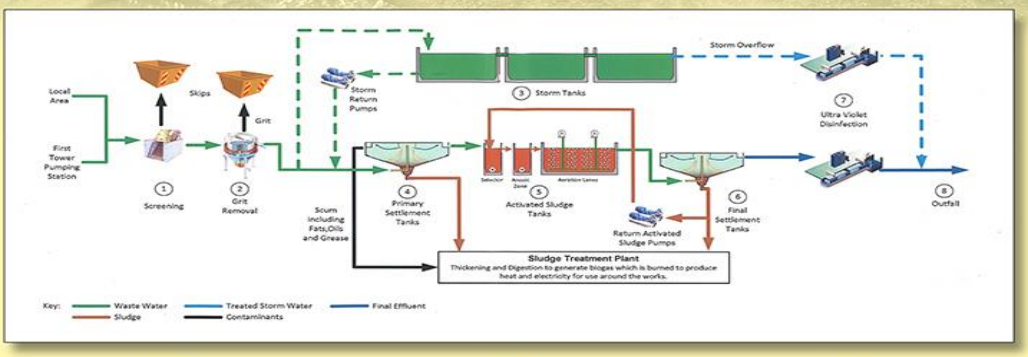
4 Bellozanne Sewage Treatment Works Replacement

THE PROCESS



1 Screening

The waste water arriving at the STW is passed through 'screens' to remove rags, paper, wood, plastic, sanitary products etc. which could damage the process equipment.

Some of this material is present within the wastewater as a result of storm water flows washing general waste into the sewer network.

The screenings removed are burned at the Energy from Waste plant at La Collette.

2 Grit Removal

Grit in the waste water can cause damage and abrasion to equipment and can remove capacity from tanks if it settles out further down the process.

Repairs and removal of grit result in higher maintenance requirements.

It is therefore important to remove as much grit as possible at the front of the works.

3 Storm Tanks

Any flow in excess of the works' capacity is stored in the storm tanks so it can be treated later rather than being allowed to discharge into the sea.

The first storm tank is a 'blind' tank which means it has no overflow and is used to capture the initial flush of waste which occurs as flows rapidly increase at the start of a storm. The last storm tank in the series does have an overflow to protect against flooding at the works.

The overflow passes through the Ultra Violet Disinfection Plant.

4 Primary Settlement Tanks

Circular primary settlement tanks are used to settle out the larger organic particles contained in the screened waste water. Typically around 60% of the solids in the flow are removed in these tanks.

The settled solids (primary sludge) and any scum taken from the surface are used to generate energy in the form of heat and electricity.

The outlet from the primary settlement tanks passes the waste water to the activated sludge tanks for further treatment.

5 Activated Sludge Tanks

This is the biological treatment stage. Air is bubbled through the waste water which encourages microorganisms to feed on the waste and convert it into minerals, gases and water.

Including the Anoxic Zone improves the quality of the effluent with a minimal increase in operating costs.

The process at Bellozanne also incorporates a control system that optimises the time that air is discharged in the tank to suit the sewage and therefore minimises the use of energy and maximises cost savings.

6 Final Settlement Tanks

The outlet from the ASP is known as mixed liquor because it contains the microorganisms suspended in treated water. These microorganisms are needed to start the activated sludge process and so the liquor is passed to the circular final settlement tanks for separation.

The microorganisms settle to the bottom of the tank to form the activated sludge while the clarified water passes on to the disinfection stage.

Surplus activated sludge is used to generate energy.

7 Ultra Violet Disinfection

The clarified water from the final settlement tanks runs through a large number of ultra violet lights which act to disinfect the flow before it passes to the works outfall.

The overflow from the storm tanks also receives Ultra Violet disinfection before passing out to sea.

Overflow events will be minimised by controlling First Tower but this arrangement means that any overflow that does occur will have been screened, settled and disinfected before reaching the sea.

States of Jersey

Department for Infrastructure

8 Outfall

The effluent from the Bellozanne Treatment Works is discharged via an outfall into St Aubin's Bay near the First Tower Pumping Station at a distance of 0.5km from the seawall.

The outfall also carries flows from the streams and other drainage in the Bellozanne Valley.