

Diquat Monitoring at Te Henga wetlands, Bethells Beach, Waitakere – 1 April 2015

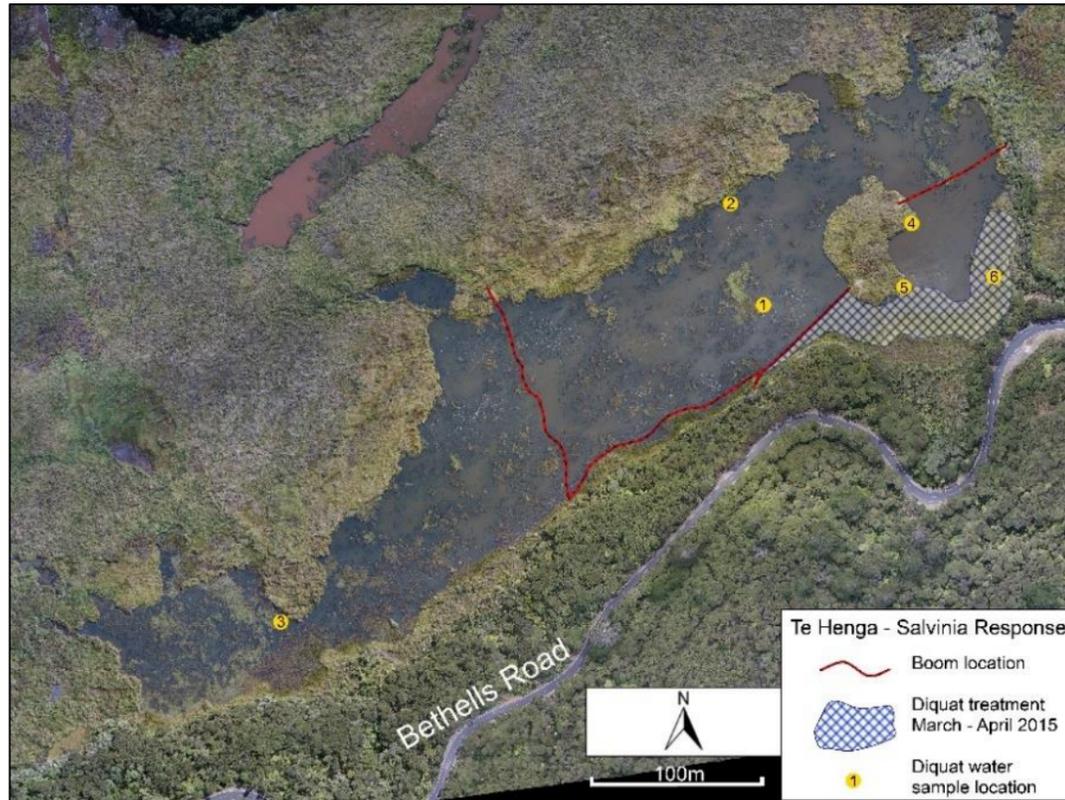


Figure 1: Map of Te Henga wetlands with application area and monitoring sample points.

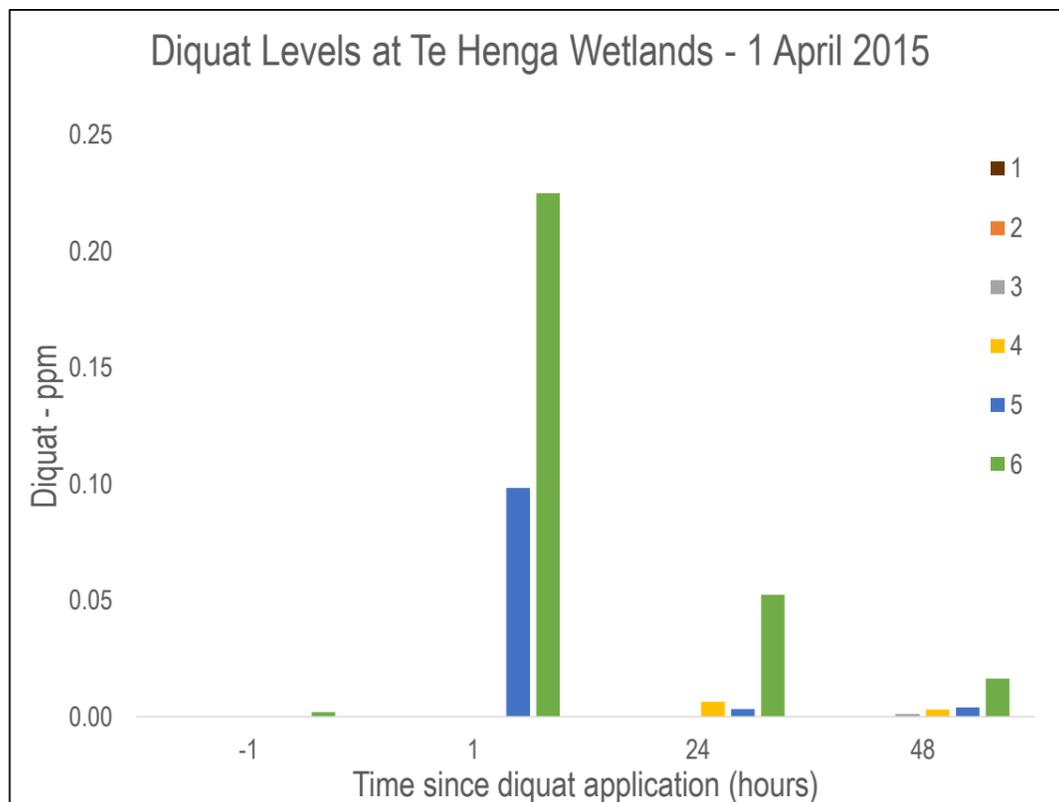


Figure 2: Diquat levels at monitoring sample points.

During late March and early April 2015, salvinia in the eastern area of the Te Henga wetlands was treated with Reglone® (active ingredient 20% diquat) at the label rate of 30 litres per hectare. At this rate, diquat will be diluted to approximately 1 part per million (ppm) in 0.5 m of water. The approximate area treated can be seen on the map to the left (figure 1).

As part of this programme, MPI undertook monitoring of diquat levels in the waterbody. The analysis was carried out by an independent laboratory (Hill Laboratories).

On 1 April, samples were taken from six locations in the wetlands (1 – 6 on map – figure 1) and at set intervals: pre-treatment, 1 hour, 24 hours and 48 hours after treatment.

Monitoring revealed presence of diquat at all set intervals, but not across all sample locations. As expected, the highest diquat reading (0.225 ppm – see figure 2) was 1 hour post-treatment and at location 6 (the only sample point within the application zone).

In previous studies of diquat fate, the target was submerged aquatic weeds; as a result, levels would rapidly fall below detection limits. At the Te Henga wetlands, diquat is being applied to emergent plants; over time, low levels of diquat will enter the water. This will explain the low level detected for the pre-application sample at location 6 – two days were required to apply diquat across the whole treatment area, the diquat detected was from the first day of application.

Levels of diquat have dropped below 0.053 and 0.017 ppm 24 and 48 hours respectively, post-application at location 6.

For comparison:

- the aquatic organism most sensitive to diquat (amphipods) have a LC50 (96 h)* of 0.05 ppm;
- chlorine (more toxic than diquat) is used in swimming pools at rates of 0.5 – 1.5 ppm.

*LC50 (96 h) – the level in which 50% of organisms will die, when exposed to this level (of diquat) over 96 hours