



# URBAN PLUNGE

Sydney  
WATER



## Ocean Guardian | LR1000 Barrier

Country of Origin: South Africa/Australia

Technology Readiness Level: 9 - Fully commercial



**Description:** The Ocean Guardian LR1000 Barrier is a large-scale shark barrier for beaches, resorts and aquaculture. It is powered by Shark Shield Technology, the world's most scientifically proven electrical shark deterrent technology. Sharks have short-range electrical receptors in their snouts called the "Ampullae of Lorenzini" used for finding food. Ocean Guardian's Shark Shield Technology has been developed to specifically take advantage of these highly sensitive receptors, creating a powerful three-dimensional electrical field which causes spasms turning the sharks away. As dolphins, whales, fish, and other marine animals are without these receptors, Shark Shield Technology has negligible effect on them. Shark Shield Technology consists of a minimum of two electrodes, which when both are submerged in sea water, emit a three-dimensional electrical field surrounding the user or area. When a shark comes within a few metres, the field (emitted by the device) causes the shark to experience muscle spasms. The LR1000 Dyneema fibre design ensures the solution is strong and durable, capable of withstanding swells up to 5 meters. Another key feature of the LR1000 is that it does not present the mass that exclusion barriers present to ocean swells and seaweed. The LR1000 design has drop antennas that are not tethered to seabed and as a result the seaweed is not trapped, and the LR1000 buoys floating on the top of the ocean present less drag for the swells and waves.



**Applicability to Urban Swim Sites:** The LR1000 can be used to create a protected swimming area in estuaries, at private resort beaches, council beaches and even designated diving and snorkelling locations. The long-term goal of the LR1000 is to replace harmful shark nets and drumlines.

**Technical Risk and Case Studies:** Shark Shield Technology is the world's most scientifically proven and independently tested electrical shark deterrent technology, with its proven performance documented in more than five peer reviewed published research studies. The Western Australian government has approved Ocean Guardian personal devices for consumer rebates. In 2022, Ocean Guardian launched its first commercial installation for the LR1000 in the Bahamas. The installation is a 365-meter system protecting a private resort. In field testing, a total of over 50 white sharks were exposed to the LR1000 prototypes and marked trends were observed. When the system was switched on, white sharks in the area moved off to a safe distance from the system and remained out of view until the system was switched off, whereupon the white sharks returned and freely engaged with the bait and floating system. In this test environment the LR1000 was 100% effective in deterring sharks.

**Cost and Business Case:** The LR1000 has a low total cost of ownership to implement and maintain.

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