

## **2. DESIGN CONSIDERATIONS**

### **2.1. Network Integration**

DMAT's Planning Department and the Urban Planning Council (UPC) development plans will show the existing and future land use within which the Developer shall identify his proposals.

At any point in time the storm water and sub-soil drainage systems in Abu Dhabi will need to accommodate flows from the following contributing sources:

- The existing networks being operated by DMAT
- Proposed future planning:
  - Extensions to the trunk main network being planned and/or constructed by DMAT to accommodate surface water from new developments and changes in sub-soil flows in accordance with the overall Municipal Development Plan. Manholes are to be located at strategic points to allow connections from new developments to be made in the future,
  - New developments with their associated sub-catchment drainage, and
- Stormwater drainage from new highways being planned and/or constructed by the Department of Transport Overland run-off from open areas.

The Consultant shall take account of all the above when preparing his drainage proposals.

DMAT has long-term responsibility for the storm water and sub-soil networks and in order to optimise the ownership and maintenance costs, it requires the design proposals to:

- Opt for gravity solutions, utilizing non-disruptive and trenchless pipeline installation technologies when large depths are encountered. No electromechanical solutions shall be utilized unless a gravity solution does not connect at the required elevations.
- Optimise the size of pipes versus additional storage provided for flow attenuation. Attenuation reduces the peak flow rate and may allow the use of smaller pipes downstream. A detailed appraisal, including NPV calculations, shall be carried out to justify the solution adopted.
- Optimise the number of pumping stations when pumping is absolutely necessary. The number and location of pumping stations shall be balanced against other considerations. A detailed appraisal including Net Present Value (NPV) calculations shall be carried out to justify the number, size and location of pumping stations.

### **2.2. Design Philosophy**

DMAT requires storm water and sub-soil systems to be provided which:

- Fulfil its requirements for minimizing the risk of flooding
- Drain water-logged areas
- Are of reasonable cost to construct, operate and maintain
- Do not involve undue health and safety risks during construction, operation and maintenance
- Comply with environmental legislation and protocols

The Consultant shall use this Manual together with their professional experience and expertise to achieve a sensible balance of the above. Achieving the right balance will be assisted by the Consultant having regular interaction with DMAT as the design proceeds.