4.3.5. Pipe Depth

The minimum cover to pipes without additional protection shall be 1200mm. In special conditions structural calculations in line with Appendix A2 may show that protection is required at greater depth for particular loading cases.

Where it is not cost-effective to have the head of the system starting with 1200mm cover then additional protection shall be provided to the pipes. Additional protection will usually take the form of concrete bed and surround or protection slabs.

When designing the pipeline, the corresponding cover depths, the pipe material and bedding, the Consultant shall consider if and by how much existing ground levels and imposed surface loads may change as a result of:

a) temporary conditions during construction
b) re-profiling of the ground as part of the site development
c) possible future changes to ground levels

Safety Note – Trenchless Solutions

Where the trench depth is greater than 10m or where difficult ground conditions exist or there is an obstacle to be passed, the Consultant shall consider whether a trenchless construction technique would be safer than open cut trenching. See also Section 4.10.

Safety Note – Pipe Flotation

During construction it may be possible for the pipe trench to contain fluid concrete or standing water. If the pipes are sealed and empty and have little or no backfill they can become buoyant with a risk of injury to personnel and damage to the pipeline and adjoining works. A similar risk is present after backfilling if the surrounding material can become fluid (as quicksand). If this can occur the buoyancy forces are greater due to the higher density of the material.

The Consultant shall carry out calculations to demonstrate that there is a Factor of Safety of at least 1.1 against pipe flotation under all practical circumstances. If the pipe self-weight is not sufficient then additional weight shall be provided by means of concrete saddles, or similar.

4.4. Inlet and Catchbasins Structures

Surface water run-off areas will accumulate windblown sand and measures shall be taken to prevent or significantly reduce the amount of sand getting into the storm water network. Surface water collection inlets shall include a sump to trap sand as shown on the Standard Drawings. Each inlet shall be connected to a rider pipe of maximum length 50m which at its end shall connect to a catchbasin. Each catchbasin shall connect to a manhole by as short a pipe as possible. Catch basins shall be specified at junctions of two or more lateral pipes, and at the upstream of manholes.