

EXECUTIVE SUMMARY of EIA/EMP
for
Public Consultation
for

*4.0 MTPA Iron Ore Beneficiation Plant at Bacheli
Complex, Dist. South Bastar Dantewada and
150 km Slurry Pipeline System from Bacheli to Nagarnar,
Dist. Bastar, Chhattisgarh*



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EXECUTIVE SUMMARY FOR PUBLIC CONSULTATION

For

Preparation of EIA/EMP report for the proposed 4.0 MTPA Iron Ore Beneficiation Plant at Bacheli Complex, Dist. South Bastar Dantewada & 150km Slurry Pipeline System from Bacheli to Nagarnar, Dist. Bastar, Chhattisgarh.

1.0 Introduction

- NMDC Limited (A Government of India Enterprise) intends to set up Iron Ore Beneficiation Plant at Bacheli, South Bastar Dantewada District, Chhattisgarh to produce iron ore concentrate (in slurry form) suitable for making pellet feed concentrate and transport the same through Slurry Pipeline transportation system from Bacheli to Nagarnar, Bastar Dt, Chhattisgarh.
- The above project falls in the schedule 2(b) category "A" of EIA Notification 2006 of Ministry of Environment and Forests, which requires prior Environmental clearance from MoEF, GOI, New Delhi.
- Director, MoEF, I.A. Division, New Delhi vide letter no: J-11015/45/2014-IA.II (M) dated 5/5/2014 issued Terms of Reference for preparation of EIA/EMP report.

1.1 Project Description:

- The Bailadila mining complex produces the world's best grade of hard lumpy ore having +66% iron content, with negligible deleterious material and the best physical & metallurgical properties necessary for steel making.
- The demand for steel is projected to grow in the years to come and this in turn would call for increased demand for iron ore. NMDC is gearing itself to meet the expected increase in demand by enhancing production capabilities of existing mines and by opening up new mines.
- In Iron and Steel industry, Pelletization is the call of the day, as due to the inherent nature of the Pellets; the productivity of Steel Plant increases, thus reducing the cost of steel making per ton. Further Pellet making helps in utilizing the unused iron rich slime (considered waste) which after beneficiation is

converted into Pellet feed concentrate suitable for Pellet making. Due to this reason, slime which is lying as waste till date will get used for steel making.

- The overall production level is envisaged to be 51 MTPA consisting of 20.9 MTPA of lumps / CLO and 30.1 MTPA of fines, including slimes.
- The Bailadila sector is served by K-K railway line of East Coast Railways which can transport up to a maximum of 25 MTPA and will not be in a position to evacuate the total produce from the Bailadila sector in the present state or even after doubling the K-K railway line.
- In view of the above, NMDC intends to develop Slurry Pipeline transportation system from Bailadila to Vizag, as an alternate mode of transport for transportation of iron ore fines in slurry form subsequent to its conversion to iron ore concentrate suitable for making Pellet Feed concentrate.
- The slurry will be filtered for producing filter cake which will be converted into Pellets in the Pellet Plants.
- As a part of the above objective NMDC intends to install iron ore beneficiation plant of 4 MTPA (in 2 phases, 2 MTPA in each phase) & slurry pipeline 150km long & 24 inch dia from Bachel to Nagarnar to transport ore concentrate.
- **Land requirement for Iron Ore beneficiation plant:** The land required for installation of iron ore beneficiation plant (slime beneficiation) at Bachel falls in the forest compartment no: 1843, 1844 and 1851 in the reserve forest of Bachel forest range within Dantewada forest division. Location of the land is adjacent to the tailing dam site. Application for 33 ha of forest land has been submitted by NMDC to Forest Department on 30/10/2012 and again on 4/8/2014 for obtaining diversion of 33.0 Ha forest land for construction of iron ore beneficiation plant.
- **Land requirement for laying the slurry pipeline** by NMDC, GoI has published Gazette Notification on 23.08.2012.
- Reconnaissance survey was completed based on which the detailed route survey work is completed by WAPCOS Limited (A Government of India undertaking), New Delhi.

- The proposed slurry pipeline starts from Iron ore beneficiation plant at Bachel and runs towards North direction and after chainage 57+000kms, it runs towards eastern direction till end point avoiding major towns, villages and habitations i.e. Bachel, Dantewada, Geedam, Jagdalpur, etc.
- The corridor of land for right of use / right of way is taken as 30m width.
- The proposed slurry pipeline passes through stretch of forest at different pockets of the pipeline corridor & about 91.950 Ha of forest land will be ROU component.
- The diversion of forest land under F.C. Act, 1980 will be obtained for 91.950 ha of forest land for slurry pipeline project.
- The site is easily accessible and well connected to Dantewada (district head quarter, 30km), Jagdalpur (120km), Raipur (state capital, 425 km), Visakhapatnam in A.P (450 km) and Hyderabad in Telangana (600 km) by all-weather roads. It can also be reached by rail from Visakhapatnam. There is regular iron ore movement from this sector to Visakhapatnam port by rail, through the K-K (Kirandul- Kottavalasa) railway line of East Coast Railways.
- Physiographically the Dantewada district forms the part of Bastar plateau. The area is characterized by a highly undulating topography with hills and valleys. The area exhibits mainly structural hills, valleys and pediment/pediplain along with some area under structural plains and some under flood plains in the southern part of the district. The elevation of the area is 576 MSL.
- The slurry pipeline shall be laid underground and for safety reasons it shall be aligned besides the State & National Highway (SH-5, NH-16 & NH-43) to the maximum extent feasible. Slope is restricted to maximum of 12 degrees. The proposed slurry pipeline passes through flat terrain covering a distance of 71.875km (51.75%) and hilly terrain covering a distance of 67km (48.25%).The elevation of important locations are as follows:

Start	: 656.58m above MSL @km. 0.00
End	: 547.274m above MSL @km. 138.875
Highest	: 774.797m above MSL @km. 80.27
Lowest	: 329.25m above MSL @km. 34.93

- Beneficiation plant: In Dantewada the oldest basement crystalline rocks and gneisses belonging to the Benggal group cover about 16% area of the district mostly in the central part of the district.
- The proposed pipeline corridor mainly passes through alluvial tract but bed rock was also found at few places at depth less than 3m. The pipeline runs parallel to the SH-5 & SH-16. In general, the area is covered by alluvial deposits, silty clay and sandy silt of low to intermediate plasticity. The basement mainly comprises of weathered sandstone and quartzite.

2.0 Description of the Environment:

Period of base line Study (March, 2014 - May, 2014):

Study area: 10 km radius area from project site.

2.1 Meteorological study:

Minimum & maximum temperatures, humidity & rainfall recorded during the study period were in the range of 20 to 40.5 °C, 32.5 to 88.6 % & 12 to 30 mm respectively.

2.2 Ambient Air Quality:

S.No.	Parameter	PM ₁₀ (µg/m ³)		SO ₂ (µg/m ³)		NO ₂ (µg/m ³)	
	Locations	Max.	Min.	Max.	Min.	Max.	Min.
1.	Within Project Site	60.00	53.20	17.74	12.20	27.76	20.59
2.	Bachel	63.00	55.00	15.00	10.00	28.10	20.00
3.	Close to the project site	70.00	61.30	15.00	10.00	25.70	20.00
4.	Chalkipara	61.40	52.60	13.40	9.10	23.30	18.00
5.	Patelpara	59.10	50.30	12.30	8.00	22.00	17.00
6.	Gayatpara	55.20	45.30	14.00	9.00	25.35	19.00
7.	Akashnagar	75.00	57.00	12.30	7.00	21.75	15.00
8.	Bailadila	65.00	53.00	17.00	8.00	27.90	20.00
9.	Bainpal	63.56	50.00	12.50	8.00	22.30	17.00
10.	Bhansi	59.00	50.20	13.20	10.00	24.00	19.00
11.	Dantewada (Near Bus stand)	72.00	56.70	16.00	10.00	29.10	20.20
12.	Nagarnar(End Point of Slurry Pipeline)	75.80	60.00	13.20	9.20	24.30	17.00

Out of 12 locations the maximum Respirable Particulate Matter (PM₁₀) was found in Nagarnar (75.80 µg/m³) & minimum value (45.30 µg/m³) was found in Gayatpara.

All the parameters are within the limit (As per NAAQS Limit) at all the locations.

2.3 Water Quality:

The water quality monitoring was done at 10 locations within the study area. 4 surface water & 6 ground water samples were taken.

2.3.1 Surface water:

Four water samples were taken from Sankini River (SW-1), Gali Nala (SW-2), Koyar river (SW-3) and Sabari River (SW-4). All the Parameters were well within the prescribed limit of IS: 2296C.

2.3.2 Ground Water:

The ground water samples are from Bore well from Bacheli(Near to the Project site) (GW-1), hand pump at Chalkipara(GW-2), Hand Pump in Gayatpara (GW-3), hand pump at Bhansi (GW-4), Hand Pump at Dantewada(GW-5) and Hand Pump at Nagarnar(GW-6).

All the parameters are well within the prescribed limit of IS: 10500, except Nitrate (48.7 mg/l) & Hardness (348 mg/l) at Dantewada (GW-5).

2.4 Noise Level:

The noise level survey was carried out at 9 locations. Ambient noise level at Project Site (N-1) was found to be 48.8 & 41.5 dB (A) in day and night time respectively. All the values are well within the prescribed limit of 75 and 70 dB (A), for industrial area in day and night time respectively. At Bacheli (N-2), Close to Project Site (N-3), Chalkipara (N-4), Patelpara(N-5), Gayatpara (N-6), Akashnagar (N-7), Dantewada(N-8) and Nagarnar(N-9) the noise levels were also within the prescribed limit of 55 dB(A) & 45 dB(A) for residential area in day and night time respectively.

2.5 Demographic Features:

Demographic features and other Statistics for the Study Area-South Bastar as per census 2011

Executive Summary for Public Consultation at Bacheli and Slurry pipeline from Bacheli to Nagarnar of NMDC

Sl.No.	Details	Rural Buffer Area	Urban area Dantewada	Urban area Bade Bacheli
		No./%	No./%	No./%
1.	Total population	12429	48701	21435
2.	No. of House hold	2933	11712	5398
3.	Average family size	4.24	4.16	3.97
4.	Average no. of house hold (per village)	267	11712	5398
5.	Average population (per village)	1130	48701	21435
6.	Sex ratio -females per thousand males	1055	895	936
7.	Percent of male population to total population	48.67	52.76	51.65
8.	Percent of female population to total population	51.33	47.24	48.35
9.	Percent of SC population to the total population	4.52	9.85	12.92
10.	Percent of ST population to the total population	84.57	35.65	33.79
11.	Percent of literate population to the total population	34.43	70.75	68.05
12.	Percent of Male literate population to the total population	20.96	40.35	39.06
13.	Percent of Female literate population to the total population	13.47	30.41	28.99
14.	Percent of total main worker to the total population	36.44	31.82	33.5
15.	Percent of total marginal worker to	19.14	3.35	3.39

	the total population			
16.	Percent of non worker to the total population	44.42	64.83	63.11

Demographic features and other Statistics for the Study Area

(Rural area - Bastar & South Bastar) as per Census 2011

Sl.No.	Details	No./%
1	Total population	97141
2	No. of House hold	22679
3	Average family size	4.28
4	Average no. of house hold per village	986
5	Average population per village	4224
6	Sex ratio -females per thousand males	1045
7	Percent of male population to total population	48.89
8	Percent of female population to total population	51.11
9	Percent of SC population to the total population	1.11
10	Percent of ST population to the total population	75.67
11	Percent of literate population to the total population	33.66
12	Percent of Male literate population to the total population	21.02
13	Percent of Female literate population to the total population	12.63
14	Percent of total main worker to the total population	30.74
15	Percent of total marginal worker to the total population	21.61
16	Percent of non worker to the total population	47.65

2.6 Flora & Fauna:

The survey has not indicated the presence of any rare, endangered or endemic species within the lease area. The lost vegetation can be reproduced elsewhere. The fauna reported in this area are not of any rare species and are all common migratory type.

2.7 Land use:

The land use/ land cover map has been generated on 1:50,000 scale using digital classification high resolution satellite data. The present work of land use/cover classification has been primarily based on the 'Manual of Nationwide Land Use/ Land Cover Mapping Using Satellite Imagery' developed by National Remote Sensing Centre, Hyderabad. Based on the methodology developed by NRSC, categories have been classified under the following major land use/land cover categories.

Executive Summary for Public Consultation at Bachel and Slurry pipeline from Bachel to Nagarnar of NMDC

Sl. No.	Category	Area (in ha)	% of the Study area
1	Forest land	17170	54.68
2	Waste land	5827	18.56
3	Water bodies	183	0.58
4	Mining Area	648	2.06
5	Industrial Setup	157	0.50
6	Agricultural land	6834	21.76
7	Built up land	581	1.85
	Total	31400	100

Anticipated Environmental Impact & Mitigation Measures:

	Impact due to proposed project	Environmental Management measures existing & proposed
Land use	<p>-33.0 Ha forest land for construction of iron ore beneficiation plant will be diverted.</p> <p>-About 91.950 Ha of forest land will be diverted for laying the slurry pipeline against total slurry pipeline area of 416.625 Ha.</p>	<p>Minimum tree felling will be done as per advice of DFO & Compensatory afforestation/plantation shall be done as per stage I clearance.</p>
Air quality	<p>The proposed plant will have value addition by making use of slime of Tailing Dam Number-1(already existing) washed fines, classifier overflow etc. These sources are wet form except fines from Deposit-5. The beneficiation shall also be done in wet form. The fines shall be transported in the slurry form hence no vehicles shall be used. The fines from Deposit-5 shall be transported to Beneficiation plant through conveyor. Hence air pollution due to the proposed project shall be</p>	<p>However water spraying on haulage roads & ore handling sites shall be done regularly. Post AAQ monitoring shall be done to check the pollution level.</p>

	Impact due to proposed project	Environmental Management measures existing & proposed
	negligible.	
Water quality	Being new project there is chance of deterioration of water quality due to tailings. Water quality deterioration from slurry pipeline is not envisaged.	Tailings will be managed by Tailing pond TD I. There will be no chance of polluting water source & degrading water quality. Post water quality monitoring shall be done to check the pollution level.
Water requirement	Total water requirement will be 1956 m ³ /day. The quantity of water will be met from Surface water and ground water.	Rain water harvesting shall be done & about 80 % of the total water requirement of the beneficiation plant will be met through recycled water.
Noise level	The contribution of noise will mainly be due to Beneficiation plant will be increased due to production & transportation.	To keep the noise level within limits, proper maintenance of machineries will be done besides regular monitoring.
Flora & Fauna	There are no rare/endangered species within the proposed Beneficiation plant site & the Slurry pipeline corridor.	Compensatory afforestation as per the requirement of Forest Conservation Act, 1980 shall be undertaken by the NMDC. Conservation Plan will be executed and coordinated with Chief Wild Life Warden, Raipur & several other agencies like Forest Department, Local villagers, Monitoring Agency etc.
Socio-economic	There will be 196 direct employments, including 28 security persons from CISF. Apart from this substantial persons will get indirect employment.	Already infrastructure is there in place. CSR health initiatives will continue. The project proponent is carrying out peripheral development jobs which will increase with the commencement of the project.

2.8 Environmental Monitoring Programme:

Ecomen Laboratories Pvt. Ltd.

Regular monitoring of Ambient Air Quality, Water Quality, Noise, Soil, water level etc. will be undertaken. Wherever needed corrective measures shall be taken to keep the pollution level well within the prescribed levels.

2.9 Project Benefits:

- ❖ There will be 196 direct employments, including 28 security persons from CISF. Apart from this, indirect employment will be generated through handling of material, transport etc, which will result in economic improvement of the people in the locality.
- ❖ Company will provide permanent or temporary employment to local people based on their qualification as & when required.
- ❖ The Company will organize Total Literacy Campaign in the area. It will adopt a village and help it in total literacy achievement.
- ❖ The company will organise free health check-up camps in nearby localities and distribute medicines amongst the poor.
- ❖ The company does not engage any child labour. Further, it will conduct awareness programmes for elimination of child labour in the community around.
- ❖ Around Rs 1170 lacs have been spent on peripheral development since last 5 years (2009-10 to 2013-14). The budget for 2014-15 is Rs 2158 lacs.

2.10 Environmental Management Plan:

The capital already spent is Rs 3.7 crore on environment. Recurring cost on environment shall be Rs 0.20 crore per annum. The company has spent Rs 117 crore on CSR/Peripheral development work during last five years (2009-10 to 2013-14).

2.11 Conclusion:

NMDC Limited has an established environment cell with qualified and experienced staff from the environmental field and the entire environmental management system is guided by the documented Environmental Policy of the Company. The Company is admired for implementation of best environmental practices and compliances to applicable statutory requirements. The Environmental Clearance proposed for the project will encourage the Company towards excellence of environmental practices and development of people around the mine.

PROJECT LOCATION MAP



LOCATION OF PLANT & START POINT OF SLURRY PIPELINE

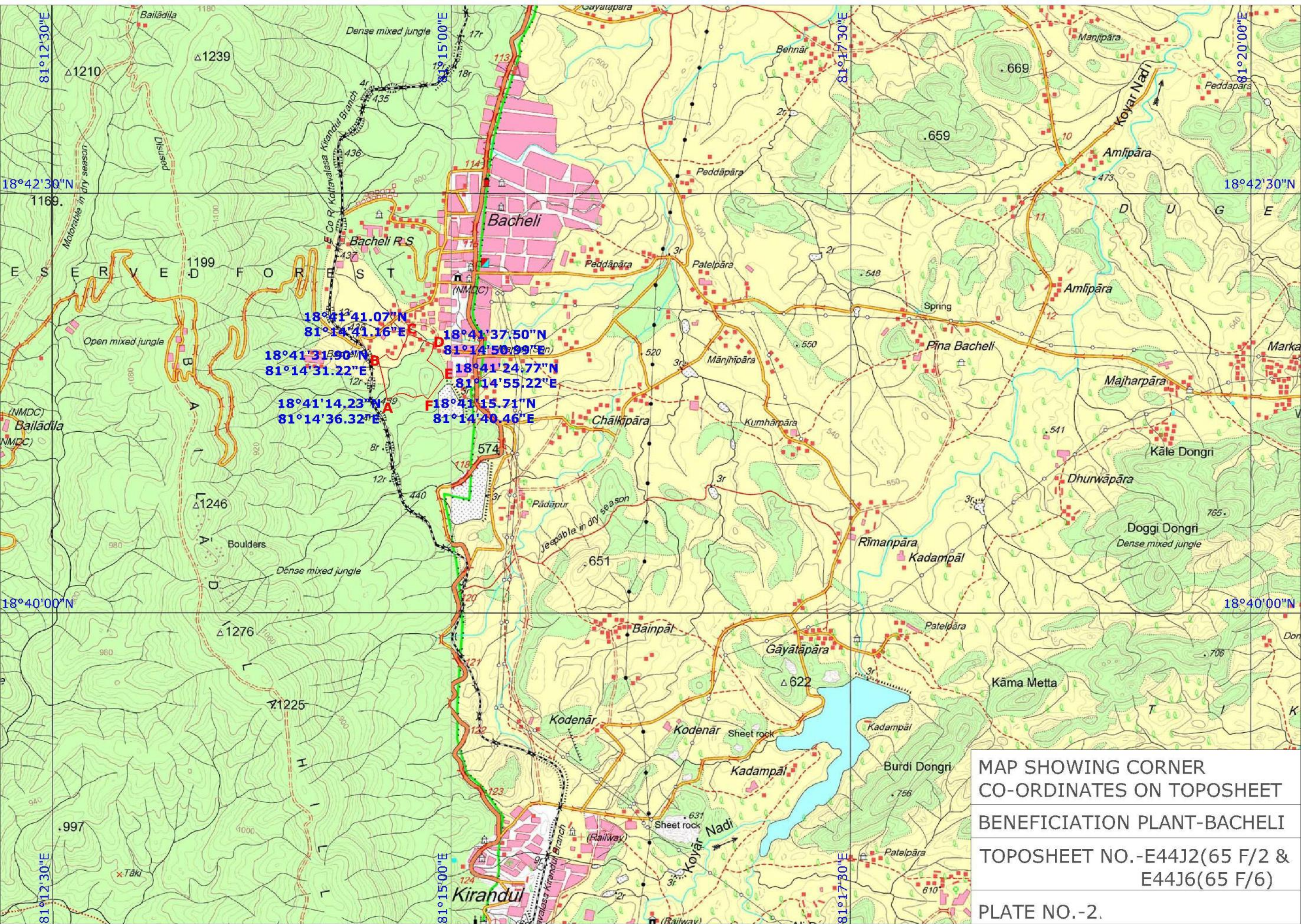
END POINT OF SLURRY PIPELINE

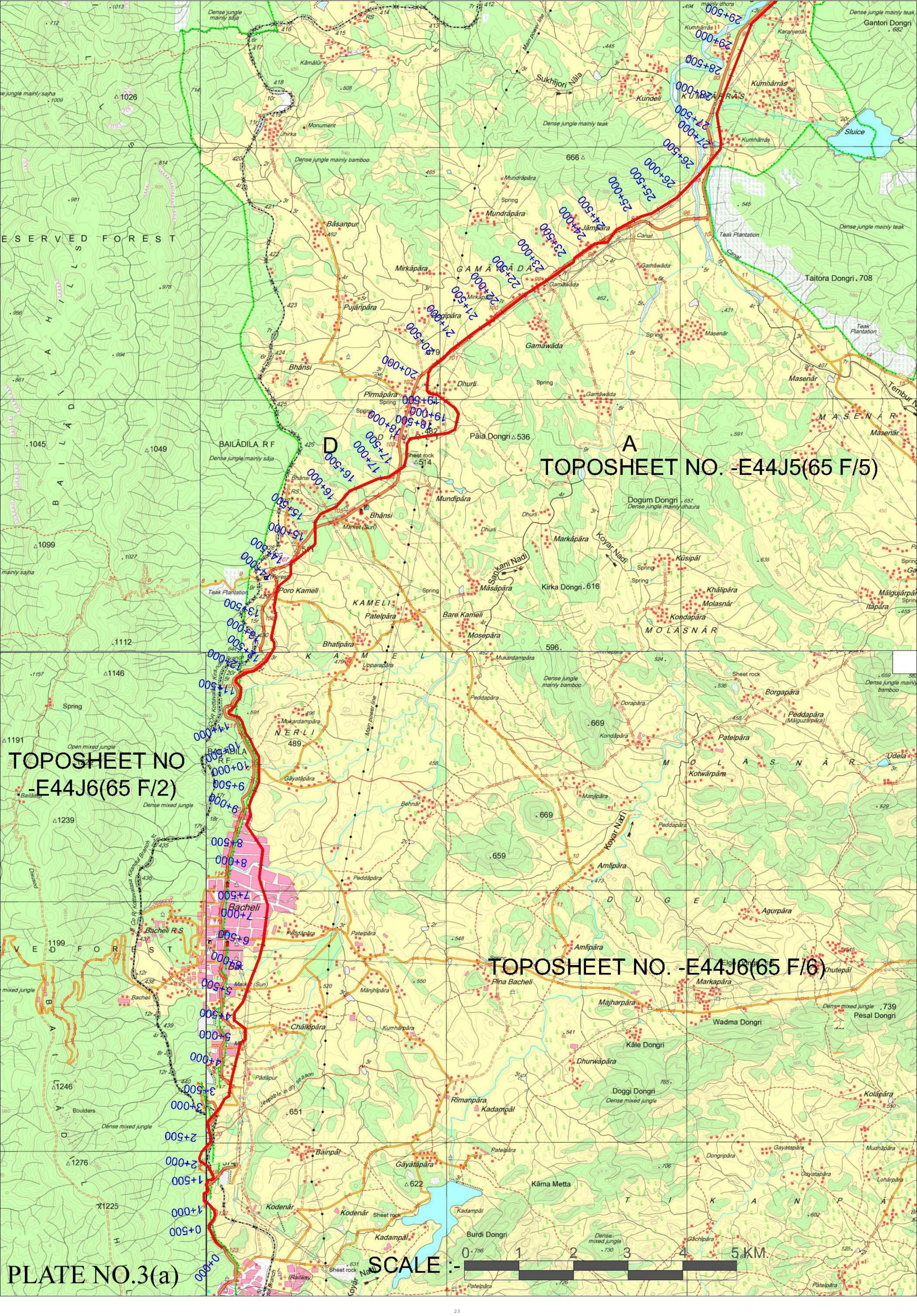


PIPELINE SHOWN IS ONLY FOR REFERENCE (NOT TO SCALE)

Water Body	State Capital	Tourist Place
District Bound	District Headquarters	Historical Place
National Highway	Taluk Headquarters	Religious
State Highway	Other Town	Industrial
Other Road	Airport	Nature
Railway	Wildlife Sanctuary	Culture

PLATE NO.-1





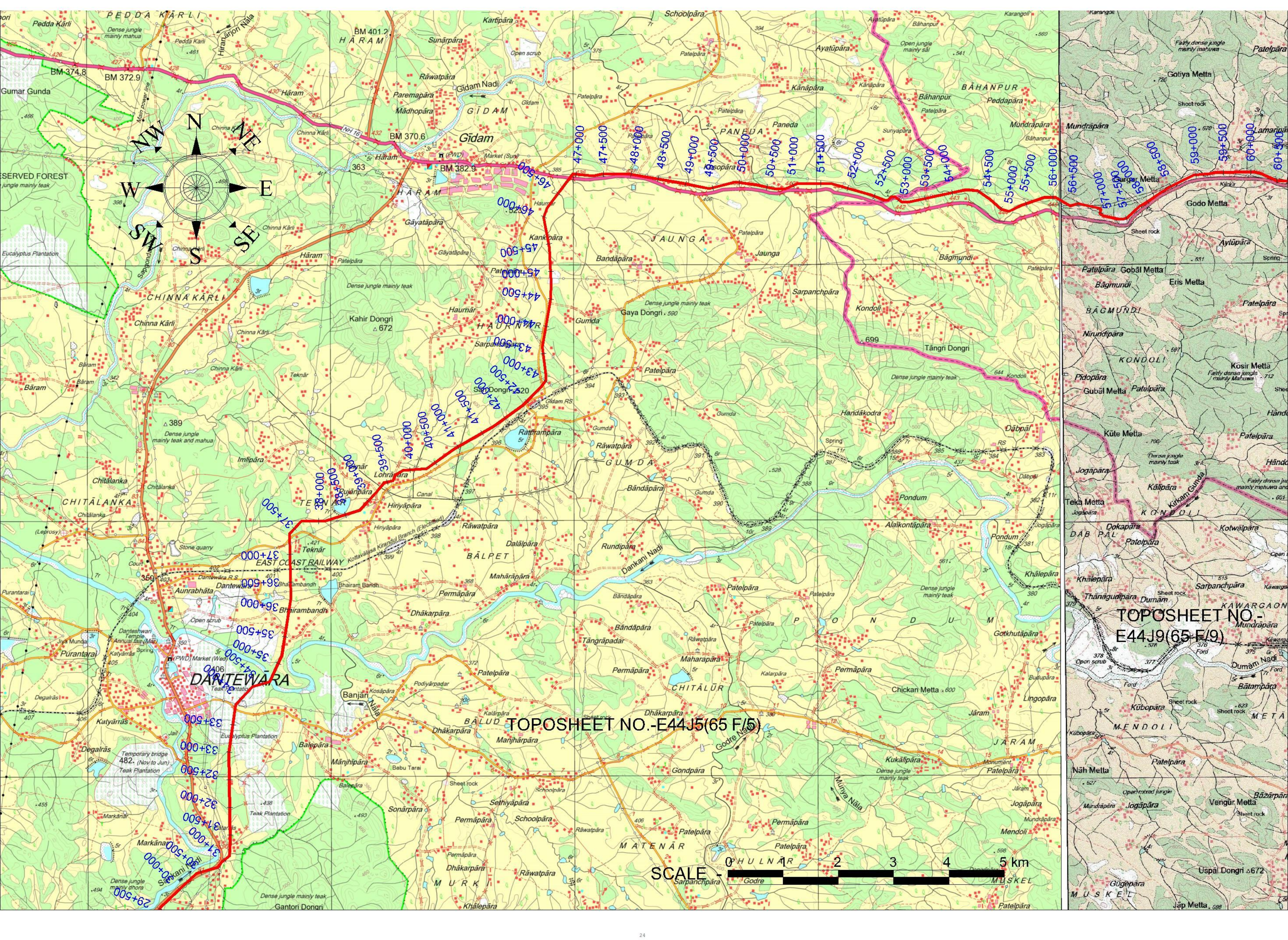
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TOPOSHEET NO -E44J6(65 F/2)

TOPOSHEET NO. -E44J6(65 F/6)

PLATE NO.3(a)





TOPOSHEET NO.-E44J5(65 F/5)

TOPOSHEET NO.-
E44J9(65 F/9)



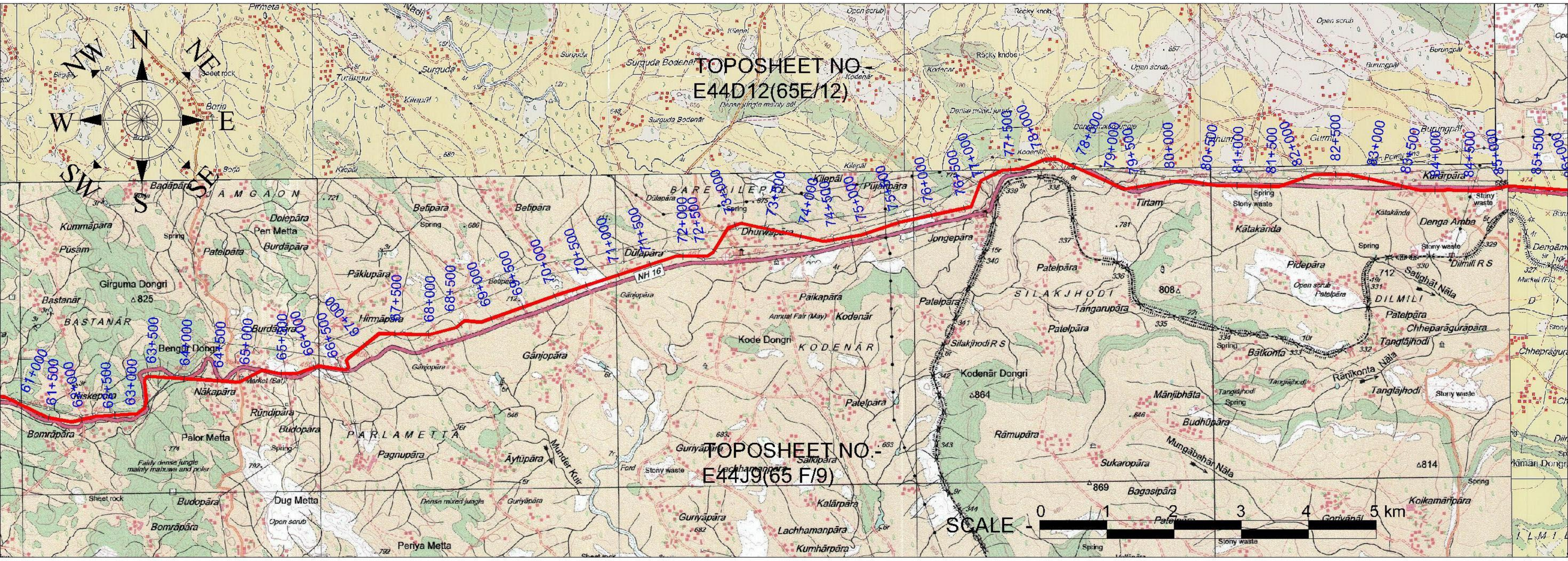


PLATE NO.3(c)

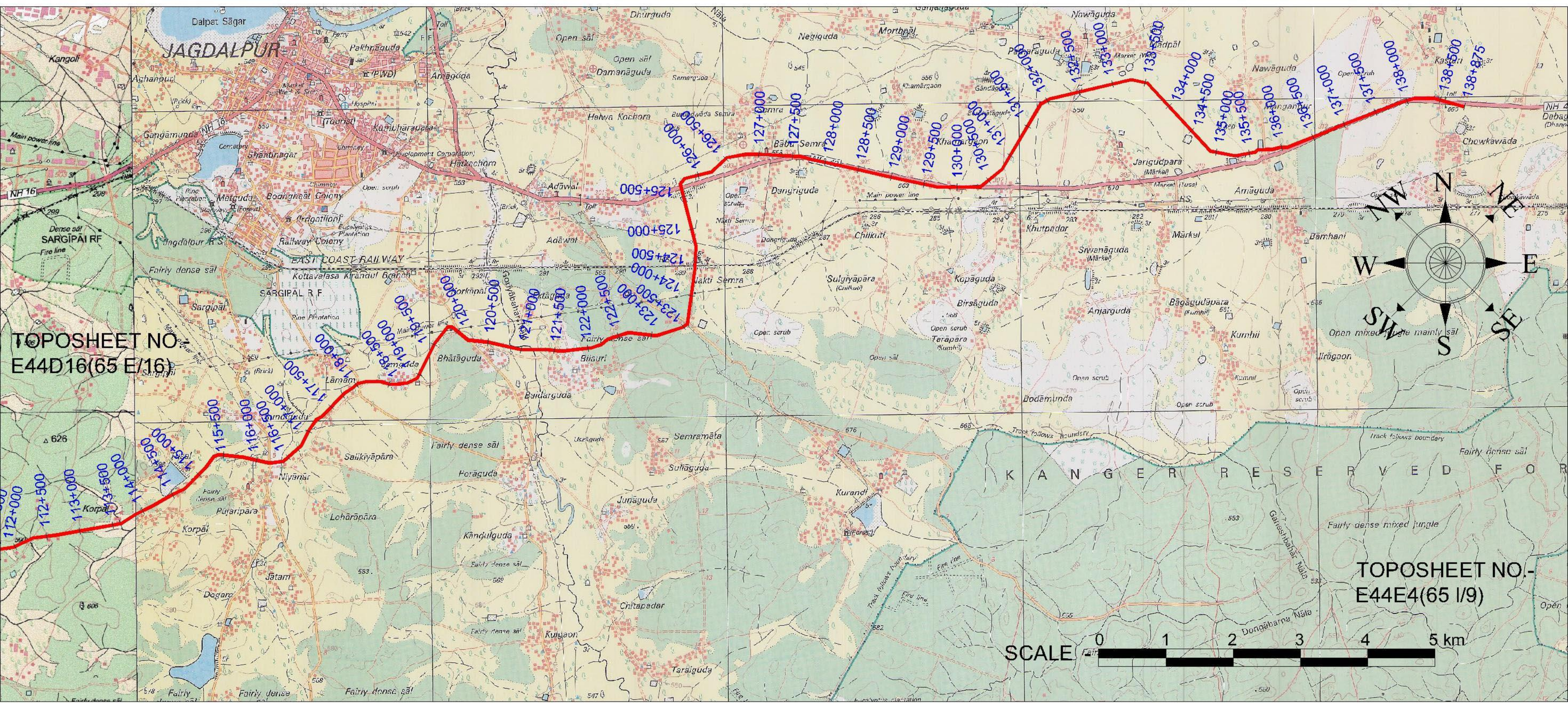


PLATE NO.3(e)