# Wastewater Treatment

# September 2025

## Introduction

There are three (3) wastewater treatment plants (WWTP) serving the area. They are located in the following areas:

- Lower cable car building. The WWTP has a capacity of 15 $m^3$/day
- Upper cable car building. The WWTP has a capacity of 10 $m^3$/day
- Restaurant building. The WWTP has a capacity of 15 $m^3$/day (to be confirmed by operator)

The process used consists of the following items:

- Bioreactors (with equalization/anoxic compartment, anaerobic tank, aerobic tank)
- Sedimentation tank
- Filtration

## Scope of work

- The scope of work of the operator comprises the inspection, replacement or repair of all electromechanical equipment that does not function as required, rehabilitation of all three (3) plants, with all associated mechanical, and electrical works, central control and monitoring system and all related necessary items. Any utility requirements needed in the facility for the proper operation of the treatment plant needs to be checked and identified by the operator prior to the start of the works.
- Testing of all three (3) plants to demonstrate their hydraulic operation (testing will take place with clean water).
- Start-up and testing of all three (3) plants to demonstrate that they are fully functional and operational. At this stage, treated effluent samples shall be taken and tested in a certified laboratory to prove that the effluent requirements are respected. All start-up costs, for example bacteriological seeding or nutrients (for the start-up of the biological process) and sampling analysis shall be covered by the operator.
- All the necessary standby component will be provided to ensure the uninterrupted operation of the plants. All mechanical equipment shall have a standby unit. Automated changeover from duty to standby operation in case of failure shall take place. Also, cyclic operation shall take place between duty and standby units.
- During operation all costs of chemical and sludge disposal shall be covered by the operator.
- During operation all maintenance costs including spare parts, labor, sampling and testing, etc. shall be covered by the operator.
- Samples of treated effluent shall be sent as per supplier’s agreement to a certified and approved laboratory to demonstrate the compliance of the treatment plants. In case the required effluent limits are exceeded penalties shall be applied to the operator and in case the effluent limits are exceeded for more than three weeks the operational contract can be terminated.

- The operator should provide yearly maintenance agreements with the supplier to ensure a proper operation of the treatment plants.
- Sampling and testing of the treated water effluent can be performed at any time as decided by the Ministry of Tourism's representative.

## Treated effluent quality

Treated effluent quality shall be suitable for discharge in the river as per relevant local authorities' requirements (MoE, 2001).

Treated effluent shall comply with the following minimum requirements for wastewater treated effluent discharged to the river.

- pH: 6-9
- Temperature ≤35 °C
- BOD5: ≤25 mg/L
- COD: ≤125 mg/L
- Total iron ≤5 mg/L
- Mercury: ≤ 0.05 mg/L
- Copper ≤ 1.5 mg/l
- Nickel ≤ 0.5 mg/l
- Aluminum ≤ 10 mg/l
- Ammonia Nitrogen (NH4-N): ≤ 10 mg/L
- Total Nitrogen : ≤ 30 mg/L
- Nitrate Nitrogen, NO3-N: ≤ 90 mg/L
- Phosphates ≤ 5 mg/L
- Free Residual Chlorine: 0.2 - 0.5 mg/L (in the irrigation network)