

Recycled water in Bendigo

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About Coliban Water
Recycled water – what and why
How it is produced in Bendigo
Uses of recycled water in
Bendigo
Risk management
Current issues

COLIBAN WATER

Coliban Water is a Statutory Authority established in 1992 under the Water Act

68,000 customers

> 49 towns

\$64M revenue

\$950M assets



COLIBAN WATER'S FUNCTIONS

Water harvesting and storage

Water treatment

Water distribution to urban & rural customers

Sewerage collection for urban & trade customers

Water reclamation, including production of high quality treated water for recycling

COLIBAN WATER'S REGULATORS

Department of Health

Environment Protection Authority

Essential Services Commission

Department of Sustainability and
Environment

RECLAIMED / RECYCLED WATER

Product of sewerage treatment plants.

Reuse or discharge to environment.

- Class C – “normal treatment”. Usage tightly controlled.
- Class B – additional treatment with disinfection. Less restrictions on use.
- Class A – Advanced treatment. Few restrictions on use.

WHY USE RECLAIMED / RECYCLED WATER ?

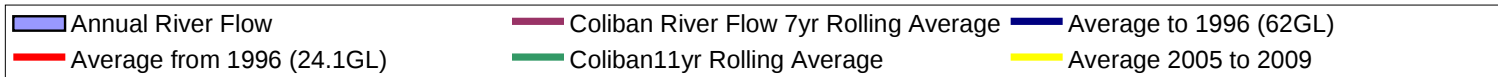
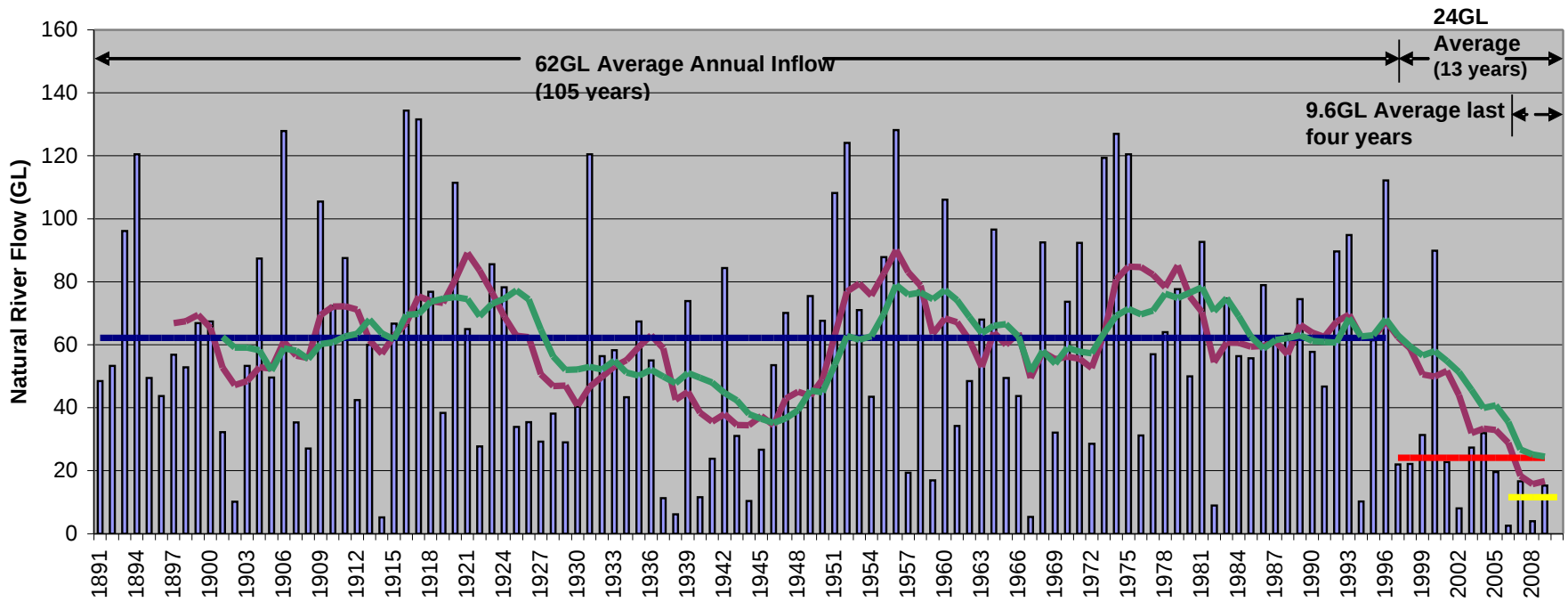
Reduce environmental discharges.

No more water to harvest – full commitment to users or the environment.

Water trading.

Substitution for potable quality water.
Drought / climate change.

Annual Coliban River Flow (GL)





Recycled Water in Bendigo



BENDIGO WATER RECLAMATION PLANT

- Upgraded in 1992 - Biological Nutrient Reduction process with discharge to Bendigo Creek and some flood irrigation of nearby land. (20 - 30MI/d) - Class C.
- Sand filters and UV added in 2004. Improved quality of creek discharge- Class B.
- Water Factory constructed in 2007 to provide high quality treated water for substitution of potable water in Bendigo

CLASS A TREATMENT PROCESS

- Biological Nutrient Removal Treatment (BNR)
- Lagoon treatment
- Dual media sand filtration
- Disinfection
 - › Ultraviolet
 - › Chlorination
- Membrane filtration
 - › Ultrafiltration
 - › Reverse osmosis
- Spring Gully Reservoir – natural sunlight







BENDIGO WATER FACTORY



BENDIGO WATER FACTORY



About Coliban Water

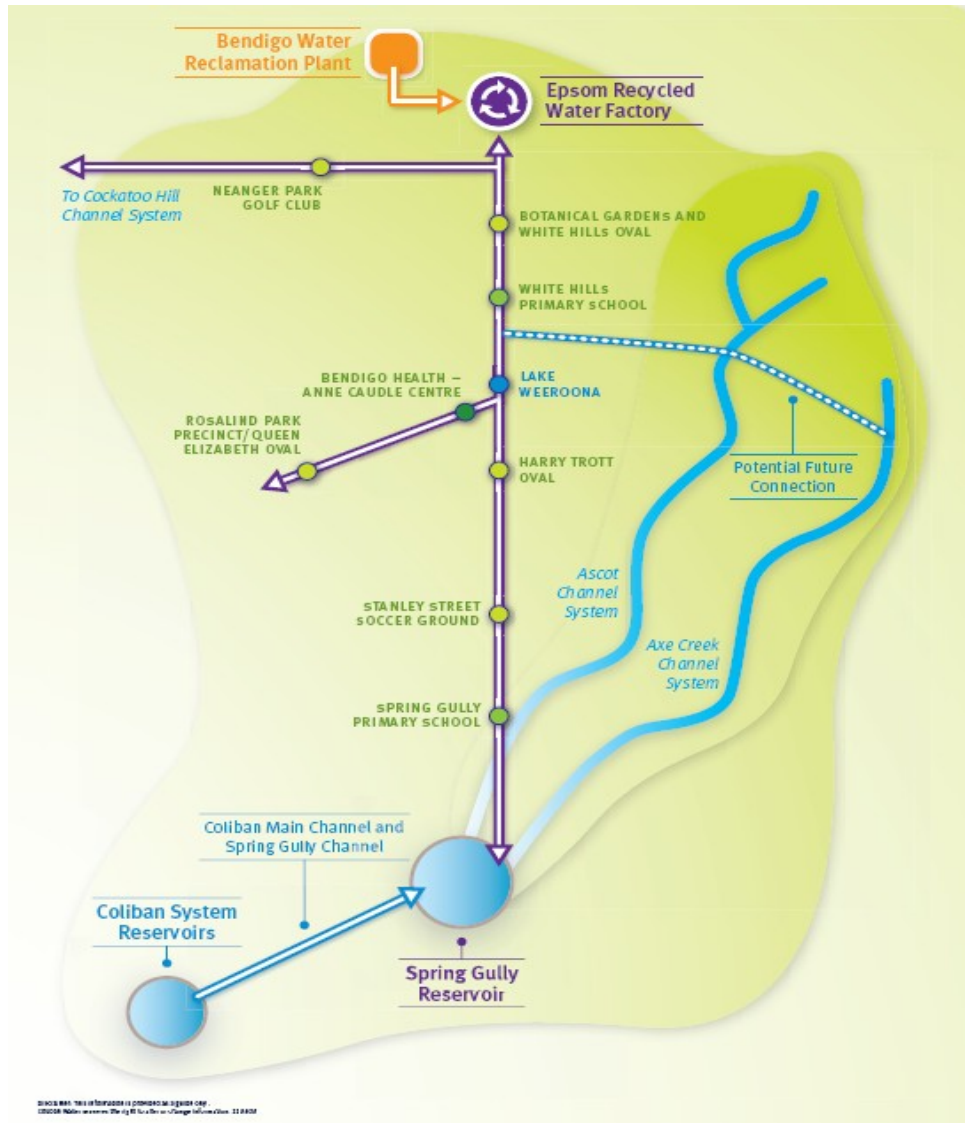
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VOLUMES OF CLASS A RECYCLED WATER

Maximum production

= 3000MI per year

Bendigo's urban water consumption

= 10,000MI per year

WHO USES THE RECYCLED WATER?

Sporting clubs

- › Bendigo Bowls Club
- › Bendigo Tennis Club
- › Bendigo Jockey Club
- › Bendigo Golf Club

Schools

City of Greater Bendigo

- › Parks and Gardens (White Hills Botanical Gardens & Rosiland Park)
- › Sports ovals such as QEO, Weeroona Oval, etc



WHO USES THE RECYCLED WATER? (cont)

Rural customers

- › Axe Creek and Ascot channel systems

Standpipe customers

- › Construction companies
- › Road works
- › Car wash
- › Fire fighting

Residential use

- › Third pipe systems for new residential developments
- › Toilet flushing, garden watering



RISK MANAGEMENT

Human exposure

Environmental

Inadequate treatment



RISK MANAGEMENT (cont)

Human exposure

- Accidental consumption due to cross connection or failure to identify recycled water infrastructure
- Inappropriate use, such as filling swimming pools

Site Management Plans state management practices required by the customer which involve:

- › Signage
- › Lilac coloured infrastructure (taps & sprinklers)
- › Cross connection testing
- › Audits conducted by Coliban Water



RISK MANAGEMENT (cont)

Environmental

- Contaminants
- Run off / spills
- Salinity / Nutrient build up

Water quality specification requirements are set by EPA and Department of Health to ensure low risk of impacts.

- › 5 – 6 log removal of bacteria, viruses and pathogens. (5 log removal = 99.999% removal)

Regional Environment Improvement Plan
Health and Environment Management Plan

RISK MANAGEMENT (cont)

Inadequate treatment

- Treatment process problems
- Unknown constituents

Continuous monitoring of critical treatment processes.

Automatic shutdown.

Validation of processes.

Testing of treated water quality.

Approved Recycled Water Quality Management System.



CURRENT ISSUES

Production difficulties

- › Feed water variation from design specification

Complexity of demonstrating treatment compliance

- › Instrumentation, continuous monitoring, validation of processes, changes to regulations

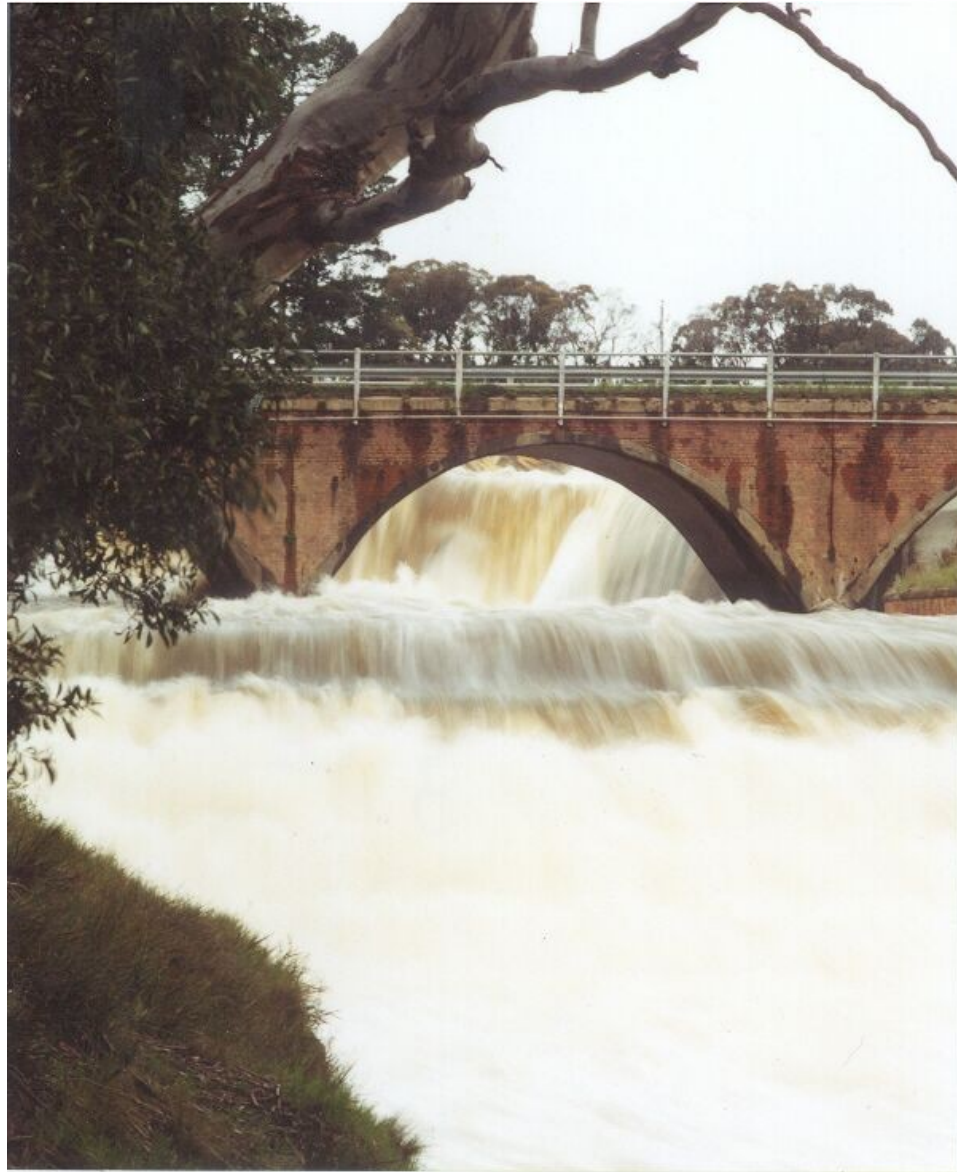
Costs of production

- › Costs exceed sale price

Variable demand

- › Supply exceeds demand





Question
s? ... for life 