BEFORE THE NATIONAL GREEN TRIBUNAL
EASTERN ZONE BENCH, KOLKATA
ORIGINAL APPLICATION NO. 14 OF 2026 / EZ

Dillip Kumar Samantaray ...Applicant

VERSUS

State of Odisha & Others. ...Respondents

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By the Respondent No.5

Through

Kolkata
Date:

Sri Dipanjan Ghosh,
Advocates for the Respondent No.5
(State Pollution Control Board, Odisha)
e-mail: dpnjnghsh0@gmail.com
Phone No.:990308097

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

EASTERN ZONE BENCH, KOLKATA

ORIGINAL APPLICATION NO. 14 OF 2026 / EZ

05 MAY 2026

Dillip Kumar Samantaray ...Applicant

VERSUS

State of Odisha & Others. ...Respondents

AFFIDAVIT ON BEHALF OF THE STATE POLLUTION CONTROL BOARD, ODISHA, R.NO.5.

I, Dr. Manoj V. Nair, IFS, son of N. Vasudevan Nair aged around 52 years, at present working as Member Secretary, State Pollution Control Board, having my office at Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, P.O. Nayapalli, Bhubaneswar, Dist – Khurda, Odisha-751012, do hereby solemnly affirm and state as under:

1. That I am the Member Secretary of the Respondent No.5 Board and, as such, am well-acquainted with the facts

NOTARY M.K. PRADHAN BHUBANESWAR REGD.NO.ON 71/09 DATE EXPIRY 02.08.2029 GOVT OF ODISHA (INDIA)

and circumstances with the case and competent to swear this affidavit.

2. That this OA has been filed alleging grave and continuing environmental damage due to breach of overflow of Red Mud Pond (RMP) / Process Water Lake on 15.09.2024 by M/s. Vedanta Ltd. (Alumina Refinery Unit), Lanjigarh, which has been impleaded as R-8. It is further alleged that the incident left to the uncontrolled release of highly alkaline, toxic red mud - laden waste water into surrounding agricultural lands and ultimately into Banshadhara River, the primary life-line for tribal and rural communities in Kalahandi and Rayagada district of Odisha. The acts and omission by the Respondents constitute multiple statutory violations etc.

3. That with regard to the aforesaid allegation of breach and overflow of Red Mud Pond (RMP) / Process Water Lake on 15.09.2024 by the R-8 unit, the following points are given below for proper appreciation of this case. It is pertinent to mention here that the R-8 unit has provided

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the Process Water Lake to collect supernatant liquor of the Red Mud Pond (RMP) and rain water of the area.

a. That the R-5 Board after getting information about breach of Process Water Lake from the R-8 on 15.09.2024 issued direction U/s-33A of Water (PCP) Act, 1974 on the basis of the inspection carried out by the officials of R-5 Board headed by the Regional Officer, Rayagada on 15.09.2024 vide Board's letter No.14764 dtd.17.09.2024 to take remedial measures and to take certain actions contained in the said direction and furnish an action taken report. In the said direction, the R-8 unit was directed to come for a personal hearing. A copy of the letter No.14764 dtd.17.09.2024 issued by the R-5 Board in favour of R-8 unit is annexed to this affidavit and marked as **ANNEXURE - R5/1**.

b. That the R-8 unit appeared for personal hearing taken up on dtd.21.12.2024 at 4 PM along with its officials in presence of the Member Secretary as well as other senior officials of the R-5 Board. The

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decision emerged during the personal hearing was communicated to the unit vide Board's memo No.1408 dtd.22.01.2025 with a direction to furnish compliance report on the decision taken in the personal hearing. Copy of the minutes of the personal hearing along with the attendance sheet is annexed to this affidavit and marked as **ANNEXURE - R5/2 Colly**.

c. That in the proceedings of the personal hearing, the timelines for compliance was fixed upto 30.06.2025 and after completion of the said dateline, the R-5 Board directed the R-8 unit on dtd.07.07.2025 to submit the status of progress report of the action plan for restoration and commissioning of Process Water Lake (PWL).

d. That the R-8 unit has submitted the compliance status of progress report of the action plan for restoration and commission of PWL vide letter dtd.02.08.2025. In the said letter, the unit has undertaken for restoration of PWL dyke under the

NOTARY M.K. PRADHAN BHUBANESWAR REGD.NO.21/09 DATE EXPIRY 02.03.2029 GOVT. OF ODISHA (INDIA)

technical supervision of IIT, Roorkee (Design) and IIT, Bhubaneswar (Stability Analysis) with design validation by M/s. Geotheta, a geotechnical farm. A copy of the letter dtd.02.08.2025 is annexed to this affidavit and marked as **ANNEXURE - R5/3**.

e. That the R-5 Board has carried out inspection of the R-8 unit on 25.07.2025 and 11.08.2025 to verify the status of implementation of the decision taken during the personal hearing held on 21.12.2024 with reference to restoration and recommissioning of PWL as well as compliance of the status of Consent to Operate conditions. It was observed during inspection that the restoration of the damaged portion of PWL has been completed. A copy of the inspection report along with monitoring report is annexed to this affidavit and marked as **ANNEXURE - R5/4 Colly**.

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f. That in addition to the above, the IIT, Roorkey vide Certificate dtd.30.07.2025 has certified that restoration upto RL 445 was completed as per

approved design. A copy of the certificate dtd.30.07.2025 is annexed to this affidavit and marked as **ANNEXURE - R5/5**.

g. That presently, the R-8 unit has taken its PWL into operation after getting permission from the R-5 Board vide letter No.20187 dtd.13.11.2025. In the said letter, the R-5 Board has allowed the R-8 unit to use the PWL for receiving water from the Red Mud Pond (RMP) (RMP) area subject to the conditions stipulated in the said letter dtd.13.11.2025. A copy of the letter dtd.13.11.2025 is annexed to this affidavit and marked as **ANNEXURE - R5/6**.

h. That the compliance report submitted by the R-5 unit reveals that the industry has also completed dispersion of compensation amount as fixed by district administration to the affected people as per direction of district administration.

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BHUBANESWAR
REGN.NO. 11/09
DATE EXPIRY
02.03.2029
GOVT. OF ODISHA (INDIA)

MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD. NO. ON-71/2009
PH-9437627119 (M)

02/05/26

4. That the Respondent No.5 Board craves leave of this Hon'ble Tribunal to file further affidavit if required for proper adjudication of this case.

5. That the Annexures annexed to the present affidavit are true and correct copies of their originals.

6. That the contents of the above paragraphs are true and correct to the best of my knowledge, as derived from the official records, and that nothing material has been concealed therefrom.

DEPONENT
Member Secretary
State Pollution Control Board
Odisha, Bhubaneswar

VERIFICATION:

I, the above named deponent, do hereby verify that the contents of the above affidavit are true and correct to the best of my knowledge, as derived from official records, and that nothing material has been concealed therefrom.

Verified at Bhubaneswar on this the 5th day of May, 2026.

SWORN BEFORE ME

NOTARY
M.K. PRADHAN
BHUBANESWAR
REGD.NO.ON-71/09
DATE EXPIRY
GOVT. OF ODISHA (INDIA)

DEPONENT
Member Secretary
State Pollution Control Board
Odisha, Bhubaneswar

MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD. NO. ON-71/2009
PH-9437627119 (M)

02/05/26

ANNEXURE-R5/1

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STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT& CLIMATE CHANGE DEPT., GOVERNMENT OF ODISHA]
ParibeshBhawan, A/118, Nilakantha Nagar, Unit – VIII
Bhubaneswar – 751 012, INDIA

No. 14764 / **Ind-I-Con-5436** Date: 17.09.2024

DIRECTION UNDER SECTION 33A OF THE WATER (PCP) ACT, 1974

Whereas, you are operating a alumina refinery unit in the name and style of M/s Vedanta Limited (Alumina Refinery Unit), At/PO: Lanjigarh in the district of Kalahandi;

And whereas, Consent to Operate was granted to your unit vide Board's letter No.4404 on 28/03/2024 for production of Calcined Alumina (Calciner-I & II) - 2.0 Million MT/Annum, Thermal Power (Unit-I, II & III)-75 MW (3x25 MW), Vanadium (By-product)-3000 MT/Annum, Calcined Alumina (Calciner-III & IV) - 2.0 Million MT/Annum upto 31/03/2026 and Thermal Power-80 MW (50 MW + 30 MW) upto 31/03/2025 with certain conditions for compliance;

And whereas, you have provided Process Water Lake (PWL) to collect supernatant liquor of the red mud pond and rainwater of the area;

And whereas, you have obtained a permission from Board vide its letter no. 16692 dated 30.10.2021 for raising of 3 m height of the dyke of the PWL from 445m to RL to 448m RL and dyke strengthening, as per the drawing, design, specification and methodology of M/s. Golder Associates Consulting (India) Pvt. Ltd and IIT, Bhubaneswar, under their direct supervision;

And whereas, you have submitted vide your Letter No. VLL/HSE/ENV/2022/1422 dated 09.05.2022, the certificate obtained from IIT, Bhubaneswar for strengthening and dyke height raising by 3 m of Process Water Lake (PWL) with additional volume of 10 lakh cum;

And whereas, an incident of breach of Process Water Lake occurred during night hours on 15.09.2024and the same was informed by you at 8.00 AM on 15.09.2024;

And whereas, consequent upon receipt of above information, the alleged site was visited by the team of Board Officials headed by Regional Officer, Rayagada on 15.09.2024 and following observations were made;

1. A breach of 15m width in the dyke of PWL occurred at 2.00 AM on the night of 15.09.2024,
2. About 4 lakh cum of runoff water was released due to the breach of dyke of Process Water Lake which holds runoff water (caustic water having pH 10 to 12) from Red Mud facility,
3. The released runoff water from Process Water Lake (PWL) due to the dyke breach was spread over to about 20-30 acres of land (mix of barren and agricultural land) and finally falls to river Banshadhara river, which is about 900m away from the PWL,
4. The construction material of dyke i.e. big size stone and stone aggregates are carried away upto 50 m,
5. The blacktopping in some portion of the public road adjacent to PWL was affected.

Now therefore, you are directed under Section 33(A) of the Water (Prevention & Control of Pollution) Act, 1974 to carry out the following actions and furnish an action taken report by **20.09.2024**;

i) All the run-off generated from the red mud pond shall be stored in RMP and under no circumstance there shall be release of any water to PWL.
ii) The use of Process Water Lake (PWL) shall be stopped forthwith till it is repaired, restored to the original condition and duly verified by the Board. The Process Water Lake (PWL) shall be taken into use with prior permission from the Board.
iii) In case you intend to operate the plant by-passing the PWL, the process flow shall be intimated to the Board.
iv) The restoration and repair work shall be done in accordance to the original drawing, design, specification and methodology of M/s. Golder Associates Consulting (India) Pvt. Ltd. and IIT, Bhubaneswar and under their direct supervision.
v) The damaged portion of public road due to dyke breach shall be repaired with consultation and permission from competent authority.
vi) Till the restoration work is complete, river water quality monitoring of Banshadhara river shall be done on daily basis for a stretch of 10 km at every 1 km interval in downstream of Process Water Lake and submit analysis report to the Board with respect to pH and TDS.
vii) Action shall be taken to assess the environmental damage due to breach of dyke and release of water and submit report regarding restoration work undertaken till date.

You are further directed to appear for a personal hearing before the Member Secretary on **21.09.2024 at 4.30 PM** in the Conference Hall of the Board.

MEMBER SECRETARY

To

The Whole Time Director and Chief Executive Officer,
M/s Vedanta Limited (Alumina Refinery Unit),
At/PO: Lanjigarh, Via: Viswanathpur,Dist: Kalahandi-766027, Odisha
E-mail: Headhse.VLL@vedanta.co.in

Memo No. 14765 / Date 17.09.2024 /

Copy forwarded to the Collector and District Magistrate, Kalahandi for information and necessary action.

17/09/24

CHIEF ENV. ENGINEER(M)

Memo No. 14766 / Date 17.09.2024 /

Copy forwarded to the Sr. Law Officer for information and necessary action.

17/09/24

CHIEF ENV. ENGINEER(M)

Memo No. 14767 / Date 17.09.2024 /

Copy forwarded to the Regional Officer, SPC Board, Rayagada for information and necessary action.

17/09/24

CHIEF ENV. ENGINEER(M)

O/C

ANNEXURE-R5/2 Colly

12

Tel : 2564033/2563924
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E-mail: paribesh1@ospcboard.org
Web site: www.ospcboard.org

STATE POLLUTION CONTROL BOARD, ODISHA

(DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVT. OF ODISHA)
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII
Bhubaneswar – 751012

No. 1406 / **Ind-I-Con-5436 (Vol-VII)** Date 22.01.2025

MINUTES OF THE PERSONAL HEARING OF M/S VEDANTA LIMITED (ALUMINA REFINERY UNIT), LANJIGARH, KALAHANDI

1.	Name of the Industry	Vedanta Limited (Alumina Refinery Unit), Lanjigarh, Kalahandi	
2.	Date & Time	21.12.2024 at 4:00 PM	
3.	Venue	Conference Hall, SPC Board, Odisha, Bhubaneswar	
4.	Participation	i. Dr. K. Murugesan, Member Secretary ii. Dr. N. R. Sahoo, CEE iii. Er. Sitikantha Sahu, ACEE iv. Er. B. K. Sethi, Sr. Env. Engineer v. Shri Ashok Kumar Bhoi, Regional Officer (Attended through VC) vi. Ms. Subhadra Majhi, Asst. Env. Scientist	State Pollution Control Board, Odisha
		i. Shri Sanjeev Kumar, Dy. COO (Commissioning) ii. Shri Harshvardhan Pande, AVP iii. Sri Debi Pattanaik, Head-Infrastructure (Projects) iv. Shri K. Ramu Naidu, Dy. Head (Env.)	M/s Vedanta Limited (Alumina Refinery Unit), Lanjigarh, Kalahandi

BACKGROUND:

An incident of breach of Process Water Lake (PWL) occurred during night hours on 15.09.2024 and the same was informed by the industry in the morning of 15.09.2024. The alleged site was immediately visited by the Board Officials from the Regional Office, Rayagada on 15.09.2024 and based on the observation made in the inspection report, a direction under Section 33A of Water (PCP) Act, 1974 was issued to the industry on 17.09.2024 to stop discharge of any water to the PWL forthwith till it is repaired, restored and verified by the Board. The industry was

directed to furnish an action taken report by 20.09.2024 and appear for a personal hearing on 21.09.2024 at 4.30 PM.

The industry has submitted the action taken report in compliance to the above direction on 20.09.2024. As per the decisions in personal hearing held on 21.09.2024, a joint inspection was carried out by the Board Officials from Head Office & Regional Office, Rayagada on 26th & 27th Sept, 2024 to assess the environmental damage caused due to breach of PWL, monitor the progress of restoration work and carryout comprehensive water quality monitoring in and around the plant to assess the extent of damage. The joint inspection team has suggested certain action points. The industry submitted a time bound action plan in response to the decision taken in the personal hearing held on 21.09.2024, preparedness plan for management of surface runoff during heavy rains, Failure Analysis Report on PWL dyke breach by IIT, Bhubaneswar and the Stability Analysis Report of Tailing Dams for the year 2023-24 by IIT, Bhubaneswar. As observed during visit, the breached portion of the PWL dyke has been restored temporarily by putting soil as recommended by IIT, Bhubaneswar. However, the final scheme for restoration of the breached portion of the dyke will be provided by IIT, Roorkee followed by validation by a reputed firm for dyke restoration.

Further it has been proposed to finish the restoration and repair job of PWL dyke by May-2025. The report has been communicated to the industry on 17.12.2024 with directions to carry out certain jobs in time-bound manner. Hence the industry was called for a meeting on 21.12.2024 to review the progress of actions taken for restoration activity and compliance report to the other action points.

The meeting was held on scheduled date and time. The list of members attended the meeting is annexed as **Annexure-I**.

RECORD OF PROCEEDING:

Initiating the hearing, the Member Secretary requested the industry representative to explain the status of repair / restoration and action plan for recommissioning of PWL. The industry representative made a power point presentation regarding the above issues and apprised the progress of action taken by them to commence / resume the operation of PWL. It was informed by the industry that all the runoff generated from the RMP is stored within the RMP only and the inflow from the RMP to PWL has been stopped as per the direction of the Board. The progress of various actions explained by the industry and observation of Board is presented in Table No.1.

Table No. 1: Progress status of action points as per Time bound action plan submitted on 22.10.2024 in compliance to personal hearing held on 21.09.2024.

Sl. No.	Time bound action point	Progress report submitted by the industry	Observation /decision by the Board
1	**Submission of geotechnical study & detail design for breached dyke restoration by IIT, Roorkee, validation of the report by Geotechnical firm M/s Geotheta (Africa) and submission of the same to Board.**	IIT, Roorkee on boarded for final restoration scheme of the breached portion based on approved drawings and geotechnical studies. IIT Roorkee visited the site on 9th Nov 2024 and suggested to carry out standard penetrating test (SPT) to confirm the health of the other three sides of the dyke and determine corrective actions required, if any. SPT is completed at 8 locations out of 13 and that in rest locations will be finished by 26th Dec 2024. Drawings for restoration work will be received from IIT, Roorkee by end of December, 2024. M/s. Geotheta (Africa), carried out the site visit on 2nd Dec 2024 for preliminary assessment. Finally this firm will validate the dyke restoration design provided by IIT and conduct independent assessment of the facility. Final scheme for restoration	1. The SPT test shall be carried out with utmost care to avoid damage to the liners. 2. The expert agencies engaged in work may be asked to study the health of the liners. 3. The restoration work shall be carried out and completed in a time bound manner as stated and the whole restoration work shall be completed by **June, 2025.**

Sl. No.	Time bound action point	Progress report submitted by the industry	Observation /decision by the Board
		of the dyke and validation by Geotheta to be submitted to the Board by 15th January, 2025. The Final completion certificate of the dyke shall be validated by IIT, Roorkee. The whole restoration process is expected to be completed by June, 2025.	
2	**Dredging and Desiltation of sludge deposit in the PWL.**	The process of awarding the job for dredging and desilting of PWL is in progress and will be finalized by 31.12.24. About 4 lakh m^3 of deposited red mud/sludge is proposed to be desilted. Mobilization period is one month and work will be completed by May, 2025.	Dredging activity shall be carried with utmost care to prevent damage to bottom liner. The dredged red mud shall be handled and disposed off in environmentally sound manner. This work shall be completed by **May, 2025**.
3	**Replacement of all damaged liner with new liners.**	As recommended by IIT Roorkee, all damaged liners will be replaced by new liners to prevent seepage of water into the dyke. The entire work shall be completed by June, 2025	The over lapping and joint of liners shall be properly welded and anchored on top. The selection of liner material and laying of the same shall be done carefully. The work shall be completed by **June, 2025.**
4	**Dispersion of compensation to the affected people as per the direction of district administration.**	Compensation for an amount of Rs.45 lakhs has been dispersed to affected people as per the direction	The process of disbursement of compensation shall be completed as soon as

Sl. No.	Time bound action point	Progress report submitted by the industry	Observation /decision by the Board
		from State Govt.	possible in consultation with District Administration.
5	**Installation of required number of the surveillance monitoring facilities in the PWL shall be checked and validated before start of operations of the PWL by an independent reputed institute having core competency in the field. After start of operation, the readings from these facilities shall be analysed once every 3 months by a competent external agency and reports to be submitted to the Board.**	IIT, Roorkee will provide the required surveillance monitoring facilities and shall be validated by M/s Geotheta. Installation to be completed by June, 2025.	The exact number of surveillance monitoring facilities shall be found out in consultation with IIT, Roorkee and shall be installed by **June, 2025**.
6	**Bio-monitoring of Bansadhara river to assess the ecological condition of river in the upstream and downstream of the plant. The bio-monitoring shall be done at least twice in a year – pre-monsoon and post-monsoon specifically determining saprobic index and diversity index.**	Scope finalization in progress. Discussion with multiple expert agencies going on. Ordering expected to be completed by February, 2025.	The time line suggested for the job is accepted.
7	**Advised to stabilize the stretch of a bund over which settlements has been noticed by buttressing from downstream side. At this juncture, stabilizing the slopes using geosynthetic**	Status: In Progress Strengthening design with reinforced soil has been provided by M/s IIT, Bhubaneswar. Project is being executed accordingly and will be completed by	The reinforcing activity shall be carried out under the supervision of IIT, Bhubaneswar and shall be completed by **30.06.2025**.

Sl. No.	Time bound action point	Progress report submitted by the industry	Observation /decision by the Board
	materials is highly recommended.	30th June, 2025.	

Besides the above, they made a presentation on compliance to the recommendation and suggestions made in the stability analysis report, failure analysis report prepared by IIT, Bhubaneswar. It was decided that the industry will follow and complete the jobs within the time frame as per the reports as well as suggested by the industry in their presentation.

The meeting ended with a vote of thanks to the Chair.

22/01/25

MEMBER SECRETARY

Memo No. 1407 Date 22.01.2025 /

Copy forwarded to the Regional Officer, SPCB, Rayagada for information and necessary action.

22/1/25

CHIEF. ENV. ENGINEER (M)

Memo No. 1408 Date 22.01.2025 /

Copy forwarded to the GM-Head MSE & Sustainability, Vedanta Limited (Alumina Refinery Unit), Lanjigarh, Kalahandi-766027 (E-mail: Headhse.VLL@vedanta.co.in) for information and necessary action. He is requested to furnish a compliance report to the decision taken in the personal hearing meeting within 15 days.

22/01/25

CHIEF.ENV. ENGINEER (M)

Annexure-I

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STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII,
Bhubaneswar – 751 012, INDIA

ATTENDANCE SHEET FOR THE MEETING WITH M/S VEDANTA LIMITED (ALUMINA REFINERY UNIT), LANJIGARH, KALAHANDI

Venue: Conference Hall, SPC Board, Odisha, Bhubaneswar

Date: 21.12.2024 (04.00 PM)

SL. No.	Name & Designation	Organisation	Mobile Number & E-mail ID	Signature
1.	Dr. K. Murugesan, IFS Member Secretary	SPCB, Odisha		21/12
2.	Dr. N. R Sahoo, Chief Env. Engineer	SPCB, Odisha		21/12/24
3.	Er. S. K. Sahu Addl. Chief Env. Engineer	SPCB, Odisha	9437205463.	S Sahu 21.12.2024
4.	Er. B. K. Sethi Sr. Env. Engineer	SPCB, Odisha		21.12.2024
5.	Shri Ashok Kumar Bhoi, Regional Officer	Regional Office, Rayagada		Attended through VC
6.	Ms. Subhadra Majhi Asst. Env. Scientist	SPCB, Odisha	7978936212	21.12.2024
7.	Mr. Sanjeev Kumar Dy. COO. Kommsty	M/s Vedanta Limited (Alumina Refinery Unit), Lanjigarh	9937251256	
8.	Harshvardhan Pande Asso Vice President Head HSE & Sust	M/s Vedanta Limited (Alumina Refinery Unit), Lanjigarh	9937294152	
9.	Debi Pattnaik. Head - Infra Proj.	M/s Vedanta Limited (Alumina Refinery Unit), Lanjigarh	7328814809.	
10.	K. Ramu Naidu Dy. Head Environ	"	8093092596	
11.				

ANNEXURE-R5/3

vedanta
transforming for good

VLL/HSE/ENV/2025/1770 **02.08.2025**

To
The Member Secretary
Odisha State Pollution Control Board
Paribesh Bhawan, Nilakantha Nagar
Bhubaneswar - 751012

Sub: Minutes of the Personal Hearing of M/s. Vedanta Limited (Alumina Refinery Unit), Lanjigarh, Kalahandi.

Ref: (i) OSPCB Letter No 12607/Ind-I-Con-5436 dtd 07.07.2025
(ii) Minutes of personal hearing communicated vide Board's Memo No. 1408 dtd 22.01.2025.
(iii) Consent to Operate granted vide Board's Letter No. 6802, dated 30.03.2025

Respected Madam,

We are in receipt of the above letter **12607/Ind-I-Con-5436 dtd 07.07.2025** on minutes of the personal hearing with respect to restoration of PWL dyke breach at our location.

In reference to the subject matter, we inform your good office that as committed by Vedanta, we had engaged IIT Roorkee for the design of restoration of the damaged portion of the PWL dyke. The detailed restoration design was developed by IIT Roorkee, Incorporating a multilayer protection system to prevent water seepage from the pond into the dyke. The inner surface of the dyke has been lined with a 6 – 7 mm thick geosynthetic clay liner, followed by the installation of 1.5 mm thick double-sided textured HDPE geomembrane. This is further covered with 500 mm thick soil layer, over which 400 GSM non-woven geotextile membrane is placed. Finally, 230 mm thick stone pitching has been carried out across the entire restored dyke section.

As per design, the inner (upstream) slope of the dyke has been maintained at 1:2 gradient, while the outer (downstream) slope has been constructed with 1:3 gradient, ensuring structural stability. Horizontal blanket filter layer of 900 mm thickness has been placed all along the restored stretch of dyke to ensure continuity of filter media of starter dyke. Additionally, sand chimney of 750 mm thickness has been constructed along the outer slope of starter dyke & it has been integrated with horizontal blanket filter media. The purpose of sand chimney is to bring down the phreatic level if any seepage occurs through the dyke & provide easy seepage path through the blanket filter which will ultimately lead to exit of seepage water in toe drain. It will avoid saturation of downstream dyke core which will result in enhanced stability in seepage condition there by maintaining the Factory of Safety (FOS) value.

VEDANTA LIMITED Lanjigarh

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CIN : L13209MH1965PLC291394

The outer rock toe has been constructed with horizontal filter media at both the base and the inner slope, incorporating geosynthetic materials such as geotextile and geogrid for enhanced stability and filtration. Additionally, a toe drain has been constructed using stone masonry, lined with LDPE, and finished with IPS flooring to ensure effective drainage and structural integrity.

Based on structural stability report of remaining dyke, prepared by IIT Roorkee, repair work has also been carried out for 320 meters at North dyke and 180 meters at West dyke in continuation to the breached portion. This repair has also enhanced the strength of North-West corner of the dyke which is typically the lowest portion of the pond where maximum water pressure is concentrated. This repair is inline with the design philosophy of the repaired section of the dyke which was breached.

The restoration of the damaged portion of the dyke has been completed up to 445 RL. The timeline for achieving this milestone was extended beyond the initial target due to unexpected intermittent rainfall between January to June 2025. During this period, the region received a total of 588 mm of rainfall, significantly higher than the 273 mm recorded in the corresponding period of the previous year.

Around 152000 MT of silt was removed from the bottom of the pond. During inspection of liner condition post various tests, desilting, restoration of damaged dyke and repair of weak sections of the dyke, around 100000 SQM liner was identified to be replaced and as such the repair and replacement works have been completed.

VLL requested IIT Roorkee to conduct site visit to assess the restoration work carried out on the PWL dyke. The inspection took place on 30th July 25. Following the visit, IIT Roorkee certified that the dyke restoration up to 445 RL complies with the approved design specifications **(Annexure-I).** Considering a freeboard of 2.0 meters from 445 RL, the Engineer of Record (M/s. Geotheta) has determined the cumulative volume of the PWL at 443 RL to be 7,69,515 m^3 (**Annexure-II**).

We aim to reduce the water load on the Red Mud Pond (RMP) where currently 250000 m^3 water is stored. We are consuming around 7,000 m^3 of RMP water daily in our refinery process. With each mm of rain fall, theoretically, around 930 m^3 of water gets added in the RMP water storage. With this usage, we have been able to reduce the water level on the RMP by around 60000 m^3 in the month of July'25. However, looking at the upcoming monsoon season and to ensure water evacuation from RMP in case of heavy rainfall, we would need to transfer water from RMP to Process Wate Lake (PWL).

The operation of the PWL will be done based on the most stringent Global Industry Standard on Tailings Management (GISTM) guidelines which have been incorporated by Vedanta Group. Under these guidelines, M/s. Geotheta, a global benchmarked geotechnical firm, has been onboarded as the Engineer of Record (EoR) and M/s. SRK Consulting has been appointed as the Independent Tailings Review Board (ITRB). We have also onboarded a global dam specialist on role as Head - Tailing Management to guide us on effective tailings management.

Vedanta would like to assure your good office that all necessary steps and utmost care has been taken by us to prevent any kind of damage to the environment and we have been fully complaint

VEDANTA LIMITED Lanjigarh

with all the environmental regulations and parameters. We humbly submit the progress made on the pointwise, time-bound action items for your kind perusal **(Annexure-III).**

As mentioned above, PWL has been completed up to 445RL for which IIT Roorkee has given the completion certificate against their design which was vetted by Geotheta. We would sincerely request your good office to kindly grant us permission to take water into PWL from RMP thereby reducing water level at RMP and enable us to be ready for heavy rainfall during the season.

We look forward to your continued guidance and support.

Thank you.

Yours faithfully,
For **Vedanta Limited, Lanjigarh.**

VEDANTA LIMITED Lanjigarh

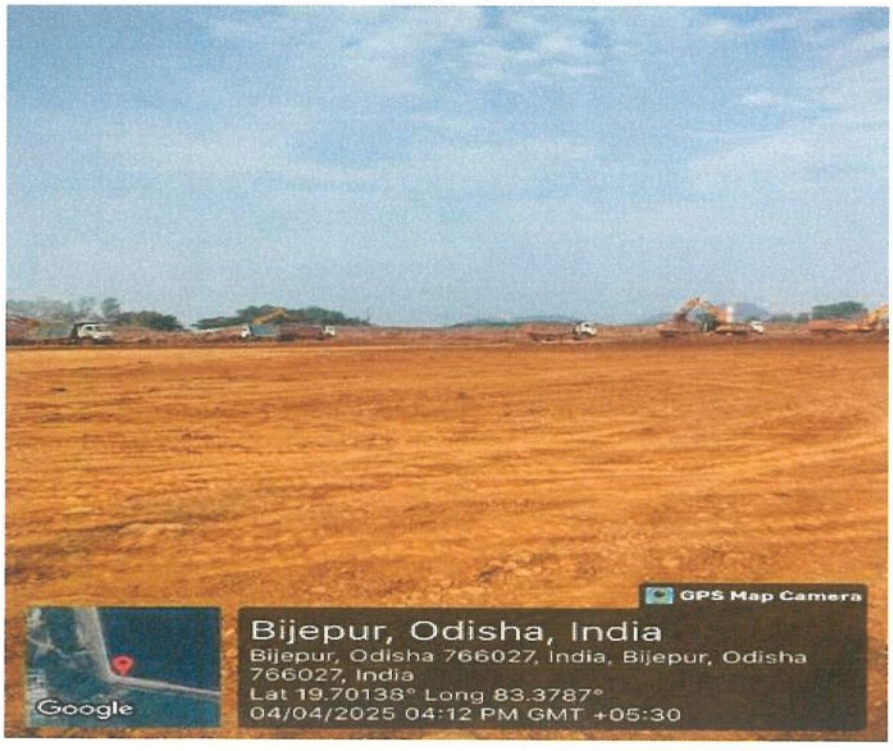
Harshvardhan Pande
(Head HSE & Sustainability)

CC: The Regional Officer, State Pollution Control board,1st Lane, Kasturi Nagar, Rayagada.

PWL Dyke Restoration Construction Photos

Silt Removal

Sand bed preparation



VEDANTA Lanjigarh LIMITED

M. Pande

HDPE Liner Laying

Soil overburden on HDPE liner

S. Panda

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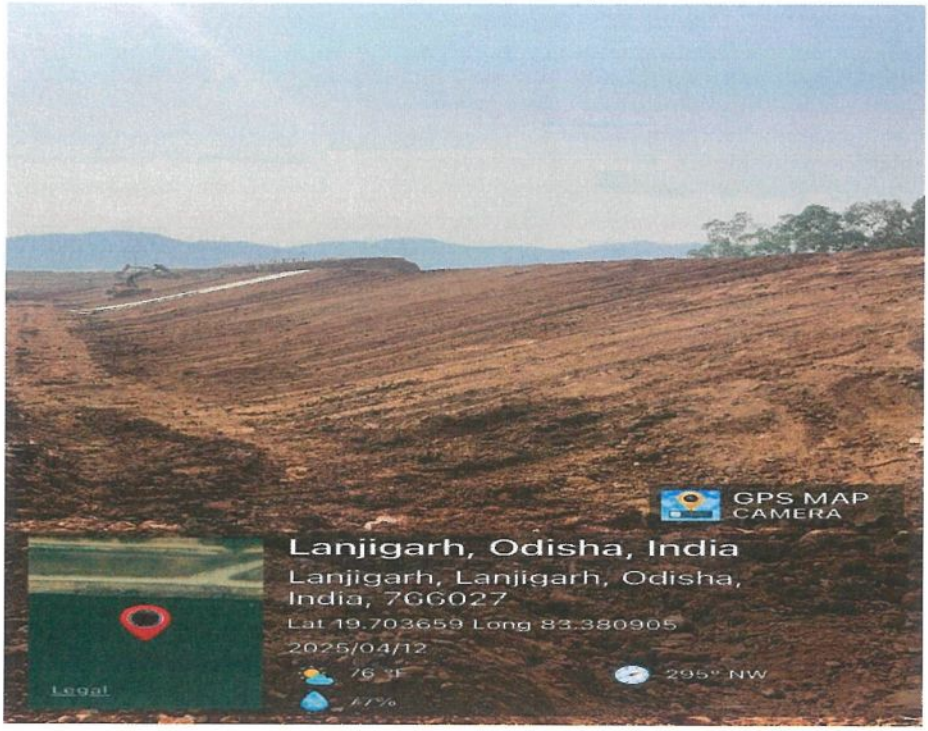
PWL Dyke Restoration- Upstream

Slope Dressing & Soil Compaction



Geosynthetic Caly Liner (GCL) Laying

B. Panda

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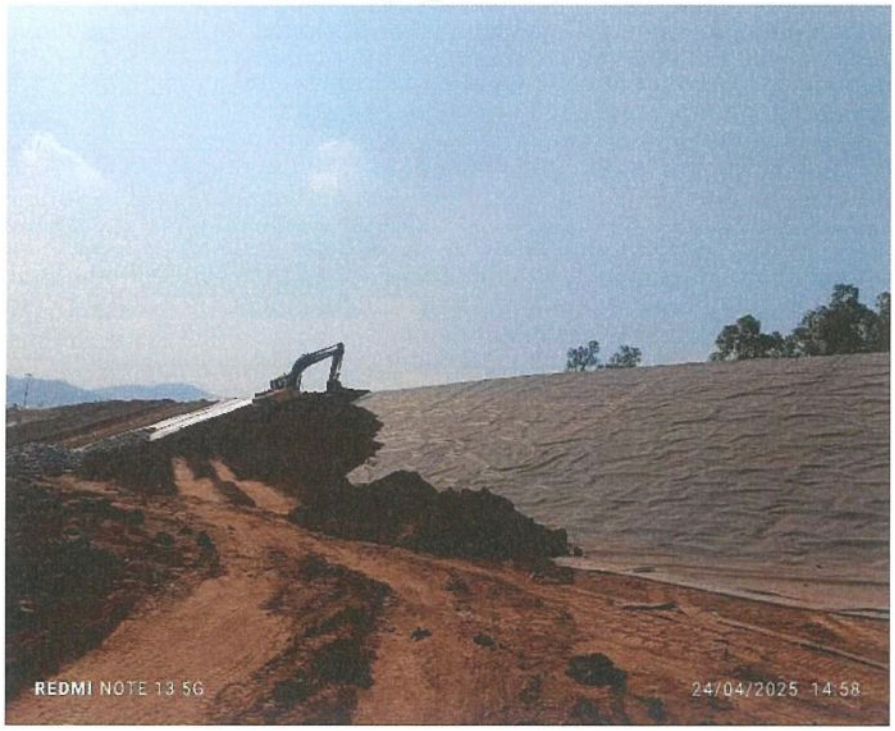
HDPE Liner Laying & Soil Over Burden



Geotextile & Stone pitching

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Annexure -III

POINTWISE TIME BOUND ACTION PLAN

SN	Timebound action point	Compliance Status
1)	Submission of geotechnical study & detail design for breached dyke restoration by IIT Roorkee, validation of the report by Geotechnical firm M/s Geotheta (Africa) and submission of the same to Board	Geotechnical study & detail design for breached dyke restoration by IIT Roorkee, **Status: Completed.** Validation of the report by Geotechnical firm M/s Geotheta (Africa) **Status: Completed.** Submission of reports to Board: Attached as **Annexure A –** Geotechnical study **Annexure B –** Design for breached dyke restoration **Annexure C –** Validation of design by M/s Geotheta Total identified damaged liner replacement after SPT test and desilting. **Status: Completed** (100000 SQM) Restoration of damaged portion of the dyke and repair of weak sections as identified in geotechnical report completed up to 445 RL. Final inspection of IIT Roorkee: **Status: Completed** IIT Roorkee confirmed that dyke restoration of PWL constructed as per the agreed design provided.
2)	Dredging and Desiltation of sludge deposit in the PWL	**Status: Completed** 152000 m3 sludge material removed from the pond.
3)	Replacement of all damaged liner with new liners	**Status: Completed** Identified damaged liners replaced (100000 SQM)
4)	Dispersion of compensation to the affected people as per the direction of district administration	**Status: Completed.** Dispersion of compensation to the affected people was completed as per the direction of district administration.

M. Pande

VEDANTA LIMITED Lanjigarh

5)	Installation of required number of surveillance monitoring facilities in the PWL shall be checked and validated before start of operations of the PWL by an independent reputed institute having core competency in the field. After start of operation, the readings from these facilities shall be analysed once every 3 months by a competent external agency and reports to be submitted to the Board.	**Status: In Progress** During final inspection of construction of dyke, IIT Roorkee provided the total number of surveillance monitoring equipment to be installed (DP-10, DS-10, DI-10). As per previous Golder recommendations, 13 surveillance equipment already installed at site. Periodic monitoring and analysis of the surveillance monitoring facilities will be done by independent reputed institute once every 3 months and report will be submitted.
6)	Biomonitoring of Bansadhara river to assess the ecological condition of river in the upstream and downstream of the plant. The bio-monitoring shall be done at least twice in a year pre-monsoon and post-monsoon specifically determining saprobic index and diversity index.	**Status: Study completed. Report awaited.** Biomonitoring study conducted by School of Life Science Department of Sambalpur University for pre-monsoon season and report awaited. Post monsoon study awarded and will be executed accordingly.
7)	Advised to stabilize the stretch of a bund over which settlements has been noticed by buttressing from downstream side. At this juncture, stabilizing the slopes using geosynthetic materials is highly recommended.	**Status: InProgress** This point refers to recommendations by IIT BBSR regarding strengthening of small section of north dyke where some amount of settlement was observed. As recommended by IIT BBSR, work is in progress and expected to compete by Mar'26. At present mud dumping is stopped at this location.

VEDANTA LIMITED Lanjigarh

Harshvardhan Pande
(Head HSE & Sustainability)

ANNEXURE-R5/4 Colly

INSPECTION REPORT OF M/S. VEDANTA LIMITED, AT/PO: LANJIGARH, VIA: VISWANATHPUR, DIST: KALAHANDI

Name of the Industry	M/s. Vedanta limited, At/PO: Lanjigarh, Via: Viswanathpur, Dist: Kalahandi.
Date of Inspection	25.07.2025 & 11.08.2025
Name of the Inspecting Officers of the Board	Sri A. K. Bhoi, Regional Officer SPCB Rayagada Er R K Sahu, Dy Env Engineer, SPCB Rayagada
Industry Person present during visit	Sri Harshavardhan Pande, Head (HSEF & Sustainability) Sri Debi Prasad Pattnaik, General Manager (Expansion Project) Sri K Ramu Naidu, AGM (Env) Sri Subhendu Sekhar Panda, Head Civil (BRDA) Satya Ranjan Sahu, Dy. Mgr (Env)

M/s Vedanta Limited Lanjigarh (Alumina Refinery Unit & Power Plant) was inspected & monitored to verify the status of implementation of decision taken during the personal hearing held on 21.12.2024 w.r.t. restoration and re-commissioning of PWL as well as compliance to status of CTO conditions.

CONSENT STATUS:

The industry has obtained CTO from the Board vide letter no. 6802/Ind-I-Con-5436 dtd 30.03.2025 which is valid for the period up to 31.03.2026 for following production facilities:

Sl. No.	Product	Quantity
1	Calcined Alumina (Calciner-I & II)	2.0 Million MT/Annum
2	Thermal Power	75 MW
3	Vanadium (By -product)	3,000 MT/Annum
4	Calcined Alumina (Calciner-III & IV)	2.0 Million MT/Annum
5	Thermal Power	80MW (50 MW + 30 MW)

Process Water Lake (PWL) dyke Restoration Status:

In the recent past, there was a portion of PWL dyke breach on north side was reported by industry on 15th Sept'24. Direction was issued to the industry by Head Office, SPCB, Bhubaneswar. Subsequently industry has appeared for personal hearings at SPCB, Bhubaneswar as per board direction. Restoration of PWL dyke was discussed on last personal hearing held on 21.12.2024. Minutes of personal hearing were recorded vide Board's Memo No. 1408 dtd 22.01.2025. The status of pointwise compliance in respect of progress of PWL dyke restoration is as below.

Sl. No	Time bound action point	Current progress status as verified during visit
1	Submission of geotechnical study & detail design for breached dyke restoration by IIT, Roorkee, validation of the report by Geotechnical firm M/s Geotheta (Africa) and submission of the same to Board.	The industry informed that detailed design for breached dyke restoration was done by IIT, Rookee. The validation of the design was carried out by M/s Geotheta. During the visit, it was observed that the industry carried out the restoration of the dyke as per the design provided by IIT, Roorkee. About 1,00,000 SQM of total identified damaged liner replacement was made by the industry with new liners after SPT test (Standard Penetration Test) and desilting in PWL. Restoration of damaged portion of the dyke and repair of weak sections as identified in geotechnical report has been completed up to 445 RL. IIT Roorkee confirmed that dyke restoration of PWL constructed as per the design provided. The industry has submitted a copy of certificate of confirmation by IIT Roorkey, dtd.30.07.2025 in this regard.
2	Dredging and De-siltation of sludge deposit in the PWL	As informed by the industry, about 1,52,000 MT of sludge material removed. At present no sludge deposits in PWL observed during the visit.
3	Replacement of all damaged liner with new liners	The industry has removed identified damaged liners 1,00,000 SQM with new liners.
4	Dispersion of compensation to the affected people as per the direction of district administration	The industry informed that dispersion of compensation to the affected people has been completed as per the direction of district administration.
5	Installation of required number of the surveillance monitoring facilities in the PWL shall be checked and validated before start of operations of the PWL by an independent reputed institute having core competency in the field. After start of operation, the readings from these facilities shall be analysed once every 3 months by a competent external agency and reports to be submitted to the Board.	As per the final inspection of construction of dyke conducted by IIT Roorkee, the total number of surveillance monitoring equipment to be installed (Digital Piezometers -10nos, Digital Survey monuments -10nos, Digital Inclinometers -10nos). As per previous Golder recommendations, 13 surveillance equipment already installed at site. As informed by the industry, Periodic monitoring and analysis of the surveillance monitoring facilities will be done by independent reputed institute once every 3 months and report will be submitted.
6	Biomonitoring of Bansadhara river to assess the ecological condition of river in the upstream and downstream of the plant. The bio-	The industry informed that Biomonitoring study was awarded to the School of Life Science Department of Sambalpur University and the report is awaited.

	monitoring shall be done at least twice in a year – pre-monsoon and post-monsoon specifically determining saprobic index and diversity index.	
7	Advised to stabilize the stretch of a bund over which settlements has been noticed by buttressing from downstream side. At this juncture, stabilizing the slopes using geosynthetic materials is highly recommended.	This is related to bauxite residue disposal area. The buttressing from downstream side is in progress. Reinforced stabilization of dyke by using geosynthetic materials is in progress.

Detailed steps taken by the industry for restoration of breached dyke restoration of PWL: (as per site visit and information obtained from the industry)

- Vedanta had engaged IIT Roorkee for the design of restoration of the damaged portion of the PWL dyke.
- The detailed restoration design was developed by IIT Roorkee, incorporating a multilayer protection system to prevent water seepage from the pond into the dyke.
- The inner surface of the dyke has been lined with a 6—7 mm thick geosynthetic clay liner, followed by the installation of 1.5mm thick double-sided textured HDPE geomembrane. This is further covered with 500mm thick soil layer, over which 400 GSM non-woven geotextile membrane is placed. Finally, 230mm thick stone pitching has been carried out across the entire restored dyke section.
- As per design, the inner (upstream) slope of the dyke has been maintained at 1:2 gradient, while the outer (downstream) slope has been constructed with 1:3 gradient, ensuring structural stability.
- Horizontal blanket filter layer of 900 mm thickness has been placed all along the restored stretch of dyke to ensure continuity of filter media of starter dyke.
- Additionally, sand chimney of 750 mm thickness has been constructed along the outer slope of starter dyke & it has been integrated with horizontal blanket filter media. The purpose of sand chimney is to bring down the phreatic level if any seepage occurs through the dyke & provide easy seepage path through the blanket filter which will ultimately lead to exit of seepage water in toe drain.
- The outer rock toe has been constructed with horizontal filter media at both the base and the inner slope, incorporating geosynthetic materials such as geotextile and geogrid for enhanced stability and filtration. Additionally, a toe drain has been constructed using stone masonry, lined with LDPE, and finished with IPS flooring to ensure effective drainage and structural integrity.

- Based on structural stability report of remaining dyke, prepared by IIT Roorkee, repair work has also been carried out for 320 meters at North dyke and 180 meters at West dyke in continuation to the breached portion. This repair has also enhanced the strength of North West corner of the dyke which is typically the lowest portion of the pond where maximum water pressure is concentrated. This repair is in line with the design philosophy of the repaired section of the dyke which was breached.
- The restoration of the damaged portion of the dyke has been completed up to 445 RL.
- Around 1,52,000 MT of silt was removed from the bottom of the pond. About 1,00,000 SQM of total identified damaged liner replacement was made by the industry with new liners after SPT test (Standard Penetration Test) and desilting in PWL.
- IIT Roorkee during their visit dtd 30.07.2025 also certified that the dyke restoration up to 445 RL complies with the approved design specifications. Considering a freeboard of 2.0 meters from 445 RL, M/s. Geo-theta (A Geotechnical firm) has determined the cumulative volume of the PWL at 443 RL to be 7,69,515 m3.
- As informed, in Red Mud Pond (RMP), currently 2,50,000 m3 water is stored. The unit is consuming around 7,000 m3 of RMP water daily in their refinery process. To ensure water evacuation from RMP in case of heavy rainfall, the industry is now wants to transfer water from RMP to Process Water Lake (PWL).
- PWL has been completed up to 445RL for which IIT Roorkee has given the completion certificate against their design which was vetted by Geotheta. The industry has requested the Board for grant of permission to take water into PWL from RMP helping in reducing the water level at RMP.

COMPLIANCE STATUS OF CTO CONDITIONS:

Sl no.	Special Conditions	Compliance status
01	The industry will install FGD and SCR in 50 MW and 30 MW Power Plant as per the schedule submitted to the Board vide letter No.VLL/HSE/ENV/2025/1712 Dated 08.02.2025	Agreed to comply by the unit
02	The ESPs installed at the Calciners and Boilers of power plant be operated efficiently so as to meet the prescribed standard. Online monitoring system shall be installed at the appropriate places for monitoring of particulate	The industry has provided ESPs to control PM emissions. Online monitoring system has been provided.

	matter (PM) emission, SO2, NOx and CO etc. The monitoring system shall be hooked to SPCB.	
03	In plant control measures to be taken for minimization of generation of caustic aerosols from the cooling towers.	Being followed as informed
04	Appropriate dust extraction / suppression system shall be installed at all potential dust generating sources of bauxite handling area, lime handling area, coal handling area and alumina handling areas. The pollution control system shall be operated and maintained properly to avoid generation of fugitive dust from these areas.	The unit has provided Air pollution control systems like Dust suppression system (Dry fog), water sprinkler system, fixed mist cannons in bauxite stockpile areas. Wet scrubber systems have been installed in lime handling plant for dust extraction. Bag filters are installed on Alumina Silo. Coal handling is being done through conveyers of enclosed type to prevent dust generation. Coal handling area has been provided with Dust suppression system of dry fog type at transfer towers and sprinkler system at stockpiles to avoid generation of fugitive dust.
05	In case coal / bauxite is received through trucks, tippers etc., the same shall be done under covered condition without overloading to avoid dust emission and spillage on the road.	As informed by the industry, Coal/Bauxite is received under covered condition.
06	Dry fog system or dust extraction system shall be provided in coal handling plant	Coal handling area has been provided with dust suppression system of dry fog type at transfer towers and sprinkler system at stockpiles to avoid generation of fugitive dust.
07	All internal roads shall be made concrete to prevent generation of dust during movement of vehicle. Periodical water sprinkling shall also be done on all internal roads to suppress the dust generation.	RCC roads have been provided to prevent generation of dust during movement of vehicle. Water sprinkling is also being carried out on roads to suppress the dust generation during movement of vehicle.
08	The industry shall provide necessary acoustic enclosures at appropriate places to control overall noise level. The overall noise levels shall be kept well within the standards of 75dB (A) during day time (06.00 AM-10.00 PM) and 70dB (A) during night time (10.00 PM-06.00 AM).	The industry has taken adequate noise control measures in the noise prone area.
09	The water spraying facility shall be provided in the red mud pond and ash pond to keep the red mud and ash	The unit has provided water sprinkling through mist canon and water tankers at red mud pond and ash pond.

	surface wet to prevent dust from being air borne.	
10	Ambient air quality shall meet the prescribed standards of the Board. At least six continuous ambient air quality monitoring stations shall be established and monitoring shall be carried out as per the guidelines of National Ambient Air Quality Standards. The continuous monitoring system shall be linked to SPCB.	The industry has provided 04 nos of CAAQMS within existing plant premises & two nos CAAQMS at outside of the plant. All are connected with SPCB server.
11	In case of transportation of fly ash through trucks, tippers, it shall be done so under covered condition to avoid any spillage and dust emission. A portion of fly ash shall be collected as dry ash, stored in silo and given to local fly ash brick makers or cement making. The unload of ash from the ash silos shall be done with the help of telescopic chutes to avoid dust emission. .	The unit is disposing fly ash through HCSD method to Ash pond. Dry fly ash which is supplied to brick manufacturers is being unloaded from the ash silos with the help of telescopic chutes. Ash loaded trucks are being covered with tarpaulin to prevent any spillage & dust emission.
12	The height of the stack connected to DG sets of capacity more than 800 KW (1000 KVA) shall conform to the following: i) 14Q0.3, Q= Total SO2 emission from the plant in kg/hr ii) Minimum 6m above the building where generator set is installed. iii) 30m	The height of the stack connected to DG sets are maintained at 30 mtrs
13	The height of the stack connected to DG set of capacity less than and upto 800 KW (1000 KVA) shall confirm to the following: i) H = h+0.2 Sqrt KVA ii) h = Height of the building where it is installed in meter iii) KVA = Capacity of DG set iv) H = Height of the stack in meter above ground level.	No DG set of capacity less than 800 KW available.
14	There shall not any discharge of process wastewater from the industry to outside. Extensive measures shall be undertaken for wastewater reuse and recycle to ensure zero effluent discharge.	The industry has informed that the plant is operating with zero discharge concept by 100% recycle of wastewater. Domestic effluent is treated in Sewage Treatment Plant of 360 KLD capacity and the treated water is reused in horticulture activities.

15	Both red mud and ash shall be disposed of using HCSD technology in the red mud pond and ash pond respectively. The desired consistency for HCSD shall always be maintained.	Red mud is disposed to the Bauxite Residue & Disposal Area-BRDA(RMP) in dry cake form after filtration through RMF. Dry red mud is having 80% solids which eliminates the wet storage of red mud. Fly ash is being discharged through HCSD technology and maintaining consistency of solids 65%
16	Greater safety and stability of the dykes of red mud pond, ash pond, process Water Lake and dirty water pond shall be ensured. Safety and stability of dykes of all ponds / lakes shall be studies through a competent agency or Institute of repute on annual basis and action if required shall be taken accordingly. The certificate of the safety and stability study shall be furnished to the Board	The unit has informed that the Stability Analysis of Redmud Pond, Ash Pond, Process Water Lake, Caustic Water Pond is being carried out through institute of repute.
17	The industry shall make provision to prevent any inflow of surface run-off entering into the red mud pond, process Water Lake, dirty water pond and ash pond.	Garland drains have been constructed around red mud pond, ash pond, process water lake and dirty water pond to handle all the surface runoff and prevents such runoff to enter into the ponds.
18	The decanted water from the ash pond shall be reused. Under no circumstances water from the ash pond shall be discharged to outside. All necessary action shall be taken to prevent any seepage from the ash pond.	The decanted water is collected in the decantation pond & used for dust suppression.
19	The process water lake shall not be put into use till its restoration is completed and permission from Board in this regard is obtained. The decanted water from red mud pond shall be recycled back to the process from the pond itself.	During the visit, it is observed that process water lake is not in operation. The decanted water from red mud pond recycled back to the process from the red mud pond itself.
20	Expedite action shall be carried out for implementation of the decisions taken during personal hearing conducted on 21.12.2024 and minutes communicated vide Board's letter dated 1406, dated 22.01.2025	Most of the actions have been completed by the industry. The status of the action points has been described above.
21	No seepage or overflow from the red mud pond, process Water Lake and dirty water pond to nearby areas or to any surface water bodies or on land shall be allowed under any circumstances. The	All the ponds are designed and provided with liners to prevent any seepage. In addition garland drains are constructed along the periphery of RMP, PWL and connected to

	industry shall take appropriate action to prevent generation of seepage water from these waste containment ponds / lakes. In case of seepage is notice, the industry shall immediately take appropriate remedial action and inform to the Regional Office for verification.	collection pits with pumping facility to recycle back the seepage water if any.
22	Steel lined collection system with reuse arrangement shall be provided at all alkaline wastewater conveying pipeline joints & valves for collection of leakages if any.	All sump pits are provided with steel liner.
23	Wastewater generated from the dust suppression system in bauxite and coal handling system if any shall be diverted to clear water pond for reuse.	As informed by the unit, no wastewater / effluent is generated from the dust suppression system in bauxite and coal handling system.
24	Adequate arrangement shall be made for collection of storm water from the entire plant area and reused in the process. The unit shall neutralize the storm water in the storm water pit before being discharged to outside in case of emergency or during monsoon and heavy rains after meeting the prescribed norm for discharge to inland surface.	The industry has informed that the plant is operating with zero discharge concept. Separate drains have been constructed in the entire plant area for collection of storm water (Storm water drain) and process water (Caustic drain). Storm water drains are connected to Clear water pond and dirty water ponds.
25	The height of parapet walls at each process section shall be adequate enough to prevent any overflow of wastewater to outside of the process areas.	The industry has provided parapet walls at each process section area adequate enough to prevent any overflow of wastewater to outside the process areas. Each such process units are provided with steel lined sump pits along with pumps to collect all such overflows and recycle back to the process.
26	The industry shall prepare and implement within Rehabilitation Plan of RMP & Ash Pond and its execution, prevent spillage of hydrated alumina, stop the problems of caustic fugitive dust emissions from Red Mud stack and RMP, toe drains for collection of seepage from RMP shall be properly lined.	The industry has informed that the plan has been prepared for rehabilitation of ash pond and red mud pond.
27	Slope stability of red mud stacks in RMPs shall be monitored by adopting appropriate methods in consultation with any Institute of repute.	The industry has informed that the slope stability of red mud stacks in RMPs is monitored by adopting appropriate methods in consultation with Institute of repute, IIT, Bhubaneswar.

28	Dumping of alkaline sludge near storm water drain or any other places shall not be allowed as it will contaminate run offs during monsoon.	Being followed as informed.
29	The dirty water pond shall be full proof and there shall not be any seepages / leakages of the highly alkaline wastewater from the pond. In case seepage / leakage is noticed, immediate corrective action shall be taken to stop such seepage / seepage.	The dirty water pond is constructed of RCC with alkali proof of lining.
30	Wastewater from the oil unloading area shall be adequately treated by providing oil separation unit and the treated water shall be completely reused.	Oil water separation facility has been provided at oil unloading area.
31	Cooling water systems in all areas shall be completely recycled.	All cooling water systems are of closed type.
32	DM plant effluent, boiler and cooling tower blow shall be adequately treated so as to meet the prescribed standards and under E(P) Rules, 1986 and shall be suitably reused. Under no circumstances, discharge of treated water to outside shall be allowed.	CBD and IBD of boiler are being reused in the refinery. Neutralized water of DM plant and cooling tower blow down is being used for ash slurry making.
33	Adequate numbers of observation wells shall be provided around ash pond, red mud pond, process water lake and dirty water pond for ground water monitoring. Monitoring report of ground water quality shall be submitted to the State Pollution Control Board on monthly basis.	The industry has provided 10 no of observation wells and monitoring reports are being submitted to the board on monthly basis, as informed by the industry.
34	The treated wastewater from the Sewage Treatment Plants (STPs) of the colony / township and plant shall be utilized for gardening / horticultural activities/dust suppression	The industry has provided two STPs of capacity 400 KLD (FAB technology) and 360 KLD (RBC technology) in township and plant respectively. The treated water is reused for gardening and horticulture activities.
35	Rainwater harvesting shall be followed in the township for ground water recharging.	Rain water harvesting is being followed in the Hostel building in the Township. Also two more rain water harvesting structures of ground water recharging capacity 1 lakh m3/annum are installed in the township.
36	Treatment system for wastewater generated from the laboratory shall be provided and the treated water be diverted to dirty water pond for reuse.	As informed, wastewater from laboratory is being diverted through caustic water drain after removing solids & the solids are send back to the process plant.

37	Backwash water of raw water treatment plant, if any, shall be treated and reused.	As informed by the industry, treated backwash water of raw water treatment plant is being sent to Clear water pond and reused.
38	Water quality of upstream and downstream of river Vansadhara shall be monitored and the report shall be submitted to the Board.	As informed, the water quality of upstream (Narayanpur) and downstream (Baterlima, Chhatrapur) of river Vamsadhra being submitted to board in Monthly Compliance report of the industry.
39	The unit shall obtain authorization from the board under the Hazardous & other Wastes (Management & Transboundary Movement) Rules, 2016.	Industry has obtained valid hazardous waste authorization from the Board.
40	The industry shall comply with the provisions of Fly Ash Utilisation Notification and amendments thereof.	Agreed to comply by the unit.
41	All DG sets installed before 1.7.2004 shall be scrapped. DG sets complying with either Stage-I or Stage-II emission norms shall reduce Particulate Matter Emission by 70% by installing RECD without affecting any other emission parameters as per the CPCB guidelines and Board's letter vide No. 17927, dated 14.11.2023 and letter No. 7146, dated 10.05.2024, in this regard.	The industry informed that no DG sets were installed before 1.7.2004.
42	A green belt shall be made around the ash pond and red mud pond. Similarly green belt shall be developed on all sides of the plant.	The industry has done plantations at the ash pond, red mud pond & around the plant. As informed, total 278.216 Ha. area have been covered under green belt development.
43	Lube oil from diesel generator shall be disposed to authorized waste oil recycler.	As informed, hazardous waste is being disposed to authorized recyclers.
44	The stack emission quality shall be monitored through authorized agency who are authorized in the E (P) Rule, 1986 to carry out certification of the DG sets and report shall be submitted on annual basis. The monitoring method shall be done in accordance with the provision recommended in the E(P) Rule, 1986.	Agreed to comply by the unit
45	The industry shall abide by the Environment (Protection) Act, 1986 and Rules framed thereunder.	Agreed to comply by the unit

MONITORING REPORT:

The Ambient Air Quality (AAQ) monitoring, stack emission monitoring, surface water quality monitoring & Effluent quality monitoring were carried out during inspection. The Monitoring / analysis report enclosed for ready reference.

RECOMMENDATIONS:

During the site visit and on reveal of completion certificate for PWL up to RL445 by IIT, Roorkee, it was found that the industry has carried out the restoration of the dyke as per the design provided by IIT, Roorkee. The restoration of the damaged portion of the dyke has been completed up to 445 RL.

In view of above progress made by the industry on restoration of dyke breach of PWL and compliance status of CTO conditions, a suitable decision may kindly be taken to permit the industry for PWL to put into operation subject to following recommendations.

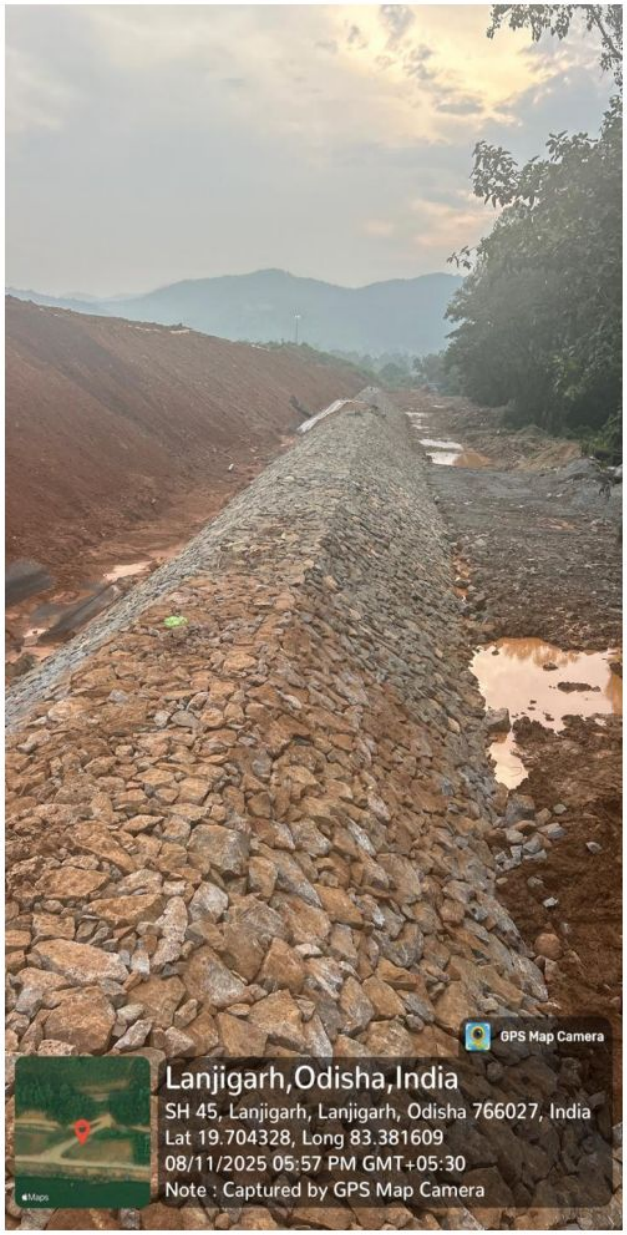
- Freeboard of 2.0 m shall be maintained in PWL at any point of time.
- An Operational and Safety Manual should be prepared by the industry for PWL.
- Water from PWL shall be recycled back into the process.
- The industry shall constitute a dedicated team for PWL who will carry out regular inspection and checking for PWL with respect to (i) Dyke stability (i.e. visually inspect the dykes for any signs of instability, such as cracks, slumps, erosion, or vegetation growth that could compromise their structural integrity), (ii) Liner integrity (i.e. inspect for potential punctures, tears, or signs of deterioration in the pond liner), (iii) Water management (i.e. Monitor water levels within the PWL & regularly check for any leaks or seepage from the PWL)
- The industry shall expedite the process of installing the surveillance monitoring equipment's as recommended by IIT, Roorkee.

14/08/2025

Dy Env Engineer
Dy Environmental Engineer
State Pollution Control Board, Odisha
Rayagada

Regional Officer
Regional Officer
State Pollution Control Board
Rayagada

PHOTOGRAPHS TAKEN DURING SITE VISIT TO THE PROCESS WATER LAKE OF VEDANTA, LANJIGARH



Tel: 06856-223073
Email: rospcb.rayagada@ospcboard.org
Website: www.ospcboard.org

OFFICE OF THE REGIONAL OFFICER
STATE POLLUTION CONTROL BOARD, ODISHA
[DEPARTMENT OF FOREST,ENVIRONMENT & CC, GOVT. OF ODISHA]
Plot No 287/A, 1st Lane, Kasturi Nagar, Rayagada,765001

ANALYSIS REPORT OF SOURCE EMISSION MONITORING

Lab Ref No.04 /Stack/2025-26 **Dtd.01.08.2025**

Name & Address of Industry : M/s Vedanta Limited (Refinery)
Lanjigarh, Kalahandi

Date of sample collection : 25.07.2025

Sample submitted by : Sri A.K.Bhoi,RO
Er.R.K.Sahu,DEE

Sl No	Stack details	Temp of flue gas (°C)	Velocity (m/s)	Particulate Matter (mg/Nm^3)
01	Stack attached to CGPP (unit-I) after ESP	137	7.6	38
02	Stack attached to CGPP (unit-III) after ESP	147	11.5	40
	Board's prescribed standard			50
01	Stack attached to 50MW(NPP-unit-I)	130	11.7	22
02	Stack attached to 50MW(NPP-unit-II)	125	7.4	20
	Board's prescribed standard			30
	Method of Analysis			Gravimetric

Analysed by

01/08/2025
Field Asst.

01/08/2025
Asst. Env.Scientist

Asst. Environmental Scientist
State Pollution Control Board, Odisha
Rayagada

Regional Officer

Regional Officer
State Pollution Control Board
Rayagada

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ODISHA

OFFICE OF THE REGIONAL OFFICER
STATE POLLUTION CONTROL BOARD, ODISHA
[DEPARTMENT OF FOREST, ENVIRONMENT & CC , GOVT. OF ODISHA]
Plot No 287/A, 1st Lane, Kasturi Nagar, Rayagada,765001

ANALYSIS REPORT OF AMBIENT AIR QUALITY MONITORING

Lab Ref No.07 /AAQ/2025-26 **Dtd.01.08.2025**

Name & Address of Industry : M/s Vedanta Limited (Refinery)
Lanjigarh, Kalahandi

Date of sample collection : 25.07.2025

Sample submitted by : Sri A.K.Bhoi,RO
Er.R.K.Sahu,DEE

Sl No	Location of Sampling Station	All Parameters are in µg/ m^3		
		PM_{10}	SO_2	NO_2
01	Near Belamba Village	34	11.4	17.5
02	Near Plant site	29	10.3	16.0
03	Near Chhatrapur village	37	10.8	17.1
Board's prescribed standard		100	80	80
Method of Analysis		Gravimetric	West & Gaeke	Sodium Arsenite

Analysed by

Jeevan 01/08/2025
Field Asst.

01/08/2025
Asst. Env.Scientist

Asst. Environmental Scientist
State Pollution Control Board, Odisha
Rayagada

Regional Officer

Regional Officer
State Pollution Control Board
Rayagada

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[DEPARTMENT OF FOREST, ENVIRONMENT & CC, GOVT. OF ODISHA]
Plot No 287/A, 1st Lane, Kasturi Nagar, Rayagada,765001

ANALYSIS REPORT OF WATER SAMPLE

Lab Ref No.14 (I)/WW/2025-26 **Dtd.01.08.2025**

Name & Address of Industry : M/s Vedanta Limited(Refinery)
At. Lanjigarh, Dist. Kalahandi.

Date of sample collection : 25.07.2025

Sample submitted by : Sri A.K.Bhoi, RO
Er.R.K.Sahu, DEE

Sl. No.	Location of sampling point	All parameters are in mg/ l except pH		
		pH	SS	BOD
01	Inlet to STP(Township)	7.3	212	95
02	Outlet of STP(Township) used for gardening purpose	7.3	85	17
03	Inlet to STP(Plant)	7.8	189	95
04	Outlet of STP(Plant) used for gardening purpose	7.9	77	19
Board's prescribed standard		5.5-8.5	100	30
Method of Analysis		Potentiometric	Gravimetric after filtration	3 days at 27° C

Analysed by

Jeevan 01/08/2025
Field Asst.

Asst. Env.Scientist
01/08/2025
Asst. Environmental Scientist
State Pollution Control Board, Odisha
Rayagada

Regional Officer
1.8.25
Regional Officer
State Pollution Control Board
Rayagada

Tel: 06856-223073
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OFFICE OF THE REGIONAL OFFICER
STATE POLLUTION CONTROL BOARD, ODISHA
[DEPARTMENT OF FOREST,ENVIRONMENT & CC, GOVT. OF ODISHA]
Plot No 287/A, 1st Lane, Kasturi Nagar, Rayagada,765001

ANALYSIS REPORT OF WATER SAMPLE

Dtd.01.08.2025

Lab Ref No.14 (III)/OW/2025-26

Name & Address of Industry : M/s Vedanta Limited (Refinery)
At. Lanjigarh, Dist.Kalahandi.

Date of sample collection : 25.07.2025
Sample submitted by : Sri A.K.Bhoi,RO
Er R.K.Sahu, DEE

Sl. No.	Location of sampling point	All parameters are in mg/ l except pH	
		pH	DO
01	River Vansodhara U/s of the unit (near Narayanpur culvert)	7.4	6.1
02	River Vansodhara D/s of the unit (near Baterlima culvert)	7.6	5.4
03	Near Rengapalli stream	7.7	5.6
Designated best use classification of stream(class B)		6.5-8.5	≥5
Method of Analysis		Potentiometric	Winkler Azide Modification Tritrimetric

Analysed by

01/08/2025
Field Asst.

01/08/2025
Asst. Env.Scientist
Asst. Environmental Scientist
State Pollution Control Board, Odisha
Rayagada

1.8.25
Regional Officer
Regional Officer
State Pollution Control Board
Rayagada

Tel: 06856-223073
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ODISHA

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STATE POLLUTION CONTROL BOARD, ODISHA
[DEPARTMENT OF FOREST,ENVIRONMENT & CC, GOVT. OF ODISHA]
Plot No 287/A, 1st Lane, Kasturi Nagar, Rayagada,765001

ANALYSIS REPORT OF WATER SAMPLE

Lab Ref No.14 (II)/WW/2025-26 **Dtd.01.08.2025**

Name & Address of Industry : M/s Vedanta Limited(Refinery)
At. Lanjigarh, Dist.: Kalahandi.

Date of sample collection : 25.07.2025

Sample submitted by : Sri A.K.Bhoi,RO
Er.R.K.Sahu,DEE

Sl. No.	Location of sampling point	All parameters are in mg/ l except pH		
		pH	SS	BOD
01	Clear storm water pond (guard pond) near bauxite unloading site(no discharge)	7.5	82	16
General standard for discharge of Environmental pollutants Part A: Effluents (Standards for inland surface)		5.5-9.0	100	30
Method of Analysis		Potentiometric	Gravimetric after filtration	3 days at 27° C

Analysed by

Leevan 01/08/2025
Field Asst.

01/08/2025
Asst. Env.Scientist
Asst. Environmental Scientist
State Pollution Control Board, Odisha
Rayagada

01.08.25
Regional Officer
Regional Officer
State Pollution Control Board
Rayagada

ANNEXURE-R5/5

Dtd.30th July'25

TO WHOM SO EVER IT MAY CONCERN

Subject: Certificate of confirmation for construction of "Dyke Restoration Job at Process Water Lake (PWL)" up to RL.445.000 by M/s Vedanta Limited, Lanjigarh as per the design.

M/s Indian Institute of Technology, Roorkee (M/s IIT-R) has been engaged by M/s Vedanta Limited for the detail design drawing for "Dyke Restoration Job at Process Water Lake (PWL)" for Alumina Refinery Plant at Lanjigarh, Kalahandi, Odisha.

M/s IIT-R had provided all detail construction drawings, specification, and methods and submitted to VLL for doing the construction of the above facilities by engaging a contractor.

The dyke restoration job at PWL constructed as per the design drawing by the M/s IIT-R up to RL.445.000. Vedanta submitted all test reports and drawings to M/s IIT-R for verification and advice.

On review of all the data and further site visit on dtd.30.07.2025, it is confirmed that all the construction has been carried out as per the agreed design.

Dr. Vishwas A. Sawant
Professor
Department of Civil Engineering
Indian Institute of Technology Roorkee
ROORKEE-247 667 (Uttarakhand) INDIA

Vishwas A Sawant
Professor
Department of Civil Engineering
Indian Institute of Technology
Roorkee, Utarakhand

ANNEXURE-R5/6

EPABX : 2561909/2562847
E-mail: paribesh1@ospcboard.org
Website: www.ospcboard.org

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII
Bhubaneswar – 751 012, INDIA

No 20187 / IND-I-CON- 5436 Dt 13.11.2025

(Speed Post/ E-Mail)

To

The Whole Time Director and Chief Executive Officer,
M/s. Vedanta Limited (Alumina Refinery Unit),
AT/PO- Lanjigarh, Via- Viswanathpur,
Dist. - Kalahandi, Odisha, Pin- 766027
Email- Headhse.VLL@vedanta.co.in

Sub- Permission to use Process Water Lake (PWL) for receiving water from Red Mud Pond (RMP) area by M/s. Vedanta Limited, Alumina Refinery, Lanjigarh, Dist. - Kalahandi- reg.

Sir,

With reference to the subject cited above, it is to intimate that there was an incident of breach of the Process Water Lake (PWL) of your Alumina Refinery at Lanjigarh on 15.09.2024 and subsequently a direction under Section 33A of the Water (Prevention and Control of Pollution) Act, 1974 was issued on 17.09.2024, instructing stoppage of discharge to the PWL forthwith until it is repaired, restored and verified by the Board.

Accordingly, you submitted a time-bound action plan and undertook restoration of the PWL dyke under the technical supervision of IIT Roorkee (design) and IIT Bhubaneswar (stability analysis), with design validation by M/s Geotheta, a geotechnical firm.

IIT Roorkee, vide its certificate dated 30.07.2025, has certified that restoration up to RL 445 was completed as per the approved design. The Regional Officer, Rayagada, during his inspections on 25.07.2025 and 11.08.2025 has also observed that the restoration of the damaged portion of PWL has been completed.

The industry has also completed dispersion of compensation to the affected people as per the direction of District Administration.

In view of the above, the Board hereby allows the Alumina Refinery of M/s. Vedanta Limited, Lanjigarh, to use the Process Water Lake (PWL) for receiving water from the Red Mud Pond (RMP) area, subject to the following conditions:

1. A minimum freeboard of 2.0 metres shall be maintained in the PWL at all times.
2. Water from the PWL shall be recycled back into the process; no discharge outside the plant premises shall be permitted.
3. The industry shall prepare and implement an Operational and Safety Manual for the safe management and operation of the PWL.
4. A dedicated inspection and monitoring team shall be constituted to conduct regular checks on:
    a. Dyke Stability- to detect cracks, erosion or deformation;
    b. Linear integrity- to identify punctures or deterioration;
    c. Water management- to monitor water levels, leakage or seepage.
5. The industry shall install and operationalize all surveillance monitoring instruments as recommended by IIT Roorkee and ensure quarterly data analysis by a competent external agency with reports submitted to the Board.
6. The industry shall strictly follow the recommendations made in the study reports of IIT, Roorkee for design & drawing of dyke restoration and stability analysis study of tailing dams by IIT, Bhubaneswar.
7. Biomonitoring of Bansadhara river to assess the ecological condition of river in the upstream and downstream of the plant. The biomonitoring shall be done at least twice in a year- pre- monsoon and post- monsoon specifically determining saprobic index and diversity index.

This permission is issued based on the satisfactory compliance of the unit as verified by the Regional Officer, Rayagada, and the technical validation of restoration works by IIT Roorkee. Any deviation or non-compliance with the above conditions shall render this permission liable for withdrawal and attract action under the provisions of the Water (Prevention and Control of Pollution) Act, 1974.

Yours faithfully,

MEMBER SECRETARY

Memo No. 20188 /Dt. 13.11.2025

Copy forwarded to:

i) Regional Officer, SPC Board, **Rayagada**
ii) District Collector, **Kalahandi**
iii) DFO, **Kalahandi**
iv) Deputy Director of Mines, **Bhawanipatna**
v) CES, Central Laboratory, SPC Board, Bhubaneswar
vi) Guard File

13/11/2025
ADDL. CHIEF ENV. ENGINEER