

Item	Description
Topography and Land Use	<ul style="list-style-type: none"> <li>• topography and land use maps on a scale between 1: 50,000 and 1:100,000 showing contour lines of the land surface</li> <li>• alignment and slope of main sewer lines, laterals and drains</li> <li>• selection of the drainage outlet</li> <li>• the direction of natural drainage</li> <li>• the concentration points of flow</li> <li>• actual and proposed land use</li> </ul> <p>Where topography and land use maps are not readily available, a simple GPS survey coupled with field observations should be undertaken. Actual and proposed land use determines the degree of drainage required, the type of drainage system and individual drain alignment.</p>
Hydrogeology	<p>Groundwater and surface hydrology considered concurrently</p> <ul style="list-style-type: none"> <li>• rainfall</li> <li>• evapotranspiration</li> <li>• water elevation</li> <li>• water quality</li> </ul> <p>As a minimum sufficient data should be collected to derive piezometric contours maps and subsequently groundwater flow patterns at sufficient scale for the size of the project.</p>
Geology	<ul style="list-style-type: none"> <li>• geological map of the region</li> <li>• cross sections showing the lithological sequence</li> <li>• borehole data</li> </ul> <p>For reasons of economy and efficiency, bores of 5-10 meters generally provide adequate information on the soil profile and depth-to-water status. The actual depth of investigation will be dependent on the target depth of subsurface drainage requirements. For selected bores a pumping test will be required to measure soil permeability of the shallow substratum (1.5 to 5.0 m)</p>
Soils	<ul style="list-style-type: none"> <li>• soil map at a scale between 1:50,000 and 1:100,000</li> <li>• data on soil stratification of the shallow substratum (1.5 to 5.0 m)</li> </ul>

Table 5-4 – Reconnaissance Data

### 5.4.2. Concept Design

Data collected during the reconnaissance phase are analysed and the results used as background for the concept design.

The Consultant shall determine

- general alignment of field drains, collectors and main line from the prevailing topography.
- spacing of field drains in a trial and error procedure whereby the time required to control the water table is evaluated in relation to pipe spacing and depth.
- calculate system capacity and pipe discharge.