



**Figure 4-1 - Pipe Position Relative to Buildings**

Pipelines shall be positioned to give a minimum clear gap of 500mm in plan to any existing utility and shall comply with DMAT's service corridor dimensions.

## 4.2. Flow Attenuation

Flow attenuation shall be provided to lower peak flow rate to produce more economic designs and to meet hydraulic constraints in existing networks.

Attenuation may also be provided where a reduction in peak flow results in a reduction in overall costs. An example might be when attenuation results in a smaller pumping station when pumping is required. In all cases, Net Present Value (NPV) calculations shall be carried out to show that such a proposal would be cost-effective.

Attenuation shall be provided by either:

- on-line tanks or oversized pipes with a flow control device at their downstream end to limit the pass-forward flow and to mobilise the storage,
- off-line storage tanks with a small outlet flow control device and high level overflow back to the main storm water line. A flushing system should be provided such as tipping buckets or high pressure jetting. Ideally off-line tanks should have a separate tank to retain the first flush. Online storage is the preferred method of attenuation as it reduces the maintenance requirements.
- a lagoon (detention pond) where levels and location permit. Open lagoons shall not be permitted within or close to developed areas. Permission to lay pipes and construct lagoons and other structures outside the developer's area shall be obtained from DMAT and affected landowners.

Lagoons and off-line tanks shall be sized to have a volume 5% larger than the required attenuation volume, to account for sedimentation of sand within the structure.

It may also be possible to provide flow attenuation by allowing some selected surface flooding, particularly during more severe storms, although the requirements in Section 4.1.3 shall be observed.

Where practical and cost-effective, flow attenuation measures shall be provided as close as possible to the source of flow.