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# chapter three

## immediate proximities

From the background study and urban framework vision, the site of the Old Pretoria West Power Station was selected as a work area. A general site investigation was conducted to understand the proximities within a more specific site. From the history of the site, the investigations into its operations and a mapping of the systems and qualities of the site, a specific work area was demarcated on the northern part of the site, namely the old coal bunker.

# analysis history of pretoria west

In 1892, Pretoria was supplied with electric energy by a power station situated in Schoeman Street, east of the current site. As energy requirements increased, the station had to move out of the city onto its larger premisses and its present location. A new station was built in 1922 [Masut, 2010]. In 1928 the South African Parliament established Iscor - the South African Iron and Steel Corporation Limited. Iscor is still situated south of the power station. The construction boom during the 1920's caused by these two industrial giants alleviated much of the poverty and unemployment pressures during the Great Depression. Iscor generated a booming steel industry that not only benefited Pretoria and its industries enormously [Stark, 1952:105], but also contributed massively to the industrial prosperity of the greater South Africa. The by-products of the steel industry were also incorporated in a variety of sub-industries into the industrial sector of Pretoria West [Engelbrecht et al, 1952:103].

However, today Iscor is in the process of closing shop and moving out. This is beneficial for the greater urban environment as the steel giant is responsible for large quantities of air, ecological and water pollution. Its monopoly and presence also made it difficult for other industries to integrate into the west and it limited the development potential for the precinct. This caused the urban environment of Pretoria West to slowly dilapidate into an monotonous, undesirable urban sector. However, with the exodus of Iscor, and the inevitable decommission of the power station, Pretoria West has significant new potential for progression. The land that Iscor occupied

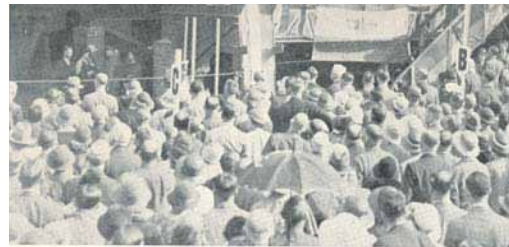


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and its immediate is considered prime property for the development of educational facilities, new industrial or other commercial enterprises [Municipality, 2004].

Together Iscor and the Old Pretoria West Power Station helped to establish and define the western boundary of the city centre of Pretoria on the aptly named Buitekant street ("outside", "outskirts" - street). This condition was enhanced by the municipality by the planting of a long row

Buitekant street circa 1950. It was the a tradition at the time to very clearly indicate the edges of cities with rows of trees, and a similar situation can be found on the historic Buitekant Street in Cape Town. The station itself expanded and additional structures were built in the forms of coal bunkers and coal stores. Buitekant Street slowly became a dead-end destination.



Iscor to the south-west of the power station



Construction and completion of the second power station of Pretoria, now on Mitchell Street

## 1925 Iscor

Figure 35: Industry boom

In 1925, Iscor and other industries brought prosperity and promise of progress for Pretoria and larger South Africa [Engelbrecht et al, 1952:103].



## 1925 power & industry

Figures 36: 100 years of landscape and urban changes

By 1925, the Pretoria West Power Station A was almost completed, and the site demarcated the edge of the city of Pretoria. Sporadic houses and residences can be seen towards both the west and the east. The site is in effect a large, noisy construction and industrial area.



## 1948 operations of Station A

**Figures 37: 100 years of landscape and urban changes**

In over 20 years, the site and urban conditions hardly change. Residential areas are extended somewhat westwards, beyond Buitekant street.



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## analysis history of power station

After the second 1928 station reached its limits on electric production capabilities, the next set of buildings were commissioned. A somewhat larger station, Station-A, expanded from one of the boiler buildings but soon also reached its peak production capacities. Station-A to this date provided 54MW of energy, selling over 400 000 000 units annually and lighting over 10 0000 street lamps for the city of Pretoria. Still, it reached production capacity and Station-B was commissioned and completed in 1954. Station-A was decommissioned and virtually abandoned, used for storage of unused machinery.

During the 1990's, new health and safety acts on asbestos demanded that asbestos material be removed from all buildings and so much of the older buildings were left totally scarred. Also, funds were tight and the municipality decided to strip the older buildings bare to the bone of all metal fittings and components found in walls, floors and machinery. The collected metal was sold as scrap to smelters and the profits made paid for the removal of the asbestos. Any building on site that cannot be used for the process of power generation, is simply abandoned, and the process will in all probably repeat itself if the power station needs to face another upgrade or change [Masut, 2010].



**Figures 36-39:** Images obtained from the University of Pretoria, The Van Der Waal Collection, images enhanced by author, 2010.

*palm trees  
circa 1950, to define  
Buitekant street as an  
urban edge*

*The coal bunker  
constructed to store  
coal for Station-B*

## 1954 completion of Station B

**Figures 38: 100 years of landscape and urban changes**

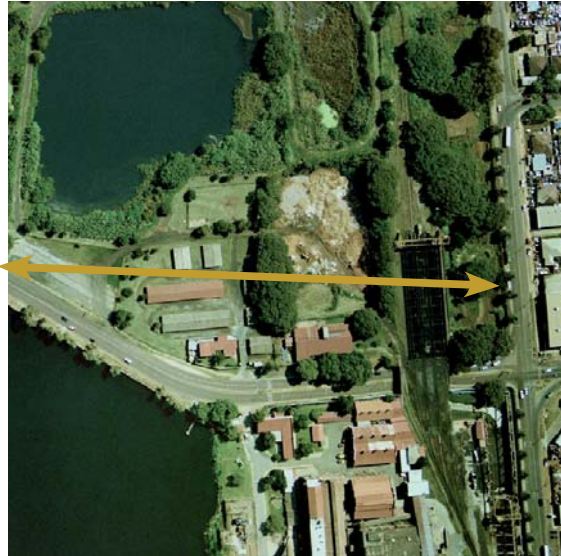
During the 4-5 years of construction of Station-B, the city develops considerably around the site. The coal bunker is constructed along Buitekant street - it enforces the barrier conditions on the street edge (it is estimated that the rows of palm trees are also planted during this time).



engulfed  
the site becomes  
engulfed by urban  
development



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edge condition  
palm trees (circa 1950)  
defines Buitekant street  
as an urban edge

## 1969 intensify

**Figure 39:** The edge condition is enforced, prohibiting access onto the site. However, the city now almost completely surrounds the site. The site is still relatively barren of vegetation and the new palm trees are clearly visible to the east.

## 2010 effects

**Figure 40:** The edge condition is still there today, but the city totally engulfs the site. The effects of the coal and ash ponds, and the nutrients in the water is clearly noticeable in the lush and healthy vegetated landscape. The site is now a hidden landscape, its heritage physically obscured from the public. It's intensely close proximity to an urban streetscape creates an opportunity for development [University of Pretoria, Dep of Geography, images enhanced by author, 2010].



Figure 41a - Current Power station



the railway bridge



Figure 41b - Urban byway



Figure 41c - The historic city edge

## the edge<sup>buitekant street</sup>

Figure 41a - 41c: Collection of photographs showing Buitekant street as the historic edge for the city of Pretoria [author, 2010].

towards Pta west

towards Pta CBD



1. portuguese sports club

2. the coal bunker

3. ash ponds

4. power station training facilities

5. 1924 station

6. 1937 station (station A)

7. coal surplus store

8. administration block

9. 1952 station (station B)

10. evaporation lake

11. cooling towers

12. glass factory

13. proclamation hill  
(residential)

14. iscor (industrial)

15. pretoria west (mixed-use and residential)

16. pretoria west (mixed-use and light industry)

17. quagga centre (retail shopping centre)

18. police college and training

19. city park

# analysis

## choice of specific site

A site investigation was conducted through numerous site visits, documentation, mapping and interviews with Mr Masut, the station head engineer. From the knowledge gained on the landscape and infrastructure of the site, it became clear that the existing coal bunker [2] is the most suited in order to address key issues of the project:

- Vertical agriculture: there are site processes and systems in place that encourage agriculture as a new productive program for the old coal bunker (greater water system, existing conveyor and distribution system, and vast scale of the bunker volume)
- Urban fringe condition: the coal bunker demonstrates the influence of industry and its processes on the natural and urban landscape. It physically separates, isolates and hides the industrial process from the interactions of a mixed-use urban environment.
- New productive landscape: there is great development potential on this north-eastern part of the site that can encourage interaction between the existing urban fabric, on-site processes and the vegetated landscape of the site.
- The new building can express the closing proximities of vegetated landscapes and built urban fabric.
- The new building can express the closing proximities of industry to social urban environment as an edgeless condition of the 21st century.
- The new building can express the closing proximities of heritage and infrastructure that must be reconfigured for contemporary needs.

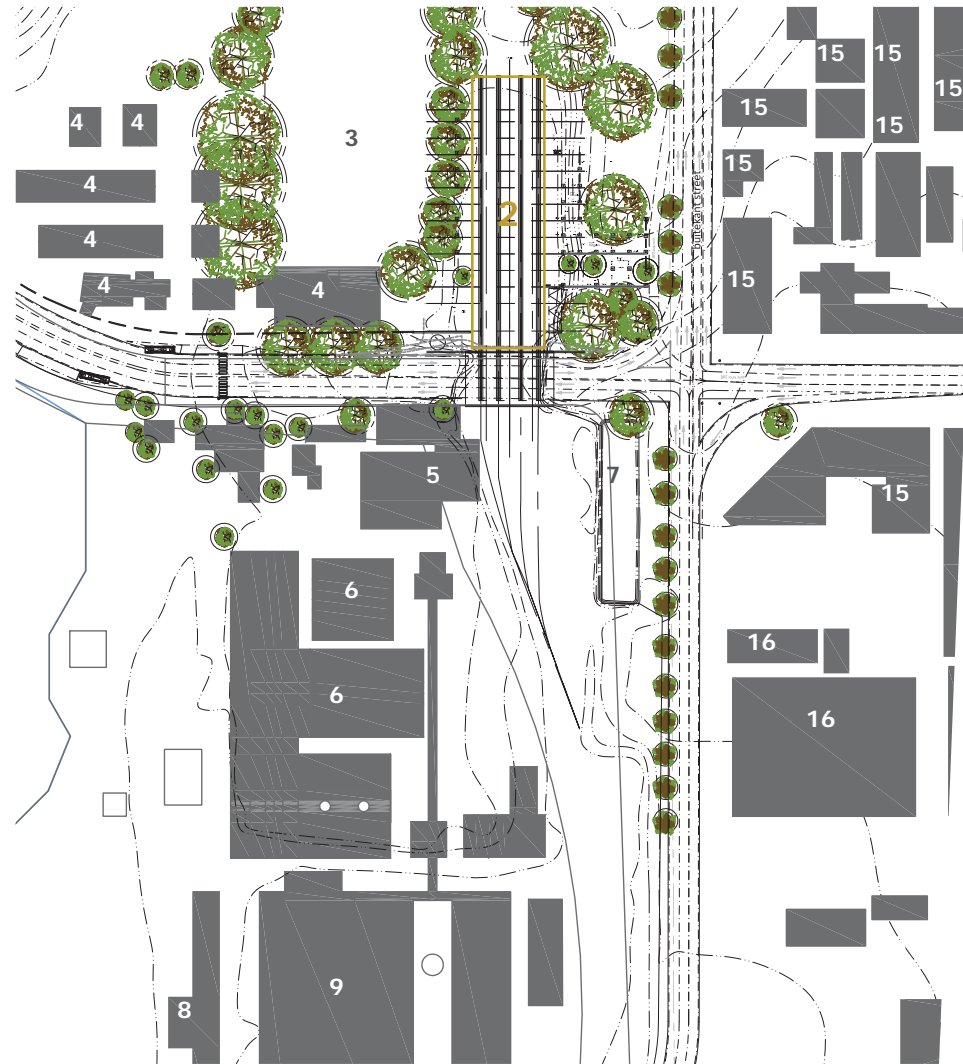


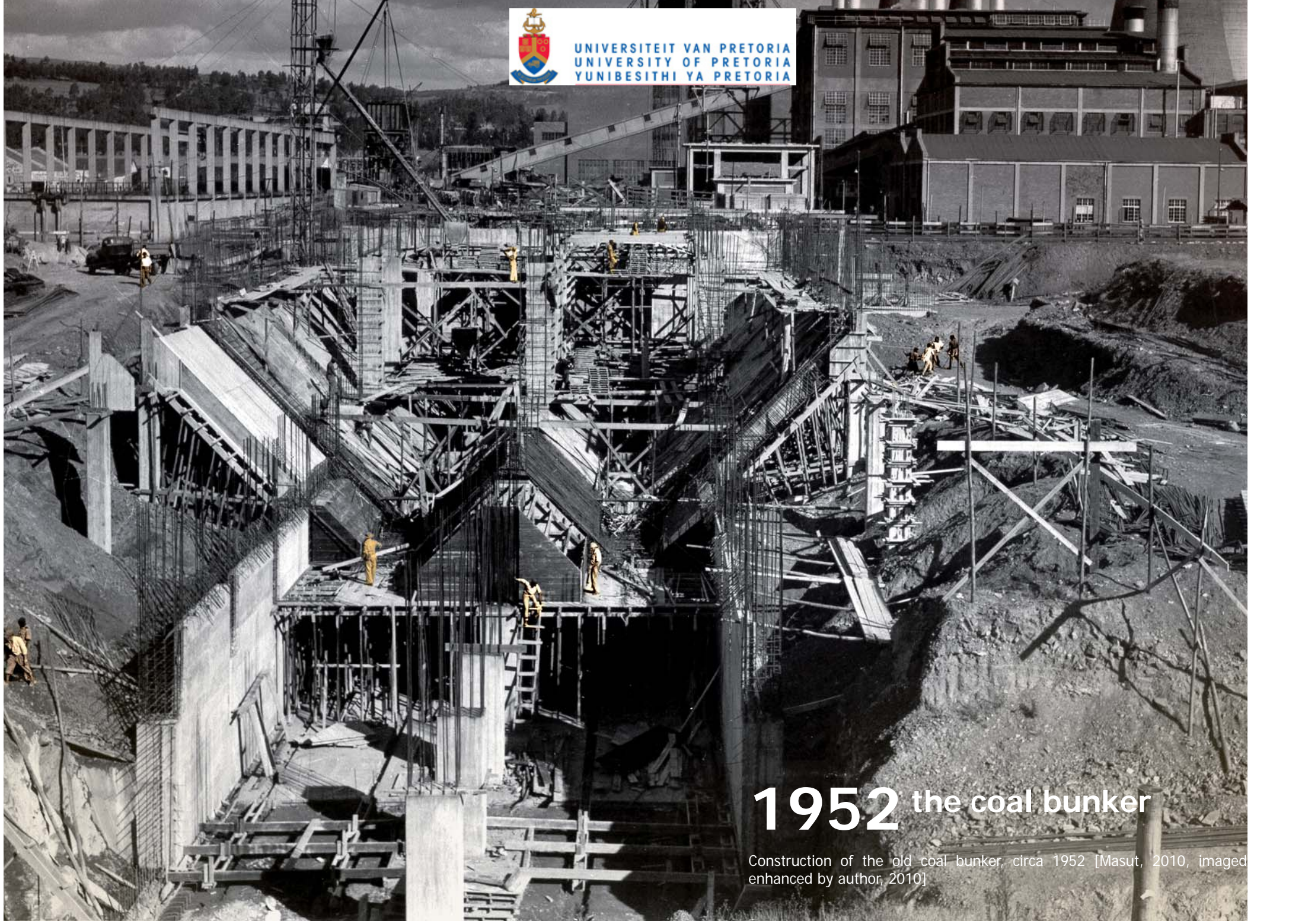
Figure 42 (opposite): Pretoria West Power Station [9] [author, 2010].

Figure 43 (top): Site context plan [author 2010].

Figure 44 (right): Site context aerial [author 2010].



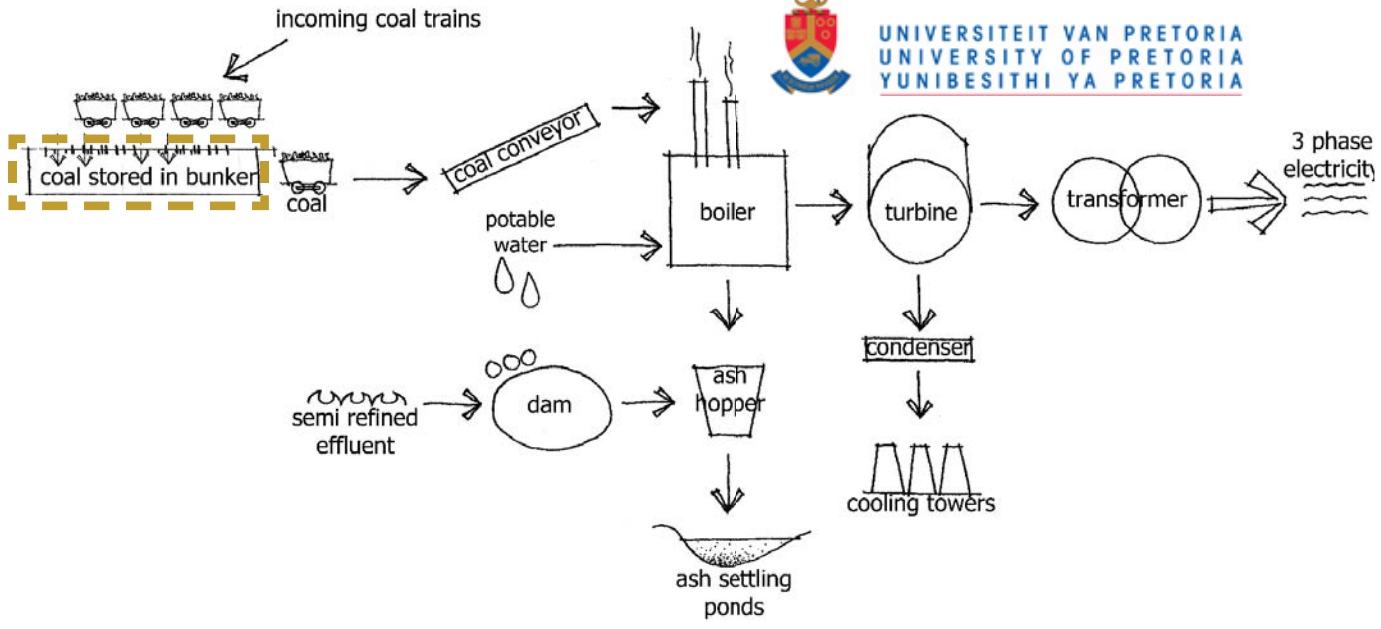
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# 1952 the coal bunker

Construction of the old coal bunker, circa 1952 [Masut, 2010, imaged enhanced by author, 2010]





**Figure 48 : The power process**

Coal comes in by rail and is stored in the underground coal bunker. From there the coal is conveyed to Station-B for combustion [Pretoria West Group,2010].



**Figure 45 : On top of the bunker**

Coal trains arrive and coal is manually shoved from the coaches, down the steel grill and into the submerged concrete bunker [author, 2010].



**Figure 46,47 : Steel steps down to Buitekant Street**

Steps down the bunker towards the street [author, 2010].



**Figure 49: The bunker hidden by the landscape**

The semi-submerged bunker is covered by the landscape [author, 2010].

# h e r i t a g e p o s i t i o n



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The old coal bunker is literally hidden in the current urban fabric of Pretoria West. If it is not used for its original purpose of storing coal, it runs a risk of becoming a lost heritage. It was decided to introduce this structure to the city. By giving the structure a contemporary, future-orientated productive program, the proximity of its past to its future is drawn closer. The bunker is a completely internalised structure and this characteristic isolates it even further from the city and its inhabitants. By opening up this object, it is possible to explain its heritage and its role in the greater process of the power station. The old coal bunker is classified as a heritage site as it has buildings, structures or other site elements older than 60 years [SAHRA, 1999:4]. Two issues are important in understanding the inherited and potential significance of the site for the city:

- Inherited: the landscape features are unique to the City of Tshwane. The cooling dam, ash ponds, dramatic vegetated landscape, valuable building stock has qualified it as a landmark site [City of Tshwane, 2006:60].
- Potential: currently the site functions as an isolated unit in relation to the city. It has potential to retain its industrial character and still be integrated with the urban environment. The group framework vision for the site [Pretoria West Group, 2010] proposes a productive environment as the heritage position as it aims to use the site as a catalyst for urban rejuvenation for Pretoria West and the western edge of the Pretoria CBD.

From all the various heritage charters, the SAHRA, ICOMOS and UNESCO position papers, Xi'an Declaration, Ename Charter and the Burra Charter were selected as the most applicable to the current bunker and the aims of the project. These charters encourage new, contemporary developments on heritage buildings so to enrich the cultural value of the heritage site for the community by integrating the heritage structure with contemporary urban life. A heritage position for the coal bunker was drafted on the combined principles of these charters. These now present a steady heritage framework to work from, and the following principles are the position for the new design:

- The new architecture and program must illustrate and retain the use of the heritage site and place.
- The architecture must be compatible, enhance and respect the heritage in its entirety as a heritage site. This implies not only objects, but the spatial quality of the landscape and site.
- The architectural developments and interventions in regards to heritage buildings and sites must address issues of urban identity; urban core and periphery.
- The architecture for the heritage site should reflect the development in contemporary urban culture.
- The new architecture and program should address the issue of how historic centres and heritage landscapes move towards modernity and the future.
- In the case of the Old Pretoria West Power Station, inherent existing systems (greater water system, on-site process or distribution of products, the purpose of the site as a generator of energy) are also accepted as heritage components of the site and must be referred to or be integrated with the new design

The coal bunker will now be introduced into the existing urban environment. It is a demonstration of the reintroduction of productive processes into the urban environment and aids in a new understanding of the role of industry and production within the urban environment for the 21st century.



**Figure 50:** The old coal bunker is buried by vegetation [author, 2010].



**Figure 51:** The area in front of the bunker has already been cultivated informally with a bunch of small crops, but the person responsible for the plants could not be found. Maize and other edible plants were also found along the railway tracks beyond the immediate site [author, 2010].

## productive history

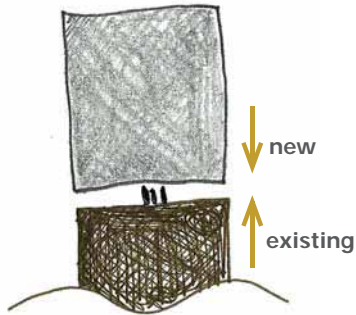
vertical agriculture a future solution building on the legacy of a bygone industry

# precedent acknowledge

heritage as object - new design floating above heritage building

**Elbe Philharmonic**  
Hamburg, Germany  
**Herzog & De Meuron**  
under construction

- isolated industrial heritage building
- original building and structure retained
- new design mimics heritage footprint
- new design elevated from old building
- new facade contrasts from heritage building
- definitive contrasting materials



**Figure 52:** Acknowledging the existing [author, 2010].

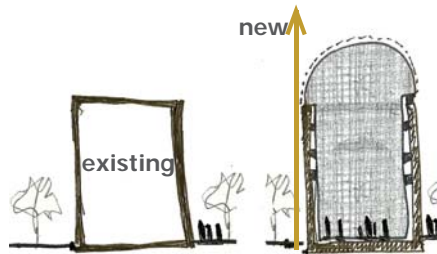
**Figure 53:** Elbe Philharmonic Hall, Germany [http://cubeme.com]

# precedent extend

new structure extruded from within heritage building

**Lyons Opera House**  
Lyons, France  
**Jean Nouvel**  
completed 1993

- heritage building in dense urban setting
- new design element - half cylinder roof
- new design rests within old building and completely replaces interior structure, only facade remains
- new materials sympathetic to old building



**Figure 55:** Extension on the existing [author, 2010].

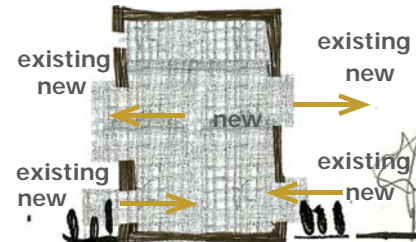
**Figure 56:** Lyons Opera House, France [Bonet, 2002:24]

# precedent invite

draw in streetscape - introduction of interior program to the street

**St Jobsveem**  
Rotterdam, Netherlands  
**Wessel de Jonge**  
completed 2008

- the conversion of old packing house into residential
- interior punches through to streetscape
- parts of facade removed
- new materials in relationship to old structure
- new scale introduced to building interior



**Figure 57:** Inviting streetscape into building [author, 2010].

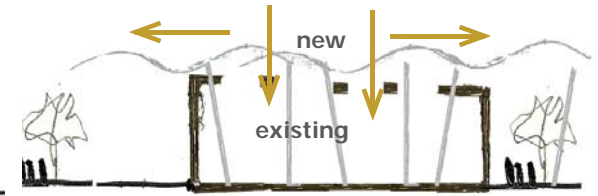
**Figure 58:** St Jobsveem, Netherlands [http://www.worldarchitecturenews.com]

# precedent insert

off-set incisions - old structure pierced and new structure envelopes street

**St Caterina market**  
Barcelona, Spain  
**Enric Miralles & Benedetta Tagliabue**  
completed 2004

- existing market revived in heritage building in dense urban setting
- additional contrasting insertions
- new design element - iconic roof
- new materials vividly contrasted to old building



**Figure 59:** Pierce with new & envelope streetscape [author, 2010].

**Figure 60,61:** St Caterina, Spain [http://www.flickr.com/]





1952

Figure 62: Circa 1952 hidden historic edge [Masut, 2010].

view from Station-B

sports field

free access onto site

sunken bunker

railway bridge

railway bridge

Mitchell street  
going under railway

conveyor system  
coming from  
underground from  
the bunker to  
Station-B

Buitekant street

free access onto site

connected  
to urban condition

linear spatial heritage

free access onto site

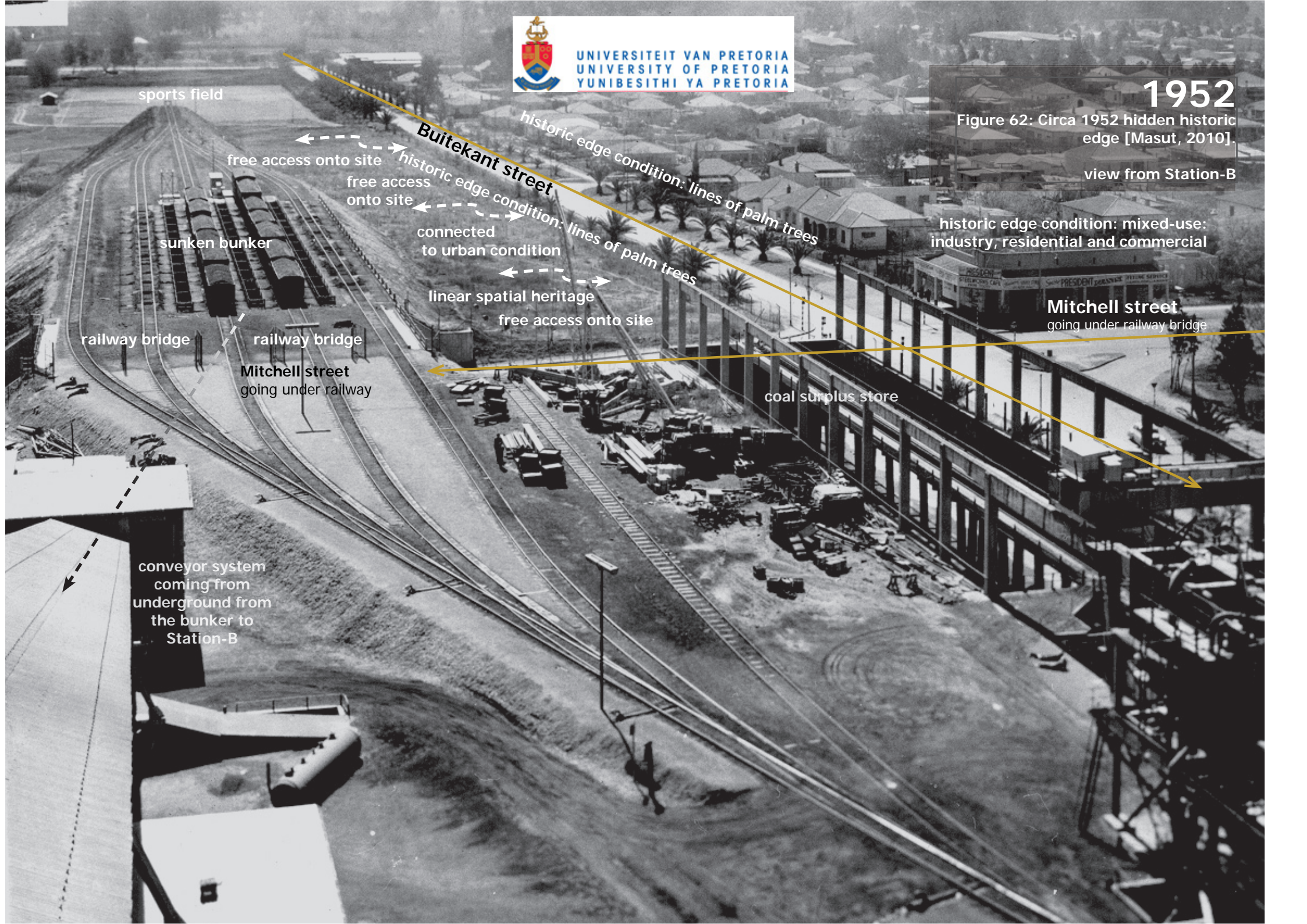
historic edge condition: lines of palm trees

historic edge condition: lines of palm trees

coal surplus store

historic edge condition: mixed-use:  
industry, residential and commercial

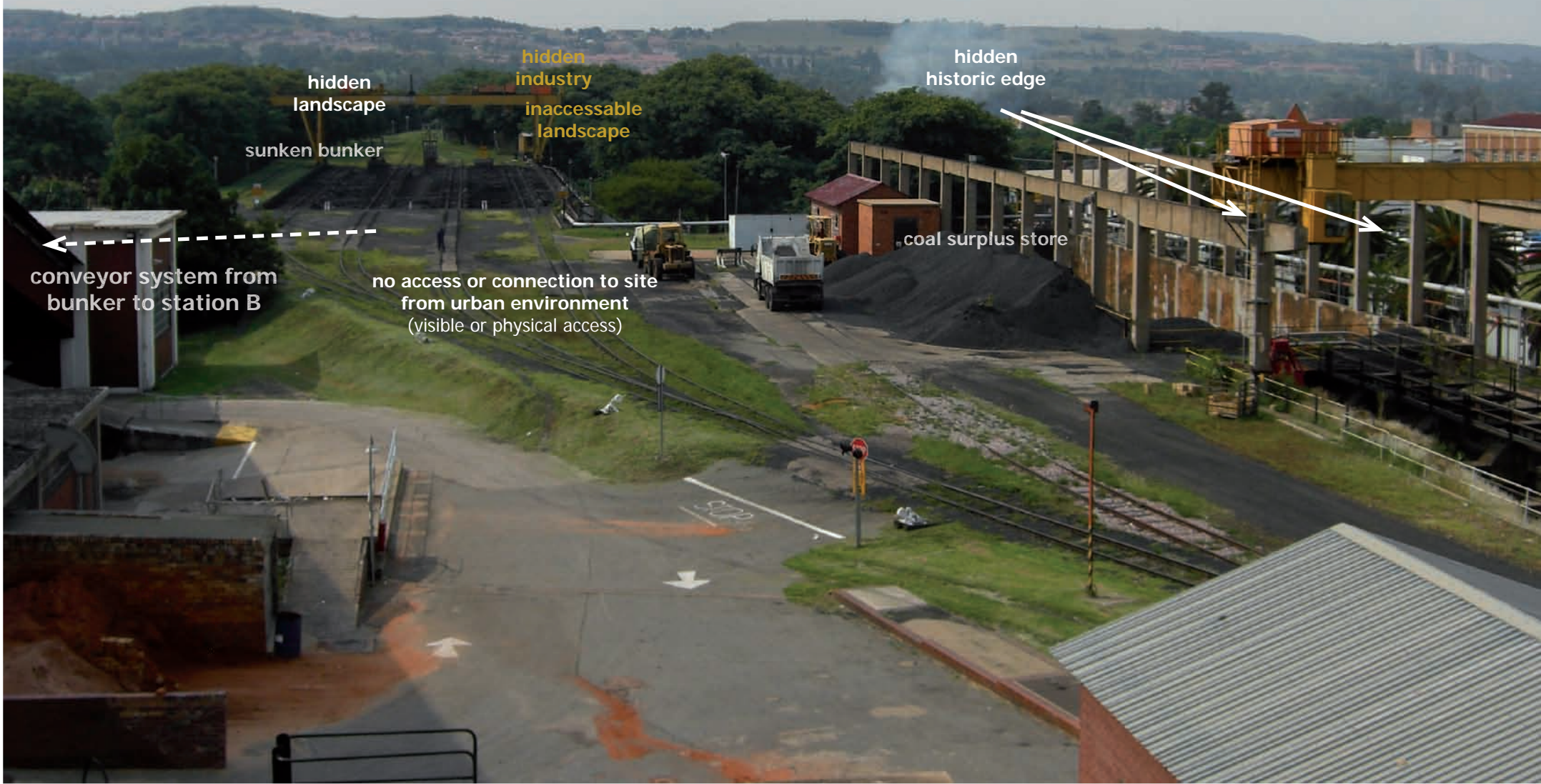
Mitchell street  
going under railway bridge



2010

Figure 63: Hidden production industry inaccessible and hidden from the urban environment [author, 2010]

view from Station-B



hidden landscape

sunken bunker

hidden industry  
inaccessible landscape

hidden historic edge

coal surplus store

conveyor system from bunker to station B

no access or connection to site from urban environment (visible or physical access)

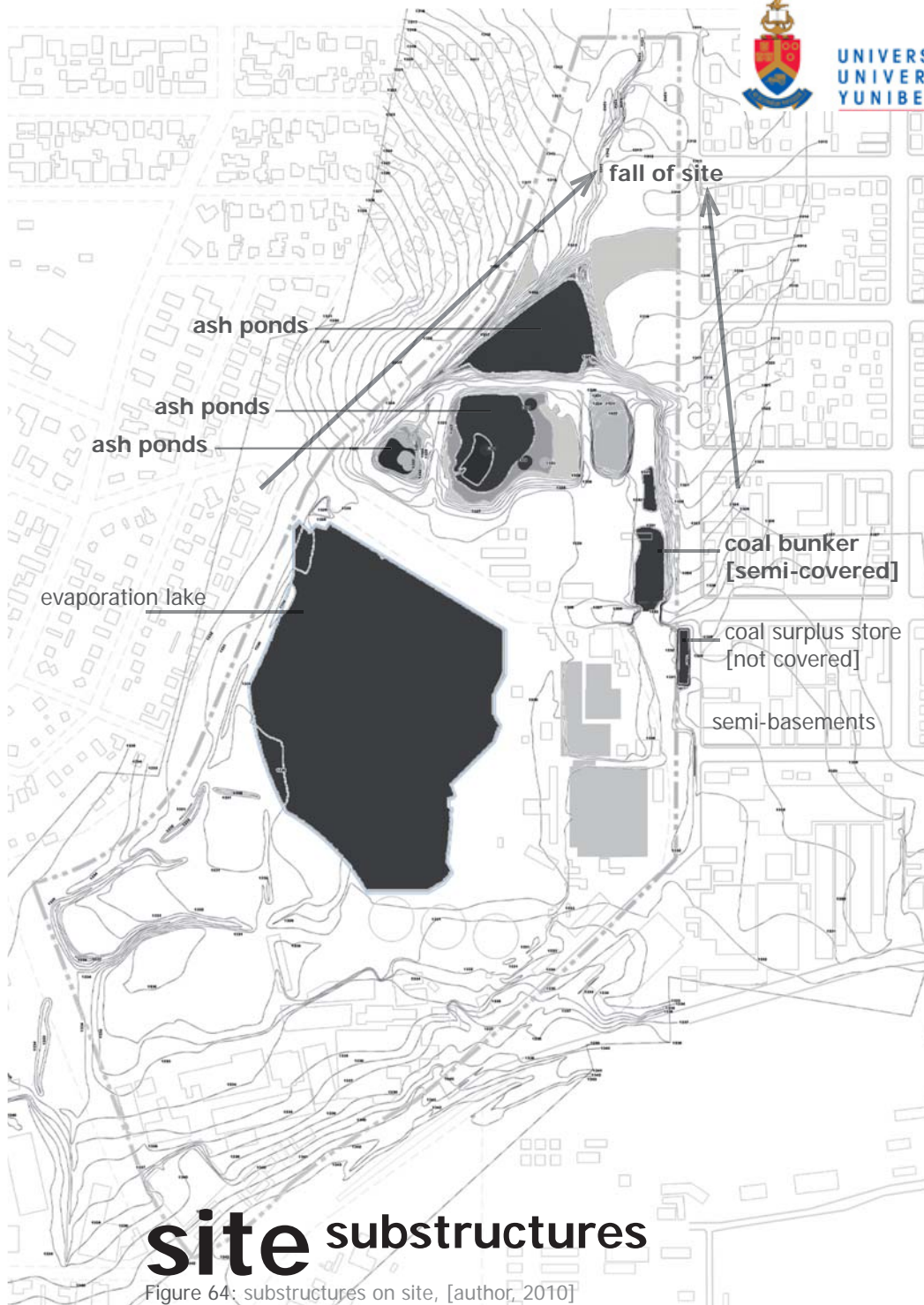


Figure 64: substructures on site, [author, 2010]

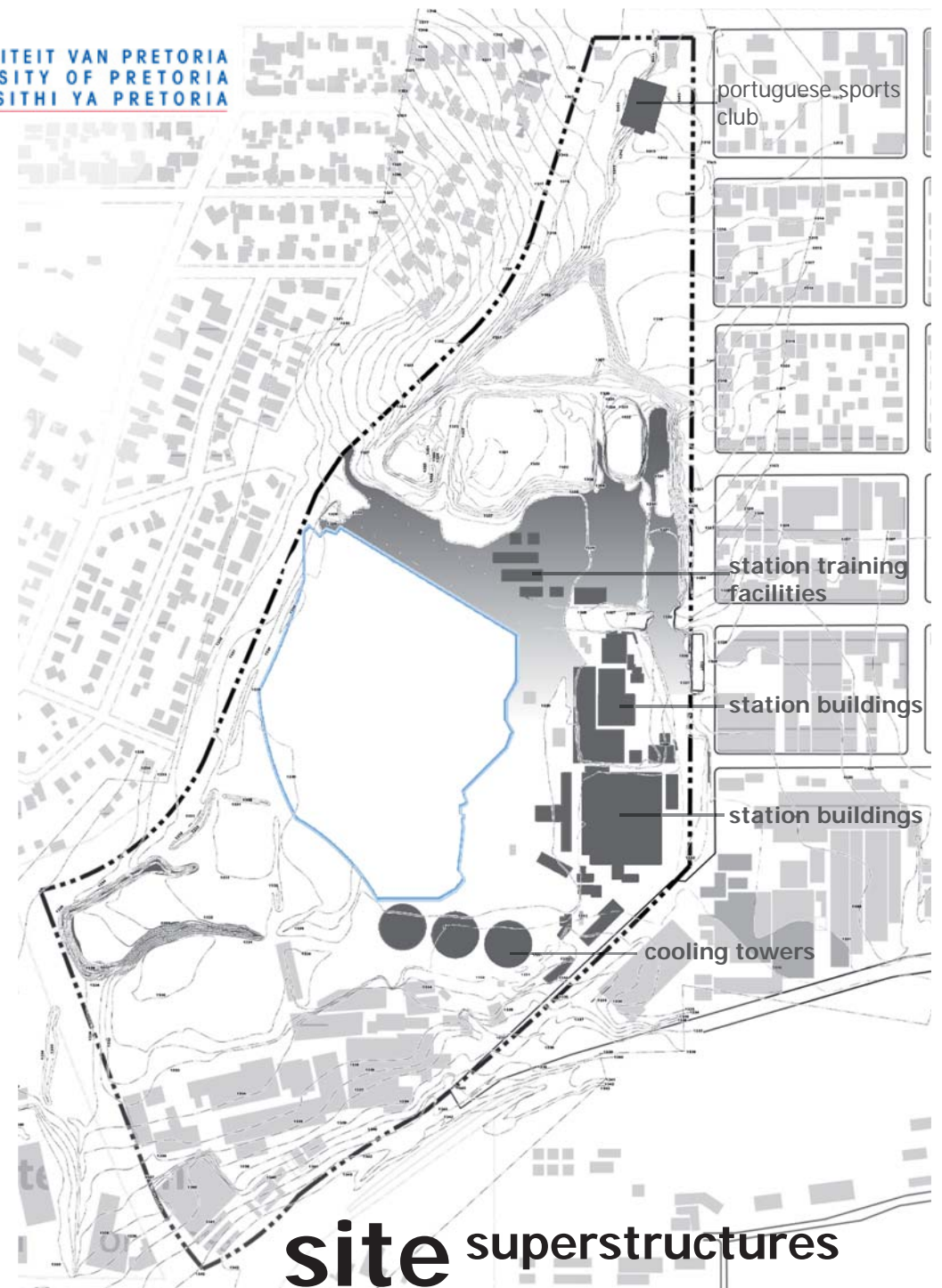


Figure 65: superstructures on site, [author, 2010].



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off-site housing components as per housing framework

off-site housing components as per housing framework

public access and stitches onto activity spots

agriculture urban park

agriculture urban park

public access

public access

public access and stitches onto activity spots

public access

on-site housing components

producers

public access

producers

producers

public access

goods and passenger rail station

public access and stitches onto activity spots

north

new convention centre program  
halls and exhibitions

# site framework proposal

Figure 66: Basic framework proposal for the site [Pretoria West Framework Group, 2010].



## water supply

The existing water system is primarily used to slurry coal (and other by-products created by the coal-fired processes) around the site. The station receives excessive amounts of refined sewerage water from the **Daspoort Sewerage Treatment plant**. Although not used as potable drinking water, this water is clean and safe as it has to comply with Tshwane health regulations [Masut, 2010]. In fact, there have been many triathlon's and other sporting events around the site which utilised the dam and water and it was reported that the water is perfectly clean and manageable for public use [Masut, 2010]. The system on site currently disposes of the water through another purifying station and finally, into the Apies River (north). When the plant closes down, the water and pipe system will be redundant unless applied in another industrial application. The Daspoort Sewerage Treatment Plant will dispose of this water into the Apies directly, causing a massive resource waste as thousands of litres of water will go unused [Masut, 2010]. Because the water has high nutrient values especially for vegetation, it is proposed to maintain and extend this system into the coal bunker as it is an invaluable resource specifically for a landscape application and the hydroponic food factory.

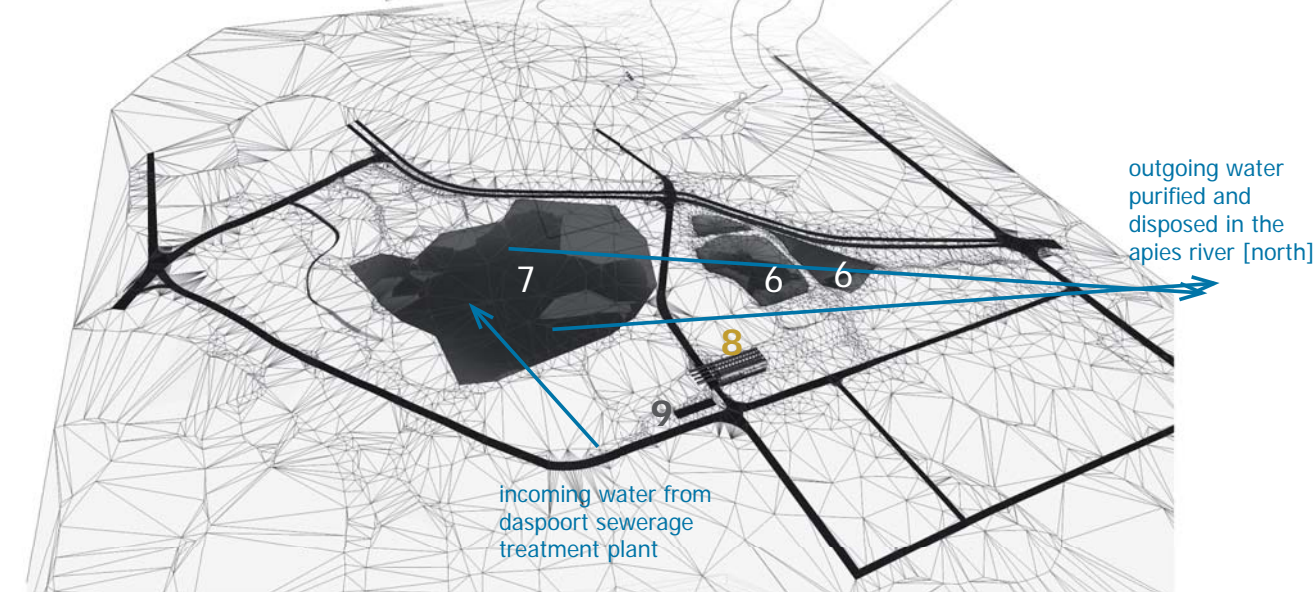
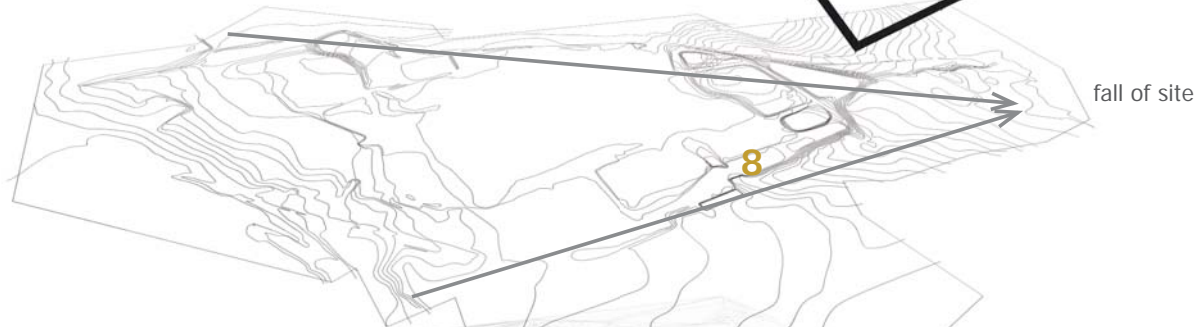
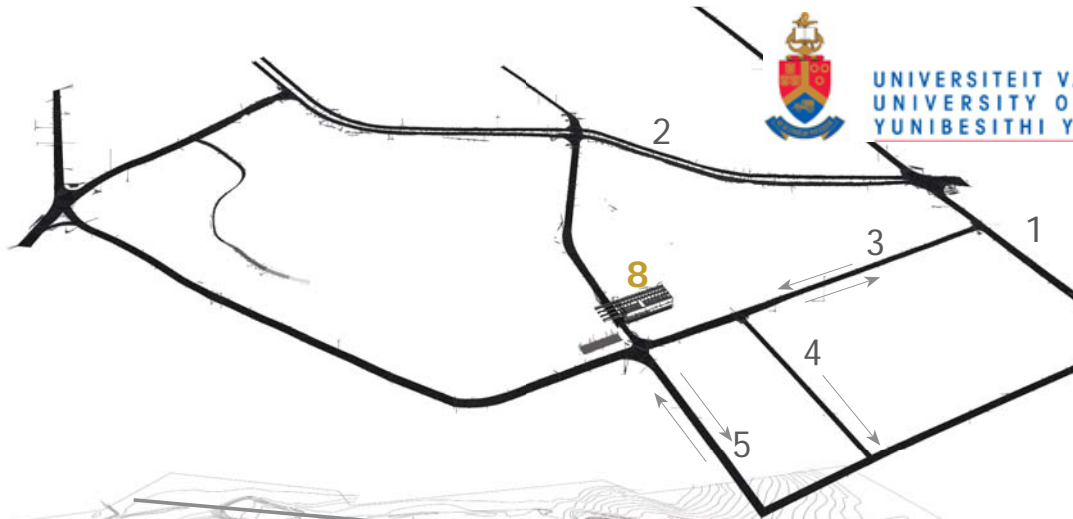
1. Church street [east - west]
2. Quagga street [north -south]
3. **Buitekant street** [north south]
4. Souter street [east-west, one -way traffic eastwards]
5. **Mitchell street** [north-south, two-way traffic]

### Topography

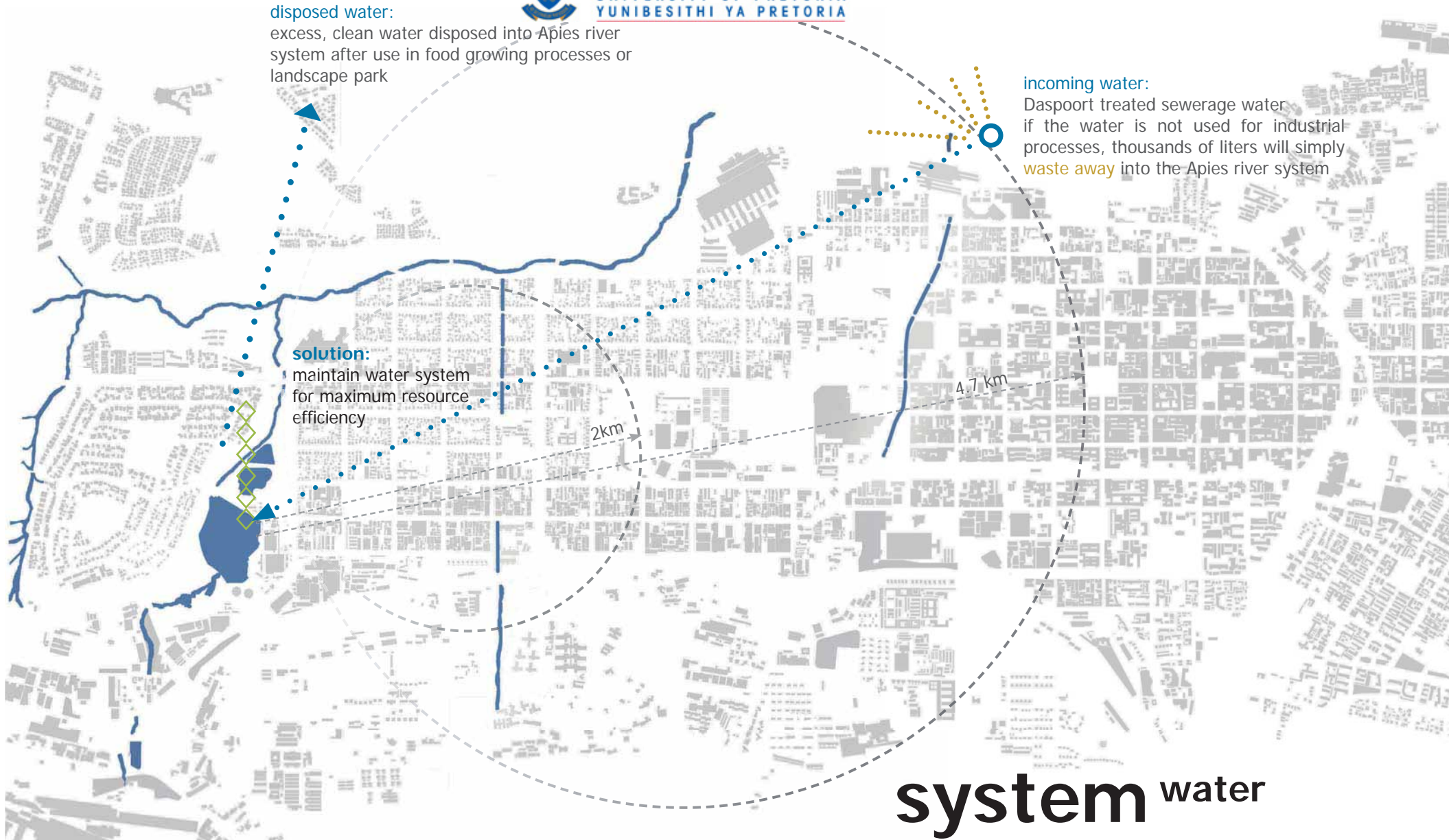
fall from south to north  
[from ridge towards church street]

### Subsurfaces

6. existing ash ponds
7. main water body [cooling dam]  
non-potable, high nutrient value water fed from Daspoort Sewerage Plant
8. **existing coal bunker** [16 meters deep, sunken]
9. existing coal store [4 meters deep, sunken]







# system water

Figure 67: Connection to Daspoort systems [author, 2010]  
 Figure 68 (opposite): Fall and topography [author, 2010]  
 hydroponic food factory is ideally suited to capitalise on the incoming nutrient-rich treated sewerage water from Daspoort, that would otherwise be a wasted resource.