DEVELOPMENT OF NEW PAARL PRISON: BULK WATER & SEWER SERVICES

This report replaces the previous report for the proposed Paarl Prison dated 20 March 2009.

The request by Mr Ashwin Hemraj of PD Naidoo & Associates Consulting Engineers (PDNA) regarding comments on the bulk water and sewer supply to the proposed development (new prison in Paarl), refers.

This document should inter alia be read in conjunction with the Water Master Plan (performed for the Drakenstein Municipality) dated August 2009 and the Sewer Master Plan dated August 2009.

Future area PF5, which includes the proposed development, was conceptually taken into consideration for the recently completed master plans for the water and sewer networks.

1. WATER DISTRIBUTION SYSTEM

1.1 Distribution zone

The master planning indicated that this development area should be accommodated in the existing Leliefontein zone. The connection to the existing system should be done on the proposed 450 mm diameter pipe in Bo-Dal Road as shown on Figure 1.

The development is situated inside the water priority area.
1.2 Water demand

The original water analysis for the master plan was performed with a total annual average daily demand (AADD) for the new Paarl Prison of 1 320 kℓ/d with a peak flow of 55 ℓ/s.

For this re-analysis, the AADD and fire flows for the proposed development was calculated as follows:

- Total water demand (as calculated by PDNA) = 1316.6 kℓ/d
- Peak flow rate (as calculated by PDNA) = 88.3 ℓ/s
- Fire flow criteria (Moderate risk) = 100 ℓ/s @ 10 m

1.3 Present situation

Accommodation of the development in the present system will require upgrading of the existing system to comply with the pressure and fire flow criteria as set out in the master plan.

1.4 Implementation of the master plan

The following master plan items will be required to reinforce the existing system in order to accommodate the proposed development together with other future development areas.

Network upgrade

- Item 1 : New PRV and controller R 500 000 *
- DPW4.4 : 1 680 m x 450 mm Ø supply pipe R 6 282 000 *

Total R 6 782 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2010 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the route of the proposed pipeline is schematically shown on Figure 1, but has to be finalised subsequent to a detail pipeline route investigation.

The size and cost of the water connection for the Paarl Prison on the proposed 450 mm Ø pipeline will be determined by the Drakenstein Municipality.

The minimum requirements to accommodate the proposed development in the existing water system are master plan items 1 & DPW4.4.

2. SEWER NETWORK

2.1 Drainage area

The development falls within the existing Paarl Gravity drainage area. The recommended position for the sewer connection for the proposed development is at the proposed 355 mm diameter outfall sewer (link services item DPS3.50) in Bo-Dal Road as shown on Figure 2.
The development is inside the sewer priority area.

2.2 *Sewer flow*

In the original sewer master plan, the peak day dry weather flow (PDDWF) for this area was calculated at 784,0 kℓ/d.

For this re-analysis, the PDDWF for the proposed development was calculated as 1 233,3 kℓ/d with a peak flow of 80,3 ℓ/s (as calculated by PDNA).

2.3 *Present situation*

There is insufficient capacity in the sewer network reticulation system to accommodate the proposed development.

The following link services item will be required to connect the proposed development to the existing sewer system as shown on Figure 2.

*Link services*

- DPS3.50 : 565 m x 355 mm Ø new outfall sewer  
  R 1 335 000 *

2.4 *Implementation of the master plan*

The following master plan items will be required to reinforce the existing system in order to accommodate the proposed development together with other future development areas.

*Network upgrade*

- DPS3.51 : 695 m x 400 mm Ø new outfall sewer  
  R 1 577 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2010 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the routes of the proposed pipelines are schematically shown on Figure 2, but have to be finalised subsequent to detail pipeline route investigations.

The minimum requirements to accommodate the proposed development in the existing sewer system are master plan item DPS3.51 and link services item DPS3.50.

*Note:* Drakenstein Municipality has indicated that no provision is made in their 5 year budget for the construction of master plan item DPS3.51 and that the developer should provide financing for this project.
3. INCREMENTAL COST TO THE DEVELOPER

3.1 Water

The incremental cost of the proposed development on the relevant master plan items were calculated as follows:

- Item 2 & DPW4.4: \( \frac{88.3 \, \ell/s}{(275.8 - 107.0) \, \ell/s \times R \, 6 \, 782 \, 000} = R \, 3 \, 547 \, 700 \)

3.2 Sewer

The incremental cost of the proposed development on the relevant master plan items were calculated as follows:

- DPS3.51: \( \frac{1,233.3 \, k\ell/d}{2,648.1 \, k\ell/d \times R \, 1 \, 577 \, 000} = R \, 734 \, 500 \)

4. CONCLUSION

The developer of the proposed prison in Paarl will be liable for the larger amount of R 3 547 700 (excluding VAT) or the Bulk Services Levy (as calculated by the Drakenstein Municipality) as a contribution towards water infrastructure and the larger amount of R 734 500 (excluding VAT) or the Bulk Services Levy (as calculated by the Drakenstein Municipality) as a contribution towards sewer infrastructure.

Over and above this contribution, the developer will also be liable for the construction of link services item DPS3.50 to connect to the existing sewer system.

The minimum requirements to accommodate the proposed development in the existing water system are master plan items 1 & DPW4.4 and the minimum requirements to accommodate the proposed development in the existing sewer system are master plan item DPS3.51 and link services item DPS3.50.

Also find attached hereto Appendix A which includes general notes from Drakenstein Municipality regarding development approvals and conditions.

We trust that you find this of value.

Yours sincerely

GLS CONSULTING (PTY) LTD
REG. NO.: 2007/003039/07

Per: JJ STREICHER (Director)
cc. PD Naidoo & Associates (Pty) Ltd
P. O. Box 37659
OVERPORT
4067

Attention: Mr Ashwin Hemraj
APPENDIX A

GENERAL NOTES FROM DRAKENSTEIN MUNICIPALITY ATTACHED TO GLS SERVICES REPORT

1. The GLS report is a services capacity report and the costs estimated in this report are only approximate values applicable at the time of the study.

2. The approval of the development by Council will be linked to certain development conditions. These conditions will be the official conditions applicable to the project and will take precedence over this report. Once approval is granted Council will enter into a formal services agreement with the developer.

3. Costs for network upgrades, bulk infrastructure contribution levies (BICL) etc. as mentioned in the GLS report could change from time to time due to escalation, new tariff structures, additional requirements etc.

4. The BICL monies are payable on the total amount of single residential erven developed for a subdivision application. In the case of any other land use developments which place an additional burden on the existing water and sewer networks, a calculation to determine the equivalent amount of residential erven will be performed based on a unit water demand of 750 ℓ/day/erf for a single residential erf.

5. The final BICL monies are calculated according to the approved council's tariffs at the time of payment.

6. The BICL monies are payable before the approval of the building plan certificate or final approval of the subdivision for the transfer of units will be issued, as applicable for the type of development.

7. Where servitudes are required, all the costs and arrangements therefore will be for the developer's account.

8. The developer will be solely responsible for the cost of the link services as identified in the GLS report. The developer will also be responsible for the costs of upgrading to the minimum requirements of the services as identified in the GLS report. These costs may however be offset against the BICL monies payable.

9. If the developer is requested to provide bridging finance for the development, the outstanding amount will be repaid within a five year period at an interest rate determined by the Head: Finance of Drakenstein Municipality.

10. The above conditions are subject to any approved council policies, which may be amended from time to time.