

Water Quality & A Sustainable Future

[Presentation by]

Elizabeth Heiles, P.E.

Senior Engineer

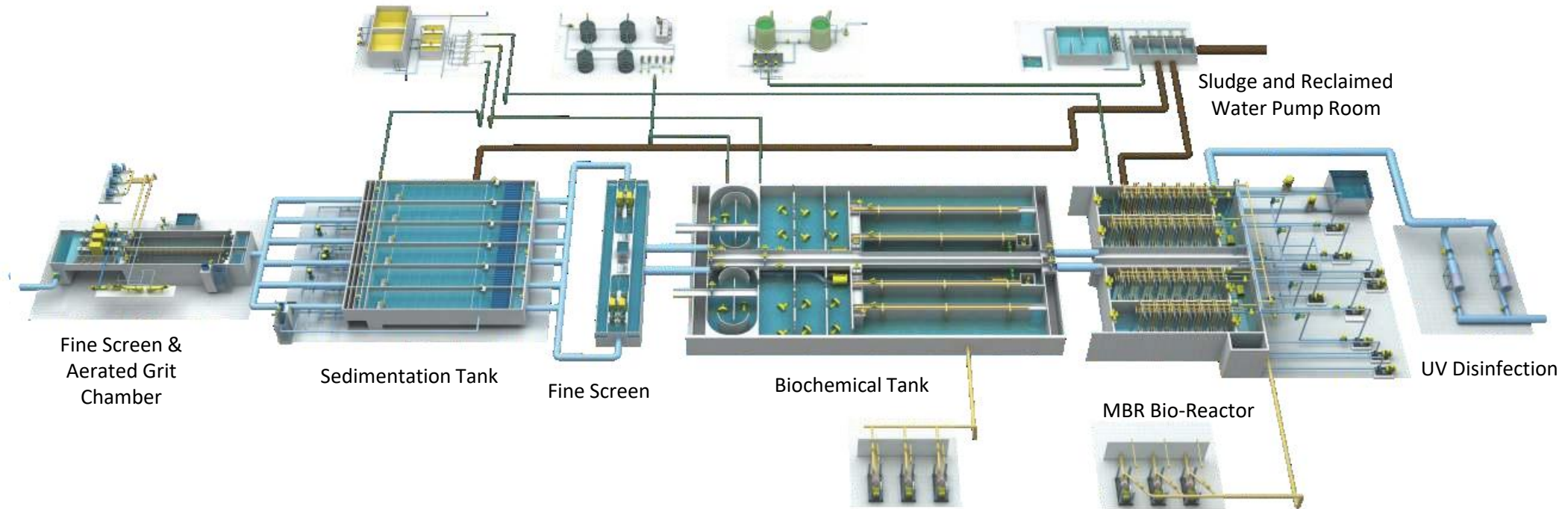
Central Arkansas Water

Carlos Medina Arce

Head of Hydraulics and Solar Power Plants

Canal de Isabel II

Honghu WWTP – Process Flow

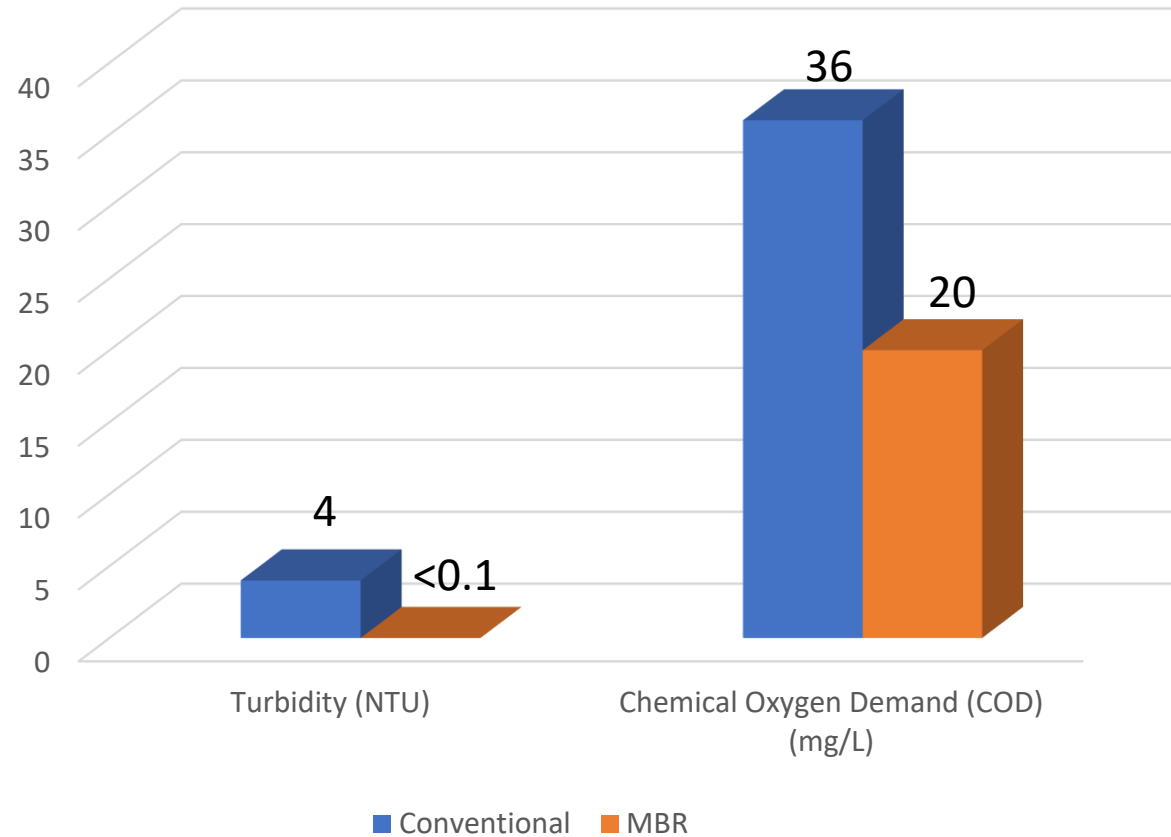


Honghu WWTP	
Capacity	100,000 m ³ /day
Surface Water Standards	Class IV
Total Nitrogen (TN)	<1.5 mg/L
Total Phosphorus (TP)	<0.3 mg/L

Optimization	
Land Area	3.24 Hectares
Electrical Reduction	5-10%
Sludge Reduction	10-15%
Decrease in Chemical Consumption	50-80%



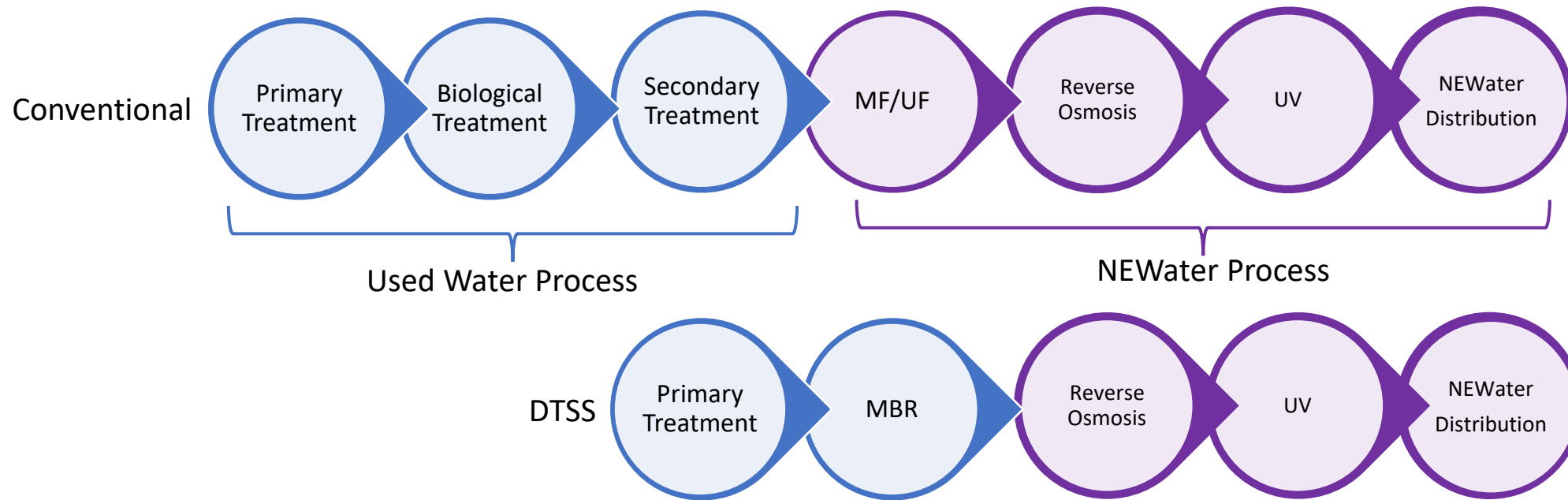
Changi WRP - Water Quality after MBR Retrofit



Changi Water Reclamation Plant Heart of Deep Tunnel Sewerage System



Aerial view of Changi WRP (Image: PUB)



Changi WRP – MBR Retrofit

Membrane Bioreactor - ~30% reduction in footprint eliminates UF/MF before RO

Capacity Increase

176 to 224 (MGD)



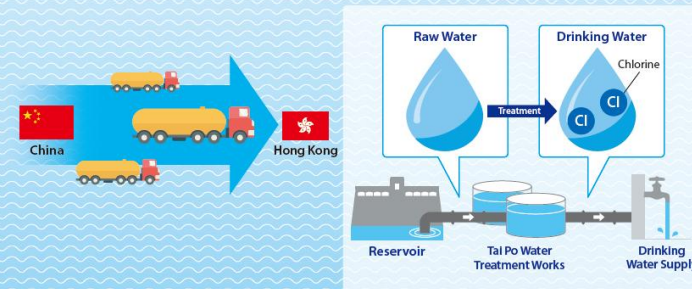
Tai Po Water Treatment Works

Capacity	800,000 m ³ /day
Covering Demand	30% of HK
On-site Generation of Ozone Gas and Chlorine Gas	

The Challenge

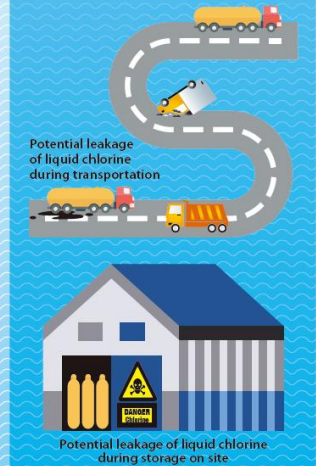
Due to the lack of local chlorine gas suppliers in Hong Kong, Tai Po Water Treatment Works has been importing chlorine gas in liquid form from Mainland China to sustain daily disinfection of drinking water.

Current Arrangement



Regular transportation of liquid chlorine from China to Tai Po Water Treatment Works in Hong Kong for daily disinfection

Potential Risks



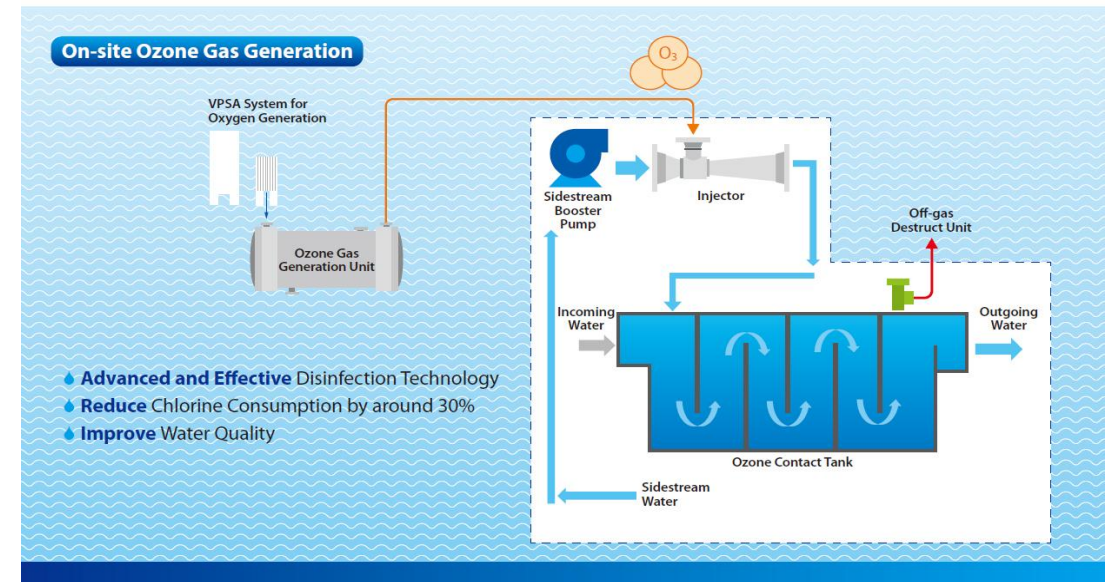


Tai Po Water Treatment Works

Capacity	800,000 m ³ /day
Covering Demand	30% of HK
On-site Generation of Ozone Gas and Chlorine Gas	

The Solution

On-site Ozone Gas and Chlorine Gas Generation



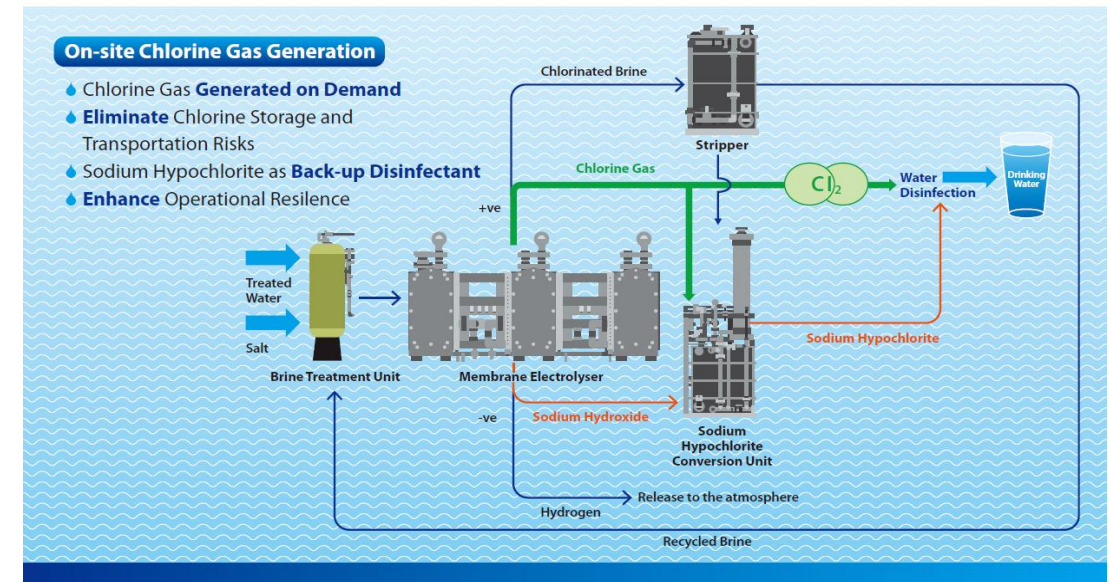


Tai Po Water Treatment Works

Capacity	800,000 m ³ /day
Covering Demand	30% of HK
On-site Generation of Ozone Gas and Chlorine Gas	

The Solution

On-site Ozone Gas and Chlorine Gas Generation







To enhance the monitoring of raw water quality and ability to provide early warning of changes in water quality, the laboratory of the Tai Po has adopted the Biosensing Alert System.

The System uses zebrafish, which have a genetic composition very similar to that of humans, as its partner in water quality monitoring.

As zebrafish are highly sensitive to contaminants in water, the System can continuously monitor the quality of raw water using a computer system to automatically analyze and detect the behavior and activities of zebrafish.



To enhance the monitoring of raw water quality and ability to provide early warning of changes in water quality, the laboratory of the Tai Po has adopted the Biosensing Alert System.

The System uses zebrafish, which have a genetic composition very similar to that of humans, as its partner in water quality monitoring.

As zebrafish are highly sensitive to contaminants in water, the System can continuously monitor the quality of raw water using a computer system to automatically analyze and detect the behavior and activities of zebrafish.



Caboolture River Nutrient Offset Project

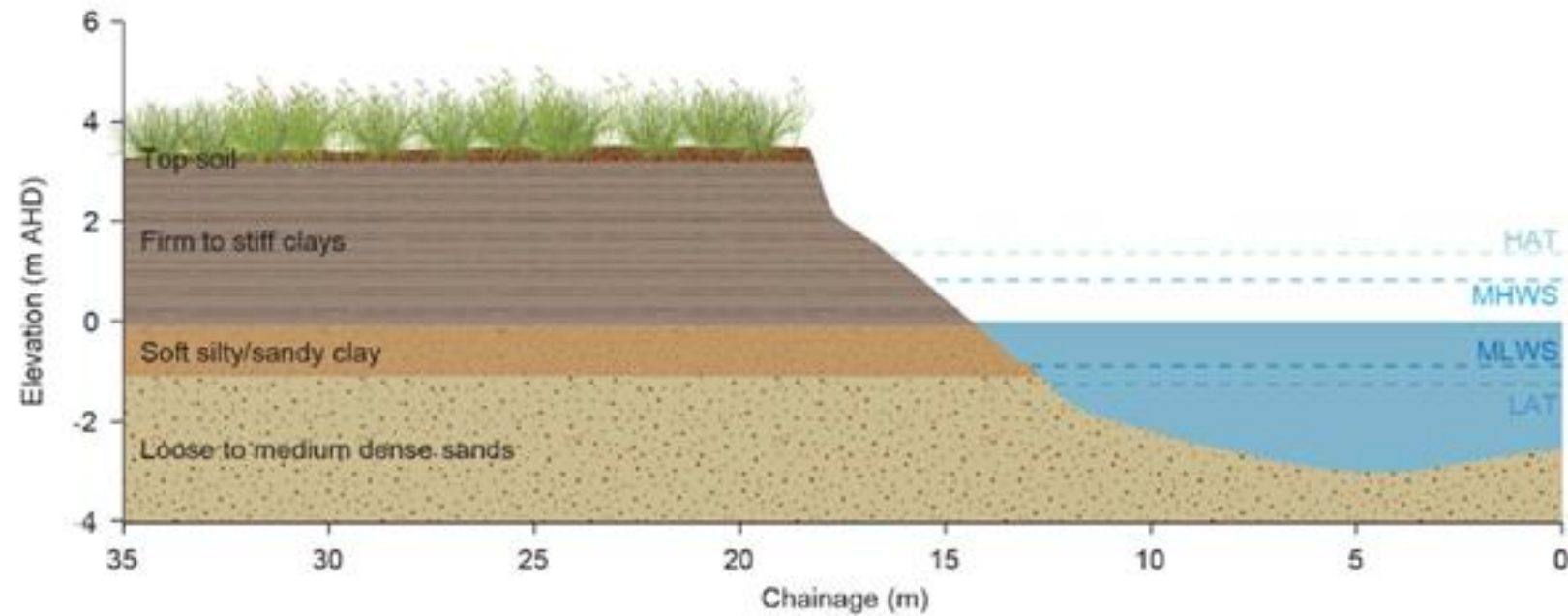
Seedlings Planted	30.000
CO2 Reduce	34 tonnes/yr
Total Nitrogen Offset	1.6 tonnes/yr

This project will offset the equivalent load of an additional 5500 people on Burpengary East Sewerage Treatment Plant (STP).

Nutrient offsetting is a cost-effective option that provides flexibility in upgrading STPs. It enables Unitywater to make a positive contribution to our environment and community spaces by actively working to improve the health of local waterways.

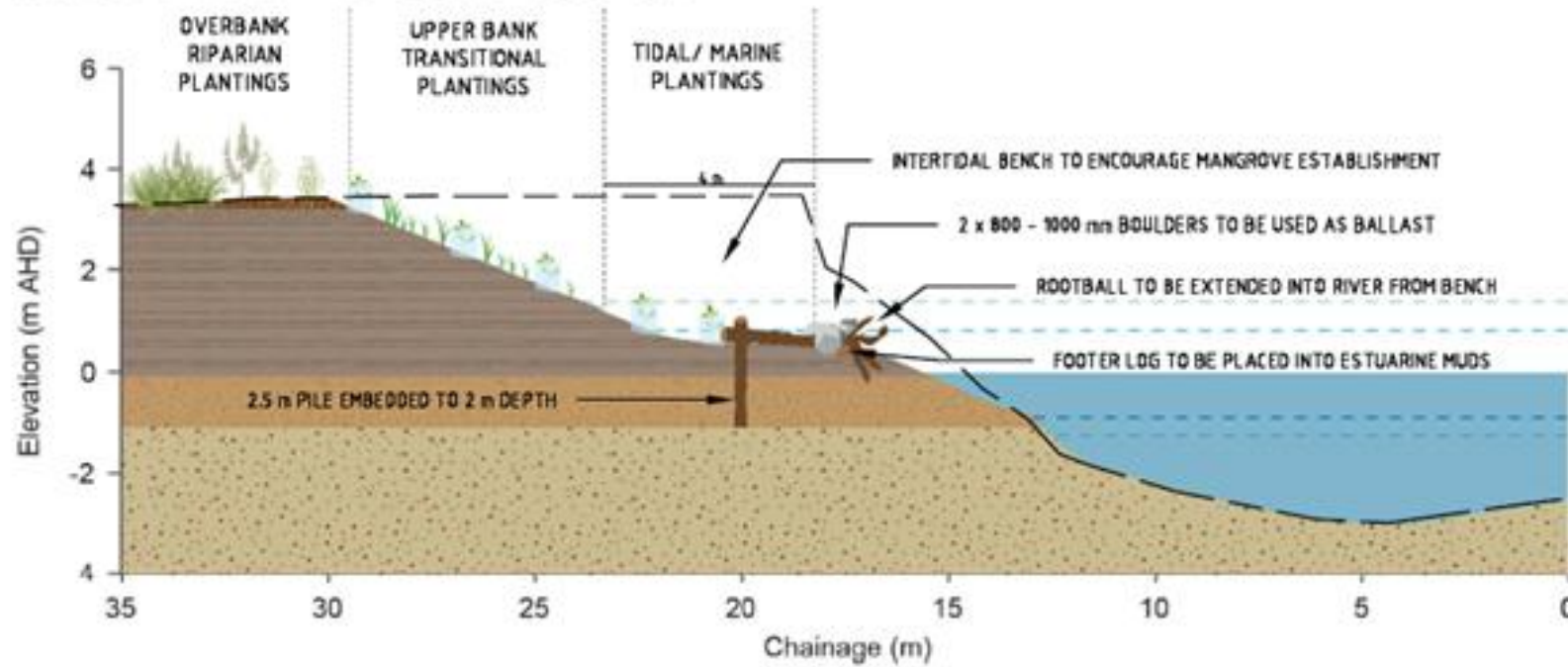
Caboolture River Nutrient Offset Project

EXISTING BANK PROFILE



Caboolture River Nutrient Offset Project

CROSS SECTION A-A (WITH ROOTBALL) – IMMEDIATELY AFTER CONSTRUCTION



Caboolture River Nutrient Offset Project

CROSS SECTION A-A (WITH ROOTBALL) –
10 YEARS FOLLOWING REVEGETATION ESTABLISHMENT

