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# Briefing into golden clam incursion in the Waikato

Report of the Environment Committee

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Hon Eugenie Sage  
Chairperson

## Briefing into golden clam incursion in the Waikato

### Recommendation

The Environment Committee has considered a briefing on an incursion of golden clams in the Waikato River, and recommends to the Government that it gives urgent consideration to developing a national surveillance system and increasing the resources devoted to management and control of golden clams. Further, we recommend that MPI review and improve communication to partners and stakeholders in light of the criticism of stakeholders and reviews its decision-making process around eradication as an option and shares this with partners and stakeholders.

### About this briefing

We initiated this briefing on an incursion of golden clams in the Waikato when we heard concerns about the way that communication was managed when the species was initially discovered in the Waikato River. We invited Manatū Ahu Matua—Ministry for Primary Industries (MPI) and their biosecurity team to brief us about the golden clam species, and what is being done in response to the incursion. We also invited the Waikato Regional Council, the Waikato River Authority, and Mercury New Zealand to make comments about the management of the incursion.

### Background about golden clams

The Asian gold clam (golden clam)—*Corbicula Fluminea*—is a species of freshwater mussel that is native to eastern Asia. It is an invasive species that can produce up to 70,000 offspring each year and reach densities of tens of thousands per square metre. Golden clams create issues in the waterbodies they occupy as they out-compete native species for space and food (phytoplankton). The clams also create problems by blocking water intake and outfall pipes of industries that use the waterways, such as water treatment facilities and electricity generators. The golden clam species has been spreading from eastern Asia to parts of North and South America since the 1920s. Despite international efforts, no country has achieved total eradication.

## Comments from the Ministry for Primary Industries

### Process since discovery

In April 2023, freshwater researchers discovered the shells of unknown molluscs in the Waikato River near Lake Karāpiro. Biosecurity New Zealand told us that it was notified of this in May 2023 and confirmed that this was the golden clam species through DNA testing. Following this, initial surveillance was undertaken to determine whether the clams had spread through the Waikato River. Major partners and stakeholders of the river, including iwi and councils, were advised of the species' incursion, and discussions began on the methodology and scope of a surveillance programme.

MPI told us that it has established a three-tier response to assess the spread and threat of the species:

- Phase one—Extended surveillance
  - investigation to establish the scale of the problem
  - survey Waikato River and Lake Taupō to determine the spread and density of the clams
  - survey conducted by National Institute of Water and Atmospheric Research to provide information on distribution, density, and habitat data in the Waikato River
- Phase two—Surveillance of Waikato River tributaries
  - mapping of potential boat movements from the Waikato River to other waterways
  - survey tributaries to the Waikato River
- Phase three—National surveillance
  - develop eDNA (environmental DNA) testing capabilities so waterways across the country can be rapidly screened for the presence of the clam.<sup>1</sup>

We were told that MPI is developing a technical advisory group consisting of scientists and mātauranga Māori experts to provide advice on potential approaches to managing the incursion. MPI has also established a communications engagement group consisting of key partners and stakeholders to promote communications about the species to target audiences that use the waterways.

### **Establishment of the species**

The clams were initially found around Bob's Landing, near Lake Karāpiro. Biosecurity New Zealand is unsure as to how the species got established in the Waikato River. We were told that the spread possibly occurred through the transportation of larvae from ballast water in ships.

Phase one surveying found the clams in further sites about 1.5 kilometres upstream from where they were discovered. We were told that many of the clams found measured up to 3 centimetres, the size of an adult clam. This indicates that the species has been living in the Waikato River for 2 to 3 years.

We expressed concern about how the Waikato River is monitored, given that the presence of the clam had not been detected until recently. We were told that the Waikato Regional Council runs monitoring programmes to test water quality. However, detecting the clam would have required the use of eDNA testing, which has not yet been deployed in the Waikato. We asked whether MPI agrees that the undetected establishment of the species in the Waikato shows a gap in New Zealand's biosecurity system. MPI told us that determining the pathways through which the clam may have entered New Zealand's waterways will show whether there are gaps in the system. It emphasised that New Zealand has some of the world's strictest biosecurity measures, and all boats and kayaks that enter the country are

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<sup>1</sup> eDNA are the traces of genetic material that are left behind when living organisms pass through water or soil.

inspected. However, the clam's larvae are microscopic, and it could only take a small amount of moist material to transport them into New Zealand.

### **Communication to targeted audiences**

We were interested in the approach that the communications engagement group is taking to educate both the users of the waterways, and the general public. We heard that the immediate focus is to communicate the issue to the Waikato River users, stakeholders, and councils. The communications group has engaged with various water sports clubs using the river to spread this messaging. We were also told that the Waikato Regional Council has reached out to groups such as earthworks contractors, surface water consent holders, and registered jet-ski owners to spread the messaging. MPI told us that the communications group is now focusing on developing a long-term campaign that will consider tailored messaging for the different types of audiences.

We were told that “check, clean, dry” is the key messaging campaign that the communications group is pushing to users of the waterways. This message encourages users to:

- check their equipment for plant or shell debris and remove it on site
- clean their equipment with water and cleaning solution
- dry their equipment thoroughly before moving to another waterway.

The “check, clean, dry” campaign was introduced in 2007 to prevent the spread of *Didymo*, an invasive algae. MPI told us that this messaging technique has been effective and is particularly important to prevent the spread of the clam, as the larvae could be easily transported by wet equipment being used in different waterways.

Lake Karāpiro is a popular area for water sports such as wakeboarding and rowing. We expressed concern that the popularity of the lake could increase the risk of spread across the country, particularly during events such as Waka Ama. MPI told us that users of the lake have been receptive to engagement and education about preventing the spread of the clam, and events have communicated the “check, clean, dry” message to their participants. We were told that MPI will continue to look into how events on the lake could still be accommodated while minimising the risk of spreading the species. We asked MPI whether it could be too late to contain the spread from Lake Karāpiro, given that it has already been in the river for three years. We were told that national surveillance and monitoring of waterways will determine whether this is the case.

### **Assessing the impact of the species**

We were interested in what stakeholders have raised as their main concerns about the presence of the clam in the Waikato River, and how the clam threatens the river's biodiversity. MPI told us that it heard a range of cultural, economic, social, and environmental concerns from stakeholders. We heard that MPI is currently focused on its operational response, but it is aware that there could be significant economic effects for electricity generators and water authorities, as well as social and cultural effects for river iwi. MPI is still assessing the full range of effects that the species could have on the Waikato River, and nationally. We heard that the most significant concern in terms of biodiversity is

the effect that the clam could have on the native mussel in the Waikato River, as the clams could outcompete native species for space and nutrients in the river.

### **Managing or eradicating the clams**

We heard that the clam's ability to grow and reproduce quickly creates a significant challenge for eradicating the species. MPI is currently seeking advice from the technical advisory group to develop tools to manage and prevent the spread of the clams. MPI told us that other countries have used the following methods to manage the species:

- smothering the clams by putting mats on the river/lake beds
- physical removal of the clams by suction dredging
- killing by exposure to heat or ice
- killing using encapsulated toxins.<sup>2</sup>

MPI noted that none of these methods have completely removed the clam populations and they all have knock-on effects on the environment. We were told that MPI will not decide on the management approach it will take until surveillance is complete. We were interested in what tools are currently available in New Zealand to manage the species, and whether there are any budgetary constraints to using them. MPI told us it is considering the option of suction dredging, which would be easy to operationalise, but it needs to consider the effect this could have on the benthic environment in the river's depths. It noted that there are no budgetary constraints to doing this.

### **Comments from Waikato River agencies and stakeholders**

We heard from the Waikato Regional Council, the Waikato River Authority, and Mercury New Zealand Limited about their concerns regarding the management of the incursion in the Waikato River. These agencies maintain that MPI's communication with key stakeholders has been insufficient. They said that MPI has taken a siloed approach to communications and that stakeholders have often heard updates about the incursion from other stakeholders before they heard it from MPI. The Waikato River Authority emphasised that the Waikato River partners have established a collaborative relationship, which could have been used advantageously. We also heard from the agencies that MPI had initially asked them to keep the information confidential. Concern was expressed about the time lost for a potential response during this process, as stakeholders were unable to inform their staff and counterparts about the issue.

Stakeholders also expressed frustration at how MPI has responded to the issue so far, informing us that they sense a "lack of haste". The stakeholders compared MPI's response to the golden clam incursion with the response to the *Mycoplasma bovis* outbreak. We heard that the *Mycoplasma bovis* response had been immediate; the Waikato Regional Council said that its staff had been well informed and prepared to respond to the situation. The council said that while it has assisted with MPI's response to the incursion—by putting up

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<sup>2</sup> The use of this method is limited, due to the potential impact to other species in the waterway and the volume required to treat large waterways.

signs and training mana whenua on how to do eDNA testing—its team has not been as embedded in the response as it was during the *Mycoplasma bovis* outbreak.

Stakeholders that we heard from expressed the view that if the incursion of golden clams in the Waikato River affected New Zealand’s primary industries, rather than biosecurity and infrastructure, there would be a more urgent response to the issue.

Stakeholders emphasised that while putting up “check, clean, dry” signage is a step towards educating the public, it will not prevent the spread to Lake Taupō without staffing to encourage the process, and cleaning stations at boat ramps. Stakeholders were pleased with MPI’s recent decision to declare the golden clam to be an unwanted organism.<sup>3</sup> However, they emphasised that the option of trying for eradication should not be overlooked simply because other countries have not successfully done so.

We asked the Waikato Regional Council how it thought the public might respond to stronger restrictions to prevent the spread of the species. We heard that stakeholders will accept the challenges that come with restrictions. However, the council noted that MPI would need to improve its communication to the public about the risk the species poses if such restrictions were to be implemented.

### **Waikato River Authority**

We asked the Waikato River Authority (WRA) how customary rights of hapū and iwi could be affected by the threat of golden clams, and whether they are concerned that the clam’s threat to customary harvests could erode property rights that Māori are entitled to. We were told that the WRA is working with MPI to determine the effect that the clams will have on the ecology of the river. So far, this has shown that changes to the habitat of species that are native to the river will be affected by a long-term incursion. The WRA told us that it is still determining whether this could be avoidable.

Following our hearing, the WRA informed us that the Waikato and Waipa iwi had recently undertaken an experimental control test harvest of golden clams in a 100-metre stretch of the river at Bob’s Landing. We were told that this harvest collected 125 kilograms of clams in that area. The WRA said this was disappointing for the iwi, and they believe the extensive distribution in this area is only “the tip of the iceberg”.

### **Waikato Regional Council**

The Waikato Regional Council (WRC) was particularly concerned that the clams may have been present in the river for up to three years. It noted that the Aquatic Weed Risk Assessment Model and the Fish Risk Assessment Model were established to determine the ecological risk of introducing new species of aquatic weed and fish into New Zealand. The WRC believes that a third risk assessment model needs to be established to measure the potential risks of introduced aquatic invertebrates. We were told that with the use of this model and frequent eDNA testing, it would be more likely that populations of invasive species could be detected earlier in waterways. We heard that the WRC strongly supports the development of a national surveillance system for high-risk species that would threaten

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<sup>3</sup> This means that it is an offence under the Biosecurity Act 1993 to knowingly move or spread the species or water that may contain it.

New Zealand's biodiversity. This system could use an aquatic invertebrate risk assessment model to determine high-risk species and establish nationwide surveillance of waterways.

The WRC also emphasised the need for a national pathway management plan for golden clams. National pathway management plans can introduce rules under the Biosecurity Act that manage the spread of the species, such as creating a requirement to thoroughly clean a boat when it is leaving a site contaminated with golden clams. The WRC encourages MPI to support work on this urgently, as it would be a useful mechanism to contain the spread of the species.

### **Mercury New Zealand Limited**

Mercury New Zealand Limited told us that the Waikato hydro system accounts for approximately 10 percent of New Zealand's electricity generation. As noted earlier, the incursion of golden clams is a threat to New Zealand's electricity infrastructure as the clams have the potential to block water intakes and outfalls.

We were interested in the financial effect the spread of golden clams would have on Mercury's electricity generators. Mercury told us that while it would be unlikely for golden clams to block a generator's penstocks,<sup>4</sup> it is likely that the clams could travel as larvae into the cooling pipes of the power station. Once in the cooling pipes, the clams would grow and block these pipes. We were informed that these are usually cleaned every four years. However, if clams were to flow into the pipes they would have to be cleaned more frequently, creating more outages for the plant and increasing maintenance costs. Mercury told us that it has already found clams in its filters. While they have not yet caused clogging issues, the problem will grow if the population spreads. Mercury encourages MPI to consider attempting eradication and noted that it is prepared for the challenges that this may create.

### **Our response to the concerns raised**

The incursion of golden clams in the Waikato River poses a great threat to the environment, the biodiversity of the Waikato River, and critical infrastructure. We are concerned that if this issue is not dealt with urgently, and more resources directed to surveillance and control, the species could spread and pose a significant threat to New Zealand's freshwater ecosystems and infrastructure.

We share submitters' concerns that MPI's response to the incursion has lacked urgency, that there is no national surveillance strategy, that it appears MPI has prematurely eliminated the option of eradication, and that the ministry's communication with stakeholders has been sub-optimal.

### **Eradication as an option**

We agree with stakeholders that the option of eradication should not be overlooked. We note that, in other cases such as the spread of *Caulerpa Brachypus* in Great Barrier Island, public pressure has encouraged eradication measures to be taken. We believe that the threat this clam poses warrants similar measures. We appreciate that total eradication has not been achieved in other countries, but we believe this should not be a reason to disregard the

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<sup>4</sup> Penstocks are pipes or long channels that carry water from a reservoir to turbines within the power station.

option. It is beyond the mandate of this committee to adopt a view of whether this is the right option. But from the information we have received, it is not clear to the committee whether MPI has taken an appropriately deliberative and evidence-based decision to reject eradication.

### **Need for a national surveillance strategy**

We are concerned to hear that the golden clam had not been detected in the river until recently, despite its already large population. We agree with the WRC's recommendation to implement a national surveillance strategy. Such a strategy would help to detect the incursion of the clam in other parts of the country at an early stage and allow for a faster response to future incursions of high-risk aquatic invertebrates. Having the ability to respond before a species has an established population would increase the chance of being able to eradicate the invasive species.

We consider that it was not clear from the information presented if and when a surveillance strategy would be prepared. Along with a national surveillance strategy, we agree that a national pathway management plan is required to prevent the golden clam from further spread across the country. We appreciate stakeholders' willingness to deal with the restrictions on river use that a pathway management plan would entail. We note that, at the time of our hearing, MPI had started discussions on the scope of a surveillance plan. However, we urge it to take more immediate action to implement this response, given the threat that the clam poses to New Zealand. Implementing a national surveillance strategy would be a preventative response that would provide a long-term benefit to New Zealand's biodiversity.

### **Poor communication to partners and stakeholders**

We are disappointed in the poor experience that stakeholders feel they have had in receiving communications from MPI and the poor process that has been taken so far to manage the incursion. We expressed concern to MPI that members of Parliament in the Waikato electorate were never alerted to the discovery, and that some senior officials in councils were only alerted to it on the day that MPI informed the public of the incursion. We were also concerned to hear about the non-disclosure agreements that members of the governance team were required to sign when told about the incursion of the golden clam. We believe that this process was not necessary and may have wasted valuable time in MPI's response. We question whether it was appropriate for MPI to require non-disclosure agreements from its partners in the context of a biosecurity incursion.

Containing the species in the Waikato River will rely on the public and stakeholders doing their part in preventing the spread, and transparent communication with both groups is a key factor to encourage this. The siloed approach that MPI has taken during this process fails to take advantage of the collaborative relationship that had previously been established between the river partners. We encourage MPI to take steps to improve its communication to stakeholders to ensure that all stakeholders are up to date with the developing situation in the Waikato River. Implementing an effective communications process will prevent future delays and improve the trust that river partners have in MPI's response. We consider that there needs to be a timeline to urgently develop a plan to manage events occurring on Lake Karāpiro because of the potential for users to spread golden clams.



We thank MPI, the Waikato Regional Council, the Waikato River Authority, and Mercury New Zealand Limited for their helpful contributions to this discussion. We appreciate the efforts that have been taken so far to contain the species. We encourage MPI to consider our recommendations and take an urgent approach to eradicating this species.

## Appendix

### Committee procedure

We met between 4 June and 24 August 2023 to consider this briefing. We heard evidence from the Ministry for Primary Industries, Waikato River Authority, Waikato Regional Council, and Mercury New Zealand Limited.

### Committee members

Hon Eugenie Sage (Chairperson)  
Tāmami Coffey  
Simon Court  
Barbara Kuriger  
Hon Stuart Nash  
Hon Scott Simpson  
Lemauga Lydia Sosene  
Hon Phil Twyford  
Angie Warren-Clark

### Advice and evidence received

We received the following documents as advice and evidence for this briefing. They are available on the Parliament website, [www.parliament.nz](http://www.parliament.nz), along with a transcript of our hearing.

The recordings of our hearing can be accessed online at the following links:

- [Hearing of evidence 8 June 2023](#)
- [Hearing of evidence 10 August 2023.](#)