



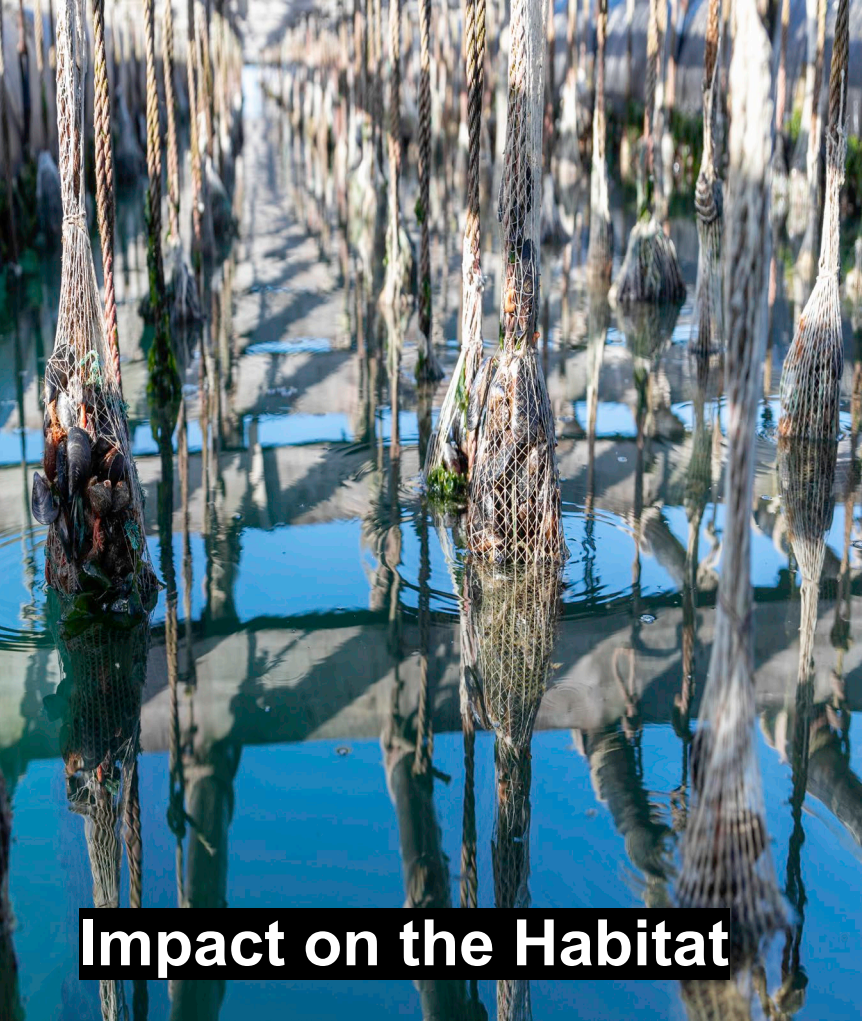
# Early Warning System for Detection of Marine Mammals in Saldanha Bay

Phillip Tjale

## Rope Grown Mussels Fishery Improvement Project



# Overview - Fishery Improvement Project



**Impact on the Habitat**



**Impact on the Environment**



**Impact on ETP sp.**

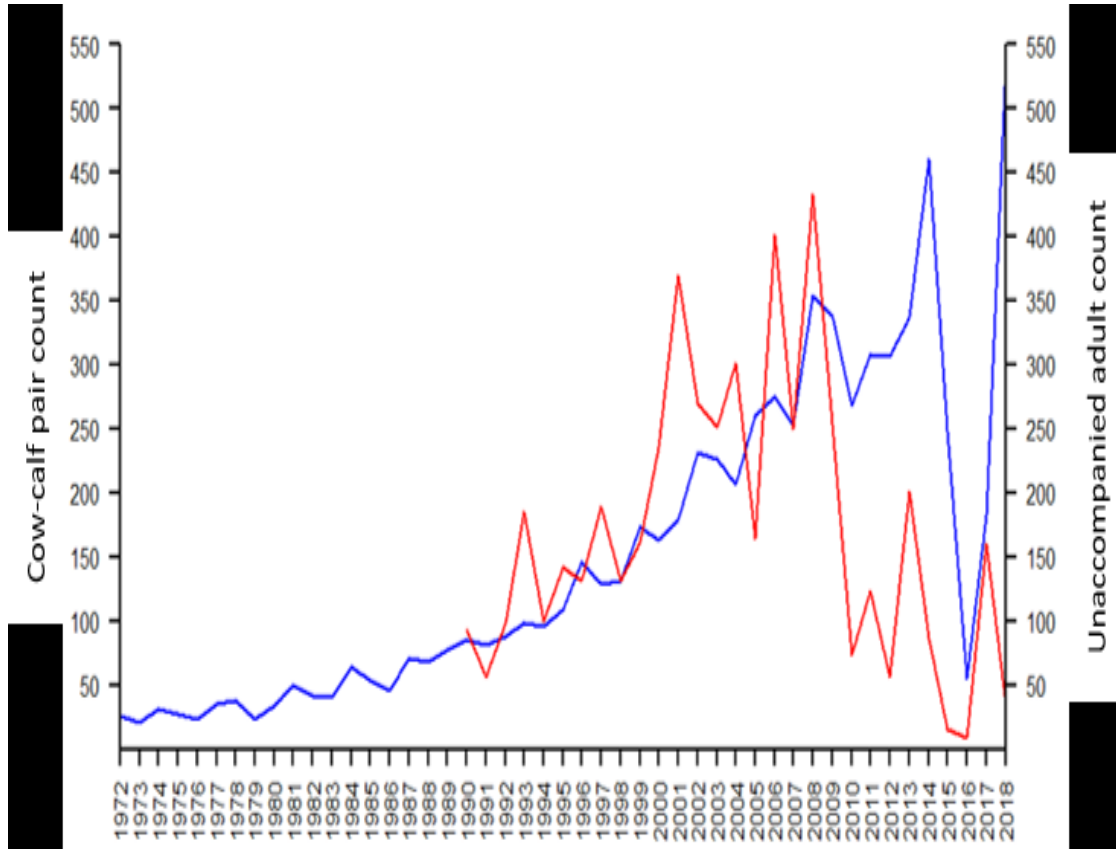
# Overview - Increase in whale number in Saldanha Bay



**Super Pods presence around the West Coast**



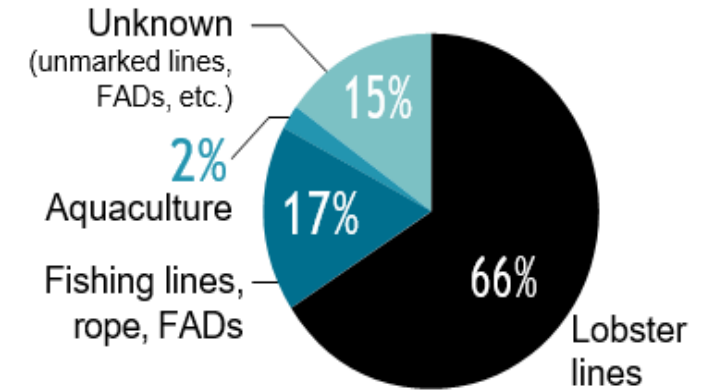
# Increase in whale number on the West Coast



# Human-Cetacean Interactions



## WEST COAST WHALE ENTANGLEMENTS



Causes of whale entanglements along South Africa's West Coast. Source: SAWDN

# Human – Cetacean Interactions




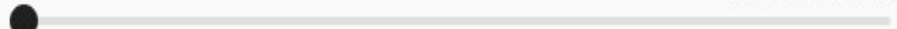
# Human-Cetacean Interactions




## Whale dies after being struck by ship in Saldanha Bay

news24 Azarrah Karrim

SHARE   

  Listen to this article 0:00

 SUBSCRIBERS CAN LISTEN TO THIS ARTICLE



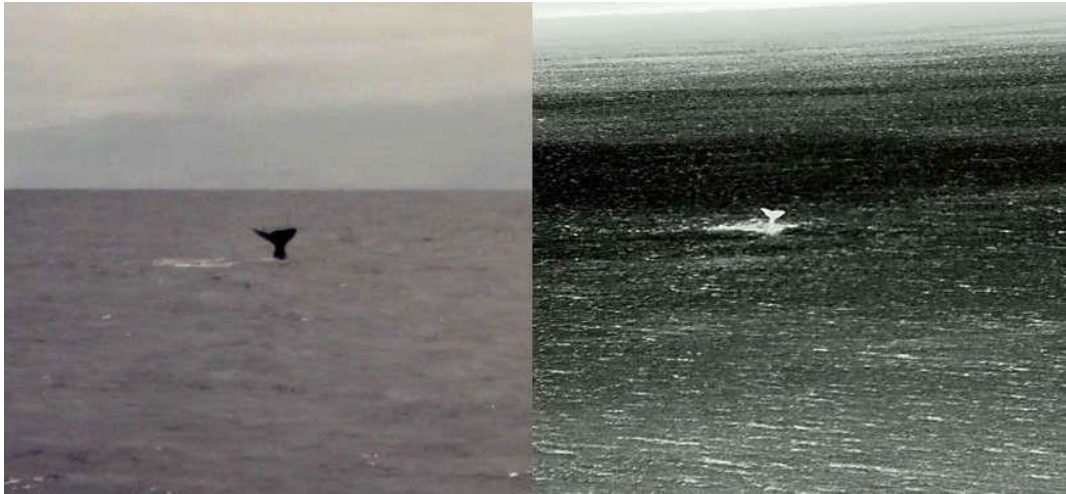


# Early Warning System Project

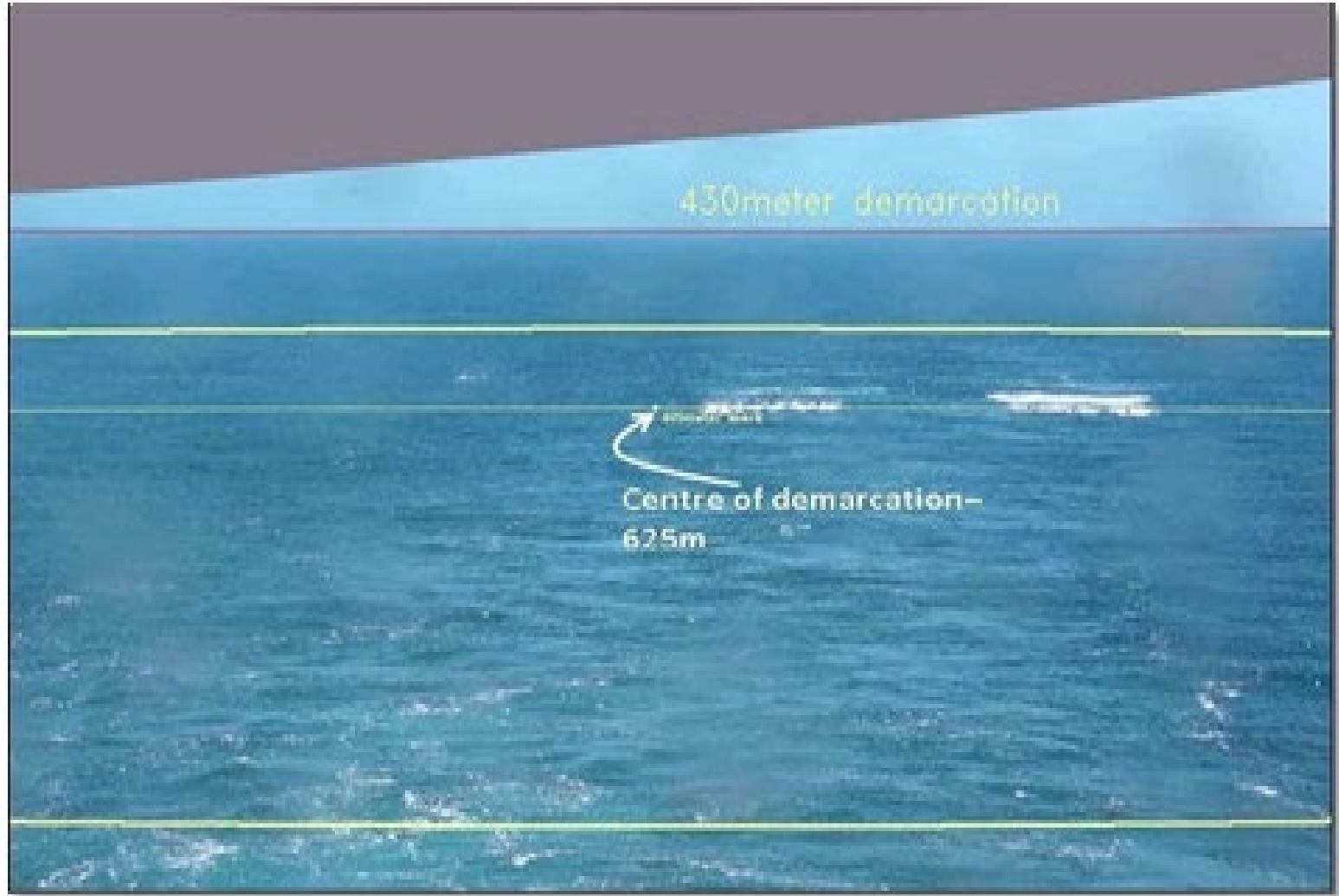


SAWDN/Michael Meyer

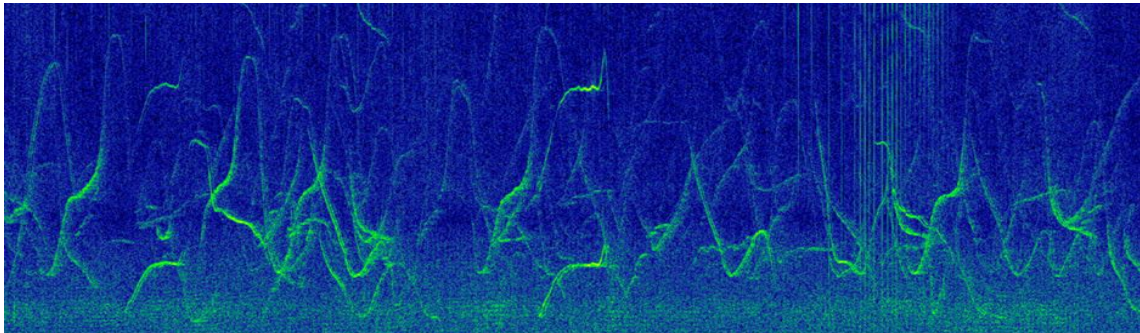
# Thermal/Infrared cameras with AI Software



# Realtime Automated Distance Estimation at Sea (“RADES”)



# Passive Acoustic Monitoring (PAM)



	Hydrophone Ch 1	Hydrophone Ch 2
Ceramic Sensitivity (re: 1 V/ $\mu$ Pa)	-195.6 dB	-195.6 dB
Preamplifier Type	STD	LF
Preamplifier Gain (dB)	40.0 dB	40.0 dB
DAQ Model	NI USB-6251	NI USB-6251
Base Sampling Rate	500 kHz	500 kHz
System Frequency Response (-3 dB)	2,500-160,000 Hz	15-24,000 Hz
System Frequency Response (-6 dB)	1,600-250,000 Hz	10-40,000 Hz

# Emergency Response Protocol



## 6.11 Entanglement of marine animals

The ADZ operations have been designed to limit the potential for marine animals (including birds, turtles, seals, whales and dolphins) to be entangled. In the event of such entanglements occurring, the following actions must be taken.

It is important to remember that speed is paramount. These animals are air-breathing and delayed response can result in them drowning. They are simultaneously at risk of permanent injury from ropes and nets, especially if they start to struggle to free themselves. Do not attempt to free the animals yourself, remain on the scene and maintain visual contact with the animal. If the animal appears to be distressed by your proximity, move away slightly but maintain visual contact wherever possible.

The following information should be provided to the SAWDN and NSPCA if marine mammals are involved:

- Type of animal(s) involved such as whales (Humpbacks and Southern Right Whales), seals, turtle, dolphins (Dusky and Heavisides) etc.
- Number of animals involved and their condition
- Nature of entanglement and if possible, nature of rescue equipment required provide photographs/ video's (on WhatsApp if possible) what parts of the body is wrapped with mainline, buoy's and nets etc.
- Exact location of the entanglement (Lat and Long if possible)
- Current state of the animal (stressed/ inert etc.) - any visible injuries.

The following information should be provided to the SANCCOB and NSPCA if marine birds are involved:

- Type of bird(s) involved such as penguins, gannets etc;
- Number of birds involved
- Nature of entanglement and if possible, nature of rescue equipment required provide photographs/ video's (on What's app if possible)
- Exact location of the entanglement (Lat and Long if possible)
- Current state of the birds (stressed/ inert etc.) - any visible injuries.

### Immediate Response

- The ADZ Incident Response Leader DFFE must be contact who in term will contact SAWDN/ SANCCOB/ NSPCA (as appropriate), they will then initiate the NSRI protocols.
- NSRI Incident Operation Centre (EOC) to place SAWDN operations manager (M.A. Meyer) on the activated NSRI operations WhatsApp.
- SANCCOB will act in collaboration with NSRI as above
- SANParks must be contacted.
- Port Control and SANHO must be notified to ensure that the incident does not pose a navigational hazard to shipping traffic within the port.
- The ADZ Incident Response Leader must notify the Farm Manager of the farm/s involved in the incident location.
- The GPS position of the incident must be reported so that the rescue team can be requested to proceed immediately to the position.
- Farm vessel/ Operator to ensure they are on standby to assist with the disentanglement as instructed by the NSRI/ SAWDN if required such as lifting the lines to allow for disentanglement.
- Farm Manager
  - must notify all relevant parties in Table 6-2.
  - should remove parallel lines and floats in close proximity to the whale where appropriate so that it cannot be

### Within 7 calendar days

- ADZ Incident Response Leader
  - complete Incident Report and submit to ADZ ECO.
- ADZ ECO
  - to register the Incident Report I the Incident Register, review the Incident Report and request additional information or actions before sign-off if required.
  - sign-off Incident Report.
  - submit a summary of the Incident report to the AMC and CF, complete transcripts must be available on request.
  - send complete transcripts and summaries to DFFE Branch Regulatory, Compliance and Sector Monitoring and SAWDN.



# Whale Disentanglements



# ETP species data collection



<b>Saldanha Bay Aquaculture Development Zone - Endangered or Threatened Species Monitoring</b>									
<b>ETP PRESENCE / ABSENCE Form</b>									
<b>SINGLE OBSERVER</b>	DATE:								
Your Name:									
Capture the Presence " " or Absence "- " of these ETP species in/on the farm/inspection area									
Any interactions (boat strike, death, entanglement, depredation etc) -> ADZ INCIDENT FORM									
Area / Farm:									
TIME of Scan									
DOLPHINS	Dolphin - Unidentified								
	Heaviside's dolphin								
	Dusky dolphin								
	Common dolphin								
	Killer whale								
WHALES	Whale - Unidentified								
	Humpback whale								
	Southern right whale								
	Bryde's whale								
SEAL	Cape Fur Seal								
TURTLES	Leatherback Turtle								
	Shell turtle (photograph!!)								
CORMORAN	Cormorant, Cape								
	Cormorant, Bank								
	Cormorant, Crowned								
	Cormorant, White breast								
BIG BIRDS	Pelican, Great White								
	Heron, Grey								
	Flamingo								
	Goose / Duck								
REGULARS	Cape Gannet								
	African Penguin								
	Skua, Subantarctic								
	Giant Petrel								
	White-chinned Petrel								
GULLS & Oyster C.	Gull, Kelp								
	Gull, Hartlaub's								
	Gull, Grey headed								
	Oyster Catcher								
TERNs	Tern, Unidentified								
	Tern, Swift								
	Tern, Sandwich								
	Tern, Common								
	Tern, Caspian								

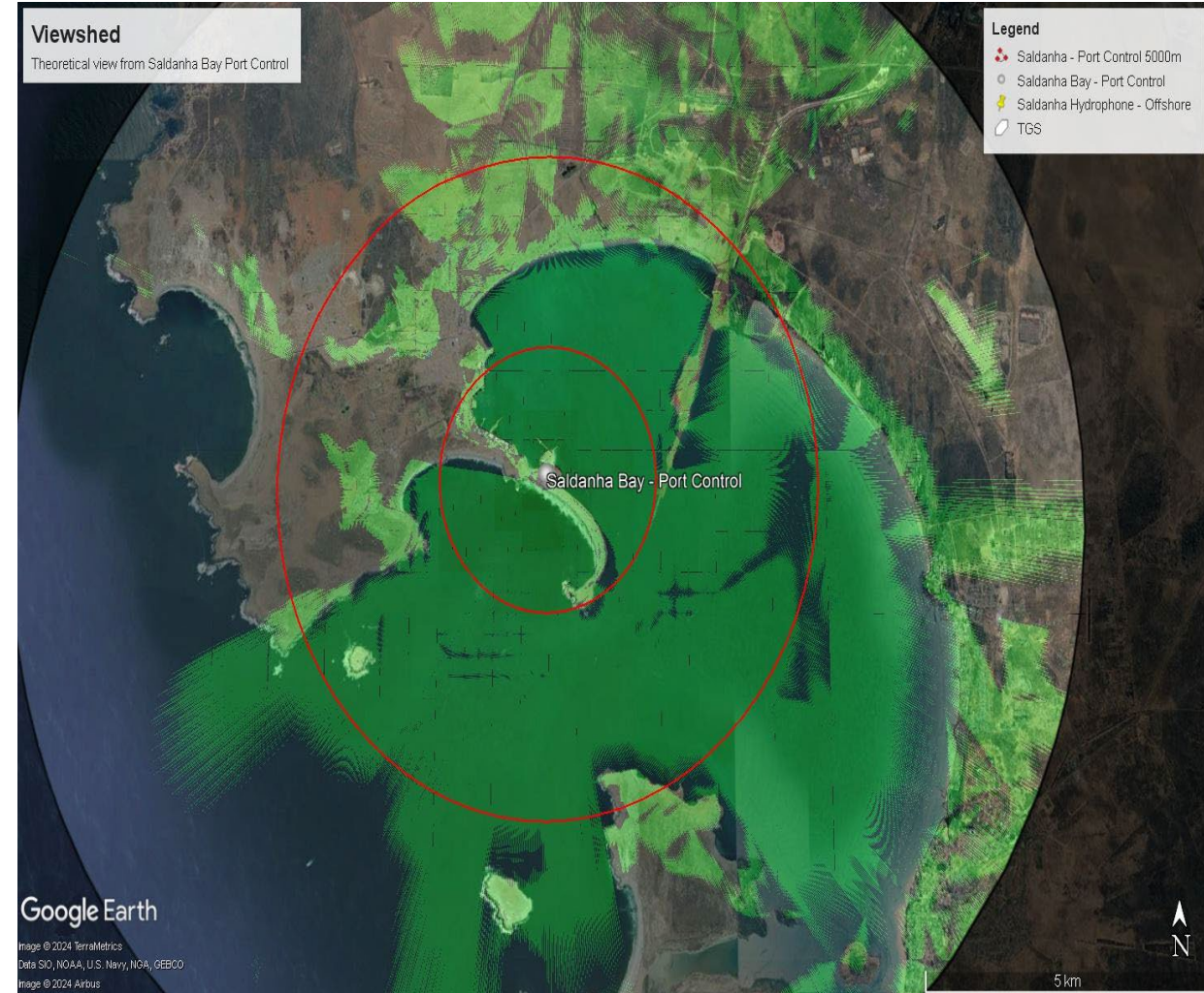
**Current Data collection method**

- ETP species identification cards developed
- Data collected on Site by operators

**EWS addition**

- Data accuracy
- 24-hour surveillance (night monitoring)
- Data across all marine mammals

# EWS Installation site





# Milestones



- ❖ Project Feasibility - Drafted
- ❖ Equipment Installation – December 2024
- ❖ Equipment testing, AI programming – June 2025
- ❖ Research, data management – December 2025
- ❖ Monitoring & Evaluation

# Impact and sustainability of project



## EWS Pilot project

**Reduction of Whale Entanglements**

**Reduction of Ship Strikes**

**Improve ETP species data collection**

# Visual Detection System





forestry, fisheries  
& the environment

Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA



NATIONAL  
SEA RESCUE  
INSTITUTE



Working to sustain the natural world for the benefit of people and wildlife.

together possible™ panda.org

WWF, 28 rue Mauverney, 1196 Gland, Switzerland. Tel. +41 22 364 9111

CH-550.0.128.920-7

WWF® and World Wide Fund for Nature® trademarks and ©1986 Panda Symbol are owned by WWF-World Wide Fund For Nature (formerly World Wildlife Fund). All rights reserved.

# Thank You



To champion the earth's capacity to provide a source of inspiration, sustainable food, water and clean energy for all.

FOR NATURE. FOR YOU.

[wwf.org.za](http://wwf.org.za)

WWF-SA is a registered non-profit organisation, number 003 -226 NPO. © 1986 Panda symbol WWF – World Wide Fund for Nature (Formerly World Wildlife Fund) ® “WWF” is a WWF Registered Trademark.

1<sup>st</sup> Floor, Bridge House, Boundary Terraces Mariendahl Lane, Newlands, Cape Town. P.O.Box 23273, Claremont 7735, t +27 21 657 6600, e: [info@wwf.org.za](mailto:info@wwf.org.za), [www.wwf.org.za](http://www.wwf.org.za)