4. STORM WATER SYSTEM DESIGN

4.1. System Planning

Storm water drainage in municipal areas has the primary purpose of receiving and disposing of rainfall run-off in order to reduce the risk of surface water flooding. It also serves as a collection network for sub-soil drainage systems.

Storm water drainage systems in new development areas shall discharge to the existing storm water drainage system, to evaporation lagoons or direct to the sea. Uncontaminated rainfall run-off must only connect to the storm water system, and domestic sewage flow must only connect to the foul sewer system.

The design of a new storm water system shall take account of the hydraulic constraints imposed by the receiving network or the point of outfall.

DMAT will identify the constraints on the design of new connections to its storm water system. These will take the form of permitted points of connection, the maximum water levels in the existing system and the maximum permitted discharge rates from the new development.

For networks serving areas up to 80ha and / or 'times of concentration' up to 30 minutes the "Rational Method" shall be used for system design, supported by the use of proprietary network design software as appropriate. For larger catchments or where the 'time of concentration' is greater than 30 minutes the SCS method shall be used, again supported by proprietary network design software as appropriate. Descriptions of the Rational and SCS methods are given in Section 3.

Models must be submitted with the draft and final preliminary and detailed design reports. Section 8 details DMAT's requirements for the Database File (DBF) and Shapefile (SHP) data files exported from the modelling software.

4.1.1. Commencing Design

The design of a new network will progress in stages. Initially the pipeline gradient available for the longest branch should be estimated and initial inputs of flow provided along its length. If the pipe gradients available for gravity flow do not give the required minimum cleansing velocities given in Section 4.3.2 then they shall be steepened and intermediate pumping stations introduced where necessary, and will be subject to DMAT approval.

Once the profile of the longest branch has been established the initial design of the other branches can proceed.

Greater refinement is then progressively achieved by inputting the flows in more detail and by considering flooding constraints. The final sizes of pipes and their gradients may result from either flow velocity or flooding constraints. A minimum pipe diameter of 300mm is recommended for surface water pipes.

Service reservations are allocated by UPC and finally approved by DMAT, and details of these shall be obtained at the earliest time in the design process. The location of existing and planned utilities shall be obtained from the relevant utility provider.

Service reservation widths shall comply with the current requirements of the UPC's Utility Corridor Design Manual (UCDM).