

**Plan and Implementation Support for  
Commercialization of NW-1**

**Summary of 7th Pilot Movement  
Budge Budge to Narayanganj/Bd.  
Interminable Commodity Management**



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## 1 Introduction

In India, the National Government intends to increase the use of IWT and to exploit the potential benefits that this mode of transport offers for the country's growing economy. During recent years, the National Government and the Inland Waterways Authority of India (IWAI) as the statutory authority in charge of the inland waterways have therefore undertaken major efforts to enhance the navigability and boost freight movements on India's national inland waterways.

Given the country's recent economic growth, India's road and rail networks are overloaded in many places and transportation of cargo and passengers suffers from heavy congestion as well as the presence of physical bottlenecks. Moreover, increasing pollution and fundamental environmental goals require a comprehensive and coordinated approach to an integrated national transportation policy. Recognizing its mode specific advantages and given the country's large network of rivers, canals and backwaters, the Indian Government therefore intends to make IWT an integral part of the country's future transport system.

In order to foster a sustainable and commercially viable future development of the IWT sector, the competent authorities have invited external expertise for a project on Plan and Implementation Support for the Commercialization of National Waterway-1 (NW-1). The project thereby aims to facilitate actual business development and to stimulate the further development of freight movements on India's longest National Waterway from Allahabad to Sagar Island.

Having been awarded the contract to conduct the assignment, a Joint Venture of HPC Hamburg Port Consulting GmbH, UNICONSULT Universal Transport Consulting GmbH and its local Partner La Mer Maritime Ltd. have put together a team of experts with comprehensive and long-standing knowledge of both, international IWT markets in general and the Indian inland waterway shipping sector in particular. In the course of the ongoing project work, the Consultants' experts engage into one to one interaction with various relevant market stakeholders as well as the competent public authorities, aiming at the conduct of Pilot Movements and the closing of actual working contracts.

Considering the practical experiences and also building upon the interim findings of the current project's ongoing field work as well as the Consultant's profound knowledge of the Indian IWT market, this summary of the seventh Pilot Movement provides implementation-oriented recommendations for creating the necessary conditions for a sustainable development of IWT transports on NW-1.<sup>1</sup>

In the following, Chapter 2 gives an overview of the general background of this specific Pilot Movement of fly ash in bulk form from Budge Budge, West Bengal and the loading location of GR Jetty to Narayanganj in Bangladesh and the efforts undertaken to initiate it. Chapter 3 presents the financial issues while Chapter 4 provides details on the operational aspects. Based on the findings, crucial success factors and requirements for commercially viable

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<sup>1</sup> In line with the beginning of the planning of the movement, the given pilot transport is referred to as the seventh conducted within the scope of the current project. However, due to lengthy necessary preparations (inter alia modification of the barge), other movements were conducted earlier.

transports and their technical feasibility are discussed in Chapter 5. Chapter 6 gives recommendations on needs for action.

## 2 Preparation of Pilot Movement

During the ongoing market research conducted within the scope of the current project, the Consultants' local team of experts has early been in contact with Interminable Commodity Management (India) Pvt. Ltd. based in Kolkata, West Bengal. Interminable Commodity Management (India) Pvt. Ltd. belongs to India's largest fly ash handling enterprises and is among the pioneers in encouraging utilization of fly ash, thus offering a solution to energy providers for the disposal of their solid waste.

Interminable Commodity Management (India) Pvt. Ltd. has thereby expressed its interest to conduct a trial transport of fly ash in bulk form from Budge Budge, West Bengal to Narayanganj in Bangladesh.<sup>2</sup> Based on the provided information and requested specifications, the Consultant's team of experts developed a corresponding transport solution for the movement of 2,005 metric tons of fly ash in bulk form and managed to identify an appropriate transport vessel. However, and partly due to the commodity specific requirements, some necessary modifications had to be done to the vessel MV Aditya.

As a result of further negotiations in between Interminable Commodity Management (India) Pvt. Ltd., the Consultants' team of local experts and V2 Shipping as the vessel operator, it was commonly agreed upon a freight rate of USD 11.00 per metric ton for the barge transport of bulked fly ash from West Bengal to Bangladesh via NW-1 and international waterways, respectively the Indo-Bangladesh Protocol Route. The stated freight rate thereby excludes costs for loading and discharging as well as for in-port handling and first mile transport of the cargo that were not part of the pilot movement agreement. No last mile transport has been requested as cargo has been unloaded directly at the cement factory where it was provided to be processed.

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<sup>2</sup> The transport was originally destined for Mongla, Bangladesh. Inter alia due to delays in the preparation of the pilot movement, the destination was later on changed to Narayanganj, Bangladesh.

### 3 Financial Aspects

Following a number of discussions under the consultancy of the Consultants' team of local experts and following the clarification of necessary requirements and specific operational details, Interminable Commodity Management (India) Pvt. Ltd. and V2 Shipping agreed upon the conduct of a pilot movement of 2,005 metric tons of fly ash in bulked form on the southern sector of NW-1 from Budge Budge, West Bengal via the Indo-Bangladesh Protocol Route to Narayanganj, Bangladesh

Both, the shipper and the barge operator thereby commonly agreed upon a freight rate of USD 11.00 (approximately INR 706.00) for barge transport of the shipment of fly ash, excluding all costs for loading and unloading at the waterways' entry and exit points. Based on the given transport volume of 2,005 tons of fly ash, transport costs directly related to IWT thus amounted to a total of USD 22,055.00 (approximately INR 1,415,530.00) and were paid directly by Interminable Commodity Management (India) Pvt. Ltd. to V2 Shipping.

Costs for first mile transport to the loading site at the GR Jetty, West Bengal were borne by shipper and thus not part of the pilot movement arrangement. Onward transport from the discharging site at Narayanganj has not been requested as cargo has been directly unloaded at the place of further processing. As to the pilot movement agreement, Interminable Commodity Management (India) Pvt. Ltd. also arranged and incurred for all costs related to loading and unloading operations as well as intermediate stevedoring and storage of the fly ash in the port areas.

Since both, the shipper and the vessel operator managed to agree on a freight rate that did not require any public gap funding, it appears reasonable to assume that a capable and reliable IWT operation facilitates an economically efficient and financially attractive transport alternative to conventional transport options.

Table 1 below shows the major cost items of the seventh Pilot Movement.

*Table 1: Freight and Transport Charges*

Position (Cost Item)	Charges (excl. Service Tax)
First mile transport to GR Jetty, West Bengal	NA
Loading at GR Jetty, West Bengal	NA
Vessel transport freight charges	USD 11.00 per ton
Discharging at Narayanganj, Bangladesh	NA
Last mile transport from Narayanganj, Bangladesh	Not applicable

*Source: The Consultants 2017*

## 4 Operational Aspects

The seventh Pilot Movement covered the transport of 2,005 metric tons of fly ash in bulk cargo form from Budge Budge, West Bengal to Narayanganj, Bangladesh. It is thereby the first pilot movement conducted within the scope of the current project that does not only use NW-1 but also continues on the Indo-Bangladesh Protocol Route to its final destination in the neighboring country. Moreover, it is the first pilot movement on the transport of fly ash in bulk cargo form.<sup>3</sup>

The total duration of the Pilot Movement including time for loading and unloading amounted to 26 days. In order to ensure a smooth and prompt operation on NW-1 and along the international waterway route, the Consultants' local team of experts closely monitored the transport throughout the course of the transport. By doing so it is possible to detect potential hurdles and bottlenecks early, take countermeasures if necessary and prevent, respectively mitigate organizational or operational delays.

In this regard, departure of the pilot movement was delayed due to necessary modifications that had to be done on the subject vessel. Once en-route, operations during day time can be regarded among the fastest of all pilot movements so far conducted within the scope of the ongoing project, allowing for an average barge speed of approximately eight knots. Yet, due to missing adequate night navigation facilities on large parts of the route, no night time navigation was possible. Moreover, several intermediate anchorage times took place at different spots en route.

Necessary documentation, including a cargo manifest, had been issued for the conduct of the pilot movement and was signed by the master as evidence for the cargo quantity on board. Customs procedures were performed at Hemnagar, West Bengal on the Indo-Bangladesh boarder.

Table 2 below presents a summary of information on the movement.

*Table 2: Pilot Movement at a Glance*

Route	Budge Budge / GR Jetty – Narayanganj
Shipper	Interminable Commodity Management Pvt. Ltd.
Vessel Operator	V2 Shipping
Vessel Name	MV Aditya
Commodity	Fly Ash
Cargo Quantity	2,005 metric tonnes
Distance on NW-1 (up to Namkhana)	90 km (total distance incl. Protocol Route 550 km)
Loading at GR Jetty, West Bengal	21 11 2017 – 29 11 2017
Departure at GR Jetty, West Bengal	30 11 2017
Arrival at Narayanganj, Bangladesh	12 12 2017
Unloading at Narayanganj, Bangladesh	14 12 2017 – 16 12 2017

*Source: The Consultants 2017*

<sup>3</sup> An earlier pilot movement on the transport of fly ash used bagged cargo instead of bulked fly ash (please see summary on Pilot Movement 5 for further details).



## 4.1 Loading Procedure

Loading operations took place at the GR Jetty in between Budge Budge, West Bengal and downtown Kolkata, West Bengal. Following necessary modifications done on the subject barge MV Aditya, loading of the fly ash in bulk cargo form started on 21<sup>st</sup> November 2017 and was finished by 29<sup>th</sup> November 2017 without encountering notable problems. Loading operations involved the use of means of mechanical operation. The fly ash was thereby conveyed by a suction system from the trucks – which has been used for first mile transport – onto the inland vessel through pneumatic tubes.

Figure 1 below shows the site of the charging location at GR Jetty, West Bengal.

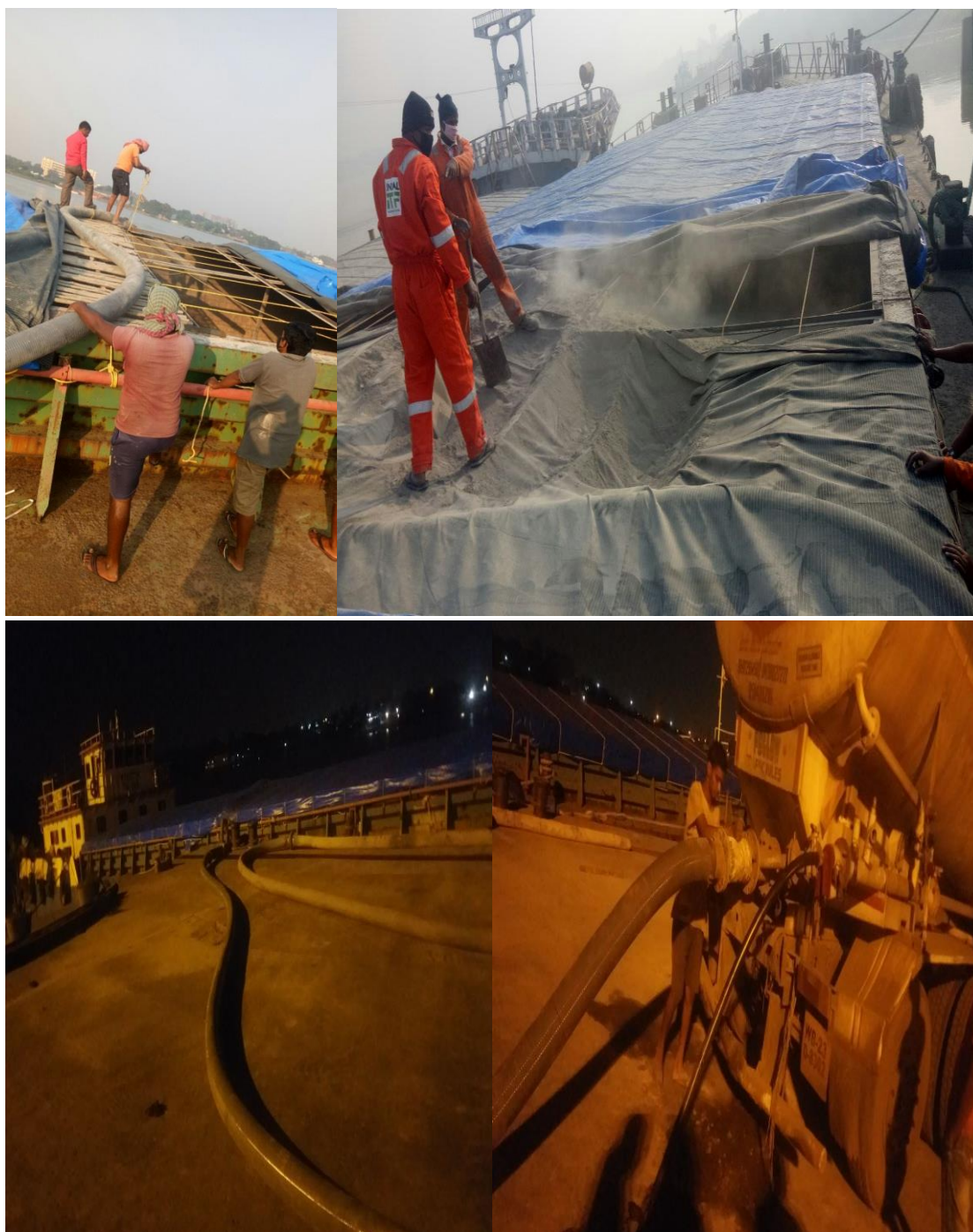
*Figure 1: Loading Location*



*Source: The Consultants 2017, based on Google Earth*

Figure 2 below provides illustrations of the loading operations taken at GR Jetty, West Bengal.

*Figure 2: Loading operations*



*Source: The Consultant 2017*



## 4.2 In-transit Procedure

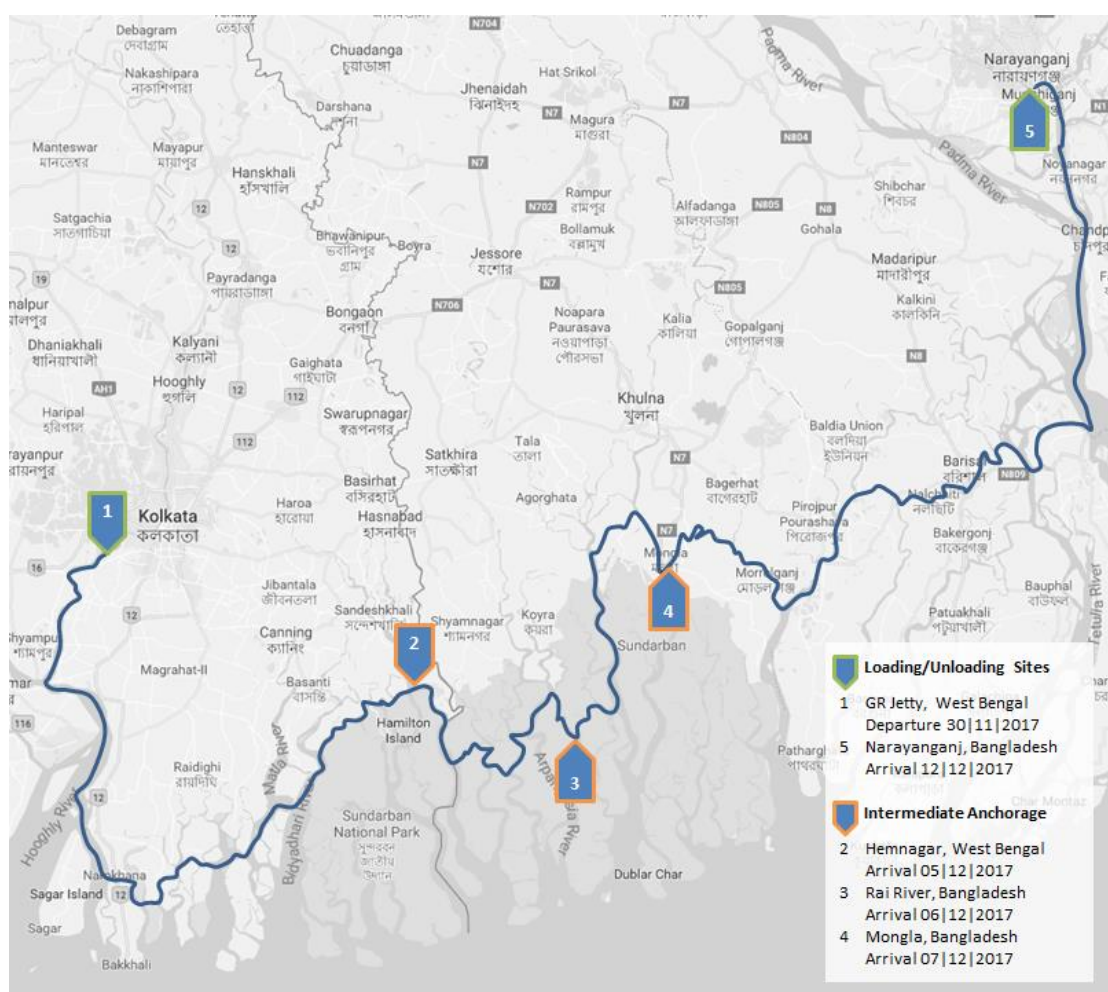
Loaded with 2,005 metric tons of fly ash the inland waterway barge MV Aditya left the loading location GR Jetty, West Bengal on 30<sup>th</sup> November 2017 at 10:20 hours. In order to protect the cargo from moisture and other weather related influences and to prevent the fly ash from being blown away, the hatches were covered by tarpaulins throughout the course of the movement.

Due to good overall navigational conditions on the southern section of the NW-1, the Pilot Movement was able to operate smoothly and without significant restrictions on the first part of its routing. Following a journey through the Indian Sundarbans National Park the transport reached Hemnagar, West Bengal on the Indo-Bangladesh border on 05<sup>th</sup> December 2017. While on anchorage at his location, customs clearance formalities were done.

Following an anchorage at the Rai River area, the movement reached Mongla, Bangladesh on 07<sup>th</sup> December 2017. Originally destined for Mongla, the transport has thereafter been at anchorage in the Mongla area until 09<sup>th</sup> December 2017 before continuing its voyage to its new destination at Narayanganj, Bangladesh where it arrived on 12<sup>th</sup> December 2017.

Figure 3 below provides a map of the IWT movement plan covered by this Pilot Movement.

Figure 3: Movement Plan



Source: The Consultant 2017, based on Google Maps

Throughout the vessel's journey on NW-1 and the Indo-Bangladesh Protocol Route, no severe disturbances or en route groundings were encountered. However, due to missing adequate night navigation facilities on the Protocol Route, operations of the pilot movement were constrained to daylight hours. Moreover, some extra idle time occurred at various anchorage locations, inter alia at the originally planned destination at Mongla, Bangladesh.

Figure 4 shows the vessel while waiting at anchorage at Narayanganj, Bangladesh, prior to unloading of the cargo.

*Figure 4: Anchorage at Narayanganj*



*Source: The Consultant 2017*

### 4.3 Unloading Procedure

Discharging of the shipment of bulked fly ash took place at a cement manufacturing location of Emirates Cement Bangladesh Ltd. on the Dhaleshwar River at Narayanganj, Bangladesh. Unloading operations using shore mounted cranes with bulk grabs started on 14<sup>th</sup> December 2017 at 11:20 hours and were completed by 16<sup>th</sup> December 2017 at 02:00 hours.

Unloading of the fly ash shipment was thereby delayed due to some necessary cutting work at on-deck mounted structure in order to allow a smooth and safe discharging operation using the bulk grabs. Once unloading operations commenced night discharging of cargo was accomplished.

Figure 5 below shows the unloading location of the seventh pilot movement at Narayanganj, Bangladesh.

*Figure 5: Unloading Location*

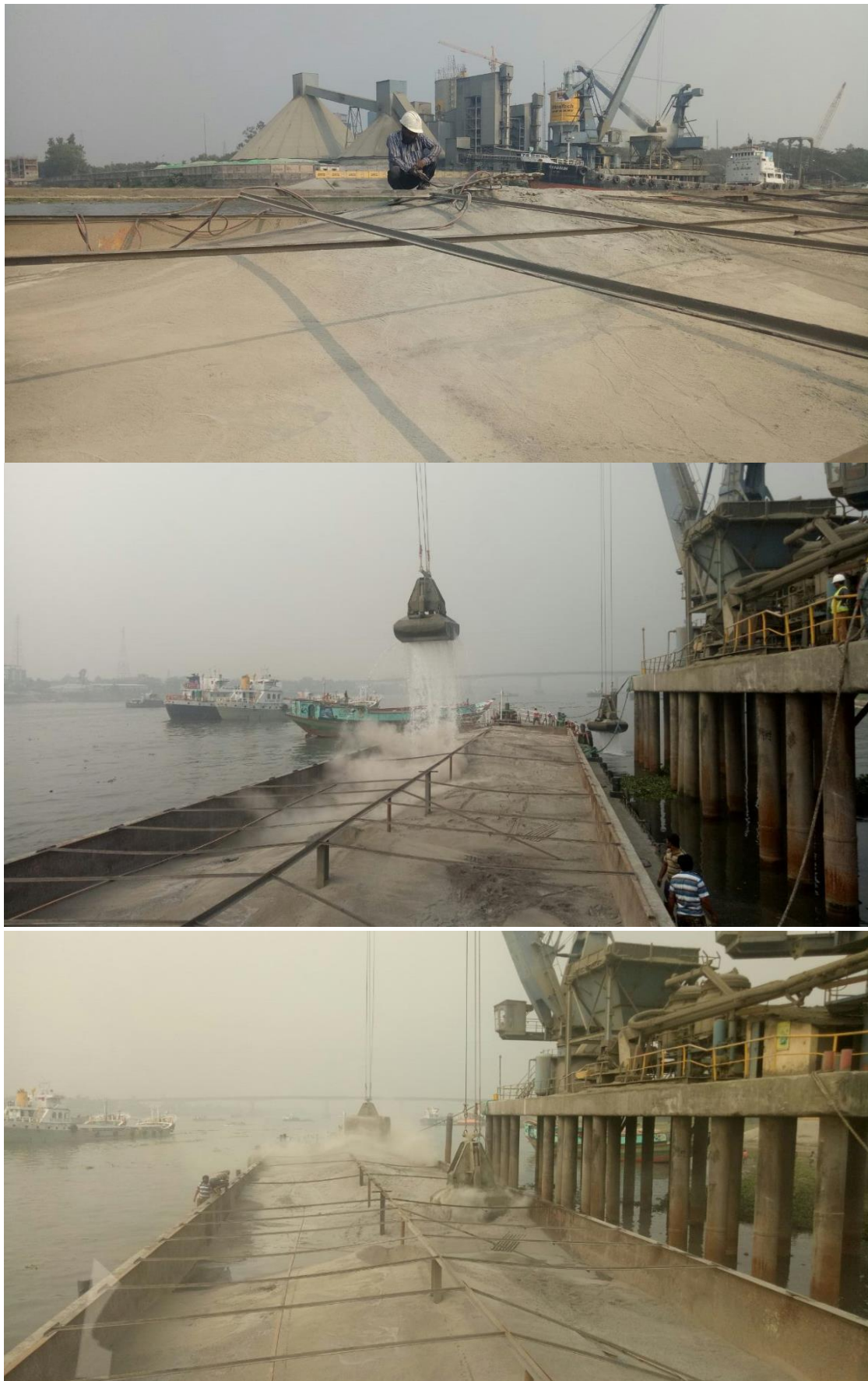


*Source: The Consultants 2017, based on Google Earth*

Figure 6 below provides illustrations of the unloading preparations and discharging operations at Narayanganj, Bangladesh.



*Figure 6: Unloading Operations*



*Source: The Consultants 2017*

## 5 Experiences and Findings

During the course of the seventh pilot movement a number of issues have been documented by the Consultants' team of experts. These include in particular:

- First pilot movement involving the transport of fly ash in bulk cargo form that must be protected from moisture and other external weather conditions by tarpaulin structure.
- Fast loading operation due to engagement of mechanical loading system, including tubes for pumping the fly ash from trucks onto the inland barge.
- Issuance of necessary transport documentation, including cargo manifest signed by master as evidence of cargo quantity carried on board.
- Straightforward transport on NW-1's southern section from GR Jetty, West Bengal to Sagar Island, West Bengal.
- Direct continuation of barge transport onto the Indo-Bangladesh Protocol Route with customs clearance formalities being performed at Hemnagar, West Bengal.
- Night time operations not possible en route due to unavailability of adequate night navigation facilities.
- No en route groundings due to sufficient available water depth at all stages throughout the course of the voyage, both on NW-1 and the Indo-Bangladesh Protocol Route.
- Longer interim anchorage time at Mongla, Bangladesh due to interim change of shipments final destination to Narayanganj, Bangladesh.
- Short-notice change of final destination due to operational considerations of shipper and the cargo's end user successfully implemented.
- Unloading operation delayed as parts of on board mounted structure had to be cut to allow for safe and smooth discharging operation with shore-mounted cranes and bulk grab equipment. The mounted on board structure for supporting tarpaulins and protecting the cargo from external influences should be generally designed thus, all possible/common loading and unloading equipment are able to work on.
- Night discharging operation at Narayanganj, Bangladesh successfully accomplished once structure had been cut.
- Direct payment of vessel operator (V2 Shipping) by cargo owner (Interminable Commodity Management (India) Pvt. Ltd.), general overall economic viability for both parties results in no requirement for public gap funding.

## 6 Recommendations

Based on the findings of the seventh pilot movement of fly ash in bulk cargo form, the following actions are recommended:

- Encourage and support the development and retrofit of necessary on board equipment such as mobile tarpaulin structures that can be mounted and unmounted when required.
  - Suggestion: Launch public funding project / financial incentives for the development of innovative solutions regarding the flexible retrofit of existing multipurpose vessels with special purpose equipment.
- Ensure technical and operational feasibility of night time navigation on all sectors on NW-1 as well as on the Indo-Bangladesh Protocol Route.
  - Suggestion: Improve navigational aid infrastructure (inter alia navigation lights) on NW-1 and in the Sundarbans' waterways used by the Indo-Bangladesh Protocol Route, enter in consultations with relevant Bangladesh authorities to improve night time navigation facilities on their part of the international waterway route.



## 7 Conclusion

Covering the transport of 2,005 metric tons of fly ash in bulk cargo form on NW-1's most southern stretch GR Jetty, West Bengal to Sagar Island, West Bengal as well as on the Indo-Bangladesh Protocol Route, the seventh pilot movement conducted within the scope of the current project on Commercialization of NW-1 provides some new evidence on the potential benefits and capabilities of IWT on NW-1 and in the Indo-Bangladesh border traffic

The pilot movement thereby demonstrated that under adequate navigational conditions and given the availability of suitable vessel equipment, transport by inland waterway barge offers a safe as well economically efficient way for the transport of large lots of cargo over larger distances and across international borders. This could open up new prospects with regard to the commercial viability of IWT for both, shipper and operators.

Moreover, the pilot movement showed the practical feasibility of the transport of fly ash in bulk cargo form by inland waterway barge. This enables the use of efficient loading and unloading procedures (e.g. pumping via tubes, use of bulk grabs) and allows for a renouncement of the need to bag the commodity prior to inland waterway transport. Necessary modifications to the inland vessel included the mounting of a tarpaulin structure. The installed on board structure for supporting tarpaulins and to protect the cargo from external influences had to be partly cut in order to allow for safe and smooth discharge operations with bulk grabs. The design of such additional on deck devices should generally consider all possible loading and unloading equipment. Thus, they have not to be stripped down after just one trip.

As to the deficits encountered during this pilot movement it should be noted that night time operations of the pilot movement were not possible due to missing night navigation aid facilities on large parts of the movement's routing.