

The World of **Watermaster**

NEWSLETTER • 2022

smart solution for hard work

Environment First

Coastal Care the Smart Way

Narrabeen Lagoon Flood Fix



*Our actions – not our words – show what we truly value
Restoring and maintaining a healthy environment
must always be our top priority*



Real progress starts from better values
Environment First

Our lives, communities, economies, and everything else we have, lie on the foundation of our environment, but this foundation is crumbling. We pollute too much and use more resources than nature can regenerate. Consequently, we have destabilized the climate and caused massive damage to the life-supporting systems of the living world. Life on earth can endure catastrophic events like these, but human societies will struggle to survive without a healthy and stable planet. We must start putting the environment first in all our decisions to ensure that nature can absorb the ecological impact of our material progress and continue to sustain us and our future generations.

Water is the soul of our environment, but due to rapid population growth, urbanization, and climate change, we struggle to manage our water resources properly. **In the same way that our houses need cleaning and teeth brushing, so do our waters need maintenance and care.**

Problems – such as the deterioration of aquatic habitats and biodiversity, the spreading of water hyacinth and other invasive aquatic plants, massive water pollution and eutrophication, excess siltation and flooding of urban waters, and the poor safety and functionality of water bodies are solvable with **smart environmental action and equipment.**

Since people tend to avoid all difficult, expensive, and unpleasant tasks, we developed the uniquely versatile and mobile Watermaster dredger to **make the restoration and maintenance of the water environment easy and efficient.**

We put the environment first in designing the Watermaster concept. **A Watermaster can single-handedly carry out all shallow water tasks** that would traditionally require many separate machines and their assisting vessels and other equipment. **Utilizing amphibious multipurpose Watermaster technology for water restoration work leads to fewer machines being procured, operated, and maintained.** All this benefits the

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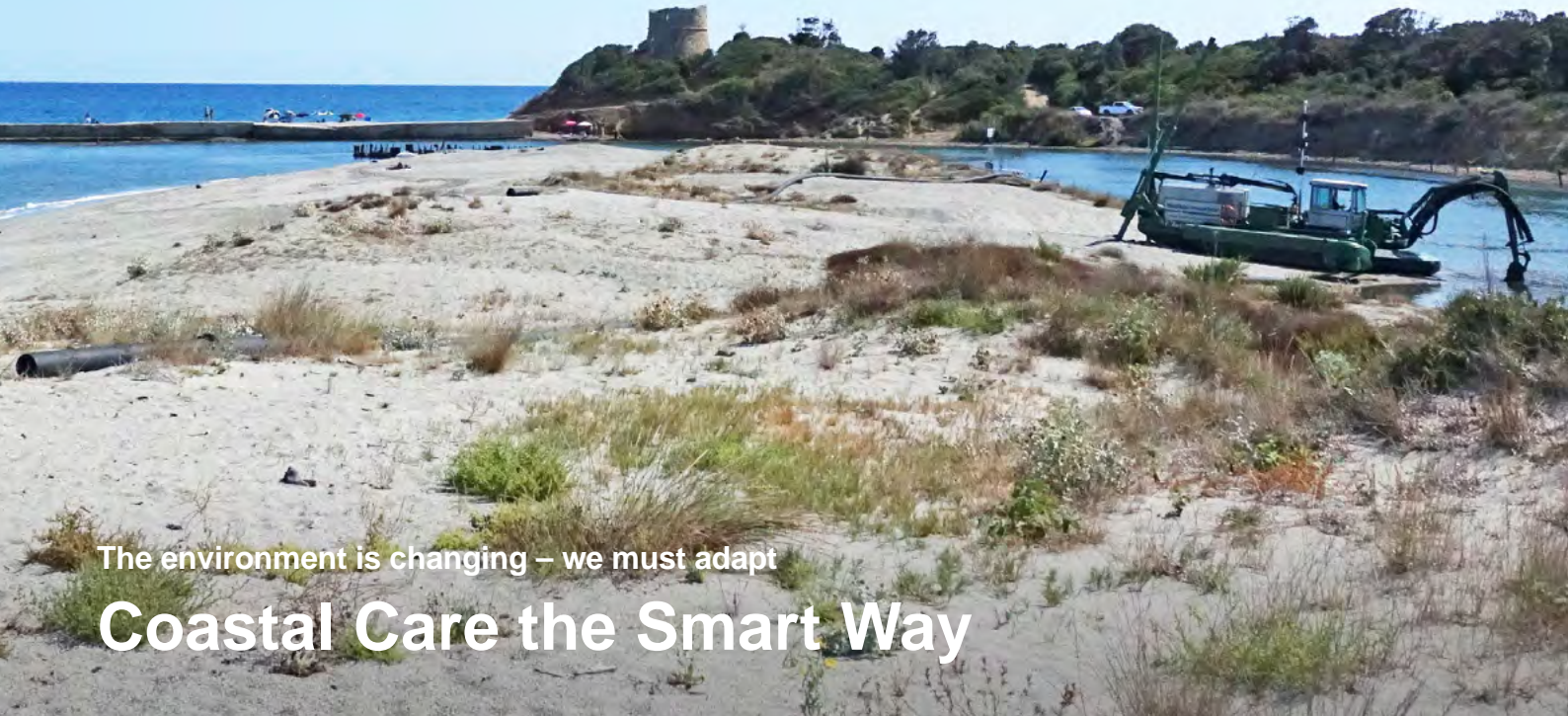
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environment and lowers costs. **Buy less, but better.** We believe this is what is needed to transform the world.

There are no shortcuts to reliability. We have continuously developed the Watermaster concept for over 35 years with feedback from several hundred clients worldwide. Choosing Watermaster means choosing field-proven reliability and support. Choosing Watermaster means more restored water bodies with fewer machines and costs. Choosing Watermaster means putting the environment first.

Respectfully Yours,
Watermaster Finland

Coastal areas face many challenges, such as floods, erosion, and algal blooms. Watermaster technology helps coastal communities solve shallow-water problems smartly. The Watermaster can, for example, quickly get out of the water when a storm approaches.



The environment is changing – we must adapt
Coastal Care the Smart Way

Coastal areas need additional attention from excess siltation from both directions: from heavy rainfall flowing into rivers and higher tides from rising sea level. Problems in this intersection of land and sea are often neglected due to conventional machinery's poor suitability for shallow waters, and their high mobilization and operational costs. The efficient, agile, self-contained Watermaster dredgers are well suited for deepening these rivers and tributaries that act as buffer zones for excess water. Without remedial action, flooding may occur repeatedly, and shoreline inhabitants are forced to move further inland. This is already happening in many parts of the world.



Seaweeds like sargassum cause problems for many island and other coastal communities

Climate change has meant severe, unpredictable, and sometimes overwhelming rainfall, floods, and erosion of previously stable riverbanks, resulting in massive water and silt volume from the uplands coursing the siltation of rivers, lakes, dams, and deltas. Many low-lying river mouths no longer have adequate flushing force due to the formation of dunes, and it causes stagnation of the water flow. **This calls for restoration of the network of tributaries, canals, and river mouths to their original depth to reduce inland flooding and keep the channels and marinas safely navigable.**

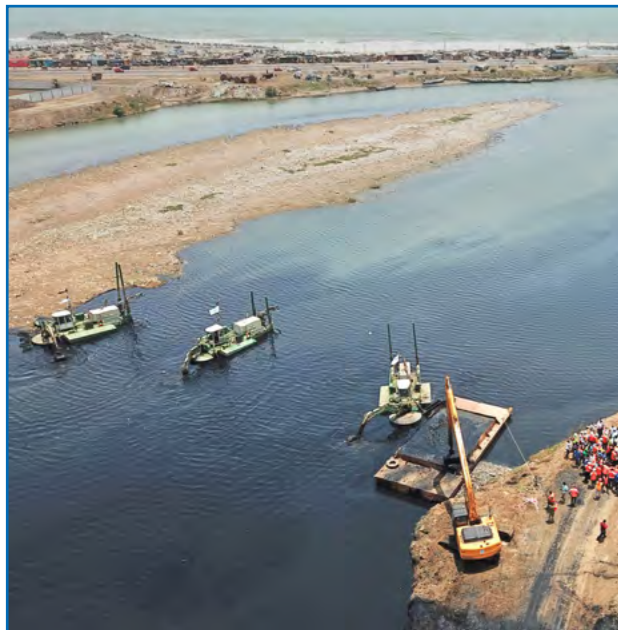
The enormous acreage of deltas and shallow water systems necessitates smaller and more efficient machinery and workforce. **Amphib-**

ious Watermaster dredger, transported by a lowboy trailer, meets this need with its ability to self-manuever from land to water and back without crane assistance, navigate independently with its propulsion, and anchor steadily with its four spuds. With Watermaster, sediment and vegetation removal are not limited to excavating materials into barges or the shore, but can also be a continuous operation with liquified spoils pumped more than a kilometer away.

Thanks to its independent anchoring, flexible excavator arm, and the submersible Watermaster Cutter Pump, **Watermaster works very efficiently and accurately and can remove precise layers of sediments while creating a minimal amount of turbidity. Com-**

pared to conventional dredging machinery, **Watermaster is more economical in mobilization and operational costs, the cost per dredged volume, and maintenance costs.** The multipurpose Watermaster can also strengthen and enhance riverbanks with wood or steel pilings, among other tasks.

Investing in versatile and mobile Watermaster technology for shoreline improvements **helps coastal communities to better adapt to the changing environment, build up their hazard-resilience, prevent and mitigate flooding, advance their economic development, and support the health of coastal ecosystems.** →



RESTORE SILTED RIVER MOUTHS TO PREVENT FLOODING



REPLENISH BEACHES TO COUNTER EROSION



REMOVE EXCESSIVE ALGAE AND NUTRIENT POLLUTION FROM COASTAL WATERS



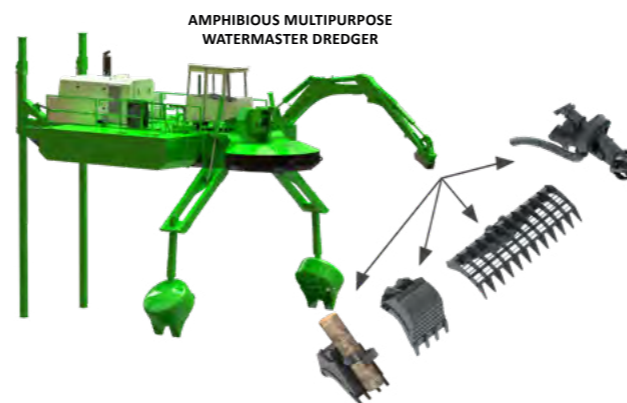
MAINTAIN THE SAFETY AND NAVIGABILITY OF COASTAL WATERWAYS AND MARINAS



IMPROVE THE FUNCTIONALITY AND RECREATIONAL VALUE OF COASTAL WATERS

COASTAL CARE

Around 700 million people globally live in low-lying coastal zones. These areas and their communities are under increasing pressure from changing climate, rising sea levels, increased erosion and flooding, advancing pollution, toxic algal blooms, and excess eutrophication. **Smart environmental action and equipment are needed to adapt to the changing environment.**



Save on investment, mobilization, operation, and maintenance costs in addition to saving the environment – **with a single Watermaster, you carry out all shallow-water work in coastal areas without additional cranes, tugboats, or other auxiliary equipment and labor.** Smart Watermaster technology helps you adapt to different situations and the changing environment.

THE SMART WAY

CHANGE SITES EASILY BY ROAD OR WATER



GET IN AND OUT OF WATER QUICKLY WITHOUT CRANE ASSISTANCE



SAVE THE ENVIRONMENT, TIME, AND COSTS BY USING ONE MACHINE FOR ALL APPLICATIONS



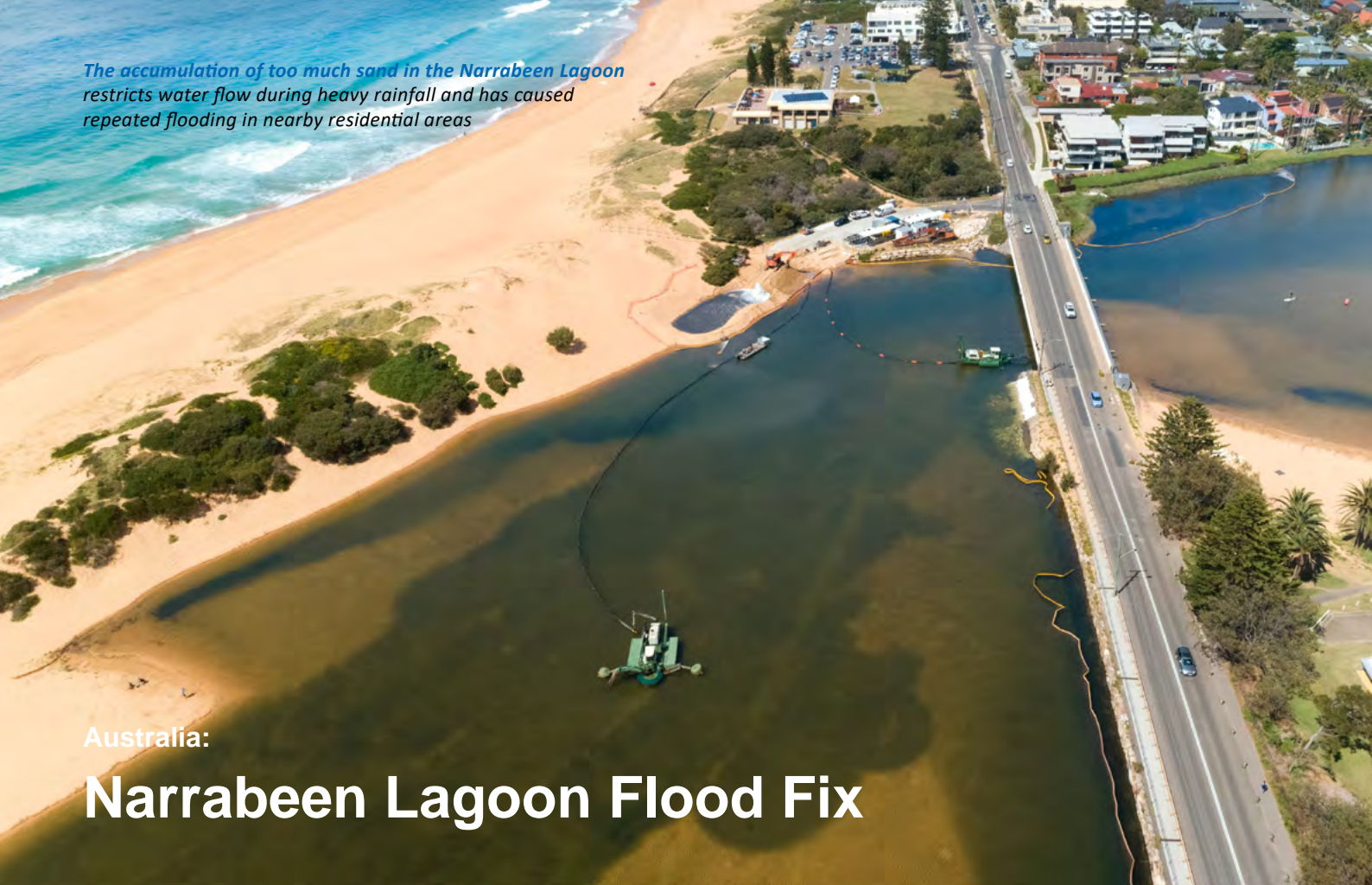
OPERATE SAFELY AND EFFICIENTLY IN SHALLOW WATERS WITH A PURPOSE-BUILT MACHINE



ENJOY THE RELIABILITY OF PROVEN TECHNOLOGY AND SUPPORT



The accumulation of too much sand in the Narrabeen Lagoon restricts water flow during heavy rainfall and has caused repeated flooding in nearby residential areas



Australia:

Narrabeen Lagoon Flood Fix

The Narrabeen Lagoon in Pittwater, Australia, is the largest coastal lagoon in the Sydney region. It is a very popular destination for enthusiasts of leisure activities such as swimming, kayaking, snorkeling, sailing, and fishing. For locals, it offers a unique lifestyle of outdoor recreation. The entrance to Narrabeen Lagoon periodically becomes clogged up and needs clearing to prevent flooding. Last year the task was assigned to Dredging Systems, who chose Watermaster as their tool of preference to ensure the best outcome.

Lagoons are defined as bodies of water that, in their natural state, remain closed from the surrounding sea until rainfall raises water levels. The excess water then breaks out over the sand barrier, creating a new channel to the sea that lowers the water level. The sea, on the other hand, constantly brings in new sand on the lagoon entrance, effectively blocking it again. In the case of heavy rainfall following long periods of drought, the sand barrier may have grown high enough to direct excess water inland rather than into the sea. The ensuing floods pose a risk to homes and businesses.

In the past, Narrabeen Lagoon water masses have repeatedly broken out, and

the flooding on nearby residential areas has impacted the lives of thousands of people. Climate change with its heavier rainfall and more frequent storms is exacerbating the situation.

Ever since 1906, when Warringah Shire Council was formed, the lagoon has been periodically dredged. Earlier, this was done by digging with multiple excavators placed at a short distance from each other, passing the excavated sand along. The method was not very efficient or safe, and required handling the same masses of sand multiple times. The land-based excavators also had a limited operational area and could not access the deeper parts of the lagoon.



The Narrabeen Lagoon is situated in the eastern coast of Australia, north of Sydney

Novel Approach Brings Results

In 2021, the Northern Beaches Council decided to take a proactive approach to the problem and have the Narrabeen Lagoon sea entrance already opened when water levels showed first signs of rising. Dredging at the optimal moment when flooding does not yet occur, but there is sufficient water in the lagoon makes the force of the water masses work in concert with dredging efforts, helping to deepen the channel more effectively.

The Council assigned the task to the **local company Dredging Systems**, which specializes in shallow-water restoration projects with modern equipment and techniques.



Protecting the local community from flooding in a smart way
Watermaster dredgers pumped the accumulated sand directly to the shore in one go

Mr. Anto Pratten, the founder and director of Dredging Systems, **mobilized two amphibious Watermaster dredgers for the project.** Watermaster is a versatile device suited for any jobs needed in a water restoration project: suction dredging with Watermaster’s cutter pump, excavating with a selection of buckets, piling with a vibratory pile driver, and removing vegetation with a rake. This technology **enables doing more with less since one Watermaster can carry out the work of many single-purpose machines.** Watermaster is a **reliable, serially produced piece of machinery from Finland that is used the world over.**

Watermaster’s mobility comes in handy in any project, also at the shallow and busy Narrabeen Lagoon. After being transported to the work site on a truck, Watermaster “walked” into the water on its own. Being self-propelled, the Watermaster needed no help to move in the water either. Nor did it need outside help for anchoring and working. This translates into **no cranes, no tug-**

boats, no assisting vessels, and no separate anchors and wire cables. Also, as no set-up is necessary, the bulk of the time spent at a site goes into actual productive work.

This was the first time the removal of excess sand build-up from the Narrabeen Lagoon was carried out hydraulically by suction dredging instead of mechanically excavating. **Watermasters dredged 40,000 m³ of sand** into a dewatering basin on the shore through a floating pipeline **in one go without having to handle the same materials many times,** as was the case earlier with conventional machinery. The sand was then scooped up by an excavator onto trucks and taken to nearby Collaroy beach, where erosion had depleted the sands. Watermaster can **work in open waters even six meters deep,** and thus easily covered the whole lagoon area. **Thanks to Watermaster’s smooth independent operation, the lagoon was never closed to the public during the project,** and people could paddle board, swim, fish, and enjoy the lagoon as usual.

Dredging Systems also did civil engineering work around and under the bridge, **depositing hundreds of tons of rocks to stop the erosion** around the bridge pillars. They did not need additional machinery for the job since **multipurpose Watermaster was perfect for this application, too.** Changing the cutter pump to a bucket took about 30 minutes, and Watermaster was soon carrying out its next task. Watermaster anchors firmly with its four stabilizers, so it **had no trouble lifting the heavy rocks steadily and safely in place using its strong excavator arm.**

Dredging Pays Off

As a result of Watermaster dredging, the **Narrabeen Lagoon area is now more flood resilient. Locals can once again live in peace and enjoy the outdoors normally.** Targeted dredging is still occasionally needed, but thanks to Dredging Systems’ Watermasters, it can now be done more quickly, efficiently, and safely.

1.

Watermasters suction dredge the accumulated sand directly to the shore



2.

The sand is dewatered



3.

An excavator lifts the sand into trucks to be transported to nearby beaches



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