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ENVIRONMENT  
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2023**

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## **JUDGES' REPORT**

### **MARINE MARINE FLEX**

<b>INTERVIEWED</b>	Mike and Donna Baker
<b>DATE</b>	October 25, 2022
<b>JUDGES</b>	Charlotte Šunde, Eric Jorgensen, Bev Doole

### **INTRODUCTION**

Marine Flex is an elasticated mooring and anchoring system that protects the seabed and is an alternative to the damaging chains used in conventional moorings.

It is one of several products developed by Mike and Donna Baker that reduce the impact on the marine environment of structures such as marine farms, jetties, and block and chain moorings.

Traditional moorings use a concrete block with chain attached to keep the boat or structure in place. The chain sweeps across the seabed, slackening or tightening depending on wind, waves and currents, damaging marine habitat and organisms. Marine Flex provides a solution to this — the rubber cables do not come into contact with the seafloor.



They are attached to a specially designed screw anchor that penetrates the seabed with less disturbance and greater holding capacity than conventional systems.

Marine Flex have customers around the world who need moorings that are compatible with environmentally sensitive marine areas.

## GENERAL INFORMATION

Mike and Donna Baker started a mooring installation and maintenance business in Picton 30 years ago and have evolved over time to focus on N-Viro Mooring and Anchor Ltd (launched 2010) and Marine Flex (launched 2012).

Their complementary skills have created a family business that thrives on innovation and problem-solving. Mike left school at 15 and trained as a diesel mechanic. He later fulfilled his dream to work as a deep-sea diver, including time in the Bass Strait oil industry. Donna brings strong business skills as well as being a qualified commercial diver, marine engineer and skipper. Marine Flex has a staff of six, supported by active Board members.

The rubber for Marine Flex is sourced from Malaysia. This natural product avoids the plastic and nylon used in other mooring systems and is guaranteed for 20 years.

Aquaculture in the Marlborough Sounds is one of their markets. The Marine Flex mooring and anchor system holds mussel farms in place and a GPS location and installation system developed by Mike ensures they do not move beyond their legal boundary.

Marine Flex has also been used in the Sounds for jetties, pontoons and to secure the underwater classroom at Lochmara Lodge. This alternative to piles causes less damage to the seafloor, avoids biofouling and is less visually obtrusive.

Sonar seafloor mapping by Marlborough District Council has shown damage caused by traditional block and chain moorings. There are about 3000 moorings in the Marlborough Sounds. As awareness grows and regulation comes in to protect seafloor habitats, Marine Flex offers a more environmentally friendly alternative.



There are strong markets for Marine Flex overseas, with mooring and anchor systems installed in countries including Norway, South Korea, Israel, Australia, Indonesia, Mexico, USA and Canada.

Australian clients include a seagrass restoration programme in New South Wales, the world heritage site of Great Barrier Reef, and an anchoring system for the ferry terminal in Hobart.

In Belgium, which has tough regulations to protect the seabed, Marine Flex is providing a way to anchor offshore marine farms between power-generating wind farms.

Marine Flex is also used at a drinking water reservoir in Israel that doubles as a floating solar farm. Large buoys are placed on the reservoir to reduce evaporation while providing a platform for the solar panels. Marine Flex cables anchor the buoys back on land. Mike sees potential for a similar power generating project on vineyard dams in Marlborough.

Environmental features of Marine Flex operations:

- Replaces boat moorings that drag chains and damage the seabed.
- Limits seabed damage in ecologically sensitive areas here and overseas.
- Less seabed disturbance than piles when used with floating pontoons and jetties, and reduces visual impact of these structures.
- The moving elasticated cables prevent biofoul from building up in the marine environment.
- Trees are not cut down for the rubber — the raw product comes from tapping the tree for sap.
- Nylon fishing nets are recycled to make housing for rubber ropes.
- Metal bins used to transport the rubber are reused to ship out finished product.
- Steel from Christchurch earthquakes has been repurposed to make housing for the cable load tester.
- Provides anchoring system for floating solar farms for power generation (overseas).

Marine Flex received a Research and Development grant of \$100K from Callaghan Innovation in 2020 to develop the next generation of products.

### THE JUDGES WERE IMPRESSED BY:

- The strong and effective partnership between husband and wife team Mike and Donna, from working extra jobs to pay for Mike's deep-sea diving training in Australia to focusing their individual skills on different parts of their business — Donna (finance and management) and Mike (innovation and manufacturing).
- The high level of persistence and problem-solving across the operation. This is accompanied by extensive research, development and testing of their products.
- Genuine commitment to looking after the marine environment. They ask clients up-front about their environmental policy, and don't do business with organisations that lack environmental values.
- Use of natural rubber rather than fossil fuel synthetic products.
- Versatility of Marine Flex and being open to new opportunities, such as the floating solar array in Israel.
- Willingness to travel and do business face-to-face to build strong relationships, resulting in a wide international reach.
- The ability to collaborate by finding experts in various fields and working with them, eg. Trimble GPS location technology; plastics modeller in Wellington.
- Willingness to learn from mistakes and not afraid to ask for help.



## PROBLEMS AND HOW THEY HAVE BEEN TACKLED

- **Poor product performance:** Before developing Marine Flex, Mike used a similar Swedish product called Seaflex and guaranteed its performance for their clients. However, a change of ownership coincided with a deterioration in Seaflex performance, which the new owners explained as being “something wrong with the New Zealand water”. Mike did not accept this and built up a body of evidence by testing the current Seaflex compounds compared to an older sample. He found the rubber had been changed to nylon and synthetic compounds which created friction and electrolysis, and stainless steel components were no longer marine grade. He also checked with other Seaflex customers around the world who were experiencing similar problems. Mike fronted up to the manufacturer with the evidence and stopped using Seaflex. This led to the development of Marine Flex so he could guarantee the quality for his customers.
- **Slow uptake in NZ:** There is a reluctance by NZ companies to pay more, even if the alternative is proven to be more environmentally friendly. Installing a Marine Flex system costs more than a traditional block and chain mooring. However, maintenance is lower and Marine Flex is guaranteed for 20 years. “When you’re selling an environmental concept they all say it’s great, and then they ask how much is it going to cost,” says Mike. They are continuing to work with and educate regional councils and NZ clients by drawing on overseas experience and proof of concept.
- **Cost of exporting:** They have more market traction and opportunity overseas, particularly in countries where there is strict legislation to protect seabed environment. However, the cost of container freight from NZ is very expensive. As business continues to grow, Mike and Donna plan to set up another factory in Europe nearer to their markets.
- **Intellectual Property:** Working as an innovator there is the risk of inadvertently creating a product that someone already has IP for. Before developing any new product idea, Mike and Donna do an international check to see if it has already been patented.
- **Business vulnerability:** Several years ago Mike was seriously ill. Fortunately they had set up standard operating procedures for all their business processes, which enabled other staff to step in and keep the company going.
- **Convincing customers:** Councils and other prospective clients want to run their own trials rather than accept the research and experience from others. Mike and Donna have assembled evidence and proof of concept to try to overcome this.

## SUMMARY

Mike and Donna have created a business from their Picton factory that has environmental and commercial benefits for companies and organisations here and around the world.

The process from idea to installation of the Marine Flex mooring and anchoring system has been underpinned by lateral thinking, extensive research and testing and a commitment to quality.

The depth of innovation and problem-solving that continues after 30 years in business is a credit to Mike, Donna and the team.

## SUGGESTIONS

- Put more emphasis on the environmental benefits of your work on the website. You're doing some great stuff.
- Familiarise staff with the Marlborough Environment Plan and new rules for moorings in ecologically significant sites. (MEP Volume 1, Chapters 8 and 13). There may be some marketing opportunities. This 2018 Cawthron report on the effects of chain swing moorings provides useful information:  
<https://envirolink.govt.nz/assets/Envirolink/Reports/1815-MLDC137-Effects-of-moorings-on-different-types-of-marine-habitats.pdf>
- Approach Marlborough District Council's coastal scientist to share the ecological benefits of marine flex mooring systems with other regions' coastal scientists:  
[Oliver.Wade@marlborough.govt.nz](mailto:Oliver.Wade@marlborough.govt.nz)
- Try again to find partners to replicate the Israeli solar farm concept in Marlborough. You may find connections through the Environment Awards: Campbell McMath, Kea Energy solar farm in Wairau Valley, [campbell@keaenergy.nz](mailto:campbell@keaenergy.nz) 021 151 0583  
<https://www.keaenergy.nz/>; Ed Massey, NZ Winegrowers GM Sustainability, [edwin.massey@nzwine.com](mailto:edwin.massey@nzwine.com) 03 265 4057 <https://www.nzwine.com>
- If you're looking for more exposure and clients, consider regular updates on your facebook page.
- Develop a succession plan. A business mentor may be helpful in planning for the future and cultivating people to carry on with your vision: <https://www.businessmentors.org.nz>