



June 2015

## Helicopter treatment plan to eradicate salvinia from the Te Henga Wetland.

### Background

- Salvinia, a notifiable unwanted organism has been found in the Te Henga wetland.
- This aquatic plant has been successfully eradicated from a number of ponds and wetlands around NZ.
- At sites where the weed is located, a plan for eradication is required which meets the following criteria:
  - economically and technically feasible;
  - practical;
  - ensures human health and safety is
  - minimises the impact on the environment.
- Te Henga wetland is nationally significant with very limited land access (the wetland occurs on private property). Much of the shore line has extensive raupo growth, with salvinia in amongst the raupo and free floating in the open water.
- Booms have been placed in the wetland to minimise the spread of salvinia.
- Ground and helicopter treatment during March and April 2015 has reduced the overall salvinia infestation within the wetlands.

### Treatment Options

- A range of treatment options have been considered.
- Given the area of infestation and difficult access, aerial application is considered to be most likely to meet the aforementioned criteria (i.e. cost effective, proven, protecting the environment, and human health and safety).
- This paper is the proposed plan for continued helicopter treatment at Te Henga.

### Proposed Treatment Plan

- Aerial application allows delivery of a measured quantity of chemical to be applied evenly over the entire infected area in a very short time.
- The same landing site as the April 2015 operations is to be used, i.e. the farm on the far side of the wetland.

### Chemicals

- The non-systemic herbicide diquat is to be used at Te Henga (Reglone® is the trade name of the product used at Te Henga).
- Diquat will only affect the parts of the plant that it comes in contact with. For example, diquat will knock leaves off willows; these will re-sprout as the trunk and the roots remain unaffected.
- Salvinia has no permanent root structure. If it comes in contact with diquat, it will be killed.



- Where salvinia is sheltered from spray (e.g. by overhanging vegetation), ground based treatment will be required.
- Diquat is rapidly removed from the environment, water monitoring at Te Henga in April 2015 demonstrated this.
- In addition to diquat, a non-ionic surfactant (Actiwett™) will be used.
- A chemical rate of 30 litres Reglone® with 300 mls Actiwett™ made up to 200 litres per hectare will be applied.

#### **Timeframes**

- Application is planned to take place between Monday 29 June and Friday 3 July.
- Application is anticipated to take no more than one morning.
- The operation on April 22, 2015 commenced at 07:30 and was completed before 11:00.

#### **Treatment Plan**

- The helicopter is to be available from daylight so treatment can begin as soon as weather conditions are right. A final proceed/delay decision is required prior to loading the helicopter with the chemicals.
- Early morning generally gives the most favourable conditions (e.g. wind speed).
- The helicopter will not be applying any chemicals when the school bus is operating.
- Once loading is completed the helicopter will apply the chemical to the target area. The target area will be provided by way of a 'shape file' for the pilot to load into the helicopter system. This ensures the correct area is treated.
- Application will use a droplet size optimised to achieve a balance of good coverage of chemical, with low spray drift.
- Upon completion of application, the helicopter will refill with water and rinse out (one or two times) over a treated area of the wetland to clean the equipment.

#### **Weather Parameters**

- The usual factors to be considered in any aerial application operation include weather, location of adjacent sensitive off-target areas, topography and vegetation.
- Given the location, one of two predominant wind forces is likely to prevail:
  - An on shore westerly wind, which will blow up the valley.
  - Katabatic winds - where cooler air drains down the valley.
- The following weather parameters will be used to determine whether the operation will take place on the day:
  - Fine weather, light showers or drizzle;
  - Wind direction, blowing away from houses in close proximity - westerly, south-westerly or katabatic winds are acceptable.
  - Wind speed below 8 knots

#### **Clean up**

- The helicopter crew will be responsible for the loading site and equipment.



### **Health and Safety**

- All operations have some inherent health and safety issues to be managed.
- For an aerial operation, added risks can be grouped into three groups:
  - Risks associated with helicopters and aerial activity;
  - Risks associated with the use of chemicals;
  - Risks associated with public interest in the programme.
- Risks associated with the aerial activity (and the helicopter in particular) are managed by the helicopter operator. No one other than the helicopter crew (and associated ground staff) are permitted to be in the vicinity of the helicopter unless expressly authorised to do so.
- Risks associated with the chemicals will be managed by the ground crew. They will have the required qualifications and equipment to:
  - transport, store and handle the chemicals;
  - clean equipment following the operation;
  - manage spills, should they occur.
- Non-trained people will not be allowed access to the chemicals.
- To manage public interest in the operation, the ground base for the helicopter is located on private land. This ensures the safety of both the public and the helicopter operator.

### **Data Capture**

- Flight lines from the helicopter, showing where the chemicals are released, will be recorded.
- Weather conditions at time of treatment, chemical usage and time of operation will also be recorded.

### **Wetland Coverage**

- The manufacturer of Reglone® recommend no more than 25% of the vegetation cover of a water body be treated at one time. The primary reason for this is the effect of decaying vegetation on biological oxygen demand (BOD).
- As the total vegetation coverage that requires to be treated is under 25% of the entire wetland, the entire infected area is to be treated this treatment round (see map, Appendix 1).

### **Impacts on Te Henga Wetland**

- Plant species other than salvinia will be impacted by the herbicide treatment.
- Most will not be killed due to the non-systemic nature of diquat.
- Those species that are killed can re-populate from outside the treatment area once the programme is complete.
- The removal of salvinia will return the wetland nearer to a natural state and improve opportunities for indigenous plants and animals to occupy the wetland.

### **Communications**

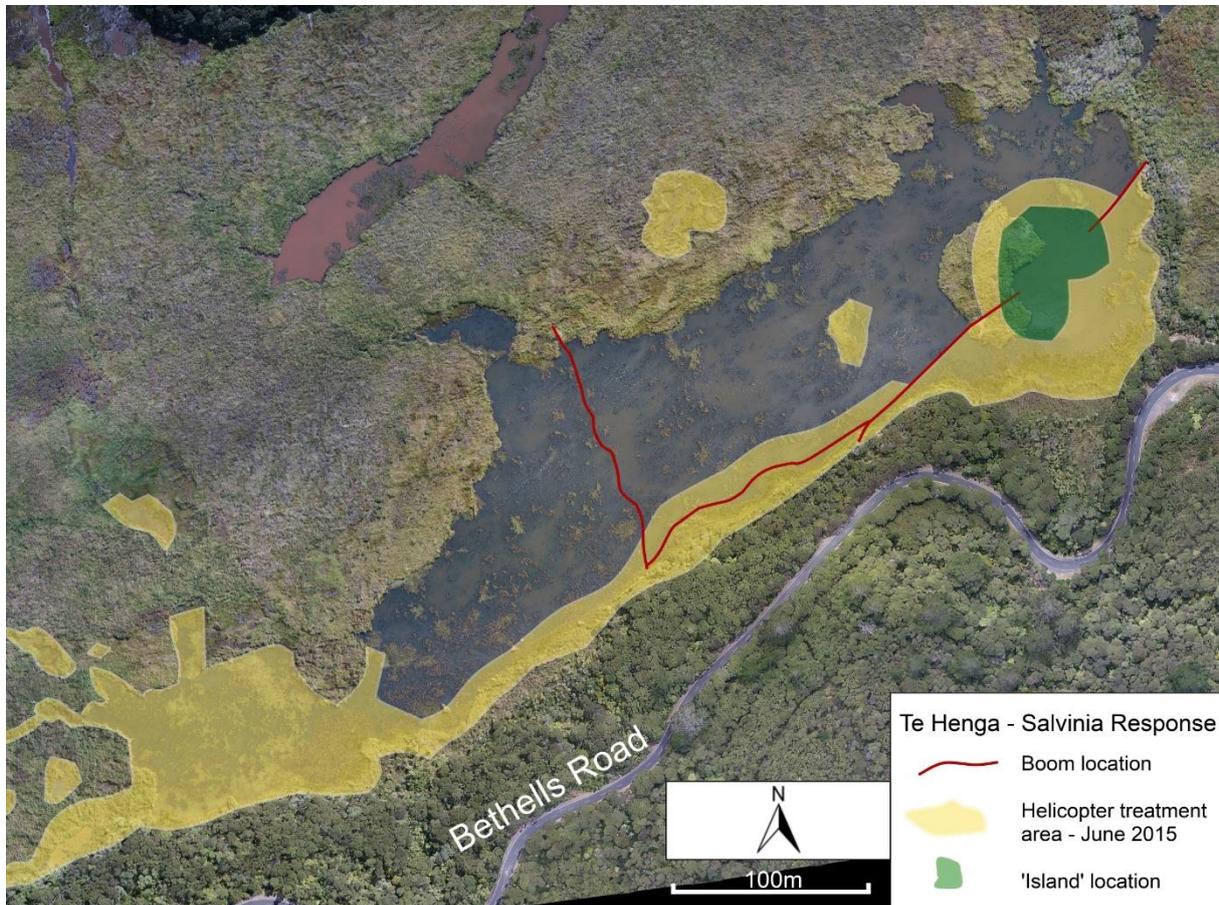


- There has been an ongoing communication programme with the local community. This will need to continue and will include information about the aerial treatment programme.
- Of importance is the need to communicate with affected neighbours to ensure they have the information they need.
- It is suggested that immediate neighbours be contacted several days in advance to advise them of the plan and when the treatment is likely to occur.
- This can be confirmed the night before and, if they wish, on the morning of the treatment (provided they don't mind a very early morning call).
- Upon completion they can again be notified that all operations have been completed for that round of treatment.

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Appendix 1 – Te Henga wetlands – overview map of operations



Note: the 'island' to the east has shifted following recent high winds and rain.