Uki Water Treatment

Water supply for Uki is drawn directly from the Tweed River, upstream of the Uki Village.

The raw water from the Tweed River is pumped to the Uki Water Treatment Plant where it is treated to remove sediments and kill bacteria and viruses.

Annual and Daily Water Production:

- About 50 megalitres (ML) of raw water are treated at the plant annually.
- The capacity of the current plant is 0.44 ML per day
- This plant currently supplies about 170 households in Uki and adjacent rural areas.

Water Treatment:

The treatment process comprises pH correction, chemical precipitation, clarification in a Lamella Separator, filtration in a Dynasand filter and disinfection.
The water treatment plant is designed for automatic operation under flood conditions.

Coagulation / Flocculation:

This is the process where coagulant chemicals are added to the raw water to convert the small, lightweight, non-settleable particles in the water to heavier particles called floc.

Aluminium Sulphate (Alum) is added to coagulate soil and clay particles, suspended solids, iron, manganese, colour and some micro-organisms such as bacteria and viruses. The amount needed varies with the quality and turbidity of the water being pumped from the River. Heavy rain in the catchment area increases the impurities in the water and the amount of Alum used.

Other pre-dosing chemicals are used when necessary:

- Powder Activated Carbon (PAC) can be used when necessary, for the removal of taste odour, algal toxins and pesticides.
- Sodium Hydroxide (NaOH) can be used when necessary to balance the pH and enhance the coagulation.
- Sodium Hypochlorite (NaOCl) can be used to reduce iron and manganese if required.

Clarification / Sedimentation:

Is the process used to separate the floc particles from the water. At the Uki water treatment plant the floc particles settle in a Lamella Clarifier and clarified water flows over the top. The sludge is drawn off the bottom of the clarifier to a sludge lagoon for further settling of sediments. The supernatant (or return water) can be returned to the start of the process.

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Filtration:

During the filtration process the Dynasand Filter continuously filters water up through the sand bed while the sand is moving downwards. The sand is cleaned at all times by means of an internal washing system and the suspended solids are discharged with the wash water. Operation is straightforward and reliable.

Dynasand filter

pH Correction:

To correct the acid - alkaline balance of the water Sodium Hydroxide (NaOH) is added. Water leaves the treatment plant with a pH between 7.8 and 8.2. This also minimises the corrosion and scaling tendency of the reticulated water.

Disinfection:

This process destroys any disease causing organisms such as bacteria and viruses in the filtered water. Sodium Hypochlorite (NaOCl) is used to disinfect the water and maintain a residual disinfecting capacity in pipelines.

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