III MAKING URBAN III

III THE CITY 7.0 III

REBUILDING THE SOUTH AFRICAN CITY BY APPLYING MEASURED URBANIZATION

urban design research report
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n venter 437103

III MAKING URBAN III

III THE CITY 7.0 III

REBUILDING THE SOUTH AFRICAN CITY BY APPLYING MEASURED URBANIZATION

making urban. the city 7.0: rebuilding the south african city by applying measured urbanisation

by

nico johannes venter

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of

master of urban design

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supervisor:
professor paul kotze

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25 day of October 2012

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In its aim to redress the inequalities of the past, the South African cities of today turned a blind eye to the urban, rural, natural & social needs of citizens. Our cities, as they stand today, reflect an urban form that is neither sustainable nor equitable. Our cities do not invest in social capital nor aim to react to the reality of diminishing recourses. They are not 'civic in nature, pedestrian friendly nor environmentally smart'. When did our cities become so unimportant and disconnected from society? Through this Research & Design Report it is explored whether South African cities *(case study: Springs, Ekurhuleni Metropolitan Municipality, South Africa)* can be transformed through retrofitting cities, building cities, making cities, unmaking cities, redeveloping cities, restructuring cities by placing the needs of citizens and nature first_ to inform urbanization, natural resources and the infrastructure that feeds it. It is examined here whether the answer could lie with the application of measured urbanization. It is within the measurement of these urban elements that the future of South African cities can be imagined, it is through the SMART application of these measured responses that broad based realistic and true change will be brought about; that the urban barriers of segregation, isolation & exclusion will be overcome.

III SECTION A III

INTRODUCTION & PREAMBLE

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THEORETICAL CONCEPTS	SECTION C	
RESEARCH METHODOLOGY	SECTION D	
CONTEXTUAL ANALYSIS	SECTION E	
VISION & DRIVERS	SECTION F	
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SECTION A INTRODUCTION & PREAMBLE

A. INTRODUCTION & PREAMBLE

1. SETTING THE SCENE

i. RAISING THE ISSUES

The state of urban development in South African Cities is in a unique process of urban development and urbanization; intertwined with urban complexities of exclusion, historical separation and poverty. Over the past 3 decades, attempts have been made to undo the inequalities of the past, however limited effect has been achieved in addressing spatial segregation, inclusion, equity, sustainability, limited natural resources and the acknowledgement of nature within our loosely defined urban confines.

Through this Design Research Report an attempt will be made to address these complexities, and (re)making existing urban core environments through applied design informed by measured urbanization. Soplet (2012) states that 'the reality of complexity is why design exists. It is not disconnected from science and data – good design is the resolution and integration of many competing issues.'

The focus of the interventions will be aimed at existing core urban environments, as they contain high levels of infrastructure that is under-utilized or disused. The Urban Task Force argues strongly that there is a need to support existing communities, through regenerating inner cities and reusing derelict land, rather than building elsewhere (Willis, 2008). Conversely, the aim to envisage new ways of making or (re)making urban environments that provide alternative solutions to the current approach to urban development and sprawl.

In proposing alternative design solutions, the intent is not to discard all design & planning systems; as 'planning systems can be changed so that they are able to function as effective instruments of sustainable urban change, that are capable of making cities more environmentally sound and safe, more economically productive and more socially inclusive.' (United Nations Human Settlement Programme, 2009).

This Design Research report will endeavour to analyse the urban informants and propose alternative solutions towards achieving inclusive, equitable, dense and integrated urban environments; that are sustainable, employ SMART plans & policies while including the natural environment.

ii. STRUCTURE OF THE REPORT & APPROACH

GUIDELINE TO THE REPORT

In approaching this Report and acknowledging the complex nature of cities, it is important to provide a guide to interpret this report. Through the theoretical analysis, spatial analysis, design development & design proposals the report looks at a multiple of scales and scaled interventions. To assist the reader in understanding the approach, a sequence of icons are provided in the top right corner of the page.

These icons illustrate the various scales within which the report is structured (these scales are illustrated & named to the left). Each of these icons will be highlighted on every page to indicate what the applicable scale is for the particular subject matter. This is required as the proposals shift between scales to strengthen arguments, form a theoretical base & proposed design solutions.

REPORT STRUCTURE & FOCUS

The following provides a breakdown of the structure of the report and the main aims of each section of the report.

A. INTRODUCTION & PREAMBLE

In this part of the document forms the basis for departure of the design report. Here the key issues driving the research report will be highlighted and the structure of the report presentation discussed.

B. TOWARDS A HYPOTHESIS

Global, African & South African Trends will be discussed in this section, which further support the key issues and inform the hypothesis & problem statement.

C. THEORY

In this section a theoretical review will be provided relating to the key urban issues of concern.

D. RESEARCH METHODOLOGY

Here the research methodology will be illustrated.

E. CONTEXTUAL ANALYSIS

A statistical & spatial analysis will be made of the Ekurhuleni Metropolitan Municipality and the Springs area (the site). Here the 9 former towns of Ekurhuleni will be compared to the 11 township areas, in order to further illustrate the ineffective spatial development of typical South African urban areas, and thereby setting the base for proposing an alternative to the current urban form pursued. The results from this analysis will be used as prime informants to the strategies and principles applied.

F. VISION & DRIVERS

This section illustrates the vision of the proposed urban redevelopment and the broad drivers of this redevelopment, interpreted from the spatial & statistical analysis.

G. DESIGN DEVELOPMENT

This section will illustrate the Urban Strategies that can be employed on an Urban Complex Scale (Springs, Brakpan & Kwa Thema) to facilitate the restructuring of the existing urban form.

H. DESIGN PROPOSALS

Here the design proposal will be presented by means of principles and key actions to be implemented on the Site Scale (the Site). These principles & actions represent the detailed designs & strategies to achieved a restructured urban form.

I. FINDINGS & DISCUSSIONS

To illustrate the quantitive impact of the proposed development, the statistical & spatial analysis conducted in Section E will be compared to the final design proposal (Section G). This comparison will aim to quantify the successes of the proposed restructured urban form.

J. RECOMMENDATIONS

Key recommendations will be made in terms of potential project implementation & phasing

K. CONCLUSION

Concluding remarks will be presented, tying the Research Report & Design back to the key issues & hypothesis of the study.

III SECTION B III

TOWARDS A HYPOTHESIS

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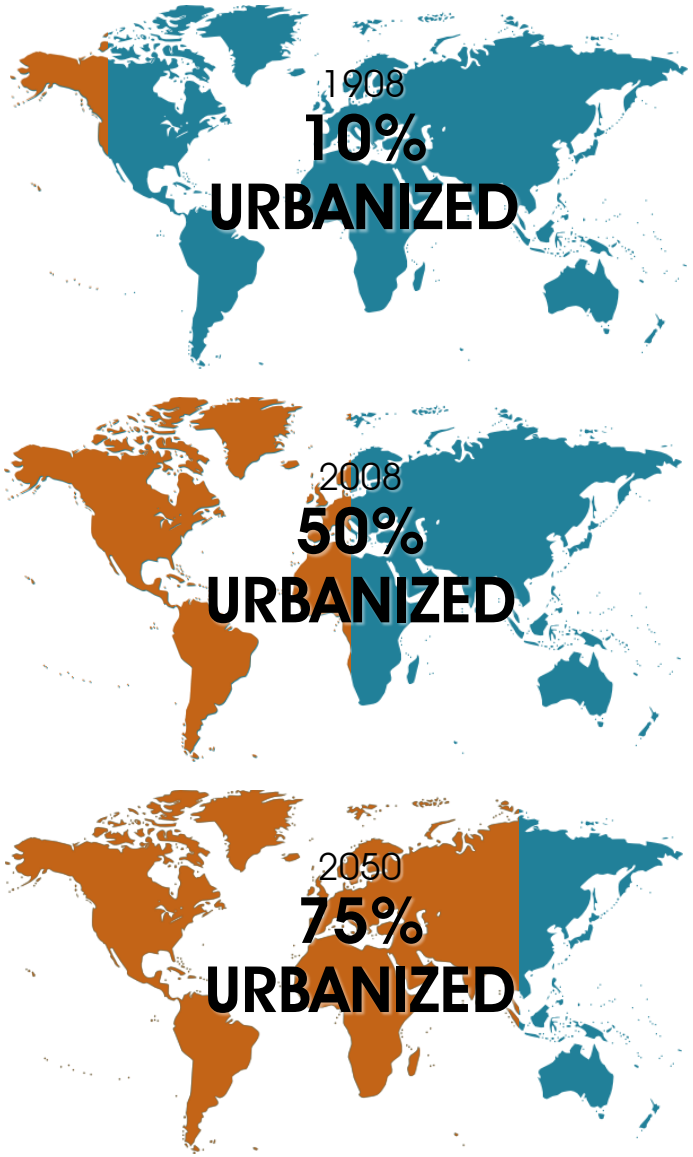
B. TOWARDS A HYPOTHESIS

1. GLOBAL TRENDS FOR URBANIZATION, URBAN DEVELOPMENT & GROWTH

i. URBANIZATION & POPULATION GROWTH: GLOBAL



As a point of departure, lets view urban development in the globe. The Rockefeller Foundation (2008) indicated '(O)one in every ten people lived in urban areas a century ago'; and for the first time in 2008 … 'a majority of people live in cities.' 'By 2050, the United Nations projects, almost three-quarters of the worlds' population will call urban home. Most of this growth is centred in the developing countries of the Global South. In these emerging economies, nearly three of every five people will live in urban areas by 2030.' (Peirce *et al*. 2008).

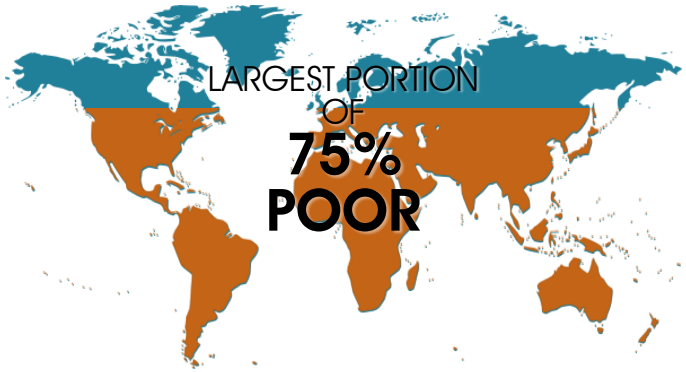
Subsequently, this suggests that the world is urbanized and will become more urbanized in the future. From this premise, if one should add the vast population growth expectancy, to the already limited/ unknown/ stretched resources (food, shelter, fuel, etc), environmental pollution & impacts, and add some increasing poverty; the anticipated future of our urban environments would look and function much more different than our urban environments of today. Conversely, with an increased population (majority of which is poor) and declining availability of energy/ water/ natural resources/ produce/ sanitation/ land- tenure/ pollution effect/ agricultural- arable land/ natural environment etc; the focus in urbanized areas will have to shift towards the making of urban areas that will secure a more sustainable future. The image to the right indicates that 75% of the worlds population is poor, and that the largest proportion of this poverty is located in the southern hemisphere.

50%

URBANIZED NOW

ii. URBANIZATION & POVERTY (THE URBANIZATION OF POVERTY): GLOBAL

POVERTY IN FUTURE WILL BE URBAN POVERTY



CURRENT URBANISATION

1 in 10 lived in urban areas a century ago
In 2008 more people are urban than rural
2050 - ¾ of worlds population urbanized
Largest growth in Global Cities of South – by 2030 ⅗ people will live in urban areas
Largest growth in Cities of South & largest proportion poor
Focus on Global South, Africa & SA

WHY CITIES IMPORTANT & WILL REMAIN IMPORTANT:

Primary economic engines
Reduces poverty
Agglomeration of best
Largest contributions to GDP's
Such in Global North – opposite in Global South
Global South – cities are centres of opportunity – but limited access to resources

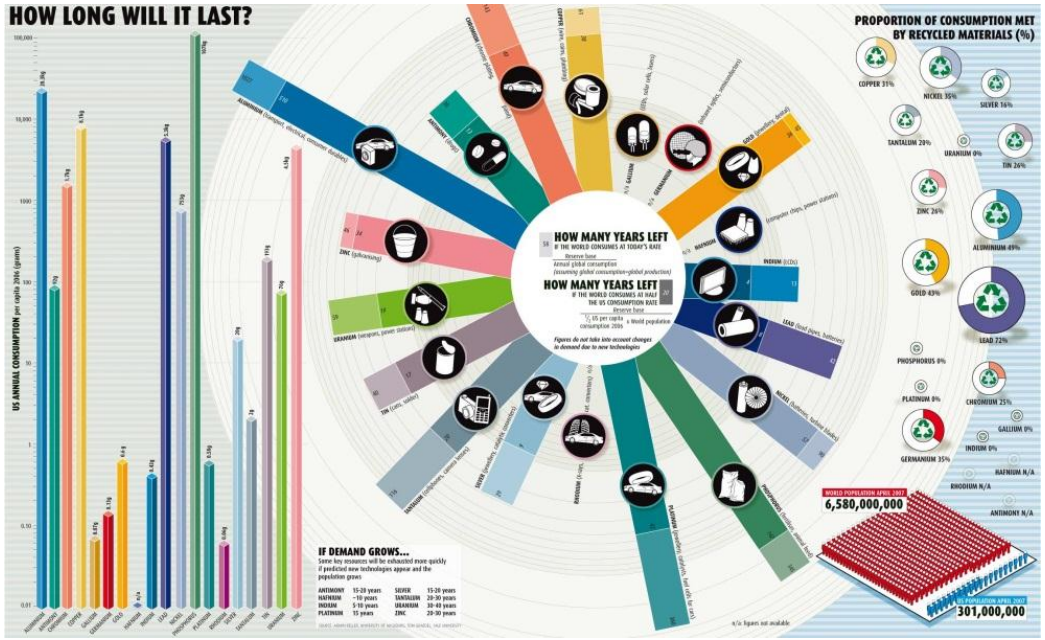
EXPONENTIAL GROWTH IN POOR COUNTRIES

Rich countries will grow from 1.2 billion to just over 1.2 billion
Poor countries will grow from 5.3 mil to 7.9 billion
To keep up need to build 1 city of 1 mil every 5 days for 42 years to accommodate rural – city migration

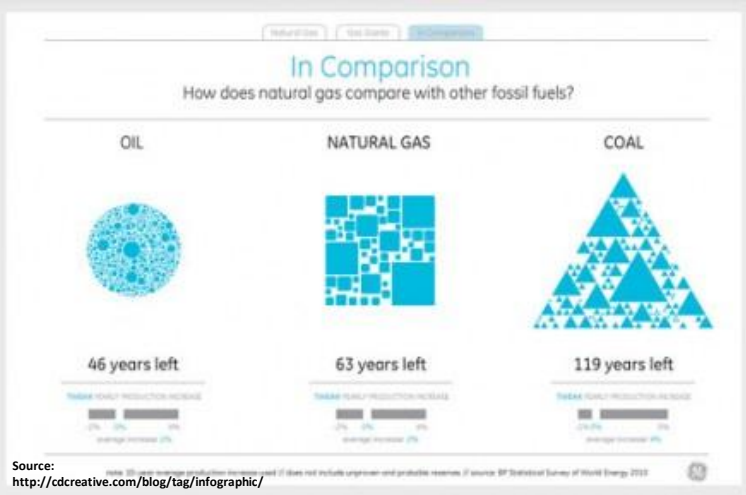
Source: (Peirce *et al*. 2008).

iii. LIMITED RESOURCES: MINERALS GLOBAL

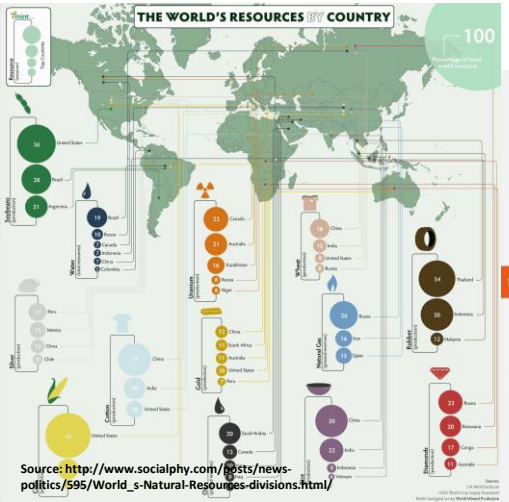
It is advocated here that the increased urbanization, population growth, poverty increase, environmental degradation and tapered resources are the urban facts that must be accepted as part of growth and an urban future. This acceptance stems from the fact that never in history has so many people had access to services, cities are the agglomeration of the (world's) best, cities make countries rich, (Rakesh Mohan, 2008) 'cities are primary economic engines' as 'full economic growth depends on urbanization' and that cities contribute to a large portion of a region's GDP (Peirce *et al*. 2008). However, the Sub- Sahara Africa has experienced the opposite, as illustrated by the *UN- Habitat report on Urbanization challenges in Sub- Sahara Africa, 2005*. However they do clearly state that 'cities and towns have always been centres of opportunity', but the limited access to resources limits this opportunity. It can be stated that urbanization will continue, as Leitmann (1999) indicated 'China and in Apartheid South Africa, migration to select urban areas was legally constrained', however 'urbanization has proceeded'. This suggests that further pressures will be placed on limited recourses, where the natural resources will become rare and depleted, where the future of our urban environments will experience shortages in natural recourses (images to bottom and right); which alludes to the reality that we need to search for alternative urban environments and functioning of these urban environments.



Source: http://flowingdata.com/2009/04/24/how-long-will-the-worlds-natural-resources-last/

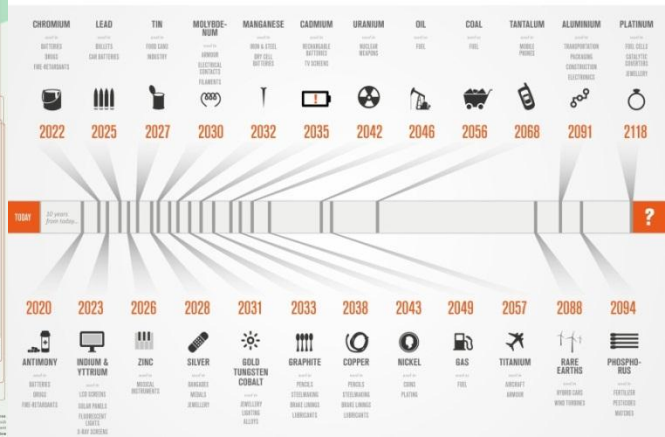


Source: http://cdcreative.com/blog/tag/infographic/



Source: http://www.socialphy.com/boosts/news-politics/595/World_s-Natural-Resources-divisions.html/

Source: http://www.infographicpins.com/environment-infographics/how-long-will-the-non-renewable-energy-resource-base-last.html



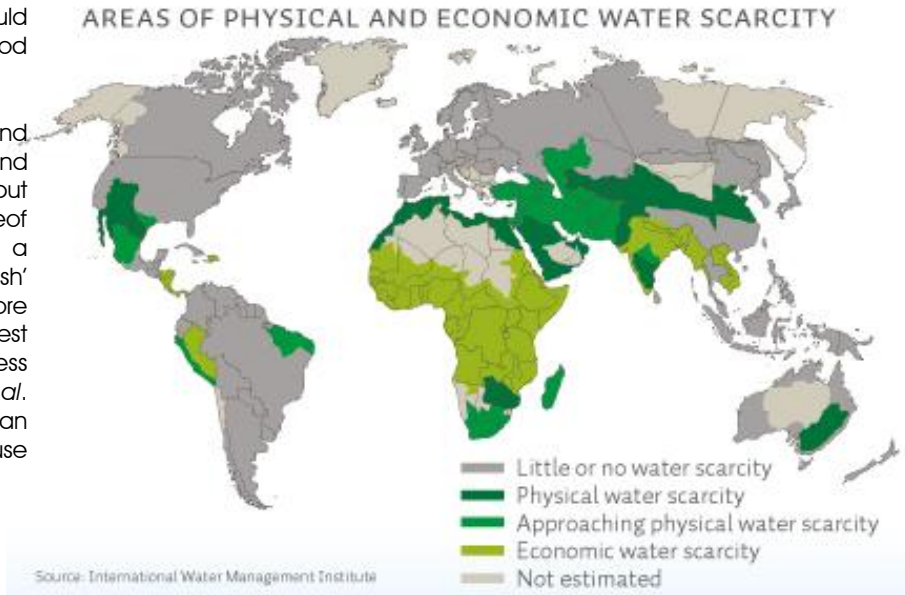
iv. LIMITED RESOURCES: WATER GLOBAL

If only one component of natural resources are placed in view, that of water shortages, it can be indicated that water scarcity is a reality in our poorer urban areas and will become more so in the future. As indicated by the UN- HABITAT report on *Urbanization challenges in Sub- Sahara Africa*, 2005; clean drinkable water is less available as 50% of African (Sub- Sahara) urban population do not have adequate water supplies.

There is a severe shortage on the limited resource of water. This restricted resource is made less accessible by the poorest communities as they pay between 10 to 100 more for the provision of fresh water, than that of their developed counterparts. Therefore the poorer population do not only have to adjust to the shortage in drinkable water, their access is also restricted by the affordability of this water. This accessibility to water is not only to drinking water but also to water for produce and infrastructure. Should water scarcity arise it would impact on wetlands, natural environment and food security & production (image to right)

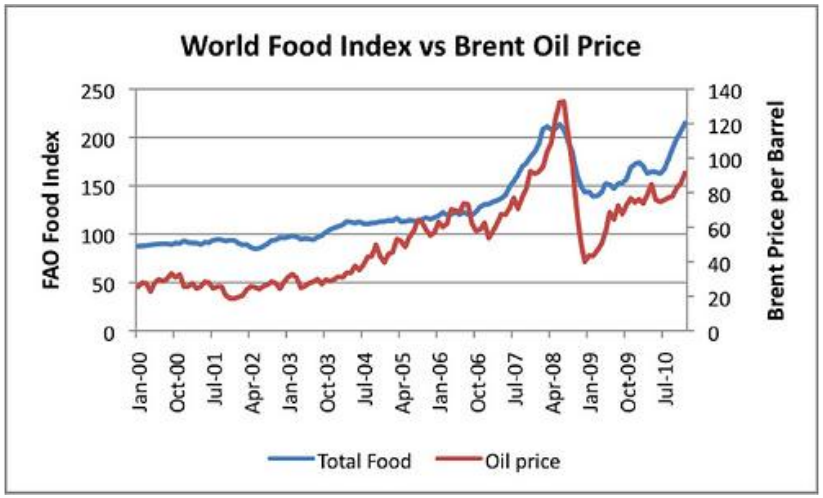
Confirming the fact that 'economic growth' and 'urbanization' are 'necessary twin phenomena', and aiming to regress urbanization is not the answer, but acceptance and sustainable development thereof is paramount. As Jane Jacobs indicated 'for a community to flourish a city at its core must flourish' and 'without cities we will all be poor'. Therefore models must be developed for the broadest application possible, in order for them to address systematic, not just individual problems (Peirce *et al*. 2008). Therefore a singular approach to an urban problem might not be flexible enough, and cause other urban problems.

Source: Google Images, Anon

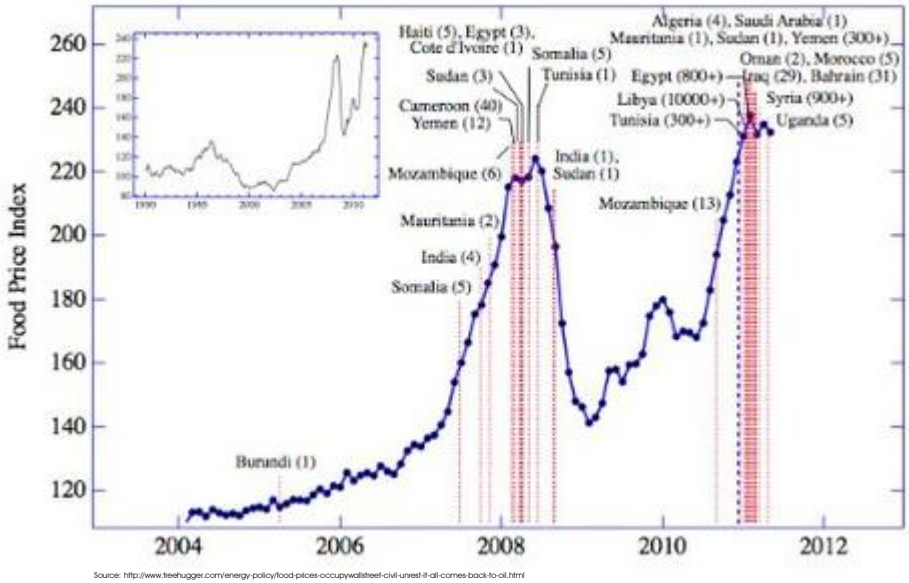


Source: http://www.greenecoservices.com/world-wetlands-destruction-infographic//

v. THE RELATIONSHIP BETWEEN FOSSIL FUEL AND FOOD PRICE: GLOBAL

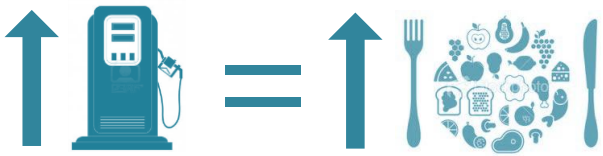


Source: http://one.org/blog/2011/03/15/whats-fueling-the-food-crisis/



Source: http://www.treehugger.com/energy-policy/food-prices-occupywallstreet-civil-unrest-it-all-comes-back-to-oil.html

Direct relationship between Brent price per barrel oil and food price



FOOD SECURITY

=

Affordability (Price) Of Food

+

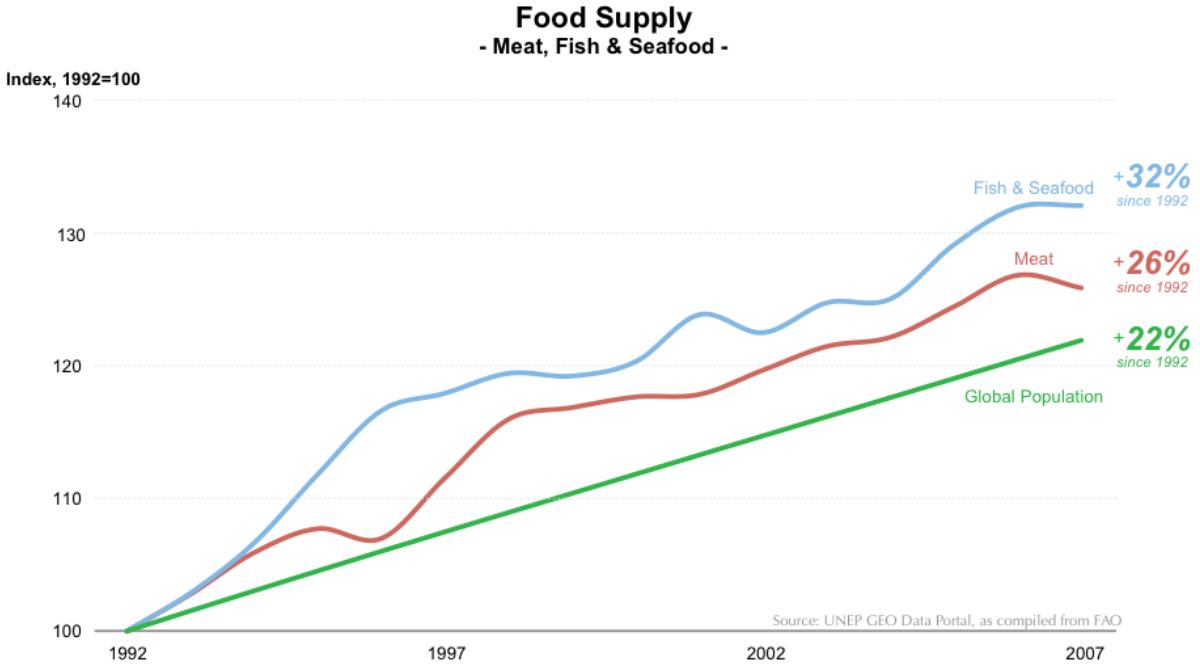
Availability Of Fertile Soil & Natural Resources (Water)

+

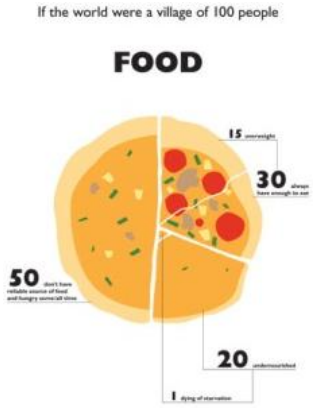
Stable Climate

When considering the economic relationship of the limited natural resources (oil) and the availability of food; one can clearly see that there is a strong relationship between the increase in food prices and the increase in Brent Price per barrel oil. As the oil prices increase, so does the food price index. The images to the left indicate this direct relationship.

vi. THE RELATIONSHIP BETWEEN FOOD PRICES & URBANIZATION: GLOBAL



Source: http://www.grid.unep.ch/index.php?option=com_content&view=article&id=73&Itemid=400&lang=en&project_id=2522760 (UNEP 2009, Fiala 2008, FAO 2006).



2005 to 2011 food price increase

RICE +102%

WHEAT +115%

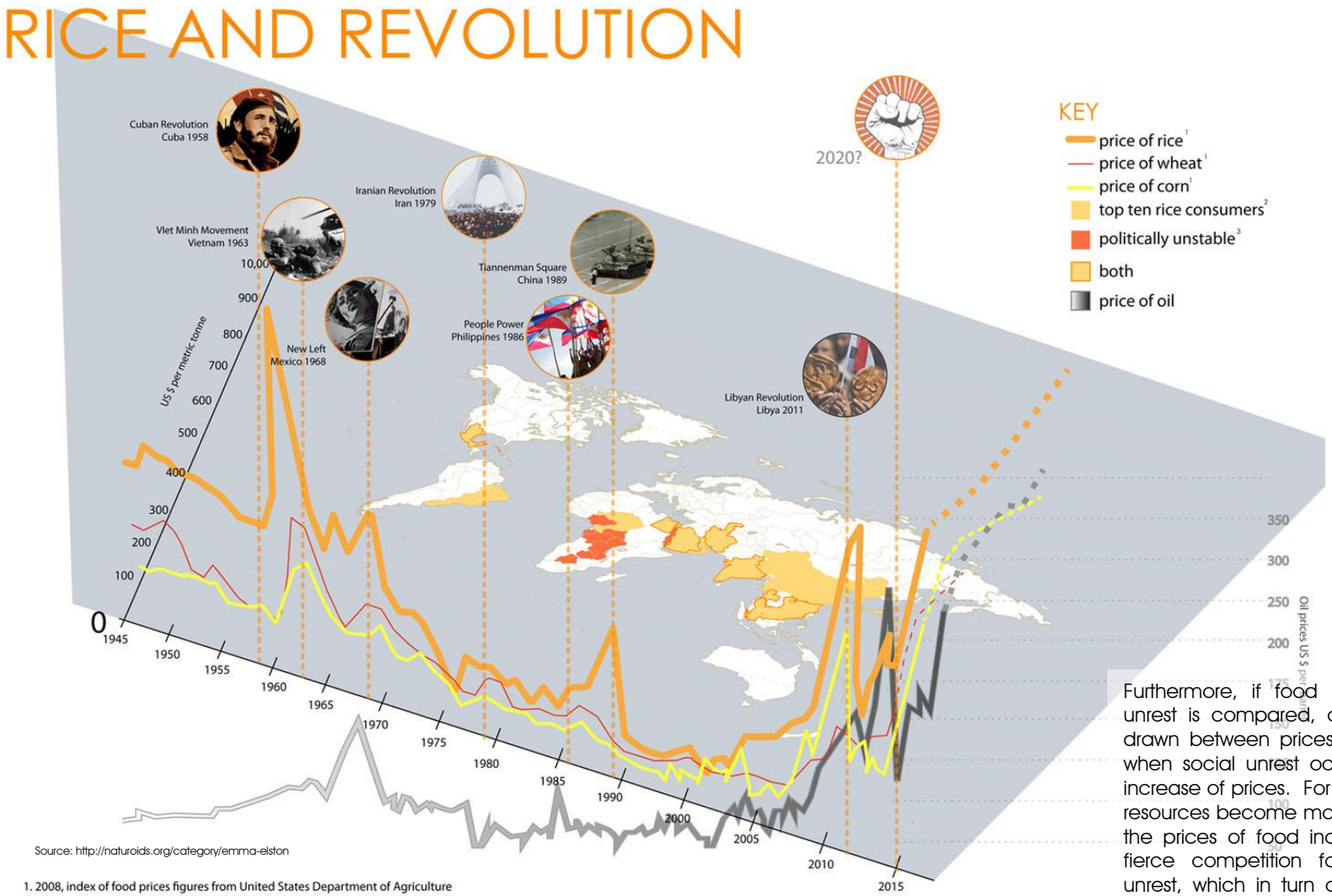
MAIZE +204%

Source: http://blogs.worldwatch.org/nourishingtheplanet/rising-food-prices-and-social-unrest/foodprices/

As an indicator of the rate of food index price increase, the graph to the left indicates that there is a relationship between global population increase and the increase in food production. The diagram above indicates the increase in food prices since 2005. The price of rice, wheat & maize increased by an average of 140% over the past 6 years. It can therefore be deducted that there is a relationship between population increase, food production increase and food price increase. Subsequently, the larger the population the more food is produced, however the more expensive this food becomes. The access to food of the poorest populations become restricted.

vii. THE RELATIONSHIP BETWEEN FOOD PRICES, UNREST & OIL PRICE: GLOBAL

RICE AND REVOLUTION



Source: http://naturoids.org/category/emma-elston

1. 2008, index of food prices figures from United States Department of Agriculture
2. 2010, index of global consumption, figures from United Nation Statistical Division
3. 2011, index of political instability figures from www.expatinvesting.org

Source:
http://artinspired.pbworks.com/w/page/13819572/Environment%20Lesson%20Ideas

Furthermore, if food prices, oil price and social unrest is compared, a direct relationship can be drawn between prices and social unrest. Whereas when social unrest occurs, it directly results in the increase of prices. For an urban environment where resources become more scarce (or less affordable), the prices of food increase, which could result in fierce competition for resources, and potential unrest, which in turn could further exaggerate the price of scarce resources. Therefore making urban environments more stable should be at the forefront of urban sustainability.

UNSUSTAINABLE USE
OF NATURAL
RESOURCES
TAKE
MAKE
WASTE

2. AFRICA TRENDS FOR URBANIZATION, URBAN DEVELOPMENT & GROWTH

i. URBANIZATION & POPULATION GROWTH: AFRICA

Looking at urbanization & population growth in Africa, it was found that Africa is predicted to have the largest population increase over the next 38 years. It is estimated that this population growth will surpass China & India's populations by 2060.

The increase in population density will directly result in the reduction in the availability of fertile soils which will impact on food security & climate change. Therefore further pressure will be placed on natural resources, such as water (and Africa's lowering water table). This means that within Africa any future urban and rural infrastructure should take cognisance of this, as 350 to 404 million Africans will be living in a water crisis by 2055 (Donald, A. et al. 2011) (excluding the potential worsening impact of climate change)

It is noted by the *UN- Habitat report on Urbanization challenges in Sub- Sahara Africa, 2005;* that Sub – Sahara Africa portrays the following growth indicators:

- 250,000 people per week growth
- ¾ (190,000) absorbed in slums
- 46% of population poor
- Africa is the most affected by poverty
- 2025 87% of Africa population will be urbanized
- 71% of Africa population live in slums

Population Growth in Africa

Worldwide the largest population increase over the next 38 years

SURPASS CHINA & INDIA POPULATIONS IN 2060

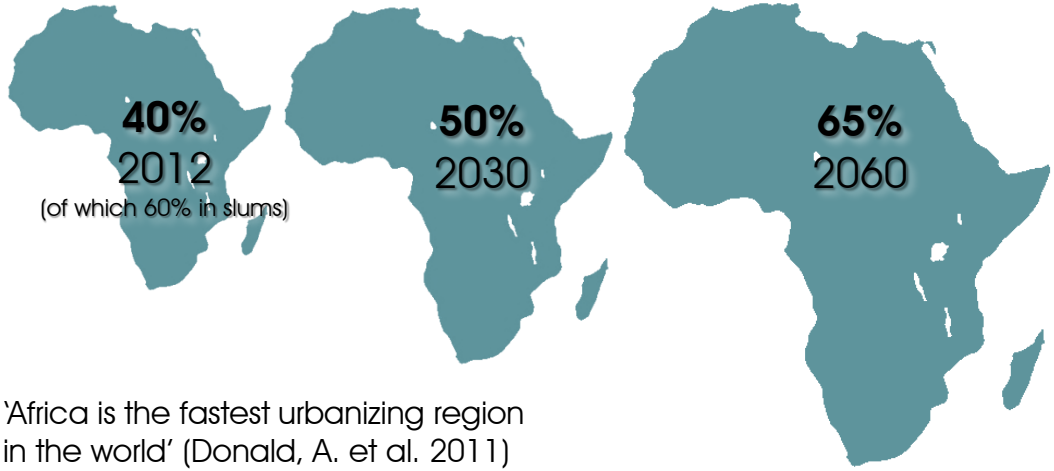
Rising Temperature

Looming Water Crisis

350 to 404 mil Africans will be living in a water crisis by 2055 excluding the potential worsening impact of climate change

The increase in population density will directly result in the reduction in the availability of fertile soils – impacting on food security & climate change – further pressure on natural resources, such as water (and Africa's lowering water table) Urban and rural infrastructure should take cognisance of this

Urbanization in Africa



'Africa is the fastest urbanizing region in the world' (Donald, A. et al. 2011)

Youth Tsunami

50% younger than 17yr

Economic active population (15 to 65) will double by 2060

Source: University of Witwatersrand & Worldbank. Wits Business School. The State of the Futures Report, August 2012

3. SOUTH AFRICAN TRENDS FOR URBANIZATION, URBAN DEVELOPMENT & GROWTH

i. URBANIZATION & POPULATION GROWTH: SOUTH AFRICA

When conducting the same comparison for South Africa it can be seen that the current population is estimated at 50million people. It is projected that South Africa will have an estimated population of 138 million by 2060 (natural growth rate). The key note that should be raised here is that South Africa is currently 51% urbanized, and is projected to be 80% urbanized in 2050.

When considering these figures of urban population and the potential influences on urban environments; as well as the potential in migration of Sub- Sahara African States growing at a rate of +122% and +136%, with 71% living in slums and 46% trapped in poverty, - are we still isolated? This could be considered as one of the central challenges for South Africa in the next decade of Urbanization – how will we accommodate this enlarged urbanized poor population within South Africa.

Population Growth in South Africa

1 in every 138 people on the planet is South African

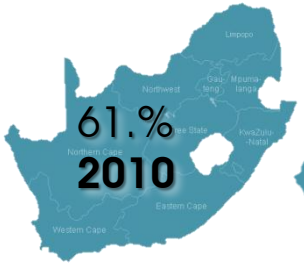
Source: Stats SA

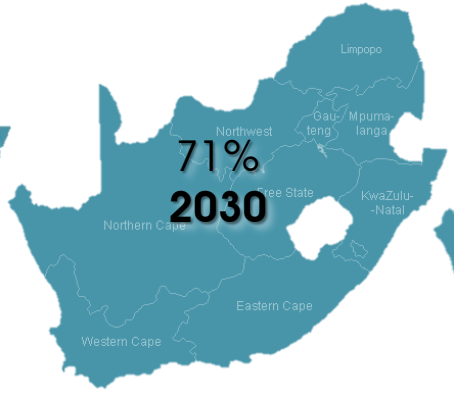
Looming Water Crisis

'South Africa faces a water crisis and could start having critical shortages as early as 2020, experts told the inaugural South African Water and Energy Forum in Johannesburg'

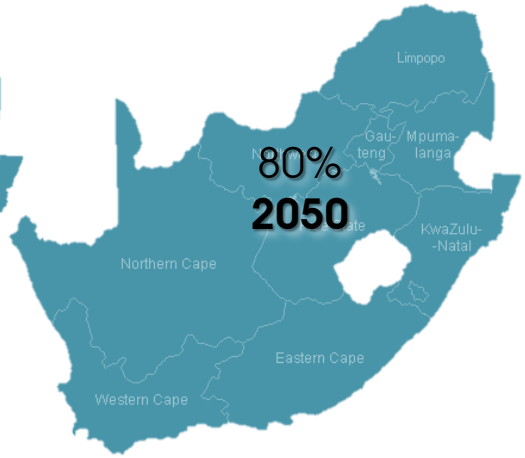
(Source: Timeslive, Water crisis by 2020, SIPHO MASONDO, 14 February, 2011)

Urbanization in South Africa





Youth Tsunami



29.3% younger than 15yr

Source: Un Habitat, State of African Cities, 2010)

Source: http://cnx.org/content/m25288/latest/

Source: http://www.tradingeconomics.com/south-africa/population

Source: Structure of South African Population: 1996-2014, Department of Socoal Development, 2009.

ii. SPATIAL IMPLICATION OF URBANIZATION: URBAN DEVELOPMENT TIMELINE OF SOUTH AFRICAN CITIES

The Spatial Implication of Urbanization within the South African context followed an urban development timeline stretching from prior 1900 to today. According to the *Township Transformation Timeline, June 2009. The Department of Co-operative Governance and Traditional Affairs (in collaboration with the European Commission);* South Africa's urban development spanned 6 distinctive development eras. These eras are graphically depicted in the illustrations to the right, and are classed as:

ERA 1: 1900 TO 1922 – EARLY SEGREGATION: Where towns & township areas developed next to each other, but had a central point of integration.
ERA 2: 1923 TO 1947 – SEGREGATION CONSOLIDATED: Here the town and township were spatially segregated and forcefully separated. Industrial employment opportunities became the buffer between these aforementioned areas.
ERA 3: 1948 TO 1975 – APARTHEID: This brought about legalized separation, where urban areas grew (with sprawl) and township areas grew due to urbanization. The separation between the town & township areas were strengthened, however limited infrastructure was provided in township areas and was characterized by long communing distances.
ERA 4: 1976 TO 1993 – APARTHEID DISMANTLED: This resulted in a special shift where the largest change was the development of informal settlements surrounding township areas. Little change was found in the urban fabric of towns. The town areas were further expanded upon through sprawl, and diminishing investment in the urban core areas.
ERA 5: 1994 TO 2004 – DEMOCRATISATION: This era was characterized by large scale housing development around township areas, the decline of inner city areas and the development of urban sprawl (security estate living) surrounding former town areas. This spatial growth did not address any of the inequalities of the past, but rather contributed to further uncontrolled urban expansion & sprawl.

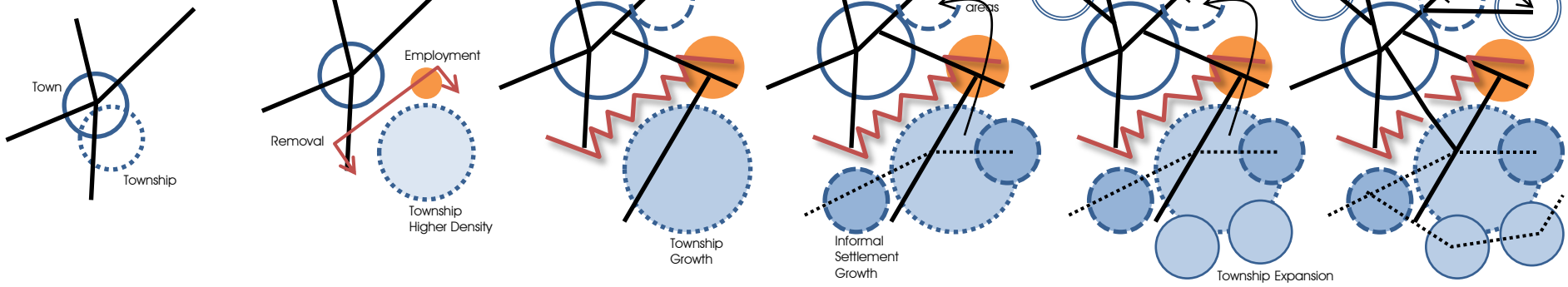
ERA 6: 2005 TO 2009 – TOWARDS URBAN INTEGRATION: Here attempts were made to address the spatial separation of towns and township areas, however it is considered that these interventions were superficial and only extended to the increase of accessibility to and from township areas. No attempts were made in addressing the spatial segregation of the Apartheid City.

It is advocated in this proposal that a seventh Era of urban development is to be developed, that of ERA 7: MAKING SUSTAINABLE URBAN ENVIRONMENTS.

We cannot continue with the current urban intervention approaches, in order to address the inequities of the past nor to address the urbanization & poverty pressures facing the global urban development arena. We cannot continue building on the wrongs of the past, a new spatial approach needs to be envisioned that will address the needs, aspirations and dreams of the modern urban citizen.

So, where to now?

1900 – 1922 EARLY SEGREGATION	1923 – 1947 SEGREGATION CONSOLIDATION	1948 – 1975 APARTHEID	1976 – 1993 APARTHEID DISMANTLED	1994 – 2004 DEMOCRATISATION	2004 – 2009 TOWARDS URBAN INTEGRATION



Source: Township Transformation Timeline, June 2009. The Department of Co-operative Governance and Traditional Affairs in collaboration with the European Commission

Urban Future?

4. CHALLENGING OUR WAY OF URBAN THINKING

THE 7TH WAVE

In its aim to redress the inequalities of the past, the South African cities of today turned a blind eye to the urban, rural, natural & social needs of citizens. Our cities, as they stand today, reflect an urban form that is neither sustainable nor equitable. Our cities do not invest in social capital nor aim to react to the reality of diminishing recourses. They are not 'civic in nature, pedestrian friendly nor environmentally smart'. When did our cities become so unimportant and disconnected from society?

Can our cities be transformed through retrofitting cities, building cities, making cities, unmaking cities, redeveloping cities, restructuring cities by placing the needs of citizens and nature first_ to inform urbanization, natural resources and the infrastructure that feeds it

The best way to predict the future is to invent it – Alan Kay

Can an existing city_node_core be transformed to achieve good urban form?
Can we rethink the economy, ecology, form, space and connections of our cities?
We cannot use the same mind-set that created the problems we are still trying to solve today.

A traditional Finnish saying goes 'Poor people cannot afford cheap things'. It is not just a contemplative thought. It is an accepted fact; that the poor cannot afford poor quality products and services. So why are we providing poor urban environments that do not address the needs.
http://www.theurbn.com/2012/04/designing-for-the-poor

5. PROBLEM STATEMENT & HYPOTHESIS

If the future urban population will increase, and this urban population is poor, and this urban population has restricted access to natural resources/ food, and these natural resources/ food increases in price; - where does that leave our current urban environments and what should the future urban environments provide to address these requirements?

The premise for the Problem Statement & Hypothesis is that the current functioning of nodal areas (cities) (within Ekurhuleni) is unsustainable. Creating sustainable nodal/ city/ urban areas entails the re-evaluation of our development approaches, decision making frameworks, spatial perception and information base.

'Only when a city … celebrates (ion) … life; is it possible to talk of urban efficiency. The search for celebrating life, therefore, must be the central issue informing thinking about urban structure & design.

The capture of these qualities requires a creative act: it defies standardisation and the predetermination of form. It is impossible to predetermine the future, but it is possible to recognize the lasting quality of what is done today. This is the art of city making.' (Dewar, D. et.al, 1991)

The Hypothesis is imbedded in the statement that this re-evaluation/ re-prioritization could present alternative design solutions that could promote a new urban form that is smart, sustainable, promotes longevity and celebrates a new found urban form that is directly applicable to its loci and citizen needs - pushing the agenda of what are we not doing?

The focus area of this study is the Ekurhuleni Metropolitan Municipality, with Springs as the focus area for design development.

Source : Google Images, Nigeria, Anon

III SECTION C III

THEORY, THEORETICAL CONCEPTS & CASE STUDY

INTRODUCTION & PREAMBLE	SECTION A
TOWARDS A HYPOTHESIS	SECTION B
	SECTION C THEORETICAL CONCEPTS
RESEARCH METHODOLOGY	SECTION D
CONTEXTUAL ANALYSIS	SECTION E
VISION & DRIVERS	SECTION F
DESIGN DEVELOPMENT	SECTION G
DESIGN PROPOSALS	SECTION H
FINDINGS & DISCUSSIONS	SECTION I
RECOMMENDATIONS	SECTION J
CONCLUSION	SECTION K
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C. THEORY, THEORETICAL CONCEPTS & CASE STUDIES

1. THINKING SMART CITIES

If we entertain the thought that we are possibly not addressing the needs of our cities and their inhabitants; and we consider that we are not applying our natural recourses and social capital appropriately; the question then begs of what the correct response could be towards good city making. Ruby, A. et.al (2008) suggests that this thinking is … 'neither an anti-urban , generic city, nor an empty form, metabolized by tiny humans. Nor is there … any politically -correct attachments to heritage.' They advocate that a 'SMART City is, first of all, a city and that means … that it takes into consideration the flow and use of water, the production and consumption of food, the production & digestion of waste, the psychologies of pleasure, as well as the intangible aspects of identity and place … the SMART City brings us into a new territory.'

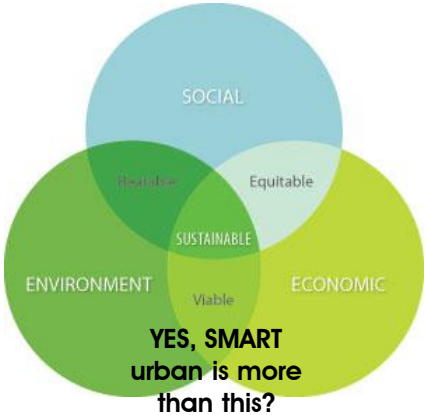
This new territory could be in a familiar form that is applied differently, that has alternative primary goals and results in an alternative but familiar urban form. As suggested in the diagram to the right, urban/ city making is more than just a balance between social, economic & environmental components of a city; it is about the application of these components towards SMART common outcomes.

Therefore the city or urban … 'need not be centered in massive power-cities, but that it can and must be distributed. The not-in-the-center quality of these micro-cities would be offset by their connectivity to the larger urban fabric and their economic semi-independence … and self-sustaining. The distinction between city and the suburb will be removed: there will only be urbs.' (Ruby, A. et.al. 2008). This approach (as illustrated by Such as Wigger City, Netzstad – Frans Oswald and Peter Baccini, 2003, plan) could suggest a new form of city making, where the smaller satellite cities are not dependent on the larger economic core, but are self sufficient, yet interlinked and interdependent on the surrounding natural recourses and other urban core areas.

As an attempt in addressing this SMART response to city making Ruby, A. et.al (2008) suggests the concept of a 'NEST (New Energy Self Sustained Towns), which begins the translation from an agrarian lifestyle to an agro-urban core one. The towns, built with simple means, are designed not only around environmental and electrical self-sufficiency, but also around the principle of micro economic capitalism that intertwines certain maternities such as electricity (wind and solar) and education…'

This type of SMART response towards making urban settlements could lead to city making that is more equitable, more sustainable, less expensive, more social, more self reliant, more efficient, more sympathetic, more focused towards the marginalized and prioritization of the common.

The tables to the right indicate potential physical interventions that could lead to this SMART city making.



Source: Google Images, Anon.

	INTERNAL (USERS)	EXTERNAL (OTHER PEOPLE)
BENEFITS	Improved housing options (reduced restrictions on multi-family housing) Increased housing affordability (e.g. reduced land and parking requirements) Improved accessibility and transport options (e.g. ability to walk to stores) Transport cost savings Reduced chauffeuring responsibilities Reduced crash risk Improved fitness and health More attractive, liveable community	Public service cost savings (lower costs for roads, utilities, emergency services, etc.) Reduced road and parking costs Reduced regional congestion Reduced crash risk to other road users Increased community cohesion Improved accessibility for non-drivers Energy conservation Reduced per capita pollution emissions Open space preservation (farms and wild lands)
COSTS	Smaller lot size Less privacy Lower local traffic speeds More road and parking fees More exposure to some local pollutants	Some additional infrastructure costs (curbs, sidewalks and public transit) Increased local traffic congestion More impervious surface coverage in developed areas

Source: http://www.planetizen.com/node/51202**Evaluating Smart Growth Benefits and Costs** **Todd Litman**

It is neither an anti-urban , generic city, nor an empty form, metabolized by tiny humans. Nor is there … any politically -correct attachments to heritage. Smart City is, first of all, a city and that means … that it takes into consideration the flow and use of water, the production and consumption of food, the production & digestion of waste, the psychologies of pleasure, as well as the intangible aspects of identity and place … the Smart City brings us into a new territory (M. Jarzombek, ed. I.Ilka & A. Ruby, 2008)

Includes Mixed Land Uses
Exhibits Compact Building Design
Provides Range of Housing Types
Promotes "Walkable" Neighbourhoods
Exhibits a Distinct Sense of Place
Preserves Open Space
Utilizes Existing Development
Provides Transportation Choices
Practices Fair Decision-making
Promotes Stakeholder Participation

Source: http://sgnarc.ncat.org/engine/index.php/resources/2005/10/03/smart-growth-in-action-moore-square

2. THINKING URBAN FORM AS CONTAINER

In this section of 'Thinking Urban' the aim is to indicate in short what urban means globally, how does it relate to suburban idealism/ memory, density, urban sprawl, horizontal space consumption, informality and what the lure of the city is.

Seemingly the global approach to city making today, is to have a set of universal design guidelines/ rules that promote good cities; however as Ruby, A. et.al. (2008) indicates'… globalization, tends to promote homogenization so as to facilitate the efficient and smooth flows of labor, capital, commodities, ideas and cultures … the new urban order seeks to plug the city in the circuit of global networks and globalized cities appear increasingly look alike.' Even our cities of the developing worlds (Mumbai, India) are striving to the global idea of a city … 'it's the machine that is still the metaphor for the city – this time in a new form. The machine no longer produces tangibility; instead it produces images of safety and security – the appearance of docile, tamed pleasures. A 'myth- machine' making science fiction landscape – a world of unrelenting forward movements, to an unknown destination where identity and history seem nothing but a haze of misinformation and fetish.' (Gosseye, J.et.al. 2009)

In our attempt to address the past inequities while further promoting suburban idealism, South African 'housing has become the leading form-determining element … community institutions are now embedded in housing areas, as opposed to housing infill between and in response to, those institutions.' (Dewar, D. et.al, 1991). Rather than seeking alternative ways of building appropriate urban, we follow familiar urban memory such as the historic cities of industrialization and post-industrialization; which …' offer a compelling illustration of the inability of society to envisage the future. Instead of an ambitious search for universal truths, it endorses many values that reflect the absence of a future. It is fragmentary, therapeutic and self-indulgent prostitution of the past.' (Donald, A. et al. 2011). One should question whether the '… agreements as to how to use pavements was established in the Victorian times…' (Donald, A. et al. 2011); still sets the norm for determining urban form and use in our modern cities?

Ashamedly, yes, we are relying on our collective urban memory of 'suburban urbanity' and the 'urban (American) dream' to envisage the future of our cities. The most recent startling example of this was in Budapest, where …'freedom from the unifying ideology of the communist era bought egoism: everyone has it's own little property, so the common space lost their value…' (Kovacevic, I.et al. 2010). Where this change from one ideology could have offered positive contributions to good city form; resulted in recalling our suburban - urban memory; where '… we are witnessing societies of overproduction and excess are barricading themselves in an unprecedented way against the sectors of scarcity they have produces out of political and economic indifference.' (Ruby, A. et.al. 2008).

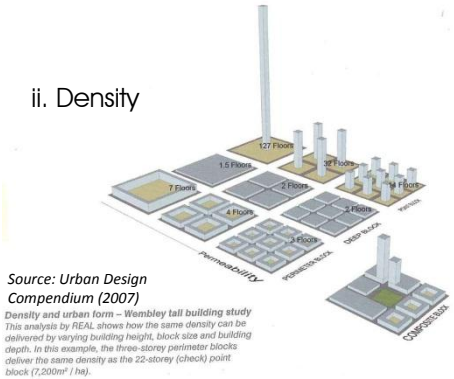
In addition to the above it is considered that the modern urban citizen has a growing and '…changing understanding of individual freedom …where individual autonomy is assumed to be at odds with the civic and environmental values asserted by the state.' (Donald, A. et al. 2011). This further strengthens the position that what is provided in urban areas today (by state/ authorities) is at odds with the modern day urban individual; conversely we are still providing 'suburban idealistic dreams', instead of imbedding the principles such as informality, where'… informal is normal …' (Ljung, P. et al. 2006); and allowance is made for this individual freedom in urban/city making. When considering the realities of aspects such as urbanization of poverty it should be noted that 'informality is not an essential preference of the urban poor; it serves primarily as an alternative to the constraints of formal structures…' (Pieterse, E. 2010) provided by state/ authorities in urban areas. This is further illustrated our inability to address the realities and everyday life of urban citizens.

A key component that feeds this historical approach towards city making is sprawl, whereas 'sprawl remains cheaper to plan, easier to finance, faster to permit, and less complicated to build, primarily due to the regulations governing development...' (Tachieva, G. 2010). This component of sprawl adds fuel to this suburban memory and 'consumes land at an alarming rate' (Duany, A. et.al. 2000). This horizontal consumption of land is a key element that should be countered in SMART urban city making; it should be converted to vertical land consumption. The reality is that demand for urban land will not dissipate as …'people come to cities in order to experience the economic, social, cultural and recreational opportunities and facilities which can be generated through the physical agglomeration of large numbers of people. Urbanization demands, and indeed is predicated on, increasing levels of specialization and diversity and these qualities in turn can only exist in the presence of large threshold of support.' (Dewar, D. et.al, 1991) Conversely, horizontal expansion of urban development is in direct opposition to agglomeration of these opportunities and diversity.

When we start considering Urban Form as a growth container (in a global of local perspective) rather than preconceived urbanistic ideologies, familiar urban/ suburban memory, rules, guidelines, do's and don'ts - it could allow for city making that is more flexible, adaptable and pliable. A city that is more applicable to place and time. 'The rapid urban population growth in many cities of the South does not follow the historically progressive model of urban development.' (Donald, A. et al. 2011). Therefore an alternative to historical city making is a requirement.

i. Suburban Idealism

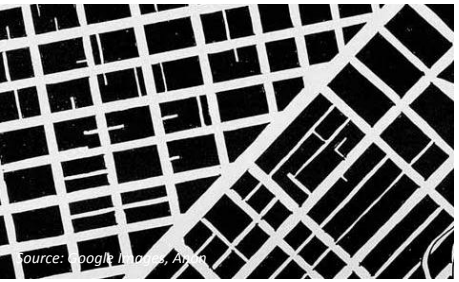
ii. Density



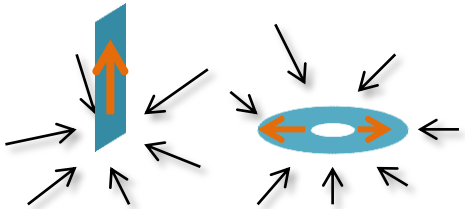
iii. The Lure of the City

v. Urban Sprawl

iv. Urban From – What is Good about the Grid



vi. Urbanization & Growth (The Fight Against Horizontal Space Consumption)



vii. Urban Patterns in South Africa

viii. Informality (Informal is Normal)

As a prelude to the proposal contained in this report; it is suggested that two universal truths are employed to promote Urban Form as Growth Container; these are density and the urban grid. Willis (2008) states the benefits of proximity/ density as being greater social contact & connectivity, services (shops, schools, healthcare) are close at hand, drives innovation (including social & environmental innovation), reduces land take, supports existing settlements, makes public transport viable, creates a safer and more secure environment, preserves distinctiveness of rural & urban areas, community energy schemes are feasible, and reduces carbon emissions from buildings & transport.

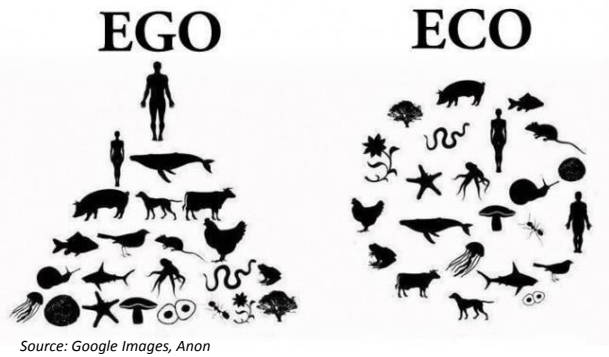
Now predicting the density of an urban settlement /city is not a matter of number of units per hectare as …'there is not one accepted measure of density in, or shared by, different countries.' (Haupt, P. et.al, 2010). 'Perceptions of density vary, and seem to be culturally determined – London 42 dwellings/ha, Los Angeles 15 dwellings/ha Kowloon 1,250 dwellings/ha.' (Willis, 2008). It is advocated here that density is a complex combination of scale, size, open space relation, height, enclosure, feeling, privacy; all of which are a combination of tangible and intangible components.

The aim here is not to propose a number of units per hectare but rather to illustrate that 'compact cities are more efficient, inclusive and resilient.' (United Nations Human Settlement Programmed, 2009). Applying the macro urban grid to the approach of density promotes the development of legible form, flexibility of inner city block development, permeability, promotion of walkability and creating building blocks for urban form.

3. THINKING NATURAL ENVIRONMENT

When considering our natural environment, we always consider it as the opposite of the urban environment. Thought is never given to the natural environment as intricately part of the urban. A recent project in Bordeux, France (Bordeaux 55,000 Project) investigated the transformation of 55,000ha of land into natural areas. Their approach was that 'filling up cities decoratively with plants and trees is not a bad thing in itself' … however it should be advocated that …'cities, and not just rain forests and rivers, can provide ecosystem services. Indeed biodiversity can be higher in cities than surrounding rural areas when the latter are dominated by industrial agriculture. (Thackara, 2012). 'It is estimated that the total amount of green space in Beijing can absorb some 4,240,000 tons of CO_2 per year, release 2,950,000 tons of O_2 per year, absorb 10,739 billion KJ heat per year through the process of transpiration, and remove 30,516 tons of dust a year' (Anon, 2005).

Thackara (2012) expands on this vision of the inclusion of natural areas within urban areas, not only by protecting rivers and natural areas but by proposing that … 'the nature in the city (is) best thought of as a new kind of park'. This approach opens up the possibilities of reimagining urban parks, the use of urban parks, the nature of these parks and the function & ownership of these parks. As Dewar, D. et.al (1991) indicates; 'the particular configuration of these elements (public space/ farm land/ land in government control) create the geometry which represents the first level of urban order.' (Dewar, D. et.al, 1991)



Source: Google Images, Anon

i. Questioning Public Space

Source: http://sdotblog.seattle.gov/2011/09/21/city-staff-meet-with-dr-keith-hwang/

ii. Public Space & Survival

Source: http://www.urbanism.org/category/public-space/page/5/

iii. Alternative Public Space With Function

Source: http://laud8.wordpress.com/2011/09/25/the-real-estate-temporary-private-spaces/

iv. Streets as Public Space

Source: http://vancouverpublicspace.wordpress.com/

4. THINKING ECONOMIC SURVIVAL

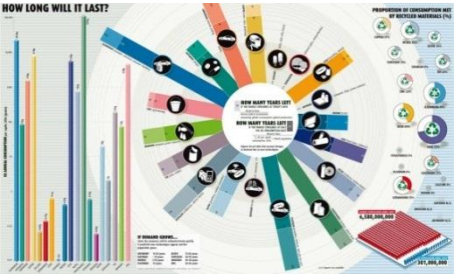
Economic Survival in urban environments today are more broad based, and is not only the dependent on creating employment opportunities, but include the provision of food security and accommodation/ inclusion of poverty. When food security becomes an economic driver for urban development, then 'the government needs to integrate urban farming into city planning, or else the cities may lose one of their best sources of food.' (Doucleff, 2012). Allowing for food security also entails the allocation & protection of land for food security 'as Africa's cities double in population over the next few decades, horticulture land will be lost to housing and industry'; 'Local Government needs to nurture and protect these urban gardens.' (Doucleff, 2012)

Doucleff (2012) suggests some advantages of urban farming/ agriculture, these include:
'More than half of Beijing's vegetable supply comes from the cities own market gardens.'
'Market gardens (or farming on commonly owned and irrigated lots in the city) trump all other urban farming … (and) also generate employment, create urban green belts and can even recycle city waste.'
'In Mozambique's capital Maputo, market gardening employs 13,000 people, while in one region of the DRC, market gardens generate 80,000 tons of produce or 65% of the region's supply.'
Mbida (2000) further suggests that 'self-production of food by poor urban households can represent 20 to 60 percent of their total food production' – 'Kampala 40 to 60 percent' (Maxwell & Zziwa, 1992) and 'Harare 60 percent'.

To illustrate the importance of urban areas becoming SMARTER in the way they use their surrounding resources, the New York (SA), Cornell University and New York State Department of Agriculture and Markets, conducted research to determine the 'estimated economic impact in New York State if New Yorker eaters shift their purchasing to 10% from local farmers and another 10% from local processors. The impact estimates are substantial – around 17,000 jobs will be created and US$16 billion of new income generated.' (Anon, 2005) This illustrates the economic value that lies within urban areas, which is not addressed/ captured at this point in time, to achieve SMART urban/cities.

A key component to understand in the economics of survival through urban agriculture/ food security is that the 'situation of urban poor … is different from that of rural poor, …urban poor depend on cash income for survival.' (Ljung, P. et al. 2006). Therefore this economic of survival is not only to provide food on the table, but to become an economic commodity that can be traded on the local urban scale.

i. Scarce Natural Resources



Source: http://flowingdata.com/2009/04/24/how-long-will-the-worlds-natural-resources-last/

ii. Food Security

iii. Urban Agriculture

iv. Urban Survival in the 21st Century

v. Poverty (Pro Poor Policies)

RICH OR POOR – IT'S GOOD TO HAVE MONEY

(TED Talks, Anon, 2012)

vi. Poverty, Ownership & Agriculture

The image to the left illustrates the key relationship between land rights, security, ownership and poverty. Case example:

'Across the globe, from China's rice paddies to Rwanda's cassava fields, the world's poorest people are climbing out of poverty by gaining legal control of their land.' '… the power of land ownership and secure land rights as the key to a better, safer future for the world's poorest people. Most of the poor share three traits: they live in rural areas, rely on agricultural labour to survive, but don't own the land they till. Landlessness is one of the best predictors of extreme poverty around the world. '…when a family has land of their own, they have opportunity and the means to improve nutrition, income, shelter. '… when land rights are secure, the cycle of poverty is broken – for an individual, a family, a village, a community and entire countries.' (Source: www.Landesa.org)

5. THINKING MOVEMENT

The next section aims to start Thinking Movement in terms of urban making, by illustrating some of the requirements/ advantages of public transport, accessibility, walkability, etc.

Movement/ Transport is a necessity for a city, however the type of transport can be varied. In numerous literatures the reference is made to individual car ownership (Downs, 1989) and use that is negative to urbanization. Note should be taken that, in general, road use has increased, truck and freight road transport has increased, however the road & rail infrastructure has decreased (Peirce, 2008). Should this situation continue, only more roads will be required. The cost benefit ratio that was conducted in public transport in Eddington (England) showed that a variety of smaller transport initiatives provide better returns than large projects.

The Rockefeller Foundation (Peirce, 2008) indicated that poor families spend more on transport than on housing, this same trend can be drawn through to South Africa. Is this not sufficient reason to think of cheaper and public transport as a possible solution.

The efficiency of movement and the density of the urban areas are interdependent and interrelated. 'The Urban Task Force estimated that around 150 people/ha are needed to make a good bus service viable.' (Willis, 2008).

Therefore, the current approach to urban development and sprawl does not allow for a viable public transport system. In South Africa the current density in suburban sprawl type township areas are 40 units/ ha; which equates to approximately 120 people/ha; which falls short of the requirement for an efficient bus transport system.

In terms of accessibility 'when ease of access is reduced it reflects a fundamental problem with urban form. Form becomes impositionary: it demands the use of time and personal resources in ways which do not reflect genuine choice of people.' (CABE, 2009) People then use larger proportion of their restrictive & diminishing personal resources to become accessible.

Therefore 'there is an absolute priority to integrate transport and planning in urban areas, to reduce the need to travel.' (CABE, 2009) This recommendation could be applied to the movement of goods, people & resources; whereas a SMART city would acquire these at the smallest possible 'real and measured' cost.

The report measuring the advantages of walkability in the Washington D.C area (Alfonzo, M & Leinberger, C.B. 2012) revealed that more walkable places: perform better economically, perform better commercially, have higher housing value, capitalization rates are lower and have lower transportation costs and higher transit access.

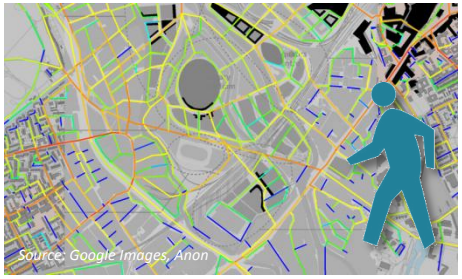
When considering that walking is your cheapest mode of transport and future urbanization being poor; it can be deduced that urban areas should be walkable, and less dependent on long distance transport. When there is less reliability on the private vehicle (car) then there is less need for roads; and more room for public space, communal space, shared space and productive green space.

Furthermore a study carried out in Galway, Ireland 'compared levels of social capital across pedestrian-orientated, mixed-use neighborhoods and car-dependent suburbs. Those living in the mixed-use, walkable neighborhoods were found to have higher levels of social capital.' (Leyden. 2003).

i. Public Transport

Source: Google Images, Anon

ii. Accessibility


Source: Google Images, Anon

iii. Walkability

Source: Google Images, Anon

iv. No Car

Source: http://www.fastcompany.com/1771005/lithuania-they-give-parking-tickets-tanks

Source: Google Images, Anon

v. No Roads Please

STREETS NOT ROADS

'Streets and their sidewalks, the main public places of a city, are its most vital organs. Think of a city and what comes to mind? It's streets. If a city's streets look interesting, the city looks interesting, if they look dull, the city looks dull.' (Jacobs, 1961).

Source: http://trendland.com/the-pedestrian-project/

Source: http://trendland.com/the-pedestrian-project/

Source: http://trendland.com/the-pedestrian-project/

Source: http://trendland.com/the-pedestrian-project/

6. THINKING HOUSING

Housing in the South African context is preoccupied with ownership; little attention or promotion is given to alternative options of tenure. This results in a situation where 'an individual's right to live in the city is often dependent on that individuals claim to ownership of property, … individuals … must find a way to inhabit the city despite the exclusivity of property … the right to housing needs to be disassociated from the right to property and return to the right to inhabit.' (Huchzermeyer, M. 2011) This suggestion by Huchzermeyer entails a diversification in the understanding of ownership, tenure and the right to use. The current patterns of ownership struggle to address the needs of the urban citizen; leaving the individual with insecurity, belonging and understanding of potential contribution as a citizen.

'It is cities where the greatest environmental and social concerns are concentrated. Thus, considerations about the built environment and how it interacts with people living and working in it is of primary importance ... the world's poorest population is rapidly increasing ... urban growth and the consequent urban sprawl associated with these populations is largely characterized by self- help settlements.' (Zetter, 2006).

In terms of physical housing, it is suggested that prime attention is given to the formal housing structure, and little attention is given to the inhabitants of the home. Limited scope is allowed for incremental housing development (occupy then build approach); and when it is allowed it is subject to restrictive regulations which are inflexible and not adaptable to improve the household's economic base.

As an illustrative example of how housing could become more flexible and a real economic asset over time (self-improvement over time); the example of the Incremental Housing Strategy in Bombay India (Kacca Houses) is mentioned. Here a framework is provided upon which the individual could develop their housing over time, according to their affordability and needs. Employing methods such as these could diversify ownership/ tenure options and instil the individual's right to inhabit/ use, over a multitude of economic affordability scales.

i. Security of Tenure

ii. Occupy then Build

iii. India: Case Study

INCREMENTAL HOUSING STRATEGY BOMBAY INDIA
BY ARCHITECTS FILIPE BALESTRA AND SARA GÖRANSSON

KACCHA HOUSES

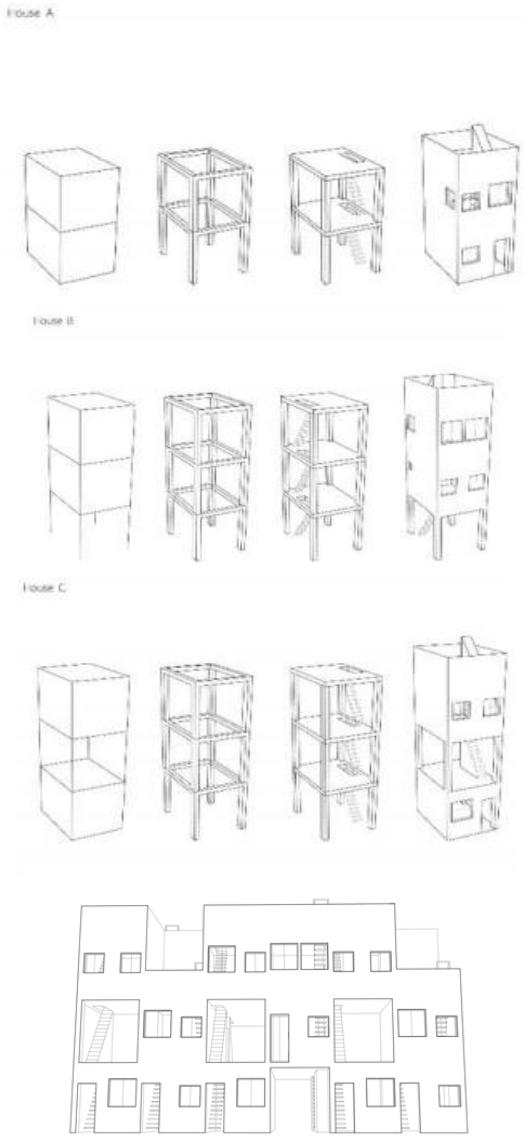
'If slums disappear only through conflagration (natural or man-made) or by assimilation into the formal city, then we will need to take existing informal housing and gradually formalize it. But as cities employ increasing physical density (more cubic space per square foot of land area), we have to go up, and many an informal settlement is constructed of materials too flimsy to support a higher story: we have to make the informal house into an embryo house. '

Source:
http://affordablehousinginstitute.org/blogs/us/2009/06/retrofitting-informal-housing.htm

May 2011

Source: The incremental house, Kambimoto, Anon

April 2008



Source: http://affordablehousinginstitute.org/blogs/us/2009/06/retrofitting-informal-housing.htm

7. THINKING GOVERNANCE & CITIZENSHIP

A key component to making urban environments is considered to be Thinking Governance and Citizenship. It is suggested that Governance should understand and support the social capital that the urban environment hold. This social capital should be nurtured and developed towards urban citizenship; and Governments should ensure that rationalized decision making/ expenditure is promoted and clearly communicated - '… what could be more important for governments in developing countries than to facilitate opportunities for the majority of the population to earn their living? … urban development policies often appear to be based on concepts and visions that are far from reality; they ignore or disregard the conditions of the majority of the citizens." (Ljung, P. et al. 2006)

This suggests that governments decision making processes should be directly linked to the facilitation of urban citizens to earn a living & improve their living conditions. The Government should ensure that '…all urban inhabitants should enjoy relative ease and equitable access to urban opportunities.

This concern with equity should not be confused with a naive utopian longing for equity. Inequality and contradiction always exist but the pursuit of constantly improving levels of access to opportunities is an achievable direction.' (Dewar, D. et.al, 1991) Conversely 'the issue is less about the number of people we pack into trains, roads, and so on, but rather about how we view public space, our fellow citizens, and indeed our common humanity.' (Donald, A. et al. 2011); these should be the fundamental urban agenda of Governance. Governance should concern themselves less with the provision of services & infrastructure (these are a given task & responsibility) – as '…the physical fabric of cities ultimately amounts only to a large collection of inanimate objects: citizens make cities, not the other way around.' (Donald, A. et al. 2011).

This being considered, Donald, a. et.al (2001) suggests that large scale intervention plans by Governments 'seems no longer to apply, and planning has also ceased to exist as a matter of grand ambition, instead celebrating cities as organically evolving settlements, and prioritizing engaging communities in local consultation exercises.'(Donald, A. et al. 2011) The following extract indicates a case study example in Vienna, where small scale interventions were made to achieve the larger flexible plan of the city. This example suggests that a sequence of smaller steps could yield more success than large scaled intervention by Government.

THE BIG PLAN OF SMALL STEPS.

In 1984 Vienna produces a plan called STEP84. This plan was referred to as 'The Big Plan of Small Steps'. This plan entailed placing decentralized consulting bureaus within each neighborhood, where city officials could 'immerse themselves in local milieu and follow initiatives on a daily basis. The objectives included the improvement of living standards and environmental conditions in the city, promoting cultural and urban diversity, including the protection of cultural heritage, and balancing the cities relation to its territory, thereby encouraging civic participation and self- determination. 'With such an emancipatory focus, planning took on a broader social-political dimension.' 'Had Vienna continuously developed and refined its strategies, it might now be at the forefront of ecological urbanism.' The latter plan was replaced by "Big Plans and Many Steps' after the fall of the iron curtain. (Kovacevic, I. et.al. 2010)

This being said, bold interventions by Government should not be ignored, - 'although the bold visions of Haussmann-esque figures may not have been expressed in democratic terms, the paradoxical result was social improvement and human progress.' (Donald, A. et al. 2011)

Here the Government could take bold steps towards improvement citizens everyday lives. This could also be illustrated through the example of Mayor Michael Bloomberg (New York) , who closed streets for more pedestrian & public open space. This is illustrated in the extract below.

BOLD STEPS TOWARDS CITIZENSHIP

'Back in February 2009, Mayor Michael Bloomberg announced that, in three months' time, New York City would permanently close Broadway to car and truck traffic in Times Square and Herald Square. The plan would "ease traffic congestion throughout the Midtown grid," the mayor said. Though he called it merely a "targeted adjustment," everyone understood that the initiative marked a big shift away from a century's worth of New York transportation policy, which had generally tried to ease traffic by adding even more space for cars. Many New Yorkers were upset by the proposal. "I'm worried because I don't know if it will work," Charlotte St. Martin, the director of the theatre industry's Broadway League, told the *New York Times*. "I certainly don't want things to be worse for theatregoers." A cabdriver, Garba Mahaman, got right to the point: "Now they're going to make it worse." City public advocate Bill DeBlasio spoke for many when he later complained, "We cannot make such a fundamental change to Times Square without first giving the community a greater say."
Three years on, it's clear that the worriers were wrong and the mayor right. Midtown traffic flows better, not only for cars and trucks but for the majority of people who use the area: pedestrians. A walk down the closed section of Times Square—Broadway between 47th and 42nd Streets—makes it hard to imagine changing things back. Where stuck drivers once fumed, people sit happily in chairs munching on dumplings. More important is that the district's huge crowds can now walk down the middle of the street instead of overflowing the sidewalk.' (Gelinas, N, 2012.)

i. Equity

Source: Google Images, Anon

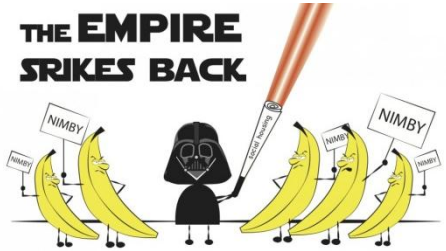
ii. Social Capital

Source: Google Images, Anon

iii. Urban Wealth

Source: Google Images, Anon

iv. Role of Government as Emperor



Source: Google Images, Anon

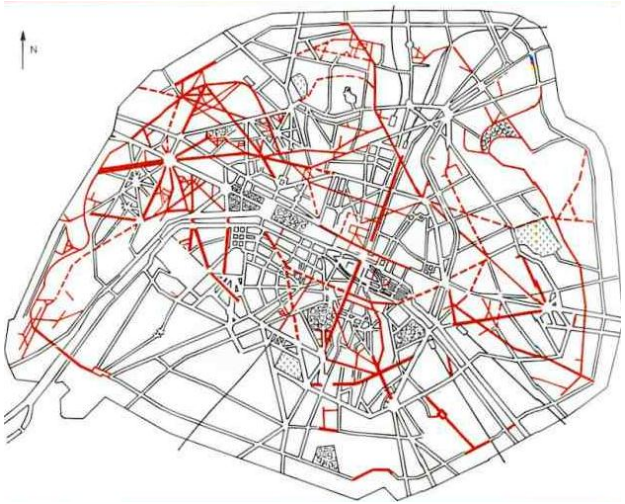
v. Urban Rational Decision Making

WHERE TO SPEND THE

$

LARGEST SOCIAL BENEFIT

vi. Big Bang: Large Scale Interventions VS Small Scale



VS

Source: Anon

Source: Haussmann, Paris plan VS Small Scale Interventions – Urban Agriculture

III SECTION D III

RESEARCH METHODOLOGY

INTRODUCTION & PREAMBLE	SECTION A
TOWARDS A HYPOTHESIS	SECTION B
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SECTION D	**RESEARCH METHODOLOGY**
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D. RESEARCH METHODOLOGY

1. APPROACH TOWARDS ANALYSIS & DESIGN

The research methodology followed in developing this research report: Making Urban. City 7.0: Rebuilding the South African City by Applying Measured Urbanization; is illustrated in the diagram to the right. The research methodology was preceded by broad urban development trends and theoretical depiction to set the scene for the hypothesis and problem statement. The research methodology & approach towards analysis & design is divided into 6 steps; from analysis to comparison to measured application.

The first step is the measurement & analysis of urban space within Ekurhuleni Metropolitan Municipality (region) and the selected site of Springs. Here the urban components of Ekurhuleni are analysed and compared, with the emphasis on Springs. As a departure point, and to illustrate the spatial inequities of South African cities, the 9 former urban centres of Ekurhuleni are compared to the 11 township areas.

The second step is to illustrate the outcomes of the aforementioned comparison, illustrating the measured spatial of inequities.

The third step is to use this comparison/ outcomes as spatial informants for readjusting equity in Ekurhuleni urban centres. In this section these comparisons will suggest varying spatial informants that could be applied to various urban conditions found within the Ekurhuleni Urban environment.

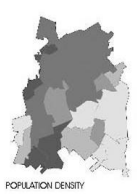
The forth step is to develop Strategies (from the above spatial informants) for implementation on the urban complex scale. These Strategies are proposed to structure the urban form on an Urban Complex Scale to assist the application of the detailed implementation Principles. These Strategies are proposed on the Urban Complex Scale, including Springs, Brakpan, & Kwa Thema.

The fifth step is the identification of targeted Principles & Action to achieve the aim of rebuilding South African cities (case study - Springs) by applying measured urbanization. The aim here is to illustrate the qualitative urban environment improvements. These Principles form the urban design guidelines for the Springs area towards a more sustainable, SMART, equitable & inclusive urban environment.

The sixth step involves the measurement of the effect of the application of the urban design principles. Here the aim is to illustrate the improvements in the urban environment (Springs) in a qualitative manner.

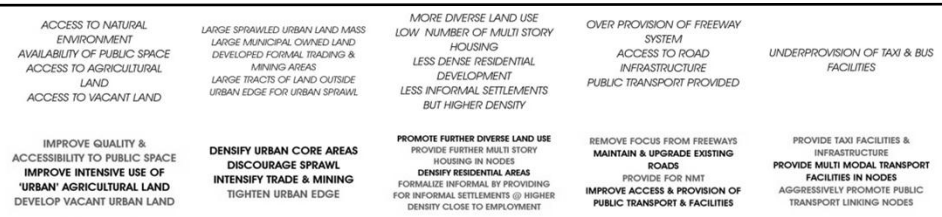
Measure/ Analyse Urban Space

(Ekurhuleni Metropolitan Municipality & Springs)



Spatial Results – Equity

Spatial Informants/ Drivers For Readjusting Equity



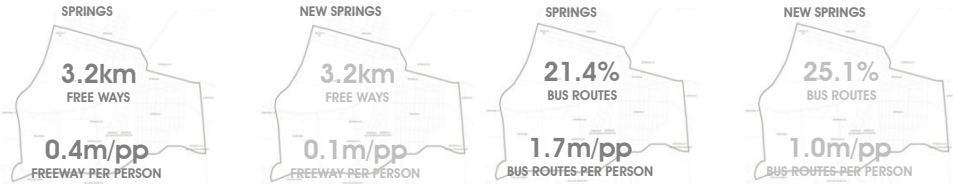
Identification of Strategies

(Urban Complex – Springs, Brakpan, Kwa Thema)

Identification Principles & Actions

(Springs)

Measured Result Of Strategy & Action Implementation



III SECTION E III

CONTEXTUAL ANALYSIS

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E. CONTEXTUAL ANALYSIS

1. THE CURRENT STATE OF URBAN FROM IN EKURHULENI (AND SPRINGS)

i. BASIS FOR SITE SELECTION & ANALYSIS

The selection of the Ekurhuleni Metropolitan Area as a study region and the town of Springs as the study area, is based on the historic development of these areas within the South African context. As illustrated in Section 3b of this report, Ekurhuleni reflects the typical South African trends for urbanization, urban development & growth. Whereas the towns developed, segregation occurred, apartheid was applied and spatial segregation and inequity resulted and continued.

What makes this analysis and site selection more interesting is that Ekurhuleni does not function around a central urban core, but is a combination of 9 urban core areas (9 former CBD's) that were historically independent with their own administration. As the urban areas grew, 11 township areas emerged (11 New CBD's), which were associated to these 9 CBD areas. These 11 township areas have now surpassed the population figures and density of the former 9 urban core areas and has become (deprived) urban areas in their own right. The importance for the site selection therefore lies in its unique urban development pattern of 9 former CBD areas and 11 New CBD areas (illustrated in diagram to right). Ekurhuleni could potentially then be defined as an urban environment of 20 urban centers that are independent with their own administration.

The potential for research therefore lies in the lessons that can be learnt from this latent inherent (and future potential) spatial form where each urban core could be viewed as a complete urban environment; which is self sustaining, independent & linked to other nodes. Conversely, presenting a potential canvas for the development of a new type of urban form (7th wave) within the South African context; directly addressing our spatial inequities, inequality, disproportionate resource allocation, exclusion and segregated spatial form.

These urban centers (such as Springs) therefore offer us an opportunity to 'isolate' urban development interventions per urban core, identify the building blocks, suggest complete sections of urbanity, illustrate SMART responses to the immediate environment and apply self sustainability in a defined environment. It (Springs) could function as a laboratory for experimentation of new urban thinking that could offer solutions for other urban environments in South Africa.

Source: Google Images, Anon

ii. BASIS FOR ANALYSIS

EKURHULENI AERIAL

9 FORMER CBD'S

1 335km²

69.2%

11 NEW CBD'S

593km²

30.8%

1 929km²

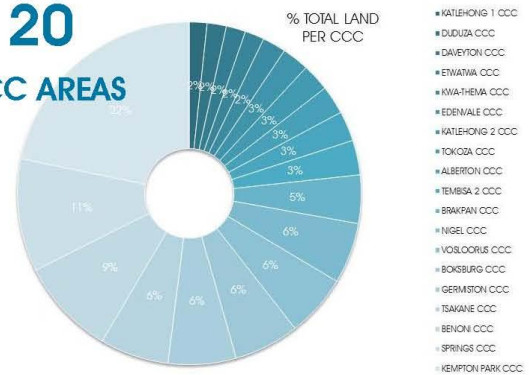
DIFFERENTIATION FACTOR

-38.4%

EKURHULENI CCC AREAS

20

CCC AREAS



9 NODES IN FORMER CBD's

ALBERTON

BENONI

BOKSBURG

BRAKPAN

SPRINGS

EDENVALE

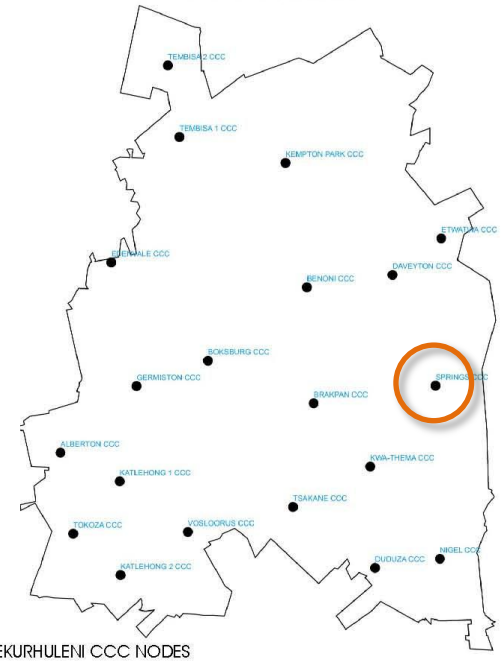
GERMISTON

KEMPTON PARK

NIGEL

9 + 11 = 20

CCC NODES



EKURHULENI CCC NODES

11 NODES IN NEW CBD's

DAVEYTON

DUDUZA

ETWATWA

KATLEHONG 1

KATLEHONG 2

KWA THEMA

TEMBISA 1

TEMBISA 2

TOKOZA

TSAKANE

VOSLOORUS

Source: http://www.statsonline.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

iii. DEMOGRAPHIC

To illustrate the current urban form of Ekurhuleni & Springs, an analysis is presented of the region & the sites' demographics, economy, housing, open space, mobility network and urban form. These data sets are presented in 2 groups, one data set based on the 9 former CBD's and one on the 11 new CBD's.

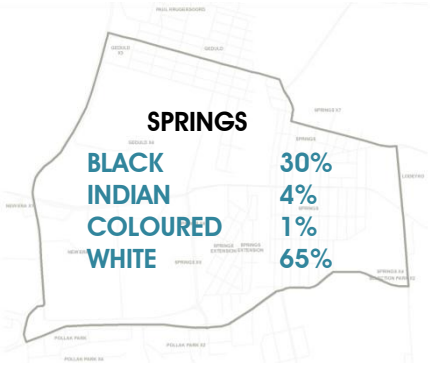
The data is presented as such to illustrate and quantify the real inequalities within our urban environments (in South Africa). These inequalities are then indicated as a positive or negative differentiation factor. These differentiation factors will the be compared at a later state and will form the basis to develop spatial informants, strategies & principles.

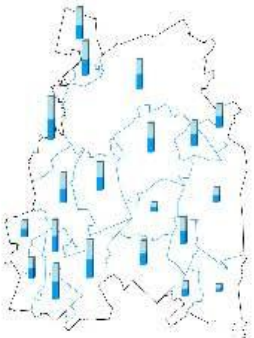
The datasets below and to the right illustrate the demographic profile of the 9 former urban areas, 11 new urban areas and Springs. From this it can be deduced that the largest proportion of white population live within the 9 urban areas and the largest proportion of black population live within the 11 urban areas, of which the largest population is between the ages of 16 to 50 years.

The interesting outcome is when the population density is compared, the 9 urban areas have 481m²/pp while the 11 urban areas have 140m²/pp; that means that the 11 urban core areas, which is further removed from urban infrastructure, is more dense than the 9 urban core areas by a differentiation factor of 341m²/pp less space.

Springs reflects a lower density than the average of the 9 urban core areas, it has 565m²/pp urban space available. This suggests high potential for densification & development in the Springs urban core area.

RACE COMPOSITION	9 FORMER CBD'S	11 NEW CBD'S	
BLACK 2 068 381	47.7%	97.1%	49.4%
COLORED 73 167	4.3%	1.7%	-2.7%
INDIAN 40 053	3.2%	0.3%	-2.9%
WHITE 499 203	44.8%	0.9%	-43.8%

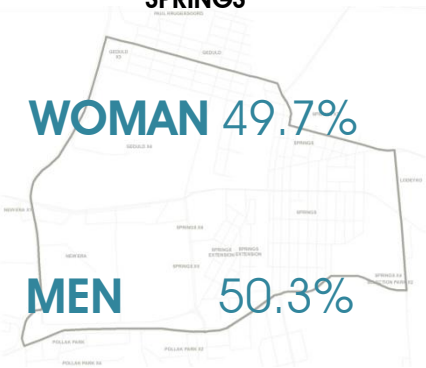




GENDER PROFILE

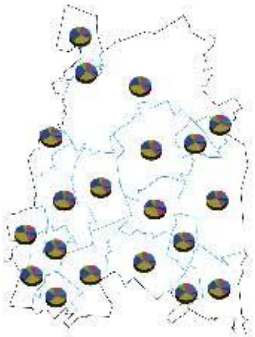
	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
1 319 004	49.6%	49%	-0.6%
1 361 776	50.4%	51%	0.6%

SPRINGS



WOMAN 49.7%

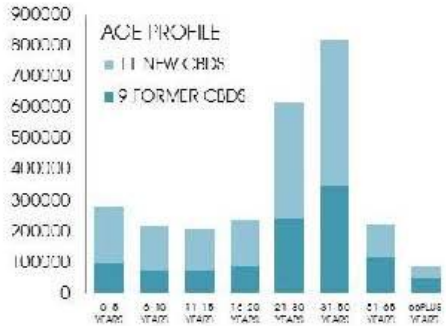
MEN 50.3%



AGE PROFILE

705 390
BELOW 16 YEARS OF AGE
83 987
ABOVE 65 YEARS OF AGE
TOTAL 29.4%

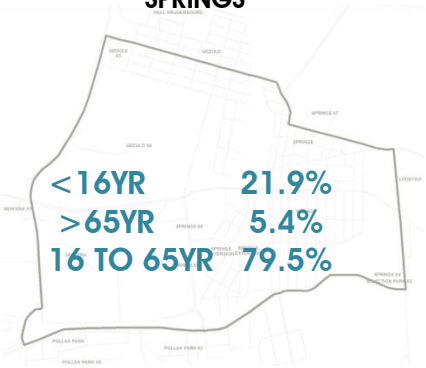
1 891 673
BETWEEN 16 TO 65 YEARS OF AGE (70.6%)



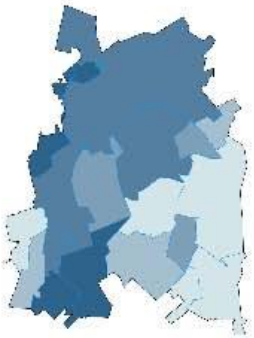
DIFFERENTIATION FACTOR

0-5	2.3%
6-10	1.8%
11-15	1.4%
16-20	1.3%
21-30	1.4%
31-50	-2.5%
51-65	-3.8%
60 PLUS	-1.9%

SPRINGS



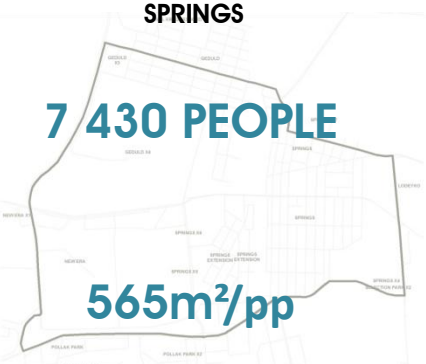
<16YR 21.9%
>65YR 5.4%
16 TO 65YR 79.5%



POPULATION DENSITY

	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
2 680 739 TOTAL POPULATION	1 082 512	1 598 281	19.2%
NET DENSITY 277 m²/pp	481 m²/pp	140 m²/pp	-341 m²/pp

SPRINGS



7 430 PEOPLE

565m²/pp

iv. ECONOMIC

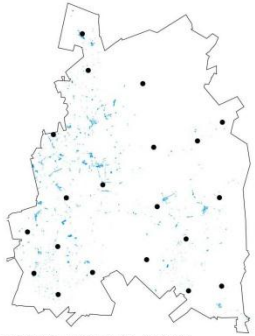
In terms of the economy the 11 urban core areas have 0.3% less formal trading areas with employment opportunities, and have 10m²/pp less formal trading land opportunities. In comparison to this Springs offer 92m²/pp formal trading land. This suggests that more employment opportunities exist within the 9 urban core areas (and Springs).

Looking at income, 57,8% of the Ekurhuleni population has no income, while 5,7% more people live under the poverty line. This entails that 63,5% of people in Ekurhuleni live in poverty. Springs, however indicates a lower level of no income (36,1%) and a 3,4% of people living under the poverty line. Therefore, the conclusion is that the 9 urban core areas have lower poverty.

There are 17,8% less economic active population and 14,6% more economically active population which is unemployed within the 11 urban core areas. Regarding the availability of mining and industrial areas; the analysis indicates that there are 44m²/pp less industrial land per person within the 11 urban core areas.

This suggests that the 11 urban core areas are deprived of broad based economic and employment opportunities; which could result in higher levels of employment, larger distances to travel to employment opportunities by separating living & working opportunities.

Higher levels of economic opportunity presents itself in Springs, however this advantage is not exploited, by placing living opportunities closer to economic opportunities. This presents a development opportunity for Springs.



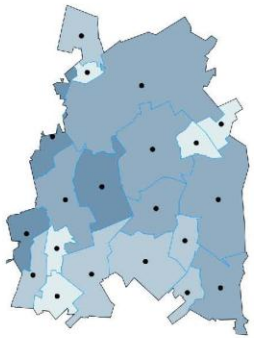
FORMAL TRADING AREAS

	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
18 394 847m²	13 809 362m²	4 585 485m²	
1% TOTAL FORMAL TRADING AREAS AS EMPLOYMENT OPPORTUNITIES	1%	0.8%	-0.3%
7m²/pp FORMAL TRADING LAND PER PERSON	13m²/pp	3m²/pp	-10m²/pp

SPRINGS

685 168m²
10.2%
FORMAL TRADING EMPLOYMENT OPPORTUNITIES

92 m²/pp
FORMAL TRADING LAND PER PERSON



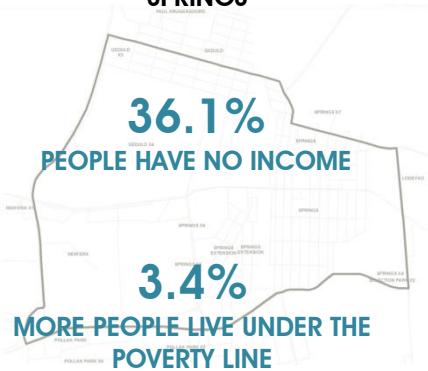
AVERAGE HOUSEHOLD INCOME

786 320
PEOPLE HAVE NO INCOME

78 090
MORE PEOPLE LIVE UNDER THE POVERTY LINE

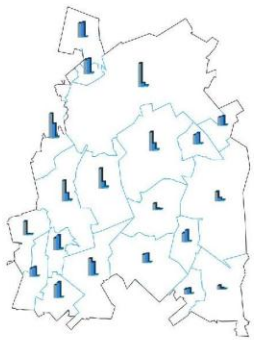
		DIFFERENTIATION FACTOR
57.8% NO INCOME	R 0 INCOME	
5.7% MORE	R418 EARN BELOW THE POVERTY LINE	**63.5%** OF PEOPLE IN POVERTY

SPRINGS



36.1%
PEOPLE HAVE NO INCOME

3.4%
MORE PEOPLE LIVE UNDER THE POVERTY LINE



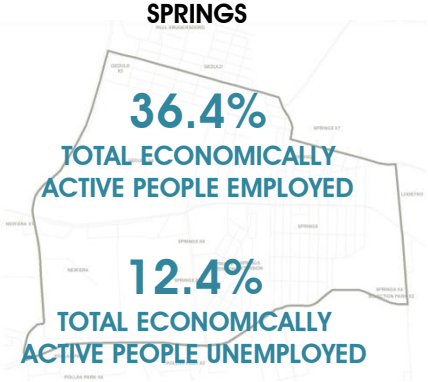
EMPLOYMENT

821 638
TOTAL ECONOMICALLY ACTIVE PEOPLE EMPLOYED (28.6%)

751 762
TOTAL ECONOMICALLY ACTIVE PEOPLE UNEMPLOYED (26.2%)

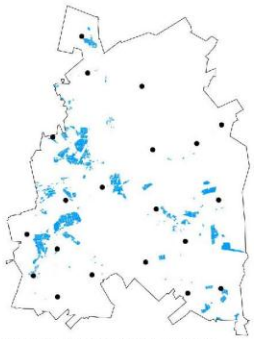
9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
39.4%	21.6%	**-17.8%**
17.3%	31.9%	**14.6%**

SPRINGS



36.4%
TOTAL ECONOMICALLY ACTIVE PEOPLE EMPLOYED

12.4%
TOTAL ECONOMICALLY ACTIVE PEOPLE UNEMPLOYED



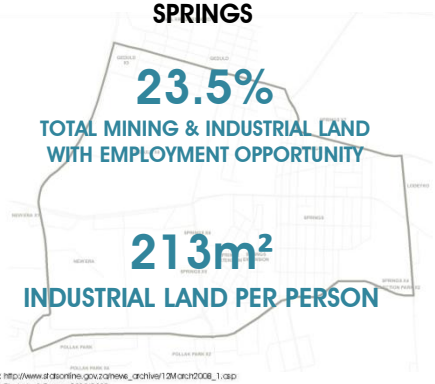
MINING & INDUSTRIAL AREAS

71 295 803m²
3.7%
TOTAL MINING & INDUSTRIAL LAND LAND WITH EMPLOYMENT OPPORTUNITY

27m²/pp
INDUSTRIAL LAND PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
4.3%	2.3%	**-2%**
53m²/pp	9m²/pp	**-44m²/pp**

SPRINGS



23.5%
TOTAL MINING & INDUSTRIAL LAND WITH EMPLOYMENT OPPORTUNITY

213m²
INDUSTRIAL LAND PER PERSON

Source: http://www.statsonline.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

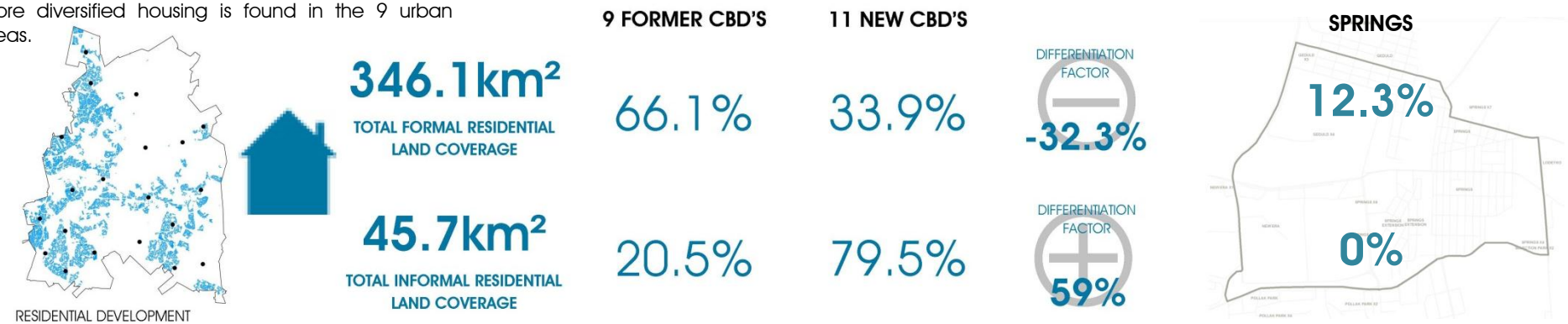
v. HOUSING

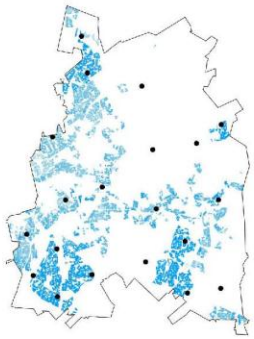
There are a total of 650,099 households within Ekurhuleni, with 3,4% more households in the 11 urban core areas. The total population of Ekurhuleni is estimated at 2,680,739, reflecting an average of 4,1pph (persons per household). There is however a larger proportion of persons per household in the 11 urban core areas (4,8pph); resulting in a 38% higher level of persons per household in these areas. Springs has 2,064 households and 3,6pph.

With relation to residential development, the 11 urban areas have 32,3% less formal residential land cover and 59% more informal residential land cover. Conversely, the 11 urban areas are more dense, however the density type is predominantly informal housing. In Springs only 12.3% of the land is utilized for residential development, which also offers the opportunity for expansion of formal housing opportunities.

In terms of housing density, a similar number of single detached households are found within the 9 and 11 urban areas; however there is 96,9% less higher density residential development typologies within the 11 urban areas. Therefore it can be deduced that only 1 type of housing (detached housing) is provided within the 11 urban areas; while more diversified housing is found in the 9 urban areas.

Springs has 43,3% formal single detached housing and 46,7% higher density housing options available. 31% of the total Ekurhuleni population lives within informal settlements. An increased informal settlement frequency is found in the 11 urban areas, with the latter holding 15,6% more informal settlements that the 9 urban areas. Springs however has 0 informal settlements.





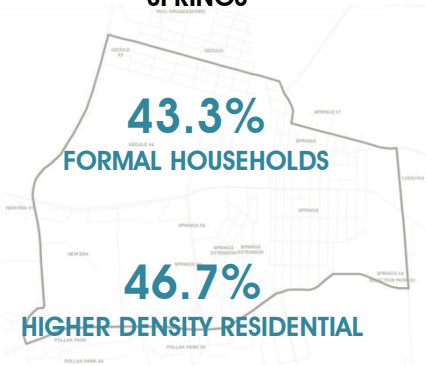
FORMAL HOUSING DENSITY

490 327
FORMAL HOUSEHOLDS

7 079
ERVEN ZONED AT HIGHER RESIDENTIAL (RES 3 & 4)

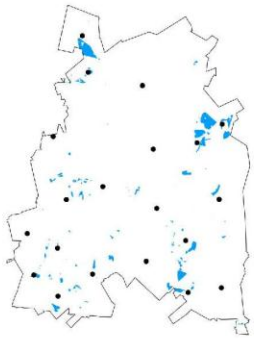
	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
FORMAL HOUSEHOLDS	50.3%	59.7%	-0.6%
HIGHER DENSITY RESIDENTIAL	98.5%	1.5%	-96.9%

SPRINGS



43.3%
FORMAL HOUSEHOLDS

46.7%
HIGHER DENSITY RESIDENTIAL



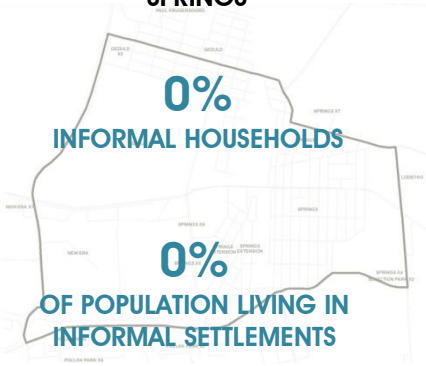
INFORMAL SETTLEMENT

159 772
INFORMAL HOUSEHOLDS

31%
OF POPULATION LIVING IN INFORMAL SETTLEMENTS (841 906 PEOPLE)

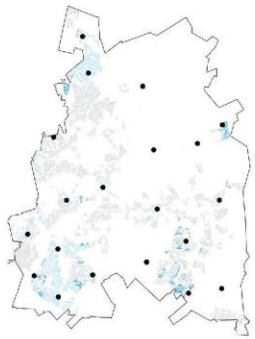
	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
INFORMAL HOUSEHOLDS	42.2%	57.8%	
OF POPULATION LIVING IN INFORMAL SETTLEMENTS	355 284	486 622	15.6%

SPRINGS



0%
INFORMAL HOUSEHOLDS

0%
OF POPULATION LIVING IN INFORMAL SETTLEMENTS



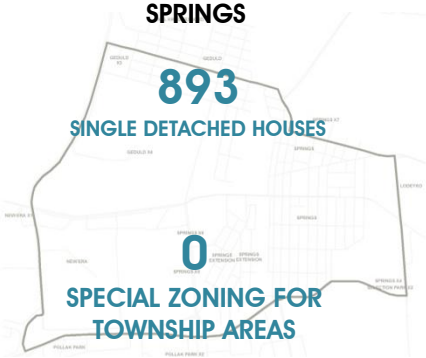
HOUSING TYPE

350 124
SINGLE DETACHED HOUSES (RESIDENTIAL 1)

108 226
SPECIAL ZONING FOR TOWNSHIP AREAS (RES 5)

	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
SINGLE DETACHED HOUSES	51.5%	48.5%	-2.9%
SPECIAL ZONING FOR TOWNSHIP AREAS	7.5%	92.5%	85.1%

SPRINGS



893
SINGLE DETACHED HOUSES

0
SPECIAL ZONING FOR TOWNSHIP AREAS

Source: http://www.statsonline.gov.za/newse_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

vi. OPEN SPACE

The analysis of the open space within Ekurhuleni includes the agricultural land, vacant land, hydrological features (ponds, dams & wetlands), rivers & streams, public spaces & parks, and protected areas.

In terms of agricultural land, the analysis indicates that there is a total of 646,3km² of agricultural land in Ekurhuleni (241m²/pp). The 11 urban areas have 21,4% less agricultural land than the 9 urban areas. This tendency is also reflected with vacant land (209,7km² in Ekurhuleni/ 78m²/pp), where the 11 urban areas have 22% less vacant land than the 9 urban areas. This suggests that agricultural expansion and urban development could easily take place within the 9 urban areas.

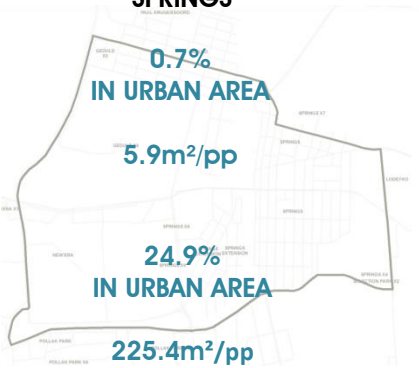
This trend is found within the hydrological components as well; whereas the 11 urban areas have 20,2% (63m²/pp) less hydrological land and 25,5% (22m/pp) less river access. In Springs there is 0% availability to hydrological land or rivers. This suggests that access to hydrological components are low in the 11 urban areas and within Springs.

In terms of the public spaces & parks, there is a total of 28,89km² (26m²/pp) available within Ekurhuleni. There is 23,7% (23m²/pp) less public space & parks available in the 11 urban areas. Within Springs there is 109,8m²/pp public space, therefore the potential exists for the active use of this public space & inclusion thereof in the urban development.

AGRICULTURAL LAND	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
646.3km²	60.7%	39.3%	-21.4%
241m²/pp	362m²/pp	159m²/pp	-203m²/pp

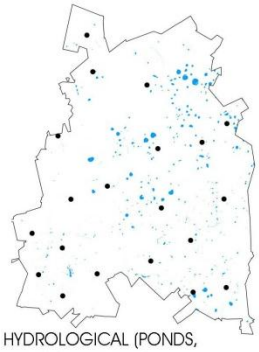
VACANT LAND	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
209.7km²	61%	39%	-22%
78m²/pp	118m²/pp	51m²/pp	-67m²/pp

SPRINGS



0.7%
IN URBAN AREA
5.9m²/pp

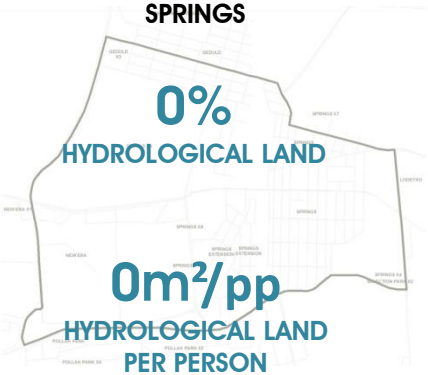
24.9%
IN URBAN AREA
225.4m²/pp



HYDROLOGICAL (PONDS, DAMS & WETLANDS)

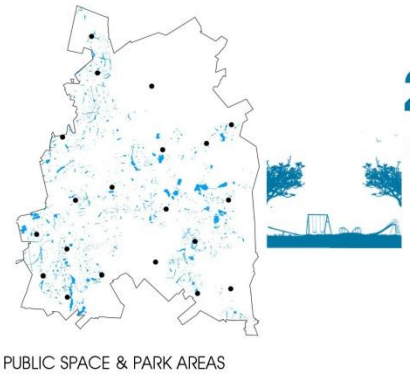
	9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
206.8km HYDROLOGICAL LAND	60.1%	39.9%	-20.2%
77m²/pp HYDROLOGICAL LAND PER PERSON	115m²/pp HYDROLOGICAL LAND PER PERSON	52m²/pp HYDROLOGICAL LAND PER PERSON	-63m²/pp

SPRINGS



0%
HYDROLOGICAL LAND

0m²/pp
HYDROLOGICAL LAND PER PERSON



PUBLIC SPACE & PARK AREAS

28.89km²
PUBLIC SPACES & PARKS

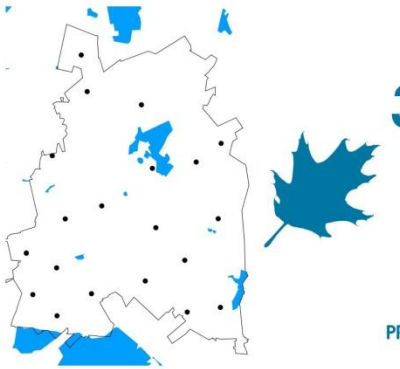
26m²/pp
PUBLIC SPACE LAND PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
61.9%	38.1%	-23.7%
39m²/pp PUBLIC SPACE LAND PER PERSON	16m²/pp PUBLIC SPACE LAND PER PERSON	-23m²/pp

SPRINGS

19.4%
PUBLIC SPACES & PARKS

109.8m²/pp
PUBLIC SPACE LAND PER PERSON



PROTECTED AREAS

346.7km²
PROTECTED AREAS

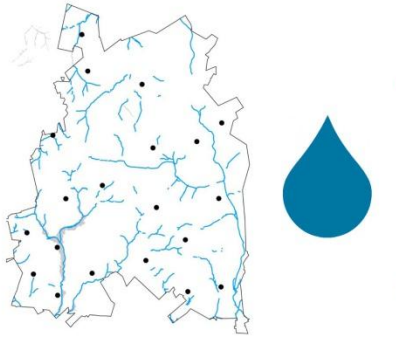
129m²/pp
PROTECTED AREA PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
25.9%	74.1%	48.2%
83m²/pp PROTECTED AREA PER PERSON	161m²/pp PROTECTED AREA PER PERSON	78m²/pp

SPRINGS

0%
PROTECTED AREAS

109.8m²/pp
PROTECTED AREA PER PERSON



RIVERS AND STREAMS

629.1km
RIVERS

0.23m/pp
RIVER LENGTH PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
62.7%	37.3%	-25.5%
0.36m/pp RIVER LENGTH PER PERSON	0.15m/pp RIVER LENGTH PER PERSON	-22m/pp

SPRINGS

0km
RIVERS

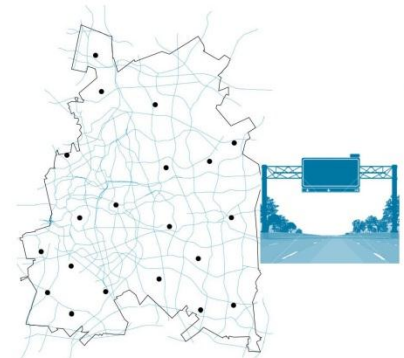
0m/pp
RIVER LENGTH PER PERSON

Source: http://www.statsonline.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

viii. MOBILITY NETWORK (ROADS)

The research indicated that there is a total of 1,476km (0,8m/pp) of freeways within Ekurhuleni, however within the 11 urban areas there is 39,7% less freeways than the 9 urban areas. In relation to roads, Ekurhuleni has a total of 10,240km of roads, where the 11 urban areas have 28,6% (3,8m/pp) less than the 9 urban areas. In comparison Springs has 8,1m/pp roads. This could suggest that road infrastructure (with the focus on public transport) should be expanded within the urban areas, particularly in the 11 urban areas.

Comparing airport access, it can also be seen that the 11 urban areas have no airports within their areas of jurisdiction.



PROPOSED ROUTES & NATIONAL ROADS

1 476km
FREE WAYS

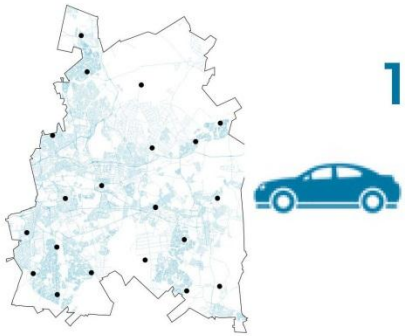
0.8m/pp
FREEWAYS PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
69.9%	30.1%	-39.7%
1.4m/pp FREEWAYS PER PERSON	0.4m/pp FREEWAYS PER PERSON	-1m/pp

SPRINGS

3.2km
FREE WAYS

0.4m/pp
FREEWAY PER PERSON



EXISTING ROADS

10 240km
ROADS

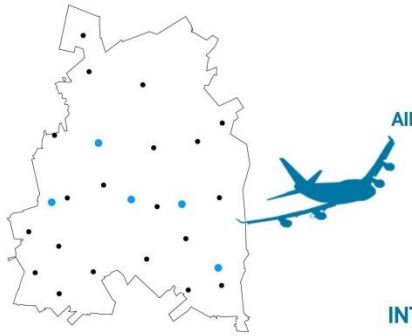
3.8m/pp
ROADS PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
64.3%	35.7%	-28.6%
6.1m/pp ROADS PER PERSON	3.2m/pp ROADS PER PERSON	-3.8m/pp

SPRINGS

60km
ROADS

8.1m/pp
ROADS PER PERSON



EXISTING AIRPORTS

5
AIRPORTS (1 INTERNATIONAL, 4 AIRFIELDS)

1
INTERNATIONAL AIRPORTS

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
5	0	-100%
20km AVERAGE DISTANCE TO INTERNATIONAL AIRPORT	30km AVERAGE DISTANCE TO INTERNATIONAL AIRPORT	-10km

SPRINGS

OR
Rar
Ber
Spri
Nig

1 ADJACENT AIRPORT/FIELD

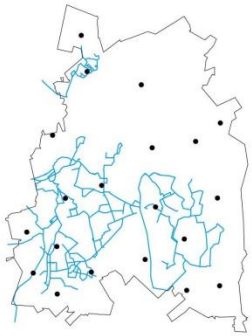
0
INTERNATIONAL AIRPORT

Source: http://www.statsonline.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

viii. MOBILITY NETWORK (PUBLIC TRANSPORT)

Through the analysis of the public transport infrastructure it was found that Ekurhuleni has 6,708km (2,5m/pp) bus routes, with 6,1% more bus routes within the 11 urban areas. Springs however has a very low provision of bus routes, equating to 1,7m/pp. In relation to the taxi public transport system, it revealed that Ekurhuleni has 7,213km (2,7m/pp) of taxi routes available, with 1,8% less routes and 7,8% less taxi ranks within the 11 urban areas (Springs 2,3m/pp). In viewing the rail infrastructure, it was found that Ekurhuleni has 1,031km (0,4m/pp) rail infrastructure, with 47% less rail infrastructure and 62% less rail stations within the 11 urban areas (Springs 1,6m/pp).

The general conclusion that can be drawn from this is that the 11 urban areas are underprovided in terms of public transport accessibility, which should be improved. As public transport is not available to the poorer communities within Ekurhuleni.



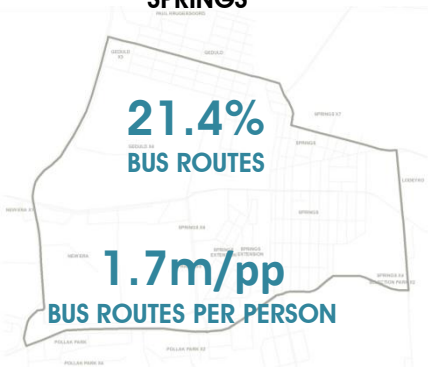
BUS MOBILITY

6 709km
BUS ROUTES

2.5m/pp
BUS ROUTES PER PERSON

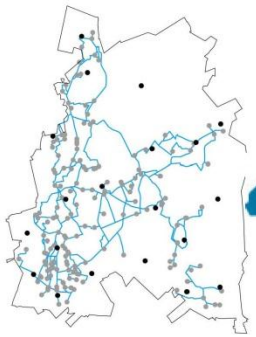
9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
46.9%	53.1%	6.1%
2.9m/pp BUS ROUTES PER PERSON	2.2m/pp BUS ROUTES PER PERSON	-0.7m/pp

SPRINGS



21.4%
BUS ROUTES

1.7m/pp
BUS ROUTES PER PERSON



TAXI MOBILITY

7 213km
TAXI ROUTES

2.7m/pp TAXI ROUTES

167 TAXI RANKS

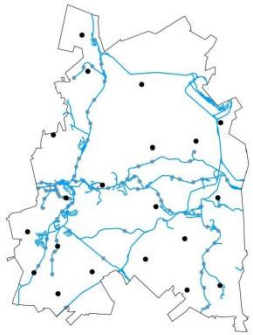
16 053 PERSONS PER RANK

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
50.9%	49.1%	-1.8%
3.4m/pp TAXI ROUTES	2.2m/pp TAXI ROUTES	-1.2m/pp
53.9%	46.1%	-7.8%
12 028 PERSONS PER RANK	20 757 PERSONS PER RANK	8 729 PERSONS PER RANK

SPRINGS

29%
TAXI ROUTES

2.3m/pp
TAXI ROUTES
2 TAXI RANKS



RAIL MOBILITY

1 031km
RAIL ROUTES

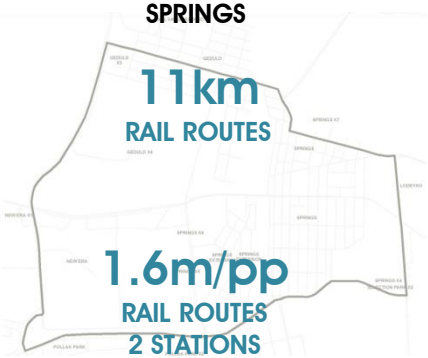
0.4m/pp RAIL ROUTES

79 STATIONS

33 934 PERSONS PER STATION

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
73.6%	26.4%	-47.1%
0.7m/pp RAIL ROUTES	0.2m/pp RAIL ROUTES	-0.5m/pp
81%	19%	-62%
16 914	106 552	8 729 PERSONS PER STATION

SPRINGS

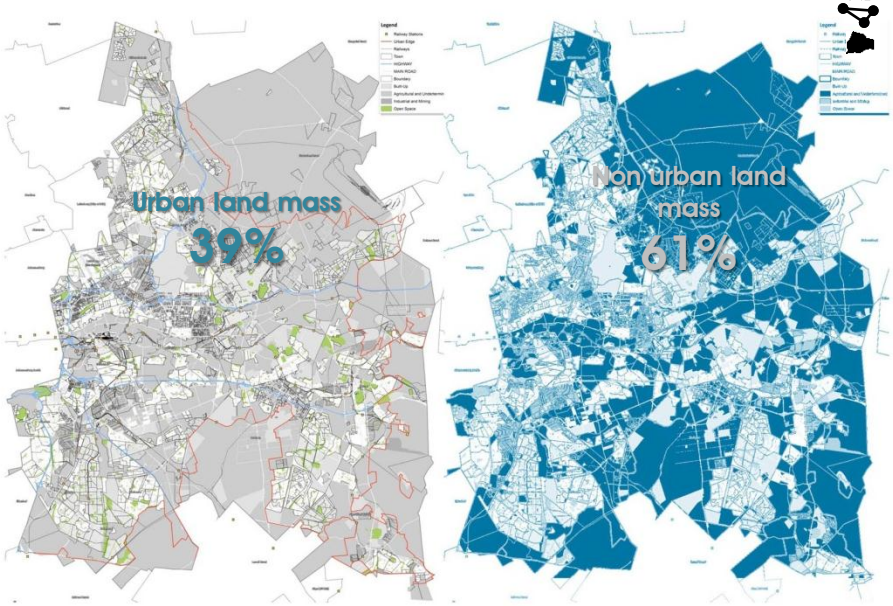


11km
RAIL ROUTES

1.6m/pp
RAIL ROUTES
2 STATIONS

Source: http://www.statsonline.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

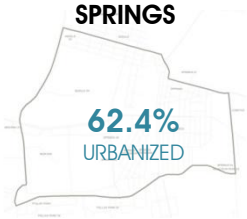
ix. URBAN FORM



Ekurhuleni comprises of 39% urban land mass and 61% non urban land mass. The 9 and 11 urban areas are approximately 39% urbanized, with Springs being 62,4% urbanized. The total urban land mass of Ekurhuleni is 743,6km², with 40% (341m²/pp) less urban land mass in the 11 urban areas. The total non urban land mass totals 1,185km² (442m²/pp), where the 11 urban areas have 37,5% (521m²/pp) less non urban land mass, as opposed to the 9 urban areas.

The total land owned in Ekurhuleni by the Municipality totals 213km² (80m²/pp), with 14% less in the 11 urban areas. The total vacant land within Ekurhuleni totals 209,7km² (78m²/pp), with 22% less in the 11 urban areas. In relation to the land within the urban edge, the 11 urban areas have 35,4% less land within the urban edge.

In relation to Springs, the total land owned by the Municipality totals 39,3% (357m²/pp). The total vacant land within Springs totals to 38,5% (349m²/pp), and all the land within Springs is within the urban edge.



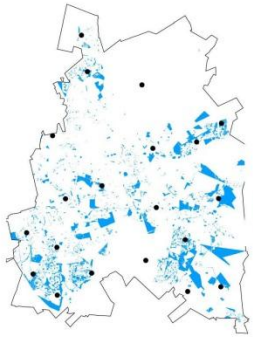
URBANIZATION FACTOR	9 FORMER CBD'S	11 NEW CBD'S	
743.6km²	39% URBANIZED	38% URBANIZED	-1%

URBAN LAND MASS	9 FORMER CBD'S	11 NEW CBD'S	
743.6km²	70%	30%	-40%
277m²/pp URBAN LAND MASS PER PERSON	481m²/pp	277m²/pp	-341m²/pp

SPRINGS
62.4% URBAN AREA
565m²/pp URBAN AREA

NON URBAN LAND MASS	9 FORMER CBD'S	11 NEW CBD'S	
1 185km²	68.7%	31.3%	-37.5%
442m²/pp NON URBAN LAND MASS PER PERSON	753m²/pp	232m²/pp	-521m²/pp

SPRINGS
37.6% NON URBAN LAND MASS
341m²/pp NON URBAN LAND MASS



MUNICIPAL OWNED LAND

Ekurhuleni
METROPOLITAN MUNICIPALITY

213.9km²
MUNICIPAL LAND

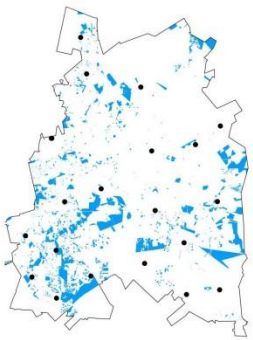
80m²/pp
MUNICIPAL OWNED LAND PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
57%	43%	-14%
113m²/pp MUNICIPAL OWNED LAND PER PERSON	58m²/pp MUNICIPAL OWNED LAND PER PERSON	-55m²/pp

SPRINGS

39.3%
MUNICIPAL LAND

357m²/pp
MUNICIPAL OWNED LAND PER PERSON



VACANT LAND

VACANT

209.7km²
VACANT LAND

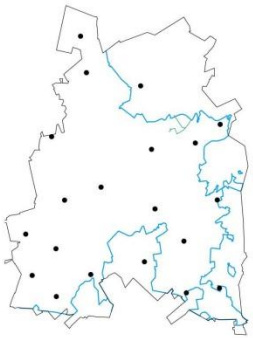
78m²/pp
VACANT LAND PER PERSON

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
61%	39%	-22%
118m²/pp VACANT LAND PER PERSON	51m²/pp VACANT LAND PER PERSON	-67m²/pp

SPRINGS

38.5%
VACANT LAND

349m²/pp
VACANT LAND PER PERSON



URBAN EDGE

1 323km²
LAND INSIDE URBAN EDGE

606km²
LAND OUTSIDE URBAN EDGE

9 FORMER CBD'S	11 NEW CBD'S	DIFFERENTIATION FACTOR
67.7%	32.3%	-35.4%
72.5%	27.5%	-45%

SPRINGS

6735km²
LAND INSIDE URBAN EDGE

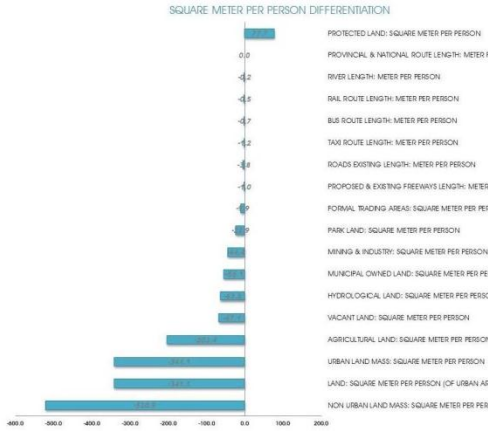
0km²
LAND OUTSIDE URBAN EDGE

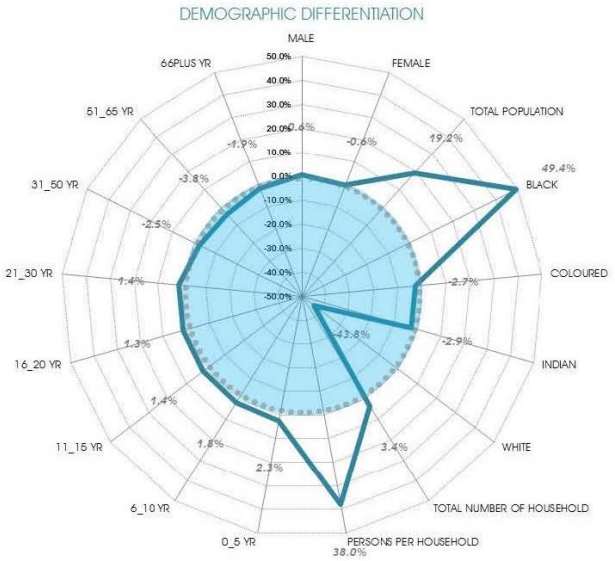
Source: http://www.statssa.gov.za/news_archive/12March2008_1.asp
Source: Ekurhuleni Census 2010/2012

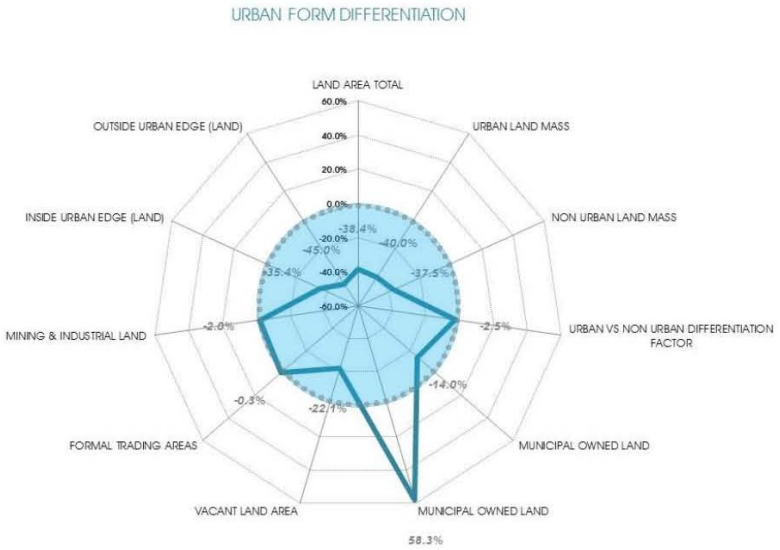
x. ANALYTICAL COMPARISON: TOWARDS SMART URBAN DEVELOPMENT

The graphs to the right illustrate the summarized differentiation characteristics between the 9 urban areas (former CBD's) and the 11 urban areas (new CBD's), as discussed in the previous pages. This graphically indicates the inequalities between the 2 distinct environments found within the urban areas of Ekurhuleni. Where the differentiation factor is 0 (blue dashed line), the 2 environments have equal access to that particular function. The further the graph (blue line) moves away from the 0 line, the more inequitable the distribution/ access of that particular function/ resource is. In most cases the differentiation factor negatively affects the 11 urban areas.

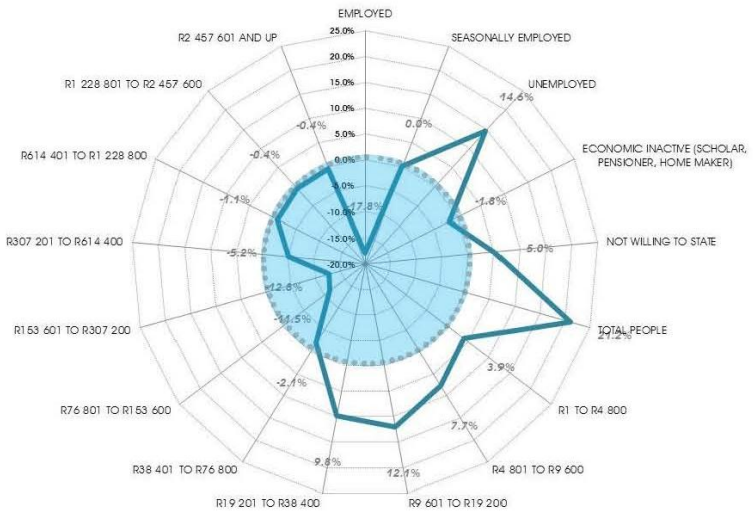
The aim is not to suggest interventions/ actions to reach to point of equality (blue dashed line), but rather to use this analysis to suggest specific targeted drivers and spatial indicators (for the 2 different environments) that could provide for a more equitable urban areas. Conversely, the 11 urban areas might require the development of new additional parks, whereas the 9 urban areas would require the development of existing parks. These drivers could inform broad strategies towards achieving an improved urban environment. These drivers and vision is discussed in the next section in more detail.



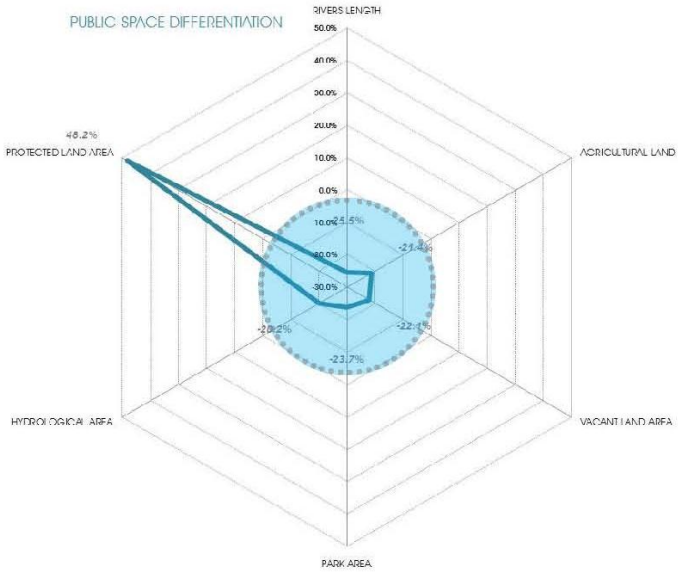




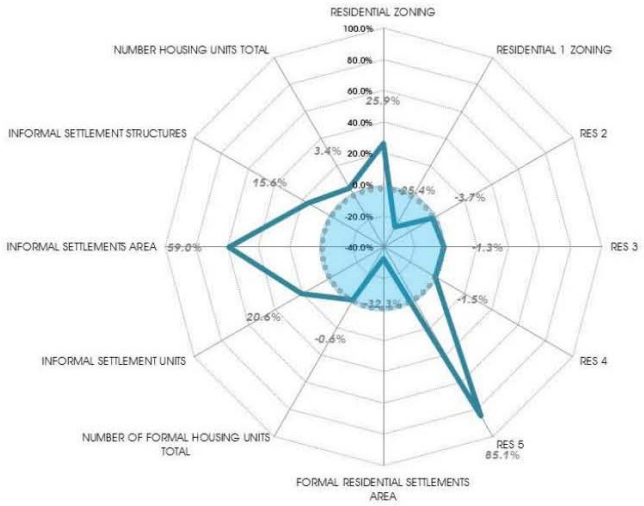
ECONOMIC DIFFERENTIATION



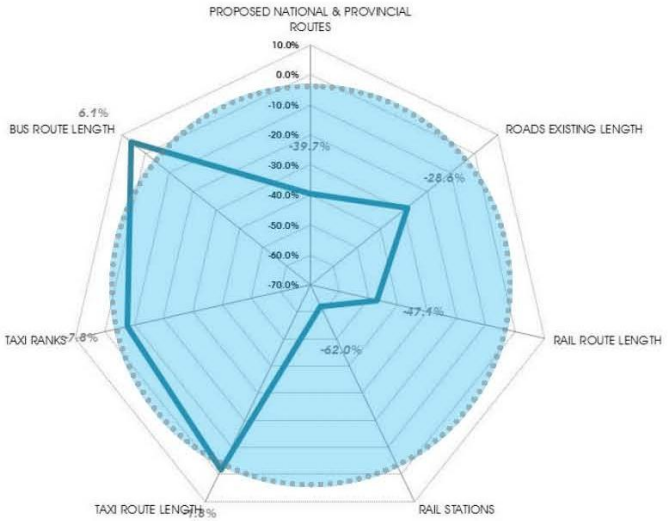
PUBLIC SPACE DIFFERENTIATION



HOUSING DIFFERENTIATION



MOBILITY DIFFERENTIATION



III SECTION F III

VISION & DRIVERS

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F. VISION & DRIVERS

1. VISION

The following section presents the vision & drivers for the proposed research & design report. This vision & drivers are deduced from the above discussed problem statement, theoretical analysis and spatial analysis of Ekurhuleni.

The vision is set as:

Making urban environments (within South Africa) through smart measured urban responses that advocates confined urbanity, equity, urban survival, walkability, external mobility connection, inclusion, protection of natural resources, citizenship, partnership, social capital, food security, flexibility and a sense of place.

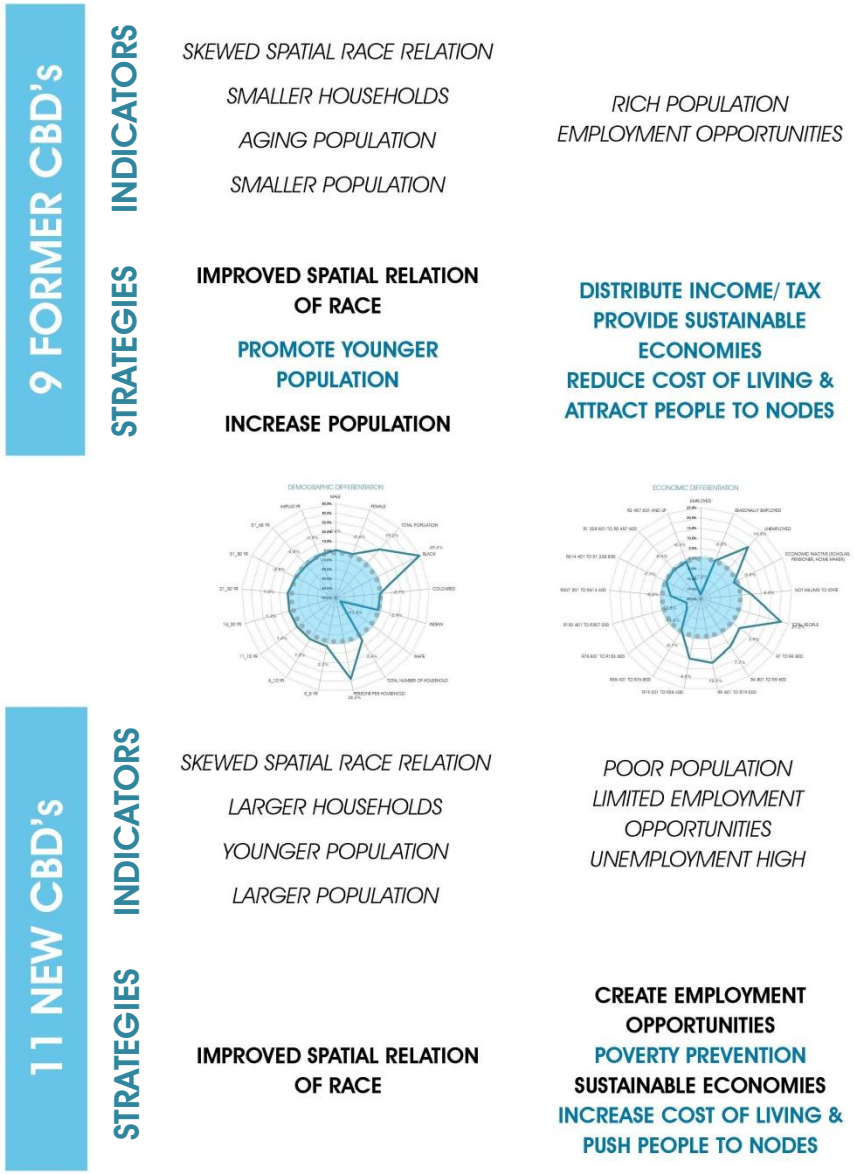
The analysis of the spatial data and the indication of the inequalities within our urban environments will inform the drivers and spatial indicators for focused change in South Africa's (in particular Ekurhuleni & Springs) urban environments.

Making Urban
through Smart Measured Urban
Responses that Advocates
Confined Urbanity, Equity, Urban
Survival, Walkability, External
Mobility Connection, Inclusion,
Protection of Natural Resources,
Citizenship, Partnership, Social
Capital, Food Security, Flexibility
and a Sense of Place

2. DRIVERS: INDICATORS FOR APPROPRIATE URBAN DEVELOPMENT AND BASE ACTIONS OF URBAN DESIGN INTERVENTION

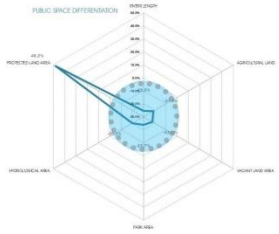
The diagram to the right illustrates the indicators and actions/ drivers per urban environment (9 former CBD's vs 11 new CBD's). This comparison indicates the varying urban conditions within the Ekurhuleni context, and proposes indicators, actions & drivers to improve the urban conditions within the 2 opposing environments. From this it can be seen that the actions/ drivers differ between the 9 urban areas and 11 urban areas. Therefore different strategies will be proposed for different urban areas within Ekurhuleni. The Springs Town has been selected as the focus area of this study. This area is classified as one of the 9 urban areas (Former CBD's), and therefore is subject to the actions/ indicators/ drivers as listed in the diagram to the right. In terms of the broad based strategy Springs should:

- Improve spatial relation of race
- Promote/ attract younger population
- Increase its population & density
- Ensure distribution of income/ employment opportunities
- Provide sustainable economies of scale
- Reduce cost of living
- Actively attract people to nodes
- Improve quality & accessibility to public space
- Improve intensive use of urban agricultural land
- Develop vacant land
- Densify urban core areas
- Discourage sprawl
- Intensify trade & mining
- Tighten urban edge
- Promote further land use diversification
- Provide further multi story housing and a range of housing typologies
- Formalize informal by providing for informal settlements at higher densities closer to employment
- Remove focus from freeways
- Maintain & upgrade existing roads
- Provide for non motorized transport
- Improve access to & provision of public transport & facilities
- Provide taxi facilities & infrastructure
- Provide multi modal transport facilities
- Aggressively promote public transport linking nodes



ACCESS TO NATURAL ENVIRONMENT
AVAILABILITY OF PUBLIC SPACE
ACCESS TO AGRICULTURAL LAND
ACCESS TO VACANT LAND

IMPROVE QUALITY & ACCESSIBILITY TO PUBLIC SPACE
IMPROVE INTENSIVE USE OF 'URBAN' AGRICULTURAL LAND
DEVELOP VACANT URBAN LAND

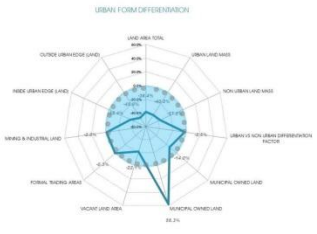


DEPRIVED ACCESS NATURAL ENVIRONMENT
DEPRIVED ACCESS TO PUBLIC SPACE
RESTRICTED ACCESS TO 'URBAN' AGRICULTURE
LIMITED ACCESS TO VACANT

PROVIDE QUALITY & ACCESSIBILITY TO PUBLIC SPACE
PROVIDE INTENSIVE USE OF 'URBAN' AGRICULTURAL LAND
REDEVELOP BROWNFIELDS URBAN LAND

LARGE SPRAWLED URBAN LAND MASS
LARGE MUNICIPAL OWNED LAND
DEVELOPED FORMAL TRADING & MINING AREAS
LARGE TRACTS OF LAND OUTSIDE URBAN EDGE FOR URBAN SPRAWL

DENSIFY URBAN CORE AREAS
DISCOURAGE SPRAWL
INTENSIFY TRADE & MINING
TIGHTEN URBAN EDGE

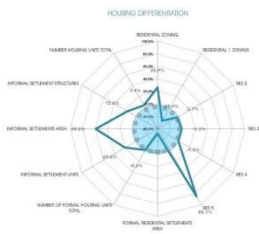


DENSER URBAN LAND MASS
LESS MUNICIPAL OWNED LAND & SMALLER LAND PORTIONS
LESS FORMAL MINING & TRADING AREAS
LESS TRACTS OF LAND FOR URBAN SPRAWL

PROMOTE NODE DEVELOPMENT
MERGE MUNICIPAL OWNED LAND & DEVELOP
PROVIDE TRADE & MINING (EMPLOYMENT CLOSE TO LIVE)
TIGHTEN URBAN EDGE

MORE DIVERSE LAND USE
LOW NUMBER OF MULTI STORY HOUSING
LESS DENSE RESIDENTIAL DEVELOPMENT
LESS INFORMAL SETTLEMENTS BUT HIGHER DENSITY

PROMOTE FURTHER DIVERSE LAND USE
PROVIDE FURTHER MULTI STORY HOUSING IN NODES
DENSIFY RESIDENTIAL AREAS
FORMALIZE INFORMAL BY PROVIDING FOR INFORMAL SETTLEMENTS @ HIGHER DENSITY CLOSE TO EMPLOYMENT

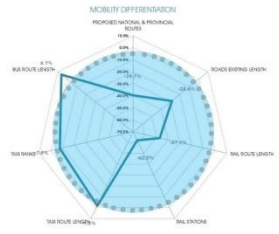


RESIDENTIAL PREDOMINANT LAND USE
LIMITED MULTI STORY HOUSING
DENSER RESIDENTIAL AREAS
MORE INFORMAL SETTLEMENTS BUT LOW DENSITY

AGGRESSIVELY PROMOTE DIVERSE LAND USE
AGGRESSIVELY PROMOTE MULTI STORY HOUSING
DENSIFY NODES
FORMALIZE INFORMAL BY PROVIDING FOR INFORMAL SETTLEMENTS @ HIGHER DENSITY CLOSE TO EMPLOYMENT

OVER PROVISION OF FREEWAY SYSTEM
ACCESS TO ROAD INFRASTRUCTURE
PUBLIC TRANSPORT PROVIDED

REMOVE FOCUS FROM FREEWAYS
MAINTAIN & UPGRADE EXISTING ROADS
PROVIDE FOR NMT
IMPROVE ACCESS & PROVISION OF PUBLIC TRANSPORT & FACILITIES

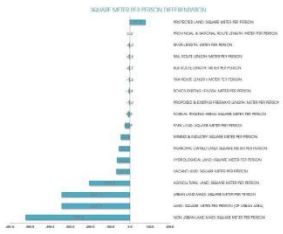


LESSER FREE ACCESS
UNDERPROVISION OF ROAD INFRASTRUCTURE
ACCESS TO PUBLIC TRANSPORT SEVERELY LIMITED

PROVIDE ACCESS TO EXISTING FREEWAYS
PROVIDE NEW ROAD INFRASTRUCTURE (WITH NMT FOCUS)
AGGRESSIVELY PROMOTE PUBLIC TRANSPORT LINKAGES BETWEEN NODES (KEY RAIL)

UNDERPROVISION OF TAXI & BUS FACILITIES

PROVIDE TAXI FACILITIES & INFRASTRUCTURE
PROVIDE MULTI MODAL TRANSPORT FACILITIES IN NODES
AGGRESSIVELY PROMOTE PUBLIC TRANSPORT LINKING NODES



URNDERPROVISION OF RAIL FACILITIES

PROVIDE RAIL INFRASTRUCTURE & STATIONS
PROVIDE MULTI MODAL TRANSPORT FACILITIES IN
AGGRESSIVELY PROMOTE PUBLIC TRANSPORT LINKING NODES

III SECTION G III

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G. DESIGN DEVELOPMENT

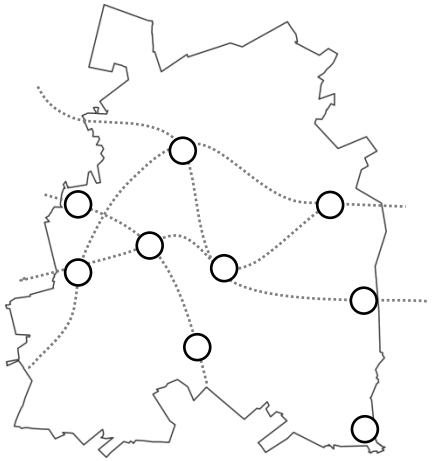
1. STRUCTURING THE METRO: METRO COMPLEX STRATEGIES

This section relates to the Design Development of this report. From the previous section, indicating the Visions & Drivers, the design development will be formulated through firstly viewing the metro complex strategies (for the Ekurhuleni Metro), then the urban complex design strategies (for the urban complex – Springs/ Brakpan/ Kwa Thema), and ultimately culminating in detail design principles (for Springs) (in the next section).

The Metro Complex Strategies are illustrated in the images to the right (please note only the 9 urban areas [9 former CBD's] are indicated as these are the current focus), and provide the following Strategies to inform the development of the Metro:

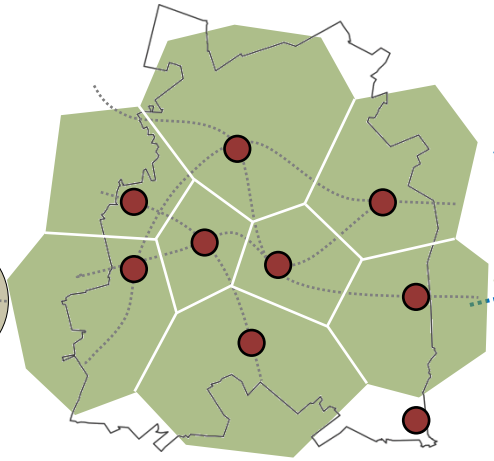
- Nodal Development Focus: It is suggested that the Metro focuses future development towards nodal areas, making land available for infill development and compact urban form. These should be focused on the existing 9 former CBD's and 11 new CBD's.
- Sprawl & Hinterland Containment: The principle should be employed to discourage further sprawl. The current hinterland development surrounding nodes should be consolidated and further growth focused towards nodal areas.
- Sustainable Rearrangement: The nodal areas should be classified as a compact node with the hinterland surrounding it, which should be employed to achieve self sustainability.
- Connecting the Nodes: The selected 20 nodes (9 former CBD's and 11 new CBD's) should be connected via public transport routes (rail, taxi & bus) & freight routes; at multi modal transport facilities.
- Anti- Horizontal Space Consumption, Pro Implosion Approach: This strategy should restrict the horizontal expansion of urban areas, and rather promote the vertical expansion of space. Horizontal expansion promotes sprawl and increases the cost of transport & infrastructure provision.

a. Nodal Development Focus

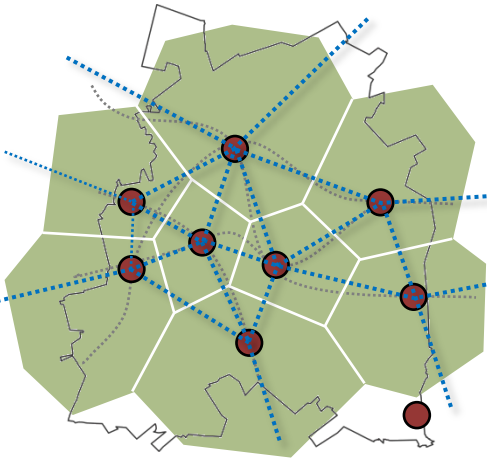


b. Sprawl & Hinterland Containment

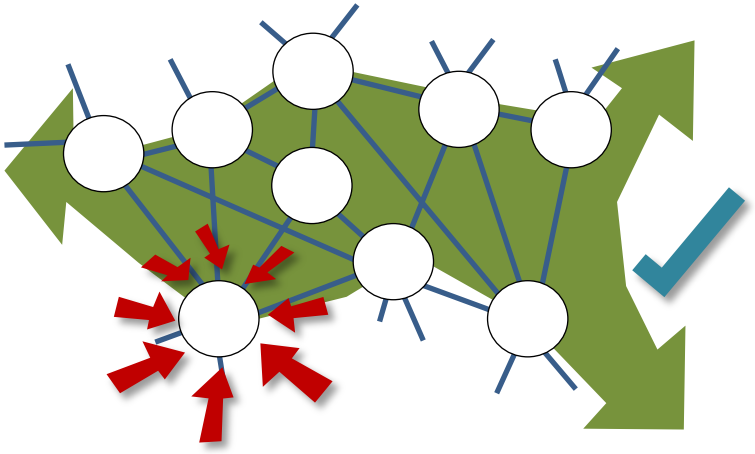
c. Sustainable Rearrangement

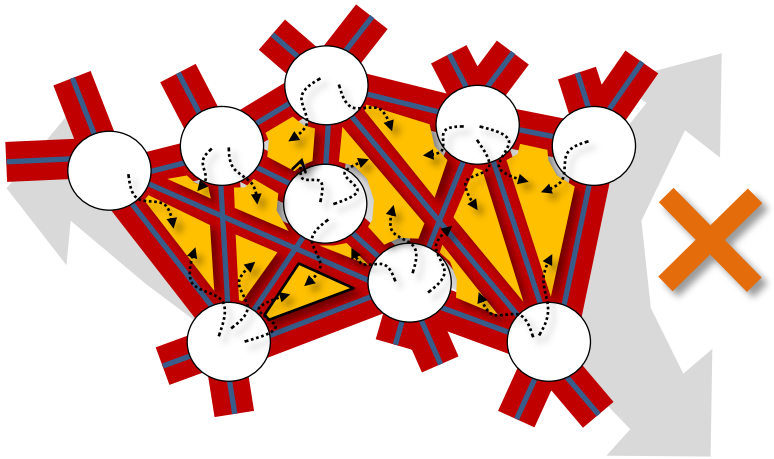


d. Connecting Nodes



e. Implosion vs Explosion (Compactness vs Sprawl) Anti - Horizontal Space Consumption

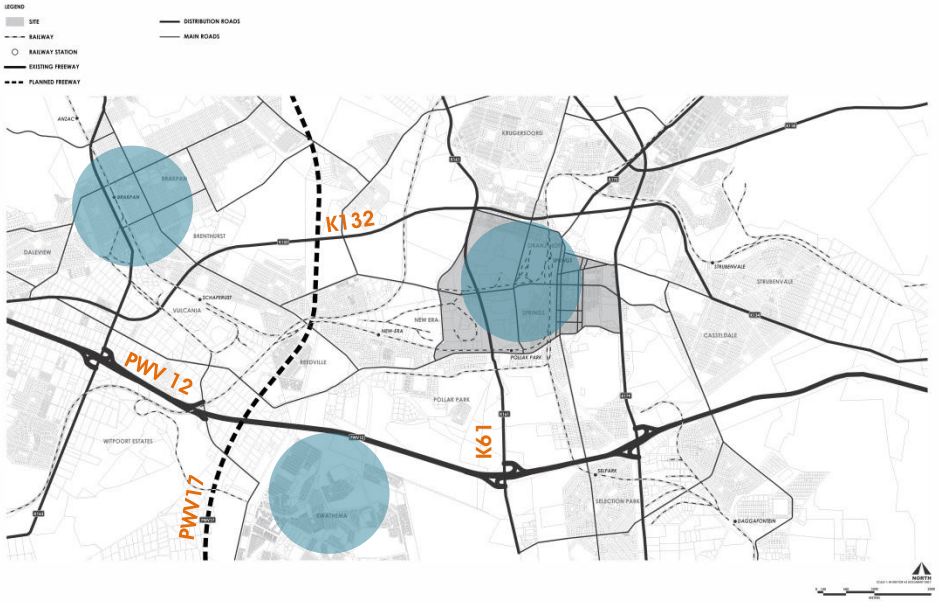




2. STRUCTURING THE URBAN COMPLEX: STRATEGIES

i. MOBILITY

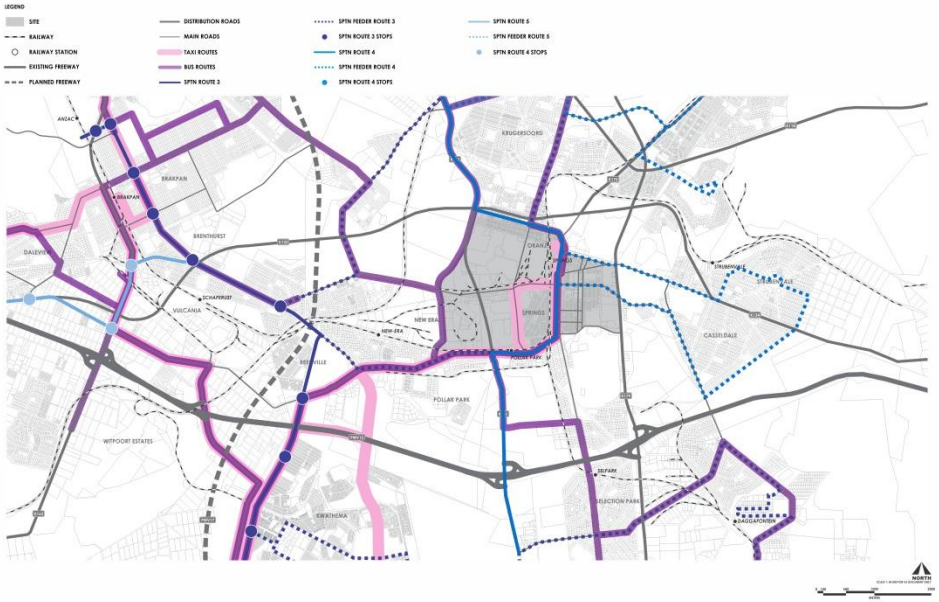
a. Existing & Planned Road Network



To illustrate the Design Strategies for the Urban Complex, the above 2 images are presented in order to indicate the existing planned road networks; as well as the existing planned public transport networks. These are the existing spatial proposals extracted from the strategic documentation of the Ekurhuleni Metropolitan Municipality Spatial Development Framework (2011).

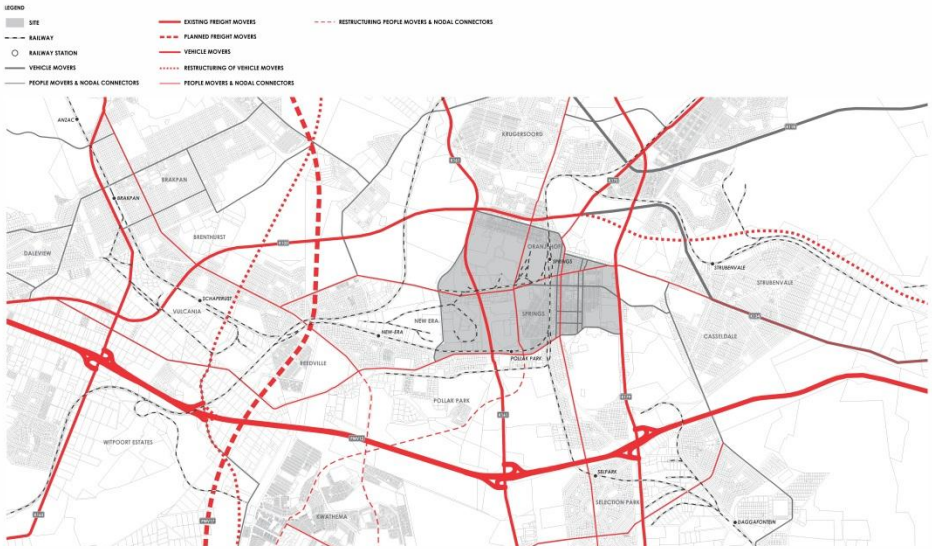
The 3 blue dots indicate the urban complex/ cluster of Brakpan, Springs (the site) and Kwa Thema. The PWV12 freeway extends east- west across the complex. The proposed PWV 17 provides regional accessibility north- south. The existing K132 provides access between Springs & Brakpan, while the K61 provides (indirect) access between Springs & Kwa Thema. From this it can be seen that limited direct access exists between the nodes within this existing urban complex.

b. Existing & Planned Public Transport Road Network

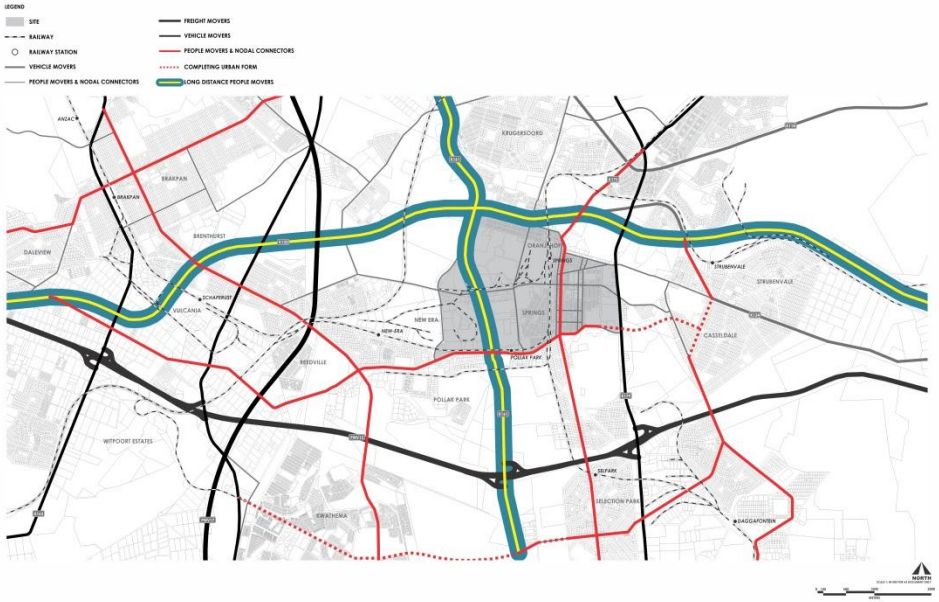


When the existing & propose public transport is viewed, it can be seen that a complex arrangement of duplicated public transport routes are existing & proposed within this urban complex. This includes rail, BRT, bus and taxi routes. It is suggested that these public transport routes are competing & duplicated; which limits the impact of the public transport system.

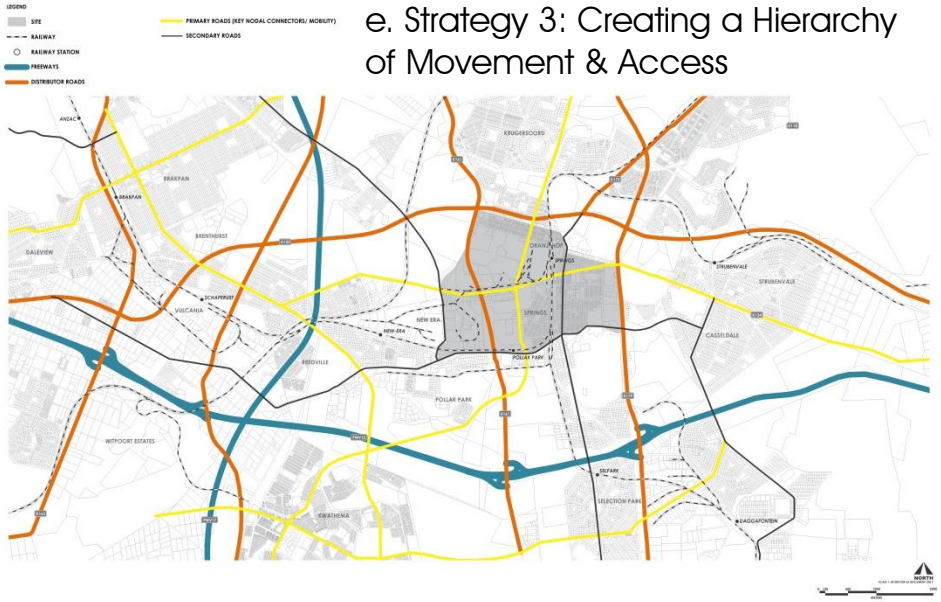
c. Strategy 1: Structuring Urban Form



d. Strategy 2 Completing Urban Form



e. Strategy 3: Creating a Hierarchy of Movement & Access



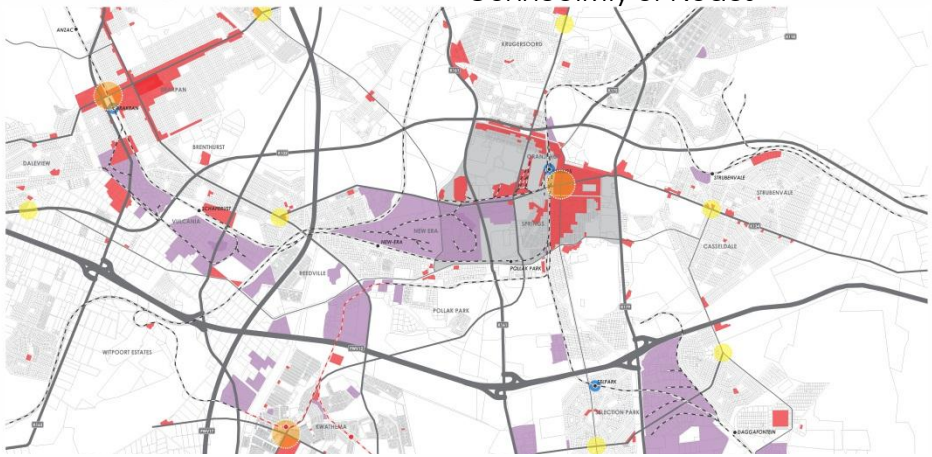
To address the issues of movement on a urban Complex Scale it is suggested that the following strategies are employed:

Strategy 1: Structuring the Urban Form. The structuring of the urban form is illustrated in red (map to top left). The dashed lines indicate the structuring of the urban form to facilitate improved connectivity between nodal areas.

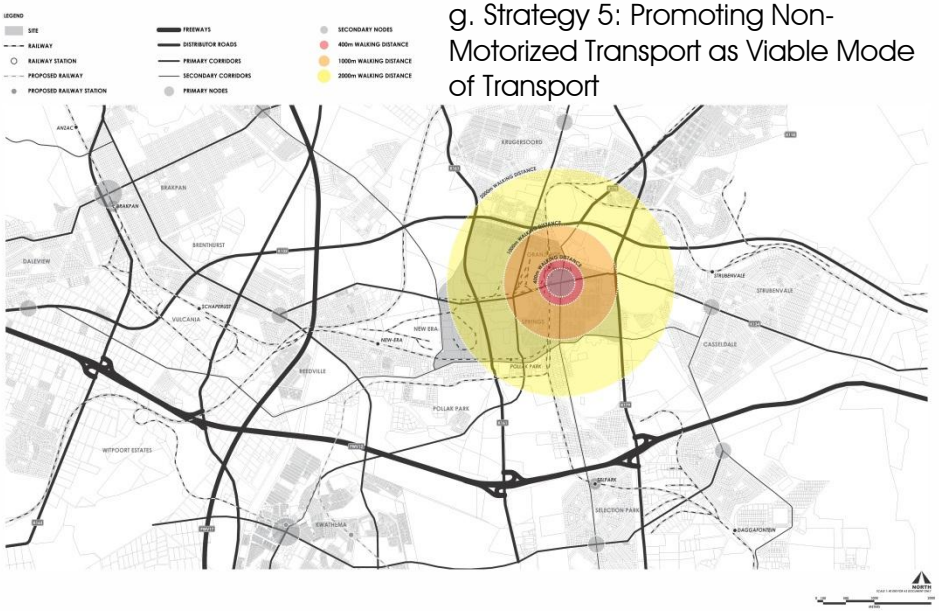
Strategy 2: Completing the Urban Form. The map to the top right indicates the proposed completion of the urban form; where the red routes indicate the people mover & nodal connector routes and the green route indicate the long distance people movers (connecting urban complexes)

Strategy 3: Creating a Hierarchy of Movement & Access. The map to the left indicates the propose hierarchy of movement; where the blue routes are existing freeways, orange routes are distributor roads and yellow routes are people & nodal connector routes (Primary Routes). It is suggested that this clear hierarchy of routes would inform a more legible urban form, that connects users across movement scales.

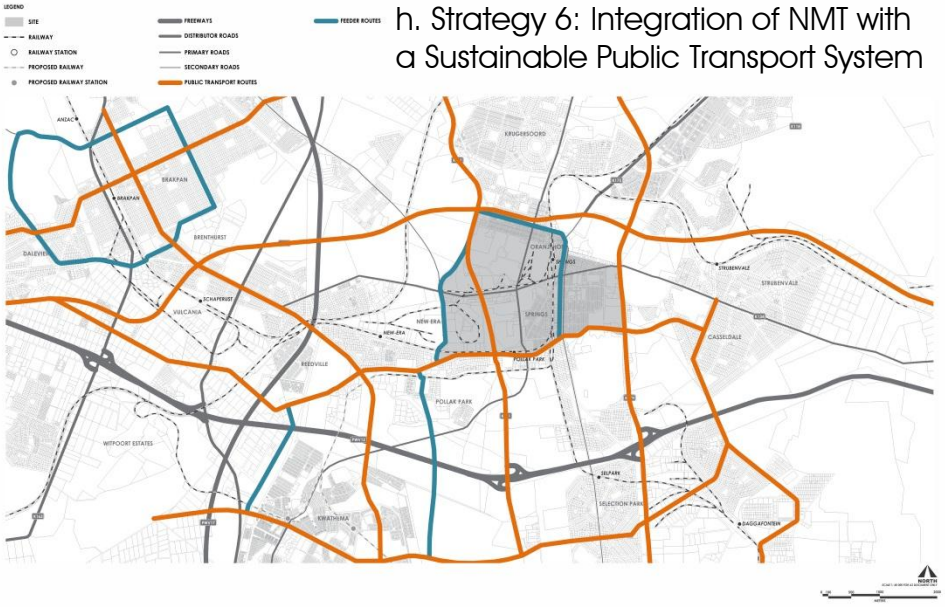
f. Strategy 4: Facilitating Access to Economic & Social Infrastructure, & Connectivity of Nodes



g. Strategy 5: Promoting Non-Motorized Transport as Viable Mode of Transport



h. Strategy 6: Integration of NMT with a Sustainable Public Transport System



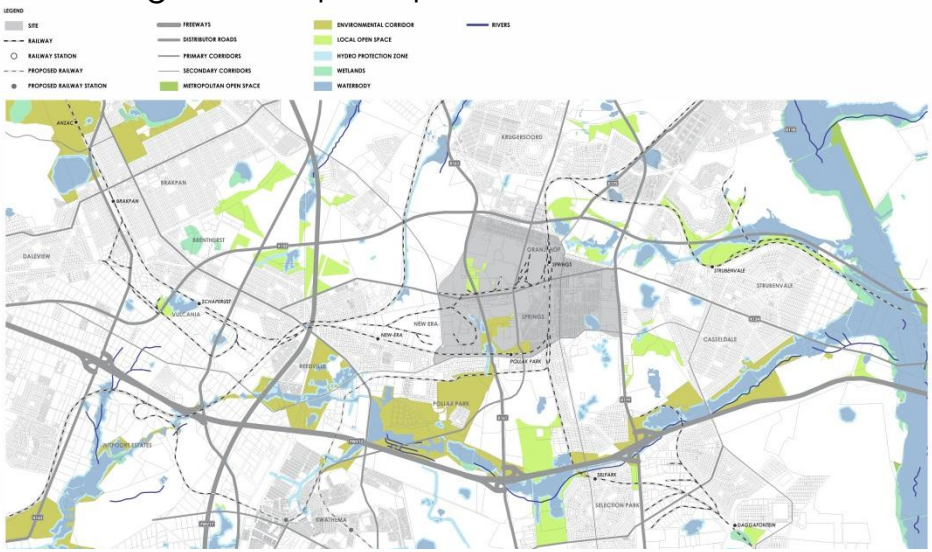
Strategy 4: Facilitating Access to Economic & Social Infrastructure & Connectivity of Nodes. It is proposed that this new hierarchy of movement will facilitate access to economic & social infrastructure; and contribute to the connectivity of the 3 nodes (Brakpan/ Springs/ Kwa Thema) within this urban complex. Thereby strengthening the nodes sustainability & connectivity to other nodes. (Map to top left)

Strategy 5: Promoting Non- Motorized Transport as Viable Mode of Transport. This Strategy aims to create walkable urban nodes that would limit the need to travel long distances, by providing facilities within a 2km travel distance. The image above illustrates a 400m walking distance (red), 1km traveling distance (orange) and a 2km cycling distance (yellow). The entire Springs area falls within this walkable radius. (Map to top right)

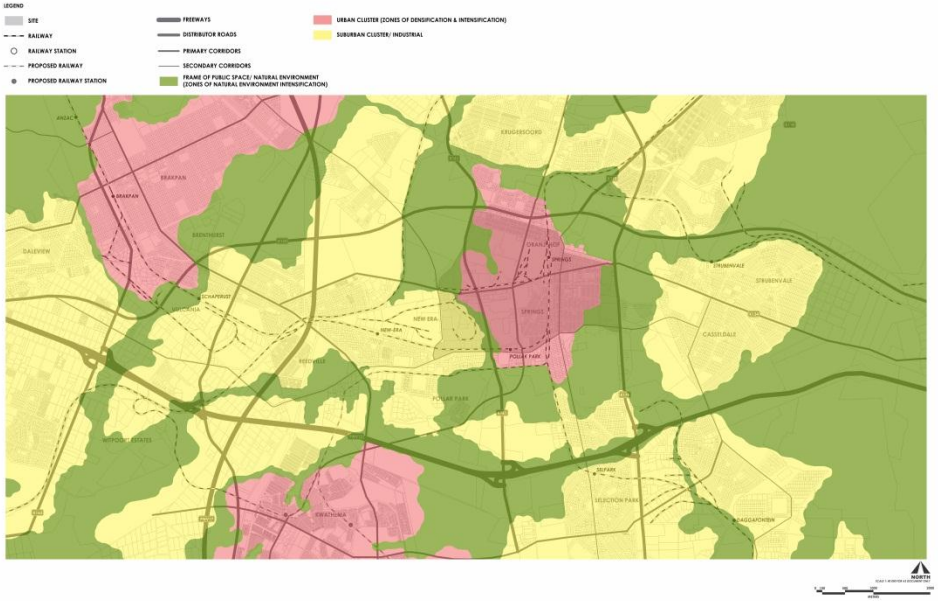
Strategy 6: Integration of Non Motorized Transport with a Sustainable Public Transport System. As opposed to the complex public transport system as proposed by the Ekurhuleni SDF, it is proposed that the 3 nodal areas walkable environment is linked to a legible and accessible public transport system, as illustrated by the routes in orange. (Map to left)

ii. PUBLIC OPEN SPACE

a. Existing Public Open Space



b. Strategy 7: Framing the City – The Green Rope



c. Strategy 8: Linking Public Spaces to Entrench an Integrated System

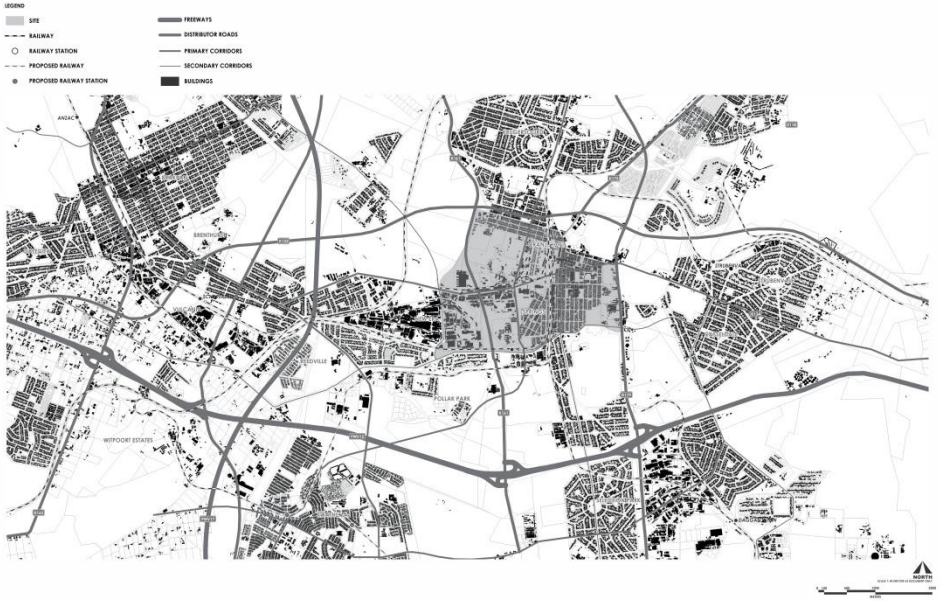
The existing public spaces within the urban complex is illustrated in the image to the top left. These indicate the natural open spaces, wetland areas, environmentally sensitive areas, dams, rivers, metropolitan open spaces, environmental corridor, local open spaces, etc. The strategies employed in relation to the public open spaces include:

Strategy 7: Framing the City – The Green Rope. It is proposed that a continuous green open space system (green) is to be developed surrounding the urban core areas (Map to top right). This is referred to as the green rope. The aim of this strategy is to contain the growth in urban nodal areas (red), by restricting & compacting urban development within the nodal areas. The green open space system is then a combination of agriculture, nature & public open spaces of all scales. The suburban areas (yellow) are then to be consolidated and not allowed to develop any further, and could be de- densified over time.

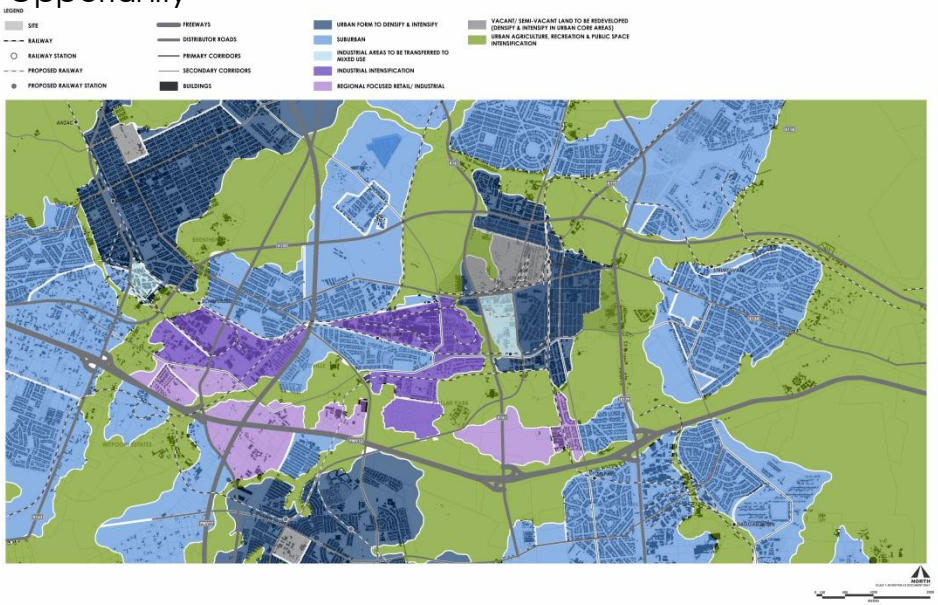
Strategy 8: Linking Public Spaces to Entrench an Integrated Public Open Space System. (Map to left). With this strategy it is therefore suggested that the 'Green Rope' surrounding compact urban environments should be linked through green/ public space systems that bisect the urban core areas. This will allow for inclusion/ accessibility of public space in the dense urban environment.

iii. URBAN BUILT FORM

a. Existing Built Urban Form



b. Strategy 9: Re- engineering Built Urban Form & Opportunity



c. Strategy 10: Transform Suburban Idealism Into Urban Survivalism

Source: Google Images, Anon

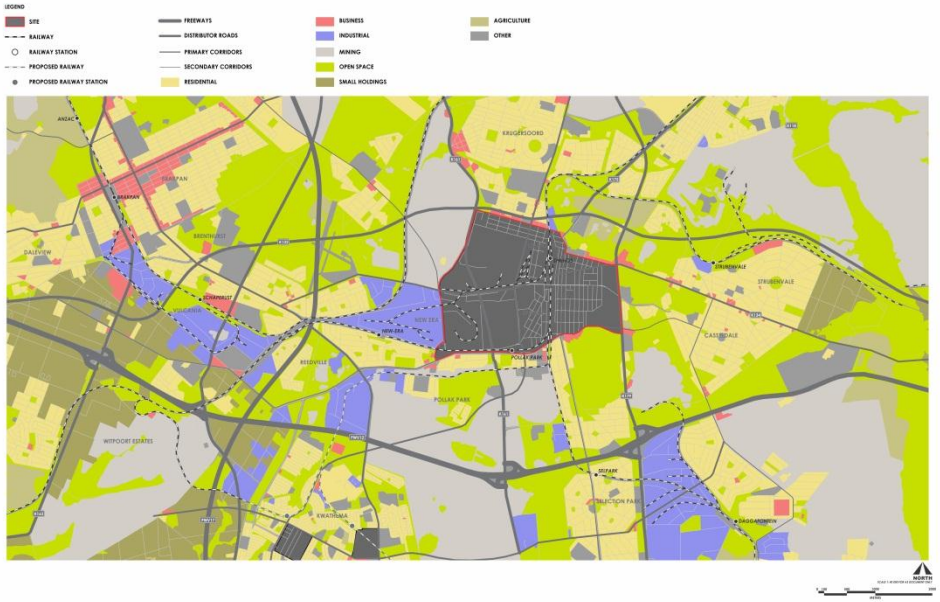
The map to the top left illustrates the existing urban built form for this complex. This urban form reinforces the strategy to compact the urban form. The nodal areas offer the opportunity for infill development & densification. The following Strategies are proposed for the urban built form:

Strategy 9: Re- engineering Built Urban Form & Opportunity. This Strategy entails the re- engineering of the existing urban built form in the urban nodal areas (Map to top right – dark blue). This urban fabric could be redeveloped at appropriate urban densities, the vacant areas (grey) (opportunities) could be developed through infill development; and thereby reconstitute the urban fabric of the nodal areas. The development of the light blue areas should be discouraged.

Strategy 10: Transform Suburban Idealism into Urban Survivalism. As discussed in the theoretical section, the strategy should be to develop sustainable urban core areas that are self sufficient and provide in the needs of its citizens. The aspiration to suburban living should be discouraged and not promoted/ supported by the urban complex.

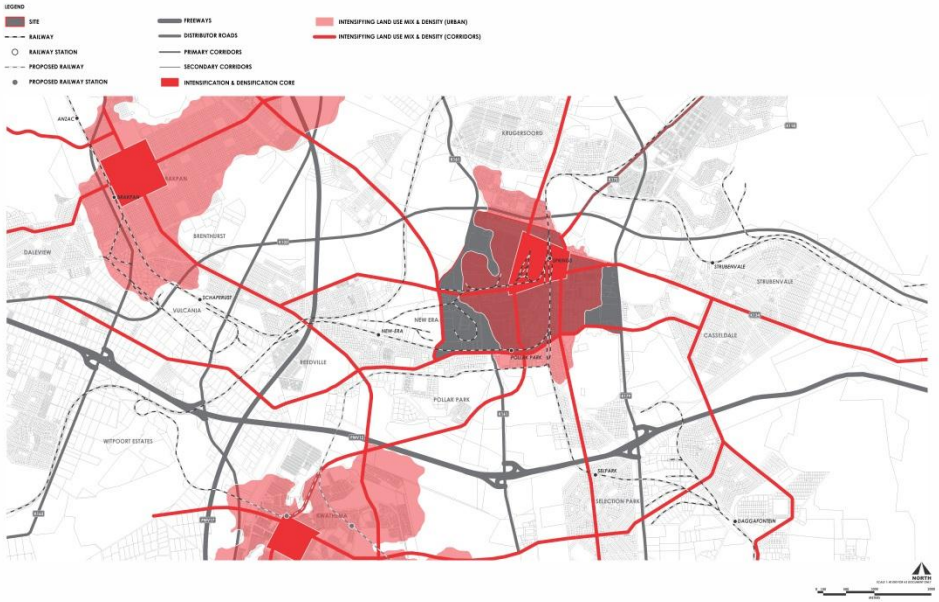
iv. LAND USE

a. Existing Land Use



The existing land use of the urban complex is illustrated in the map above. This is characterized by monochromatic zoning, predominated by residential development. Furthermore this residential development is also in the form of single detached residential dwellings. Limited mix of uses are allowed, with spatial segregation of work and living environments.

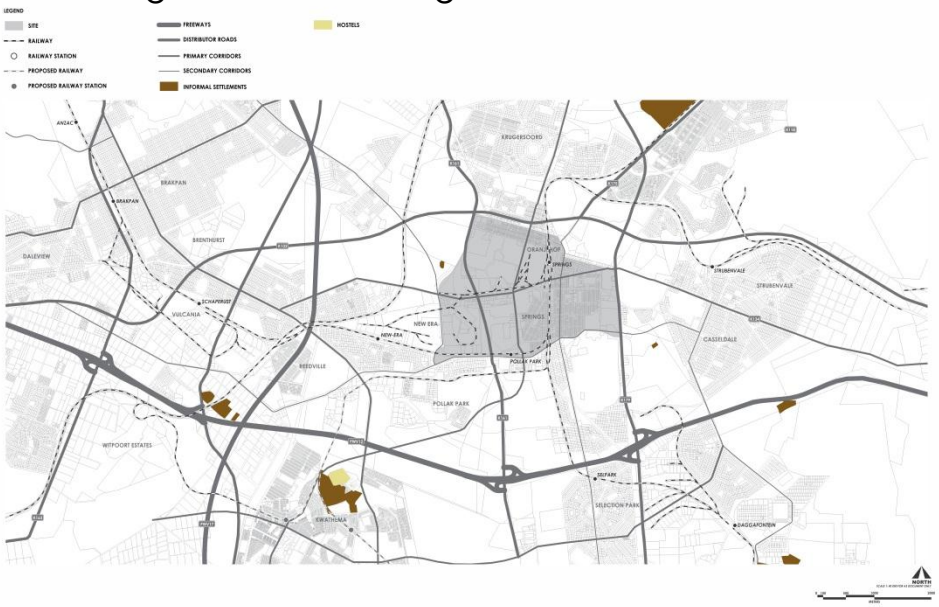
b. Strategy 11: Intensifying Land Use Mix & Density Along Public Transport Routes.



Strategy 11: Intensifying land use Mix & Density Along Public Transport Routes. (Map above). This strategy advocates for the development of intense land use mix within urban core areas. This will ensure that opportunities are available to all citizens within short distances. Furthermore it is also proposed that these nodal areas of mix intensity should be connected to other surrounding nodes by means of public transport. This will support the viability & longevity of a nodal area.

v. HOUSING

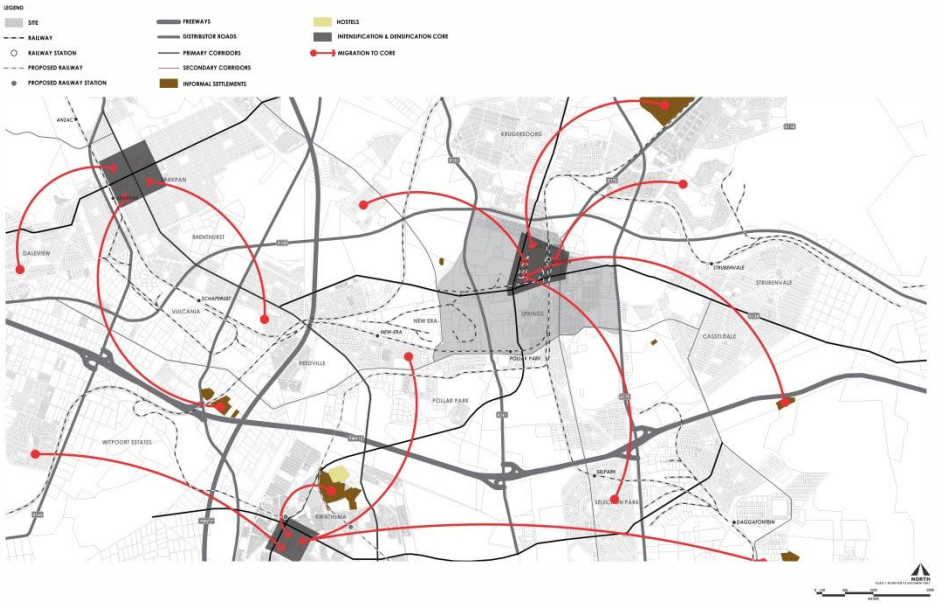
a. Existing Informal Housing



The existing informal housing within this urban complex is illustrated in the map above. From this map it can be seen that limited informal residential settlements occur around the urban core areas of Brakpan & Springs, however some occur around Kwa Thema. It is suggested, through the theoretical research that further pressure will be exerted on urban areas and vacant land as urbanization increases in South Africa. It is therefore projected that more informal settlements would locate closer to urban areas for urban opportunities.

Strategy 12: Integrating Development Interventions Towards Equitable Access, Inclusion & Integration. (Map top right). This Strategy promotes the principle of inclusion within urban areas. As the pressure for urbanization increased, it is proposed that accommodation be made for all aspects of an urban environment. Conversely, the poor should not be excluded, but included in the urban futures of the nodal areas, they should not be moved to the outer edges of the city; but included as an integral part of the city.

b. Strategy 12: Integrating Development Interventions Towards Equitable Access, Inclusion & Integration



In conclusion the strategies proposed here relate to the Urban Complex Scale (Springs/ Brakpan & Kwa Thema), which together with the Metro Scale Strategies, inform the Local (Site) Scale Principles. The following section deals with the Urban Design Strategies, Principles & Actions to be employed within the Springs environment, with the aim to develop a new type of urban structure (urban making) for South African cities. The following section provide the design proposals of the research report (for Springs).

Source: Google Earth

III SECTION H III

DESIGN PROPOSALS

INTRODUCTION & PREAMBLE	SECTION A	
TOWARDS A HYPOTHESIS	SECTION B	
THEORETICAL CONCEPTS	SECTION C	
RESEARCH METHODOLOGY	SECTION D	
CONTEXTUAL ANALYSIS	SECTION E	
VISION & DRIVERS	SECTION F	
DESIGN DEVELOPMENT	SECTION G	
	SECTION H	DESIGN PROPOSALS
FINDINGS & DISCUSSIONS	SECTION I	
RECOMMENDATIONS	SECTION J	
CONCLUSION	SECTION K	
REFERENCES	SECTION L	

H. DESIGN PROPOSALS

1. STRUCTURING THE CITY (SITE): CITY DESIGN STRATEGIES, PRINCIPLES & ACTIONS

i. INTRODUCTION & DESIGN PRINCIPLES

This Section deals with the Design Development for the Springs area, within the Ekurhuleni Metropolitan Municipality context and the Urban Complex within which it is located. This Section aims to provide Design Principles (10) that would guide the intent of creating a proposed new city form for South African Cities, referred to earlier as the 7th wave of development. Each of these Design Principles then contain a number of Design Actions that illustrates the proposed physical intervention within the urban environment. The Design Proposal therefore is a combination of the proposed Design Principles & Actions towards achieving a new type of urban environment.

The list to the right indicates the 10 Design Principles that will be employed within the Design Proposal application. These Principles are a combination of physical restructuring elements of the urban forma and structure, as well as a differentiating approach towards urban management & policy directives. As can be seen from the analysis of the South African cities (Section B2) that when physical alteration of the urban form is not implemented in conjunction with broad based urban management & administration change; the effect is short lived and unsustainable.

It is unsustainable in the sense that no alternative urban form is achieved or advocated; that only the existing ineffective urban sprawl is perpetuated which is portrayed as urban spatial restructuring for inclusiveness and provision of infrastructure (services & housing) for the previously excluded, with the promise of a better future. However, no conclusive urban strides are made in the attempt to create more liveable urban environments, that are cheaper, that are healthier, that promote self sufficiency, that supports the individual in collective action, that is inclusive, that does not judge, that considers the basic needs of citizens, that includes nature as part of the urban environment and that does not develop to the detriment of the surrounding communities nor natural resources.

10

Principle 1:
Determine Scale & Potential Of Urban Intervention

Principle 2:
Utilizing Grid As Structuring Tool

Principle 3:
Prioritizing Free & Less Expensive Modes Of Transport

Principle 4:
Attract People & Investment To Urban Areas

Principle 5:
Creating The Urban Realm Through Defining Legibility, Permeability & Character

Principle 6:
Prioritizing Public Space As Primary Urban Informant For The Natural, Agricultural & Recreational Environments

Principle 7:
Providing A Legible Framework For Complex Land Use Allocation Towards Urban Survival

Principle 8:
Promote Higher Densities

Principle 9:
Promote Flexible Urban Housing Forms

Principle 10:
Adjusting The Urban Economic Base

ii. SPRINGS HISTORY & BACKGROUND

The focus area of the study is Springs. The selection of the site is based on the argument as discussed in Section E1i. In addition to this, the Springs area was selected due to its existing urban character & infrastructure, large tracts of vacant urban land, the potential for land occupation/ invasion, the availability of public transport infrastructure, its unique character, its function within the eastern parts of Ekurhuleni Metropolitan Municipality (in terms of their new Ekurhuleni Growth & Development Strategy 2050), its offering in terms of agricultural land, the existing civic function, its isolation from other urban centers and its separate administration.

The settlement of the area known today as Springs started in 1840 (after the signing of the Sand River Convention of 1852 – declaring South Africa Republic & later Transvaal) through farmers moving into the area and declaring farms for themselves. These declared areas (farms) were large, with inaccurate measurements and borders. When these farms had to be formally registered and documented, large portions of land remained unclaimed. These portions became state property, and one of these portions, a 685ha portion of land, was named 'The Springs' (derived from the large number of natural springs in the area) by the land surveyor James Brooks. In September 1884 the official map of The Springs was registered. Cole was then discovered and the 1st mining contract signed in 1888. The first railway was built 3 years later to carry coal from east rand Cole fields to the Witwatersrand. When Cole was discovered closer to the Witwatersrand gold mines the Springs Collieries closed down. However, gold was discovered in the area in 1908. Springs was proclaimed a town in 1904 and obtained municipal status in 1912. By 1930 there were 8 gold mines near Springs making it the largest single gold producing area in the world at that time. (Source: http://www.sahistoryonline. org.za/places/springs). Today Springs is a town with large scale urban infrastructure, that is not optimally utilized in favor of sprawled urban development of the poorer communities.

2. DESIGN PRINCIPLE & ACTIONS

i. PRINCIPLE 1: DETERMINE SCALE & POTENTIAL OF URBAN INTERVENTION

a. Action 1.1: Target Infill Land

VISION

making urban environments through smart measured urban responses that advocates confined urbanity, equity, urban survival, walkability, external mobility connection, inclusion, protection of natural resources, citizenship, partnership, social capital, food security, flexibility and a sense of place.

To achieve the vision (stated above) the following 10 Principles (and associated Actions) are presented with the intent of providing an alternative urban environment to what is currently the norm.

The first principle is to determine the scale and potential of urban intervention. This determination is based on 4 Actions, and these are the:

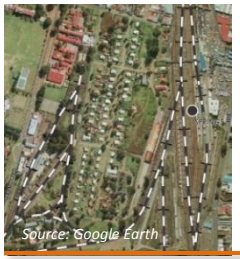
- Action 1: Targeted infill of land
- Action 2: Assessment of land ownership
- Action 3: Identification of flexible (or changeable)urban form
- Action 4: The expansion & understanding of ownership/ security of tenure

The targeted infill of land suggests viewing the urban environment in a condensed form. Conversely, identifying all vacant land that is available in the urban core area, that means to purposefully not identify land outside of a tight urban boundary, and focusing attention towards the urban core firstly. The image to the right indicates the targeted infill land potential in blue. This infill land includes all roads, parks, yards, rail/ road reserves, sports fields, etc. only excluding the physical built form.

When an urban environment is viewed in such a manner then the following reality comes to the fore - that within this environment 82,5% of the land mass is 'vacant' or available for urban change or intervention. (the total land mass is 6,735,955m^2 – total built form of 1,174,441m^2 = 5,561,514m^2 'vacant' land). This offers the potential of 82.5% potential for change within the urban environment.

From this key land parcels could be targeted as points of first intervention. These areas are indicated in the areal extracts to the right, and include:

- Inner city redevelopment opportunities with low densities or the disused rail reserve. This refers primarily to the old railway houses and shunting yards.
- Vacant land, sports facilities & under-utilised land
- Vacant land & industrial land
- Inner city redevelopment opportunities such as parking areas & vacant land.



Inner City Redevelopment Opportunities/ Low Densities/ Disused Rail Reserve

Vacant Land/ Sports Fields/ Underutilised Land

Vacant Land and Industrial Land

Inner City Redevelopment Opportunities/ Parking Areas/ Vacant Land

82,5%

VACANT

17,5%

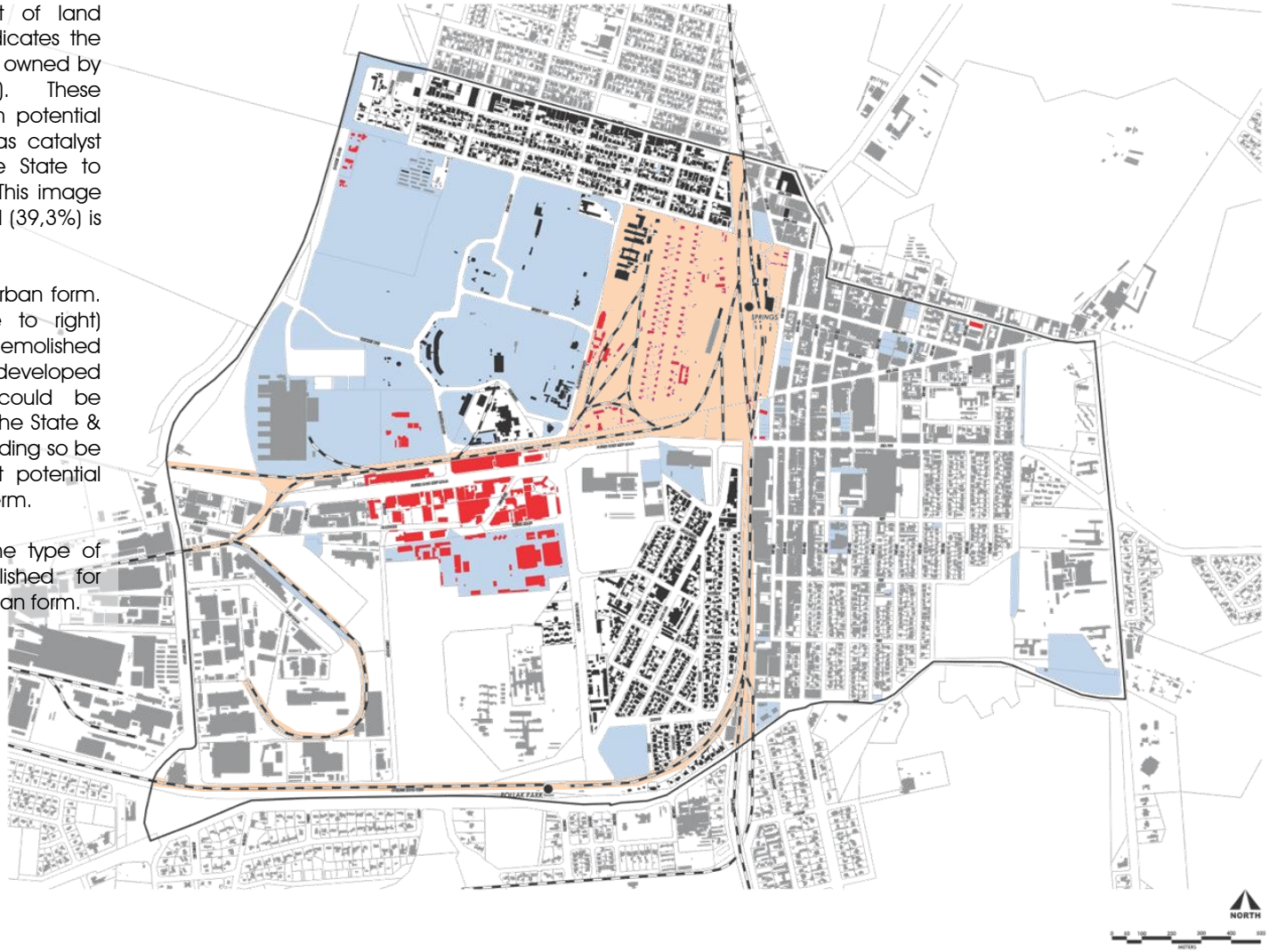
BUILT

b. Action 1.2: Assessment of Land Ownership

The second Action is the assessment of land ownership. The image on this page indicates the land owned by the State (blue) and land owned by Parastatal/ PRASA Transnet (in orange). These portions are identified as first intervention potential land portions, as these could function as catalyst portions of land for intervention by the State to facilitate urban focused development. This image illustrates that large portions of urban land (39,3%) is available for urban intervention.

The third Action is to identify the flexible urban form. The image on this page (and page to right) indicates the potential buildings to be demolished (in red), potential buildings to be redeveloped (block) and existing buildings that could be redeveloped in the future (grey). Where the State & Parastatal ownership overlaps with the building so be demolished/ redeveloped is the highest potential intervention land in the short to medium term.

The images to the far right indicates the type of urban fabric that could be demolished for redevelopment in a more appropriate urban form.



c. Action 1.3: Identification of Flexible Urban Form

Low Density Residential Development

Storage Buildings

Industrial Development

Railway Housing (Low Density)

Low Density Industrial Development (1 Use)

Rail Infrastructure

d. Action 1.4: Expand Understanding of Ownership/ Security of Tenure

The forth Action is the expansion of the understanding of ownership and security of tenure. This is not a physical intervention but a policy/ administrative intervention that would assist the principle of determining the scale and potential of intervention. As discussed in detail in Section C7 the understanding of ownership in South Africa needs to be expanded upon.

Ownership means the right to the city, therefore if we can expand our understanding of ownership/ security of tenure, than we can offer more citizens the right to the city. As illustrated in the diagram to the immediate right; security of tenure can be expressed in a multitude of ways, such as:

- Ownership
- Leasing
- Share
- Temporary/ interim use
- Squat
- Occupy
- Rent
- Stay, etc.

This is a policy extension that is required for an inclusive city that is not only based on ownership, but on the right to use a city/ urban environment. This simplistic approach could change our urbanization approach from occupying sprawled urban township areas, towards occupying existing urban environments.

Source: Google Images, Anon

ii. PRINCIPLE 2: UTILIZING THE GRID AS STRUCTURING TOOL
a. Action 2.1: Structuring Urban Form

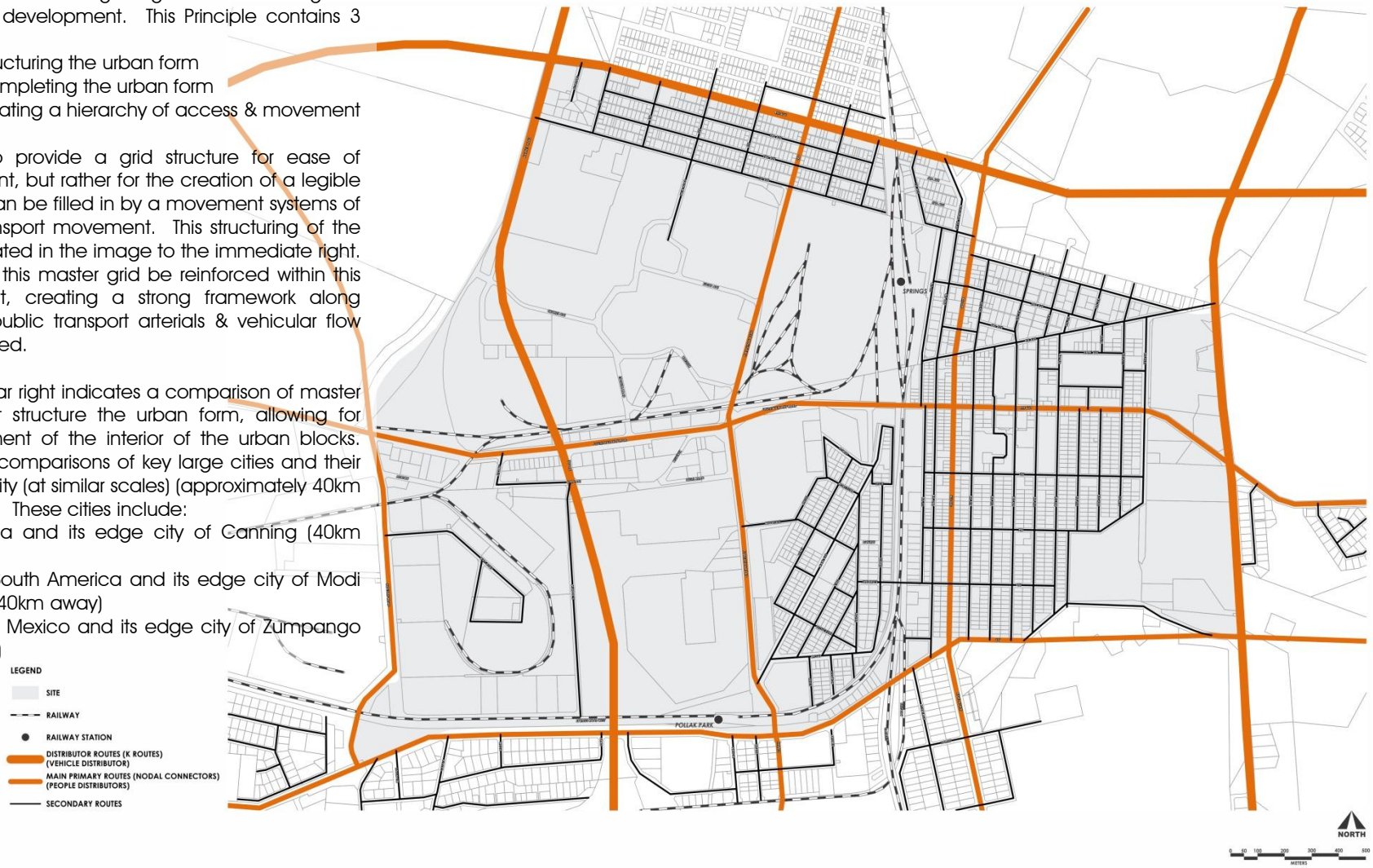
The second Principle employed for the redevelopment of Springs is the Principle of utilizing the grid as a structuring tool for efficient urban development. This Principle contains 3 Actions, these are:

- Action 1: Structuring the urban form
- Action 2: Completing the urban form
- Action 3:Creating a hierarchy of access & movement

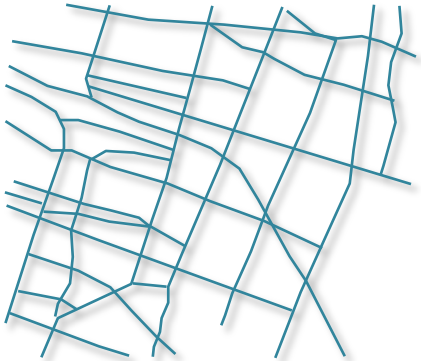
The aim is not to provide a grid structure for ease of vehicular movement, but rather for the creation of a legible master grid, that can be filled in by a movement systems of non motorized transport movement. This structuring of the urban form is illustrated in the image to the immediate right. It is proposed that this master grid be reinforced within this urban environment, creating a strong framework along which the major public transport arterials & vehicular flow can be concentrated.

The image to the far right indicates a comparison of master grid structures that structure the urban form, allowing for informal development of the interior of the urban blocks. These images are comparisons of key large cities and their associated edge city (at similar scales) (approximately 40km from the main city). These cities include:

- Kolkata, India and its edge city of Canning (40km away)
- Sau Paulo, South America and its edge city of Modi das Cruzes (40km away)
- Mexico City, Mexico and its edge city of Zumpango (40km away)

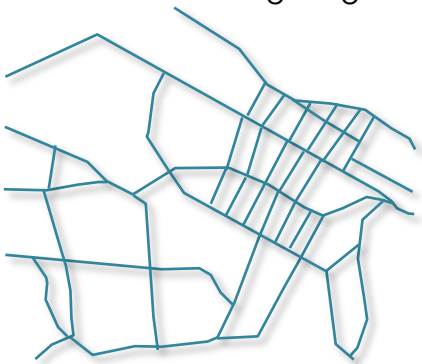


Kolkata



INDIA

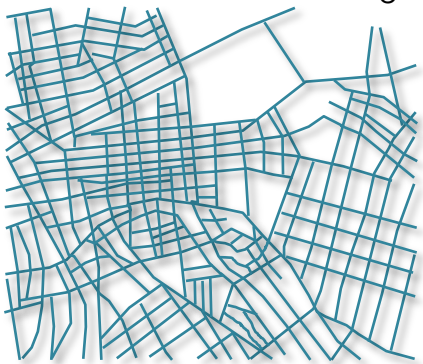
Canning: Edge City 40km from Kolkata



Sau Paulo

SOUTH AMERICA

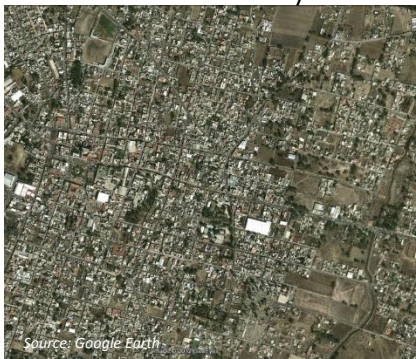
Modi das Cruzes: Edge City 40km from Sau Paulo



Mexico City

MEXICO

Zumpango: Edge City 40km from Mexico City



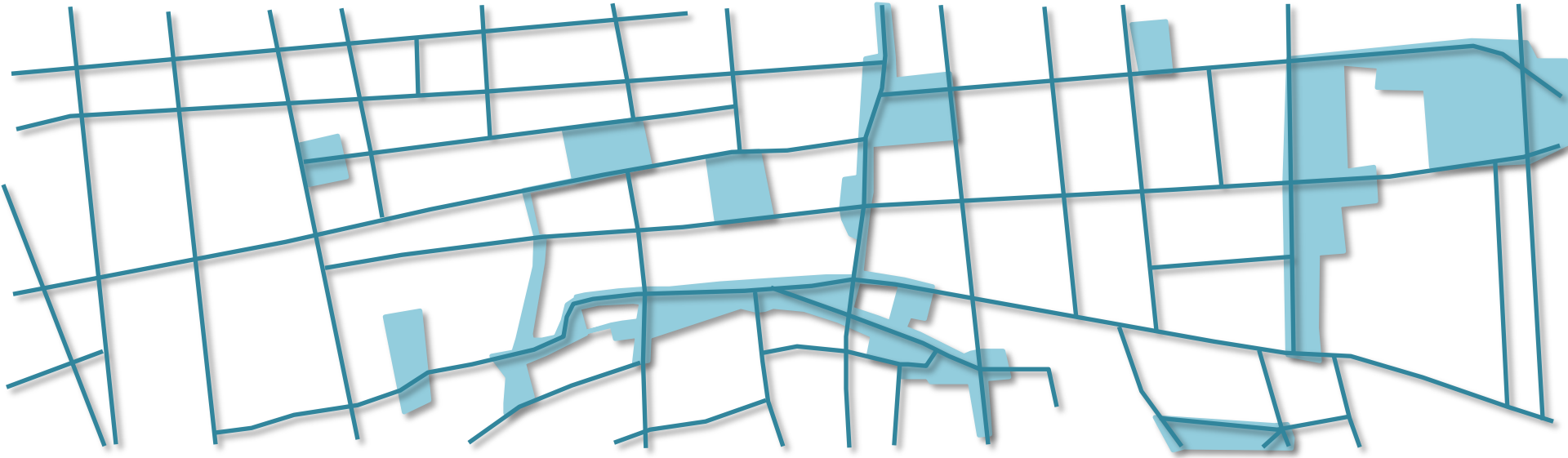
Springs: Edge City 40km from Johannesburg, South Africa

The comparison of the main/ capitol city (on the previous page) aims to illustrate that the grid remains a structuring element in urban environments, and is not dependant of on the scale/ sixe of a city. It also illustrates that the grid is not only applicable to formal cities, but applies in more informal cites as well (such as Kolkata, India).

The image to the far right illustrates a more detailed analysis of the grid pattern in Modi das Cruzes (40km from Sau Paulo). From this image it can be seen that an adapted grid pattern allows for the legibility and free movement within more formal patterns (north) and informal patterns (south) of the city. The element that ties these formal & informal grid patterns together is the public open space system (indicated in blue). These form the anchor from which the urban grid (formal or informal extends).

In relation to the urban grid as a structuring element for the Springs site, from the image above it can be concluded that the grid urban structure is larger and more rigid, and allows for little flexibility or smaller scale development. It is proposed that within the new urban proposal for Springs, that a more flexible urban form with smaller urban building blocks be provided.

Modi das Cruzes: Edge City 40km from Sau Paulo, South America



b. Action 2.2: Completing Urban Form: Public Transport & Vehicular Movers

The second Action relating to the utilization of the grid as a structuring tool is the completion of the urban form, post the Action of structuring the urban form. This Action will be presented in the form of 3 scales, these are:

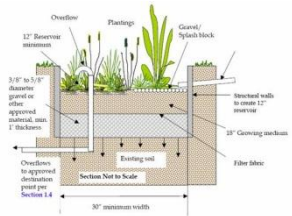
- Completing urban form for public transport & vehicular movers
- Completing urban form for main/ primary routes, nodal connectors & people distributors
- Completing urban form for secondary routes, people & slow moving traffic
- Completing urban form for car restriction and pro people, crops and nature.

The first scale of intervention proposal is illustrated in the images to the right. This scale of completion of the urban form relates to the establishment of clear distinctive trunk public transport & vehicular movers. The image to the right top indicates that only 3 routes have been identified, thereby limiting the trunk vehicular movement to these routes. These routes together with the rail infrastructure (and stations – in blue) provide for sufficient trunk transport routes.

Two illustrations of the proposed road section of these trunk routes are included to the bottom right. It is proposed that these routes are a minimum of 30m wide (and an additional 2m build to line). From this section it can be deduced that this route is not a high speed traffic route, but provides for 6 lanes of traffic, all interspersed by nature & non motorized transport space. It should also be noted that all the surface levels are on the same level and should function as shared spaces; only the trunk public transport/ bus routes are lowered. The double lanes of traffic either side of the trunk public transport route is slower moving vehicular traffic and on-street parking.

The photos to the top right provides indications & suggestions of the proposed urban environment envisaged. These illustrate that even though these road environments are for trunk transport routes, the pedestrian still remains the priority. As can be seen from these images these routes should accommodate pedestrians of all ages, cyclists, public transport, vehicles and nature; sharing the environment.

In terms of including the 'green' environment in these transport reserves, two images are included to indicate the form of the natural environment accommodation. These 'green' areas could function as stormwater management as well as increasing the urban biodiversity of the city.



Source: Infiltration Planter Detail. From City of Portland 2004 Stormwater Management Manual

Source: http://www.planetizen.com/node/47317, How Shared Space Challenges Conventional Thinking about Transportation Design

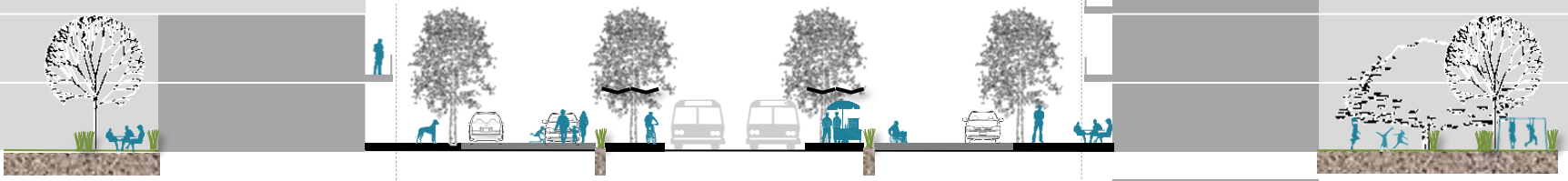
Source: Google Images, Anon

Source: www.rudi.net, Ashford Town Centre & Anon

Source: Google Images, Anon

30 meter road reserve (2meter build to line)

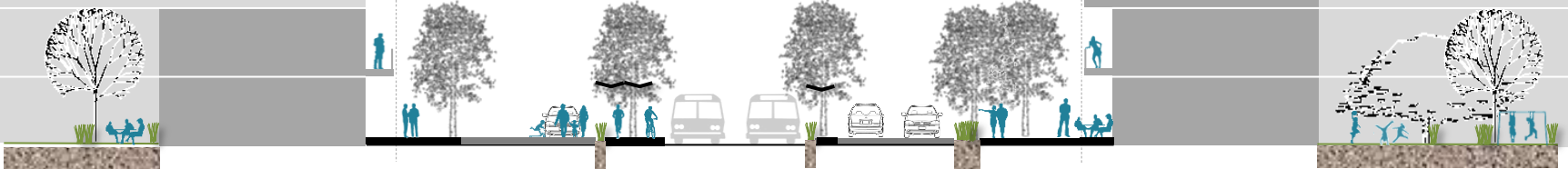
Alternative 1



Alternative 2

2m build to line

2m build to line



c. Action 2.3: Completing Urban Form: Main Primary Routes, Nodal Connectors & People Distributors

The third scale of application is the completion of the urban form for the main/primary routes, nodal connectors & people distributors. As the description implies, these routes move away from the predominance of the vehicle, towards a more people orientated transport route, where vehicles are secondary. The application (2 examples) of this scale Action is illustrated in the images to the right.

These routes (20m road reserve with 2m built to line) provide access to the central areas of the urban environment and nodal areas, providing for more space for pedestrians, natural environment & potential urban agriculture. The intersection of these routes are approximately 800m appart. Within this configuration only 6m (30%) of the total road reserve is provided for vehicles & busses, however these routes are on the same level as the pedestrian foot paths.

The natural environment & pedestrian environment dominates the space, while providing active edges & balconies. The internal courtyards are retailed for private use such as play areas, recreation, social facilities, agriculture and utilities.

The photos to the top right suggest the type of agricultural activity that could take place within these road reserves. Uses could include the expansion of the natural environment, as well as the provision of space for urban agriculture; making optimal use of space available.

Source: Google Images, Anon

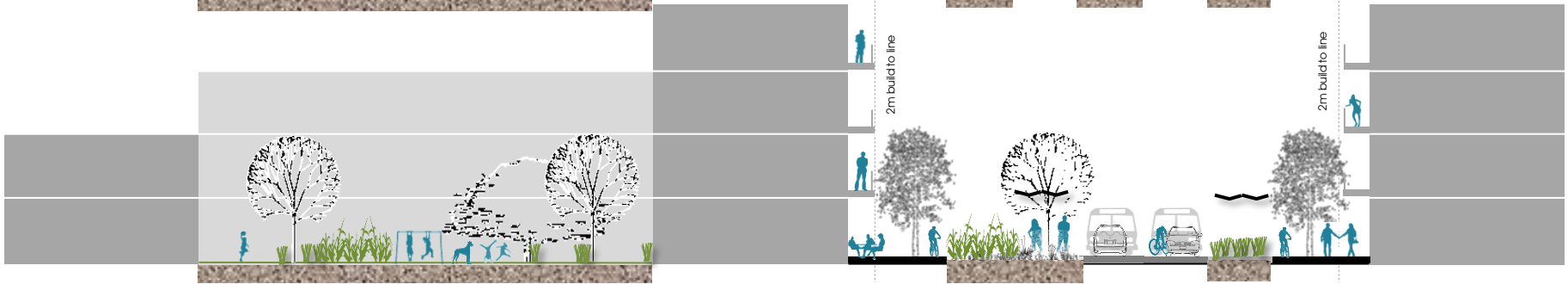
Source: Curbside Corps, http://www.theedstsider.com/2010/07/echo-park-urban-farmers-take-to-the-streets/

Source: North Philly Street garden, http://articles.philly.com/2012-09-13/news/33738413_1_community-garden-activity-and-violence-drug-activity/

20 meter road reserve (2meter build to line)

Alternative 1

Alternative 2



d. Action 2.4: Completing Urban Form: Secondary Routes, People & Slow Moving Traffic

This forth level scale intervention relates to the completion of the urban form for secondary routes, people & slow moving traffic. As illustrated in the images to the right, these are secondary routes which provide accessibility to the internal urban neighbourhood cells. These routes are proposed to be a minimum of 16m wide (with an additional 2m built to line).

The section (bottom right) indicates that the total 16m road width is used as shared space. Here the speed of traffic is slowed drastically to 40km/hr and alternative public transport such as trams & shuttles are provided. These routes are however primarily for non motorized transport use, with all movement occurring on the same level. These routes should also function as key movers of pedestrians & cyclists. The intersection of these routes are 400m to 800m apart.

The photos to the top right aim to indicate the proposed environment of these scaled interventions. The first image indicates these spaces could also be shared with livestock, in addition to the normal uses; the second image illustrates the provision of the shared infrastructure at the sale level; and the third image indicates the potential use of the inner courtyards of buildings as urban agriculture space.

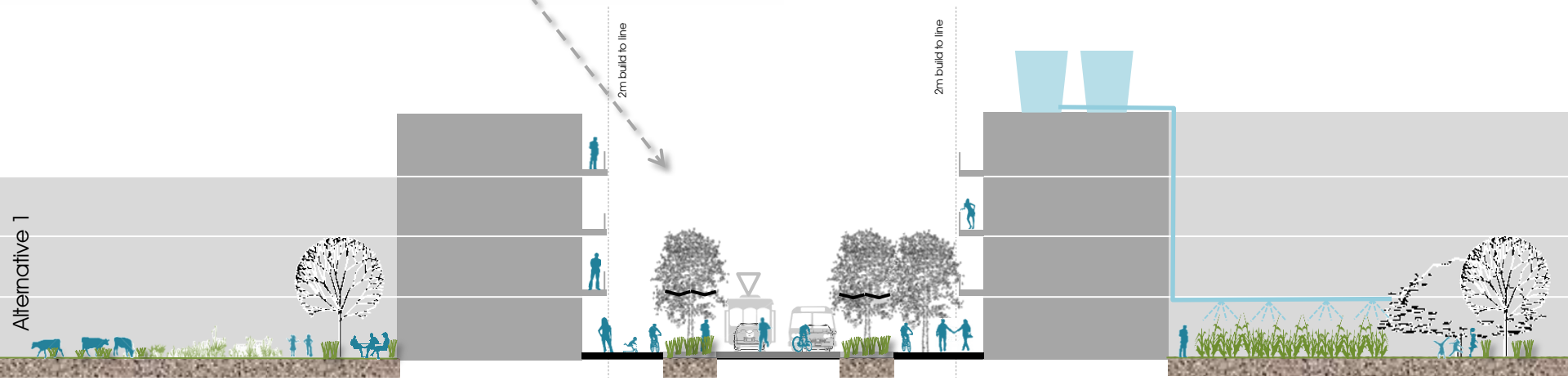
These routes could function as the key urban element in linking the public open space of the city, and creating a system of public open spaces, by using 'road' infrastructure and natural areas/ infrastructure. This will be illustrated later.

Source: Shri Lanka, http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/0,,contentMDK:21955438~menuPK:2644039~pagePK:64020865~piPK:51164185~theSitePK:33717,00.html

Source: Google Images, Anon

Source: Shared Streets and shared spaces, Anon (United Kingdom and India)

16 meter road reserve (2meter build to line)



e. Action 2.5: Completing Urban Form: Tertiary Routes: Car Restriction And Pro People, Crops & Nature

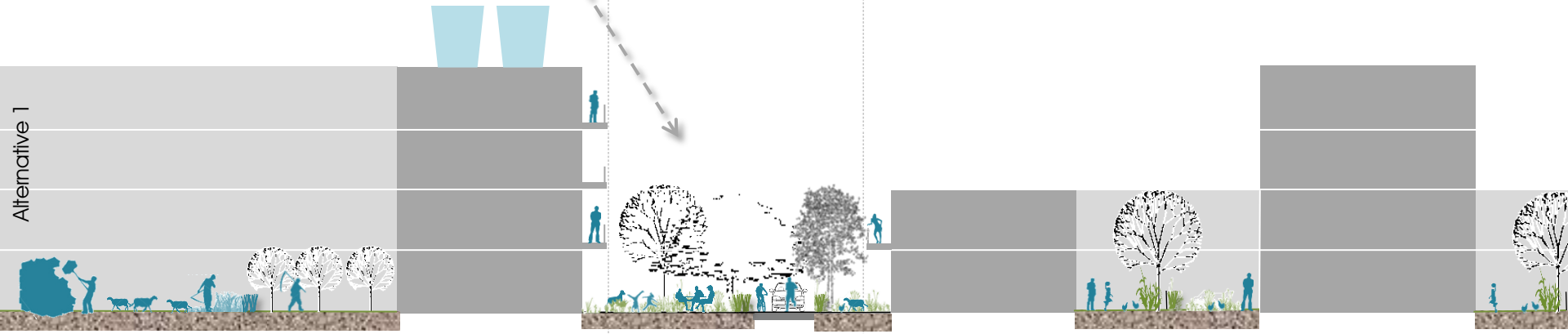
This fifth level scale intervention relates to the completion of the urban form for tertiary routes, that promote no vehicular use and advocates for use of the space by people for movement, crops and the inclusion of nature in the urban environment on the doorstep. These routes provide direct access to individual living units and businesses, internal to the urban neighbourhood. These routes are proposed to be a minimum of 10m to 13m wide (with an additional 2m built to line). Here only 30% (3m) of the reserve surface area is provided for single lane vehicular access.

The section (bottom right) indicates that the total 10m road width is used as citizen space. Here the speed of traffic is reduced further to 20km/hr. These routes are however primarily for access to individual units, with all movement occurring on the same level. These routes should function as an extension of the individual residential/ business units shared front garden into the public urban realm. Uses allocated to these spaces could include gardens, agriculture, parks, recreation, grazing, relaxation, etc.

The adaptive illustration to the top right aim to indicate the proposed environment of these scaled interventions. This image illustrates the inclusion of the aforementioned uses, and creates an urban garden atmosphere at your doorstep.

10 to 13 meter road reserve (2meter build to line)

Alternative 1



f. Action 2.6: Creating a Hierarchy of Access & Movement (Not Road Movement but Connectivity)

The sixth Action utilized to implement the principle of using the grid as urban structuring tool, is to create a hierarchy of access & movement. Creating a hierarchy promotes the legibility of the urban environment, structures the flow of movement, facilitates applicable scaled use, promotes higher densities, focuses activity towards urban nodes and creates passive control on accessibility. The latter point is achieved through the suggestion on design of where vehicles are allowed (or not), providing for scaled passive access control.

The images to the immediate right indicate the application of a hierarchy of movement & access, these include:

- The first image indicates the primary trunk routes. These routes include private vehicular & public transport trunk routes. These routes provide connection between this urban area and the next (i.e. Brakpan & Kwa Thema)
- The second image indicates the primary/ main routes. These routes link to the rail stations and provide for connectivity of nodes within the urban environment. Here public transport routes area provided.
- The third image illustrates the secondary routes. These routes provide connectivity between internal urban neighbourhoods, with slow moving localized public transport. These routes prioritize pedestrian and other non motorized transport routes (green connector routes between public open spaces)
- The forth image indicates the tertiary routes. These routes are internal neighbourhood routes and provide for limited/ no vehicular access. These routes function more as public open spaces than connector routes.

Source: Adapted - http://www.minnpost.com/minnesota-blog-cabin/2012/08/how-slow-traffic-put-st-way

iii. PRINCIPLE 3: PRIORITIZING FREE & LESS EXPENSIVE MODES OF TRANSPORT
a. Action 3.1: Ratification of Duplicated Public Transport Routes & the Focus Towards Central Nodes of Transit

The third Principle aims to prioritize 'free' and less expensive modes of transport. This Principle focuses on making urban areas function more effectively, cheaply & efficiently. This Principle includes the following actions:

- Action 1: The ratification of duplicated public transport routes and the focus towards central nodes of transit.
- Action 2: Promote the cheapest mode of transport – pedestrian movement & walkability (including non motorized transport)
- Action 3: Addressing border spaces
- Action 4: Placing the pedestrian first – consider the most vulnerable user
- Action 5: Provide for pedestrian & public transport connection points at a range of nodes

The first Action relates to the ratification of the duplicated public transport routes and focus towards a central node of transit. As discussed in Section G2i of this report, the current public transport network is not effectively distributed for a sustainable settlement.

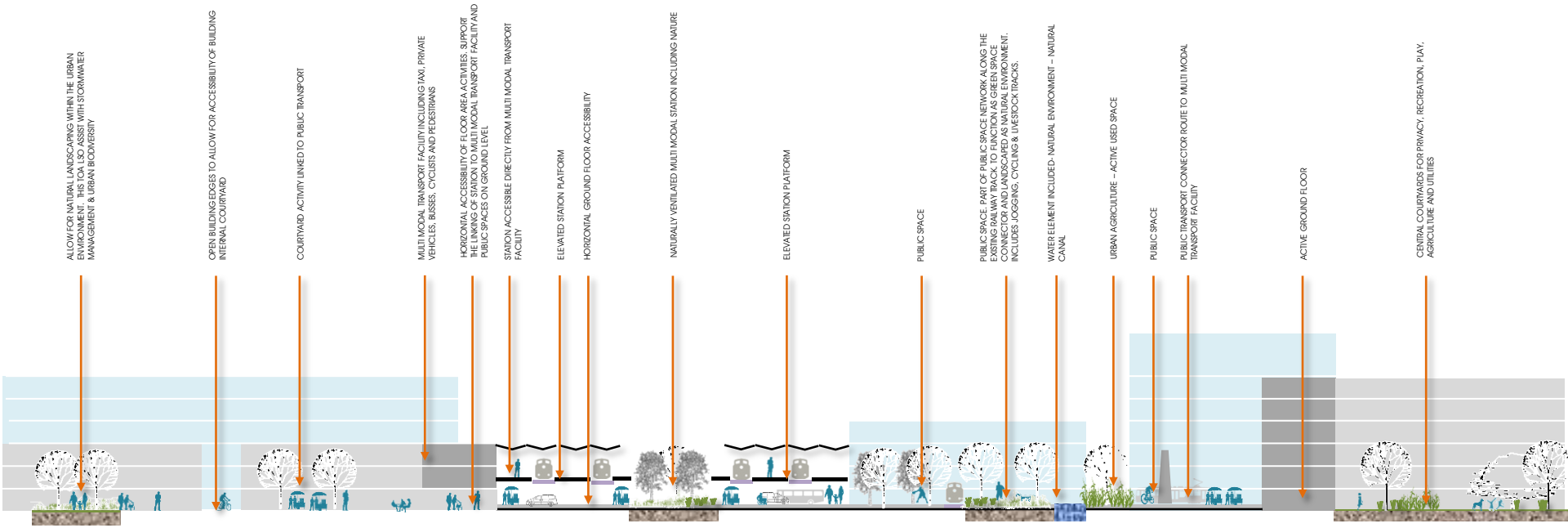
The images above and top right suggests a structured public transport system which allows for 3 transport orientated nodes (2 at the rail station), linked to trunk transport routes (bus, taxi & vehicles), linked to internal nodal connector routes (slower bus, taxi & vehicular routes), which in turn links to neighbourhood connector routes (slow tram & shuttle routes). These routes also correspond to the hierarchy of movement & access. There is a clear distinction in transport type, order and distance of travel, which are focused towards the 3 transit orientated nodes.

It is also important to note that all the mentioned public transport routes are to prioritize the pedestrian and other non motorized transport.

As an illustration of the functioning of the multi modal transport route, a section (bottom left) is provided of the proposed Springs station multi modal transport node. This section illustrates the elevation of the rail tracks and station platforms. This allows for the horizontal connection of the public spaces either side of the proposed multi modal transport facility.

Thereby, visual connection of the transport interchange, public spaces and urban form is achieved. Access to the station platforms are proposed form the buildings (multi modal transport facility) abutting the left edge of the station, whereas the access from the right will be obtained from the public square abutting the station.

The multi modal transport facility, station and public space will contain natural elements, pedestrian walkways, cycling & jogging routes, water elements, hard surface landscaping & natural landscaping. The station could function as an open air natural ventilated space, which could rather be associated with a covered public space than a station/ multi modal transport facility.



SPRINGS STATION SECTION

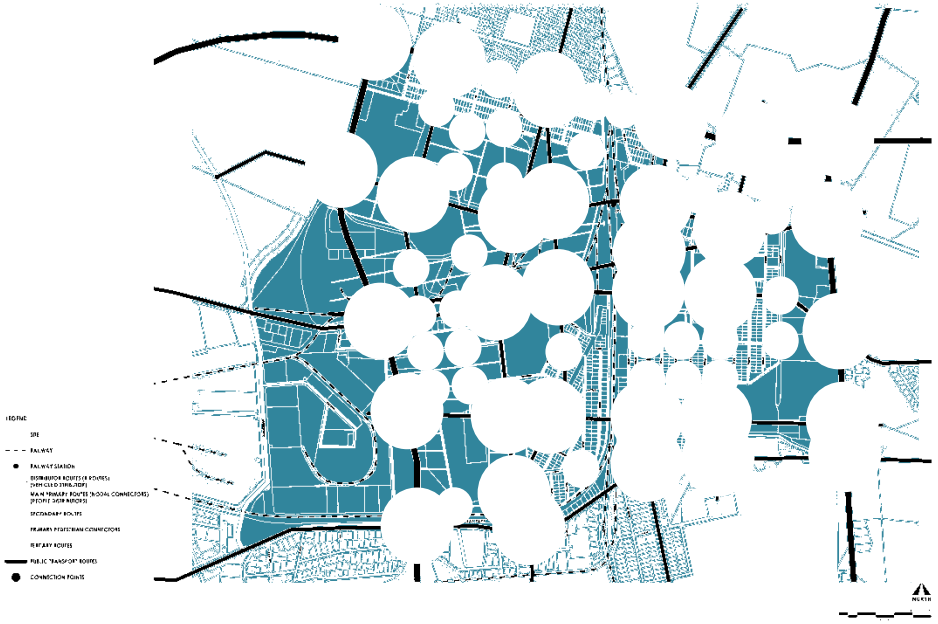
b. Action 3.2: Promoting Cheapest Mode of Transport: Pedestrian Movement & Walkability (Plus NMT)

The second Action relates to the promotion of the cheapest mode of transport through pedestrian movement, walkability and the promotion of non motorized transport (NMT) use and provision. The image to the immediate right indicates the application of the proposed hierarchy of movement & access to the proposed public open space movement system. This public open space movement system relates directly to the Secondary Movement Routes (from the previous section). These routes aim to connect the urban neighbourhoods to each other, the main public transport arterials and to the nodal areas, via pedestrian prioritized routes. These are routes that provide for wide sidewalks and the inclusion of natural vegetation.

In addition to this, these routes also promote a slower alternative movement network, which is not duplicated, but rather supports the other movement network types. These routes also ensure that the transit nodal areas are within 400m to 800m walking distance. Thereby walking (and NMT) is promoted as the cheapest mode of internal transport.

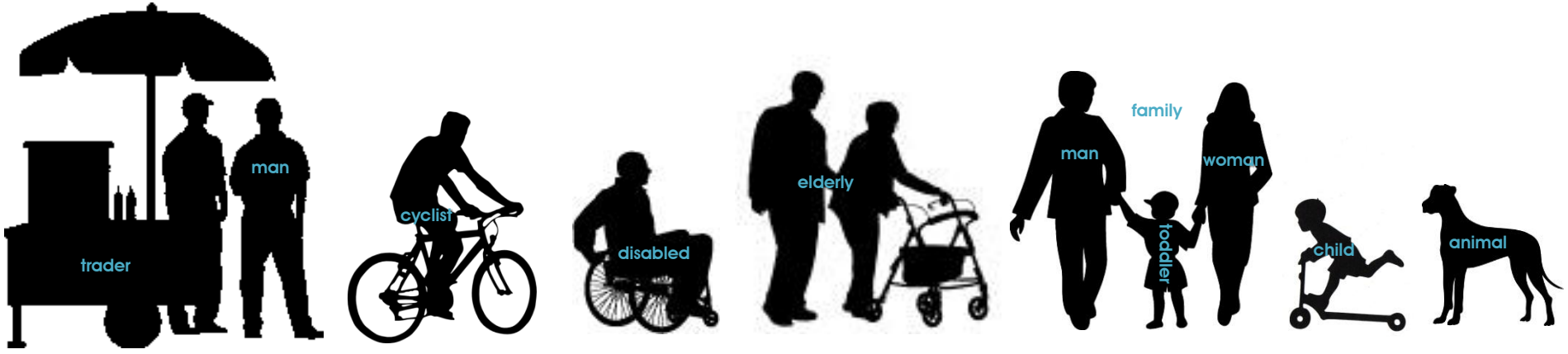
c. Action 3.3: Addressing Border Spaces

The third Action, focuses on addressing border spaces. This Action entails the identification of the smallest potential nodal area/ intersection, indicating 200m walking radii and then 100m walking radii. These are indicated on the maps to the right. The third map below indicate the border areas that are not located within the immediate vicinity of an intersection point/ potential nodal point. These areas (indicated in blue) are areas of lesser urban intensity, where uses such as schools, sports fields, technicons and rail reserve are located. The aim here is to ensure that these areas remain areas of lesser urban intensity but are linked to the main arterial routes via the public open space system



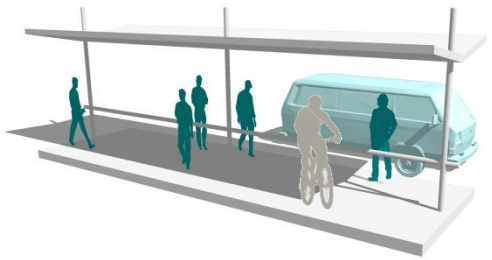
d. Action 3.4: Placing the Pedestrian First – Consider the Most Vulnerable User

Action 4 refers to placing the pedestrian first in terms of design of streets & public spaces. Here it is advocated that design should be sympathetic to the most vulnerable user of the public space and streets. The design of the public realm should consider users as equal and of equal importance, when design is focused towards creating the maximum opportunity for the most vulnerable the public real becomes more equitable, accessible and democratic. The images to the right & below illustrate the broad spectrum of users of a public realm that should be considered in creating inclusive spaces.



e. Action 3.5: Provide for Pedestrian & Public Transport Connection Points at a Range of Nodes

Action 5 aims to provide pedestrian & public transport connection points at a range of nodes, not only at the multi modal transport facilities. The image to the bottom right illustrates these potential connection points (in red). To the bottom an illustration is provided of the type of basic facility to be provided at these connection points.



iv. PRINCIPLE 4: ATTRACT CITIZENS & INVESTMENT TO URBAN AREAS (NOT PERIPHERY)
a. Action 4.1: Edge the City

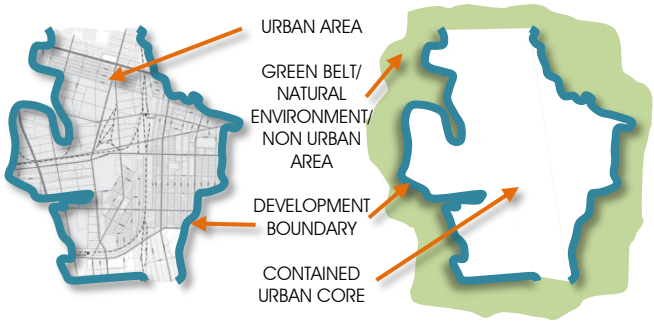
The forth Principle aims to attract citizens and investment to urban areas. This principle is aimed at making the urban environment more competitive so that the periphery for investment and urbanization; thereby limiting the need for horizontal land consumption & the associated destruction of vacant potential agricultural land/ natural environment.

This Principle proposed 4 action that would assist in achieving this goal, these are:

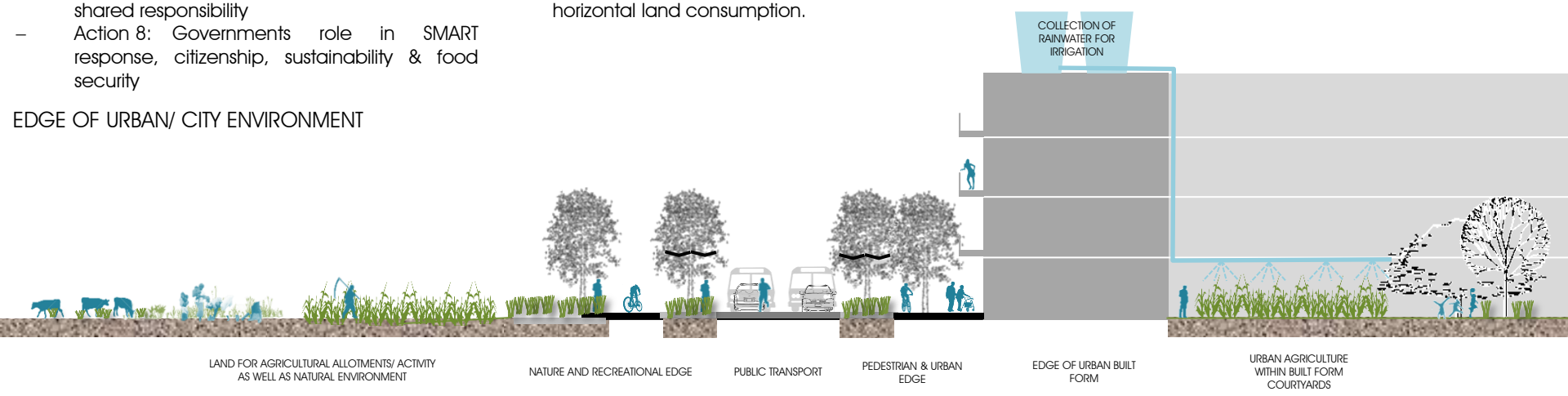
- Action 1: Edging the city
- Action 2: Application of the honey & vinegar approach, including super taxation on development outside the urban core areas
- Action 3: Promotion/ provision of free and/or inexpensive public transport
- Action 4: Ensuring food security
- Action 5: Promotion of high environmental quality
- Action 6: Government investment in urban areas only
- Action 7: Governments role in promoting shared responsibility
- Action 8: Governments role in SMART response, citizenship, sustainability & food security

The first Action is the edging of the city (urban environment). The image to the right illustrates this Action. By containing the urban environment, the surrounding natural environment is protected, uncontrolled sprawl is countered and a compact urban form is achieved. The adapted image to the far right illustrates how this strong distinction between urban and natural environment can be realized. They key of this illustration is that the urban condition is contained and densified, while the surrounding agricultural & natural environment is maintained & cultivated to the benefit of the urban area it surrounds.

The section below illustrates the proposed edge of the city. This illustrates the relationship that can be achieved between the urban and the natural environment. The edge between these two environments should be retained and protected as the one is dependant on the success of the other. The aim is not to suggest a fortified city, but rather to contain the urban environment with a natural green edge., dismissing the potential for sprawl and horizontal land consumption.



EDGE OF URBAN/ CITY ENVIRONMENT



Source: Adapted Image

b. Action 4.2: Applying the Honey & Vinegar Approach - Super Taxation on Development Outside Urban Core Areas

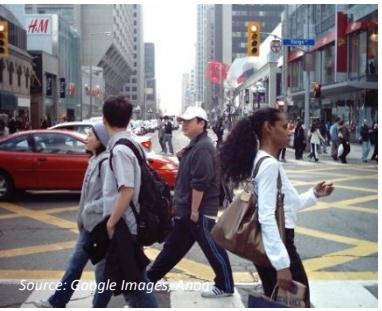
Action 4 is related to the application of the honey & vinegar approach, where the Government/ Municipality applies super taxation on development outside of the urban core areas. This is less of a physical action, but is more related to the policy and administrative changes required towards development of smart & sustainable urban settlement development & management. It is proposed that the Government/ Municipality attract appropriate types of development through positive actions (such as tax incentives, bonus zoning, discounted municipal rates, etc.) (honey); and oppose other type of development (through measures such as super taxation, restricted service delivery, fines, restrictions, etc.) (vinegar).

In Springs it is proposed that industrial & low density development should not be allowed within the urban areas; the surrounding natural area should be protected, further expansion of urban sprawl surrounding the urban core should be opposed, the existing sprawl should be reduced systematically and compact urban development should be promoted within the urban core.

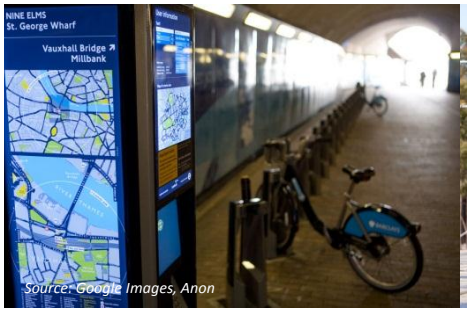
Source: Google Images, Anon

c. Action 4.3: Promotion of Free/ Inexpensive Public Transport

The promotion of free/ inexpensive public transport is another Action through which citizens and investment can be attracted to the urban core areas. By offering this service the urban areas could become less expansive and more attractive for urbanization. Examples of the provision of free transport can be found in Victoria, Australia, where 'free public transport would be available to all children and full-time tertiary students'. Free public transportation should however be of good quality, safe and regularly available. By providing in such a basic need as transportation, the Municipality could reduce the amount of each household spent on transportation, and free up household income for other needs.


Source: Google Images, Anon

Source: Google Images, Anon



Source: Google Images, Anon

Source: Google Images, Anon

Source: Google Images, Anon

Source: Google Images, Anon

Source: Google Images, Anon

Source: http://www.theage.com.au/news/national/libs-promise-free-fides-for-students/2006/10/22/1161455608828.html

d. Action 4.4: Ensuring Food Security

The forth Action to attract citizens and investment to urban areas (as opposed to the periphery) is to ensure food security in urban core areas. This Action should be implemented as a physical action and as a policy Action.

Firstly, in terms of a physical Action, the 'green' areas surrounding the urban core nodes should be used as communal commercially driven agricultural activity, natural resource use and as protection of the natural environment. In addition to this, the internal public spaces and courtyards could also be used as subsistence urban agricultural farming for each household.

As a policy intervention, the Government should provide for pro- urban food production policies, and develop economies to support this activity on a commercial basis. Food security does not only refer to subsistence farming, but related to commercial farming for income generation and trade. Conversely, the Municipality should instil agriculture as an economic activity, ensuring that the produce is sold at the urban market for the urban area and that the revenue collected from this gets transferred to the agricultural workers and the agricultural industry.

Source: Google Images, Anon

Source: Google Images, Anon

e. Action 4.5: Promotion of High Environmental Quality

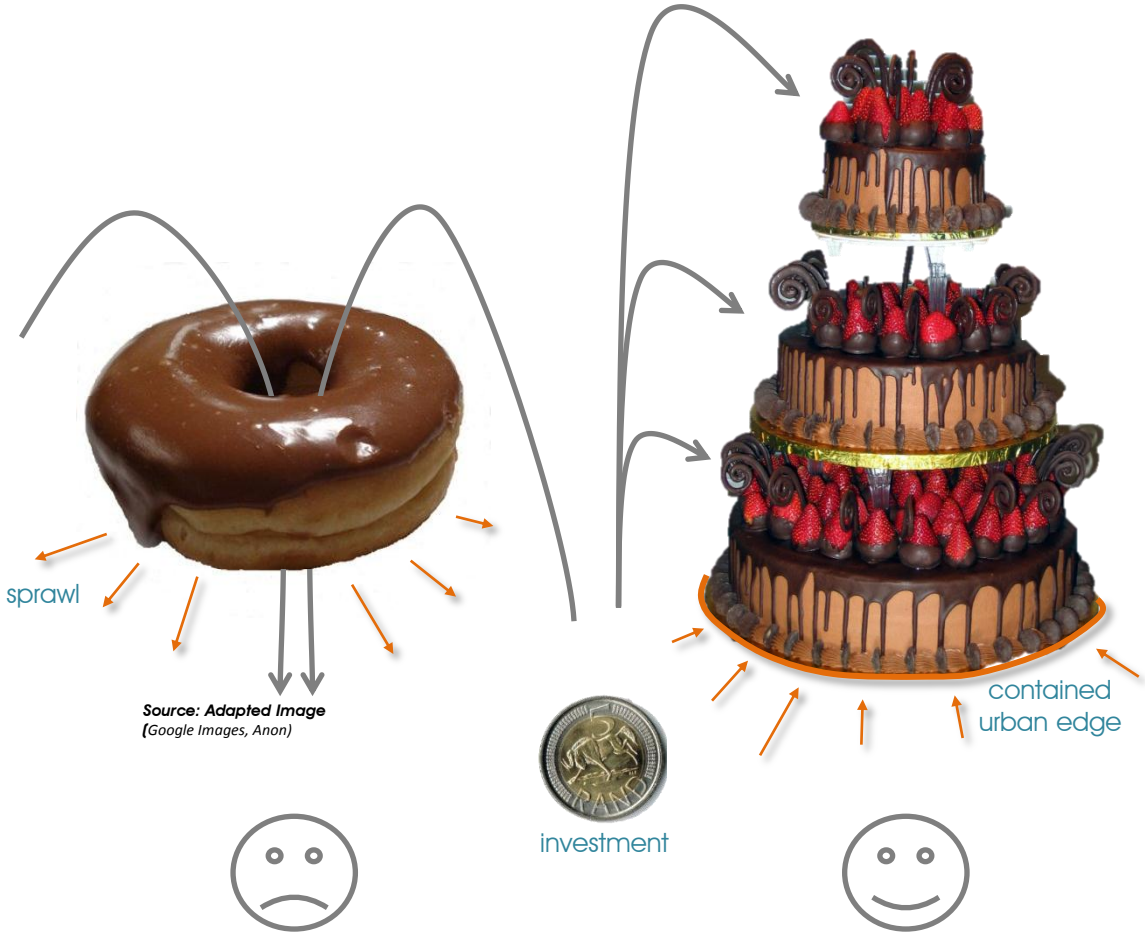
The fifth Action to attract citizens & investment to urban areas is to promote the environmental quality of the urban environment. The images to the right indicate the quality of public space provision in urban environments. The intervention on public space could contribute to the attraction of citizens to the urban core areas. The provision of high quality urban environments could also improve the living conditions of the Ekurhuleni poorer communities living in the urban messes on the edges of cities, where access to good quality environments are restricted and limited.

f. Action 4.6: Government Investment in Urban Areas Only

Another policy/ urban management Action that could attract people and investment into urban centres is the Governments commitment to invest in urban areas only. This is a drastic policy shift from the current approach in Ekurhuleni (and South Africa) where investment is also made in sprawl areas to improve their functioning, congestion, expansion and economic requirements. This approach diminishes the economic & natural resources available for urban areas; and favours a selected few above the larger South African population.

It is strongly suggested that reinvestment takes place in urban areas only, that illustrated the Governments shift in approach to develop sustainable settlements. The image to the right illustrates this approach through the analogy of the cake and doughnut principle. Currently our South African cities are investing in the doughnut model, where the urban edge is constantly expanding, and if funding is allocated to the urban areas, it has little real affect. Whereas the approach with the cake is that the urban growth is contained, and when investment occurs in urban areas it, builds on what is existing and cumulatively improves the urban environment.

Fundamental Differences In Approaches: Doughnut vs Cake Approach of Investment



Source: Adapted Image
(Google Images, Anon)

g. Action 4.7: Government Role in Promoting Shared Responsibility

The seventh Action to promote the principle of attracting citizens and investment to urban areas is the Governments role in promoting shared responsibility. It should be the role of Government to ensure community involvement in all aspects of the urban environment, the citizens of the city and the Government should share the responsibility of good city making, as it is not only a function of Government action, but rather combined citizen action. Conversely the citizen becomes a shareholder in the city; whereas if the city improves, the citizen improves and benefits.

h. Action 4.8: Government Role in SMART Response, Citizenship, Sustainability & Food Security

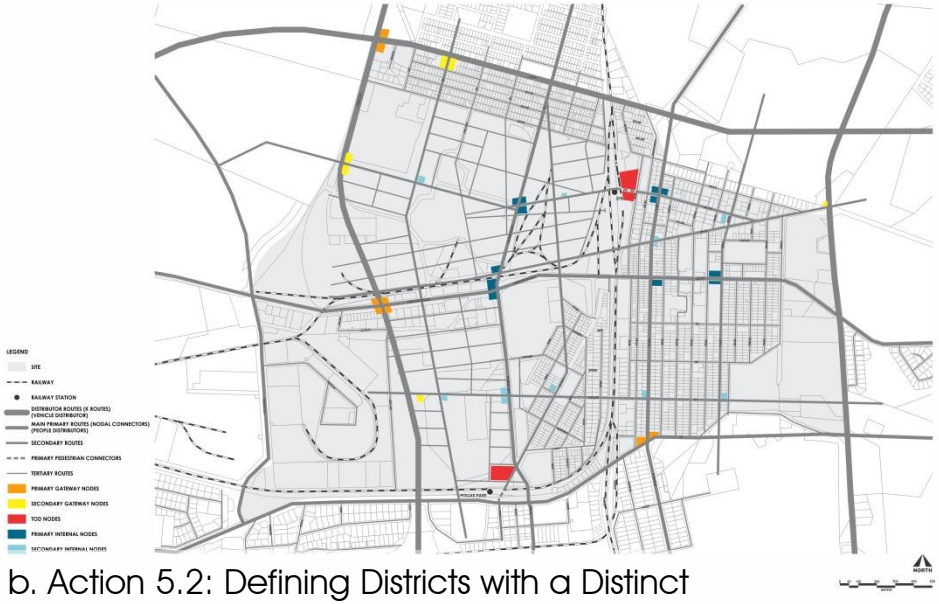
The eighth Action is to clearly indicate and publicly communicate the role of the Government in SMART response, citizenship, sustainability and food security. It should be the role of the Government to make public its challenges and indicate the Governments SMART response to urban issues & challenges. The current public reporting of budget expenditure on infrastructure is considered to be insufficient and a non SMART response to modern urban issues. Real urban challenges should be identified, clearly communicated, SMART responses developed, implemented and made public knowledge. The real urban issues that should be addressed by Government is not the maintenance of infrastructure; that is a given; it is urban issues of poverty, food security, cost of transport, urbanization rates, the inefficiency of urban areas, unemployment, security of tenure and access to opportunities.

Serving as an example, urban agriculture will be used in the context of the Springs area. This report infers that the role of the Government is not to develop a programme for subsistence farming for household food security. The role of Government should rather be as facilitator that ensures that system of agricultural economy is functioning. This will enable commercial drive of the agricultural activity, where the agricultural workers will have a captured market to sell their goods, they can reinvest the funding in the farming activities while providing in the economic needs of their families. The government could ensure that standards of agricultural activities are upheld to fulfil in the needs of the urban community it serves.

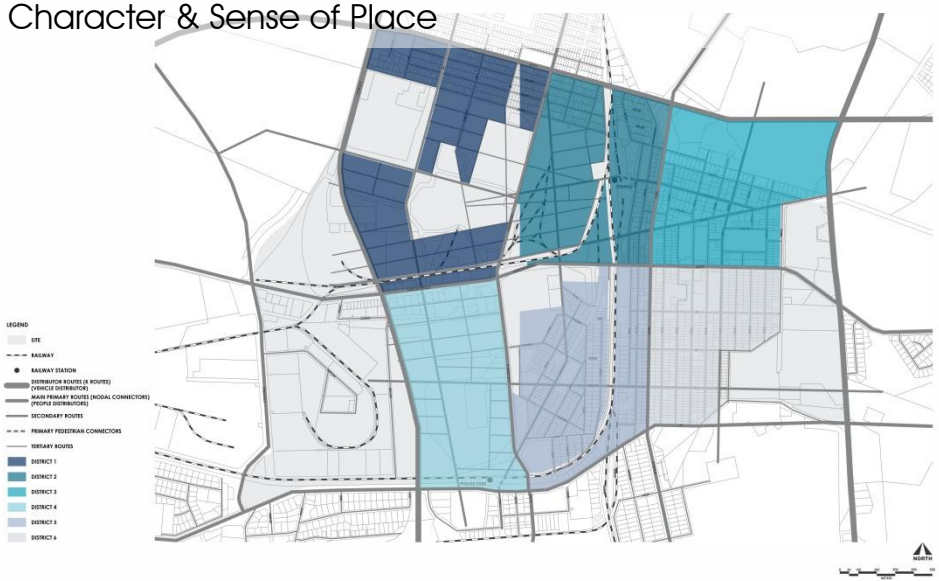
http://cargocollective.com/littlethingslabs#TakeRoot-Citizen-Forester

v. PRINCIPLE 5: CREATING THE URBAN REALM THROUGH DEFINING LEGIBILITY, PERMEABILITY & CHARACTER

a. Action 5.1: Identifying & Defining the Character of Nodes



b. Action 5.2: Defining Districts with a Distinct Character & Sense of Place



The fifth Principle makes use of the principles of 'good city form'; as described by Lynch (1984); which relates to creating the urban realm through defining legibility, permeability & character. Here the elements of good city form are instilled in the urban fabric through the following Actions:

- Action 1: Identifying & defining the character of nodes
- Action 2: Defining districts with a distinct character and sense of place
- Action 3: Defining edges
- Action 4: Identifying landmarks
- Action 5: Identifying landmark void areas (a system for linking landmarks)
- Action 6: Identifying paths linking districts and nodes

Action 1 aims to identify nodes an defining the character of the nodes. As the image to the top left illustrates 21 clusters of nodes of varying function, scale and intensity are proposed for the new Springs urban area. 5 categories of node are identified:

- Primary gateway nodes, functioning as main access points into the city and as connection nodes with surrounding urban areas.
- Secondary gateway nodes, function as secondary access points on the edges of the city.
- Transport orientated nodes, these nodes are located at the 2 rail stations (Springs & Pollack Park Station). These nodes function as the multi modal transport facilities of the town, the main node being the Springs station. Here rail, bus, taxi, tram, train, bicycles and pedestrians converge.
- Primary nodes, are situated at the intersection of major arterial routes.
- Secondary nodes, are located along major arterial routes within the neighbourhood cell.

Action 2 aims to define districts with distinct character and sense of place. The image to the bottom left illustrates the 6 districts that are proposed for the new Springs area. District 1 functions as a gateway district with a residential & recreational function. District 2 functions as the central transport core of the urban area, with associated higher densities. District 3 functions as the redeveloped central urban core area. District 4 provides for tertiary educational function & residential development linked to the Pollack Park Station. District 5 functions as the administrative core with residential function. District 6 relates to the urban downtown district, where urban redevelopment & densification of previously single detached housing can be found.

c. Action 5.3: Defining Edges to Protect District Character

Action 3 identifies the edges of the proposed districts (Map to top left). These edges define the district & protect the character of the district. Furthermore the district edges identify where higher quality investment should be focused and where the public environment should be of high quality. These edges are where 2 or more districts meet and should function as an integrative tool (through the public realm) between the districts.

The map to the bottom left illustrate the application of Action 4, which is the identification of landmarks within the urban fabric. The key landmarks identified are the Municipal & Administrative buildings, located at the centre of the urban core; the other 2 landmarks correspond to the 2 Transport Orientated Nodes of the Springs Station and Pollack Park Station. These landmarks anchor the urban area, promotes movement between the stations and urban administrative core, assists with legibility of the urban area and provides for visual linkages between nodes (taller buildings).

d. Action 5.4: Identifying Landmark Void Areas – a System for Linking Landmarks

A key component in the identification of landmarks relates to Action 5, which entails the identification of landmark void areas. These landmark void areas created the framework that ties together the nodes and landmarks within the urban fabric. These void areas are of similar importance than the landmarks or the nodes.

As illustrated in the plan to the top right, these landmark voids link the nodes and landmarks of the city. Furthermore, they also assist in entrenching a formal structured system for an integrated public open space system. These landmark void areas comprises of sports fields, recreation areas, public spaces, urban agriculture, public squares, pedestrian routes and cattle paths.

The image to the top provides an illustration of how such a landmark void area could be realised. In this image it can be seen that public spaces are linked to public parks, which in turn are linked/ used as cattle grazing and/ food production. Therefore these landmark void areas/ public open space system are not considered to be formal stately parades of manicured lawns, fountains and monolithic structures; but rather open spaces used by its citizens to fulfil their urban needs, be-it recreation, relaxation, food production, celebration, cultivation or protection of the natural environment. Conversely, this could also allow for a flexible open space system/ landmark void areas that could change over time as the urban citizens needs adapt and change.

e. Action 5.5: Identifying Paths Linking Districts & Nodes

f. Action 5.6: Urban Form (Districts & Edges Combined)

Action 6 is illustrated in the map to the top right, and relates to the identification of paths that link the districts and the nodes. These paths follow the edges of the districts and assists in the differentiation of the districts, as well as the integration of the districts. These paths link nodes, landmarks and landmark void areas and allow for integration & connectivity across district boundaries and edges.

The map to the bottom left indicates the complete urban form by creating the urban realm through the definition of legibility, permeability and character. The key elements that tie the urban form is the landscape void areas (or public open space system), and the paths; that links the nodes, landmarks and districts.

vi. PRINCIPLE 6: PRIORITIZING PUBLIC SPACE AS PRIMARY URBAN RECEPTOR FOR THE NATURAL, AGRICULTURAL & RECREATIONAL ENVIRONMENT

The sixth Principle relates to the prioritization of public space as the primary urban receptor for the natural, agricultural & recreational environment. The public space environment within Springs is therefore proposed to depart from our existing understanding of public space and the use of public space. Creating public spaces as receptors for perceived non urban/ informal activity provides for a basis where public spaces could be actively utilized as recreational, economic, social, participatory, shared, communal spaces; and not only as passive spaces for recreational and social congregation.

This Principle contain 12 Actions that aim to illustrate the implementation of this Principle in the Springs urban environment, these are:

- Action 1: Providing a green frame as growth container
- Action 2: Promote compact urbanization & contained growth (declare a war on transect development)
- Action 3: Actively protect & develop agricultural resources for food security
- Action 4: Provide a hierarchy of public spaces
- Action 5: Provide an 'alternative' public space as urban survival tool
- Action 6: Developing the two central civic spines as natural/ agricultural connector corridors
- Action 7: Promote streets as 'non- streets', people connectors & mobility infrastructure (streets as public spaces)
- Action 8: Promoting Green Roofs & Rain Harvesting for Water Security & Agriculture
- Action 9: Promoting Stormwater Management & Associated Environmental Protection
- Action 10: Promoting public space and associated higher density
- Action 11: Providing a hierarchy of non motorized movement
- Action 12: Providing a network of good quality public spaces through a range of public space types

a. Action 6.1: Providing a Green Frame as Growth Container

As discussed in Section H2iv.a; it is proposed as Action 1 to provide a green frame as growth container for the urban area of Springs. It is envisaged (image below) that the growth container will be kept free from any urban development and only allow for agriculture and the protection of the natural environment/ resources. The image to the right aims to illustrate that there's should be a pronounced physical distinction between the urban environment (IN) and the non urban environment (OUT). A resident/ visitor should clearly see when they are entering the urban environment from the non urban (and visa versa).

This Action aims to provide for a 'natural' urban edge that does not allow for sprawl or horizontal expansion of the urban area. It is proposed that this Action will contain the urban environment and promote urban densification and optimal use of urban infrastructure.

Source: Google Images, Anon – Adapted Image

b. Action 6.2: Promote Compact Urbanization & Contained Growth - Declare War on Transect Development - Declare an Urban Development Boundary

Action 2 refers to the promoting compact urbanization & contained growth. This Action is achieved through declaring war on the less responsible urban tendency of transect development. With this statement it is suggested that transect development approached perpetuate further sprawl and do not support the principle of creating compact urban environments.

As illustrated in the sketch to the right, the Transect development (black image) allows for a denser urban core, which then tapers down in intensity to a semi urban environment, which dwindles down to suburban development and enters the rural reserve category. It is presented here that this approach advocates for future sprawl as the rural reserve will be subdivided in the future as the suburban expansion occurs.

As opposed to this, the approach of declaring an urban development boundary (natural/ green/ agriculture) is illustrated parallel to the transect model (to the right – in blue). This approach proposed a dense urban core, with dense urban outer-, peri urban- and urban- zones.

The urban edge zone therefore define the edge of urban development, and allows no further urban expansion beyond this zone. The next zone entered is then the urban agricultural zone and natural forest zone. This again makes the definitive distinction between urban (IN) and non urban (OUT).

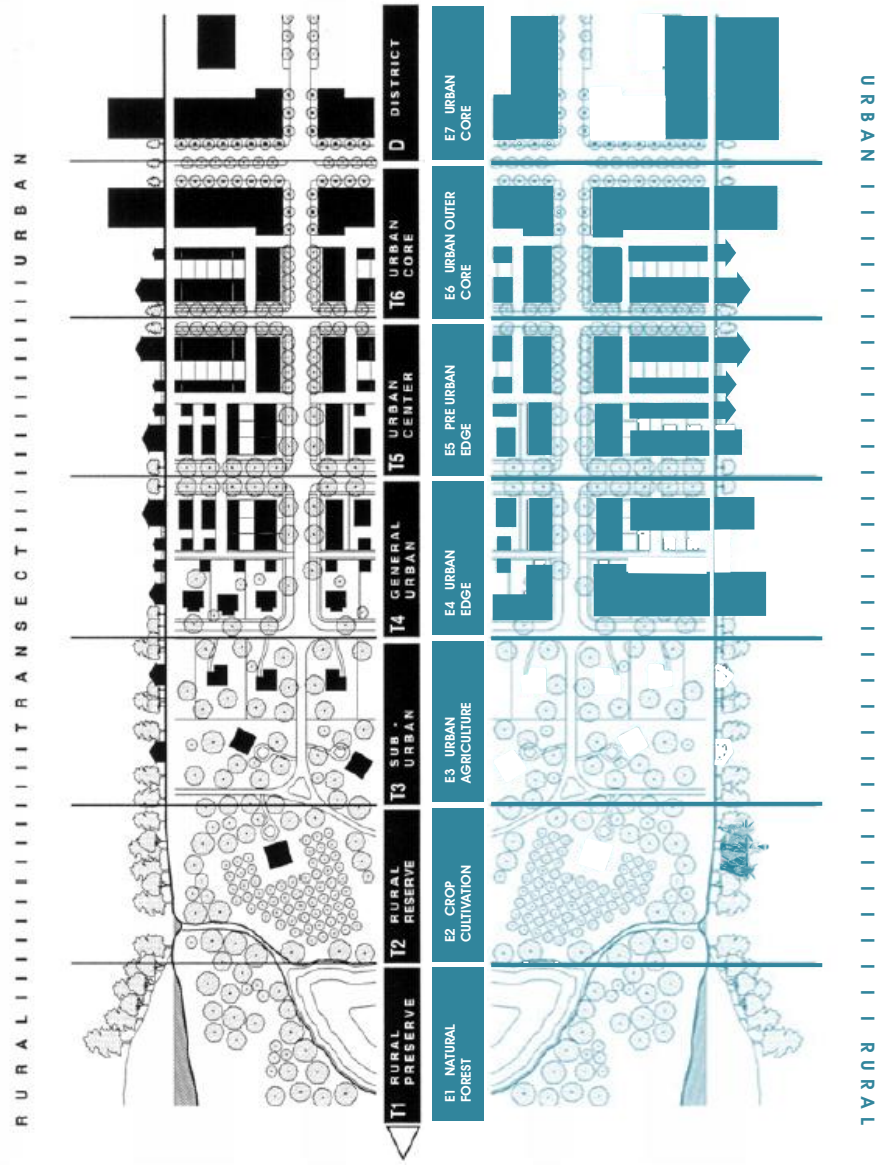
In terms of sprawl, it is suggested that the latter development approach would counter sprawl, and rather promote the reinvestment in the existing urban area; thereby protecting the inherent value and integrity of the urban and the natural (non urban).

URBAN

SEMI URBAN

ADVOCATE SUBURBAN SPRAWL

IN WHICH SUBURBIA AM I?



IN

URBAN

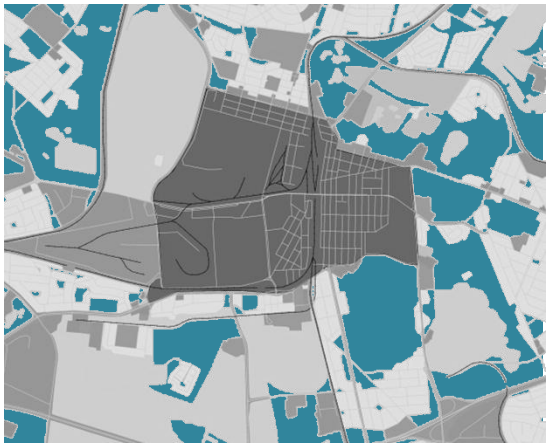
RURAL

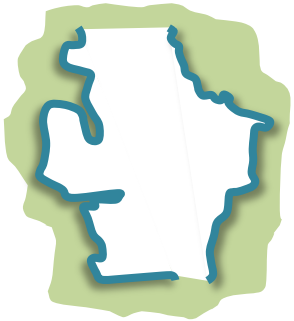
OUT

Source: Transect, http://layingthegroundwork.wordpress.com/2011/04/16/125/

Adapted Image

c. Action 6.3: Actively Protect, Expand & Develop Agricultural Resources for Food Security





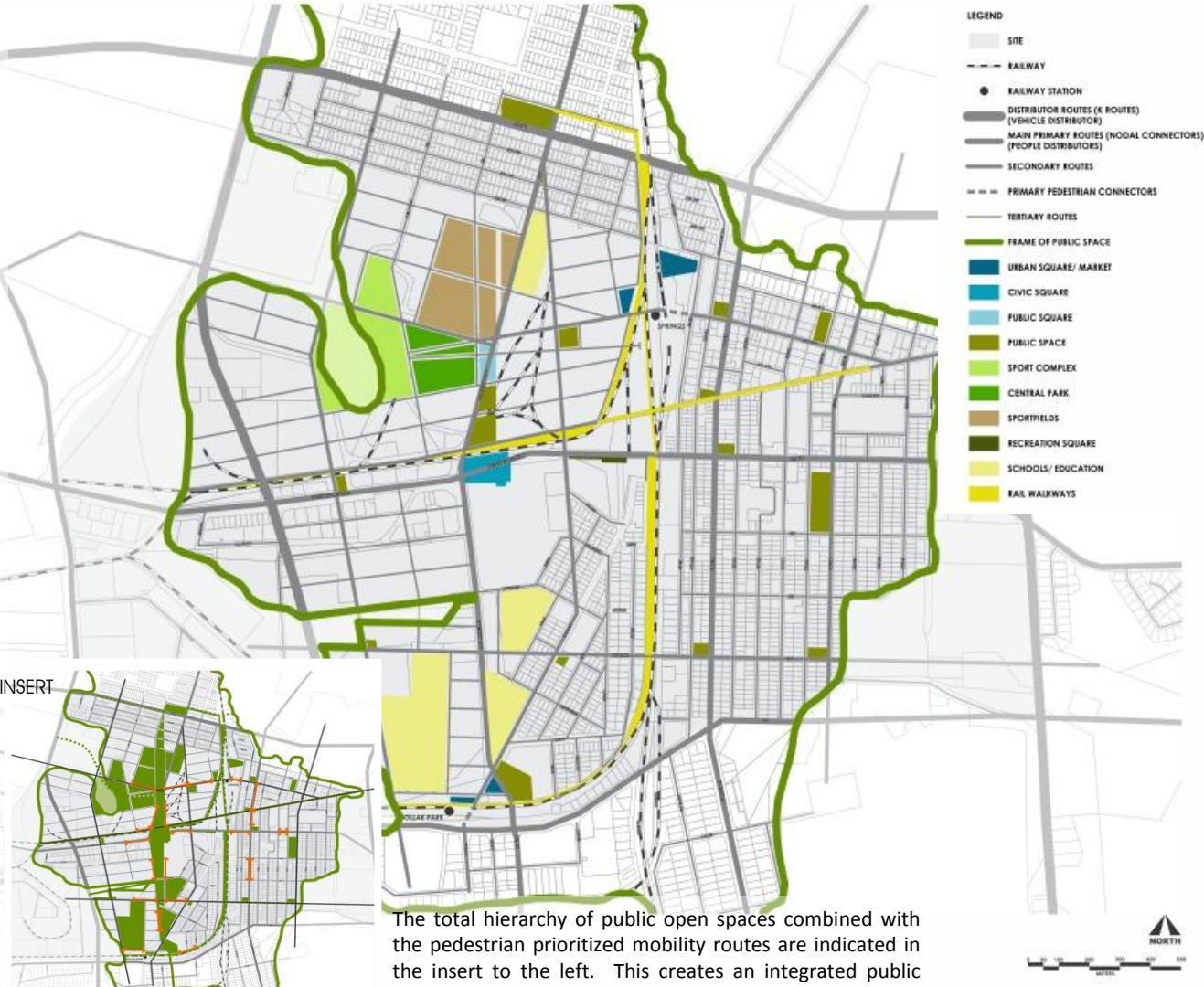
Action 3 promotes the active protection & development of agricultural resources and food security. It is proposed that the surrounding area of Springs (illustrated above and middle right) be actively developed as urban agricultural activity. These areas in blue (above) indicate the land that is available/ suitable for agricultural development. The aim of developing this agricultural resource is primarily to provide food security for the urban area of Springs.

Natural resources are recruited for the cultivation of these agricultural crops. These include water, suitable soil and fertilizers. The Springs area has water available and soil (blue above) for agricultural production. To produce fertilizer, the option could be investigated of composting of human waste (from the urban areas). Instead of transporting waste from the urban areas to sewerage works, the waste could be used as fertilizer in the production of crops (image to bottom right). This promotes the self sustainability of the urban area.

d. Action 6.4: Provide a Hierarchy of Public Spaces

The public spaces within the Springs environment (be-it parks or agricultural allotments) are proposed the be integrated and provide a hierarchy of public spaces. The image to the right illustrates the hierarchy of public spaces, these include:

- Urban green frame, which includes the urban agriculture activities
- Urban square or market, these are located adjacent to the multi modal transport nodes/ stations. These areas could function as market areas where agricultural produce could be sold.
- Civic square, this is located in front of the existing Civic building in the centre of the urban area.
- Public square, this public square is provided to the north of the Civic square (linked via a public space), at the intersection of high volume pedestrian routes
- Public spaces, are provided for within neighbourhoods adjacent to pedestrian movement corridors.
- Sports complex, Central park and Sports fields, combined form a central large public open space linked to the civic square and the Springs station square.
- Schools/education, these facilities function as shared facilities to the surrounding community.
- Rail walkways, it is proposed that a rail walkway be provided adjacent to the existing rail. This will allow for pedestrian only linkages between stations, nodes and public spaces. This could function as an alternative pedestrian only environment for recreation, cycling, jogging, walking, etc.



The total hierarchy of public open spaces combined with the pedestrian prioritized mobility routes are indicated in the insert to the left. This creates an integrated public open space system.

e. Action 6.5: Provide an 'Alternative' Public Space as Urban Survival Tool

The development of agricultural resources is not only proposed to be restricted to the exterior of the urban environment. Action 5 suggests that agriculture should be provided for within the urban environment as well. It is proposed that the public spaces to be provided in Springs should function as alternative production spaces towards food security and urban survival. The images to the right and bottom illustrate examples of transforming public spaces within urban environments into active spaces for food production. The quotation to the right (RAUF, 2011) adds that this trend (urban agriculture) is increasing in higher density urban areas, and is focused on enterprise development (commercial development of agriculture) not only for food security. The adapted image to the far right aims to illustrate the application of urban agriculture in the propose public spaces of Springs. This particular example indicates the use of a parking area for agricultural food production. It also illustrates that these alternative public spaces are to be edges by higher density residential or commercial development.

'More cities and national governments are using urban agriculture as part of their strategy to combat the global food crisis. Sierra Leone's Operation "Feed the Nation" involves youth in urban agriculture production and related enterprise development. The Sri Lankan government is renewing the use of agricultural land within cities. Lima, Porto Novo, Amman and Beijing have also adopted urban agriculture polices. The trend is growing fast.'
(Source: http://rauf.com - Resource Centres on Urban Agriculture and Food)

Source: New York, http://www.designtrust.org/projects/project_11photourb.html

Source: Anon, Wishard Slow Food Garden in White River State Park (Indianapolis, IN)

Source: http://www.milb.com/team1/page.jsp?ymd=20080627&content_id=424236&vkey=team1_t565&fext=.jsp&sid=t565

Source: http://www.morinvillecommunitygardens.com/2012/07/community-garden-tour/

Adapted Image

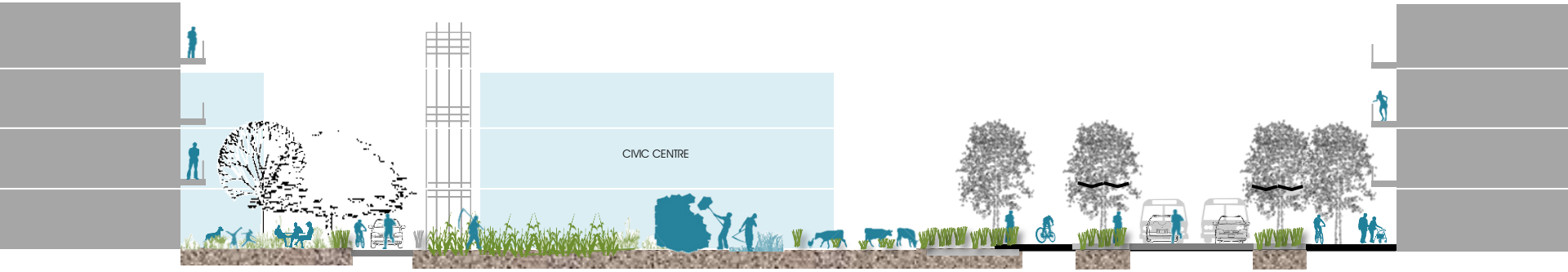
f. Action 6.6: Developing the Two Central Civic Spines as Natural/ Agricultural Connector Corridors

To connect the outer green belt with the inner urban core activities, it is proposed (Action 6) that the two central civic spines be developed as natural and agricultural connector corridors. This will ensure that agricultural movement and nature become part of the everyday life within the urban environment. It also departs from the grandeous notions of a central civic spine that focuses attention to the Civitas; but rather places emphasis on the use of central civic spines by the daily activities of urban citizens. The map to the right illustrates the location of these routes, illustrating its linkage from the natural outer edges to the centre of the urban environment. The images below indicate the perceived non urban activities that are found in modern urban environments. The image to the far right is an adaptation of the existing Springs Civic Centre. This image and section illustrates the natural/ agricultural corridors passing the Civic Centre, and use of these spines/ open spaces as active/ productive open spaces.

Source: Google images, India, Anon

Source: Google Images, India, Anon

Source: Google Images, India, Anon



CIVIC AXIS SECTION

LAND FOR AGRICULTURAL ALLOTMENTS/ ACTIVITY AS WELL AS NATURAL ENVIRONMENT

CIVIC SPINE USED FOR AGRICULTURAL/ NATURAL CONNECTOR CORRIDORS

NORTH SOUTH MOBILITY CORRIDOR FOR PUBLIC TRANSPORT & PEDESTRIANS

SIDEWALKS

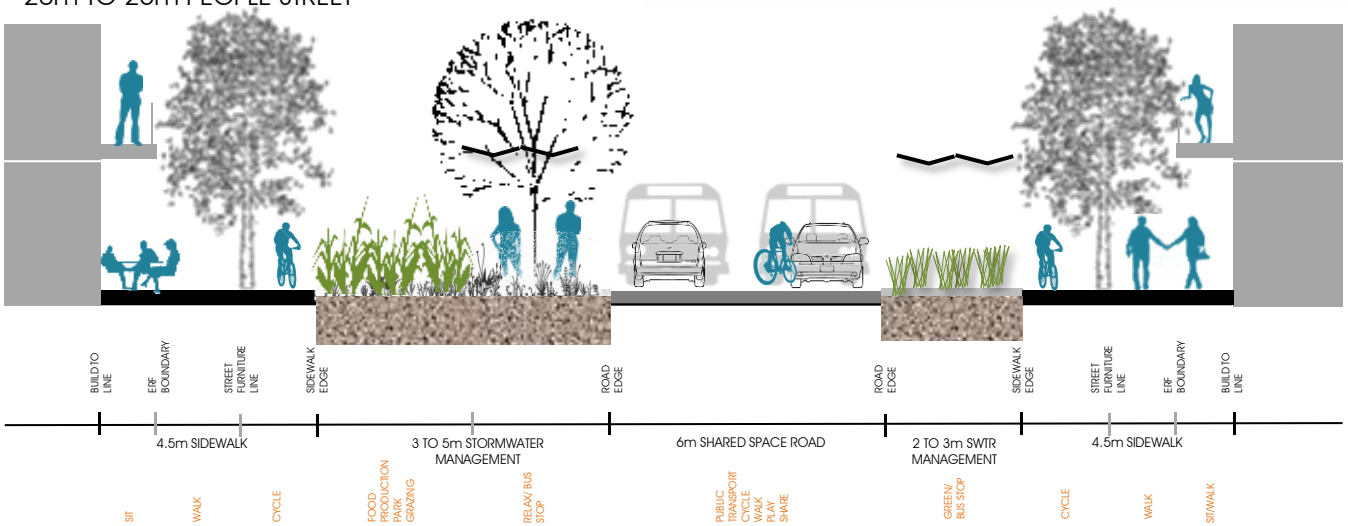
BUILDING

g. Action 6.7: Promoting Streets as 'Non' Streets', People Connectors & Mobility Infrastructure (Streets as Public Spaces)

As discussed in Section H2iii.b, and illustrated in the diagram to the right, the Secondary Movement Routes are to be developed a pedestrian priority routes. These routes will aim to (Action 7) promote streets as 'non streets', people connectors and mobility infrastructure. Subsequently, developing streets as public spaces rather than roads. These routes indicated in orange will provide for the primary pedestrian movement together with vehicular movement. If this formal structure is linked to the proposed public open space system, a network of accessible and connected public spaces emerge.

The section to the bottom right illustrates the application of developing streets as public spaces. This section refers to the orange routes and provides for 60 to 70% of the road reserve to be developed as public space, with only 30% for vehicular movement.

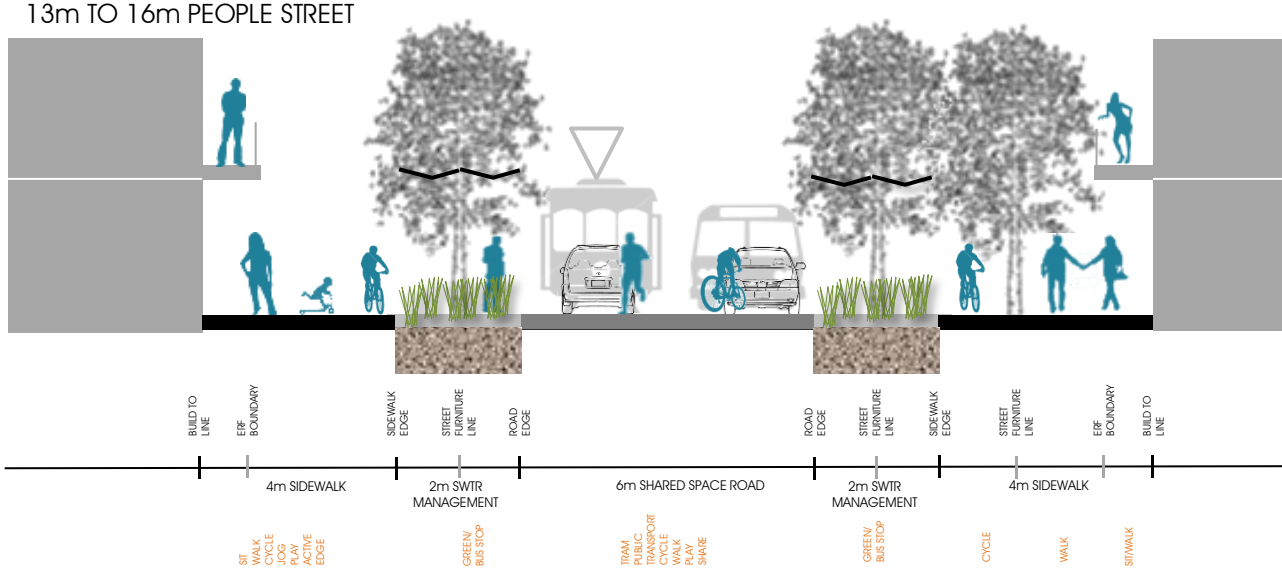
20m TO 25m PEOPLE STREET



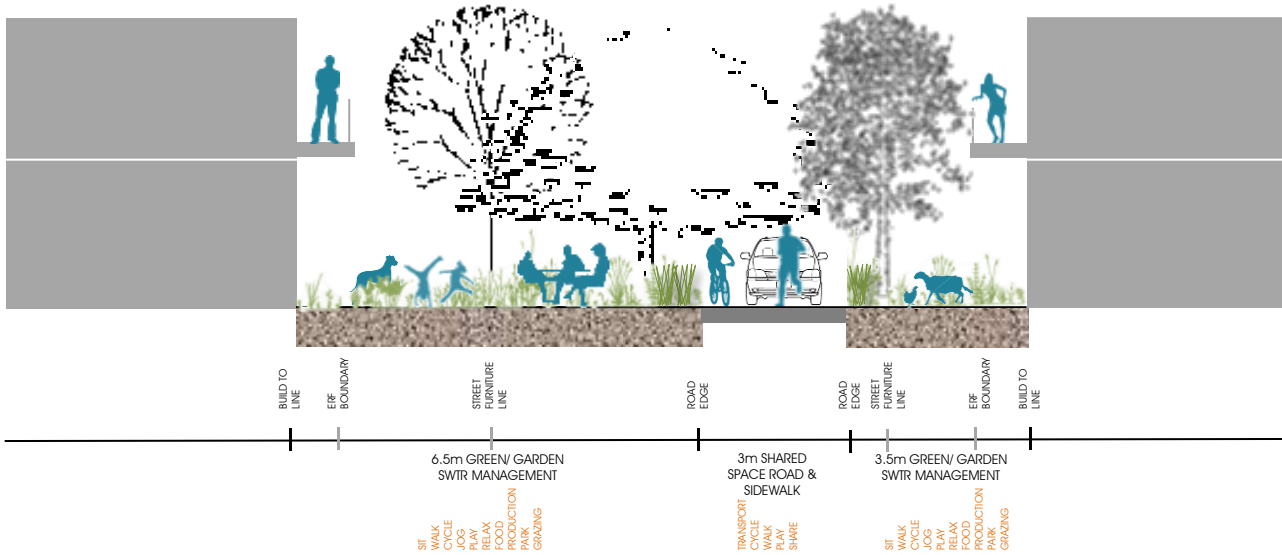
The sections indicated to the right illustrate internal roads within neighbourhoods. It is proposed that these streets also be developed as public spaces rather that roads for vehicular movement.

In the first section it is proposed that at least 60% of the road reserve be utilized as public space. Where the second section (internal residential roads) at least 75% of the road reserve is to be used as public space. Note should be taken that the road surface for vehicles are also shared spaces, and should allow for pedestrian predominance. The use of each of the road zones are also indicated in orange.

13m TO 16m PEOPLE STREET



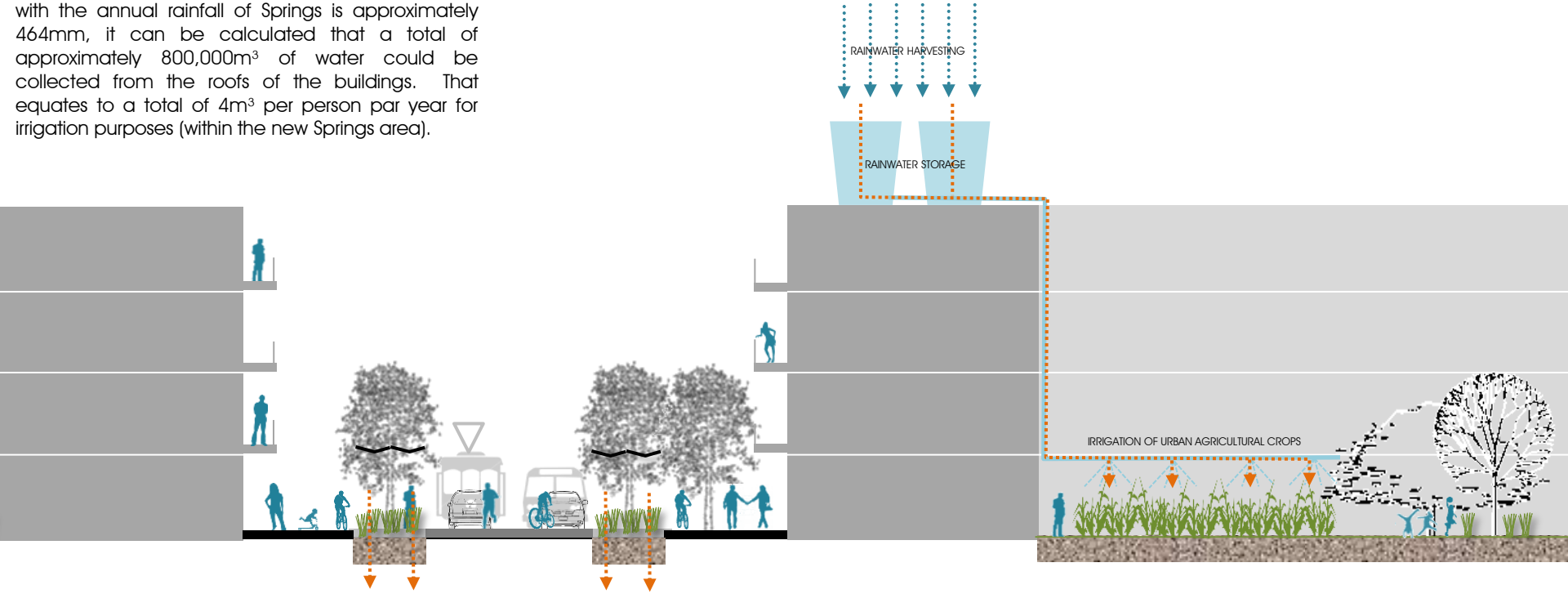
10m TO 13m PEOPLE STREET



h. Action 6.8: Promoting Green Roofs & Rain Harvesting for Water Security & Agriculture

In terms of sustainability of using the public spaces as urban agriculture or natural areas, the following is presented as Action 8 where green roofs and rainwater harvesting is promoted for water security and agricultural food production. The section below indicates how water could be collected on the roofs of the buildings, stored and used for irrigation of agricultural crops. The precipitation that is not collected on the roofs could be absorbed in the streets (to be discussed in next section) and infiltrate into the ground to replenish the groundwater.

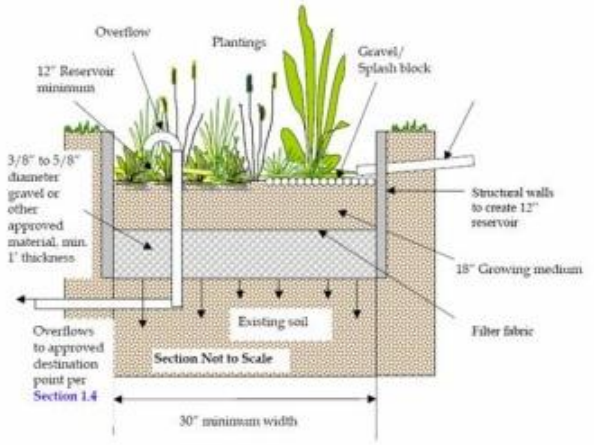
It is estimated that the proposed new urban roof area would total to 1,714,308m^2, if this is combined with the annual rainfall of Springs is approximately 464mm, it can be calculated that a total of approximately 800,000m^3 of water could be collected from the roofs of the buildings. That equates to a total of 4m^3 per person par year for irrigation purposes (within the new Springs area).



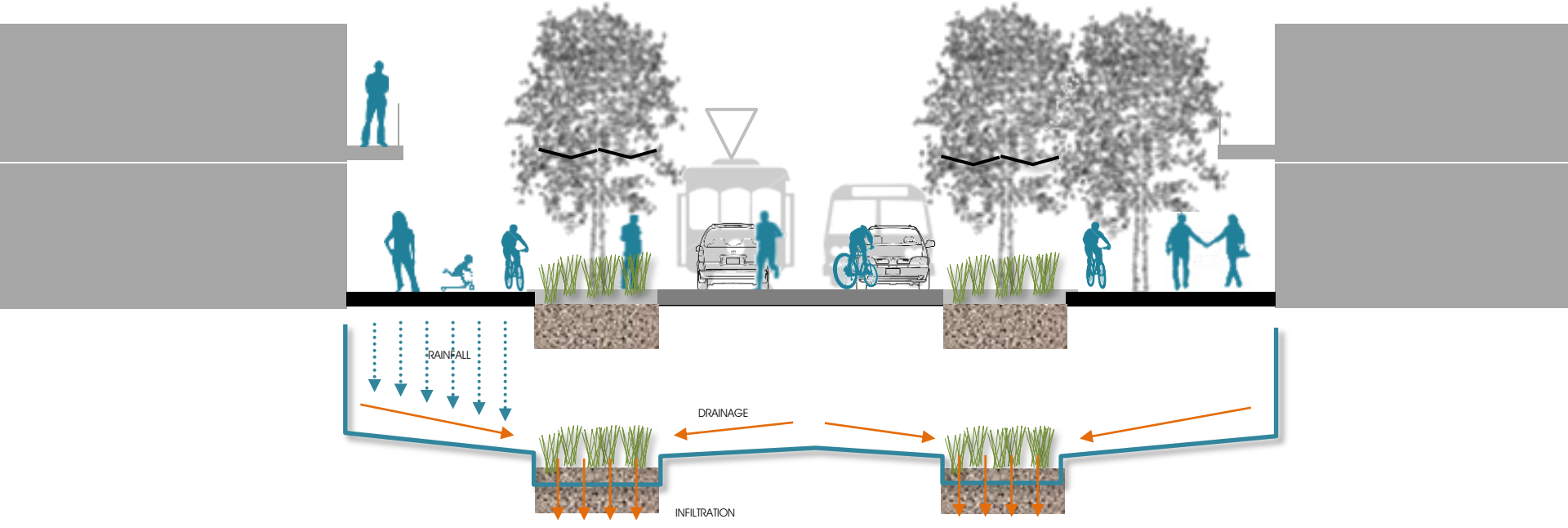
Source: Transect, http://layingthegroundwork.wordpress.com/2011/04/19/28/

i. Action 6.9: Promoting Stormwater Management & Associated Environmental Protection

Action 9 aims to promote stormwater management through on- site infiltration & environmental protection. This Action aims to reduce the urban rainfall runoff from streets within the urban environment. It is proposed, as illustrated in the section below and the image to the right, that the stormwater management within the urban environment be managed within the street reserves. Allowance should be made for small retention ponds within the flower beds of the sidewalks. This will allow for the capturing of the water on site and the infiltration of the stormwater to replenish the groundwater. This will reduce the stormwater runoff and support the introduction of nature and vegetation into the urban environs.



Source: Infiltration Planter Detail. From City of Portland 2004 Stormwater Management Manual



j. Action 6.10: Promoting Public Space & Associated Higher Density

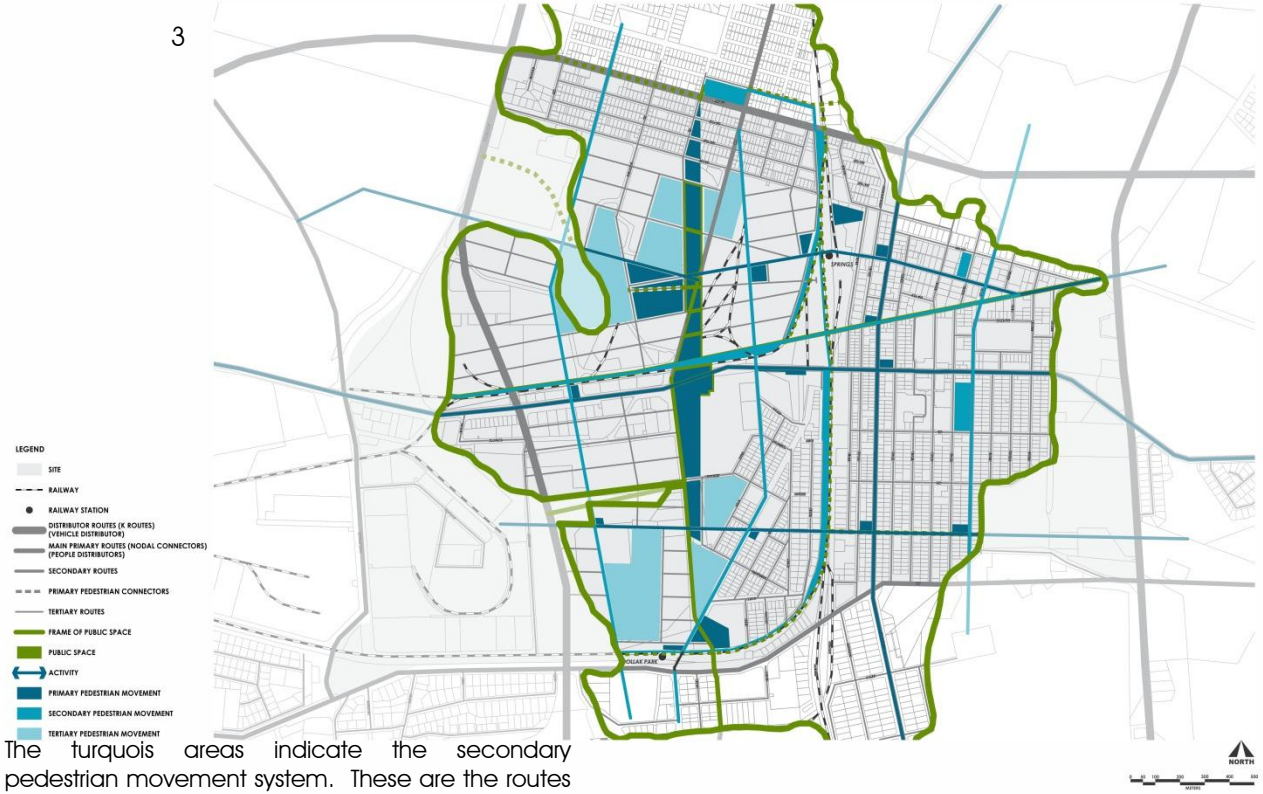
The total public open space network (roads, streets, parks, and public spaces) proposed is illustrated in the map to the right (green). Action 10 suggests that higher density development could take place surrounding the public open space system. It is suggested that the presence of public space should allow for the potential of higher density development, as more public space is provided- less private space is required. Higher densities could then be developed in the areas indicated in orange on the map to the right.

k. Action 6.11: Providing a Hierarchy of Non Motorized Movement

1

2

3



Action 11 aims to provide for a hierarchy of non motorized movement. This is illustrates in the maps above. This proposed movement system prioritizes all non motorized transportation types above motorized vehicular transportation. Note should be taken that this non motorized movement system corresponds to the integrated public open space system proposed.

The primary pedestrian movement is indicated in the dark blue. This movement is along the central civic spines (east- west and north- south), this is supplemented with the Secondary movement Network where pedestrians are prioritized, as well as the primary public spaces.

The turquois areas indicate the secondary pedestrian movement system. These are the routes that connect the secondary public spaces to the primary.

The light blue areas indicate the tertiary pedestrian movement and include the areas such as sports fields, schools and education facilities. These should function as large park areas for recreation.

I. Action 6.12: Providing a Network of Good Quality Public Space Through a Range of Public Space Types (PARK-OUR SPRINGS CONCEPT)

As the last Action to achieve the Principle of prioritizing public space as primary urban receptor for the natural, agricultural & recreational environment; it is proposed (Action 12) that combined these spaces should provide a network of good quality public spaces through a range of public space types. The image to the right illustrates the primary public space network in red. This network is considered to be the backbone of the urban area and should be developed as high quality urban public space environments; allowing or flexibility and use by its citizens (be-it in the form of agriculture, grazing, recreation, movement, entertainment etc.). The remaining public space environments should be provided to support the primary public space network through infrastructure such as sport, education, recreation, markets and parks.

Adapted Image

vii. PRINCIPLE 7: PROVIDE A LEGIBLE FRAMEWORK FOR COMPLEX LAND USE ALLOCATION TOWARDS URBAN SURVIVAL

a. Action 7.1: Provide for a Mix of Land Use

b. Action 7.2: Advocating Vertical Land Use Differentiation

The seventh Principle relates to the provision of a legible framework for complex land use allocation towards urban survival. This principle aims to provide a robust framework that allows for flexibility and adaptability towards sustainability and urban survival.

This Principle contain 7 Actions towards a legible framework, these are:

- Action 1: Provide for a mix of land use
- Action 2: Advocating vertical land use differentiation
- Action 3: Creating legible urban blocks with internal flexibility
- Action 4: Providing robust built form
- Action 5: Promotion of the principle of sharing of facilities
- Action 6: Active inclusion of poverty & progressive gentrification
- Action 7: Allowance for informality in a formalized framework

Action 1 aims to provide for a mix of land use. The map to the left indicates the predominant land use allocation per city block. The departure point from the norm is not to restrict one type of zoning per area, but rather to accommodate a multitude of uses within a city block, however with the predominance of one use. Departure should be made from the monochromatic zoning of areas as solely residential or commercial zones. This use allocation will be discussed in the next Principle (Principle 8).

Action 2 promotes the vertical differentiation of land use. The map to the bottom left indicate the areas that should be promoted for vertical land use differentiation. The mixed use vertical differentiation (brown) is located along the railway line and the Springs station, while the vertical commercial differentiation (red) is located close to nodal areas. The vertical residential differentiation areas (orange) refers to the potential differentiation of residential unit types and sizes.

c. Action 7.3: Creating Legible Urban Blocks With Internal Flexibility

By creating legible blocks with internal flexibility (Action 3) allowance is made for individual use and interpretation of the urban form, however still protecting the inherent value of connectivity, permeability, legibility and movement. These urban blocks (city blocks) are indicated in the map to the bottom left. These urban blocks provide for larger blocks further away from the urban core and smaller blocks closer to the urban core.

Taking the urban city block a step further a robust built form (Action 4) could be suggested for the urban environment. This robust built form is illustrated in the image to the left. The built form to the east of the railway line is the existing built form of Springs; while the majority of the built form on the western side of the railway line is proposed new built form. The latter form is suggested to be more robust and flexible in design, however maintaining the integrity of the permeability and edge block development created by it.

d. Action 7.4: Providing Robust Built Form

e. Action 7.5: Promoting the Action of Sharing of Facilities

f. Action 7.6: Active Inclusion of Poverty & Progressive Gentrification

Source: Google Images, Anon

Action 4 relates to the promotion of the sharing of facilities. The social & education facilities provided in the urban environment should be designed in such a manner as to promote the sharing of these facilities by the entire urban community. This will support the principle of effective use of urban infrastructure. These shared facilities are indicated on the map to the left.

Action 5 refers to the active inclusion of poverty and progressive gentrification. Poverty should be considered as part of the urban environment, however the urban environment should be designed to manage poverty and improve the quality of everyday life. The Actions such as food security and the right to the city should be presented to all its inhabitants, thereby fulfilling the basic needs of citizens and starting to manage poverty. Through recognizing and managing poverty within the urban environment, improvements can be made in the everyday lives of its urban citizens. Gentrification should be transformed into positive gentrification, where the lives of all the urban citizens are improved collectively, not the improvement of one above the other.

The image to the right illustrates the allowance/ inclusion of informality within a formalized framework (Action 6). This image illustrates the proposed market to the east of the proposed Springs station. This is an informal market that could function within a formalized urban framework. Thereby providing the urban residents with formal and informal activity within a formally managed urban environment.

g. Action 7.7: Allowance of Informality in a Formalized Framework

http://urbanvignettes.com/contributors-themes/whose-city/4440/

Source: Google Images, Anon

Source: Google Images, Anon

Source: Google Images, Anon

viii. PRINCIPLE 8: PROMOTE HIGHER DENSITIES
a. Action 8.1: Promoting Nodes as Zones of Intensity

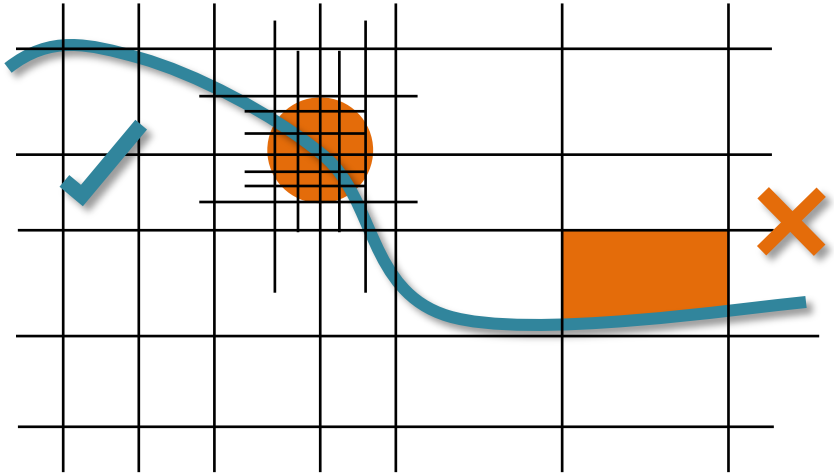
To create a sustainable and SMART Springs urban area it is a prerequisite that higher densities should be promoted. However, higher densities are not only a function of adding more residential units of smaller scale, but rather of a complex combination of intensity, public space, private space and built form. Contained in literature (and discussed in Section C1) are examples of density calculations, which is not the aim of Principle 8. This Principle is aimed to promote higher densities through 4 Actions. These Actions are:

- Action 1: Promoting nodes as zones of intensity
- Action 2: Promoting ground floor distribution of public interaction and horizontal zone of use intensity
- Action 3: Promote higher densities to protect natural resources
- Action 4: Advocate for parks as nodes (&higher densities adjacent to public spaces)

To promote nodes as zones of intensity (Action 1), it should be noted that intensity refers to the land use intensity of smaller grain and smaller scale. Conversely, when nodes are promoted as zones of intensity it does not refer to the intensity of one land use such as retail/ commercial, but rather refers to the intensity of a variety of land uses at smaller scale and higher frequency.

The image to the top right illustrates the location of the 3 primary nodes and the potential secondary nodes (in general). Action 1 aims to provide these nodes as zones of use intensity, rather than nodes based on economic value and commercial only intensity. The image to the right aim to illustrates the envisaged intensity increase at nodes as apposed to a node that has low intensity (retail mall) that allows for a group of single uses.

Nodes not for higher order uses only (i.e. commercial, but rather focused towards intensity of provision, smaller scale smaller grain. Its not land use that defines a node as a node.

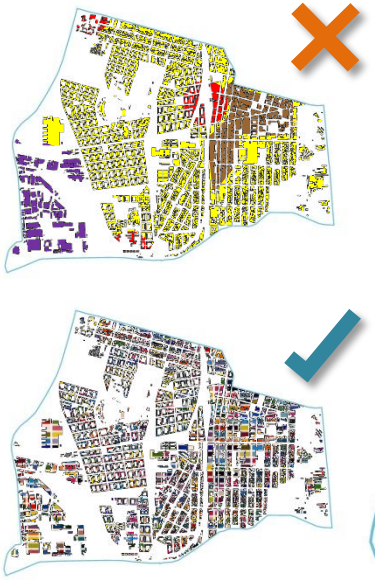


b. Action 8.2: Promoting Ground Floor Distribution of Public Interaction and Horizontal Zone of Use Intensity

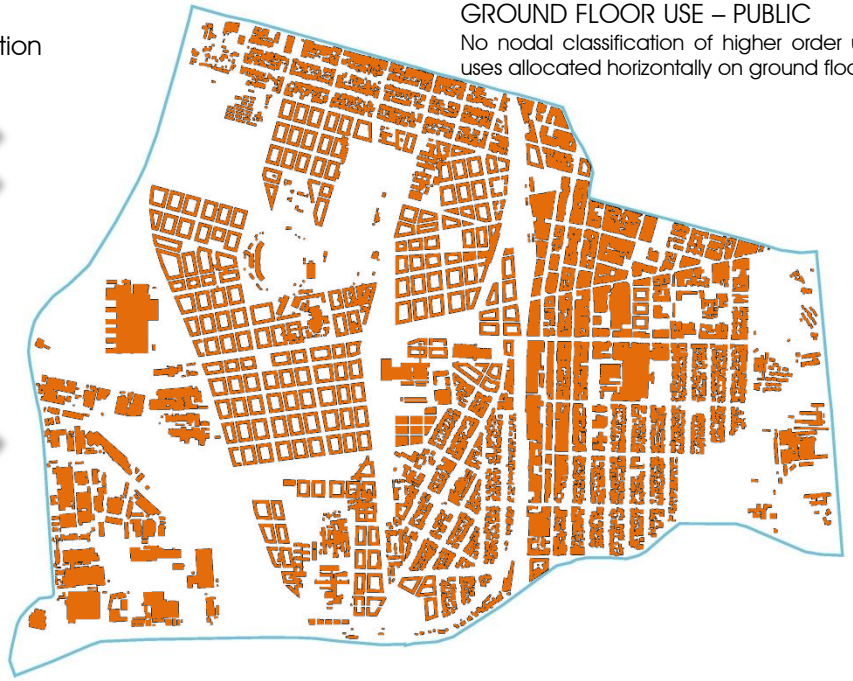
The promotion of ground floor distribution of public interaction and horizontal zone of use intensity entails that the ground floor of the total urban environment should be promoted for higher order uses (as indicated in orange on the map (far right). The higher order uses should not only be located at the primary or secondary nodes, but should be spread out horizontally. This will create the environment where citizens would access services and opportunities form their residential units (above) by accessing the ground floor of their immediate environment (section below). This could reduce the need to travel and create a more sustainable environment.

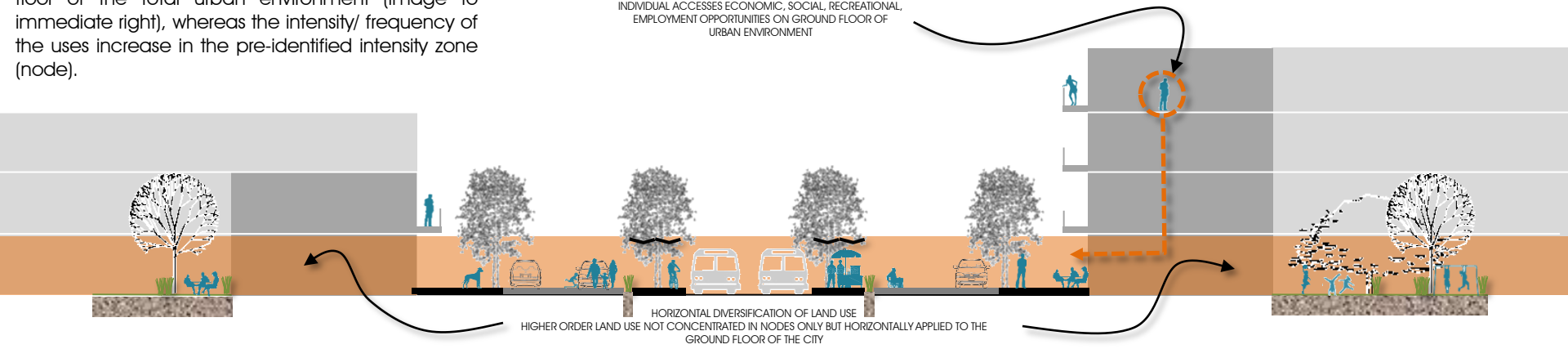
As mentioned previously, the proposed nodes are zones where the intensity increases, and are not zones which are solely for the proposes of services, opportunities and retail. The image to the immediate right (top) illustrate the accepted standard for grouped use allocation. It is considered that this approach of zoned use allocation is incorrect. The retail, economic, social, recreational, employment services and other opportunities should be allocated across the ground floor of the total urban environment (image to immediate right), whereas the intensity/ frequency of the uses increase in the pre-identified intensity zone (node).

THE ANTI- FUNCTIONAL CITY-
Against grouped zoning for function



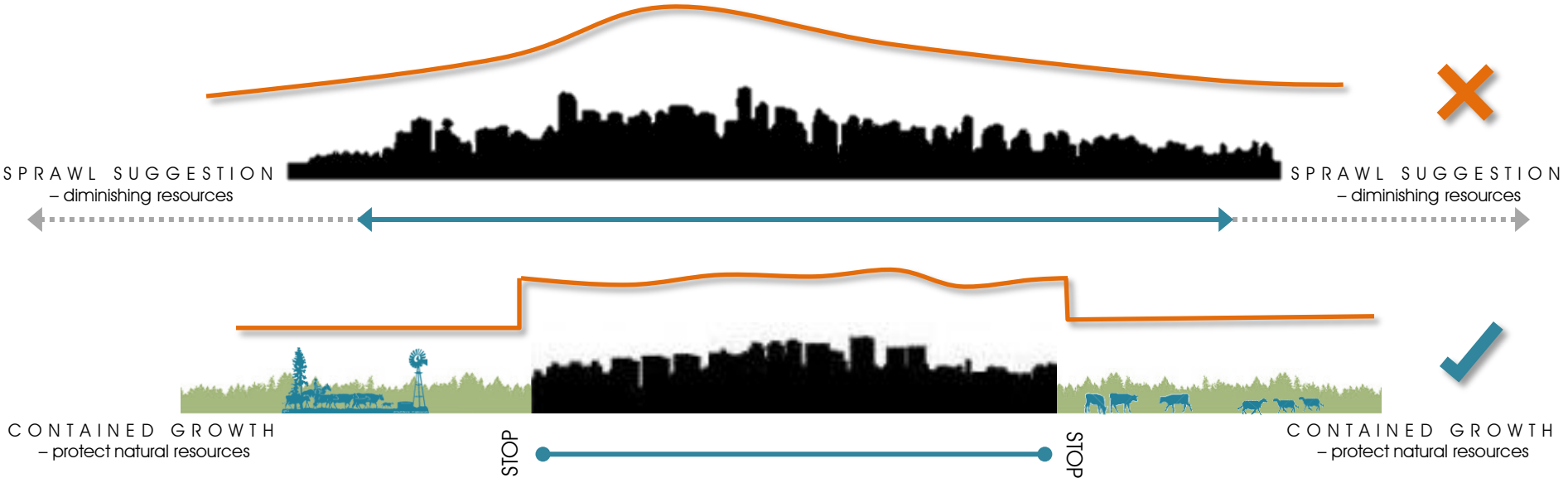
GROUND FLOOR USE – PUBLIC
No nodal classification of higher order uses, uses allocated horizontally on ground floor





c. Action 8.3: Promote Higher Densities to Protect Natural Resources

Action 3 relates to the promotion of higher densities in urban core areas in order to protect the surrounding natural resources. This is an Action that directly aims to address the threat of horizontal consumption of space (sprawl) by urban environments of today. The first image below indicates a typical urban form that has no urban edge and suggests sprawled development. The second image below suggests an urban form which is contained, promotes higher densities and protects the surrounding natural environment. It is projected that when densities are increased and an urban edge is defined, that direct access could be obtained to the natural environment by the maximum number of urban citizens residing in the urban environment, as opposed to a sprawled city.



d. Action 8.4: Advocate for Parks as Nodes (& Associated Higher Densities Adjacent to Public Spaces)

The Action of advocating for higher densities adjacent to public spaces is two-fold. The first is the obvious approach of increasing densities adjacent to public spaces (top right). However, the second approach is illustrated in the diagram to the bottom right. This approach is not to create nodes as points of higher density and height (top right); but rather to create nodes as park/ void areas, around which the densities and heights are drastically increased.

This approach and application of the Action transforms the nodal areas into areas that pronounce public space (public investment) as the core/key element; around which commercial, retail, economic, social, recreational or employment opportunities could develop at an inflated density and intensity (due to the presence of the park/ void/ public space). This also reflects the 'prioritization' of urban elements within this sustainable environment; where nature and people are considered first before commercial/retail, economic opportunities are added.

Nodes do not primarily necessitate higher density

Voids/ public spaces promotes higher density

ix. PRINCIPLE 9: PROMOTE FLEXIBLE URBAN HOUSING FORMS
a. Action 9.1: Provide a Range of Housing Typologies/ Options (Vespa Principle)

Principle 9 is the promotion of flexible urban housing forms, that aim to provide a broader base for accessing housing opportunities within the urban environment. At current housing trends and tendencies, the poorer are located further from urban opportunities, and located in housing that might not fulfil their needs nor contribute to the improvement of their living standards/ environment. As discussed in Section C7 of this report, housing could become an economic asset to the urban population as it is flexible and can change according to the owner/ occupier/ renters needs and aspirations.

This Principle suggests 3 Actions towards achieving a more flexible urban housing form, these are:

- Action 1: Provide a range of housing typologies/ options
- Action 2: Provide for variety in housing typologies
- Action 3: Allow for incremental housing (occupy a house then build house approach)

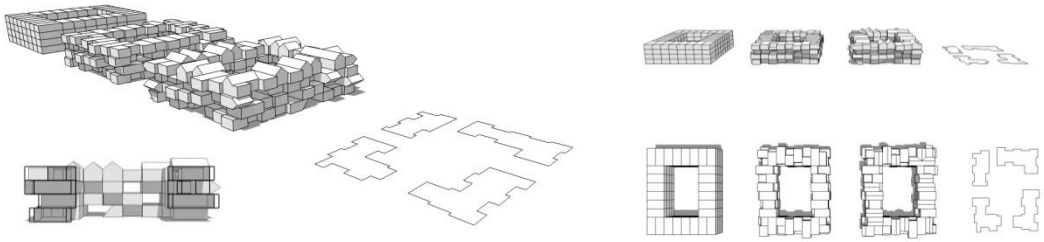
The first Action is illustrated in the images to the right. This Action is referred to as the 'Vespa principle'; where the current housing provision in South Africa is based on the principle of providing every citizen with a house (vespa). There is an attempt to provide a range of housing typologies, however the result is that only different configurations of the same housing option is provided (only different coloured Vespa's produced). The reality in the South African context is that the housing needs of the urban population differ drastically according to their individual requirements (illustrated in the diagrams below right). Each individual needs to utilize their house/ tenureship for accommodation and economic upliftment. Thereby providing one housing typology/ option in different configurations does not provide flexibility in housing for the individual to transform their housing/ tenureship into opportunity/ to fulfil their needs. Therefore, providing more flexible housing / tenureship typologies would contribute to a sustainable urban environment.

PERCEIVED VARIETY/ RANGE
VS
REAL VARIETY/ RANGE

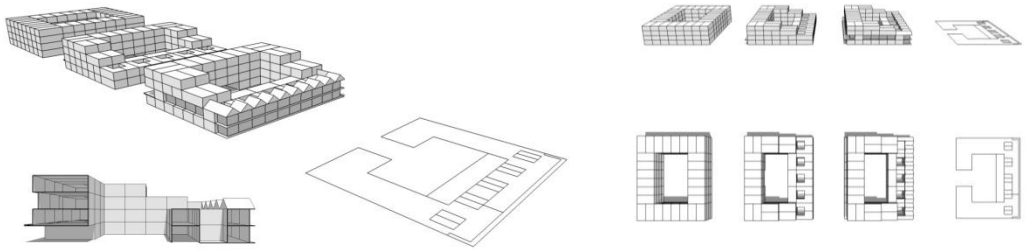
Source: Google Images, Anon

b. Action 9.2: Variety in Housing Typology

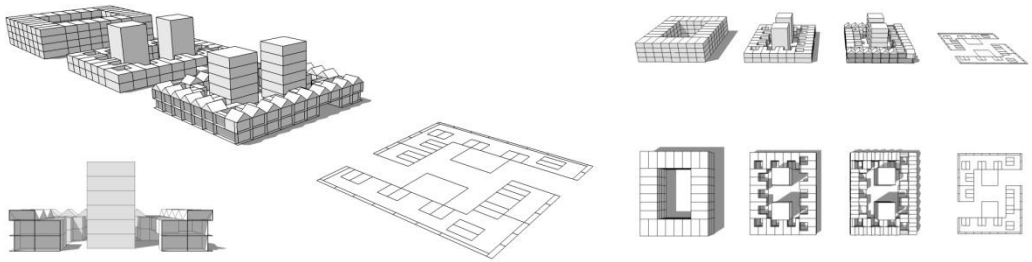
1. TRANSFORMATIVE HOUSING



2. SCALED HOUSING



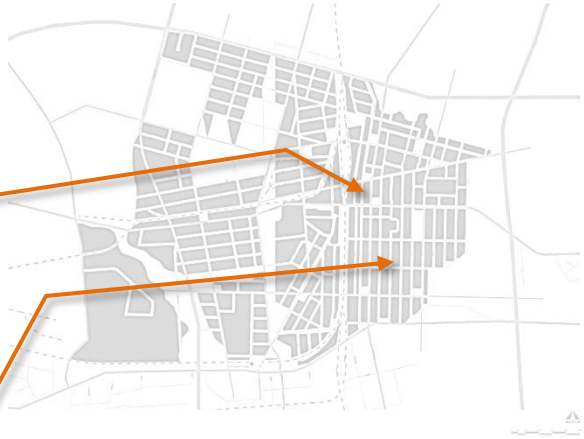
3. INTENSIFIED HOUSING



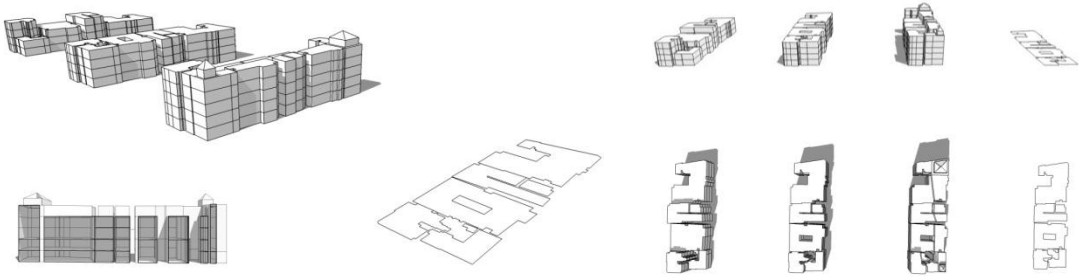
Within the proposed new Springs housing environment, it is proposed that 5 new varieties in housing typologies are provided (Action 2). These are indicated in the images to the right & left. The first housing typology proposed is the Transformative housing. This type of housing allows for a structure/ framework to be constructed, where the individual constructs the walls and interior themselves. These housing opportunities allow for subsidy qualifiers and non subsidy qualifiers to build their homes themselves over time. These housing types are to be located close to the transport orientated nodes.

The second housing typology is the Scaled housing. This housing is situated along the east- west civic corridor, with the 4 story edge facing the corridor. The 2 story edge faces away from the corridor, and provides for a variance in streetscape to the north of the civic spine. Here, a variety in housing could be provided by providing walk-up apartments in combination with semi- detached units.

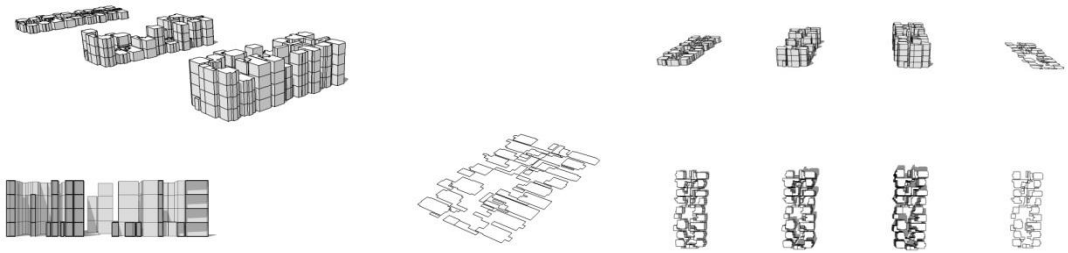
The third housing type is situated south of the east-west Civic corridor. These housing typology provides for semi- detached dwellings as the street front, with 6 story apartments within the central courtyard, providing for higher density accommodation and housing typology choice.



4. RETROFITTED HOUSING (EXISTING RETAIL/ COMMERCIAL/ OFFICE URBAN FABRIC)



5. DENSIFIED HOUSING (EXISTING HOUSING URBAN FABRIC)



The forth housing typology is located within the existing urban fabric currently functioning as storage, retail, offices or industries. It is proposed that these buildings be retrofitted to accommodate housing units on the upper floors. These buildings are located east of the existing railway line.

The fifth housing typology is the allowance of individual free standing housing owners to develop their properties into residential 4 story apartments. These units are located in the existing residential areas of Springs. This redevelopment should be actively promoted and supported.

The remainder of the Springs urban environment could provide further housing typology variety, by combining a number of these proposed housing types. Note should be taken that these housing typologies are not based only on ownership, but accommodate rental units, rent- to – buy units, temporary accommodation, use rights, subsidized housing and communal rental (which qualification is not part of this study).

c. Action 9.3: Allow for Incremental Housing (Occupy House the Build House)

The third Action is the allowance of incremental housing development. As alluded to in the aforementioned housing option 1, room should be made for the 'occupy- then- build- approach'. This approach would provide the opportunity for citizens that cannot afford to live within current urban areas; and as a result reside in areas on the outer edges of urban environments; to have access to the city.

This Action would allow an individual/ family to occupy an area that is affordable and build what is affordable to them at that time. However, it allows the option to expand when the opportunity presents itself or it is economically viable. In addition to this, this proposed expansion, self built or occupation is not in an informal uncontrolled manned, but within a formal physical structure/ framework and management framework. The image to the right illustrates such housing types within Sau Paulo.

This housing option is considered to be the most flexible housing option, which caters to the individuals needs, affordability and aspirations. This flexibility allows for constant change and adaption to prevailing conditions; and would also counter negative gentrification.

Source: Sau Paulo, http://www.futurecities.ethz.ch/research-modules/territorial-organisation/

The images to the right illustrate some examples of the flexible housing typologies that can be achieved through the 'occupy- then- build- principle'. These images were produced by Beyond Architecture, Dionisio Gonzàlez; illustrating the proposed radical restructuring of the shantytowns of Sao Paulo and Rio de Janeiro.

These provocative images highlight the reality of urban areas not making allowance for a variety of applicable housing typologies. It highlights the inefficiency of urban areas to provide and accommodate alternative housing for the urban poor.

Source: Beyond Architecture, Dionisio Gonzàlez proposes a radical restructuring of the shantytowns of Sao Paulo and Rio de Janeiro, http://subtopia.blogspot.com/2007_11_01_archive.html

x. PRINCIPLE 10: ADJUSTING THE URBAN ECONOMIC BASE
a. Action 10.1: Promote Small Scale Intervention Opportunities

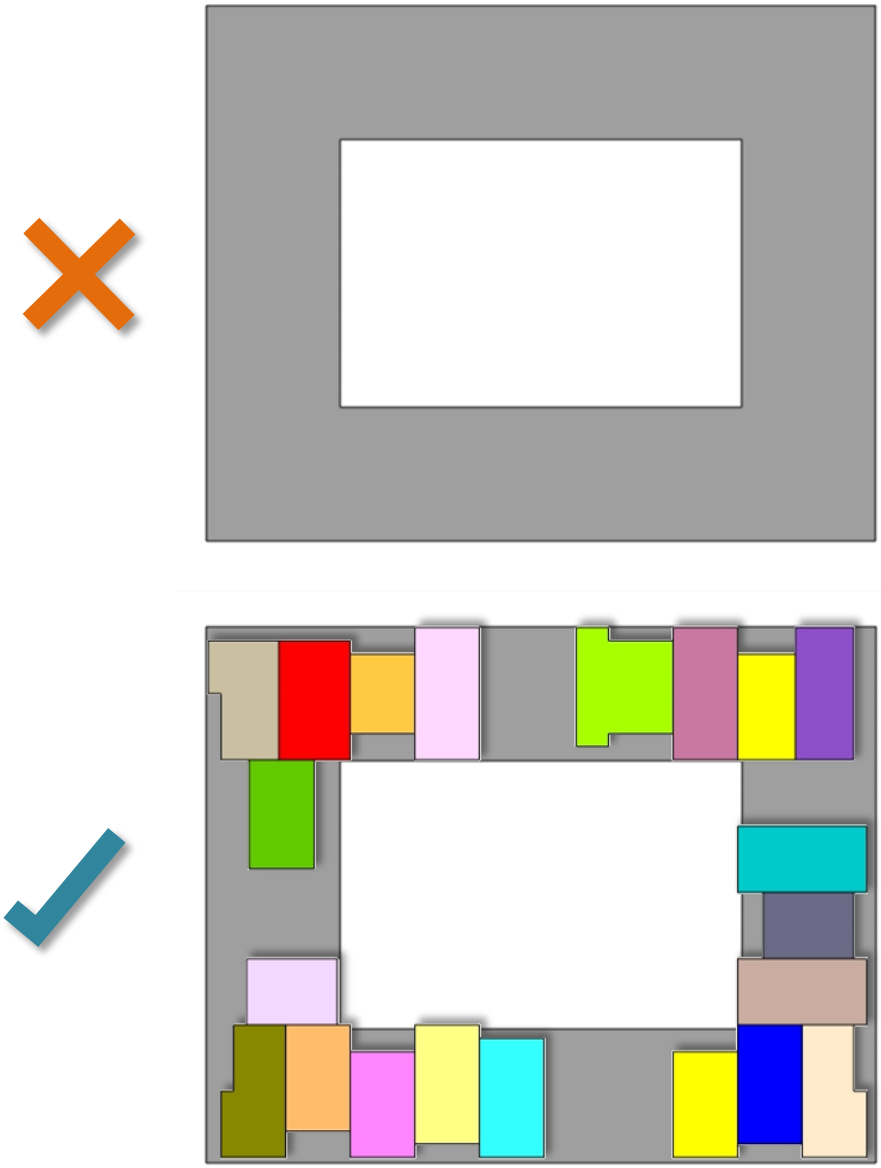
The tenth Principle is focused towards adjusting the urban economic base so as to allow the aforementioned actions to be implemented in the proposed new urban environment of Springs. The current urban economic base does not allow an individual to directly access the opportunities that an urban environment offer. These opportunities are economically inflated and unaffordable to the urban individual.

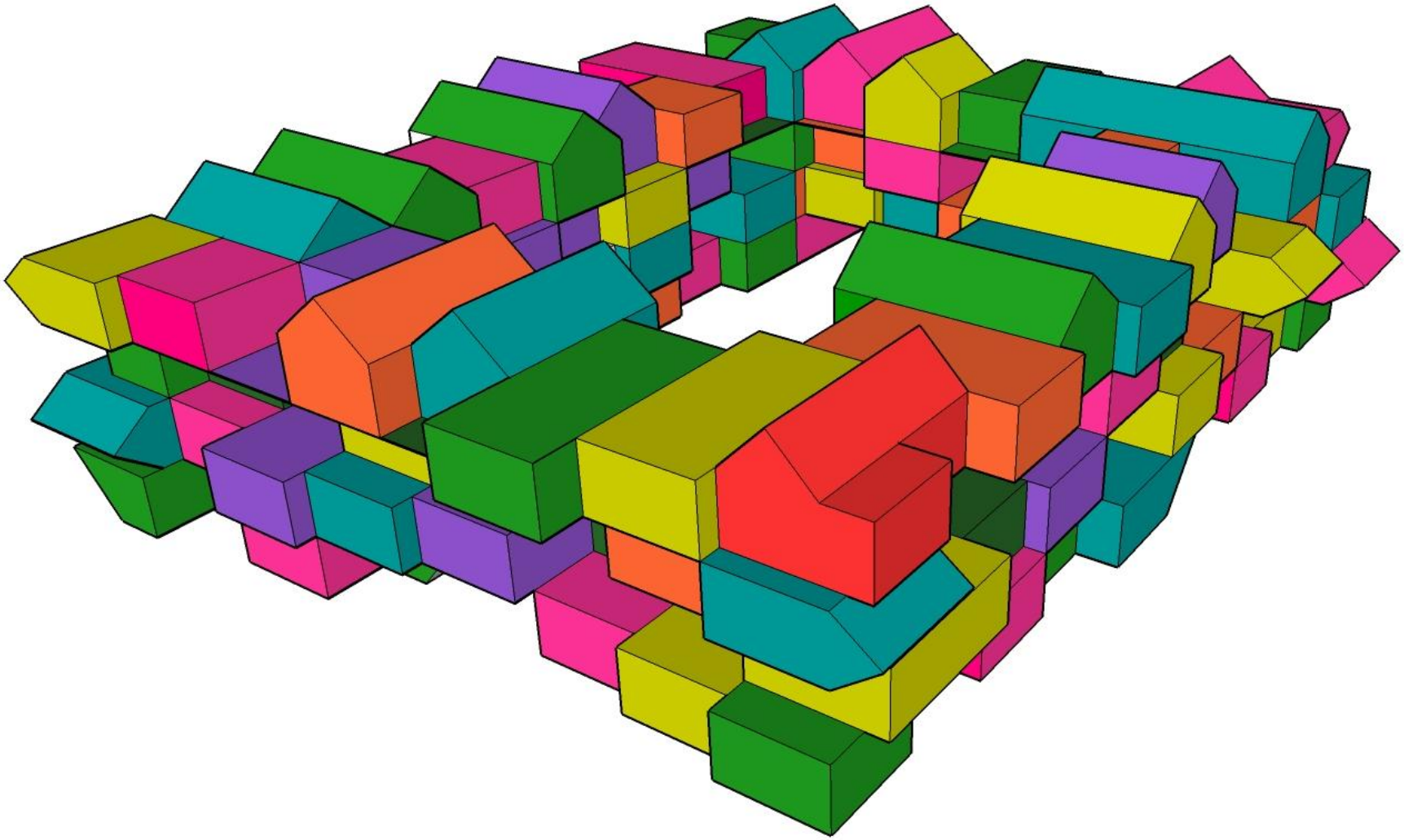
It is therefore proposed that the adjustment of the economic base should be realized through the following Actions:

- Action 1: Promote small scale intervention opportunities
- Action 2: Promote individual as shareholder

The image to the right aims to illustrate Action one, where small scale intervention opportunities are promoted. If housing is taken as one example, then it is proposed that the development of housing units should not be provided by large developers only (top right), but an approach should be followed where the individual can get involved on the small scale and develop their own housing (within an apartment block).

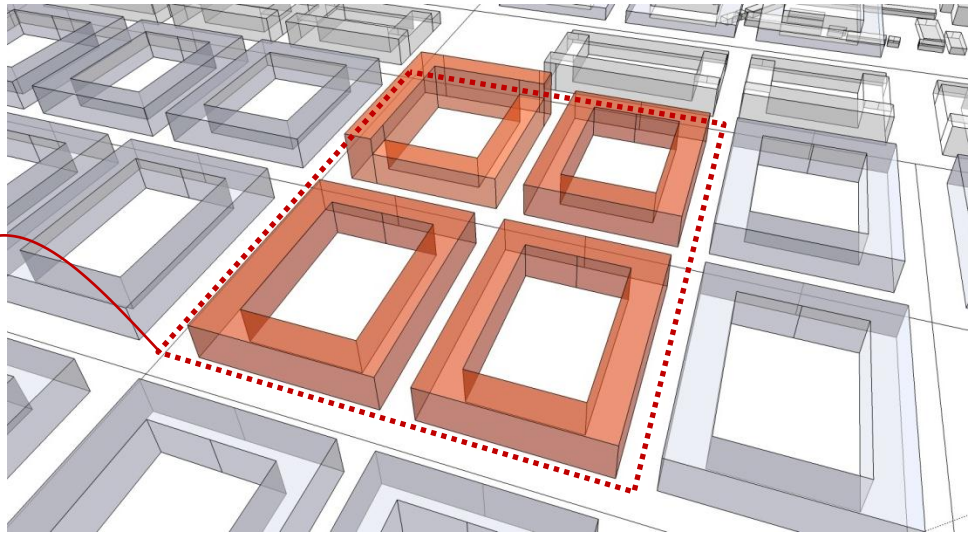
Successful implementation is achieved when an individual has control over their expenditure, that is one reason why individual detached housing units in a suburban setting is so successful- the individual has control over the housing product, the asset and the expenditure. Conversely, small scale intervention opportunities will allow the individual access to urban opportunities offered by the city, and will instil the feeling of ownership of the city and the right to the city. This example is only provided for housing, however it can be expanded to other opportunities of the city.

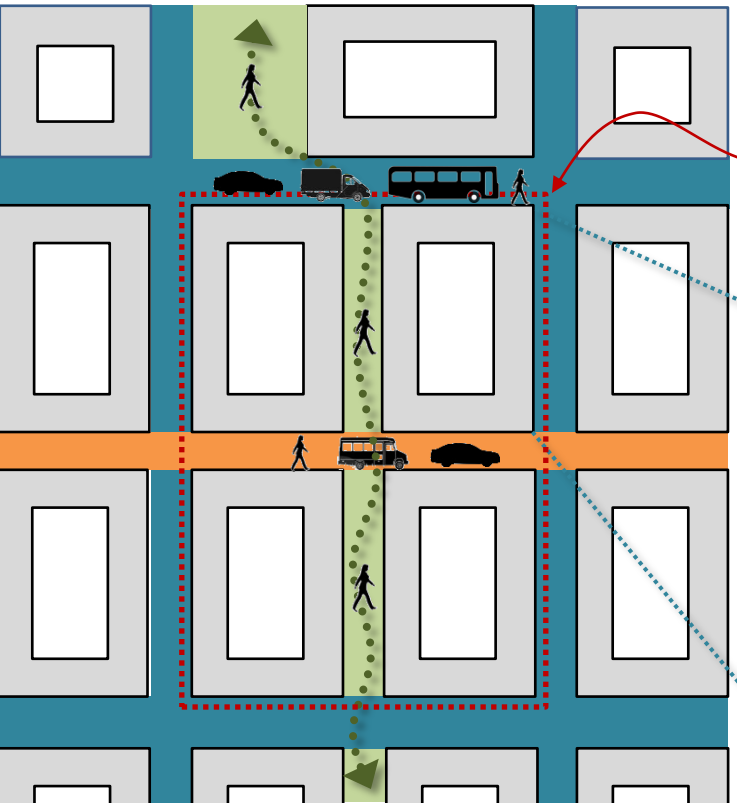


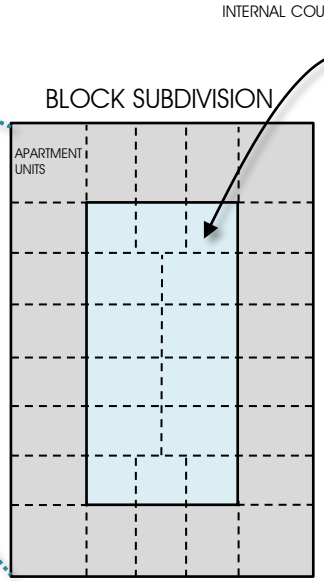


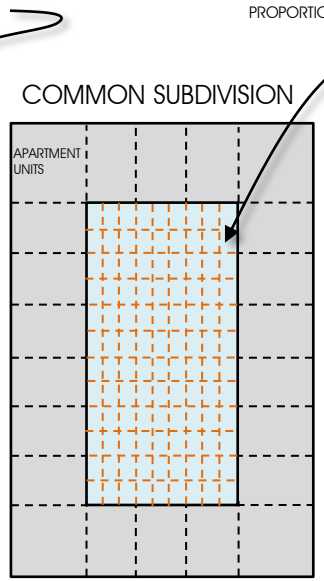
b. Action 10.2: Promote Individual as Shareholder

Action two promotes the development of the individual as a shareholder in the urban environment. The image to the immediate right illustrates a typical urban block configuration within the proposed Springs area. The image below illustrates public environments that are shared by all urban user types. This is the first level of shareholding. The second level of shareholding is illustrated in the image to the bottom right, where the individual/ family within each unit could hold a proportionate share in the private space (central courtyard) of the apartment block.









88 units

108 communal blocks

88 blocks (1 per unit – 1.1x3m)

10 blocks for needed communal

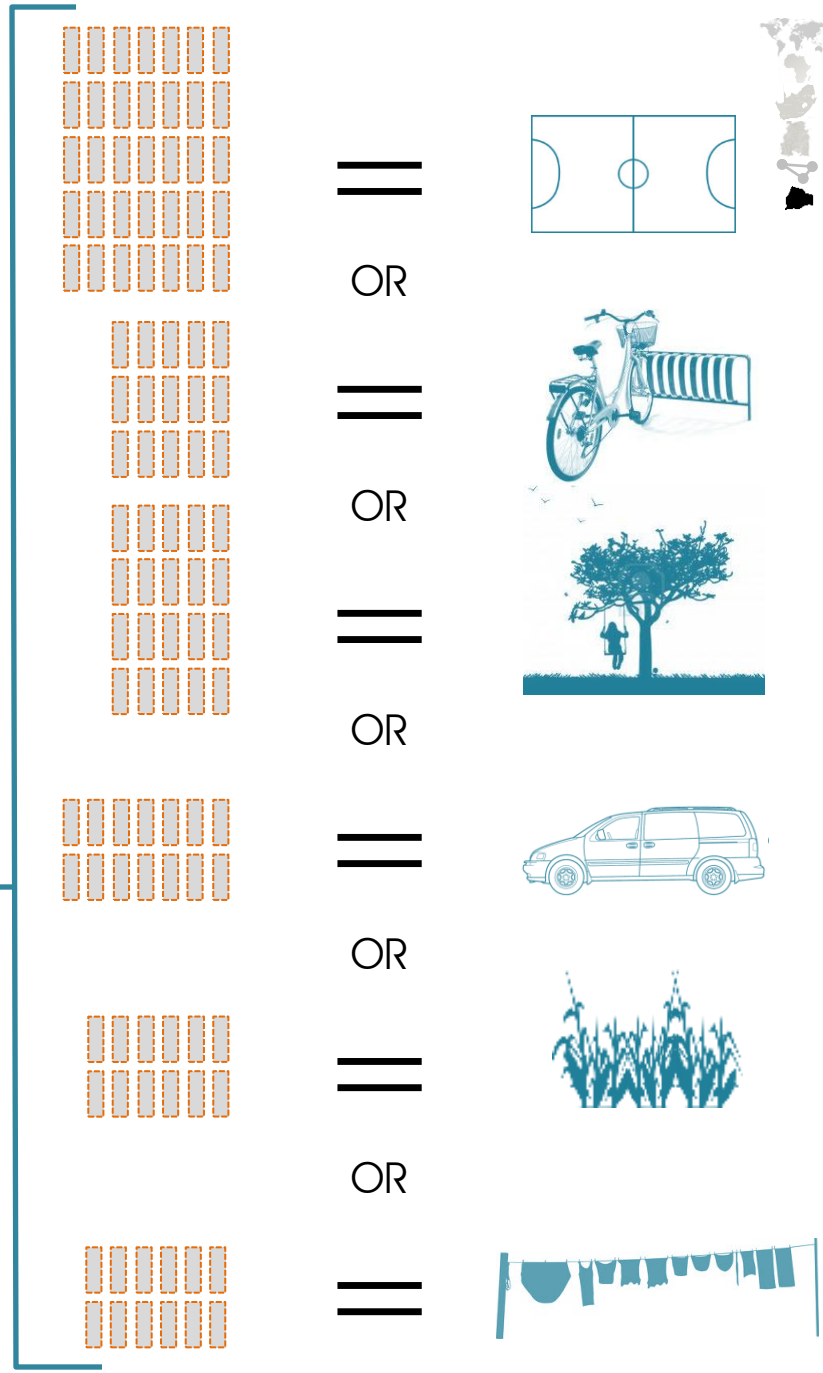
Blocks organized/ used as agreed by residents

Urban blocks used as trade

In this example it is proposed that there are 88 residential units within the apartment, there are 108 subdivided blocks of the internal courtyard. Therefore the shareholder option is expressed, that each family (unit) owns a 1,23% share in the communal courtyard. The 88 residents/ families should then decide how to use this combined shareholding. As illustrated to the far right, it could be used for communal facilities, as per the need of the shareholders. Alternatively the shares share become tradable commodities that can be sold/ leased for the benefit of the individual or the apartment complex. Thereby the individual becomes as shareholder within the urban environment, and takes decisions/ has control over the use/ activity within his/ her immediate environment.

108 BLOCKS

108 blocks
88 units
= 1,23% share



III SECTION I III

FINDINGS & DISCUSSIONS

INTRODUCTION & PREAMBLE	SECTION A
TOWARDS A HYPOTHESIS	SECTION B
THEORETICAL CONCEPTS	SECTION C
RESEARCH METHODOLOGY	SECTION D
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VISION & DRIVERS	SECTION F
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I. FINDINGS & DISCUSSION (MEASURE)

1. BASIS FOR ANALYTICAL COMPARISON

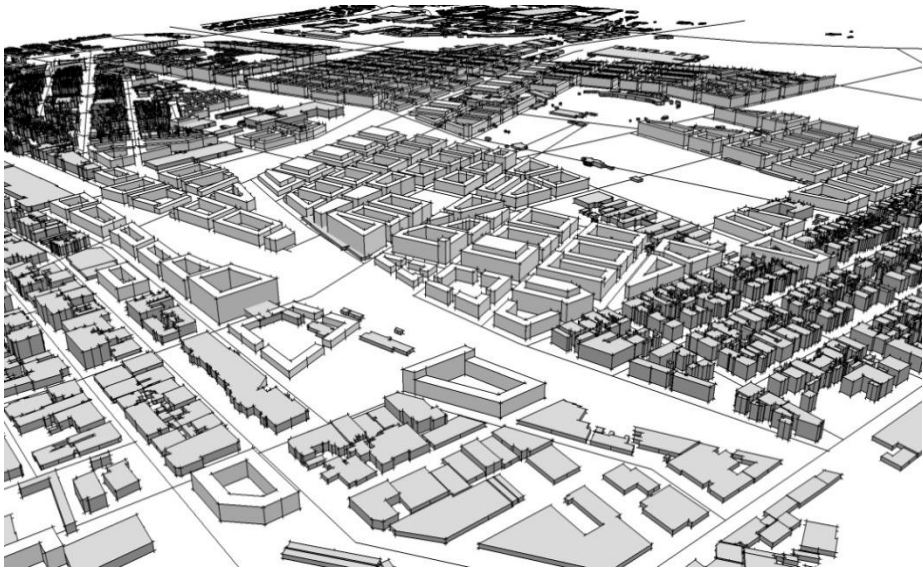
From the design proposal above (Section H) which illustrated the qualitative components of the proposed redevelopment of the Springs urban core area; the following section will aim to indicate the quantitive (measurements) contributions of the proposed redevelopment of the Springs urban core area.

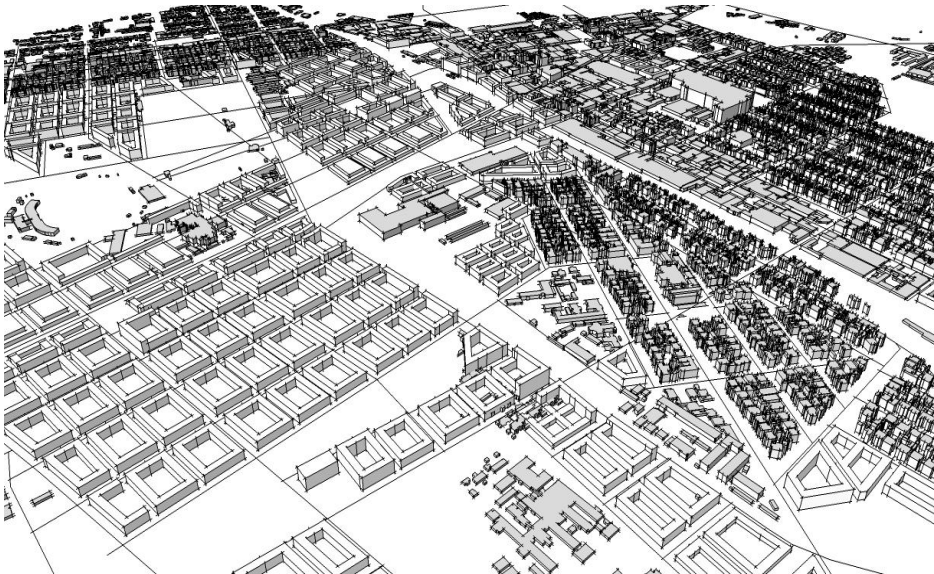
These measurements aim to indicate the level of improvement within the urban environment, to achieve the vision of 'making (or remaking) urban environments through smart measured urban responses that advocate confined urbanity, equity, urban survival, walkability, external mobility connection, inclusion, protection of natural resources, citizenship, partnership, social capital, food security, flexibility and a sense of place.'

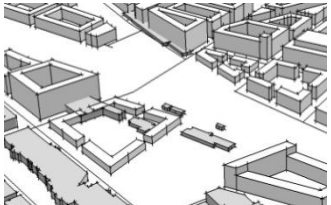
A measured comparison will be drawn between the proposed new Springs urban core area (as developed and applied in the Section H: Design Proposals) and the current urban conditions found within Springs, in relation to the following indicators:

- Demographics
- Economic
- Housing
- Open Space
- Mobility Network (including public transport)
- Urban Form

These comparisons will be illustrated as percentage value additions, note should however be taken that measurements are provided in terms of Gross Effect and Net Effect. The Gross Effect will refer to the gross additional function (urban component) provided to the total urban framework; whereas the Net Effect will refer to the ratio effect on square meter available per individual. In most cases the Gross Effect is positive; however the Net Effect is then negative due to less space being available to each individual. Even though the Net Effect is negative, the use of the space per person is applied more effectively. Conversely the individual ratio of availability reduces, but the communal availability increases substantially. This latter component reinforces the principle of citizenship, sharing of resources and optimum use of space available.







2. THE CURRENT STATE OF URBAN FORM IN SPRINGS VS NEW SPRINGS

i. DEMOGRAPHIC

In terms of Demographics, it is projected that the proposed New Springs area could accommodate a total population of 231,429 people. That relates to a 3 114% increase in population, which is 31 times larger population that it currently accommodates. By accommodating this population within the New Springs area, it provides for 22,7% of the total estimated population increase of Ekurhuleni Metropolitan Municipality up to 2060*. This translates into the reality that Ekurhuleni needs to create 5 such cities/ urban areas over the next 40 years to accommodate demographic growth; however note should be taken that urbanization has not been taken into consideration.

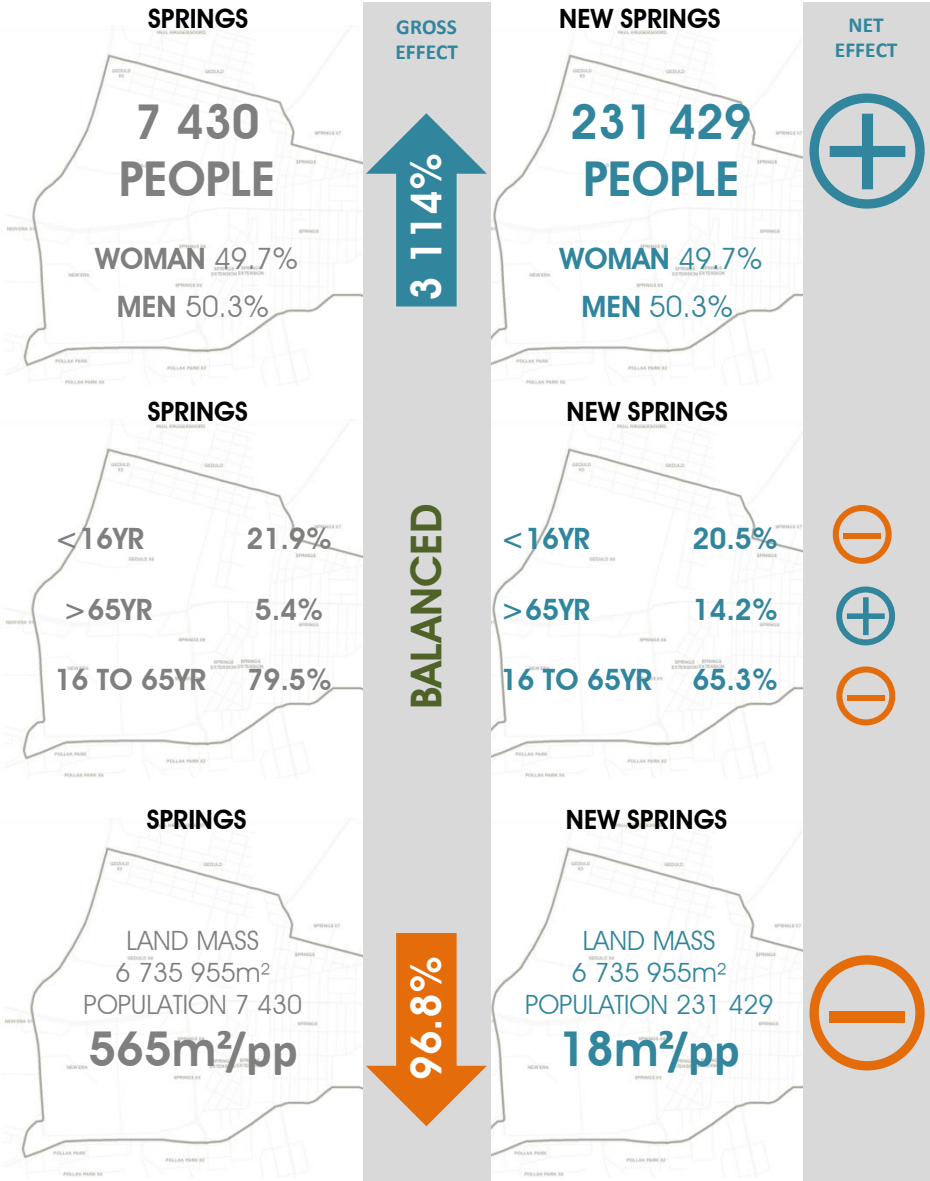
Taking the age profile of the city into consideration, it is proposed that a more balanced population profile is promoted, where the non economic active population is in balance with the economic active population.

The total land mass available within the New Springs proposal remains the same, however the square meter ratio per person reduces from 565m²/pp to 18m²/pp. Which reflects a more dense urban environment and more intensive use of available space.

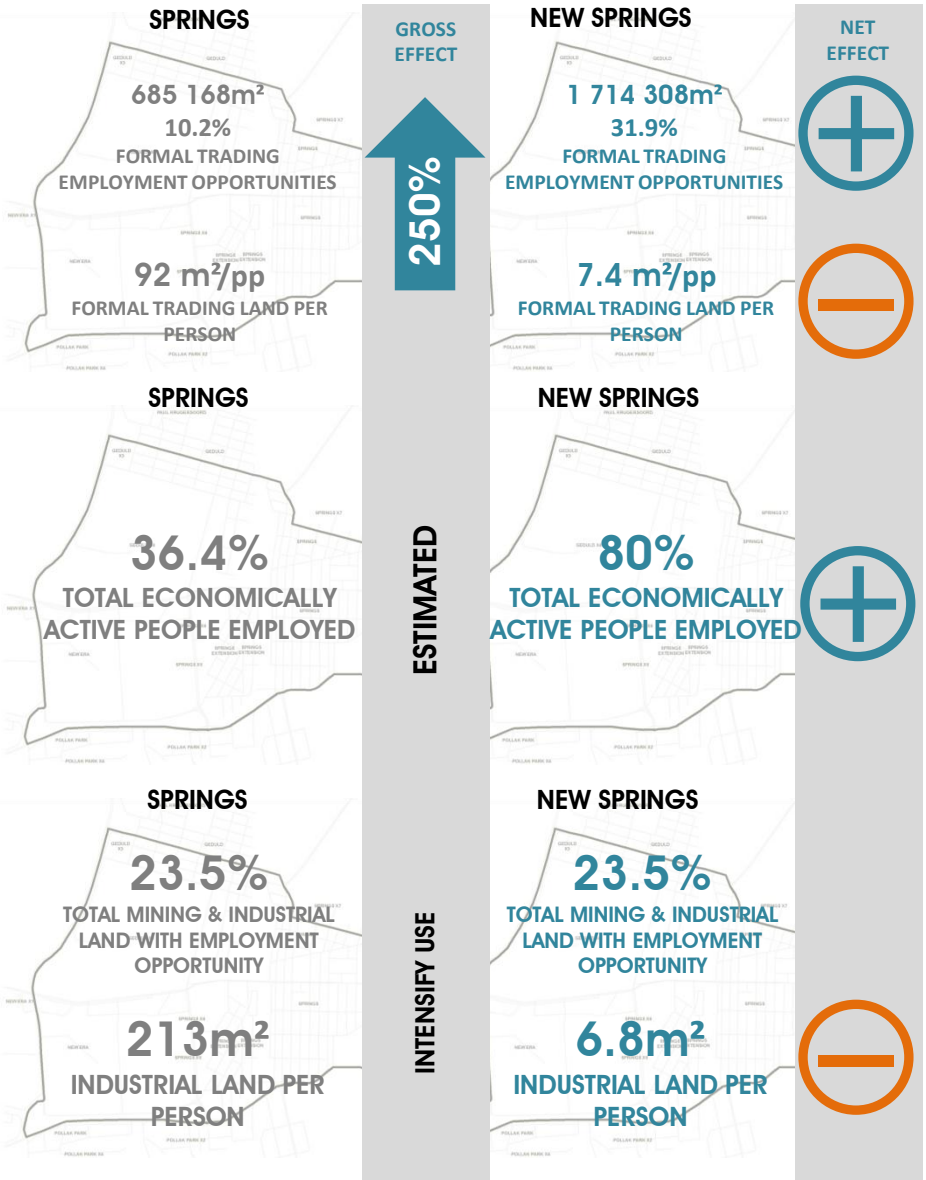
The economic profile suggests indicates that there is a potential 250% Gross increase in available formal trading employment opportunities; which allow for more work opportunities in close proximity to residential opportunities. The Net amount of land available per person for employment opportunities increases, however the immediate availability increases.

In terms of Housing, the New Springs urban core could yield a total of 64,286 residential opportunities (@ 3,6p/hh), with only a 13,2% increase in formal residential land footprint. Conversely, housing opportunities/ units increase by 31 fold, while housing land/ ground surface (horizontal land footprint) only increases by 13,2%. This means the provision of 30 times more housing on twice the amount of land.

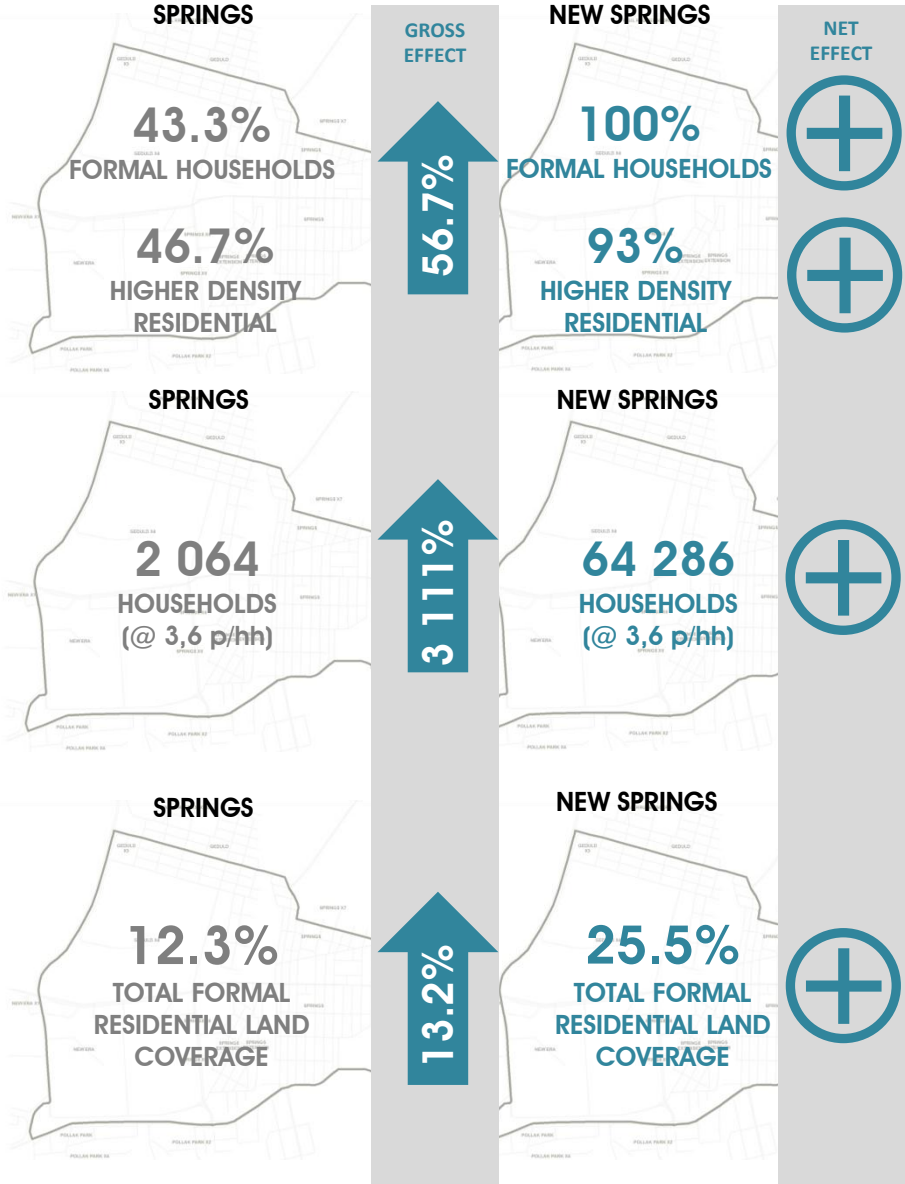
(Based on a 38% Africa growth rate up to 2060) (2,680,739 current EMM population, growth with 38% = 1,018,680 estimated population increase till 2060).



ii. ECONOMIC



iii. HOUSING



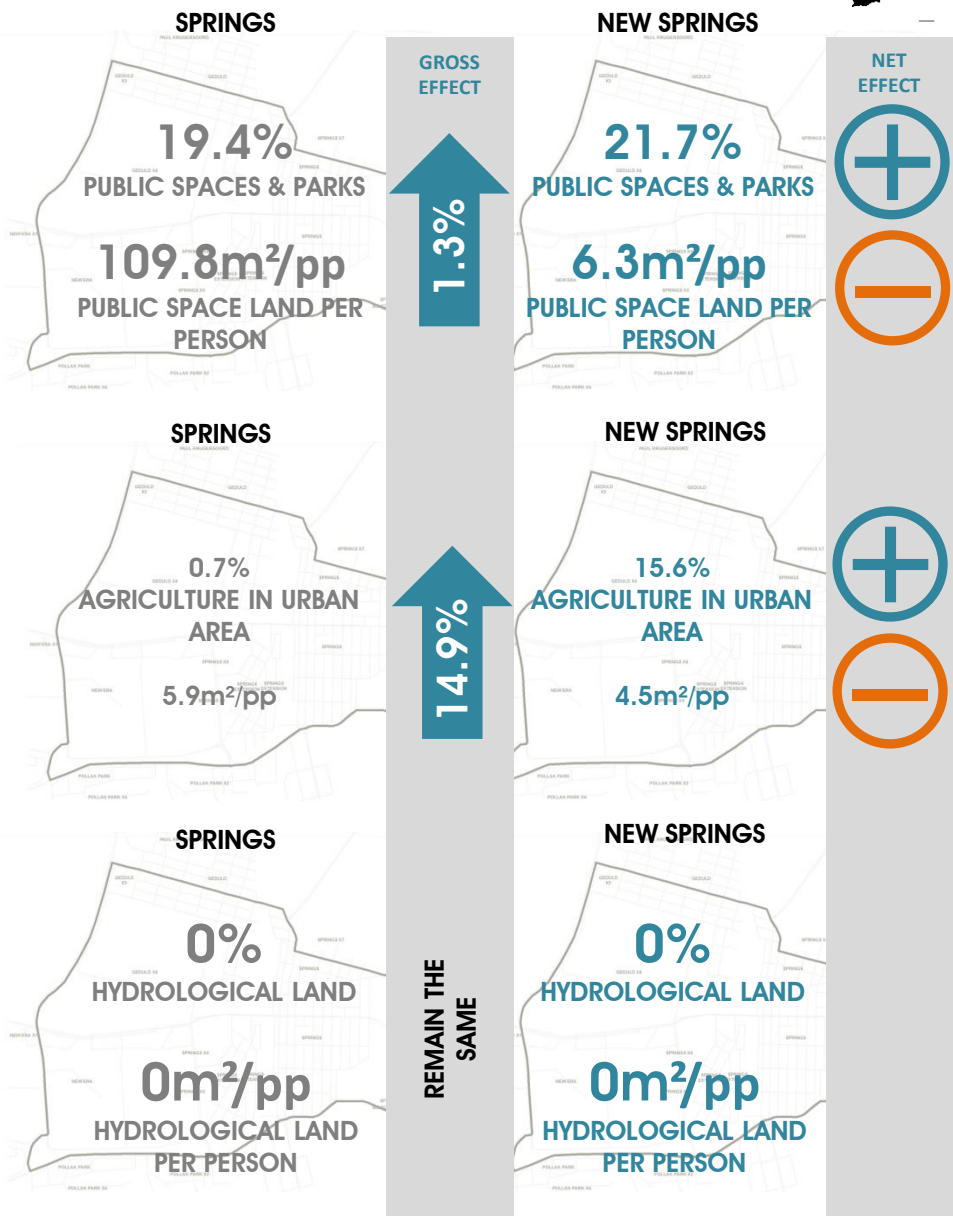
iv. OPEN SPACE

The total Gross Public Space allocation for the proposed New Springs urban area is an increase of 1,3% (total of 21,7% or 1,463,938m²). The Net public space allocation however reduces to 6,3m²/pp, but with a more intensive use of the open spaces. In addition to this, note should also be taken that the Gross agricultural land within the urban environment increases from 0,7% to 15,6% (14,9% increase). This land is to be utilized for urban agriculture. The need for urban agriculture is 6m² per family, but 4,5m²/pp is allowed here. This enables the household to not only produce food for subsistence, but also for commercial purposes. Outside of the urban environments of the New Springs (within the Green Rope) 4,528,706m² of additional urban agricultural land is provided for commercial agricultural activities.

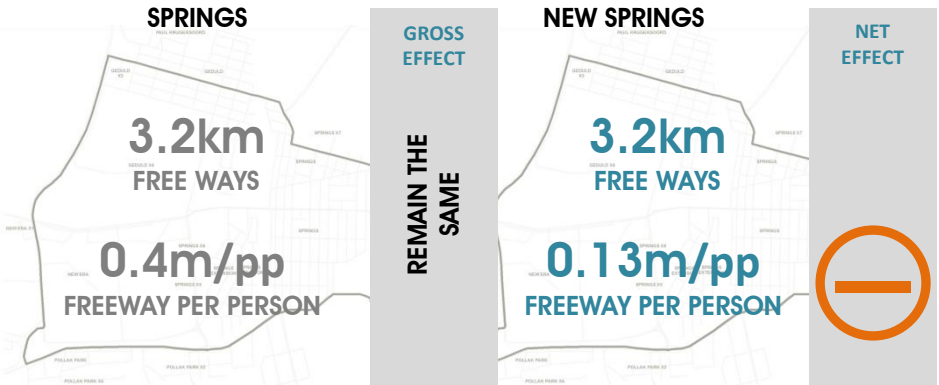
In terms of Mobility the same amount of freeway is provided in the New Springs urban area than in the old. An additional 142,3km of road (Gross) is provided for urban access purposes, however the Net increase of provision of roads decreased from 8,1m/pp to 0,6m/pp. Note should be taken though, that 47km (of the 142,3km) of road will be for the prioritized use of pedestrians and non vehicular movement; which therefore adds 47km of public open space to the open space system.

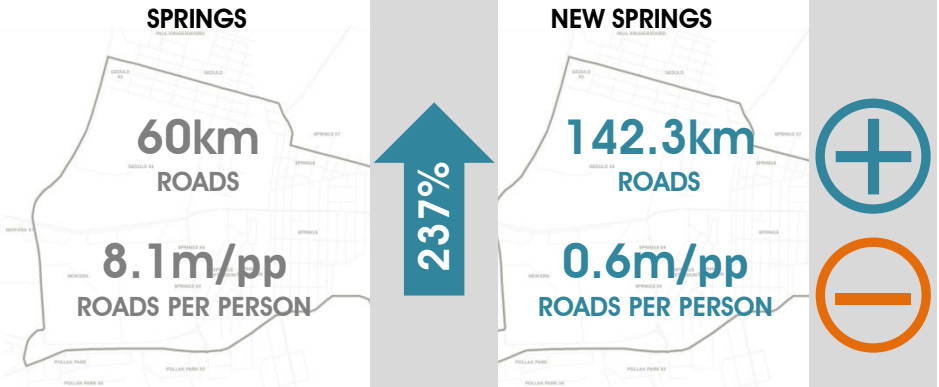
The public transport system (bus, taxi & rail infrastructure) indicates a Gross & Net reduction in the amount of infrastructure provided. The reasoning for this is that a more effective walkable environment is created, where the duplication of public transport infrastructure is not required and the use of non motorized transport is promoted. Note should be taken here that the total road length of 142,3km also functions as cycling routes/ non motorized transport routes.

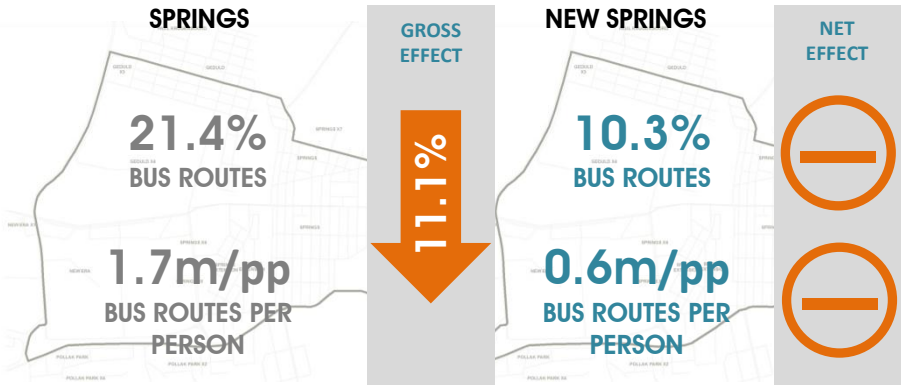
The provision of rail routes indicate the largest reduction in infrastructure, however this is due to the removal of the rail shunting yards, and not the reduction of service lines.

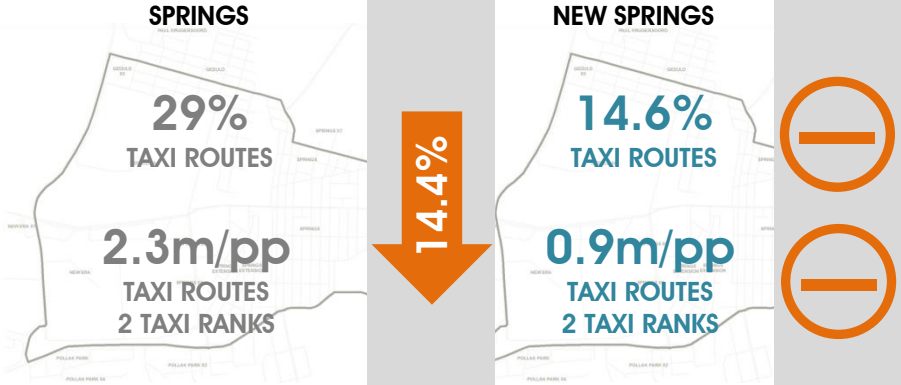


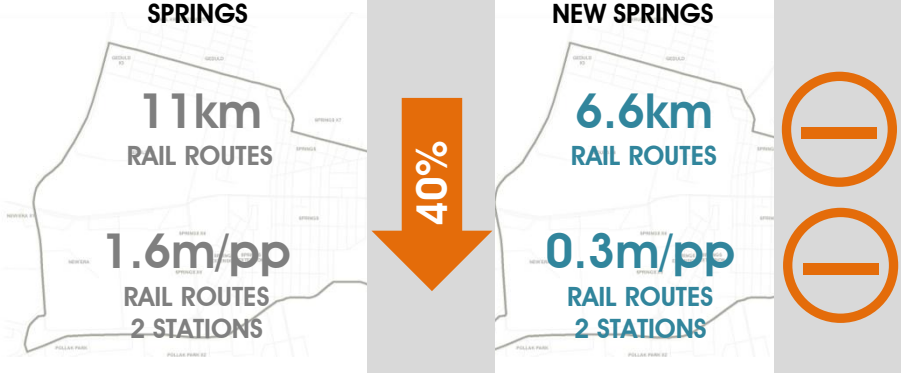
v. MOBILITY NETWORK









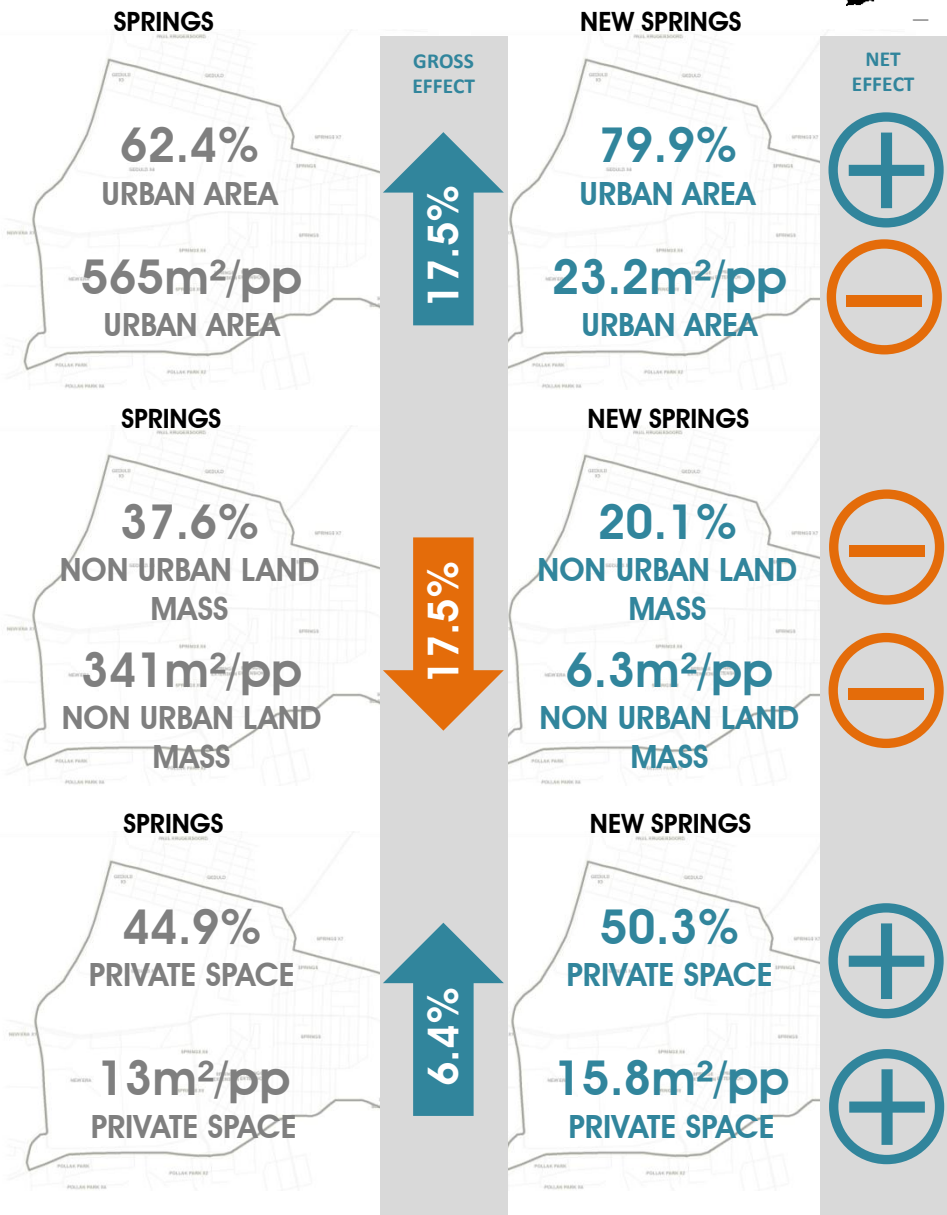


vi. URBAN FORM

The Urban Form footprint increased from 62% to 79,9% (Gross); which is a 17,5% increase in urban area footprint. The Net effect is that there is a reduction from 565m²/pp to 23,3m²/pp urban area. The positive result from this urban area increase is that the total urban footprint area only increased by 17,5%, while the total urban form total floor area yield increased six (6) fold, from 1,174,441m² to 6,857,232m² floor area.

The Non Urban footprint decreased by only 17,5%, from 37,6% to 20,1%. The positive result from this is that even though the Urban Form total floor area increased six (6) fold, the non urban land mass reduced by less than half. In comparison to the latter, the private space increased from 44,9% to 50,3%, (Gross), providing 15.8m²/pp private open space.

This measured comparison indicates the improved urban conditions (quantitive) that could be expected from applying the qualitative design proposals from Section H. This quantitive analysis clearly indicates the advantages of applying the Design principles to the Springs area.



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J. RECOMMENDATIONS

1. RECOMMENDATIONS TOWARDS REBUILDING THE SOUTH AFRICAN CITY BY APPLYING MEASURED URBANIZATION

i. RECOMMENDATIONS

To achieve the proposed urban environment of Springs it is recommended that 2 broad elements within the urban environment be reviewed; these are the stringent adaptation of the policy and urban management legislation towards sustainable development; and the purposeful physical restructuring of the existing urban core areas within Ekurhuleni (such as Springs) to address the spatial inequities of such environs.

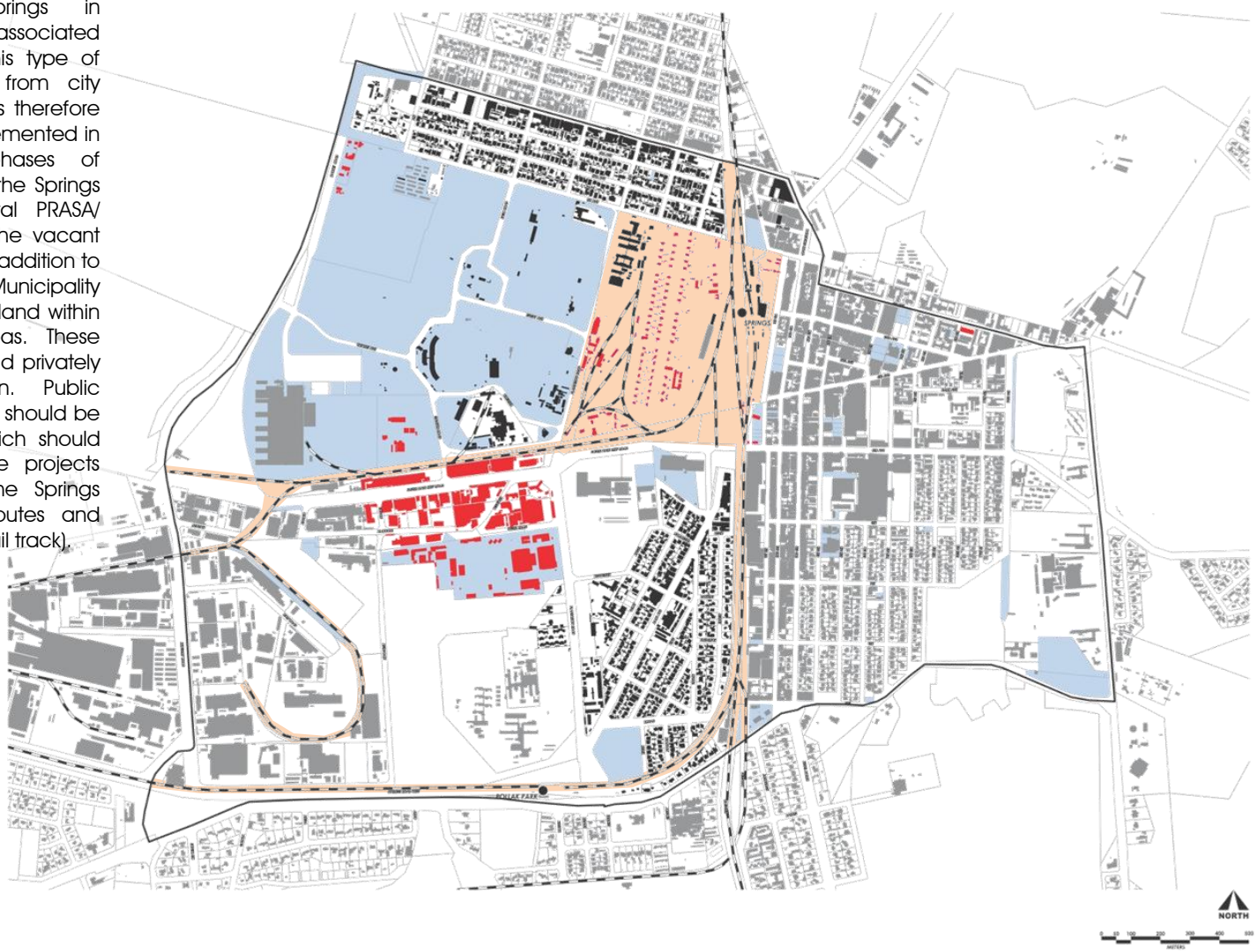
The recommendations that can be made, and lessons learnt from the preparation of this design research report include:

- That urbanization is on the increase worldwide
- This urbanization is the urbanization of poverty
- There are limited natural resources
- There is a direct relationship between escalation of prices and the availability of scarce resources
- South African cities still experience the injustices of the past, are still segregated and the poor still marginalised, almost 3 decades after democratization
- There is limited understanding of urban environments, they are not measured and that measured informed decisions are not taken. Rather an approach of, lets develop where there is vacant space, is followed
- The same development and design criteria is applied to marginalized, suburban areas and urban areas
- The natural environments within our urban core areas are not considered as important urban components
- That South African cities promote sprawled development of rich and poor
- Ownership determines the right to our urban environments
- The flexibility of the grid pattern is not utilized as a development, structuring & management tool in urban environments
- The citizen, pedestrian and public transport is considered secondary to private vehicle ownership & movement/ infrastructure
- There is no consideration of where our urban environments obtain their food and other required resources
- Existing urban infrastructure is not utilized to its maximum potential; but new developments on the periphery is supported
- That no method of urban containment and densification exists
- The basic needs of urban citizens are not met by urban core areas– urban citizens have to go elsewhere to obtain these services/ infrastructure (such as employment, food, water, entertainment, recreation, etc.)
- Interventions in public space and the public realm is not considered as development priorities
- Citizens are not supported to become, or considered as shareholders of the urban environment
- Government investment is not selective in achieving social equity
- International standards of space making is applied to South African cities, without seeking appropriate local responses
- Alternatives for the current functioning of urban environments are not considered
- Urban environs are not considered as inclusive of natural biodiverse environments, nor are urban natural environments managed as such

The recommendations are therefore to address these shortcomings of the South African urban environments. Emphasis should however be placed on the discipline of urban design, as it is primarily focused on good city making, and is therefore is responsible for making (or remaking) urban environments through SMART, measured urban responses that advocates confined urbanity, equity, urban survival, walkability, external mobility connection, inclusion, protection of natural resources, citizenship, partnership, social capital, food security, flexibility and a sense of place. It is therefore recommended that this role of urban designer be expressed and implemented in the urban areas.

ii IMPLEMENTATION & PHASING

When considering the implementation of the proposed development within Springs in accordance with the 10 Principles (and associated Actions), it is important to note that this type of development is a fundamental shift from city making is the South African context. It is therefore proposed that the development be implemented in a phased manner. The first phases of implementation will be focused around the Springs station (land owned by the Parastatal PRASA/ Transnet) and will extend eastwards to the vacant land owned by the State/ Municipality. In addition to this some of the land owned by the Municipality could be exchanged for key portions of land within Springs that are priority development areas. These areas include the Pollack Park Station, and privately owned land east of the Springs station. Public space making & public realm investment should be of the first implementation projects (which should constantly be extended upon). These projects could include the development of the Springs station square, the public transport routes and pedestrian rail walkway (adjacent to the rail track).



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K. CONCLUSION

The starting point for the rebuilding of South African cities lies with the application of measured urbanization. It is within the measurement of these urban elements that the future of South African cities can be imagined, it is through the SMART application of these measured responses that broad based realistic and true change will be brought about; that the urban barriers of segregation, isolation & exclusion will be overcome. The approach of only addressing the inequities of the past and building upon these injustices are fundamentally prejudice.

It seems as if urban development in the South African context is focused towards mass production and the chase of the international suburbian dream, instead of looking at the inherent potential of our existing urban environments and the prospect of sustainable restructuring. Can we not, possibly, consider an alternative than what is existing? This is one of the largest challenges facing urban development within South Africa today, which is compounded by urbanization rates (not necessarily population growth), migration rates, limited resources and citizens expectation of and aspirations for an urban environment.

How do we consider urban environments, how do we see urban environments, how do we think of urban environs, how do we measure success in urban environs, do we imagine alternative urban futures, how do we apply measured interventions, how do urban areas fulfil the needs of its citizens, what is citizens perceptions of urban environs, can we afford to still live segregated/ isolated, how far is far, how big is big, how dense is dense, are the urban environments improving lives and is our urban environments sustainable? These are some of the issues raised in this report. The attempt was not to answer these burning questions, but rather to exemplify the questions that are never asked of our South African urban environments.

Adapted Image

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