Foresights: The Urban Water and Real Estate Development Nexus in the Mount Hampden 'New City' Project, Zimbabwe

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Abstract

The article interrogates and exposes the criticality of water as a crucial aspect defining urban and real estate development projects in territorial planning, design and implementation. It questions how and why a century after Mt Hampden (outside Harare) was discarded as a potential site by the British Pioneer Column, it has suddenly become possible to establish the same site and environment as a seat of government. The new Parliament Building is already under construction by the Chinese and, once it is completed, is believed to become a puller of investment and various other urban functions. It would appear that 'things' were better then, than now. Using a triangulation of literature review, document review and key informant interviews, the article observes several critical developments in scholarship, policy and practice. In policy and practice, it is has observed that the Pioneer Column saw simplistic and rudimentary measures such as retreating to living in proximity of open water sources (in this case Mukuvisi River in Harare) as the low-cost and cheap and only possible option then. Technology had not been developed to harvest water, including groundwater for a growing urban-like population such as they were. Secondly, the choice of Harare Kopje as the epicentre of development then was much about security, seeing that the new white migrants were settling among a sea of the autochthons – the Shona – they were not

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sure of how they would react. Thirdly, the New City is a development that is a post-modern development taking place in a context of deep poverty in the country and might appear as a sign of extravagance on the part of the government, hence insensitive to the 'people's needs' at the moment.

***Keywords**: real estate, urbanity, spatial planning, territorial planning, decentralised water system*

INTRODUCTION

Water is essential in the well-being of individuals, communities and surrounding settlements, thus, making it a quintessential part of the urban and real estate development equation. The water utility industry around the globe is under enormous pressure to meet the challenges of increasing demand resulting from increasing population growth and lifestyle changes in the face of depleting freshwater sources (Piratta and Goverdhanam, 2015). Zimbabwe is no exception as far as water woes are concerned, hence, with the development of a new city, it is prudent to critically look into the anticipated water demand and supply alternatives for the city. A groundwater stock-take and a model may be required to see if the supply meets the expected demand. Already, there is a current and predicted future deficit challenge to water supply and this requires water supply managers to come up with sustainable and reliable alternative sources, whilst making the supply infrastructure smarter and more resilient (Piratta and Goverdhanam, 2015).

Water shortages in Zimbabwe have produced the most contentious aspect of urban crisis, putting the state in a constant struggle over water supply and these shortages are still prevalent and perhaps worsened today (Musemwa, 2008). Therefore, there is need to make sure that the 'new city' does not inherit the same struggles, not only on water supply but of having an economic base because this affects service provision in a city. This dilemma of having cities with no economic base did not befall Zimbabwe alone, but most former and developing colonies. In both Mauritania and Rwanda, there was no urban system during the colonial period. Only embryonic urban centres existed (O'Connor, 1983). It is, therefore, evident that most of Zimbabwe's urban centres do not have

economic bases by the establishment. Some planning professionals perceive Zimbabwean urban centres as 'misplaced urban centres' that make them difficult to manage and that makes them very complex and expensive to run (Mbiba, 2017). Now that there is a plan to develop a new city in Mt. Hampden, the question of its economic base remains. More so, considering the current economic environment in the country the issue of capacity and timing becomes very critical; is it really necessary to develop a new city at the moment? Does the government have the capacity to see this development through? The article seeks to interrogate and expose the criticality of water as a critical aspect defining urban and real estate development projects in territorial planning, design and implementation. It communicates with town planners, water managers, urban managers and all those involved in the planning and development of the new city and urban development in general. It helps us as a guide in addressing water woes that may threaten the new city and that are already prevalent in existing cities. Water plays a critical role in real estate and urban development, hence it is a critical element.

The study is based on the Sustainable Services at Scale (Triple-S) Theory by Schouten and Moriaty (2013). This theory promotes sustainable water services at scale by helping to catalyse change in the water sector. Sustainable services, at scale theory of change, is guided by an understanding that existing practice is excessively focused on the provision of new infrastructure and, as a result, contributes to a failure to provide sustainable water services. The theory, therefore, brings a package of knowledge, strategies and tools that can support the required change toward a more appropriate paradigm for water supply (*ibid*). This theory supports the need for change in the water sector to ensure sustainable water provision and management in both rural and urban sectors. It looks at the need for change in the water sector, focusing mainly on the cause of failure and the systematic problem in the water sector to address the water issues (Schouten and Moriarty, 2013; Sood, 2018).

Sustainable services at scale theory propound the basis for change to rely on the pillars of change that comprise changing the service delivery approach, harmonisation among actors and alignment to nationally agreed and government-owned strategies, policies and practices and creating a

learning and adaptive sector that enables the water sector to adapt to a rapidly changing operational and physical environment. A country's water sector must be able to learn and adapt its strategies and plans for delivering sustainable services. It needs the technical capacity to deliver services and the policies, guidelines and resources to achieve its goals. Additionally, the theory lays down the principles for systematic change as relevance, responsiveness, leverage and legacy. The water sector should be seen as a complex adaptive system, consisting of multiple actors and relationships, all of which need to work together effectively for services to be delivered (Schouten and Moriarty, 2013; Koehler *et al.,* 2018; Sood, 2018).

The theory promotes developing and sharing evidence, principles, tools and new practice to support the change process, stimulate reflection and debate and inform and underpin changes in policy and practice (Koehler *et al.,* 2018). It, therefore, provides building blocks for sustainable service delivery that is key in the development of the new city.

CONTEXT OF THE STUDY

The provision of clean water and sanitation is one of the Sustainable Development Goals (SDGs) (goal number 6). This goal seeks to ensure availability and sustainable management of water and sanitation for all by the year 2030, as this is considered a basic human right (UNDP, 2015). This makes the provision of water a critical aspect of urban development and real estate development. Most urban settlements in developing nations make use of groundwater for all uses. Resultantly, over-extraction of groundwater is posing a threat to the sustainability of aquifers. This happens when water abstraction exceeds natural recharge, groundwater becomes depleted and contaminates surface water (World Bank, 2011; Jacobsen *et al.,* 2012). In Zimbabwe, one of the key issues local authorities look at before granting partial or full compliance to any development is the provision of safe water and sanitation facilities. This shows the importance of water in urban development. It is indeed the lifeblood of the urban settlements. However, almost all of Zimbabwe's major urban centres are exhibiting water quality and scarcity problems and it was projected that these problems will worsen from 2008 onwards that indeed has come true (Nhapi, Siebel and Gijzen, 2008).

Since the late 1990s, an increasing number of urban areas in Zimbabwe have been haunted by water problems. This has been attributed to poor rainfall, insufficiently trained water resources personnel, population growth, ageing infrastructure, lack of funds and corruption (Rondinelli, 1991; Chatora, Taylor and Hoevenaars, 1995; Mpande and Tawanda, 1998). Moreso, Southern Africa, in general, and Zimbabwe, in particular, have been experiencing perilous and enervating water scarcities in their urban settlements since the beginning of this millennium. Water scarcities have been reported even when normal-to-above normal rainy seasons are experienced. Water shortages continue to haunt Zimbabwe's urban centres even when water sources are reported to be full (Makwara and Tavuyanago, 2012). All of Zimbabwe's major urban centres, among them Greater Harare, Bulawayo, Mutare, Gweru, Masvingo and Kadoma, are plagued by inadequate water supplies (Dube and van der Zaag, 2002; Reuters, 2007; Nhlanhla, 2008). This is, however, not peculiar and unique to Zimbabwe. Urbanisation is increasing at the fastest rate in sub-Saharan Africa and this is causing water challenges in both new and existing urban centres.

The current urban water crisis in Zimbabwe owes its genesis to the central government's inescapable politicisation of most decisions affecting the municipal provision of water and sanitation in the country's cities and towns. This process has been given expression by the government's directive to Zimbabwe National Water Authority (ZINWA) to take over the management of urban water supply and sanitation and from all the urban local authorities in Zimbabwe. Since then, the Government of Zimbabwe has continued to treat ZINWA as an extension of itself, financially propping it up and defending it to the hilt even in the face of palpable operational deficiencies to further its political objectives (Musemwa, 2008). More so, it has alluded that Zimbabwe's major urban centres are situated upstream of their water reservoirs' catchments due to poor planning. Such circumstances provide a favourable environment for the proliferation of diseases. Moreover, Harare's water supply system was built in 1956 for an estimated population of 250000 people, just about a tenth of its now ballooned population which is a real problem, since the city still depends on the same supply system that has depreciated over the years (Makwara and Tavuyanago, 2012). The ageing equipment is

compromising the efficiency of water supply, thus, resulting in the loss of huge amounts of expensively treated water. However, even where they are functioning, they cannot meet increasing demand. If the new city is to evade these water woes facing urban settlements in Zimbabwe, it has to have its water sources and construct new infrastructure dedicated to its population alone.

LITERATURE REVIEW

Cities are not just places where there are large numbers of people but they are political and legal entities, usually places of local government and economic activity and sites of leisure and recreational activity (Thorns, 2002; Sassen, 2010; Makwara and Tavuyanago, 2012). The initial cities arose at a time when the capacity of societies had grown such that they could become more settled and permanent. There was a move from hunting and gathering toward agrarian production, leading to surplus production and the emergence of new classes within the population who had greater wealth and a more differentiated set of tasks and lifestyles. There was, thus, the need for an administrative system to complement the family and clan structures that had provided the basis of social organisation (Thorns, 2002). Some cities then developed as a result of continuous urban expansion but most of them had an economic base and evolved slowly. Over time, they grew from small settlements for trade and fortification into splendid political, economic and cultural centres. It is, therefore, imperative that every town or city has an economic base to ensure its sustenance (Thorns, 2002; Sassen, 2010; Harvey, 2012).

Cities in the developing world, however, face challenges in their development. These problems faced by Third World countries are twofold: first, their development is not based on any economic base and, second, their urban centres do not specialise. They try to do everything, thus, eventually, they dilute their efforts and end up losing relevance and fail to have a significant impact on a global and local scale. They are not competent concerning world urban centres and they do not yield much revenue and cannot sustain themselves. In developed countries, urban centres are established based on their economic bases and are identified by their speciality (Sood, 2018). It is not healthy to have too many administrative cities in a small country such as Zimbabwe. Harare is already an administrative city hence the deemed "new city" – Mt.

Hampden which is very close to Harare cannot be another administrative city.

In the development of cities, green growth is considered very crucial**.** Green growth in urban areas is linked to adequate provision of basic services (water, sewer, solid waste, wastewater, transport network) and proper management of water resources and supply (Makwara and Tavuyanago, 2012). This is because the sustainable management and use of water resources and the provision of quality services to a growing population underpin the future success of the development of cities. Thus, reflecting the importance of water in real estate and urban development. Moreover, the provision of safe water is one of the sustainable development goals, hence it is a key element in urban and real estate development. Moreso, water resources are said to be important in facilitating economic growth, hence they are at the core of social and economic development in an urbanising world (Closas *et al*., 2012; Makwara and Tavuyanago, 2012). Additionally, in real estate development, water plays a key part in the construction of infrastructure, hence there can never be infrastructure without water. In urban development, health, safety and sanitation issues all depend on the availability of safe water for domestic, industrial and recreational use (Thorns, 2002; Closas *et al*., 2012; Koehler *et al*., 2018).

Water experts say that most African cities have not been able to develop the basic utilities for water and environmental services to keep pace with the rapid growth and Zimbabwe is not an exception (Tsiko, 2007; Mangizvo and Kapungu, 2010). Moreover, Southern Africa's urbanisation rates are among the highest in the world, denoting that overwhelming pressure is being exerted on water and its associated facilities (Garland and Herzer, 2009; Makwara, 2011). High urbanisation rates are increasing the demand for water for domestic consumption, power generation, industrial uses and recreation (Chigumira and Mujere, 2009). Global climatic changes are in a way affecting the provision of safe water for communities. This calls for new approaches in urban water management to ensure the adequate and safe provision of water for all uses as this is key to sustainable urban development. Moreso, water is a basic human right hence, it should be delivered to the people.

Water management is often affected by a city's geographical location (Domenech, 2010; Bahri, 2012). However, urban water management is an approach that seeks to warrant access to water and sanitation infrastructure and services in urban areas that are faced with the most daunting challenges of water and sanitation. Urban water management endeavours to manage rainwater, wastewater, storm-water drainage and runoff pollution, while controlling waterborne diseases and epidemics, mitigating floods, droughts and landslides and preventing resource degradation to ensure sustainable environments in urban areas (Domenech, 2010; Bahri, 2012; Closas *et al*., 2012; Koehler *et al.,* 2018). Urban water management is however, said to be on the verge of a revolution in response to rapidly escalating urban demands for water and the need to make urban water systems more resilient to climate change that is being experienced globally (Bahri, 2012; Closas *et al*., 2012).

To address the growing competition, conflicts, shortages, waste and degradation of water resources, there has been a shift from an approach that attempts to manage different aspects of the urban water cycle in isolation to an integrated approach supported by all stakeholders termed the integrated urban water management (IUWM) (Domenech, 2010; Bahri, 2012). IUWM is a valid tool for planning, decision-making and implementation for responsible authorities in the private sector, and local and central governments and this can be very useful in both new and existing cities. It is an emerging concept that can be used to complement traditional planning and technological approaches to resolving the existing challenges that affect the provision of services in cities.

Integrated urban water management manages water supply, sanitation, storm-water and wastewater using isolated entities and all four are separated from land-use planning and economic development (Koehler *et al*. 2018). This approach calls for the alignment of urban development and basin management to attain sustainable economic, social and environmental goals of a settlement. Here, planning for the water sector is integrated with other urban sectors, such as land use, housing, energy and transportation to overcome disintegration in public policy formulation and decision-making. The approach strengthens cross-sectoral relationships through embracing a common working culture, articulating shared goals and respective benefits and negotiating differences in power and resources (Bahri, 2012; Koehler *et al.,* 2018).

Moreso, the urban informal sector and marginalised populations are included in decision-making under the integrated urban water management (Bahri, 2012; Makwara and Tavuyanago, 2012; Koehler *et al*., 2018). The process begins with clear national policies on integrated water management that are supported by operational legislation to guide local councils. If this approach is to be adopted for the new city, it may help with water issues for that city since the approach encompasses all aspects of water management including environmental, economic, social, technical and political aspects. For the approach to be successful, there may be a need to engage local communities in solving the problems of water management (Closas *et al*., 2012; Bahri, 2012, Koehler *et al*., 2018). Collaborative approaches, such as this approach, should involve all stakeholders in setting priorities, taking action and assuming responsibility for the issue at hand, in this case, water provision. Integrated urban water management takes in assessments to determine the quantity and quality of a water resource, estimate current and future demands and anticipate the effects of climate change which is quite key for any urban settlement, hence in the development of a new city it becomes very critical (Koehler *et al.,* 2018).

Integrated urban water management acknowledges the significance of water-use efficiency and economic efficiency, without that water operations cannot be sustainable. It concedes that diverse kinds of water can be used for different purposes, that is, freshwater sources (surface water, groundwater, rainwater) and desalinated water may supply domestic use and wastewater (black, brown, yellow and greywater) can be treated appropriately to satiate the demands of agriculture, industry and the environment., with efficient new desalination technologies, saltwater has become an accessible water source. The approach encourages water reclamation and re-use which helps close the loop between water supply and wastewater disposal. However, integrating these two water management functions requires forward-looking planning, a supportive institutional setting, coordination of infrastructure and facilities, public health protection, wastewater treatment technology and siting appropriate to end uses, treatment process reliability, water utility management and public acceptance and participation (Koehler *et al.,* 2018).

New technologies for wastewater treatment and new business models, such as public-private partnerships and cooperation with the private

sector, are options under integrated urban water management. Under integrated urban water management, water prices and allocations reflect the true costs of developing and delivering water supplies and maintaining the system (Closas *et al*., 2012; Bahri, 2012, Makwara and Tavuyanago, 2012). The price signals the value of water. Accurate prices will encourage wise water management by all users, consistent with an integrated urban water management strategy. Differential tariffs that account for water quality can be incentives for agricultural, commercial, municipal and industrial users to reduce consumption of surface water or groundwater in favour of reclaimed water (Bahri, 2012; Koehler *et al.,* 2018). The water pricing system has greatly contributed to the water challenges facing Zimbabwe's urban settlements as the current prices do not reflect the true costs of delivering water and maintaining the systems.

Water resource assessments, such as water audits, are vital, hence, they need to be undertaken for the new city and existing cities. They make it possible for the respective authorities to quantify a given water resource base and the demands placed upon it (Taylor, 2009; Closas *et al*., 2012). Additionally, these audits or groundwater stock-takes are the basis for water policy, water management approaches and investment decisions. In an integrated urban water management approach, they examine not just surface and groundwater supplies, but previously overlooked sources, such as stormwater and wastewater. An example where these assessments were of great help is in Perth, Australia where the Tamala Park Regional Council decided to integrate urban water cycle management approaches into a new urban development. The use of water balance modelling allowed the authority to design a water system that minimised demand for imported water and maximised water reuse (Barton *et al*., 2009). Water audits are, therefore, very essential as they help in effective planning for settlements. It will, therefore, be advisable for water managers involved in the development of the new city in Zimbabwe to do a groundwater audit in Mt. Hampden to quantify the water resource base in the area against the anticipated demand. Moreover, this will greatly help in coming up with a water policy and water management approach that is relevant to the site conditions.

RESEARCH METHODOLOGY

The study used the methods of triangulation of literature review, document review and key informant interviews. This enabled the article to

observe several critical developments in scholarship, policy and practice. A multi-pronged approach was adopted to identify relevant literature. For data collection, a desk study was used for secondary data and primary data was gathered mainly through interviews and questionnaires. Sources consulted were government and international reports, government officials, planning consultants, water managers, environmentalists, policy-makers and various professionals in the built environment. These sources were from Harare and Mashonaland West – Zvimba Rural District Council. These were considered as they are jointly involved in the planning of this new city and they jointly contributed to the production of the concept plans. A combination of purposive and snowball sampling was used to select the respondents. The study area – Mt. Hampden new city is in Mashonaland West Province and is located just about 20km from Harare, the current capital city. Data collected were analysed mainly through content analysis as it was mostly qualitative data.

RESULTS

The proposals for developing a new city in Mt. Hampden date back to 2012 when the government of Zimbabwe announced its plans to have a new city there in a bid to decongest Harare[2]. This new city would then be the new capital city of Zimbabwe and will house the new parliament building, a presidential palace, reserve bank, Supreme Court, high court, shopping malls, and modern residential developments (Colussi-Mtah, 2012). The site for the new city is considered a natural landmark as it is seventy (70) metres higher than the surrounding area and has a magnificent panoramic view of the surroundings. Currently, some existing buildings and services include radar for the Zimbabwe National Army and other privately-owned properties, some of which are yet to be acquired by the Government. The proposed project will see the development of about 18,863 hectares of land into a new city with the new parliament building as the catalyst for this new development (Ministry of Local Government and Public Works, 2019).

> "The proposed New City presents an opportunity for Zimbabwe to define itself as a nation through a home-grown plan that will set a global example of how an integrated sustainable mixed-use development can assist in addressing the

[2] Interview with an official from Department of Spatial Planning (DSP)– Ministry of Local Government and Public Works

challenges of employment, public transport, residential accommodation, environmental degradation" (Moyo[3], 2019).

The groundbreaking for the Parliament Building Project for the new city was done in 2018 by President Emerson Mnangagwa. This is the first government building development for the new city. From the information gathered, it was revealed that the master plan for the city is not yet finalised. In the meantime, there is a concept plan. The Ministry of Local Government and Public Works is overseeing the development of this new city and has engaged the University of Zimbabwe to work on the master plan for the city. The new city will be mainly an administrative city and the ministry intends to minimise the population of the city[4]. Residential developments in areas near the new parliament building are being witnessed but these do not relate to what is reflected in the concept plan in terms of the type of modern apartments and buildings. It is said that about 300 low-density housing stands have been serviced in a government-approved new estate and plans for other high and medium density housing are underway. The housing waiting list for that area is, however, said to be already full[5].

Private developers are said to be moving to the city to invest in the various types of real estate developments and one of the developers is Leengate (developing Penrose suburb – 2900 medium- and high-density stands and Haydon Park – 300 low-density stands) who has been approved to service 60 hectares of land by the Ministry of Local Government and Public Works as part of the planned controlled development (Mushanawani, 2019). With regards to the water source for the city, there is a proposal to draw water from either Kunzvi Dam which is yet to be constructed or Darwendale where the dam is to be constructed. Information from an interview with one of the authorities reveals that there are concerns about pollution levels of Kunzvi Dam as a water source, so the final decision is yet to be made. This then raises the concern that where do the current surrounding settlements get water from, settlements like Haydon Park that fall under the new city? However, regarding the water system for the new city, it seems the plan is to use the usual groundwater piping system.

[3] Minister of Local Government and Public Works in his address

[4] Interview from an official from DSP

[5] Interview from an official from Mazowe RDC

Information gathered from officials from the Ministry of Local Government and Public Works, and the Harare City Council, reveal that water treatment plants serving greater Harare have become obsolete and if a new water source is not established and new infrastructure constructed, it is most likely that the same sources are to provide water for the new city. The treatment plants serving Harare were commissioned well before independence, some in the late 1930s to the 1950s, if not earlier. Over the years, the plants have undergone a series of upgrades that can be best described as cosmetic upgrades. Unfortunately, these upgrades do not seem to be keeping pace with the rate of urbanisation. Equipment in the water provision system is dilapidated as a result of old age. The pump equipment at various plants has outlived the efficiency of their designs. Now, faced with the development of a new city, there may be a need for an independent water source to serve it and new infrastructure for the same.

It was highlighted from the interviews with water managers from local authorities that urban councils are incurring enormous maintenance costs to keep them functioning. Now the question that emerges is that if the Council has failed to maintain existing water infrastructure, does it have the capacity to construct new infrastructure to serve the new city? There is need to carry out a comprehensive groundwater stocktake and check if there will be enough water to serve the city at the proposed site. This, however, raises the question of capacity in terms of the technology in Zimbabwe. Most respondents were sceptical about the ability of the government to provide adequate water to the new city in face of the current economic situation.

Water managers alluded that the efficiency of securing and sustaining water resources for expanding cities can be increased through the implementation of alternative solutions, such as innovative technologies planned around new urban clusters, decentralised infrastructure and diversification of water sources. As a nation, Zimbabwe can draw lessons from other developing and developed nations that have managed to come up with the necessary technologies and diverse water sources. Literature highlights that these alternatives could be sequenced along with traditional infrastructure (Closas *et al.,* 2012). It was proposed by most respondents that the adoption of an integrated urban water management approach will go a long way in ensuring the provision of adequate and safe water for the new city and existing cities. This is made possible by managing and harvesting surface water, rainwater and groundwater

appropriately. The approach concedes that diverse kinds of water can be used for different purposes, that is, freshwater sources and desalinated water may supply domestic use and wastewater (black, brown, yellow and greywater) can be treated appropriately and be used for agricultural or industrial purposes (Bahri, 2012; Makwara and Tavuyanago, 2012; Koehler *et al*. 2018, Sood, 2018). It is time water re-use is encouraged and promoted in Zimbabwe's urban areas as this will reduce demand for imported water that is expensive to provide at subsidised rates.

There were, however, sentiments from several respondents that the new city project is a brilliant idea but the timing is wrong considering the current economic challenges facing the nation. The economy is fragile and there are no adequate funds to efficiently run the country. Some key sectors, such as the health sector, education sector, transport sector, water and sanitation, and public service, to mention just a few are already collapsing. The initial estimated cost of development for the new city is pegged at US$13 billion based on recently developed new towns around the world (Ministry of Local Government and Public Works Report, 2019). Given this, most respondents believed that for now, funds may have to be channelled to revive these sectors, while a few thought that there will never be a perfect time. So, if there are investors who are willing to invest in the new city let them invest. Another issue of concern raised was that if the development of this city is more politicised and not properly planned for, this development will end up being just a diversion from current challenges Harare is facing, thus, being a temporary solution without addressing the causes.

Below is additional information in tabular format and pictures for tentative population projections, land-use allocation, concept plans showing proposed city boundary, green belt and 3D plans for the parliament and the city in general. This information will help in appreciating how the city is expected to grow in the next 30 years and beyond in terms of the human population as this has a bearing on the expansion of the city as this is key in determining the water source and water demand and supply for the city.

Table 1 shows the proposed spaces in hectares allocated for each land use in the new city. Allocation of land uses is important in determining water demand and supply for each location.

Table 1: *Tentative population projections for the new city at Mt Hampden*[6] (Authors, 2021)

Period	Estimated Population	Remarks
1-5 years	+- 30 000	Mainly public sector and institutional establishments, selected business ventures and housing schemes that rely on interim infrastructural arrangements
6–10 years	30 000–100 000	Private sector investment (commerce and industry) is expected to start firming up over and above already initiated public sector institutional development and housing
11–20 years	100 000–300 000	All land-use activities are expected to grow significantly as all key infrastructural services are expected to have been developed
21-30 years	300 000–700 000	Rapid expansion is expected to continue based on impetus from infrastructure availability and investor confidence
Beyond 30 years	700 000 – 1.5 million	Further expansion of the city during this period to be relatively slowed down to maintain functionality and efficiency

Table 2: *Draft Brief for land-use allocations*[7] (Authors, 2021)

Ref	Land Use	Area/HA
1	New parliament building	118.5
2	Government ministries and departments	415.8
3	Office park	508.2
4	Commercial	668.9
5	Hi-Tech park	334.9
6	ICT park	1,067.3
7	Institutional	1,007.8
8	Agro-processing	557.6
9	Resort hotels, conference centres and golf course	284.6
10	Apartments	1,865.0
11	Cluster houses and garden flats	986.3
12	Residential low density	4,236.9
13	Civic centre	62.8
14	Game sanctuary and botanical garden	480.7
15	Waste to energy management centre	148.2

[6]Extracted from the 2019 report on the new city prepared by Ministry of Local Government, Public works and National Housing

[7]Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

16	Roads and servitude area	383.2
17	Green buffers	11.6
	Total	**13,124.2**

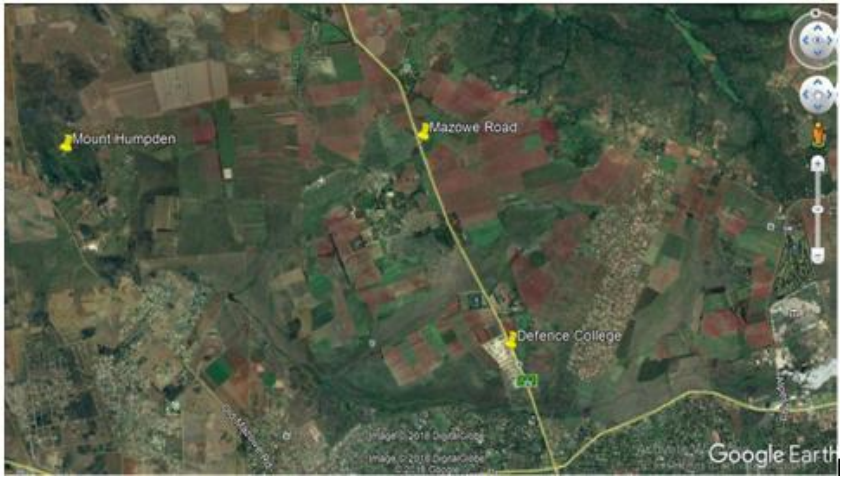

Figure1: *New City site Aerial view showing proposed boundaries of the city*[8] (Authors, 2021)

Figure 2: *Aerial view of the concept plan showing the green belt*[9] (Authors, 2021)

[8] Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

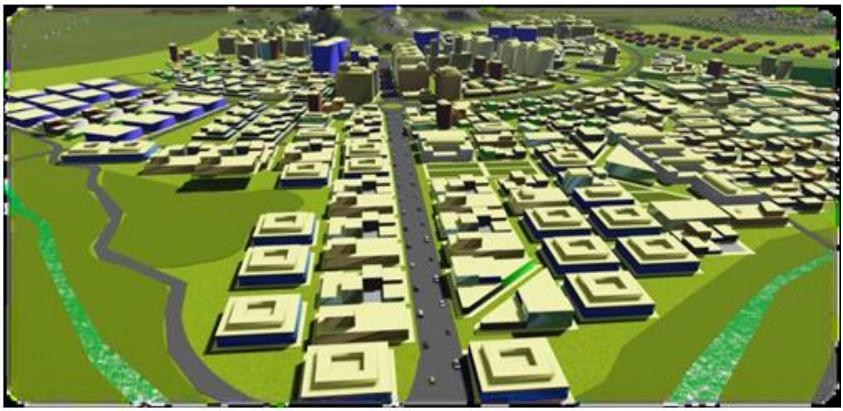

Figure 3: *3D view of the concept plan*[10] (Authors, 2021)

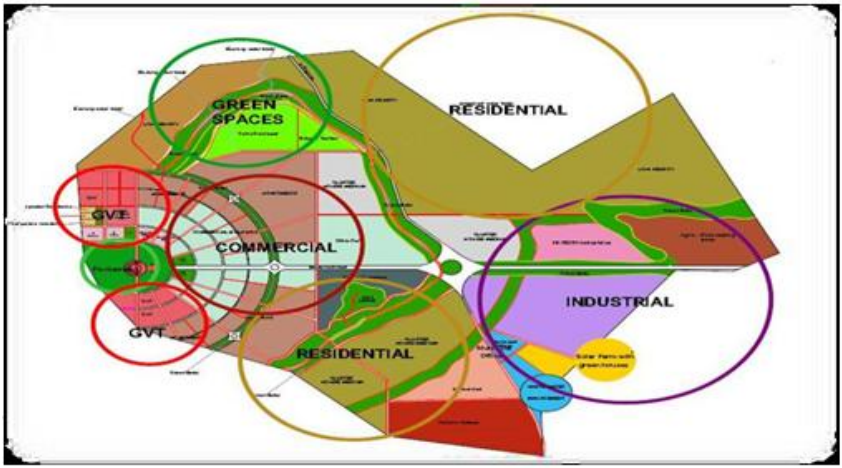

Figure 4: *Land-use plan for the new city*[11] (Authors, 2021)

[9] Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

[10] Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

[11] Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

Plate 1: *New Parliament Building – This shows the 3D plan view for the building that is already under construction.*[12] (Authors, 2021)

DISCUSSION

By 2050, the global urban population is projected to double, hence the water needs in cities will grow from 15-20% of the global consumption to 30%, while the supply of freshwater resources is likely to remain unchanged. The unprecedented concentration of demand is already putting pressure on water resources and infrastructure, yet one of the sustainable development goals is that of universal access to safe drinking water and decent sanitation for all (UN Water, 2017). The rapid urbanisation process is contributing to the concentration of industries and services, thus, driving economic growth. This concentration of population and economic assets leads to the growing competition for water and the increased output of urban wastewater. Decoupling the development of urban water supplies from wastewater management puts additional pressure on the water resources, ultimately undermining the long-term reliability of water supplies and increasing the challenges to the ecosystem services along the river basin or aquifer (Closas *et al.,* 2012).

There is a need to embrace decentralised water and sanitation systems and move from centralised water systems if need be, or have the two

[12]Extracted from the 2019 report prepared by the Ministry of Local Government, Public Works and National Housing

complement each other in urban settlements. This may address the water challenges to a greater extent. Decentralised systems embrace rainwater harvesting and greywater re-use and the centralised systems are the traditional piped water system currently in use in most, if not all, urban settlements in Zimbabwe and most countries. Rainwater harvesting and greywater re-use systems range from simple installations at the household level to more complex installations that collect water from a cluster of buildings, a neighbourhood or a municipality (Domenech, 2010). In most developing and developed nations, there has been a fundamental change in the way water management is understood and currently taking place (Gleick, 2003; Domenech, 2010; Koehler *et al.,* 2018). It is time Zimbabwe embraces these changes, especially in new developments.

Water demand is being supplied by a portfolio of local water sources that include storm-water, rainwater, wastewater and greywater. These local water sources have traditionally been treated as nuisance in urban areas but in recent times, these flows are increasingly appreciated as valuable resources (Domenech, 2010; Koehler *et al.,* 2018). This is because water demand is increasing, while groundwater sources remain unchanged. Moreover, the use of local water resources is linked to the existing debate on urban sustainability that recognises the significance of local solutions and the key role of local governments and citizens in the search for sustainable development. However, realising a paradigm shift in water management may be difficult due to the inertia that accompanies existing technological regimes (Geels, 2002). Sunk investments and well-established socio-technical regimes create path dependencies that favour the existing centralised model (Krozer *et al.,* 2010). Moreso, at institutional levels, the main stakeholders involved in water management may be reluctant to embrace and install decentralised technologies owing to a series of perceived risks. On the other hand, developers may object cost penalty concerns, engineers may show concerns for loss of functionality, while municipalities may point to at-risk of failure and concerns for maintenance requirements. Additionally, public health institutions may emphasise the risk of diseases if the systems are not well managed. Water supply agencies may be worried about the risk of losing revenue and other professionals may highlight the risks associated with doing work not authorised by a standard (Argue, 1995; Wentz et *al.,*

2008; Domenech, 2010; World Bank, 2014). This, therefore, implies that attitude plays a greater role in embracing change.

CONCLUSION AND RECOMMENDATIONS

Growing cities are facing challenges that affect the provision of basic urban services, especially water. As a result, business-as-usual approaches may be too costly and not resilient to land-use changes, climate changes and other future shocks to be experienced. Developing nations are the hardest hit by these challenges. The availability of water for cities in the catchment is shrinking due to land-use changes, demands for irrigation and energy, environmental degradation, climate change and new urban settlements upstream. Often there is not enough water to satisfy all users (Closas *et al.,* 2012). Water is a vital element in human survival, henceforth there is a compelling need to come up with long-lasting solutions to the problem of water shortages. To cope with rapid urbanisation, local and national settlement planners have to look into the future. Water provision should be a priority for the government, since it is considered a national crisis that needs a national solution because councils on their own cannot find ways of providing alternative potable water facilities (Makwara and Tavuyanago, 2012). The article recommends that:

- State and city leaders embrace an integrated approach to urban water management, including a basin-wide perspective and coordinated approaches to green and greywater infrastructure, in line with the Habitat III New Urban Agenda.
- Sustainable designs for delivery of urban water and sanitation infrastructure and services be designed that are adaptable to changing populations and circumstances, such as decentralised systems that can enhance water security and minimise environmental degradation.
- The new city embraces technologies to use greywater. Greywater has been recommended as an alternative water source that is available at the point of consumption as it can be recycled and used for other purposes other than drinking

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