

https://dspace.org/

A growing city: agriculture and food security in the growing urban context

Tarboton, Ian

2013-08-02
http://hdl.handle.net/10539/12970

Downloaded from a DSpace repository. https://dspace.org/

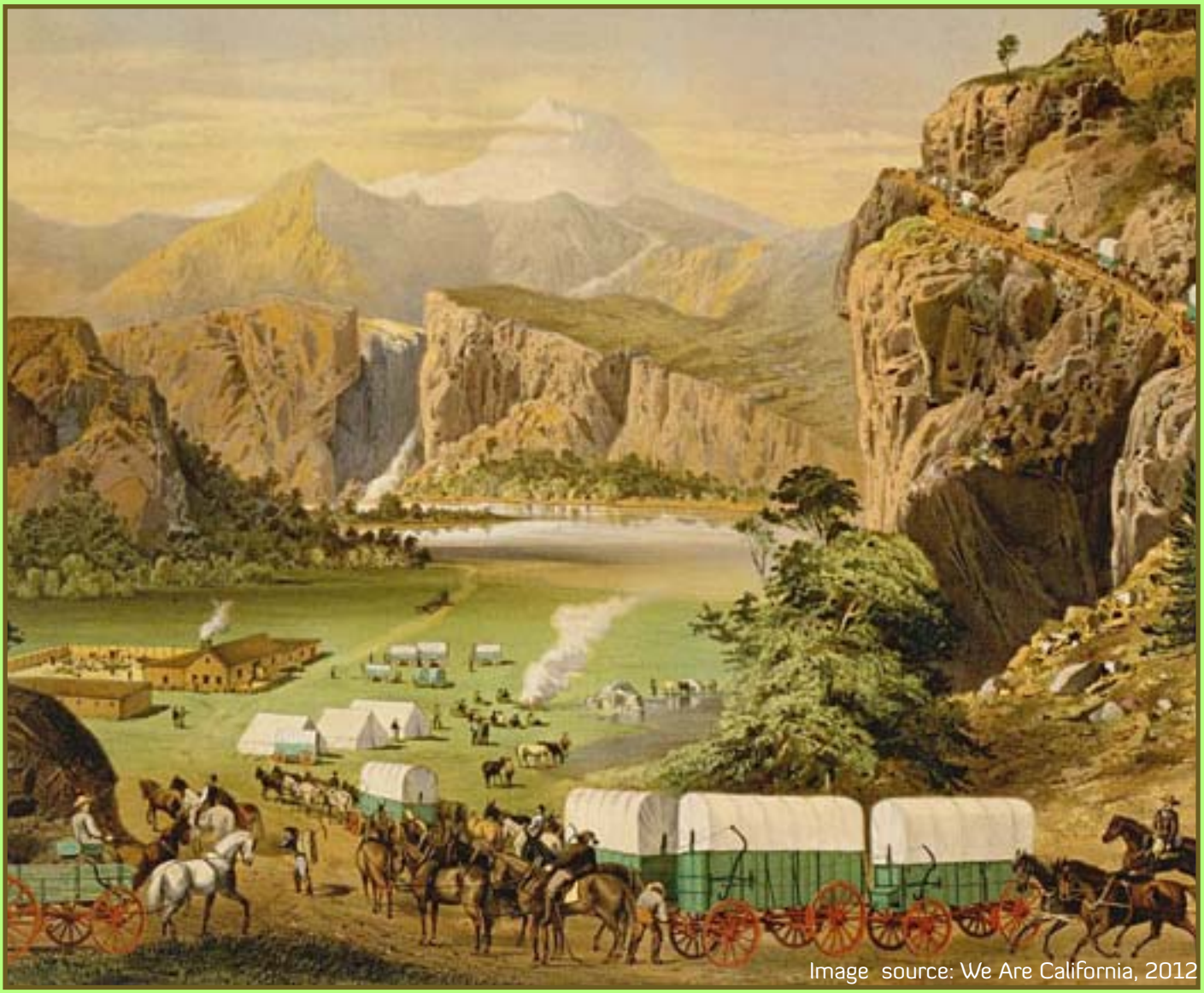


Image source: We Are California, 2012

Land Ho!

Sighting a Site

Faraday

From Seed to Feed

The Captain and the Crew

Chapter: 4

Identification of Possible Sites

This image shows all the possible sites which can house an urban agricultural development. These sites are weighed against the criteria that I have determined are relevant criteria for an urban agricultural intervention in the context of Johannesburg.

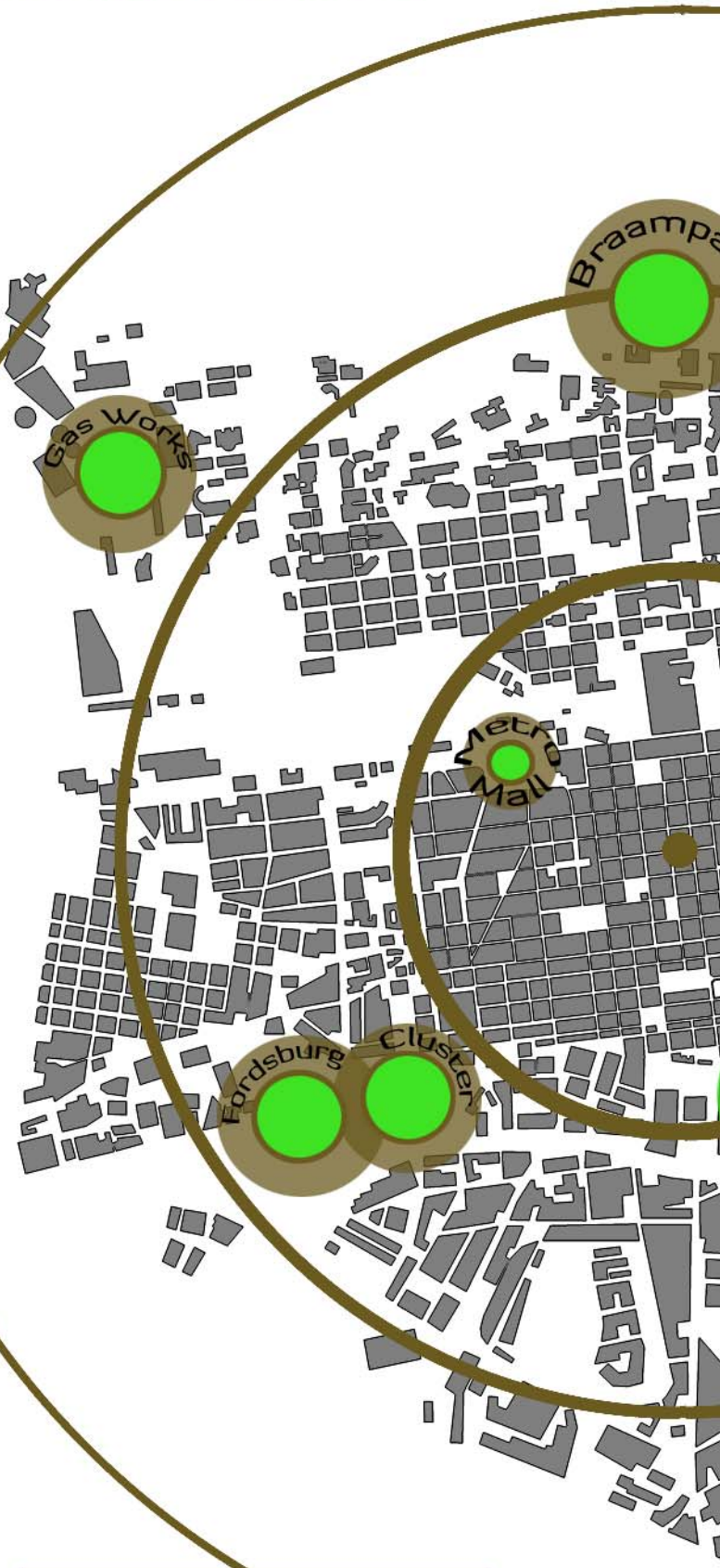
These criteria are determined by the factors concerning food security. These are primarily considered within the inner city due to the major concerns around food security therein.

The criteria include firstly proximity to the major informal food markets in the inner city. Since the majority of the population buys their food from the informal market, and that many people in the inner city are without food, the informal market is in need of more food at cheaper prices. The site should be close to the major informal food markets in the inner city, which are primarily in Kerk Street, in order to supply them with food that has not travelled far distances. Thus, I have drawn radii centred around the central point of the Kerk Street market. These radii are set at 1km intervals.

The second criteria considered is links to public transport nodes, particularly taxis and trains. Part of food security lies in easy access to food. This allows for people to have easier access to food, and for the food to be easily distributed through the city.

Given the strong ties between food and health it is necessary to consider where there are areas of the city that address health. It is necessary to consider where the traditional healers are, as well as where the medical clinics are. These have been shown in my mapping of the inner city.

Finally I considered population densities in proportion to current food supply. Where the population is very dense, food needs to be dense too. Where food and population densities do not align suggests a good location for an urban agricultural intervention.




5 kilometers
4 kilometers
3 kilometers
2 kilometers
1 kilometer
Bezuidenhout Valley Cluster
Kwa Mai Mai
Tapdat

Sighting a Site

Now that it has been determined who should benefit first from urban agriculture within Johannesburg it is time to consider where such an intervention should be sited in order to be most effective. Not only is the location important, but also the state of the site in order to ensure that the left-over spaces of the city are addressed and gentrified, uplifting them.

The kinds of factors that should determine the siting are related to food security and the assortment of factors that affect it or are affected by it. As research has shown, AIDS is a major role-player which exacerbates food insecurity (Altman et al., 2009). Research has also shown that the majority of people in South Africa infected with HIV/AIDS go first to a traditional healer before a western doctor (Rukini, 2011). So it is necessary to consider where the traditional healers are, as well as where the medical clinics are. These have been shown in my mapping of food in the inner city in chapter 1.

The factors are: proximity to the major informal food markets in the inner city; links to public transport nodes; located near to people in need of better health and nutrition as well as existing infrastructure that addresses health (traditional and clinical) because food and health are inseparable; and population density. These are described more in the analytical image which follows. It also shows various sites which are seen to fit into these categories. The sites highlighted in the image are existing open spaces or large vacant plots. This is necessary for the beginning plantation of an urban agricultural intervention so that it may be big enough to address as many people as possible and be able to establish the development in order for it to grow. A small site would not allow enough infrastructure to be put in place and would require designing vertically which makes it less accessible to the person on the street. The sites which fit into some or all of these categories in Johannesburg inner city are highlighted in the graphic on the previous page.

After sighting the various sites which are viable options for urban agriculture, I compared each according to how well they fulfill the criteria. The do not all fulfill all the criteria, as can be seen in the chart adjacent, but each has their merits and arguments in favour of and against.

The site that best fulfils all the criteria is the Faraday site. It is a major traditional healing node and also has a medical clinic across Eloff road from the muti market. Muti markets are important because that is where the majority of traditional healers can be found. Therefore Faraday has the greatest opportunity to affect lots of people and act as the fore-running intervention. According to the medical clinic there, about 25% of the people in and around Faraday are HIV positive, so there is a need there, as well as an open site immediately across Wemmer-Jubilee Road to the north-east of the muti market. It is also connected to the train system in the city, as well as being a major taxi node. The muti market comes straight off Eloff Street which is the historical route directly south from Park Station.

There is a recycling facility nearby as well. It is just south of the M2 highway edging against Eloff Street. This is beneficial in light of biomimicry and permaculture principles where recycling is encouraged as much as possible.

The site is also close to the M2 highway at the south of the city, allowing for publicity as people see it on their way past on the highway, and is in close proximity to the on-ramp for the highway. Therefore transport is addressed and passers-by, whether pedestrians, public transport commuters, or private car commuters, become aware of the food grown. Given the major transport node that Faraday is, there are significant numbers of feet passing through the area, but the amount of food in the area is despairingly small in comparison. Therefore the proportion of food to population density is in a state of imbalance. As for proximity to the major informal markets in the city, besides being an informal market itself (though not selling food) it is within a 1km radius from the Kerk Street market. This all shows how Faraday addresses all the site criteria relevant to addressing food security in the inner city as there is significant infrastructure in place already for the Faraday site.

Comparison of Possible Sites

Possible Sites	Site Criteria				
		Link to Transport	Link to Health	Close to Informal Markets	In Densely Populated Area
	Braampark		✓		✓
	Gas Works		✓		
	Metro Mall	✓		✓	✓
	Fordburg Cluster	✓		✓	✓
	Faraday	✓	✓	✓	✓
	Highlands Cluster			✓	✓
	Kwa Mai Mai	✓	✓	✓	✓
	Bezuidenhout Valley Cluster		✓		✓

There are two sites which fulfill all the criteria, viz. Faraday and Kwa Mai Mai. These two are the only dedicated muti markets in Johannesburg. Both are known for traditional healing as well as present opportunities for tourism within the inner city. They are both also taxi ranks, providing the necessary link to public transport, while Faraday also has a train station. They are within two kilometres of the Kerk Street market, though the Faraday site is closer. They are also both located in areas which are fairly densely populated with people living or working in the area or merely passing through. Also, there is very little food currently sold in these areas.

Faraday

The area of Faraday forms part of the Industrial and Mining Belt traversing the city in an east-west direction (Annemarie Loots et al., 2009: 5). It is one of the oldest industrial sectors in the city. Capacity is also of great concern, particularly with regard to power and water (Annemarie Loots et al., 2009: 6). The quality of the public environment is very poor. There are almost no street trees and the streets have not been designed to accommodate large number of people on foot (Annemarie Loots et al., 2009: 7).

Faraday train station was an area of significant decay which came under the telescope of city planners during a city regeneration campaign. The area is home to Faraday Market, a major centre dedicated to the art of traditional healing and a viable transport hub (City of Johannesburg, 2012). The railway terminal links Soweto and other south-western townships to the city, making the precinct a multi-nodal transport interchange, with bus and taxi services extending connections into the central and near city zones (City of Johannesburg, 2012). Faraday functions as a threshold space offering access to various destinations both locally and in the broader city environment.

The taxi rank can accommodate more than 250 vehicles and serve a significant number of commuters each day (JDA, 2012). The allocated taxi holding area also has a formal space for the preparation of food. Steel framed structures with curved galvanised IBR roofs shelter the ranking lanes between pavement platforms. The building straddles a broad walkway that links the new market, through the taxi rank, to the area beneath the motorway where trading was once conducted (JDA, 2012).

The Faraday Muti Market is also known as Ezinyangeni, which is a Zulu word that means 'the place of healers'. The market is managed by the City's Metropolitan Trading Company (City of Johannesburg, 2012). It is abuzz with people any time of day searching for herbs, animal skins, good luck charms and healing potions (SouthAfrica.net, 2011). Stalls spill out into the passageways with plastic squares laid down, covered with an amazing array of dried herbs, roots of all shapes and sizes, and dozens of bright blue packets of bark (City of Johannesburg, 2012). "The pungent smell that emanates from the market comes from the plant matter but also from the range of dried animal organs, skulls and dried small animals like rock rabbits or even complete donkey legs." (City of Johannesburg, 2012)

There are many consulting rooms, each with a doorway that is only 1.6 metres high (SouthAfrica.net, 2011). They are built like this to force clients to stoop as they enter. This

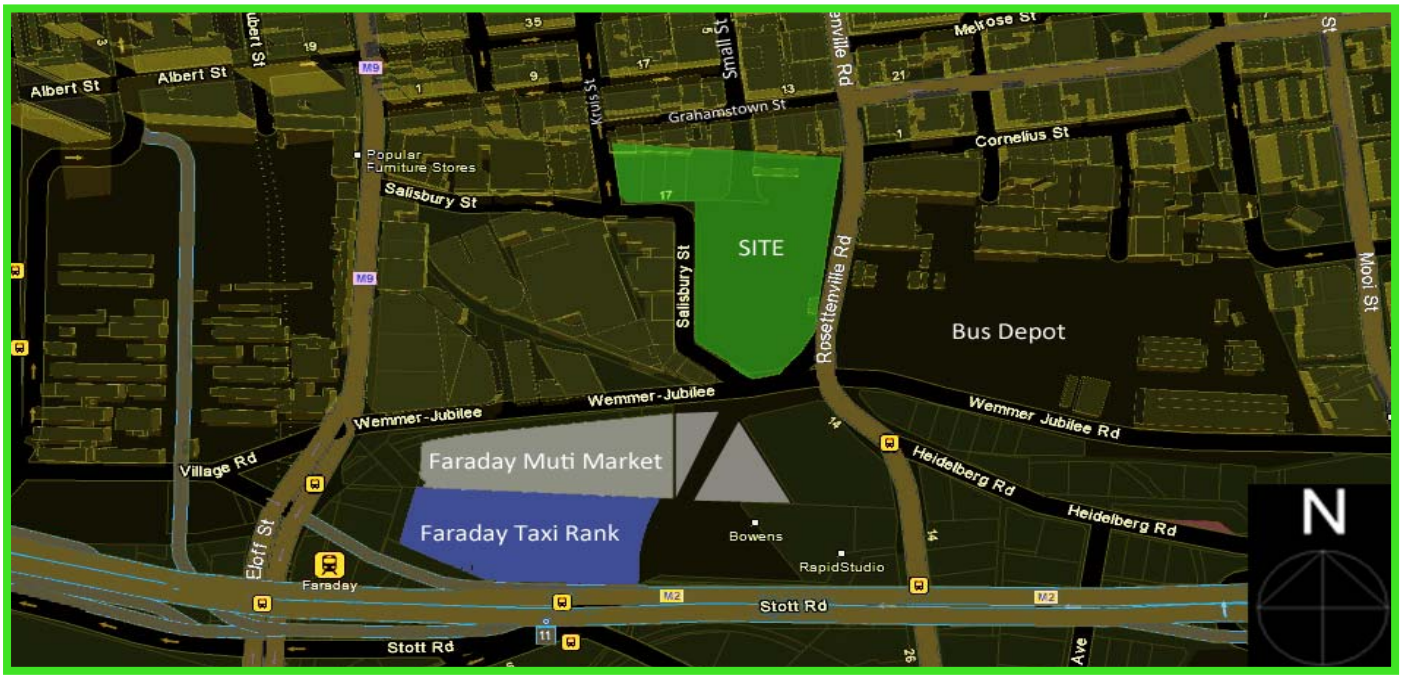


Fig. 4.1: Site location, not to scale. (Source: author, taken from Google Maps, 2012)

is an attempt to recreate the traditional way of entering a healer's hut. It gives the space a sense of ceremony, and by stooping you are also showing reverence for the healer and indicating that you are ready to submit to his or her wisdom (SouthAfrica.net, 2011). Merch Nobesuthu of the Traditional Healers Organisation for Africa said there were more than 300 000 traditional healers in the country, and that a large proportion of the population relies on them for healthcare (City of Johannesburg, 2012).

The muti market is the strongest and most important link in the surrounding context for my site. It is the destination of most of the passersby and serves as the biggest landmark and attraction to the area.

Most of the people that pass through the area are going either to the transportation available or to the muti market. The route that many of them take to get there from other parts of the inner city are either down Eloff Street, or down Rosettneville Road, which is Von Weilligh Street further north. From these two major routes through the city pedestrians often branch towards Kruis Street which lies between these two roads. This becomes a major pedestrian node full of social activity at the intersection with Salisbury Street. It is between this point and Rosettenville Road that my site is located.

Congested, but still; vacant, but overflowing; informal, and yet highly ordered. The first impression upon arriving at the site is that it is a taxi rank and appears to share all the vibrancy associated with commuting. This is not entirely true. Yes there are taxis on site, lots of them, but they are not there to collect or drop off passengers. That activity happens at the Faraday taxi rank by the Muti Market. What happens on my site is seemingly of a more relaxed nature.

Scores of taxis parked in a haphazard order; pedestrians



Fig. 4.2: Faraday taxi rank. (Source: author, 2012)


Fig. 4.3: One of the aisles at Faraday Muti Market. The consulting rooms are up the stairs to the right. (Source: author, 2012)


Fig. 4.4: Pedestrians along Rosettenville Road with an existing toilet block on the left. (Source: author, 2012)



Fig. 4.5: The corner of Kruis Street and Salisbury where many people congregate. (Source: author, 2012)

weaving a pattern in and out of the taxis, making their way across the site; forlorn concrete walls stand at half-mast are the only vestiges of any previous attempts to order the site, together with a few small scattered buildings converted to housing for informal dwellers. A handful of informal traders offer services (primarily of food) to the taxi owners. The taxi owners themselves use the site as a place of rest and a place to clean their vehicles.

The north-west corner of the site is currently outcast from the rest of the site due to the concrete walls which surround the parked taxis. This part of the site is the most open part, but surrounded by the tallest neighbouring buildings across the road. It is also the most active part of the site as it is thriving with a throng of pedestrians most days of the week. A couple of informal food traders have set up shop to serve the gathered crowd and this part of the site has a strong social zeitgeist. There are few vehicles here since the ground is covered with paving at different levels. The paving is all that remains of the once-existent buildings which inhabited this part of the site. I can't help but think they are an apt mirror on the nature of the city - it grows and is built until it is no longer suitable for our purposes, at which point it is demolished and re-shaped. On every level the site seems to shun permanence and rigidity.

There is lots of litter and rubble on the site, intermingled with piles of ash from fires. It is evident that the site is a local dump. There are also a lot of oil stains on site from all the vehicles that are parked and serviced there.

The site shows an ecosystem that has been destroyed, and replaced with litter and rubbish — the waste of human society. Such a devastation of what could have been a beautiful open green space in the south of the CBD is pitiful. The conditions on site are likely to affect the psyche negatively as they are an absolute eyesore. They show the negative effects of the city on the natural environment, which in turn can have negative effects on the state of the human mind. This is cause for mental-health concern attributable to the degraded state of the physical surroundings and environment of the site.

The site has been highlighted by the City of Johannesburg



Fig. 4.6: Site activities include washing parked taxis. (Source: author, 2012)



Fig. 4.7: The southern corner of the site. This is the most prominent side of it. (Source: author, 2012)



Fig. 4.8: The north-west corner with uneven paving. (Source: author, 2012)



Fig. 4.9: View from the Salisbury Road and Wemmer-Jubilee Road intersection. (Source: author, 2012)

as a node of possible catalytic transformation. It is proposed that the area north of the M2 is transformed to establish a work-live mixed-use urban area (Annemarie Loots et al., 2009: 21). The many non-functional industrial buildings and warehouses could be converted to accommodate uses other than what they were originally constructed for (Annemarie Loots et al., 2009: 21). There is a proposed park to be established on the Salisbury Claims site – the site of my thesis design.

Many older industrial buildings in this area have been illegally converted and are used for residential purposes.

> This area is earmarked for residential mixed-use...A catalytic development is needed to stimulate market interest and attract development to this zone... The creation of a public space and recreational node is thus proposed as catalytic intervention. The facility would benefit from its locality adjacent to the proposed NMT route that would enhance its accessibility from other zones. In light of the shortage of recreational and open space facilities in the Inner City, this move supports the notion of a more liveable Inner City. (Annemarie Loots et al., 2009: 35)

The soil on site is hard and mostly dust due to excessive trampling by vehicles. Portions of the site are covered in broken paving. There is little to no grass. There are a few existing trees which provide a wide canopy of shade across the midsection of the site. The site is also contaminated from the mines and this makes the soil condition poor, though the soil type is good for agriculture. This needs to be addressed in order to grow food on the site. There is a gentle slope from the northern end down to the south of approximately five meters along this near 200m length.

The edges of the site are quite hard, even when imagined without the walls which surround the site. The buildings adjacent on the northern and western edges all stand like an army holding its line, while the eastern edge has the feeling of hesitancy since the road is quite wide and pushes the other buildings away from the site. This road is itself rather busy. The southern edge of the site feels more open as to the southeast it opens up into three roads, making a large intersection white affords great views to the site. This corner is perhaps the corner which interacts with the public in the most iconic manner. The southern edge is also the one which addresses the access road that leads to the main attraction of the area – the muti market.

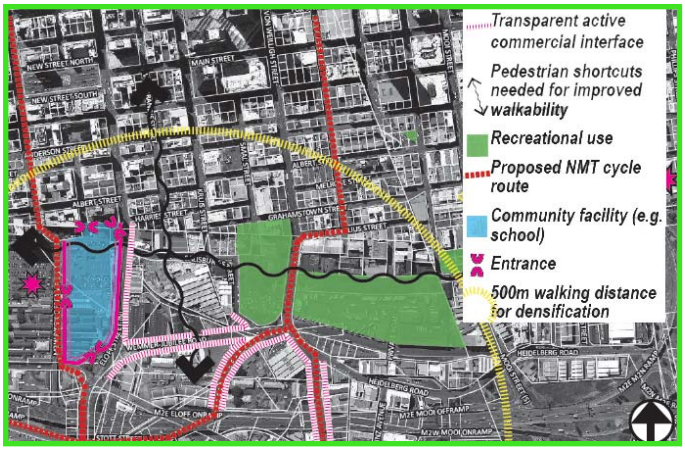


Fig. 4.10: Proposed zoning and redevelopment for the Southern Inner City Block. (Source: Annemarie Loots et al., 2009: 21)

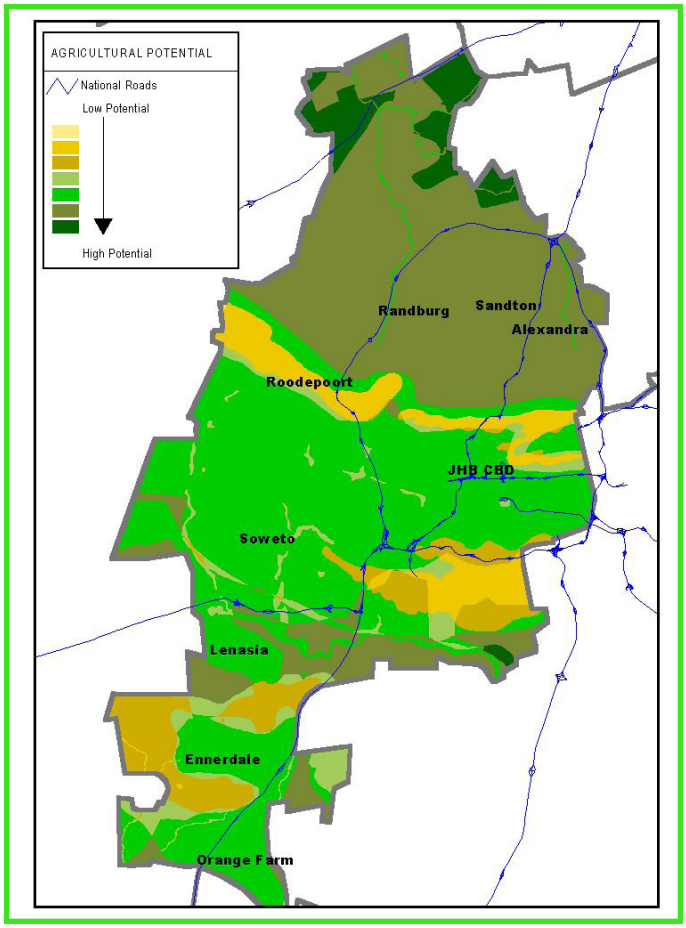


Fig. 4.11: Agricultural potential of soils in Johannesburg. The greener the better. (Source: Greater Johannesburg., 2000)

Panoramas of Site Edge Conditions

Wemmer Jubilee Road



Rosettenville Road



Grahamstown Street



Salisbury Street











The market itself borders Wemmer Jubilee Road to the south, while my site borders the same road to the north. Wemmer Jubille Road has a little bit of vehicular traffic, but it is not extremely busy in this regard. Many of the cars and other vehicles that pass along this road are going either to the Faraday Market and taxi rank, or to my site. There is a fair amount of pedestrian movement on this road, many of whom share the same destinations as the vehicles.

The site is hemmed in on the east by Rosettenville Road. A fair number of pedestrians use this road and it seems to be one of the major pedestrian routes in the area. A couple of informal traders line up daily along this road to try make sales to the passers-by. Vehicular traffic is also quite heavy on this road and the road acts as a major north-south axis for the CBD. The buildings on the opposite side of the road vary in use, from a blank wall that demarcates the bus depot, to electro-plating, hardware, a Fish and Chips fast food store, and a petrol station.

To the north of my site is the back of a few small buildings (averaging three storeys) which themselves front onto Grahamstown Street, a one-way street connecting Kruis Street with Rosettenville Road. These buildings are used mostly for motor vehicle servicing, and one of the buildings runs noisy machinery. The street is fairly small and dense with buildings. Pedestrians roam up and down while cars are parked on the sides of the road. Behind the three storey buildings is a strip of one-storey hostel-like rooms, used as housing for a few families. These units open out directly onto my site and the families use the site as if it is their courtyard.

To the west is Kruis Street which runs south to join onto Salisbury Street, which then runs east and south until bearing east again just before joining Wemmer Jubilee Road, creating a pan-handle shape for the site. The buildings on this side are unpleasant. A large vacant auctioneer dominates the edge of the pan-handle, while sitting adjacent to a large bare-concrete building, three storeys tall. The ground floor of this is used for motor vehicle work, while the two floors above are used by informal residents, numbering approximately 2000 people according to a gentleman who works in the area. This is next to a Supa-Quick branch, one of the more active buildings in the area. The pavements around these buildings are flowing with pedestrians, and one of the shops on the ground floor sports a pool table and games area. The rest of Salisbury Street is lined with poorly kept vacant buildings and more car repair shops or tool outlets. The height of these buildings dwindles to a single storey nearer to Wemmer Jubilee Road.

The site has access to a large amount of direct sunlight throughout the day and year. The shadows on site from other buildings are minimal in the morning and midday but as the afternoon wanes they grow longer and smooth over much of the western half of the site. This is particularly pronounced in winter. The greatest amount of shade on site is caused by the trees, but the trees are not evergreen, thereby allowing light sunlight to the earth in winter.

The temperatures of Johannesburg are generally pleasant averaging 25°C in summer and 16°C in winter as daytime temperatures, with nighttime averages of 16°C in summer and 4°C in winter (Climatemps, 2012). Summers occasionally get warm beyond comfort and winter occasionally gets cold beyond comfort. As a result it is necessary that the building to be designed for use by people should allow for cooling in summer and heating in winter. The equinoxes are usually very comfortable in Johannesburg.

The average rainfall is 849mm (Climatemps, 2012) which falls primarily in summer. Winter rainfall is rare and uncommon. Therefore any rainwater capturing will have to be focused in summer and stored for the dry winter months. This means a significant amount of storage is necessary.

The wind in Johannesburg comes predominantly from the north throughout the year, with the summer winds coming from north and northeast. Very little wind comes from the

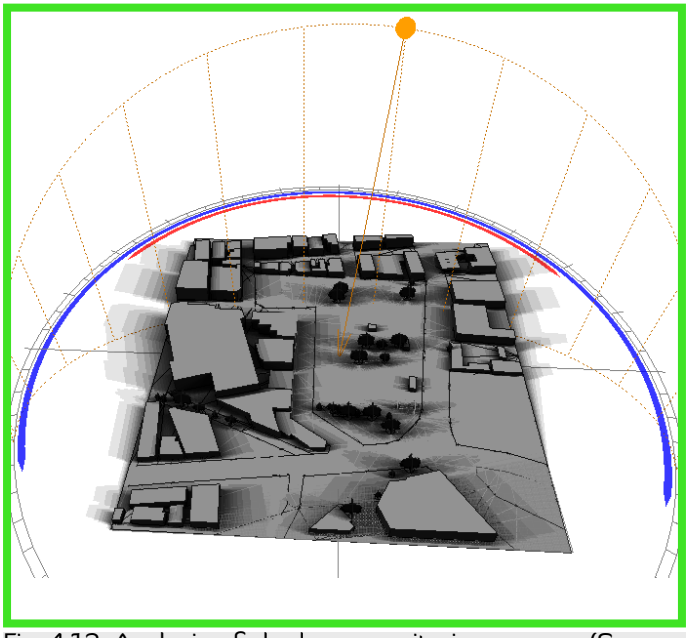


Fig. 4.12: Analysis of shadows on site in summer. (Source: author, 2012, taken from Ecotect analysis)

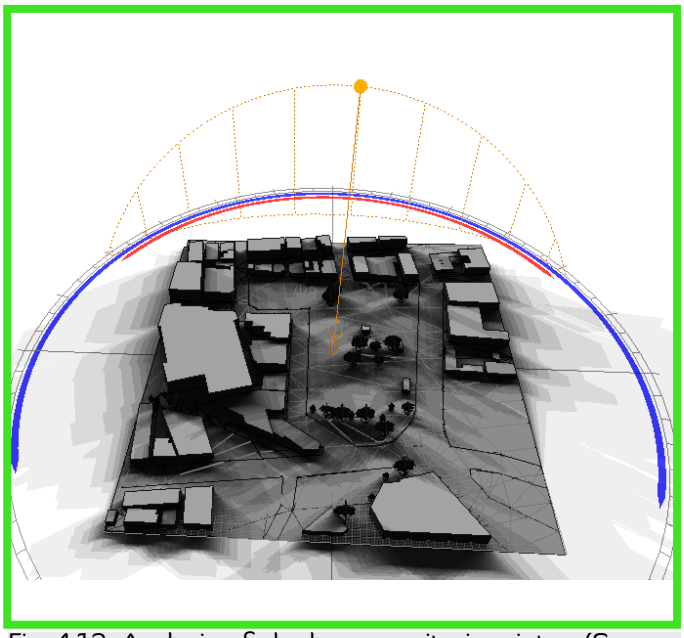


Fig. 4.13: Analysis of shadows on site in winter. (Source: author, 2012, taken from Ecotect analysis)



Fig. 4.14: Analysis of solar radiation on site, from the north. (Source: author, 2012, taken from Ecotect analysis)

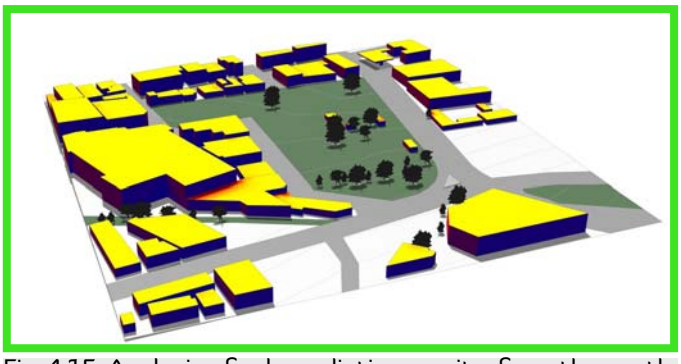


Fig. 4.15: Analysis of solar radiation on site, from the south. (Source: author, 2012, taken from Ecotect analysis)

south. The wind speeds are generally mild not straying too far over 10knots. The southern edge of the site is exposed and unprotected from wind but this is not a major concern since the wind very seldom comes from the south. The northern edge is somewhat sheltered by two to three story buildings so the air at ground level should be fairly still most of the time. It is likely, however, that wind will be channeled down Rosettenville Road like a wind tunnel.

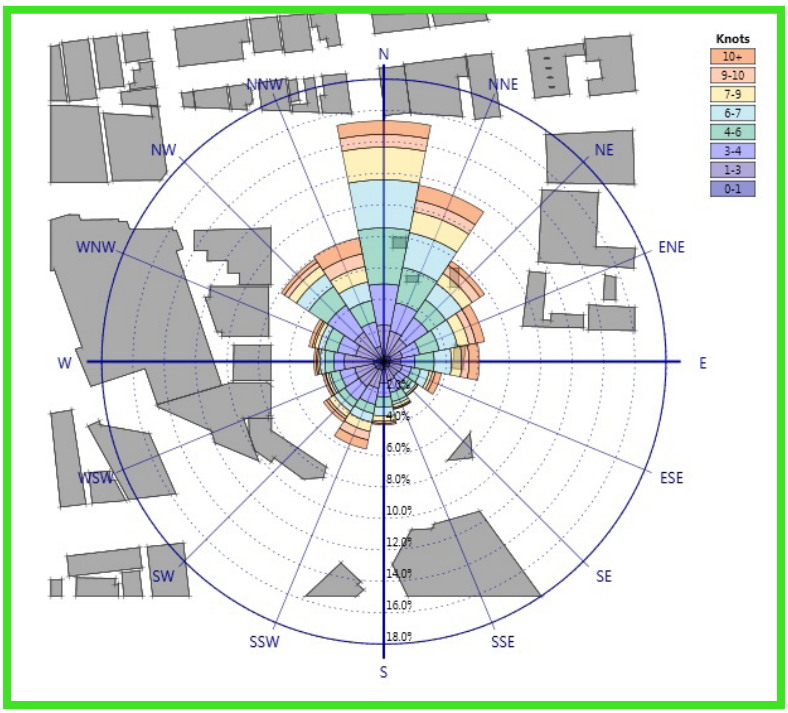


Fig. 4.16: Wind study. (Source: author, 2012, taken from Ecotect analysis)

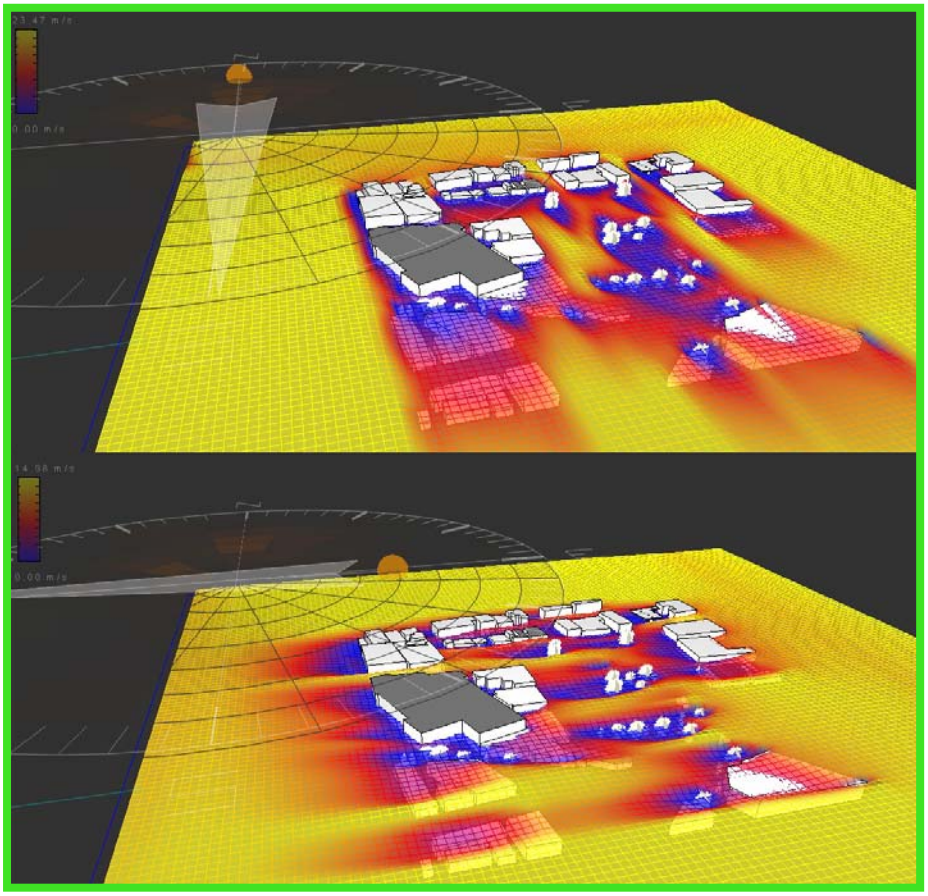
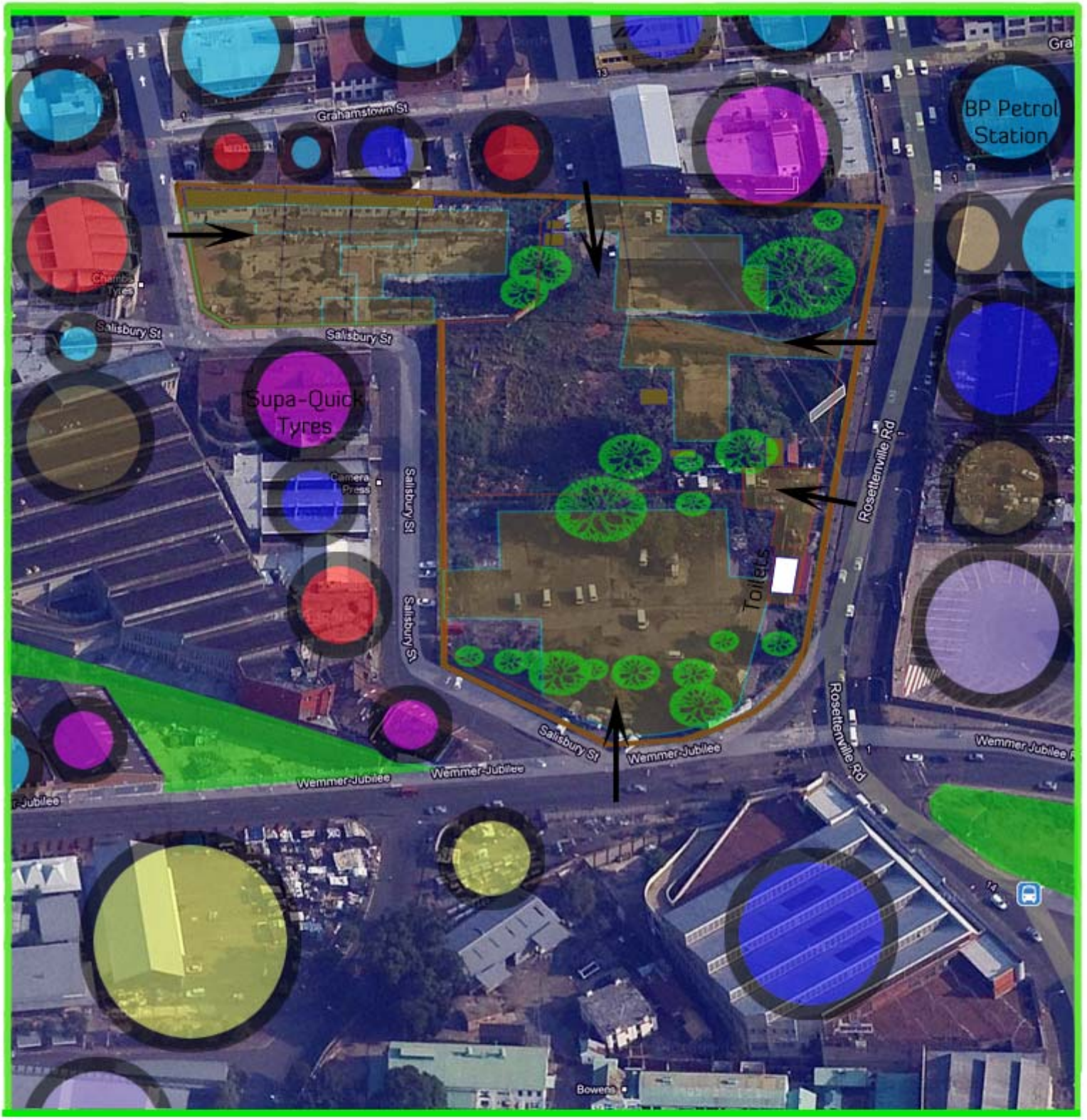


Fig. 4.17: Study of north and east winds on site - the two predominant directions for Johannesburg. The warmer the colour the faster the flow of air. (Source: author, 2012, taken from Ecotect analysis)



- Vacant Buildings
- Informal Residential
- Existing Hard Surfaces on Site
- Transport Nodes
- Open Spaces Other Than Site
- Mixed Industrial/Commercial
- Fast Food Stores
- Motor Car Repairs & Servicing
- Faraday Muti Market
- Hardware, Tools & Machinery
- Vehicular Access Points

There are a couple of vehicular access points as the site is, but access to the roads is fairly easy from any point on site. There is a small entrance on the northern edge which seems to be more private and is currently unused and closed off. Pedestrian access is limited to holes in the perimeter walls but it seems that pedestrians walk frequently around the site to get to the corner of Salisbury Street and Kruis Street from Rosettenville Road, or vice versa. Both the north-south axis roads which define the site are laden with many feet passing daily. It could be worthwhile connecting these two roads across the site and facilitate a pedestrian thoroughfare, as seems to be the desire.

The area is an industrial one and the functions of the surrounding buildings are no exception. Motor mechanics, hardware and machinery comprise the bulk of what happens. There are also some vacant buildings in poor condition, as well as some informal and illegal residences.

Noises come mostly from traffic in Rosettenville Road and machinery in Salisbury Street, as well as from the M2 highway just south of the muti market. Vehicular noise in Salisbury Street is less since cars typically drive slower as the road is narrow. Other sources of noise are the pedestrians who gather socially on the corner of Salisbury Street and Kruis Street. This is a popular "hang-out" and there is even a pool bar two buildings west of the intersection. There is an informal trader selling fresh fruit and vegetables as well as cooked meat in this corner. There are usually another three informal traders occupying the southern border of the site to catch people who are on their way to or from the muti market. These traders sell snacks, chickens, and shoes.

The buildings in the area are all in bad condition, making the area look forlorn and neglected. The average height of the buildings is three to four stories, with a few single story buildings and a couple of five story buildings. This area has already been highlighted by the city council as an area to be renovated and for catalytic change. Needless to say it is ripe for change.

==========
==========

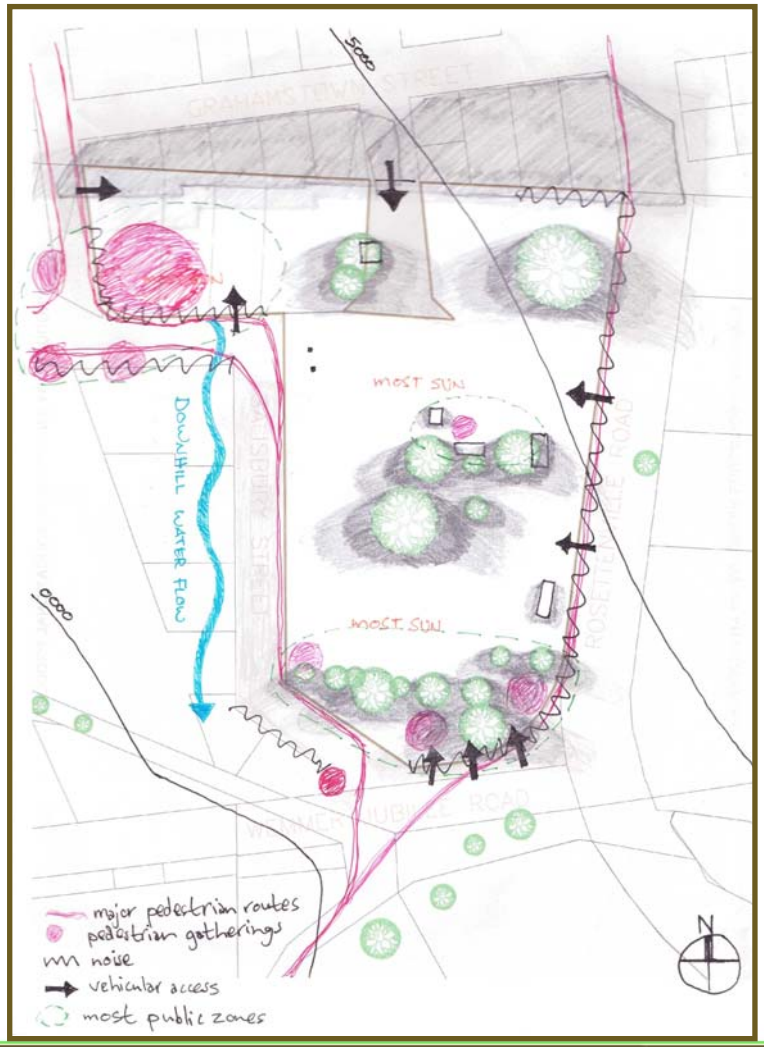


Fig. 4.18: This shows a hand sketch analysis of the site, including pedestrian routes and noise sources. (Source: author, 2012)

From Seed to Feed

Plants and ecosystems grow all the time. They always produce more, evolve, adapt, diversify. The same species grow in different places and different species grow in the same place. This creates diversity and decentralisation. These are two vital aspects for resilience of an ecosystem or single species in the face of disaster. With food we are dealing directly with plants, therefore it is necessary to facilitate the growth of the plants in a way that they would grow naturally. That is to say, firstly, that diversity of species in one place rather than a single crop over a large area is a far better way of farming that leads to greater crop yields, greater resilience, less pests or disease, better soil quality, and a flourishing ecosystem. Secondly, it means that decentralization is critical for growth.

Decentralization means to have many farms within the city, not merely one. It means to have many developments for urban agriculture. Therefore as I have identified a need and am now proposing a solution, this solution is meant as one of many. It is meant a pioneer project which, like pioneer plants, would go in to the damaged site and prepare the way for future growth. Infrastructure would begin at Faraday with all the major things necessary to develop an urban agricultural project, and this would then act as the mother ship for following developments from where all the developments could be managed. The developments which follow would not need as much infrastructure as certain things can be unique to Faraday as the mother ship.

If my intervention is a seed that can be planted in other parts of the city then when the people with AIDS and other major illnesses come to Faraday they will see the

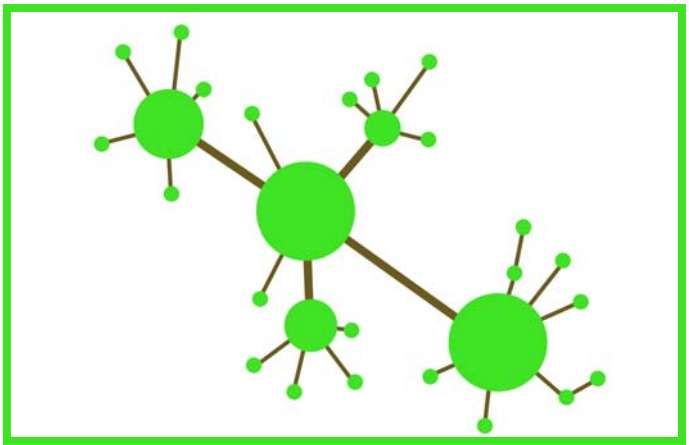


Fig. 4.19: Decentralisation. (Source: author, 2012)

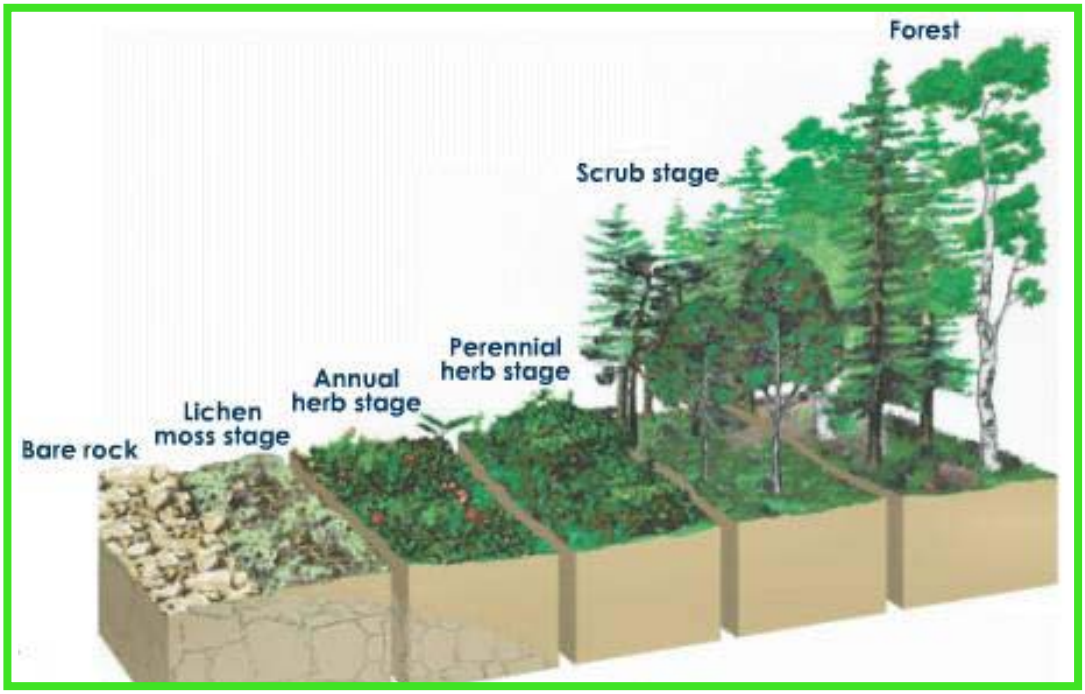


Fig. 4.20: Secondary succession in plants. This shows how a pioneer species like lichen goes into a desolate situation and prepares the way for succession of more density over time. (Source: Temperate Rainforest, 2012)

network in place and be informed of other such future instances (seeds) in the city which may be closer to where they live. On the other hand they may see those future developments and learn of the Faraday pioneer project which would cater more to their needs. Thus a network is set up which provides to the needs of the people in the city.

So, much like the Mobile City Farm in Chicago the intervention I propose can be adapted according to how the city changes, but one major difference is that the Faraday site will be a more permanent mother ship. As sites become available and need arises, more food growth can happen in the new vacant sites. As vacant land gets sold for other development the farms can be taken off them and moved elsewhere. This can be achieved through a flexible and adaptive design based on principles of biomimicry learning from how nature adapts.

I propose now other sites within the inner city of Johannesburg which could be follow-up sites to continue the growth of this development. From Faraday it is recommended that it plants out to Kwa Mai Mai as this also fulfills all the criteria for choosing a site. These criteria allow for the maximum impact to be achieved through such an intervention. From Kwa Mai Mai the next site is the Highlands cluster near Yeoville and Hillbrow. These areas are very densely populated and have very little food in them as the mapping of food in the city shows. From there Braampark is the next suggested site as it is still close to Hillbrow where it can serve many people in need. The fourth follow-up site is Gas Works near UJ and Wits University. This allows for students to benefit from urban agriculture and have access to affordable food as students are usually not wealthy.

Disseminating the Seeds



This graphic shows the recommended spread pattern for the next four installments of the model of urban agriculture developed in this thesis. These future sites are chosen acording to where the biggest impact can be made to the greatest population. Hence it starts at Kwa Mai Mai muti market, moving north to Yeoville and Hillbrow, and then to Braamfontein.

Food security is not merely a matter of producing enough food at low cost, but equally important is the human component of knowledge of what food to eat and how to prepare it as well as being involved in the production of it.

John Todd says, "If we combine our housing, and our waste treatment, and our food production, and our energy generation, all integrated in single whole systems, we can live beautifully on the planet with one tenth or less of the resources that our current civilisation uses." (DiCaprio, 2007) Cumberlidge et al. (2007: 16) believe we are currently undergoing a massive shift towards participative culture. They further say:

> Process is a key term in considering point of shared principle in this new field. Objects, buildings and designs may result from these exemplary projects but principally they are the conduit for processes of social change and not the primary objective. (2007: 20)

In most poor, food-insecure countries, the two greatest potential resources are the people and the productivity of the land and water (FAO, 2012). To defeat chronic hunger and poverty, investments will have to be made in both people and productivity. Investing in people will need to come in the form of education, clean water and sanitation, health and social services and, in some cases, direct food and nutrition support (FAO, 2012).

Beery (2012), who heads up the Siyakhana garden, suggests planning and architecture interventions must consider:

- Farmer's markets
- Transport linked to food retail
- Community restaurants and shared food preparation facilities
- Adaptive reuse of space
- Food preparation and nutrition training for households and informal traders
- Design for physical activity (non-motorised transport)
- Resource efficient design: water storage reuse and cycling of nutrients
- Adaptation and rehabilitation of unused land
- Create open spaces in which communities can interact socially, develop community cohesion and social capital

"The way we thought about the world could change that world, and the world could in turn change us." - Gregory Bateson

An architectural intervention in Johannesburg inner city should consider facilitating, based on the above, a market, community restaurants, education facilities, resource efficient design, and of course food growing space (farms). It is also useful for food security to have family farming units who are intensively trained in the technical aspects



Fig. 4.21: Community education at Siyakhana. (Source: Siyakhana, 2012)

of production, value addition, entrepreneurship, wealth creation and basic value chain management (Rukini, 2011: 228). This includes bequeathing life and survival skills to the youth in food production and preservation, home improvement and project management (Rukini, 2011: 228). This links a food security project directly to the family unit. Thus it is also necessary to provide housing in the development. This has numerous benefits as it provides housing for the families who would be working in the farms; it provides twenty four hour activity, and subsequently protection, on site; and it reconnects living with food production in a way that can increase the quality of life of the people and the quality of the inner city.

Because feedback loops are a vital component in the security and growth of any system it is necessary to also include different methods of attaining feedback in order to act on it. Feedback is needed on what people are eating, what food people want, where the population is, where food is sold and grown throughout the city, other urban agriculture, and workshops. This will create a network of food security in the city, leading to greater resilience in the food system. Other feedback concerns community networking and agricultural events, growing techniques that work or do not, food market economics, where growing space is available, and plants that grow well in the local climate. As for the building, adaptability is key to being able to facilitate the growth of plants; therefore conditions need to be constantly monitored to see where they are good for growing different kinds of foods. The design of the farms should be flexible in order to adapt and move according to this feedback. This can be achieved through a modular design. The feedback can determine how modules are arranged according to sun and plant growth.

All of this can be logged in an office that gathers feedback information in order to suggest appropriate changes in the development and monitor its growth and progress. This can also be made available to the public in order for them to gain knowledge about food through the city.

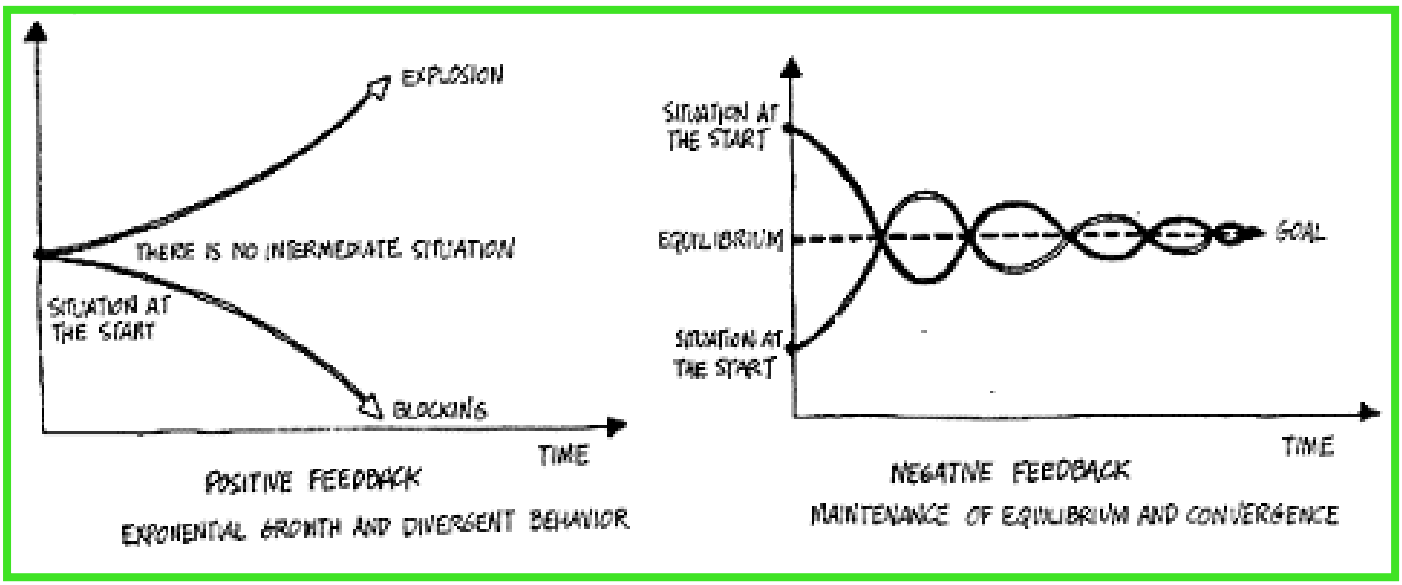


Fig. 4.22: Diagrams explaining how the two types of feedback loops work (Source: Principia Cybernetic Web, 1997)

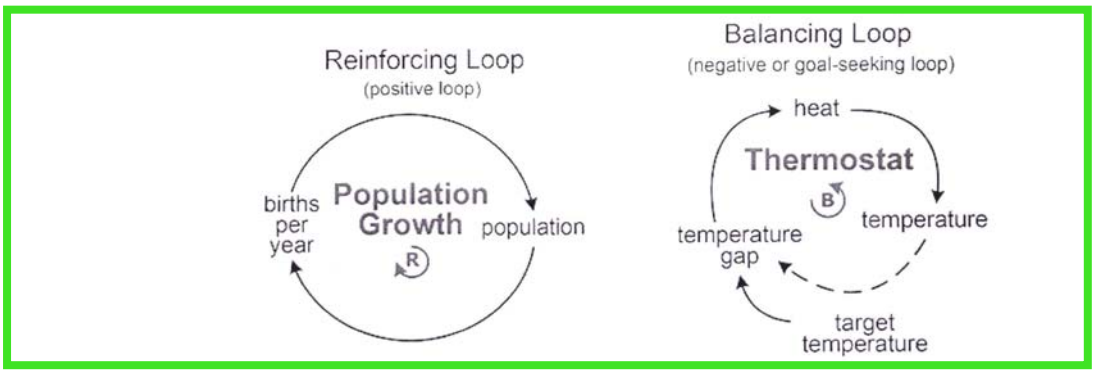


Fig. 4.23: There are examples of two types of feedback loops. Positive feedback loops continuously expand (towards infinity), while negative feedback loops try to achieve and maintain a certain level of something within the system and continuously converges towards that point. (Source: Biomimicry SA, 2012)

Below the recommended program for a pioneer urban agriculture project is laid out:

Accommodation:		Area: (m^2)	
Food production space:		5600	
• Aquaponics			600
• Permaculture gardens (including fruit & nut trees)	min.		5000
Storage space:		700	
• Tools and general storage			350
• Food storage			350
Market area		1000	
Food court/community restaurants:		600	
• Kitchen space			100
• Seating area			500
Services:		600	
• Service yard			600
• Water treatment and irrigation (incorporated in landscaping)			
• Energy system (incorporated in design)			
• Biogas digester			600m^3
Education facilities:		250	
• Multi-functional classrooms (x2)			60
• Demonstration Kitchen (link to classrooms)			30
• Gallery			100
• Library			60
Health facilities:		95	
• Nutritionist consulting room and treatment facilities			70
• AIDS and nutrition education (accommodated in classrooms)			
• Demarcated farm plots for medicinal herbs (incorporated in permaculture farms)			
• Seed shop			25
Research and monitoring facilities:		30	
• Offices			30
Development management:		390	
• Public reception and information			30
• Foyer			70
• Security			40
• Offices			250
• Toilets			
Additional offices:		400	
• To rent out to other food organisations			400
Feedback loops:		175	
• Informal theatre (min. 100 seater)			150
• Log room			25
Housing units (2x caretakers' flats)		130	
Other:			
• Covered parking for office and aquaponics employees	min.		40 bays
• Open parking	min.		30 bays
• Landscaping and public park area			
Total Area (excl. Biogas digester, toilets, energy and water systems, vertical farming area, landscaping, parking)		9370	

The Captain and the Crew

Given the social nature of the project which addresses persons infected with or affected by HIV/AIDS and people who are living below the bread line in conditions of food insecurity, the project is proposed to the Virgin Group who considers sustainable developments seriously and also invests in reducing poverty in developing countries. Richard Branson, the founder of the Virgin Group enterprises, also founded the Environmental War Room which is a board set up to address climate change through promoting environmentally friendly practices. He sees a need to address poverty in developing countries as well as to curtail deforestation which often occurs in order to make more agricultural land (Flannery, 2009).

The Virgin Group often try to connect people, as seen physically through Virgin Atlantic airlines connecting people with travel, as well as electronically in Virgin Mobile connecting people through communications. Food is a major part of life and cultures and facilitates people coming together. In a way food is a connection catalyst.

Other NGOs that are concerned with food security can hire out office space in the development, setting up a hub of food security and activity.

The development will have direct appeal to the everyday passer-by as well as informal traders and small retailers. The traders will be able to use the facilities for their own benefit through educational programs and also purchase their supplies here for selling to other people in other parts of the city. The location of this development is in closer proximity to all the major informal markets than the Johannesburg Fresh Produce Market. The public who use the building will be there to buy food, learn more about food and business, and acquire HIV/AIDS counselling.

The people who will use the main building are people in administrative positions who do the necessary paper work to keep the development organised. These will also include people who interact with the public and help the public in knowing more about the development. There will be educators to teach people about correct nutrition and growing food, the basics of business, as well as to teach people about HIV/AIDS. There will be researchers who will use the facilities to research foods and processes relevant to the South African context, as well as means for addressing food insecurity in the future.

The centre will provide employment for persons from the surrounding community through their labour in the permaculture gardens, thus allowing them the opportunity to grow their own food and directly benefit from it. People with HIV/AIDS are often unable to obtain correct nutrition for themselves and their families due to their inability to earn and income. This development will provide them will employment that will not be strenuous on them, thus allowing them food and income. There will be other members of staff also working in the gardens, as well as higher trained and more specialised persons growing the food in the hydroponic halls.

==========

==========

Fig. 4.24: The Virgin Group are the proposed client for this development. (Source: Wikipedia, 2012)



Fig. 4.25: The community in Faraday area who would benefit from this development (Source: author, 2012)