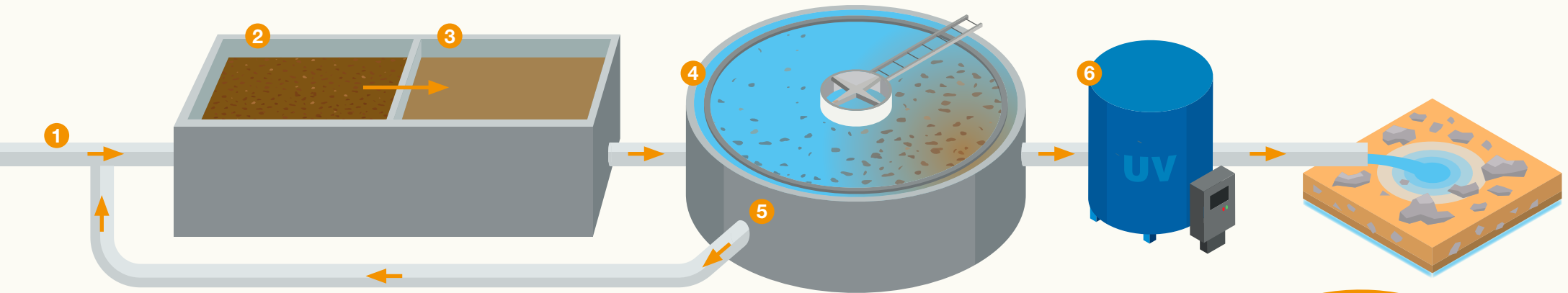


Modified Ludzack-Ettinger (MLE) Activated Sludge process

Shotover Wastewater Treatment Plant



- 1 Wastewater is piped to the treatment plant and screened to remove the bulk of non-biodegradable solids in it.
- 2 Wastewater then flows through into a reactor tank with different treatment zones. Initially the wastewater is exposed to anoxic conditions which starves bacteria of oxygen. This bacteria then begins to break down elements in the wastewater to produce oxygen it needs to survive.
- 3 Wastewater then enters the aerobic tank and is fed with an oversupply of oxygen. This causes further biological processes that complete the stabilisation of organic matter, reducing nitrogen concentration in the wastewater.

- 4 The combination of water and biomass (the collection of microbes responsible for treatment), then flows into a clarifier. This is a settling tank that uses gravity to separate solids from the treated water, with heavier solids settling at the bottom.
- 5 A scraper mechanism within the clarifier collects the settled sludge and returns it to the front of the reactor tank to allow the biomass to further participate in the treatment process.
- 6 Clear treated wastewater from the clarifier then receives ultraviolet (UV) disinfection before it is discharged into a disposal field, where it is intended to soak through gravels and safely return to the environment (in the case of the Shotover WWTP the Shotover and Kawarau Rivers).

20% of wastewater entering Shotover Wastewater Treatment Plant is currently treated by oxidation ponds before discharge, which are large and shallow basins that hold wastewater while natural processes, supplemented by aeration, break down organic matter.

Treatment through the pond process is not capable of achieving the same standard as is possible through the MLE process.