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File No: EC/SEIAA/2026-27/5030/2026

State Environment Impact Assessment Authority (SEIAA), Jharkhand

(Constituted as per the provision of EIA Notification, 2006, as amended by the Ministry of Environment, Forest and Climate Change, Government of India)

Dated: **08/10/2026**

To,

ANOOP SRIVASTAVA
Tata Steel Limited
Bombay House, 24 Homy Modi Steet, Fort, MUMBAI, MAHARASHTRA, 400001
tsl.env@tatasteel.com

Subject: Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Proposal for 0.5 MTPA Electrical Steel Complex at village - Dugdha, Gamharia, Dist: Saraikela Kharsawan, Jharkhand - 832108 submitted to Ministry vide proposal number SIA/JH/IND1/521365/2026 dated 22/07/2026.

2. The particulars of the proposal are as below:

(i) TOR Identification No.	TO26B1009JH5666258N
(ii) File No.	EC/SEIAA/2026-27/5030/2026
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	3(a) Metallurgical Industries (ferrous and non ferrous)
(vi) Name of Project	Proposal for 0.5 MTPA Electrical Steel Complex at village - Dugdha, Gamharia, Dist: Saraikela Kharsawan, Jharkhand - 832108
(vii) Name of Company/Organization	Tata Steel Limited
(viii) Location of Project (District, State)	SARAIKELA KHARSAWAN, JHARKHAND
(ix) Issuing Authority	SEIAA
(x) Applicability of General Conditions	no
(xi) Applicability of Specific Conditions	no

Plot/Survey Khasra Nos.: Plot nos. 15 , 16 , Plot nos. 77 , 78 , 79 , 81 , 82 , 84 , 90 , 91 , 92 , 93 , 94 , 95 , 96 , 97 , 98 , 99 , 100 , 101 , 102 , 103 , 104 , 105 , 106 , 107 , 108 , 109 , 110 , 111 , 112 , 113 , 114 , 115 , 116 , 117 , 118 , 119 , 120 , 121 , 122 , 123 , 124 , 125 , 126 , 127 , 128 , 129 , 130 , 131 , 132 , 133 , 134 , 144 (P) , 146 (P) , 147 (P) , 148 , 149 , 150 ,

151 , 152 , 153 , 154 , 155 , 156 , 157 , 159 (P) , 160 , 170 , 171 , 172 , 173 , 174 , 175 , 176 , 177 , 178 , 179 , 180 , 181 , 182 , 183 , 184 , 185 , 186 , 187 , 188 , 189 , 190 , 191 , 192 , 193 , 194 , 195 , 197 , 198 , 199 , 200 , 201 , 202 , 203 , 204 , 205 , 206 , 207 , 208 , 209 , 210 , 211 , 212 , 213 , 214 , 215 , 216 , 218 , 219 , 220 , 222 , 223 , 224 , 225 , 226 , 227 , 228 , 229 , 231 , 232 , 233 , 234 , 235 , 236 , 237 , 280 , 281 , 282 , 284 , 285 , 287 , 288 , 289 , 290 , 291 , 292 , 293 , 294 , 295 , 296 , 297 , 298 , 299 , 300 , 301 , 302 , 303 , 304 , 305 , 306 , 307 , 308 , 309 , 310 , 311 , 312 , 313 , 314 , 315 , 316 , 317 , 318 , 319 , 320 , 321 , 322 , 323 , 324 , 325 , 326 , 327 , 328 , 329 , 330 , 331 , 332 , 333 , 334 , 335 , 336 , 337 , 338 , 339 , 340 , 341 , 342 , 343 , 344 , 345 , 346 , 347 , 348 , 349 , 350 , 351 , 352 , 353 , 354 , 355 , 356 , 376 , 377 , 378 , 379 , 380 , 381 , 382 , 383 , 384 , 385 , 386 , 387 , 388 , 389 , 390 , 391 , 392 , 393 , 394 , 395 , 396 , 397 , 398 , 399 , 400 , 401 , 402 , 403 , 404 , 405 , 406 , 407 , 408 , 409 , 410 , 411 , 412 , 413 , 414 , 415 , 416 , 417 , 418 , 419 , 420 , 421 , 422 , 423 , 424 , 425 , 426 , 427 , 428 , 429 , 430 , 431 , 432 , 433 , 434 , 435 , 436 , 437 , 438 , 439 , 440 , 441 , 442 , 443 , 444 , 446 , 447 , 448 , 449 , 450 , 451 , 452 , 453 , 454 , 455 , 456 , 457 , 458 , 459 , 460 , 461 , 462 , 463 , 464 , 465 , 466 , 467 , 468 , 469 , 470 , 471 , 472 , 473 , 474 , 475 , 476 , 477 , 478 , 479 , 480 , 481 , 482 , 483 , 484 , 485 , 486 , 487 , 488 , 489 , 490 , 491 , 492 , 493 , 494 , 495 , 496 , 497 , 498 , 499 , 500 , 501 , 502 , 503 , 504 , 505 , 506 , 507 , 508 , 509 , 510 , 511 , 512 , 513 , 514 , 515 , 516 , 517 , 518 , 519 , 520 , 521 , 522 , 523 , 524 , 525 , 526 , 527 , 341/1592 , 82/1584

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the SEIAA Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by SEIAA Appraisal Committee of SEIAA in the meeting held on 08/09/2026. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

5. The brief about configuration of plant/equipment, products and byproducts and salient features of the project along with environment settings, as submitted by the Project proponent in Form-1 (Part A, B and C)/EIA & EMP Reports/presented during SEIAA are annexed to this EC as Annexure (1).

6. The SEIAA, in its meeting held on 08/09/2026, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of specific and general conditions as detailed in Annexure (2).

7. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEIAA Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of M/s. ANOOP SRIVASTAVA under the provisions of EIA Notification, 2006 and as amended thereof.

8. The Ministry reserves the right to stipulate additional conditions, if found necessary.

9. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

10. This issues with the approval of the Competent Authority.

Copy To

1. The Member Secretary, CGWA, 18/11 Jamnagar House Man Singh Road, Central, Delhi, cgwa@nic.in
2. The Member Secretary, CPCB, Central Pollution Control Board Cbd-Cum-Office Complex East Arjun Nagar Delhi – 32, New Delhi, Delhi, mscb.cpcb@nic.in

Annexure 1

Standard Terms of Reference for

1. Preliminary Requirements

S. No	Terms of Reference
1.1	EIA/EMP report cover page shall consists of project title with location, applicable schedule of the EIA Notification, 2006, ToR letter No. with date, study period along with EIA consultant & laboratory details with QCI/NABET/NABL accreditation certificate detail.
1.2	Besides, following points shall be compiled as per QCI/NABET norms: a. Disclaimer by the EIA consultant. b. Declaration by the Functional Area Experts contributed to the EIA study and declaration by the head of the accredited consultant organization/authorized person. c. Undertaking by the project proponent owning the contents (information and data) of the EIA/EMP report. d. Undertaking by the EIA consultant regarding compliance of ToR issued by MoEF&CC. e. Consultant shall submit the Plagiarism Certificate for the EIA/EMP Report.

2. Executive Summary

S. No	Terms of Reference
2.1	Table of Contents of the EIA report including list of tables/figures/annexures/abbreviations/symbols/notations.
2.2	Point wise compliance to the ToR issued by MoEF&CC.

2.1 Introduction

S. No	Terms of Reference
2.1.1	Name of the project along with applicable schedule and category as per EIA, 2006.

Additional Terms of Reference

N/A

Annexure 2

Details of Products & By-products

Name of the product /By-product	Product / By-product	Quantity	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
Electrical Steel	Electrical Steel	500000	Tons per Annum (TPA)	Road and/Rail	

State Level Environment Impact Assessment Authority, Jharkhand
Nursery Complex, Near Dhurwa Bus Stand, P.O+P.S-Dhurwa, Ranchi, Jharkhand-834 004
E-mail: msseiaa.jhk@gmail.com / website: www.jseiaa.in

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Letter No.-**EC/SEIAA/2026-27/5030/2026/** Ranchi, Date:

To: **Shri Uma Shankar Pattanaik,**
Head (PLTCM), Cold Rolling Mill,
M/s Tata Steel Limited,
Jamshedpur.

Sub: Prescribing of ToR to **"Proposed for 0.5 MTPA Electrical Steel Complex of M/s Tata Steel Limited, Village : Dugdha, Gamharia, Distt. : Saraikela-Kharsawan, Jharkhand (Proposal no.: SIA/JH/IND1/ 521365/2026) - regarding.**

Ref: Your application no.- TSL/EMD/C-49/124/2026, dated : 13.08.2026.

Sir,

It is in reference to the project **"Proposed for 0.5 MTPA Electrical Steel Complex of M/s Tata Steel Limited, Village : Dugdha, Gamharia, Distt. : Saraikela-Kharsawan, Jharkhand"** submitted by you for seeking Terms of Reference (ToR).

This is a new project which has been taken for appraisal on 25.08.2026.

Project Sector: 3(a) Metallurgical Industries (ferrous and non ferrous), Category: B1.

Application for Terms of Reference (ToR) as per EIA Notification, 2006.

S. No	Parameters	Description
1	Identification of project	Project falls under Metallurgical Industries (Secondary metallurgical processing), Item 3(a) of the schedule of EIA notification of 14 Sept 2006 issued by MOEF&CC (Category – B1)
2	Project Proponent	M/s Tata Steel Limited
3	Brief description of nature of the project	0.5 MTPA Electrical Steel Complex
4	**Salient Features of the Project**	
4.1	Proposed production capacity	0.5 MTPA Electrical Steel Complex: • 0.4 MTPA Cold Rolled Non-Grain Oriented (CRNO) • 0.1 MTPA Cold Rolled Grain Oriented (CRGO)
4.2	Existing Capacity	NA (It is a new project)

S. No	Parameters	Description
4.3	Capacity after proposed expansion	
4.4	Total Plot Area	46.2 Ha
	Khata no.	1, 2, 3, 10, 15, 20, 29, 32, 33, 37, 39, 51, 54, 56, 58, 61, 65, 66, 68, 71, 73, 77, 79, 84, 86, 87, 93, 98, 100, 101, 102, 107, 109, 110, 111, 122, 127, 128, 133, 143, 149, 157, 158, 159, 163, 166, 168, 173, 176, 178, 183, 189, 190, 200, 201, 207, 213, 216, 109/1, 109A, 10A and 98A.
	Plot No.	15, 16, 77, 78, 79, 81, 82, 84, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 160, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 218, 219, 220, 222, 223, 224, 225, 226, 227, 228, 229, 231, 232, 233, 234, 235, 236, 237, 280, 281, 282, 284, 285, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 144(P), 146(P), 147(P), 159(P), 341/1592 and 82/1584.
4.5	Location	Village: Dugdha & Jhurkuli, Dist: Saraikela Kharsawan, Jharkhand
4.6	Geo-Coordinate	Latitude-22°48'28" N to 22°48'57" N Longitude-86°4'22"E to 86°5'2"E
4.7	Water requirement	Net makeup water requirement for the proposed project will be approx. 202m^3/h.
4.8	Source of water	Subarnarekha River
4.9	Wastewater	The total wastewater generation is estimated as 240 m^3/h, including 20 m^3/hr of domestic wastewater generated from the plant. The

S. No	Parameters	Description
		wastewaters will be managed through Wastewater treatment plant with RO (process wastewater) and Sewage treatment plant (domestic wastewater), to ensure Zero Effluent Discharge (ZED).
4.10	Manpower	Operation Phase: 620 (Direct) & 1800 (Indirect) Construction Phase: 8000 (Peak contractual workforce)
4.11	Electricity/Power requirement	The power requirement for the proposed project is estimated as 82MW and the same will be sourced from TSUISL.
4.12	Alternative site	Not applicable as the proposed project is planned on the existing site which was acquired by Tata Sponge Iron Limited (TSIL) fromM/s UM Cables Limited under the SARFAESI Act.TSIL subsequently underwent corporate restructuring/renaming to become Tata Steel Long Products Limited (TSLP), which was subsequently amalgamated into Tata Steel Limited (TSL).
4.13	Land form, Land use and land ownership	Private land, under possession and ownership of TSL
4.14	Project Cost	Rs 9,704 Crores

Details of proposed units with their capacity is as follows:

Sl. No.	Plant Unit	Capacity
1.	Annealing and Pickling Line (APL)	0.541 MTPA
2.	Cold Rolling Mill for CRNO & CRGO – 4/18-High Reversing	0.588 MTPA
3.	Annealing and Coating Line (ACL) for CRNO	0.468 MTPA
4.	De-Carburising and Coating line (DCL) for CRGO	0.110 MTPA
5.	Multi Stack Batch Annealing furnace (MBAF) for CRGO	0.110 MTPA
6.	Flattening and Coating Line (FCL) for CRGO	0.100 MTPA
7.	Recoiling and Inspection Lines (RCL)	0.450 MTPA
8.	Slitting Line	0.12 MTPA
9.	Cut-to-length Line (CTL)	0.080 MTPA
10.	Coil Packaging Lines (CPL)	20 Coils/hr
11.	Major auxiliary units:	
	1. Acid regeneration plant (ARP)	2,800 l/h
	2. Silicon reduction plant (SRP)	12,000 l/h

Details of the proposed products to be generated are as follows:

Sl. No.	Products	Unit	Proposed
1	Cold Rolled Non-Grain Oriented (CRNO) electrical steel	MTPA	0.4
2	Cold Rolled Grain Oriented (CRGO) electrical steel	MTPA	0.1

Sl. No.	Products	Unit	Proposed
	Total Electrical steel:	**MTPA**	**0.5**

The other detail of the project is as follows:

Raw Materials Requirements

Name of Raw Material	Quantity	Source	Mode of Transport
HR coils	0.577 MTPA	Tata Steel Ltd. & other sources	Road / Rail

Other Chemical Requirements

Chemicals	Requirement	Source	Mode of Transport
Hydrogen & Nitrogen	Hydrogen (2,420 Nm^3/hr) & Nitrogen (21,046 Nm^3/hr)	In house generation	-
1. HCl 2. H_2SO_4 3. Varnish 4. NaOH 5. MgO 6. Rolling Oil	1. 127 Tonne/Annum 2. 265 KL/Annum 3. 835 KL/Annum 4. 1,500 KL/Annum 5. 735 Tonne/Annum 6. 2000 KL/Annum	Local & Domestic Market within 300 km	Road

This is an indicative source of material while materials can be sourced from open market as per availability.

Makeup Water Requirement for the Plant& Wastewater generation

Unit	Purpose	Recirculating water (m^3/h)	Net Makeup water (m^3/h)	Total makeup water requirement (m^3/h)	Wastewater generation (m^3/h)
		(a)	(b)	(c) = (a)+(b)	
Plant Operations	Process, Cooling	203	180	383	220
Drinking & Sanitation	Domestic	0	22	22	20
Total		**203**	**202**	**405**	**240**

Power requirement for the Plant

Unit	Power requirement(MW)
CRM 1,2,3	22.87
APL	6.87

Unit	Power requirement(MW)
DCL	7.09
FCL	2.65
ACL 1 & 2	39.48
MBAF	5.02
RCL 1,2,3	4.23
Slitter 1,2	1.62
CPL 1,2	0.06
CTL 1,2	1.24
Services & utilities	4.07
Total	95.2
Total for plants with 3% losses &1.2 diversity	82
Total Power required: 82 MW	

Details of Solid waste and their end use

Unit	Type of waste	Description of Waste	Quantity (Annual generation)	End Use
ARP	Non-hazardous	Iron Oxide (byproduct of ARP)	2,740 T	Co-processed / recycled / sold
APL	Non-hazardous	Scrap	36,070 T	Co-processed / recycled / sold
CRM	Non-hazardous	Scrap	22,750 T	Co-processed / recycled / sold
ACL	Non-hazardous	Scrap	7,890 T	Co-processed / recycled / sold
DCL	Non-hazardous	Scrap	250 T	Co-processed / recycled / sold
FCL	Non-hazardous	Scrap	9,900 T	Co-processed / recycled / sold
RCL	Non-hazardous	Scrap	2,500 T	Co-processed / recycled / sold
Slitting & CTL	Non-hazardous	Scrap	3,050 T	Co-processed / recycled / sold
Various plant units	Hazardous	Waste oil & grease	40 T	Co-processed / recycled / disposal internally or Externally (to authorized party)
CRM	Hazardous	Sludge	800 T	Co-processed / recycled / disposal internally or Externally (to authorized party)
RO with MEE	Hazardous	MEE Salt	3,000 T	Co-processed / recycled / disposal internally or Externally (to authorized party)

Unit	Type of waste	Description of Waste	Quantity (Annual generation)	End Use
APL	Hazardous	Waste pickle liquor	20,160 KL	Co-processed / recycled / disposal internally or Externally (to authorized party)
FCL	Hazardous	MgO sludge	590 T	Co-processed / disposal internally or Externally (to authorized party)
SRP	Hazardous	Solids (SiO_2)	325 T	Co-processed / recycled / disposal internally or Externally (to authorized party)

Baseline data has been generated from March2024 to May 2024.Details of baseline monitoring are as follows:

MICRO METEOROLOGY

Site Specific Micro-Meteorological Data

Avg. Wind Speed (m/sec)	Predominant Wind Direction	Avg. Temp. [C]	Avg. Relative Humidity [%]	Total Rainfall (mm)
1.22	W, ESE	31.4	54.4	71.4

AAQ Monitoring Locations

Station Code	Location Name	Latitude	Longitude
A1	Sitarampur Village	22° 50'00.02"	86°03'57.47"
A2	Uparbera Village	22° 49'31.12"	86° 04'53.09"
A3	ChotaHariharpur Village	22° 49'39.49"	86° 03'11.61"
A4	Chota Gamharia Village, New Panchayat Bhawan	22° 48'57.18"	86° 05'40.65"
A5	Ramjibonpur (Barkatand)	22° 48'24.79"	86° 03'02.58"
A6	Pragati Nagar (Gamhariya)	22° 48'05.20"	86° 06'01.16"
A7	Udaipur Village	22° 46'20.62"	86° 05'33.97"
A8	Gohnadih Village	22° 49'04.96"	86° 04'04.61"

Ambient Air Quality in Study Area

Station Code	Location	Parameter	Max	Min	Avg.	P98
A1	Sitarampur Village	PM_{10}	141.8	64.5	122.2	141.7
		$PM_{2.5}$	81.5	32.8	61.2	77.4
		SO_2	26.5	4.8	15.6	24.2
		NO_2	42.5	15	31.3	41.4
		C_6H_6	1.3	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	32.5	<10	-	-
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	0.3	<0.02	-	-
		B(a)P	0.6	<0.36	-	-
		CO	0.5	0.2	0.3	0.5
A2	Uparbera Village	PM_{10}	132.6	58.2	106.2	132.1
		$PM_{2.5}$	68.2	26.5	53.7	67.7
		SO_2	21.8	<4.0	-	-
		NO_2	38.2	10	26.8	38.2
		C_6H_6	1.3	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	32.5	<10	-	-
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	<0.02	<0.02	-	-
		B(a)P	0.5	<0.36	-	-
		CO	0.5	0.2	0.3	0.5
A3	Chota Hariharpur Village	PM_{10}	89.5	41.2	69.2	85.2
		$PM_{2.5}$	53.6	21.5	34.9	50.2
		SO_2	14.2	4.8	8.8	13.4
		NO_2	30	10	24	30.0
		C_6H_6	0.9	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	23.5	<10	17.7	23.2
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	<0.02	<0.02	-	-
		B(a)P	0.5	<0.36	0.4	0.4
		CO	0.4	<0.1	0.3	0.4
A4	Chota Gamharia Village (New Panchayat Bhawan)	PM_{10}	136.2	72.5	115.4	134.6
		$PM_{2.5}$	68.3	38.2	58.8	68.2
		SO_2	19.2	6.5	12.5	18.9
		NO_2	38.2	19.2	26.5	37.3
		C_6H_6	1.2	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	30	<10	-	-
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-

Station Code	Location	Parameter	Max	Min	Avg.	P98
		Ni	<0.02	<0.02	-	-
		B(a)P	0.5	<0.36	-	-
		CO	0.5	0.2	0.3	0.5
A5	Ramjibonpur (Barkatanr)	PM_{10}	86.5	51.2	70.1	85.9
		$PM_{2.5}$	47.2	20.8	35.5	47.0
		SO_2	9.5	4.8	6.7	9.4
		NO_2	28.5	12.5	21.2	28.5
		C_6H_6	<0.74	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	<10	<10	-	-
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	<0.02	<0.02	-	-
		B(a)P	<0.36	<0.36	-	-
		CO	0.4	<0.1	-	-
A6	Pragati Nagar (Gamhariya)	PM_{10}	148.2	65.2	113.5	145.3
		$PM_{2.5}$	73.6	31.5	57.3	73.4
		SO_2	23.5	5.2	12.9	21.2
		NO_2	42.5	12.5	27.6	41.0
		C_6H_6	1.12	<0.74	0.8	1.11
		NH_3	<4.18	<4.18	-	-
		O_3	26.5	<10	18	25.8
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	<0.02	<0.02	-	-
		B(a)P	0.5	0.4	0.4	0.5
		CO	0.5	0.2	0.3	0.5
A7	Udaipur Village	PM_{10}	81.6	43.5	66.4	79.1
		$PM_{2.5}$	42.9	20.8	32.1	40.4
		SO_2	8.5	<4.0	-	-
		NO_2	26.5	10	17.5	25.8
		C_6H_6	<0.74	<0.74	-	-
		NH_3	<4.18	<4.18	-	-
		O_3	20	<10	-	-
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	<0.02	<0.02	-	-
		B(a)P	<0.36	<0.36	-	-
		CO	0.2	<0.1	-	-
A8	Gohnadih Village	PM_{10}	141.2	69.20	108.0	139
		$PM_{2.5}$	72.5	39.20	53.4	70.5
		SO_2	21.5	6.80	12.3	20.0
		NO_2	41.80	16.50	30.1	41.7
		C_6H_6	1.38	<0.74	1.05	1.35
		NH_3	<4.18	<4.18	-	-
		O_3	28.5	<10	21.1	28.5

Station Code	Location	Parameter	Max	Min	Avg.	P98
		Lead	<0.01	<0.01	-	-
		As	<0.01	<0.01	-	-
		Ni	0.20	<0.02	0.05	0.19
		B(a)P	0.5	0.4	0.4	0.5
		CO	0.6	0.2	0.4	0.6

GROUND WATER QUALITY

Ground Water Quality Monitoring Locations

Station Code	Location Name	Latitude	Longitude
GW1	Sitarampur - Tubewell	$22^0$49'59.80''N	86^0 03'59.16''E
GW2	Uparbera	$22^0$49'29.91''N	86^0 04'48.37''E
GW3	Chota Hariharpur Village	$22^0$49'39.33''N	86^0 03'10.01''E
GW4	Chota Gamharia, New Panchayat Bhawan	$22^0$48'56.89''N	86^0 05'41.40''E
GW5	Ramjibonpur (Barkatanr)	$22^0$48'24.79''N	86^0 03'02.58''E
GW6	Pragati Nagar (Gamhariya)	22^0 48'5.22"N	86^0 6'1.28"E
GW7	Udaipur Village	$22^0$46'13.74''N	86^0 05'27.73''E
GW8	Gohnadih	$22^0$49'05.70''N	86^0 04'04.29''E

Ground Water Quality in Study area

Sl. No.	Parameters	GW1	GW2	GW3	GW4	IS 10500:2012
1	Odour (TON)	Odourless	Odourless	Odourless	Odourless	Unobjectionable
2	Colour (Hazen)	1	1	1	1	1
3	Taste	Acceptable	Acceptable	Acceptable	Acceptable	Agreeable
4	Temperature (^{0}C)	24.17	24.67	25.17	25.5	-
5	Total Suspended Solid (mg./l)	<10.0	<10.0	12	<10.0	-
6	Total Dissolved Solid (mg/l)	1039.33	648.33	444	615.67	500 (max.)
7	Electrical Conductivity (µs/cm)	1622.70	1010.27	691.33	962.53	-
8	Turbidity (NTU)	<1.0	<1.0	1.06	1.14	1
9	pH	7.09	7.15	7.06	6.76	6.5-8.5
10	Total Hardness (mg/l)	307.93	162.37	115.19	145.57	200 (max.)
11	Dissolved Oxygen (mg/l)	2.57	2.6	2.57	2.87	-
12	BOD at 27^{0}C for 3 days (mg/l)	<2.0	<2.0	<2.0	<2.0	-
13	COD (mg/l)	<5.0	<5.0	<5.0	<5.0	-
14	Carbonate (mg/l)	<0.6	<0.6	<0.6	<0.6	-
15	Alkalinity (mg/l)	295.95	231.63	121.82	203.52	200 (max.)
16	Bi Carbonate (mg/l)	361.06	282.59	148.62	248.29	-

Sl. No.	Parameters	GW1	GW2	GW3	GW4	IS 10500:2012
17	Phenol (mg/l)	<0.01	<0.01	<0.01	<0.01	0.001 (max.)
18	Nitrate + Nitrite (mg/l)	9.91	6.49	8.92	8.74	45 (max.)
19	Chloride (mg/l)	173.68	106.36	89.75	87.83	250 (max.)
20	Fluoride (mg/l)	0.30	0.25	0.59	0.13	1.0 (max.)
21	Sulphate (mg/l)	122.33	47.33	43.33	75.47	200 (max.)
22	Total Nitrogen (mg/l)	4.47	4.08	4.52	4.33	-
23	Residual Chlorine (mg/l)	<0.01	<0.01	<0.01	<0.01	0.2 (max.)
24	Ortho-Phosphate (mg/l)	<0.1	<0.1	<0.1	<0.1	-
25	Calcium (mg/l)	76.27	42.34	24.88	40.1	75 (max.)
26	Magnesium (mg/l)	28.23	13.62	12.75	10.93	30 (max.)
27	Potassium (mg/l)	3.27	1.89	2.02	1.83	-
28	Sodium (mg/l)	43.68	27.78	27.18	35.23	-
29	Manganese (mg/l)	<0.03	<0.03	0.07	0.06	0.1 (max.)
30	Boron (mg/l)	<0.1	<0.1	<0.1	<0.1	0.5 (max.)
31	Lead (mg/l)	<0.005	<0.005	<0.005	<0.005	0.01 (max.)
32	Arsenic (mg/l)	<0.01	<0.01	<0.01	<0.01	0.01 (max.)
33	Zinc (mg/l)	0.04	0.04	0.11	0.06	5.0 (max.)
34	Iron (mg/L)	0.39	0.38	0.58	0.43	0.3 (max.)
35	Copper (mg/l)	<0.04	<0.04	<0.04	<0.04	0.05 (max.)
36	Chromium (VI) (mg/l)	<0.1	<0.1	<0.1	<0.1	0.05 (max.)
37	Nickel (mg/l)	<0.02	<0.02	<0.02	<0.02	0.02 (max.)
38	Mercury (mg/l)	<0.001	<0.001	<0.001	<0.001	0.001 (max.)
39	Cadmium (mg/l)	<0.002	<0.002	<0.002	<0.002	0.003 (max.)
40	Cyanide (mg/l)	<0.01	<0.01	<0.01	<0.01	0.05 (max.)
41	Aluminium (mg/l)	0.08	0.05	0.06	0.10	0.03 (max.)
42	Total Coliform (CFU/100 ml)	<1	<1	<1	<1	Nil
43	Fecal Coliform (CFU/100 ml)	<1	<1	<1	<1	Nil

Ground Water Quality in Study area…cont.

Sl. No.	Parameters	GW5	GW6	GW7	GW8	IS 10500:2012
1	Odour (TON)	Odourless	Odourless	Odourless	Odourless	Unobjectionable
2	Colour (Hazen)	1	1	1	1	1
3	Taste	Acceptable	Acceptable	Acceptable	Acceptable	Agreeable
4	Temperature (^{0}C)	24	25.00	24.33	24.17	-
5	Total Suspended Solid (mg./l)	<10.0	19.47	10.53	<10.0	-
6	Total Dissolved Solid (mg/l)	970.67	866.00	301.77	373.33	500 (max.)

Sl. No.	Parameters	GW5	GW6	GW7	GW8	IS 10500:2012
7	Electrical Conductivity (µs/cm)	1522.87	1352.67	470.80	582.30	-
8	Turbidity (NTU)	2.00	7.06	3.48	1.83	1
9	pH	6.77	7.11	6.89	6.85	6.5-8.5
10	Total Hardness (mg/l)	256.09	192.66	69.97	90.40	200 (max.)
11	Dissolved Oxygen (mg/l)	2.93	2.63	2.63	2.60	-
12	BOD at 27^0C for 3 days (mg/l)	<2.0	<2.0	<2.0	<2.0	-
13	COD (mg/l)	<5.0	<5.0	<5.0	<5.0	-
14	Carbonate (mg/l)	<0.6	<0.6	<0.6	<0.6	-
15	Alkalinity (mg/l)	291.88	299	97.35	136.62	200 (max.)
16	Bi Carbonate (mg/l)	356.10	364.78	118.77	166.67	-
17	Phenol (mg/l)	<0.01	<0.01	<0.01	<0.01	0.001 (max.)
18	Nitrate + Nitrite (mg/l)	8.01	10.60	8.40	5.01	45 (max.)
19	Chloride (mg/l)	186.71	102.51	54.73	37.37	250 (max.)
20	Fluoride (mg/l)	0.25	0.16	0.55	0.56	1.0 (max.)
21	Sulphate (mg/l)	110.00	69.60	17.93	23.40	200 (max.)
22	Total Nitrogen (mg/l)	4.09	5.08	4.38	3.52	-
23	Residual Chlorine (mg/l)	<0.01	<0.01	<0.01	<0.01	0.2 (max.)
24	Ortho-Phosphate (mg/l)	<0.1	<0.1	<0.1	<0.1	-
25	Calcium (mg/l)	68.80	51.35	16.94	18.19	75 (max.)
26	Magnesium (mg/l)	20.26	15.49	6.65	10.81	30 (max.)
27	Potassium (mg/l)	3.68	1.39	1.29	1.85	-
28	Sodium (mg/l)	36.59	90.44	24.61	40.93	-
29	Manganese (mg/l)	0.39	0.11	0.11	0.07	0.1 (max.)
30	Boron (mg/l)	<0.1	<0.1	<0.1	<0.1	0.5 (max.)
31	Lead (mg/l)	<0.005	<0.005	<0.005	<0.005	0.01 (max.)
32	Arsenic (mg/l)	<0.01	<0.01	<0.01	<0.01	0.01 (max.)
33	Zinc (mg/l)	0.06	0.04	0.05	0.03	5.0 (max.)
34	Iron (mg/L)	1.04	4.97	1.38	0.35	0.3 (max.)
35	Copper (mg/l)	<0.04	<0.04	<0.04	<0.04	0.05 (max.)
36	Chromium (VI) (mg/l)	<0.1	<0.1	<0.1	<0.1	0.05 (max.)
37	Nickel (mg/l)	<0.02	<0.02	<0.02	<0.02	0.02 (max.)
38	Mercury (mg/l)	<0.001	<0.001	<0.001	<0.001	0.001 (max.)
39	Cadmium (mg/l)	<0.002	<0.002	<0.002	<0.002	0.003 (max.)
40	Cyanide (mg/l)	<0.01	<0.01	<0.01	<0.01	0.05 (max.)
41	Aluminium (mg/l)	0.06	0.18	0.13	0.07	0.03 (max.)

Sl. No.	Parameters	GW5	GW6	GW7	GW8	IS 10500:2012
42	Total Coliform (CFU/100 ml)	<1	<1	<1	<1	Nil
43	Fecal Coliform (CFU/100 ml)	<1	<1	<1	<1	Nil

SURFACE WATER QUALITY

Surface Water Quality Monitoring Locations

Station Code	Location Name	Latitude	Longitude
SW1	Subarnarekha near Tirildih Village, Gamhraia	22^0 50'12.09'' N	86°07'47.04'' E
SW2	Subarnarekha & Kharkai River Meeting Point Near Domuhani Shive Mandir, Domuhani Ghat	$22^0$50'13.73''N	86^0 09'36.67''E
SW3	Kharkai River Near NH-118, Near KadmaChoto Ghat, Green Park	22^0 48'54.33''N	86^0 08'59.57''E
SW4	Kharkai River Near Shastri Nager, Word No. 3	$22^0$47'46.13''N	86^0 09'46.41''E
SW5	Kharkai Dudra Dam, Jilinggora/Dudra Village	$22^0$45'28.03''N	86^0 08'33.88''E
SW6	Kharkai River Near Gangia	$22^0$45'34.26''N	86^0 04'54.06''E
SW7	Kharkai River Near JaherChamaru/ Sarna Dhorom)	$22^0$46'43.58''N	86^0 02'17.88''E
SW8	Sitarampur Reservoir Near Sitarampur Village	$22^0$46'41.74''N	86^0 06'29.49''E

Surface Water Quality in Study area

Sl. No.	Parameters	SW1	SW2	SW3	SW4
1	Odour (T.O.N)	Odourless	Odourless	Odourless	Odourless
2	Temperature (0C)	29.37	28.63	28.70	29.13
3	pH	6.86	6.95	6.76	6.73
4	Total Suspended Solid (mg./l)	10.07	11	10.67	10.47
5	Total Dissolved Solid (mg./l)	176	350.00	425.00	388.67
6	Electrical Conductivity	275.8	554.53	671.53	607.17
7	Turbidity	1.45	3.20	2.49	1.85
8	Total Hardness (mg/l)	47.83	83.16	85.74	75.54
9	Dissolved Oxygen (mg/l)	6.27	6.27	6.03	5.97
10	BOD, 3 days at 27^OC (mg./l)	3	5.00	5.00	5.67
11	COD (mg./l)	9.43	18.85	18.85	20.37
12	Oil & Grease (mg./l)	<1.0	<1.0	<1.0	<1.0
13	Salinity (ppt.)	0.00	0.00	0.00	0.00
14	Kjeldahl Nitrogen (mg/l)	3.96	3.27	4.76	5.03

Sl. No.	Parameters	SW1	SW2	SW3	SW4
15	NH_3 - N (mg/l)	<0.01	<0.01	<0.01	<0.01
16	Nitrate + Nitrite (mg/l)	2.41	2.61	2.45	2.07
17	Chloride (mg/l)	17.89	68.21	69.24	68.02
18	Fluoride (mg/l)	0.26	0.27	0.45	0.30
19	Sulphates as SO_4 (mg/l)	9.93	17.93	36.53	36.93
20	Alkalinity	61.77	101.58	137.85	124.27
21	Bi-Carbonate (mg/l)	75.36	123.93	168.18	151.61
22	Total P (mg/l)	0.51	0.44	0.55	0.73
23	Phosphate (mg/l)	0.59	0.51	0.64	0.83
24	Calcium (mg/l)	11.50	19.04	18.78	16.79
25	Magnesium (mg/l)	4.59	8.55	9.33	8.08
26	Potassium (mg/l)	2.35	4.43	5.29	4.17
27	Sodium (mg/l)	12.77	26.81	34.87	30.87
28	Manganese (mg/l)	<0.03	0.09	0.13	0.06
29	Boron (mg/l)	<0.1	<0.1	<0.1	<0.1
30	Lead (mg/l)	<0.005	<0.005	<0.005	<0.005
31	Arsenic (mg/l)	<0.01	<0.01	<0.01	<0.01
32	Zinc (mg/l)	0.02	0.03	0.03	0.02
33	Iron (mg/l)	0.42	0.51	0.59	0.41
34	Chromium (Total) (mg/l)	<0.02	<0.02	<0.02	<0.02
35	Hexavalent Chromium (mg/l)	<0.1	<0.1	<0.1	<0.1
36	Nickel (mg/l)	<0.02	<0.02	<0.02	<0.02
37	Mercury (mg/l)	<0.001	<0.001	<0.001	<0.001
38	Cadmium (mg/l)	<0.002	<0.002	<0.002	<0.002
39	Total Coliform /100 ml.	2.2 x 10^3	2.5 x 10^3	2.5 x 10^3	2.4 x 10^3
40	Fecal Coliform /100 ml.	1.6 x 10^2	1.6 x 10^2	1.8 x 10^2	1.7 x 10^2

Surface Water Quality in Study area…cont.

Sl. No.	Parameters	SW5	SW6	SW7	SW8
1	Odour (T.O.N)	Odourless	Odourless	Odourless	Odourless
2	Temperature (0C)	28.20	29.63	30.10	28.00
3	pH	7.23	7.33	7.23	6.76
4	Total Suspended Solid (mg./l)	10.4	<10.0	<10.0	<10.0
5	Total Dissolved Solid (mg./l)	236	230.33	233.00	557.00
6	Electrical Conductivity	364.63	359.57	364.83	872.97
7	Turbidity	2.59	1.28	1.23	1.51
8	Total Hardness (mg/l)	60.32	75.84	76.19	131.98

Sl. No.	Parameters	SW5	SW6	SW7	SW8
9	Dissolved Oxygen (mg/l)	6.27	6.30	6.10	6.27
10	BOD, 3 days at 27^{O}C (mg./l)	3.00	<2.0	3.33	3.33
11	COD (mg./l)	9.43	<5.0	12.60	10.97
12	Oil & Grease (mg./l)	<1.0	<1.0	<1.0	<1.0
13	Salinity (ppt.)	0.00	0.00	0.00	0.00
14	Kjeldahl Nitrogen (mg/l)	4.75	4.72	4.96	7.69
15	NH_3 - N (mg/l)	<0.01	<0.01	<0.01	<0.01
16	Nitrate + Nitrite (mg/l)	2.25	2.17	2.00	3.48
17	Chloride (mg/l)	25.00	20.36	18.80	96.26
18	Fluoride (mg/l)	0.25	0.46	0.27	0.39
19	Sulphates as SO_4 (mg/l)	12.67	12.53	10.53	69.80
20	Alkalinity	86.80	77.08	78.20	157.08
21	Bi-Carbonate (mg/l)	105.90	94.04	95.40	191.64
22	Total P (mg/l)	0.72	0.62	0.53	0.78
23	Phosphate (mg/l)	0.81	0.72	0.61	0.88
24	Calcium (mg/l)	12.22	14.74	15.60	29.20
25	Magnesium (mg/l)	7.16	9.37	8.94	13.95
26	Potassium (mg/l)	1.86	1.68	1.86	6.21
27	Sodium (mg/l)	14.89	13.96	14.54	33.08
28	Manganese (mg/l)	<0.03	0.03	<0.03	0.05
29	Boron (mg/l)	<0.1	<0.1	<0.1	0.16
30	Lead (mg/l)	<0.005	<0.005	<0.005	<0.005
31	Arsenic (mg/l)	<0.01	<0.01	<0.01	<0.01
32	Zinc (mg/l)	0.02	0.02	0.02	0.02
33	Iron (mg/l)	0.70	0.42	0.53	0.64
34	Chromium (Total) (mg/l)	<0.02	<0.02	<0.02	<0.02
35	Hexavalent Chromium (mg/l)	<0.1	<0.1	<0.1	<0.1
36	Nickel (mg/l)	<0.02	<0.02	<0.02	<0.02
37	Mercury (mg/l)	<0.001	<0.001	<0.001	<0.001
38	Cadmium (mg/l)	<0.002	<0.002	<0.002	<0.002
39	Total Coliform /100 ml.	2.7 x 10^3	2.5 x 10^3	2.6 x 10^3	2.5 x 10^3
40	Fecal Coliform /100 ml.	1.8 x 10^2	1.5 x 10^2	1.8 x 10^2	1.8 x 10^2

SOIL QUALITY

Soil Quality Monitoring Locations

Code	Location	Latitude	Longitude
S1	Project site	22^{0}48' 35.45''N	86^{0} 04' 31.25''E
S2	Agricultural Land (Near Rajgaon Village)	22^{0}46' 40.57''N	86^{0} 04' 51.07''E
S3	Agricultural Land (Near Prabatipur Village)	22^{0}44' 34.43''N	86^{0} 08' 49.82''E

S4	Forest Land (Near ABC Dugdha Football Ground &Hundburbera village)	$22^0$48' 02''N	86^0 04' 34''E
S5	Forest Land (Near Rapcha Village)	$22^0$51' 18.98''N	86^0 04' 42.07''E

Soil Quality in Study area

Key Parameters	S1	S2	S3	S4	S5
Colour	Slightly reddish	Greyish	Slightly reddish	Greyish	Slightly reddish
Soil Texture	Sandy clay loam	Sandy clay loam	Sandy clay loam	Sandy loam	Sandy loam
Sand (%)	65	60	62	70	75
Silt (%)	15	20	20	20	15
Clay (%)	20	20	18	10	10
Electrical conductivity (dS/m)	1.4	1.6	1.8	2.3	2.1
Hydraulic conductivity (cm/sec.)	$1.4x10^{-3}$	$1.9x10^{-3}$	$2.1x10^{-3.}$	1.8 x 10-2	3.8 x 10-2
Bulk Density (gm/c.c)	1.2	1.6	1.9	1.1	1.4
Moisture (%)	15	26	29	16	23
Porosity (%)	38	42	45	38	40
Infiltration rate (cm/hrs)	1.6	1.9	2.2	1.6	1.9
pH (1:2)	7.26	7.43	7.4	7.12	7.23
Alkanity/Acidity	very slightly basic	very slightly basic	very slightly basic	slightly basic	very slightly basic
Available N_2 (mg/kg)	850	1150	1210	520	850
Available P_2O_5 (mg/kg)	690	890	1080	410	620
Available K_2O (mg/kg)	1250	1420	1290	720	910
Chloride (mg/kg)	890	810	865	1150	1050
Sulphate (mg/kg)	790	860	1025	980	1260

Key Parameters	S1	S2	S3	S4	S5
Sodium absorption ratio (SAR)	5.39	6.76	6.63	5.42	5.64
Available Organic Carbon (gm/kg)	5.2	7.8	7.2	4.2	5.2
Calcium (mg/kg)	1120	820	1020	1280	1120
Magnesium (mg/kg)	1280	1150	1290	960	850
Iron (mg/kg)	2850	1120	1050	1265	1020
Copper (mg/kg)	6.5	9.2	6.7	11.5	9.2
Lead (mg/kg)	<3.0	<3.0	<3.0	<3.0	<3.0
Chromium (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
Microbial Population (CFU/ gm)	4.1×10^4	6.2×10^4	7.4×10^4	3.8 x 104	4.1 x 104
Cation Exchange Capacity (meq/100g)	18.9	16.7	18.6	15.9	14.6

NOISE LEVEL MONITORING

Noise Level Monitoring Locations

Station Code	Location	Latitude	Longitude
N1	Proposed Gate No. - 1, Near Gohanadih Village	22°48'57.68" N	86^0 04'24.14"E
N2	Proposed Gate No. - 2, Near Dugdha Shiv Mandir	$22^0$48'27.09''N	86^0 04'29.73''E
N3	Near Dugdha Village	22^O48'29.60''N	86^0 04'58.08''E
N4	Sona Chawk	$22^0$48'23.37''N	86^0 04'26.41''E
N5	Tata Steel, Gamharia, Gate No - 1	22^O48'55" N	86°05'2.76"E
N6	F.P.A.I. Hospital	$22^0$48'41.73''N	86^0 05'30.23'E
N7	Bhojpur Colony	$22^0$49'01.76''N	86^0 05'41.42''E

N8	Kerala Public School	22°49'12.61" N	86°05'39.88"E

Noise Levels in the Study area

Station Code	Day time Leq, dB (A)	Night timeLeq, dB (A)
N1	69.03	55.22
N2	71.75	56.58
N3	67.29	58.82
N4	66.65	53.81
N5	65.28	57.51
N6	57.2	50.83
N7	60.63	53.19
N8	72.32	49.41

TRAFFIC STUDY

Traffic Study Locations

Station code	Location
T1	Gamaria Bus Stop (4 Lane 2 way divided arterial road, Capacity- 3600 PCU/hr(4 Lane 2 way divided arterial road, Capacity- 3600 PCU/hr)
T2	Near Jamshedpur IOCL LPG Bottling Plant (2 Lane 2-way undivided sub-arterial road, Capacity- 1200 PCU/hr)

Summary of Classified Volume Count Survey at Gamharia Bus Stop (Normal Day)

Sl. No.	Vehicle Type	Daily Traffic (No.)	Equivalent PCUs factor	Avg. Daily Traffic (PCU)
1	Car and Jeep	3790	1	3790
2	Bus	214	2.2	470.8
3	Truck	5115	3.7	18925.5
4	Two-Wheeler	2784	0.75	2088
Total Traffic		**11903**		**25274.3**

V/C Ratio- 0.29, LOS-B

Summary of Classified Volume Count Survey at Gamharia Bus Stop (Holiday)

Sl. No.	Vehicle Type	Daily Traffic (No.)	Equivalent PCUs factor	Avg. Daily Traffic (PCU)
1	Car and Jeep	2480	1	2480
2	Bus	186	2.2	409.2
3	Truck	3591	3.7	13286.7
4	Two-Wheeler	2021	0.75	1515.75
Total Traffic		**8278**		**17691.65**

Summary of Classified Volume Count Survey
Near Jamshedpur IOCL LPG Bottling Plant (Normal Day)

Sl. No.	Vehicle Type	Daily Traffic (No.)	Equivalent PCUs factor	Avg. Daily Traffic (PCU)
1	Car and Jeep	3006	1	3006
2	Bus	85	2.2	187
3	Truck	2176	3.7	8051.2
4	Two-Wheeler	2674	0.75	2005.5
Total Traffic		**7941**		**13249.7**

V/C Ratio- 0.46, LOS-C

Summary of Classified Volume Count Survey

Near Jamshedpur IOCL LPG Bottling Plant (Holiday)

Sl. No.	Vehicle Type	Daily Traffic (No.)	Equivalent PCUs factor	Avg. Daily Traffic (PCU)
1	Car and Jeep	1941	1	1941
2	Bus	80	2.2	176
3	Truck	2317	3.7	8572.90
4	Two-Wheeler	1859	0.75	1394.25
Total Traffic		**6197**		**12084.15**

STATUTORY CLEARANCES

1	Land Document	:	Private land, under possession and ownership of Tata Steel Limited.
2	CO	:	The CO, Gamharia (Saraikela-Kharsawan) vide memo no. 786, dated 12.06.2026 and memo no. 936, dated 15.07.2026 has mentioned the plot no. of the project is not recorded as "Jungle-Jhari" in R.S. Khatiyan & Register II.
3	DFO Wild Life	:	Deputy Conservator of Forest & Field Director, Elephant Project, Jamshedpur vide letter no. 1263, dated 21.07.2026 certified that the proposed project site is outside Eco Sensitive Zone of Dalma Wildlife Sanctuary.
4	DFO Territorial	:	Divisional Forest Officer, Saraikela Forest Division vide letter no. 2065, dated 01.08.2025 certified that the distance of reserved / protected forest is less than 250 meters from proposed project site. The project qualifies as an "existing project" as it was legally established and operational well before the establishment of SEIAA and SEAC on 27 December 2012. Hence, this project is entitled to be evaluated on an "as is where it is basis", as it does not fall within a notified/demarcated forest or an Eco-Sensitive Zone (ESZ), allowing for the lawful exemption from the minimum distance from forest guidelines.

SEAC, Jharkhand has suggested the ToRs in its **134th** meeting held on **23rd, 24th, 25th, 26th and 27th August, 2026** for undertaking detailed EIA / EMP study and SEIAA, Jharkhand has approved the ToRs in its **134th** meeting held on **08th, 09th & 10th September, 2026.** The SEAC has recommended following project specific conditions:

The TORs prescribed for undertaking detailed EIA study are as follows:

A. Standard Terms of Reference

1. Executive Summary

2. Introduction

i. Details of the EIA Consultant including NABET accreditation.
ii. Information about the project proponent.
iii. Importance and benefits of the project.

3. Specific Conditions:

i. **In compliance of OM no. F.No. IA3-22/3/2024-IA.III (E-241594) dated 24.07.2024 of MoEF&CC, Govt. of India plantation of saplings shall be**

carried out in the earmarked green belt area as the part of tree plantation campaign "*Ek Ped Ma Ke Naam*" and the details of the same shall be uploaded in the MeriLiFE Portal (https://merilife.nic.in). 10% of the total green belt proposed shall be allocated under this clause.

ii. **Provision shall be made for development of green belt of minimum 33% of the project area.**

4. Project Description

i. Cost of project and time of completion.
ii. Products with capacities for the proposed project.
iii. If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
iv. List of raw materials required and their source along with mode of transportation.
v. Other chemicals and materials required with quantities and storage capacities
vi. Details of Emission, effluents, hazardous waste generation and their management.
vii. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)
viii. Process description along with major equipments and machineries, process flow sheet (quantative) from raw material to products to be provided.
ix. Hazard identification and details of proposed safety systems.
x. Expansion/modernization proposals:
    a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment, Forest and Climate Change as per OM no. F.no. IA3-22/10/2022-IA.III [E 177258], dated 08th June, 2022 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to Operate for the ongoing / existing operation of the project from SPCB shall be attached with the EIA-EMP report.
    b. In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification, 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.

5. Site Details

i. Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.

ii. A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places).

iii. Details w.r.t. option analysis for selection of site

iv. Co-ordinates (lat-long) of all four corners of the site. .

v. Google map-Earth downloaded of the project site.

vi. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.

vii. Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.

viii. Landuse break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)

ix. A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area

x. Geological features and Geo-hydrological status of the study area shall be included.

xi. Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)

xii. Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.

xiii. R&R details in respect of land in line with state Government policy.

6. Forest and Wildlife related issues (if applicable):

i. Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable).

ii. Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha).

iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.

iv. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon

v. Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area

vi. Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.

7. Environmental Status:

i. Determination of atmospheric inversion level at the project site and site-specific micro- meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.

ii. AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.

iii. Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.

iv. Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF & CC guidelines.

v. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF & CC, if yes give details.

vi. Ground water monitoring at minimum at 8 locations shall be included.

vii. Noise levels monitoring at 8 locations within the study area.

viii. Soil Characteristic as per CPCB guidelines.

ix. Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.

x. Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule- I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.

xi. Socio-economic status of the study area.

8. Impact and Environment Management Plan:

i. Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.

ii. Water Quality modelling - in case of discharge in water body

iii. Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor- cum-rail transport shall be examined.

iv. A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.

v. Details of stack emission and action plan for control of emissions to meet standards.

vi. Measures for fugitive emission control.

vii. Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle / reuse / recover techniques, Energy conservation, and natural resource conservation.

viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.

ix. Action plan for the green belt development plan in 33 % area i.e. land with not less than 2500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.

x. Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.

xi. Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.

xii. Action plan for post-project environmental monitoring shall be submitted.

xiii. Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.

9. Occupational health:

i. Plan and fund allocation to ensure the occupational health & safety of all contract and Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.

ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of

the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.

iii. Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved,

iv. Annual report of health status of workers with special reference to Occupational Health and Safety.

10. Corporate Environment Policy:

i. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.

ii. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.

iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.

iv. Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report

11. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

12. Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

13. Enterprise Social Commitment (ESC)

i. Adequate funds (at least 2.5 % of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be included. Socio-economic development activities need to be elaborated upon.

14. Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.

15. A tabular chart with index for point wise compliance of above TOR.

A. SPECIFIC TERMS OF REFERENCE FOR EIA STUDIES FOR METALLURGICAL INDUSTRIES (FERROUS & NON FERROUS)

1. Complete process flow diagram describing each unit, its processes and operations, along with material and energy inputs & outputs (material and energy balance).
2. Details on blast furnace/ open hearth furnace/ basic oxygen furnace/ladle refining, casting and rolling plants etc.
3. Details on installation/activation of opacity meters with recording with proper calibration system
4. Details on toxic metals including mercury, arsenic and fluoride emissions
5. Details on stack height requirement for integrated steel
6. Details on ash disposal and management -Non-ferrous metal
7. Complete process flow diagram describing production of lead/zinc/copper/ aluminium, etc.
8. Raw materials substitution or elimination
9. Details on smelting, thermal refining, melting, slag fuming, and Waelz kiln operation
10. Details on Holding and de-gassing of molten metal from primary and secondary aluminum, materials pre-treatment, and from melting and smelting of secondary aluminium
11. Details on solvent recycling
12. Details on precious metals recovery
13. Details on composition, generation and utilization of waste/fuel gases from coke oven plant and their utilization.
14. Details on toxic metal content in the waste material and its composition and end use (particularly of slag).
15. Trace metals Mercury, arsenic and fluoride emissions in the raw material.
16. Trace metals in waste material especially slag.
17. Plan for trace metal recovery
18. Trace metals in water.

B. Other

1. Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the F.R for securing the TOR) should be brought to the attention of SEIAA, Jharkhand with reasons for such changes and permission should be sought, as the TOR may also have to be altered.
2. The Prescribed ToRs is valid as per O.M. F. No. IA3-22/10/2022-IA.III[E177258], dated 08.06.2022. of MoEF & CC, Govt. of India.

Sd/-
Member Secretary
State Level Environment Impact
Assessment Authority, Jharkhand.

Memo No.- **EC/SEIAA/2026-27/5030/2026/** 177 Dated: 16.09.2026

Copy to:

1. Member Secretary, Jharkhand State Pollution Control Board, Ranchi for information and necessary action.
2. Regional Office, Ministry of Environment, Forest and Climate Change, Govt. of India, 2nd Floor, Jharkhand State Housing Board (HQ), Harmu Chowk, Ranchi, Jharkhand – 834002.
3. Member Secretary, SEAC, Jharkhand, Ranchi for information and necessary action.

16/9/26

Member Secretary
State Level Environment Impact
Assessment Authority, Jharkhand.

Signature Not Verified

Digitally Signed by : Smt Smitha Pankaj
Member Secretary, SEIAA

Date: 09/10/2026