

ECOLOGICAL STUDY

A baseline ecological study of the remnant vegetation of the Yarra Yarra Catchment was undertaken in 2001. All remnants greater than 1 ha were visited in 15 of the 50 identified sub catchments in the Yarra Yarra. The Ecological Assessment of the Yarra Yarra Catchment identified remnant vegetation health and concluded that while vegetation in the valley floors of the sub catchments had been substantially impacted by vegetation clearing (ie succession from woodland to samphire dominated systems) the structure remnant vegetation communities that fringed the Yarra Yarra Lake system appeared to be unchanged since clearing (ie no notable tree deaths and little evidence of succession vegetation). This first pass study indicated that despite clearing and an increase in the ground water levels there was little evidence to suggest the ecology of Yarra Yarra Lakes system had been significantly impacted by clearing.

DRAINAGE EVALUATION

Five drains representing a typical sample of drainage type across the Yarra Yarra Catchment were monitored for water quality, flow rates and down stream impacts. The previous Ecological Assessment of the Yarra Yarra Lakes identified very little biological activity in the salt lakes as there is seldom any free water and the lakes are encrusted with salt for the major part of the year. The ecological study also identified that there was very little impact from clearing on the structure of the remnant vegetation units that surrounded the lake as was evident from mature stands of trees and no evidence of successional vegetation.

The drains for this project have been constructed primarily through farmland and the altered valley floors of the sub catchments of the Yarra Yarra. Drain construction has deliberately avoided remnant vegetation resulting in minimal impact from drainage construction on the existing remnant vegetation.

Results

1.) Drainage discharge water quality

Discharge water were measured for pH, salinity and a suite of metals and nutrients. The results showed that the drainage discharge water had a low pH ranging from a pH of 3.2 to a maximum of 7. The Ph of the soils (sediment) of the receiving wetland was also measured and it was shown that the soils of the receiving wetlands in the Yarra Yarra have the capacity to buffer the pH from the drainage water resulting in a lesser impact from acid drainage on the lakes system.

Both the receiving wetlands and the discharge water had hypersalinity, resulting in minimal impact (if any) from the addition of salinity.

Metals mobilized as a result of lower pH was considered to be a possible negative down stream impact however given buffering capacity of the sediment in the receiving wetland and the lack of biological activity in the Yarra Yarra lake system this was not considered to be of significance.

2.) Volumes of water being discharged.

The down stream impact of the movement of additional water into the lakes was insignificant with an area of influence in the primary receiving wetland from the drainage water was less than 0.01% of the entire wetland.

This is due to the extreme evaporation rates in the area (greater than 2m per annum) and the lack of water in the Yarra Yarra Lakes.

The quantity of water being discharged from the drains decreases with the age of the drain indicating the ground water aquifer is not being recharged annually at the rate the water is being drained. (A positive effect).

General discussion

Drainage projects in the Yarra Yarra Catchment have so far improved significant areas of arable land and saved infrastructure by draining away excess surface water and the lowering of ground water levels. The downstream impacts of the drainage works have been minimal with the drains being constructed only through degraded valley floors and farmland. The impact from the additional water and nutrient on the Yarra Yarra Lakes system have been determined to be minimal as a result of the enormous surface area of the lake system, the buffering capacity of the soils/sediment of the lake system, the lack of biological activity in the lakes system, the huge evaporation, low rainfall and resulting low recharge of the ground water once the water has been drained.