

Southernness Wastewater Treatment Plant

Southernness, Scotland

- Treats mixed sewage from a holiday village and local industry estate
- High seasonal load variation
- Design loads varies from a summer population equivalent of 5,500 to winter population equivalent of 260
- High quality disinfected effluent for discharge to bathing waters
- 2,592 m³/d full flow to treatment



Description	Value	Note
Current Status	Operational	Commissioned Dec 2007
Client	Scottish Water	
Market Type	Mixed	
Population Served	5,500-260 (summer-winter)	PE
Flow	2,592 m ³ /d	Full Flow to Treatment
Consent/Permit	25:35:100:100 BOD:SS:1:2 (1F. coliforms: 2F. streptococci)	mg/L, per 100ml
Performance	<25:<35:<100:<100 BOD:SS:1:2 (1F. coliforms: 2F. streptococci)	mg/L, per 100ml
Brief Description	Principal contractor for submerged aeration filters plant and UV disinfection for high quality disinfected effluent.	

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Process Description

Jacopa were employed as Principal Contractor to design, build, install and commission the Southernness WwTW. The plant treats a highly seasonal load for discharge to a bathing beach.

Design data

Flow to full treatment:	2,592 m ³ /d
BOD Load (summer-winter):	321-16 kgBOD/d

Plant data

No of membrane SAF units:	5 x CB1000
Lamella plates surface area:	6 x 50 m ²
UV lamp power:	4.5 kW

Project Status

Commissioned:	Dec 2007
Operated by:	Scottish Water

All flow to the works pass through a spiral sieve inlet screen to remove rags and debris from the influent. An emergency bypass with hand raked screen is provided as a back-up.

The screened influent flows to the inlet pumping station. Duty/standby submersible pumps lift the influent to the primary settlement tank distribution chamber.

The distribution chamber split the flow equally between the 3 lamella primary tanks where gross solids is settled.

Settled effluent from the primary tanks gravitates to the SAF tank distribution chamber. The chamber will split the flow equally between the 5 new CB1000 Copa SAF units where biological treatment takes place.

A dedicated air blower provides air to each SAF unit. A boxed spare blower is also provided in case of breakdown.

Treated effluent from the SAF units flows via gravity to the final settlement tank distribution chamber.

The distribution chamber split the flow equally between the 3 lamella final tanks where biomass carried over from the SAF unit is settled.

After the final tanks the effluent pass through the UV disinfection stage. The effluent is then suitable for discharge.

Sludge from the SAF unit and the final settlement tanks is returned to the works via the inlet pumping station. Primary sludge is stored in the existing tank on site for removal by tanker.

Winter period

In winter the plant run in basically the same configuration with only one primary tank, one SAF unit and one final tank being utilised. Handstops are be inserted in the distribution chambers to ensure this is the case.

The number of process streams is adjusted according to the occupancy of the holiday village.