

## Scientific non-lethal SMART drumline trial

The Western Australian Government has committed to conduct a scientific trial of non-lethal SMART drumlines and to deploy additional satellite-linked (VR4G) acoustic receivers in the South West.

Following public consultation, ten SMART drumlines will be deployed evenly across 11.5 kilometres of coastline in the State's South West, about 500 metres offshore from Hangmans surfbreak north of Gracetown to Ellensbrook in the south.

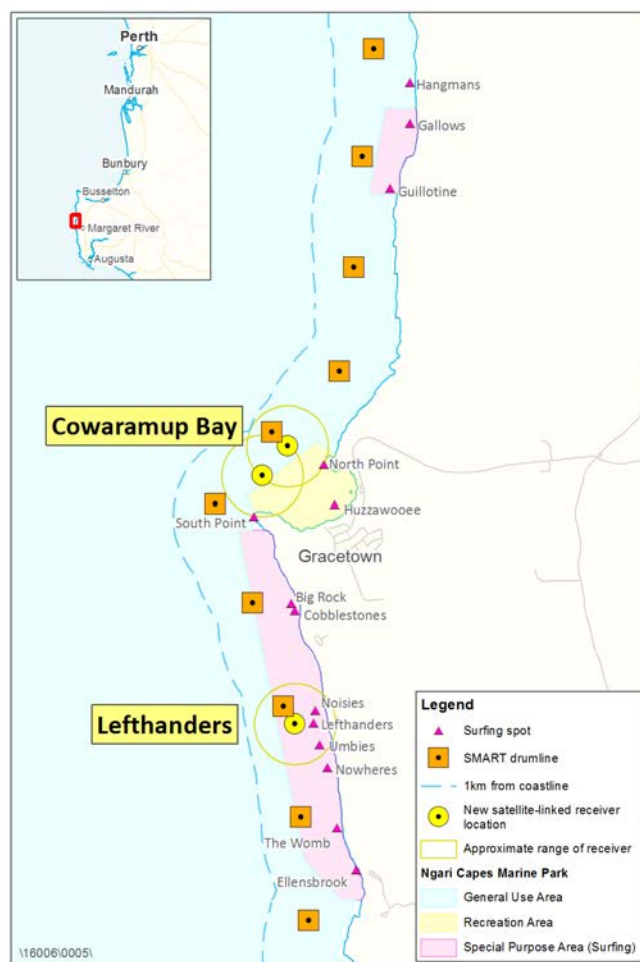
The trial is expected to run for at least 12 months, commencing as soon as possible. The intent of the trial is not to kill sharks, but to catch, tag, relocate and release white sharks one kilometre from shore.

Weather permitting, SMART drumlines will be deployed and retrieved each day, during day light hours. The drumlines will be continuously monitored while in the water and positioned to allow vessels to attend within 30 minutes of an alert being triggered.

Where possible, the Gracetown trial will be consistent with that conducted in New South Wales, to allow information from the two trials to be compared.

At the conclusion of the trial the Chief Scientist, Professor Peter Klinken AC, will

undertake an independent assessment on the effectiveness of smart drumlines in reducing shark attacks. The Chief Scientist's report will assist government in making a science-based assessment of the potential application of SMART drumlines in Western Australia.



## Extension of the Shark Monitoring Network

As part of the consultation process, the community was also able to review potential locations for the new satellite-linked acoustic receivers. Three receivers will now be deployed, two outside

Cowaramup Bay and one at Lefthanders surfing spot, providing ocean users and land managers with near real-time alerts through the Shark Monitoring Network when tagged sharks are detected.

Final deployment of SMART drumlines and new satellite-linked acoustic receivers will be subject to relevant environmental approvals.

# Frequently asked questions

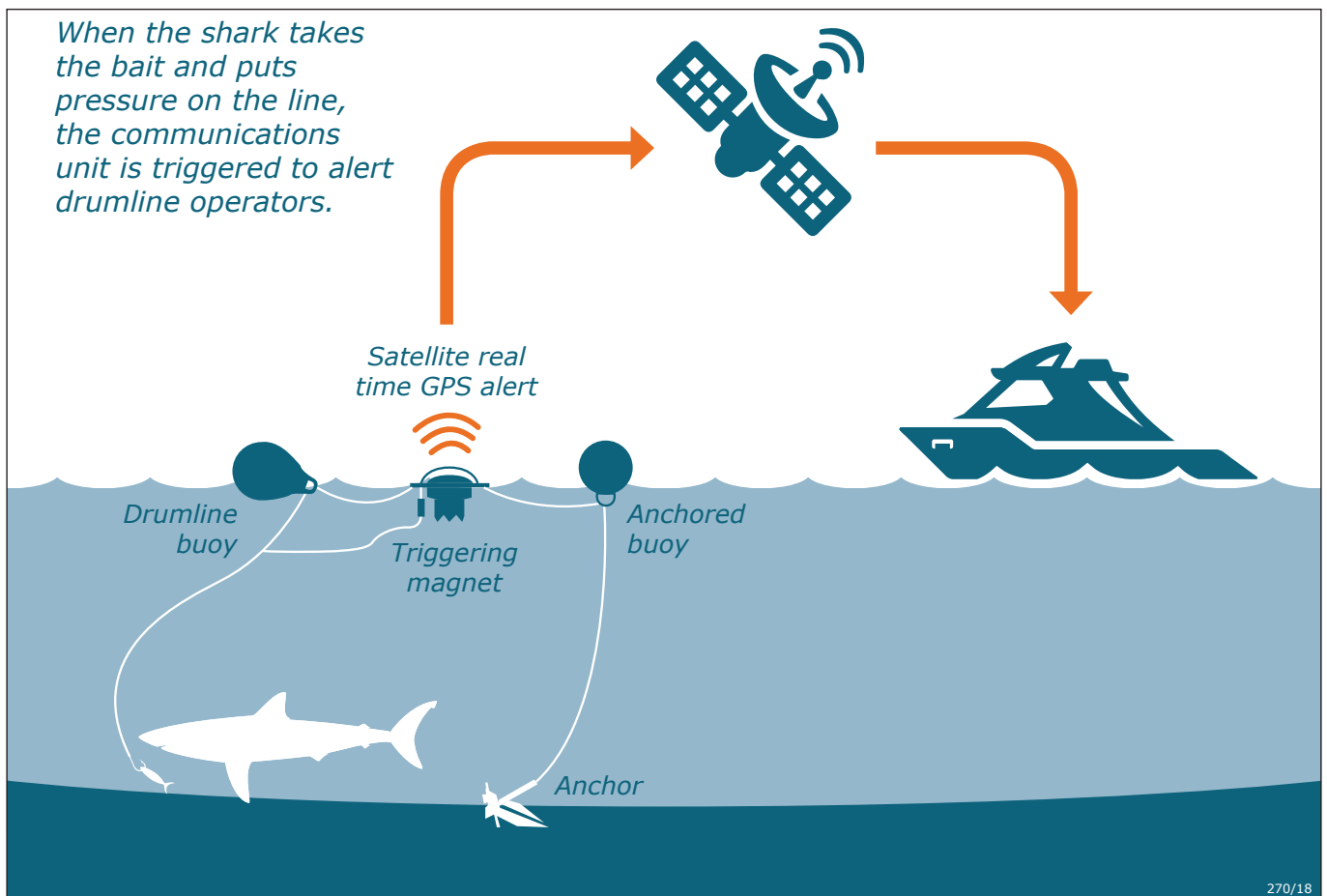
## What Is a SMART drumline?

'SMART' is an acronym for Shark-Management-Alert-in-Real-Time. A SMART drumline is non-lethal, and designed to send an alert when a shark has been captured on the line. Anchored to the sea floor, SMART drumlines comprise of two buoys and a satellite-linked GPS communications unit attached to a baited hook.

A triggering magnet is attached to the communications unit and the line. When a

shark takes the bait and puts pressure on the line, the magnet is released. This causes the communications unit to transmit its position to the drumline operator, alerting them to the presence of an animal on the line. Once alerted, the drumline operator can immediately respond to tag, relocate and release the animal.

The proposed locations of the non-lethal SMART drumlines in the Gracetown trial are based on a vessel attending within 30 minutes when an alert is triggered.



## Who will be responsible for the deployment of SMART drumlines?

The Department of Primary Industries and Regional Development (DPIRD) will be responsible for implementing the trial and managing a contractor who will operate the non-lethal SMART drumlines.

The appointment of the contractor will be subject to a formal tender process in accordance with Western Australia Government procurement processes. The contractor will receive training from DPIRD staff and will regularly have DPIRD staff on board vessels to monitor the trial.

## How often will SMART drumlines be deployed?

Weather permitting, SMART drumlines will be deployed and retrieved each day. It will be the responsibility of the contractor to stay in the vicinity of the drumlines, providing the capacity for an immediate response once alerted to the presence of a shark on the line.

## What are the objectives of the trial?

The Western Australian trial will gather tagged shark movement data which will be assessed to determine whether SMART drumlines reduce the risk of shark interactions in local conditions.

The target species for the trial is white sharks, as all fatal and serious shark bites since 2000 in Western Australia have been attributable to white sharks.

After 12 months, the Chief Scientist, Professor Peter Klinken AC will undertake an independent assessment on the effectiveness of SMART drumlines in reducing shark attacks. The Chief Scientist's report will assist government in making a science-based assessment of the potential application of SMART drumlines in Western Australia.

## What tags will be used as part of the trial?

The following tags will be attached to white sharks:

1. An external acoustic tag to allow monitoring by satellite-linked receivers as part of the Shark Monitoring Network and data recording receivers deployed for the term of the trial.
2. A pop-up satellite archival tag will be used to collect water depth, temperature and broad scale location data.
3. An identification tag will be used for easy physical identification to determine if the shark has been caught as part of the trial.

## Why are we using pop-up satellite archival tags?

Pop-up satellite archival tags (PSATs) consists of various sensors, a data recorder, a programmable, automatic release mechanism and a transmitter for data retrieval via satellite. PSATs are positively buoyant so float to the surface at a pre-determined release time (usually after a few months) and data is then transmitted to a satellite.

PSATs collect data on time of day, light levels, temperature and water depth. This data enables scientists to broadly estimate the shark's movements from the time a shark is tagged, to the time the tag releases from the shark. The PSATs for this study also use an accelerometer to detect if a tagged shark keeps swimming after release and so will be used to estimate survival rates following tagging, a critical aspect of the trial. The PSATs also monitor for constant depth, a state which implies the tag is floating at the surface or sitting on the sea floor. If constant-depth is met the tag will release, indicating animal mortality and transmit its data summaries.

PSATs are not designed or intended to provide a real-time satellite-track of a shark. Tags that use satellites to track location cannot reliably provide the level of accuracy required for fine-scale tracking and only transmit locations when the shark's dorsal fin breaks the surface. Such tags would not provide information relevant to the design of the trial.

## How far offshore will sharks be released?

Where possible sharks will be relocated about one kilometre offshore. While every attempt will be made to release sharks beyond that point, weather conditions may impact the ability to relocate the shark safely.

## How will tagged shark movements be monitored?

Shark movements will be monitored via data-recording receivers on the sea-bed around the perimeter of the trial area. They store data in the on board memory and will be retrieved and information downloaded for the Chief Scientist's independent assessment.

In addition, during the trial white sharks will be tagged with an acoustic tag which can be detected by one of the satellite-linked receivers which make up the Shark Monitoring Network.

The Shark Monitoring Network will provide ocean users and land managers with near real-time alerts of tagged sharks. The information is also posted to the SharkSmart Activity Map and Surf Life Saving WA Twitter feed.

Pop-up satellite archival tags will also be used to collect broad scale movement data.

## How will I know if a shark has been captured on a SMART drumline?

Information regarding sharks caught and released will be made publicly available. Beach users are encouraged to check the SharkSmart Activity Map and Surf Life Saving WA Twitter feed for up to date tagged shark information, as well as tagged shark detections and reported shark sightings.

## What makes the SMART drumline trial different to the 2014 drumline trial?

Between January and April 2014, the former government trialled the use of traditional drumlines, which consisted of a baited hook suspended from buoys, anchored to the ocean floor.

The lethal 2014 trial was designed to kill target shark species caught on the line.

The planned non-lethal SMART drumline trial will be designed as a catch, tag, relocate and release program of target species.

## Do SMART drumlines attract more sharks to the area?

By using a single bait and hook, the SMART drumline is designed to capture sharks within the immediate area. The use of burley or other attractants are not permitted.

There have been no scientific studies to determine if drumlines attract sharks from offshore environments.

## Further information

**SharkSmart**

[www.sharksmart.com.au](http://www.sharksmart.com.au)