

18th MEETING
SOUTHERN AFRICAN AND ISLANDS
HYDROGRAPHIC COMMISSION (SAIHC 18)

MAPUTO, MOZAMBIQUE

NATIONAL REPORT
REPUBLIC OF MAURITIUS



10-12 May 2022

1. **Executive Summary**

1.1. **Name of the Institution** - Mauritius Hydrographic Service (MHS)

1.2. **Introduction**

Mauritius Hydrographic Service (MHS) is a Governmental institution operating under the aegis of the Ministry of Housing and Land Use Planning and is the nodal agency for hydrographic surveying and nautical charting for the Republic of Mauritius which includes the Islands of Mauritius, Rodrigues, Agalega, Tromelin, Cargados Carajos and the Chagos Archipelago, including Diego Garcia and any other island comprised in the State of Mauritius.

1.3. **Cooperation between Mauritius and India**

Under the existing Memorandum of Understanding (MoU) between the Republic of Mauritius and the Republic of India in the field of hydrography, Mauritius has obtained assistance from India *inter alia* for the conduct of deep-sea surveys, production of navigational charts, training of staff and provision of expertise for the setting up of hydrographic infrastructure in Mauritius.

1.4. **Staff of MHS**

MHS is currently headed by a Commander (Hydrographer) supported by two Petty Officer Survey Recorders deputed by the Government of India. One Principal Surveyor, one Senior Surveyor and one Surveyor from the Ministry of Housing and Land Use Planning also form part of the MHS team. All the surveyors from the Ministry are IHO/FIG CAT "A" qualified and have completed their hydrographic course under various IHO capacity building programmes.

1.5. **Submitted by:**

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2. Surveys

MHS organised its stakeholders meeting on 22 December 2021 to review the hydrographic survey requirements of Ministries and parastatal bodies. The meeting was attended by twelve stakeholders and a total of 75 hydrographic survey requirements were projected for the block year.

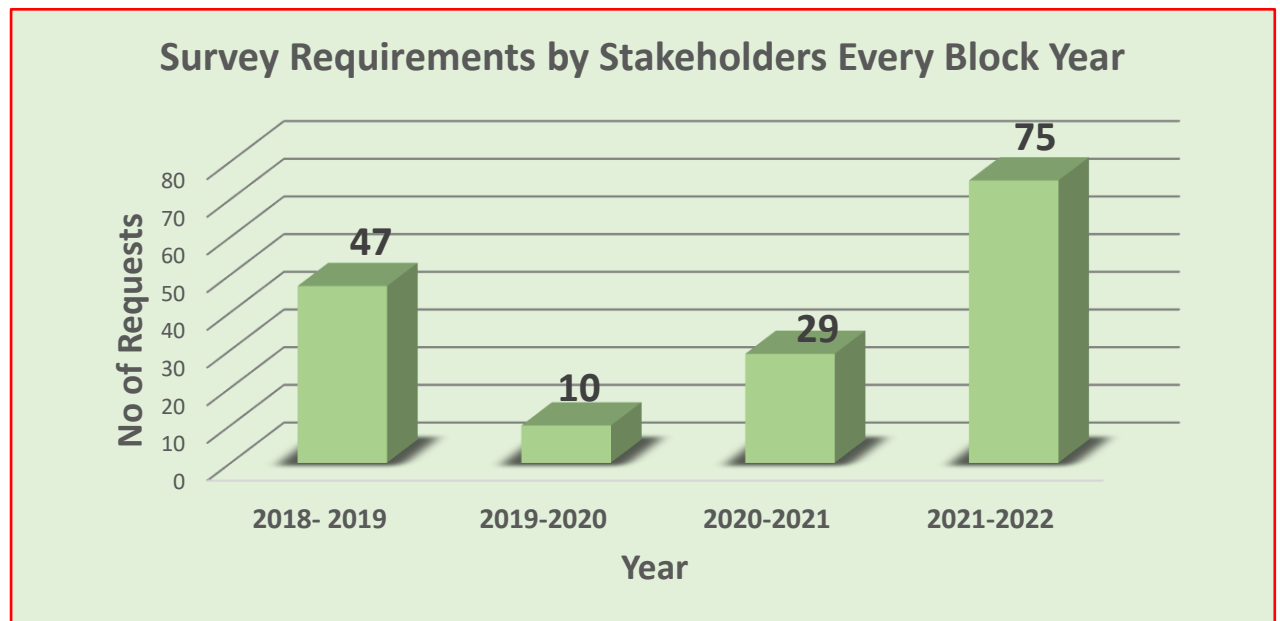


Figure 1: Survey Requirements by Stakeholders since 2018

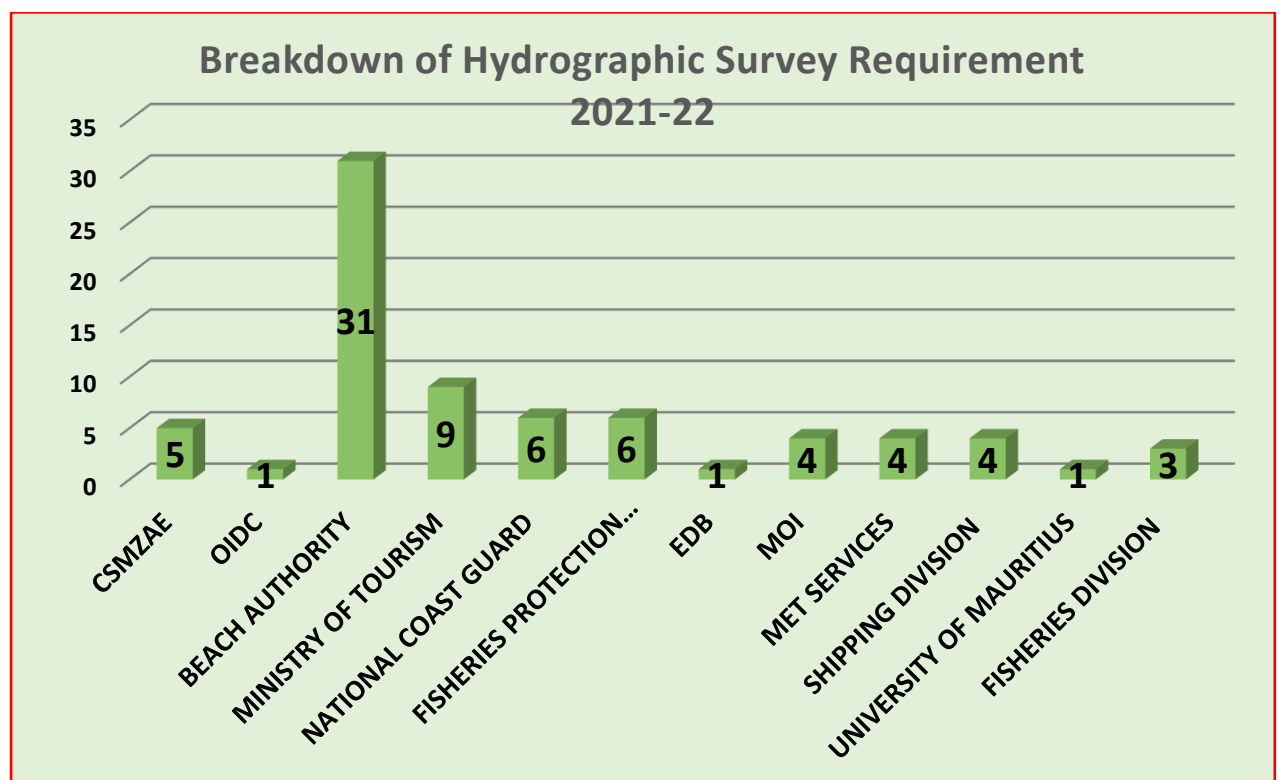


Figure 2: Breakdown of Hydrographic Survey Requirements 2021-2022

These surveys have been segregated as deep sea and shallow water surveys for an effective execution plan. The deep sea surveys are executed by hydrographic vessels deputed by the Government of India annually. The areas closer to the coast are surveyed using inshore survey vessel 'Pathfinder' fitted with Multibeam Echosounder (SeaBat T 20-P) and the lagoon areas are surveyed using crafts of opportunity received from various stakeholders requesting for surveys.

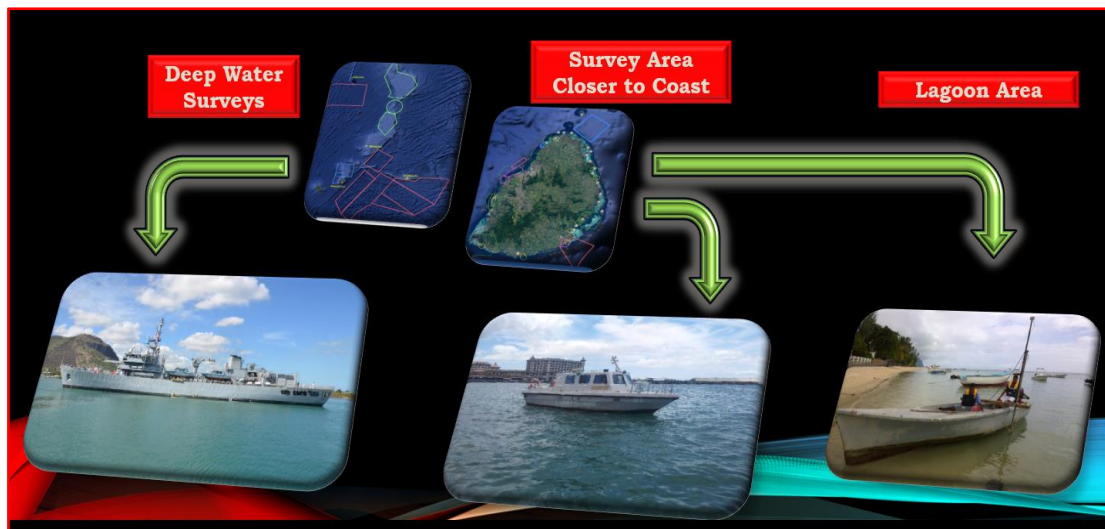


Figure 3: Execution Plan of Survey Tasks

2.1 **Coverage of New Surveys.** MHS is endeavouring to meet the most urgent survey requirements as projected by the stakeholders in a phased manner. Towards this, MHS undertook the following surveys:-

- (a) **Hydrographic Survey of Public Beaches Around Mauritius.** At the request of the Beach Authority, hydrographic surveys were carried out for several public beaches. The hydrographic survey data would be used by the Authority for demarcation of swimming zones/ dangerous current zones/ installation of beach information panels /demarcation of marine protected areas etc. The public beaches at the following locations have been surveyed for this block year:

- (i) Belle Mare;
- (ii) Palmar;
- (iii) Poste La Fayette;
- (iv) La Prairie;
- (v) Surinam ; and

(vi) Riambel.



Figure 4: Singlebeam Survey at Belle Mare



Figure 5: SVP cast at Palmar



Figure 6: Pole Sounding at Surinam

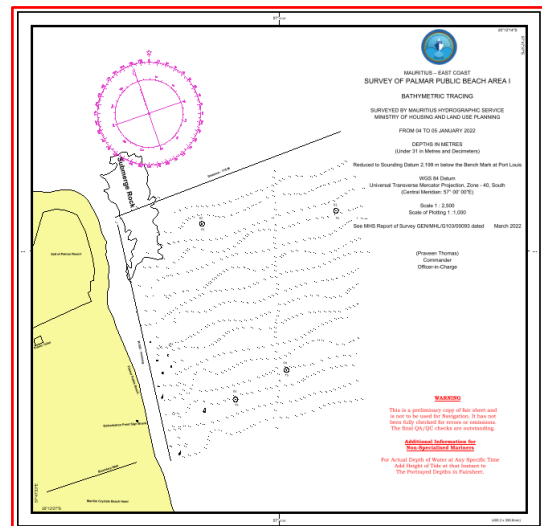
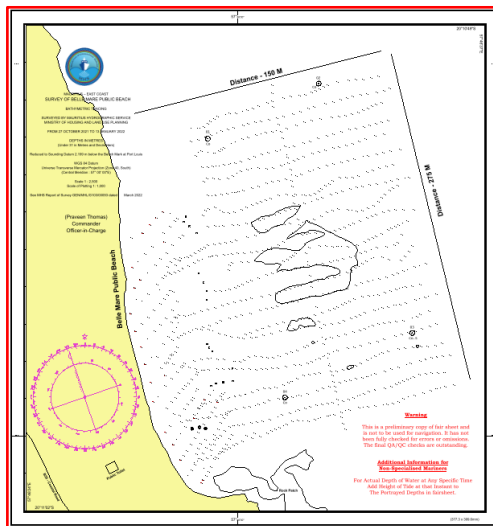


Figure 7: Fairsheets of Belle Mare and Palmar Regions

(b) **Hydrographic Survey of Navigational Passes Phases VI & VII (Jun 21 – April 22).** The survey of navigational passes are undertaken to demarcate the safe passage for mariners to enter and exit the lagoons to access the deep sea. These surveys are carried out at the request of the Ministry of Blue Economy, Marine Resources,

Fisheries and Shipping and the Ministry of Tourism. In this context, MHS executed the following surveys between June 2021 to April 2022:

- (i) Passe Poule – Northern region;
- (ii) Passe Calodine – Northern region;
- (iii) Passe Deux Toque – Northern region;
- (iv) Passe D’Oscone – Northern region;
- (v) Passe Jacot – North Eastern region;
- (vi) Passe St Geran – North Eastern region;
- (vii) Passe Carcasse – North Eastern region; and
- (viii) Passe Trois Canals – North Eastern region.



Figure 8: Singlebeam Survey in the North Eastern Region

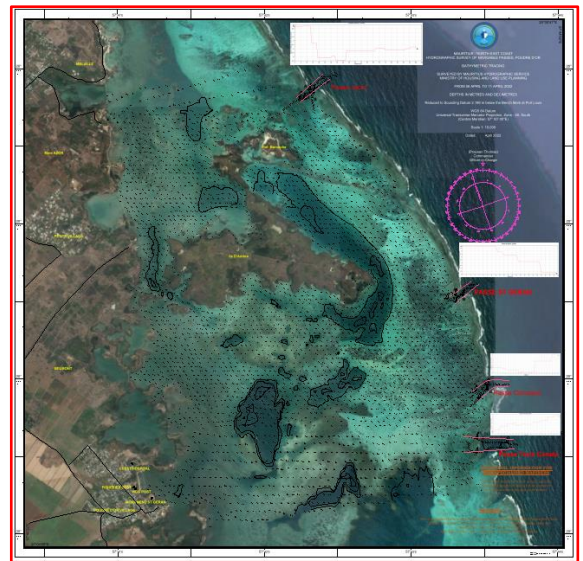
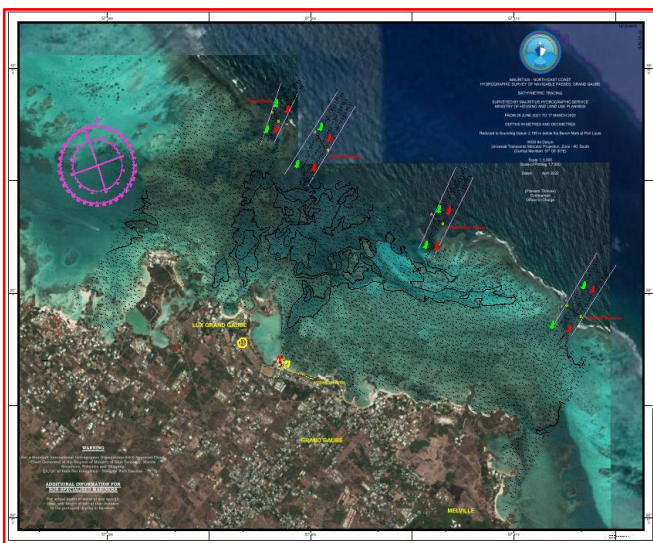


Figure 9: Fairsheet of Passes (Northern & North Eastern Regions)

(c) **Survey Undertaken by INS Sarvekshak (March/ April 2021)**

Under the provisions of the MoU in the field of Hydrography between the Government of Mauritius and the Government of India, Indian Naval Survey Ship ‘Sarvekshak’ was deployed to undertake Foreign Cooperation Survey in the Mauritian waters from 18 March to 14 April 2021. During the deployment, the hydrographic survey of the EEZ north of Mauritius was undertaken for the Department of Continental Shelf, Maritime Zones Administration and Exploration (CSMZAE), Prime Minister’s Office and for updating of the chart of the area.



Figure 10: INS Sarvekshak Berth at Port Louis Harbour

(d) **Survey for Extension of MPAs under UNDP funded Mainstreaming Biodiversity Project.**

MHS carried out hydrographic surveys for the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping for extending the surface areas of Marine Protected Areas (MPAs) of Mauritius by at least 5000 Ha into the sea. The fair sheets prepared with coordinates of extended limits will be used for official proclamation of the MPAs in the Government Gazette.

(e) **Survey for Study of Carrying Capacity of lagoons for Management of the Coastal Zone.**

MHS carried out hydrographic surveys and data compilation at the request of the Ministry of Tourism for the UNDP Biodiversity project of management of the coastal zone of Mauritius. The data provided by MHS will enable the Ministry to determine and evaluate the carrying capacity of different activities in the lagoon and to formulate a management framework with clearly defined strategies and policies.

2.2 **The basic infrastructure** available for undertaking Hydrographic surveys at Mauritius Hydrographic Service are listed below: -

Equipment

- (a) Inshore Survey Vessel “Pathfinder”
- (b) Seabat T-20P Multibeam Echosounder System interfaced to SBG Ekinox II Inertial Navigational System
- (c) Atlas Deso-30 Echo sounder with 210 KHz and 33 KHz Transducers
- (d) Precision Depth Recorders – PDR 601
- (e) Teledyne Hydrotrac Portable Single Beam Echo Sounder
- (f) Side Scan Sonar 4200 FS with Discover and Sonar wiz software
- (g) Hemisphere R-131 Satellite DGPS
- (h) TSS Dynamic Motion Sensor 25.
- (i) CTD 48M Sound Velocity Profiler
- (j) Infinity-EM Current Meter
- (k) Aquadopp Current Meter
- (l) Valeport TideMaster Automatic Tide Gauge
- (m) Valeport SWiFT SVP

Software

- (n) HYPACK 2019 software
- (o) CARIS Processing Suite for Single and Multi-beam Sounding
- (p) CARIS BDB
- (q) CARIS Paper Chart Composer

2.3 **New Technologies/Equipment**

(a) **Automatic Tide Gauge**

MHS has procured a new Valeport VRS-20 RADAR based, Automatic Tide Gauge (ATG). The ATG was successfully commissioned in April 2022. A custom made contraption arrangement to deploy the radar sensor of the TG into water was manufactured for ease of deployment. The procurement of the equipment is now enabling MHS to gather reliable tidal data from ongoing survey sites instead of relying on online data from Port Louis ATG on the western side of Mauritius.



Figure 11: Commissioning of ATG

(b) **Valeport SWiFT SVP**

MHS has procured a new Valeport SWiFT SVP which is equipped with integral GPS to geo-locate every profile. The data will be used for Singlebeam and Multibeam Echosounder data processing and to meet the specific sound velocity profile requirements of stakeholders.



Figure 12: Valeport SVP

(c) **Aquadopp Current Meter**

As per the provisions of the Memorandum of Understanding in the field of Hydrography between the Government of Mauritius and the Government of India, Mauritius has received an “Aquadopp” Current Meter which will be used to meet the ocean current data requirements of various stakeholders.



Figure 13: Aquadopp Current Meter

2.4 **New Ships.** Nil

2.5 **Challenges.**

(a) Limited Local Representative of OEM for Survey Equipment

(b) Delayed local expert support for multibeam echosounder despite securing an Annual Maintenance Contract.

(c) Limited support towards repair of survey vessel, engines, DA and associated accessories.

2.6 **Achievements**

Data from the hydrographic survey of navigable passes is being used by the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping for the placement of buoys to demarcate navigable channels around the Island of Mauritius for the safety of fishermen and marine community in a phased manner. For this financial year, buoys are being placed to demarcate 14 navigable passes.

3. **New Charts & Updates**

3.1 **ENCs and Paper Charts.** A total of 13 Electronic Navigation Charts and 11 Navigational Paper Charts are being produced in collaboration with National Hydrographic Office (NHO), Dehradun, India for Mauritian waters. NHO, being the principal charting authority for Mauritius, any ambiguity regarding ENC/ paper chart issues is addressed by this organisation. Since the last country report submitted for SAIHC-17 meeting, one new ENC / Paper Chart has been released. The details of the new ENC/ Paper Chart are enumerated below: -

ENC Number	-	IN42531R
Chart Number	-	2531
Chart Title	-	Rodrigues Island
Publication	-	Dec 2020
Scale	-	50 000

3.2 **ENC Distribution Model.** ENCs covering Mauritian waters are distributed worldwide through UKHO, M/s Jeppesen Marine, M/s Primar Norwegian Hydrographic Service and M/s IIC Technologies Limited.

3.3 **RNC's.** Presently, UKHO is producing some of the RNCs for Mauritian waters.

3.4 **Charts.** As at date, eleven (11) navigational charts covering Mauritian waters are being published and are as follows: -

<u>Sl No.</u>	<u>Chart No.</u>	<u>Name</u>
(a)	2514 (INT 7739)	Port Louis and Approaches to Port Louis.
(b)	2503 (INT 77391)	Approaches to Cargados Carajos Shoals
(c)	2504 (INT 77392)	Mathurin Harbour
(d)	2505 (INT 77393)	Approaches to Mathurin Harbour
(e)	2506 (INT 77394)	Grand Bay and Grand Riviere Noire Bay
(f)	2507 (INT 77395)	Grand Port
(g)	2512 (INT 77396)	Agalega Island
(h)	2529	Northern Islets of Mauritius
(i)	2527 (INT 77397)	Mauritius
(j)	2530	Approaches to Grand Port
(k)	2531	Rodrigues Island

Table 1: Navigational Charts of Mauritian Waters

- 3.5 Charts of Mauritian waters are available from the following agencies:
- (a) Cartographic Section, Ministry of Housing and Land Use Planning, Mauritius
 - (b) National Hydrographic Office, Dehradun, India
 - (c) Naval Chart Depots at Mumbai and Vishakhapatnam, India
 - (d) M/s IIC Technologies Limited
 - (e) M/s Jeppesen India Private Limited
 - (f) M/s Lift o Marine
 - (g) M/s C & C Marine Combine
 - (h) M/s EW Liner Charts & Publication

3.6 **Challenges and Achievements.** Nil

4. **New Publications & Updates**

4.1 **Catalogue.** The catalogue of Paper Charts and Electronic Navigational Charts, Mauritius has been updated as of September 2021. The catalogue is available on the website of the Ministry of Housing and Land Use Planning at https://housing.govmu.org/Documents/MHS%20311220/CHART%20CATALOGUE_CO MBINED1.pdf

4.2 **Compendium of the Survey of Navigable Passes.** Mauritius Hydrographic Service (MHS) has published “Compendium of the Survey of Navigable Passes”, collating the availability of survey data of Navigable Passes surveyed by the Mauritius Hydrographic Services since its inception. This compilation of the data will bridge the gap between stakeholder projects and knowledge of data availability. The information in the document is viewed as a vital contributor to the Mauritius Government Marine Spatial Data Infrastructure website “Ocean Observatory E-platform”. The compendium is also available on the website of the Ministry of Housing and Land Use Planning at https://housing.govmu.org/Documents/MHS%20311220/Catalogue%20passe_Final_20_09.2021_WO%20Heads.pdf

4.3 **Challenges and Achievements.** Nil

5. **MSI (Maritime Safety Information)**

5.1 **Existing Infrastructure for Transmission.**

Dissemination of Maritime Safety Information is carried out by the Mauritius Radio Services (MRS), a GMDSS coast station operated by Mauritius Telecom, on behalf of and within an agreement with the Shipping Division of the Ministry of Blue Economy, Marine Resources, Fisheries and Shipping. GMDSS covers sea areas A1, A2 and A3 within our SRR only. Mauritius Radio Services operates 24/7 and is based at Cassis, Port-Louis. Mauritius is located in NAVAREA VIII coordinated by India.

5.2 **MRS disseminates MSI by the following methods:-**

(a) **Navtex**

All MSI are transmitted on the International Navtex by default. The frequency is 518 KHz. There is no National Navtex (490 KHz) service in Mauritius. The Station Identification of the Navtex in Mauritius is 'C'. Messages are transmitted on a 10-minute slot every 4 hours starting at 0020, 0420, 0820, 1220, 1620 and 2020 hours GMT. The normal range of Navtex broadcast is 400 nautical miles.

(b) **VHF**

Based on the area of concern, some MSI messages are broadcast on VHF Radio Telephony on Channel 24, after an announcement is made on Channel 16. MRS has a VHF network that completely covers the Sea Area A1 of Mauritius. 6 VHF stations are remotely operated around the island from the control centre in Cassis. The maximum range is 30 nautical miles.

(c) **HF**

MSI may also be broadcasted on HF Radio Telephony (8800 khz). This is specifically done if the area of concern is around the Mauritius fishing banks. Fishing vessels operating on Mauritius fishing banks are equipped with HF Radio Telephone equipment for communication with MRS. Weather information are sent daily to these fishing vessels on HF.

(d) **Inmarsat-C**

If the area of concern is relatively far from Mauritius, especially beyond the normal range of Navtex, some MSI may be broadcast on the e-broadcast system. This system is operated by AMSA (Australian Maritime Safety Authority) and MRS have access to this platform through an agreement made by the Shipping Division. It is an online tool through which messages may be broadcast to ships within Mauritius Search and Rescue Region (SRR). The e-broadcast is normally intended for Distress and Urgent situations and therefore not all MSI messages are broadcast on this system.

5.3 **Challenges and Achievements.** Nil6. **C-55**

The updated C-55 table is placed at Annexure to the National Report.

7. **Capacity Building**7.1 **Training Received, Needed and Offered**(a) **Training Received**

Training on ENC and Chart Production course. Two officers from the Ministry of Housing and Land Use Planning attended the ENC and Chart Production Course under the ITEC programme of the Govt. of India at NHO, Dehradun for a duration of 6 weeks from Jan - Feb 2022.

(b) **Training Needed.** Additional training requirements are envisaged in following areas: -

- (i) Nautical Cartography (Paper Chart and ENC chart production)
- (ii) 06 weeks Electronic Survey Equipment Orientation Course (ESEOC) for two personnel conducted at National Institute of Hydrography, Goa.
- (iii) CAT 'A' and CAT 'B' courses for one Officer through IHO capacity building programme.

8. Oceanographic Activities

The Mauritius Oceanography Institute (MOI) advises Government on the formulation and implementation of policies and programs in respect to oceanography and marine resources. MHS also works in close collaboration with MOI for providing assistance in the collection of certain oceanographic Datasets like Sound Velocity Profiles, ocean Current Parameters, nature of seabed etc.

The Mauritius Meteorological Service is responsible for the maintenance of tide gauges and production of tide tables in Mauritius. The following tide stations are in use:

<i>Locations</i>	<i>Digital Tidegauges</i>	<i>Installation</i>	<i>Sensors used to measure sea level</i>	<i>GPS Positions</i>
Port Louis (<i>Trou Fanfaron</i>)	Sutron SatLink Logger	14 March 2008	Encoder, radar, pressure	20 ⁰ 09.434' South, 57 ⁰ 30.256' East
Port Louis (<i>Trou Fanfaron</i>)	Vaisala (MAWS 301)	May 2005	Encoder, radar, pressure	
Blue Bay	Sutron SatLink (XLITE 9210)	29 November 2008	Radar, pressure	20 ⁰ 26.650' South, 57 ⁰ 42.655' East
Rodrigues (<i>Port Mathurin</i>)	Sutron SatLink Logger	8 March 2008	Encoder, radar, pressure	19 ⁰ 40' South, 63 ⁰ 25' East
Agalega (<i>La Fourche</i>)	Sutron SatLink (XLITE 9210)	22 November 2008	Radar only	10.346 ⁰ South, 56.586 East

Table 2: Tide Stations within the Republic of Mauritius

9. **Spatial Data Infrastructure**

9.1 **Existing Infrastructure for MSI Dissemination**

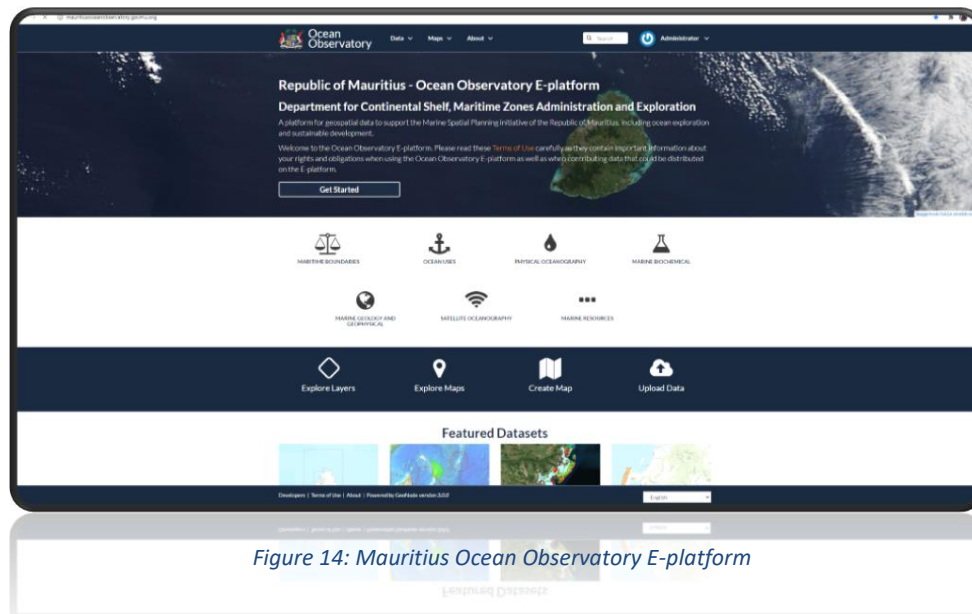


Figure 14: Mauritius Ocean Observatory E-platform

The Department for Continental Shelf, Maritime Zones Administration and Exploration (CSMZAE), with the expertise of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Oceans & Atmosphere, Australia, has developed the Mauritius Ocean Observatory E-platform (E-platform) under the Indian Ocean Rim Association (IORA) project “Developing an Enhanced Ocean Observatory in support of Ocean Exploration and Development”. The main objective of the E-platform is to centralise data pertaining to the maritime zones of the Republic of Mauritius in order to facilitate data discovery and data sharing between researchers, partners and users involved in management, policy and planning.

9.2 **Achievements**

The Meta data of the hydrographic surveys have been successfully incorporated into the Ocean Observatory E-platform of the Government of Mauritius and is available to the stakeholders. Taking reference of the meta data Government agencies and educational institutions approach MHS for bathymetry and allied information for the implementation of their projects of interest.

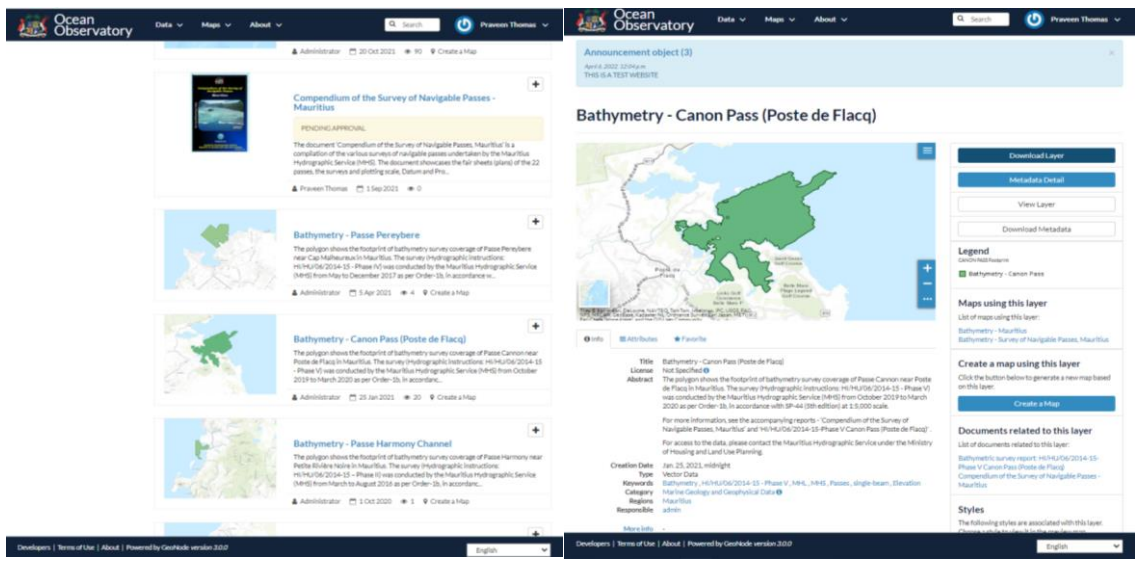


Figure 15: MHS Hydrographic Data on the “Republic of Mauritius - Ocean Observatory E-platform”

10. **Other Activities**

10.1 **Participation in National Productivity and Quality Convention**

Mauritius Hydrographic Service (MHS) participated in the third edition of the National Productivity and Quality Convention (NPQC 2020/2021) held virtually in June 2021. MHS presented its project “*How Mauritius Hydrographic Service (MHS) can Improve Capability to Achieve International Hydrographic Standards*” and was awarded **Silver medal** in line with the theme “*Pursuing Productivity and Quality Amidst COVID-19*”.

10.2 **Data for Salvage Operations of FV WN HUNG DAR 168.** MHS provided the bathymetry sheet for enabling the salvage and spill response operation of three grounded Taiwanese fishing vessels off Pointe-Aux-Sables a few miles to the west of Port Louis in February 2022 at the request of the Mauritius Ports Authority.

Input to the IHO Publication P-5 (Yearbook)

Country : Mauritius
Unit : Mauritius Hydrographic Service
Parent Organization : The Ministry of Housing and Land Use Planning
Head of Parent Organisation : Ms. Maheswaree Naraini Madhub,
 Senior Chief Executive

Contact information	
Head of the Hydrographic Office	Post: Officer-in-Charge Name: Cdr Praveen Thomas Postal address: Ministry of Housing and Land Use Planning Ebene Tower, Level 5 Republic of Mauritius Tel: + 230 4013802 Fax: + 230 4681773 Email: ois_hydrounit@govmu.org
Other point(s) of contact	Mr D. Madhow, Principal Surveyor + 230 4016808 dmadhow@govmu.org Mr H. Teckmun Senior Surveyor + 230 4013801 hydrounit@govmu.org
Web site	housing.govmu.org
Country information	
Declared National Tonnage	Tonnage: 164349 T Date: December 2019
-National day -Fête nationale -Fiesta nacional	Independence Day 12 March Republic Day 12 March
Date of establishment and Relevant National Legislation	Hydrographic surveys and nautical charting are under the ambit of Ministry of Housing and Land Use Planning. The legislative framework for hydrographic services would be formulated in due course.
Date first joined IHO	August 2005

Date ratification Convention	August 2005
Remarks on membership	Nil
Agency information/ Information sur l'agence/ Información sobre la agencia	
Top level parent organisation	Ministry of Housing and Land Use Planning
Principal functions of the organisation or the department	<ol style="list-style-type: none"> 1. Hydrographic surveys for compiling and updating nautical charts and products. 2. Project surveys in support of development activities, scientific research, coastal zone management, environmental protection, fisheries management and maritime security. 3. Compilation of Navigational warnings for promulgation through NAVAREA coordinator. 4. Procurement & Maintenance of hydrographic, oceanographic and marine cartographic equipment for the department. 5. Interact with International Hydrographic Organisation (IHO), North Indian Ocean Hydrographic Commission (NIOHC), Southern African & Islands Hydrographic Commission (SAIHC) on matters related to hydrography. 6. Provide training to surveyors, officers from Ministry of Housing and Land Use Planning & other stakeholders in the field of hydrography 7. Cooperate with other stakeholders and provide expertise on matters related to maritime domain.
Annual operating budget	Approximately 50,000 USD (excluding salaries)
Total number of staff employed	6
Number of INT charts published	8
Total number of paper charts published	11
Number of ENC cells published	13

Number of Other charts	Nil			
Type of publications produced	Catalogue of Charts Compendium of Survey of Navigable Passes			
Detail of surveying vessels/ aircraft	Name	Displacement	Date Launched	-Number of crew
	ISV Pathfinder	6.5 T	2012	05
Other information of interest	Following a memorandum of understanding in the field of Hydrographic Cooperation with India, a full-fledged Hydrographic Unit was established at the Ministry of Housing and Land Use Planning in 2013. The unit has been rechristened as Mauritius Hydrographic Service since 2018.			

Input to the IHO Publication C-55
(Status of Hydrographic Surveying and Charting Worldwide)
Country: Mauritius

C-55 Summary for:				Comments on Charts: Chart coverage updated based on new charting scheme and requirement of stakeholders especially for areas of Saya de Malha and Nazareth banks
Country:	Mauritius			
Country Iso Code:	MU			
Country SubCode:	-			
INT Region:	H			
Country/Depend:	-			
Last updated:	February 2021			
Provided by:	Mauritius			
Chart coverage	Passage (%)	Coastal (%)	Ports and Approaches (%)	Comments on Surveys: Adequate: Surveys between 2005-2022 Resurvey: 1980-2005 (as per requirement) Never Systematically Surveyed: Surveys prior to 1980
INT	100	80	90	
RNC	-	-	-	
ENC	100	80	90	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	Adequate (%)	Resurvey (%)	No survey (%)	
0-200m	35	35	30	
> 200m	08	45	47	

MSI	Y/N	Comments on MSI:
Local warning	Y	
Coastal warning	Y	
Nav warning	Y	
Port warning	Y	
GMDSS	Y/N	Comments on GMDSS:
Master Plan	Y	
Area A1	Y	
Area A2	Y	
Area A3	Y	
NAVTEX	Y (International Frequency)	
SafetyNet	N	