

4.3.2. Pipe Hydraulic Design

To provide a self-cleansing regime within gravity storm water pipes, the minimum velocity shall be above 0.75 m/s at peak flow. Less velocity may be accepted only at the early upstream of the storm water network after discussions with DMAT Engineers.

The maximum flow velocity shall not exceed 2.5m/s to minimise energy dissipation problems. Where system levels would result in higher velocities then the use of backdrop manholes for energy dissipation is not recommended. Specialist advice should be obtained if this occurs.

Where a scheme is to be developed in phases over several years, calculations shall be carried out to show the flow velocities at the end of each phase. Depending on the network and the nature of the development it may be necessary to increase the pipe gradients to give the required velocities from the lower flows during the early years of operation. This shall be by agreement with DMAT.

4.3.3. Minor Friction Losses

Calculations of the hydraulic grade line (HGL) for typical storm water systems usually ignore minor pipe losses. These include losses that occur in manholes (a summation of entrance, exit and bend losses), as well as losses that occur in pipes (at pipe to pipe junctions, bends, contractions, enlargement and transitions).

These minor losses, when cumulated, can cause substantial differences in the estimated HGL for the storm drain. In some cases (such as when profile slopes are minimal and velocities slow), design calculations need to allow for the additional head losses that will occur in manholes, chambers and pipes. This is necessary to avoid restricting the capacity of the drain system by not accounting for them in design.

When using proprietary network design software these losses can be calculated. For details on how to calculate minor losses manually, refer to the relevant literature.