

Waitahora Lake & Lagoon

11/02/2026

NRC Lake Number: 3/4



Ecological Condition: High

Submerged Plant Indices	Score	NPS-FM Attribute band
Native Condition Index	0%	D
Invasive Impact Index	N/A	N/A

Summary

Overall Rank: In 2026, the former Waitahora Lake and Waitahora Lagoon had merged into a single freshwater wetland–lake complex. The system is functionally devoid of submerged macrophytes, but its ecological importance is retained through intact wetland features, indigenous catchment cover, and threatened-flora and bird values.

Threats: The main threats are catchment erosion, pest-animal disturbance, pampas expansion and possible future spread of *Utricularia gibba*. More broadly, the ecological condition of the site is highly sensitive to bar-opening/closure state, water level, flow regime, and salinity shifts.

Recommendations: Focus on protecting catchment and margin stability where feasible, pest plant and mammal control, and continued surveillance of *Utricularia gibba*. Ongoing ecological assessment across contrasting bar states and water levels.

General description

At the time of the site visit, the former Waitahora Lakes and Waitahora Lagoon had merged into a single large freshwater lake and wetland complex following approximately a year of bar closure at the lagoon outlet and extended periods of heavy rainfall. As a result, the system was functioning as one hydrologically connected freshwater waterbody rather than as separate lake and coastal lagoon environments. The merged open-water area is approximately 23.0 ha and the total merged catchment area is 3,318.2 ha, resulting in a very high catchment-to-lake area ratio.

The Waitahora Lagoon is a Northland's only example of a marine contact or barrier lake and is separated from the ocean by a sand bar which occasionally breaches at its western end allowing freshwater to drain and salt water to wash in. Storms help form the barrier again blocking the river mouth trapping freshwater behind the barrier. This natural process results in shifts in submerged vegetation from fresh water to brackish which drives the assemblage of submerged plant and animal communities which can live there. An investigation of previous survey results and Google Earth time series photographs show that the lagoon has been open to the sea at least five times in the last 20 years. It is expected that with lake levels so high the barrier bar will breach again in the near future.

The merged system is located along the northern tip of the region (2493880E, 6749715N) embedded within a largely intact indigenous landscape. Catchment land cover is primarily native, with 99.47% of the catchment classified as indigenous vegetation. This is dominated by extensive mānuka/kānuka scrub, which accounts for the majority of the catchment and extends across most of the surrounding hill country. There are smaller areas of broadleaved indigenous hardwoods amongst the mānuka/kānuka scrub. This extensive native cover reflects minimal catchment modification and provides strong natural buffering capacity.

Exotic land cover within the merged catchment is negligible, comprising only 0.24% of the total area. This includes a very small area of exotic forest and a trace amount of low-producing grassland, neither of which is extensive enough to exert a significant influence on water quality at the catchment scale. Overall, the surrounding land use pattern

confirms that the Waitahora system remains one of the least anthropogenically modified lake–wetland complexes in the region.

Wetlands are a defining feature of the combined system, comprising approximately 7.00% of the merged catchment area. These wetlands include the Paranoa Swamp and associated wetland areas connected to the Waitahora Stream and other unnamed tributaries draining the upper native bush-clad catchment. Under the current merged state, these wetlands are more directly integrated with the expanded freshwater waterbody than under the previous lake–lagoon configuration. They play a critical hydrological and biogeochemical role by attenuating flows, trapping sediments, storing floodwaters, and regulating nutrient transport before water enters the lake–wetland complex.

Hydrological inputs are dominated by stream-fed inflows draining intact native scrub and wetland systems. Under normal conditions, the lagoon component would be influenced by episodic marine exchange, with previous observations indicating saline conditions when the western bar was open. However, during the 2026 assessment former lakes and lagoon had merged into a freshwater system.

The strong influence of wetlands and indigenous vegetation means the merged waterbody is likely to retain a humic character, with elevated dissolved organic matter, reduced water clarity, and subdued inorganic nutrient concentrations. These catchment characteristics continue to buffer the system against excessive nutrient enrichment and limit the risk of anthropogenic eutrophication.

Overall, the Waitahora Lake–Lagoon complex represents a highly natural freshwater lake and wetland system whose current condition is primarily governed by bar dynamics, rainfall, wetland connectivity, and the extensive indigenous catchment. Although the merged state observed during fieldwork reflects a temporary hydrological phase rather than the lagoon’s long-term typical condition, the dominance of native vegetation, minimal exotic land use, and strong wetland connectivity indicate high ecological integrity and strong resilience to catchment-driven water quality degradation.

Wetland vegetation

During the 2026 survey the lake and lagoon were merged and formed a single freshwater wetland lake complex. The eastern half of the complex is surrounded by an extensive wetland dominated by *Apodasmia similis*, *Eleocharis sphacelata*, *Machaerina articulata*, *Juncus kraussii* var. *australiensis*, *Typha orientalis* and *Schoenoplectus tabernaemontani*.

The prolonged elevated water levels created an ~25 – 100 m wide marginal zone with ~0.2 – 1.0 m of water over a base of wetland vegetation. Evidence of heavy flows were present, with wetland vegetation pushed toward the lagoon mouth forming a dense reed mat just below the water surface.

The Nationally and Regionally Critical purangi (*Sabdariffa diversifolia* subsp. *diversifolia*) was locally common on northern dunes with frequent seedlings, indicating ongoing recruitment. An island in the centre of the lagoon was also surveyed. This island supported Naturally Uncommon lichens on kānuka (*Kunzea linearis*), including *Coccocarpia pellita*, *Crocodia poucillifera*, and *Pseudocyphellaria haywardiorum*. A large patch of the Regionally Declining gumland grass tree *Dracophyllum lessonianum* was also noted along the higher part of the island. The rare fern *Cyclosorus interruptus* (At Risk – Declining) was recorded in marginal wetland vegetation for the first time in 2021 but was not seen during the 2026 survey.

The overall wetland health is high in terms of extent, habitat heterogeneity, and threatened species values. However, hydrological alterations caused by the opening/closing of the lagoon bar can cause rapid shifts and could result in varying state changes.

Submerged vegetation

The Waitahora Lagoon and Lake complex has transitioned from two historically separate water bodies (freshwater lake and saline lagoon) into a single freshwater wetland–lake complex in 2026. This has been driven by the natural closure of the sandbar for approximately a year (Ngāti Kuri pers. comms). The resulting desalination of the lagoon and elevated water level has merged the formerly distinct systems and materially altered

habitat availability, exposure, and the physical drivers that control submerged vegetation establishment.

The current submerged vegetation condition is functionally devegetated, with submerged macrophytes largely excluded by physical smothering and poor light conditions (Video 1).



Video 1: Devegetated substrate and poor light conditions.

The elevated water level has created a 25 – >100 m wide shallow margin (0.2 – 1.0 m deep) of inundated wetland vegetation. Evidence of sustained heavy flows were noted across the waterbody. This flow has created large sections of collapsed wetland vegetation that form a dense near-surface reed mat. This mat has smothered potential littoral habitat, suppressed seedling establishment, limited macrophyte bed expansion, and maintained low-light conditions beneath it (Video 2).



Video 2: Collapsed wetland vegetation forming dense near-surface reed mats.

Only a single stand of *Myriophyllum triphyllum* was recorded in a remnant deep pool within the wetland complex. This isolated stand was in poor-condition and etiolated, with ~30% cover and an average height of ~0.7 m. *Utricularia gibba* formed large clumps of up to ~50% cover in certain areas but the average cover remained low (~10% or less) (Video 3). This distribution is indicative of opportunism rather than cohesive bed formation. The combination of the limited photic depth, encroaching wetland vegetation, reed mats and sediment inputs mean the system is currently unlikely to support sustained, lake-wide submerged macrophyte communities.

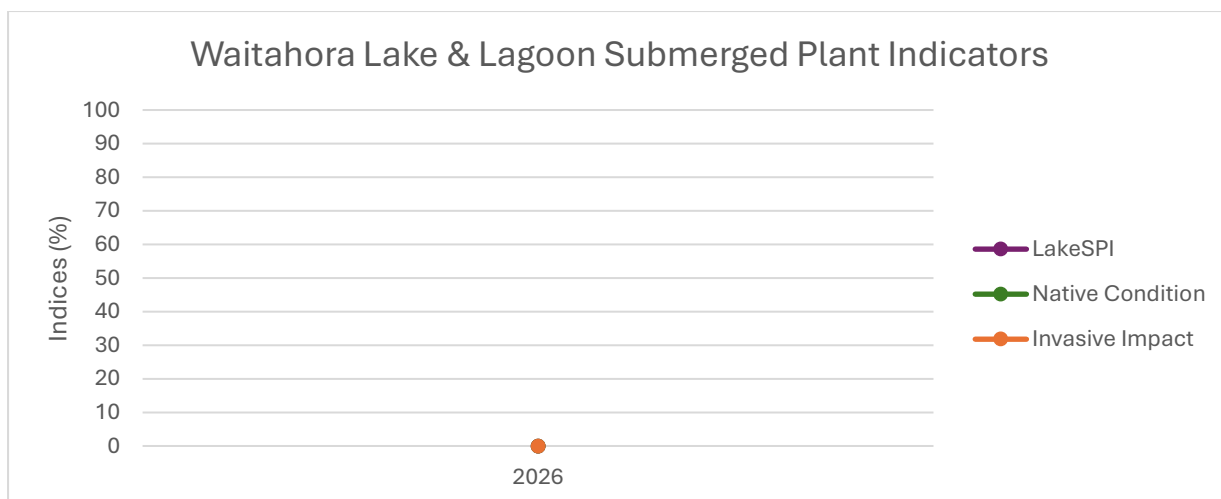


Video 3: High covers of *Utricularia gibba* amongst the collapsed wetland vegetation.

The comparison to previous assessments shows that the 2026 survey represents a shift between two different environmental states (freshwater lake vs saline/brackish lagoon) rather than a decline from an earlier stable condition. In 2014 the Waitahora Lake was a defined waterbody with a diverse freshwater community including charophytes (*Chara australis* & *Chara fibrosa*), pondweeds (*Potamogeton cheesemanii* & *Potamogeton ochreatus*), *Myriophyllum propinquum*, and the introduced *Ottelia ovalifolia*. *Ludwigia palustris* was present along the lake margin, and the rare *Stuckenia pectinata* (AT Risk – Naturally Uncommon) was recorded in one of the eastern pools adjacent to Paranoa Swamp. This indicates that under a clearer freshwater lake state, the Waitahora complex is capable of supporting submerged vegetation and a relatively rich species assemblage.

A survey of the Waitahora Lagoon in 2021 recorded predominantly saline conditions, with no submerged macrophytes across most of the lagoon other than the *Gracilaria chilensis*. Brackish taxa such as *Ruppia polycarpa*, *Triglochin striata*, *Thyridia repens*, and *Lamprothamnium* sp. were recorded in previous surveys. The vegetation assemblage is variable through time with the 2009 survey yielding similar results to the 2026 assessment however, *Utricularia australis* was noted in a discrete channel. In 2014 and 2021 *Lamprothamnium* sp. was locally abundant in saline water with accompanying brackish species. The lagoon therefore historically functioned as a dynamic, intermittently saline system with limited submerged macrophyte development except in specific, more sheltered channels or pools.

Across all surveys, there has been insufficient submerged vegetation to generate a LakeSPI score for these dynamic waterbodies (Figure 1).



Survey Date	Status	LakeSPI %	Native Condition %	Invasive Impact %
February 2026	Non-vegetated	0	0	N/A

Figure 1: Waitahora Lake & Lagoon LakeSPI scores as a percentage of the maximum Potential LakeSPI score, Native Condition Index, and Invasive Impact Index

The likely future condition depends strongly on the bar-opening state and associated hydrodynamics. If the lagoon remains closed and the merged complex persists as a dystrophic freshwater system, the most plausible trajectory is the continued dominance of inundated wetland vegetation and reed mats, with only sporadic, patchy submerged plants (e.g., *Utricularia gibba* clumps and isolated milfoil stands). If/when the lagoon re-opens to the coast, the system could shift rapidly with higher salinity and increased flushing that could remove accumulated fine sediment/tannins and potentially improve water clarity. Under that alternative state, recolonisation could occur as a brackish-lagoon assemblage (e.g., *Ruppia/Triglochin/Thyridia/Lamprothamnium*) or if parts of the complex remain sufficiently fresh, a partial recovery toward the freshwater lake assemblage observed in 2014 (charophytes, pondweeds, milfoils).

Wetland birds

During the February 2026 assessment, the Waitahora lagoon bar had been closed for approximately a year. As a result, the Waitahora Lake and Waitahora Lagoon merged and formed a single hydrologically connected freshwater wetland/lake complex. The system has extensive emergent vegetation, broad shallow flooded margins, and comparatively low shoreline disturbance, supporting both open-water and emergent-margin habitats.

The 2026 survey recorded an ecologically diverse assemblage including: black swan (*Cygnus atratus*), shags including little shag (*Microcarbo melanoleucos brevirostris*), pied shag (*Phalacrocorax varius*) and little black shag (*Phalacrocorax sulcirostris*), sacred kingfisher (*Todiramphus sanctus*), welcome swallow (*Hirundo neoxena*), a single Pacific heron (*Ardea pacifica*), and Australasian bittern (*Botaurus poiciloptilus*). The low overall abundance likely reflects timing of the survey as cryptic wetland birds are commonly under-recorded in rapid daytime surveys and require targeted crepuscular/nocturnal methods.

Despite the low abundances, threatened species values remain high. Bittern presence (Nationally Critical) indicates that emergent cover, shallow foraging water, and prey availability can be sufficient. North Island fernbird (*Poodytes punctatus*; At Risk - Declining) has been recorded previously and is a useful indicator of intact, structurally complex wetland margins. Historic records also include brown teal (*Anas chlorotis*; Nationally Increasing) and marsh crake (*Zapornia pusilla*; At Risk - Declining), suggesting occasional use by rarer wetland specialists.

Waitahora likely functions as a local and regionally significant environment within the Te Hiku dune-lake/coastal network, particularly during dry periods or when nearby coastal wetlands become more saline.

Subsequent surveys should be done across contrasting water levels/bar states, with targeted bittern and rail/dabchick protocols to properly quantify threatened-bird use over time.

Fish & invertebrates

Waitahora Lagoon supports a modest but clearly established fish assemblage based on historical observations and the 2026 survey.

In 2007, a school of approximately 40 grey mullet (*Mugil cephalus*) up to 30 cm long was observed in the clear lagoon waters, indicating periodic use by estuarine or coastal fish. Historical records also document shortfin eels (*Anguilla australis*).

In 2026, divers regularly recorded large numbers of common bullies (*Gobiomorphus cotidianus*) throughout the waterbody and eDNA detected shortfin eels. No key invertebrate species were noted during the survey.

Endangered species

Waitahora Lake and Lagoon has high threatened-flora significance based on previous assessments noting the largest known population of *Sabdariffa diversifolia*, the only northern North Island site for *Lamprothamnium* sp. (Nationally Vulnerable), the largest Northland population of *Thyridia repens* (At Risk - Naturally Uncommon), and Threatened - Nationally Critical *Utricularia australis*. An additional At Risk – Declining pondweed (*Stuckenia pectinata*) has also been recorded.

In 2026, the native purangi (*Sabdariffa diversifolia* subsp. *diversifolia*; Threatened - Nationally Critical) was locally common along the northern dune margin with frequent seedlings, suggesting ongoing recruitment. Survey of the central wetland island recorded Naturally Uncommon lichens on kānuka (*Coccocarpia pellita*, *Crocodia poucifer*, *Pseudocyphellaria haywardiorum*) and a patch of *Dracophyllum lessonianum* (At Risk - Regionally Declining).

Threatened birds recorded in 2026 included little shag (*Microcarbo melanoleucos brevirostris*; At Risk – Relict), pied shag (*Phalacrocorax varius varius*; At Risk – Recovering), little black shag (*Phalacrocorax sulcirostris*; At Risk – Naturally Uncommon), and Australasian bittern (*Botaurus poiciloptilus*; Threatened - Nationally Critical). A Pacific heron (*Ardea pacifica*) was also noted as a vagrant species while exiting the wetland area. Pampas (*Cortaderia* sp.) was seen in surrounding dunes in 2026 and is recommended for early control to prevent spread.

Lake ecological value

The Waitahora Lake and Lagoon complex is regarded as having high ecological value, notwithstanding the absence of a stable submerged macrophyte community in 2026. This is the only waterbody of its type in the region.

At the time of survey, the formerly separate Waitahora Lake and Waitahora Lagoon were functioning as a single freshwater wetland–lake complex following prolonged bar

closure, with ~23 ha of open water within a 3318.2 ha catchment that is almost entirely indigenous and strongly buffered by extensive connected wetlands.

Habitat size is moderate, but buffering is very high given the largely native catchment, broad wetland extent, and extensive emergent margins. Water quality appears to be controlled primarily by natural hydrological processes, humic inputs, and bar dynamics rather than by catchment modification.

Aquatic vegetation diversity and integrity are presently low because elevated water levels, sustained flows, collapsed reed mats, and poor light have produced a functionally devegetated state, with only sparse *Myriophyllum triphyllum* and patchy *Utricularia gibba* persisting. However, this should be interpreted as a state shift rather than a simple ecological decline, as the complex has historically supported diverse freshwater and brackish assemblages under alternative hydrological states.

Ecological value remains high because the system retains outstanding wetland extent, and high threatened-species values, including purangi, nationally important lichen and shrub assemblages, and Australasian bittern, together with historical records of *Utricularia australis*, *Lamprothamnium papulosum* and other rare/threatened taxa.

Overall, Waitahora is best characterised as a hydrologically dynamic lake–lagoon–wetland complex that should be included as an Outstanding water body as it represents a unique environment type in the region.

Threats

The main threats to Waitahora Lake and Lagoon are catchment erosion, pest animal disturbance around the margins and the potential future expansion of *Utricularia gibba*. *Utricularia gibba* is not currently a dominant pressure, but it could spread if conditions shift in its favour.

Sediment inflow from erosion in the upper catchment reduces water clarity, smothers habitat and degrades littoral and wetland margins over time.

Signs of ungulates (deer) and lagomorphs (hares/rabbits) indicate continuing pressure on shoreline vegetation and bank stability, which may further accelerate erosion and habitat disturbance.

Management recommendations

The erosion is a result of natural processes however, stabilisation of vulnerable areas in the upper catchment could be beneficial if possible. Pest plant and mammal control around the margins would help protect shoreline vegetation, reduce browsing pressure, and improve habitat for native biota. Pampas control should be conducted before it spreads further. Continued surveillance of *Utricularia gibba* will track any increase in abundance and facilitate early response if resources allow, this could be done by iwi lead snorkelling-based removal. Protecting catchment stability and riparian habitat quality should remain the core management objective for this site.