



Water and Sewerage Authority Trinidad and Tobago

Design of the Wastewater Treatment Plant Crown Point, Tobago

In Trinidad and Tobago not all areas have wastewater collection systems and associated treatment plants. One such area was Southwest Tobago

MAAK Technologies and its team were retained by the Water and Sewerage Authority (WASA) to design the new regional Southwest Tobago wastewater treatment plant located in Crown Point to service approximately 3,615 hectares.

Crown Point Wastewater Treatment Plant receives all wastewater generated in the service area and treats it to an advanced level, which includes biological nutrient removal (BNR) and ultra-violet (UV) disinfection. This new plant, designed to treat an average daily flow of 12.8 MLD, discharges the effluent into an ocean outfall line over one kilometer long. In addition, as the plant exceeds national discharge standards to a sensitive environment, a percentage of the high quality effluent can be reused for urban irrigation at golf courses and industrial estates.

Fast Facts:

- *Average daily flow of 12.8 MLD*
- *High quality effluent suitable for reuse*



The scope of the project was divided into five key areas:

1. **Review and Evaluation of Existing Information:** This included previous reports and studies, design documents, maps, topological data and geotechnical surveys, as well as a review of land policy maps, census data, water demand data and population projections.
2. **Verification and Design Data:** Verification of the conceptual design, preparation of a design synopsis (to ensure options are feasible), identification of all areas that required further investigations or review (as technical memoranda), and design of the plant to ensure its effluent meets the national water

pollution rules were included in this phase. The plant design included process, mechanical, civil, structural, electrical, instrumentation and control details for all processes within the plant – all to meet or exceed local regulations.

3. **Formulation and Selection of Design Options for the Construction of the Wastewater Treatment Plant to Achieve Maximum Efficiency:** The methodology to compare life cycle costing over the 25-year project horizon was developed. Also included were: design criteria; determination of appropriate methods of construction (e.g. locally available technology); consideration of modular designs for expansion capability; handling of sludge; land acquisition issues; technical specifications on materials and equipment; works; soils analysis; and testing of all structures and equipment.
4. **Preparation of Tender Documents for the Construction of the Plant:** This included: contract documents (including technical specifications and BOQs); design documents (including process flow diagrams and all calculations and plans); detailed description of the plant using maps (showing layout, components, sizing); activities preceding construction, schedule of works, and O&M activities.
5. **Preparation of Recommendations to Mitigate the Impacts Identified During the Construction Phase:** The Environmental Assessment was updated. Recommendations with regard to land acquisition issues, as well as new access and discharges from the treatment plant during the construction and operational phases were made. Base-line data on the pertinent physical, social, environmental, and economic elements of the area of construction, and downstream of the project were provided.

- Water/Wastewater Treatment Design, Treatability Studies, Distribution/Collection Systems
- Design/Build – Treatment Plants, Pumping Stations, Distribution/Collection Systems
- Programme/Project Management
- Government Management Support Services
- Master Planning – Water, Wastewater, Drainage
- Automation and SCADA System Design & Development
- Utility Asset Management Planning & Optimization
- Data Management – System Planning & Design
- Training – Knowledge Transfer, Public Education
- Operations Optimization & Modelling
- Energy Management
- GIS Development

