

Our Ref.: Pan/01

26 October 2011

Att. Mr. P Govender

Dear Sir

**STORMWATER MANAGEMENT PLAN FOR PANORAMA BUSINESS PARK DEVELOPMENT :**

Attached are the following:

1. Plan – Alternative ONE : Piped
2. Plan – Alternative TW0 : Open Channel

The parameters used for the stormwater design are as follows:

- i) Rational Method
- ii) Time of concentration taken as 15 minutes.
- iii) Intensity used  
1:50yr 200mm/hr
- iv) Co-efficient of run-off.
  - a) Streets and paved areas - 0.8
  - b) Residential - 0.7
  - c) Grassed , Vegetation - 0.5
  - d) Light Industrial - 0.95

The outflow into the site are from two points from the existing Panorama residential area as shown on the plan as A and B. These outflows will be allowed for through the development. The outflow at the lower end of the Development will be restricted to the pre-development scenarios. Where pipes are discharged into grassed or open areas, erosion protection will be provided.

## ALTERNATIVE ONE - PIPED

### PREDEVELOPMENT FLOWS.

Area = 13.38 ha

C = 0.5

Intensity = 200mm/hr

$Q_{50} = 3.716\text{m}^3/\text{sec}.$

### POSTDEVELOPMENT FLOWS

Area = 13.88ha. C = 0.95

$Q_{50} = 7.325\text{m}^3/\text{sec}.$

Difference =  $3.6\text{m}^3/\text{sec}.$

**Onsite storage required for 15mins =  $3240\text{m}^3$**

This will be provided for by the way of two storage ponds, viz. C and D as shown on plan :

Storage Pond C (  $2498\text{m}^3$  )

Approximate dimensions : area =  $3122\text{m}^2$  x 0.8m average depth

Storage Pond D (  $1545\text{m}^3$  )

Approximate dimensions : area =  $1545\text{m}^2$  x 1.0m average depth

**Total storage provided for =  $4043\text{m}^3$**

The flow through the 600mm diameter pipe from C will be restricted to  $1.1\text{m}^3/\text{sec}$ , thereby retaining  $2.2\text{m}^3/\text{sec}$  for 15mins (  $1980\text{m}^3$  , storage available =  $2498\text{m}^3$  ) ( Plan Pan / 01 )

At F the pipe will be 900mm diameter to accommodate internal stormwater flows into the system which will be discharged into Storage pond D.

Storage Pond D will allow for the retention of approximately  $1260\text{m}^3$  (  $1545\text{m}^3$  available ) and will allow for a flow of  $4.816\text{m}^3/\text{sec}$  (  $3.716 + 1.1$  ) through the 1050 diameter pipe into the Existing Concrete Channel.

**This is the preferred Option.**

## ALTERNATIVE TWO – Open Flow Channel

~~This alternative is to provide an open channel from E to Storage Pond D as per the cross section shown on plan. ( Plan Pan / 02 ).~~

Area of Development under consideration for open channel flow = 9.14ha. ( 13.88ha – 2.64ha -2.10ha )

Post development flow  $Q_{50} = 4.82\text{m}^3/\text{sec}$   
Attenuated flow from A =  $1.1\text{m}^3/\text{sec}$

Total flow for  $Q_{50}$  in proposed channel =  $5.92\text{m}^3/\text{sec}$ .

The flow will be contained as per the cross section on plan PAN/02.

**Flow allowed for in channel =  $6.5\text{m}^3/\text{sec}$ .**

Storage will be the same as for Option One :

Storage Pond C (  $2498\text{m}^3$  )

Approximate dimensions : area =  $3122\text{m}^2$  x 0.8m average depth

Storage Pond D (  $1545\text{m}^3$  )

Approximate dimensions : area =  $1545\text{m}^2$  x 1.0m average depth.

Velocities at the outlet from Storage Pond D will be controlled by means of a weir system.  
Details will be submitted with Design drawings.

Alternative ONE , the Piped option is the preferred option and has been recommended in the other reports by Alletson Ecologicals.

Should you have any queries, please do not hesitate to contact me.

Regards



Mr. G M Chetty

Sukuma Consulting Engineers ( Pty ) Ltd