

Diquat Monitoring at Te Henga wetlands, Bethells Beach, Waitakere – 2 July 2015

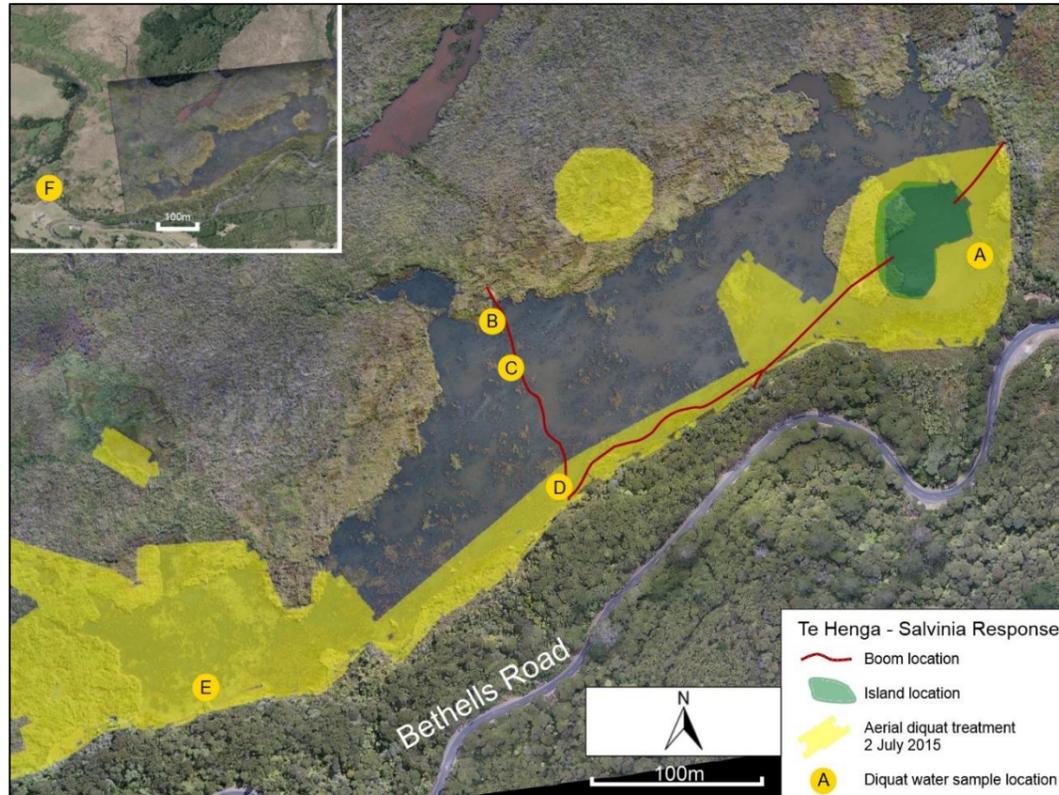


Figure 1: Map of Te Henga wetlands with helicopter application area and monitoring sample points. Inset upper right displays sample site F, approximately 300m west of the wetland clear-water.

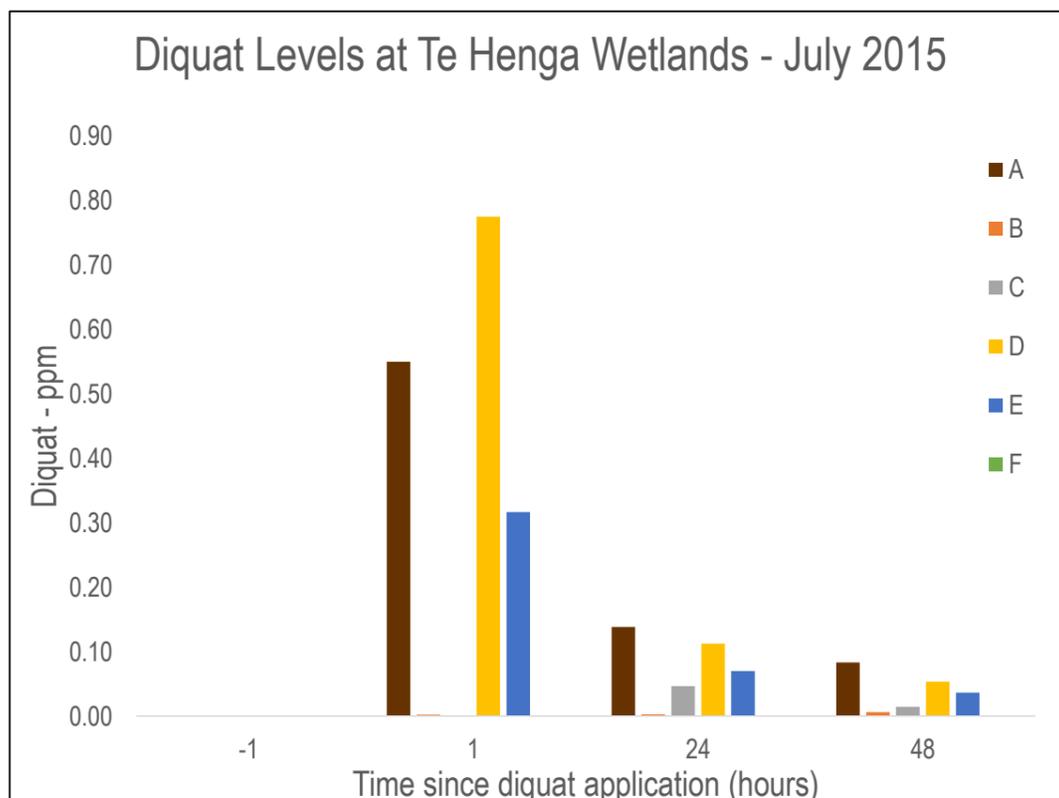


Figure 2: Diquat levels at monitoring sample points, displayed as parts per million (ppm).

On 2 July 2015, the Te Henga wetlands were treated, using a helicopter, 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).

Commencing on the morning of 2 July, samples were taken from six locations in the wetlands (A – F on map – figure 1) and at set intervals; 1 hour pre-treatment, and 1 hour, 24 hours and 48 hours after treatment.

No diquat was detected in any pre-treatment samples – this was expected as the last treatment occurred on 22 April 2015.

At all sample locations, diquat was detected during the course of the sampling. As expected, the highest diquat readings were 1 hour post-treatment and at sites within the treatment zone (see figure 2). The highest 1 hour post-treatment reading was at location D (0.775 ppm). Within 24 hours, the diquat level had dropped to 0.113 ppm at location D.

Diquat levels have dropped below 0.138 and 0.083 ppm 24 and 48 hours respectively, post-treatment at location A (the sample site with highest diquat levels at 24 and 48 hours post-application).

At all sample sites, 48 hours after treatment, diquat levels were very low or not detected at all. Over the course of time, levels would be expected to drop further.

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