Report compiled: 17/4/2023

Waterbug Report for D-1 drain, Hoppers Crossing

WaterWatch WaterWatch Site code and name:

ME_WDD050 D1 Drain, 150 metres from Chat Place, Hoppers Crossing/Werribee. (Part of the Werribee River catchment)

Date sampled: 28/3/23 at 1pm
Surveyors: Trevor Hausler and Tania Struzina (MCMC staff)

Description
The weather was cloudy and there had been approx. 12mm of rain 5 days prior and 4 mm in the 24 hours before. The drain was heavily impacted by the rain. During the previous testing visit on 16/02/23 the drain had been observed to be reduced to a series of disconnected pools and these were seen to be dominated by Mosquito fish (*Gambusia holbrooki*). On this visit the drain was full and beginning to overflow its banks onto the grassy parkland. The water appeared generally clear and the level visibly dropped during the visit.

The habitat instream in the drain was very limited, mainly grass with a few aquatic plants (including slender knotweed, *Persicaria decipiens*). The riparian habitat was very sparse, predominantly mown grass with a few scattered Eucalypts.

On arrival a number of frogs were heard calling. These were Pobblebonks (*Limnodynastes dumerilli*), Striped Marsh Frogs (*L. peronii*) and Spotted Marsh Frogs (*L. tasmaniensis*). A recording of the frogs was loaded onto the Melbourne Water Frog Census app. A number of tadpoles were observed and Mosquito Fish were again seen at the site. These are an introduced pest species that have a detrimental effect on the invertebrate population, especially in late summer and autumn when their numbers can become very high. They are also known to eat frog's eggs and tadpoles and therefore can affect amphibian reproduction success.

The sampling revealed a low range of 9 taxa, dominated by pollution tolerant species. The weighted ALT SIGNAL score was 1.64. This indicates that the drain is severely impacted by stormwater flows. This result can be explained by the following:

1. There is little diversity in instream, bank and riparian vegetation as well as a concrete benthic layer which cannot support any vegetation or substrate such as rocks, or logs. This severely limits waterbug ability to survive and breed at the site.

2. Physical chemical sampling has been completed on four occasions in early 2023. Dissolved Oxygen (D.O) results at the majority of these visits was at either 3 or 4 mg/L which is very low. This will severely limits waterbug ability to survive and breed at this site. Infrastructure such as riffle sections, deeper pools or some aeration infrastructure should be introduced at this site to increase D.O levels.

3. High velocity flows after high rainfall will push waterbug populations further downstream as well as adding pollution into the main stream.

Table 1. List of Taxa and SIGNAL scores for ME_WDD050 on 28/03/2023

Name	Common Name	Quantity	SIGNAL 2 Score	Photo
Class Hirudinea	Leeches	30	2	
Class Oligochaeta	Aquatic worms	30	2	
Class Turbellaria	Flatworms	30	1	
Class Mollusca				
Family Physidae *Physa acuta*	European Pond Snail	3	1	
Class Insecta				
Order Coleoptera	**Beetles**			
Family Dytiscidae Genus *Rhantus*	Diving Beetles	4	1	
Family Dytiscidae Larvae	Two-tailed tiger	1	2	
Order Hemiptera	**True Bugs**			
Family Notonectidae Genus *Anisops*	Slender Backswimmers	1	1	

Family Corixidae Genus *Sigara*	Striped Waterboatmen	1	3	
Order Odonata	**Dragonflies and Damselflies**			
Family Coenagrionidae	Damselflies	6	1	
	TOTALS	106		
			Weighted/ALT SIGNAL score	1.64*
			Meaning	Severe Pollution

*Explanatory notes on SIGNAL Score (from the Waterwatch Victoria website)

Each aquatic macro invertebrate is given an ALT (Agreed Level Taxonomy) SIGNAL2 score depending on their sensitivity to pollutants. SIGNAL stands for Stream Invertebrate Grade Number - Average Level. In 1994, a new version of this method, known as SIGNAL2, was developed and is available on the Federal Government website. By knowing the SIGNAL2 grade for every family, the SIGNAL2 score of a site, and therefore its health, can be assessed. For example a site that has abundant diversity and many sensitive aquatic invertebrates will have a high ALT SIGNAL2 score.

To calculate an ALT SIGNAL2 score for a site:

Step 1. Collect, sort and identify the creatures found at the site

Step 2. Calculate the sum of the individual ALT SIGNAL2 grades

Step 3. Divide the sum of the individual ALT SIGNAL2 grades by the number of different invertebrates collected to calculate the ALT SIGNAL2 score.

A guide for interpreting water health according to the SIGNAL score of a site is given in this table

SIGNAL score ratings

Higher than 6	Healthy habitat
Between 5 and 6	Mild pollution
Between 4 and 5	Moderate pollution
Less than 4	Severe pollution

These ratings were originally developed for very "normal" freshwater streams and rivers, and do not work as well for wetlands or lakes. An adaptation for wetlands can be found within the Environmental leader guide to running an ALT macroinvertebrate survey available here: https://www.melbournewater.com.au/education/citizen- science/waterbug-monitoring

This report has been added to the Waterwatch Victoria database.

Trevor Hausler
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