To,
The Member Secretary
Jharkhand State Pollution Control Board
TA Building, HEC Complex, Dhurwa,
Ranchi – 834004
Jharkhand

MD/ENV/112/ 125/18
20th June 2018

Subject: Submission of annual report of Bio-medical waste in prescribed format (Form-IV) of TATA Steel Hospital, Noamundi, for a period of one year (1st Jan. 2017 to 31st Dec. 2017), as per Bio-medical Waste Management Rule 2016.

Ref: 1. Bio-medical Waste authorization no. JSPCB/HO/RNC/BMW-1355118/2017/28, dated 30th Aug. 2017, valid till 24.10.2021.

2. Consent to Operate (CTO) no. JSPCB/HO/RNC/CTO-1619551/2017/1284, dated 25th Sept. 2017, valid till 24.10.2021.

Dear Sir,

Kindly find attached the annual report of Bio-medical Waste in a prescribed format (Form – IV) as per Bio-medical Waste Management Rules, 2016 for a period of January 2017 to December 2017 of TATA Steel Hospital, Noamundi, Babuline Campus, District East Singhbhum, Jharkhand along with required documents.

Also, kindly find attached the compliance of Consent to Operate (CTO) and Bio-medical Waste Authorization of TATA Steel Hospital, Noamundi as on date for your kind information.

Kindly acknowledge the same.

Thanking you,

Yours sincerely,
f: TATA Steel Limited

Sr. Manager (Environment), OMQ

Enclosed:

1. Form-IV (Annual Report), Form-1 (Accident Report), Bio-medical Waste Details, Immunization Details, Training Details, Hospital Registration Certificate with Govt. of Jharkhand.
2. Compliance of Consent to Operate (CTO) & Bio-medical Waste Authorization as on date.
3. Environmental Monitoring Report of Incinerator, STP & ETP of TATA Steel Hospital, Noamundi.

Copy to:

Regional Officer, Jharkhand State Pollution Control Board, Jamshedpur.

TATA STEEL LIMITED
Mines Division Noamundi 833 217 India
Tel 91 9234301340 Fax 91 6596 290737
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Form – IV
(See rule 13)
ANNUAL REPORT

[To be submitted to prescribed authority on before 30th June every year for the period from **January to December** of the preceding year, by the occupier of health care facility (HCF) or common bio-medical waste treatment facility (CBWTF)]

Sl. No	Particulars		
1.	Particulars of the Occupier	:	TATA Steel Hospital, Noamundi Health Care Facility
	(i) Name of the authorised person (occupier or operator of facility)	:	Dr. Dhirendra Kumar, Chief (Medical Officer)
	(ii) Name of HCF or CBMWTF	:	TATA Steel Hospital, Noamundi, Babu Line Campus, Noamundi District: West Singhbhum, Pin: 833217, JHARKHAND Phone: Fax No. : E-mail: dhirendra.kumar2@tatasteel.com envgroup.noa@tatasteel.com Website: www.tatasteelindia.com GPS location: Lat - 22°08'49.5"N Lon - 85°29'38.1"E
	(iii) Address for correspondence	:	
	(iv) Address of Facility		
	(v) Tel. No, Fax. No	:	
	(vi) E-mail ID	:	
	(vii) URL of Website		
	(viii) GPS coordinates of HFC or ~~CBMWTF~~		
	(ix) Ownership of HCF or ~~CBMWTF~~	:	(~~State Government~~ or **private** or ~~Semi Govt. or any others~~) **By TATA Steel Ltd.**
	(x) Status of Authorisation under the Bio-Medical Waste (Management and Handling)	:	Authorization No.: **JSPCB/HO/RNC/BMW-1355118/2017/28, dated 30th Aug., 2017** valid up to **24.10.2021**.
	(xi) Status of Consent under Water Act and Air Act	:	Consent to Operate **(CTO)** No. JSPCB/HO/RNC/CTO-1619551/2017/1284, dated 25th Sept., 2017 valid up to **24.10.2021**
2.	Type of health Care Facility	:	No. of Beds: **75 (Seventy-Five)**
	(i) Bedded hospital	:	
	(ii) Non-bedded hospital (Clinic or Blood Bank or Clinical Laboratory or Research Institute or Veterinary Hospital or any other)	:	The hospital is integrated with ICU, Blood Bank, Pathological Lab, X-Ray Room, Ultra Sound facility etc.
	(iii) License number and its date of expiry		Hospital is registered as per Clinical Establishment Act (Registration & Regulation) 2010 from Govt. of Jharkhand and subsequently applied for renewal. Registration no.:- JH/BB/1311/1988 (as attached).
3.	Details of CBMWTF	:	**Not applicable**
	(i) Number healthcare facilities covered by CBMWTF	:	
	(ii) No of beds covered by CBMWTF	:	
	(iii) Installed treatment and disposal capacity of CBMWTF:	:	____----------____Kg per day
	(iv) Quantity of biomedical waste treated or disposed by CBMWTF	:	____----------____Kg per day

Sl. No	Particulars		
4.	Quantity of waste generated or disposed in Kg per annum (on monthly average basis)	:	**Yellow** Category : **1288 Kg** **Red** Category : **949.5 Kg** (including liquid chemical waste) **White** : **1929 Kg** **Blue** : **644 Kg** General Solid waste : 5.34 Tonnes
5.	Details of the Storage, treatment, transportation, processing and Disposal Facility		
	(i) Details of the on-site storage facility	:	Size : Yellow category : Red Category : White Category : Blue Category : **Provision for 48 hrs storage only** Capacity : Provision of on-site storage or any other provision) : (cold storage **Not available**
	(ii) Details of the treatment or disposal facilities	:	Type of treatment equipment / No. of units / Capacity Kg/day / Quantity treated or disposed in kg/annum Incinerators **01** 25kg/day 180 Plasma Pyrolysis **Nil** Autoclaves **01** 25kg/day Microwave **Nil** Hydroclave **Nil** Shedder **01** 10kg/day 150 Needle tip cutter or destroyer sharp **07** 100 encapsulation or concrete pit Nil Deep burial pits: 01 as per standard Chemical Disinfection:- **Thru Chemical Treatment** Any other treatment. Equipment : **10 KLD Effluent Treatment Plant (ETP) & 10 KLD Sewage Treatment Plant (STP) installed and regularly been operated.**
	(iii) Quantity of recyclable wastes sold to authorized recycler after treatment in kg per annum.	:	Red Category (like plastic, glass etc.) **Nil**
	(iv) No of vehicles used for collection and transportation of biomedical waste	:	**Nil.** Since entire waste is been treated & incinerated in the premises. However, municipal solid waste (Food, plastic etc) is been collected & disposed by 01 no. vehicle.
	(v) Details of incineration ash and ETP sludge generated and disposed during the treatment of waste in kg per annum		Quantity Generated / Where disposed Incineration Ash **12kg** **As per standard** ETP Sludge* **Incinerated** **Till date no ETP sludge is generated*

Sl. No	Particulars		
	(vi) Name of the Common Bio-Medical Waste Treatment Facility Operator through which wastes are disposed of		Nil. Bio-medical waste is collected & disposed internally. The list of incinerator operators are attached in annexure.
	(vii) List of member HCF not handed over bio-medical waste.	:	–
6.	Do you have bio-medical waste management committee? If yes, attach minutes of the meeting held during the reporting period.		At district level, a bio-medical waste management committee made, chaired by Hon. Dy. Commission, East Singhbhum. At local level an EHS committee made.
7.	Details trainings conducted on BMW		
	(i) Number of training conducted on BMW Management.		06 (Six) nos
	(ii) Number of personnel trained		87 (Including Contractual).
	(iii) Number of personnel trained at the time of induction		All (100%)
	(iv) Number of personnel not undergone any training so far		Nil (Zero), All paramedical staff & healthcare workers undergone for BMW training
	(v) Whether standard manual for training is available?		Yes
	(vi) Any other information		All healthcare workers under gone for immunization for Hepatitis B and Tetanus regularly.
8.	Details of the accident occurred during the year		**Not any such**. However, a NIL accident report is attached as annexure.
	(i) Number of Accidents occurred		Nil
	(ii) Number of the persons affected		Nil
	(iii) Remedial Action taken (Please attach details if any)		Nil
9.	Are you meeting the standards of air Pollution from the incinerator? How many times in last year could not met the standards?		Yes At all the times.
	Details of Continuous online emission monitoring system installed		Online emission monitoring facility is not installed. However, from recognized agency emission monitoring been done regularly. All the monitoring results are attached herewith in annexure.
10.	Liquid waste generated and emission methods in place. How many times you have not met the standards in a year?		1. Yes, all liquid waste generated being pre-treated and neutralized for 1-2% sodium Hypochlorite dosing. All the liquid waste after pre-treatment is been treated in effluent treatment plant. 2. Integrated Effluent treatment plant of 10 KLD is installed and regularly been operated. 3. All the waste water from hospital is been collected and connected to 10 KLD Sewage Treatment Plant in the area. 4. The required standard is met always. 5. All the monitoring results are attached herewith.

Sl. No	Particulars		
11.	Is the disinfection method or sterilization meeting the log 4 standards? How many times you have not met the standards in a year?		All the times.
12.	Any other relevant information	:	(Air Pollution Control Devices attached with the Incinerator). The double chambered incinerator is installed as per standard.

Certified that the above report is for the period of **one year from January -2017 to December - 2017**

Name and signature of the Head of the Institution

Dhirendra Kumar 19/06/18

Dr. Dhirendra Kumar, Chief (Medical Officer)
Chief Medical officer (Mines)
Tata Steel Hospital, Noamundi

Date: 19th June 2018

Place: TATA Steel Hospital, Noamundi

Form – I
[(See rule 4(o), 5(i) and 15 (2)]

ACCIDENT REPORTING

NIL REPORT

1.	Date and time of accident:	NIL.	Not any such
2.	Type of Accident:	NIL.	Not any such
3.	Sequence of events leading to accident:	NIL.	Not any such
4.	Has the authority been informed immediately:	NIL.	Not any such
5.	The type of waste involved in accident:	NIL.	Not any such
6.	Assessment of the effects of the accident on human health and the environment:	NIL.	Not any such
7.	Emergency measure taken	Adequate emergency measure taken to address any accident	
8.	Steps taken to alleviate the effects of accidents:	NIL.	Not any such

9. Steps taken to prevent the recurrence of such an accident: Various measure taken

10. Doses your facility has an Emergency Control Policy? If yes give details:

The hospital doesn't have any separate Emergency Control Policy. However, various emergency measures such as fire detection devices, fire alarm, fire hydrants, fire extinguishers, separate storage of gas (LPG etc used in cooking), day-night 24 hrs ambulance service, all the wards / rooms are regularly being monitored by Sister In-charge and Medical Officer. The Hospital always have a well-qualified medical officer for 24hrs to address any eventuality. Apart from above the hospital is certified for ISO: 9001:2015, ISO:14001:2015 & OHSAS:18001:2007 integrated with other units.

Date: **19th June 2018**

Signature... **Dr. Dhirendra Kumar** .....
Chief Medical officer (Mines)
Tata Steel Hospital, Noamundi

Place: **TATA Steel Hospital, Noamundi**

Designation ... **Chief (Medical Officer)** .....

Note: As per Bio-medical Waste Management Rule 2016 this report is been made.

YEARLY REPORT OF BIO-MEDICAL WASTE

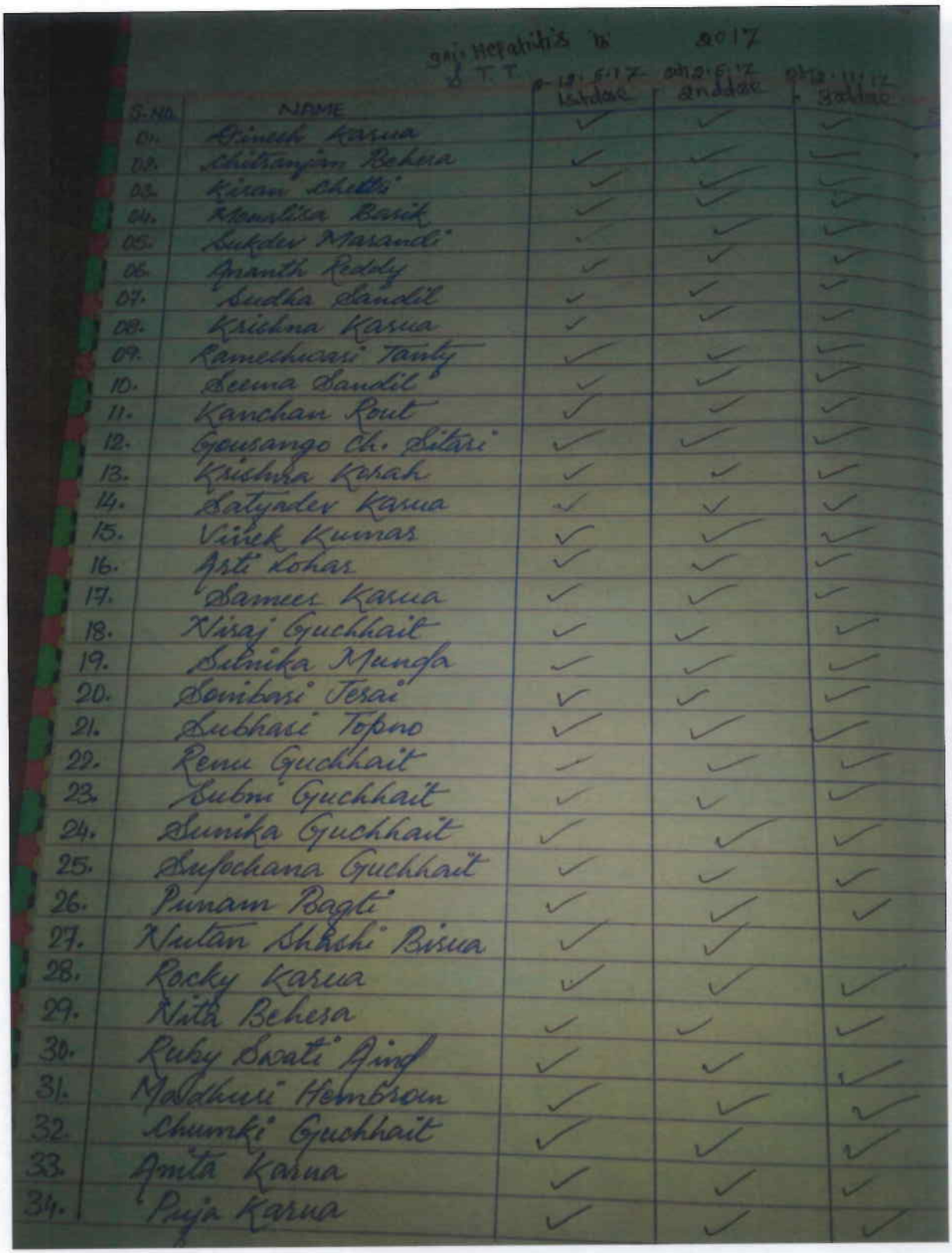
TATA STEEL HOSPITAL, NOAMUNDI

APRIL 2017 - TO MARCH 2018

MONTH	YELLOW	RED	BLUE	WHITE	LIQUID	GARBAGES
	(K.G)	(K.G)	(K.G)	(K.G)	(Galon)	(K.G)
APRIL (2017)	112	82.5	56	165	43500	422.5
MAY	100	72	50	144	39000	375
JUNE	128	96	64	192	49000	482.5
JULY	138	103.5	69	207	49500	522
AUGUST	128	96	64	192	49000	482.5
SEPTEMBER	138	103.5	69	207	49500	522
OCTOBER	112	82.5	56	165	43500	422.5
NOVEMBER	92	66	46	132	38000	346.5
DECEMBER	78	57	39	114	35000	294
JANUARY(2018)	86	61.5	43	123	37000	322.5
FEBRUARY	100	72	50	144	39000	375
MARCH	76	57	38	144	34500	285
TOTAL						
K. G	1288	949.5	644	1929	506500	4852

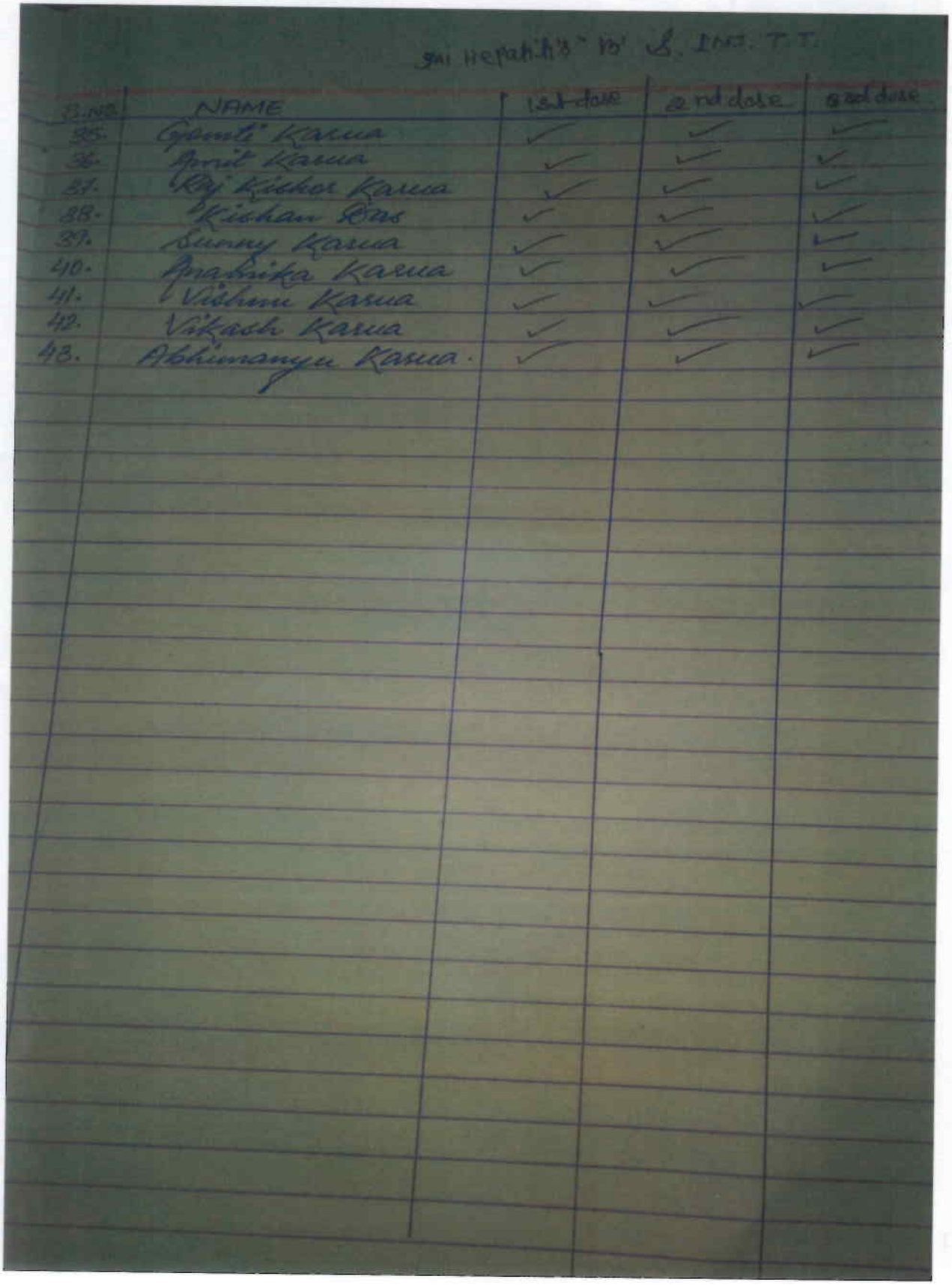
Immunization Details of Health Care Workers & Others

TATA Steel Hospital, Noamundi



Anti Hepatitis 'B' 2017 & T.T.

S.No.	NAME	19.5.17 Istdose	2nd dose	3rd dose
01.	Dinesh Karua	✓	✓	✓
02.	Chitranjan Behera	✓	✓	✓
03.	Kiran Chetti	✓	✓	✓
04.	Monalisa Barik	✓	✓	✓
05.	Lukdev Marandi	✓	✓	✓
06.	Gnanth Reddy	✓	✓	✓
07.	Sudha Sandil	✓	✓	✓
08.	Krishna Karua	✓	✓	✓
09.	Rameshwari Tanty	✓	✓	✓
10.	Seema Sandil	✓	✓	✓
11.	Kanchan Rout	✓	✓	✓
12.	Gousango Ch. Sitari	✓	✓	✓
13.	Krishna Karah	✓	✓	✓
14.	Satyadev Karua	✓	✓	✓
15.	Vinek Kumar	✓	✓	✓
16.	Arti Kohar	✓	✓	✓
17.	Samuel Karua	✓	✓	✓
18.	Niraj Guchhait	✓	✓	✓
19.	Subnika Munga	✓	✓	✓
20.	Sonibasi Tesai	✓	✓	✓
21.	Subhasi Topno	✓	✓	✓
22.	Renu Guchhait	✓	✓	✓
23.	Subni Guchhait	✓	✓	✓
24.	Sunika Guchhait	✓	✓	✓
25.	Sulochana Guchhait	✓	✓	✓
26.	Punam Bagti	✓	✓	✓
27.	Nutan Bhashi Bisua	✓	✓	
28.	Rocky Karua	✓	✓	✓
29.	Nita Behesa	✓	✓	✓
30.	Ruby Swati Ajmi	✓	✓	✓
31.	Madhuri Hembrom	✓	✓	✓
32.	Chumki Guchhait	✓	✓	✓
33.	Amita Karua	✓	✓	✓
34.	Puja Karua	✓	✓	✓



gai Hepatitis "B" & Inf. T.T.

S.No.	NAME	1st dose	2nd dose	3rd dose
35.	Ganti Kanwa	✓	✓	✓
36.	Amit Kanwa	✓	✓	✓
37.	Raj Kishor Kanwa	✓	✓	✓
38.	Kishan Das	✓	✓	✓
39.	Sunny Kanwa	✓	✓	✓
40.	Anshika Kanwa	✓	✓	✓
41.	Vishnu Kanwa	✓	✓	✓
42.	Vikash Kanwa	✓	✓	✓
43.	Abhimanyu Kanwa.	✓	✓	✓

Bio-medical Waste Management (Storage & Disposal) Training for all Health Care Workers & Others

TATA Steel Hospital, Noamundi

Hospital Registration Certificate.

Provisional registration No:2036800027

झारखण्ड सरकार

1610
27/06/17

GOVERNMENT OF Jharkhand

District Registering Authority
PASHCHIMI SINGHBHUM

CERTIFICATE OF PROVISIONAL REGISTRATION

This is to certify that *Tata Steel Hospital,Noamundi* located at *Noamundi* owned by ***BRP RAO*** has been granted provisional registration as a clinical establishment under Section 15 of The Clinical Establishments (Registration and Regulation) Act, 2010. The Clinical Establishment is registered for providing medical services as a *Hospital, Polyclinic,Physiotherapy,Dental Clinic* under *Allopathy* System of Medicine.

This Certificate is valid for a period of one year from the date of issue.

Place: Pashchimi Singhbhum
Date of Issue: 26/05/2017

26/6/17
अपर मुख्य चिकित्सा पदाधिकारी
DR Pashchimi Singhbhum
Designation of the Issuing Authority
26/06/17

*Terms and Conditions of Registration**

1. The holder of this Certificate of Registration shall comply with all the provisions of Clinical Establishment Act (Registration and Regulation) 2010 and the Rules made there under.
2. The Certificate of Registration is not transferable. The Certificate of Registration shall be displayed in a prominent place in a part of the premises open to the public.
3. Any change of ownership or change of category or change of management or on ceasing to function as a clinical establishment, the certificate of registration shall be surrendered to the authority and application for fresh registration submitted.

**Additional terms and conditions are as stipulated by the appropriate registering authority.*

COMPLIANCE OF EMISSION & DISCHARGE CONSENT CONDITIONS

UNIT: TATA Steel Hospital, Noamundi
CONSENT ORDER NO.: JSPCB/HO/RNC/CTO-1619551/2017/1284
ISSUE DATE: 25.09.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS

(A) General Conditions

1. That, the occupier shall maintain the national ambient air quality within the standard given below:

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area
(1)	(2)	(3)	(4)	(5)
1.	Sulphur Dioxide(SO_2), µg/m³	Annual 24 hrs.	50 80	20 80
2.	Nitrogen Dioxide(NO_2), µg/m³	Annual 24 hrs	40 80	30 80
3.	Particulate Matter (size less than 10 µm) or PM_{10}, µg/m³	Annual 24 hrs	60 100	60 100
4.	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$, µg/m³.	Annual 24 hrs	40 60	40 60
5.	Ozone(O_3), µg/m³	8hrs. 1 hr.	100 180	100 180
6.	Lead(Pb) µg/m³	Annual 24 hrs	0.50 1.0	0.50 1.0
7.	Carbon Monoxide(CO) mg/m³	8 hrs. 1 hr.	02 04	02 04
8.	Ammonia (NH_3) µg/m³	Annual 24 hrs	100 400	100 400
9.	Benzene (C_6H_6) µg/m³	Annual	05	05
10.	Benzo(α)Pyrene(BaP)Particulate phase only ng/m³	Annual	01	01
11.	Arsenic (As) ng/m³	Annual	06	06
12.	Nickel (Ni) ng/m³	Annual	20	20
Note: Serial no. 1 to 4 – Mandatory, Serial no. 5 to 12 – As applicable for specific type of industry				

We are maintaining the national ambient air quality within the standard. All the results of ambient air quality are being submitted regularly to JSPCB on monthly basis. Complete environmental monitoring report of Hospital is attached as annexure.

Two numbers of continuous online ambient quality stations (CAAQMS) are also installed in the Noamundi mines area Various parameters such as PM_{10}, $PM_{2.5}$, SO_x, NO_x is being monitored for every 15 minutes and the data of same is continuously uploaded in Pollution Control Board server. The data is same is also been displayed using electronic display board in public domain.

CAAQMS station of Noamundi

2. That, the occupier shall maintain the emission quality and the quantity, as follows:

Sr. No.	Parameter	Standard
I.	Particulate Matter	100 mg/Nm³

A doubled chamber incinerator is installed at TATA Steel Hospital Noamundi for treatment & disposal of bio-medical waste generated from hospital. All the results are attached.

Double chambered incinerator with 60m chimney

3. That, the occupier shall keep process effluent in close-circuit and the quality of effluent from other sources in conformity with the standard (s) and the discharge quantity as below:

All the effluent generated is recycled in close-circuit to maintain zero discharge. An effluent treatment plant (ETP) of 10 KLD is been installed in Hospital. The effluent quality is

UNIT: TATA Steel Hospital, Noamundi
CONSENT ORDER NO.: JSPCB/HO/RNC/CTO-1619551/2017/1284
ISSUE DATE: 25.09.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS

Sr. No.	Parameter	Standard
I.	Total Suspended Solids	100 mg/L
II.	BOD	30 mg/L
III.	COD	250 mg/L
IV.	Oil & Grease	10 mg/L
V.	Quantity of Discharge	

maintained as per standard and effluent quality report is being submitted regularly.

10 KLD ETP at TATA Steel Hospital, Noamundi

4. That, the occupier shall dispose of solid waste as follows:

Sr. No.	Type of Waste	Mode of Disposal
I.	Hazardous Carbonaceous Wastes	In co-processing in high temp. furnaces or Kilns
II.	Hazardous non-Carbonaceous Wastes	In TSDF
III.	Non-carbonaceous non-hazardous solid wastes/ mine over burdan	As a substitute of soil or mineral

No Hazardous waste is generated from Hospital except ETP sludge. The same is been disposed / incinerated as per standard. All the biomedical waste is generated is disposed as per standard.

5. That, the occupier shall keep D G Set(s) within the acoustic enclosure (s) and shall keep the height(s) of exhaust pipe(s) as per Central Pollution Control Board norms.

Small DG sets of various capacities are provided in area for lighting purpose in the area. The height(s) of exhaustive pipe as per norms.

6. That, the occupier shall install and maintain Central Ground Water Board / State Ground Water Directorate approved system of rain water harvesting –cum-ground water recharge and submit the photographic view of the structures within a month.

Noamundi hospital is an integrated part of Noamundi Mine. All the rain water harvesting ponds and ground water recharge structures have been constructed and rain water harvesting plan is been approved from Ground Water Directorate, Jharkhand, Ranchi vide letter no. GWD 317/Ranchi, dated 14th Jun, 2012.

RWH structure for augmentation in the area

At Noamundi area the various RWH structures in the form of Check Dams, Saucer ponds, Gabion Structures, Trenches and contour are made based on recommendation of Hon. Director, Ground Water Directorate,

UNIT: TATA Steel Hospital, Noamundi
CONSENT ORDER NO.: JSPCB/HO/RNC/CTO-1619551/2017/1284
ISSUE DATE: 25.09.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
	Water Resources Dept. Jharkhand and available land in the area.
7. That, the occupier shall grow and maintain greenery in the periphery and other available spaces and shall continue enhancing its plant density and biodiversity.	We are continuously growing and maintaining the greenery in the periphery and other available spaces. Last year we have planted 10,478 nos. saplings to cover an additional area. Plantation is being carried out by native species on the inactive dump slopes. The tree density has been maintained as 5122 plants per ha.
8. That, the occupier shall submit environmental statement with supporting stoichiometric calculations analyses reports by 30th Sept. every year.	Environmental Statement is shall be submitted as per requirement before 30th of Sept. every year.
9. That, the occupier shall submit report(s) duly monitored and issued by an NABL accredited / ISO 9001:2008 and OHSAS 18001:2007 certified laboratory in compliance of sub-para (2), (3), and (5), of paragraph 3 of this CTO yearly at required periodicity.	Complied with. The monitoring report of various parameters from NABL accredited / ISO 9001:2008 and OHSAS 18001:2007 certified laboratory is monthly submitted. The same is been attached as annexure.
10. That, this CTO is valid subject to the validity of mining lease / Mining Plan / Ecofriendly / Environmental Clearance, if applicable. In case of no renewal of mining lease / mining Plan, this consent shall be treated as revoked automatically.	Complied. The unit has all regulatory clearances. The mine lease is valid till year 2030.
11. That, this CTO is issued from the environmental angle only and does not absolve the occupier from other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility to comply with these conditions laid down in all other laws for the time being in force, rests with the industry / unit occupier.	Noted and being complied.
12. That, this CTO shall not in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be, instituted against you by the State Board for violation of the provisions of the Act or the Rules made there under.	Noted and being complied.

UNIT: TATA Steel Hospital, Noamundi
CONSENT ORDER NO.: JSPCB/HO/RNC/CTO-1619551/2017/1284
ISSUE DATE: 25.09.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
13. That the occupier shall abide by the applicable provisions of the Water (Prevention & Control of Pollution) Act, 1974; the Water Prevention & Control of Pollution) Cess Act 1977; the Air (Prevention & Control of Pollution) Act 1981; and the Environment (Protection) Act, 1986 and rules there under.	Being complied with
(B) Specific Conditions	
1. This CTO will supersede the previous CTO issued vide ref. no. JSPCB/ HO/ RNC/ CTO – 1130746 /2017/ 562 dt. 12-5-2017.	Noted down
2. That, the occupier shall ensure treatment and disposal of liquid waste in accordance with Water (Prevention and Control of Pollution) Act, 1974.	Being complied with. The liquid chemical waste generated from pathological, blood bank etc is pre-treated in neutralization pit. Followed by treatment in 10 KLD Effluent Treatment Plant & Sewage Treatment Plant.
3. That, the occupier shall dispose off bio-medical waste in accordance with the provisions of respective Bio-medical waste management Rules, 2016 made under the relevant	All the bio-medical waste is dispose off as per Bio-medical Waste Management Rule 2016. Double chambered incinerator is installed and operated at Hospital along with 10 KLD Effluent Treatment Plant, plastic shredder autoclave, deep burial facility, ash pit etc.  *Incinerator & autoclave at Hospital*  *Plastic shredder, ash disposal pit at Hospital*
4. That, the occupier shall dispose off solid waste other than bio-medical waste in accordance with	

UNIT: TATA Steel Hospital, Noamundi
CONSENT ORDER NO.: JSPCB/HO/RNC/CTO-1619551/2017/1284
ISSUE DATE: 25.09.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
provisions of respective waste management rules made under the relevant laws and amended from time to time.	The solid waste such as food waste generated from hospital is been disposed as per norms on daily basis.
5. That, the occupier shall ensure segregation of liquid chemical waste at source and ensure pre-treatment of neutralization prior to mixing with other effluent generated from health care facilities.	The liquid chemical waste generated from pathological, blood bank etc is pre-treated in neutralization pit. Followed by treatment in 10 KLD Effluent Treatment Plant & effluent Treatment plant.  *10 KLD ETP at TATA Steel Hospital, Noamundi*
6. That, the occupier shall ensure separate treatment for bio-medical waste and municipal solid wastes.	Being complied with.
7. That, the occupier shall submit Environmental Statement every year by 30th September.	Being complied with.
8. That, the occupier shall submit applications for renewal of consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days prior to the expiry of this consent i.e. 24.10.2021, with requisite fee and documents showing compliance of all the above conditions.	Application for renewal of consent under section 25/26 of the Water (Prevention & Control of Pollution) Act 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 shall be done 120 days prior to the expiry of this consent i.e. 24.10.2021.

Compliance of Bio-Medical Waste Authorization Conditions

UNIT: TATA Steel Hospital, Noamundi
Bio-Medical Waste Authorization NO.: JSPCB/HO/RNC/BMW-1355118/2017/28
ISSUE DATE: 30.08.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
(A) General Conditions	
1. The authorization shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made there under.	Being complied with. All the provisions of the Environment (Protection) Act, 1986 and the rules made there under shall be abided in true sense.
2. The authorization or its renewal shall be produced for inspection at the request of an officer authorized by the prescribed authority.	Being complied with.
3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the biomedical wastes without obtaining prior permission of the prescribed authority.	Being complied with. The bio-medical waste authorization shall not be transferred without prior permission from prescribed authority in any case.
4. Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorization.	Being complied with and shall be abided truly.
5. It is the duty of the authorized person to take prior permission of the prescribed authority to close down the facility and such other terms and conditions may be stipulated by the prescribed authority.	Being complied with. Prior permission of the prescribed authority shall be taken before closing down of TATA Steel Hospital, Noamundi.
(B) Specific Conditions	
6. That the occupier shall not mix bio-medical waste with general waste and shall under no circumstances, hand over untreated wastes to the municipality for disposal in land fill site.	Noted down and strictly followed in unit. The Bio-medical waste at any case shall not be mixed with municipal waste and shall not be disposed with municipal waste in any landfill site of area.
7. That, the occupier shall segregate bio-medical wastes and collect in colored containers/bags at the point of generation as per the Rules and shall transport them in covered containers labeled with the symbols of bio-hazard & cytotoxicity.	Complied and strictly followed in unit. Different colored (Yellow, Red, Blue & White) container as per norms placed at various generation points (different wards, OPD, Pathology, Blood Bank, ICU etc) and all the waste is segregated at generation point and disposed in in-house

UNIT: TATA Steel Hospital, Noamundi
Bio-Medical Waste Authorization NO.: JSPCB/HO/RNC/BMW-1355118/2017/28
ISSUE DATE: 30.08.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
8. That, the occupier shall treat the segregated bio-medical wastes in the manner prescribed under the Rules and shall ensure requisite treatment of segregated wastes at the individual or common facility, duly authorized by State Pollution Control Board, Jharkhand.	incinerator & ETP after pre-treatment (for solid & liquid bio-medical waste) as per norms. The segregation of Bio-medical waste is made from generation point and shall be disposed as per norms. Due to absence of common facility; a double chamber incinerator has been installed at hospital along with autoclave, shredder and other various facilities for disposal of Bio-medical Waste.  *Double chambered incinerator & autoclave at Hospital*  *Plastic shredder, deep burial-ash disposal pit at Hospital* The liquid chemical waste generated from pathological, blood bank etc is pre-treated in neutralization pit. Followed by treatment in 10 KLD Effluent Treatment Plant.  *10 KLD ETP at TATA Steel Hospital, Noamundi* Apart from above 10 KLD STP is also been installed

UNIT: TATA Steel Hospital, Noamundi
Bio-Medical Waste Authorization NO.: JSPCB/HO/RNC/BMW-1355118/2017/28
ISSUE DATE: 30.08.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
	 *10 KLD STP connected to Hospital, Noamundi*
9. That, the authorized person shall treat the biomedical waste containing more than or equal to 50 PPM of mercury and shall dispose of it (them) as per the provisions of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016.	Being complied with. Currently no such waste been generated at Hospital.
10. The occupier of health care unit shall submit the statement related to spillage and collection of mercury during the period from January to December of previous year, along with the annual report latest by 30th June of every year.	Being complied with. Currently no such waste been generated/ disposed from Hospital.
11. The authorized person of the unit shall maintain records related to the generation, collection, receipt, storage, transportation, treatment, disposal and/or any form of handling of Bio-medical Waste and all records shall be subject to inspection and verification by the State Pollution Control Board, Jharkhand at any time.	All the records of generation of Bio-medical waste are well maintained in Hospital. The summery sheet waste generated and disposed is attached herewith.
12. That, the occupier shall upload online application for renewal of authorization 90 days prior to the date of expiry of this authorization under Rule 10 of the Bio-Medical Waste Rules, 2016 with CTO copy issued under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974 along with compliance of all the above conditions.	Being complied with. The Hospital shall apply renewal 90 days prior to the date of expiry of this authorization.

UNIT: TATA Steel Hospital, Noamundi
Bio-Medical Waste Authorization NO.: JSPCB/HO/RNC/BMW-1355118/2017/28
ISSUE DATE: 30.08.2017. Valid till 24.10.2021
COMPLIANCE PRIOD: 01.01.2017 – 31.12.2017

CONSENT CONDITIONS	COMPLIANCE STATUS
13. That, the occupier shall do pre-treat the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on-site the manner as prescribed by the World Health organization (WHO) of National AIDS Control Organization (NACO) guidelines and then send to the common bio- medical waste treatment facility for final disposal.	Pre-treatment such as neutralization of contamination of waste by using 1-2% Hypochlorite dosing & autoclaving is practiced regularly before incineration of waste.
14. That, the occupier shall ensure segregation of liquid chemical waste at source and ensure pre-treatment or neutralization prior to mixing with other effluent generated from health care facilities.	Complied with. Pre-treatment by using 1-2% Hypochlorite dosing of liquid waste is been done. All the liquid waste drains are connected to Effluent Treatment plant for final treatment after Hypochlorite dosing and finally discharged to 10 KLD Sewage Treatment Plant for final treatment.
15. That, the occupier shall submit an annual report to the prescribed authority in Form-IV, on or before the 30th June of every year.	Complied regularly. The annual report of last year submitted vide letter no. MD/CMO/256/103 on 5th May 2017.
16. That. the occupier shall submit analysis report of ETP to the Board yearly.	Complied with. All the environmental monitoring results are attached as annexure.

Incinerator Report

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-304

Date: 03.02.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**19.01.2017 at 3.30 pm**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	52	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.58	
4	Quantity of gas flow (Nm^3/hr.)	:	1223	
5	Concentration of Carbon monoxide (%)	:	1.60	
6	Concentration of Carbon dioxide (%)	:	2.4	
7	Concentration of Nitrogen dioxide (PPM)	:	28.9	400
8	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.4	
9	Concentration of particulate Matters (mg/Nm^3)	:	43.7	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref:VCSPL/17/R-407

Date:.....

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**16.02.2017 at 3.0 pm**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	50	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.41	
4	Quantity of gas flow (Nm^3/hr.)	:	1193	
5	Concentration of Carbon monoxide (%)	:	1.8	
6	Concentration of Carbon dioxide (%)	:	2.5	
7	Concentration of Nitrogen dioxide (PPM)	:	59.1	400
8	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.6	
9	Concentration of particulate Matters (mg/Nm^3)	:	46.1	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

C:VCSPL/17R-614

Date: 04:04:2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**16.03.2017 at 11.0 am**
A	**General Information about Stack**	-	- -
1	Stack Connected to	:	Incinerator
2	Emission due to	:	Burning of H.S. Diesel
3	Material of Construction of stack	:	MS
4	Shape of stack	:	Circular
5	Whether stack is provided with permanent platform & ladder	:	Yes
6	Generation capacity	:	N.A.
B	**Physical Characteristics of Stack:**	-	- -
1	Height of the stack from ground level	:	60m (approx)
2	Diameter of the stack at sampling point	:	0.30m
3	Height of the sampling point from GL	:	15.0m (approx)
4	Area of Stack	:	0.0707 m^2
C	**Analysis / Characteristic of Stack:**	-	- -
1	Fuel Used	:	N.A.
2	Fuel consumption	:	N.A.
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results** **CPCB Limit**
1	Temperature of emission (°C)	:	49
2	Barometric pressure (mm of Hg)	:	714
3	Velocity of gas (m/sec.)	:	5.42
4	Quantity of gas flow ($Nm^3/hr.$)	:	1199
5	Concentration of Carbon monoxide (%)	:	1.5
6	Concentration of Carbon dioxide (%)	:	2.2
7	Concentration of Nitrogen dioxide (PPM)	:	35.6 400
8	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.24
9	Concentration of particulate Matters (mg/Nm^3)	:	42.8 50
E	**Pollution control Device**		
	Details of pollution control Device attached with the stack	:	Nil
F	**Remarks**		

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VCSPL/17/R-814

Date: 03.05.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**20.04.2017 at 10.40am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	48	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.35	
4	Quantity of gas flow ($Nm^3/hr.$)	:	1187	
5	Concentration of Carbon monoxide (%)	:	1.7	
6	Concentration of Carbon dioxide (%)	:	2.4	
7	Concentration of Nitrogen dioxide (PPM)	:	34.8	400
8	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.42	
9	Concentration of particulate Matters (mg/Nm^3)	:	44.5	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R - 946

Date.: 03.06.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**19.05.2017 at 10.20am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	50	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.32	
4	Quantity of gas flow ($Nm^3/hr.$)	:	1173	
5	Concentration of Carbon monoxide (%)	:	1.8	
6	Concentration of Carbon dioxide (%)	:	2.6	
7	Concentration of Sulphur dioxide (mg/Nm^3)	:	7.17	
8	Concentration of Nitrogen dioxide (mg/Nm^3)	:	77.49	400
9	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.34	
10	Concentration of particulate Matters (mg/Nm^3)	:	41.8	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VESPL/17/R-1202

Date: 04.07.2017

ANALYSIS REPORT OF FLUE GAS FOR JUNE-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**12.06.2017 at 10.30am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	Incinerator	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	48	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.05	
4	Quantity of gas flow ($Nm^3/hr.$)	:	1120	
5	Concentration of Carbon monoxide (%)	:	1.6	
6	Concentration of Carbon dioxide (%)	:	2.4	
7	Concentration of Sulphur dioxide (mg/Nm^3)	:	2.4	
8	Concentration of Nitrogen dioxide (mg/Nm^3)	:	35.1	400
9	Concentration of Hydrocarbon as CH_4 (ppm)	:	3.14	
10	Concentration of particulate Matters (mg/Nm^3)	:	37.4	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT LTD

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-1366

Date.: 07.08.2015

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**17.07.2017 at 10.00am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	47	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.38	
4	Quantity of gas flow (Nm^3/hr.)	:	1197	
5	Concentration of Carbon monoxide (%)	:	1.2	
6	Concentration of Carbon dioxide (%)	:	2.1	
7	Concentration of Sulphur dioxide (mg/Nm^3)	:	2.92	
8	Concentration of Nitrogen dioxide (mg/Nm^3)	:	27.2	400
9	Concentration of Hydrocarbon as CH_4 (ppm)	:	2.92	
10	Concentration of particulate Matters (mg/Nm^3)	:	31.6	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**	-		

VISIONTEK CONSULTANCY SERVICES PVT LTD

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/171/R-1645

Date.: 06.09.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**03.08.2017 at 10.20am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	48	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.12	
4	Quantity of gas flow (Nm^3/hr.)	:	1136	
5	Concentration of Carbon monoxide (%)	:	1.0	
6	Concentration of Sulphur dioxide (mg/Nm^3)	:	1.8	
7	Concentration of Nitrogen dioxide (mg/Nm^3)	:	24.2	400
8	Concentration of particulate Matters (mg/Nm^3)	:	27.2	50
E	**Pollution control Device**			
	Details of pollution control			
	Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref:.....VCSPL/17/B-1906

Date.:.....05.10.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**20.09.2017 at 11.0am**
A	**General Information about Stack**	-	-
1	Stack Connected to	:	**Incinerator**
2	Emission due to	:	Burning of H.S. Diesel
3	Material of Construction of stack	:	MS
4	Shape of stack	:	Circular
5	Whether stack is provided with permanent platform & ladder	:	Yes
6	Generation capacity	:	N.A.
B	**Physical Characteristics of Stack:**	-	-
1	Height of the stack from ground level	:	60m (approx)
2	Diameter of the stack at sampling point	:	0.30m
3	Height of the sampling point from GL	:	15.0m (approx)
4	Area of Stack	:	0.0707 m^2
C	**Analysis / Characteristic of Stack:**	-	-
1	Fuel Used	:	N.A.
2	Fuel consumption	:	N.A.
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results** / **CPCB Limit**
1	Temperature of emission (°C)	:	46
2	Barometric pressure (mm of Hg)	:	714
3	Velocity of gas (m/sec.)	:	5.31
4	Quantity of gas flow (Nm^3/hr.)	:	1185
5	Concentration of Carbon monoxide (%)	:	1.2
6	Concentration of Sulphur dioxide (mg/Nm^3)	:	1.6
7	Concentration of Nitrogen dioxide (mg/Nm^3)	:	22.8 / 400
8	Concentration of particulate Matters (mg/Nm^3)	:	29.9 / 50
E	**Pollution control Device**		
	Details of pollution control Device attached with the stack	:	Nil
F	**Remarks**		

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT LTD

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VCSPL/17/R-3047

Date.: 04.11.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**09.10.2017 at 11.45am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	Incinerator	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	43	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.37	
4	Quantity of gas flow ($Nm^3/hr.$)	:	1210	
5	Concentration of Carbon monoxide (%)	:	1.4	
6	Concentration of Sulphur dioxide (mg/Nm^3)	:	1.7	
7	Concentration of Nitrogen dioxide (mg/Nm^3)	:	20.2	400
8	Concentration of particulate Matters (mg/Nm^3)	:	33.9	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-3295 Date.: 04.12.2017

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**22.11.2017 at 11.10am**	
A	**General Information about Stack**	-	-	-
1	Stack Connected to	:	**Incinerator**	
2	Emission due to	:	Burning of H.S. Diesel	
3	Material of Construction of stack	:	MS	
4	Shape of stack	:	Circular	
5	Whether stack is provided with permanent platform & ladder	:	Yes	
6	Generation capacity	:	N.A.	
B	**Physical Characteristics of Stack:**	-	-	-
1	Height of the stack from ground level	:	60m (approx)	
2	Diameter of the stack at sampling point	:	0.30m	
3	Height of the sampling point from GL	:	15.0m (approx)	
4	Area of Stack	:	0.0707 m^2	
C	**Analysis / Characteristic of Stack:**	-	-	-
1	Fuel Used	:	N.A.	
2	Fuel consumption	:	N.A.	
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results**	**CPCB Limit**
1	Temperature of emission (°C)	:	40	
2	Barometric pressure (mm of Hg)	:	714	
3	Velocity of gas (m/sec.)	:	5.6	
4	Quantity of gas flow (Nm^3/hr.)	:	1274	
5	Concentration of Carbon monoxide (%)	:	1.2	
6	Concentration of Sulphur dioxide (mg/Nm^3)	:	1.4	
7	Concentration of Nitrogen dioxide (mg/Nm^3)	:	23.6	400
8	Concentration of particulate Matters (mg/Nm^3)	:	30.4	50
E	**Pollution control Device**			
	Details of pollution control Device attached with the stack	:	Nil	
F	**Remarks**			

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

ISO 9001 : 2008
ISO 14001 : 2004
OHSAS 18001 : 2007

Ref.: VCSPL/17/R-3426

Date: 04.01.2018

ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**

	Date of Sampling	:	**14.12.2017 at 11.15am**
A	**General Information about Stack**	-	- -
1	Stack Connected to	:	**Incinerator**
2	Emission due to	:	Burning of H.S. Diesel
3	Material of Construction of stack	:	MS
4	Shape of stack	:	Circular
5	Whether stack is provided with permanent platform & ladder	:	Yes
6	Generation capacity	:	N.A.
B	**Physical Characteristics of Stack:**	-	- -
1	Height of the stack from ground level	:	60m (approx)
2	Diameter of the stack at sampling point	:	0.30m
3	Height of the sampling point from GL	:	15.0m (approx)
4	Area of Stack	:	0.0707 m^2
C	**Analysis / Characteristic of Stack:**	-	- -
1	Fuel Used	:	N.A.
2	Fuel consumption	:	N.A.
D	**Results of Sampling & Analysis of Gaseous Emission**	-	**Analysis Results** **CPCB Limit**
1	Temperature of emission (°C)	:	42
2	Barometric pressure (mm of Hg)	:	714
3	Velocity of gas (m/sec.)	:	5.73
4	Quantity of gas flow (Nm^3/hr.)	:	1295
5	Concentration of Carbon monoxide (%)	:	1.4
6	Concentration of Sulphur dioxide (mg/Nm^3)	:	1.3
7	Concentration of Nitrogen dioxide (mg/Nm^3)	:	21.2 400
8	Concentration of particulate Matters (mg/Nm^3)	:	27.4 50
E	**Pollution control Device**		
	Details of pollution control Device attached with the stack	:	Nil
F	**Remarks**		

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

For Visiontek Consultancy Services Pvt. Ltd.

STP Report

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VCSPL/17/R-307

Date: 08.02.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF JANUARY-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD :**
   STPW-2: Outlet of STP 50 KLD :
   STPW-3: Inlet of STP 10 KLD Hospital:
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 23.01.2017
4. Date of analysis : 24.01.2017 to 30.01.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	08 & Pungent smell	CL/UO	09 & Pungent smell	CL/UO
2	Suspended Solids	APHA 2540 D	mg/l	100	242	36	186	38
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H+ B	–	5.5-9.0	6.28	6.84	6.38	6.98
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	20	20	20	20
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	3.4	ND	2.4	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	5.2	ND	4.6	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	16.7	1.6	13.8	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	140	8	120	10
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	380	36	290	40
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.13	<0.05	0.11	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.18	<0.05	0.14	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.21	0.022	0.16	0.018
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.84	0.14	0.7	0.08
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8010-C		90% survival of fish after 96 hours in 100% effluent	70% survival of fishes	98% survival of fishes	72% survival of fishes	98% survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.016	<0.005	0.012	<0.005
30	Iron as Fe (max)	APHA3500 Fe B	mg/l	3	0.74	0.26	0.7	0.24
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	4.6	1.2	4.2	1.1

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-410

Date.: 03.03.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF FEBRUARY-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 16.02.2017
4. Date of analysis : 17.02.2017 to 23.02.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	09 & Pungent smell	CL/ U/O	11 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	306	32	256	40
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.36	6.94	6.28	6.88
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	21	21	21	21
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	4.2	ND	2.2	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	5.6	ND	5.4	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	15.8	1.4	15.4	0.8
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	130	6	128	8
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	360	24	320	30
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.15	<0.05	0.12	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.22	<0.05	0.13	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.24	0.018	0.18	0.015
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.78	0.12	0.82	0.1
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	72% Survival of fishes	98% Survival of fishes	70% Survival of fishes	98% Survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.02	<0.005	0.014	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.82	0.28	0.68	0.26
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	4.9	1.3	3.8	1.2

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

f.:VCSPL/171R-617

Date.: 04.04.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MARCH-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 16.03.2017
4. Date of analysis : 17.03.2017 to 23.03.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	07 & Pungent smell	CL/ U/O	08 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	264	24	228	20
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.40	7.04	6.34	6.96
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	21	21	21	21
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	3.8	ND	2.8	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	5.2	ND	5.8	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	14.9	1.6	16.8	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	140	8	100	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	320	28	280	20
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.16	<0.05	0.13	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.18	<0.05	0.12	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.26	0.02	0.19	0.016
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.84	0.1	0.7	0.08
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	71% Survival of fishes	98% Survival of fishes	72% Survival of fishes	98% Survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.02	<0.005	0.014	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.76	0.25	0.6	0.24
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.8	1.1	3.2	0.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17HR-617

Date.: 02.05.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF APRIL-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 13.04.2017
4. Date of analysis : 14.04.2017 to 20.04.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	06 & Pungent smell	CL/ U/O	06 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	242	20	196	24
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H$^+$ B	–	5.5-9.0	6.28	7.10	6.36	7.06
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	28	28	28	28
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	3.2	ND	2.4	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3C	mg/l	50	4.8	ND	5.4	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	12.2	1.8	13.6	1.6
10	Free ammonia (as NH_3)	APHA 4500-NH_3F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	120	10	120	8
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	290	40	300	30
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.14	<0.05	0.12	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.16	<0.05	0.14	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.24	0.024	0.21	0.03
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.74	0.12	0.68	0.1
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	73% Survival of fishes	98% Survival of fishes	71% Survival of fishes	98% Survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.84	0.28	0.7	0.22
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.4	1.0	3.6	1.2

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-949

Date.: 03.06.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MAY-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 11.05.2017
4. Date of analysis : 12.05.2017 to 18.05.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	05 & Pungent smell	CL/ U/O	05 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	192	24	172	20
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.34	7.20	6.48	7.10
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	30	30	30	30
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	3.5	ND	1.8	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	4.6	ND	4.8	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	11.6	2.2	12.2	1.8
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	132	8	110	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	320	36	270	24
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.12	<0.05	0.13	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.14	<0.05	0.18	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.2	0.018	0.22	0.028
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.62	<0.05	0.6	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	73% Survival of fishes	98% Survival of fishes	71% Survival of fishes	98% Survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.84	0.28	0.7	0.22
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.4	1.0	3.6	1.2

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-1206

Date.: 04.07.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF JUNE-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 12.06.2017
4. Date of analysis : 13.06.2017 to 19.06.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	09 & Pungent smell	CL/ U/O	07 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	178	28	154	24
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.40	7.12	6.36	7.04
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	25	25	25	25
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	2.6	ND	ND	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3,C	mg/l	50	3.9	ND	4.1	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	10.3	2.1	11.4	2.4
10	Free ammonia (as NH_3)	APHA 4500-NH_3,F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	120	10	98	8
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	290	32	248	26
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.09	<0.05	0.11	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.12	<0.05	0.16	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.14	0.016	0.18	0.022
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.52	<0.05	0.54	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	76% Survival of fishes	98% Survival of fishes	80% Survival of fishes	98% Survival of fishes
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.8	0.28	0.68	0.24
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	2.6	0.64	3.4	0.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-1369

Date.: 07.08.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF JULY-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 17.07.2017
4. Date of analysis : 18.07.2017 to 24.07.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	11 & Pungent smell	CL/ U/O	10 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	164	26	150	22
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.48	7.08	6.40	7.02
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	25	25	25	25
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	ND	ND	ND	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	2.6	ND	2.8	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	6.8	1.3	7.5	1.6
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	70	8	64	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	220	20	190	18
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.07	<0.05	0.09	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.1	<0.05	0.13	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.12	0.014	0.13	0.02
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.46	<0.05	0.5	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	84% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	82% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.72	0.21	0.6	0.18
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	1.8	0.6	2.6	0.9

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VCSPL/17/R-1648

Date: 06.09.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF AUGUST-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 17.08.2017
4. Date of analysis : 18.08.2017 to 24.08.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	14 & Pungent smell	CL/ U/O	11 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	200	32	168	24
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.36	7.10	6.40	7.14
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	24	24	24	24
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	ND	ND	ND	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3C	mg/l	50	3.2	ND	3.1	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	9.1	1.4	8.4	1.3
10	Free ammonia (as NH_3)	APHA 4500-NH_3F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	78	6	60	5
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	180	24	160	20
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.09	<0.05	0.12	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.14	<0.05	0.19	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.13	0.024	0.14	0.03
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.5	<0.05	0.56	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	82% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	80% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.012	<0.005	0.018	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.78	0.24	0.8	0.22
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	1.9	0.64	2.8	0.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/B-1909

Date.: 05.10.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF SEP-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ; STPW-2: Outlet of STP 50 KLD ; STPW-3: Inlet of STP 10 KLD Hospital; STPW-4: Outlet of STP 10 KLD Hospital.**
3. Date of sampling : 20.09.2017
4. Date of analysis : 21.09.2017 to 27.09.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	06 & Pungent smell	CL/ U/O	05 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	208	24	184	26
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.30	7.14	6.24	7.18
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	23	23	23	23
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	ND	ND	ND	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3.C	mg/l	50	3.6	ND	3.4	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	9.8	1.6	9.2	1.5
10	Free ammonia (as NH_3)	APHA 4500-NH_3.F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	72	8	54	10
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	172	24	154	30
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.10	<0.05	0.11	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.12	<0.05	0.16	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.12	0.022	0.16	0.024
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.46	<0.05	0.52	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	84% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	86% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.76	0.25	0.72	0.23
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	2.1	0.54	2.5	0.72

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/R-3050

Date.: 04.11.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF OCT-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 09.10.2017
4. Date of analysis : 10.10.2017 to 16.10.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	08 & Pungent smell	CL/ U/O	06 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	172	20	150	16
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.36	7.20	6.38	7.12
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	23	23	23	23
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	1.4	ND	1.3	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3,C	mg/l	50	3.2	ND	3.1	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	9.2	1.4	8.6	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	52	6	48	7
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	148	18	132	21
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.11	<0.05	0.08	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.18	<0.05	0.16	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.11	0.020	0.12	0.022
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.64	<0.05	0.56	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	85% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	87% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.68	0.28	0.78	0.24
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	2.4	0.82	2.8	0.84

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT LTD

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref:.....VCSPL/171R-3298

Date:.....04-12-2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF NOV-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 16.11.2017
4. Date of analysis : 17.11.2017 to 23.11.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	06 & Pungent smell	CL/ U/O	04 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	150	18	112	14
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.46	7.14	6.38	7.05
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	20	20	20	20
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	1.6	ND	1.4	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3,C	mg/l	50	3.5	ND	3.6	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	9.6	1.4	10.2	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3,F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	64	7	52	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	166	21	148	24
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.13	<0.05	0.12	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.16	<0.05	0.19	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.13	0.025	0.14	0.022
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.58	<0.05	0.64	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	72% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	74% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.008	<0.005	0.007	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.8	0.27	0.72	0.26
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	2.8	0.88	2.6	0.84
33	Faecal Coliform	APHA 9221 B	MPN/100 ml	Shall not be detectable in any 100 ml sample	92.0	<1.8	86.0	<1.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

ISO 9001 : 2008
ISO 14001 : 2004
OHSAS 18001 : 2007

Ref.: VCSPL/17HR-2429

Date: 04.01.2018

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF DEC-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **STPW-1: Inlet of STP 50 KLD ;**
   STPW-2: Outlet of STP 50 KLD ;
   STPW-3: Inlet of STP 10 KLD Hospital;
   STPW-4: Outlet of STP 10 KLD Hospital.
3. Date of sampling : 14.12.2017
4. Date of analysis : 15.12.2017 to 21.12.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results			
					W-1	W-2	W-3	W-4
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	08 & Pungent smell	CL/ U/O	07 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	184	24	147	18
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	<850	<850	<850	<850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.24	7.06	6.28	7.14
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	20	20	20	20
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	2.1	ND	2.5	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	4.2	ND	3.8	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	11.5	1.2	10.8	0.9
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	84	10	80	10
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	220	36	192	30
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.16	<0.05	0.14	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.16	<0 05	0.19	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.14	0.03	0.16	0.028
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.62	<0.05	0.68	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	68% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent	70% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.012	<0.005	0.01	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	1.16	0.28	0.96	0.32
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.1	0.72	2.9	0.68
33	Faecal Coliform	APHA 9221 B	MPN/100 ml	Shall not be detectable in any 100 ml sample	88.0	<1.8	72.0	<1.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

ETP Report

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/17/B-1910

Date.: 05.10.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF SEP-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **ETPW-1: Inlet of ETP 10 KLD ; ETPW-2: Outlet of ETP 10 KLD .**
3. Date of sampling : 20.09.2017
4. Date of analysis : 21.09.2017 to 27.09.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results	
					W-1	W-2
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	07 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	166	18
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850
4	pH Value	APHA 4500H$^+$ B	--	5.5-9.0	6.35	7.06
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	23	23
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	ND	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	2.7	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	8.4	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	50	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	142	18
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001
17	Hexavalent Chromium as Cr $^{+6}$	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.14	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.20	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.19	0.028
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.64	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001
28	Bio-assay test	APHA 8910-C	-	90% survival of fish after 96 hours in 100% effluent	87% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.88	0.28
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.1	0.88

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services

VISIONTEK CONSULTANCY SERVICES PVT LTD

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref:..VCSPL/17/R-3051

Date:..04.11.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF OCT-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **ETPW-1: Inlet of ETP 10 KLD ; ETPW-2: Outlet of ETP 10 KLD.**
3. Date of sampling : 26.10.2017
4. Date of analysis : 27.10.2017 to 02.11.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results	
					W-1	W-2
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	04 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	128	23
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.44	7.00
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	23	23
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	1.6	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	2.4	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	6.8	1.2
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	40	5
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	120	16
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.14	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.22	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.21	0.023
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.68	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	86% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	<0.005	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.94	0.3
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.6	1

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref: VCSPL/17/R-3249

Date: 04.12.2017

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF NOV-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **ETPW-1: Inlet of ETP 10 KLD ; ETPW-2: Outlet of ETP 10 KLD.**
3. Date of sampling : 16.11.2017
4. Date of analysis : 17.11.2017 to 23.11.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results	
					W-1	W-2
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	03 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	96	20
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850
4	pH Value	APHA 4500H^+ B	--	5.5-9.0	6.40	7.06
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	20	20
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	1.8	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3 C	mg/l	50	2.8	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	7.6	1.1
10	Free ammonia (as NH_3)	APHA 4500-NH_3 F	mg/l	5	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	32	6
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	116	18
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.16	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.25	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.22	0.026
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.6	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001
28	Bio-assay test	APHA 8910-C	-	90% survival of fish after 96 hours in 100% effluent	87% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.01	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	0.88	0.28
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	3.8	0.96
33	Faecal Coliform	APHA 9221 B	MPN/100 ml	Shall not be detectable in any 100 ml sample	66.0	<1.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

ISO 9001 : 2008
ISO 14001 : 2004
OHSAS 18001 : 2007

Ref.: VESPL/17/R-3430 *Date:* 04.01.2018

DOMESTIC EFFLUENT WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF DEC-2017

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **ETPW-1: Inlet of ETP 10 KLD ; ETPW-2: Outlet of ETP 10 KLD .**
3. Date of sampling : 14.12.2017
4. Date of analysis : 15.12.2017 to 21.12.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameters	Testing Methods	Unit	Standards (In land Surface water)	Analysis Results	
					W-1	W-2
1	Colour & Odour	APHA 2120 B, C & APHA 2150 B	Hazen	Colourless/Odourless as far as practicable	04 & Pungent smell	CL/ U/O
2	Suspended Solids	APHA 2540 D	mg/l	100	135	28
3	Particulate size of SS	APHA 2540 D		Shall pass 850 micron IS Sieve	< 850	< 850
4	pH Value	APHA 4500H^+ B	–	5.5-9.0	6.34	7.18
5	Temperature	APHA 2550-B	°C	Shall not exceed 5°C above the receiving water temperature	20	20
6	Oil & Grease(max)	APHA 5520 B	mg/l	10	2.2	ND
7	Total Residual Chlorine	APHA 4500Cl, B	mg/l	1	ND	ND
8	Ammonical Nitrogen (as N)	APHA 4500-NH_3,C	mg/l	50	3.5	ND
9	Total Kjeldahl nitrogen (as NH_3)	APHA 4500-N_{org} C	mg/l	100	9.6	0.82
10	Free ammonia (as NH_3)	APHA 4500-NH_3,F	mg/l	5	ND	ND
11	BOD(3 days at 27°C (max)	APHA 5210 B	mg/l	30	64	8
12	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	250	148	26
13	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
14	Mercury (Hg)	APHA 3500 Hg	mg/l	0.01	<0.001	<0.001
15	Lead as Pb(max)	APHA 3111 B, C	mg/l	0.1	<0.01	<0.01
16	Cadmium as Cd (max)	APHA 3111 B, C	mg/l	2	<0.001	<0.001
17	Hexavalent Chromium as Cr^{+6}	APHA 3500Cr B	mg/l	0.1	<0.05	<0.05
18	Total Chromium (Cr)	APHA3500-Cr, B	mg/l	2	<0.05	<0.05
19	Copper as Cu (max)	APHA 3111 B, C	mg/l	3	0.13	<0.05
20	Zinc as Zn(max)	APHA 3111 B, C	mg/l	5	0.22	<0.05
21	Selenium (Se) (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
22	Nickel (Ni)	APHA 3500-Ni	mg/l	3	<0.001	<0.001
23	Cyanide as CN (max)	APHA 4500 CN- C,D	mg/l	0.2	ND	ND
24	Fluoride as F (max)	APHA 4500F- C	mg/l	2	0.19	0.024
25	Dissolved Phosphates (P)	APHA4500-P D	mg/l	5	0.56	<0.05
26	Sulphide (S)	APHA 4500-S_2-D	mg/l	2	<0.1	<0.1
27	Phenolic Compounds as C_6H_5OH (max)	APHA 5530 B, D	mg/l	1	<0.001	<0.001
28	Bio-assay test	APHA 8910-C		90% survival of fish after 96 hours in 100% effluent	75% survival of fish after 96 hours in 100% effluent	98% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	APHA 3500-Mn, B	mg/l	2	0.014	<0.005
30	Iron as Fe (max)	APHA3500-Fe, B	mg/l	3	1.12	0.36
31	Vanadium (V)	APHA 3500-V	mg/l	0.2	<0.001	<0.001
32	Nitrate Nitrogen	APHA 4500-NO_3 E	mg/l	10	4.1	0.84
33	Faecal Coliform	APHA 9221 B	MPN/100 ml	Shall not be detectable in any 100 ml sample	72.0	<1.8

Note:CL:Colourless, U/O:Unobjectionable, ND:Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.