

Site analysis

The site analysis investigates the following concepts:

- The Pretoria West Power Station as a discarded space
- Regenerating the Pretoria West Power Station through movement, activity and social interaction
- The prevailing social themes in the Pretoria West Industrial area

Discarded space

The discarded Pretoria West Power Station will act as a laboratory to demonstrate sustainable community integration with the production process and the urban fabric.

In order for the production process to function as an ecosystem (fig: 39-) it needs to be cyclical (process orientated) and not linear (product orientated). The problem with the linear approach to production is the creation of waste that is discarded, and processes are implemented to yield an optimum product irrespective of the effect that it might have on the ecology. Potential concepts for form-generation in the cyclical approach where waste equals food will produce creativity and emergence; key aspects to address challenges on various scales and levels.

The spontaneous emergence of order at critical points of instability is one of the most important concepts of the new understanding of life. It is technically known as self-generation and is often referred to simply as 'emergence'. It has been recognized as the dynamic origin of development, learning as evolution. . . And since emergence is an integral part of the dynamics of open systems, we reach the important conclusion that open systems develop and evolve. Life constantly reaches out into novelty (Capra, 2002: 14).

Mcdonough (2002: 103) raise a very important question that associates the concept of process with community and product with the individual:

What would have happened, we sometimes wonder, if the Industrial Revolution had taken place in societies that emphasise the community over the individual?

A community is a network of processes. Williams (2007: 45) defines the elements of a community as land and structures, people and their socio-cultural activities, and business and educational institutions; all vital and interconnected. As a result, improvement to one simultaneously enhances the others, and degradation to one degrades the others. What good is it to solve an economic problem if, by doing

so, it increases air pollution and other environmental problems? What good is a solution to an environmental crisis if it wrecks economic havoc on its citizens?

In either case, the community as a whole suffers. The idea of community is central to ecology where materials and energies constitute to create the forms and patterns of the community, and these constituent elements are characteristics of the community's scale and size (Williams, 2007: 69).

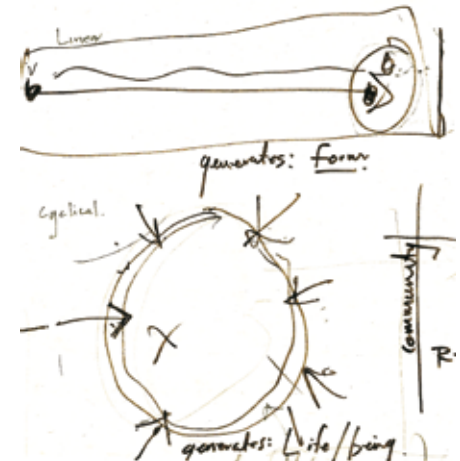


Figure 39. In order for the production process to function as an ecosystem it needs to be cyclical (process orientated) and not linear (product orientated): Author 2010.

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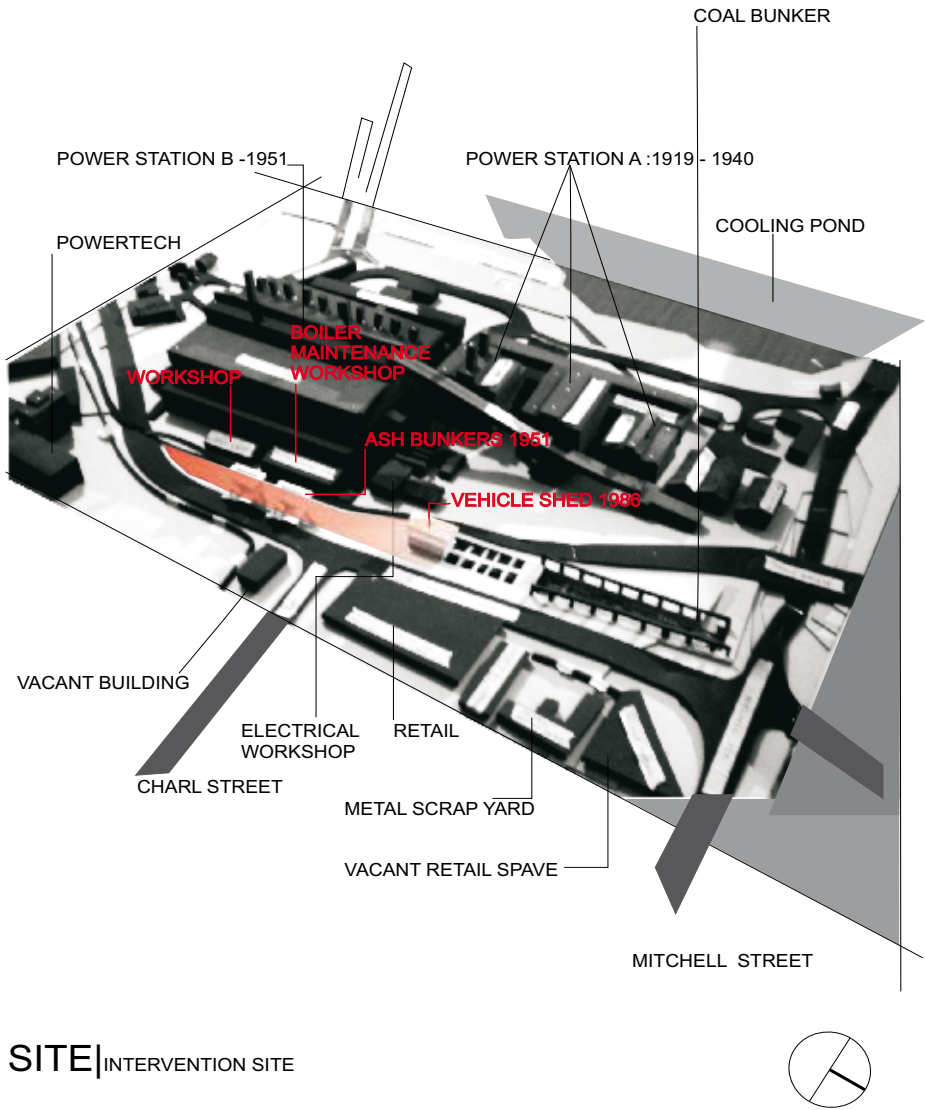


Figure 40. Existing conditions at the Pretoria West Power Station: Author 2010.

The concept of the individual, drawn to socially accepted pleasures, is useful to an expanding capitalist economy as it fuels consumption (Hill, 2006: 43).

Today most so-called durables are tossed. Who on earth would repair a cheap toaster today? It is much easier to buy a new one than it is to send the parts back to the manufacturer or track down someone to repair it locally. Throw away products have become the norm (Mcdonough, 2002: 92).

The action of consuming thus generates a sense of wellbeing and safety to the individual. Consumable commodities provide assistance and security that isolate individuals to function on their own, with little or no help from others, only to weaken the sense of community. Hill (2006: 21) states; the myth of a mass-produced commodity is somehow individual and can transform and define an individual, leading to a capitalist economy that generates ever-expanding cycles of consumption that cultivate rather than resolve feelings of personal inadequacy.

Societies that value community, will value the in- and outflow of energies and the consequences that it might have on the rest of the network where services and products are produced. On the other hand, an individual oriented society focuses on the most effective and economically viable product, irrespective of the in- and outflow of energies and its consequences.

The discarded Pretoria West Power Station (fig: 40) will be explored as a laboratory to demonstrate sustainable community integration with the production process and the urban fabric.

Building program

The building program emerged to be a production process that moves away from a linear approach to a cyclical approach. It is in this cyclical approach to production that emerging opportunities will have the capacity to address the regeneration of the urban fabric.

In keeping with the regenerative approach to discarded objects and memory of energy production (Pretoria West Power Station), the emergent program is to use discarded objects (used cooking oil) to produce energy (bio-diesel). The production of bio-diesel presents an environmentally-friendly and sustainable process that would have a positive impact on the community through training, job creation and the provision of a much-needed energy resource.

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STRUCTURES **SUNKEN** AND RAISED LANDSCAPES

0m 250m 500m



Figure 41. Pretoria West Power Station: Existing Structures: Author 2010.

Discarded space in the industrial city [destruction breeds creation]

All industrial space that exists does so because it was possible to sink its foundations in logic (Mueller, 2009: 33). The development of the Pretoria West iron industry in 1930 led to major factories being developed along Mitchell Street; an area originally developed in 1910 as single middle class and workers' houses (PWIF, 2004). The function of these factories was mostly related to the iron industry due to its location and direct link to the rail.

In December 2004 ArcelorMittal (formerly known as ISCOR) announced the relocation of its head office from Pretoria to Vanderbijlpark. Downscaling of its Pretoria works (fig: 42) commenced in the early 1980s. A planned rehabilitation program was implemented and the demolition of the plant and buildings, and the moving of large volumes of potentially hazardous material was completed without any negative environmental impact (ArcelorMittal Steel South Africa limited annual report, 2004).



Figure 42. ArcelorMittal (March 2010), Pretoria West, City of Tshwane: Author 2010

This relocation had an effect on the remaining functions of the factories in Mitchell Street. Today the industry is predominately car related.

The Pretoria West Power Station (fig: 41), another key industrial generator in this area, faces an uncertain future, with conversations by the City of Tshwane Municipality to close it down due to its low energy contribution and economical inefficiency. The total power demand of the City of Tshwane Metropole is 1800mW with only 160mW (8,8%) supplied by the Pretoria West Power Station (when it runs at full capacity). Rooiwal Power Station supplies 200mW and Eskom 1440mW (Massut, 2010).

The first power station in the City of Tshwane Metropolitan Municipality was constructed in 1892 at the present Tram Shed in Schoeman Street. It soon became evident that the above site was too restricted in terms of area and facilities (it had no rail access) to accommodate the increasing amount of generator plant required to deal with the growing demand for power. In 1919 a new site was selected on Mitchell Street, Pretoria West. There was access to it by rail and road and a dam could be constructed to provide cooling water for the power plant (Massut, 2010).

The initial capacity of 9mW at the Pretoria West site, subsequently called the 'A' Station (fig: 40), was increased as demand for power increased and in 1940 the capacity was increased to 54mW. In the same year a report was submitted to the city council to increase the capacity by a further 37,5mW. The plant for this extension was ordered in 1940 but owing to the war it was only fully commissioned in 1949. The "A" station was shut down in 1975 due to the high operational and maintenance costs (Massut, 2010).

The design of a further extension to the Pretoria West site, the current 'B' station, commenced in 1949. The station with an installed capacity of 180mW consisted of six 30mW steam-driven alternators. The first two alternator sets were commissioned in 1952 and the last set in 1960 (Massut, 2010).

When the operation of the Pretoria West Power Station terminates, this discarded space could through emergence reinvent itself; just as Barcelona reinvented itself when its port died. Cities are where human beings live, and cities do rethink themselves (Mueller, 2009: 36).

Regeneration

[i am frequently asked: how can we transform failing cities into thriving cities? But there is no magic formula (Solzi, 2009: 56)

Urban regeneration was defined in the introduction as a process whereby an area is rehabilitated or improved through the creation of a sustainable ecology between economic and ecological networks. The aim of regenerating the Pretoria West Industrial Area is to reconnect renewable energies and resources to the urban form. Only then will this industrial urban cell be in a position to emerge as a sustainable community, and reconnect and support the central business district of the City of Tshwane.

Much of the current thinking in urban and community design focuses on the form of neighbourhood and community. In these projects, many important objectives are stressed: walkable neighbourhoods, small scale streets, good edge definition, design, and location of town and neighbourhood centres, transportation, and community gathering places. However, long term sustainability is not achievable in these communities, as they rely almost entirely on non-renewable energy. No matter how charming the pattern, any biological community, including the human community, must tie its long term development and use to sustainable energies and resources that are resident to the place. When resources dry up, so do communities. A sustainable urban and community pattern comes from understanding and connecting and adapting to local sustainable resources (Williams, 2007: 69).

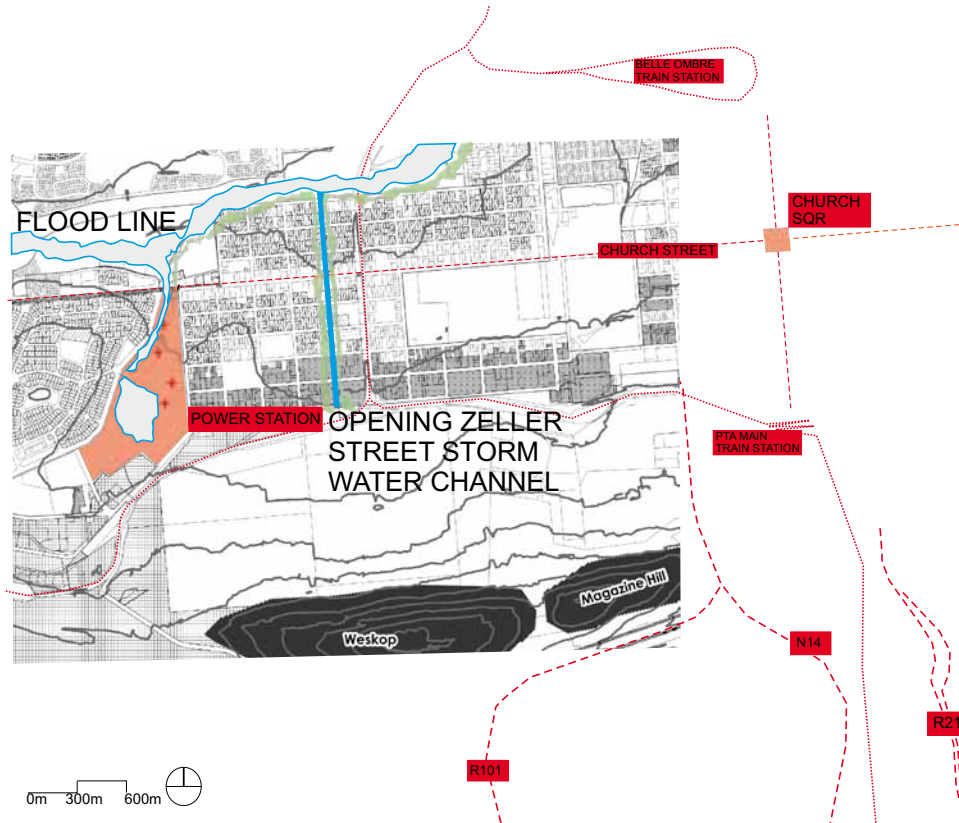


Figure 43. Main movement routes linking to the Pretoria West Industrial Area: Author 2010.

Both Norquist (2009: 51) and Halliday (2009: 58) suggest that the modern urbanists should go back to the basics of urban design. Norquist argues that in an urban context the time tested practice of connecting the natural system to the urban system is based on movement, activity and social interaction.

These concepts will be explored and applied to the Pretoria West Industrial Area, the Pretoria West Power Station and the proposed bio-diesel plant.

Movement

The short-sightedness of leading thinkers in design is often only revealed through time. The great modernist Le Corbusier said; 'kill the street', meaning get the pedestrians and pavement cafes and other obstacles out of the way of traffic (Halliday, 2009: 58). His propaganda was aimed at eliminating emerging connections and focusing on the functional.

Urban planners lose sight of the benefits of chaos. They forget that without pedestrians to slow them down, cars are apt to go too fast and kill their drivers, and without the eyes of the cars on them, pedestrians can feel vulnerable and isolated. Cities laid out on apparently rational, where different specialised facilities – houses, shopping centres, offices – are separated from one another across a vast terrain connected by motorways and presuppose that we march from place to place with a sense of unflagging purpose (de Button, 2009: 53).

The Pretoria West Industrial Area acts as a moving corridor between the City of Tshwane CBD and western suburbs (Atteridgeville, Proclamation Hill, Danville etc.) with only a few destination points (Pilditch Stadium, Showgrounds, schools and churches). The main economical activity of the area is predominantly car-related. With it being a movement corridor to the suburbs and the lack of diversity in activity contribute to the fast vehicular movement towards the eastern and western directions. This functional approach to movement makes the area uncomfortable and unsuitable for pedestrian activities, due to the speed of movement and scale of the roads (a one way, three-lane road). While vehicle access is necessary, it should not determine the design of our streets as it is today (Solzi, 2009: 57). It is clear that it is much easier to sort out the functional aspects of a city than the qualitative aspects like atmosphere, character, and scale.

Movement in the Pretoria West industrial Area:

The aim would be to slow down the movement towards the eastern and western directions, through interventions in the northern and southern direction. This will contribute to the diversity and quality of the space (fig: 43). The first interventions would be to link predominantly private vehicle movement towards the east and west with public transport nodes (train and Bus rapid transport (BRT) stations).

The second intervention (fig: 43) would be to link the natural system with the urban system; the currently closed stormwater channel in Zeller Street that serves as the catchment for Weskop Hill, should be opened up and developed as a much-needed urban open space with floodwater stored for recharge while civic amenities are created.

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Movement in the Pretoria West Power Station:

The main movement activities (fig: 44) would be along the natural systems of the site and would lead to the public spaces (destination points). The aim of the public spaces would be to accommodate emerging (economical and social) activities and to coordinate the user in terms of space and destination.

Figure 44. Pretoria West Power Station: natural systems: Author 2010

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Movement in the proposed bio-diesel Plant:

Movement along the opened facade on Buitenkant Street would form visual connections to the production process, and generate conversation that would interweave the production process into the urban fabric (fig: 45).

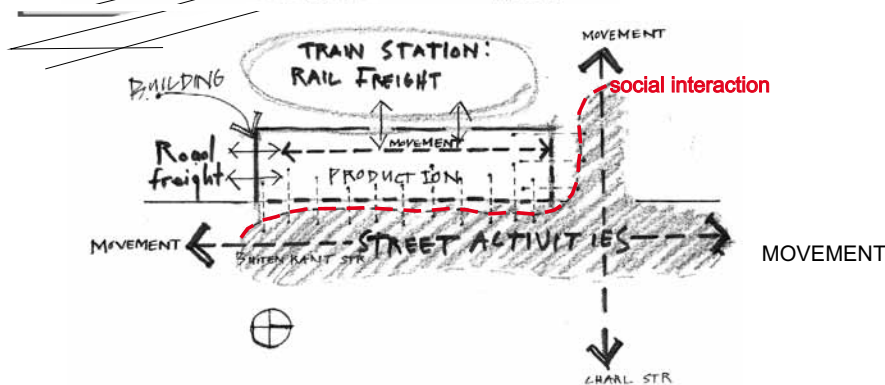


Figure 45. Movement along the street edge (Buitenkant Street) and the proposed bio-diesel plant: Author 2010.

Activity:

In an urban context the street is the host of economic and social activities, it is where business deals are negotiated, and where people interact through observation or verbally-shared ideas and thoughts. City streets need to be pleasant places to live, but also facilitate small businesses, craft-makers and even the odd car mechanic. They might be unsightly, noisy and lower the tone of the street, but they make a neighbourhoods thrive, and anyway, too much peace and quiet can be bad for you (Tuck, 2009: 66). Only a very small group of the most annoying industrial activities is unsuitable for integration with residence (Gehl, 2006: 102).

We've become so hooked on the value of clean service jobs and big business that we've forgotten that cities also need to be places where we make things. Of course it's hard to persuade people that noise is needed, but a bit of clutter does us good. When streets are too quiet, every little noise becomes the sound of a potential intruder (Tuck, 2009: 66).

Activity in the Pretoria West Industrial Area:

In the study area the predominantly car-related industries, such as panel-beaters, vehicle repair workshops and scrapyards, all function behind solid façades with very little or no interaction with the street. This might be due to security reasons or no

desire to have interaction with the street. The nature of car-related activities in the Pretoria West Industrial Area attracts once-off clients, that wouldn't come to this area if it isn't for a specialised vehicle-related need. The pattern of repetitively visiting a location that relates to an activity (for example: buying food at your local grocer) is necessary for a person or group to build attachment and meaning to create a sense of place. Diverse activities (food shops, hair salons, clothing shops etc.) in the study area would attract more people thereby generating regular interactions. People and activities are the key components of a living place that generate place attachment, sense of belonging and community (Shuhana & Norsidah, 2008: 404).

There are some things, though, that all cities should consider. We come to cities in order to enjoy more opportunities. And the more densely populated a city is, the higher the chance of encounters that can lead to economic and social opportunities. This does not just mean a high concentration of residents. A city needs a variety of different people in order to build the relationships of buyers, sellers and creators (Solzi, 2009: 57).

The sense of place is viewed as a form of connection or bonding, between a person and the setting (Hidalgo & Hernandez, 2001: 279), and we have established that activities serves as the first generator to create a sense of place or appropriate

space.

Activity in the Pretoria West Power Station:

The nature of electricity production is a close and isolated process (fig: 47). The activities proposed to intervene with the Pretoria West Power Station (fig: 48) include light industry, housing, urban agriculture, transport node and mixed use activities (local grocer, restaurants, a hotel, a convention center etc.) These activities would establish connections with the surrounding industrial urban fabric needed to regenerate the area to ultimately reconnect with its surrounding urban-cells.



Activity in the proposed bio-diesel Plant:

By creating production annexes to accommodate the production activities a non-linear facade would be created that would enable a tacit connection between the production process and the local community through visual and social interaction (fig: 46).

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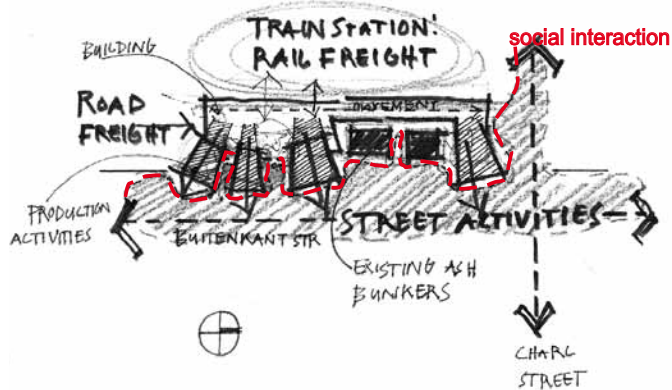


Figure 46. Non-linear facade to generate maximum interaction with street activity (urban fabric): Author 2010.

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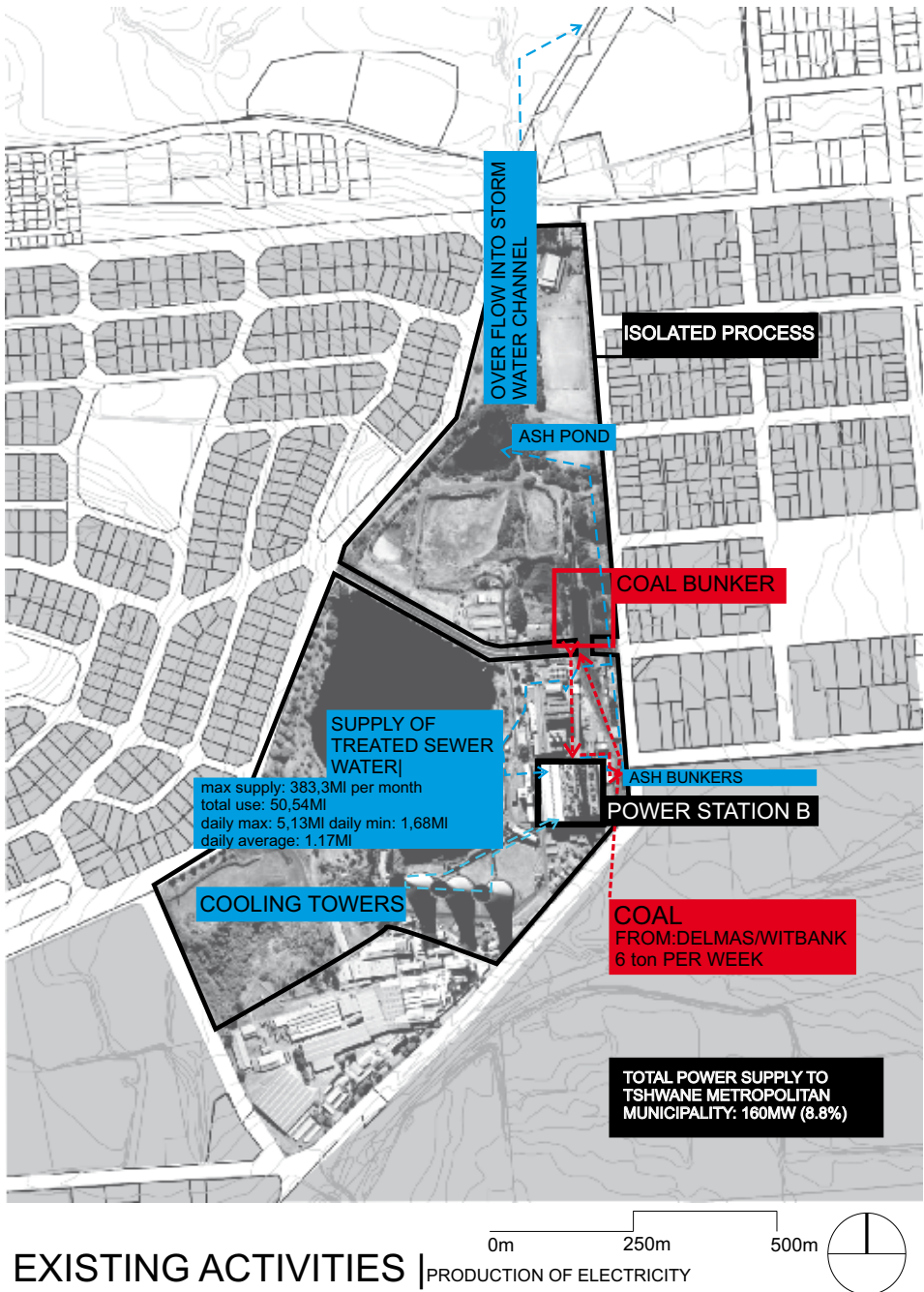


Figure 47. Existing activities in the Pretoria West Power Station, City of Tshwane: Author 2010.

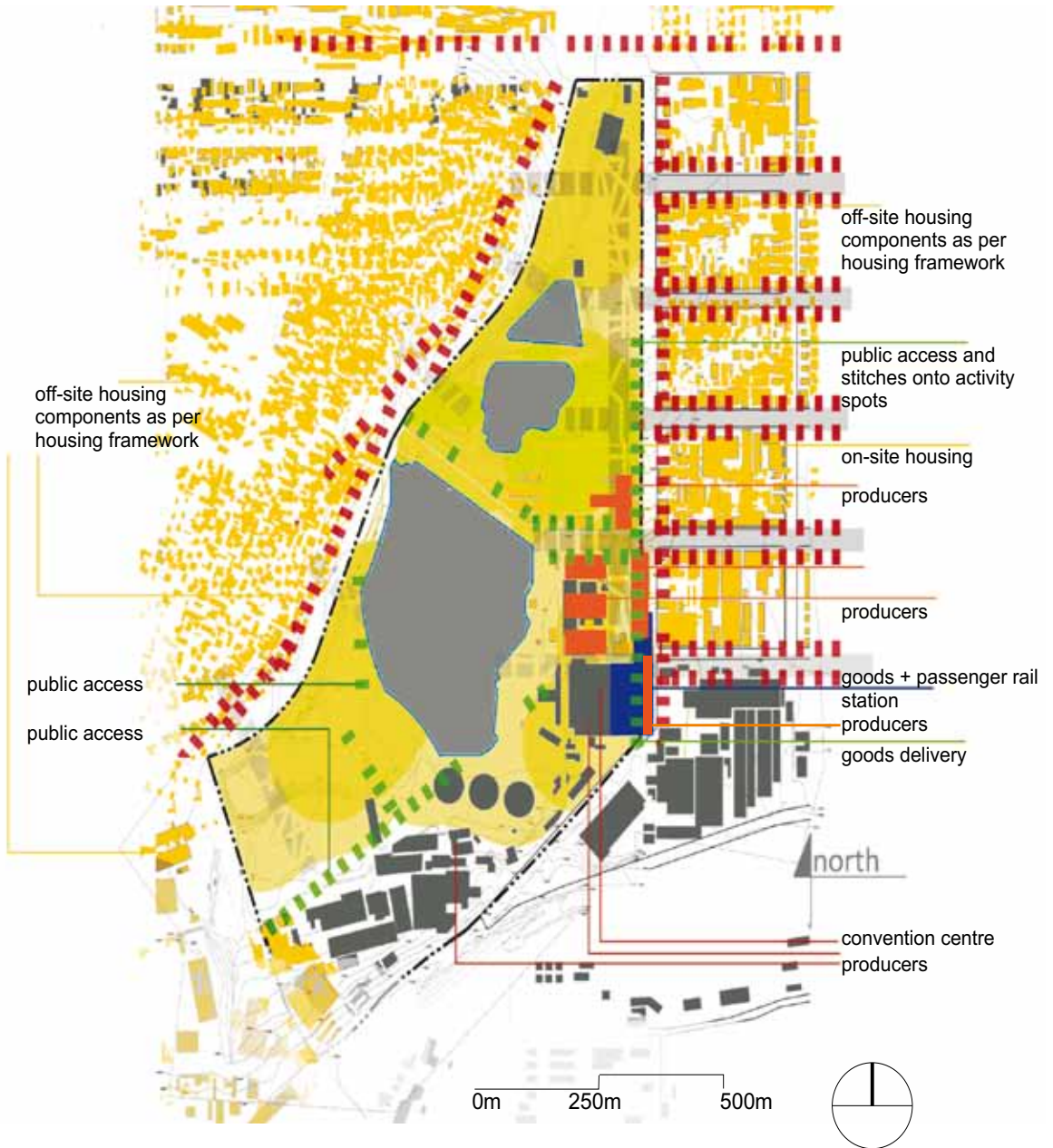
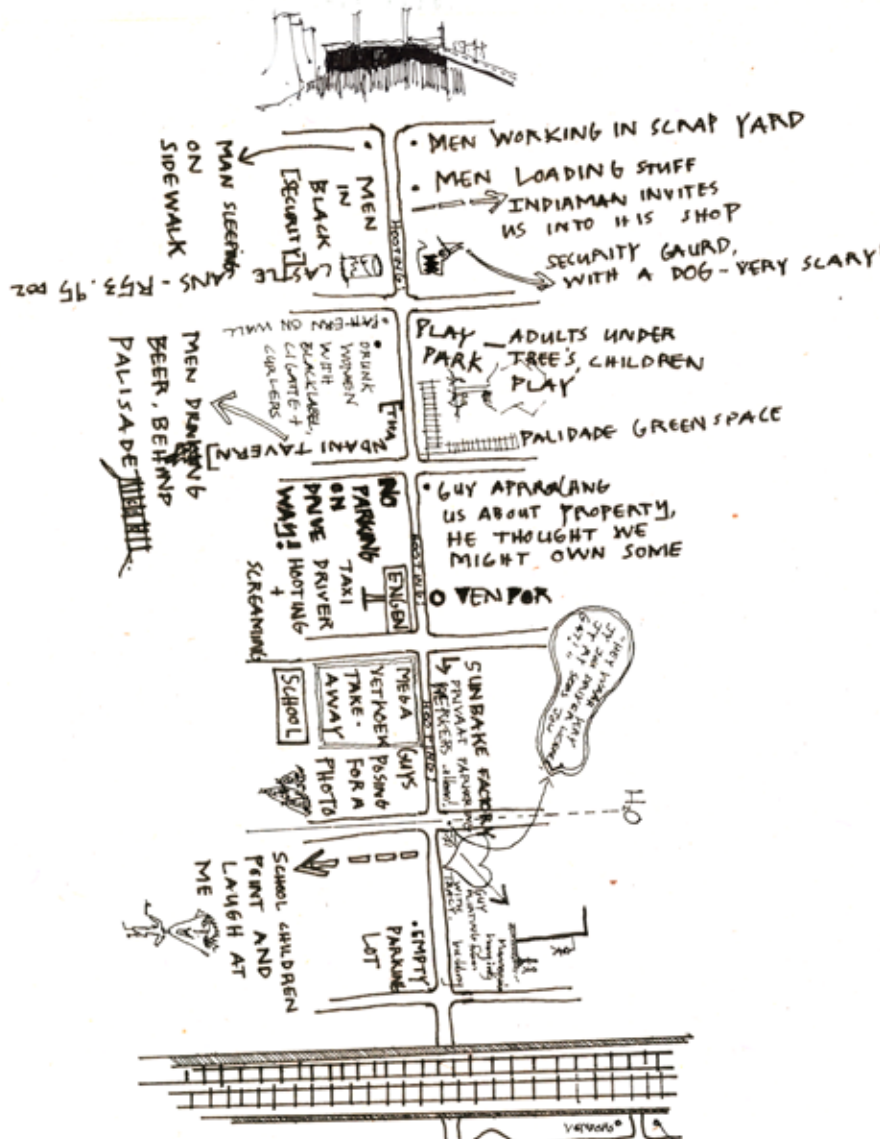


Figure 48. Proposed activities in the Pretoria West Power Station, City of Tshwane: Pretoria West Group Framework 2010.



Flaneur as per methods described on page 15:

Mitchelle Street, reminiscing of a place that had its hey days. Young men jumping of trains to come and earn a living. The beginning of the industrial life:

new dreams
new horizons

The Berrel Hotel, the old lady that stood the test of time, her grandeur is still distinct but not polished, and does that matter? People still talk to each other, still laugh at the shebeen, are still drunk after work, still selling their bodies,

are still just human?

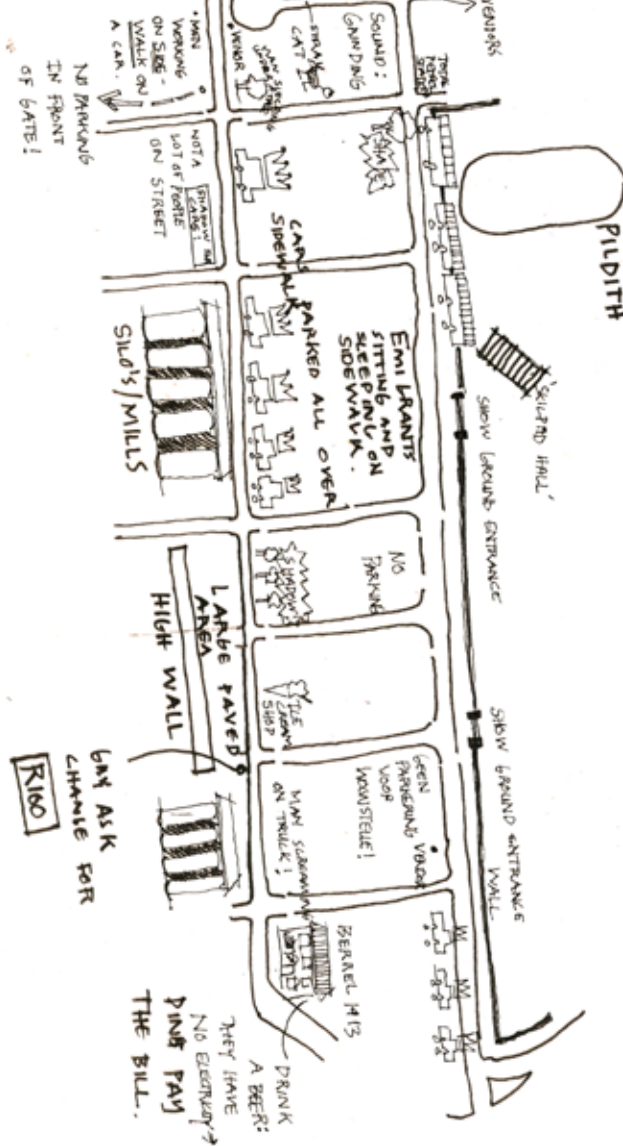
Did I only come to look for decay? School children point and laugh at me, Susan at the Berrel Hotel says she doesn't live in this shit hole . . . "I only work here".

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Social interaction

Pretoria West Industrial Area:

Charles Baudelaire (1821-1867) described walking down crowded and diverse city streets as one of the most exciting adventures open to mankind, far more dramatic than any play, far richer in ideas than any book, one should become, he suggested, a flaneur (de Botton, 2007: 53). The flaneur is a stroller with no particular goal in mind, whose aim is to engage without being noticed. They are opening their eyes and ears to explore the community, any perception or pre-idea must be discarded to be able to engage with the essence of the social network. In the urban context the social structures use communication to generate values and rules of behaviour. Each communication creates thoughts and meaning, which gives rise to further communication, and thus the entire network generates itself (Capra, 2002: 83).

Our ability to hold mental images of material objects and events seems to be a fundamental condition for the emergence of the key characteristics of social life. Being able to hold mental maps enables us to choose among several alternatives, which is necessary to formulate values and social rules of behaviour (Capra, 2002: 73).

Through strolling and observing the author documents his first observations (fig: 49) to represent key characteristics of social life and interaction in the Pretoria West Industrial Area. Mitchell and Souter street were used to conduct this experiment.

Figure 49. Flaneur walking through Pretoria West Industrial Area: Author 2010

The method of flaneur is implemented to understand the social interaction on the Pretoria West Industrial area. For the site of the Bio-diesel plant, the concepts of movement and activity (fig: 51) is implemented to understand the social interaction that the building have to respond to.

Social Interaction in the proposed bio-diesel plant:

Integration of the production process into the urban fabric would be achieved through (fig: 50):

- Opening up the facade to establish a visual connection to the production process
- Production annexes that would form a non-linear facade

Urban space is an extension of the space contained inside the building. By looking at the city through the concept of a continuous space it becomes more evident that the building and the city loose their weight in a possible hierachy. Both are lowered to the same level of importance when subordinate to the space (Carta, 2010: 157)

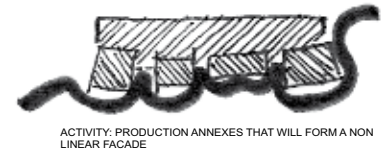
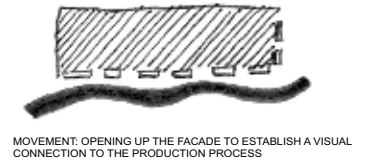
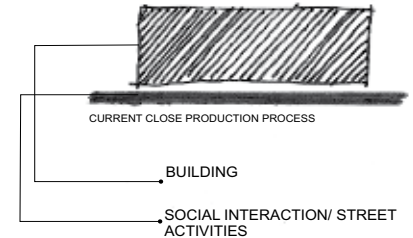


Figure 50. Integration of the production process into the urban fabric through movement and activity: Author 2010.



A



B



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Figure 51. The surrounding landscape that indicates industrial (view B) and residential activities (view A) from the Pretoria West Power Station: Author 2010.

THEMES		QUALITATIVE [emergence]	QUANTITATIVE [industrial architecture]
-RELOCATION OF PEOPLE		-IDENTITY AND COMMUNITY economics /work	-HOUSING + JOB CREATION
-CRIME	PROVISION	-SELF RESPECT economics and community	-MANUFACTURING AND CREATING job creation
-SERVICE DELIVERY	DEPENDENCE	-SELF SUSTAINED government, economics -taxes	-PASSIVE DESIGN economics + job creation
-EDUCATION	EMPOWERMENT	-ENTREPRENEUR social change, economics	-TRAINING FACILITY/BUSINESS job creation and empowerment
-ILLEGAL DUMPING		-SELF REGENERATIVE community/ ownership/ education	-RECYCLING PLANT community/ education
-POVERTY		-DIGNITY awareness/ economics / education / identity/	-CREATIVE SKILLS TRAINING education
-PUBLIC TRANSPORT	DEPENDENCE	-STABILITY services, government, economics	-TRAIN AND BUS STATION services: economics / dependency: job creation
-SPORT		-CHARACTER, ENDURANCE health, entertainment, recreation	-SPORT FACILITY health/ recreation
-ILLEGAL IMMIGRANTS	LOCAL IDENTITY	-DIVERSITY community, identity, economics	-TRANSFER OF SKILL local identity/ community/ job creation
-RECYCLING PROGRAMS		-WASTE EQUALS FOOD education , economics , job creation	-RESEARCH + EXPERIMENT - REGENERATIVE PRODUCTION job creation
-CLEAN YOUR SUBURB		-OWNERSHIP, RESPECT identity/ education / community	-GREEN SPACE/RECREATIONAL SPACE communal social space
-SAVE WATER		-RESPECT AND VALUE economics / education	-WATER RECYCLING PLANT education + job creation

Figure 52. Emerging themes in the Pretoria West Industrial Area, City of Tshwane. From Pretoria West Record newspaper (Jan - Apr 2010) as per periodical analysis described under methods on page 15.

Prevailing social themes in the Pretoria West Industrial Area:

For Aguilar (in Breed, 2010) when the press writes about the city a double process is revealed. Collective forms are recuperated and exhibited by giving value, themes and hierarchies to the urban context (or space). It could be politics, housing or development, where something is lacking e.g. facilities or amenities or something that is going to happen such as new proposals by government or consultation between different parties. At the same time, these values are recuperated in a convenient form (which can be an informative note, a report or advice given) that orientates, models and gives representation of social recognition to a previous social discourse.

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Landscape

The Pretoria West Record newspaper covers the Pretoria West Industrial Area. It is freely distributed on Fridays to 18 800 households, and the aim of the newspaper is to be a voice for the community.

The newspaper is published in English with a small synopsis of the article in Afrikaans. Fifteen exemplars (22/01/2010 – 16/04/2010) consisting of 12 pages each were analysed.

The aim of the analysis (full study in addendum A) is to determine the hierarchy of themes currently prevailing in this area; guiding the author in identifying the emerging opportunities in the Pretoria West Industrial Area that would contribute to the regeneration of the urban fabric.

The following themes were discovered in the news paper analysis:

The newspaper analysis formed part of the process to understand the prevailing themes in the area in order to guide the author in determining the appropriate building intervention for the site. The intervention would have to address job creation and economic empowerment if it is to contribute to the wellbeing of the community.

(Only a synopsis of the main themes is discussed here, the full study appears in addendum A)

The lack of economic empowerment is the main emerging theme (fig: 52). In addressing this challenge the question arises: What can economic empowerment promise ?

- Generation of opportunities.
- Urban Regeneration.
- Self-sustainability.
- Identity through sense of community.
- Skills (empowerment) development.

These economic ways to empowerment were addressed further during design development.



Industrial scale



Function or process defines spatial quality



Landmark quality of cooling towers

Figure 53. Drawings of the Pretoria West Power Station to show the character of the site: Author 2010.

