

### Ref. No. TSLIFAMD/ FAPJ/FY26/2571

Date:29/05/2025

### То

The Director, MOEF & CC Impact Assessment Division (EAC-Industry-1) Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhavan, Jor Bagh Road, Aliganj, New Delhi-110003

Subject: Submission of Half Yearly EC Compliance for a period of October' 2024 to March' 2025 considering the financial year from 1<sup>st</sup> April 2024 to 31<sup>st</sup> March 2025.

Ref:

1. EC Vide File No.- J-11011/372/2009-IA II (I) dated 30th September 2010

2. EC Vide File No. J-11011/372 /2009-IA II (I) dated 21st September 2012.

Dear Sir,

With reference to the subject and reference number cited above, we are herewith submitting the " Half Yearly Compliance Report of Environment Clearance conditions for the period of October' 2024 to March' 2025 for your kind perusal and needful .

> amar Panda Alloys Plant, Jajpur STEEL LTD.

C,P().-Manatira,Via-Danagadi

With Best Regards

For M/s. Tata Steel Limited

Alok Kun ar Panda **Plant Head** Ferro Alloys Plant, Jajpur

**Enclosure: As Enclosed** 

Cc: The Regional Officer, Kalinganagar, Jajpur Road. The MOEF, Regional Office, Bhubaneswar The State Pollution Control Board, Bhubaneswar

### **TATA STEEL LIMITED**

Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 6665 8282 Fax 91 22 6665 7724 Website www.tatasteel.com Corporate Identity Number L27100MH1907PLC000260

| Your (Half Yearly Compliance Report) has been Submitted with following details                                    |  |  |  |
|---|--|--|--|
| Proposal No   | IA/OR/IND/4594/2010                      |  |  |
| Compliance ID   | 128218754                                |  |  |
| Compliance Number(For Tracking)   | EC/M/COMPLIANCE/128218754/2025           |  |  |
| Reporting Year  | 2025                                     |  |  |
| Reporting Period  | 01 Jun(01 Oct - 31 Mar)                  |  |  |
| Submission Date   | 31-05-2025                               |  |  |
| RO/SRO Name   | Shri Senthil Kumar Sampath               |  |  |
| RO/SRO Email  | agmu156@ifs.nic.in                       |  |  |
| State   | ODISHA                                   |  |  |
| RO/SRO Office Address   | Integrated Regional Offices, Bhubaneswar |  |  |
| Note:- SMS and E-Mail has been sent to Shri Senthil Kumar Sampath, ODISHA with Notification to Project Proponent. |  |  |  |

| Half Yearly Compliance Report<br>2025<br>01 Jun(01 Oct - 31 Mar)<br>Acknowledgement |                               |  |  |  |
|---|-------------------------------|--|--|--|
| Proposal Name   |                               | along with Captive Power<br>Kalinganagar Industrial Co | sting), 1*33 MVA (Proposed)<br>Plant (67.5MW) at<br>omplex (Growth Centre),<br>handia, Mouza Duburi, Tehsil: |  |
| Name of Entity / Corporat   | e Office                      | Ferro Alloys Plant, Jajpur, Tata Steel Limited         |  |  |
| Village(s)  |                               | N/A  |  |  |
| District  |                               | JAJAPUR  |  |  |
| Proposal No.  | IA/OR/IND/4594/2010           | Category   | Industrial Projects - 1  |  |
| Plot / Survey / Khasra N/A  |                               | Sub-District   | N/A  |  |
| State   | ODISHA                        | Entity's PAN   | ****2803M  |  |
| MoEF File No.   | J-11011/372/2009-IA-<br>II(I) | Entity name as per<br>PAN                              | UTSAV KASHYAP  |  |

### **Compliance Reporting Details**

| <b>Reporting Year</b>   | 2025  |
|-------------------------|---|
| Remarks (if any)        | Submission of Half Yearly<br>EC Compliance for a<br>period of October 2024 to<br>March 2025 in details as<br>below. |
| <b>Reporting Period</b> | 01 Jun(01 Oct - 31 Mar)   |

### **Details of Production and Project Area**

| Name of Entity /<br>Corporate Office | Ferro Alloys Plant, Jajpur, Tata Steel Limited |
|--------------------------------------|--|
|--------------------------------------|--|

|                  | Project Area as per EC Granted | Actual Project Area in Possession |
|------------------|--------------------------------|-----------------------------------|
| Private          | 24.29                          | 24.29                             |
| Revenue Land     | 0                              | 0                                 |
| Forest<br>Others | 0                              | 0                                 |
|                  | 0                              | 0                                 |
| Total            | 24.29                          | 24.29                             |

## **Production Capacity**

| Sr. no                                  | Product Name   | units  | Valid Upto   | Capacity  | Production<br>last year   | Capacity as<br>per CTO          |
|---|--|--|--|---|---|---------------------------------|
| 1                                       | Ferro<br>Manganese,<br>Silico<br>Manganese,<br>Ferro<br>Silicon,Ferro<br>Chrome  | Tons per<br>Annum (TPA)  | 31/03/2027   | 100000  | 45228   | 100000                          |
| Condit                                  | ions   | · · · · ·  |  |   |   | 1                               |
| ecific (                                | Conditions   |  |  |   |   |                                 |
| Sr.No.                                  | Condition Ty   | ре   | Condition De   | tails   |   |                                 |
| 1                                       | ENERGY PRI<br>MEASURES   | ESERVATION   |  | nall be used as fue<br>oal from unknown                       | 1. Pet coke shall be<br>sources.  | used as fuel                    |
| Low A                                   | Submission: Compl<br>sh Metallurgical Co<br>Therefore, as a repla  | oke (LAM Coke) is  |  |   | ng in place of Pet  | Date:<br>30/05/2025             |
| 2                                       | AIR QUALIT<br>MONITORING<br>PRESERVATIO  | AND  | pollution contro<br>filters, ID fan ar                         | l equipments viz.<br>and stack of adequa                      | for all the stacks a<br>fume extraction sys<br>te height to submer<br>ions below 50 mg/N                          | tem with bag<br>ged arc furnace |
| Bag fil                                 | Submission: Compl<br>ter based DE systen<br>tinuous emission m   | ns have been provid  |  | tacks. CEMS has l   | been installed for  | Date:<br>31/05/2025             |
| 3                                       | AIR QUALIT<br>MONITORING<br>PRESERVATIO  | AND  | controlled withi   | n the latest permis onitored. Guidelin                        | om all the sources s<br>sible limits issued l<br>es / Code of Practic   | by the Ministry                 |
| The fol<br>1. Cond<br>premise<br>system | Submission: Compl<br>lowing control mea<br>creting of internal ro<br>es for fugitive dust s<br>which is routed thr<br>g system installed at<br>ed. | sures are implement<br>bads and additional<br>suppression. 2. Tap<br>ough GCP. 3. Wate | mobile water sprin<br>ping fumes are suc<br>r fogging system i | nkler are engaged<br>ked by a Hood an<br>nstalled at feeding  | within the<br>d collection<br>points. 4. Water  | Date:<br>31/05/2025             |
| 4                                       | WATER QUA<br>MONITORING<br>PRESERVATIO   | AND  | authority shall b<br>water harvested<br>enhanced to me         | e obtained. Effort<br>. If needed, capaci<br>et the maximum w | f 9,155 KLD water<br>s shall be made to r<br>ty of the reservoir s<br>vater requirement. C<br>from other sources. | nake use of rain<br>hould be    |
| 960 KI<br>obtaine                       | Submission: Compl<br>D of raw water is u<br>the from CGWA for<br>ed in the plant prem  | used in Submerged a withdrawal of grou   | nd water for drink   | ing purposes. Rair  |   | Date:<br>31/05/2025             |
| 5                                       | WATER QUA<br>MONITORING  |  | Regular monit ground water sh                                  |   | and effluent surface  |                                 |

| Monito   |   | nd sub surface and ground water is being done on<br>d the report is being submitted to SPCB in monthly   | Date:<br>31/05/2025  |
|--|---|--|--|
| 6  | WASTE MANAGEMENT  | 'Zero' effluent discharge shall be strictly followed an<br>wastewater should be discharged outside the premises.   |  |
|  | Submission: Complied fater Circuit of the Plant adheres to Zer  | ro Effluent Discharge principle.   | Date:<br>31/05/2025  |
| 7  | WASTE MANAGEMENT  | All the Ferro alloy slag shall be used for land filling<br>or used as building material only after passing through<br>Chemical Leach ability Potential (TCLP) test. Otherwis<br>substances shall be recovered from the slag and output<br>disposed in secured landfill as per CPCB guidelines.   | Toxic<br>ise, hazardous  |
| TCLP   |   | on the basis of the results, the slag is used for<br>Unsold slag is being stored inside the plant premises.  | Date:<br>31/05/2025  |
| 8  | WASTE MANAGEMENT  | Slag produced in Ferro Manganese (Fe-Mn) product<br>used in manufacture Silico Manganese (Si-Mn).  | ion shall be   |
| Not Ap   | <b>Submission:</b> Complied oplicable. The unit is not producing M stion of Ferro Manganese (Fe-Mn), the  | anganese (Mn) Alloys at present. In future, if there is slag shall be utilized accordingly.  | Date:<br>31/05/2025  |
|  |   |  |  |
| 9  | Statutory compliance  | No Ferro Chrome shall be manufactured without price<br>from the Ministry of Environment & Forests.   | or approval  |
| <b>PPs</b><br>Ameno<br>Silico                        | Submission: Complied<br>led EC for production of Ferro Chrom  | from the Ministry of Environment & Forests.<br>e apart from producing Ferro Alloys (Ferro Manganese,<br>approved production capacity has been obtained from  | Date:<br>31/05/2025  |
| <b>PPs</b><br>Ameno<br>Silico                        | Submission: Complied<br>led EC for production of Ferro Chrom<br>Manganese and Ferro Silicon) within a   | from the Ministry of Environment & Forests.<br>e apart from producing Ferro Alloys (Ferro Manganese,<br>approved production capacity has been obtained from  | Date:<br>31/05/2025<br>nitigation<br>the Ministry's  |
| PPs<br>Ameno<br>Silico<br>MoEF<br>10<br>PPs<br>Compl | Submission: Complied<br>ded EC for production of Ferro Chrom<br>Manganese and Ferro Silicon) within a<br>vide File No. J-11011/372/2009-IA,II<br>Risk Mitigation and Disaster<br>Management<br>Submission: Complied<br>ied. Onsite Emergency plan was prepa | from the Ministry of Environment & Forests.<br>e apart from producing Ferro Alloys (Ferro Manganese,<br>approved production capacity has been obtained from<br>(I) on dated 21.09.2012.<br>Risk and Disaster Management Plan along with the r<br>measures should be prepared and a copy submitted to<br>Regional Office at Bhubaneswar, OSPCB and CPCB v   | Date:<br>31/05/2025<br>nitigation<br>the Ministry's  |
| PPs<br>Ameno<br>Silico<br>MoEF<br>10<br>PPs<br>Compl | Submission: Complied<br>ded EC for production of Ferro Chrom<br>Manganese and Ferro Silicon) within a<br>vide File No. J-11011/372/2009-IA,II<br>Risk Mitigation and Disaster<br>Management<br>Submission: Complied<br>ied. Onsite Emergency plan was prepa | from the Ministry of Environment & Forests.<br>e apart from producing Ferro Alloys (Ferro Manganese,<br>approved production capacity has been obtained from<br>(I) on dated 21.09.2012.<br>Risk and Disaster Management Plan along with the r<br>measures should be prepared and a copy submitted to the<br>Regional Office at Bhubaneswar, OSPCB and CPCB w<br>of issue of environment clearance letter | Date:<br>31/05/2025<br>nitigation<br>the Ministry's<br>within 3 mont<br>Date:<br>31/05/2025<br>t 33 % of the |

| 12                 | Corporate Environmental<br>Responsibility  | At least 5 % of the total cost of the project should be<br>towards the corporate social responsibility and item- w<br>along with time bound action plan (need based) should<br>and submitted to the Ministry's Regional Office at Bhy<br>Implementation of such program shall be ensured acco<br>time bound manner. | vise details<br>1 be prepared<br>ubaneswar.        |
|--------------------|--|---|--|
| Tata St<br>under t |  | Tata Steel Limited) has acquired the Plant through NCLT<br>Tata Steel Foundation (TSF) for implementing CSR   | Date:<br>31/05/2025                                |
| 13                 | MISCELLANEOUS  | The company shall provide housing for construction<br>the site with all necessary infrastructure and facilities<br>cooking, mobile toilets, mobile STP, safe drinking was<br>health care, crèche etc. The housing may be in the forr<br>structures to be removed after the completion of the pr                     | such as fuel for<br>ter, medical<br>n of temporary |
|                    | Submission: Complied ied during construction phase.  |   | Date:<br>31/05/2025                                |
| 14                 | Statutory compliance   | The company shall comply with all the conditions st<br>according environmental clearance vide Ministry's let<br>number dated 30th September, 2010.  |  |
|                    |  | o. J-11011/372/2009-IA,II(I) dated 30/09/2010 are being   | Date:<br>31/05/2025                                |
| 15                 | WASTE MANAGEMENT   | The company shall recover ferro chrome from ferro<br>The remaining slag shall be disposed of in the waste d<br>after carrying TCLP Test.  |  |
| The pro            |  | ing the low-lying areas. We have earmarked the area for P is being carried out before disposing the slag.   | Date:<br>31/05/2025                                |
| 16                 | WATER QUALITY<br>MONITORING AND<br>PRESERVATION  | The ground water quality monitoring around the disp<br>be regularly monitored and the results of the monitored<br>submitted to the SPCB and to the RO of the Ministry.  |  |
| Ground             | Submission: Complied<br>I water quality monitoring around the<br>submitted to SPCB and RO, MoEF, B | e disposal site is being carried out regularly and result is<br>Bhubaneswar and enclosed here with.   | Date:<br>31/05/2025                                |
| 17                 | MISCELLANEOUS  | The trucks carrying the slag shall be covered with ta   | rpaulin.   |
|                    | Submission: Complied<br>lin covered transportation of slag is b                                    | being carried out.  | Date:<br>31/05/2025                                |
| 18                 | AIR QUALITY<br>MONITORING AND<br>PRESERVATION  | The National Ambient Air Quality Standards issued vide G.S.R. No. 826(E) dated 16th November, 2009 sh   |  |
| Regula<br>limit du |  | d indicate that the AAQ results are within the NAAQS llution control equipment and the report is being  | Date:<br>31/05/2025                                |
|                    | Addresse IA Divi   | aion Ministry of Environment Forest and Climate Change  | Page   |

| Sr.No.              | Condition Type   | Condition Details   |   |  |
|---------------------|--|---|---|--|
| 1                   | Statutory compliance   | The project authorities must strictly adhere to the stipulations may<br>by the Orissa State Pollution Control Board and the State<br>Government.  |   |  |
| All the s           | abmission: Complied<br>tipulations made by the Odisha Pollut<br>followed.                                  | tion Control Board and the State Government are being   | Date:<br>31/05/2025                                       |  |
| 2                   | Statutory compliance   | No further expansion or modifications in the plant sh<br>out without prior approval of the Ministry of Environm<br>Forests.   |   |  |
|                     | <b>ubmission:</b> Complied<br>ledged and status quo is being and wi  | ll be maintained.   | Date:<br>31/05/2025                                       |  |
| 3                   | AIR QUALITY<br>MONITORING AND<br>PRESERVATION  | The gaseous emissions from various process units sh<br>the load/mass based standards notified by this Ministry<br>1993 and standards prescribed from time to time. The<br>may specify more stringent standards for the relevant p<br>keeping in view the nature of the industry and its size a  | on 19th May<br>State Board<br>parameters                  |  |
|                     | <b>ubmission:</b> Complied nissions from all the units are being m   | naintained well within the statutory limits.  | Date:<br>31/05/2025                                       |  |
| 4                   | AIR QUALITY<br>MONITORING AND<br>PRESERVATION  | At least four ambient air quality monitoring stations<br>established in the downward direction as well as where<br>ground level concentration of PM10, SO2, NOx are an<br>consultation with the SPCB. Data on ambient air qualit<br>emission shall be regularly submitted to this Ministry i<br>Regional Office at Bhubaneswar and the SPCB/CPCB<br>months. | e maximum<br>ticipated in<br>ty and stack<br>ncluding its |  |
| Ambien              | <b>ubmission:</b> Complied<br>t Air Quality is being monitored at 5 s<br>bmitted to SPCB on monthly basis. | stations across the units. Monitoring report of AAQ is  | Date:<br>31/05/2025                                       |  |
| 5                   | WASTE MANAGEMENT   | Industrial wastewater shall be properly collected, treat<br>conform to the standards prescribed under GSR 422 (E<br>May, 1993 and 31st December, 1993 or as amended for<br>time. The treated wastewater shall be utilized for plant   | ) dated 19th<br>rm time to                                |  |
| Process<br>utilized |  | and treated in the existing ETP. Treated water is being<br>also being treated in ETP and reused in plantation and<br>ing tested every month.  | Date:<br>31/05/2025                                       |  |
| 6                   | Noise Monitoring & Prevention  | The overall noise levels in and around the plant area<br>well within the standards (85 dBA) by providing noise<br>measures including acoustic hoods, silencers, enclosur<br>sources of noise generation. The ambient noise levels s<br>to the standards prescribed under EPA Rules, 1989 viz  | control<br>es etc. on all<br>should confor                |  |

| Followi<br>mainten             |   | restrict noise levels within prescribed limits:- 1. Regular ries is being carried out. 2. Use of vibration dampeners   | Date:<br>31/05/2025  |
|--------------------------------|---|--|--|
| 7                              | Statutory compliance  | Occupational health surveillance of the workers sh<br>regular basis and records maintained as per the Factor   |  |
| Done as                        |   | keeping. It is being done as per the Factories Act in every complete employees and contractor workmen.   | Date:<br>31/05/2025  |
| 8                              | MISCELLANEOUS   | The company shall develop surface water harvesti<br>harvest the rain water for utilization in the lean sease<br>recharging the ground water table.   |  |
| Feasibil                       | <b>ubmission:</b> Complied<br>ity study is completed. Going for<br>chment pond. The same is expecte | ward, Tata Steel has a plan to develop rainwater recharge d to be completed by June 2026.  | Date:<br>31/05/2025  |
| 9                              | Statutory compliance  | The project proponent shall also comply with all the protection measures and safeguards recommended in report. Further, the company must undertake socio-edevelopment activities in the surrounding villages lindevelopment programs, educational programs, drink and health care etc.   | n the EIA/EMP<br>economic<br>ke community  |
| All the immedi                 |   | onmental Clearance are being complied to safeguard the<br>is engaging with Tata Steel Foundation (TSF) for<br>brate guidelines.  | Date:<br>31/05/2025  |
| 10                             | MISCELLANEOUS   | Requisite amount shall be earmarked towards capi<br>recurring cost/annum for environment pollution con<br>implement the conditions stipulated by the Ministry<br>and Forests as well as the State Government. An im-<br>schedule for implementing all the conditions stipula<br>be submitted to the Regional Office of the Ministry<br>The funds so provided shall not be diverted for any | trol measures to<br>of Environment<br>plementation<br>ted herein shall<br>at Bhubaneswar |
| Annual<br>being s <sub>l</sub> | pent towards environmental protect  | Pollution control equipments to the tune of 3 Cr/annum is<br>etion measures. One time Capital cost for construction of<br>tation to the tune of around 10-12 crores for the year 2025-   | Date:<br>31/05/2025  |
| 11                             | MISCELLANEOUS   | A copy of clearance letter shall be sent by the prop<br>concerned Panchayat, Zila Parishad/Municipal Corp<br>Local Body and the local NGO, if any, from whom<br>suggestions/representations, if any, were received w<br>the proposal. The clearance letter shall also be put o<br>the company by the proponent.  | oration, Urban<br>hile processing  |
| Environ                        |   | bmitted to the concerned Govt. /Private Bodies.<br>en uploaded on the Tata Steel website, www.tatasteel.com  | Date:<br>31/05/2025  |
|                                | AIR QUALITY<br>MONITORING AND   | The project proponent shall upload the status of co  | mpliance of the  |

|  |  | and the SPCB. The criteria pollutant levels namely; PM (ambient levels as well as stack emissions) or critical separameters, indicated for the projects shall be monitored displayed at a convenient location near the main gate or in the public domain.   | ectoral<br>ed and   |
|--|--|---|---|
| Six-mo<br>Electro<br>SO2, N<br>the pub | nic multi-line display board installe<br>OX or critical sectoral parameters,   | bloaded to the company's website www.tatasteel.com.<br>ed to display the criteria pollutant levels namely, PM10,<br>indicated for the projects at main gate of the company for<br>s are being sent to the Regional Office, MoEFCC and the<br>3.   | Date:<br>31/05/2025   |
| 13                                     | Statutory compliance   | The project proponent shall also submit six monthly<br>status of the compliance of the stipulated environmenta<br>including results of monitored data (both in hard copies<br>e-mail) to the Regional Office of MOEF, the respective<br>of CPCB and the SPCB. The Regional Office of this M<br>Bhubaneswar/CPCB/SPCB shall monitor the stipulated   | al conditions<br>s as well as by<br>e Zonal Office<br>linistry at                                 |
| In comp<br>six-more                    |  | a vide S.O-5845, dt. 28th Nov 2018, the online submitted ed annexures is being submitted to MoEFCC/OSPCB  | Date:<br>31/05/2025   |
| 14                                     | Statutory compliance   | The environmental statement for each financial year<br>March in Form-V as is mandated to be submitted by th<br>proponent to the concerned State Pollution Control Bos<br>prescribed under the Environment (Protection) Rules, I<br>amended subsequently, shall also be put on the website<br>company along with the status of compliance of enviro<br>conditions and shall also be sent to the respective Regi-<br>the MOEF at Bhubaneswar by e-mail.   | e project<br>ard as<br>1986, as<br>e of the<br>onmental   |
|  | Submission: Complied<br>vironmental statement is being subr<br>ie is also uploaded on Companys w                             | nitted every year to OSPCB and RO MoEFCC. Copy of ebsite.   | Date:<br>31/05/2025   |
| the sam                                | te is also aproaded on companys w  |   |   |
| the sam                                | Statutory compliance   | The Project Proponent shall inform the public that the<br>been accorded environmental clearance by the Ministry<br>the clearance letter are available with the SPCB and ma<br>at Website of the Ministry of Environment and Forests<br>http:/envfor.nic.in. This shall be advertised within seve<br>the date of issue of the clearance letter, at least in two I<br>newspapers that are widely circulated in the region of v<br>be in the vernacular language of the locality concerned<br>the same should be forwarded to the Regional office at | y and copies of<br>ay also be see<br>at<br>en days from<br>local<br>which one sha<br>and a copy o |
| 15<br>PPs S<br>Tata Ste<br>by erstv    | Statutory compliance<br>Submission: Complied<br>eel Ltd. has acquired the Plant throw<br>while owner i.e Rohit Ferrotech lin | The Project Proponent shall inform the public that the<br>been accorded environmental clearance by the Ministry<br>the clearance letter are available with the SPCB and ma<br>at Website of the Ministry of Environment and Forests<br>http:/envfor.nic.in. This shall be advertised within seve<br>the date of issue of the clearance letter, at least in two I<br>newspapers that are widely circulated in the region of w<br>be in the vernacular language of the locality concerned   | y and copies of<br>ay also be see<br>at<br>en days from<br>local<br>which one sha<br>and a copy o |

| <b>PPs Submission:</b> Complied<br>Tata Steel Ltd. has acquired the Plant through NCLT under the IBC code. Post-acquisition,<br>before the start of the work concerned authorities were informed. Presently the four furnaces<br>(16.5 MVA) are in operation at a rated capacity 100000 TPA after obtaining valid CTO from<br>SPCB |                   |   | Date:<br>31/05/2025 |  |
|--|-------------------|---|---------------------|--|
| Visit Remarks  |                   |   |                     |  |
| ast Site Visit Report Date:  |                   | N/A   |                     |  |
| Additional Remarks:  |                   |   |                     |  |
| considered as conclusion on any action   | on the compliance | tted by project proponent. In no way is the of the project. This is strictly for the project purpose. | roject proponent's  |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |
|  |                   |   |                     |  |

## Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

# **Half -Yearly Compliance Report**

Name of the Project: Ferro Alloys Plant, Jajpur of M/s Tata Steel Limited

# **Environmental Clearance Conditions**

(MoEF LETTER NO. EC Vide File No.- J-11011/372/2009-IA II (I) dated 30th September 2010

EC Vide File No. J-11011/372 /2009-IA II (I) dated 21st September 2012. ISSUED BY GOVT. OF INDIA, MINISTRY OF ENVIRONMENT &FOREST, NEW DELHI)

## Period: Oct'2024 to Mar'2025

# Submitted By:

### Ferro Alloys Plant, Jajpur

Of M/s Tata Steel Limited

P.O- Duburi, Dist. Jajpur

Odisha- 755026

## {Period: October 2024 – March 2025}

| S.No. | EC Conditions   | Compliances   |  |  |
|-------|---|---|--|--|
| 3.NU. | Specific Conditions   |   |  |  |
| 1.    | No charcoal shall be used as fuel. Pet coke<br>shall be used as fuel instead of charcoal from<br>unknown sources.   | Low Ash Metallurgical Coke (LAM Coke) is<br>used for Ferro Chrome manufacturing in<br>place of Pet Coke which is a cleaner<br>alternative to pet coke.  |  |  |
| 2.    | Continuous monitoring facilities for all the stacks and sufficient air pollution control equipment's viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 50 mg/Nm <sup>3</sup> .  | Bag filter based DE systems have been<br>provided in all process stacks. CEMS has<br>been installed for the continuous emission<br>monitoring in all process stacks.  |  |  |
| 3.    | The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 <sup>th</sup> November, 2009 shall be followed.   | Regular Monitoring has been carried out<br>and indicate that the AAQ results are<br>within the NAAQS limit during the<br>operation along with the pollution control<br>equipment and the report is being<br>submitted to SPCB in monthly basis.   |  |  |
| 4.    | Secondary fugitive emissions from all the<br>sources shall be controlled within the latest<br>permissible limits issued by the Ministry and<br>regularly monitored. Guidelines / Code of<br>Practice issued by the CPCB shall be followed.  | <ul> <li>The following control measures are implemented to keep a check on secondary fugitive emission :-</li> <li>1. Concreting of internal roads and additional mobile water sprinkler are engaged within the premises for fugitive dust suppression.</li> <li>2. Tapping fumes are sucked by a Hood and collection system which is routed through GCP.</li> <li>3. Water fogging system installed at feeding points.</li> <li>4. Water fogging system installed at feeding points. At all the conveyor nodes, intermittent water sprinkling is practiced.</li> </ul> |  |  |
| 5.    | Prior permission for the drawl of 9,155 KLD<br>water from competent authority shall be<br>obtained. Efforts shall be made to make use of<br>rain water harvested. If needed, capacity of the<br>reservoir should be enhanced to meet the<br>maximum water requirement. Only balance<br>water requirement should be met from other<br>sources. | 960 KLD of raw water is used in<br>Submerged Arc Furnace. Additionally,<br>NOC has also been obtained from CGWA<br>for withdrawal of ground water for drinking<br>purposes. Rainwater getting collected in<br>the plant premises is being recycled back<br>in plant processes.  |  |  |
| 6.    | Regular monitoring of influent and effluent<br>surface, sub-surface and ground water shall be<br>ensured and treated wastewater shall meet the<br>norms prescribed by the State Pollution Control<br>Board or described under the E(P) Act<br>whichever are more stringent. Leachate study  | Monitoring of influent and effluent surface<br>and sub surface and ground water is being<br>done on regular basis. ETP and STP is<br>operational and the report is being<br>submitted to SPCB in monthly basis.   |  |  |

## {Period: October 2024 - March 2025}

|       | ι   | - March 2025}   |  |  |
|-------|---|---|--|--|
| S.No. | EC Conditions   | Compliances   |  |  |
|       | for the effluent generated and analysis should<br>also be regularly carried out and report<br>submitted to the Ministry's Regional Office at<br>Bhubaneswar, SPCB and CPCB.   |   |  |  |
| 7.    | 'Zero' effluent discharge shall be strictly<br>followed and no wastewater should be<br>discharged outside the premises.   | The Water Circuit of the Plant adheres to Zero Effluent Discharge principle.  |  |  |
| 8.    | All the Ferro alloy slag shall be used for land<br>filling inside the plant or used as building<br>material only after passing through Toxic<br>Chemical Leach ability Potential (TCLP) test.<br>Otherwise, hazardous substances shall be<br>recovered from the slag and output waste and<br>be disposed in secured landfill as per CPCB<br>guidelines. | TCLP Test is done on the slag samples,<br>and on the basis of the results, the slag is<br>used for construction and for land levelling<br>purposes. Unsold slag is being stored<br>inside the plant premises.   |  |  |
| 9.    | Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture Silico Manganese (Si-Mn).  | Not Applicable. The unit is not producing<br>Manganese (Mn) Alloys at present. In<br>future, if there is production of Ferro<br>Manganese (Fe-Mn), the slag shall be<br>utilized accordingly.   |  |  |
| 10.   | No Ferro Chrome shall be manufactured without prior approval from the Ministry of Environment & Forests.  | Amended EC for production of Ferro<br>Chrome apart from producing Ferro Alloys<br>(Ferro Manganese, Silico Manganese and<br>Ferro Silicon) within approved production<br>capacity has been obtained from MoEF<br>vide File No. J-11011/372/2009-IA,II(I) on<br>dated 21.09.2012.                  |  |  |
| 11.   | Risk and Disaster Management Plan along with<br>the mitigation measures should be prepared<br>and a copy submitted to the Ministry's Regional<br>Office at Bhubaneswar, OSPCB and CPCB<br>within 3 months of issue of environment<br>clearance letter.  | Complied. Onsite Emergency plan was<br>prepared and was approved by Directorate<br>of Factories and Boilers, Bhubaneswar.<br>A copy of the same was also submitted to<br>OSPCB and CPCB.  |  |  |
| 12.   | As proposed, green belt shall be developed in<br>at least 33 % of the project area. Selection of<br>the plant species shall be as per the CPCB<br>guidelines in consultation with the DFO.  | Plant is located over the area of 60 Acre.<br>The green cover has been developed over<br>an area of 10.8 Acres (18 percent of total<br>area).<br>Development of green cover over<br>additional area is in progress to achieve 33<br>percent green cover and shall be<br>completed by December 26. |  |  |
| 13.   | At least 5 % of the total cost of the project<br>should be earmarked towards the corporate<br>social responsibility and item- wise details<br>along with time bound action plan (need based)<br>should be prepared and submitted to the<br>Ministry's Regional Office at Bhubaneswar.<br>Implementation of such program shall be                        | Tata Steel Mining Ltd. (amalgamated with<br>Tata Steel Limited) has acquired the Plant<br>through NCLT under the IBC code. TSL is<br>engaging with Tata Steel Foundation (TSF)<br>for implementing CSR activities as per<br>corporate guidelines.   |  |  |

## {Period: October 2024 - March 2025}

| -     | {Period: October 2024 - Marcin 2025}  |   |  |  |  |
|-------|---|---|--|--|--|
| S.No. | EC Conditions   | Compliances   |  |  |  |
|       | ensured accordingly in a time bound manner.   |   |  |  |  |
| 14.   | The company shall provide housing for<br>construction labour within the site with all<br>necessary infrastructure and facilities such as<br>fuel for cooking, mobile toilets, mobile STP,<br>safe drinking water, medical health care, crèche<br>etc. The housing may be in the form of<br>temporary structures to be removed after the   | Complied during construction phase.   |  |  |  |
|       | completion of the project.<br>General Conditi   | iono  |  |  |  |
| 1.    | The project authorities must strictly adhere to<br>the stipulations made by the Orissa State<br>Pollution Control Board and the State<br>Government.  | All the stipulations made by the Odisha<br>Pollution Control Board and the State<br>Government are being strictly followed.   |  |  |  |
| 2.    | No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.  | Acknowledged and status quo is being and will be maintained.  |  |  |  |
| 3     | The gaseous emissions from various process<br>units shall conform to the load/mass based<br>standards notified by this Ministry on 19th May,<br>1993 and standards prescribed from time to<br>time. The State Board may specify more<br>stringent standards for the relevant parameters<br>keeping in view the nature of the industry and<br>its size and location.   | Stack emissions from all the units are<br>being maintained well within the statutory<br>limits.   |  |  |  |
| 4     | At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of $PM_{10}$ , $SO_2$ , $NO_x$ are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months. | Ambient Air Quality is being monitored at 5<br>stations across the units. Monitoring report<br>of AAQ is being submitted to SPCB on<br>monthly basis.   |  |  |  |
| 5     | Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.  | Process related waste water is being<br>collected and treated in the existing ETP.<br>Treated water is being utilized in plant<br>operations.<br>Surface run-off is also being treated in ETP<br>and reused in plantation and water<br>sprinkling on the roads. The water is being<br>tested every month. |  |  |  |
| 6     | The overall noise levels in and around the plant<br>area shall be kept well within the standards (85<br>dBA) by providing noise control measures<br>including acoustic hoods, silencers, enclosures<br>etc. on all sources of noise generation. The<br>ambient noise levels should conform to the   | Following measures are implemented to<br>restrict noise levels within prescribed<br>limits:-<br>1. Regular maintenance of noise<br>generating machineries is being<br>carried out.  |  |  |  |

| {Period: October 2024 – Ma | rch 2025} |
|----------------------------|-----------|
|----------------------------|-----------|

|       | · · · · · · · · · · · · · · · · · · ·   |   |  |  |
|-------|---|---|--|--|
| S.No. | EC Conditions   | Compliances   |  |  |
|       | standards prescribed under EPA Rules, 1989  | 2. Use of vibration dampeners for all   |  |  |
|       | viz. 75 dBA (daytime) and 70dBA (nighttime).  | the equipment.  |  |  |
| 7     | Occupational health surveillance of the workers<br>shall be done on a regular basis and records<br>maintained as per the Factories act  | Done as per the statute along with record<br>keeping. It is being done as per the<br>Factories Act in every 3rd Quarter of a<br>Financial Year covering complete<br>employees and contractor workmen.   |  |  |
| 8     | The company shall develop surface water<br>harvesting structures to harvest the rain water<br>for utilization in the lean season besides<br>recharging the ground water table.  | Feasibility study is completed. Going<br>forward, Tata Steel has a plan to develop<br>rainwater recharge pits/catchment pond.<br>The same is expected to be completed by<br>June 2026   |  |  |
| 9     | The project proponent shall also comply with all<br>the environmental protection measures and<br>safeguards recommended in the EIA/EMP<br>report. Further, the company must undertake<br>socio-economic development activities in the<br>surrounding villages like community<br>development programs, educational programs,<br>drinking water supply and health care etc.   | All the stipulated conditions of the<br>Environmental Clearance are being<br>complied to safeguard the immediate<br>surrounding environment. TSL is engaging<br>with Tata Steel Foundation (TSF) for<br>implementing CSR activities as per<br>corporate guidelines.   |  |  |
| 10    | Requisite amount shall be earmarked towards<br>capital cost and recurring cost/annum for<br>environment pollution control measures to<br>implement the conditions stipulated by the<br>Ministry of Environment and Forests as well as<br>the State Government. An implementation<br>schedule for implementing all the conditions<br>stipulated herein shall be submitted to the<br>Regional Office of the Ministry at Bhubaneswar.<br>The funds so provided shall not be diverted for<br>any other purpose. | Annual recurring cost for maintenance of<br>Pollution control equipments to the tune of<br>3 Cr/annum is being spent towards<br>environmental protection measures. One<br>time Capital cost for construction of new<br>WTP, Internal Roads and drain, plantation<br>to the tune of around 10-12 crores for the<br>year 2025-2026. |  |  |
| 11    | A copy of clearance letter shall be sent by the<br>proponent to concerned Panchayat, Zila<br>Parishad/Municipal Corporation, Urban Local<br>Body and the local NGO, if any, from whom<br>suggestions/representations, if any, were<br>received while processing the proposal. The<br>clearance letter shall also be put on the web<br>site of the company by the proponent.   | Environment Clearance copy has been<br>submitted to the concerned Govt. /Private<br>Bodies. Environment Clearance letter has<br>also been uploaded on the Tata Steel<br>website, www.tatasteel.com  |  |  |
| 12    | The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Bhubaneswar. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub>  | Six-monthly EC compliance reports are<br>uploaded to the company's website<br>www.tatasteel.com.<br>Electronic multi-line display board installed<br>to display the criteria pollutant levels<br>namely, PM10, SO2, NOX or critical<br>sectoral parameters, indicated for the<br>projects at main gate of the company for         |  |  |

## {Period: October 2024 - March 2025}

|       | {Period: October 2024 - March 2025}   |  |  |  |  |
|-------|---|--|--|--|--|
| S.No. | EC Conditions   | Compliances  |  |  |  |
|       | (ambient levels as well as stack emissions) or<br>critical sectoral parameters, indicated for the<br>projects shall be monitored and displayed at a<br>convenient location near the main gate of the<br>company in the public domain.   | the public domain.<br>The compliance reports are being sent to<br>the Regional Office, MoEFCC and the<br>respective zonal office of CPCB and<br>SPCB.  |  |  |  |
| 13    | The project proponent shall also submit six<br>monthly reports on the status of the compliance<br>of the stipulated environmental conditions<br>including results of monitored data (both in hard<br>copies as well as by e-mail) to the Regional<br>Office of MOEF, the respective Zonal Office of<br>CPCB and the SPCB. The Regional Office of<br>this Ministry at Bhubaneswar/CPCB/SPCB shall<br>monitor the stipulated conditions.  | In compliance with MoEFCCs notification vide S.O-5845, dt. 28th Nov 2018, the online submitted six-monthly compliance report with required annexures is being submitted to MoEFCC/OSPCB Regional Office through e-mail.  |  |  |  |
| 14    | The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Bhubaneswar by e-mail.  | The environmental statement is being<br>submitted every year to OSPCB and RO<br>MoEFCC. Copy of the same is also<br>uploaded on Companys website.  |  |  |  |
| 15    | The Project Proponent shall inform the public<br>that the project has been accorded<br>environmental clearance by the Ministry and<br>copies of the clearance letter are available with<br>the SPCB and may also be seen at Website of<br>the Ministry of Environment and Forests at<br>http:/envfor.nic.in. This shall be advertised<br>within seven days from the date of issue of the<br>clearance letter, at least in two local<br>newspapers that are widely circulated in the<br>region of which one shall be in the vernacular<br>language of the locality concerned and a copy<br>of the same should be forwarded to the<br>Regional office at Bhubaneswar. | Tata Steel Ltd. has acquired the Plant<br>through NCLT under the IBC code. The<br>advertisement done by erstwhile owner<br>i.e Rohit Ferrotech limited is not traceable<br>by us. Once the EC is transferred in the<br>name of Tata Steel, the advertisement will<br>be published and hosted on the website. |  |  |  |
| 16    | Project authorities shall inform the Regional<br>Office as well as the Ministry, the date of<br>financial closure and final approval of the<br>project by the concerned authorities and the<br>date of commencing the land development<br>work.   | Tata Steel Ltd. has acquired the Plant<br>through NCLT under the IBC code. Post-<br>acquisition, before the start of the work<br>concerned authorities were informed.<br>Presently the four furnaces (16.5 MVA) are<br>in operation at a rated capacity 100000<br>TPA after obtaining valid CTO from SPCB,   |  |  |  |

## Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

|       | EC File No. J-11011/372/2009-IA.II(I) dated 21.09.2012  |   |  |  |  |  |
|-------|---|---|--|--|--|--|
| S.No. | Specific Conditions   | Compliances   |  |  |  |  |
| 1.    | The company shall comply with all the conditions stipulated while according environmental clearance vide Ministry's letter of even number dated 30 <sup>th</sup> September, 2010.             | Conditions stipulated in previous EC File<br>No. J-11011/372/2009-IA,II(I) dated<br>30/09/2010 are being complied.  |  |  |  |  |
| 2.    | The company shall recover ferro chrome from ferro<br>chrome slag. The remaining slag shall be disposed of<br>in the waste disposal site after carrying TCLP Test.                             | The processed slag is utilized directly in<br>filling the low-lying areas. We have<br>earmarked the area for stacking of slag and<br>is being followed. TCLP is being carried out<br>before disposing the slag. |  |  |  |  |
| 3.    | The ground water quality monitoring around the disposal site shall be regularly monitored and the results of the monitored data shall be submitted to the SPCB and to the RO of the Ministry. | Ground water quality monitoring around<br>the disposal site is being carried out<br>regularly and result is being submitted to<br>SPCB and RO, MoEF, Bhubaneswar and<br>enclosed here with.                     |  |  |  |  |
| 4.    | The trucks carrying the slag shall be covered with tarpaulin.   | Tarpaulin covered transportation of slag is being carried out.  |  |  |  |  |

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Report No. - CEMC/TSL/041124/SW1

### 041124/SW1 Issued Date-04.11.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 19.10.2024
- : Mr. Rabindranath Das
- : 20.10.2024
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 20.10.2024 to 30.10.2024
- : CEMC-04112024SW1

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 120     |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 48      |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.61    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 25.6    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.81    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.88    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 12      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 80      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.08    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.19    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.02    |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.13    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.026   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.61    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.17    |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.8     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Pg-3 of 4

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041124/SW1

### Issued Date-04.11.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001  |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.14    |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 2.38    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 1.32    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.7     |

### \*End of the Report\*

Authorized Signatory Notes:



- > The result given above related to the tested sample, as received. The customer asked for the above test only.
- > This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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Report No. - CEMC/TSL/041124/SW2

### 41124/SW2 Issued Date-04.11.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 19.10.2024
- : Mr. Rabindranath Das
- : 20.10.2024
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 20.10.2024 to 30.10.2024
- : CEMC-04112024SW2

| ANALYSIS RESULT<br>IS 2490: |  |                        |   |                              |         |  |  |
|-----------------------------|--|------------------------|---|------------------------------|---------|--|--|
| SI.<br>No                   | Parameter                                  | Unit of<br>measurement | Discharge into<br>Inland Surface<br>Water                         | Testing Method               | Result  |  |  |
| 1                           | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 100     |  |  |
| 2                           | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |
| 3                           | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 28.8    |  |  |
| 4                           | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |
| 5                           | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.46    |  |  |
| 6                           | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 25.4    |  |  |
| 7                           | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |
| 8                           | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |
| 9                           | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |
| 10                          | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 6.81    |  |  |
| 11                          | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.92    |  |  |
| 12                          | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 18      |  |  |
| 13                          | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 150     |  |  |
| 14                          | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |  |  |
| 15                          | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |  |  |
| 16                          | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |  |  |
| 17                          | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |  |  |
| 18                          | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | < 0.05  |  |  |
| 19                          | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.21    |  |  |
| 20                          | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | < 0.005 |  |  |
| 21                          | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.11    |  |  |
| 22                          | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |  |  |
| 23                          | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.088   |  |  |
| 24                          | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |
| 25                          | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.57    |  |  |
| 26                          | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 3.21    |  |  |
| 27                          | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 2.4     |  |  |
|                             |  |                        |   |                              |         |  |  |

N.B: U/O-Unobjectionable, ND-Not Detectable

Pg-3 of 4

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041124/SW2

#### Issued Date-04.11.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 93%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.14   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.1    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 8.61   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.4    |

### \*End of the Report\*

Bppa

Authorized Signatory Notes:

Environmenta Seal of Laborator

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Report No. - CEMC/TSL/041124/SW3

### A1124/SW3 Issued Date-04.11.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 19.10.2024
- : Mr. Rabindranath Das
- : 20.10.2024
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Near Furnance-1
- : 20.10.2024 to 30.10.2024
- : CEMC-04112024SW3

#### ANALYSIS RESULT IS 2490: Unit of **Discharge** into SI. Parameter **Testing Method** Result **Inland Surface** No measurement Water 40 1 Colour Hazen APHA 2120 B,C & ---APHA 2150 B U/O 2 Odour ------3 100 APHA 2540 D 23.8 **Total Suspended Solids** mg/l 4 Shall pass 850 <850 Particular size of SS APHA 2540 D ---5.5 to 9.0 APHA 4500H<sup>+</sup> B 5 pH Value @ 25°C 6.82 ---Shall not Exceed 40 within 15 m d/s°C 6 Temperature APHA 2550 B 25.4 from effluent Outlet 7 Oil & Grease mg/l 10 APHA 5520 B <1 Residual Free Chlorine APHA 4500Cl, B ND 8 mg/l 1.0 9 50 APHA 4500NH3 B,C ND Ammonical Nitrogen mg/l 4.14 10 Total Kjeldahl Nitrogen as N 100 APHA 4500 N, B mg/l Free Ammonia 5.0 Calculation Method 0.22 11 mg/l **Biochemical Oxygen Demand** 12 30 APHA 5210 B 16 mg/l 13 Chemical Oxygen Demand 250 APHA 5220 C 140 mg/l 14 Arsenic (as As) 0.2 APHA 3114 B < 0.001 mg/l 15 Mercury (as Hg) mg/l 0.01 APHA 3500Hg < 0.001 16 0.1 APHA 3111 B,C < 0.005 Lead (as Pb) mg/l Cadmium (as Cd) 2.0 APHA 3111 B,C < 0.005 17 mg/l Hexavalent Chromium (as Cr<sup>+6</sup>) 18 mg/l 0.1 APHA 3500Cr B < 0.05 APHA 3111 B,C 0.26 19 Total Chromium (as Cr) mg/l 2.020 3.0 APHA 3111 B,C < 0.005 Copper (as Cu) mg/l 21 Zinc (as Zn) 5.0 APHA 3111 B,C 0.09 mg/l Selenium (as Se) 0.05 APHA 3114 B < 0.001 22 mg/l

N.B: U/O-Unobjectionable, ND-Not Detectable

Dissolved Phosphate (as PO<sub>4</sub>)

23

24

25

26

27

Nickel (as Ni)

Cvanide (as CN)

Fluoride (as F)

Sulphide (as S)

Pg-3 of 4

0.03

ND

0.62

0.64

< 0.1

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mg/l

mg/l

mg/l

mg/l

mg/l

3.0

0.2

2.0

5.0

2.0

APHA 3111 B,C

APHA 4500F C

APHA 4500P D

APHA 4500 S<sup>2</sup>-D

APHA 4500CN<sup>-</sup>C,D

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### Report No. - CEMC/TSL/041124/SW3

#### Issued Date-04.11.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 95%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.07   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.2    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 3.41   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.5    |

### \*End of the Report\*

BpDa

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Report No. - CEMC/TSL/041124/SW4

### 41124/SW4 Issued Date-04.11.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur

- : 19.10.2024
- : Mr. Rabindranath Das
- : 20.10.2024
- : Surface Water
- : 2.0 Ltrs
- : Sump Pit Near ETP
- : 20.10.2024 to 30.10.2024
- : CEMC-04112024SW4

### ANALYSIS RESULT

|           | <u>ANALISIS RESULT</u>                     |                        |   |                              |         |  |  |  |  |
|-----------|--|------------------------|---|------------------------------|---------|--|--|--|--|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |  |  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 30      |  |  |  |  |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |  |  |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 21.2    |  |  |  |  |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |  |  |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.14    |  |  |  |  |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 25.5    |  |  |  |  |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |  |  |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |  |  |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |  |  |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 2.4     |  |  |  |  |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | ND      |  |  |  |  |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 8       |  |  |  |  |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 20      |  |  |  |  |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |  |  |  |  |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |  |  |  |  |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.21    |  |  |  |  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.38    |  |  |  |  |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.084   |  |  |  |  |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |  |  |  |  |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.006   |  |  |  |  |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |  |  |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 1.21    |  |  |  |  |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.38    |  |  |  |  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.4     |  |  |  |  |

N.B: U/O-Unobjectionable, ND-Not Detectable

Pg-3 of 4

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041124/SW4

### Issued Date-04.11.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.016  |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.02   |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 3.42   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.7    |

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Report No. - CEMC/TSL/041124/SW5

### 041124/SW5 Issued Date-04.11.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 19.10.2024
- : Mr. Rabindranath Das
- : 20.10.2024
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Raw Material Yard, Coal Yard
- : 20.10.2024 to 30.10.2024
- : CEMC-04112024SW5

|           | ANALYSIS RESULT                            |                        |   |                              |         |  |  |  |  |
|-----------|--|------------------------|---|------------------------------|---------|--|--|--|--|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |  |  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 110     |  |  |  |  |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |  |  |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 164     |  |  |  |  |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |  |  |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.04    |  |  |  |  |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 25.5    |  |  |  |  |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |  |  |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |  |  |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |  |  |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.72    |  |  |  |  |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.84    |  |  |  |  |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 10      |  |  |  |  |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 60      |  |  |  |  |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |  |  |  |  |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |  |  |  |  |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.14    |  |  |  |  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.22    |  |  |  |  |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | < 0.005 |  |  |  |  |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.074   |  |  |  |  |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |  |  |  |  |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.078   |  |  |  |  |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |  |  |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 1.13    |  |  |  |  |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.51    |  |  |  |  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.4     |  |  |  |  |

N.B: U/O-Unobjectionable, ND-Not Detectable

Pg-3 of 4

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041124/SW5

### Issued Date-04.11.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 95%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.093  |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.22   |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 6.34   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.9    |

### \*End of the Report\*

Authorized Signatory Notes:

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Report No. - CEMC/TSL/041224/SW1

### 041224/SW1 Issued Date-04.12.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur

- : 14.11.2024
- : Mr. Rabindranath Das
- : 14.11.2024
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 15.11.2024 to 23.11.2024
- : CEMC-04122024SW1

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface                      | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
|           |  |                        | Water   |                              |         |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 100     |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 34      |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA $4500H^+B$              | 7.48    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 25.1    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 6.28    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.93    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 20      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 100     |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.11    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.21    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.028   |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.24    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.031   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.66    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.22    |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 1.0     |

N.B: U/O-Unobjectionable, ND-Not Detectable

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### Report No. - CEMC/TSL/041224/SW1

#### Issued Date-04.12.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001  |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 93%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.18    |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 2.46    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 3.42    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.6     |

### \*End of the Report\*

**Authorized Signatory** 

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Report No. - CEMC/TSL/041224/SW2

### 41224/SW2 Issued Date-04.12.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 14.11.2024
- : Mr. Rabindranath Das
- : 14.11.2024
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 15.11.2024 to 23.11.2024
- : CEMC-04122024SW2

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 90      |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 22.4    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.31    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 25.2    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 7.28    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 1.04    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 22      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 180     |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | < 0.05  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.28    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | < 0.005 |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.18    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.091   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.61    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 3.5     |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 2.0     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041224/SW2

#### Issued Date-04.12.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.16   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.8    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 7.21   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.5    |

### \*End of the Report\*

Authorized Signatory Notes:

(Date Environmental Seal of Laborato

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Report No. - CEMC/TSL/041224/SW3

# 041224/SW3 Issued Date-04.12.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 14.11.2024
- : Mr. Rabindranath Das
- : 14.11.2024
- : Surface Water
- : 2.0 Ltrs

: Surface Drain Near Furnance-1

- : 15.11.2024 to 23.11.2024
- : CEMC-04122024SW3

### ANALYSIS RESULT

|     |  |             | IS 2490:  |                              |         |
|-----|--|-------------|---|------------------------------|---------|
| SI. | Parameter                                  | Unit of     | <b>Discharge</b> into   | Testing Method               | Result  |
| No  |  | measurement | Inland Surface  |                              | 1105411 |
|     |  |             | Water   |                              |         |
| 1   | Colour                                     | Hazen       |   | APHA 2120 B,C &              | 30      |
| 2   | Odour                                      |             |   | APHA 2150 B                  | U/O     |
| 3   | Total Suspended Solids                     | mg/l        | 100   | APHA 2540 D                  | 18.6    |
| 4   | Particular size of SS                      |             | Shall pass 850  | APHA 2540 D                  | <850    |
| 5   | pH Value @ 25°C                            |             | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 6.91    |
| 6   | Temperature                                | °C          | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 25.1    |
| 7   | Oil & Grease                               | mg/l        | 10  | APHA 5520 B                  | <1      |
| 8   | Residual Free Chlorine                     | mg/l        | 1.0   | APHA 4500C1, B               | ND      |
| 9   | Ammonical Nitrogen                         | mg/l        | 50  | APHA 4500NH3 B,C             | ND      |
| 10  | Total Kjeldahl Nitrogen as N               | mg/l        | 100   | APHA 4500 N, B               | 4.56    |
| 11  | Free Ammonia                               | mg/l        | 5.0   | Calculation Method           | 0.34    |
| 12  | Biochemical Oxygen Demand                  | mg/l        | 30  | APHA 5210 B                  | 18      |
| 13  | Chemical Oxygen Demand                     | mg/l        | 250   | APHA 5220 C                  | 160     |
| 14  | Arsenic (as As)                            | mg/l        | 0.2   | APHA 3114 B                  | < 0.001 |
| 15  | Mercury (as Hg)                            | mg/l        | 0.01  | APHA 3500Hg                  | < 0.001 |
| 16  | Lead (as Pb)                               | mg/l        | 0.1   | APHA 3111 B,C                | < 0.005 |
| 17  | Cadmium (as Cd)                            | mg/l        | 2.0   | APHA 3111 B,C                | < 0.005 |
| 18  | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l        | 0.1   | APHA 3500Cr B                | < 0.05  |
| 19  | Total Chromium (as Cr)                     | mg/l        | 2.0   | APHA 3111 B,C                | 0.31    |
| 20  | Copper (as Cu)                             | mg/l        | 3.0   | APHA 3111 B,C                | < 0.005 |
| 21  | Zinc (as Zn)                               | mg/l        | 5.0   | APHA 3111 B,C                | 0.12    |
| 22  | Selenium (as Se)                           | mg/l        | 0.05  | APHA 3114 B                  | < 0.001 |
| 23  | Nickel (as Ni)                             | mg/l        | 3.0   | APHA 3111 B,C                | 0.036   |
| 24  | Cyanide (as CN)                            | mg/l        | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25  | Fluoride (as F)                            | mg/l        | 2.0   | APHA 4500F C                 | 0.68    |
| 26  | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l        | 5.0   | APHA 4500P D                 | 0.72    |
| 27  | Sulphide (as S)                            | mg/l        | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.2     |

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### Report No. - CEMC/TSL/041224/SW3

### Issued Date-04.12.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.082  |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.7    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 4.21   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.4    |

### \*End of the Report\*

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Report No. - CEMC/TSL/041224/SW4

### 041224/SW4 Issued Date-04.12.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur : 14.11.2024

- : Mr. Rabindranath Das
- : 14.11.2024
- : Surface Water
- : 2.0 Ltrs
- : Sump Pit Near ETP
- : 15.11.2024 to 23.11.2024
- : CEMC-04122024SW4

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method              | Result  |
|-----------|--|------------------------|---|-----------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &             | 20      |
| 2         | Odour                                      |                        |   | APHA 2150 B                 | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                 | 16.4    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                 | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA $4500H^+B$             | 7.23    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                 | 25.1    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                 | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B              | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C            | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B              | 3.1     |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method          | ND      |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                 | 10      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                 | 40      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                 | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                 | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C               | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C               | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B               | 0.26    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C               | 0.42    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C               | < 0.005 |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C               | 0.092   |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                 | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C               | 0.008   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN C,D             | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                | 1.14    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                | 0.46    |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D | 0.6     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/041224/SW4

### Issued Date-04.12.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 95%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.018  |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.34   |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 3.88   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.6    |

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Report No. - CEMC/TSL/041224/SW5

### A1224/SW5 Issued Date-04.12.2024 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 14.11.2024
- : Mr. Rabindranath Das
- : 14.11.2024
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Raw Material Yard, Coal Yard
- : 15.11.2024 to 23.11.2024
- : CEMC-04122024SW5

| ANALYSIS RESULT |  |                        |   |                              |         |
|-----------------|--|------------------------|---|------------------------------|---------|
| SI.<br>No       | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |
| 1               | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 80      |
| 2               | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3               | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 152     |
| 4               | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5               | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.14    |
| 6               | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 24.9    |
| 7               | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8               | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9               | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10              | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.98    |
| 11              | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.94    |
| 12              | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 20      |
| 13              | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 80      |
| 14              | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3114 B                  | < 0.001 |
| 15              | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3500Hg                  | < 0.001 |
| 16              | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3111 B,C                | < 0.005 |
| 17              | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3111 B,C                | < 0.005 |
| 18              | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.18    |
| 19              | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3111 B,C                | 0.29    |
| 20              | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3111 B,C                | < 0.005 |
| 21              | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3111 B,C                | 0.081   |
| 22              | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3114 B                  | < 0.001 |
| 23              | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3111 B,C                | 0.082   |
| 24              | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25              | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 1.24    |
| 26              | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.62    |
| 27              | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.7     |

N.B: U/O-Unobjectionable, ND-Not Detectable

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### Report No. - CEMC/TSL/041224/SW5

### Issued Date-04.12.2024

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001 |
|----|--|------|--|------------------------------|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                | 0.103  |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 1.64   |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 6.56   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.7    |

### \*End of the Report\*

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Report No. - CEMC/TSL/040125/SW1

### 40125/SW1 Issued Date-04.01.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur

- **Kalinga Nagar**, : 14.12.2024
- : Mr. Rabindranath Das
- : 14.12.2024
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 15.12.2024 to 23.12.2024
- : CEMC-04012025SW1

#### **ANALYSIS RESULT** IS 2490: SI. Unit of **Discharge** into Result Parameter **Testing Method Inland Surface** measurement No Water 130 Colour Hazen APHA 2120 B,C & 1 ---Odour APHA 2150 B U/O 2 ------3 Total Suspended Solids mg/l 100 APHA 2540 D 52 APHA 2540 D <850 4 Particular size of SS Shall pass 850 ---5 pH Value @ 25°C 5.5 to 9.0 APHA $4500H^+B$ 7.31 Shall not Exceed 40 within 15 m d/s °C APHA 2550 B 24.8 6 Temperature from effluent Outlet APHA 5520 B 7 Oil & Grease mg/l 10 <1 **Residual Free Chlorine** 1.0 APHA 4500Cl, B ND 8 mg/l 9 Ammonical Nitrogen mg/l 50 APHA 4500NH3 B,C ND 10 Total Kjeldahl Nitrogen as N mg/l 100 APHA 4500 N, B 7.56 5.0 11 Free Ammonia mg/l Calculation Method 1.1 **Biochemical Oxygen Demand** 26 12 mg/l 30 APHA 5210 B Chemical Oxygen Demand 250 APHA 5220 C 160 13 mg/l 14 Arsenic (as As) mg/l 0.2 APHA 3114 B < 0.00115 Mercury (as Hg) mg/l 0.01 APHA 3500Hg < 0.001 16 Lead (as Pb) mg/l 0.1 APHA 3111 B,C < 0.005 17 Cadmium (as Cd) 2.0 APHA 3111 B,C < 0.005 mg/l Hexavalent Chromium (as Cr<sup>+6</sup>) 0.1 APHA 3500Cr B < 0.05 18 mg/l 19 Total Chromium (as Cr) 2.0 APHA 3111 B,C 0.12 mg/l 20 3.0 0.021 Copper (as Cu) mg/l APHA 3111 B,C 5.0 0.28 21 Zinc (as Zn) mg/l APHA 3111 B,C 22 Selenium (as Se) 0.05 APHA 3114 B < 0.001 mg/l 0.041 23 Nickel (as Ni) mg/l 3.0 APHA 3111 B,C 0.2 APHA 4500CN C,D ND 24 Cyanide (as CN) mg/l

N.B: U/O-Unobjectionable, ND-Not Detectable

Dissolved Phosphate (as PO<sub>4</sub>)

Fluoride (as F)

Sulphide (as S)

25

26

27

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mg/l

mg/l

mg/l

2.0

5.0

2.0

APHA 4500F C

APHA 4500P D

APHA 4500 S<sup>2-</sup>D

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0.54

< 0.05

1.6

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### Report No. - CEMC/TSL/040125/SW1

#### Issued Date-04.01.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | <0.001  |
|----|--|------|--|--|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 92%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                            | 0.11    |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B                           | 0.41    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                            | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 6.2     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                             | 5.5     |

### \*End of the Report\*

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Report No. - CEMC/TSL/040125/SW2

Parameter

### 40125/SW2 Issued Date-04.01.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No.

SI.

No

: M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 14.12.2024
- : Mr. Rabindranath Das
- : 14.12.2024
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 15.12.2024 to 23.12.2024
- : CEMC-04012025SW2

## IS 2490: Unit of measurement Discharge into Inland Surface Water Testing Method Hazen - APHA 2120 B,C & - - APHA 2150 B - - APHA 2150 B

ANALYSIS RESULT

| 1  |  |       |   |                             | · ·     |
|----|--|-------|---|-----------------------------|---------|
| 1  | Colour                                     | Hazen |   | APHA 2120 B,C &             | 70      |
| 2  | Odour                                      |       |   | APHA 2150 B                 | U/O     |
| 3  | Total Suspended Solids                     | mg/l  | 100   | APHA 2540 D                 | 34.8    |
| 4  | Particular size of SS                      |       | Shall pass 850  | APHA 2540 D                 | <850    |
| 5  | pH Value @ 25°C                            |       | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B   | 7.42    |
| 6  | Temperature                                | °C    | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                 | 25.1    |
| 7  | Oil & Grease                               | mg/l  | 10  | APHA 5520 B                 | <1      |
| 8  | Residual Free Chlorine                     | mg/l  | 1.0   | APHA 4500Cl, B              | ND      |
| 9  | Ammonical Nitrogen                         | mg/l  | 50  | APHA 4500NH3 B,C            | ND      |
| 10 | Total Kjeldahl Nitrogen as N               | mg/l  | 100   | APHA 4500 N, B              | 6.28    |
| 11 | Free Ammonia                               | mg/l  | 5.0   | Calculation Method          | 0.91    |
| 12 | Biochemical Oxygen Demand                  | mg/l  | 30  | APHA 5210 B                 | 18      |
| 13 | Chemical Oxygen Demand                     | mg/l  | 250   | APHA 5220 C                 | 140     |
| 14 | Arsenic (as As)                            | mg/l  | 0.2   | APHA 3114 B                 | < 0.001 |
| 15 | Mercury (as Hg)                            | mg/l  | 0.01  | APHA 3500Hg                 | < 0.001 |
| 16 | Lead (as Pb)                               | mg/l  | 0.1   | APHA 3111 B,C               | < 0.005 |
| 17 | Cadmium (as Cd)                            | mg/l  | 2.0   | APHA 3111 B,C               | < 0.005 |
| 18 | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l  | 0.1   | APHA 3500Cr B               | < 0.05  |
| 19 | Total Chromium (as Cr)                     | mg/l  | 2.0   | APHA 3111 B,C               | 0.21    |
| 20 | Copper (as Cu)                             | mg/l  | 3.0   | APHA 3111 B,C               | < 0.005 |
| 21 | Zinc (as Zn)                               | mg/l  | 5.0   | APHA 3111 B,C               | 0.12    |
| 22 | Selenium (as Se)                           | mg/l  | 0.05  | APHA 3114 B                 | < 0.001 |
| 23 | Nickel (as Ni)                             | mg/l  | 3.0   | APHA 3111 B,C               | 0.084   |
| 24 | Cyanide (as CN)                            | mg/l  | 0.2   | APHA 4500CN C,D             | ND      |
| 25 | Fluoride (as F)                            | mg/l  | 2.0   | APHA 4500F C                | 0.76    |
| 26 | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l  | 5.0   | APHA 4500P D                | 2.2     |
| 27 | Sulphide (as S)                            | mg/l  | 2.0   | APHA 4500 S <sup>2-</sup> D | 1.2     |
|    |  |       |   |                             |         |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: Plot No.-522/3458,Near Utkal Hyundai,Opposite Apex College,Pahal,Bhubaneswar-752101,Odisha, India, ,Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101, Odisha, India, ,Mobile: 7752014842 E-mail: cemclab@yahoo.in

Result

An ISO 9001-2015& OHSAS 45001:2018 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization. Empanelled with PCCF(Wildlife) &CWLW,Odisha Enlisted in Construction Industry Development Council (CIDC) established by the Planning Commission (Govt. of India) MoEF&CC, Govt. of India, RecognisedEnvironment Laboratory under Environment (Protection) Act, 1986 & NABL Accredited Laboratory

### Report No. - CEMC/TSL/040125/SW2

#### Issued Date-04.01.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | <0.001 |
|----|--|------|--|--|--------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 93%    |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                            | 0.24   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B                           | 4.89   |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                            | < 0.01 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 6.24   |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                             | 5.6    |

### \*End of the Report\*

Bppa

### Authorized Signatory Notes:

- Environmental Laboratory
- > The result given above related to the tested sample, as received. The customer asked for the above test only.
- > This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in.

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Report No. - CEMC/TSL/040125/SW3

### A0125/SW3 Issued Date-04.01.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No.

SI.

No

1

2

3

4

5

6

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11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

Mercury (as Hg)

Cadmium (as Cd)

Copper (as Cu)

Selenium (as Se)

Cyanide (as CN)

Fluoride (as F)

Sulphide (as S)

Zinc (as Zn)

Nickel (as Ni)

Total Chromium (as Cr)

Lead (as Pb)

: M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur

- : 14.12.2024
- : Mr. Rabindranath Das
- : 14.12.2024
- : Surface Water
- : 2.0 Ltrs

0.01

0.1

2.0

0.1

2.0

3.0

5.0

0.05

3.0

0.2

2.0

5.0

2.0

APHA 3500Hg

APHA 3111 B,C

APHA 3111 B,C

APHA 3500Cr B

APHA 3111 B,C

APHA 3111 B,C

APHA 3111 B,C

APHA 3111 B,C

APHA 4500F C

APHA 4500P D

APHA 4500 S<sup>2-</sup>D

APHA 4500CN C,D

APHA 3114 B

- : Surface Drain Near Furnance-1
- : 15.12.2024 to 23.12.2024
- : CEMC-04012025SW3

#### IS 2490: Unit of **Discharge** into Parameter **Testing Method Inland Surface** measurement Water Colour Hazen APHA 2120 B,C & ---Odour APHA 2150 B ------100 APHA 2540 D Total Suspended Solids mg/l APHA 2540 D Particular size of SS Shall pass 850 --pH Value @ 25°C 5.5 to 9.0 APHA $4500H^+B$ Shall not Exceed 40 within 15 m d/s °C APHA 2550 B Temperature from effluent Outlet Oil & Grease APHA 5520 B mg/l 10 **Residual Free Chlorine** 1.0 APHA 4500Cl, B mg/l Ammonical Nitrogen mg/l 50 APHA 4500NH3 B,C Total Kjeldahl Nitrogen as N mg/l 100 APHA 4500 N, B 5.0 Free Ammonia mg/l Calculation Method Biochemical Oxygen Demand mg/l 30 APHA 5210 B Chemical Oxygen Demand 250 APHA 5220 C mg/l Arsenic (as As) mg/l 0.2 APHA 3114 B

mg/l

ANALYSIS RESULT

N.B: U/O-Unobjectionable, ND-Not Detectable

Dissolved Phosphate (as PO<sub>4</sub>)

Hexavalent Chromium (as Cr<sup>+6</sup>)

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101, Odisha, India, ,Mobile: 7752014842 E-mail: cemclab@yahoo.in

Result

20

U/O

12.6

<850

7.12

24.9

<1

ND

ND

3.86

ND

10

120

< 0.001

< 0.001

< 0.005

< 0.005

< 0.05

0.23

< 0.005

0.082

< 0.001

0.042

ND

0.72

0.24

ND

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### Report No. - CEMC/TSL/040125/SW3

#### Issued Date-04.01.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | < 0.001 |
|----|--|------|--|--|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 93%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                            | 0.075   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B                           | 2.6     |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                            | < 0.01  |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 7.3     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                             | 5.5     |

### \*End of the Report\*

Authorized Signatory Notes:

Demen Environmental Seal of Laboratory

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- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
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Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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Report No. - CEMC/TSL/040125/SW4

40125/SW4 Issued Date-04.01.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 14.12.2024
- : Mr. Rabindranath Das
- : 14.12.2024
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Raw Material Yard, Coal Yard
- : 15.12.2024 to 23.12.2024
- : CEMC-04012025SW4

| No         measurement         Inland Surface<br>Water         No. Surface<br>Water         No. Surface<br>Water           1         Colour         Hazen          APHA 2120 B,C &         66           2         Odour          APHA 2150 B         U//           3         Total Suspended Solids         mg/l         100         APHA 2540 D         12           4         Particular size of SS          Shall pass 850         APHA 4500H <sup>+</sup> B         7.3           5         pH Value @ 25°C          5.5 to 9.0         APHA 4500H <sup>+</sup> B         7.3           6         Temperature         °C         40 within 15 m d/s<br>from effluent<br>Outlet         APHA 2550 B         <5.           7         Oil & Grease         mg/l         1.0         APHA 4500Cl, B         NII           9         Ammonical Nitrogen         mg/l         50         APHA 4500NH3 B,C         NII           10         Total Kjeldahl Nitrogen as N         mg/l         100         APHA 4500N, B         5.9           11         Free Ammonia         mg/l         30         APHA 5210 B         14           13         Chemical Oxygen Demand         mg/l         0.2         APHA 3114 B         <0.0   |          | ANALYSIS RESULT                            |       |  |                            |         |  |  |  |
|---|----------|--|-------|--|----------------------------|---------|--|--|--|
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $   |          | Parameter                                  |       | Discharge into<br>Inland Surface   | Testing Method             | Result  |  |  |  |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$   | 1        | Colour                                     | Hazen |  | APHA 2120 B,C &            | 60      |  |  |  |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $   | 2        | Odour                                      |       |  | APHA 2150 B                | U/O     |  |  |  |
| 5         pH Value @ $25^{\circ}$ C          5.5 to 9.0         APHA 4500H <sup>+</sup> B         7.3           6         Temperature         °C         Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet         APHA 2550 B         25.           7         Oil & Grease         mg/l         10         APHA 4500Cl, B         NII           9         Ammonical Nitrogen         mg/l         50         APHA 4500NH3 B,C         NII           10         Total Kjeldahl Nitrogen as N         mg/l         100         APHA 4500 N, B         5.9           11         Free Ammonia         mg/l         5.0         Calculation Method         0.6           12         Biochemical Oxygen Demand         mg/l         30         APHA 5210 B         14           13         Chemical Oxygen Demand         mg/l         0.2         APHA 3500 N, B         5.9           14         Arsenic (as As)         mg/l         0.1         APHA 5210 B         14           15         Mercury (as Hg)         mg/l         0.2         APHA 3500 Hg         0.0           16         Lead (as Pb)         mg/l         0.1         APHA 3500Cr B         0.1           19         Total Chromium (as Cr <sup>+6</sup> )         mg/l         0.1 <td< td=""><td>3</td><td>Total Suspended Solids</td><td>mg/l</td><td>100</td><td>APHA 2540 D</td><td>120</td></td<> | 3        | Total Suspended Solids                     | mg/l  | 100  | APHA 2540 D                | 120     |  |  |  |
| 6       Temperature       °C       Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet       APHA 2550 B       25.         7       Oil & Grease       mg/l       10       APHA 5520 B       <1  | 4        | Particular size of SS                      |       | Shall pass 850   | APHA 2540 D                | <850    |  |  |  |
| 6       Temperature $^{\circ}$ C       40 within 15 m d/s<br>from effluent<br>Outlet       APHA 2550 B       25.         7       Oil & Grease       mg/l       10       APHA 5520 B       <1  | 5        | pH Value @ 25°C                            |       | 5.5 to 9.0   | APHA 4500H <sup>+</sup> B  | 7.36    |  |  |  |
| 8         Residual Free Chlorine         mg/l         1.0         APHA 4500Cl, B         NI           9         Ammonical Nitrogen         mg/l         50         APHA 4500NH3 B,C         NI           10         Total Kjeldahl Nitrogen as N         mg/l         100         APHA 4500 N, B         5.9           11         Free Ammonia         mg/l         5.0         Calculation Method         0.6           12         Biochemical Oxygen Demand         mg/l         30         APHA 5210 B         14           13         Chemical Oxygen Demand         mg/l         250         APHA 5220 C         60           14         Arsenic (as As)         mg/l         0.2         APHA 3114 B         <0.0   | 6        | Temperature                                | °C    | 40 within 15 m d/s<br>from effluent  | APHA 2550 B                | 25.1    |  |  |  |
| 9         Ammonical Nitrogen         mg/l         50         APHA 4500NH3 B,C         NI           10         Total Kjeldahl Nitrogen as N         mg/l         100         APHA 4500 N, B         5.9           11         Free Ammonia         mg/l         5.0         Calculation Method         0.6           12         Biochemical Oxygen Demand         mg/l         30         APHA 5210 B         14           13         Chemical Oxygen Demand         mg/l         250         APHA 5220 C         60           14         Arsenic (as As)         mg/l         0.2         APHA 3114 B         <0.0   |          |  | mg/l  | 10   | APHA 5520 B                | <1      |  |  |  |
| 10Total Kjeldahl Nitrogen as Nmg/l100APHA 4500 N, B5.911Free Ammoniamg/l5.0Calculation Method0.612Biochemical Oxygen Demandmg/l30APHA 5210 B1413Chemical Oxygen Demandmg/l250APHA 5220 C6014Arsenic (as As)mg/l0.2APHA 3114 B<0.0   |          | Residual Free Chlorine                     | mg/l  | Victoria de la compansión | APHA 4500Cl, B             | ND      |  |  |  |
| 11Free Ammoniamg/l5.0Calculation Method0.612Biochemical Oxygen Demandmg/l30APHA 5210 B1413Chemical Oxygen Demandmg/l250APHA 5220 C6014Arsenic (as As)mg/l0.2APHA 3114 B<0.0   | 9        | Ammonical Nitrogen                         | mg/l  | 50   | APHA 4500NH3 B,C           | ND      |  |  |  |
| 12Biochemical Oxygen Demand $mg/l$ 30APHA 5210 B1413Chemical Oxygen Demand $mg/l$ 250APHA 5220 C6014Arsenic (as As) $mg/l$ 0.2APHA 3114 B<0.0   | 10       |  | mg/l  | 100  | APHA 4500 N, B             | 5.98    |  |  |  |
| 13Chemical Oxygen Demandmg/l250APHA 5220 C6014Arsenic (as As)mg/l0.2APHA 3114 B<0.0   |          |  |       |  |                            | 0.61    |  |  |  |
| 14Arsenic (as As) $mg/l$ 0.2APHA 3114 B<0.015Mercury (as Hg) $mg/l$ 0.01APHA 3500Hg<0.0   | 12       | Biochemical Oxygen Demand                  | mg/l  | 30   | APHA 5210 B                | 14      |  |  |  |
| 15Mercury (as Hg)mg/l0.01APHA 3500Hg<0.016Lead (as Pb)mg/l0.1APHA 3111 B,C<0.0  | 13       | Chemical Oxygen Demand                     | mg/l  | 250  | APHA 5220 C                | 60      |  |  |  |
| 16       Lead (as Pb)       mg/l       0.1       APHA 3111 B,C       <0.0         17       Cadmium (as Cd)       mg/l       2.0       APHA 3111 B,C       <0.0  | 14       | Arsenic (as As)                            | mg/l  | 0.2  | APHA 3114 B                | < 0.001 |  |  |  |
| 17Cadmium (as Cd) $mg/l$ 2.0APHA 3111 B,C<0.018Hexavalent Chromium (as $Cr^{+6}$ ) $mg/l$ 0.1APHA 3500Cr B0.119Total Chromium (as Cr) $mg/l$ 2.0APHA 3111 B,C0.220Copper (as Cu) $mg/l$ 3.0APHA 3111 B,C<0.0  | 15       | Mercury (as Hg)                            | mg/l  | 0.01   | APHA 3500Hg                | < 0.001 |  |  |  |
| 18         Hexavalent Chromium (as $Cr^{+6}$ )         mg/l         0.1         APHA 3500Cr B         0.1           19         Total Chromium (as Cr)         mg/l         2.0         APHA 3111 B,C         0.2           20         Copper (as Cu)         mg/l         3.0         APHA 3111 B,C         <0.0  | 100.0000 |  | mg/l  |  |                            | < 0.005 |  |  |  |
| 19         Total Chromium (as Cr)         mg/l         2.0         APHA 3111 B,C         0.2           20         Copper (as Cu)         mg/l         3.0         APHA 3111 B,C         <0.0  |          |  |       |  | APHA 3111 B,C              | < 0.005 |  |  |  |
| 20         Copper (as Cu)         mg/l         3.0         APHA 3111 B,C         <0.0           21         Zinc (as Zn)         mg/l         5.0         APHA 3111 B,C         0.0           22         Selenium (as Se)         mg/l         0.05         APHA 3114 B         <0.0   | 18       | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l  | 0.1  | APHA 3500Cr B              | 0.11    |  |  |  |
| 21         Zinc (as Zn)         mg/l         5.0         APHA 3111 B,C         0.07           22         Selenium (as Se)         mg/l         0.05         APHA 3114 B         <0.0  | 19       | Total Chromium (as Cr)                     | mg/l  |  | APHA 3111 B,C              | 0.21    |  |  |  |
| 22         Selenium (as Se)         mg/l         0.05         APHA 3114 B         <0.0           23         Nickel (as Ni)         mg/l         3.0         APHA 3111 B,C         0.0'           24         Cyanide (as CN)         mg/l         0.2         APHA 4500CN <sup>-</sup> C,D         NI  | 20       | Copper (as Cu)                             | mg/l  | 3.0  | APHA 3111 B,C              | < 0.005 |  |  |  |
| 22         Selenium (as Se)         mg/l         0.05         APHA 3114 B         <0.0           23         Nickel (as Ni)         mg/l         3.0         APHA 3111 B,C         0.0           24         Cyanide (as CN)         mg/l         0.2         APHA 4500CN <sup>-</sup> C,D         NI   | 21       | Zinc (as Zn)                               | mg/l  | 5.0  | APHA 3111 B,C              | 0.072   |  |  |  |
| 24         Cyanide (as CN)         mg/l         0.2         APHA 4500CN <sup>-</sup> C,D         NI   |          | Selenium (as Se)                           |       | 100 Bit 144 US   | APHA 3114 B                | < 0.001 |  |  |  |
|   | 23       | Nickel (as Ni)                             | mg/l  | 3.0  | APHA 3111 B,C              | 0.074   |  |  |  |
|   | 24       |  | mg/l  | 0.2  | APHA 4500CN C,D            | ND      |  |  |  |
| 25         Fluoride (as F)         mg/l         2.0         APHA 4500F <sup>-</sup> C         0.8   | 25       | Fluoride (as F)                            | mg/l  | 2.0  | APHA 4500F C               | 0.89    |  |  |  |
|   | 26       | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l  | 5.0  |                            | 0.54    |  |  |  |
|   | 27       |  | mg/l  | 2.0  | APHA 4500 S <sup>2</sup> D | 0.4     |  |  |  |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040125/SW4

#### Issued Date-04.01.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | < 0.001 |
|----|--|------|--|--|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 95%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3500Mn B                            | 0.081   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B                           | 1.42    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3111 B,C                            | < 0.01  |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 7.82    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                             | 5.6     |

### \*End of the Report\*

### Authorized Signatory Notes:

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Report No. - CEMC/TSL/040225/SW1

### 40225/SW1 Issued Date-04.02.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 28.01.2025
- : Mr. Rabindranath Das
- : 28.01.2025
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 29.01.2025 to 03.02.2025
- : CEMC-04022025SW1

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 90      |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 32.8    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.92    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 25.8    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 6.14    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.6     |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 12      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 40      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.09    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.16    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.015   |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.19    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.026   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.38    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | < 0.05  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.8     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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#### Report No. - CEMC/TSL/040225/SW1

### Issued Date-04.02.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001  |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | < 0.005 |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.19    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 4.2     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 6.1     |

### \*End of the Report\*

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### Authorized Signatory Notes:

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Report No. - CEMC/TSL/040225/SW2

### 40225/SW2 Issued Date-04.02.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 28.01.2025
- : Mr. Rabindranath Das
- : 28.01.2025
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 29.01.2025 to 03.02.2025
- : CEMC-04022025SW2

### ANALYSIS RESULT

| Sl.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method              | Result  |
|-----------|--|------------------------|---|-----------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &             | 40      |
| 2         | Odour                                      |                        |   | APHA 2150 B                 | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                 | 28.2    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                 | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B   | 7.97    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                 | 25.9    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                 | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B              | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C            | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B              | 4.56    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method          | 0.42    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                 | 14      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                 | 60      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                  | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                  | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                  | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                  | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B               | < 0.05  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                  | 0.15    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                  | < 0.005 |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                  | 0.008   |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                  | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                  | 0.052   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN C,D             | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                | 0.52    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                | 1.6     |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D | 1.0     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040225/SW2

Issued Date-04.02.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | 0.13    |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.28    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 4.62    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.9     |

### \*End of the Report\*

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Report No. - CEMC/TSL/040225/SW3

### 40225/SW3 Issued Date-04.02.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 28.01.2025
- : Mr. Rabindranath Das
- : 28.01.2025
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Near Furnance-1
- : 29.01.2025 to 03.02.2025
- : CEMC-04022025SW3

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method              | Result  |
|-----------|--|------------------------|---|-----------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &             | 10      |
| 2         | Odour                                      |                        |   | APHA 2150 B                 | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                 | 8.4     |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                 | <850    |
| 5         | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B   | 7.48    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                 | 25.7    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                 | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B              | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C            | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B              | 2.14    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method          | ND      |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                 | 8       |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                 | 50      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                  | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                  | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                  | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                  | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B               | < 0.05  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                  | 0.11    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                  | < 0.005 |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                  | 0.043   |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                  | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                  | 0.021   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN C,D             | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                | 0.38    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                | 0.16    |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D | ND      |

N.B: U/O-Unobjectionable, ND-Not Detectable

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### Report No. - CEMC/TSL/040225/SW3

#### Issued Date-04.02.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001  |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | 0.025   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.14    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 5.4     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.5     |

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Report No. - CEMC/TSL/040225/SW4

40225/SW4 Issued Date-04.02.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 28.01.2025
- : Mr. Rabindranath Das
- : 28.01.2025
- : Surface Water
- : 2.0 Ltrs
- : Surface Drain Raw Material Yard, Coal Yard
- : 29.01.2025 to 03.02.2025
- : CEMC-04022025SW4

| ANALYSIS RESULT |  |                        |   |                              |         |  |  |
|-----------------|--|------------------------|---|------------------------------|---------|--|--|
| SI.<br>No       | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |
| 1               | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 20      |  |  |
| 2               | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |
| 3               | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 46.8    |  |  |
| 4               | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |
| 5               | pH Value @ 25°C                            |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.64    |  |  |
| 6               | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 25.8    |  |  |
| 7               | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |
| 8               | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |
| 9               | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |
| 10              | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 2.56    |  |  |
| 11              | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.21    |  |  |
| 12              | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 6       |  |  |
| 13              | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 40      |  |  |
| 14              | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |  |  |
| 15              | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |  |  |
| 16              | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |  |  |
| 17              | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |  |  |
| 18              | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.08    |  |  |
| 19              | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.14    |  |  |
| 20              | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | < 0.005 |  |  |
| 21              | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.056   |  |  |
| 22              | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |  |  |
| 23              | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.021   |  |  |
| 24              | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |
| 25              | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.28    |  |  |
| 26              | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.31    |  |  |
| 27              | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.4     |  |  |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040225/SW4

#### Issued Date-04.02.2025

\*End of the Report\*

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | <0.001  |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | APHA 8910 C                  | 95%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | 0.042   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.24    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 5.23    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 6.2     |

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### Report No. - CEMC/TSL/040325/SW1

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

Issued Date-04.03.2025

- Kalinga Nagar, Jajpur
- : 11.02.2025
- : Mr. Rabindranath Das
- : 12.02.2025
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 12.02.2025 to 23.02.2025
- : CEMC-04032025SW1.

### ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 70      |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 26.4    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.75    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 28.2    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APIIA 5520 B                 | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500C1, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.24    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.4     |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 14      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 50      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.11    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.19    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.018   |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.23    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.029   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.42    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | < 0.05  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 1.2     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040325/SW1

#### Issued Date-04.03.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 93%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | < 0.005 |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.23    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 4.8     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.9     |

### \*End of the Report\*

RODO **Authorized Signatory** 

Notes:

> The result given above related to the tested sample, as received. The customer asked for the above test only.

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Report No. - CEMC/TSL/040325/SW2

### A0325/SW2 Issued Date-04.03.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 11.02.2025
- : Mr. Rabindranath Das
- : 12.02.2025
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 12.02.2025 to 23.02.2025
- : CEMC-04032025SW2

### ANALYSIS RESULT

|     |  |             | IS 2490:  |                              |         |
|-----|--|-------------|---|------------------------------|---------|
| SI. | Parameter                                  | Unit of     | <b>Discharge into</b>   | Testing Method               | Result  |
| No  | r al ameter                                | measurement | <b>Inland Surface</b>   | resting Method               | Result  |
|     |  |             | Water   |                              |         |
| 1   | Colour                                     | Hazen       |   | APHA 2120 B,C &              | 50      |
| 2   | Odour                                      |             |   | APHA 2150 B                  | U/O     |
| 3   | Total Suspended Solids                     | mg/l        | 100   | APHA 2540 D                  | 34.6    |
| 4   | Particular size of SS                      |             | Shall pass 850  | APHA 2540 D                  | <850    |
| 5   | pH Value @ 25℃                             |             | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.09    |
| 6   | Temperature                                | °C          | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 28.8    |
| 7   | Oil & Grease                               | mg/l        | 10  | APHA 5520 B                  | <1      |
| 8   | Residual Free Chlorine                     | mg/l        | 1.0   | APHA 4500C1, B               | ND      |
| 9   | Ammonical Nitrogen                         | mg/l        | 50  | APHA 4500NH3 B,C             | ND      |
| 10  | Total Kjeldahl Nitrogen as N               | mg/l        | 100   | APHA 4500 N, B               | 5.28    |
| 11  | Free Ammonia                               | mg/l        | 5.0   | Calculation Method           | 0.61    |
| 12  | Biochemical Oxygen Demand                  | mg/l        | 30  | APHA 5210 B                  | 20      |
| 13  | Chemical Oxygen Demand                     | mg/l        | 250   | APHA 5220 C                  | 80      |
| 14  | Arsenic (as As)                            | mg/l        | 0.2   | APHA 3120B                   | < 0.001 |
| 15  | Mercury (as Hg)                            | mg/l        | 0.01  | APHA 3120B                   | < 0.001 |
| 16  | Lead (as Pb)                               | mg/l        | 0.1   | APHA 3120B                   | < 0.005 |
| 17  | Cadmium (as Cd)                            | mg/l        | 2.0   | APHA 3120B                   | < 0.005 |
| 18  | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l        | 0.1   | APHA 3500Cr B                | 0.08    |
| 19  | Total Chromium (as Cr)                     | mg/l        | 2.0   | APHA 3120B                   | 0.19    |
| 20  | Copper (as Cu)                             | mg/l        | 3.0   | APHA 3120B                   | < 0.005 |
| 21  | Zinc (as Zn)                               | mg/l        | 5.0   | APHA 3120B                   | 0.014   |
| 22  | Selenium (as Se)                           | mg/l        | 0.05  | APHA 3120B                   | < 0.001 |
| 23  | Nickel (as Ni)                             | mg/l        | 3.0   | APHA 3120B                   | 0.061   |
| 24  | Cyanide (as CN)                            | mg/l        | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25  | Fluoride (as F)                            | mg/l        | 2.0   | APHA 4500F C                 | 0.59    |
| 26  | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l        | 5.0   | APHA 4500P D                 | 1.8     |
| 27  | Sulphide (as S)                            | mg/l        | 2.0   | APHA 4500 S <sup>2-</sup> D  | 1.4     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040325/SW2

Issued Date-04.03.2025

| 28 | Phenolic Compounds (as<br>C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|---|------|--|------------------------------|---------|
| 29 | Bioassay Test   |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)   | mg/l | 2.0  | APHA 3120B                   | 0.16    |
| 31 | Iron (as Fe)  | mg/l | 3.0  | APHA 3500Fe, B               | 0.31    |
| 32 | Vanadium (as V)   | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                               | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 5.13    |
| 34 | Dissolved Oxygen  | mg/l |  | APHA 45000 C                 | 5.8     |

### \*End of the Report\*

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Report No. - CEMC/TSL/040325/SW3

### 40325/SW3 Issued Date-04.03.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 11.02.2025
- : Mr. Rabindranath Das
- : 12.02.2025
- : Surface Water
- : Surface Drain Near Furnance-1
- : 12.02.2025 to 23.02.2025
- : CEMC-04032025SW3

|           | <u>ANALYSIS RESULT</u>                     |                        |   |                             |         |  |  |  |  |
|-----------|--|------------------------|---|-----------------------------|---------|--|--|--|--|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method              | Result  |  |  |  |  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &             | 20      |  |  |  |  |
| 2         | Odour                                      | 111                    |   | APHA 2150 B                 | U/O     |  |  |  |  |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                 | 14.6    |  |  |  |  |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                 | <850    |  |  |  |  |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B   | 7.21    |  |  |  |  |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                 | 28.9    |  |  |  |  |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                 | <1      |  |  |  |  |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500C1, B              | ND      |  |  |  |  |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C            | ND      |  |  |  |  |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B              | 2.82    |  |  |  |  |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method          | ND      |  |  |  |  |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                 | 12      |  |  |  |  |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                 | 60      |  |  |  |  |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                  | < 0.001 |  |  |  |  |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                  | < 0.001 |  |  |  |  |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                  | < 0.005 |  |  |  |  |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                  | < 0.005 |  |  |  |  |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B               | < 0.05  |  |  |  |  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                  | 0.14    |  |  |  |  |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                  | < 0.005 |  |  |  |  |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                  | 0.049   |  |  |  |  |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                  | < 0.001 |  |  |  |  |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                  | 0.026   |  |  |  |  |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN C,D             | ND      |  |  |  |  |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                | 0.42    |  |  |  |  |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                | 0.19    |  |  |  |  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D | ND      |  |  |  |  |

### ANALYSIS RESULT

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040325/SW3

#### Issued Date-04.03.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 95%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | 0.029   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.18    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 6.2     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.4     |

### \*End of the Report\*

Authorized Signatory

Notes:

Environmental Seal of Laboratory

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Report No. - CEMC/TSL/040325/SW4

### 40325/SW4 Issued Date-04.03.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant), Kalinga Nagar, Jajpur

- : 11.02.2025
- : Mr. Rabindranath Das
- : 12.02.2025
- : Surface Water
- : Surface Drain Raw Material Yard, Coal Yard
- : 12.02.2025 to 23.02.2025
- : CEMC-04032025SW4

| ANALYSIS RESULT |  |                        |   |                              |         |  |  |
|-----------------|--|------------------------|---|------------------------------|---------|--|--|
| SI.<br>No       | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |
| 1               | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 30      |  |  |
| 2               | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |
| 3               | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 56.2    |  |  |
| 4               | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |
| 5               | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.46    |  |  |
| 6               | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 28.2    |  |  |
| 7               | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |
| 8               | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |
| 9               | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |
| 10              | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 2.86    |  |  |
| 11              | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.26    |  |  |
| 12              | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 10      |  |  |
| 13              | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 50      |  |  |
| 14              | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |  |  |
| 15              | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |  |  |
| 16              | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |  |  |
| 17              | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |  |  |
| 18              | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.09    |  |  |
| 19              | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.18    |  |  |
| 20              | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | < 0.005 |  |  |
| 21              | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.064   |  |  |
| 22              | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |  |  |
| 23              | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.024   |  |  |
| 24              | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |
| 25              | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.32    |  |  |
| 26              | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.38    |  |  |
| 27              | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.6     |  |  |

### ANALYSIS RESULT

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040325/SW4

### Issued Date-04.03.2025

| 28 | Phenolic Compounds (as<br>C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | < 0.001 |
|----|---|------|--|--|---------|
| 29 | Bioassay Test   |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 95%     |
| 30 | Manganese (as Mn)   | mg/l | 2.0  | APHA 3120B                               | 0.058   |
| 31 | Iron (as Fe)  | mg/l | 3.0  | APHA 3500Fe, B                           | 0.26    |
| 32 | Vanadium (as V)   | mg/l | 0.2  | APHA 3120B                               | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                               | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 5.43    |
| 34 | Dissolved Oxygen  | mg/l |  | APHA 45000 C                             | 6.1     |

### \*End of the Report\*

Authorized Signatory

Notes:

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### Report No. - CEMC/TSL/040425/SW1

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

**Date of Sampling** Sampling by **Date of Sample Received** Sample Description Sample Quantity Location **Date of Analysis Reference No.** 

: M/s. TATA Steel Ltd., (Ferro Alloys Plant),

Issued Date-04.04.2025

- Kalinga Nagar, Jajpur
- : 18.03.2025
- : Mr. Rabindranath Das
- : 18.03.2025
- : Surface Water
- : 2.0 Ltrs
- : Finishing Yard Sump Pit
- : 18.03.2025 to 25.03.2025
- : CEMC-04042025SW1.

# IS 2490:

ANALYSIS RESULT

| SI.<br>No | Parameter                                  | Unit of<br>measurement | Discharge into<br>Inland Surface<br>Water                         | Testing Method               | Result  |
|-----------|--|------------------------|---|------------------------------|---------|
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 80      |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 38.4    |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 6.88    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 31.6    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APIIA 5520 B                 | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500C1, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.91    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.46    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 22      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 80      |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.15    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.23    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.025   |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.31    |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.036   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.48    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | < 0.05  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 1.4     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040425/SW1

#### Issued Date-04.04.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 92%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | < 0.005 |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.33    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 5.2     |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.7     |

### \*End of the Report\*

RODO **Authorized Signatory** 

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> The result given above related to the tested sample, as received. The customer asked for the above test only.

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Report No. - CEMC/TSL/040425/SW2

### SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Sample Quantity Location Date of Analysis Reference No. : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

Issued Date-04.04.2025

- Kalinga Nagar, Jajpur
- : 18.03.2025
- : Mr. Rabindranath Das
- : 18.03.2025
- : Surface Water
- : 2.0 Ltrs
- : Furnace Backside Sump Drain
- : 18.03.2025 to 25.03.2025
- : CEMC-04042025SW2

### ANALYSIS RESULT

|           |  |                        | IS 2490:  |                              |         |
|-----------|--|------------------------|---|------------------------------|---------|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | Discharge into<br>Inland Surface<br>Water                         | Testing Method               | Result  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 60      |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 42.4    |
| 4         | Particular size of SS                      | 123                    | Shall pass 850  | APHA 2540 D                  | <850    |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 6.89    |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 31.8    |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 5.86    |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.71    |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 30      |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 110     |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.15    |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.21    |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | < 0.005 |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.016   |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.066   |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.62    |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 2.1     |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 1.6     |

N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040425/SW2

Issued Date-04.04.2025

| 28 | Phenolic Compounds (as<br>C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                            | < 0.001 |
|----|---|------|--|--|---------|
| 29 | Bioassay Test   |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                              | 93%     |
| 30 | Manganese (as Mn)   | mg/l | 2.0  | APHA 3120B                               | 0.17    |
| 31 | Iron (as Fe)  | mg/l | 3.0  | APHA 3500Fe, B                           | 0.38    |
| 32 | Vanadium (as V)   | mg/l | 0.2  | APHA 3120B                               | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                               | mg/l | 10   | APHA 4500 NO <sub>3</sub> <sup>-</sup> E | 5.64    |
| 34 | Dissolved Oxygen  | mg/l |  | APHA 45000 C                             | 5.6     |

### \*End of the Report\*

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Report No. - CEMC/TSL/040425/SW3

### Issued Date-04.04.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

**Date of Sampling** Sampling by **Date of Sample Received Sample Description** Location **Date of Analysis Reference** No.

: M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 18.03.2025
- : Mr. Rabindranath Das
- : 18.03.2025
- : Surface Water
- : Surface Drain Near Furnance-1
- : 18.03.2025 to 25.03.2025
- : CEMC-04042025SW3

|           | ANALYSIS RESULT                            |                        |   |                              |         |  |  |  |  |
|-----------|--|------------------------|---|------------------------------|---------|--|--|--|--|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |  |  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 25      |  |  |  |  |
| 2         | Odour                                      | 111                    |   | APHA 2150 B                  | U/O     |  |  |  |  |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 22.6    |  |  |  |  |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |  |  |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.13    |  |  |  |  |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | APHA 2550 B                  | 31.4    |  |  |  |  |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |  |  |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500C1, B               | ND      |  |  |  |  |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |  |  |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 3.28    |  |  |  |  |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | ND      |  |  |  |  |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 28      |  |  |  |  |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 90      |  |  |  |  |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |  |  |  |  |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |  |  |  |  |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |  |  |  |  |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |  |  |  |  |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.06    |  |  |  |  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.16    |  |  |  |  |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | < 0.005 |  |  |  |  |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.054   |  |  |  |  |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |  |  |  |  |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.031   |  |  |  |  |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |  |  |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.51    |  |  |  |  |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.23    |  |  |  |  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.2     |  |  |  |  |

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N.B: U/O-Unobjectionable, ND-Not Detectable

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

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### Report No. - CEMC/TSL/040425/SW3

#### Issued Date-04.04.2025

| 28 | Phenolic Compounds (as<br>C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|---|------|--|------------------------------|---------|
| 29 | Bioassay Test   |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 93%     |
| 30 | Manganese (as Mn)   | mg/l | 2.0  | APHA 3120B                   | 0.031   |
| 31 | Iron (as Fe)  | mg/l | 3.0  | APHA 3500Fe, B               | 0.22    |
| 32 | Vanadium (as V)   | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                               | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 7.1     |
| 34 | Dissolved Oxygen  | mg/l |  | APHA 45000 C                 | 5.3     |

### \*End of the Report\*

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Notes:

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Report No. - CEMC/TSL/040425/SW4

### 40425/SW4 Issued Date-04.04.2025 SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

Date of Sampling Sampling by Date of Sample Received Sample Description Location Date of Analysis Reference No.

## : M/s. TATA Steel Ltd., (Ferro Alloys Plant),

- Kalinga Nagar, Jajpur
- : 18.03.2025
- : Mr. Rabindranath Das
- : 18.03.2025
- : Surface Water
- : Surface Drain Raw Material Yard, Coal Yard
- : 18.03.2025 to 25.03.2025
- : CEMC-04042025SW4

|           | <u>ANALYSIS RESULT</u>                     |                        |   |                              |         |  |  |  |
|-----------|--|------------------------|---|------------------------------|---------|--|--|--|
| SI.<br>No | Parameter                                  | Unit of<br>measurement | IS 2490:<br>Discharge into<br>Inland Surface<br>Water             | Testing Method               | Result  |  |  |  |
| 1         | Colour                                     | Hazen                  |   | APHA 2120 B,C &              | 40      |  |  |  |
| 2         | Odour                                      |                        |   | APHA 2150 B                  | U/O     |  |  |  |
| 3         | Total Suspended Solids                     | mg/l                   | 100   | APHA 2540 D                  | 62.4    |  |  |  |
| 4         | Particular size of SS                      |                        | Shall pass 850  | APHA 2540 D                  | <850    |  |  |  |
| 5         | pH Value @ 25℃                             |                        | 5.5 to 9.0  | APHA 4500H <sup>+</sup> B    | 7.24    |  |  |  |
| 6         | Temperature                                | °C                     | Shall not Exceed<br>40 within 15 m d/s<br>from effluent<br>Outlet | АРНА 2550 В                  | 31.3    |  |  |  |
| 7         | Oil & Grease                               | mg/l                   | 10  | APHA 5520 B                  | <1      |  |  |  |
| 8         | Residual Free Chlorine                     | mg/l                   | 1.0   | APHA 4500Cl, B               | ND      |  |  |  |
| 9         | Ammonical Nitrogen                         | mg/l                   | 50  | APHA 4500NH3 B,C             | ND      |  |  |  |
| 10        | Total Kjeldahl Nitrogen as N               | mg/l                   | 100   | APHA 4500 N, B               | 3.14    |  |  |  |
| 11        | Free Ammonia                               | mg/l                   | 5.0   | Calculation Method           | 0.29    |  |  |  |
| 12        | Biochemical Oxygen Demand                  | mg/l                   | 30  | APHA 5210 B                  | 20      |  |  |  |
| 13        | Chemical Oxygen Demand                     | mg/l                   | 250   | APHA 5220 C                  | 70      |  |  |  |
| 14        | Arsenic (as As)                            | mg/l                   | 0.2   | APHA 3120B                   | < 0.001 |  |  |  |
| 15        | Mercury (as Hg)                            | mg/l                   | 0.01  | APHA 3120B                   | < 0.001 |  |  |  |
| 16        | Lead (as Pb)                               | mg/l                   | 0.1   | APHA 3120B                   | < 0.005 |  |  |  |
| 17        | Cadmium (as Cd)                            | mg/l                   | 2.0   | APHA 3120B                   | < 0.005 |  |  |  |
| 18        | Hexavalent Chromium (as Cr <sup>+6</sup> ) | mg/l                   | 0.1   | APHA 3500Cr B                | 0.13    |  |  |  |
| 19        | Total Chromium (as Cr)                     | mg/l                   | 2.0   | APHA 3120B                   | 0.21    |  |  |  |
| 20        | Copper (as Cu)                             | mg/l                   | 3.0   | APHA 3120B                   | < 0.005 |  |  |  |
| 21        | Zinc (as Zn)                               | mg/l                   | 5.0   | APHA 3120B                   | 0.071   |  |  |  |
| 22        | Selenium (as Se)                           | mg/l                   | 0.05  | APHA 3120B                   | < 0.001 |  |  |  |
| 23        | Nickel (as Ni)                             | mg/l                   | 3.0   | APHA 3120B                   | 0.029   |  |  |  |
| 24        | Cyanide (as CN)                            | mg/l                   | 0.2   | APHA 4500CN <sup>-</sup> C,D | ND      |  |  |  |
| 25        | Fluoride (as F)                            | mg/l                   | 2.0   | APHA 4500F C                 | 0.38    |  |  |  |
| 26        | Dissolved Phosphate (as PO <sub>4</sub> )  | mg/l                   | 5.0   | APHA 4500P D                 | 0.42    |  |  |  |
| 27        | Sulphide (as S)                            | mg/l                   | 2.0   | APHA 4500 S <sup>2-</sup> D  | 0.8     |  |  |  |

### ANALYSIS RESULT

N.B: U/O-Unobjectionable, ND-Not Detectable

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### Report No. - CEMC/TSL/040425/SW4

### Issued Date-04.04.2025

| 28 | Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH) | mg/l | 1.0  | APHA 5530 B,D                | < 0.001 |
|----|--|------|--|------------------------------|---------|
| 29 | Bioassay Test  |      | 90% survival of<br>fish after 96 hours<br>in 100% effluent | АРНА 8910 С                  | 94%     |
| 30 | Manganese (as Mn)  | mg/l | 2.0  | APHA 3120B                   | 0.061   |
| 31 | Iron (as Fe)   | mg/l | 3.0  | APHA 3500Fe, B               | 0.29    |
| 32 | Vanadium (as V)  | mg/l | 0.2  | APHA 3120B                   | < 0.005 |
| 33 | Nitrate (as NO <sub>3</sub> )                            | mg/l | 10   | APHA 4500 NO3 <sup>-</sup> E | 6.21    |
| 34 | Dissolved Oxygen   | mg/l |  | APHA 45000 C                 | 5.9     |

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