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B-BBEE LEVEL THREE CONTRIBUTOR

Your ref.:

Our ref.: W1900/3.7-01

28/09/2018

Attention: Mr. R. Rabie

AT Darling Green Estate
Private Bag X1
Suite 119
MELKBOSSTRAND
7441

Sir

**@ DARLING GREEN ESTATE: SUBDIVISION OF ERF 4401, DARLING
INTERNAL SERVICES REPORT**

1. LOCALITY

This development is situated against the south eastern border of the existing town, Darling, and is bordered by an existing residential development and the Darling Golf Course on it's north western border, the Malmesbury to Darling railway line on it's northern border, existing farm land on it's eastern border and the R307 (Darling to Atlantis) road on it's south eastern border.

2. DEVELOPMENT DETAILS

The development will consist of the following:

- 1ha Stands 9
- 0,5ha Stands 12
- 0,2ha Stands 30
- 0,125ha Stands 66
- Crafters Village 100-130 Units
- Retirement Village 254 Units
- Food & Craft Market 6,7ha

3. SERVICES

All services will be designed and constructed in accordance with:

- The Provision of Engineering Services to Residential Townships (Blue/Red Book).
- The standards, requirements and approval of the Swartland Municipality.
- SANS1200 specification as applicable.

3.1 ROADWORKS

Access to the development will be from the R301 (Darling to Atlantis) Road by means of a paved access road and access control. An internal road network will be installed to provide access to the new units.

The new roads will be designed and constructed to the following minimum standards:

- a. The access road and roads inside the Retirement Village will be surfaced with a permanent dust free surface with kerbs on both sides. Surfaced widths will vary from 8m to 5m.
- b. Internal roads will be gravel roads treated with a dust suppressing additive. Widths will vary from 6m to 5m.
- c. Roads will have a gravel shoulder on each side of suitable width to accommodate pedestrians, cyclists and equestrian traffic.
- d. Stormwater drainage will be addressed with open channels and a stormwater network consisting of Class 100D concrete pipes of suitable diameter.
- e. Road markings and signage as per statutory requirements.

3.2 STORMWATER

Stormwater will be accommodated on the new erven by means of conservancy tanks and a system open gravel channels and concrete stormwater pipes gravitating to the existing dam on site. The existing dam will be provided with an overflow of suitable diameter that will discharge into the existing culvert crossing the railway line. The stormwater pipe system will be designed to accommodate the post development 1:2 year recurrence interval run-off from the properties.

For the major stormwater event (i.e. in excess of the 1:2 year recurrence interval) stormwater will be accommodated on the road surface and directed by means of an overland escape route to the existing dam and existing culvert crossing the railway line.

3.3 WATER

An internal water network will be installed and connected to the existing municipal water network at a point to be confirmed.

3.4a Water Demand

The Total Average Daily Demand (ADD) calculation:

1.0ha stands	:	9 x 2.0 kl/day	=	18.0 kl/day
0.5ha stands	:	12 x 1.0 kl/day	=	12.0 kl/day
0.2ha stands	:	30 x 1.0 kl/day	=	30.0 kl/day
0.125ha stands	:	66 x 0.8 kl/day	=	52.8 kl/day
Crafters Market	:	130 x 0.6 kl/day	=	78.0 kl/day
Retirement Village	:	254 x 0.6 kl/day	=	152.4 kl/day
Food and Craft Market	:		=	<u>2.0 kl/day</u>

Total ADD = 345.2 kl/day

Average Daily Flow = 4 l/s

3.4b Internal Water supply

The peak demand for the fully developed area:

Peak Factor: 2.2
 Peak Flow: 2.2 x 4 l/s = 8.8 l/s

Water to the new erven will be supplied by means of a water network consisting of:

- 160mm and 110mm Ø HDPE (PE 100) Class 12 pipes with the necessary accessories.
- 22mm Ø HDPE erf connections.
- Hydrants will be placed and installed as per *The Provision of Engineering Services to Residential Townships* (Blue/Red Book).

3.4 SEWER

3.4a Internal Sewer Network

Sewerage from the new erven will be collected in a sewer network consisting of 160mm Ø uPVC Class 34 pipes with a 110mm Ø uPVC erf connection to each erf. Manholes will be placed at all vertical and horizontal changes of gradient and direction with a maximum of 90m between manholes. The sewerage will gravitate to a new pump station from where it will be pumped to the existing municipal sewer network at a point to be determined.

3.4b Estimated sewerage run-off:

$$345.2 \times 0.8 = 276.2 \text{ kl/day}$$

3.4c Pump station

The new pump station will be constructed with pre-cast concrete rings and be designed to have a storage capacity of 4 hours. The pump station will be equipped with 2 electricity driven pumps, working on an alternating cycle, and telemetric equipment linked to the existing municipal monitoring system.

3.5 SOLID WASTE

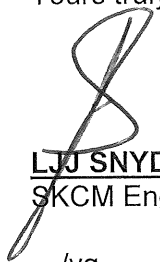
Solid Waste will be collected by Swartland Municipality's sanitation department, from individual stands, on a weekly basis and transported to the Highlands solid waste facility outside Malmesbury.

Solid waste generation is estimated to be : 1 353 persons @ 1 kg/day = 1 353 kg/day.

This report is based on the assumption that the existing municipal services have sufficient capacity to accommodate the burden generated by the new subdivision.

GLS Consulting Engineers will be appointed by the Client to confirm adequate capacity in the existing bulk services and to recommend any possible upgrading of the existing municipal infrastructure.

Yours truly



L.J. SNYDERS PrTechEng
SKCM Engineers

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