Public Law and Sustainable Cities:

Draft report

Democratic Governance and Rights Unit

& African Centre for Cities

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1. Introduction

This report 'Public law and sustainable cities' seeks to understand the interaction between public law and sustainability in the city context.

Sustainability agendas in urban planning have largely been driven by attempts to create a "compact city" or otherwise densifying. Densification as a key driver of more sustainable cities has been embraced as a policy goal of government at all levels and most political persuasions in the democratic era.

However various factors are believed to have had the practical effect of reducing densification in spite of policy to the contrary i.e. it is believed the number of households and people housed per 100 square metres in urban areas has declined. This is also believed to be the case in Cape Town. Consequently it is postulated that South African policies in favour of densification have not worked to encourage densification and have not promoted the sustainability of Cape Town.

The aim of this report is to interrogate the concept of sustainability in constitutional and local context and to understand its relationship to density. Sustainability is a relatively new concept and there is no coherent jurisprudence on it. The report further seeks to identify appropriately policies and their levers via law or associated regulations and development control instruments for the promotion of a more sustainable Cape Town.

2. Methodology

The following methodology was adopted:

1. The determination for Cape Town of the actual geographical trends in relation to issues relating to densification in recent times.
2. A review of the literature on the international experience in relation to sustainable cities and its relationship to densification and government policy.
3. A review and analysis of relevant South African and Cape Town legislation, policy, by-laws, including rates policy and development control instruments, to determine their impact on sustainability in Cape Town.
4. An analysis the extent to which the actual trends in relation to densification observed since 1994 in Cape Town bear any relationship with policy and the possible reasons for the observed trends
5. The identification of appropriate policy goals, policy, and policy levers in relationship to sustainability and densification for Cape Town.

3. Literature and analysis findings

3.1 Sustainability is not a single concept

The most well-known definition of "sustainability" or "sustainable development" is that emanating from the 1987 UN World Commission on Environment and Development (also known as the Brundtland Commission after its chair Gro Harlem Brundtland) which defined sustainability as "forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs."

UN documentation usually expands on this definition to note that sustainability requires reconciliation of environmental, social and economic demands, noting further that these three are not mutually exclusive and may be mutually reinforcing. Thus they are often represented as overlapping Venn circles, suggesting that only the area of overlap of all three forms of sustainability (environmental, social and economic) implies true sustainability.

The Brundtland definition of sustainability has been the subject of various variations or interpretations depending on the context in which it is used. For example, Williams et.al, when discussing urban form, define sustainable development as development which does not require resources beyond its environmental capacity, is equitable, promotes social justice, and is created through inclusive decision-making processes.[1] This definition appears to expand on the social aspects of the UN definition, while apparently conflating environmental and economic aspects under the rubric of "resources".

During the early years of a democratic South Africa, "sustainable housing" was a term frequently used as shorthand for housing which could be built and maintained within the limitations of the state purse – in other words economic sustainability was emphasized and little emphasis was placed on environmental or social sustainability.

In the early 2000s the term sustainability when applied to cities has tended to focus on environmental considerations such as reducing carbon-based energy demand and reducing pollutants i.e. environmental concerns have the upper hand. This approach in turn has tended to focus on increasing public transport and reducing reliance on motor vehicles, which in turn has focused on the policy of promoting densification, based largely on the theory that denser cities have more equitable, more cost-efficient and more environmentally friendly transport trends.

3.2 The components of sustainability may reinforce each other

Since 1994 the term "sustainable" has frequently appeared in the lexicon of South African legislators, policy makers and urban developers. As discussed above, there have essentially been three main components to the term. These are:

- Economic sustainability,
- Socio-political sustainability and
- Environmental sustainability.

There are many situations in which the objectives of a "sustainable city" defined in terms of one of the components of sustainability meet desirable outcomes or objectives defined in terms of the other dimensions of sustainability i.e. where for example the goal of environmental sustainability also meets economic and socio-political sustainability objectives.

[1] Williams et. al. 2000 Achieving Sustainable Urban Form

In particular “densification” of residential areas is seen as a means through which both the ecological sustainability of the city and its long-term economic viability can be enhanced. Similarly densification has been promoted as one of the means by which equity between residents (and thus social sustainability) can be promoted.

The connection between environmental or ecological and economic sustainability rests largely on the convergence between consumption and ecological impact. The more residents consume, the greater their impact on the environment. Consequently policies or programmes that reduce the distance residents commute, the amount of electricity and fossil fuels they consume or the amount of water they utilise, should also reduce their environmental impact.

For example, an improved public transport system would, to the extent with which residents turn to public transport or have shorter commuting distances, minimise the transport-related carbon footprint of residents while reducing their cost of commuting.

In South Africa, reducing commuting distances could have particular benefits for the majority of black residents. The urban topography bequeathed by apartheid is such that black (and thus poor) residents were settled in areas that were well removed from commercial centres (but close to industrial areas where their labour was desired) as well as from other services and opportunities.

The burden placed on the poor included that of having to travel large distances to access opportunities and services. Today the changing economic activity of the area away from industry towards services means for most residents of such areas a need to travel for employment also.

Consequently a reduction in travel distances could, in addition to reducing the transport-related carbon footprint and the direct financial costs to the poor of commuting, also offer some redress to black and poor residents so prejudiced by the persisting design of the city.

When there is such a confluence of positive impacts it should be clear that the specified objective should indeed be pursued. Realising the benefits of redesigning the urban landscape to capitalise on these synergies has been a prominent feature of policy-makers during the post-apartheid era. In the early phases the ideas centred about the notion of the “compact city”. The term has largely fallen into disuse probably because of the poor extent to which the vision has been given form. Now similar concepts and objectives are more likely to fall under the rubric of the “sustainable city”.

Throughout this period there has been at least one golden policy thread permeating the debates – that of densification. Essentially, densification refers to getting more residents per hectare into the areas that are well located to opportunities, services and transport infrastructure.

In practice the term is often used in contradistinction to the bogey of “urban sprawl”. Urban sprawl was often seen as epitomising the impact of apartheid planning in which most city residents were located in areas well removed from commercial and service centres. Such urban sprawl increased commuting distances, reduced the financial viability of public transport systems, heightened the cost of infrastructure and service delivery and increasingly encroached on agricultural land outside the city. In addition, the clear racial predicates of apartheid planning ensured that those worst affected by such sprawl would be black and poor, thus impacting negatively on social and political sustainability.

Given the negative social, economic and political costs of the apartheid topography it would be easy to assume that the demise of the apartheid regime would be accompanied by the rapid destruction of that spatial regime. The assumption was given weight by the adoption by national, provincial and

local authorities of policies that explicitly sought to undermine, at the very least, the racial dimension of the urban topography.

However fifteen years after full franchise was instituted the urban topography is largely unchanged. Both townships and suburbs have largely maintained their pre-1994 racial and economic characteristics. Not only has there been relatively small changes in the racial characteristics of urban spaces there has, despite similar efforts to the contrary, been even less success in efforts to increase populations densities. If anything there has been a marked de-densification of suburbs and established townships since 1994.

The failure of densification policies was initially attributed to the lack of co-ordination between tiers of government and between government departments themselves. The most vivid example of this was the massive expansion of Reconstruction and Development Programme (RDP) housing. This programme contributed markedly to urban sprawl by locating beneficiaries in houses designed for single families on stand-alone lots on the periphery. Many beneficiaries of the programme were previously residents of backyard shacks, informal settlements and hostels. When these households relocated to RDP schemes, they moved to low density areas and the population density of their place of origin was reduced. The RDP programme offered little scope for the massive uptake of high-density housing such as flats or apartments.

The tendency of RDP programmes to decrease housing densities was largely attributed to the demands of beneficiaries who resisted smaller lot sizes and multi-storey housing projects. Curiously, during the same period there was a significant movement of affluent households from suburbs to various forms of housing clusters. The move was usually accompanied by a significant reduction in lot sizes – a move facilitated by the widespread use of multi-storey and compact dwelling designs.

The de-densification and expansion of townships and the densification of middle class areas was precisely the wrong trend to have occurred in terms of city sustainability from an environmental and economic point of view. In the poorer black areas, public transport providers have to traverse large distances to service the same number of passengers. By contrast, the cluster developments in middle class areas served to further concentrate private vehicle users. This invariably aggravated congestion on transport networks and increased financial, social and environmental costs for all.

3.3 The components of sustainability may contradict each other

On many issues, however, this confluence of the three objectives of sustainability does not occur. The objectives of achieving ecological sustainable cities may, for example, run counter to the objectives of a politically and economically sustainable city. Taking the cue from the observation that reduced consumption (***ceteris paribus***) may invariably be an ecological good it becomes apparent that increasing the costs of goods and services (perhaps through taxation) may well contribute to ecological sustainability but at the cost of economic sustainability.

One example is the levy on plastic shopping bags. The levy has forced the price of shopping up and contributed to reduced consumption of plastic bags. The same move has reduced employment among those who produce bags and reduced (marginally) the income of consumers. Unfortunately the state has failed to use the revenue gained to assist in the recycling of those shopping bags that have been purchased. Neither has the move prompted stores to provide free alternatives to disposable plastic bags.

Another such contradiction lies in the way in which combating urban sprawl threatens the

availability of public open spaces. The development of land available within the city may well combat sprawl and ensure that the required population mass is reached for operating an efficient (environmentally and economically sustainable) public transport system. However this objective may be at the cost of the use of open spaces used for recreation, or even simply for ecological sustainability (the city's "green lung") and other public benefits that appear to fail to generate direct revenue for the city. Deciding what to do with such land may be, for city managers at least, clear. They would be inclined to juxtapose the "efficient" use of available land and the resulting revenue against the more intangible benefits of open spaces. Proponents of such in-filling can easily portray "unused" land as dysfunctional, a drain on city coffers, lost development opportunities, a security risk (crime, dumping, animal control), or an impediment to a cost efficient public transport system. By contrast open spaces may very well contribute to a higher quality of living in terms of air quality, recreation access (particularly among those who cannot afford to access private facilities) and the appeal greater Cape Town has to tourists.

Further examples of such core contradictions abound. In many areas, further densification can now only be achieved by increasing the prominence of multi-storey dwellings. While this may ensure that better use is made of existing facilities, the move may very well be at the cost of higher crime counts, increased stress of residents, general environmental decay and greater social strife.

Similarly policies which facilitate the access the poor enjoy to under-utilised services (both state and educational) may well aggravate the traffic congestion in key nodes. On the one hand, city sustainability is enhanced by better utilisation of existing infrastructure. On the other, ensuring the use of such assets may be at the cost of greater dis-economies to other commuters and a larger overall carbon footprint for the city.

The concept of ecological sustainability takes the edge off such tensions at least as far as agricultural production is concerned. The practice of producing agricultural goods in and near the city reduces the amount of distance that such products have to be transported to reach markets. This reduces the carbon-footprint of food production and possibly even reduces the cost of such products. Further benefits in terms of air quality, temperature reduction and water quality strengthen the arguments for advocates. Regardless, agricultural production within the city – particularly when it reaches the recommended 20 percent of city surface area – would invariably negatively impact on human density.

At the heart of such contradictions in South African literature and particularly that relating to Cape Town is the equating of densification and in-filling. In recent years the failure to densify metropolitan areas has led councils and the Cape Town City Council in particular, to sell off unused land to developers. To the extent that this land is used for residential purposes the move will contribute to higher population densities and provide much-needed housing. However the principles of densification and such in-filling are not synonymous. The underlying rationale of densification is that increasing the residential density of cities facilitates the provision of public open spaces. The concerns then centre on how that open space is used rather than whether it is used for commercial or residential development.

This is because densification can contribute to the expansion of land available for facilities and even the prevalence of open ground. Essentially, densification is intended to alleviate the pressure that development places on available land. To the extent that densification is successful more (not less) land for non-residential, industrial and other "productive" purposes should become available.

Densification is thus not necessarily at the expense of those assets that contribute to places like Cape Town becoming a desirable place to live in or visit. The same may not be said of the indiscriminate in-filling of unused land. Unfortunately proponents of densification (particularly

those concerned with the development of public transport systems and revenue generation) seem to have conflated in-filling with densification. The question then, erroneously, arises as to what extent an economically sustainable public transport system may be at the expense of the existing urban character?

3.4 Density is not necessarily to be equated with sustainability

It is often assumed that greater density or compactness of cities results in more sustainable cities. It is theorised that denser cities more easily reach threshold numbers to make environmentally-friendly public transport economically sustainable, have lower infrastructure ***per capita*** costs, ease the provision of and access to government services, and have environmental benefits in limiting urban sprawl and preserving adjacent farmland and natural habitat. The social benefits of density policies in the South African context are also understood to promote racial integration and redress of apartheid era planning. Thus policies which promote greater density of development are assumed to result in greater social sustainability.

However the claim that the compact city is ***per se*** a sustainable urban form has been examined in some detail by Jenks, et.al. (1996), who were unable to endorse the compact city model has ***necessarily*** sustainable, at least in the developed countries studied. They found that while there were "benefits in relation to the viability of public transport and saving of agricultural and other valuable land, there were problems about environmental quality and local acceptance of more compact forms of urban living."[2]

The question of what is sustainable urban form and how can it be achieved was addressed by Williams et. al. (2000). They reached the conclusion that there was "no single sustainable urban form, but rather a variety of urban forms that were more sustainable than typical recent development patterns".[3] These depended on "the characteristics of and the local strategic objectives chosen for sustainability".[4]

Australian academic Paul Mees notes that for two decades in Australia, urban policy has been based on the belief that high levels of car use and poor public transport are the result of low urban densities.[5] However recent changes to data collection and publication systems across the three countries have for the first time allowed for the comparison of urban densities and transport mode shares for the journey to work.

Using this data, Mees overturns popular assumptions about the densities of well-known cities– for example, metropolitan Los Angeles, far from being the "archetype of sprawl" is the densest of cities considered. Mees finds furthermore that density bears little relationship to transport mode share – LA having 98% automobile share. Mees argues strongly that density is not the primary determinant of transport mode share (a key component of sustainable cities), but that a key role is played by transport policy.

In other words the density of cities is far less relevant to their sustainability insofar as transport mode share is concerned, than transport policy. This suggests that transport policy plays a key role in determining an important element of sustainability, and the relevance of density is highly dependant on local context.

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[2] Jenks & Burgess (ed). ***Compact Cities: Sustainable Urban Forms for Developing Countries*** Spon Press, London, (2000) p1.
[3] Ibid.
[4] Ibid.
[5] Mees, P. ***How dense are we? Another look at urban density and transport patterns in Australia, Canada and the USA*** State of Australian Cities Conference, Perth, 25 November 2009.

Similarly Gordon accepts that the densities with which urbanised regions are occupied can have a significant impact on energy use and emissions, via the patterns of personal mobility that are enabled and encouraged. He finds however that the potential for using this variable as a tool for environmental regulation is limited, however, for two inter-related reasons: because actual densities are an outcome of complex processes of individual choice over which planners have little direct control, and because planning operates only at the margins of physical development, with much slower and more modest impacts on the behaviour of the population as a whole than would be the impact of changes in relative transport costs, in particular.[6]

Closer to home Sharon Biermann finds that for the greater metropolitan Pretoria region bulk infrastructure costs do not simply decrease with decreasing distance from central areas. In fact she finds in all cases, ***total*** infrastructure costs ***increase*** as density increases, due to the additional demand on the system as a whole.[7] Only some per capita costs decrease with increasing density – electricity per capita costs for example, ***increase*** with increasing density.

She notes that South African housing, transport and development policies all promote the densification and compaction of urban areas and discourage sprawl in the interests of efficient and integrated development. However she argues that there is not enough evidence to argue that densification is the cost-effective alternative in all situations and under all conditions.

Her recommendation is that words such as "compact" and "dense" should be avoided as policy imperatives, and policy should rather focus on the optimisation of existing physical and social infrastructure. In other words "development should be promoted in areas of existing spare infrastructure capacity, and in areas in which it would be relatively cheaper to provide."

The thrust of critical literature thus appears to suggest that density should not be presumed to promote sustainability. This is not to say that in particular contexts sustainability may not be served by density. Understanding where densification is both appropriate and achievable requires a better understanding of both sustainability and the local context. Furthermore the literature suggests that state planning may have a far lesser role than market forces in shaping residential densities.

Understanding why densification has not taken place over recent years will be important for implementing appropriate measures that ensure the benefits typically associated with densification. Although the last fifteen years have been marked by the repeated prioritisation of densification as part of urban development strategies many critics point to failures by the state to give substance to these strategies. The questions then centre less on the commitment of the state to densification than on how the presumed sustainability benefits of densification may be achieved – whether by densification or other means.

3.5 Social normalisation and sustainability

Prominent in many sustainability debates are issues relating to redress, social justice and, by implication, political stability. At the heart of the issue is the normalisation of South African society through the undoing of the racial topography that apartheid ensured – particularly apparent in Cape Town. Although some progress has been made towards the de-racialisation of South African society in general and of metropolitan areas in particular the rate of change has been slower than many expected. The slow rate of desegregation can be attributed to a range of social, political and cultural

[6] Gordon I. [a]Department of Geography and Environment, London School of Economics, Houghton Street, London WC2A 2AE, UK

[7] Biermann, S., ***Bulk Engineering Services: Costs and Densities*** in Jenks & Burgess (ed). ***Compact Cities: Sustainable Urban Forms for Developing Countries*** Spon Press, London, (2000) p306.

reasons but at the heart of the inertia is the extent to which class, race and living space coincide.

There are two dimensions to the de-segregation of residential areas. The first is the extent to which changing economic conditions now allow spatial mobility. One example of this is the growth of the African middle class who, commensurate with their upward mobility, relocated to formerly "white" suburbs. At the other end of the spectrum is the pressure on impoverished whites to relocate to areas with ready access to free services, better provision of RDP housing etc. These dimensions contribute to the de-racialisation of suburbs and townships respectively.

The second dynamic to the de-racialisation of residential areas results from the relocation of people to residential areas that have both different racial and class characteristics. This reflects, for example, the movement of working class or unemployed Africans to white suburbs. In some instances this movement was on a large scale (e.g. Hout Bay) while in other instances the movement that took place was less obvious (such as student accommodation) Presumably this movement has been in one direction only – the affluent do not move to impoverished poorly serviced areas unless their economic status collapses.

The de-racialisation of suburbs has been undermined by countervailing trends. In at least one regard white suburbs became "whiter" and more middle class after 1994. After that date labour legislation and economic conditions ensured, ***inter alia***, that the employment of live-in domestic workers became far less prevalent. Domestic workers that did manage to retain their employment became increasingly dependent on having several part-time jobs and were increasingly required to commute to those jobs from townships.

It is the de-racialisation of living areas that are well serviced and located close to work and study opportunities and well positioned with respect to infrastructure that is presented as being at the heart of political sustainability. However, given the relatively slow impact of the embourgeosification of the formerly disenfranchised on the racial characteristics of suburbs, the focus has fallen on those mechanisms that change both the racial ***and*** economic characteristics of the suburbs.

One expression of this has been the Department of Housing's attempt to use space available in suburbs to provide low cost housing for people employed in or near these areas. There have, to date, been limited efforts to promote such "mixed-income" residential development in Cape Town (e.g. Marconi Beam/ Milnerton).

The development of mixed-income residential areas is one way in which densification (and social integration) may be encouraged. This is the result of the fact that low income housing located in relatively affluent suburbs should take place ideally on unused or under-used land. Further these developments will almost certainly be of smaller dwelling units optimising available land.

However a key problem arises when a technical objective is laden with political agenda as proponents of projects are prone to do. If densification policy is seen as the mechanism through which desegregation is to be achieved, debates on the issue will probably be on motives and politics rather than the concept of sustainability, including social and political sustainability, considered holistically.

3.6 Factors operating against density

Why have state policies in favour of densification not had the desired effect? The key problems with state land use planning as a mechanism of change relates to (1) difficulty in the enforcement of their provisions (2) community participation impediments to re-zoning or departures from zoning (3) the ongoing provenance of zoning schemes in outdated legislation. (This is considered in more

detail in the legislative overview (chapter 4) below.)

State planning, for the above reasons, has been powerless to change densities in areas which most require it. Market incentives in the form of property rates policy have similarly failed to ensure the densification of populations in the manner required for social redress and normalisation. One of the most promising instruments for ensuring densification are local rates and tax which can be used to penalise inefficient use of land.

The setting of property rates in Cape Town is based on the "market" value of the property less R88 000. The tax is thus progressive (taxes the rich more) in that a higher proportion of low value properties are exempt (at least in part) from rates. Currently for each million rand a property is worth (on the market), the city taxes the owner about R5 000 a year. While the rates system is progressive and may thus be seen as equitable it fails to encourage the more intensive use of residential land.

This is because there are significant diminishing returns on the value of residential land. In other words a property on a double-sized erf does not fetch, ***ceteris paribus***, twice the price on the market. While the property on the double-sized erf will fetch substantially more than a comparable dwelling on a single-sized erf, it is unlikely to fetch twice as much. The current rates/ rebates system is based on the market value of the property and thus the larger property will be taxed at less than twice that of the smaller property – although it occupies twice the area.

As a result the current taxation regime is, in terms of land use, regressive. Larger erfs are taxed at a lower rate per meter than smaller erfs. Conversely, smaller properties which are more "densely" used are taxed at a higher rate per square meter. This, ***inter alia***, disincentivises densification. Changing the taxation regime to reflect land use intensity would go some way to ensuring densification of the more affluent suburbs. Whether this is likely or possible is considered in more detail in the legislative overview below.

3.7 Aspects of the sustainable city

At best densification is only a tool whereby certain benefits may be realised with regard to sustainability. It is by no means the only or best tool available. Despite this it seems to form the bedrock of many policies regarding transportation, service provision and the like. The next section contextualises densification among other pertinent aspects of sustainable cities.

3.7.1 Public transport

It is incontrovertible that the apartheid city tended to locate black residents well away from service and commercial centres. However those planners ensured that these same residents were located close to job opportunities in industrial developments. Unfortunately economic change since that era has seen the decline of the industrial sector as a whole and of the once dominant textile sector in particular. During the same period employment opportunities shifted markedly toward the service sector. The emerging employment opportunities tended to be located in the more distant commercial and tourist centres. This served, ***inter alia***, to ensure that township residents were then compelled to travel greater distances to work. The effect of these changes have been to funnel ever-increasing numbers of commuters from the north and east of the city into the city bowl or from the north and east of the city through to the southern suburbs via the transport interchanges in and near the city bowl. In 2008 approximately 160 000 people were commuting into the CBD daily.

By and large transport planning for the city acknowledges these changes and seeks to ease the

journey of commuters into the city. The changes are exemplified by the new Integrated Transport System (ITS) system which seeks better linkages between transport nodes. The first phase seeks to expedite the movement of people from the international airport to the city bowl and the new facilities associated with the FIFA World Cup. The facilitation will largely hinge on the reservation of special lanes on the highway for exclusive use by busses and taxis. Subsequent phases expand the reaches of the transport network to include more distant parts of the city.

The strategy is likely to have overwhelmingly positive effects in so far as they reduce travel times, eliminate road congestion and promote public transport. The long term vision is to reduce the number of private vehicles on the roads by 20%. Currently two-thirds of people entering the CBD each day do so in private vehicles. The impact of the ITS will be to reduce energy consumption (and thus the city's carbon footprint) while having positive social and economic benefits (improving access to services and reducing travelling time).

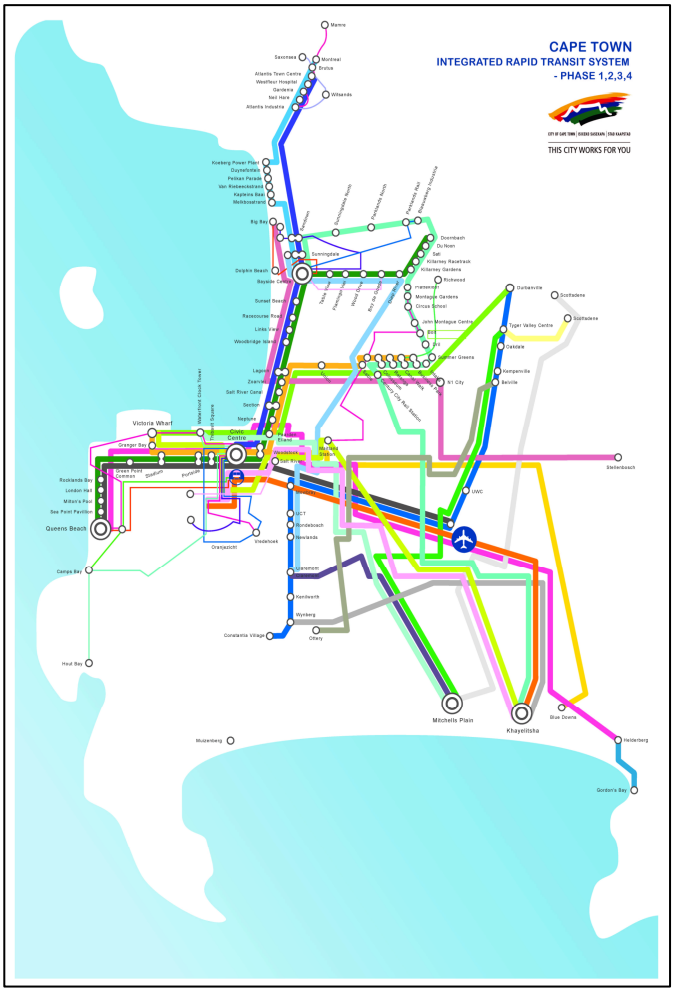

Figure 1: Proposed Integrated Transport System

However the overwhelming thrust of the ITS is to improve the access residents have to the city centre – in other words it serves to enhance the existing rail and road conduits. The success of the ITS however rests partly on attaining an adequate mass of commuters who use public transport. Only if sufficient residents use the system will it be cost-effective. In essence this requires that the system gets people out of private cars and onto public trains and busses. The hopes of achieving this mass of users rest, to some degree, on the densification of residential areas along the routes.

> ***"Enrique Penalosa, ex-Mayor of Bogata, Colombia and IRT expert pointed out at a talk in Johannesburg recently that the real issue (of IRT financial sustainability), in all SA cities, is our low density urban sprawl. I agree with him.***
>
> ***Any form of public transport will not be sustainable unless we seriously tackle our current urban form. More people travelling shorter distances, with better peak to base rations, will ensure that a future IRT service is viable. The*** City of Cape Town ***has recently published a draft policy on densification for comment. In my view, far tougher measures need to be put in place, but it is a good start and we should all be getting involved in the debate....***
>
> ***This means promoting transit-led development, where there is a confluence of people, economy and public transport in nodes and along transport corridors, is given a high priority."***
>
> http://www.andrewboraine.com

The above quote from Andrew Boraine, and other similar statements, skirt perilously close to justifying densification on the grounds that it is needed to make the ITS a success. This hardly seems satisfactory given the negative consequences in-filling – the current primary mode of densification – has environmentally. These arguments tend to conflate densification with in-filling and, implicitly, call for the densification of those areas most desperately in need of de-densification.

A more sustainable city would look to the reasons why if is necessary to facilitate access between residential areas and opportunities – particularly those in the CBD. Obviously the ITS should facilitate residents access to the services and employment opportunities in and near the CBD. However there are other factors behind the mobility patterns. In general the design of transportation systems heavily reflect the demands made by business and its need to access appropriate labour forces. However in Cape Town in particular mobility patterns are heavily informed by commuting for education purposes. This peculiarity is the result of apartheid topography, changing demographic structures, and the failure of the education system to redress imbalances. An examination of this phenomenon offers insight into many of the diseconomies that militate against a sustainable city.

Demographic changes in the "white" southern suburbs have led to a declining number of people of school-going age in those areas. The surplus of classrooms has been matched by a commensurate shortfall of classrooms in the townships in the south east of the city. As the surplus classrooms in the southern suburbs have in fact been filled by scholars from elsewhere it would appear that a significant number of scholars commute from the south east townships to the southern suburbs for education purposes.

In the graphic below suburbs where the number of people of school-going age is lower than the number of people in school are coloured blue. In these areas the desks are presumably occupied by scholars from outside the suburb. Those areas where there is a shortage of desks for students (the number of people in school is lower than the school-going population) are coloured red.

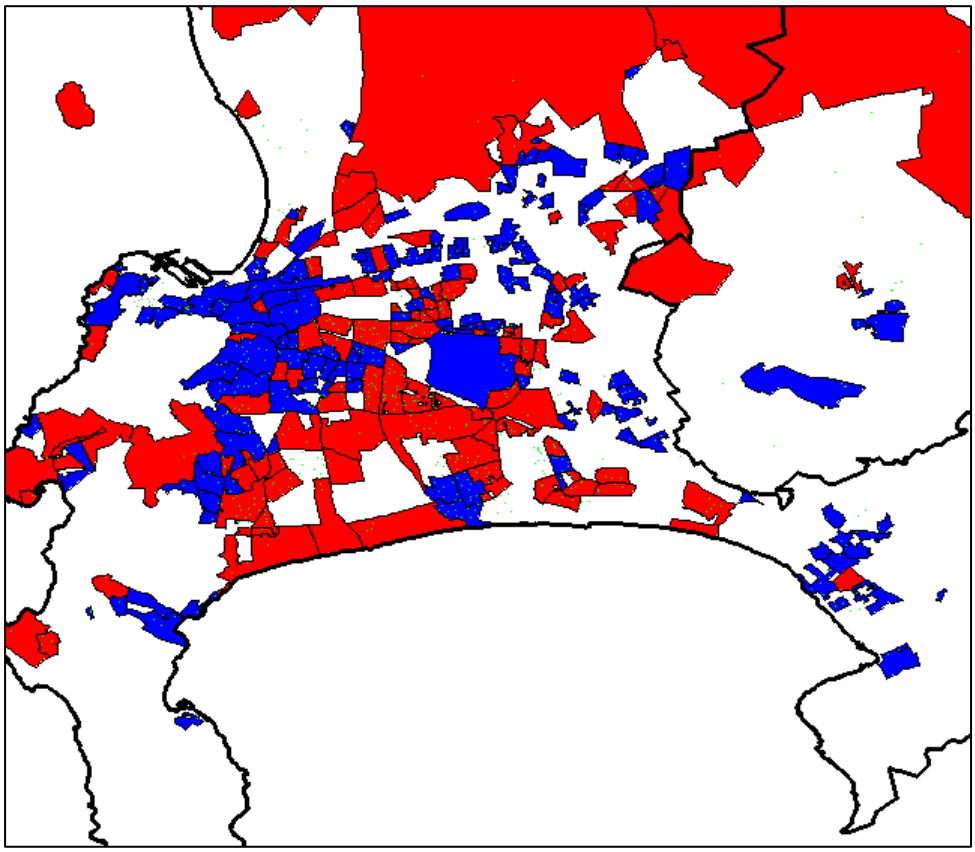

Figure 2: School-going age children versus supply of school places

The locations of the schools themselves are indicted by the small green dots. Our estimates indicate that at least 20 000 scholars commute into the southern suburbs to attend school. Public transport facilitates this flow and results in a better uptake of these services. Moreover the movement ensures that black scholars are able to access to schools that are widely thought of as superior. A similar dynamic exists with regard to tertiary facilities such as the University of Cape Town (UCT) and the Cape Peninsula University of Technology (CAPUT). UCT is also located in the southern suburbs and services the advanced education requirements of over 20 000 students, many of whom commute on a regular basis.

Although the envisaged transport system facilitates some measure of redress in this regard the question arises as to why it is necessary for the commute in the first place. Were these scholars and students to be accommodated in areas where they live a significant proportion of travel into the city (as interchange) would be eliminated. Eliminating these commutes would however detract from the demand for a public transport system which is heavily dependent on volumes for financial viability.

The central question posed by this conundrum is whether a sustainable city can rest on facilitating access to existing services and opportunities rather than the placement of those same services and opportunities where people live. Although the question arose with regard to education facilities it also arises with respect to the creation of job opportunities or building of FIFA stadia. In the long term the answer is a “no-brainer” – it is patently more efficient and environmentally sustainable to obviate the need for residents to travel significant distances. On the other hand the waste of existing infrastructure has to be prevented.

The solution may lie in distinguishing between immediate and long term objectives. Short term objectives would concentrate on utilising existing resources – particularly when doing so contributes to social redress. Long term objectives would concentrate of eliminating the need to

travel to access core services in the first place. Unfortunately it is difficult to see how the ITS contributes to the long term objective.

3.7.2 Township upliftment

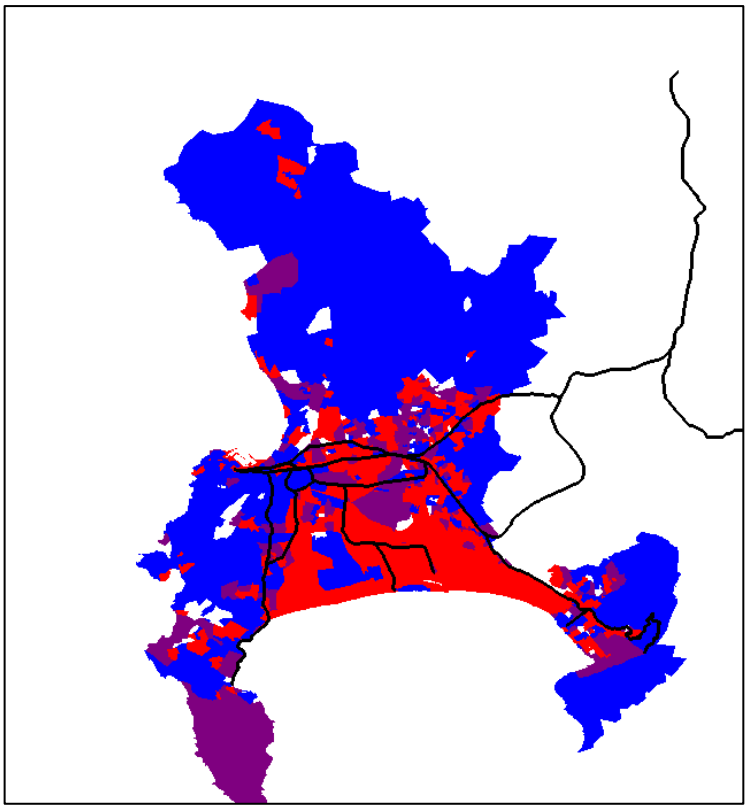

Figure 3: Increasing and decreasing populations

The dynamic that gave rise to the dearth of students in suburbs and shortage of school positions in townships was a combination of demographic change and migration. The aging of the population tended to boost the proportion of black people of school-going age while reducing that of white people. The townships experienced strong in-migration while the suburbs were more likely to be subject to emigration. These factors changed the overall population profile of the city and, notably the density of the various regions. The graphic above shows which areas showed an increase in population between 1996 and 2001 (the years of the last two censi).

The areas with increasing populations are shown in red and those with decreasing populations are shown in blue. The changes correspond to two railway axes. The decline in population was concentrated along the Muizenberg, Cape Town route through the southern suburbs. Population increases tended correspond to residential areas along the Khayelitsha, Cape Town route. The latter route is heavily centred on those areas in which African townships are concentrated.

Because of the way in which density was measured an increase in population necessarily corresponded to an increase on population density. However it is more challenging to represent relative population densities on a thematic map like the one above. The crude density is better illustrated by portraying high density areas as if they were peaks. This is illustrated below.

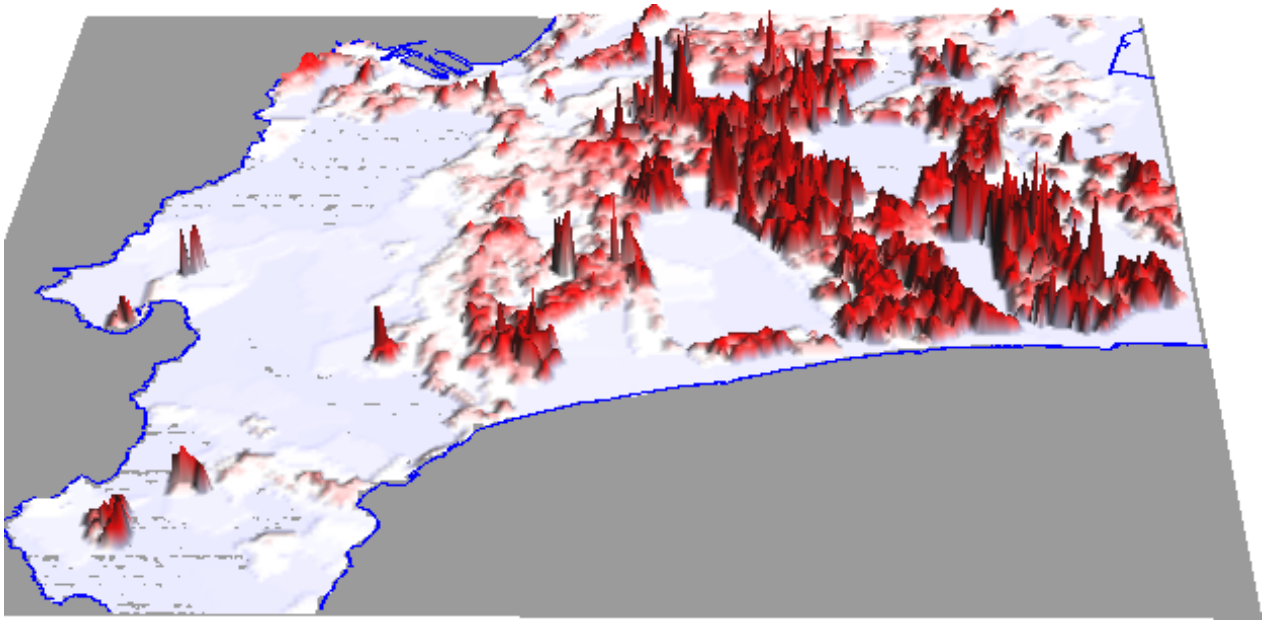

Figure 4: Relative population densities

It is clear from the above graphic that the highest population densities are evident in the township areas of Khayelitsha and Nyanga. The high population densities are largely due the presence of poorly structured and serviced informal settlements.

If the shortfall in services to these areas was corrected along with the elimination of the backlog in schools, the establishment of appropriate road networks, service lanes, gaps between dwellings, storm water drains, sidewalks etc then there would be a significant reduction in the current population density of these poor areas. The de-densification of these areas would contribute enormously to the sustainability of these areas in terms of reducing risks from fire and flood and enhancing the quality of life in general. The provision of these services would thus contribute to enhanced privacy among residents just as it alleviates the dangers posed by fire and flood while simultaneously reducing the need for residents to access education and other services far from their homes. The de-densification of these areas may very well do more to enhance the quality of life of the poor than investments in infrastructure that enable them to access to other parts of the city which neither meet their needs in terms of jobs nor bring them to the markets they require. De-densification of these areas can clearly be seen as desirable in terms of economic and political sustainability.

It should be clear from the above that blanket densification is not a politically or socially sustainable option for Cape Town. Despite this there are benefits to be derived from the densification of other areas – like the southern suburbs which are well serviced but have been experiencing marked reductions in population densities over recent years. Targeted policies that encourage densification in key areas are thus called for.

In its own right densification will not necessarily result in the envisaged benefits (increased uptake of public transport, lower costs of providing infrastructure). As more agenda are appended to the policies it becomes increasingly likely that that resistance is broadened. This will undermine the objectives of achieving decreasing unit costs of infrastructure or attaining population masses required for and efficient public transport system. Obviously this concern will pervade all policies which may be seen to cloak other agenda.

Recent South African commentary on densification has been largely mute about its benefits other than those that relate to social integration and the economics of public transport. The debate thus

parallels justifications for the ITS, which are focussed on better/faster transport systems which will somehow also promote social cohesion. It is almost as if densification is required for the capital investment in the ITS etc. to bear fruit. It seems that densification along transport routes and at the appropriate residential nodes is required to ensure that the transport infrastructure is used often enough to ensure an efficient public transport system. This objective is, in the long term, at odds with the development of a sustainable city.

If the objective of the ITS was to allow residents of Khayelitsha better access to job opportunities it would presumably reflect the fact that residents of that area are significantly closer to Somerset West than they are to the CBD. The jobs should be located closer to Khayelitsha and Gugulethu i.e. where workers live. Indeed pundits see this as the ideal if somewhat elusive long term objective that may be realised at some future, undefined date. Be this as it may, how this long term ideal is facilitated by the ITS is not immediately apparent. Perhaps the defining feature of sustainable policies is the extent to which they look to long-term objectives rather than the extent to which they address current pressures.

If residents are to travel to the city bowl they should make use of public transport. However sustainability can only be achieved by ensuring that residents do not have frequent reason to travel to the city bowl. Either this requires the residents to relocate to the infrastructure jobs or services, or the infrastructure jobs and services need to be where the residents are. Market prices in well-serviced areas operate to prevent the relocation of those in the densest areas to these areas. Consequently reducing the need for travel requires, for want of a better word, the decentralisation of services and opportunities.

3.7.3 Sustainable energy

The prices of goods and services are a powerful instrument in fashioning consumer behaviour. High prices are a powerful cue to consumers to reduce consumption of any given good or service. As a rule the resulting reduction in consumption has positive environmental impact as it reduces the amount of carbon produced, water polluted, land fill wasted etc. Consumers react to price increases through the more efficient use of existing resources, conservation or by substituting sources.

Over recent years the prices of goods that are fixed administratively rather than by market forces have tended to rise faster than that of other goods. This has resulted in seemingly inevitable surges in the costs ***inter alia*** of electricity, and water. In so far as these increases result in reduced consumption levels or uptake of environmentally sustainable alternatives they bode well for environmental sustainability. However the price increase for water and electricity are largely as a result of attempts to increases total consumption – even as individual consumers reduce their own level of use

However it is metropolitan and local government, in conjunction with bulk service providers like Eskom which determine the prices at which water and electricity are sold. And it is these bodies that may offer households the greatest incentives to reduce their water consumption and their carbon footprint arising from electricity use. To the extent that these price increases are ensured the move towards a sustainable city will be enhanced. However the surety of the increases in electricity and water costs needs to be examined.

Eskom, the state power utility with an effective monopoly on the provision of bulk electricity, initially applied for the right to increase the cost of their services four fold between 2009 and 2012. That application has subsequently been moderated to 3.25 percent increase. The magnitude of the increase has been justified in terms of a need to finance the development of new coal-fired power

stations.

Traditionally household consumers have borne the brunt of increases as their consumption has cross-subsidised indigent users and, to a lesser extent, some industries. Consequently it should be anticipated that non-indigent households may receive tariff increases for their consumption in excess of the amount awarded.

However seemingly missing from the application is an examination of the price elasticity of demand from households. It is axiomatic that such price increases will result in reduced electricity consumption – even though the magnitude of the decline may be unclear. It would not be unreasonable to expect that increases of the magnitudes envisaged could lead to consumption levels that obviate the need to build new power stations for some time. If demand from consumers drops sufficiently Eskom may have to stimulate demand by dropping prices. Be this as it may the reversals will only come once households have responded to the price signals by reducing their consumption and possibly sourcing their power elsewhere.

Alternative sources of electricity involve substantial initial capital outlays particularly if they are green i.e. solar powered or wind generated. The envisaged price increases are such that the required outlays start becoming competitive cost wise. However once these investments are made consumers will have little incentive to revert to Eskom regardless of their cost structure.

If the electricity price signals are as strong as anticipated the shift to alternative (greener) sources may well be taken as given. It however stills falls on the city authorities to establish an enabling environment for the uptake of such sources. With respect to solar panels and water heaters the situation is relatively clear, not so the case with wind turbines. Wind turbines for electricity generation raise an additional barrage of concerns regarding noise, safety and other environmental concerns. The legislative aspects of establishing an enabling environment are considered below.

3.7.4 Sustainable water provision

A regular, assured supply of water is probably the single greatest impediment to the sustained development of the city. Currently infrastructure is expected to meet projected demand only until 2019. To assure adequate supply after that date requires ongoing, large scale capital investment that yields ever diminishing returns. However the key characteristic of water demand is a pronounced seasonality with demand in the dry summer being significantly larger than during the winter months. The difference in demand levels is largely attributed to demand for water of gardens etc. In other words an adequate water supply is assured for a longer period but meeting demand at key times is highly problematic. This problem is likely to be further aggravated by global warming.

In the short term (the next twenty years or so) the impact of global warming on Cape Town will be through rising sea levels and changing weather patterns. Even so the city will be only marginally affected by rising sea levels. The sea is expected to rise by “only” one meter over the next ninety years. While this may threaten infrastructure along the shoreline it will have little impact on residential areas. A more marked impact is expected in terms of rain patterns.

Over the next few decades rainfall is expected to:

1. decline by as much as ten percent and
2. be increasingly erratic.

It is the unpredictable nature of rain patterns that may very well determine the extent to which demand for water can be met at reasonable prices. Currently excessive demand for water is limited by restrictions on use and punitive tariffs. When consumption exceeds pre-set levels escalating

tariffs are implemented. Under normal circumstances tariffs are slightly progressive and on a par with those in other metropolitan areas in South Africa. However as consumption rises above the pre-set level ever more punitive (and progressive) tariffs are implemented. The graphic below illustrates how the relevant rates (Rand per KL) change for consumption levels and the extent of water scarcity.

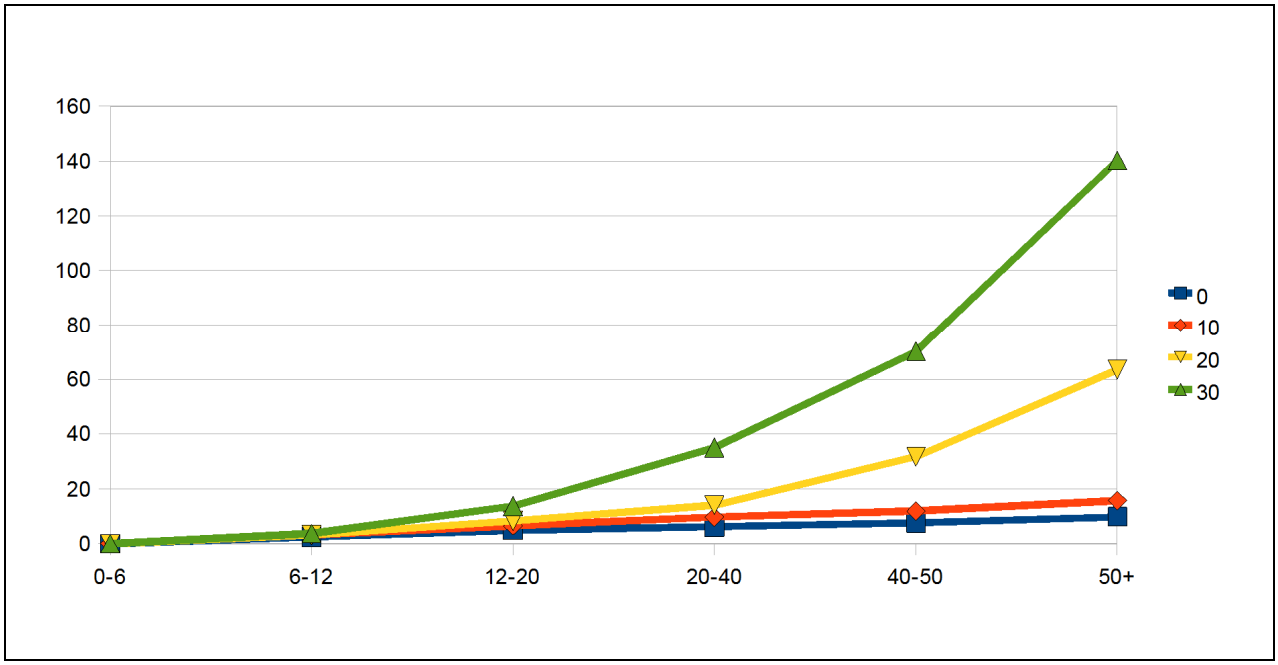

Figure 5: Applicable water tariffs at levels of water scarcity

Enduring changes in consumption patterns rest on behavioural changes that, ***inter alia***, predispose residents to environmentally sustainable agricultural and horticultural practices and smaller gardens. In essence, densification (in terms of reduced garden size through the subdivision of plots) will be encouraged by conservation initiatives. The more often the price of water spikes (and these occasions will become ever more frequent as demand overtakes supply) the more often residents will have to question their consumption patterns. Declining rainfall and population growth, the erratic rainfall patterns, coupled to seasonally fluctuating demand will ensure that the city has to revert to water restrictions and punitive tariffs with escalating frequency. As the frequency of the penalties increases the ability of households to maintain gardens (and for the middle classes to have swimming pools) will be undermined. This is almost certain, in the long run, to contribute to the sub-division of larger lots and/or the development of these stands.

If densification comes to be associated with the reduction of open public spaces and the undermining of private gardens it is likely to meet with heightened resistance. However the long term sustainability of the city is intrinsically linked to reduced discretionary consumption of water. This ensures that the adoption of appropriate tariff regimes, water restrictions and the changing of gardening practices will remain key to the city's future.

3.7.5 Summary

The anticipated hikes in the prices of electricity, water and, in the long term, petrochemicals may well ensure lower consumption levels and the adoption of environmentally sensitive alternatives. The latter include appropriate gardening methods, more fuel-efficient modes of transport, and installation of solar and/or wind energy facilities. The envisaged hikes in Eskom tariffs are thus bound to prompt the expanded use of energy saving appliances, solar water heating facilities, solar electricity generators etc. As argued above the anticipated periodical imposition of punitive water

tariffs is similarly likely to ensure changes in gardening and recreation practices. It is also inevitable that as the world emerges from the recent recession the price of petroleum products will similarly escalate. While the price of providing public transport will escalate with fuel costs, this escalation will affect private vehicle users even more severely. In other words as the cost of fuels rise public transport will increasingly appear cheap in a relative but not absolute sense.

The question then remains; to what extent does existing public law facilitate the achievement of sustainable city? This necessitates a review of pertinent legislation.

4. Public law findings

Public law is the general term for law governing the relationship between persons (private or corporate) and the state. The term usually includes such fields of law as constitutional and administrative law, human rights, constitutional and statutory interpretation, public international law, environmental law, and local government law. Public law is thus primarily concerned with matters involving public authorities.

Private and public law are both are subject to the Constitution as well as common law principles (where these common law principles are not in conflict with the Constitution). The particular significance of public law is in that the interests of the general public are taken into account. When considering the sustainability of cities, the interests of the general public loom particularly large. This is because sustainability deals with matters which economists term "externalities" – those factors or costs which do not impinge on an individual and thus seldom influence their decision-making. Externalities also affect public-authority decision-making.

When taking account of sustainability, public authorities must take into account not only current economic, social and environmental costs but also those located in the future. Sustainability requires of public authorities the courage to make decisions the benefits of which may only become apparent when their political masters may no longer be in power – or when their electorate has long passed on.

Consequently it is appropriate that the Constitution as well as a raft of legislation passed since 1994 requires all levels of government, and particularly local government, to provide services in a sustainable manner and to promote sustainable development.

4.1 Cities and the Constitution

The Constitution brought to an end the era in which municipalities were solely the implementers of national and provincial legislation. The Constitution recognises "municipality's right to govern, on its own initiative, the local government affairs of its community, subject to national and provincial legislation as provided for in the Constitution".[8]

The scope of local government's ***executive*** power – the power to "do" – is delineated by the functional areas listed in Schedules 4B (local government functional areas of concurrent national ***and*** provincial legislative competence)[9] and 5B (local government functional areas of exclusive

[8] Section 151 (1) Constitution

[9] 'The following local government matters to the extent set out in section 155 (6) (***a***) and (7): Air pollution; Building regulations; Child care facilities; Electricity and gas reticulation; Fire-fighting services; Local tourism; Municipal

provincial legislative competence)[10] of the Constitution. These are the functional areas in respect of which cities are empowered to provide services and pursue development.

Metropolitan municipalities such as the City of Cape Town have exclusive authority over these powers and functions, unlike local councils which must share these with district councils.[11]

Local government also has executive competence over any matter assigned to it by national or provincial legislation.

A municipality's executive and administrative authority is complemented by the ***legislative*** right to make ***by-laws*** to regulate these matters.[12] In relation to Schedule 4B (local government concurrent national and provincial competence) matters, national and provincial government's legislative powers are said to be circumscribed in that they do not extend to the "core" of Schedule 4B matters but rather deal with the framework within which local government is to exercise these powers i.e. the setting of national standards, minimum requirements, monitoring procedures and the like.[13] A by-law that conflicts with national or provincial legislation is invalid. [14]

The same principle applies to provincial legislative powers in relation to Schedule 5B matters (local government exclusive provincial competence) – provincial legislative competence does not extend to the core of these matters.

National government also has intervention powers in respect of Schedule 5B matters only if legislation is necessary to maintain national security, economic unity, or essential national standards; or to establish minimum service stands or prevent unreasonable action by a province prejudicial to another province or the country as a whole.[15]

The constitutional objects of local government are to:
- provide democratic and accountable government for local communities;
- ensure the provision of services to communities in a sustainable manner;
- promote social and economic development;
- promote a safe and healthy environment;
- encourage the involvement of communities and community organisations in the matters of local government.[16]

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airports; Municipal planning; Municipal health services; Municipal public transport; Municipal public works only in respect of the needs of municipalities in the discharge of their responsibilities to administer functions specifically assigned to them under this Constitution or any other law; Pontoons, ferries, jetties, piers and harbours, excluding the regulation of international and national shipping and matters related thereto; Storm water management systems in built-up areas; Trading regulations; Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems.'

[10] 'The following local government matters to the extent set out for provinces in section 155 (6) (***a***) and (7): Beaches and amusement facilities; Billboards and the display of advertisements in public places; Cemeteries, funeral parlours and crematoria; Cleansing; Control of public nuisances; Control of undertakings that sell liquor to the public; Facilities for the accommodation, care and burial of animals; Fencing and fences; Licensing of dogs; Licensing and control of undertakings that sell food to the public; Local amenities; Local sport facilities; Markets; Municipal abattoirs; Municipal parks and recreation; Municipal roads; Noise pollution; Pounds; Public places; Refuse removal, refuse dumps and solid waste disposal; Street trading; Street lighting; Traffic and parking.'

[11] Section 155(1)(a) Constitution
[12] Section 156(2) Constitution
[13] Steytler & De Visser 5-21
[14] Section 156 (3) Constitution
[15] Section 44(2) Constitution
[16] Sections 152 and 153 Constitution

The Constitution emphasizes the developmental responsibilities of local government by requiring that a municipality "structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community".[17] The provision of municipal services is thus central to the purpose of local government.[18]

O'Regan J expands on the important role of local government: "Local government thus bears the important responsibility of providing services in a sustainable manner to their communities. This task is particularly important given the deep divisions in our towns, the scars of spatial apartheid which still exist and the fact that many poor communities are still without access to basic facilities such as water, adequate sewerage systems, refuse collection, electricity and paved roads."[19]

Steytler and De Visser argue that as with socio-economic rights, the duty to provide municipal services does not compel a municipality to provide a particular service to a particular resident, but rather entails a reasonableness review which will determine whether the municipality has taken reasonable measures within its available resources to achieve the progressive delivery of a service.[20] The obligation to provide a particular service is however clearest where such a service intersects with a socio-economic right such as the right of access to sufficient water.[21] This view hinges on such socio-economic rights themselves being subject to progressive realisation qualifications.

4.2 Cities and development

A municipal council must "strive within its capacity to achieve" its constitutional objects.[22] Thus the municipality exercises its legislative and executive authority "by promoting and undertaking development". Development is expansively defined in the Local Government: Municipal Systems Act as follows.[23]

1. Development must include the uplifting of a community aimed at improving the quality of life of its members with specific reference to the poor and disadvantaged members of the community
2. Development must include its "social, economic, environmental, spatial, infrastructural, institutional organisational and human resource" aspects
3. Development is equated with ***sustainable*** development – development must be aimed at "ensuring that development serves present and future generations". [24]

This definition of development is important because it prioritises the improvement in the quality of life of the poor and disadvantaged members of the community. Just as the third world complains today that it is being made to pay the price of limiting development due to environmental concerns, similar concerns may be mirrored at local level. Where sustainability is equated with environmental issues alone, this can often operate to block sorely-needed development.

[17] Section 152(1)(b)
[18] Steytler & De Visser 9-5
[19] ***Mkontwana v Nelson Mandela Municipality and Another 2005 (2) BCLR 150 (CC)***
[20] Steytler & De Visser 9-7
[21] Section s7(1)(b) Constitution
[22] Section 19(1)(a) Local Government: Municipal Structures Act
[23] Section 1 Local Government: Municipal Systems Act
[24] Section 1 Local Government: Municipal Systems Act

4.3 Mechanisms to leverage sustainability

4.3.1 Municipal planning and zoning schemes

Municipalities have the executive authority to administer municipal planning.[25] Chapter 5 of the Systems Act is devoted to the legal framework for "Integrated Development Planning". An IDP should consolidate all municipal planning, including its spatial framework, into a comprehensive strategy and link it to the municipal budget.[26] Furthermore a municipality must have a performance management system and set Key Performance Indicators (KPIs) for measuring performance in respect of each of its developmental priorities and objectives which are in turn linked to the IDP.[27]

Zoning schemes stipulate what type of buildings and activities can occur in a particular area. "Zoning is a method of development management that designates property for a particular development or use category or zone. Within each zone there are provisions and rules setting out the purposes for which property may be used, and the manner in which it may be developed." [28]

Zoning is different from spatial development frameworks, structure plans and policy plans which are associated with planning guidelines for medium and long term development. If a zoning scheme is not allied to frameworks and policy there is little hope of such plans being realised. Zoning schemes thus lie at the heart of development and may be the most direct tool of state planning in attempting to shape spatial development in ways affecting sustainability, which may include such issues as increasing population densities, providing for mixed-use areas, and promoting decentralisation. Typical land-use or zoning categories in a zoning scheme include:

- "Residential zones (e.g. single residential dwellings, group housing schemes or blocks of flats)
- Open space zones (e.g. public open spaces, parks, sports fields, cemeteries or private open spaces)
- Business commercial zones (e.g. shops or office blocks)
- Community use facility zones (e.g. schools, clinics or places of worship)
- Industrial zones (e.g. factories, motor repair garages or warehouses)
- Utility zones (e.g. electricity substations or water treatment plants)
- Transport zones (e.g. public roads, railway lines and public transport interchanges)". [29]

Zoning schemes regulate in detail, for each zoning category, ***inter alia*** minimum setbacks from roads as well as maximum floor areas and maximum coverage – the maximum percentage of the plot which may be covered by buildings. For example the Elsies River Town Planning Scheme (1971) provides for no more than 50% coverage in the single residential zone. By contrast the regulations pursuant to the Black Communities Development Act (4 of 1984) stipulate a maximum coverage of 60% for residential areas.[30]

The key problems with land use planning in general and zoning schemes in particular as mechanisms of change relate to (1) the enforcement of their provisions (2) public participation impediments to re-zoning or departures from zoning (3) their ongoing provenance in outdated legislation.

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[25] Section 156(1) of Constitution read with Schedule 4B.
[26] Steytler and De Visser 7-3
[27] Steytler and De Visser 7-20
[28] City of Cape Town Zoning Scheme Fourth Draft November 2007
[29] http://www.capetown.gov.za/en/planningandbuilding/Functions/Pages/LandUseManagement.aspx
[30] ***GN R1897 of1986 published in GG 10431 RG 3998 of 1986-09-12 (comm 1986-09-15) under s 66 (1) of Act 4 of 1984***.

Municipal courts were established in Cape Town to deal with violations of by-laws and legislation enforced by local authorities. A study in 2006 found that only around 300 non-traffic matters were heard across all 10 Cape Town municipal courts.[31] Most frequent were violations relating to building regulations as well as those relating to air pollution, dog nuisance, fire control, land use, electricity, and water. The sample drawn in the study further suggested that these general matters tended to run on for periods in the region of 2-3 years with no obvious conclusion, while by contrast traffic matters generally had no more than one postponement culminating in the authorisation of a warrant. To all intents and purposes, the courts were operating as traffic courts and were ineffective in relation to other matters.

Compliance with zoning schemes and similar regulation appears however to be relatively high in suburban and commercial Cape Town. This may be because such provisions are frequently "policed" by members of the community. Ironically community participation requirements introduced with the new dispensation in legislation such as Chapter 4 of the Systems Act have tended to be utilised by the "formerly advantaged". To quote one former municipal planner:

"The irony of the matter is the areas that require densification are the areas occupied by the rich and vocal. Each application to subdivide erven … in these areas is met with great ferocity and supported by poorly researched arguments that, for example, argue a direct relationship to densities and crime levels, property values, visual impact and obviously the arguments raised by the 'privacy brigade'."[32]

Ironically the key piece of legislation for land use planning in Cape Town has provincial provenance and predates the constitutional era: The Land Use Planning Ordinance 15 of 1985 (as subsequently amended) (LUPO). Municipalities are empowered to recommend to the relevant Provincial Minister of the Provincial Government Western Cape zoning scheme regulations in terms of the Land Use Planning Ordinance.[33]

Furthermore although the bulk of the Black Communities Development Act (Act 4 of 1984) (BCDA) was repealed years ago, land use and zoning schemes are still managed in terms of the regulations promulgated under the Act in certain areas of the city where it applies.[34] A Draft Amendment Bill which seeks to amend LUPO so that the Provincial minister may amend or replace town planning schemes under the BCDA was published in December 2009.[35]

However at the time of writing there are over 20 different zoning schemes operating within the City of Cape Town, originating from all the smaller local authorities which were amalgamated to form the City of Cape Town.[36] The city is currently working on an Integrated Zoning Scheme (IZS), the fourth draft of which was published in November 2007. A new draft is set to be published in March 2010.[37] However, until the new scheme is promulgated, the existing ones remain in force.

There is an urgent need to align zoning schemes with IDP policy. However for real change reliance should rather be made on ways in which market forces may be leveraged to encourage a more sustainable city. The possibilities for this are explored in relation to municipal rates and the

[31] Lue-Dugmore, M & Redpath, J ***A study of Municipal Courts in South Africa: Research Report for the City of Cape Town*** Institute for Security Studies 31 August 2006
[32] http://www.cyburbia.org/forums/showthread.php?t=20120
[33] Section 9(2) and section 10 Land Use Planning Ordinance 15 of 1985
[34]http://www.capetown.gov.za/EN/PLANNINGANDBUILDING/PUBLICATIONS/LANDUSEMANAGEMENT/Pages/LegislationPart1.aspx
[35] Province of the Western Cape: Provincial Gazette 6683 of 11 December 2009
[36]http://www.capetown.gov.za/en/planningandbuilding/Publications/LandUseManagement/Pages/LegislationPart1.aspx#Zon
[37] Email communication with city official, 2 February 2010.

provision of municipal services.

4.3.2 Municipal rates

As discussed above (chapter 3), basing municipal rates on the valuation of properties is regressive in the sense that properties with a single dwelling with twice the plot area are seldom valued at twice the price of an equivalent area with two dwellings. Consequently the municipal rates structure encourages the retention of larger, less dense properties by effectively levying lower rates on such properties.

However the Local Government: Municipal Rates Act provides that rates policy must be based on the market value of the property, calculated with reference to both the land and the improvements.[38] Market value is defined as "the amount the property would have realised if sold on the date of valuation in the open market by a willing seller to a willing buyer"[39].

A municipality may not levy different rates on ***residential*** properties.[40] Exceptions to this are a rate levied on properties with a market value below a prescribed valuation level, the phasing in of newly rated property and transitional arrangements with regard to valuation rolls.

However in terms of the regulations to the Act the rate on agricultural properties (as opposed to residential properties) may not be more than 25% of that imposed on residential properties. [41] This is likely to operate to encourage the retention of agricultural functions[42] for properties in areas such as Phillipi and Constantia and consequently densities are likely to remain low in these areas.

In addition to the standard rates imposed on a property, a municipality may impose an additional rate on all properties within a circumscribed area. The object of raising additional rates in a given area is to improve or upgrade that area in so-called "improvement districts"[43]. This provision may not be used to reinforce existing inequities. Consequently it is unlikely that such provisions may be used to leverage densities in wealthy, low-density areas.

A municipality may grant exemptions, reductions or rebates to a specific category of ***owners*** of properties in terms of its rates policy.[44] This however relates to ***qualities of the owner*** without reference to the property. Thus it appears that the usefulness of municipal rates as a possible tool for leveraging desirable densities will require amendment to the Local Government: Municipal Rates Act. Municipalities such as Cape Town may not depart from the provisions of the Rates Act.

4.3.3 Water services pricing

"Potable water supply systems and domestic waste-water and sewage disposal systems" falls under Schedule 4B of the Constitution, i.e. they are a local government function of concurrent national and provincial competence.

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[38] Section 11(1)(a) Local Government: Municipal Rates Act
[39] Section S46)(1) Local Government: Municipal Rates Act
[40] Section 19(1)(a) Local Government: Municipal Rates Act
[41] ***Municipal Property Rates Regulations on the Rate Ratio between Residential and Non-residential Properties on GN R363 GG no.32061 of 27 March 2009***
[42] The definition of "agricultural purposes" excludes eco-tourism and game farms.
[43] Section 22(1)(b) Local Government: Municipal Rates Act
[44] Section 15(2) of the Local Government: Municipal Rates Act

The National Water Act provides the framework of environmental protection and promotion of optimal use of water in the public interest, while the Local Government: Municipal Systems Act provides that the council must adopt and implement a tariff policy on the levying of fees for municipal services, including the provision of water.[45]

The adopted policy must comply with the provisions of the Systems Act, the Local Government: Municipal Financial Management Act and any other applicable legislation – which includes the Water Services Act 108 of 1997. This Act provides ***inter alia*** for the rights of access to basic water supply and basic sanitation and for the national setting of standards and of norms and standards for tariffs. Section three provides for the right of access to basic water supply and sanitation, while section five of this Act provides that if water services are unable to meet the requirements of all its existing consumers, it must give preference to the provision of basic water supply and basic sanitation. This provides support for the suggestion that far higher tariffs be applied to high-consumption users during times of scarce supply.

The Systems Act further provides that the tariff policy must reflect the following principles:

- Users must pay for services consumed generally in proportion to their actual consumptions
- However this must be balanced against the principle that service users must be "treated equitably in the application of the tariffs". Thus a uniform policy may lead to inequitable results for example in the case of the indigent. The Minister may regulate the subsidisation of tariffs for poor households.
- Tariffs must relate to the actual cost of providing a service.
- Services may however be used to generate income over and above recovering actual costs.
- Tariff structure may be used as a policy instrument in the promotion of local economic development. Special tariffs may be established for commercial and industrial users.
- Sustainable use of resources must be pursued: ""economical, efficient and effective use of resources".
- The extent of subsidisation of tariffs for poor users and other categories of users must be fully disclosed. [46]

None of these provisions prevent the application of more aggressive demand management pricing to high consumption users during times of scarcity (basic minimum provision should however continue to be zero-rated). As postulated previously, water demand management pricing may operate as a lever to encourage a reduction in plot size and thus encourage density indirectly.

4.3.4 Electricity services pricing

The Systems Act provisions in relation to tariff policy apply equally to electricity reticulation. The Electricity Regulation Act 4 of 2006 provides for additional electricity tariff principles applicable to license conditions under which licenses may granted to licensees, such as municipalities.

These include that the approval of prices, charges and tariffs and the regulation of revenues-

- must enable an efficient licensee to recover the full cost of its licensed activities, including a reasonable margin or return;
- must provide for or prescribe incentives for continued improvement of the technical and economic efficiency with which services are to be provided
- must give end users proper information regarding the costs that their consumption imposes on the licensee's business;

[45] Section 74(1) Local Government: Municipal Systems Act
[46] See Steytler & De Visser 9-20

- must avoid undue discrimination between customer categories; and
- may permit the cross-subsidy of tariffs to certain classes of customers.[47]

A licensee may not charge a customer any other tariff and make use of provisions in agreements other than that determined or approved by the National Energy Regulator as part of its licensing conditions, although the Regulator may, in prescribed circumstances, approve a deviation from set or approved tariffs. Thus a city may set its own tariffs but these must be approved by the Regulator and must comply with the conditions alluded to above.

The Act places a specific duty on municipalities to ensure sustainable reticulation services through effective and efficient management and adherence to the national norms and standards promulgated by the Regulator.[48]

4.3.5 Renewable energy promotion

Current national legislation regarding alternative power sources concentrates almost exclusively on regulating large-scale Independent Power Providers (IPP). This opens the door to the city to create an enabling environment in relation to private small-scale power production for home use. Nothing in the legislation prevents the City from subsidising such small-scale power generation.

One means of providing incentives for small-scale generation whether via wind or solar lies with the city paying the small-scale producer for power fed back to the grid when the producer has produced excess power. Technologically all that is required is an additional meter to measure electricity returned to the grid. However such feeding back into the grid would require, in terms of current legislation, such a small-scale producer to be licensed with the National Electricity Regulator to produce power (generation for own use does not require licensing). [49] Such licensing is likely to be a significant bureaucratic burden.

Subsidies are thus probably necessary. A UCT study found that wind turbines were financially viable for consumers in only a few of the windiest locations in South Africa, given the current low coal-based electricity tariffs.[50] The analysis for a tariff subsidy indicates that a subsidy of about R1.45/kWh (at current electricity prices) will be required for consumer-based turbines to be viable in areas with average winds of at least 5m/s (found in many areas of Cape Town). Capital subsidies for both 1kW and 5kW turbines would need to be substantial in order for investment to be viable. However increasing electricity prices may further shift the balance toward the economic viability of green energy.

4.3.6 Public transport commuter subsidisation

Services such as water have special status and municipalities are required to provide "free basic minimum services" to the indigent because access to water is a socio-economic right.[51] Transport

[47] Section 16 Electricity Regulation Act 4 of 2006
[48] Section 27(f) Electricity Regulation Act 4 of 2006
[49] Section 7 read with Schedule 2 of the Electricity Regulation Act 4 of 2006
[50] Whelan, B & Muchapondwa, E. ***Enhancing consumers' voluntary use of small-scale wind turbines to generate own electricity in South Africa*** Working Paper 135 School of Economics, University of Cape Town.
[51] See Steytler & De Visser 9-13 for more on free basic municipal services

services do not appear to be treated similarly, possibly because it is thought its provision cannot be related to a protected socio-economic right.

However our analysis above shows that for a substantial number of children from poorer suburbs in Cape Town, basic education can only be accessed if commuting is undertaken. The Constitution protects the right to basic education, and this right is not subject to progressive realisation.[52] There is a substantial amount of literature which speaks to the fact that transport costs act as impediments to children accessing education, with transport costs consuming a large proportion of the income of the poor.[53]

No-fee schools and fee exemptions, the primary mechanisms by which the state seeks to ensure this right, do not ensure access to basic education for the poor if schools are full or located a commute away. Consequently it can be argued that indigent scholars should have a "basic minimum service" of transport to ensure they are able to access basic education. Current provincial education policy is to the effect that where there is no school within a certain distance of learners' place of residence, school transport is provided. This does not cover the situation where the nearest school is full or where the choice is made not to attend the nearest school, for reasons which may include the convenience of parents being able to escort children to school on the way to work, or the perception of parents that the nearest school provides inferior education.

The new ITS smart card system provides an opportunity for targeted transport cost relief. The envisaged smart card system of the ITS could be tweaked to provide indigent scholars with a pre-loaded amount of trips. It is further suggested that taxis be included on the smart-card system, as many schools are only directly accessed by taxi. Whether the cost of this subsidy should be borne by the city or the department of education is however open to debate. While school transport costs are currently borne by the education department, municipal transport is a local government function.

What seems clear is the social sustainability of Cape Town is being undermined by the continued inequity in education and disproportionate burden placed on the poor in meeting transport costs for the purposes of accessing quality education. Case law has already suggested that equity requires more than equality of treatment.

Such a burden (of subsidised public transport) placed on either the city or the provincial department of education will provide a strong incentive to ensure schools and other services are located closer to the people who need them. Furthermore, such a subsidised system is also likely to boost use of the ITS and thus promote its economic sustainability. Currently it appears the city views it investment in ITS infrastructure as its subsidisation of public transport.

5. Conclusion and Recommendations

The paradigm that is assumed to continue in Cape Town for the foreseeable future is:

1. In-migration is likely to continue at roughly the current tempo and from similar geographical areas and socio-economic groups.
2. Emigration and demographic changes will probably lead to on-going changes including the aging of the middle class and a growing African population of school-going age.
3. Tourism will remain a mainstay of the local economy and, if anything, assume increasing

[52] Section 29(1) Constitution
[53] See ***inter alia*** the work of he Children's Institute (University of Cape Town).

prominence.
4. Much of the transport infrastructure is geared towards carrying people and goods to the city bowl.
5. In the medium term the prices of electricity is to increase to a level that makes green alternatives competitive.
6. The scarcity of water will increase over the medium and long terms.
7. The price of petroleum fuels will similarly increase. In the medium term these increases will make green transport alternatives ever more attractive.

How then are the pieces to be fit together in a coherent policy? Perhaps the most useful way of resolving the evident tensions is to periodise the priorities. Ultimately the extent to which sustainability is improved depends on the extent to which long-term objectives are met.

5.1 Immediate term

The immediate objectives should centre on making better use of existing services, facilities and infrastructure while putting in place an enabling environment for long term objectives.

1. Implement the obvious, such as changes to state procurement policies to ensure that goods and services are as green as possible as well as the expansion and enhancement of the current programmes of waste recycling.
2. Facilitate the uptake by residents of green alternatives (solar heating, wind turbines, water saving devices). This may require adjustments to the electricity tariff to finance the subsidisation of (currently more expensive) green electricity. Alternatively, amendments to national legislation to enable the feeding back to the grid of small-scale production without the necessity for licensing by the regulator may be required.
3. Adopt building regulations to enable the state to demand that new developments make use of fuel-efficient designs and alternative sources of energy. Such measures would include requiring dwellings and commercial buildings to be north-facing and have appropriate shading to enable the use of natural heating and cooling systems.
4. Amend rates legislation to enable city authorities to dis-incentivise large erfs for dwellings.

5.2 Medium term

The medium term objectives centre on dealing with the tensions between the competing demands placed on densification, differentiating between in-filling and densification and even de-densification of certain areas. The guiding principle should be that investments and policies should facilitate development within long-term sustainability objectives.

1. Enable better and more affordable access to existing education, employment and service opportunities. These tend to be located in the “traditional” core of Cape Town. This requires the establishment of an efficient public transport system in concert with policies to ensure it is affordable to those who most need it.
2. Densification: make more efficient use of existing land by facilitating densification of those areas that are well serviced in terms of infrastructure, opportunities and services. This may require detailed and highly localised consideration of appropriate zoning schemes as informed by existing trends. Further densification of areas along already saturated transport nodes should be avoided.
3. De-densification: de-densify poorly serviced high density areas through the provision of

services (schools, sidewalks, fire lanes, etc.)

4. Decentralisation: direct new investment in schools, job opportunities, state facilities etc. towards those areas where the demand is and where travelling distances can be reduced. This may require substantial investment and forward planning to identify future transport nodes.

5.3 Long term

The long term objective is to normalise the social topography of the city, minimise the need for residents to commute long distances, minimise reliance on bulk electricity services and optimise the effect of the water that is consumed. Cape Town's draft spatial development framework contains many of the key elements required for realising a more sustainable future.

5.4 Cape Town's Draft Spatial Development Framework

In terms of the locus of housing and future economic development, Cape Town's draft spatial development programme (and density strategy) creates an enabling environment for more sustainable development. The draft document envisages facilitating such development through a tiered, grid transport system. As such the draft seems a marked deviation from recent practices the sustainability of which was brought into question above. For example, the facilitation of a grid transport network coupled to the expansion of services and nodes of economic opportunity near to where people live is in sharp contrast to the first phase of the ITS and the massive investment in soccer and other facilities near the CBD. While the latter developments highlighted the developmental focus on the CBD and congested linkages thereto, the draft document at the very least allows for a higher degree of decentralisation in economic development and service provision. It was earlier indicated that such decentralisation would, in the long, term offer a far more sustainable option.

Salient points from the draft include:

- The explicit recognition of the central role played by open spaces in terms of residents' quality of life
- The need to facilitate transport networks along both the north-south and the east-west axes
- The need to densify affluent areas and provision of facilities and services to the townships in the south east
- The protection of agricultural land from encroachment
- The encouragement of development to the north of the city rather than to the east.

These changes can, respectively, be contrasted to:

- The current preference for filling open spaces with residential and commercial development
- The focus of the ITS investment (in particular phase one) on routes to the CBD
- The professed need to densify residential areas along public transport routes in order to generate an appropriate mass of users
- The location of massive sub-economic housing developments on the eastern edge of the city.

Conducive as the draft policy may be to a more sustainable future it remains silent on three vital issues:

1. The policy explicitly seeks to ensure a greater mix in the income of beneficiaries in new residential development. However, the document is silent as to how tensions in implementing are to be resolved or indeed if they can be resolved. On the one hand mixed-income housing development is certain to be resisted by current residents. The document

does not indicate if and how the rights of current residents can be usurped in order to realise the objective. Assuaging the fears of existing residents will not be achieved by merely branding their resistance as reactionary or prejudiced. On the other hand, such mixed-income development may, in the long run, possibly not be to the benefit of the poor. The types of developments envisaged (relatively small scale housing estates in well situated areas within high value neighbourhoods) are predisposed to "gentrification". Market forces may rapidly price such developments beyond the affordability levels of the targeted beneficiaries.

2. The proposed policy recognises the inefficient use of land particularly among the affluent: "High-income housing has the greatest impact on urban sprawl. The top 20% of high-valued properties take up 40% of the residential land in Cape Town. This figure excludes many of the low-density golf, wine and equestrian developments within the municipal area that, if included, would shift the disproportion of land allocated to high-income development even further. (pg. 32)" However these very areas, at the same, time are identified as important asset of the area. "What makes Cape Town special and unique, and more importantly, what will continue to give it the edge as an attractive place to live in and visit in the decades ahead, is its high-quality destinations. Some of the destinations are of high cultural and heritage importance, e.g. Robben Island and Groot Constantia; some capitalise on the city's natural assets, e.g. the Kirstenbosch Botanical Gardens and Cape Point...(pg. 11)". These perspectives conceal a possibly irreconcilable tension between the need to densify (and to densify affluent areas in particular) and the need to make better use of existing land while contributing to redress. If areas such as those Groot Constantia, the equestrian estates and golf courses were, for example, to be taxed at rates that did not give preferential treatment to "agricultural" uses (or under a regime that was progressive with respect to the size of the area used) then market forces would almost contribute to them being made available for residential purposes. This however would certainly be at the cost of the aesthetic quality of the region. On the other hand if such areas are not taxed at residential areas it would appear that other residents are subsidising the most affluent – and doing so in a way that protects only the most affluent from densification. Aggravating the situation is that fact that most of the facilities mentioned, such as golf course, are "exclusive". The draft spatial policy is silent as to how such key areas are to be addressed or if and how these competing objectives are to be reconciled.

3. The draft policy makes repeated reference to densification while implying that this is to be achieved by the more frequent use of multi-storey structures. Historically South Africans have been hesitant to accept such "vertical densification". However when the benefits of vertical densification appear to outweigh the costs, market forces will serve to overcome this reluctance. However market forces are of little relevance to sub-economic housing. It is also among this group more than any other which associates high rise development with gangsterism, crime, social decay etc. In the absence of market forces compelling the poor to accept vertical densification, the responsibility for implementing the policy fall to city administrative and political authority. However the extent of aversion to vertical densification among the poor will ensure that the policy objectives remain highly contested and politically problematic for some time to come.

The draft policy is unfortunately silent as to how these issues are to be addressed and indeed whether or not the objectives are reconcilable. To its credit the authors of the policy do not, for example, try to justify densification in terms of generating population mass required to make the ITS cost efficient or as an explicit mechanism for social engineering. This softly-softly approach may very well ensure that the benefits with which densification is associated, may well be realised.