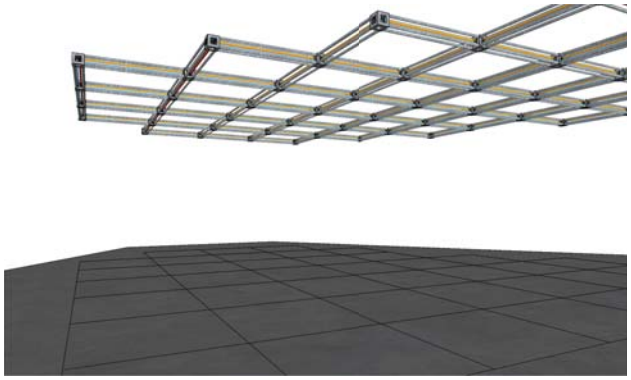
TRADER TROLLEY

- Iterated trolley from design, originally proposed to be constructed of standard steel angles and welded at connecting joints.
- Technically resolved to be constructed of steel slotted angles (figure , nuts, bolts and washers to allow for adaptation, providing flexibility, and repair.

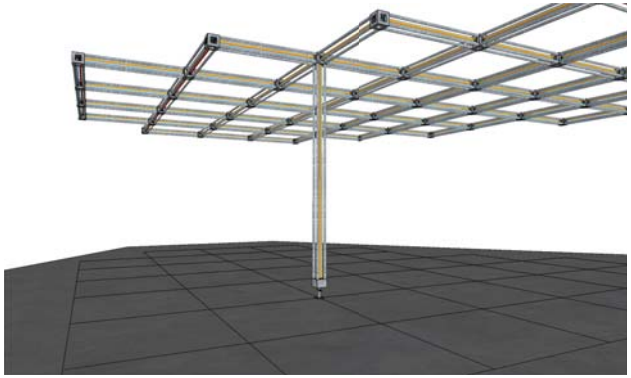
TRADER STORAGE CABINET

- As the market itself is enclosed in a security barrier during non-operational hours, a lockable wheeled cabinet can be rented to as a provision of daytime security and general storage.
- As per the first iteration of the trader trolley, the proposed construction method was standard steel angles and welded at connecting joints.
- Technically resolved to be constructed of steel slotted angles (figure , nuts, bolts and washers to allow for adaptation, providing flexibility, and repair.

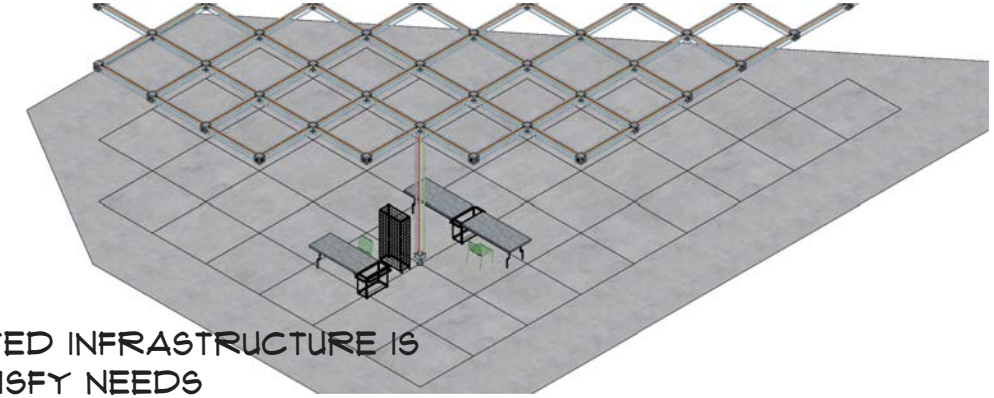


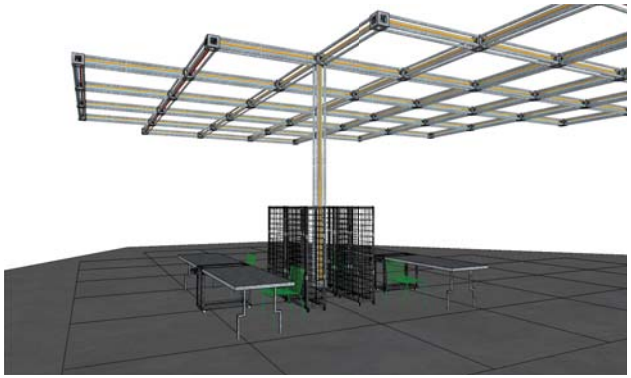


MODULAR CEILING GRID LAYOUT ALIGNS TO GRID LINE PATTERN ON FLOOR



SERVICE COLUMN ISINSTALLED IN TRADERS PREFERRED POSITION





TRADER SELECTED INFRASTRUCTURE IS PLACED TO SATISFY NEEDS

Figure 7.5.2.2 - Market pavilion infrastructure installation process (Author, 2019)

Figure 7.5.2.3 - Market pavilion ceiling (Author, 2019)

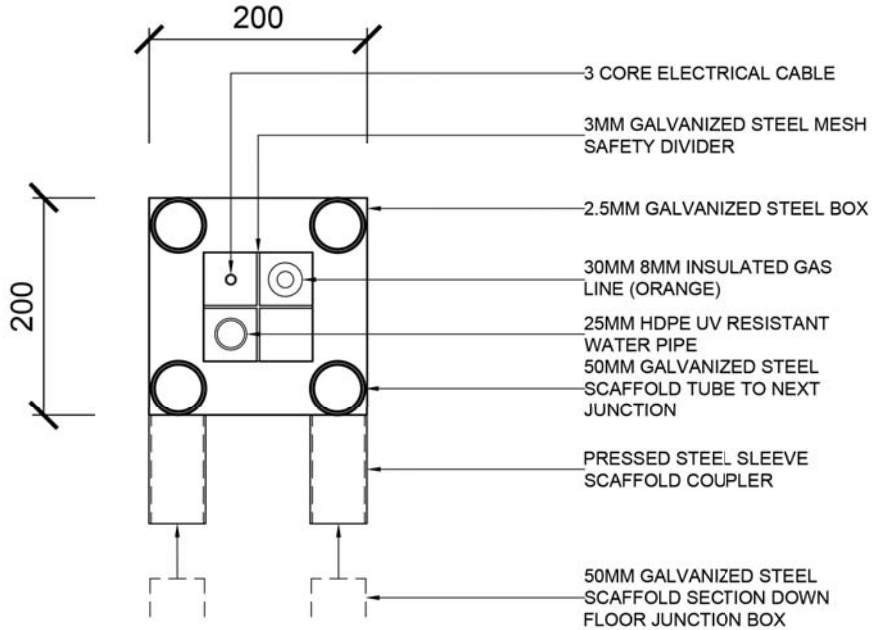


Figure 7.5.2.4 - Service ceiling junction detail, NTS (Author, 2019)

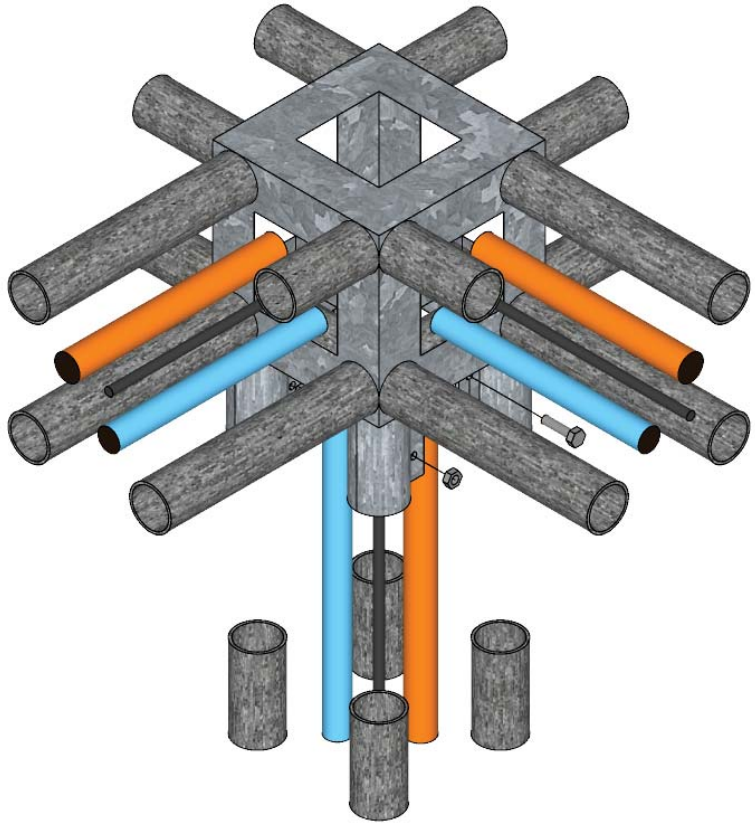


Figure 7.5.2.5 - Junction detail exploded isometric, NTS (Author, 2019)

Figure 7.5.2.6 - Trader trolley elevation (Author, 2019)

Figure 7.5.2.7 - Trader trolley perspective (Author, 2019)

Figure 7.5.2.8 - Slotted angle connection detail (FS Industries, n.d)

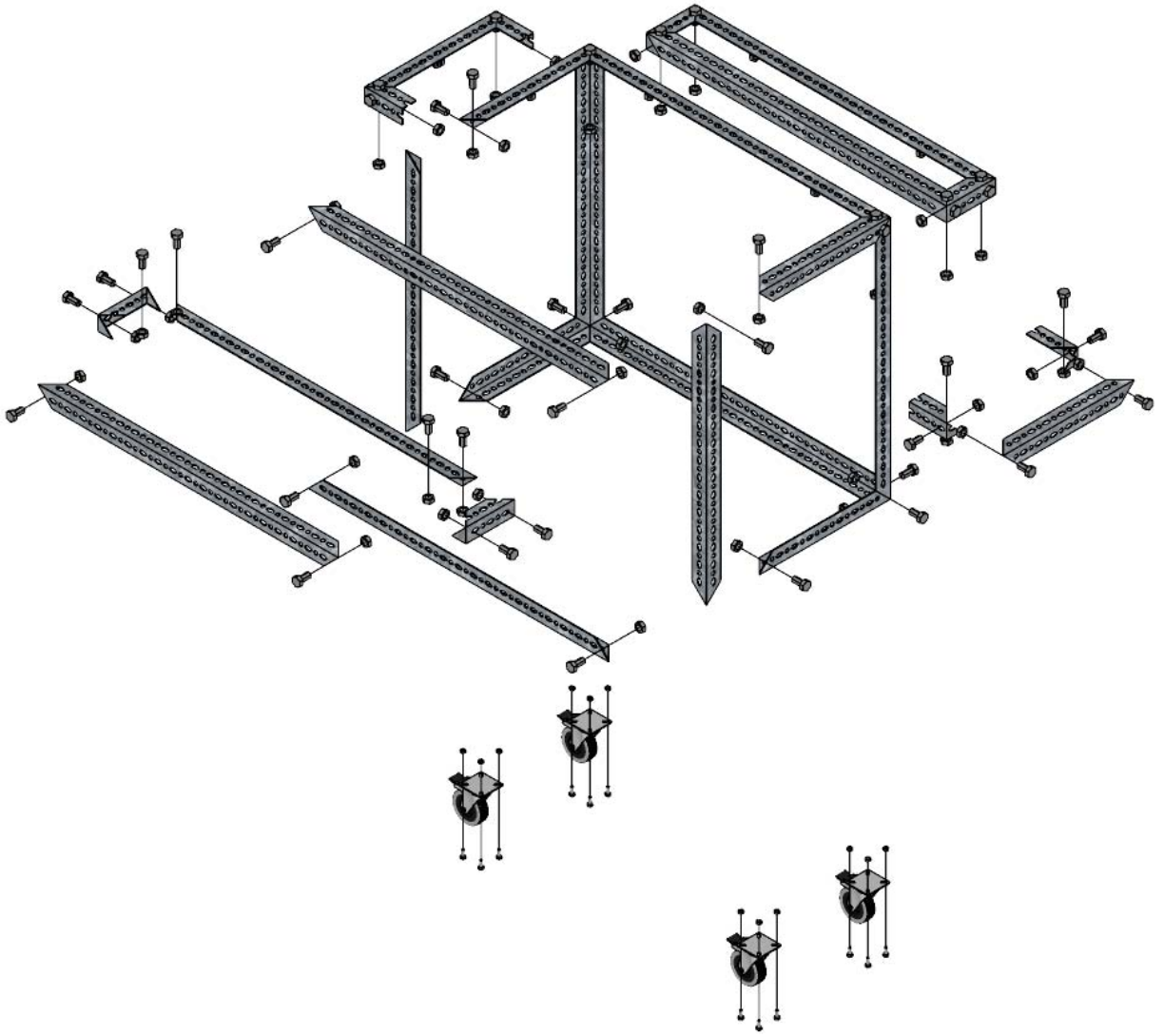


Figure 7.5.2.9 - Trader trolley construction exploded isometric (Author, 2019)

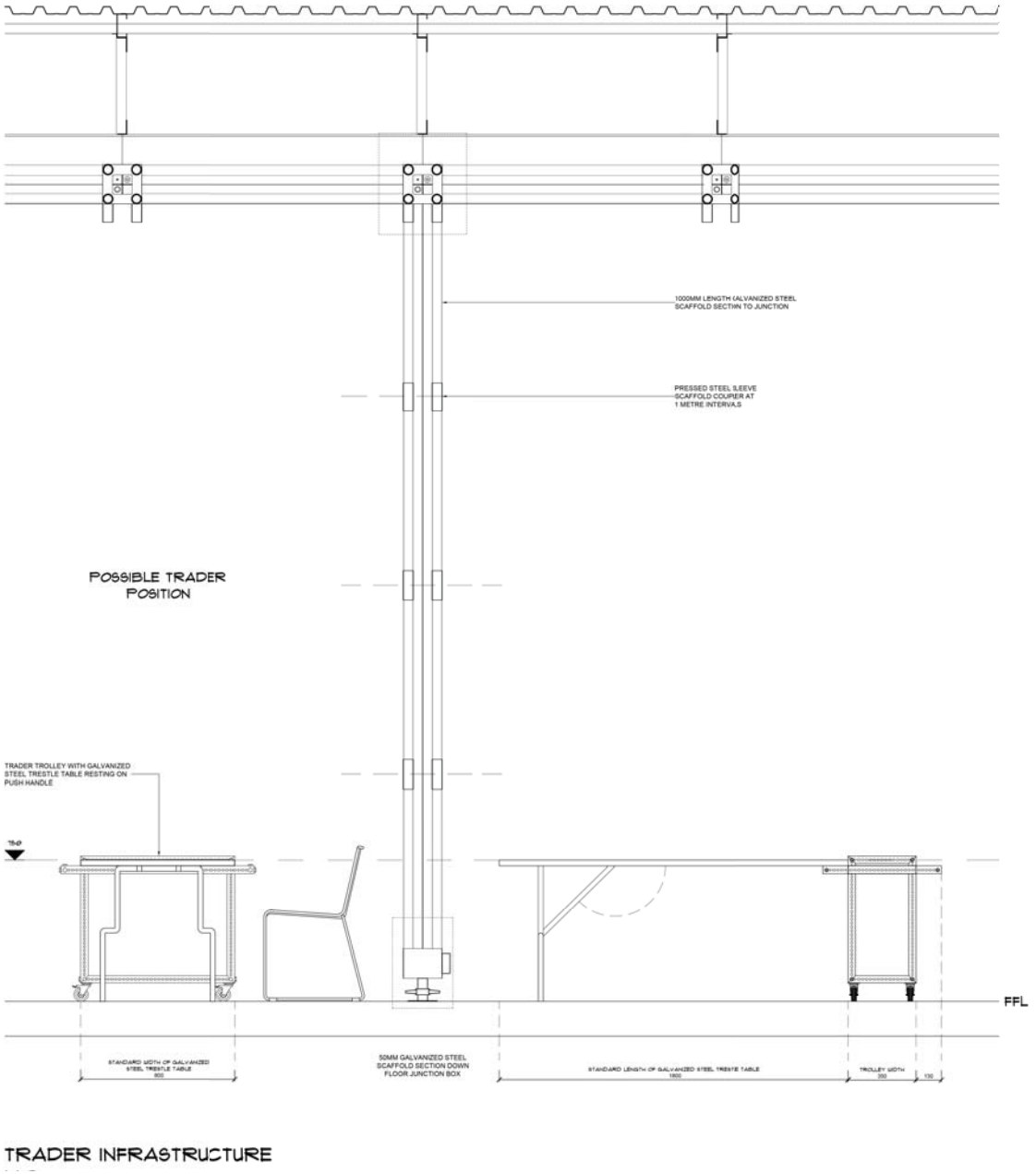
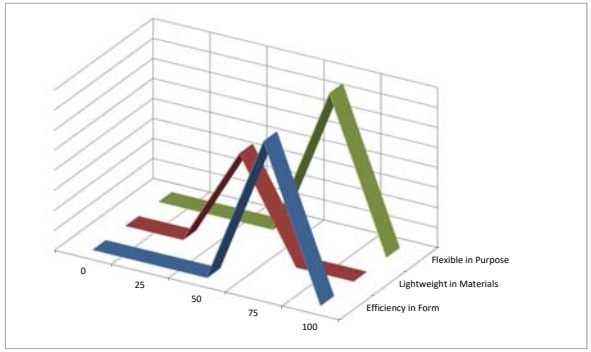


Figure 7.5.2.10 - Trader infrastructure, NTS (Author, 2019)

SERVICE COLUMN

	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form				75	
Lightweight in Materials			50		
Flexible in Purpose				75	



Criteria

Principle: Efficiency in Form

The Efficiency of the Elements Form

	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials

Weight of Elements Materiality

	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

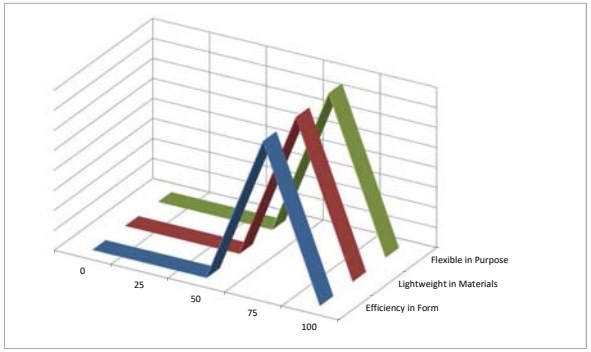
Principle: Flexible in Purpose

Purpose of Element is Flexible in Use and or Allows Promotes Adaptation

	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

TRADER TROLLEY

	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form				75	
Lightweight in Materials				75	
Flexible in Purpose				75	



Criteria

Principle: Efficiency in Form

The Efficiency of the Elements Form

	%	0	50	75	100
Inefficient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials

Weight of Elements Materiality

	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

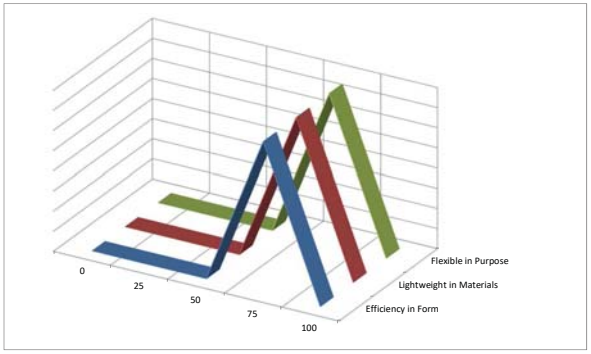
Principle: Flexible in Purpose

Purpose of Element is Flexible in Use and or Allows For/Promotes Adaptation

	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

TRADE STALL

	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form				75	
Lightweight in Materials				75	
Flexible in Purpose				75	



Criteria

Principle: Efficiency in Form

The Efficiency of the Elements Form

	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials

Weight of Elements Materiality

	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose

Purpose of Element is Flexible in Use and or Allows Promotes Adaptation

	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

7.5.3 MARKET COURTYARD DRINKING FOUNTAIN

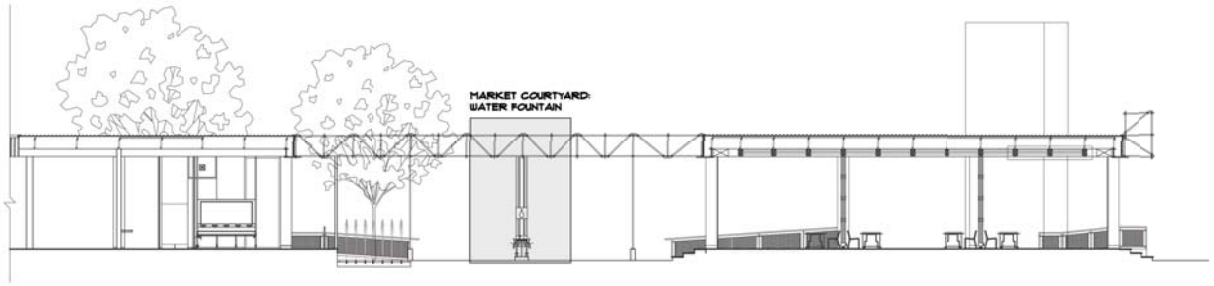
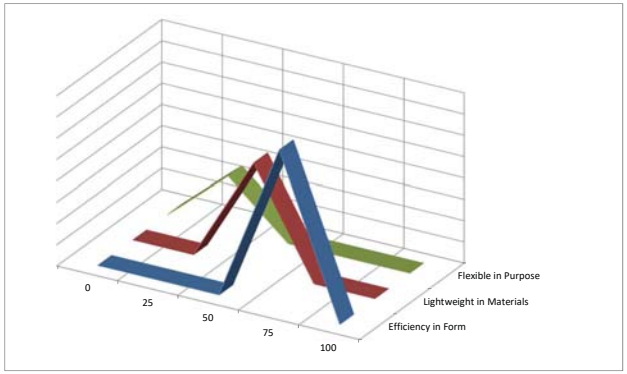


Figure 7.5.3.1 - Digital visualization of drinking fountain in market courtyard (Author, 2019)

DRINKING FOUNTAIN					
	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form				75	
Lightweight in Materials			50		
Flexible in Purpose		25			



Criteria

Principle: Efficiency in Form					
The Efficiency of the Elements Form					
	%	0	50	75	100
Inefficient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials					
Weight of Elements Materiality					
	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose					
Purpose of Element is Flexible in Use and or Allows Promotes Adaptation					
	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

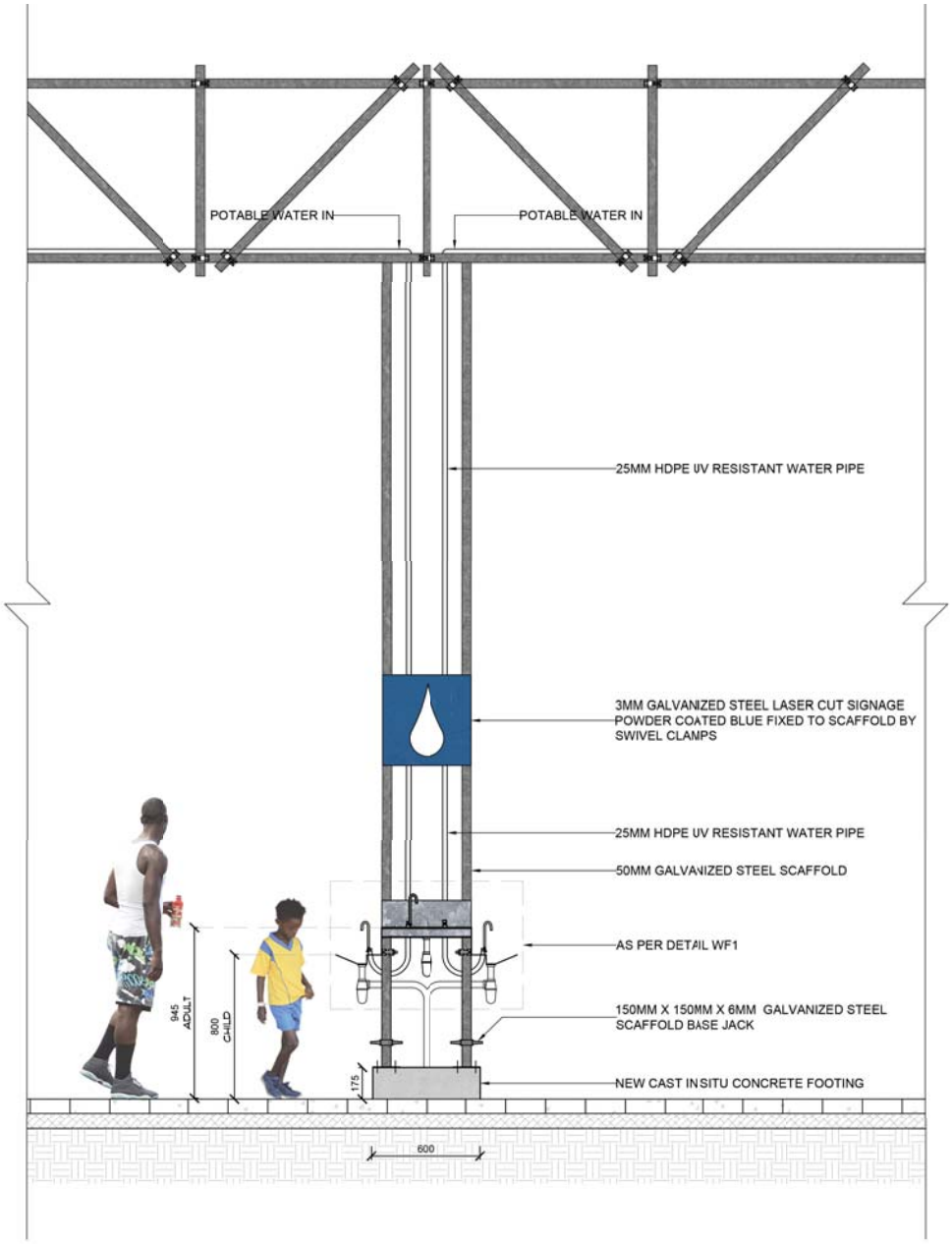
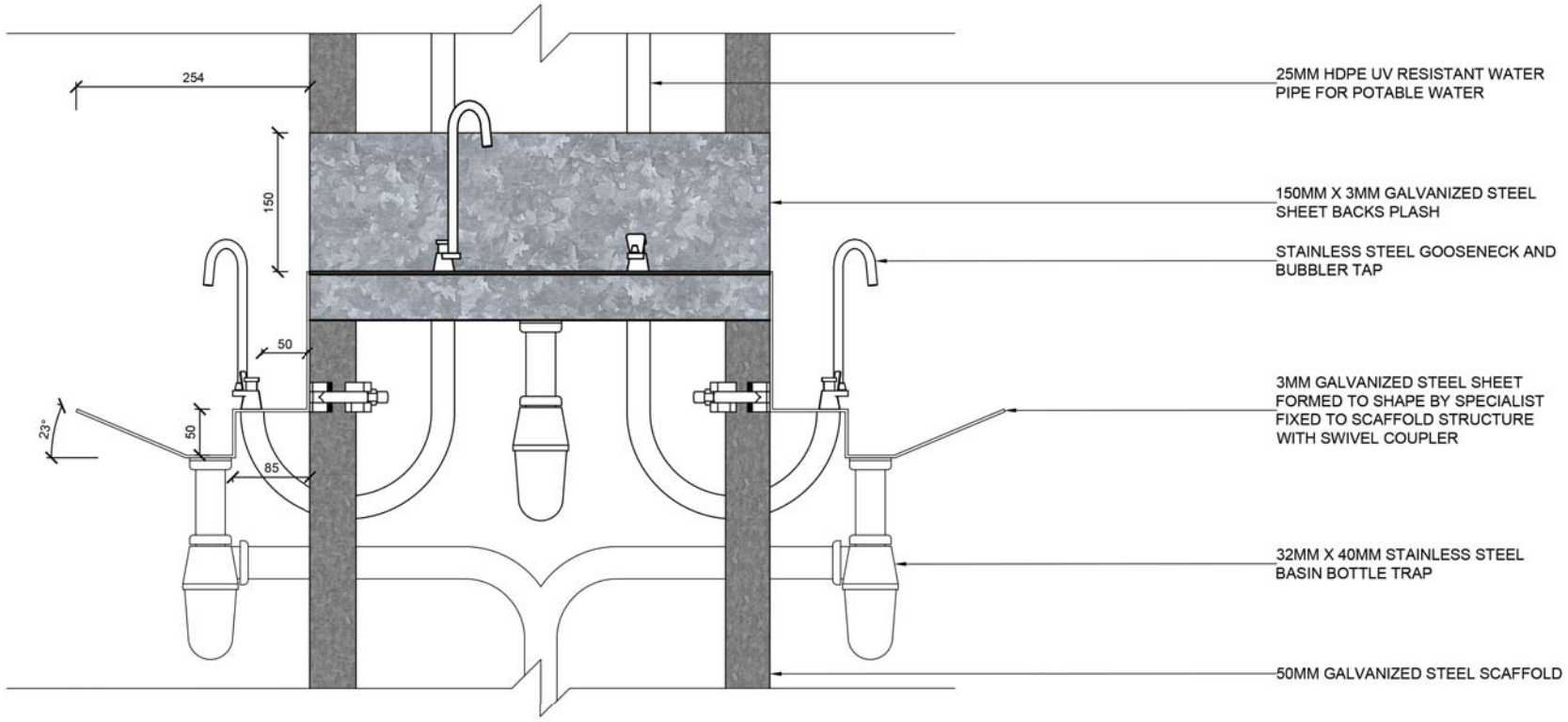


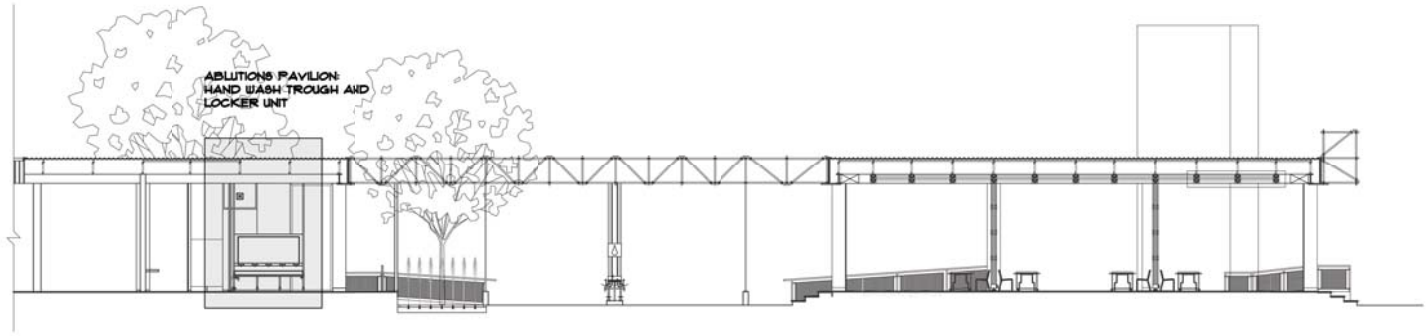
Figure 7.5.3.2 - Drinking fountain detail NTS (Author, 2019)



DETAIL WF1

Figure 7.5.3.3 - Detail WF1 NTS (Author, 2019)

7.5.4 ABLUTIONS PAVILION HAND WASH TROUGH AND LOCKER UNIT



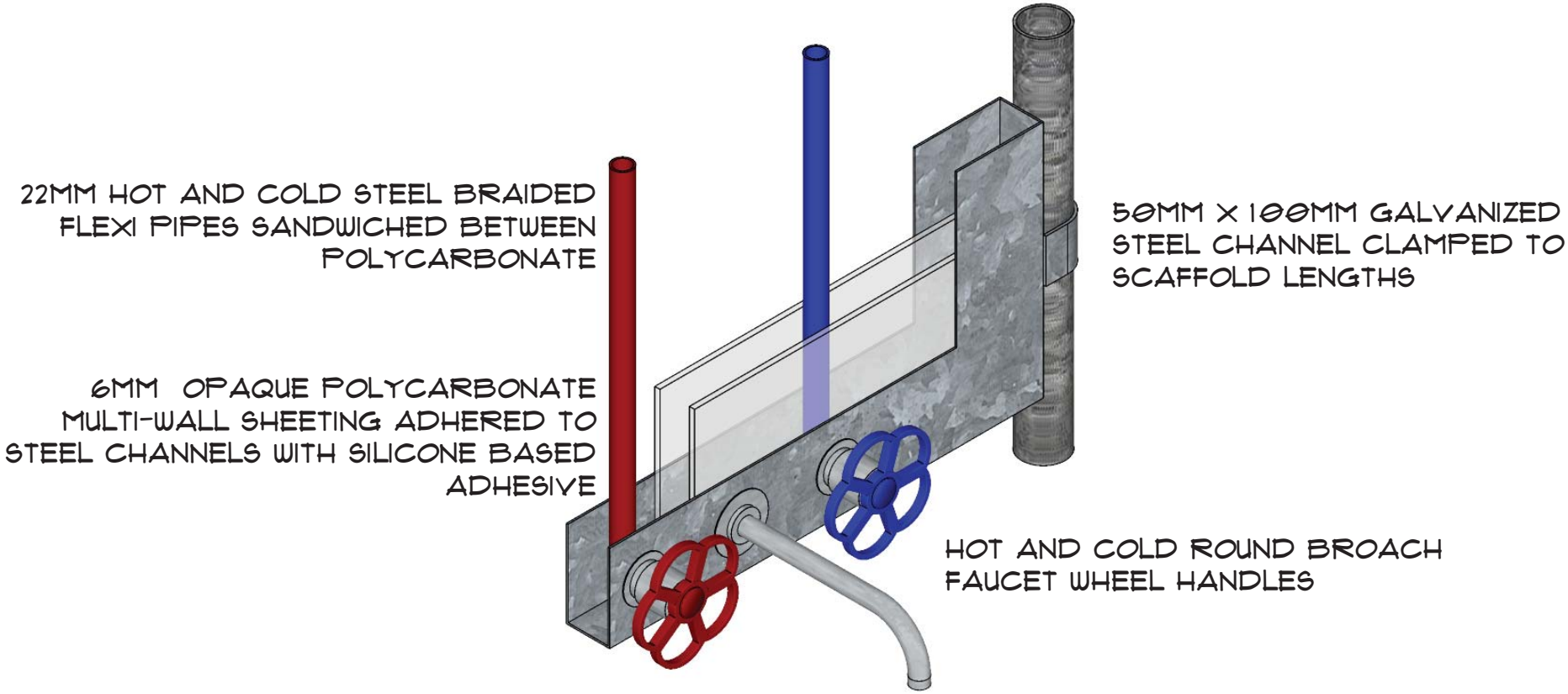
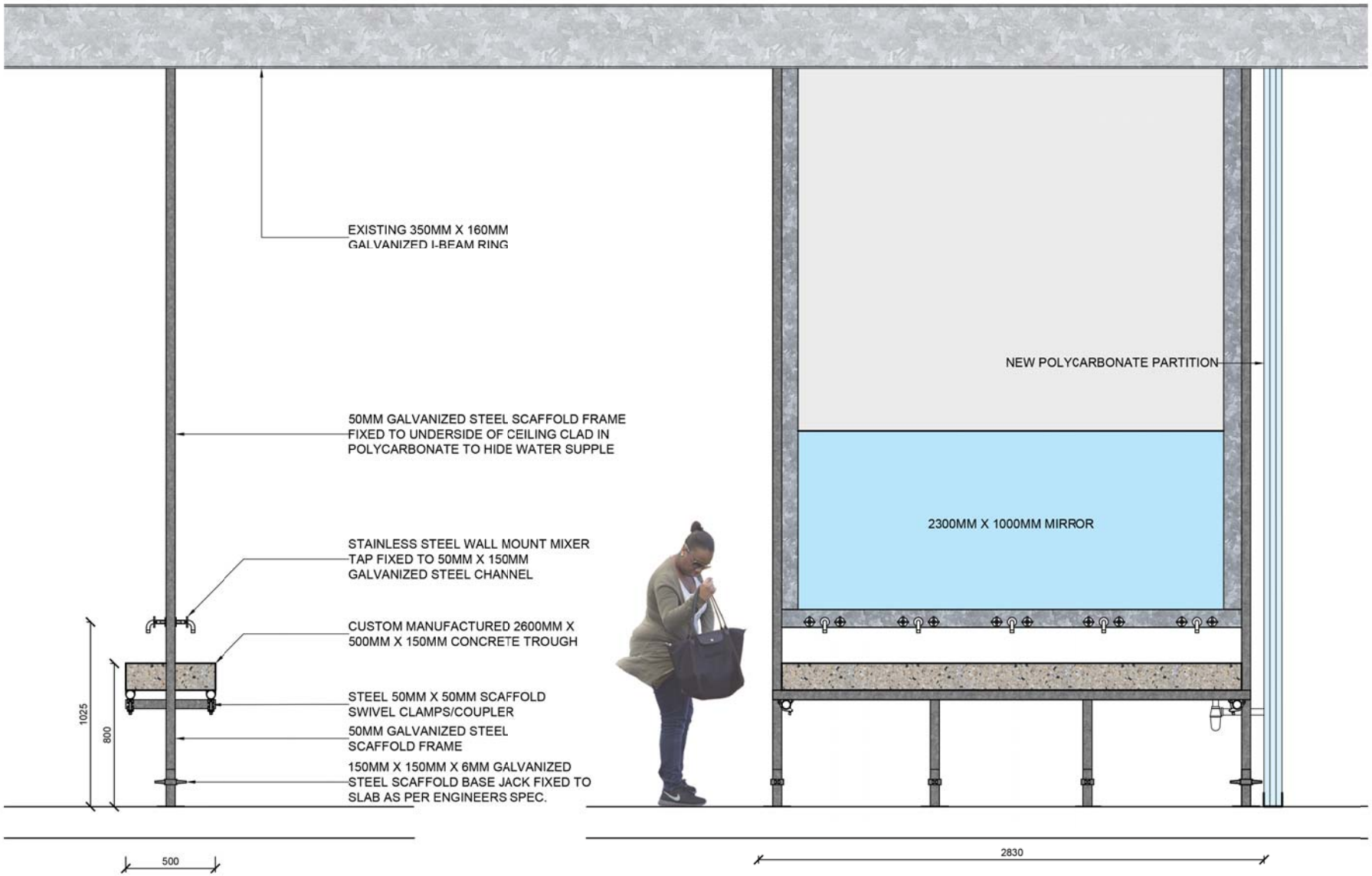
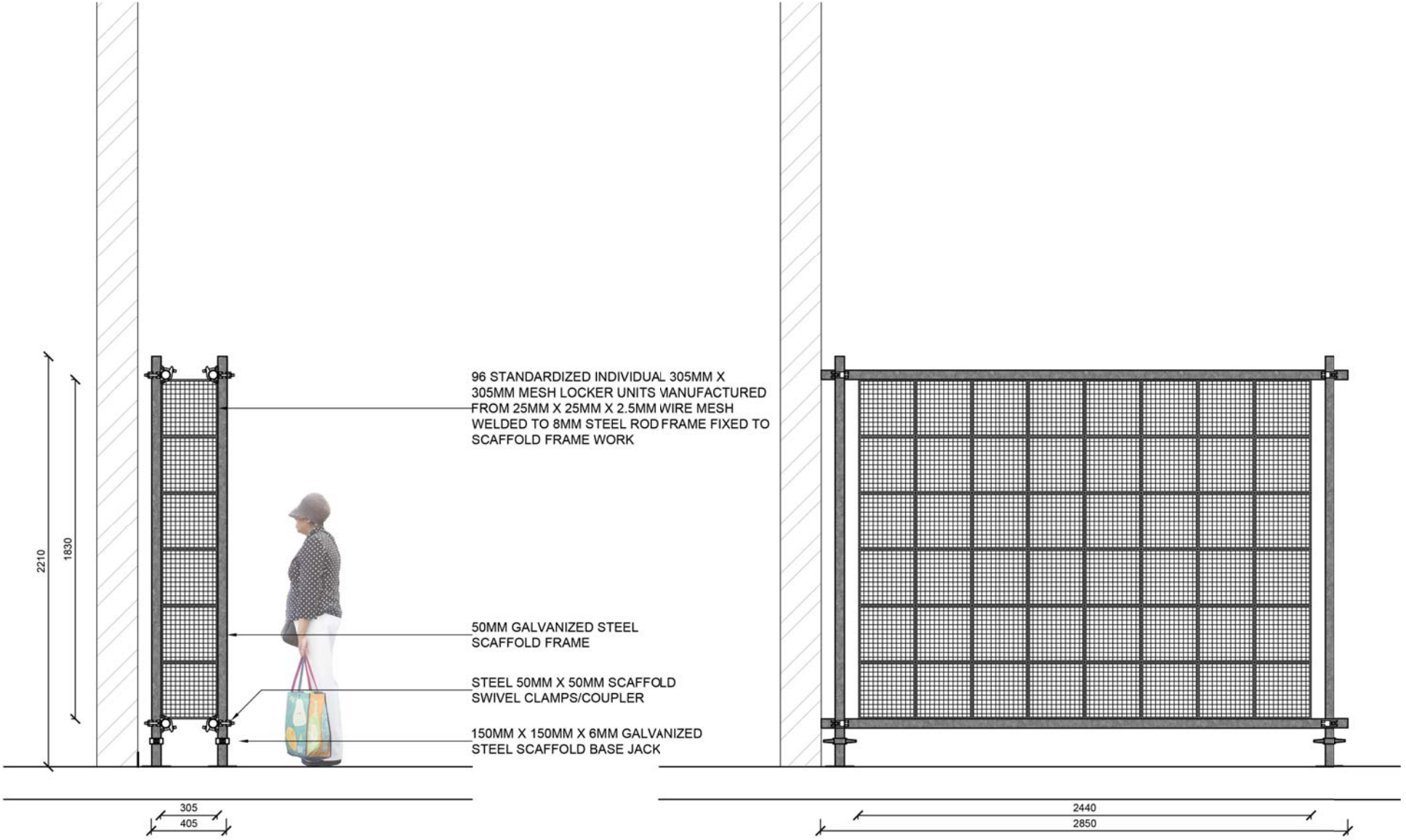


Figure 7.5.4.1 - Exploded isometric of hand wash trough detail NTS (Author, 2019)



HAND WASH TROUGH DETAIL

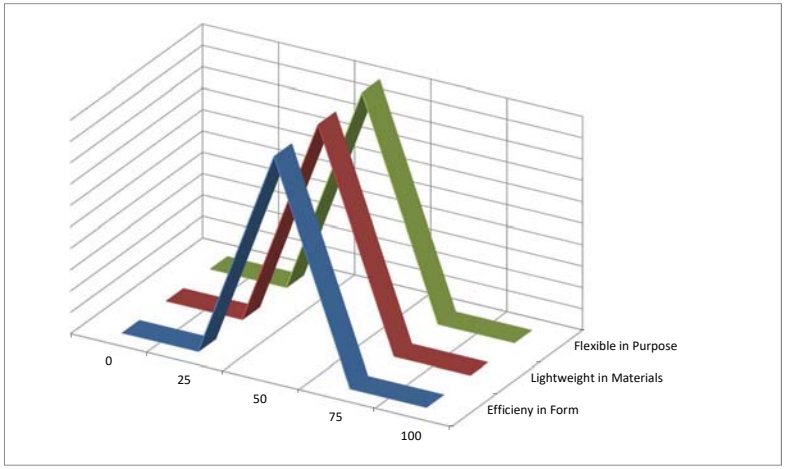
Figure 7.5.4.2 - Hand wash trough detail, NTS (Author, 2019)



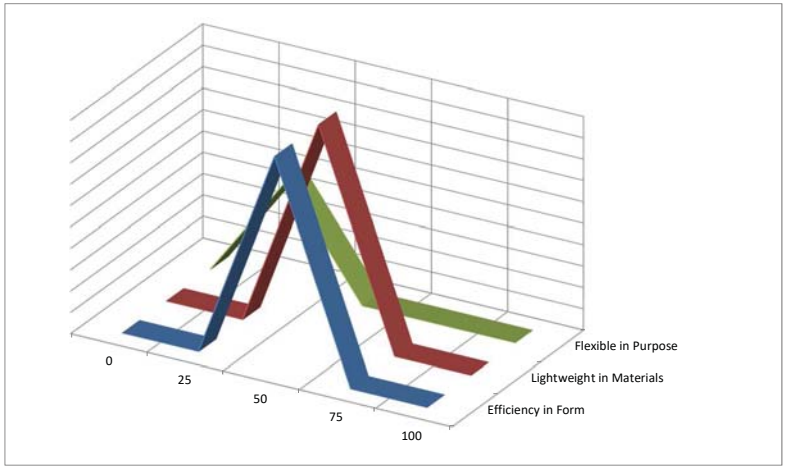
LOCKER UNIT DETAIL

Figure 7.5.4.3 - Locker unit detail NTS (Author, 2019)

HAND WASH TROUGH					
	Net Percentage %				
	0	25	50	75	100
Principles					
Efficieny in Form			50		
Lightweight in Materials			50		
Flexible in Purpose			50		



LOCKERS UNIT					
	Net Percentage %				
	0	25	50	75	100
Principles					
Efficiency in Form			50		
Lightweight in Materials			50		
Flexible in Purpose		25			



Criteria

Principle: Efficiency in Form					
The Efficiency of the Elements Form					
	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials					
Weight of Elements Materiality					
	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose					
Purpose of Element is Flexible in Use and or Allows Promotes Adaptation					
	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

Criteria

Principle: Efficiency in Form					
The Efficiency of the Elements Form					
	%	0	50	75	100
Ineffient					
Moderately Efficient					
Efficient					
Form is Extremely Efficient					

Principle: Lightweight in Materials					
Weight of Elements Materiality					
	%	0	50	75	100
Element is 'Heavy'					
Element is Moderately Lightweight					
Element is Lightweight					
Element is Extremely Lightweight					

Principle: Flexible in Purpose					
Purpose of Element is Flexible in Use and or Allows Promotes Adaptation					
	%	0	50	75	100
Element is inflexible					
Element is moderately flexible					
Element is Flexible					
Element is Extremely Flexible					

7.5.5 ADDITIONAL DETAILS

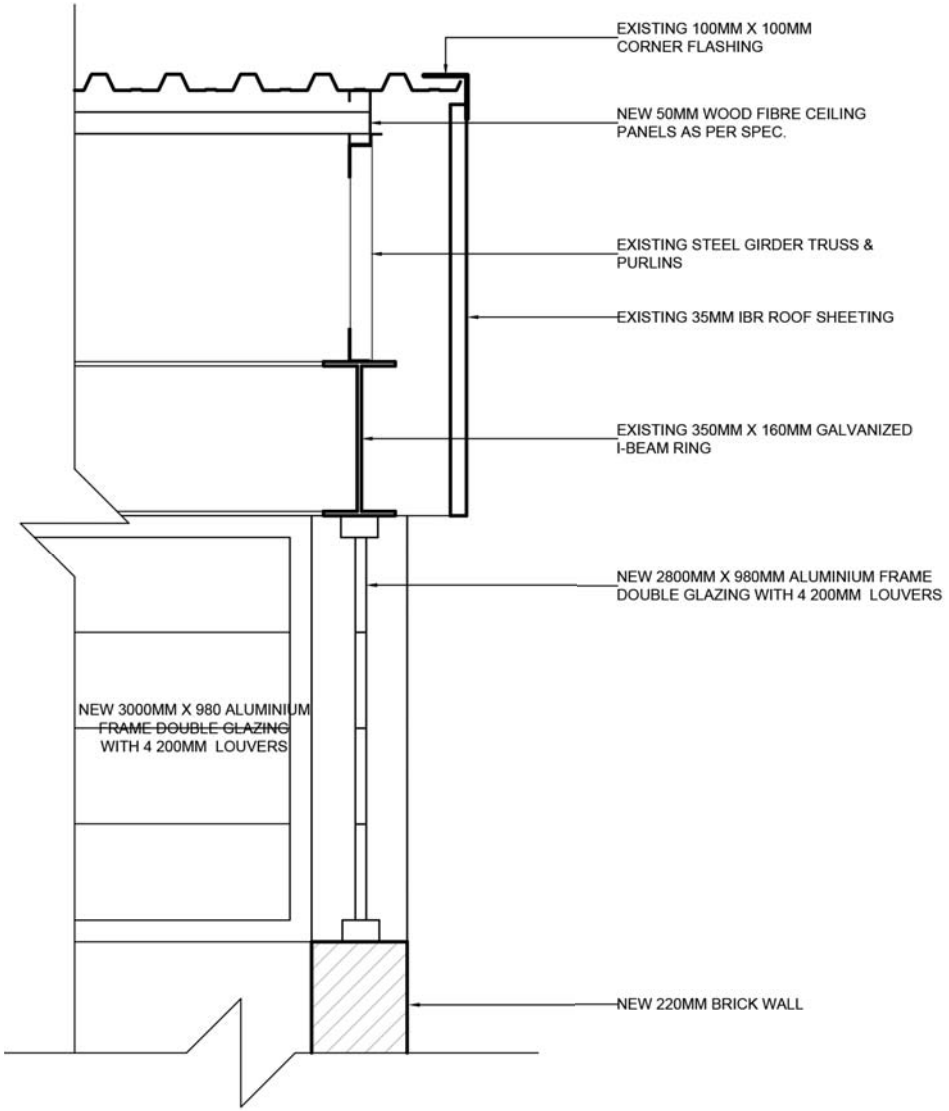


Figure 7.5.5.1 - Detail RD1, NTS (Author, 2019)

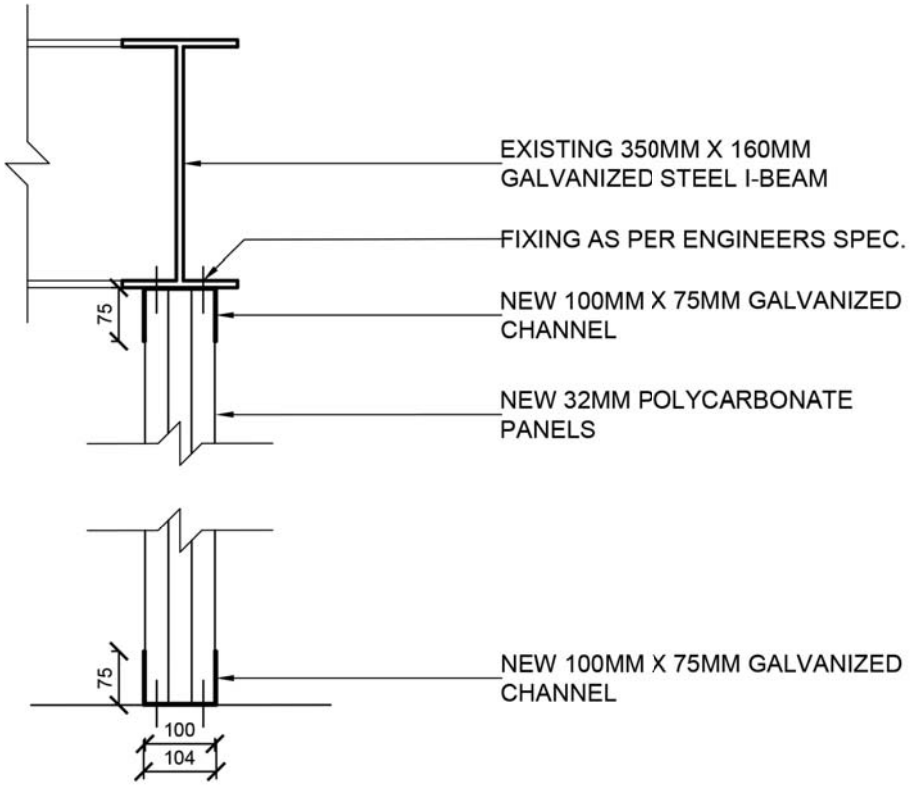


Figure 7.5.5.2 - PFD1 polycarbonate facade fixing detail, NTS (Author, 2019)

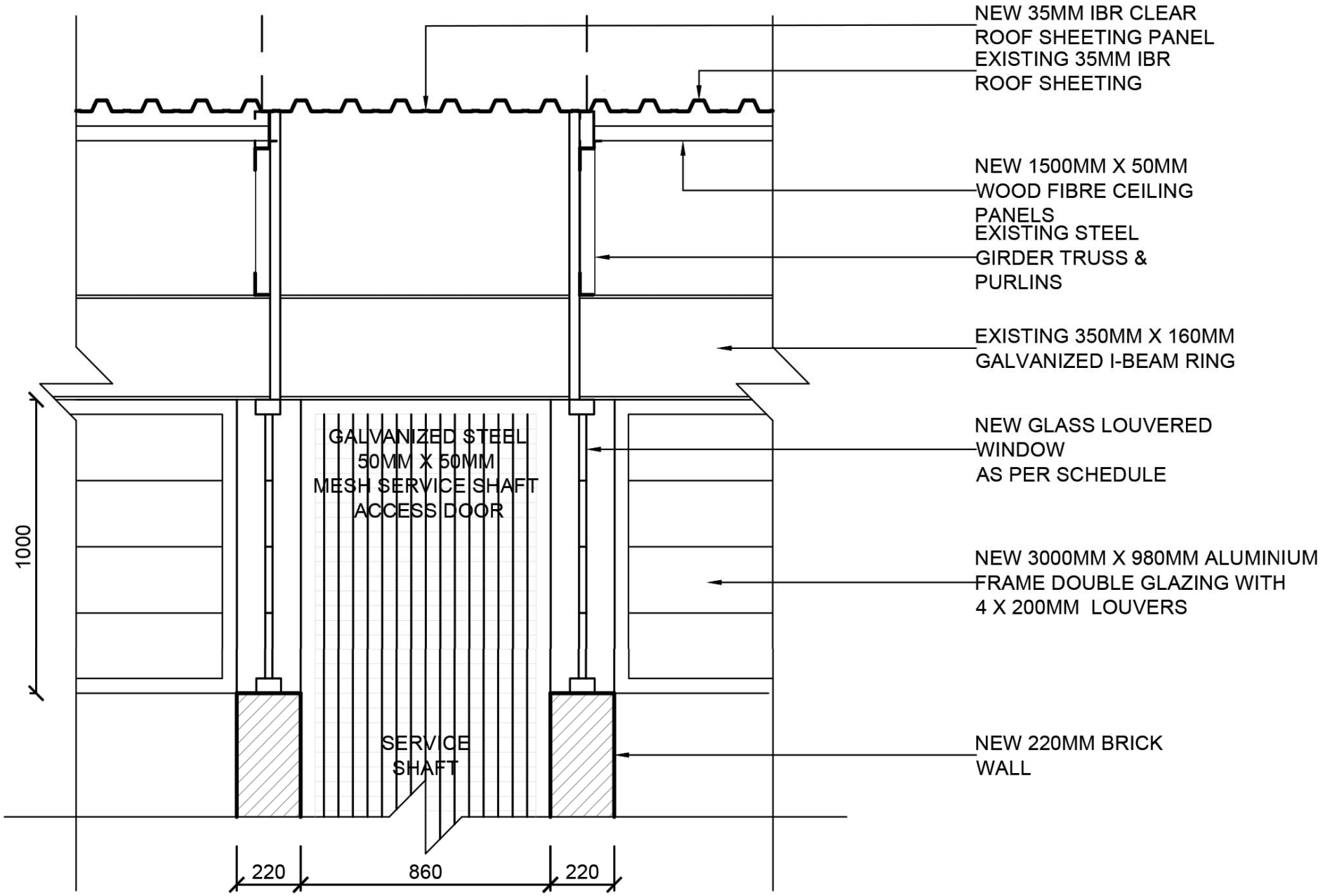


Figure 7.5.5.3 - Detail RD2, not to scale (Author, 2019)

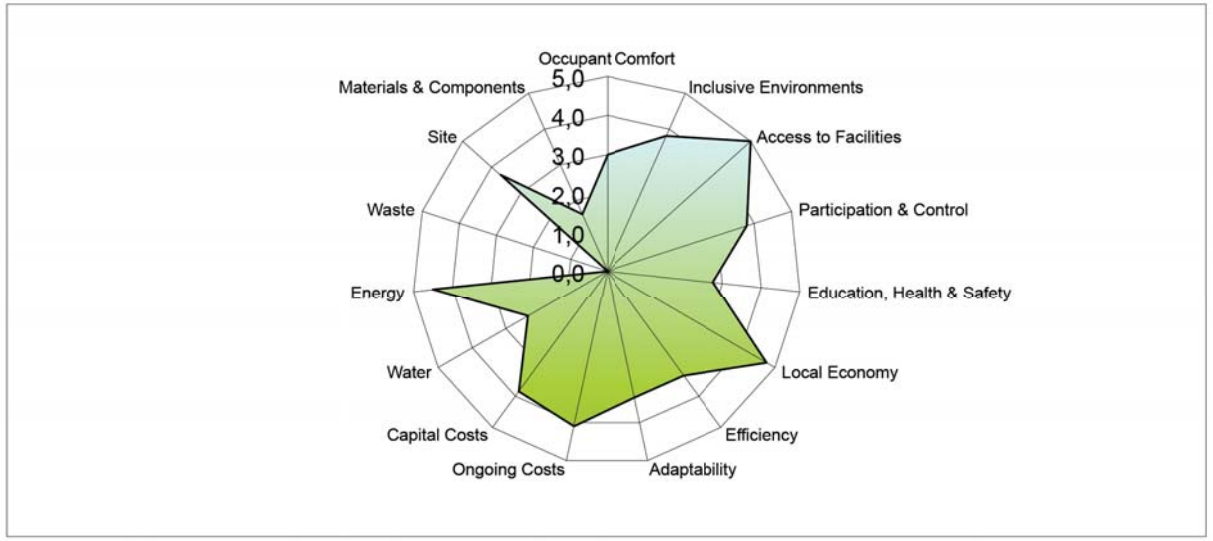
7.6 SUSTAINABLE BUILDING ASSESSMENT TOOL

The Sustainable Building Assessment Tool (SBAT) has been selected as an assessment tool, as the tool has been designed to be especially appropriate for use in developing countries. The tool assesses the performance of a building in relation to economic, social and environmental criteria. Furthermore, the tool includes aspects such as the impact of the building on the local economy, such as the nature of the Nana Sita Market, as economic issues are often a priority.

The Nana Sita Market has scored the most highly on the SBAT economic criteria, meeting such criteria as;

- The intervention can be constructed by local labour
- Components used are locally manufactured
- Furniture and fittings can be manufactured locally
- Maintenance and repairs can be undertaken by local labour
- Materials/equipment used in the building on a daily basis are supplied by local manufacturer
- Construction is coordinated with material / component sizes in order to minimise wastage
- Meets all SBAT adaptability criteria
- Address locals issues.

Project title: Nana Sita Urban Informal Trade Market
Location: 330 Du Toit Street
Building type (specify): Public/Small scale commercial
Internal area (m2): 800m2



Social	3,7	Economic	3,9	Environmental	2,4

Overall	3,3

The market scored poorly on the environmental criteria, as the design did not make considerations of rainwater harvesting, recycling used water, managing waste and makes use of recycled materials. However, the addition of rainwater harvesting and water recycling systems can be implemented. Additionally, the ephemeral nature of the intervention, such as the use of standard tubular steel scaffold, can provide an argument towards producing a higher SBAT score.

7.1 CONCLUSION

This chapter was concerned with the technical development of the Nana Sita Market, focusing on the introduction of the pragmatic approach towards the construction and detailing of the design intervention. In response to the market's ephemeral nature, the technical development was driven by ephemeral architecture principles; efficiency in form, lightweight in materials and flexibility in purpose. The principles informed the technical development framework and methodology, applied to the adaption approach of the intervention and the varying scales of the urban, the envelope and the interior.

REFLECTION

CHAPTER EIGHT.

8.1 RECAPITULATION

The primary objective of this study was the implementation of an urban renewal strategy towards restraining the onset of urban decay. In the context of this study, decay is caused by the prolonged vacancy, specifically of automotive dealerships, resultant of South Africa's current economic decline, which lead to the nationwide downsizing of automobile manufacturers' dealership networks. As a consequence, a number of dealerships stand vacant in Pretoria's CBD.

The urban renewal strategy, consisted of the ephemeral adaptive reuse of a vacant dealership in Arcadia into an urban informal trade market, described as the Nana Sita Market. The insertion of an informal trade market programme was informed by, and in response to the current site conditions, consisting of a high frequency pedestrian movement pattern and a subsequent, thriving, informal trade economy that was spawned off the street activity. Supporting the argument of the programme and informing the design development of the market was relevant theory and precedents of similar urban markets and the case study of an African urban informal trade market.

The market was conceptualized with a bottom-up approach. This approach was informed by time spent on site with the informal traders, urban market precedent studies and the case study of an African urban informal trade market. The intention of the market focuses on traders needs, such as shelter and access to services, sensitively providing necessary infrastructure to maximize and encourage informal trade. Additionally, supporting the programme of the urban informal market are secondary programmes that included a market courtyard, public ablutions, and a workshop and storage facility for the repair and maintenance of market infrastructure.

To convey the ephemeral nature of the intervention and informed by precedents of ephemeral interventions, the construction medium of standard tubular steel scaffold and its components, was adopted. Furthermore, the concept of ephemerality informed the technical investigation, with the principles of ephemeral architecture guiding the construction and detailing of specific design elements of the Nana Sita Market.

Lastly, the overarching objective of the study was the reintegration of the vacant site into the urban context to restrain decay and contribute positively towards the urban condition

8.2 STUDY CONTRIBUTION

The contribution of this study is the role of the discipline of interior architecture within the field of urbanism and the extension of the practice of adaptive reuse, commonly associated with heritage conservation, as method towards restraining the onset of urban decay.

The theoretical and design approach of the Nana Sita Market contributes towards urban interiorism, referring to the scale and techniques of interior architecture and the application to the urban scale. Additionally, the design of the Nana Sita challenges the traditional interior design requirement of a permanent, architectural envelope as the condition that defines an interior space, designed without the dominance or architecture and mediating the relationship between the interior and exterior.

The study contributes towards the practice of adaptive reuse, particularly within the urban context, and not the common association with heritage conservation.

8.3 CHAPTER SUMMARIES

Chapter One served as an introduction to the study, providing the background, problem statement and research questions. Additionally, the chapter put forward the study aim and objective, study significance, the employed research methods, the study delineations and limitations and any assumptions formed.

Chapter Two presented the context of the site by investigation of the site on the macro and micro scales. The chapter began by presenting the site's macro locality, the urban morphology and the historical development of Arcadia. The analysis of the existing site conditions, which included site mapping and site visits, were presented and interpreted in the form of a SWOT analysis. On the micro-scale, the analysis consisted of site observations, the investigation of the design of the architectural design language of automobile dealerships and the dealership on site, followed by the documentation of the edge conditions and an illustrated solar analysis of the site.

Chapter Three outlined the client, programme and the users of the Nana Sita Market. The client is the current owner of the building, who has social and economic investment within the area in the form of the three businesses described in the chapter. The primary programme of an urban informal trade market was informed directly by the current urban conditions of the site's thriving informal trade economy that has spawned off the high frequency pedestrian movement. The users of the intervention were identified, with the primary users being the informal traders and their consumers.

Chapter Four investigated theories on urban decay and renewal, informality and urban informal trade, adaptive reuse, public interiors and ephemerality, in order to establish a theoretical framework for the urban renewal strategy. The theoretical investigation and subsequent findings supported the proposal of the programme presented in Chapter Three and the design of the Nana Sita Market, as well as the condition of ephemerality that served as conceptual driver for both the design and technical investigation.

Chapter Five discussed and analyzed precedents of urban markets and a case study of an African urban informal trade market to contribute towards design informants of Nana Sita Market. The findings discussed presented insights into formal and informal markets.

Chapter Six presented the design development of the Nana Sita Market. The chapter began by setting forth the urban renewal strategy and the bottom-up design

approach, emphasizing the focus on trader needs. The findings from the previous chapters were then presented as design informants followed by conceptual maquette and digital visualization exercises. Precedent and conceptual visualizations introduced the addition of tubular steel scaffold as a design medium to convey the ephemeral nature of the market. From the concepts presented, the iterative design process was conducted with three iterations completed and analyzed by method of SWOT analyses before presenting the final design iteration of the Nana Sita Market.

Chapter Seven was concerned with the technical development of the Nana Sita Market, focusing on the introduction of the pragmatic approach towards the construction and detailing of the design intervention. In response to the market's ephemeral nature, the technical development was driven by ephemeral architecture principles. The principles informed the technical development framework and methodology, applied to the adaption approach of the intervention and the varying scales of the urban, the envelope and the interior.

Chapter Eight concludes the study by a study recapitulation, the contribution of the study, summaries of all the previous chapters and a conclusion.

8.4 CONCLUSION

The study identified the problem of the prolonged vacancy of automotive dealerships contributing towards the onset of urban decay. The site's thriving urban informal trade economy was identified and informed the programme of the ephemeral adaptive reuse of the vacant dealership, the Nana Sita Market. The contextually appropriate injection of an urban informal market and supporting programmes, such as public ablutions, activate the once vacant dealership, thereby providing a model for similar contexts. By injecting contextually responsive activity onto the vacant site, the onset of urban decay can be restrained and the once vacant dealership can contribute positively towards the urban condition.

List of References

99% Invisible (2016). Least Resistance: How Desire Paths Can Lead to Better Design.

Anderson, JE. Jenkins, P. (2011). Developing Cities in between the Formal and Informal. ECAS 2011 - 4th European Conference on African Studies African Engagements: On Whose Terms?

Andersen, H. (2003). Urban Sores: The Interaction Between Segregation, Urban Decay and Deprived Neighbourhoods. 1st ed. London. Ashgate.

ArchDaily. (2015). A Scaffolding System for a Temporary Facility / Peris+Toral.arquitectes. [online] Available at: https://www.archdaily.com/796646/a-scaffolding-system-for-a-temporary-facility-peris-plus-torarquitectes [Accessed 1 Feb. 2019].

Bcnecologia.net. (n.d.). SUPERBLOCKS | BCNecologia. [online] Available at: http://www.bcnecologia.net/en/conceptual-model/superblocks [Accessed 1 Jan. 2019].

Bullen, P. and Love, P. (2011). 'Adaptive reuse of heritage buildings'. Structural Survey, 29(5), pp. 411-421.

Byard, P. (2005). The architecture of additions. New York: W.W. Norton.

Bromley, R., Tallon, A. and Thomas, C. (2005). 'City Centre Regeneration through Residential Development: Contributing to Sustainability'. Urban Studies, 42(13), pp.2407-2429.

Camocini. B & Nosova. O. (2017). A second life for Contemporary Ruins. Temporary Adaptive Reuse strategies of Interior Design to reinterpret vacant spaces, The Design Journal, 20:sup1, S1558-S1565, DOI: 10.1080/14606925.2017.1352680

Cardosi, G. 2011. Habitat between norms, impulse and utopia towards the integration of informal settlements. Department of Urban Planning. McGill University, Montreal, Canada

Coles, J. (2015). The fundamentals of interior architecture. New York: Fairchild Books.

Cordan, Ö., Dinçay, D. and Fialho Teixeira, F. (2014). 'Adaptive Reuse in Interior Architecture: A Case Study in Famagusta, Cyprus'. The International Journal of Architectonic, Spatial, and Environmental Design, 8(1), pp.1-15

De Beer, S.F., 2018, 'Faith-based action and urban regeneration', HTS Teologiese Studies/ Theological Studies 74(3), a5168. https://doi.org/10.4102/hts.v74i3.5168

Dewar, D. and Watson, V. (1990). Urban Markets - Developing Informal Retailing. 1st ed. USA & Canada: Routledge, pp.2-70.

Fairs, M. (2016). SelgasCano pavilion to become school in Kenya's Kibera slum. [online] Dezeen. Available at: https://www.dezeen.com/2016/02/11/selgascano-kibera-school-pavilion-louisiana-art-museum-copenhagen-kenya-nairobi-slum-humanitarian-architecture/ [Accessed 1 Feb. 2019].

Hejduk, R., Oudenallen, H. and Compton, B. (2005). The art of architecture, the science of architecture. Washington, DC: ACSA Press, pp.129-136.

Gibson, E. (2016). Peris + Toral Arquitectes uses scaffolding to create temporary pavilion in Barcelona. [online] Dezeen. Available at: https://www.dezeen.com/2016/09/21/peris-toral-arquitectes-scaffolding-temporary-pavilion-barcelona/ [Accessed 1 Feb. 2019].

Grogan, P. and Proscio, T. (2008). Comeback Cities. 1st ed. New York: Basic Books.

Huvendick Jensen, R. and Ulv Lenskjold, T. (2004). Designing for social friction: Exploring ubiquitous computing as means of cultural interventions in urban space. In: Computers In Art And Design Education Conference. [online] Copenhagen, p.2. Available at: http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.1.1489 [Accessed 1 Sep. 2019].

Iannone, P. (2014). Seeking Balance. 1st ed. New York: Taylor & Francis.

Lagos: Wide & Close. (2004). [video] Directed by B. van der Haak. Lagos: Submarine.

Latham, D. (2000). Creative re-use of buildings. Shaftesbury: Donhead Publishing.

Mills, G. 2012. Informal Settlements could be our cities of the future. [Online] www.urbanlandmark.org.za [Accessed 10 May 2019]

Peel, D. (2015). Me[a]ting The Beef Bar. A typology for informal socio-economic public space. Unpublished Mint(Prof.) dissertation. University of Pretoria.

Poot, T., Van Acker, M. and De Vos, E. (2015). 'The Public Interior: The meeting place for the urban and the interior'. Idea Journal, [online] pp.54-64. Available at: https://www.researchgate.net/publication/308903038_The_Public_Interior_The_meeting_place_for_the_urban_and_the_interior [Accessed 1 Feb. 2019].

Pps.org. (2014). Ten Strategies for Transforming Cities and Public Spaces through Placemaking. [online] Available at: https://www.pps.org/article/ten-strategies-for-transforming-cities-through-placemaking-public-spaces [Accessed 1 March. 2019].

Roberts, D. (2017). A fascinating new scheme to create walkable public spaces in Barcelona. [online] Vox. Available at: https://www.vox.com/2016/8/4/12342806/barcelona-superblocks [Accessed 1 Jan. 2019].

Simone, A. (2012). Reclaiming Black Urbanism: Inventive methods for engaging urban field in Africa and beyond. African Perspective in [South] Africa, City Society, Space, Literature and Architecture. Edited by Bruins, G & Graafland, A. Rotterdam. 010 Publishers.

Sahistory.org.za. (n.d.). Nana Sita | South African History Online. [online] Available at: https://www.sahistory.org.za/people/nana-sita [Accessed 1 Feb. 2019].

Swartz, R. (2016). Dealer Classic: Planning Automobile Dealer Properties – GM's Postwar Vision. [Blog] Curbside Classic. Available at: http://www.curbsideclassic.com/blog/dealer-classic/dealer-classic-gms-post-war-vision/ [Accessed 1 Jan. 2019].

Weaver, M., 2001, 'Urban regeneration – The issue explained', The Guardian, 19 March, 2001.w https://www.theguardian.com/ society/2001/mar/19/regeneration.urbanregeneration1 [Accessed 18 May 2018]

LIST OF FIGURE REFERENCES

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology
Department of Architecture

To whom it may concern

26 January 2019

MASTERS IN ARCHITECTURE

Students associated with the above-mentioned program, at the University of Pretoria, are in the process of accessing information for their 2019 Design Dissertation projects.

Can you please assist them with access to sites under investigation and any relevant information that they may need to successfully complete their research projects? Any data obtained will only be used for academic purposes and not for any commercial gain.

If you have any queries, please do not hesitate to contact me.

Yours sincerely

Prof Arthur Barker
MProf coordinator, Design coordinator and Heritage and Cultural Landscapes Research Coordinator
PhD(UP), MSc(dist)(Bartlett), BArch(dist)(UCT), BAS(dist)(UCT), NHDAT(cum laude)(Cape Tech), PrArch, SAIA
Department of Architecture
Faculty of Engineering, the Built Environment and Information Technology
+27 (0)12 420 5777 [Office]
+27 (0)12 420 4542 [Secretary]
arthur.barker@up.ac.za [Email]

Interview conducted by Duren Moodley, student number 18022473, from the University of Pretoria, EBIT Faculty.

Interview Agreement

I, KENNY understand the purpose of this interview.

I understand that any information gather from this interview will only be used in reports and findings for the study. I also have a right to review the final submission.

I understand that my participation is voluntary. I may choose not to answer some questions asked by the student.

I understand that I have an option, at the end of the interview, to revoke my consent for any information used,

I grant permission for this interview to be recorded. The recording will not be made publicly and will only be used for information purposes only.

✓ Yes / No

Participant Signature X

Date of interview. 23/04/19

Interview conducted by Duren Moodley, student number 18022473, from the University of Pretoria, EBIT Faculty.

Interview Agreement

I, FORTUNE understand the purpose of this interview.

I understand that any information gather from this interview will only be used in reports and findings for the study. I also have a right to review the final submission.

I understand that my participation is voluntary. I may choose not to answer some questions asked by the student.

I understand that I have an option, at the end of the interview, to revoke my consent for any information used,

I grant permission for this interview to be recorded. The recording will not be made publicly and will only be used for information purposes only.

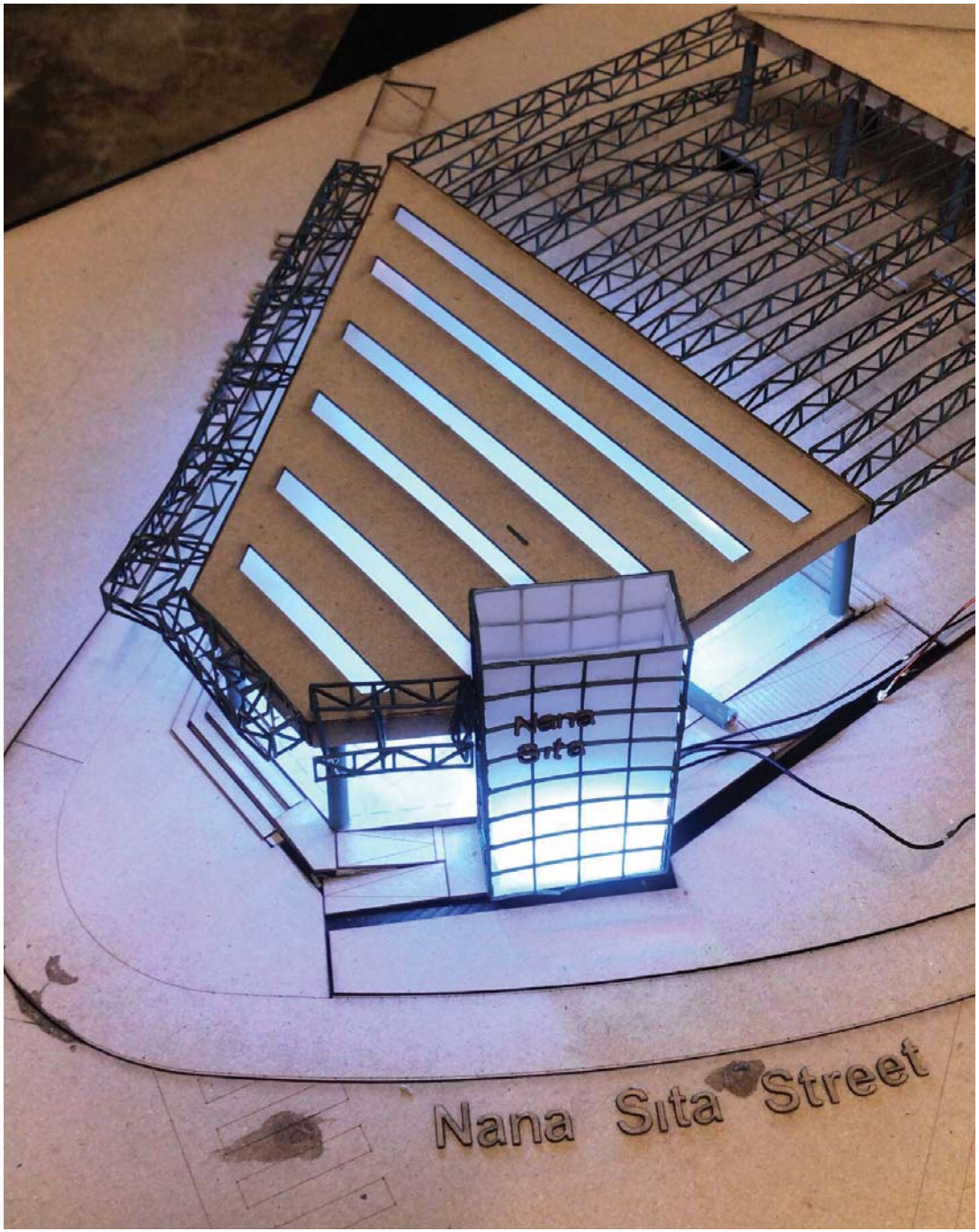
✓ Yes / No

Participant Signature X

Date of interview. 23/04/19

APPENDIX B - POSTERS AND MODEL


EMERAL
IRBANISM
2. SITE
ENVELOPE ANALYSIS
3. CLIENT, USER AND PROGRAME


Nana Sita
Nana Sita Street

END.