Matuku Link

Management Report for Auckland Council

Willow control by aerial drone application of herbicide in Te Henga Wetland

January 2026

By Matuku Reserve Trust

Management Plan

Contents

Project: Crack Willow (*Salix fragilis*) Control – Te Henga / Bethells Wetland
Lead organisation: Matuku Reserve Trust

1. Purpose of this Plan

The purpose of the plan is to clearly document **why**, **how**, **when**, and **under what controls** crack willow control has been and will be undertaken in the Te Henga wetland, with transparent links back to publicly available information.

Further detail, background explanations, and FAQs are available on the Matuku Link website: https://matukulink.org.nz/pest-plant-control/

This plan also aims to satisfy Auckland Council's request for an overview of information previously supplied to different departments.

All documents which are referred to in this Plan are either available on the designated page of the Matuku Link website, or available via the supplied link, or copied into Appendix A. Where privacy issues are identified, documents will be available upon request.

When the trustees of Matuku Reserve Trust applied to the Department of Conservation Community Fund for the funding of this project, it was in the knowledge of following up on willow work done before by several councils and council departments in the past – for ecological benefit as well as flood protection. Cyclone Gabrielle in February 2023 highlighted this fact, when several properties along Te Henga wetland were inundated and damaged.

For more information on Matuku Reserve Trust please visit the website www.matukulink.org.nz

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2. Background and Rationale

Removing crack willow is a critical restoration action to improve the ecological function of te Henga wetland, a **Significant Ecological Area (SEA)**. Willow control has a long history in te Henga wetland.

Wetlands are now rare and those left are in poor condition. Of the original wetland area that existed in the North Island of pre-settlement Aotearoa New Zealand, only 4.9% remains, one of the highest extent of wetland loss in the world. It is imperative to restore what remains of our wetlands to good health. Te Henga Wetland, the largest mainland wetland in the Auckland region, is a very valuable taonga. Restoration is vital for its

biodiversity and hence the drone spraying of the willows, the single most invasive weed in te Henga, is fully supported by Te Kawerau ā Maki, mana whenua to the area.

Wetlands also provide essential 'ecosystem services'. These include sequestering carbon and returning nitrogen to the atmosphere, protecting and improving water quality by filtering water, storing and slowing floodwaters – especially important in these days of climate change and increased rain events.

Image below: Deck of the Te Henga Surf club washed away when the Waitakere River flooded in the anniversary floods and Cyclone Gabrielle events of February 2023.

2.1. Targeted pest plant: crack willow

Crack willow (*Salix fragilis*) is a major pest plant in the Te Henga wetland. It is also on the National Pest Plant Accord list, and considered a pest plant on the Auckland Council website https://www.tiakitamakimakaurau.nz/protect-and-restore-our-environment/pests-in-auckland/pest-search/salfra/

Crack willow:

- traps sediment and debris, causing blockages in waterways
- raises flood levels and increases flood risk to homes, roads, and services
- outcompetes native wetland vegetation

- degrades habitat for threatened species including **matuku-hūrepo (australasian bittern)** and **pekapeka touroa (long-tailed bat)**

2.2. History of willow control in Te Henga

Willow control in Te Henga has a long history, as per the article below.

Western Leader 15/1/96

Councils join to fight willow problem

Waitakere waterways will soon be willow free.

Waitakere City and Rodney District councils have teamed up to fund a $150,000 willow eradication project in the Waitakere Valley area.

Willows clogging creeks and the Waitakere River have caused flooding of nearby farmland and the project, which starts next month, has been long awaited by locals.

"I look down on the river from my house, and willows have been a problem there for years," says John Staniland, a member of the Forest and Bird Protection Society which owns 100ha of reserve in the area.

"A few years ago work was done by Rodney District Council, but now the willows have re-infested the area and clogged the stream again."

Previous attempts to stop the spread of willows in the area involved bringing in heavy machinery and cutting down the trees.

JOHN STANILAND

The main species causing the problem is crack willow, says environmental consultant Mark Bellingham. "When they are cut down branches travel downstream and regrow, causing an even bigger problem.

"Because of the ecological sensitivity of the area spraying is not an option.

"Instead, we are using a poisoning technique."

That involves boring into tree trunks and injecting herbicides into the willow. The method is time consuming, but it is certain to kill the trees and does not affect other plant life.

There are a few trees along the river banks, but the bulk of the willow problem is in the Bethells wetland.

"They grow across the river and cause flooding by restricting the water flow as well as killing native vegetation," says Mr Bellingham.

The poisoning programme will take in the area from Waitakere Golf Course, along the Waitakere River to the sea outlet and will take around three years to complete.

Mr Bellingham says landowners in the area have all been supportive.

"We're trying to tackle the problem once and for all so hopefully it won't have to be done again and again."

Auckland Council and its predecessors have been writing reports recommending weed control, and specifically crack willow control, for several decades. For instance:

- Both *Salix Fragilis* and *Salix Cinera* are on the *Proposed pest plant list Auckland City Appendix 14* – 2006 (http://www.aucklandcity.govt.nz/council/documents/hgi/docs/hgiApp14.pdf)
- *Auckland Council Technical Report on Changes in indigenous ecosystems and the environment within the boundary of the Waitakere Ranges Heritage Area Act 2008: 2008-2013 report*

- *Local Area Plan Te henga (Bethells Beach) and the Waitakere River Valley (2015)*
- *Waitākere Ranges Strategic Weed Management Plan June 2015, C Jack Craw*

There are many other national reports on the detrimental effects of willows in wetlands, see list of references in Appendix A.

The work done by Matuku Reserve Trust follows in the footsteps of the Willow control operation by aerial spraying which was done in 2009 by the then Auckland Regional Council, Rodney City Council and Waitakere City Council. This features in the national handbook for wetland restoration.

- *Wetland restoration: a handbook for New Zealand freshwater systems / edited by Monica Peters and Beverley Clarkson. -- Lincoln, N.Z. : Manaaki Whenua Press, 2010. Chapter 9:* Kerry Bodmin – p 21 onward. Case study: CONTROLLING CRACK WILLOW IN TE HENGA/BETHELLS WETLAND

CASE STUDY

CONTROLLING CRACK WILLOW IN TE HENGA/BETHELLS WETLAND

At 153 ha, Te Henga is the largest freshwater wetland in the Auckland region. The wetland is of national importance for wildlife, and supports a high diversity of freshwater wetland bird species and native vegetation. However, crack willow (*Salix fragilis*) has invaded the wetland, forming dense stands that totally exclude native vegetation, and has blocked water channels causing localised flooding and erosion. Grey willow (*S. cinerea*) is sparse throughout the swamp but has the potential to invade the majority of the wetland. The desired outcomes of the Waitakere City Council led restoration project are long-term flood control and enhanced wetland habitat for native plants, fish and birds.

Ground and aerial control

Crack willow control work started from the top of the catchment working downstream to avoid reinvasion from fragments broken off accidentally during work or through natural events. Over a 10-year period, willows in the main wetland body and channels were accessed by boat, and trunks were drilled and injected using a herbicide mix (1 L Roundup Renew extra, 10 g Escort, 20 mL Pulse, 2 L water) or seedlings and saplings foliar sprayed (1.5% Glyphosate).

Aerial treatment of willows was considered for the Mokoroa Arm portion of Te Henga wetland as it is a dense and inaccessible area. Consultations with individual landowners, a public meeting, and an open day were held as part of the resource consent process. A small pilot area was used for the initial aerial treatment. Willows were aerially mapped before aerial spray control to define areas suitable for boom spraying and those needing spot spraying (i.e. individual plants/small clusters surrounded by native vegetation). Glyphosate Green™, approved and recommended for use over water, was used for both treatment methods.

Monitoring

Vegetation monitoring plots were established in the wetland to track the results of the aerial spray work. As well as measuring willow control, any effects on non-target vegetation (e.g., native species) will be assessed, and the success of natural native regeneration evaluated.

Willow control – the benefits

- Water flow opened up from previously willow-choked channels
- Flooding reduced by allowing water to spread through the wetland
- Native regeneration where dead willow trees were left standing
- Greater recreational use of the wetland for locals (e.g., kayaking)

Willow control – the drawbacks

- An explosion of the aquatic weed parrot's feather (*Myriophyllum aquaticum*) due to more light penetrating the water
- Pampas (*Cortaderia* spp.) and other weeds invaded where dead willow trees were removed

Funding

To date, more than $320,000 has been spent on weed control, with joint funding from the Auckland Regional Council, Waitakere City Council and Rodney District Council, and assistance from the Department of Conservation. Agency support has been crucial: complete willow eradication requires a high level of coordination and individual landowners within the catchment lacked the resources to fully support such a large-scale conservation initiative.

REF: www.waitakere.govt.nz/cnlser/pw/greennetwk/pdf/tehenga-willow-control-report.pdf

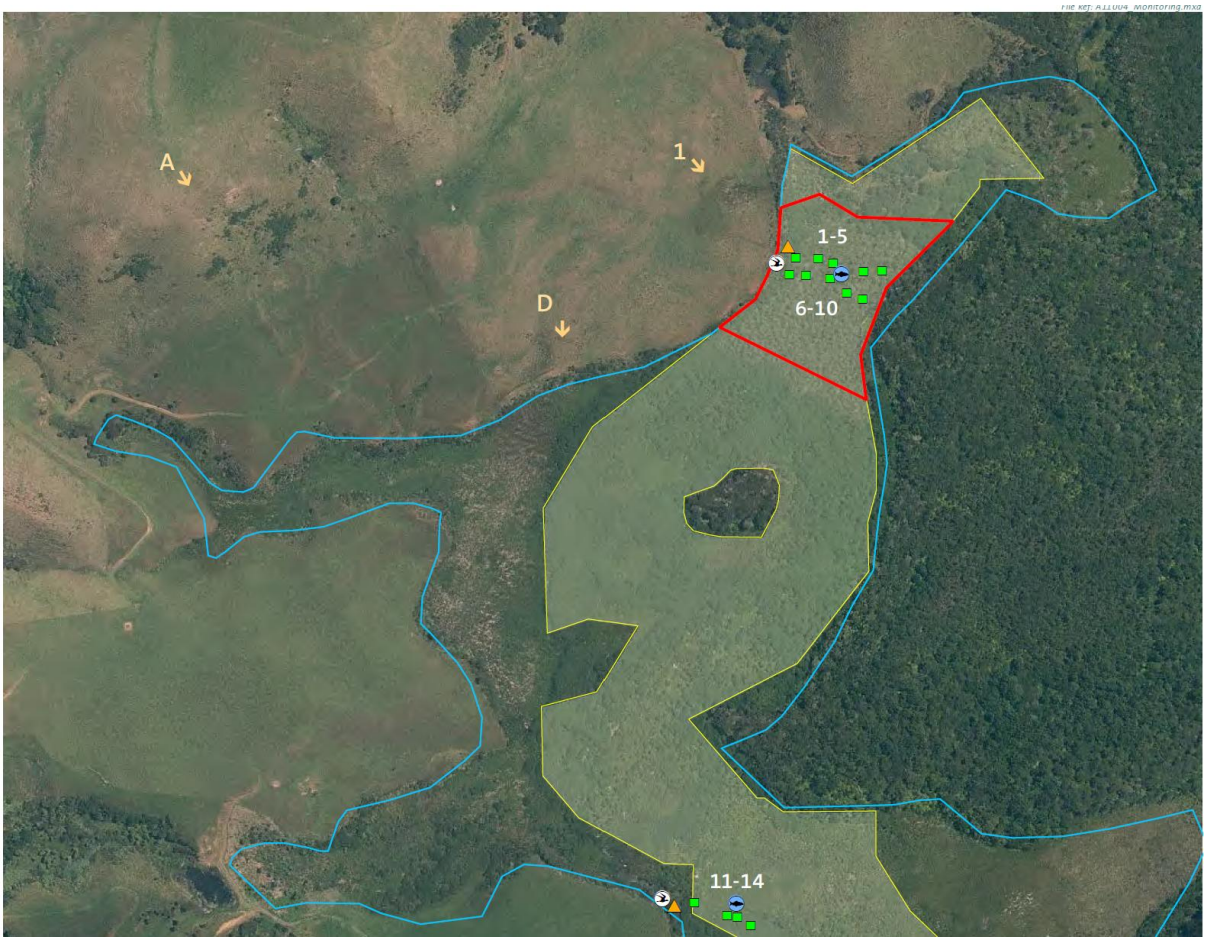
The above project was monitored by Boffa Miskell for the consecutive years after the spraying, the monitoring reports are downloadable from the website https://matukulink.org.nz/pest-plant-control/.

All reports recommend a follow-up to the spraying:

It is recommended that:

- Back-pack foliar spray and/or cutting and pasting of willow regeneration should be undertaken within the trial plot in the immediate future.
- During this process, other significant environmental weeds encountered within the wetland should also be targeted (e.g. pampas), to prevent them from colonising sites where willows have been eradicated.
- Further consideration should be given to eradicating the remaining willows in the Mokoroa Arm, either by aerial methods and/or drill and inject.
- Further vegetation, fish and macroinvertebrate monitoring should be undertaken to monitor the wetland, including prior to and after any more widespread willow control.

Unfortunately this follow up was never done and the willows have reinvaded this area again. Below the 2009 spray area in the red line.



Drone image below by Auckland Council taken September 2025. All grey-red foliage north of this line is reinvaded willow (currently dying due to the 2025 spraying).

All reports conclude that crack willows are the most significant threat to the wetland and removing those would be the largest part of the wetland restoration. They conclude that aerial application of herbicide has no measurable negative effects to the water quality, aquatic macroinvertebrates, birds or fish.
Threatened species like Australasian Bittern (matuku hūrepo) breed in raupo, not under willows. Raupo does not grow under willows: the removal of willows will restore and improve bittern habitat. Improvement in abundance of fish species will increase the possibility of bittern breeding at te Henga as well, as research has shown *(by Dr E Williams, Department of Conservation and P. Langlands, Wildlands)* food abundance is critical for their breeding success.

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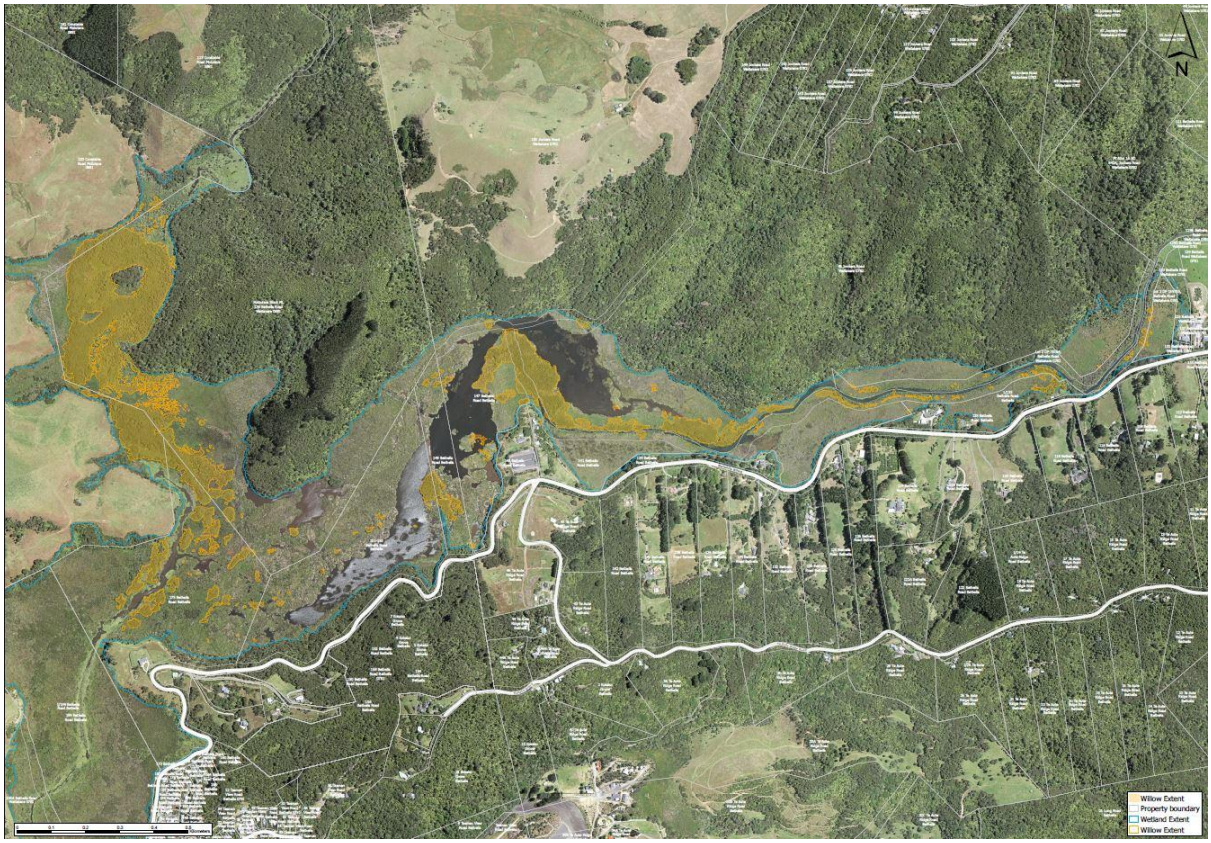
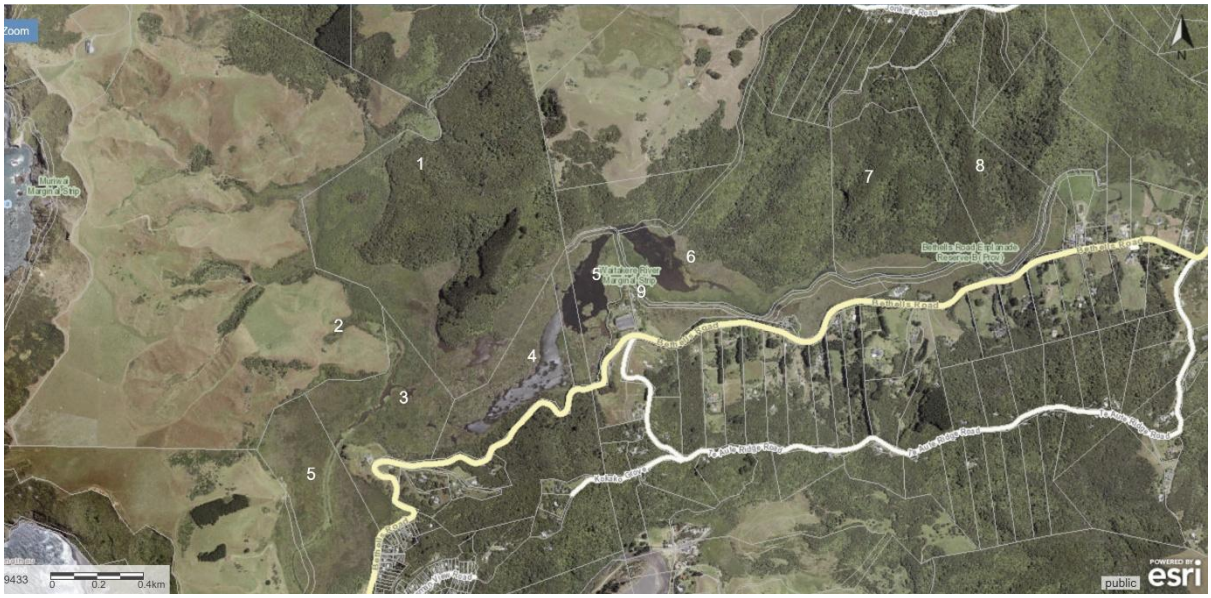
3. Land Tenure and Community Engagement

The drone survey identified the willows – yellow on map below. This map was supplied to Auckland Council with a description of proposed work.



All crack willow control work has been undertaken with landowner support for the work occurring on their properties (nrs 1 to 8 below – names upon request due to privacy).



- The pest plant control webpage has been publicly available since **November 2024** as background information for the community.
- Several community information evenings were held, supported by:
    - Letter drops

- Email notifications
- Facebook posts

The webpage https://matukulink.org.nz/pest-plant-control/ was specifically designed to answer common community questions in advance of operations.

- Landowners and interested community members were notified in advance
- Email notifications and evidence of timing are held in *Q11 – Notifications*

4. Governance, Support, and Approvals

The restoration programme is supported by:

- Auckland Council Biosecurity Team
- Auckland Council Bioinformation Team
- Department of Conservation (funding)
- Te Kawerau ā Maki (mana whenua)

Auckland Council issued the relevant Permitted Activity Notice and Certificate of Compliance, and the programme aligns with regional pest plant management objectives as well as national pest plant standards, see appendix A for both.

As a small but vocal number of local residents continued spreading false information on the local Facebook Page ("Bethells Bongo"), a much larger group of locals wanted to show their support for this work. Over 100 local residents signed a letter of support for the work Matuku Link is doing restoring the wetland, also included in Appendix A.

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5. Target pest plant species and control methods

Not all willow species are invasive; ornamental and non-crack willow species are not targeted, nor are other invasive weeds.

- **Primary target:** Crack willow (*Salix fragilis*) – spreads by broken branches and suckering roots.
- The more invasive Grey willow (*Salix cinerea*) was prioritised in the 1990's as it spreads from seed as well as suckering roots. Broken branches can root in soil and grow into trees. It was treated manually by Auckland Council staff, contractors and volunteers and eradicated from the Waitakere River valley.

Control methods for crack willow in wetlands assessed include:

- Cut and burn / chainsaw
- Drill and inject (herbicide)
- Aerial spraying by helicopter/fixed wing plane
- **Targeted drone spraying** (selected method)

Drone spraying was selected because it is demonstrably necessary to achieve the goal of eradicating the single biggest threat to this threatened wetland ecosystem. The Boffa Miskell monitoring reports post the 2009 spraying all native understory has regrown after several years. The Boffa Miskell 2026 report by Dr. Sarah Flynn concludes that some native species (*Carex* and *Machaerina*) are more affected than Harakeke and cabbage trees by glyphosate. Spring regrowth of raupō and *Machaerina* was noted on the immediate periphery of aerially sprayed willow stands, see p.11 onward of said report and figures below.

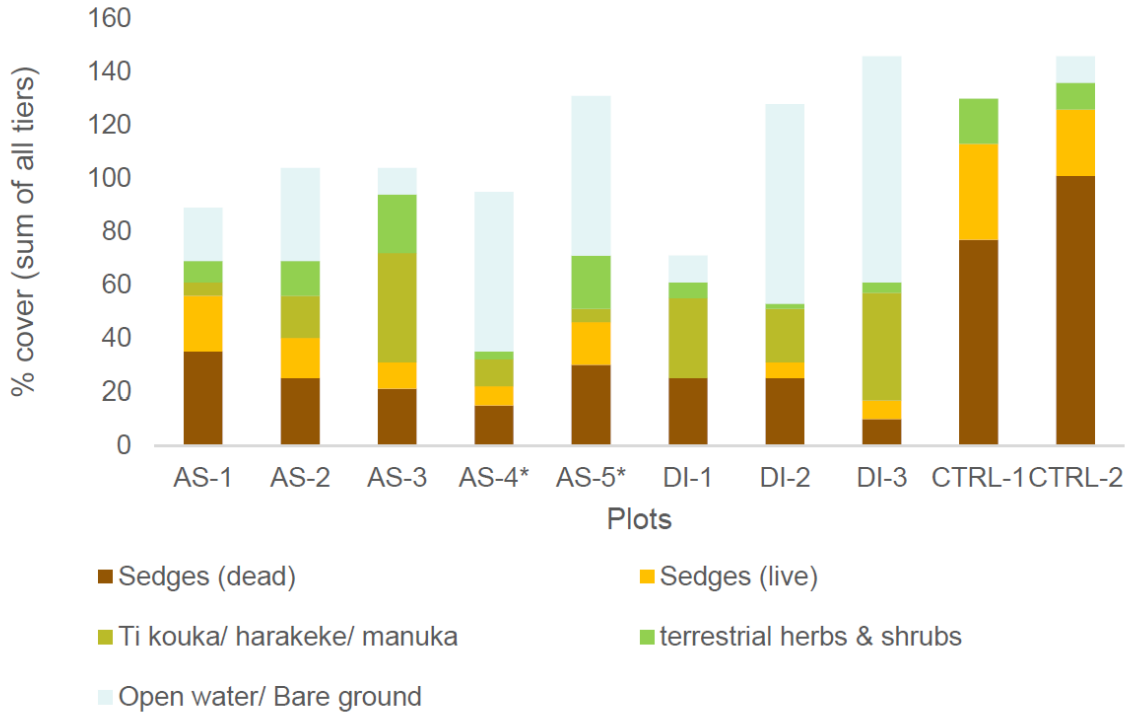

Figure 6: Summary results of vegetation plot surveys undertaken in September 2025.

Figure 11 above: Spring regrowth of raupo adjacent to AS-1 (beneath willow scrub on edge of spray treatment area).

Figure12: Plot AS-5, showing dead and resprouting Carex, live harakeke.

Figure 13: spring regrowth of raupo, Machaerina (13 September 2025) through dead swamp millet litter on edge of spray treatment area (dead willow in top right corner).

The Boffas Miskell 2026 report also states the dieback of undergrowth is larger in manually treated (drill and inject) areas than treated by drone, see below.

Herbicide application by drone:

- uses significantly less herbicide than drill-and-inject
- is highly targeted and flown very low
- minimal spray drift compared to application by helicopter or plane
- is applied to the canopy with a sticking agent ensuring with minimal discharge in water.

See Q2 on our website https://matukulink.org.nz/pest-plant-control/ and below for comparison table.

A: There are four methods used in NZ, each with their own benefits and issues of concern.

Method	Benefits	Concerns
Cut & Burn or Chainsaw	• Precise, individual targeting of willows	• Very labour intensive • Difficult to access willows in deeper water • Hazardous for the operators • All cut stems have to be removed or they will regrow • Leads to other invasive weed growth following control • Expensive
Drill & Inject	• Precise, individual targeting of willows	• Slow, very labour intensive • Higher concentration of herbicide and more herbicide required • Hazardous for the operators • Expensive
Helicopter Spraying	• Precise application • Requires 10 to 20 times smaller amount of herbicide than Drill & Inject • No negative effects to water quality or macroinvertebrates • Significant increase in native plant growth following death of willows as shown by 3 years of monitoring in Te Henga wetland by Boffa Miskell	• Noisy at the time of operation • Risk of helicopter accidents • Minimal spray drift is expected if operation is undertaken in ideal weather conditions – needs low to no wind, ideally early morning • Te Henga community doesn't like the sight and sound of helicopters
Drone Spraying	• Precise application • Requires 10 to 20 times smaller amount of herbicide than drill & inject • Uses exact amounts of measured herbicide, minimising environmental contamination • Minimal spray drift • Can fly very low and target each tree individually • Quiet • Efficient • A drone is much less intrusive and can do more precise spraying than a helicopter	• More costly than helicopter spraying • Operation needs to be done in ideal weather conditions – needs low to no wind, ideally early morning

This method allows native wetland vegetation to recover with minimal disturbance, as proven by comparison per Boffa Miskell Report 2025 p.14 – supplied to Auckland Council and downloadable from our website.

In the absence of proactive control, invasive willows permanently alter successional pathways and displace reed, rush and sedgelend habitat that is optimal for cryptic wetland birds.

Results of monitoring indicates that foliar application of glyphosate is an efficient and effective means of killing invasive willows. Observations from monitoring surveys support the conclusions of earlier, comprehensive monitoring between 2009 and 2013 following a trial of aerial herbicide application to control willows, which found most treated sites returned to indigenous vegetation cover within five years following aerial spraying. Evidence of regrowth of *Carex* sedges, and rhizomatous expansion of raupo into the periphery of foliar-sprayed areas is a good early indication that indigenous wetland vegetation will recover and re-establish well in willow infestation sites once trees are killed. We note that terrestrial vegetation has colonised elevated substrates formed by willow roots in some locations, and these patches may persist unless there is a change in groundwater levels or the substrate subsides.

Furthermore, precise aerial application of herbicide via drone appears to reduce the impact on susceptible indigenous understorey vegetation in comparison to "drill & inject" methods, at least where the canopy is tall (>6 m) and continuous. Plot results and general observations made during the walkover of treatment areas noted foliar application generally produced somewhat less dieback of sedges and other ground cover plants than drill & inject methods; this may be because the foliar application typically uses less herbicide per plant, and less of it reaches the root system of adjacent plants when applied to the canopy, while sensitive plants survived with superficial damage to foliage where the willow canopy was dense. We note that the droplet size for foliar spraying is carefully calibrated, and treatment only undertaken in periods of fine, calm weather, in order to avoid spray drift and ensure the herbicide is sufficient to wet the willow foliage, with minimal runoff. The precision achieved with herbicide application by drone was evident in the complete absence of over-spray in any of the areas assessed, with no evidence of spray damage to immediately adjacent vegetation.

6. Herbicides and Additives Used

All agrichemicals were used in accordance with EPA controls, product labels, safety data sheets, and NZS 8409:2004.

6.1. Primary Herbicide

- Polaris 450 (Glyphosate) **-** Approved for use over water

Product information:
https://www.adama.com/new-zealand/en/crop-protection/herbicides/polaris450

New Zealand Food Safety has advised that glyphosate does not pose a risk to humans when applied in accordance with maximum residue levels. The application method used complies with these requirements. Further glyphosate information is provided at the bottom of the Matuku Link webpage https://matukulink.org.nz/pest-plant-control/

6.2. Adjuvants and Additives

- Aquakynde (used instead of regular organosilicone, following Auckland Council Biosecurity advice)
  https://drive.google.com/file/d/1xCa1xoAo7YAq9iO1etHdXkHc70h05FBX/view
- AntiFoam 1410
  https://agpro.co.nz/downloads/sds-agpro-anti-foam-1410-dzgn7.pdf
- Blue "FIL Done That" marker dye
  https://www.fil.co.nz/file/done-that-safety-data-sheet/open

Packaging photographs were supplied to Auckland Council on request; operational drums were triple-rinsed, decommissioned, and recycled as per manufacturer instructions.

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7. Aerial Operations (2025)

7.1. Timing

Drone spraying was undertaken on the following dates and times:

- 16 January 2025 — 9:00–18:00
- 28 January 2025 — 10:00–16:00
- 30 January 2025 — 9:00–16:00
- 3 February 2025 — 10:00–14:00
- 10 February 2025 — 10:30–16:00
- 12 February 2025 — 8:30–13:30
- 14 February 2025 — 9:00–14:00
- 20 February 2025 — 8:30–12:30
- 25 February 2025 — 8:30–15:30
- 26 February 2025 — 8:30–10:30

Operations avoided willow flowering season to protect pollinators and was done within operational criteria of low wind, no precipitation or predicted precipitation within 12 hours. Each work day had the required number of people as spotters, pilots etcetra – on average six people per day.

The drone work done over (some very short) 10 days covered approx. 90% of willows. The manual 'drill and inject' work took another 10 days with 5 or 6 people per day. Due to the physical demands of this work (carrying 20 l backpack sprayers while scrambling through willows, fully covered, in the heat – amongst huge nests of invasive wasps) and mental strain (demotivated by the knowledge this work could have been done by drone in a couple of hours), two employees of Phylogeny quit their job after these 10 days.

7.2. Operational information

Spray plan for January–February 2025: see *Matuku Link Briefing Sheet.xls* as supplied to Auckland Council.

GPS flight paths, spray swaths, and daily records supplied to Auckland Council.

7.2.1. Operator, Qualifications, and Equipment

- All aerial spraying was carried out by contracted company Phylogeny,) www.phylogeny.co.nz owned by David Hall who has over 30 years' experience in horticulture and environmental management
- 15 years as owner-operator of Phylogeny Environmental Services

Qualifications include:

- Pilot's Chemical Rating
- CAA Part 102 certification
- GrowSafe Certificate
- LUV 4x4 Off-Road Handling Certificate

Certificates have been provided to Auckland Council.

7.2.2. Equipment

Drone: DJI Agras T30

Drone as inspected on vehicle by Auckland Council compliance officers.

Employed as herbicide spraying system to reach previously unreachable areas, apply chemicals over difficult ground / terrain to lessen impacts of ground-based services where areas might need to be shut down where pedestrians were in location, applications to cropping, farm pasture etc.

To apply herbicide to wasteland, farmland and revegetation areas where planting is or has occurred, to control weeds on roadways, storage areas, boundaries and extraction areas.

Dry spreader, to utilise the drone as above with Fertiliser, Grass/ Crop Seed and also specialised native revegetation seeding process developed by Phylogeny for slip sites or unreachable land. Also, applications of dry herbicide in applicable areas.

Mavic Enterprise 3 RTK

To supply detailed mapping file to the T30 to execute spraying programme. To film/ photograph and measure stockpiles, plantings and weed infestations.

DRTK base station

Accurate ground measuring radar to provide "ground millimetre" accuracy to the RTK platform.

Vehicles and Equipment

- Toyota Hilux twin cab Ute wellside tray, lockable aluminium canopy, Sign written.
- Toyota Landcruiser twin cab Ute with custom built secure lockable canopy. Sign written. DC and AC power.
- Quickspray 400L twin remote 100m reels ground unit. Honda GSX 120 Motor
- Quickspray 300L single remote reel 100m, static 30m line. Honda GSX 100 Motor.
- Chemicals in Lock boxes.
- IBC x 1000L tanks on twin axle new trailers.
- 250 Litre mixing tank to pre-mix chemicals and bowser delivery for drone with Honda W60 pump.
- Water in 20 Litre drums as required.
- Generator for charging batteries and equipment, DJI 9000 digital inverter.
- Calibrated measure jugs, Syringes for small volume accurate delivery.
- Spill Tray
- Spill Kit
- PPE, Overalls, Masks, Gloves, Glasses, Aprons, Splash Face shield

- First Aid kits x 3
- Fire Extinguishers x 4
- Signage for excluding area from entry.
- Flashing beacons, Vehicle flags.
- Anemometer handheld wind direction and speed
- Binoculars for site survey, checking boundaries.
- Laser rangefinder for measuring hazards, obstacles, boundaries etc.
- Laptop
- Samsung S21 for communications/ Data / Internet access.
- Tait TP3900 RT x 4 comms on site direct point to point private channels and comms.

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8. Sensitive Areas, Species and Mitigation Measures

Sensitive areas assessed included:

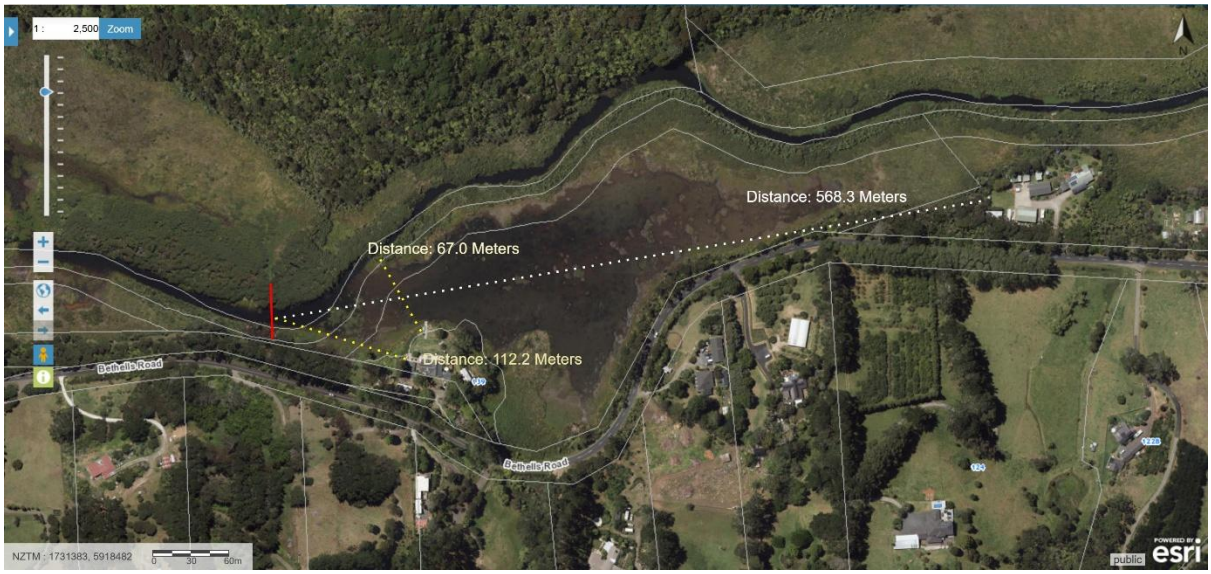
- Dwellings
- Potable water supplies
- Organic and spray-free gardens
- Non-target flora and fauna (including bees)

Mitigation actions included:

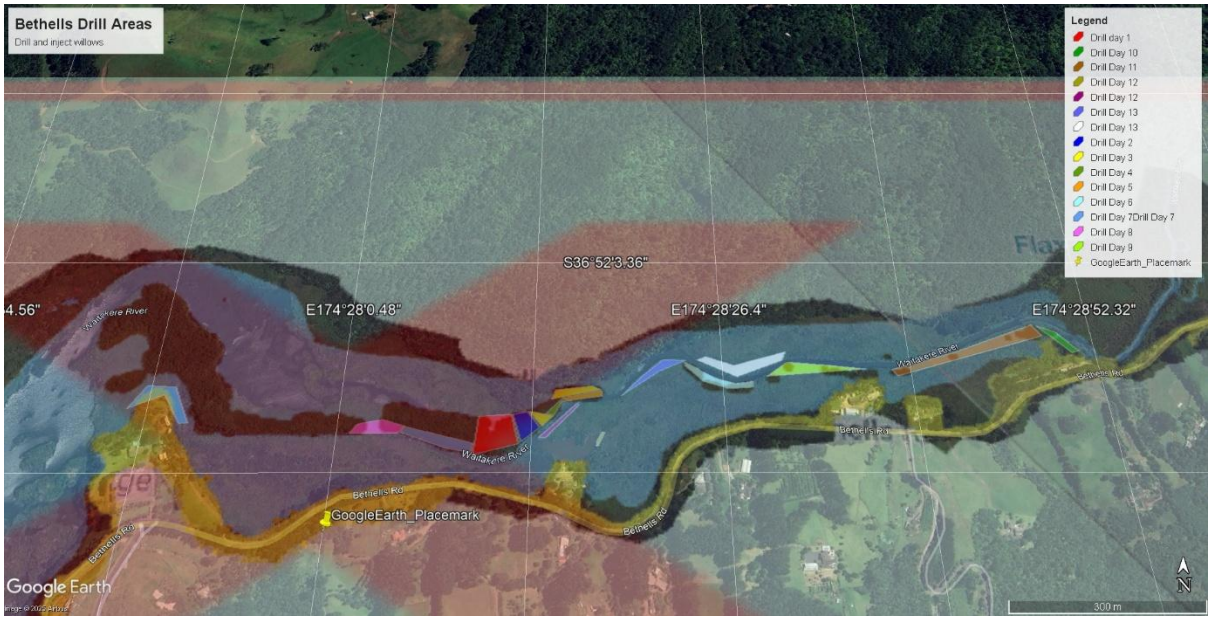
- No aerial spraying within 50 m of dwellings
- Manual treatment of willows near 135, 139, and 145 Bethells Road at landowner request
- Temporary disconnection of roof water systems (139 and 145 Bethells Road)
- Private owner's drinkwater/rainwater tank refilled with delivered water at 139 Bethells Road to compensate for missed rain water due to temporary disconnection.
- No spraying during flowering season
- There is no water take recorded for agricultural use downstream from spray area.
- Water quality tests have been done before, during and after spraying.

Maps and details have been provided to Auckland Council.

Drone spraying done west of red line, manual drill and inject east of red line. Distance in meters to sensitive areas.

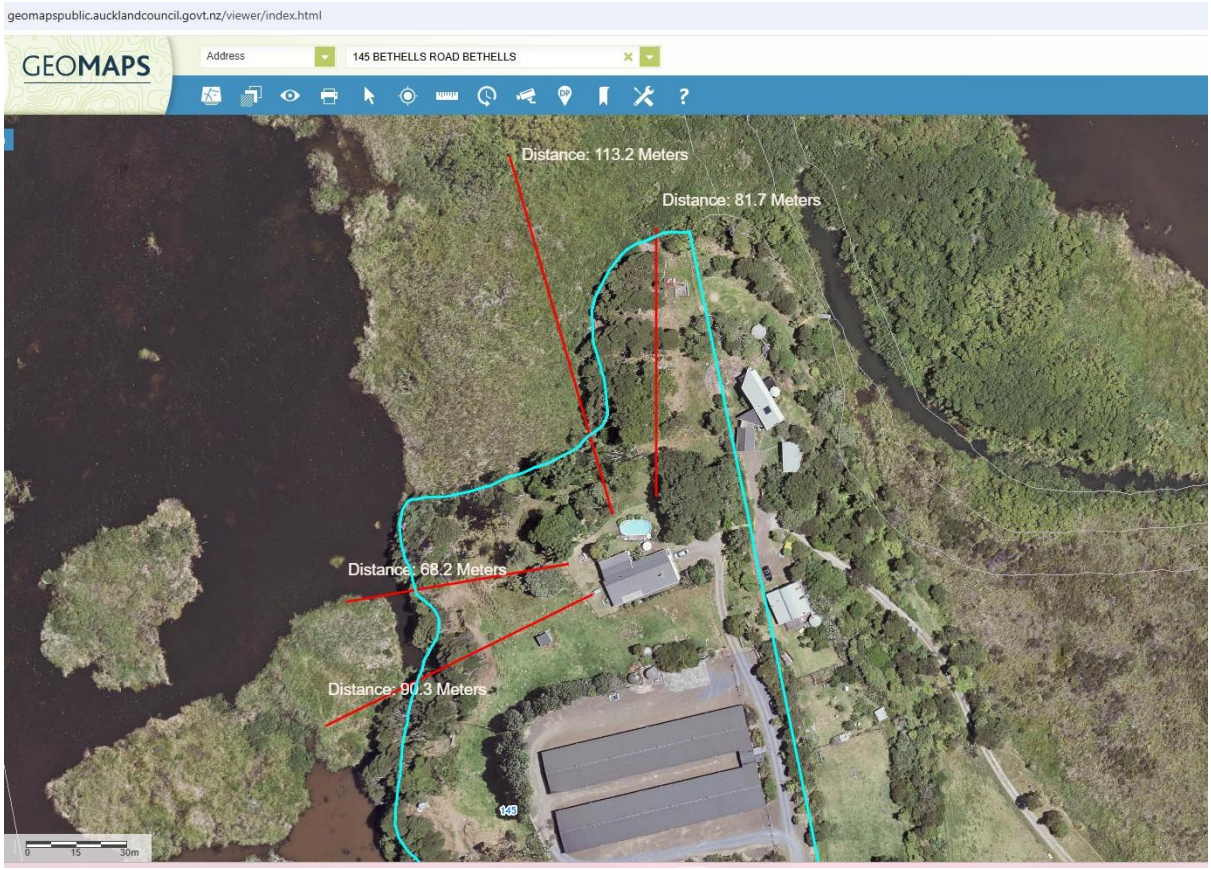


Drill and inject areas below



Distance to one of the concerned residents below.

Distance to one of the other concerned residents below. Rainwater tanks were disconnected from roofs, reconnected after spraying and after first rains.



Any disturbance of breeding birds will be less than minor as work is done outside of the breeding area – statement by bittern expert P. Langland included in the attachment.

None of the monitoring done by Boffa Miskell (2011, 2012, 2013 after the 2009 aerial helicopter spray) and 2026 after 2025 aerial drone spray) reported any adverse effects to macroinvertebrates, fish or water quality. All reports downloadable from our website.

Disturbance of threatened fish species will be less than minor or none, according to statement by Dr Aileen Sweeney BSc PhD Ecology – as per statement attached, due to:

1. Location - spraying occurred upstream from inanga spawning site, and downstream on any other whitebait species spawning sites.
2. Time of year - spraying occurred outside of whitebait spawning season (this happens in Autumn) AND outside of whitebait returning to freshwater from the ocean (this happens in Spring).
3. Dilution levels: the minimal amount of foliage spray will be highly diluted in the large body of water as spawning site is downstream from the confluence of the Waitākere River with Waitī Stream.

9. Spray Drift and Weather Controls

- Spraying occurred only when wind speed was low and direction was away from sensitive areas
- Anemometer readings were recorded daily
- Spray quality was no smaller than “coarse”
- All drift mitigation complied with NZS 8409:2004
- Anemometer results were shared with all interested residents the next day.
- All complaints/concerns (when people living on a ridge felt the wind was higher than allowed) were followed up with a visit at the spray site in the valley, by the Matuku Link project manager to check wind speed on site. No violations of wind speeds were seen.

Documentation is held in:

- *Matuku Link Briefing Sheet.xls*
- *Q13 Safety Risk Assessment*
- *Q14 Anemometer Daily Flight Sheets*

  Example of Anemometer record. All daily records supplied to Auckland Council.

Environmental Conditions: Record prior to start and end, and if any significant changes.

14/2/2025	Anemometer recording			Windy App	
Time	**Wind Speed km/h**	**Temperature °C**	**Altitude**	**Wind Direction**	**Humidity**
09:00	1.29	22.5		W	93%
10:00	6.73	29.5		W	73%
11:00	5.47	24.6		W	68%
12:00	6.73	25		W	66%
13:00	7.96	24.8		W	60%
14:00	6.3	32		W	56%
TIME				NIL	
TIME				NIL	
TIME				NIL	
TIME				NIL	
TIME				NIL	
TIME				NIL	

10. Monitoring

10.1. Water Testing

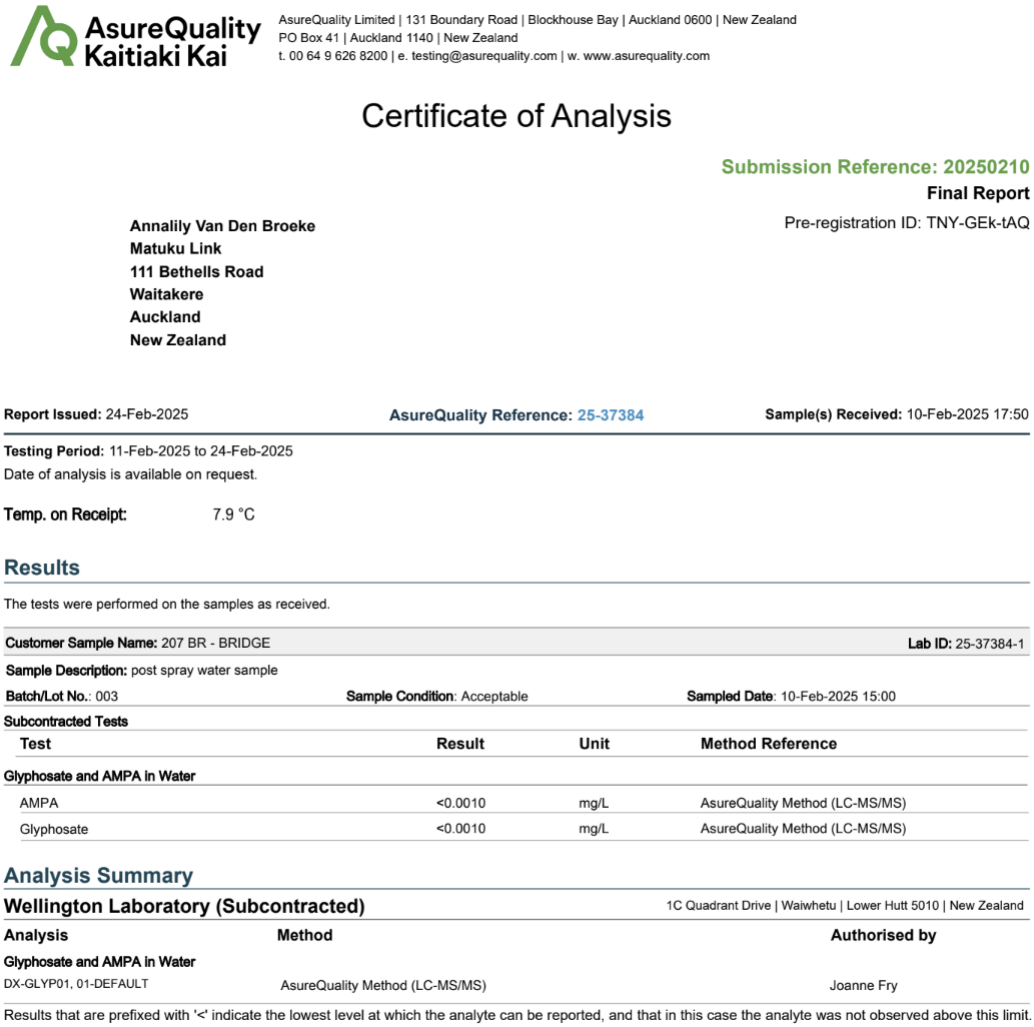
Water testing was not required by Auckland Council but was undertaken following community requests.

- Testing conducted by **AsureQuality**
- Results shared publicly on the Matuku Link website and emailed to interested residents

Sampling locations:

- 205 Bethells Road / 207 Bridge (upstream of the confluence)
- 139 Bethells Road

Pre-spray testing at 139 Bethells Road showed elevated E. coli, highlighting existing water quality issues unrelated to spraying. None of the tests showed a measurable amount of glyphosate or its derivatives.



AsureQuality Limited | 131 Boundary Road | Blockhouse Bay | Auckland 0600 | New Zealand
PO Box 41 | Auckland 1140 | New Zealand
t. 00 64 9 626 8200 | e. testing@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: 20250210
Final Report
Pre-registration ID: TNY-GEk-tAQ

Annalily Van Den Broeke
Matuku Link
111 Bethells Road
Waitakere
Auckland
New Zealand

Report Issued: 24-Feb-2025 AsureQuality Reference: 25-37384 Sample(s) Received: 10-Feb-2025 17:50

Testing Period: 11-Feb-2025 to 24-Feb-2025
Date of analysis is available on request.

Temp. on Receipt: 7.9 °C

Results

The tests were performed on the samples as received.

Customer Sample Name: 207 BR - BRIDGE Lab ID: 25-37384-1
Sample Description: post spray water sample
Batch/Lot No.: 003 Sample Condition: Acceptable Sampled Date: 10-Feb-2025 15:00
Subcontracted Tests

Test	Result	Unit	Method Reference
Glyphosate and AMPA in Water			
AMPA	<0.0010	mg/L	AsureQuality Method (LC-MS/MS)
Glyphosate	<0.0010	mg/L	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory (Subcontracted) 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | New Zealand

Analysis	Method	Authorised by
Glyphosate and AMPA in Water		
DX-GLYP01, 01-DEFAULT	AsureQuality Method (LC-MS/MS)	Joanne Fry

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

This is an expected outcome as the herbicide is sprayed on the foliage, not in the water.

10.2. Post spray monitoring by Boffa Miskell

Even though not required, Matuku Reserve Trust engaged Boffa Miskell to do a post spray monitoring including a comparison between drone sprayed sites and manually drill-and-inject sites.

Boffa Miskell was chosen as they had also done the post 2009 monitoring and were aware of the site and the project.

- Treated crack willows are dying, standing and rot naturally. This reduces the risk of fragments re-establishing downstream
- Native wetland vegetation is already recovering strongly – see Boffa Miskell report

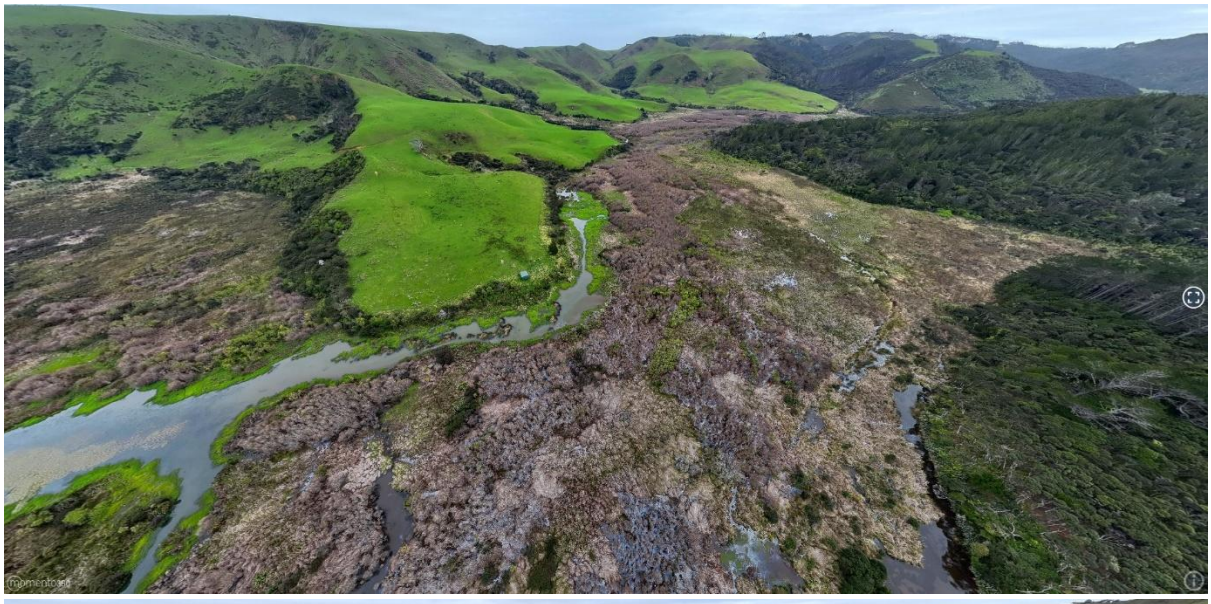
Monitoring will continue for up to two years post-treatment, with further mop-up if required, as per recommendations in Boffa Miskell report.

10.3. On site inspection

Several Auckland Council staff visited Matuku Link – some to inspect the drone and equipment used by Phylogeny, others to see the results of the spraying. Many follow up questions were asked, frequently prompted by a complaint from one of the few opposing locals. No issues were raised during these visits.

10.4. Drone survey

Hugo Geddes, Senior Bio Information Analyst & Chief Pilot (Prime Person) Auckland Council — pilot licence CAA UAOC 97839 surveyed over most of the treated site. All redgrey foliage is treated and dying willows.



11. Conclusion

Based on these Auckland Council drone surveys and subsequent drone surveys by Phylogeny and monitoring report from Boffa Miskell it is evident:

- Overspray was nil or minimal
- the ti kouka - cabbage trees are vibrant green and thriving
- the remainder of the willows are in hard to reach places – a drone is still needed and the most efficient and effective tool to do this
- eradication of willows is possible in the near future, enabling a major restoration of Aucklands largest mainland wetland.

With perhaps 80% of the targeted invasive pest plant now killed with demonstrably no ill effects to other indigenous fauna or flora, it is vital that the remaining willows be dealt to this year and next if needed, so that the threat of re-invasion does not need to be addressed by a future local community, conservationists, or council. In this way, the habitat will be restored for rare indigenous fauna and flora and the risks of flooding damage to local infrastructure will be reduced.

Appendix A - References

1. **Waitākere Ranges Strategic Weed Management Plan June 2015***, C Jack Craw Principal, Koru Biosecurity Management, for Waitakere Ranges Local Board, p22 onward:*

Waterways

The Waitākere Ranges streams are free of most significant freshwater aquatic pest plants. This has been largely due to the pristine condition of the headwaters, and sensible management by Auckland Council staff. However the weedy condition of the Waitākere Stream is of considerable concern, with crack and grey willows, alligator weed, Mexican water lily, parrot's feather and other weeds causing considerable ecological damage and posing high infrastructure and public safety risks in the Te Henga wetland. Programmes to control these weeds have been opposed by a number of residents concerned at pesticide use. The willow removal programme was implemented over 20 years ago at the request of the local community, as a result of flooding caused by willow logs blocking the stream. This flooding threatened both the houses at the bottom of the estuary and the road. The clearing of willows from the main channel has been successful in reducing this threat of flooding. There are also many ecological benefits that will result if the willows are replaced by native vegetation. A fully funded programme (initially $200,000 pa, falling to $40,000 pa) could achieve eradication of willows, alligator weed and Mexican water lily within 10 years. All of the pest plants of concern in the Te Henga wetland can be controlled and/or eradicated without causing any negative water quality or ecological impacts. Unfortunately, budget cuts at Auckland Council have meant that some programmes have recently been cut, including part of the $90,000 pa aquatic weed programme at Te Henga. This pest plant programme will need to be restored at some stage and may require external funding assistance.

Recommendation 14 – Advocacy via the Long-term Plan process: It is recommended that the Waitākere Ranges Local Board seeks to secure funding for completion of the Te Henga aquatic weed programme.

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2. **Wetland restoration : a handbook for New Zealand freshwater systems** */ edited by Monica Peters and Beverley Clarkson.* - Lincoln, N.Z. : Manaaki Whenua Press, 2010. Chapter 9 Weeds, Kerry Bodmin – p 21 onward. Case study: CONTROLLING CRACK WILLOW IN TE HENGA/BETHELLS WETLAND, ISBN: 978-0-478-34706-7

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3. **Auckland Council Technical Report 2013/003 Changes in indigenous ecosystems and the environment within the boundary of the Waitakere Ranges Heritage Area Act 2008: 2008-2013 Report** ISSN 2230-4525

Bishop, Craig D, Landers, Todd J and Goldwater, Nick P (2013). Auckland Council technical report, TR2013/003 – p65 onward:

10.5.1 Auckland Council pest management

Introduced plants and animals can significantly threaten indigenous biodiversity and the healthy functioning of ecosystems. The Auckland Council developed the Auckland Regional Pest Management Strategy 2007-2012 (ARPMS) in accordance with the Biosecurity Act 1993 which provides a strategic and statutory framework for managing pest plants and animals. This document includes harmful pathogens such as kauri dieback (Chapter 7). The ARPMS objectives include maintaining both extensive and intensive biosecurity programmes on regional parks and buffer zones to address pathways of pest incursions and to optimise the effectiveness of pest control programmes. These objectives includes working with local boards, tangata whenua, DOC, community groups, volunteers and private property owners to deliver effective pest control programmes. At present there are eight primary pest management projects run by the Auckland Council Biosecurity Team in the WRHA (Table 13). Each of these projects run annually based on the Council's financial year from 1 July to June 30th, with specific budgeted monies and staff time coming primarily from the Biosecurity Team's annual budget. Several indicators are presented below in this and the following sections dealing directly with some of the major pest projects. The other projects are highlighted below as well.

Table 13 Auckland Council pest management projects in the Heritage Area.

Project name	Purpose
Community Pest Control (Indicator C1)	Assist community groups and private landowners manage pests for biodiversity protection
Low Incidence Pest Plants/Pest Fish	Eradicate/control key rare, high threat pest plants; intensively manage pest fish at Lake Wainamu
Regional Parks Ecological Weeds (Indicator C2)	Tactical ecological weed control in key habitats and/or for key weed species
Strategic Weeds Initiative (Indicator C2)	Control pest plants on key areas of private land adjoining regional parkland to protect it from external weed threats
Regional Possum Control (Indicator C3)	Protect ecosystems in the Heritage Area by monitoring possum densities and undertaking contracted possum control where necessary
Regional Pest Animal Management	Protect ecosystems in the Heritage Area by undertaking contracted feral pig and other selected pest animal control; maintaining feral goat and deer exclusion programmes
Kauri Dieback Management (Indicator K1)	Prevent spread of kauri dieback disease by implementing phytosanitary measures, outreach and compliance programmes, and research and monitoring programmes
Te Henga Pest Plant Control	Remove key pest plants (willows, alligator weed, Mexican water lily etc) from the Te Henga wetland

Te Henga Pest Plant Control

The former Waitakere City Council and now Auckland Council have been working to control key pest plants in the Te Henga wetland area, specifically grey willow, crack willow, Mexican water lily and alligator weed. The programme had its genesis in willow control for flood protection but has | 66 expanded to include ecological protection. The programme involves targeted pest plant control, working with the wider local community to educate the value of the work, explain rules around notification of work on private and public property, and address concerns about the use of herbicides. In addition to achieving control of key pest plants at Te Henga, this project has also raised the profile of the wetland through the community interactions and pest work.

10.8.7 Indicator W6: Average native: exotic weed plant frequency in monitored wetlands

Summary

The exotic component of wetlands is a key component of wetland health, and indicators W3, W4 and W5 include all exotic plants in the exotic species group, irrespective of how weedy they are. Indicator W6 recognizes that some exotic plants have a much greater effect on indigenous wetland ecosystems than others. Populations of many different exotic herbs and grasses often take up space within a wetland that could be occupied by native herbs, grasses, and rushes. However, not all these exotic species are aggressively weedy. That is, they do not grow into large woody plants that are likely to grow quickly and/or suppress native plant species in lower tiers, or they do not form dense swards that spread and actively displace native wetland plants form the system. In contrast, the invasion of important wetland weeds species such as crack willow, grey willow, pampas, Mercer grass or reed sweet grass can have a much greater impact on the indigenous component of wetlands. These species are capable of completely altering the vegetation structure (e.g. in the case of willow turning a rushland into a forest) and/or displacing native plants by smothering and out-competing them. The definition of a 'weed' for the purposes of this indicator was any exotic plant species that is a known ecological weed species of wetland ecosystems. The data used for this indicator is from recently established plots and only baseline measures are available for this report. This baseline will be used to monitor future change. However, it is clear from comparing the averages for this indicator from different types of wetlands across the Auckland Region (Figure 18) that wetlands in the Heritage Area have a relatively low frequency of exotic wetland weed species.

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4. ***Local Area Plan Te henga (Bethells Beach) and the Waitakere River Valley (2015)*** *p.47 and Key Action 17.2:*

- **Te Henga Wetland weed control and willow control programmes.** These programmes led by Auckland Council aim to restore the quality of the wetland habitat for birds and fish and to preserve long term flood control in the valley. Work is carried out to control and eradicate environmental weeds, including alligator weed, Mexican water lily, reed sweetgrass, elephant grass, pampas, parrot's feather, royal fern, tradescantia and willow from the Te Henga Wetland and Waitākere River. For more information, contact Auckland Council.

Key actions	Who will lead? Who else may be involved? What funding may be available?	When could it start? (subject to resources being available)	Notes on implementation
17.2 Exercise stewardship of significant ecosystems, continuing practical work aimed at increasing the viability of existing habitats	Led by AC Biosecurity, Biodiversity and Water and Land Management units, AT, Watercare, DoC, Royal Forest and Bird Society, land owners and community groups **Regional and local operational funding, community resources**	Ongoing	• This is done by improving the safety of habitats (e.g. from predation), their health and resilience (e.g. improving habitat structure) and their connectivity (e.g. through extending or linking through ecological corridors). • Advocacy and/or funding of the Local Board to maintain or improve operational by AC, Watercare and AT including, but not restricted to: - aquatic habitat restoration programme (including pest fish and plant control) at Lake Wainamu - willow and other pest control in Te Henga wetland - pest animal and plant control at Te Henga Park and other parts of Te Henga (Bethells Beach) - pest plant control on the road reserve - animal and pest plant control in the Waitākere Ranges Regional Park, local reserves and Waitākere Quarry - planting with eco-sourced native species. • Implement measures to address water quality issues in Te Henga lagoon. This includes providing incentives for property owners to improve their septic systems and fence off riparian margins.

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5. ***Landcare ICM Report No. 2008-2009/01, Motueka Integrated Catchment Management Programme Report Series: Use of willows in stream bank control in New Zealand: a survey of regional councils,*** December 2008, https://icm.landcareresearch.co.nz/knowledgebase/publications/public/willows_survey_report_2008.pdf

   Page10 onward:

Willows as invaders of waterways and wetlands

Willows colonise river and stream beds by vegetative or sexual reproduction, with potentially severe environmental and biological effects through formation of dense stands of structurally unstable trees or shrubs with extensive, dense, root mats. Impacts include:

- modification of stream morphology, hydrology and stability, causing blockage/obstruction, avulsion, increased erosion and sedimentation and increased flooding.
- increased water-use in streams resulting from higher transpiration rates than indigenous vegetation.
- severe damage to infrastructure where willow debris obstructs stream channels during floods (e.g., loss of bridges and roads).
- alterations to ecological processes in streams (e.g., Lester et al., 1996; Collier 1993), including energy fluxes and nutrient cycling (timing, quality and consistency of organic matter inputs), water temperature modifications (through intense shading) and water quality via anoxic conditions produced (biological oxygen demand) during breakdown of the massed autumn leaf fall.
- dense shading by willow canopies alter (or decrease) primary production, impacting on higher order consumers such as invertebrates and fish.
- destruction of instream and streambank indigenous vegetation communities and dependent faunal communities by intense shading.
- destruction of significant flora and fauna species and populations of streams and streambeds.
- reduction in amenity values associated with streams, for example reduced access for fishing, canoeing and rafting on streams densely vegetated with willows.

Crack (*Salix fragilis*) and grey willow (*Salix cinerea*) are listed for inclusion in the Auckland Regional Council's 2007 to 2012 RPMS (ARC 2006) as 'surveillance' plant pests. Horizons Regional Council's proposed RPMS (Horizons 2006) lists grey willow as a 'containment' pest plant whilst crack willow is listed under Horizon's 'site-led programme'. In conjunction with DoC, Environment Waikato is seeking the ability to conduct control work on crack and grey willows in the region on an as needs basis. No landowner compliance rules/obligations are proposed. Environment Waikato are proposing that the crack willow is included in its RPMS as a 'containment' plant pest.

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6. Other national reports on willows in wetlands and/or willow control projects

1. Amaravathi, K K (2010) The role of crack willow in the wetland water balance, Moutere region, New Zealand https://ir.canterbury.ac.nz/items/da530602-4d0d-4fc9-8eab-0e6d9567af7a
2. CSIROS (2007) Removing willows can generate big water savings https://gwydirshire.com/wpcontent/uploads/2014/05/benefits%20of%20willow%20removal.pdf
3. NZ Landcare Trust (2015) Best Practice Guidelines for Willow and Alder Control for Riparian Restoration for the Waikato River https://landcare.org.nz/wp-content/uploads/2022/09/WillowAlder-Guidelines-2015.pdf
4. Otago Regional Council - Guidance on willow control https://www.orc.govt.nz/environment/land-care/landuse-in-otago/willow-management-in-otago/guidance-on-willow-control

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7. Letter of support from 104 Te Henga residents

Matuku Link

111 Bethells Road

Te Henga Bethells Beach

Auckland 0781

3 November 2025

Dear Matuku Link,

We the undersigned would like to express our support and thanks for your tireless efforts on behalf of the Te Henga environment and the wider community, and specifically for your ongoing efforts to remove crack willow from the wetlands. We believe that there is a clear need to remove the willows from the wetlands and we welcome the benefits that will come from their elimination.

We feel very fortunate to have Matuku Link within our community. As only 4.9% of the North Island's original wetland area still remains, Matuku Links' guardianship of the Te Henga wetland is crucial.

Unfortunately willow removal has become a controversial and divisive issue in our local community, and we acknowledge the stress that this must place on Matuku Link in striving to achieve its objectives.

We are aware that there is a plethora of misinformation regarding the herbicide glyphosate and its use; however we believe that there is scientifically credible evidence and a regulatory framework that supports its use in this context. This letter of support will not debate those issues until an appropriate time and forum when our wider expertise may be accessed in support of Matuku Link.

We also believe that the application methods used are the best practicable option for applying the spray. We hope that your funding will allow the remaining willows to be dealt with, and that we can then celebrate the improved health of our wonderful wetland.

Yours sincerely

(Signed by 104 members

of the Te Henga/Bethells Beach community)

8. *Report of Certificate of Compliance*

Report for a certificate of compliance application under section 139 of the Resource Management Act 1991 (RMA)

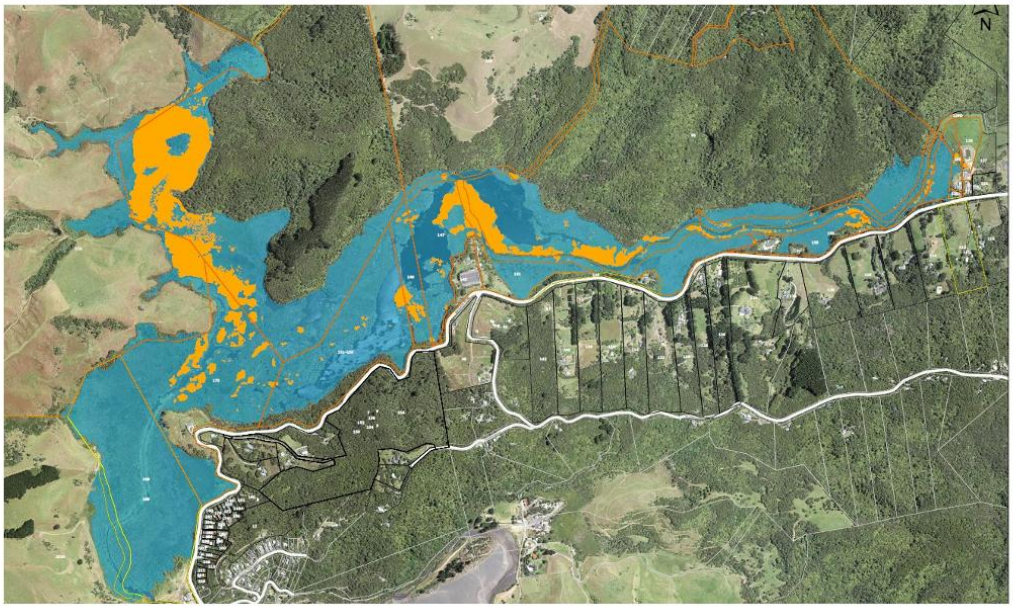
1. Application description

Application number:	CER70024867 (certificate of compliance)
Applicant:	Matuku Reserve Trust
Site address:	111 Bethells Road, Waitakere 0781
NZTM map reference:	1729891 5918177
Legal description:	Lot 5 DP 58486 - NA13B/1140
Area:	168.07 hectares
Auckland Unitary Plan (Operative in part)	
Zoning and precinct:	Rural - Rural Coastal Zone, Muriwai-Te Henga coastal area
Overlays, controls, special features, designations, etc:	Natural Resources: Significant Ecological Areas Overlay - SEA_T_6743, Terrestrial Natural Resources: Natural Stream Management Areas Overlay [rp] Natural Heritage: Outstanding Natural Landscapes Overlay [rcp/dp] - Area 73, Waitakere Ranges and coastline Natural Heritage: High Natural Character Overlay [rcp/dp] - AREA 34, Waitakere River Natural Heritage: Waitakere Ranges Heritage Area Overlay - Extent of Overlay Controls: Macroinvertebrate Community Index - Native Controls: Macroinvertebrate Community Index - Rural Designations: Airspace Restriction Designations - ID 4311, Defence purposes - protection of approach and departure paths (Whenuapai Air Base), Minister of Defence
Date application received:	4 December 2024

2. Locality Plan

The area of the Te Henga Wetland extends from 129 - 175 Bethells Road, Waitakere as shown on the aerial below.

Key:



Source: Auckland Council GIS

3. The proposed permitted activity

Proposal

The applicant proposes to undertake herbicide treatment via drone application, over a 3-year period, to control willow trees for biosecurity purposes over the Te Henga wetland.

The proposed works are necessary due to the invasive nature of willow species, their potential to damage/alter natural wetland environments, and the fact they are a known "pest" species.

The works include one round of herbicide application via target drone in the first year (approx. duration of 10 days), followed by two additional rounds in the following years depending on results and regrowth. It is anticipated that the work will be undertaken from December 2024 until March 2027

The works will take place in a dry weather window with adequate time to allow for soakage of applied herbicide through the targeted leaves/foliage.

The proposed herbicide is glyphosate which can be used in manner which avoids more than minor effects on aquatic life & native vegetation (targeted drone

application to foliage, low drift nozzles, dry weather window, certified preparation/handling of chemical, and addition of surfactant to increase adhesiveness of glyphosate to foliage).

Background

Te Henga is the largest freshwater wetland in the Auckland mainland and is situated on in the Te Henga Valley on the west coast and covers the lower sections of the Waitkere River and Mokoroa Stream.

At the end of August this year the Matuku Reserve Trust applied for written notice to undertake permitted natural inland wetland activities regulated by Part 3 Subpart 1 of the RMA (NES for Freshwater – Regulation 2020) to undertake herbicide treatment via drone application, over a 3-year period, to control willow trees for biosecurity purposes over the Te Henga wetland. The notice was issued 3 October 2024.

4. Reason for the application

The applicant has requested a certificate of compliance under the following rules for the activity described above:

Certificate of compliance (s139) – CER70024867

National Environmental Standard for Freshwater (NES-F) 2020

- The proposed restoration, wetland maintenance, and biosecurity of natural inland wetlands is a permitted activity as it meets the relevant standards as they relate to Regulations 38 and Regulation 55 of the NES-F.

Consideration of the application

5. Statutory considerations

Section 139 of the Resource Management Act 1991 (RMA) sets out the circumstances under which a consent authority may issue a certificate of compliance.

A certificate must be issued if the activity referred to in the application can be done lawfully in a particular location without a resource consent, and the applicant pays the appropriate administrative charge (section 139(6)).

Any certificate which is issued must describe the activity and the location, and state that the activity can be done lawfully in the particular location without a resource consent, as at the date on which the consent authority received the request (section 139(7)).

Under section 139(8), a consent authority must not issue a certificate if the request has been made after a proposed plan has been notified, and the activity referred to in the application could not be done lawfully in a particular location without a resource consent, under the proposed plan.

6. Analysis of plan provisions

The proposal has been described in the submitted application material. The information submitted by the applicant is considered against the permitted activity rules of the relevant regulations below.

Auckland Unitary Plan (Operative in part)

Provision / rule	Analysis / Conclusion
Regulation 38(1)	Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a permitted activity if it— (a) is for the purpose of natural inland wetland restoration, wetland maintenance, or biosecurity; and (b) complies with the conditions.
Regulation 38(4)	the activity must comply with the general conditions on natural inland wetland activities in regulation 55;
Regulation 55(2)	General conditions on natural inland wetland activities If this regulation applies in relation to a permitted activity, the 1 or more persons responsible for undertaking the activity must, at least 10 working days before starting the activity, provide the relevant regional council with the following information in writing: (a) a description of the activity to be undertaken; and (b) a description of, and map showing, where the activity will be undertaken; and (c) a statement of when the activity will start and when it is expected to end; and (d) a description of the extent of the activity; and (e) their contact details.

7. Conclusion

Overall, the applicant proposes to undertake herbicide treatment via drone application, over a 3-year period, to control willow trees for biosecurity purposes over the Te Henga wetland and this is able to occur as a permitted activity, and a certificate of compliance can be issued for this activity.

8. Recommendation

Under s139 of the RMA, I recommend that the Council issues a certificate of compliance as:

- The proposal complies with regulations 38 and 55 of the NES-F 2020.
- The applicant will confirm ongoing compliance, Matuku will need to provide evidence (some form of completion report) for each year the PA (Herbicide Application) is undertaken.

This report and recommendation prepared by:

Name:	Bonnie Collinson
Title:	Planner, Resource Consents
Signed:	
Date:	11th December 2024

Certificate of compliance issued under section 139 of the Resource Management Act 1991

Application number:	CER70024867
Applicant's name:	Matuku Reserve Trust
Site address:	111 Bethells Road, Waitakere 0781
Legal description:	Lot 5 DP 58486 - NA13B/1140
NZTM map reference:	1729891 5918177
Date application received:	4 December 2024

Proposal:

The applicant proposes to undertake herbicide treatment via drone application, over a 3-year period, to control willow trees for biosecurity purposes over the Te Henga wetland.

- The proposed works are necessary due to the invasive nature of willow species, their potential to damage/alter natural wetland environments, and the fact they are a known "pest" species.
- The works include one round of herbicide application via target drone in the first year (approx. duration of 10 days), followed by two additional rounds in the following years depending on results and regrowth. It is anticipated that the work will be undertaken from December 2024 until March 2027.
- The works will take place in a dry weather window with adequate time to allow for soakage of applied herbicide through the targeted leaves/foliage.
- The proposed herbicide is glyphosate which can be used in manner which avoids more than minor effects on aquatic life & native vegetation (targeted drone application to foliage, low drift nozzles, dry weather window, certified preparation/handling of chemical, and addition of surfactant to increase adhesiveness of glyphosate to foliage).

Decision
I have read the application, supporting documents, and the report and recommendations on the application for a certificate of compliance. I am satisfied that I have sufficient information to consider the matters required by the Resource Management Act 1991 (RMA) and make a decision under delegated authority on the application.

- The proposed restoration, wetland maintenance, and biosecurity of natural inland wetlands is a permitted activity as it meets the relevant standards as they relate to Regulations 38 and Regulation 55 of the NES-F.

Acting under delegated authority, I certify that the proposal described above and at the above location can be done lawfully without a resource consent as at 4 December 2024.

.

Advice notes

1. *This certificate is deemed to be a resource consent under section 139(10) of the Resource Management Act 1991 (RMA) and is issued subject to on-going compliance with the documents and drawings submitted with the application, detailed below, and all referenced by the council as consent number CER70024867.*

    - *Application form / application document prepared by Annalily van den Broeke of the Matuku Reserve Trust dated 4 December 2024.*
    - *Willow Control Aerial Maps*

2. *Section 125 of the RMA applies to this deemed resource consent (refer section 139(12)). Accordingly, this consent will expire five years after the date of the commencement of this deemed consent, unless, before the deemed consent lapses:*

    - *it is given effect to; or*
    - *an application is made to the council to extend the period of the deemed consent, and the council decides to grant an extension after taking into account the statutory considerations set out in section 125(1A)(b) of the RMA.*

2. *The holder of this certificate is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.*

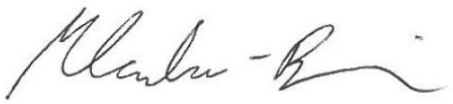
3. *The applicant must confirm ongoing compliance, Matuku will need to provide evidence (some form of completion report) for each year the PA (Herbicide Application) is undertaken.*

Delegated decision maker:

Name: Matt Parker-Bevin

Title: Senior Planner, Resource Consents

Signed:



Date: 11th December 2024

9. *Permitted activity notice granted*

From: Lauren Folwell <lauren.folwell@aucklandcouncil.govt.nz>
Sent: Tuesday, October 1, 2024 2:48 PM
To: Rowena Gilchrist <Rowena.Gilchrist@aucklandcouncil.govt.nz>
Cc: Laura Scaife <laura.scaife@aucklandcouncil.govt.nz>
Subject: RE: Permitted Activity Notification PLUC70024452

Kia ora Rowena,

Thanks for sending through the additional information!

I have reviewed the application and confirm that the works in Te Henga Wetland can proceed as a Permitted Activity under the NES-F 2020 as they are in general accordance with Regulations 38 and 55 of the NES-F.

I note the following:

- The proposed works are necessary due to the invasive nature of willow species, their potential to damage/alter natural wetland environments, and the fact they are a known "pest" species.
- The works include one round of herbicide application via target drone in the first year (approx. duration of 10 days), followed by two additional rounds in the following years depending on results and regrowth
- The works will take place in a dry weather window with adequate time to allow for soakage of applied herbicide through the targeted leaves/foliage.
- The proposed herbicide is glyphosate which can be used in manner which avoids more than minor effects on aquatic life & native vegetation (targeted drone application to foliage, low drift nozzles, dry weather window, certified preparation/handling of chemical, and addition of surfactant to increase adhesiveness of glyphosate to foliage).

Please let me know if you have any questions.

Ngā mihi
Lauren Folwell *(she/her)* **| Earthworks & Streamworks Monitoring Officer**
Environmental Monitoring Unit | Te aroturuki i te ū ki ngā ture tiaki taiao
Licensing and Compliance Department | Te wāhanga mō te Tuku Raihana me te ū ki ngā Ture
Community Directorate | Te kāhui o te tari ā-hapori
M: 0272568208
Auckland Council, 135 Albert Street
Visit our website: Resource consent conditions and monitoring (aucklandcouncil.govt.nz)

10. Breeding Australasian Bittern – Statement.

23-1-2026

This is an expert witness statement from Peter Langland's WildCapture Research.

I've been a bittern specialist for 20 years now, working for the Department of Conservation as a private consultant and an advocate for Bittern conservation in Aotearoa. In summary, the main bitterns breeding season is from September to mid February, and the timing within that is that eggs are laid from September through to December, with a peak in late October early November and a peak fledgling time from early December to mid February, with juvenile bittern fully fledged, dispersed in all breeding areas by early March.

There are occasional outlier breeding attempts, but analysis of 225 breeding attempts of Australasian Bittern in New Zealand dating from historical records through to the 2025 season, shows a normal distribution. Ranging of eggs laid from September late September to mid December, with the normal distribution being focused on the October November period. Further details and references can be supplied to support this statement if required.

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11. Dr Aileen Sweeney – Inanga spawning statement

BSc PhD Ecology

26-1-2026

I am an ecologist who has spent the last 4 years working primarily with freshwater species around the Auckland region. In my opinion, the spraying of willows in Te Henga will have had a very minimal impact on the whitebait population for the following reasons:

4. Location - spraying occurred upstream from inanga spawning site, and downstream on any other whitebait species spawning sites.
5. Time of year - spraying occurred outside of whitebait spawning season (this happens in Autumn) AND outside of whitebait returning to freshwater from the ocean (this happens in Spring).
6. Dilution levels: the minimal amount of foliage spray will be highly diluted in the large body of water as spawning site is downstream from the confluence of the Waitākere River with Waitī Stream.

More information upon request.

Dr Aileen Sweeney BSc PhD