

**PORTION 79 FARM BLESBOKLAAGTE 296-JS, PROVINCE  
MPUMALANGA**

**CIVIL SERVICES REPORT**

**TOWN PLANNER:**



**REPORT COMPILED BY:**



**Revision – 000  
Date – May 2014**

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## 1 GENERAL INFORMATION

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### 1.1 Location

The township is located to the north west of Emalahleni/Witbank.

*Figure 1* indicates the border parameters of the property under discussion.



*Figure 1*

To the south of the property is the Pineridge Township and to the East is situated the recently serviced Klarinet Ext 6 township.

The 1:100 year floodlines for the river on the southern boundary as well as the section of river through the western part and north western part of the development were calculated and provided in a separate floodline report dated 17 November 2011.

## 1.2 Applicant

The Managing Director  
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## 1.3 Consulting Engineer

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## 1.4 Layout plan

The layout plan that was used for the preparation of the Civil Services Report (this report) is shown in *Appendix A*.

## 1.5 Land-use rights

Application is made for the following land-use rights (Phase 1). A table with details is available from Townscape Planning Solutions.

Land Use	Area (ha)
Residential 1	25,4812
Residential 3	0,8227
Residential 4	1,5429
Community Facility	0,2729
Industrial 2	2,0617
Business 3	1,4648
Commercial	0,4546
Park	2,0435
Private Roads	12,9647
<b>TOTAL AREA</b>	<b>47,1090</b>

The total area of phase for this development according to the details provided by Townscape Planning Solutions is 47,1090 hectares.

## 1.6 Services (general)

According to the townplanner, all municipal civil services of this township will be handed over to eMalahleni Local Municipality.

The ownership of all services will therefore revert to ELM after construction and the maintenance and insurance of the services will be the responsibility of ELM.

The different services are now discussed per discipline.

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## 2 ROADS

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### 2.1 Access and Traffic Impact Study

The proposed development will primarily have direct access from the Saaihoek Road (D1126) as planned by WSP Consulting Engineers.

Secondary access from the Verena road and Pineridge Township will possibly be provided during later phases (phase 2) of the development.



*Figure 2*

It is believed that sufficient capacity will be available from the D1126 for phase 1 of the development.

The Traffic Impact study by WSP should be studied for further details on the roads and road accesses.

## 2.2 Street classification

The following street classes were provided for and incorporated in the current layout by Townscape Planning Solutions.

Street Reserve Width	Class of road	Roadway width (m)	Road Description
13 m	Class 5	5m	Local Access Roads
20 m	Class 4	6m	Local Collector Roads
25 m	Class 3	7m	Distributors/Secondary Roads

*Table 1*

It is the opinion of *SCIP Engineering Group (Pty) Ltd.* that the various street widths provided are sufficient.

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## **3 STORMWATER**

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### **3.1 Surface Drainage**

The road layout of the township leans itself to a good free drainage scheme.

Stormwater, as excess surface runoff during extreme events, can drain freely to kerb inlets that will be provided on all internal roads and spaced according to topography and therefore catchment size.

Releasing stormwater from this township to the nearby stream can be easily managed thorough minor outlet and energy dissipating structures located higher within the 1:100 floodline area.

Roads with sufficient reserve width for stormwater pipes have been provided along internal roads and existing stormwater from higher lying areas will be accommodated within and through this development.

It is not foreseen that any problems will be encountered to accommodate the 1:2 (residential) and 1:5 year (business) return period storms on the roads and in sub-surface conduits.

### **3.2 Stormwater routing**

The safe routing of stormwater within municipal areas is very important.

Retention ponds may be considered at bulk stands depending on the density that will eventually be provided here. The requirement for retention ponds shall be in accordance with the bylaws of the Local Authority and shall be provided at detail design phase.

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## 4 WATER SERVICES

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### 4.1 Bulk water availability

This report does not aim to provide *detail water demand modeling results* or the exact impact of this development on the bulk water system, but rather aims to convey an engineering opinion on the ways and means to serve the development with water.

The impact of this development on the existing bulk water infrastructure will be quantified once a Design Engineer has been assigned for the detailed design phase of both bulk and network water services.

Design drawings will be submitted with a design report by the Design Engineer to the Local Authority for their approval. It is the Local Authority's right to scrutinize the report and request changes to the design where needed.

SCIP is of the opinion that the scale of this development to its fullest extent will drastically impact on the provision and distribution of bulk water, i.e. affecting the Water Treatment Works as well as storage reservoirs at Point A (in Witbank) as well as the bulk water lines feeding from Point A to the north-western suburbs. The later phases in particular will have a drastic effect.

The proposed land use covered in the township layout of *Figure 1* will require an estimated water demand as follows:

Technical parameter	Estimated value
Estimated Total Daily Demand =	406 kℓ/d
Estimated Peak Flow Rate based on a peak factor of 5 =	40 ℓ/s
Peak Flow Rate – Fire Flow	100 ℓ/s

The main water supply internally will likely be designed for fire water requirements and pipe sizes will likely vary from 110mm diameter to 315mm diameter pipes. The pipes will have to be designed with the greater area in mind, i.e. the later phases of development.

The area is located relatively low compared to low level reservoirs at Point A and it is expected that *sufficient pressure will be available for this development*. The development of the greater Western area, together with the recently established Klarinet X6 will necessitate the building of a new reservoir group in the area.

The upgrading of bulk lines to this development will have to be provided and should be done in accordance with the Klarinet Integrated Housing Project currently implemented by Bigen Africa and ABSA's Development Company.

According to Mr. Dieter Storbech from Bigen Africa the waterline from Pap & Vleis at the railway crossing feeding from Point A in town will be upgraded to serve a portion of phase 1C and phase 2.

It is likely that the upgraded water line from Pap & Vleis will not be sufficient for the full Sarovic Development and that further upgrading by the Local Authority through the bulk services contribution strategy will have to be implemented.

It is also possible that the bulk lines from Point A to Pap & Vleis would not be sufficient for long.

It is our opinion that the Local Authority will have to plan carefully in terms of the necessary upgrading work required for bulk water services.

#### **4.2 Internal water layout**

The township layout by Townscape Planning Solutions provides sufficient street reserves for an internal water network to be designed and constructed according to municipal standards.

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## 5 SEWER SERVICES

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### 5.1 Bulk sewer availability

This report does not aim to provide detail sewer flow modeling results or the exact impact of this development on the existing bulk sewer system.

The report merely aims to convey an engineering opinion regarding the ways and means of draining the development with a bulk and internal sewer systems.

The development is generally situated topographically higher than the outfall sewer draining to the Pineridge Sewage Pumpstation.

According to Mr. Dieter Storbeck from Bigen Africa, the outfall sewer line and pumping line from the Pineridge Sewage Pumpstation is sufficient for most of the phase 1 Klarinet Integrated Housing Development. According to him a services agreement was signed whereby one can assume that no spare capacity is available on the pumpline for the Sarovic Development.

The further phases of the Klarinet Integrated Housing Development will require a new outfall sewer line that will in theory serve the Sarovic Development from a topographical point of view.

Thus, the requirement for a new outfall gravity sewer to the Klipspruit Works is in our opinion the only feasible solution to drain the area with a sewage service.

Such a line should be done in accordance with the Klarinet Integrated Housing Development and Bulk Services Contribution Policy of ELM.

Technical parameter	Estimated value
Estimated Average Daily Dry Weather Flow =	290 kl/d
Estimated Peak Wet Weather Flow rate =	400 kl/d

Internal sewer lines will likely vary from 160mm to 250mm diameter lines that will drain toward a bulk outfall sewer line to be implemented by ELM in the next 3 – 6 years. Certain pipes will be sized with the future development in mind.

The bulk studies that were available at the time of writing this report was limited and the report is based on basic information and opinions of other consultants dealing with the *Integrated Housing Development of Klarinet*.

## 6 NETWORK SERVICES

### 6.1 Services

The costing of network services was based on the layout provided by *Townscape Planning Solutions* on 30 November 2011.

The layout comprised of a phase 1 proposal for the development and contains a mixture of residential, business and institutional land-uses as listed under *Section 1.5* of this report.

The cost of network and bulk services is calculated separately. Please refer to *Section 7.1* for the bulk services costing.

#### **PHASE 1 – INTERNAL SERVICES**

<i>Civil Service Discipline</i>	Phase 1	Comments
<b>Internal Services</b>		
Water	R 3,900,000	
Sewer	R 3,880,000	
Roads	R 26,900,000	
Stormwater	R 5,080,000	
SUB-TOTAL	R 39,760,000	
Plus 14% VAT	R 5,566,400	
TOTAL	R 45,326,400	
<b><i>Calculation based on stands</i></b>		
<i>Res 1</i>	<i>779 stands</i>	
<i>Res 3</i>	<i>4 stands</i>	
<i>Res 4</i>	<i>9 stands</i>	
<i>Community</i>	<i>7 stands</i>	
<i>Industrial 2</i>	<i>12 stands</i>	
<i>Business 3</i>	<i>9 stands</i>	
<i>Commercial</i>	<i>3 stands</i>	
<i>Park</i>	<i>5 stands</i>	
<b><i>Total stands</i></b>	<b><i>828 stands</i></b>	
<b><i>Internal services cost per stand (all zonings)</i></b>	<b>R 48,019 / stand</b>	<i>Excluding Vat</i>

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## 7 BULK SERVICES CONTRIBUTION

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### 7.1 Services

According to our knowledge, ELM is currently implementing a bulk services contribution strategy.

Hereby, developers will pay a bulk services contribution and in turn receive bulk services to the development's boundary provided by ELM. This process is still to be rolled out and we cannot comment on the implementation of this process further.

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## 8 EXECUTIVE SUMMARY

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Access to this development will be provided through the existing road network of roads namely the R544 (D1126) and Pineridge Road to Verena.

Stormwater can be safely routed within the development on roads and within sub-surface systems. No formal retention dams are foreseen. Existing stormwater infrastructure from higher lying areas will be accommodated in this development.

It is believed that sufficient bulk water is available for this development but that certain upgrading work to pipelines and reservoirs will be required to provide the necessary water pressure and flow rate during peak periods.

Sewage will have to be drained through a new outfall sewer line to the Klipspruit WWTW. As far as we understand, the spare capacity on the existing outfall line as well as the pump line from Pineridge to Klipspruit has been absorbed by the *Klarinet Integrated Housing Development* currently being done by ABSA Development Company. The line will have to be installed by ELM and funded from their *Bulk Services Fund* when approved.

The provision of water will have to be implemented through the upgrading of bulk lines from Pap & Vleis (Railway Crossing) to the larger Klarinet Development. Also the capacity of Point A's storage and the capacity of the current Water Treatment Works (WTW) in town will have to be investigated. The upgrading of all these bulk infrastructure should be implemented through the *Bulk Services Fund*.

The above ground activities of this development will not lead to soil, surface water or ground water pollution.

Care shall be taken when installing services where high water tables are experienced.

Strict Health and Safety Regulations will be enforced as per the Health and Safety Act and associated regulations. All fauna and flora outside the perimeter of this development shall be protected and will not be damaged.

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## 9 RECOMMENDATION

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It is recommended that the Civil Services Report for this development be approved by the Local Authority as a basic planning document for the implementation of bulk services.

Trust you find this in order.

Yours faithfully,  
*SCIP Engineering Group (Pty) Ltd*

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*W.R. van As, Pr. Eng*

FIGURE A.1



## APPENDIX B

### SITE PHOTOS



Low cost housing to the south-east of this development



View from the south, unidentified measuring station on river bordering the south



Pineridge pumpstation, currently accepting sewage from low cost housing



View from the North-west, west of western bordering river



View from the north, close to highest point on property



View from the north east, close to highest point on property