

5. Spatial & Infrastructure Cluster

The issues included within the Spatial & Infrastructure Cluster are:

- Spatial & Land Use;
- Housing;
- Transportation;
- Traffic Safety.
- Roads;
- Water & Sanitation;
- Electricity; and
- Fleet Management

Two of the focus areas of the CDS, which directly relate to this cluster, are a “well connected city in the region” and “building on a solid infrastructure foundation”.

The “well connected city” focuses on ensuring the accessibility of Buffalo City through key infrastructure such as the Port, regional road links, air, rail and broadband infrastructure.

Whilst “building on a solid infrastructure foundation”, focuses on addressing infrastructure needs within the municipal boundaries, with the key agenda being the re-capitalization of municipal infrastructure and dealing with, amongst other infrastructure issue,

- water and sanitation problems
- electricity backlogs
- road network

Over the course of the next few months and in tandem with the ongoing development of the IDP these issues will be further explored.

5.1. Spatial

5.1.1 Land Use and Housing

Buffalo City has historically been characterised by social segregation and spatial fragmentation, with consequent inefficiencies in the functioning of the built environment.

Buffalo City’s **Spatial Development Framework (SDF)**, identifies and details potential ways of mitigating past inefficiencies and maximising opportunities. **Local Spatial Development Frameworks (LSDF)** support the SDF and provide a more detailed view of specific localities. LSDF’s have been completed for the West Bank, Vincent/ Berea, Dimbaza/Mount Coke, Quenera and Mount Ruth and are being developed for Duncan Village, Arnoldton and Bonza Bay.

There is increasing pressure to develop outside the “urban edge”, on the urban fringe, in areas such as the Gonubie Valley and the West Bank. BCM is currently developing an **Urban Edge Framework**, which will provide clear guidance to prospective developers.

Significant potential exists for the re-development or ‘urban renewal’ of urban settlements such as Mdantsane, Duncan Village and Zwelitsha, as well as inner city areas such as Southernwood, Quigney and the CBD/Sleeper Site. Urban renewal has the potential to redress chronic problems in areas, allowing the Municipality to focus on the creation of renewed built environments.

Mdantsane is one of the national urban renewal nodes and it is expected that a significant amount of funding, from a variety of donor and government sources, will be channelled into the area in support of the goals of the **Mdantsane Urban Renewal Programme (MURP)**.

There is a great deal of movement in and out of Buffalo City. Significant movement also occurs within Buffalo City, between urban and rural settlements, as people search for opportunities. This is most evident in places such as Duncan Village where a high demand exists for informal residential accommodation, due to its proximity to places of employment in the city centre and West Bank. This has resulted in dense shack settlements developing in the area and a high density of dwellings within certain parts of Duncan Village.

According to **BCM's Housing Policy**, in 2004, approximately 75,000 households, in both the rural and urban areas of Buffalo City, do not have access to adequate shelter. This backlog is evident in problems such as multiple families living within single formal houses, informal dwellers on vacant land within formal townships or on green belts, and scattered settlements on the urban fringes in rural areas.

The delivery of sustainable housing is integral to the city's vision; however there are many challenges to the delivery of housing including:

- slow and complex land identification and development processes;
- limited land in close proximity to the city centre;
- land invasions and uncontrolled growth of informal settlements;
- limited capacity of bulk services to meet the demands of new developments (roads, water, sewerage electricity and storm-water);
- securing funds for the coordinated supply of social infrastructure such as schools, clinics, sports and recreational facilities and operational costs associated with managing the services;
- variation between National and Provincial norms and standards;
- slow response by Province with respect to approval and conclusion of delivery contracts, movement of funds and poor decisions on approval of projects;
- withdrawal of large construction groups due to low profit margins;
- complex and time-consuming procurement processes;
- the HIV/Aids crisis is likely to result in a skewed demographic profile comprising relatively more elderly and orphaned children and fewer economically active adults, with the probable future need for more communal housing for the care of the elderly and orphans.

Buffalo City's Housing Policy and Implementation Plan was completed in 2004 and attempted to detail and address these challenges.

Achieving sustainable human settlements is made more complex because the predominant mode of delivery for public-funded housing favours approaches perpetuating low-density, one house-one plot settlement form, which has led to the current sterile and costly built environments on the periphery that hinder the development opportunities of their residents.

One of the opportunities for integration and bringing people closer to social and economic opportunities, is the 11000ha of land in various localities near East London, KWT and Berlin potentially available for urban infill development.

The vision of BCM is to restructure the urban environment into a more viable, efficient, equitable spatial configuration and to create and sustain viable human settlements. BCM is in the process of developing an Integrated **Sustainable Human Settlement Plan** to provide guidance and enable the achievement of this vision.

The Housing Policy and Implementation Plan were approved in 2004. Thus the Implementation Plan will be reviewed during the process of preparing a five year Integrated Sustainable Human Settlement Plan for the City. Projects identified in the Implementation Plan will be selected through a consultative process. The process will ensure the alignment of resources and funding across Directorates and external Departments to achieve the objective of ensuring integrated and sustainable development.

5.1.2 Land Tenure Systems

There is a multiplicity of land tenure forms and related land management and land planning legislation across Buffalo City. The complexity of land-related legislation, the overlapping layers of land tenure and informal land rights, hampers an integrated, sustainable approach to spatial development. This is a barrier to development and in some instances results in the lack of tenure security and the population movements evident in the Buffalo City area.

However, there remains much opportunity for rural development and land reform within Buffalo City. Planning has already been completed in some areas through the ADM's Land Reform & Settlement Plan and Buffalo City's LSDF. The implementation of these plans will increase tenure security and boost economic development and the livelihoods of the rural poor.

5.1.3 Transportation

The fragmented nature of the built environment, particularly in the rural areas, impacts negatively on the mobility of Buffalo City residents. In this situation, the transportation network and public transport system becomes even more critical in enabling residents, especially the rural poor, to access higher order facilities, participate in social activities and to take advantage of economic opportunities. Over 70% of the population in Buffalo City are dependent on public transport and it is therefore imperative that high-density housing development and work opportunities are provided in close proximity to public transport routes, especially the railway system (as recommended in the spatial development framework plan). This will make the public transport system more accessible to a larger proportion of the population and reduce or eliminate the need for transfers, thereby reducing costs and travel times for commuters. The fragmented settlement pattern has obvious consequences for sustainability, requiring a more extensive and expensive transportation network and public transport system.

Even though there is a high dependence on the public transportation system, the system is not meeting the needs of the community adequately. It is unsustainable, unsafe, ineffective, not accessible and supply-driven. An improved public transport system is required. The Public Transport Plan was completed in 2006 and provides the long-term strategy and structure for developing an integrated public transport system for Buffalo City. This will be a formal system based on regulated competition.

Deficiencies in the road infrastructure, lack of facilities for pedestrians and cyclists, lack of traffic safety awareness, inconsiderate, aggressive driving habits all impact on traffic safety in Buffalo City. A Traffic Safety Plan was developed in 2005, which details strategies to address traffic safety issues in Buffalo City. The immediate focus area is around schools.

The Integrated Transport Plan was completed in 2006 and details the proposals for Buffalo City's transportation system.

5.2 Infrastructure

5.2.1 Road Network

The road network is one of the key components of the transportation system. A large percentage of Buffalo City's road infrastructure is old, rapidly deteriorating and in some cases past its functional life.

Major rehabilitation is required to surface roads in the rural areas and in areas such as Mdantsane, where road infrastructure has had little or no maintenance for the past 25 years. In addition, a large proportion of the roads in these areas is gravel and will over time require surfacing. An amount of R730 million is required for upgrading of Mdantsane gravel roads to surfaced roads (surfacing of 310kms).

Capital allocations are insufficient and only a small percentage of the road network is adequately maintained or upgraded on an annual basis.

BCM faces resource constraints for both the extension and maintenance of the road infrastructure. The annual increase in the maintenance budget has not kept pace with the escalation rates associated with this activity. Funding Backlog for maintenance of BCM roads is estimated at R270million, R34million must be spent annually so as to eliminate this backlog. For the next two financial years R68million is required for resurfacing of roads so as to avoid premature reconstruction and for the next five years R252million is required for carrying out roads rehabilitation (**BCM Pavement Management System**). The estimated replacement costs for 1 388.5 km of BCM road network is R1.34 billion.

The RMS is the key tool to ensuring the most judicious use of the limited funding. It monitors road conditions and prioritises roads for rehabilitative treatments. Road inspections for the updating of the PMS are undertaken every year for surfaced roads and every five years for gravel roads.

Bridge Management System (BMS) has identified all the bridge structures, the next step would be to undertake a detailed analysis to determine the necessary maintenance and rehabilitative measures. This process is projected to be undertaken during financial year 2008/9, but its progress will be subject to availability of funding

5.2.2 Water Services

Buffalo City has been designated as a Water Services Authority and has in place a **Water Services Development Plan**, which guides the Municipality in the delivery of water and sanitation services.

BCM has undertaken an assessment in terms of Section 78(1) of the Municipal Systems Act in order to determine the most appropriate and cost-effective mechanism to deliver water services. Council has resolved to form an internal business unit in terms of this Act. The financial ring-fencing exercise will be commenced in March 2008. Operational ring-fencing is underway and the proposed structure of the

business unit is presently under review. Both exercises should be completed by the end of May 2008.

- **WATER SUPPLIES**

The Amatola Water Resource System supplies the urban and rural areas of Buffalo City. Water is sourced from the Bridle Drift (main source), Rooikrantz, Nahoon, Laing and Sandile Dams and the Peddie Scheme. The system is complex and is made up primarily of surface water resources, with the limited groundwater resources suitable for only a few localised schemes.

A **Feasibility Report on the Augmentation of Raw Water Resources** has been completed and BCM is now considering the most appropriate and cost effective means of implementing the proposals.

- **Water Demand Management**

The City has had a relatively large incidence of 'water loss' or non-revenue water. This occurs either through physical losses (leaks etc.), billing inaccuracies, users who are not on the database or illegal connections. The result is an unnecessary demand on water resources, wastage of water and loss of income.

A COMPREHENSIVE WATER LOSS STUDY HAS BEEN UNDERTAKEN AND THE RECOMMENDATIONS EMANATING FROM THIS STUDY ARE BEING IMPLEMENTED, ACCORDING TO THE AVAILABLE RESOURCES. Intervention in Mdantsane has proved to be very successful. Mid-block water mains have been replaced with mains in the road reserves and metering of consumers has been undertaken. A similar exercise is underway in Gompo where excessive night flows in the Sewer Conveyance network were of great concern as they were contributing to the over flow of the Second Creek pump station. Sewer night flows in both areas have decreased significantly and further reduction will be evident as the projects proceed. Intervention on indigent properties is to start towards the end of March 2008 and a public education programme will be implemented after September 2008.

- **Bulk Water & Sewerage Systems**

BCM's bulk water is purchased from Amatola Water (32%) with the remainder coming from the Umzoniana Treatment Works and a small amount from the KWT Treatment Works. The cost of the water from the Umzoniana Treatment Works is R0,60/ kl whilst the cost from Amatola Water is R3,48/ kl, hence BCM must continue to optimise its usage from the Umzoniana Water Treatment Works. Feasibility studies into the Umzoniana Treatment Works and water systems have been undertaken and refurbishment / augmentation/ renewals are underway. It is envisaged that up to 20% of the Umzoniana Water Treatment Works capacity (24 Ml/day) will be saved at the end of the project.

Sewerage systems in the City are well beyond their design lives, are in poor condition and are operating at capacity. The effect of this situation is that expansion of the city and the housing programme, is now severely constrained and the environment is under threat from sewage spills and leakages. Significant funding is required to refurbish and upgrade this bulk infrastructure within the next five years.

To alleviate current constraints within the system, application has been made to DBSA for R64 million. Proposed projects include Phase 1 of the Regional Waste

Water Treatment Scheme for King Williams Town, Bhisho, Breidbach, partial diversion of flow from the Central Waste Water Treatment Works to Reeston (WWTW), refurbishment of the Pontoon Road sewer tunnel and refurbishment to the Eastern Beach sewers. The contract has been awarded for the upgrade of Gonubie (WWTW) to the value of R48 million. It is estimated the contract will be completed in 18 months. Other projects underway include Phase 1C Bufferstrip bulk sanitation to the value of R18 million.

It is estimated that the cost of deferred maintenance for water and sanitation services is R750,000,000:

Table B.18: Estimated Deferred Maintenance

Service	Estimated deferred maintenance
Water	200,000,000
Wastewater	550,000,000
Total:	750,000,000

• **Water & Sanitation Backlog**

The latest information from the Water and Sanitation Master Plan Studies are as follows:

Table B.19: Census 2001: Household Access to Basic Services

	Water (access to piped water in dwelling/ yard or within 200m)	Sanitation (flush toilet, septic tank, chemical toilet, VIP)
No of Households	193 000	135 672
% of Household	96%	75%

The water backlogs for greenfields work amounts to R26,26 million and that of remedial work to R35,04 million. The backlog areas include Needs Camp, Ncera, Mount Coke, Potsdam and some Rural areas in the King Williams Town District. Needs Camp, Ncera and Mount Coke are being addressed by a three year MIG Project which is already underway. The other areas are awaiting funding from MIG but some in-roads have been made by addressing supplies to areas handed over by DWAF.

The key findings of the Rural Sanitation Master Plan investigations in terms of rural basic sanitation backlogs are summarized as follows:

<i>Outside urban edge (i.e. rural)</i>		
• Greenfields	:	51 192
• Remedial / refurbishment	:	<u>885</u>
Sub total		52 077 households
<i>Inside urban edge but rural of nature (i.e. peri-urban)</i>		
• Greenfields	:	20 637
• Remedial / refurbishment	:	<u>1 162</u>
Sub total		21 799 households
Total		73 876 households
• Funding required to address the backlog:		R456 785 175

Given the extent of the backlogs and the requirement to eradicate these sanitation backlogs by 2011, expenditures of ±R100 million per annum will be required.

Applications have been submitted for MIG funding to address these backlogs within the national timeframe.

5.2.3 Electricity

Both Eskom and Buffalo City supply electricity within the Buffalo City Municipal area. BCM supplies the former King Williams Town and East London areas, whilst Eskom supplies the remaining rural areas.

In June 2004, consultants were appointed to conduct a Status Quo assessment of Buffalo City's electricity service delivery in terms of Section 78 of the Municipal Systems Act. The outcome of the assessment is that the current electricity service delivery mechanism is not sustainable and should be restructured.

The electricity network in Buffalo City is currently in a poor condition. This is as a result of budget constraints, which force the Electricity Department to cut down on the maintenance, upgrading and replacement of equipment. Consequently there are frequent power outages and a poor quality of supply to electricity consumers. In addition, the electricity department is at high risk of non-compliance to the license issued by the National Electricity Regulator of South Africa (NERSA) and to non-compliance of occupational health and safety regulations.

It is estimated that the cost of deferred maintenance for BCM electricity is R210 million.

Two new sub-stations are going to be built over the forthcoming years to accommodate the increased demand for electricity in Buffalo City. One will be built at Reeston to provide power to new developments in the area and another one near the Queens Park Zoo to supplement and stabilize supply to the CBD.

The Electricity Department has established a Network Control Centre which will help with compliance issue and improve network operation safety. The installation of quality of supply meters as required by NRS 048 will also improve the compliance requirements called for by NERSA.

The Electricity Department will be appointing Consultants to provide a Master Plan for the Electricity Service required over the next twenty years. This plan will provide essential information required to upgrade, refurbish and maintain the existing network. It will also provide information as to where growth within the City will take place and the state of the network in these areas. The will inform our network strengthening programme.

- **Electricity Losses**

Electricity losses are due to non-technical e.g. theft of electricity and meter tampering and technical reasons, such as inadequate monitoring of electricity usage. Savings can be achieved through:

- the implementation of remote metering and the supply of primary metering/billing information to consumers;
- the installation of meters at strategic points within the network;
- replacement of dysfunctional metering;
- installation of pre-paid electricity meters.

Installation of check meters is now part of new developments and planning process, replacement of dysfunctional meters is ongoing and progress is made. Installation of pre-paid meters is a full-time running project.

Illegal connections are currently a problem; installation of meters in strategic points will help identify areas with such problems, which is part of further planning and implementation.

- **Electrification of houses and schools**

According to the 2001 Census, 122 872 households (63%) in Buffalo City have access to electricity for lighting. The rate at which electricity is extended to low-income households depends on the number of formal houses built in a particular financial year.

Funding for the electrification of houses is obtained from the Integrated National Electrification Programme (INEP), with BCM topping up the funds. Of concern is that once an area has been electrified through INEP funds, it does not qualify for further subsidization. The result is that when additional low-income houses are built in the area, these houses do not qualify for subsidized electrical connections and the households are required to pay the full connection fee.

The provision of streetlights in these and other electrified areas is also a major problem. The INEP does not subsidize the provision of streetlights. This is the responsibility of the municipality. Without sufficient budget provision, however, many of these electrified areas remain either with inadequate streetlights or none at all.

Many schools within the BCM area do not have electricity. Schools are electrified by BCM on application and according to the allocation from the INEP.

5.2.4 Fleet Management

A **Fleet Management Policy** has been developed and is being “workshop-ed” with Departments to assist with addressing of problems relating to inefficient use of Municipal vehicles, vehicle abuse and record keeping.

In order to address the problem of inadequate maintenance and the general poor condition of the fleet, whose efficiency is critical to effective service delivery, an amount of R90 million was secured to replace old vehicles between 2006 and 2009. An amount of R 45 million was spent in 2006/07 to replace 186 units of Fleet. The balance will be spent on 2007/08 and 2008/09.