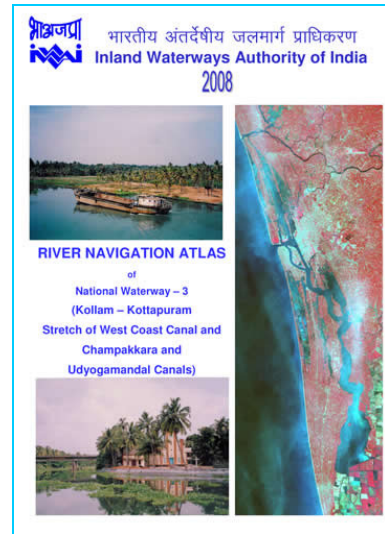
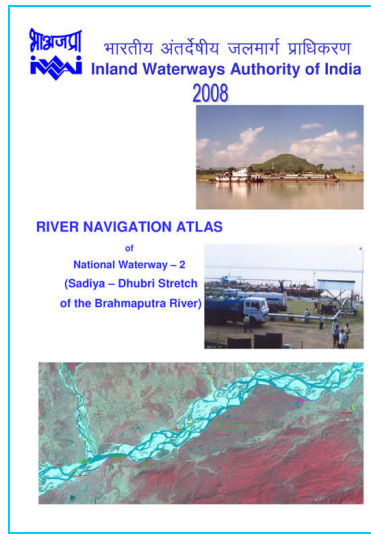
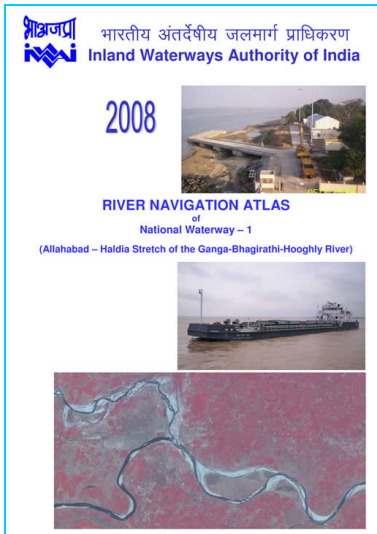


operators. Besides, the survey team is also undertaking detailed survey for identifying/ assessing shoal locations before and after carrying out river conservancy works like *bandalling* and *dredging*. Terminal surveys are taken up twice in a year (before and after monsoon period) at all terminal locations to study and assess the channel behavior. Bank-to-bank bathymetric surveys are also taken up on need basis to plan permanent river training works and for updation of navigational charts.

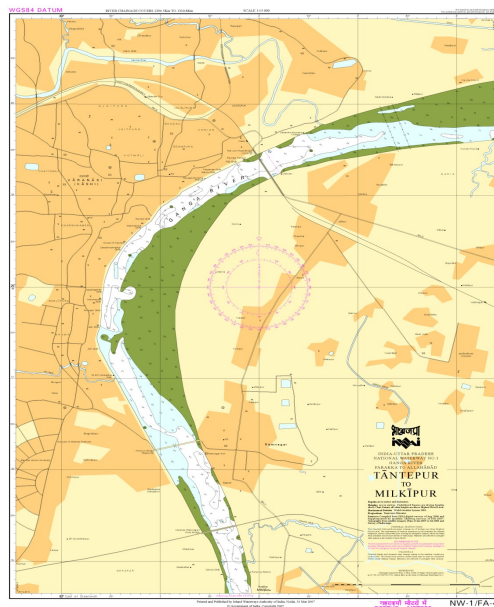


### **Survey Launch**

IWAI has published 103 **River Navigational Charts** (RNC) for NW-1 and 40 RNC for NW-2 and 49 for NW-3. The state of the art **River Atlas** for these waterways have also been prepared and published by IWAI. The publication of RNC and Atlas for Indo-Bangladesh protocol route (Sunderbans Waterways) is under progress. This is available on sale to users/ IWT operators for giving first hand information on the navigational channel being maintained by IWAI on these waterways. River Pilots giving sailing direction is under preparation for all these waterways.



**River Atlas of the National Waterway published for sale to waterway users.**



**Typical River Navigational Chart**

## **8. Other Night navigational facilities**

Initially only day navigational marks (conventional bamboo marks) were erected to demarcate the channel limiting the navigation only during day time. When more and more users came forward for using the IWT mode, it becomes necessary to introduce night navigational facilities to reduce the turn around time by about 50%. Accordingly IAWA has introduced night navigational facilities as follows:

➤ **Light mounted on Country Boat**

3km range LED (Light Emitting Devices) lights on a 2m elevated platform on stretches of NW -1 and NW -2 where channel is not defined and banks are not firm necessitating frequent dislocation and deployment of aids.

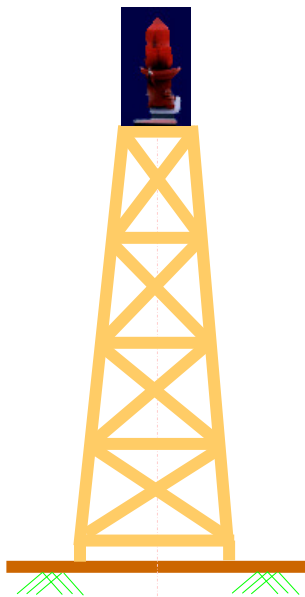


➤ **Lighted Buoys**

Lighted buoys with suitable day mark installed on the FRP bouys as per IALA (International Association of Lighthouse Authority ) System 'A' guidelines and appropriate mooring arrangement in the stretches where channel remains firm over a period of one year have been installed in the entire stretch of NW-3. Such facilities are being installed in phases in other National Waterways to be completed by 2010-11. The lights are operated by solar system



- 7 NM (Nautical Miles) range beacon light on 15/20m lattice structure on the firms banks are being installed in NW-1, & NW-2. In NW-3, such shore beacons have been installed with 5 NM.



- **Shore beacon lights**

Projects under implementation for taking up above mentioned methods of aids to navigation in NW-1 & NW-2 are as per details given below:

Type	NW-1	NW-2
Lighted Buoys	201	128
Shore Beacons	87	35
Country crafts fitted with lights	1162	459

## 9. Conclusion: Step towards safe navigation

- Regular, accurate & reliable river charts coupled with day & night navigation aids Like DGPS, beacons, lighted buoys, country boats fitted with lights & conventional day marks in the national waterways will enhance the confidence of IWT operators in speedy & safe transportation of cargo/passengers.
- Quality digital charts of national waterways based on regular and modern surveying techniques will ensure safe & speedy movement of IWT which will further enhance efficient management of resources on inland waters of India.

These steps taken by IWAI to facilitate safe day and night navigation on the National Waterways, will, no doubt, pave the way for large scale movement of bulk cargo through inland water transport in the country.

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