

CHAPTER

02

[context and site analysis]

urban decay as a result of neglected infrastructures

.

The chapter seeks to contextualize the conceptual and practical issues hitherto discussed. The project focuses on the analysis of three major scales of intervention: urban, precinct and site scales. Analysis further reveals physical and conceptual content to be used as potential design generators.

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Fabric Decay





BACKGROUND AND DELIMITATIONS

For the purpose of this dissertation, the block of Brown Street is studied in relation to t he North-Eastern urban context of the Pretoria CBD. This sees analysis done on both a macro- and micro-level.

Understanding of the site's current condition is sought through a brief study of its history.

PRETORIA

[historical core of the larger City of Tshwane]



 $\textbf{Figure 2.1:} \ \texttt{5m contours showing Re Kgabisa Framework within the Apies river valley (GIS, 2015)}.$



MACRO ANALYSIS

2.1 CONTEXTUAL ANALYSIS

2.1.1 [a brief history]

Nestled between the Magalies Mountain- and Bronberg ranges, Pretoria is located on the 'watered' plains in the Apies river valley at about 1300m above sea level. It forms the historical core of the larger City of Tshwane. The Tshwane Metropole is located in Gauteng Province, the economic heart of South Africa. The city has approximately 2.9 million inhabitants spread over an area of 6298 km² (City of Tshwane 2013). The history of Pretoria can be traced back to the 1850s when iterant Boere established Pretoria as the capital of the Zuid-Afrikaansche Republiek (ZAR). Granted independence by Great Britain, the ZAR dominated Southern Africa politically (Clarke & Corten. 2009: 883).

Pretoria's agrarian origin is evident within its urban fabric. Single storey buildings were incorporated within a strictly regulated orthogonal grid. These buildings were used as residences with large backyards; offices for administration and regional services and also as shops for trade. Citizens were obliged to plant and maintain trees in front of their properties in order to provide the streets with shade. Dwellings were supplied with fresh water via canals fed by the source of the Apies river; a fountain located to the south of the fledgling settlement at Elandspoort.

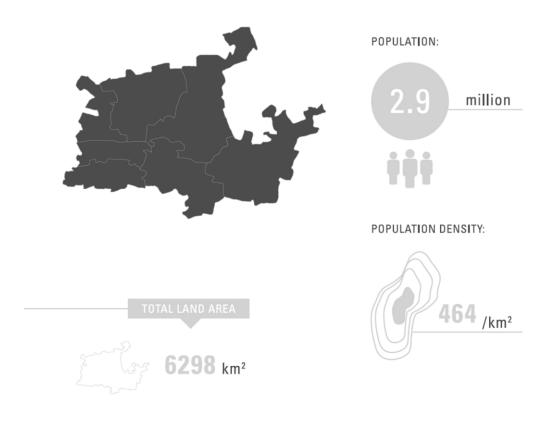
The discovery of gold in 1886 led to an enormous influx of people. This saw the transformation of the rural community of Pretoria into an urban society (Clarke & Corten, 2009: 883). The first expansion stemming from this transformation was comfortably accommodated in the centralized grid. The Apies River to the North-East and the Steenhovenspruit in the West formed its borders.

It was in 1880 that the city had expanded beyond its central grid. A new central grid, entitled Sunnyside, was established to the South-East to satisfy the increasing demand for residential dwellings. The next expansion, called Arcadia, was situated directly east of the city centre. The idea was that it constitute a direct extension of the city's core via Church Street (Clarke & Corten. 2009: 883). These expansions sparked a series of developments to the South-East, including Hatfield, Brooklyn, Menlopark, Menlyn, Lynnwood, Irene Centurion. Based on economic centres, these are responsible for the urban decentralization which has inevitably resulted in Pretoria's current state of stasis.



FACTS

2.2 CITY OF TSHWANE



City of Tshwane is the third largest metropolitan municipality in the world, in terms of land area, after New York in the USA and Tokyo in Japan.

2nd With 134 diplomatic missions and 26 international organisations represented, the City of Tshwane has the second highest concentration after Washington DC.

Figure 2.2: City of Tshwane: Fast Facts about our City (City of Tshwane, 2013: 42).



TSHWANE

2.3 CONTEXTUAL ANALYSIS

2.3.1 [a city in stasis]

PARTI DIAGRAM

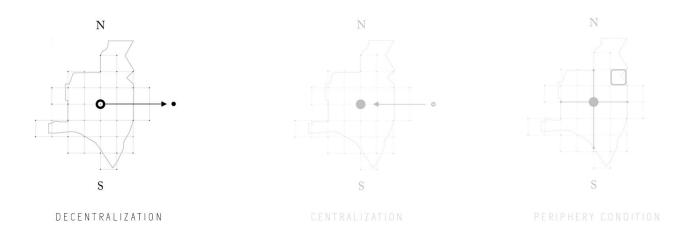


Figure 2.3: parti diagram illustrating decentralization from the Pretoria CBD (Author, 2015).

Currently the city of Tshwane exists within a state of stasis relating to its urban condition. This condition has inevitably resulted from forces of decentralization and fragmentation. Commonly referred to as urban sprawl, decentralization and fragmentation may lead to the urban decay of the country's capital (Oelofse, 2012). According to Jan Oelofse, leasing agent and broker for JHI Properties, "the absence of new developments has resulted in the stagnation of this important national landmark, with a gradual migration away from the precinct, resulting in vacant buildings with little demand for the space."

This urban migration is thought to be an effect of the central business district (CBD's) growing inability to meet the requirements of government. These requirement include its

communal. social various and physical infrastructural components (see Figure 2.3) infrastructure diagram. "Poor infrastructure is a major impediment to development, poverty reductions and improved standard of living. For congestion, example, road poor public transportation, poor facilities for pedestrians, poor sanitation, and power outages, etc. are major infrastructural deficiencies that hinder development" (Myeza, 2013: 96). The city of Tshwane has therefore proposed a vision, which by the year 2055 sees the implementation of several infrastructural projects. These projects, via a process of re-centralization, rejuvenate and restructure the inner city of Pretoria and include amongst others, a ceremonial boulevard, government precinct and civic precinct.



Provincial Cabinet Decision of July 2004

"Approved development of strategic plan for accommodation of National Government in the Inner City of

Pretoria..." (Tshwane, 2004).

Provincial Cabinet Decision of May 2005

"Noted progress to date... approved the implementation plan for the project." (Tshwane, 2005).

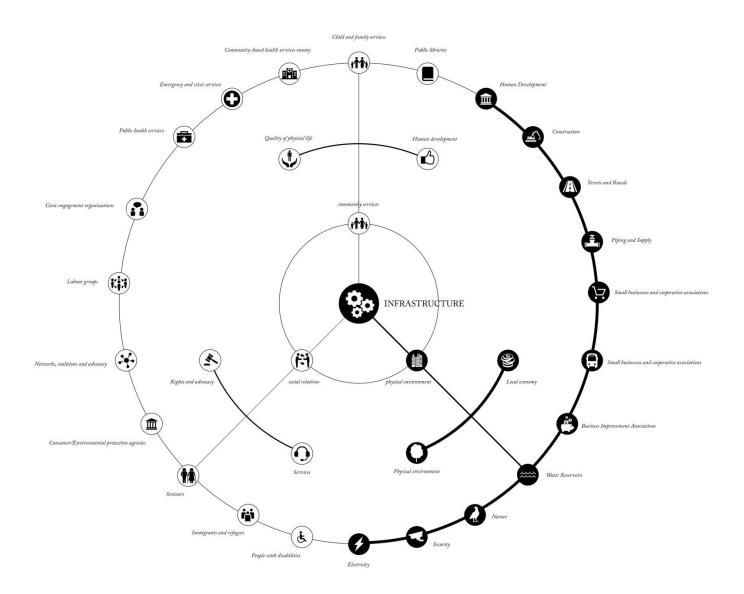


Figure 2.4: Diagram of the three primary city infrastructures and their various components (Author, 2015).



In 2005 the National Department of Public Works, along with the Department of Public Services and Administration and the City of Tshwane Metropolitan Municipality launched the 'Re Kgabisa Tshwane' program. The program was a direct response to disinvestment in property in the city's centre, which led to associated decay of the core and urban sprawl in areas of lower density (Clarke & Corten, 2009: 883).

2.3.2 [Tshwane Vision 2055]

The Tshwane vision consists of various component frameworks that aim to strategically restructure the entire city. The 'Re Kgabisa Tshwane' Framework is the components that focuses more specifically on the development of the CBD. It concentrates on the development of the two main corridors of Pretoria's inner city;

its *Cardo* and *Decumanis*.. The 'Decomanis' is imagined to become a ceremonial boulevard which intends to promotes a safe public network with accessibility to government departments (City of Tshwane, 2006). The 'Cardo' is to form the primary axis for the proposed civic and government precincts.

OBJECTIVES

[objectives as highlighted within published proposal documentation]

- Maximizing functionality of existing city infrastructure specifically those which directly relate to the Pretoria CBD.
- Creating an infrastructural spine that promotes private development.
- Ensuring improved urban safety by means of ensuring well utilized public space as well as accessibility to those spaces.
- Providing commercial opportunity
- Linking symbolic and heritage sites of Freedom Park, Church Square and the Union buildings via a visual axis.

SHORTCOMINGS

[shortcomings relevant to the degenerative condition of the North Eastern periphery]

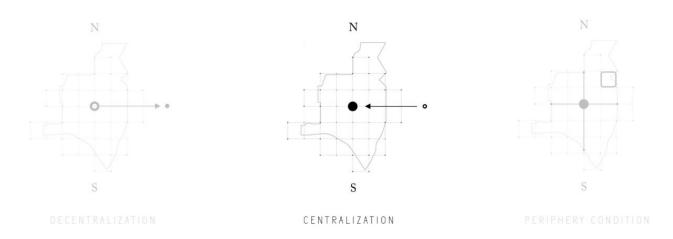
- No intention for the transformation / development of the North Eastern Corridor.
- No densification programme for inner city degenerative urban fabric of the block of Brown Street.
- Lack of connection between Brown Street and the proposed structure for the city, more specifically, the Civic Precinct.
- Insufficient provision of public safety infrastructures in places with high rates of crime
- No recognition of infrastructure potential to circumvent present and future crises, such as electricity- and, more importantly, water scarcity.
- No recognition of the informal transportation HUB which currently feeds the North Eastern quadrant of the CBD.



MACRO ANALYSIS

2.4 URBAN ANALYSIS

PARTI DIAGRAM



 $\textbf{Figure 2.5}: parti \ diagram \ illustrating \ centralization \ from \ the \ Pretoria \ CBD \ (Author, 2015).$

2.2.1 THE VOID

[formation of the void]

In November of 2014, the Tshwane 2055 vision for the city was approved and an extensive 40 year implementation process initiated (Sacommercialpropnews.co.za). Although the proposed framework has merit, it continues to facilitate the formation of voids within the city's fabric. Voids, in this context, are defined as zones within the CBD that the Tshwane vision for 2055 fails to recognize. These voids persist as a result of municipalities' continued

restriction of capital (Woods, 1997). The most prominent of these voids exists within the North Eastern quadrant of the CBD's metropolitan municipal boundary. Currently occupied by the city's marginal informal sector, this void does not, as the literal definition suggests, exist as a placeless vacuum. Rather, it is a place of energy; a vibrant energy of commerce that has stemmed over time from the presence of an informal transport HUB.



MACRO ANALYSIS

2.5URBAN ANALYSIS

PARTI DIAGRAM

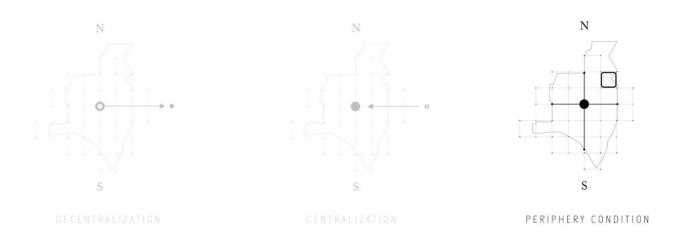


Figure 2.6: parti diagram illustrating North-Eastern periphery from the Pretoria CBD (Author, 2015).

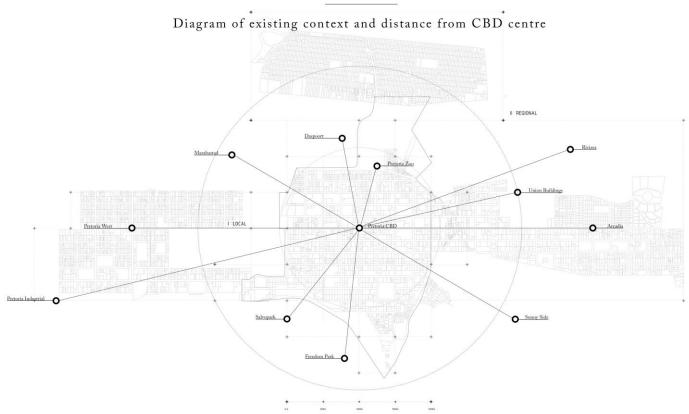
2.2.2 NORTH-EASTERN GATEWAY

[the unveiling of hidden urban potential]

In relation to the 'Re Kgabisa' spatial framework, there are three city blocks within the North-Eastern quadrant of the CBD that have been excluded. Of these three city blocks, the block of Brown Street is most evidently impacted by both a state of neglect and this exclusion. Despite its degenerative nature, it does however have the most potential for intervention due to its ideal location in relation to the city's urban structure.. It is not only situated on the Northern border of the intended Civic Precinct but also defines the North-Eastern Soutpansberg gateway of the CBD (see Figure ##). Although neglected, the North-Eastern gateway holds much potential as a possible mediator between the CBD's formal and informal occupants. The formal is to occupy the zones as demarcated within the 'Re Kgabisa' spatial framework. The rest, the informal, then manifests within the neglected periphery; the zones that have not been included within the framework. The informal nature of the North-Eastern periphery is ascribable to the fact that it's one of the most prominent access points to the city's core from the North. The potential value of the north-eastern gateway can be realised as a thoroughfare between the North and the South via the Southern Gateway. . The mediation between the formal and informal elements is thus stretched far beyond the border of the CBD. This is accomplished through the formal establishment of a connection between the previously mentioned decentralized nodes (Arcadia, Hatfield, Brooklyn, Lynwood, Menlyn, Irene and Centurion) of the South-East.

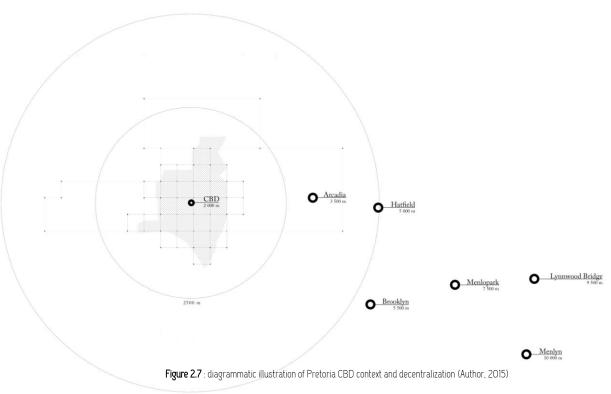


CONTEXT



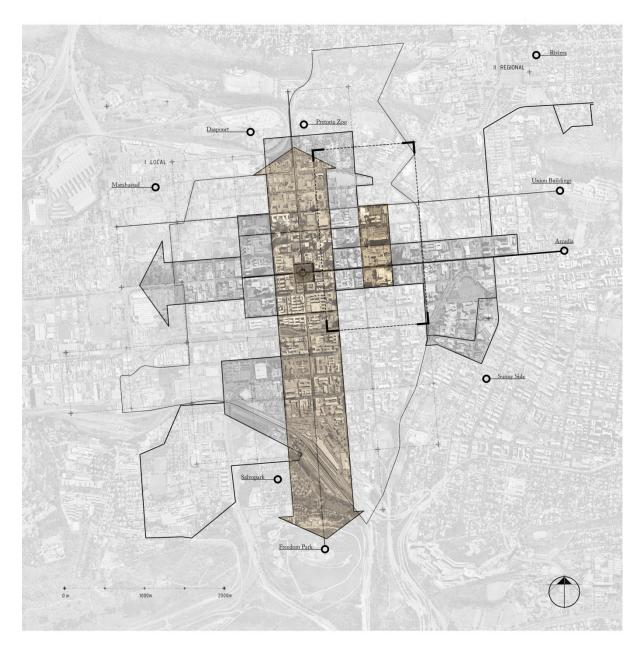
DECENTRALIZATION

Diagram showing economic node as well as distance from CBD







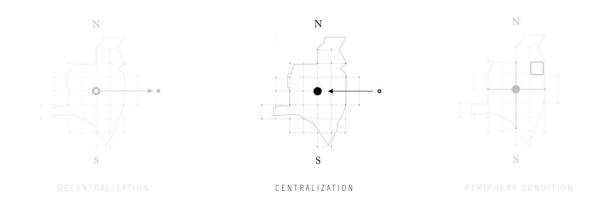


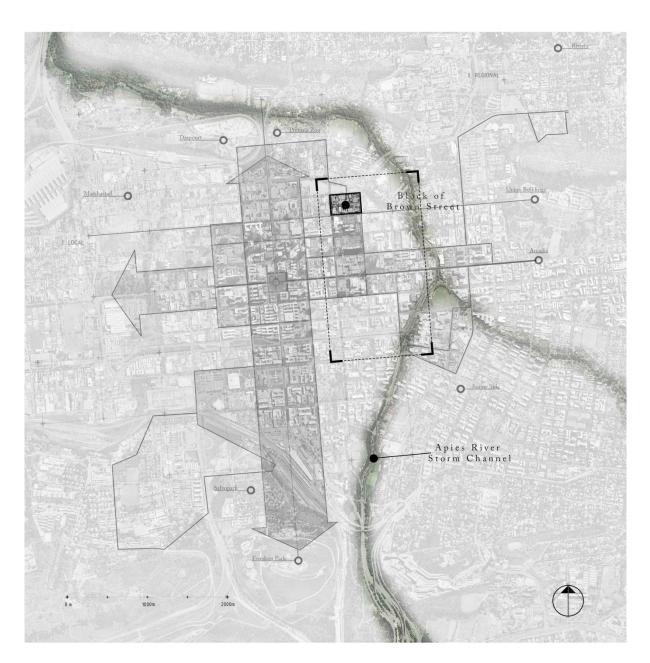
TSHWANE VISION 2055

[Rekariga Spatial Framework for inner city Pretoria]

Figure 2.8 : Spatial structure of the Central Business District as per the Re Kgabisa Framework (City of Tshwane, 2013 edited by Author, 2015).







THE "ORPHANED"

[Identified decaying infrastructures]

Figure 2.9: North Eastern periphery condition in relation to Re Kgabisa framework (Author, 2015).



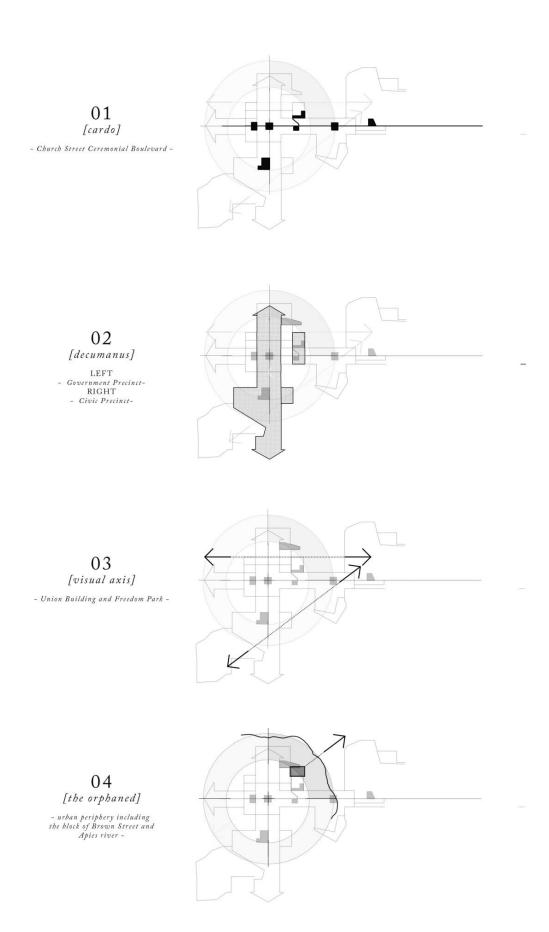


Figure 2.10 : Diagram components of Re Kgabisa inner-city Framework (Author, 2015).







PROPOSED CIVIC CORRIDOR

[unveiling the possibility of mediating formal and informal]

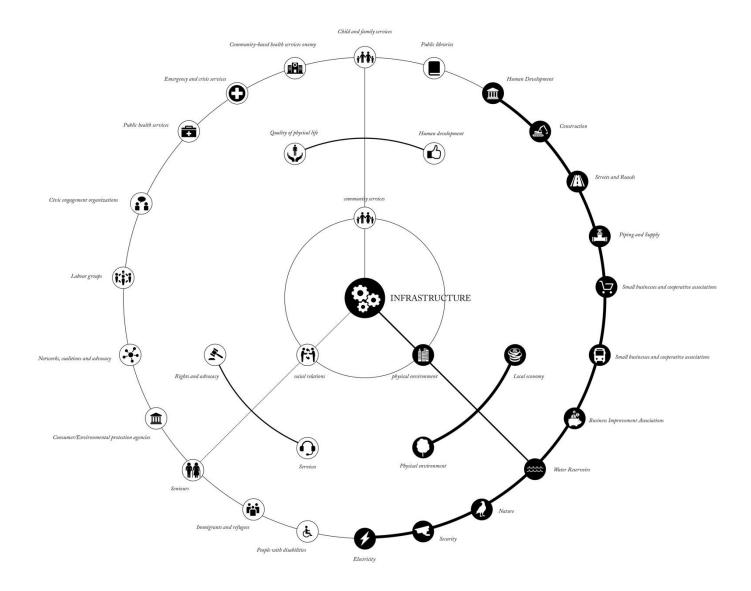
Figure 2.11: Proposed corridor aiming to include the North Eastern periphery within the proposed spatial structure of the CBD (Author, 2015).



MACRO ANALYSIS

2.2 PRECINCT ANALYSIS

The North-Eastern quadrant of the Pretoria CBD consists of a wide range of infrastructures. These are essential to the functioning not only of the CBD itself but also of the entire urban structure. Mapped within the following precinct analysis are the infrastructures that significantly contribute towards the public realm of the CBD, specifically within the proposed Civic Precinct. (AS HIGHLIGHTED BELOW)



 $\textbf{Figure 2.12}: \textbf{Diagram of the three primary city infrastructures and their various components} \ \ (\textbf{Author}, 2015).$







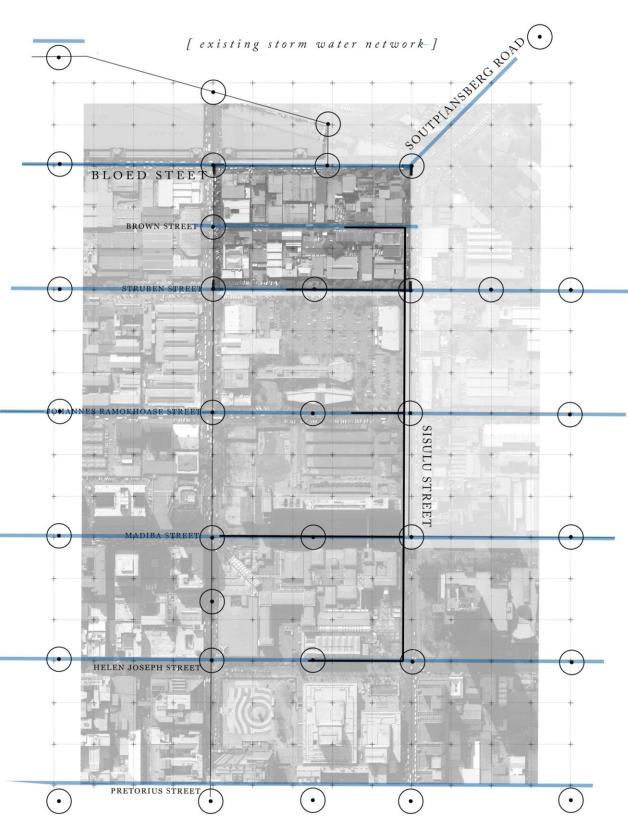


Figure 2.13: Illustration of Pretoria's storm water network and manhole access points. Based on 1889 plan (Author, 2015).





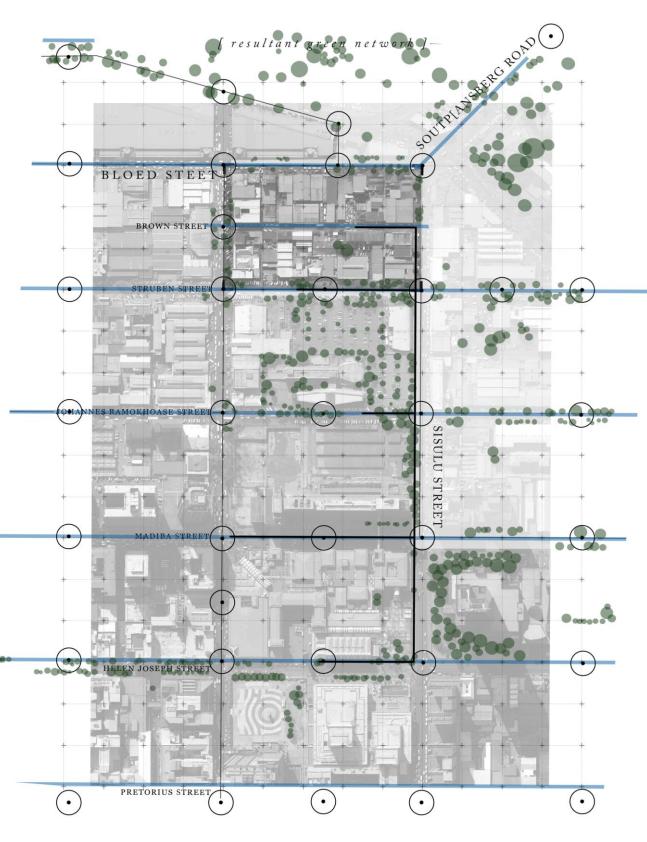


Figure 2.14: Illustration of Pretoria's green network in relation to storm water channels. (Author, 2015).





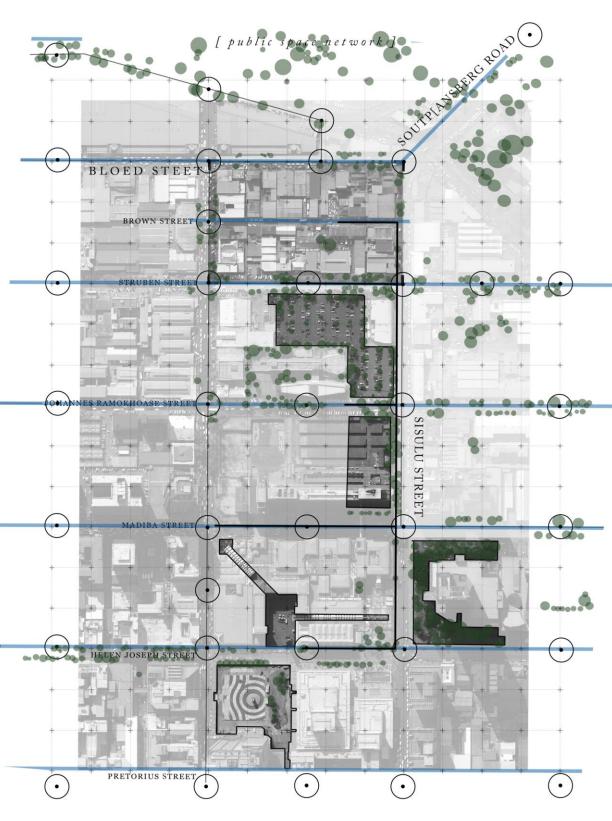


Figure 2.15: Illustration of Civic Precinct public space network in relation to green network (Author, 2015).





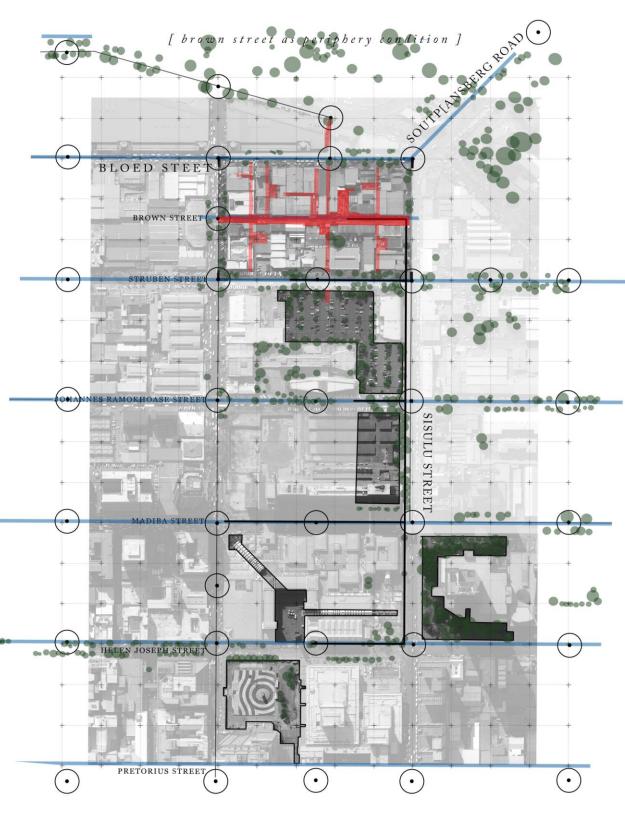


Figure 2.16: Illustration of urban vision in relation to the in between spaces of Brown Street in red. (Author, 2015).



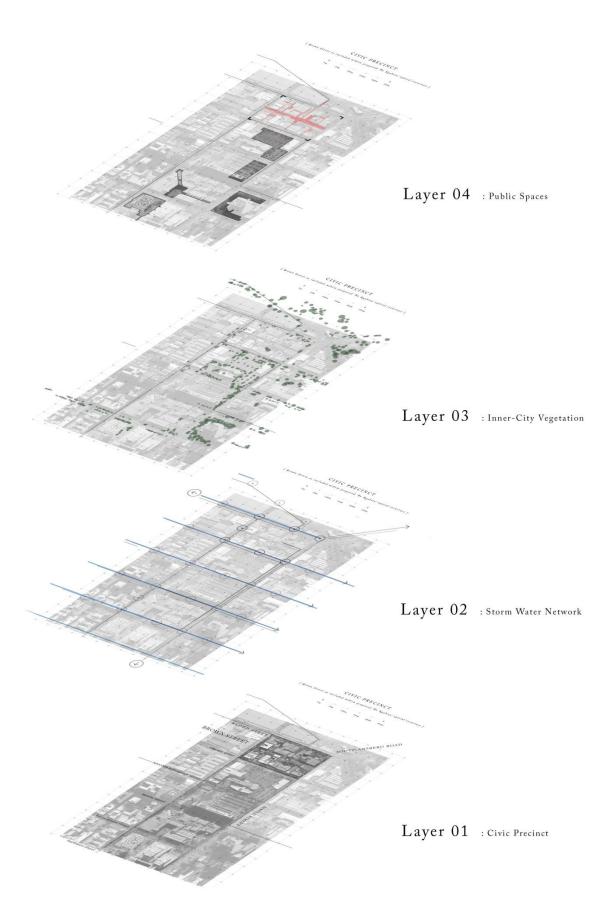


Figure 2.17: layered illustration of urban vision (Author, 2015).



MICRO ANALYSIS

[the block of Brown Street]



BROWN STREET

25°44'27.24"S 28°11'37.53"E

Figure 2.18: Photography of Western access point of Brown Street (Author, 2015).



MICRO ANALYSIS

URBAN HUB CHECKLIST

[as per urban hub design toolkit for the city of Tshwane]

The Urban Hub Design Toolkit, published in February 2013, was drawn up in response to the National Development Program's (NDP) requirements. The NDP recognises the need to invest in Urban Hubs as a "strategy to enable the long term restructuring of our larger urban settlements" (Urban Hub Toolkit, 2013: 1). The toolkit provides a structured guide allowing for the following tasks to be undertaken:

- Identification of key opportunities, constraints and challenges
- Identification of the extent / boundary of the hub precinct
- Identification of key infrastructure interventions
- Planning of land use components

"The toolkit methodology should serve as a reference for designers and planners of Hub Precincts, a guide for municipal officials and simultaneously an evaluation tool for the NDP who will be overseeing the work of the Municipalities. It can be used to guide planners and designers through a process but can also be used as a design reference source to be dipped in and out of as required" (Urban Hub Toolkit, 2013: 3).

[brown street]

Brown Street's lack of supporting infrastructure and its veil-like spatial condition has led to the enablement of high rates of crime and to the accumulation of grime within the CBD's periphery. The density of Brown Street's urban fabric directly contributes to the degenerative nature of its current spatial conditions.. This dense urban fabric comprises primarily of industrial portal frame buildings. The building typology relates directly to the buildings function and need for flexibility. The street's historical significance is eclipsed now by a brazen drug trade..

As a result, high levels of crime and violence in the area has created an inhospitable urban environment. Subsequently, in fear of becoming victims of unlawful activity local businesses and pedestrians have fled; leading to vacancy and resultant decay of the urban fabric. The inner buildings, those with direct access to Brown Street, have become uninhabited. Also having been abandoned by the Cities Improvement District (CID) for reasons unknown, it is predicted that the degenerative condition of the city block worsen (reference article). Today, Brown Street is truly a mere shadow of its former self.



ZONING ANALYSIS:

The currently veiled and fragmented nature of the city block is revealed by municipal zoning areas. The block of Brown Street is split both vertically and horizontally. Horizontal fragmentation forms the basic nature of Brown Street, whilst the vertical fragmentation takes the shape of service alleys. The "in-between" spaces created by this fragmentation have the potential to establish a series of public thoroughfares. These provide a platform for the conceptual mediation between the existing industry that surrounds Brown Street and the block's external commercial interface. The degenerative nature of this site has, however, led to the obstruction of these "in-between" spaces. Instead of being utile thoroughfares, they are accumulations of large quantities of industrial waste.

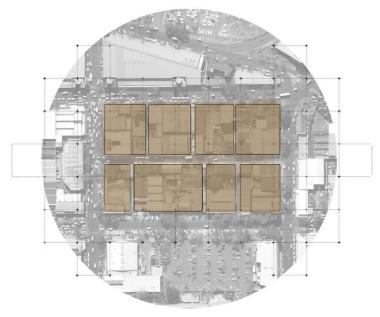


Figure 2.19: Zoning analysis. Not to Scale (Author, 2015).

SIGHT LINE ANALYSIS:

The density of the urban fabric of Brown Street does not allow for much visual accessibility. It is this limited visibility that has facilitated the formation of a veil like spatial condition, which allows crime related activity to take place on the street. As the service alleys are closed off by property owners, Brown Street is only revealed from strategic anchor points on the block's periphery (specifically the street's Western entrance and Eastern exit). This veiled characteristic of the site emphasises the sight line study as an infrastructural design informant concerned with public safety.

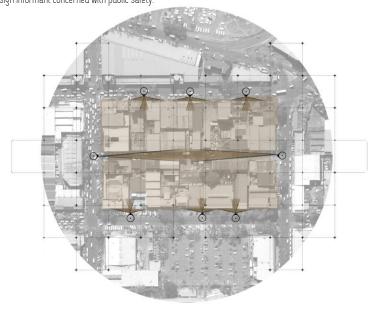


Figure 2.20: Site Line Analysis (Author, 2015).



EDGE CONDITION:

As mentioned above, the veil like spatial condition is a result of the privatised character of the city block's fabric. The Northern and Southern perimeters of the city block limit public accessibility due to fenced off service routes. The fenced character of the site limits the potential of public movement and accessibility; contrasting with that which is possible through the municipal **erf** layout...

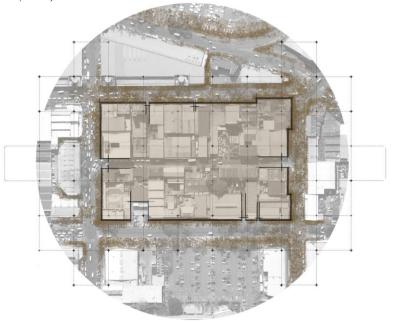


Figure 2.21: Corridor development (Author, 2015).

TRANSPORTATION STRUCTURE:

Transportation from Bloed Street provides a large percentage of the surrounding area's transportation structure. This is a potential asset to the Brown Street transformation. The SAPD (South African Police Department) has blocked the Bloed Street (the West entrance) to Brown Street. As this was the city's block only access point, the site is now inaccessible by vehicle. The service ways between the existing buildings are, in most cases around 4500mm wide for the purpose of vehicular accessibility.

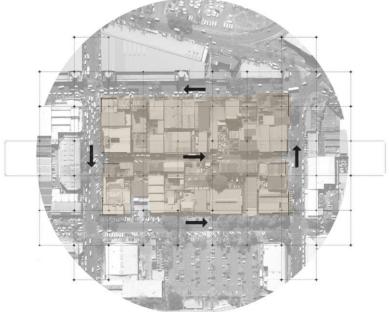


Figure 2.22: Transportation structure (Author, 2015).



DENSITY AND FABRIC ANALYSIS:

The block of Brown Street has a dense urban fabric with the majority of buildings ranging between one and two storeys. However, there are 6 buildings on the perimeter of the block which ranges between 3 and 4 storeys of which 4. Due to the presence of industry to the core of the block, residential components are located on the outer edge. This facilitate for dormant activity which contributes to the degenerative nature of the core of the block, Brown Street.

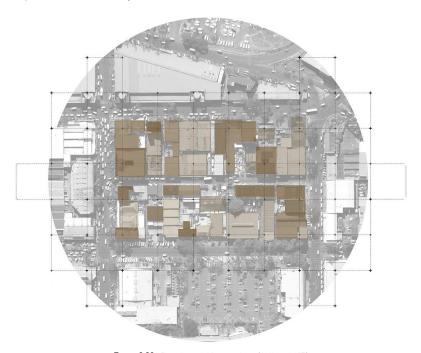


Figure 2.23: Density and fabric analysis (Author, 2015).

SITE CIRCULATION ANALYSIS:

Primary roads form a ring around the block of Brown Street. These streets include Bloed Street (North), Lilian Ngoyi Street (West), Struben Street (South), and Sisulu Street (East). Secondary and tertiary roads, Brown Street and the service ways, allow access to the inner buildings of the block. Currently underutilized, these secondary and tertiary roads contain the potential of becoming pedestrianized to allow for site permeability and therefore maximizing public movement.

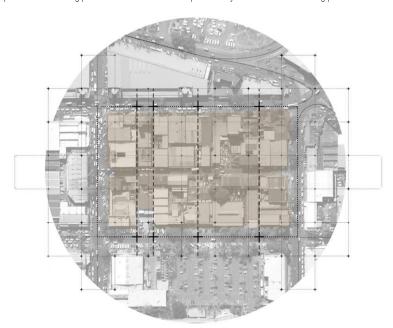


Figure 2.24: Circulation analysis (Author, 2015).



SITE HYDROLOGY ANALYSIS:

Due to the contour gradient, the block of Brown Street is located in the lower North-Eastern quadrant of the CBD. At present, the site does not make use of any method of water catchment. The lack of a water management system has induced the growth of vegetation in areas alongside the street where soil from surface runoff has accumulated. The lack of this essential infrastructure forms an important design informant. Hydrological activity, as illustrated below, becomes a major design generator..

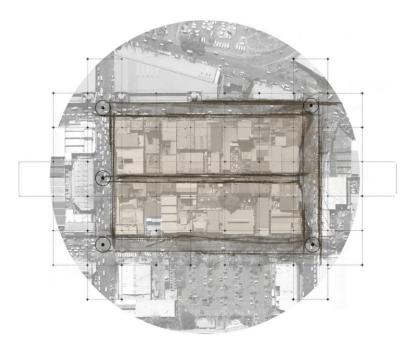


Figure 2.25 : Hydrology analysis (Author, 2015).

DESIGN POTENTIAL:

A series of design informants are superimposed to create an initial illustration of the design potential in the regeneration of Brown Street. This design potential diagram takes into account the conclusions reached in the micro analysis. It illustrates areas, located alongside service ways and based along Brown Street as the primary axis, that allow for maximum interaction of the [infra]structure with all existing structures on site..

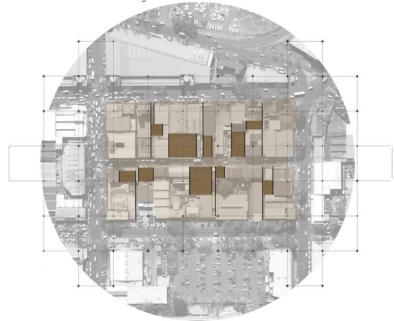


Figure 2.26: Design potential (Author, 2015).



MICRO ANALYSIS

[photographic site study]

This study is done to establish a visual understanding of the architectural and urban characteristics of the block of Brown Street. The decaying state of urban fabric emphasises the neglected and derelict state of the site since its decline in 2013. Brown Street now only exists as a manifestation of entropy.

THE NEGLECTED

[contextualizing neglected infrastructures]

In the next ten years' time, the city will face a water crisis. The Institute of Security Studies (ISS) suggests that it will equal the electricity pressure we are currently experiencing (reference article). A water plight will heavily impact the

functioning and liveability of the city. This is an infrastructural issue and could lead to a further decay of the city's infrastructure.

[contextualizing dissertation intentions]

Therefore the intended *urban linfralstructure* will address the looming issue of water scarcity and will, use this infrastructure alongside other neglected infrastructures as a means to rejuvenate the decaying condition and fabric of Brown Street and its surroundings. This will done by harnessing regenerative potentials relating to the infrastructure of water. Other neglected infrastructures include: security, informal transportation, power and 'biodiversity'.

However, due to the increasing unreliability of these infrastructures to provide the necessary services, the idea is to alongside rejuvenation, create an infrastructural typology which not only sustains the fabric of Brown Street but is also regenerative in its context.



A BRIEF HISTORY

[water and pretoria]

With a population of 2.9 million people, the city of Tshwane requires almost 800 million litres of fresh water per day. Although the population has grown considerably since its founding in 1855, the pristine drinking water from the fountain valley met all water requirements until the 1930s, after which subvention became necessary. People need water on a daily basis, whether it be for the purpose of drinking, washing or recreation. However, what is of little concern to the users of the water is where the water comes from.

Ground water has supplied the city with water for over 160 years. In fact, Pretoria was founded due to its vast water recourses. These are in the form of two natural springs in the Groenkloof region. The Bronkorst brothers established the farms of Eelands poort and Groenkloof in 1839 mainly due to the presence of these springs. The farms were then purchased by the Zuid-Afrikaanse Republiek in 1863 for water supply to Pretoria. President Paul Kruger declared Groenkloof a conservation area in 1895 to protect the wildlife in this region. The reserve also protects the dolomite aquifer that supplies water to the two springs; the upper and lower fountains respectively. These springs also contribute to the upper reaches of the Apies river. They supply up to 46 000 000 litres of water to Pretoria per day while still allowing surplus water to enter the Apies river.

In 1860, following Pretoria's selection as the seat of government, a network of furrows was constructed to divert water to the central part of Pretoria by means of gravity. The furrows were covered by slate in approximately 1885; then overlaid with earth and finally with paving. They served as storm water channels until the 1940s.. Remnants of these furrows can still be observed between Sammy Marks Square and the State theatre. The central fountain

of Pretoria once stood in the middle of Church Square. It was later replaced by the statue of Paul Kruger and the fountain was moved to its current location at the Pretoria Zoo.

Pretoria's population growth may have been a function of its vast water resources, combined with its proximity to the Witwatersrand gold field and its status as capital city.. The city's population within the municipality gradually increased from about 35 000 in the 1900s to around 700 000 in the 1980s.. Since then the population as well as its municipal land area has increase rapidly which led to the creation of addition adjacent municipalities. A survey of done in 2013 revealed that the population has surged to about 2.9 million within a 640 000 hectare municipality. Water demand has followed the same trend; from 700 million litres per year in the 1930s to 88 000 million litres in the 1980s, and finally a present demand of 270 000 million litres per year.

Pretoria is a city with a strong history. An origin ascribable to two natural springs uninterruptedly supplying high quality water has developed into a city that houses the administrative capital of South Within the context of a continuously developing and changing city the springs remain a consistent source; in both their faithful supply and outstanding water quality. Water is clearly one of main reasons for Pretoria's founding and rise to the leading city it is today. However, in order for this success story to endure, water should continue to be prioritized as an enabler. The occurrence of ground water, the formation of springs, the intricate geological history and the important hydrological heritage shaping the history of the city and the nation should not be overlooked.



It should be appreciated for being a fundamental human need which governs our existence, our development, and the status of Pretoria in South Africa and the world. It is only with interest and knowledge that we can manage this precious hidden resource and its only with management that we can sustainably use this resource for the foreseeable future.

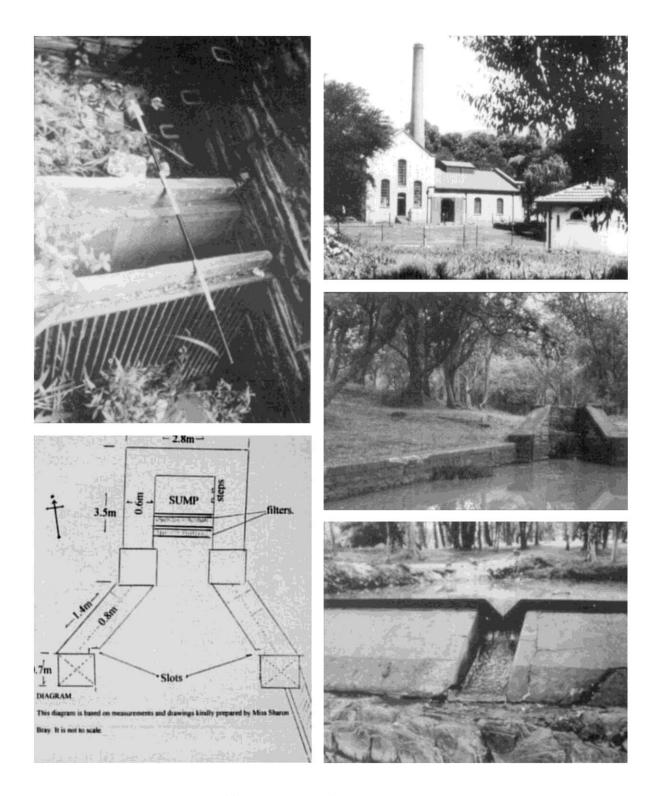


Figure 2.27: Photographs of Pretoria's old pumping station (Author, 2015).



CONCLUSION

[Urban Regeneration]

Pretoria as a heritage city has unprecedented potential. However, it is the discrepancy between old and new that deprives the city from achieving this potential. Koolhaas (1998: 1248) explains that "Not only is the centre by definition too small to perform its assigned obligations, it is also no longer the real centre but an overblown mirage on its way to implosion; yet its illusory presence denies the rest of the city its legitimacy".

The regeneration of the physically dilapidated fabric of the North Eastern periphery is not merely a matter of repair and restoration. As dilapidation of urban areas usually result from social and economic disorder (Clarke and Corten, 2009: 882), the aim then would be to restore the social cohesion and economic feasibility of these areas. This is to be achieved by means of an infrastructural architecture, which should in turn provide a sustainable platform for the surrounding fabric to be rehabilitated. Thus, the main intention for the block of Brown Street would be to tempt inhabitants and investors to invest in the precinct in an appropriate way. According to Clarke and Corten (2009: 882) this may be achieved by firstly formulating a clear perspective on the area's future. This future should be provided or secured by the local authority; it should be legally secured in an appropriate development plan. The development plan must be supported by a political will with a life longer than a single political term of office.

The first step toward integrating historical centres and future developments is to convince decision makers of the development potential the urban periphery has to offer. They must be assured that the city will benefit from such integration. A policy entitled "Integrated Conservation" aims at revitalizing dilapidated city quarters by reusing existing building stock and infrastructure. This entails (appropriately) their adaptation to meet current social and economic requirements (Clarke and Corten, 2009: 882).

