

# **OIL SPILL PREPAREDNESS AND RESPONSE**

## **In**

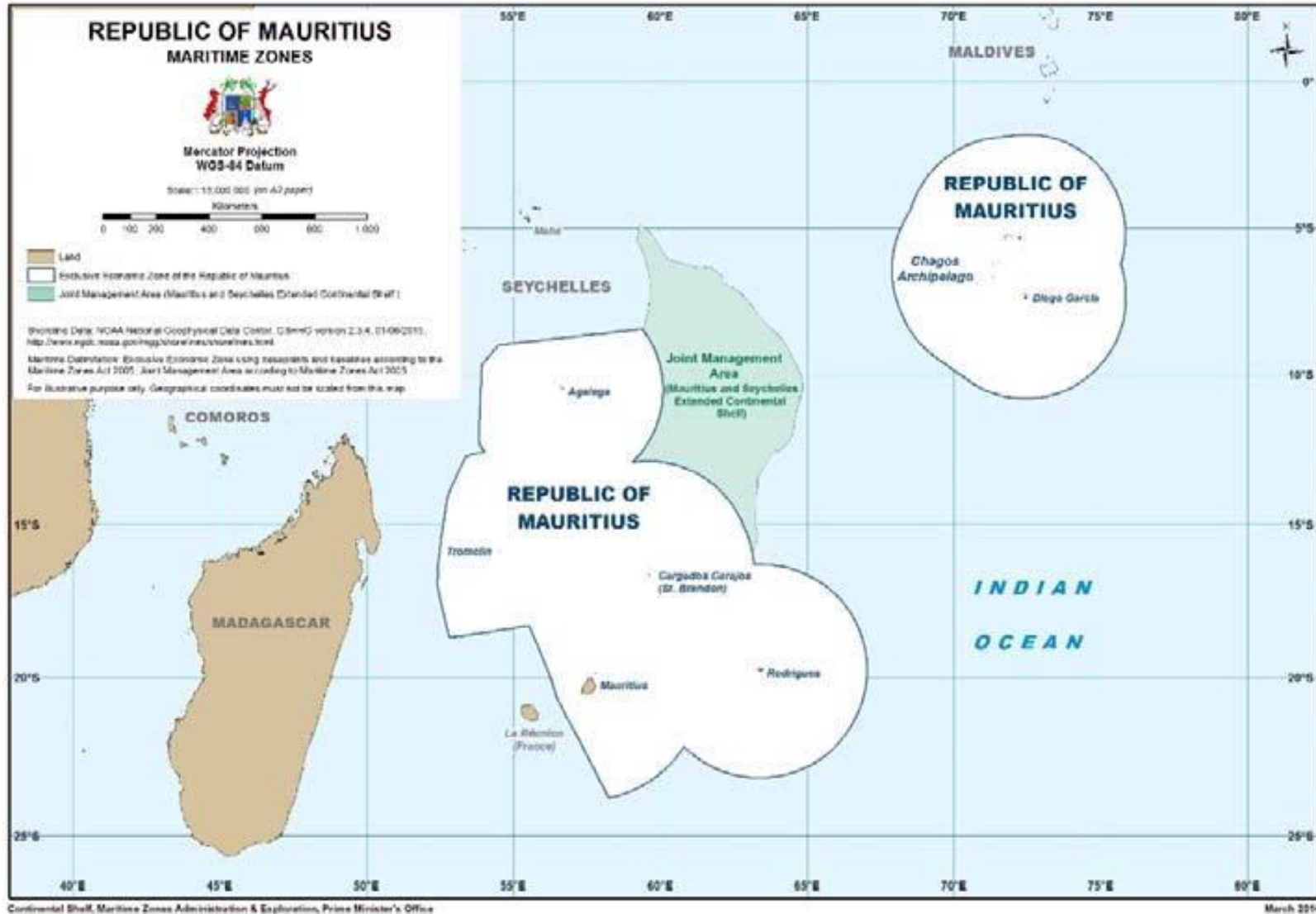
# **MAURITIUS**

**Henna Ramdour**  
**Senior Environment Officer**  
**Ministry of Environment, Solid Waste Management & Climate Change**  
**Mauritius**

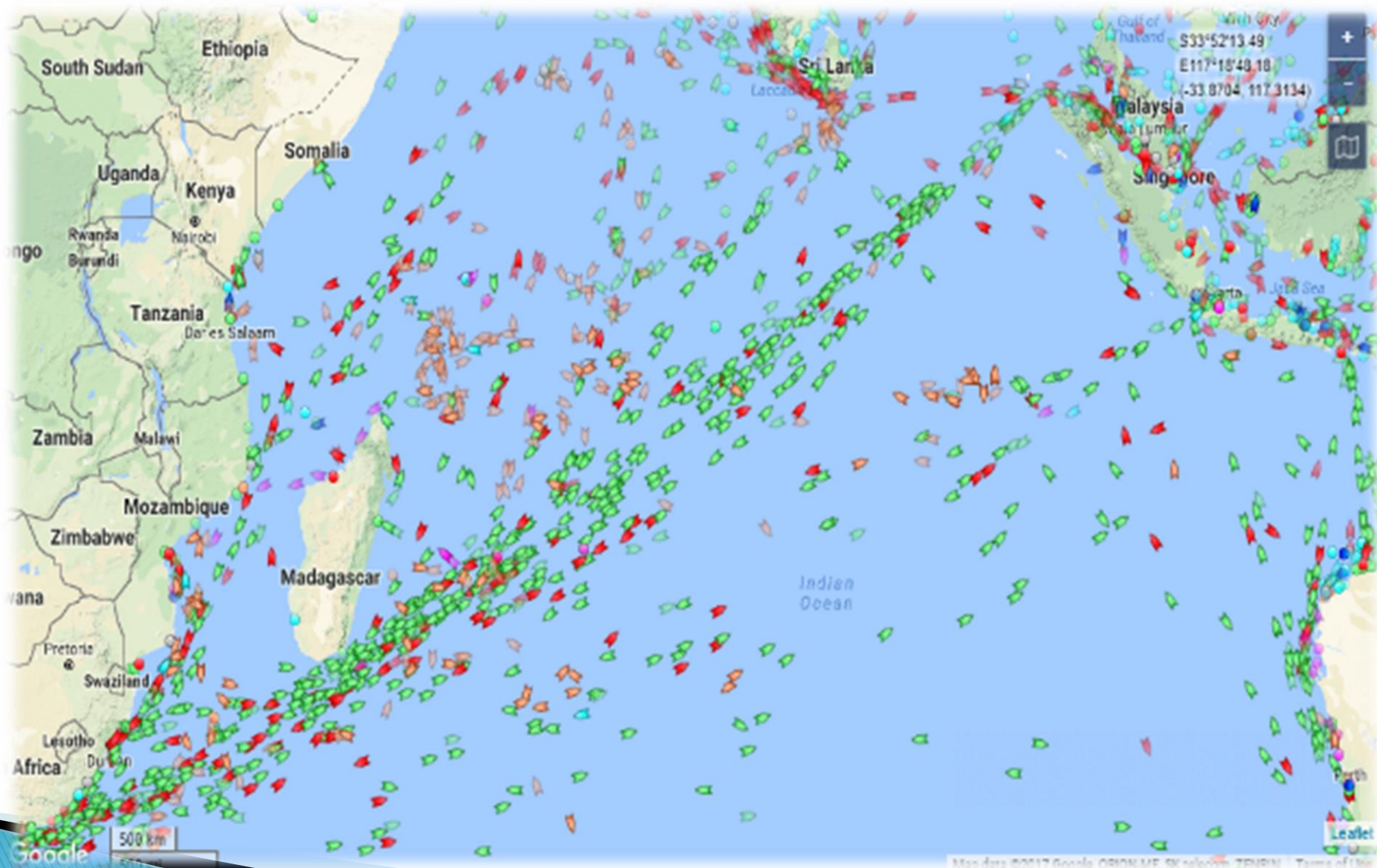
**08 December 2023**



# REPUBLIC OF MAURITIUS



# DENSE MARITIME TRAFFIC



# MV WAKASHIO OIL SPILL – 06 AUGUST 2020



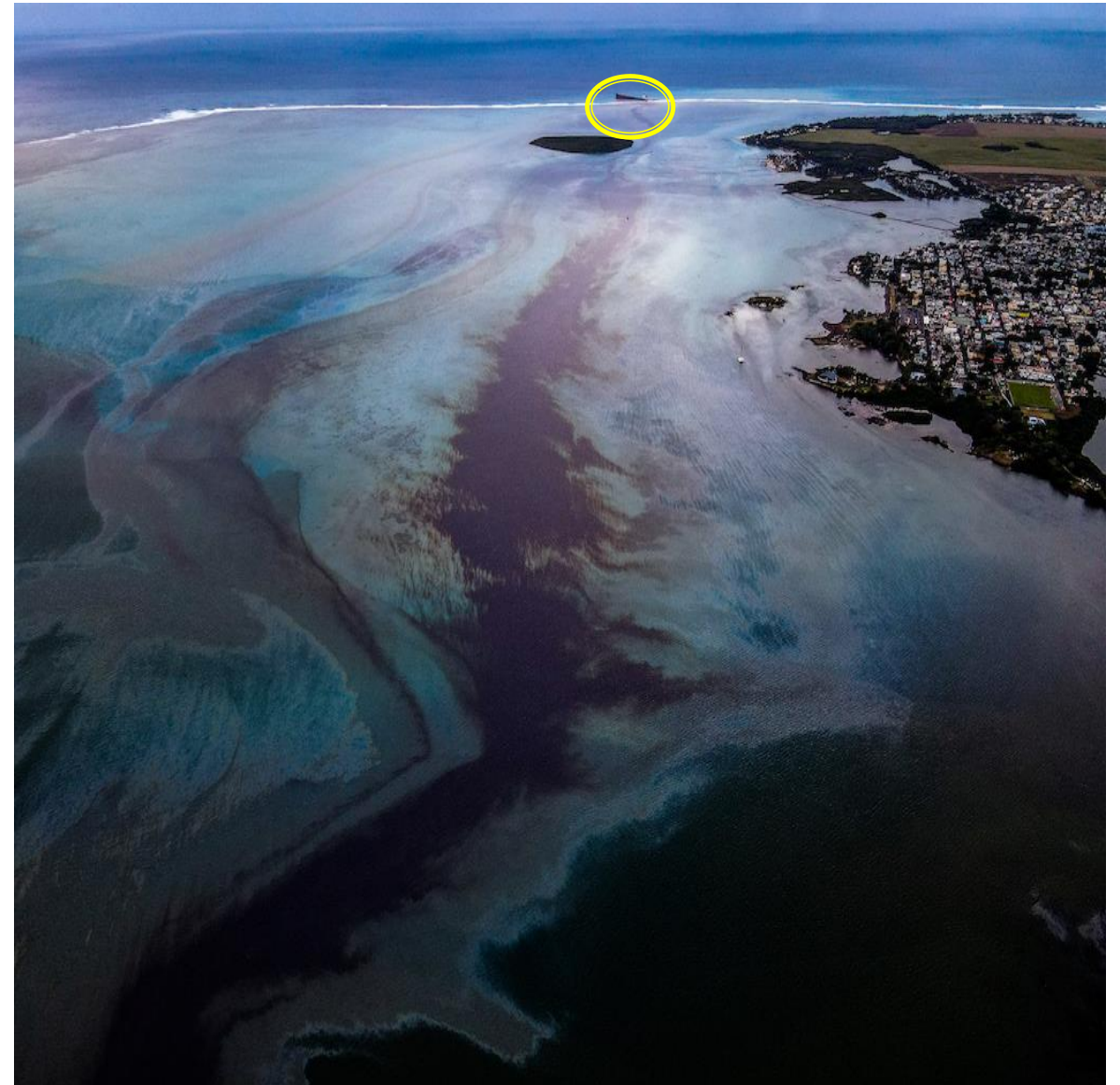


**Breaking of MV Wakashio**



**Oil Spill occurring**

# Aerial view of the oil spill



## Riviere des Creoles area



## Mahebourg / Ville Noire

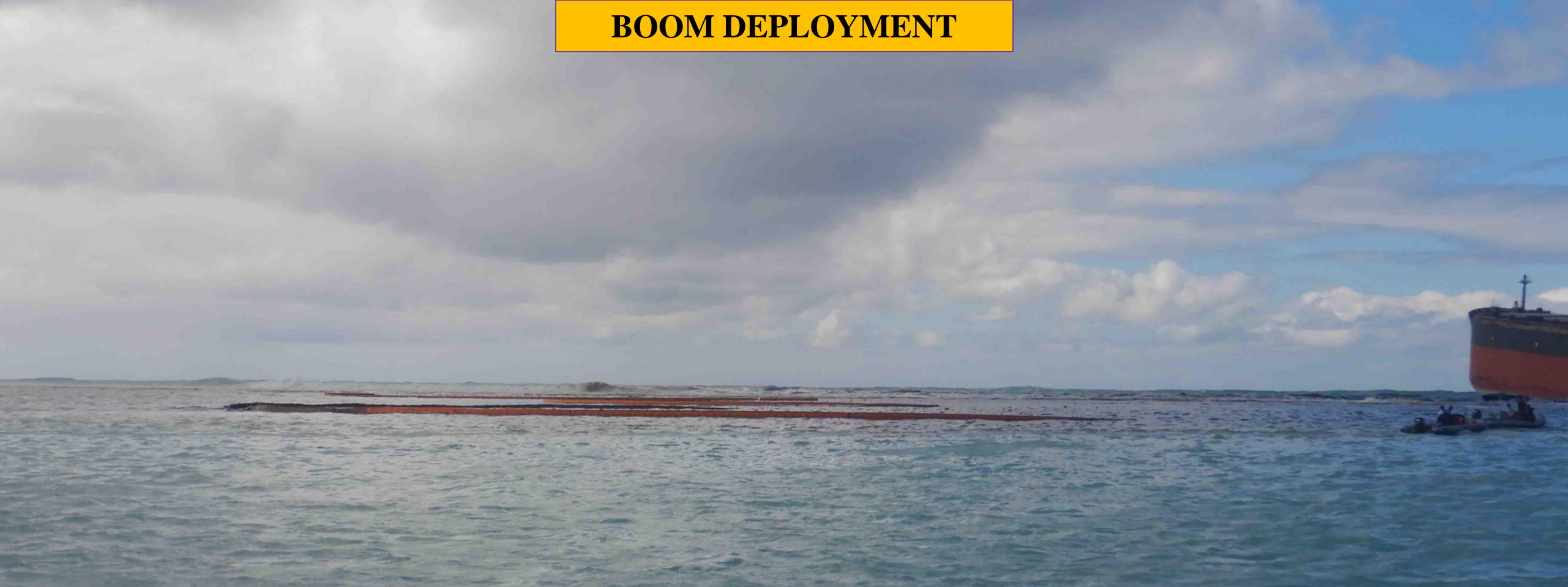


# AFFECTED SHORELINE





# BOOM DEPLOYMENT



# CLEAN UP



# CLEAN UP



# **PROJECTS AFTER THE WAKASHIO OIL SPILL**

1. Procurement of Oil Spill Combat Equipment – **Government of Mauritius**
  2. Enhancement of Institutional Capacity for Oil Spill Response – **JICA**
  3. Development of oil spill wastes management plan – **Agence Francaise De Developpement**
  4. Development of a volunteer management plan – **Agence Francaise De Developpement**
  5. Update of Sensitivity Map, Tactical and Operational Maps – **NCS – SAPPHIRE Project**
  6. Update of NOSCP 2003
    - 10 Sectorial Sensitisation Workshops with key Stakeholders – **NCS – SAPPHIRE Project**
- 

## Procurement of Oil Spill Combat Equipment

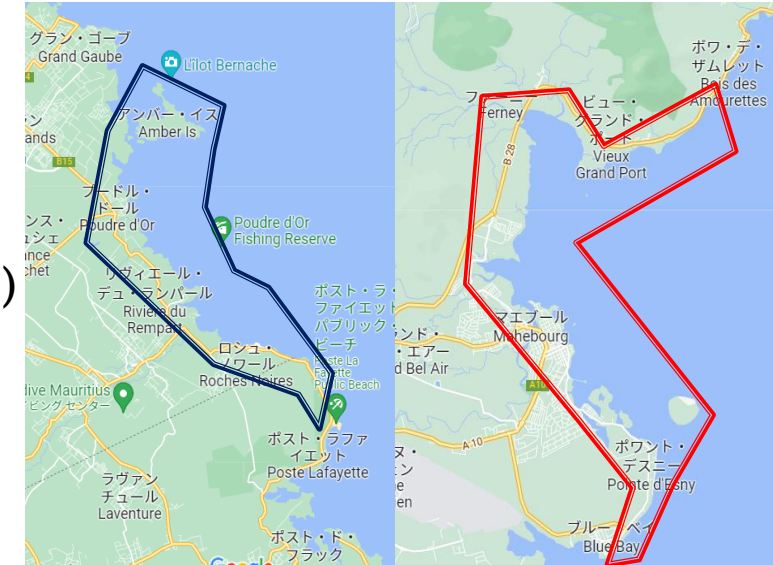
- **Objective** : to maintain adequate capability to deal credibly with oil pollution emergencies.
- **Funding : Government of Mauritius – USD 2 M**
  - 1000 m high sea booms
  - 2000 m lagoon booms
  - 5100 m sorbent booms
  - Skimmers,
  - power packs,
  - storage containers and
  - accessories
- **Status of Project**
  - Bid : Launched on 04 September 2023
  - Closing date: 20 November 2023
  - Under evaluation

# Enhancement of Institutional Capacity for Oil Spill Response by Japan International

## Objectives:

## Cooperation Agency

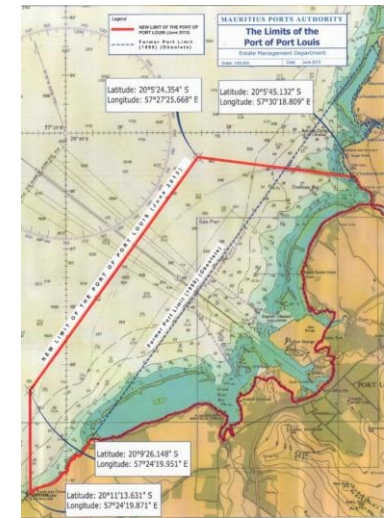
- **Training of Trainers – 7 Oil Spill Preparedness and Management Experts (OSPRM) April 2023**
- **Develop sensitivity Map – GIS and tactical sheet folio :**
  - Port area (March to December 2023)
  - Pointe du Diable to Pointe D'Esny (Jan 2024 to August 2024)
  - Bain des Rosnay to Poste de Flacq (September 2024 to July 2025)
- **IMO Level 1 training to responders**
- **IMO Level 0– Workshop with communities for each site**



**Project Period : October 2022 to August 2025**

## Achievement :

- 7 experts trained in Japan (3 MoE, 2 NCG and 2 SMF)
- 32 Government officials trained on IMO Level 1
- 40 participants (fishers, oil companies, NGO's & amongst others)
- Shore line sensitivity Map – GIS , Tactical Sheet folio for Port Area

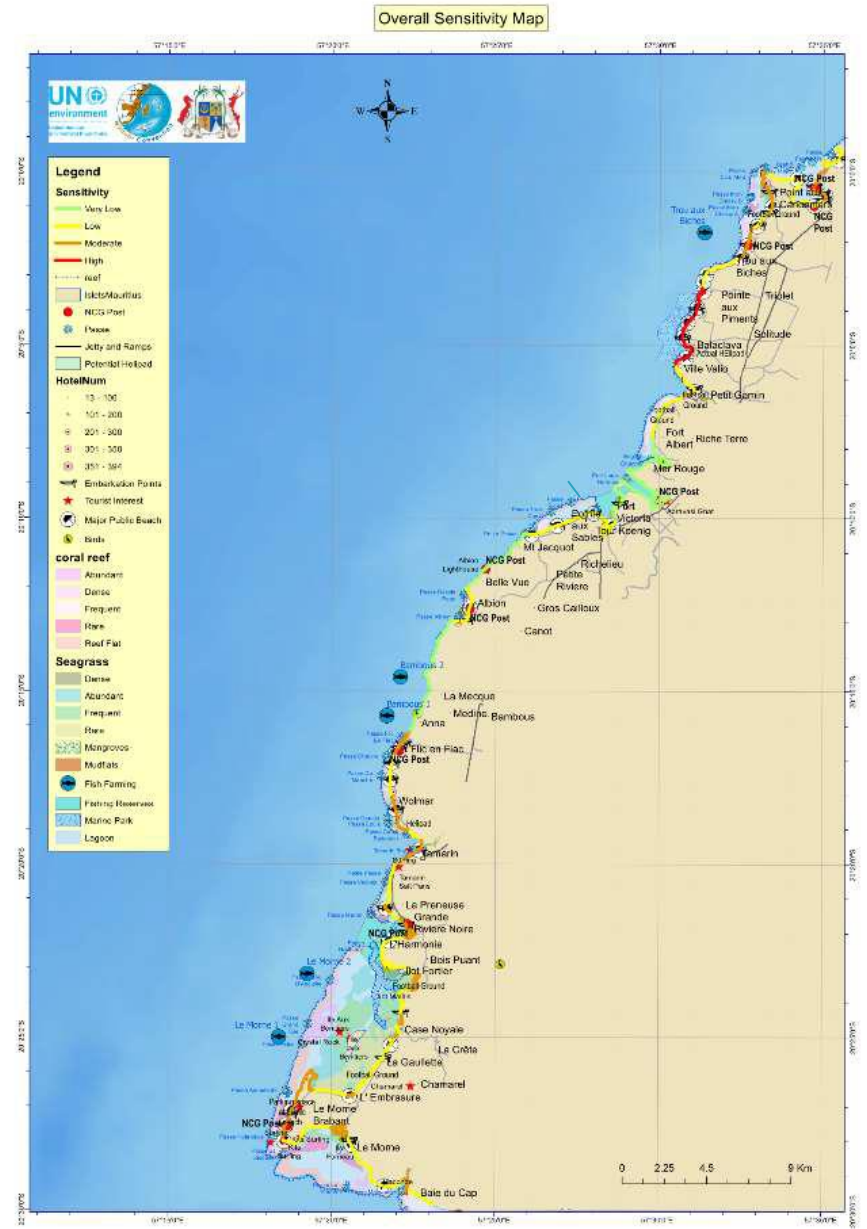


# **SAPPHIRE PROJECT**

**DEVELOPMENT OF  
TACTICAL, OPERATIONAL  
& SENSITIVITY MAPS**



# SAPPHIRE - Update of Sensitivity Map, Tactical and Operational Map



- ▶ Last Map 2003 – PDF version
- ▶ To develop **Sensitivity Map**, **Operational** and **Tactical Map** on GIS from Pointe aux Canonniers to Le Morne (Excluding Port Area)
- ▶ Project period : February 2023 to September 2023
- ▶ Funding : UNEP/ NCS
- ▶ Status : GIS format – Completed

## Aim of the project

- To strengthen the capacity of authorities of the Republic of Mauritius for the prompt and effective planning and response tools to oil pollution
- To sensitize the population on the updated National Oil Spill Contingency Plan (NOSCP).

# Oil Spill Maps

The Maps are classified into three types:

- (i) **Tactical Map** showing the shoreline resources, biological resources, and socioeconomic resources.
- (ii) **Strategic Map** describing the most sensitive areas for decision makers.
- (iii) **Operational Map** for the oil spill responders on site.

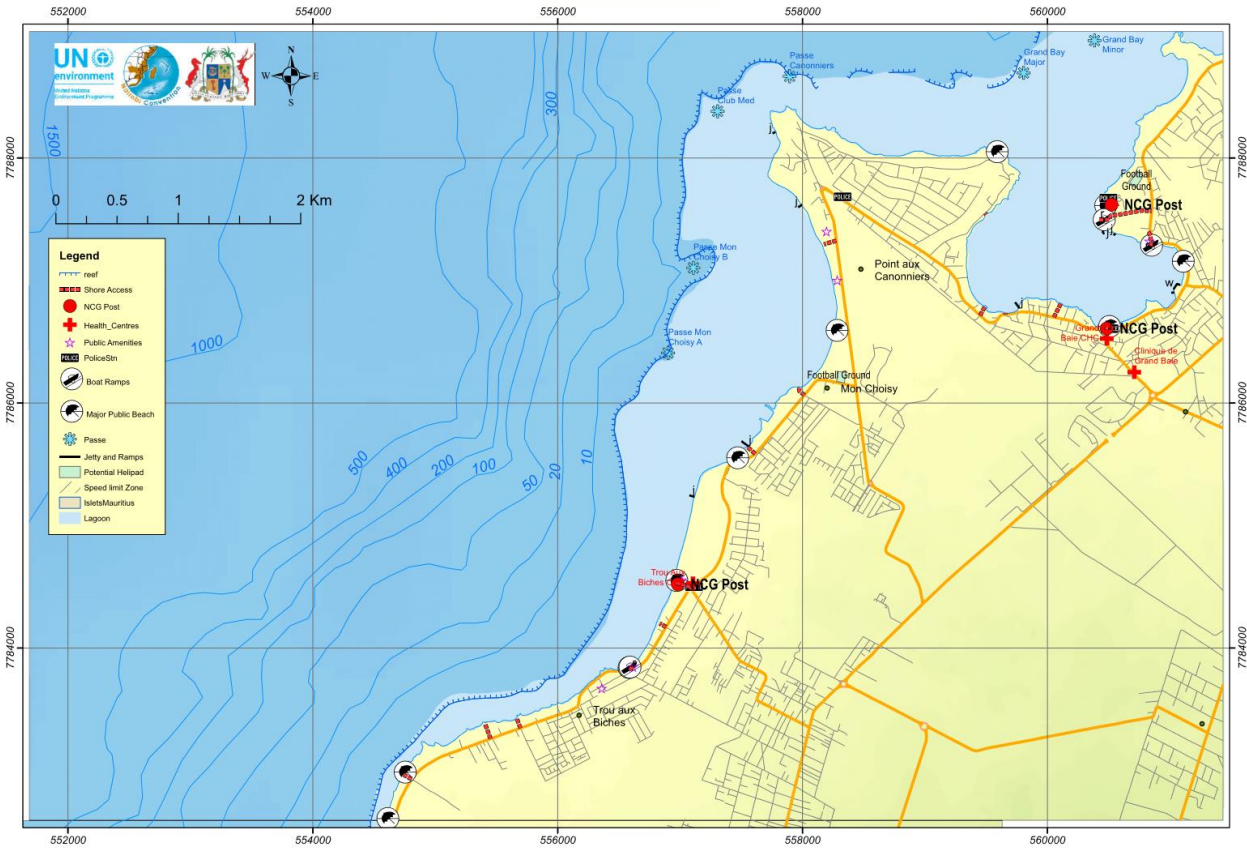


# Sensitivity Map, Tactical and Operational Maps 2023

- Develop **Sensitivity Map**, **Operational** and **Tactical Map** in Geographical Information System (GIS) format for the North West to Western Coast from Pointe aux Canoniers to Le Morne (Excluding Port Area)
- World Conservation Monitoring Centre (WCMC) appointed as Consultant for this project
- Mauritius as pilot to use the Mapping Environmentally Sensitive Assets (MESA) tool
- Local consultant appointed from February to August 2023 using the cartographic method:
  - Ground truthing
  - Liaison with stakeholders
  - Provide training
  - Gaps and needs assessment

# Operational Maps

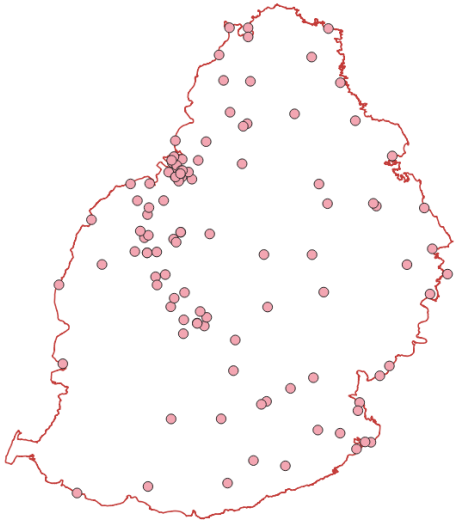
Operational Map



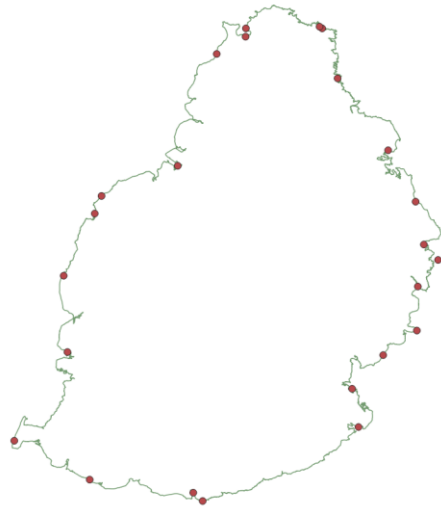
Operational Map



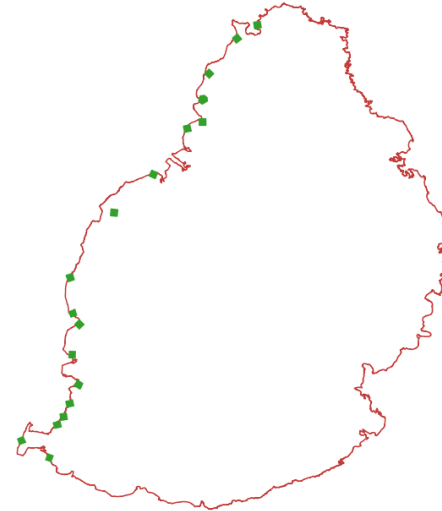
# Operational Maps



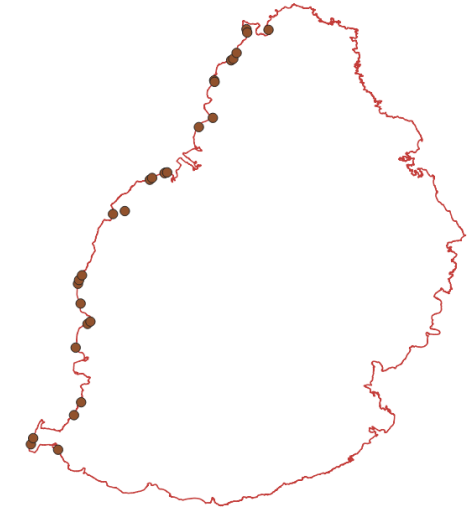
Police  
Stations



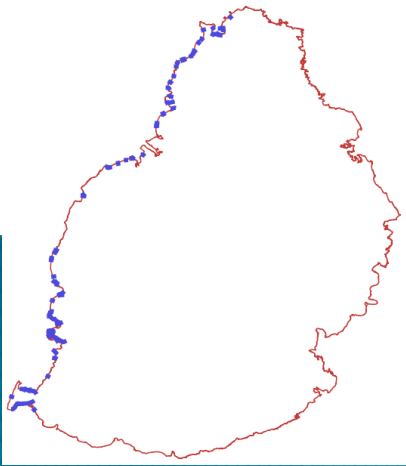
NCG  
Routes



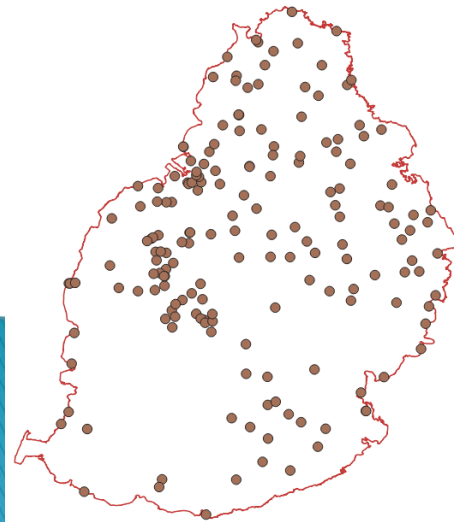
Potential  
Helipads



Public  
Amenities



Shore  
Access



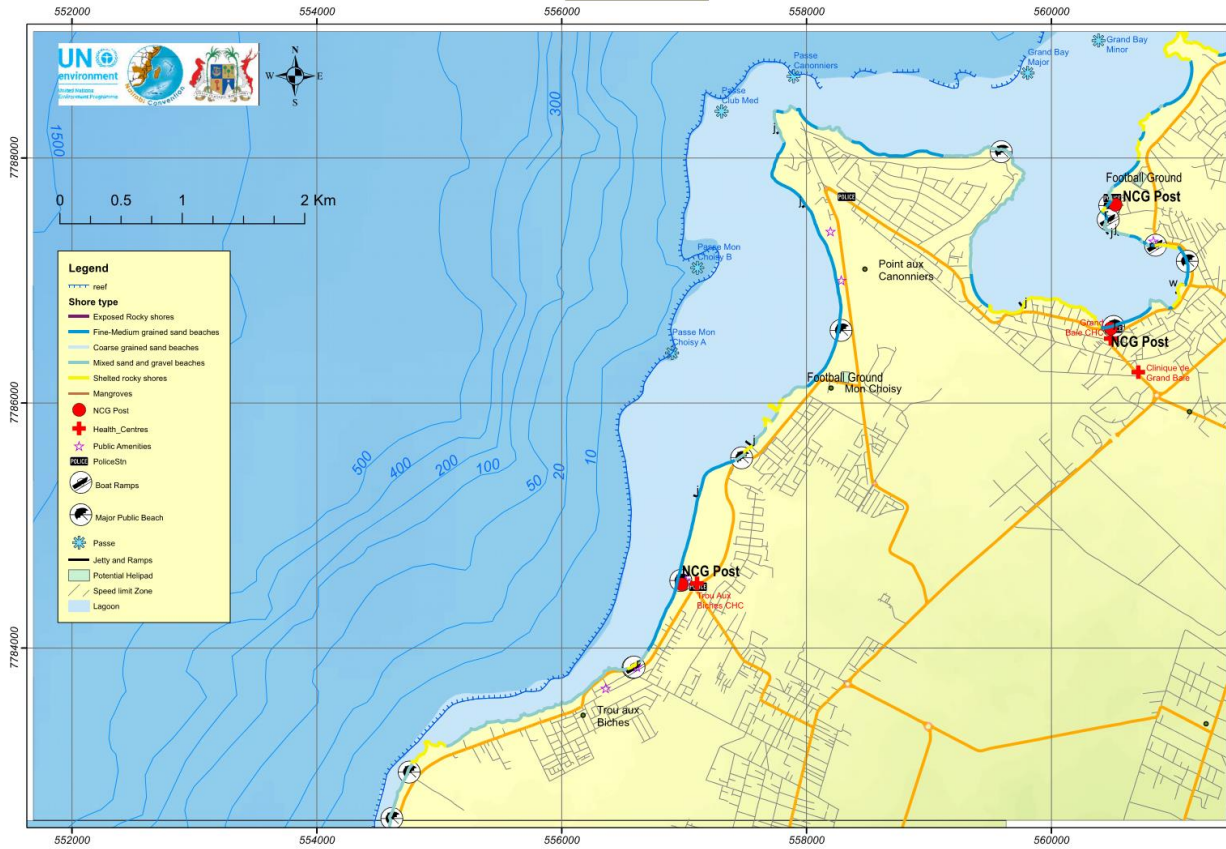
Health  
Centres



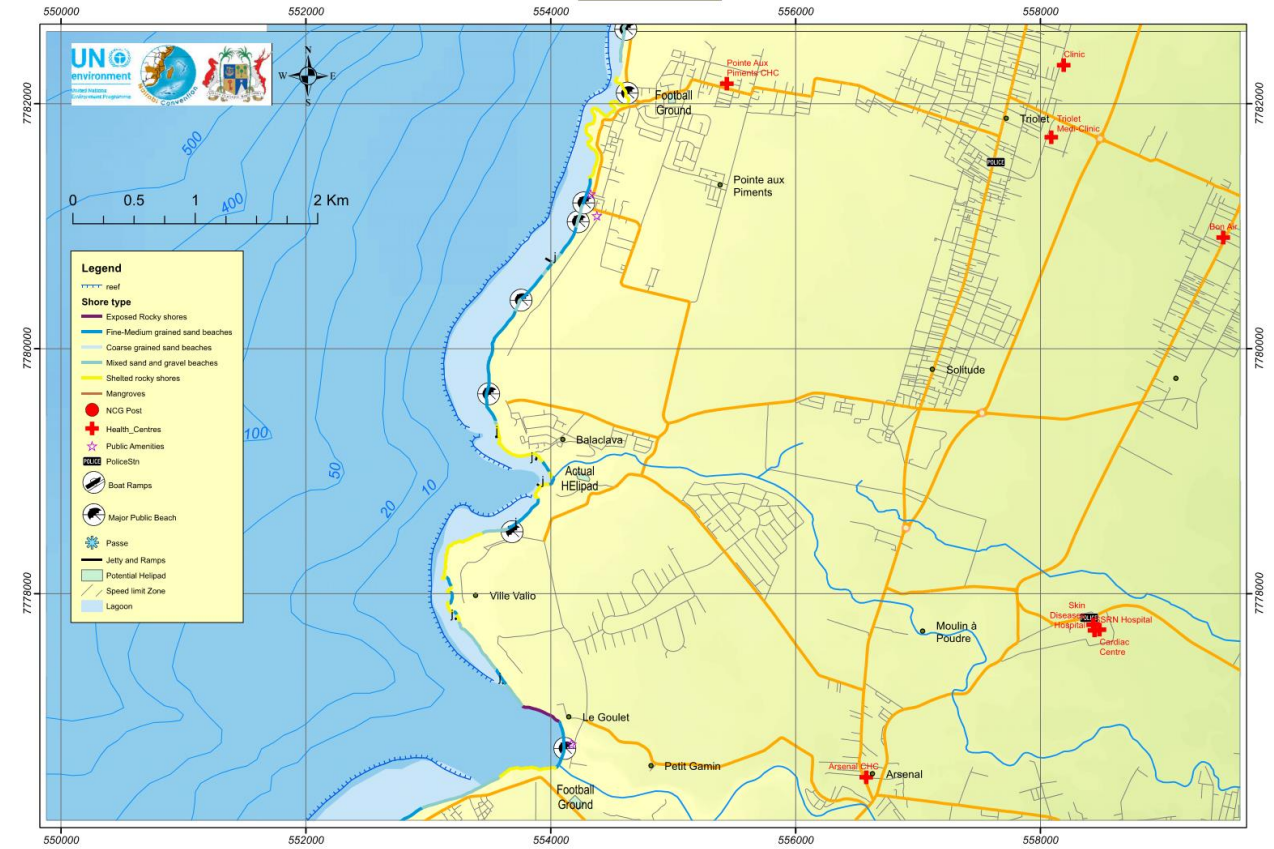
Jetty and  
Ramps

# Tactical Maps

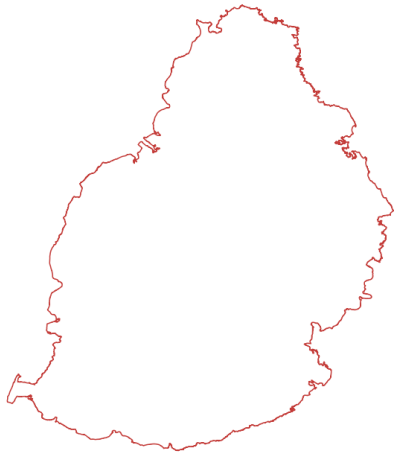
Tactical Map



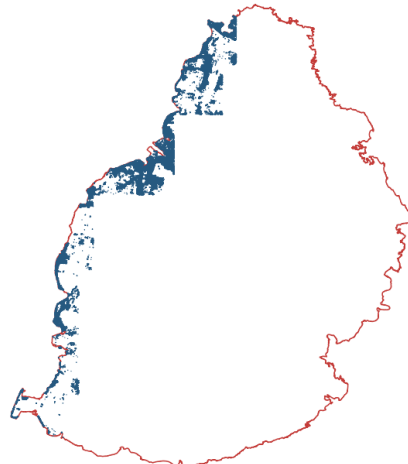
Tactical Map



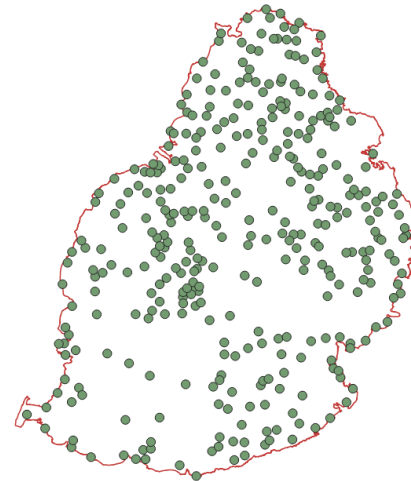
# Base maps



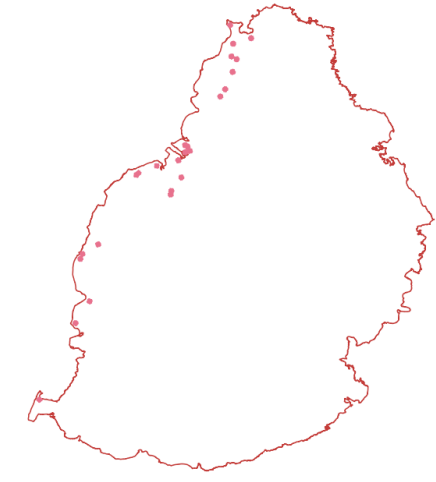
Coastline



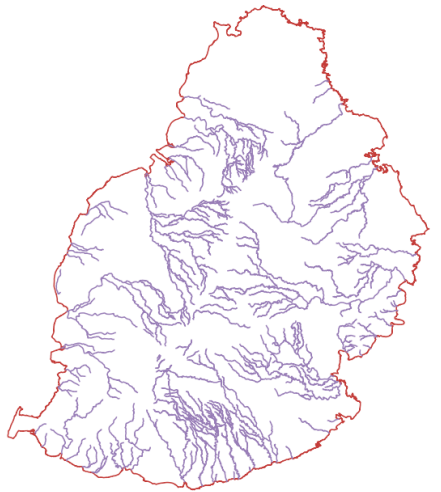
Buildings



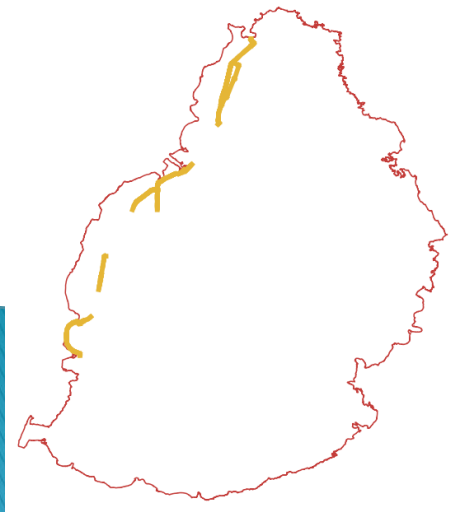
Locality names



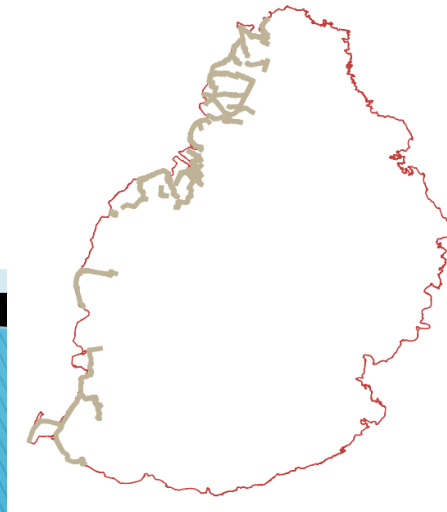
Round About



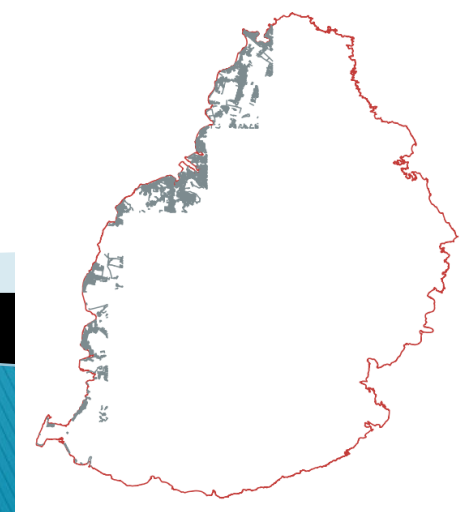
Rivers



A Roads



B Roads

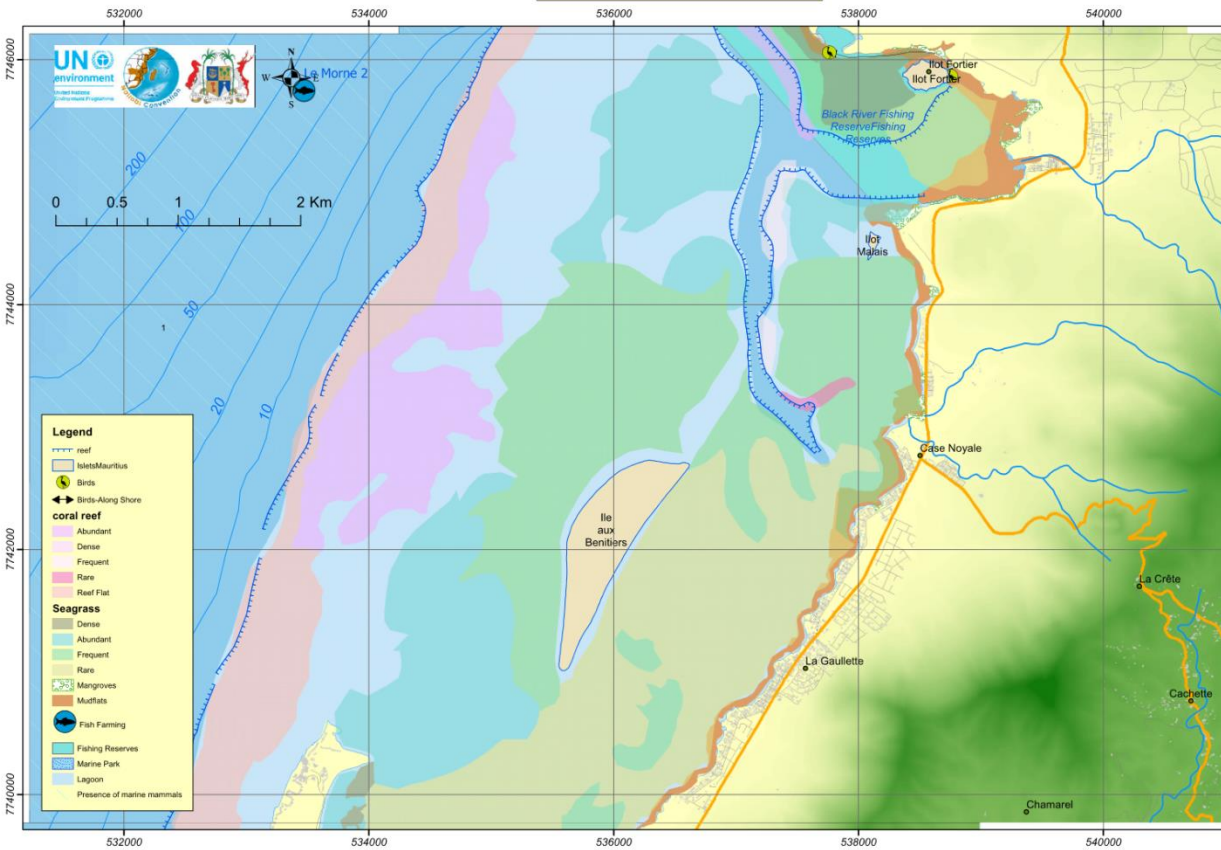


Residential Roads

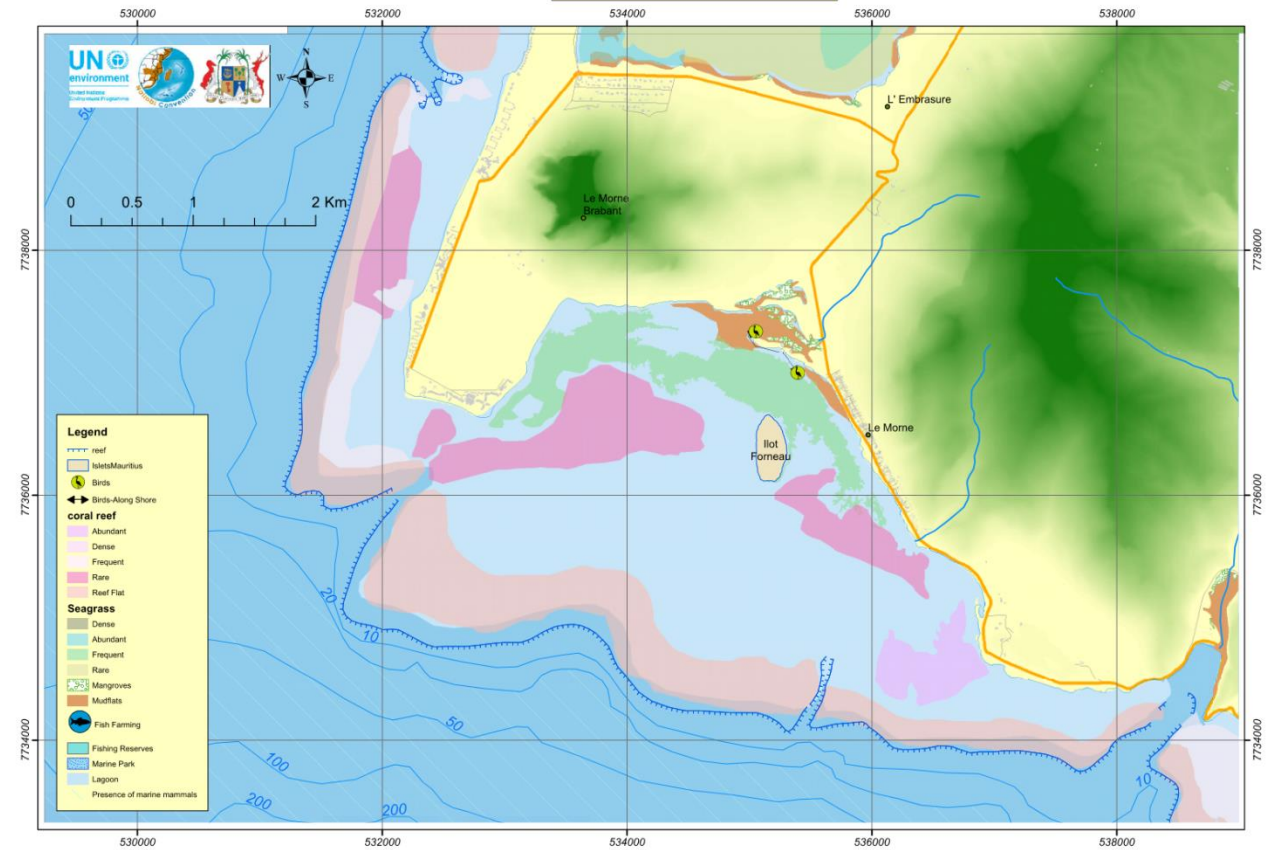


# Biological Resources

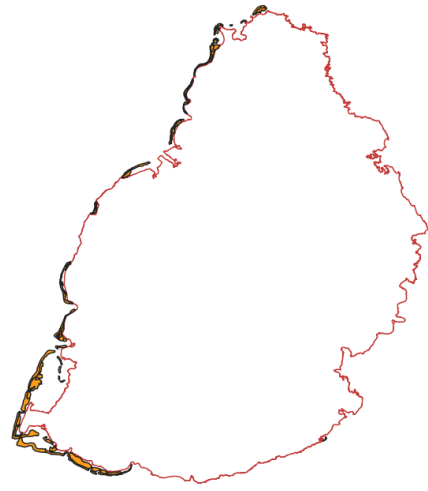
Biological Resources Map



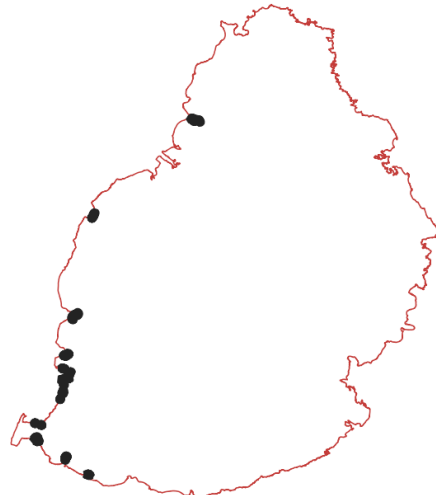
Biological Resources Map



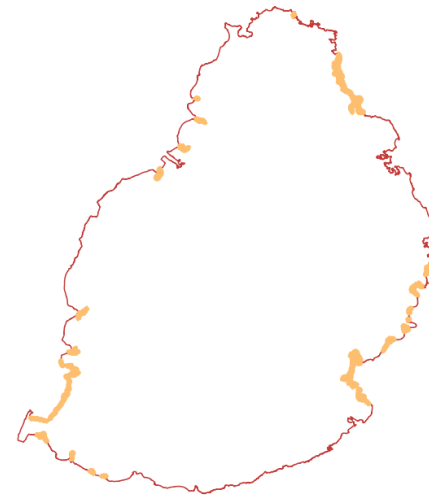
# Biological Resources



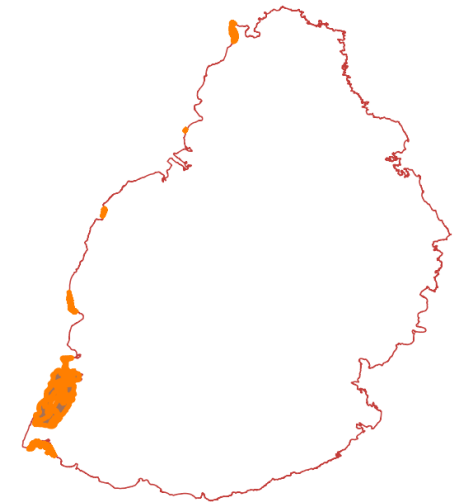
Coral Reef



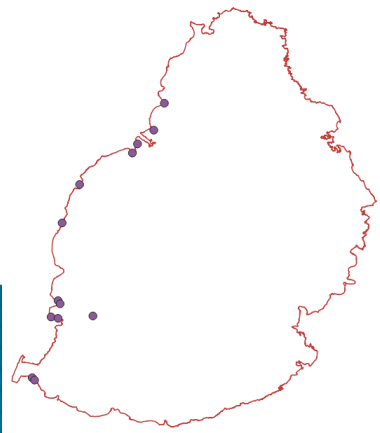
Mangrove



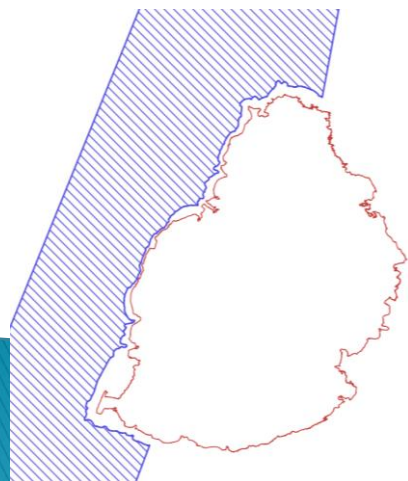
Mud Flats



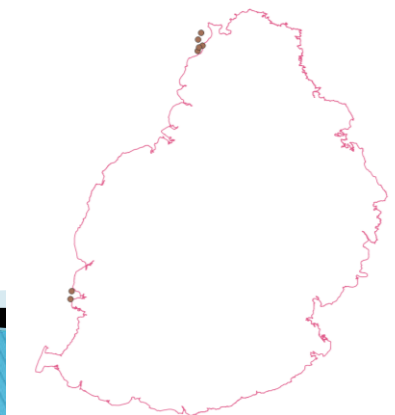
Seagrass



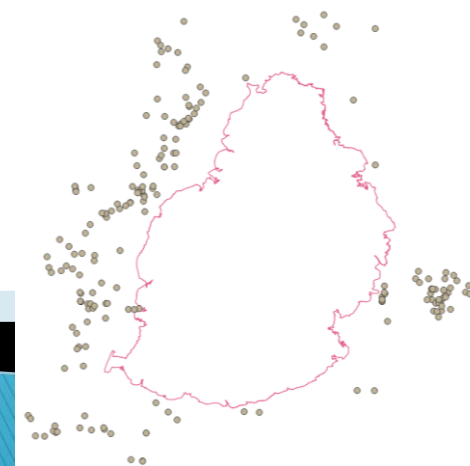
Bird S



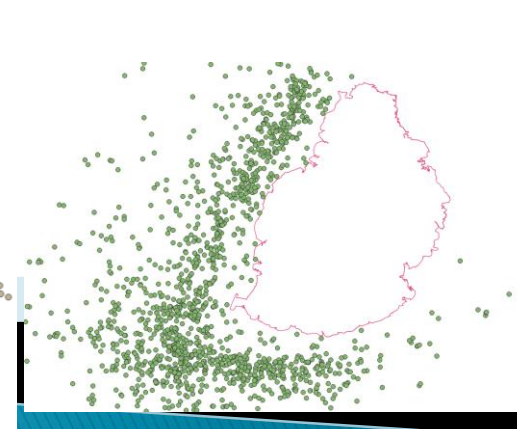
Marine Mammals



Turtles



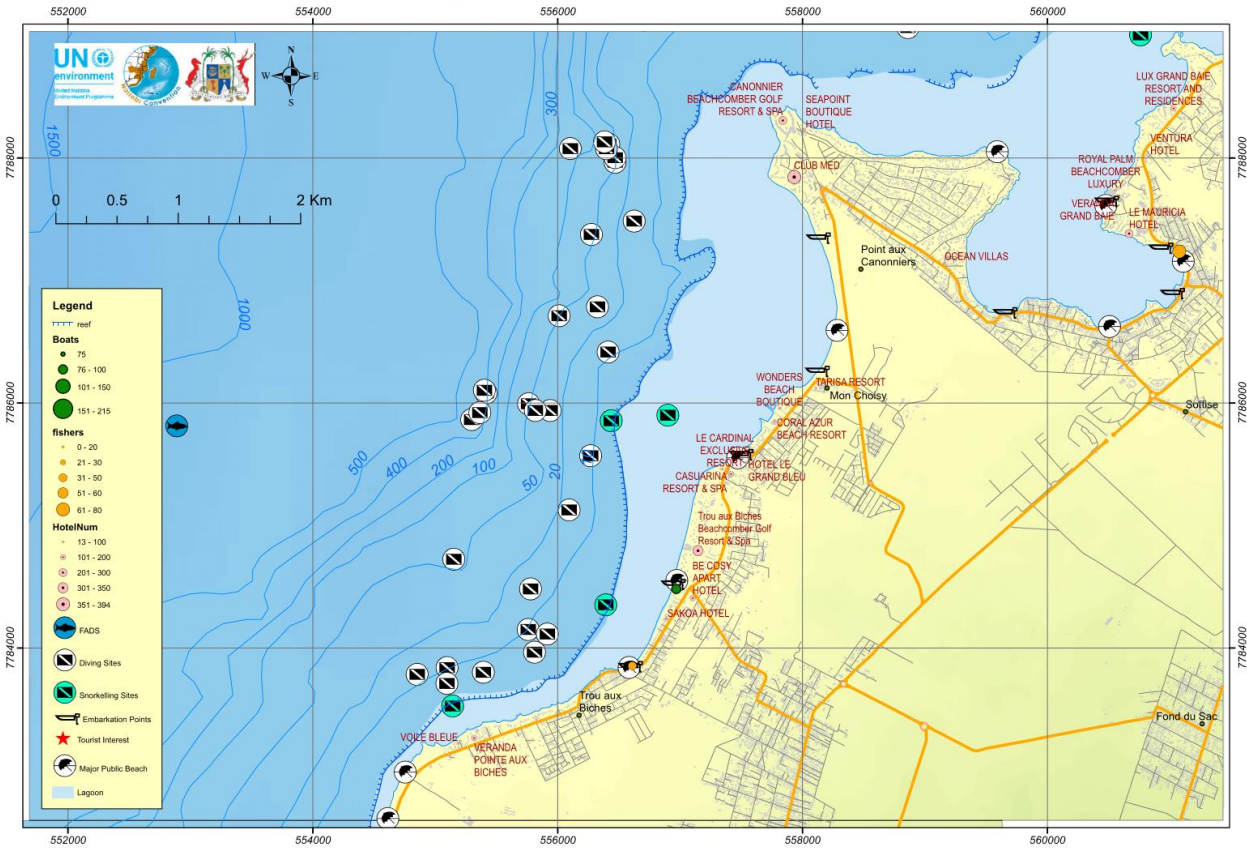
Cetaceans 2020-2022



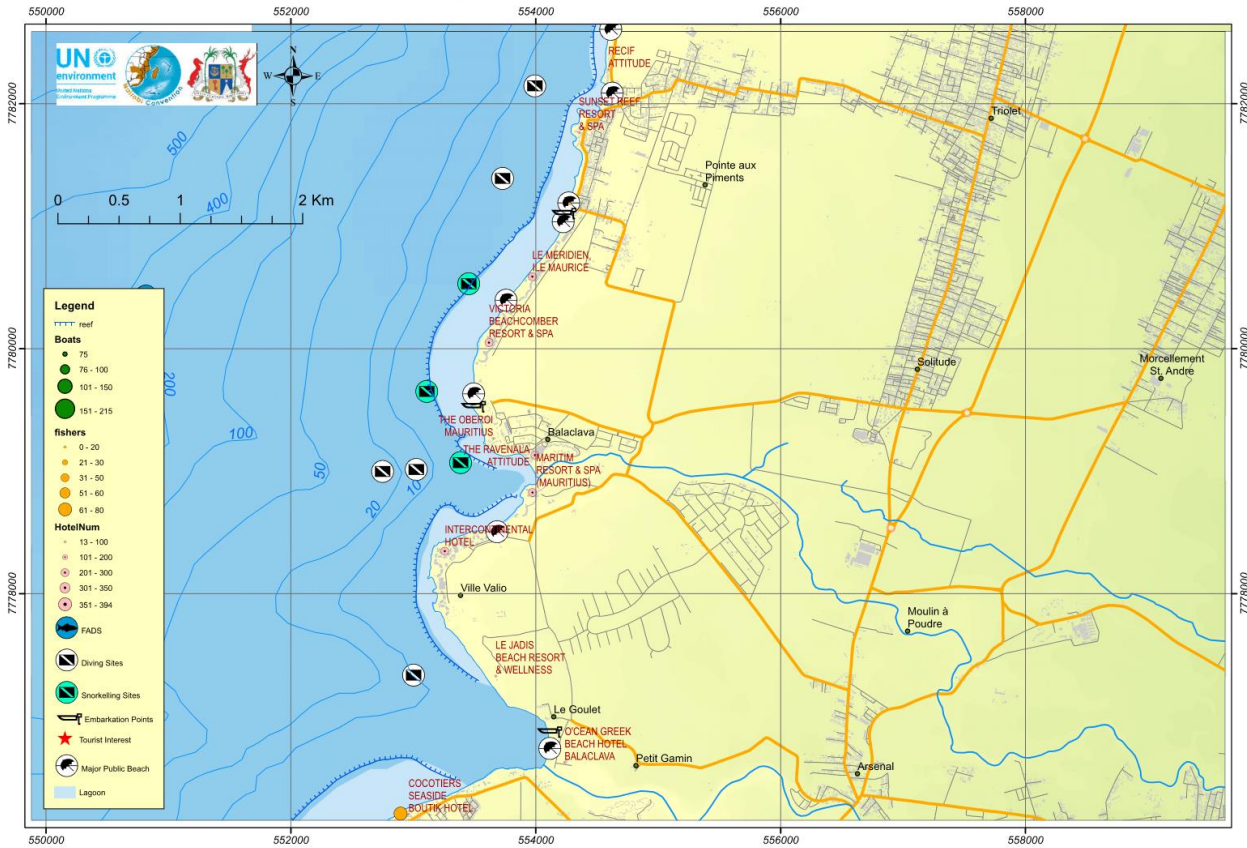
Whales 2014-2018

# Socio Economic Resources

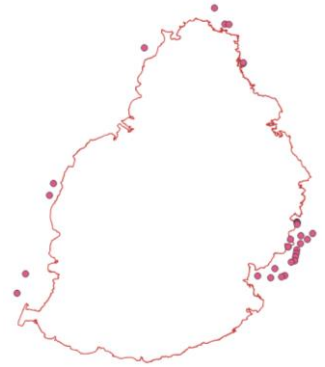
Socio Economic Resources Map



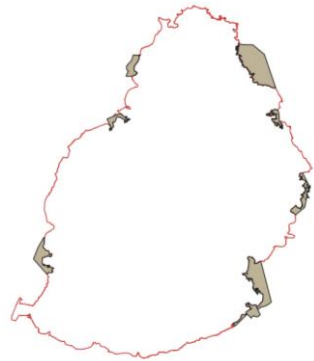
Socio Economic Resources Map



# Socio Economic Resources



Fish



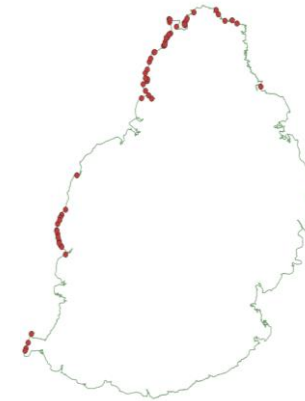
Fishing Reserves and Marine Protected Area



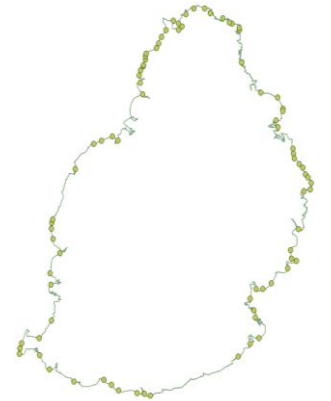
Diving Sites



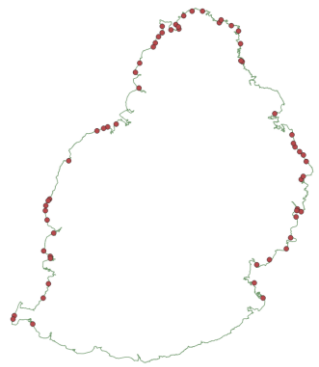
Snorkeling Sites



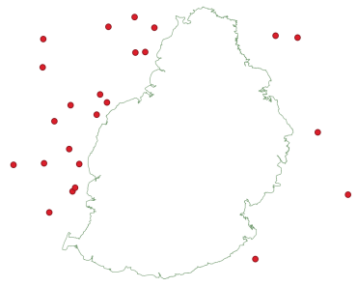
Hotels



Major Public Beaches



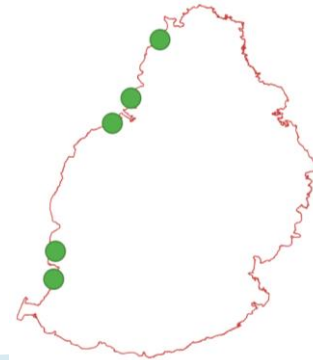
Embarkation Points



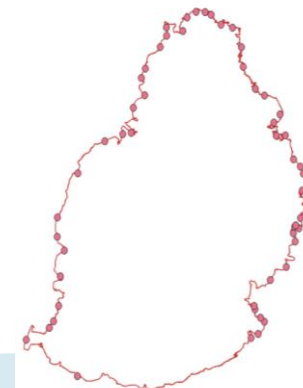
FADs



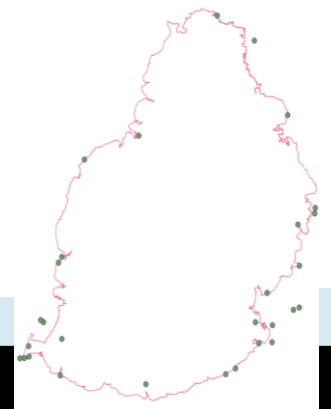
B Roads



Fisheries Posts with Fisher boats



Commercial Pleasure Crafts













Interest Sites

# Coastal Sensitivity Maps

The mapping of the sensitive and vulnerable sites helps:

- ▶ For decision making
- ▶ Prioritization of sites to be protected
- ▶ Helpful to reducing response, optimize on resources and time
- ▶ Localisation of sensitive areas should be **in Advance** and
- ▶ Is an integral part of the National Oil Spill Contingency Plan

# Ranking of coastline type

ESI ranking	Type of shoreline	ESI ranking	Type of shoreline
 1A 1B 1C	Exposed rocky shores Exposed, solid man-made structures Exposed rocky cliffs with boulder talus base	 6A 6B	Gravel beaches (pebble, cobble and boulders) Riprap
 2A 2B	Exposed wave-cut platforms Exposed scarps and steep slopes in clay	 7	Exposed tidal flats
 3A 3B	Fine- to medium-grained sand beaches Scarps and steep slopes in sand	 8A 8B 8C 8D	Sheltered rocky shores, Sheltered, solid man-made structures Sheltered riprap Sheltered rocky rubble shores
 4	Coarse-grained sand beaches	 9A 9B 9C	Sheltered tidal flats Vegetated low banks Hypersaline tidal flats
 5	Mixed sand and gravel beaches	 10A 10B 10D	Salt- and brackish-water marshes Freshwater marshes Swamps Mangroves

# Shoreline sensitivity classification

Increasing Vulnerability



- ESI 1 : Exposed rocky cliffs
- ESI 2 : Exposed beach rock
- ESI 3 : Fine grained sand
- ESI 4 : coarse grained sand beaches
- ESI 5 : Mixed sand & pebbles beach
- ESI 6 : Pebbles, cobbles & Boulder
- ESI 7 : Exposed Tidal Flats
- ESI 8 : Sheltered raised fossil reefs & solid man-made structures
- ESI 9 : sheltered tidal flats & vegetated low banks
- ESI 10 : Marshes & Mangroves

Very low

Very low sensitive

Low sensitivity

Moderately sensitive

Sensitive

Sensitive

Sensitive

Very sensitive

Very sensitive

# Description: Shore type sensitivity for the western side of Mauritius



Shapefile: Shoretype sensitivity.shp

Source: Digitized from Aerial images and Google Earth.

Coverage: Western side of Mauritius

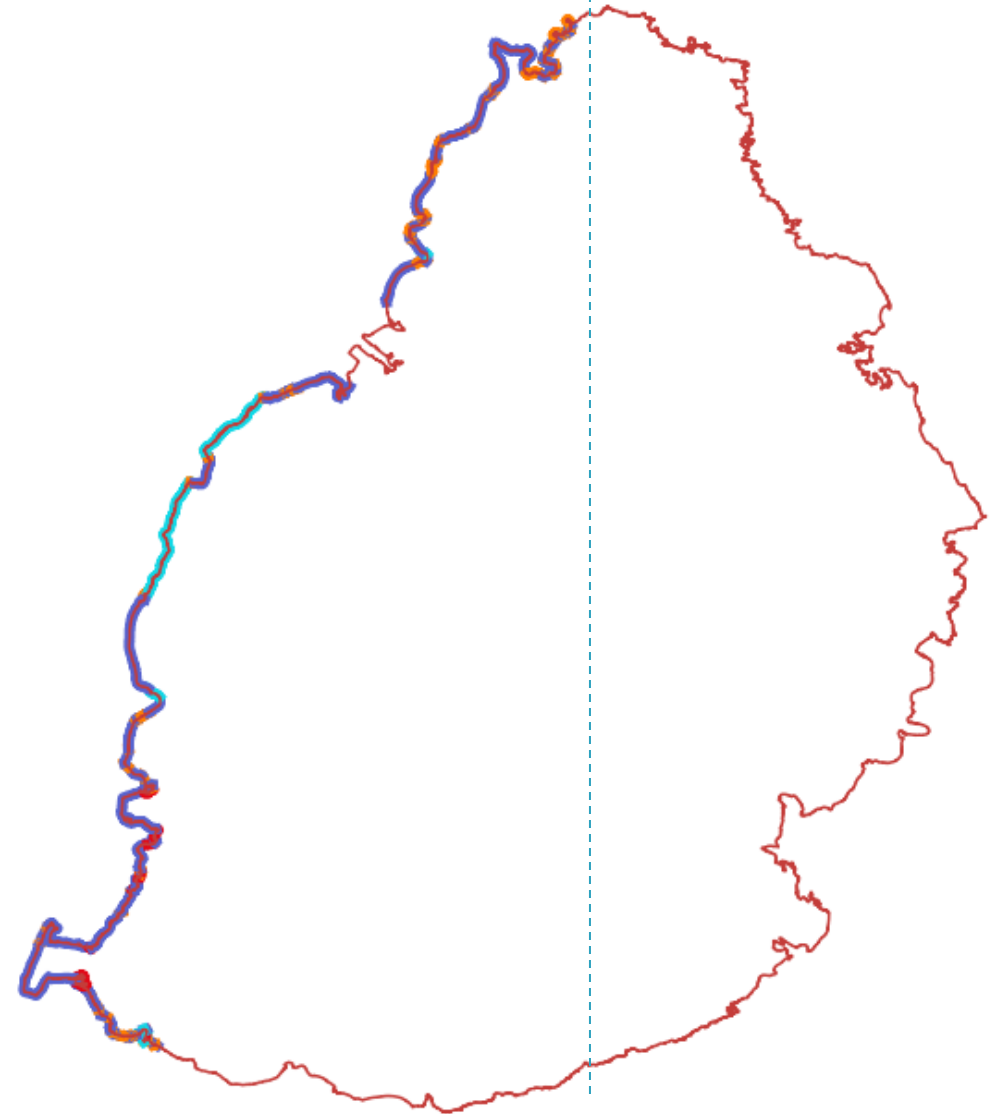
Updates: 2023

Data Format: Vector line

Remarks:

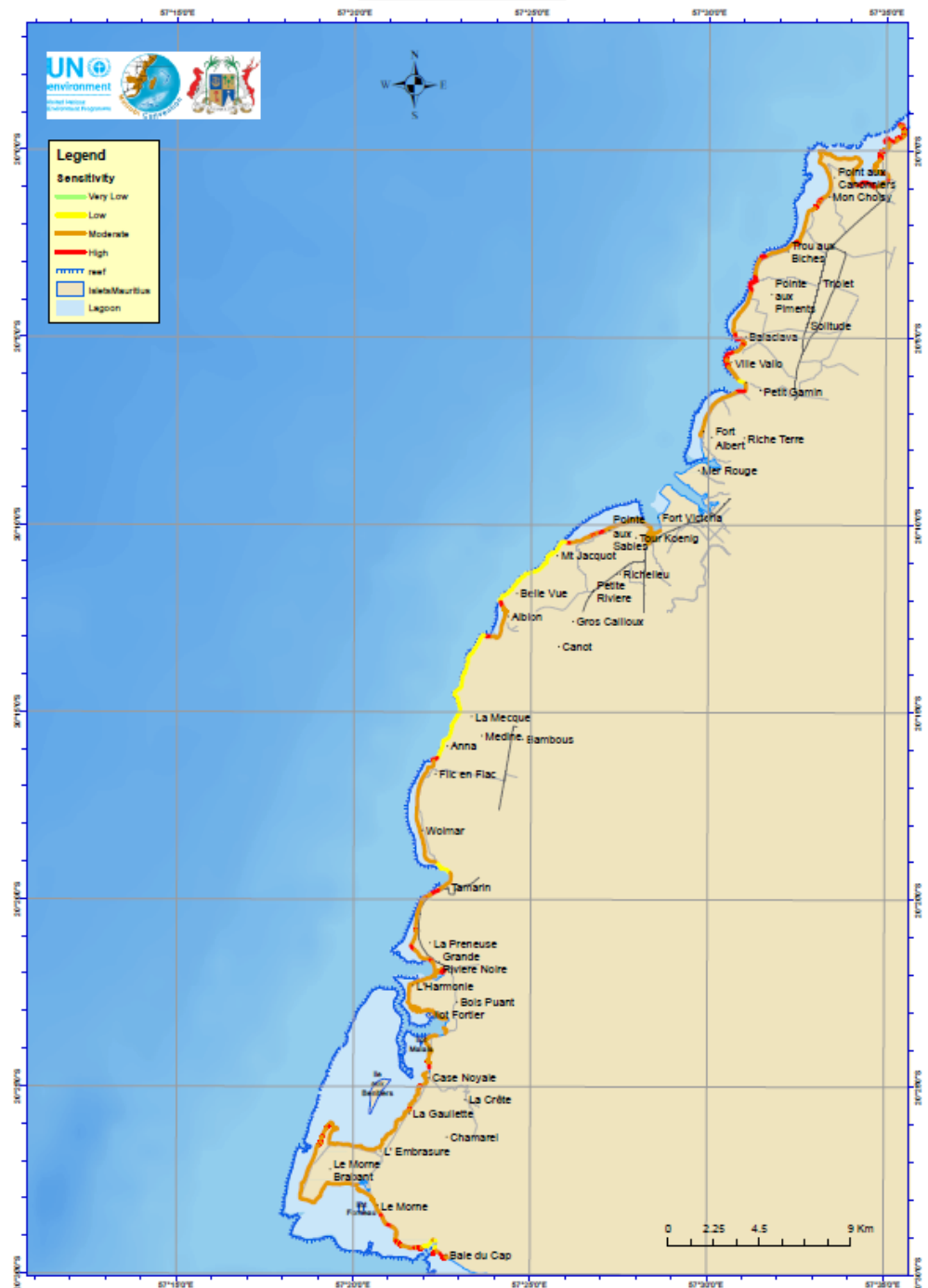
The sensitivity index from NOAA is further simplified into 4 categories:

ESI 1,2 is least sensitive in pale blue,  
ESI 3,4,5 low sensitivity in blue,  
ESI 6,7,8 medium sensitivity in orange and  
ESI 9,10 high sensitivity in red.





# Shoreline Sensitivity Map



# GIS MAPPING

## Advantages

- Uses coordinates system
- Different layers showing different features at the same time
- Less bulky to carry as compared to hard copies
- Easy to use and update
- Can be accessed from anywhere by multiple users

## Limitations

- Require a minimum knowledge of GIS
- Hardware and software (can be costly )
- Maintenance for migration online



**UPDATE OF THE  
NATIONAL OIL SPILL  
CONTINGENCY PLAN  
(NOSCP)**

# Update of the National Oil Spill Contingency Plan

- 10 Sectorial Sensitisation Workshops (October 2023) – completed
  - Roles and responsibilities
  - Support : Nairobi Convention Secretariat – SAPPHIRE Project

## Target groups

1. Tourism Sector
2. Fisheries Sector
3. Oil Companies
4. Local Authorities
5. Waste Collectors
6. Volunteers/ NGO's,
7. Women Association
8. Youth
9. Media and
10. First Responders

Stakeholder	Key take away
Volunteers and NGO's	The role of NGOs and volunteers needs to be defined and clarified in order to ensure that they are properly registered, made aware of the risks involved and protected by adequate insurance.
Women Association	Women association can play an active role in oil spill incidents prior, during and during the recovery phase by providing support, labour and sharing their local knowledge.
Youth	Youth have been very active and they could play a role as animators and coordinators for volunteers based on their experience and motivation, subject to proper training, insurance cover and provision for Personal Protective Equipment in all phases of an oil spill incident.
Tourism	Training and coordination through the TA could enhance the critical role which tourism operators have played during previous oil spill incidents both as observers and as personnel providing navigation, boat and local knowledge support in case of an oil spill incident.
Fisheries	Training and coordination through the FPS could enhance the critical role which fisheries operators have played during previous oil spill incidents both as observers and as personnel providing navigation, boat and local knowledge support in case of an oil spill incident.

Stakeholder	Key take away
Media	Communication of information to the public should be properly coordinated and substantiated; safety and security of the media should also be considered for access purposes
First Responders	The roles and responsibilities of first responders are generally well defined in the plan. Other para-statal bodies such as CWA and MT have suggested to be included in the plan as support organisations. Outside government scientific support should be envisaged.
Oil Companies	Oil companies should have a better line of communication and be represented to facilitate private-public partnerships in case of oil incidents.
Local Authorities	Suggestions have been made to clarify the roles and responsibilities of local authorities and to develop a multi-stakeholder public-private approach.
Waste Collectors	It was suggested to add the contact details of oil companies in the Contacts List of the NOSCP and to define the criteria used for the selection of such companies in case of oil spill incident.







A spiral-bound notebook with a silver metal binding is open on a light blue wooden surface. A silver and black ballpoint pen lies diagonally across the top right of the notebook. The notebook's pages are white and feature faint, light blue business charts, including line graphs and bar charts. The text "THANKS FOR YOUR ATTENTION" is printed in large, bold, black, sans-serif capital letters across the center of the notebook. A faint watermark "dreamstime." is visible behind the text. The notebook is slightly tilted, and the lighting creates soft shadows on the wooden surface.

**THANKS FOR  
YOUR  
ATTENTION**