WALTERS & ASSOCIATES

CONSULTING CIVIL & STRUCTURAL ENGINEERS
97 CHAMBERLAIN ROAD, VINCENT, EAST LONDON 5247
Tel : (043) 726 7945 Cell: 082 334 6864 e-mail: waltersd@mweb.co.za

The Manager : Disaster Management
Buffalo City Metropolitan Municipality
EAST LONDON

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Ref No.718 / 01 (Braun)

NEW DWELLING ON ERF 72494, EAST LONDON : LIDO AVENUE, NAHOON RIVER: STORMWATER IMPACT ASSESSMENT & MANAGEMENT PLAN

We refer to the Buffalo City Municipality (BCM) Approval Conditions that a Stormwater Impact Assessment (SWIA) be carried out for any Subdivision, Rezoning, or *specific* Building Plan application. The BCM standards for the SWIA are as follows :

A Stormwater Detention facility to be provided on the site, that will retain the 1 : 50 year storm runoff, with a post-development run-off factor of 0,9, and a rainfall intensity of 140 mm per hour, for a minimum duration of 15 minutes, and able to release the 1 : 5 year storm runoff, with a pre-development run-off factor of 0,45 and a rainfall intensity of 75 mm per hour.

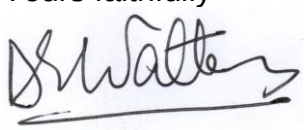
The Rational Method[2] of stormwater determination has been used to calculate the rainfall runoffs corresponding to both the T = 5 and T = 50 year return periods. The rainfall intensities used are those determined by SRK Hydrology Report[1] prepared for Zone 'D'.[1] The calculations have been performed on the entire area of erf 7244, which has a total area of 1034.5 square metres, and which may accommodate a single residential dwelling on the banks of the Nahoon River.

Using Abt & Grigg's Method[2] of stormwater detention dam design and a time of concentration of T_c = 15,0 minutes as the duration time (t) of all storms considered. The rainfall intensities (i_T) used were : $i_{T=5}$ = 75 mm/hour & $i_{T=50}$ = 140 mm/hour.

RECURRENCE INTERVAL :	T = 5 years	T = 50 years
STORMWATER RUNOFF :	$Q_{T=5}$ = 0,010 m^3/sec	$Q_{T=50}$ = 0,036 m^3/sec

Using Abt & Grigg's Method[2] of stormwater detention dam design, the calculated total detention facility requires a volume of 17.0 cubic metres to accommodate a 1:50 inflow, while discharging a 1:5 outflow as required by the BCM. As indicated on our diagram 718 / 01, we recommend that the lowest point on the erf should accommodate the detention facility, as calculated above, and may comprise of part of the garden as a sunken basin type construction against the gabion wall, with a single 110mm diameter pipe installed through the gabion wall to permit the 1:5 year storm runoff to be discharged into the *formal stormwater system* of the Nahoon River.

Yours faithfully



Dr D E WALTERS Pr Eng

References :
1. SRK Hydrology Report to Buffalo City Municipality, rainfall intensity figures for Zone"D", East London city.
2. Abt S & Griggs N, "An Approx Method of sizing Detention Dams" AWRA Water Resources Bulletin, Aug 1978