

5 | SITE & PROGRAMME



5.1 | SITE

INTRODUCTION

Fritjof Capra explains that an urban landscape like that of Marabastad is a living network of people (Capra, 2002). Marabastad's living network is in constant flux and it functions quite differently from a static environment. Although the networks within Marabastad grow and change continuously, unlike conventional cell development, which is created by the cell itself, Marabastad's parts – its people, products, economic stability and social and cultural identity rely on external sources for its existence and survival.

It is therefore imperative to identify both a site and a programme that encourage permanence and an interdependent relationship between Marabastad and informal settlements and Marabastad and the city; a site within the precinct that provides optimal conditions for a catalytic programme, allowing its energy to infiltrate into the surrounding urban fabric; and a site on which existing informal activity has opportunity for diverse programmatic development and growth

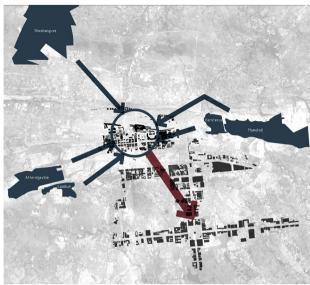


Figure 5.1. Reliance on external energies for survivial (Author, 2015)



Figure 5.2. Intention of interdependency (Author, 2015)

5.2 | SITE REQUIREMENTS

5.2.1 | IN ALLIGNMENT WITH THE URBAN VISION:

Facilitating the existing activities and networks: The mapping attempts to reveal existing threats and opportunities within the fabric of Marabastad. Identifying a site where infrastructure is able to facilitate the establishment and growth of existing activities and networks as well as allow for the development of new activities and networks is imperative. Architectural design intervention can be a catalyst in improving the livelihoods of those who rely on Marabastad as well as strengthen its urban fabric.

Creating public space: There is a need for designated public space which links the urban fabric and improves legibility. Public space also provides opportunity for public interaction and social cohesion amongst a diverse community. By ensuring accessible public space through the provision of adequate infrastructure, opportunities are bound to arise on-site that would cater for the needs of people (Hamdi, 2004).



Designated pedestrian walkways:

Designated pedestrian walkways need to be provided along busy pedestrian routes to increase pedestrian accessibility and safety from high speed traffic.

Opportunities were identified by investigating existing as well as preceding and potential activities and networks. In doing so an understanding of what Marabastad was in the past, what it is currently and what it could be in the future could be explored.

5.2.2 | LOCATION REQUIREMENTS

The site needs to be:

- Suitably positioned with the intention of uplifting surrounding urban fabric. It should be located where it is able to improve the legibility and accessibility of the precinct.
- In close proximity to natural resources with the intention of uplifting the natural environment. e.g. Steenhovenspruit
- In close proximity to the city in assisting and promoting the interdependency and physical integration of the two urban conditions

- In close proximity to various modes of public transport ensuring the site's connectivity to surrounding areas. A site that connects various transport nodes often guarantees high pedestrian movement.
- High pedestrian movement (which is different from vehicular movement as it allows for direct economic and social interaction) generate increased energy flow and ensures a constant flow of people through the site throughout the day.

5.2.3 | URBAN REQUIREMENTS

• Support existing urban fabric:

The chosen site should have potential to strengthen the remaining urban fabric as it has heritage significance. Existing infrastructure and services should be upgraded and expanded with the intention of uplifting the current urban environment.

• Existing formal and informal:

As stated in the theoretical discourse, one of the main design intentions is to investigate how architecture can be a tool, promoting the co-existence of the formal and the informal. Elements of formality

have established themselves within the informality of Marabastad and the analysis of this can inform appropriate development. It is therefore necessary that the chosen site has both formal and informal qualities.

Socio-economic opportunity in existing trade and transport networks:

The 'community' of Marabastad relies on economic vigour generated by trade and transport networks. The site therefore needs to support the existing economic opportunity while also promoting new socio-economic opportunities. Places where trade and transport currently exist ensure the relevance of developing an economic node further and encourage social integration.

Informality:

Informality develops and adapts according to the needs of a place. The presence of informal activity is therefore useful in identifying these needs. Informality is also often not provided with sufficient infrastructure and this hinders its establishment and growth. Observing the numerous degrees of informality will also allude to how space is used through adaptation and re-appropriation. This will inform appropriate solutions to spatial, functional and infrastructural needs.



A site where activities require a range of spatial solutions will inform a richer response through a variety of architectural interventions and implementations. Informality develops along high movement routes, therefore alluding to nodes of energy and high pedestrian movement.

5.2.4. PROGRAMMATIC REQUIREMENTS

Growth and establishment:

Opportunity in the existing environment needs to be identified where an architectural intervention would be catalutic within its context by enabling the growth of existing activities and networks; while also creating potential for the establishment of new activities and networks that will promote programmatic diversity. Within the urban framework, the introduction of numerous catalystic interventions within Marabastad will uplift the urban condition by promoting diversity, adding richness and strengthening its urban fabric. Marabastad has the potential of becoming a destination within its context through encouraged stability, permanence and independence.

Cultural identity and cohesion:

Where Marabastad was once a place of cultural and racial expression that

offered blacks, coloureds and Indians a sense of belonging and community, it now experiences a loss of identity and attachment by all cultures and races and a complete lack of public and social space. Understanding Marabastad's cultural history - what it was in the past, what it is currently and what it could be in the future - is important in proposing suitable site conditions for a public and social space. These places have the potential of becoming places of livelihood where everyday activity extend beyond the current transitory nature of Marabastad (Hamdi, 2011).

• Potential for public space:

Marabastad lacks public space as a result of the dominant occupation of trade and transport networks. Public space needs a catalytic activity. The development of public space around existing activities that have the potential of mediating activity and anchoring the energy, can facilitate in the creation of infrastructure, to aid activities and networks (Capra, 2002:234).

• Socio-economic environments:

Spaces with various layers of informality could become the site of not only economic engagement but social interaction and activity too (Hamdi, 2011). In accordance

with the urban vision, there is a need to promote not only economic development, but also social and cultural development. Identifying a site where social activity is evident (even if only slightly) or where there is potential for social integration will provide a platform for further development of the social sector. Existing activities onsite or in the surrounds should be catalysts in supporting and promoting social engagement through public space.

CONCLUSION

The support and facilitation of existing activities and networks would allow for the development and expansion of the existing urban fabric and create platforms for further opportunity, introduction of new programmes and increased diversity. Furthermore these spaces with various layers of informality could become sites of not only economic engagement, but social interaction and activity too. These places of informality have the potential of becoming places of livelihood where everyday activities extend beyond the current economic vigour and transitory nature of Marabastad (Hamdi, 2011).



5.3 | PROPOSED SITE

The proposed site is along 11th Street, from the Belle Ombre Metro Station, along the West of the sub-station up until Boom Street.



Figure 5.3. Site in macro-context



Figure 5.4. Site in micro-context



Figure 5.5. Significant buillings & sites adjacent site



5.3.1 | SITE DESCRIPTION

There are a variety of formal and informal activities on-site:

- On the north of the site is the African Affal Depot, which is an informal butchery - specialising in cow heads, skin and hooves.
- West of the informal butchery is an informal meat market where the cow meat and other cow 'affhal' (intestines, stomach, and lungs) are sold from numerous small informal stalls.
- Buildings (some of which have heritage value) on the West edge of the site, are occupied by formal trading. Formal activities situated along the western edge of the site (From North to South) incude: a hairdresser, clothing stores, empty shed, herbalist, formal butcher, wholesaler, textile stores, supermarket (selling non-perishable goods) and a dentist.
- On the corner of 11th street, fruit and vegetables (that come from the Marabastad market) are repacked and distributed within Marabastad, to the CBD and to the informal settlements.



Figure 5.6. Informal bovine butcher (Author 2015)



Figure 5.7. Informal meat market (Author 2015)



Figure 5.9. Fruit & vegetable distribution (Author 2015)



Figure 5.8. Formal shops (Author 2015)



- On the east of the site there are two light roof structures, one with a small formal fruit and vegetable market which sources its products directly from the distribution point and the other adjacent shelter it is a small craft market.
- Attached to this more formal structure are numerous informal vendors selling fruit, vegetables and sweets.
- There are public ablutions on the Southwest of the site.
- Situated adjacent the ablutions on the most Southern side of the site bordering Boom Street are 4 informal restaurants.
- The Steenhovenspruit runs underground west of the substation.



Figure 5.10. Fruit & vegetable market (Author 2015)



Figure 5.12. Informal restaurant (Author 2015)



Figure 5.11. Craft market (Author 2015)



Figure 5.13. Steenhovenspruit goes underground (Author 2015)



5.3.2 | SITE JUSTIFICATION

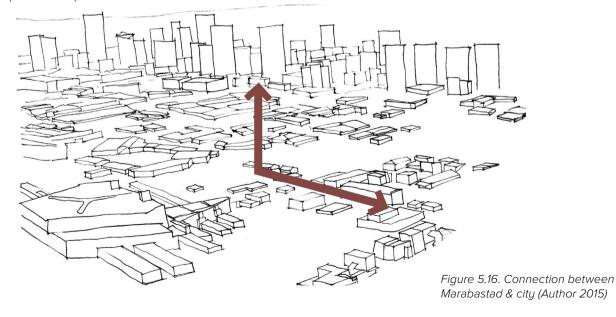
- Both existing formal and informal activity are evident onsite.
- The Steenhovenspruit runs east of the site. The proposed site is significant because it is the site where the Steenhovenspruit goes underground. There is an opportunity to access this natural water source on-site. The site and programme intend to create an interface in which the public are able to enjoy and more easily access this natural resource and acknowledge the submergence of the Steenhovenspruit. This public interface will also be functional is assisting during flooding. (Aziz Tayob Partnership, 2002:207) Exposure to the functional use of the water on-site from the Steenhovenspruit will also celebrated.
- The site is located on the fringe of Marabastad and therefore in close proximity to the CBD. The proposed intervention is intended to become a significant space within Marabastad improving legibility and accessibility. It therefore offers the opportunity of being a gateway between Marabastad and the city, encouraging physical



Figure 5.14. Steenhovenspruit goes underground (Author 2015)



Figure 5.15. Site as gateway to city (Author 2015)





integration by providing a good location for a catalytic programme.

- Most growth enterprises are close to the Belle Ombre Station. In alignment with The Tshwane City Vision for 2055, a proposed BRT station will be located South-East of the site along Boom Street. The implementation of the BRT station will result in a significant increase in pedestrian traffic between the Belle Ombre Metro Station and the new BRT Station, across the proposed site. This will ensure high pedestrian traffic as well as a constant flow of people through the site. The development of the site as a designated pedestrian walkway promotes the use of both the Belle Ombre Station and the BRT therefore supporting transport infrastructure.
- With the predicted increase in pedestrian movement along 11th street and the high speed traffic on this road, the urban framework proposes the site as a designated pedestrian walkway (from Belle Ombre Station to Boom Street). This is achieved by proposing a new vehicular road from Belle Ombre Plaza straight through to the informal taxi rank west of the Belle Ombre

Station, allowing vehicles (especially taxis) to move more directly to the taxi rank and enabling a safe pedestrian space.

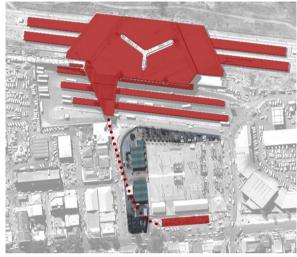


Figure 5.17. High pedestrian movemnt between modes of public transport (Author 2015)

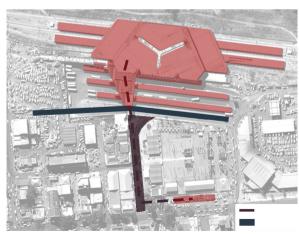


Figure 5.18. Proposed pedestrian walkway & extension of 11th street (Author 2015)

5.3.3 | SITE CONDITIONS

- The site comprises of both formal and informal activities - providing the design challenge to integrate these two effectively.
- The site has numerous layers of informality and through the observation of underlying formality within this informality, appropriate development can be prompted.
- Informality was identified where potential for intervention would be catalytic to existing networks as well as promote new networks encouraging functional diversity.
- The activities that exist on-site offer huge diversity and the potential for cohesion between programmes.
- The chosen site has numerous generators of activity which involve the participation of the community and is therefore ideal in creating public interactive space that encourages participation and social cohesion as well as improving livelihoods (Relph, 1976:128). The development of public space around existing activities that



have the potential of mediating activity and anchoring the energy can facilitate in the creation of infrastructure to aid existing networks and deal with existing resources (Capra 2002:234).

5.4 | SITE ANAYLSIS

Conditions of the site: threat and opportunities – what to latch onto and what to improve.

NEGATIVE SITE CONDITIONS

- Orientation
- Site slope
- Vehicular pedestrian movement
- Physical inaccessibility
- Scale difference and sub-station visually impeding
- Existing structures
- Lack of infrastructure

POSITIVE SITE CONDITIONS

- Natural elements
- Pedestrian movement
- Transport nodes and routes
- Trade formal and informal
- Edges

GENERAL OBSERVATIONS

Lack of designated public space and social interaction
Lack of infrastructure
Lack of platform for growth and development of the existing
Lack of efficient use of resources

5.4.1 | NEGATIVE SITE CONDITIONS

A_ORIENTATION

• Site orientation with short axis East-West

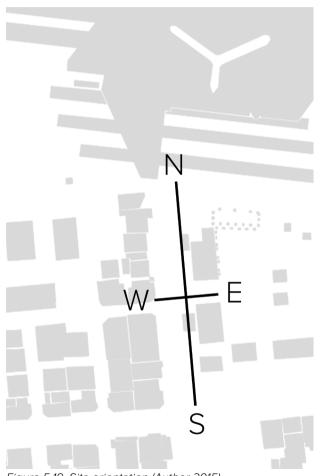


Figure 5.19. Site orientation (Author 2015)



B_SITE SLOPE

• Site slope of 4m

Figure 5.20. Site contours (Author 2015)

C_VEHICULAR & PEDESTRIAN MOVEMENT

- Detour route for vehicles through site
- High speed traffic
- High pedestrian traffic

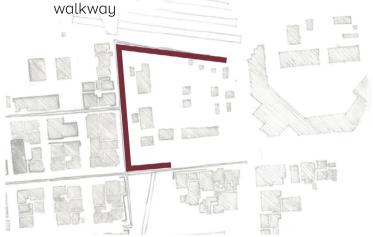


Figure 5.21. Vehicular & pedestrian movement conflict (Author 2015)



D_PHYSICAL INACCESSIBILITY

- Fence reduces access to activities, hindering economic opportunity
- Lack of sufficient designated pedestrian





 Consideration of varying scales: large scale of the City, the sub-station, Belle Ombre Station and small sclae of Marabastad

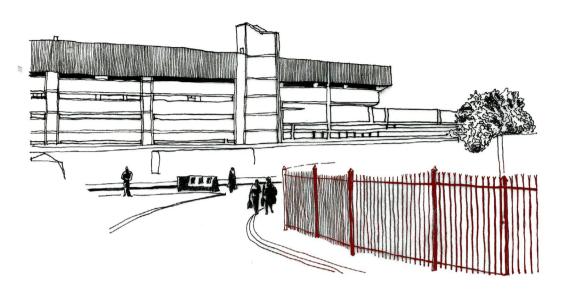


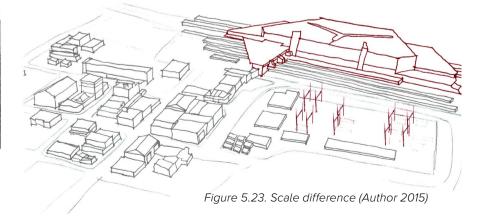
Figure 5.22. Fence as barrier (Author 2015)



Figure 5.24. Belle Ombre Metro Station (Author 2015)



Figure 5.25. Sub-Station (Author 2015)





F_EXISITING STRUCTURE

- Temporary
- Does not facilitate all programmatic needs

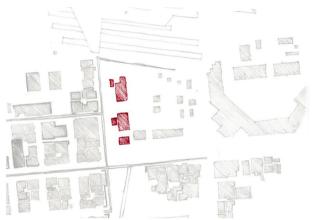


Figure 5.26. Figure ground of existing structures (Author 2015)

Figure 5.27. Location of extisting structures (Author 2015)

G_LACK OF INFRASTRUCTURE



Figure 5.28. Make-shift meat storage (Author 2015)



Figure 5.29. Unhygenic meat preparation (Author 2015)



Figure 5.30. Lack of shelter from elements (Author 2015)

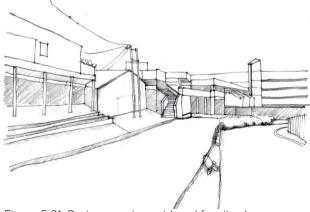


Figure 5.31. Drainage not considered for site slope (Author 2015)



POSITIVE SITE CONDITIONS

A_LOCATION

Location ideal for gateway between City and Marabastad

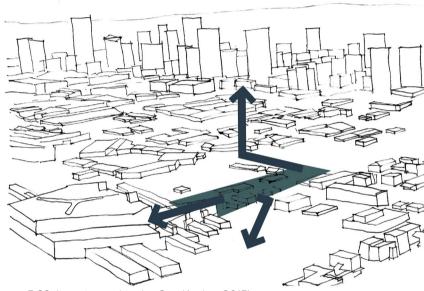


Figure 5.32. Location within the City (Author 2015)

Figure 5.34. Existing structure (Author 2015)

B_EXISITING STRUCTURE

Material can be re-used

C_NATURAL ELEMENTS

- Accesible water from Steenhovenspruit
- Exsiting trees providing shade



Figure 5.33. Natural elements (Author 2015)



informal elements (Author 2015)

D_SELF-ORGANISATION AND ADAPTABILITY

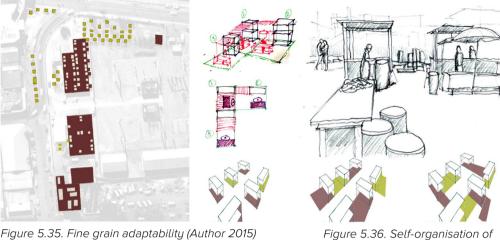


Figure 5.35. Fine grain adaptability (Author 2015)

Figure 5.37. Temporality allows adaptability (Author 2015)

E_FORMAL AND INFORMAL ACTIVITIES

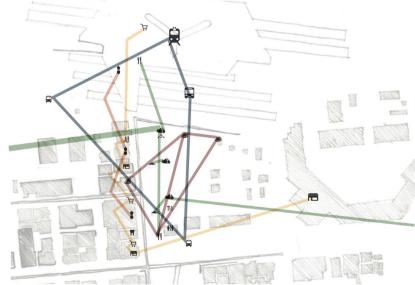


Figure 5.38. Co-existence of formal & informal activities and networks (Author 2015)





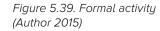






Figure 5.40. Informal activity (Author 2015)



5.5 | PROGRAMME

INTRODUCTION

The intention of the design intervention is to re-house the existing informal activities, and through provsion of appropriate infrastructure provide a platform for socioeconomic establishment and growth.

Create permanence and socio-economic opportunity by:

- 1. Unleashing the capacities and resilience of the majority through an opportunistic approach which supports underapprehended forms of urban life seen as informality and encourages its development and growth within Marabastad.
- 2. Encouraging economic and social cohesion that improves the livelihoods of those in Marabastad by creating public space that exceeds the limited social interaction evident in the transitory nature of transport and retail networks instilling a greater sense of permanence within Marabastad.

The programme is directly informed by the site conditions, activities and networks onsite. The intention of the programme is to support the growth of existing activities and

networks and promote the establishment of new programmes and networks. Provision of appropriate infrastructure through architectural design intervention will assist in creating platforms for establishment and growth of multi-functional programmes adding diversity and richness to the site. In alignment with the urban vision and with consideration of Marabastad's rich tangible and intangible memory, the intention is to celebrate Marabastad's economic vibrancy and cultural diversity. The programme therefore intends to identifu social and economic opportunities and provide opportunities for their co-existence within the programme. Supporting socioeconomic opportunities will increase livelihoods of those in Marabastad. The activities on-site are part of important networks and combined, have the potential to support a socio-economic programme.



5.5.2 | INVESTIGATION OF PROGRAMME

1. THE AFRICAN AFVAL DEPOT

Description:

The African Affal Depot is an informal butcher specialising in bovine heads. A group of 6 men work under a simple covered structure with two concrete counters; one on which they store the delivered bovine heads and the second on which they skin the bovine heads. The skinned heads are then transferred onto the tar surfaced ground where they are 'stored' before being chopped up for their meat. An old tree stump is used as a surface for the chopping process. A lack of infrastructural support has compromised the health and safety of the bovine butcher.

Programmatic and architectural issue:

- There are too few working counters, resulting in unhygienic alternatives for meat preparation and storage.
- The existing concrete counters are not appropriately sealed preventing them from being cleaned properly – a process which is imperative when working with raw meat.

• The tar floor surface also prevents cleanliness as its texture catches meat and blood.

Infrastructural:

- Lack of an effective, filtering drainage system results in blood and pieces of meat and cartilage running into public space and collecting in pedestrian passage ways.
- Lack of allocated waste deposit bins and refuge collection has resulted in an increase in flies and undesirable smells in a public area.
- Limited access to water and a complete lack of access to hot water contributes to inefficient cleaning procedures
- The lack of sufficient storage and cold rooms results in the meat sitting in hot conditions before and after its preparation – decreasing its shelf life and health safety.

Successful aspects:

 The existing structure allows sufficient ventilation which is important in a space where meat is prepared. The process of preparing the bovine head meat is a sociable one with high interaction between different butchers.

Programmatic intention:

- Provide larger working spaces that cater for all steps of the meat preparation process.
- Consider appropriate use of material that allow for cleanliness.
- Provide water points that provide clean hot and cold water: cold water to be used for meat preparation and hot water for cleaning.
- Ensure adequate drainage of meat and unclean, bloody water.
- Maintain good ventilation of the space
- Maintain social interaction between butchers.

In an environment that is largely saturated by monotonous economic solution, the African Affal Depot which skins, chops and sells the bovine head meat, has been innovative in having identified a unique economic opportunity within the community of Marabastad. The African Affal Depot





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2. THE INFORMAL AFVAL MEAT MARKET:

Description: The informal meat market is an exterior space in an area populated with trees. The site was provided with stalls in 2000, however the stalls were too small and did not facilitate all the meat market's functional needs. This has led to a reappropriation of the provided stalls and the attachment of new makeshift stalls resulting in a disorderly space.

Issue:

- Insufficient space provided by stalls has resulted in the attachment of new makeshift stalls for selling meat.
- Lack of storage provision led to the orginal provided stall being used for meat preparation and for storage.
- Meat is stored in soiled water, in plastic refuge bins as a result of a lack of cold rooms for storage.
- Lack of adequate services such as water and proper drainage.
- Lack of well-considered ventilation has led to an increase in flies which sit on the meat creating unhygienic conditions for the selling of meat and questionable health issues.

Successful aspects:

 The site allows for the re-organisation of individual space which is necessary in allowing the specific needs of each vendor to be met.

Programmatic intention:

- Allocate a larger space which accommodates meat storage, preparation and selling.
- Provide water points that provide clean water. There is a need for cold water used for meat preparation and hot water for cleaning.
- Ensure effective drainage with filter systems to prevent contaminated water from entering natural systems and water storage.
- Provide allocated waste disposal points.
- Ensure sufficient ventilation of the space to reduce flies.

There is an opportunity to observe the existing conditions and provide both infrastructural and spatial needs for the informal meat market. Provision of sufficient infrastructure will ensure the hygienic preparation and selling of meat and create awareness of the importance of health

and safety. The provision of appropriate infrastructure, increases the opportunity for an established meat market, where a greater variety of meat can be sourced and sold under hygienic conditions.











Figure 5.42. Informal meat market (Author 2015)



3. INFORMAL FRUIT AND VEGETABLE MARKET STALLS

Description:

As with the stalls provided for the meat market, two roofed structures, with indicated stalls were provided as a fruit and vegetable market. An increase in vendors and therefore an increase in the demand for space has resulted in an increased number of informal stalls – able to set themselves up in optimal spaces on-site they obstruct the vendors occupying the formal structure. A palisade fence intended to allow the site to be locked at night makes access to the market difficult in the day decreasing the economic potential of the activities.

Issue:

- The lack of storage results in vendors either having to unpack and repack their stock, to store in containers on-site or having to sleep on-site to watch their stock. Squatting threatens the urban condition.
- The site is fenced off reducing accessibility by pedestrian movement to activities using the formal structure. This has resulted in the informal inhabitation of more accessible space onsite with the decreasing use of the provided structure.

- Lack of services such as water compromises the hygiene of the market space.
- Lack of lighting compromises the safety of the site at night.

Programmatic Intention:

- Provide storage for vendors that relieve them from having to unpack and repack and transport stock each day.
- Provide more vendors opportunity to sell products by increasing market size.
- Increase accessibility of site activities (fruit and veg vendors) by relocating the market along the pedestrian movement route.
- Provide hygieni water and drainage services.
- Include sufficient lighting within the design to improve surveillance and safety.

There is an architectural opportunity to support the dominating fruit and vegetable activities and networks. Provision of more space for an increase in the number of vendors will be justified and feasible by increasing the pedestrian accessibility to the fruit and vegetable market. The intervention will need to increase access to the site without compromising safety.













Figure 5.43. Fruit & vegetable market (Author 2015)



4. FRUIT AND VEGETABLE SORTING AND DISTRIBUTION

Description:

The open, unsheltered space occupied by fruit and vegetable re-packaging and distribution is located alongside 11th street at the West access point from the Belle Ombre Station. Fruit and vegetable distribution is a seemly disorderly process and considered a back of house activity that does not require the direct interaction of the public. It is, however, located in a prime spot with public exposure, in a space that would be more appropriate for activities which require pedestrian movement. The area lacks storage space for packaging materials.

Issue:

- Occupies a highly public location more suitable for trade activities.
- The fruit and vegetable distribution area also lacks shelter from natural elements (sun and rain).
- Lack of waste removal and lack of storage for produce boxes and packaging results in storage of un-used packaging along the pedestrian path, visually blocking the meat market and fruit and vegetable market.

Intention:

• Creating an open plan structure that offers shelter from sun and rain.

- Situate the point of fruit and vegetable distribution in close proximity to the fruit and vegetable market to facilitate easy movement of products between the two programmes. Allow for easy movement of products through provision of ramps.
- Provide storage for packaging where it can be easily collected for recycling.

Opportunity for architectural design solution in providing an appropriate roofed structure for sorting and distribution of fruit and vegetables. The structure should facilitate the re-use and recycling of produce packaging. Encouraging the site as a point of distribution will support the existing fruit and vegetable markets on-site.



Figure 5.44. Fruit & vegetable distribution (Author 2015)



5. INFORMAL 'RESTAURANTS'

Description:

The site is occupied by 'informal restaurants' along Boom Street. Meat is 'braaied' (cooked over an open fire) in portable 'braais' by the 'owner' of the 'restaurant'. Each 'restaurant' is made up of a table or two where condiments and juice are served to accompany the meat. The evidence of social activity and interaction is a positive platform, encouraging social cohesion, more meaningful interaction and a sense of community within Marabastad.

Issue:

- Lack of infrastructure results in having to pack up the restaurant each day.
- Numerous portable, open braais pose a fire safety risk.
- Lack of gas for cooking limits food preparation options.
- Lack of water accessibility for cooking results in use of the ablutions as a water point.

Intention:

- Create stronger connections between butcher, meat market, fruit and vegetable market and informal restaurants so that they are able to support each other.
- Safe communal fire places for braaing.
- Safe implementation of gas for cooking will improve the opportunities for food preparation.
- Provide water and drainage services to assist in hygienic preparation of food and efficient functioning of food preparation spaces.

Successful aspects:

- Social interaction between restaurants is positive and should be further encouraged.
- The existing programmes of butchery, meat market and fruit and vegetable market provide the ideal programmatic and urban opportunity to introduce a public space which encourages social interaction and in so doing, further enhances the economic opportunity.

• The importance of designing designated public space is imperative as currently all vacant space is occupied by either retail or transport. There is an opportunity for economic and social cohesion where the meat market and fruit and vegetable market provide products directly to an informal restaurant. Meat can be chosen by the customer and cooked at the informal restaurant, where their meat will be served with salad, fruit, vegetables and starch.





Figure 5.45. Informal restaurant (Author 2015)



CONCLUSION

{Meating the Beef Bar}

The collaboration of an informal butcher, meat market, fruit and vegetable market and informal restaurant serves as a platform for socio-economic prosperity.

There are many layers of informality which add richness to the site by informing a multi-functional programme. With the consideration of Marabastad's rich tangible and intangible memory, the programme intends to celebrate Marabastad's economic vigour as well as cultural and social diversity.

The activities on-site are part of important networks which need to be supported through a socio-economic programme. Marabastad's richness in culture, food and trade will be enhanced by collaborating these aspects into a programme that not only supports Marabastad as an economic destination within the city but as a social destination too. This will encourage the movement of people to Marabastad (and not only through Marabastad) where they can enjoy the character of a place with social and economic vigour, reminiscent of its past and promising for its future.

TABLE 1: SERVICES & INFRASTRUCTURE REQUIREMENTS

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Y	X	X	X		X	X	X		X	
A	X	X	X			X	X		X	
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	X	X	X				X			
O	X									X
솄	X									
٣1	X	X	X	X	X	X	X		X	X

Figure 5.46. Programmatic services & infrastructure (Author 2015)

TABLE 2: SPATIAL REQUIREMENTS

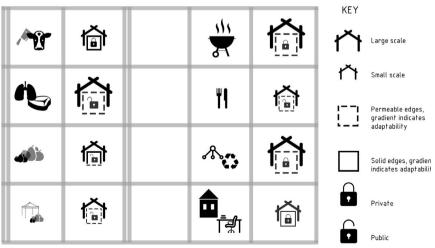


Figure 5.47. Programmatic spatial requirements (Author 2015)



5.5.3 | PROGRAMMATIC FLOW

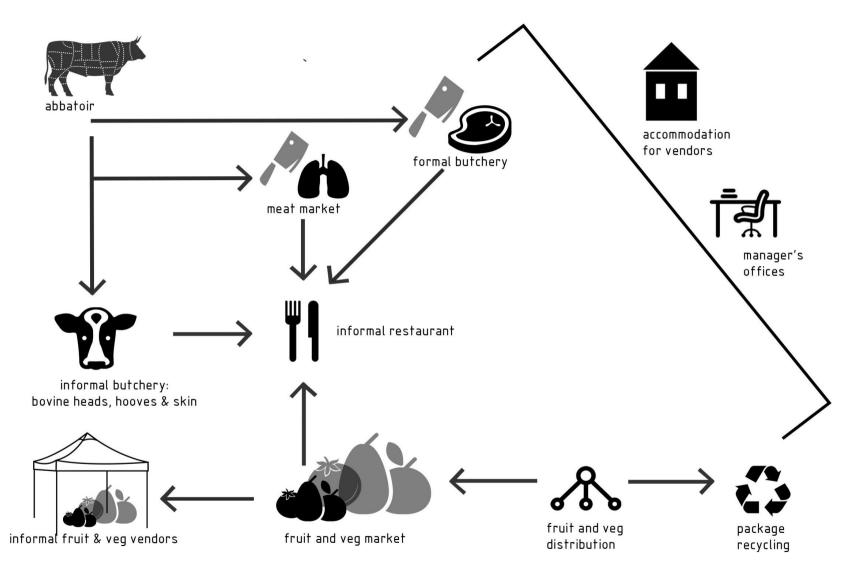


Figure 5.48. Programmatic flow (Author 2015)