

NC New University Bulk Services Report

Feasibility Stage Sol Plaatje

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1. INTRODUCTION

The Bulk Services includes all Municipal services that are provided by the Local Authority in support to the establishment of the New University including Water, sanitation, electricity, roads and storm water, transport and traffic and waste management.

1.1 PURPOSE OF THE REPORT

The purpose of the report is to provide some detail on the status of bulk Municipal Infrastructure services around the location of the proposed new university that will be located in the Inner City of Sol Plaatje Municipality. The information in the report is a collation of information received from reports, discussions with municipal officials and from observation during site visits.

1.2 STATUS OF BULK SERVICES

Sol Plaatje has embarked on a detailed Bulk Infrastructure Feasibility study in 2009 which forms the basis of future planning and implementation of bulk services in the region. Scenarios were developed for future expansion of services until 2030. The presence of the New University (NU) in the Inner City has obviously not been taken into consideration during the 2009 feasibility study. It can be accepted that the location of the NU will certainly impact on the capacity and perhaps the reliability of municipal services in this area.

1.3 POTABLE WATER

1.3.1 Current status potable water

Sol Plaatje abstracts raw water from the Vaal River some 20km north of the town. Water is treated at the 168MI/day Riverton Water treatment plant and is pumped through a 965mm dia pipeline to Kimberley to various reservoirs. The Newton Reservoir supplies potable water to the Inner City at water pressures of between 2,5 and 3 bar (or 25m to 30m of water head).

From the 2009 Sol Plaatje Bulk Infrastructure Feasibility Study, 25% (17MI/day) of the bulk potable water of 68 MI/day is provided in the commercial centre of Kimberley (Inner City or Zone J). From this study, it was estimated that this water demand in the inner city can grow to almost 20MI/day by 2030. The impact of the Inner City Campus will result in this Volume to increase further. Likewise the Campus will also have an impact on sanitation services

Water losses in SP is mainly due to unbilled consumption due to unmetered supply points, unread meters, unauthorised connections, inconsistent field meter readings, old infrastructure with frequent pipe bursts, lack of timely maintenance, poor response times to pipe bursts band leaks and over pressurizing of the network due to lack of zoning to manage (isolate) zones during major leaks.

The water distribution network in the Inner City is relatively old due the age of the town. Pipe bursts are therefore often experienced which translates to significant water losses. This has resulted in Sol Plaatjies to develop an active water conservation and water demand management programme to curb the high water losses. The Municipality also experiences, like most other urban centres a backlog of services that need to be addressed as priority.

1.3.2 Future planning potable water

The expansion of water services to accommodate the growth as well as the new university will comprise:

- Bulk water supply – upgrade of the water treatment works
- Distribution and reticulation – the water supply network in town has recently been divided into separate water supply zones for improved management of the water supply (in terms of water pressures) and water losses, metering, telemetry, etc which are also in the process of being installed and upgraded.
- Management – metering currently being upgraded for improved cost recovery as important income stream for the City.

The estimated budget to upgrade the water network and bulk supply is estimated at about R430m (2009 figure) using the high road scenario development as basis that is to also accommodate developments such as the New University in town.

1.3.3 Risks potable water

The risk on water supply is cost recovery and lack of funding not to be able to realize the proposed planned expansions. According to the 2009 feasibility report the city recovers the costs of about a third of their water supply, thus the importance of curbing unaccounted for water, an initiative that Sol Plaatje has already embarked on.

The development of the new university will add to the pressure on water supply over the medium to long term. Assurance was given by the Municipality that the additional demand for water will be accommodated within the medium planning and implementation process.

1.4 SANITATION SERVICES

1.4.1 Current Status sanitation

Kimberley is serviced by two WWTP, the Homevale Waste Water Treatment Works (WWTW) (30 Ml/day) to the north and Beaconsfield works (7 Ml/day) to the south-east. Due to backlogs in refurbishment, available sanitation capacity is much less while the plant intake exceeds the design capacity.

Treatment effluent is discharges treated effluent into the Kamfers Dam which raises concerns with reduction of the quality of water and the rising water which threatens the nearby railway line. Some infrastructure has been established to use treated water (between 30 and 40 Ml/day) for irrigation of parks area in the city, including the Inner City. The mines used some of this grey water in the past but with the downscale of mining more water is retained in the dam. A 20km pipeline is being constructed to discharge some of the treated effluent (38 Ml/day) towards the Vaal River, protecting the quality of water in the Kamfers Dam. Arrangements has also been made with farming communities along the pipeline for use of the treated effluent for irrigation

Sanitation services are more costly that water services at R5-70/kl.

1.4.2 Future planning sanitation

The WWTP facilities in Sol Plaatje need to be upgraded for more capacity. Expansion of sewer networks has to consider the relative flat topography of the urban area to ensure effective discharge of urban effluent towards WWTWs. The expansion of WWTW would therefore result in phasing in of a third plant to the North West of the City.

Distribution is not foreseen to be restrictive wrt sanitation services. This will be verified during feasibility studies. Design of on-site sanitation reticulation will allow for re-use of grey water on the NU premises to allow for irrigation and to reduce pressures on the distribution network.

1.4.3 Risks sanitation

Raising water in the Kampers Dam poses a threat to the Railway line and deteriorating of water quality. The use of on-site grey water on the NU premises will add to the reduction of effluent at the WWTW and as such less treated effluent in the dam.

1.5 ELECTRICITY

Eskom is the main supplier of bulk electricity to the SP Municipality while the Municipality is responsible for the distribution of electricity.

1.5.1 Current status electricity

Eskom supplies electricity to Sol Plaatje from 2 distribution centres namely Herlear (2x60MVA units) and Homestead (1x80MVA unit). No power cuts are experienced in Sol Plaatje municipal area.

According to the 2009 feasibility report, operational restrictions and problems with the generation of electricity reduce this available capacity to about 120MVA. The current max demand measured is 106MVA which allows for spare capacity in electricity.

The current distribution network comprises a ring network around the town which could provide in the demand.

1.5.2 Future Planning electricity

Eskom is planning upgrading (restoring) the sustainable power supply generation to 200MVA.

The network and substations will be upgraded as priority to ensure sustainability in supply (A substation was recently lost in a fire).

1.5.3 Risks electricity

High funding requirements for upgrading of the power supply network, however the Municipality has assured that this receives their highest priority.

1.6 ROADS AND STORMWATER

1.6.1 Current status roads and stormwater

Roads - Management of traffic through Kimberley along the N12 and the N8 routes has presented certain challenges for the Local Municipal Council in terms of safety, maintaining the quality of roads, traffic control and others. The economic benefit for the town with the traffic through the town was evaluated against the economic costs of handling the traffic and in particular heavy vehicles through the town. It was decided to rather keep the traffic flowing through town instead of routing it through a western by-pass route (at estimated cost of R440m).

Stormwater – Sol Plaatje has a well-defined GIS-driven stormwater (SW) system which comprises open lined channels, culvert systems and pipe systems. The area is in a semi-arid rainfall district with rainfall of just more than 400mm per annum. From a study in 2008, it was found that most of the SW systems can handle the required 1 in 20 year SW event.

1.6.2 Future Planned roads and stormwater

Roads - The decision to keep the traffic flowing through town and as such through the campus will certainly pose some challenges and innovative ideas how to reduce the conflict between an increasing number of pedestrians (students) between the campuses and vehicular movement on the main road through the proposed north and central campuses.

The existing road network will remain, however small adjustments on road crossings to improve the flow of traffic on and around the campus will be mad as part of the spatial layout of the new campus. This may include two large traffic circles, traffic lights for pedestrian crossing and road deviations around the Oppenheimer Memorial park. Details of these proposed changes are included in the Movement Plan.

The SP Municipality has done a pavement management study which will be used as basis for the design of all paved areas on campus.

Stormwater – the required 1 in 20 year SW event will be used as basis to consider utilising surface water runoff from new buildings and when increasing paved areas on the campus, thus also increasing the peak runoff. Permeable paving will be considered.

The recently developed Sol Plaatje SW management system will act as the basis from which the infrastructure will be designed.

1.6.3 Risks roads and stormwater

The most significant risk is the future conflict between an increasing number of pedestrians (students) between the campuses and vehicular movement on the main road through the proposed campus. The will pose some innovation to manage and reduce the conflict at pedestrian crossings and ensure smooth flow of training on and around the campus.

No risks are foreseen on SW infrastructure

1.7 TRANSPORT

Sol Plaatje has a well-integrated transport system which will certainly benefit staff and students moving to and from the campus.

1.7.1 Current Status and planned transport

From the Integrated Transport Plan the following:

Rail services – Kimberley lies on the PRASA network of rail systems between the north and the south. These include long distance inter-city rail systems such as Shosholozha Meyl and luxury tourist rail service (Luxrail). Kimberley is also the major stopping point for the Blue Train and Rovos Rail.

Tram service – according to the Frances Baard District Integrated Transport Plan, the tram is still operating from the Big Hole tourist attractions to the Kimberley Main Station. The intention is to extend this service to Galeshewe. The option of passing through the new University site could as a public transport system also be considered in future.

Bus transport – is in the hands of private owners (8 bus operators), some of them subsidized. 3 of the companies provide commuter services, morning and afternoon services in Kimberley while the remaining operates longer distance services. Some of the long distance operators currently operate their long distance hauling from a point on the proposed campus.

Taxis – Minibus taxi services currently operate informally (ownership not formalised yet) and relies on the competency of private operators. Although all taxis are associated with a taxi association (9 in total) and represented by the SA National Taxi Council, taxi routes, operating licenses, etc should be clarified. Taxi routes include the Inner City from all regions in Sol Plaatje.

Aviation – there is a fully fledged airport in Kimberley which is run by ACSA and serviced by SAA Express and Airlink with flights daily to and from OR Tambo and Cape Town.

Non- motorized Transport – The use of NMT is encouraged in the region and will as a result also be high on the agenda to be accommodated in transport on the premises. A concerted effort should be launched to link public transport on Campus and from commuting towards the campus by NMT and will in all probability become part of the National Shova-ka-lula (Ride Easy) programme in the NC.

Pedestrian walkways – the longest walking distance on the campus from north to south is about 2km, an estimated walking duration of between 20 and 25 minutes. Existing walkways between the north and south campus will therefore be upgraded to also accommodate the increasing number of pedestrians. Where pedestrian routes will be shared with roads, walkways and streetscaping will be improved to ensure safety of pedestrians.

1.7.2 Risk transport

No risks with respect to transport, other than the conflict of the N12 road crossing mentioned.

1.8 SOLID WASTE

An Integrated Waste Management Plan was developed and with clear guidance of waste management. Waste collection facilities exist and sufficient capacity exists at the landfill site. Hazardous waste cannot not be dealt with and is currently being exported to Bloemfontein

There is no risks foreseen that will not be handled within current waste removal operations.