

Consultation for SMART drumline trial and satellite-linked receiver locations

General information

The Western Australian Government seeks your views on the locations for the non-lethal SMART drumline trial and deployment of satellite-linked (VR4G) acoustic receivers in the South-West.

The outcomes of the consultation will inform the preferred locations for both the SMART drumline trial and new satellite-linked receiver locations. Final deployment will be subject to relevant environmental approvals.

Public consultation will be conducted between Thursday 13 September and Wednesday 10 October 2018.

To complete the online survey, visit sharksmart.com.au/research/smart-drumline-trial/ or complete the included survey and mail to PO Box 496, Fremantle WA 6959. For enquiries please email sru@fish.wa.gov.au.

SMART drumline trial

The Government plans to conduct a scientific trial of SMART drumlines in the Gracetown area which is expected to last at least 12 months and will commence as soon as possible. Consistent with the New South Wales trial, the intent of the Western Australian trial is not to kill sharks, but to catch, tag, relocate and release white sharks, where possible, 1km from shore.

Weather permitting SMART drumlines will be deployed and retrieved each day. It will be an operational requirement of the trial, that the lines are continuously monitored while in the water.

Where possible it is intended that the Gracetown trial will be consistent with the trial 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.

For more information, see included FAQs fact sheet.

Shark monitoring network

The extension of the satellite-linked (VR4G) receivers will provide land managers with near real-time alerts of tagged sharks. The information is also posted to the SharkSmart website's Shark Activity Map and Surf Life Saving WA's Twitter feed.

Final deployment is subject to site inspections to be conducted by Department of Primary Industries and Regional Development staff.

Options for public comment

Two trial options are available for public comment (see Map Option 1 and Map Option 2). The distances used in the design of both options mean a vessel can attend within 30 minutes when an alert is triggered.

Option 1

The orange box at Gracetown indicates the proposed location for the SMART drumline trial. Orange squares represent individual drumlines. Yellow dots represent potential locations for the new satellite-linked receiver locations which will provide ocean users and land managers with near real-time alerts through the Shark Monitoring Network. Shark detections occur when an acoustically tagged shark swims within 400-500 m of the receiver.

Option one proposes that 12 SMART drumlines will be deployed in four groups of three, about 500 m from shore. Drumlines are clustered around surf breaks across 9 km of coastline. Clusters include The Womb, Nowheres, Umbies, Lefthanders, Noisies to the south; Cobblestones and Big Rock; South Point, Huzzawooee and North Point in Cowaramup Bay; and Guillotine, Gallows and Hangmans to the north. In this scenario it is possible to have two additional drumlines (compared to option 2) as the grouping means they are easily accessible within the minimum response time.

Option 2

The orange box at Gracetown indicates the proposed location for the SMART drumline trial. Orange squares represent individual drumlines. Yellow dots represent potential locations for the new satellite-linked receiver locations which will provide ocean users and land managers with near real-time alerts through the Shark Monitoring Network. Shark detections occur when an acoustically tagged shark swims within 400-500 m of the receiver.

Option two proposes that 10 SMART drumlines will be deployed evenly, about 500 m from shore, across 11.5 km of coastline from Hangmans in the north, to Ellensbrook in the south.

Options for public comment continued

Both options allow for the review of potential locations for the new satellite-linked acoustic receivers which will provide ocean users and land managers with near real-time alerts through the Shark Monitoring Network when a tagged shark is detected. Potential satellite-linked receiver locations are represented by yellow dots. The yellow line represents the approximate range of the receiver – shark detections occur when an acoustically tagged shark swims within 400-500 m of the receiver.

Green dots represent the locations of existing satellite-linked receivers at Busselton, Meelup and Smiths Beach, Yallingup.

The shaded areas represent the Ngari Capes Marine Park.

Proposed satellite-linked receiver locations

- Three Bears is a popular surfing spot accessible only by 4WD.
- Yallingup Beach provides a protected lagoon ideal for swimming, snorkelling and surfing. This beach is patrolled by life guards during peak periods.
- Injidup Bay is great for surfing, snorkelling, swimming and diving.
- Cowaramup Bay is a popular swimming beach and a great place to go snorkelling. Further out the large swells provide world class surf breaks. Due to the physical conditions at this site, two receivers are positioned outside the bay to provide maximum protection. Cowaramup Bay has been the site of one fatal shark bite at South Point in 2010.
- Lefthanders is a popular surf break accessible from Ellensbrook. The proposed receiver location would also provide a level of coverage for Noisies and Umbies surf breaks. Lefthanders has been the site of one fatal shark bite in 2004 and another nearby at Umbies in 2013. In 2018, Lefthanders was also the site of a serious shark bite incident.
- Margaret River, Surfers Point (Prevelly) is a popular surf break near the mouth of the Margaret River.
- Boranup Beach is a popular surfing spot accessible only by 4WD.

SMART Drumline Trial survey

Review the proposed locations for the SMART drumline trial and potential satellite-linked receivers displayed on the included maps and have your say by completing the survey below.

1. Which is your preferred SMART drumline trial option? (please tick ✓)

Option 1

Option 2

Comments (optional)

2. Rank your top **three** preferred satellite-linked receiver locations (1 being most preferred).

Three Bears

Lefthanders

Boranup Beach

Yallingup Beach

Cowaramup Bay (2 receivers)

Injidup Bay

Margaret River, Surfers Point (Prevelly)

3. Outline why you selected your choices (optional).

4. What is your primary water activity? (please tick ✓)

Swimming

Paddle boarding

Kayaking

Surfing/body boarding

Snorkelling/free diving

Other

Scuba diving

Kite boarding/windsurfing

5. Is your primary residence within the Shire of Augusta-Margaret River?

YES

NO

6. Is your primary residence within the City of Busselton?

YES

NO

7. Do you have a secondary residence (e.g. holiday home) within the Shire of Augusta-Margaret River or City of Busselton?

YES

NO

Email (optional - please provide your email if you would like to receive feedback)

Additional comments (optional)

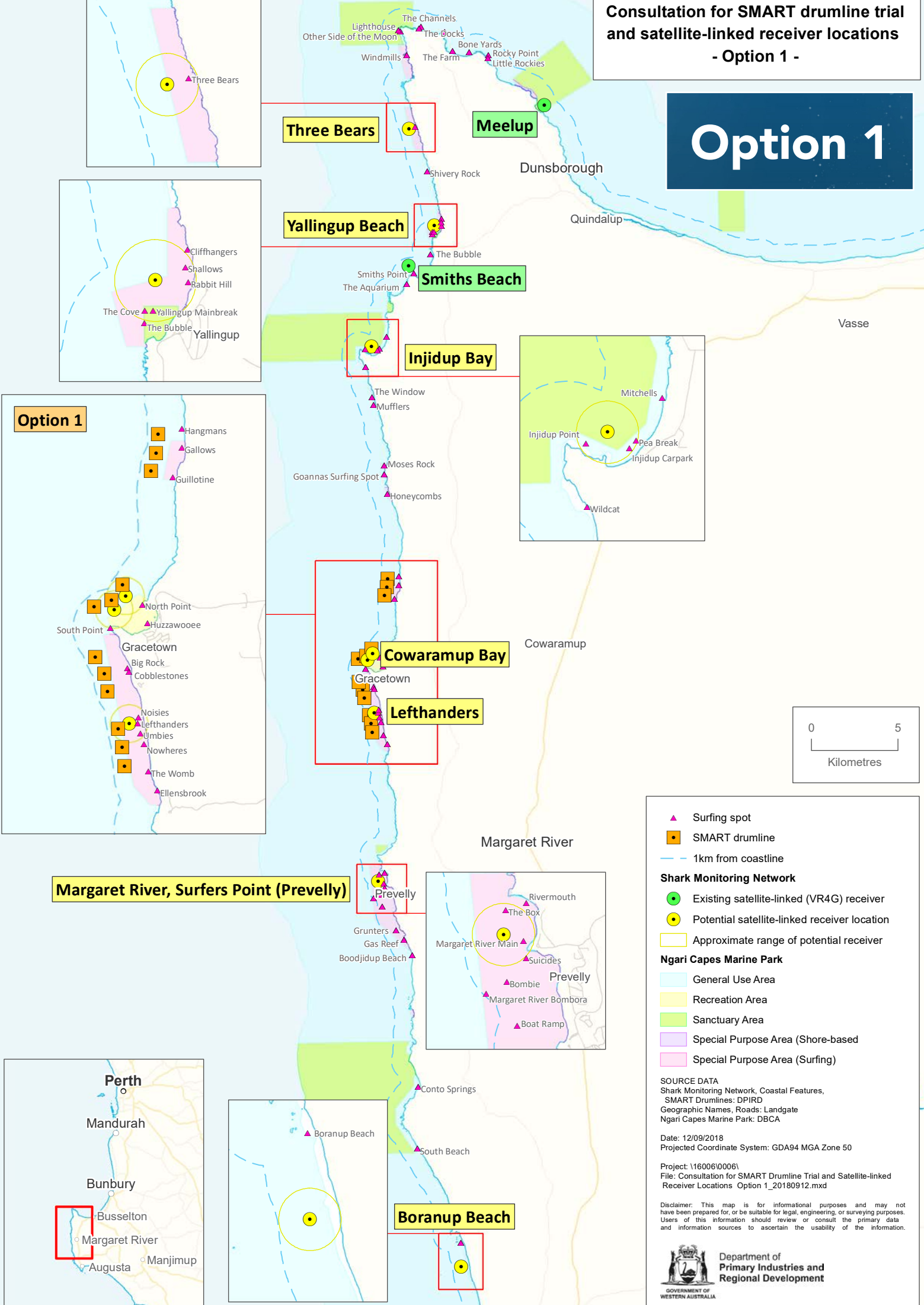
Complete and return to:

Shark Response Unit

Department of Primary Industries and Regional Development
PO Box 496, Fremantle, WA 6959

Consultation for SMART drumline trial and satellite-linked receiver locations - Option 1 -

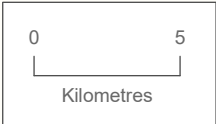
Option 1



Option 1

Margaret River, Surfers Point (Prevelly)

Boranup Beach



- ▲ Surfing spot
- SMART drumline
- - - 1km from coastline
- Shark Monitoring Network**
- Existing satellite-linked (VR4G) receiver
- Potential satellite-linked receiver location
- Approximate range of potential receiver
- Ngari Capes Marine Park**
- General Use Area
- Recreation Area
- Sanctuary Area
- Special Purpose Area (Shore-based)
- Special Purpose Area (Surfing)

SOURCE DATA
 Shark Monitoring Network, Coastal Features,
 SMART Drumlines: DPIRD
 Geographic Names, Roads: Landgate
 Ngari Capes Marine Park: DBCA

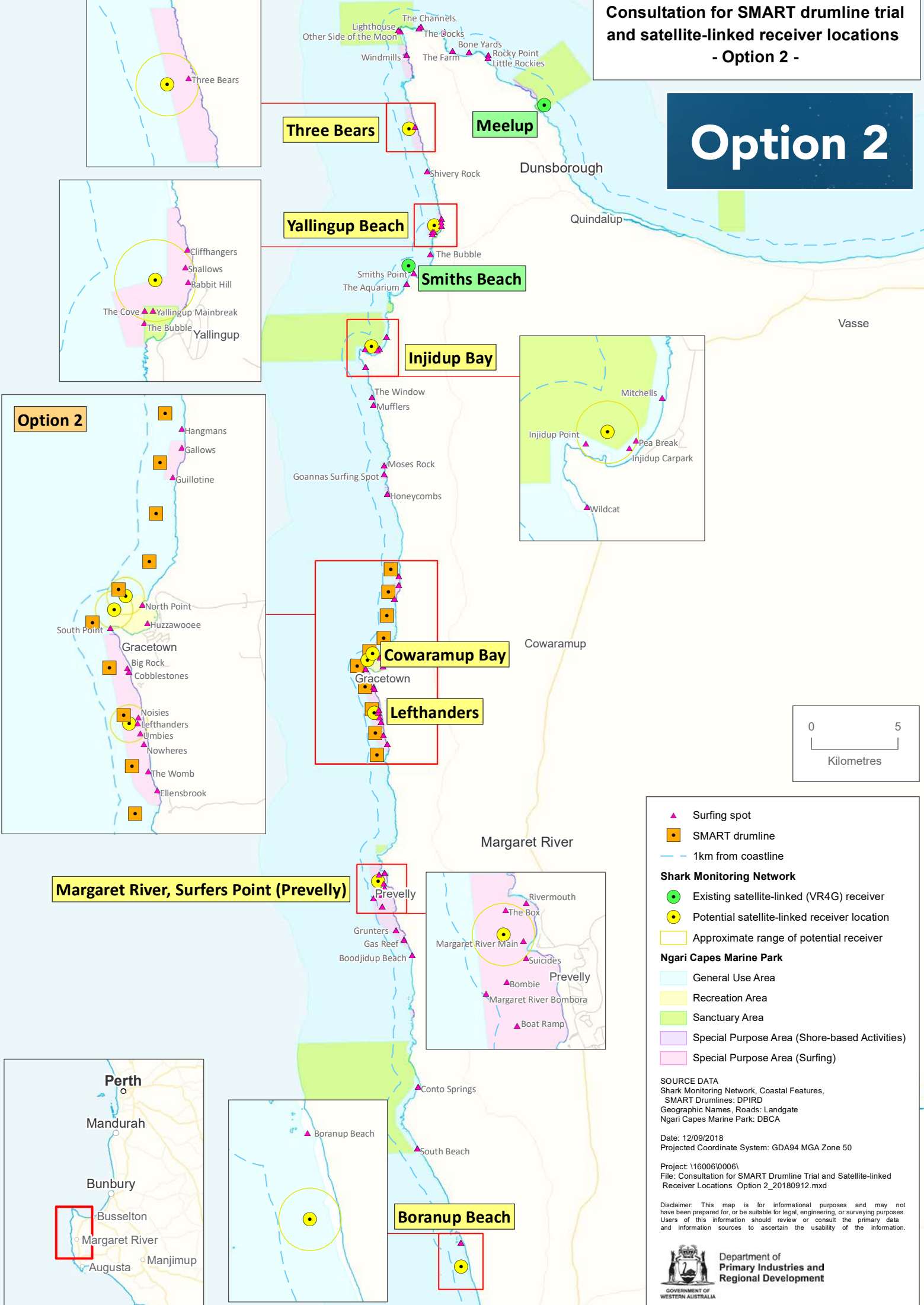
Date: 12/09/2018
 Projected Coordinate System: GDA94 MGA Zone 50

Project: \16006\0006\
 File: Consultation for SMART Drumline Trial and Satellite-linked Receiver Locations Option 1_20180912.mxd

Disclaimer: This map is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Consultation for SMART drumline trial and satellite-linked receiver locations - Option 2 -

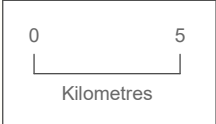
Option 2



Option 2

Margaret River, Surfers Point (Prevelly)

Boranup Beach



- ▲ Surfing spot
- SMART drumline
- - - 1km from coastline
- Shark Monitoring Network**
- Existing satellite-linked (VR4G) receiver
- Potential satellite-linked receiver location
- Approximate range of potential receiver
- Ngari Capes Marine Park**
- General Use Area
- Recreation Area
- Sanctuary Area
- Special Purpose Area (Shore-based Activities)
- Special Purpose Area (Surfing)

SOURCE DATA
 Shark Monitoring Network, Coastal Features,
 SMART Drumlines: DPIRD
 Geographic Names, Roads: Landgate
 Ngari Capes Marine Park: DBCA

Date: 12/09/2018
 Projected Coordinate System: GDA94 MGA Zone 50

Project: \16006\0006\
 File: Consultation for SMART Drumline Trial and Satellite-linked Receiver Locations Option 2_20180912.mxd

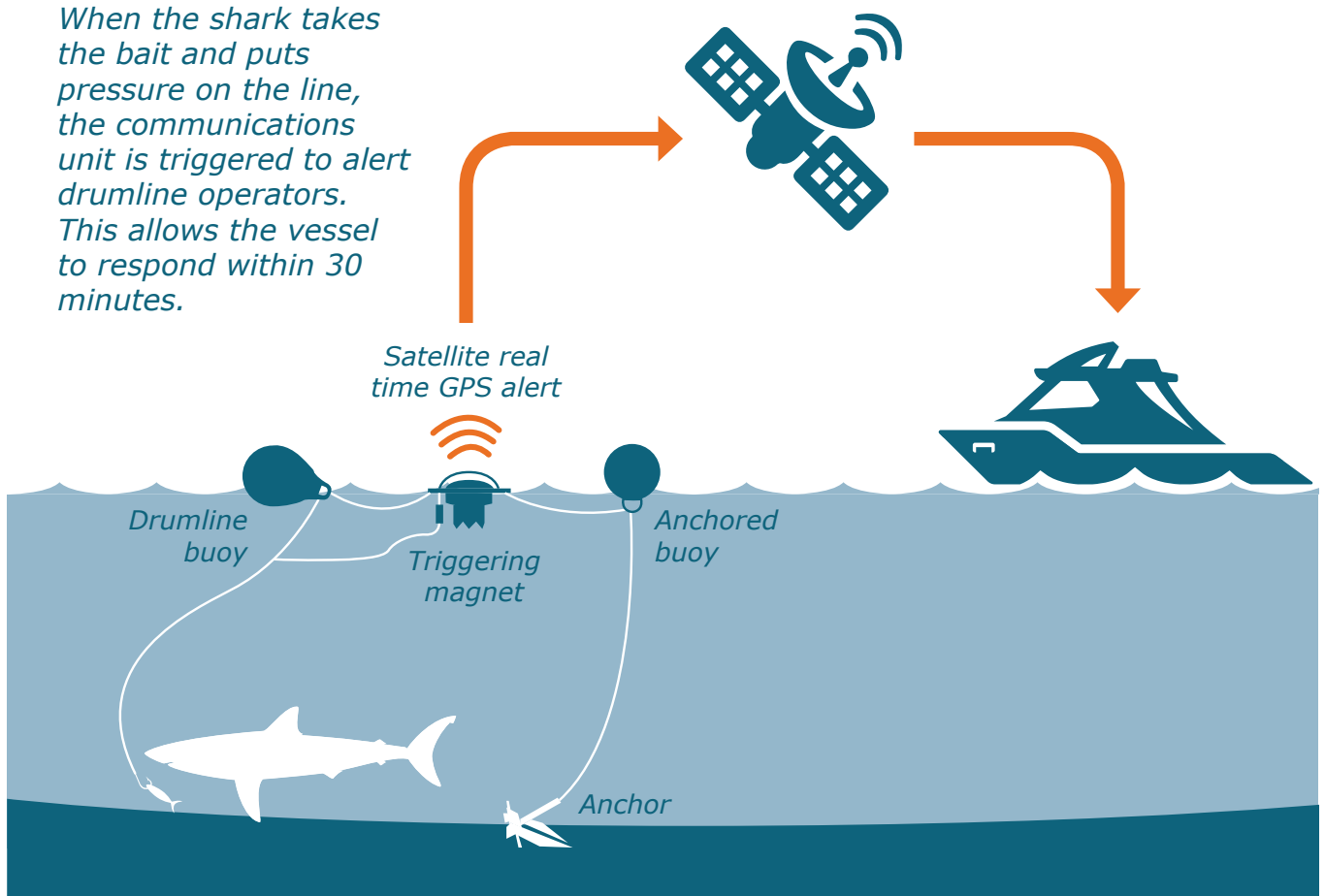
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Frequently asked questions

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 SMART drumlines in the Gracetown trial are based on a vessel attending within 30 minutes when an alert is triggered.

When the shark takes the bait and puts pressure on the line, the communications unit is triggered to alert drumline operators. This allows the vessel to respond within 30 minutes.



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 SMART drumlines. The appointment of the contractor will be subject to a formal tender process in accordance with Government procurement processes. The contractor will receive training from DPIRD scientists 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.

Frequently asked questions continued

What are the objectives of the trial?

The Western Australian trial will collect 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.

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.

What tags will be used as part of the trial?

Three tags will be attached to a white shark including:

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) or if constant-depth conditions are met (programmable) 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 sharks 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 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 will tagged shark movements be monitored?

Shark movements will be monitored via data-recording receivers on the sea-bed. These receivers store data in the on board memory and will be deployed around the perimeter of the trial area. Data recording receivers will be retrieved and information downloaded for the Chief Scientists 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 website's Shark Activity Map and Surf Life Saving WA Twitter feed. Pop-up satellite archival tags will also be used to collect broad scale movement data.

Frequently asked questions continued

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 website's Shark 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.