

C A S E S T U D Y

CLIENT

Wyong Shire Council, a central coast township about 100 km's from Sydney.

Wyong Shire covers an area of 820.42 square kilometres. The shire extends from near Gwandalan in the north, to Ourimbah in the south and from the Pacific Ocean to the hills beyond the Yarramalong Valley.

APPLICATION

Recycling of secondary treated effluent to provide water to a nearby Oval for irrigation application.

Existing STP at Gwandalan uses extended aeration process for treating sewage. The process was further augmented using media filters to produce recycled water. Need was felt to treat it further to make water usable for irrigating nearby Oval and the school park and make it safe for any accidental human contact.

PROCESS

Amiad supplied a recycling plant consisting of activated carbon Filter, UF and RO. Special spiral UF membranes were used allowing both UF and RO is mounted on the same skid with common PLC control. Membrane flush and integrated CIP system was provided for regular operation and cleaning process.

The system is designed for desalination of tertiary municipal effluents, producing 3.6 kL/hr of potable water for irrigation

Deepak Bhargava the Assets Manager at Wyong Shire council says that they are very happy with the system and the level of support provided by Amiad. This is the first project of its kind in the Shire and success of this project has already triggered planning of various water recycling projects around the Shire.

DESIGN PARAMETERS

Scope of work includes the desalination of treated effluents, producing 3,600 lit/hr (1 lit/sec) of potable quality water. The system is designed to recover 72% of feed water with designed UF recovery of 90% and RO recovery of 80%.

WATER SOURCE / FEED

The following water quality was reported and used as basis for design (based on latest data for tertiary effluents sample, after media filters, collected)

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Parameter	Value	Remarks
Turbidity (NTU)	2.6	
SDI	6.7	
pH	7.3	
Conductivity	3370	
TDS 9mg/l)	1490	Calculated
Total hardness (mg/l CaCO ₃)	275	
Total alkalinity (mg/l CaCO ₃)	103	
Total Fe (mg/l)	0.11	Dissolved < 0.1mg/l
Cl (mg/l)	140	
Na (mg/l)	340	
Ca (mg/l)	32	
Mg (mg/l)	48	
K (m/l)	32	
SO ₄ (mg/l)	190	
Nitrate (mg/l)	2.35	
Silica (SiO ₂) (mg/l)	9.5	
COD (mg/l)	< 30	
BOD (mg/l)	4	
Free chlorine (mg/l)	1	
Water temp (°C)	20-25	Assumed for design purposes

RECOVERY

The process helps them to recover around 90 cum/day sewage for irrigation application, thus saving the equivalent amount of fresh water, a precious resource in Central Coasts region of NSW, reeling under severe water stress. The reject from the desalination plant is fed to downstream of STP, with reject from UF being fed to the head of sewage treatment plant.



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