

CIVIL ENGINEERING SERVICES REPORT

ERF 3122 HARTENBOS

Client:

**ATKV
Hartenbos Strandoord
P O Box 3
HARTENBOS
6520**

**Tel No.: 044 – 6017200
Fax No.: 044 – 6950770**

Project Managers:

**Uhambiso Consult (Pty) Ltd
Consulting Engineers and Project Managers
P O Box 2462
GEORGE
6530**

**Tel No.: 044 – 8742380
Fax No.: 044 – 8735118
E-mail: uhamgeo@intekom.co.za**

INDEX

1.	Background	2
2.	Location of Site	2
3.	Geotechnical Conditions	2
4.	Existing Structures and Services on Site	2
5.	Water Supply	3
6.	Sewerage Disposal	4
7.	Stormwater	5
8.	Roads	5
9.	Servitudes	6

Annexures:

Annexure A	-	Location Plan
Annexure B	-	Geotechnical Investigation for Hartenbos Extension 4 Township
Drawing No ATKV1.1	-	Hersonering en Onderverdeling van Erf 3122 Hartenbos

1. BACKGROUND

The ATKV want to proceed with the development of Erf 3122 and has appointed a team of consultants to submit the required environmental (R.O.D.) and sub-divisional applications.

This report covers the internal and external bulk civil services required for this development.

In general all services will be designed according to the standards set out in the "Red Book" (Guidelines for Human Settlement Planning and Design).

2. LOCATION OF SITE

The location of the site is shown on the Location Plan attached as Annexure A.

3. GEOTECHNICAL CONDITIONS

A detailed Geotechnical Investigation of the site was done in November 1984 by Schwartz Tromp and Associates.

The present development is located on the area referred to as Phase 2 in above mentioned report.

Phase 1 of the development was completed in 1988 by the ATKV and is known as Hartenbos Heuwels Phase 1.

An extract from the Geotechnical Report conducted for this project is attached under Annexure B.

4. EXISTING STRUCTURES AND SERVICES ON SITE

A 3.5 Ml water reservoir of the Mosselbay Municipality is located on the highest point of the site. The 3.5 Ml reservoir was funded by the ATKV and was sized to provide storage also for the future Phase 2 development (this application).

The reservoir is filled by a 200 mm AC pipe and a 300 mm AC pipe serve as the outlet to the network.

The above mentioned pipes will be relocated within road reserves of the proposed new development if required.

5. WATER SUPPLY

5.1 Total Annual Average Daily Demand

The AADD of the development is calculated as follows:

* Single Residential Erven – 173 e x .95kl/d	164 kl/d
* Group Housing Erven – 182 e x .8 kl/d	146 kl/d
* Retirement Village – 162 e x .8 kl/d	130 kl/d
* Commercial Erven – 0.25 ha x 15 kl/ha/d	4 kl/d
* Bowls Field - .7 ha x 15 kl/ha/d	11 kl/d
<hr/>	
TOTAL	455 kl/d
	(5.27 l/s)

Number of “ee” erven = $(173 \times 950 + 182 \times 800 + 162 \times 800) \div 1000 = 440$ “ee”

Peak factor = 6 x

Peak flow in mains = $6 \times 5.27 = 31.62$ l/s

5.2 Bulk Water Storage

The developer (ATKV) funded the 3.5 Ml reservoir which is situated at the highest point of Erf 3122. This reservoir was sized to have sufficient storage capacity to supply all the ATKV developments in Extension 4 including the Phase 2 development for which this application is submitted.

To ensure sufficient water pressure to all the erven within the Phase 2 development a water tower will be provided adjacent to the 3.5 Ml reservoir as follows:

- * The water tower will be 20 m high to ensure that all houses will have a minimum of 24 m head under instantaneous peak demand.
- * The water tower will be filled by one electrical driven pump with an identical standby pump plus a standby generator.

- * The water tower will have sufficient storage capacity to supply 2 hours of instantaneous peak demand ($31.62 \text{ l/s} \times 3600 \text{ s/hr} \times 2 \text{ hrs} = 227\,664 \text{ l} = 228 \text{ m}^3$).

5.3 Internal Water Distribution Network

The internal water network will be sized as follows:

- * The design minimum residual head under instantaneous flow will be 24 m (20 m for few highest houses).
- * The minimum residual head under instantaneous peak flow plus minimum hydrant flow (15 l/s) will be 7 m.
- * Hydrants will be spaced at 240 m maximum apart.

All internal water network pipes will be laid within the road reserves and every erf will be provided with a metered water connection.

5.4 Water Conservation Measures

To ensure that water conservation measures are implemented the township establishment regulations for this development will stipulate the following:

- * that for each erf a 5 000 l storage tank must be provided when the house is built and that all roof rainwater runoff must be conveyed to this storage tank so that the water can be used for gardening purposes;
- * that all toilets that are installed is equipped with a double flush system;
- * that only low volume shower heads are installed.

6. SEWERAGE DISPOSAL

6.1 Total Average Daily Sewerage Flow

The average daily sewerage flow for this development is estimated at 80% of the AADD at 364 m³/day (0.8 x 455 m³/d).

6.2 Preliminary Design of Internal Network and Linking to External System

The internal sewerage reticulation system will be 160 mm diam uPVC Class 34 with 100 mm house connections to each erf to the standards as set out in the "Red Book".

This development is situated higher than the adjacent existing developments of the ATKV Hartenbos Heuwels Phase 1 and Vyf Brakke Fontein No 220 and the proposed new internal sewerage network will be able to connect under gravity to the sewer networks of the surrounding developments.

7. STORMWATER

7.1 General

This development is situated at the head of a stormwater drainage area and does not receive any stormwater runoff from any adjacent areas.

The largest part of the development drain to a natural drainage course running down the centre of the development.

7.2 Internal Network

The internal stormwater network will consists of concrete pipes and catchpits along roads and will be designed according to the standards of the "Red Book".

7.3 Stormwater Detention Ponds

To protect downstream developments from the risks association with increased post development stormwater runoffs one (or more) detention ponds will be constructed in the natural water course in the public open space to ensure that there is no increase in stormwater runoff due to this development.

8. ROADS

8.1 Roads

All internal roads will be provided with a permanent surface (bitumen or brick paved) and kerbing and channeling.

This project will get access to the following streets:

- * To the east the new main access road for this development (20 m road reserve) will connect to existing Kammiebos Lane of the Hartenbos Heuwels Phase 1 development.
- * To the south the new main access for this development will connect to a proposed new road in Hilands Development for which an R.O.D. has been issued.

8.2 Traffic Impact Assessment

The traffic impact assessment for this development forms part of a separate report for which a specialist has already been appointed.

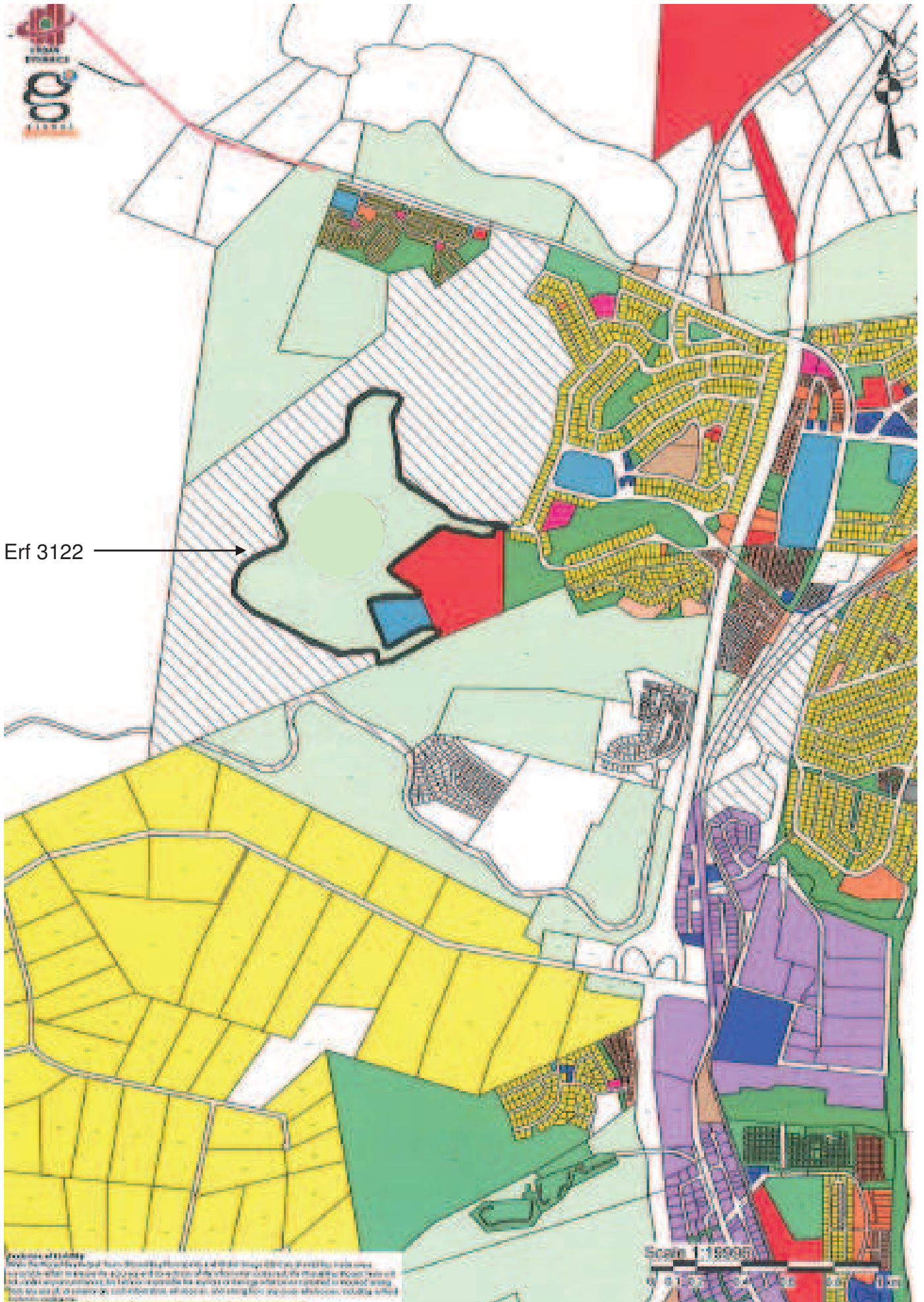
9. **SERVITUDES**

All new and existing services will be located within road reserves or public open spaces and servitudes will therefore not be required for these services.

Report prepared by:

J. H. DU TOIT Pr. Eng
Uhambiso Consult (pty) Ltd

Annexure A : Locality Plan



Erf 3122



Accuracy of the Map
This map is a computer-generated map and is not a survey map. It is intended for general information purposes only and should not be used for any legal or financial purposes. The map is not a substitute for a professional survey or other official documents. The map is provided as a guide only and is not intended to be used as a basis for any legal or financial decisions. The map is not a substitute for a professional survey or other official documents. The map is provided as a guide only and is not intended to be used as a basis for any legal or financial decisions.

Scale 1:10000
0 100 200 300 400 500