

4.3.11 TERMINAL AT RAJGHAT (VARANASI)

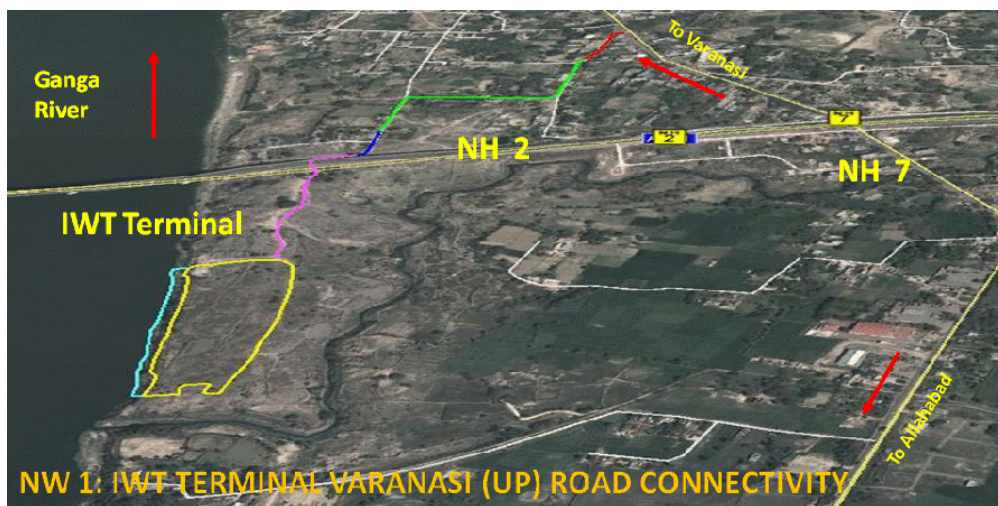
There is a floating jetty with 35m water front is available at Varanasi. Necessary land for setting up the terminal is to be acquired. Food grains and General goods are the commodities likely to be handled through this terminal.

Traffic:

Projected divertible traffic through Varanasi Terminal

Varanasi Total Traffic (MT)			
Year	Originating	Terminating	Total
2011-12	0.36	0.65	1.01
2021-22	0.50	0.73	1.23
2031-32	1.32	1.25	2.57
Important Commodity: Food grains and General Goods			

Road Connectivity: The nearest National Highway (NH 7) is at 1.20km length. The existing road/land width available for this 1.2 km stretch is of different width and the details of the condition of road and land width required is as tabulated below:



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
—	0.40	Nil / Nil	20.0	Private	2.2	1.08	3.28
—	0.1	3.25 / 3.25	10.75	State Govt	0.40	0	0.40
—	0.49	4.25 / 4.25	9.75	Private	1.96	1.32	3.28
—	0.1	4.95 / 4.95	9.05	Private	0.56	0.33	0.89

Thus it can be seen that a sum of Rs.7.85 crores is required for the road connectivity to the terminal. The satellite imagery indicating the road connectivity is produced below:

Rail Connectivity: The nearest station is Vyasnagar Railway Station under Lucknow Charbagh Division under Northern Railway. The length of connectivity is 9.0km. However, the traffic potential is not justifying the need for connectivity apart from the line needs to pass through the congested city, Rail Connectivity is not considered for this terminal.

Total Development Cost:

It is envisaged that a sum of Rs.3073 crore is required for the development of IWT Terminal including waterway development upto Varanasi. The breakup cost of investment required is detailed as follows:

Waterway development	: Rs. 3000 crores
Road Connectivity	: Rs. 8 crores
Terminal Development Cost	: Rs. 65 crores
Total Investment	: Rs. 3073 Crores

4.3.12 TERMINAL AT ALLAHABAD

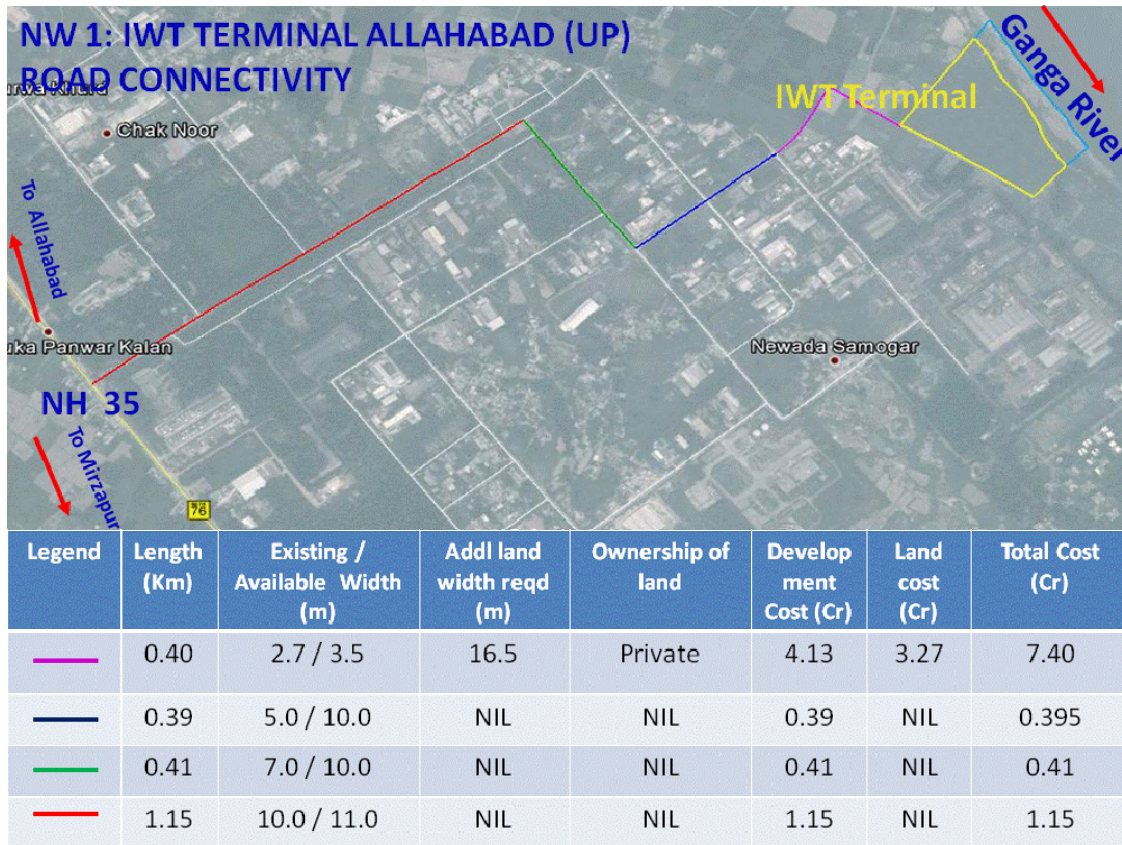
A land area of 8.759 Hectare is in possession of IWAI for development activities. Presently a floating jetty is available at Allahabad. Terminal at Allahabad is considered based on the assumption that the long distance traffic from Northern States to East and North Eastern region of the part of India shall be handled and moved through this terminal.

Traffic:

Projected divertible traffic through Allahabad Terminal

Allahabad Total Traffic (MT)	
Year	Total
2011-12	0.52
2021-22	0.75
2031-32	1.57
Important Commodity: Coal, cement, food grains, fertilizers, iron and steel	

Road Connectivity: The nearest National Highway (NH 35) is at 2.35km length. The existing road/land width available for this 2.35 km stretch is of different width and the details of the condition of road and land width required is as indicated in the satellite imagery below. From the same, it can be seen that a sum of Rs.10 crores is required for the road connectivity to the terminal. The satellite imagery indicating the road connectivity is produced below:



Rail Connectivity: The nearest station is Karchhana Railway Station under Allahabad Division of North Central Railway. The length of connectivity is 7.55km. However, the line has to pass through the congested city area it is not feasible for connecting with rail network, though rail connectivity to Allahabad terminal in the long run will help boost the traffic potential by accommodating long distance traffic from North and North Eastern States.

Total Development Cost:

It is envisage that a sum of Rs.3110 crore is required for the development of IWT Terminal at Allahabad. The breakup cost of investment required is detailed as follows:

Waterway development	: Rs. 3000 crores
Road Connectivity	: Rs. 10 crores
Terminal Development Cost	: Rs. 100 crores
Total Investment	: Rs. 3110 Crores

4.4 CONNECTIVITY IN PROPOSED TERMINALS AT NATIONAL WATERWAY-2

River Brahmaputra between Dhubri and Sadiya over a length of about 891 km was declared as NW2 in 1988. It serves the states of Assam, Meghalaya and Arunachal Pradesh covering about 37 traffic regions. Because of its connectivity with National Waterway 1 through protocol route via Bangladesh its catchment area is extended up-to the State of West Bengal, thereby establishing its connectivity with Haldia and Kolkata ports.



The following terminals are planned under National Waterway-2.

National Waterways	SN.	Name of IWT Terminal	Nearest NH/SH	Nearest Railhead	Gauge
NW2	1	Jogighopa	NH-31B	Jogighopa	BG
NW2	2	Pandu (Guwahati)	NH-37	Kamakhya	BG
NW2	3	Tezpur	NH-37A	Tezpur	BG
NW2	4	Neamati (Jorhat)	NH-37	Lahing	BG
NW2	5	Dibrugarh	NH-37	Dikam	BG

4.4.1 TERMINAL AT JOGIGHOPA

The existing IWT terminal at Jogighopa is a floating terminal with steel crane pontoon to handle available goods traffic in the region. Though, based on current traffic volumes Jogighopa (Bongaigaon) stands fifth in the row among NW-2 terminals, being first IWT terminal on Indian side and likely to induce large secondary area traffic, the terminal is given adequate importance in NW-2.

Jogighopa city is well connected with the road & rail. It is situated/ located on the right bank of the Brahmaputra River in the Bongaigaon district. Jogighopa is major industrial city in the state of Assam. Bongaigaon refinery is 30km away from the jogighopa terminal. Meghalaya coal field is situated around this region. Jogighopa is proposed as a major coal transshipment hub apart from transporting other cargo like Jute, Cement, etc. Mainly coal from Meghalaya is expected to be transported through NW2 to Haldia, Katwa and Barh.



Traffic:

Projected divertible traffic through at Jogighopa Terminal

Jogighopa Total Traffic (MT)

Year	Org.	Termi.	Total
2011-12	0.75	1.20	1.95
2021-22	1.20	3.60	4.80
2031-32	2.60	7.43	10.03
Imp. Com.	Coal and General Goods		

Road Connectivity:

Jogighopa city is well connected with the road by National Highway 31B which connects Jogighopa with the states of Bihar, Jharkhand and West Bengal. National Highway 37 from Goalpara connects other bank of the river to Dimapur in Nagaland, and traverses the entire length of Assam. It also connects Jogighopa with almost all the major cities of Assam including the cities of Pandu, Jorhat and Dibrugarh.

A single lane 3.5m wide road of 2km length from the National Highway 31B is required to be widened to 10m with additional land requirement of 6.50m to lay a double lane road. The cost of widening the road and strengthening is expected to cost Rs. 8 crores. The additional land width can be obtained from Government as the land belongs to Government only.



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	2.0	3.5/3.5	6.5	Govt	8.0	0.0	8.0

Rail Connectivity:

Bongaigaon falls under the Northeast Frontier Railway zone of the Indian Railways. The nearest railway station is Jogighopa. The rail connectivity from the nearest rail head is found not feasible and also inside the boundary of IWT Terminal. Further the traffic level of 1.4 MTPA at the 2031-32 level indicates inadequacy for considering exclusive rail connectivity. Therefore, rail connectivity is not considered for this terminal.

Total Development Cost:

It is envisaged that a sum of Rs.318 crores is required for the development of IWT Terminal at Jogighopa. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 210 crores
Road Connectivity	: Rs. 8.0 crores
Terminal Development Cost	: Rs. 100 crores
Total Investment	: Rs. 318 Crores

4.4.2 Terminal at Pandu (Guwahati)

Guwahati is the largest city of Assam and North Eastern India. It is located on the bank of River Brahmaputra and is one of the fastest developing cities often referred to as "Gateway" of North Eastern Region of the country. Guwahati is a major commercial and educational hub of North-East India. It falls under the North-East Frontier Railway zone of the Indian Railways. Guwahati Junction is a major railway station and two other stations named; Kamakhya and New Guwahati (for freight services) are located on west and east of the city, respectively.

Guwahati being on the banks of Brahmaputra River, is connected to National Waterway No. 2, with a Fixed/permanent terminal with two godowns and RCC jetty terminal at Pandu. It is used for movement of bulk and general cargo, passenger vessels and tourist vessels.

Based on the rail and road traffic information collected to estimate base year goods traffic, Guwahati region handled around 12.2 million tonnes goods traffic, comprising 6.53 million tonnes of originating and 5.66 million tonnes of terminating traffic. Out of this, traffic which is likely to get shifted to IWT services are 3.13 million tonnes comprising 1.9 million tonnes of originating and 1.2 million tonnes of terminating goods traffic. Pandu is the major location on NW-2 as an entry point to NE States.

Traffic:

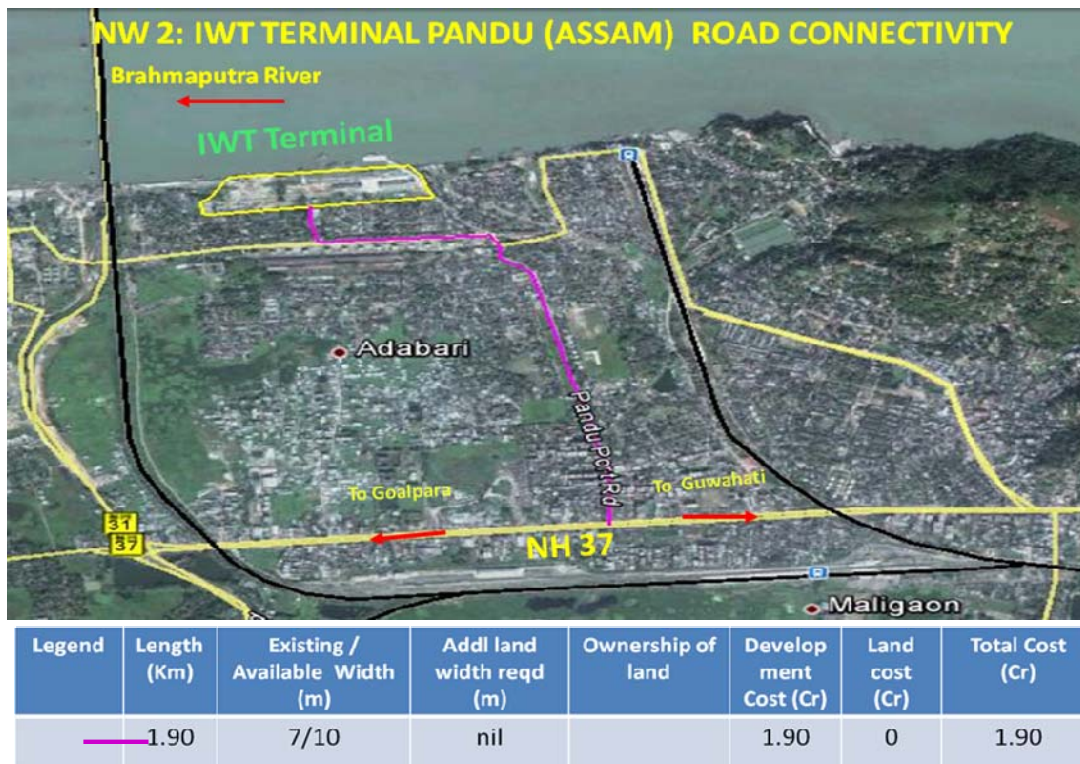
Projected divertible traffic through at Pandu Terminal

Pandu Total Traffic (MT)

Year	Org.	Termi.	Total
2011-12	2.08	1.65	3.73
2021-22	4.30	2.70	7.00
2031-32	7.58	7.05	14.63
Imp Commodities:			
Food grains, Cement, Coal, Fertilizer, Building Material, Vegetables			

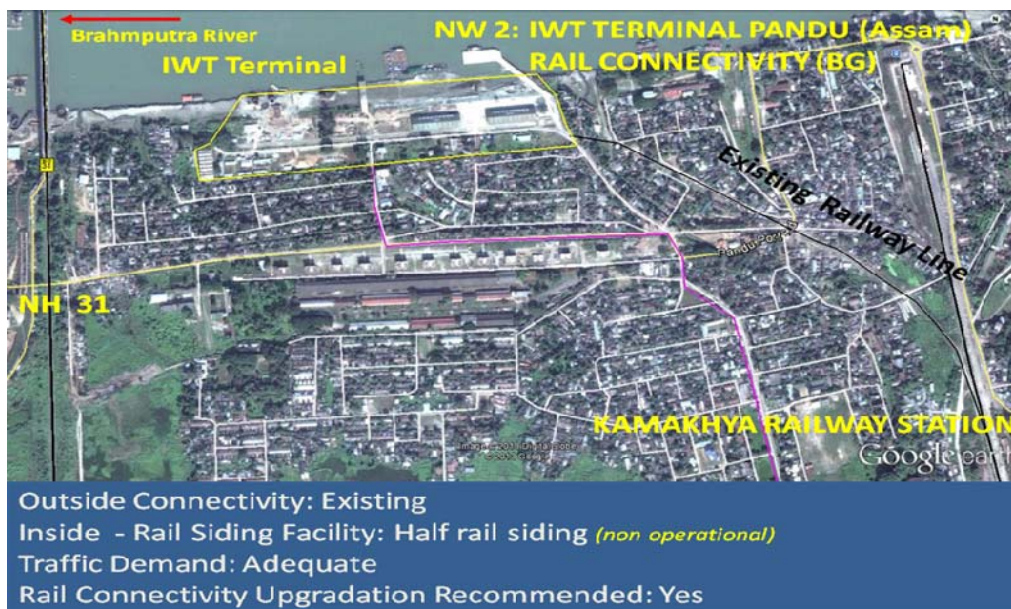
Road Connectivity:

It can be seen from the map below that a 1.90km road connectivity exists from the terminal to the nearby NH-37. This link road requires strengthening for heavy vehicle movement, for which Rs.1.90 crore is kept in the estimate prepared based on normative costs.



Rail Connectivity:

Rail connectivity upto IWT Terminal exists. However, due to space constraints inside the terminal location, a full length rail rake could not be brought inside the terminal, which is mandatory for operational clearance to be given by Indian Railways. This issue can be resolved by IWAI in consultation with Railways. This aspect will be studied in detail while DPR for Pandu terminal is carried out in future. It is to mention that adequate traffic potential exist that warrant rail connectivity to this terminal, and hence rail connectivity is recommended.



Total Development Cost:

It is envisaged that a sum of Rs. 232 crores is required for the development of IWT Terminal at Pandu. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 210 crores
Road Connectivity	: Rs 2 crores
Terminal Development Cost	: Rs. 20 crores
Total Investment	: Rs. 232 Crores

4.4.3 TERMINAL AT TEZPUR

Tezpur is administrative headquarters of Sonitpur district, an ancient city on the banks of river Brahmaputra and the largest town on north bank with a population exceeding 100,000. It is located 190 km from Dispur (Guwahati) and is well connected by road transport. The region is also provided with an IWT terminal (Floating Jetty) and a steel crane pontoon. In the base year (2011-12), Tezpur region handled around 2.06 million tonnes comprising 0.08 million tonnes of originating and 1.2 million tonnes of terminating goods traffic, relevant for proposed IWT services. Out of this, 0.62 million tonnes comprising 0.27 million tonnes originating and 0.35 million tonnes terminating goods traffic is estimated to get diverted to IWT services.



Traffic:

Projected divertible traffic through at Tezpur Terminal

Tezpur Total Traffic (In million Tonnes)

Year	Org.	Termi.	Total
2011-12	0.85	1.30	2.15
2021-22	1.35	1.90	3.25
2031-32	3.11	3.68	6.79
Imp Com.	General Goods		

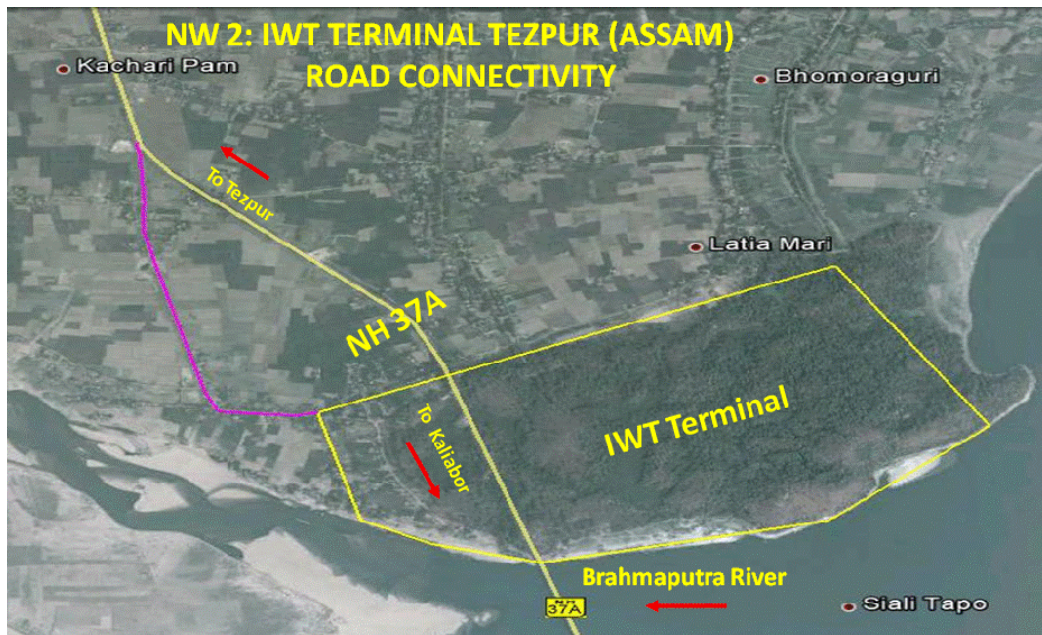
Road Connectivity:

Tezpur Terminal is well connected with the road by National Highway 37A which connects Assam with the states of Bihar, Jharkhand and West Bengal. The IWT terminal is at a distance of 1.50km from the NH 37A, with 3.50m wide. An additional land width of 16.50m is required for widening to cater two lane road. The type of land is forest land. Development cost of Rs.8.25 crore is kept in estimates for strengthening and widening the existing road.

Rail Connectivity:

The nearest railway station is at Tezpur and length of alignment tentatively proposed is worked out to 13.50km from the terminal location. As the alignment has to pass through city

limits and laying a new line through the city is not feasible apart from inadequate traffic to justify the same, rail connectivity is not considered for this terminal.



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	1.50	3.5/3.5	16.5	Forest land	8.25	0	8.25



Outside Connectivity: Not Feasible
 Inside - Rail Siding Facility: Not Feasible
 Traffic Demand: Inadequate
 Rail Connectivity Recommended: No

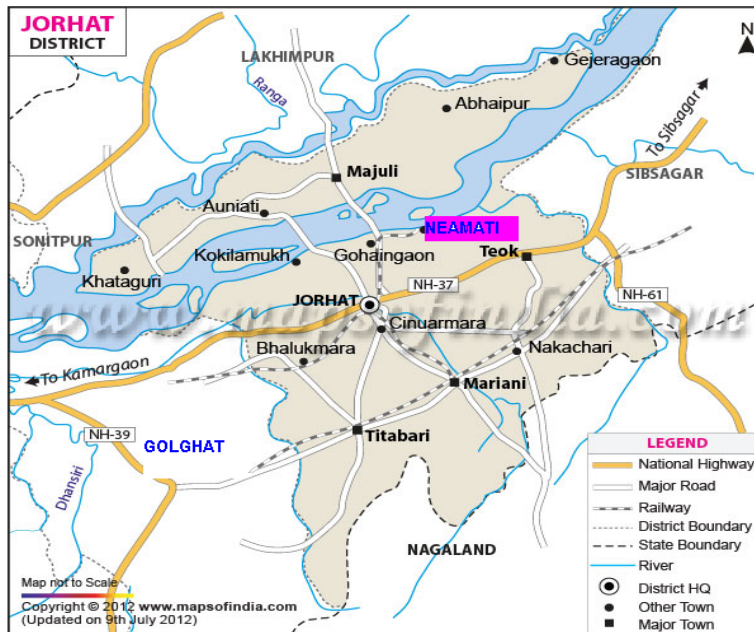
Total Development Cost:

It is envisaged that a sum of Rs. 299 crores is required for the development of IWT Terminal at Tezpur. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 225 crores
Road Connectivity	: Rs. 9 crores
Terminal Development Cost	: Rs. 65 crores
Total Investment	: Rs. 299 Crores

4.4.4 TERMINAL AT NEAMATI (JORHAT)

Jorhat is 4th most important city of Assam after Guwahati, Silchar and Dibrugarh. The city acts as a gateway to upper Assam and to the state of Nagaland. The city today has evolved to be one of the major commercial and business hubs of the state with growing numbers of shopping malls, restaurants, hotels, flats and educational institutions. Tezpur also serves as the base for tourism to famous places such as the Kaziranga National Park and the largest river Island Majuli. Jorhat is located on the bank of river Brahmaputra.



Jorhat is well connected with all major cities of North east India. The district falls under the North east Frontier Railway zone of the Indian Railways. It is also connected with air transport with rest of the country. The region is also provided with a Floating IWT terminal with a crane pontoon at Neamati to handle goods traffic.

In the base year, region handled around 2.57 million tonnes comprising 1.17 million tonnes of originating and 1.40 million tonnes of terminating traffic. Out of this traffic which is likely to get shifted to IWT services are 0.6 million tonnes comprising 0.28 million tonnes of originating and 0.32 million tonnes of terminating goods traffic.

Traffic:

Projected divertible traffic (in MT) through Neamati Terminal

Year	Org.	Termi.	Total
2011-12	0.96	1.85	2.81
2021-22	1.40	2.45	3.85
2031-32	2.45	5.60	8.05
Imp Com.	General Goods		

Road Connectivity: The Neamati Terminal location is connected with a 3.50m wide road to the nearest National Highway (NH-37) connecting Jorhat and Dibrugarh. An additional land width of 6.50m all along this 11km stretch is required to be acquired for widening to two lane road and for widening and strengthening this road a sum of Rs.56.05 crore is estimated. The development cost amounting to Rs.47.60 crore and the land acquisition cost of Rs.8.45 crore is considered on normative basis. The satellite imagery indicating the proposed road connectivity is indicated in the figure below:



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	11.0	3.5/3.5	6.5	Private	47.60	8.45	56.05

Rail Connectivity:

Rail connectivity to the terminal is not feasible considering the terrain as well as the area available in the terminal location. The traffic potential is also not adequate enough to provide a rail line. Hence, rail connectivity is not considered for this terminal location.

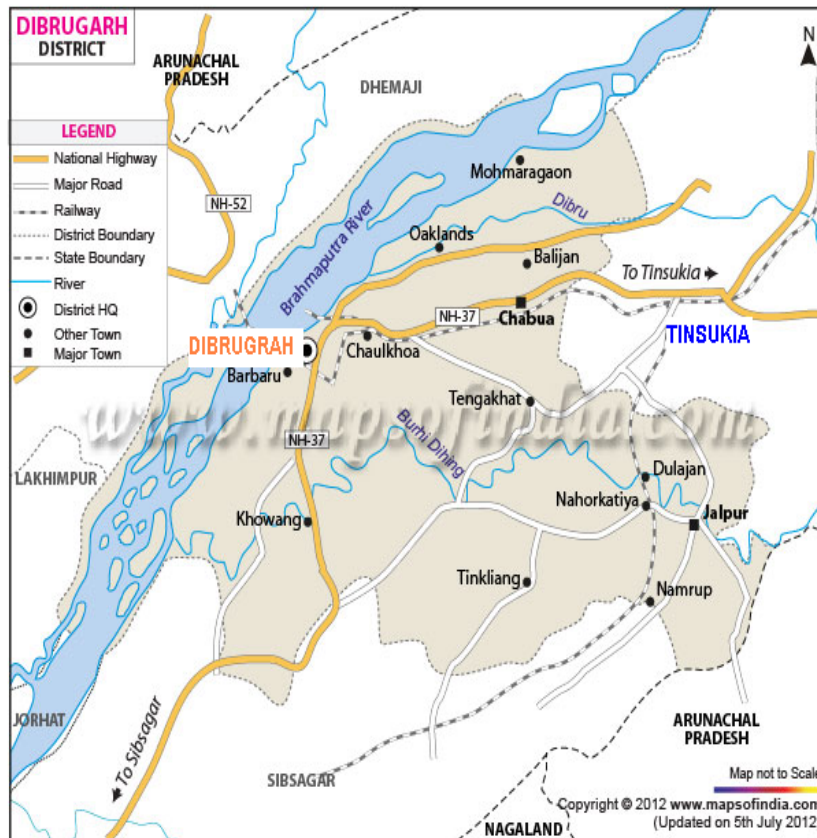
Total Development Cost:

It is envisaged that a sum of Rs. 331 crores is required for the development of IWT Terminal at Neamati. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 225 crores
Road Connectivity	: Rs. 56 crores
Terminal Development Cost	: Rs. 50 crores
Total Investment	: Rs. 331 crores

4.4.5 TERMINAL AT DIBRUGARH (SAIKHUAGHAT GHAT)

Dibrugarh Town Railway Station is one of the Eastern most railway station on the map of the Indian Railways through a direct broad gauge rail network. Dibrugarh has also developed waterway transportation system and has floating terminal with a steel pontoon.



In the base year Dibrugarh handled around 2.28 million tonnes of cargo comprising 1.18 million tonnes of originating and 1.09 million tonnes of terminating within the regions considered on NW2 of the current study. Out of this, divertible traffic to proposed IWT services is worked out to 0.55 million tonnes comprising 0.21 million tonnes of originating and 0.34 million tonnes of terminating.

Traffic:

Projected divertible traffic through at Dibrugarh Terminal

Dibrugarh Traffic (MT)

Year	Org.	Termi.	Total
2011-12	1.12	1.52	2.64
2021-22	2.20	2.10	4.30
2031-32	4.21	4.78	8.99
Imp Com.	Foodgrains, Fertilizer, Vegetables		

Road Connectivity: Dibrugarh is an important city of Assam, along with Guwahati, Jorhat, and Silchar. It is located on the eastern bank of river Brahmaputra. Dibrugarh is connected with road to rest of the country through NH 37. After completion of Bogibeel Bridge it will be connected to northern bank of the Brahmaputra by NH-52(B).

The present terminal location is 12.30km from NH-37 and presently connected with a 3.5m wide road. This 3.50m wide road needs to be widened to cater 2 lane road and existing road is to be strengthened. Private land on the sides of existing road is required to be acquired for this purpose. Land acquisition cost of Rs.11.81 crore and road developmental cost of Rs.57.80 crores totalling Rs.69.61 crores



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	12.3	3.5/3.5	6.5	Private	57.80	11.81	69.61

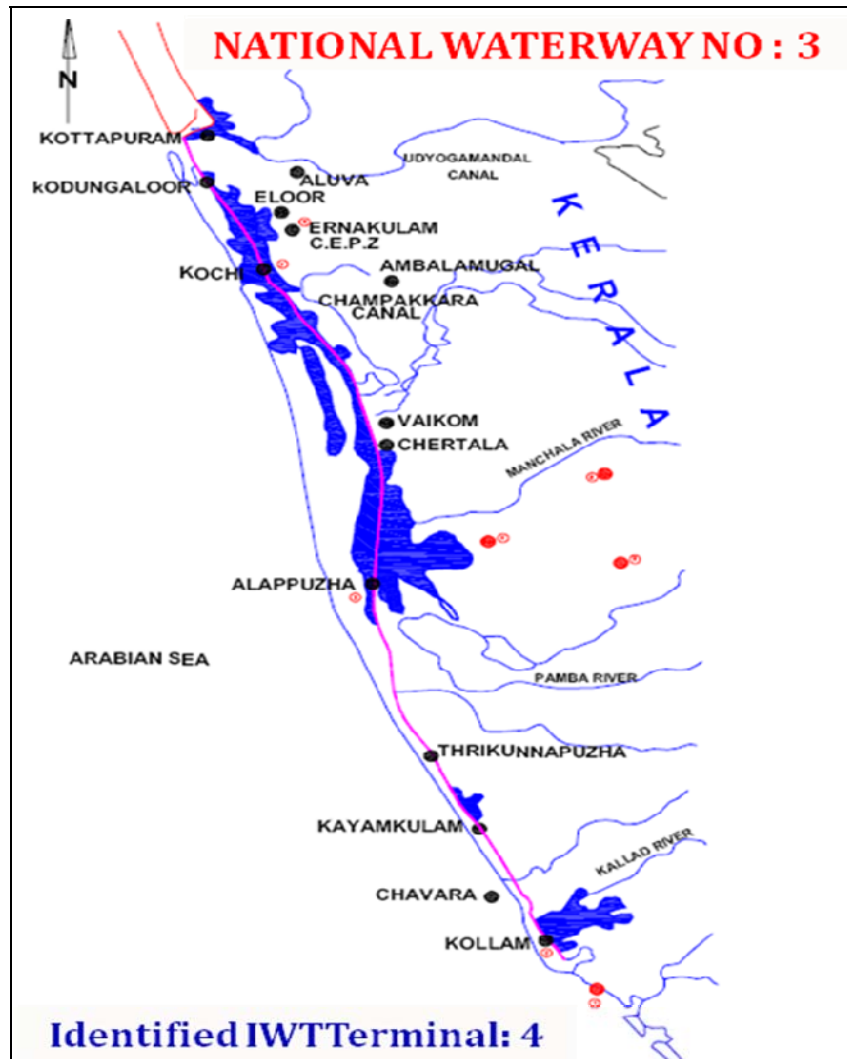
Rail Connectivity: The nearest railhead from the terminal location is Dikam Railway station at about 11km. As the entire stretch of alignment connecting the terminal to this station is passing through private land, land for rail connectivity is to be acquired for this corridor if connectivity is desired. However, based on the traffic estimates and the land availability along the alignment as well as inside the terminal location, it is decided that no rail connectivity is required for the terminal and hence not considered for rail connectivity.

Total Development Cost:

It is envisaged that a sum of Rs. 620 crores is required for the development of IWT Terminal at Dibrugarh. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 500 crores
Road Connectivity	: Rs. 70.0 crores
Terminal Development Cost	: Rs. 50 crores
Total Investment	: Rs. 620 Crores

4.5 CONNECTIVITY IN PROPOSED TERMINALS AT NATIONAL WATERWAY-3



The state of Kerala, with numerous backwaters, is one of the States in India, where waterways are successfully used for commercial Inland water transport. Inland Navigation was a principal mode of transportation in the region

The main arterial Waterway in the state is the West Coast Canal. The West Coast Canal connects the Neeleswaram in the North to Kovalam in the South and is about 590 km including the 47 Km. uncut portion from Vadakara to Azheekal. The Inland Canals play an important role in the economy of the State as they inter connect the rivers on the banks of which are situated places of commercial and industrial importance and also give a connection from interior places to the West Coast Canal system (WCC).

The West Coast Canal (WCC) can be broadly divided into four sections as below

1.	Neeleswaram to Kottapuram	348 Km.
2.	Kottapuram – Kollam (III)	168 Km.
3.	Kollam – Kovalam	74 Km.
	Total	590 Km

The canal portion from Thiruvananthapuram to Ponnani and then along Bharathapuzha River up to Shornur is known as Thiruvananthapuram - Shornur Canal (TS Canal). As part of a program for developing waterways by the Central Government, length of 168 Km. of Waterway from Kollam to Kottapuram of West Coast Canal including Udyogmandal and Champakara Canals was declared as National Waterway No. 3 with effect from 1993. The canals coming under National Waterway 3 are as follows.

Sl No	Route	Distance
1	Kottapuram-Kochi	33 Km.
2	Kochi- Alappuzha	62 Km.
3	Alappuzha – Kollam	73 Km.
4	Udyogmandal	23 Km
5	Champakara	14 Km.
	Total	205 Km

Government of Kerala has undertaken a programme to improve feeder canals, portion of the WCC which are not declared as National Waterway, modernization of jetties etc. with possible assistance from Government of India.

The following terminals proposed for development are falling under National Waterway-3.

National Waterway	SN.	Name of IWT Terminal	Nearest NH/SH	Nearest Railhead	Gauge
NW3	1	Kottapuram	NH – 17	Aluva	BG
NW3	2	Aluva	NH – 47C	Aluva	BG
NW3	3	Kollam	NH – 47/NH – 208	Kollam	BG
NW3	4	Alappuzha	SH – 40	Alappuzhac	BG

4.5.1 TERMINAL AT KOTTAPURAM

Kottapuram is a part of the Thrissur district in Kerala and at the southern most border of the Kodungallur municipality. Kottapuram has one of the biggest vegetable markets in Kerala. It is located close to the town of Kodungallur. The Kollam-Kottapuram National Waterway-3 ends at Kottapuram. It is built near to the Kottapuram Bridge. The economy of Kottapuram

diocese is mainly based on agriculture and fisheries. Power loom textile, tile, timber and coir are the major industries here.



Traffic:

Projected divertible traffic through at Kottapuram Terminal

Kottapuram Traffic (MT)

Year	Org.	Termi.	Total
2011-12	0.48	0.70	1.18
2021-22	0.56	0.78	1.34
2031-32	1.16	1.64	2.80
Imp Com.	Food Grains, General Goods		

Road Connectivity:

The road connecting the terminal is just 350m away from the existing National Highway 17 and the available road width is sufficient to cater two-way traffic. Only a provisional sum of Rs.1.4 crore is made in the estimates to strengthen the existing stretch to cater heavy vehicle movement on this small stretch. The key map indicating the location of terminal and connecting road is given below.

Rail Connectivity:

The nearest railway station is Aluva, which is around 25km from the terminal. As the stretch along the alignment is passing through densely populated area, and the traffic does not warrant rail connectivity, it is not recommended for rail connectivity to the terminal.



Legend	Length (Km)	Existing / Available Width (m)	Addl land width reqd (m)	Ownership of land	Develop ment Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	0.35	7/10	0		1.4	0	1.4

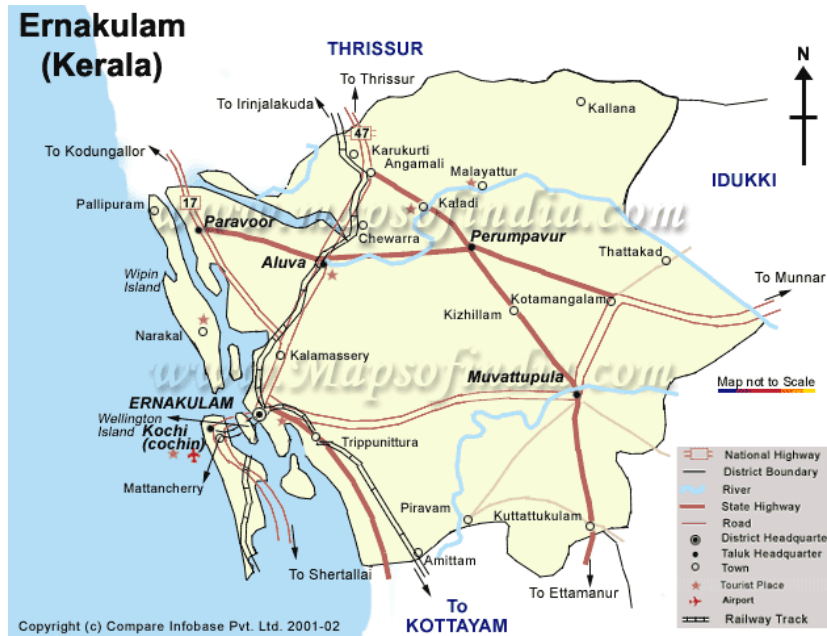
Total Development Cost:

It is envisaged that a sum of Rs. 37 crores is required for the development of IWT Terminal at Kottapuram. The breakup costs of investment required are detailed as follows:

- Waterway development : Rs. 25 crores
- Road Connectivity : Rs. 2.0 crores
- Terminal Development Cost : Rs. 10 crores
- Total Investment : Rs. 37 Crores**

4.5.2 TERMINAL AT ALUVA

Aluva is a suburb of Kochi in the Ernakulam district of Kerala, India. Located on the River Periyar, Aluva is the industrial epicenter of the state. A major transportation hub, with easy access to all major forms of transportation, Aluva acts as a corridor which links the highland districts to the rest of the state.



Traffic:

Projected divertible traffic through at Aluva Terminal

Aluva Traffic (MT)

Year	Org.	Termi.	Total
2011-12	1.15	1.23	2.38
2021-22	2.00	1.43	3.43
2031-32	6.10	2.07	8.17
Imp Com.	Food Grains, General Goods		

Road Connectivity: As seen in the satellite image below, the Aluva terminal is well connected with the NH-47C and is about 3.50km from the National Highways with two lane road connectivity. This existing road is sufficient to cater two-way traffic and a provision of Rs. 3.73 crore is kept for strengthening this stretch of road for heavy vehicle traffic.



Legend	Length (Km)	Existing / Available Width (m)	Add land width reqd (m)	Ownership of land	Development Cost (Cr)	Land cost (Cr)	Total Cost (Cr)
	0.23	7/10	Nil		0.23	0.0	0.23
	0.80	10/10	Nil		0.80	0.0	0.80
	2.70	10/10	Nil		2.70	0.0	2.70

Rail Connectivity:

Aluva Station is about 5.70k from the IWT terminal. As the hinterland is very small and the rail/ road connectivity surrounding the hinterland is good, it is found unviable to provide any rail link to this terminal. Further, the traffic anticipated in this terminal is also not justifying rail link. Moreover, the alignment, if connected, has to pass through congested city zone, which is not possible, and hence rail connectivity is not recommended.

Total Development Cost:

It is envisaged that a sum of Rs. 39crore is required for the development of IWT Terminal at Aluva. The breakup costs of investment required are detailed as follows:

Waterway development	: Rs. 25.0 crores
Road Connectivity	: Rs. 4.0 crores
Terminal Development Cost	: Rs. 10 crores
Total Investment	: Rs. 39.0 Crores

4.5.3 TERMINAL AT KOLLAM

Kollam district is located on the southwest is the capital of Kerala's cashew industry. It covers 2,492 sq km, is the seventh-largest district in Kerala and is densely populated. Two major rivers namely the Kallada and the Ithikkara passes through Kollam. Ashtamudi Lake and Paravur Kayal are two important lakes in the district. Ashtamudi Lake covers 30 percent of