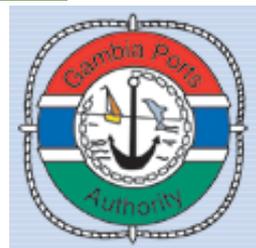




**IHO Capacity Building Programme
IHO TECHNICAL VISIT TO THE GAMBIA
24 – 28 July 2017
REPORT**



**Ministry of Work, Infrastructures and Transport
GMA: Gambia Maritime Administration
GPA: Gambia Ports Authority
Gambia Navy
NEA: National Environment Agency
Department of Lands and Survey
Department of Water Resources
NDMA: National Disaster Management Agency**



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Abbreviations

CBSC	Capacity Building Sub-Committee
DWR	Department of Water Ressources
EAtHC	Eastern Atlantic Hydrographic Commission
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
ENC	Electronic Navigational Chart
GBOS	Gambia Bureau Of Statistics
GIS	Geographic Information System
GMA	Gambia Maritime Administration
GPA	Gambia Ports Authority
IALA	International Association of Marine Aids to Navigation and Lighthouse
IOC	Intergovernmental Oceanographic Commission
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IMSAS	IMO Member State Audit Scheme
MBES	Multi-Beam Echo Sounder
MSI	Maritime Safety Information
MOWCA	Maritime Organization of West and Central Africa
MSDI	Maritime Spatial Data Infrastructure
MWIT	Ministry of Works, Infrastructures and Transport
NC	Nautical Charts
NDMA	National Disaster Management Agency
NEA	National Environment Agency
NHS	National Hydrographic Service
NHC	National Hydrographic Committee / Navy Hydrographic Committee
NtMs	Notice to Mariners
PCA	Primary Charting Authority
PMAWCA	Port Management Association of West and Central Africa
RHC	Regional Hydrographic Commission
RNC	Raster Navigational Chart
SBES	Single Beam Echo Sounder
Shom	French Hydrographic and Oceanographic Service
SOLAS	[United Nations] Convention for the Safety of Life at Sea
TTW	Territorial Waters

UKHO	United Kingdom Hydrographic Office
UNCLOS	United Nations Convention on the Law of the Sea
WMO	World Meteorological Organization
WWNWS	Worldwide Navigation Warning Service

1 Background

December 2015: First contact between M Dominic Correa (GPA), a recent graduate (CAT A) of MSc Hydrographic Science Program (USM) and M Alberto Costa (IHO: Assistant Director in charge of Capacity Building).

January 2016: M Dominic Correa is put in contact with M Eric Langlois (Shom) who is the Capacity Building Coordinator for the EAthC.

March 2016: Captain Kuley Manneh (GPA) send a submission of a proposal to IHO Capacity Building Sub-committee for a Technical working Visit to the Gambia.

May 2016: the Technical Visit to The Gambia is included by CBSC in the CBWP for 2017 (N° A-01) under the responsibility of EAthC (TV led by Shom, resources from IHO)

Other context: IMAS (IMO Member State Audit Scheme) visit due to take place in 2017.

Terms of Reference: Annex A.

2 Composition of Team

The RHC Technical Visit Team is comprised by:

<u>Name</u>	<u>Role</u>
Henri Dolou	Team Leader Shom (France)
Cathy Tunks	Co-team leader UKHO (United Kingdom)

PART A - OVERALL ASSESSMENT OF THE SITUATION IN REGION

3 Efficacy of the Technical Visit

Thanks to M Dominic Correa (Hydrographic Engineer) and M Ansu Gibba (Assistant Manager, Public Relations) both from GPA, it was possible to meet most of stakeholders in The Gambia concerned with navigation and the marine environment.

It deserves to be mentioned that the Harbour Master, Captain Kulay Manneh of GPA, very often introduced the meetings and recalled the importance of the technical visit.

A high-level visit at the Ministry of Works, Infrastructures and Transport permitted not only to emphasize the need for national hydrographic services but generate strong engagement to create a National Hydrographic Committee (NHC). It also provided an opportunity to present

a draft arrangement between The Gambia and the actual primary chart authority (UKHO) and discuss of membership to IHO. A first step would be for The Gambia to increase their participation in the EAtHC and become an associate member.

The meetings have been an opportunity to check inter-visibility between local agencies, in particular, for bilateral cooperation with GPA. It deserves to be mentioned that these local agencies have enough common interests to share the technical and human resources at their disposal (ships, GPS, tide recorder, GIS, knowledge ...). Recommendations are proposed to consolidate these possibilities of cooperation, which without them, will not allow rapid development.

The meetings were also an opportunity to address (and clarify) the following topics:

- relationship with NAVAREA II for MSI (France /Shom)
- relationship with Primary Chart Authority for nautical publication (UK/UKHO)

It should be pointed out that technical exchanges have covered the SOLAS convention obligations as well as cost effective shipping. The financial savings that can be generated by hydrographic investments have been specifically addressed for dredging operations.

The visit made it possible to conclude also on follow-up actions and recommendations concerning the following subjects:

- MSI
- equipment for hydrography
- ship(s) to conduct survey
- training
- data center (MSDI: Maritime Spatial Data Infrastructure)
- funding
- relationship with IALA and IOC

The visit focused on the national organization of the country. The possibilities for regional co-operation (example Senegal), cultural (English speaking countries) or economic (ECOWAS, Commonwealth) regions could be strengthened.

It will be advisable to make regular reviews of the above actions and recommendations, the EAtHC meetings providing a good opportunity to communicate with the regional hydrographic community.

There is no compelling reason to change the IHO's terms of reference of the technical visits.

4 Co-operative Arrangements and Potential.

a. [Regional Organisation]. Apart from belonging to EAtHC (as an observer member) The Gambia is part of MOWCA (Maritime Organization of West and Central Africa) and PMAWCA (Port Management Association of West and Central Africa). The Team didn't contact these organizations.

b. [Defence and Security Arrangements]. The Gambia Navy is already involved in Search and Rescue (SAR) and Fishery patrols. Their interest in hydrography has been emphasized. The Gambia Navy proposed to provide its ships, fuel and staff for hydrography in the context

of the development of civil activities encouraged by the new government. The Gambia Navy wants to dedicate personnel to develop hydrographic and oceanographic capacities. According to Commodore Madani Senghore, Commander of The Gambia Navy, they are “Ready, willing and available”.

PART B – THE GAMBIA ASSESSMENT

5 RHC Involvement

The Gambia is not a member of IHO. The Gambia is however an observer of the EAthC. The Gambia didn't participate to the last two meetings. The last report was delivered for the 10th EAthC in Lomé, Togo 3-5 December 2008.

The Permanent Secretary of the Ministry of Transport, Works & Infrastructure, Mrs Mariama Ndure Njie, questioned the non-affiliation of The Gambia to the IHO.

It has been suggested to first participate more intensively in the EAthC and become an Associate Member (status could be signed during the next meeting in Nigeria 2018).

6 Preliminary Liaison

The visit was prepared by Henri Dolou (Shom) and Cathy Tunks (UKHO), in close co-ordination with M Dominic Correa from the Hydrographic Unit of GPA.

The IHO questionnaire was used and proved extremely useful (Preliminary discussions of M Dominic Corea with all stakeholders).

7 Points of Contact.

The contacts of the Technical Visit are listed in Annex B.

Up-dates to the IHO Yearbook are in Annex E.

Top-level awareness and support for the national hydrographic capability were discussed at the Ministry of Works, Infrastructures & Transport and received an excellent reception.

DESCRIPTION OF MARITIME ACTIVITIES

8 National Maritime Affairs.

Navigation (Safety) (IMO, IHO):

- Ministry of Works, Infrastructures & Transport:
 - Gambia Maritime Administration (GMA) (regulation) (IMO). GMA has a MOU with most other government ministries
 - Gambia Ports Authority (GPA) (under the responsibility of the Harbour Master)

Other stakeholders:

- Gambian Navy (Security, SAR)

- Department of Lands and Survey (land maps)
- Department of Water Resources (fisheries, environment)
- National Environment Agency (environment)

Within the framework of the National Hydrographic Committee (NHC) that the Ministry of Transport wants to set up and that all the parties have fully supported, technical cooperation between GPA (Surveys), Gambian Navy (Ships), Department of Water Resources (tides) and NEA (GIS, data management, dinghy) seems particularly promising.

As already stated, The Gambia is a signatory to the SOLAS and UNCLOS conventions. The Gambia is a member of IMO, MOWCA and of PMAWCA (GPA). The Gambia is not a member of IALA.

There is already a National Maritime Security Committee (Ministry of Works, Infrastructures and Transport).

9 Trade and Maritime Traffic.

The Gambia has only one seagoing port; Banjul, which is approached via a buoyed channel and leading beacons. There is a project to dredge a new approach channel to a depth of 10.2m following the line of the existing beacons, which would simplify the approach. Prior to 2006 The River Gambia was used to transport materials into the heart of the country but a vessel sank close to Devils Point (13° 28'·12 N 15° 37'·89 W approx) and this effectively closed the river upstream of this point.

The (Gambian) Maritime Transport Policy states: ” - *the development of Banjul port is in line with port Master plan and the trade gateway project and promotion of river transport to address the current under utilization of the river. This focuses on strengthening the position of the port of Banjul as a gateway to the region. Hence, services are improved to ensure transport chain to keep it competitive.*”

Banjul currently has five berths and a role-on / role-off ramp in operation.

New Banjul Jetty's outer dock (3A & 3B): maximum of 2 container ships for vessels with draughts -12 - 14 metres

New Banjul Jetty's inner dock (4): for smaller vessels such as fishing boats and coast-going vessels.

Banjul Wharf (2): outer berth, 9.5 - 12.0 metres

Banjul Wharf (2): inner berth, 8.0 metres used for smaller vessels such as fishing boats and coast-going vessels

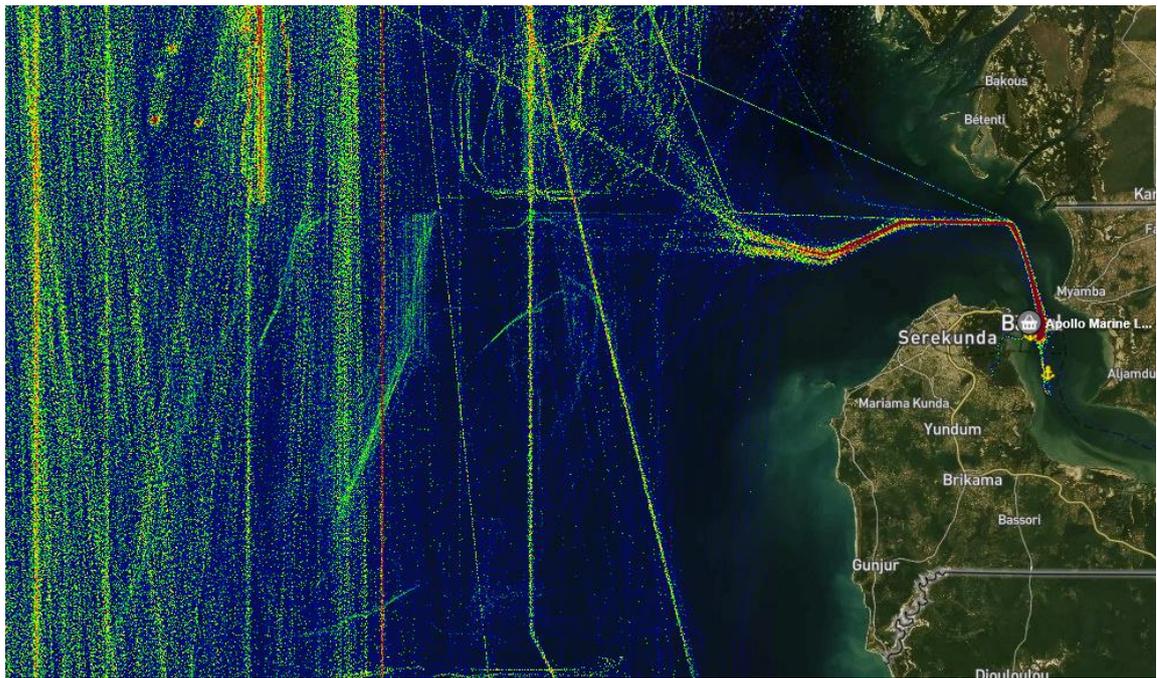
Berth No. 1: without restriction for other non-container vessels. Mainly utilised by oil tankers and general purpose cargo ships.

News item: Chinese and French companies bidding to upgrade port
<http://uk.reuters.com/article/us-gambia-economy-idUKKBN19S1EO>



Banjul Wharf from approach to New Banjul jetty [2017]

AIS Data



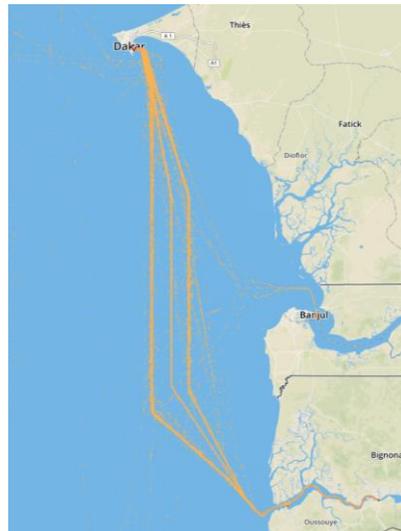
[Marinetraffic.com]



[AIS data from 2016, vessels over 2000 gross tonnes or passenger vessels
www.marinespatial.co.uk/]

a. Through Routes.

Offshore – main routes between Europe, West Africa and the Indian Ocean
 Inshore - mainly passenger traffic between Dakar, Senegal and River Casamance, Senegal.



b. Transshipment.

Banjul is the only seagoing port for The Gambia, there is very limited ship to ship transfer of containers, most other cargo is off loaded to lorries. There is a significant amount of onward transport out of the country to Senegal, Guinee-Bissau and Guinea.

Currently river barges are used to transport groundnuts.

c. Bulk Trades.

Combined tonnages (metric tons):
 2 095 000 (2014)

1 991 000 (2015)

2 187 000 (2016)

Main imports: containers, vehicles, cement, petroleum, wheat, rice

Main exports: containers, groundnut oil, bran wheat



New Banjul jetty, Maersk Regensburg and Fiona [2017]

Bulk cargoes such as sugars, flour, rice, and fertilizer, on average such vessels offload between 5-7 thousand tonnes, gross performance varies between 7 to 13 tonnes per hook and hour. Bagged cargo is delivered directly from the vessel to importer's truck.



Unloading and bagging rice [2017]

Cement: Bulk cement is accepted in batches of a maximum of 8,000 - 10,000 tonnes per ship. The vessels are unloaded by a mobile and electric vertical screw conveyor (Siwertel) at the quayside with a capacity of 85,000 - 100,000 tonnes per hour.

Petroleum products: Offloaded at the Mandināri Tanker Terminal, upstream of the port (13° 22'·77 N 16° 33'·47 W) and piped ashore to a tank farm using a 188m oil boom.

Note: vessels must use their own cranes as there are no dockside cranes

- d. Feeder, Coasting and Local Trade. Comment on volume and patterns, and list significant ports, including ferry ports.

Feeder: None at present

Coasting: None at present

Local Traffic: None at present

Ferries:



Banjul Ferry Terminal [2017]

The Banjul to Barra Ferry Service is one of the Gambia capital's vital economic lifelines and an essential river crossing to Dakar (Senegal). The journey time from the terminal and across the mouth of the Gambia River estuary is about 35 minutes and services start from Banjul at 7am and operate until 9pm, with departures taking place at intervals of every 30 minutes. There are 3 ferries the latest and largest being Kunta Kinteh, a passenger and vehicle ferry is designed with a very flexible layout where it can be reconfigured from passenger and vehicle transportation to passenger only – with a maximum of 2,000 persons.



There are a further 8 other ferry crossing points up-river. They include (Georgetown) Janjangbureh, Bansang, Barajally, Yellintenda to Bambatenda, Basse, Sankully Kunda, Fatoto and Jarreng.

e. Offshore Supply and support



Eight exploration blocks have been specified, six offshore and two onshore, to date only the outer blocks have allocated and 2,500km³ 3D seismic activity conducted. Early estimates indicate the net unrisks mean prospective oil resources at 3,079MMSb.

Currently there are no shore based support facilities.

f. Tourism - Cruise Liners.

Cruise liners do call and berth alongside, usually between October and April. Currently there are on average 1-2 per month however this is expected to increase now the political situation in the country has settled down.

Itineraries already available for 2018/19 indicate visits from Holland America Line, Variety Cruises, Silversea Cruises and Regent Seven Seas.

Before a vessel sank close to Devils Point (13° 28'·12 N 15° 37'·89 W approx) small cruise ships could reach Kau-ur (13° 41'·860 N 15° 19'·020 W approx) 118km upriver.

g. Tourism -Small Craft.

Very limited. This is may change now the political situation in the country has settled down as the river is rich in wildlife, crocodiles, dolphins, hippos and a wide variety of birds . There are currently no marinas or facilities dedicated to the leisure industry.

h. Fisheries.



Fisheries in The Gambia are divided into two sub-sectors:

a) The artisanal sub-sector which is widely dispersed throughout the country and is mainly based on pirogues (canoes) with outboard engines. There are approximately 1,800 such boats in The Gambia. In 2001, the estimated artisanal fish production was 32016 tonnes, of which 948.8 tonnes was exported and the balance, 31067.2 tonnes, was consumed domestically.

b) The industrial sub-sector which comprises a small number of, mainly foreign owned, trawlers. In 2001 there were 57 such boats and one factory ship licenced to fish in Gambia waters. *(There is no dedicated fish landing pier in The Gambia, although there are some limited facilities at Banjul Port but most is processed offshore.)*

Total annual fish production in 2002 was circa 43,000 metric tones (mt), of which only 573 tonnes was exported in 2003. Most exports are aimed at EU markets. It is believed that the Maximum Sustainable Yield for all species in Gambian territorial waters stands at between 150,000 mt. and 200,000 mt.

[<http://www.accessgambia.com/information/fisheries-sector.html>]

10 Responsibility for Safety of Navigation.

GPA is the authority responsible for the maintenance of channels (there is a small dredger), provision and maintenance of nav aids, and the promulgation of Local Notices to Mariners. They also provide data to UKHO for chart correcting purposes.

For legal reasons the removal of wrecks is under the responsibility of GMA.

GMA is the representative for IMO.

GPA is the representative for IHO.

11 Defence Force Responsibilities.

The Gambia Navy is responsible for search and rescue (SAR), as there is no specific coastguard service; fishing patrols and countering illegal trafficking. They have a GMDSS Radio station installed at their headquarters.

The Gambia Navy is strongly interested in cooperation with GPA for both military and civilian objectives in particular the survey of the River Gambia and then the production of a modern navigational chart.

The Gambia Navy offered his service to conduct hydrographic surveys with his patrol ships and personnel. It follows that the Gambia Navy could be one of the most promising of the cooperating organisations to be involved in hydrographic matters.

12 Coastal Zone Management and Environmental Protection.

The National Environment Agency (NEA) is responsible for environment issues. Coastal zone management (erosion) is a matter of concern.

NEA has a Coastal and Marine Environment (CME) working group, this does not conflict with the future NHC.

NEA is the focal point for GEF (Global Environment Facility) and is associated to GMES (Global Monitoring for Environment and Security).

NEA has GIS experts. A close cooperation with GPA could include exchange of data (hydrographic surveys) and expertise in data archive (MSDI) analysis and visualization on GIS.

There is another organization concerned with the environment, the Department of Water Resources (DWR). They are in charge of water level measurements (monitoring stations) both in the harbor and along the river. GPA must liaise with DWR to get tide measurements for survey and improve tide prediction.

It must be pointed out that there are existing projects dealing with environment at a regional scale. One of them is WACA (West Africa Coastal Areas) a partnership for saving West Africa's coastal assets (World Bank) in which France (Shom) is taking part with Senegal (scanning old navigational charts and aerial photos, etc). Such a project seems to be a very good opportunity to manage knowledge (hydrography, coastline, tides, cartography ...) without stopping at the borders

OUTLINE C-55 ANALYSIS

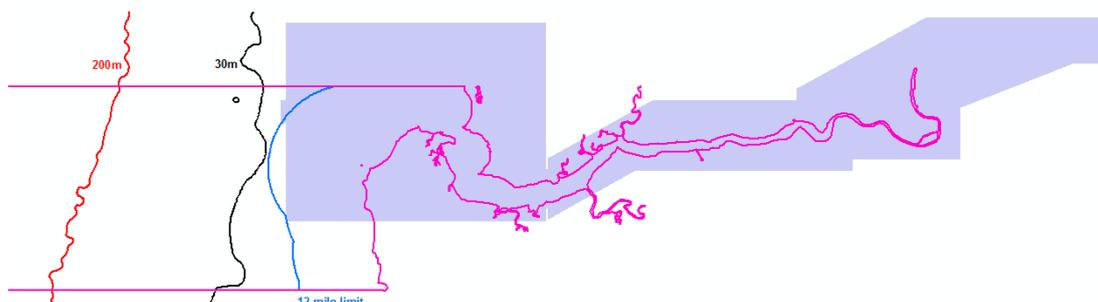
13 Status of surveys within the National Maritime Zone.

Status of Survey EEZ* to 200m contour

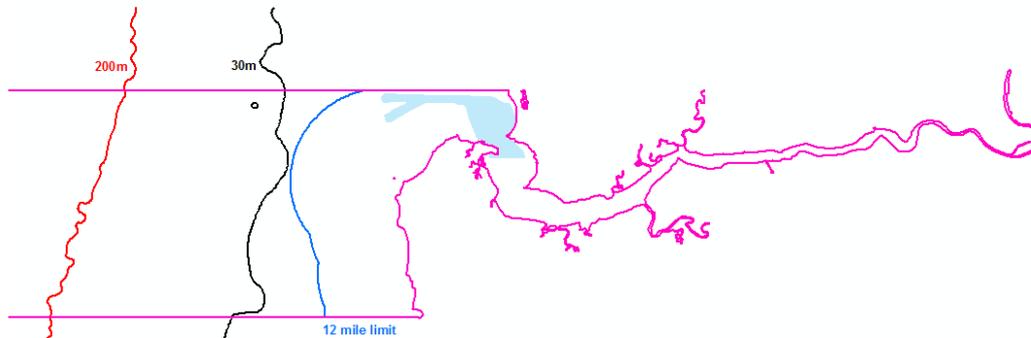
Passage soundings only

**There is a short unresolved limit with Capo Verde but for the purposes of this report it has no effect*

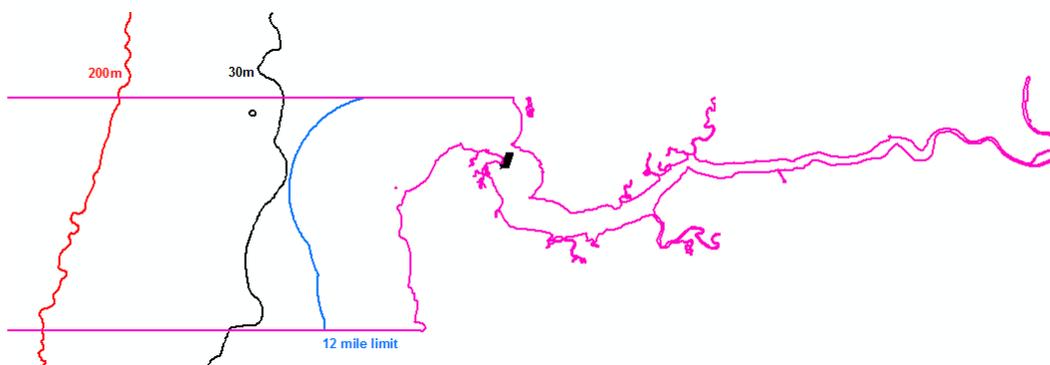
Single beam echo sounder: 1935-1972



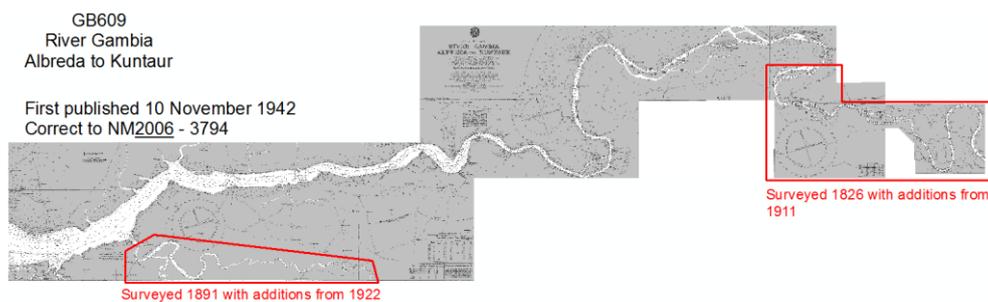
Single beam echo sounder and side scan: 1973-1999



Swathe echo sounder / multibeam: 2000 to date



Lead-line survey only:



Offshore oil and gas fields:

None to date

Recommendations:

30m contour to port limits - full multibeam coverage

Within the port limits, including the river - survey to be conducted by GPA using single beam echo sounder and side scan.

Seaward of the 30m contour – systematic multibeam coverage if possible, consideration should be made when granting oil exploration leases that any depth data collected is forwarded to GPA and charting authority.

There are no known offshore banks, but an isolated 25m depth exists in 13° 33'·551 N 17° 08'·667 W and dangerous wrecks 13° 28'·993 N 17° 08'·023 W and 13° 15'·050 N 17° 13'·136 W which should be investigated.

NOTE: This is based on data held by UKHO only

14 Collection and Circulation of Nautical Information.

GPA provides data to UKHO for chart correcting purposes, ensuring Notices to Mariners are being issued. The effectiveness of NtM depends on the completeness of the information flow.

Items forwarded since 2005 have included buoyage changes (including mooring buoys), wrecks, obstructions and changes to submarine cables. Note GB 609: River Gambia Albreda to Kuntaur has not been corrected since 1990.

15 Survey Capability.

Bathymetry

At the time of the visit there were not hydrographic survey capabilities (only hand lead line to monitor depths around berthing facilities).

However GPA has just ordered the following equipment (and associated software):

- Single beam echo sounder
- GPS
- Side scan sonar
- Sound velocity probe

Some suggestions to improve the specifications of the equipment were made by the visit team.

Tide

Water level measurements (OTT) (+ salinity, conductivity, temperature) are made regularly under the responsibility of the Department of Water Resources (DWR). There is a station in Banjul Harbour (functional) and many others along the river.

GPA should rely on DWR for tide measurements in order to correct depth measurements, improve tide prediction and even allow real time information for the optimization of ship loading. The data should also be forwarded to UKHO for the improvement of the existing tidal harmonics for use by GPA



Ships, small boats, dinghies

It is very interesting to observe that there are many opportunities not only at GPA (pilot's boat) but also at DWR (Dinghy) and, last but not least, at the Gambia Navy (who offer his ship (38m length 1.8m draught), fuel and personnel for surveying) (no photos)



Pilotine of GPA



Dinghy of DWR

Manpower, expertise

The only person to have expertise in hydrography is M Dominic Correa from GPA (Cat B and A). He has a single assistant

There are related expertise in data acquisition and management (archive, GIS) in others organizations such as DWR and NEA.

The Gambia Navy propose to dedicate personnel to develop hydrographic and oceanographic capacities should be considered under the auspices of the NHC.

Management, planning

There is no overall survey plan that would allow the planning of full chart updates. A national strategic plan (objectives, means) would be very useful to manage in a sustainable way the development of hydrography in its largest sense including: safety, security, environment ...

In summary

Much equipment and human resources are in existence, or will soon be available, but are currently distributed in the different organizations. This strengthens the role of the NHC Chair in its coordination function.

16 Independent Chart Production Capability.

There is no chart production capability in The Gambia. UKHO is the primary charting authority for The Gambia waters, and can continue this task in order to ensure that nautical information is regularly made available worldwide.

For chart coverage: Annex F

PROPOSALS FOR COORDINATION AND CAPABILITY BUILDING

17 National Hydrographic Committee.

There is a National Maritime Policy (currently under review) that, now a NHC has been proposed and accepted, should address hydrography.

Such a NHC (Inter-institutional agreement) has been explained (SOLAS, cost effective shipping ...) and presented to all the organizations met by the technical visit team. The scope of the NHC should be broaden to include land cartography and environment. The proposition of the NHC received a very warm welcome from all the stakeholders and the Ministry of Works, Infrastructures and Transport (who would chair and give secretariat support).

The Committee will be responsible for:

- Developing the National Cartographic Scheme and for monitoring its execution and update
- Coordinating and planning the necessary hydrographic surveys for the development of this cartographic scheme
- Identifying and recommending the necessary action with respect to training of the staff and purchase of equipment for the execution of the scheme
- Coordinating the development of the national maritime safety
- Submitting an annual report to the parent organizations

An initiative from GPA to push forward the creation and first meeting of the NHC would certainly be appropriate.

Note: Committee needs to be officially recognized by the Government as part of its response to meeting national responsibilities under IMO instruments like the SOLAS convention or GMDSS organization.

18 Phase 1 Hydrographic Capability: MSI Organisation and GMDSS.

Introduction:

Maritime Safety Information (MSI) consists of the promulgation of navigational and meteorological warnings, search and rescue information and other urgent safety-related information, including urgent information related to charts. IHO Publication S-53 - Joint IMO/IHO/WMO Manual on Maritime Safety Information provides detailed information about

MSI. In addition MSI in its broadest sense includes navigational chart and publication maintenance.

MSI need an organization (procedures to collect, transcribe and transmit information, maintained equipment, trained staff) with a national MSI coordinator (understood to be GPA) in connection with navigators, the Primary Chart Authority (UK/UKHO) and NAVAREA II (France/Shom).

- a. MSI (Navigational Warnings). For the time being, there is no real MSI organization. Services to mariners could be offered on SafetyNET via the NAVAREA II coordinator (France/Shom) although it was noted that no input has been received from The Gambia for a long time. For ships sailing through The Gambia waters or approaching Banjul, NAVTEX of Senegal should be the optimum solution; but this infrastructure is not operational. For as long as NAVTEX of Senegal is out of order, SafetyNET (NAVAREA II, France/Shom) will be available and could be used for Coastal Warnings.

MSI must be made available to **NAVAREA II:**

Department "Informations et Ouvrages Nautiques"

Service hydrographique et océanographique de la marine (Shom)

CS 92803 - 29228 BREST CEDEX 2

Tel: +33 2 56 31 24 24 (Duty Officer, H24)

+33 6 24 80 08 92 (Duty Officer, spare)

Fax: +33 2 56 31 25 84

Email: coord.navarea2@shom.fr (H24),

coord.navarea2@gmail.com (spare)

Website: <http://diffusion.shom.fr/navarea-en-vigueur>

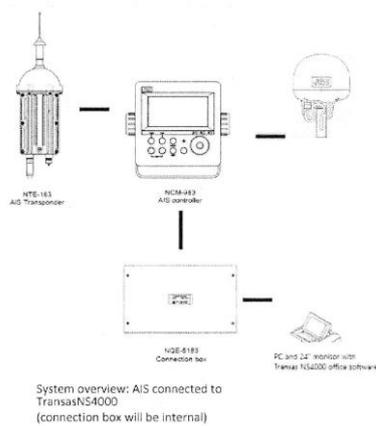
- b. Information on Ports and Harbours. The NtMs and the nautical publications (List of Lights, Sailing Directions, etc.) are published and maintained by UKHO.
- c. GMDSS Status. The TV did not address this issue. Some information on SafetyNET and NAVTEX is available above.

Table 1: Summary of Progress towards Implementation of GMDSS.

Master Plan	A1 Area	A2 Area	A3 Area	NAVTEX	SafetyNET	Notes
Yes	VHF	MF	No	No	No	1 to 6

Notes:

1. Project (budget 2018): acquisition of a shore-based AIS monitoring system (Transas NS4000) (JHS-183 Class A receiver to receive AIS targets) which shows AIS target indication on an ENC (chart folio of harbour area in the supply package)
2. Senegal has a NAVTEX but not operational
3. SafetyNET operated by France (via NAVAREA II)
4. Just acquired: a NAVTEX receiver (to be installed)
5. GMDSS radio station installed in the headquarters of the Gambia Navy
6. No VTS



Shore-based AIS monitoring system



GPA (Harbour Master)

19 Phase 2 Hydrographic Capability: Survey.

- a. Provision of Survey Data. All surveys (private, research, etc.) conducted in The Gambia waters should be collected by GPA (data and report) and send to UKHO as PCA.
- b. Survey Capability (see also paragraph 15 “Survey Capability”). It is desirable to start as soon as possible when GPA gets their new survey equipment (and installation training by the provider). A small survey team could be set up in collaboration with the Gambia Navy (offer of ship). GPA may have confidence to start with small surveys in the harbour before requesting further technical assistance (from UKHO as an example). For the long term, at a national level, responsibility belongs to the NHC to plan the activities, the purchase of equipment and associated funding.
- c. Potential for Regional Activity. Regional activity could be easily prepared under the auspices of IHO (EAtHC), where technical matters and training are discussed and promoted. This regional activity could benefit from the proximity of Senegal (MSI/NAVTEX when operational, coastal zone management, practice sharing ...) and from close English speaking countries.

20 Phase 3 Hydrographic Capability: Chart Production.

There is no chart production (nor dissemination) capability in The Gambia.

For land, most recent maps (digital, 1: 50 000) date from 2002 (JICA: Japan International Cooperation Agency).

21 Table 2: summary of the assessment of the National Hydrographic Capability

Table 2: Assessment of National Hydrographic Capability.

IHO Member	RHC	NHC	Phase 1 Capacity	Phase 2 Capacity	Phase 3 Capacity	Notes
No	Observer	No	Partial	Yes	No	1 to 6

Notes:

1. IHO-RHC: it has been proposed to The Gambia that they apply to become an Associate Member of the EAHC and sign the statutes during the next meeting in Lagos/Nigeria October 2018. GPA is the maritime and port organization which acts the national hydrographic authority.
2. NHC: has been proposed and received a very warm reception from all the stakeholders and the Ministry of Works, Infrastructures and Transport (chair and secretariat).
3. Phase 1 capacity seems easy to obtain but relies on internal organization to collect information. For dissemination, there is an opportunity to use SafetyNET either for NAVAREA and local MSI (as long as NAVTEX of Dakar is not operational).
4. Phase 2 capacity: this level is reached now that GPA has acquired equipment and that there are other administrations ready to offer contributions for ships or tide measurements (Gambia Navy, NEA, DWR).
5. Phase 3: Primary Chart Authority still UKHO (Arrangement proposed between UK and The Gambia)
6. There is a very well educated surveyor (IHO/FIG standards Category A Engineer) : Dominic Correa from GPA

PROPOSALS FOR ASSISTANCE

22 Training.

Firstly, it must be stated that GPA already has enough knowledge to start their first modern surveys even if it is not initially easy. A good option could be to work with other organizations strongly interested in hydrography and related affairs (Gambia Navy, NEA). Complementary training would be more profitable after using and testing the new equipment.

Nevertheless, there are other opportunities that could be taken into consideration:

Opportunities IHO – Specific: EAHC (contact Shom, CB coordinator: dmi.rex@shom.fr)

(Source : https://www.iho.int/mtg_docs/CB/CBWP/2018-CBWP.pdf)

- P-04 / Regional awareness seminar on maritime geospatial knowledge (intended to be organized in addition to next EAthC in Nigeria: Lagos 17-19 October 2018)
- P-12 / MSI E-learning guided session
- P-14 / Survey specification E-learning guided session

Opportunities IHO – Specific: SAIHC (contact UKHO, CB coordinator)

(Source : https://www.iho.int/mtg_docs/CB/CBWP/2017-CBWP.pdf)

- MSI course, Fish Hoek, Republic of South Africa 05 to 07 September 2017. The IHO Capacity Building Fund will provide support (bed & breakfast accommodation, course meals and air travel) for ONE participant per country

Note: since the visit, UKHO has received an application for this course from The Gambia (Dominic Correa)

Opportunities IALA: (contact: jacques.manchard@iala-aism.org).

- Level 1 AtoN Manager Course in Cape Town, Autumn 2017, The Gambia could send one participant

23 Equipment.

Some suggestions to improve the specification of the equipment (bathymetry, localization) recently ordered (see paragraph 15) have been made by the visit team.

UKHO (possibility from Shom too) will be able to give more technical advice on request.

It must be emphasized that there are already good tide observatories.

Special conditions of estuaries shall have to be taken in consideration (tides, sound velocity, suspended sediment ...).

It seems that cooperation between different organizations should solve the often-challenging problem of the availability of boats.

Note: Regarding the discussions which have taken place on the purchase of equipment, it seems it would be very beneficial to provide aid for the definition and technical specification of such purchases (procurement). Such assistance has to be organized (EAthC) and could be part of a package for “management assistance” including other items such as procurement of commercial surveys, a strategic plan for cartography and hydrography, the establishment of NHC and HS, funding opportunities and potential sources of funding.

24 Funding.

For capacity building (courses, training) there are still some opportunities in Africa offered by IHO (EAthC, SAIHC).

GPA has already invested in survey equipment. Once the other stakeholders (Gambia Navy, DWR, NEA) cooperate to share their resources, it is now possible to conduct surveys without further immediate investment.

There will be a time when it will be necessary to increase the level of equipment already acquired or to supplement it to meet broader needs.

Medium and long-term planning of equipment purchases (replacements, upgrades, etc.) is a matter for the NHC.

International aid must be available when it meets the objectives of developing trade (and hence poverty reduction), security and environmental protection. By the grouping of these entities it should be possible to suggest a project of a sufficient critical size to be considered for funding. Beyond a national approach, the search for regional cooperation could be well perceived.

FOLLOW-UP ACTIONS

25 Encouragement of Formation of a NHC, Development of a National Hydrographic Strategy, and RHC Membership.

NHC (National Hydrographic Strategy included) (see paragraph 17)

NHC has been proposed and received a very warm welcome from all the stakeholders and the Ministry of Works, Infrastructures and Transport (who would chair and give secretariat support).

Action: The Gambia - MWIT (GPA to push forward with stakeholders already reported)

RHC

The Gambia is only an observer of the EAtHC.

It has been suggested to first participate more intensively in the EAtHC and become an associate member (statutes could be signed during the next meeting in Nigeria 2018).

Action: The Gambia - GPA (in communication with EAtHC chair and IHO Secretariat)

26 Encouragement of Effective and Timely Collection and Promulgation of Hydrographic Information.

- a. It will be beneficial to maintain regular relations (even in the absence of crucial information) with UKHO (Primary Chart Authority) and Shom (NAVAREA II)

Action: The Gambia - GPA

- b. Known dangers to navigation – particularly any new wrecks in the harbour and approaches, which require fixing and possibly marking have to be reported as soon as possible to UKHO (and NAVAREA II) for immediate assessment of the need for NtM and/or charting action.

Action: The Gambia - GPA

- c. An organization for the collection and dissemination of Maritime Safety Information needs to be instituted as soon as possible, with a link being established with:
 - a. NAVTEX Senegal (when operational)
 - b. NAVAREA II co-ordinator at Shom, Brest, for the distribution of urgent MSI on SafetyNET

Action: [The Gambia – GPA] & [Shom – NAVAREA II - SafetyNET] & [Senegal –NAVTEX]

27 Encouragement of Development of Hydrographic Capability.

Note areas where the Hydrographic Unit merits assistance:

- a. Once equipped, immediate priorities for survey work are to monitor the port, checking of berths (particularly monitoring post-dredging surveys) and fixing of dangers to navigation in the inshore areas. The river survey could then be started (priority 2)

Action: it is suggested that GPA starts working on his own before asking for additional training from outside The Gambia. UKHO (and Shom) could first provide remote advice and assistance (Mail, telephone...).

- b. As the hydrographic team of the GPA is rather small, it is advisable to promote active cooperation with other partners and in particular: Gambia Navy, NEA and NWR.

Action: GPA relying on the NHC

- c. Economies of scale for new equipment and training funding seem possible through cooperation between the services, especially: GPA, Gambia Navy, NEA and NWR

Action: NHC (GPA to push forward)

CONCLUSIONS

28 Principal conclusions, co-operative opportunities

Based on discussions and the facts obtained, the following principal conclusions have been reached:

- a. There is generally good awareness of national hydrography (and related issues in the marine environment) in The Gambia and a desire to improve it.
- b. Now that GPA is to have specific equipment; knowing that there are already other related nautical facilities (ships, dinghies, tide observatories ...) and several institutions (GPA, Gambia Navy, DWR, NEA) are ready to work together (and share knowledge) the conditions are met for moving forward and achieving the first hydrographic surveys.
- c. These new “Gambian surveys”, supplemented by surveys carried out by private companies (eg dredging) and all collected by GPA (including data and metadata) will

- then permit new publications or editions of charts (in cooperation with UKHO, under the arrangement which has been proposed by the United Kingdom to The Gambia).
- d. It is appropriate to have an organization taking initiatives and involving all the stakeholders. GPA is to be this organization under the cover of a National Hydrographic Committee (NHC)
 - e. The establishment of the NHC is essential to provide the framework to enhance cooperation amongst the various stakeholders.
 - f. An effective MSI service needs to be put in place in order to support the safety of navigation, the safety of life at sea and the protection of the marine environment. The participation of Dominic Correa of GPA in the next MSI course (IHO – SAIHC) due to take place in Fish Hoek, Republic of South Africa 05 to 07 September 2017 is an opportunity that comes at exactly the right time.
 - g. A stronger engagement within the IHO (first to become an associated member of the EAHC at the next meeting in Nigeria, 2018) will make it possible to benefit from the community of hydrographers and marine cartographers and provide capacity building opportunities.

RECOMMENDATIONS

29 Actions, opportunities

- a. Ministry of Works, Infrastructures and Transport to establish a National Hydrographic Committee (NHC) including the following stakeholders: MWIT, Gambia Navy, GPA, GMA, NEA, Department of land of survey, Water Resources, NDMA. Such a NHC very well accepted by all stakeholders.
- b. NHC to deal with maritime geospatial information (hydrography, cartography, environment, Integrated Coastal Zone Management, security, disaster management ...).
- c. NHC to plan, investigate sources of funding and coordinate involvement of stakeholders.
- d. MWIT to be Chair and secretariat.
- e. NHC to start immediately
- f. NHC to create a national data center (NEA may be considered as a repository) and facilitate data sharing and distribution.
- g. GPA to propose to the NHC a strategic plan for hydrography.
- h. To be in accordance with SOLAS regulations, The Gambia Government to sign a bilateral arrangement with UKHO to formalize production of navigational charts and publications within their waters (draft arrangement presented to MWIT, GMA, GPA).
- i. The Gambia to become an associated member of EAHC and sign the statutes during the next meeting in Nigeria (Lagos) in October 2018.

- j. GPA/GMA to allocate regular funding and travel support to the hydrographic unit to fulfill the duties of the service and to represent The Gambia in appropriate forums, and in particular, to attend relevant meetings of the EAHC and IHO.
- k. Additional survey training by UKHO to be envisaged after initial use of the new equipment currently on order.
- l. Publicity to confirm GPA as the Maritime Safety Information (MSI) operational Coordinator.
- m. GPA to liaise with NAVAREA II (France/Shom) and have regular contact even if no information (3 months, may be “nil return’s”)
- n. GPA to apply to the SAIHC for a place on MSI course in September 2017 (South Africa) (Done).
- o. GPA to develop relationship with IOC and IALA for development and possible further training opportunities.
- p. GPA to have priority for survey in the harbor, the approaches and the river.
- q. GPA to send to UKHO navigational information to update charts and nautical publications.
- r. Tide data and metadata from DWR to be sent to GPA for qualification (vertical datum) and provided to UKHO for harmonic analysis and new predictions for Admiralty products.
- s. DWR to send tidal data and meta data to GPA for survey corrections on request.
- t. GPA and DWR to cooperate for maintenance and calibration of the tide gauge station of Banjul harbor.
- u. Gambia Navy, GPA, DWR and NEA to have a joint project to survey the river both for bathymetry and hydrology. UKHO to produce a new chart based on this new survey and other datasets available from the NHC members.
- v. Boats, GPS, echo sounders, computers ... of different organizations to be made available and shared as required.
- w. Existing experts in GIS in The Gambia (for example, GBOS, NEA, Planning division of Ministry of Agriculture, University of The Gambia) to be utilized to benefit the project and provide training for less experienced staff.
- x. Pre and post dredge surveys be conducted independently from dredging consultants.
- y. Insure that data (bathymetry) collected by oil and gas exploration is archived (at a national level) and communicated to the chart producer to update charts.
- z. United Kingdom can continue to issue nautical publications, charts and up-dates, on behalf of The Gambia. The provision of MSI and the capacity to conduct surveys according to local priorities will support the safety of navigation in The Gambia waters.

Editors

Henri DOLOU and Cathy TUNKS

ANNEXES

Annex A: Terms of Reference of the RHC Technical Visit Team

1. The Technical Visit Team, comprising members of the staffs of the hydrographers cartographers of France and United Kingdom, are to carry out a visit to The Gambia to discuss issues of mutual interest in the fields of hydrography and maritime safety information (MSI).

Preparation

2. The members of the Team, under the guidance of the leader and with the assistance of the staffs of the Hydrographers of France and United Kingdom, are to plan the Team visit having obtained access to material available from each related organizations, the International Hydrographic Organization Secretariat [appropriate International Technical Consultative Organizations], and the information supplied by The Gambia.

Work Objectives

3. The Team is to:

a. obtain access to decision making levels of government in the visited country and liaise with senior officials, emphasizing the importance of hydrography to coastal states and, hence, the need to include hydrographic and associated charting activities within National Plans;

b. assess the National capacities to plan and execute the collection and rendering of hydrographic data to enable the production of charts and publications both locally and through the supply of data to Hydrographic Offices with international chart folios;

c. consider and advise on measures which can be taken to improve the capacity of nations to carry out the above;

d. emphasize the basic importance of a national system for the collection of data, such as engineering drawings and local Notices to Mariners, which have an effect on the interests of mariners;

e. advise on the assistance to be gained from close liaison with the IHO secretariat, IMO and funding agencies to enable viable and sustainable capability to be maintained.

Report

4. A Report on the activities and recommendations of the Team is to be submitted to the Chair of the RHC (Regional Hydrographic Commission) for the middle of September 2017.

Annex B: List of contacts

Given ,family name	Responsability	Phone	E_mail
Ministry of Works, Infrastructure and Transport			
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Gambia Maritime Administration (GMA)			
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Gambia Ports Authority (GPA)			
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Department of Water Resources (tides measurements)			
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			om
Yusupha Bojang	Hydrological		
Sarkou Sanyanp ?	Hydro		
Leese Benedul Mendy	Principal Hydrologist		
Malido Secka ?	Hydrologist		
Bambo Janneh	Hydrologist		
Manding Sen. ?			
Department of Lands and Survey (topography, mapping, surveys)			
Joseph Lewis-Gaye	Senior Surveyor E-mail:	Tel: +220 7743284	papandoye246@gmail.com
Siaka Saikyhan	Lands and valuation Officer		siaka.saidkhan@yahoo.com
Abdul Bah	Assistant cartographer		
Jais ... Banny ?	Senior Cartographer		
Dawada Darbal	Lands and valuation Officer		
Lamin Sonlto ?	Lands and valuation Officer		
Gambia Navy (SAR)			
Commodore Madani Senghore	Commander Gambia Navy		
National Disaster Management Agency (NDMA)			
Sanneh	Executive Director		
Seryn Modou Jooj ?	Deputy Executive Director		
James Bass	Finance Director		

Address :

(MWIT)	Ministry of Works, Infrastructure and Transport	MDI Road, Kanifing Serrekunda
GMA	Gambia Maritime Administration	OAU Duaa Jabbi Building P.O Box, 1721 Banjul, The Gambia
GPA	Gambia Ports Authority	1 Liberation Avenue P.O Box, 617 Banjul, The Gambia Tel: +220 4227266, +220 4229940 E-mail: info@gampiports.gm Website: http://www.gamports.com/
NEA	National Environment Agency	Jimpex Road Serrekunda Kanifing PMB 48 The Gambia Tel: +220 4399422 www.nea.gm
DWR	Department of Water Resources	7 Marina Parade Banjul
NDMA	National Disaster Management Agency	Office of The President 55 Kairaba Avenue , Serrekunda
(GN)	The Gambia Navy	Banjul
(DLS)	Department of lands and Survey	Marina Parade Banjul, The Gambia Att: Joseph Lewis-Gaye- Senior Surveyor

Given ,family name	Responsability	Phone	E_mail
UKHO	United Kingdom	Hydrographic Office	
Miss Cathy Tunks	Geographic Technical Manager - France, Spain, Portugal and the west coast of Africa	Direct Dial:+44 (0)1823 483956 Office: +44 (0)1823 484444 Mobile: +44 (0)7810 756174	cathy.tunks@ukho.gov.uk
Mr.Tim Lewis	Head of International Partnering (Middle East and Africa)	Direct dial: +44(0) 1823 483088 Mobile: +44 (0) 7917174399	tim.lewis@ukho.gov.uk
Shom	Service hydrographique et	océanographique	de la marine France
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Annex C: Agenda –Events

Day	Event
Day 1	
Monday 24 July Afternoon	Arrival in Banjul Airport Transport from airport to hotel
Day 2	
Tuesday 25 July Morning	Gambia Ports Authority (GPA)
	Gambia Maritime Administration (GMA)
	Gambia Navy
	Lunch
Afternoon	Department of Lands and Survey
Day 3	
Wednesday 26 July Morning	Department of Water Resources (Ministry of Fisheries)
	Lunch
Afternoon	National Disaster Management Agency (NDMA)
Day 4	
Thursday 27 July Morning	Ministry of Works, Infrastructure and Transport
	National Environment Agency (NEA)
	Lunch
Afternoon	AOB and Discussion on matters arising from stakeholders meetings
Day 5	
Friday 28 July Morning	Discussion with GPA Recommendations
	Visit of the Harbour
Lunch Afternoon	British Embassy Banjul
	Transport to airport Departure from Banjul Airport

Annex D: Photos



GPA: Gambia Ports Authority



GPA: Gambia Ports Authority



GPA: Gambia Ports Authority



GMA: Gambia Maritime Administration



Gambia Navy



Department of Lands and Survey



Department of Water Resources



NDMA: National Disaster Management Agency



Ministry of Works, Infrastructure and Transport



Ministry of Works, Infrastructure and Transport



NEA: National Environment Agency



End of the visit at the harbour

Annex E: IHO Yearbook

(The) Gambia / (La) Gambie

Country information / Informations sur le pays / Información sobre el país

-Declared National Tonnage -Tonnage national déclaré -Tonelaje Nacional Declarado	
-National day -Fête nationale -Fiesta naciona	18 February

GAMBIA PORTS AUTHORITY

Contact information / Informations de contact / Información de contacto

-National Hydrographer or equivalent -Hydrographe national ou équivalent -Hidrógrafo Nacional o equivalente	Gambia Ports Authority (GPA) Capt. Kulay Manneh (Harbour Master) Postal address: G.P.A. 1 Liberation Avenue , BANJUL, Gambia Tel: +220 422 9940, +220 9977038 Fax: +220 422 7268 E-mail: info@gambiaports.gm/kmanneh@gambiaports.gm
-Other point(s) of contact -Autre(s) point(s) de contact -Otros punto(s) de contacto	GPA: Dominic Correa Hydrographic engineer Tel: + 220 4227 268, +220 9962853 Fax: + 220 4227 268 E-mail: info@gambiaports.gm/correadominic@yahoo.co.uk
	GMA: Gambia Maritime Administration under Ministry of Works, Infrastructures and Transport as GPA
Web site -site web -sitio web	GPA: http://www.gamports.com/

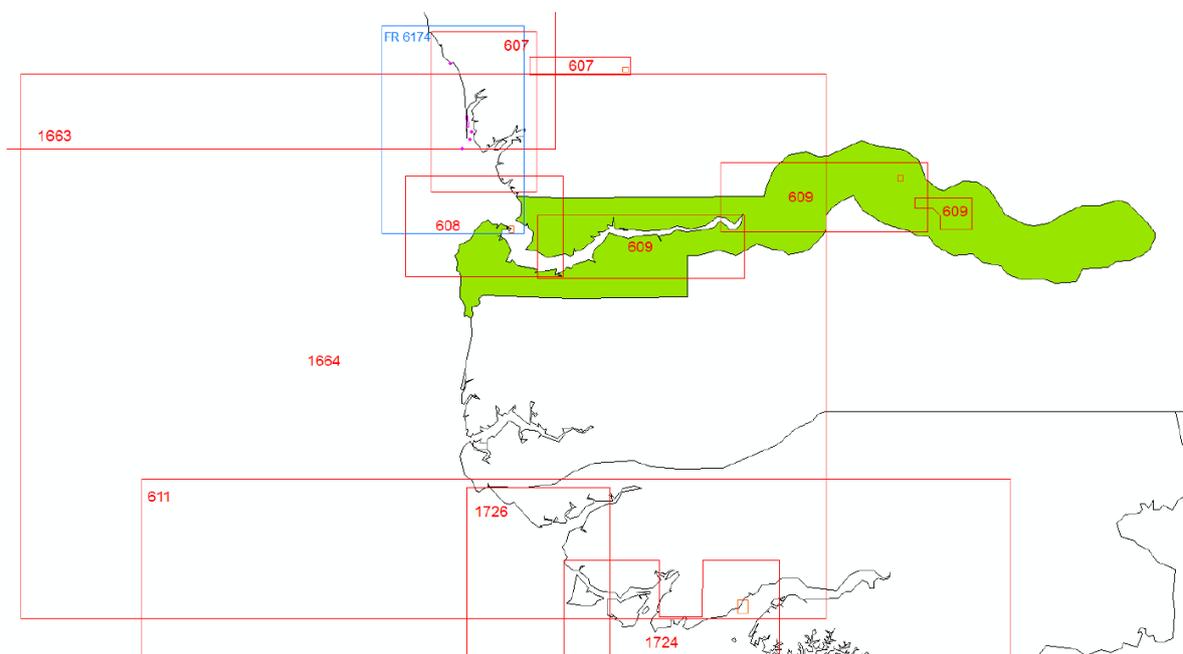
Agency information / Information sur l'agence / Información sobre la agencia

-Date of establishment -Date de mise en place -Fecha de constitución Relevant National Legislation -Législation nationale pertinente -Legislación nacional pertinente	1972
-Top level parent organization -Organisme mère -Organización asociada de nivel superior	Gambia Port Authority/ Harbours Dept. GPA is under the Ministry of Works, Infrastructures and Transport
-Principal functions of the organization or the department -Attribution principales de l'organisme ou du département -Principales funciones de la Organización o el departamento	Conducting hydrographic/bathymetric surveying Maintenance of Aids to Navigation
-Annual operating budget	

-Budget annuel -presupuesto anua	
-Total number of staff employed -Effectifs totaux -Número total de personal empleado	For hydrography: 1 (CAT B and A) + 1 Assistant
-Number of INT charts published -Nombre de cartes INT publiées -Número de cartas de INT publicadas	1. INT 1954 (= FR 7389 and GB 1664)
-Total number of paper charts published -Nombre total de cartes papier publiées -Número total de cartas de papel publicadas	1. GB 1664 – FR 7389 – INT 1954 (1: 342 000) 2. GB 608 (INT 1996 next NE) (1: 75 000) 3. GB 609 (1: 100 000) 4. FR 6174 (1: 100 000)
-Number of ENC cells published -Nombres de cellules ENC publiées -Número de células ENC publicadas	1. FR 373890 (1: 180 000) 2. GB 400608 (1: 45 000) 3. GB 600608 (1: 12 000)
-Number of Other charts -Nombre d'Autres cartes -Número de Otras cartas	
-Type of publications produced -Type d'ouvrages produits -Tipo de publicaciones producidas	FR/Instructions Nautiques C4—INA : Afrique (côte Ouest) : de Râs Spartel à Cape Palmas - Îles du Large Ed 2015 UK/ADMIRALTY Sailing directions Africa Pilot NP1Ed 2014 FR/Livres des feux et signaux de brume LC—FNC : Océan Atlantique (Est) - Océan Indien (Ouest) - Océan Pacifique Ed 2016 UK/ADMIRALTY list of lights and fog signals Volume D NP77 Eastern Atlantic Ocean, Western Indian Ocean Arabian and Red Seas Ed 2016 FR/Annuaire des marées http://maree.shom.fr/harbor/BANJUL-BATHURST UK/ADMIRALTY Tide table Volume 8
-Other information of interest -Autres informations utiles -Otra información de interés	Gambia Navy well interested in hydrography and nautical charts (river included). Common interest with DWR (Department of Water Resources for tides) and NEA (National Environment Agency for coastal zone and river management)
The Gambia has not yet established a hydrographic service. Equipment being acquired at the GPA. Ministry of Works, Infrastructures and Transport well interested in a NHC (National Hydrographic Committee). The Gambia Ports Authority is responsible for all shipping and conservancy matters. The Harbour Department of this authority has responsibility for all dredging and surveys. Technical assistance is requested when required.	

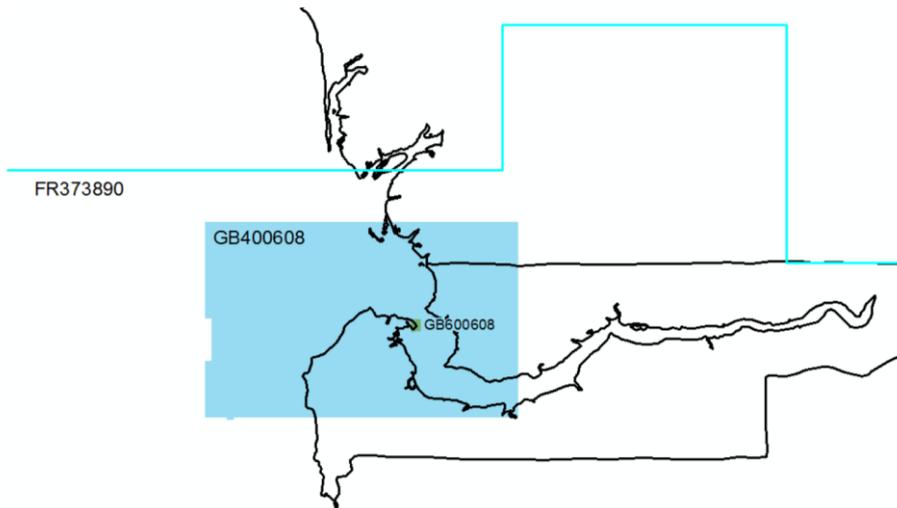
Annex F: Chart and ENC coverage

Paper charts



Scale	Title	Country	Publication / edition
1:342 000	Du fleuve Saloum à Ilhéu de Caió	FR: 7389 INT: 1954	Pub: 1997 Ed: 1
1:350 000 (1:342 00 at 12° 57')	Rivière Saloum to Ilhéu de Caió	GB: 1664 INT: 1954	Pub: 2002 (adaptation of FR7389) Ed: 1
1:100 000	De Joal à Bathurst	FR: 6174	1959
1:75 000 1:12 500	River Gambia Entrance Banjul	GB: 608 (INT : 1996 at next NE)	Pub: 1977 Ed 2: 1990
1:100 000 1:25 000 1:7 500	River Gambia Albreda to Kuntaur Kuntaur Anchorage off Mac Carthy's Island	GB: 609	Pub: 1942 (fathoms and feet) Ed: 1

ENC



Scale	Title	Country	Publication or edition
1:180 000 UB: Coastal	Diombos river ...	FR373890	Issued 12/10/2016
1:45 000 UB: Approach	River Gambia entrance	GB400608	Issued 12/08/2016
1:12 000 UB: Berthing	Banjul	GB600608	Issued 12/08/2016
Usage Band (UB)			