

EATING ANEW

IMPROVING NUTRITION THROUGH ENVIRONMENTAL DECISION-MAKING AIDS

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I declare that this dissertation, which I hereby submit for the degree Master of Landscape Architecture (Professional) at the University of Pretoria, is my own work and has not been previously submitted by me for a degree at this or any other institution.

I further state that no part my dissertation has already been, or is currently being submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to works of others, the extent to which that work has been used is indicated and fully acknowledged in the text, list of references.

Mikael de Beer

Title:	Environmental consumption patterns: improving nutrition through environmental decision-making aids
Programme:	Spinal urban development with public Demonstration Kitchen, store-front upgrade, Play Park and supporting infrastructure
Address:	Un-zoned Erf 36397, Informal Settlement Alaska, Moshumi Street, Mamelodi, Tshwane
GPS Coordinates:	25°43'38.80"S, 28°26'31.76"E
Research Field:	Human Settlements and Urbanism
Clients:	Real-time Foods research group (University of the Western Cape and University of Pretoria Centre of Excellence in Food Security)
Keywords:	Nutrition, Food Environment, Eating Behaviour, Infrastructural Upgrade, Landscape Influence
Site description:	Mamelodi's eastern most informal settlement on a south-western slope of the Magaliesberg range
Theoretical Premise:	Investigating the influence landscape architecture has on eating patterns
Architectural Approach:	Novel behavioural science toolbox application to site

PREFACE

This project explores the effect landscape elements may have on eating behaviour within the informal settlement of Alaska, Mamelodi, South Africa. The overall intention is to decrease the poor-lifestyle diseases prevalent in Alaska through aiding better consumption patterns within the settlement. The project deals with issues of environmental health influences, specifically salutogenic environments and behavioural stimuli, urban street spaces in informal settlements and community participation through neighbourhood amelioration.

This study is undertaken through the Real-time Foods research group in partnership with the Centre of Excellence in Food Security jointly hosted by the University of Pretoria and University of the Western Cape, and the Human Settlements and Urbanism study unit of the Department of Architecture, University of Pretoria. It is made possible by a generous study grant from the National Research Fund of South Africa.



aan Gerhard & Ilse

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Thanks to the Alaska Honours 2015 class

ABSTRACT

Recognising food security as a subset of the broader health debate surrounding life-style disease within South Africa's burgeoning informal settlements lead to an investigation into the designed landscape's ability to influence eating habits.

Much has been written on the potential health benefits of landscape architecture, yet very little that focusses on the influence landscape architecture has on health through food choices (other than productive agricultural landscapes). An eating toolbox is developed to guide design decisions—it is based on psychological and behavioural science principles. The toolbox encourages social norm dissemination, not creating cognitive fatigue, the exposure to healthy choices and the utilisation of healthy foods in self-image creation, amongst others.

Some of these tools require a salutogenic (healthy) environment. A clean, accessible and legible street is proposed and supported by an ancillary landscape system. This 'food street' is proposed as the most effective manner in which healthier consumption patterns may be aided. The congruence of existing networks in Alaska, the influence on pedestrians along a linear route, the facilitation of existing subsistence agriculture and upgrading of existing infrastructure all serve to create Alaska's first urban street.

The design and incorporation of transporting, producing, displaying, trading, preparing, consuming and recycling food all blends into creating a healthy eating experience.

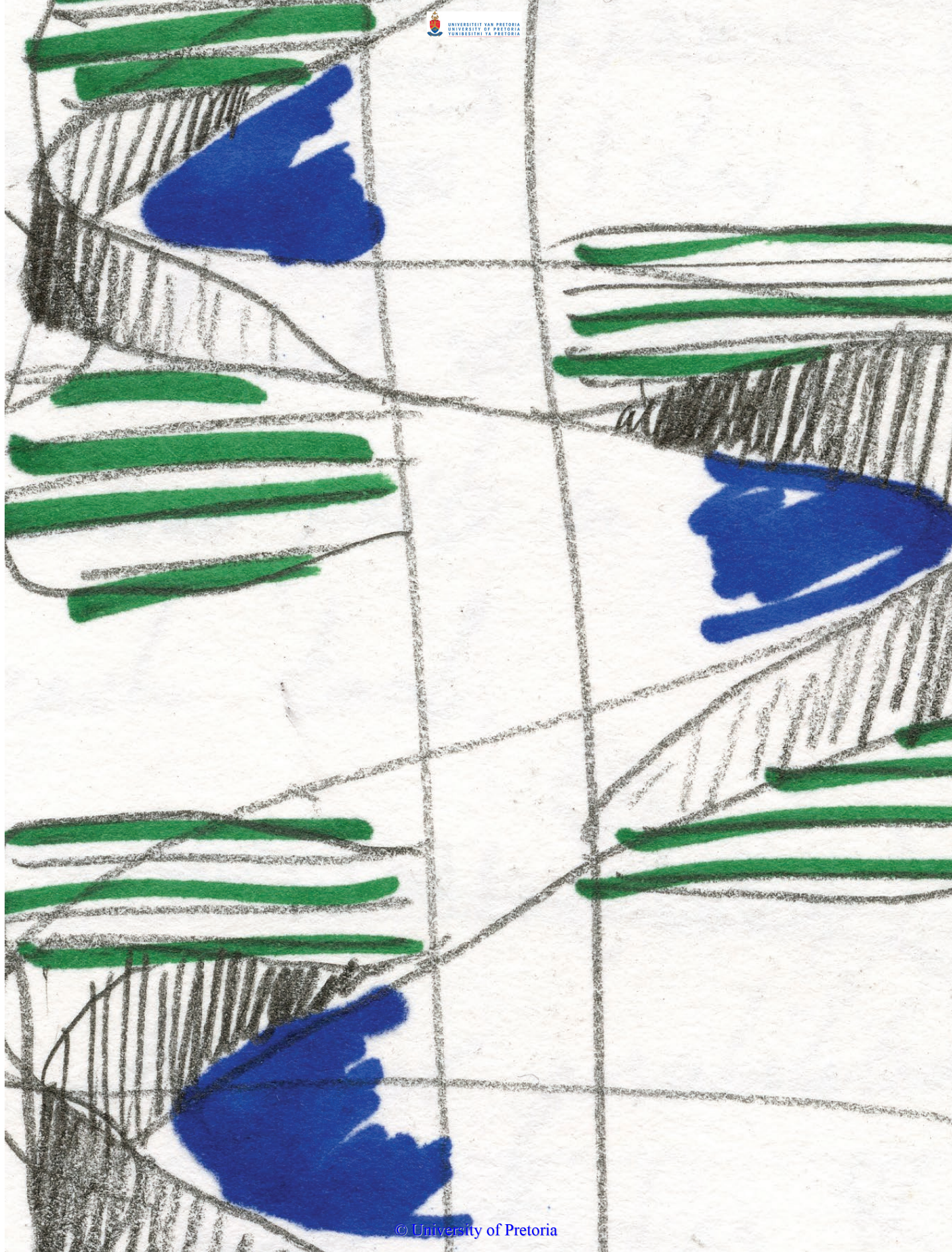
DEFINITION OF TERMS

Food desert:	Food deserts are defined as urban neighbourhoods and rural towns without easy access to fresh, healthy and affordable food even though they may have fast food restaurants and convenience stores.
Food environment:	A food environment is a collection of physical, biological and social factors that affect an individual or a group of individuals' eating habits and patterns.
Good food:	Food that provides nourishment and enables people to thrive, is tasty, is visually appealing, is produced in an environmentally sustainable manner, is not exploiting people during its creation and is affordable to all people.
Heuristics:	A common-sense rule or pattern intended to increase chances of solving a problem in a shorter amount of time.
Malnutrition:	Malnutrition is the condition that develops when the body does not get the right amount of the vitamins, minerals and other nutrients it needs to maintain healthy tissue and organ function. This can be either getting too much or little of these nutrients.
Nutrition:	The process of taking in food and using it for growth, metabolism and repair.
Salutogenic:	Based on <i>salutogenesis</i> which describes an approach focusing on factors that support human health and well-being, rather than factors that cause disease.
Salutogenic Environment:	An environment that is easy to walk on, legible to the user and clean of waste.
Undernutrition:	A type of malnutrition: undernutrition is a consequence of consuming too few essential nutrients or using or excreting them more rapidly than they can be replaced. Also called caloric deficiency.

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1. OBSERVATIONS

This section outlines a series of observations of health in the informal settlement of Alaska, Mamelodi, Tshwane, as related to food.

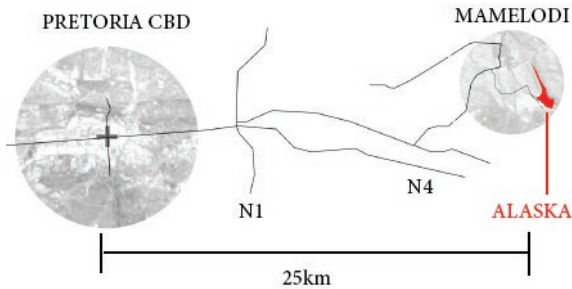


Figure 1 Location of Alaska in relation to Pretoria's CBD (HONS 2014)

1.1 SOUTH AFRICAN FOOD & NUTRITION SECURITY

Food and Nutrition Security (FNS) as defined by the World Health Organisation is 'when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life' (WHO © 2015:para.1).

In Jonathan Foley's (2014:29) article, 'A Five Step Plan to Feed the World', he illustrates the link between our global population and its impact on our environment through our civilization's largest endeavour: agriculture. He points out that the predicted 35% increase in population to 9 billion by 2050 will require a 100% increase in food production due to changing dietary patterns and bio-fuel requirements. Most of this increase will be required in developing countries such as South Africa.

The fact that the Department of Science and Technology, the National Research Foundation, the Water and Agricultural Research Councils and all the universities and universities of technology in South Africa apart from one (see Appendix 1), are involved in developing a national food security policy illustrates the severity of South Africa's looming FNS crisis.

The primary reason to assure a country's food is to

continue a supply of sustaining nutrition to its citizenry. There are strong links between the health of a country's populace and the food they consume as illustrated in Figure 2. Poor nutrition has effects such as straining a country's healthcare system, lowering its economic capabilities and increasing the chance for civil unrest (von Braun 2008:1). A healthy populace equates to a healthy country.

1.2 POOR HEALTH IN POOR COMMUNITIES

Let your food be your medicine and your medicine be your food.

Hippocrates

What then, is the relationship between citizens' health and their food?

According to Roberts (in Potteiger 2013:264) there has been a shift in the public health paradigm from focussing on infectious disease to focussing on chronic illness, since diseases such as cancer, diabetes, heart disease and high-blood pressure have become the main pathogenic causes of death. These diseases are all largely influenced by diet, behaviour and environment (Roberts in Potteiger 2013:265). This means that the government's Health Department spends a lot of resources on these chronic diseases, which can be prevented and controlled through creating healthy environments and lifestyle behaviours, i.e. encouraging

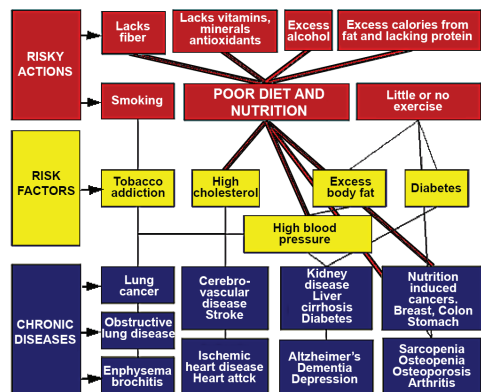


Figure 2 Diagram illustrating food's large role in chronic disease prevalence (combat-aging.com [Sa])

healthy eating.

Recent research has shown that lifestyle or chronic diseases are the most prevalent diseases in Mamelodi (Hugo 2015). There is a high percentage of hypertension, tuberculosis and diabetes amongst those living in Alaska according to Community Health Workers (CHWs) working in the area (CHWs 2015).

Nutrition is considered a large determinant of chronic disease (WHO/FAO 2003:2) which points towards the poor suffering from malnutrition and not necessarily only from undernutrition, as is commonly believed.

The same applies to Alaska as can be seen from the high chronic disease prevalence: Alaskans suffer more from malnutrition than from undernutrition. Put simply, people in Alaska are sick not because they are eating too little, but because they are eating wrong.

1.3 FOOD ACCESS

If food plays such a large role in health and it is clear that there are poor health indicators in Alaska, then is the problem perhaps that there is not enough good food in Alaska?

As the following section shows, Alaska benefits from the same industrialised agriculture and distribution system as most of South Africa. There are small stores selling a limited stock in Alaska called 'spaza' stores; taverns or shebeens selling alcoholic beverages; a single fresh vegetable store and a single supermarket

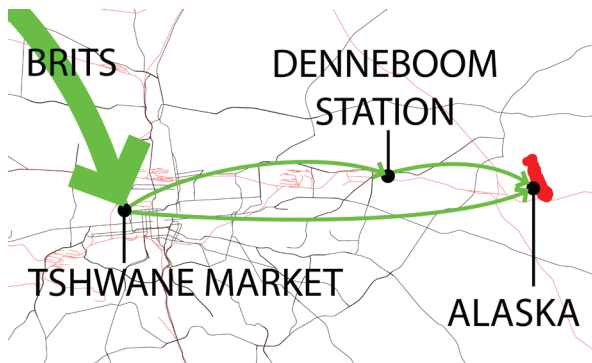


Figure 3 Fresh produce primarily comes in from Brits, through the Tshwane Market, to Alaska (Author 2015)

almost exclusively selling non-perishables. Individuals peddling fruit and vegetables walk the streets daily and there are 'tuck-shops' spread around which sell snacks and sweets. See Figure 9 for locations.



Figure 4 Fresh produce on display at the vegetable store (Author 2015)



Figure 5 Some of the items on sale at the supermarket (Author 2015)



Figure 6 Supermarket fridges used to cool non-perishables instead of fresh produce (Author 2015)

Even though there are spazas nearer at hand, most Alaskans prefer to shop abroad primarily at the shopping centres around Denneboom train station on a weekly shopping trip. Denneboom train station is ten kilometres to the west of Alaska and offers some larger chain supermarkets such as Pick n Pay, Checkers and Score Supermarket. These stores offer the perception of safer, better foods and the social status gained when purchasing from a more expensive but convenient retailer when compared to informal vendors (Food Safety Mini-Symposium 2015). Low-income orientated chain stores have the same quality of products, sourced from the same suppliers, as more upmarket chain stores but strategically place and bulk package their products to cater for the lower income groups (Van der Woude & Van der Woude 2015). This creates more desire to shop at a chain store than to shop at private stores or street vendors.

A small portion of the Alaskans highest upon the mountain practice subsistence agriculture by tending to a small fields of maize and keeping chickens. This provides less than half of their nutritional needs (Alaskan Farmer 2015) with the other food originating by the same means as the rest of Alaska: from South Africa's industrialised agricultural system.

Access was also considered as the possible cause of malnutrition in Alaska. Access to food in poor, informal settlements is considered a mainstay to food

security (Romanik 2008:1). But this investigation shows that large Coca-Cola delivery trucks and bakkies with goods make it to Alaska (Figure 7) and that there are accessible stores that sell good food, therefore access is not a problem. The Real-time Foods research group also concluded that establishing a new supermarket chain-store such as Spar or Pick n Pay would not bring in any significant new options to the food environment of the Alaskans (Real-time Foods Meeting 2014).

Alaskans have access to local pedlars, spazas, a vegetable store and a supermarket. They also often travel to upmarket stores out of choice. It seems, therefore, that the availability of good food is not the reason for malnutrition in Alaska.



Figure 7 Small maize field on the upper mountain edge of Alaska providing a meagre supply (Shaku 2015)



Figure 8 Privately owned delivery vehicle supplying spazas and other stores in Alaska (HONS 2015)

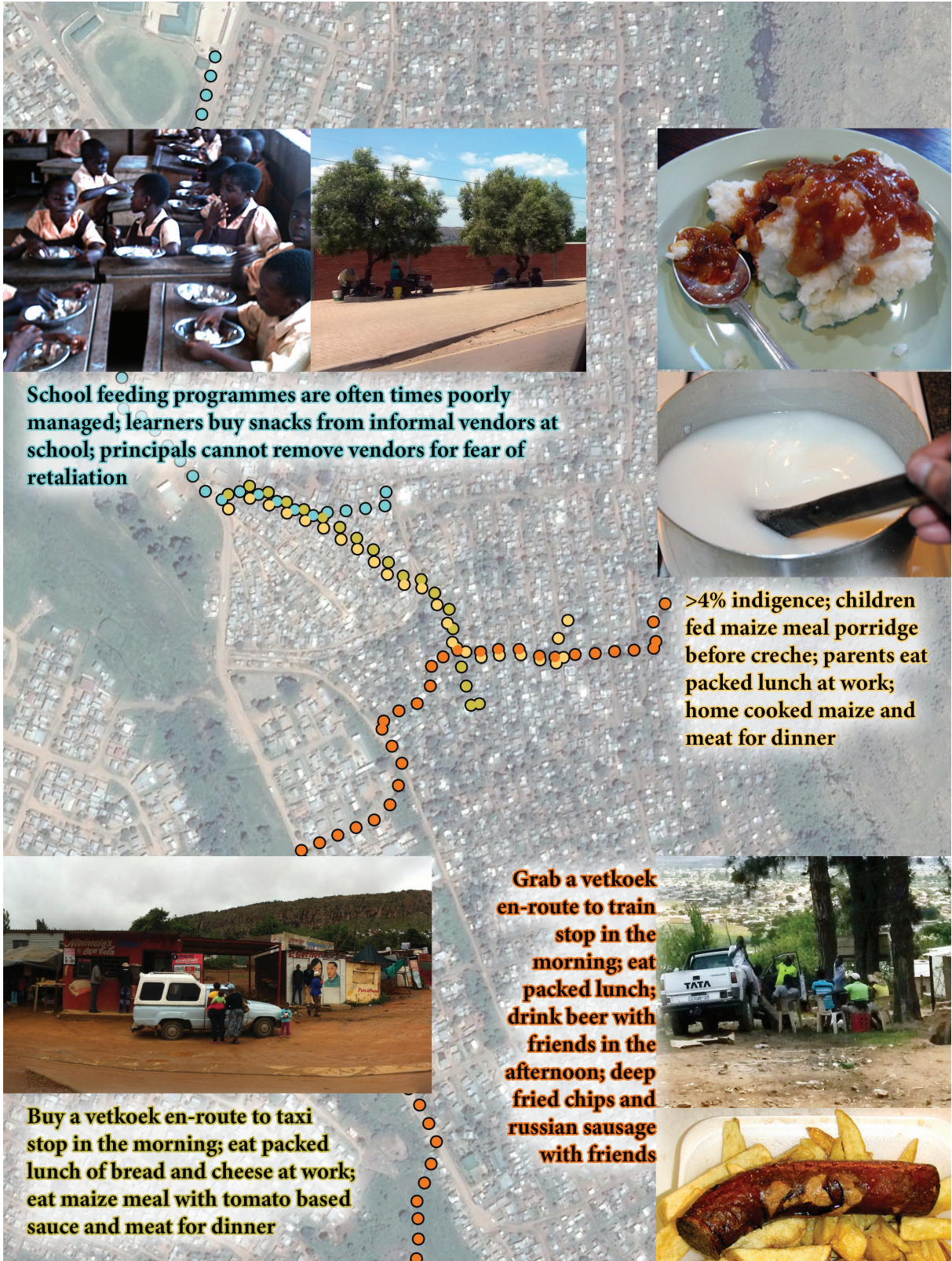


Figure 10 Typical food routes and days of four individual Alaskans (Author 2015)

1.4 ENOUGH MONEY FOR CHANGE

The fact that there is poor health brought about by poor eating habits, yet there is access to good food begs the question: are Alaskans not just too poor to afford the healthier food?

Oxfam (Tsegay *et al* 2014) released a report at the end of 2014, '*Hidden Hunger in SA: The Faces of Hunger and Malnutrition in a Food Secure Nation*' that claimed one in four South Africans experience hunger on a regular basis and that about half of South Africans are at risk of going hungry. Yet a preliminary assessment in 2015 of the 200 000+ individuals registered on the City of Tshwane & University of Pretoria's Community Oriented Primary Care (COPC) programme indicated only 4% of Mamelodi—a historically poor working area in Tshwane—not having enough food .

When one takes the COPC reports to be the more accurate—it is local while the Oxfam report is based on a minor investigation in the Eastern Cape and census data—the difference in reports shows up a misconception that the poor in South Africa are unhealthy because of undernutrition. They are not starving, they have enough money to buy a variety of foods. Mamelodi only has 4% indigence, indicating that the poor are not as destitute as believed.

There is some indication of social spending in Alaska, which shows that there is money that can be used for buying healthier food. The Author has experienced worrying levels of the abuse of alcohol. There is a high prevalence and availability of alcohol. This is disconcerting not only from a physiological aspect but also due to the damage it is causing the community socially. It is universally argued that if people have money to abuse alcohol, they should be able to use that money for food instead. There are also gambling syndicates that operate in poor areas of Mamelodi (Author witnessed and informal interview with Alaskan Resident 2014) which is again potential for food spending. Social spending of money is an indication of the availability of money.

Analysing Figure 10 (previous page) one may also

argue that better spending of existing food budgets may increase health in Alaska. The current norm is to eat meat and pap (maize meal) with some sheba (fried tomato based vegetable sauce). If more balance, variation and even moderation on energy dense foods was practiced there it would be healthier (Wenhold 2015). If expensive meat was replaced by legumes and fresh leafy greens eaten instead of oil fried sheba once in a while there would be no need to alter shebeen or gambling practices.

Looking at the factors mentioned here, the indigence of Mamelodi and the spending trends, it seems as though the Alaskans in Mamelodi, for the greater part, have enough money to buy alternative, healthier food, should they choose to do so.

It has been shown that the people in Alaska suffer more from malnutrition than undernutrition and that their bad food choices impact on the chronic disease prevalence. The two most obvious reasons for the malnutrition in Alaska, namely access to good food and poverty, were explored and it was found that Alaskans do have access to good food and have the money to afford to eat differently. This leads to the conclusion that Alaskans choose to eat, in part, unhealthy food. Therefore, the challenge is not to create access or provide money, but to change Alaskans' behaviour so that they choose healthy food instead. This leads to the question: how can designed landscape change people's food choices?

2. PROPOSITION

2.1 FUNDAMENTALS

Place is not good or bad simply because it is real vs surrogate authentic vs pastiche.... Successful place...engages us actively in an emotional experience orchestrated...to communicate purpose and story.
~ Sircus 2001:31

Accepting that the high chronic disease rate in Alaska is largely due to poor food and lifestyle choices and that these choices are not as poverty induced as previously thought—it is time to look at the role that the built environment can play in changing food choices.

The philosophies of Graham Harman and Peter Sloterdijk (in Nieuwenhuis 2014) argue that space is dynamic in its relational capacity, and not as objective as is commonly believed. Objects have innate qualities which, in their relation with the space, determine the quality of the space. This in turn impacts on how humans interact with the space and therefore also determine the humans' relational qualities with the space. This is fundamental to how people interact with their food environments. Sloterdijk on ontology and space is quoted as saying '[w]e need...to go beyond both the myth of *homo faber* and of *homo religiosus* and to understand the human being as a creature that results from repetition' (Ansell-Pearson 2013:para.8). He concludes that '[h]umans live in habits, not in territories' (Ansell-Pearson 2013:para.8). Space is what we habitually make it. We should focus on the built environment's power to influence our lives, as we are products of our environment which we perpetuate. This implicates built environment designers as partially responsible for our food habits and subsequently our diseases.

If the goal is to reduce the disease levels in Alaska through changing food choices we should look at the

influence our built environment has on our choices. If we want to alter our food environment we must look at how we interact with it.

2.2 HYPOTHESIS

A designed, eating oriented landscape can change people's dietary habits.

The statement asks whether or not the physical environment has the power to influence something as complex as eating patterns. This goes beyond simply denying one access to food as a wall or fence would do but rather asks whether the physical environment can alter long standing cultural norms and practices in an unobtrusive, sensitive and self-sustaining manner.



Figure 11 Man as defined by environmental factors (Author 2015)

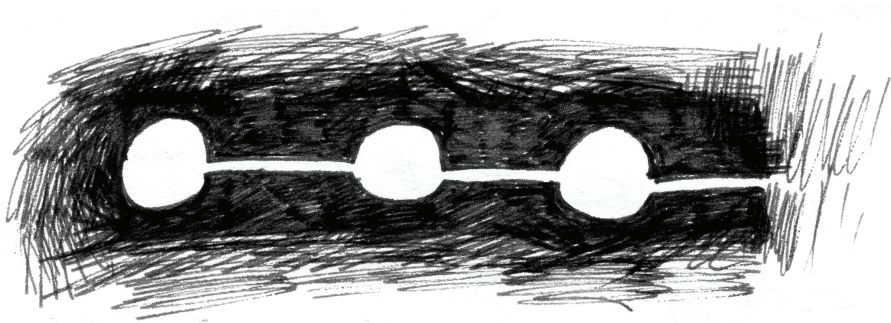


Figure 12 Environment [man] defining space [man] (Author 2015)

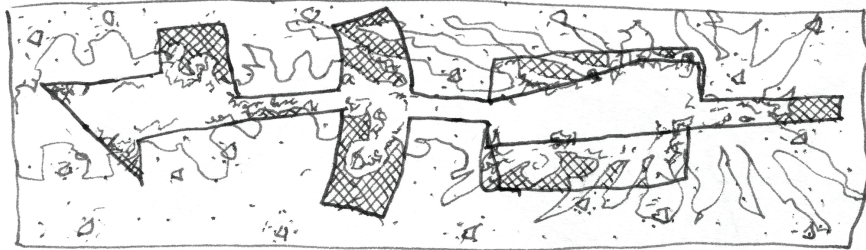


Figure 13 *Eating your environment anew*: Concrete cast around polystyrene then splashed with acid (Author 2015)

CLIMATE CHANGE - CHILDHOOD C
EPIDEMICS - NUTRIT
MACRO ECONOMICS - SOCIAL
TRADE AND TRANSPORT DEPARTMENT - PUBLIC
AGRICULTURE AND WATER DEPARTMENT - E

3. UNDERSTANDING

This section describes how the dissertation question is going to be answered: through gaining an understanding of how food choices are influenced and analysing the Alaskan context where-in that knowledge must be applied.

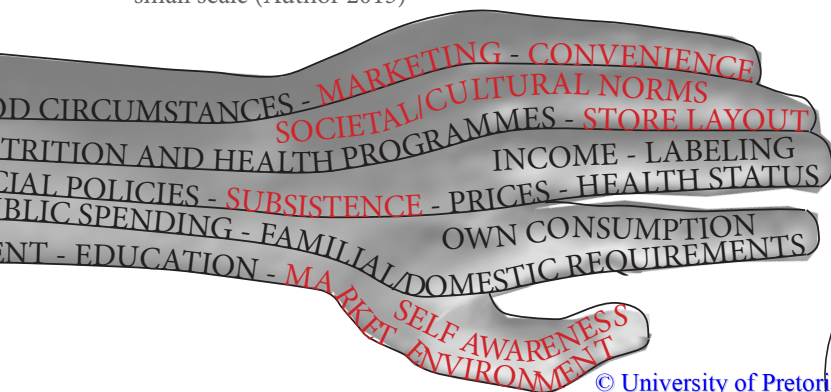
3.1 EATING AND LANDSCAPE ARCHITECTURE

There is not much written on the topic of landscape architecture's influence on food choices. The primary applicable academic focus is on small scale environments which influence food choices and intake, as well as health and obesity, in unconscious, yet pervasive ways (Sobal & Wansink 2007:124). Sobal and Wansink (2007:124) suggests that '[re]engineering built environments may offer opportunities to shape food intake'.

When one looks at the larger landscape scale, writing indicates symptoms and effects of food on landscape but not causal relationships of landscape on food. Potteiger (2013:261) speaks of food developing from and forming with landscapes' ecological, social and spatial processes, yet he does not suggest the opposite.

There is writing on what certain types of environments do to consumer patterns. Consumer Sciences is a large field but has paltry offerings when asked to explain the influences landscape architecture has on eating.

Figure 14 Influences on food choices from large to small scale (Author 2015)



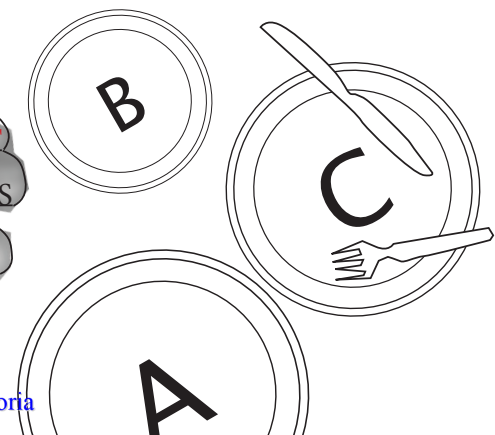
Most of the writing relating landscape architecture and health comes in the form of psychological studies done in hospitals' gardens. Theories range from the ontological to the physiological as to why certain environments facilitate healing. One that is popular amongst landscape architecture practitioners is the Cognitive School Theory. It states that 'instorative' environments restore a more positive view of the user's self and the user's capacities. It claims that an environment that corresponds with the preferences of the user tells the user that he is a part of a world of meaning (Grahn & Stigsdotter 2002:63).

The lack of conclusive literature on designed landscape's impact on food choices makes it necessary to delve into the root causes of eating decisions and build up arguments for the influences of landscape elements on food choices from first principles.

3.2 FIRST PRINCIPLES

The presence of other people at an eating occasion or when choices are made about food has a powerful effect on behaviour.
~ Suzanne Higgs 2015:42

Looking at the list of food choice influences (Figure 14) it was decided to focus on the purview of landscape architecture, from the eating equipment scale such tables and seating up to the neighbourhood scale. Anything bigger becomes the prerogative of town planners, councils, municipalities and eventually politicians and economic forces.



3.2.1 OTHERS AND EATING

Humans have evolved a strong capacity to learn from the behaviour of others. We find approval reinforcing and disapproval repelling. We follow norms more easily when we are uncertain or when we have a stronger shared identity with the norm defining group. Social norms can influence food choices by changing your self-perceptions or through changing the sensory evaluation of food. Eating something that we have seen others eat and enjoy creates the same enjoyment pathways in the brain as eating something that we actually enjoy (Higgs 2015:42).

3.2.2 IDENTITY AND FOOD

A study by Hansen and Thomsen (2015:109) has shown that ‘personal food identity’ (the extent to which consumers believe that their health identity is linked to their food patterns) can aid in increasing healthy food consumption. This is due to personal food identity being positively linked to involvement, i.e. the self-signalling capacity of food consumption should be stressed—consumers should be prompted to engage their food patterns so as to reflect a desired identity (Hansen & Thomsen 2015:114).

One creates and reinforces a food identity by the food one chooses to eat, as well as the preparation techniques one chooses to use (Bisogni *et al* 2002:129). Because a healthy and fit body has become equated to discipline and self-control, food practices can reveal people’s socioeconomic status and knowledge—one can view a person’s identity interacting with their environment through their food practices and patterns (Bisogni *et al* 2002).

3.2.3 ALASKAN IDENTITY AND FOOD

The destabilisation in identity and cultural norms when transitioning from a more rural and traditional setting to an urban, consumer driven one, makes people prone to poorer food and health related decisions. Yet, according to the managing director (Kriel 2015) at an NGO in Alaska, Viva Village, there is not much original cultural heritage or identity left in the inhabitants. Most

are third generation urbanites who aspire to modern Western consumer ideals (Kriel 2015).

Also, a study reported that ethnicity’s influence on food choice is highly variable (Bisogni *et al* 2002:135). Ethnicity does not influence eating habits directly, but rather influences ideals, identities and roles, which interactively determine the food choice process (Devine *et al* 1999:86).

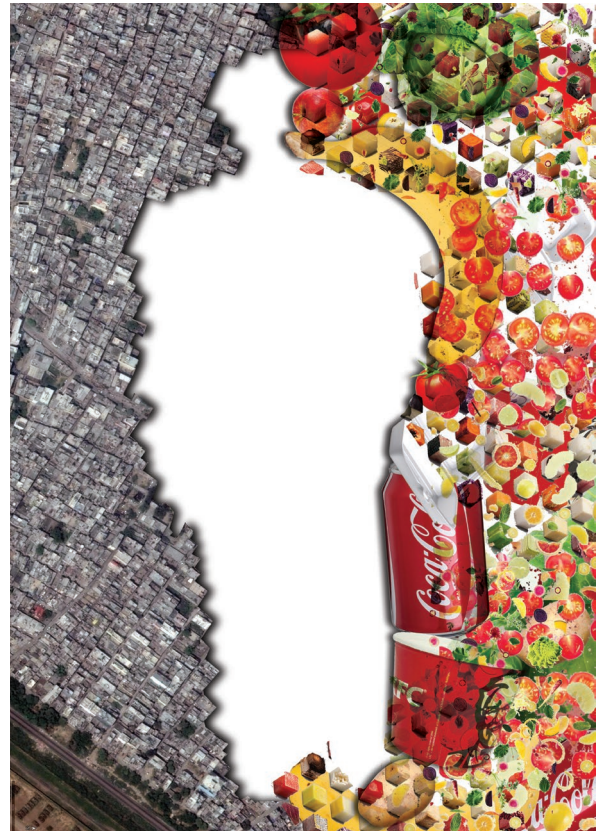


Figure 15 Man as defined by his built environment and food environment (Author 2015)

3.2.4 COGNITIVE FATIGUE

The food choice of the individual is dependent on many influences, most of which go by without us noticing. Humans tend to rely on heuristics when making purchasing and preparation choices. We go through a plethora of considerations, from familial duty, cultural identification, perceptual factors, desired identity to ideals, roles and health. Yet doing this requires energy and higher level cognitive effort which leads to cognitive fatigue and more spontaneous and

heuristic food choices. The heuristic routines of fast food decisions are mainly shaped by environmental cues including appearance, familiarity, size and price (Cohen & Babey 2012:767).

More impulse based and aggressive marketing for low nutrient and high energy foods are prevalent in poorer neighbourhood supermarkets when compared to more affluent neighbourhood markets (Cohen & Babey 2012:774). Stores focus energies, in descending order, on merchandising, accessibility, reputation, in-store service, store atmosphere and finally promotions (Thang & Tan 2003:199). So when Alaskan's shop at a Score Supermarket or Pick n Pay, they are influenced by impulse marketing and make poorer consumer decisions.

The alternative, to have more food shopping in Alaska has its obstacles as different contexts become associated with certain qualities of food and particular eating occasions (Liu *et al* 2014:199). This is the underlying functioning to the 'perceptions of quality and safety with regard to informal vendors versus chain-stores' (Food Safety Mini-Symposium 2015). The local perception of the stores in Alaska needs to be the same as that of the chain stores for them to be used more frequently.

Humans are dependent on, amongst others, environmental cues for food decisions thus partially answering the hypothesis question. The next step is to synthesise these principles into a form that can be applied to a designed landscape.

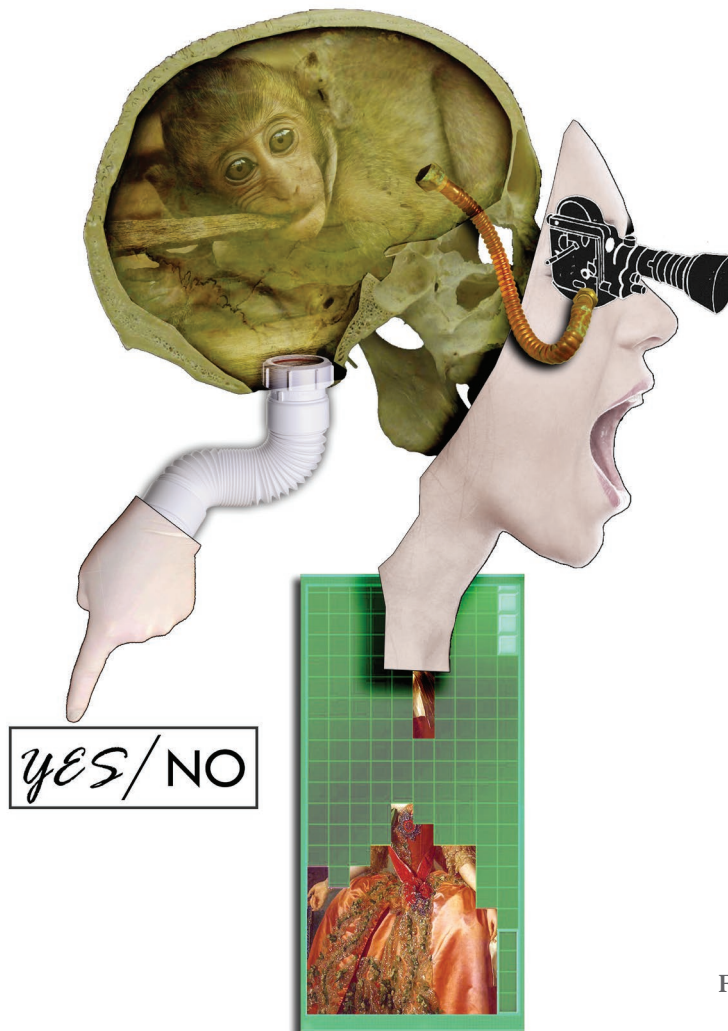


Figure 16 Human heuristic eating machine (Author 2015)

3.3 OPEN EATING TOOLBOX

The fact that almost all food consumption occurs within the context of the built environment makes one blind to that which is ubiquitous and pervasive around you: the street or kitchen you are in, the table, chairs, specific objects—all of which influence and shape food intake. The immediate built environment can distract self-monitoring of eating, increase awareness or tempt with convenience. The immediate environment may give hints as to social norms or appropriate consumption and does so through unconscious influence. Influence can occur when we miss the landmarks or cues in our setting that frame perceptions, for example distractions in a restaurant lets one eat more than one would normally. There are even some environments that contain scripts that alter behaviour to the extent of what to eat and how much. There are multiple behavioural influences and they interact with each other or individually under specific conditions (Sobal & Wansink 2007).

Using the principles mentioned above an Open Eating Toolbox (OET) was developed. It uses the behavioural particulars of our eating choice processes and proposes a built environment application to each one, creating several behavioural tools. These behavioural tools were found to be sensitive to other environmental cues and influences. For example, priming only works when one is exposed to the sensitising element. This is unlikely to occur if the priming element is a high billboard but the road passing it is so eroded that one concentrates on the ground when walking by and misses the billboard. A section for tool prerequisites and physical aids was introduced to increase the behavioural and anti-cognitive fatigue tools' efficacy.

The tools are laid out on the following pages according to Figure 17.

Specific section of OET
Tool name
Tool image
Tool description
How the tool works
Where to apply and/or example of application
Illustration of examples

Figure 17 Layout of OET tools on following pages (Author 2015)

PREREQUISITES

SALUTOGENIC ENVIRONMENT

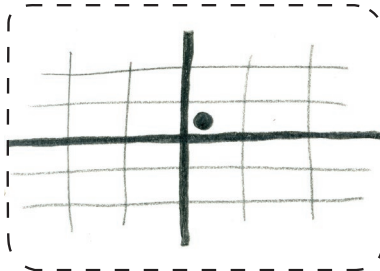


ACCESSIBLE & COMFORTABLE;
ORIENTATING & LEGIBLE; CLEAN

Hierarchy of interventions: for the finer food influencing elements to work, they cannot be overshadowed by stronger influences such as access or stink revulsion.

Urban planning.

LOCATION

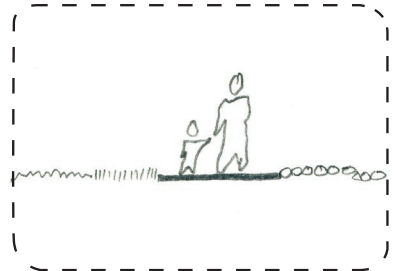


CENTRALLY LOCATED, EN-ROUTE

Place healthy food in readily accessible and central location or at least as close as possible to next unhealthy food competitor.

Urban planning.

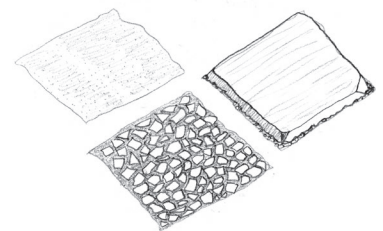
TRAVERSABLE SURFACE



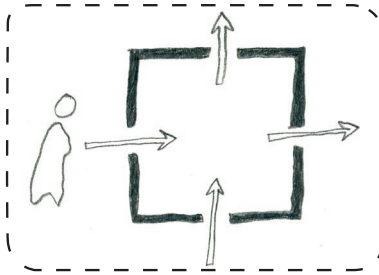
EASY ACCESS, MINIMAL SLOPE, DRY,
COMFORTABLE TEXTURE

In a site that has poor pathways and streets a comfortable and safe surface would be preferred by users—giving one more influence over traffic flow.

Rigid paved surface in the form of roads, ramps, stairs and terraces.



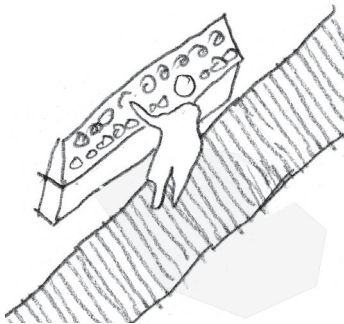
ACCESS



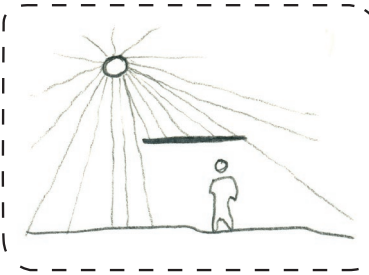
VISUAL & PHYSICAL ACCESS TO CERTAIN FOOD

The larger the access is to a food, the larger its consumption.

Food available on street front.



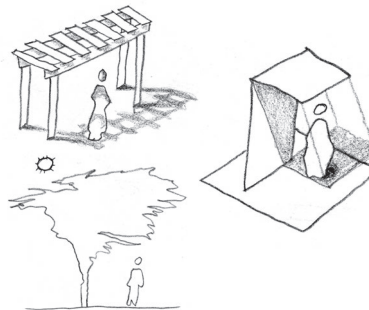
SHADE



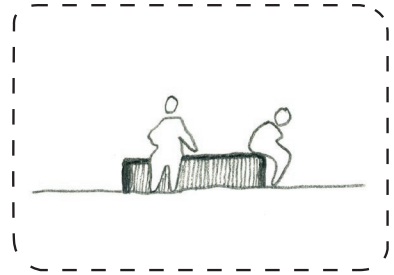
PERGOLA, ROOF, TREE

Anyone walking long distances between work, stores and home needs respite from the harsh South African sun.

Provide immediate screen from sun in form of tree, roof or pergola; along desired stops in street.



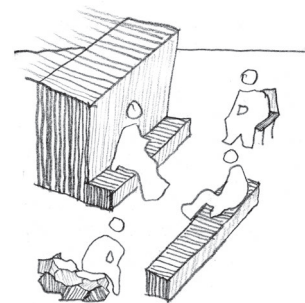
SEAT



BENCH, CHAIR, LEDGE, ROCK, LOG

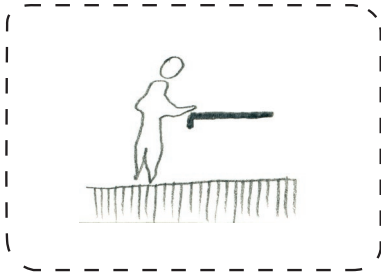
Anyone walking & carrying items long distances between work, stores and home needs an opportunity to rest their legs.

Multiple points of rest at desired stops along a route with larger resting areas serving as social hubs.



PHYSICAL TOOLS

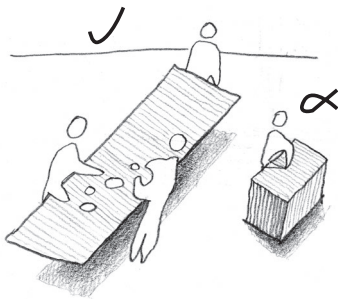
TABLE TOP



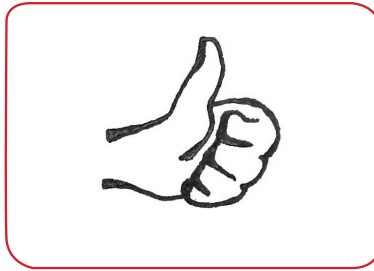
SITTING & STANDING HEIGHT FLAT WORK SURFACE

Healthy foods require preparation. Influences through social norm dissemination when surface is shared.

Hard wearing, accessible, no-frills working surface.



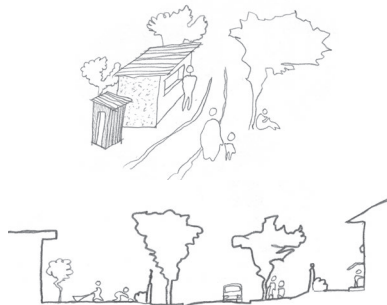
FAMILIARITY



SIMILARITY TO USER'S FORMATIVE ENVIRONMENT

Environment corresponding with users preferences gives basis to user feeling part of that environment.

Use similar materials from site's environment.



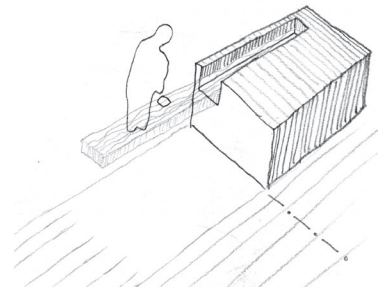
WASH BASIN



DEPRESSION SUITABLE FOR WASHING AND RINSING OF ITEMS

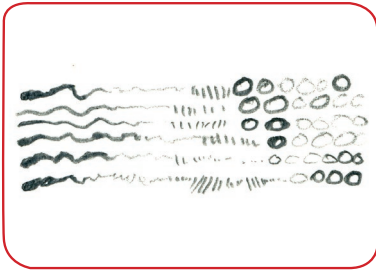
Healthy foods require preparation. Influences through visible sanitation use.

Try to utilise sustainable water in conjunction with anti-cognitive fatigue.



BEHAVIOURAL TOOLS

NATURAL COLOURS AND TEXTURES

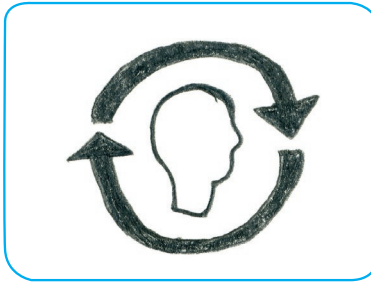


STONE, GREENERY, BUSHVELD TEXTURES, TIMBER, NO SYNTHETIC SURROUNDINGS

Breaking association of bright coloured fast-food store adornment with acceptable foods.

Use what the site has and emulate anti-cognitive fatigue patterns.

GENERAL ONTOLOGY

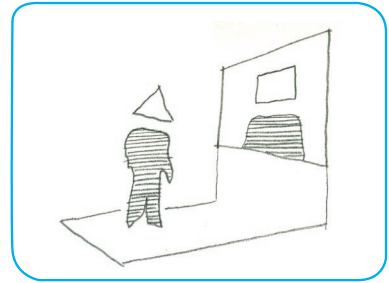


WANTS TO PURCHASE FOODS AT LARGE COMMERCIAL SUPERMARKET

General perception that an established, formal supermarket will provide better quality foods when compared to small, informal vendors.

Urban planning: create similar shopping experience on site.

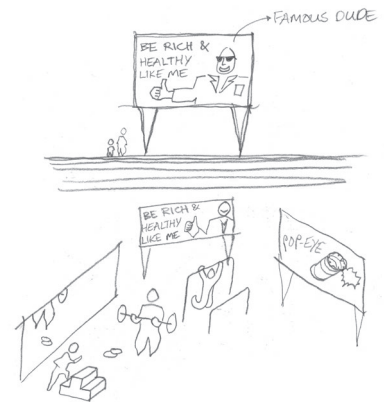
MAGIC MIRROR



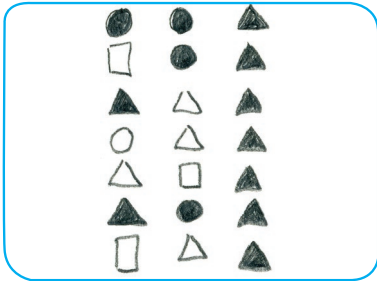
SELECTIVELY FACILITATE IDENTITY BUILDING

Food is a large part of personal identity reinforcement. Allowing for an altered, healthier reflection will engender striving towards a healthier, desired identity.

Recreating the desired built environment (affluent suburbia).



CONSISTENCY



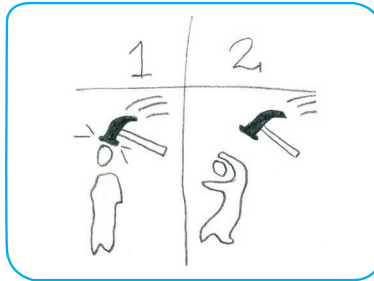
MAKES PLANNING TO EAT, EASIER

Physical and temporal orientation leads to healthier, better planned eating events and less unhealthy, quick-fix meal events.

Same design language from start to finish. Create orientating markers in landscape.



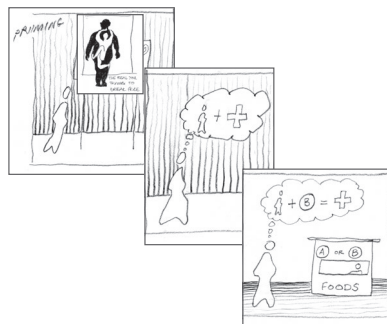
PRIMING



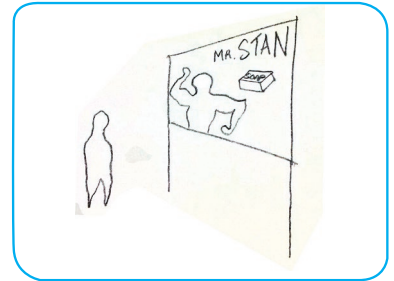
MAKING SOMEONE MORE AWARE OF OR SENSITIVE TO SOMETHING

One can be set-up or primed in a particular fashion before making a specific choice through environmental cues shortly before making said choice.

Placing fresh produce and clear water prior to arriving to purchase/prepare food or have fruit trees bear edibles throughout the year.



CONDITIONING



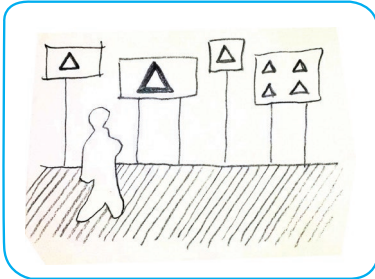
A LOGO/SIGN ASSOCIATING GOOD FOOD WITH ANYTHING

Pairing of stimuli so that characteristics of one are transferred to the other.

Placing the healthy store next to popular place so that the two become paired.

ANTI-COGNITIVE FATIGUE

MERE EXPOSURE CONDITIONING



'HIDDEN' CUES ASSOCIATING A
GOOD
LIFE WITH HEALTHY FOOD

Seeing something repeatedly makes one preferential to it.

Always have leafy greens, vegetables and fruit growing or on display in site.

COGNITIVE FATIGUE AWARENESS

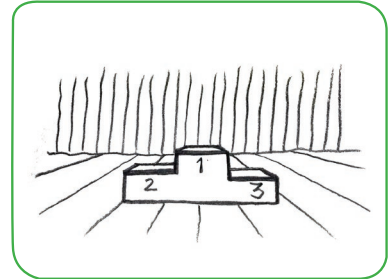


CREATE ENVIRONMENT THAT
DOES NOT OVER STIMULATE AND
SENSITISE THE USER

Making decisions tires the higher level brain functions leading to impulsive, automatic, often poor food choices.

Framework and design elements are not to be confusing, are to be legible and simple.

SELECTIVE MINIMALISM



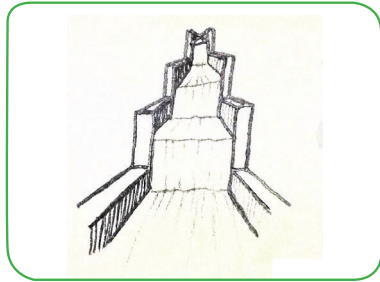
LESS CHOICE, NOT BETWEEN
HEALTHIER FOODS

Making more decisions eventually leads to more impulsive choices. Though more choice amongst the same healthy plethora can lead to more healthy choices.

Inundate with healthy food choices.
Enclose with healthy foods.

MEAL 8
MEAT 1 + STARCH 1 + VEGETABLE 1 + SALAD X
MEAT 2 + STARCH 2 + VEGETABLE 2 + SALAD X
...
VEGETABLE 84 + SALAD X

WATER

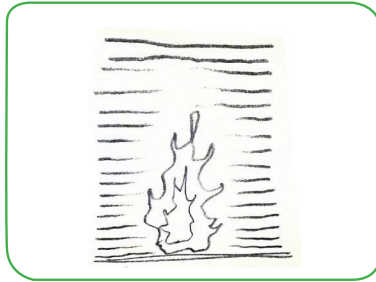


FLOWING WATER

Less cognitive strain equates to more chance for a prudent food decision. Water is relaxing and a 'low gear' for the brain.

Flowing, splashing and twisting water on site.

FIRE



FLICKERING FLAME

Less cognitive strain equates to more chance for a prudent food decision. Fire is relaxing and a 'low gear' for the brain.

Flickering and dancing flames that are safely and comfortably approachable.

3.4 ALASKA, MAMELODI

The Open Eating Toolbox is a generic means to aid design decisions when trying to influence food choices of individuals. To achieve more success in behavioural change one should focus on existing behaviour

instead of ideal behaviour (Schwerin 1982:1325). Thus understanding Alaska's specifics will allow for a better application of the OET.



3.4.1 HISTORY

Alaska is an informal settlement that was on the eastern most periphery of the Tshwane municipality until the municipal boundary shifts of 2013 included more wards into Tshwane. It settled in 2007 when forced evictees from an adjacent piece of land began to move onto the slopes of the Magaliesberg range. A subsequent eviction attempt from the municipality through a third party security agency, a short while after the first eviction, led to violent protests. Two security personnel were killed and their vehicles torched (Eye-witness 2014). There have not been any further attempts to remove the settlers from the mountain side. Alaska has grown in numbers and is now estimated to contain between 20 000 and 40 000 inhabitants. Most of those living in Alaska are migrant workers from Limpopo and Mpumalanga looking for opportunities in Tshwane's urban centres.

Figure 19 Alaska from the South in March (Growar 2015)



Figure 18 Diagram showing Alaska's rapid urban sprawl across the Magaliesberg slope (Author 2015)



Figure 20 Sections and primary routes into Alaska with eating street in blue (Author 2015)

3.4.2 PERMANENCE

The transience of informal settlements determines whether a project will be present for long enough to make a difference or will be scrapped when the settlement is relocated. In 2015 the municipality started to request proposals for new sewerage lines and water supply within Alaska (Figure 21 and Figure 23). Mamelodi East's Urban Hub Development Strategy Report has mixed messages about Alaska as some images include Alaska and some do not (see Appendix 2). Considering the rate at which Alaska has expanded (Figure 18) and the government housing backlog, 2.3 million (Presence 2014) it does not seem likely that Alaskans will have alternative housing made available soon. Considering all of the above, it is safe to assume that Alaska will not be removed.

3.4.3 CONDITIONS

The leaders sold stands large enough for a small home for R1000 each, which included an illegal municipal

water connection the leaders connected to each stand. This informed the grid-like layout. Electricity is the new home owner's prerogative and illegal connections known as *isenyoka* ('snake' in Sepedi) are maintained by those with electricity connection knowledge. The municipality regularly arrives to disconnect them but this has caused protests and people thought to be interfering with Alaska's supply have been violently

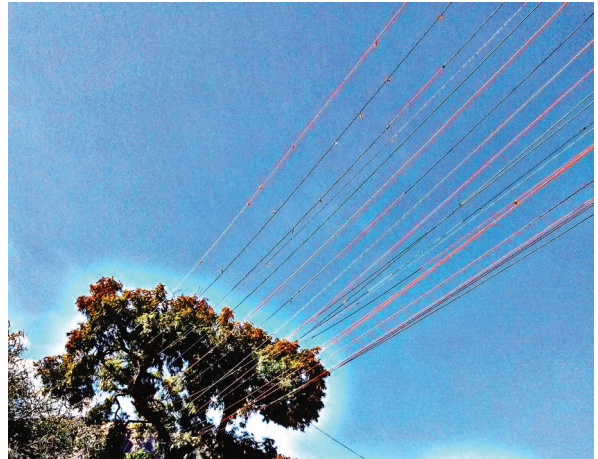


Figure 22 Illegal electrical cables called *isenyoka* between a building corner and tree (Author 2015)



Figure 21 Proposed new sewerage piping including Alaska in red (HONS 2015)

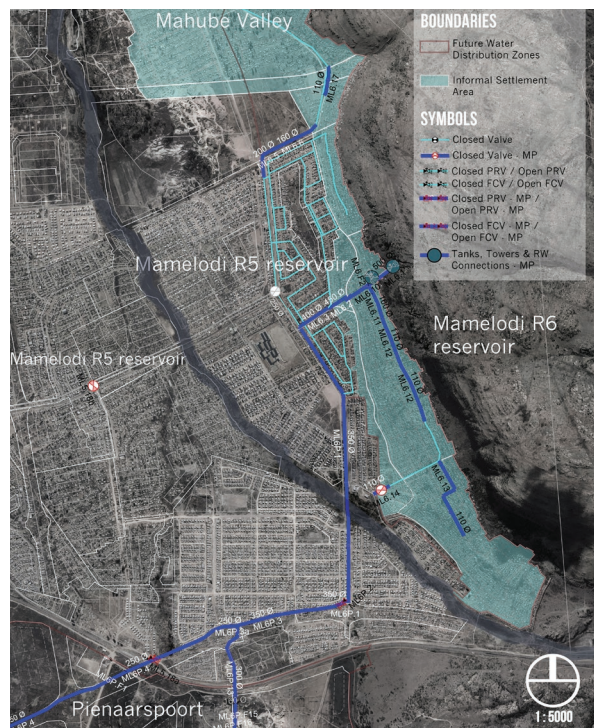


Figure 23 Proposed upgrade of water supply lines including Alaska in blue and turquoise (HONS 2015)

attacked (Kriel 2015; Franklin 2015).

The high stone content of the lithosol soil conditions slow erosion, but the majority of the paths headed down the mountain suffer erosion to such an extent that it is difficult and unpleasant to use them. The high stone content also makes digging of the pit-latrines a more laborious exercise. Drainage is poor and during storms many houses become flooded.

The steep slope that the majority of Alaska is settled

on also plays a role in construction costs. Not only are the roads for vehicles to deliver items within the settlement difficult to create, the individual plots have to be levelled first at a cost of R1200 by local contractors before the building material (locally prefabricated walls and roofs, available at R1200 for a single and R2400 for a larger galvanised corrugated steel sheeting clad pallet timber frame) (HONS 2015) can be hauled up a narrow, eroded and rocky path.



Figure 24 Erosion along a path running down the mountain side (Author 2015)



Figure 27 Houses on plinths built on cut & fill sections. Plinths double as seating (Author 2015)



Figure 25 Much less erosion from roads running perpendicular to the mountain's slope (Author 2015)



Figure 26 Abandoned hole dug in preparation for pit latrine exposes rocky nature of soil (Author 2015)

3.4.4 ASPECTS

One can describe Alaska as a tight-knit, proud and aspirational community that is content with their living place but not their situation. Most are third generation removed from their rural homesteads and do not relate strongly to traditional values and rural customs, yet familial bonds and expectations still play a strong role (Kriel 2015). A typical migratory worker will use their Alaskan plot during the year to be close to work and then be expected back in Limpopo or Mpumalanga at year's end with support for the extended family in the form of money or goods. If the individual is desperate it leads to the theft of anything deemed valuable. In the tight-knit and mob-justice prone community, stealing from your neighbour may land you in hospital or a shallow grave (Franklin 2015), but taking goods from a well-to-do NGO project has less severe repercussions. Viva Village is an NGO that has been operating in Alaska since 2012 and now performs all its services from within a secure plot after retracting them from satellite locations because of constant theft.

Regardless of the hardships the Alaskan's endure, they are none-the-less a proud community and take care to maintain their modest homes. There is much energy spent on both edible and decorative gardening and landscaping their plots. There is emulation of the gardens many Alaskan's are employed to keep in Tshwane's more affluent neighbourhoods. There is even an annual gardening competition held to determine the best garden in Alaska (HONS 2014).

Figure 28 Illustration of pride taken in domestic environment and aspirations in Alaska (Author 2015)

GARDENS



ROCK GABION GARDEN



PLAIN LAWN & TREE



SUBURBIA TYPICAL



SUBURBIA MERIT

THRESHOLDS



VEGETATED FENCE



HEDGE WITH FENCE



GABION & FENCE



STONE & FENCE



FAILED GARDEN



HARD PACKED
DIRT



WILD VELD &
ROCK



ROCKY
PRODUCTIVE



SUBURBIA
EXEMPLARY



SCULPTED LAWN



VERNACULAR
MIX



SANDY LAWN



GLASS BOTTLES



FENCE MIX



STANDARD
FENCING



STONE &
MORTAR



LOCAL TREE
POSTS



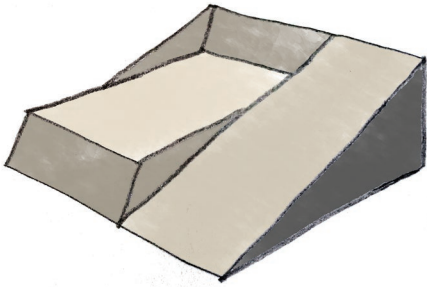
ROCK MIX



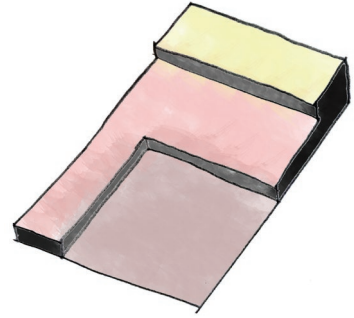
MUD PLASTERED
ROCK WALL



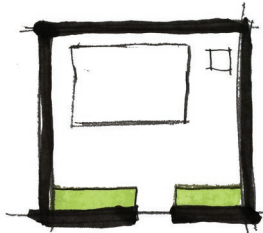
TERRACES



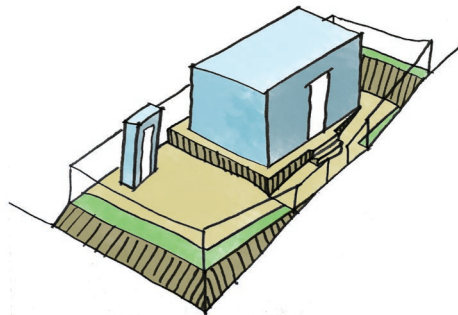
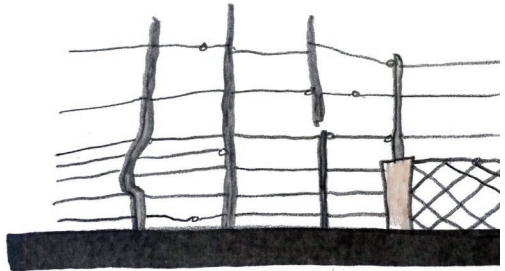
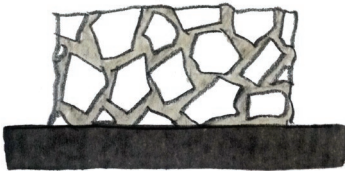
Landscaping of stands in either cut and fill or terracing forms.



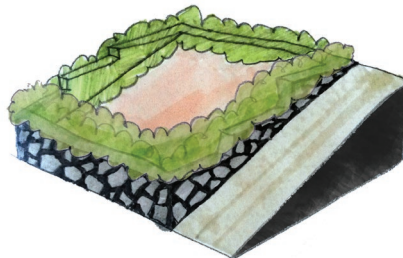
Strong boundaries and public facing decorative garden are indicative of ownership by physical demarcation and personal ability and aspirational attitude of owner.



Dry packed, mortar set stone walls and fences are part of informal South African housing practices. One MUST demarcate boundaries.



Typical Alaskan placemaking



Essence of Alaskan placemaking

The settlement is run by Joe Kgopa and the five zones it is subdivided into are each monitored by an equally charismatic community leader (see Figure 29). They are involved in administrative actions with the municipality and other organisations in Mamelodi East, take care of disputes if any should arise between residents of Alaska and tend to electrical and water connections.

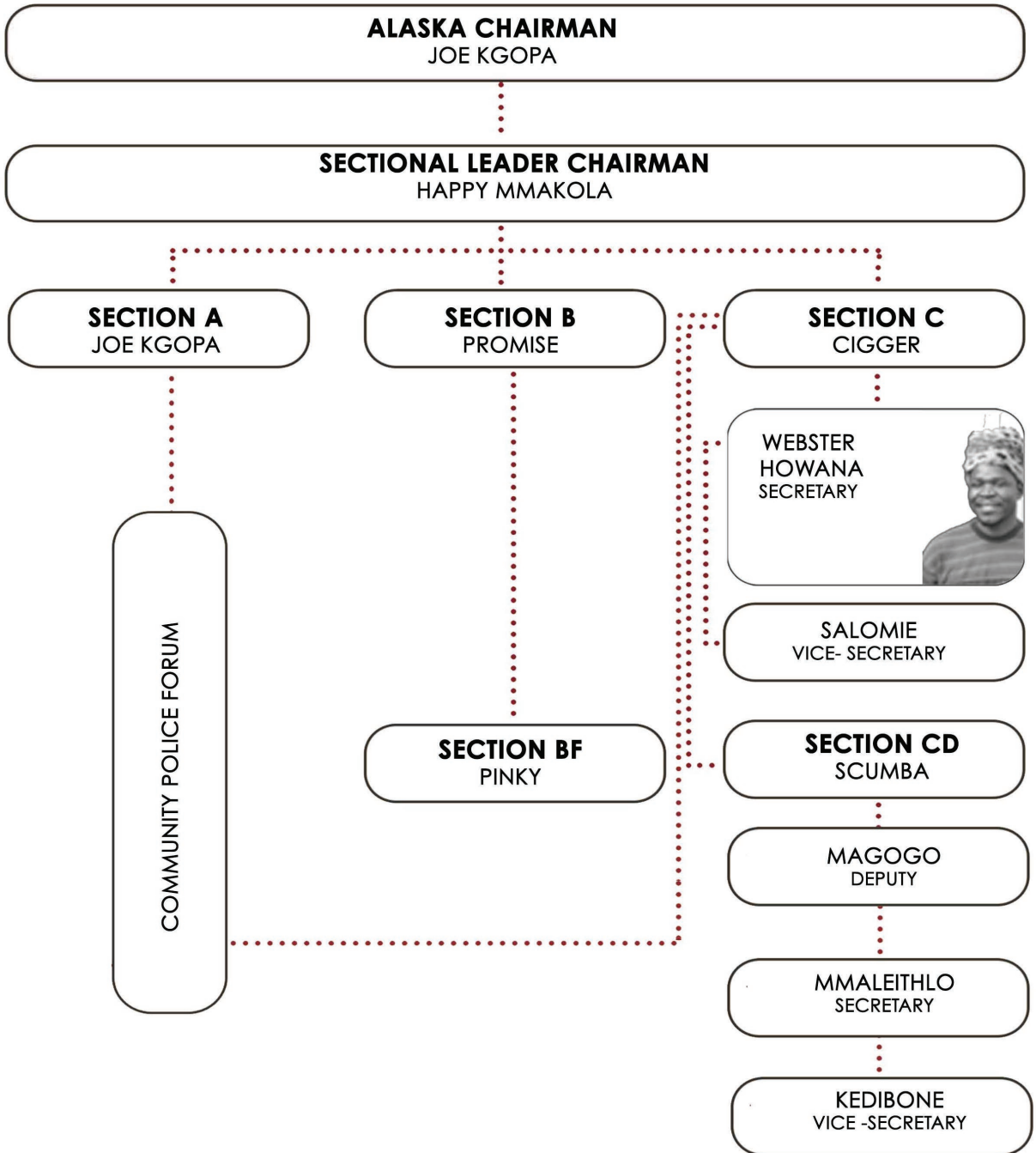


Figure 29 Hierarchy of leadership structure in Alaska (HONS 2015)

3.4.5 WASTE

There is not much pollution in Alaska as the inhabitants do not have abundant money to spend on packaged goods. The waste that is accumulated is either burnt or dumped in the existing RDP storm water channel half-way up the mountain. Sewerage in the form of raw effluent is a possible issue from the shallow dug pit latrines when it rains hard enough to flood them. Two latrine pits are typically dug on a plot and alternated between over a period of approximately six months.

In summary: Alaska is a neat informal settlement busy putting its roots down into a steep mountain slope. It has aspirations which can be channeled into healthier eating decisions, organised leadership to assist some interventions and infrastructural problems such as erosion which need to be addressed for the OET to work optimally.



Figure 30 (above) Waste burn pile with new waste (HONS 2015)

Figure 31 (left) Typical pit latrine (HONS 2015)

Figure 32 (below) Rubbish discarded into existing RDP storm water channel (Author 2015)



3.5 PRODUCTION PRONE PROFESSIONALS

At this point it should be pointed out that the typical response to increasing health through food and landscape architecture is the design of productive urban agriculture as can be attested by the UP Architecture Department's track record: most of the recent dissertations dealing with food and landscape architecture did so through focussing on a productive landscape. This dissertation has found that option wanting as a main driver for its goals.

The Real-time Foods research group (which includes human nutrition and sociologist specialists with community garden experience) and other research articles point out that community food gardens in South Africa are prone to failure, perform poorly (Ruysenaar 2013; Van Averbeke 2007) and that family networks and social grants contribute to a dependence on purchased food (Thornton 2008). The option to implement systems of permaculture are promising but simply put, the benefit to cost ratio of poor working class citizens with little time and money trying to produce their own food is too low. Thus, proposing urban agriculture as the main solution for improving Alaskans' diets is not viable.

As has been noted before, the primary issue lies more with the choices people make when purchasing and preparing food than the availability of it. Even if a community garden was designed and sustainably provided healthy food at a cheaper price than the markets Alaskans frequent, this would not guarantee a change in their eating patterns. In-situ urban agriculture cannot be the primary vehicle for the dissertation's main goal. Giving people more of the same options they do not choose in the first place will not change their diets. One has to change people's eating choices through changing their desire.



Figure 33 Prerequisites for modest returns (Author 2015)

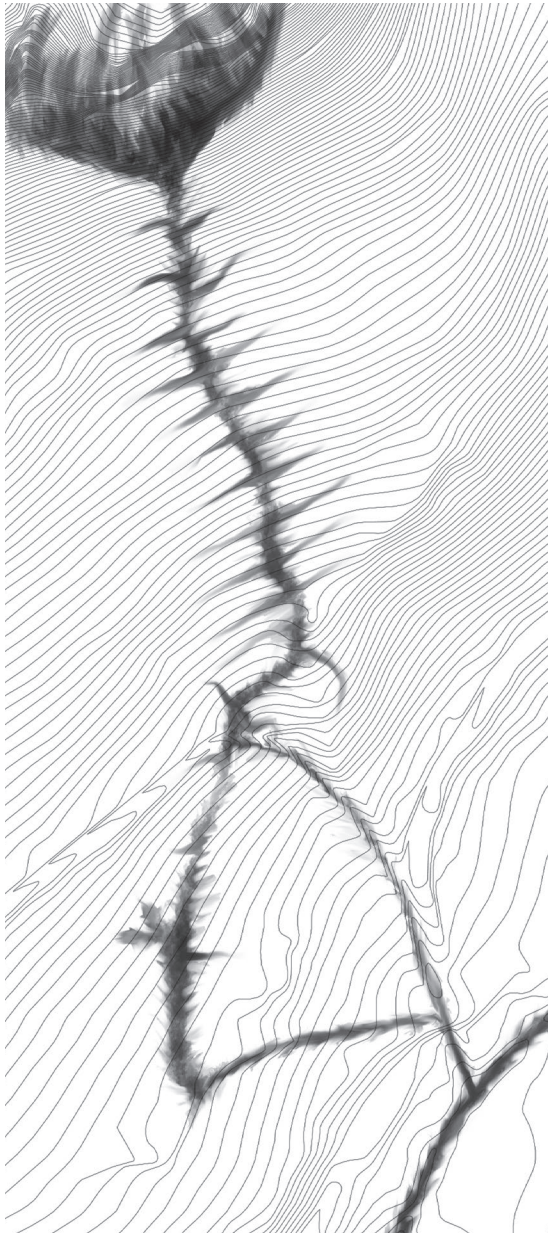


Figure 34 A potential cost to benefit ratio of growing one's own food in Alaska (Author 2015)

4. CONCEPTUAL DEVELOPMENT

4.1 FUNCTION AND FORM

The conceptual driver for the project is the Open Eating Toolbox. It dictates the functioning of the intervention but not necessarily all aspects of its form. The primary aid to finding form is derived from Alaska's geology. Stone is used for construction and to define surroundings and water sculpts stone, therefore water sculpted stone is used as form driver.



4.2 BOUNDARIES

Given the turbulent and violent history of Alaska it should be pointed out that property boundaries are a sensitive issue. It must be noted that Alaskans pay a relatively sizable sum for their piece of land, are proud of it—given their effort at beautification—and don't experience the same sureties in personal property ownership as formal land owners do.

It is for these reasons that it cannot be expected of them to give up or donate sizable portions of their small stands for a 'communal good' or because it will 'increase their worth'. The only way to broaden thoroughfares in Alaska, if that is truly what is needed for better urban placemaking, is through the incentivisation thereof. For example: pointing out the increase in socialising at the street corner, because of a boundary wall's seating, as being a potential financial income would prompt a resident to allow for the boundary's expansion into their stand. Yet this example may not even happen as owners may view increased traffic as a nuisance.

Without extensive community engagement being feasible it was decided to respect the small stand's boundaries and leave the later development of the project's public places up to the sovereign home owner.

This view of Alaskan boundaries plays a big role in the conceptual development of the project.

Figure 35 Water carving down the streets of Alaska
(Author 2015)

Herewith terracotta clay maquette investigations

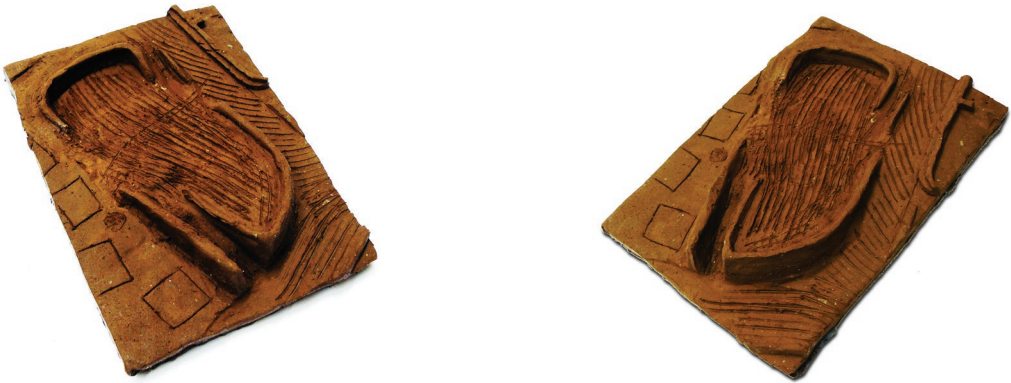


Figure 36 Kitchen version (Author 2015)



Figure 37 Sinuous street edge with seating and private gardening (Author 2015)



Figure 38 Exposed Park stone plinth version (Author 2015)



Figure 39 Street edge seating and drain lines (Author 2015)



Figure 40 Private garden terracing (Author 2015)



Figure 41 Private entrance threshold over drain (Author 2015)

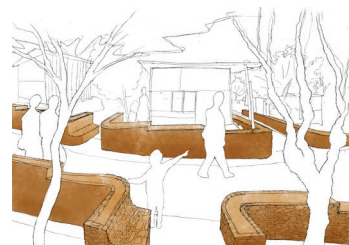
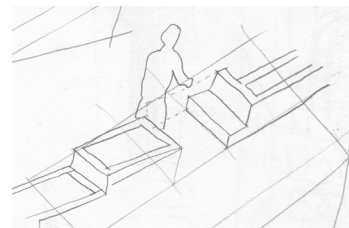
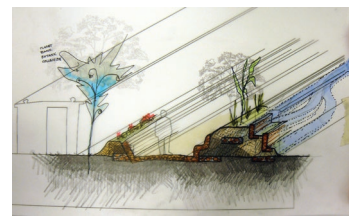
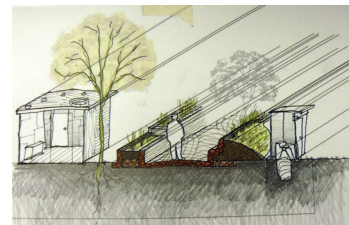
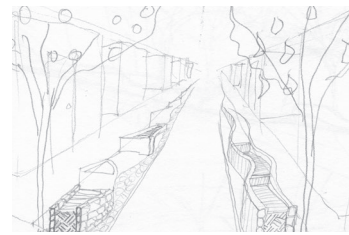
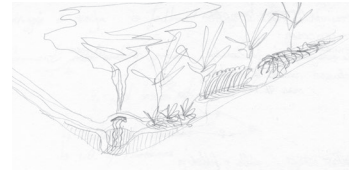
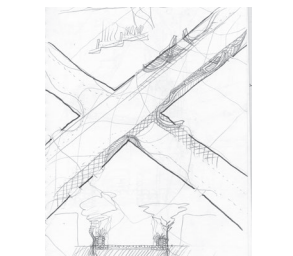
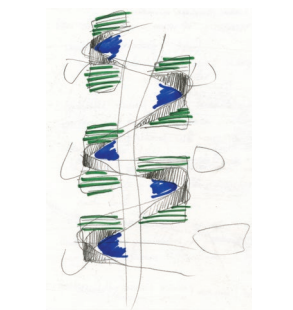
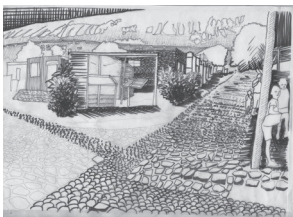
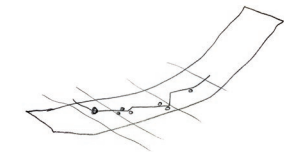
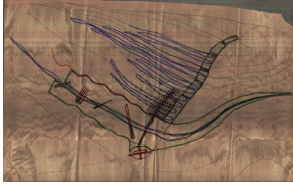
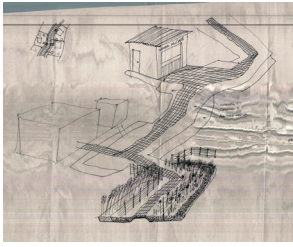


Figure 42 Private entrance threshold over drain and gardening (Author 2015)

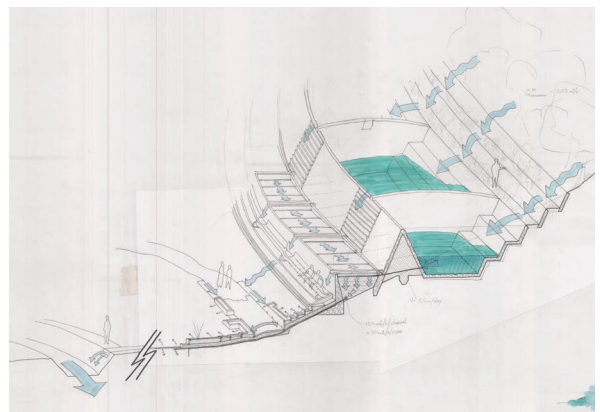
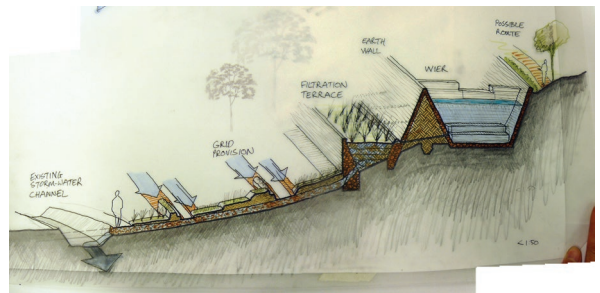
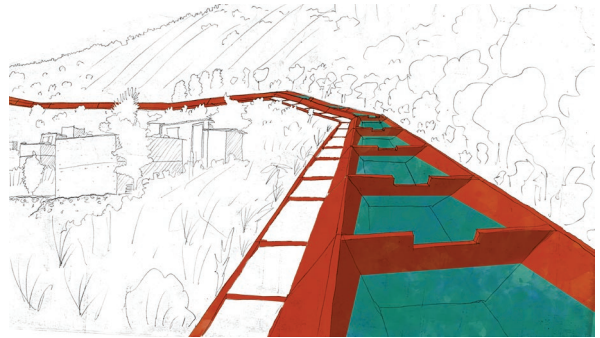


Figure 43 Water sculpted tile. Gypsum hand carved (Author 2015)

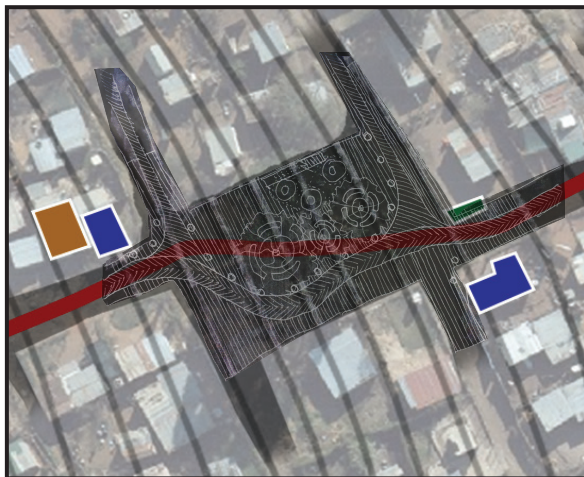
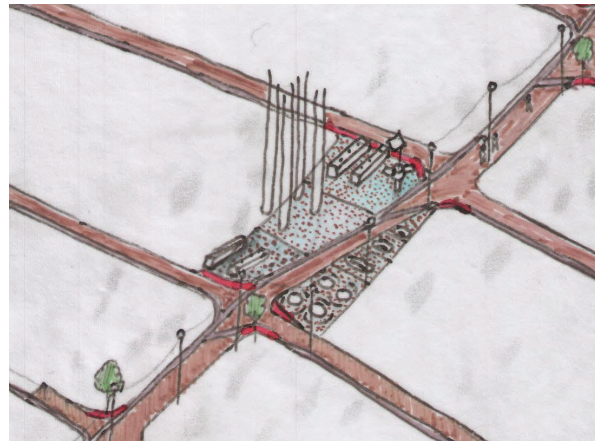
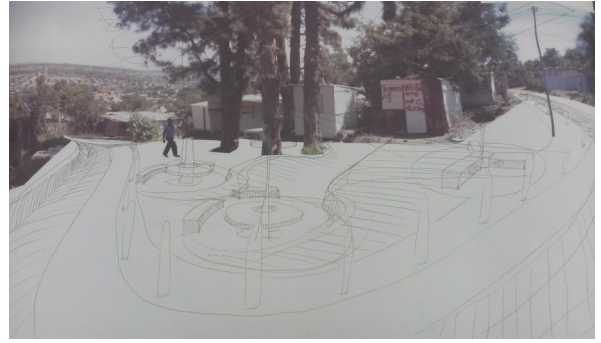
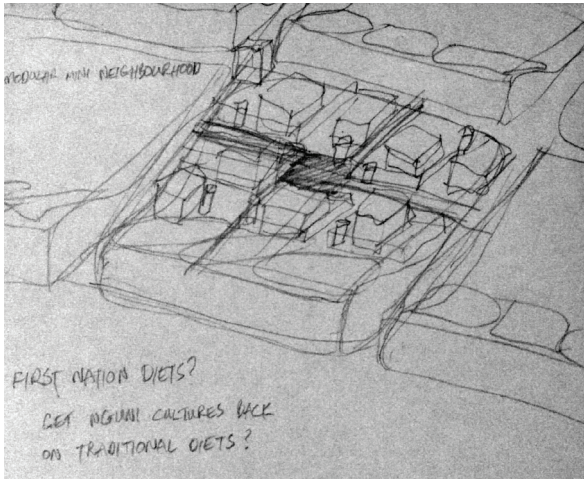
4.2.1 DEVELOPMENT OF THE STREET



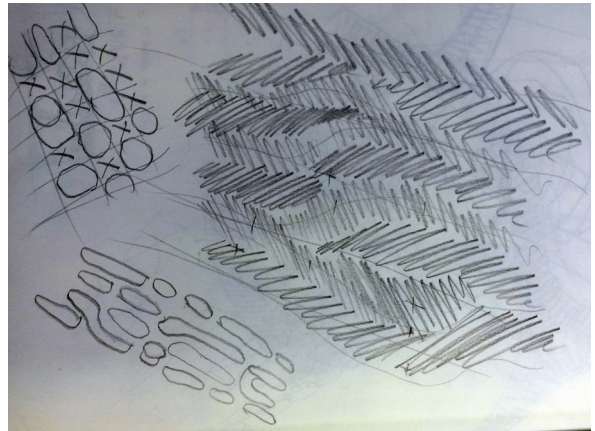
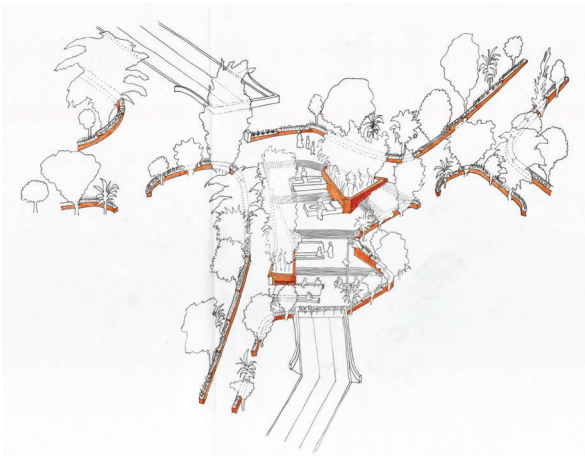
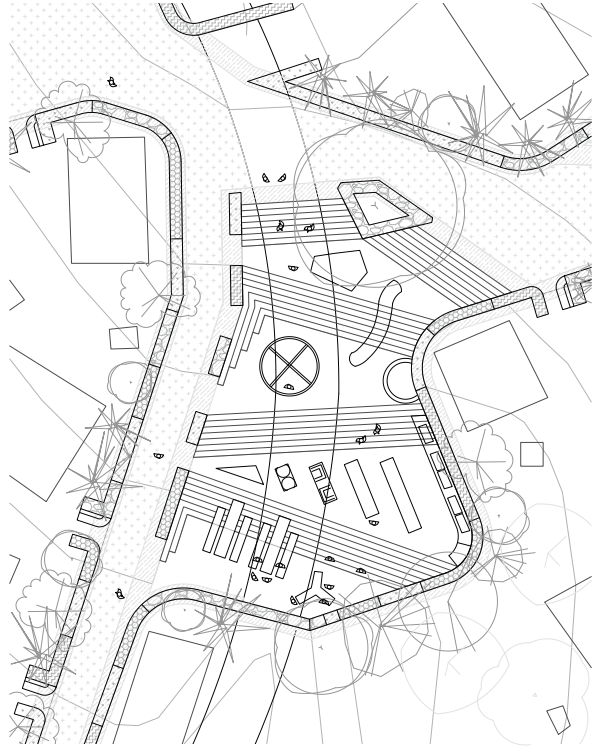
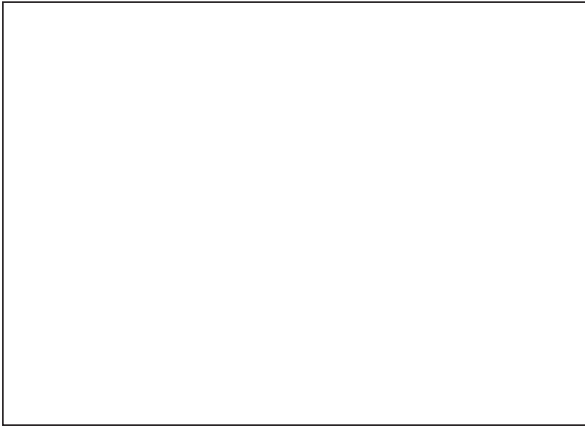
4.2.2 DEVELOPMENT OF THE ANCILLARY SYSTEM



4.2.3 DEVELOPMENT OF THE KITCHEN AREA



4.2.4 DEVELOPMENT OF THE PARK AREA



5. APPLICATION

The combination of the OET with the specifics of Alaska resulted in the creation and design of an infrastructural intervention supporting an eating street. The following is an explanation of the results.

5.1 URBAN FRAMEWORK

The OET prerequisites call for a salutogenic environment. In the context of the main pathways chosen in Alaska, it would amount to a good South African street. The qualities would include the same basics as Western or First World streets: legible, accessible, clean, protection from elements, separation from traffic, comfort, rest elements and interesting elements (*New Urbanism* [Sa]). Dewar & Uytendogaardt's (1991) book, *South African Cities*, espouses the humanist element: designing for humans, creating space for humans, celebrating life, giving freedom and constraint and having a phased approach to street development thereby rendering a process framework.

Taking all of these elements into consideration the project takes the form of a spinal corridor development along the main pedestrian traffic route that attaches to an infrastructural armature along the cliff edge. Along with the store area at the start of the route and the route itself, there are two immediate sites for development in the form of a storm water channel which can be covered and an area under some *Pinus* trees used for the occasional community leader meeting.

The Store Area area is to be developed as the commercial hub, allowing for store-fronts to amalgamate into a unified commercial image that rivals the *faux* sophistication of the Denneboom centres. The Play Park is located on the storm water channel as it offers the largest space, novel height difference opportunities on the steep slope and is situated near a crèche. The Play Park may develop into an amenity for a small consortium of crèches or a primary school. The Demonstration Kitchen is placed in the community

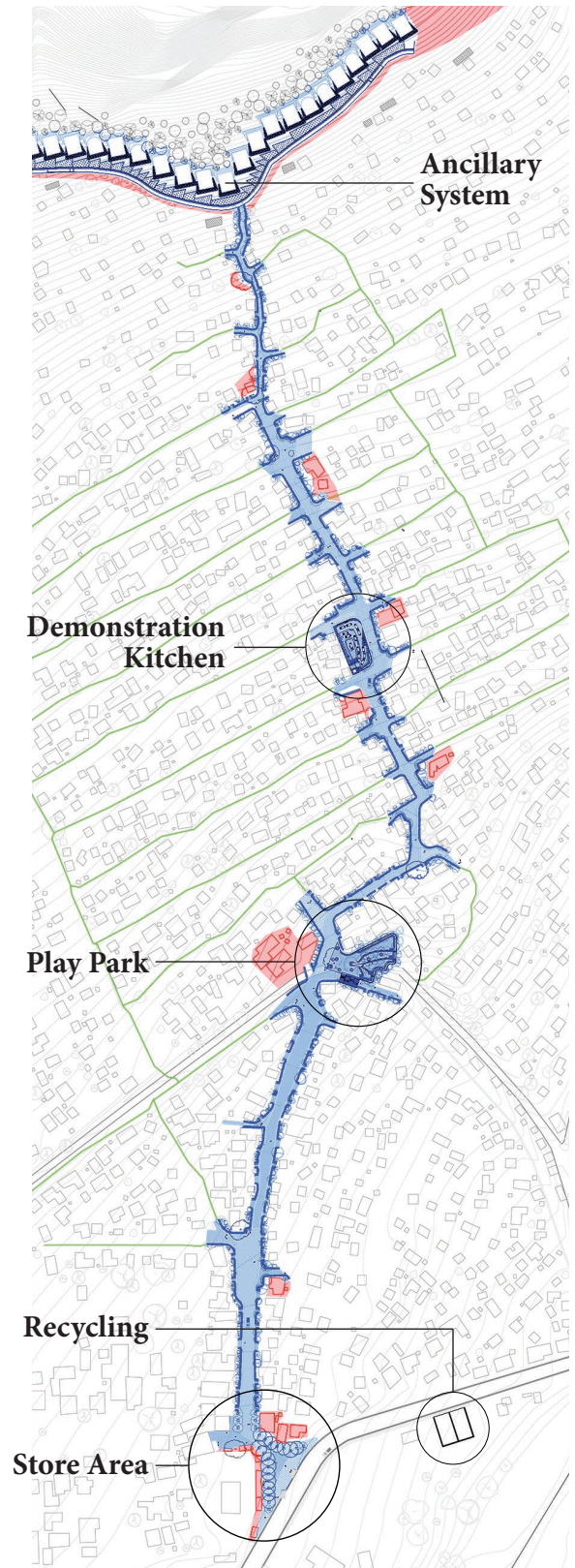


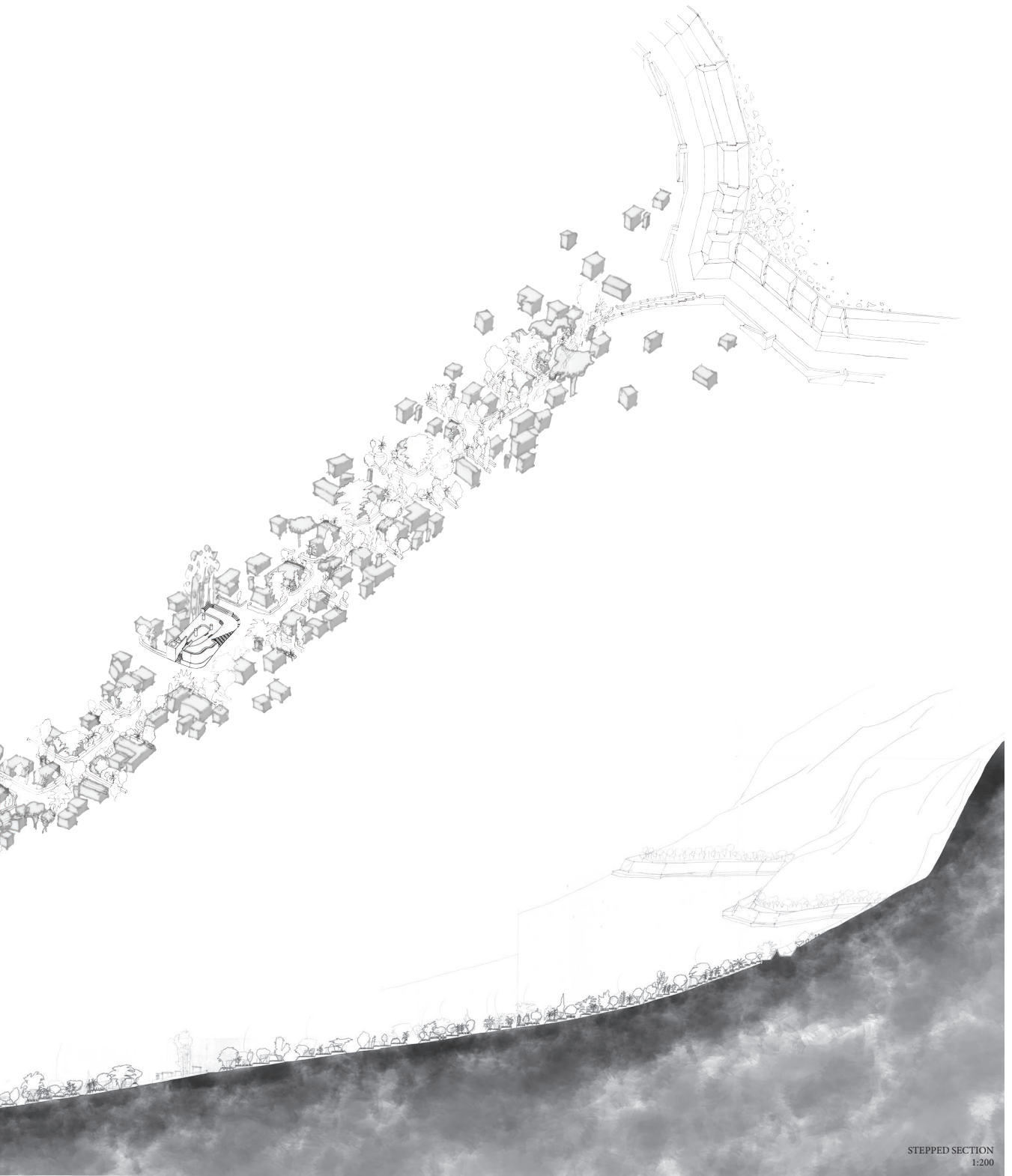
Figure 44 Spine in blue, future integration in red and storm water grid in green (Author 2015)

leader meeting area as the existing function can be maintained while allowing for the social agenda of the Kitchen. This area will allow for communal activities and will develop into a civic hub due to its central location within Alaska.

New nodal development will occur naturally as Alaska increases in density along the corridor and new corridors will emerge as they link to the ancillary armature along the cliff's edge.

Figure 45 Isometric 3D of proposed street with nodal points (Ancillary System depicted obsolete) (not to scale) and stepped section of entire street (not to scale) (Author 2015)





STEPPED SECTION
1:200



Figure 46 Plan of proposed street with nodal points (continues on following pages) (not to scale) (Author 2015)

EXISTING RDP
STORM WATER
CHANNEL

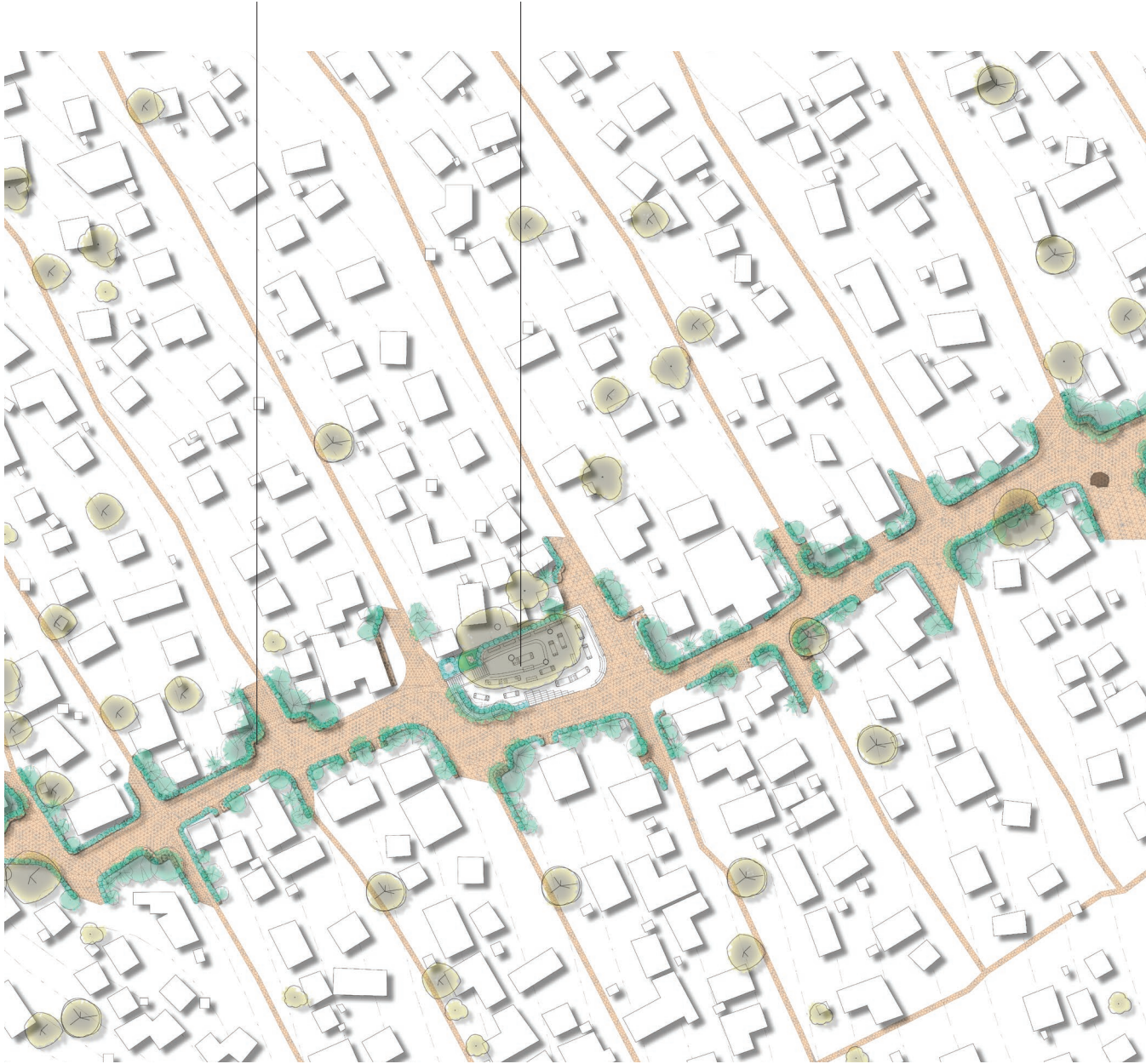
VEGETATED
PERGOLA

FIG FALLS
AT PLAY
PARK



PEDESTRIAN
SEATING AT STREET
INTERSECTIONS

DEMONSTRATION
KITCHEN



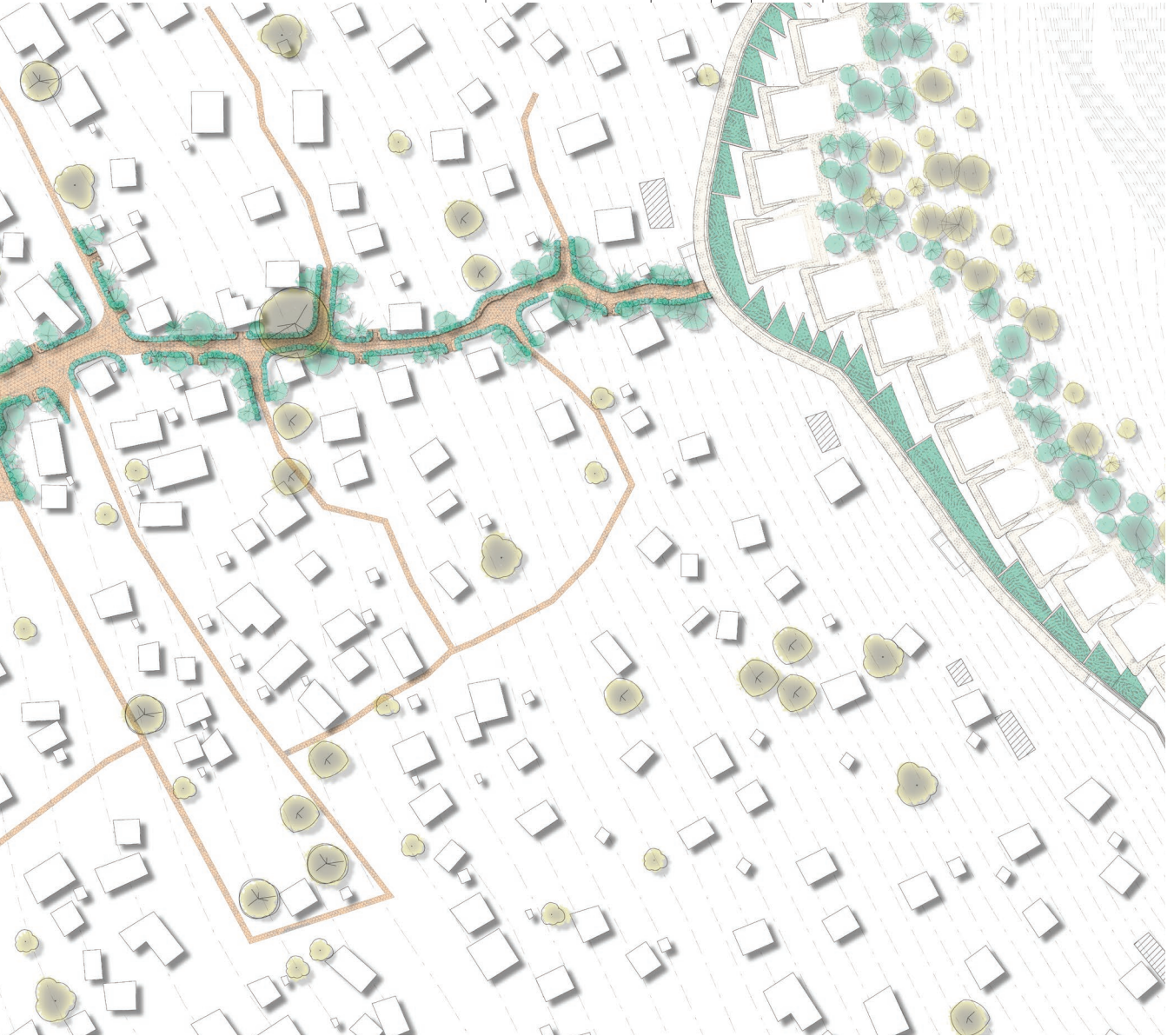
PEDESTRIAN SEATING AT STREET INTERSECTIONS

EXISTING SUBSISTENCE AGRICULTURE

MOUNTAIN BORDER WALKWAY

FILTERING CASH CROP TERRACE

ANCILLARY SYSTEM CELL



5.2 STREET

As mentioned previously: the street will set up the correct environment for the other OET behavioural tools to work in. These will include a traversable road equipped to deal with erosion on the steep mountain slope, a recycle system to keep it clean and amenities along the way.

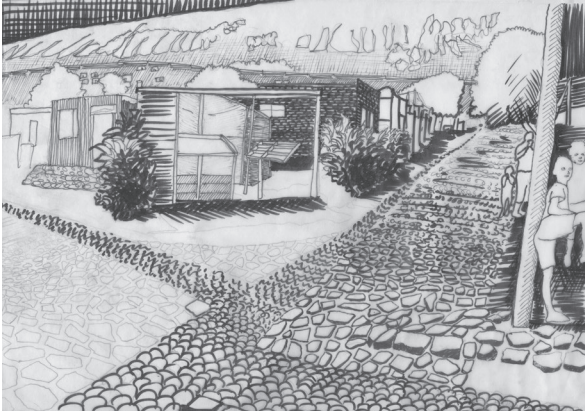


Figure 47 Proposed surface for comfortable walking (Author 2015)

5.2.1 ROAD

The proposal requires a flat, traversable surface that, considering the context of Alaska, is hard wearing, not easily erodible, easy to maintain and not theft prone. Locally sourced stone through a community cultivation project will suffice. The street also needs to acknowledge the existing houses opening onto it, create opportunity for social interaction and community building and deter dangerous criminal situations.

The difference between a good African informal settlement street and the other more typical example

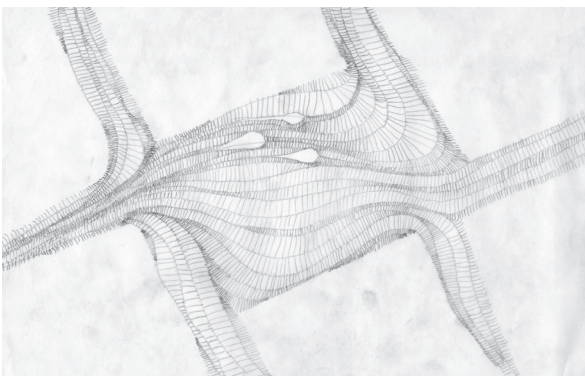


Figure 48 Paving surface pattern (Author 2015)



Figure 49 Existing stone surface skills in Alaska (Author 2015)

that is on offer, namely the European or North American model, is that the African street has to accomplish the same with less resources. It should be more robust as it must accommodate informal appropriation without the support of formal guides and aids.

A good informal settlement street will have multifunctional elements; it cannot afford singular use items. It will allow for cyclical and progressive change in the highly dynamic informal environment. The necessary activities, optional activities and social activities together form good social urban space (Gehl & Gemzoe 2004). Its elements must be robust, it cannot be poorly designed and constructed as one can only guess at what uses it must eventually endure. It should be nodal as the environment does not have the resources to spread out development along its entire length.

5.2.2 DRAINAGE SYSTEM

To keep the road in a good condition and prevent erosion, in accordance with the OET and the salutogenic principle, a drainage system is to be implemented.

Alaska deals with more concentrated, higher rainfall on the southern, steep slopes of the Magaliesberg range than compared to the northern slopes. There is no existing storm water management system for those living above the storm water channel designed to protect the Lusaka RDP development below Alaska.

The proposed stone filled swale system will act as a decentralised storm water conveyance and infiltration grid. The system consists of channels that line the primary street on either side of the route running down the hill and only on one side of the perpendicular connecting routes. They are designed to cope with a 2% storm event. Any additional storm water run-off from a larger storm event or an unmaintained swale will be dealt with by the camber of the road surface.

DESIGN RAINFALL DEPTH : EERSTE FABRIEKE : 1 & 7 DAY DURING 5 & 50 YEAR STORMS

DURATION	RETURN PERIOD	DEPTH (mm)	RATE (mm/h)
1 DAY/24 HOURS	5 YEARS	0.075	3.125
7 DAYS/168 HOURS	5 YEARS	0.139	0.827380952
1 DAY/24 HOURS	50 YEARS	0.131	5.458333333
7 DAYS/168 HOURS	50 YEARS	0.229	1.363095238

← HIGHEST RATE (ave.)

ROUGH INTENSITY RAINFALL RATE in 50 YEAR STORM	
1/2 of 131mm in 1/4 of 24hours = 66mm in 6h = 11mm/h	

Mountain weighted area (m ²)	72507.5
Kitchen weighted area (m ²)	32977.8
Garden weighted area (m ²)	11879.1
Shop weighted area (m ²)	5989.75

Peak Discharge during 50 year storm

Region	Area Weighted (m ²)	Intensity (m/h)	Peak Discharge (m ³ /h)	Peak Discharge (m ³ /s)
Mnt Cat Right	31083.65	0.011	341.92015	0.094977815
Mnt Cat Left	41423.85	0.011	455.66235	0.126572875
Kitchen	33000	0.011	363	0.100833333
Garden	13100	0.011	144.1	0.040027778
Shop	6000	0.011	66	0.018333333

Total Mnt m³/s
Total Kitchen m³/s
Total Garden m³/s

← Qmax

Figure 50 Essential water calculation amounts (Author 2015)

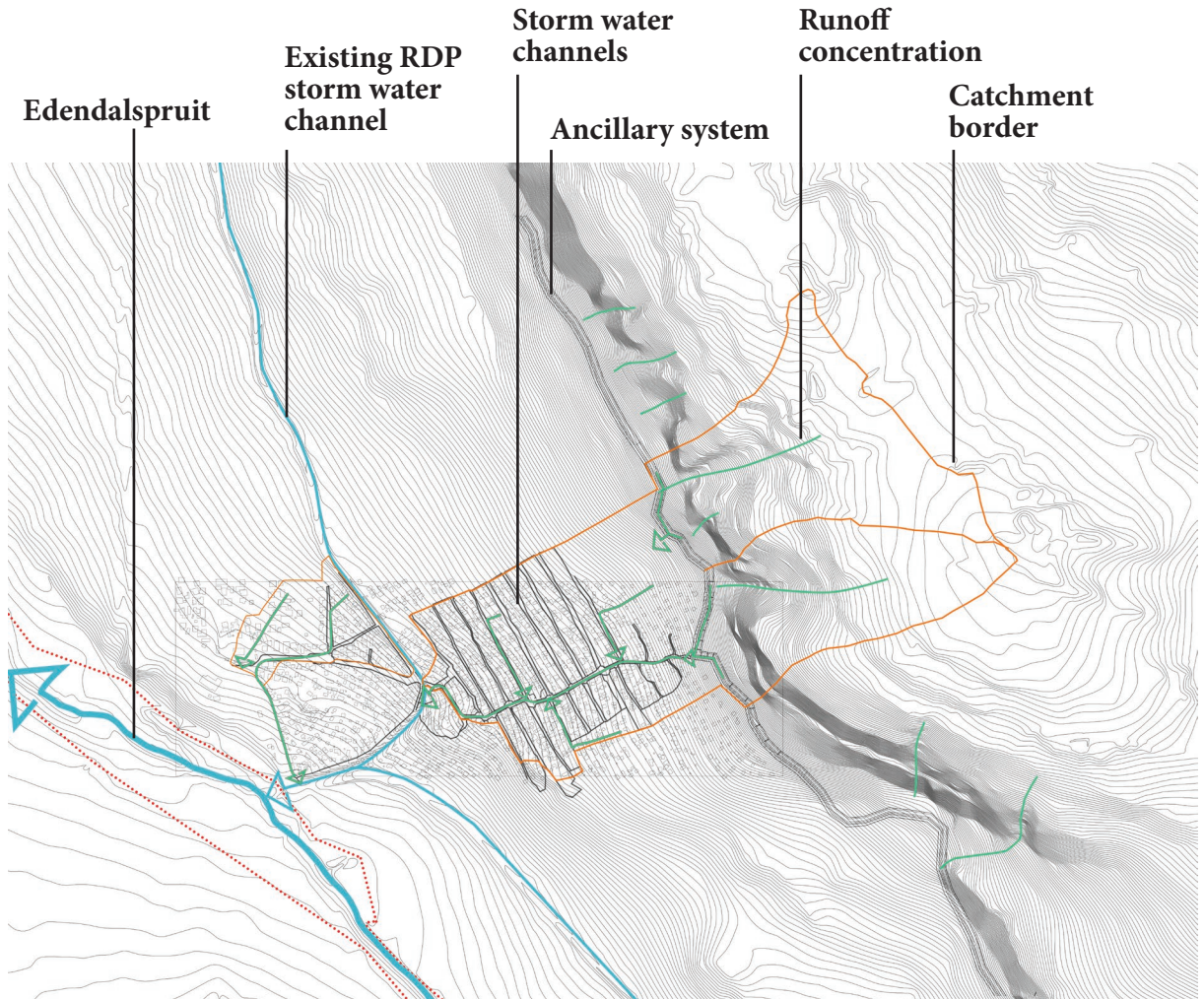


Figure 51 Overview of water management system, catchments and existing structures (Author 2015)

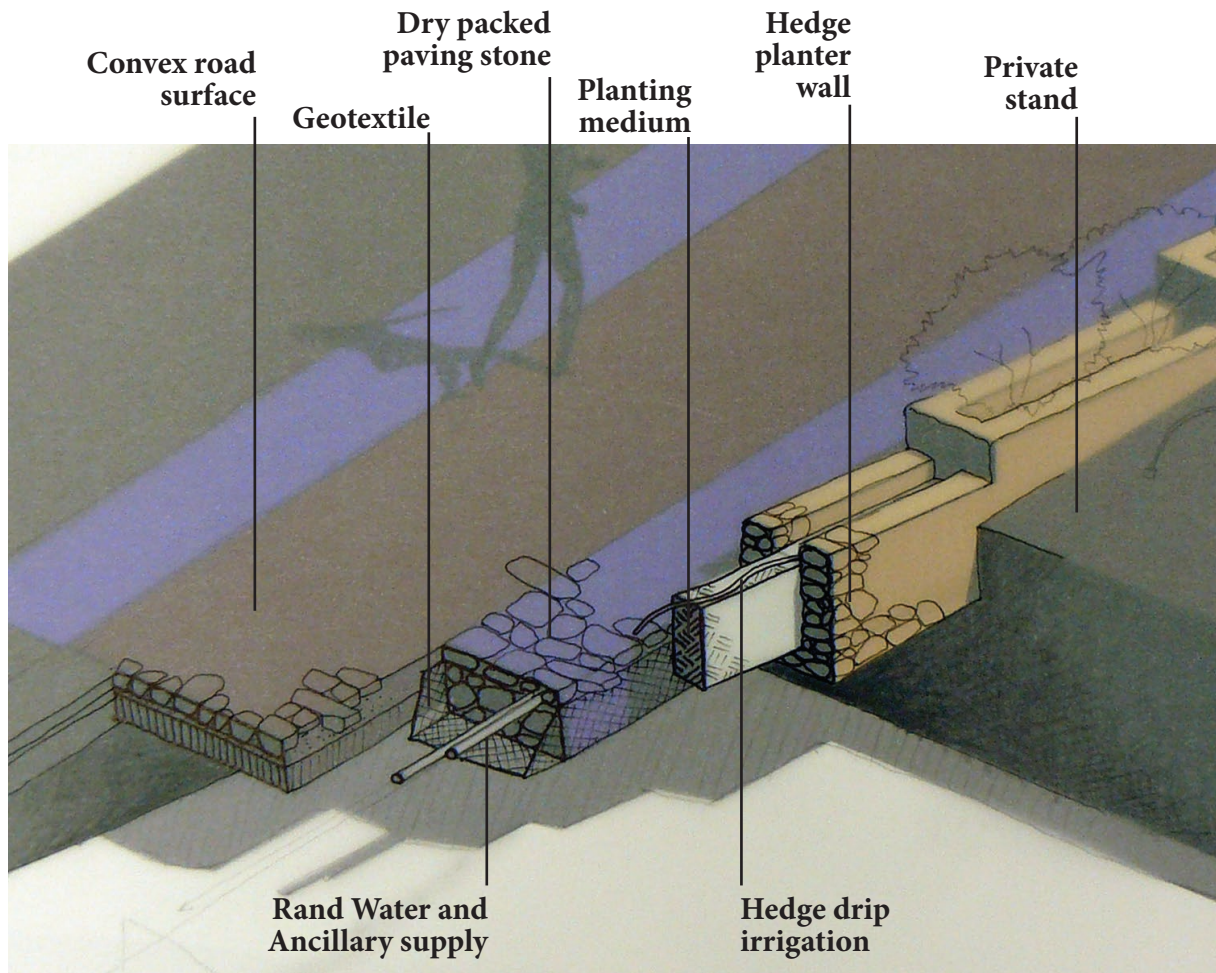


Figure 52 Road surface bordered by drainage channel bordered by planter wall (Author 2015)

5.2.3 RECYCLE SYSTEM

To adhere to the salutogenic requirements of the street, waste should not detract from the effect of the OET while people are walking up or down the mountain. To achieve this, a recycle programme is proposed.

There is a municipal owned skip that is removed every Thursday, but it is still up to the residents to keep their portion of Alaska clean—as mentioned earlier Alaskans generally take pride in their surroundings.

The proposed street's hedges, fruit trees and focal points will all generate both organic and inorganic waste. To keep the route clean, a number of waste bins have been included into the more social areas and focal

points. These sit close to the route down the hill so as to allow easy access for those collecting the rubbish and transporting it down to the proposed recycle area (Figure 54). This will be accomplished by the few subsistence farmers who will have a vested interest in collecting and sorting the waste. They will be able to compost the organic waste, especially high energy spoiled fruit and food preparation by-products, to create fertilizer which will be in high demand amongst the many gardeners in Alaska. The inorganic waste can be sorted and recycled for money or be re-utilised by those willing to pay for the material. The ancillary agricultural belt will require its own fertiliser and if demand from gardeners is low, there will always be a need from those tending crops along the mountain border (Figure 53).



Figure 53 Recycle system waste and fertiliser flow: yellow shows waste generation at points of interest and gardens then conveyance to recycle centre; red is fertilizer going back to crops and gardens; green is produce arriving at point of interest (Author 2015)

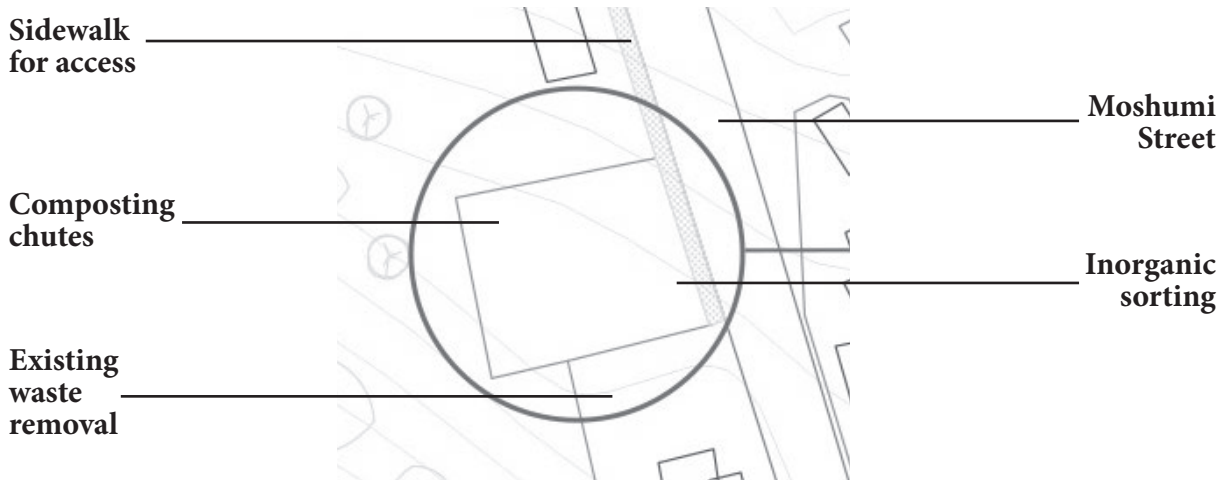


Figure 54 Recycling centre at existing waste removal point on Moshumi Street (Author 2015)

5.2.4 EDGE CONDITIONS

The behavioural tools in the OET are those that will foster better health through influencing food choices while the rest of the toolbox facilitates better health through general infrastructure and amenities. The behavioural tools work best if applied throughout the typical Alaskan's day: at home, at work and everywhere in between, but the only feasible place to implement them would be on the proposed street. There is opportunity for diffuse behavioural aids along the street edge with concentrations at the Store Area, Play Park, Demonstration Kitchen and Ancillary System.

The street edges are defined by hedges on low planter walls that replace existing scrap wire fences. The hedges are planted with a variety of shrubs that produce edible fruits. There are also select fruit trees that are planted on the owner's property behind the hedge. Both the hedge and fruit trees are irrigated by the Ancillary System. This green, edible edge morphs from simple wall, to seated enclave for socialising and rest, to opening for business opportunities to joining with nodal points. These various conditions are set according to the needs of the street and home's relationship.

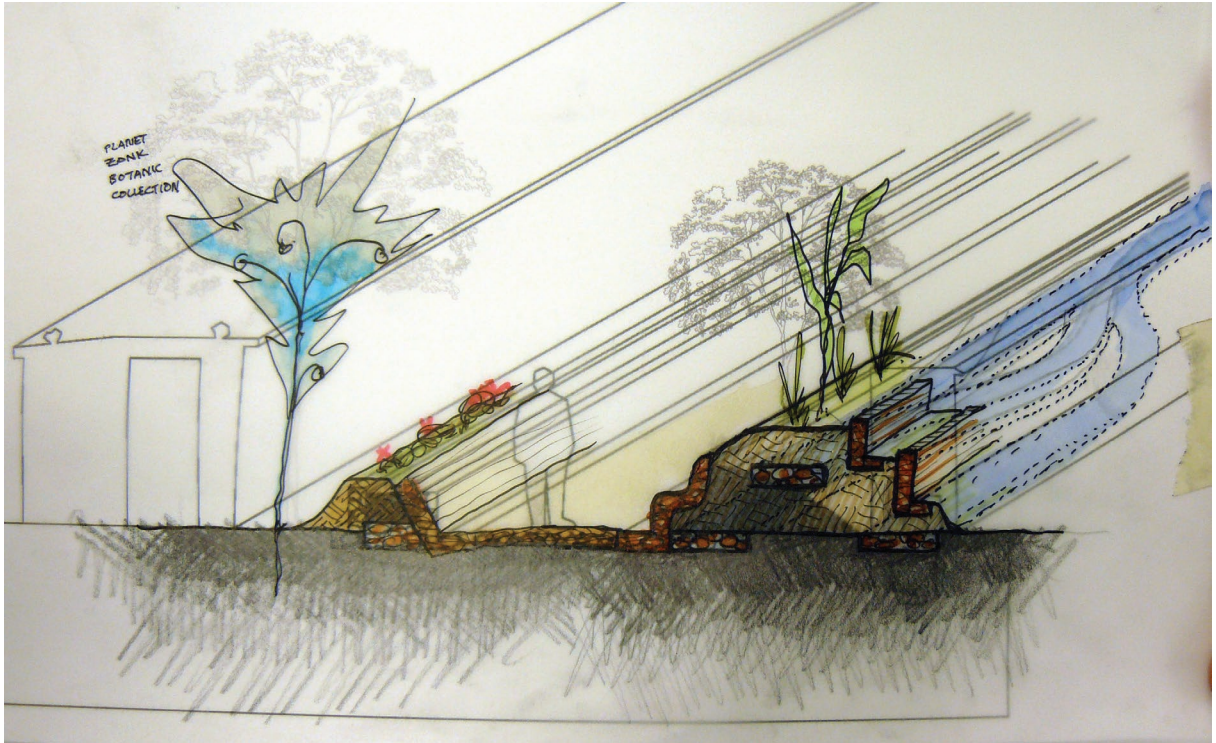


Figure 55 Edge condition along street with multiple drains (obsolete) (Author 2015)

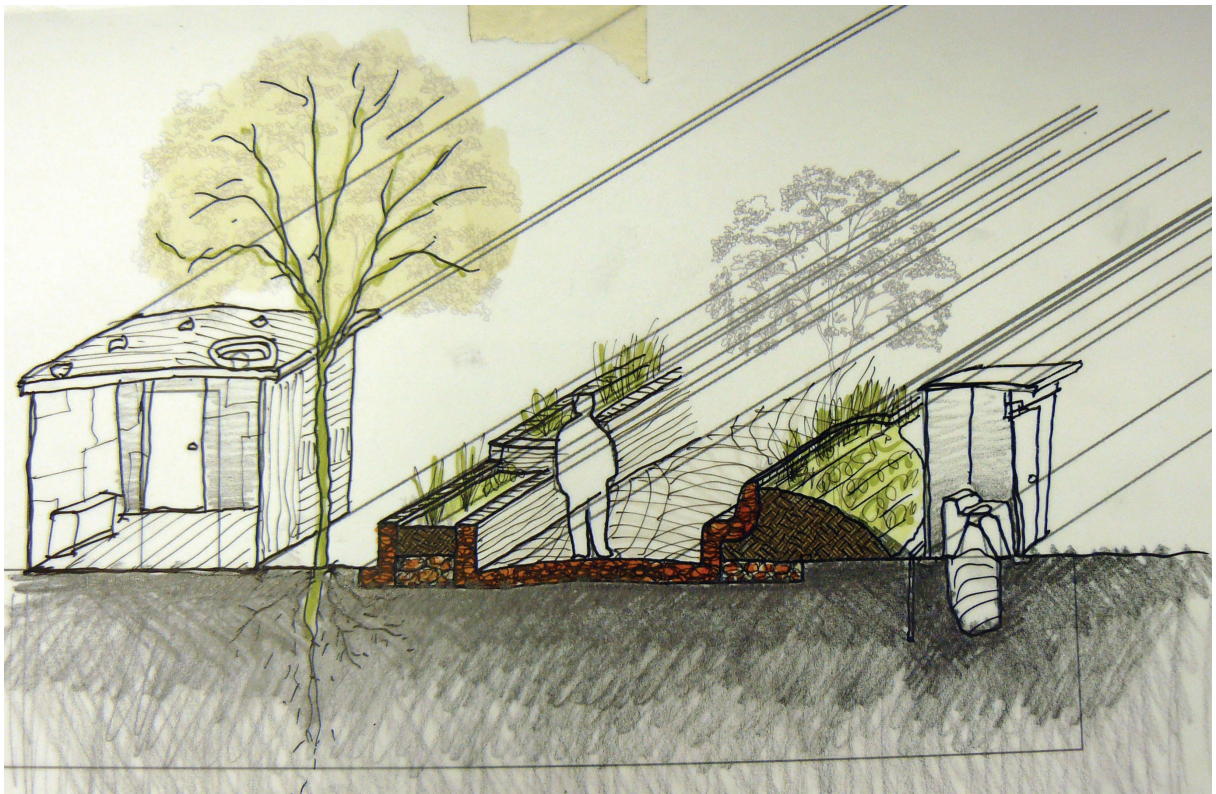


Figure 56 Edge condition along street with seating and pit latrine barrier (obsolete) (Author 2015)

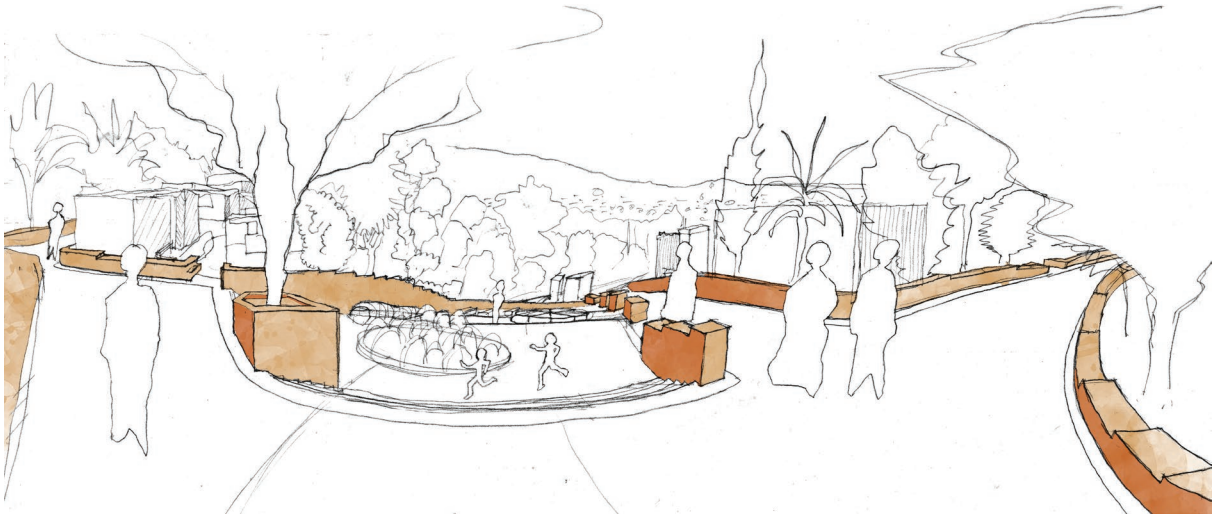


Figure 57 Play Park edge condition along street (obsolete) (Author 2015)

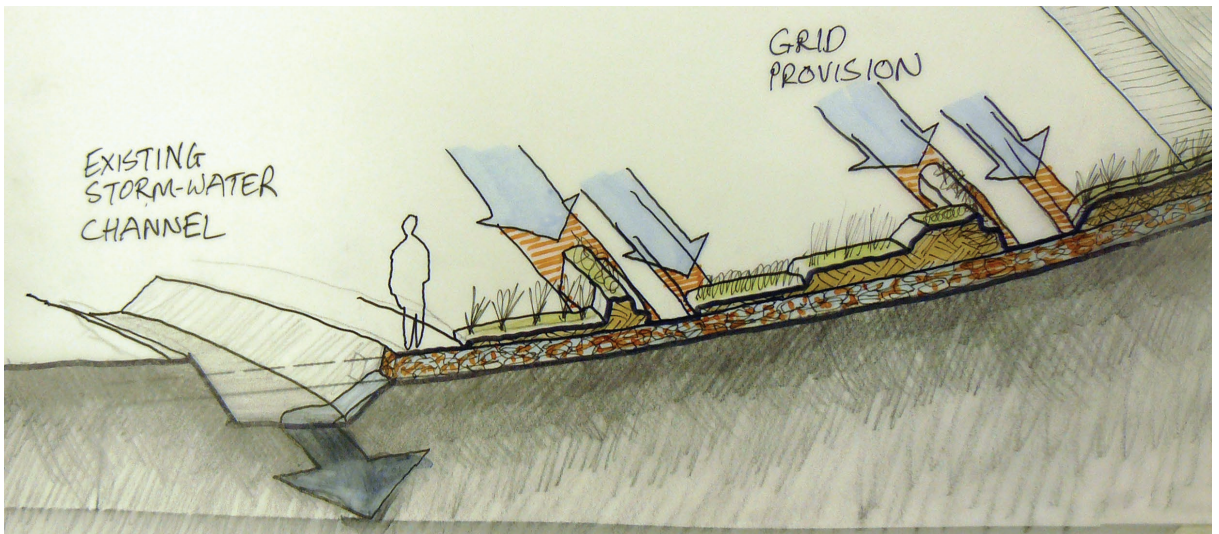


Figure 58 Section perspective of road down the mountain's slope indicating water flow (obsolete) (Author 2015)

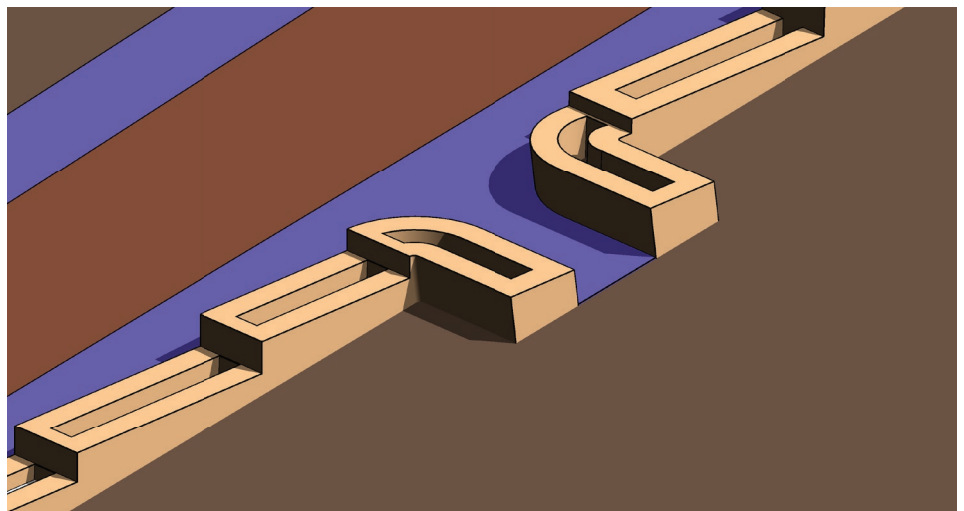


Figure 59 Typical entrance detail including threshold space and seating (incomplete) (Author 2015)

5.2.5 PLANTING

The OET requires elements which exert the tool's influence. Typically they would be in the form of visual, aural and olfactory stimulation or deprivation, or a combination of all of the above. This can be in the shape of fast food restaurant smells that entice you as you walk past, the visual over-stimulation begging for attention in a busy food court and the fast music played at a restaurant to make you leave sooner.

To impart a more positive effect on people's eating habits, similar tactics are employed with the planting visual, aural and olfactory stimuli.

The planting chosen has specific requirements in order for these tactics to work: the plants must bear fruit that is edible, tasty, look enticing, does not require pesticides or much care and should not be patronising to the aspirational Alaskans. Species are selected by

combining lists from African Orphan Crops (World Agroforestry Centre ©2015) and common commercial cultivars, filtering these through the requirements mentioned above and then determining if these are ecologically suited to the southern Magaliesberg slope environment.

Main street:

The planting along the main street has several functions. It provides early morning and late afternoon shade. It provides a 'magic mirror' of green verdure similar to the sought-after affluent neighbourhood streets. It also defines and secures property boundaries. Most importantly it provides a small amount of fruit to the owners and to those passing in the street, year round. This small subsistence amount of fresh, healthy fruit, not only feeds their stomachs but also their minds. The expectation or priming of edible fruit along

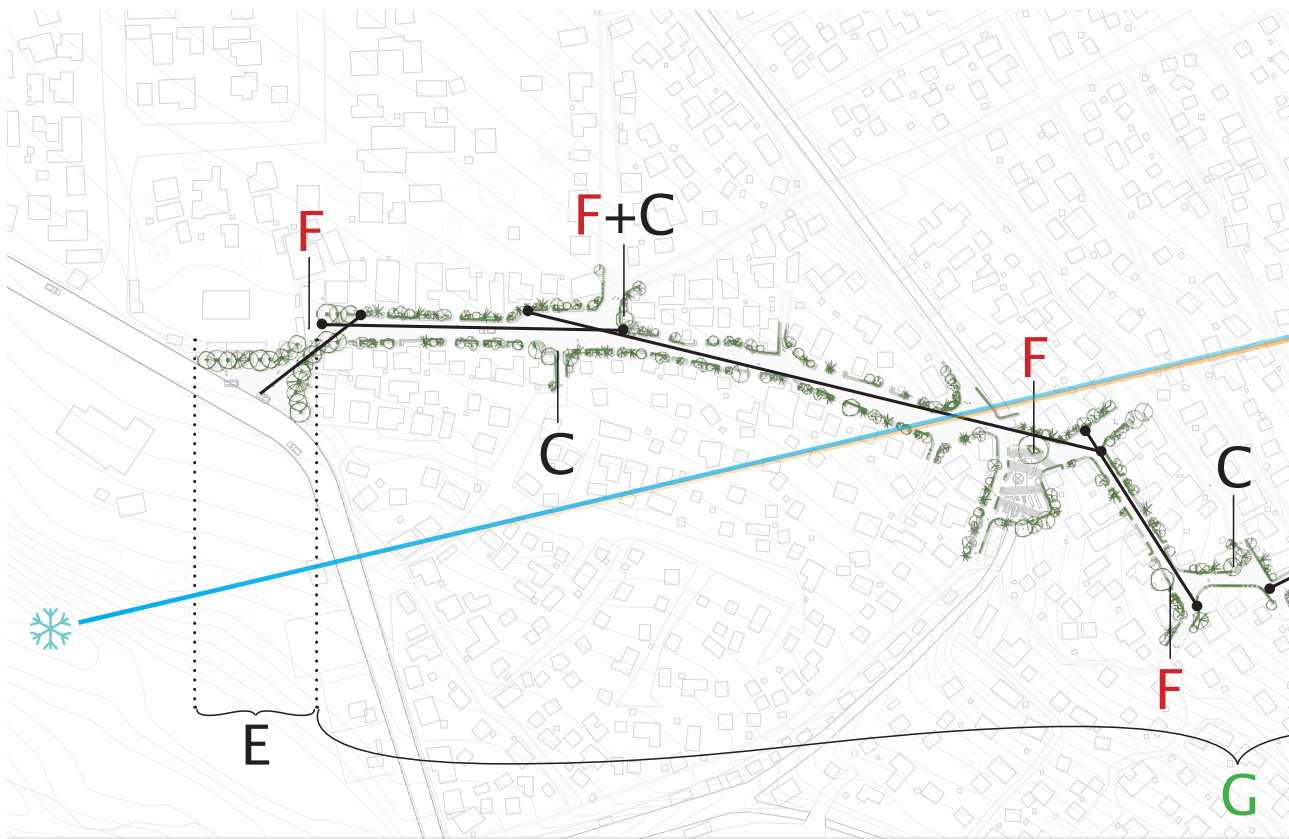


Figure 60 Planting location logic (Author 2015)

Alaskans' daily walk to and from the taxi or train stop reminds them of fresh, tasty and healthy food. They are sensitised and conditioned to fresh foods, increasing chances of choosing healthily at their next eating occasion.

Crossings:

The chances of a pleasant social encounter along the route are increased through providing seating and shade at crossings. The positive aspects are associated with the surroundings which include fruit trees and hedges. Alaskans should feel free to enjoy the available fruit amidst a conversation, heightening the priming effect of the surroundings. The trees are chosen for their taller, broader crowns.

Focal Points:

Focal trees are similar to the street planting, but are

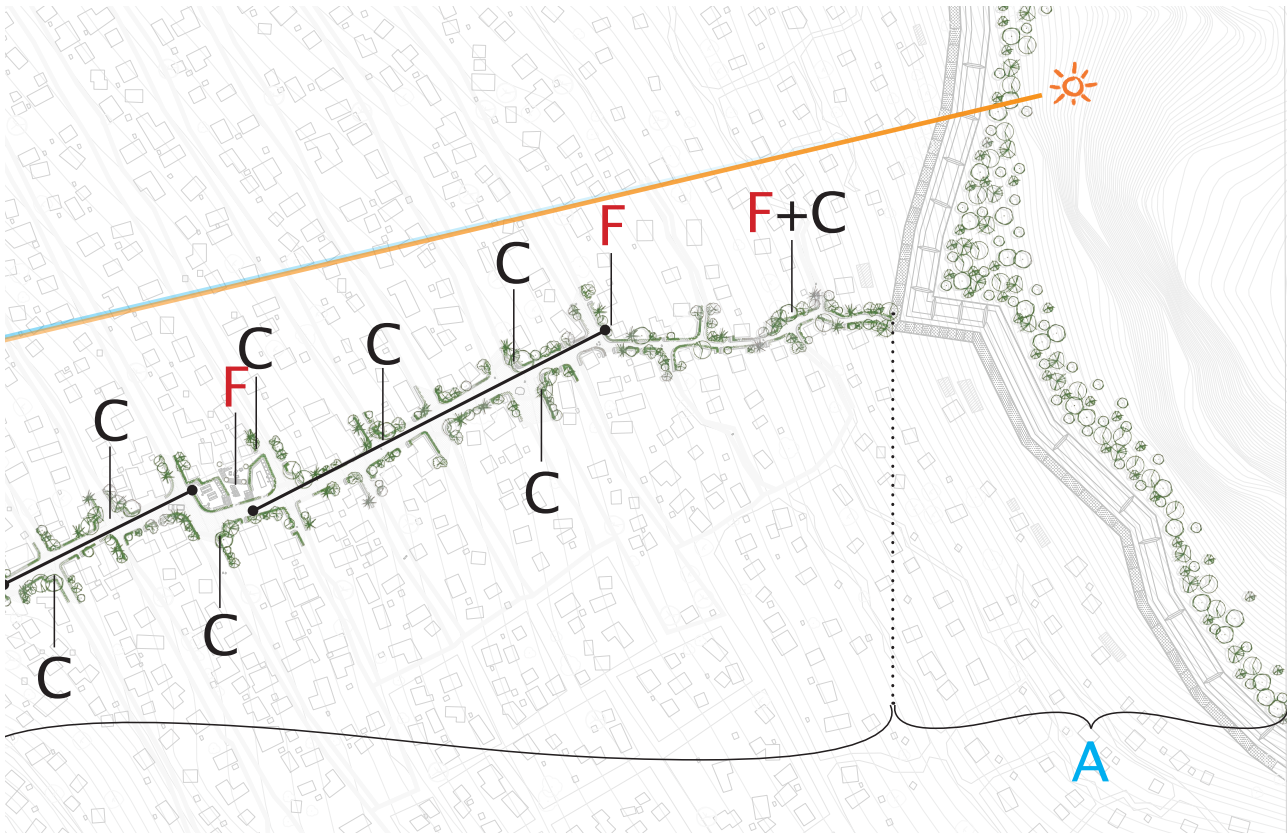
much more noticeable due to their large size and distinct colour. The orientating effect helps in navigation around Alaska. This association of navigation via fruit trees is also desirable for continued exposure conditioning.

Ancillary:

In addition to the Ancillary System providing cash crops for the subsistence farmers and being a water filter, it acts as rehabilitation barrier for the

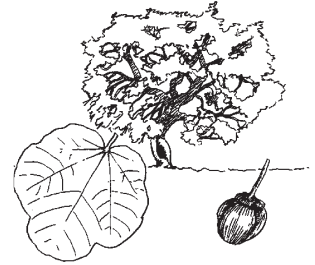
KEY

- A - Ancillary filtration planting & cash crops
- C - Crossing & seating shaded planting
- E - Entrance trees
- F - Focal & orienteering point
- G - General planting along route
- ☀ ☁ - Altitude difference >110m





Annona senegalensis
Custard Apple



Azanza garckeana
Snot Apple



Berchemia zeheri
Red Ivory



Carissa edulis
Simple Spined Num-Num



Carisa macrocarpa
Num-Num



Carya illinoensis
Pecan



Cordyla africana
Wild Mango



Diospyros mespiliformis
Jackel Berry



Dovyalis caffra
Kei Apple



Dovyalis longispina
Coast Kei Apple



Englerophytum magalismontanum
Stem Fruit



Ficus sur
Broom Cluster Fig



Harpephyllum caffrum
Wild Plum



Morus mesozygia
African Mullberry



Papea capensis
Jacket Plum



Prunus persica
Peach



Sclerocarya birrea ssp. caffra
Marula



Syzygium guineense
Water Berry



Vangueria infausta ssp. infuasta
Wild Medlar



Ziziphium mauritiana
Jujube



FRUITING MONTHS

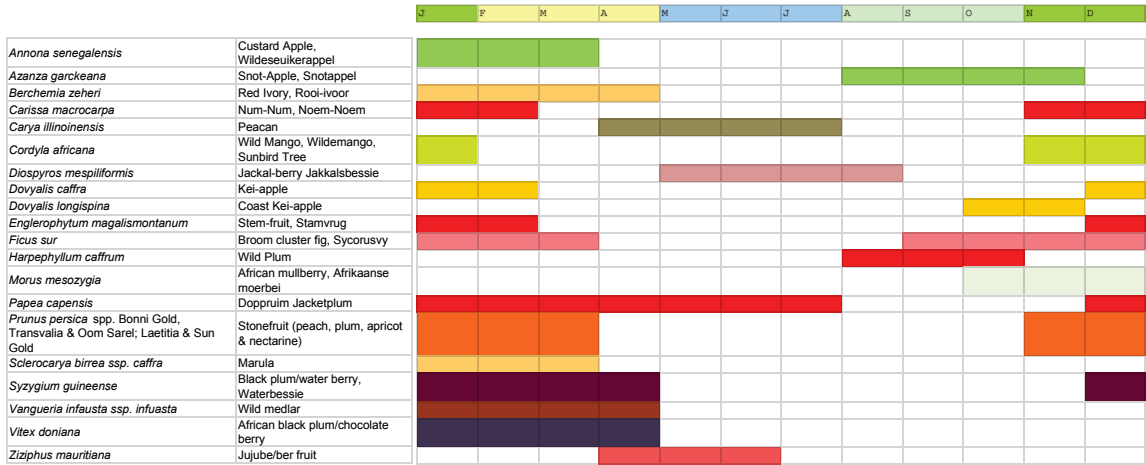


Figure 61 Plant fruiting distribution (Author 2015)

5.3 DEMONSTRATION KITCHEN

The dissertation relies on two forms of behavioural aids, namely active and passive aids. The passive aids are primarily the OET techniques applied to Alaska whereas the active aids will come in the form of direct institutionally supported education and diffuse community education.

5.3.1 FORODHANI PARK, STONE TOWN

The Alaska intervention will require spaces like the Forodhani Market, Stone Town, Zanzibar along its street. The Aga Khan Trust for Culture set out to restore the seaside walkways, infrastructure and landscape near the Forodhani Park in 2008. This was accomplished through lighting, sewerage and drainage upgrades, civic amenities, restoration of a seawall in front of the Park and the stimulation of economic activities and small enterprise with improvements for vendors. The project created 200 jobs for construction including training of local masons, employment opportunities in the informal sector and the creation of a more attractive environment for users (Aga Khan Trust for Culture 2009).

The result is an open and comfortable park during the day and a bustling night food market starting from early evening. Locals stream in, place orders and wait in the ambient and social atmosphere and quite often have dinner picnics on the park's lawn (Govender 2011).

What made this night market successful was the physical intervention facilities coupled with a lively communal eating culture and some tourist income. The Park offers unique urban qualities in the form of shade

from trees and open seating space.

Similar programmatic requirements and results are aimed for in Alaska. A communal and social eating experience is envisioned.

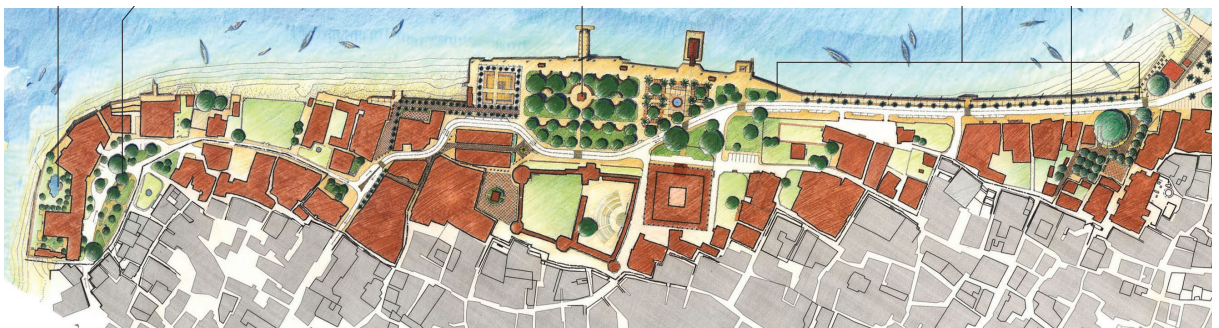


Figure 62 Forodhani Square during the day - mostly empty (Moongateclimber [Sa])



Figure 64 Chefs preparing food for locals and tourists (Govender 2011)

Figure 63 (below) Forodhani Park as part of a seafront rehabilitation programme linking up to Kelele Square (Aga Khan Trust for Culture 2009)



There are similar places in Tshwane such as the Marabastad Market in central Pretoria, but this has been found to be detrimental to health because of unsavoury food preparation practices. This issue needs to be dealt with through a mentorship programme tackling food preparation techniques.



Figure 65 Unsanitary food preparation surfaces and techniques, Marabastad Market, Pretoria (Peel 2015)



Figure 66 Community Healthcare Workers from Mamelodi and Alaska engaging with students at the University of Pretoria (Carneson 2015)

The general purpose of the Demonstration Kitchen is to create a space for formal and informal food preparation, mentoring programmes, community meetings and a communal plaza. It is the only open portion of land along the densely packed route and is currently used for the occasional community leader meeting.

5.3.2 ALASKAN KITCHEN

It is proposed that the COPC project, the Department of Human Nutrition's community outreach programme, Viva Village NGO and other interested parties create a mentorship and research programme taking place in a designed knowledge exchange platform. This programme will be an interchange of information aimed at notifying the outside specialists of the financial, dietary and gastronomic skills available to local inhabitants which will allow them to aid in novel food purchasing, preparation and presentation techniques for the Alaskans.

Some research points to the social environment being more important than the physical environment when it comes to healthier eating (Brug *et al* 2008:314); this is why the social aspect of the kitchen is so important. The diffuse community education occurs after the Alaskans have overcome the stigma of communal based cooking and have appropriated the kitchen to their own specific needs. The self-image building aspect of food is a stumbling block in the road to communal food preparation. People with limited means in South Africa find it degrading to have to resort to cooking together when they aspire to the self-sufficient individualism rich capitalist neighbourhoods enjoy. This is based on the analysis of them striving for a particular image around their homes (Figure 26) and on Alaskan residents disliking a communal kitchen and preferring a Demonstration Kitchen when the author showed them the option (Figure 66). There are many examples of the benefits of community based food preparation in Central America and Eastern Europe (Johnson 2007). There the communal kitchens helped

with keeping food costs low, strengthened the sense of community and, most importantly, assisted with the diffusion of cultural norms associated with eating. This last point will allow for the rapid dissemination of better eating practices in Alaska. As humans we evolved to be cooperative in our food practices, from hunting, collecting and preparing to eating (Higgs 2015).

5.3.3 KITCHEN CONCEPTUAL DEVELOPMENT

As with the primary concept of water sculpted stone, the Demonstration Kitchen represents the spherically scoured potholes found in Magaliesberg riverbed stone. This occurs when minor depressions in the stone surface allow for particles to be circulated by stream water currents. These particles scour the stone, creating a larger depression allowing for yet larger particles and stones to accelerate the process, resulting in a pothole.

The form of the kitchen emulates a large stone exposed to weathering with a central depression akin to a stone scoured pothole. This creates a three tiered amphitheatre for bidirectional observational learning and creates overflow seating opportunity on the tiers' edges.

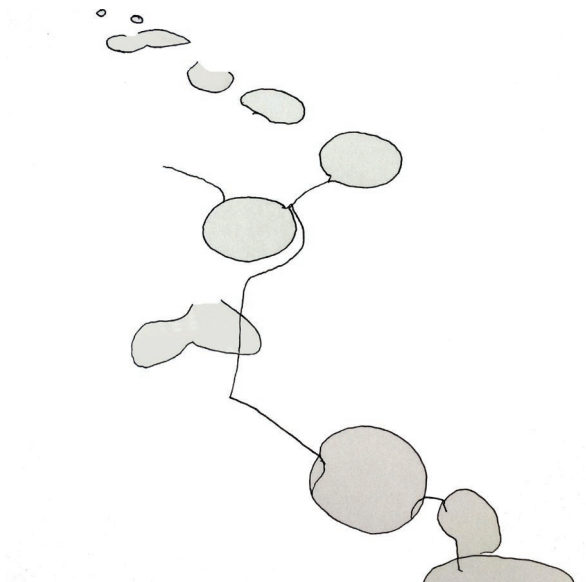


Figure 67 Sketch of a series of pot-holes in river bedrock (Author 2015)



Figure 68 Pot-hole in river bedrock (Author 2015)

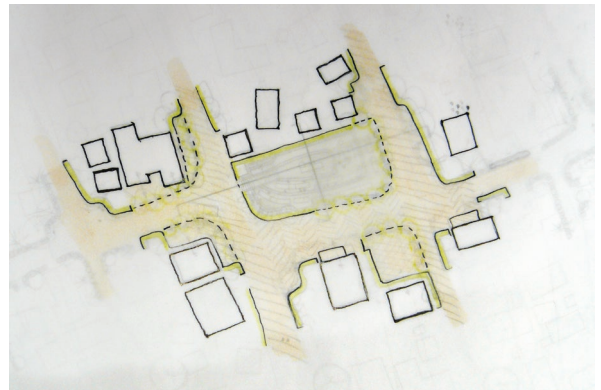
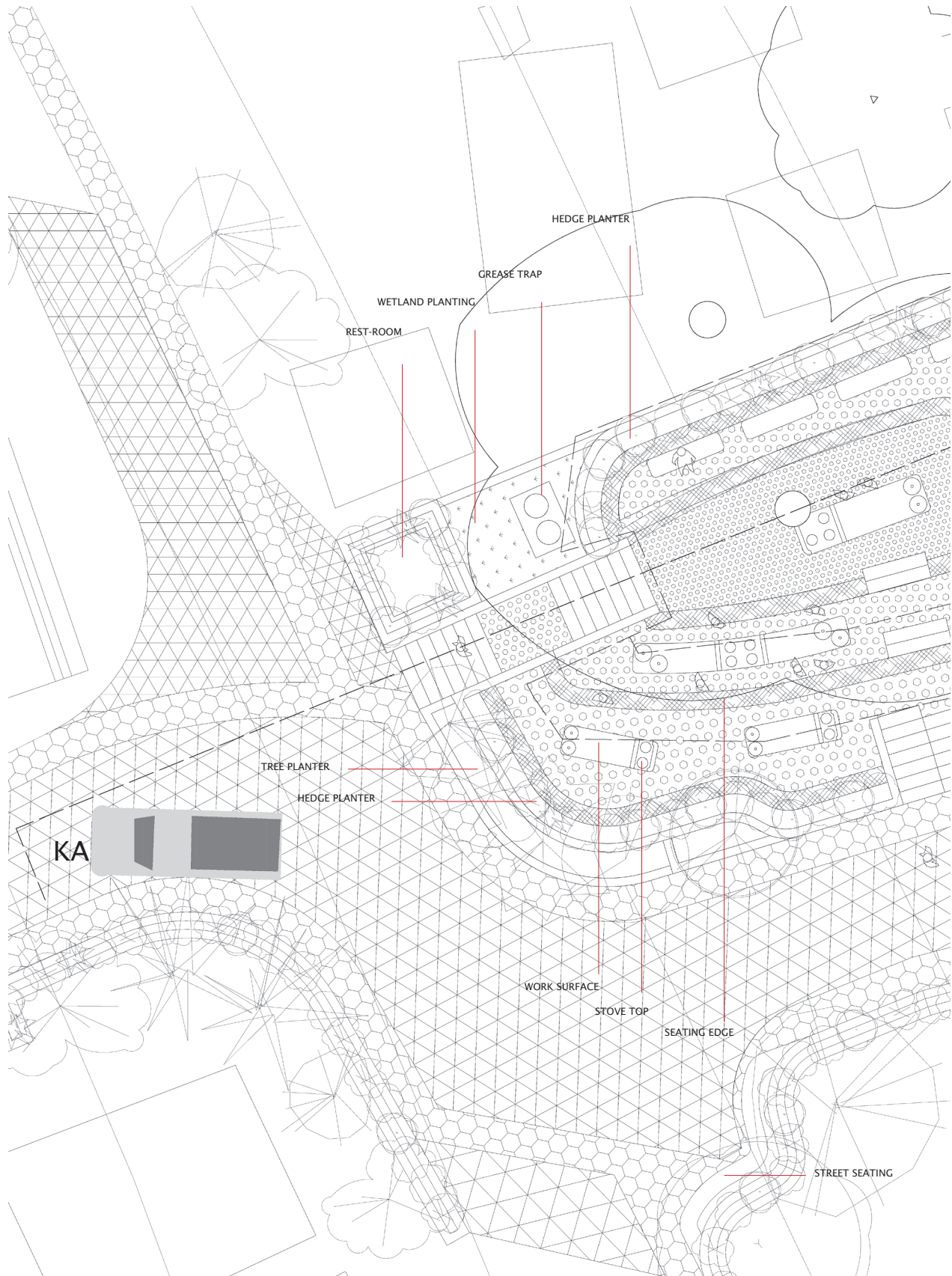


Figure 69 Kitchen permeable and hard edges (Author 2015)



Figure 70 Kitchen three tiered version (obsolete) (Author 2015)



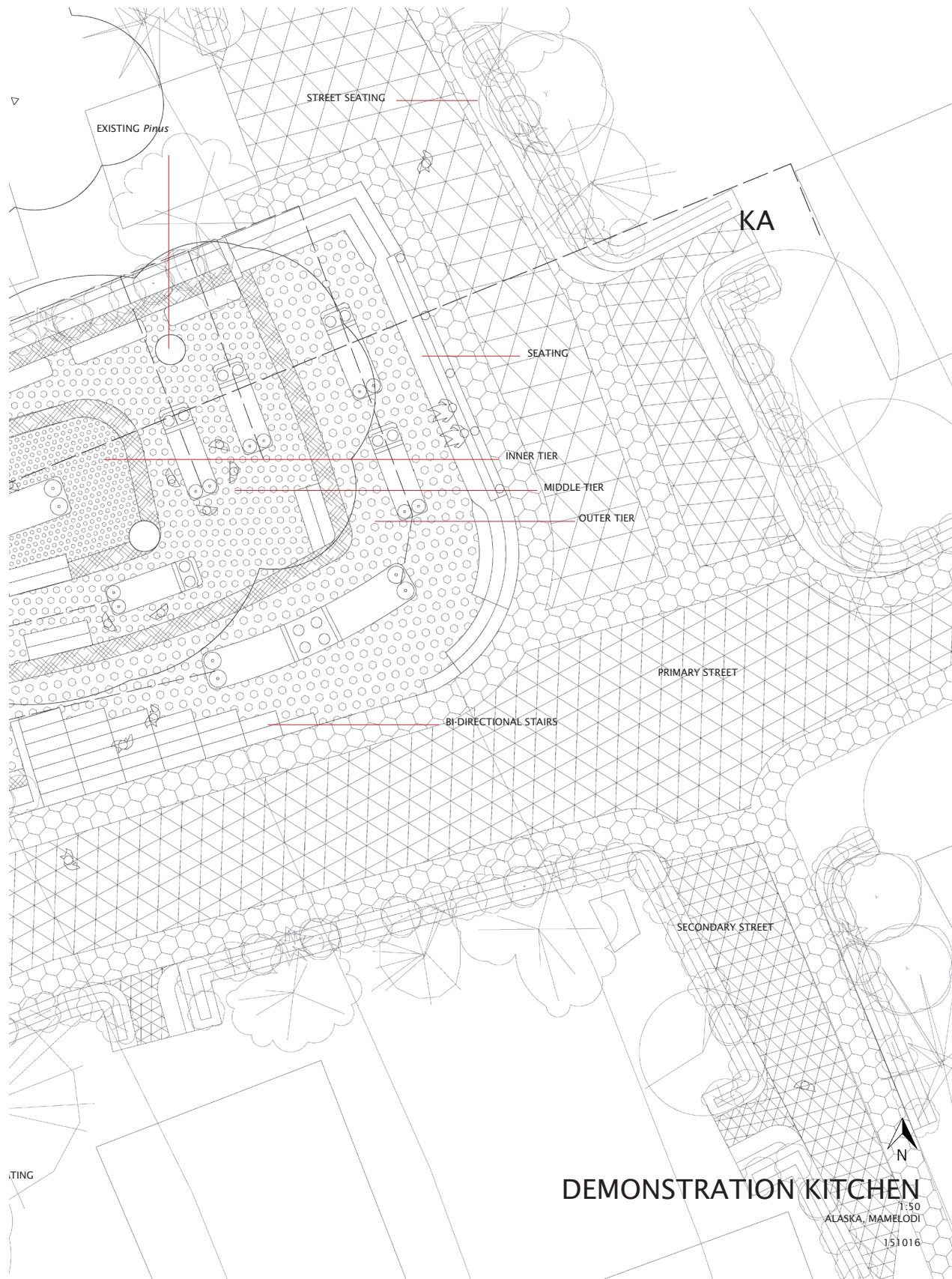






Figure 71 Paper Clay Kitchen model (Author 2015)

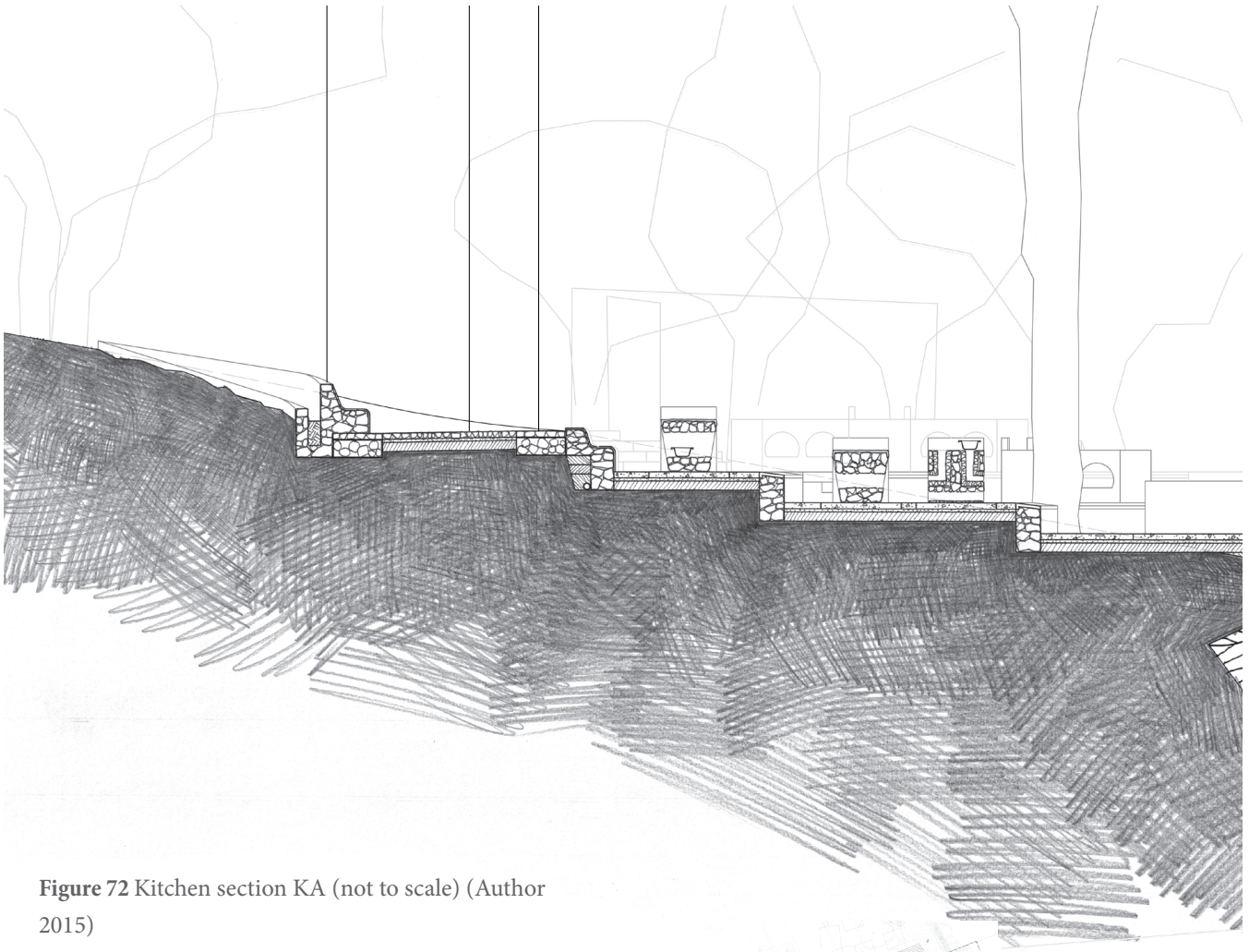


Figure 72 Kitchen section KA (not to scale) (Author 2015)

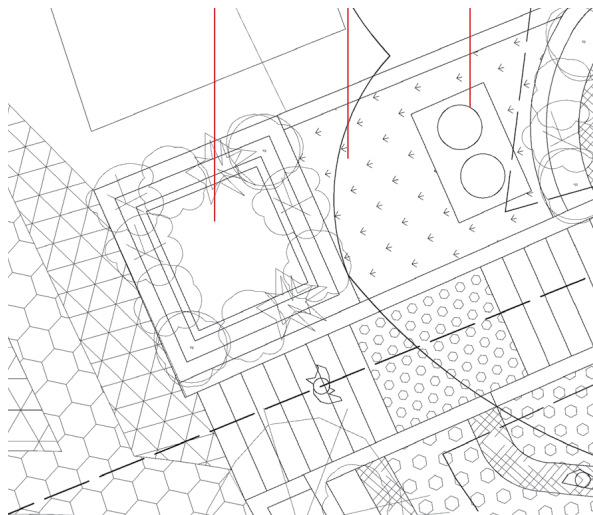


Figure 73 Rest-room on plan (not to scale) (Author 2015)

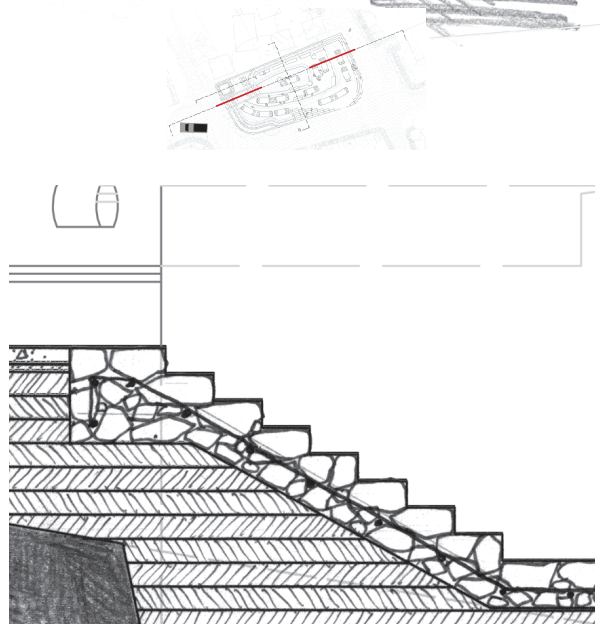


Figure 74 Kitchen steps (not to scale) (Author 2015)

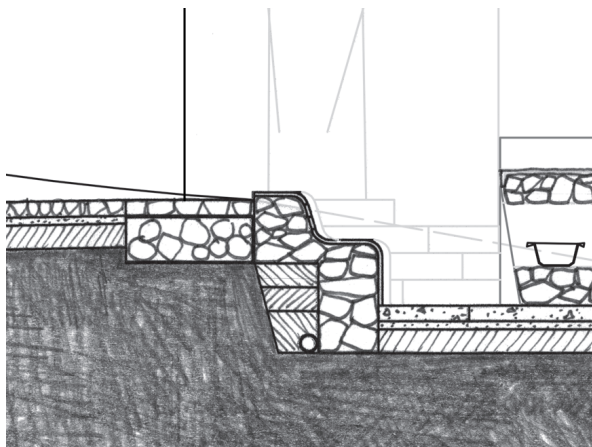
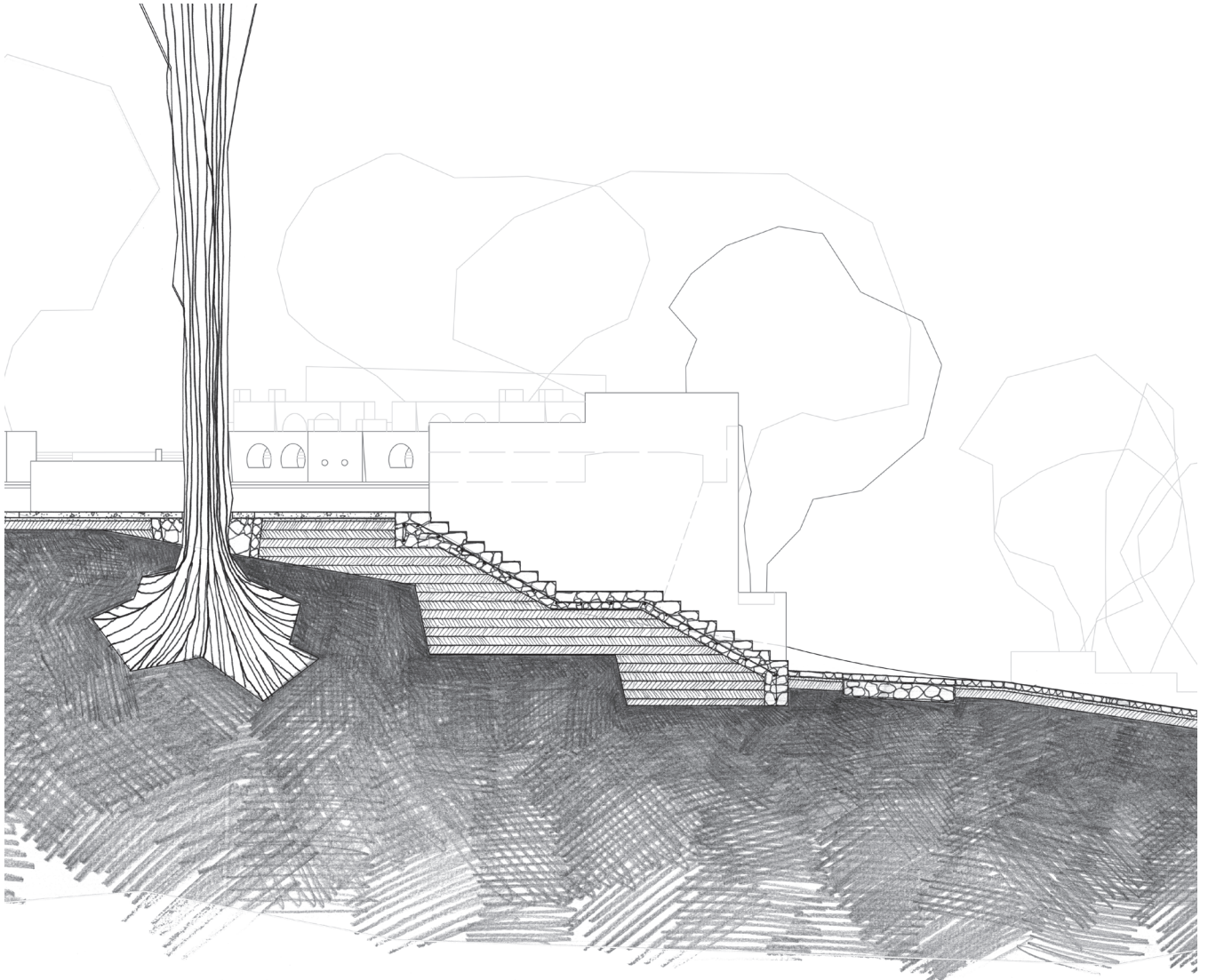


Figure 75 Kitchen seating (not to scale) (Author 2015)

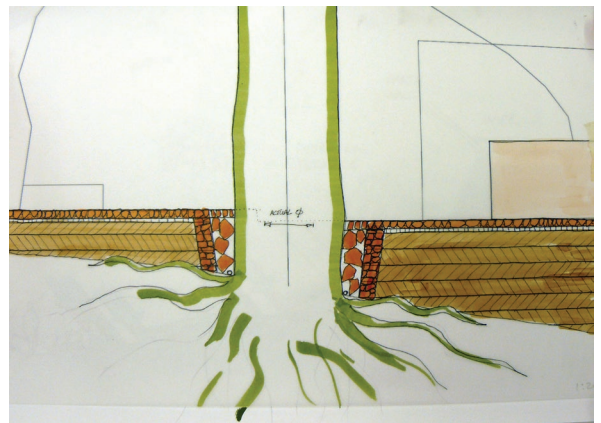


Figure 76 *Pinus* enclosure detail (not to scale) (obsolete) (Author 2015)

5.3.4 EQUIPMENT

The Demonstration Kitchen will be equipped with preparation tables, rocket stoves, wash basins and a rest-room. A non-rigid tensile roof structure is proposed as Alaska's rain patterns do not require a fixed structure. This roof will provide shelter from the early morning and late afternoon sun that the four large central *Pinus* trees do not give.

The preparation tables allow for users to comfortably stand either side and share the hard wearing surface and rocket stove (Figure 80). The tables are staggered for ease of access and to be able to view the central table. They include storage space below the worktop, but do not have doors as doors were found to induce vandalism in the Bovine Head Market in Warwick Junction, KZN (Dobson [Sa]:3).

The rocket stoves are placed so that up to four containers can be warmed in a single cooking area on the larger work bench and two on the smaller—similar to a typical residential stove top. The rocket stove works similarly to a traditional *mbaula* (perforated steel drum filled with wood or coal to cooking with) but is more efficient: a 20l *mbaula* requires 500g of wood to boil 5l of water at 15% efficiency whereas a rocket stove requires 300g at 40% efficiency (Lloyd 2012:26).

The wash basins are simple depressions side-by-side in the hard-wearing surface, to allow for washing and rinsing. The water supply is from Rand Water with the Ancillary System attached in case of municipal water cuts or distribution issues. All wash basins drain to a grease trap that will be serviced by the organic organic compound hungry recycle system. The grease trap drains to a small wetland which drains into the roadside stone filled swale grid. The wash basins' grey water is not re-utilised due to the variable nature of the suspended solids and pressure requirements for the street's drip irrigation system.

A rest-room makes preparing or eating food, socialising and mentoring programmes more convenient: one need not walk back home during a gathering. The rest-room contains a robust, cistern

flush, in-situ moulded and ceramic tiled toilet with similar hand wash basin and urinal. The open air nature of the rest-room allows for ventilation and light and sound infiltration. The wall tops host fruiting vegetation and a roof which brings the behavioural elements of the project into the rest-room.

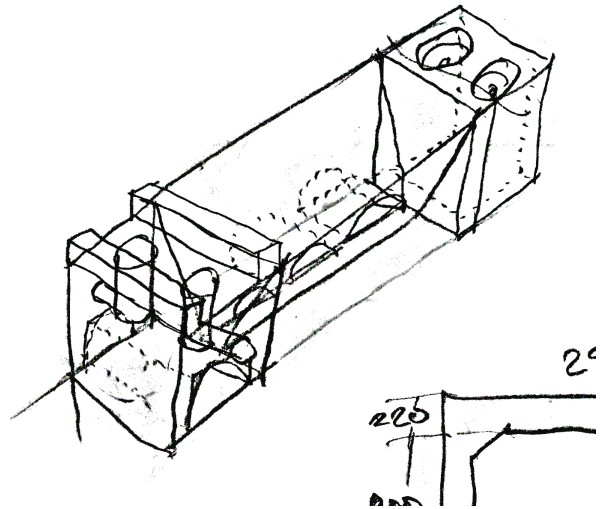


Figure 77 Work bench wire-frame isometric (not to scale) (Author 2015)

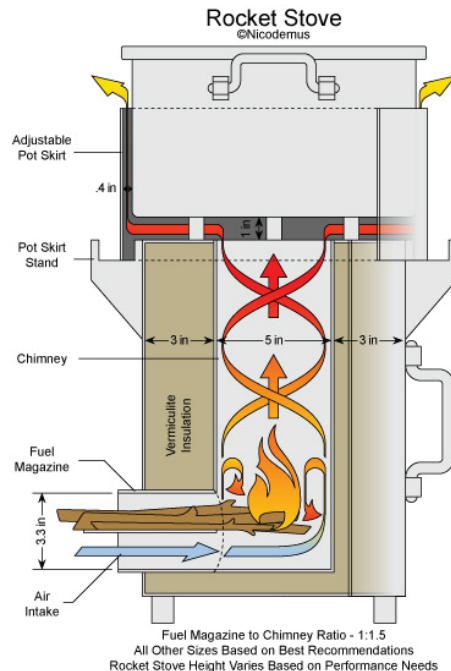


Figure 78 Rocket stove thermal principals (Nicodemus [Sa])

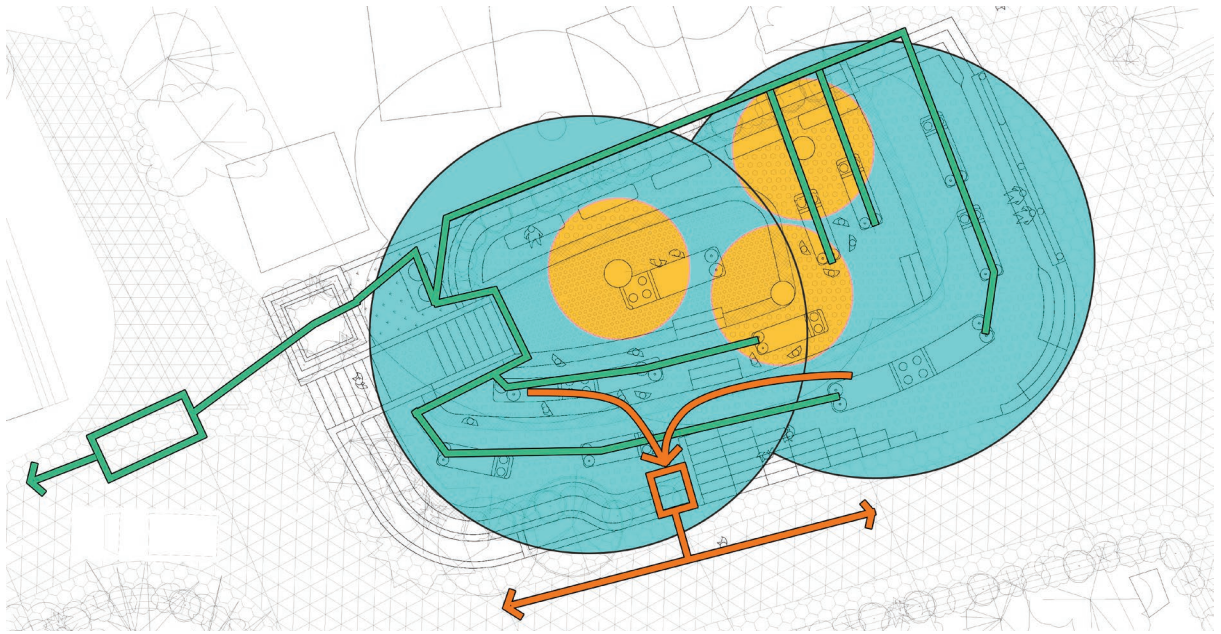


Figure 79 Systems diagram of Demonstration Kitchen: irrigation (green), waste removal (orange), cleaning (blue) and lighting (yellow) (Author 2015)

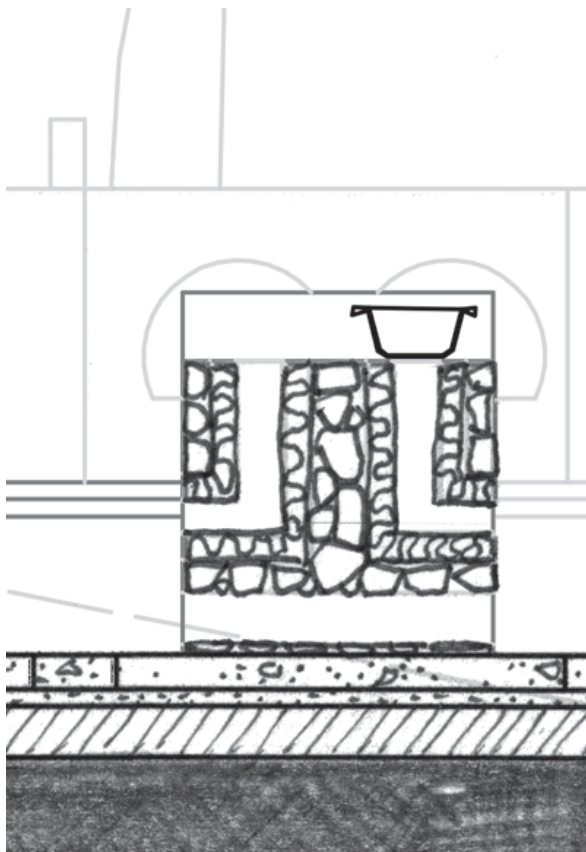


Figure 81 Work bench section through rocket stove installation (not to scale) (Author 2015)

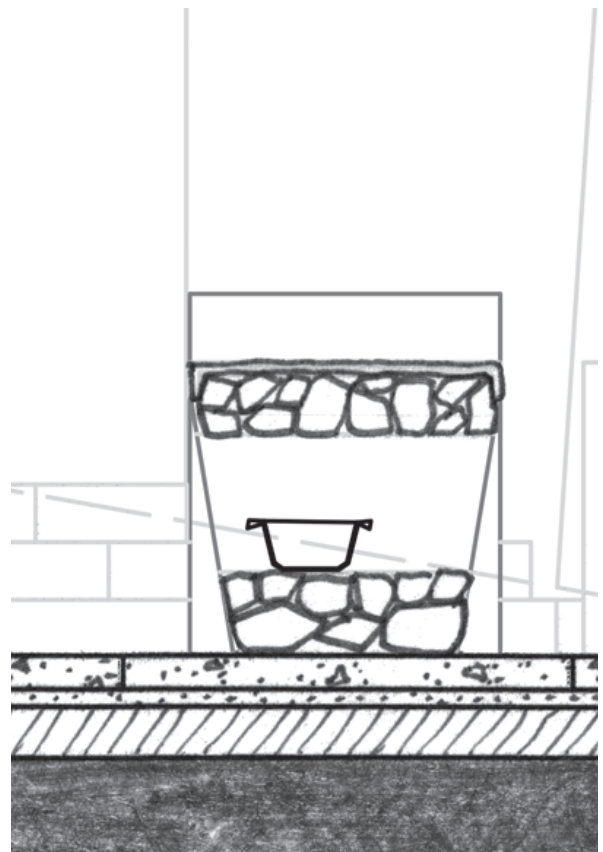


Figure 80 Section through storage cavity of work bench with foot space chamfer (not to scale) (Author 2015)

5.3.5 BEHAVIOURAL TOOLS

The primary behavioural change is brought about by the mentoring programme. It plays a direct role in behaviour change whilst the Kitchen’s communal nature does the same in an indirect way through social norm diffusion: people cooking together share helpful hints and better methods.

As with the street edges, Store Area and the Play Park, the Demonstration Kitchen utilizes several of the OET tools—exposure conditioning from the hedge and fruit trees surrounding the kitchen and the priming of dietary expectations through the association of good food with the demonstrations that take place in the kitchen.

Colour pairing objects with the vegetable store, Play Park and Ancillary System creates a conditioning experience. By appropriating the ‘fast food colours’ a new, healthy association of yellow, red and some blue and green is created. Red ceramic tiles line the tier edges and link with the Play Park. The trees, hedges and wash basins are associated through green and blue tiles to the Ancillary System—reminding one of the importance of water.

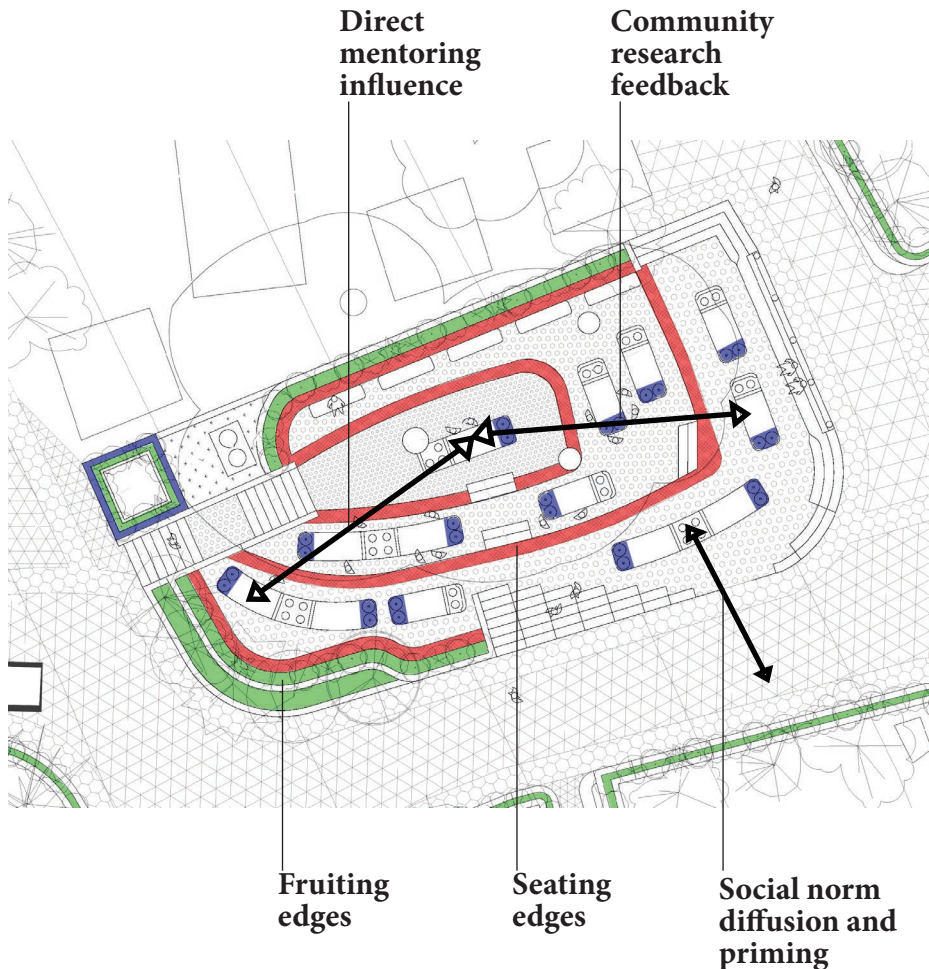


Figure 82 Links between various OET tools and places
(Author 2015)

5.4 PLAY PARK

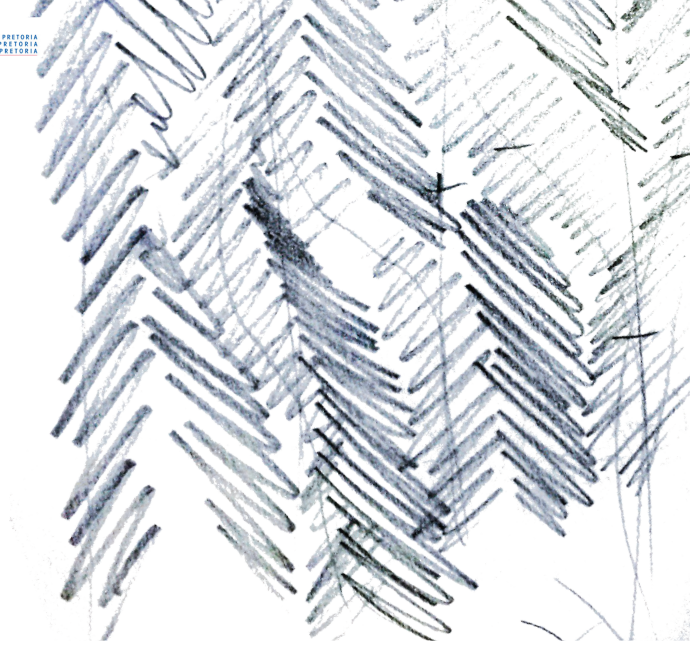
The RDP storm water channel was identified as the only sizable area, along with the Demonstration Kitchen's site, that could be developed. Seeing as the dissertation objective of food choice change is primarily being dealt with through the street edges, Demonstration Kitchen, Store Area and Ancillary System, the channel offers the opportunity to respond, in addition, to another need: a park for the children in Alaska who spend their days in hot corrugated iron-clad informal crèches. It also functions as a means to stop the dumping in the channel and a chance to implement some behavioural tools to influence the eating habits of the children of Alaska. Environments that support children eating healthier foods, aid their self-regulating abilities and promote physical activities even help those adolescents outside of that environment (Toumbourou 2014; Stok *et al* 2015).

5.4.1 PLAY PARK CONCEPT DEVELOPMENT

As with the primary concept of water sculpted stone, the Play Park takes the shape of one of the forms found in the Magaliesberg range: ripples or wave



Figure 83 Ripples frozen in stone on the Magaliesberg range (Author 2015)



patterns. These are caused by water oscillating sediment which hardens to form long straight crests in stone which branch occasionally. The Park takes another direct cue from the mountain as it is on a steep slope which often leads to larger stones being exposed by gradual weathering and erosion.

This led to the plinth form with an undulating surface for children to run on. There is a double step around the perimeter of the plinth—the top step to allow for the accentuation of the park edge with a hedge of fruiting shrubs and the bottom to have the fruit trees' canopy at eye level. Both put fruit within children's reach. There are large boulders cored to create sculptural planters with edible fruiting vegetation.

As with the street and other focal point planting, the Play Park is drip irrigated with water from the Ancillary System. Any excess or rain event's water is drained through the plinth into the existing RDP storm water channel.

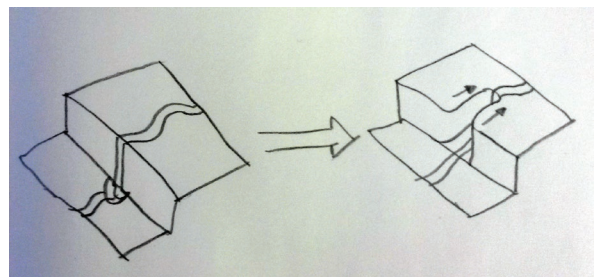


Figure 84 Water cutting into plateau and receding (Author 2015)

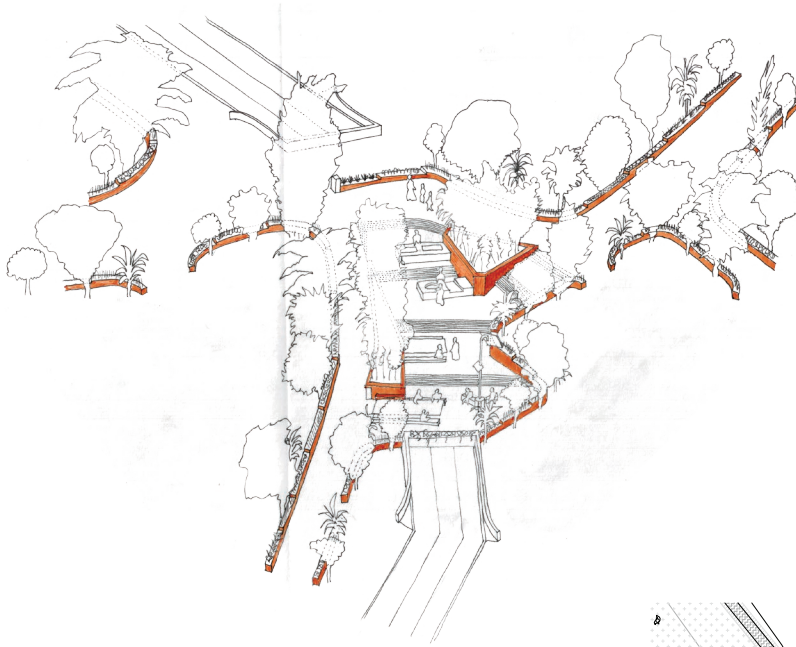


Figure 85 Three terraced hard-surface park with kitchen version (Author 2015)

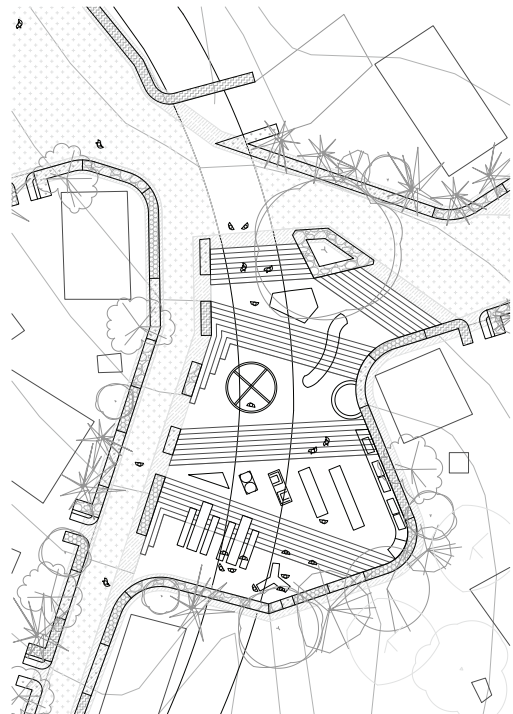


Figure 86 Three terraced hard-surface park with kitchen version (Author 2015)

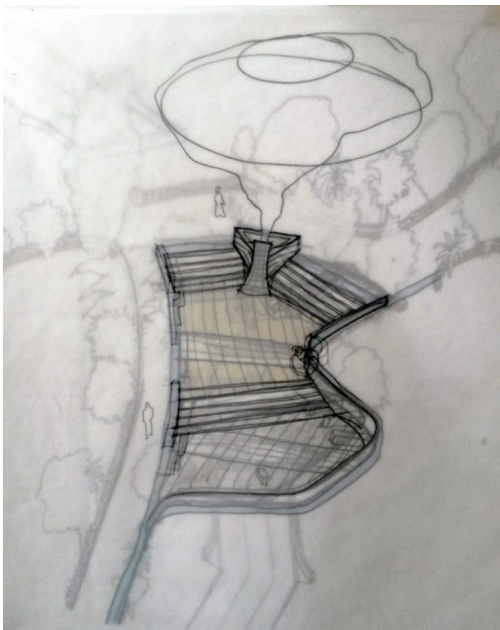
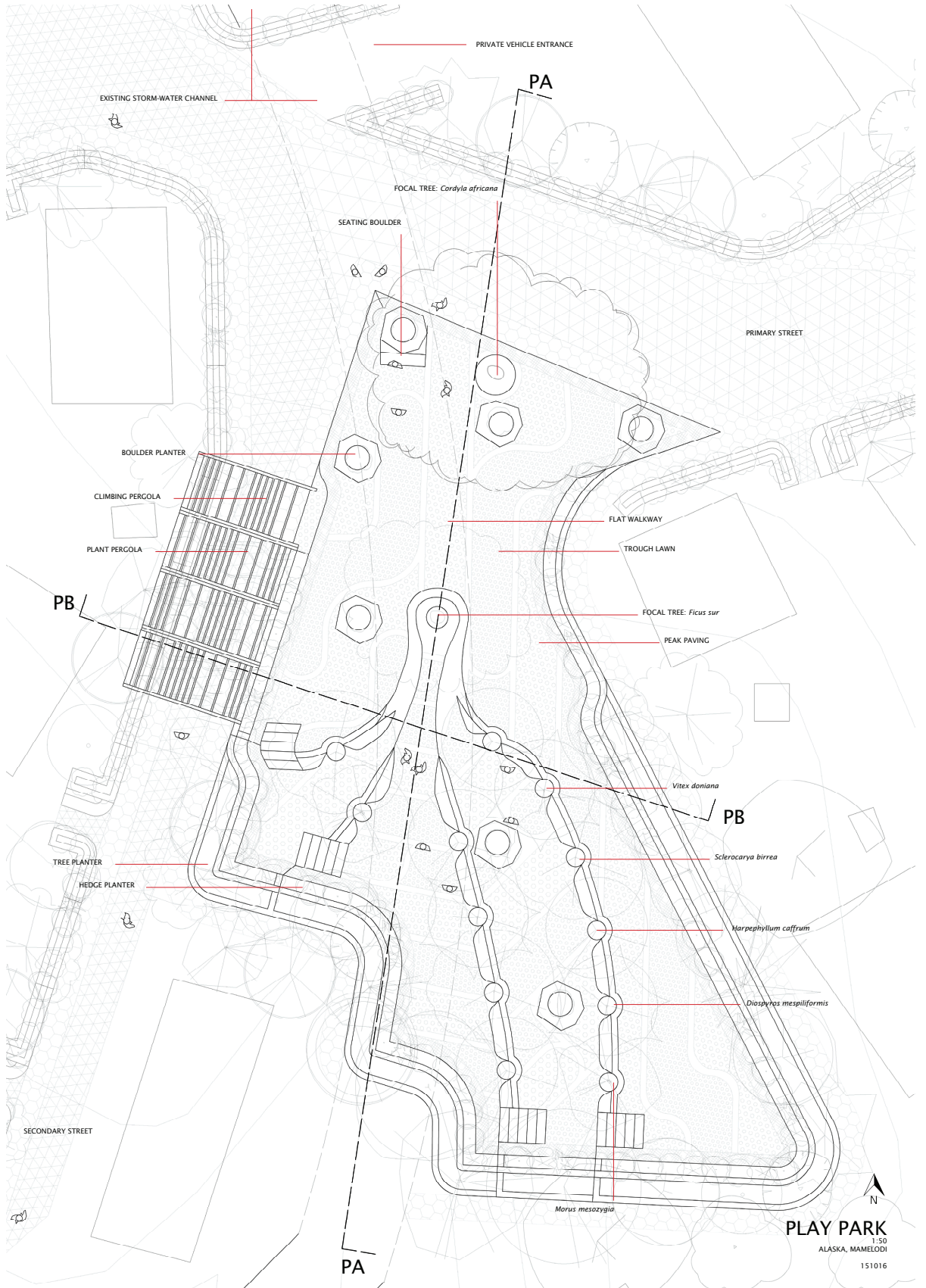
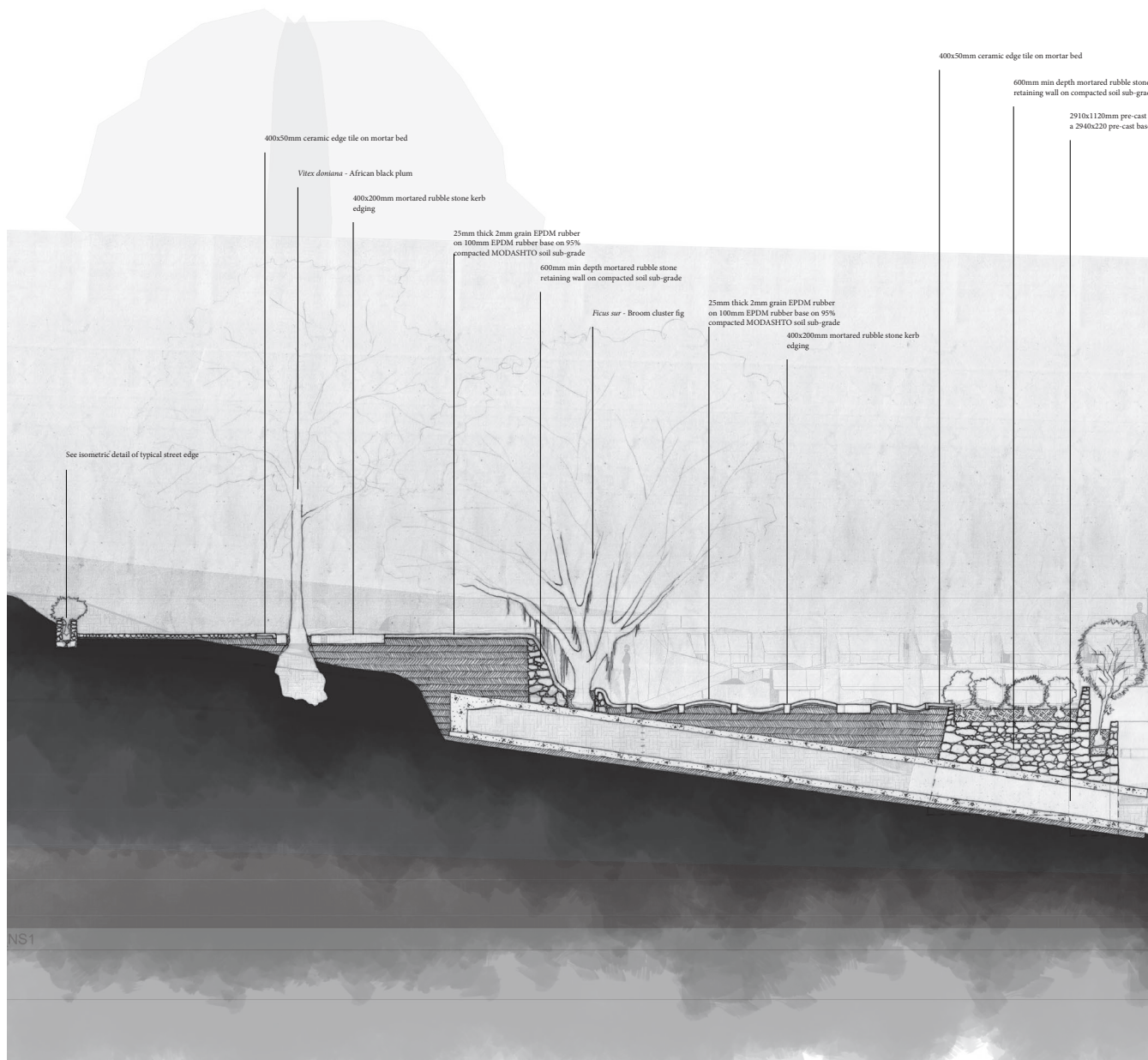


Figure 87 Two terrace hard-surface park version (Author 2015)





92x200mm laminated marine grade plywood CCA treated main beams threaded with 80mm diameter *Eucalyptus* sapling CCA treated dowel stringers

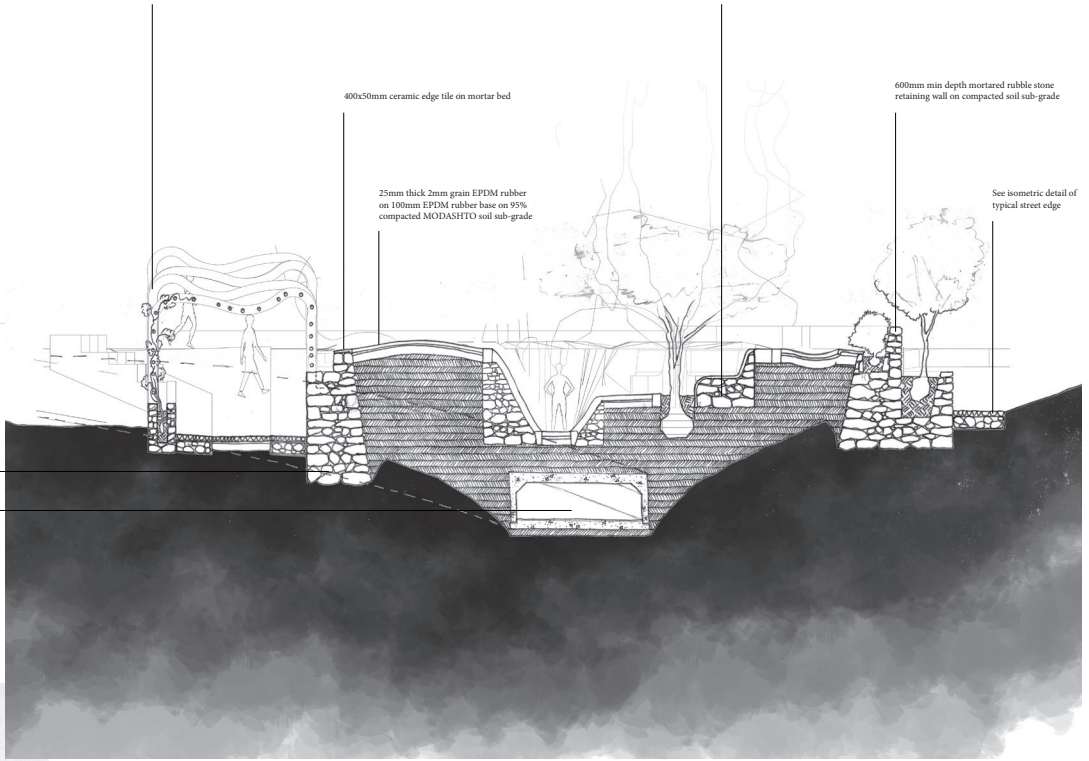
600x800mm Mortared rubble stone retaining wall seating on 90% MODASHTO compacted soil sub-grade with 25mm hand polished concrete seating finish

400x50mm ceramic edge tile on mortar bed

25mm thick 2mm grain EPDM rubber on 100mm EPDM rubber base on 95% compacted MODASHTO soil sub-grade

600mm min depth mortared rubble stone retaining wall on compacted soil sub-grade

See isometric detail of typical street edge



PARK SECTION PB
1:50

Existing RDP storm water concrete channel

PARK SECTION PA
1:50

5.4.2 PLAY EQUIPMENT

Playing requires imagination from the user and this is stimulated through the novelty, both imagined and real, of the play environment. A park should encourage novelty to illicit a strong experience across age groups and physical abilities (Rawlinson & Guaralda 2012:2). Here this is accomplished through the undulating surface of the Park allowing for three dimensional movement, hiding and jumping. The shape of the Park does not conform to a right angled, uniform layout thus allowing for more spatial perception. There are unfamiliar and perception challenging objects set in the landscape in the form of stones with plants growing out of their tops. The pergola, trees on top of the plinth and fig canyon offer dynamic climbing and movement experiences.

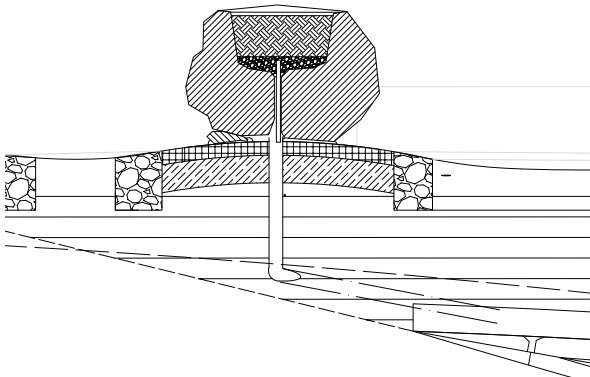


Figure 88 Boulder planter (not to scale) (Author 2015)

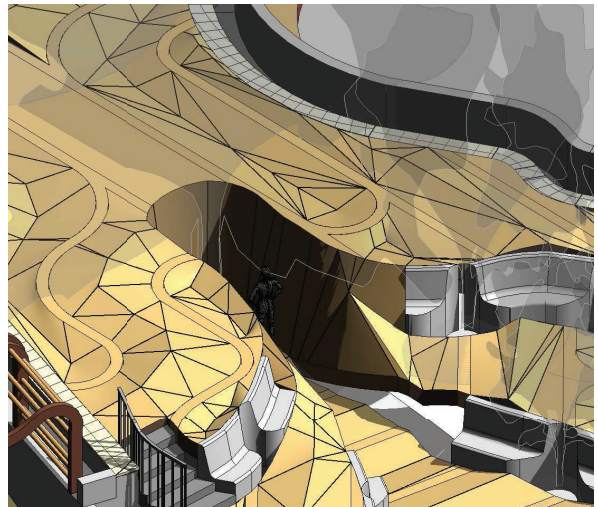


Figure 89 Fig tree play canyon (Author 2015)

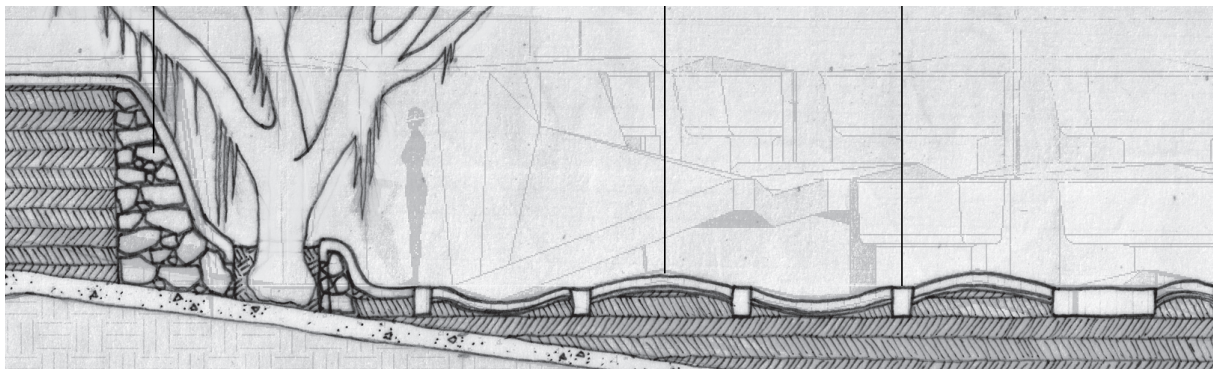


Figure 90 Undulating surface and Fig Falls (not to scale) (Author 2015)

5.4.3 BEHAVIOURAL TOOLS

As with the street edges, the hedges and fruit trees offer an alternative source of sweet snacks and, if not available, serve as a reminder from previous experiences. This occurs through the mere exposure conditioning of the plethora of fruits within easy reach year round and the priming of dietary expectations when returning home for a meal.

Colour pairing play objects with the vegetable store (Store Area), Demonstration Kitchen and Ancillary System affords a conditioning experience. By using

colours most fast food stores appropriate, a new, healthy association of yellow, red and some blue and green, is created. Adorning yellow ceramic tiles on the popular play objects and, similarly, the vegetable store conditions children to associate enjoyment with the store. The same is done with red ceramic tiles and linking the plinth surface ripples with the Demonstration Kitchen. The trees and hedges are associated through green and blue tiles with the Ancillary System, reminding children of the importance of water.



Figure 91 Behavioural tools and links to other elements along the street (Author 2015)

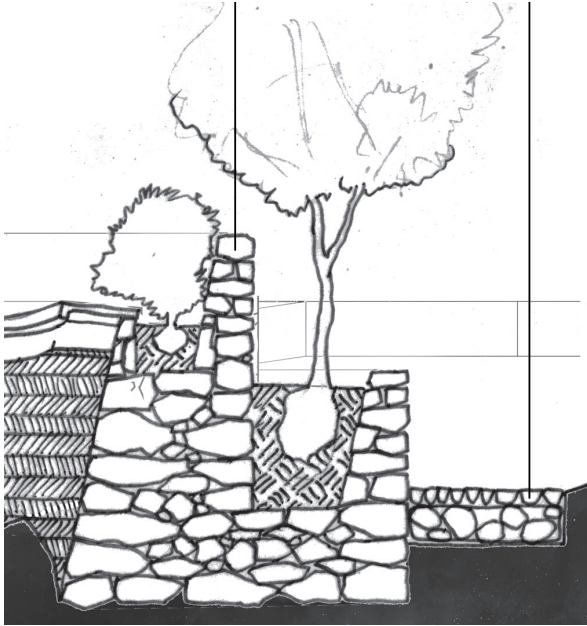


Figure 93 Detail of stone construction (not to scale)
(Author 2015)

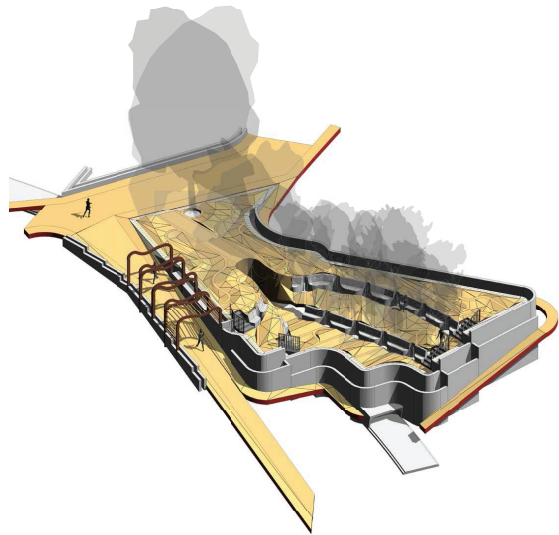


Figure 92 Isometric view of Play Park (not to scale)
(Author 2015)

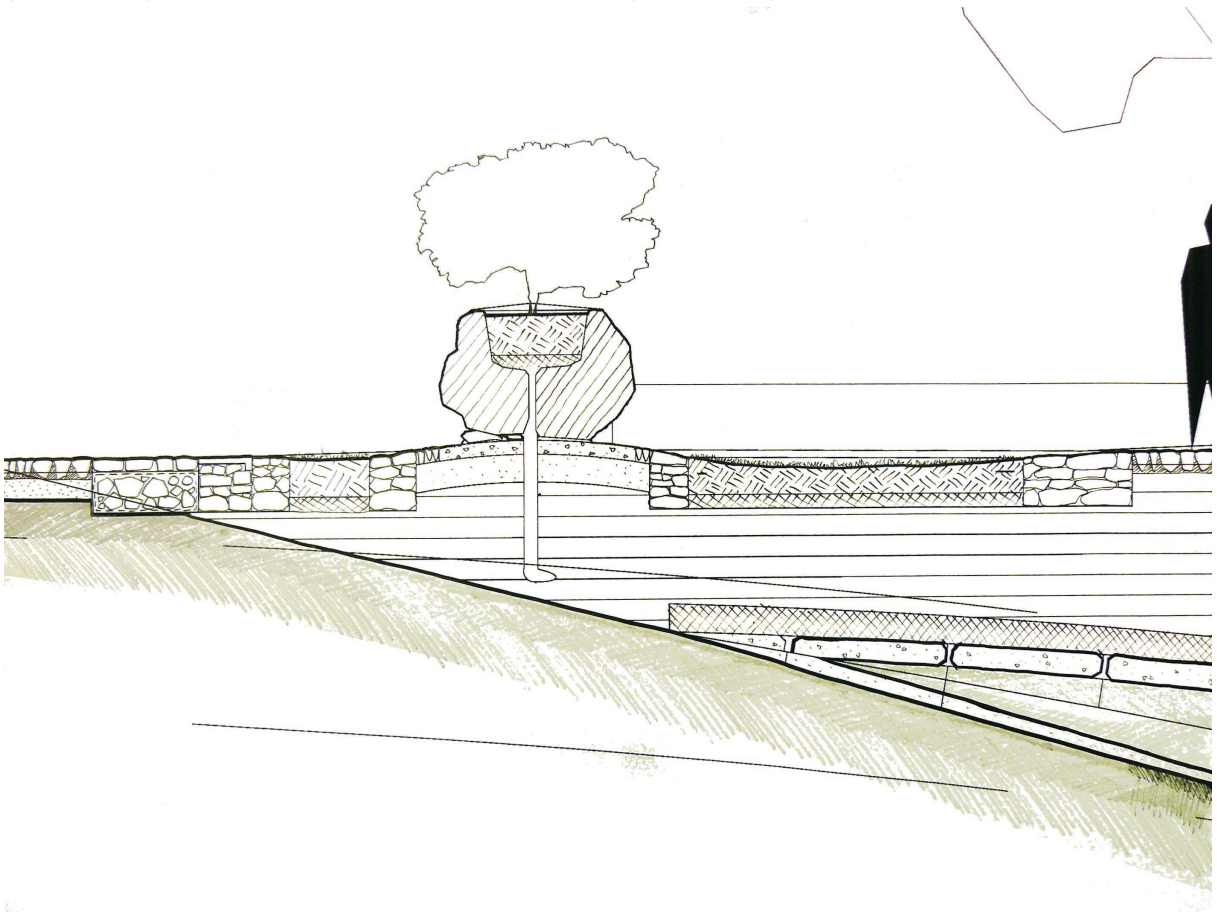


Figure 94 Detail of section PA (not to scale) (obsolete) (Author 2015)

5.5 STORE AREA

The existing store node on the proposed route caters for most of the Alaskan dietary needs. There is a small supermarket selling a wide range of non-perishables and frozen meats; a fast-food store; shisanyama (meat barbeque) store; a vegetable store and two small miscellaneous food item spaza stores.

Having more locals purchase within Alaska leads to better food security through local prices dropping, a greater variety of foods being made available to the bigger demand and, importantly, allows more chance to affect behavioural change in combination with the rest of the OET tools. There is a big difference in the efficacy of the OET when someone purchases food within the environment the tools are acting in. For example, the cues in the Store Area entice purchasing at the vegetable store but if one goes to Denneboom one is prey to the more profit driven tools utilised in those stores.

The proposal calls for new shop-fronts and purchase interfaces that must attract more local sales and work with the aims of the OET and larger project goals. This would entail encouraging a more balanced diet with less fast food purchases. When redesigning the store fronts, using single concise slogans will work better at having new foods purchased (Fenko *et al* 2014:268) and including dense trees with open canopies for shade will entice passers-by (Wolf 2004:50).

This shopping complex development will require the expertise of an interior architect well versed in the low-income commercial retail environment. As such it is only suggested in broad strokes within the dissertation.

5.5.1 BEHAVIOURAL TOOLS

The Store Area is part of the primary street and as such utilises fruit trees and hedges for mere exposure conditioning purposes. The trees are specifically chosen for their height and branching characteristics so as not to hide the store fronts from passers-by on Moshumi Street. The trees do, however, frame the vegetable store

as one approaches the Store Area from the mountain's side.

Colour coding is used similarly to other points and positively links the vegetable store with certain play objects in the Play Park via yellow ceramic tiles. Blue and green tiles outline the suspended paving system allowing the trees to grow to their full potential—creating a large, divergent entrance avenue—and also link to the source of the trees' fruits: the Ancillary System.

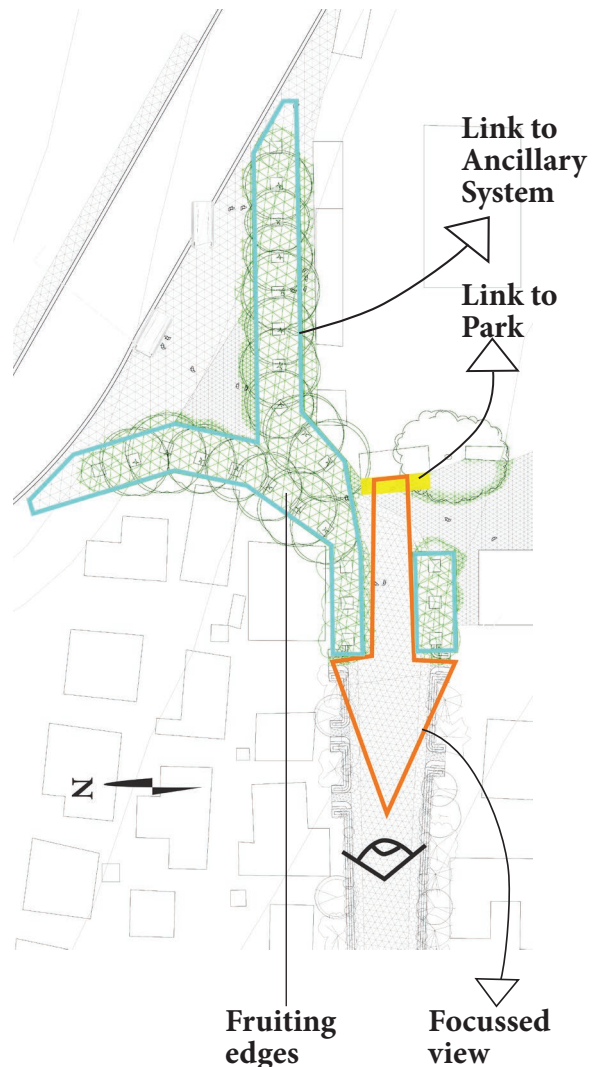
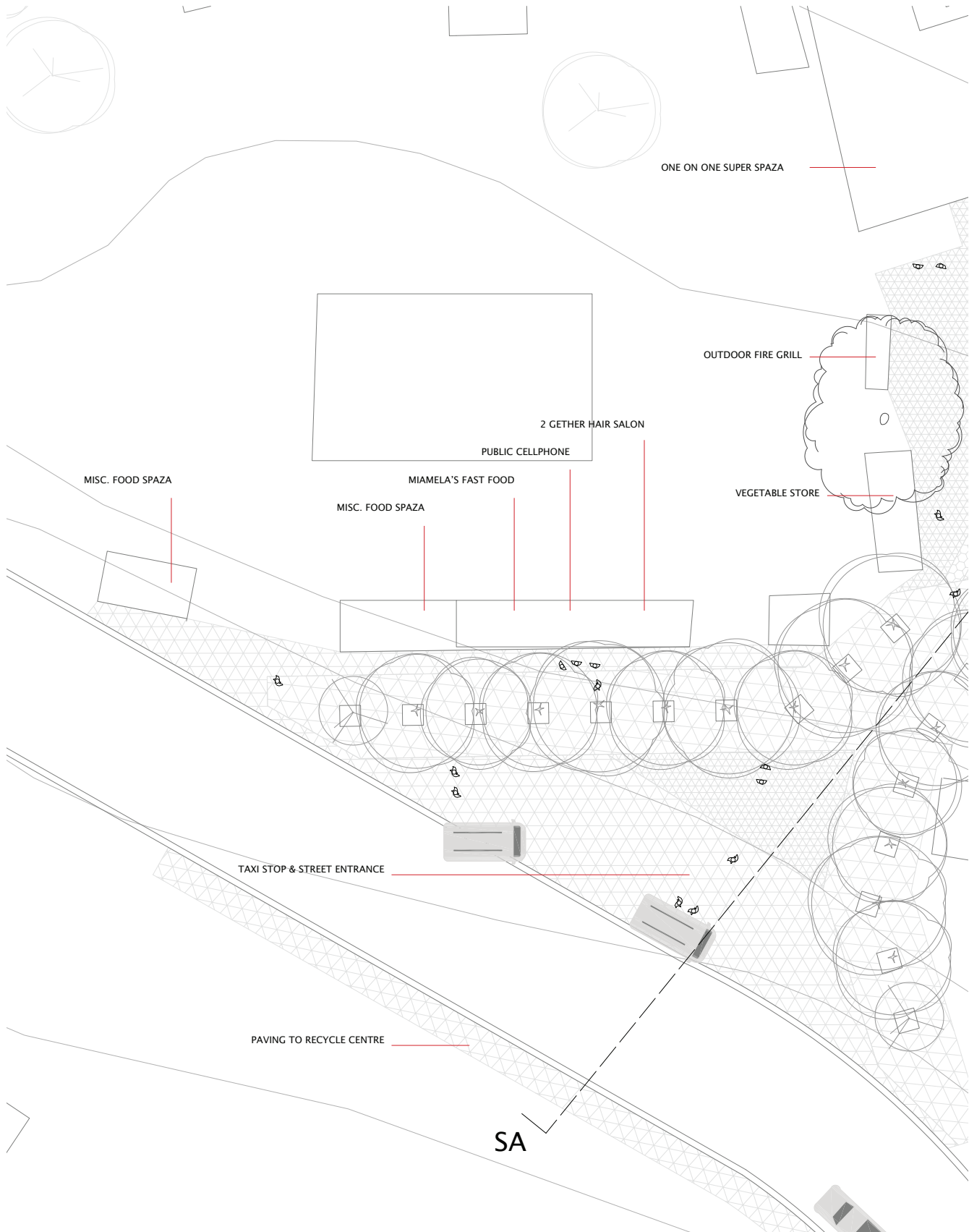


Figure 95 Store Area behavioural tools diagram (Author 2015)

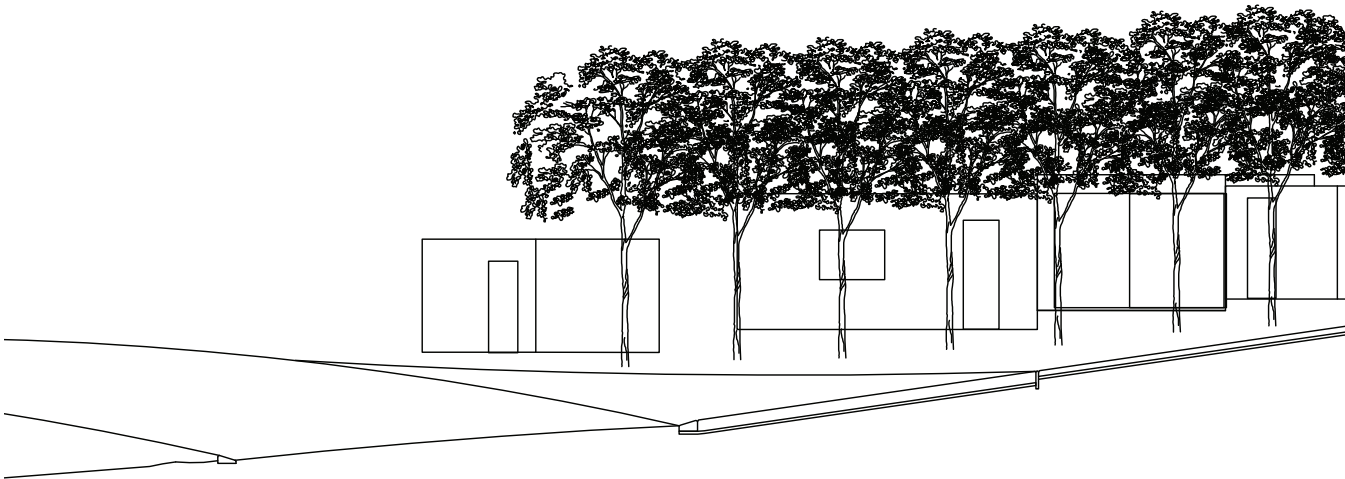
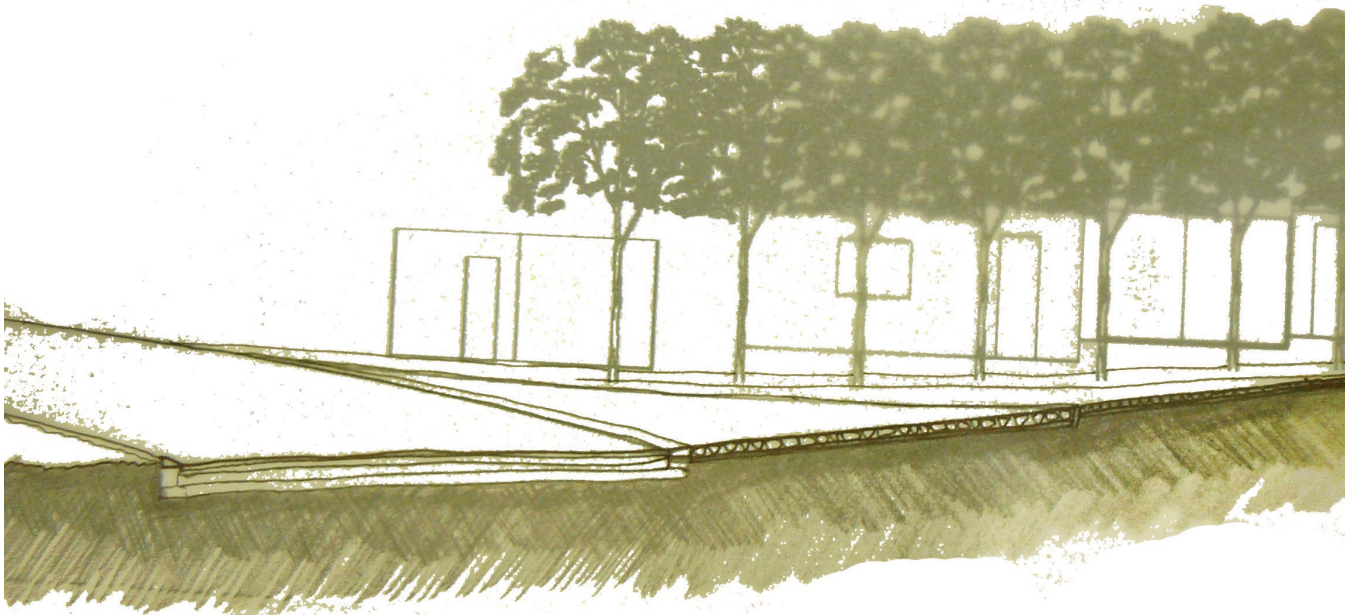




ENTRANCE & SHOPPING

1:100
ALASKA, MAMELODI

151016



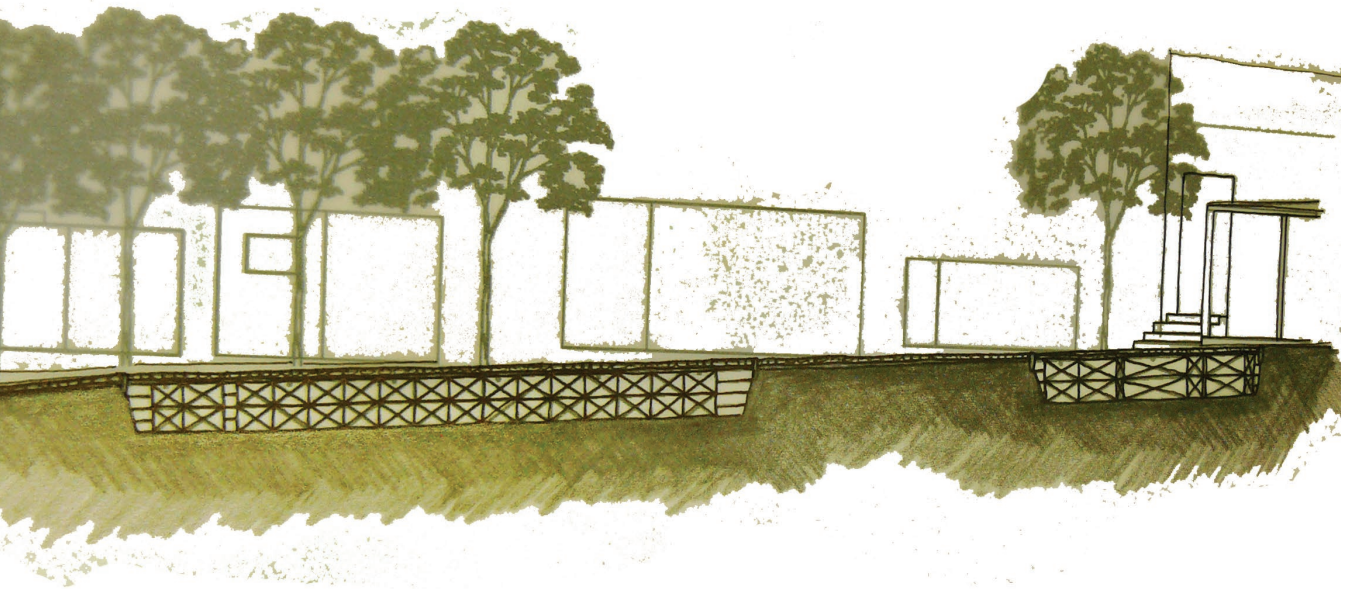


Figure 96 Section through Store Area cutting through two suspended pavement soil reservoirs (Author 2015)

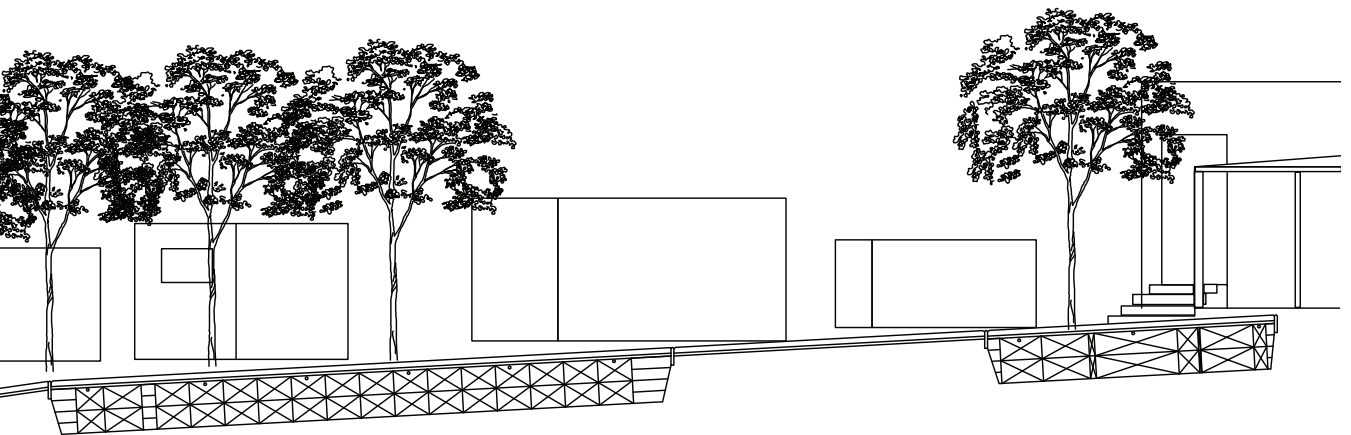


Figure 97 Section through Store Area cutting through two suspended pavement soil reservoirs (Author 2015)

5.6 ANCILLARY SYSTEM

The Ancillary System has multiple functions and programmes. It lessens the severity of storm events through detaining surface runoff and storing and filtering water for use along the agricultural belt, street planting and personal gardens. It also creates a barrier for the sprawl of Alaska infringing on the sensitive Magaliesberg ridge ecosystem, aids in stopping minor rock fall and will become the mountain-side border boulevard for Alaska. The system will act as a guiding armature or spine that other streets can connect to as Alaska develops.

The supply of water to the street planting is of great importance to the scheme. It is achieved through a detention system at the base of the cliffs above Alaska. The system is comprised of catchment, storage and filtering structures that run the length of the upper Alaskan border and a distribution system in the form of drip irrigation piping along the length of the primary street.

5.6.1 CATCHMENT

The catchment area is fairly small due to the Magaliesberg mountain range's natural 30° slope towards the north creating sheer cliffs on the south. The steep mountain slope and short runoff distance led to calculations by ideal storm characteristics and not the rational method. In the end it was found that the monthly precipitation supply far outweighed the requirements of a fully planted main street throughout the year. If the Ancillary System is full it will supply water for 60 days without being replenished.

5.6.2 CELLS

Detention storage is achieved through units laid out at twelve meter intervals along the settlement border. The units or 'cells' consist of well-draining and filtering soil above recycled polymer crate subterranean storage tanks. These cells filter and collect water from

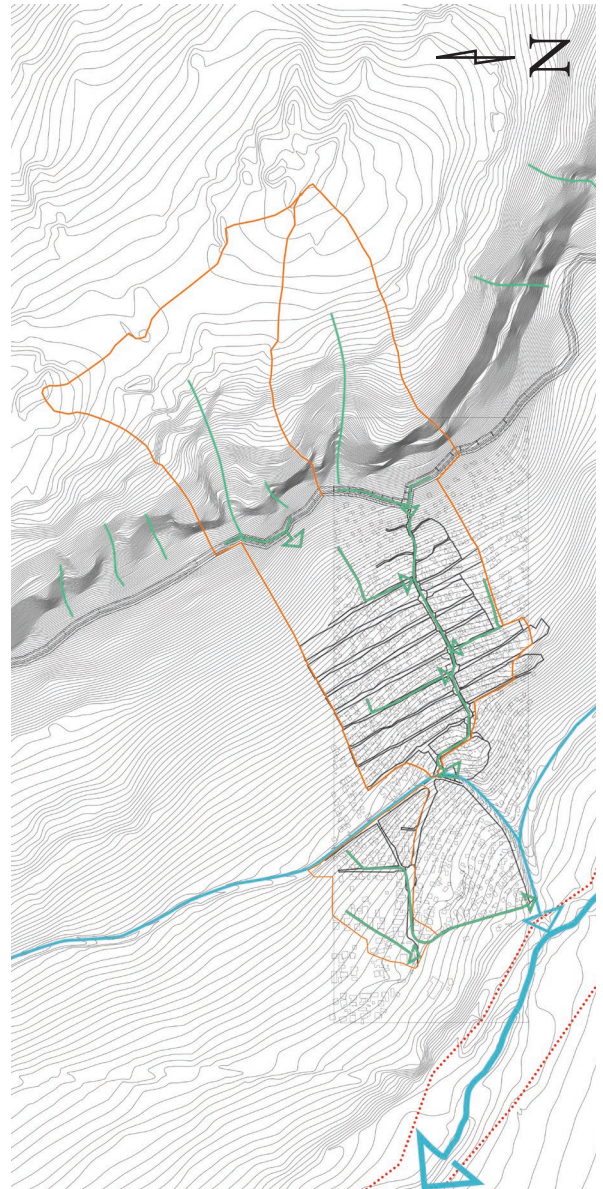


Figure 98 Water System (not to scale) (Author 2015)

the catchment area before releasing to the final filtering system, which is a terraced subsurface wetland band just below the cells. From various points of concentration along the Ancillary System, water for street planting is provided on rotational basis through a drip irrigation system. The drip system conveys the water down the main street in various lateral and feeder pipe diameters with pressures regulated along the way.

5.6.3 AGRICULTURAL BELT

Even though urban agriculture is not the primary focus, the Ancillary Systems does create opportunity for it.

The Ancillary System irrigation is run by the subsistence farmers who are given the control because of a vested interest in its proper management. The primary hindrance to urban agriculture in poor settlements is space and water (Van Averbeke 2007:342). They will be utilising its filtration system for cash crops of thatching grass that can be sold for construction material in Alaska and abroad. Their own fields will be greatly improved by the regular irrigation offered through the Ancillary System.

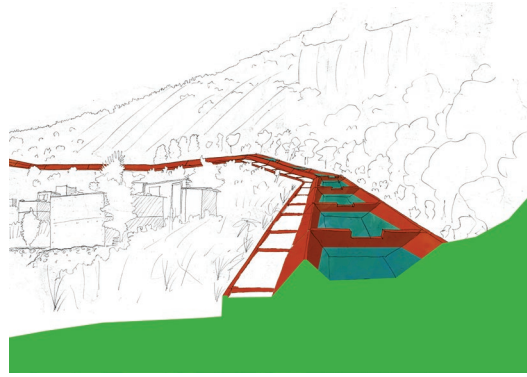


Figure 100 Section-perspective of Ancillary System with open cells (obsolete) (Author 2015)

150mm CO

20mm GEOSYNTHETIC CL

1500 x 600mm min DEPTH MORTARED RUBBLE STONE RETAINING

600mm FINE AGGREGATE PLANT

600 x 600mm min DEPTH MORTARED RUBBLE STONE RETAINING WALL ON COMPACTED SOIL SUB-GRADE WITH WATER TILE COPING

100mm RUBBLE STONE LAID ON 50mm CEMENT SAND SETTING BED ON 150mm COMPACTED AGGREGATE BASE ON COMPACTED SOIL SUB-GRADE

400x400mm min DEPTH MORTARED RUBBLE STONE WALKWAY EDGE FOOTING ON 90% MODASHTO COMPACTED SOIL SUB-GRADE WITH WATER TILE COPING

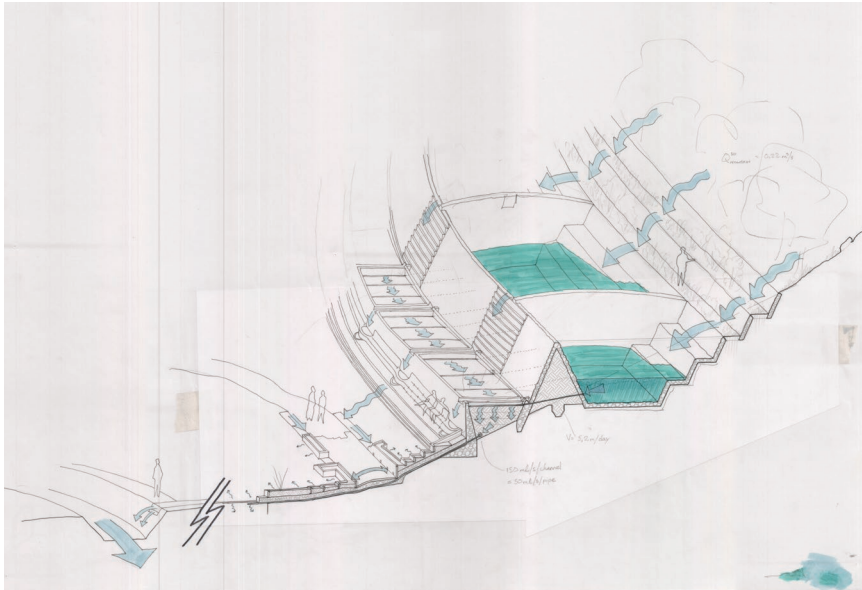
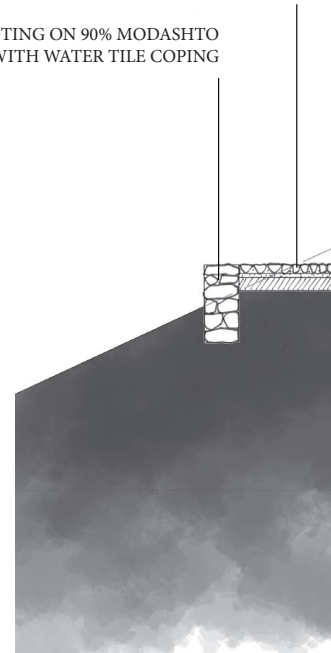
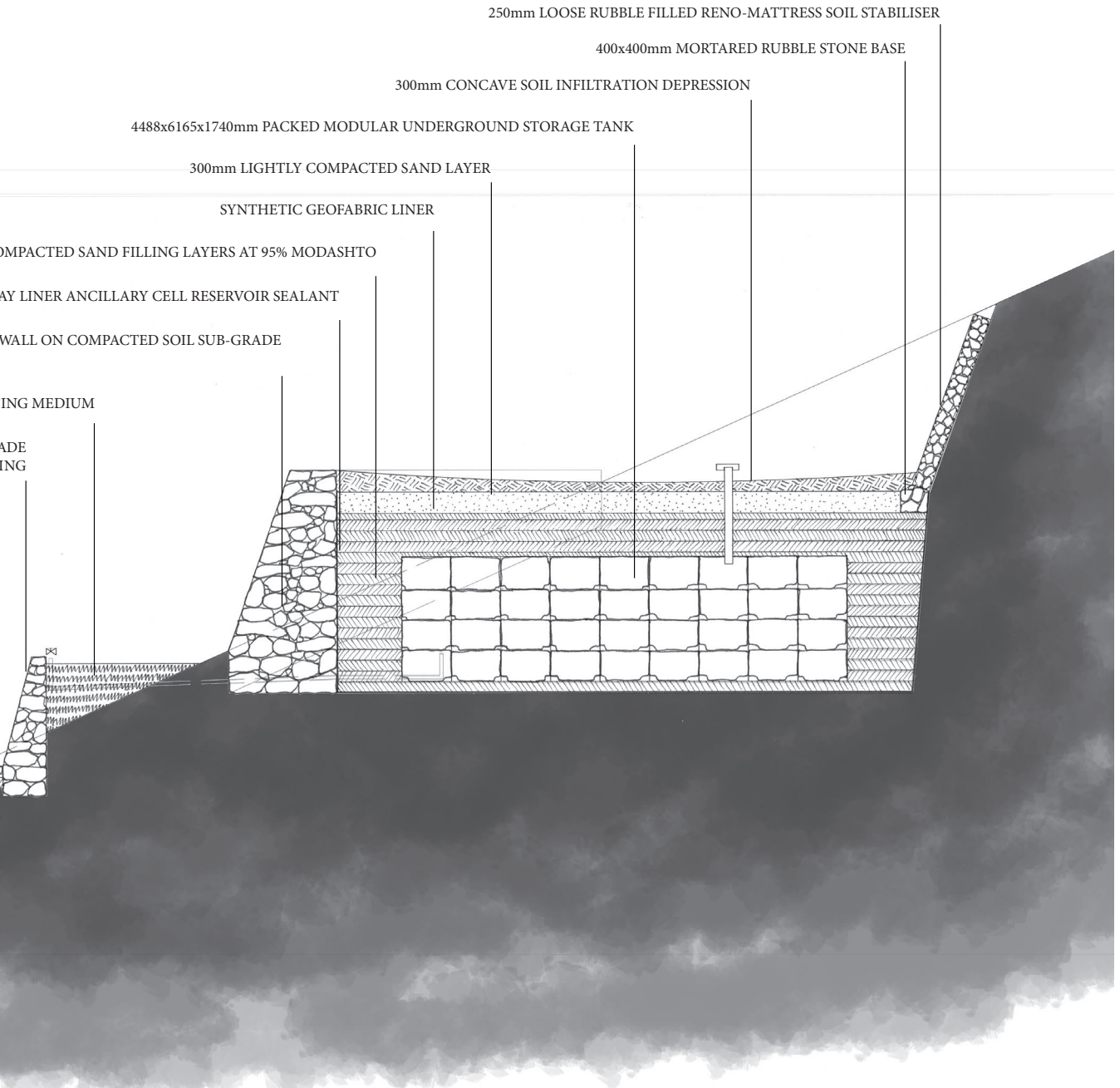


Figure 99 Isometric of water flow over and through Ancillary System with open cells (obsolete) (Author 2015).





ANCILLARY SECTION AB

1:50

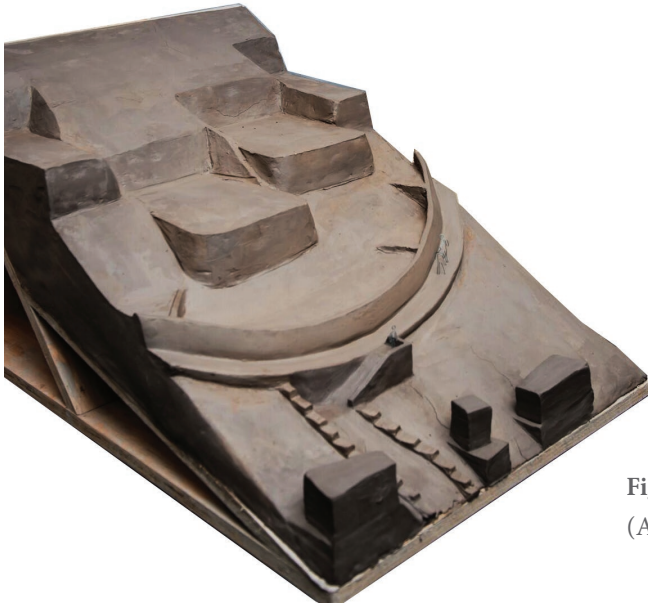


Figure 101 Paper Clay model of Ancillary System (Author 2015).

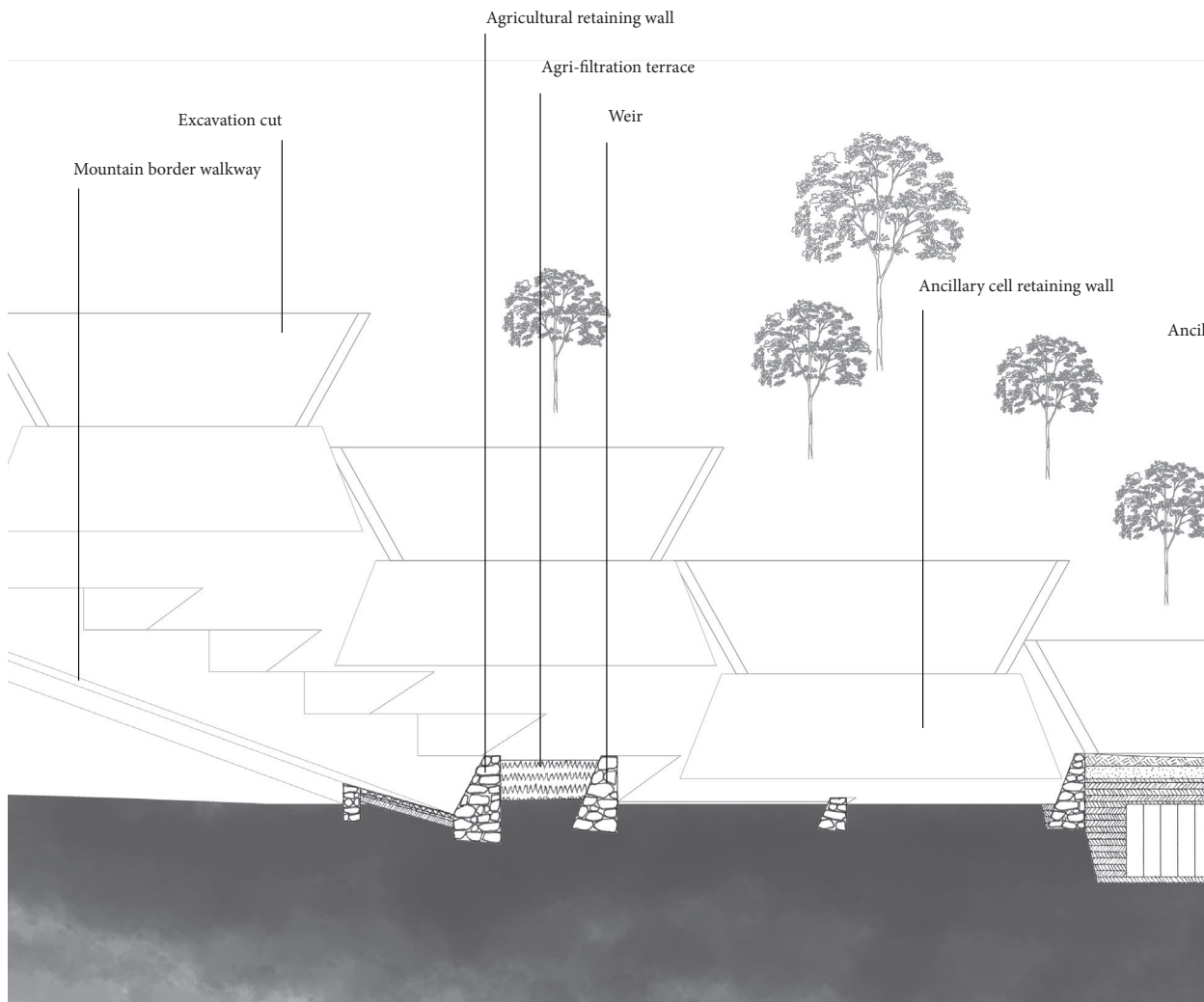
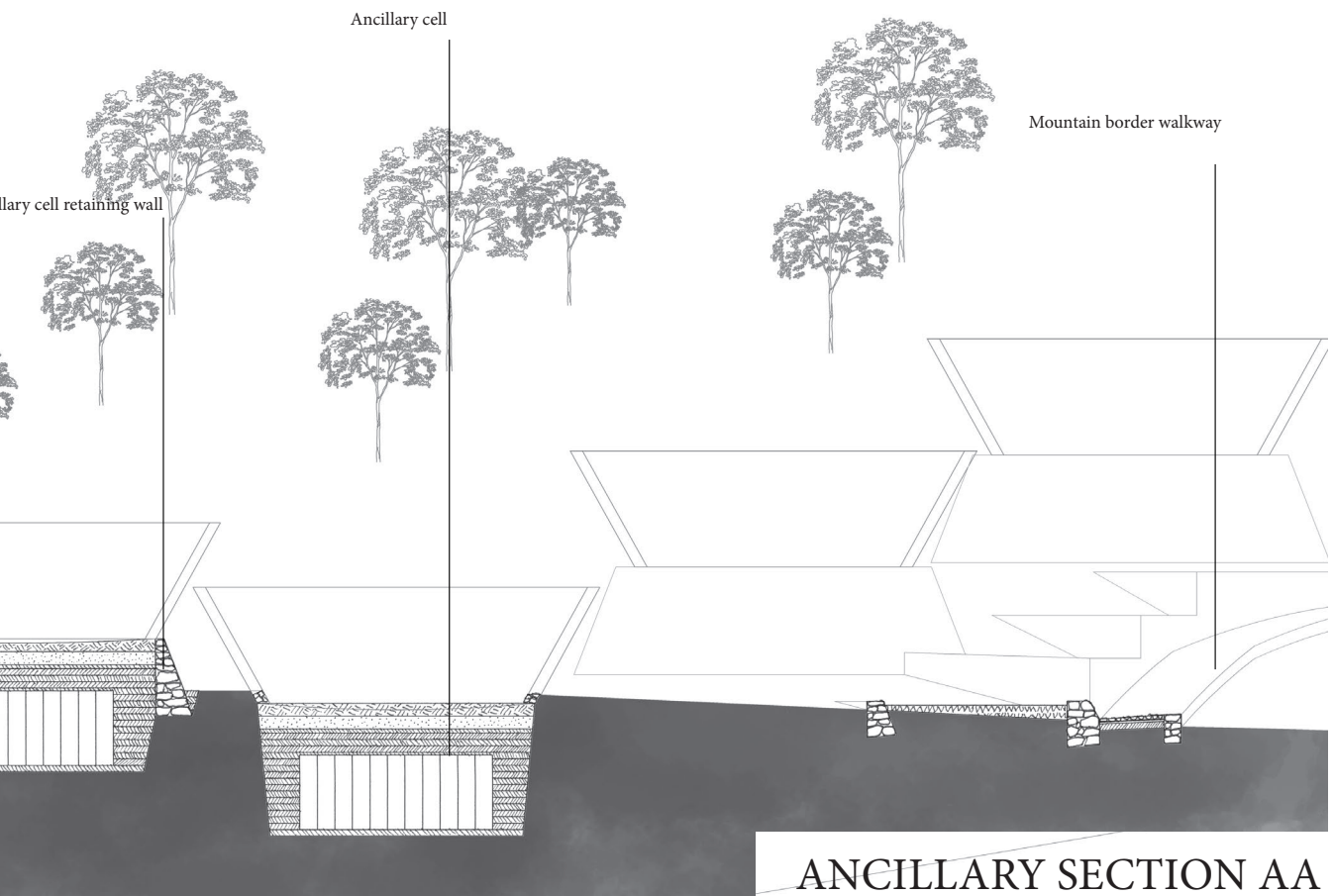




Figure 102 Ancillary System mountain border promenade and agricultural belt perspective (Author 2015).



6. CONCLUSIONS

Humans have evolved a means to filter and reinforce certain stimuli in order to choose food. In the past this helped us, but now, with a globalised world and refined foods, we need to be diligent in our creation of outdoor eating spaces. We should design environments that aid healthier food decisions.

The proposal takes the form of an in situ, phased and supportive environmental upgrade; giving the necessary infrastructural facilities, guiding examples and institutional support so as to allow Alaskans a better chance at making healthier food choices. It is comprised of:

- An infrastructural upgrade of one of Alaska's main walkways dealing with erosion and ease of access.
- The use of behavioural tools along the route and at nodes to aid healthier eating decisions.
- A mentorship programme at the Demonstration Kitchen aiding food cultivation, preparation and presentation skills.
- A Play Park with social amenities.
- A refreshed Store Area with attraction to Alaskans.
- A recycling initiative aimed at giving monetary incentives to keep the primary walkway clean thus making the behavioural tools more effective.
- An ancillary water supply intended to irrigate the entire primary street and subsistence agriculture belt.

All the above is done in a way that makes it easy to appropriate and scale out to the rest of Alaska with sustainable means of construction and management.

Food is such a complex, intrinsic and pervasive part of our lives that to effect any real change one would need to alter as much of the user's environment as possible. This change would come in the physical built environment and just as importantly in social norm changes which are the hardest to affect. Implementing an outdoor eating street which uses behavioural techniques requires institutional action, such as food mentorship as proposed in the Demonstration Kitchen, to increase the success of the project. As we have seen,

many of our habits are embedded in our culture and built environment which means that large social shifts in our landscape needed to alter these habits.

To change people's behaviour one must give them the opportunity to do so. Giving Alaskan's the chance to eat better is the strongest tool to use. This is what the OET behavioural tools allow for: a break from the low-income consumerist norms and a reminder of what is healthy and uplifting.

Good design practice that is inclusive, enabling, resilient and accessible through dissemination is still the vehicle for the behavioural tools. Design is still just as important as it ever was. Only, now it is getting help in the form of behavioural science. When we design our envisaged places and we take into account not only the obvious relationship users have with place but understand the core behavioural principles, we can design with any goal or aim in mind. Understanding people lets one design for them.

You are designing for people; you need to be well versed in the abilities and frailties of the human mind. There are fundamental truths of what we are capable [of] that runs deeper than culture and language.

~ Raskin 2011:para.9

7. RECOMMENDATIONS

The answer to the research question ‘can a designed, eating oriented landscape change peoples’ dietary habits’ is a qualified ‘Yes’, but the efficacy is yet to be determined. To do this a simulation of the intervention will have to be attempted, but based on the research cited and the dynamic nature of Alaska it will be a very subjective attempt. This highlights the need for design research to take place in one-to-one scale testing and experiential learning (Roncken *et al* 2012:68).

The issue of community participation in design should be addressed. The project’s solution is based on academic research, much of which is derived from the local context of Tshwane and some even in Mamelodi, yet this desktop study approach negatively impacts the chances of discovering the community’s hierarchy of needs. One could claim that the intervention’s ownership still sits with the landscape architect and institutes running the mentorship programmes when it should wholly be of the community.

The lack of writing on the effects landscape architecture has on eating behaviour shows that there is still a lot that needs to be researched and explored, such as:

- Utilising opportunities similar to the intensive and thorough data gathering accomplished by the COPC’s system to substantiate the efficacy of landscape elements in eating behaviour change.

- How causal reasoning can be used to solve complex landscape design issues: first principles based design that starts at neural and biological level.

8. APPENDICES

1: Real-time Foods research group research plan proposal April 2014. Please note CoE Collaborating Institutes.



DST/NRF Centre of Excellence in Food Security Research Plan

Proposal to NRF April 2014

Director: Prof Julian May

CoE Co-Director: Prof Sheryl Hendriks

CoE Collaborating Institutions: Universities of Cape Town, Fort Hare, Johannesburg, Limpopo, Nelson Mandela, North West, Stellenbosch, and Venda, Tshwane University of Technology, the Agricultural Research Council, Water Research Council and international partners, Australian National University, City University of New York, International Food Policy Research Institute, Michigan State University and Missouri University

2: MAMELODI EAST - URBAN HUB DEVELOPMENT STRATEGY

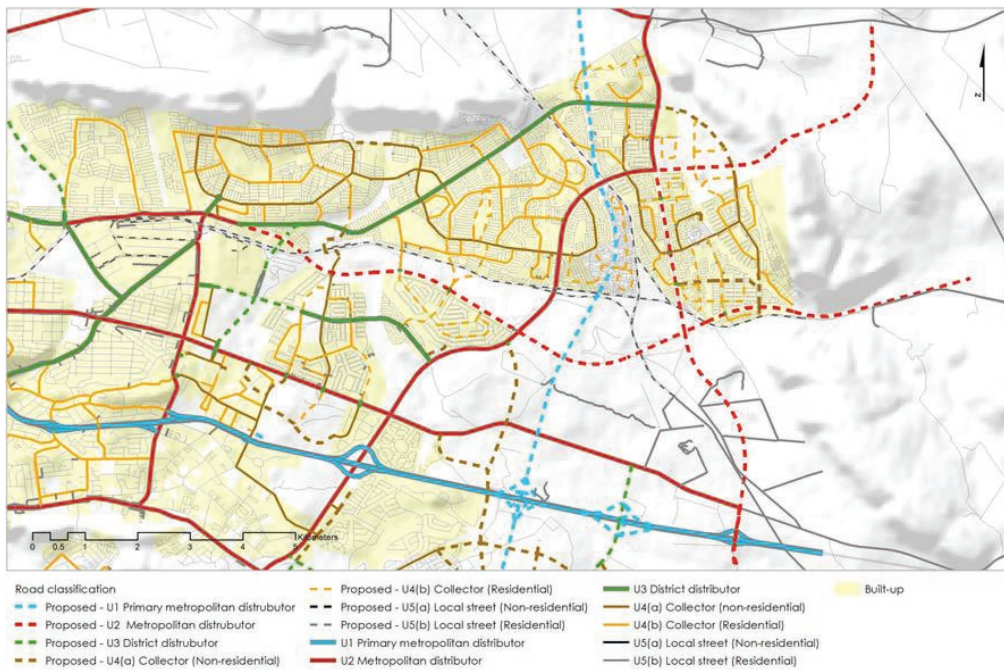
Page 16, Figure 8.1: Mamelodi East Green and Blue Ways does not recognise Alaska.

Figure 8.1: Mamelodi East Green and Blue Ways



Page 22, Figure 10: Road Network illustrates the primary routes in Alaska as existing.

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