

# Deep Creek Romsey ecological survey results March 2020

## Biomonitoring of Deep Creek

Water quality conditions in Deep Creek are influenced by land use: agriculture, urban and natural areas.

Biomonitoring of Deep Creek was undertaken in summer 2020, to establish existing conditions both upstream and downstream of the proposed Romsey Recycled Water Plant discharge point. There was no discharge from Western Water's RWP during the study.

Monitoring included fish, macroinvertebrates, platypus and water quality. Surveys were completed with appropriate permits, and with compliance to the Australian Code of Practice for Care and Use of Animals for Scientific Purposes

## Macroinvertebrates

Macroinvertebrates ('water bugs') live in waterways and are an indicator of the health of the waterway, depending on the number of species and how many of each species are present.

Results indicate little difference for macroinvertebrates in Deep Creek sites upstream and downstream of the stormwater outlet to Deep Creek. Although the average number of species was slightly higher at sites downstream from the outlet point, the average 'SIGNAL2' score (an indicator of water quality) was slightly lower at downstream sites.

## Fish

Fish survey results show that five native fish species were present in Deep Creek: The Short-finned Eel, Southern Pygmy Perch, Yarra Pygmy Perch, Smelt and Flathead Gudgeon. Other than Smelt, all these species were identified in a previous fish survey undertaken in 2009. Yarra Pygmy Perch (listed as vulnerable under federal legislation) was captured from one site upstream - Fish A on the map below - but not downstream.

Non-native fish captured were Gambusia, Redfin and Goldfish with Gambusia being the most collected non-native fish at all sites. Goldfish and Redfin were only collected from the upstream sites.

Habitat conditions at the downstream sites are not as favourable as those at upstream sites. Results from Deep Creek in 2020 show the creek supports the same species as the 2009 survey.



*Yarra Pygmy Perch*

## Platypus

Platypus presence was assessed using environmental DNA (eDNA) – a recent technology able to detect the presence of platypus DNA in a water sample. Results are indicative of a low-density platypus population through the Deep Creek study area.

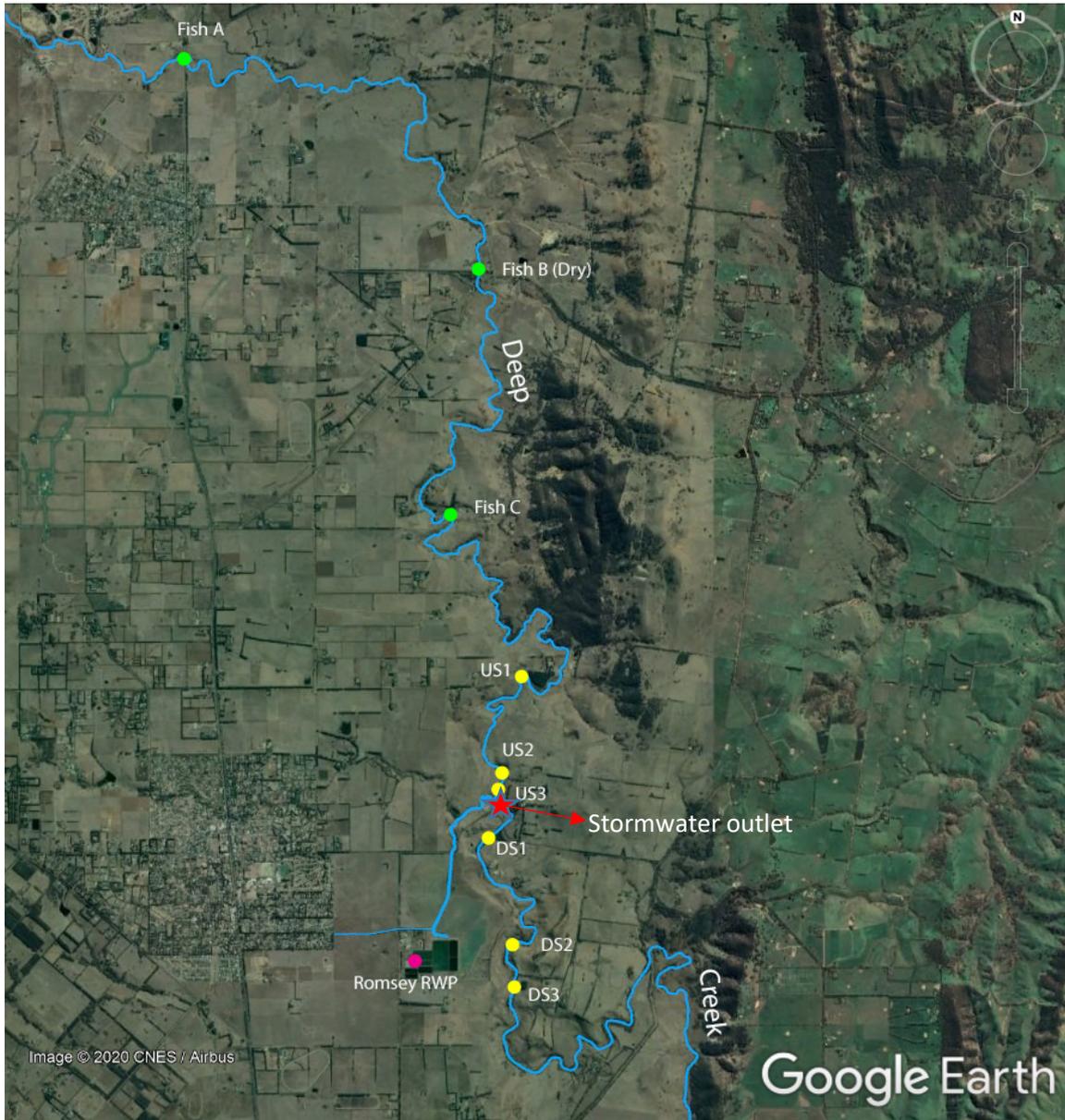
Some suitable habitats do exist in Deep Creek (e.g. large pools of water that exist in the creek even during periods of no streamflow) but the population is likely to be scattered throughout the creek.

Although platypus were not detected in the pools near the stormwater outlet to Deep Creek, habitat (and food resources in the form of macroinvertebrates) exist in this reach of the creek which could support them.

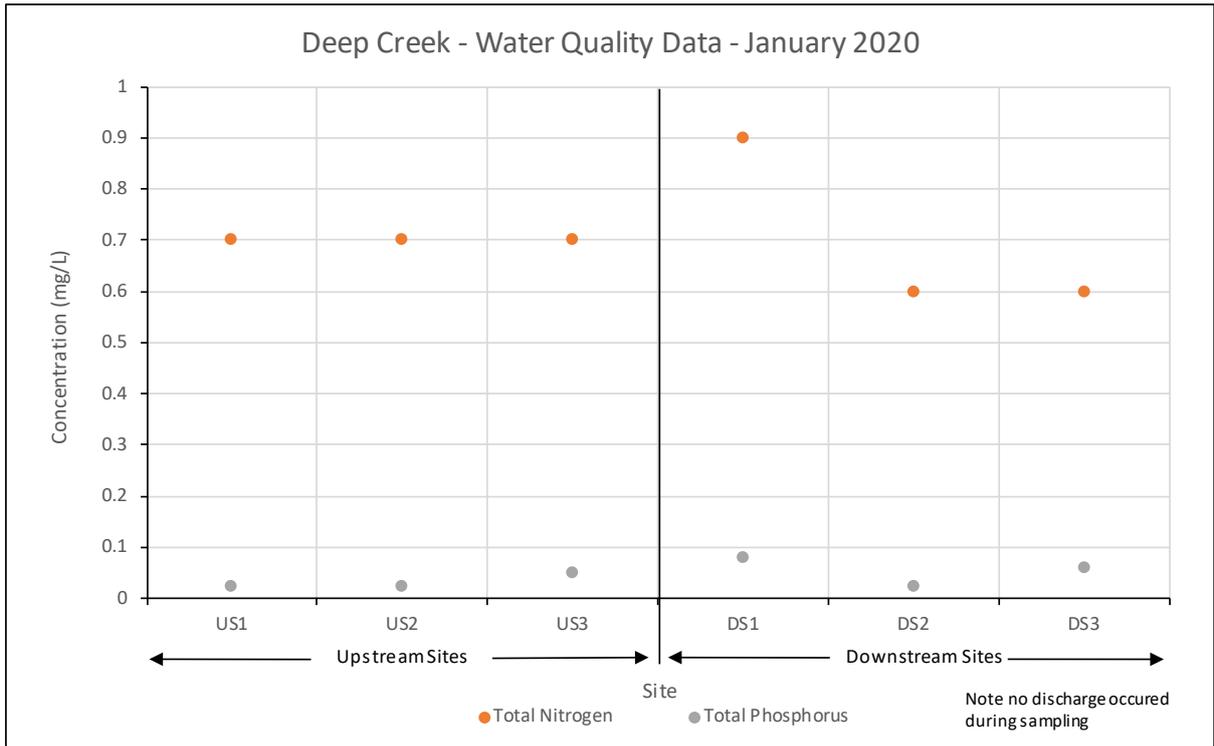
## Water quality data

Water samples were taken at each site, providing a 'snap-shot' of water quality conditions (note no discharge was occurring during sampling). Relatively low dissolved oxygen was observed at one downstream site DS1. Slightly elevated nutrients (nitrogen and phosphorus), zinc, titanium, aluminium and iron at downstream sites DS1-DS3.

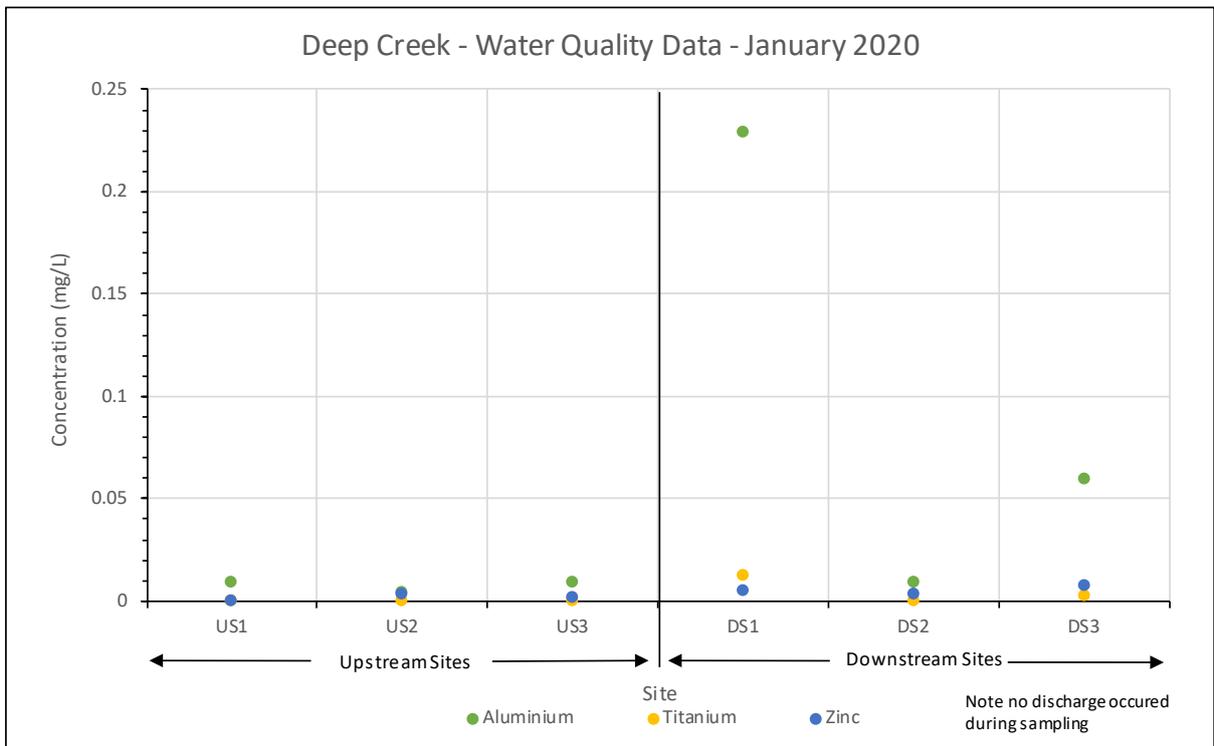
No noticeable differences between sites up and downstream of the stormwater outlet to Deep Creek were observed for other parameters tested.



Overview map of water and fish sample sites along Deep Creek (Upstream sites are US1 – US3 and downstream sites are DS1 – DS3). Sites Fish A, Fish B and Fish C are fish survey sites consistent with a previous survey in 2009 (although site Fish B was dry so could not be surveyed)



**Water Quality Data in Deep Creek – Nutrients (note no discharge was occurring during sampling)**



**Water Quality Data in Deep Creek – Metals (note no discharge was occurring during sampling)**