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**B-BBEE LEVEL TWO CONTRIBUTOR**

Your ref.:

Our ref.: W1516/3.7-02

12/09/2016

**Attention: Ms J Linnemann**

CK Rumboll & Partners  
P.O. Box 211  
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Jolandie

## **LA MOTTE: STORMWATER MANAGEMENT PLAN**

The project comprises the development of two parcels of land on either side of the existing La Motte Forest Village. The third parcel of land comprises the formalisation of an existing residential and business area.

The affordable housing development is situated on the western side of the existing township and makes provision for 329 housing units, a school site, 2 church sites and 2 crèche sites. The land on the eastern side of the existing township has been earmarked for GAP housing. Provision has been made for 106 residential erven.

The third development node comprises the formalisation of an existing area and comprises 16 residential erven, 3 business sites and 2 erven belonging to the local authority.

### **1. INTRODUCTION**

This Stormwater Management Plan discusses the stormwater runoff parameters, as well as planning and routing of the stormwater system for the site. The first two development nodes are discussed in this report. The third node is an already developed area with existing services which requires a formalised town plan. The existing stormwater management of this node will not be affected.

### **2. STORMWATER RUNOFF PARAMETERS**

#### **2.1 Sub-catchment demarcation and topography**

The development areas node 1 and 2 are indicated on the accompanying drawings.

Node 1 comprises 4.59 ha with an average slope of 1:26. This is a gentle slope and no special precautions will be required during construction of the services. The site was previously used for forestry. The south western border abuts the existing pine forest. The stormwater in the forest area is well managed and will not have an impact on the development.

Node 2 comprises an area of 12.33 ha. The site has an average slope of 1:11. The slope is steeper than Node 1 and the stormwater management during construction will require erosion control measures i.e. temporary contouring during construction in winter.

The site is situated in the forestry area and abuts the forest on the south western border. No stormwater run-off from the forest is foreseen.

## **2.2 Soil and geohydrological conditions**

The soils on both sites are sandy with rocky outcrops visible. The soils are well drained and are not expected to become over saturated. The sites are situated above the 1:100 year flood line.

## **2.3 Existing and future land use**

The pre-development areas are grasslands and a run-off factor of 0.21 was used in the rational method to determine the pre-development run-off from the sites.

The post-development run-off factor was calculated at 0.50. The difference between the pre-development and post-development factors was used to calculate the size of the retention ponds required.

## **2.4 Storm rainfall**

The 1:5 return period was used in sizing the retention ponds for the development. The internal stormwater network will also be designed for a 1:5 year return period.

The stormwater precipitation for the 1:5 year return period was estimated as 80mm/hour.

# **3. STORMWATER MODELLING AND PLANNING**

## **3.1 Design criteria and management requirements**

The "Guidelines for Human Settlement Planning and Design" was used as a design guideline for the stormwater system in the study area.

The following special conditions were provided in the design of the stormwater network:

- a) The internal stormwater infrastructure is designed for the 1:5 year return period. The stormwater network will consist of open channels, side inlet catchpits, manholes and concrete pipes with sizes varying from 375mm to 450mm diameter.
- b) The detention facilities will be dry ponds and designed to detain the run-off for the 1:5 year return period.
- c) The road layout and servitudes were designed to drain all low points out of the township in a major storm event.
- d) The post-development peak flows will be detained in detention facilities before being discharged to the receiving water body at the pre-development discharge rates.
- e) The retention ponds will act as sand traps and will therefore require periodic cleaning.
- f) The retention ponds will also be designed to act as litter traps from the development. The ponds will therefor require regular periodic cleaning

## **3.2 Analysis of stormwater drainage system**

The rational method was used to calculate the pre- and post-stormwater run-off from the development nodes.

As part of the preliminary design, the design peak flows of 1:5 years was used to design the internal sewer network which consists of a series of catchpits and a pipe network which discharges into the retention ponds. The volumes of the retention ponds were calculated accordingly.

The detention facilities are designed as dry ponds. The capacity of the ponds required to limit the discharge from the site to the pre-development rates is:

- a) Node 1 = 260 m<sup>3</sup>
- b) Node 2 = 800 m<sup>3</sup>.

The layout of the stormwater systems is shown on drawings W1519-201, 202, 203 (see Annexure A).

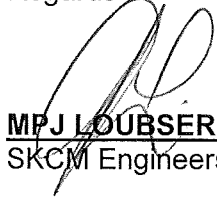
#### **4. SYNOPSIS AND CONCLUSION**

La Motte Development is situated within the Berg River catchment area.

The stormwater network for both sites will be designed for the 1:5 flood. The stormwater discharge rate from the development will be limited to the pre-development discharge rates. The major storm events will drain from the development area the roads to minimise stormwater damage to the properties.

We trust that you will find the above in order.

Regards



**MPJ LOUBSER PrEng**  
SKCM Engineers

.../yg

## **ANNEXURE A: Drawings**









NOTES:

DATE	REVISION	BY
2016/09/12	A	V.M.

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**STELLENBOSCH  
MUNICIPALITY**

PROJECT  
**PROPOSED RESIDENTIAL  
PROJECT, LA MOTTE  
FRANSCHOEK**

TITLE  
**PROPOSED  
ROAD AND STORMWATER  
LAYOUT  
PART 1**

**SKCM**

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DATE  
FEBRUARY 2014

SCALE  
1: 2 000

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W1519 - 201	A

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CUTOFF DRAIN ADDED

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PROJECT, LA MOTTE  
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PART 2



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