



Shark Shield Submission To:

**Inquiry into the efficacy and regulation of shark mitigation
and deterrent measures**

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SECTION 1 – TERMS OF REFERENCE

[Shark Shield™](#) is the world's only scientifically proven and independently tested electrical shark deterrent.

In reviewing the most recent research on Shark Shield conducted by the University of Western Australia (Section 5) the Australian Geographic stated "[Great white shark deterrent almost 100 per cent effective](#)"

Proven personal electrical deterrents are the most effective approach for providing direct and meaningful protection from dangerous sharks for key at risk water users (surfers and divers).

Sharks have small short-range electrical receptors in their snouts used for feeding. Shark Shield's unique three-dimensional electrical waveform instantly turns sharks away by causing unbearable spasms in these sensitive receptors.

Under the Terms of Reference inquiry into the efficacy and regulation of shark mitigation and deterrent measures, Shark Shield Pty Ltd is providing a response to the highlighted areas below;

- (a) research into shark numbers, behaviour and habitat;
- (b) **the regulation of mitigation and deterrent measures under the Environment Protection and Biodiversity Conservation Act 1999, including exemptions from a controlled action under section 158;**
- (c) **the range of mitigation and deterrent measures currently in use;**
- (d) **emerging mitigation and deterrent measures;**
- (e) bycatch from mitigation and deterrent measures;
- (f) alternatives to currently employed mitigation and deterrent measures, including education;
- (g) the impact of shark attacks on tourism and related industries; and
- (h) any other relevant matters.



SECTION 2 – REGULATION OF MITIGATION AND DETERRENT MEASURES

Shark Shield has pioneered the electrical shark deterrent product category over the past twenty years, however there are no Australian Standards upon which a consumer can base a confident purchase decision.

Considerable investment, science and testing has gone into the development of Shark Shield technology enabling the company to make the claim of being the “world’s only scientifically proven and independently tested electrical shark deterrent”.

Unfortunately, as there are no standards upon which to compare product efficacy, products are entering the Australian market without the independent supporting research, these products undermine the consumers’ confidence in the product category.

For example, if one speculated that a magnetic field might act as an effective shark deterrent, the active magnetic field radiates to approximately six centimeters (6 cm), not the meters claimed by manufacturers. Furthermore, there is no independent scientific research supporting the use of magnets as effective shark deterrents.

In testing funded by the Western Australian Government conducted by the University of Western Australia published in July 2016, testing of electrical deterrents found that Shark Shield was the only effective product and that alternative imported electrical deterrent products tested were found to be ineffective in deterring Great White Sharks. These products are sold in the Australian market with no independently scientific basis as to their efficacy.

To enable consumers to gain confidence in this emerging category of products an Australian Standard is required where products meet the minimal requirements as determined by the existing independent research.

Shark Shield electrical deterrents are safety products designed and proven to reduce risk just like seat belts, bike helmets etc. and as such should be regulated with manufacturers required to meet minimum standards. This will greatly assist in building consumer confidence and adoption.



SECTION 3 – THE RANGE OF MITIGATION AND DETERRENT MEASURES CURRENTLY IN USE

Globally, the number of shark bites is increasing annually and this trend is likely to continue.

While shark bite mitigation will always involve a mix of strategies, proven individual deterrents are the most effective at providing direct and meaningful protection for all types of water users. Individual deterrents are the only real way that high risk groups of water users, such as divers and surfers, can be afforded real protection, including in more remote locations.

The Federal and State Governments have invested significantly in a range of mitigation approaches, but arguably they have not provided direct and meaningful protection for all water users. For example: Tagging and locating tagged sharks and providing this information to the public is important in its own right, but it does not provide actual direct protection for water users. Enclosures such as the ones at Coogee Beach WA are limited in their transferability to other locations with greater wave energy, and are generally suitable for bathers only.

Other methods such as aerial surveys have been found to be highly ineffective, while shark control programs (netting and drumlines) are obviously contentious, expensive and ineffective. New high profile sonar technologies for detection also have serious scientific questions regarding their effectiveness which have been raised by independent researchers.

Arguably, the various governments investment has not been cost-effective in terms of providing actual and demonstrable protection for water users (particularly surfers and divers), although it has yielded important information on the biology and ecology of the key shark species

The Shark Shield™ is the only individual deterrent that has been independently tested in Australian conditions, including on white sharks. It has in fact been independently tested a number of times, and each time it has yielded positive results. The results of these tests are available in the peer reviewed literature in high quality journals. Independent field tests published in peer reviewed scientific journals is the obvious scientific standard that needs to be reached to demonstrate effectiveness. Further background to the Shark Shield and the independent test examples are included in Section 5 of this briefing and can be found on the company's website www.sharkshield.com

The Shark Shield™ very clearly represents the most effective shark deterrent for divers and surfers – the two water users that are most at risk in Australian waters.



SECTION 4 – EMERGING MITIGATION AND DETERRENT MEASURES

The company has a range of products used in diving and recently introduced a new version of its product for surfers (highest risk group) co-designed with the assistance of 2 x World Champion Surfer Tom Carroll to ensure that the product does not impact surfing performance, key to broad adoption.

An issue that influences the uptake of the Shark Shield is the cost of an individual unit. The cost of a unit is based on the componentry and the labour. It is not due to excessive profiteering from the company, the company is forecasting to produce its first profit in fifteen years following over \$10M invested in research and development of its technology.

The desired outcome is that the government commit to providing a rebate to purchasers of the Shark Shield and/or scientifically proven electrical deterrents.

The advantage to a government of this approach is that it is directly supporting mitigation measure that:

- a) has been scientifically proven to work and requires no more scientific research, and
- b) provides direct and meaningful protection for high risk water users, and
- c) enables the individual to take personal responsibility for risk management

Further the government would not require any changes in legislation, and the ultimate decision to purchase a Shark Shield™ would still rest with an individual, so that a government would not be impinging upon an individual's right to choose.



SECTION 5 – SHARK SHIELD EFFICACY RESEARCH

[Estimating the Probability of a Shark Attack when using an Electric Repellent:](#) University of Pretoria, South Africa and University of Durban-Westville, South Africa. 2003

SUMMARY: The research concluded that the probability of an attack in sharks allowed access to bait for a 5 minute period was reduced from about 0.70 when the SharkPOD was in power-off mode, to about 0.08 when the SharkPOD was in power-on mode. When sharks were allowed access to bait for a 10 minute period, the probability of an attack was reduced from 0.90 when the SharkPOD was in power-off mode, to 0.16 when the SharkPOD was in power-on mode. (SharkPOD was the first version of Shark Shield)

[Effects of the Shark Shield electric deterrent on the behaviour of white sharks.](#) The South Australian & Research Development Institute (SARDI), Flinders University and Ocean Research South Africa 2012

SUMMARY: During the static bait test, the proportion of baits taken were not affected by the deterrent, however, the deterrent doubled the time it took for sharks to take the static bait, as well the number of interactions per approach, indicating that the sharks investigated how to approach the bait with minimal affect by the field. During the dynamic seal decoy, no breaches and only two surface interactions were observed when the deterrent was activated, compared to 16 breaches and 27 surface interactions, when the deterrent was not activated.

[How Close is too Close? The Effect of a Non-Lethal Electric Shark Deterrent on White Shark Behaviour.](#)

University of Western Australia Ocean Institute, Flinders University and Ocean Research South Africa. 2016

SUMMARY: The study analyzed 322 encounters involving 41 individual white sharks, ranging from 2m to 4m long. Upon first encounter with a Shark Shield, all approaching great white sharks were effectively deterred, staying an average of 1.3m away from a baited canister with the device attached. Only one great white shark came into contact with the bait in the presence of an active Shark Shield, and only after multiple approaches. The interaction in question simply involved a bump of the bait canister rather than a full bite. In contrast, bites were common during control trials.