

Water Treatment Process

POTABLE DRINKING WATER TREATMENT PROCESSES AND ADDED SUBSTANCES

Process / Substance	Description	Water Treatment Plant Location
Coagulation / Flocculation	<p>Coagulation / flocculation is a process where a controlled dose of chemical coagulant or flocculant is added to the water. This results in fine particles joining together and forming larger particles (floc) that can be settled /floated or filtered from the water</p> <p>Coagulants used by Coliban Water include Aluminium Sulphate (Alum) & Aluminium Chlorohydrate (ACH). Flocculation aids used include Polyelectrolyte.</p>	Bendigo, Boort, Bridgewater, Castlemaine, Cohuna, Echuca, Goornong, Heathcote, Korong Vale, Kyneton, Laanecoorie, Leitchville, Lockington, Pyramid Hill, Raywood, Rochester and Serpentine.
Clarification	<p>Clarification is used to remove much of the solid material from the water. This can be achieved by simply allowing the solids to settle to the bottom of a sediment tank or can be achieved by using a mechanical process to separate the floc from the clear water:</p> <ul style="list-style-type: none"> - The slow up flow of water in an up flow clarifier allows the solid particles to sink, whilst clear water overflows at the top; - Dissolved Air Flotation (DAF) relies on the injection of microscopic air bubbles into the water stream, causing floc particles to float to the surface. The particles are drawn off the surface and removed with a waste stream. <p>Clarification is aided by the use of chemical coagulants and or flocculants.</p>	Boort, Bridgewater, Cohuna, Echuca, Goornong, Heathcote, Korong Vale, Laanecoorie, Leitchville, Lockington, Pyramid Hill, Raywood, Rochester and Serpentine.



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Filtration	<p>Filtration occurs when water is passed through some sort of filter medium to remove the solids carried over from clarification. The most common form of water filtration is where the filter media consists of several types of graded filter media (such as gravel through to fine sand).</p> <p>Microfiltration involves passing the water through membranes with small pore size.</p> <p>Filtration is effective in removing harmful pathogens such as Giardia and Cryptosporidium. At regular intervals, each filter is backwashed to remove trapped particles from the filter media and to maintain filter integrity and water quality.</p>	Bendigo, Boort, Bridgewater, Castlemaine, Cohuna, Echuca, Goornong, Gunbower, Heathcote, Korong Vale, Kyneton, Laanecoorie, Leitchville, Lockington, Pyramid Hill, Raywood, Rochester, Serpentine and Trentham.
Taste / Odour / Algae Toxin Removal	Contact with granular or biological activated carbon is used for taste, odour & algae toxin control. The use of ozone (Ozonation) before the activated carbon filtration enhances this control.	Bendigo, Bridgewater, Castlemaine, Cohuna, Echuca, Korong Vale, Kyneton, Laanecoorie, Pyramid Hill, Serpentine and Trentham.



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pH Correction	<p>The capacity to adjust the water pH level aids the following:</p> <ul style="list-style-type: none"> - ensure treated water is delivered to customers within an acceptable pH range; - make coagulation more effective; - make disinfection more effective; and - reduce the corrosiveness of the water. <p>pH can be adjusted by adding acidic or alkaline solutions to the water. Coliban Water currently uses caustic soda, soda ash, hydrated lime, carbon dioxide and sulphuric acid to adjust pH.</p>	Bendigo, Boort, Bridgewater, Castlemaine, Cohuna, Echuca, Elmore, Goornong, Heathcote, Korong Vale, Kyneton, Laanecoorie, Leitchville, Lockington, Pyramid Hill, Raywood, Rochester, and Serpentine.
Disinfection	<p>All drinking water supplied by Coliban Water is disinfected to ensure that the microbiological pathogens (eg bacteria, viruses and protozoa) are eliminated. There are four types of disinfection methods used by Coliban Water:</p> <ul style="list-style-type: none"> - Chlorination (addition of chlorine gas or liquid); - Chloramination (addition of chlorine and ammonia); - Ozonation (addition of ozone); - UV (irradiation of water with ultraviolet light). 	Bendigo, Boort, Bridgewater, Castlemaine, Cohuna, Echuca, Elmore, Goornong, Gunbower, Heathcote, Korong Vale, Kyneton, Laanecoorie, Leitchville, Lockington, Pyramid Hill, Raywood, Rochester, Serpentine and Trentham.



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Fluoride	<p>Fluoride is added at safe levels in the water for health reasons (minimise fluoride deficiency). Fluoride has been found to have a significant positive effect in reducing tooth decay.</p> <p>Fluoride is added only at the larger water treatment plants by Coliban Water.</p>	<p>Bendigo, Castlemaine*, Echuca and Kyneton</p> <p>*as at 3/7/08</p>
Potassium Permanganate	<p>Potassium permanganate can be added to remove manganese from water. The potassium permanganate oxidises the soluble manganese in the water to form the insoluble manganese dioxide which precipitates out as fine black particulates which can then filtered out of the water.</p>	Cohuna

