# 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 & Uytenbogaardt'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

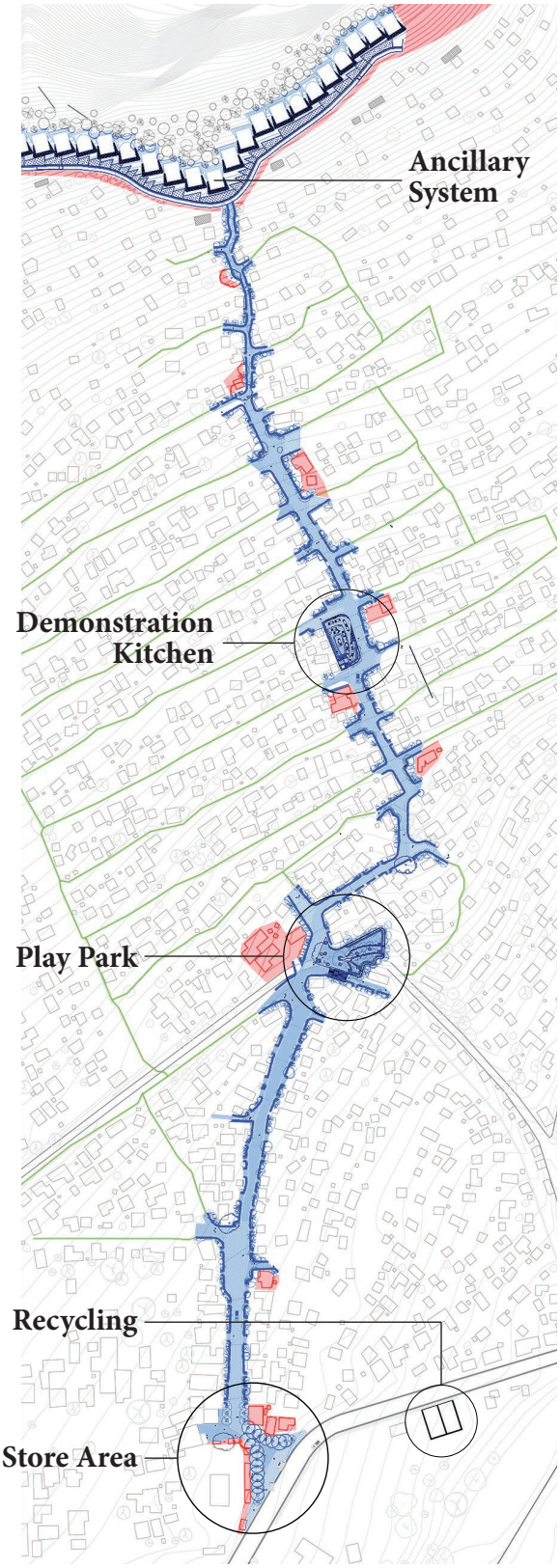
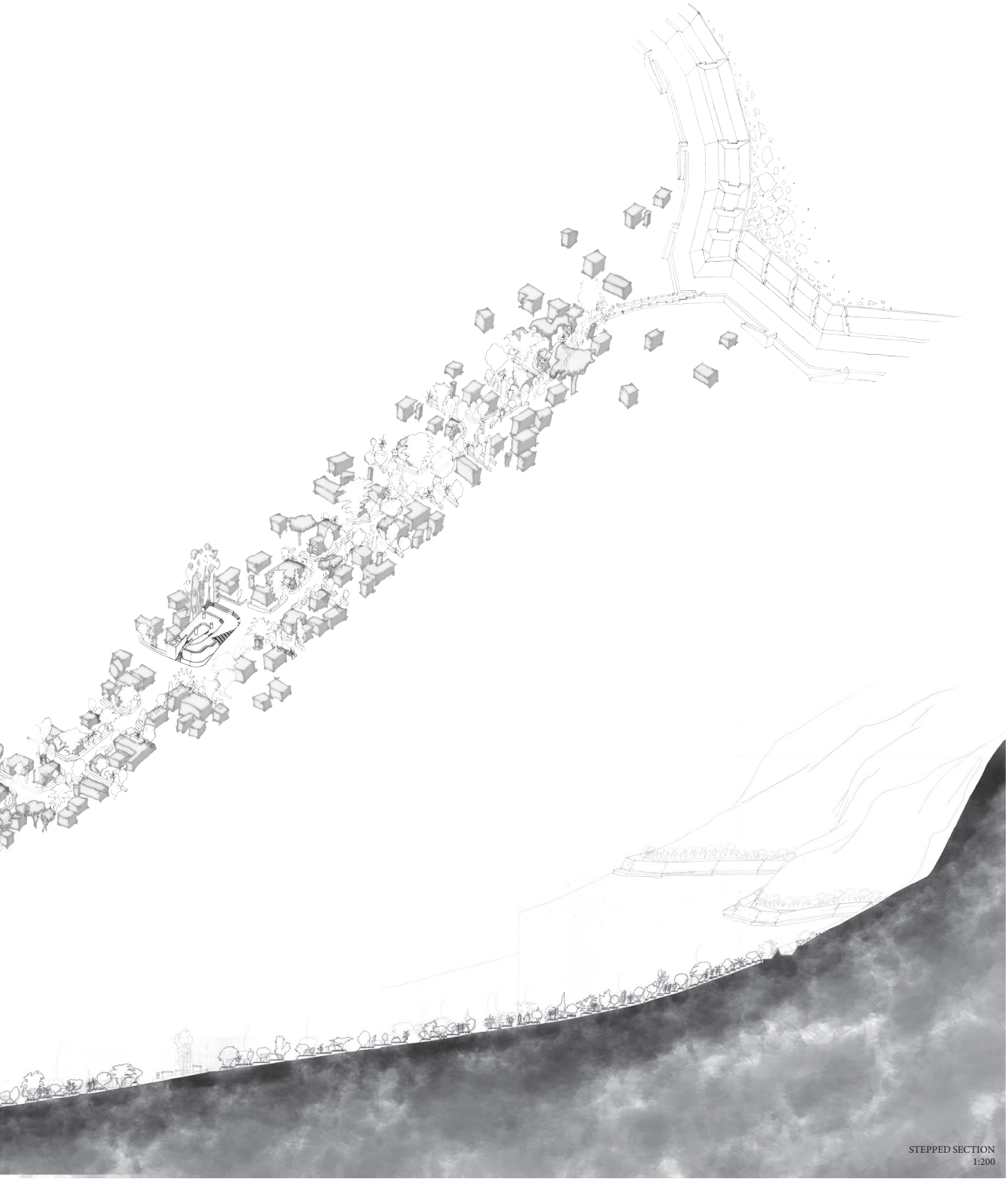



**Figure 44** Spine in blue, future integration in red and storm water grid in green (Author 2015)

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.

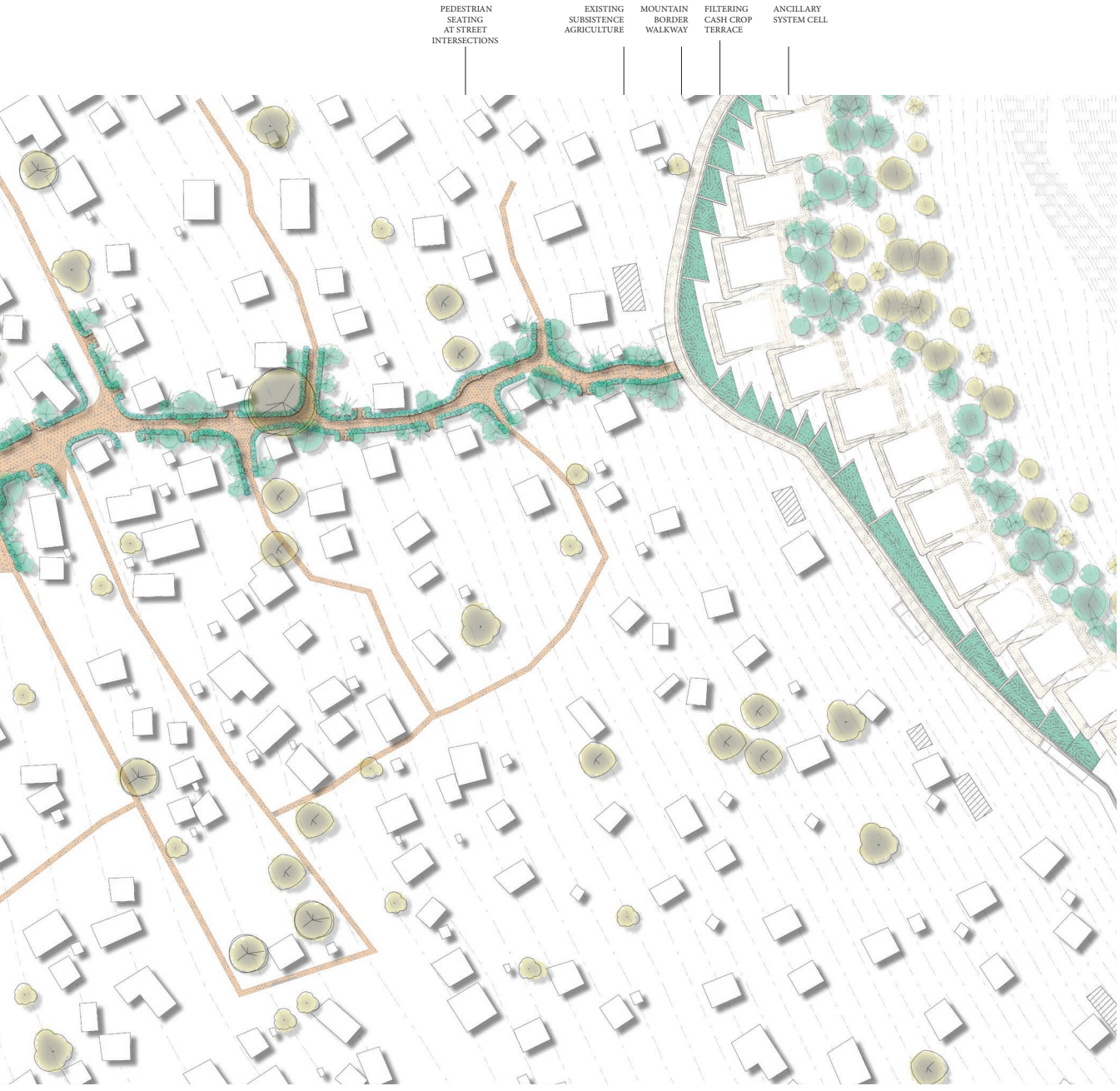
New nodal development will occur naturally as Alaska increases in density along the corridor and new corridors will emerge as they link to the ancillary armature along the cliff's edge.

**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)



## 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.

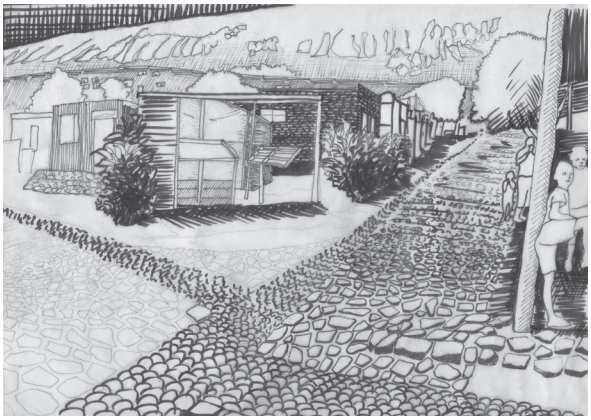


**Figure 47** Proposed surface for comfortable walking (Author 2015)

### 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

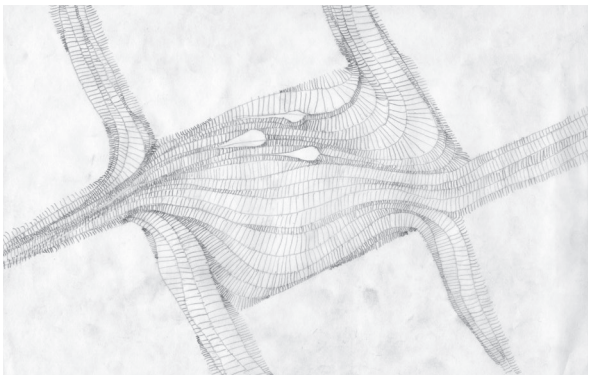


**Figure 48** Paving surface pattern (Author 2015)

**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 (m) | 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 | <--- HIGHEST RATE (ave.) |
| 7 DAYS/168 HOURS | 50 YEARS | 0.229 | 1.363095238 | |

**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 (m²) | 72507.5 |
| Kitchen weighted area (m²) | 32977.8 |
| Garden weighted area (m²) | 11879.1 |
| Shop weighted area (m²) | 5989.75 |

**Peak Discharge during 50 year storm**

| Region | Area Weighted (m²) | Intensity (m/h) | Peak Discharge (m³/h) | Peak Discharge (m³/s) | |
|---|---|---|---|---|---|
| Mnt Cat Right | 31083.65 | 0.011 | 341.92015 | 0.094977819 | |
| Mnt Cat Left | 41423.85 | 0.011 | 455.66235 | 0.126572875 | |
| | | | | 0.221550694 | Total Mnt m³/s |
| Kitchen | 33000 | 0.011 | 363 | 0.100833333 | |
| | | | | 0.322384028 | Total Kitchen m³/s |
| Garden | 13100 | 0.011 | 144.1 | 0.040027778 | |
| | | | | 0.362411806 | Total Garden m³/s |
| Shop | 6000 | 0.011 | 66 | 0.018333333 | |

<--- Qmax

**Figure 50** Essential water calculation amounts (Author 2015)

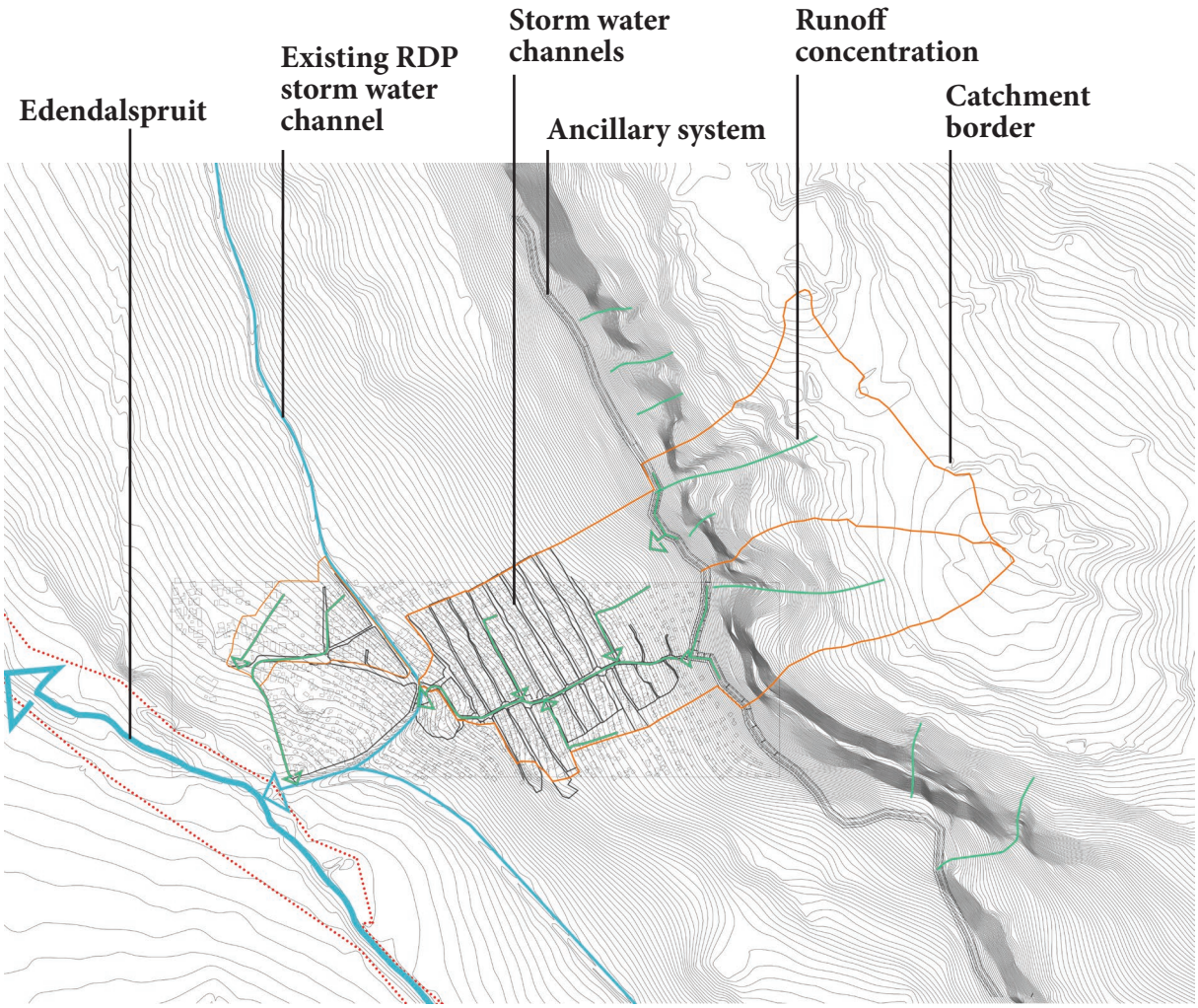



**Figure 51** Overview of water management system, catchments and existing structures (Author 2015)

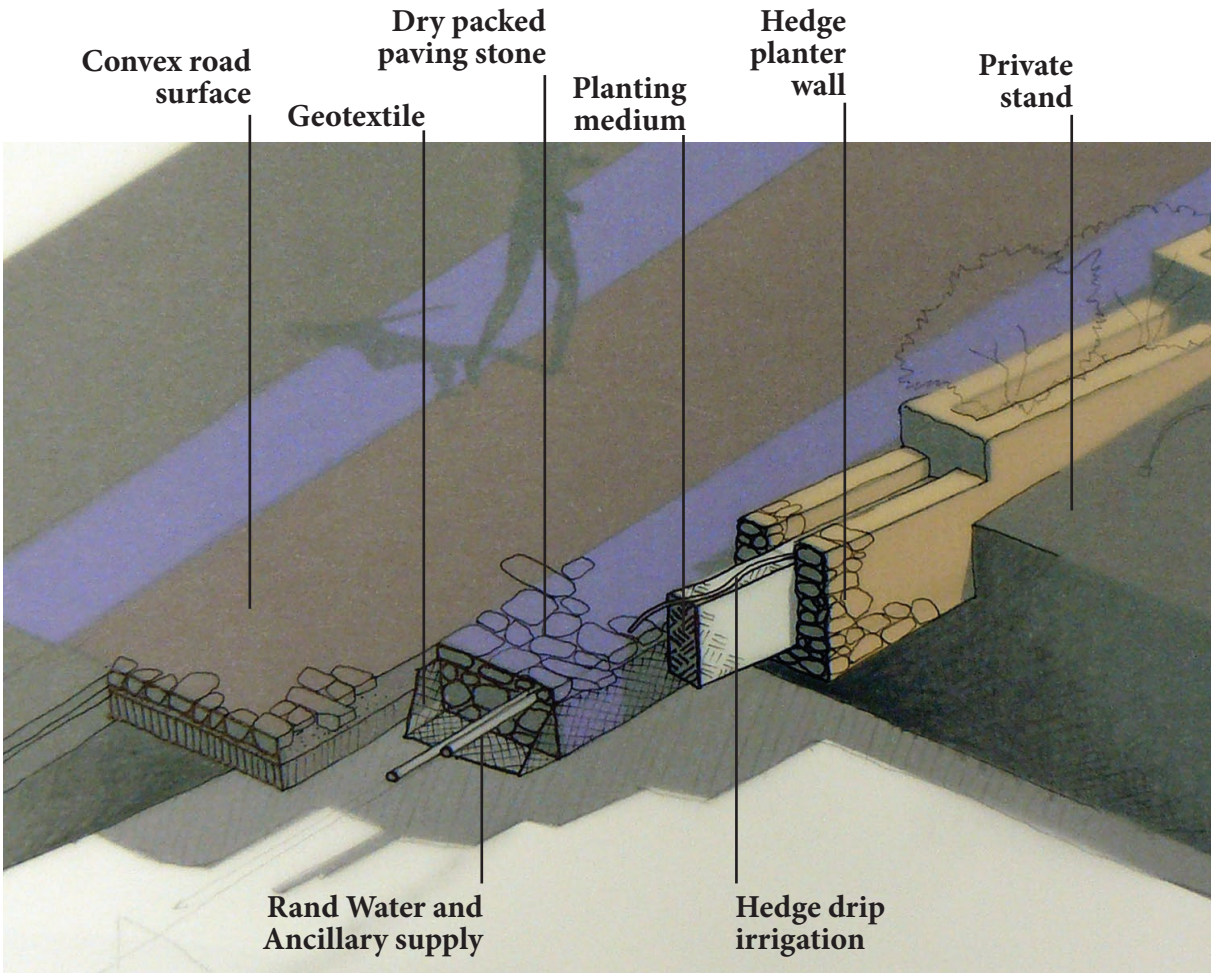



**Figure 52** Road surface bordered by drainage channel bordered by planter wall (Author 2015)

### 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)

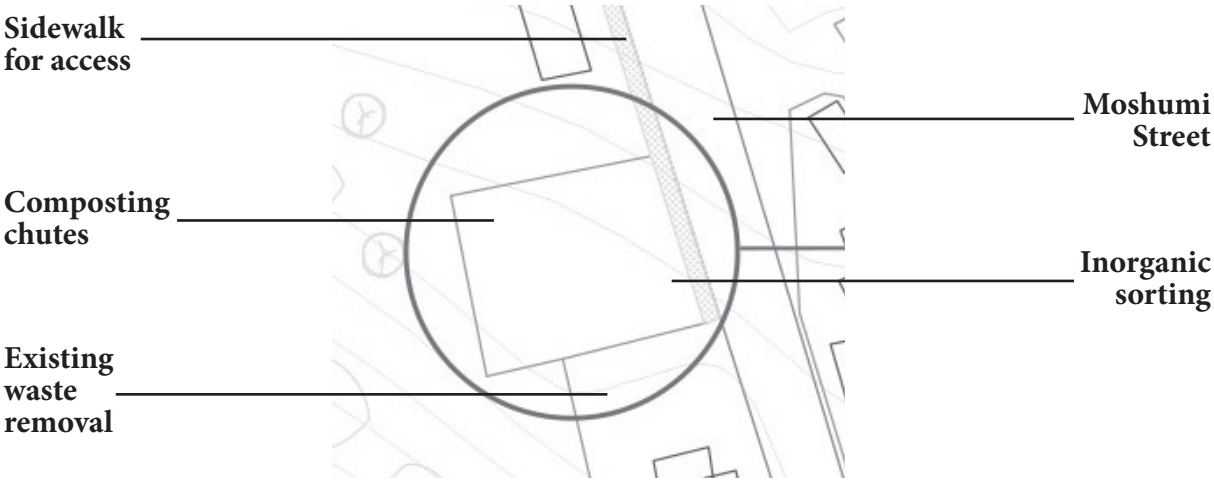



**Figure 54** Recycling centre at existing waste removal point on Moshumi Street (Author 2015)

## 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.

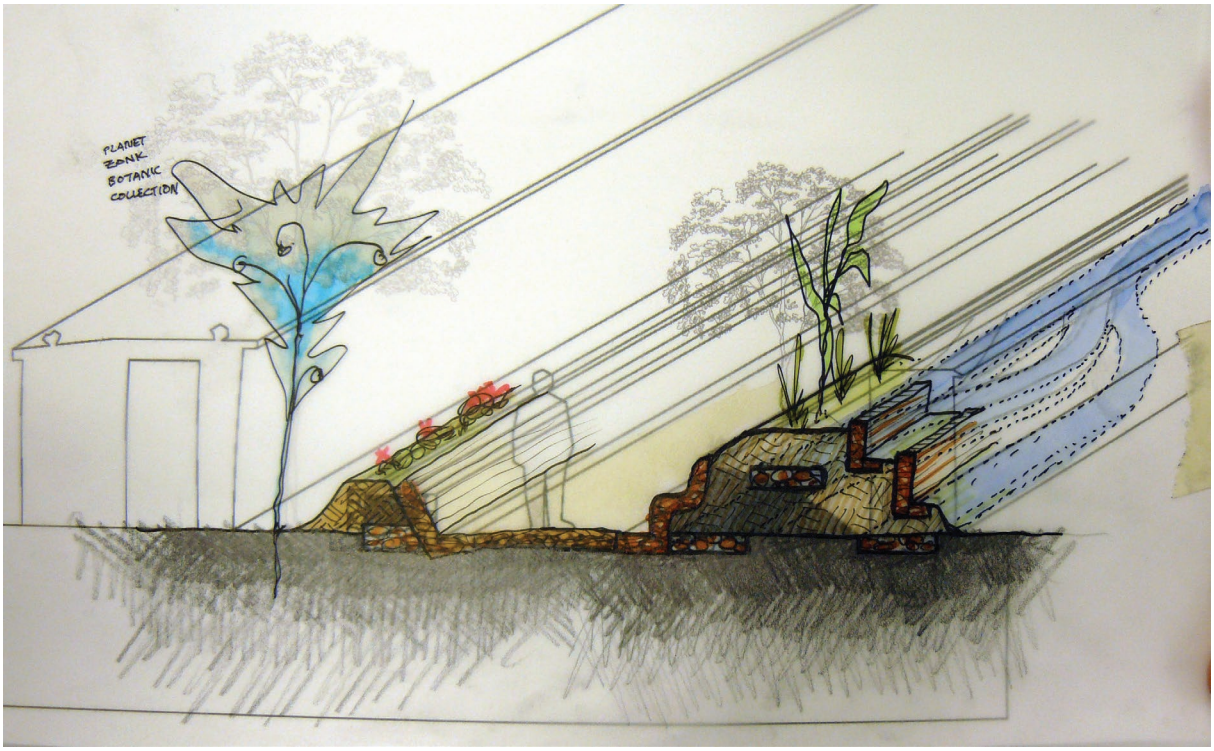



**Figure 55** Edge condition along street with multiple drains (obsolete) (Author 2015)

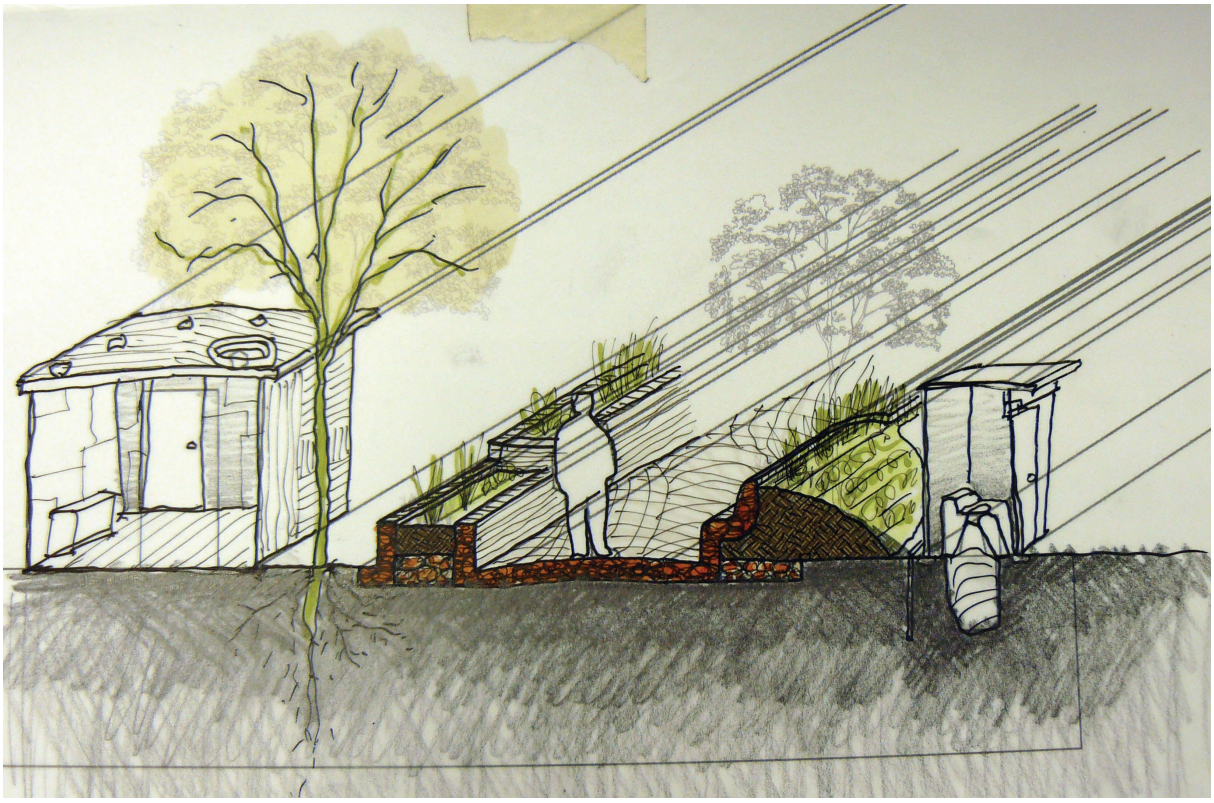


**Figure 56** Edge condition along street with seating and pit latrine barrier (obsolete) (Author 2015))

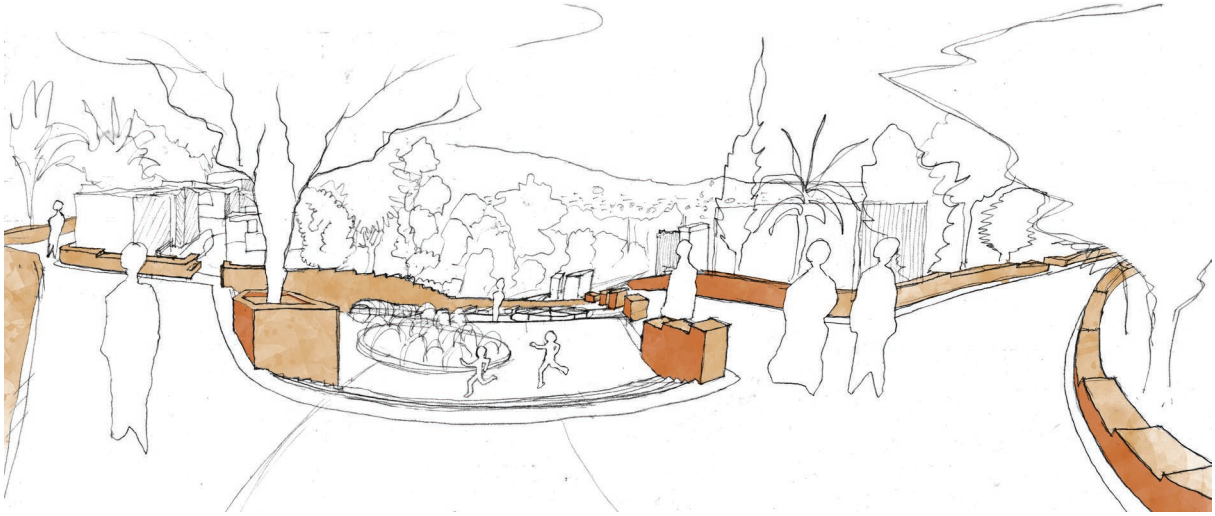


**Figure 57** Play Park edge condition along street (obsolete) (Author 2015)

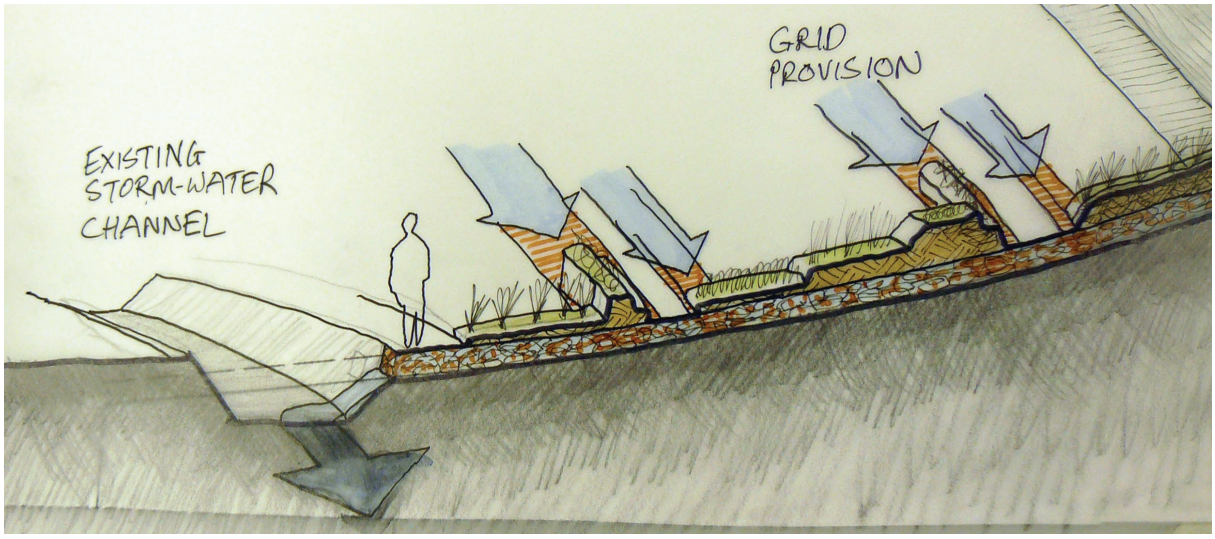



**Figure 58** Section perspective of road down the mountain's slope indicating water flow (obsolete) (Author 2015)

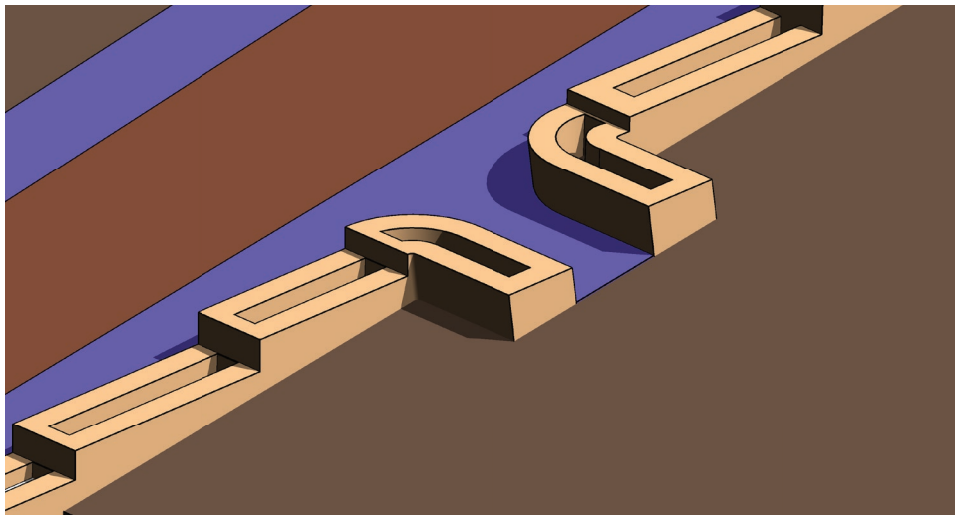


**Figure 59** Typical entrance detail including threshold space and seating (incomplete) (Author 2015)

### 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

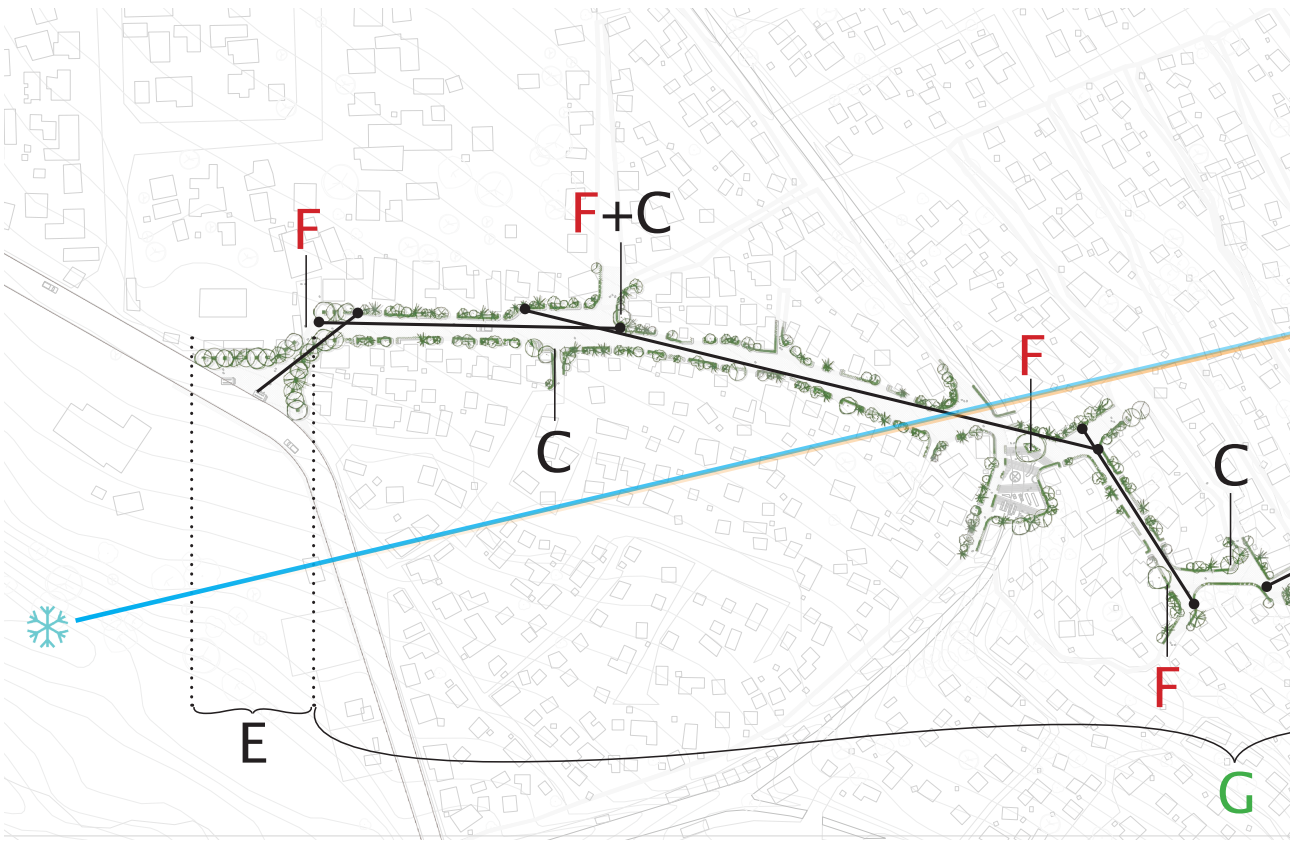



**Figure 60** Planting location logic (Author 2015)

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.

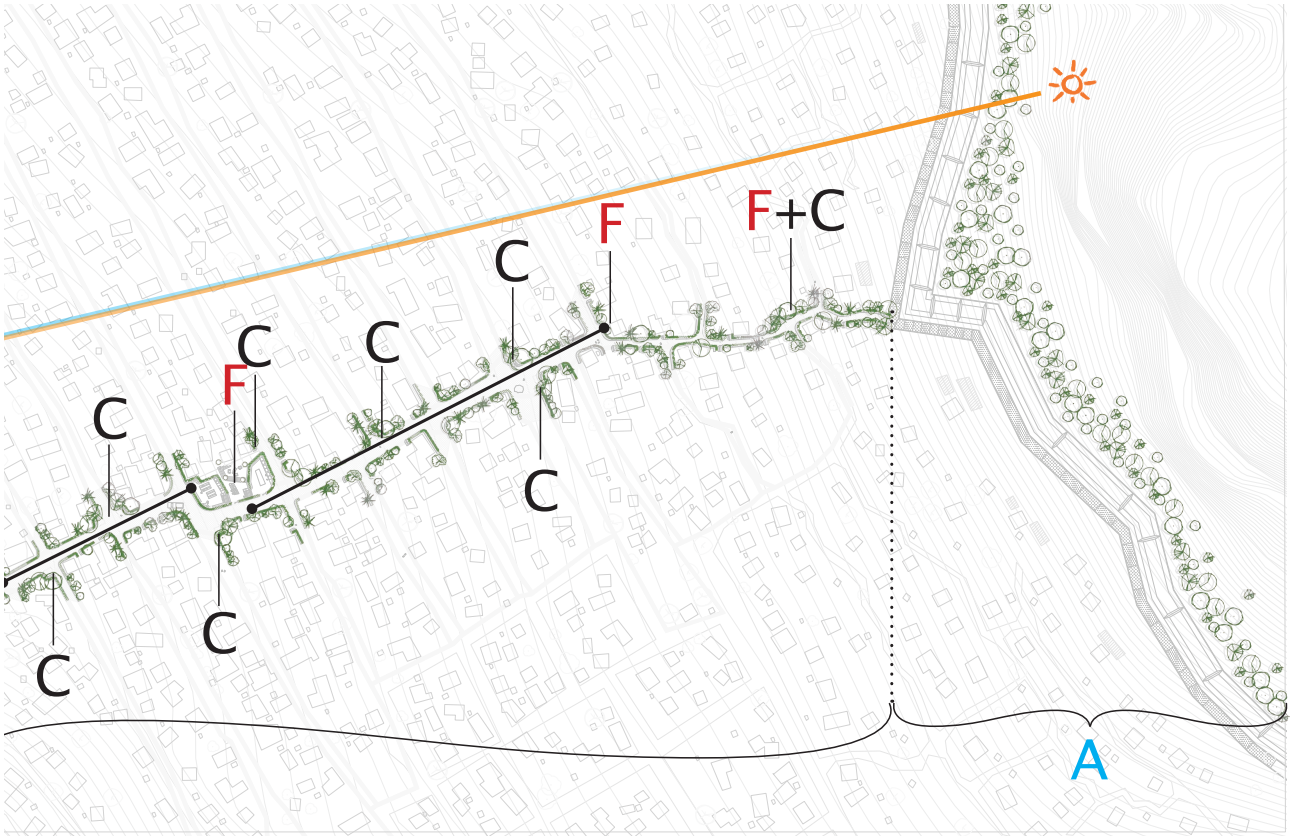
Focal Points:

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 illinoinensis*
Peacan


*Cordyla africana*
Wild Mango


*Diospyros mespiliformis*
Jackel Berry


*Dovyalis caffra*
Kei Apple


*Dovyalis longispina*
Coast Kei Apple

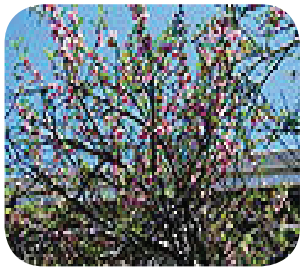

*Englerophytum magalismontanum*
Stem Fruit


*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


*Ziziphus mauritiana*
Jujube

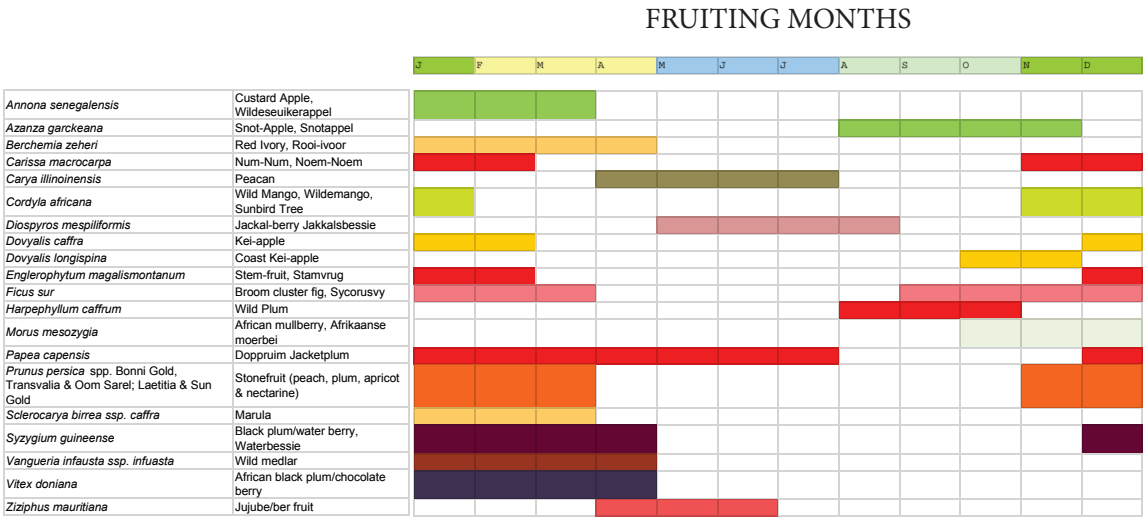



**Figure 61** Plant fruiting distribution (Author 2015)

## 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).

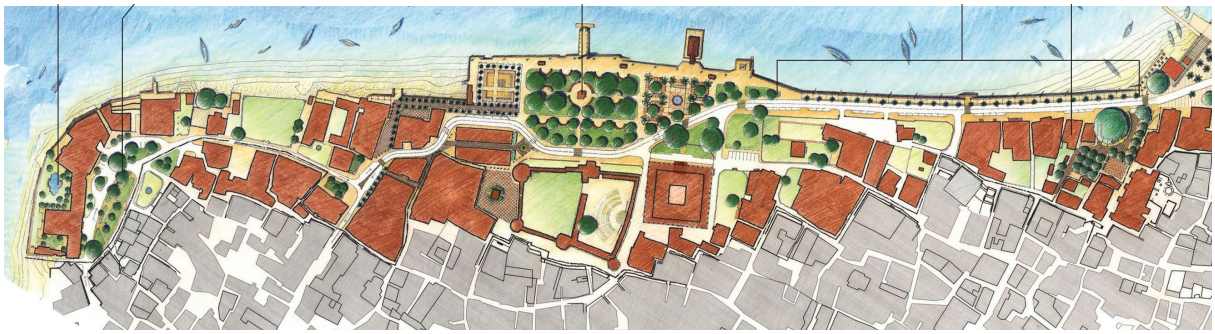
What made this night market successful was the physical intervention facilities coupled with a lively communal eating culture and some tourist income. The Park offers unique urban qualities in the form of shade from trees and open seating space.

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 prefering 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.

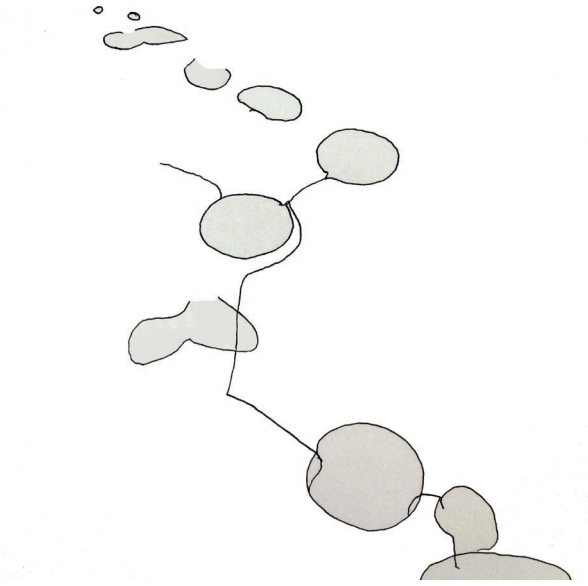


**Figure 67** Sketch of a series of pot-holes in river bedrock (Author 2015)

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

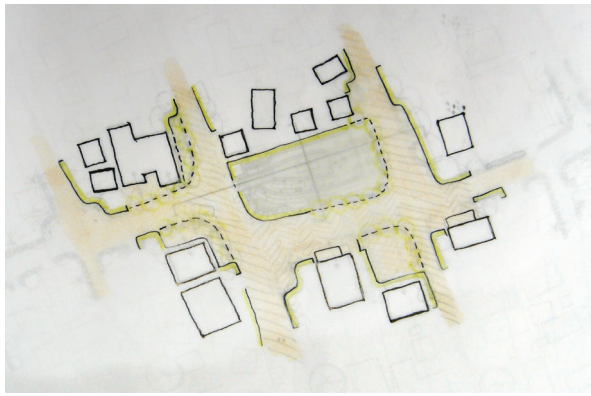
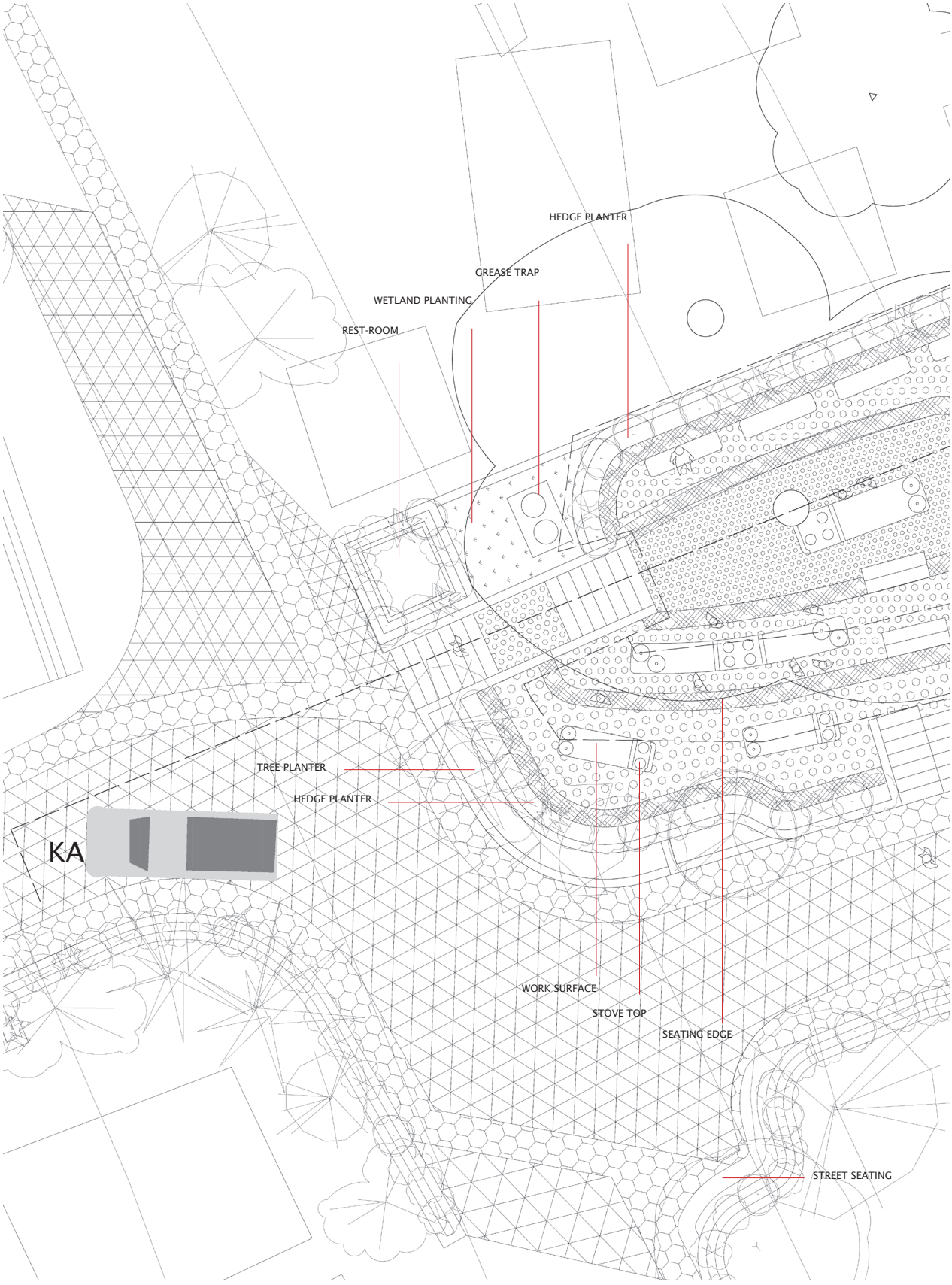
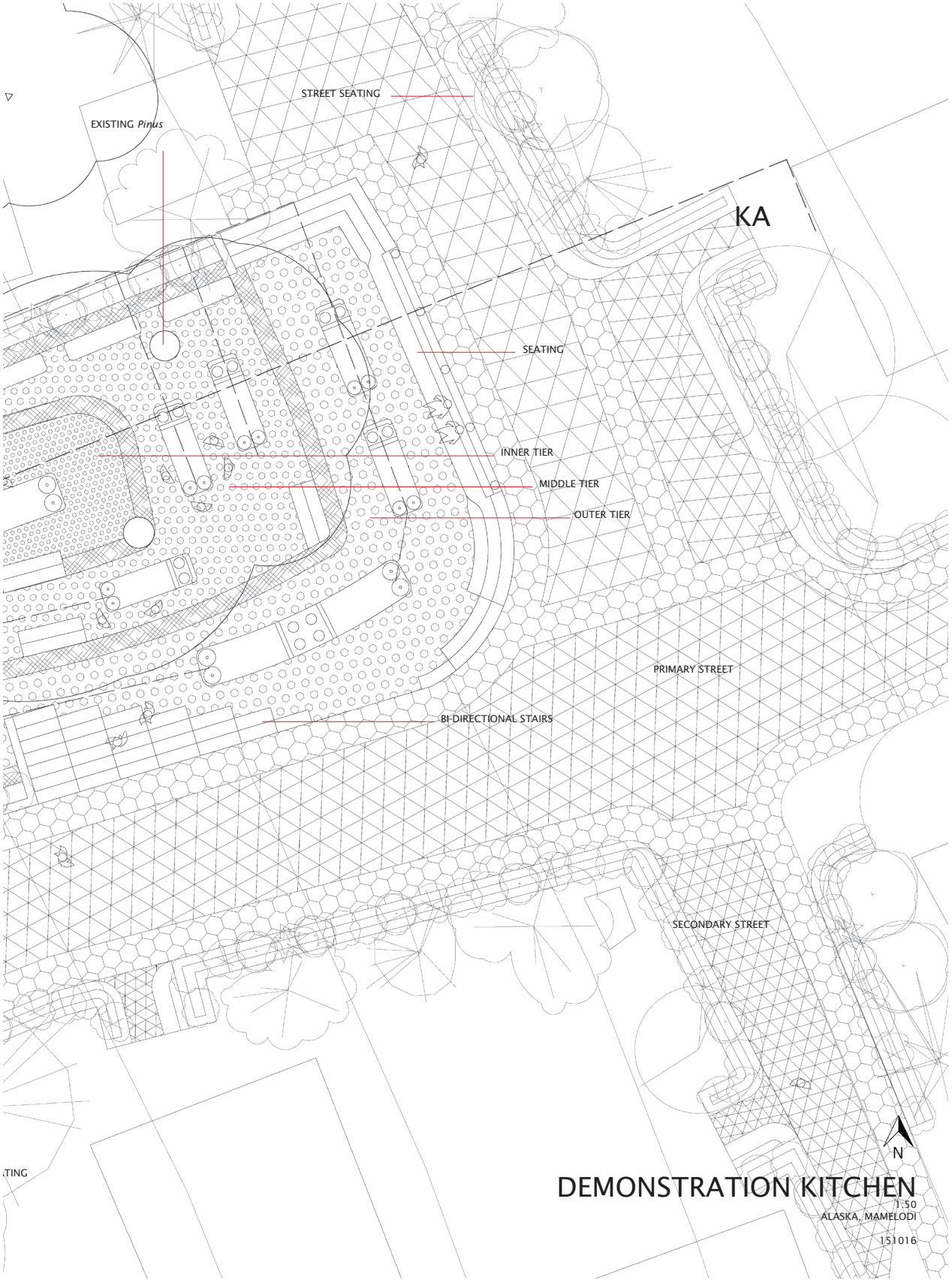


**Figure 69** Kitchen permeable and hard edges (Author 2015)

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






DEMONSTRATION KITCHEN

1:50

ALASKA, MAMELODI

151016

**Figure 71** Paper Clay Kitchen model (Author 2015)

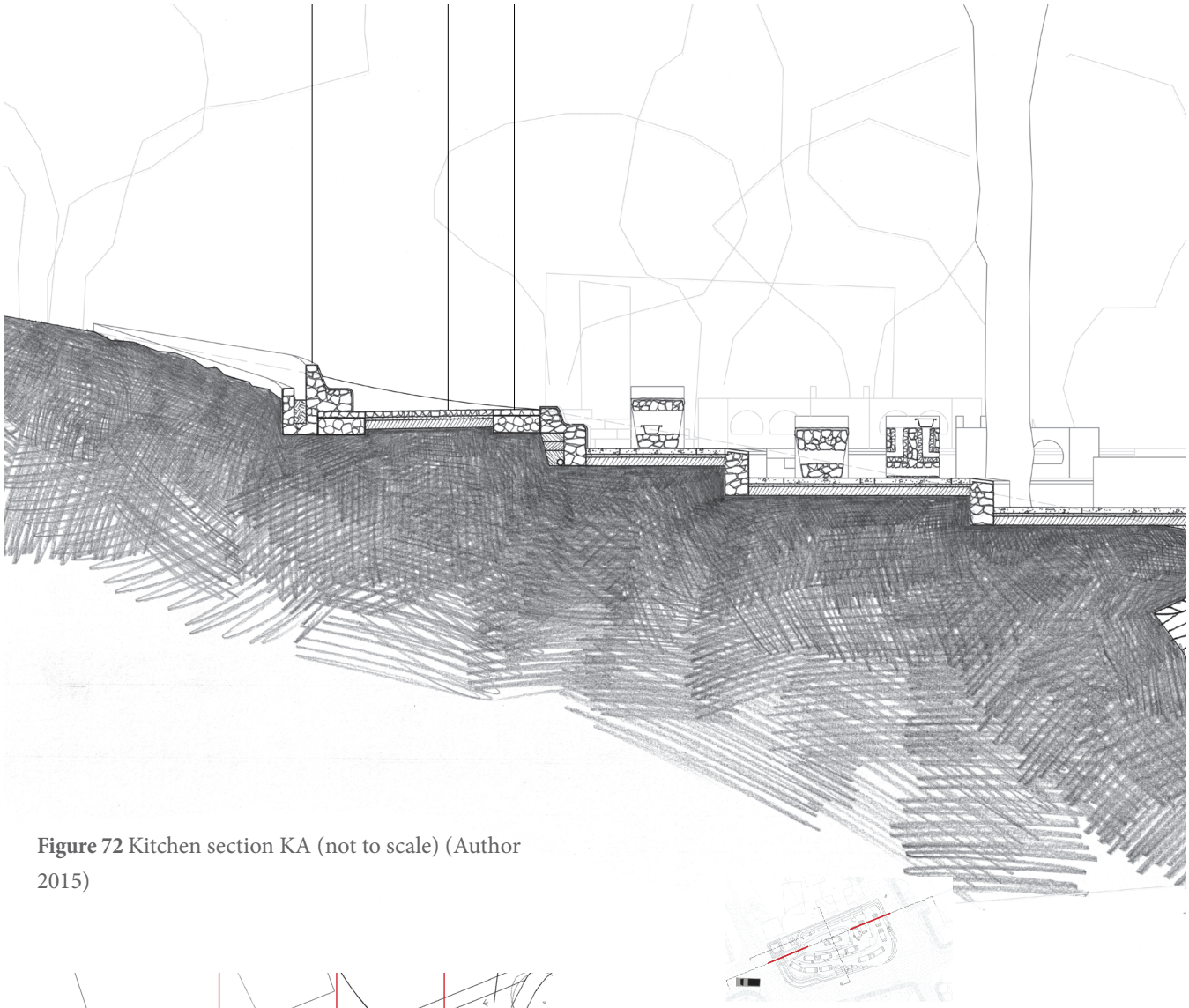


**Figure 72** Kitchen section KA (not to scale) (Author 2015)

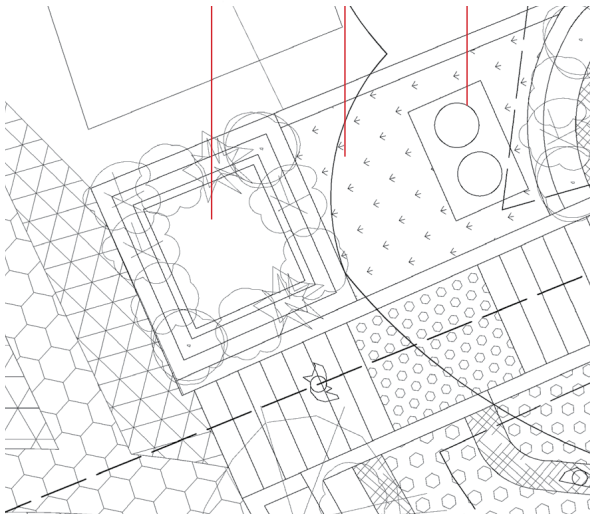


**Figure 73** Rest-room on plan (not to scale) (Author 2015)

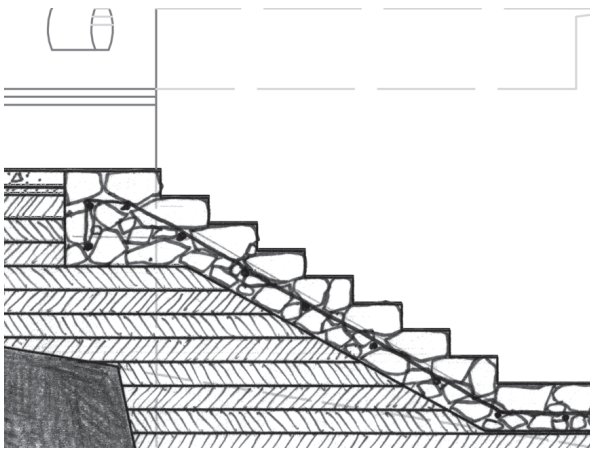
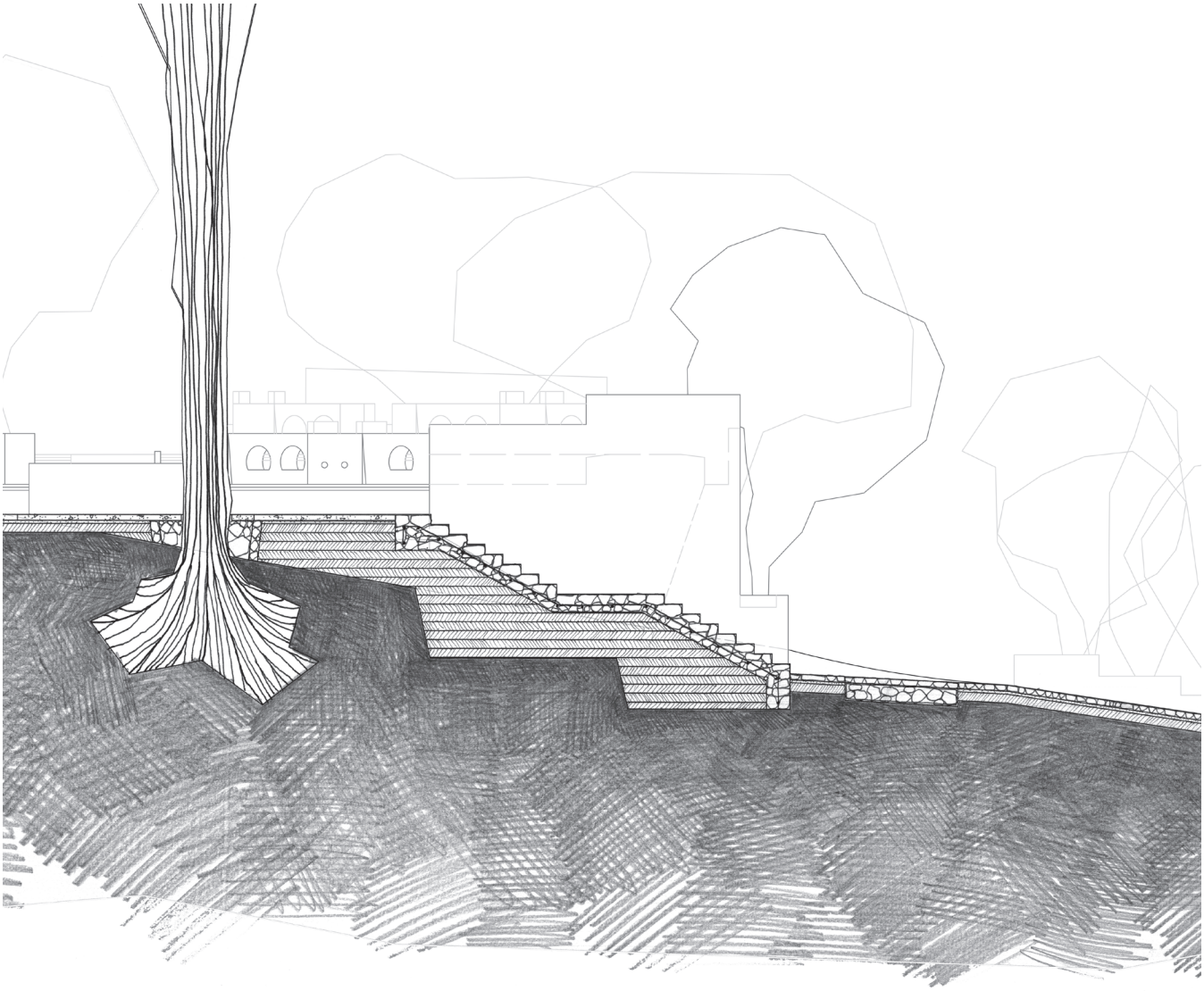


**Figure 74** Kitchen steps (not to scale) (Author 2015)



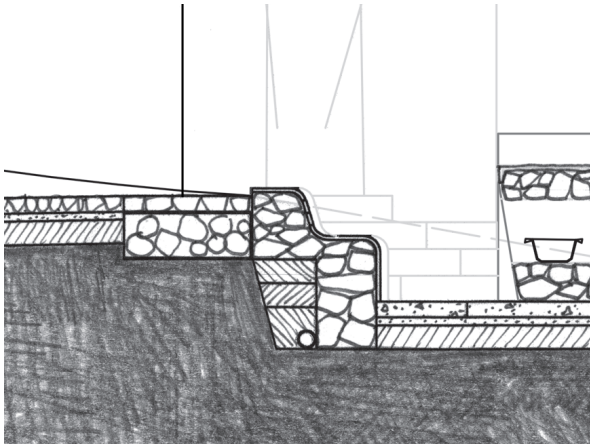


**Figure 75** Kitchen seating (not to scale) (Author 2015)

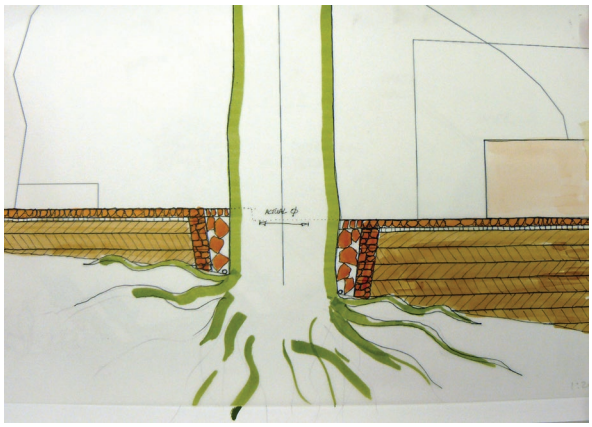


**Figure 76** *Pinus* enclosure detail (not to scale) (obsolete) (Author 2015)

## 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 20*l* *mbaula* requires 500g of wood to boil 5*l* 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 compund 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.

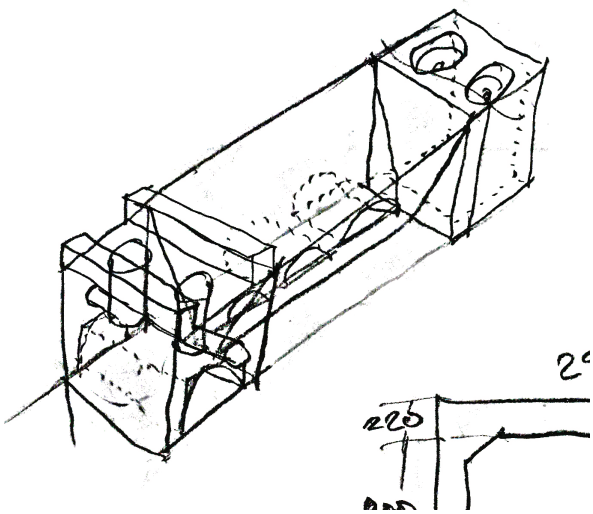


**Figure 77** Work bench wire-frame isometric (not to scale) (Author 2015)

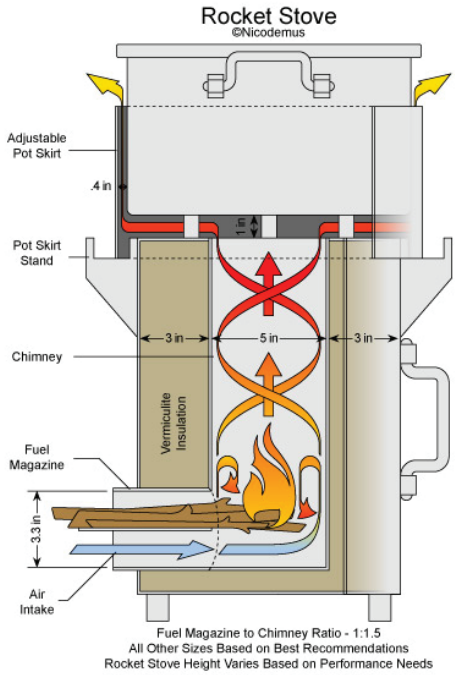



**Figure 78** Rocket stove thermal principals (Nicodemus [Sa])

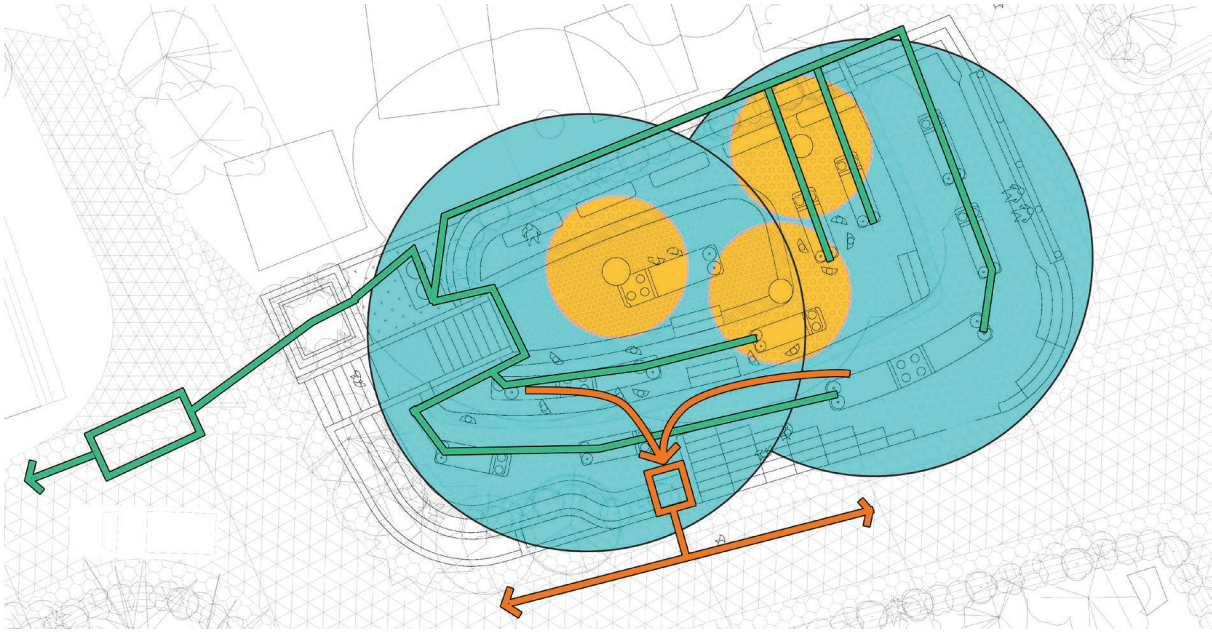


**Figure 79** Systems diagram of Demonstration Kitchen: irrigation (green), waste removal (orange), cleaning (blue) and lighting (yellow) (Author 2015)

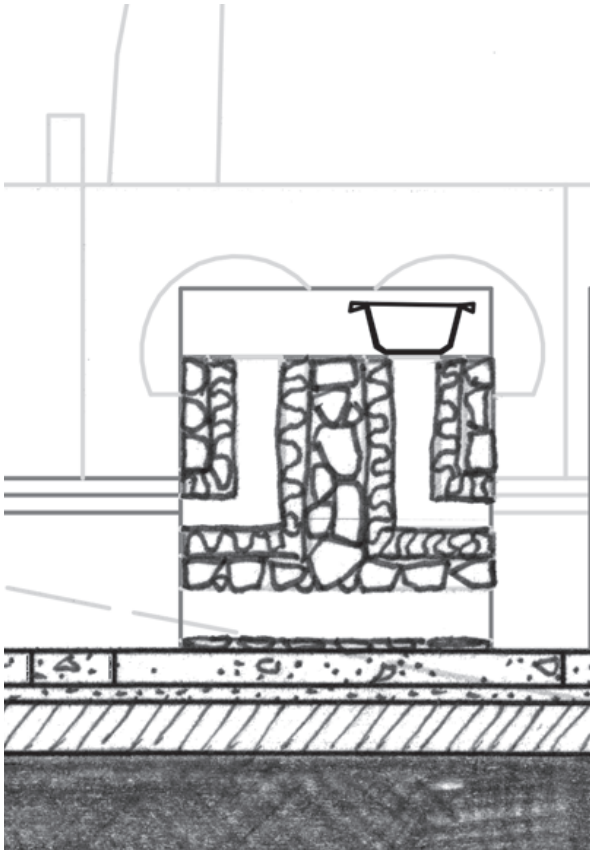


**Figure 81** Work bench section through rocket stove installation (not to scale) (Author 2015)

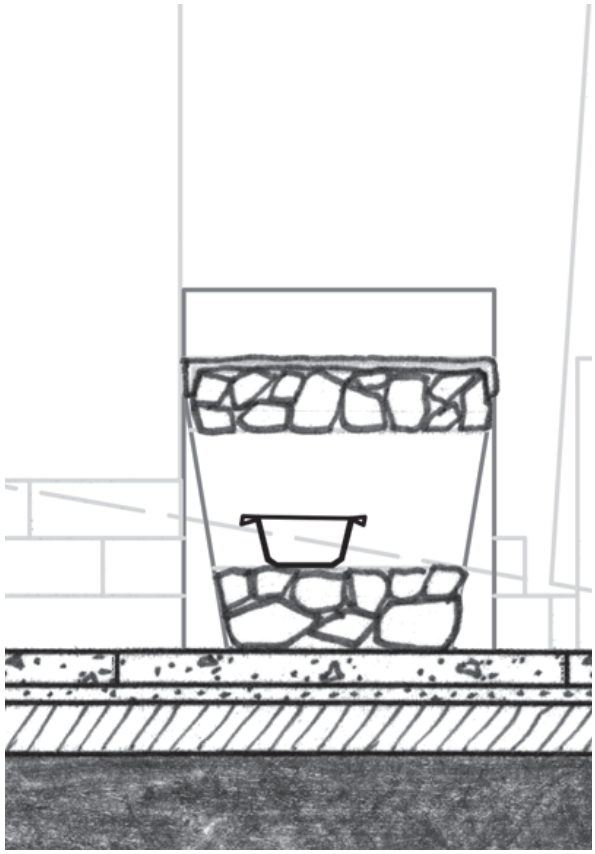


**Figure 80** Section through storage cavity of work bench with foot space chamfer (not to scale) (Author 2015)

## 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.

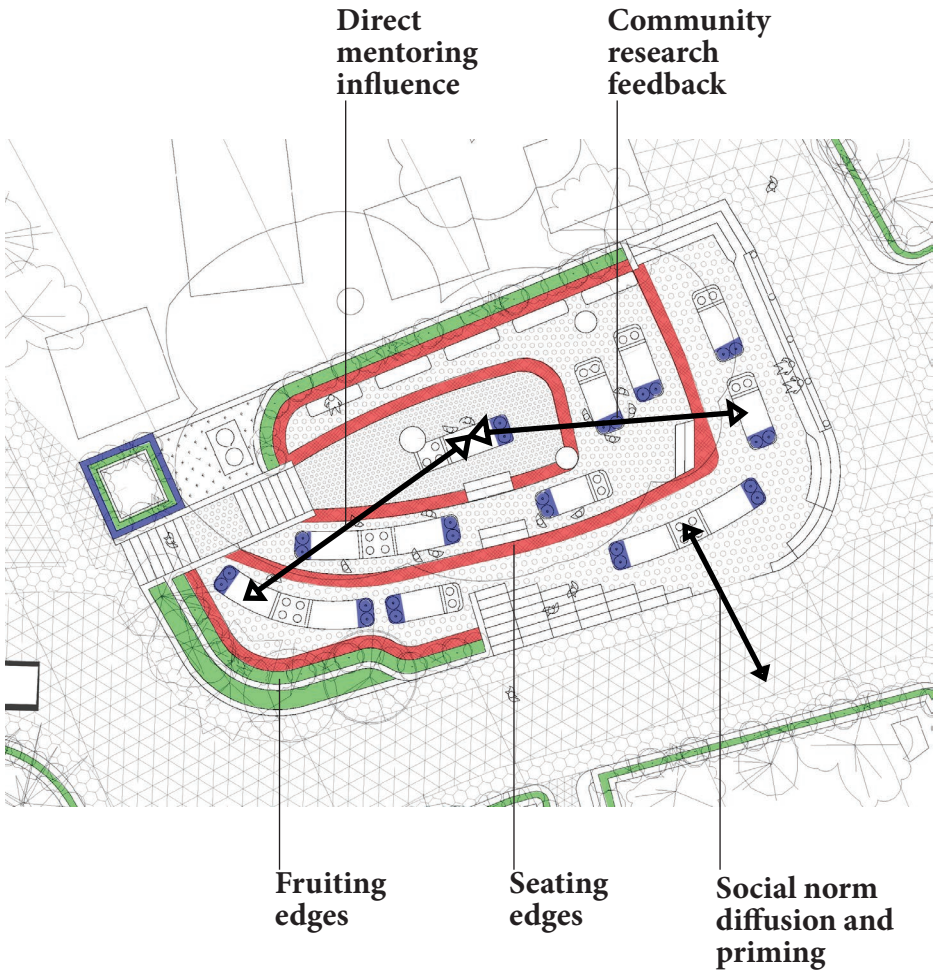



**Figure 82** Links between various OET tools and places (Author 2015)

## 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 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.

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

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.

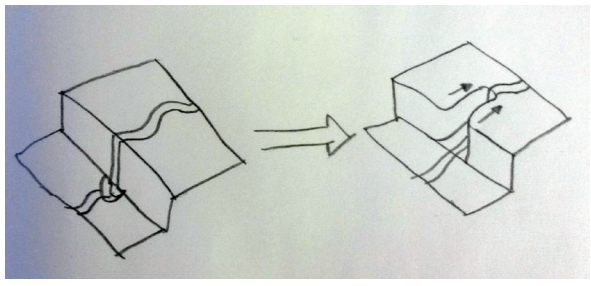


**Figure 84** Water cutting into plateau and receding (Author 2015)

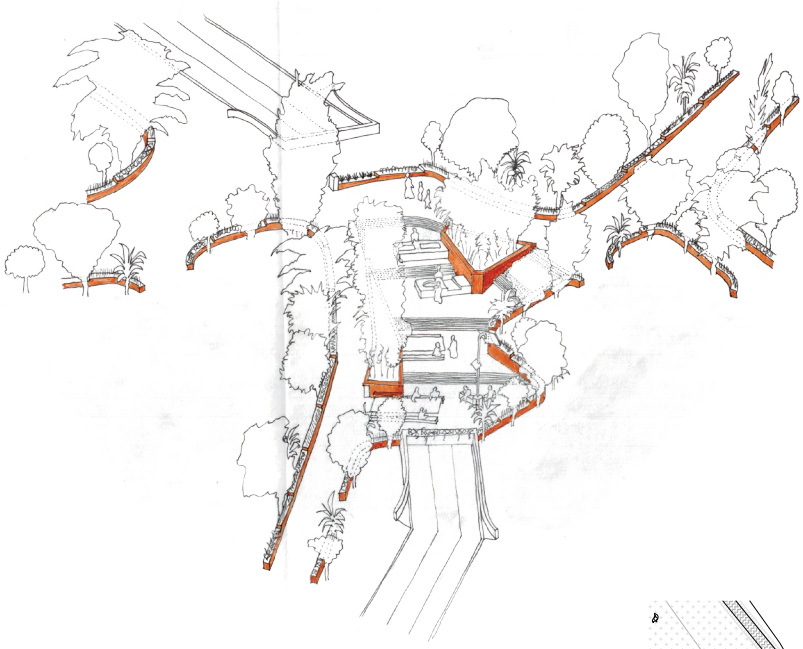


**Figure 85** Three terraced hard-surface park with kitchen version (Author 2015)

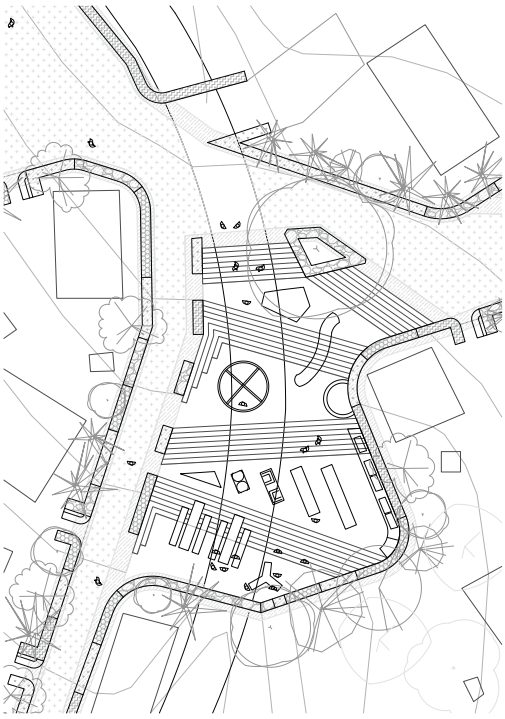


**Figure 86** Three terraced hard-surface park with kitchen version (Author 2015)

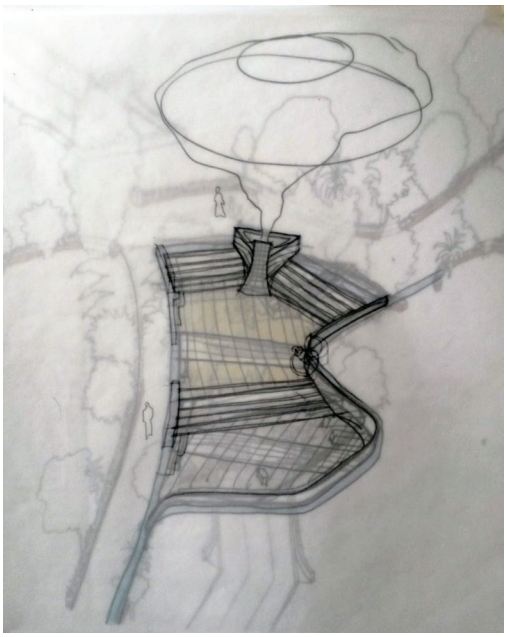
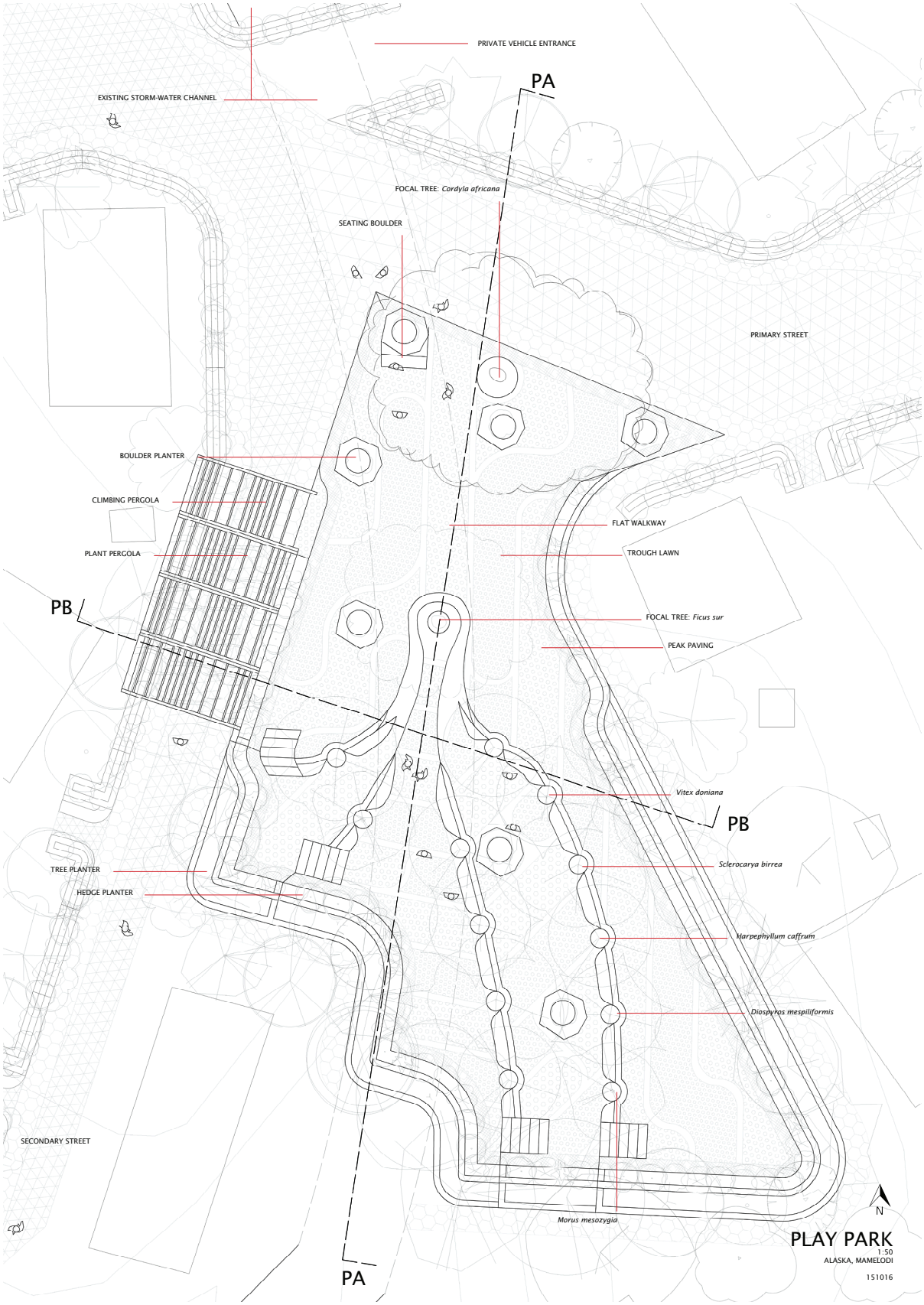
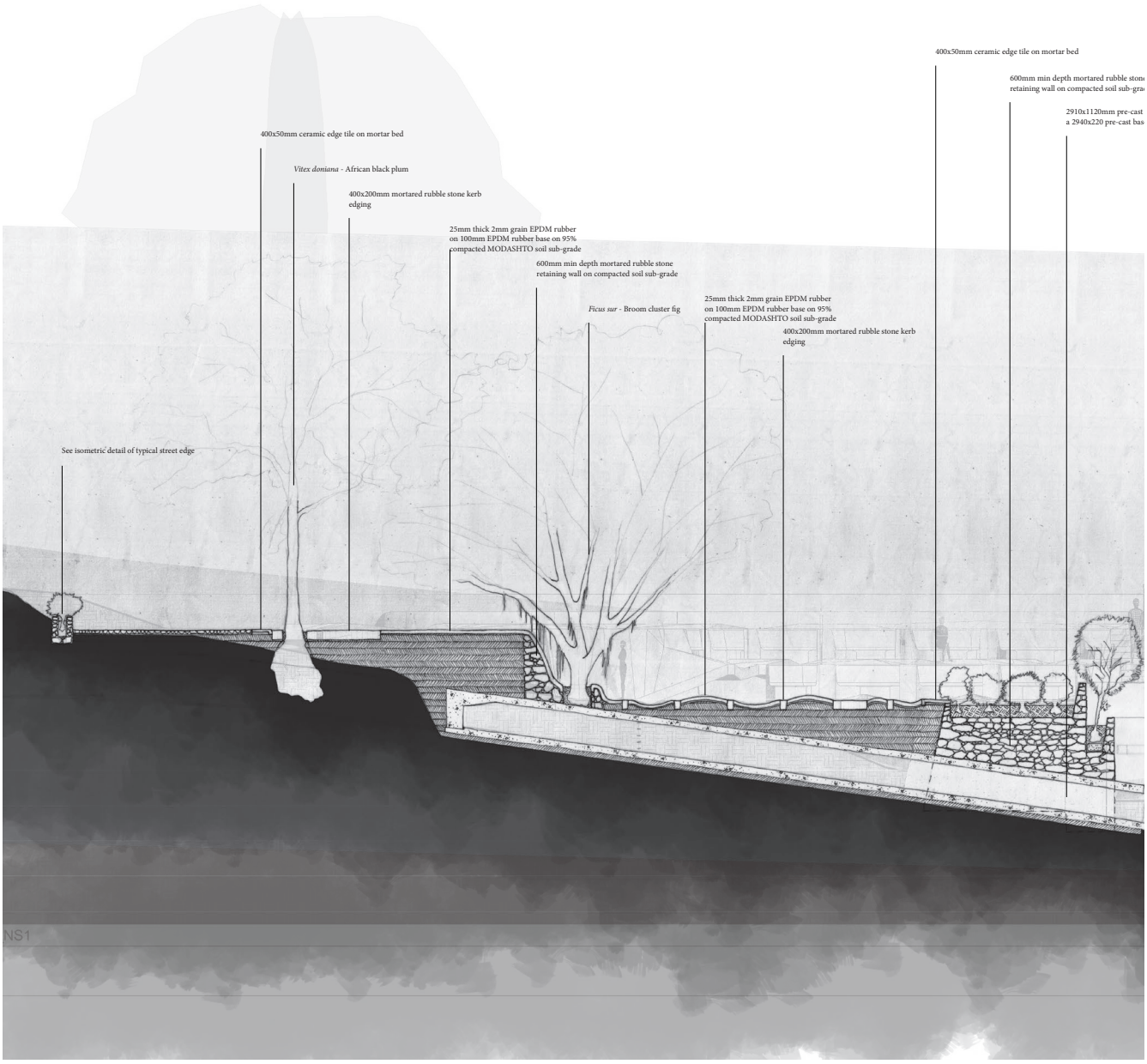
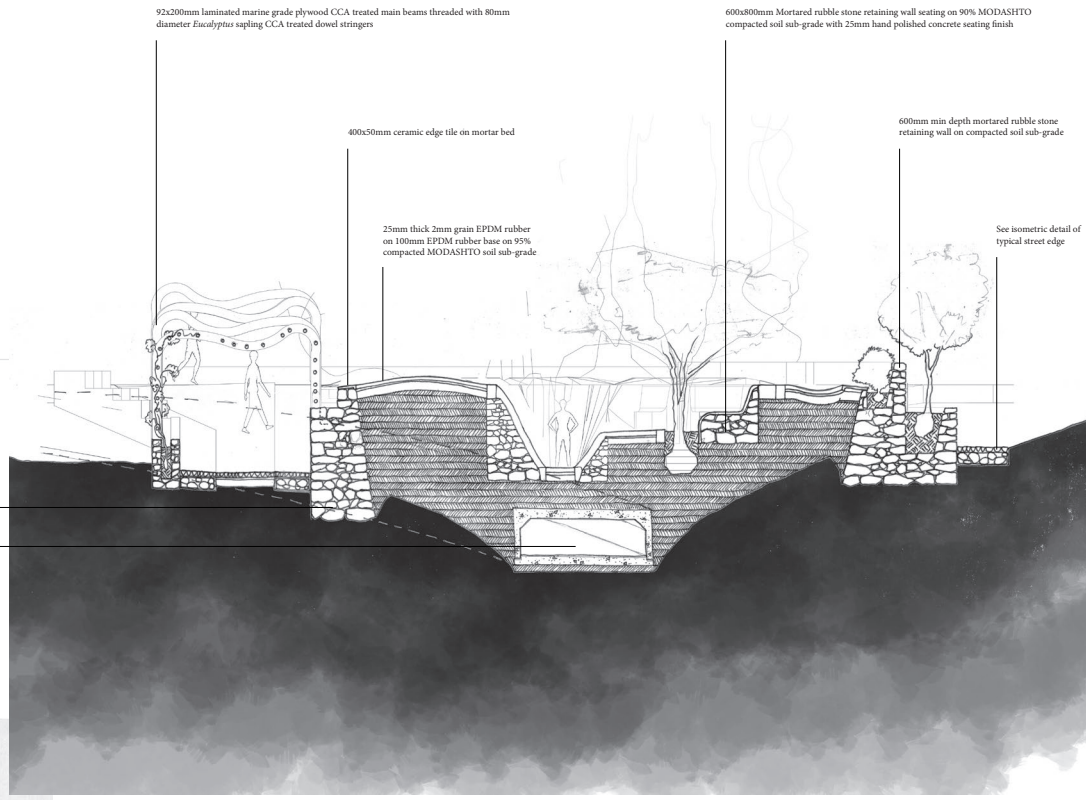


**Figure 87** Two terrace hard-surface park version (Author 2015)








PARK SECTION PB
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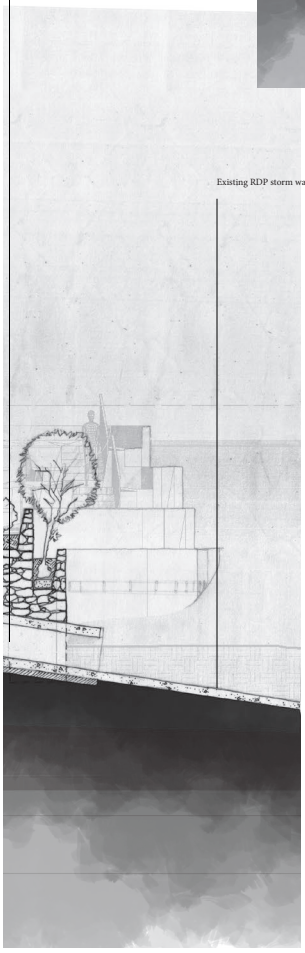


PARK SECTION PA
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## 5.4.2 PLAY EQUIPMENT

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.

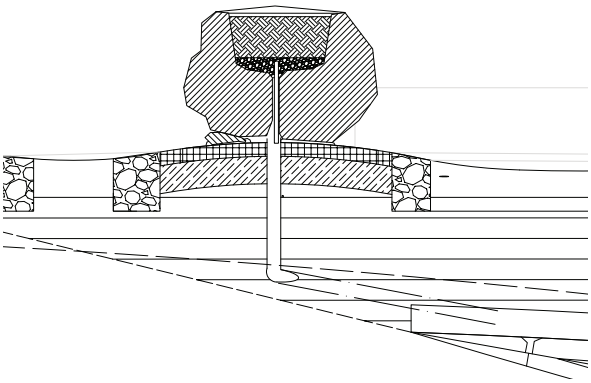


**Figure 88** Boulder planter (not to scale) (Author 2015)

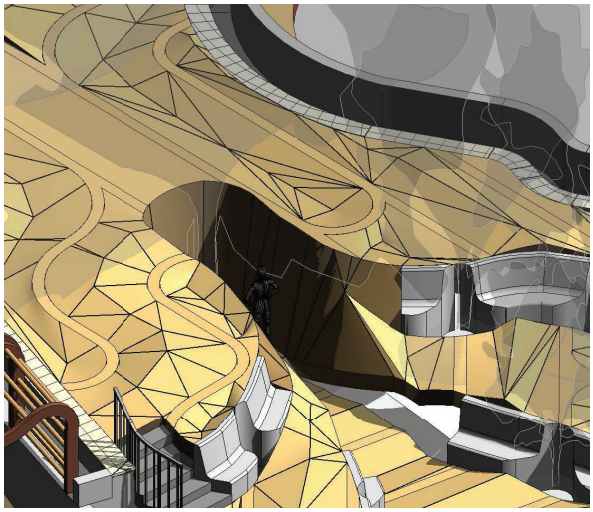


**Figure 89** Fig tree play canyon (Author 2015)

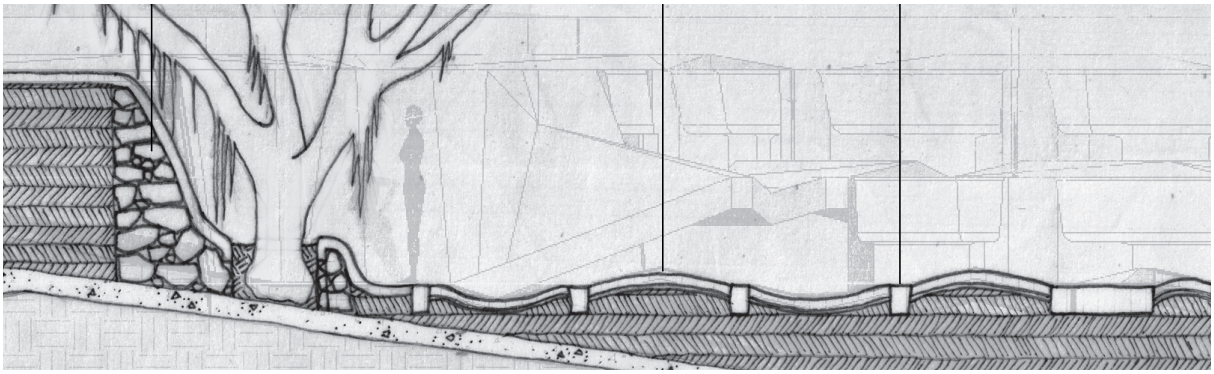


**Figure 90** Undulating surface and Fig Falls (not to scale) (Author 2015)

## 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)

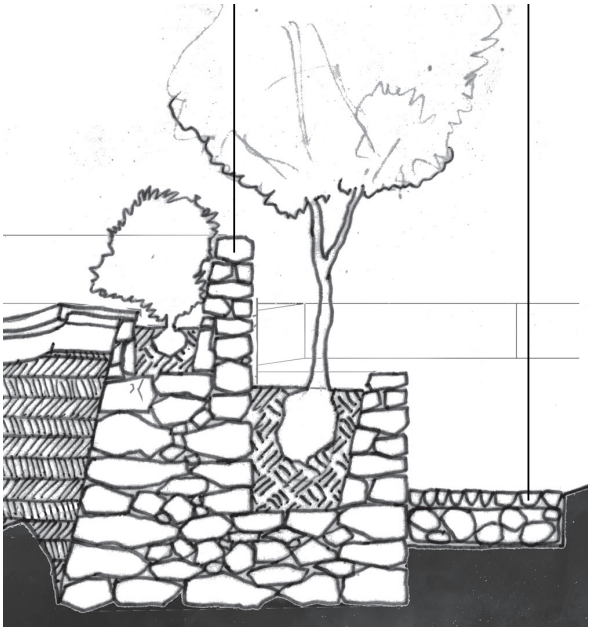


**Figure 93** Detail of stone construction (not to scale) (Author 2015)

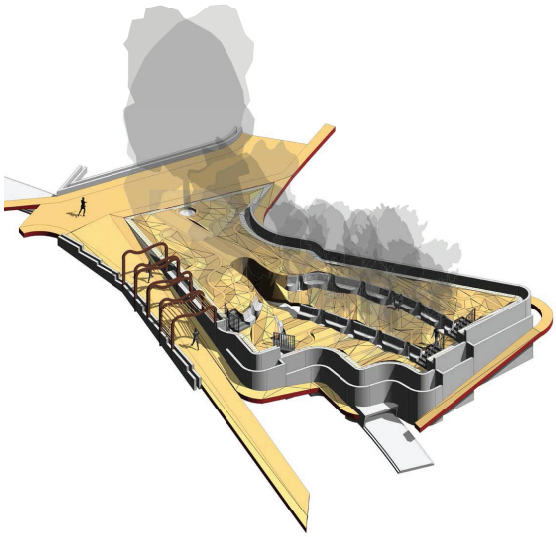


**Figure 92** Isometric view of Play Park (not to scale) (Author 2015)

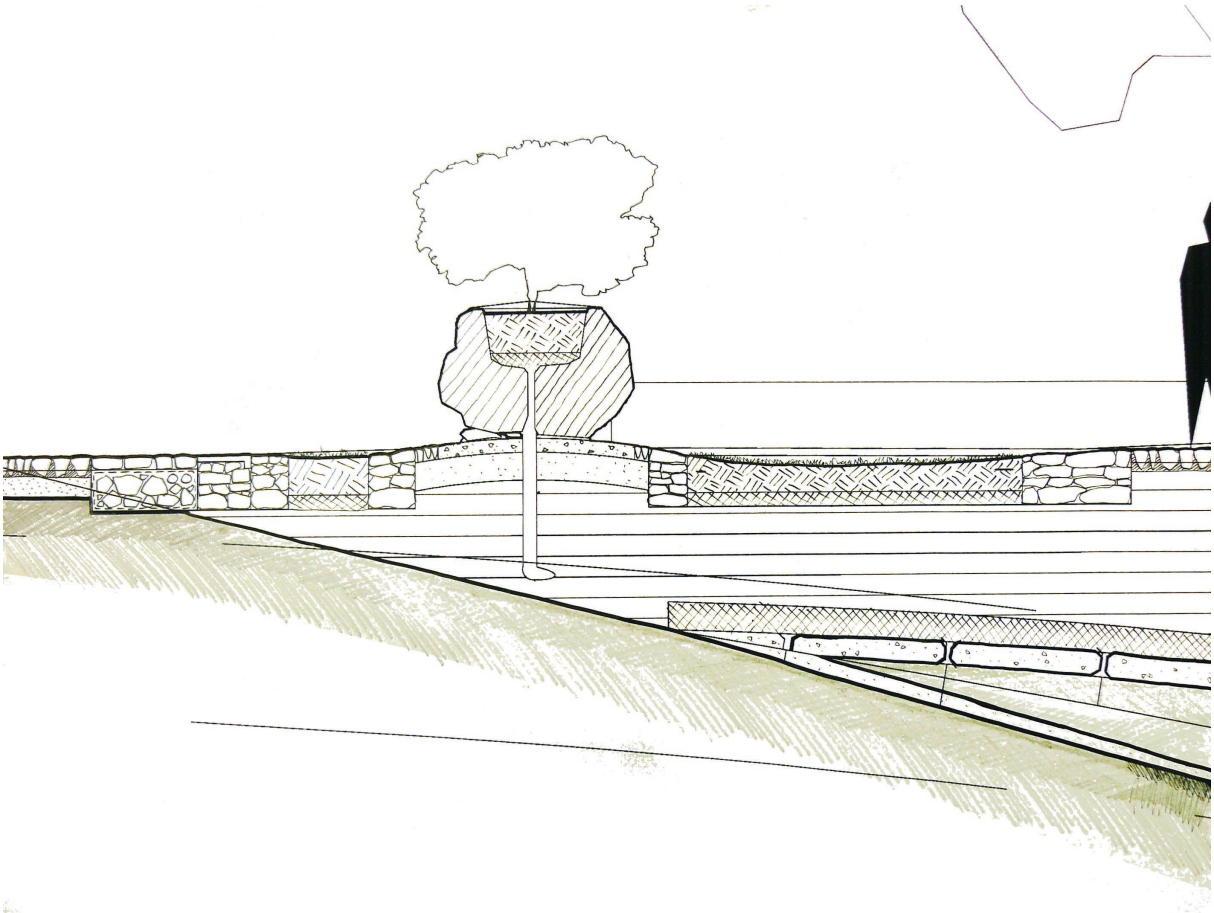


**Figure 94** Detail of section PA (not to scale) (obsolete) (Author 2015)

## 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; shisa-nyama (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, how ever, 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.

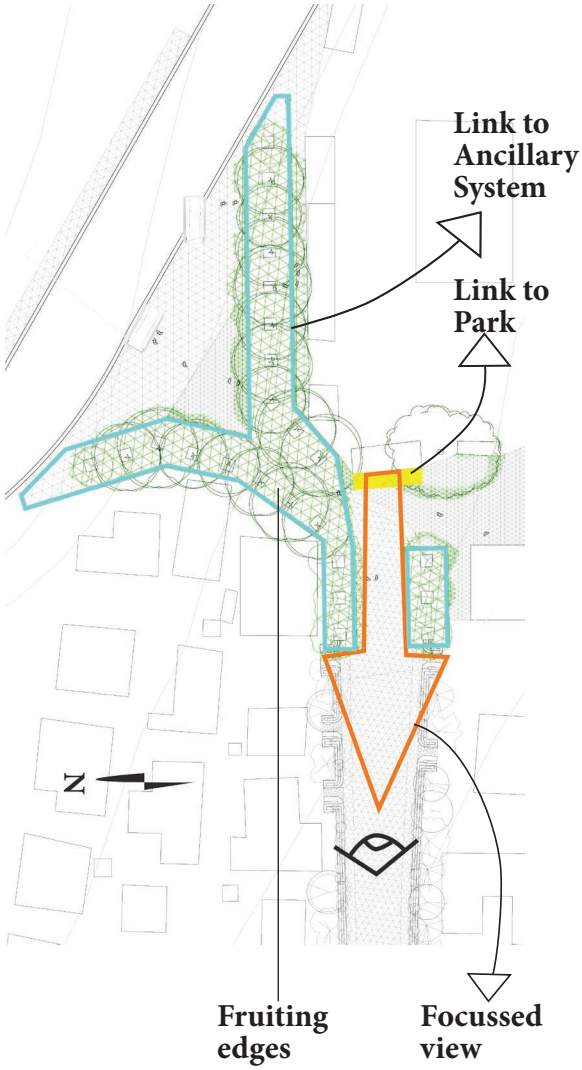
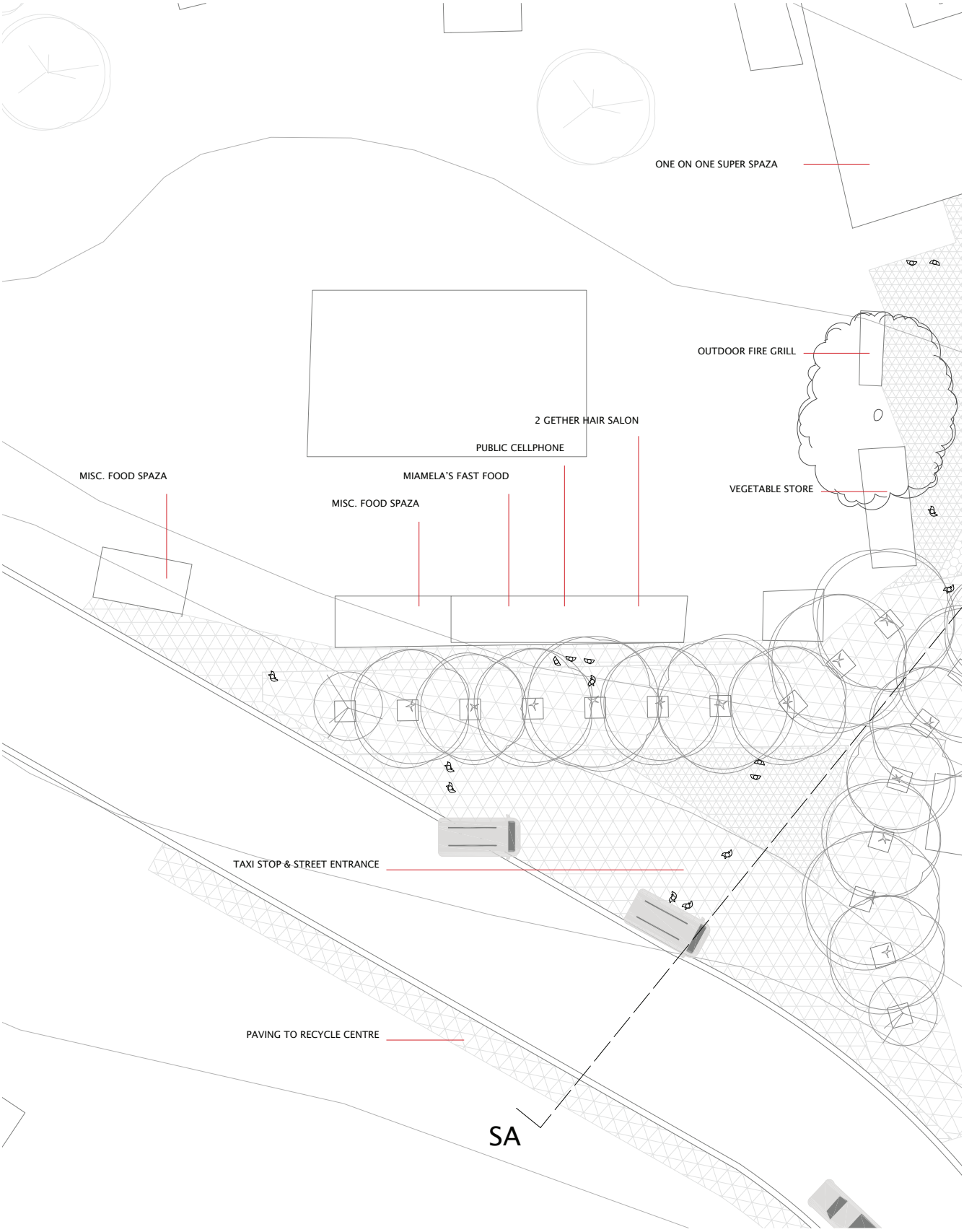



**Figure 95** Store Area behavioural tools diagram (Author 2015)




# ENTRANCE & SHOPPING

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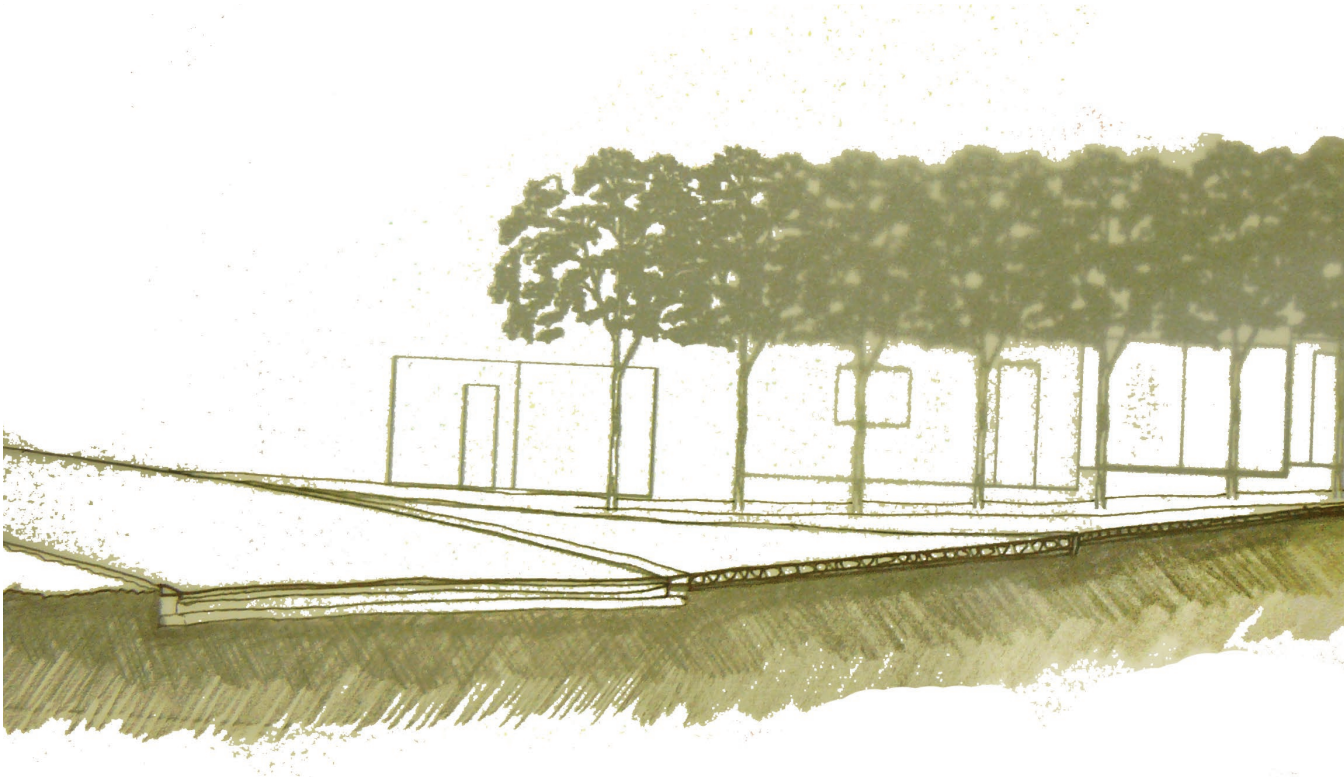
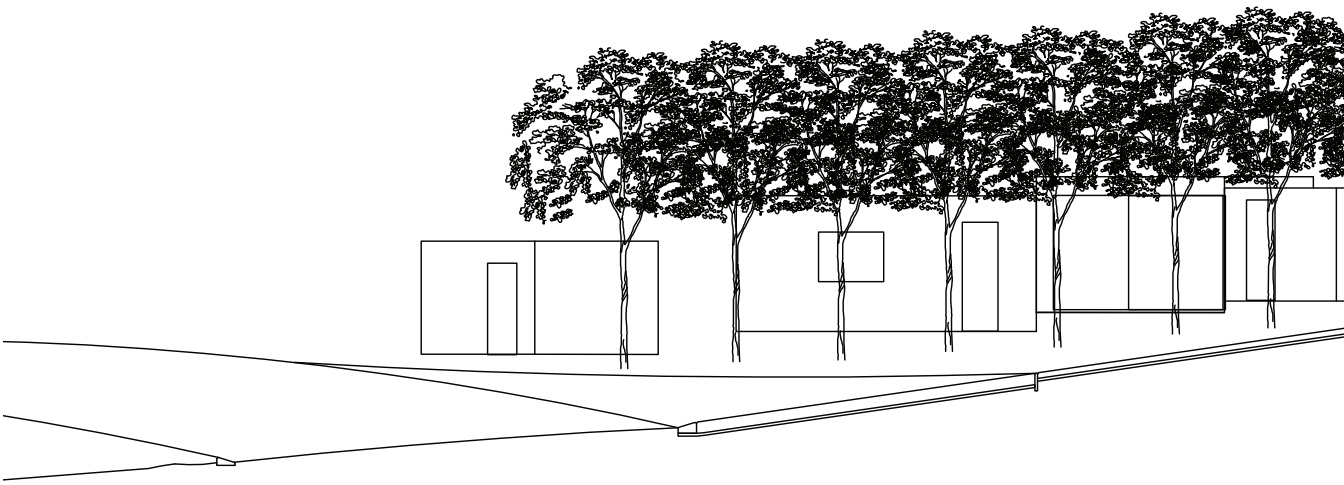




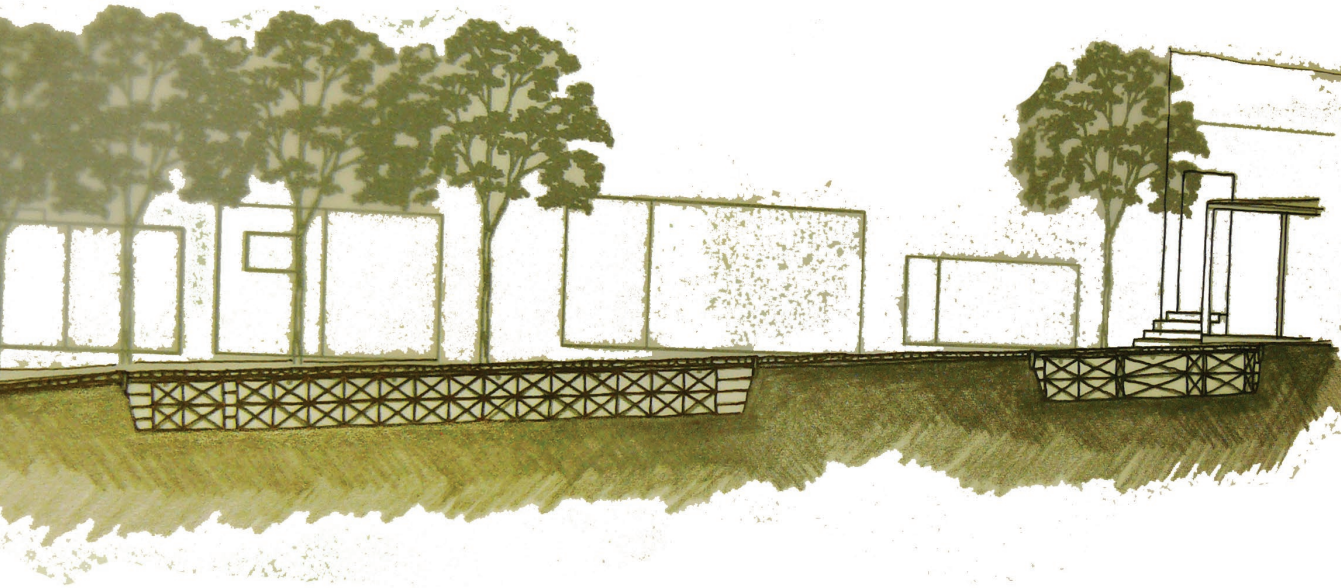


**Figure 96** Section through Store Area cutting through two suspended pavement soil reservoirs (Author 2015)

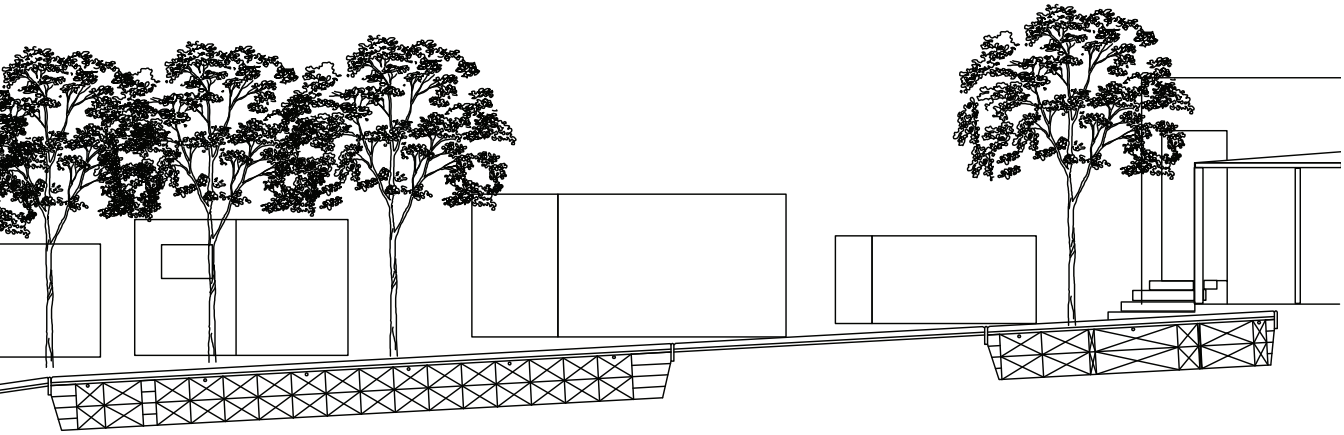


**Figure 97** Section through Store Area cutting through two suspended pavement soil reservoirs (Author 2015)

## 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 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.

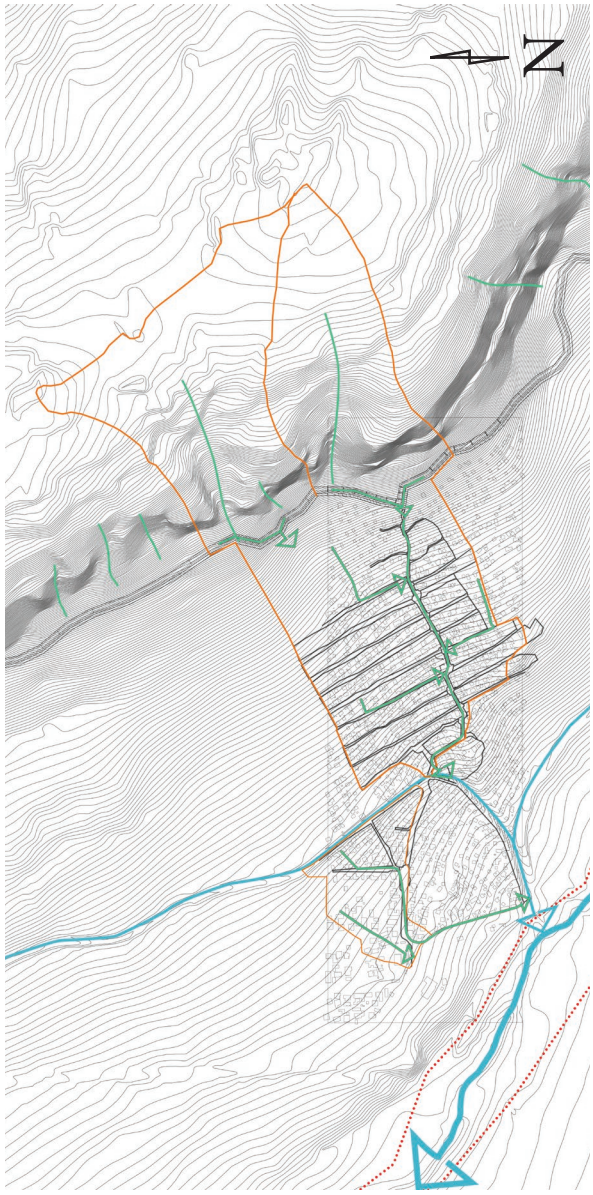



**Figure 98** Water System (not to scale) (Author 2015)

## 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.

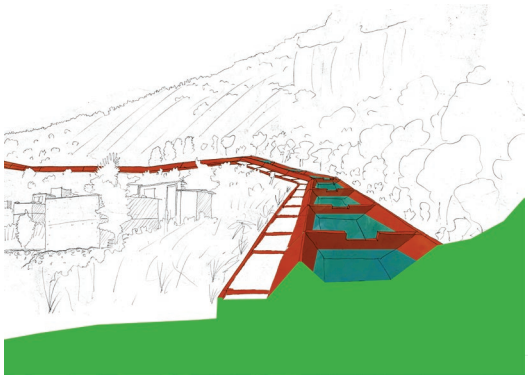


**Figure 100** Section-perspective of Ancillary System with open cells (obsolete) (Author 2015)

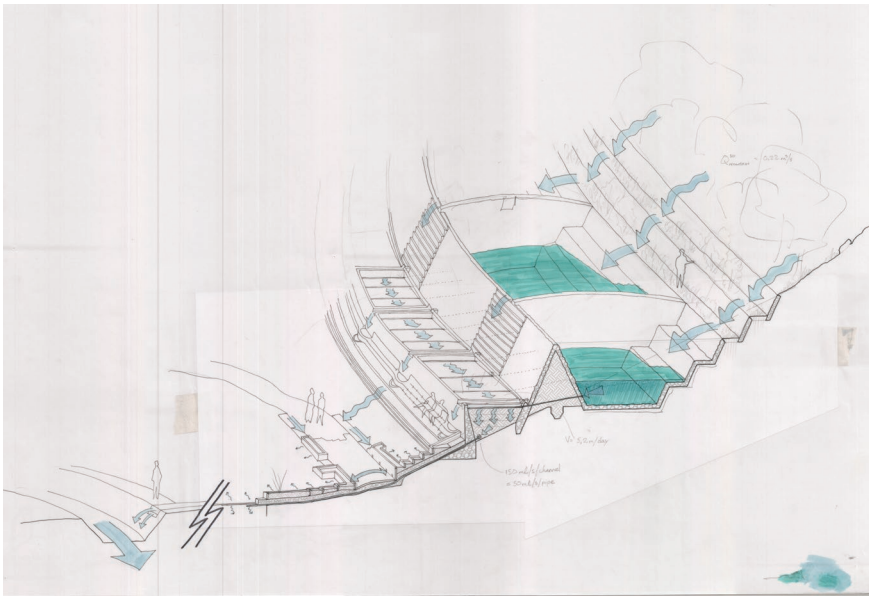
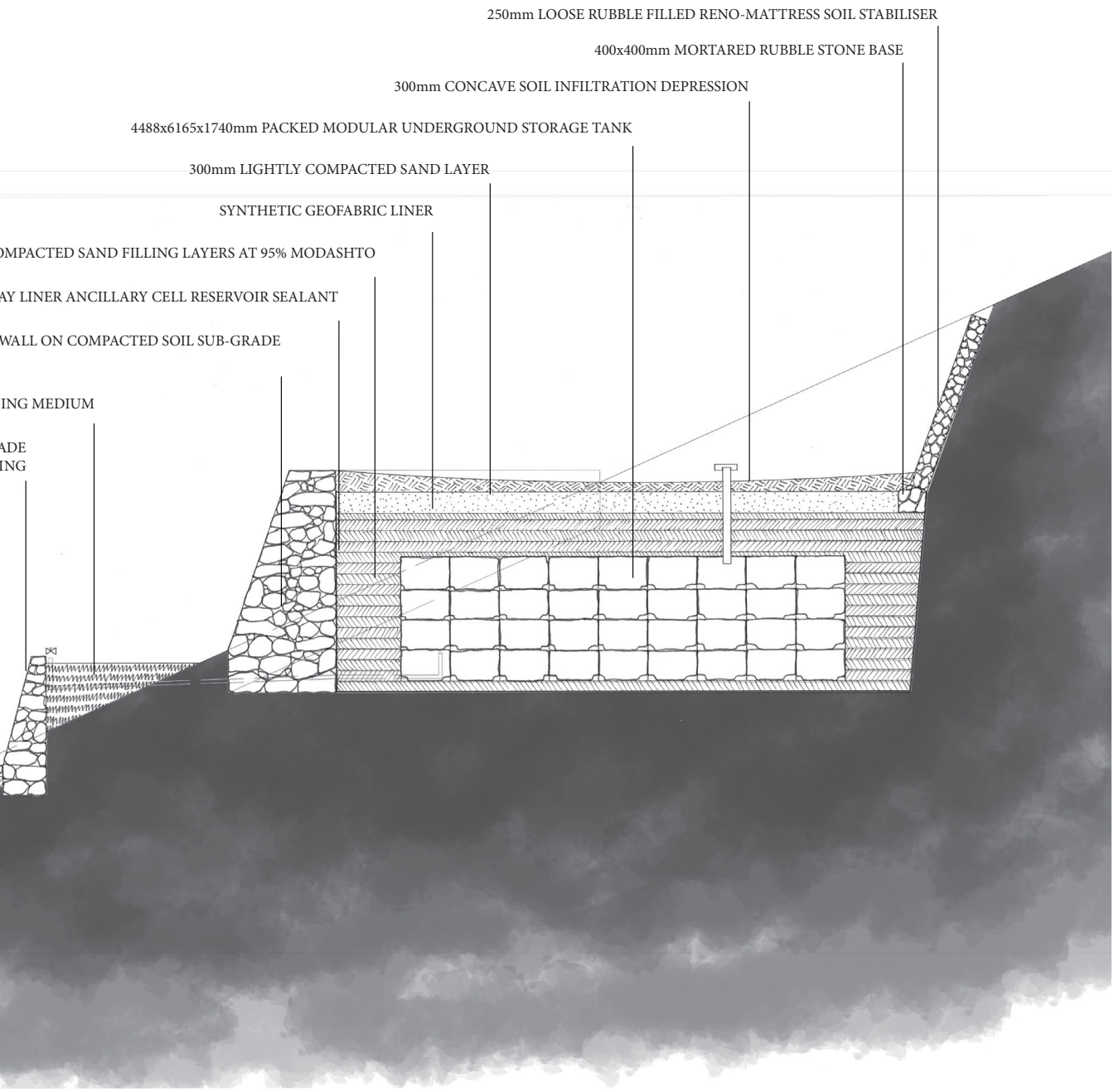


**Figure 99** Isometric of water flow over and through Ancillary System with open cells (obsolete) (Author 2015).




# ANCILLARY SECTION AB

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

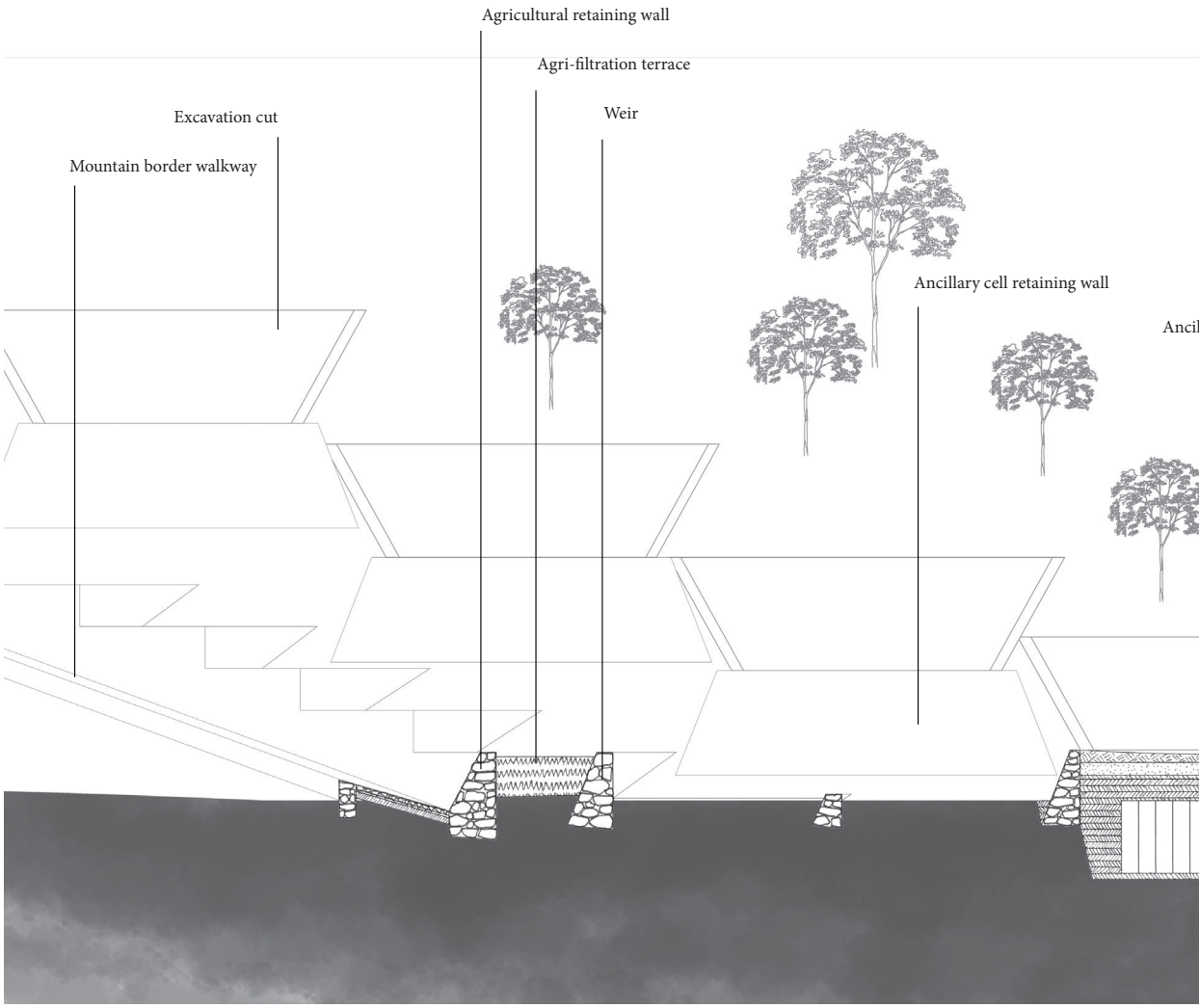

**Figure 102** Ancillary System mountain border promenade and agricultural belt perspective (Author 2015).