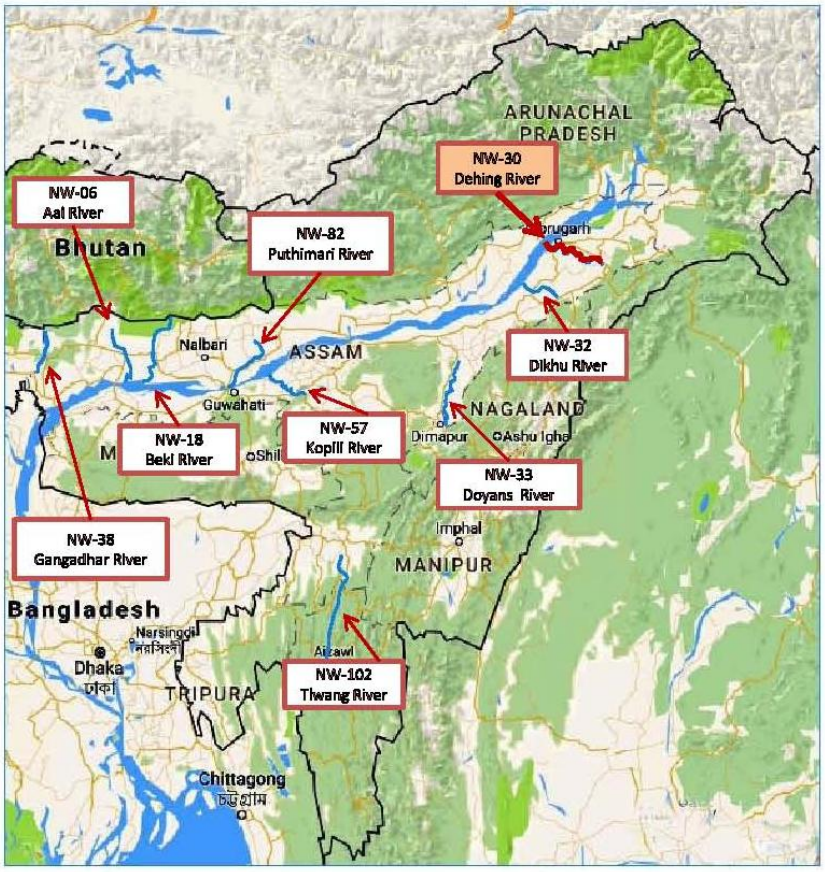
INLAND WATERWAYS AUTHORITY OF INDIA, A-13, SECTOR-1, NOIDA DIST-GAUTAM BUDHA NAGAR, UTTAR PRADESH, PIN- 201 301(UP)

“ FINAL FEASIBILITY REPORT ON HYDROGRAPHIC SURVEY

DEHING RIVER (NW-30) (109.136 km)

FROM “CONFLUENCE OF DEHING AND BRAHMAPUTRA RIVER NEAR VILLAGE LACHAN TO RAIL BRIDGE AT MERBIL MAJULI”

Survey Period from 08.11.2015 to 30.11.2015



FINAL REPORT ON HYDROGRAPHICAL SURVEY OF DEHING RIVER, ASSAM

REPORT SUBMISSION DATE-05.11.2018

SUBMITTED BY:

PRECISION SURVEY CONSULTANCY

“Vichitra” SP -45, (Kolkata West International City)
Salap Junction, Howrah Amta Road &
Bombay Road Crossing,
NH- 6, Howrah – 711 403
e-mail – info@precisionsurvey.co.in
Visit us –www.precisionsurvey.co.in

Acknowledgement

Precision Survey Consultancy (PSC), Salap, Howrah express its sincere gratitude to **IWAI** for awarding the work and guidance for completing this Project of detailed Hydrographic Survey and the Feasibility Report in **Region-II (Dehing River) from Confluence of Dehing and Brahmaputra River near village Lachen to Rail Bridge at Merbil Majuli (109.136 Kms)**.

We would like to use this opportunity to pen down our profound gratitude and appreciations to **Ms. Nutan Guha Biswas, IAS, Chairperson, IWAI** for spending their valuable time and guidance for compleing this project of " Detailed Hydrography and Topography survey in Dehing River." PSC would also like to thanks **Shri Pravir Pandey, Vice Chairman, IA&AS., Shri Alok Ranjan, Member (Finance) and Shri S.K.Gangwar, Member (Technical).**

PSC wishes to express their gratitude to **Cdr. Ashish Arya, Hydrographic Chief, IWAI, Cdr. P.K. Srivastava, Ex. Hydrographic Chief, Shri S.V.K. Reddy, Chief Engineer-I, IWAI** for his guidance and inspiration for this project. PSC would also like to thank **Shri Rajiv Singhal, A.H.S., IWAI** for invaluable support and suggestions provided throughout the survey period. PSC is pleased to place on record our sincere thanks to other staff and officers of **IWAI** for their excellent support and co-operation throughout the survey period.

List of Abbreviations

CD	Chart Datum
DGPS	Differential Global Positioning Systems
ETS	Electronic Total Station
GPS	Global Positioning Systems
LBM	Local Bench Mark
MSL	Mean Sea Level
RL	Reference Level
SD	Sounding Datum
SBAS	Satellite-Based Augmentation System
TBC	Trimble Business Centre
FRP	Fiber Reinforced Plastic

Table 1 List of Abbreviations

Table of Contents

Lists of Figure

List of Table

Salient Features of Dehing River

Sl.	*Particulars*	*Details*
1.	Name of Consultant	Precision Survey consultancy
2.	Region number & State (s)	Region II, Assam
3.	a) Waterway name b) NW # c) Total Stretch and length of declared NW (from…. To….; total length d) Survey Period (… to …)	a) Dehing River b) NW-30 c) Confluence of Dehing and Brahmaputra River near village Lachen to Rail Bridge at Merbil Majuli No.1 (109.136 km). d) 08th November to 30th November, 2015
4.	Tidal & non tidal portions (from… to, length, average tidal variation)	There are no Tidal influence or portions found in this zone of River.
5.	LAD (Least available depth) status i) <1.2 m ii) 1.2 m to 1.4 m iii) 1.5 m to 1.7 m iv)1.8 m to 2.0 m v) >2.0 m ii) <1.2 m ii) 1.2 m to 1.4 m iii) 1.5 m to 1.7 m iv)1.8 m to 2.0 m v) >2.0 m	**Observed Depth**

Sub Stretch- 1 (0.00-10.00 km)	Sub Stretch- 2 (10.00-20.00 km)	Sub Stretch- 3 (20.00 – 30.00 km)	Sub Stretch- 4 (30.00-40.00 km)
3.0	3.0	4.75	4.75
0.8	0.8	1.75	1.75
1.0	1.0	1.5	1.5
1.5	1.5	0.85	0.85
3.7	3.7	1.15	1.15
Total-10.0	Total-10.0	Total- 10.0	Total- 10.0

Sub Stretch-5 (40.00-50.00 km)	Sub Stretch-6 (50.00-60.00 km)	Sub Stretch-7 (60.00 – 70.00 km)	Sub Stretch-8 (70.00-80.00 km)
6.0	6.0	5.0	5.0
1.25	1.25	2.1	2.1
1.35	1.35	0.6	0.6
0.65	0.65	0.4	0.4
0.75	0.75	1.9	1.9
Total-10.0	Total-10.0	Total- 10.0	Total- 10.0

i) <1.2 m
ii) 1.2 m to 1.4 m
iii) 1.5 m to 1.7 m
iv)1.8 m to 2.0 m
v) >2.0 m

Sub Stretch-9 (80.00-90.00 km)	Sub Stretch-10 (90.00-100.00 km)	Sub Stretch-11 (100.00 – 109.136 km)	Total
6.4	6.4	4.5	54.8
1.1	1.1	0.123	14.123
0.5	0.5	1.2	11.1
0.5	0.5	0.776	8.576
1.5	1.5	2.537	20.537
Total-10.0	Total-10.0	Total- 9.136	Total- 109.136

Reduced Depth

LAD (Least available depth) status
i) <1.2 m
ii) 1.2 m to 1.4 m
iii) 1.5 m to 1.7 m
iv)1.8 m to 2.0 m
v) >2.0 m

Sub Stretch-1 (0.00-10.00 km)	Sub Stretch-2 (10.00-20.00 km)	Sub Stretch-3 (20.00 – 30.00 km)	Sub Stretch-4 (30.00-40.00 km)
2.5	2.5	3.75	3.75
0.5	0.5	1.5	1.5
0.9	0.9	1.7	1.7
1.4	1.4	0.5	0.5
4.7	4.7	2.55	2.55
Total-10.0	Total-10.0	Total- 10.0	Total- 10.0

i) <1.2 m
ii) 1.2 m to 1.4 m
iii) 1.5 m to 1.7 m
iv)1.8 m to 2.0 m
v) >2.0 m

Sub Stretch-5 (40.00-50.00 km)	Sub Stretch-6 (50.00-60.00 km)	Sub Stretch-7 (60.00 – 70.00 km)	Sub Stretch-8 (70.00-80.00 km)
5.0	5.0	4.2	4.2
1.2	1.2	1.5	1.5
1.0	1.0	0.5	0.5
0.5	0.5	0.3	0.3
2.3	2.3	3.5	3.5
Total-10.0	Total-10.0	Total- 10.0	Total- 10.0

i) <1.2 m
ii) 1.2 m to 1.4 m
iii) 1.5 m to 1.7 m
iv)1.8 m to 2.0 m
v) >2.0 m

Sub Stretch-1 (80.00-90.00 km)	Sub Stretch-2 (90.00-100.00 km)	Sub Stretch-3 (100.00 – 109.136 km	Total
5.2	5.2	4.0	45.3
0.6	0.6	1.2	11.8
0.4	0.4	1.5	10.5
0.3	0.3	1.0	7.0
3.5	3.5	1.436	34.536
Total-10.0	Total-10.0	Total- 9.136	Total- 109.136

6. Cross structures

i) Dams, weirs, barrages etc
(total number; with navigation locks or not)
ii) Bridges, Power cables etc
[total number; range of horizontal and vertical clearances]

i) No Dams, weirs or Barrages are found in this zone of River.

ii) Total number of RCC Bridges – 3 (Three), Rail Bridge- 2 (Two)
iii) Total number of Steel Bridge- 1 (one)

Clearance w.r.t H.F.L	Min (m)	Max (m)
Horizontal Clearance (m)	29.760	46.550
Vertical Clearance w.r.t. H.F.L (m)	2.179	3.917

iv) Total number of Electric lines-2 (Two)

Clearance w.r.t H.F.L	Min (m)	Max (m)
Horizontal Clearance (m)	262.85	270.59
Vertical Clearance w.r.t. H.F.L (m)	3.273	4.890

7. Slope

Reach		River / Canal Bed Level Change (m)	Distance (km)	Slope (m/km)	Slope (cm/km)
From	To				
0.00 km	5.022	0.553	5.022	0.110	11.01
5.023	16.221	1.234	11.198	0.110	11.02
16.222	25.174	0.986	8.952	0.110	11.01
25.175	34.618	1.041	9.443	0.110	11.02
34.619	41.531	0.761	6.912	0.110	11.01
41.532	57.575	3.994	16.043	0.249	24.90
57.576	72.536	3.735	14.96	0.250	24.97
72.537	82.681	2.532	10.144	0.250	24.96
82.682	87.915	1.307	5.233	0.250	24.98
87.916	96.509	2.145	8.593	0.250	24.96
96.510	102.478	1.490	5.968	0.250	24.97
102.479	108.693	1.552	6.214	0.250	24.98
Total			108.682	Avg.-0.191	Avg.-19.149

8. Discharge Report

Sl. No	Chainage (km)	Discharge (Cu.m/sec)	
1	16.299	156.357	**Dated 8.11.15 to 30.11.15**
2	41.297	71.393	
3	57.698	56.783	
4	72.390	90.016	
Avg. Discharge		93.637	

9.	i) Present IWT operations ii) Ferry services, tourism, cargo, if any	i) As follows ii) There are ten numbers of passenger ferry services Ramchandrapucan Ghat, GolaGhat, Vogamo Ghat, Romai Ghat, Tikirabali Ghat, Pandua Ghat etc available in this zone of river. The cargo (light goods, vegetables etc.) is available lightly in this zone of river.
10.	Approx Distance of Rail & Road from Industry	Nearest Railway station- i) Khowang Railway Station near at Kutuha Kachari Village. ii) Naharkatia Railway Station near at Naharkatia Village. Details of NH- 52B, NH-37, NH- 38, NH-315 A Details of SH- 23, SH-24, SH-26, SH-2
11.	Any other information/comment	

1. - Section-I Introductory Considerations:-

1.1-River Course: Background information, Historical Information, Origin, End:-

Dehing River, which is also known as 'Burhi Dihing River', is a largetributary, about 380 kilometres of the Brahmaputra River in Upper Assam in northeastern India. The river originates at 2,375 metres above sea level in the Eastern Himalayas in Arunachal Pradesh and flows through Tinsukia and Dibrugarh Districts in Assam to its confluence with the Brahmaputra at Dehingmukh. Its watershed covers about 6,000 square kilometers. The Dehing has created number of oxbow lakes in the area.

The Joy-Dehing Rainforest, numerous petroleum fields, wet-paddy fields, bamboo orchards and tea gardens provide a unique landscape along its course. Dehing is the one of the most important contributors to the Brahmaputra River. The plains of the Dehing Valley, has a rich variety of flora and fauna. The Betel nuts have been produced most in the areas of the Dehing Plains.The plains of theDehing Valley have a rich variety of flora and fauna, located on the bank of beautiful Dehing River that originates from a glacier in Nemaha Tiger Reserve and finally rolls down to Brahmaputra, which is nice and quaint river-side lodge with interesting thatched Bamboo huts in a lush Assamese countryside. Apart from watching birds in nearby Jokai Reserve Forest, one can soak into the traditional rural life in Assamese village, taste local food, visit Silk farms, take part in their cultural activities and enjoy fishing.

Figure 1- Dehing River Map

1.2-Tributaries / Network of River/ Basin:-

The Three streams create a river basin in this zone of river-

i) Dikhow

ii) Dehing

iii) Doyans

1.3-State / District through which river passes:-

The River passes through in Arunachal Pradesh and flows through Tinsukia and Dibrugarh Districts in Assam.

1.4-Project Site Location Map:-

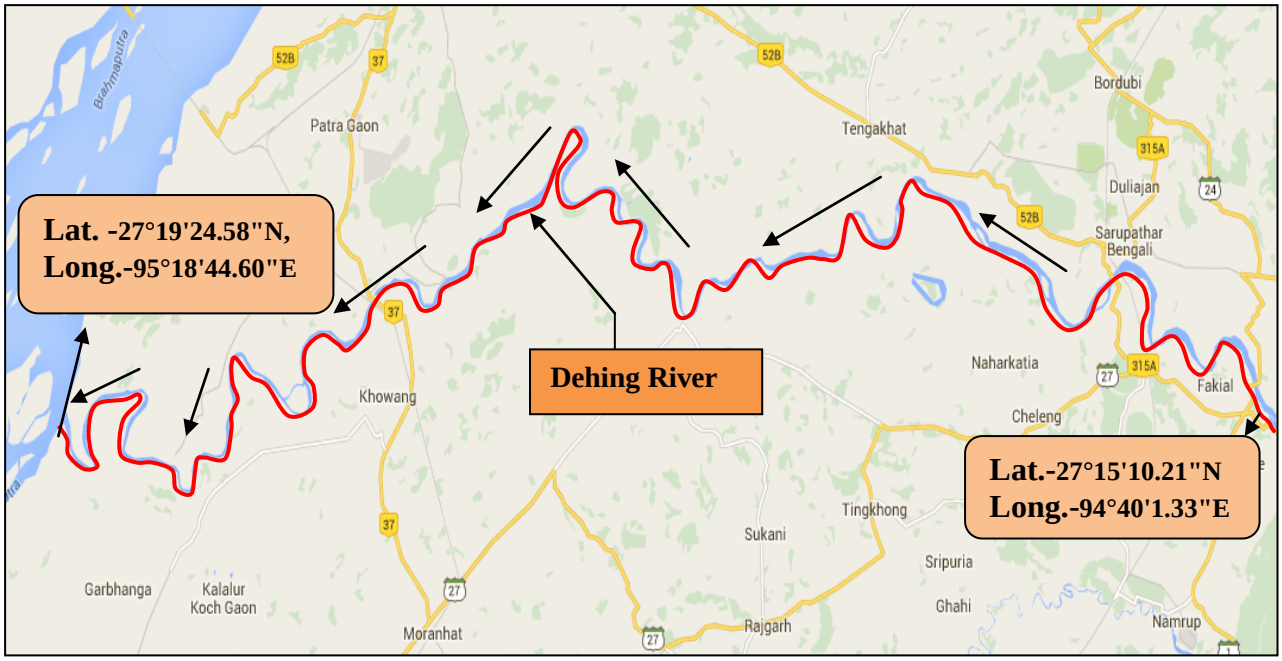


Figure 2- Project Site Location Map

1.5 River Key Map

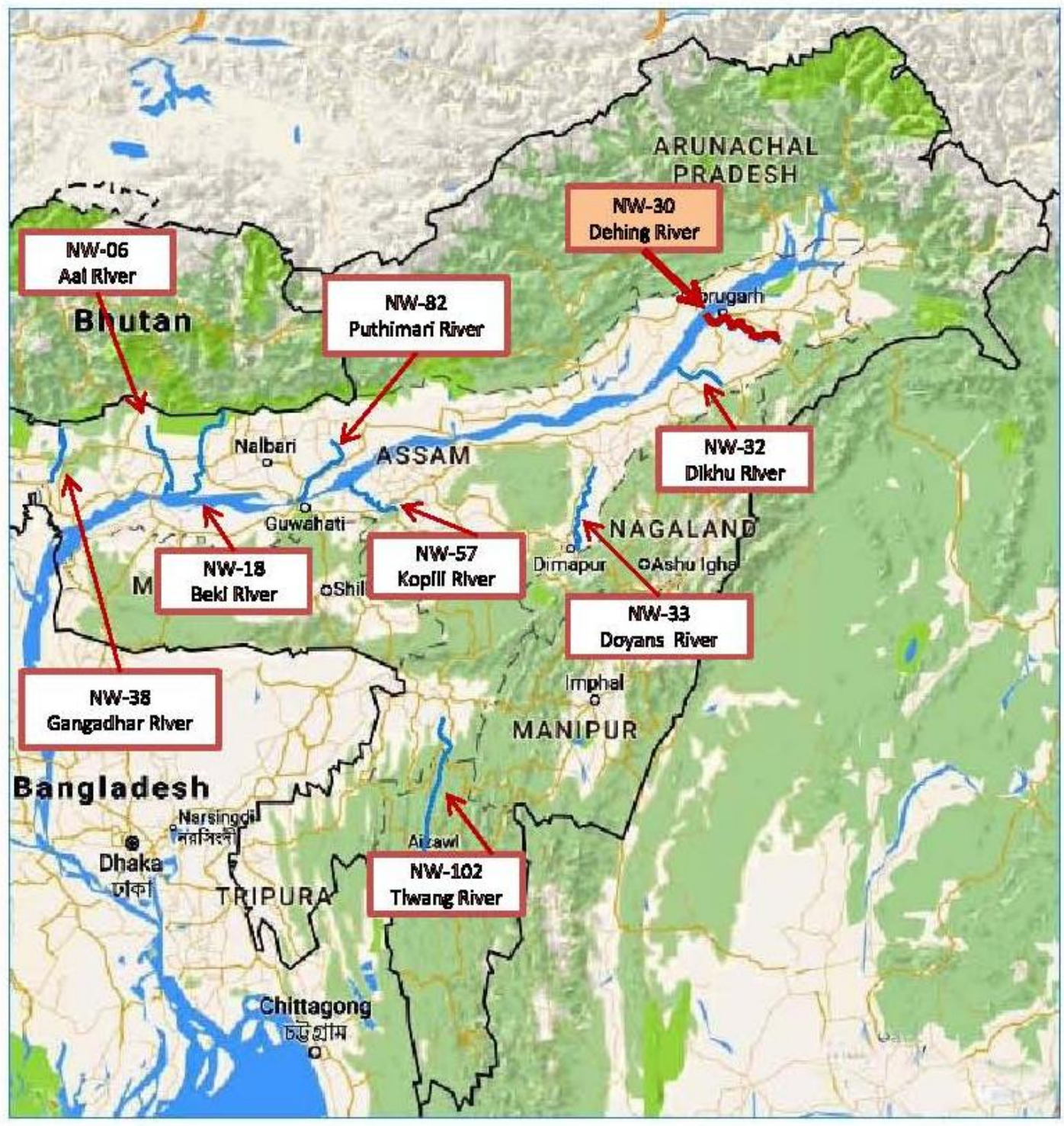


Figure 3- River Key Map

1.6-Scope of work:-

The Scope of work shall cover all technical aspects of hydrographic survey at par with International Standards including the following for development of the river/canal for inland navigation.

The detailed hydrographic survey is to be carried out by using Automated Hydrographic Survey System (using digital Echo sounder for depth measurement, DGPS Beacons Receivers for position fixing and Hypackmax or equivalent software for data logging). The survey is to be conducted in WGS"84 datum.

- Detailed Hydrographic Survey to assess the navigability of the waterway.
- To collect Water and bottom samples, current meter observation and discharge from the deepest route at every 10 km interval.
- To identify cross structures which are obstructing navigation.
- To identify the length of bank protection required.
- The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm.
- The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar.
- The main objective of the Study was to recommend the strategy and programs for the development of the Dehing River waterway and to provide an appropriate economic and organizational framework for restoring trade and navigation (cargo and passengers) on the Dehing with an aim to do as follows:
- Improve public and private investments into transport on the Dehing River, in accordance with adequate economic and financial analysis;
- Propose enhancement of coordination of activities regarding inland navigation and to set up priorities of public interests;
- Obtain an integrated approach considering water management, energy production, flood control and environmental aspects in the Dehing River basin and Propose improvement of the infrastructure.

Section-2: Methodology Adopted to undertake Study

2.1-Methodology Adopted including Resources and equipment used and calibration:-

Following equipments are employed for the Topographic and Bathymetric survey tabulated below:-

Equipment	Make	Version	Qty Employed
Echo sounder	Bathy MF 500	……	1
Current Meter	AEM 213-D	……	1
Tide Gauge	Manual (Pole type)	-	4
RTK	South S86T		3
GPS Sets	Trimble –Becon Rover SPS 361		1
Software	HYPACK data acquisition	Version 14	1
Software	AUTOCAD	2013	1
Software	Microsoft Office	2013	1

Table 2- Equipments

- **Conduct of survey work**

  - **Topographic Survey:-**

    - Detailed Topography survey has been carried out from "Confluence of Dehing and Brahmaputra River near village Lachan at (**Lat 27°15'10.21"N, 94°40'1.33"E**) to Rail Bridge at Merbil Majuli No.1 (**Lat 27°19'24.58"N, Long 95°18'44.60"E**)." The Length of the topography survey is from Chainage 0.00 km to Chainage 109.136 km.

The Topographic survey was conducted to ascertain following in the survey area:-

- Spot levels
- High bank Line
- Vegetation covered
- Bridges and permanent structures
- Road, culvert and other communication network

GPS RTK (Real Time Kinematic) satellite navigation is a technique used in land survey and in hydrographic survey based on the use of carrier phase measurements of the GPS, GLONASS and / or Galileo signals where a single reference station provides the real-time corrections, providing up to centimeter-level accuracy. When referring to GPS in particular, the system is also commonly referred to as Carrier-Phase Enhancement, CPGPS. RTK systems use a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier that it measured, and the mobile units compare their own phase measurements with the ones received from the base station. There are several ways to transmit a correction signal from base station to mobile station. The most popular way to achieve real-time, low-cost signal transmission is to use a radio modem, typically in the UHF band. This allows the units to calculate their relative position to millimeters, although their absolute position is accurate only to the same accuracy as the position of the base station.

Bathymetry Survey:-

The Length of the topography survey is from Chainage 0.00 km to Chainage 96.752 km.

Bathy 500 MF was used to obtain soundings onboard the survey boat. A working frequency of 210 KHz was used for sounding operations. The digital output from the echo sounder was automatically fed to the HYPACK data logging software on a real-time basis for the acquisition of survey data. No breakdown of equipment was reported and the performance of the equipment was found to be satisfactory during the entire duration of the survey.

The sound velocity was set to 1400 m/s on single beam echo sounder during acquisition. The Daily bar checks were done prior to the sounding operation and before the closing of the sounding operation for the day. Being very shallow depths, the echo sounder depths were also cross-checked in between by using demarcated sounding poles during the conduct of the survey. The sounding lines were run using Survey boat to identify the design line of the Dehing River for the possible stretch. The cross lines were run perpendicular to the orientation of river flow (i.e. perpendicular to the orientation of depth contours) in respective stretches. The spot sounding was also carried out in the area where the survey boat cannot be operated due to low depth. The hemisphere DGPS and Sounding Pole were used for Spot sounding at shallow locations in the Dehing River. The DGPS position along with water depths was recorded simultaneously and the tidal reduction was applied to the obtained depths.

Figure 4- Bathymetry survey work

2.2-Description of Bench Marks (B.M) / authentic Reference Level used:-

For Topographic Survey, The Horizontal control has been carried out from the CWC Gauge Level; Bench mark no. - BM-5 which is located near at the RCC Bridge at Kutuha Kachari Village. The value of BM-5 near at RCC Bridge is –

Location Name	Geographic position		UTM position		Elevation (m)
	Latitude (N)	Longitude (E)	Northing	Easting	
Kutuha Kachari Village	27°18'38.64"	94°53'1.87"	3022258.96	686409.92	107.940 w.r.t. MSL

Figure 5- C.W.C Gauge of Dehing River

2.3-Tidal Influence Zone and tidal variation in different stretches:-

There are no Tidal influences or Tidal variation found in this zone of river.

2.4-Methodology to fix Chart Datum / Sounding Datums in Tidal and Non-Tidal area:-

IWAI had provided Sounding Datum at Naharkatia, Chenimari and at confluence with Brahmaputra River. The same was used to arrive the Sounding Datum values at BM Pillars and at tide gauges by interpolation method.

Sl. no	Place	Sounding Datum w.r.t MSL (Provided by IWAI)
1	Naharkatia (Chainage-108.739 km)	114.045 meter
2	Chenimari (Chainage- 41.610 km)	97.288 meter
3	Brahmaputra Confluence (Chainage- 0.00 km)	92.704 meter

2.5-SixYears minimum and maximum Water Levels:-

The CD levels of Dehing River are-

The CD level of Naharkatia at Dehing River is -114.045 meter

The CD level of Chenimari at Dehing River is - 97.288 meter

The CD level of Confluence point is - 92.704 meter

2.6- Salient Features of Dam, Barrages, Weirs, Anicut, Locks, and Aqueducts etc.:-

There are no Dam, Barrages, weirs, Anicut, Locks and Aqueducts Found in this zone of river.

2.7-Description of erected Bench mark pillar:-

BM No	Location	Chainage (Km)	Latitude (N)	Longitude (E)	Easting	Northing	BM Height above MSL (m)	BM Height above SD (m)
BM 1	Dehing Calghar	5.022	27°15'22.30"	94°42'23.07"	668931.032	3015964.306	98.635	1.332
BM 2	Lai Bill	16.221	27°15'15.05"	94°44'22.54"	672220.62	3015786.171	99.298	14.727
BM 3	Banhbari Gaon	25.174	27°15'23.49"	94°47'30.93"	677398.928	3016119.903	101.695	10.762
BM 4	Sonowal	34.618	27°16'50.29"	94°50'30.30"	682292.559	3018862.243	102.975	8.004
BM 5	Kutuha kachari	41.531	27°18'38.64"	94°53'1.87"	686410.133	3022259.884	107.940	6.676
BM 6	Tikirabali	82.680	27°19'59.33"	95° 7'4.77"	709542.092	3025114.805	112.947	19.686
BM 7	Kamakhya	57.575	27°22'34.80"	94°59'26.81"	696877.209	3029692.714	108.845	14.354
BM 8	Hologuri	72.536	27°19'46.01"	95° 2'53.81"	702650.655	3024589.371	110.830	16.313
BM 9	Chirika Beel	87.914	27°20'53.06"	95° 9'37.80"	713720.466	3026840.185	114.395	17.14
BM 10	Chirika Beel	96.508	27°21'7.77"	95°13'7.44"	719474.915	3027394.438	119.875	19.326
BM 11	Pandhua	102.477	27°19'25.38"	95°16'10.65"	724567.413	3024333.338	118.663	6.181
BM 12	Merbil Majuli	108.693	27°19'10.57"	95°18'39.28"	728662.928	3023952.533	120.835	6.801

Table 3- Bench Mark Details

2.8 Details of collected Water level of different gauge stations:-

Chainage (km)	Gauge station	Location	Easting	Northing	Latitude (N)	Longitude (E)	WL (m)	Period of Observations
41.670	GS- (TP)-1	Aliachuk	686119.951	3021962.995	27°18'29.14"	94°52'51.13"	98.157	24 Hrs
108.657	GS-(TP)-2	Mohmari	727242.190	3022543.665	27°18'25.66"	95°17'46.71"	115.153	24 Hrs
102.377	GS-(TP)-3	Amguri Nepali	722970.154	3025012.079	27°19'48.37"	95°15'13.02"	113.305	24 Hrs
96.458	GS-(TP)-4	Chowdang	718097.562	3027719.408	27°21'19.12"	95°12'17.56"	111.224	24 Hrs
57.538	GS-(TP)-5	Hanchara Pathar	696911.518	3028793.974	27°22'5.58"	94°59'27.53"	102.061	24 Hrs
5.058	GS-(TP)-6	Dehing kalghar	669069.455	3015800.184	27°15'16.91"	94°42'28.01"	93.997	24 Hrs
16.221	GS-(TP)-7	Lai bill	672241.670	3016105.285	27°15'25.40"	94°44'23.47"	94.541	24 Hrs
16.460	GS-(TP)-8	Lai Bill	672110.426	3015641.928	27°15'10.39"	94°44'18.47"	94.511	24 Hrs
41.307	GS-(TP)-9	Nibuk Gaon	685977.160	3021645.079	27°18'18.91"	94°52'45.79"	98.075	24 Hrs
54.672	GS-(TP)-10	Borbill Gaon	694967.953	3026552.371	27°20'53.80"	94°58'15.51"	100.711	24 Hrs

Table 4-Details water level at different Gauge

2.9-Chart Datum / Sounding Datum and Reductions details:-

Sl no	CWC gauge / Dam / Barrage / Weir / Anicut / Bench Mark / tide gauges	Chainage (km)	Stretch for corrected soundings and topo levels (km)	Established Sounding Datum w.r.t. MSL (m) at col. A.	Sounding Datum of Tide Gauge w.r.t. MSL (m)	Correction in WL data for Bathymetric survey (m)	Topo level data to be converted as depth for volume calculation w.r.t. SD (m)
	A	B	C (50% stretch is to be selected on both side of tide gauge)	D +ve indicates above MSL -ve indicates below MSL	E	F = (E- WL data in MSL)	G = ((E- topo levels in MSL)
1	Naharkatia	108.739		114.045	114.045		Topo Reduced Data of Dehing River
2	GS-(TP)- 2	108.657	105.5-109.143		114.025	-1.128	Submitted in soft copy
3	GS-(TP)- 3	102.377	99.4-105.5		112.457	-0.848	
4	GS-(TP)- 4	96.458	77.0-99.4		110.979	-0.245	
5	GS-(TP)- 5	57.538	56.1-77.0		101.264	-0.797	
6	GS-(TP)- 10	54.672	48.2-56.1		100.549	-0.162	
7	GS-(TP)- 1	41.670	41.5-48.2		97.303	-0.854	
8	Chenimari	41.610		97.288	97.288		
9	GS-(TP)- 9	41.307	28.9-41.5		97.255	-0.820	
10	GS-(TP)- 8	16.460	16.3-28.9		94.517	0.006	
11	GS-(TP)- 7	16.221	10.6-16.3		94.491	-0.050	
12	GS-(TP)- 6	5.058	0.0-10.6		93.261	-0.736	
13	Confluence	0		92.704	92.704		

Table 5 - Chart Datum/Sounding Datum and Reduction Details

2.10-High Flood Level (H.F.L) at known Gauge Stations:-

Sl no	Location and description of CWC gauge / Dam / Barrages / Weirs / Anicut / Locks / Aqueducts / BM	Cross-structure details	Chainage (km)	Established HFL / MHWS / FSL / MWL / FRL w.r.t. MSL (m)	Computed HFL at Cross-Structures w.r.t. MSL (m)
1	Naharkatia	RCC Bridge	108.739	122.690	
2	Chenimari	RCC Bridge	41.610	104.160	
3	Confluence of Brahmaputra		0.00		

Table 6- H.F.L Details

2.11- Graph: Sounding Datum and HFL vs. Chainage:-

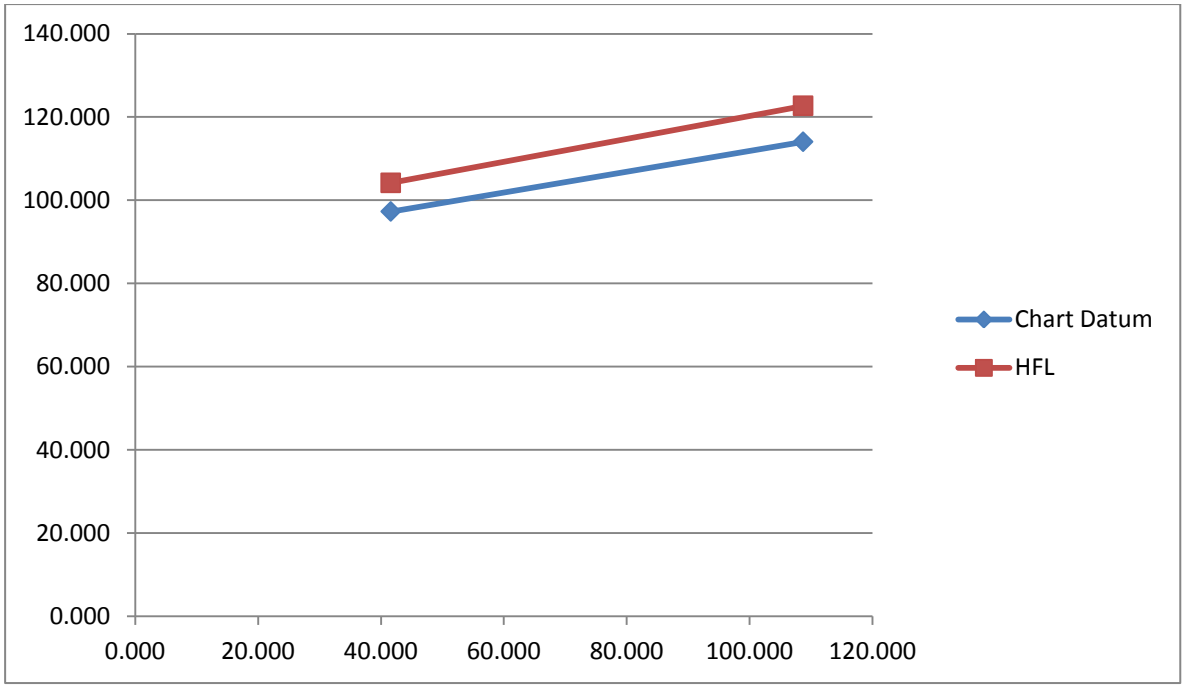


Table 7 Graph

2.12-Average Bed Slope:-

Reach		River / Canal Bed Level Change (m)	Distance (km)	Slope (m/km)	Slope (cm/km)
From	To				
0.00 km	5.022	0.553	5.022	0.110	11.01
5.023	16.221	1.234	11.198	0.110	11.02
16.222	25.174	0.986	8.952	0.110	11.01
25.175	34.618	1.041	9.443	0.110	11.02
34.619	41.531	0.761	6.912	0.110	11.01
41.532	57.575	3.994	16.043	0.249	24.90
57.576	72.536	3.735	14.96	0.250	24.97
72.537	82.681	2.532	10.144	0.250	24.96
82.682	87.915	1.307	5.233	0.250	24.98
87.916	96.509	2.145	8.593	0.250	24.96
96.510	102.478	1.490	5.968	0.250	24.97
102.479	108.693	1.552	6.214	0.250	24.98
Total			108.682	Avg.-0.191	Avg.-19.14

Table 8-Average Bed Slope

2.13 Details of Dam, Barrages, Weirs, Anicut, etc. w.r.t. MSL:-

There are no Dams, Barrages, weirs, Anicut found in this zone of River.

2.14 Details of Locks:-

There are no locks found in this zone of river.

2.15 Details of Aqueducts:-

There are no aqueducts found in this zone of River.

2.16 - Details of existing Bridges and Crossings over waterway:-

There are two Rail Bridges, one steel Bridge, three RCC Bridges are situated in this zone of river. The details of the Bridges are tabulated below:-

Sl. No	Structure Name	Chainage (km)	Location	Position		Position		Length (m)	Width (m)	Nos of Piers	Horizontal Clearance (m)	Vertical Clearance w.r.t H.F.L (m)
				Latitude (N)	Longitude (E)	Easting	Northing					
1	Rail Bridge	41.480	Kutuhakachari Village	27°18'40.12"	94°52'53.71"	686185.097	3022301.378	288.20	6.30	5	46.181	2.635
2	RCC Bridge	41.610	Kutuhakachari Village	27°18'43.85"	94°52'56.25"	686253.602	3022417.251	236.30	8.18	5	37.724	3.739
3	RCC Bridge	54.586	Kowar Kharoni village	27°21'14.47"	94°58'39.71"	695622.247	3027199.447	504.20	8.50	10	44.930	2.179
4	Steel Bridge	102.625	Chirika Beel village	27°19'23.31"	95°16'12.35"	724615.450	3024270.828	661.6	3.13	11	46.550	3.917
5	RCC Bridge	108.730	Merbil Majuli village	27°19'17.82"	95°18'32.52"	728472.579	3024172.214	273.93	8.25	8	29.760	2.435
6	Rail Bridge	109.136	Mohmara Village	27°19'24.96"	95°18'45.18"	728816.270	3024398.185	339.90	5.89	6	45.480	2.425

Table 9 Bridge Details

2.17- Details of Other Cross structures, pipe-lines and underwater cables:-

No other cross structures like Bamboo Bridge, wooden Bridge or underwater cables are found near the bank side of the River.

2.18-High Tension Lines / Electric Lines:-

There is an electrical line and one H.T.line is located in this zone of river. The Electrical lines are tabulated below:-

Sl. no	Line	Chainage (km)	Location	Latitude (N)	Longitude (E)	Northing	Easting	No of piers	Horizontal clearance (m)	Vertical clearance w.r.t H.F.L (m)	Remarks
1.	H.T Line	41.740	Sessakuch village	27°18'47.64"	94°52'57.44"	3022534.034	686284.309	8	262.85	3.273	Complete
2.	H.T Line	109.064	Mohmara village	27°19'18.31"	95°18'48.07"	3024195.268	728899.151	8	270.59	4.890	Complete

Table 10 Electric Lines

2.19 Current Meter and Discharge Details:-

		Current Meter Report								
Stretch No.	Chainage (kms)	Easting (m)	Northing (m)	Latitude (N)	Longitude (E)	Observed Depth (m)	Velocity (m/sec) 0.5 D	Average velocity (m/sec)	X-Sectional area (sq.m.)	Discharge (Cu.m/sec)
1	16.299	672207.5731	3015861.772	27°15'17.515"	94°44'22.13"	2.10	0.345	0.345	453.21	156.357
2	41.297	686298.9354	3022320.16	27°18'40.682"	94°52'57.868"	1.35	0.263	0.263	271.46	71.393
3	57.698	697142.9642	3029446.259	27°22'26.682"	94°59'36.346"	1.25	0.245	0.245	231.77	56.783
4	72.390	702657.9608	3024470.035	27°19'42.145"	95°02'54.024"	1.34	0.261	0.261	344.89	90.016

Table 11- Current Metre Details

2.20 - (a) Soil Sample Locations:-

Sample No.	Chainage (km)	Easting (m)	Northing (m)	Latitude (N)	Longitude (E)	Depth (m)
1	5.022	669007.64	3016005.055	27°15'23.602"	94°42'25.881"	1.1
2	16.221	672178.14	3015788.425	27°15'15.145"	94°44'21.023"	1.0
3	25.174	678064.2814	3016151.583	27°15'24.238"	94°47'55.17"	1.2

Table 12 Soil Sample Locations

b) Water Sample Locations:-

Sample No.	Chainage (km)	Easting (m)	Northing (m)	Latitude (N)	Longitude (E)	Total Depth (m)	Mid-Depth (0.5d) (m)
1	5.022	669007.64	3016005.055	27°15'23.602"	94°42'25.881"	1.1	0.55
7	57.575	697156.69	3029619.285	27°22'32.295"	94°59'36.946"	4.1	2.05
10	96.508	719445.2386	3027230.676	27°21'02.479"	95°13'06.285"	3.5	1.75

Table 13 Water Sample Locations

Section-3: Description of Waterway:-

3.1 From Chainage 0.00 Km to Chainage 10.00 Km (Brahmaputra Confluence to Jokai Kachari Gaon):-

Figure 6 Chainage 0.00 km to Chainage 10.00 km

The River width of Dehing River from Chainage 0.00 km to Chainage 10.00 km is approximately 136m to 114m.The average width portion of the river is 120m.

During the survey it was noticed that Lachan village, Teteliguri village, Rangadaria village, Miripathar village, Khalihamari village, Rajabari village, Ghalghali village, Nowpara village, Ahom Pathar village, Lai Bill village are situated right side bank of the river and Jokai village, Modhupur Baragharia F.V village are situated left bank side of the river. BM1 is situated near at chainage of 5.022km at right bank side of the river. Both side plants are also noticed during the survey. Char land, both side plants have been also found both bank side of the river. The Right bank side are also protected by bituminous road.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	0.00	10.00	0.5	3.8	7000	49892.09	-0.2	3.7	9700	186603.07
II	0.00	10.00	0.5	3.8	5550	80192.84	-0.2	3.7	9000	186904.36
III	0.00	10.00	0.5	3.8	7100	50661.23	-0.2	3.7	9500	200641.44
IV	0.00	10.00	0.5	3.8	7100	50899.2	-0.2	3.7	9650	198633.59

3.2-From Chainage 10.00 Km to Chainage 20.00 Km (Jokai Kachari Village to Chakoi Pathar Gaon):-

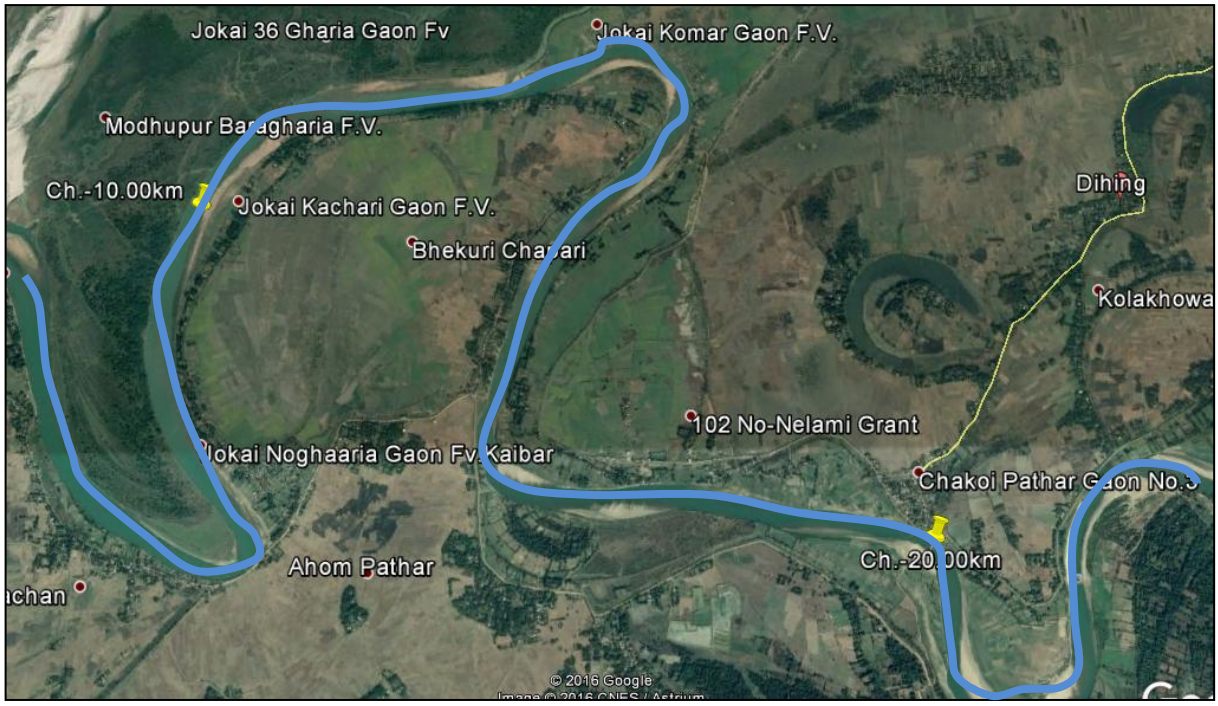


Figure 7 Chainage 10.00 km to Chainage 20.00 km

The River width of Dehing River from chainage 10.00 km to Chainage 20.00 km is approximately 107m to 75m. The average width portion of the river is 70m.

During the survey it was noticed that Jokai Komar F.V. village, Chakoi Pathar village no-3, Burisuti Kaibatra Gaon village, 102 no Nelami Grant, Sessamukh Gaon village are situated at left bank side of the river and Bhekuri chapari village, Ahom Pathar village, Bhatgaj village are situated right bank side of the river. A Ferry service (Golaghat) is available near at chainage of 16.221km.The ferry service is really helpful for Daily communication system. This area are highly protected by boulder Pitching. BM 2 has been located near at chainage of 16.221km in the left bank side of the river near the Golaghat Ferry services. Both side plants are also noticed in this river zone.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	10.00	20.00	0.5	3.7	9000	96711.17	-0.3	3.3	9300	191029.1
II	10.00	20.00	0.5	3.7	7500	79010.11	-0.3	3.3	9000	165292.44
III	10.00	20.00	0.5	3.7	9100	99900.9	-0.3	3.3	10000	223129.1
IV	10.00	20.00	0.5	3.7	9100	105318.01	-0.3	3.3	10000	250482.81

Figure 8-Golaghat (Chainage- 16.221 km)

3.3 -From Chainage 20.00 Km to Chainage 30.00 Km (Chakoi Pathar Gaon to Sessakiner Bridhi Block):-

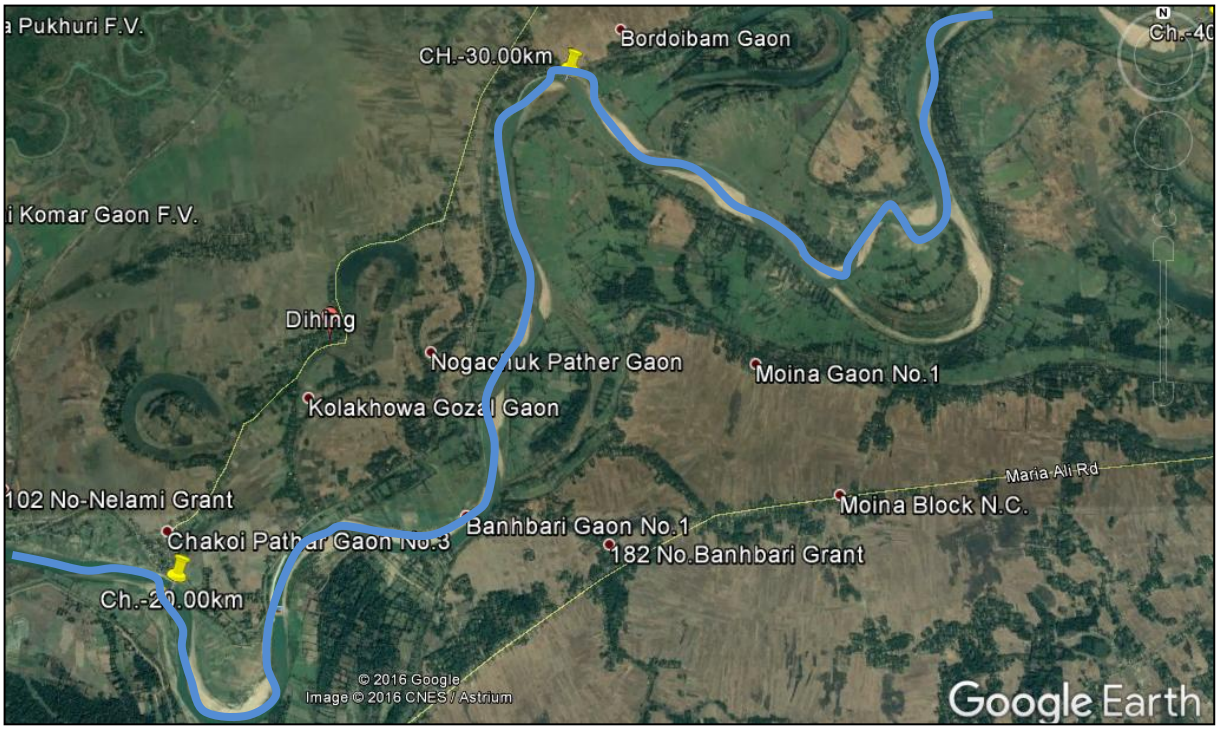


Figure 9 Chainage 20.00 km to Chainage 30.00 km

The River width of Dehing River from chainage 20.00 km to Chainage 30.00 km is approximately 72.80m to 144m. The average width portion of the river is 81m.

During the survey it was noticed that BM 3 is situated near at chainage of 25.174 km. Two passenger Ferry ghat services are available near at chainage of 22.200 km and 24.492 km respectively. Banhbari village, Kolakhowa village, Sessakiner Bridhi Block and Gaon, Chakoi Pathar Gaon village, Nogachuk pather gaon village, Motak Gaon village are situated at left bank side of the river and Garukhuti, Jon Gaon, chari Banhi Hingari gaon village, Jun gaon village, Silputa Gaon village, Moina Gaon village and block, Janzimukh gaon village, Lazai Miri Gaon village, lezaimiri Pather gaon village are situated at right bank side of the river.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	20.00	30.00	0.5	3.7	9450	200166.79	-0.3	2.3	10000	598116.27
II	20.00	30.00	0.5	3.7	10000	203969.12	-0.3	2.3	10000	633559.02
III	20.00	30.00	0.5	3.7	9150	200828.42	-0.3	2.3	10000	595575.56
IV	20.00	30.00	0.5	3.7	9300	202492.14	-0.3	2.3	10000	529039.52

3.4-From Chainage 30.00 Km to Chainage 40.00 Km (Sessakiner Bridhi Block to Bali Gaon):-

Figure 10 Chainage 30.00 km to Chainage 40.00km

The River width of Dehing River from chainage 30.00 km to Chainage 40.00 km is approximately 144 m to 286m. The average width portion of the river is 100 m.

During the survey it was noticed that pani gaon village, Bordoibam bridhi block and gaon, Lazai gaon Pather, Sonowal gaon village, Lazai gaon village, Dewanbari Gaon village, Vhagamotinali village are situated at left bank side of the river and Moina village, Bali Gaon village, Bhogamur gaon village, Bhogamur Tiniali gaon village are situated at right bank side of the river. BM 4 is situated near at chainage of 34.618km. Vogamo Ghat is situated near at chainage of 35.381km in this zone of river.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	30.00	40.00	0.2	3.3	10000	239072.63	0.2	2.5	10000	456773.56
II	30.00	40.00	0.2	3.3	10000	246195.29	0.2	2.5	10000	446558.38
III	30.00	40.00	0.2	3.3	10000	229363.25	0.2	2.5	10000	2578582
IV	30.00	40.00	0.2	3.3	10000	226782.68	0.2	2.5	10000	482984.28

3.5-From Chainage 40.00 Km to Chainage 50.00Km (Bali Gaon to Kachomari Deori Gaon):-

Figure 11 Chainage 40.00 km to Chainage 50.00 km

The River width from chainage 40.00 km to 50.00 km is approximately 213m to 147m.The average width portion of the river is 100m.

During the survey it was noticed that BM 5 is situated near at chainage of 41.531km. One Rail Bridge and One RCC Bridge (Dibrugarh to Guwahati)) are situated near at chainage of 41.480km and 41.610km respectively over the river. The Bridge position of the Rail Bridge and RCC Bridge are (Lat.- 27°18'40.12"N, Long.- 94°52'53.71"E), (Lat.- 27°18'43.85"N, Long.- 94°52'56.25"E) respectively. Kutuha Kachari village, sessakuch village no-4, Bhogamur gaon village, Aliachuk gaon village, Tinchukia gaon village, dewanbari Kaibatra Gaon village, nibuk gaon village, Boloi gaon village are situated at left bank side of the river and Simoluguri village, Deuri village, nowjan Salmari village, Mowamora gaon village, Kolowlowa Habi, Kachomari Deori village, Charaihabi Gaon village are situated at right bank side of the river.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	40.00	50.00	0.5	2.9	10000	176598.93	0.2	2.5	10000	741578.6
II	40.00	50.00	0.5	2.9	10000	184425.36	0.2	2.5	10000	785385.1
III	40.00	50.00	0.5	2.9	10000	173653.43	0.2	2.5	10000	751015
IV	40.00	50.00	0.5	2.9	10000	174697.96	0.2	2.5	10000	688799.7

Figure 12 RCC Bridge (Chainage- 41.610km)

Figure 13 Rail Bridge (Chainage- 41.480km)

3.6-From Chainage 50.00 Km to Chainage 60.00 Km (Kachomari Deori Gaon to Dhariatoli Gaon):-

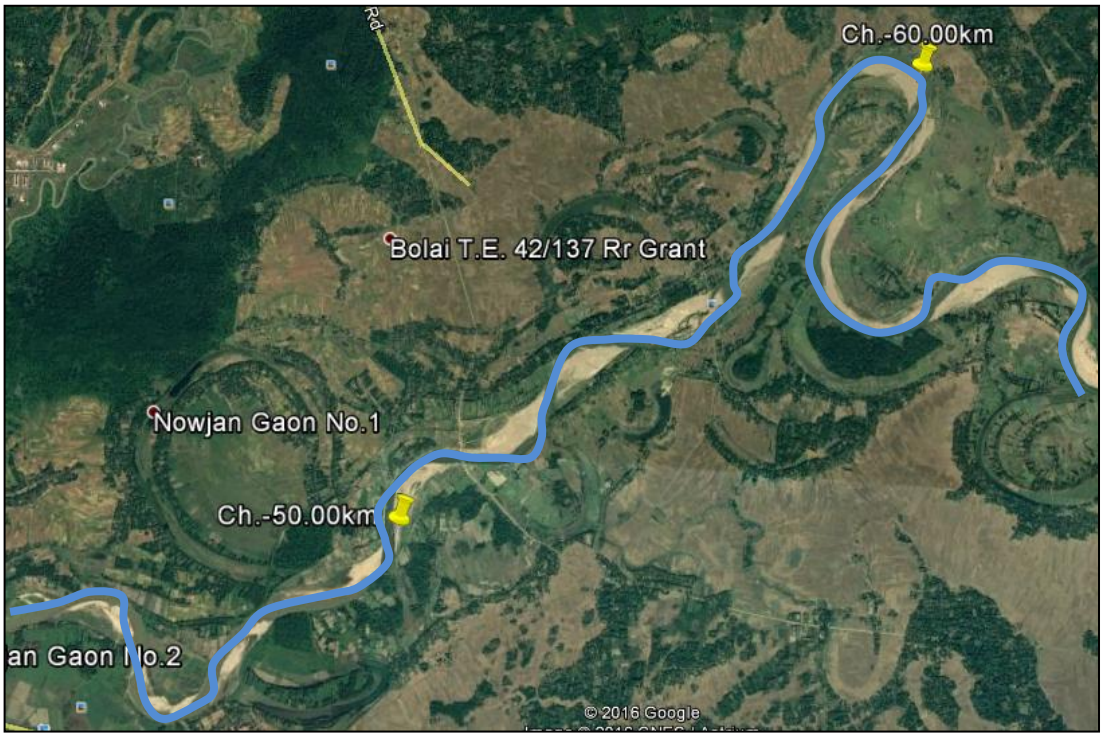


Figure 14 Chainage 50.00 km to Chainage 60.00 km

The River width of Dehing River from chainage 50.00 km to Chainage 60.00 km is approximately 147m to 330m. The average width portion of the river is 230m.

During the survey it was noticed that BM 7 is situated near at chainage of 57.575 km. An RCC Bridge is situated near at chainage of 54.586 km. The position of the RCC Bridge is (Lat.- 27°21'14.47"N, Long.- 94°58'39.71"E). Dehing Khamtighat village, Dhariatoli gaon, Kamakhya gaon, Borbil gaon, Ghetira Pather gaon, kachomari Deori gaon, Hatigar gaon are situated at the right bank side of the river and Kowar Kharoni village, Maju Temtow Bagisha village, changamari gaon village, Chamguri Bangali gaon village, Chamguri Kachari gaon village, Koliani Gaon, Harok Pather gaon village, Panitola Konwar gaon village, Dehing Thakerani gaon village, Kowar Kharoni gaon village, Harok Pather gaon, Panitola Konwar gaon villages are situated left bank side of the River.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	50.00	60.00	0.5	3.7	10000	166248.6	0.4	1.9	10000	471068.4
II	50.00	60.00	0.5	3.7	10000	167927.16	0.4	1.9	10000	504853.5
III	50.00	60.00	0.5	3.7	10000	177399.28	0.4	1.9	10000	425984.4
IV	50.00	60.00	0.5	3.7	10000	178450.84	0.4	1.9	10000	460211.1

Figure 15 RCC Bridge (Chainage-54.586km)

3.7-From Chainage 60.00 Km to Chainage 70.00 Km (Dhariatoli Gaon to Chaharikata N.C. Block-3):-

Figure 16 Chainage 60.00 km to 70.00 km

The River width of Dehing River from chainage 60.00 km to Chainage 70.00 km is approximately 330 to 82.91m. The average width portion of the river is 80m.

During the survey it was noticed that a Ferry Ghat is located near at chainage of 67 km. Jultoli Bam village, Lachen Gayan Miri N.C village, Ulom Pather gaon village are situated right bank side of the river and Jilliguri village, Bhurbhuri gaon no-1 village, Dangar Pothar no-2 village, Na Gaon village, Saglikata village, Phutahula village are situated left bank side of the River. Romai ferry ghat is located in this stretches near at chainage of 67.00 km.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	60.00	70.00	0.5	2.5	9100	86499.09	0.3	2.5	10000	578244.5
II	60.00	70.00	0.5	2.5	10000	90148.92	0.3	2.5	10000	580762.7
III	60.00	70.00	0.5	2.5	10000	110785.99	0.3	2.5	10000	610883.8
IV	60.00	70.00	0.5	2.5	9500	111509.17	0.3	2.5	10000	615212

3.8-From Chainage 70.00 Km to Chainage 80.00 Km (Chaharikata N.C. Block-3 to Kenduguri Village):-

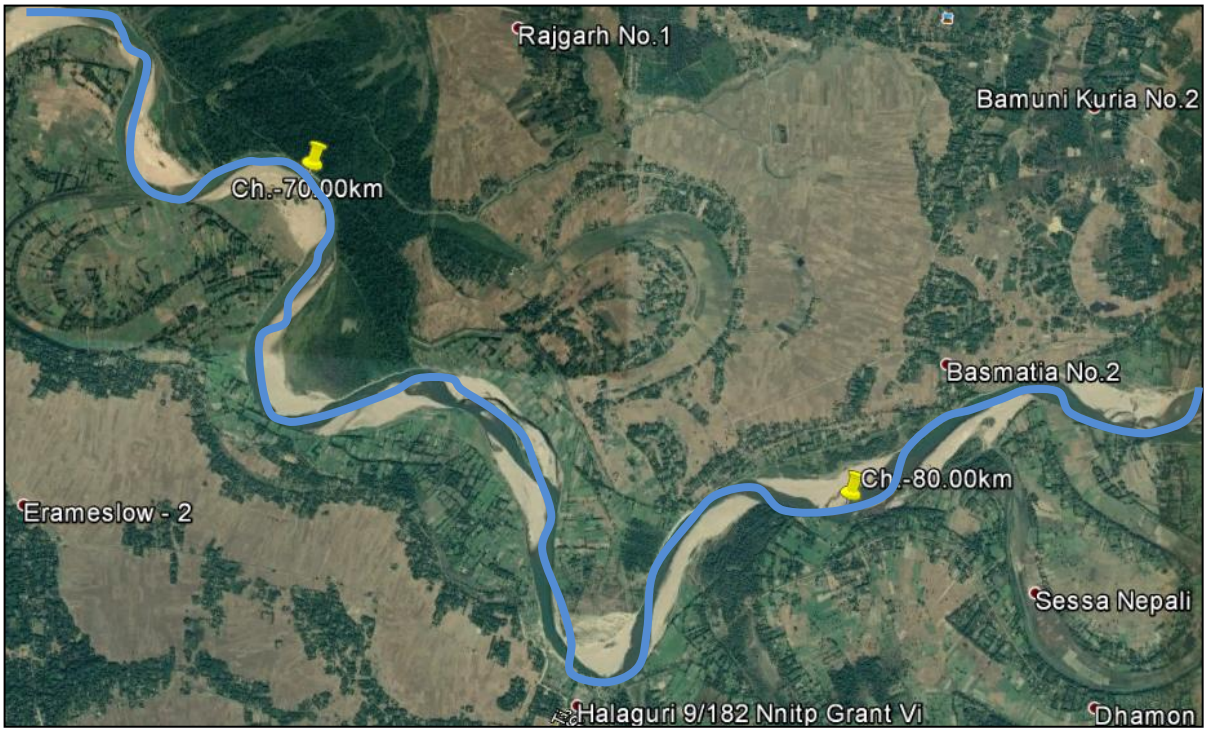


Figure 17 Chainage 70.00km to Chainage 80.00km

The River Width of Dehing River from Chainage 70.00 km to Chainage 80.00 km is approximately 84.19m to 221m. The average width portion of the river is 109 m.

During the survey it was noticed that Rajgarh village, Chahari Kata village no-2 village, Telpani Block Gaon village, Basmotia T.E village are situated at left bank side of the river and Kenduguri no-1 village, Chahari Kata village no-3, Halaguri Bidhi Block no 1 and no 2 village, Changmai gaon village, Garuhara village, Bormeslow gaon village are situated at right bank side of the river. A temporary Ferry service (Halaguri) is available near at chainage of 75.233 km. BM-8 is situated near at chainage of 72.536 km.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	70.00	80.00	0.2	3.1	8750	52921.9	0.1	1.9	9400	380225.3
II	70.00	80.00	0.2	3.1	7800	51339.4	0.1	1.9	9450	368926.9
III	70.00	80.00	0.2	3.1	9100	79019.4	0.1	1.9	9100	508857.5
IV	70.00	80.00	0.2	3.1	9100	78421.3	0.1	1.9	8700	3680125

3.9-From Chainage 80.00 Km to Chainage 90.00 Km (Kenduguri Village to Hatibandha Village):-

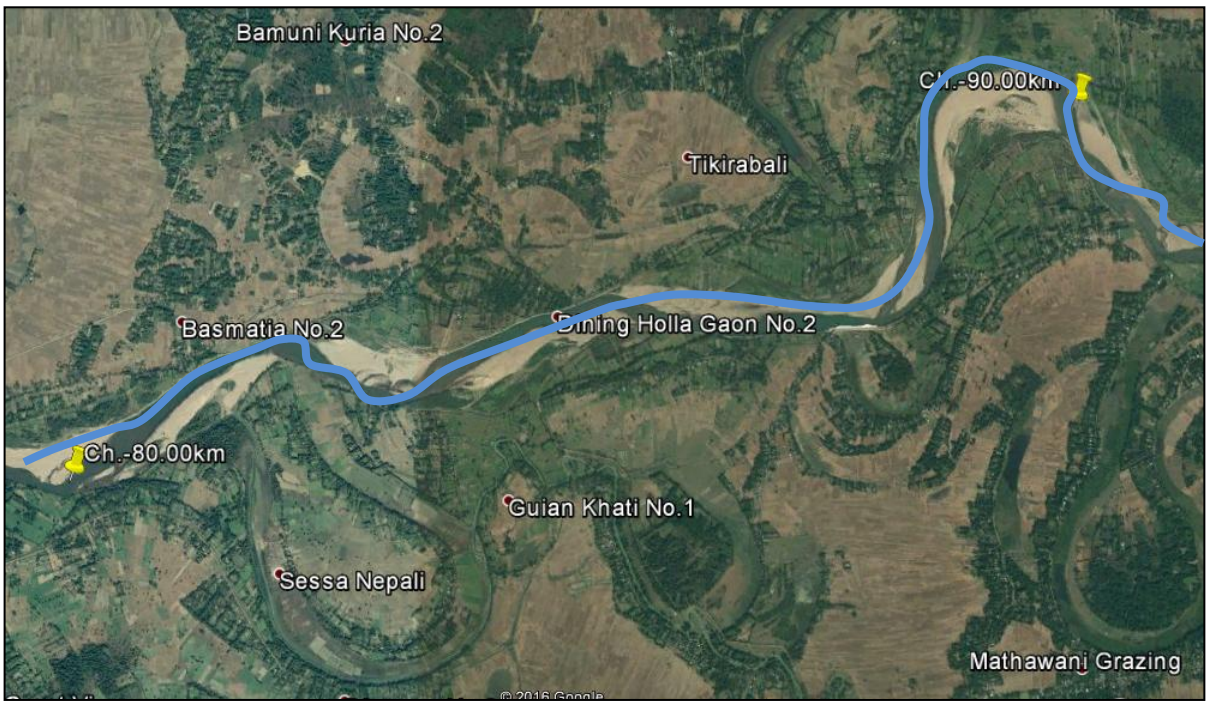


Figure 18 Chainage 80.00 km to Chainage 90.00 km

The River width of Dehing River from Chainage 80.00 km to Chainage 90.00 km is approximately 221m to 281m. The average width of the river is 200m.

During the survey it was noticed that BM-6 and BM-9 are situated near at chainage of 82.680 km and 87.914 km. Three passenger Ferry services are available near at chainage of 80.798 km, 82.054 km and 85.421 km respectively. Basmatia no-2 village, Tikirabali village, Borbam no-2 village, Na Khangia Bangali gaon village, Pithu Nagar village, Hati Bandha no-2 village, gulai Bam gaon village, Kathalani gaon village, Ikarani no-2 village are situated left bank side of the river and Guian Khati no-1 village, Joypur village, Dihing Holla no-1 village, Bamuni Kuria no-1 village, Guian Khati no-1 village, Sessa Nepali village, Disang Kinar no-1 village, Chakalia Pather Gaon village are situated right bank side of the river.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	80.00	90.00	0.3	3.1	9750	73878.7	0.2	3.0	9100	53782
II	80.00	90.00	0.3	3.1	10000	63479.6	0.2	3.0	10000	55748.1
III	80.00	90.00	0.3	3.1	10000	103020.2	0.2	3.0	8550	79696.9
IV	80.00	90.00	0.3	3.1	10000	106317.1	0.2	3.0	9500	80411

Figure 19 – Basmatia Ferry ghat (Chainage-80.798 km)

Figure 20- Tikirabali Ferry Ghat (Chainage-85.421 km)

3.10-From Chainage 90.00 Km to Chainage 100.00 Km (Hatibandha Village to Tingrai Nepali village):-

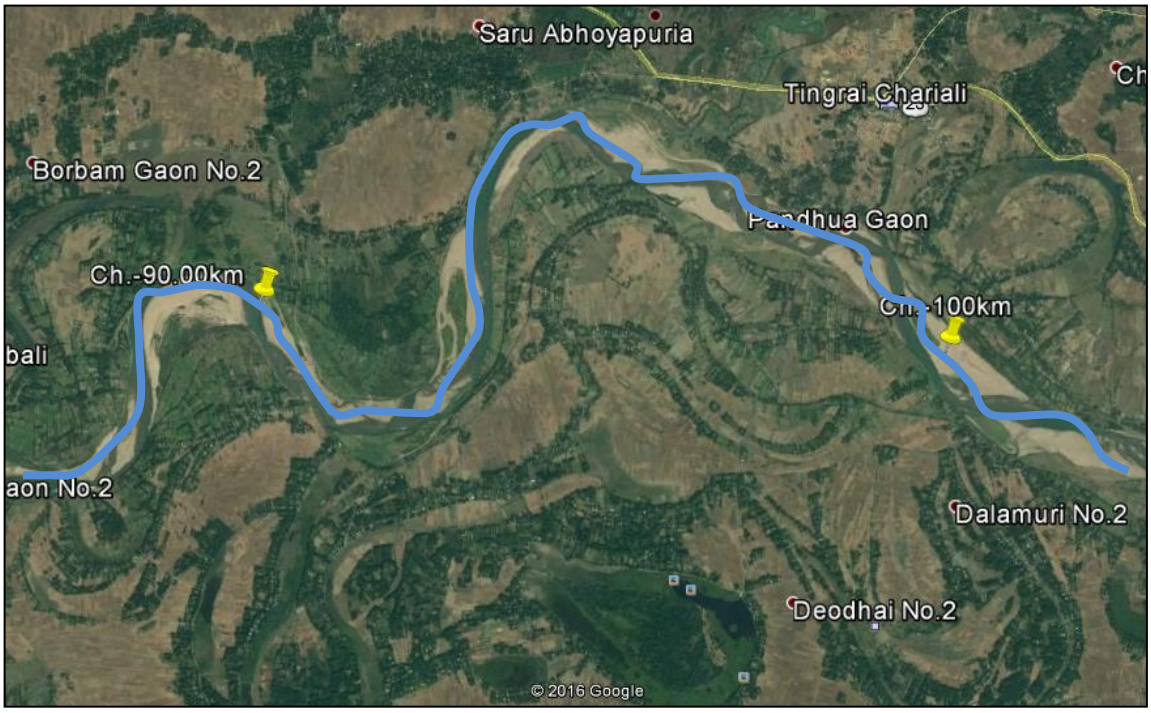


Figure 21 Chainage 90.00 km to Chainage 100.00 km

The River width of Dehing River from Chainage 90.00 km to Chainage 100.00 km is approximately 281m to 450m. The average width portion of the river is 200m.

During the survey it was noticed that BM-10 has been situated near at chainage of 96.508km. Two passenger Ferry Ghat services named Choudang ghat and and Pandua ghat are available near at chainage of 92.850km and 96.508km. Saru Abhoya puria village, 1no. Tingrainepali village, Ghumtat gaon village, Bhereki bam Gaon village, Bantana gaon village, Panimudi gaon village, Phukan Bari village, Tingrai Chariali village, Bhakalajan gaon village, Gerakoni village, Pandhua gaon village, Tingrai Dom gaon village, Tingrai Nepali no-2 village are situated left bank side of the river and Tingrai Doom Gaon no-2 village, Uriamguri village, Dihing Kinar Bangali no-1 village, Hilkachu bam village, Bhagamuria gaon village, Takaubill no-1 village are situated right bank side of the river.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	90.00	100.00	0.1	3.1	10000	207729	-0.3	0	10000	445375.2
II	90.00	100.00	0.1	3.1	10000	206876.1	-0.3	0	10000	474362.8
III	90.00	100.00	0.1	3.1	10000	225437.8	-0.3	0	10000	416135
IV	90.00	100.00	0.1	3.1	10000	228399.3	-0.3	0	10000	467100

Figure 22-Choudang ferry ghat (Chainage-92.850 km)

Figure 23- Pandua Ferry Ghats(Chainage- 96.508 km)

3.11-From Chainage 100.00 Km to Chainage 109.136 Km (Tingrai Nepali Village to Merbil Majuli Village):-

Figure 24 Chainage 100.00km to Chainage 109.136 km

The River width of Dehing River from chainage 100.00km to 109.136 km is approximately 450 to 247.46m. The average width Portion of the River is 250m.

BM 11 and BM 12 have been situated near at change of 102.477km and 108.693km respectively. 1 no. Trangnepali village, Pansuti village, Chirika Beel village, Chetia pather village, 1no. Mohmara village, Ronga gora Nepali village, Dihing Erasuti village, Panch Suti Gaon village, Panch Suti Barbali village, Chetia Pather village, Chirika Beel village, Merbell Pather village, Mohmari gaon village, Merbil Majuli village are situated left bank side of the river and Dalamuri no-2 village, Deodhai village, Merbil Grazing village, Amaguri village, Amguri Nepali village, Balipara village, kukura Phuia village, Khatua village, Sasoni village, Hudupara village, sasoni Pather gaon village, Hajua Pather village, Konwarijan village, Chengelijan village, Barbam no.2 village, chengelijan village, Halowa village are situated right bank side of the river. Two Rail Bridges and a RCC bridge are situated near at chainage of 102.625km, 109.136km and 108.730 km respectively.

Class	Chainage (km)		Observed				Reduced w.r.t. Sounding Datum			
	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cu.m.)
I	100.00	109.136	0.1	0.8	9000	213937.4	-0.3	0	9000	441888.6
II	100.00	109.136	0.1	0.8	9000	227728.2	-0.3	0	9000	610459.3
III	100.00	109.136	0.1	0.8	9000	218110.3	-0.3	0	9000	468937
IV	100.00	109.136	0.1	0.8	9000	221439.1	-0.3	0	9000	469820

Figure 25 Rail Bridge (Chainage-102.625km)

Figure 26 Rail Bridge (Chainage-109.136km)

Figure 27 RCC Bridge (Chainage- 108.730 km)

Hydrographic Survey

- **Bathymetry Survey:-**

a) Length of the stretch for which the Bathymetric Survey has been carried out:-

The layer of water in the River Dehing is average for carrying out the Bathymetric survey. The Bathymetry survey is starting from Dehing and Brahmaputra confluence to Merbil Majuli. The Stretch of the River has been carried out from the chainage of 0.00 km to 96.752km.

Date of Survey	Chainage	
	From (km)	To (km)
12.11.15	0.00	10.00
13.11.15	10.00	19.800
14.11.15	19.800	32.200
15.11.15	32.200	38.900
18.11.15	38.900	51.00
19.11.15	51.00	60.00
20.11.15	60.00	68.3
25.11.15	68.3	77.00
26.11.15	77.00	96.752

- **Topographic Survey:-**

a) Length of the stretch for which the Topographic survey has been carried out:-

The Topographic survey has been carried out from "confluence of Dehing and Brahmaputra rivers near village Lachan (Lat- 27°15'10.21"N, Long- 94°40'1.33"E) to Rail Bridge at Merbil Majuli No.1 (Lat 27°19'24.58"N, Long 95°18'44.60"E)". The length of the Topography survey is 109.136 km.

a) Prominent Dams/ Barrage:-

There are no Dams, Barrage found in this zone of river.

b) Tidal stretch, tidal range, pondage stretch / length of Dam, Barrages, Weirs, Anicut, and Locks:-

There are no Dams, Barrage, weirs, Anicut, locks found in this zone of river.

c) Description of stretch w.r.t. different depths, widths, current, discharge:-

The Different depths have been described in the salient feature portion.

d) Conditions of banks (protected, un-protected):-

The River had a tendency to break its boundary. For this reason some short and as well as long embankments are needed in the both banks of the river. Some portion of the river are protected by Bolder Pitching and also be protected by the embankment which are needful some for protecting the banks of the river and also prevent for soil erosion and floods.

e) Hindrances - Hyacinth, rocks, rapid waterfalls, forest, wild-life sanctuary, security issues:-

Dehing Patkai wild life sanctuary and the Panidehing Bird Sanctuaryare situated near the riverside of Dehing River. In this portion of the river, the high Security has been declared due to dense Forest area and also the wildlife animals.

f) Details of protected area-wildlife, defence, Atomic power plants and any other issue attached to it:-

During the period of survey no navigational hazards like rocks, rapid waterfalls, and steep gradients have been seen. So if there were any kind of waterways will develop in future it will be a pleasant Environment for the Inland waterways of India. The River is too close with the border of Assam and Arunachalpradesh so there were some security clearance will need for the water ways development and as well as the security or other clearance will need for the vicinity of the Dehing Patkai Wild life sanctuary.

g) NH/SH/MDR along and/or within 5km from the waterways:-

NH-37, NH-52B, NH-315A, NH-38 is located in this zone of river. Besides SH-23, SH-24, SH- 26, SH-27 are the state highways located in this zone of river.

h) Railway Line and Stations in the vicinity:-

The First Railway line is situated near at chainage of 41.480km which is communicated between Dibrugarh and Assam and the rest two Railway line are situated near at chainage of 102.625km and 109.136km.

i) Land Use Pattern along Waterway on visual assessment:-

During the period of the survey it is noticed that the maximum land on the both bank of the river is used as the agricultural land and the rest portion of the land is small forests.

j) Crops / Agriculture in the region on visual assessment:-

In the north eastern part of India, Assam is the major state from all aspect in agriculture in the north portion of Assam basically in the bank of the river Dehing. The major crops Paddy, jute, Tea, Rice, Wheat, Maize, Sorghum, gram, Millets, Sugarcane and Spices are cultivated here.

k) Availability of Bulk / Construction Material:-

The availability of the construction materials are too easy for construction any kind of structure. There were so many cement factories and the brick fields are located and the sand is available from the river.

l) Existing Industries along Waterway with their types and details:-

A Chemical plant named Brahmaputra valley Fertilizer Corporation limited is located in this zone of river far away 12 km from Naharkatia. Namrup Thermal power substation (NTPS) is also located far away 11 km from Naharkatia.

m) Existing Ghats, Jetties and Terminals (with conditions and facilities) existing navigation facilities (if any):-

As much as ten numbers of passenger Jetty services are available in this zone of river. The ferry services are tabulated below:-

Sl no	Chainage (km)	Name of Ferry ghat	Easting	Northing	Latitude (N)	Longitude (E)	Remarks
1	16.221	Golaghat	672091.5794	3015820.835	27°15'16.21"	94°44'17.87"	Temporary Jetty
2	22.200	Ramchandrapur ghat	676112.1278	3014676.507	27°14'37.21"	94°46'43.44"	
3	24.492	Banhbari ferry ghat	677837.3769	3015402.681	27°14'59.99"	94°47'46.52"	
4	67.000	Romai ghat	700056.75	3027326.21	27°21'16.29"	95° 1'21.08"	
5	75.233	Halaguri ferry ghat	703996.7801	3022204.695	27°18'27.83"	95° 3'41.32"	
6	80.798	Basmatia ghat	707999.7942	3024550.589	27°19'41.86"	95° 6'8.31"	
7	82.054	Guian khati ghat	709182.9846	3024394.169	27°19'36.14"	95° 6'51.24"	
8	85.421	Tikirabali ghat	712384.9952	3024676.223	27°19'43.52"	95° 8'47.85"	
9	92.850	Choudang ghat	716480.3248	3027500.952	27°21'12.93"	95°11'18.61"	
10	96.508	Pandua ghat	719415.0193	3027397.472	27°21'7.90"	95°13'5.29"	

n) Existing Cargo Movement:-

The Cargo movement is processed through waterways system. As much as ten numbers of passenger ferry services are available in this zone of river. Golaghat, Ramchandrapur, Banhbari, Romai ghat, Halaguri, Basmatia ghat, Gujan khati ghat, Tikirabali ghat, Choudang ghat and pandua ghat ferry services are located near at chainage of 16.221 km, 22.200 km, 24.492 km, 67.000 km, 75.233 km, 80.798 km, 82.054 km, 85.421 km, 92.850 km and 96.508 km respectively. The light cargo like cycle and bi-cycle, goods, vegetables are available in this zone of river.

o) Prominent City / Town / Places of Worship / Historical places for Tourism:-

Bell Temple, Na-Pukhuri at Tinsukia, Lakhipathar, Dehing Patkai wildlife sanctuary are the famous historical and tourist place in this zone of river. Dibrugarh, Itanagar, Tinsukia, Jaipur are the famous town located near the bank of river.

p) Village/Colonies along the sub-stretch and approx.population:-

Rangadaria, Teteliguri, Dehing Kalghar, Rangadaria, Lachen, Miripathar, Lai Bill, Banhbari Gaon, Janjimukh Gaon, Lazai Miri Gaon, Pani Gaon, Bhogamur Gaon, Bali Gaon, Deori Gaon, Kachomai Deori Gaon, Sasoni pather Gaon, Mohmari Gaon are located right bank side of the river from the confluence and Madhupur Baragharia, Jokai Komar Gaon, Burisuti Kaibatra Gaon, Sessamukh Gaon, Chakoi Pathar Gaon, Motak Gaon, Sonowal Gaon, Bhogamur Gaon, Kutuha Kachari Gaon etc. villages have been located left bank side of the river.

q) Availability of Passenger Ferry Services:-

As much as ten numbers of passenger Ferry services are available in this zone of river. The ferry services are tabulated below:-

Sl no	Chainage (km)	Name of Ferry ghat	Easting	Northing	Latitude (N)	Longitude (E)	Remarks
1	16.221	Golaghat	672091.5794	3015820.835	27°15'16.21"	94°44'17.87"	Temporary Ferry
2	22.200	Ramchandrapur ghat	676112.1278	3014676.507	27°14'37.21"	94°46'43.44"	
3	24.492	Banhbari ferry ghat	677837.3769	3015402.681	27°14'59.99"	94°47'46.52"	
4	67.000	Romai ghat	700056.75	3027326.21	27°21'16.29"	95° 1'21.08"	
5	75.233	Halaguri ferry ghat	703996.7801	3022204.695	27°18'27.83"	95° 3'41.32"	
6	80.798	Basmatia ghat	707999.7942	3024550.589	27°19'41.86"	95° 6'8.31"	
7	82.054	Guian khati ghat	709182.9846	3024394.169	27°19'36.14"	95° 6'51.24"	
8	85.421	Tikirabali ghat	712384.9952	3024676.223	27°19'43.52"	95° 8'47.85"	
9	92.850	Choudang ghat	716480.3248	3027500.952	27°21'12.93"	95°11'18.61"	
10	96.508	Pandua ghat	719415.0193	3027397.472	27°21'7.90"	95°13'5.29"	

r) Available and probable Water Sport Recreational Facilities:-

There are no water sports and other facilities are available in this River.

s) Fishing Activities:-

Dehing River is the lifeline of the people of is also important places for fishing culture. Dehing provides diverse habitat in its downstream for living biota such as stream, riparian zones and wetlands etc. Dehing has some of the richest riverine fisheries in India. The river has over fish species and forms an important component of livelihood and nutritional security in the downstream stretches in Assam. The wetlands are ecologically and economically important for the local people. Fishing in Dehing River is very famous among the people.

t) Sand mining:-

Illegal river sand mining across the country is on the rise for past many years in Indian, which results in adverse impact on river system and dependent communities. In Dehing gravel mining was noticed during the survey period. Besides this, sand is also exported to other states as it becomes demandful for making Building or Industries.

u) Tributaries:-

The Three streams create a river basin in this zone of river-

i) Dikhu

ii) Dehing

iii) Doyans

v) Details of Irrigation Canals and Outlets:-

No Irrigation Canal and outlets are found in this zone of river.

w) Details of Nalas, Polluted water discharge in to the rivers and treatment plants (if any):-

There are no Nalas found in this zone of river.

x) Usage of water (drinking, irrigation, Industries, Navigation etc.) water quality:-

In recent time's man avoid drinking the water of the river but the water is used for particularly in the cultivation. The water is also used in the industries purposes. NTPS, Brahmaputra valley Fertilizer Corporation limited are located in this zone of river far away 12 km from Naharkatia. The Ferry services are also navigable in this region of river. As much as ten ferry services are available in this zone of river. Mustard land, paddy land etc. are located in this zone of river. Mustard farm are noticed both bank side of the river. Besides, Tea garden is also found in this zone. So the water of the river is mostly used in the agriculture activities.

aa) Photographs of cross structures in each stretch with description, location, chainage, clearance and condition:-

The Railway Bridge has been situated near at chainage of 41.480km near at Kutuha kachari Village. The Bridge Position is (Lat-27°18'40.12"N, Long-94°52'53.71"E). The Bridge has a good horizontal and vertical clearance for the development of the waterways.

The RCC Bridge has been situated near at chainage of 41.610km near atKutuha Kachari Village. The Bridge position is (Lat.- 27°18'43.85"N, Long.- 94°52'56.25"E). The Bridge has a good horizontal and vertical clearance for the development of the waterways.

The RCC Bridge has been situated near at chainage of 54.586km near at Kowar Kharoni village. The Bridge Position is (Lat. - 27°21'14.47"N, Long-94°58'39.71"E). The Bridge has a good horizontal and vertical clearance for the development of the waterways.

The Railway Steel Bridge has been situated near at chainage of 102.625km near at Chirika Beel village. The Bridge position is (Lat.- 27°19'23.31"N, Long.- 95°16'12.35"E). The Bridge has a good horizontal and vertical clearance for the development of the waterways.

This RCC Bridge has been situated near at chainage of 108.730km near at Merbil Majuli village. The Bridge Position is (Lat.- 27°19'17.82"N, Long.- 95°18'32.52"E). The bridge has a good horizontal and vertical clearance for the development of the waterways.

The Rail Bridge has been situated near at chainage of 109.136km near at Mohmara Village. The Bridge Position is (Lat.- 27°19'24.96"N, Long.- 95°18'45.18"E). The Bridge has a good horizontal and vertical clearance for the development of the waterways.

Section 4: Terminals

There is no existing terminal found in this zone of river.

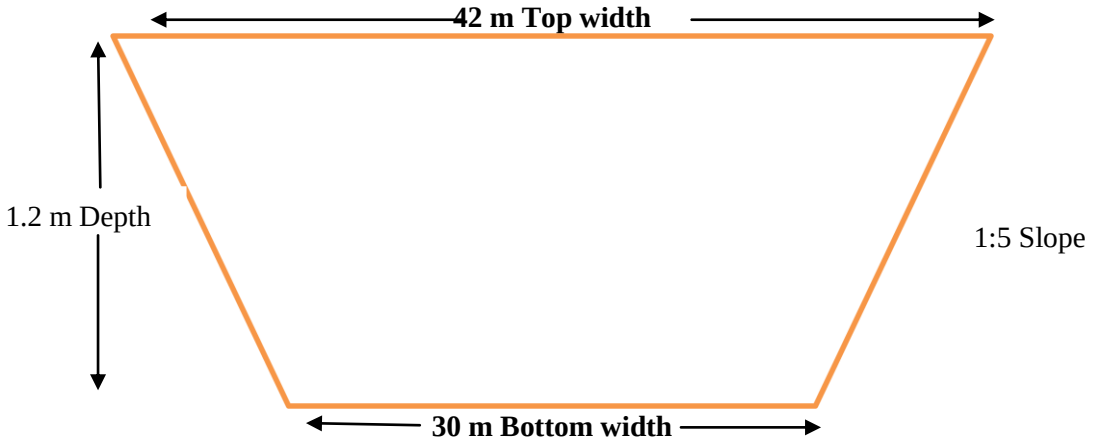
4.4 Details of Land use, owner etc:-

The banks of the Dehing River used for cultivation. The Farmers are cultivated their crops with using this fertile land and grows a huge amount of crops every year. Besides, some portions of the land are surrounded by small industries and Forests. Though bolder pitching is found in some places, But in Recent times, the bank of the river has been worn away in some places for lack of trees. Sometimes, the land of the river has been changed into a heap of garbage. As a result, the river side becomes polluted land. In the Monsoon period, Flood and erosion has been affected both side of the river bank.

Section 5: Fairway Development

Dredging Sections, summary of Depths and Dredging quantity for different classification of waterways (Stretch- wise):-

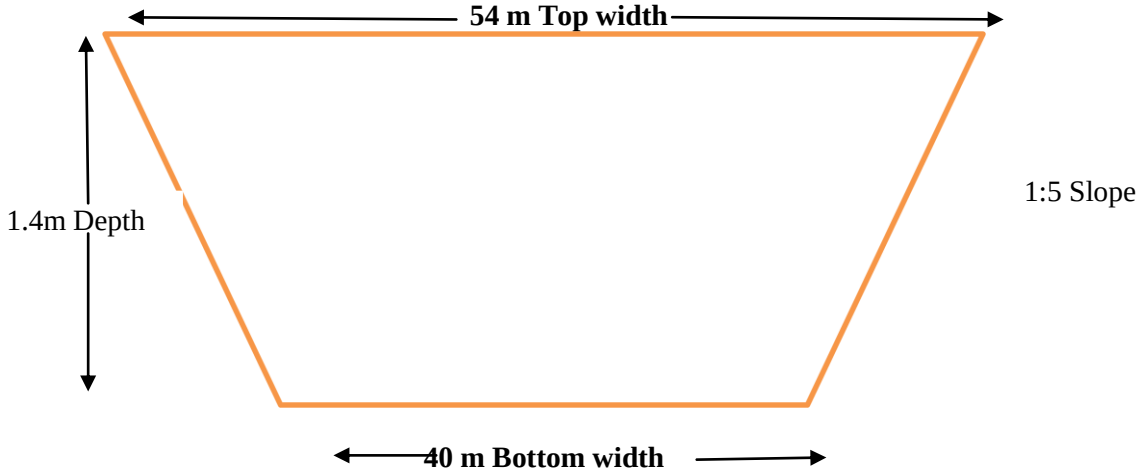
Class-I: - (Channel design: - Bottom width- 30 meter, Top width- 42 meter)



Location		Chainage (km)		As per Observed Soundings						As per Reduced Soundings					
From	To	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (Cubic meter)	Cumulative Dredging Qty (Cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (Cubic meter)	Cumulative Dredging Qty (Cubic meter)
Brahmaputra Confluence	Jokai Kachari Gaon	0	10	0.5	3.8	7000	0.215	49892.09	49892.09	-0.2	3.7	9700	0.582	186603.07	186603.07
Jokai Kachari	Chakoi Pathar	10	20	0.5	3.7	9000	0.325	96711.17	146603.26	-0.3	3.3	9300	0.621	191029.1	377632.17
Chakoi Pathar	Sessakiner Bridhi Block	20	30	0.5	3.7	9450	0.641	200166.79	346770.05	-0.3	2.3	10000	1.811	598116.27	975748.44
Sessakiner Bridhi Block	Bali Gaon	30	40	0.2	3.3	10000	0.724	239072.63	585842.68	0.2	2.5	10000	1.383	456773.56	1432522
Bali Gaon	Kachomari Deori Gaon	40	50	0.5	2.9	10000	0.535	176598.93	762441.61	0.2	2.5	10000	2.245	741578.6	2174100.6
Kachomari Deori Gaon	Dhariatoli gaon	50	60	0.5	3.7	10000	0.503	166248.6	928690.21	0.4	1.9	10000	1.426	471068.4	2645169
Dhariatoli gaon	Chaharikata N.C.Block-3	60	70	0.5	2.5	9100	0.287	86499.09	1015189.3	0.3	2.5	10000	1.751	578244.5	3223413.5
Chaharikata N.C.Block-3	Kenduguri Gaon	70	80	0.2	3.1	8750	0.183	52921.9	1068111.2	0.1	1.9	9400	1.224	380225.3	3603638.8
Kenduguri Gaon	Hatibandha Village	80	90	0.3	3.1	9750	0.229	73878.7	1141989.9	0.2	3	9100	0.178	53782	3657420.8
Hatibandha Gaon	Tingrai Nepali Village	90	100	0.1	3.1	10000	0.629	207729	1349718.9	-0.3	2.5	10000	1.348	445375.2	4102796
Tingrai Nepali	Merbil Majuli	100	109.136	0.1	0.8	9000	0.719	213937.4	1563656.3	-0..3	0	9000	1.48	441888.6	4544684.6
Total						102050		1563656.3		Total		106500		4544684.6	

Table 14-Dredging quantity for Class-I

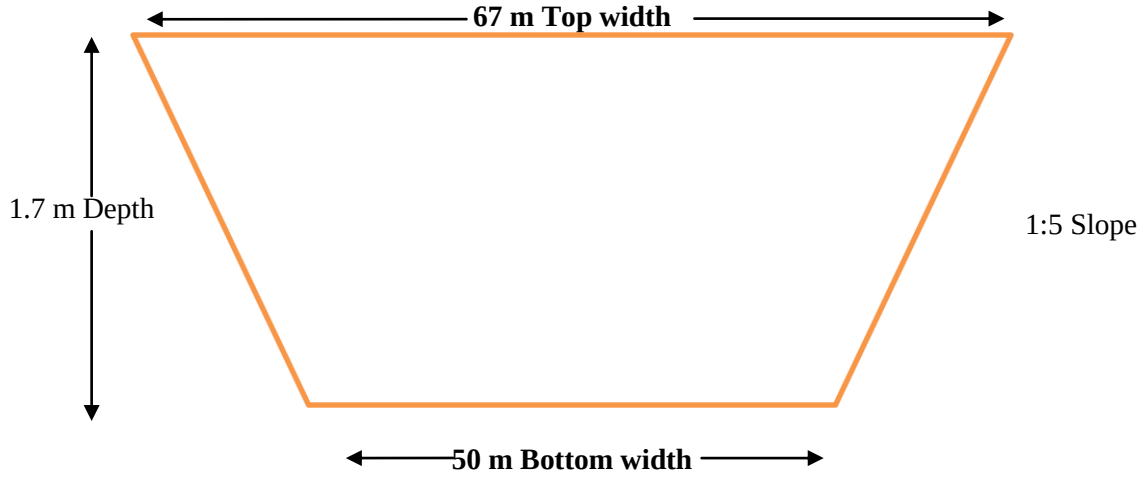
Class-II: - (Channel design: - Bottom width- 40 meter, Top width- 54 meter)



Location		Chainage (km)		As per Observed Soundings						As per Reduced Soundings					
From	To	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (cu.m.)	Cumulative Dredging Qty (Cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (cu.m.)	Cumulative Dredging Qty (Cubic meter)
Brahmaputra Confluence	Jokai Kachari Gaon	0	10	0.5	3.8	5550	0.328	80192.84	80192.84	-0.2	3.7	9000	0.471	186904.36	186904.36
Jokai Kachari Gaon	Chakoi Pathar Gaon	10	20	0.5	3.7	7500	0.239	79010.11	159202.95	-0.3	3.3	9000	0.417	165292.44	352196.8
Chakoi Pathar Gaon	Sessakiner Bridhi Block	20	30	0.5	3.7	10000	0.463	203969.12	363172.07	-0.3	2.3	10000	1.439	633559.02	985755.82
Sessakiner Bridhi Block	Bali Gaon	30	40	0.2	3.3	10000	0.559	246195.29	609367.36	0.2	2.5	10000	1.014	446558.38	1432314.2
Bali Gaon	Kachomari Deori Gaon	40	50	0.5	2.9	10000	0.419	184425.36	793792.72	0.2	2.5	10000	1.784	785385.1	2217699.3
Kachomari Deori Gaon	Dhariatoli gaon	50	60	0.5	3.7	10000	0.381	167927.16	961719.88	0.4	1.9	10000	1.147	504853.5	2722552.8
Dhariatoli gaon	Chaharikata N.C.Block-3	60	70	0.5	2.5	10000	0.205	90148.92	1051868.8	0.3	2.5	10000	1.319	580762.7	3303315.5
Chaharikata N.C.Block-3	Kenduguri Gaon	70	80	0.2	3.1	7800	0.149	51339.4	1103208.2	0.1	1.9	9450	0.886	368926.9	3672242.4
Kenduguri Gaon	Hatibandha Village	80	90	0.3	3.1	10000	0.144	63479.6	1166687.8	0.2	3	10000	0.127	55748.1	3727990.5
Hatibandha Gaon	Tingrai Nepali Village	90	100	0.1	3.1	10000	0.470	206876.1	1373563.9	-0.3	2.5	10000	1.077	474362.8	4202353.3
Tingrai Nepali Village	Merbil Majuli Village	100	109.136	0.1	0.8	9000	0.574	227728.2	1601292.1	-0.3	0	9000	1.54	610459.3	4812812.6
Total						99850		1601292.1		Total		106450		4812812.6	

Table 15- Dredging quantity for Class-II

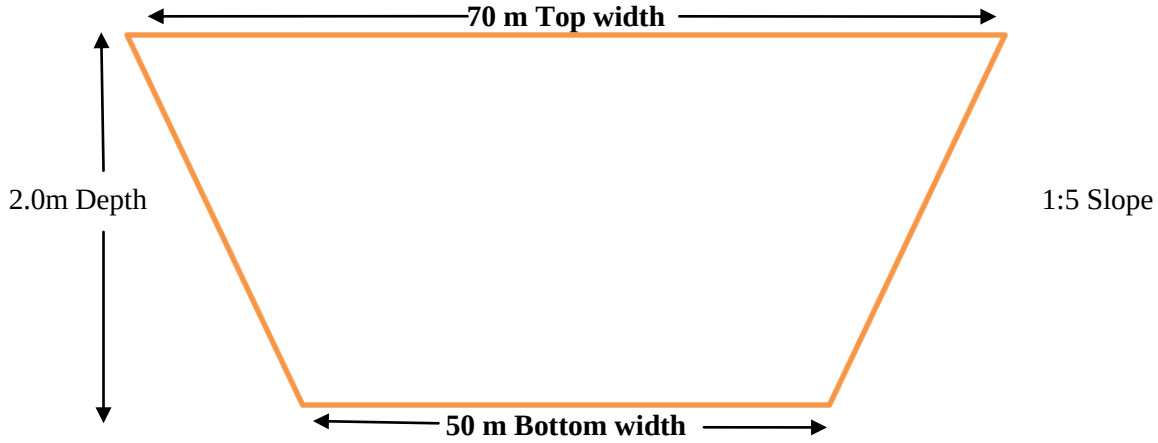
Class-III: - (Channel design: - Bottom width- 50 meter, Top width- 67 meter)



Location		Chainage (km)		As per Observed Soundings						As per Reduced Soundings					
From	To	From	To	Min. depth (m)	Maxdepth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (cu.m.)	Cumulative Dredging Qty (Cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (cu.m.)	Cumulative Dredging Qty (Cubic meter)
Brahmaputra Confluence	Jokai Kachari Gaon	0	10	0.5	3.8	7100	0.129	50661.23	50661.23	-0.2	3.7	9500	0.383	200641.44	200641.44
Jokai Kachari Gaon	Chakoi Pathar Gaon	10	20	0.5	3.7	9100	0.199	99900.9	150562.13	-0.3	3.3	10000	0.406	223129.1	423770.54
Chakoi Pathar Gaon	Sessakiner Bridhi Block	20	30	0.5	3.7	9150	0.398	200828.42	351390.55	-0.3	2.3	10000	1.083	595575.56	1019346.1
Sessakiner Bridhi Block	Bali Gaon	30	40	0.2	3.3	10000	0.417	229363.25	580753.8	0.2	2.5	10000	4.687	2578582	3597928.1
Bali Gaon	Kachomari Deori Gaon	40	50	0.5	2.9	10000	0.316	173653.43	754407.23	0.2	2.5	10000	1.365	751015	4348943.1
Kachomari Deori Gaon	Dhariatoli gaon	50	60	0.5	3.7	10000	0.322	177399.28	931806.51	0.4	1.9	10000	0.774	425984.4	4774927.5
Dhariatoli gaon	Chaharikata N.C.Block-3	60	70	0.5	2.5	10000	0.201	110785.99	1042592.5	0.3	2.5	10000	1.110	610883.8	5385811.3
Chaharikata N.C.Block-3	Kendugur i Gaon	70	80	0.2	3.1	9100	0.187	79019.4	1121611.9	0.1	1.9	9100	1.016	508857.5	5894668.8
Kenduguri Gaon	Hatibandha Village	80	90	0.3	3.1	10000	0.417	103020.2	1224632.1	0.2	3	8550	0.169	79696.9	5974365.7
Hatibandha Gaon	Tingrai Nepali Village	90	100	0.1	3.1	10000	0.410	225437.8	1450069.9	-0.3	2.5	10000	0.756	416135	6390500.7
Tingrai Nepali Village	Merbil Majuli Village	100	109.136	0.1	0.8	9000	0.440	218110.3	1668180.2	-0.3	0	9000	0.947	468937	6859437.7
Total						103450		1668180.2		Total		106150		6859437.7	

Table 16- Dredging quantity for Class-III

Class-IV: - (Channel design: - Bottom width- 50 meter, Top width- 70 meter)



Location		Chainage (km)		As per Observed Soundings						As per Reduced Soundings					
From	To	From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (Cubic meter)	Cumulative Dredging Qty (Cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Avg Depth of cut (m)	Dredging Qty. (Cubic meter)	Cumulative Dredging Qty (Cubic meter)
Brahmaputra Confluence	Jokai Kachari Gaon	0	10	0.5	3.8	7100	0.130	50899.2	50899.2	-0.2	3.7	9650	0.374	198633.6	198633.59
Jokai Kachari Gaon	Chakoi Pathar Gaon	10	20	0.5	3.7	9100	0.210	105318.01	156217.21	-0.3	3.3	10000	0.455	250482.8	449116.4
Chakoi Pathar Gaon	Sessakiner Bridhi Block	20	30	0.5	3.7	9300	0.395	202492.14	358709.35	-0.3	2.3	10000	0.962	529039.5	978155.92
Sessakiner Bridhi Block	Bali Gaon	30	40	0.2	3.3	10000	0.412	226782.68	585492.03	0.2	2.5	10000	0.878	482984.3	1461140.2
Bali Gaon	Kachomari Deori Gaon	40	50	0.5	2.9	10000	0.318	174697.96	760189.99	0.2	2.5	10000	1.252	688799.7	2149939.9
Kachomari Deori Gaon	Dhariatoli gaon	50	60	0.5	3.7	10000	0.324	178450.84	938640.83	0.4	1.9	10000	0.837	460211.1	2610151
Dhariatoli gaon	Chaharikata N.C.Block-3	60	70	0.5	2.5	9500	0.213	111509.17	1050150	0.3	2.5	10000	1.118	615212	3225363
Chaharikata N.C.Block-3	Kenduguri Gaon	70	80	0.2	3.1	9100	0.156	78421.3	1128571.3	0.1	1.9	8700	7.690	3680125	6905488
Kenduguri Gaon	Hatibandha Village	80	90	0.3	3.1	10000	0.193	106317.1	1234888.4	0.2	3	9500	0.153	80411	6985899
Hatibandha Gaon	Tingrai Nepali Village	90	100	0.1	3.1	10000	0.415	228399.3	1463287.7	-0.3	2.5	10000	0.849	467100	7452999
Tingrai Nepali Village	Merbil Majuli Village	100	109.136	0.1	0.8	9000	0.447	221439.1	1684726.8	-0.3	0	9000	0.949	469820	7922819
Total						103100		1684726.8		Total		106850		7922819	

Table 17-Dredging quantity for Class-IV

Section 6: Conclusion:

The surveyed stretch of Dehing River is 109.136 km in length that originates from a glacier in Namdapha Tiger Reserve. As much as 10 (ten) nos. of Ferry Services like Ramchandrapur Ghat, GolaGhat, Romai Ghat, Halaguri ferry ghat, Basmatia ghat, Tikirabali Ghat, Pandua Ghat are located in this zone of river. Total 12 nos. of Bench mark have been established throughout the survey Period. The Joy-Dihing Rainforest, numerous petroleum fields, wet-paddy fields, bamboo orchards and tea gardens provide a unique landscape along its course. Ledo, Margherita, Digboi, Duliajan and Naharkatia (Nahorkotiya) are the small towns in its valley. Dehing is the one of the most important contributors to the Brahmaputra River. The plains of the Dehing Valley has a rich variety of flora and fauna. The Betel nuts are produced most in the areas of the Dehing Plains. During the period of the survey we found some bent curve in the river. Some sand char have been found in the way of the river. There is no Dam, Barrages, weirs, Anicut, Locks, Aqueduct found in this zone of river. The River Dehing has couple of RCC Bridges which are situated near at chainage of 41.610 km and 54.586 km. Another RCC Bridge is situated near at chainage of 108.730km. Three Rail Bridges are also situated near at chainage of 41.480 km, 102.685 km and 109.136 km respectively. The bridges have a good Vertical and horizontal clearance for the development of the water ways. RCC and Railway communication has been really very favorable for this region and also for the tourist.

The Historical and Tourist places like Dibrugarh, Naharkatia, Chenimari, Amguri, Tikirabali etc have been located in this region of River. Jokai Reserve forest, Kaziranga National park is located in this zone of river. Both side plants are also protected the bank of the river side. NH-52B, NH-315 A, NH-37 is the major communication way located in this zone of river. Besides, SH-23, SH-26, SH-27 is also passed through in this zone of river. Railway and Road communication is really well in this zone of river for transportation system.

6.1 Dredging Quantity:-

Class Details	As per Observed Soundings (cubic meter)	As per Reduced Soundings (cubic meter)
Class I	1563656.30	4544684.60
Class II	1601292.10	4812812.60
Class III	1668180.20	6859437.70
Class IV	1684726.80	7922819.00

Table 18 Details of Dredging Calculations

Annexure:

Annexure-1 Source and Type of Data collected from various agencies:-

The Chart Datum value and HFL values of Naharkatia, Chenimari and Confluence of Brahmaputra River have been provided by IWAI office.

Annexure-2 Min. / max. depth, length of Shoal per km-wise for different Classification in the designed dredged channel:-

Class-I:-

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
0	1	0.5	1.9	1000	23169.46	23169.46	-0.2	1.7	1000	71107.07	71107.07
1	2	0.5	1.8	1000	16380.01	39549.47	-0.2	1.7	1000	38240.9	109347.97
2	3	0.5	2.8	1000	1441	40990.47	-0.2	2.5	1000	26775.15	136123.12
3	4	1	2.5	1000	3521.01	44511.48	0.5	2.1	700	719.35	136842.47
4	5	1.1	2.3	1000	889.26	45400.74	0.3	2.2	1000	13811.01	150653.48
5	6	2	3.2	0	0	45400.74	0.8	1.7	1000	1039.82	151693.3
6	7	2.1	2.5	0	0	45400.74	0.6	3.7	1000	2577.55	154270.85
7	8	2.1	3.1	0	0	45400.74	0.5	3.2	1000	1992.58	156263.43
8	9	1.1	3.8	1000	2154.09	47554.83	0.5	3.2	1000	26546.16	182809.59
9	10	0.9	3.1	1000	2337.26	49892.09	0.7	2.1	1000	3793.48	186603.07
10	11	0.9	3.5	1000	2951.01	52843.1	0.5	3.2	1000	12683.41	199286.48
11	12	0.5	3.2	1000	9556.43	62399.53	0.5	3	1000	4651.94	203938.42
12	13	1.2	2.9	0	0	62399.53	1.1	2.9	300	457.02	204395.44
13	14	1.1	3.3	1000	10857.81	73257.34	-0.3	3.2	1000	26142.79	230538.23
14	15	0.5	3.2	1000	12090.25	85347.59	-0.1	2.5	1000	19065.13	249603.36
15	16	0.7	2.7	1000	3330.37	88677.96	-0.3	2.5	1000	3957.93	253561.29
16	17	0.8	3.7	1000	1889.99	90567.95	0.5	3.3	1000	22195.96	275757.25
17	18	0.5	2.9	1000	22365.6	112933.55	0.3	2.5	1000	35574.43	311331.68
18	19	0.9	3.7	1000	11229.02	124162.57	0.5	3.2	1000	9029.51	320361.19
19	20	0.7	2.9	1000	22440.69	146603.26	0.3	2.1	1000	57270.98	377632.17
20	21	0.7	3.1	1000	21163.46	167766.72	-0.3	2.3	1000	84777.74	462409.91
21	22	0.9	2.7	1000	29531.48	197298.2	0.3	2	1000	75716.52	538126.43
22	23	0.5	3.7	450	529.76	197827.96	-0.3	1.7	1000	10261.33	548387.76
23	24	0.9	3.5	1000	20943.93	218771.89	0.5	2.1	1000	64787.79	613175.55
24	25	0.5	3.7	1000	17048.66	235820.55	-0.3	2.1	1000	78645.74	691821.29
25	26	0.9	2.8	1000	22466.55	258287.1	0.5	1.7	1000	67089.64	758910.93
26	27	1	2.7	1000	21674.44	279961.54	0.5	2.3	1000	42917.05	801827.98
27	28	1	2.9	1000	26076.93	306038.47	0.3	2.1	1000	98436.35	900264.33
28	29	0.5	2.7	1000	14695.94	320734.41	0.3	1.8	1000	53945.7	954210.03

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
29	30	1.2	3.2	1000	26035.64	346770.05	0.3	2.1	1000	21538.41	975748.44
30	31	0.5	3.3	1000	39065.34	385835.39	0.3	1.7	1000	12974.09	988722.53
31	32	0.8	2.5	1000	31411.55	417246.94	0.5	1.7	1000	39632.94	1028355.5
32	33	0.7	2.3	1000	13785.73	431032.67	0.5	1.7	1000	79117.28	1107472.8
33	34	0.7	2.5	1000	29782.01	460814.68	0.7	2.5	1000	38018.16	1145490.9
34	35	1	2.5	1000	29863.49	490678.17	0.5	2.4	1000	33590.89	1179081.8
35	36	0.7	2.7	1000	7696.39	498374.56	0.4	1.9	1000	30520.38	1209602.2
36	37	0.5	2.9	1000	14272.33	512646.89	0.7	2.1	1000	38565.95	1248168.1
37	38	0.2	2.9	1000	19825.23	532472.12	0.8	1.8	1000	47708.03	1295876.2
38	39	0.5	2.6	1000	27806.69	560278.81	0.5	1.4	1000	67595.38	1363471.5
39	40	0.7	2.4	1000	25563.87	585842.68	0.4	2	1000	69050.49	1432522
40	41	0.6	2.2	1000	23632.76	609475.44	0.9	1.8	1000	65745.92	1498268
41	42	0.5	2.5	1000	13108.4	622583.84	0.5	1.7	1000	94413.95	1592681.9
42	43	0.7	2.7	1000	8888.27	631472.11	0.5	2.2	1000	55536.47	1648218.4
43	44	0.8	1.9	1000	10125.29	641597.4	0.5	2.3	1000	77751.31	1725969.7
44	45	0.8	2.9	1000	17978.26	659575.66	1.1	2.5	1000	96974.93	1822944.6
45	46	0.5	2.5	1000	29753.74	689329.4	0.5	1.7	1000	140302.29	1963246.9
46	47	0.5	2.4	1000	22517.02	711846.42	0.9	1.5	1000	85239.42	2048486.3
47	48	0.9	2.4	1000	17961.58	729808	0.5	1.7	1000	89620.39	2138106.7
48	49	0.5	1.8	1000	12789.09	742597.09	0.9	1.7	1000	18195.09	2156301.8
49	50	1	2.3	1000	19844.52	762441.61	0.2	1.4	1000	17798.75	2174100.6
50	51	0.5	1.9	1000	24617.92	787059.53	0.4	1.7	1000	28210.09	2202310.6
51	52	0.5	2.3	1000	16734.05	803793.58	0.5	1.9	1000	38897.47	2241208.1
52	53	1	2.8	1000	24730.87	828524.45	0.4	1.7	1000	25666.61	2266874.7
53	54	0.9	1.8	1000	18549.3	847073.75	0.7	1.4	1000	32368.79	2299243.5
54	55	0.5	1.8	1000	27288.45	874362.2	0.3	1.9	1000	119500.8	2418744.4
55	56	1.1	3.7	1000	15073.05	889435.25	1	1.9	1000	31992.76	2450737.1
56	57	1	2.9	1000	5484.14	894919.39	1	2	1000	38945.44	2489682.6
57	58	1	2.7	1000	3081.76	898001.15	0.5	1.8	1000	45542.69	2535225.2
58	59	0.5	1.7	1000	14098.39	912099.54	0.3	1.9	1000	52896.02	2588121.3
59	60	0.9	1.7	1000	16590.67	928690.21	0.5	1.9	1000	57047.71	2645169
60	61	0.5	1.7	1000	9816.04	938506.25	0.5	1.9	1000	26557.48	2671726.5
61	62	0.5	2.1	1000	14482.1	952988.35	0.3	1.5	1000	90958.89	2762685.3
62	63	0.5	2.5	1000	4572.69	957561.04	0.9	1.7	1000	45202.33	2807887.7
63	64	0.7	2.5	1000	16100.27	973661.31	0.5	1.5	1000	71785.93	2879673.6
64	65	0.9	2.1	1000	11870.64	985531.95	0.3	1.9	1000	62562	2942235.6
65	66	1	2.3	100	55.27	985587.22	0.7	1.9	1000	20800.79	2963036.4
66	67	1	2.5	1000	7744.45	993331.67	0.6	1.8	1000	61647.86	3024684.3
67	68	1.1	2.5	1000	14279.14	1007610.8	0.5	1.9	1000	102897.5	3127581.8
68	69	0.9	2.3	1000	6749.6	1014360.4	0.7	2.5	1000	66537.72	3194119.5
69	70	0.5	1.8	1000	828.89	1015189.3	0.3	1.7	1000	29294	3223413.5

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
70	71	0.6	2.1	1000	3087.77	1018277.1	0.4	1.9	1000	58562.25	3281975.7
71	72	0.5	2.5	1000	14081.15	1032358.2	0.5	1.5	1000	49838.32	3331814.1
72	73	1	3.1	1000	8238.61	1040596.8	1	1.8	1000	73189.68	3405003.7
73	74	0.5	2.1	1000	9704.25	1050301.1	0.5	1.5	1000	109440.9	3514444.6
74	75	0.2	1.8	250	380.52	1050681.6	0.2	1.4	1000	6231.69	3520676.3
75	76	0.8	2.7	1000	1008.95	1051690.6	0.5	1.5	1000	52318.55	3572994.8
76	77	1	2.2	500	523.91	1052214.5	1	1.5	1000	22999.13	3595994
77	78	0.5	1.9	1000	2493.43	1054707.9	0.3	1.9	1000	1110.63	3597104.6
78	79	1.1	3	1000	4854.77	1059562.7	0.9	2.1	400	405.52	3597510.1
79	80	1	2.9	1000	8548.51	1068111.2	0.5	1.4	1000	6128.65	3603638.8
80	81	1	3.1	1000	6411.94	1074523.1	0.9	1.9	1000	1501.22	3605140
81	82	0.3	2.6	1000	8797.74	1083320.9	0.5	1.9	1000	8837.46	3613977.5
82	83	0.7	2.4	1000	2338.68	1085659.5	0.5	1.5	1000	8465.02	3622442.5
83	84	0.5	2.5	1000	6281.35	1091940.9	0.3	1.5	1000	2482.98	3624925.5
84	85	0.7	1.8	750	809.73	1092750.6	0.5	1.9	1000	2454.15	3627379.6
85	86	0.5	2.7	1000	16818.09	1109568.7	0.4	1.9	1000	2822.79	3630202.4
86	87	0.5	2.9	1000	8670.34	1118239	0.4	2.1	100	0.18	3630202.6
87	88	0.5	2.1	1000	4811.6	1123050.6	0.3	2	1000	10542.39	3640745
88	89	0.6	2.5	1000	5695.19	1128745.8	0.5	3	1000	8361.91	3649106.9
89	90	1.2	2.3	1000	13244.08	1141989.9	0.4	3	1000	8313.91	3657420.8
90	91	1	2.3	1000	11856.1	1153846	1	1.9	1000	14540.84	3671961.6
91	92	1	2.1	1000	4026.11	1157872.1	0.5	1.9	1000	12218.98	3684180.6
92	93	0.5	3.1	1000	3574.32	1161446.4	0.3	2.2	1000	4012.36	3688193
93	94	0.5	3.1	1000	8564.97	1170011.4	0.3	2.2	1000	13525.6	3701718.6
94	95	0.5	2.2	1000	10661.84	1180673.3	0.3	2.5	1000	20019.5	3721738.1
95	96	1	2.3	1000	12193.16	1192866.4	0.5	2.2	1000	38854.03	3760592.1
96	97	1	1.9	1000	58156.56	1251023	0.7	2.3	1000	147340.2	3907932.3
97	98	0.1	3.1	1000	29153.22	1280176.2	-0.3	0	1000	67865.22	3975797.5
98	99	0.1	0.6	1000	37615.01	1317791.2	-0.3	0	1000	74170.47	4049968
99	100	0.1	0.5	1000	31927.66	1349718.9	-0.3	0	1000	52828.05	4102796
100	101	0.1	0.8	1000	20732.95	1370451.8	-0.3	0	1000	34818.7	4137614.7
101	102	0.1	0.8	1000	15683.65	1386135.5	-0.3	0	1000	66513.52	4204128.3
102	103	0.1	0.6	1000	29048.48	1415183.9	-0.3	0	1000	40186.96	4244315.2
103	104	0.1	0.5	1000	26516.09	1441700	-0.3	0	1000	42987.01	4287302.2
104	105	0.1	0.5	1000	23131.07	1464831.1	-0.3	0	1000	34237.42	4321539.7
105	106	0.1	0.8	1000	35775.38	1500606.5	-0.3	0	1000	4340.4	4325880.1
106	107	0.1	0.7	1000	31524.94	1532131.4	-0.3	0	1000	42919.71	4368799.8
107	108	0.1	0.8	1000	15346.72	1548309.6	-0.3	0	1000	66482.59	4435282
108	109.136	0.1	0.8	1000	16178.22	1563656.3	-0.3	2	1000	109402.3	4544684.6
Total				102050	1563656.3		Total		106500	4544684.6	

Table 19 Minimum & Maximum depth for Class-I

Class-II:-

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
0	1	0.5	1.9	1000	28890.01	28890.01	-0.2	1.7	1000	63931.14	63931.14
1	2	0.5	1.8	1000	10697.94	39587.95	-0.2	1.7	1000	45347.78	109278.92
2	3	0.5	2.8	1000	30164.31	69752.26	-0.2	2.5	1000	19269.85	128548.77
3	4	1	2.5	1000	4759.8	74512.06	0.5	2.1	1000	8271.7	136820.47
4	5	1.4	2.3	0	0	74512.06	0.3	2.2	1000	12805.33	149625.8
5	6	2	3.2	550	768.02	75280.08	0.8	1.7	1000	1221.25	150847.05
6	7	2.1	2.5	0	0	75280.08	0.6	3.7	1000	3533.08	154380.13
7	8	2.1	3.1	0	0	75280.08	1.4	3.2	0	0	154380.13
8	9	2.2	3.8	0	0	75280.08	0.5	3.2	1000	18686.54	173066.67
9	10	0.9	3.1	1000	4912.76	80192.84	0.7	2.1	1000	13837.69	186904.36
10	11	1.4	3.5	0	0	80192.84	0.5	3.2	1000	7101.1	194005.46
11	12	0.5	3.2	1000	11259.18	91452.02	0.5	3	1000	10117.93	204123.39
12	13	1.2	2.9	1000	1249.34	92701.36	1.4	2.9	0	0	204123.39
13	14	1.4	3.3	0	0	92701.36	-0.3	3.2	1000	20826.69	224950.08
14	15	0.5	3.2	1000	13083.93	105785.29	-0.1	2.5	1000	19604.22	244554.3
15	16	0.7	2.7	1000	12060.97	117846.26	-0.3	2.5	1000	5079.83	249634.13
16	17	0.8	3.7	500	673.94	118520.2	0.5	3.3	1000	10672.24	260306.37
17	18	0.5	2.9	1000	11952.48	130472.68	0.3	2.5	1000	38253.09	298559.46
18	19	0.9	3.7	1000	19416.47	149889.15	0.5	3.2	1000	17296.7	315856.16
19	20	0.7	2.9	1000	9313.8	159202.95	0.3	2.1	1000	36340.64	352196.8
20	21	0.7	3.1	1000	27771.54	186974.49	-0.3	2.3	1000	74313.46	426510.26
21	22	0.9	2.7	1000	29544.08	216518.57	0.3	2	1000	117833.53	544343.79
22	23	0.5	3.7	1000	11540.21	228058.78	-0.3	1.7	1000	2696.16	547039.95
23	24	0.9	3.5	1000	10128.82	238187.6	0.5	2.1	1000	57563.77	604603.72
24	25	0.5	3.7	1000	18036.09	256223.69	-0.3	2.1	1000	95501.61	700105.33
25	26	0.9	2.8	1000	23826.11	280049.8	0.5	1.7	1000	48299.84	748405.17
26	27	1	2.7	1000	20607.75	300657.55	0.5	2.3	1000	58937.54	807342.71
27	28	1	2.9	1000	22364.95	323022.5	0.3	2.1	1000	73256.38	880599.09
28	29	0.5	2.7	1000	22798.4	345820.9	0.3	1.8	1000	87789.49	968388.58
29	30	1.2	3.2	1000	17351.17	363172.07	0.3	2.1	1000	17367.24	985755.82
30	31	0.5	3.3	1000	31408.35	394580.42	0.3	1.7	1000	19464.68	1005220.5
31	32	0.8	2.5	1000	39082.88	433663.3	0.5	1.7	1000	28581.29	1033801.8
32	33	0.7	2.3	1000	21329.52	454992.82	0.5	1.7	1000	69934.68	1103736.5
33	34	0.7	2.5	1000	23116.04	478108.86	0.7	2.5	1000	64818.48	1168555
34	35	1	2.5	1000	35035.58	513144.44	0.5	2.4	1000	29803.11	1198358.1
35	36	0.7	2.7	1000	20419.46	533563.9	0.5	1.9	1000	28156.51	1226514.6
36	37	0.5	2.9	1000	10993.78	544557.68	0.4	2.1	1000	32811.56	1259326.1

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
37	38	0.2	2.9	1000	12222.5	556780.18	0.2	1.8	1000	43941.1	1303267.2
38	39	0.5	2.6	1000	25002.41	581782.59	0.5	1.4	1000	79607.94	1382875.2
39	40	0.7	2.4	1000	27584.77	609367.36	0.5	2	1000	49439.04	1432314.2
40	41	0.6	2.2	1000	24606.71	633974.07	0.5	1.8	1000	87819.99	1520134.2
41	42	0.5	2.5	1000	18664.03	652638.1	0.5	1.7	1000	104954.91	1625089.1
42	43	0.7	2.7	1000	15124.8	667762.9	0.5	2.2	1000	59348.96	1684438.1
43	44	0.8	1.9	1000	5713.29	673476.19	0.5	2.3	1000	66720.66	1751158.7
44	45	0.8	2.9	1000	17666.56	691142.75	0.6	2.5	1000	86013.59	1837172.3
45	46	0.5	2.5	1000	21778.72	712921.47	0.5	1.7	1000	157346.98	1994519.3
46	47	0.5	2.4	1000	25203.25	738124.72	0.3	1.5	1000	78733.98	2073253.3
47	48	0.9	2.4	1000	19263.4	757388.12	0.5	1.7	1000	93131.86	2166385.1
48	49	0.5	1.8	1000	20051.5	777439.62	0.3	1.7	1000	46489.64	2212874.8
49	50	1	2.3	1000	16353.1	793792.72	0.5	1.4	1000	4824.51	2217699.3
50	51	0.5	1.9	1000	21832.83	815625.55	0.4	1.7	1000	29950.73	2247650
51	52	0.5	2.3	1000	18923.16	834548.71	0.5	1.9	1000	59845.12	2307495.1
52	53	1	2.8	1000	21420.71	855969.42	0.5	1.7	1000	22536.81	2330032
53	54	0.9	1.8	1000	20481.75	876451.17	0.7	1.4	1000	32132.61	2362164.6
54	55	0.5	1.8	1000	25146.72	901597.89	0.3	1.9	1000	115062.6	2477227.2
55	56	1.1	3.7	1000	23791.59	925389.48	1	1.9	1000	43121.09	2520348.3
56	57	1	2.9	1000	7692.9	933082.38	0.5	2	1000	43535.67	2563883.9
57	58	1	2.7	1000	4479.93	937562.31	0.3	1.8	1000	35254.35	2599138.3
58	59	0.5	1.7	1000	12211.38	949773.69	0.3	1.9	1000	52846.36	2651984.6
59	60	0.9	1.7	1000	11946.19	961719.88	0.5	1.9	1000	70568.12	2722552.8
60	61	0.5	1.7	1000	11446.22	973166.1	0.5	1.9	1000	16577.63	2739130.4
61	62	0.5	2.1	1000	12829.86	985995.96	0.3	1.5	1000	93080.62	2832211
62	63	0.5	2.5	1000	10958.94	996954.9	0.3	1.7	1000	42479.52	2874690.5
63	64	0.7	2.5	1000	4659.74	1001614.6	0.5	1.5	1000	83200.47	2957891
64	65	0.9	2.1	1000	15143.61	1016758.3	0.5	1.9	1000	64315.43	3022206.4
65	66	1	2.3	1000	8043.79	1024802	0.7	1.9	1000	18865.31	3041071.7
66	67	1	2.5	1000	1459.23	1026261.3	0.8	1.8	1000	59497.31	3100569
67	68	1.1	2.5	1000	8566.42	1034827.7	0.5	1.9	1000	109684.39	3210253.4
68	69	0.9	2.3	1000	14714.43	1049542.1	0.6	2.5	1000	60070.29	3270323.7
69	70	0.5	1.8	1000	2326.64	1051868.8	0.3	1.7	1000	32991.81	3303315.5
70	71	0.6	2.1	250	288.71	1052157.5	0.5	1.9	1000	55329.63	3358645.2
71	72	0.5	2.5	1000	10319.77	1062477.2	0.5	1.5	1000	52811.96	3411457.1
72	73	1	3.1	1000	10083.19	1072560.4	1	1.8	1000	63167.16	3474624.3
73	74	0.5	2.1	1000	7712	1080272.4	0.5	1.5	1000	111732.02	3586356.3
74	75	0.2	1.8	1000	8685.12	1088957.6	0.2	1.4	1000	11284.43	3597640.7
75	76	0.8	2.7	150	136.8	1089094.4	0.5	1.5	1000	46328.46	3643969.2
76	77	1	2.2	600	656.67	1089751	0.6	1.5	1000	20820.13	3664789.3
77	78	0.5	1.9	800	994.19	1090745.2	0.6	1.9	1000	1771.88	3666561.2
78	79	1.1	3	1000	3193.44	1093938.7	0.9	2.1	450	518.45	3667079.7

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
79	80	1	2.9	1000	9269.5	1103208.2	0.5	1.4	1000	5162.7	3672242.4
80	81	1	3.1	1000	4798.02	1108006.2	1	1.9	1000	1725.64	3673968
81	82	0.3	2.6	1000	6391.27	1114397.4	0.3	1.9	1000	7335.64	3681303.6
82	83	0.7	2.4	1000	4358.71	1118756.2	0.5	1.5	1000	7133.23	3688436.9
83	84	0.5	2.5	1000	6936.91	1125693.1	0.3	1.5	1000	4247.79	3692684.7
84	85	0.7	1.8	1000	1202.21	1126895.3	0.5	1.9	1000	3881.64	3696566.3
85	86	0.5	2.7	1000	6351.03	1133246.3	0.4	1.9	1000	2365.13	3698931.4
86	87	0.5	2.9	1000	10429.09	1143675.4	0.5	2.1	1000	3405.8	3702337.2
87	88	0.5	2.1	1000	9301.58	1152977	0.5	2	1000	4628.53	3706965.8
88	89	0.6	2.5	1000	5138.51	1158115.5	0.5	3	1000	11382.17	3718347.9
89	90	1.2	2.3	1000	8572.29	1166687.8	0.4	3	1000	9642.53	3727990.5
90	91	1	2.3	1000	11949.42	1178637.2	1	1.9	1000	17300.49	3745290.9
91	92	1	2.1	1000	9820.33	1188457.5	0.5	1.9	1000	9511.5	3754802.4
92	93	0.5	3.1	1000	2509.7	1190967.2	0.4	2.2	1000	6027.28	3760829.7
93	94	0.5	3.1	1000	4115.11	1195082.3	0.5	2.2	1000	12768.31	3773598
94	95	0.5	2.2	1000	9088.76	1204171.1	0.5	2.5	1000	24085.49	3797683.5
95	96	1	2.3	1000	9924.33	1214095.4	0.3	2.2	1000	45042.5	3842726
96	97	1	1.9	1000	29188.13	1243283.6	1	2.3	1000	160193.29	4002919.3
97	98	0.1	3.1	1000	58198.81	1301482.4	-0.3	0	1000	73437.49	4076356.8
98	99	0.1	0.6	1000	34761.15	1336243.5	-0.3	0	1000	71373.79	4147730.6
99	100	0.1	0.5	1000	37320.34	1373563.9	-0.3	0	1000	54622.68	4202353.3
100	101	0.1	0.8	1000	20914.28	1394478.1	-0.3	0	1000	47803.97	4250157.2
101	102	0.1	0.8	1000	20194.87	1414673	-0.3	0	1000	53294.73	4303452
102	103	0.1	0.6	1000	23075.27	1437748.3	-0.3	0	1000	31341.54	4334793.5
103	104	0.1	0.5	1000	28117.74	1465866	-0.3	0	1000	54683.47	4389477
104	105	0.1	0.5	1000	21408.84	1487274.9	-0.3	0	1000	13633.53	4403110.5
105	106	0.1	0.8	1000	34530.76	1521805.6	-0.3	0	1000	5679.26	4408789.8
106	107	0.1	0.7	1000	33529.81	1555335.4	-0.3	0	1000	128995.03	4537784.8
107	108	0.1	0.8	1000	21199.6	1576535	-0.3	0	1000	134674.29	4672459.1
108	109.136	0.1	0.8	1000	24757.08	1601292.1	-0.3	2	1000	140353.55	4812812.6
Total				99850	1601292.1		Total		106450	4812812.6	

Table 20 Minimum & Maximum depth for Class-II

Class-III:-

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
0	1	0.5	1.9	1000	24172.11	24172.11	-0.2	1.7	1000	73655.73	73655.73
1	2	0.5	1.8	1000	16351.01	40523.12	-0.2	1.7	1000	35756.07	109411.8
2	3	0.5	2.8	1000	2269.3	42792.42	-0.2	2.5	1000	33758.97	143170.77
3	4	1	2.5	1000	3534.76	46327.18	0.5	2.1	500	666.82	143837.59
4	5	1.1	2.3	1000	1510.19	47837.37	0.3	2.2	1000	17667.87	161505.46
5	6	2	3.2	0	0	47837.37	0.8	1.7	1000	1063.86	162569.32
6	7	2.1	2.5	0	0	47837.37	0.6	3.7	1000	2263.92	164833.24
7	8	2.1	3.1	100	2.03	47839.4	0.5	3.2	1000	7740.25	172573.49
8	9	1.1	3.8	1000	1172.21	49011.61	0.5	3.2	1000	24454.65	197028.14
9	10	0.9	3.1	1000	1649.62	50661.23	0.7	2.1	1000	3613.3	200641.44
10	11	0.9	3.5	1000	2875.28	53536.51	0.5	3.2	1000	11727.34	212368.78
11	12	0.5	3.2	1000	9857.11	63393.62	0.5	3	1000	5431.01	217799.79
12	13	1.2	2.9	100	39.04	63432.66	1.1	2.9	1000	4010.28	221810.07
13	14	1.1	3.3	1000	11143.63	74576.29	-0.3	3.2	1000	40185.71	261995.78
14	15	0.5	3.2	1000	12383.93	86960.22	-0.1	2.5	1000	19323.12	281318.9
15	16	0.7	2.7	1000	5395.54	92355.76	-0.3	2.5	1000	11103.12	292422.02
16	17	0.8	3.7	1000	5312.57	97668.33	0.5	3.3	1000	20848.73	313270.75
17	18	0.5	2.9	1000	19342.07	117010.4	0.3	2.5	1000	39620.34	352891.09
18	19	0.9	3.7	1000	9037.54	126047.94	0.5	3.2	1000	7844.83	360735.92
19	20	0.7	2.9	1000	24514.19	150562.13	0.3	2.1	1000	63034.62	423770.54
20	21	0.7	3.1	1000	21748.1	172310.23	-0.3	2.3	1000	69481.73	493252.27
21	22	0.9	2.7	1000	29330.26	201640.49	0.3	2	1000	64844.46	558096.73
22	23	0.5	3.7	150	203.61	201844.1	-0.3	1.7	1000	10618.45	568715.18
23	24	0.9	3.5	1000	20713.66	222557.76	0.5	2.1	1000	63901.82	632617
24	25	0.5	3.7	1000	18254.56	240812.32	-0.3	2.1	1000	63480.91	696097.91
25	26	0.9	2.8	1000	22862.86	263675.18	0.5	1.7	1000	97480.25	793578.16
26	27	1	2.7	1000	22683.1	286358.28	0.5	2.3	1000	36996.6	830574.76
27	28	1	2.9	1000	25551.36	311909.64	0.3	2.1	1000	107948.56	938523.32
28	29	0.5	2.7	1000	16131.62	328041.26	0.3	1.8	1000	58093.07	996616.39
29	30	1.2	3.2	1000	23349.29	351390.55	0.3	2.1	1000	22729.74	1019346.1
30	31	0.5	3.3	1000	40386.93	391777.48	0.4	1.7	1000	9042.85	1028389
31	32	0.8	2.5	1000	29822.29	421599.77	0.5	1.7	1000	42027.47	1070416.5
32	33	0.7	2.3	1000	12523.4	434123.17	0.5	1.7	1000	1121591.3	2192007.8
33	34	0.7	2.5	1000	26078.56	460201.73	0.7	2.5	1000	1121591.3	3313599.1
34	35	1	2.5	1000	25865.57	486067.3	0.5	2.4	1000	36513.63	3350112.8
35	36	0.7	2.7	1000	5037.71	491105.01	0.5	1.9	1000	38053.17	3388165.9

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
36	37	0.5	2.9	1000	14403.63	505508.64	0.5	2.1	1000	51813.77	3439979.7
37	38	0.2	2.9	1000	21786.01	527294.65	0.2	1.8	1000	51910.46	3491890.2
38	39	0.5	2.6	1000	28553.34	555847.99	0.5	1.4	1000	55857.33	3547747.5
39	40	0.7	2.4	1000	24905.81	580753.8	0.5	2	1000	50180.65	3597928.1
40	41	0.6	2.2	1000	25229.44	605983.24	0.5	1.8	1000	56427.68	3654355.8
41	42	0.5	2.5	1000	11305.42	617288.66	0.5	1.7	1000	49946.48	3704302.3
42	43	0.7	2.7	1000	10704.48	627993.14	0.6	2.2	1000	80060.68	3784363
43	44	0.8	1.9	1000	7447.36	635440.5	0.5	2.3	1000	51700.83	3836063.8
44	45	0.8	2.9	1000	19957.11	655397.61	0.6	2.5	1000	80443.75	3916507.6
45	46	0.5	2.5	1000	29414.62	684812.23	0.5	1.7	1000	104396.06	4020903.6
46	47	0.5	2.4	1000	20064.56	704876.79	0.5	1.5	1000	123539.79	4144443.4
47	48	0.9	2.4	1000	19761.58	724638.37	0.5	1.7	1000	108372.84	4252816.3
48	49	0.5	1.8	1000	14642.47	739280.84	0.4	1.7	1000	84725.27	4337541.5
49	50	1	2.3	1000	15126.39	754407.23	0.2	1.4	1000	11401.6	4348943.1
50	51	0.5	1.9	1000	25969.92	780377.15	0.4	1.7	1000	29964.92	4378908
51	52	0.5	2.3	1000	17204.37	797581.52	0.5	1.9	1000	16446.99	4395355
52	53	1	2.8	1000	25803.08	823384.6	1	1.7	1000	14914.95	4410270
53	54	0.9	1.8	1000	19852.67	843237.27	0.7	1.4	1000	49353.05	4459623
54	55	0.5	1.8	1000	27394.82	870632.09	0.3	1.9	1000	32750.48	4492373.5
55	56	1.1	3.7	1000	16233.26	886865.35	1	1.9	1000	109826.14	4602199.7
56	57	1	2.9	1000	7925.41	894790.76	1	2	1000	31696.03	4633895.7
57	58	1	2.7	1000	2638.75	897429.51	0.9	1.8	1000	32851.95	4666747.6
58	59	0.5	1.7	1000	14529.78	911959.29	0.4	1.9	1000	58056.76	4724804.4
59	60	0.9	1.7	1000	19847.22	931806.51	0.5	1.9	1000	50123.09	4774927.5
60	61	0.5	1.7	1000	16057.41	947863.92	0.5	1.9	1000	53554.26	4828481.7
61	62	0.5	2.1	1000	14578.74	962442.66	0.3	1.5	1000	29357.92	4857839.7
62	63	0.5	2.5	1000	7662.17	970104.83	0.3	1.7	1000	68821.17	4926660.8
63	64	0.7	2.5	1000	17924.18	988029.01	0.5	1.5	1000	39690.22	4966351.1
64	65	0.9	2.1	1000	11775.67	999804.68	0.6	1.9	1000	70740.14	5037091.2
65	66	1	2.3	1000	1012.99	1000817.7	1	1.9	1000	66193.99	5103285.2
66	67	1	2.5	1000	13261.3	1014079	0.7	1.8	1000	27779.94	5131065.1
67	68	1.1	2.5	1000	15420.6	1029499.6	0.5	1.9	1000	54350.1	5185415.2
68	69	0.9	2.3	1000	9902.52	1039402.1	0.6	2.5	1000	98184.57	5283599.8
69	70	0.5	1.8	1000	3190.4	1042592.5	0.3	1.7	1000	102211.5	5385811.3
70	71	0.6	2.1	1000	4909.25	1047501.7	0.5	1.9	1000	34408.95	5420220.2
71	72	0.5	2.5	1000	15227.23	1062729	0.3	1.5	1000	56520.05	5476740.3
72	73	1	3.1	1000	10297.71	1073026.7	0.9	1.8	1000	63935.28	5540675.6
73	74	0.5	2.1	1000	10067.13	1083093.8	0.5	1.5	1000	103858.96	5644534.5
74	75	0.2	1.8	100	96.35	1083190.2	0.2	1.4	1000	108974.26	5753508.8
75	76	0.8	2.7	1000	9970.78	1093160.9	0.7	1.5	1000	12985.34	5766494.1
76	77	1	2.2	1000	2126.74	1095287.7	0.9	1.5	1000	75365.7	5841859.8

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
77	78	0.5	1.9	1000	4730.13	1100017.8	0.3	1.9	1000	51441.32	5893301.2
78	79	1.1	3	1000	9266.57	1109284.4	0.9	2.1	1000	1254.37	5894555.5
79	80	1	2.9	1000	12327.54	1121611.9	0.5	1.4	100	113.3	5894668.8
80	81	1	3.1	1000	8539.35	1130151.3	1	1.9	1000	10735.73	5905404.6
81	82	0.3	2.6	1000	13036.14	1143187.4	0.3	1.9	450	527.03	5905931.6
82	83	0.7	2.4	1000	4325.61	1147513	0.5	1.5	1000	15807.47	5921739.1
83	84	0.5	2.5	1000	9506.93	1157020	0.4	1.5	1000	16161.72	5937900.8
84	85	0.7	1.8	1000	2926.52	1159946.5	0.5	1.9	1000	514.98	5938415.8
85	86	0.5	2.7	1000	19866.77	1179813.2	0.3	1.9	100	124.7	5938540.5
86	87	0.5	2.9	1000	9903.32	1189716.6	0.3	2.1	1000	3845.8	5942386.3
87	88	0.5	2.1	1000	9289.71	1199006.3	0.4	2	1000	1798.01	5944184.3
88	89	0.6	2.5	1000	10531.23	1209537.5	0.5	3	1000	24732.32	5968916.6
89	90	1.2	2.3	1000	15094.61	1224632.1	0.4	3	1000	5449.16	5974365.7
90	91	1	2.3	1000	15351.71	1239983.8	1	1.9	1000	4938.22	5979304
91	92	1	2.1	1000	7290.34	1247274.2	0.5	1.9	1000	9915.22	5989219.2
92	93	0.5	3.1	1000	5081.41	1252355.6	0.4	2.2	1000	10714.32	5999933.5
93	94	0.5	3.1	1000	10394.75	1262750.3	0.5	2.2	1000	14865.06	6014798.6
94	95	0.5	2.2	1000	11346.61	1274096.9	0.5	2.5	1000	10159.12	6024957.7
95	96	1	2.3	1000	14058.09	1288155	0.3	2.2	1000	23278.47	6048236.2
96	97	1	1.9	1000	58296.67	1346451.7	1	1.7	1000	42777.88	6091014
97	98	0.1	3.1	1000	32227.46	1378679.2	-0.3	0	1000	146954.52	6237968.6
98	99	0.1	0.6	1000	39862.1	1418541.3	-0.3	0	1000	81205.96	6319174.5
99	100	0.1	0.5	1000	31528.64	1450069.9	-0.3	0	1000	71326.19	6390500.7
100	101	0.1	0.8	1000	23077.91	1473147.8	-0.3	0	1000	43558.64	6434059.3
101	102	0.1	0.8	1000	14456.7	1487604.5	-0.3	0	1000	22893.21	6456952.6
102	103	0.1	0.6	1000	31851.5	1519456	-0.3	0	1000	84977.74	6541930.3
103	104	0.1	0.5	1000	25959.48	1545415.5	-0.3	0	1000	41766.79	6583697.1
104	105	0.1	0.5	1000	24110.09	1569525.6	-0.3	0	1000	44051.34	6627748.4
105	106	0.1	0.8	1000	34545.22	1604070.8	-0.3	0	1000	24507.79	6652256.2
106	107	0.1	0.7	1000	32054.7	1636125.5	-0.3	0	1000	7874.95	6660131.2
107	108	0.1	0.8	1000	18883.74	1655009.2	-0.3	0	1000	78759.79	6738891
108	109.136	0.1	0.8	1000	13170.96	1668180.2	-0.3	2	1000	120546.7	6859437.7
Total				103450	1668180.2		Total		106150	6859437.7	

Table 21 Minimum & Maximum depth for Class-III

Class-IV:-

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
0	1	0.5	1.9	1000	24238.65	24238.65	-0.2	1.7	1000	73418.5	73418.5
1	2	0.5	1.8	1000	16367.82	40606.47	-0.2	1.7	1000	35753.9	109172.4
2	3	0.5	2.8	1000	2424.11	43030.58	-0.2	2.5	1000	33014.96	142187.36
3	4	1	2.5	1000	3539.55	46570.13	0.5	2.1	650	680.43	142867.79
4	5	1.1	2.3	1000	1644.89	48215.02	0.3	2.2	1000	17261.18	160128.97
5	6	2	3.2	0	0	48215.02	0.8	1.7	1000	1028.12	161157.09
6	7	2.1	2.5	0	0	48215.02	0.6	3.7	1000	2328.71	163485.8
7	8	2.1	3.1	100	33.11	48248.13	0.5	3.2	1000	6787.78	170273.58
8	9	1.1	3.8	1000	1124.1	49372.23	0.5	3.2	1000	24690.21	194963.79
9	10	0.9	3.1	1000	1526.97	50899.2	0.7	2.1	1000	3669.8	198633.59
10	11	0.9	3.5	1000	2855.19	53754.39	0.5	3.2	1000	11865.18	210498.77
11	12	0.5	3.2	1000	9894.9	63649.29	0.5	3	1000	5416.67	215915.44
12	13	1.2	2.9	100	58.14	63707.43	1.2	2.9	1000	3469.49	219384.93
13	14	1.1	3.3	1000	12487.22	76194.65	-0.3	3.2	1000	18923.1	238308.03
14	15	0.5	3.2	1000	12970.48	89165.13	-0.1	2.5	1000	9908.09	248216.12
15	16	0.7	2.7	1000	4146.95	93312.08	-0.3	2.5	1000	20906.38	269122.5
16	17	0.8	3.7	1000	8029.85	101341.93	0.5	3.3	1000	39164.82	308287.32
17	18	0.5	2.9	1000	19462.61	120804.54	0.3	2.5	1000	7921.24	316208.56
18	19	0.9	3.7	1000	8523.8	129328.34	0.5	3.2	1000	62478.28	378686.84
19	20	0.7	2.9	1000	26888.87	156217.21	0.3	2.1	1000	70429.56	449116.4
20	21	0.7	3.1	1000	23236.23	179453.44	-0.3	2.3	1000	65325.39	514441.79
21	22	0.9	2.7	1000	23300.36	202753.8	0.3	2	1000	10123.13	524564.92
22	23	0.5	3.7	300	391.34	203145.14	-0.3	1.7	1000	62763.34	587328.26
23	24	0.9	3.5	1000	22652.45	225797.59	0.5	2.1	1000	64304.75	651633.01
24	25	0.5	3.7	1000	21023.23	246820.82	-0.3	2.1	1000	94045.05	745678.06
25	26	0.9	2.8	1000	23413.19	270234.01	0.5	1.7	1000	37024.56	782702.62
26	27	1	2.7	1000	21773.96	292007.97	0.5	2.3	1000	106542.5	889245.12
27	28	1	2.9	1000	23870.11	315878.08	0.3	2.1	1000	57603.97	946849.09
28	29	0.5	2.7	1000	17415.7	333293.78	0.5	1.8	1000	22254.68	969103.77
29	30	1.2	3.2	1000	25415.57	358709.35	0.3	2.1	1000	9052.15	978155.92
30	31	0.5	3.3	1000	40032.2	398741.55	0.5	1.7	1000	41539.58	1019695.5
31	32	0.8	2.5	1000	28290.57	427032.12	0.5	1.7	1000	53392.95	1073088.5
32	33	0.7	2.3	1000	11300.31	438332.43	0.5	1.7	1000	36448.98	1109537.4
33	34	0.7	2.5	1000	28281.15	466613.58	0.7	2.5	1000	37516.06	1147053.5
34	35	1	2.5	1000	21830.81	488444.39	0.5	2.4	1000	49246.97	1196300.5
35	36	0.7	2.7	1000	5481.03	493925.42	0.5	1.9	1000	50347.89	1246648.4
36	37	0.5	2.9	1000	15018.79	508944.21	0.3	2.1	1000	54679.58	1301327.9
37	38	0.2	2.9	1000	23829.65	532773.86	0.2	1.8	1000	51574.76	1352902.7

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
38	39	0.5	2.6	1000	30681.82	563455.68	0.5	1.4	1000	57152.58	1410055.3
39	40	0.7	2.4	1000	22036.35	585492.03	0.5	2	1000	51084.94	1461140.2
40	41	0.6	2.2	1000	25704.87	611196.9	0.5	1.8	1000	81577.45	1542717.7
41	42	0.5	2.5	1000	10753.66	621950.56	0.3	1.7	1000	51670.53	1594388.2
42	43	0.7	2.7	1000	10506.31	632456.87	0.5	2.2	1000	79304.2	1673692.4
43	44	0.8	1.9	1000	6350.18	638807.05	0.5	2.3	1000	103303.63	1776996
44	45	0.8	2.9	1000	23863.49	662670.54	0.7	2.5	1000	125727.76	1902723.8
45	46	0.5	2.5	1000	27225.21	689895.75	0.5	1.7	1000	105577.92	2008301.7
46	47	0.5	2.4	1000	19418.85	709314.6	0.5	1.5	1000	84733.4	2093035.1
47	48	0.9	2.4	1000	21919.73	731234.33	0.5	1.7	1000	11828.13	2104863.2
48	49	0.5	1.8	1000	15050.96	746285.29	0.5	1.7	1000	28233.6	2133096.8
49	50	1	2.3	1000	13904.7	760189.99	0.2	1.4	1000	16843.1	2149939.9
50	51	0.5	1.9	1000	25002.81	785192.8	0.4	1.7	1000	16421.57	2166361.5
51	52	0.5	2.3	1000	19970.18	805162.98	0.5	1.9	1000	46623.99	2212985.5
52	53	1	2.8	1000	23421.41	828584.39	1	1.7	1000	32171.09	2245156.6
53	54	0.9	1.8	1000	21498.35	850082.74	0.7	1.4	1000	110498.4	2355655
54	55	0.5	1.8	1000	27369.77	877452.51	0.3	1.9	1000	31646.3	2387301.3
55	56	1.1	3.7	1000	13958.48	891410.99	1	1.9	1000	33213.5	2420514.8
56	57	1	2.9	1000	7394.91	898805.9	1	2	1000	56182.36	2476697.1
57	58	1	2.7	1000	6566.38	905372.28	1	1.8	1000	50206.06	2526903.2
58	59	0.5	1.7	1000	12694.6	918066.88	0.4	1.9	1000	54061.84	2580965
59	60	0.9	1.7	1000	20573.95	938640.83	0.5	1.9	1000	29186.04	2610151
60	61	0.5	1.7	1000	14952.46	953593.29	0.5	1.9	1000	70955.72	2681107
61	62	0.5	2.1	1000	16297.03	969890.32	0.3	1.5	1000	39891.65	2720998
62	63	0.5	2.5	1000	5729.18	975619.5	0.4	1.7	1000	70519.13	2791518
63	64	0.7	2.5	1000	18150.67	993770.17	0.5	1.5	1000	65634.97	2857153
64	65	0.9	2.1	1000	12283.84	1006054	0.8	1.9	1000	26950.37	2884103
65	66	1	2.3	500	606.27	1006660.3	1	1.9	1000	54725.2	2938828
66	67	1	2.5	1000	13897.95	1020558.2	1	1.8	1000	98675.04	3037503
67	68	1.1	2.5	1000	17466.7	1038024.9	0.5	1.9	1000	98365.21	3135868
68	69	0.9	2.3	1000	9645.56	1047670.5	0.7	2.5	1000	33263.67	3169132
69	70	0.5	1.8	1000	2479.53	1050150	0.3	1.7	1000	56231.05	3225363
70	71	0.6	2.1	1000	9272.8	1059422.8	0.5	1.9	1000	3326493	6551856
71	72	0.5	2.5	1000	13100.58	1072523.4	0.5	1.5	1000	100290.3	6652146
72	73	1	3.1	1000	9520.83	1082044.2	1	1.8	1000	108445.5	6760592
73	74	0.5	2.1	1000	9828.39	1091872.6	0.5	1.5	1000	11999.41	6772591
74	75	0.2	1.8	100	0.42	1091873	0.2	1.4	1000	72900.02	6845491
75	76	0.8	2.7	1000	4587.93	1096461	0.5	1.5	1000	48083.15	6893575
76	77	1	2.2	1000	3490.82	1099951.8	1	1.5	1000	1335.46	6894910
77	78	0.5	1.9	1000	5139.1	1105090.9	0.3	1.9	100	176.4	6895086
78	79	1.1	3	1000	12841.12	1117932	0.9	2.1	1000	9804.71	6904891
79	80	1	2.9	1000	10639.27	1128571.3	0.5	1.4	600	597.33	6905488

Chainage (km)		As per Observed Soundings					As per Reduced Soundings				
From	To	Min. depth (m)	Max. depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)	Min. Depth (m)	Max. Depth (m)	Length of Shoal (m)	Dredging Qty. (cubic meter)	Cumulative Dredging Quantity (cubic meter)
80	81	1	3.1	1000	7976.82	1136548.1	1	1.9	1000	15095.25	6920584
81	82	0.3	2.6	1000	12607.4	1149155.5	0.3	1.9	1000	15362.3	6935946
82	83	0.7	2.4	1000	6015.89	1155171.4	0.5	1.5	500	602.15	6936548
83	84	0.5	2.5	1000	8975.87	1164147.3	0.5	1.5	1000	160.82	6936709
84	85	0.7	1.8	1000	3817.47	1167964.7	0.6	1.9	1000	3717.76	6940427
85	86	0.5	2.7	1000	18851.65	1186816.4	0.3	1.9	1000	1239.87	6941667
86	87	0.5	2.9	1000	9928	1196744.4	0.4	2.1	1000	23149.32	6964816
87	88	0.5	2.1	1000	12564.99	1209309.4	0.5	2	1000	5715.52	6970531
88	89	0.6	2.5	1000	10304.41	1219613.8	0.5	3	1000	5130.74	6975662
89	90	1.2	2.3	1000	15274.57	1234888.4	0.4	3	1000	10237.16	6985899
90	91	1	2.3	1000	16787.24	1251675.6	1	1.9	1000	10894.86	6996794
91	92	1	2.1	1000	4997.88	1256673.5	0.5	1.9	1000	13355.79	7010150
92	93	0.5	3.1	1000	5305.29	1261978.8	0.5	2.2	1000	10399.54	7020549
93	94	0.5	3.1	1000	12463.03	1274441.8	0.5	2.2	1000	22699.04	7043249
94	95	0.5	2.2	1000	10438.72	1284880.5	0.5	2.5	1000	42233.52	7085482
95	96	1	2.3	1000	20106.73	1304987.2	0.3	2.2	1000	147019.8	7232502
96	97	1	1.9	1000	58291	1363278.2	1	1.7	1000	81389.01	7313891
97	98	0.1	3.1	1000	28354.17	1391632.4	-0.3	0	1000	71557.36	7385448
98	99	0.1	0.6	1000	43765.31	1435397.7	-0.3	0	1000	44127.79	7429576
99	100	0.1	0.5	1000	27889.97	1463287.7	-0.3	0	1000	23423.32	7452999
100	101	0.1	0.8	1000	25308.6	1488596.3	-0.3	0	1000	83249.76	7536249
101	102	0.1	0.8	1000	15704.98	1504301.3	-0.3	0	1000	41317.91	7577567
102	103	0.1	0.6	1000	28491.05	1532792.3	-0.3	0	1000	44251.31	7621818
103	104	0.1	0.5	1000	26080.29	1558872.6	-0.3	0	1000	25168.3	7646987
104	105	0.1	0.5	1000	26263.78	1585136.4	-0.3	0	1000	7532.66	7654519
105	106	0.1	0.8	1000	35072.65	1620209	-0.3	0	1000	74395.58	7728915
106	107	0.1	0.7	1000	32258.9	1652467.9	-0.3	0	1000	29282.31	7758197
107	108	0.1	0.8	1000	18569.49	1671037.4	-0.3	0	1000	45113.27	7803310
108	109.136	0.1	0.8	1000	13689.41	1684726.8	-0.3	2	1000	119508.9	7922819
Total				103100	1684726.8		Total		106850	7922819	

Table 22 Minimum & Maximum depth for Class-IV

Annexure-3 Observed depth at 200 meter interval:-

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
0	0.5	1.3	0.5	1.3	0.5	1.3	0.5	1.3
200	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
400	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
600	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
1000	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
1200	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
1400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
1600	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
1800	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
2000	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
2200	1.4	2.5	1.4	2.5	1.4	2.5	1.4	2.5
2400	1.5	2.7	1.5	2.7	1.5	2.7	1.5	2.7
2600	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
2800	1	2.8	1	2.8	1	2.8	1	2.8
3000	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
3200	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
3400	1.4	2.4	1.4	2.4	1.4	2.4	1.4	2.4
3600	1.7	2	1.7	2	1.7	2	1.7	2
3800	1	1.9	1	1.9	1	1.9	1	1.9
4000	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
4200	2.2	2.3	2.2	2.3	2.2	2.3	2.2	2.3
4400	2.1	2.2	2.1	2.2	2.1	2.2	2.1	2.2
4600	2.2	2.3	2.2	2.3	2.2	2.3	2.2	2.3
4800	2.1	2.2	2.1	2.2	2.1	2.2	2.1	2.2
5000	2.1	3.2	2.1	3.2	2.1	3.2	2.1	3.2
5200	2.2	2.5	2.2	2.5	2.2	2.5	2.2	2.5
5400	2.3	2.6	2.3	2.6	2.3	2.6	2.3	2.6
5600	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
5800	2	2.4	2	2.4	2	2.4	2	2.4
6000	2.2	2.4	2.2	2.4	2.2	2.4	2.2	2.4
6200	2.3	2.5	2.3	2.5	2.3	2.5	2.3	2.5
6400	2.2	2.4	2.2	2.4	2.2	2.4	2.2	2.4
6600	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
6800	2.2	2.5	2.2	2.5	2.2	2.5	2.2	2.5
7000	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
7200	2.5	3	2.5	3	2.5	3	2.5	3
7400	2.7	3.1	2.7	3.1	2.7	3.1	2.7	3.1

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
7600	2.1	2.9	2.1	2.9	2.1	2.9	2.1	2.9
7800	2.2	2.5	2.2	2.5	2.2	2.5	2.2	2.5
8000	2.4	2.7	2.4	2.7	2.4	2.7	2.4	2.7
8200	2.5	3.5	2.5	3.5	2.5	3.5	2.5	3.5
8400	2.7	3.8	2.7	3.8	2.7	3.8	2.7	3.8
8600	2.4	3	2.4	3	2.4	3	2.4	3
8800	1.1	3.5	1.1	3.5	1.1	3.5	1.1	3.5
9000	2.2	3.1	2.2	3.1	2.2	3.1	2.2	3.1
9200	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
9400	1.2	1.8	1.2	1.8	1.2	1.8	1.2	1.8
9600	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
9800	1.7	2	1.7	2	1.7	2	1.7	2
10000	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
10200	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
10400	1.4	2.7	1.4	2.7	1.4	2.7	1.4	2.7
10600	2	2.9	2	2.9	2	2.9	2	2.9
10800	1.5	3.5	1.5	3.5	1.5	3.5	1.5	3.5
11000	1.4	3.1	1.4	3.1	1.3	3.1	1.3	3.1
11200	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
11400	0.7	2.7	0.7	2.7	0.7	2.7	0.7	2.7
11600	1	2.9	1	2.9	1	2.9	1	2.9
11800	1.1	3.1	1.1	3.1	1.1	3.1	1.1	3.1
12000	1.2	3.2	1.2	3.2	1.2	3.2	1.2	3.2
12200	1.3	2.9	1.3	2.9	1.2	2.9	1.2	2.9
12400	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
12600	1.3	2.7	1	2.7	1	2.7	1	2.7
12800	1.2	2.3	1.1	2.3	1.1	2.3	1.1	2.3
13000	1.2	2.9	1.2	2.9	1.2	2.9	1.2	2.9
13200	1.8	2.5	1.8	2.5	1.8	2.5	1.8	2.5
13400	1.5	2.9	1.5	2.9	1.5	2.9	1.5	2.9
13600	1.4	3.1	1.4	3.1	1.4	3.1	1.4	3.1
13800	1.3	3.3	1.3	3.3	1.3	3.3	1.3	3.3
14000	1.5	3.2	1.5	3.2	1.5	3.2	1.5	3.2
14200	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
14400	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
14600	1	2.9	1	2.9	1	2.9	1	2.9
14800	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
15000	0.7	2.7	0.7	2.7	0.7	2.7	0.7	2.7
15200	0.8	2.5	0.8	2.5	0.8	2.5	0.8	2.5
15400	0.9	1.9	0.9	1.9	0.9	1.9	0.9	1.9
15600	1.1	2.3	1.1	2.3	1.1	2.3	1.1	2.3
15800	1	2.7	1	2.7	1	2.7	1	2.7

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
16000	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
16200	1.3	3.1	1.3	3.1	1.3	3.1	1.3	3.1
16400	0.8	3.7	0.8	3.7	0.8	3.7	0.8	3.7
16600	1.1	3.6	1.1	3.6	1.1	3.6	1.1	3.6
16800	1.2	3.7	1.2	3.7	1.2	3.7	1.2	3.7
17000	1.3	2.9	1.3	2.9	1.3	2.9	1.3	2.9
17200	0.9	2.5	0.9	2.5	0.9	2.5	0.9	2.5
17400	1.1	2.8	1.1	2.8	1.1	2.8	1.1	2.8
17600	0.5	1.9	0.5	1.9	0.5	1.9	0.5	1.9
17800	0.7	2.7	0.7	2.7	0.7	2.7	0.7	2.7
18000	0.9	2.9	0.9	2.9	0.9	2.9	0.9	2.9
18200	1	3.7	1	3.7	1	3.7	1	3.7
18400	1.2	3.5	1.2	3.5	1.2	3.5	1.2	3.5
18600	1.3	3.7	1.3	3.7	1.3	3.7	1.3	3.7
18800	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
19000	0.9	2.7	0.9	2.7	0.9	2.7	0.9	2.7
19200	0.8	1.8	0.8	1.8	0.8	1.8	0.8	1.8
19400	0.7	2.5	0.7	2.5	0.7	2.5	0.7	2.5
19600	1	2.9	1	2.9	1	2.9	1	2.9
19800	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
20000	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
20200	1.4	2.9	1.4	2.9	1.4	2.9	1.4	2.9
20400	0.7	2.2	0.7	2.2	0.7	2.2	0.7	2.2
20600	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
20800	1.2	2.9	1.2	2.9	1.2	2.9	1.2	2.9
21000	1.3	3.1	1.3	3.1	1.3	3.1	1.3	3.1
21200	0.9	2.2	0.9	2.2	0.9	2.2	0.9	2.2
21400	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
21600	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
21800	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
22000	1	2.5	1	2.5	1	2.5	1	2.5
22200	1.1	3.1	1.1	3.1	1.1	3.1	1.1	3.1
22400	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
22600	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
22800	0.8	3.7	0.8	3.7	0.8	3.7	0.8	3.7
23000	0.9	3.1	0.9	3.1	0.9	3.1	0.9	3.1
23200	1.2	2.7	1.2	2.7	1.2	2.7	1.2	2.7
23400	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
23600	1.4	2.4	1.4	2.4	1.4	2.4	1.4	2.4
23800	1.1	3.2	1.1	3.2	1.1	3.2	1.1	3.2
24000	1.3	3.5	1.3	3.5	1.3	3.5	1.3	3.5
24200	2.1	3.7	2.1	3.7	2.1	3.7	2.1	3.7

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
24400	1	2.1	1	2.1	1	2.1	1	2.1
24600	0.5	2.3	0.5	2.3	0.5	2.3	0.5	2.3
24800	0.8	2.5	0.8	2.5	0.8	2.5	0.8	2.5
25000	0.9	2.7	0.9	2.7	0.9	2.7	0.9	2.7
25200	1.3	2.8	1.3	2.8	1.3	2.8	1.3	2.8
25400	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
25600	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
25800	1	2.3	1	2.3	1	2.3	1	2.3
26000	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
26200	1.3	2.6	1.3	2.6	1.3	2.6	1.3	2.6
26400	1	2.3	1	2.3	1	2.3	1	2.3
26600	1.1	2.4	1.1	2.4	1.1	2.4	1.1	2.4
26800	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
27000	1.4	2.7	1.4	2.7	1.4	2.7	1.4	2.7
27200	1	2.9	1	2.9	1	2.9	1	2.9
27400	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
27600	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
27800	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
28000	1	2.3	1	2.3	1	2.3	1	2.3
28200	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
28400	0.8	2.7	0.8	2.7	0.8	2.7	0.8	2.7
28600	0.6	1.8	0.6	1.8	0.6	1.8	0.6	1.8
28800	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
29000	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
29200	1.3	2.3	1.3	2.3	1.3	2.3	1.3	2.3
29400	1.4	2.5	1.4	2.5	1.4	2.5	1.4	2.5
29600	1.5	2.7	1.5	2.7	1.5	2.7	1.5	2.7
29800	1.7	3.1	1.7	3.1	1.7	3.1	1.7	3.1
30000	1.6	3.2	1.6	3.2	1.6	3.2	1.6	3.2
30200	1.8	3.3	1.8	3.3	1.8	3.3	1.8	3.3
30400	1.7	2.3	1.7	2.3	1.7	2.3	1.7	2.3
30600	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
30800	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
31000	1	1.3	1	1.3	1	1.3	1	1.3
31200	1.3	1.6	1.3	1.6	1.3	1.6	1.3	1.6
31400	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
31600	1.4	2.5	1.4	2.5	1.4	2.5	1.4	2.5
31800	0.8	1.9	0.8	1.9	0.8	1.9	0.8	1.9
32000	0.9	1.8	0.9	1.8	0.9	1.8	0.9	1.8
32200	0.7	2.1	0.7	2.1	0.7	2.1	0.7	2.1
32400	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
32600	1.1	2.3	1.1	2.3	1.1	2.3	1.1	2.3

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
32800	1	1.9	1	1.9	1	1.9	1	1.9
33000	1.3	2.1	1.3	2.1	1.3	2.1	1.3	2.1
33200	0.7	2.2	0.7	2.2	0.7	2.2	0.7	2.2
33400	0.9	1.8	0.9	1.8	0.9	1.8	0.9	1.8
33600	1	2.1	1	2.1	1	2.1	1	2.1
33800	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
34000	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
34200	1.1	1.9	1.1	1.9	1.1	1.9	1.1	1.9
34400	1.3	2.1	1.3	2.1	1.3	2.1	1.3	2.1
34600	1	2.3	1	2.3	1	2.3	1	2.3
34800	1.3	2.4	1.3	2.4	1.3	2.4	1.3	2.4
35000	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
35200	1.4	2.6	1.4	2.6	1.4	2.6	1.4	2.6
35400	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
35600	0.8	2.4	0.8	2.4	0.8	2.4	0.8	2.4
35800	0.7	2.5	0.7	2.5	0.7	2.5	0.7	2.5
36000	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
36200	2	2.9	2	2.9	2	2.9	2	2.9
36400	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
36600	0.7	2.9	0.7	2.9	0.7	2.9	0.7	2.9
36800	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
37000	0.5	2.7	0.5	2.7	0.5	2.7	0.5	2.7
37200	0.2	2.9	0.2	2.9	0.2	2.9	0.2	2.9
37400	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
37600	1.5	2.7	1.5	2.7	1.5	2.7	1.5	2.7
37800	0.8	1.9	0.8	1.9	0.8	1.9	0.8	1.9
38000	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
38200	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
38400	1	1.9	1	1.9	1	1.9	1	1.9
38600	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
38800	0.5	2.6	0.5	2.6	0.5	2.6	0.5	2.6
39000	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
39200	0.9	1.9	0.9	1.9	0.9	1.9	0.9	1.9
39400	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
39600	1.1	2.3	1.1	2.3	1.1	2.3	1.1	2.3
39800	1	2.4	1	2.4	1	2.4	1	2.4
40000	0.8	1.7	0.8	1.7	0.8	1.7	0.8	1.7
40200	0.7	2	0.7	2	0.7	2	0.7	2
40400	0.6	2.1	0.6	2.1	0.6	2.1	0.6	2.1
40600	1	2.2	1	2.2	1	2.2	1	2.2
40800	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
41000	1	1.9	1	1.9	1	1.9	1	1.9

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
41200	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
41400	2	2.9	2	2.9	2	2.9	2	2.9
41600	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
41800	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
42000	0.7	1.9	0.7	1.9	0.7	1.9	0.7	1.9
42200	1	2.3	1	2.3	1	2.3	1	2.3
42400	1.2	2.7	1.2	2.7	1.2	2.7	1.2	2.7
42600	1.1	2.6	1.1	2.6	1.1	2.6	1.1	2.6
42800	1.3	2.2	1.3	2.2	1.3	2.2	1.3	2.2
43000	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
43200	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
43400	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
43600	1	1.2	1	1.2	1	1.2	1	1.2
43800	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
44000	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
44200	1.3	2.1	1.3	2.1	1.3	2.1	1.3	2.1
44400	0.8	2.3	0.8	2.3	0.8	2.3	0.8	2.3
44600	0.9	2.5	0.9	2.5	0.9	2.5	0.9	2.5
44800	1.2	2.7	1.2	2.7	1.2	2.7	1.2	2.7
45000	0.11	2.9	0.11	2.9	0.11	2.9	0.11	2.9
45200	1	2.3	1	2.3	1	2.3	1	2.3
45400	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
45600	0.7	2.3	0.7	2.3	0.7	2.3	0.7	2.3
45800	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
46000	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
46200	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
46400	1.3	2.3	1.3	2.3	1.3	2.3	1.3	2.3
46600	0.9	2.4	0.9	2.4	0.9	2.4	0.9	2.4
46800	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
47000	1.2	2.2	1.2	2.2	1.2	2.2	1.2	2.2
47200	2	2.5	2	2.5	2	2.5	2	2.5
47400	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
47600	1.1	2.4	1.1	2.4	1.1	2.4	1.1	2.4
47800	1	1.7	1	1.7	1	1.7	1	1.7
48000	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
48200	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
48400	0.7	1.8	0.7	1.8	0.7	1.8	0.7	1.8
48600	1.1	1.8	1.1	1.8	1.1	1.8	1.1	1.8
48800	1	1.7	1	1.7	1	1.7	1	1.7
49000	1.3	1.6	1.3	1.6	1.3	1.6	1.3	1.6
49200	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
49400	1	2.3	1	2.3	1	2.3	1	2.3

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
49600	1.2	2.2	1.2	2.2	1.2	2.2	1.2	2.2
49800	1.3	2.1	1.3	2.1	1.3	2.1	1.3	2.1
50000	1	1.7	1	1.7	1	1.7	1	1.7
50200	0.9	1	0.9	1	0.9	1	0.9	1
50400	0.7	1.3	0.7	1.3	0.7	1.3	0.7	1.3
50600	0.6	1.9	0.6	1.9	0.6	1.9	0.6	1.9
50800	0.5	1.8	0.5	1.8	0.5	1.8	0.5	1.8
51000	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
51200	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
51400	0.9	1.9	0.9	1.9	0.9	1.9	0.9	1.9
51600	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
51800	1	2.1	1	2.1	1	2.1	1	2.1
52000	1.3	2.3	1.3	2.3	1.3	2.3	1.3	2.3
52200	2.1	2.5	2.1	2.5	2.1	2.5	2.1	2.5
52400	2	2.3	2	2.3	2	2.3	2	2.3
52600	1.5	2.5	1.5	2.5	1.5	2.5	1.5	2.5
52800	1.7	2.7	1.7	2.7	1.7	2.7	1.7	2.7
53000	1	2.8	1	2.8	1	2.8	1	2.8
53200	1.1	1.9	1.1	1.9	1.1	1.9	1.1	1.9
53400	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
53600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
53800	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
54000	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
54200	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
54400	0.7	1.8	0.7	1.8	0.7	1.8	0.7	1.8
54600	0.8	1.5	0.8	1.5	0.8	1.5	0.8	1.5
54800	1	1.3	1	1.3	1	1.3	1	1.3
55000	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
55200	1.4	2.5	1.4	2.5	1.4	2.5	1.4	2.5
55400	2	2.9	2	2.9	2	2.9	2	2.9
55600	2.1	3.1	2.1	3.1	2.1	3.1	2.1	3.1
55800	1.1	3.5	1.1	3.5	1.1	3.5	1.1	3.5
56000	1.2	3.7	1.2	3.7	1.2	3.7	1.2	3.7
56200	1	2.3	1	2.3	1	2.3	1	2.3
56400	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
56600	1.2	2.9	1.2	2.9	1.2	2.9	1.2	2.9
56800	1	2.5	1	2.5	1	2.5	1	2.5
57000	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
57200	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
57400	1.1	1.9	1.1	1.9	1.1	1.9	1.1	1.9
57600	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
57800	1	1.8	1	1.8	1	1.8	1	1.8

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
58000	1.1	1.3	1.1	1.3	1.1	1.3	1.1	1.3
58200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
58400	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
58600	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4
58800	0.7	1.6	0.7	1.6	0.7	1.6	0.7	1.6
59000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
59200	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
59400	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
59600	1	1.7	1	1.7	1	1.7	1	1.7
59800	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
60000	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
60200	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
60400	0.7	0.9	0.7	0.9	0.7	0.9	0.7	0.9
60600	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
60800	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
61000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
61200	0.5	1.3	0.5	1.3	0.5	1.3	0.5	1.3
61400	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
61600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
61800	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
62000	1.7	2.1	1.7	2.1	1.7	2.1	1.7	2.1
62200	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
62400	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
62600	1	2.2	1	2.2	1	2.2	1	2.2
62800	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
63000	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
63200	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
63400	1.1	2	1.1	2	1.1	2	1.1	2
63600	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
63800	1.2	2.2	1.2	2.2	1.2	2.2	1.2	2.2
64000	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
64200	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
64400	1.5	2	1.5	2	1.5	2	1.5	2
64600	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
64800	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
65000	1.3	2	1.3	2	1.3	2	1.3	2
65200	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
65400	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
65600	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
65800	1	2.3	1	2.3	1	2.3	1	2.3
66000	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
66200	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
66400	1.1	2.3	1.1	2.3	1.1	2.3	1.1	2.3
66600	1	2.2	1	2.2	1	2.2	1	2.2
66800	1.2	2.3	1.2	2.3	1.2	2.3	1.2	2.3
67000	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
67200	1.4	2.2	1.4	2.2	1.4	2.2	1.4	2.2
67400	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
67600	1.6	2.5	1.6	2.5	1.6	2.5	1.6	2.5
67800	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
68000	1.2	2.2	1.2	2.2	1.2	2.2	1.2	2.2
68200	1.3	2.3	1.3	2.3	1.3	2.3	1.3	2.3
68400	1	1.5	1	1.5	1	1.5	1	1.5
68600	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
68800	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
69000	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
69200	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
69400	0.7	1.3	0.7	1.3	0.7	1.3	0.7	1.3
69600	0.9	1.2	0.9	1.2	0.9	1.2	0.9	1.2
69800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
70000	1.1	1.8	1.1	1.8	1.1	1.8	1.1	1.8
70200	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
70400	0.8	1.5	0.8	1.5	0.8	1.5	0.8	1.5
70600	0.6	1.7	0.6	1.7	0.6	1.7	0.6	1.7
70800	0.7	1.9	0.7	1.9	0.7	1.9	0.7	1.9
71000	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
71200	1.2	2	1.2	2	1.2	2	1.2	2
71400	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
71600	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
71800	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
72000	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
72200	1.2	3.1	1.2	3.1	1.2	3.1	1.2	3.1
72400	1	1.7	1	1.7	1	1.7	1	1.7
72600	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
72800	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
73000	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
73200	1.7	2.1	1.7	2.1	1.7	2.1	1.7	2.1
73400	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
73600	1	1.9	1	1.9	1	1.9	1	1.9
73800	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
74000	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
74200	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
74400	2	1.5	2	1.5	2	1.5	2	1.5
74600	0.3	1.8	0.3	1.8	0.3	1.8	0.3	1.8

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
74800	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
75000	0.8	1.2	0.8	1.2	0.8	1.2	0.8	1.2
75200	1	1.4	1	1.4	1	1.4	1	1.4
75400	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
75600	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
75800	2.3	2.7	2.3	2.7	2.3	2.7	2.3	2.7
76000	1	2.1	1	2.1	1	2.1	1	2.1
76200	1.3	2.2	1.3	2.2	1.3	2.2	1.3	2.2
76400	1	1.9	1	1.9	1	1.9	1	1.9
76600	1.1	1.9	1.1	1.9	1.1	1.9	1.1	1.9
76800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
77000	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
77200	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
77400	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
77600	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6
77800	1	1.5	1	1.5	1	1.5	1	1.5
78000	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
78200	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
78400	1.1	2.5	1.1	2.5	1.1	2.5	1.1	2.5
78600	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
78800	1.4	2.9	1.4	2.9	1.4	2.9	1.4	2.9
79000	1.1	3	1.1	3	1.1	3	1.1	3
79200	1	2.9	1	2.9	1	2.9	1	2.9
79400	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
79600	1.3	2.7	1.3	2.7	1.3	2.7	1.3	2.7
79800	1	2	1	2	1	2	1	2
80000	1.2	2.2	1.2	2.2	1.2	2.2	1.2	2.2
80200	11	2.1	11	2.1	11	2.1	11	2.1
80400	1.2	2.9	1.2	2.9	1.2	2.9	1.2	2.9
80600	1.3	3.1	1.3	3.1	1.3	3.1	1.3	3.1
80800	1	3	1	3	1	3	1	3
81000	1.1	2.6	1.1	2.6	1.1	2.6	1.1	2.6
81200	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
81400	1	1.8	1	1.8	1	1.8	1	1.8
81600	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5
81800	0.4	1.7	0.4	1.7	0.4	1.7	0.4	1.7
82000	0.5	1.6	0.5	1.6	0.5	1.6	0.5	1.6
82200	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
82400	0.9	1.8	0.9	1.8	0.9	1.8	0.9	1.8
82600	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
82800	1.1	2.3	1.1	2.3	1.1	2.3	1.1	2.3
83000	1	2.4	1	2.4	1	2.4	1	2.4

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
83200	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
83400	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
83600	1	2.2	1	2.2	1	2.2	1	2.2
83800	0.9	2.5	0.9	2.5	0.9	2.5	0.9	2.5
84000	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
84200	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
84400	0.8	1.7	0.8	1.7	0.8	1.7	0.8	1.7
84600	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
84800	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
85000	1.1	1.8	1.1	1.8	1.1	1.8	1.1	1.8
85200	1.2	2.5	1.2	2.5	1.2	2.5	1.2	2.5
85400	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
85600	0.7	2.3	0.7	2.3	0.7	2.3	0.7	2.3
85800	0.8	2.5	0.8	2.5	0.8	2.5	0.8	2.5
86000	0.9	2.7	0.9	2.7	0.9	2.7	0.9	2.7
86200	0.5	2.9	0.5	2.9	0.5	2.9	0.5	2.9
86400	1	2.1	1	2.1	1	2.1	1	2.1
86600	1	1.9	1	1.9	1	1.9	1	1.9
86800	0.8	1.7	0.8	1.7	0.8	1.7	0.8	1.7
87000	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
87200	1.2	1.6	1.2	1.6	1.2	1.6	1.2	1.6
87400	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
87600	1	1.8	1	1.8	1	1.8	1	1.8
87800	0.5	1.9	0.5	1.9	0.5	1.9	0.5	1.9
88000	0.6	2.1	0.6	2.1	0.6	2.1	0.6	2.1
88200	0.8	2.2	0.8	2.2	0.8	2.2	0.8	2.2
88400	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
88600	1	2.4	1	2.4	1	2.4	1	2.4
88800	1	2.5	1	2.5	1	2.5	1	2.5
89000	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
89200	1.3	2	1.3	2	1.3	2	1.3	2
89400	1.4	2.1	1.4	2.1	1.4	2.1	1.4	2.1
89600	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
89800	1.7	2.3	1.7	2.3	1.7	2.3	1.7	2.3
90000	1.8	2.1	1.8	2.1	1.8	2.1	1.8	2.1
90200	1	1.5	1	1.5	1	1.5	1	1.5
90400	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
90600	1.7	2.1	1.7	2.1	1.7	2.1	1.7	2.1
90800	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
91000	1.6	2.3	1.6	2.3	1.6	2.3	1.6	2.3
91200	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
91400	1.7	2	1.7	2	1.7	2	1.7	2

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
91600	1.8	2.1	1.8	2.1	1.8	2.1	1.8	2.1
91800	1	1.5	1	1.5	1	1.5	1	1.5
92000	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
92200	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
92400	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
92600	0.5	2.2	0.5	2.2	0.5	2.2	0.5	2.2
92800	2.1	2.9	2.1	2.9	2.1	2.9	2.1	2.9
93000	1.1	3.1	1.1	3.1	1.1	3.1	1.1	3.1
93200	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
93400	0.7	1.9	0.7	1.9	0.7	1.9	0.7	1.9
93600	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
93800	0.6	2.5	0.6	2.5	0.6	2.5	0.6	2.5
94000	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
94200	0.5	1.8	0.5	1.8	0.5	1.8	0.5	1.8
94400	1.1	1.8	1.1	1.8	1.1	1.8	1.1	1.8
94600	1	2	1	2	1	2	1	2
94800	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
95000	1.3	2.2	1.3	2.2	1.3	2.2	1.3	2.2
95200	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
95400	1.7	2	1.7	2	1.7	2	1.7	2
95600	1	2.1	1	2.1	1	2.1	1	2.1
95800	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
96000	1.2	1.8	1.2	1.8	1.2	1.8	1.2	1.8
96200	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
96400	1	1.7	1	1.7	1	1.7	1	1.7
96600	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
96800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
97000	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
97200	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8
97400	1.5	2	1.5	2	1.5	2	1.5	2
97600	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
97800	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
98000	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4
98200	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
98400	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4
98600	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6
98800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
99000	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
99200	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
99400	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
99600	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
99800	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
100000	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
100200	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
100400	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
100600	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
100800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
101000	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8
101200	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
101400	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
101600	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
101800	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
102000	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4
102200	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
102400	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4
102600	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6
102800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
103000	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
103200	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
103400	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
103600	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
103800	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5
104000	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
104200	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
104400	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.4
104600	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5
104800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
105000	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
105200	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
105400	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
105600	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
105800	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8
106000	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
106200	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
106400	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
106600	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
106800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
107000	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7
107200	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
107400	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8
107600	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
107800	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
108000	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
108200	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Observed		Observed		Observed		Observed	
	Min	Max	Min	Max	Min	Max	Min	Max
108400	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
108600	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5
108800	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3
109136	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5

Figure 28- Observed depth at 200 meter interval

Annexure-4 Reduced depth at 200 meter interval:-

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
0	0.3	1.1	0.3	1.1	0.3	1.1	0.3	1.1
200	0.5	1	0.5	1	0.5	1	0.5	1
400	-0.2	1.3	-0.2	1.3	-0.2	1.3	-0.2	1.3
600	1	1.7	1	1.7	1	1.7	1	1.7
800	0.9	1.4	0.9	1.4	0.9	1.4	0.9	1.4
1000	1	1.2	1	1.2	1	1.2	1	1.2
1200	-0.2	1.2	-0.2	1.2	-0.2	1.2	-0.2	1.2
1400	1	1.3	1	1.3	1	1.3	1	1.3
1600	1	1.5	1	1.5	1	1.5	1	1.5
1800	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
2000	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5
2200	1.3	2.4	1.3	2.4	1.3	2.4	1.3	2.4
2400	-0.2	2.5	-0.2	2.5	-0.2	2.5	-0.2	2.5
2600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
2800	0.5	2	0.5	2	0.5	2	0.5	2
3000	0.9	2.1	0.9	2.1	0.9	2.1	0.9	2.1
3200	1	2.1	1	2.1	1	2.1	1	2.1
3400	1.2	2	1.2	2	1.2	2	1.2	2
3600	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
3800	0.5	1.6	0.5	1.6	0.5	1.6	0.5	1.6
4000	1	2	1	2	1	2	1	2
4200	1.3	2	1.3	2	1.3	2	1.3	2
4400	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
4600	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
4800	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
5000	1.7	2	1.7	2	1.7	2	1.7	2
5200	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
5400	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
5600	1	1.6	1	1.6	1	1.6	1	1.6
5800	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
6000	0.8	1.5	0.8	1.5	0.8	1.5	0.8	1.5
6200	1.2	3.3	1.2	3.3	1.2	3.3	1.2	3.3
6400	1.3	3.5	1.3	3.5	1.3	3.5	1.3	3.5
6600	1	3.7	1	3.7	1	3.7	1	3.7
6800	1.2	3.2	1.2	3.2	1.2	3.2	1.2	3.2
7000	1.4	3.1	1.4	3.1	1.4	3.1	1.4	3.1
7200	2.1	3.2	2.1	3.2	2.1	3.2	2.1	3.2
7400	2.5	3.2	2.5	3.2	2.5	3.2	2.5	3.2
7600	2	3	2	3	2	3	2	3
7800	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
8000	2.2	2.9	2.2	2.9	2.2	2.9	2.2	2.9
8200	2.1	2.5	2.1	2.5	2.1	2.5	2.1	2.5
8400	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
8600	0.7	1.9	0.7	1.9	0.7	1.9	0.7	1.9
8800	1.1	2.1	1.1	2.1	1.1	2.1	1.1	2.1
9000	1	3.2	1	3.2	1	3.2	1	3.2
9200	0.7	1.8	0.7	1.8	0.7	1.8	0.7	1.8
9400	1	1.5	1	1.5	1	1.5	1	1.5
9600	1.2	2	1.2	2	1.2	2	1.2	2
9800	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
10000	0.8	1.3	0.8	1.3	0.8	1.3	0.8	1.3
10200	1	2.3	1	2.3	1	2.3	1	2.3
10400	0.5	2.4	0.5	2.4	0.5	2.4	0.5	2.4
10600	0.9	2.5	0.9	2.5	0.9	2.5	0.9	2.5
10800	1.2	3.1	1.2	3.1	1.2	3.1	1.2	3.1
11000	1.3	3.2	1.3	3.2	1.3	3.2	1.3	3.2
11200	0.5	2.3	0.5	2.3	0.5	2.3	0.5	2.3
11400	0.7	2.5	0.7	2.5	0.7	2.5	0.7	2.5
11600	0.8	2.6	0.8	2.6	0.8	2.6	0.8	2.6
11800	1	3	1	3	1	3	1	3
12000	1.2	3	1.2	3	1.2	3	1.2	3
12200	1.3	2.5	1.3	2.5	1.3	2.5	1.3	2.5
12400	1.4	2	1.4	2	1.4	2	1.4	2
12600	1.7	2.5	1.7	2.5	1.7	2.5	1.7	2.5
12800	1.3	2	1.3	2	1.3	2	1.3	2
13000	1.5	2.9	1.5	2.9	1.5	2.9	1.5	2.9
13200	-0.3	2.2	-0.3	2.2	-0.3	2.2	-0.3	2.2
13400	0.1	2.6	0.1	2.6	0.1	2.6	0.1	2.6
13600	1	3.2	1	3.2	1	3.2	1	3.2
13800	1.1	3	1.1	3	1.1	3	1.1	3

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
14000	-0.1	3	-0.1	3	-0.1	3	-0.1	3
14200	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
14400	1	2.2	1	2.2	1	2.2	1	2.2
14600	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5
14800	0.7	2	0.7	2	0.7	2	0.7	2
15000	0.9	2.5	0.9	2.5	0.9	2.5	0.9	2.5
15200	0.3	2.3	0.3	2.3	0.3	2.3	0.3	2.3
15400	-0.1	1.5	-0.1	1.5	-0.1	1.5	-0.1	1.5
15600	-0.3	2	-0.3	2	-0.3	2	-0.3	2
15800	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5
16000	0.5	2.3	0.5	2.3	0.5	2.3	0.5	2.3
16200	1	0.3	1	0.3	1	0.3	1	0.3
16400	0.9	3.2	0.9	3.2	0.9	3.2	0.9	3.2
16600	0.5	3.3	0.5	3.3	0.5	3.3	0.5	3.3
16800	0.7	3.1	0.7	3.1	0.7	3.1	0.7	3.1
17000	1	1.9	1	1.9	1	1.9	1	1.9
17200	0.8	2.1	0.8	2.1	0.8	2.1	0.8	2.1
17400	1	2.3	1	2.3	1	2.3	1	2.3
17600	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5
17800	0.5	2.4	0.5	2.4	0.5	2.4	0.5	2.4
18000	0.6	2.5	0.6	2.5	0.6	2.5	0.6	2.5
18200	0.7	3.2	0.7	3.2	0.7	3.2	0.7	3.2
18400	1	3.1	1	3.1	1	3.1	1	3.1
18600	0.8	1.5	0.8	1.5	0.8	1.5	0.8	1.5
18800	1	1.9	1	1.9	1	1.9	1	1.9
19000	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
19200	0.6	1.8	0.6	1.8	0.6	1.8	0.6	1.8
19400	0.3	1.7	0.3	1.7	0.3	1.7	0.3	1.7
19600	0.5	1.8	0.5	1.8	0.5	1.8	0.5	1.8
19800	0.7	2.1	0.7	2.1	0.7	2.1	0.7	2.1
20000	1	1.9	1	1.9	1	1.9	1	1.9
20200	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
20400	-0.3	2	-0.3	2	-0.3	2	-0.3	2
20600	-0.1	2.3	-0.1	2.3	-0.1	2.3	-0.1	2.3
20800	0.2	1.5	0.2	1.5	0.2	1.5	0.2	1.5
21000	0.3	1.7	0.3	1.7	0.3	1.7	0.3	1.7
21200	0.5	1.9	0.5	1.9	0.5	1.9	0.5	1.9
21400	0.7	2	0.7	2	0.7	2	0.7	2
21600	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
21800	1	1.2	1	1.2	1	1.2	1	1.2
22000	0.9	1	0.9	1	0.9	1	0.9	1
22200	-0.3	0.9	-0.3	0.9	-0.3	0.9	-0.3	0.9

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
22400	-0.1	0.7	-0.1	0.7	-0.1	0.7	-0.1	0.7
22600	0.3	1.7	0.3	1.7	0.3	1.7	0.3	1.7
22800	0.7	1.6	0.7	1.6	0.7	1.6	0.7	1.6
23000	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
23200	1	2	1	2	1	2	1	2
23400	0.5	2.1	0.5	2.1	0.5	2.1	0.5	2.1
23600	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
23800	1	1.5	1	1.5	1	1.5	1	1.5
24000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
24200	2	2.1	2	2.1	2	2.1	2	2.1
24400	0.9	1.2	0.9	1.2	0.9	1.2	0.9	1.2
24600	-0.3	1.5	-0.3	1.5	-0.3	1.5	-0.3	1.5
24800	-0.1	0.9	-0.1	0.9	-0.1	0.9	-0.1	0.9
25000	0.5	1	0.5	1	0.5	1	0.5	1
25200	1	1.2	1	1.2	1	1.2	1	1.2
25400	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
25600	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
25800	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
26000	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1
26200	1	1.3	1	1.3	1	1.3	1	1.3
26400	0.5	1	0.5	1	0.5	1	0.5	1
26600	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
26800	1	1.5	1	1.5	1	1.5	1	1.5
27000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
27200	0.5	2	0.5	2	0.5	2	0.5	2
27400	0.7	2.1	0.7	2.1	0.7	2.1	0.7	2.1
27600	1	2.3	1	2.3	1	2.3	1	2.3
27800	1	1.5	1	1.5	1	1.5	1	1.5
28000	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
28200	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
28400	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
28600	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5
28800	0.6	1.7	0.6	1.7	0.6	1.7	0.6	1.7
29000	1	2.1	1	2.1	1	2.1	1	2.1
29200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
29400	1	1.7	1	1.7	1	1.7	1	1.7
29600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
29800	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
30000	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8
30200	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
30400	1.4	2.1	1.4	2.1	1.4	2.1	1.4	2.1
30600	0.3	1.2	0.3	1.2	0.3	1.2	0.3	1.2

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
30800	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
31000	1	1.3	1	1.3	1	1.3	1	1.3
31200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
31400	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
31600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
31800	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
32000	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
32200	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9
32400	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
32600	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
32800	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4
33000	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
33200	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7
33400	1.2	1.3	1.2	1.3	1.2	1.3	1.2	1.3
33600	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
33800	1.5	1.9	1.5	1.9	1.5	1.9	1.5	1.9
34000	2	2.5	2	2.5	2	2.5	2	2.5
34200	2.1	2.4	2.1	2.4	2.1	2.4	2.1	2.4
34400	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1
34600	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9
34800	0.7	1	0.7	1	0.7	1	0.7	1
35000	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
35200	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
35400	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
35600	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
35800	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
36000	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
36200	1.7	2	1.7	2	1.7	2	1.7	2
36400	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
36600	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
36800	0.7	1.7	0.7	1.7	0.7	1.7	0.7	1.7
37000	0.8	1.1	0.8	1.1	0.8	1.1	0.8	1.1
37200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
37400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
37600	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
37800	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
38000	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
38200	1	1.2	1	1.2	1	1.2	1	1.2
38400	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
38600	0.5	0.8	0.5	0.8	0.5	0.8	0.5	0.8
38800	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
39000	1	1.2	1	1.2	1	1.2	1	1.2

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
39200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
39400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
39600	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
39800	1.7	2	1.7	2	1.7	2	1.7	2
40000	1	1.5	1	1.5	1	1.5	1	1.5
40200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
40400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
40600	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
40800	1	1.3	1	1.3	1	1.3	1	1.3
41000	0.9	1	0.9	1	0.9	1	0.9	1
41200	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
41400	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
41600	0.9	1.2	0.9	1.2	0.9	1.2	0.9	1.2
41800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
42000	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
42200	1.1	2	1.1	2	1.1	2	1.1	2
42400	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
42600	1.7	2.2	1.7	2.2	1.7	2.2	1.7	2.2
42800	1	1.5	1	1.5	1	1.5	1	1.5
43000	1.1	1.7	1.1	1.7	1.1	1.7	1.1	1.7
43200	0.9	1	0.9	1	0.9	1	0.9	1
43400	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
43600	0.5	1	0.5	1	0.5	1	0.5	1
43800	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
44000	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
44200	2	2.5	2	2.5	2	2.5	2	2.5
44400	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
44600	1.7	2	1.7	2	1.7	2	1.7	2
44800	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
45000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
45200	0.9	1	0.9	1	0.9	1	0.9	1
45600	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
45800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
46000	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
46200	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
46400	0.9	1	0.9	1	0.9	1	0.9	1
46600	1.1	1.3	1.1	1.3	1.1	1.3	1.1	1.3
46800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
47000	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1
47200	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9
47400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
47600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
47800	0.9	1	0.9	1	0.9	1	0.9	1
48000	0.9	1	0.9	1	0.9	1	0.9	1
48200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
48400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
48600	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
48800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
49000	1.1	1.3	1.1	1.3	1.1	1.3	1.1	1.3
49200	1	1.4	1	1.4	1	1.4	1	1.4
49400	0.9	1	0.9	1	0.9	1	0.9	1
49600	0.2	0.9	0.2	0.9	0.2	0.9	0.2	0.9
49800	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
50000	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
50200	1	1.4	1	1.4	1	1.4	1	1.4
50400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
50600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
50800	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
51000	0.5	1	0.5	1	0.5	1	0.5	1
51200	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
51400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
51600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
51800	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
52000	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
52200	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
52400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
52600	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
52800	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
53000	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
53200	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
53400	1	1.1	1	1.1	1	1.1	1	1.1
53600	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9
53800	0.7	1	0.7	1	0.7	1	0.7	1
54000	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
54200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
54400	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
54600	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
54800	1	1.3	1	1.3	1	1.3	1	1.3
55000	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
55200	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
55400	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
55600	1	1.3	1	1.3	1	1.3	1	1.3
55800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
56000	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
56200	1	1.3	1	1.3	1	1.3	1	1.3
56400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
56600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
56800	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
57000	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
57200	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
57400	1	2	1	2	1	2	1	2
57600	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
57800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
58000	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
58200	1.4	1.8	1.4	1.8	1.4	1.8	1.4	1.8
58400	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
58600	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
58800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
59000	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
59200	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
59400	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
59600	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
59800	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
60000	0.9	1	0.9	1	0.9	1	0.9	1
60200	0.5	1.1	0.5	1.1	0.5	1.1	0.5	1.1
60400	1	1.2	1	1.2	1	1.2	1	1.2
60600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
60800	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
61000	1.6	1.9	1.6	1.9	1.6	1.9	1.6	1.9
61200	0.5	0.7	0.5	0.7	0.5	0.7	0.5	0.7
61400	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.9
61600	1	1.5	1	1.5	1	1.5	1	1.5
61800	0.5	1	0.5	1	0.5	1	0.5	1
62000	1	1.5	1	1.5	1	1.5	1	1.5
62200	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
62400	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
62600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
62800	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
63000	0.9	1	0.9	1	0.9	1	0.9	1
63200	0.5	1.1	0.5	1.1	0.5	1.1	0.5	1.1
63400	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
63600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
63800	1.1	1.3	1.1	1.3	1.1	1.3	1.1	1.3
64000	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
64200	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
64400	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
64600	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
64800	1	1.5	1	1.5	1	1.5	1	1.5
65000	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
65200	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
65400	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
65600	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
65800	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
66000	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
66200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
66400	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
66600	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
66800	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
67000	1	1.2	1	1.2	1	1.2	1	1.2
67200	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
67400	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
67600	0.7	1.3	0.7	1.3	0.7	1.3	0.7	1.3
67800	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
68000	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
68200	1.4	2	1.4	2	1.4	2	1.4	2
68400	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3
68600	1.7	2.5	1.7	2.5	1.7	2.5	1.7	2.5
68800	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
69000	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
69200	1	1.3	1	1.3	1	1.3	1	1.3
69400	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
69600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
69800	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
70000	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
70200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
70400	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
70600	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
70800	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
71000	1	1.2	1	1.2	1	1.2	1	1.2
71200	0.9	1.1	0.9	1.1	0.9	1.1	0.9	1.1
71400	0.5	0.7	0.5	0.7	0.5	0.7	0.5	0.7
71600	0.7	1.2	0.7	1.2	0.7	1.2	0.7	1.2
71800	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
72000	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
72200	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
72400	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
72600	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
72800	1	1.2	1	1.2	1	1.2	1	1.2

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
73000	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
73200	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
73400	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
73600	1	1.3	1	1.3	1	1.3	1	1.3
73800	0.9	1	0.9	1	0.9	1	0.9	1
74000	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
74200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
74400	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
74600	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
74800	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
75000	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
75200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
75400	1	1.2	1	1.2	1	1.2	1	1.2
75600	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
75800	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
76000	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
76200	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
76400	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
76600	1	1.2	1	1.2	1	1.2	1	1.2
76800	1.2	1.3	1.2	1.3	1.2	1.3	1.2	1.3
77000	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
77200	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
77400	1	1.2	1	1.2	1	1.2	1	1.2
77600	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
77800	1.5	1.6	1.5	1.6	1.5	1.6	1.5	1.6
78000	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
78200	1.9	2	1.9	2	1.9	2	1.9	2
78400	2	2.1	2	2.1	2	2.1	2	2.1
78600	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
78800	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
79000	0.9	1	0.9	1	0.9	1	0.9	1
79200	0.5	1.1	0.5	1.1	0.5	1.1	0.5	1.1
79400	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
79600	1	1.2	1	1.2	1	1.2	1	1.2
79800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
80000	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
80200	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
80400	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
80600	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
80800	1.2	1.3	1.2	1.3	1.2	1.3	1.2	1.3
81000	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.5
81200	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
81400	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
81600	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
81800	0.9	1.3	0.9	1.3	0.9	1.3	0.9	1.3
82000	1	1.2	1	1.2	1	1.2	1	1.2
82200	1.1	1.3	1.1	1.3	1.1	1.3	1.1	1.3
82400	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
82600	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
82800	0.9	1	0.9	1	0.9	1	0.9	1
83000	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
83200	0.7	1.3	0.7	1.3	0.7	1.3	0.7	1.3
83400	1	1.2	1	1.2	1	1.2	1	1.2
83600	1.1	1.4	1.1	1.4	1.1	1.4	1.1	1.4
83800	1.2	1.4	1.2	1.4	1.2	1.4	1.2	1.4
84000	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
84200	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
84400	0.8	1	0.8	1	0.8	1	0.8	1
84600	1	1.2	1	1.2	1	1.2	1	1.2
84800	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
85000	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
85200	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
85400	1	1.2	1	1.2	1	1.2	1	1.2
85600	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
85800	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
86000	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
86200	1.5	2	1.5	2	1.5	2	1.5	2
86400	1.4	2.1	1.4	2.1	1.4	2.1	1.4	2.1
86600	1	1.5	1	1.5	1	1.5	1	1.5
86800	1.1	1.9	1.1	1.9	1.1	1.9	1.1	1.9
87000	1.2	1.5	1.2	1.5	1.2	1.5	1.2	1.5
87200	1.3	1.9	1.3	1.9	1.3	1.9	1.3	1.9
87400	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
87600	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
87800	1.6	1.8	1.6	1.8	1.6	1.8	1.6	1.8
88000	1.3	2	1.3	2	1.3	2	1.3	2
88200	1.4	2.1	1.4	2.1	1.4	2.1	1.4	2.1
88400	1.5	2.2	1.5	2.2	1.5	2.2	1.5	2.2
88600	1.7	2.5	1.7	2.5	1.7	2.5	1.7	2.5
88800	1.4	2.4	1.4	2.4	1.4	2.4	1.4	2.4
89000	1	3	1	3	1	3	1	3
89200	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5
89400	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
89600	0.4	1.2	0.4	1.2	0.4	1.2	0.4	1.2

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
89800	1	1.5	1	1.5	1	1.5	1	1.5
90000	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
90200	1.3	1.7	1.3	1.7	1.3	1.7	1.3	1.7
90400	1.4	1.7	1.4	1.7	1.4	1.7	1.4	1.7
90600	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8
90800	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
91000	1	1.5	1	1.5	1	1.5	1	1.5
91200	0.5	1.7	0.5	1.7	0.5	1.7	0.5	1.7
91400	0.7	1.9	0.7	1.9	0.7	1.9	0.7	1.9
91600	1	1.5	1	1.5	1	1.5	1	1.5
91800	0.5	1.2	0.5	1.2	0.5	1.2	0.5	1.2
92000	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
92200	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
92400	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
92600	1.5	2.1	1.5	2.1	1.5	2.1	1.5	2.1
92800	1.1	2.2	1.1	2.2	1.1	2.2	1.1	2.2
93000	1.2	2.1	1.2	2.1	1.2	2.1	1.2	2.1
93200	1.1	1.5	1.1	1.5	1.1	1.5	1.1	1.5
93400	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
93600	1.3	1.8	1.3	1.8	1.3	1.8	1.3	1.8
93800	0.6	1.3	0.6	1.3	0.6	1.3	0.6	1.3
94000	0.6	2.5	0.6	2.5	0.6	2.5	0.6	2.5
94200	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3
94400	0.7	2.5	0.7	2.5	0.7	2.5	0.7	2.5
94600	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
94800	1.2	1.7	1.2	1.7	1.2	1.7	1.2	1.7
95000	1.3	1.5	1.3	1.5	1.3	1.5	1.3	1.5
95200	0.3	1	0.3	1	0.3	1	0.3	1
95400	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9
95600	1.1	1.2	1.1	1.2	1.1	1.2	1.1	1.2
95800	1.3	1.4	1.3	1.4	1.3	1.4	1.3	1.4
96000	2.1	2.2	2.1	2.2	2.1	2.2	2.1	2.2
96200	1.5	1.7	1.5	1.7	1.5	1.7	1.5	1.7
96400	1.7	1.9	1.7	1.9	1.7	1.9	1.7	1.9
96600	2.1	2.3	2.1	2.3	2.1	2.3	2.1	2.3
96800	2	2.1	2	2.1	2	2.1	2	2.1
97000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
97200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
97400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
97600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
97800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
98000	-0.3	0	-0.3	0	-0.3	0	-0.3	0

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
98200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
98400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
98600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
98800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
99000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
99200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
99400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
99600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
99800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
100000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
100200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
100400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
100600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
100800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
101000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
101200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
101400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
101600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
101800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
102000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
102200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
102400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
102600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
102800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
103000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
103200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
103400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
103600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
103800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
104000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
104200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
104400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
104600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
104800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
105000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
105200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
105400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
105600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
105800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
106000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
106200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
106400	-0.3	0	-0.3	0	-0.3	0	-0.3	0

Chainage (in meter)	Class-I		Class-II		Class-III		Class-IV	
	Reduced		Reduced		Reduced		Reduced	
	Min	Max	Min	Max	Min	Max	Min	Max
106600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
106800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
107000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
107200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
107400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
107600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
107800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
108000	-0.3	0	-0.3	0	-0.3	0	-0.3	0
108200	-0.3	0	-0.3	0	-0.3	0	-0.3	0
108400	-0.3	0	-0.3	0	-0.3	0	-0.3	0
108600	-0.3	0	-0.3	0	-0.3	0	-0.3	0
108800	-0.3	0	-0.3	0	-0.3	0	-0.3	0
109136	-0.3	0	-0.3	0	-0.3	0	-0.3	0

Table 23-Reduced depth at 200 meter interval

Annexure-5 Details of collected Water level of different gauge stations w.r.t. MSL (CWC, Irrigation, Ports, Maritime Boards, Observed stations during survey etc.) – Table indicating Chainage (zero at downstream) and following:-

Date	Tide Pole name	Chainage (km)	Time	T. Reading (m)	Zero of TP w.r.t. MSL (m)	W.L w.r.t. MSL (m)	SD value w.r.t. MSL (m)	Corrected Tide (m)
				A	B	C = A+B	D	E = D-C
10.03.16	GS- (TP)-1	41.670	24 hrs	0.24	97.917	98.157	97.303	-0.854
11.02.16	GS-(TP)-2	108.657	24 hrs	0.32	114.833	115.153	114.025	-1.128
11.02.16	GS-(TP)-3	102.377	24 hrs	0.39	112.915	113.305	112.457	-0.848
12.03.16	GS-(TP)-4	96.458	24 hrs	0.47	110.754	111.224	110.979	-0.245
12.03.16	GS-(TP)-5	57.538	24 hrs	0.56	101.501	102.061	101.264	-0.797
14.03.16	GS-(TP)-6	5.058	24 hrs	0.67	93.327	93.997	93.261	-0.736
14.03.16	GS-(TP)-7	16.221	24 hrs	0.74	93.801	94.541	94.491	-0.05
07.03.16	GS-(TP)-8	16.460	24 hrs	0.78	93.731	94.511	94.517	0.006
07.03.16	GS-(TP)-9	41.307	24 hrs	0.81	97.265	98.075	97.255	-0.82
10.03.16	GS-(TP)-10	54.672	24 hrs	0.85	99.861	100.711	100.549	-0.162

Table 24-Water Level at Different Gauge Stations

Annexure-6 Details of Bathymetric surveys carried out:-

Date of Survey	Chainage	
	From (km)	To (km)
12.11.15	0.00	10.00
13.11.15	10.00	19.800
14.11.15	19.800	32.200
15.11.15	32.200	38.900
18.11.15	38.900	51.00
19.11.15	51.00	60.00
20.11.15	60.00	68.3
25.11.15	68.3	77.00
26.11.15	77.00	96.752

Table 25- Details of Bathymetry Survey

Annexure-7 Details of Bank Protection along the Bank:-

The Bank of the river is generally protected by Roads, Bolder pitching, H.T Lines, Irrigation Canals and outlets. RCC bridge, Rail Bridge are also protected the riverside of the bank. From chainage 5km to 15km (Lachen Village to Chakoi Pathar Village No-3) the area has been protected by Bituminous Road on the right bank side of the river. From Golaghat village to 2 no.Paniegone village area are also protected by Bituminous Road on the left bank side of the river. From Chainage 102km to 111.600km (Amguri Village to 1 no Mohmara Village) area has been also protected by Bituminous road on the right bank side of the river.

Annexure-8 Details of Features across the Bank:-

The bank of the river includes villages, Ferry ghat, Irrigation canals and outlets, Rail Bridges, RCC Bridges and Forest etc. The both side river bank are highly protected by embankment and bolder pitching due to flood, erosion etc. The villagers are also situated near the bank side of the river. Recently different kinds of industries are also located near the bank side of the river.

Annexure-9 Detailed methodology adopted for carrying out survey. Horizontal Control and Vertical Control:-

- **Establishment of Horizontal Control:-**

The Horizontal control for Topography surveys: - High precision RTK DGPS in fix mode is using UHF Radio Modem with IHO accuracy standards, with minimum 24 hours observations at some permanent platform/base.

The Horizontal control for Bathymetry surveys: - DGPS is receiving corrections from Beacons.

- **Establishment of Vertical Control:-**

Vertical Control from BM-5 is used for the entire Survey Work; its value is 107.940m w.r.t. MSL has been considered for calculating the vertical levels. Total 12 nos. of BM has been established along the 109.136 km. stretch of the Dehing River with the reference of BM-5, which was situated near at the RCC Bridge. The vertical control is to be established with respect to the chart datum / sounding datum from the following methods:-

i. Standard method shall be adopted for transfer of datum in rivers/canals. For tidal reaches standard transfer of datum as per Admiralty Manual shall be adopted.

ii. Chart datum/ sounding datum already established by Port Authorities (Chart Datum), Central Water Commission (Average of last six years minimum Water Level) / State Irrigation Department (Full Supply Level (FSL)) and at their gauge stations along the river/canal.

- **Topography Survey:-**

The survey was commenced on 14th September 2015 and completed on 06th October 2015. Then The days become Autumn season and the climate become normal which reached about 20◦ C. Mostly day weather was sunny and was very favorable for the conduct of survey and the weather condition remains same for the entire duration of the survey.

The survey was undertaken as per the line plan provided and the spot level points in the cross line were spaced at 40 m interval. The plotting of the chart was done on UTM Projection at Zone 46R as directed in the contract specifications. The spot levels along the river were obtained by using Trimble DGPS. The data was post processed using Trimble Business Center to get the precise position and MSL height values of the rover locations. The topographic survey for the entire survey stretch was conducted to collect the following data:-

- Spot levels
-Delineation of Islands

-Fixing of bridges and marks
-Assess the type of river bank
-Extending the vertical and horizontal control throughout the survey area
-Collection of local information along the river Banks

Topographic survey Equipments: South (S86T) GNSS RTK, Total Station was used for conducting the topographic survey.

South RTK (S86T) satellite navigation is a technique used in land survey and in hydrographic survey based on the use of carrier phase measurements of the GPS, GLONASS and / or Galileo signals where a single reference station provides the real-time corrections, providing up to centimeter-level accuracy. When referring to GPS in particular, the system is also commonly referred to as Carrier-Phase Enhancement, CPGPS. RTK systems use a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier that it measured, and the mobile units compare their own phase measurements with the ones received from the base station. There are several ways to transmit a correction signal from base station to mobile station. The most popular way to achieve real-time, low-cost signal transmission is to use a radio modem, typically in the UHF band. This allows the units to calculate their relative position to millimeters, although their absolute position is accurate only to the same accuracy as the position of the base station.

RTK systems are available in dual-frequency and single-frequency versions. Dual-frequency systems deliver greater precision, faster and over longer baselines than single-frequency systems. Leica GS09 & GS12 GNSS RTK that used for the survey contains dual-frequency requires antenna and controller to suit any surveying task with a wide range of functionality. Leica GS09 & GS12 GNSS RTK Rover is extremely light-weight and cable free rover is comfortable to use and withstand even for rough use and topple over. It uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier that it measured, and the mobile units compare their own phase measurements with the ones received from the base station. So, that centimeter level accuracy can be achieved from latitude, longitude and altitude. RTK technique in terms of general navigation, it is perfectly suited to roles like surveying. In this case, the base station is located at a known surveyed location, often a benchmark, and the mobile units can then produce a highly accurate map by taking fixes relative to that point. RTK has also found uses in auto drive/autopilot systems, precision farming and similar roles.

Figure 29-Topography Survey Instrument

- **Bathymetry Survey:-**

The bathymetry survey was carried out using Bathy 500 portable shallow water Echosounder supported by DGPS Beacon Receiver and HYPACK Data collection and processing software. The survey equipment was installed as per the standard procedure the survey vessel equipped with safety gears.

Bathy- 500MF Echo-sounder: The Bathy- 500MF echo-sounder is an electronic hydrographic survey instrument used for measuring depths with precision chart recordings and digital data output manufactured by Syqwest Incorporated, USA. The Bathy-500 echo sounding systems are based on the principle that when a sound signal is sent into the water it will be reflected back when it strikes an object. The Bathy-500 is technologically sophisticated, utilizing modern, micro processor based electronics and a thermal chart recorder mechanism. Digital processing enables the instrument to offer fully automatic digitizing capabilities. When interfaced to a NMEA 0183 compatible position sensor, it provides user with a complete, integrated hydrographic survey environment. The instrument front panel consists of a high contrast, backlit four line LCD displays and a fully sealed input keypad. The front panel encompassing system data, status and setup parameters with RS232/RS422 output format. All operating functions are set via the front panel interface. Setup selections are stored within internal, non-volatile memory for instant availability upon power-up. The instrument decodes and processes the NMEA 0183 formatted sentence GGA or GLL from GPS/DGPS using variable Baud rates for communication.

Figure 30- Bathymetry Survey Instrument

Annexure-10 Photographs of equipment:-

Figure 31 -Survey Boat

- **Positioning System:-**
  - **1 no Trimble DGPS system (SPS361)**

Figure 32 DGPS System Instrument

- **Navigation & Data Logging System:-**

  To provide on-line route guidance, log navigation data, provide QC of navigation data, etc. The system comprises the following equipment:

  - **1 no. DELL Laptop**
  - **1 no. Hypack version 2014 Navigation & Data Logging Software**
  - **1 no. Positioning & sensor interfaces**
  - **Sufficient Paper Rolls**

- **Single Beam Echo Sounder System:-**

  - **1 no. Bathy 500MF multi frequency Echo sounder**
  - **1 no. transducer 210 kHz + mounting bracket & base plate**

Figure 33 Echo Sounder Instrument

- **Current Meter:-**

  - **1 no. current meter (**AEM 213-D**) was used during water velocity**
  - **observation**

Figure 34 - Current Meter

Annexure-11 Bench Mark Forms:-

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 1	3015964.306	668931.032	27°15'22.30"	94°42'23.07"	98.635
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal; Date of Establishment –14.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

Table 26 - Bench Mark Form & Google image of BM 1

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 2	3015786.171	672220.620	27°15'15.05"	94°44'22.54"	99.298
Pillar Established by : - Precision Survey Consultancy. Surveyor - Mr. Debasis Mondal ; Date of Establishment –14.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs		Datum: - WGS 84		**ZONE :**46 R	

Table 27 - Bench Mark Form & Google image view of BM 2

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 3	3016119.903	677398.928	27°15'23.49"	94°47'30.93"	101.695
Pillar Established by: - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –15.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

Table 28 - Bench mark Form & Google image view of BM 3

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 4	3018862.243	682292.559	27°16'50.29"	94°50'30.30"	102.975
Pillar Established by: - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –16.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

Table 29 - Bench Mark Form & Google image view of BM 4

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 5	3022259.884	686410.133	27°18'38.64"	94°53'1.87"	107.940
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –17.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

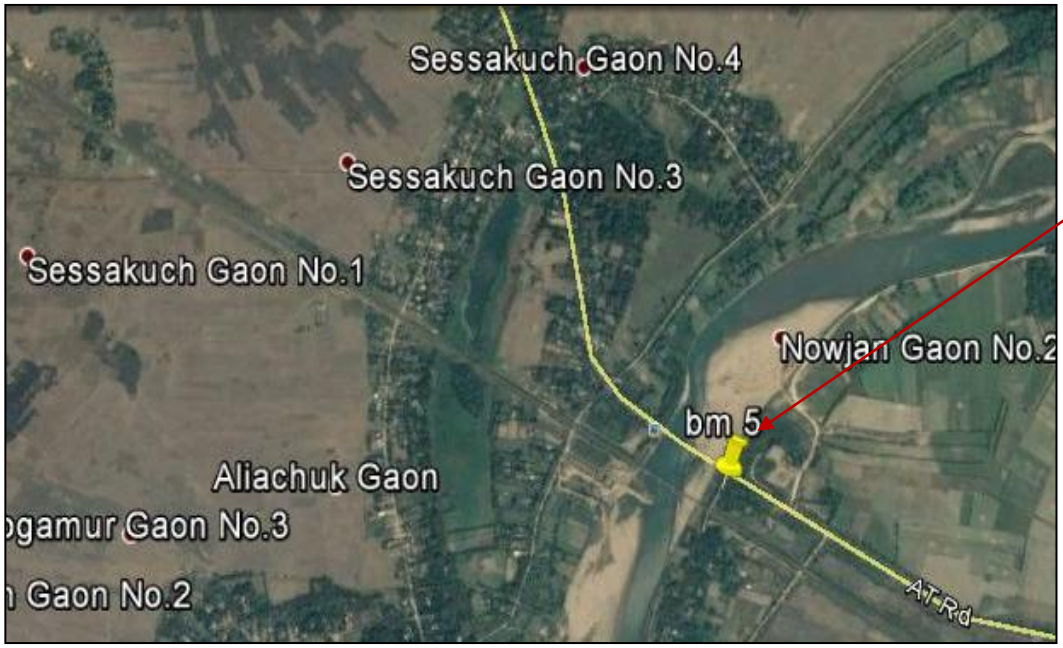


Table 30 - Bench mark Form & Google image view of BM 5

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 6	3025114.805	709542.092	27°19'59.33"	95° 7'4.77"	112.947
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –20.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

Table 31 - Bench Mark Form & Google image view of BM 6

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 7	696877.209	3029692.714	27°22'34.80"	94°59'26.81"	108.845
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –20.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84			**ZONE :**46 R	

Table 32 - Bench Mark & Google image view of BM 7

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 8	702650.655	3024589.371	27°19'46.01"	95° 2'53.81"	110.830
Pillar Established by: - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –22.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84			**ZONE :**46 R	

Table 33 - Bench Mark Form & Google image view of BM 8

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 9	3026840.185	713720.466	27°20'53.06"	95° 9'37.80"	114.395
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal ; Date of Establishment –23.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs		Datum: - WGS 84		**ZONE :**46 R	

Table 34 - Bench Mark Form & Google image of BM 9

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 10	3027394.438	719474.915	27°21'7.77"	95°13'7.44"	119.875
Pillar Established by : - Precision Survey Consultancy. Surveyor- Mr. Debasis Mondal; Date of Establishment –23.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84			**ZONE :**46 R	

Table 35 - Bench Mark Form & Google image of BM 10

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 11	3024333.338	724567.413	27°19'25.38"	95°16'10.65"	118.663
Pillar Established by : - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal; Date of Establishment –24.110.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

Table 36 - Bench Mark Form & Google image of BM 11

BM Name	Northing (m)	Easting (m)	Latitude (N)	Longitude (E)	RL (m)
BM 12	3023952.533	728662.928	27°19'10.57"	95°18'39.28"	120.835
Pillar Established by: - Precision Survey Consultancy. Surveyor – Mr. Debasis Mondal; Date of Establishment –24.11.2015					
Station Description :-					
Benchmark is located near Chakoi Pathar Gaon village. The BM is denoted by a "." mark engraved on a plate. The plate is fixed on a 5cm diameter GI pipe. The GI pipe is cemented with construction pillar of 30cmX30cmX150cm. The pillar extends 60.cms above ground level. Inscription "IWAI", "PSC" and BM No. can be seen on the face of the pillar. The measurements of the bench mark pillar from notable locations / edges as follows: West from Road - 3.340m.					
Life of Station : 15Yrs	Datum: - WGS 84		**ZONE :**46 R		

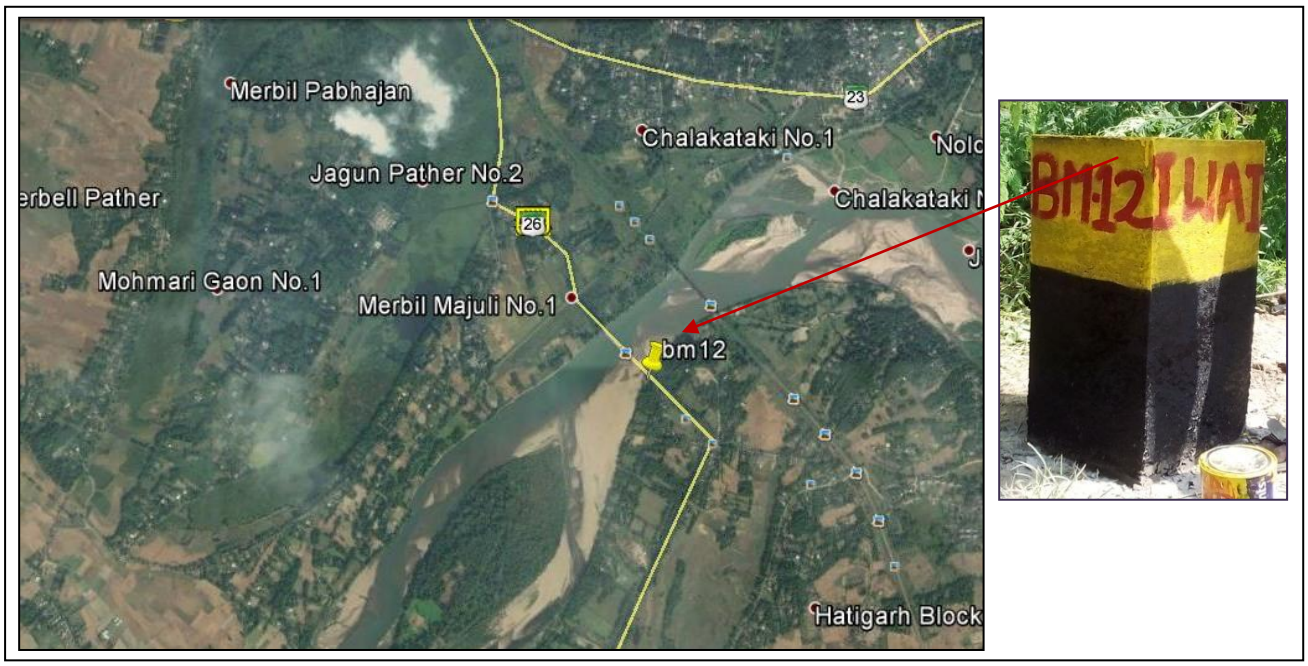


Table 37 - Bench Mark Form & Google image of BM 12

Annexure-12 Leveling Calculations:-

Levelling from BM-1 to GS-6

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.642					98.635	BM-1
0.465		1.983		1.341	97.294	
0.492		2.388		1.923	95.371	
		1.866		1.374	93.997	GS-6

Levelling from BM-2 to GS-7

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.376					99.298	BM-2
0.229		1.865		1.489	97.809	
0.488		1.972		1.743	96.066	
0.672		1.250		0.762	95.304	
		1.435		0.763	94.541	GS-7

Levelling from BM-2 to GS-8

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.572					99.298	BM-2
0.460		1.982		1.410	97.888	
0.295		2.374		1.914	95.974	
		1.758		1.463	94.511	GS-8

Levelling from BM-5 to GS-9

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.452					107.940	BM-5
0.458		2.164		1.712	106.228	
0.385		2.995		2.537	103.691	
0.675		2.955		2.570	101.121	
0.260		2.145		1.470	99.651	
		1.836		1.576	98.075	GS-9

Levelling from BM-5 to GS-1

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.675					107.940	BM-5
0.852		2.883		2.208	105.732	
0.462		3.584		2.732	103.000	
0.252		2.976		2.514	100.486	
		2.581		2.329	98.157	GS-1

Levelling from BM-7 to GS-5

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.420					108.845	BM-7
0.284		2.810		2.390	106.455	
0.425		2.775		2.491	103.964	
		2.328		1.903	102.061	GS-5

Levelling from BM-10 to GS-4

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.480					119.875	BM-10
0.854		3.240		2.760	117.115	
0.254		2.570		1.716	115.399	
0.345		3.544		3.290	112.109	
		1.230		0.885	111.224	GS-4

Levelling from BM-11 to GS-3

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.436					118.663	BM-11
0.782		2.687		2.251	116.412	
0.235		2.364		1.582	114.830	
		1.760		1.525	113.305	GS-3

Levelling from BM-12 to GS-2

BS	IS	FS	RISE(+)	FALL(-)	RL	REMARKS
0.875					120.835	BM-12
0.455		2.940		2.065	118.770	
0.459		1.975		1.520	117.250	
		2.556		2.097	115.153	GS-2

Table 38- Leveling Calculation of Dehing River

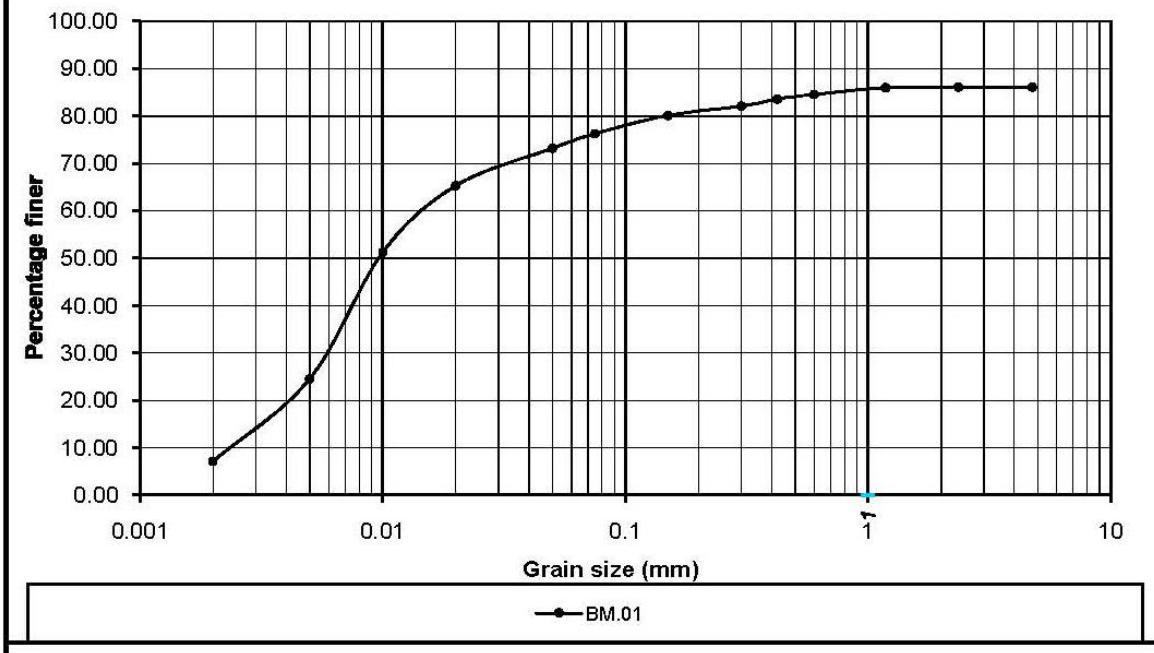
Annexure-13 Soil Sample

RESULT OF TEST OF SOIL SAMPLES

SITE: DEHING RIVER

RESULTS OF TEST OF SOIL SAMPLES										
SITE – DEHING RIVER										
PHYSICAL ANALYSIS OF SOIL										
Sl.No.	BM.	GRAVEL (%)	SAND (%)	SILT+CLAY (%)	SPECIFIC GRAVITY	pH VALUE	SILT (%)	CLAY (%)	Cu	Cc
1	1.00	13.89	24.50	61.61	2.66	7.30	54.50	7.11	6.14	0.97
2	2.00	8.40	21.84	69.76	2.65	7.40	61.00	8.76	8.18	1.38
3	-	12.96	27.65	59.39	2.66	7.20	49.50	9.89	7.52	1.14

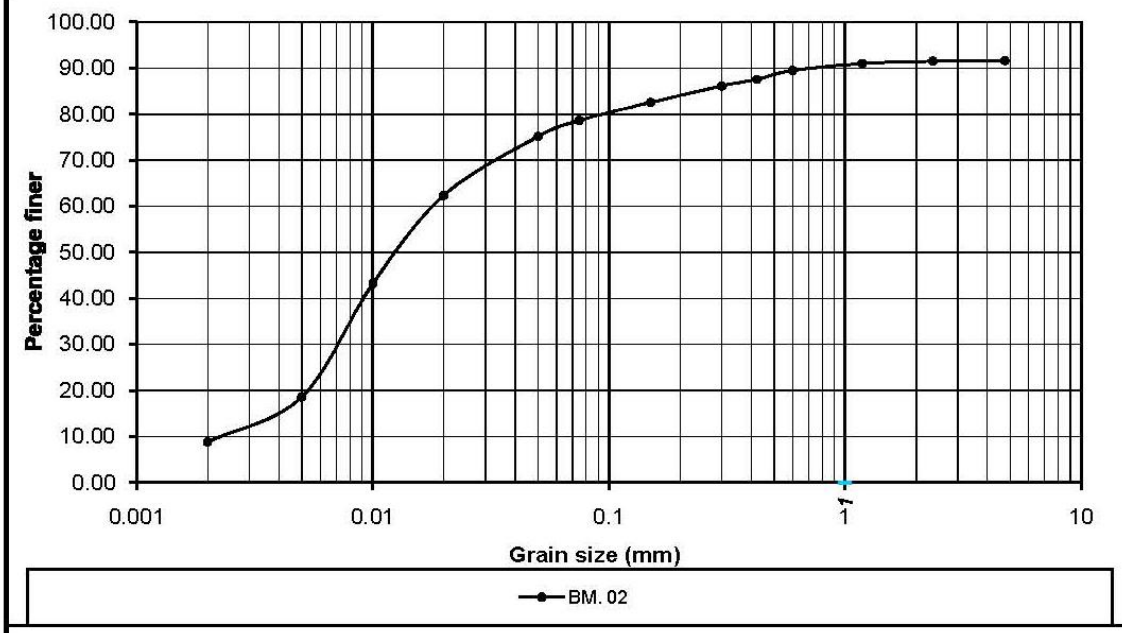
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-4.75*	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Sand (%)**	**Gravel (%)**
BM.01	7.11	54.50	24.50	13.89

*Silt & Clay

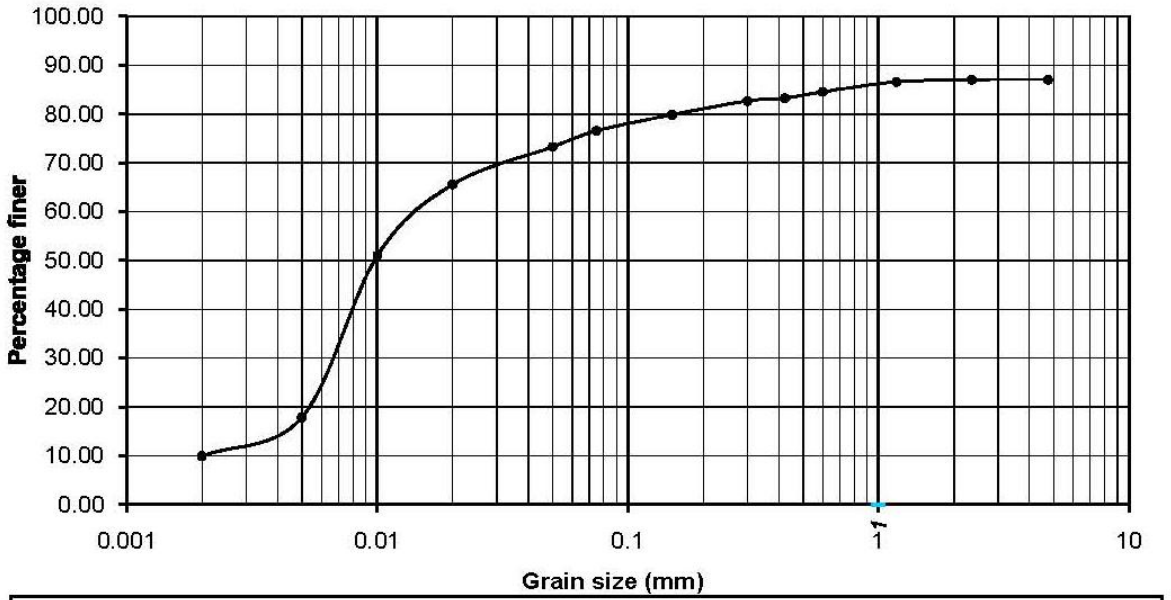
GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-4.75*	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Sand (%)**	**Gravel (%)**
BM. 02	8.76	61.00	21.84	8.40

*Silt & Clay

GRAIN SIZE DISTRIBUTION CURVES



Grain size (mm)	*<0.002*	*0.002-0.075*	*0.075-4.75*	*>4.75*
Sample No.	**Clay (%)**	**Silt (%)**	**Sand (%)**	**Gravel (%)**
3	9.89	49.50	27.65	12.96

*Silt & Clay

Annexure-14 Water Sample

RESULTS OF EXAMINATION OF SAMPLES OF WATER

SITE- RIVER DEHING

PARAMETER – pH Value at 25° C

SL.NO;	B.M	LOCATION	PARAMETER	WATER SAMPLE RESULTS	PERMISSIBLE LIMIT IS:456-2000
1	1	UPPER	pH Value at 25° C	7.0	6.5 – 8.5
2		MIDDLE		7.1	
3		LOWER		6.9	
4	7	UPPER		7.1	
5		MIDDLE		7.0	
6		LOWER		7.0	
7	10	UPPER		7.2	
8		MIDDLE		7.1	
9		LOWER		6.9	

PARAMETER –Chloride as Cl (mg/l)

SITE- RIVER DEHING

SL.NO;	B.M	LOCATION	PARAMETER	WATER SAMPLE RESULTS	PERMISSIBLE LIMIT IS:456-2000
1	1	UPPER	Chloride as Cl (mg/l)	6	2000 mg/l for concrete not containing embedded steel and 500 mg/l for reinforced concrete work.
2		MIDDLE		5	
3		LOWER		4	
4	7	UPPER		7	
5		MIDDLE		5	
6		LOWER		5	
7	10	UPPER		7	
8		MIDDLE		6	
9		LOWER		5	

PARAMETER –Sulphates as SO_4 (mg/l)

SITE- RIVER DEHING

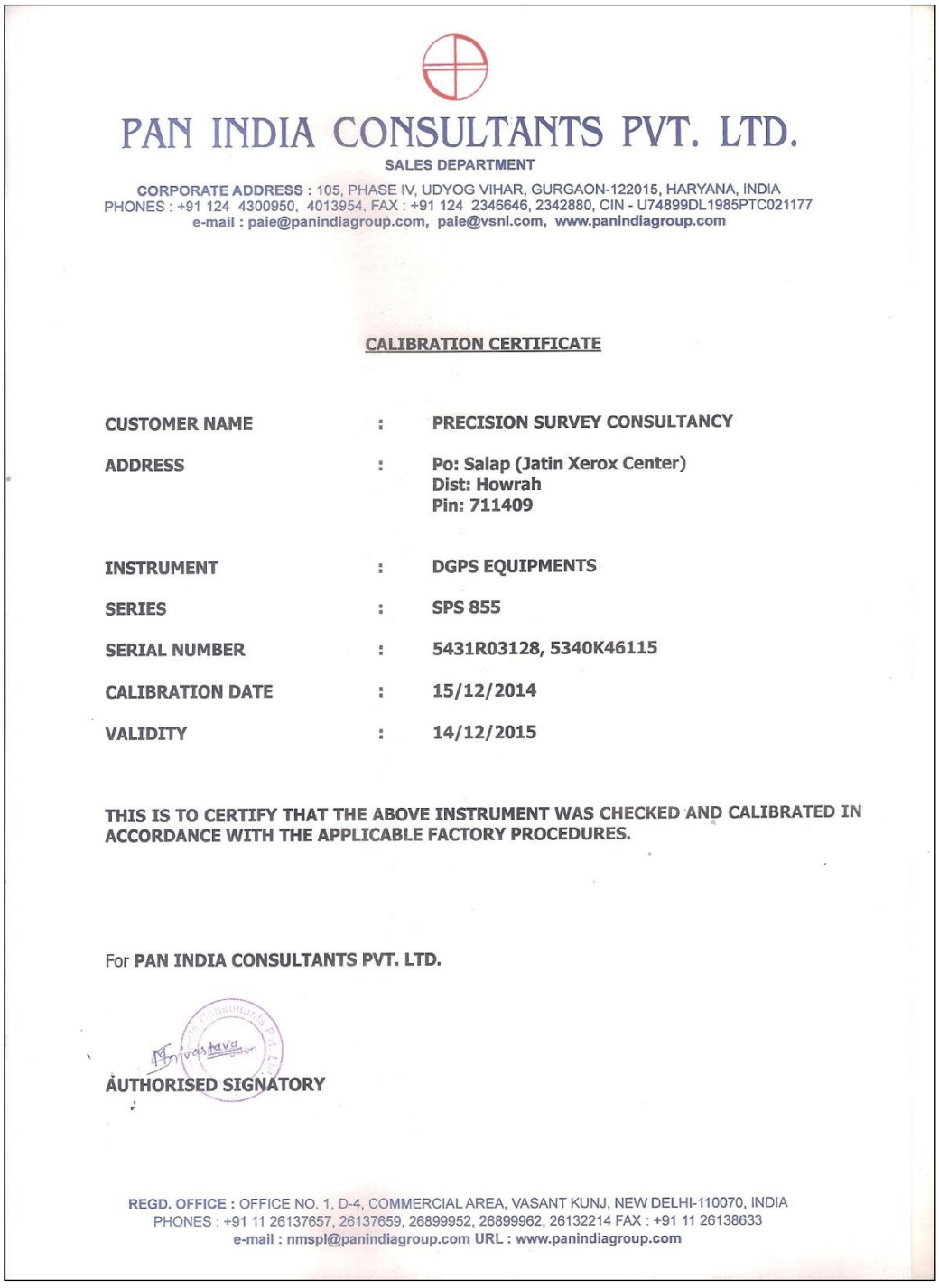
SL.NO;	B.M	LOCATION	PARAMETER	WATER SAMPLE RESULTS	PERMISSIBLE LIMIT IS:456-2000
1	1	UPPER	Sulphates as SO_4 (mg/l)	147	400 (mg/l)
2		MIDDLE		151	
3		LOWER		134	
4	7	UPPER		148	
5		MIDDLE		152	
6		LOWER		150	
7	10	UPPER		149	
8		MIDDLE		150	
9		LOWER		138	

PARAMETER –Sediment Concentration (mg/l)

SITE- RIVER DEHING

SL.NO;	B.M	LOCATION	PARAMETER	WATER SAMPLE RESULTS	PERMISSIBLE LIMIT IS:456-2000
1	1	UPPER	Sediment Concentration (mg/l)	22	2000 (mg/l)
2		MIDDLE		27	
3		LOWER		40	
4	7	UPPER		21	
5		MIDDLE		28	
6		LOWER		26	
7	10	UPPER		20	
8		MIDDLE		27	
9		LOWER		40	

Annexure-15 Calibration Certificate



PAN INDIA CONSULTANTS PVT. LTD.

SALES DEPARTMENT

CORPORATE ADDRESS : 105, PHASE IV, UDYOG VIHAR, GURGAON-122015, HARYANA, INDIA
PHONES : +91 124 4300950, 4013954. FAX : +91 124 2346646, 2342880, CIN - U74899DL1985PTC021177
e-mail : paie@panindiagroup.com, paie@vsnl.com, www.panindiagroup.com

CALIBRATION CERTIFICATE

CUSTOMER NAME	:	PRECISION SURVEY CONSULTANCY
ADDRESS	:	Po: Salap (Jatin Xerox Center) Dist: Howrah Pin: 711409
INSTRUMENT	:	DGPS EQUIPMENTS
SERIES	:	SPS 855
SERIAL NUMBER	:	5431R03128, 5340K46115
CALIBRATION DATE	:	15/12/2014
VALIDITY	:	14/12/2015

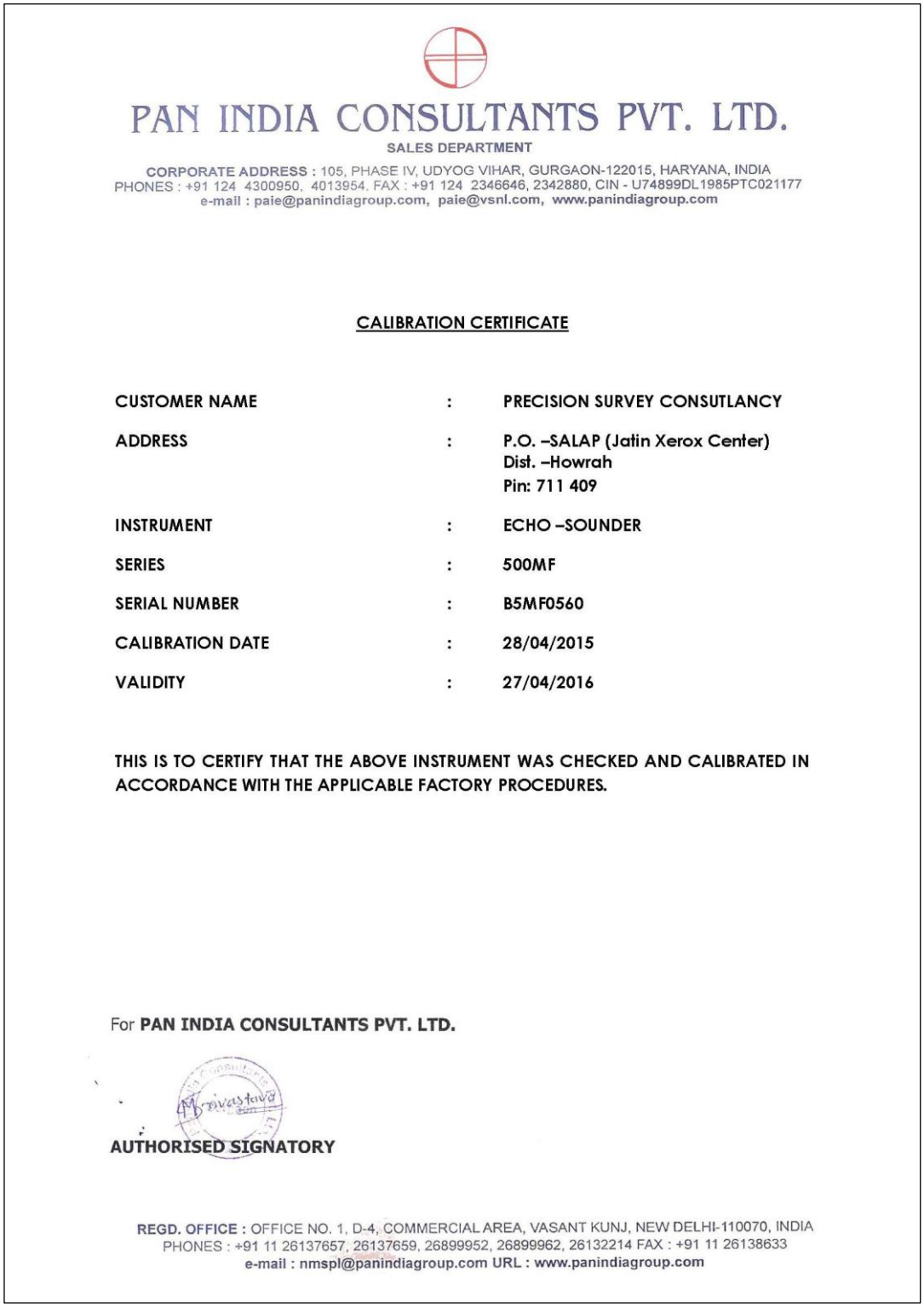
THIS IS TO CERTIFY THAT THE ABOVE INSTRUMENT WAS CHECKED AND CALIBRATED IN ACCORDANCE WITH THE APPLICABLE FACTORY PROCEDURES.

For PAN INDIA CONSULTANTS PVT. LTD.

AUTHORISED SIGNATORY

REGD. OFFICE : OFFICE NO. 1, D-4, COMMERCIAL AREA, VASANT KUNJ, NEW DELHI-110070, INDIA
PHONES : +91 11 26137657, 26137659, 26899952, 26899962, 26132214 FAX : +91 11 26138633
e-mail : nmspl@panindiagroup.com URL : www.panindiagroup.com

Figure 35- Calibration Certificate of DGPS



PAN INDIA CONSULTANTS PVT. LTD.

SALES DEPARTMENT

CORPORATE ADDRESS : 105, PHASE IV, UDYOG VIHAR, GURGAON-122015, HARYANA, INDIA
PHONES : +91 124 4300950, 4013954. FAX : +91 124 2346646, 2342880, CIN - U74899DL1985PTC021177
e-mail : paie@panindiagroup.com, paie@vsnl.com, www.panindiagroup.com

CALIBRATION CERTIFICATE

CUSTOMER NAME	:	PRECISION SURVEY CONSUTLANCY
ADDRESS	:	P.O. –SALAP (Jatin Xerox Center) Dist. –Howrah Pin: 711 409
INSTRUMENT	:	ECHO –SOUNDER
SERIES	:	500MF
SERIAL NUMBER	:	B5MF0560
CALIBRATION DATE	:	28/04/2015
VALIDITY	:	27/04/2016

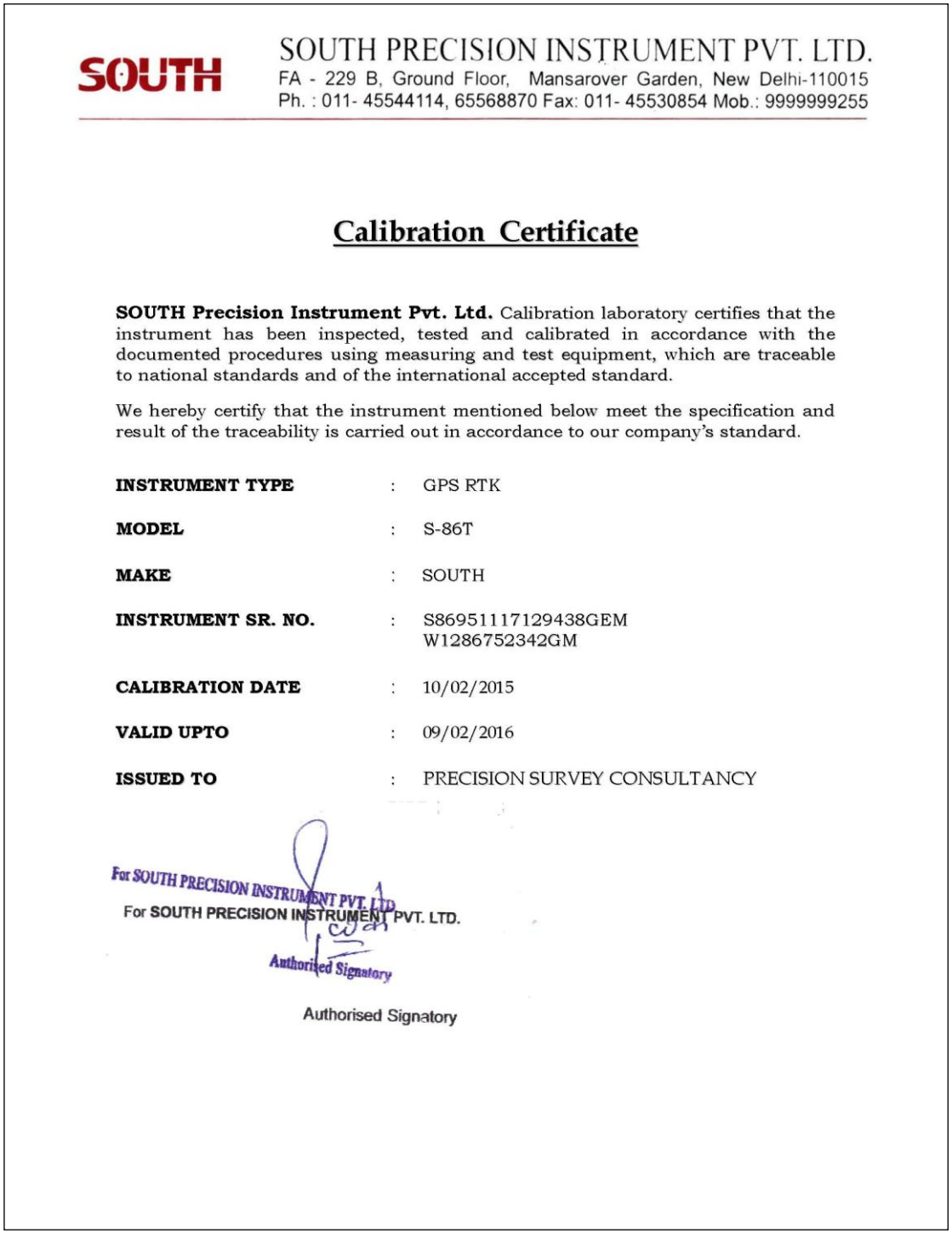
THIS IS TO CERTIFY THAT THE ABOVE INSTRUMENT WAS CHECKED AND CALIBRATED IN ACCORDANCE WITH THE APPLICABLE FACTORY PROCEDURES.

For PAN INDIA CONSULTANTS PVT. LTD.

AUTHORISED SIGNATORY

REGD. OFFICE : OFFICE NO. 1, D-4, COMMERCIAL AREA, VASANT KUNJ, NEW DELHI-110070, INDIA
PHONES : +91 11 26137657, 26137659, 26899952, 26899962, 26132214 FAX : +91 11 26138633
e-mail : nmspl@panindiagroup.com URL : www.panindiagroup.com

Figure 36- Calibration Certificate of Echo Sounder



SOUTH PRECISION INSTRUMENT PVT. LTD.
FA - 229 B, Ground Floor, Mansarover Garden, New Delhi-110015
Ph. : 011- 45544114, 65568870 Fax: 011- 45530854 Mob.: 9999999255

Calibration Certificate

SOUTH Precision Instrument Pvt. Ltd. Calibration laboratory certifies that the instrument has been inspected, tested and calibrated in accordance with the documented procedures using measuring and test equipment, which are traceable to national standards and of the international accepted standard.

We hereby certify that the instrument mentioned below meet the specification and result of the traceability is carried out in accordance to our company's standard.

INSTRUMENT TYPE	:	GPS RTK
MODEL	:	S-86T
MAKE	:	SOUTH
INSTRUMENT SR. NO.	:	S86951117129438GEM W1286752342GM
CALIBRATION DATE	:	10/02/2015
VALID UPTO	:	09/02/2016
ISSUED TO	:	PRECISION SURVEY CONSULTANCY

For SOUTH PRECISION INSTRUMENT PVT. LTD.
For SOUTH PRECISION INSTRUMENT PVT. LTD.
Authorised Signatory
Authorised Signatory

Figure 37- Calibration Certificate of G.P.S- R.T.K

Annexure-16 Field Photographs

Figure 38 Site Picture of Topographic Instruments

Figure 39-River Bank side pictures

Figure 40- Bathymetry Instruments

Figure 41-B.M Pillar Establishment

Figure 42- picture of Catching the Fishes using Nets

Annexure-17 Survey Chart:

LIST OF SURVEY CHARTS OF DEHING RIVER (NW-30)								
Sl. No.	**Chart No.**	**Location**	**Chainage (Form…….km. To…...km.)**	**Chart Datum And Water Level w.r.t. MSL**			**Value of Reduction**	**Remarks**
				Chainage (km.)	**CD (m.)**	**WL (m.)**		
1	P_01	Rajabari to Dehing Kalghar	0.000 km to 4.000 km	5.058	93.261	93.997	-0.736	GS-6
2	P_02	Dehing Kalghar to Jokai 36 Gharia Gaon Fv	4.000 km to 11.440 km	5.058	93.261	93.997	-0.736	GS-6
				16.221	94.491	94.541	-0.050	GS-7
3	P_03	Jokai 36 Gharia Gaon Fv to 102 no-Nelami Grant	11.440 km to 18.570 km	16.221	94.491	94.541	-0.050	GS-7
				16.460	94.517	94.511	0.006	GS-8
4	P_04	102 no-Nelami Grant to Banbari Gaon No-I	18.570 km to 24.387 km	16.460	94.517	94.511	0.006	GS-8
5	P_05	Banbari Gaon No-I to Lezai Miri Pather Gagon	24.387 km to 28.000 km	16.460	94.517	94.511	0.006	GS-8
6	P_06	Lezai Miri Pather Gagon to Bhaogamur Tiniali Gaon	28.000 km to 33.840 km	41.307	97.255	98.075	-0.820	GS-9
7	P_07	Bhaogamur Tiniali Gaon to Bali gaon	33.840 km to 38.550 km	41.307	97.255	98.075	-0.820	GS-9
8	P_08	Bali gaon to Nowjan Gaon no -2	38.550 km to 42.620 km	41.307	97.255	98.075	-0.820	GS-9
				41.670	97.303	98.157	-0.854	GS-1
9	P_09	Nowjan Gaon no -2 to Mowamora Gaon no-2	42.620 km to 47.780 km	41.670	97.303	98.157	-0.854	GS-1
10	P_10	Mowamora Gaon no-2 to Dihing thekerani gaon	47.780 km to 51.488 km	54.672	100.549	100.711	-0.162	GS-10
11	P_11	Dihing thekerani gaon to Chamoguri Bangali Gaon	51.488 km to 55.000 km	54.672	100.549	100.711	-0.162	GS-10
12	P_12	Chamoguri Bangali Gaon to Jultoli Bam Gaon	55.000 km to 64.411 km	54.672	100.549	100.711	-0.162	GS-10
				57.538	101.264	102.061	-0.797	GS-5

LIST OF SURVEY CHARTS OF DEHING RIVER (NW-30)								
Sl. No.	Chart No.	Location	Chainage (Form…….km. To…...km.)	Chart Datum And Water Level w.r.t. MSL			Value of Reduction	Remarks
				Chainage (km.)	CD (m.)	WL (m.)		
13	P_13	Jultoli Bam Gaon to Chaharikata N.C.Block-3	64.411 km to 69.825 km	57.538	101.264	102.061	-0.797	GS-5
14	P_14	Chaharikata N.C.Block-3 to Hologuri no-3	69.825 km to 74.680 km	57.538	101.264	102.061	-0.797	GS-5
15	P_15	Hologuri no-3 to Dihing Holla no-I	74.680 km to 79.617 km	57.538	101.264	102.061	-0.797	GS-5
				96.458	110.979	111.224	-0.245	GS-4
16	P_16	Dihing Holla no-I to Dihing Holla no-II	79.617 km to 83.784 km	96.458	110.979	111.224	-0.245	GS-4
17	P_17	Dihing Holla no-II to Hatibandha no I	83.784 km to 87.592 km	96.458	110.979	111.224	-0.245	GS-4
18	P_18	Hatibandha no I to Chowdang Gaon	87.592 km to 92.729 km	96.458	110.979	111.224	-0.245	GS-4
19	P_19	Chowdang Gaon to Pandhua Gaon	92.729 km to 97.000 km	96.458	110.979	111.224	-0.245	GS-4
20	P_20	Pandhua Gaon to Amguri Nepali	97.000 km to 100.278 km	96.458	110.979	111.224	-0.245	GS-4
				102.377	112.457	113.305	-0.848	GS-3
21	P_21	Amguri Nepali to Chirika Beel	100.278 km to 103.391 km	102.377	112.457	113.305	-0.848	GS-3
22	P_22	Chirika Beel to Mohmari goan no-II	103.391 km to 106.580 km	102.377	112.457	113.305	-0.848	GS-3
				108.657	114.025	115.153	-1.128	GS-2
23	P_23	Mohmari Goan no-II to Merbil Majuli	106.580 km to 109.136 km	108.657	114.025	115.153	-1.128	GS-2

Table 39- Survey Chart

Note: Scale: - 1:5000 in each survey Chart

Survey period: - 08th November, 2015 to 30th November, 2015

G.S:- Gauge Station