The Free[way] City

An exploration of Inner City Renewal through the removal of Settlers Way Freeway in Port Elizabeth, South Africa

Dissertation presented by PC Wasserman as part fulfilment

of the degree of Masters of City Planning and Urban Design.

School of Architecture, Planning and Geomatics

University of Cape Town

November 2014

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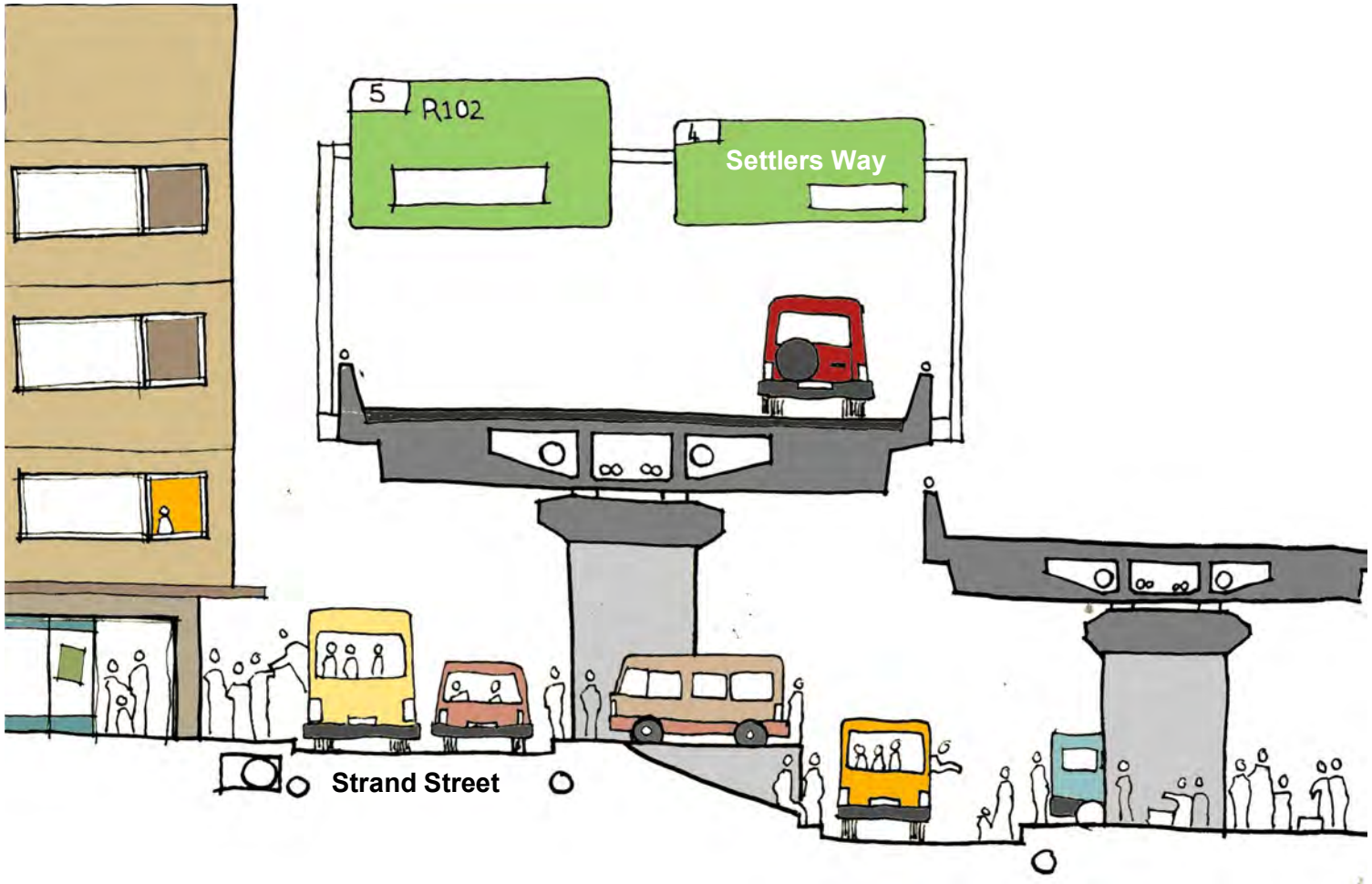

Settlers Way Section
(author, 2014)

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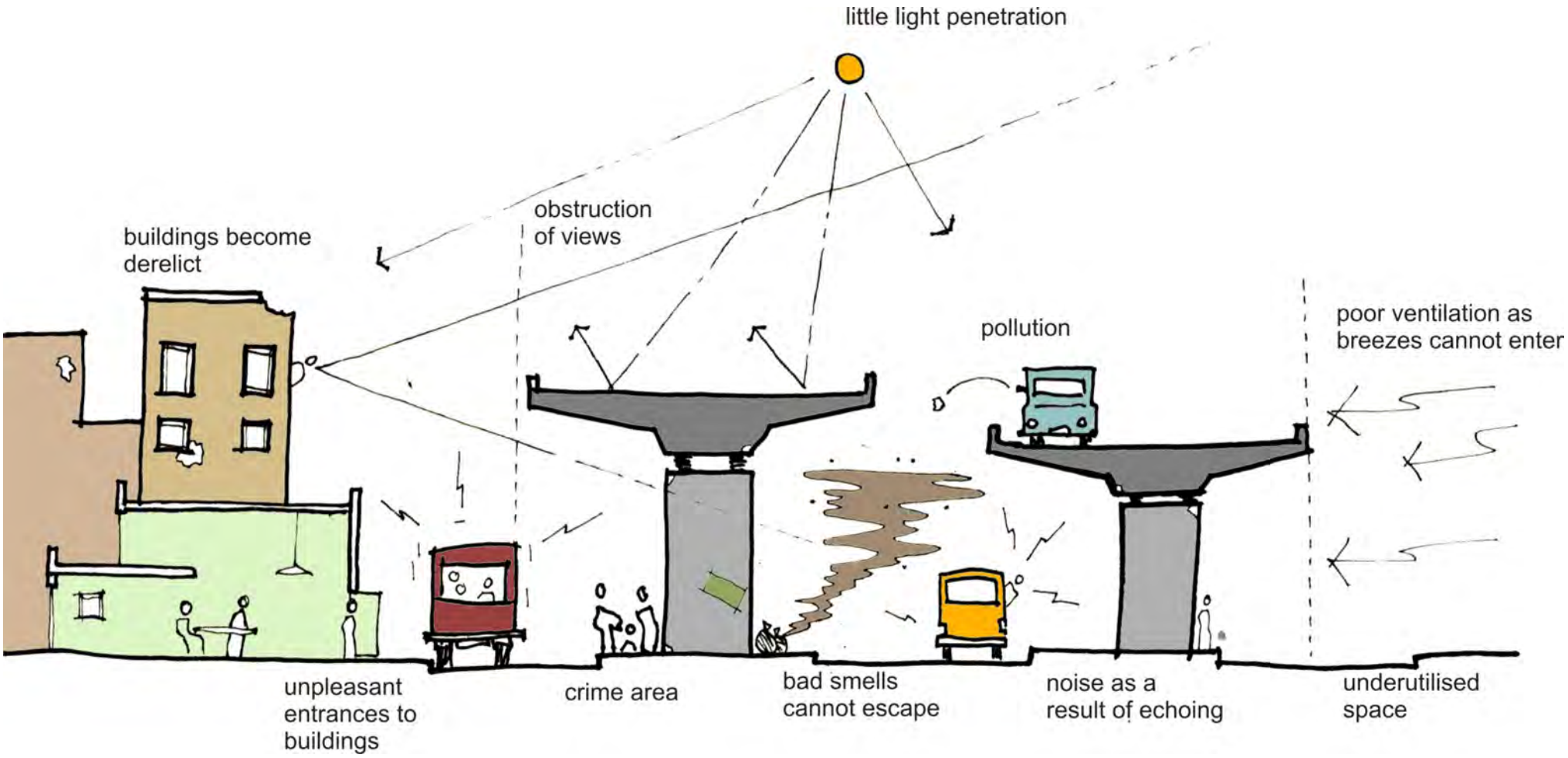


Settlers Way Section
(author, 2014)

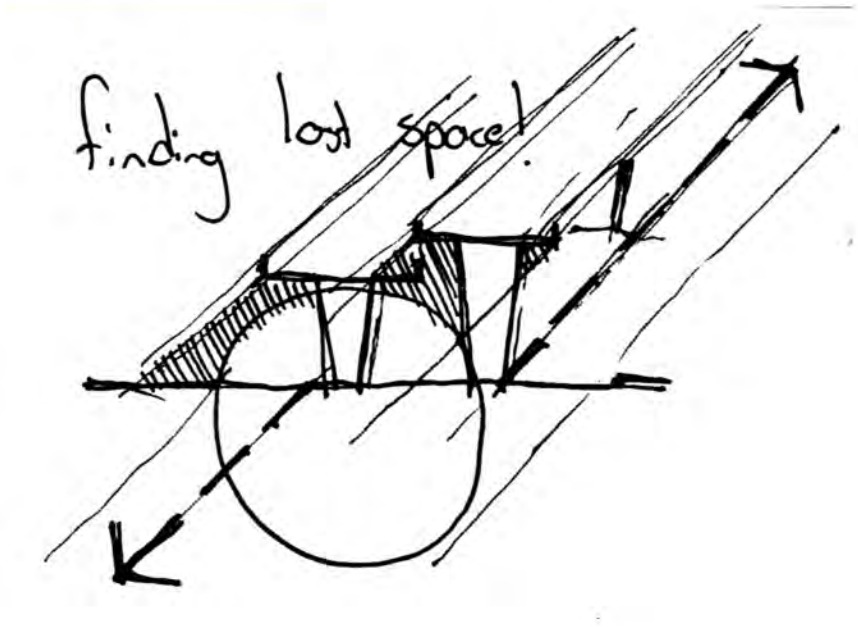
Abstract

The inner city of Port Elizabeth has faced a series of problems since the 1960s. These include forced removals, relocation of critical functions and the implementation of obdurate infrastructure. One of the most destructive of these forces was the construction of the Settlers Way Freeway in 1963. This freeway cuts through the inner city and had many buildings and neighbourhoods demolished for it to be realised. Since then it has caused more harm than good by only serving a select few while degrading inner city public space for others.

This project investigates the possibility of the demolition of the Settlers Way freeway as it is essential for the appropriate future growth of Port Elizabeth's City centre. This will also have a large positive impact on the metro area in terms of spatial and economic benefit. The city centre is centrally located in the region and has a major spatial advantage in terms of trade and commerce. This alone should be enough reason for concern when it comes to social and economic reasons.

An argument is formulated for the removal of the Settlers Way freeway and suggests a viable and realistic alternative in its place. This is done through a lens of economic rejuvenation of the inner city by using the freeway removal as a catalytic device for future development by unlocking land that is currently underutilised.

This initiative is now more urgent than ever as continued urban sprawl is occurring on the peripheries of the city in the form of shopping malls drawing much needed economic investment further away from the city centre.



Lost Space Diagram
(author, 2014)

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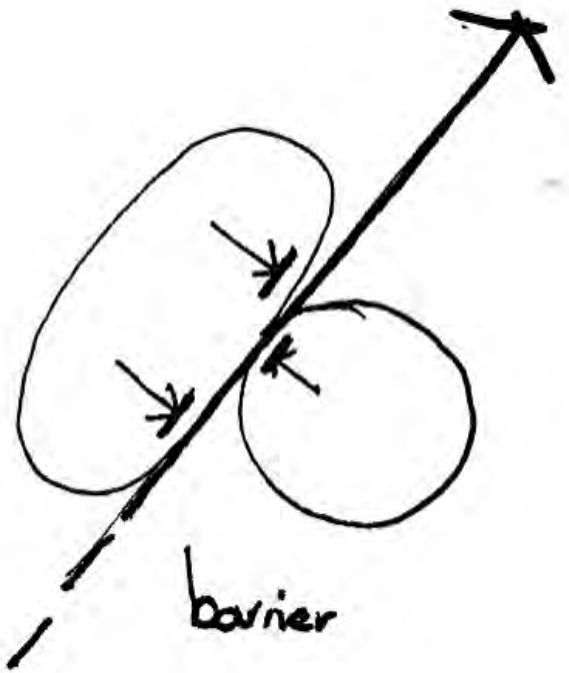

Barrier Diagram
(author, 2014)

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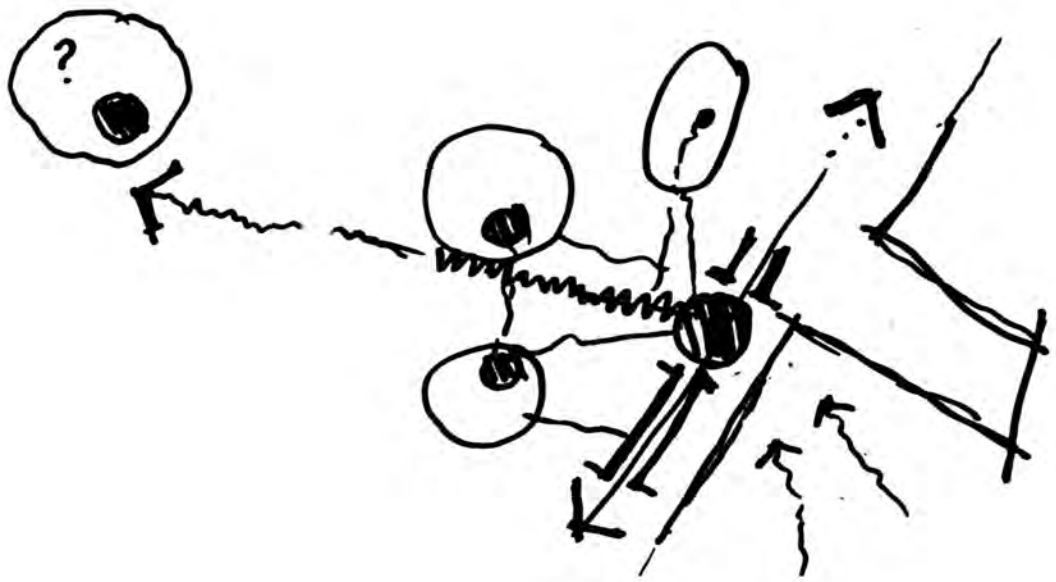

Economic Distribution Diagram
(author, 2014)

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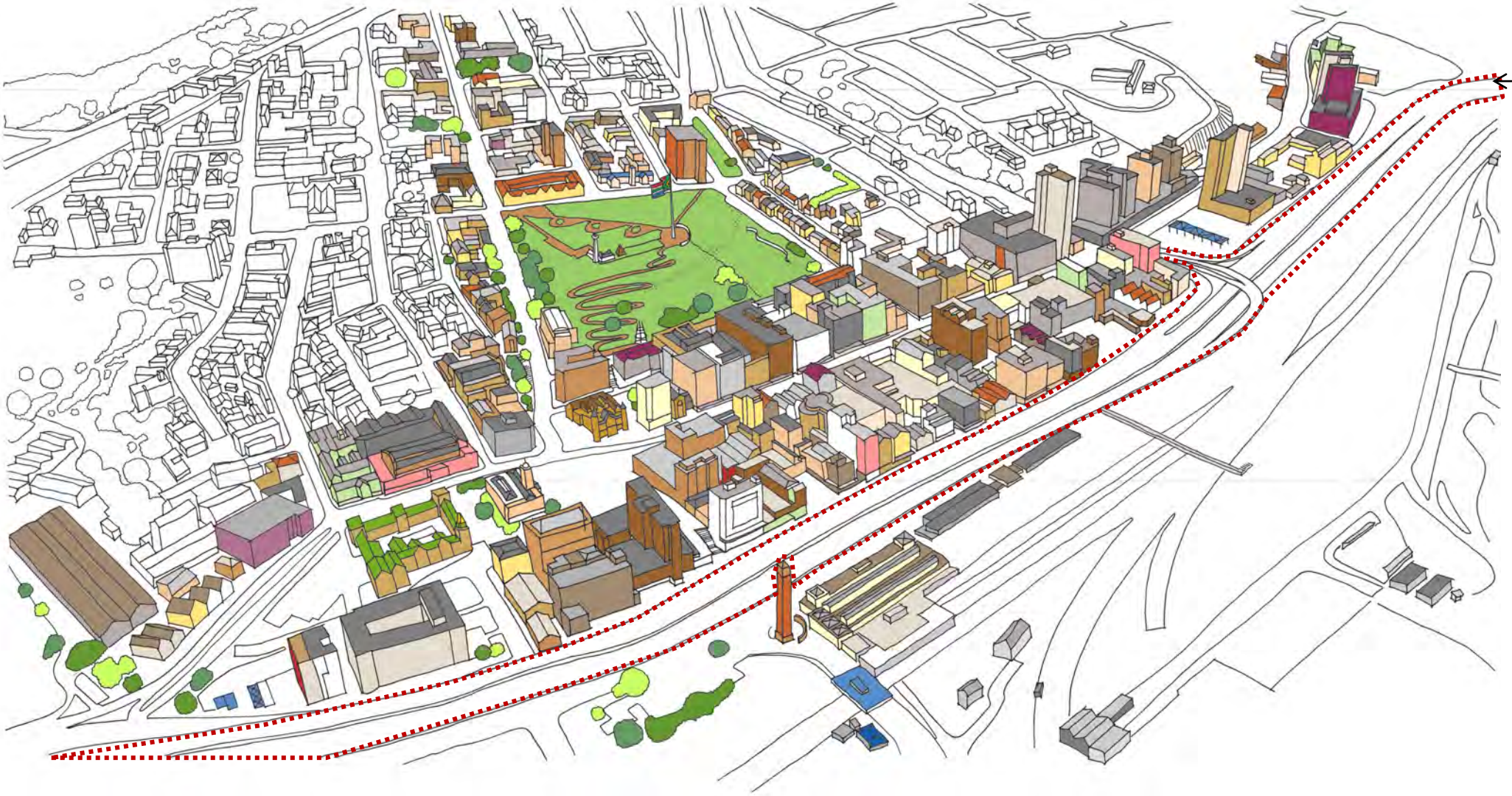


Port Elizabeth Aerial View
(author, 2014)

1. Introduction

The inner city of Port Elizabeth has experienced many problems since the 1960s. Forced removals, relocation of critical functions and implementation of obdurate infrastructure are a few of these troubles that faced the inner city. One of the most destructive of these forces was the construction of the **Settlers Way Freeway in 1963**. This freeway cuts through the inner city and had many buildings and neighbourhoods demolished for its completion to be realised. Since then it has caused more harm than good. Therefore this projects aim is to formulate an argument for the removal of the Settlers Way freeway and to suggest a viable and realistic alternative in its place.

This project consists of three main sections which involve the past, present and future of Port Elizabeth relating to the Settlers Way freeway. The first section discusses the **growth of the city** and factors that influenced its morphology. The decision to construct the freeway and the reasons for inner city decline are then examined.

The second section deals with the formulation of an argument for the demolition of the freeway followed by the method of navigation needed to achieve this. The argument is then strengthened by an analysis of similar case studies and the outcomes that these projects delivered. **Alternative options** to replace the freeway as well as potential traffic flow problems that this might cause are discussed. This is followed by potential solutions to these problems. Possible developments that may occur on land that the demolition of the freeway unlocks is then discussed.

The third section invasions a possible future for Port Elizabeth with the assumption that the Settlers Way freeway is **demolished**. It explores different freeway conditions, freeway functions, and local examples before suggesting a metro scale proposal for Port Elizabeth that involves the demolition of the freeway as the catalyst. An analysis of the inner city area is then done to inform further decisions after which an initial design process is explored. Different ideas and concepts are then shown through multiple layers and the effects of these are discussed. A visualised journey and potential alternatives to Settlers Way are then shown through sectional drawings. Finally the incremental development process of the inner city and port are explored.

This project aims to make a viable argument for the demolition of the freeway by considering economic, social and spatial issues. Investigation reveals that the positives of such a catalytic project outweigh the negatives. Economic benefits are a strong possibility as reinvestment after such a project bear little risk as the inner city is already a well located established business district. Social benefits are derived from accessibility to this area by those who already utilise the inner city as well as those who will be drawn to it by this project. **Spatial benefits** will occur as a result of reinvestment in a centralised area whereby further sprawl is prevented.

This project also discovers that there may well be feasible funding options as projects of a much larger scale have recently been approved and constructed within the metro area. Through this process it is revealed that a project of this kind is possible to plan and implement if those involved are committed and dedicated enough to make a difference to the city of Port Elizabeth.

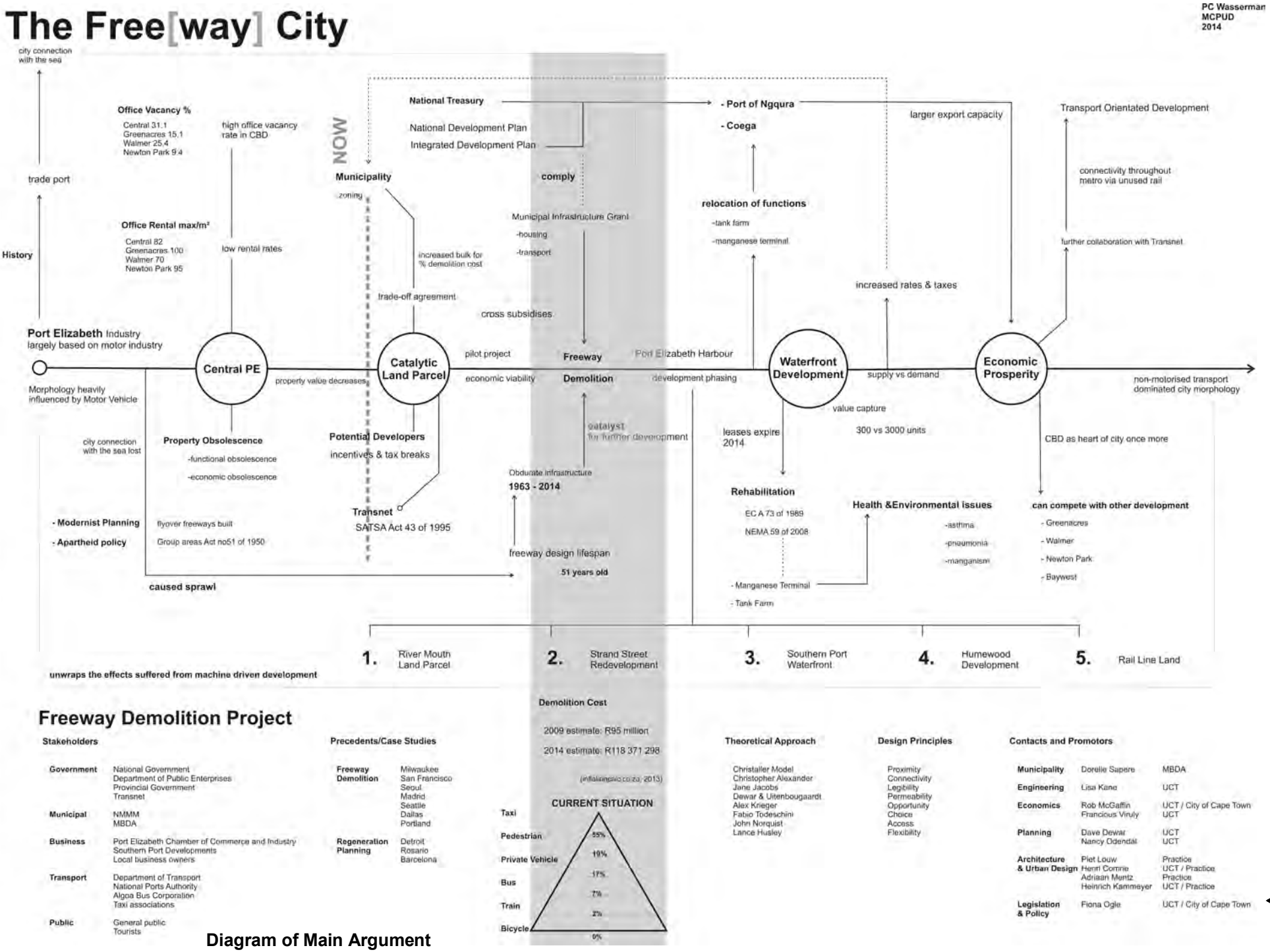


Diagram of Main Argument
(author, 2014)

1.2 Methodology & Process

The design process and method employed will try to further the objective of the removal of the Settlers Way freeways through a series of explorations. The first of these will be the Position Statement. This is done in order to determine the actual reason behind the project and what the process should aim to be doing as well as what should be aspired to.

After this a set of **principles or norms** will be determined to test further project developments against and to serve as a guide for decision making.

The analysis phase will follow in which the context is explored at different scales, from macro through to intermediate and micro scale.

The possibilities or potential solutions that may be employed are then examined and the most contextually suitable solutions are then taken further through a series of developmental approaches.

A proposal entailing **incremental development** of the city is then suggested as an alternative to the current situation of Port Elizabeth. Finally a conclusion will evaluate the findings and determine possibilities.

NOTE

The diagram to the left will be used throughout the document as a reference to the main argument that has been set up. It diagrammatically explains the route that the argument follows.

Before each new section a part of this diagram is displayed to show where that specific section fits into the main argument.

1.3 Research methods

Information gathered for this project was done through various methods. Mapping and spatial development frameworks and diagrams were obtained from the Nelson Mandela Metropolitan Municipality, the Mandela Bay Development Agency, the Nelson Mandela Metropolitan University and the National Geographic Institute.

Additional information relating to theory and development of the project was gathered from the University of Cape Town via various lecturers, professors as well as the various libraries and data source centres. Additional information was obtained from reliable internet sources.

Meetings with studio supervisors for discussions and other professionals who have valuable insight relating to this topic were also used to compile this document.

1.4 Project Limits

During the development of this project methods of community participation or direct interviews with individuals were not performed. Rather a desktop study was done through the sources and methods mentioned in the research methods section.

This projects main purpose was to explore the possibility of the demolition of Settlers Way freeway in Port Elizabeth to improve spatial economic activity in the inner city. Therefore the project predominantly focused on the inner city while considering metro scale effects.

Actors	Suppliers		Producers					Consumers
Elements of the built environment	Land owner	Funder	Developer	Local authority		Architects	Urban designers	Everyday users
				Planners	Highway engineers			
Street pattern	–	–	○	○	●	–	○	○
Blocks	–	–	–	–	–	–	○	–
Plots – subdivision & amalgamation	●	●	●	○ (in U.K.)	–	–	○	–
Land/building use	●	●	●	●	⊕	○	○	○
Building form – height/mass	–	●	●	●	–	⊕	○	○
– orientation to public space	–	–	○	⊕	–	–	○	○
– elevations	–	○	○	●	–	⊕	○	○
– elements of construction (details/materials)	–	○	●	⊕	–	⊕	○	○

Key: ● Power—either to initiate or control. ○ Interest/influence—by argument or participation only
⊕ Responsibility—legislative or contractual – No obvious interest

Powergram diagram showing influence of Urban Design when compared to other professions
(McGlynn in Carmona & Tiesdell, 2007)

1.5 Role of the Urban Designer

When considering the role of the urban designer for a project of this nature it is important to consider the scale and impact that might be caused. As mentioned before there are many stakeholders, land owners and institutions to involve. The role of the urban designer should therefore be as a **facilitator** of the development process of the project. The urban designers responsibility is to inspire those involved and to bring about **ideas and inspiration** for what could be achieved. The idea of ' Visionary Urbanism' as explained by Alex Krieger in Territories of Urban Design explains that the urban designer is responsible for conveying hope and aspiration in a physical sense through inspiring people to imagine.

> "Cities today are designed by an intricate interplay of private investment, public subsidies and incentives for development, government regulations, public participation, and public protest. The professional urban designer needs to know how to work with and guide all these forces."
>
> (Barnett in Krieger, 2009)

What is needed in South Africa and Port Elizabeth specifically is a culture of providing for the future and the establishment of physical change through correcting the mistakes that have caused harm to the city. This can only be done through the establishment of a 'Legacy' program. It could be argued that this is similar to the MBDAs mandate and the 2020 Vision that the previous mayor Nceba Faku had for the city. The essential difference is that a true **championship** of urban design and urban interest is needed who is independent of political influence and institutional bias. This idea should be headed by an individual or team of specialists of the urban realm which consists of heritage, natural systems, social issues, built form and other concerns that shape a city.

A strong set of **principles or norms** should be established within the context of the city centre and should be used to inform design decisions. These principles would also be used to test proposals against and to determine whether the design is adequate. In addition an urban design framework and possibly a policy could be established to reinforce the procedural and evaluation of potential projects.

The urban designer should also initiate **catalytic or visionary projects** (most will not materialise) to inspire and keep the spark of progression and furtherance of the city alive. Therefore the 'art of the possible' is a skill that the urban designer possesses to convince the public of projects such as this.

The urban designer is able to set up **participatory meetings** with stakeholders in a manner that involves the exploration of scenarios and exercises such as 'cherettes' that demonstrate a testing of situations. This 'If – Then' approach aims to illustrate the possibility of developments and their outcome. This may be an effective means of testing development proposals.

As can be seen in the 'Powergram' diagram by McGlynn the urban designer has the power of **influence** at their disposal. This is an important tool as projects of this magnitude involve many parties that need to be persuaded.

The role of the urban designer is therefore an essential one to for fill in a project that involves the reimagining of the connection between the CBD and the port of Port Elizabeth .

Citizens crowd into City Hall wearing signs on their heads to express their opposition to the freeways being erected all over San Francisco. Source: San Francisco History Center, San Francisco Public Library.
(wwwced.berkeley.edu, 2013)

1.6 Position Statement

Before starting the design process a position statement with norms and principles is to be formulated. This will explain the position the author has taken in the project to inform the design process. These principles are then to be used to test development decisions during the design process.

The city of Port Elizabeth has long been plagued by a number of factors that have led to the deteriorating condition of the inner city. The two major factors that led to this were the displacement of the university from Bird Street in Central to Summerstrand on the outskirts of the city and the construction of the Settlers Way freeway. These decisions were taken within the modernist era during apartheid. These factors have led to a divided city both racially and physically. Today the city suffers as a result of these decisions.

Therefore strong decisive action needs to be taken to correct these problems. It is up to institutions, local government and local residents to see the potential and perform decisive actions in Port Elizabeth. Although small inner city **rejuvenation initiatives** have been employed they have not yet overcome the two major problems mentioned. These are to be seriously considered if any significant progress is to be made. It is not surprising that a project like the demolition of the freeway may come as a shock to most but the benefits out weigh the drawbacks. These benefits affect the localised and regional economy, social interaction and perceived identity of Port Elizabeth.

The inner city has been experiencing a decline in **economic investment** and a lack of incremental **growth** and development. This in not as a result of a lack of space but rather a mismanagement of space. The freeways obstruct growth and development as well as integration between different areas of Port Elizabeth as it restricts access. The restriction of **access** results from the non-functional nature of the freeway and its traffic direction. The city is completely bypassed and as a result suffers from a neglected image and nature. The issue of community therefore arises. The people of Port Elizabeth are directly disadvantaged by the disconnecting nature of the freeway infrastructure. Community cannot occur in a severed urban landscape.

The issue of **pride** is directly related to that of community and **choice**. The disruptive spatial nature of the freeway is not conducive to the feeling of pride amongst Port Elizabethans. The spatial realisation of the freeway is one of division and confusion to city users. **Legibility** and orientation of the city is lost as a result whereby the image and identity of the city is destroyed.

The demolition of the freeway and development of an alternative boulevard and street grid system would improve the image of the inner city, provide **opportunity** to the residents and reconnect the city with the port and ocean to create a commonality within the different portions of the city.

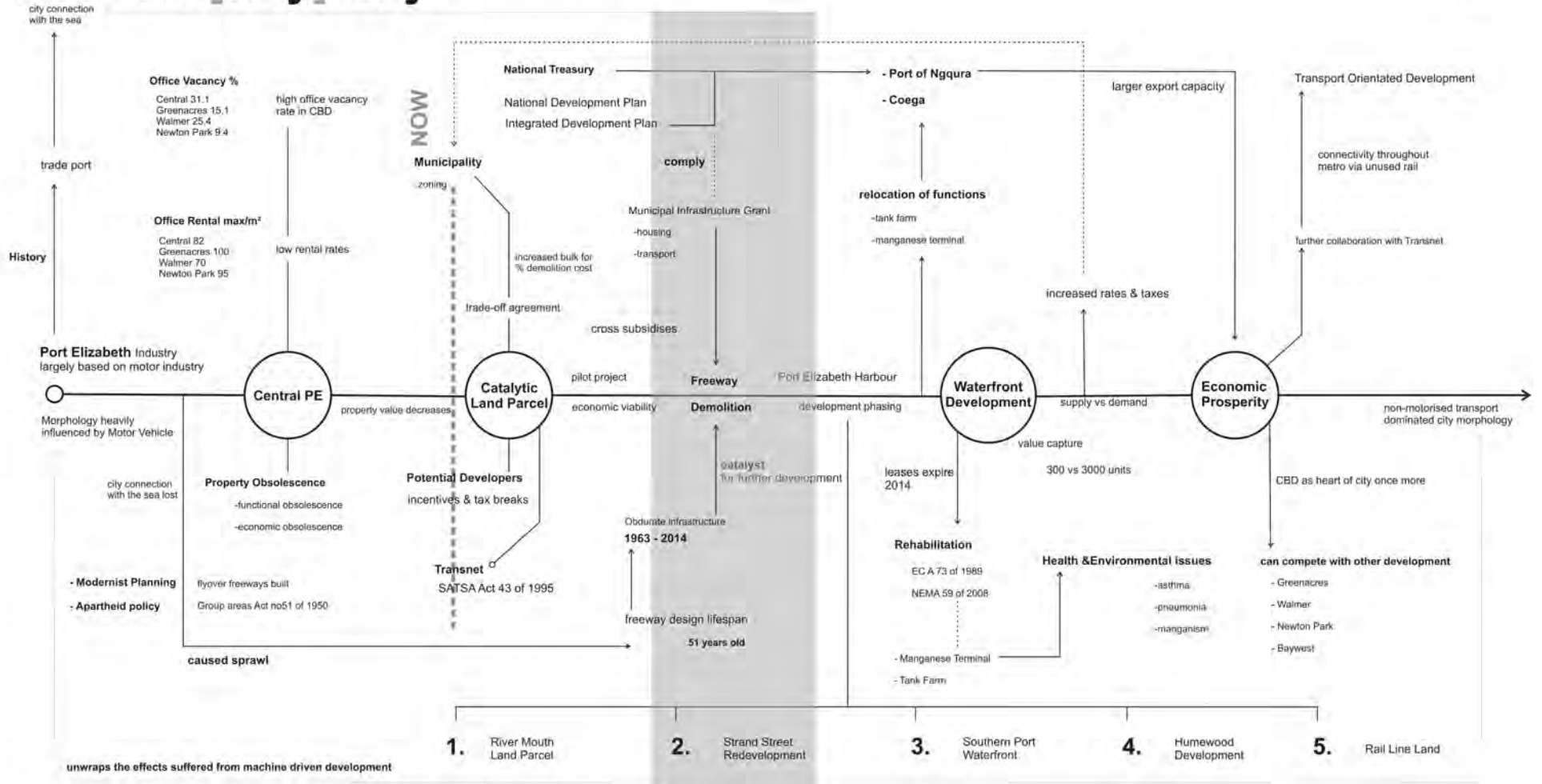
The reconnection of the city to its form giving counterpart, the port, through the removal of the Settlers Way freeway will once again place Port Elizabeth on the map as a major regional city.

NOTE

The principle icons on the left have been used throughout the document to indicate the appropriate principal or norm that is either to be learned from an example or implemented within the design

The Free[way] City

PC Wasserman
MCPUD
2014



DEVELOPMENT & IMPLEMENTATION

Freeway Demolition Project

Stakeholders

Government	National Government Department of Public Enterprises Provincial Government Transnet
Municipal	NMMM MBDA
Business	Port Elizabeth Chamber of Commerce and Industry Southern Port Developments Local business owners
Transport	Department of Transport National Ports Authority Algoa Bus Corporation Taxi associations
Public	General public Tourists

Precedents/Case Studies

Freeway Demolition	Milwaukee San Francisco Seoul Madrid Seattle Dallas Portland
Regeneration Planning	Detroit Rosario Barcelona

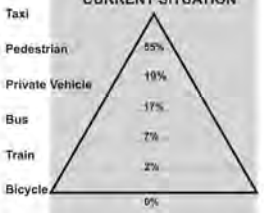
Demolition Cost

2009 estimate: R95 million

2014 estimate: R118 371 298

(inflationsite.co.za, 2013)

CURRENT SITUATION



Theoretical Approach

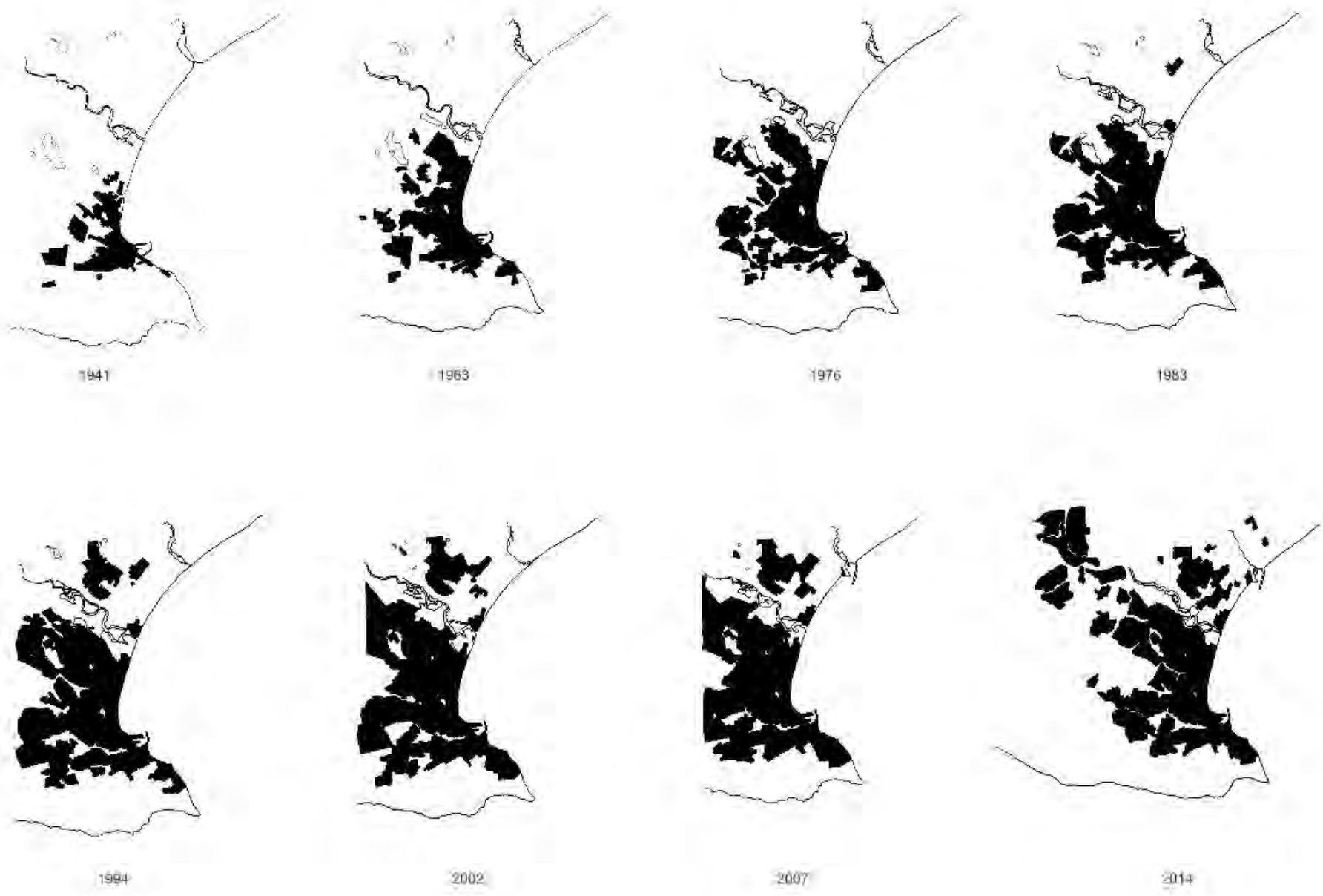
Christaller Model
Christopher Alexander
Jane Jacobs
Dewar & Uitenbougaardt
Alex Krieger
Fabio Todeschini
John Norquist
Lance Husley

Design Principles

Proximity
Connectivity
Legibility
Permeability
Opportunity
Choice
Access
Flexibility

Contacts and Promotors

Municipality	Dorelle Sapere	MBDA
Engineering	Lisa Kane	UCT
Economics	Rob McGaffin	UCT / City of Cape Town
	Francious Viruly	UCT
Planning	Dave Dewar	UCT
	Nancy Odendal	UCT
Architecture & Urban Design	Piet Louw	Practice
	Henri Comrie	UCT / Practice
	Adriaan Mentz	Practice
	Heinrich Kammeyer	UCT / Practice
Legislation & Policy	Fiona Ogle	UCT / City of Cape Town



Morphological study of Port Elizabeth from 1941 till 2014
(National Geographical Institute, 2014)

2. Growth of the Port City

2.1 Introduction

This section will explore the influencing and shaping factors that led to the **morphological** progression of Port Elizabeth. Its early exposure to trade and manufacture of the **motor industry** and the resulting infrastructural changes bought about will be explored. The effect that the **political landscape** and Apartheid had on the population and their movement patterns will also be examined. The time period and principles that was Modernism and its emergence and relationship with Apartheid will be discussed. Ultimately this sections intention is to understand how and why **sprawl** and the **decline of Port Elizabeth's inner city** occurred as well as how it became South Africa's second largest city in terms of area. (Census2011.adrianfrith.com, 2014)

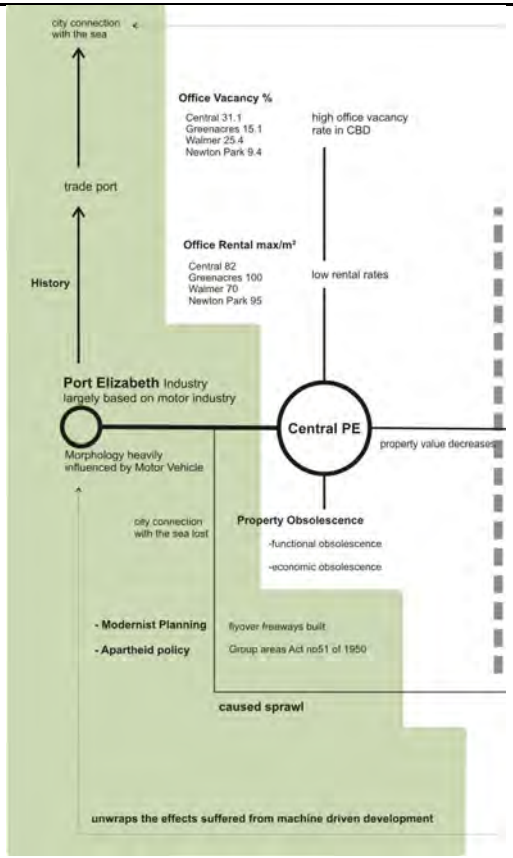


Image showing where this section fits into the argument

Ford motor works c. 1930. Aerial view.
(Port Elizabeth Library, 2014)
Ford motor works - Building motor bodies. c. 1930
(Port Elizabeth Library, 2014)

2.2 Influencing Factors

There are a number of aspects that are responsible for the growth pattern and eventual urban form of Port Elizabeth. These are related to the **functional nature** of the city as a **port** and the influences that trade had on its growth as well as the movement routes and access to other trade areas in the region.

Even before Port Elizabeth was a city, Algoa Bay was used as a stopover point for Portuguese sailors to replenish their fresh water supplies during the late 1400s .(www.nmbt.co.za, 2014) The bay later flourished during the 19th century as the regional centre of commercial activity with the exchange of primary produce. This centred predominantly on the wool and mohair industries as well as fresh produce as the city was able to draw these products from the nearby hinterland consisting of the Uitenhage and Dispatch areas. Port Elizabeth later also traded with ostrich feathers and diamonds to an extent, this however was short lived. (Pakes, 1998)

The nature of **trade** in the city later changed in the 1920s as elite members of the local inhabitants started to actively **promote industrial growth** and development. This was in tune with the global **industrial growth** movement. The local entrepreneurs push for development in the industrial sector paid off in 1923 when the city managed to attract the **Ford Motor Company** to establish factories in close proximity to the city. In 1926 General Motors followed suit and in the 1950s Volkswagen South Africa also established factories in the area. (Pakes, 1998) The bay area was particularly sought after as it had space, lots of labour and a functional port.

> "These large motor manufacturers were particularly interested in the City because of its harbour facilities, its railway network, and a large supply of labour. The result was that the automotive component and allied industries (such as tyre, glass, and textile) began to develop."
>
> (Robinson in Pakes, 1998)

The **automotive and components sub-sector industry** of the local economy later (in 1978) grew to account for over "...50% of the value of the area's manufacturing industry production." (Adler in Pakes, 1998) This indicates that the city has been heavily reliant on this industry from the 1920 up till today. (Adler in Pakes, 1998) Port Elizabeth had been known as the 'Liverpool of the Cape' during the middle of the 19thcentury and later as the 'Detroit of South Africa' as a result of its industrial and manufacturing nature and its association with the production for motor vehicles. (Adler in Pakes, 1998)

Even though today this industry is not as strong as it was in the period between the 1920s and 1970s the legacy it left behind in terms of infrastructure is evident.

> "…over time significant changes in dominant technologies ushered in new eras in terms of urban form…"
>
> (Dewar & Todeschini, 2004)

Large scale decentralisation of industry subsequent to the local and national policy of the day and massive infrastructural highways and flyovers dominating and overshadowing the CBD are the remnants of this period. Port Elizabeth's close ties to the **motor industry** might also explain its **growth pattern** in terms of movement routes and the predominance of the motor vehicle in later years. Port Elizabeth is in a transition phase and is turning into a **post-industrial** city very slowly. Even though industry plays a large role in the economy of the city, changes need to be made to accommodate economic change and diversification. These other sectors of the city's economy may expand to financial, business and service sectors as well as potential governmental administration.

View from Settlers Way towards the city
(author, 2014)

2.3 Shaping Factors

Port Elizabeth is a good example of a variety of juxtaposing city planning methods. This can be noticed when looking at the morphological development of the city and its growth patterns over time. There are two main determining factors that helped shape the city as it is today. Both were conceived as ideologies to control development patterns. These two factors are Modernism and Apartheid.

2.3.1 Modernism

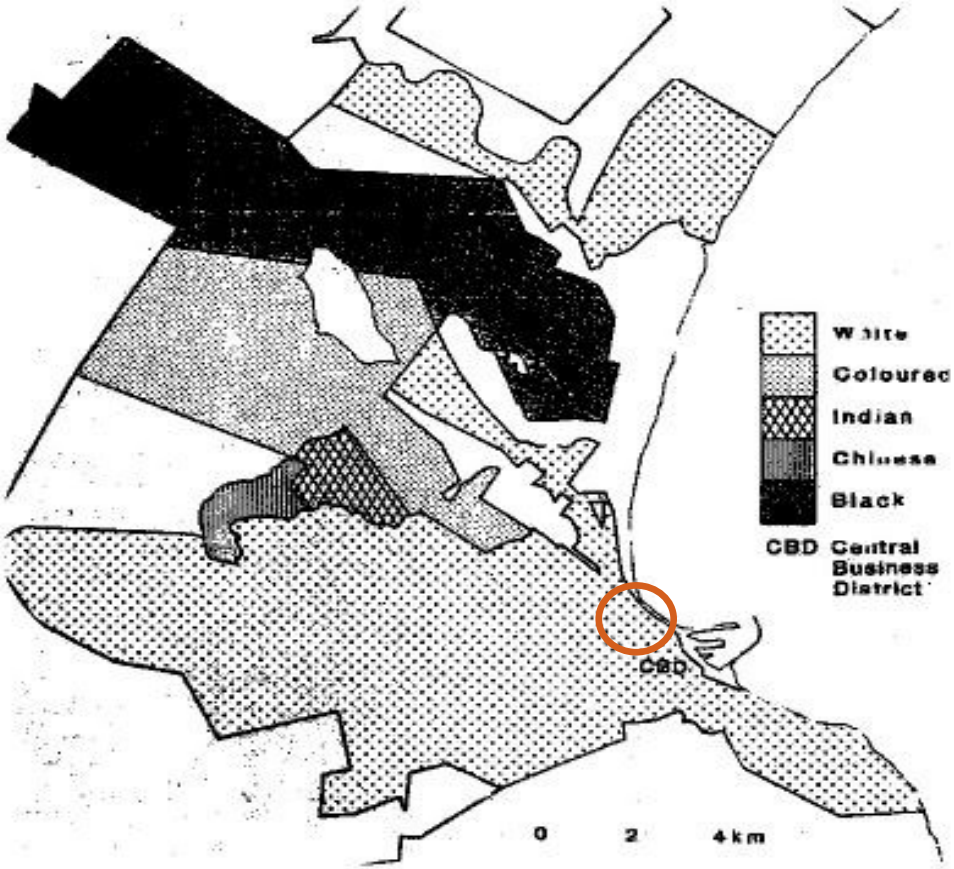
It is evident that the emergence of modernism had a great impact on the city as it did globally. These ideals that were imported to South Africa from abroad have heavily **influenced** the morphological growth of our cities. The theoretical basis of modernism is the dominant concern with the **separation of functions**. This means that activities such as work, recreation, play and movement were consciously separated as areas of **monofunctionalism**. The reason for this was to reduce potential conflict that might occur between activities and to take full advantage of the practical action of each separate activity. (Dewar & Todeschini), 2004)

Practically these principles were enforced in the modernist conception of urban settlements. These **dispersed** areas and **neighbourhoods** were depended on **high-speed routes** linking the fragmented parts of the city. In South African these routes were road-based to make it easier for residents to travel these distances between destinations. This resulted in **freeways meeting cities** in awkward ways causing many inner city areas to degenerate. When meeting the city these freeways would generally morph into flyovers that glided above the city. At least this was the theory. However, in reality these flyovers **disjointed city centres** and severed connections between areas through becoming a physical and visual barrier. These areas are seen today as dangerous and degenerated.

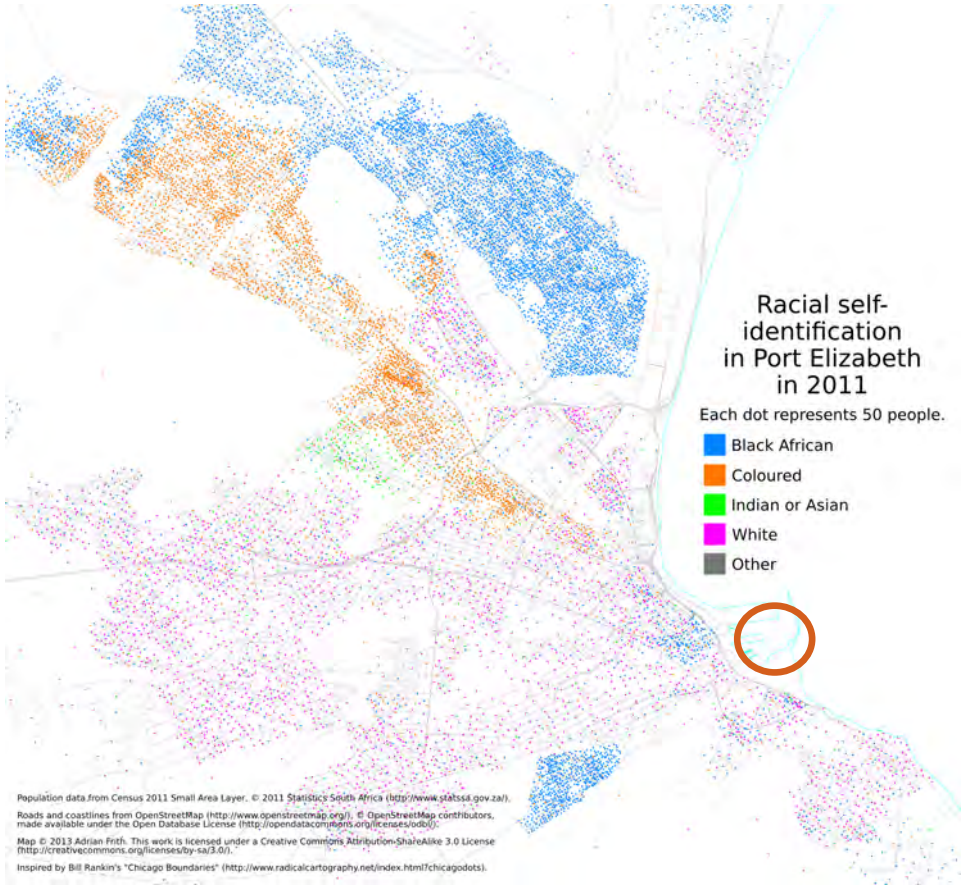
> "These routes were seen as "space-bridges": their sole purpose was to move large numbers of people and goods over considerable distances from one destination to another as rapidly as possible. The emphasis was almost entirely on promoting mobility rather than increasing access."
>
> (Dewar & Todeschini), 2004)

The junction and threshold condition that occurs when freeway meets city was not thoroughly thought through and the **solution of the 'flyover'** was not successful in not hampering inner city activity and growth. The same problems occurred during this period in other areas of the world including a number of cities in the United States. Examples of these are New York, San Fransisco and Milwaukee.

The modernist 'Machine Age' was geared to solve problems with **absolute answers** and did not take into account any external aspects that might be affected. Engineering was often seen as the cure to ailments of the built environment even though today we are aware that these developments often caused more harm. Disjointed cities are one of the symptoms of the failure of modernist planning.



Map showing apartheid planning through Group Area Act regulations in Port Elizabeth
(www.motormedia.co.za, 2014)



Map showing the continued effect of apartheid planning in Port Elizabeth today
(www.adrianfirth.com, 2013)

2.3.2 Apartheid

In South Africa modernism was the theoretical turned practical means through which to enforce the **political ideals** of Apartheid. This effectively caused **sprawl** through laws such as the Group Areas Act No 41 of 1950 which displaced vast amounts of people and destroyed communities such as **South End** in Port Elizabeth. All but a few religious buildings were demolished leaving the Pier Street Mosque in the undignified left over space resulting from the freeway construction. These demolished areas made way for other developments including enclave middle to high income housing and large scale infrastructure projects such as the Settlers Way Freeway in Port Elizabeth. The displaced communities were forced to live on the peripheries and outskirts of the city thus **fragmenting** the city.

This regime left remnants of a time where efficiency was the overriding factor for most built environment projects. The car dominated city of Port Elizabeth with its beep rooted history with automobile manufacturing now suffers from road infrastructure over engineering as a direct result of Apartheid policies. What were originally streets for public use became roads for **public separation**.

2.3.3 Conclusion

This section has explored the effect that different **socio-political and market forces** have had on the growth and development of Port Elizabeth. The motor manufacturing industry, modernism, apartheid and other factors have all influenced the cities morphology and caused unregulated sprawl through **over scaled** movement **infrastructure**. This has led to a totally car orientated developmental pattern that has wreaked havoc in terms of spatial economic conditions in the inner city as well as in the larger metro.

The next section will deal with more specific particularities of the project by discussing the development of the Settlers Way freeway flyover system that cuts across the Centre of Port Elizabeth.

Image showing the old neighbourhood of South End before demolition in the 1960s
(www.motormedia.co.za, 2014)

Before

After

Topographical Maps

Before

After

Aerial Photographs

Topographical maps & phots showing the difference between before and after the freeway was built
(NGI, 2014)
(Port Elizabeth Library, 2014)

3. Enter the Freeway

3.1 Introduction

The Flyover system of Port Elizabeth was constructed alongside the coast and through the centre of Port Elizabeth in 1963.(www.africoast.com, 2000) This section will discuss the specifics of this massive infrastructure project and the impact that it had on the city. Urban decay in the inner city of Port Elizabeth was caused mainly by of two major infrastructural factors.

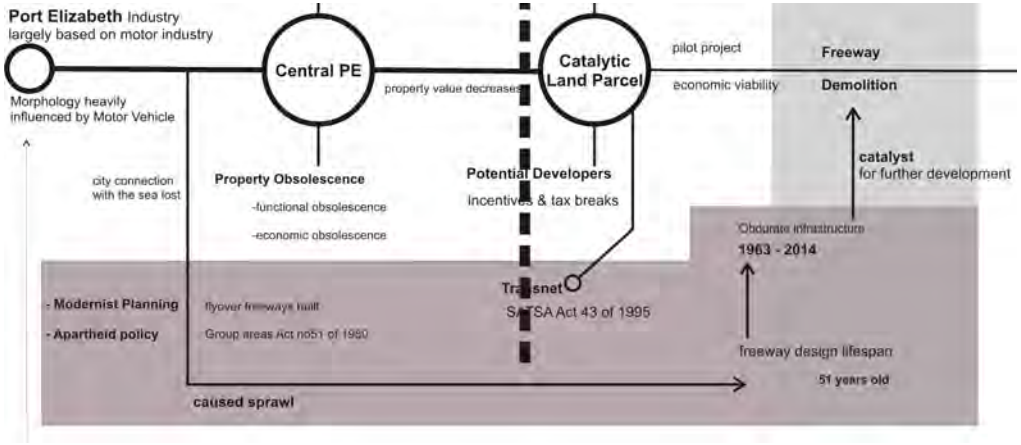


Image showing where this section fits into the argument

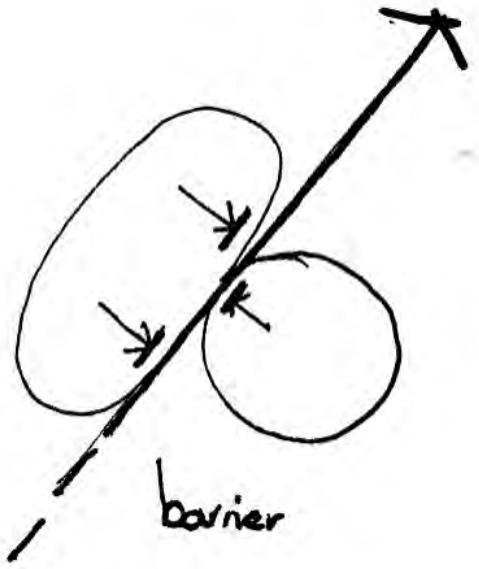
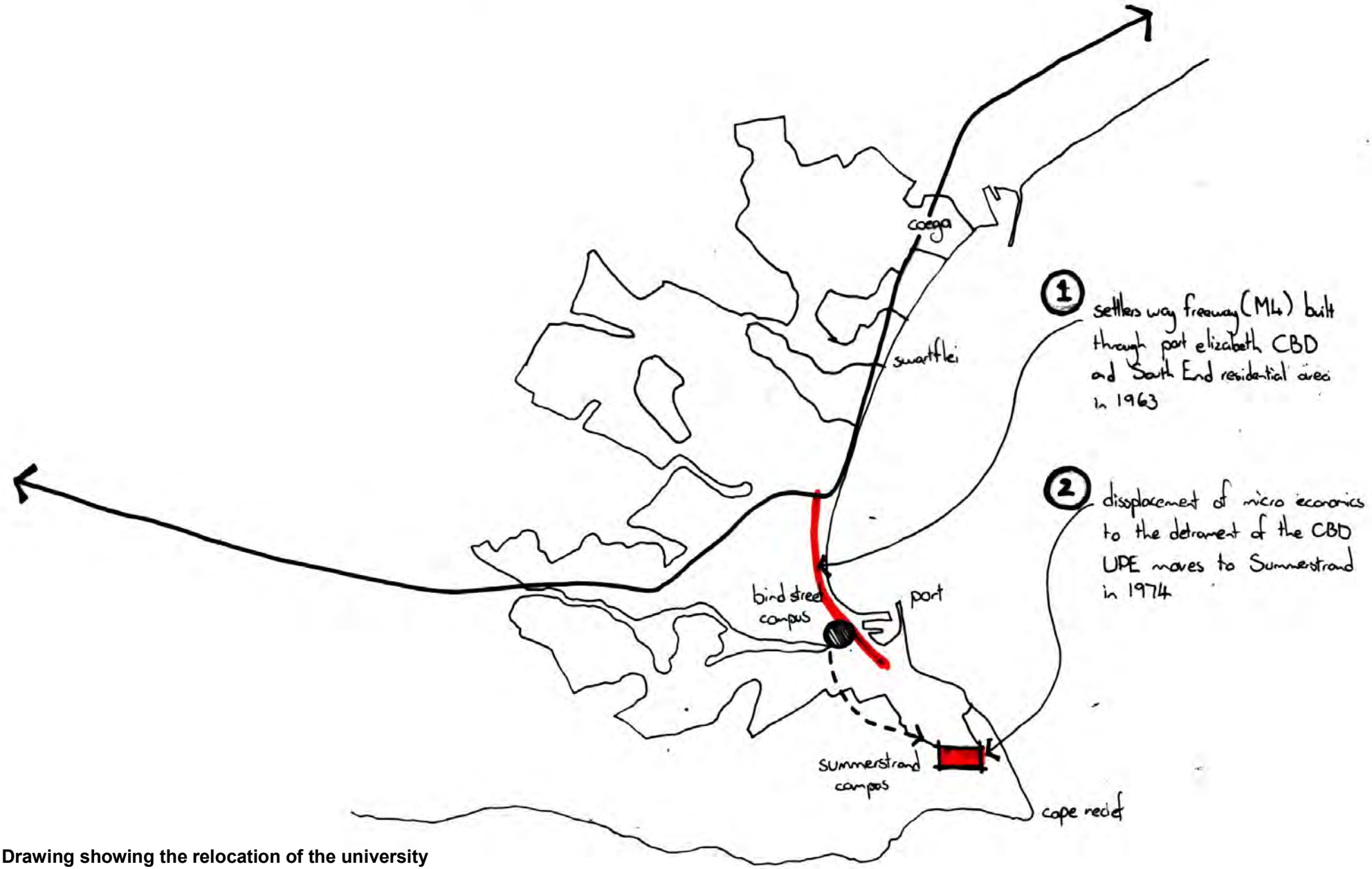


Image showing how the freeway acts as a barrier
(author, 2014)



Drawing showing the relocation of the university & the construction of the freeway
(author, 2014)

3.2 Determining Factors

The first factor contributing to Port Elizabeth's inner **city decline** can be attributed to the construction of a **system of highways**, interchanges and flyovers straight through the inner city in 1963.(www.africoast.com, 2000) This augmented the already struggling situation of Central. These ambitious ideas and plans coming from the municipal engineers and town planners envisioned the **re-creation** of the town centre. (Space Syntax & The Workplace Architects, 2008) Other reasons for the freeway system were **projected future capacity** limitations of the transport system of that time. Predictions and reasoning for the freeway were to prevent further congestion in the CBD by filtering vehicles in and out at a rapid pace. Today it is evident through a user group analysis that these predicted capacities were never reached and the freeway system proved to be over engineered and underutilised (see later sections).

> "The irony of it all was that by this time old Main Street was no longer the central business district."
>
> (Space Syntax & The Workplace Architects, 2008)

The second was that the **University of Port Elizabeth** was **removed** from its original site on Bird Street, overlooking the city centre and harbour, to the **outskirts** of the town in Summerstrand. The new university grounds were designed to be an enclave in a nature reserve. (Showme.co.za, 2014) This is in stark contrast to that of an urban imbedded campus. The reason behind this was that the campus in town was entirely inadequate. Since this removal, the old centre of Port Elizabeth has been **degenerating** slowly. This is because students provided the much needed activity that was needed to sustain economic activities within the city centre. These activities included accommodation for students, eating places and restaurants, recreation facilities and amenities such as laundries. All these activities had been relocated to the new Summerstrand Campus by 1974 leaving the inner city economically bare. (Showme.co.za, 2014)

The removal of a key energy and activity generator, the university, and the construction of an underutilised megalith seems to have bought about the beginning of the end for the local economy of the inner city.

The Administrative block on the Summerstrand South Campus
(www.nmmu.ac.za, 2013)

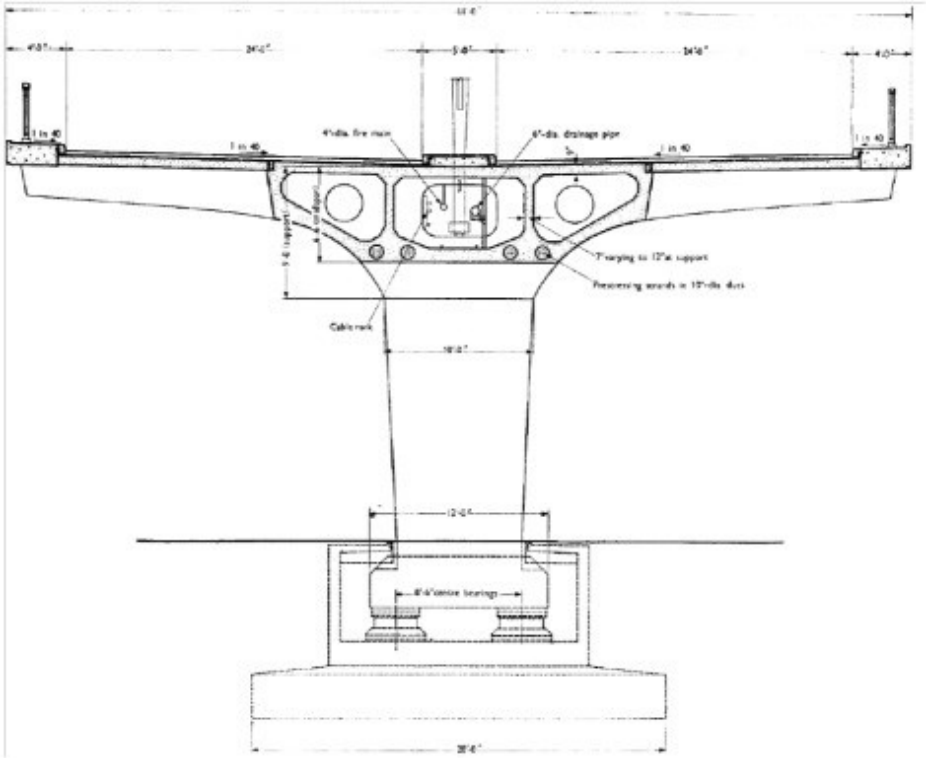
The Wegspring building on the NMMU Bird Street Campus
(www.nmmu.ac.za, 2013)

Map showing the extent of engineering plans for a system of freeways throughout Port Elizabeth
(The Port Elizabeth Library, 2014)

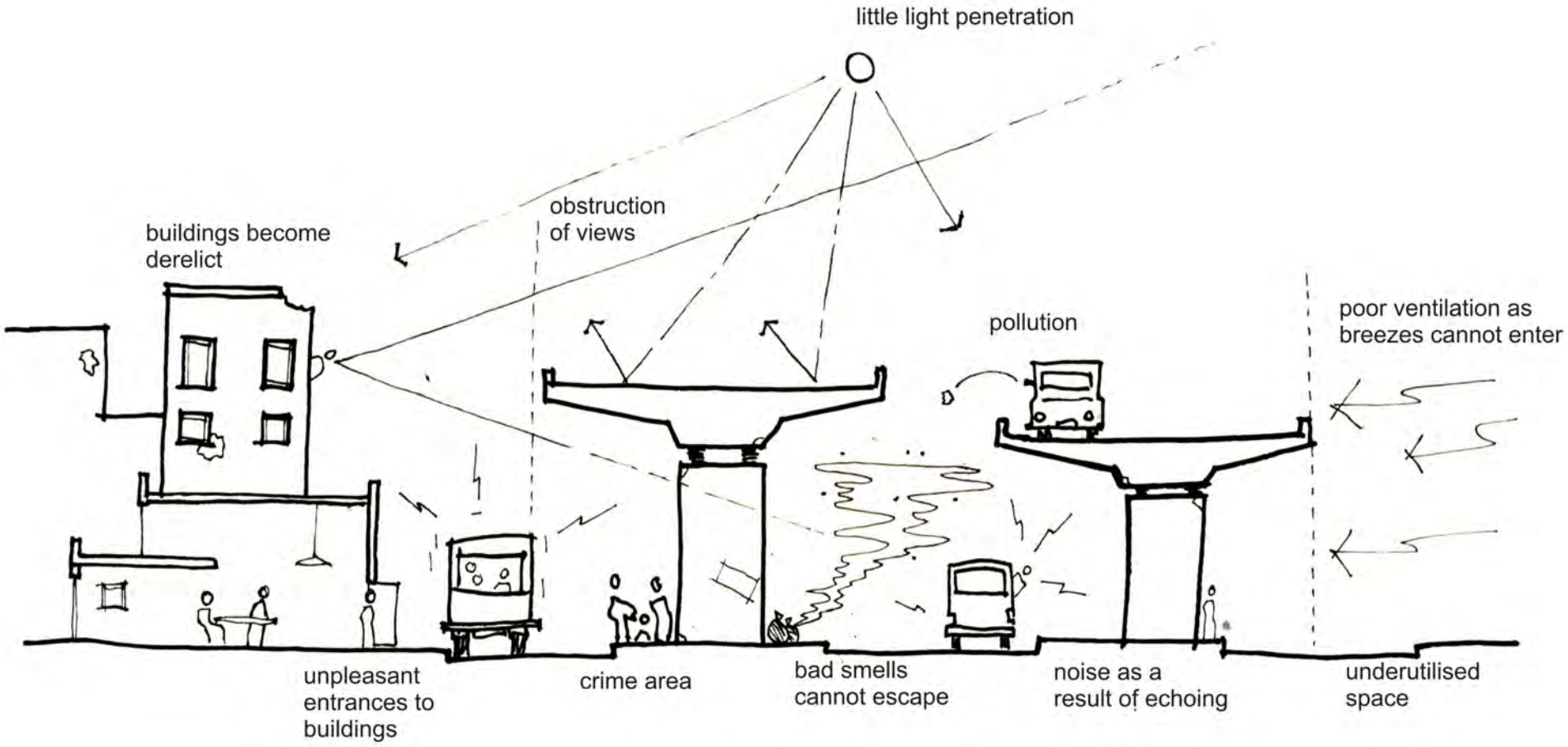
3.3 Conception of the Flyovers

Grand ideas for Port Elizabeth included the creation of a “grand new entrance into the city” (Space Syntax & The Workplace Architects , 2008) in the area of South End. A new system of freeways to connect various parts of Port Elizabeth was also planned. This consisted of the “a 4-lane dual-carriage freeway built onto the side of the valley from the main north-south freeway through Settlers Park as far as the Linton interchange” (Space Syntax & The Workplace Architects, 2008) as well as bridges that were to span the Baakens Valley from the top of Brickmakers Kloof to Walmer. Fortunately due to enormous opposition by a protesting public after seeing the first north-south stages of the project, the **Baakens Valley Parkway** was officially halted in 1979. (Space Syntax & The Workplace Architects, 2008)

The **north-south section** of the freeway system consisted of a series of flyovers. These flyovers were constructed as a separated arrangement of dual lane traffic flows consisting of between four and seven elevated lanes. This system was built directly along the coast and over the roof of the central station. This massively scaled piece of infrastructure severs the old town from the station and harbour and in so doing it destroys the history, integrity, allure and safety of the once bustling inner city. (Showme.co.za, 2014)



Sectional drawing through Hammersmith flyover in London
(www.londonist.com, 2012)



Drawing showing problems that occur as a result of the freeway condition in Port Elizabeth
(author,2014)

3.4 Negative Effects

The **old city structure** was negatively affected in a number of ways by these flyovers. Although it ferried vehicle past the centre of the city, thereby connecting it to other areas it allowed for little access to the CBD. This meant that it was difficult to get to the old portion that traditionally was the bustling economic heart of the local economy.

Another factor was that the buildings that once faced onto the Strand Street were now directly and rudely confronted with the flyovers. This meant that the **property prices** in this area **dropped dramatically** as a consequence of the **unpleasant space** that the flyovers created. This covered underpass condition also led to less light penetration and less ventilation in the area.

Noise also became an issue as echoing occurs in a large voided space such as the one created. The traffic on Strand Street in combination with the upper deck traffic also caused increased **fumes** and **pollution** to become the norm in the area. Many building entrances also led onto the now covered Strand Street making them illegible and unpleasant. It is clear to see how all these contributing factors may affect the areas property values. **Safety** in this area also became an issue as crime increased in this increasingly derelict area. Side alleys and niches became hiding places for criminals and unsavoury characters.

The integrity of the old inner city was also compromised as historical streetscapes, views and vistas were destroyed by the freeway. An example of this is Jetty Street that used to run down from the upper end of Central towards the Campanile. This axial alignment was now **obstructed** by the freeway flyover and Jetty Street was closed to make way for the new Algoa Bus Terminus which sits below Market Square. Many other significant buildings in Central were **demolished** to make way for the freeway. One of these included the beautiful French bank of South Africa.

The **uncompromising engineering** drawings for the plan of the integrated freeway system were drawn directly over the centre of the city and straight through neighbourhoods like **South End**. This was done without consideration or taking into account of the potential consequences. The plans argued for a non-congested city that allowed free transition between areas, and yet what was produced was the M4 **appendix** freeway that leads to no particular area of significance.

The area in which the freeway terminates used to be known as South End and consisted of a mixed racial community. This neighbourhood was first cleared of its inhabitants to make way for a single racial population group according to the Group Areas Development Act of 1956 but was later demolished in 1965 to make way for the grand plans of the Municipal planners and engineers. This was to become the southern termination end of the north-south freeway route. The only remnants of South end are a few religious buildings that include two mosques, a church and a Hindu temple. (commons.wikimedia.org, 2013)

Old Jetty Street view axis
(author, 2014)

Picture showing under condition of the Settlers Way freeway in Port Elizabeth. Informal trade takes place in this area

(author, 2014)

3.5 Conclusion

It is evident that the development of the highway system has in fact caused **more harm than good** within the greater Port Elizabeth area. Later in the project it will be explained that only some benefit from this system and that user group analysis suggests that the freeway is **underutilised**. Today the undersides of the flyovers are used by small businesses trading in stock varying from household goods to hardware. There are also a large number of **informal traders** who do business in this area. Other users include taxis and busses that make use of this space as a pickup and drop off point in conjunction with the main train station. Even though this space has **decayed** and become an example of bad urban planning it is still largely in use. Today Strand Street and its surrounds suffer from degradation caused by the flyovers and have become an **undignified** space within the city of Port Elizabeth.

The next section will look at the causes of urban decline and determine how the freeways have contributed to this process.

Algoa Bus Station underneath Market Square
(author,2014)

Informal trade taking place in Govan Mbeki Street
(www.portelizabethdailyphoto.blogspot.com by FireflyAfrica, 2011)

4. Decline & Renewal

4.1 Introduction

This section will deal with the causing factors that have led to the decline of the inner city of Port Elizabeth. A few of these triggering factors are Apartheid, **disinvestment**, white flight, decentralisation, sprawl and obdurate infrastructure. A consecutive discussion relating to these issues will be explained in this section. The section will also introduce initiatives and developments that have been directed specifically at **reversing the urban decay.** Developments that have in avertedly occurred because of the decline of specific areas and have taken advantage of the derelict state of the inner city are also discussed.

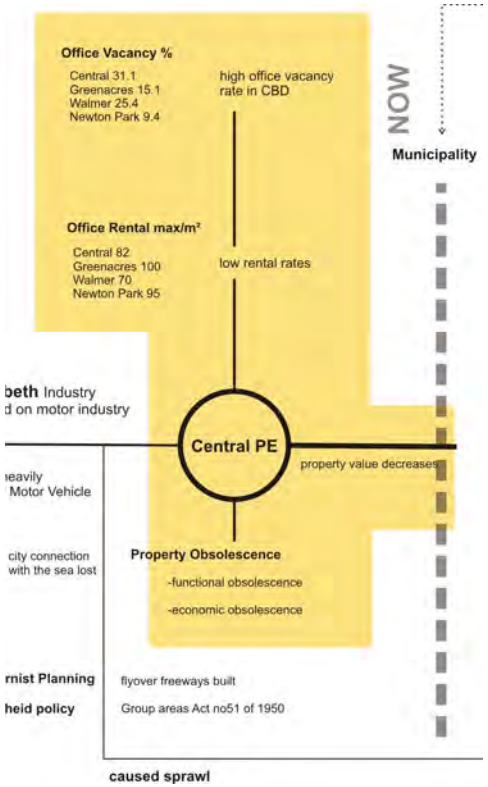


Image showing where this section fits into the argument

The derelict Victoria Hotel in Central
(www.portelizabethdailyphoto.com, 2009)

Derelict buildings in the inner city of Port Elizabeth
(www.simpleintrigue.blogspot.com, 2012)

Panorama down Hartman Road in central showing the bad state of buildings in the area
(author, 2014)

4.2 The City's Decline

Port Elizabeth is a case of some of the **worst urban decay** in South Africa. This steady decline of the CBD area of the city can be attributed to a number of factors. These factors may have contributed to a collective effect that ultimately has resulted in the **economic** as well as **spatial** insignificance of Central.

Historical events and political will have also influenced the inner city of Port Elizabeth through various acts by the previous Apartheid regime. The planning of this era was geared to **separate** people and **divide** areas along racial lines. An example of this took place in the South End District of Port Elizabeth where a mixed community of residents were forcibly removed in 1965. (sahistory.org.za, 2012)The area's built fabric and structures were demolished and partially redeveloped by wealthier white inhabitants. The South End story is comparable to the District 6 story of Cape Town. This left a **gap** in the urban fabric that has not yet been filled and continues to divide a previously integrated central Port Elizabeth with the rest of the city. The **morphology** of the city has suffered ever since as residential areas were explicitly severed from their previous connection with the inner city and port industries. This was also the start of a process of urban decay and the heyday of Apartheid from which Port Elizabeth suffered heavily both economically and spatially.

Two years prior to this implementation of apartheid legislation there was a decision to construct the elevated highway, Settlers Way, through the city. This was a massive capital project that **coincided with the establishment of the University of Port Elizabeth** in Summerstrand. (sahistory.org.za, 2012) This flyover would cut across the inner city and CBD alongside the bay, severing the city's most important public space, Market Square, from the Port. This space along with the main street complimented the port through a series of axis, vistas and alignments that was initially set out to form the **legibility and character** of the city. This freeway flyover terminated directly in the South End neighbourhood where it once again came to grade and turned into Marine Drive.

In addition, perceived essential infrastructure provision in the form of freeways caused property in Central to experience functional and economic obsolescence. This caused these **properties to decrease in value** aiding in disinvestment and ultimately decay. Large areas of road reserves and inter neighbourhood trunk routes as well as far flung developments assisted the decentralisation and dispersal of trade nodes and wealth throughout the city. This meant that **centralised functions were now diluted** and forced the users to abide by this spatial pattern. City sprawl had occurred. This undermined the traditional hierarchy of city spaces and economies.

The dynamics of forced removals, displacement and over engineered, misplaced infrastructure served to divide and conquer the city in the name of Apartheid. This legacy was one of the major contributing factors to the decay of the city.

Another factor to consider was that the CBD was opened to all races in1986 after the pass laws in 1985(sahistory.org.za, 2012). The deracialization of the inner city meant that the area would undergo transitions creating a fear of instability for businesses and the affluent. This along with the Abolition of Racially Based Land Measures Act of 1991 may have led to some **businesses and individuals relocating** to areas outside of the CDB as a result of intolerance to these new and often poorer user groups. (sahistory.org.za, 2012) This could be described as "White Flight" (boundless sociology, 2013) and caused a number of wealthy and prominent individuals to move business sites. There was a sentiment of increased vulnerability of **public transport systems** and inner city areas to crime and grime. This exacerbated the decentralisation and decay of the CBD. This in turn would have had a negative effect on the **perception of the area** as well as **rental and vacancy rates** of Central. (Freund, 2010)

Sprawl and decentralisation of wealth to malls and other areas of the city also contributed to the degeneration of the city centre. Developments such as the Greenacres Mall, Walmer Park and Summerstrand Village further attracted the businesses that once performed commerce in the inner city. This caused disinvestment by large businesses such as investment and banking firms and in so doing resulted in property values decreasing exponentially. Other businesses of smaller yet paramount importance to the functioning of the area followed suit. This eventually led to buildings being

(left)
Lockhead House
(author, 2014)
(www.googleearth.com, 2014)

(top & bottom)
Steve Biko House
(author , 2014)
(www.googleearth.com, 2014)

sold in the CBD for amounts that are lower than the buildings insurance amount.

Monopolistic land owners such as Ken Denton have taken advantage of this situation purchasing and developing large portfolios of property within the CBD of Port Elizabeth. When arriving in 1998 at the height of property devaluation Mr Denton **purchased a large amount of properties**. Many of these became derelict and started a process of decay. This led to the surrounding neighbourhood to be affected in terms of perception from potential buyers and eventually property prices. (Montgomery, 2010) These affected properties in turn became derelict as they had lost their perceived or their alleged 'good neighbourhood' status.

One of these properties is the beautiful Art-Deco Campanile Hotel. It is considered a historically significant site as it was constructed in 1934. The hotel was **dilapidated, disused and abandoned** due to a number of years of urban degeneration. Urban squatting took place within it for many years. It was later on sale in 2010 for the low-slung amount of R4.43-million. (Montgomery, 2010) This nine storey building, comprising of a number of rooms has **lost its true market value** and rental potential as a result of a number of contributing factors. These causes may be attributed to the above mentioned circumstances occurring in Port Elizabeth with the most heavily causative component being that of the construction of the Settlers Way Freeway on the doorstep of this building. Two other buildings sharing a similar plight are Lockhead House and Steve Biko House, both of which are on Strand Street. Lockhead House, a six storey building was for sale in 2010 at R2.14 million and Steve Biko House a seven storey building at R5.6 million. (Heritage SA.com, 2010) These values are evidence that urban decay may result as a consequence of bad urban environments caused by a **lack of care for urban public spaces** as well as sensitivity to physical structures that influence market forces.

The Campanile Hotel in a sad state
(www.skyscrapercity.com, 2013)

Donkin row houses (www.septua.co.za, 2014)
Campanile Hotel (www.skyscrapercity.com, 2013)
The Friendly Stranger Café (www.googleearth.com, 2014)

Photographs showing the difference in private investment initiatives when maintaining buildings in Port Elizabeth

4.3 Urban Renewal Projects

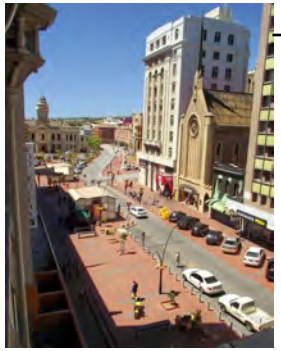
As a result of the continued urban decay in the inner city of Port Elizabeth a number of different initiatives have come about to curb this trend. These have been from both the private and public sectors and consist of businesses, recreational facilities, public open space and even new residential developments.

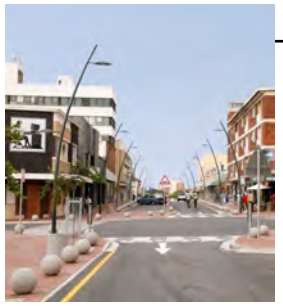
4.3.1 Private Developments

These private developments have mostly been initiated by private land owners, businessmen and entrepreneurs who have spotted a gap in the market or who have played the property market and demand to their advantage. These speculative projects have included restaurants, coffee shops, private housing, student housing and a microbrewery. The private housing developments were largely initiated by the property magnet Ken Denton who has recently **renovated** the Donkin Row houses. Although a very controversial redevelopment it is sure to attract potential renters and therefor **improve the areas derelict character**. (Montgomery, 2010)Noel Nyemba and Siviwe Kwatsha are two **entrepreneurs who have also spotted gaps in the rental market** and have converted the old Campanile Hotel (discussed earlier in this section) into newly renovated **student accommodation**. They have also done the same to a few other building in and around Central. These buildings are now utilised whereas a few years ago they were derelict and decaying. This also brings much needed life to the inner city. The area now also enjoys a longer active period and new residents have bought about new **opportunities** for small businesses such as restaurants and laundry services (ru.ac.za, 2013).

Another phenomenon of urban regeneration has occurred a few years ago in Stanley Street, Richmond Hill in a section of Central. Here a collection of developers and restaurant moguls established a small corridor of businesses comprising of a yoga school, estate agents, architects and other professionals offices as well as a number of restaurants and bars. This had a **positive effect on the spatial and local economic** situation of the area.

In the Baakens River Valley another private development took place through the revamp of an old factory building, No. 1 Bridge Street. This now includes a number of offices including architects and graphic designers as well as a microbrewery, coffee shops and restaurants. This has sparked new interest in the valley that adjoins the harbour and Central.





Map showing public redevelopment initiatives done by the MBDA
(author, 2014)

4.3.2 Public Developments

Public revitalisation initiatives have largely been the responsibility of the **Mandela Bay Development Agency**. This body was established in 2003 after research undertaken by the NMMM indicated that the greatest chance at reversing urban decay would be to establish a unit that would deal exclusively with urban projects within the area.

> "…is a special purpose development company which has become the driving force behind urban regeneration in Nelson Mandela Bay. […]While the MBDA falls under the local authority, it operates as a separate entity but works closely with the relevant Municipal Directorates.[…]The rationale for the establishment of the Agency in 2003 was to create a special-purpose vehicle that would reverse the trend of urban decay and bring people and business back into the inner city by leveraging existing assets."
>
> (Mbda.co.za, 2014)

The MBDA have been largely **successful in their undertakings** and implementation of projects within the CBD of Port Elizabeth. Their projects range from the **redevelopment of streets to parks** and public spaces. Significant buildings and natural corridors have also made up part of their mandate. These public amenities and facilities have had positive effects on the inner city and their self-evaluation studies show that the area is now used more than it was in the past. These spaces and developments provide a much needed sense of place for those who use the CBD. A few of these developments will be outlined as they have contributed much to the image of the inner city. (Mbda.co.za, 2014)

- The renewal of Govan Mbeki Street provided a facelift for the main street of Port Elizabeth and improved overall perceptions of the area.
- The Donkin Reserve was reimagined and converted into a used public park that adjoins to the CBD and allows access to other areas of Central.
- Route 67 is a new art and heritage route that involves significant buildings such as the newly renovated Athenaeum and other galleries.
- The Baakens River Precinct is currently in negotiation stages as the revitalisation of this green belt is envisioned.
- The Waterfront is a much larger and later vision that the MBDA has for the redevelopment of the harbour area of the city.

Images from top on overleaf:

Govan Mbeki Street	(www.portelizabethdailyphoto.com, 2013)
Parliament Street	(www.beka.co.za, 2014)
Donkin Reserve	(author, 2014)
Chapel Street	(author, 2014)
Athenaeum	(www.whatson.co.za, 2014)
Tramway building	(www.themaxefiles.blogspot.com, 2013)

Actors	Suppliers		Producers					Consumers
				Local authority				
Elements of the built environment	Land owner	Funder	Developer	Planners	Highway engineers	Architects	Urban designers	Everyday users
Street pattern	–	–	○	○	●	–	○	○
Blocks	–	–	–	–	–	–	○	–
Plots – subdivision & amalgamation	●	●	●	○ (in U.K.)	–	–	○	–
Land/building use	●	●	●	●	⊕	○	○	○
Building form – height/mass	–	●	●	●	–	⊕	○	○
– orientation to public space	–	–	○	⊕	–	–	○	○
– elevations	–	○	○	●	–	⊕	○	○
– elements of construction (details/materials)	–	○	●	⊕	–	⊕	○	○

Key: ● Power—either to initiate or control. ○ Interest/influence—by argument or participation only
⊕ Responsibility—legislative or contractual – No obvious interest

Powergram showing different professions involvement
(McGlynn in Carmona & Tiesdell, 2007)

4.4 Conclusion

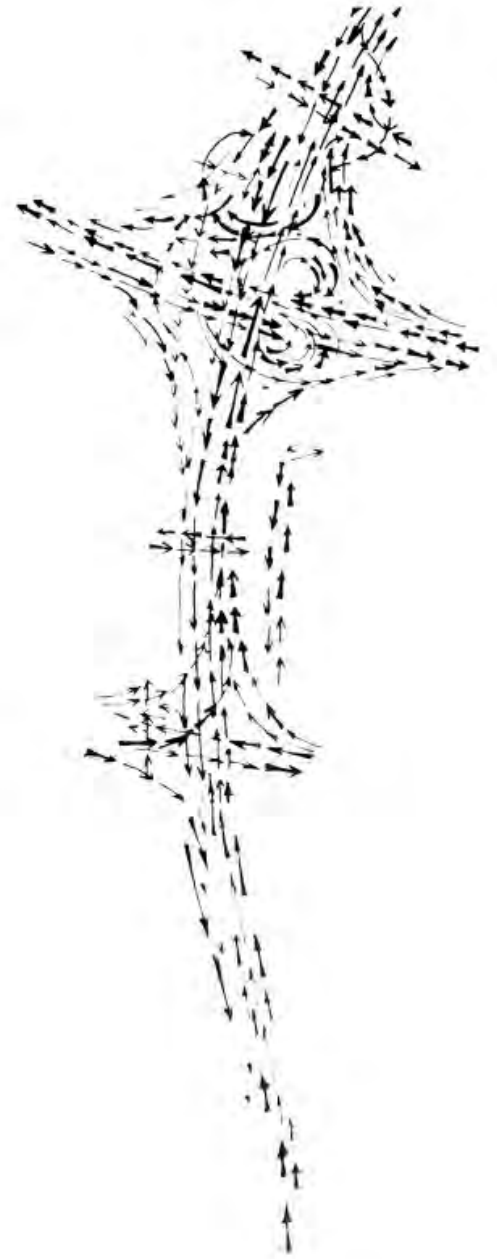
Although many initiatives have been performed to combat the inner city decay of Port Elizabeth it is **evident that there is still much to be done**. These piece-meal developments **need a larger binding vision** that collectively allows for the city to grow as a coherent whole.

The city will never reach its full potential if the reasons for urban decline are not investigated and understood. These include as previously mentioned mattes of the recent history of Apartheid and the tool of Modernist Planning that was used to enforce this rule. In addition the obdurate infrastructure left behind by this regime are thorns in the side of the city of Port Elizabeth and are hampering much needed redevelopment and growth.

Stated plainly the elephant in the [urban] room is the Settlers Way Freeway flyover.

This piece of underutilised infrastructure stems from a time period where planners and engineers had little interest in the spatial qualities of the inner city and has thus led to decades of wasted opportunities and developments that did not occur in Port Elizabeth. Because of this single structure the city has missed out on countless opportunities to become one of the **most beloved cities of South Africa**. Port Elizabeth and its city centre have become unappreciated as the second oldest city in South Africa as a result of being hidden in the shadow of the flyovers.

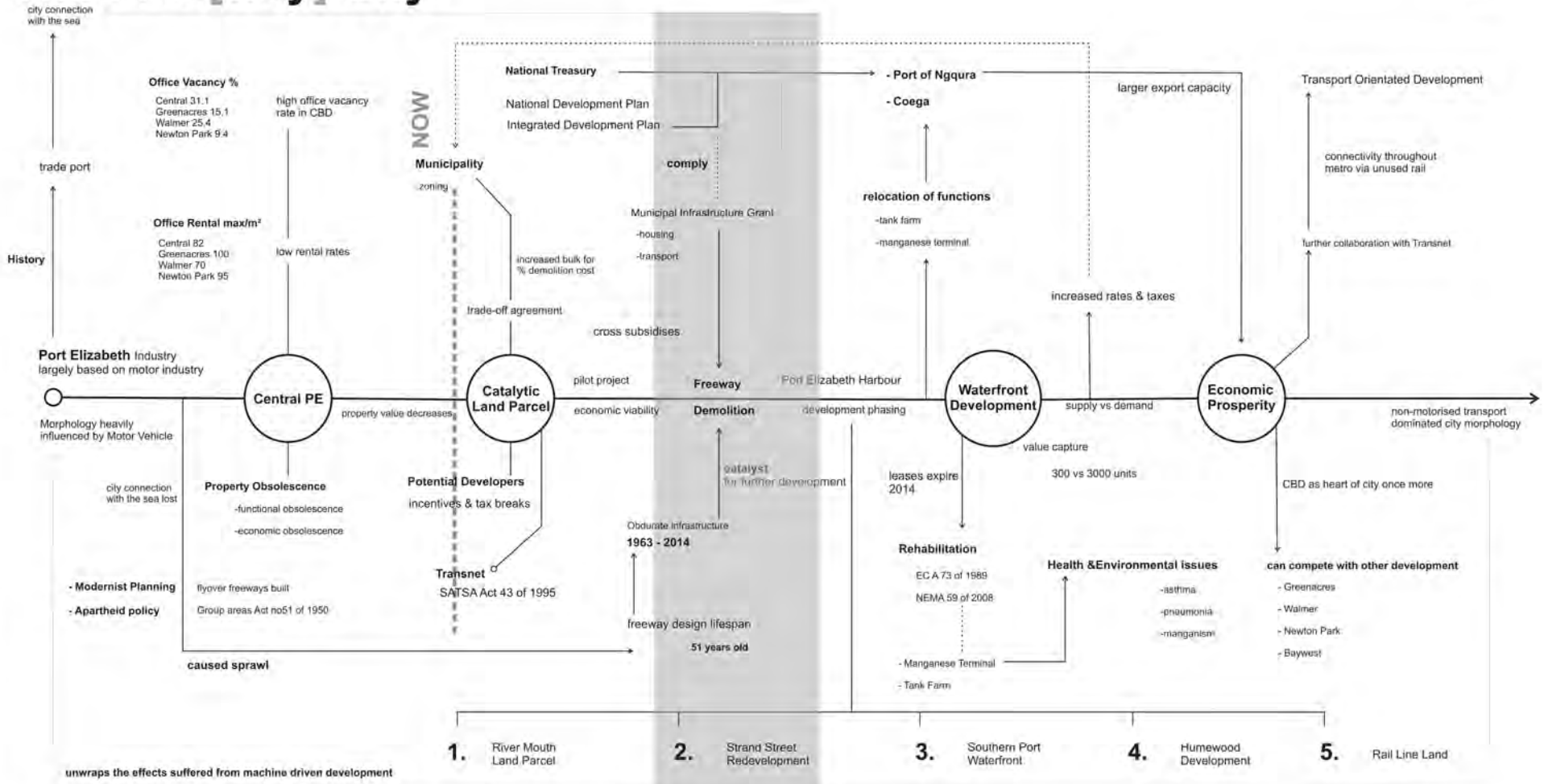
It might seem too large a task and extremely expensive, but through the analysis in the next section it will become clear that it is **not impossible** and rather essential. What is needed is a broad and idealistic vision to demolish the freeway while still realising the effort and perseverance needed to realise this. This should be the goal for the city of Port Elizabeth irrespective of political terms of leadership, alliances, personal preferences and differences.



Highway movement patterns
(Halprin, 1966)

The Free[way] City

PC Wasserman
MCPUD
2014



DEVELOPMENT & IMPLEMENTATION

Freeway Demolition Project

Stakeholders

Government	National Government Department of Public Enterprises Provincial Government Transnet
Municipal	NMMM MBDA
Business	Port Elizabeth Chamber of Commerce and Industry Southern Port Developments Local business owners
Transport	Department of Transport National Ports Authority Algoa Bus Corporation Taxi associations
Public	General public Tourists

Precedents/Case Studies

Freeway Demolition	Milwaukee San Francisco Seoul Madrid Seattle Dallas Portland
Regeneration Planning	Detroit Rosario Barcelona

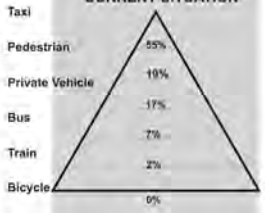
Demolition Cost

2009 estimate: R95 million

2014 estimate: R118 371 298

(inflationcalc.co.za, 2013)

CURRENT SITUATION



Theoretical Approach

Christaller Model
Christopher Alexander
Jane Jacobs
Dewar & Uitenbougaardt
Alex Krieger
Fabio Todeschini
John Norquist
Lance Husley

Design Principles

Proximity
Connectivity
Legibility
Permeability
Opportunity
Choice
Access
Flexibility

Contacts and Promotors

Municipality	Dorelle Sapere	MBDA
Engineering	Lisa Kane	UCT
Economics	Rob McGaffin	UCT / City of Cape Town
	Francious Viruly	UCT
Planning	Dave Dewar	UCT
	Nancy Odendal	UCT
Architecture & Urban Design	Piet Louw	Practice
	Henri Comrie	UCT / Practice
	Adriaan Mentz	Practice
	Heinrich Kammeyer	UCT / Practice
Legislation & Policy	Fiona Ogle	UCT / City of Cape Town

Settlers Way cutting between the city and port
(www.portelizabethdailyblogspot.com by FireflyAfrica, 2014)

5. An Argument for Freeway Demolition

5.1 Introduction

Since the construction of the freeway flyovers through the Central Business District of Port Elizabeth in the 1960s the inner city has slowly been decaying. This is in part a result of the effect that large infrastructure has on surrounding space. As international precedents suggest, these leftover spaces under freeways are more often than not **underutilised and disused** or derelict.

Society is scared to break down infrastructure especially in South Africa where we have only recently started to provide the much needed groundwork to those who previously did not have these services. However, it is important to differentiate between **infrastructure that serves and infrastructure that spatially fragments** a society and causes economic and physical decline.

It can be argued that the freeways have benefitted those who pass through the city while suppressing those who find livelihood within it. The issue with freeway infrastructure built in the 1960s and 1970s comes from a number of factors. This brings to light a few key questions concerning the nature of freeways as infrastructure, and whether they contribute or hinder the city. These questions are as follows:

- When does infrastructure become obdurate?
- When does it reach its expected lifespan?
- When does it become a hindrance to the growth of a city?
- How does it impact on property values?

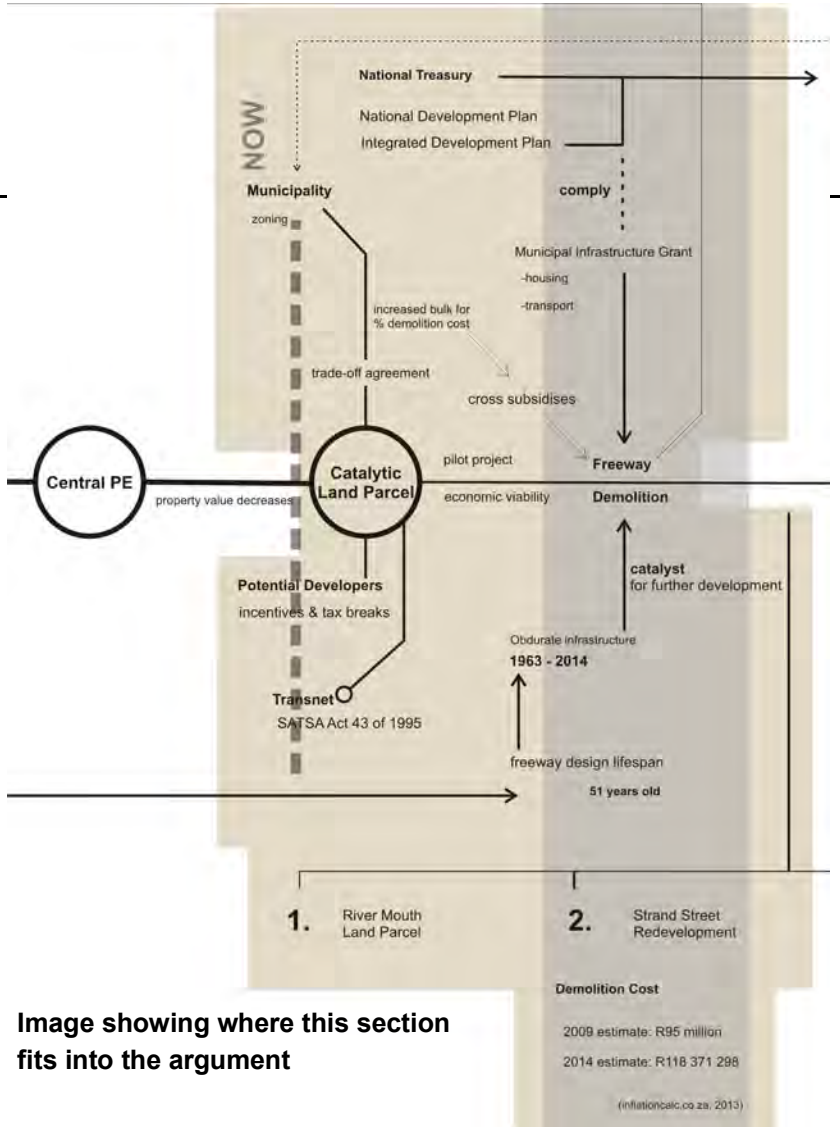
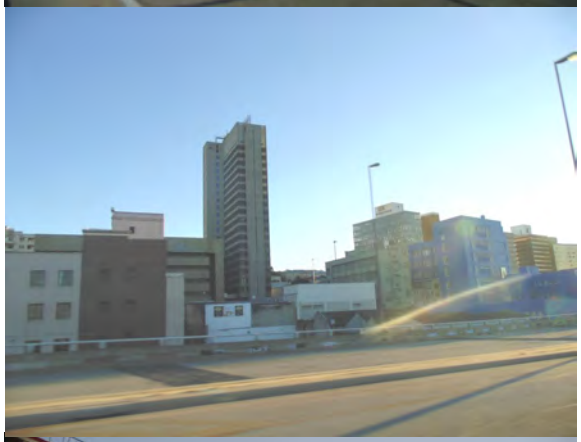
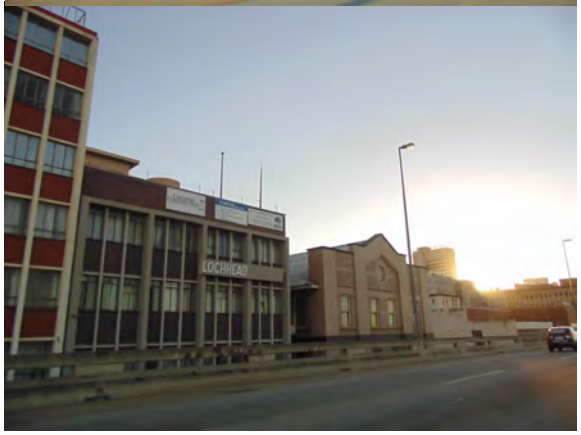
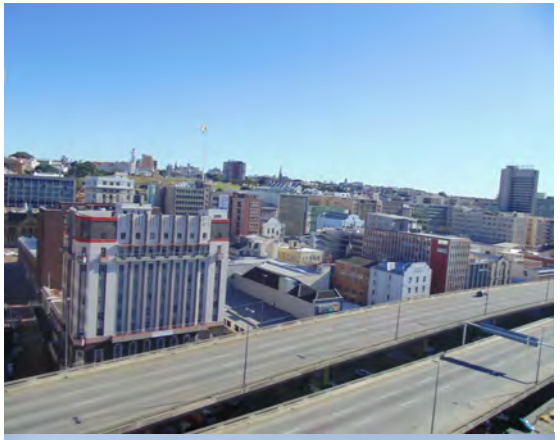
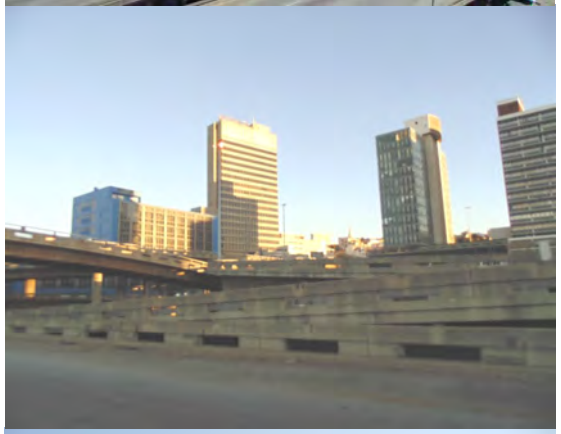
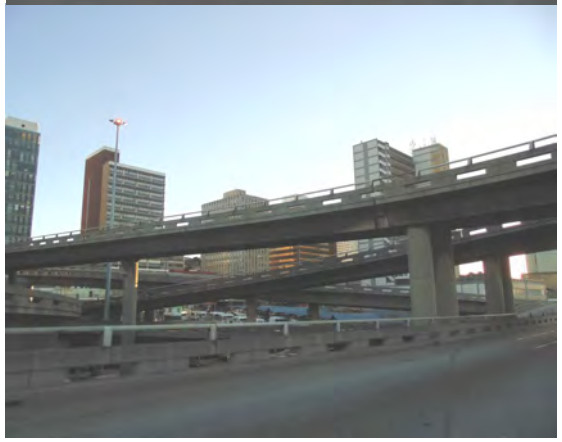


Image showing where this section fits into the argument

The following section will attempt to investigate some of these questions through a discussion and analysis of the particular context of Port Elizabeth.

The economic decline of the inner city is partly as a result of the unpleasant public spaces resulting from the placement of the freeways.

The Settlers Way freeway and its relationship with buildings in the CBD
(author, 2014)

The freeway in Port Elizabeth cuts through the heart of the **city severing it from its connection with the Port**. This decline in quality of public space has an effect on whether or not people will want to spend time in a place. This in turn impacts on economic drivers of the CBD such as consumer patterns which **then impacts on sales then rental and finally maintenance.** This turns into a vicious cycle which requires huge sums of capital investment from local and regional government and other sources for “beautification” projects such as the regeneration projects mentioned in the previous section. Some of these have already been done in Govan Mbeki Street and have had a positive effect on the informal economy but ultimately have not solved the economic problem.

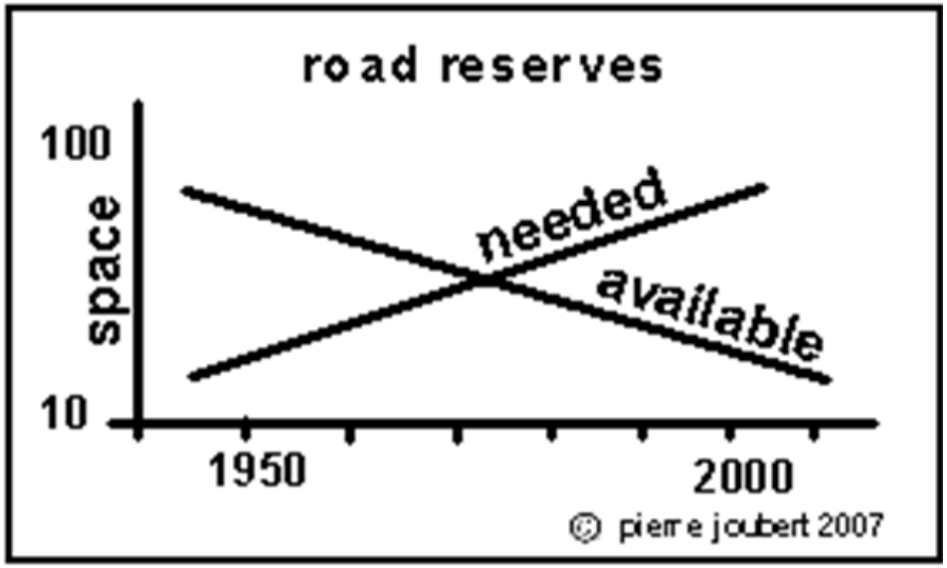
5.2 Obduracy of Freeway Infrastructure

The freeway was built on the premise that there would be an ever increasing demand for road space as a result of an increasing car using populous. In Port Elizabeth there **are large tracts of road reserves** that line residential and commercial areas. These are disused and act as a buffers between areas. These tracts of land are a leftover spatial resultant of the over anticipation of future trends by the modernist planners of the city.

Modernist planning has had some **inaccurate and usually extreme predictions of future trends** and capacity demands. These are quite evident in the monstrous seven-lane elevated highway that bypassed the city to the suburb of Summerstrand, a small sparsely populated affluent neighbourhood.

The highway was designed and implemented for future car capacity predicted by traffic engineers. Multiple lanes, interchanges, road reserves and flyovers were built to service a supposed increase in traffic. These predictions along with the city’s history with the car industry could be linked with the morphological growth of the city. As a result of these planning predictions and methods Port Elizabeth has turned into a sprawling metropolitan area, second in area only to Johannesburg in South Africa. This stands in stark contrast to the rational pedestrian based design of the old trade port beginnings of Port Elizabeth and Walmer as towns.

It is now quite evident that these predictions, planning tools and irreversible morphological forms were unnecessary as the fear of congestion and inadequate transport infrastructure predictions were inaccurate. This can be said to be a **failure on behalf of city planners and traffic engineers of the modernist era** as the 10 minute city of the 1970s has changed to the 15 minute city of today. Five decades of increasing traffic has resulted in five minutes longer travel time within the city. Over engineering and planning have therefore not contributed to the city as a whole but rather impeded economic growth of certain key areas resulting in lost potential and growth in terms of wealth.



Engineering graph showing projected demand for road reserves
(www.septua.co.za, 2013)

Mount Road turn-off closed for maintenance

Mount Road turn-off being maintained

Flyover to the harbour

Settlers Way freeway that is being renovated and maintained
(www.googleearth.com, 2013)

5.3 Technical Rationale: Expected Lifespan of Freeways

The Port Elizabeth Freeway flyover bridges are **constructed out of High Performance Concrete** of a similar kind to those built in other locations in South Africa. They have also been engineered as Simple Span Concrete Tee Beam bridges and were built during the 1960s and 70s. (Norquist, 1998)

Investigation revealed that most bridges built during this time period used reinforced HPC with expansion joints and shifting disks that allow for the upper deck of the structure to move independently from the lower columns to prevent cracking and damage to the structure through movement. (Cusson, 2011) These **bridges have a varying lifespan** depending on deck designs and the strength of the concrete used as well as the thickness of the concrete coverage over the reinforcing members within the structure as well as the environmental conditions within which they need to function. A freeway of this kind will start its life cycle as follows:

The freeway is constructed and completed with a deck. The assumption is then that if a bridge has conventional joints it will need a **deck replacement every 30 years**. Between these 30 year periods a deck resurfacing will be required every 15 years with maintenance taking place every 5 years. (Keoleian et al, 2005) It was found that these concrete flyover freeways have "…service lives ranging from 20 years to 70…".(Cusson, 2011) The freeways in Port Elizabeth were found to be rather old in that respect being 51 years of age this year. Since construction they have had multiple re-decking and spalling maintenance projects performed over the years. (Africoast.com, 2000)

> "Comprehensive inspections and corrosion diagnostic testing to the 37 year old Settlers Freeway bridge interchanges for the City of Port Elizabeth revealed widespread corrosion and spalling of reinforcing steel is occurring. A medium to long term maintenance and rehabilitation programme was developed for implementation."
>
> (Africoast.com, 2000)

The Afri-coast Engineers portfolio claims to have performed maintenance and rehabilitation on the said freeway in 2000, proving the current age of the freeways to date to **be 51 years of age**. If this is the case, the freeway flyovers in Port Elizabeth should have experienced multiple maintenance procedures (10 since 1963), 3 resurfacing operations and 1 deck replacement. This also means that the freeways are nearing their second deck replacement operation.

It is difficult to judge the costs of these types of operations as the scale of these kinds of freeways vary and prices differ globally and inflation also occurs over time. Therefore these costs will not be investigated in this project. The aim is strictly to determine the functional lifespan of a structure such as this.

The former mayor of Milwaukee, John Norquist noted that "[m]uch of the U.S. interstate system is reaching the end of its design life." (Norquist, 1998) He was a key player in demolition of the Park East Freeway in Milwaukee city in the U.S. He structured an economic argument comparing the functional lifespan of the freeway to the amounting maintenance costs over a period of years. This finally led to the demolition and redevelopment in an area which had formerly been dominated by **costly obdurate infrastructure.**

> "A lot of freeways are headed beyond their design life, so they have to be rebuilt. You can't just resurface them again. It's cheaper to just tear it down and replace it with a surface street, so you win the cost argument by comparing it with rebuilding the freeway."
>
> (Norquist in www.grist.org, 2012)

Views of spatial condition created by flyovers for users both above and below the freeway
(author, 2014)

5.4 Economic Rationale: Impact of Obsolescence on Property Values

The impact that these flyover freeways have on property can be explained through economic obsolescence and functional obsolescence. The definition of obsolescence in this case would pertain to the "process of passing out of use or usefulness or becoming obsolete" (Hulsey, 2008). **Economic obsolescence** is the loss of value from external factors occurring outside of the property itself. The flyovers built in the middle of a bustling CBD are an example of this occurring. They have caused unpleasant noise, smell, pollution as well as unusable and poor quality public space. This has negatively impacted on the surrounding buildings in terms of use and maintenance. This has made it very difficult for business owners to keep their customers and clients as externalities cannot be controlled by them.

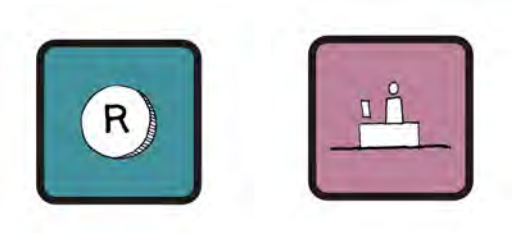
> "…economic obsolescence issue is beyond the property owner's control which can make it almost impossible to "cure" the economic obsolescence issue."
>
> (Hulsey, 2008)

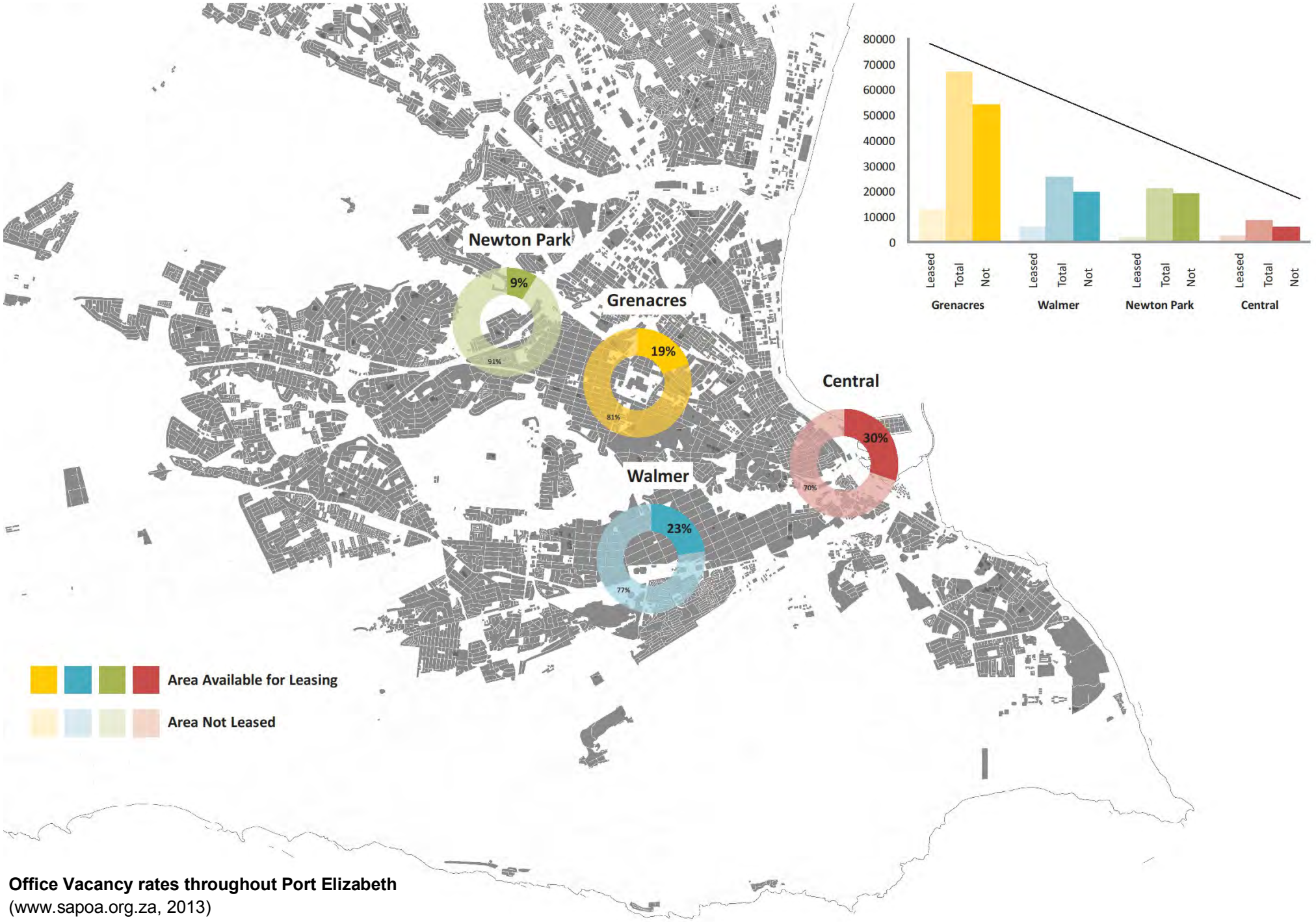
Furthermore, economic obsolescence has **caused functional obsolescence** of the buildings and areas adjacent to them. **Functional obsolescence** is the loss of value of property through internal causes in the property itself. These exclude physical deterioration. An example of this would be faulty building design and poorly arranged floor plans. The property then partially loses its functionality and what it is intended to be used for.

> "This describes a type of depreciation that applies when a building has a relative loss of utility. Loss of Utility would be defined as some feature on, or in a building that is not as useful as the cost would suggest."
>
> (Hulsey, 2008)

This can be seen in the many residential and office buildings as well as the Campanile Hotel that used to have a view over the harbour but as a result of the freeways now do not have this feature. Many of these buildings were designed to have views for visitors and tourists over the bay as well as entrances off Strand Street now eclipsed by the flyovers. These considerations originally formed part of the overall building design as it responds to streets, views and access. The building entrances and views now **face onto the underside of the freeway** which is not pleasant for residents or tourists. The alteration or contradiction of these design decisions through the impact that the freeway can be said to be an example of how **economic obsolescence can impact and cause functional obsolescence**.

> "The main objection to the Freeway is visual and environmental intrusion and its negative influence on property values in Strand Street and the adjacent CBD."
>
> (MBDA Report, 2014)





Office Vacancy rates throughout Port Elizabeth
(www.sapoa.org.za, 2013)

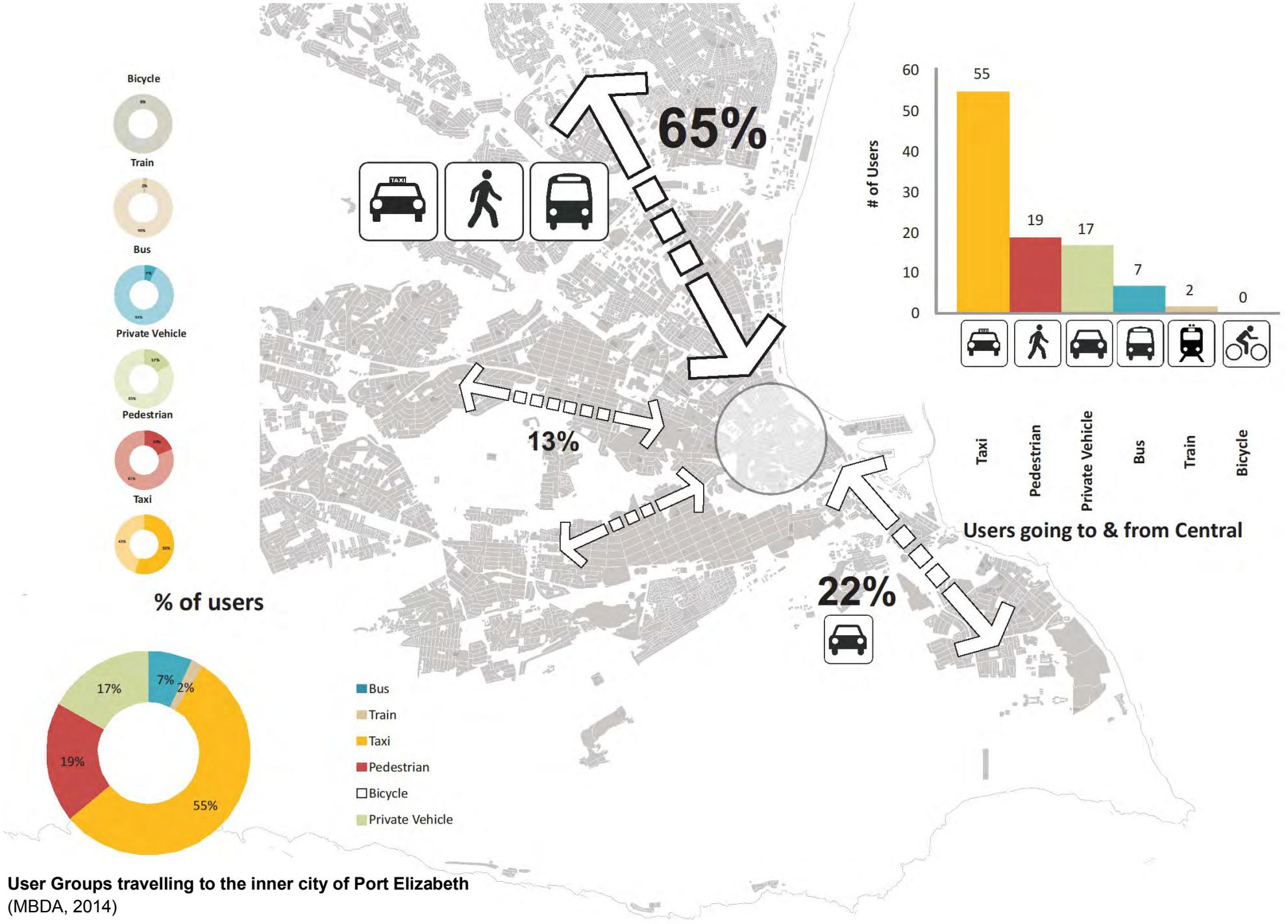
5.4.1 Rental rates

According to the MBDAs 2014 report rental rates in the CBD of Port Elizabeth have **declined in recent years** and in spite of regenerative projects such as the Govan Mbeki Street upgrade are still low. This might indicate that piece-meal projects such as this have **not influenced the perception of the area** to potential businesses and as a result the local economy continues to suffer. It is arguable that the image of Central is associated with dirt, crime and lower income shopping facilities and that this is reinforced by the unpleasant nature of the streets and public spaces as a result of the dominance of the freeway over the city. Average rental rates for Central, based on the survey sample, declined by 11.3% between 2011 and 2013, equating to an average annual decline of 5.8% per year over the period. The average 2013 commercial rental rate of R 103.61 per m2 is the **second lowest over the recorded period** (2009 – 2011; 2013) as well as being below the 2009 figure (R 111.85). The 2013 commercial rental rate is however in line with the historical average of R 102.17 over the recorded period (2009-2011, 2013).(MBDA, 2014)

The potential demolition of the flyovers will positively affect the property market of Central especially the properties facing onto Strand Street above which the freeway currently sits. The increased value of properties as a result of the demolition of the freeway flyovers will **result in rates increases for the NMMM**. This needs to be taken into account as rental prices will rise and owners will regain not only sales prices of buildings but also potential rental rates. (MBDA Report, 2014)

5.4.2 Office Vacancy Rates

The South African Property Owners Associations 2014 report on office vacancy compares Central's office vacancy to those of other commercial and economic hubs in Port Elizabeth such as Green acres, Newton Park and Walmer. It is interesting to note that for B-grade office space, the price per meter squared in Central is R81 which is the highest but remains competitive with the other rates of Greenacres (R80/m²), Newton Park (R75/m²) and Walmer (R70/m²). However, there seems to be a **lack of choice in office rental type in Central** as the only option is B-grade office space. Even though the area has the least total amount of lettable office space, it also has the **highest vacancy rate at 31.1%**. This is further evidence that Central is not a desired location for business and trade. Once again this may be attributed to the areas lack of good public space, streets and connectivity with other areas of the city. These are impeded by the monofunctional modernist megalith that is the freeway.



User Groups travelling to the inner city of Port Elizabeth
(MBDA, 2014)

5.5 Social Rationale: User Groups

As per info gathered from the MBDA Report of 2014 the following are the daily vehicle volumes on main roads through Port Elizabeth's CBD:

Road	Vehicle numbers
Settlers Way (freeway)	48000
Strand Street (underneath freeway)	14000
Govan Mbeki North (main road)	17000
Govan Mbeki South (main road)	7000

At first glance it seems clear that the freeway is relatively well utilised as it far exceeds the other streets in terms of vehicle usage per day. When further investigation is done and **user groups and numbers** are taken into account the focus shifts. The user group of Strand Street is far larger than that of Settlers Way. This can be said because the users of Settlers Way are predominantly locals who are moving to and from work and who live in suburbs such as Walmer and Summerstrand. This group is characterised by their economic ability to afford private vehicles and can therefore be placed in a general middle to high income brackets.

The other user group of the freeways are visitors and tourists who are lead straight past the CDB when travelling on the M4. These users simply bypass the CBD on route to their destination. In contrast to this the user group of Strand Street consists mostly of people travelling to town for work or shopping purposes. **Strand Street gets used predominantly by taxis and busses** as the Algoa Bus Company have their main station underneath Market Square leading on to Strand Street. Adjacent to the bus station is Port Elizabeth's main train station which is a gateway to the city mainly for people who move to and from the city's hinterland of Uitenhage and Dispatch. It is because of this that taxis make use of the opportunity to transport people to and from other parts of town to this busy informal transport zone.

When taking into account that Strand Street is made use of primarily by taxis and busses one can roughly determine how many people are transported daily along this route. A single taxi has the capacity of 15 people (Toyota Sesfikile) whereas the typical bus as used by Algoa Bus Company (M.A.N. Explorer bus) seats approximately 65 passengers. When considering that the majority of vehicles on Strand Street are either busses or taxies, even when not loaded to capacity, the **number of users far exceeds the user group of those vehicles travelling on Settlers Way**. This is because private vehicles tend to carry an average load of 2 persons. It is clear that the categorical analysis of user groups can influence the perception of user numbers of the different streets. The graphic refers (overleaf) to the number of vehicles and users per street per day. Even though these numbers are based on averages and not specific user count it can be deducted from vehicle type, capacity and street used which is the more utilised path.

(MBDA, 2014)

When considering the number of people instead of the number of vehicles, it is clear that **Strand Street below the Settlers Way (the freeway) is used much more than the freeway**. The freeway infrastructure overshadows Strand Street and causes it to be less appealing because of the noise, pollution, lack of sunlight and ventilation caused by this piece of infrastructure. This is despite the fact that the freeway serves far less people daily. This indicates the social obduracy of the freeway.

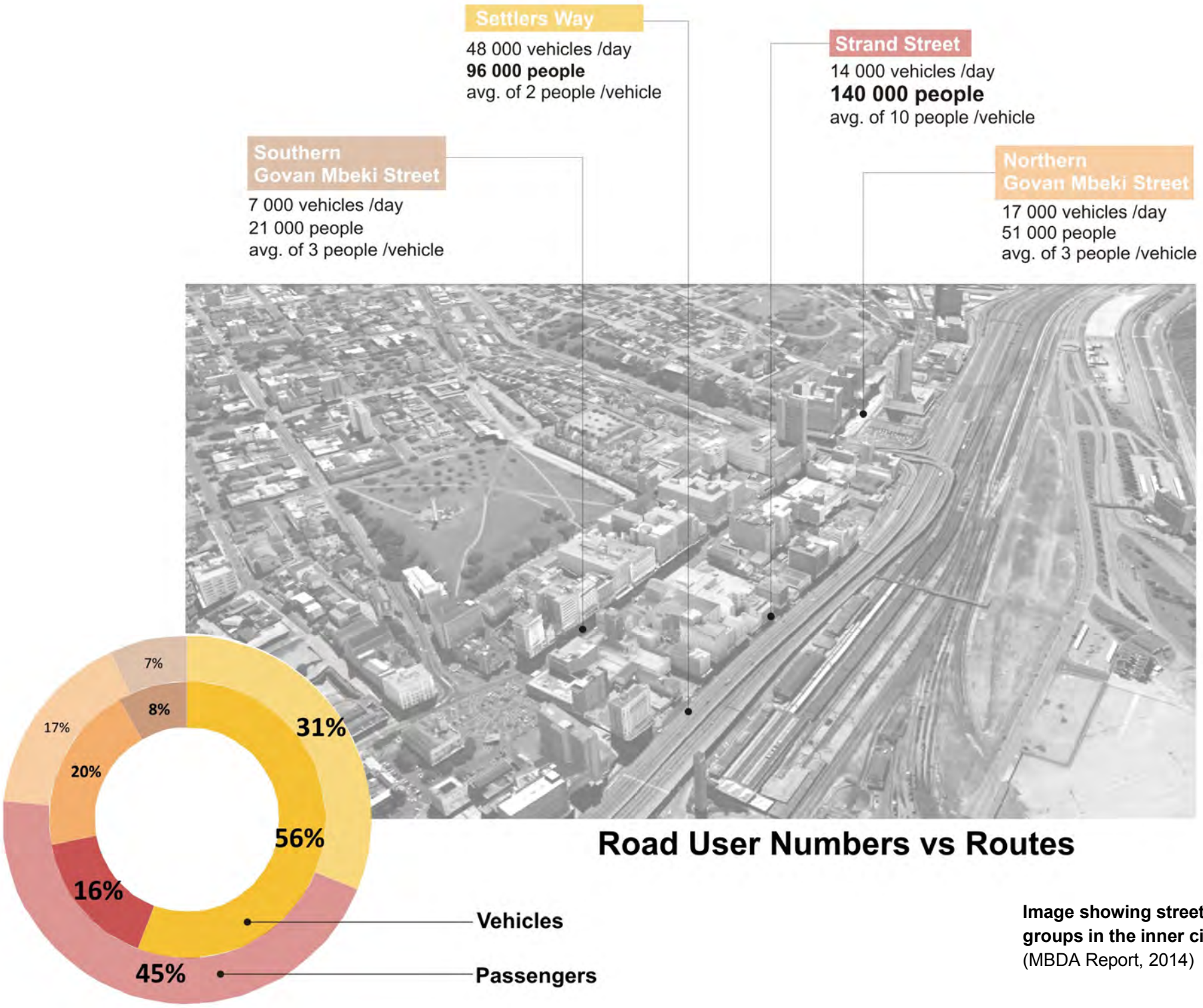


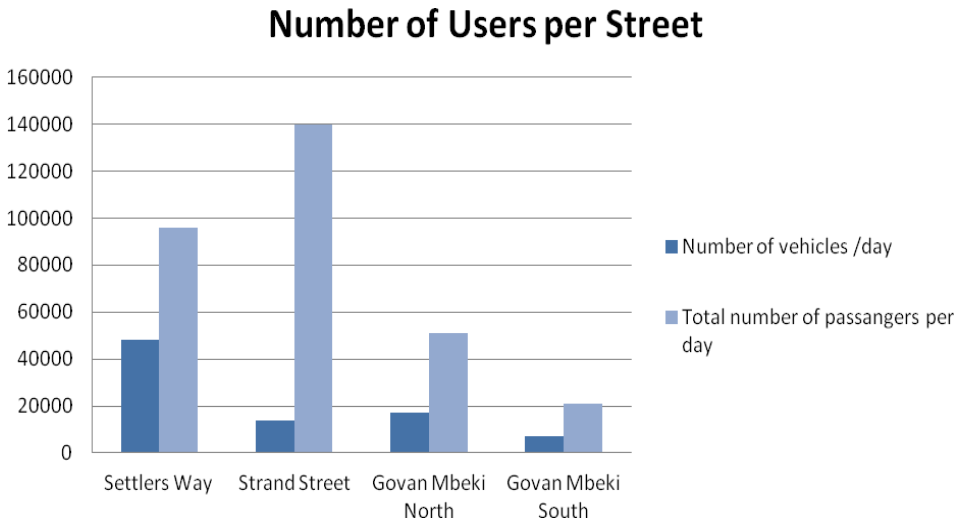
Image showing street user groups in the inner city
(MBDA Report, 2014)

5.6 Alternative routes

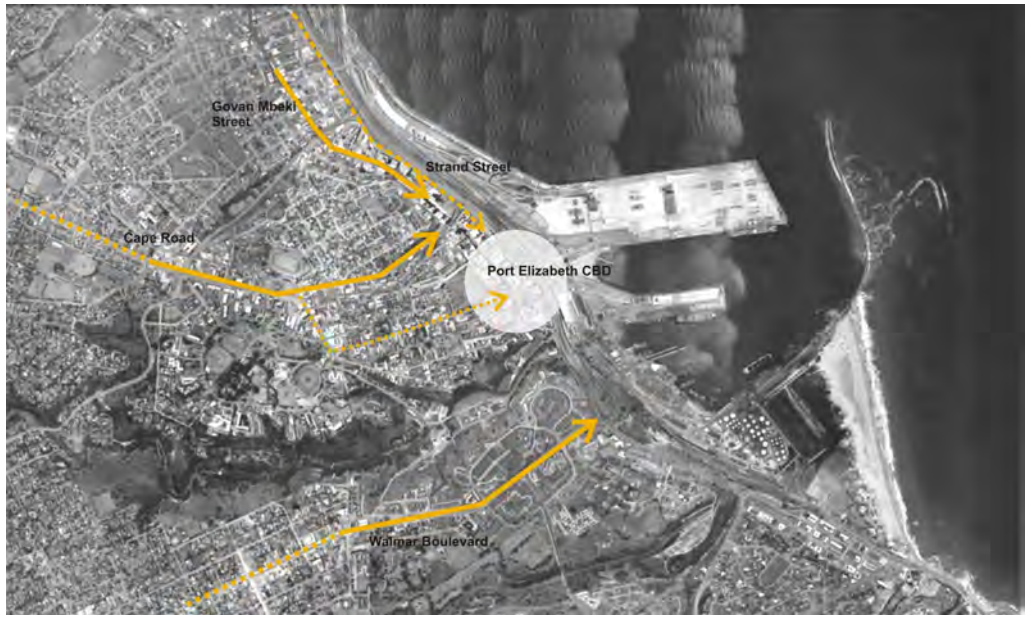
Alternative routes to the more affluent neighbourhoods of Humewood and Summerstrand that do not hinder the CBD of Port Elizabeth are already in place and will not be affected by the traffic congestion. This is because the **dispersal of traffic flows over a number of routes** instead of one single route in combination with multiple entrances (connectivity) to an area serves to minimise congestion. In contrast to this the current funnelling of traffic along the freeway is more prone to congestion as all vehicles on route on this single transit artery may be congested by a single accident or blockage event. This is how the current highway functions. This relates to the idea that more vehicles may pass to or from an area when using multiple routes. This might be compared to a **capillary system** that still allows flow even when a section gets blocked rather than a single artery that stops flow indefinitely when blocked. Traffic is therefore no longer siphoned but rather disperses like a watering can.

Similarly more vehicles may be able to pass from point to point in the same amount of time when traveling slower and in closer proximity to one another (bumper to bumper) than would when travelling faster and in a spread out manner. This is how a well-planned boulevard at grade level may operate.

Walmer Boulevard, Marine Drive, Beach Drive and an improved Strand Street would comprise part of this “capillary” system that flows to and from Humewood, Summerstrand and other areas from the CBD. These underutilised alternative routes may also benefit from the added activity and the organic formation of new nodes and corridors may follow.



Graph showing user groups travelling to the inner city of Port Elizabeth
(MBDA Report, 2014)



Alternative routes to the inner city of Port Elizabeth
(author, 2014)

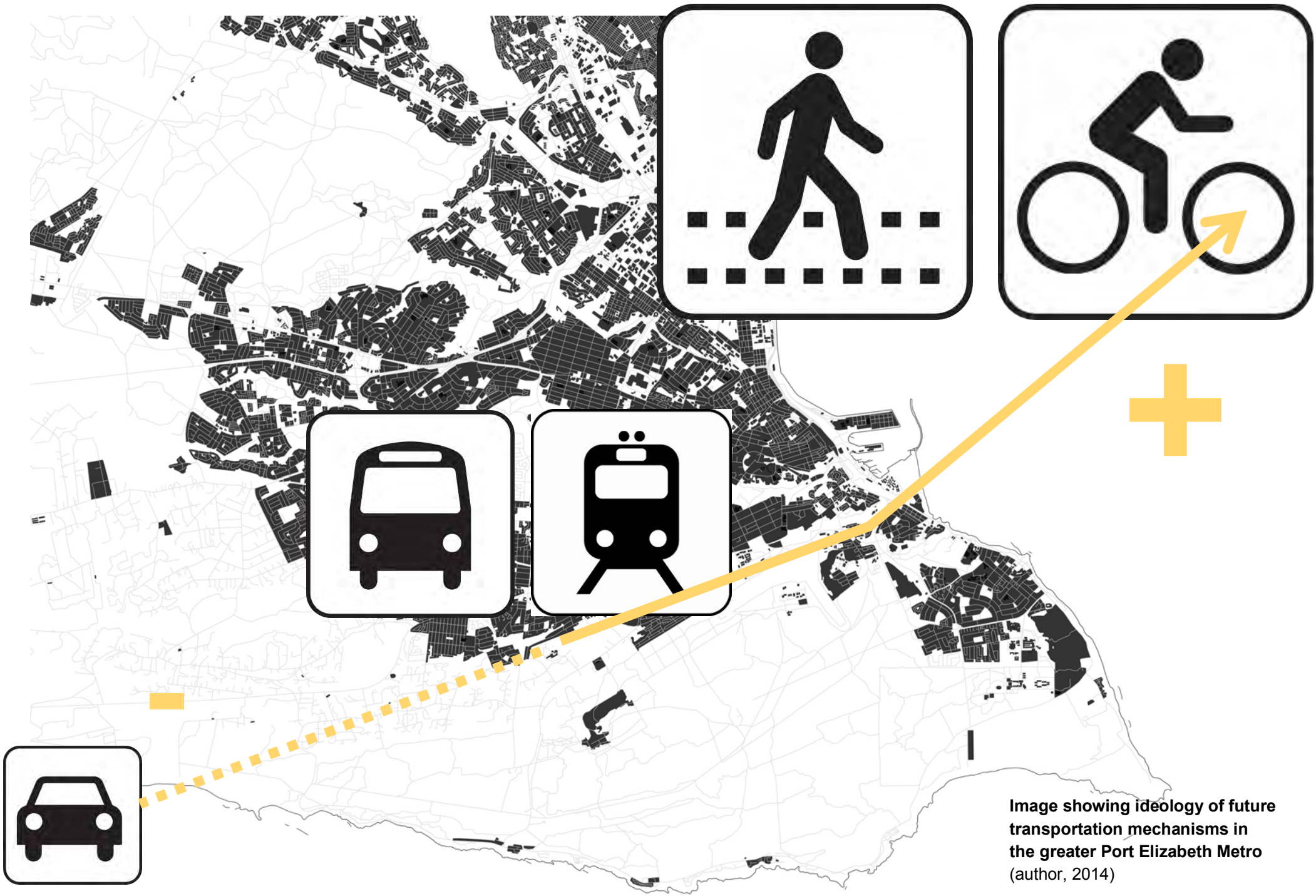


Image showing ideology of future transportation mechanisms in the greater Port Elizabeth Metro (author, 2014)

5.7 Traffic Congestion Alternatives

This portion discusses the alternatives that may be implemented to control the possible complications, if any, that might arise from the demolition of the freeway flyovers in Port Elizabeth. It is important to explore these alternatives even though the flyovers are underutilised as discussed previously in this document. These alternatives are derived from international precedents that have been or are currently being implemented.

5.7.1 Tunnels

This option carries traffic underground via tunnel systems with the aim to **bypass the CBD** of a city. The Central Artery Project in Boston or the 'Boston Big Dig" is an example of this alternative. It is a very effective but **costly** option for through flow traffic in a heavily urbanised or densely built area. This may only be an option if the city or CBD is not decaying. However it is a viable option if the city suffers from chronic congestion that hampers activities within it. This is clearly not the case with Central as it is no longer economically dominant hence the projects aim to redevelop and revitalise the area. A tunnel will perform the same function as the flyovers currently do.

5.7.2 Traffic Control Systems

These consist of an array of systems that analyse and predict traffic flow through complex computerised mechanisms. This active system is integrated with passive systems consisting of one-ways, traffic calming mechanisms, pedestrian zones and alternatively surfaced roads to control traffic flows within the city. This approach may be used in combination with a robust grid in Port Elizabeth.

5.7.3 Ban of Private Vehicles

The ban or reduction of private vehicles commonly carrying single persons may also improve traffic flow. This may be done through providing less parking in the inner city where there are already unused parking garages.

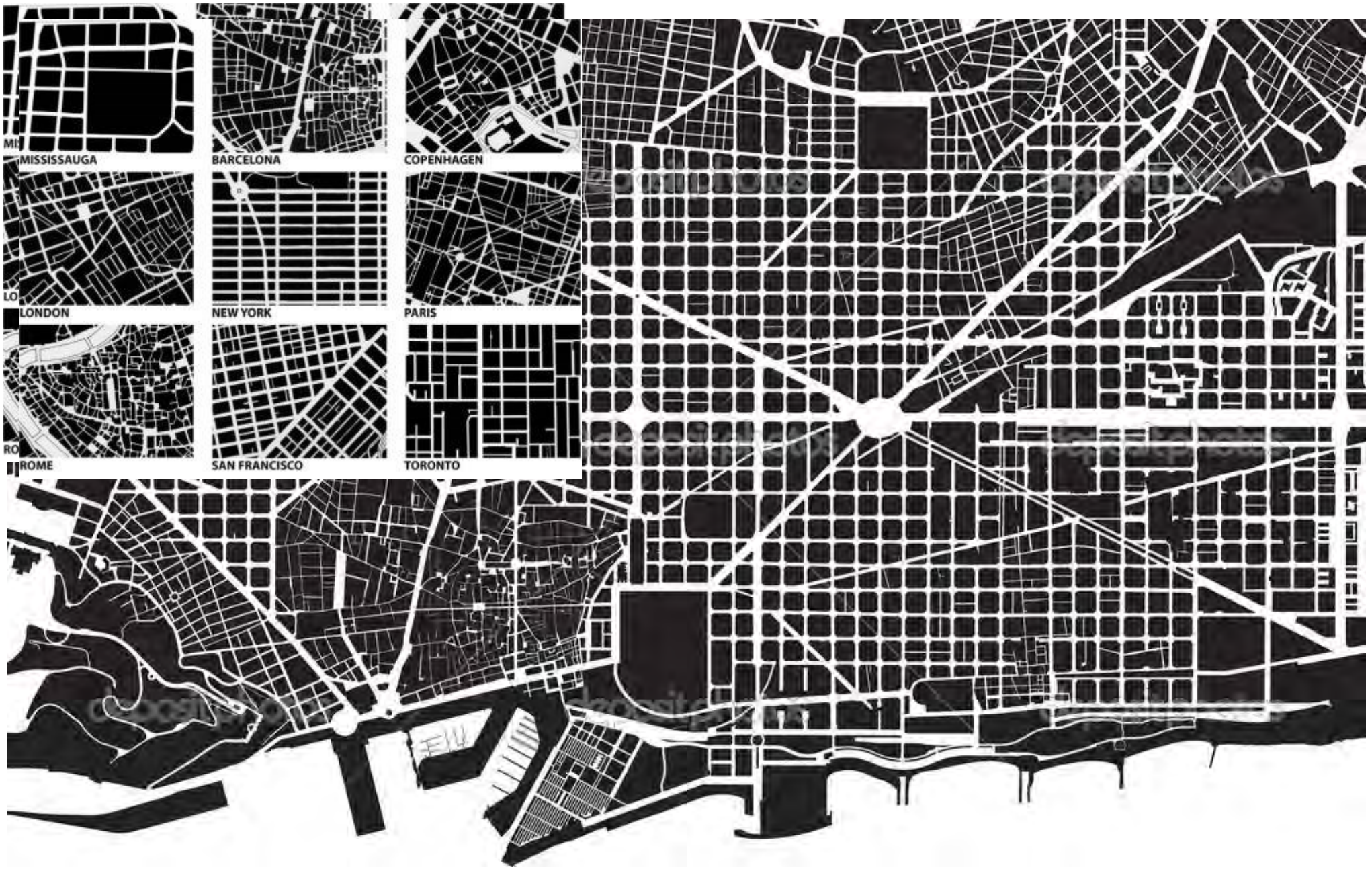
> "Surveys of the use of the 1 400 on-street parking bays available to the public (712 metered bays and 688 free bays) showed that the highest occupancy of bays was between 10:00 and 11:00 on a typical weekday. However, the average occupancy of all on-street bays during this time was only 54%."
>
> (MBDA, 2014)

This is another example of the city's overprovision of infrastructure for minor needs. **Realistically parking is of less concern** than the activities that take place within a city and the character that draws potential consumers and investment to it.

Increased parking tariffs may also aid in the lessening of private vehicles. However if this is done, it needs to be complimented with an efficient and reliable as well as affordable public transport system for users as an alternative means to enter the inner city areas.

5.7.4 Efficient Public Transport

Currently the inner city is serviced by an array of public transport systems. These include taxis, the Algoa Bus Service and the newly developed Integrated Public Transportation System (IPTS) Libongolethu Bus Service. The Algoa Bus Service is a long distance and localised service whereas the Libongolethu Busses are a less extensive services. This system will make use of the portions of Govan Mbeki that comprise of designated bus lanes to improve traffic flow and congestion. The taxi services currently use the Griffin Street and Norwich ranks which front onto Strand Street. When these reach capacity during peak afternoon periods the taxis spill into Strand Streets disused areas. If the flyovers were to be demolished a more integrated and extensive public transport model will need to be developed even though initial steps have been taken. Non-Motorised Transport infrastructure and use such as bicycle/skateboards routes, pedestrian walkways and other alternatives also need to be taken into account as viable options.

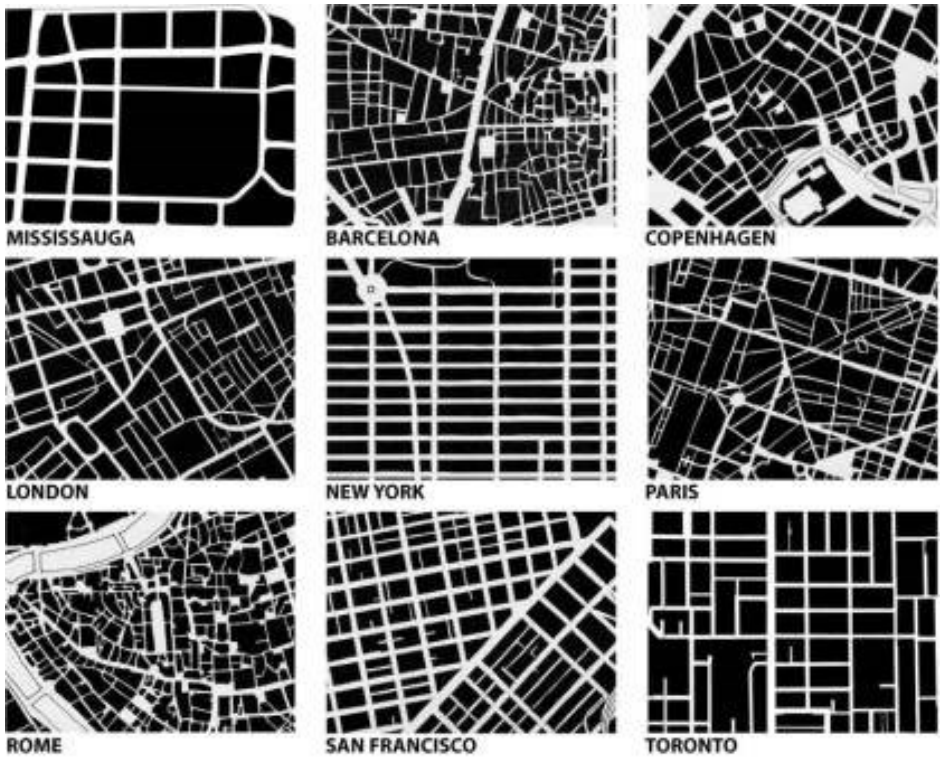


Barcelona Grid Plan
(www.shutterchock.com, 2014)

5.7.5 Robust Grid

A **fully integrated grid system** that directs flows to and from the city centre in a manner that allows for access and choice of route will be able to handle large traffic flows. Currently the flyovers only allow for minimal access points though providing connectivity. The freeway currently comprises of a few intersections that force longer travel times and routes for users as well as back tracking trips when a user has missed a turn off. A robust grid is therefore necessary for **traffic dispersal and choice of destination**.

A combination of a more efficient traffic control system, less private vehicles, better public transport and a robust transportation street grid is most likely the best for Port Elizabeth's situation as other options would be expensive and unrealistic within the context.



Grid patterns of cities
(www.minijanejacobs.files.wordpress.com, 2011)

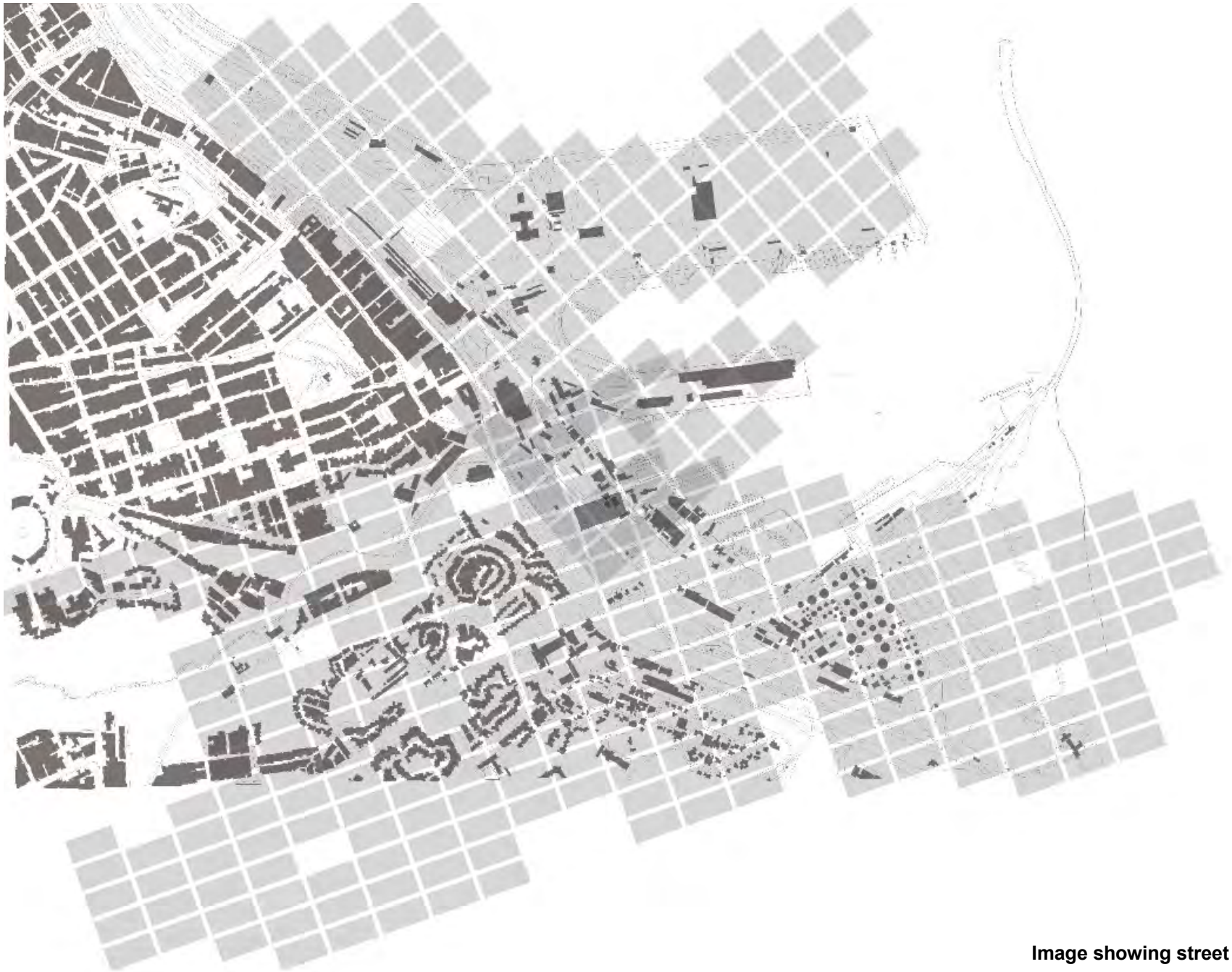
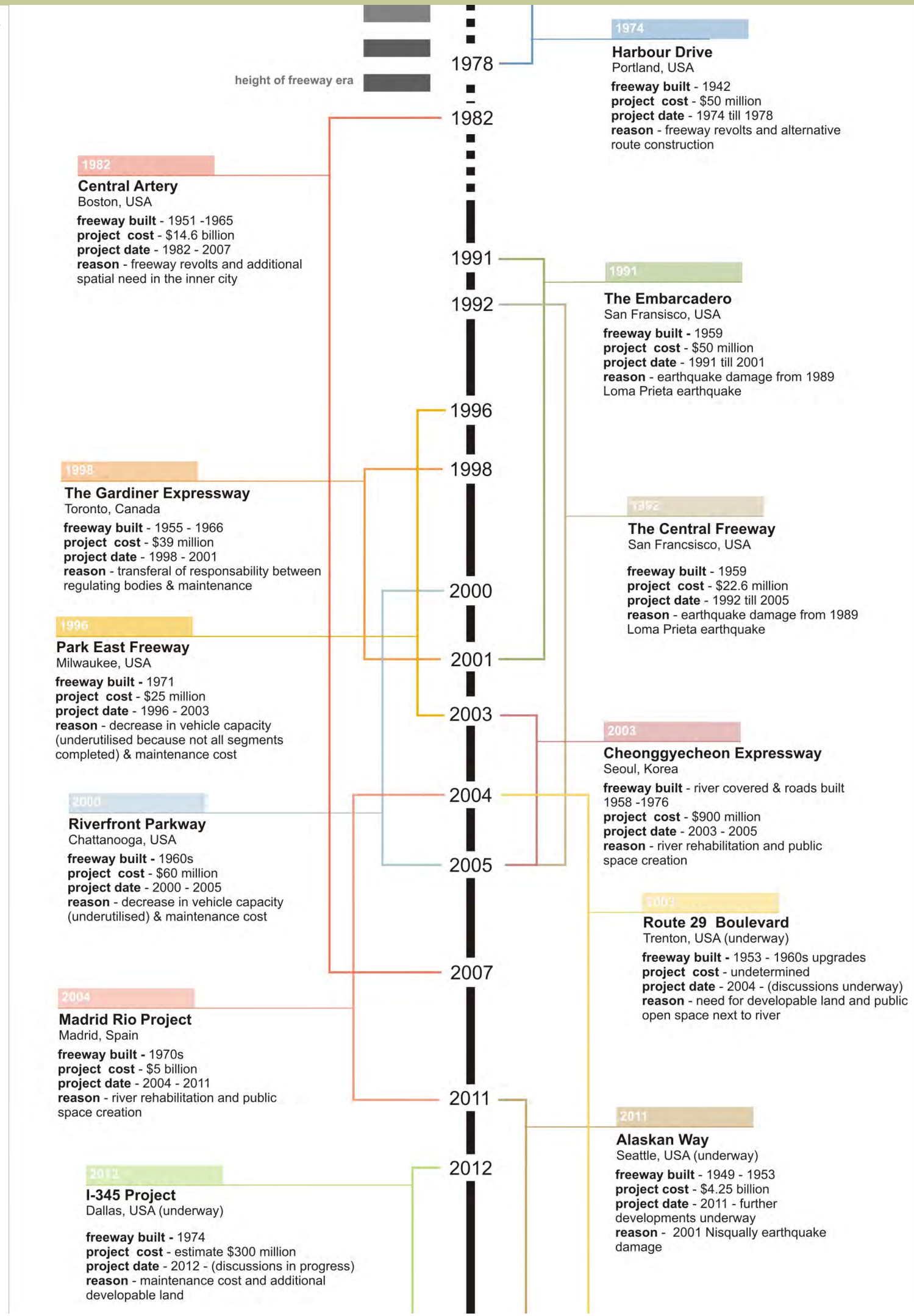


Image showing street grid overlay onto Port Elizabeth's port area
(author, 2014)

5.8 The City Grid

The traditional idea of a **robust grid** or many alternative routes that are interconnected such as the one that Port Elizabeth and Walmer were originally based on may provide much needed connectivity between areas. Choice, access and opportunity are other principles that may result from such a development. Examples of this in theory exist in the practical city layouts done via the ***Law of the Indies*** (1573) and in prominent examples such as the Barcelona Grid in Eixample established by Lidefonce Cardá. Other such grids exist in Philidelphia, Manhatten and Mexico City, Mexico. Another leading urban thinker, Christopher Alexander, explain this method of city making in his writing entitled ***The City is Not a Tree***. In this writing he explains that the city is complex in its structure and should not be connected in a “tree-like” manner. Rather it should take on the pattern of a “semi-lattice” and be **interconnected** as well as robust in its inherent nature.


height of freeway era
1978
1982
1991
1992
1996
1998
2000
2001
2003
2004
2005
2007
2011
2012
1974
Harbour Drive
Portland, USA
freeway built - 1942
project cost - $50 million
project date - 1974 till 1978
reason - freeway revolts and alternative route construction
1982
Central Artery
Boston, USA
freeway built - 1951 -1965
project cost - $14.6 billion
project date - 1982 - 2007
reason - freeway revolts and additional spatial need in the inner city
1991
The Embarcadero
San Fransisco, USA
freeway built - 1959
project cost - $50 million
project date - 1991 till 2001
reason - earthquake damage from 1989 Loma Prieta earthquake
1998
The Gardiner Expressway
Toronto, Canada
freeway built - 1955 - 1966
project cost - $39 million
project date - 1998 - 2001
reason - transferal of responsability between regulating bodies & maintenance
1992
The Central Freeway
San Francsisco, USA
freeway built - 1959
project cost - $22.6 million
project date - 1992 till 2005
reason - earthquake damage from 1989 Loma Prieta earthquake
1996
Park East Freeway
Milwaukee, USA
freeway built - 1971
project cost - $25 million
project date - 1996 - 2003
reason - decrease in vehicle capacity (underutilised because not all segments completed) & maintenance cost
2003
Cheonggyecheon Expressway
Seoul, Korea
freeway built - river covered & roads built 1958 -1976
project cost - $900 million
project date - 2003 - 2005
reason - river rehabilitation and public space creation
2000
Riverfront Parkway
Chattanooga, USA
freeway built - 1960s
project cost - $60 million
project date - 2000 - 2005
reason - decrease in vehicle capacity (underutilised) & maintenance cost
2004
Route 29 Boulevard
Trenton, USA (underway)
freeway built - 1953 - 1960s upgrades
project cost - undetermined
project date - 2004 - (discussions underway)
reason - need for developable land and public open space next to river
2004
Madrid Rio Project
Madrid, Spain
freeway built - 1970s
project cost - $5 billion
project date - 2004 - 2011
reason - river rehabilitation and public space creation
2011
Alaskan Way
Seattle, USA (underway)
freeway built - 1949 - 1953
project cost - $4.25 billion
project date - 2011 - further developments underway
reason - 2001 Nisqually earthquake damage
2012
I-345 Project
Dallas, USA (underway)
freeway built - 1974
project cost - estimate $300 million
project date - 2012 - (discussions in progress)
reason - maintenance cost and additional developable land

5.9 Case studies

Internationally there have been a number of precedents that involved the demolition of freeways that cut across and divide cities. With the exception of a few cases, such as Portland's Harbour Drive, most of these have all taken place within the past two decades. These projects have largely proved to be hugely **successful as urban renewal projects** as they affect not only the local context but also the immediate surrounds and ultimately the area and region. This ripple effect may positively affect a city indefinitely if done correctly. The following is a list of case studies:

- The Gardiner Expressway – Toronto, Canada
- The Central Freeway – San Francsisco, USA
- The Embarcadero – San Francsisco, USA
- Harbour Drive – Portland, USA
- Central Artery – Boston, USA
- Riverfront Parkway – Chattanooga, USA
- Park East Freeway – Milwaukee, USA
- Route 29 - Trenton, USA
- Alaskan Way – Seattle, USA (underway)
- I-345, Dallas – USA (underway)
- Cheonggyecheon Expressway - Seoul, Korea
- Madrid, Rio – Madrid, Spain

A few case studies will be discussed briefly to give an idea of how this kind of project has been handled in similar urban contexts around the world. These will investigate other projects in cities with similarities to Port Elizabeth in terms of urban context, economic redevelopment and the reestablishment of environmental balance. Within each of the projects discussed it is also important to note the incrementality, scale and method employed throughout process.

Timeline showing freeway demolition projects globally
(author, 2014)

Embarcadero Freeway in San Francisco before and after demolition
(www.prologispier1.com, 2014)

Axis with the Ferry building
(www.seattletransitblog.com, 2009)
(www.upload.wikimedia.org by JaGa, 2008)

5.9.1 Urban Context Similarity: Embarcadero Freeway, San Francisco, CA, USA

This case study was selected as it may inform the project with regards to its contextual similarities and urban place making and revitalisation potential.

The Embarcadero Freeway in San Francisco shared many **similarities with the Setters Way Freeway** in Port Elizabeth. The Embarcadero Freeway consisted of an elevated highway deck which caused "…a physical and visual barrier between downtown and the waterfront." (Seattle Urban Mobility Plan, 2008) It also disjointed urban spaces as it caused historically significant buildings such as the ferry building to be left in undignified spaces causing them to become **disused and underappreciated**. The ferry building in San Francisco also boasts a spire much like the Campanile in Port Elizabeth. The ferry building and spire which historically acted as a landmark in the city were also lost to the public view before the demolition of the freeway. The Campanile in Port Elizabeth currently suffers a similar plight. Also, correspondingly both the Settlers Way and Embarcadero Freeway exist in areas that feature a ferry terminal, had historic streetcar lines, are within walking distance of major tourist attractions, and are near areas undergoing urban redevelopment. (Seattle Urban Mobility Plan, 2008)

In the wake of the **1989 earthquake** that damaged the freeway and the redevelopment of the area, a number of positive developments took place. These included the release of land for development of new residential areas as well as civic facilities and new tourist attractions.

> "…whole new neighbourhoods were established in adjacent areas, major new civic amenities and tourist attractions were opened in the path of the former freeway, and existing tourist destinations that had relied on the freeway for automobile access remained major destinations."
>
> (Seattle Urban Mobility Plan, 2008)

The tourist industry also grew as people became aware of the city's jewels in terms of public spaces and buildings that had **previously been hidden by the freeway.**

> "…San Francisco's tourism industry grew impressively in the years following removal of the freeway and reclamation of the downtown waterfront. Between 1995 and 2000, visitor spending citywide increased 39%."
>
> (Seattle Urban Mobility Plan, 2008)

The **absorption of traffic congestion** through alternative routes also steadily took place as people realised that there were multiple routes to take when travelling from point to point in the city, many of which are shorter now that the freeway has been removed. This means that there are fewer closed loop systems of traffic flow which now enables **choice in movement.**

> "While post-closure counts indicate that remaining traffic was displaced onto alternate routes to and from the Bay Bridge, it appears to have been successfully absorbed, as levels of service were not substantially degraded."
>
> (Seattle Urban Mobility Plan, 2008)

The positioning of the freeway in Port Elizabeth separating the CBD from the Port is similar to that of San Francisco and may aid in informing further developments in planning and considerations to be taken in such a project.

Embarcadero Freeway in San Francisco before and after demolition
(www.googleearth.com, 2014)

5.9.2 Economic Redevelopment: Park East Freeway Milwaukee, Wisconsin, USA

This case study was chosen as it may inform this project in terms of spatial economic decisions, trade-offs and feasibility.

The Milwaukee Park East Freeway divided the northern part of the downtown from the central city and created "… both a visual and a physical barrier and lowering property values on the surrounding land." After the demolition of the freeway **large tracts of land were freed for development**. This redevelopment area has created three new neighbourhoods and in 2007 five investment projects totalling $340 million were either approved or in the process of review.

> "…28 traditional city blocks on 64 acres [and] some previously divided streets have been reconnected…"
>
> (Seattle Urban Mobility Plan, 2008)

This case study of the demolition of the Milwaukee Park East Freeway proves that an **average increase of property values** occurs after such a project has been completed. Since the demolition of the flyover and redevelopment of the road into a boulevard, large corporate businesses such as the Fortune-500 Manpower Corporation have moved there headquarters to the area. Multiple mixed use developments have also settled in the area and started to give life to an area that was previously undervalued. (www.cnu.org, 2011) These interested parties and the investment of private money have turned the area around.

> Between 2001 and 2006, the average assessed land values per acre in the footprint of the Park East Freeway grew by over 180% and average assessed land values in the Park East Tax Increment District grew by 45% between 2001 and 2006. This growth is much higher than the citywide increase of 25% experienced during the same time period.
>
> (www.cnu.org, 2011)

It must be mentioned that the decision to demolish and redevelop the area was a strong political decision that was **intended to leave a long term legacy** to the benefit of the areas future through reinvestment into previously underutilised sections of the city. The elimination of the expressway in this case specifically encouraged development and raised land prices through reconnecting areas of the city whereby access and investment were stimulated.

The land area that may potentially be released by the demolition of the freeway in Port Elizabeth may take cues from the developmental pattern that took place in Milwaukee as a spatial economic model for regeneration and growth in an area.

Madrid Rio Project in Madrid, Spain
(www.urbanistdispatch.com, 2012)

Before

After

Madrid Rio river rehabilitation & freeway removal project
(www.healthcity.2013.be, 2013)

5.9.3 Reestablishment of environmental balance: Madrid Rio Project, Madrid, Spain

This case study was chosen to inform the project with regard to the development and strategic location of green connections throughout and urban context.

The Madrid Rio Project is more a river and environmental regeneration project than a freeway demolition project even though the existing freeway was redirected underground. It is the largest urban infrastructure project that Europe has experienced in recent history. (Hernando & Corkery, 2012) The project involved the rehabilitation of a 10 kilometre stretch of river within an urban context whereby it gave back **forgotten public spaces**, new amenities and a promenade alongside the river to the residents of Madrid.

This project was a **large scale capital investment into a concentrated area** of the city. Through its implementation a hierarchy of spaces was created in the city which dictates the importance of certain spaces over others. This ensures that spaces have different uses and in so doing do not directly compete with one another. The river promenade therefore becomes important in its own right as a transition space as well as a destination at certain points. The massive capital expenditure for such a project may be justified as it not only provides a renewed "landmark" for the city but also provides spaces as would be used in the "ordinary city" for residents. The Cheonggyecheon Freeway in Seoul, Korea is similar in nature.

"Madrid City Council launched a plan to reclaim the Manzanares River, restoring the surrounding natural habitat for residents to enjoy."

(Hernando & Corkery, 2012)

The Madrid Rio Project has also renewed and improved the existing river system that flows through the city by the rehabilitation of vast areas of river bed. These areas have been changed into planted walkways, paths, a promenade and cycle routes. The project extent has been planted with a total of 26 260 trees and other vegetation. In addition to this "…[t]wo skateboard areas, climbing wall, soccer pitches and basketball courts …" (Hernando & Corkery, 2012)have been constructed for recreational purposes.

This project may inform the **potential of the Baakens River Valley Precinct** in Port Elizabeth as a natural river system flowing through an urban area which can create a meeting place between nature and infrastructure.

5.9.4 Conclusion

These case studies have been evaluated along with one or two others to determine which would be most suitable to take clues from in terms of principles and set concerns. These have been complied into tables that rank the developments in their suitability as precedents for the Port Elizabeth Freeway Project. The top examples are the Park East Freeway in Milwaukee and the Embarcadero Freeway in San Francisco. These two cases both delivered high returns in terms of efficiency, effectively, cost and benefit.

The case studies aimed to illustrate the possibility for a project of this kind to be performed and **yield positive results** in spite of **the perceived difficulties associated with such a massive undertaking**. They also reveal that a project of this nature may prove realistic and beneficial for growth in urban centres that have or are experiencing urban decay as a direct result of obdurate or underutilised infrastructure. It is also evident that alternative solutions may be found to smooth traffic congestion in city centres.

Although these kinds of catalytic projects are possible, it is important to realise the extent of the complexity of such a project that needs to be navigated through in order to perform such a task. The buy-in from all parties, commitment and perseverance are key to success. The next section will attempt to traverse the immense complexity of the freeway demolition in Port Elizabeth.

	Scale	Time	Cost	Economic Benefit
Milwakee	**small** 1.6km long & 105218m² area	**6 years** 1996 - 2003	$25 million	**large**
San Fransisco	**medium** 1.3km,1000units & 467m² park	**10 years** 1991 - 2001	$50 million	**large**
Boston	**massive**	**32 years** 1982 -	$14.6 billion	**medium/ inconclusive**
Seoul	**large** 10.92km long/ 50.96km² area	**3 years** 2003 - 2005	$366 million	**medium to large**
Madrid Rio	**large** 10km long/ 1.2km² park	**8 years** 2004 - 2011	$5 billion	**medium to large**

	Scale	Time	Cost	Economic Benefit	
Milwakee	● ●	● ●	● ●	● ●	8
San Fransisco	●	●	● ●	● ●	6
Boston				●	1
Seoul	●		●	●	3
Madrid Rio	●	●		●	3

Tables showing case study comparison
(author, 2014)

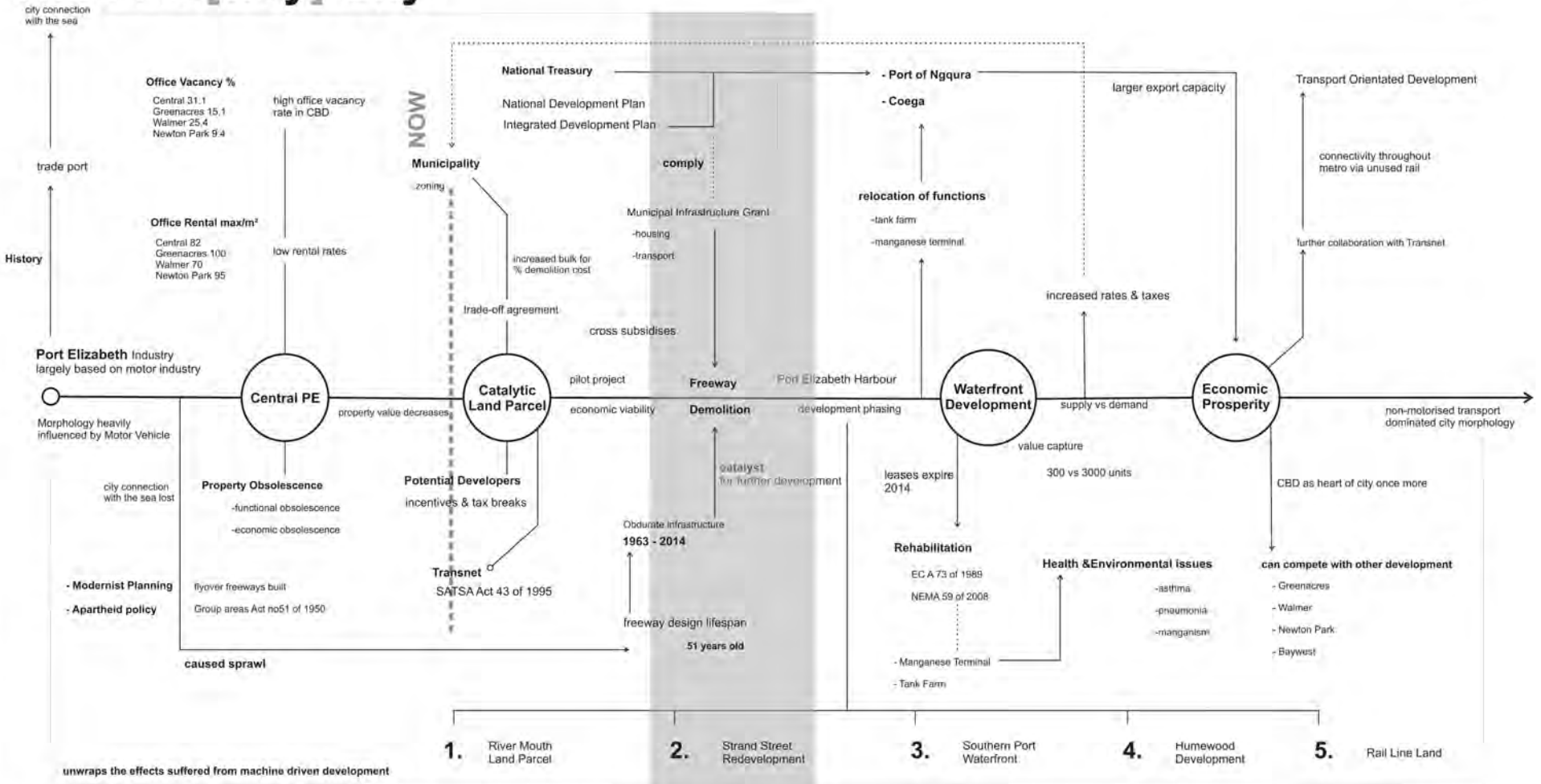
5.10 Conclusion

From these technical, economic and social rationale investigations relating to the obduracy and possible demolition of the Settlers Way freeway it is clear to see that there are unlikely to be any negative impacts if the freeway was removed and replaced by a robust a well-considered street network. Rather there would be **a number of potential positive developments** and spin-offs from such a catalytic intervention resulting in the eventual rejuvenation of the inner city of Port Elizabeth. Some of these benefits as discussed in this section may occur in the form of social, economic and spatial renewal to reintegrate the heart of the city with the other parts that form the Mandela Bay Metro.

The table (left) comparing the different case studies indicates that the Milwaukee case was the most successful in the categories listed. Therefore if the Settlers Way freeway is to be demolished cues from this development must be taken into account.

The Free[way] City

PC Wasserman
MCPUD
2014



Freeway Demolition Project

Stakeholders

Government	National Government Department of Public Enterprises Provincial Government Transnet
Municipal	NMMM MBDA
Business	Port Elizabeth Chamber of Commerce and Industry Southern Port Developments Local business owners
Transport	Department of Transport National Ports Authority Algoa Bus Corporation Taxi associations
Public	General public Tourists

Precedents/Case Studies

Freeway Demolition	Milwaukee San Francisco Seoul Madrid Seattle Dallas Portland
Regeneration Planning	Detroit Rosario Barcelona

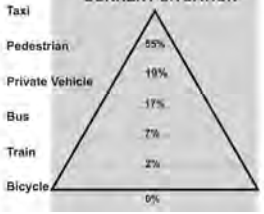
Demolition Cost

2009 estimate: R95 million

2014 estimate: R118 371 298

(inflationsa.co.za, 2013)

CURRENT SITUATION



Theoretical Approach

Christaller Model
Christopher Alexander
Jane Jacobs
Dewar & Uitenbougaardt
Alex Krieger
Fabio Todeschini
John Norquist
Lance Hustey

Design Principles

Proximity
Connectivity
Legibility
Permeability
Opportunity
Choice
Access
Flexibility

Contacts and Promotors

Municipality	Dorelle Sapere	MBDA
Engineering	Lisa Kane	UCT
Economics	Rob McGaffin	UCT / City of Cape Town
	Francious Viruly	UCT
Planning	Dave Dewar	UCT
	Nancy Odendal	UCT
Architecture & Urban Design	Piet Louw	Practice
	Henri Comrie	UCT / Practice
	Adriaan Mentz	Practice
	Heinrich Kammeyer	UCT / Practice
Legislation & Policy	Fiona Ogle	UCT / City of Cape Town

6. Navigating Freeway Demolition

6.1 Introduction

A project of this kind consists of multiple complexities. The demolition of a flyover freeway involves **many factors and considerations** on all levels. This is because a massive infrastructural removal project of this nature would affect the lives of countless residents within the city as well as change the perception of the city as a whole. Before considering the social and spatial implications, there are a number of other **administrative affairs** that need to be taken into account and navigated. These are the acknowledgement of all stakeholders, the ownership of the land the infrastructure besets both on and around, regulations that come into force before, after and during the process, contract agreements and trade-offs that make the process legal and profitable and the actual funding process of the project. A management plan and progressive developmental approach for future developments in an incremental manner is also necessary to consider.

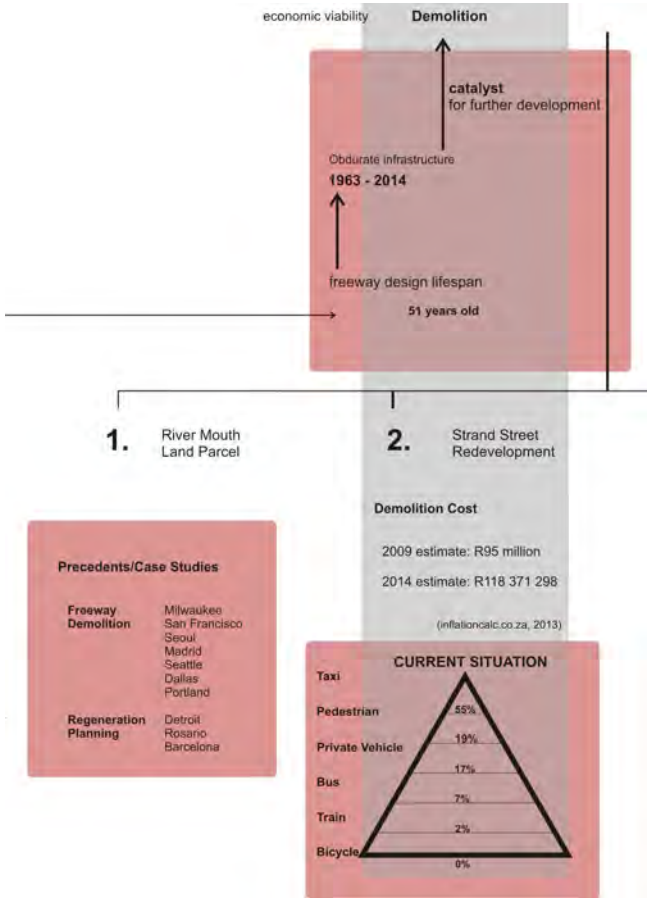


Image showing where this section fits into the argument

Image showing argument for freeway demolition
(author, 2014)

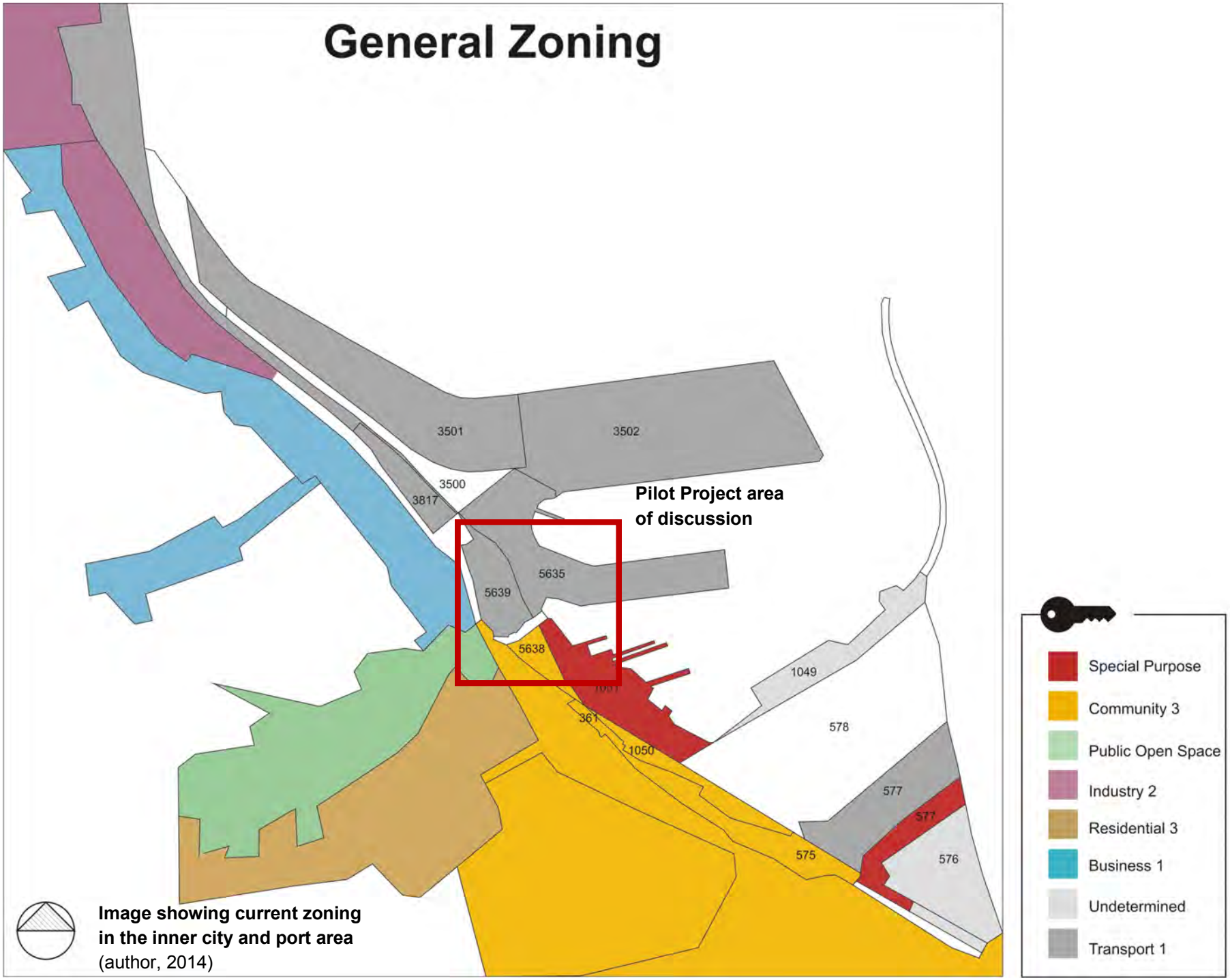


Image showing current zoning in the inner city and port area
(author, 2014)

6.2 List of Stakeholders

Stakeholders occur at different levels and have very different interests concerning the project. These parties will often have clashing views and suggestions regarding the potential proceeding or halting of the process of the project. **Ulterior motives, financial benefits and status** are also to be expected in this type of development. A thorough public participation process is therefore also needed at the appropriate time to inform and take into account the opinion of various parties before further effort is spent. This process will not be discussed fully within this project. The following are a list of potential stakeholders and their involvement with the project.

6.2.1 Government Structures

Governmental departments at all levels would be involved in such a process as **approval and other national agendas and mandates** need to be taken into account. Developmental strategies such as the National Development Plan, Integrated Development Plan and others need to be taken into account .Public land owners such as Transnet are also implicated. The power of political will is also an important factor and without it the project might never materialise. A catalytic project such as this with all the potential benefits although being risky may provide a political showcasing spectacle when successful and therefore lead to an increased number of votes for the political party involved. The following are a list of the departments that need to be involved:

- National Government
- Department of Public Enterprises
- Provincial Government
- Transnet

6.2.2 Municipal Departments

Municipal departments and other affiliated agencies and partnerships that have been delegated power within the area are also to be involved. The municipality has a set of developmental plans such as a Spatial Development Framework, Local Area Plans, Zoning Schemes, Land Use Plans, Policies and other **strategic developments** that need to be taken into account. The affiliated bodies would also have prepared documentation and research relating to their mandated projects. These documents are not only legally binding but also informative to further the progression of the project. They also aid in statutory bodies buy-in potential when abided by. In this project these public representative bodies consist of:

- Nelson Mandela Metropolitan Municipality
- Mandela Bay Development Agency

6.2.3 Transportation Systems

As this project deals directly with transportation issue and the resulting consequences of the removal of the freeway, parties that are involved or affected need to be taken into account. These range from government departments to parastatals and private vehicle owners. The immediate impact on traffic routes and potential temporary congestion might affect these parties and all round understanding needs to be reached. These parties include:

- Department of Transport
- National Ports Authority
- Algoa Bus Corporation
- Taxi Associations

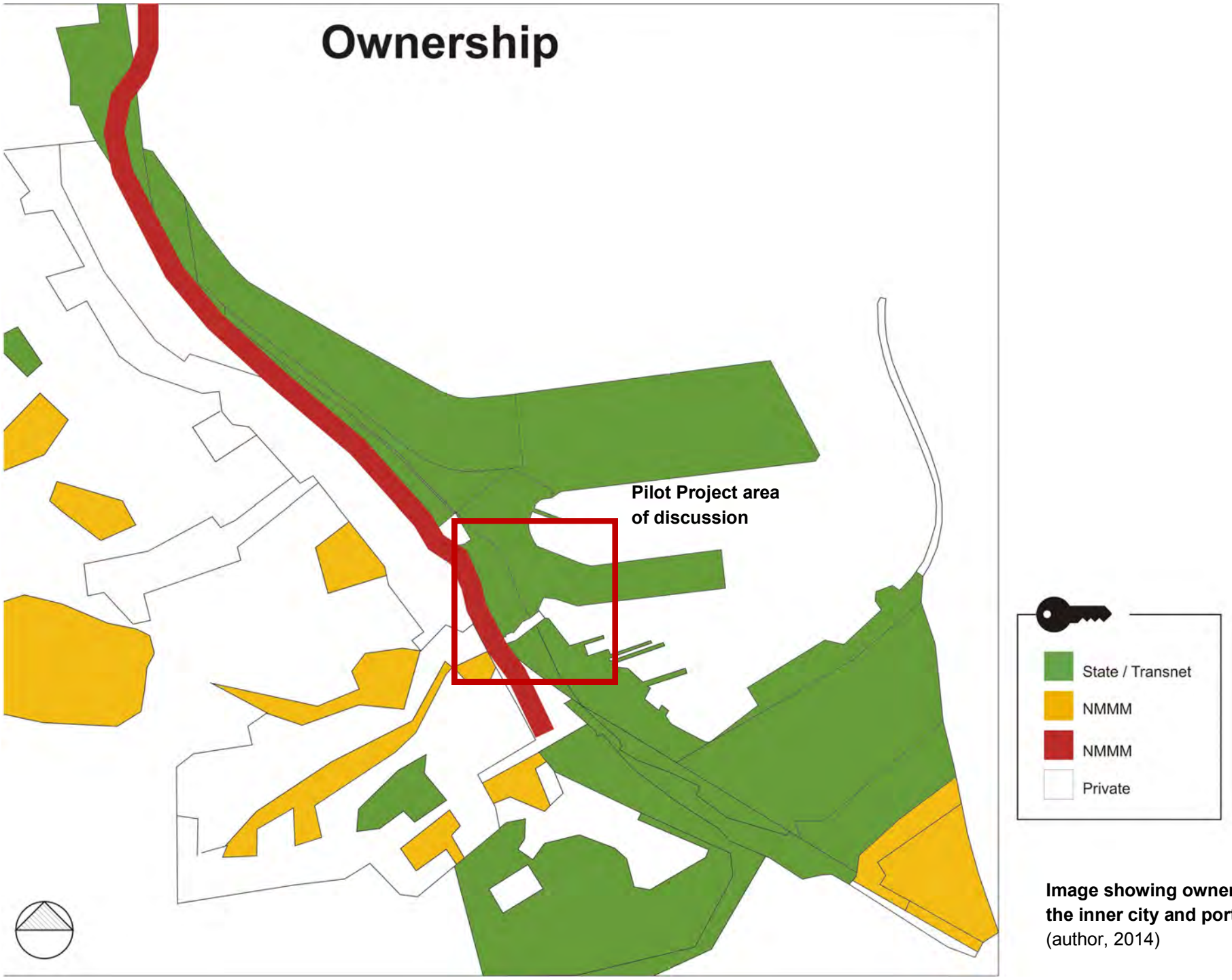


Image showing ownership in the inner city and port area
(author, 2014)

6.2.4 Public

The demolition of the freeway would affect the general public greatest of all. This is because decisions will be made regarding this development that might not involve the public directly. It is important to realise that the demolition might cause some shock to the population of the city. It would indefinitely **change the functional and future developmental potential of the city** and in so doing affect the perception of the residents and tourists alike. This would in turn have an effect on the liveability and economic situation of the city and the region.

6.3 Ownership

The issue of ownership is beneficial for the success of the project. Ownership in this project relates more to the physical tenure of land rather than perceived ownership of territory. The area that the freeway currently hampers is owned by **multiple owners both public and private**. This area is also divided into several land parcels belonging to different parties. These plots all have different rights according to the zoning scheme.

Buildings and businesses adjacent to the freeway are owned by private individuals and shareholders. Ownership issues will also not be limited to the boundary of the actual area affected by demolition or construction but also the surrounding area. This is because businesses and residents in the immediate surrounds may be affected by the projects implementation and future consequential factors. These owners may experience discomfort in terms of the actual physical development through loss of business, dust, noise and potential unusability of premises to an extent. These owners will have to be compensated for this.

This having been said, these privately owned properties will be negatively affected for a short period of time while **benefiting immensely** through the development in the future. Land magnets who own portfolios of property in Strand Street such as Mr. Ken Denton may find it to their advantage to co-operate with the project program. These properties may re-gain competi-

The Free[way] City

PC Wasserman
MCPUD
2014

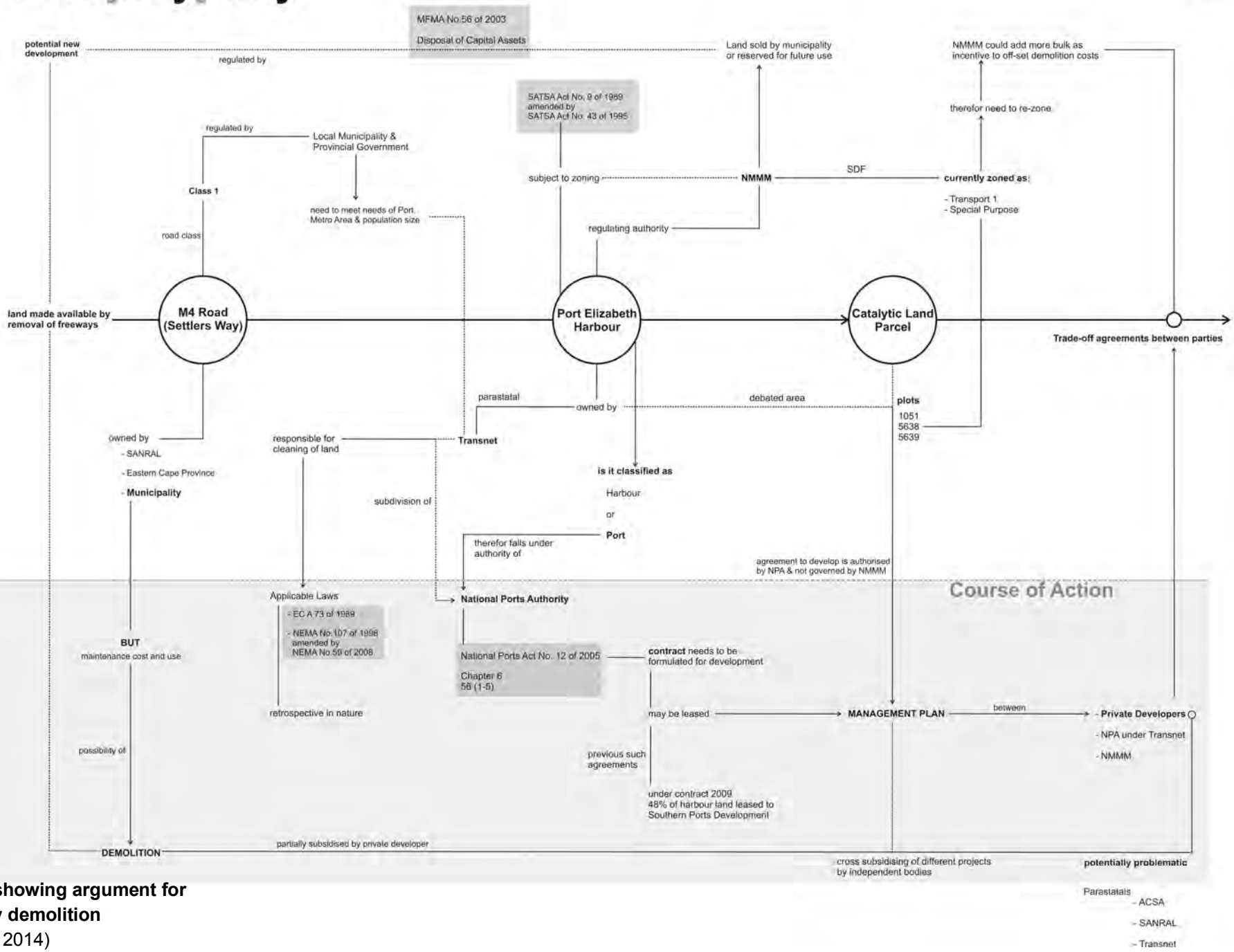


Image showing argument for freeway demolition
(author, 2014)

REGULATION & LEGISLATION

tive sales prices as a result of redevelopment and their already prime location. This was illustrated previously in the case study of the Park East Freeway in Milwaukee.

The issue of ownership which relates to **new land parcels** that will be bought, redeveloped and sold is a complicated matter as new land will be made available through the demolition process. This means that new plots need to be laid out for future development.

6.4 Negotiations

The negotiation process involves the above mentioned stakeholders as well as regulations and economic factors. This section will attempt to explain a possible **route of negotiation** through these obstacles to facilitate this catalytic project of the demolition of the freeway and the redevelopment of the inner city.

The flyover freeway is graded as a Class 1 route and falls under **metropolitan responsibility** and maintenance as the name M4 would suggest. This means that if it was owned by SANRAL it would be difficult to negotiate. Fortunately the actual flyover is owned by the NMMM as is the road (Strand Street) and road reserve below it. This makes it easier for the municipality to subdivide and **rezone their own property** as costs are not incurred and disputes concerning rights will not occur. The municipality is also able to allocate the appropriate land parcel sizes, rights and bulk to these plots for the successful redevelopment of the area. Before the municipality can sell these plots the MFMA No. 56 of 2003, Disposal of Capital Assets regulation needs to be considered as this concerns the legitimate manner as to go about selling off public land.

Other land parcels owned by the state and various parastatals such as Transnet and SANRAL also need to be negotiated for redevelopment in this project. These statutory bodies are notoriously difficult to bargain and negotiate with. For this project it is necessary to deal with the National Ports Authority, a subsidiary of Transnet as the Port Elizabeth harbour is classified as a Port. This means that all negotiation in terms of development on harbour land owned by Transnet will have to be done through the NPA. This is as per regulation in the National Ports Act No. 12 of 2005. The NPA have on previous occasions engaged in negotiations with firms such as Tsogo Sun and Southern Ports Development with regards to a potential waterfront development. Such negotiations consist of contracts and management plans which are agreed upon. These negotiations have not delivered results as of yet.

Earlier this year (2014) negotiations and tenders were prepared for the possible redevelopment of the Baaken River Precinct. This was a project initiated by the MBDA in conjunction with the NMMM and Transnet. This development included an area of **land earmarked for redevelopment** and owned by Transnet. This **specific land parcel** surrounds the mouth of the Baakens River that flows into the harbour and includes the historic docking area for ships. This space is currently used by recreational boatmen, the Port Elizabeth Yacht Club, boat repairs workshops and fresh fish sale. It consists of multiple plots previously zoned by the municipality as ‘Transport 1’ and ‘Special Purposes’ according to the SATSA Act No.9 of 1989 amended by the SATSA Act No. 43 of 1995.

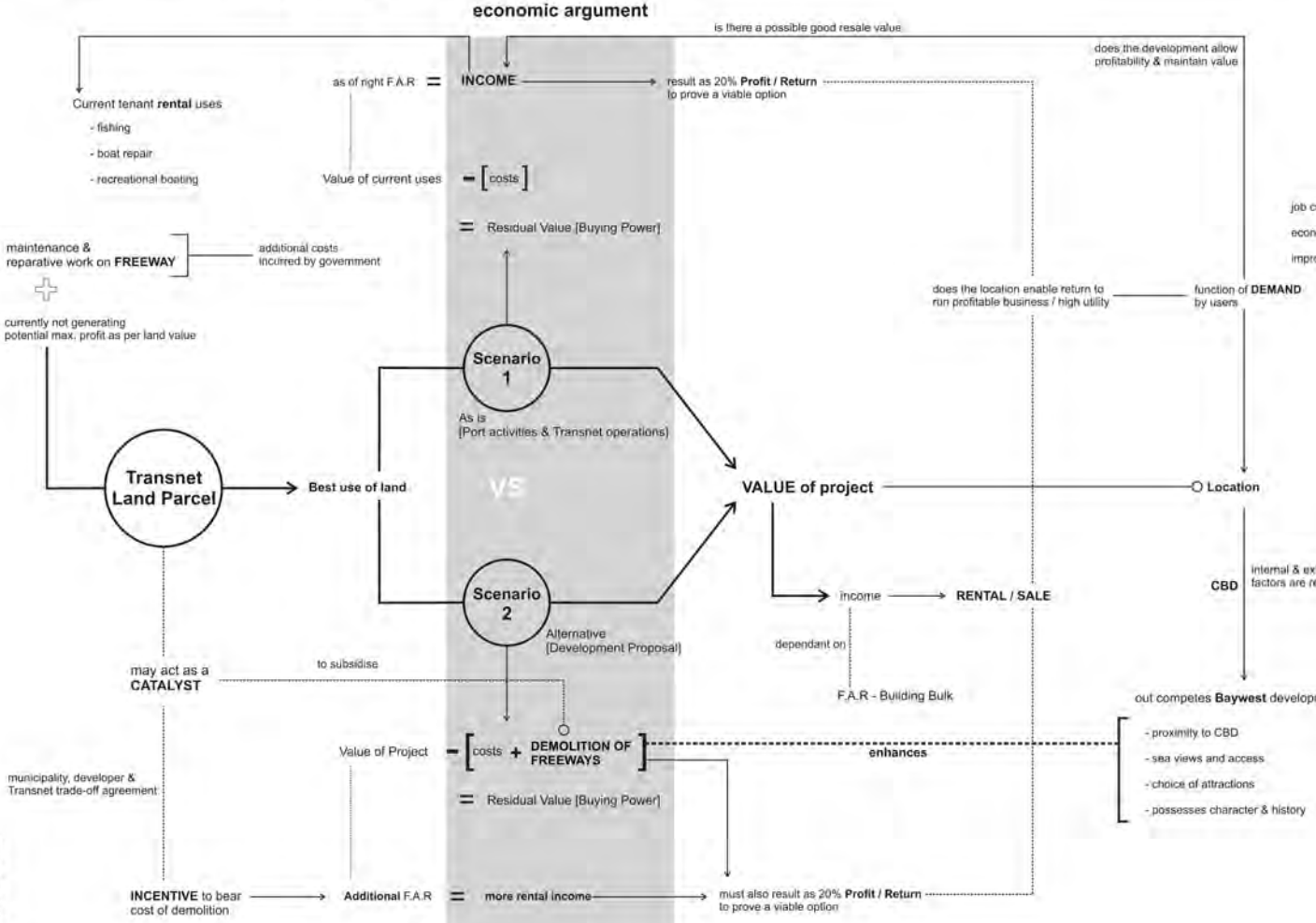
This project ambitions to **negotiate this specific land area** in the same manner as has been done but instead to use it as a **catalytic starting point for the redevelopment of Central** and the partial subsidisation of the demolition of the freeway. The next section will explain the potential financing and planning with developers and other authorities to legitimise and finance the demolition of the freeway flyover as an urban renewal initiative.

The Free[way] City

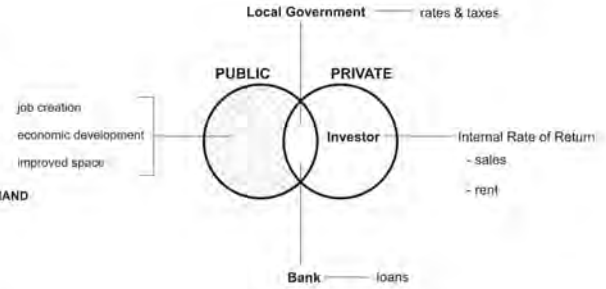
PC Wasserman
MCPUD
2014

ECONOMICS & FINANCE

economic argument



Relationship of Development Benefits



Residual Value

- Property **uses** compete for space
- Whichever **use** generates the highest value will out compete
- **Residual Value is the** value of the project less all cost to develop it [except land cost]

eg. A development costs **R1 000000**

Costs - building costs, prof fees, development profit, etc **R 800 000**

Therefor the Residual Amount to buy land with would be **R 200 000**

This amount determines the developers "Buying Power"

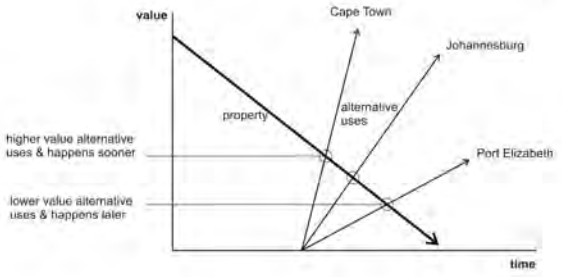
Comparison of Sales Price, Unit Area & Unit Cost

	Sales price of apartment	Size of apartment	Sale of apartment/m²	Cost of Construction/m² [at 75% of sale value]	Profit of Sale/m² [at 25%]
Development in same location	① R 2million	200m² apartment	R10 000/m²	R7 500/m²	R2 500/m²
	② R 500 000	60m² apartment	R8 333/m²	R6249/m²	R2084/m²
	③ R 500 000	45m² apartment	R11 111/m²	R8333/m²	R2778/m²

out competes

out competes

Comparison of Alternative Uses of CBDs



6.5 Financing

The funding of the demolition of the highway will be done via a complex succession of trade-off deals and negotiations between the municipality, MBDA and Transnet. The Transnet **land area** that has been mentioned previously will be used for initial development that will potentially act to encourage further development of the long awaited Port Elizabeth Waterfront. In addition the developers would need to formulate a **budgetary plan to account for the partial subsidisation of the highway demolition**. This will play a role in a larger urban structure plan for the larger Central area.

Potential developers interested in the development rights will have to bargain a **contractual deal with the NPA** under Transnet in order to lease this specific area for development. Transnet's minimal lease time period is thirty years and would most probably be extended significantly in order to make the development feasible.

This development would be the **first part of a succession of developments** that would incentivise capital urban regeneration with additional developmental rights such as increased bulk. In this case the partial subsidisation of the highway demolition may be agreed upon to be a set percentage of the total cost.

These developments would then have to be incorporated into the Spatial Development Framework by the municipality. These developments would also have to be given rights as a liveable area or "township" and plots will have to be subdivided and rezoned as it is currently zoned as Transport 1 and Special Purposes. The municipality would then have to comply with the agreement by granting additional rights within the rezoning of the land area to facilitate **added bulk and Floor Area Ratios** for the development. This would in turn offset the cost of the demolition for the developer as they are able to get more rentals from added development.

As mentioned before this development will provide for a percentage of the demolition costs. The rest may be financed by Provincial or National Government by means of National Infrastructure Grants or Municipal Infrastructure Grants. These are aimed at local economic upliftment of communities and the development of transportation dynamics in urban areas. It is also important to **secure government and political buy-in** through comprehensive development and management plans for the project.

This **cross subsidisation** model will facilitate the provision of funding for demolish and develop relationships between the stakeholders through co-operation. This project is unquestionably mutually beneficial for all the mentioned parties. This can be said as developers could potentially profit, while politicians contract votes, the city's urban realm gets rejuvenated, and new developmental opportunities and local economic breaks take place.

The **cost for the demolition of the freeways in 2005 was R95 million** (Theherald.co.za, 2005). When taking into account general inflation it would cost **approximately R 165 million today**. This means that if the developers were to theoretically agree to cover 40% of the demolition cost, they would have to contribute R66 million while other governmental sectors may contribute the rest.

A comparison can be made between the **R165 million** needed to revitalise the CBD of Port Elizabeth to the new **R300million** road network that has just been constructed (2014) for the new Baywest development on the peripheral outskirts of the city. At just over half the price, more centrally located and connected and able to use existing infrastructure it is a wonder how the demolition of the freeway flyovers have not yet been strongly considered. (www.baywestmall.co.za, 2014)

> "Baywest MD Gavin Blows says the Baywest developers, Abacus As set Management and Billion Group, as well as the South African Na tional Roads Agency SOC Limited (SANRAL), will pay the bulk of the costs for the new network, with the city contributing 15% of the costs."
>
> (www.baywestmall.co.za, 2014)

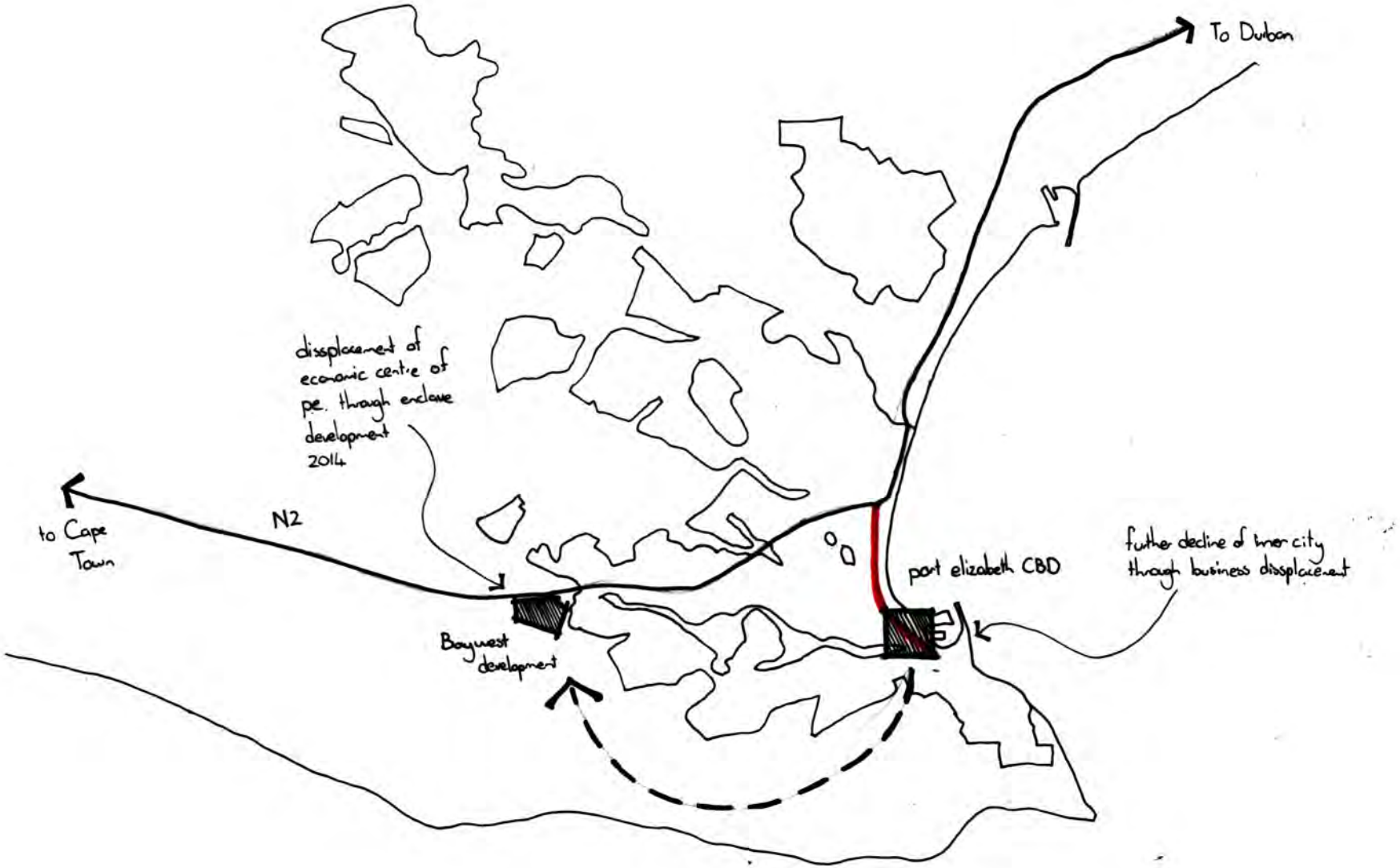


Image showing location of Baywest development and proximity to CBD of Port Elizabeth
(author, 2014)

6.6 Feasibility

When taking into account the above scenario it is important to realise that this added R66 million that the developer would spend on demolition fees would make the development on the catalytic land parcel unfeasible for the developer as they would incur great financial loss. Therefore the **added bulk allowed by the municipality** to the developers on the agreed parcel of land need to recompense the developer or be of adequate or even larger value in terms of potential rental than the amount or percentage of demolition cost of the freeway as agreed on. Thus the same yield of profit must be derived through negotiations for the developer to make it worth their effort.

Decisions relating to the land use, consumer demand, user groups, potential buyers and other such factors need to be discussed by all parties to maximise benefit and to ensure that the development is a success. This is beneficial to the future of the inner city and all parties must understand this as a collection of developments need to be mutually integrated and need to act in a symbiotic manner in order to have an effect or influence real change in the CBD of Port Elizabeth.

Any further redevelopment concerning the rail and train station will have to be done in a similar fashion with PRASA. It is also suggested that any large capital development in the inner city should follow a similar process to provide services or amenities to the public for the greater good of the city.

6.7 Conclusion

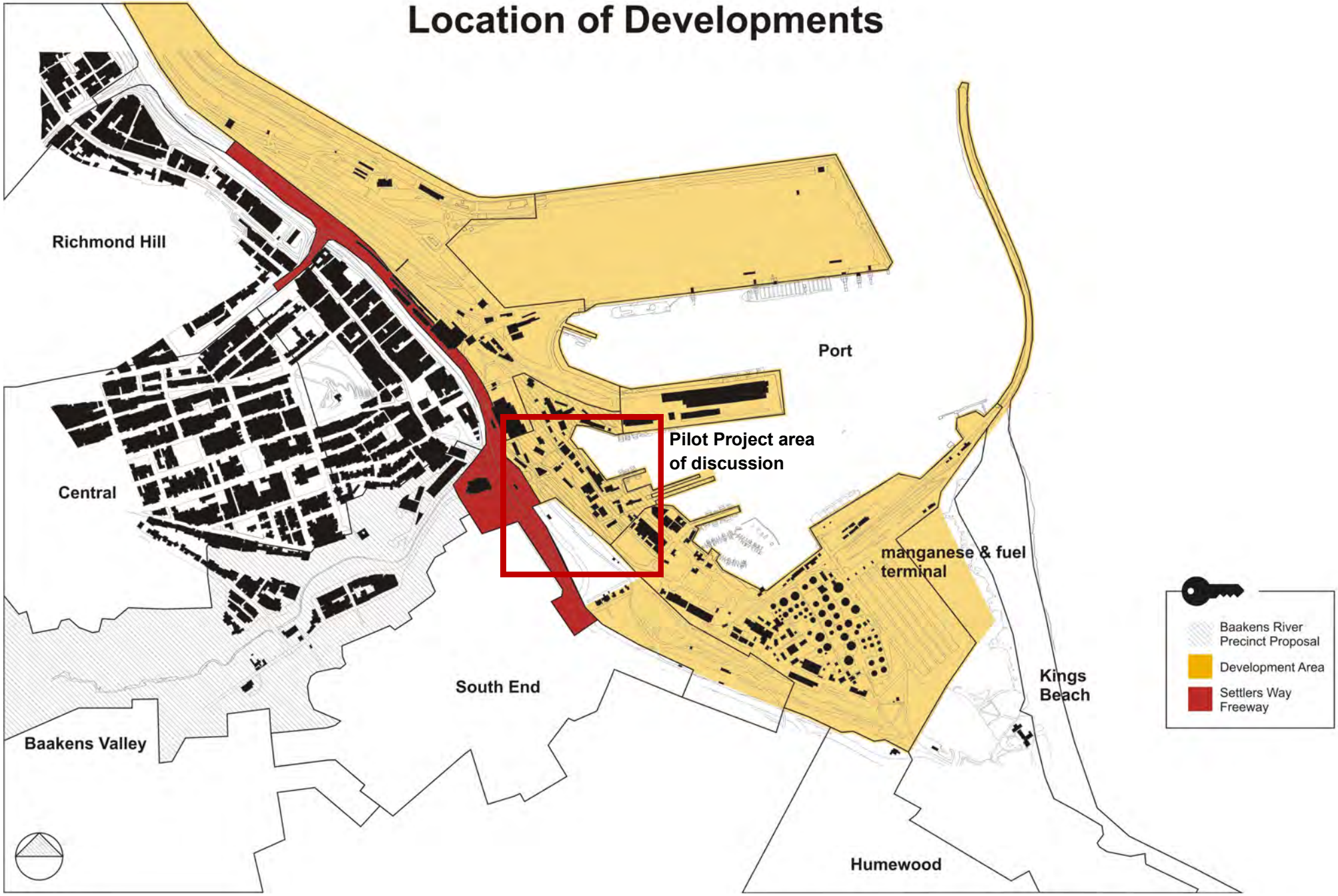
This section attemptes to traverse a method or path that may suggest how a project of this kind may be dealt with. Although it is **very complex** in its nature, what is suggested is **not impossible to achieve**. Factors such as regulations, economics, stakeholders and others need to be studied carefully. Compromise, negotiation, cooperation and understanding are necessary for this kind of project to materialise. Timing also plays an important role in this regenerative development. Realistically it will take a number of years to realise, but the benefits outweigh the effort.

This kind of regeneration project is what Port Elizabeth needs at a time of uncertainty and economic instability. It will build identity, reignite dignity and pride for the city by its residents and ultimately build a legacy for a better future.

The next section will look at possible new developments that may occur as a result of urban regeneration through the demolition of the freeway flyovers. These developments are hoped to create an integrated system of spaces and districts throughout the city centre.

Construction of freeway infrastructure for the new Baywest mall
(www.baywestmall.co.za, 2014)

Location of Developments



7. Unlocking Future Developments

7.1 Introduction

The highway demolition project might serve as a catalyst to heighten the cumulative effects of these relatively fragmented piece-meal projects to promote the economic revitalisation of the CBD in a more focused manner. Thus the cumulated effect of these developments or the creation of a whole is greater than the sum of the parts. An array of other developments might take place in the wake of the flyover demolition. This section will discuss the progression of past developmental ideas for the CBD of Port Elizabeth with particular emphasis on the **Waterfront development**.

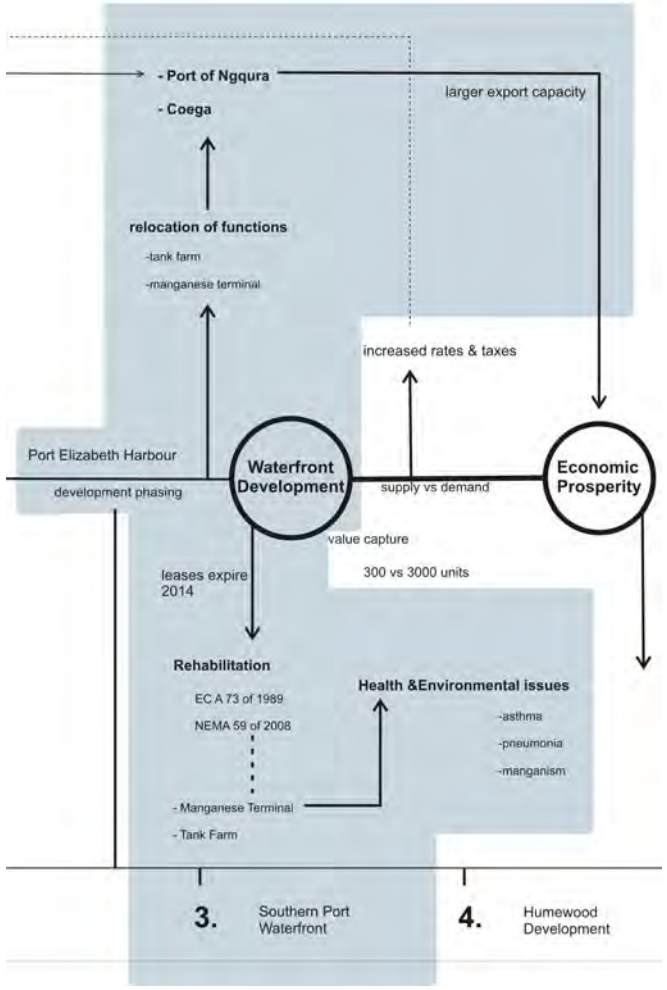
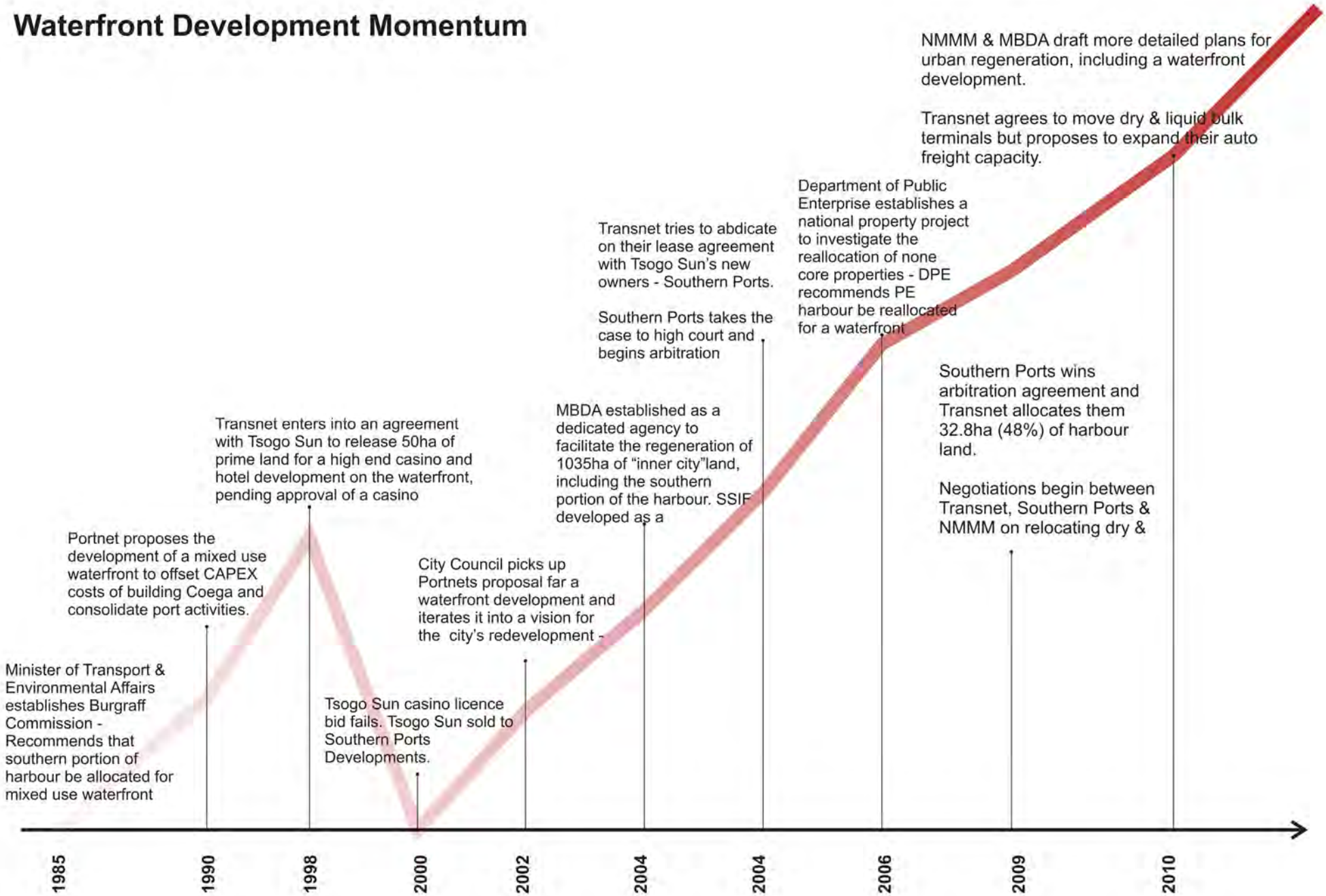


Image showing where this section fits into the argument

Image showing the location of proposed developments
(author,2014)

Waterfront Development Momentum



7.2 History of Developments

Although waterfront developments have been suggested a number of times on the southern portion of Port Elizabeth's harbour since 1985, it was not until Mayor Nceba Faku championed Port Elizabeth's Vision 2020 that a plan was mentioned to demolish and redevelop the Settlers Way freeway. First mention of the plan was in 2002 and since then a couple of studies have been done. These investigations were done in 2002 and 2004. The **Mandela Bay Develop Agency** claims that this is also one of their developmental projects.

> "Madiba Bay Development Agency chief executive Pierre Voges said yesterday the removal of the freeway was "very much part of our investigation" and featured high on the agency's development plans for the CBD and the waterfront. "We must tear them down and unlock other development opportunities. It is part of our master plan."
>
> (The Herald, 2005)

Since 1985 the process of negotiations for the freeing up of land in the harbour for development has made considerable ground. In this project negotiation between stakeholders and parties is essential. The potential leasing of land for development by Transnet is important as it is key to negotiate for funding for the demolition of the highway.

Summery of Waterfront development related activity since 1985—2010
(author using Linkd, 2010)

7.3 Relocation of Industries

A key development in the scenario is the Port of Ngqura. The port development was authorised by parliament in September of 2002. The port construction was completed in 2009 and opened for operation in October of the same year. It is a deep water port approximately 20 kilometres north east of the current Port Elizabeth harbour. The port is able to accommodate larger new-generation container vessels. The Transnet Port Terminals (TPT), a division of transport para-statal Transnet are the developers and owners of the facility (Smit, 2009) The Coega Industrial Development Zone is located adjacent to the new port facilitates and accommodates heavy, medium and light industries. It is a phased plan development centred on industry clusters that are focused on export orientated development and manufacturing. It is managed and operated by the Coega Development Corporation.

This **development is integral to the argument** as the current Port Elizabeth harbour is experiencing a shift in usage. If the harbour is to expand and develop a change in land use, such as the development of a waterfront, then certain processes and industrial usages would need to be relocated to the Port of Ngqura.

Currently the harbour houses a variety of businesses types including a large scale motor export industry, a fish market, container delivery and storage, a manganese terminal and fuel storage and distribution facilities. The navy also has an operation in the port. (Ports.co.za, 2014)

The petroleum product tank farm facilities are owned by the Transnet National Ports Authority and their leases are divided between companies such as BP, Shell, Caltex and Engen. (Olver, 2008) The tank farm operation lease agreements are drawing to a close and the National Ports Authority has refused to renew the leases. The lease of Total expired in 2012 while the rest of the oil companies' leases expire this year (2014).

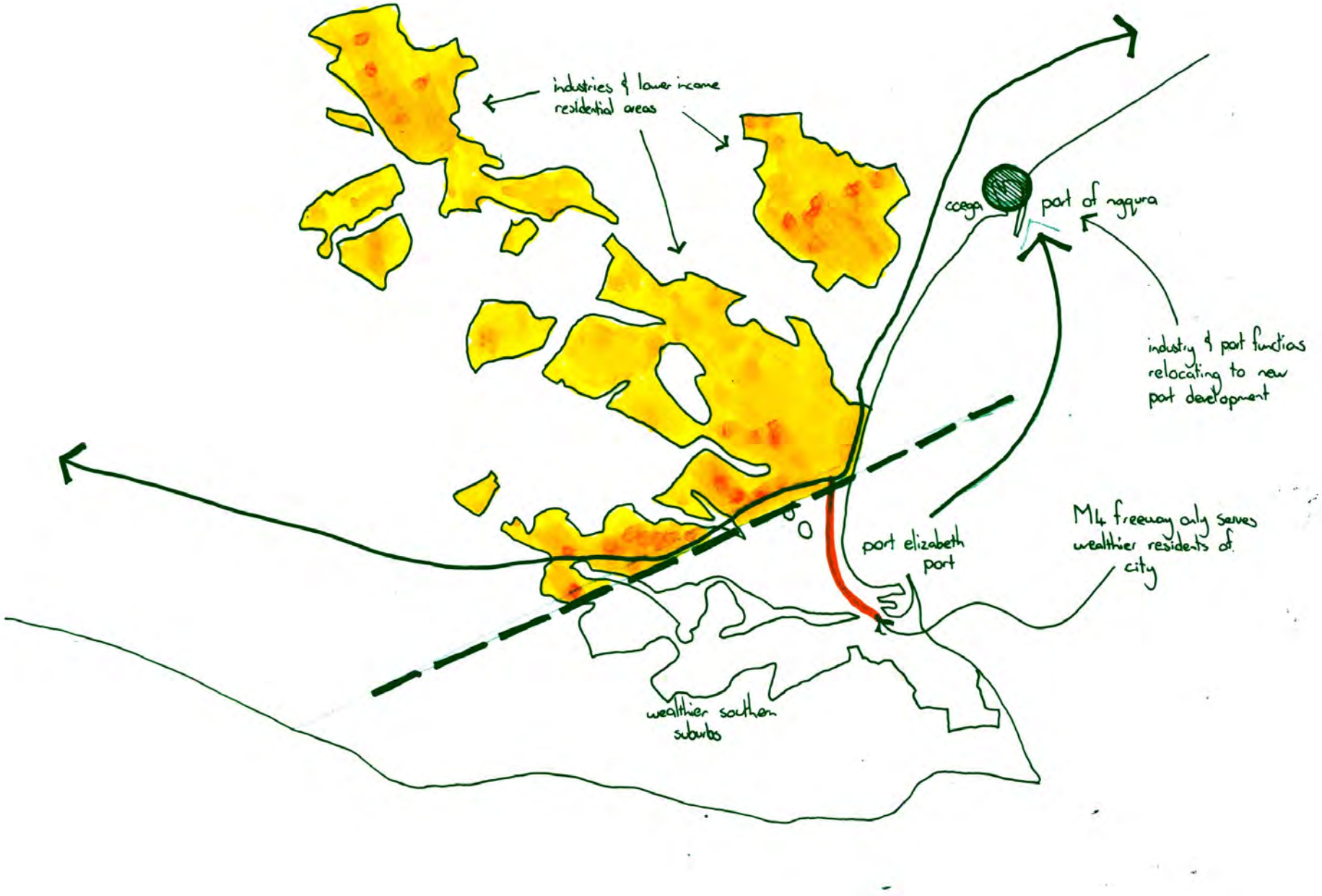


Image showing relocation of industry from Port Elizabeth harbour to the Port of Ngqura
(author, 2014)

> "The tank farm leases specify that the improvement to the site will become the property of Transnet once the lease is terminated. Currently the lease for Total is set to expire in 2012, and the lease for the rest of the companies is set to expire in 2014. The industry has been informed by NPA that the lease is not renewable, and they have accordingly been considering their options for relocating."
>
> (Olver, 2008)

The manganese terminal is owned and operated by the Transnet National Ports Authority but the lease agreement makes provision of renewal terms every 3 years. According to Olver (2008) the last lease expiration date was in March 2009. This then must mean that the next lease expiration is in March 2015. The manganese export business is also on the up as the increased production of steel in China requires this product. This means that current operation in Port Elizabeth faces decisions that will be important for the future export of this product. The main issue with the manganese terminal is that it currently stores 460 000 tons and Transnet have already decided to provide upgrades to store 4.2 million tons. The terminal has not yet reached its capacity as allowed by permit of 6 million tons. Therefor Transnet is either aiming to upgrade the facility or relocate and provide a new terminal with extended capacity at the Port of Ngqura. However, any **further upgrades to the current facility may prove costly** and unfeasible as regulations, restrictions and future market predictions of the manganese market prove unsuitable for the current location.

> Upgrades beyond 6 million tons will not be feasible in the current location, as this is the absolute maximum capacity of the ore berth, as well as the upper limit of the existing permit. It is highly unlikely that Transnet would get approval for an EIA for increases in volumes above this amount, even if the berth capacity could be increased.
>
> (Olver, 2008)

The National Ports Authority has also reported that the manganese terminal **does not provide high revenue** for them especially when compared to the petroleum product tank farm. The NPA also recognise that the proposal to relocate the operation to another facility can produce far higher returns. (Olver, 2008) These industrial functions are therefore proposed to be relocated to the new Port of Ngqura and Coega facilities a mere 20 kilometres north of the current harbour. The new ports access, facilities and capacity far exceed the current Port Elizabeth standards. This relocation would be deemed necessary in order for any new development to take place in the harbour. This however does not mean that other current functions need to be relocated. Utilities that occupy certain parts of the harbour such as the Navy, the cruise liner passenger terminal and possibly the container and vehicle terminal may remain. (Ports.co.za, 2014) This will provide the ongoing functional support that will be important to maintain the liveliness and character of the harbour when redevelopment does take place.

It must be noted that the development of the proposed land parcel is a **long term goal and would occur in a phased approach** as to structure development incrementally and realistically in terms of both operational functionality and financing.

Image showing location of industrial areas and hazard zone
(author with NGI data, 2014)

7.4 Health Risks

Environmental and health concerns about the current manganese terminal are mounting: long term exposure to inorganic manganese dust seems to have **negative effects in terms of health risks** for residents of Port Elizabeth. It has been found that "[m]anganese is a neurotoxic substance at certain exposure levels regardless of route of exposure…"(Santamaria, 2008). This has serious consequences to those residents in contact and in the vicinity of large scale industrial operations of the kind being performed in the harbour. This is especially relevant if the current facility is to be upgraded.

The inhalation of particulate manganese compounds "…can lead to an inflammatory response in the lung." (www.atsdr.cdc.gov, 2011) This may also lead to damage of lung tissue, bronchitis, pneumonitis and possible minor reductions in lung function. (www.atsdr.cdc.gov, 2011) These kind of effects have been observed mainly in people who have been exposed to manganese dust under work-related conditions, although there is indication that respiratory effects may also occur in residential populations near or in the vicinity of ferromanganese factories (Kagamimori et al. 1973; Nogawa et al. 1973; WHO 1987 in www.atsdr.cdc.gov, 2011). There are also some more serious effects to be considered that entail neurological complications.

> "There is conclusive evidence from studies in humans that inhalation exposure to high levels of manganese compounds […] can lead to a disabling syndrome of neurological effects referred to as 'manganism'. '"
>
> (www.atsdr.cdc.gov, 2011).

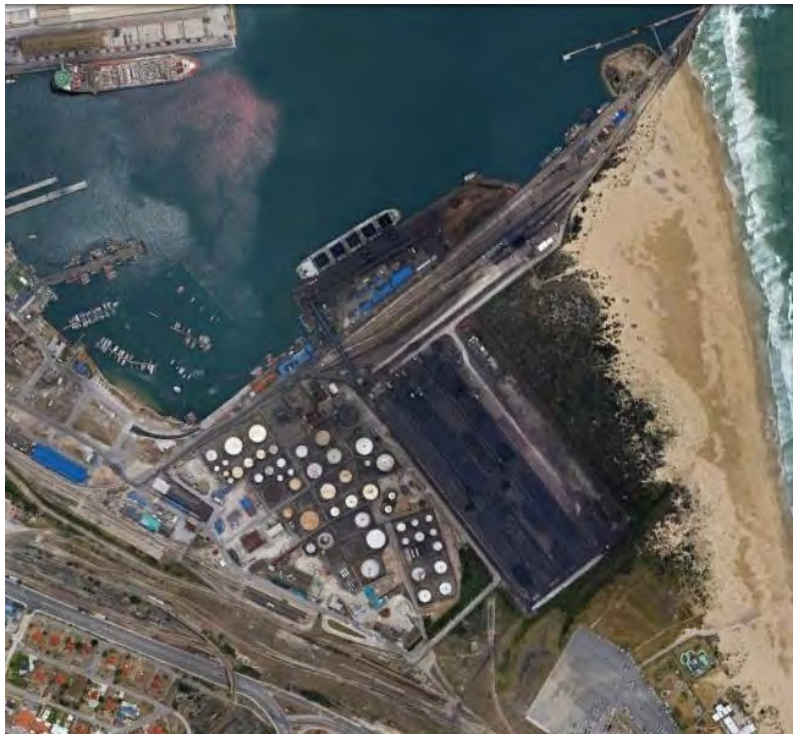
Manganese exposure effects on health further causes behavioural and other nervous system changes. These may include slow and clumsy hand movement from the affected person. The combination of these symptoms when suitably severe is referred to as "manganism." Less severe nervous system effects such as decelerated movement have been noted in workers exposed to lower concentrations. (Public Health Statement: Manganese CAS#7439-96-5, 2012)

These **health effects on the general populous of Port Elizabeth are enough to seriously justify the relocation of the manganese terminal**. The populous is constantly being exposed to manganese dust particles as the winds in the area kick up dust particles from the manganese terminal and carry them throughout the metro's coastal area. The North Easterly is especially prone to this kind of activity as the harbour obstructs coastal winds and cause cyclonic eddies to form on both sides of the harbour. (Goschen and Schumann, 2011) This means that these dust particles get inhaled by countless residents who are unaware of the health implications the facility currently poses.

Port Elizabeth Manganese & Fuel Terminal
(www.1.bp.blogspot.com by FireflyAfrica, 2011)

7.5 Clean-up and Rehabilitation

Environmental concerns surrounding the current manganese terminal and tank farms are mounting as their leases are to expire relatively soon or have already expired. The cleaning and rehabilitation of the area to make future development possible needs to be taken into account as it has an effect on various stake holders namely, Transnet, local inhabitants, future inhabitants of the developed area, the NPA and lessees of the current property (e.g. BP, Shell). **Various parties are held accountable for rehabilitation of the area** as per regulations such as the Environment Conservation Act No. 73 of 1989 and the National Environmental Management: Waste Act No. 59 of 2008. The latter of which is the only retrospective act in South Africa. This means that operations performed by companies that have polluted before this act was promulgated are still held accountable for past actions. These companies are therefore theoretically still responsible for clean-up and rehabilitation of these areas.



Port Elizabeth Manganese & Fuel Terminal location
(www.googleearth.com, 2014)

7.6 Conclusion

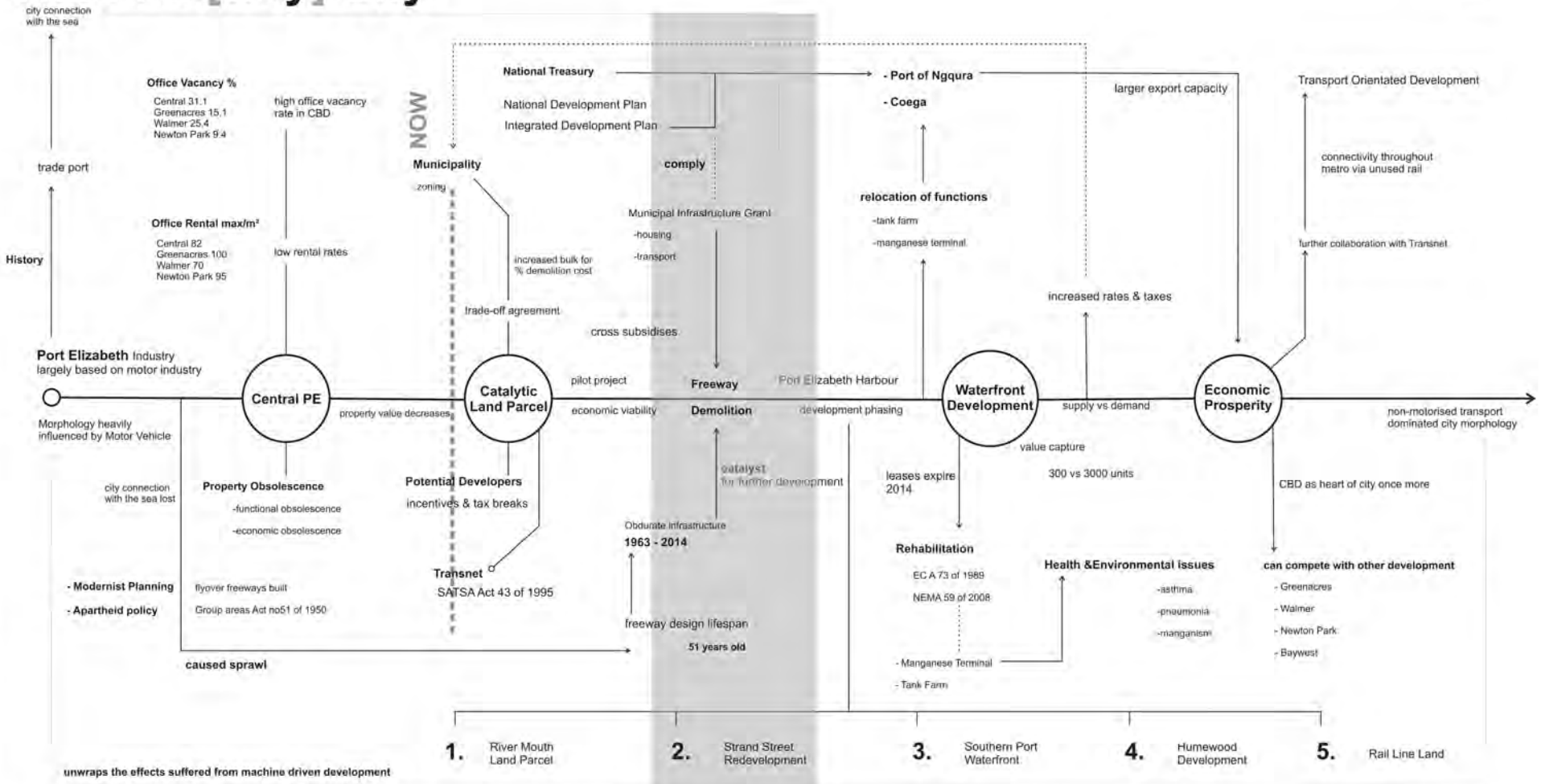
Having considered the procedural and logistical routes to be taken for the waterfront development to materialise it is very likely that it will happen sooner than later. The **relocation of industries, health risks and economic benefit all point to the eventual development of this area**. In addition a catalytic development such as the development of a portion of the harbour area and the demolition of the flyovers will regenerate the area to such an extent that risk in investment in a waterfront will be minimised.

Therefore it is **important to recognise the potential of the highway demolition** as a ‘pilot project’ to start off a chain reaction of redevelopment that will see the economic and urban growth of the CBD of Port Elizabeth. The benefit of such an area as a heart to the metro for all residents far outweighs the investment and excitement of a development such as Baywest. The document has thus far determined that **highway demolition is possible and should be done as soon as possible.**

The next section will deal with a vision for the redevelopment of the areas mentioned thus far in the document.

The Free[way] City

PC Wasserman
MCPUD
2014



DEVELOPMENT & IMPLEMENTATION

Freeway Demolition Project

Stakeholders

Government	National Government Department of Public Enterprises Provincial Government Transnet
Municipal	NMMM MBDA
Business	Port Elizabeth Chamber of Commerce and Industry Southern Port Developments Local business owners
Transport	Department of Transport National Ports Authority Algoa Bus Corporation Taxi associations
Public	General public Tourists

Precedents/Case Studies

Freeway Demolition	Milwaukee San Francisco Seoul Madrid Seattle Dallas Portland
Regeneration Planning	Detroit Rosario Barcelona

Demolition Cost

2009 estimate: R95 million

2014 estimate: R118 371 298

(inflationsa.co.za, 2013)

CURRENT SITUATION

Theoretical Approach

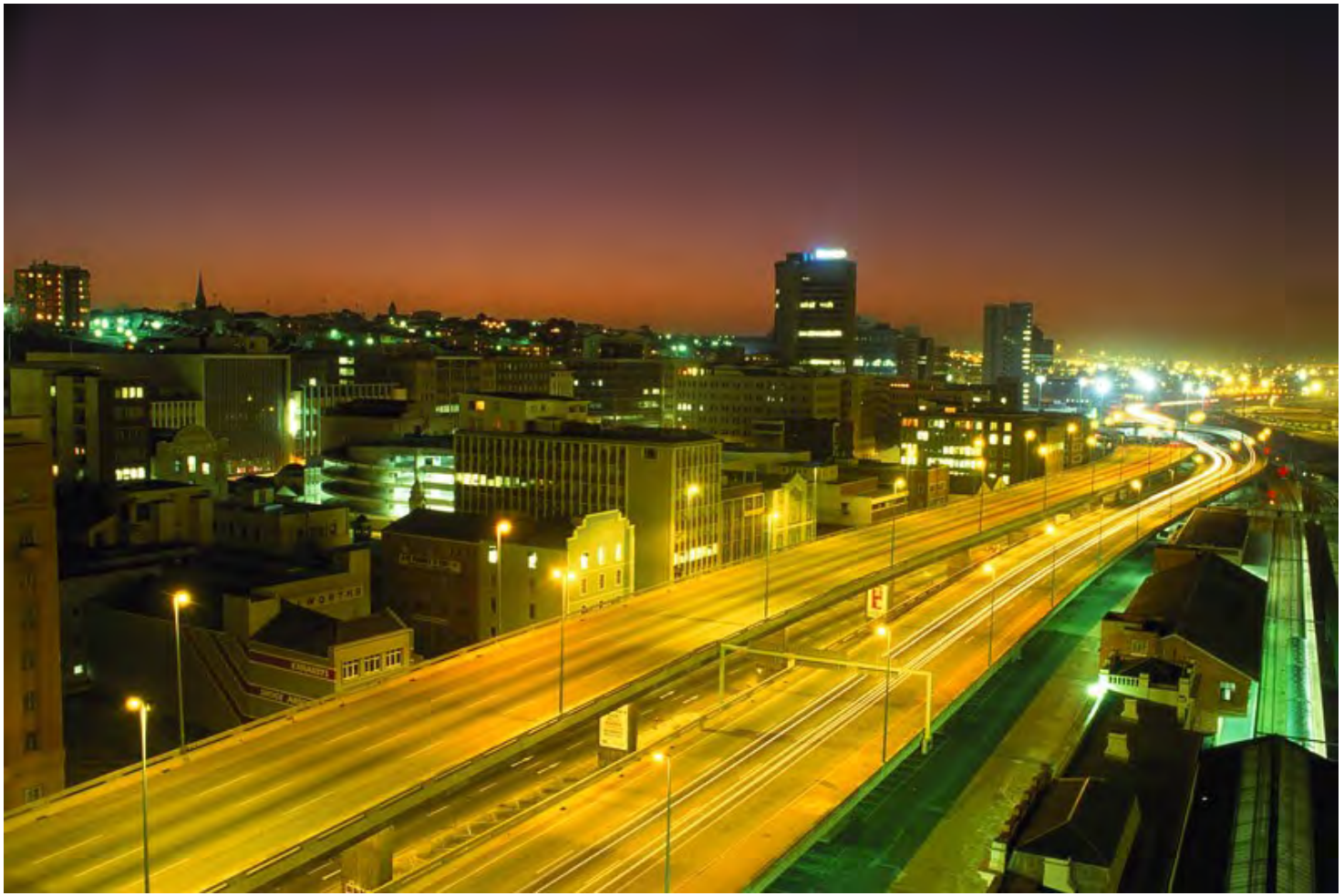
Christaller Model
Christopher Alexander
Jane Jacobs
Dewar & Uitenbougaardt
Alex Krieger
Fabio Todeschini
John Norquist
Lance Husley

Design Principles

Proximity
Connectivity
Legibility
Permeability
Opportunity
Choice
Access
Flexibility

Contacts and Promotors

Municipality	Dorelle Sapere	MBDA
Engineering	Lisa Kane	UCT
Economics	Rob McGaffin	UCT / City of Cape Town
	Francious Viruly	UCT
Planning	Dave Dewar	UCT
	Nancy Odendal	UCT
Architecture & Urban Design	Piet Louw	Practice
	Henri Comrie	UCT / Practice
	Adriaan Mentz	Practice
	Heinrich Kammeyer	UCT / Practice
Legislation & Policy	Fiona Ogle	UCT / City of Cape Town



Settlers Way freeway by night
(www.nelsonmandelabay.gov.za , 2014)

8. A Vision for an Alternative Future

8.1 Introduction

This section deals with a visionary exploration concerning the redevelopment of the proposed areas of the inner city and surrounding areas. This is done by considering clues from the historical development, social informants, economic factors and navigation needed as discussed in the former sections. The section also discusses the appropriate principles through which the development process is guided and tested. Later design guidelines and suggestions are derived and explained.

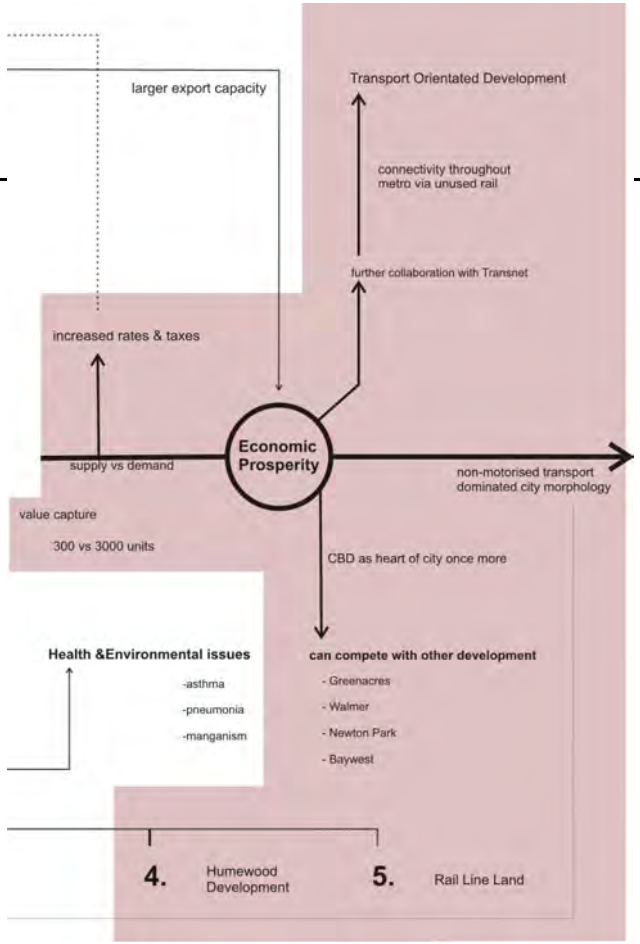
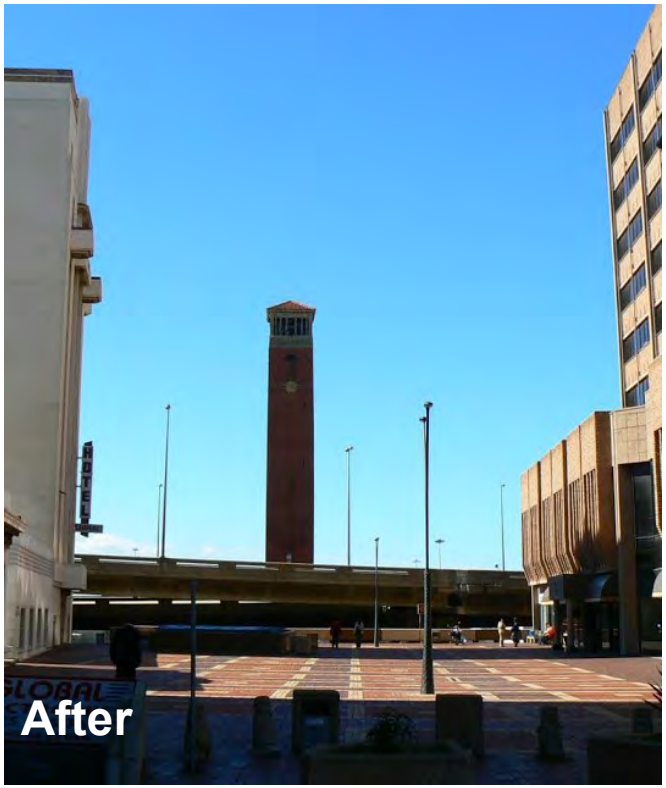


Image showing where this section fits into the argument.



A view down Jetty Street towards the Campanile in Port Elizabeth showing the illegibility effect that the freeway has on the city.
(Port Elizabeth Library, 2014)

Street Grid of Barcelona demonstrating good all round permeability
(www.googleearth.com, 2014)

8.2 Principles

Principles derived to inform the development of a project such as this have to take into account the nature of the problem and what is needed to potentially correct it. They include physical, social and other factors. It must be noted that principles are sometimes interchangeable and may complement one another. These are used to inform design decisions and test the result of these decisions and to use as a reference to guide the process of the project. The following principles are those chosen to inform the design decisions for this project.

8.2.1 Permeability

An area of a city can be well connected to other parts while still being impermeable. This relates to the degree of connectivity that occurs within an area. The handling capacity of an area through which different vehicular types or pedestrian move is expressed. This explores whether or not a spatial condition is navigable by either pedestrians of vehicles in terms of numbers. Currently the freeway creates permeability for large amounts of vehicles but suppresses it for pedestrians. The aim of this project is not to reverse this effect but to rather find a harmonious balance between the two to maximize activity within the city.

8.2.2 Legibility

The spatial organisation of the city is also an important factor to consider. The freeway impacts on the city's image through the user's ability to navigate through it. The city structure is severely impacted by the freeway infrastructure in terms of hierarchy, vistas, views and axial alignments between important sites. the user's ability to orientate themselves, understand the surroundings and read the city is compromised by the freeways divisive nature. This affects the perception that residents and outsiders have of the city. A spatial hierarchy may be regained through the removal of the freeway and the reestablishment of old legibility structures throughout the inner city.

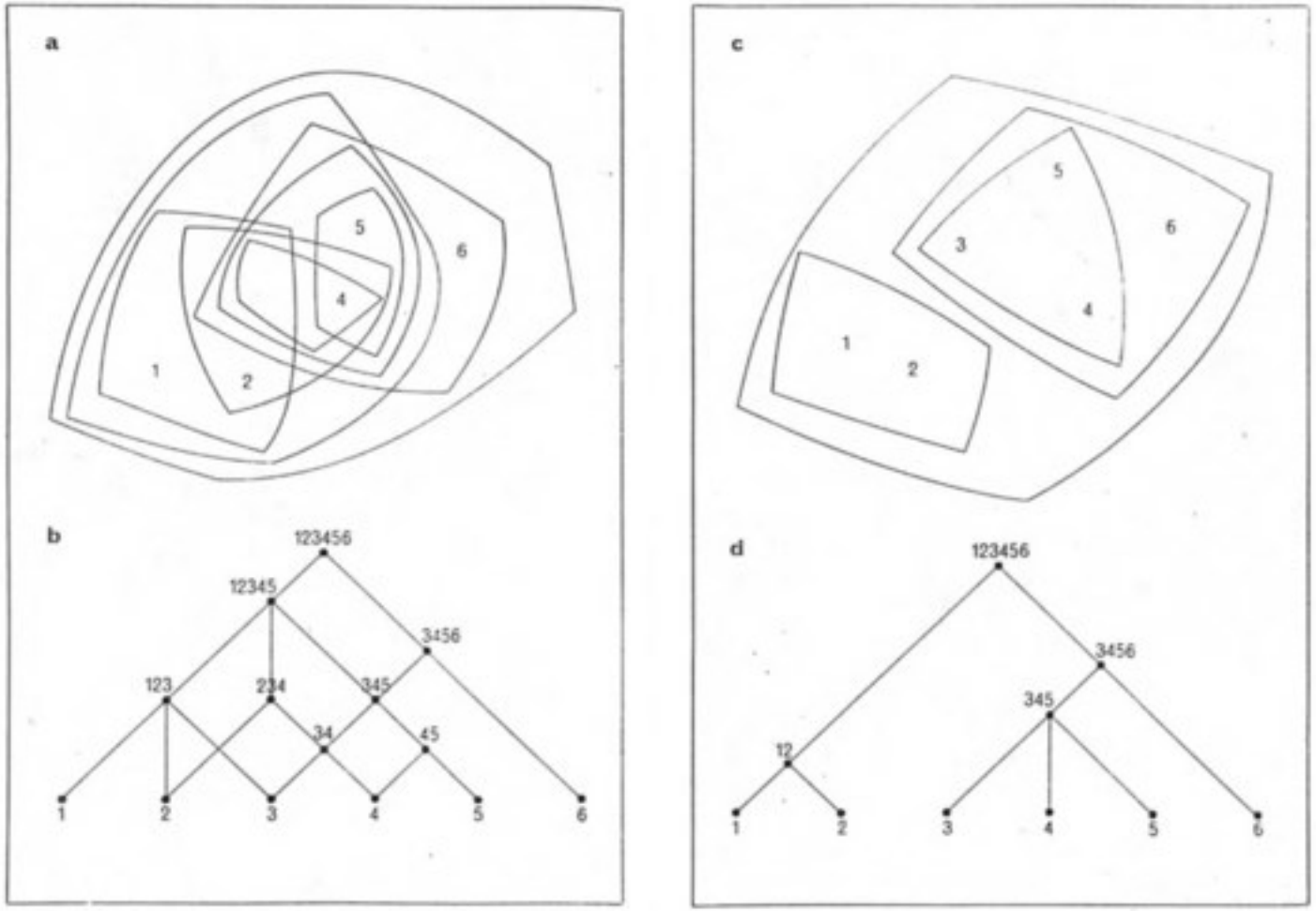
A view over Port Elizabeth prior to the construction of the freeway
(Port Elizabeth Library, 2014)

8.2.3 Economic Benefit

The most important reason for a city to thrive comes from its ability to circulate and produce economic gain for its users. this is fundamentally what drives a city spatially. The spatial quality of Port Elizabeth is an indication of its economic decline. The condition that the freeway creates within the city is not favourable for profitable ventures and investments . The attraction of potential investors is partially spatial as good space attracts people and profit. With the removal of the freeway the spatial quality of Central will improve and attract reinvestment. This will in turn create employment and interaction between city goers and potentially generate ideas between businesses which will further encourage new industry development in the city. This reinvestment ups property which increases municipal tax gains to further improve infrastructure. The spatial attraction of the inner city is therefore not limited to the gain from freeway demolition but also by the land released towards the port which is invaluable for the city's growth.

8.2.4 Choice

The availability of choice is important for the growth of different functions in a city. These functions relate to living, working and recreation. The ability to choose the area in which one spends time and interacts with others is moulded and influenced by the space within which it is done. Through the removal of the freeway different user groups will be integrated and create an equality that is currently lacking as it is obstructed by obdurate infrastructure. The creation of public space that breeds choice and inclusivity is important for the growth of a city. The freeway currently leaves no choice for users but to spend their time in its uncompromising shadow.



A diagram showing the difference between a tree structure and a semi-lattice structure within a city.
(Christopher Alexander in www.contentsmagazine.com, 2013)

8.2.5 Access

The of access to the city is also to be taken into account. The majority of people who currently access the city arrive via taxi or foot. Currently the spatial condition for these two modes of transport are largely ignored and not adequate for the number of users. The freeway obstructs free movement of pedestrians and vehicles underneath it, as it illogically structures the movement of vehicles past the inner city rather than through it. This means that the space underneath the freeway area is dictated by it. This in turn restricts access to the city for both people coming from near and far. With the demolition of the freeway it is hoped that greater access will be gained for city users to explore the port and harbour as spatial freedom is not currently achieved because of port authority's exclusionary and security measures.

8.2.6 Opportunity

The future of the city is also to taken into account. With the removal of the freeway a chance for the city to reinvent itself arises. The potential change of perception of the inner city of Port Elizabeth is possible through a comprehensive and legitimate urban design structure plan that may influence the spatial quality of public spaces and build a legacy regarding spatial utilisation and optimisation. The possibility to transform the narrow structure of the inner city and expand towards the port is possible only with the removal of the freeway acting as the catalytic device of for change. With this revolution in spatial restructuring the opportunity for development, innovation and entrepreneurship follows. This in turn has an impact on the spatial economy of the city.

Aerial view of Central before and after the construction of Settlers Way in 1963
(Port Elizabeth Library, 2014)
(www.googleearth.com, 2014)

8.3 Conclusion

These principles have been derived through a need to rethink the spatial importance of the inner city of Port Elizabeth. The removal of the Settlers Way freeway flyovers from the inner city will greatly influence the image, economy, functionality and demand of the city centre. Although these principles have been identified as key, other similarly important principles are also to be taken into account. These may include a broad range of goals or ideals to strive towards. These may include:

- **Safety**
- **Preservation of heritage**
- **Flexibility**
- **Proximity**
- **Connectivity**
- **Appropriate density**
- **Liveability**
- **Innovation**

Although these principles strive towards ideals for a more spatially liberated city they serve merely a guiding mechanism to empower a vision for the future of Port Elizabeth. These principles will strongly influence explorations for an alternative future for Port Elizabeth's inner city.

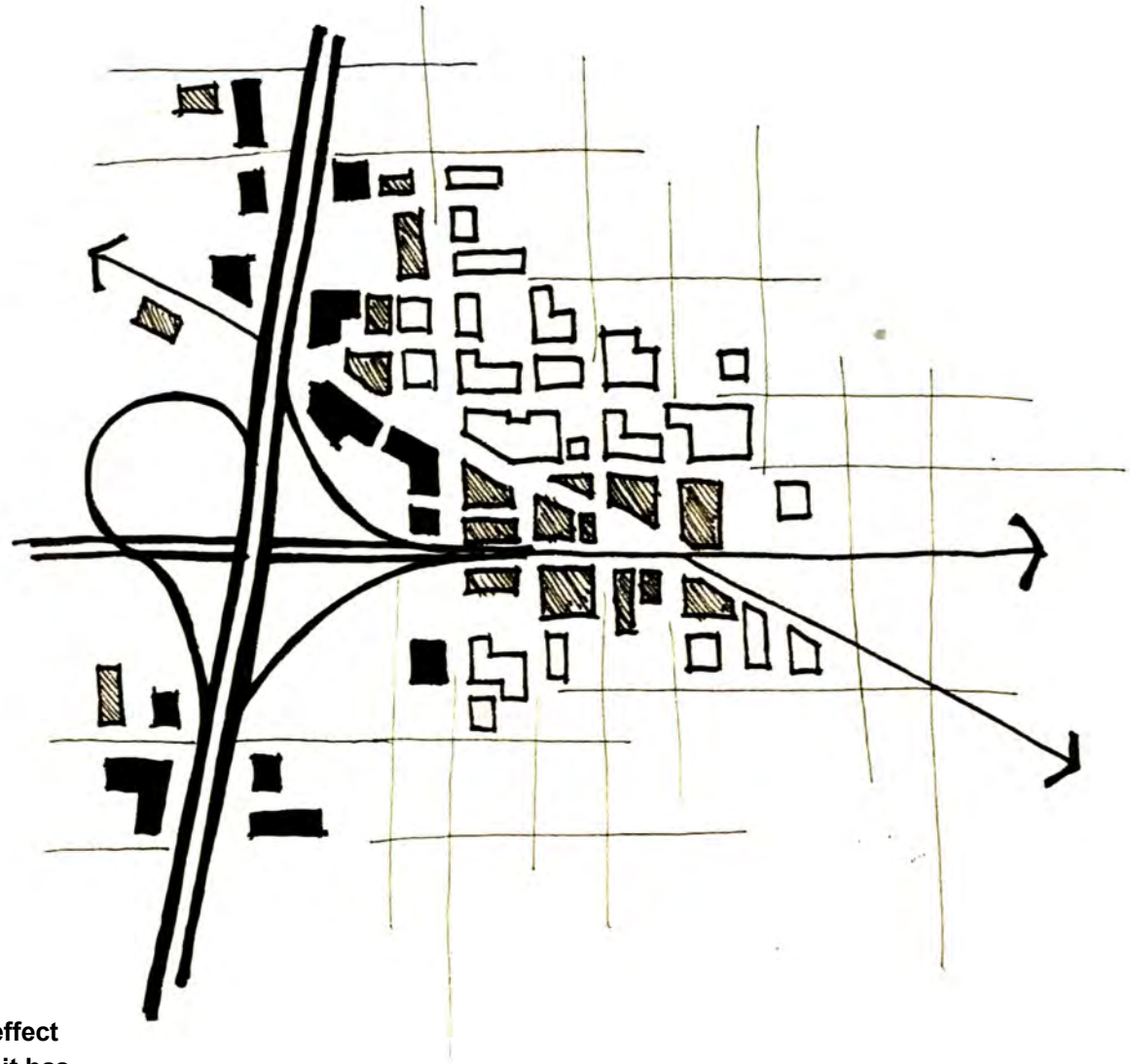


Diagram showing the disconnecting effect a freeway has on a city and the effect it has on adjacent buildings.
(author, 2014)

9. Freeway Conditions

9.1 Introduction

This section will aim to explain the role of freeways outside as well as inside city structures. It will also explore the condition that arises when a freeway meets a city and the resulting spatial consequence. Different freeway types are also explored with focus on their benefits and drawbacks.

9.2 Function of Urban Freeways

Urban freeways can be split into three categories. These may be classified as by-pass routes, commuter routes and inner city routes. They all serve different purposes and user groups and are developed in varying forms. These must be investigated separately as not all have the same affect on the city. Some maybe more obstructive than others in terms of urban fragmentation.(Halprin, 1966) The following is an explanation the these three types of freeways.

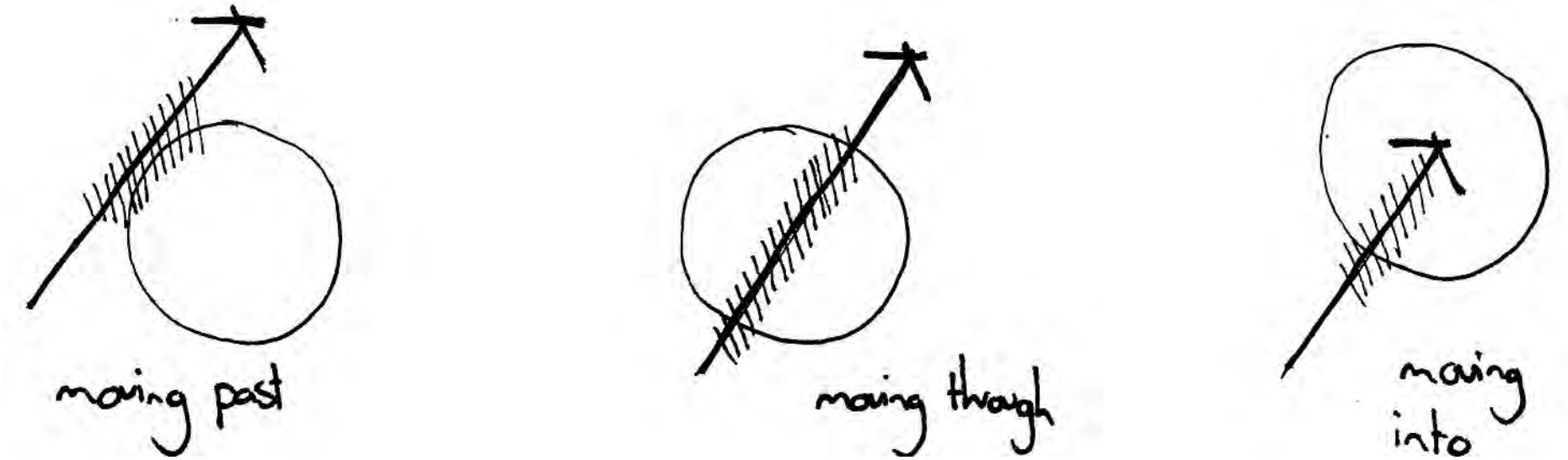


Diagram showing the different freeway types, where they affect the city and their movement towards the city.
(author, 2014)

(top) Image showing a freeway bypassing Carson City in the USA
(www.nevadanewsbureau.com, 2012)

(left) Image showing freeway systems bypassing towns and cities. (left) freeway passed Antioch, Oakley & Brentwood in the USA
(www.markthomas.com, 2014)

9.2.1 Moving Past - Urban Freeway Bypass

This first type of freeway was designed to serve a large number of people travelling through a region. These people may not wish to enter the urban areas that the freeway bypasses but connections to these cities or towns are made as enclave destinations via the use of off-ramps and turn-offs. (Halprin, 1966)

These routes are used less often as inter regional travel is not done on a frequent basis for most people. No complexities or actual conditions of the freeway meeting urban realm exist in these models as they miss the city intentionally. However, these bypasses have caused considerable damage to small towns that once relied on through passing traffic for economic reasons. The bypasses have therefore disrupted this economic flow pattern and ruined these towns' potential growth. An example of this is the town of Philippollis in the Southern Free State that was originally en route from Colesbug to Bloemfontein via the N717 through the town. This route and town was later bypassed by the N1 road which completely missed the town. This spelled economic decline for Philippolis.

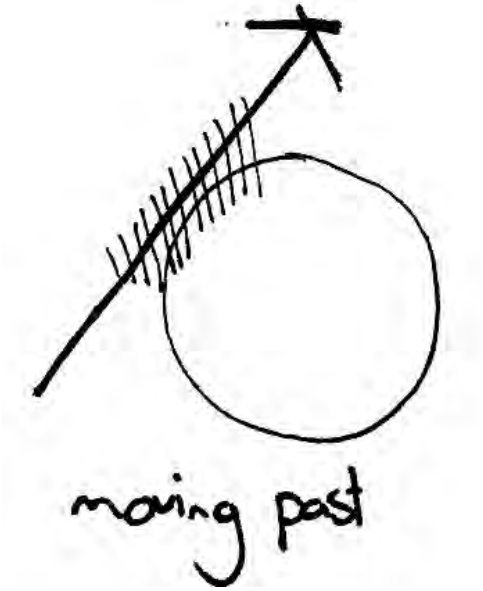


Diagram showing traffic bypassing the CBD in Port Elizabeth
(author, 2014)

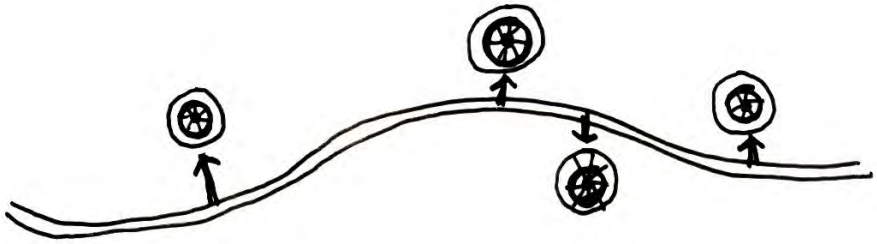


Diagram showing bypass effect of freeways
(Halprin, 1966)

Images showing commuter traffic to and from the city of Los Angeles in the USA on the 101 Hollywood freeway.

(left)	www.brookings.edu	2013
(bottom)	www.scpr.org	2011

9.2.2 Moving Towards - Commuter Freeway

The second type of freeway mainly serves commuter traffic to and from the city. This kind of route is used by people who work in the city but live in small towns or neighbourhoods outside of the city centre. They use these roads on a daily basis to move into and out of the city as easily as possible. This is however not always possible as large numbers of people follow these commuter patterns causing traffic jams and congestion at peak times. These generally occur in the morning and in the late afternoon when people are either entering or leaving the city centre. These routes have more complexities than by-pass routes as they pass from sparsely grained built form in the suburbs towards the city where they cut through dense built fabric. This is where most problems occur as many fast moving vehicles try to enter a tight knit fabric through a single movement route. (Halprin, 1966)

The economy of localised shopping facilities may be affected by commuters opting to shop in the city rather than in their resident towns. These patterns are however negligible in their impact in terms of economic scale.

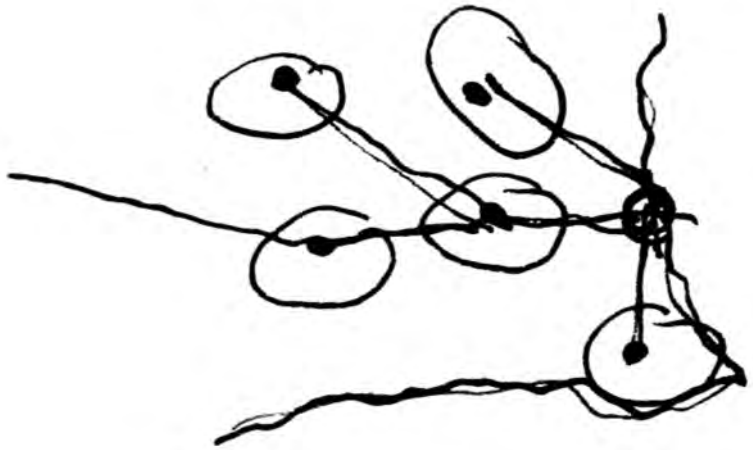


Diagram showing commuting traffic in Port Elizabeth
(author, 2014)

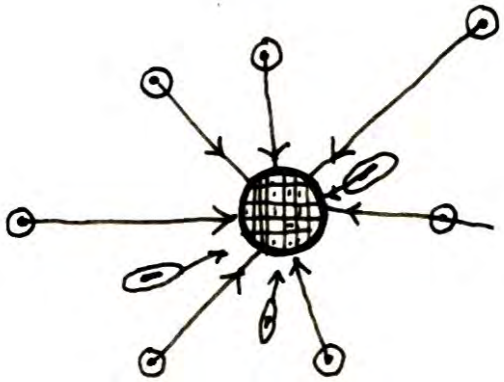


Diagram showing commuting effect towards a city via freeways
(Halprin, 1966)

Image showing Kansas City in the USA. The city has been disconnected and split into parts by massive freeway systems.
(www.googleearth.com, 2014)

9.2.3 Moving Within - Inner City Freeway

The third type of freeway takes place within the city. This is by far the most challenging system of freeway types. These interconnecting systems of road hierarchies link various parts of the city with one another . The problem occurs as cities generally have a central core or CBD, these areas are destinations for users and need to be connected to various other areas and nodes throughout a metropolitan area. This generally results in a complex system of roads and freeways intertwined in the inner city or CBD as the main destination.(Halprin, 1966)The CBD therefore serves as the end point of all journeys from outlying areas. These freeways that enter the city cut through the densely built fabric and more often than not divide inner city areas. These inner city freeways in turn actively destroy the very fabric that attracts commuters and businesses. Because of this many freeways have been elevated and turned into flyovers that in theory free the ground level for pedestrians. What happens in reality is that these areas under the freeway flyovers become derelict and unused as a result of the poor spatial conditions. These spaces underneath the freeways are also used to build additional roads which in turn hamper pedestrian flow anyway.

Economically this impacts on business as clients and customers would hesitate to visit shops and facilities that are located in an unwelcoming, unsafe and unbecoming areas underneath or next to urban freeways.

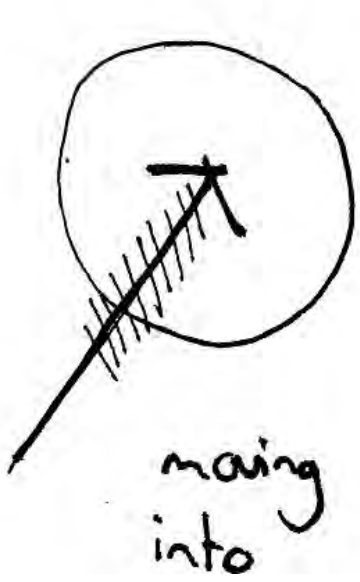


Diagram showing the movement of traffic into a city
(author, 2014)

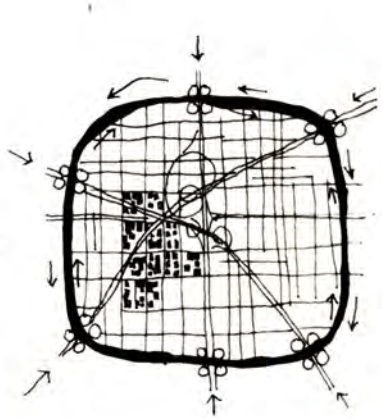
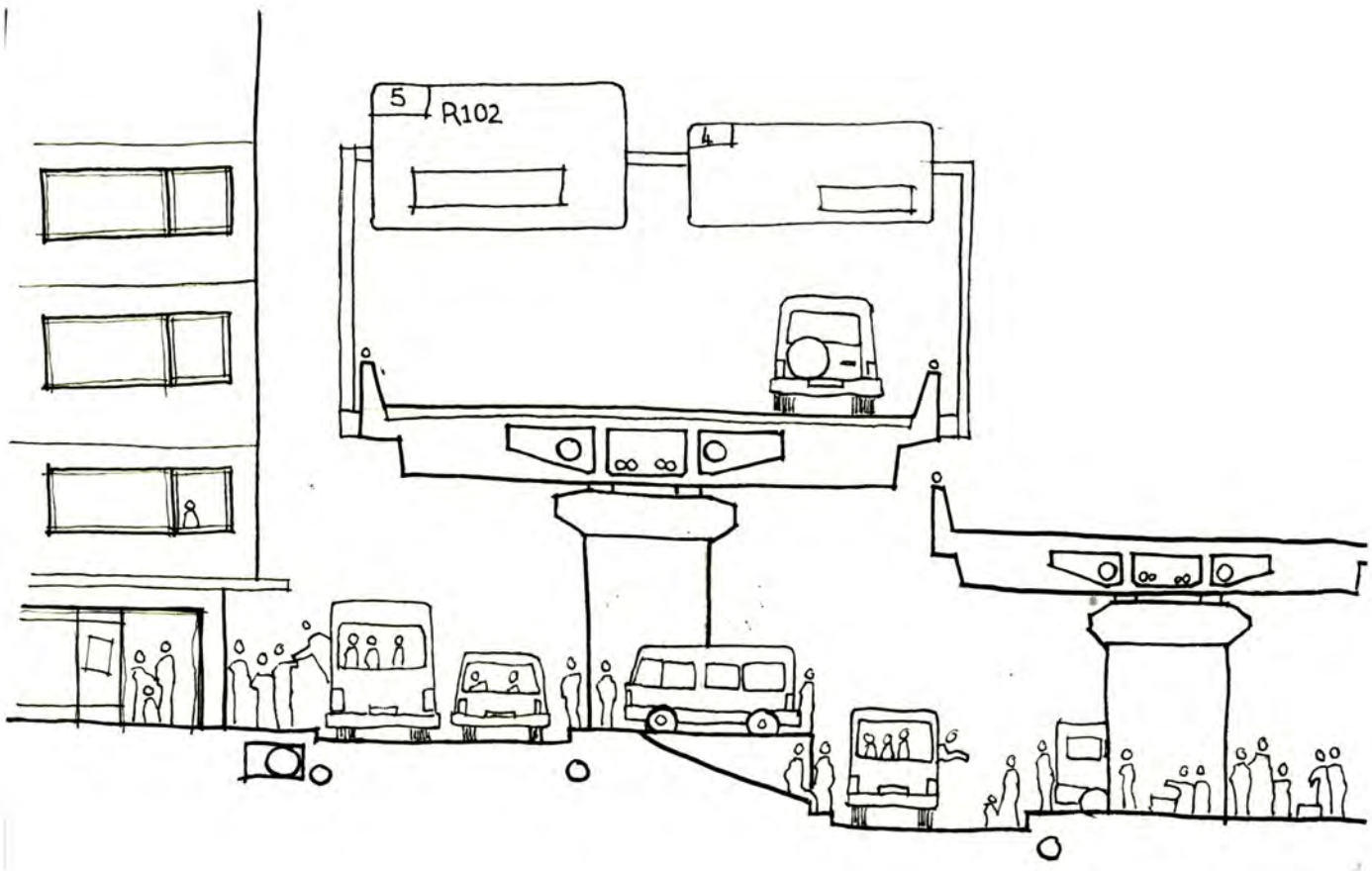


Diagram showing the movement of freeway systems within a city
(Halprin, 1966)



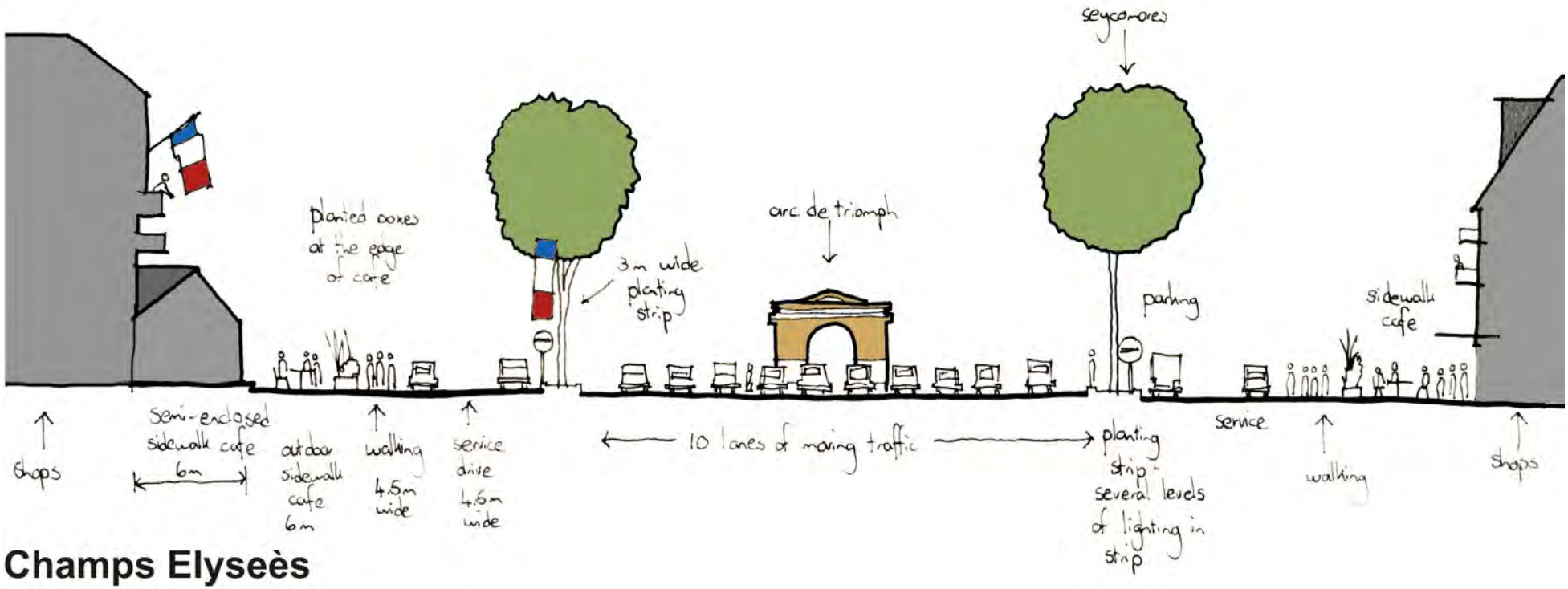
Drawing showing the relationship that the Settlers Way freeway has with surrounding buildings and the usage of space above and below the structure
(author, 2014)

10. Settlers Way as a Freeway Function

10.1 Introduction

It is difficult to classify Settlers Way freeway in port Elizabeth as it serves as all three of the above mentioned functions. It serves commuters to and from the city north and south of the centre. It also turns into an inner city loop linking to other major roadways. Lastly it very effectively bypasses the inner city from north to south completely severing the city from the port and causing a disconnect between commuter or traveller and the city. It also suffers from the underpass condition generally associated with flyover freeways.

Panorama view of the southern part of the city centre and its locality to port and harbour. Taken from the Campanile.
(author, 2014)



Champs Elyseès

10.2 Freeway Type

There are many different freeway types that my be used for different purposes that suit different contexts. These will be investigated in and evaluated through the advantages and disadvantages that they pose to their surrounding areas. The purpose of this exploration is to determine whether or not there is a suitable alternative to the current freeway condition occurring in the CBD of Port Elizabeth as a result of the Settlers Way freeway. This analysis of freeway types has been done in a very similar way to that of Lawrence Halprin's analysis in his book 'Freeways'. (Halprin, 1966)

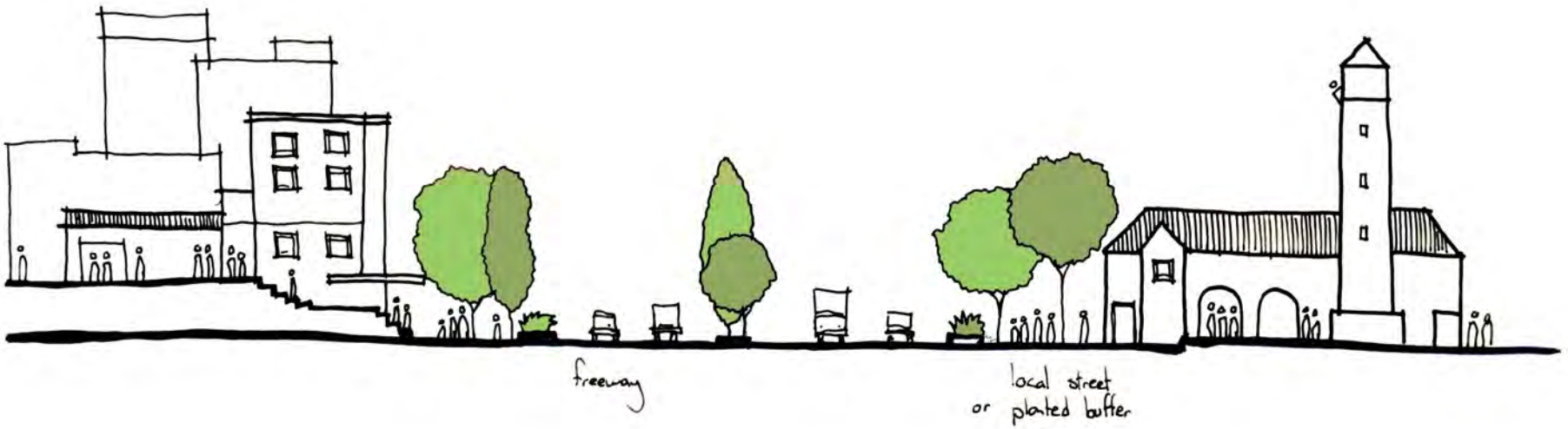
10.2.1 Boulevard

Boulevards are generally more adequate for the transition of large amounts of traffic within city area as they allow for the interaction between vehicles and pedestrians. These movement routes also **integrate** movement patterns between vehicle types. Boulevards also tend to be less obtrusive and friendlier to residents and city goers as a necessary infrastructure. They also allow for traffic and local roads to join onto it at various intersections. As boulevards are fully integrated into a city's structure and legibility system they require relatively less space as they do not need buffer strips along them for pedestrian protection. Some good examples are the **Champs Elysees i**n Paris, the **Andrassy Ut** in Budapest and the **Passeig De Gracia** in Barcelona.

(top left) A section through the Champs Elysees
(Halprin, 1966)

(left) Comparison between different boulevard types throughout the world
(www.googleearth.com, 2014)

(right) Images showing the use of a boulevard by both pedestrians and vehicles
(top) (www.virtualtourist.com, 2014)
(middle) (www.bugbog.com, 2014)
(bottom) (www.paris-sights.net, 2014)



At Grade

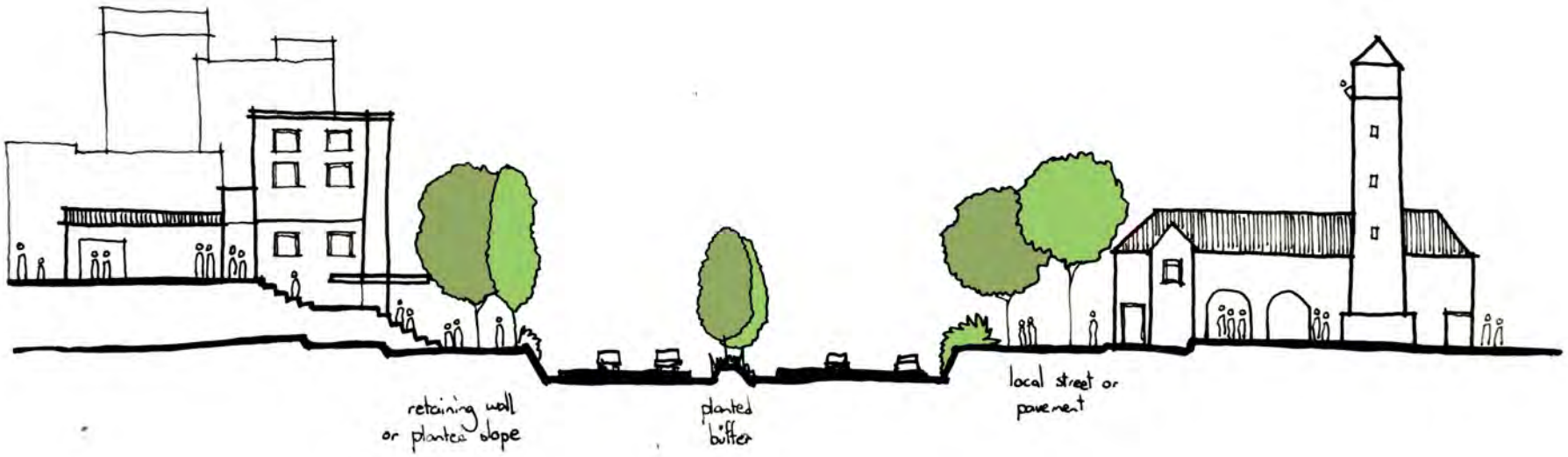
(author, 2014)

10.2.2 At-grade Freeway

Freeways that are at grade generally require more land to function as they need to incorporate a **buffer zone** for pedestrian access control and safety. These types of freeways are also not pedestrian friendly as they require either overpasses of underpasses for pedestrian movement. Within an urban context they also **split neighbourhoods** as they are very wide. They are however met and adjoined to fairly easily by local traffic (this depends on intersection regulation and traffic norms).

Freeways at grade taking up lost of space in Wyoming, Michigan, USA
(www.en.wikipedia.org, 2014)

Freeway at grade in Southern Ontario, Canada.
(www.en.wikipedia.org, 2006)



Depressed Freeway

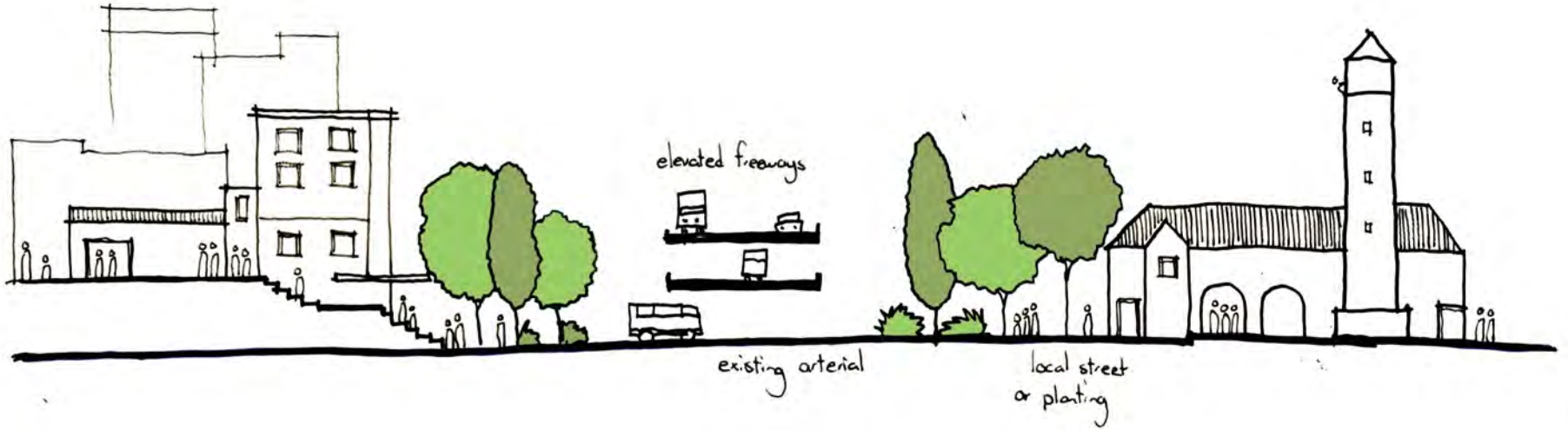
(author, 2014)

10.2.3 Depressed Freeway

Depressed freeways require as much land as at-grade freeways and are generally a little more **difficult to access** via local streets. This is because ramps are required. Pedestrian movement across these barriers are fairly easy as they tend to be level crossings on foot. Although noise and visual impact are lessened by this type of freeway they are still able to disrupt neighbourhoods through disconnecting and **fragmenting**. This is inevitable as it is built into the nature of freeways. Durban has a few examples of these freeways entering the city.

Depressed freeway in Durban moving through a city
(www.googleearth.com, 2014)

Depressed freeway with access over it
(www.urbanophile.com, 2010)



Elevated Stacked

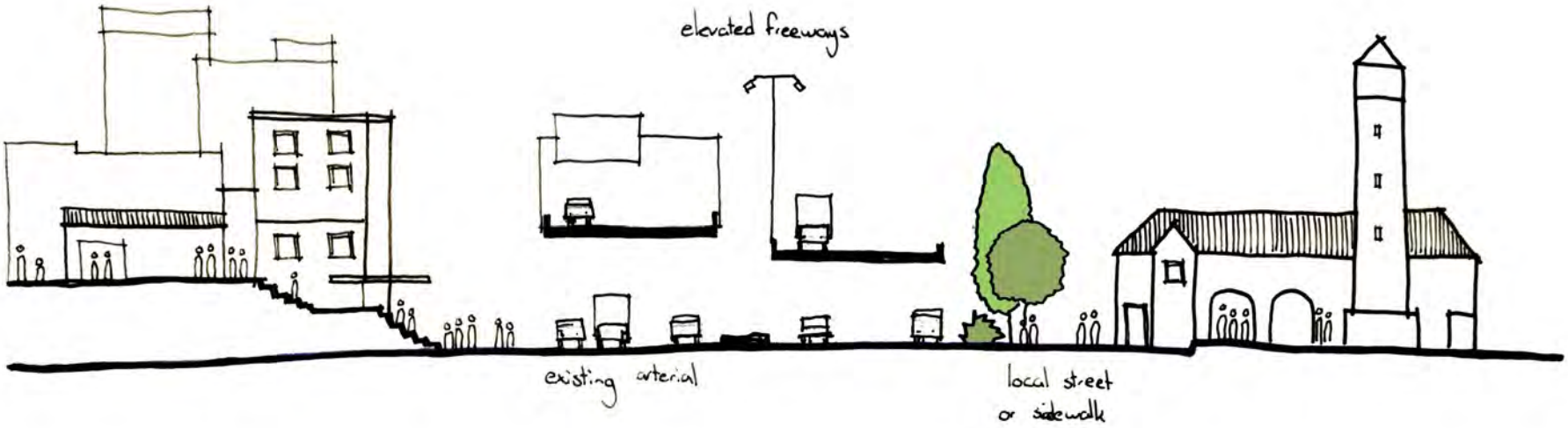
(author, 2014)

10.2.4 Elevated Stacked Freeway

These freeways need less space to operate as lanes are above one another. They also do not obstruct pedestrian flow beneath them. They are however a little more difficult to access via on-ramps as the height of the top freeway is very high. As a result of their height they tend to act more as a **wall** within an urban context and successfully divide neighbourhoods. An example of this was the old Embarcadero Freeway in San Francisco.

Elevated Stacked Embarcadero Freeway in San Francisco in 1985
(www.blog.sfgate.com by Gary Fong, 2010)

San Francisco stacked freeway after damaged by earthquake. Taken in 1990
(www.flickr.com, 2012)



Elevated Side-by side

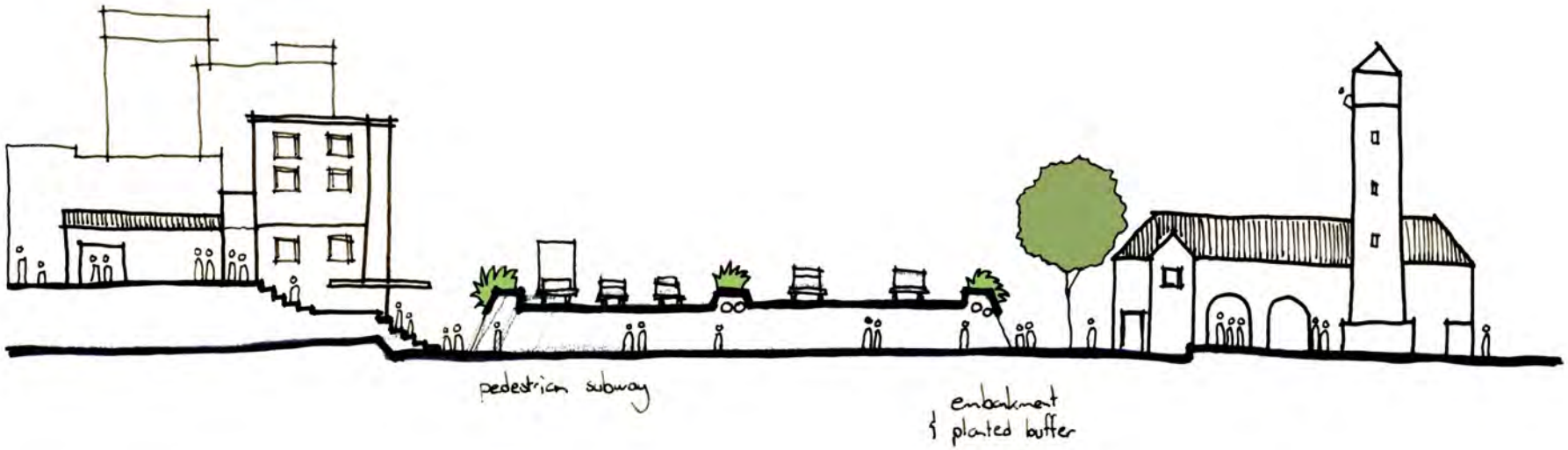
(author, 2014)

10.2.5 Elevated Side-by-side Freeway

This freeway type needs more space than the stacked type but does not require a buffer. Access from local streets and on-ramps is easier because of the height and pedestrian movement is able to function underneath the structure. It does however create a division within cities and creates dead and **unpleasant space underneath** it. The Settlers Way freeway n Port Elizabeth is an example of this type.

Elevated Side-by-side freeway in Port Elizabeth
(author, 2014)

Underside of elevated freeway in Port Elizabeth
(author, 2014)



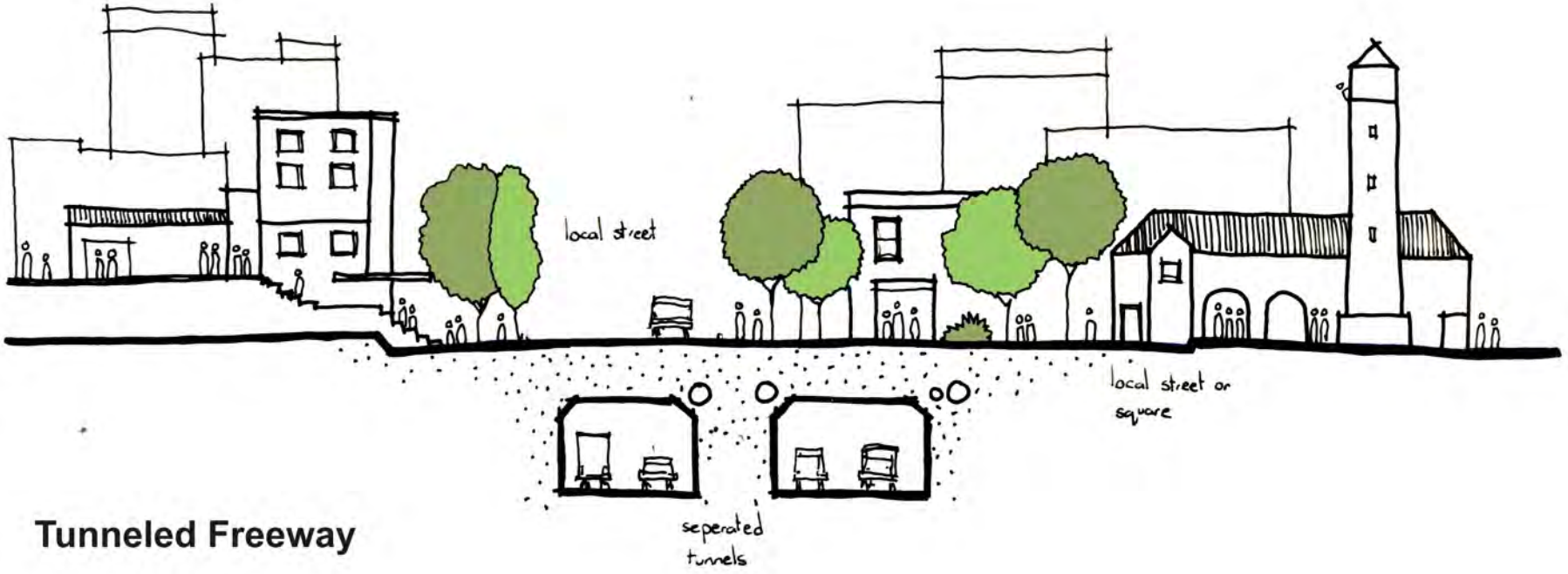
Elevated on Embankments

(author, 2014)

10.2.6 Elevated on Embankments Freeway

These freeways require as much land as at-grade and depressed freeways but are easily accessed via onramps and local streets. Pedestrians are able to move through these embankments via tunnels. These freeways are **very divisive** and act as walls severing cities and causing disconnection between areas. These types are seldom seen within urban contexts.

Embanked freeway structure of Dubai-Fujairah-Freeway
(www.dc-ca.com, 2014)



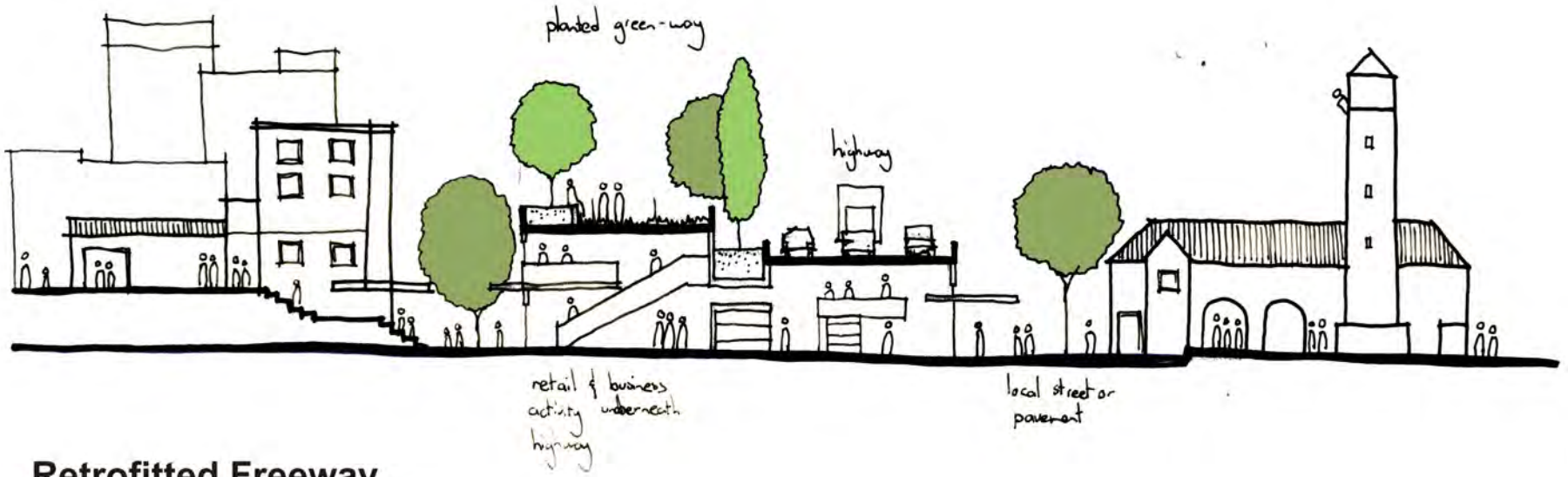
Tunneled Freeway

(author, 2014)

10.2.7 Tunnelled Freeway

Tunnelled freeways do not require land to operate but are however very **expensive** to construct. They are also difficult to join up with from localised streets and generally have only a few on or off-ramps as they are either destination driven or by-pass routes. Pedestrians are able to function **uninhibited above ground** under normal circumstances. These tunnels are generally unobtrusive to urban contexts other than the potential of unpleasant air pump and filtration ducts and busy tunnel entrances. An example of this is the massive Central Arterial route in Boston.

Before and After pictures of the Boston Big Dig Central Artery project showing the use of a tunnelled freeway
(www.skyscrapercity.com, 2011)

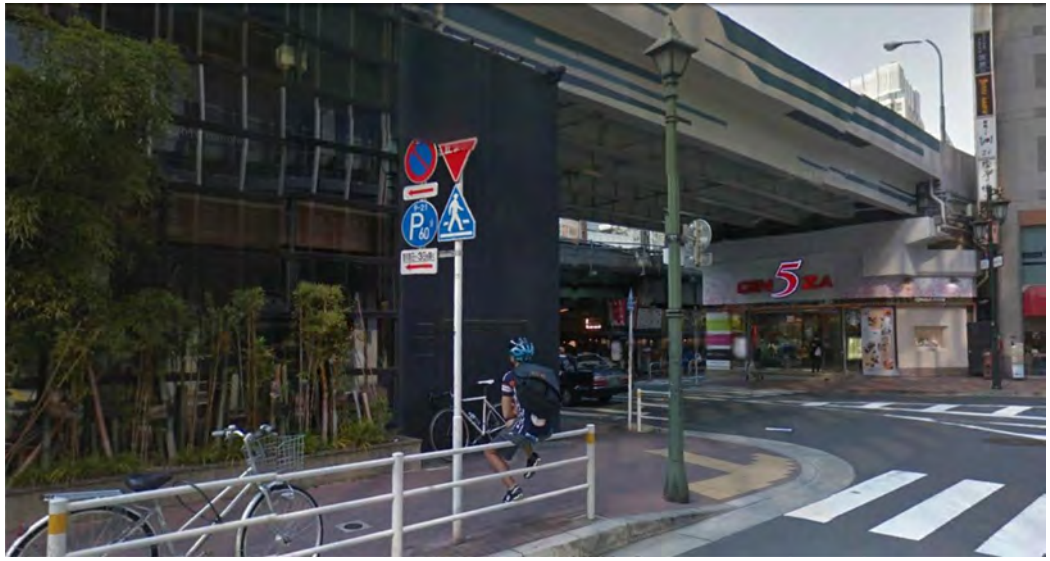


Retrofitted Freeway

(author, 2014)

10.2.8 Retrofitted Freeway

These retrofitted freeways have been converted to perform additional functions other than facilitating movement. They generally consist of elevated freeways onto or under which **functions** have been latched. These functions may consist of parks on top of the freeway or shops underneath the freeway. This option is viable in urban areas that are very densely populated and where land is at a premium. They allow for **pedestrian interaction** and movement but still act as a lesser barrier. On and off-ramps from local roads are however still difficult as they require space. An example of this is the Linear City built under a freeway in Tokyo, Japan.



The portion of the Linear City under a freeway that was built in Tokyo, Japan in the 1960s
(www.googleearth.com, 2014)

The Linear City in Tokyo, Japan in the 1960s
(Halprin, 1966)

Comparison of Freeway Types

	Land Required	Adjacent Street Access	Pedestrian Interaction	General Residential Impact	
Boulevard	●	● ●	● ●	● ●	7
At-grade		● ●			2
Depressed		●	● ●	●	4
Elevated Stacked	●		● ●		3
Elevated Side-by-side		●	● ●		3
Elevated on Embankments		●	●		2
Tunnels	● ●		● ●	● ●	6
Retrofitted	● ●	●	●	●	5

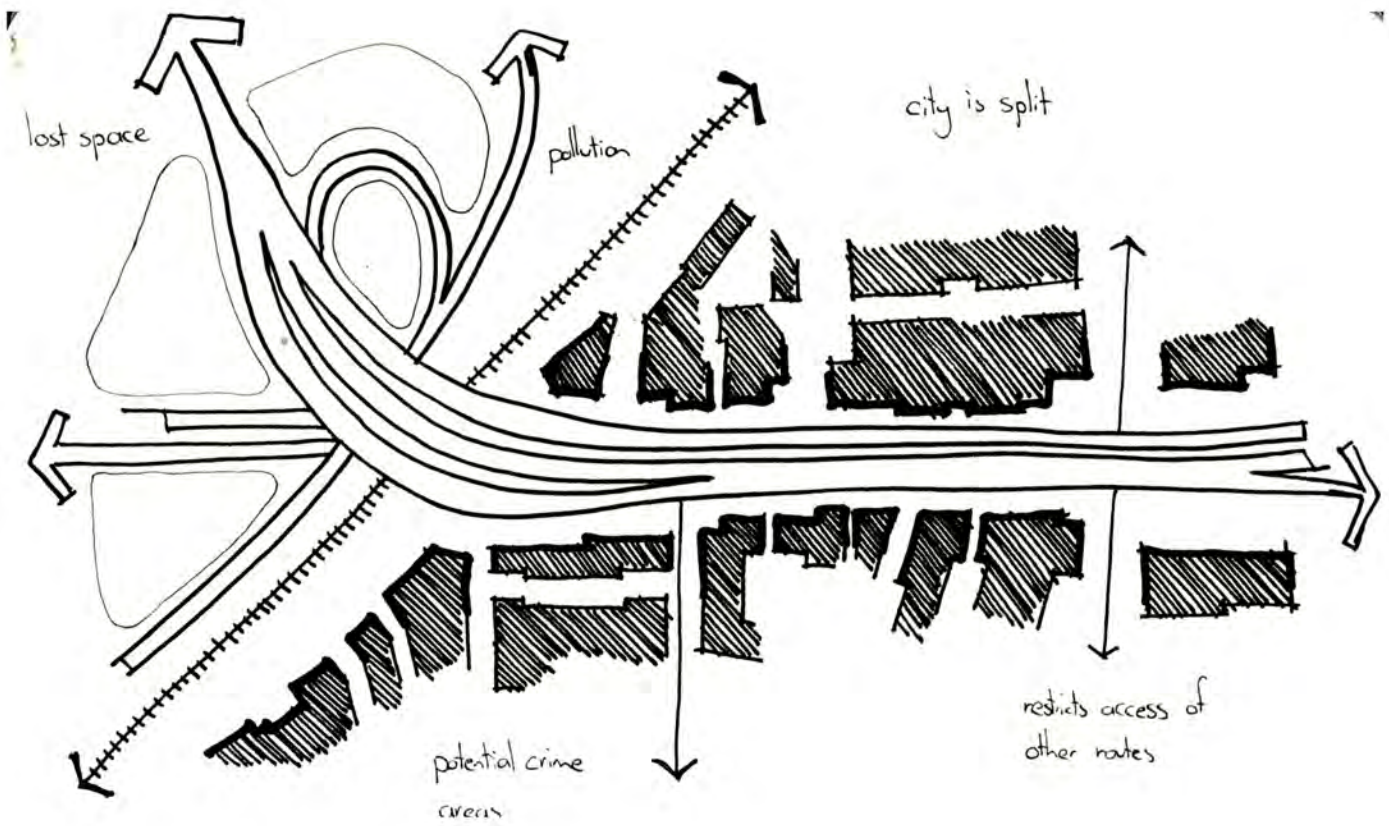
potential solution

current situation in Port Elizabeth

Table comparing freeway types according to criteria that affect a city the most. Criteria are borrowed from Halprin, 1966.
(Halprin, 1966)

10.3 Conclusion

Having looked at these freeway types it is important to consider the various advantages and disadvantages that arise. Other factors that come into consideration when deciding on a potential model to follow or strive toward is **context, cost of construction, social impact, robustness** and **economic** and **spatial influence**. When comparing these options in a table the preferred choice is the **boulevard**. The reason for this is its integrated nature and simplicity in terms of function. It does not try to separate itself or stand apart from its context and users. It also does not create any spatial conditions that might negatively affect a city or divide neighbourhoods through acting as a barrier. Boulevards sit comfortably within cities as part of a system of movement structures but also function as public spaces. They are used by both vehicles and pedestrians. People may even utilise the spaces next to boulevards as restaurants and coffee shops as they are pleasant places to be in. They also form part of a system of hierarchies of movement and space within a city that compliment legibility. In this project, it is suggested that Port Elizabeth should employ a boulevard to direct traffic through the central city in conjunction with a robust system of intersecting grid streets to improve traffic flow. This would replace the monofunctional and obdurate Settlers Way freeway.



A diagram showing the Westgate free-way and its effects o the city in Johan-nesburg
(author, 2014)

11. Local Examples

11.1 Introduction

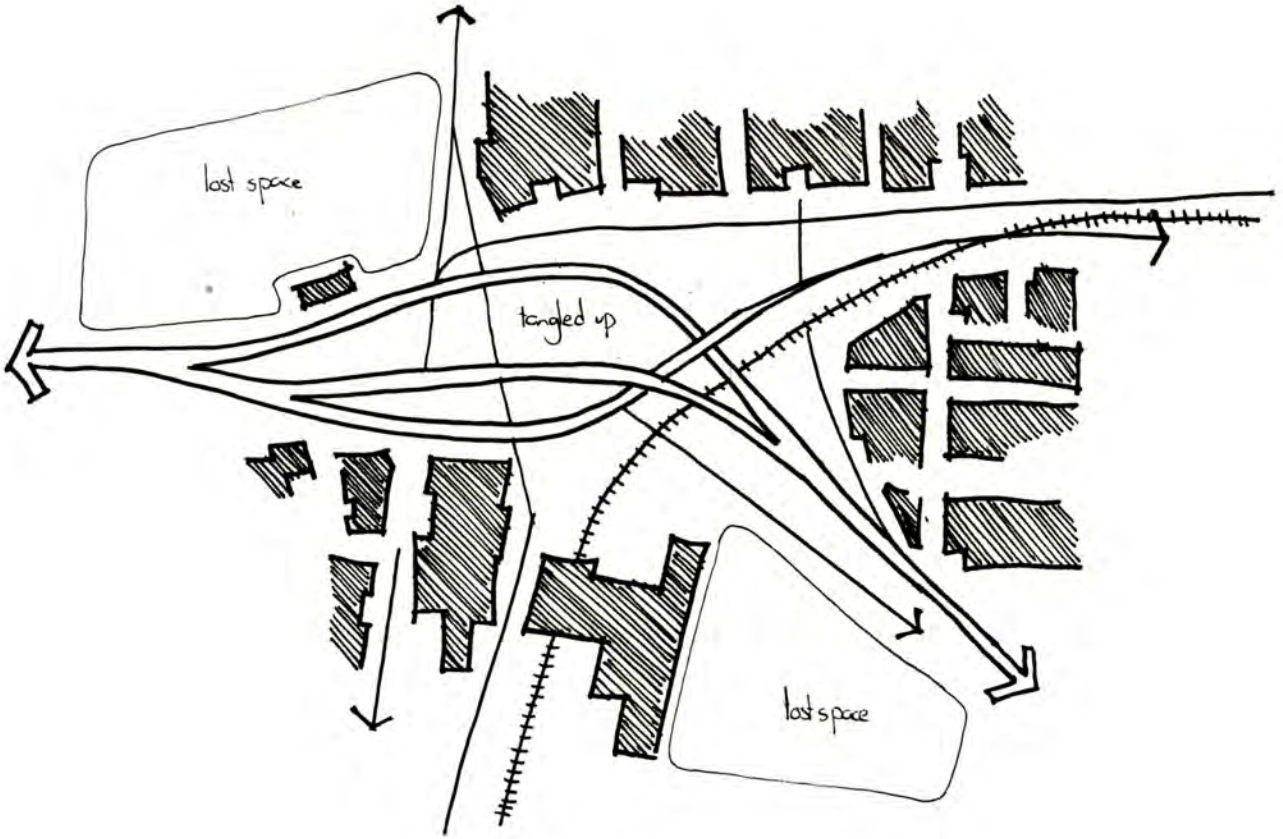
Throughout South Africa there are a number of cities that experience a similar problem regarding freeways as that of Port Elizabeth. These cities are Durban, Johannesburg and Cape Town. They will be looked at briefly to determine possible similarities and lessons that may be learned.

11.2.1 Johannesburg

Johannesburg is heavily reliant on private vehicles as a transport method and thus has needed to employ freeways and flyovers to facilitate these vehicles. Johannesburg freeways are generally the **elevated side-by -side type**. These freeways amongst other reasons have caused the city to **sprawl** and become the largest in South Africa in terms of area. There are a number of flyovers throughout the city and around major areas of access to the CBD. The flyovers cause large areas to be underutilised and adjacent buildings to decline in value. The urban freeways also spilt the city into defined areas and restricts movement to and from these areas. These are the general effects that this type of infrastructure has on surrounding buildings. The drawing shows a section of a freeway condition in Johannesburg where the M1 and M2 join to become Henry Nxumalo Street in over the Westgate train station.

(above & below) Images showing the ground level effect of the freeway in Westgate, Johannesburg
(www.googleearth.com, 2014)

(left) Map of freeways in Westgate, Johannesburg
(www.googleearth.com, 2014)

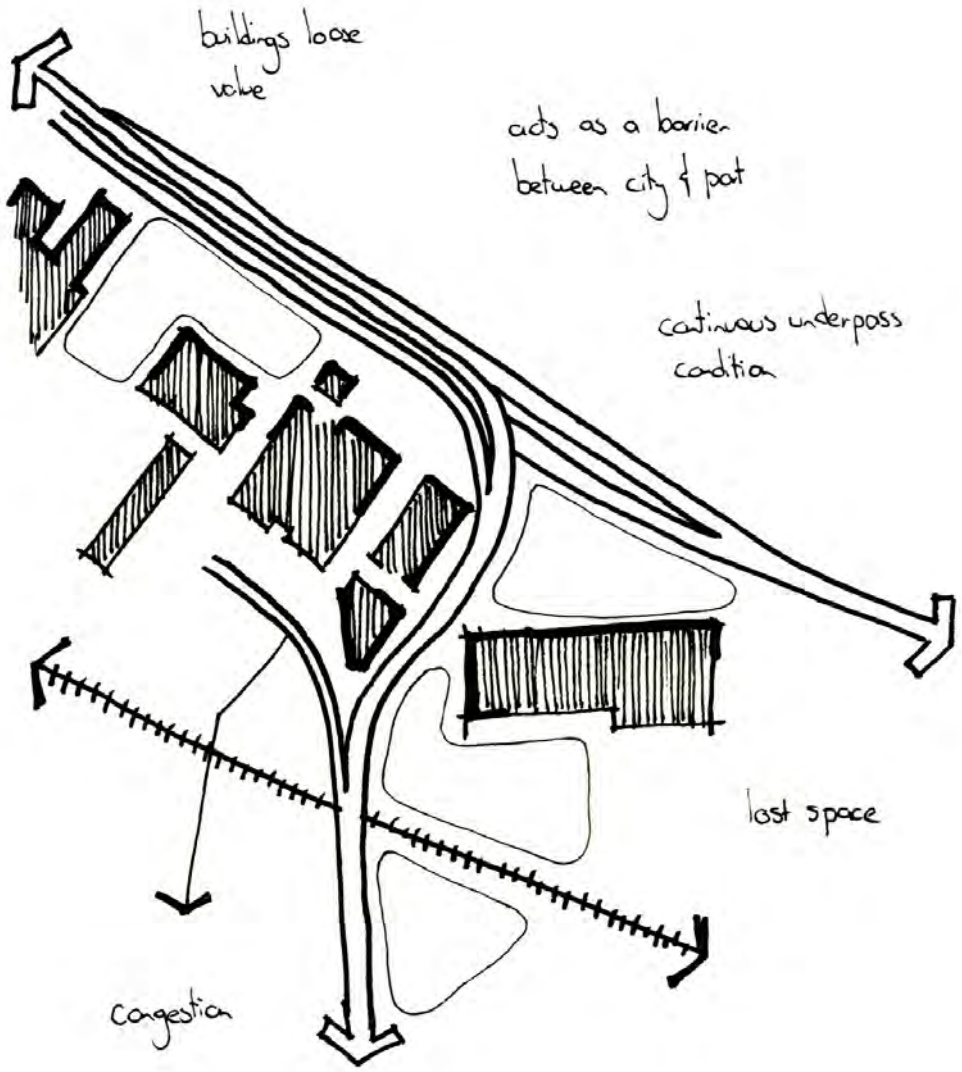


A diagram showing the Westgate freeway and its effects on the city in Johannesburg
(author, 2014)

11.2.2 Durban

Durban freeways consist of a variety of **depressed** as well as **elevated** freeways. The depressed freeways lead through the suburbs as the N3 before reaching the city. This section is less dividing than the elevated type but still create a barrier. The N3 serves as a commuter freeway bringing people into the city. It later splits into various roads over the Warwick Junction area where it enters the city centre. This area is characterised by high flyovers over the Berea Road train station. Durban suffers less from the negative effects of freeways as the N3 enters the city at the edge rather unobtrusively. The drawing shows the Warwick Junction freeway intersection.

(right) Images showing the ground level effect of the freeway in Warwick, Durban
(www.googleearth.com, 2014)
(www.kznia.org.za, 2014)
(above) map of freeways in Warwick, Durban
(www.googleearth.com, 2014)



A diagram showing the freeways (N1 & N2) enter the city of Cape Town and how it divides portions of the Foreshore area.
(author, 2014)

11.2.3 Cape Town

The Cape Town freeway situation is comparatively the most similar to that of Port Elizabeth. It runs along the coast splitting the city from the port. This is problematic as the port which essentially created the city and is the reason for its existence is disconnected. The section where the N1 and N2 enter the city consists of elevated freeways. This area remains largely undeveloped and cannot be considered as pleasant space. As there are fewer buildings surrounding the freeway in this area, it does not impact as heavily on property prices as the Port Elizabeth condition does. The freeway also serves to direct traffic into the city and does not purposefully bypass the CBD as Settlers Way does in Port Elizabeth. The drawing shows where the flyovers start in the Foreshore area as they lead over the train tracks towards the port area.

(above) Map of Cape Town showing the freeway area
(www.googleearth.com, 2014)
(right) Images showing the ground level effect of the freeway in the Foreshore area of Cape Town as well as how it enters the city
(www.googleearth.com, 2014)
(www.skyscrapercity.com, 2010)

The northern section of the Settlers Way freeway in Central
(author, 2014)

The southern section of the freeway that passes over the Baakens River
(author, 2014)

The southern section that ends amongst religious buildings

(author. 2014)

11.2 Port Elizabeth's Freeway Condition

Having discussed other South African cities freeway types and problems, it is now possible to evaluate Port Elizabeth's Settlers Way freeway. The freeway is much greater in extent that than the other cities' freeways. It also stretches further along the coasts while dividing the city from the port. The extent of the flyover section will be discussed as the entire freeway section is too vast. Two intersections will be discussed as well as the underpass portion of the flyovers that runs through the city.

11.2.1 The Northern Intersection

This area is where the M4 or Settlers Way joins up with Russel Road leading into city neighbourhoods. This intersection splits Govan Mbeki Street into two sections whereby is destroys old vistas and views. It also over sails the city's main taxi rank where it creates underutilised and unusable space beneath it. The edges and hierarchy of tall buildings and skyscrapers in this area are undermined by the freeway's path as it breaks up the roofline of the street. The freeway intersection also requires a large amount of space even though it does not necessarily impact on ground level movement. This means that less area is able to be used by buildings and less density is able to exist within the city. At certain points, the eight lane freeway takes up as much space as a city block. Ultimately the intersection causes a tangled mess within the inner city.

11.2.2 The Southern Intersection

The southern end of Settlers Way ultimately leads to no particular destination other than a set of other smaller roads, this splits the city in a drastic manner. This termination point is known as South End and was once a neighbourhood (as previously discussed). The connection between neighbourhood areas and the city have been lost as there is no defined entrance of transition into the city from the southern end. Large areas of underutilised land occur in this area as a result of buffer space needed for the high speed freeways to function. Within this leftover space, the Pier Street Mosque is located in no-man's land. The mosque was left over after the South End demolitions. It is located in an undignified space right next to

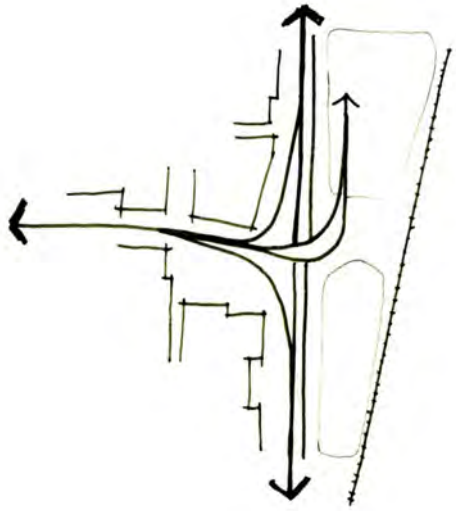


Diagram of the northern intersection area
(author, 2014)

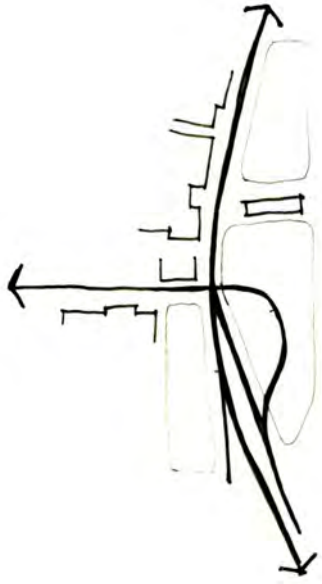
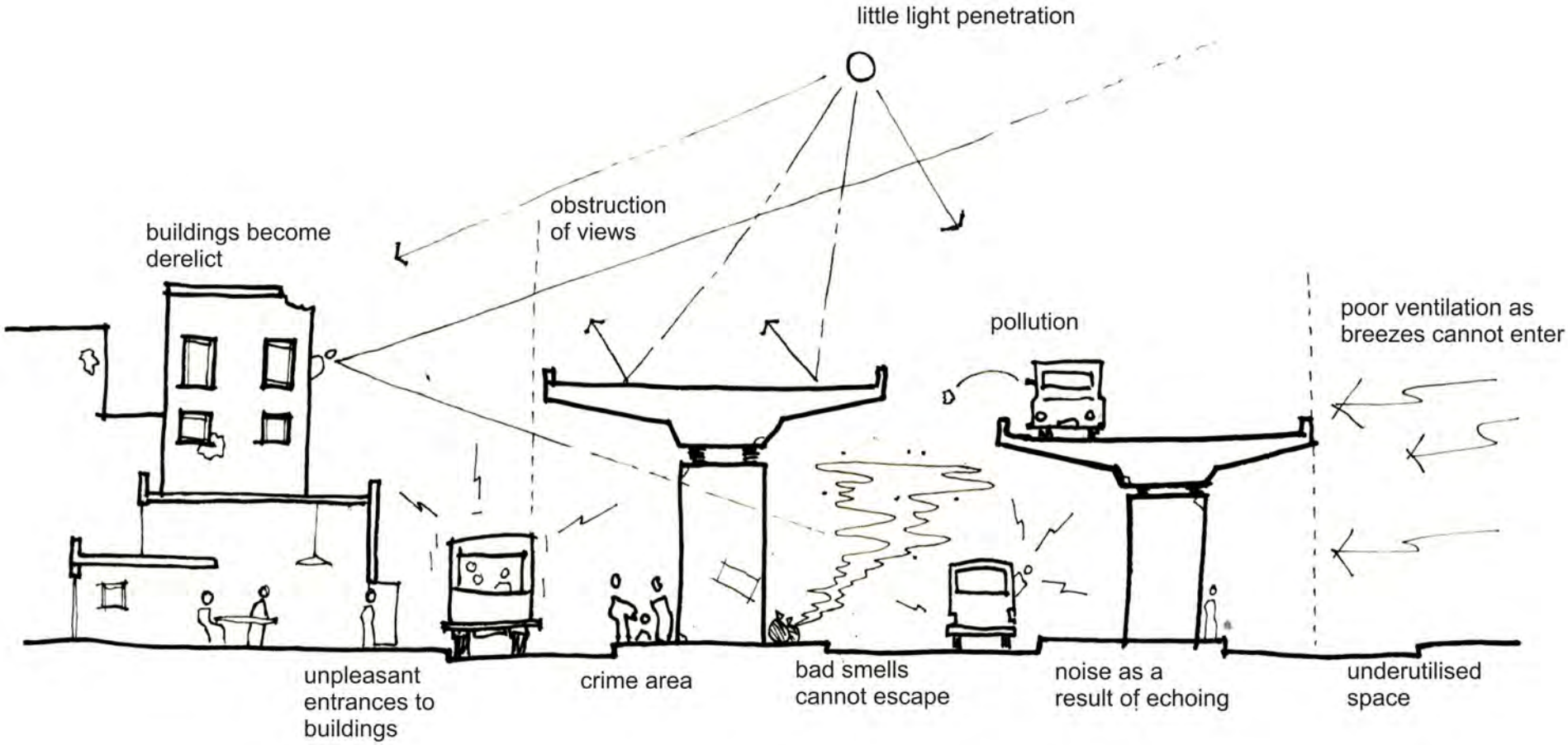


Diagram of the southern intersection areas
(author, 2014)



Drawing of the negative effects that take place as a result of the Settlers Way freeway
(author, 2014)

the freeway. The Rudolf Street Mosque which is also in the area, suffers a similar fate. The freeway also causes the Baakens River mouth to not be noticed. This area is after all the birth sight of Port Elizabeth as a city and the reason why it was established. The freeway creates large amounts of wasted and unused space underneath it and causes the city to become illegible from a distance. The scale of the city is affected as the freeways skew the human scale of buildings.

11.2.3 The Underpass Section

The section of the freeway between these two intersections causes great problems within the city. There are multiple negative effects that cause the area adjacent to the freeway to become unpleasant.

This area does not receive lots of light and sun throughout the day as the freeways cause shadows to fall onto Strand Street and the adjacent buildings. There is no proper ventilation that occurs here during hot summer days but during windy days the wind is channelled through this area like a tunnel. As a result of bad ventilation bad smells and toxic fumes expelled by vehicles stay in the area much longer. This is hazardous to the public for health reasons. Any loud noises under the freeway do not dissipate but echo as a result of the concrete structure. This causes an unpleasant noisy atmosphere.

The entrances of the buildings facing out onto Strand Street under the freeway are not utilised to their full potential as spatial quality is not good. This leads to entrances on this street to be used less frequently and sometimes even blocked. It also depreciates the building values. The buildings next to the freeway have lost their view and as a result have declined in value. The area has deteriorated as no one takes pride in devalued buildings and owners have neglected to maintain the buildings. This causes a lack of ownership over public space and as a result crime and other elements of bad human behaviour may occur. Crime and muggings frequently occur in this area as a result. most of the space underneath the flyovers is not used as it is not conducive to good living conditions, business or recreation. It is only good for parking and transportation uses.

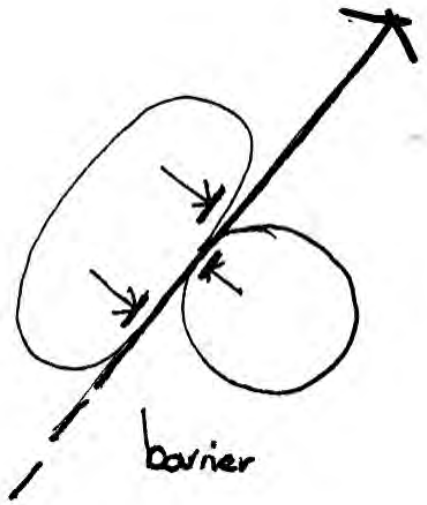
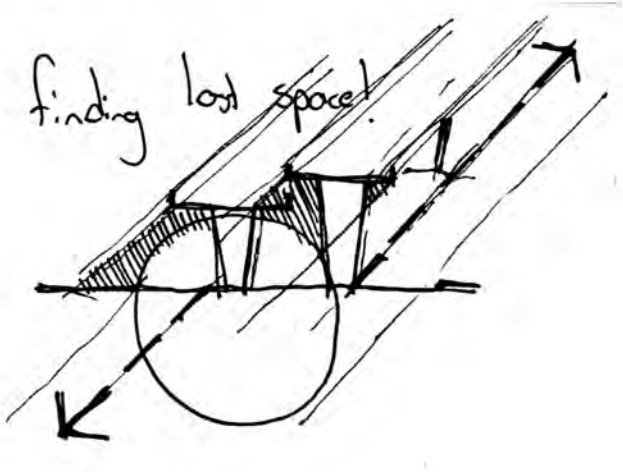


Diagram of barrier that is formed by freeway
(author, 2014)



Drawing of the lost space that occurs under an elevated freeway
(author, 2014)

Image of the city and the Campanile from the port before the freeway was built obstructing the view and legibility.
(www.heritage-tours.tourtravelworld.com, 2014)

11.3 Conclusion

It is clear to see the extent at which these freeway flyovers destroy the city fabric. Nowhere is this more evident than in Port Elizabeth. This is because The CBD of Port Elisabeth is relatively small and has been forced to bear these massively oversized infrastructural freeways. Ultimately they do nothing but dived the city from the port and cause degradation of buildings and underutilisation of space and the inner city as a whole. Therefore this project suggests an alternative solution for this problem as will be discussed in sections to follow.

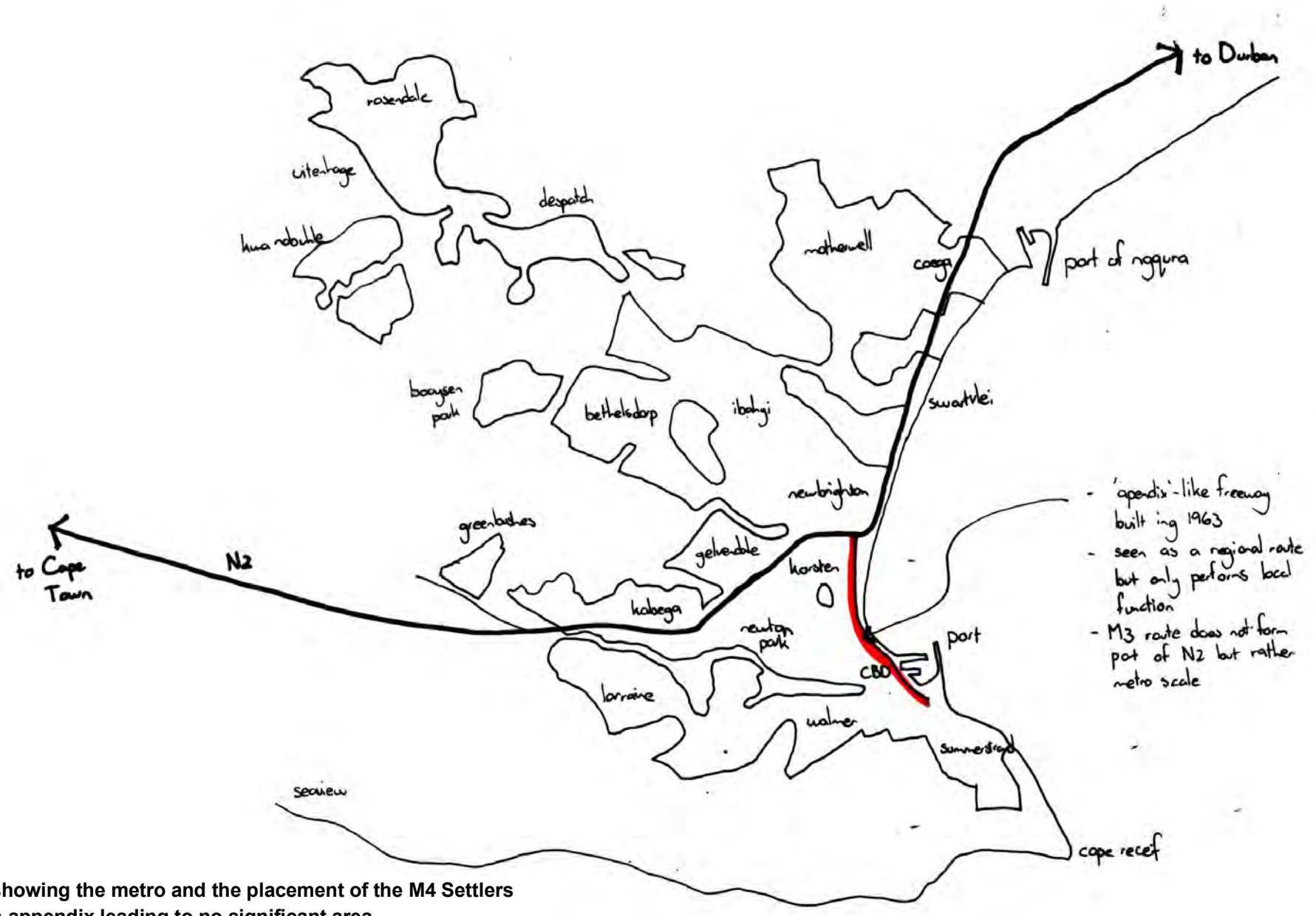


Diagram showing the metro and the placement of the M4 Settlers Way as an appendix leading to no significant area
(author, 2014)

12. Metro Analysis

12.1 Introduction

A metro scale analysis is done to express the relevance of the proposed demolition of the Settlers Way freeway at a metropolitan scale. It will explore the possibilities at this scale and the effects that a small catalytic project such as this might have on the city as a whole.

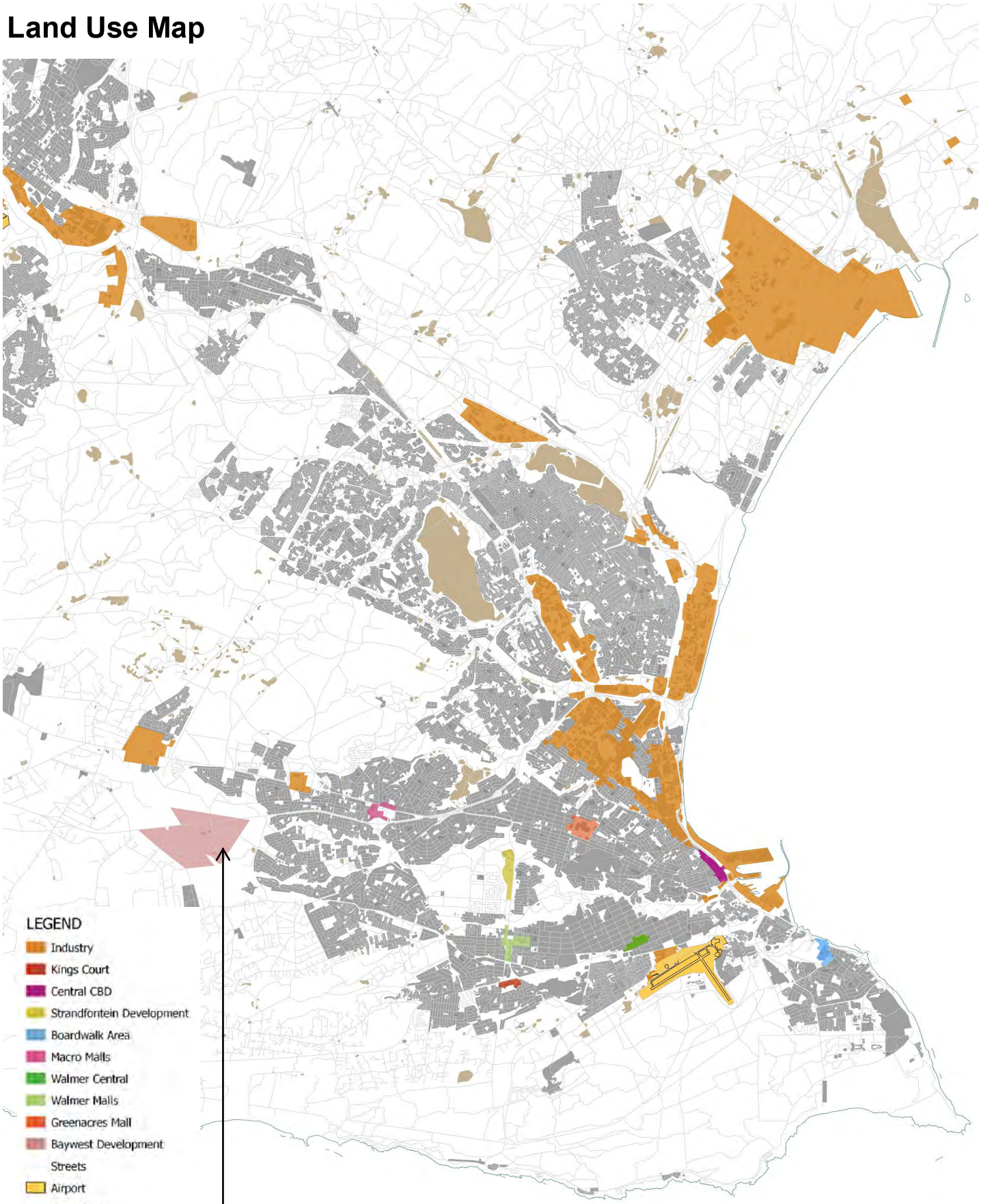
12.2 Current Situation & New Developments

The Nelson Mandela Metropolitan area is the second largest city in terms of area in South Africa (as previously mentioned in this document). The metro consists or Port Elizabeth with all its suburbs as well as its informal settlements, Dispatch and Uitenhage. The metro has a loosely formed grain of fabric with low densities in most areas. This has been caused by **urban sprawl** and partially as a result of the city's history and economic drive as was explored i previous sections.

The CBD of Port Elizabeth has experienced a number of incidents that have exacerbated the problems it has in terms of spatial economic difficulty. These problems include the **Construction of the Settlers Way freeway** system that split the city from the port in 1963 and the **relocation of the university** form Bird Street in Central to the new Summerstrand campus in 1974.

Map of Port Elizabeth Metro showing the extent of sprawl moving north and south from the city centre
(author, 2014)

Land Use Map

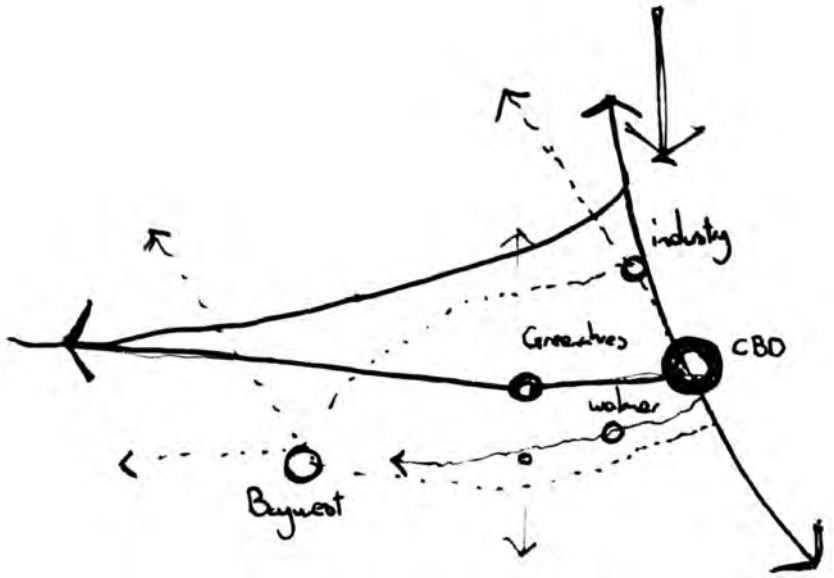


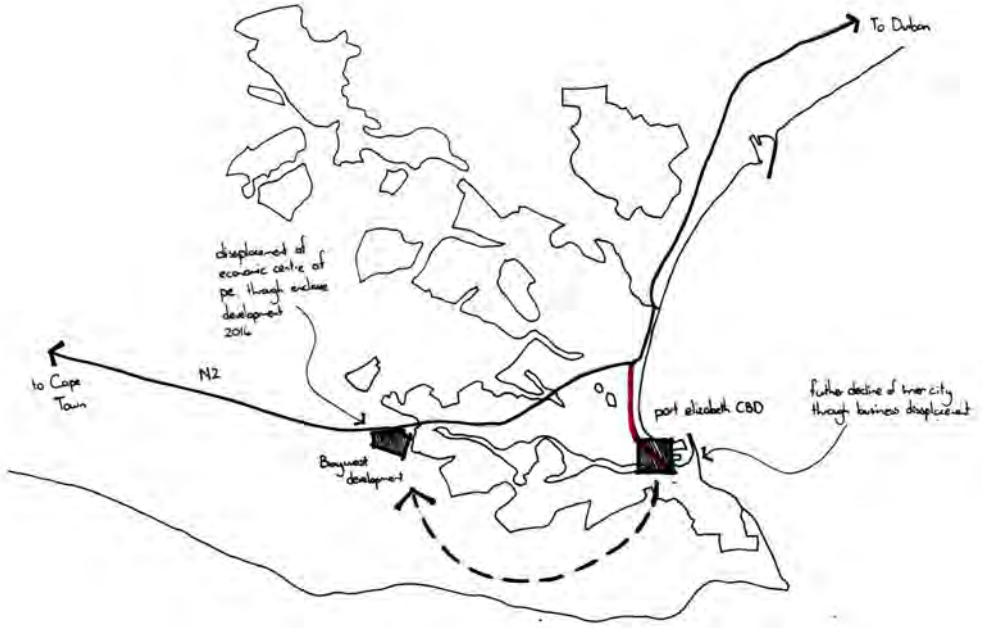
Map showing land use
(author, 2014)

12.3 Baywest Development

A new development that started construction in 2012 is the new Baywest development that is located on the western periphery of the metro. It is positioned next to the N2 for easy access via the freeway. This multimillion Rand development will permanently change the regional economic structure as it will attract many people from all over the region. The Baywest development involves a mall as a shopping component that will serve the greater metro area., This means that Central and the older business districts of Port Elizabeth will experience a decline in economic activity as it will be displaced to the Baywest development. Decentralisation of economic activities like the relocating of the university in the past have had a catastrophic effect on the CBDs economy. The same effect will be felt with the construction of **Baywest**. This puts the inner city of Port Elizabeth at a pivotal point in its history. Decisions that may either make or break the economy of the CBD are to be made within the next few years.

Current redevelopment strategies for the inner city lack cohesive decision making and structure. They are largely piece meal decisions made as and when needed. The next section will deal with a potential solution to this problem.

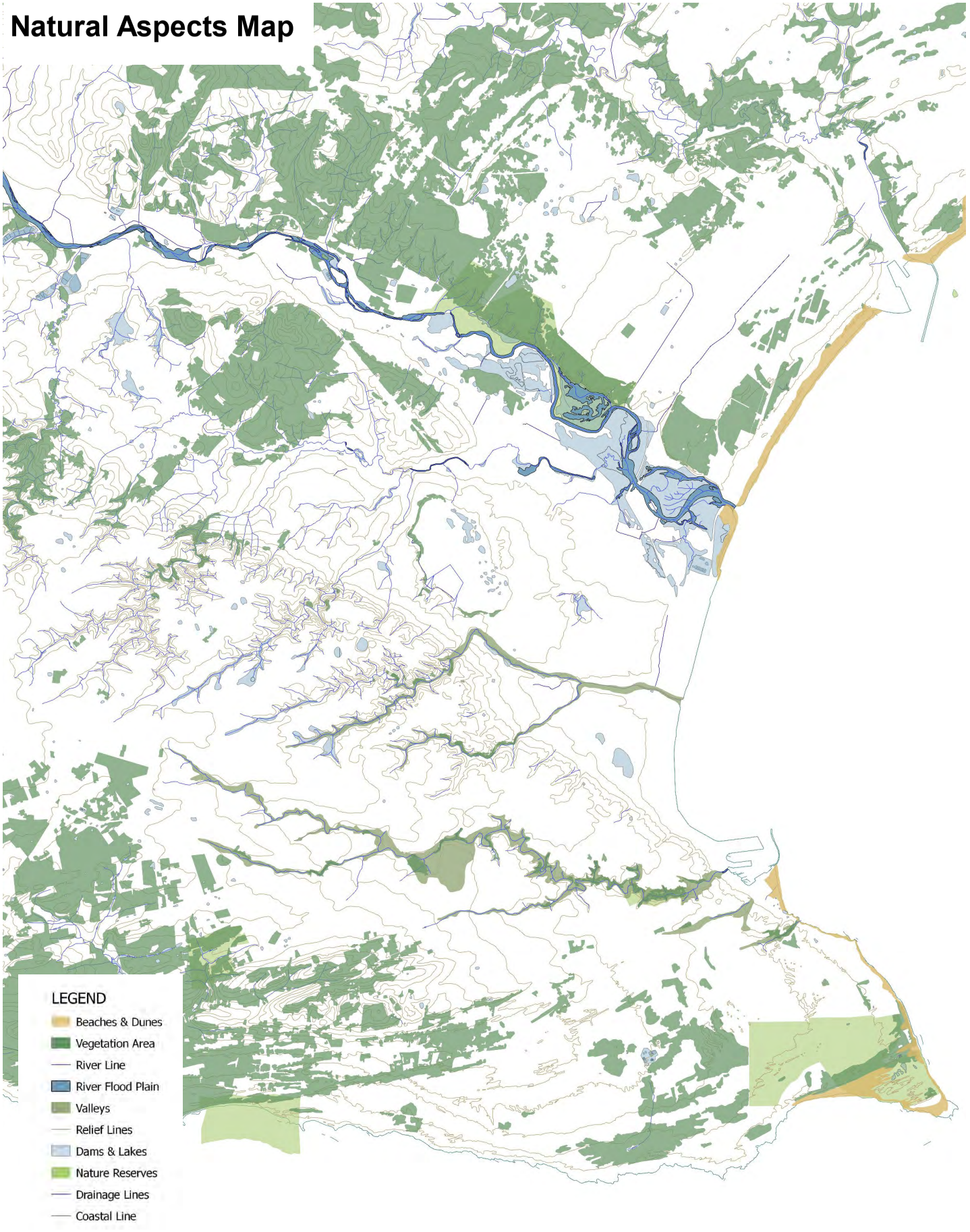




(top) Diagram showing the potential linkages that might form via rail from the city centre towards Baywest and other developments
(author, 2014)

(right) Diagram showing the effect of the displacement of economic activity to Baywest from the CBD
(author, 2014)

Natural Aspects Map



Map showing natural aspects
(author, 2014)

12.4 Proposal

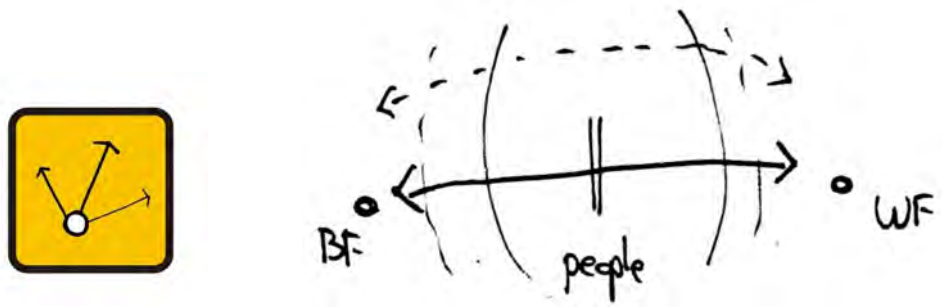
The Baywest development is inevitable and is due to open in 2015. This means that the CBD will have to compete with this regional super mall for potential economic gains. Office and shop rental and potential residential rental will be lost to the Baywest if the city does not change the perception that its residents and tourists have of it. Therefore this document suggests a series of developments at different scales to prevent this form happening, while not detracting from developments of this kind.

The metro area of Port Elizabeth possesses a set of underutilised and under developed rail lines and train stations. This rail line runs from the main station in the CBD towards Humewood where there is another station. The line then continues further west towards the airport and further through the neighbourhood of Walmer towards Lorraine. from here it passes by the Baywest site and on towards Humansdorp. This route has a major connection with another rail line that connects the northern metro area through another east-west railway. This connection happens very close to the Baywest development.

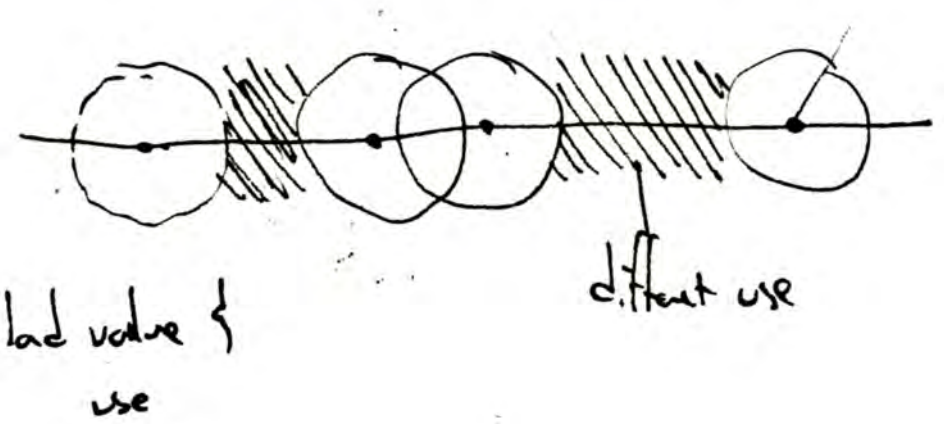
This project suggests that this forgotten rail line infrastructure and the rail reserves that exist should be reinvestment in. This will be to the benefit of the larger metro area as choice and opportunity will be derived from the option of public transport throughout the metro. The Baywest development will also benefit from this proposal as the train station in its locality will aid in patronage. It is therefore suggested that trade-offs with future development stakeholders and Transnet should be encouraged as a system like this may be partially subsidised by developers to the advantage of both the residents of port Elizabeth and the developers.

The theory of Transport Orientated Development or infrastructure led development is important when taking into consideration to guide larger metro scale development plans. This pattern of development supports higher densities as public transport is readily available in close proximity to developments. All new developments throughout the metro should therefore be incentivised to happen around these train station and transport points to densify development. These incentives may be proposed by the municipal-

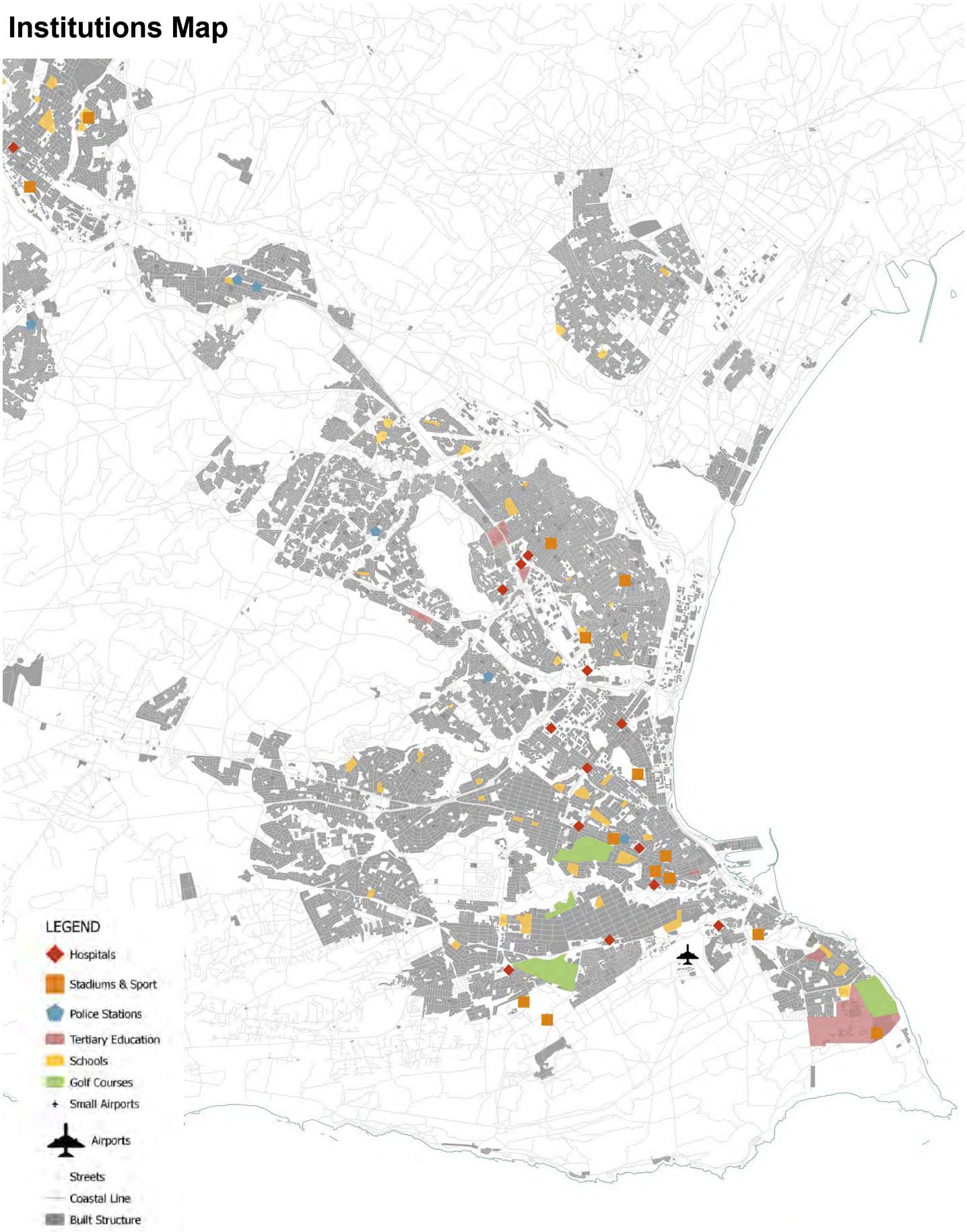
(below) Diagram showing the possible catchment areas of economy and customers between Baywest and the new proposed Waterfront in an idealised matter. This might be aided by TOD initiatives and provide much needed choice.
(author, 2014)



(bottom) Diagram showing the increase in land value as a result of proximity to public transport facilities and the land uses that occur in-between these areas (eg light industry or recreation)
(author, 2014)



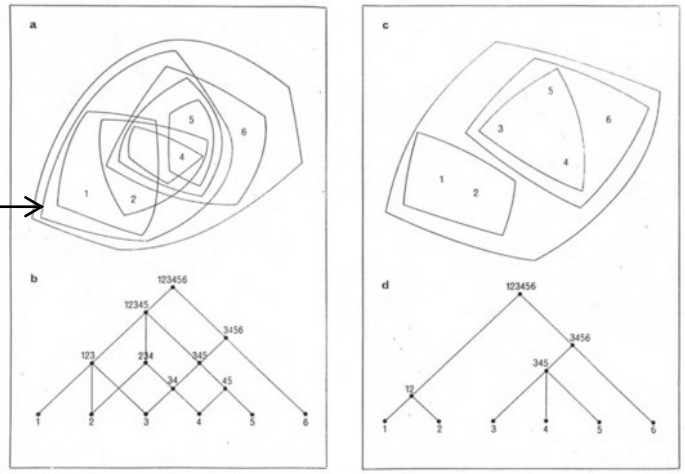
Institutions Map



Map showing institutions
(author, 2014)

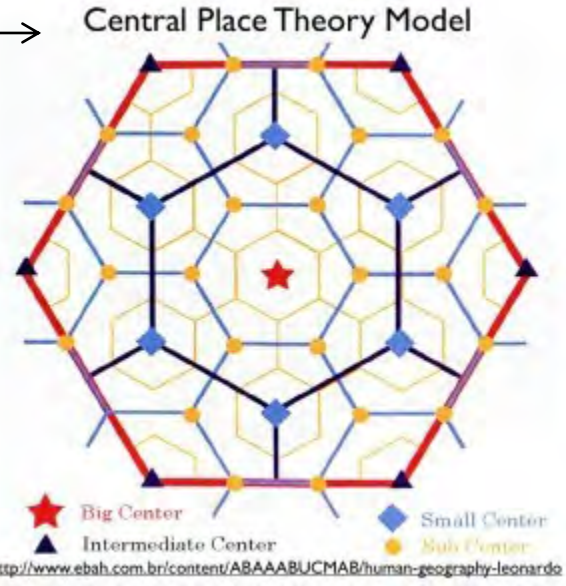
ity to developers through rate reductions in designated areas as well as additional bulk development rights. These areas in turn develop controlled patterns of expansion through transport and infrastructural guidance which combats urban sprawl.

Theories and principles by thinkers such as those of **Christopher Alexander** may be used to navigate the problem of urban sprawl through the implementation of transport Orientated Development. Alexander's theory that the city should not follow connective structure of a tree but rather that of a semi lattice is particularly relevant for the suggested upgrade of transport throughout the metro. The underutilised rail system will provide much needed public transport throughout the metro while connecting the city in a semi-latticed method. This will be achieved through the complementary connections between streets and railway lines and the nodes and points of activity that occur where these meet to form stations. The city will eventually consist of various nodes with different function and scales of hierarchy as this method of development is employed.



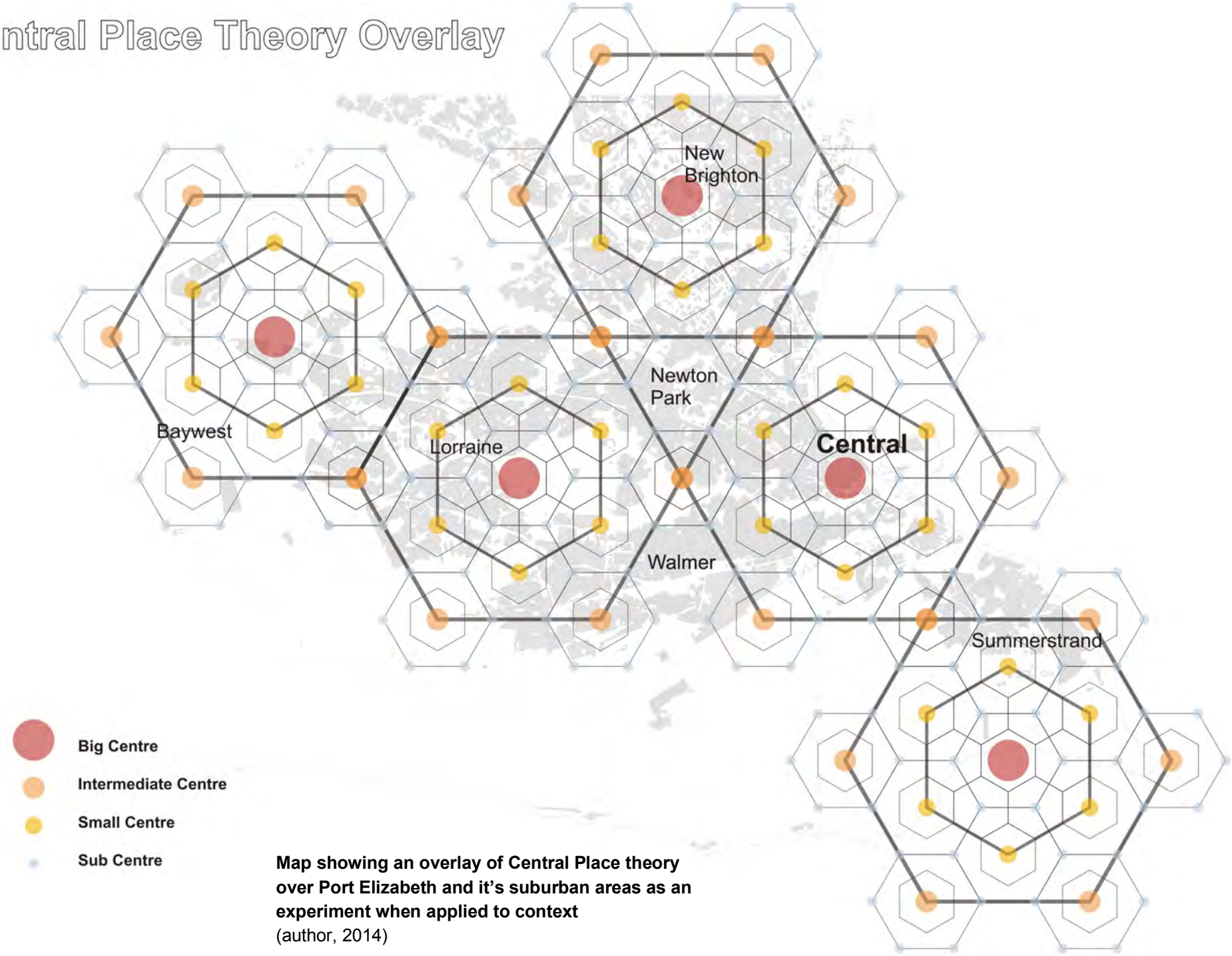
Cristopher Alexander's "the city is not a tree" diagram
(www.contentsmagazine.com, 2013)

This metro scaled plan also may also learn from the utopian **Central Place Theory of Walter Christaller**. This theory derives potential development patterns from population sizes, distances between developments, different economic markets as well as other influences. In must be realised that in these models all amounts are homogenous, all distances are optimised and populations are equally spread. The utilisation of this theory is simply to suggest that many factors and influences are to be considered in the planning of new developments within the metro area as there are external forces at play when planning developments and competition between these developments. For the local economies of these potential Transport Orientated Developments to work these factors are to be investigated in depth.



Walter Christaller's Central Place Theory diagram
(www.geocurrents.info, 2012)

The utilisation of the rail none the less will allow greater access for those who previously were not able to travel or commute within the metro. Through the redevelopment of the rail system a **polycentric city** may be developed that will combat sprawl and potentially decrease the use of the motor vehicle through the use of alternative methods of transport such as the train.



Map showing an overlay of Central Place theory over Port Elizabeth and it's suburban areas as an experiment when applied to context
(author, 2014)

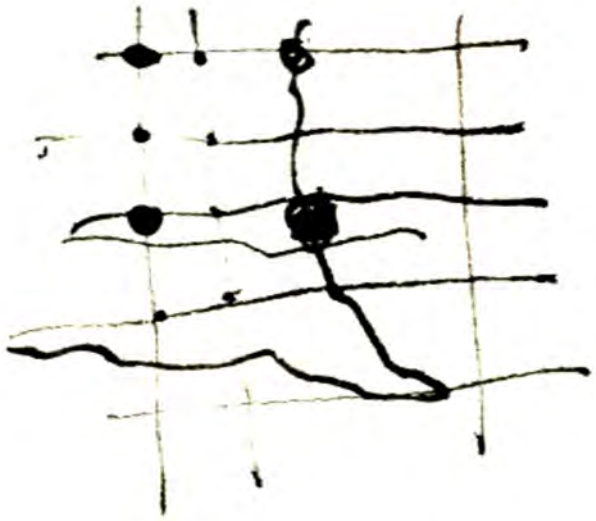
12.5 Plan for Port Elizabeth Central

The plan for the reimagining of the centre of Port Elizabeth will start with the catalytic effect that the demolition of the freeway will have on that area and the unlocking of land for future development as previously discussed. This will change the image of the CBD and make it possible for the reinvestment in the CBD.

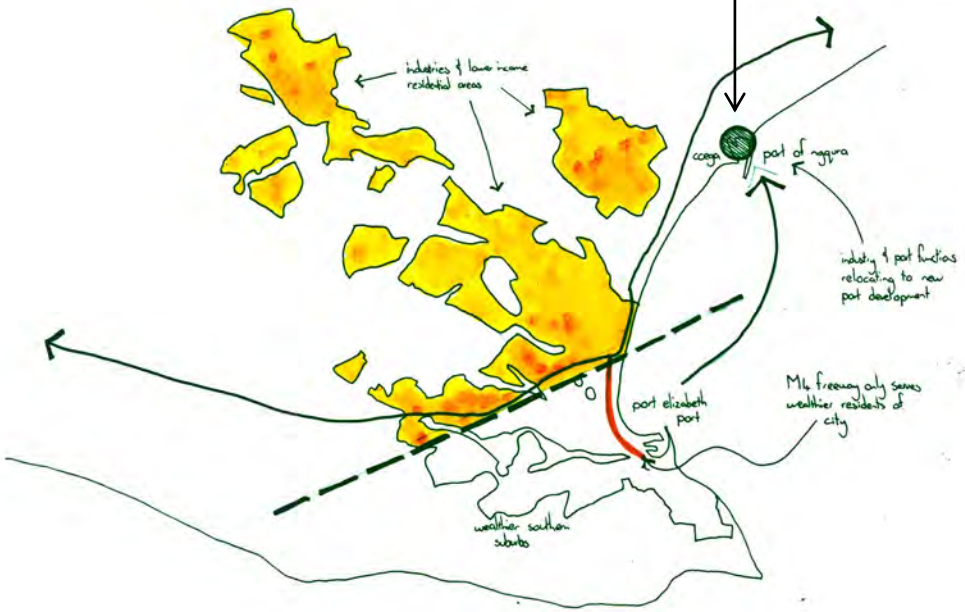
The way that this main proposal (the demolition of the Settlers Way freeway) of this project ties in with the former metro scaled plan can be argued through an economic and transportation means. The CBD will benefit from the freeway demolition as it will change the potential for growth and development as well as opportunity within the area. This means that developers will not have to look for alternative locations for future developments as there will be a demand to spend time in a pleasant urban area where demand already exists. the additional benefit of this suggestion is that with the potential relocation of port industries to the Port of Ngqura and the release of land in the port area other long awaited developments might occur. This refers to the development of the Waterfront precinct in the harbour. This might cause the total redefinition of Central and the port area. This is however only possible if the freeway is removed to act as a catalytic device for this developmental approach.

12.6 Conclusion

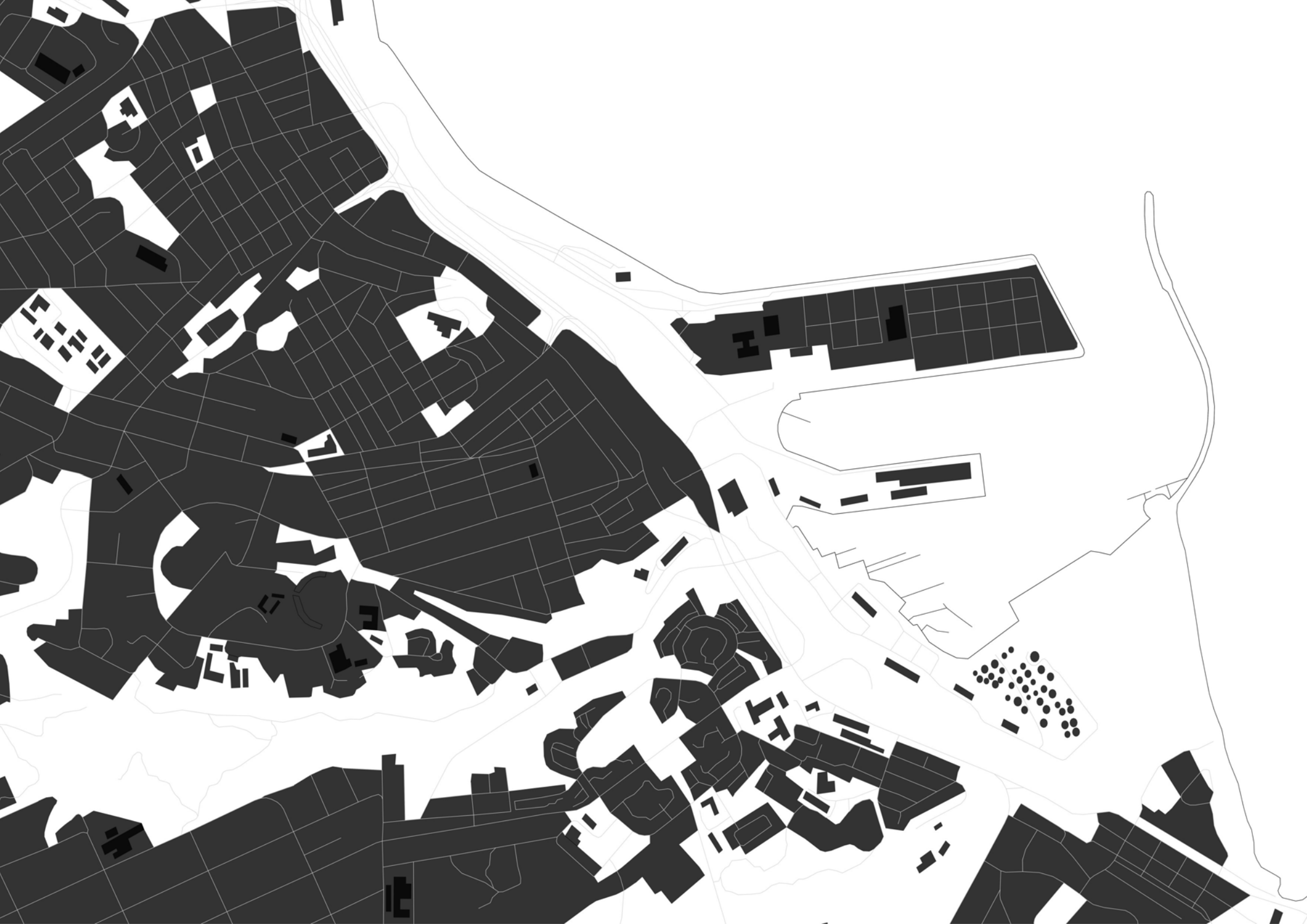
This means that the CBD of Port Elizabeth because of its location and proximity to the port will develop a character and spatial quality that will draw investment and make it possible for the city to compete with economic giants such as Baywest. This will create a balance within the spatial hierarchy of nodes in the metro. Added to this are the benefits that the redeveloped rail will cause. Indirect positives will include the ease of pressure off traffic flow within the metro and therefore potential congestion problems will be avoided. It must be realised that this may only be achieved through the combination of the catalytic and metro scale plan.



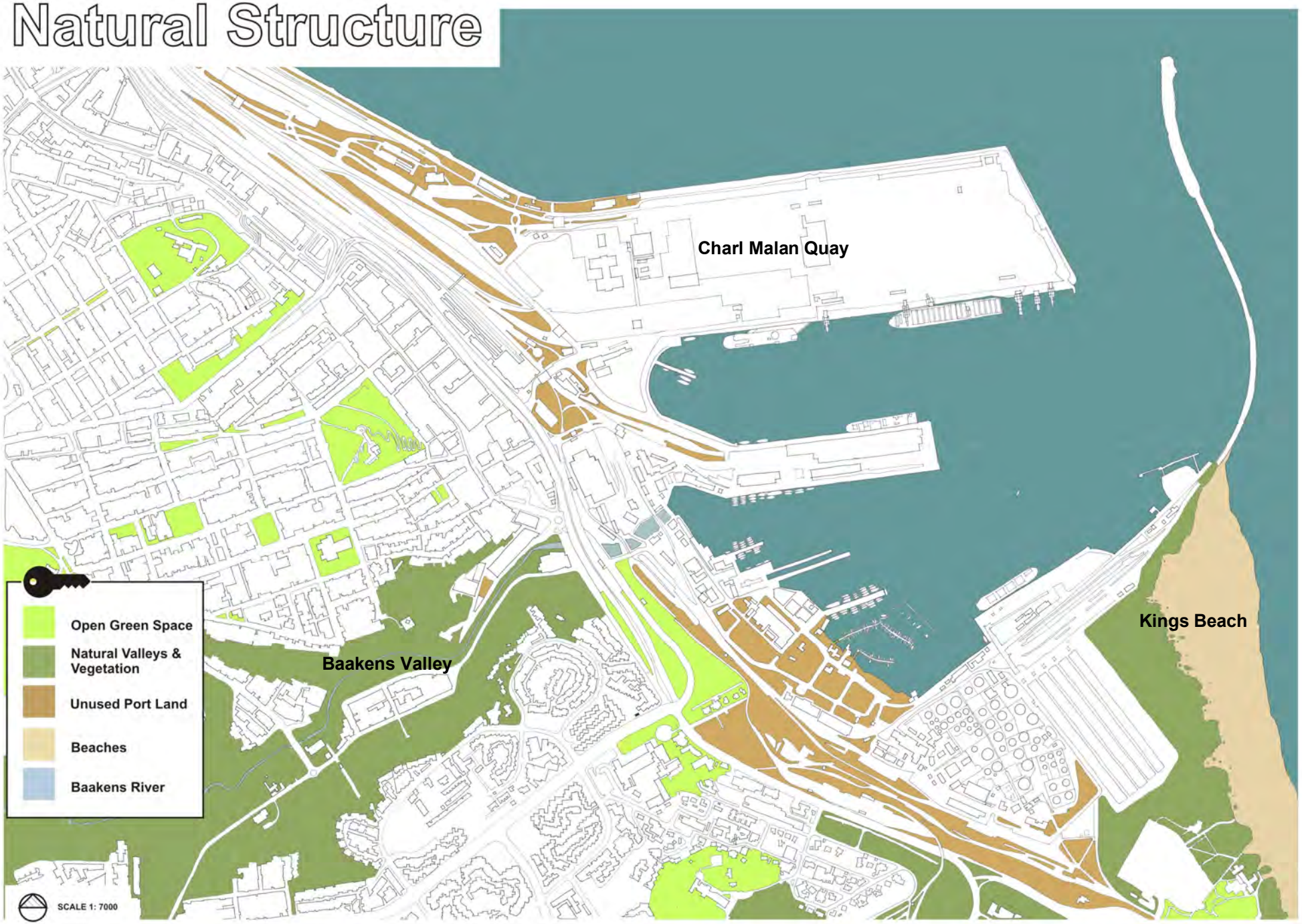
(top) Diagram showing Central Place Theory over Port Elizabeth
(author, 2014)



(bottom) Map showing location of most industry in the metro and the displacement of port functions to the Port of Ngqura
(author, 2014)



Natural Structure



13. Analysis of the Port Elizabeth CBD

13.1 Introduction

Before a design process or proposal of an alternative to the current state of the CBD of Port Elizabeth can be visualised, additional analysis through mapping of features and informants at the medium scale is needed. This will help to identify clues for the developmental process.

13.2 Natural Structure

The natural structure of Port Elizabeth's Central area can be seen to possess the following characteristics:

The city lies within a narrow stretch between the coast and a plateau which extends due south west from the city. To the south towards Humewood and Summerstrand are large flat sand lands that extend towards Cape Recief, the southernmost point of Algoa Bay.

The Baakens River Valley also plays a major role in the formation of the city and its development as it is the origin of the port. The Baakens River mouth spills out into the port, but is unfortunately greatly obstructed by an excessive amount of bridges leading from the south toward the city.

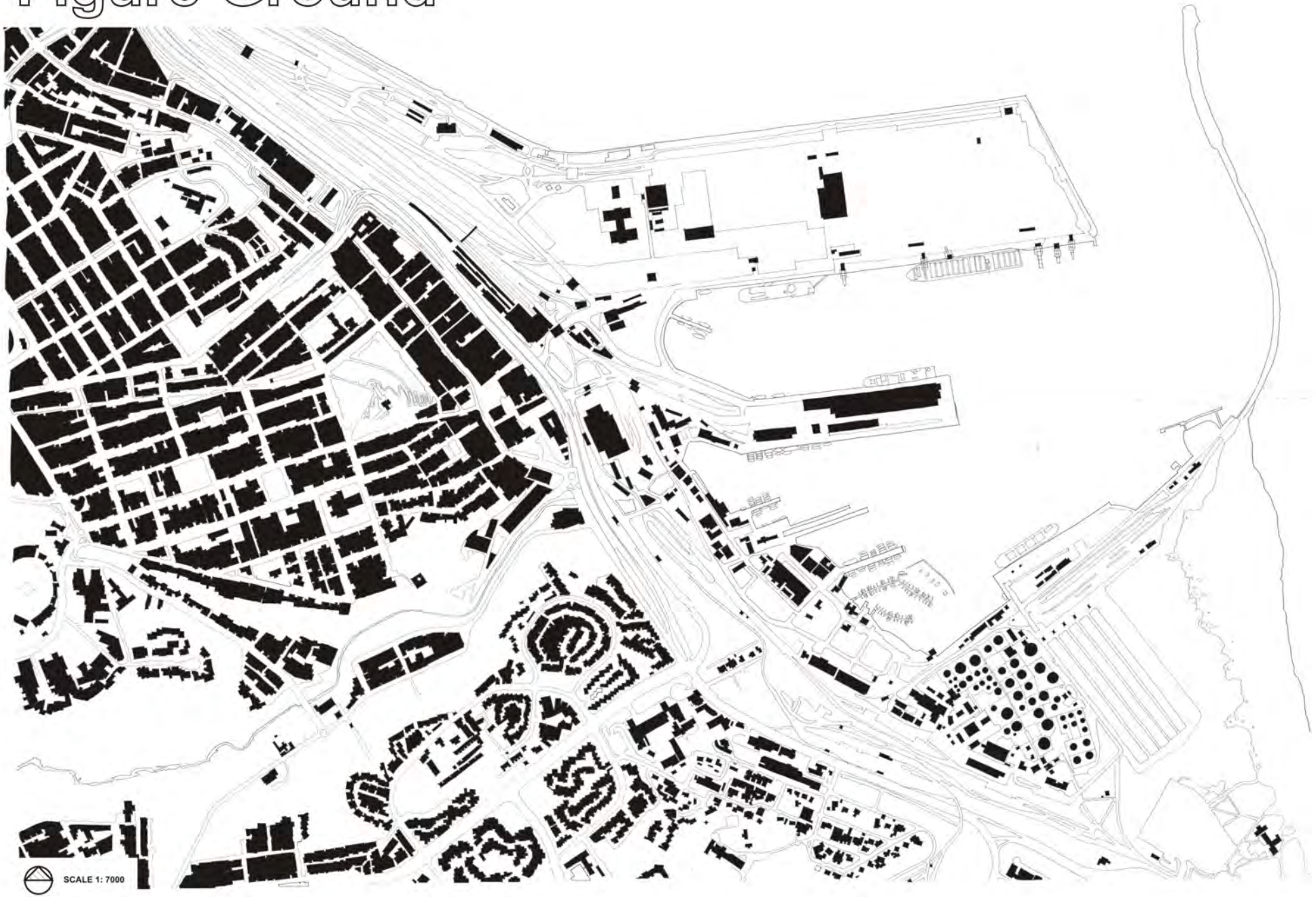
The construction of the harbour has stopped the build-up of sand north of the Charl Malan Quay. This area used to have a large beach area which has long since vanished. The current usable beaches all lie south of the port. Examples of these are Humewood Beach and Kings Beach.

It is clear to see that there is a lack of integration between green spaces and a legible system of natural space does not exist.

There are also vast amounts of underutilised land and lost space particularly within the harbour area and around the termination area of Settlers Way freeway. This space may be utilised in a far better manner.

Aerial views over the Baakens Valley & Tramway building.
(Port Elizabeth Libray, 2014)

Figure Ground



13.3 Figure Ground

The figure ground diagram of the Pot Elizabeth Central area reveals the extent of the lack of integration that currently plagues the city centre. This is due to a number of reasons. The natural topography, laws and regulations of the past such as the Group Areas Act, and land ownership that restricts integration between areas are some of these reasons. A small study comparing the different grains of fabric between these areas will follow:

13.3.1 Central

City block sizes are considerable measuring on average about 85 meters wide and 89 meters long. Between these blocks alleys may be found providing access to parallel streets. The grain can be describe as solid and built up. Buildings are densely packed in this area. The streets also follow a rigid grid pattern that makes navigation easy.

13.3.2 Richmond Hill

Blocks here are 115 by 75 meters in measurement. The grain of fabric is less dense and consists of residential units that are predominantly freestanding. The streets also follow a grid structure which is linked to that of Central.

13.3.3 South End

The grain of fabric of this area is scattered and of a very low density. The structure consists of enclave streets with cul-du-sac endings. The building type in this area is mostly residential and consists of security villages. This is in stark contrast to the old structure of South End that used to consist of a grid structure linking to the city with high residential densities. This was before the Apartheid rule demolished the area. This area also experiences a large waste of space as a result of the freeway ending in this location.

13.3.4 Walmer

This area used to be a separate town from Port Elizabeth but eventually grew to meet. The blocks are arranged in a grid structure and measure 350 by 155 meters. The grain is of a low density as most buildings are freestanding houses on large plots.

13.3.5 Humerail

This area is of a very low density and consists mainly of freestanding railway worker housing on large plots. A semi grid street structure exists in this area

It is apparent that the historical method of developmental layout in Port Elizabeth consists of Grid street patterns with medium to low densities. This is with exception to the South End area that was redeveloped during the 1960s and1970s. A similar linking approach to that of the street grid layout and densities should be considered when proposing new developments in tis area

Central

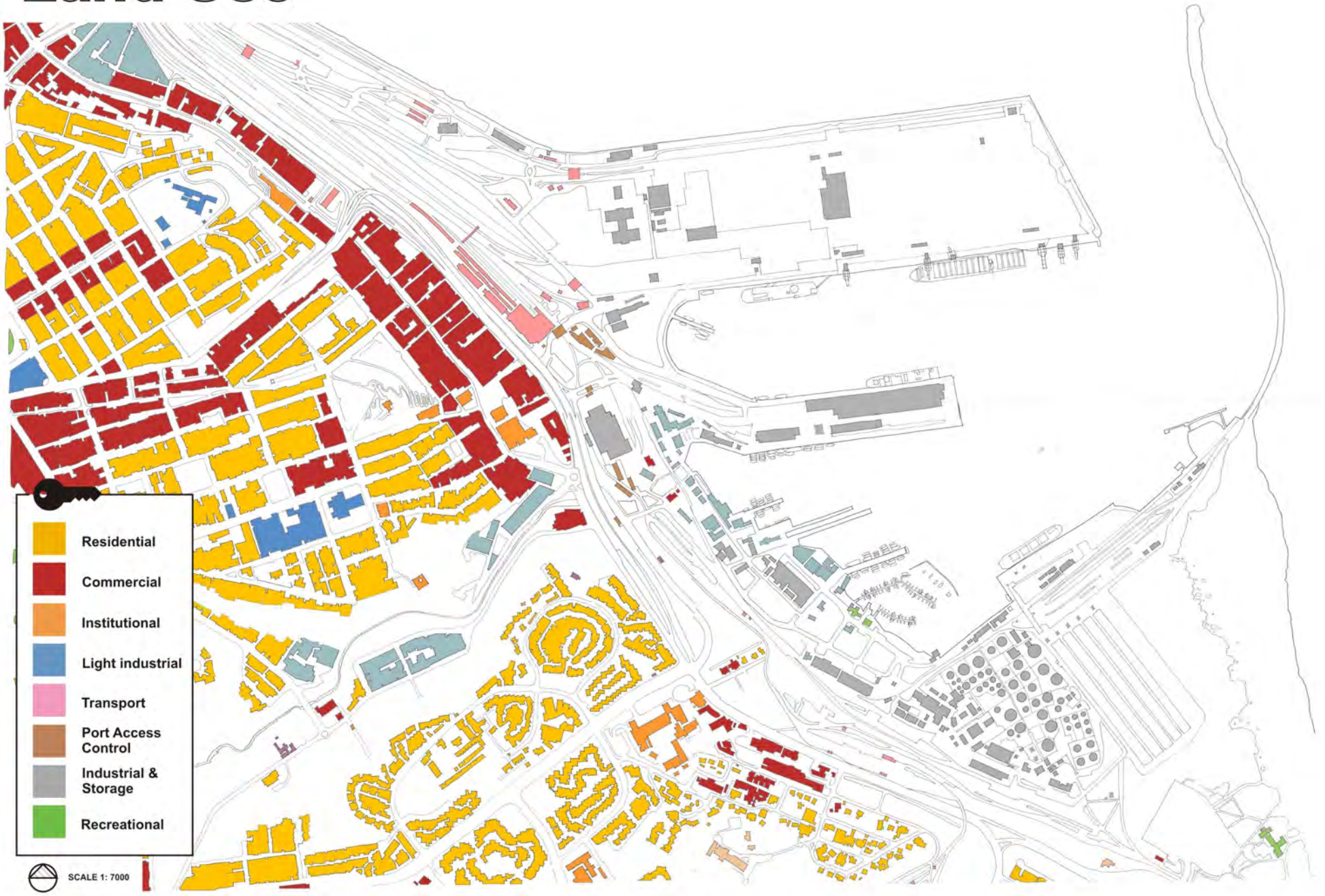
Richmond Hill

South End

Walmer

Humerail

Land Use


Residential
Commercial
Institutional
Light industrial
Transport
Port Access Control
Industrial & Storage
Recreational
SCALE 1: 7000

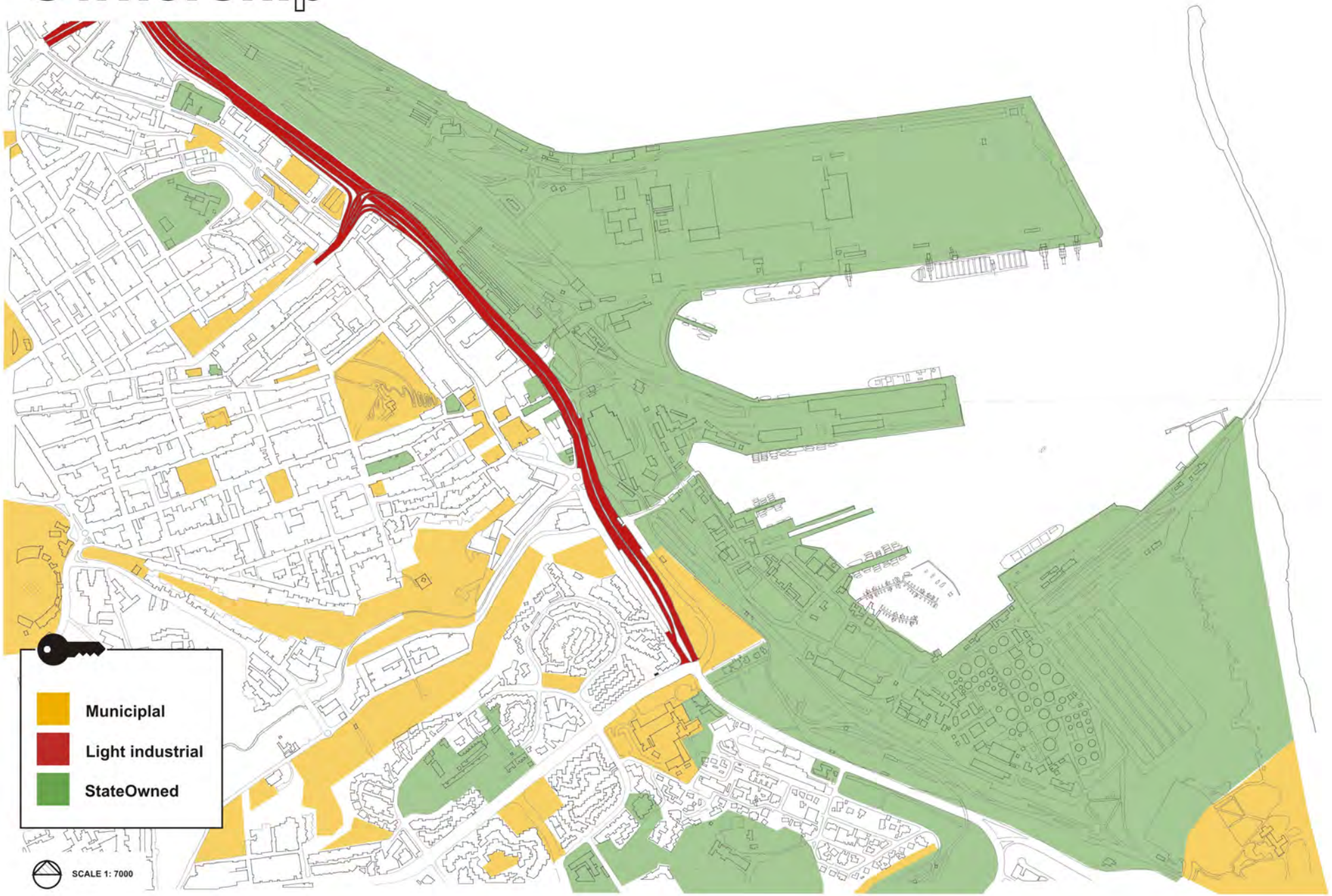
13.4 Land Use

The land use map indicates the specific uses of the different areas of the inner city. Patterns can be seen in the use of buildings adjacent to important routes to and from the CBD. Smaller nodal activity can also be picked up through the map as can be seen in the case of Humerail. Here a mix of activities can be noticed indicating a good area for activity to occur. Stanley Street in Richmond Hill is also noticeable for its commercial activity consisting of restaurants.

These patterns are partly due to location of the buildings and the functions that are appropriate in these areas. However, these activities may also be regulated by zoning regulations that dictate the function of individual buildings within an area. Zoning of the area will not be explored as it is of little relevance to this particular project. Light industry is also apparent in the Baakens Valley as this area was easily accessed via the port. Another noticeable trait is that most port activities consist of industrial, light industry, storage warehouses and transport functions. This area is currently largely seen as a functioning port. This will soon change as many current industries and functions of the port are to be moved to new locations in the Port of Ngqura. This will leave large areas of the port vacant and ready for alternative uses or developments. This project will partially suggest what could be done in this situation

(top) People use the underside of the freeway for different purposes including informal trader.
(author, 2014)
(bottom) Panorama from the Donkin Reserve showing the tops of large buildings used as retail and office space in the CBD
(author, 2014)

Ownership



13.5 Ownership

This map illustrates the extent of State Owned land in the port area. This land is owned by the parastatal Transnet and managed by the National Ports Authority as previously mentioned. The port area is currently undeveloped and inaccessible for this reason. It is clear to see that the Settlers Way freeway creates a barrier between the city and the port. The land that the freeway is builds on is owned by the municipality. The freeway is marked as a metropolitan route and therefore falls under the responsibility of the metropolitan authorities. It is clear that a catalytic effect will be experienced in the inner city if the demolition of the freeways is to occur. Vast amounts of developable land will be available for development through potential negotiations with Transnet and the National Ports Authority. However, this can only happen if the barrier that the freeway poses can be removed to reconnect the city with the port.

The yellow marks the Municipal owned land consisting of public open space and parks. These spaces are generally the maintained and managed by the municipality but seldom sold or developed for other purposes as it is public domain.

(top) View from the Campanile showing the vast amount of land owned by Transnet and the State. This is largely underutilised prime property.
(author, 2014)
(bottom) Panorama showing the relationship between privately owned land ,the city, and Transnet owned land, the port.
(author, 2014)

Constraints & Informants

13.6 Nodes & Corridors

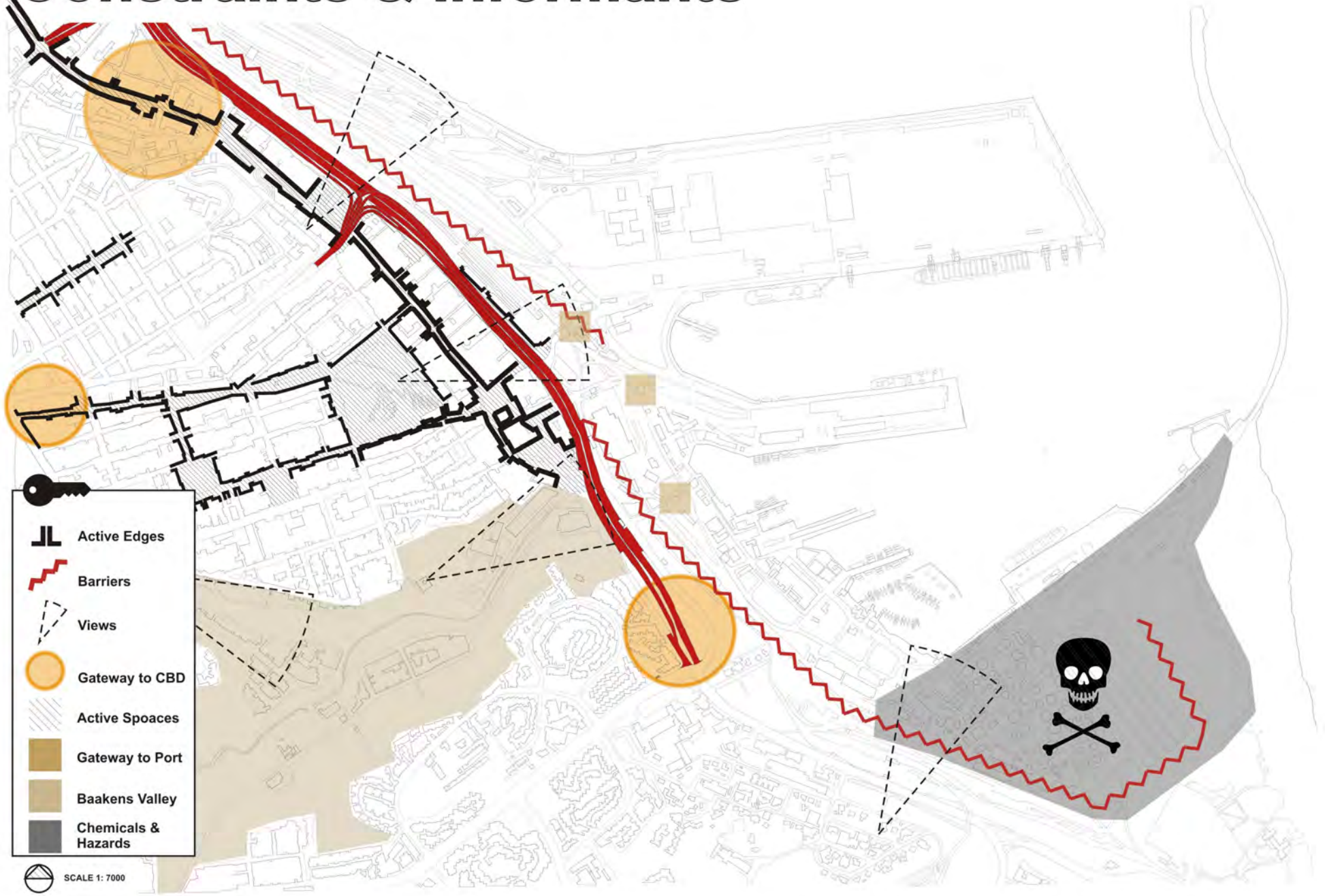
This map illustrates the existing pattern of nodes that exist within the Central area of Port Elizabeth. It is clear to see that they all vary in size and importance and all possess different factions. This leads to a system of areas that work in a symbiotic manner. These nodes support one another through good grid street connections. Connections to other parts of the city are reinforced through corridors that consist mainly of shop fronts that provide activity. This is the antithesis of a mall structure.

These corridors or activity routes may, if treated appropriately, also serve to create transect patterns between them and feeder routes. An example of this exists between Govan Mbeki Street and Strand Street where the alley ways may be able to provide space for smaller specialty shops and services. The interconnectivity between these areas however gets broken up by the freeway and off-ramps that disconnects parts of the inner city.

The connection between the city and the port will develop in a progressive way if the freeway was to be replaced by a boulevard structure that might support activity in a more appropriate manner than the current freeway does.

(top) Image showing the activity on the main street, Govan Mbeki Street and the axial alignment with the town hall.
(author,2014)
(bottom) Panorama of Market Square, the city centres main public space
(author, 2014)

Constraints & Informants



13.7 Constraints & Informants

This map includes a combination of factors that exist within the current city fabric that may serve to restrict or inform development patterns.

The active edges that exist within the inner city form a system of routes toward the harbour. This project will aim to support these routes through strengthening these connections with the port and ultimately ending up within the port area.

The active public spaces that result from these edges are mostly public land that serve as parks and hard surfaces such as squares and streets. The most important of these is Market Square and the Donkin Reserve.

There are three main gateway entrances to the inner city. Two of these include access to the freeway. Access is restricted by natural elements such as the valley but also by the freeway which restricts access to and from the harbour.

The port authorities also set up barriers through legislation that prevents the public to access the harbour area. This acts as a large barrier that is reinforced by the vast amount of underutilised rail within the port area and the freeway structure.

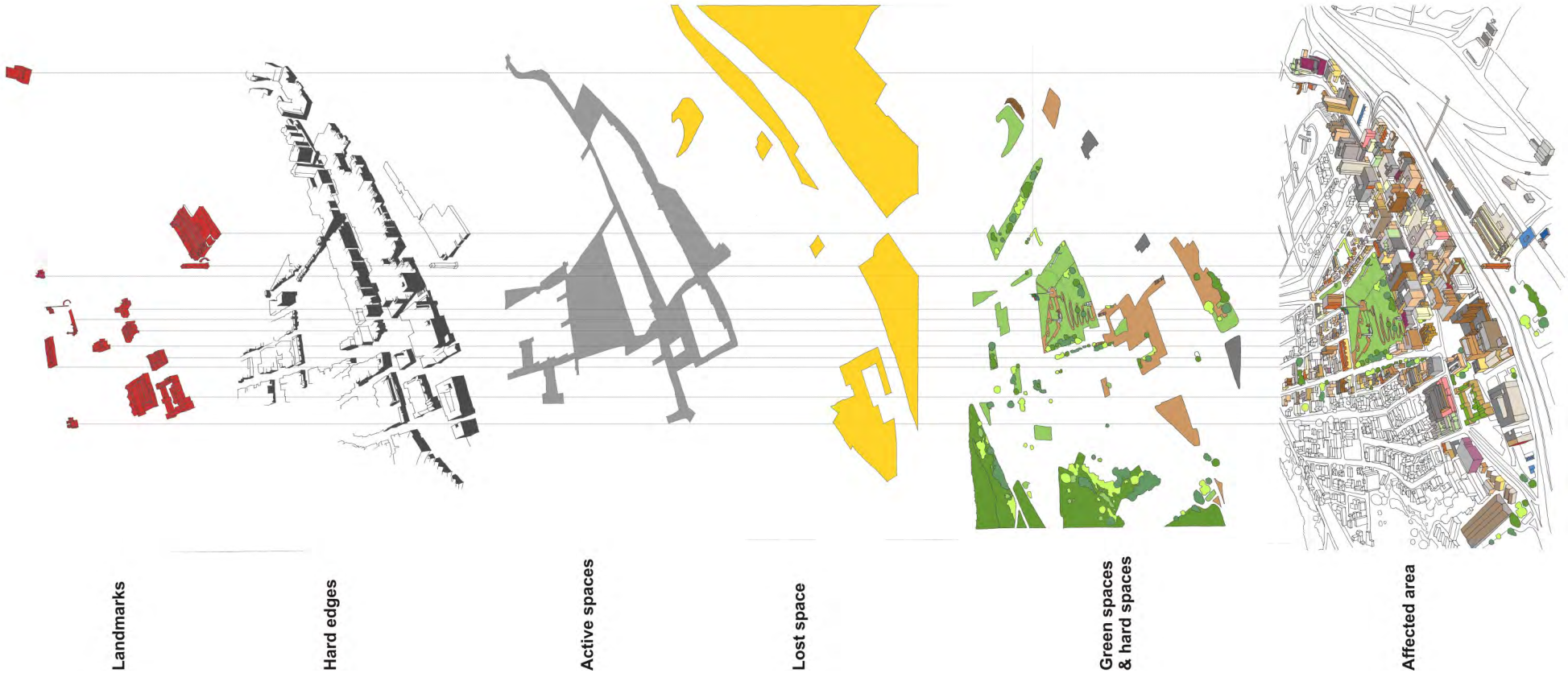
Additional points of entry have been added for security measure when entering into the port area currently there are no other access roads leading into the port. This may be an issue of access and connectivity if further development of the port is to be suggested.

The area where the fuel and manganese terminals are located presently also presents a hazardous environment for both the public and nature as multiple spillages and polluting effects have occurred in this area since its construction. This area will have to be rehabilitated after the industries have moved to the Port of Ngqura and before new project may be developed.

The valley itself presents a welcome challenge in terms of integration with the rest of Port Elizabeth. The valley was successfully integrated into the grid structure of the city before South End was demolished in the 1960s. This may be strived toward in the future with additional pressure being placed on well located land for densification purposes. The current low

Hazardous conditions are created by the fuel terminal in the port area
(www.gettyimages.com, 2014)

Manganese dust is blown off the large manganese terminal towards the city by sea breezes and cause health risks
(www.mype.co.za, 2011)



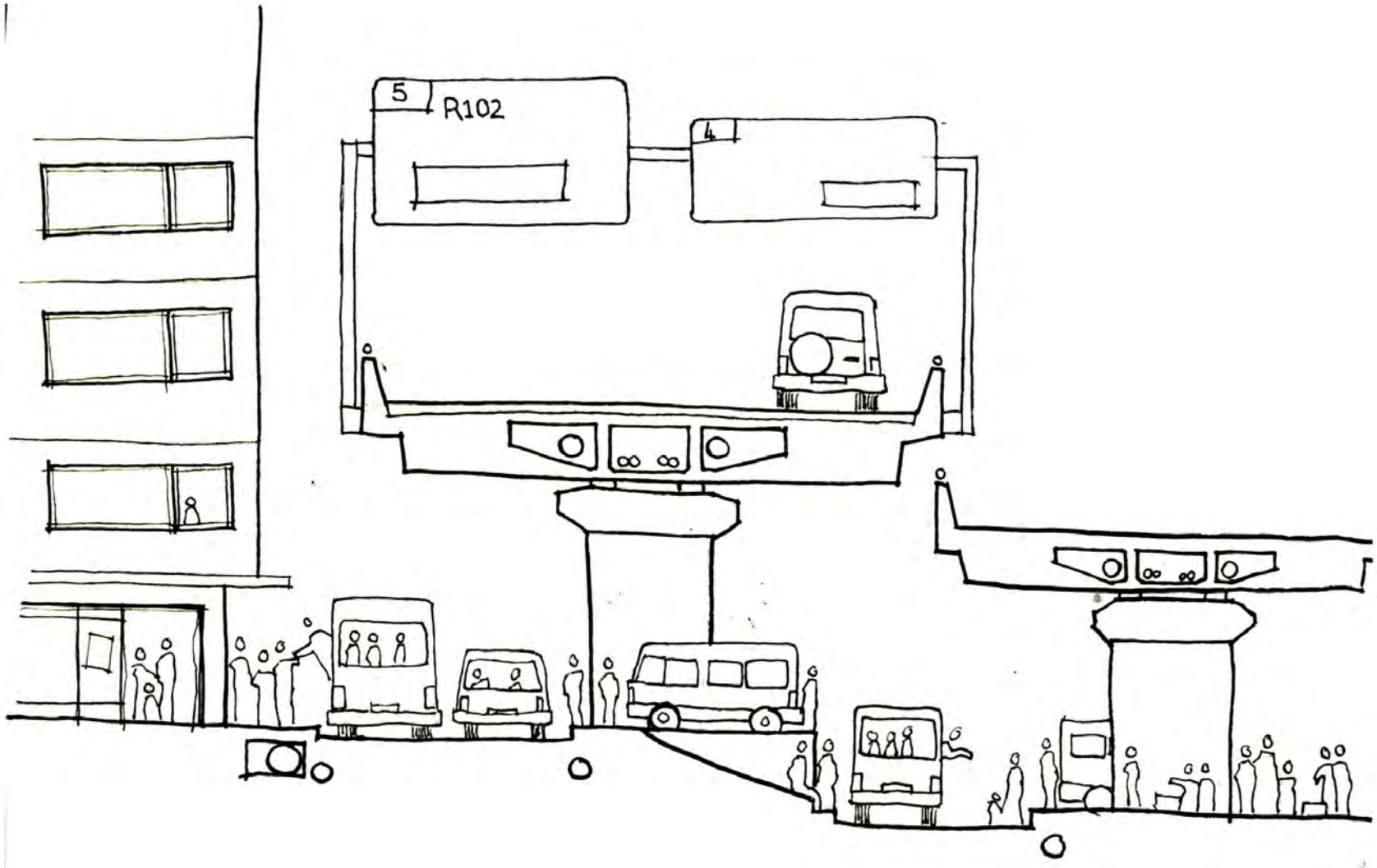
Drawing showing the different types of layering that make up the city. These include foreground buildings, active edges, active spaces, lost space and hard and soft public spaces. These all make up the fabric of the city
(author, 2014)

13.8 Conclusion

These maps and analysis aided in the informative research that needed to be done to understand the local context before a set of proposals may be made. The information gathered has been invaluable in the development of a cohesive plan for the furtherance of the inner city and for the formulation of an incremental development plan for future development of the port.

The next section will aim to explore the possibilities of an extension to the current fabric of the city with the assumption that the freeway was removed. The incremental development of this process of freeway removal will follow later in the project.

Different layers of proposals will be presented to give an indication of how the future development will integrate with the existing city fabric. The next section deals with potential design ideas by looking at sections through various similar case studies.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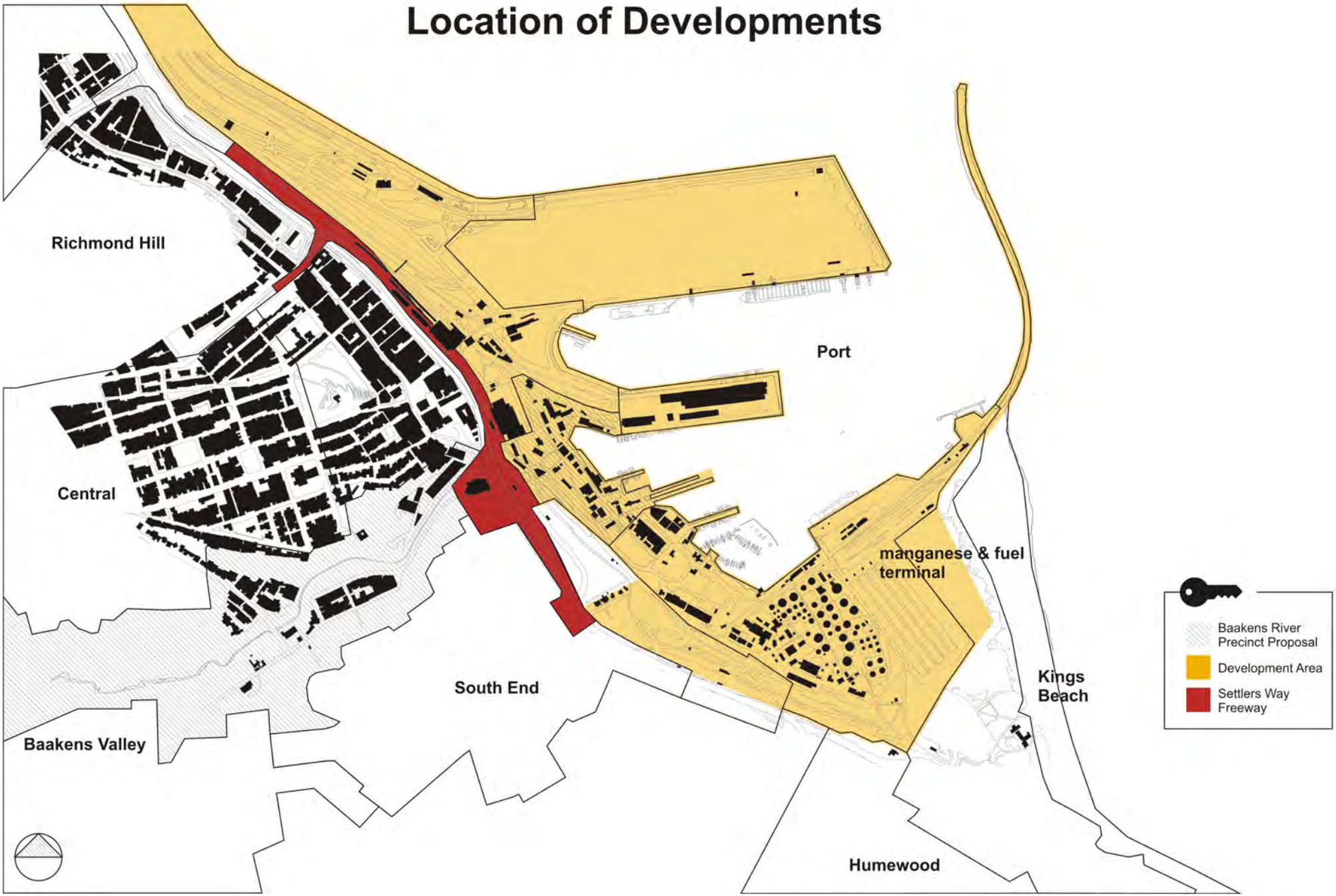


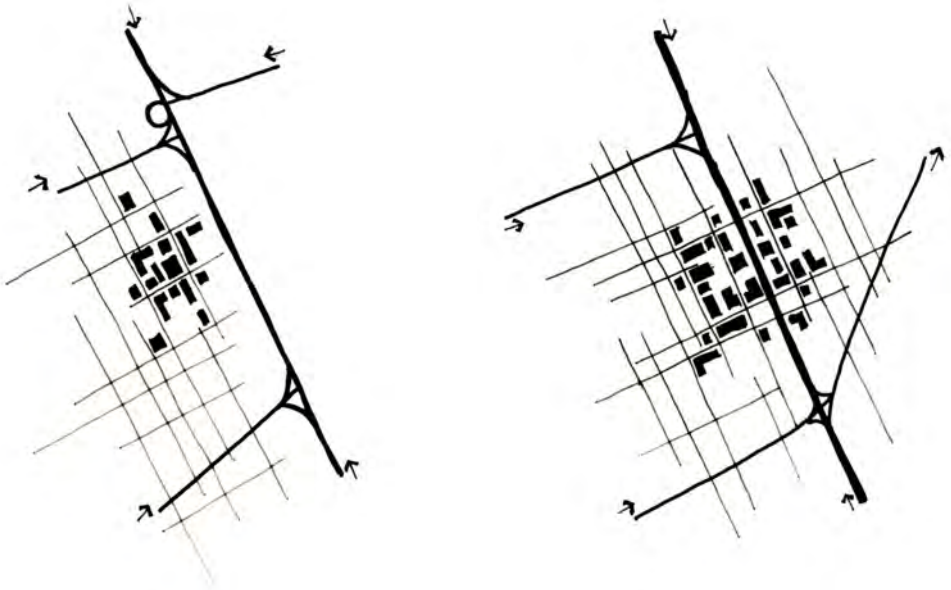
Map showing location of developments
(author, 2014)

14. Case Studies

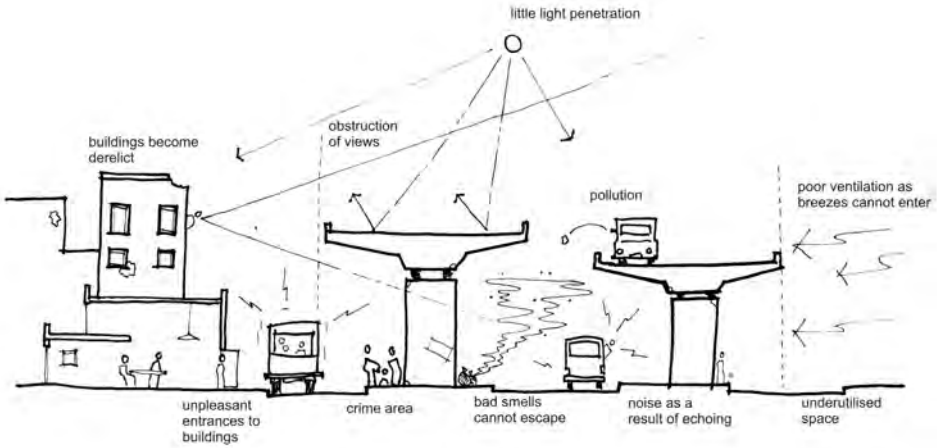
14.1 Introduction

Settlers Way freeway in Port Elizabeth has effectively cut off the city from the port and other areas. It has also caused various other problems relating to property value decrease and public space degradation. In this section different sections through international precedents will be investigated to determine an alternative future for the inner city of Port Elizabeth.

Alternatives to the freeway and traffic dispersal and flow will be investigated through a series of international precedents on a timeline. The timeline includes multiple examples of freeway demolition projects from various s countries. Those that are particularly relevant to Port Elizabeth's situation will then be investigated through section comparisons of before and after freeway removal scenarios.



Drawing showing better connectivity through a choice of routes rather than a single artery
(author, 2014)



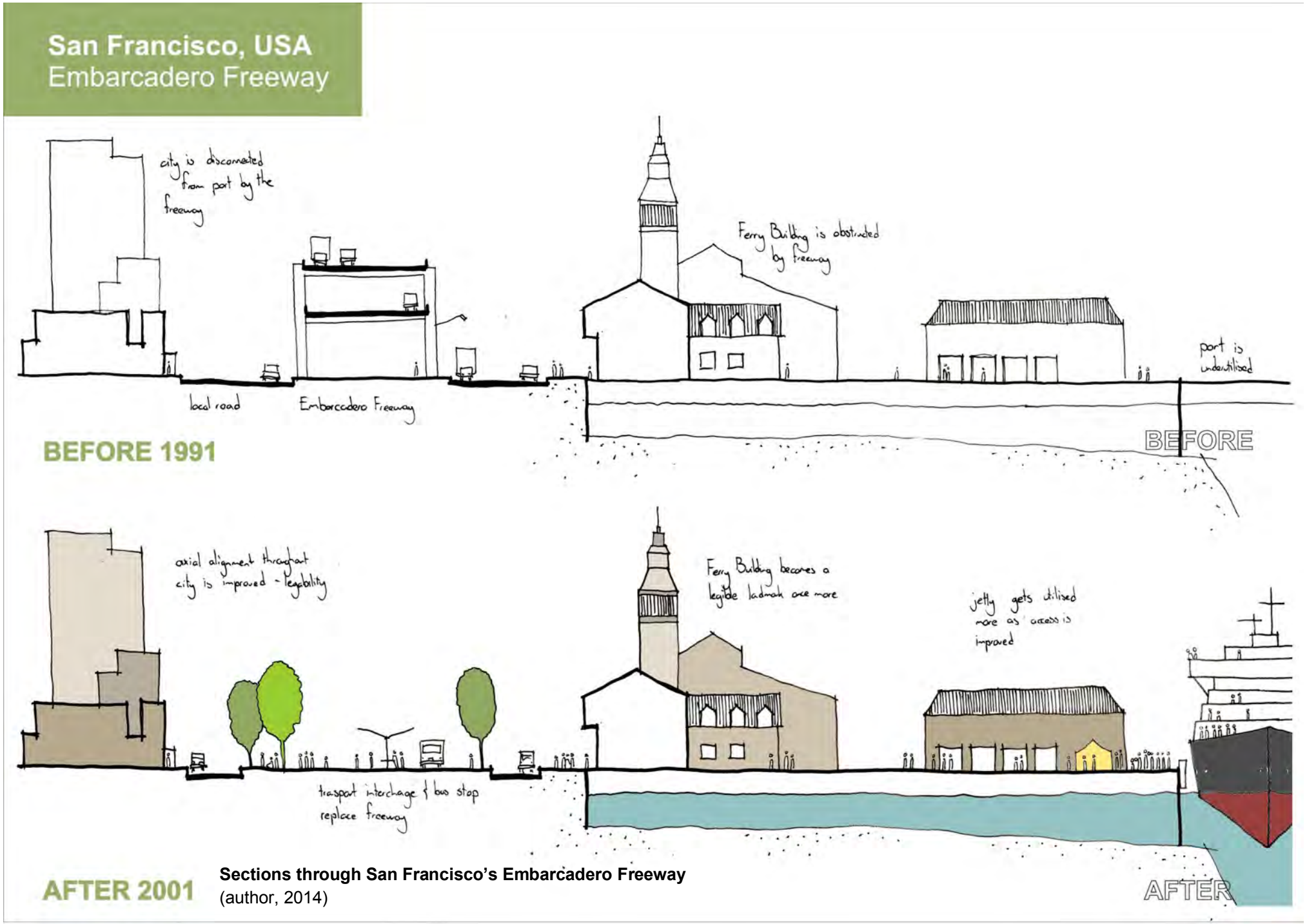
Drawing showing spatial problems occurring as a result of freeways
(author, 2014)

14.2 Case Studies Timeline

A timeline has been made of various freeway demolition developments that are comparable to the one that is suggested. These demolitions have happened all over the world for various reasons. Some redevelopments were as a result of freeway damage caused by earthquakes such as the San Francisco example. Others were to rehabilitate natural areas and rivers that have been destroyed by freeways and infrastructure.

Some of these freeway demolitions occurred in the 1970s when freeways were only just getting popular as a method of movement infrastructure. During the 2000s the idea of freeway demolition became more accepted in other parts of the world and eventually grew to a viable option in many cases. In South Africa the same freeway problems exist in places such as Cape Town and Port Elizabeth. Yet the idea of freeway demolition has not yet caught on in South Africa.

The next part of the document will look as some of these case studies in more depth.



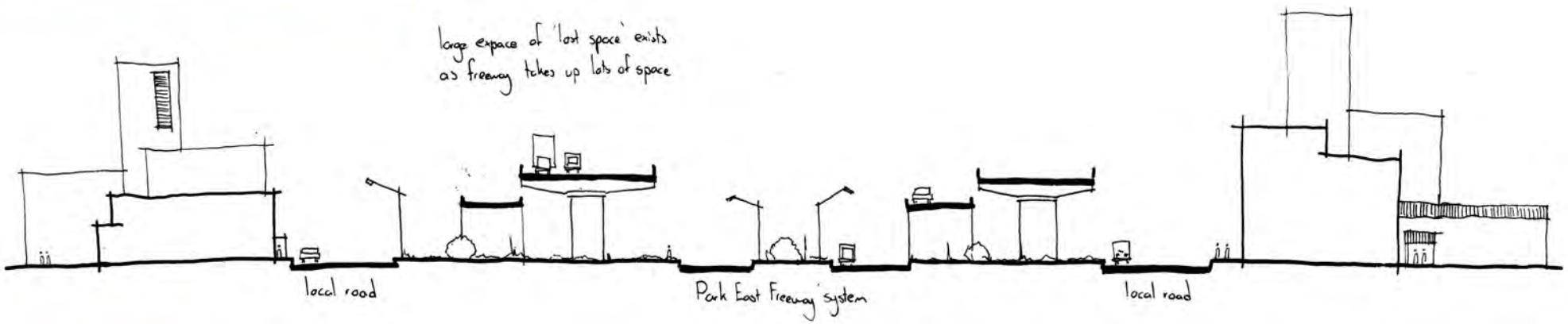
Sections through San Francisco's Embarcadero Freeway
(author, 2014)

14.3 San Francisco

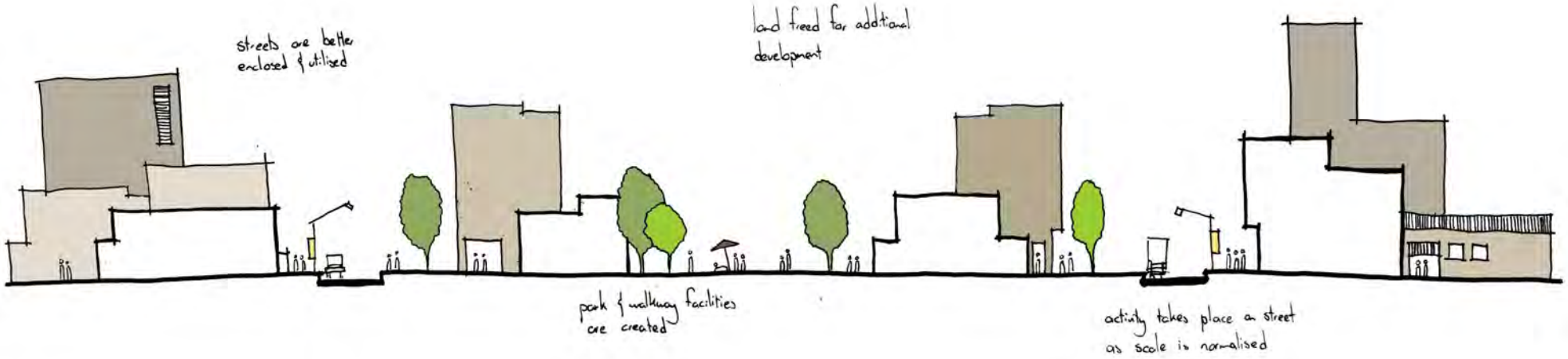
The case of the Embarcadero freeway is similar to that of Port Elizabeth in that also used to obstruct a significant building, the Ferry Building. In Port Elizabeth the freeway obstructs the Campanile. The removal of the Embarcadero and replacement with a boulevard has significantly improved the legibility and spatial quality of this water front area In San Francisco.

Before and after images of Embarcadero Freeway
(www.seattletransitblog.com, 2014)

Milwaukee, USA
Park East Freeway



BEFORE 1996

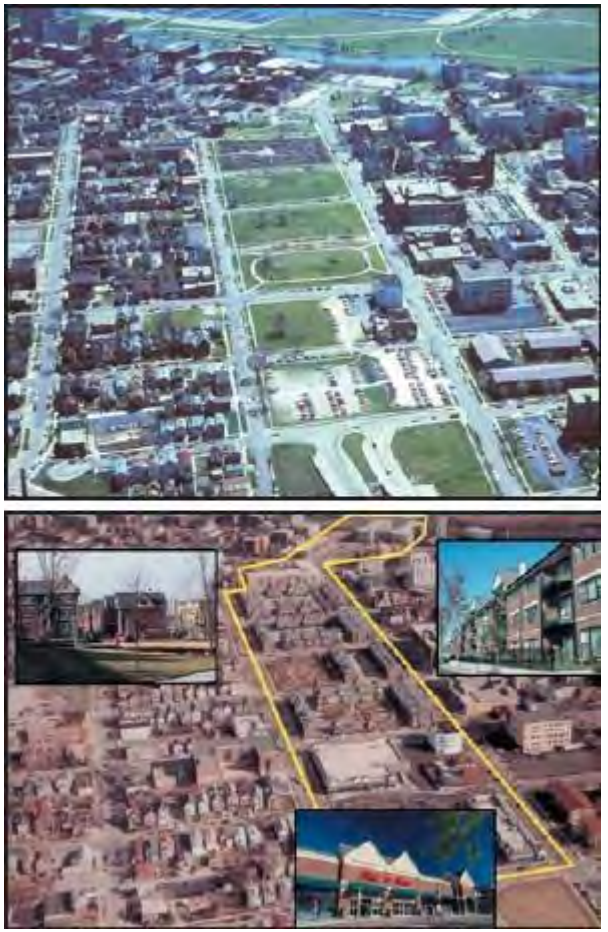


AFTER 2003

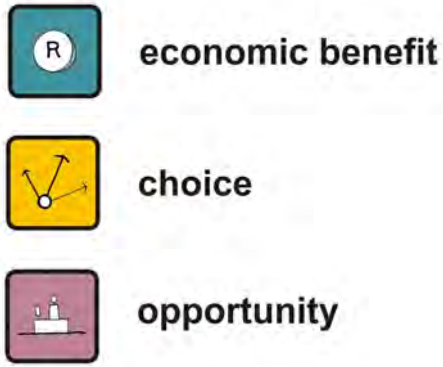
Sections through Milwaukee's Park East Freeway
(author, 2014)

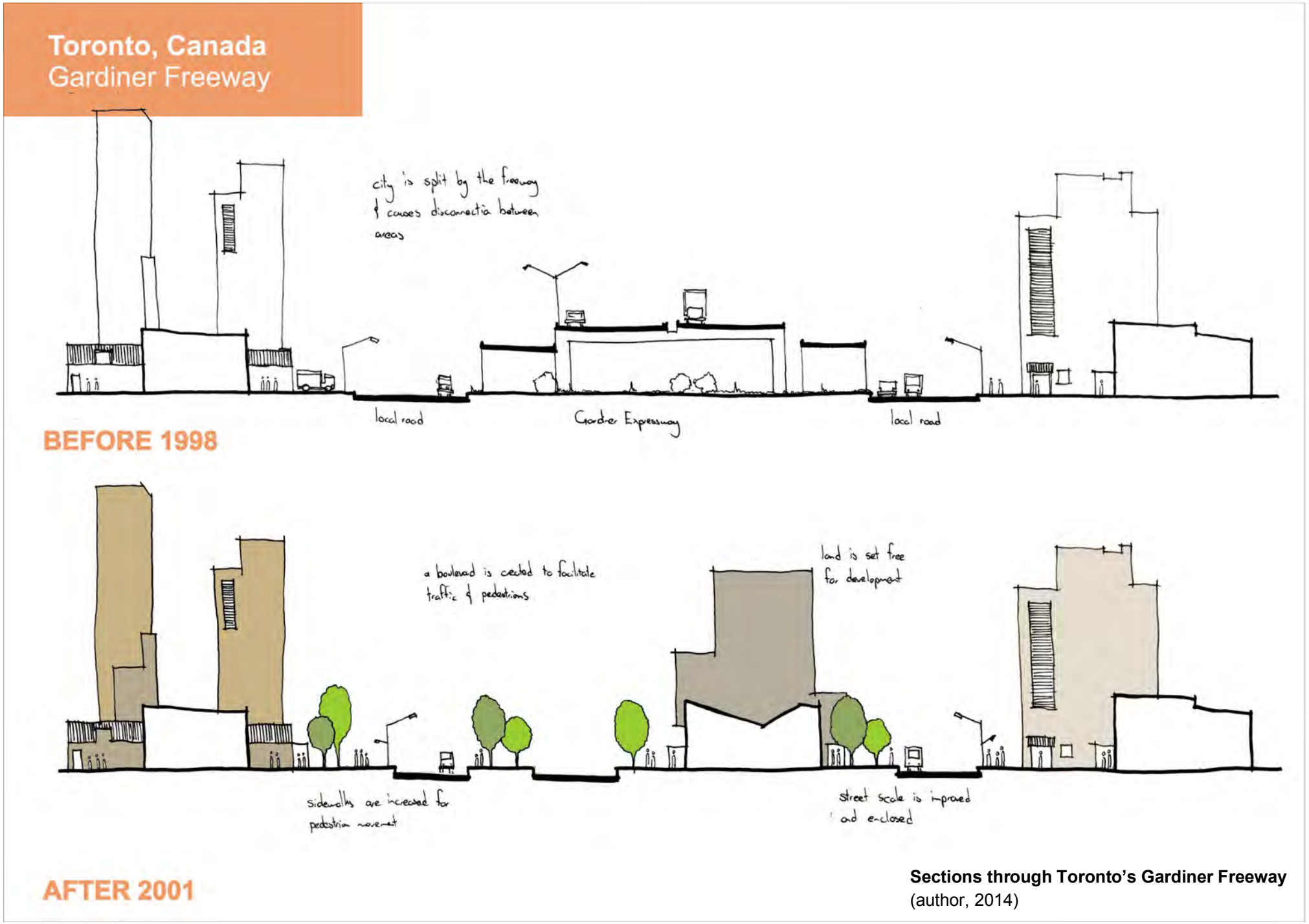
14.4 Milwaukee

The freeway demolition In Milwaukee indicates how this type of project might unlock land within the city for greater economic benefit. This land is generally situated in prime locations within the city and is able to be developed to form part of the city grain. In Port Elizabeth this is also possible with the added benefit of setting a precedent for the partial development of the port area.



Before and after mages of the Milwaukee freeway demolition project
(www.preservenet.com, 2007)





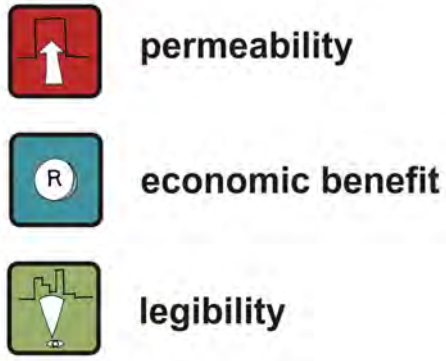
Sections through Toronto's Gardiner Freeway
(author, 2014)

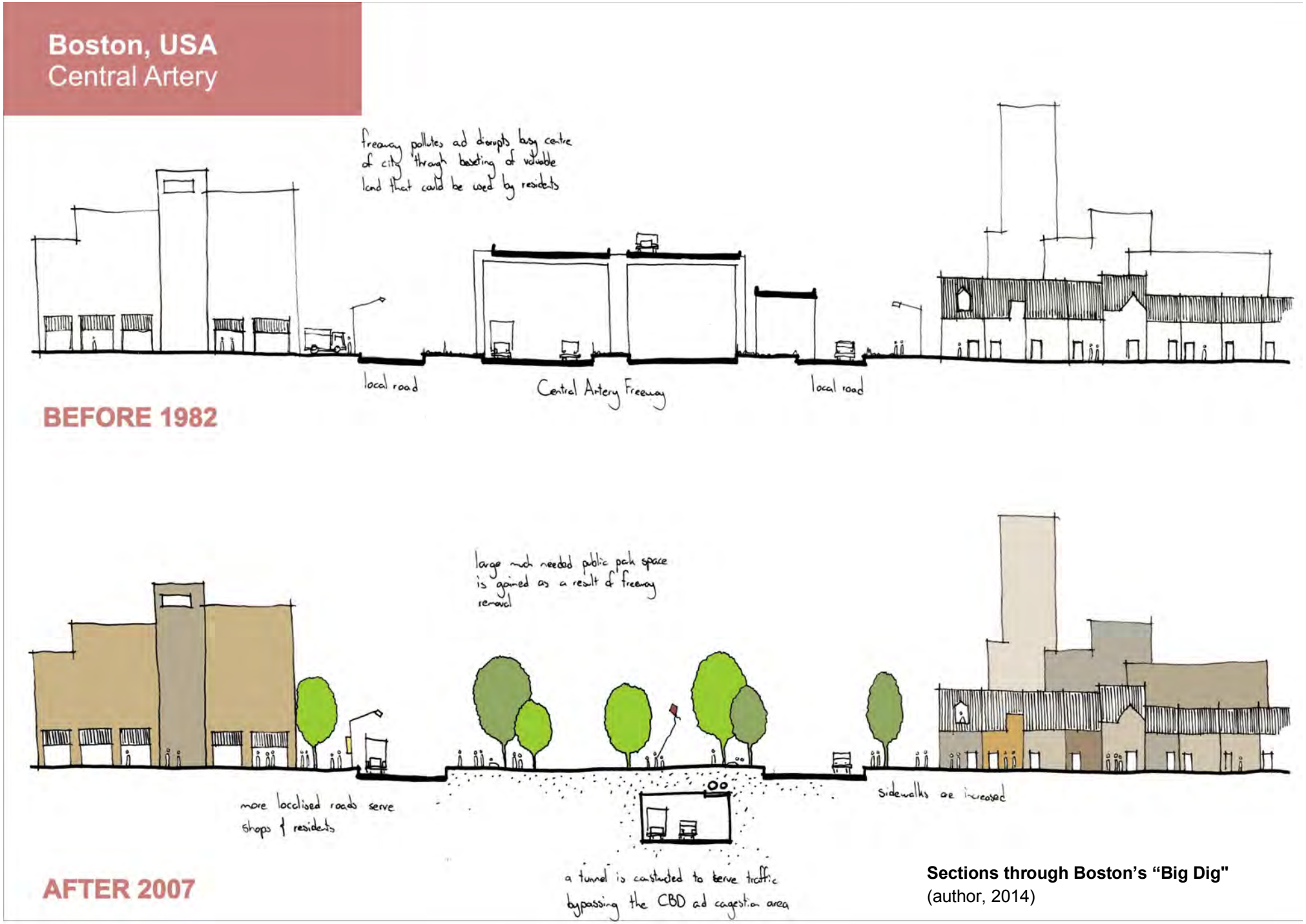
14.5 Toronto

The Gardiner Freeway in Toronto is an example of freeway removal that happened as a result of mounting maintenance costs on an old freeway structure. It was demolished to provide public space and redevelopment of significant areas of the city. Legibility and permeability returned and had not negatively affected the city structure.

Image showing old Gardiner Freeway
(www.theglobeandmail.com, 2014)

Image showing the demolition monument in Toronto
(www.flickr.com by George Socka, 2009)



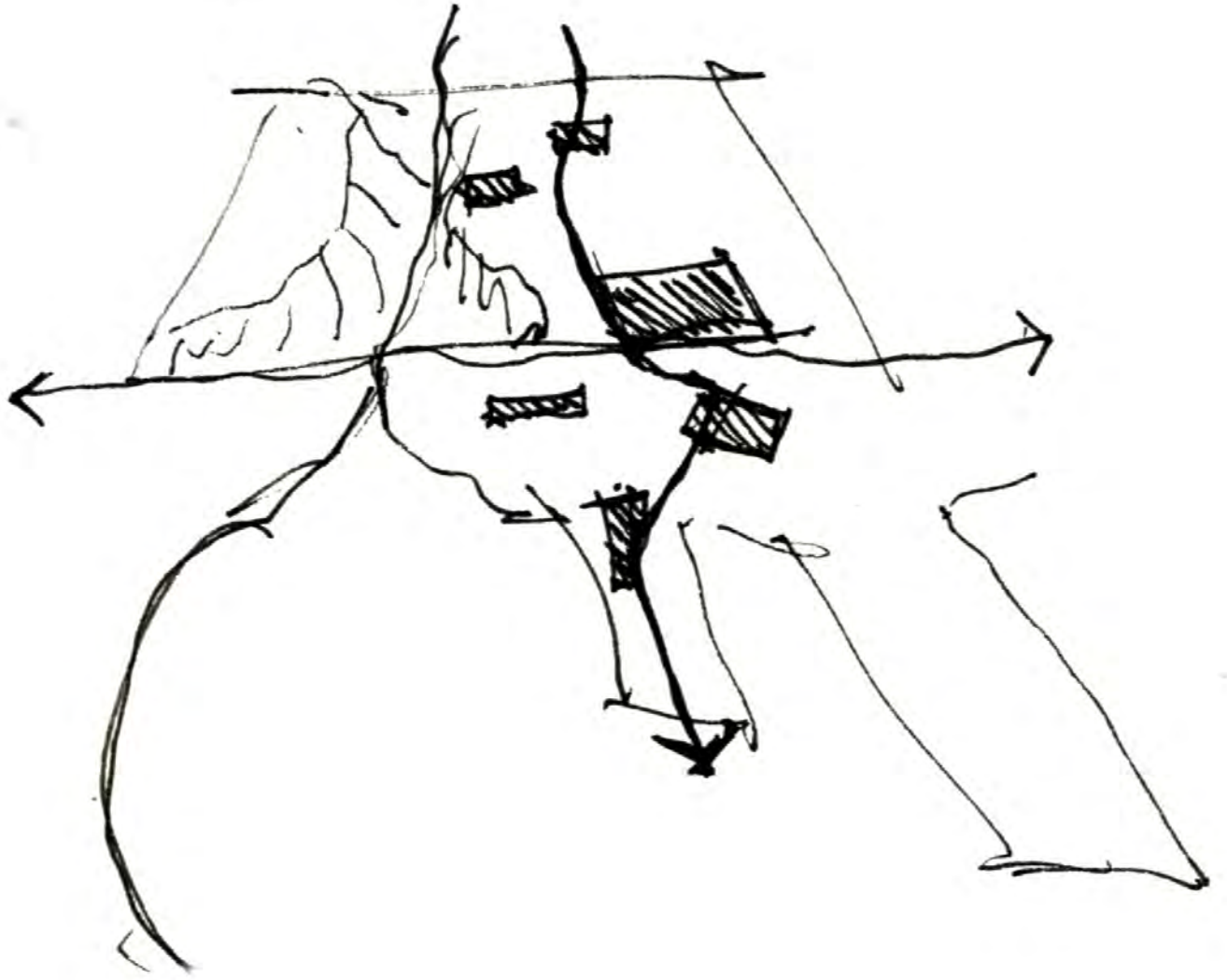


Sections through Boston's "Big Dig"
(author, 2014)

14.6 Boston

The Boston Central Artery project or the “Big Dig” was a massive infrastructural removal and replacement project. It involved the removal of sections of freeway flyovers within Boston and the relocation of this through traffic movement to tunnels underneath the city. This project aids to inform Port Elizabeth’s situation in terms of permeability choices. The same route may still be used by traffic but may take a different form other than a freeway.

Boston’s “Big Dig" before and after images
(www.city-data.com, 2014)



Diagrams showing intersection of journey and coastal route as main idea for the development of the released port land
(author, 2014)

15. Ideas and Concepts

15.1 Introduction

Initial ideas for the development of the port area after the removal of the Settlers Way freeway were predominantly done through the investigation of **case studies of spatial ideals**. The expiration of how the release of land in the port area should be treated when considering development involved a number of factors. These included the importance that space plays in the everyday for those who use it.

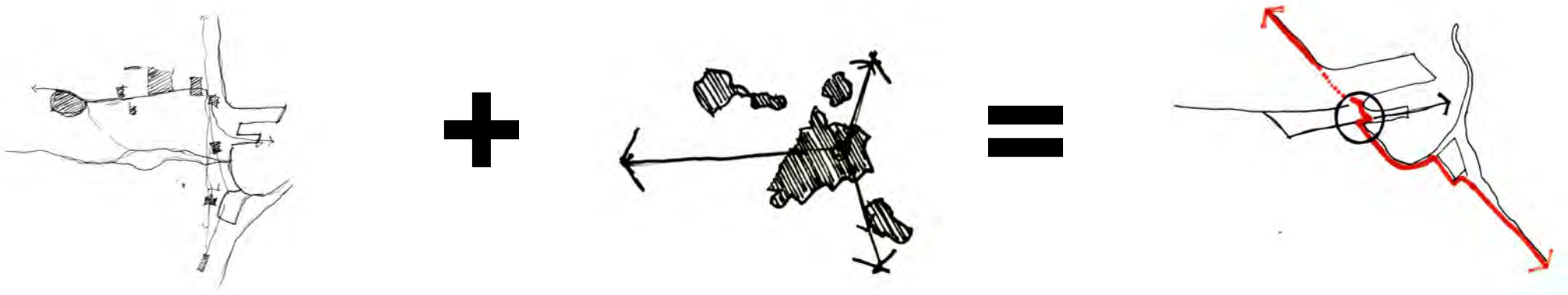
In order for Port Elizabeth to grow into a place that might be enjoyed by all it must be realised that **a competitive approach with other South African cities is not sustainable**. Port Elizabeth should not strive to be a "world class city" or even an iconic city within South Africa. Rather it should strive to become a **liveable city** for its residents. The idea of the "ordinary city" is appropriate. To provide for the citizens of the city should be first priority when considering new development. Spatially this deals with the provision of spaces in which people might live, work and play while being proud of the area in which they live and perform these activities. This project also deals with the provision of opportunity and choice through spatial means to these residents.

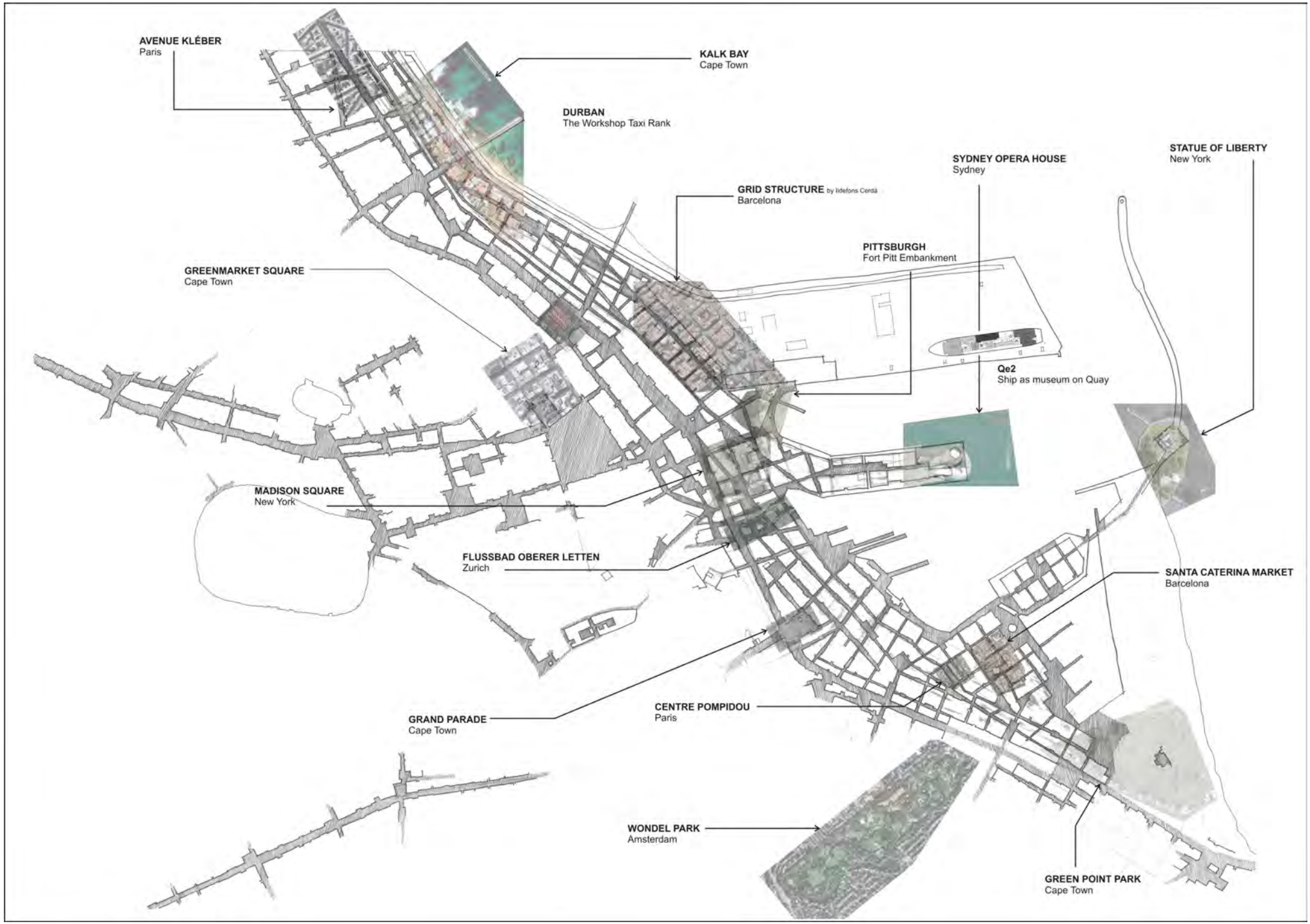
Spaces in cities should be shared and used by its residents at different times for different occasions. This project builds on the idea of Aldo van Eyck as: **Space is to place as time is to event**. Therefore the journey into Port Elizabeth was investigated and the creation of spaces along the path was accepted, analysed and furthered. This in turn developed a sense of character that might develop incrementally as developments take place over time.

The emphasis throughout the development of the proposal was on the importance of the journey through public spaces within the city. These spaces might be **guided by the set of principles** as discussed before. Through the creation of good space character develops in an area. This in turn sets a precedent for further good development and space. These places get used by people and create an image for a place which leaves a legacy and heritage. This is what is needed in Port Elizabeth. This character will then attract other benefits such as tourism over time.

A **quick fix to the city is not what should be encouraged**. Massive landmark buildings and standalone projects will capture the imagination only for a while before a new one comes along. What is needed is a comprehensive urban development framework for future development in the port and inner city area that consolidate developments into mutually supporting elements. This will be aided by the catalytic project of the demolition of the freeway which is partially funded by a pilot project as explained before.

The following part of the project will discuss the various layers that make up the ideas for the future development of the port and inner city.




AVENUE KLÉBER
Paris
KALK BAY
Cape Town
DURBAN
The Workshop Taxi Rank
SYDNEY OPERA HOUSE
Sydney
STATUE OF LIBERTY
New York
GRID STRUCTURE by Ildefons Cerdà
Barcelona
PITTSBURGH
Fort Pitt Embankment
GREENMARKET SQUARE
Cape Town
Qe2
Ship as museum on Quay
MADISON SQUARE
New York
FLUSSBAD OBERER LETTEN
Zurich
SANTA CATERINA MARKET
Barcelona
GRAND PARADE
Cape Town
CENTRE POMPIDOU
Paris
WONDEL PARK
Amsterdam
GREEN POINT PARK
Cape Town

15.2 Collage Map

Various spatial precedents were taken and overlaid on the proposed map of development to get a sense of what each space should entail and what **kind of character could be achieved**. These aided in informing spatial quality, scale, density and hierarchy throughout the development. The use of elements and places that have a good spatial quality was intentional to convey the potential of each area. This does not mean each area is intended to take on a specific role and compete with another area. Each space has potential while only some will develop this potential others will subside to form other functions within the hierarchy that will develop in the area.

Not all spaces are meant to attract attention and activity. Some spaces and developments will create the backdrop for others and so a foreground and background condition of spaces will form over time. The characters of neighbourhoods will also change over time and perform functions that were not necessarily suggested.

Aerial photos of precedent studies of good space
(www.googleearth.com)

Proposed Built Area

15.3 Proposed Built Area

This map shows the proposed built area of new future developments. These are shown in yellow.

Development occurs in areas so as to integrate with the current built fabric and grain density of the city. This is done so that the character of Port Elizabeth is maintained. There is however a proposal for **high density development to facilitate future demand** for well-located land. This is judged as urban influx is on the rise globally and decisions must be made to provide for future development on a large scale.

The importance of **good public space** must not be underestimated in high density development as these spaces will become the 'living rooms' of the residents of these areas. Interactions between people breed a healthy city as new ideas are developed between people in collaboration. **These ideas may develop into economic benefit** for the city as a whole. These people may only meet if the density factors of a city are favourable and there is enough public space provided for interaction.

Within this proposed developable area smaller neighbourhoods will form and social cohesion will start to develop between community members. This will be built through the incrementality of the development. These neighbourhoods will develop their own character and spatial qualities that will add to the greater good of the city.

Just like the public spaces and streets, other areas will also be undevelopment and left for other activities to occur. These will be the beaches, the Baakens Valley, the Baakens River mouth and a portion of the harbour area. Continued industrial use of the port for activities such as export of goods will result and compliment the character of the port. This will happen while the Baakens Valley will be conserved as an open space for nature where residents may go to relax and enjoy the river and nature.

It must be stressed that this kind of development is only able to occur with small but strategic development decisions that will enable the city to grow in this manner. The most important of these decisions for development will be that of the demolition of the Settlers Way freeway.

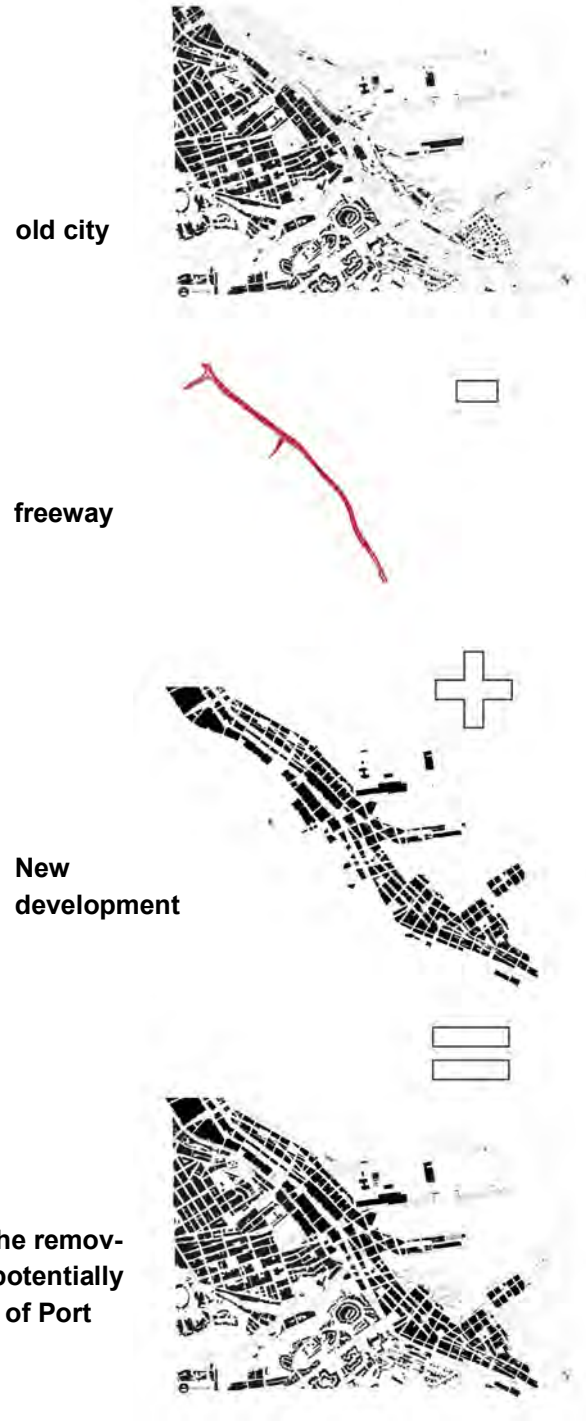
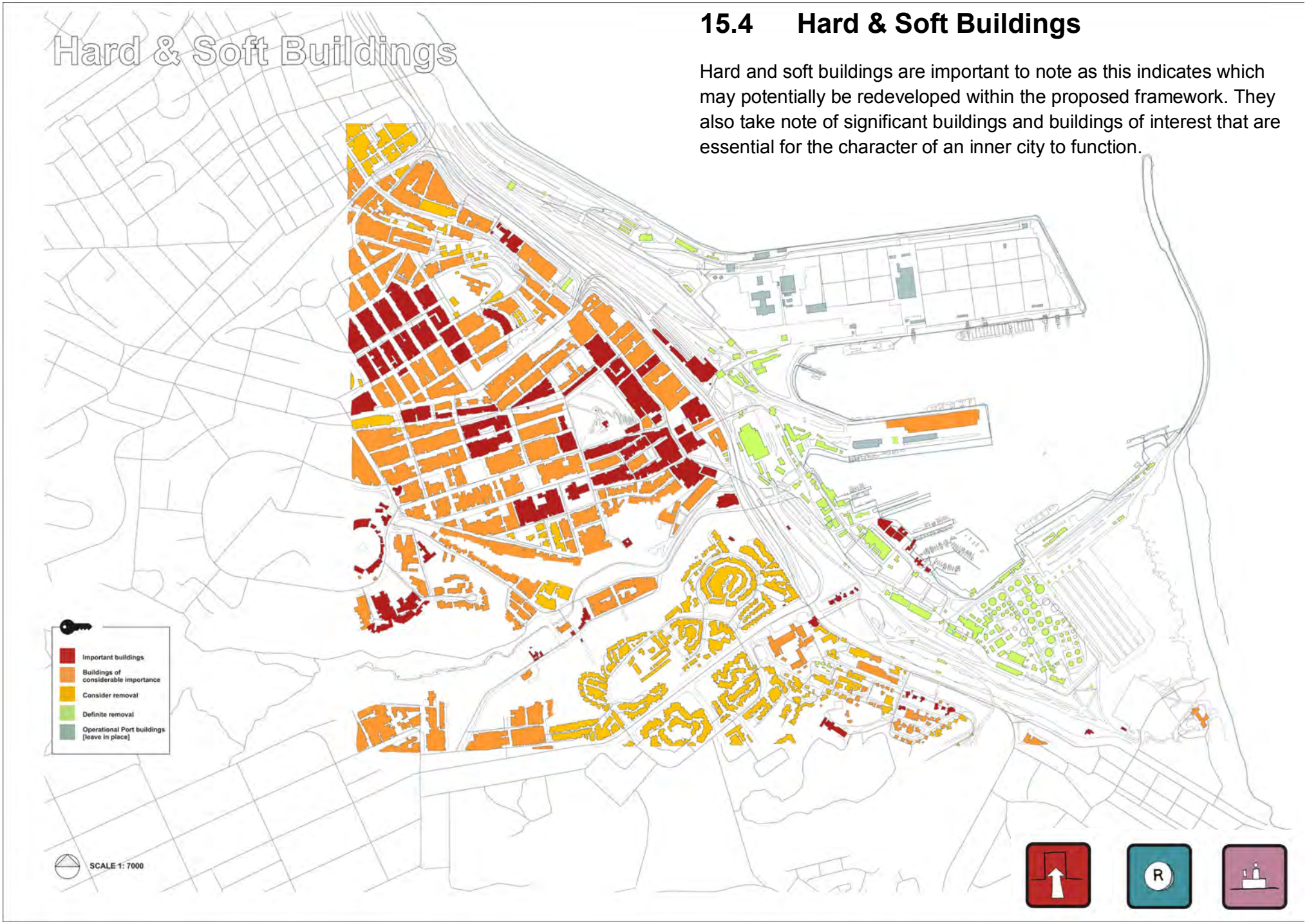


Diagram showing how the removal of the freeway could potentially positively affect the city of Port Elizabeth
(author, 2014)

15.4 Hard & Soft Buildings

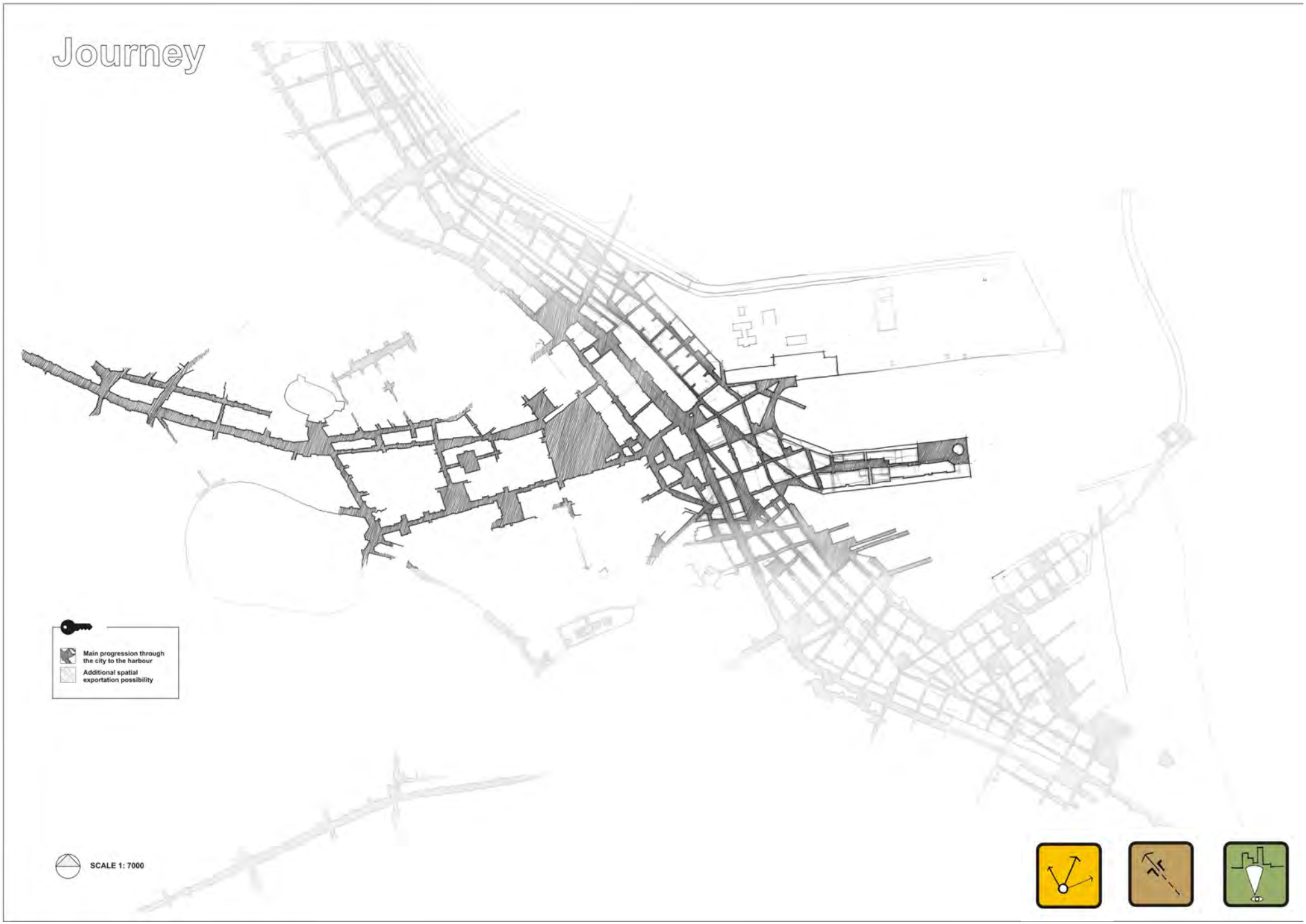
Hard and soft buildings are important to note as this indicates which may potentially be redeveloped within the proposed framework. They also take note of significant buildings and buildings of interest that are essential for the character of an inner city to function.



15.5 New Developments

A map of the new development by both public and private initiatives are important to link to with the proposal as these developments might act to support the development initially and therefore bear the risk of initial investment in an area. As seen the developments currently all happen to the west of the freeway. This project hopes to change this through the catalytic freeway demolition.

Journey


Main progression through the city to the harbour
Additional spatial exportation possibility
SCALE 1: 7000

15.6 The Journey

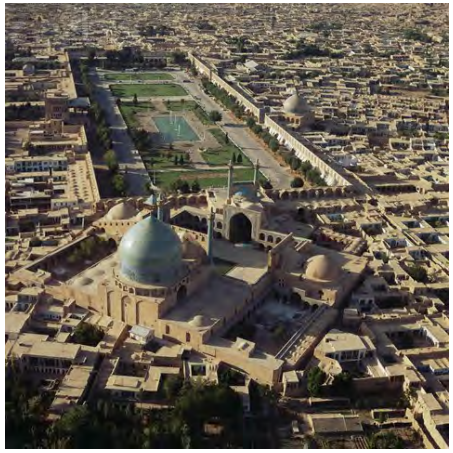
The idea of a journey through the city, towards the port or vice versa is not a new one. Port Elizabeth used to have a jetty in the harbour that aligned with Jetty Street. This passed the main public space, Market Square, then the Theatre and the Donkin Reserve, another public space, before heading up to reach the gallery at the entrance of St. Georges Park. This route is what made the inner city special for many tourists and locals. It wanders through many public spaces with different functions and characters.

What is strived for in this project is to maintain this ideal while upgrading it and **furthering the journey** towards the harbour and port to once again give the public the freedom of the port. The city is after all called “Port” Elizabeth for a reason. This journey will be an extension of Cape Road, an alternative route into the city as discussed before in the project.

A smaller initiative, the Route 67, by the MBDA has been established running through this area as a heritage and art route for tourists and locals. This will be noted and developed further as other projects start to happen incrementally in the city as reinvestment follows the catalytic project.

This journey concept is inspired by towns and cities that are on route to a specific destination or have had a route built within them as a result of a destination point residing within the city itself. An example of this is the city of **Brighton in the UK** which has the famous Palace Pier as an end point to a journey towards the ocean. A series of parks and public spaces lead towards this revealing point.

Another example is **Isfahan in Iran**. This city was based around a journey towards the Maydan-i Shah and Masjid-i Shah in Isfahan and the Zayandah River. This city also reflects a history of building a spatial journey toward an important destination to which people flock. In this case it happens to be a Mosque. In the Case of Port Elizabeth the journey may pass through the existing public spaces as well as some new ones in the development to reach the ocean. This is after all the origin of the city. Other important elements along this journey may include the Campanile which itself is a marker of a significant time in history.



Aerial View of the Mosque in Isfahan
www.corbisimages.com by Roger Wood 1968

A map illustrating the route taken through the
www.iranicaonline.org 2014

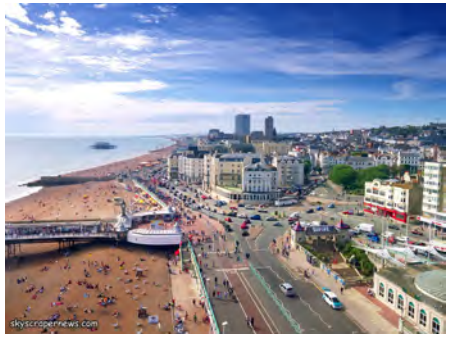
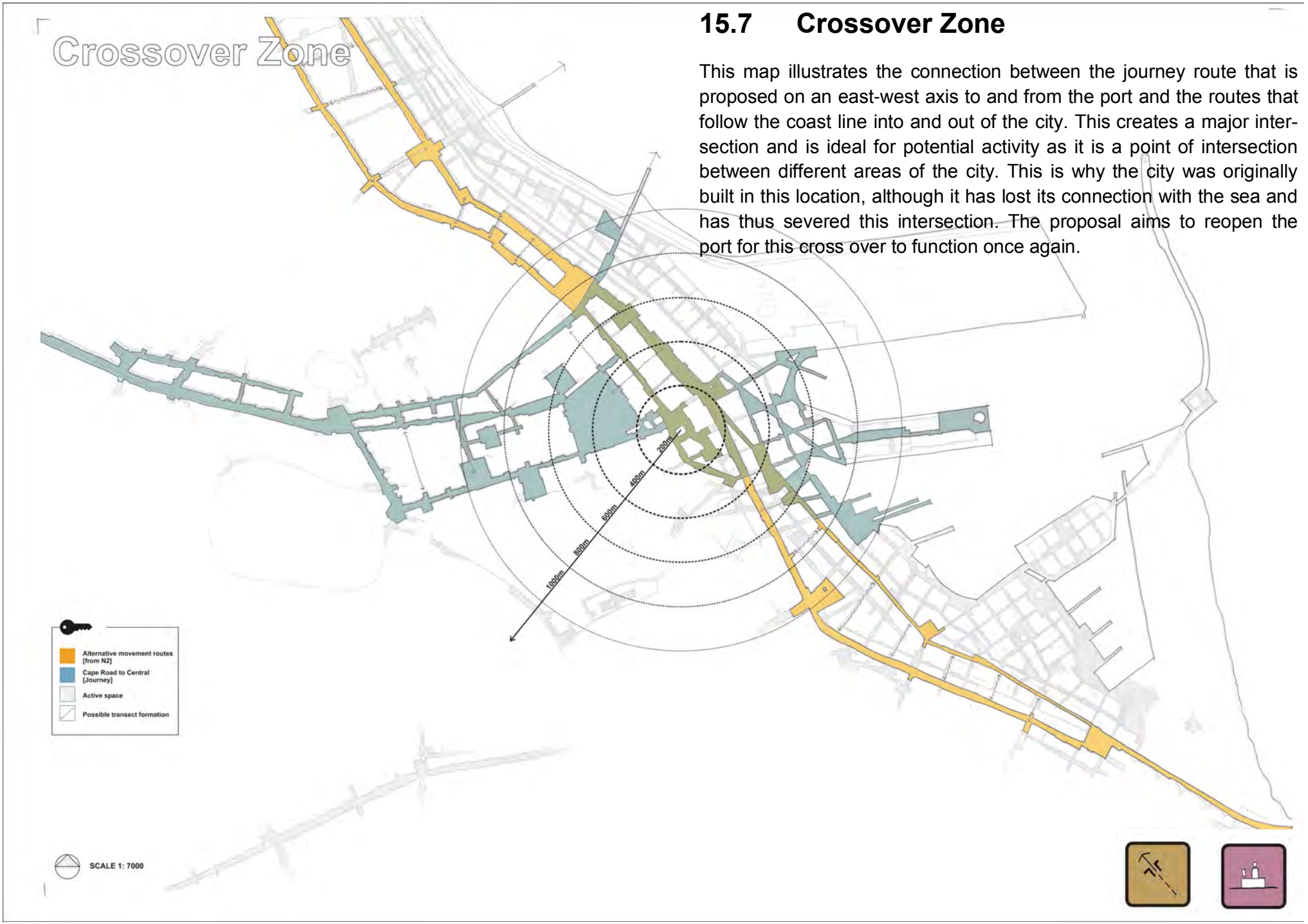


Image showing how Brighton meets the sea and extends via a pier
www.skyscrapernews.com 2000

Map showing spatial differentiation in the journey to the water
www.googleearth.com 2014

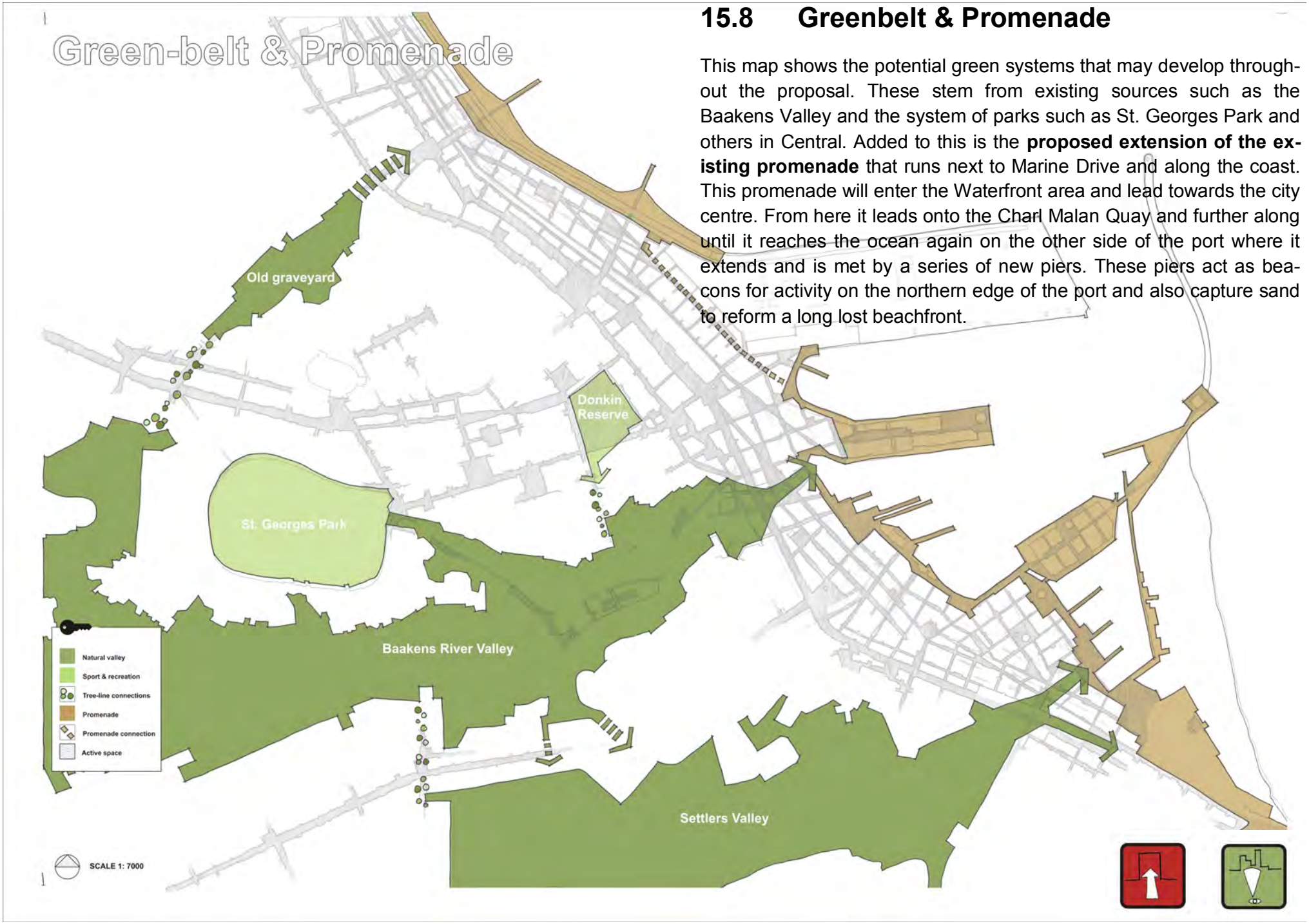
15.7 Crossover Zone

This map illustrates the connection between the journey route that is proposed on an east-west axis to and from the port and the routes that follow the coast line into and out of the city. This creates a major intersection and is ideal for potential activity as it is a point of intersection between different areas of the city. This is why the city was originally built in this location, although it has lost its connection with the sea and has thus severed this intersection. The proposal aims to reopen the port for this cross over to function once again.



15.8 Greenbelt & Promenade

This map shows the potential green systems that may develop throughout the proposal. These stem from existing sources such as the Baakens Valley and the system of parks such as St. Georges Park and others in Central. Added to this is the **proposed extension of the existing promenade** that runs next to Marine Drive and along the coast. This promenade will enter the Waterfront area and lead towards the city centre. From here it leads onto the Charl Malan Quay and further along until it reaches the ocean again on the other side of the port where it extends and is met by a series of new piers. These piers act as beacons for activity on the northern edge of the port and also capture sand to reform a long lost beachfront.

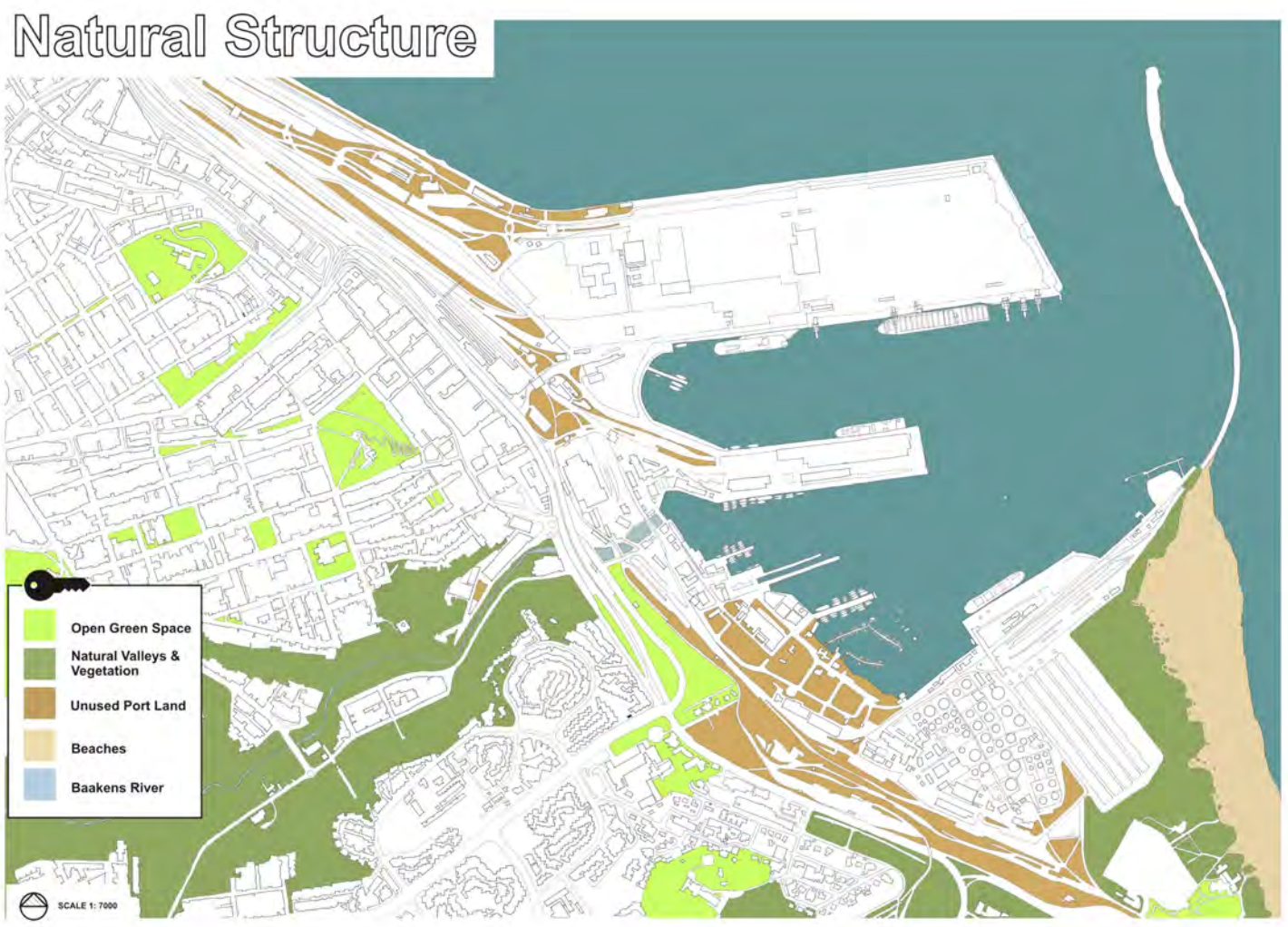



Green structure
New Beaches
EP Athletics Union
Donkin Reserve
St. Georges Park
Kings Beach
Baakens Valley
Walmer Cemetary
Natural valley
Sport & recreation
River
Predominant pedestrian routes
Hard Public Spaces
Beach
Hard spaces
SCALE 1: 7000

15.9 Natural Structure

The green structure of the proposal aims to maintain the natural systems that pass through this part of the city and to **maximise them as public and recreation spaces**. These include the Baakens Valley through which the Baakens River flows. Currently the river is underutilised and not reaching its full potential. It is suggested that the river be **rehabilitated** and opened up to its full extent to the port once more. Currently there are too many bridge crossings and canalisation efforts occurring at the mouth of the river. This area may be converted into a recreational area with facilities to relax next to the urban river. This example exists in Zurich, Switzerland at the 'Flussbad Oberer Letten where decks have been built alongside the river for the urban population to enjoy. This is also possible in Port Elizabeth. Floods are however to be taken into account.

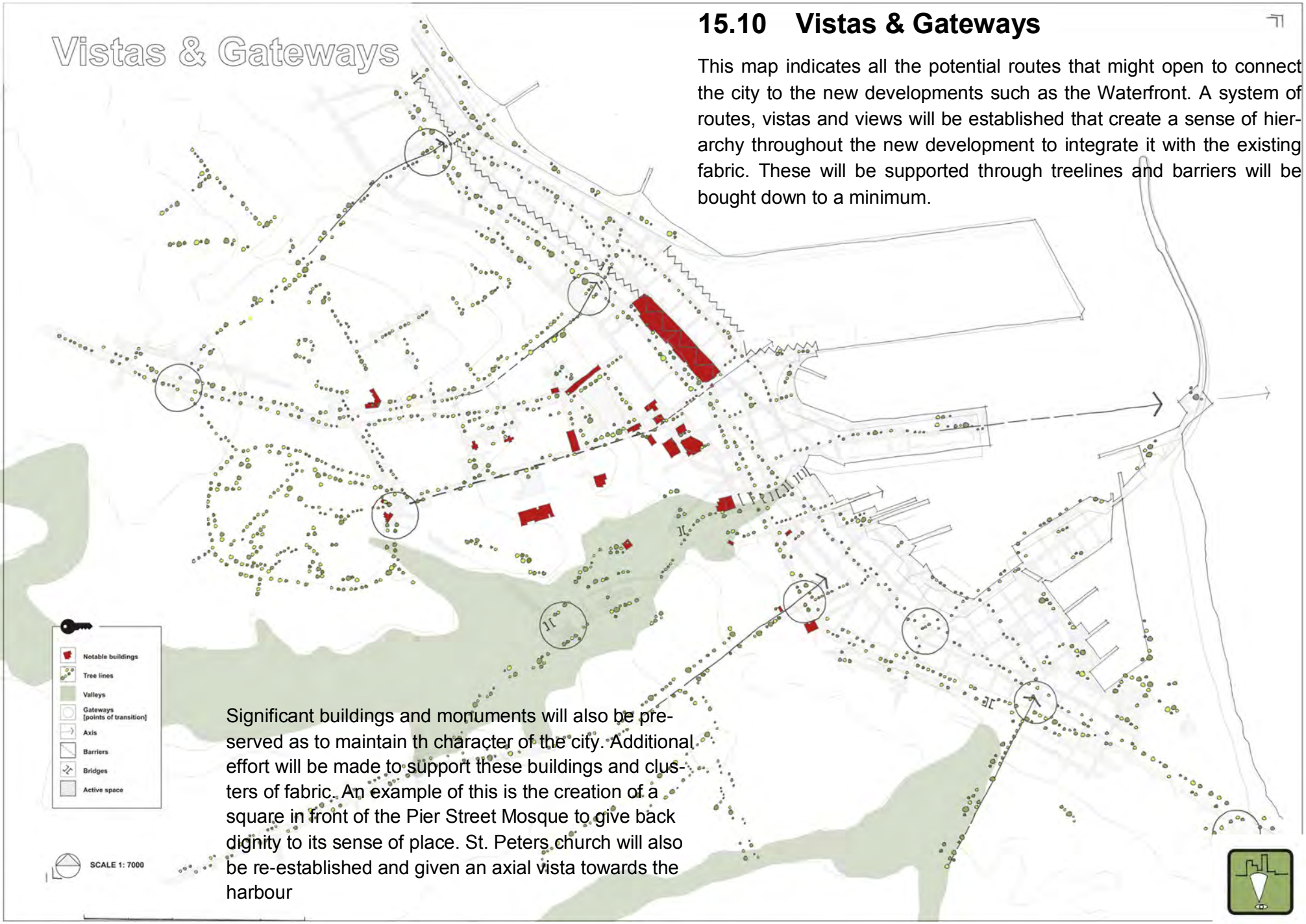
Other initiatives are the promenade that has been discussed and connections between green areas. Trees may also be used to improve legibility as well as softening the urban fabric and serve to cool the city.



Map showing the existing green structure of the city
(author, 2014)

15.10 Vistas & Gateways

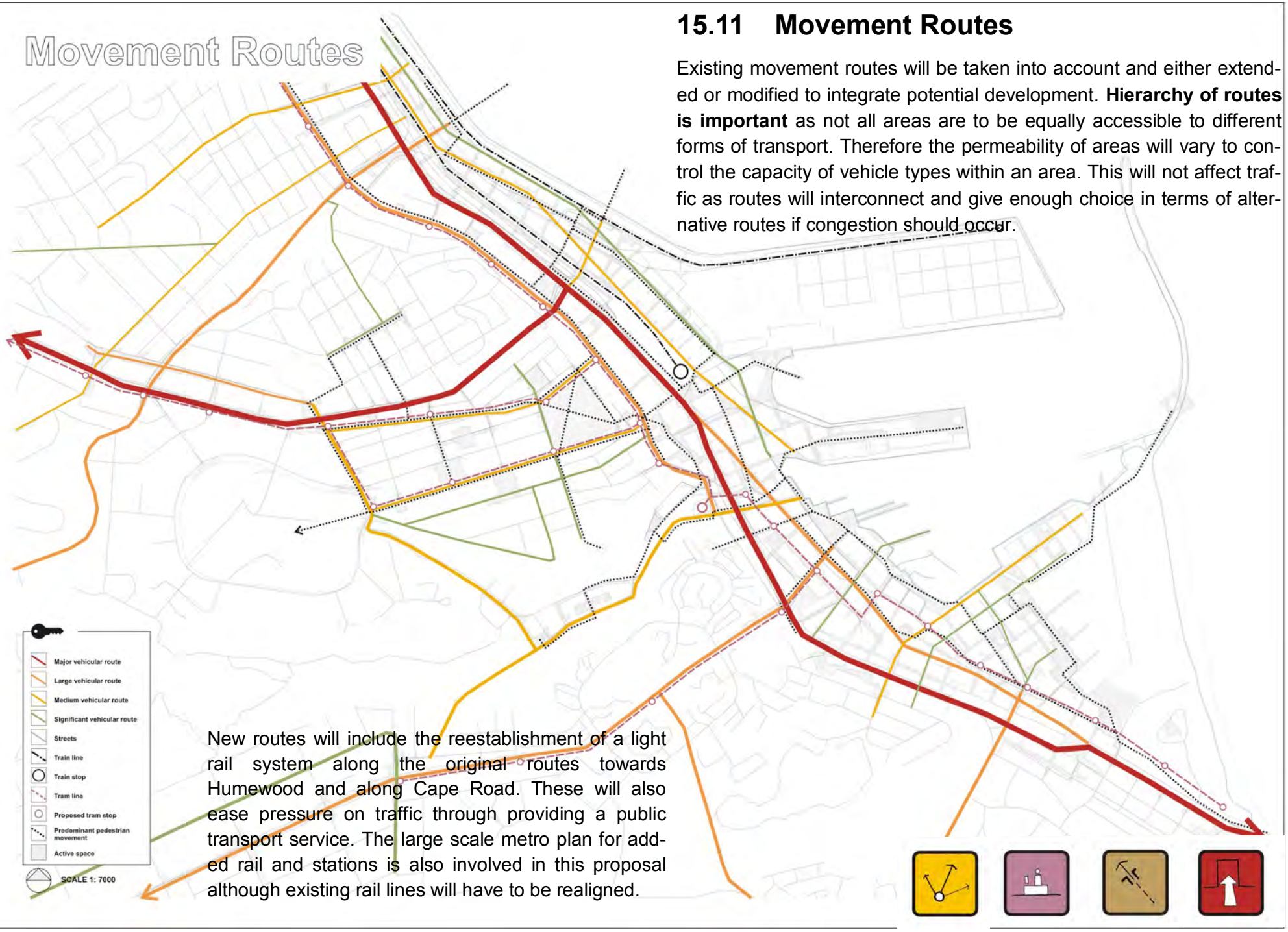
This map indicates all the potential routes that might open to connect the city to the new developments such as the Waterfront. A system of routes, vistas and views will be established that create a sense of hierarchy throughout the new development to integrate it with the existing fabric. These will be supported through treelines and barriers will be bought down to a minimum.



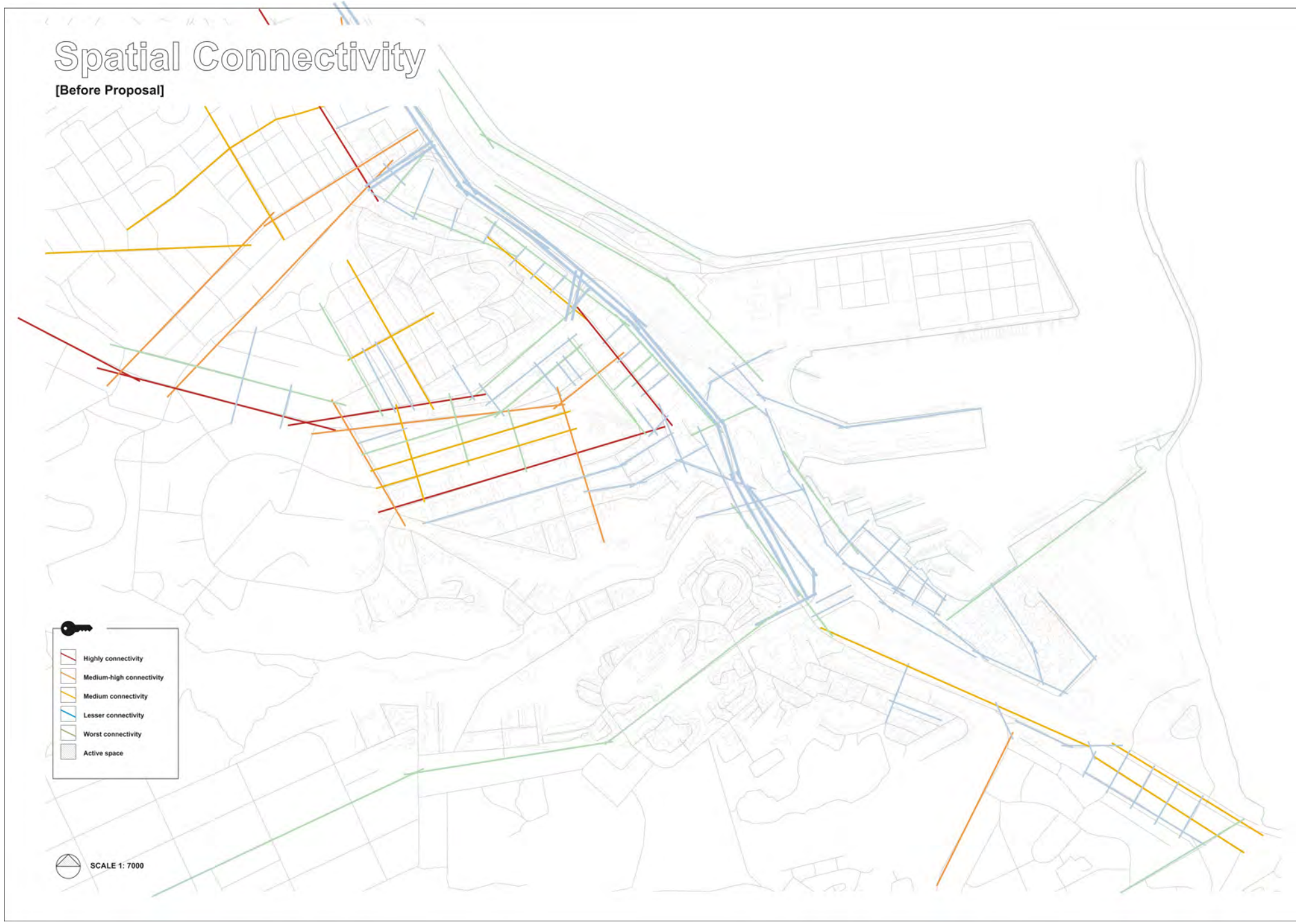
Significant buildings and monuments will also be preserved as to maintain th character of the city. Additional effort will be made to support these buildings and clusters of fabric. An example of this is the creation of a square in front of the Pier Street Mosque to give back dignity to its sense of place. St. Peters church will also be re-established and given an axial vista towards the harbour

15.11 Movement Routes

Existing movement routes will be taken into account and either extended or modified to integrate potential development. **Hierarchy of routes is important** as not all areas are to be equally accessible to different forms of transport. Therefore the permeability of areas will vary to control the capacity of vehicle types within an area. This will not affect traffic as routes will interconnect and give enough choice in terms of alternative routes if congestion should occur.



New routes will include the reestablishment of a light rail system along the original routes towards Humewood and along Cape Road. These will also ease pressure on traffic through providing a public transport service. The large scale metro plan for added rail and stations is also involved in this proposal although existing rail lines will have to be realigned.


Spatial Connectivity
[Before Proposal]
Highly connectivity
Medium-high connectivity
Medium connectivity
Lesser connectivity
Worst connectivity
Active space
SCALE 1: 7000

15.12 Spatial Connectivity

These maps show the spatial connectivity of Port Elizabeth through roads, streets and alleyways. The method employed to create this mapping was similar to that used by Bill Hillier and Space Syntax. Straight segments of road are taken from start point to end point and given a colour ranging from red to blue. The colours indicate the number of connections or intersections with other lines and thus start to **display the connectivity** of a segment of road, with red being the most connected, and blue the least. It must be realised that this was an attempt to illustrate the connectivity and was not done with the use of software, but does however indicate the condition of connections within the city.

The ‘before’ and ‘after’ effects of the maps are dramatic when the potential of a development is revealed. Street colours change as routes are affected by the addition or deduction of connections through future developments. It is evident in the blue colour of the Settlers Way freeway that it is not at all well connected and thus follows the argument for a well-connected grid to replace the freeway.

Analogy

The **freeway** can be compared to a pipeline, while a **grid system** can be compared to a watering can. The freeway directs traffic like a pipeline in a single direction, through a single hole and does not allow for any deviation. If this pipeline gets blocked at a specific point the whole system gets blocked up. In contract to this a watering can distributes the flow evenly. This means that if one route gets blocked there are many more to distribute the flow. Therefore the idea that a freeway is faster than a well-connected grid is not necessarily true. This becomes clear in these maps.

Spatial Usage & Movement

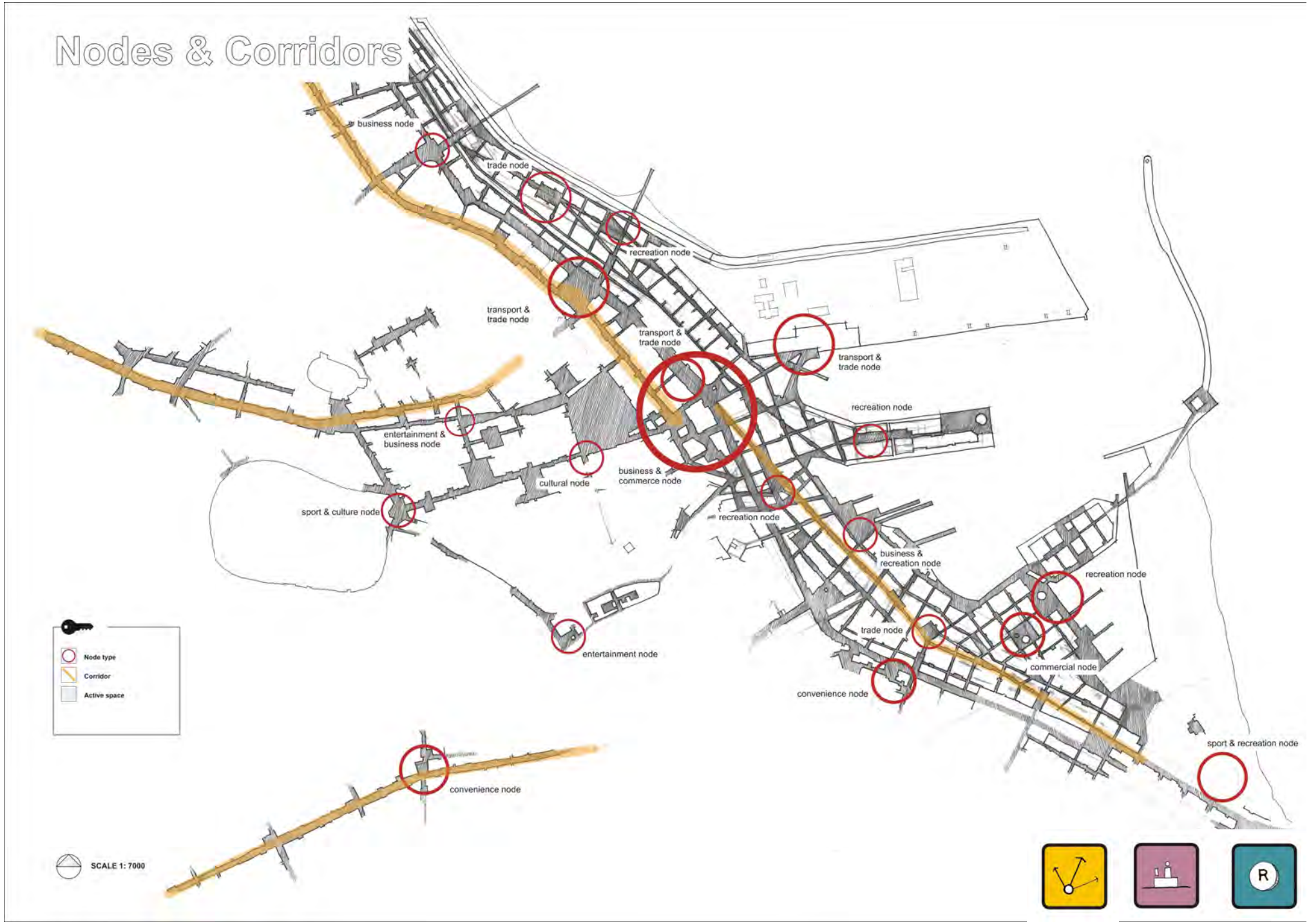
[Before Proposal]

15.13 Spatial Usage and Movement

As with the previous map an investigation was done in a similar method to that of Space Syntax to determine the patterns that exist when mapping **stationary activity and movement activity as per pedestrian** use of the city. The red dots indicate stationary activity while the blue lines indicate preferred pedestrian movement. It is interesting to note that these movements happen predominantly along movement and activity routes. Those with more red dots indicate activity corridors while those without are mobility routes. Clusters of activity occur in and around specific nodal areas and public spaces. It is clear that there is little activity of any kind within the port area.

It is hoped that the catalytic removal of the freeway will unlock further such areas of activity and expand and reinforce current ones. It is no secret that people like to be where there are pleasant spaces. This can be seen in these maps as spaces that are vacant of activity are either not accessible, are of a private nature or are simply not good spaces to spend time in.

More activity will require more people. This means that further development in the area might thin activity in other areas or steal those people who create these activities. However, this may be reversed with projected population increase and demand for space within the city as time passes. This potential development pattern is **anticipated to grow incrementally** and over a period of at least fifty years. Therefore the demand for spatial growth through population increase will be followed by the creation of place and not the other way round.

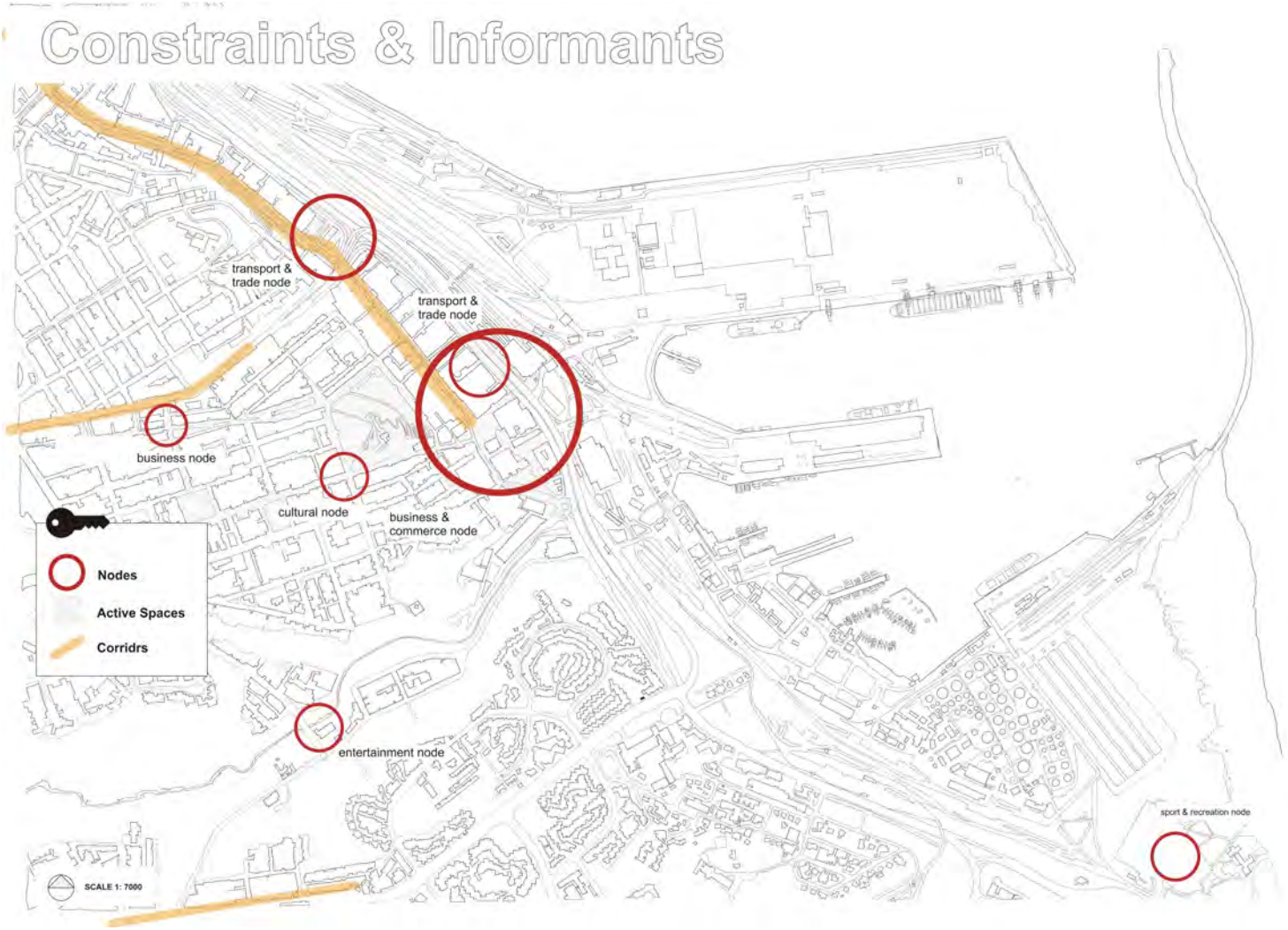

Nodes & Corridors
business node
trade node
recreation node
transport & trade node
transport & trade node
transport & trade node
recreation node
entertainment & business node
cultural node
business & commerce node
sport & culture node
recreation node
business & recreation node
recreation node
trade node
commercial node
convenience node
entertainment node
sport & recreation node
convenience node
Node type
Corridor
Active space
SCALE 1: 7000
R

15.14 Nodes and Corridors

There is already a functioning system of nodes linked via a few corridors in the inner city. This will undoubtedly expand and grow organically and in an incremental manner if the city is allowed to expand towards the port. It will be influenced by demands within the area for retail, office space and residential development.

The added **attraction of being close to the port** will also be a factor to consider. Future development will have to take into account the market and must take care to not provide what is already occurring in other areas of the city (e.g. Baywest, Greenachres and Walmer Park) to avoid competition and potential spatial failure as a result of oversupply. This may decrease property values. Timing of development to meet demand and economic cycles must also be noted as this may determine whether developments succeed or fail. These factors all have a spatial implication in the incremental growth of the project area.

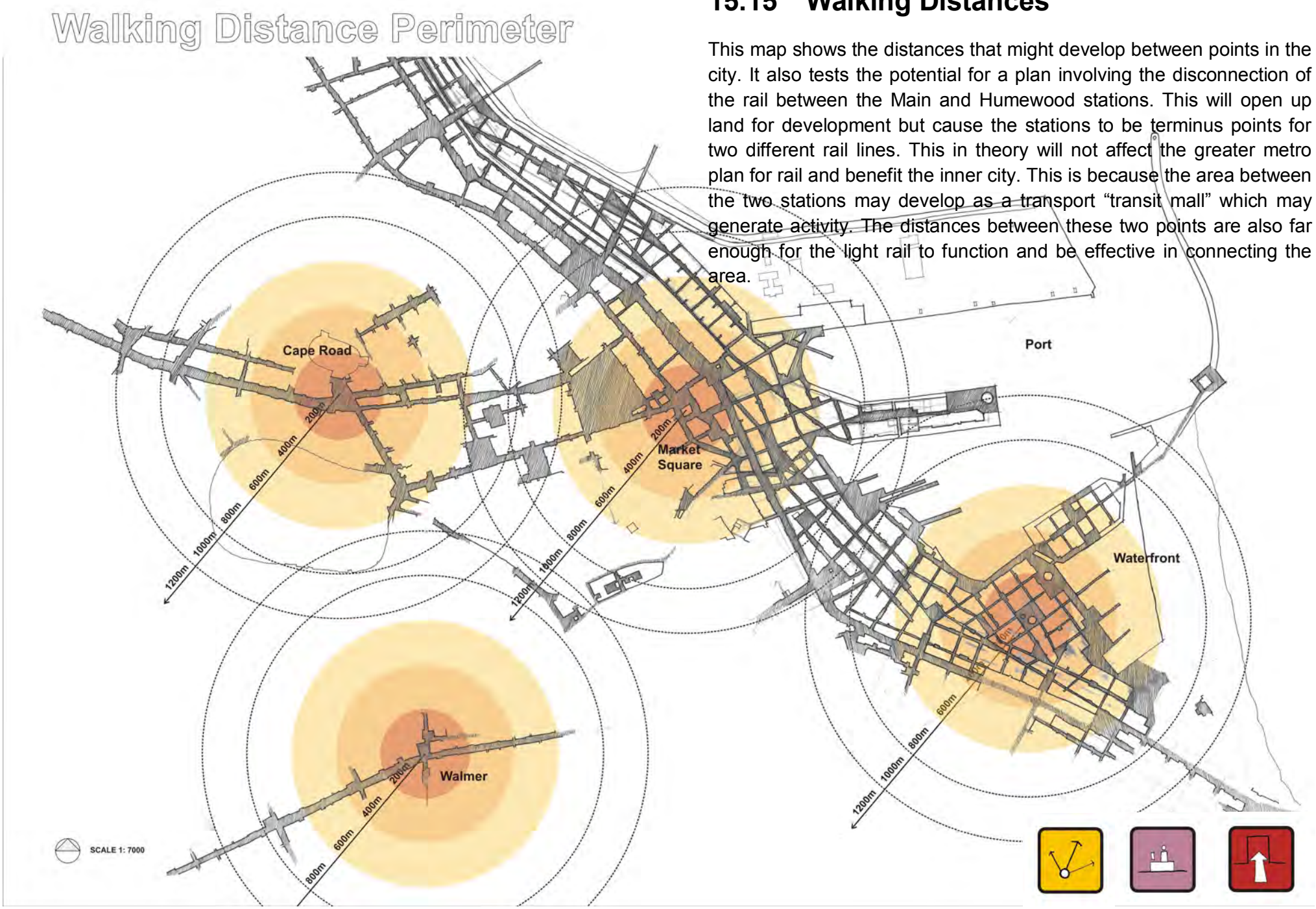
Care should be exercised by municipal departments to prevent developments such as gated community, malls and monopolistic land owners as these make for an unhealthy spatial combination. Furthermore large developer driven projects at a large scale should be phased to prevent failure and over supply problems. These massive once off projects also have a significant effect on the inner city and should be controlled. Proper design guidelines should be laid down by authorities to ensure that the character to the city is maintained and furthered. Nodes will then grow organically and corridors will follow or vice versa.



Map showing the existing nodes and corridors
(author, 2014)

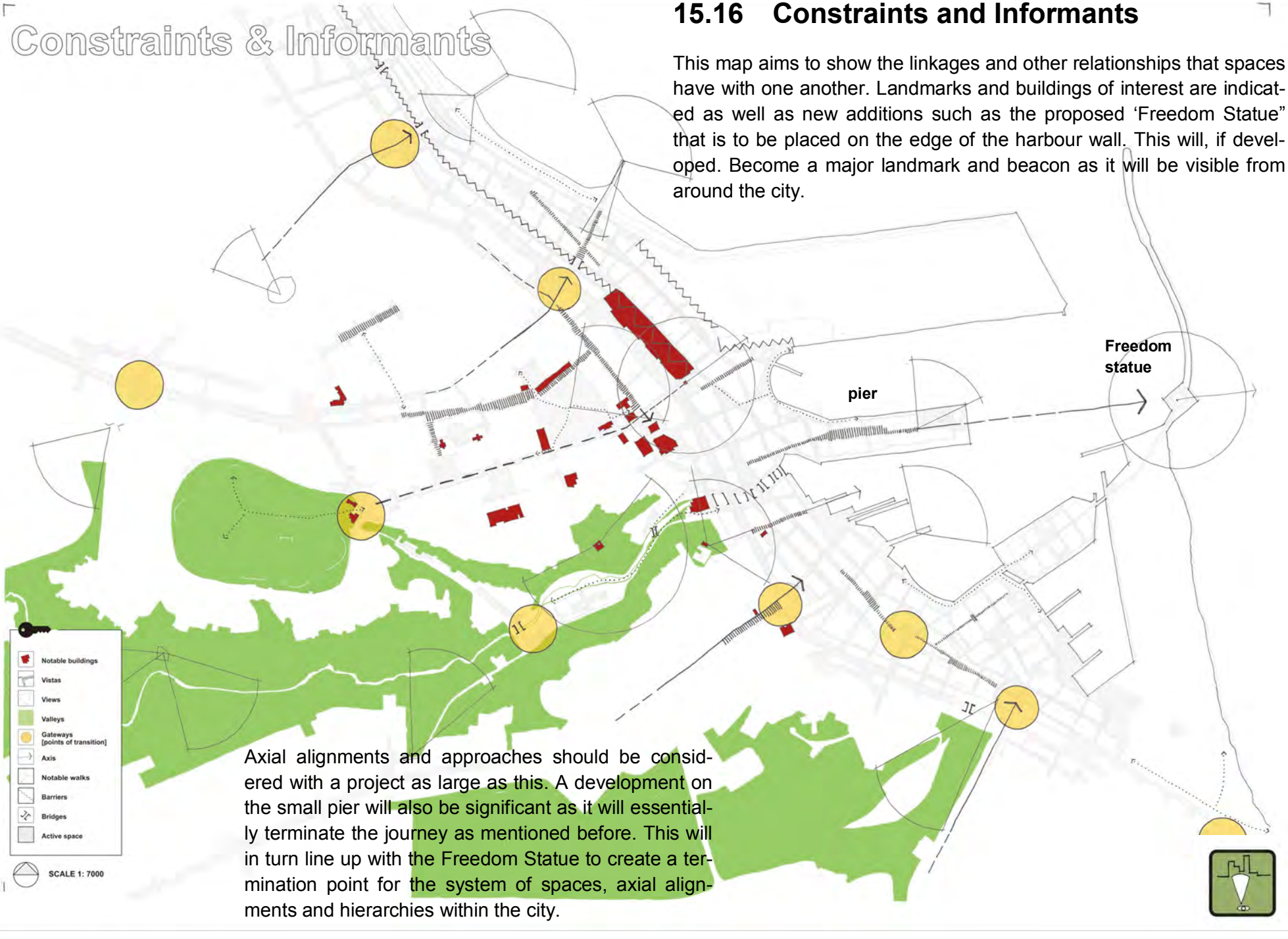
15.15 Walking Distances

This map shows the distances that might develop between points in the city. It also tests the potential for a plan involving the disconnection of the rail between the Main and Humewood stations. This will open up land for development but cause the stations to be terminus points for two different rail lines. This in theory will not affect the greater metro plan for rail and benefit the inner city. This is because the area between the two stations may develop as a transport “transit mall” which may generate activity. The distances between these two points are also far enough for the light rail to function and be effective in connecting the area.



15.16 Constraints and Informants

This map aims to show the linkages and other relationships that spaces have with one another. Landmarks and buildings of interest are indicated as well as new additions such as the proposed ‘Freedom Statue” that is to be placed on the edge of the harbour wall. This will, if developed. Become a major landmark and beacon as it will be visible from around the city.



Axial alignments and approaches should be considered with a project as large as this. A development on the small pier will also be significant as it will essentially terminate the journey as mentioned before. This will in turn line up with the Freedom Statue to create a termination point for the system of spaces, axial alignments and hierarchies within the city.

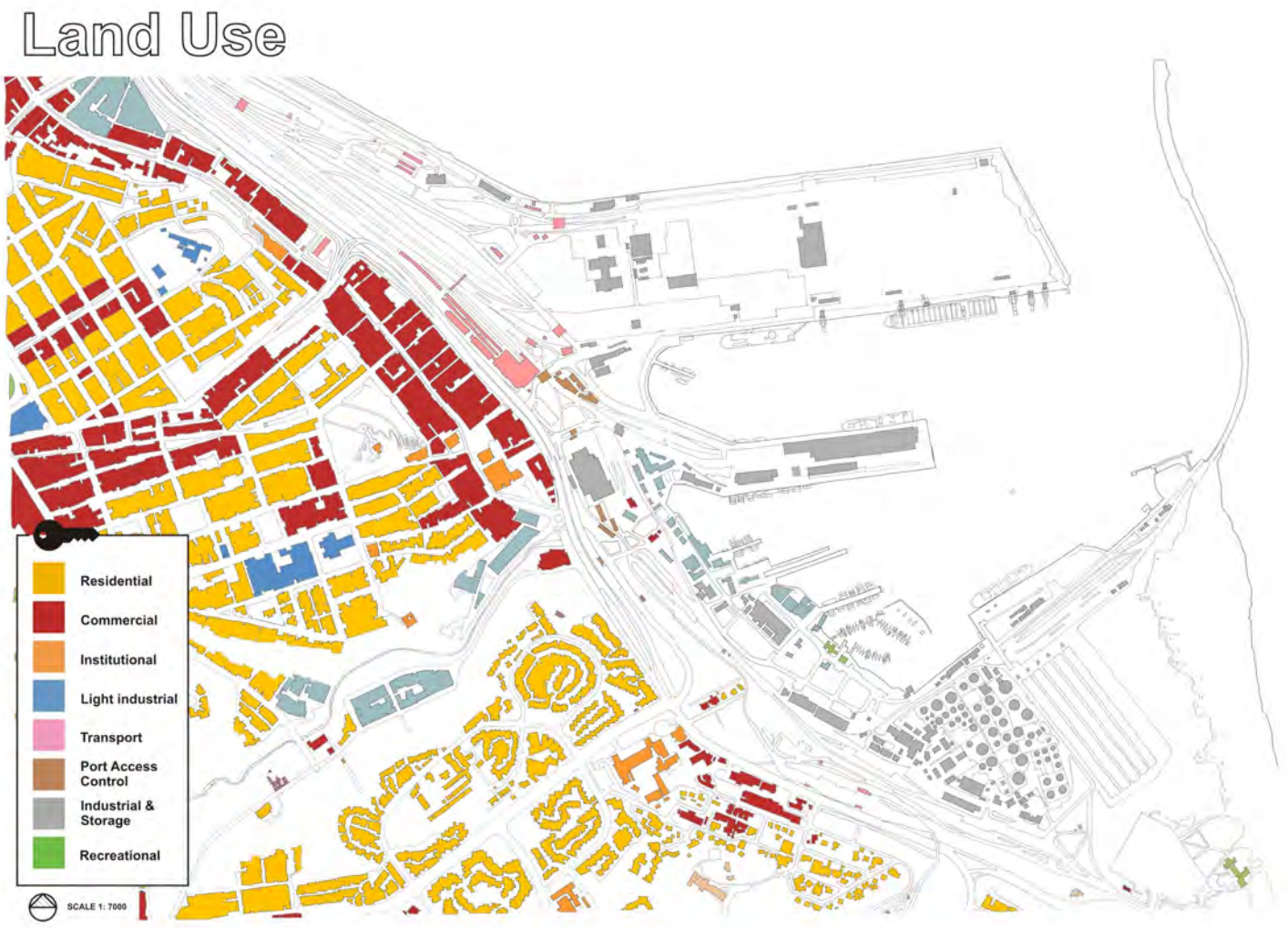

Land Use
Commercial / Mixed-use
Public / Civic facilities
Residential
Light industrial
Port activities / Industrial
Sport & Recreational
Transport & Rail facilities
Educational facilities
Religeous
SCALE 1: 7000
R

15.17 Land Use

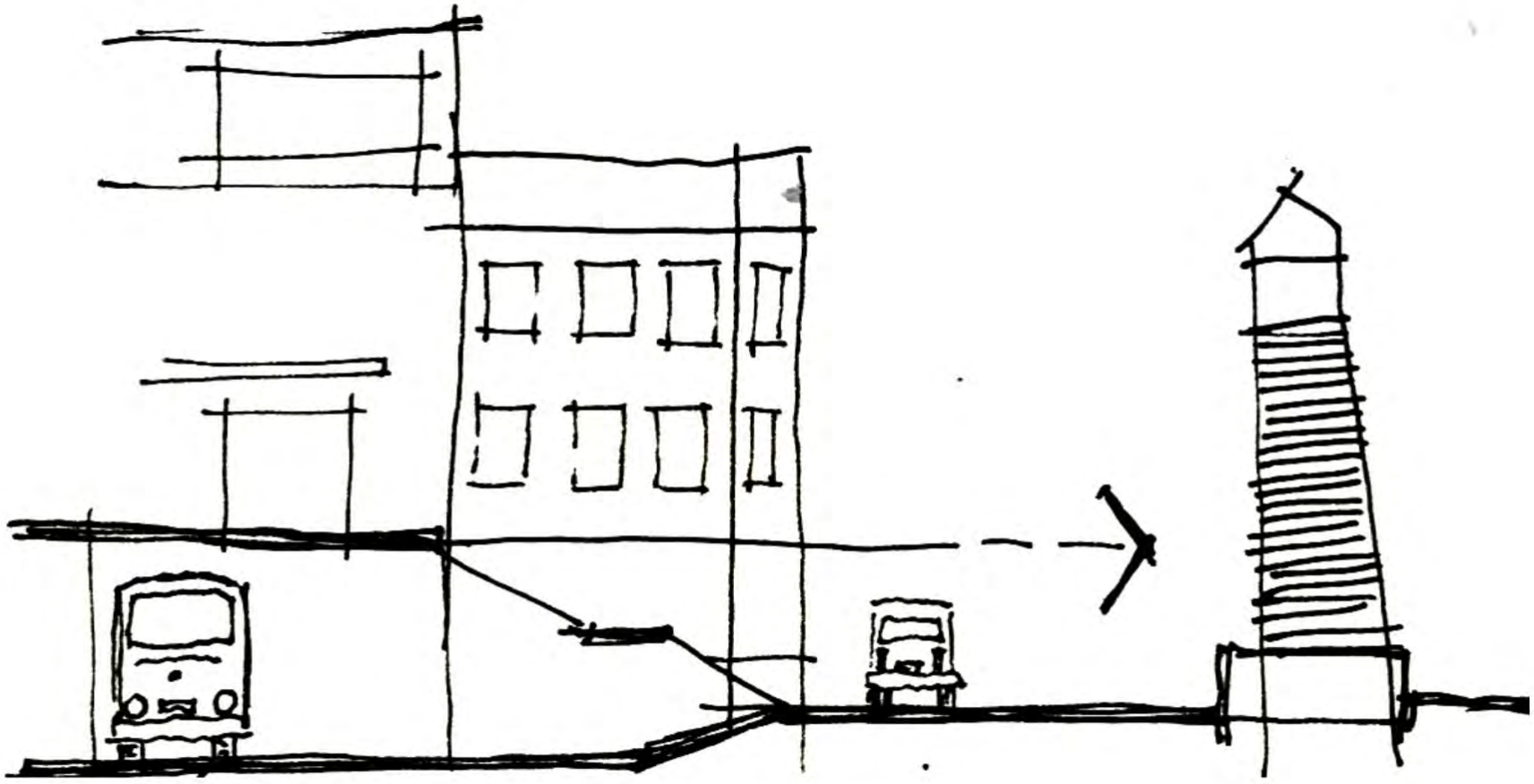
These maps show the current and proposed land use of the Central area. It is evident in the existing fabric that **patterns of land use** have developed in the inner city according to paths to and from the port. It is evident that these paths have influenced trade and development of the city centre. As mentioned before the **city is at a crossroads between two major routes**, one running along the coast and the other from inland towards the port and ocean. Both resulted from trade. These routes are characterised through the demand for retail and commercial activity along them. Cape Road has developed into a corridor that intersects with Strand Street and Govan Mbeki. More complex land uses exist through the development of Stanley Street and sites around the Donkin Reserve.

The city is in fact better connected than Baywest and has the best location in the region. This is why the city was established here in the first place. Therefore it is suggested that reconnection and reinforcing of these land uses should occur through further development of land use in the CBD. This will be done through the catalytic development started through the demolition of the Settlers Way freeway.

This proposal map is an indication of what could be developed given the appropriate circumstances and decisions. By unlocking strategic land and development through proper land use, Port Elizabeth could become one of the most loved cities in South Africa.



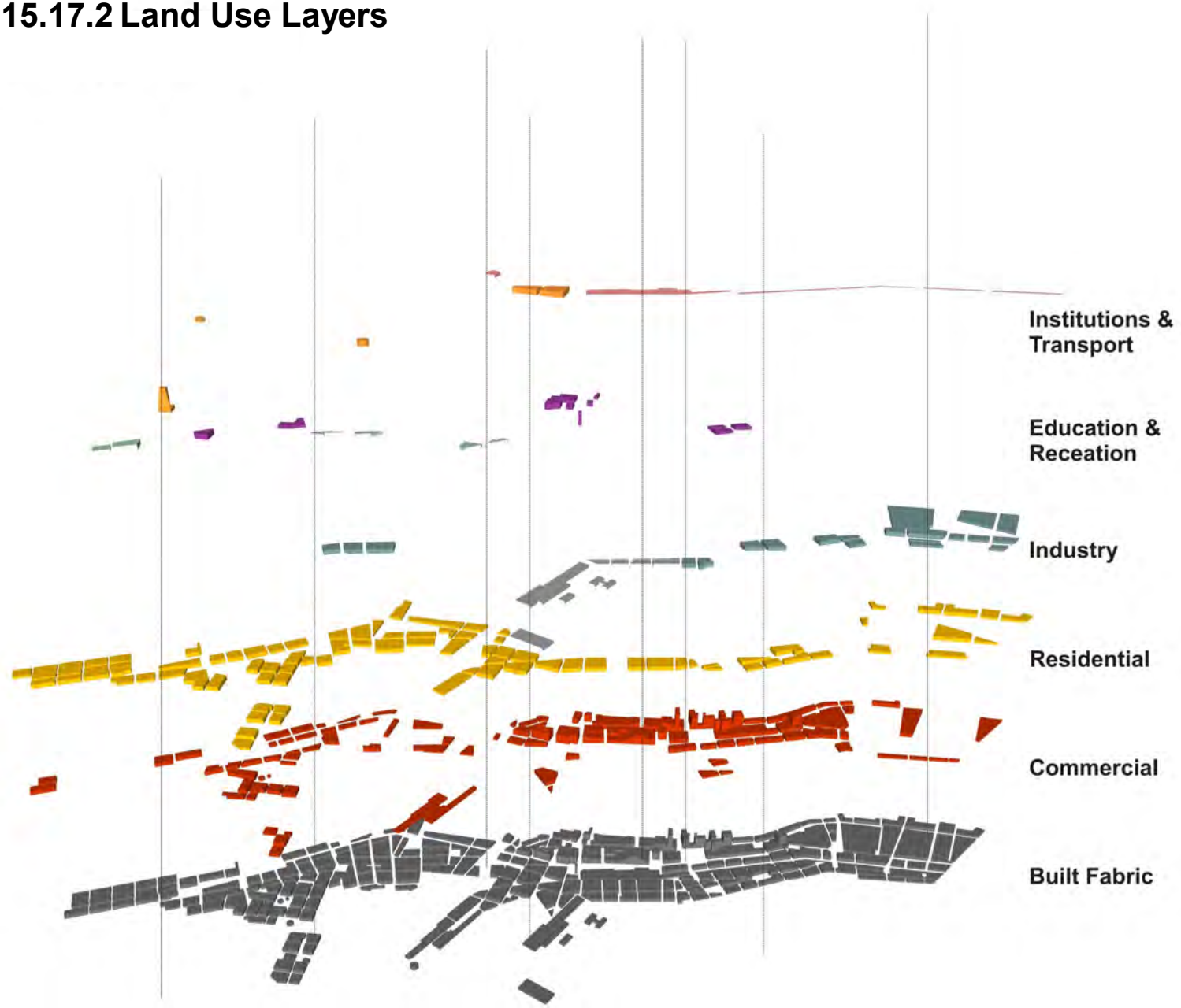
Map showing the existing land use
(author, 2014)



15.17.1 Proposed Land Use

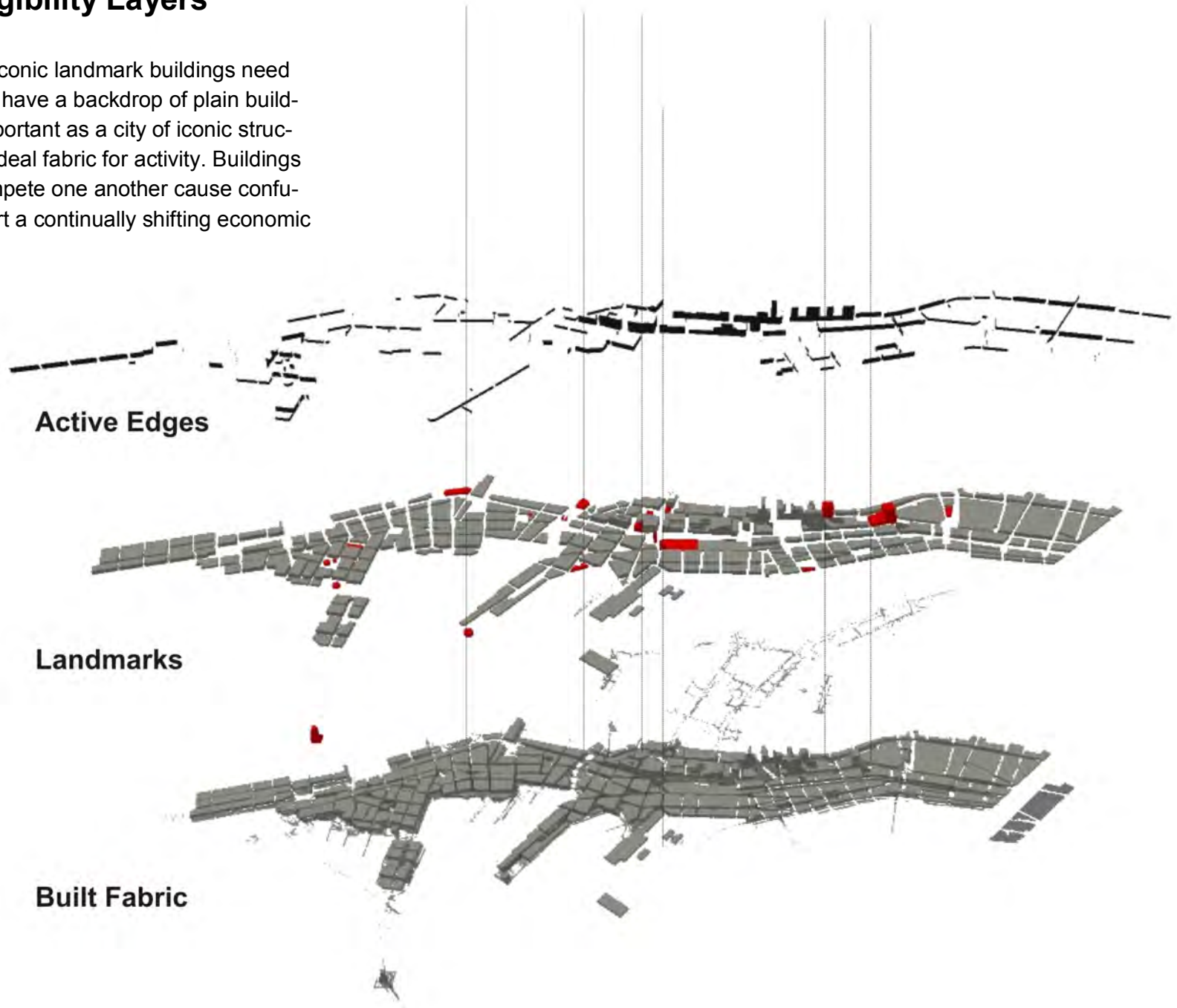
Land use proposals take into account current developments and aim to create areas that compliment one another through different land uses. The appropriate function for different areas will develop incrementally as demands and needs are recognised over time. Therefore it is important to not force patterns of future developments.

15.17.2 Land Use Layers

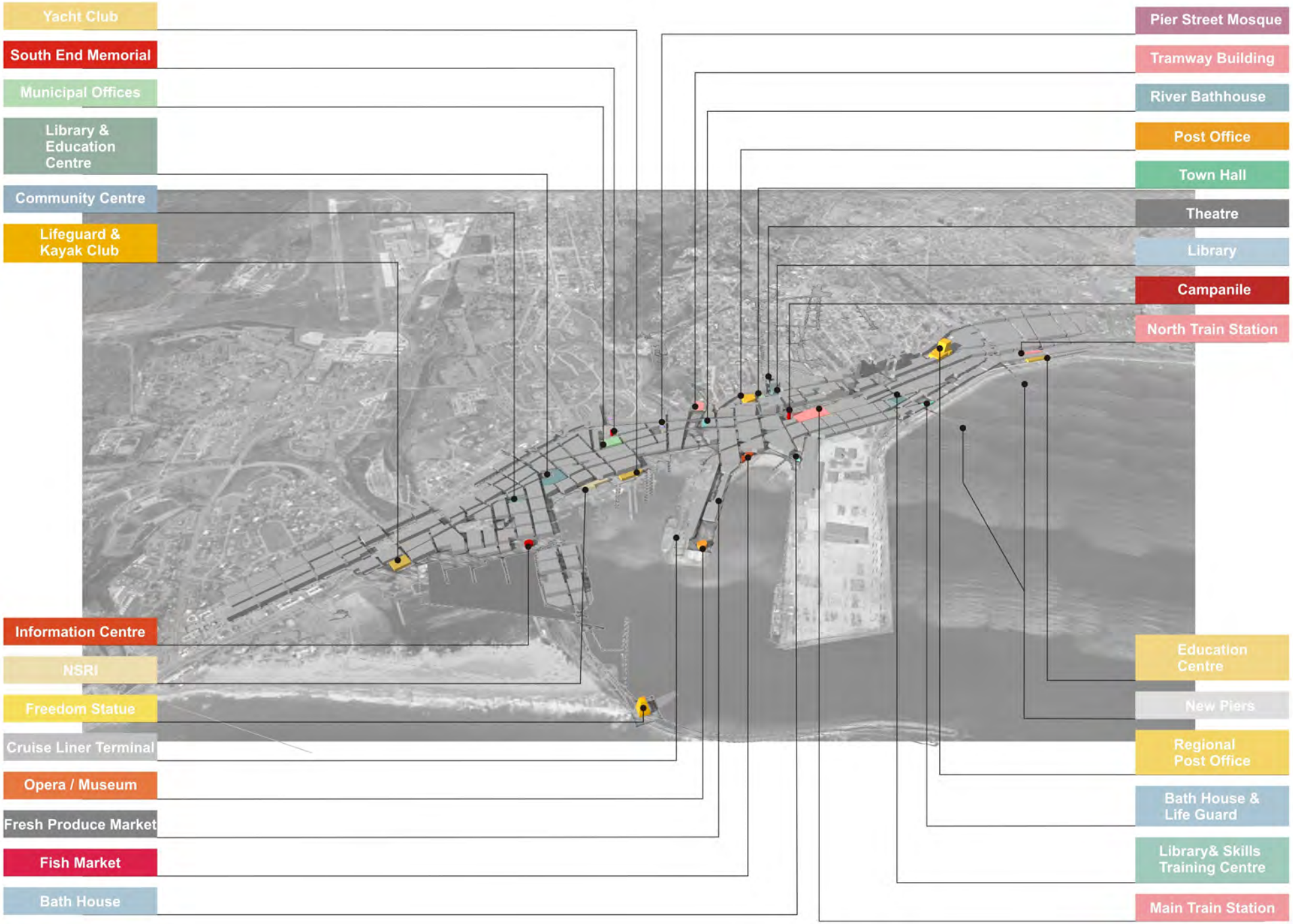


15.17.3 Legibility Layers

Foreground or iconic landmark buildings need to be framed or have a backdrop of plain buildings. This is important as a city of iconic structures is not an ideal fabric for activity. Buildings trying to outcompete one another cause confusion and support a continually shifting economic pattern.



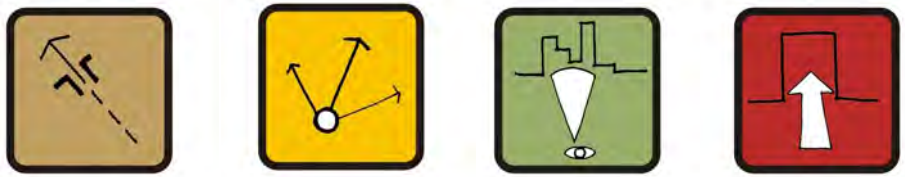
15.18 Specific Facilities

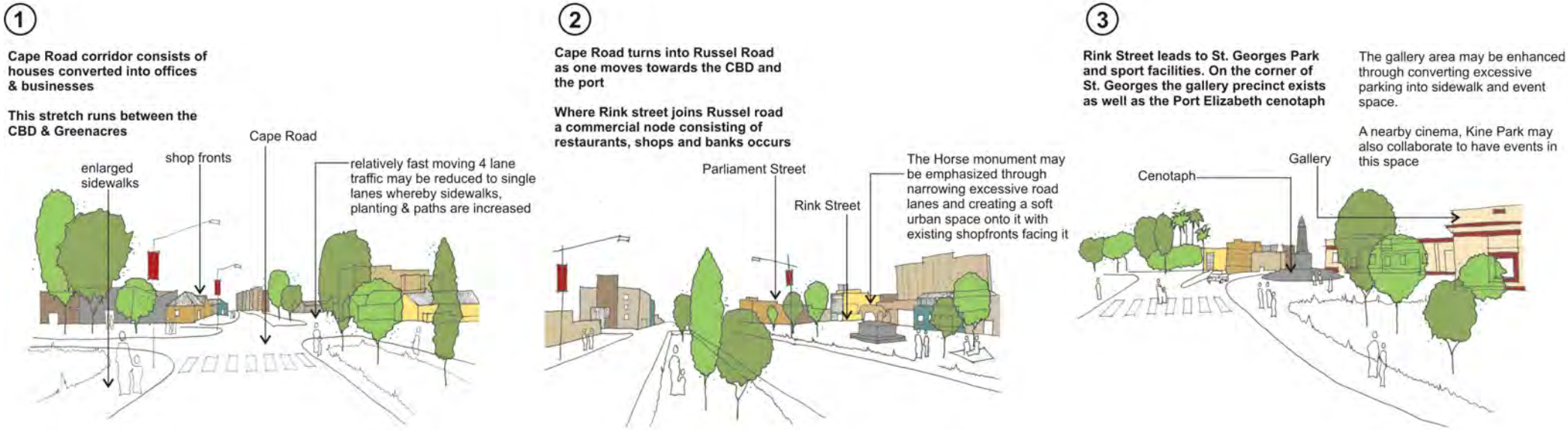


16. The Journey

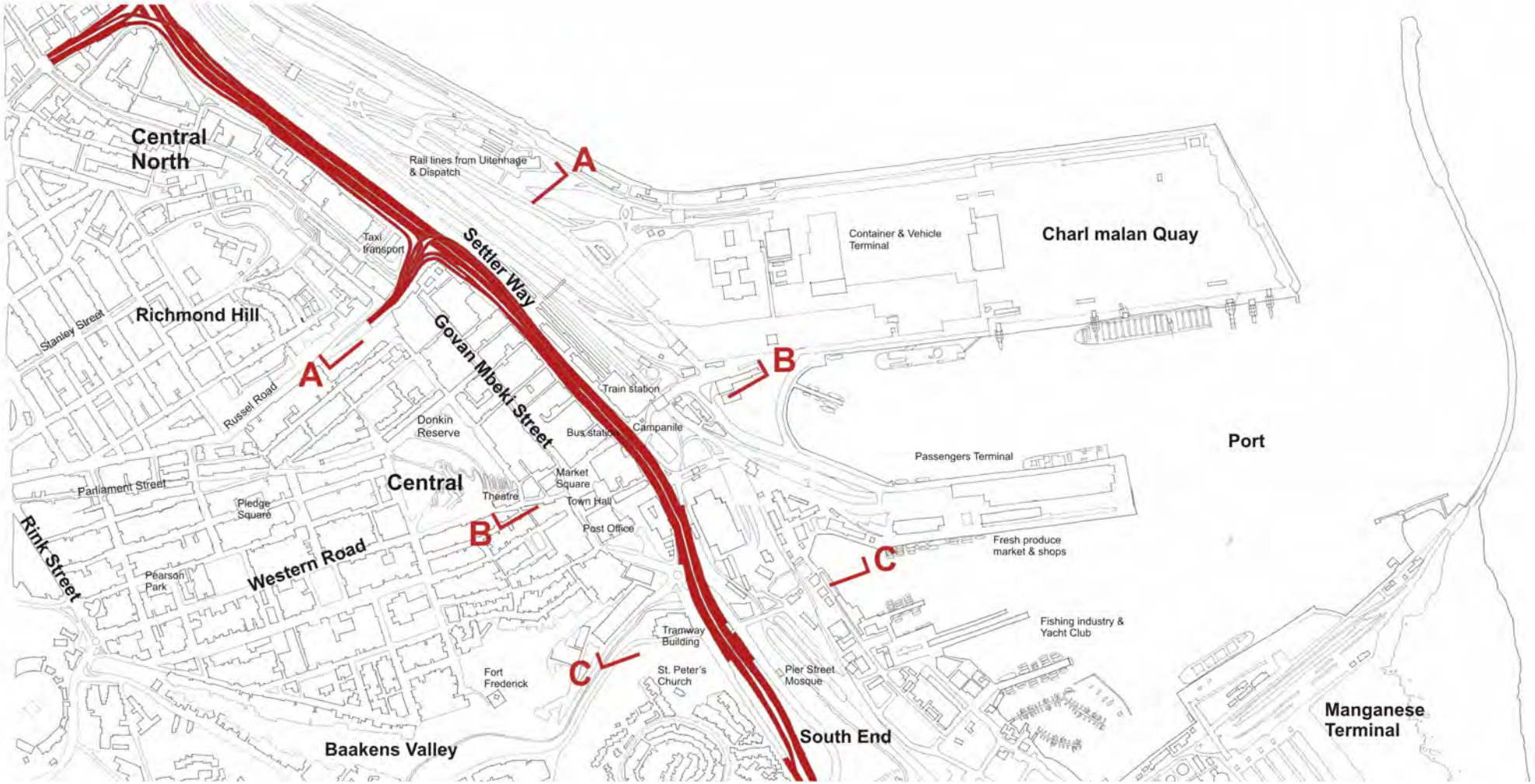
16.1 Walking Journey

The images and map describe the journey taken from Cape Road through the inner city and down to the port. This visual representation is what is suggested as a potential developmental approach for the future. It explores the existing context while moving through new areas that may develop and suggests the potential creation of public spaces along the route. **Legibility, permeability, access and choice** are important principles to be employed as these are lacking in the city currently. These still frames suggest possible ways in which these problems may be solved.





BEFORE


Central North
Rail lines from Uitenhage & Dispatch
A
Taxi transport
Settler Way
Container & Vehicle Terminal
Charl malan Quay
Richmond Hill
Stanley Street
Govan Mbeki Street
A
B
Russel Road
Train station
Donkin Reserve
Bus station
Campanile
Port
Passengers Terminal
Parliament Street
Central
Market Square
Theatre
Town Hall
Pledge Square
B
Post Office
C
Fresh produce market & shops
Rink Street
Western Road
Pearson Park
Tramway Building
Fishing industry & Yacht Club
Fort Frederick
St. Peter's Church
Pier Street Mosque
C
Manganese Terminal
South End
Baakens Valley

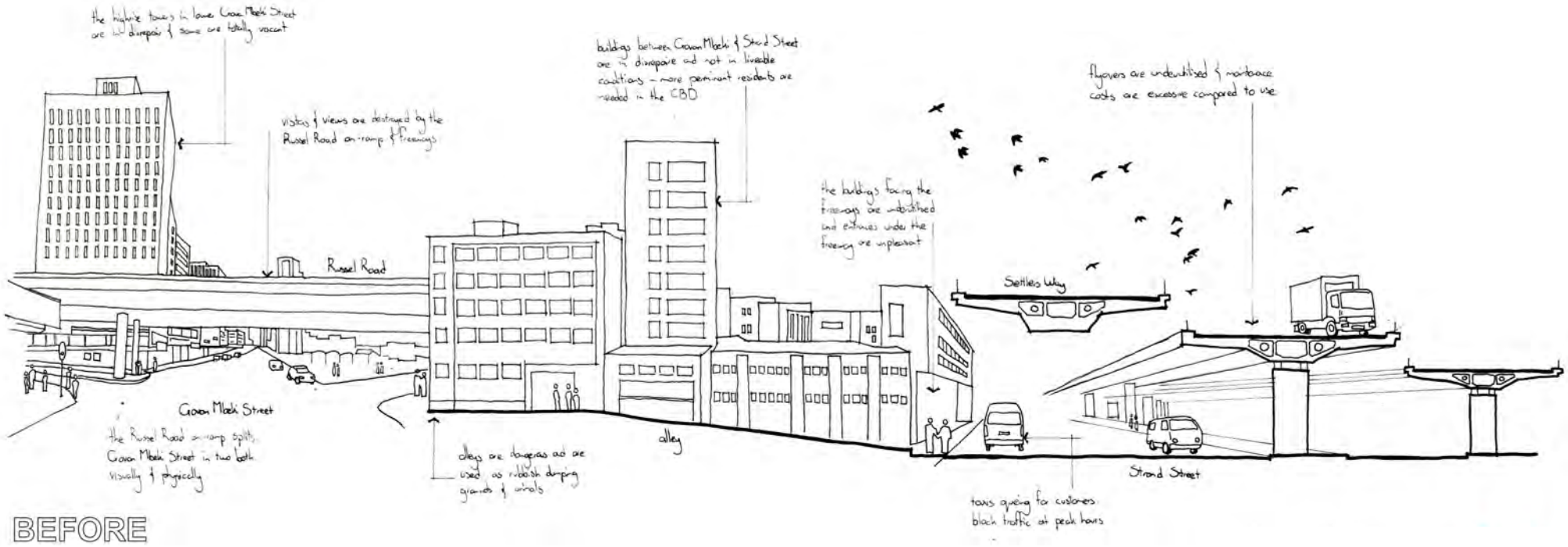
16.2 Sections through the Freeway

This part of the document will discuss the existing state of the freeway at different points and examine these conditions. Possible alternatives are then suggested through **visualising what may be achieved if the freeway is demolished**. These sections have been selected to cut through three significant points within the city centre. Section AA shows the connection of the freeway with Russel Road and the taxi rank. Section BB shows the Campanile and Market Square and Section CC shows the Baakens River and the entrance to the city.

In this visualisation the freeway is **replaced with a boulevard that facilitates the current traffic flow** along the coast. This enables both pedestrians and vehicles to navigate the city. Shop fronts are also able to line the boulevard and provide activity in this shared space. By removing the freeway and replacing it with a simple but robust boulevard most of the problems occurring in this area are already resolved.

Section through Govan Mbeki & Taxi Terminal

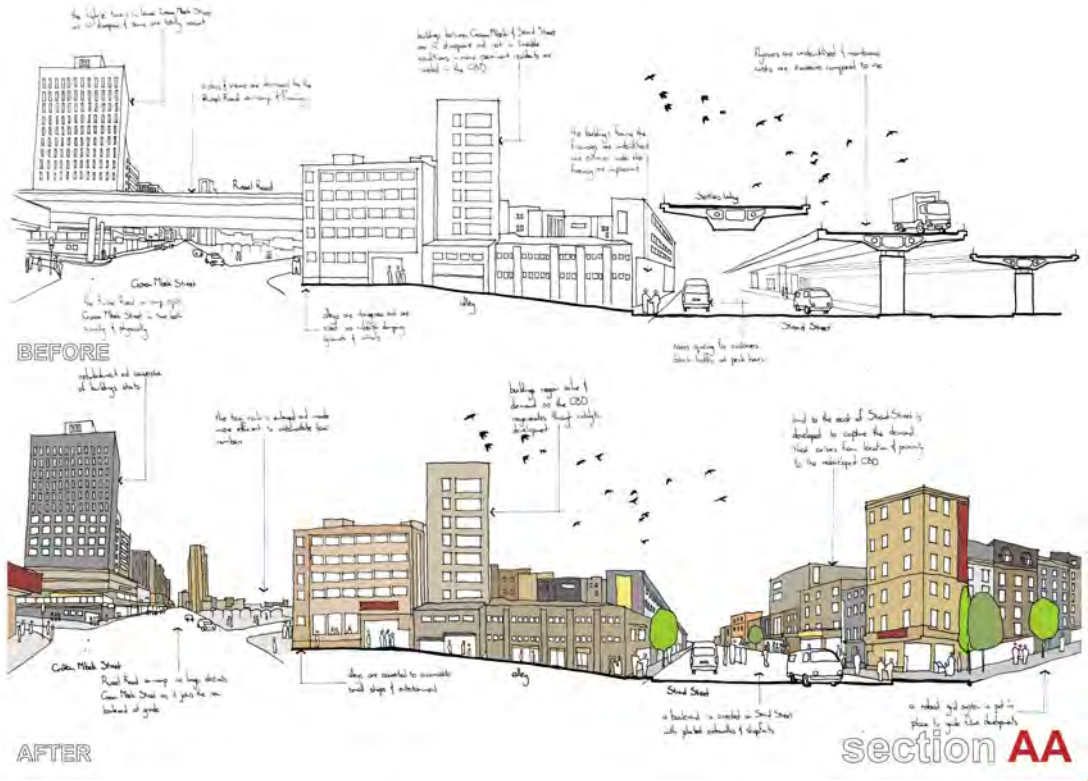
Section AA



16.2.1 Section AA

This section through Govan Mbeki Street and Strand Street illustrates the divisive manner in which the freeway exerts itself upon the CBD. The Russel Road turn-off splits Govan Mbeki Street in two and does not respect city scale. This area also suffers from the other ills relating to the overpass condition that occurs when flyovers are built in cities as discussed before. The taxi rank is also affected as the freeway is not conducive in forming a regional transport interchange area. The freeway off-ramps also take up vast amounts of space that amplify the problem. At some points up to eight lanes are formed with a width of sixty meters. This leads to vast amounts of underutilised or lost space underneath.

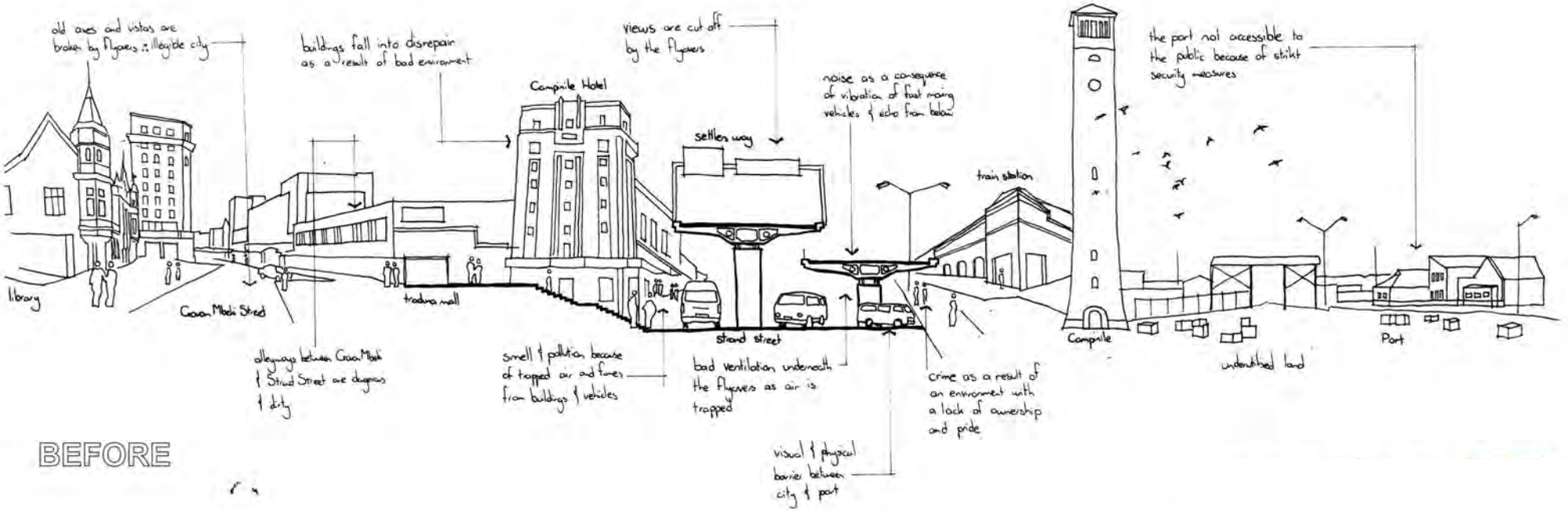
The benefits of a boulevard as a replacement for the freeway can be seen in the creation of street fronts and legible streets.



Images showing the taxi rank and the visual obstruction caused by the freeway.
(author, 2014)

Section through Market Square & Campanile

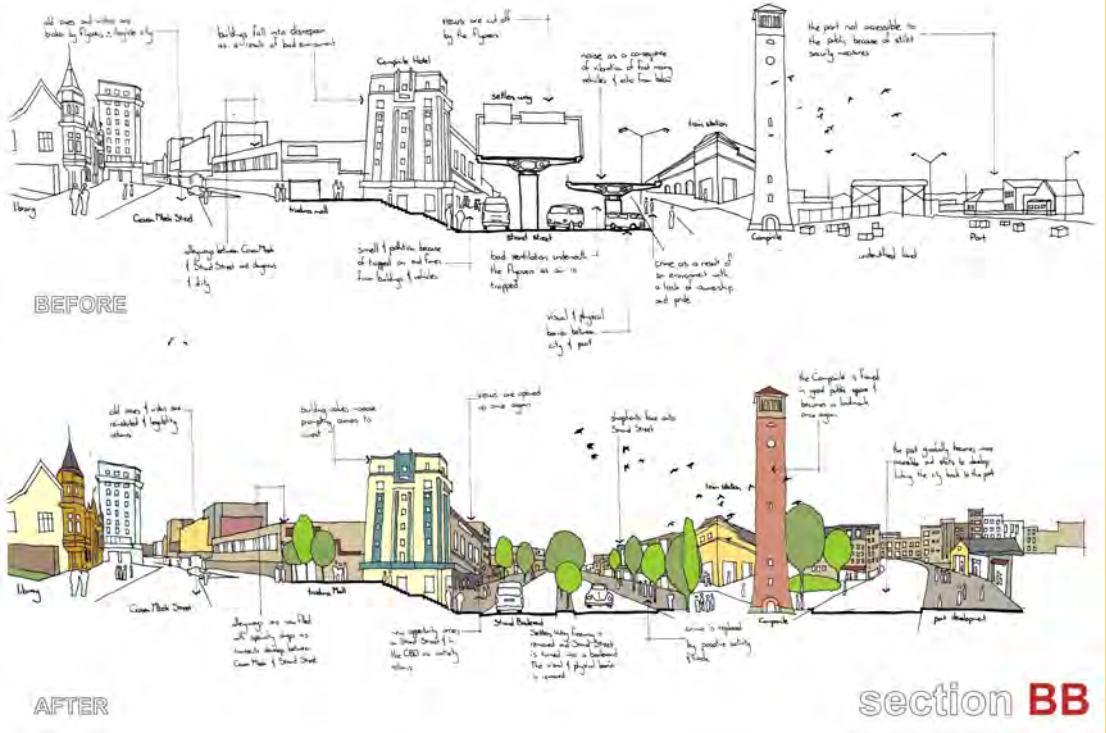
Section BB



16.2.2 Section BB

This section cuts through the middle area of the Settlers Way freeway. The legibility of the city is compromised by the freeway that cuts across and stops views and axial alignments with significant buildings. This is the case with the Campanile that gets cut visually by the freeway when viewing it from old **Jetty Street** (the street along which this section cuts). Lack of access to the harbour and the underdeveloped land is also a problem that stops the development of the inner city. The train station is also a victim of the freeway as it sits underneath the flyovers and is not clearly defined as an important building within the city. The bus terminus underneath Market Square is also not clearly visible. Important functions in a city such as these needs to form part of a larger public space as a transport interchange. The entrances and views for buildings off Strand Street are also compromised by the freeway.

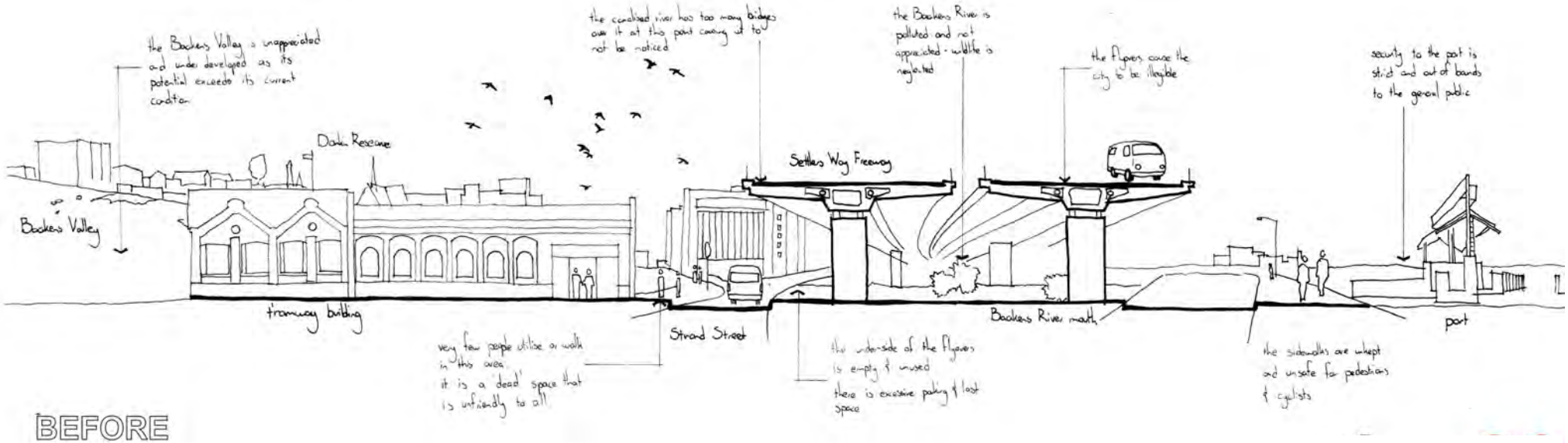
The removal of the freeway liberates these views and vistas once more and allows public spaces to be created.



Images showing the spatial condition under the freeway and the legibility problem occurring with the Campanile (author, 2014)

Section through Baakens Valley & River Mouth

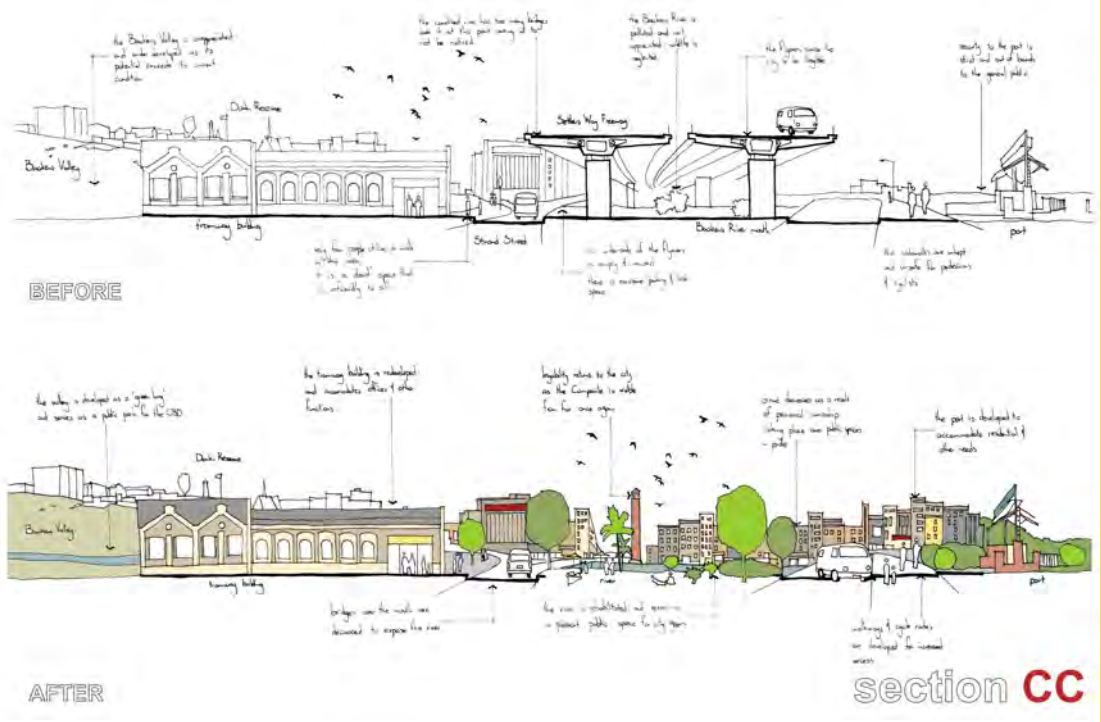
Section CC

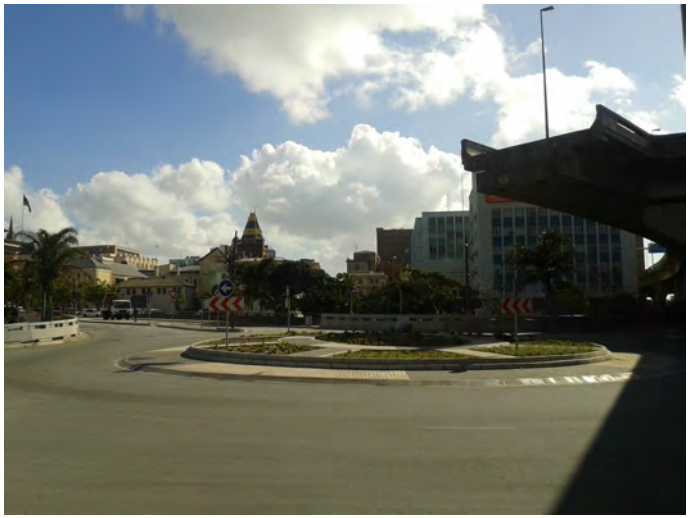


16.2.3 Section CC

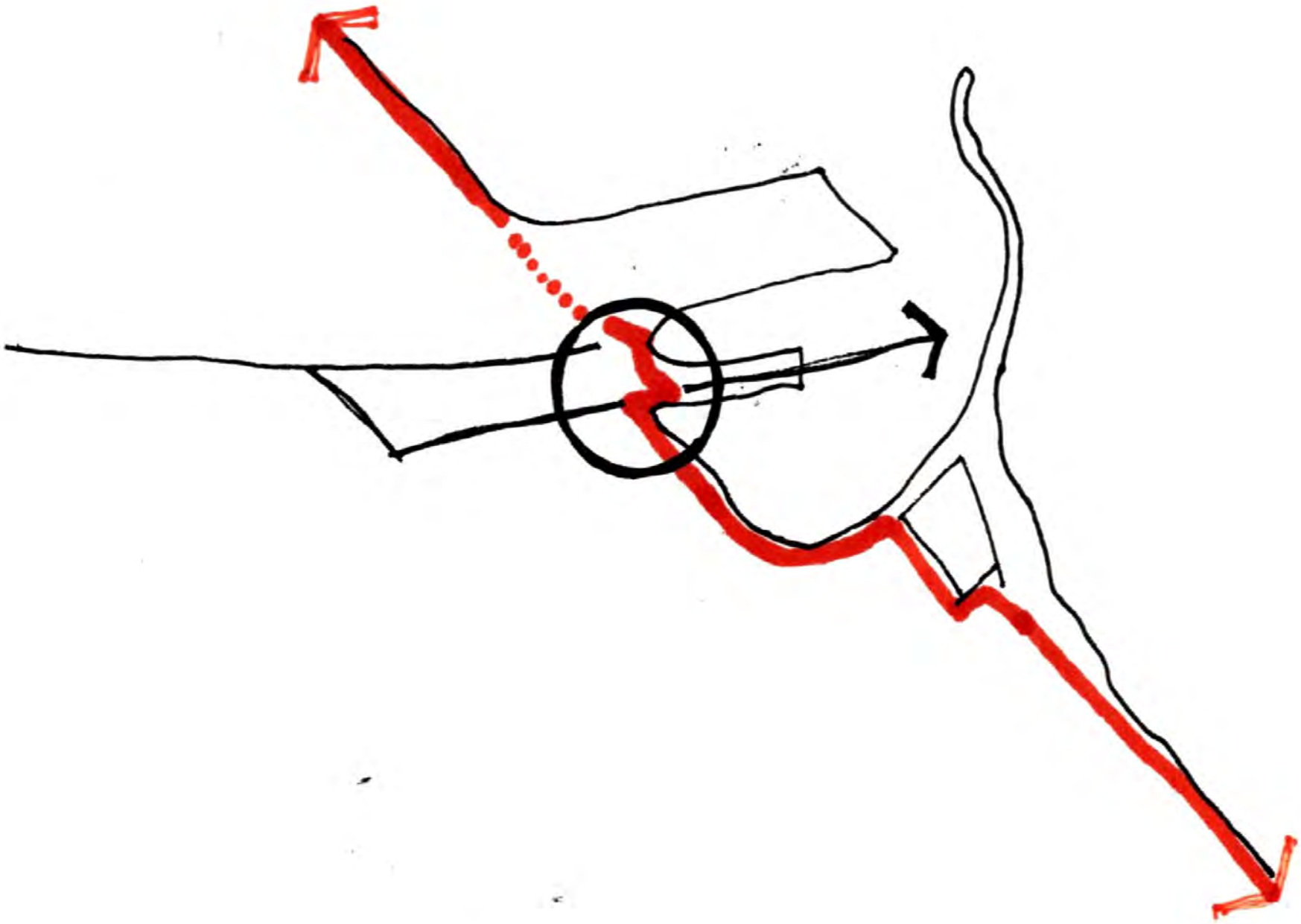
This section cuts through the southernmost part of the freeway. The Baakens River mouth enters the port at this point but is totally hidden by the freeway structure. There are too many bridges and freeway structures over the river mouth. This undermines the importance of the river mouth to the city as part of its heritage and developmental history. One of the only buildings in the area, the tramways building is dwarfed by the freeway. This area is also plagued by lost space under and around the freeway. This is because the South End area was demolished to make way for the freeway in 1963.Ultimately the freeway causes the gateway or entrance to the city centre to not be legible and the approach to the city is therefore not celebrated.

The removal of the freeway will open up the river which may become part of the larger Baakens Valley Precinct plan as mentioned before.





Images showing entrance to the city centre and the current state of the Baakens River
(author, 2014)

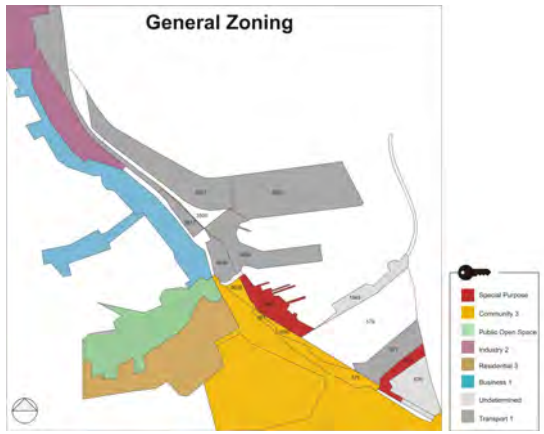


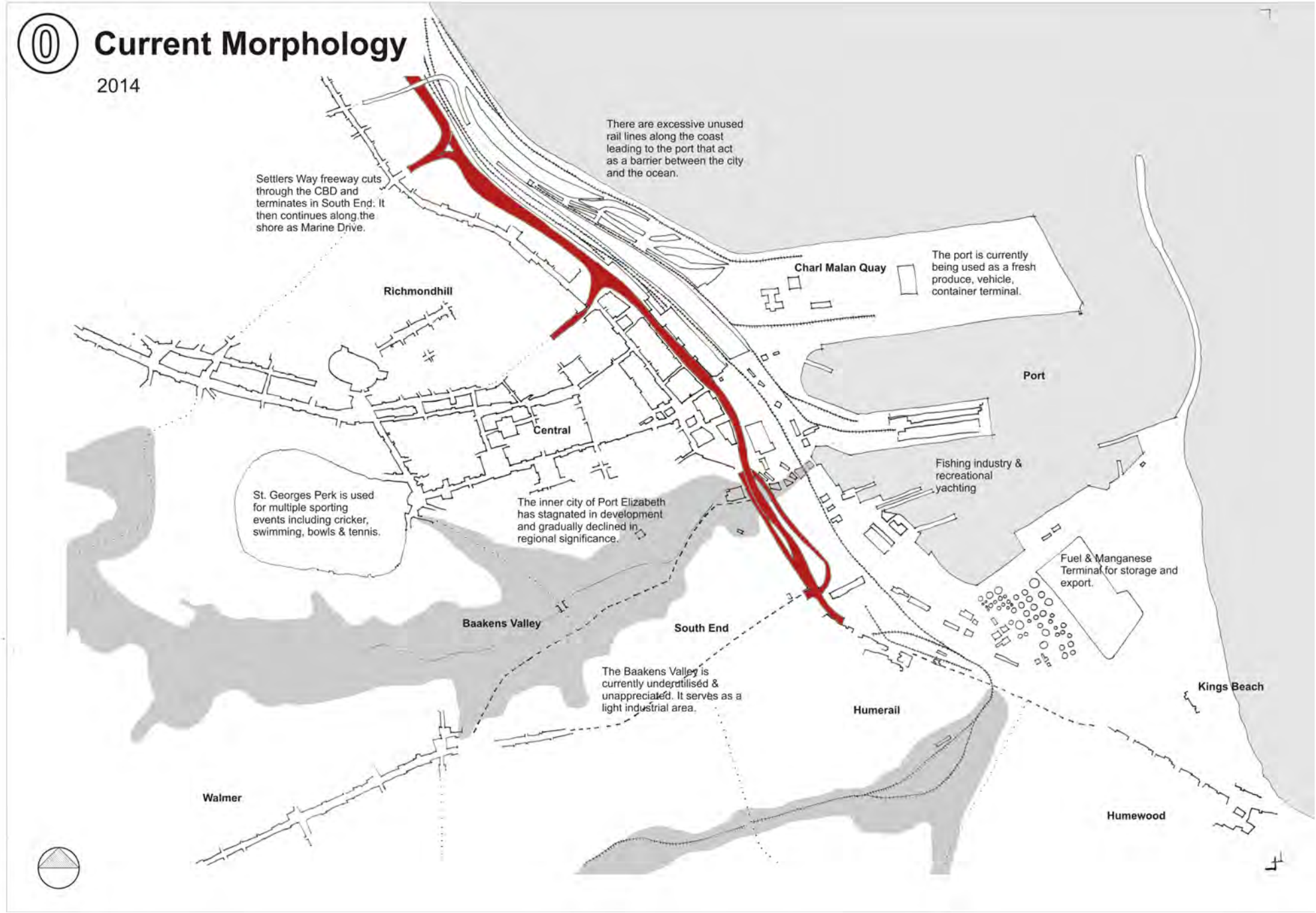
Current

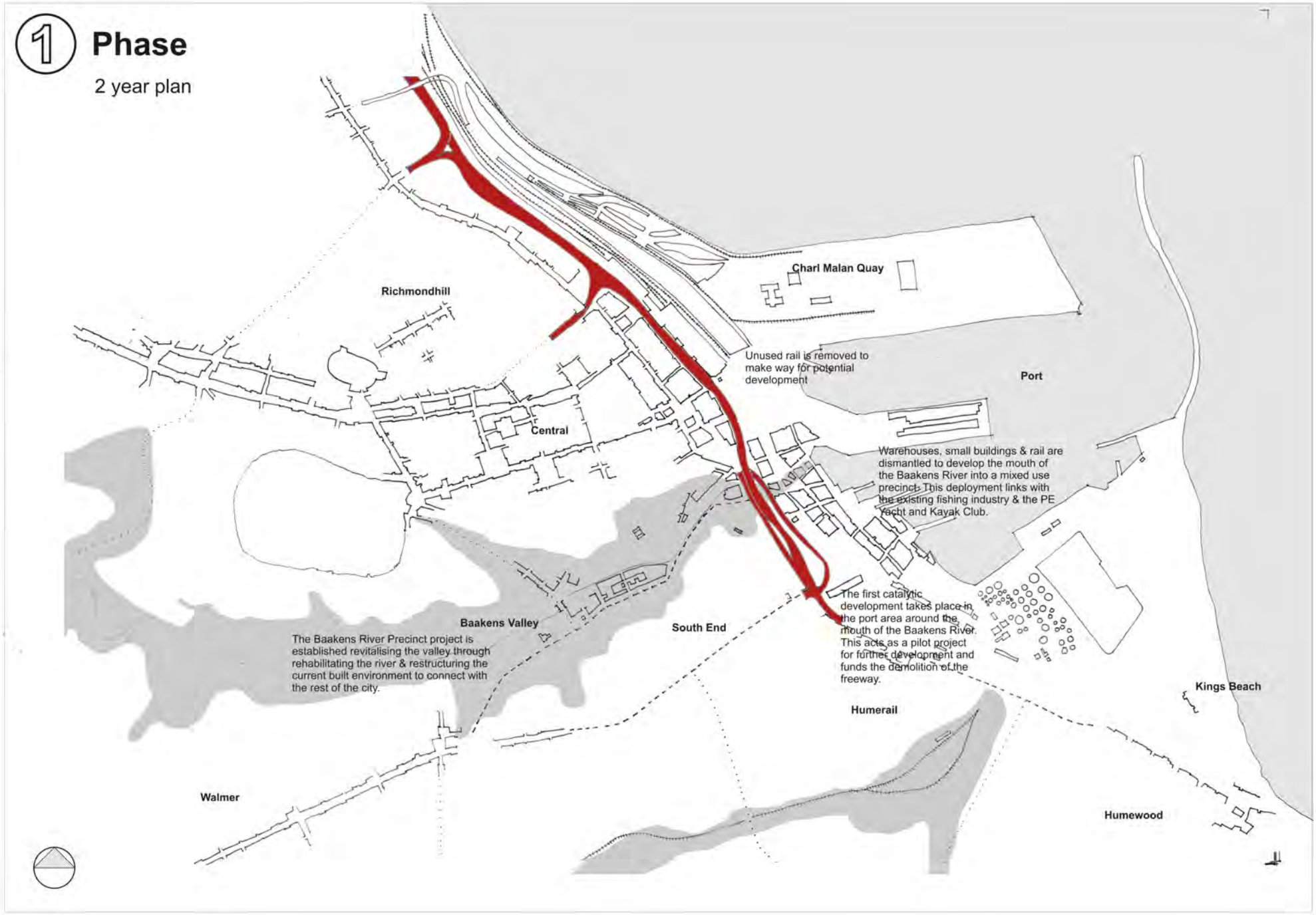
17. Incremental Development

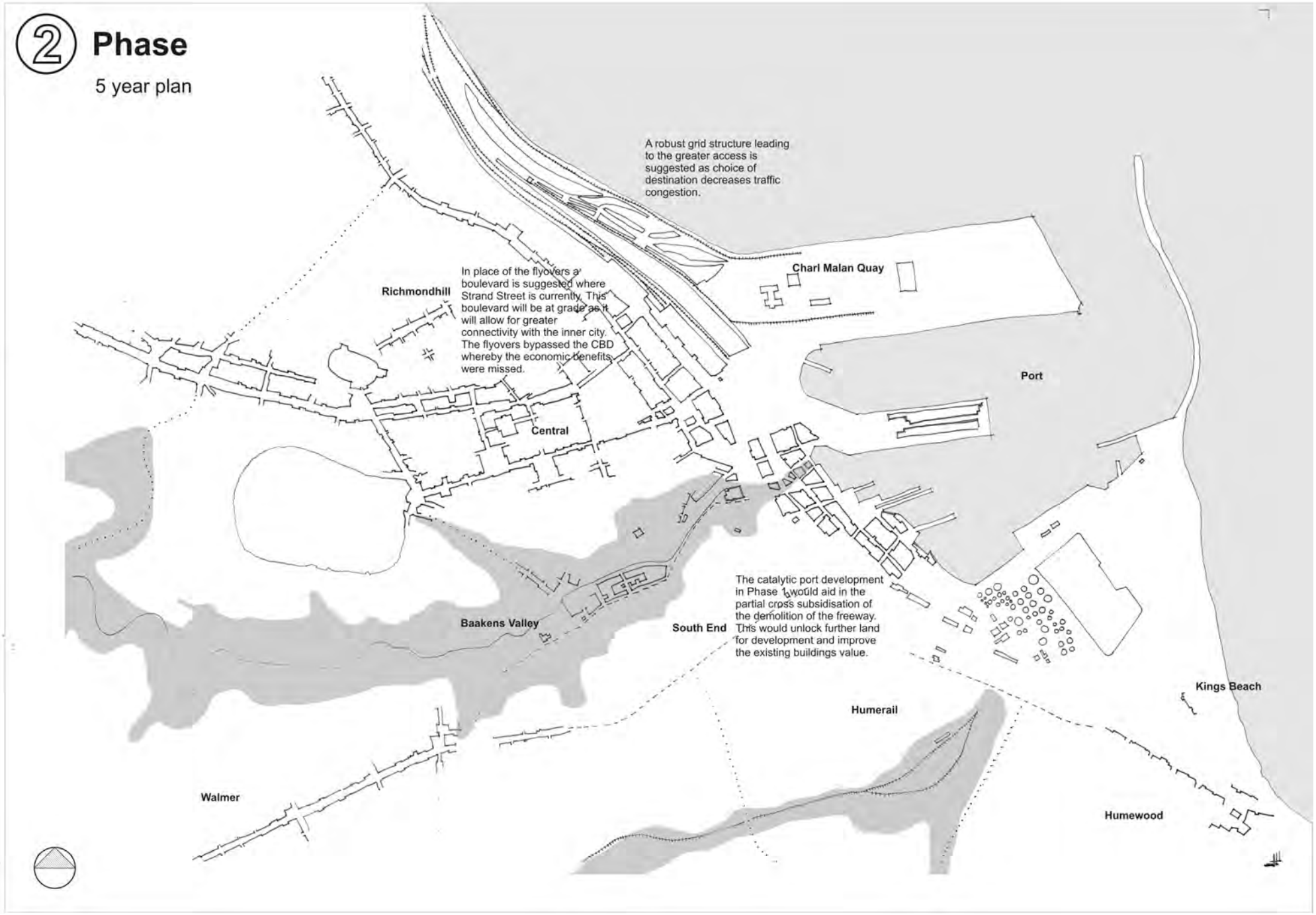
This section will explain a possible manner in which a development of the port area will be able to occur. The explanation starts with the current context of Port Elizabeth and assumes that a **pilot project will subsidise the demolition of the freeway.** The success of these projects will then inform further developmental initiatives by the private sector as demand increases for development closer to the port area.

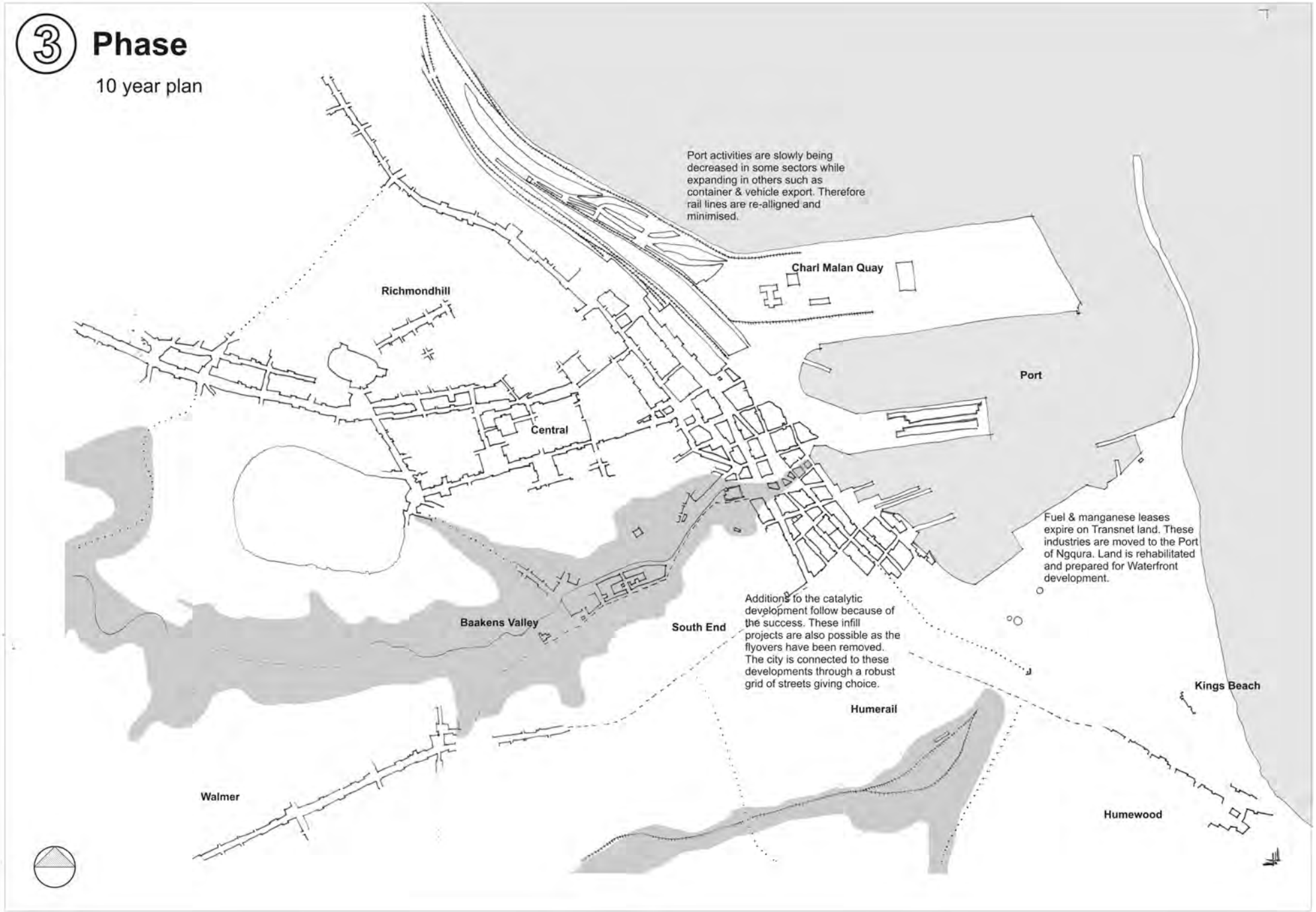
These phases have taken into account ownership, demand, potential zoning and timing of development to create an **incremental strategy for port development**. Not all of the suggested development may occur as other unforeseen factors might arise and therefore the timing of different phases may also take longer.

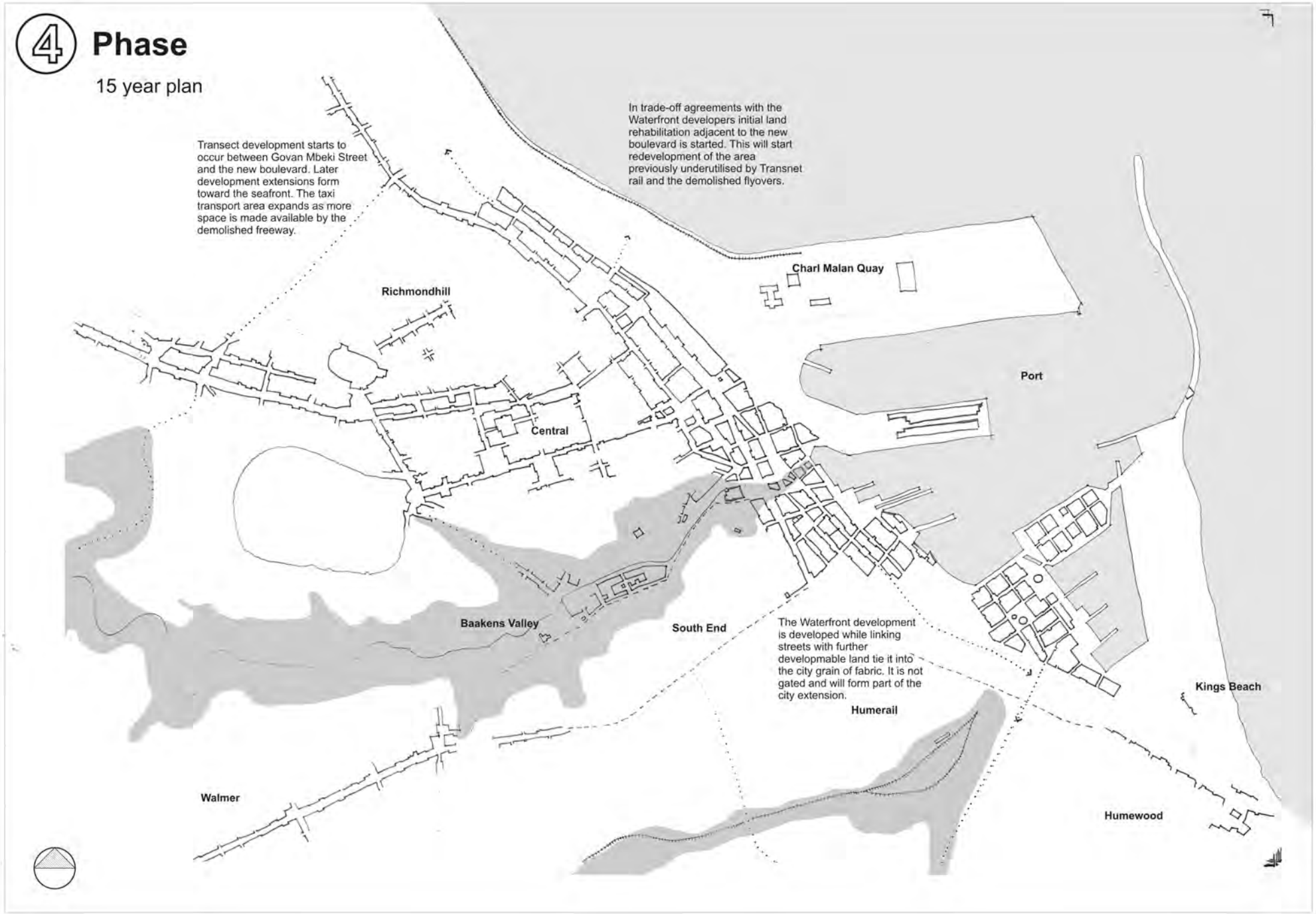


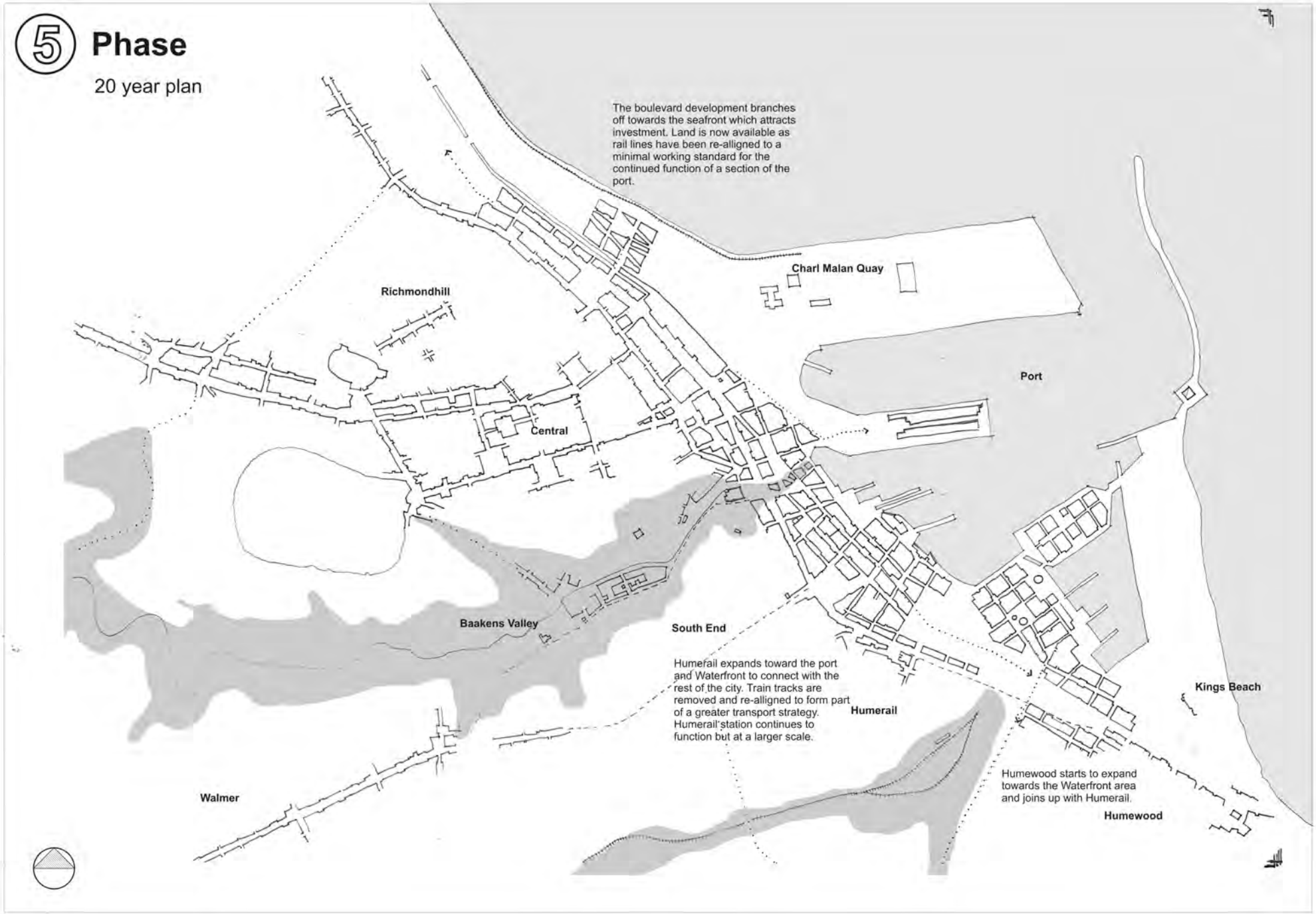

0
Current Morphology
2014
There are excessive unused rail lines along the coast leading to the port that act as a barrier between the city and the ocean.
Settlers Way freeway cuts through the CBD and terminates in South End. It then continues along the shore as Marine Drive.
Charl Malan Quay
The port is currently being used as a fresh produce, vehicle, container terminal.
Richmondhill
Port
Central
Fishing industry & recreational yachting
St. Georges Perk is used for multiple sporting events including cricker, swimming, bowls & tennis.
The inner city of Port Elizabeth has stagnated in development and gradually declined in regional significance.
Fuel & Manganese Terminal for storage and export.
Baakens Valley
South End
The Baakens Valley is currently underutilised & unappreciated. It serves as a light industrial area.
Kings Beach
Humerail
Walmer
Humewood

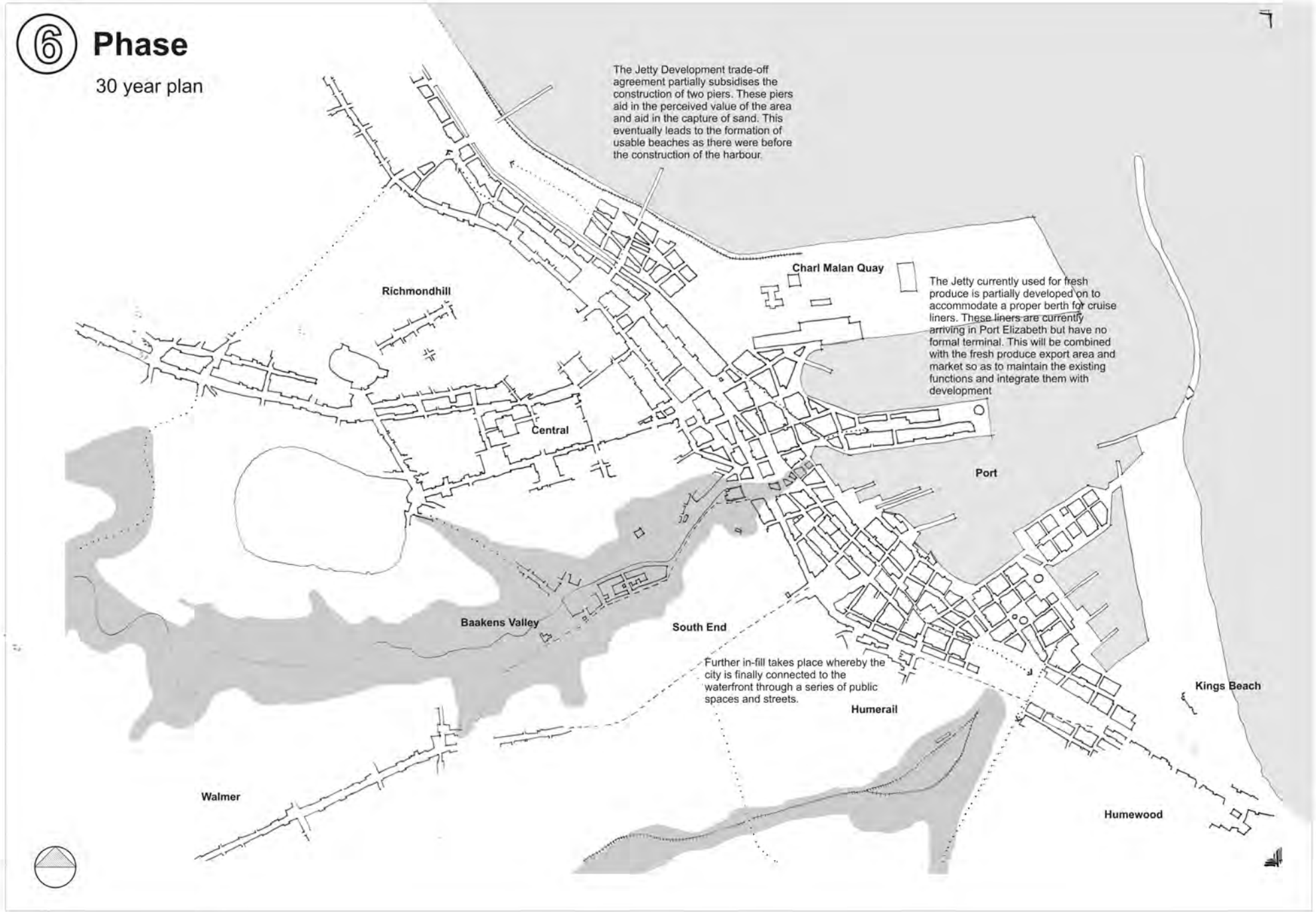

1 Phase
2 year plan
Richmondhill
Charl Malan Quay
Unused rail is removed to make way for potential development
Port
Central
Warehouses, small buildings & rail are dismantled to develop the mouth of the Baakens River into a mixed use precinct. This deployment links with the existing fishing industry & the PE Yacht and Kayak Club.
Baakens Valley
The Baakens River Precinct project is established revitalising the valley through rehabilitating the river & restructuring the current built environment to connect with the rest of the city.
South End
The first catalytic development takes place in the port area around the mouth of the Baakens River. This acts as a pilot project for further development and funds the demolition of the freeway.
Kings Beach
Humerail
Walmer
Humewood

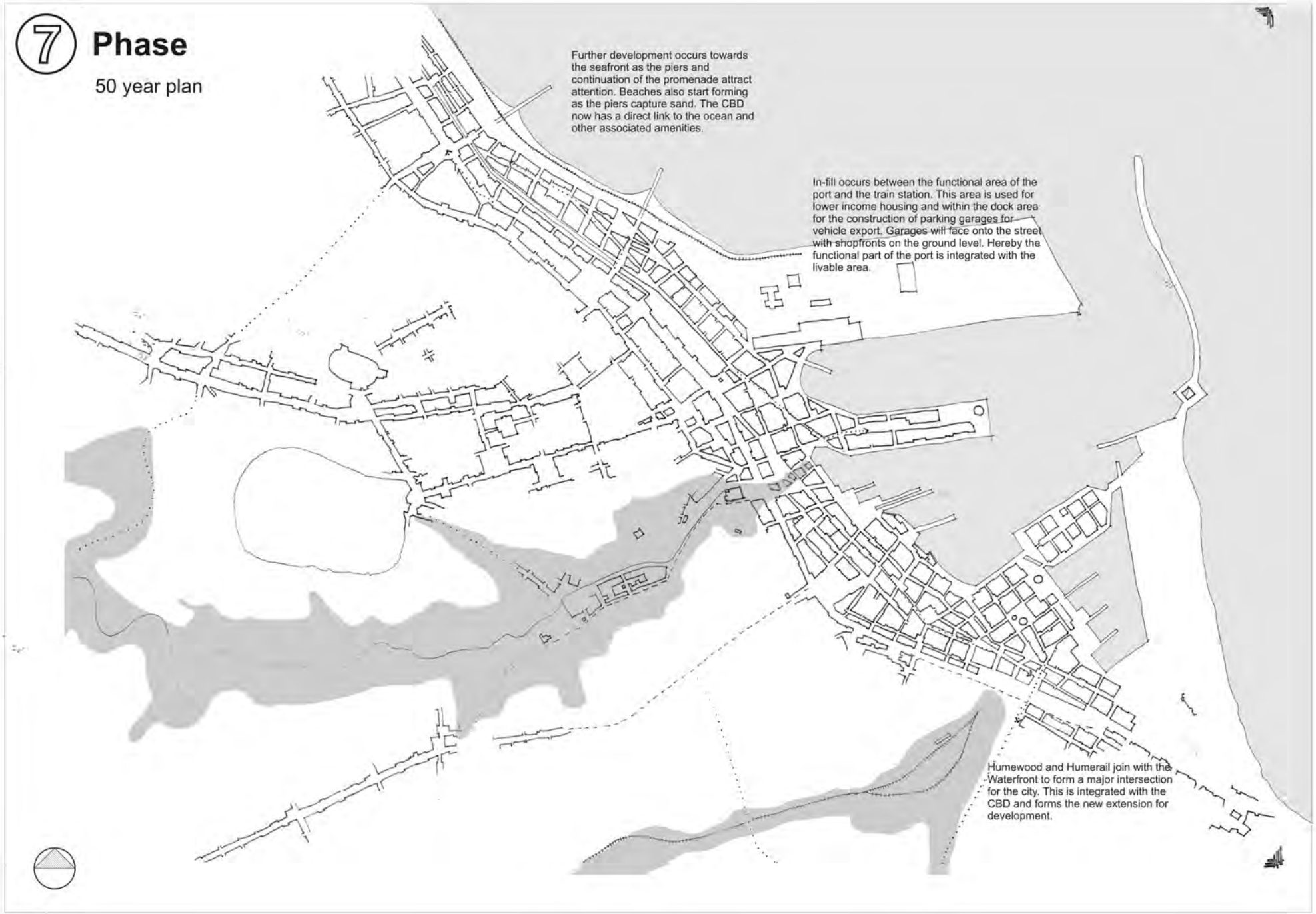

2 Phase
5 year plan
A robust grid structure leading to the greater access is suggested as choice of destination decreases traffic congestion.
Charl Malan Quay
Richmondhill
In place of the flyovers a boulevard is suggested where Strand Street is currently. This boulevard will be at grade as it will allow for greater connectivity with the inner city. The flyovers bypassed the CBD whereby the economic benefits were missed.
Port
Central
The catalytic port development in Phase 1 would aid in the partial cross subsidisation of the demolition of the freeway. This would unlock further land for development and improve the existing buildings value.
Baakens Valley
South End
Kings Beach
Humerail
Walmer
Humewood


3 Phase
10 year plan
Port activities are slowly being decreased in some sectors while expanding in others such as container & vehicle export. Therefore rail lines are re-alligned and minimised.
Charl Malan Quay
Richmondhill
Port
Central
Fuel & manganese leases expire on Transnet land. These industries are moved to the Port of Ngqura. Land is rehabilitated and prepared for Waterfront development.
Additions to the catalytic development follow because of the success. These infill projects are also possible as the flyovers have been removed. The city is connected to these developments through a robust grid of streets giving choice.
Baakens Valley
South End
Kings Beach
Humerail
Walmer
Humewood


4 Phase
15 year plan
Transect development starts to occur between Govan Mbeki Street and the new boulevard. Later development extensions form toward the seafront. The taxi transport area expands as more space is made available by the demolished freeway.
In trade-off agreements with the Waterfront developers initial land rehabilitation adjacent to the new boulevard is started. This will start redevelopment of the area previously underutilised by Transnet rail and the demolished flyovers.
Charl Malan Quay
Richmondhill
Port
Central
Baakens Valley
South End
The Waterfront development is developed while linking streets with further developmable land tie it into the city grain of fabric. It is not gated and will form part of the city extension.
Humerail
Kings Beach
Walmer
Humewood


5 Phase
20 year plan
The boulevard development branches off towards the seafront which attracts investment. Land is now available as rail lines have been re-alligned to a minimal working standard for the continued function of a section of the port.
Charl Malan Quay
Richmondhill
Port
Central
Baakens Valley
South End
Humerail expands toward the port and Waterfront to connect with the rest of the city. Train tracks are removed and re-alligned to form part of a greater transport strategy. Humerail station continues to function but at a larger scale.
Humerail
Kings Beach
Humewood starts to expand towards the Waterfront area and joins up with Humerail.
Humewood
Walmer


6 Phase
30 year plan
The Jetty Development trade-off agreement partially subsidises the construction of two piers. These piers aid in the perceived value of the area and aid in the capture of sand. This eventually leads to the formation of usable beaches as there were before the construction of the harbour.
Charl Malan Quay
The Jetty currently used for fresh produce is partially developed on to accommodate a proper berth for cruise liners. These liners are currently arriving in Port Elizabeth but have no formal terminal. This will be combined with the fresh produce export area and market so as to maintain the existing functions and integrate them with development
Richmondhill
Central
Port
Baakens Valley
South End
Further in-fill takes place whereby the city is finally connected to the waterfront through a series of public spaces and streets.
Humerail
Kings Beach
Walmer
Humewood


7
Phase
50 year plan
Further development occurs towards the seafront as the piers and continuation of the promenade attract attention. Beaches also start forming as the piers capture sand. The CBD now has a direct link to the ocean and other associated amenities.
In-fill occurs between the functional area of the port and the train station. This area is used for lower income housing and within the dock area for the construction of parking garages for vehicle export. Garages will face onto the street with shopfronts on the ground level. Hereby the functional part of the port is integrated with the livable area.
Humewood and Humerail join with the Waterfront to form a major intersection for the city. This is integrated with the CBD and forms the new extension for development.

Port Elizabeth aerial view
(author, 2014)

18. Conclusion

The inner city of Port Elizabeth undoubtable **suffers from urban decay** and disinvestment. The reason why this has occurred has been investigated in this project through research and analysis. One of these was that the **Settlers Way freeway** (M4) running through the inner city has caused spatial complications. This has led to the image of the city being tarnished by a single piece of infrastructure.

This project has set out an argument for an alternative future for Port Elizabeth by concentrating on this specific issue. **Economic, social and spatial investigations have been done** to determine which alternatives are appropriate. This project was divided up into three sections. The first examined the past, the second looked at the present and the third predicted a future.

The first section of this document dealt with the Port Elizabeth's **past**. It discussed the morphological growth of the city and the influencing factors that led it to develop in this particular way. The construction of the Settlers Way freeway and the decline of the inner city as a result was discussed. This was followed by current urban renewal projects that have occurred as an attempt to stop urban deterioration of the inner city.

In the second section an argument for freeway demolition was investigated. It looked at the **present** situation of the inner city and the possibility of demolition of the freeway in Port Elizabeth's city centre. The obduracy of freeway infrastructure was discussed by looking at the **technical, economic and social rational** behind such an argument. Alternative routes and traffic dispersal methods that may replace the current freeway were then discussed. Case studies were then examined for clues on how to implement these changes. How to navigate the freeway demolition project was then looked at to determine what stakeholders are involved and what negotiations, financing and legal aspects had to be taken into account. The last part of this section looked at potential developments that might unfold as a result of the freeway demolition project.

The Last section dealt with the **future** vision of the city and port area of Port Elizabeth. It investigated a vision for an alternative future through freeing up land that is currently underutilised via the freeway demolition. **Principles were then formulated** to guide and test the development of a proposal. Freeway conditions were investigated to establish the problems that occur as a result of freeways in the city as well as problems that may occur through its removal. Different freeway types were then discussed to determine the best suited alternative. More local examples in other South African cities were analysed before suggestions for the Port Elizabeth Condition were made. A metro analysis and inner city analysis were then done to determine what specific aspects should be focused on. An initial design process through a further investigation of case studies was then done before being followed by ideas and concepts. The Journey idea was then furthered and an incremental development proposal was set up.

This project has investigated the possibility of the demolition of the Settlers Way freeway and **determined that it is essential for the appropriate future growth** of Port Elizabeth's centre as well as the metro area in terms of spatial and economic benefit. The city centre is centrally located in the region and has a major spatial advantage in terms of trade and commerce. This alone should be enough reason for concern when it comes to social and economic reasons.

Furthermore it has been established through a comparison that **there is not lack of funds for this project, only a lack of will**. There have been no prior in depth reports done on this matter even though it has been considered a possibility for years.

Funding for the construction of road infrastructure for the new Baywest development on the periphery of Port Elizabeth has been approved and construction has started. This area is inaccessible to those without private vehicles . This infrastructure was subsidised by both the Port Elizabeth municipality and SANRAL by 15%. The total value of this project was R300 million. (www.baywestmall.co.za, 2014)

> "Baywest MD Gavin Blows says the Baywest developers, Abacus Asset Management and Billion Group, as well as the South African National Roads Agency SOC Limited (SANRAL), will pay the bulk of the costs for the new network, with the city contributing 15% of the costs."
>
> (www.baywestmall.co.za, 2014)

This means that R45million was spent by the municipality and SANRAL. When comparing this to spending R165million for the demolition and rehabilitation of the Freeway in the CBD of Port Elizabeth it is plain to see that there is **not a lack of funding available**. The CBD is also more accessible to the those without private transport.

The revitalisation of the CBD through freeway demolition is of much greater benefit to the city of Port Elizabeth and the metro area than an enclave development on the periphery of the city which contributes to further sprawl. Up until now it has been a combination of bad decision making relating to land use and spatial hierarchy that has contributed to further sprawl and fragmentation.

Therefore this projects suggests re-centralisation and concentrate of economic activities rather than spreading .This can be done through the demolition of Settlers Way which will lead to further development in the CBD of Port Elizabeth. It is suggested that this should seriously be considered and be done sooner than later.

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Port Elizabeth Time-line

- general events affecting Port Elizabeth
- economic events affecting Port Elizabeth
- administrative & legal events affecting Port Elizabeth
- major factors leading to the decline of Port Elizabeth's inner city

Morphology


1938


1941


1963


1976


1983


1994


2002


2007


2014

1924 — **Ford Motors** establishment of the first motorcar assembly plant in South Africa.

1926 — February, **General Motors** establishes a factory in Port Elizabeth

1927 — New Brighton estate industrial development starts

1930 — In October a new **Ford Motor Company** factory is opened in Harrower Road

1931 — Port Elizabeth is extended to include Korsten, Swartkops Deal Party Fairview township & Winterstrand.

1936 — **Firestone** opens a factory in Port Elizabeth

1938 — June, **Cadbury** Fry's factory is completed

1939 — Municipality resolves to build a Power Station at Swartkops

WW 2

1945

1950 — Parliament passes the **Union Group Areas Act**.

1961 — Zoning of Port Elizabeth under the **Group Areas Act** takes place.

1961 — South Africa declares **republic** and leaves British Commonwealth

1963 — **Settlers Way Freeway is built** through the centre of Port Elizabeth and South End **1**

1965 — **South End** residents are forcibly removed as per the Group Areas Act & to make way for the new freeway

1965 — **University of Port Elizabeth** is founded.

1966 — The Kempston Road Free Trade Area is established.

1974 — South Africa voted out of UN for apartheid policies

1974 — **University of Port Elizabeth is moved** from Bird Street in Central to Summerstrand nature reserve **2**

SA Border War

1983 — Coloureds and Asians allowed vote in South Africa

1983 — Motherwell is established.

1985 — First mention of potential **Waterfront Development** in Port Elizabeth

1986 — The Central Business District (CBD) is opened to all races.

1990 — the "New South Africa" is born

1994 — **South Africa becomes Democratic** Nelson Mandela becomes first black President of South Africa

2003 — **Mandela Bay Development Agency established** to help combat inner city decay of Port Elizabeth

2003 — Geneva Report of the International Maritime Organization & International Labour Organization - meeting of experts on security, safety and health in ports results in ring **fencing all ports worldwide**

2007 — Redevelopment of **Govan Mbeki Street**

2008 — Global **recession** starts

2008 — First mention of potential flyover demolition

2009 — **Port of Ngqura** and Coega IDZ becomes operational

2010 — The **Donkin Reserve** gets upgraded to a usable public space

2010 — **FIFA World Cup** Football event is held in Port Elizabeth is held at the Nelson Mandela Bay Stadium

2014 — The **Baakens Valley upgrade** starts

2015 — **Baywest Mall** opens on outskirts of Port Elizabeth

2015 — **Potential demolition of the Settlers Way freeway** to act as a catalyst for economic rehabilitation of the Port Elizabeth CBD **3**

Freeway Demolitions

a brief history of freeway demolition projects

During the 1950s through to the 1970s freeway construction throughout the world was the cure to ever increasing traffic pressures in cities. These freeway systems were originally inspired by the Autobahns of the Third Reich in Germany. Similar systems were implemented in the United States after WW2. The TransAm system navigated from city to city over the continent. South Africa later copied this model through a National series of highways.

The problem came where these freeways connected or intersected with the city. To avoid problems many were elevated to continue fast moving traffic over the city. This in turn led many CBDs to become discussed and started the process of urban degeneration.

During this time many people advocated for the halting of such projects. Jane Jacobs was one of these pioneers. The 'Freeway riots' were also a protest movement against the construction of freeways through city neighbourhoods.

It was not until the early 2000s that the benefits of the removal of such underutilised freeways were realised. Since then many cities around the world have reaped the benefits of freeway demolition projects. Countries that have implemented such projects are the USA, Canada, Spain and South Korea. Within these countries there are many more cities discussing similar possibilities.

As of yet South Africa has not realised the potential of such projects and cities such as Port Elizabeth continue to suffer the economic and social ills of these freeway conditions within the city. Therefore this project proposes such an intervention in Port Elizabeth to restore the cities former glory and pride.

Freeway Construction Trend

height of freeway era

1950

1960

Settlers Way Freeway
Constructed through the centre of Port Elizabeth & South End, RSA

1963

1970

1974

1974

Harbour Drive
Portland, USA

freeway built - 1942
project cost - $50 million
project date - 1974 till 1978
reason - freeway revolts and alternative route construction

1978

1982

1982

Central Artery
Boston, USA

freeway built - 1951 -1965
project cost - $14.6 billion
project date - 1982 - 2007
reason - freeway revolts and additional spatial need in the inner city

1991

1991

The Embarcadero
San Fransisco, USA

freeway built - 1959
project cost - $50 million
project date - 1991 till 2001
reason - earthquake damage from 1989 Loma Prieta earthquake

1992

1996

1998

1998

The Gardiner Expressway
Toronto, Canada

freeway built - 1955 - 1966
project cost - $39 million
project date - 1998 - 2001
reason - transferal of responsability between regulating bodies & maintenance

The Central Freeway
San Francsisco, USA

freeway built - 1959
project cost - $22.6 million
project date - 1992 till 2005
reason - earthquake damage from 1989 Loma Prieta earthquake

2000

2001

1970

Park East Freeway
Milwaukee, USA

freeway built - 1971
project cost - $25 million
project date - 1996 - 2003
reason - decrease in vehicle capacity (underutilised because not all segments completed) & maintenance cost

2003

2002

Cheonggyecheon Expressway
Seoul, Korea

freeway built - river covered & roads built 1958 -1976
project cost - $900 million
project date - 2003 - 2005
reason - river rehabilitation and public space creation

2004

Riverfront Parkway
Chattanooga, USA

freeway built - 1960s
project cost - $60 million
project date - 2000 - 2005
reason - decrease in vehicle capacity (underutilised) & maintenance cost

2005

Route 29 Boulevard
Trenton, USA (underway)

freeway built - 1953 - 1960s upgrades
project cost - undetermined
project date - 2004 - (discussions underway)
reason - need for developable land and public open space next to river

2007

2007

Madrid Rio Project
Madrid, Spain

freeway built - 1970s
project cost - $5 billion
project date - 2004 - 2011
reason - river rehabilitation and public space creation

2011

2011

Alaskan Way
Seattle, USA (underway)

freeway built - 1949 - 1953
project cost - $4.25 billion
project date - 2011 - further developments underway
reason - 2001 Nisqually earthquake damage

2012

2012

I-345 Project
Dallas, USA (underway)

freeway built - 1974
project cost - estimate $300 million
project date - 2012 - (discussions in progress)
reason - maintenance cost and additional developable land

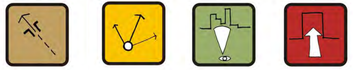
2015

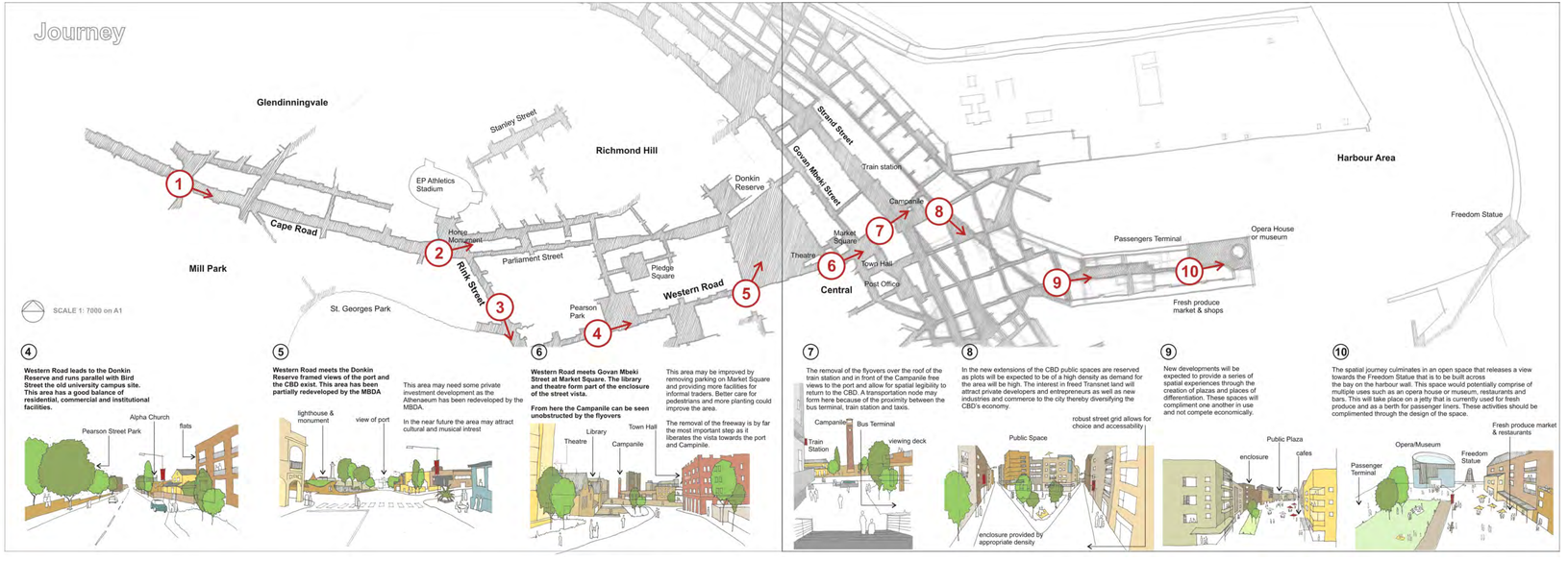
Settlers Way Freeway is demolished
the freeway is potentially demolished and redeveloped into a boulevard reinventing the local economy of the CBD

16. The Journey

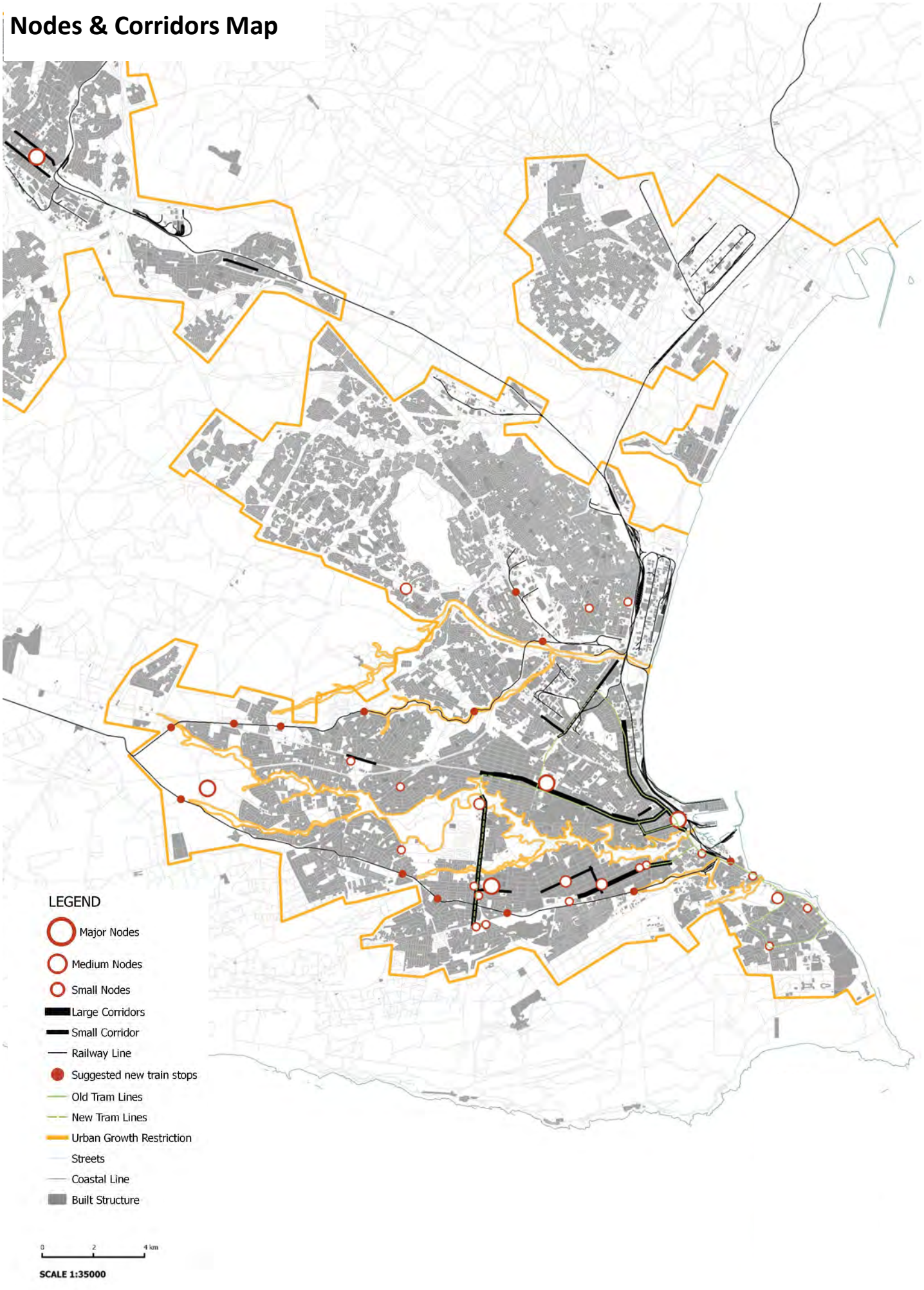
16.1 Walking Journey

The images and map describe the journey taken from Cape Road through the inner city and down to the port. This visual representation is what is suggested as a potential developmental approach for the future. It explores the existing context while moving through new areas that may develop and suggests the potential creation of public spaces along the route. **Legibility, permeability, access and choice** are important principles to be employed as these are lacking in the city currently. These still frames suggest possible ways in which these problems may be solved.

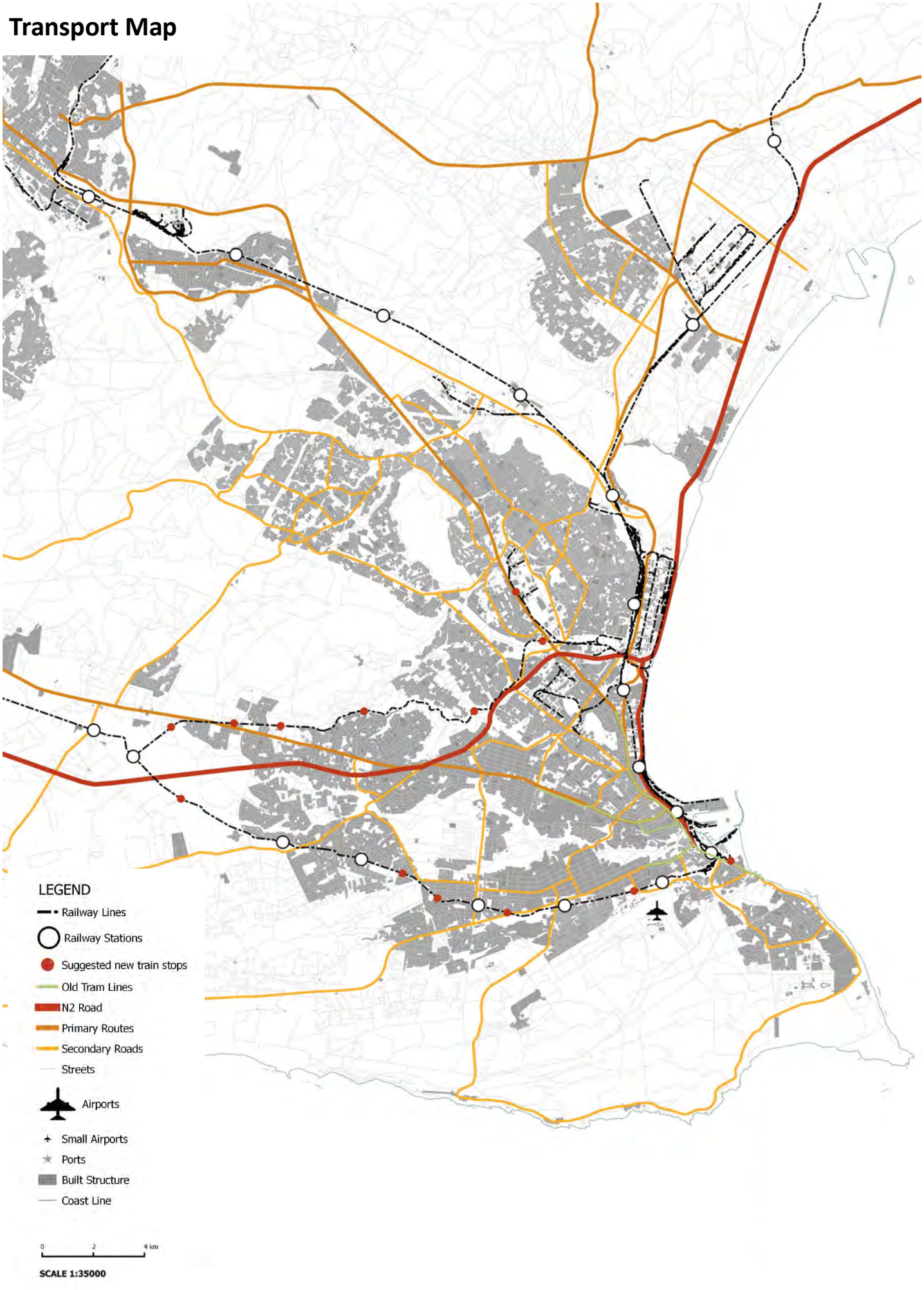




Nodes & Corridors Map



Transport Map

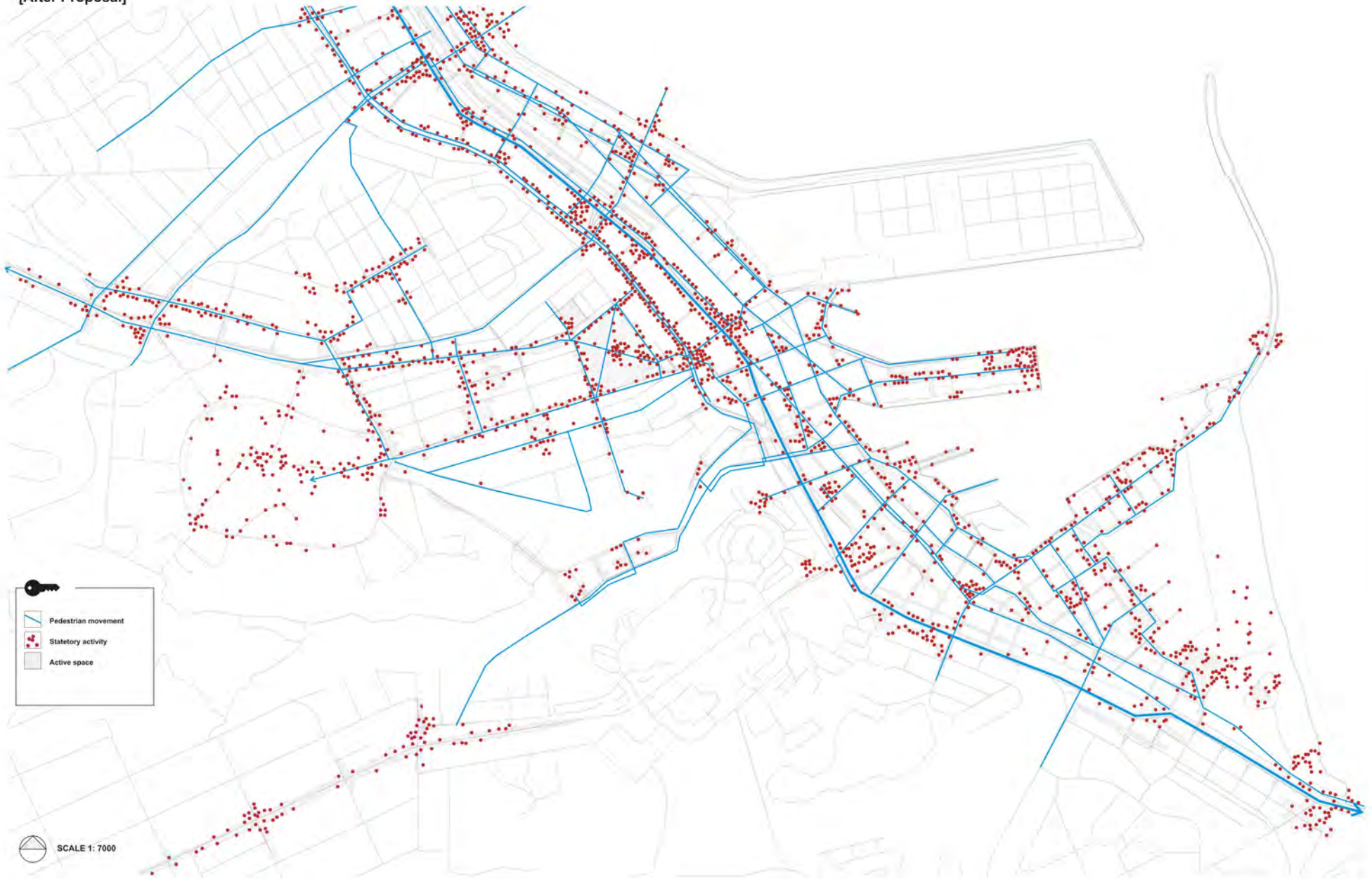


Spatial Connectivity

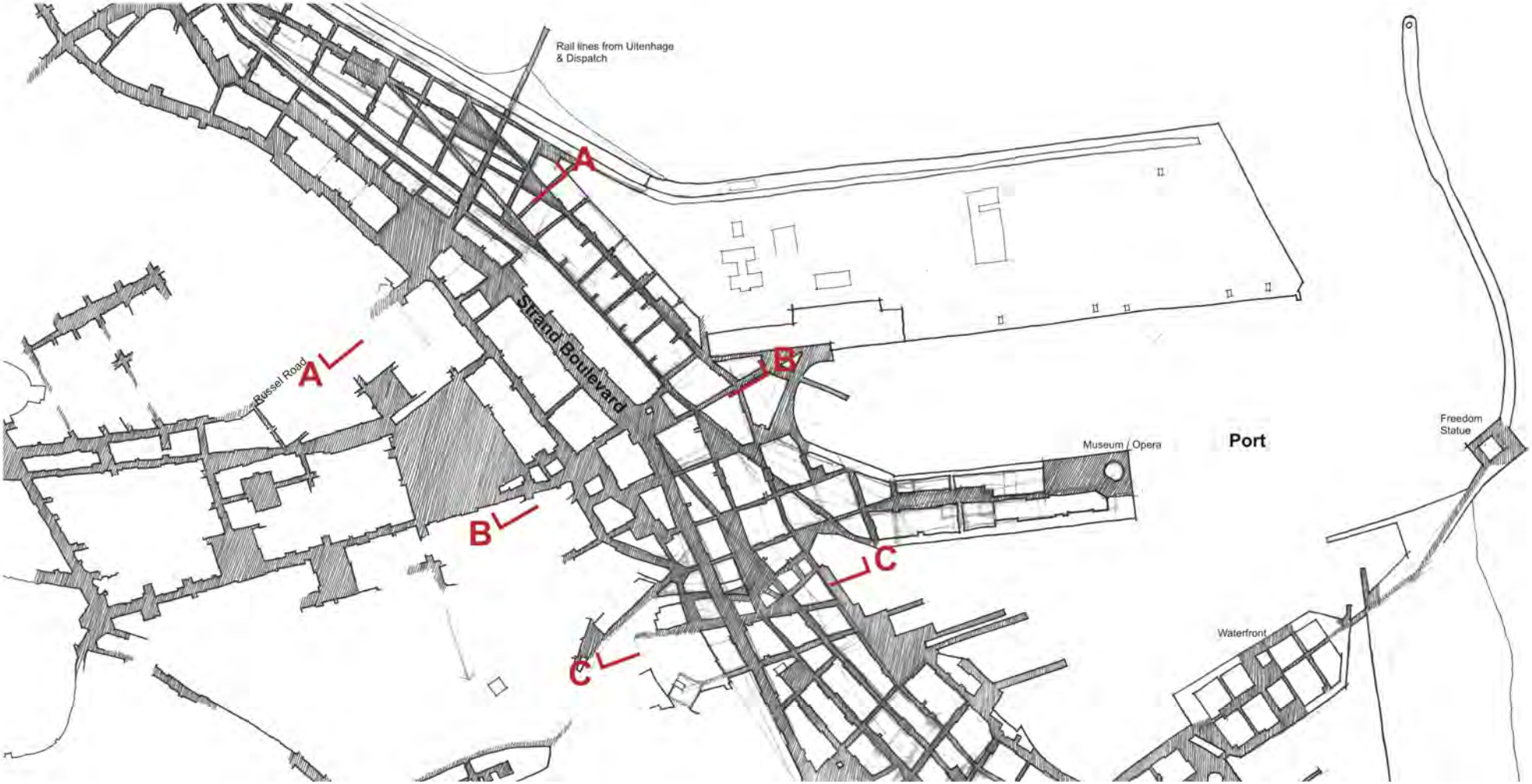
[After Proposal]

Spatial Usage & Movement

[After Proposal]



AFTER


Rail lines from Uitenhage
& Dispatch
A
A
Russel Road
Strand Boulevard
B
B
Museum / Opera
Port
Freedom
Statue
C
C
Waterfront

Section AA

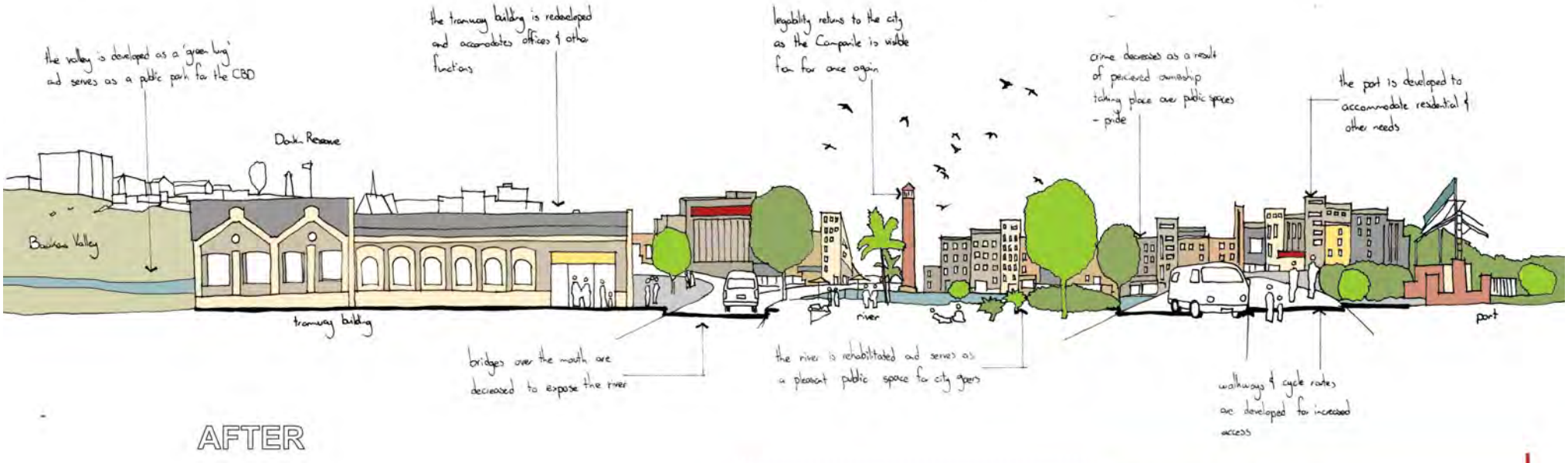

refurbishment and conversion of buildings starts
the taxi route is enlarged and made more efficient to accomodate taxi numbers
buildings regain value & demand as the CBD regenerates through catalytic development
land to the east of Strad Street is developed to capture the demand that arises from location & proximity to the redeveloped CBD
Cuba Mbeki Street
Russel Road on-ramp no longer obstructs Cuba Mbeki Street as it joins the new boulevard at grade
AFTER
alleys are converted to accomodate small shops & entertainment
alley
Strad Street
a boulevard is created on Strad Street with planted sidewalks & shopfronts
a robust grid system is put in place to guide future developments
proposed new development

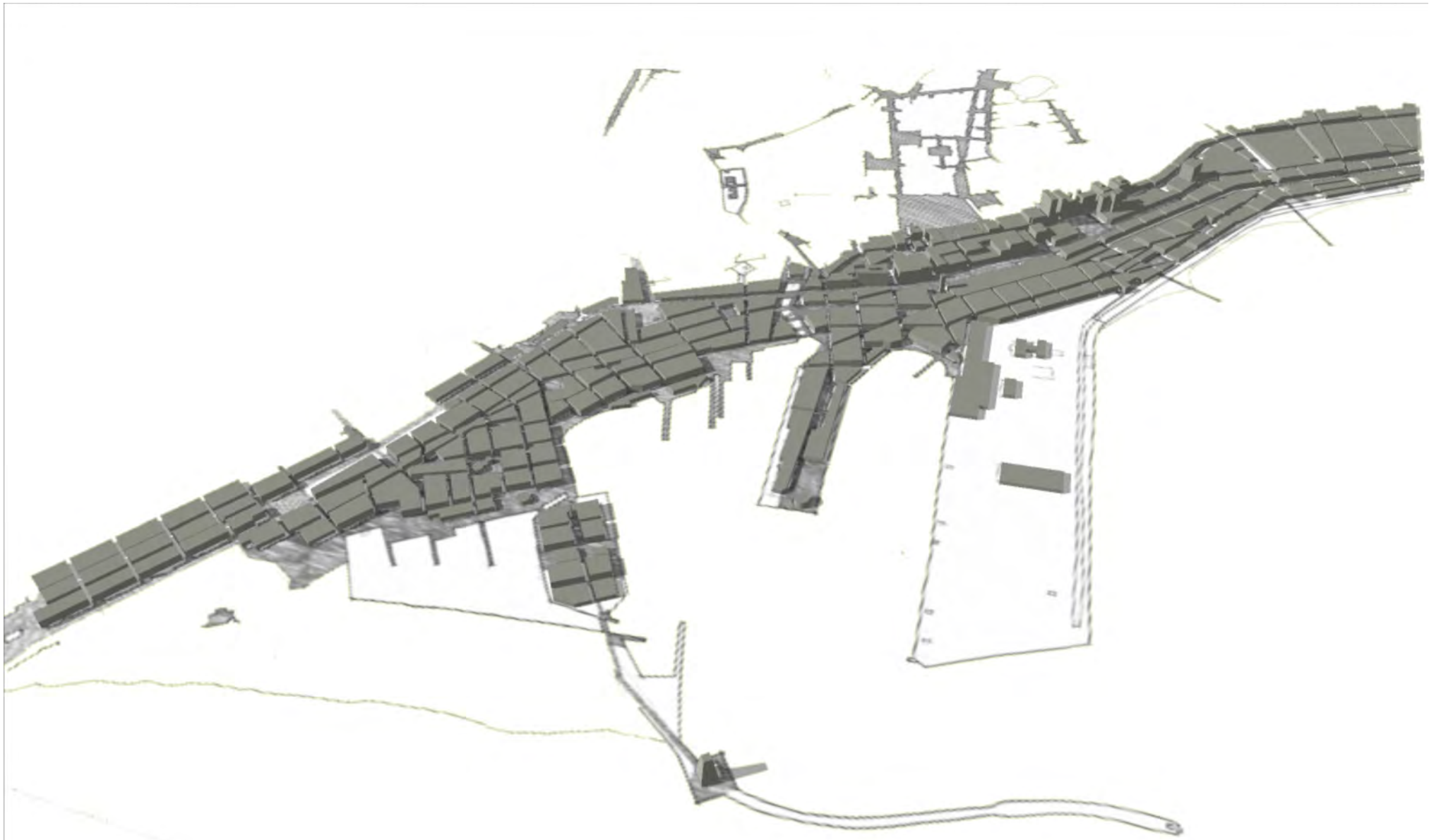
Section BB

AFTER

proposed new development

Section CC


the valley is developed as a 'green lung' and serves as a public park for the CBD
Dock Reserve
Bowden Valley
the tramway building is redeveloped and accomodates offices & other functions
tramway building
bridges over the mouth are decreased to expose the river
legability returns to the city as the Carparks is visible for far once again
river
the river is rehabilitated and serves as a pleasant public space for city goers
crime decreased as a result of percieved ownership taking place over public spaces - pride
the port is developed to accommodate residential & other needs
port
walkways & cycle routes are developed for increased access
AFTER
proposed new development



Potential