OBJECTIVE **2**

Water

Maintain and enhance the water level and water quality to support wetland values.

AWARUA-WAITUNA / REPORT CARD 2015

At Waituna Lagoon maintaining water levels and water quality is needed to support growth of Ruppia – an aquatic plant critical for maintaining the health of the ecosystem.

Water levels

Waituna Lagoon is a coastal lagoon that would naturally be open to the sea occasionally (estuarine phase), and closed for long periods (freshwater phase). For years artificial Lagoon opening has been undertaken to facilitate upstream farm drainage in times of high water levels, and more recently as a management tool to improve water quality.

Water quality

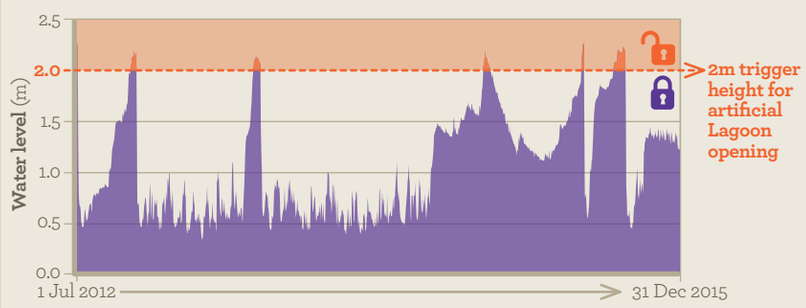
When the lagoon is closed water quality declines due to nutrient levels rising as the Lagoon is not getting flushed by incoming seawater. This is indicated by high concentrations of nitrogen (TN) and phosphorus (TP).

High nutrient levels encourage algae to grow which smothers vulnerable plants like *Ruppia*. Under certain conditions the algae can become toxic. Opening the Lagoon is a useful tool for water quality management – but regularly opening the Lagoon can have negative effects on lagoon health such as high salinity levels which also endangers *Ruppia*.

The reference for the graph limits is LTG (2013) Ecological Guidelines for Waituna Lagoon.

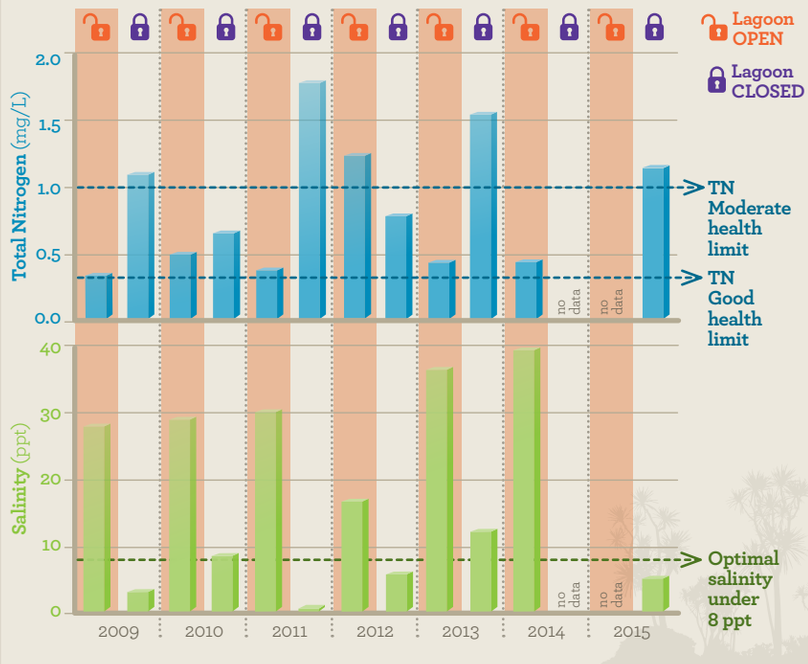
WATER LEVEL

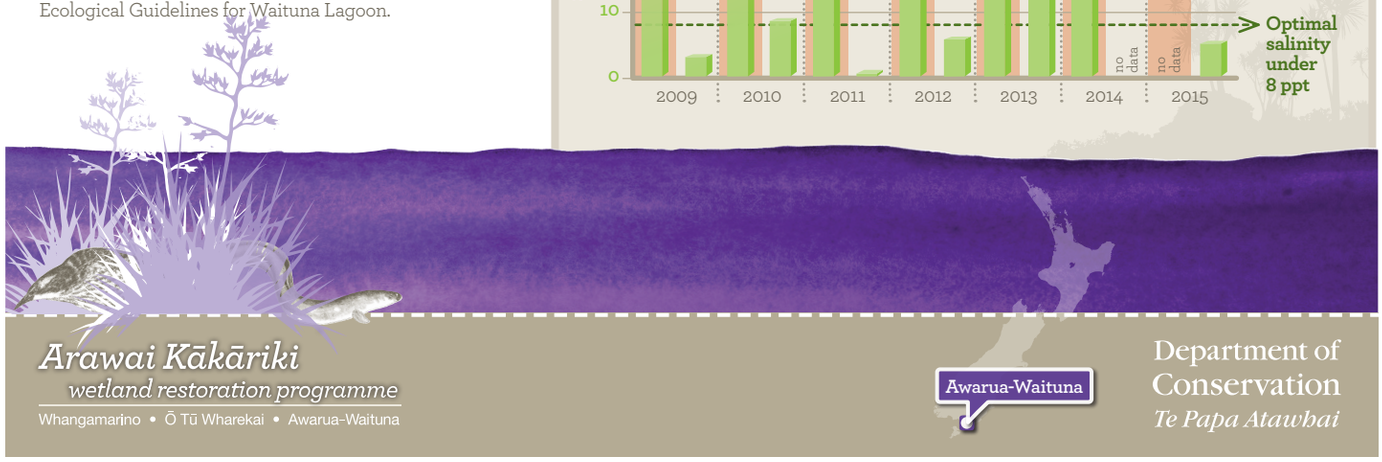
Mean daily levels Jul 2012–Dec 2015



WATER CHEMISTRY

TN & salinity levels 2009–2015 (Aug–Mar)





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Te Papa Atawhai

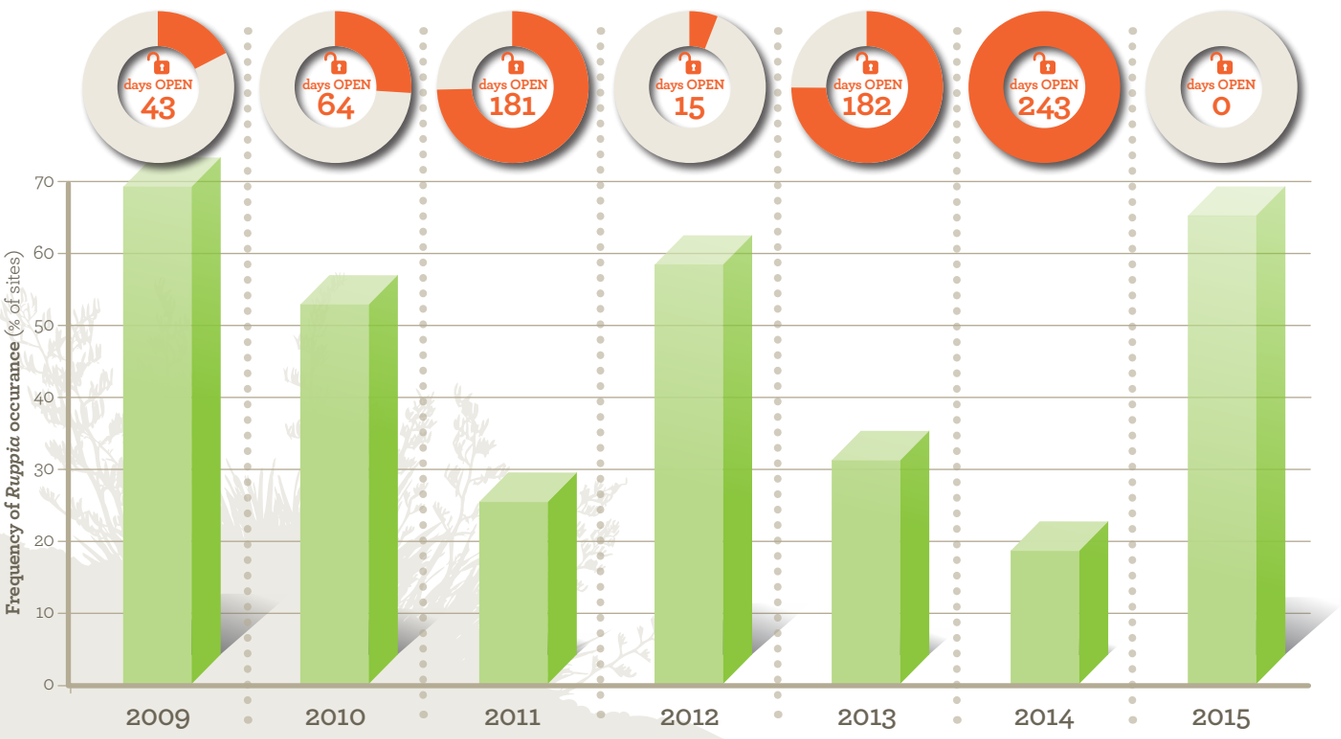
Abundance of aquatic plants – *Ruppia*

Ruppia is a critical aquatic plant species. It provides habitat and food for fish, birds and invertebrates while improving water quality by trapping sediments, taking up nutrients, and releasing oxygen.

Two species of *Ruppia* occur in the Lagoon – *Ruppia polycarpa* and *Ruppia megacarpa*. They grow in both freshwater and brackish conditions, but prolonged salty conditions effect growth and reproduction.

Low levels of water in the Lagoon reduce the abundance of *Ruppia* beds, and they are particularly sensitive to the Lagoon opening during their growing season (Aug–Apr).

Our monitoring between 2009–2015 indicates that the abundance of *Ruppia* is directly related to how long the Lagoon has been open to the sea.



NEXT ACTIONS...

Ruppia is a key feature of Waituna Lagoon and we don't want to lose it. Careful management of lagoon opening events will be required, particularly during the spring-summer growing season.

Advocacy...

to reduce the nutrient and sediment load from the Waituna Catchment

Stakeholders...

are worked with to develop a sustainable approach to lagoon opening

Monitor...

changes in water quality, aquatic plants (Ruppia) and other key features of Waituna Lagoon

Research...

to improve understanding of how much agricultural land is impacted by high water levels

The Department is working with the Regional Council, Te Ao Marama, and local landowners to improve water quality and habitats in the catchment upstream and explore options for managing Lagoon openings

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