

Date: Thursday 10 April 2025
Time: 10.00am
Meeting Room: Reception Lounge
Venue: Auckland Town Hall
301-305 Queen Street
Auckland

Te Komiti mō te Kaupapa Here me te Whakamahere / Policy and Planning Committee

OPEN ATTACHMENTS

ADDITIONAL ATTACHMENTS
UNDER SEPARATE COVER

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Date: 11 March 2025

Item 17

Memorandum

To: Policy and Planning Committee and all local board members.

Subject: Update on exotic caulerpa response

From: Phil Brown – Head of Natural Environment Delivery, Environmental Services

Contact information: Taylor Farrell – Senior Advisor
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Purpose

1. To provide an update on recent developments in the national and regional exotic caulerpa response.

Summary

2. Two species of exotic caulerpa seaweed are known to be present in five areas of the Auckland region: off the coasts of Aotea / Great Barrier, Waiheke, Kawau, Mokohinau and Rakino. It is also present elsewhere in the Hauraki Gulf, off northwest Coromandel and Great Mercury Island/Ahuahu, and in the Bay of Islands.
3. Exotic caulerpa is likely to cause significant impacts on marine ecosystems and harvested seafood species. Exotic caulerpa spreads on boat anchors or other equipment and as fragments drift on currents. It is extremely challenging to control.
4. Regular updates on this incursion have been provided to the Policy and Planning Committee, most recently in [August 2024](#). This memo provides a further update on the caulerpa response, including surveillance, control and community outreach.
5. The Ministry for Primary Industries (MPI) has recently allocated an additional \$13 million of funding for actions to combat exotic caulerpa. Much of this funding will go towards developing tools, research, and communications. Auckland Council is delivering around \$590,000 of work on MPI's behalf.
6. Auckland Council has supported the development of an indicative business case for fighting exotic caulerpa. This was initiated by Ngāti Pāoa, as part of a consortium with other iwi, and intends to build a financial case for increased government and private sector investment in the caulerpa response. The fighting invasive caulerpa indicative business case was sent by Ngāti Pāoa Iwi Trust to the Ministers of Biosecurity, Environment and Conservation on 12 December 2024.
7. A central concept in the indicative business case is a national pathway management plan to improve consistency in marine biosecurity requirements between regions. The Minister of Biosecurity is considering the Clean Hull Plan developed by northern regional councils alongside the caulerpa indicative business case.
8. Auckland Council is undertaking a range of advocacy activities, including marine biosecurity ambassadors at popular boating locations around the region during summer, supported by mana whenua on Aotea / Great Barrier and Waiheke.

Page 1

Attachment B



9. A recent investigation by MPI showed that there are areas of significant caulerpa biomass reduction, especially in soft substrate/sandy bays. However, caulerpa does still cling onto rocky reefs in these areas of dieback. Further research as to the cause of the caulerpa dieback is required. NIWA have completed some early investigative work on this and a report is expected.
10. A new exotic caulerpa Controlled Area Notice (CAN) on and around Onetangi Bay, Waiheke, was introduced by MPI on 16 December 2024. This restricts fishing to methods that do not disturb the seafloor. Anchoring is permitted in this area, with boaties required to check and clean their anchors and chains.
11. Auckland Council is procuring bookable moorings at Aotea / Great Barrier to counter the impact of the CAN on visiting boaties and the local island economy.
12. Further updates will be provided to elected members as new information becomes available.

Context

13. The invasive seaweeds known as exotic caulerpa are a serious threat to marine ecosystems and species, including recreationally and commercially important species like scallops.
14. Exotic caulerpa was originally detected at Aotea / Great Barrier Island in 2021 and is now known at multiple other sites in the Auckland part of the Hauraki Gulf. It is likely elsewhere in the Hauraki Gulf in as-yet undetected populations. It is also established in the Bay of Islands, north-west Coromandel and at Ahuahu / Great Mercury Island.
15. Regular updates on exotic caulerpa have been provided to the Policy and Planning Committee since July 2023, with the most recent in [August 2024](#). This memo provides a further update.
16. The exotic caulerpa response is being led by the Ministry for Primary Industries (MPI) and delivered by multiple agencies, iwi and groups across several sites and regions. Response activities are changing swiftly, consequently this is not an exhaustive update, and some information may be out of date by the time this update is sent.
17. In February 2024, central government announced \$5 million in funding for the first phase of an exotic caulerpa accelerated programme. This funded a multi-project accelerated programme which included three projects in the Auckland region. Two of these projects were delivered by council – suction dredging of Aotea and development of a Community Caulerpa Viewer Surveillance Map. The third project, at Iris Shoal, Kawau Island, used a suction dredge and portable vacuum device to remove exotic caulerpa from 1.27 hectares.
18. In August 2024, the Minister for Biosecurity announced a further \$10 million (subsequently increased to \$13 million) funding injection to finance the ongoing development and testing of techniques to remove exotic caulerpa; campaigns to educate people on how they can avoid spreading caulerpa; support for community coordination; research to further understand the impacts of the pest; and targeted surveillance using tools developed in the first phase of the programme.
19. The Long-term Plan 2024-2034 (LTP) contains \$200,000 in funding to support exotic caulerpa surveillance in the Hauraki Gulf; advocacy and engagement to raise awareness; support for incursion responses by mana whenua and communities impacted by caulerpa in their rohe / localised areas; deployment of tools to respond to incursions where appropriate; and capability and capacity-building for mana whenua. This is in addition to other complimentary marine biosecurity activities council is delivering,



20. MPI has established an Exotic Caulerpa National Advisory Group (ECNAG). Auckland Council is represented on the group, which is made up of mana whenua representatives, MPI, the Department of Conservation, regional councils and the recreational and commercial fishing industries.
21. The ECNAG is developing a new national long term management strategy. It will also guide the prioritisation of central government funding. The strategy is likely to be completed in early 2025.

Discussion

Caulerpa infestation developments

22. An extension to the range of exotic caulerpa has been confirmed at Kawau Island with small, sparse patches identified at Bostaquet Bay at the south end of Kawau. A 'New Detection Team' consisting of Auckland Council, Ngāti Manuhiri and MPI has been established to develop a plan of action. This is in addition to the large but sparse infestation that was identified at Iris Shoal off the northwest of Kawau Island in July 2023.
23. A further new detection has also now been confirmed near Oneroa Beach at Waiheke Island – a small patch near Hakimango Point, less than 0.5m². It was removed by council-contracted divers. They also conducted a further search for caulerpa (up to eight metres from the detection point) and did not find any more but noted that a couple of small caulerpa plant remnants still remain in the area.
24. Following multiple reports of a reduction in exotic caulerpa cover at several locations in the Hauraki Gulf, MPI commissioned NIWA to determine the extent of this and the potential cause. Monitoring work was undertaken at Waiheke and at a number of locations at Aotea.
25. NIWA's preliminary report shows that there have been large reductions in the cover of exotic caulerpa at some sites, notably in Onetangi Bay, Waiheke Island and Okupu Blind Bay at Aotea. The biggest areas of decline have occurred in exotic caulerpa on soft sediment or sandy seabed. However, it is still present in large amounts in rocky and intertidal areas and in deeper waters.
26. MPI and scientists are cautious about interpreting these results and need more research to understand the significance of the decline and what has caused it such as environmental factors or reproductive cycles. A report is due from NIWA soon.
27. A new exotic caulerpa [Controlled Area Notice \(CAN\)](#) at Waiheke's Onetangi beach area was introduced by MPI on 16 December 2024. This restricts fishing to methods that do not disturb the sea floor, but allows anchoring in this area, with boaties required to check and clean their anchors and chains. This aligns with the existing rahui. See Figure 1 below.



Figure 1. Waiheke Controlled Area Notice Zone map



28. The existing CAN remains at Aotea / Great Barrier. Gazetted in 2021, this bans fishing and anchoring on much of the west coast of Aotea from Cape Barrier in the south, up the entire western coastline to the southern edge of Port Abercrombie and restricts safe harbour anchoring to Port Fitzroy only.
29. Council is working to install 10 - 13 bookable short stay boat moorings at three locations in Tryphena and Whangaparapara harbours at Aotea. This is to counter the economic impact of the extended CAN, which has locked off much of the island from boaties for the last three years. This initiative has come from both Ngāti Rehua Ngāti Wai ki Aotea Trust, the Aotea Caulerpa Response Team, and the Aotea / Great Barrier Local Board, and is jointly funded by MPI and the local board. A cross-council team have collaborated to assist in the timely procurement and installation of this facility. A booking system will be used to allocate the moorings for short stays for the duration of the CAN.
30. On-water ambassadors have been engaged on Aotea and Waiheke to educate boaties about the CAN rules. The ambassadors have been funded by MPI and are run through Auckland Council agreements with mana whenua in both locations.
31. MPI is currently investing in several new projects to further develop and refine tools for treating caulerpa infestation sites, particularly on a larger scale. These include refining a mechanical suction dredge tool, an expanded UV-C light array and a chlorine dispensing device.

Fighting Invasive Caulerpa Indicative Business Case

32. Ngāti Pāoa Iwi Trust have led the development of an indicative business case for exotic caulerpa management. This was sent to the Minister for Biosecurity, Minister for the Environment and Minister of Conservation on 12 December 2024.
33. The indicative business case was developed by iwi in the Pou Rāhui Project (Ngāti Pāoa, Ngāi Tai ki Tāmaki, Ngāti Hei and Ngāti Tamaterā) in collaboration with local authorities (Northland Regional Council, Auckland Council and Waikato Regional Council), with support from the Thames-Coromandel District Council and Hauraki District Council.
34. The indicative business case was written by consultants MartinJenkins. It was developed through a series of workshops involving the above parties and marine scientists, but with minimal input from MPI or the Department of Conservation. Council staff participated in these workshops.
35. The indicative business case shows that substantial investment would be required to limit the spread of caulerpa, to eliminate infestations where practical and to reduce the density of those infestations that are too big or complex to eliminate. See Attachment A - *Fighting Invasive Caulerpa Indicative Business Case* summary.
36. The indicative business case identified and valued the environmental, recreational and economic impacts of exotic caulerpa, and costed five options to address the threat.
37. Two preferred options were recommended by the consultant which provide a strengthened marine biosecurity framework from which the exotic caulerpa response could be co-ordinated and scaled up. It features a national pathway management plan, rapid detection and local elimination of new outbreaks, innovation focusing on new technology, and a coordinated science strategy with proposed benefits for the environment, tino rangātiratanga for mana whenua, economic resilience of marine-based industries and recreational values.
38. For the preferred options, the associated costs (net present value) are between \$30.8 and \$43 million per year over the first five years. The investment return is calculated at 7.0 or 6.1 (respectively).



39. The indicative business case proposes a multi-pronged funding strategy through a mix of funding from Crown, regional councils, philanthropic organisations and a levy on users and beneficiaries of the marine environment. Auckland Council has made no further financial commitment and any significant increase in our funding commitment would need to be addressed through an Annual Plan or LTP process.
40. Auckland Council (and other authorities) have supported the indicative business case by providing staff time, technical information and input to inform the analysis. Auckland Council has also provided \$100,000 in funding to Ngāti Pāoa to support the development of the indicative business case. The cost-benefit analysis completed through the indicative business case will be used by Auckland Council staff to help inform future advice to decision makers about invasive caulerpa and will also be useful information for the review of the Auckland Regional Pest Management Plan.
41. In coming months there is likely to be an opportunity to engage with government and other regional councils, and for elected members to receive further advice about any possible next steps associated with the indicative business case and the biosecurity management response to exotic caulerpa.

The Clean Hull Plan

42. Following on from the indicative business case, consultants have developed an outline of the Clean Hull Plan as the logical next step to address the country's marine biosecurity challenges (see Attachment B). This topic was presented to the Environment and Climate Change Committee in 2020 (resolution [ECC/2020/17](#).)
43. The proposed plan has been developed by the regional councils of the upper North Island over the last 10 years, with much consultation in the last six years. This has included analysis of the impacts and cost benefit analyses to develop a common set of requirements and practices for consistent marine biosecurity between regions. It addresses the many facets of a successful biosecurity approach, including regulatory standards, compliance and enforcement, behaviours / attitudes, surveillance, information management, intelligence and research in an integrated and consistent manner. This approach is central to the Better Business Case for caulerpa.
44. Implementing a Clean Hull Plan might cost in the order of \$5 million/year across the northern North Island. Councils are already contributing a significant proportion of this through their marine biosecurity programmes but would likely need to invest more to meet the requirements of the plan. A recent survey of recreational boat owners found most recreational vessel owners are willing to contribute to the costs of keeping hulls reasonably clean ([McCarthy et al, 2024](#)). The proposal suggests 60 per cent of the annual cost of implementation could be met by charging recreational boat owners \$200/year. The levy would be on top of the additional costs to meet these new requirements, which is estimated at \$1,500-\$1,900/year per recreational vessel.
45. The Clean Hull Plan is being considered by the Minister of Biosecurity. Staff from the 'Top of the North' councils have proposed that the plan is made available for public consultation followed by adoption of the plan to create appropriate rules. Staff will bring any significant developments back to members for consideration.

Auckland Council exotic caulerpa programme

46. Auckland Council has undertaken surveillance of high risk/high value sites around the region to ensure caulerpa and other marine pests have not arrived in new locations. With support from Ports of Auckland (POA), council surveyed the SailGP spectator fleet anchor zone for exotic caulerpa. The Rangitoto Channel and commercial ship anchor zones were also surveyed. No caulerpa was found in any of these locations. POA intends to dredge the channel early this year.



- 47. Summer 2024/25 has an expanded programme of biosecurity champions on mainland as well as Aotea / Great Barrier and Waiheke. Eighteen ambassadors are positioned at key boat departure points, ramps and marinas around the city, and more will be on the water at Aotea and Waiheke, to educate boaties on how they can help reduce the risk of spreading exotic caulerpa through human mediated activities, such as on anchors or fishing. This is part-funded by MPI and is part of the campaign to reach boaties, including major events such as SailGP, Moana Auckland and boat shows.
- 48. Reports of beach-cast exotic caulerpa led to the initial detection on Aotea, as well as the subsequent major detection at the Bay of Islands. We are seeking reports from those who frequent beaches in Auckland to help identify any new sites of infestation. Council's SafeSwim signage at 12 significant and popular beaches around the region have been utilised and carry a 'Help Stop the Spread – Report Caulerpa' message, see Figure 2.



Figure 2. 'Help Stop the Spread – Report Caulerpa' signage

- 49. Exotic caulerpa was detected and successfully treated with chlorine in July 2024 at Leigh Harbour/Omaha Cove. Subsequent surveillance of the site has confirmed no further caulerpa at this site, or in the wider Leigh Harbour. Ngāti Manuhiri was closely involved in this response. The initial detection was part of council's normal marine biosecurity surveillance of high value and high-risk areas around the region. This is the first recorded successful control of exotic caulerpa in Aotearoa and demonstrates the benefit of early detection and a rapid response.
- 50. Council is working with Ministry for Primary Industries (MPI) to increase wider communications to boaties in our region to reduce the risk of spread of exotic caulerpa by vessels, and related activities such as fishing. This is being funded by MPI as part of the additional accelerated funding. 'Protect our Paradise' (see Figure 3), the new national brand for marine biosecurity, complements the established 'Clean Below? Good to Go' campaign and will be utilised in signage, brochures, paid advertising and social media.



Figure 3. 'Protect our Paradise' branding



Next steps

51. Council staff will continue to be involved through representation on the Exotic Caulerpa National Advisory Group and will be represented in the governance of the Fighting Caulerpa Better Business Case.
52. Auckland Council will continue to advocate for the Clean Hull/Vessel Plan (consistent interregional regulation to reduce the risk of further spread of marine pests), which is currently with the Minister for Biosecurity and government for a decision on next steps and is a Better Business Case recommendation.
53. Staff will continue to work with MPI, mana whenua, relevant local boards, the Department of Conservation and the community on the local responses to exotic caulerpa in the various sites around the Hauraki Gulf.
54. Staff will continue to undertake surveillance and monitoring to assist and respond to exotic caulerpa as appropriate and feasible in the Auckland region.
55. Council's \$200,000 budget set aside in the LTP will be used to deliver exotic caulerpa surveillance in the Hauraki Gulf; advocacy and engagement to raise awareness; support for incursion responses by mana whenua and communities impacted by caulerpa in their rohe / localised areas; deployment of tools to respond to incursions where appropriate; and capability and capacity-building for mana whenua.
56. Updates will be provided to the Policy and Planning Committee and local boards as new information becomes available.

Attachments

- Attachment A: Fighting Invasive Caulerpa Indicative Business Case Summary
- Attachment B: The Clean Hull Plan Summary

Fighting invasive Caulerpa

An Indicative Business Case (IBC) to safeguard te moana o Aotearoa (Side A)

A Purpose

The invasive species, Caulerpa, has established itself in our treasured marine and coastal environment. Caulerpa's potential impact is devastating. This is a summary of an indicative business case prepared by iwi, regional councils and supported by non-profit organisations, with peer review by independent scientific experts, to fight invasive Caulerpa.

B Background

First detected in Aotea Great Barrier Island in 2021, invasive Caulerpa has now spread further in the Hauraki Gulf and coastal waters of Northland. It has the potential to spread from the Cape Reinga to the East Cape.

\$66 Billion

The total economic value of this coast and marine environment

A more ambitious response is required. Current attempts to address its spread have focused on education and trials of treatment tools.

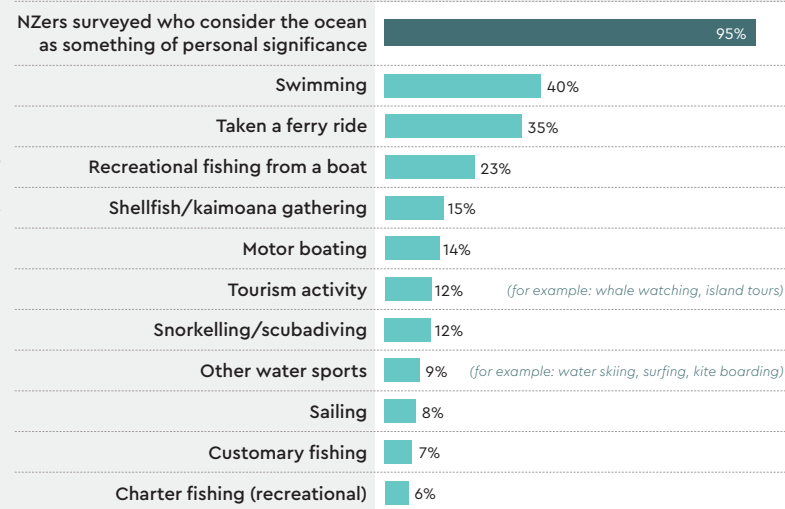
C Environmental impacts

Scientists view the arrival of invasive Caulerpa as the most serious marine biosecurity incursion in our lifetime. The Caulerpa infestation has significant implications for many who value and rely on the marine environment:

- Monopolising space in seagrass habitats**
Dense mats smother and shade reefs.
- Reduced biodiversity**
Reduced food sources for juvenile fish and space for native flora.
- Increased carbon release**
Reduced seagrass meadows (a natural and critical carbon sink).
- Toxic effect on native fauna**
Production of direct and indirect toxic chemical compounds.
- Reduced resilience of native species**
For example reduced shell thickness and strength of shellfish.
- Reduction in commercial fisheries species**
Through cumulative ecological impacts.
- Potential reduction in taonga species**
Such as tipa and kina, early NZ studies have identified a potential link consistent with overseas experience.

D Recreational impacts

FIGURE 1. Significance and prevalence of recreational activities in the Hauraki Gulf



E Economic impacts

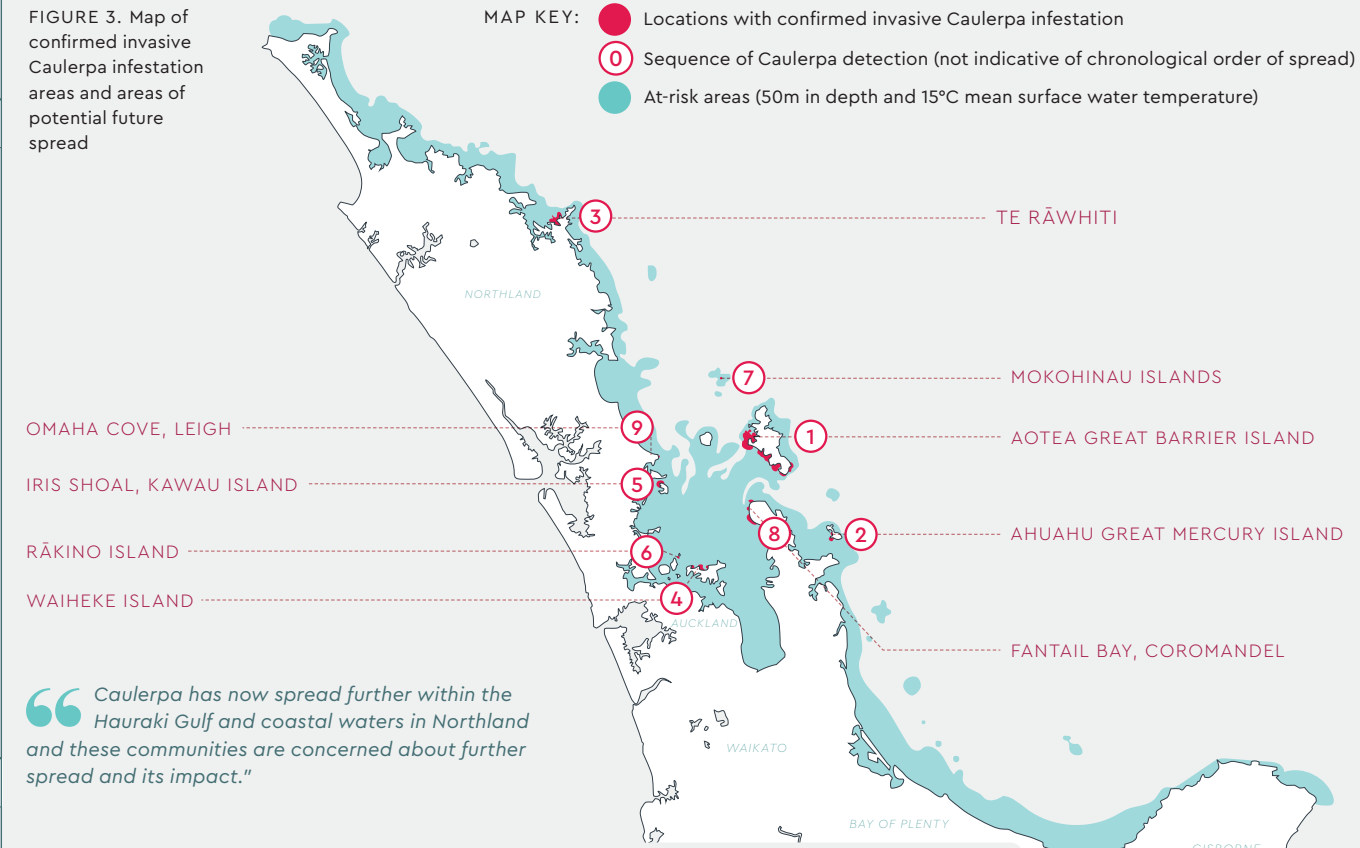
- Upper North Island contributes about a third of national seafood industry GDP and half of national tourism GDP:**
- A seafood sector worth \$334m in GDP, employing 2,771 in aquaculture, fisheries, seafood processing, and wholesaling.
 - Approximately 97% of national oyster farming and 31% of national mussel farming.
 - Contributed \$99m to national aquaculture GDP (28%).
 - In-region tourism contributed \$8,312m to national GDP.
- Affected areas are a driving force for maritime economic activity:**
- Home to 70% of the domestic maritime fleet.
 - 17,000+ in-water recreational crafts and more trailered boats.
 - 900+ in-water commercial crafts (≥6m in length).
- Choosing to live with invasive Caulerpa would risk significant deterioration in the value of our marine and coastal environment:**
- NZIER found about \$9.4 billion (14%) of the at-risk area's natural capital asset value may be lost over 30 years if existing regulatory methods remain the main intervention to address invasive Caulerpa.
 - Recreational and tourism (including recreational fishing) make up a significant proportion of the \$8.8 billion potential asset value loss, while the degradation in ecosystem services such as carbon sequestration, water quality, nutrient cycling, and biodiversity provided by the marine and coastal environment is conservatively valued at \$489 million.
 - Commercial value of natural assets are also forecast to drop by about \$118.1 million for commercial fishing and \$21.4 million for aquaculture.
 - Successful implementation of alternative responses can mitigate \$0.9 to \$2.9 billion of the forecast natural capital asset value loss.

FIGURE 2. Natural capital valuation approach (NZIER)



F Areas of current invasive Caulerpa infestation and potential future spread

FIGURE 3. Map of confirmed invasive Caulerpa infestation areas and areas of potential future spread



#	LOCATION	DETECTED	AREA INFESTED	CONFIRMED CAULERPA SPECIES
1	Aotea Great Barrier Island	May 2021	850 hectares	C. parvifolia and C. brachypus
2	Ahuahu Great Mercury Island	March 2022	84 hectares	C. parvifolia
3	Te Rāwhiti	May 2023	280 hectares	C. parvifolia and C. brachypus
4	Waiheke Island	July 2023	410 hectares	C. parvifolia
5	Iris Shoal, Kawau Island	July 2023	90 hectares	C. parvifolia
6	Rākino Island	April 2024	25 hectares	C. parvifolia
7	Mokohinau Islands	April 2024	19.1 hectares	C. parvifolia
8	Fantail Bay, Coromandel	May 2024	<1 hectares	C. parvifolia
9	Omaha Cove, Leigh	June 2024	c. 1 m ²	C. parvifolia

“International research has confirmed the value and cost effectiveness of early intervention.”

G Investment objectives

A long-term strategy toward eradication, delivered in a coordinated way, will leverage the will and ingenuity of iwi, private enterprise and local communities working in partnership with Government and local government.

- 1 Ensure that Aotearoa New Zealand is well prepared to detect, prevent and respond to invasive Caulerpa and as a result future marine pest incursions.
- 2 Safeguard the mauri of our marine and coastal waters to enable them to be self-sustaining, naturally productive, and healthy.
- 3 Preserve the ability of current and future generations to engage in customary and recreational activities on the moana.
- 4 Support resilient production and practices of marine based industries.
- 5 Establish sustainable resourcing for managing marine biosecurity threats.
- 6 Enable innovation to develop tools and systems to manage invasive Caulerpa/other invasive marine pests.

“Our marine biosecurity system lacks the maturity and sustainable funding to avert the rapid spread of invasive species such as Caulerpa in Aotearoa New Zealand.”

Fighting invasive Caulerpa

The key options (Side B)

H	Approach	I	Assessment of shortlisted options																																			
	<p>Using the Better Business Case methodology, options were identified to most effectively address the invasive Caulerpa threat. Analysis focused on:</p> <ul style="list-style-type: none"> Marine biosecurity system resilience and the scale of intervention having a dual focus with invasive Caulerpa as the immediate priority. Prioritising the control of human-mediated pathways. Enhancing treatment tools through investment into R&D. Identifying the range of funding and regulatory tools needed to deliver the response. <p>KEY SUCCESS FACTORS:</p> <p>Strategic fit and business needs</p> <p>Meets the agreed investment objectives and contributes to relevant national and regional strategies and plans.</p> <p>Value for money</p> <p>Optimises public value (social, economic, and environmental) in terms of the potential costs, benefits, and risks of the project.</p>	<p>Option 4 is the preferred approach that provides a strengthened marine biosecurity framework from which the Caulerpa response can be co-ordinated and scaled up.</p> <p>The ambition around invasive Caulerpa and to what extent it is removed, will in large, depend on the collective aspiration and availability for funding.</p> <p>In the short-term, focusing on adaptive management and remaining flexible to new information and discoveries will be essential to navigating the uncertainty that exists.</p> <p>The preferred approach will deliver benefits for the environment, tino rangatiratanga for mana whenua, economic resilience of marine-based industries and recreational values.</p>	<table border="1"> <thead> <tr> <th>TABLE 1. Options summary table</th> <th>OPTION 1: Do minimum, rely on Controlled Area Notices (CANs) and local action</th> <th>OPTION 2: Focus on exclusion in high-value areas only</th> <th>OPTION 3: Dual focus on containing the spread in heavily infested sites and exclusion in high value areas</th> <th>OPTION 4A: Strengthened marine biosecurity response that supports suppression and local elimination</th> <th>OPTION 4B: Strengthened marine biosecurity response with an ambition to remove the threat</th> <th>OPTION 5: Restrict access and movement to support eradication</th> </tr> </thead> <tbody> <tr> <td>Description</td> <td> <ul style="list-style-type: none"> Reactive approach that uses CANs as primary intervention. Existing CANs and rāhui continue, and new CANs imposed as new outbreaks identified. Treatments delivered locally with no national action plan in place to achieve coordination. Assume under this option that funding for treatments would be redirected to other pests by year 10. Delivered within existing baselines with no increases in enforcement, education, monitoring, and R&D. </td> <td> <p>Option 1 plus:</p> <ul style="list-style-type: none"> Enhanced surveillance at high-value areas. Some increase in treatment of new incursions focused on high value areas. </td> <td> <p>Option 2 plus:</p> <ul style="list-style-type: none"> Preventative CANs put in place over high-value areas. Modest increases in enforcement and education, as well as investment in public moorings. Monitoring of affected areas targeted to perimeter of existing outbreaks. Some ad-hoc investment in science primarily through grants and existing research programmes. </td> <td> <ul style="list-style-type: none"> Multi-regional CAN from North to East Cape, replaced by a pathways management plan eventually. Larger increases in enforcement and education, plus investment in more public moorings. Increase in monitoring to include high-risk and high value areas. Innovation fund established to support R&D. Co-ordinated science strategy. Option of introducing a levy. </td> <td> <p>Option 4a plus:</p> <ul style="list-style-type: none"> Long-term ambition to remove the threat of invasive Caulerpa over time. Increase in enforcement Increase in monitoring and surveillance. Increase in funding available as part of the innovation fund. Significant increase in treatment expenditure due to the long-term ambition to remove the threat. Increase in public information, education, and awareness. Option of introducing a levy remains. </td> <td> <ul style="list-style-type: none"> Restrict all access until eradication complete. CANs over all infested areas and preventative CANs have significant restrictions on access and movement within those areas. Further increases in enforcement, monitoring and surveillance, and education. Further increase in investment into new technology and in science to better understand Caulerpa and its impact. Option of introducing a levy. </td> </tr> <tr> <td>Total 30-year costs (net present value)</td> <td>\$24.3 million</td> <td>\$42.4 million</td> <td>\$191.7 million</td> <td>\$360.9 million</td> <td>\$466.1 million</td> <td>\$484.7 million</td> </tr> <tr> <td>Total 30-year benefits (mitigated loss in natural asset values, NPV)</td> <td>\$0</td> <td>\$0</td> <td>\$931.4 million</td> <td>\$2,515.7 million</td> <td>\$2,864.7 million</td> <td>\$2,553.9 million</td> </tr> <tr> <td>Investment return</td> <td>N/A</td> <td>N/A</td> <td>4.9</td> <td>7.0</td> <td>6.1</td> <td>5.2</td> </tr> </tbody> </table>	TABLE 1. Options summary table	OPTION 1: Do minimum, rely on Controlled Area Notices (CANs) and local action	OPTION 2: Focus on exclusion in high-value areas only	OPTION 3: Dual focus on containing the spread in heavily infested sites and exclusion in high value areas	OPTION 4A: Strengthened marine biosecurity response that supports suppression and local elimination	OPTION 4B: Strengthened marine biosecurity response with an ambition to remove the threat	OPTION 5: Restrict access and movement to support eradication	Description	<ul style="list-style-type: none"> Reactive approach that uses CANs as primary intervention. Existing CANs and rāhui continue, and new CANs imposed as new outbreaks identified. Treatments delivered locally with no national action plan in place to achieve coordination. Assume under this option that funding for treatments would be redirected to other pests by year 10. Delivered within existing baselines with no increases in enforcement, education, monitoring, and R&D. 	<p>Option 1 plus:</p> <ul style="list-style-type: none"> Enhanced surveillance at high-value areas. Some increase in treatment of new incursions focused on high value areas. 	<p>Option 2 plus:</p> <ul style="list-style-type: none"> Preventative CANs put in place over high-value areas. Modest increases in enforcement and education, as well as investment in public moorings. Monitoring of affected areas targeted to perimeter of existing outbreaks. Some ad-hoc investment in science primarily through grants and existing research programmes. 	<ul style="list-style-type: none"> Multi-regional CAN from North to East Cape, replaced by a pathways management plan eventually. Larger increases in enforcement and education, plus investment in more public moorings. Increase in monitoring to include high-risk and high value areas. Innovation fund established to support R&D. Co-ordinated science strategy. Option of introducing a levy. 	<p>Option 4a plus:</p> <ul style="list-style-type: none"> Long-term ambition to remove the threat of invasive Caulerpa over time. Increase in enforcement Increase in monitoring and surveillance. Increase in funding available as part of the innovation fund. Significant increase in treatment expenditure due to the long-term ambition to remove the threat. Increase in public information, education, and awareness. Option of introducing a levy remains. 	<ul style="list-style-type: none"> Restrict all access until eradication complete. CANs over all infested areas and preventative CANs have significant restrictions on access and movement within those areas. Further increases in enforcement, monitoring and surveillance, and education. Further increase in investment into new technology and in science to better understand Caulerpa and its impact. Option of introducing a levy. 	Total 30-year costs (net present value)	\$24.3 million	\$42.4 million	\$191.7 million	\$360.9 million	\$466.1 million	\$484.7 million	Total 30-year benefits (mitigated loss in natural asset values, NPV)	\$0	\$0	\$931.4 million	\$2,515.7 million	\$2,864.7 million	\$2,553.9 million	Investment return	N/A	N/A	4.9	7.0	6.1	5.2
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<p>Achievability</p> <p>Is likely to be delivered given the ability of relevant agencies and key decision-makers to respond to the changes required, including assessing relevant regulatory/legislative barriers.</p>	<p>Affordability</p> <p>Can be funded from available funding sources, including cross-agency funding and alternative funding (such as a levy, philanthropic partners etc) and commercial arrangements.</p>	<p>Capacity and capability</p> <p>The ability of key agencies, iwi, community groups, and local suppliers to deliver the required changes.</p>	<p>COST BENEFIT ANALYSIS:</p> <ul style="list-style-type: none"> We commissioned independent economic analysis from NZIER to support the business case. The analysis considers the potential loss in natural asset value of the affected marine and coastal environment attributable to invasive Caulerpa and the potential loss mitigated by the business case options. Options 1 and 2 are assumed to deliver benefits close to the status quo in which case no net benefit is anticipated. The analysis suggests that options 4a and 4b are likely to provide the greatest return on investment. Option 3 is relatively lower cost but is unlikely to deliver the same scale of impacts as the other options while option 5 is the highest cost and imposes significant economic losses which make it less attractive. 	<p>MAKING THE PREFERRED OPTION WORK:</p> <p>The biosecurity system has responded to the identification of invasive Caulerpa through the use of CANs in sites of high infestation, establishment of technical and strategic advisory groups to inform the response, public information and funding for development and trial of new tools and techniques.</p> <p>Despite the efforts, the system hasn't enabled an effective response:</p> <ul style="list-style-type: none"> The system has not empowered local approaches The response has been predominantly reactive with limited proactive monitoring and prevention activities The system needs strengthened co-ordination and direction The overall approach does not currently enable intervention at the scale required. A new approach is needed. 	<p>DESIGN OBJECTIVES:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Ensure Aotearoa New Zealand is well prepared to detect, prevent, and respond to invasive Caulerpa and, as a result, future marine pest incursions.</p> </div> <div style="text-align: center;"> <p>Recognises the role and knowledge of mana whenua as kaitiaki.</p> </div> <div style="text-align: center;"> <p>Enables a coordinated and integrated response across the multi-stakeholder environment, including industry, iwi, central and local government, and NGOs.</p> </div> <div style="text-align: center;"> <p>Encourages innovation, agility and a pace of implementation well informed by robust evidence.</p> </div> </div> <p>DESIGN PRINCIPLES:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Fit-for-purpose</p> <p>Enables an effective response through the necessary capacity and capabilities, legislative and institutional mechanisms and multi-faceted interventions, including regulation and treatments.</p> </div> <div style="text-align: center;"> <p>Dynamic and adaptive</p> <p>Is proactive and innovative enabling a dynamic response to invasive Caulerpa offering resilience to evolve and be applicable to manage marine pests in the future.</p> </div> <div style="text-align: center;"> <p>Supports confidence and action</p> <p>Stakeholders are confident the arrangements will achieve the objectives at the pace required to avert the spread of invasive Caluerpa.</p> </div> <div style="text-align: center;"> <p>Value for money</p> <p>Achieves the biggest impact with least resources through efficiency and effectiveness.</p> </div> </div>	<p>A NATIONAL PATHWAYS MANAGEMENT APPROACH:</p> <ul style="list-style-type: none"> The scale of invasive Caulerpa requires a comprehensive long term management response. Pathways plans are focused on stopping the spread of harmful organisms through named pathways. Pathways plans apply to multiple marine pests A national plan enables a single and consistent set of rules to be applied across regions It provides regulatory backing to the response and access to enforcement powers. The plan can be funded through a levy. <p>There is already shared agreement across key stakeholders that a pathways plan is the preferred regulatory mechanism, with the clean hull plan proposal.</p>	<p>“ Establishing a national pathways management plan is a critical first step to fighting Caulerpa.”</p>
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Fighting invasive Caulerpa

Financial considerations and a way forward (Side C)

J Financial considerations

The preferred option is estimated to cost between \$30.8 million to \$43.0 million per annum over the first five years.

We have estimated the additional costs for each option to inform the indicative business case. Costs and quantities were identified for each item. Volumes were estimated based on current activities provided by Councils. Costs were sourced from Cabinet papers, public research reports, and information requests to Councils and Biosecurity NZ.

FUNDING STRATEGY:

Funding the preferred approach will require a multi-pronged strategy through a mix of funding from Crown, regional councils, philanthropic organisations and users of the marine environment.

The funding strategy for the preferred approach should be guided by the following principles:

- additionality**—new revenue streams should support additional investment, not substitute for or divert existing spending that otherwise occurs to deliver marine biosecurity in the affected areas
- common but differentiated responsibility**—the wider community stands to benefit from the investment to improve how we manage Caulerpa and other biosecurity threats in our valued marine and coastal environment. This extends to sharing some of the costs of doing so, through contributions from regional councils (ratepayers) and Crown (taxpayers).
- distributional equity**—the costs and benefits of resource use and protection should be distributed between groups and users according to equity or sensitivity to harm. This means some degree of differentiation of costs borne by users who either benefit from the marine and coastal environment and/or exacerbate harm.
- intergenerational equity**—the costs and benefits of resource use and protection should be distributed between present and future generations, to ensure future generations do not bear a disproportionately greater burden of costs and impacts.

TABLE 2. Summary costs of the preferred approach (inflated)

ACTIVITIES	DETAILED ACTIVITIES	AVERAGE ANNUAL COST FOR FIRST FIVE YEARS (\$ million)	FIVE-YEAR TOTAL (\$ million)	THIRTY-YEAR TOTAL (\$ million)
National management activities	Biosecurity NZ staff	\$1.0	\$4.8	\$19.1
Regional Council activities	Detection	\$0.9 – \$1.1	\$4.6 – \$5.7	\$9.7 – \$19.1
	Information campaigns	\$0.3	\$1.3	\$2.8
	Enforcement	\$1.3 – \$1.6	\$6.4 – \$8	\$31.5 – \$39.4
	Regional council delivery	\$1.0 – \$1.3	\$5.1 – \$6.7	\$40.1 – \$46.8
	Levy collection	\$0.3	\$1.3	\$6.7
	Science and Innovation Fund	\$5.3 – \$10.6	\$26.5 – \$53.1	\$26.5 – \$53.1
Treatment	Treatment	\$17.7 – \$23.2	\$88.7 – \$116.2	\$345.2 – \$417.9
Capital expenditure	Public moorings	\$1.5 – \$1.8	\$7.3 – \$9.2	\$26.9 – \$34
Depreciation and contingency	Contingency	\$1.0 – \$1.2	\$5.2 – \$6.1	\$27.5 – \$33.6
	Depreciation	\$0.5 – \$0.6	\$2.6 – \$2.8	\$27.7 – \$34.2
Total expenditure		\$30.8 – \$43.0	\$153.8 – \$215.1	\$563.8 – \$706.7

TABLE 3. PROPOSED ALLOCATION OF FUNDING SOURCES TO ACTIVITIES

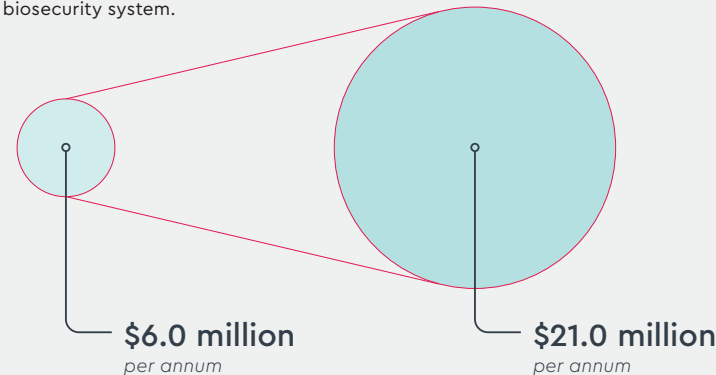
ACTIVITIES	CROWN (vote appropriation)	REGIONAL COUNCILS (general or targeted rates)	MARINE USERS (Levy)	PHILANTHROPIC	INDUSTRY BODIES	IWI
National management activities	✓		✓			
Regional Council activities		✓	✓			
Research and Innovation	✓	✓	✓	✓	✓	✓
Treatment	✓	✓	✓	✓	✓	✓

MARINE BIOSECURITY LEVY:

The preferred option also proposes the introduction of a levy, which provides an alternative funding source beyond local and central government funding. The levy is envisioned to fund the management cost of the response to invasive Caulerpa.

A range of levy options have been evaluated to ensure that any levy is fit for purpose. It is proposed that the levy be implemented through marina, berths and mooring authorisation processes administered by regional councils.

A marine biosecurity levy could raise between \$6 million to \$21 million per annum to support the marine biosecurity system.



K Transition and implementation

Implementation would cover three phases. Given the current rate of spread of invasive Caulerpa, it will be critical that implementation maintains momentum to date and proceeds at pace to provide the best chance of containment.

PHASE 1:

ESTABLISHING THE NEW PROGRAMME

0 – 6 months

1. Renew momentum on the current management approach.
2. Transition to the new model. Assuming decisions are made on progressing the recommended approach, the new model will need to be established. A high pace of change is required to provide the best chance of containing the spread. Key actions are:
3. Establish new programme arrangements:
 - a. Develop the management plan and charging mechanism.
 - b. Prepare for enactment and implementation of the management plan.
 - c. Progress Biosecurity Act reforms (currently subject to consultation).
4. Transition programme governance and management.

PHASE 2:

IMPLEMENTING NEW RESPONSE ARRANGEMENTS

6 – 18 months

Following the establishment of the new unit and management plan, the focus will move to implementation:

1. Moving from initial ad hoc to a long-term management framework.
2. Increasing the scale of the response.
3. Building institutional capability across the system at central, regional and local levels.
4. Maturing central to local partnership networks to enable local delivery.
5. Shifting the behaviour of marine users.

PHASE 3:

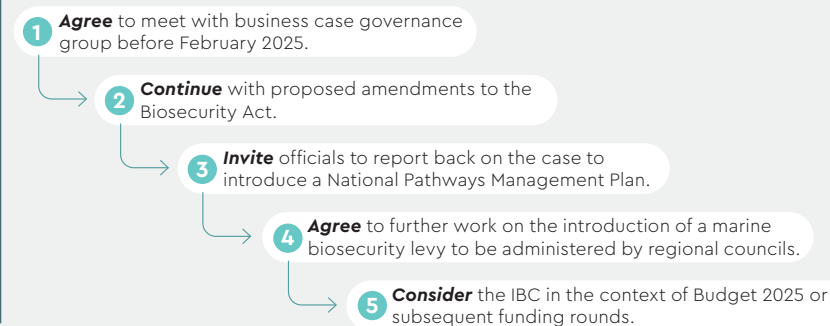
MATURING AND CONSOLIDATING RESPONSE ARRANGEMENTS

2 – 4 years

This phase involves maturing the response arrangements:

1. Refining the overall system through reviewing and adapting the approach.
2. Evolving the focus to all marine pests.

L Immediate next steps



A Clean Hull Plan: protecting the biosecurity of our nationally significant oceans and coast in the Upper North Island

About this A3

The way we manage the threat of marine invasive species and prevent potential damage holds ever increasing value for Aotearoa New Zealand as an island nation with a highly endemic and diverse population of marine species.

This is a summary of the proposal for a national pathways management plan (the Clean Hull Plan) applying in the first instance to the regions of Northland, Auckland, Waikato, and Bay of Plenty, collectively referred to as the "Management Area".

A The Clean Hull Plan provides an immediate, pragmatic, and publicly supported solution to our growing biosecurity threat

The Clean Hull Plan represents a logical next step for regional councils in the Upper North Island, considering that regulatory practices, user behaviour, and attitudes are coalescing around a common set of requirements for clean hulls, gear, and equipment.



All regional councils party to the Clean Hull Plan have shifted to pathways management as part of their Marine biosecurity strategy.



Approximately two-thirds of submitters want proactive rules to protect national marine biodiversity.



The Aquaculture Industry supports a common set of rules for both commercial and recreational marine users.

“Aquaculture New Zealand is supportive of the Clean Hull Plan as a mechanism for aligning practices of recreational and commercial users who share the marine environment. A pathways management approach to marine biosecurity is consistent with industry best practice.”

DAVE TAYLOR
TECHNICAL DIRECTOR, AQUACULTURE NEW ZEALAND



80% of vessel owners surveyed over the summer were already compliant with the requirements that would be enforced under the Clean Hull Plan.



In a 2019 consultation, 30% of submitters supported a common set of hull-fouling rules, and 37% supported rules for other pathways.

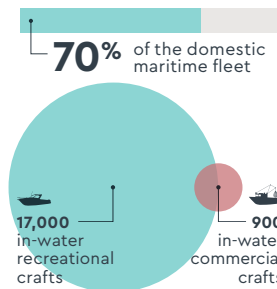


On average, the Clean Hull Plan would cost recreational vessel owners under \$200 per year – assuming 60% of expenses are covered by a marine biosecurity levy.

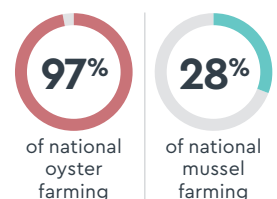
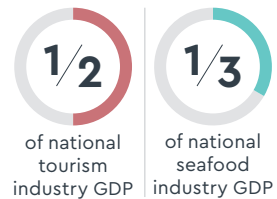
Importantly, other regions can learn from and join this initiative in the future.

B The Management Area is nationally significant for its economic, recreational and environmental values

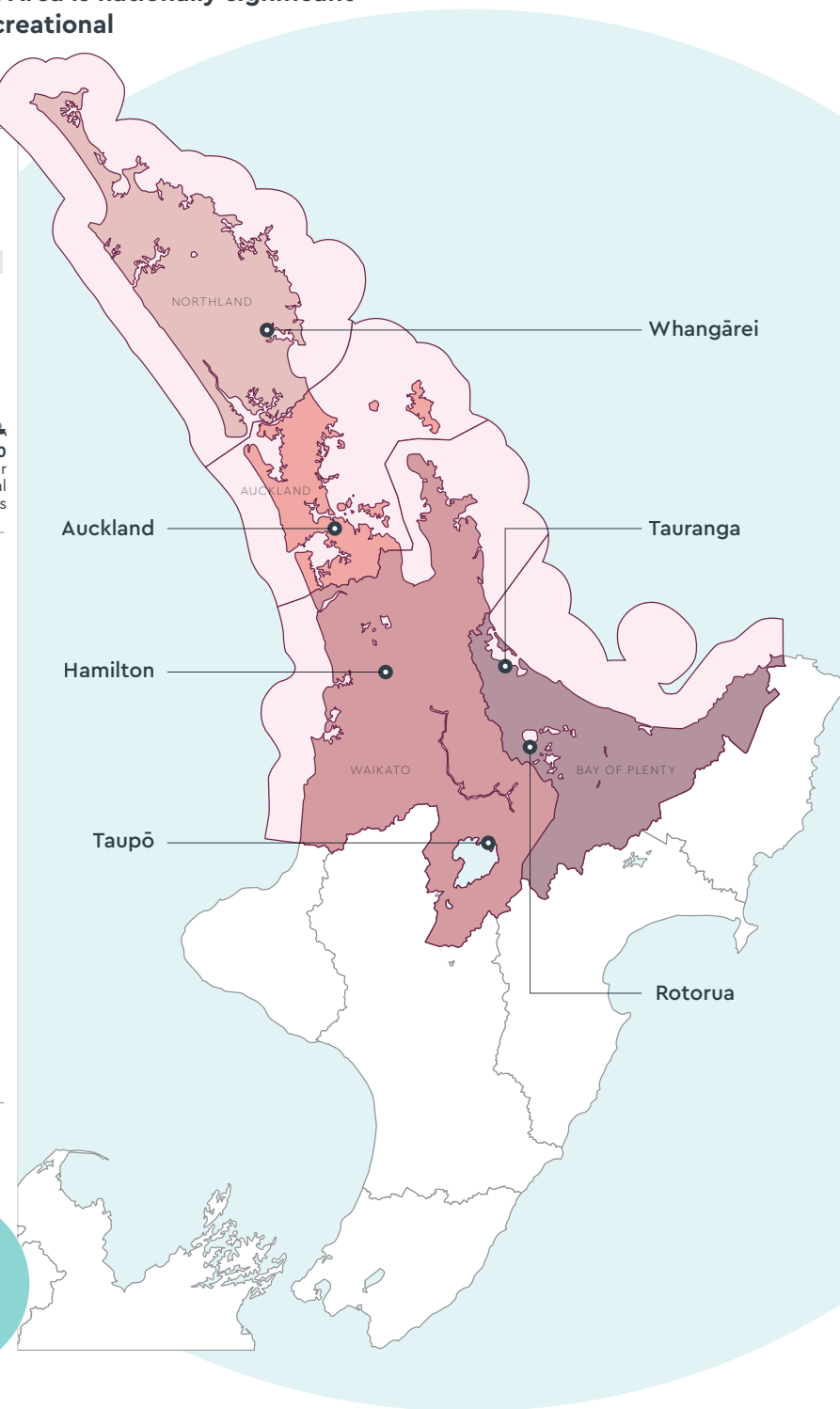
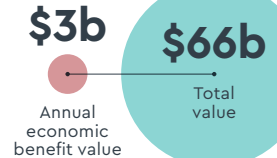
A major driving force of national maritime economic activity, the area is home to:



Activities in area contribute and account for:



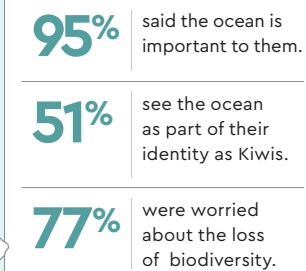
The area's coastal and marine environment is independently valued at:



The intangible recreational value of our coastal and marine environment

As an island nation, our marine environment is a core part of Aotearoa New Zealand's national identity and recreational activities. This is felt particularly keenly in the Management Area, where over 50% of New Zealand's recreational boat users reside.

In a 2023 survey of over 1,000 New Zealand adults:



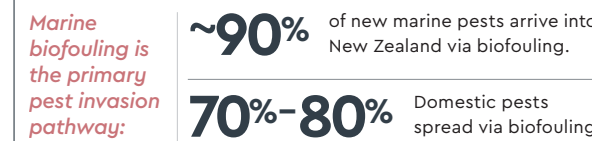
Our coastal and marine environment are anchor hubs for popular recreational and cultural activities, including shellfish gathering, fishing, diving, snorkelling, kayaking, swimming, and relaxing on the beaches.

Environmental value

The Management Area contains some of Aotearoa New Zealand's most significant and diverse marine environments, from offshore islands to harbours, rocky coasts, and subtidal zones. Its warm climate and diverse ecosystems support unique marine life, including endemic species. The area also hosts important marine reserves and fish nurseries vital for economic and cultural interests.

C The Management Area is at risk of biosecurity incursions

The area's subtropical climate creates rich biodiversity but also enables many pest species to thrive.



- Key risks:**
- 1 Vessel movements spread established marine pests to pest-free areas.
 - 2 New pest arrivals establishing and spreading domestically.

- Critical factors:**
- Most invasive marine species enter through the Upper North Island.
 - The Management Area contains 151 of 220 known marine invasive species and gets an average of 1-2 new pests each year.
 - The Management Area hosts 70% of national domestic maritime fleet.

D Marine invasive species place the economic, environmental, and amenity values of the Management Area under threat

Marine pests can potentially cause irreversible harm to the unique ecological, economic, recreational, and amenity values in the Management Area. They also have the potential to adversely affect the relationship between Māori and their ancestral sites and access to mahinga kai.

- The costs and impacts of marine pests include:**
- Smothering of habitat
 - Predation and competition with native/endemic species
 - Costs of pest control
 - Loss of ability to gather kai moana
 - Loss of ability to fish for recreation
 - Reduction in economic productivity (seafood, aquaculture, and tourism)
 - Barriers to and reduced amenity values from everyday recreational users

