

Coastal Features Dataset

- What is it?
- What's it for?
- Dataset Sources
- Dataset
- Fields
- How was it created?
- Geonoma Preparation:
- ABSAMP beaches dataset Preparation:
- Amalgamated dataset processing:
- DoF Locations

What is it?

The dataset consists of known geographic features (beaches, bays, points etc.) off the coast of WA and within 500m of the coastline on the land.

What's it for?

The Coastal Features spatial dataset was created to provide information to the SharkSmart website, to provide pre-plotted information so reported shark sightings can be represented on a map. It is designed to be used as a lookup table, and used as part of the back end of the Western Australian Shark Sighting and Notification system used by Water Police in WA.

The Shark Sighting and Notification system which uses the Coastal Features spatial dataset was created so that members of the public can call in, to make a report when they encounter a suspected shark hazard. It is also used by Department of Parks and Wildlife (DPAW), Department of Fisheries (DoF), and Surf Life Saving Western Australia (SLSWA) to report shark hazards to the public, and as a back-up system if there is any outage from the Shark Monitoring Network. In addition to reports of sharks, sightings also include reports of whale carcasses as these can result in an increased risk of encountering a shark.

A likely scenario would be: shark spotter spots shark off Cottesloe beach. The receiver of the call would then select Cottesloe beach from a drop down list with the application using the longitude and latitude from the list to place a point on the map. The map that uses this dataset is located: <http://www.sharksmart.com.au/shark-activity>.

A maximum of two points are registered for each known beach or coastal feature name.

The recorded X and Y coordinate for each coastal location within 1km of shore are placed at the centre point of the beach or closest water feature (eg. reef). A second point is located 1km offshore from the centre point of the beach.

Where the coastal feature is not a beach, there is no off-shore location recorded. The default X and Y coordinates are used.

This approach has been used by existing business systems, so mapped information can be aggregated on a single point, or pin. Relevant risk information can then be presented, rather than pins overlapping and potentially being obscured.

Utilising the coastal features dataset also allows information to be quickly and automatically pushed using the coastal feature name provided at the time of the telephone report, which is consistent with existing business processes.

The determination of the 1km point is based on current beach closure procedures for shark hazards, where shark sightings reported inside 1km of shore, are more likely to trigger a beach closure.

Additionally, the Coastal Features spatial dataset is provided in a GIS mapping tool to both Water Police and Surf Life Saving WA, so they can use it for other operational purposes.

Dataset Sources

- **Geonoma (Landgate)**
- **Australian Beach Safety and Management Program (ABSAMP) beaches database** supplied by Surf Life Saving WA was used to cross reference the Geonoma information. The ABSAMP database was developed as part of a project to identify all beaches Australia wide and collect information about their history, facilities, safety, conditions etc. More information about this database can be found here: http://www.ozcoasts.gov.au/coastal/beach_intro.jsp. Surf Life Saving Australia use it in their Beach Safe website and app: <http://beachsafe.org.au/>.
- **Shark Monitoring Stations** - DoF
- **Local Names** - DoF. These are locations that do not appear in the other datasets but are known locally by certain names. DoF in conjunction with regional stakeholders, continues to add common or local names previously not included in any centralised database (such as local surf break names).

Dataset

Fields

Field	Description
CoastalFeatureID	This is a unique ID for each Coastal Feature
CoastalFeatureDOFID	ID from Geonoma, ABSAMP and DoF data sources (shark monitoring receivers, abalone landing locations, Fisheries and Marine officers and locations from SLSWA and Landgate that has been moved closer to the coast to assist with reporting).
CoastalFeatureFullName	Original name from source datasets.
CoastalFeatureDisplayName	Processed name which is typically a combination of the FullName and FeatureType fields created by DoF and displayed on the Sharksmart activity map.
CoastalFeatureFeatureType	Type of feature. Generally how it is described in the source data.
CoastalFeatureInshoreLatitude / CoastalFeatureInshoreLongitude	Actual location of the feature.
CoastalFeatureOffshoreLatitude / CoastalFeatureOffshoreLongitude	For features located on the coast (e.g. beaches) there is also a location 1km offshore. This is used for shark sightings that are at least 1km from the shore feature. Not all features have an offshore location (e.g. channels, shark monitoring stations). In these cases the offshore lat/long will be the same as the inshore lat/long in the dataset.
CoastalFeatureLGAName	Name of the Local Government Authority that the location is within. Derived by DoF using a spatial join of the locations with the Local Government Authority layer from Landgate.
CoastalFeatureSource	Source of the location (e.g. Landgate, SLSWA, DoF).
CoastalFeatureTownProximityOLD	Initial determination of closest town used in the Lookup_Table and Tweet_Text fields.
CoastalFeatureTownProximityNEW	Determination of closest town used in the Lookup_Table and Tweet_Text fields.
CoastalFeatureInshore_Offshore	Attribute defines whether the coordinates are different between InshoreLatitude/InshoreLongitude and OffshoreLatitude/OnshoreLongitude fields.
CoastalFeatureLookup_Table	A concatenation of DisplayName, Feature Type and TownProximity. Used by Water Police and

	other shark responders when determining the location of a sighting
CoastalFeatureTweet_Text	A concatenation of DisplayName and TownProximity. Used in shark sighting tweets and in the map to describe the location of the sighting. Not more than 60 characters to address social media parameters
CoastalFeatureResponse_Region	Region that is required to respond to the sighting. This information is used to determine who receives text message notifications of reported sightings.
CoastalFeatureSource1	Provides a date for when additional points have been added to the list.
CoastalFeatureTweet_Text_Len	Number of characters used in the Tweet_Text field.

How was it created?

Geonoma Preparation:

- All data points not in the ocean or within 500m of the landward side of the coastline were removed from the original dataset
- All features that were not of interest (schools, roads etc.) were also removed
- In cases where a feature was described by multiple points (i.e. same name and FeatureID), these were manually inspected and one point was chosen to represent the feature. All other duplicates were removed.
- There were some instances where a single feature has multiple names, these were generally kept. This resulted in a number of duplicate FeatureIDs in the final dataset.
- Any beaches that also appeared in the ABSAMP dataset were removed. This was done by manual inspection.

ABSAMP beaches dataset Preparation:

- There were many cases in this dataset where there were multiple points for a beach, indicating different beach access points. Generally only one point per beach was selected, however for long beaches up to three points were chosen and the names were adjusted in the DisplayName field- e.g. 'Hammer Head Beach (West)', 'Hammer Head Beach (East)'.

Amalgamated dataset processing:

- The Geonoma points and the ABSAMP points were loaded into the same Feature Class
- A spatial join between the final dataset and the Local Government Authority boundaries was performed and LGA name was added as an attribute. The purpose of this was to provide additional context as to the location of the feature within the state.
- To provide even more context various coastal towns were selected and a spatial join was performed to determine the closest town to each feature. This town information was then added to the "Tweet_Text" attribute.
- The Google map on the SharkSmart website was unable to appropriately display locations that were close to one another without pins overlapping and relevant risk information potentially not being displayed. This meant that both the onshore and offshore locations needed to be moved until they were all at least 50m away from each other.

DoF Locations

- As reports started to come in from the Western Australian Shark Sighting and Notification system used by Water Police in WA, it was identified that locations that were not included in the final dataset were being found, due to local names, or other descriptors. These are added to the dataset as they become known to the GIS Group such as local surf spots, Abalone Landing areas. The GIS group continues to work with local regions to identify and map key relevant locations by local names.