



NATIONAL ALUMINIUM COMPANY LIMITED  
(A Government of India Enterprise)  
PANCHPATMALI BAUXITE MINE  
Mines & Refinery Complex  
D A M A N J O D I – 763008  
Dist. KORAPUT (ODISHA)  
Ph-06853-268001, Fax-06853-268002/268003

Ref-NAL/MIN/CGM(Mines)/2025/ 81

Date: 29.10.2025

To,

The Deputy Director General of Forests (C),  
Ministry of Environment, Forest and Climate Change, Regional Office,  
A/3, Chandrasekaharpur, Bhubaneswar-751023

**Sub:-** Submission of Six monthly compliance status report on Environmental Clearance conditions for the period 1<sup>st</sup> April 2025 to 30<sup>th</sup> September 2025 in respect of Panchpatmali Central & North Block Bauxite Mine, NALCO.

**Ref- (1)** Env. Clearance Letter No. J-11015/49/2008-1A.II(M), Dtd. 20-2-2009 from MoEF&CC, GOI.

Dear Madam/Sir,

Please find enclosed herewith the six monthly compliance reports against the condition of above referred Environmental Clearances for the period 1st April 2025 to 30th September 2025 in respect of Panchpatmali Central & North block Bauxite Mine, NALCO. This is for your kind information and perusal please.

Thanking you,

Encl- As above

Copy-

-Additional Secretary (IA)  
Ministry of Environment & Forests & Climate Change  
Govt of India, Indira Paryavaran Bhawan, Aliganj,  
Jorbagh Road, New Delhi-110 003.

-The Member Secretary, (Central)  
State pollution Control Board, Odisha  
A/118, Nilakantha nagar,  
Bhubaneswar-751012

-The D.F.O.  
Koraput Division, Koraput

Yours faithfully,

(P Mohanta)

Chief General Manager(Mines)  
PURUSOTTAM MOHANTA  
Chief General Manager (Mines)  
Panchpatmali Bauxite Mines  
Damanjodi-763008

-for kind information

- for kind information

-for kind information

## ANNEXURE-1

**STATUS OF COMPLIANCE TO THE CONDITIONS STIPULATED IN ENV. CLEARANCE  
FOR BAUXITE PRODUCTION @ 6.825 MTPY WITH RESPECT TO PANCHPATMALI  
CENTRAL & NORTH BLOCK BAUXITE MINE, NALCO**

(Ministry Letter No. J-11015/49/2008-IA. II(M) Dt. 20-02-2009)

| Sl.No.                   | A. SPECIAL CONDITIONS                                                                                                                                                                                                                                                                                                                                                                             | Status of Compliance as on 30.09.2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------|------------------------|----------------------|---------|--------|--------|-----|---------|--------|--------|-----|---------|--------|--------|-----|---------|--------|--------|-----|--------------------------|-------|-------|-----|
| i                        | The environmental clearance is in continuation to the environmental clearance earlier accorded to this project by the Ministry vide letter No. J-11015/09/2000-IA.II (M) dated 30.07.2004. The lease area shall remain unchanged.                                                                                                                                                                 | The lease area remains unchanged.<br>At present the lease area of Central and North Block = 1315.264 hectares.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| ii                       | The project proponent shall obtain Consent to Establish from the State Pollution Control Board and effectively implement all the conditions stipulated therein.                                                                                                                                                                                                                                   | The consent to establish for 6.825 MTPY production capacity for Central-North Block was obtained from SPCB, Odisha vide letter no. 16213/Ind-II-NOC-5666, DTD. 4-9-2013.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| iii                      | The environmental clearance is subject to grant of forestry clearance. The project proponent shall obtain requisite prior forestry clearance under the Forest (Conservation) Act, 1980 for working in the forest area                                                                                                                                                                             | Forest Clearance exists vide MoEF&CC letter No- F.No.8-40/1993-FC(PT-I) Dt.15 <sup>th</sup> September 2014 for the entire forest land of 1294.283 ha of forest land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| Iv                       | The mining operations shall be confined to the hill tops only and restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out | It is revealed from a study by RAMKY (in Yr 2010) that the ground water table exists below 80 mtr. From the plateau top, where the mining activities are going on. As the Mining activities limited to 35 Mtrs only from the surface, there is no impact of Mining operation on the ground water / aquifers.                                                                                                                                                                                                                                                                                                                                                                                  |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| V                        | The project proponent shall ensure that no natural watercourse and / or water resources are obstructed due to any mining operations. Adequate measures shall be taken while diverting seasonal channels emanating from the mine lease, during the course of mining operation.                                                                                                                     | No Natural water course exists on hilltop/ plateau top. As such, mining operation which is confined to hill top does no way obstruct natural water course. No rain water from the mining area is allowed to flow down below the valley by constructing peripheral barriers.                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| vi                       | The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.                                                                                                                                                                                                                  | Top soil is being separately removed and is concurrently used in backfilling of mined out area.<br>The top soil generated and utilized in reclamation for the last five years are as follows. <table><tr><th>Year</th><th>Top soil generated (MT)</th><th>Top soil utilized (MT)</th><th>Top soil stored (MT)</th></tr><tr><td>2021-22</td><td>115000</td><td>115000</td><td>Nil</td></tr><tr><td>2022-23</td><td>133490</td><td>133490</td><td>Nil</td></tr><tr><td>2023-24</td><td>171930</td><td>171930</td><td>Nil</td></tr><tr><td>2024-25</td><td>130030</td><td>130030</td><td>Nil</td></tr><tr><td>2025-26 as on 30.09.2025</td><td>31940</td><td>31940</td><td>Nil</td></tr></table> | Year                 | Top soil generated (MT) | Top soil utilized (MT) | Top soil stored (MT) | 2021-22 | 115000 | 115000 | Nil | 2022-23 | 133490 | 133490 | Nil | 2023-24 | 171930 | 171930 | Nil | 2024-25 | 130030 | 130030 | Nil | 2025-26 as on 30.09.2025 | 31940 | 31940 | Nil |
| Year                     | Top soil generated (MT)                                                                                                                                                                                                                                                                                                                                                                           | Top soil utilized (MT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Top soil stored (MT) |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| 2021-22                  | 115000                                                                                                                                                                                                                                                                                                                                                                                            | 115000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nil                  |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| 2022-23                  | 133490                                                                                                                                                                                                                                                                                                                                                                                            | 133490                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nil                  |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| 2023-24                  | 171930                                                                                                                                                                                                                                                                                                                                                                                            | 171930                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nil                  |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| 2024-25                  | 130030                                                                                                                                                                                                                                                                                                                                                                                            | 130030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nil                  |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |
| 2025-26 as on 30.09.2025 | 31940                                                                                                                                                                                                                                                                                                                                                                                             | 31940                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Nil                  |                         |                        |                      |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |       |       |     |

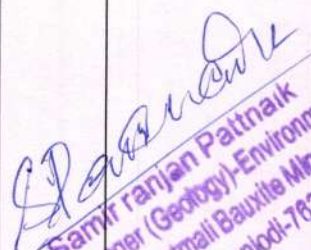


Mr. Ranjan Pattanaik  
Manager (Geology)-Environmen  
Panchpatnali Bauxite Mine  
NALCO, Damanbodi-763008

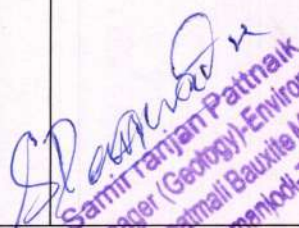
*Samir Ranjan Pattnaik*  
Sr. Manager (Geology)-Environment  
Panchpatmali Bauxite Mine  
NALCO, Damanjodi-763008

| vii                      | <p>The overburden (OB) generated shall be concurrently backfilled. There shall be no external over burden dump. The entire backfilled area shall be progressively afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubaneswar on six monthly basis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>OB generated is being concurrently backfilled. Reclamation programme for the mined out area goes on concurrent to mining operation.</p> <p>The OB generated (including top soil) and utilized in reclamation for the last five years are as follows.</p> <table><tr><th>Year</th><th>OB generated (MT)</th><th>OB utilized (MT)</th><th>OB stored (MT)</th></tr><tr><td>2021-22</td><td>798225</td><td>798225</td><td>Nil</td></tr><tr><td>2022-23</td><td>788300</td><td>788300</td><td>Nil</td></tr><tr><td>2023-24</td><td>800715</td><td>800715</td><td>Nil</td></tr><tr><td>2024-25</td><td>759305</td><td>759305</td><td>Nil</td></tr><tr><td>2025-26 as on 30.09.2025</td><td>286330</td><td>286330</td><td>Nil</td></tr></table> <p>The plantation in the rehabilitated area is maintained till the vegetation becomes self-sustaining. Compliance status is submitted to MOEF every six months.</p>                                                           | Year           | OB generated (MT) | OB utilized (MT) | OB stored (MT) | 2021-22 | 798225 | 798225 | Nil | 2022-23 | 788300 | 788300 | Nil | 2023-24 | 800715 | 800715 | Nil | 2024-25 | 759305 | 759305 | Nil | 2025-26 as on 30.09.2025 | 286330 | 286330 | Nil |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|------------------|----------------|---------|--------|--------|-----|---------|--------|--------|-----|---------|--------|--------|-----|---------|--------|--------|-----|--------------------------|--------|--------|-----|
| Year                     | OB generated (MT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OB utilized (MT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OB stored (MT) |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| 2021-22                  | 798225                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 798225                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil            |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| 2022-23                  | 788300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 788300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil            |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| 2023-24                  | 800715                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 800715                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil            |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| 2024-25                  | 759305                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 759305                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil            |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| 2025-26 as on 30.09.2025 | 286330                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 286330                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil            |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| viii                     | <p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil and mineral dumps to prevent run off of water and flow of sediments directly into the water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. the drains shall be regularly desilted, particularly after the monsoon, and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil dumps and the mineral dumps to prevent run off of water and flow of sediments directly into the water bodies and sump capacity shall be designed keeping 50 % safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals</p> | <p>Siltation ponds of adequate size are provided to collect sediments from the mineral stock pile area near crusher house during rain through drains. Rain water accumulated in the sedimentation ponds cannot go out due to peripheral barrier and percolates down through porous mined out surface. The mine is a elongated strip of land with peripheral barriers on the western and eastern sides which prevent any rain water from going outside. Inside the mine sedimentation pits of adequate size have been kept which collect water through drains with natural gradient. Due to porous nature of the mined out surface, the rain water percolates down to recharge the ground water. There are no waste dumps or OB dumps as concurrent reclamation method has been adopted. The sedimentation pits are cleaned periodically to maintain the sump capacity to hold water. There are no active dumps and hence there is no question of washouts from dumps.</p> |                |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| ix                       | <p>Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on the rainfall data.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>The overburden material is concurrently reused in backfilling of mined out area. The runoff generated inside mining area cannot go out as there are in-situ peripheral barrier all around the mining area. All the runoff are diverted to the sedimentation tanks inside the mining area where the collected water percolates into the ground.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |
| x                        | <p>The project proponent shall develop a 7.5 m wide green belt in the safety zone all around the mining lease. In addition, plantation shall be raised in the backfilled and the reclaimed area, around void roads etc. by planting the native species in consultation with the local DFO / Agriculture Department.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>A green belt having minimum width of 7.5 mtr has been developed all around the Mined out area in the safety zone. This green belt is developed/ maintained 500M ahead of Mining operation. Native species like Jamun, Rose Apple, Guava, Mangos, Jackfruit, Tamarind, Karanj, etc are being planted at the rate of 2500 plants /ha for development of the green belt. In addition to that plantation has also been carried out in the backfilled/reclaimed area.</p> <p><i>Samir Ranjan Pattnaik</i><br/>Sr. Manager (Geology)-Environment<br/>Panchpatmali Bauxite Mine<br/>NAI CO, Damaniodi-763008</p>                                                                                                                                                                                                                                                                                                                                                              |                |                   |                  |                |         |        |        |     |         |        |        |     |         |        |        |     |         |        |        |     |                          |        |        |     |

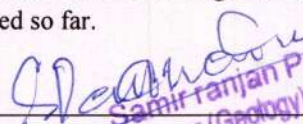
|        | The density of the trees should be around 2500 plants per ha.                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>As on 30.9.2025</b> the plantation carried out in different areas in <u>Central and North Block</u> are as follows.</p> <p>(i) Mined out area : 1,741,402</p> <p>(ii) Other areas like Safety zone and other barren land(Hill slope area/Conveyor Corridor/Auxiliary Facilities Area/Water Supply Area/Power line Area/ Magazine Area): 399036</p> <p>iii) Waste Dump: 9,520</p> <p>(vi)Outside lease area: 1,415,598.</p> <p>Total trees planted in <u>Central and North Block</u> <b>as on 30.9.2025</b> is <b>3,565,556</b>.</p> <p>In addition to the above plantation, as on date Miyawaki plantation also carried out in Panchpatmali Central and North Block with an area of 1 Ha with 10000 Nos of saplings.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |             |                             |   |           |       |   |           |       |   |           |       |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|-----------------------------|---|-----------|-------|---|-----------|-------|---|-----------|-------|
| xi     | Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as around crushing and screening plant, loading and unloading point and all transfer point. Extensive water sprinkling shall be carried out on haul roads. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. | <p>Regular water sprinkling is being done using 06 no's of self-propelled mobile water tankers.</p> <p>Provision of PLC controlled Auto sprinkling system installed over Permanent haul roads (4.5 km).</p> <p>The AAQ quality monitoring is done every month. The monitoring locations are A1(Baiguda village) , A2(Bitiarguda Village), A3(Goudguda village), A4(Kakriguma village), A5(Upper Meeting village), A6(Near Main Haul Road Area), A7(Near Crusher HouseA8(Roof of the HEMM main building), A9(Roof of Panchpatmali Bhavan), A10(Near SMCP North Block). The latest results of ambient air analysis are given at <b>Annexure-I</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |             |                             |   |           |       |   |           |       |   |           |       |
| xii    | Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.                                                                                                                                                                                                                                                                                       | <p>NALCO has been measuring water flow rate of perennial streams at the foot hill in 17 locations on monthly basis every year. The stream flow has been measured at 17 locations during every month. The locations are 1.Litiguda, 2.Jholaguda, 3.Bhitara Bhejaput, 4.Barigurha, 5.Kapsiput, 6.Litaputta, 7.Murdagurha, 8.Gaurhaguda, 9.Tenguligurha, 10.Kakriguma, 11.Tentulipadar, 12.Keler, 13.Kusumagurha, 14.Kirajhola, 15.Rangapani, 16.Pansaputa and 17.Balipeta. For 25-26 as on 30.09.2025, the results are given at <b>Annexure-II</b>.</p> <p>Previously it was done on quarterly basis and from last year it is being carried out on monthly basis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |             |                             |   |           |       |   |           |       |   |           |       |
| xiii   | The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.                                                                                                                                                                                                                                                       | <p>The plateau top, where the mining operation is confined, stands out about 300 mtr above the surrounding valley areas. The ground water exists at a depth of about 80mtr.</p> <p>At present, 3 no. of rain water harvesting reservoirs have been developed atop the mines. The capacity of the three nos of ponds are as follows.</p> <table border="1"> <thead> <tr> <th>Sl No.</th><th>Description</th><th>Capacity of storage in cum.</th></tr> </thead> <tbody> <tr> <td>1</td><td>Pond no-1</td><td>19800</td></tr> <tr> <td>2</td><td>Pond no-2</td><td>23625</td></tr> <tr> <td>3</td><td>Pond no-3</td><td>10000</td></tr> </tbody> </table> <p>Also, rooftop rainwater harvesting structures for the Administration Building, Mine Manager's Building and MVT centre has been completed by 2014 to augment ground water recharging.</p> <p>Further, the method of Mining &amp; the peripheral barrier all around does not allow the storm water from within the mining area to go outside valley areas. The water thus trapped, percolates down &amp; recharges the ground water.</p> <p>Further as per advice of CGWB, Bhubaneswar, a suitable agency (M/s Geoventech Research &amp; Services Pvt Ltd , Bhubaneswar ) was appointed for carrying out a hydro-geological study for suggesting measures for rain water harvesting and augmentation of ground water resources. The recommendations are implemented.</p> | Sl No. | Description | Capacity of storage in cum. | 1 | Pond no-1 | 19800 | 2 | Pond no-2 | 23625 | 3 | Pond no-3 | 10000 |
| Sl No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                      | Capacity of storage in cum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |             |                             |   |           |       |   |           |       |   |           |       |
| 1      | Pond no-1                                                                                                                                                                                                                                                                                                                                                                                                                                        | 19800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |             |                             |   |           |       |   |           |       |   |           |       |
| 2      | Pond no-2                                                                                                                                                                                                                                                                                                                                                                                                                                        | 23625                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |             |                             |   |           |       |   |           |       |   |           |       |
| 3      | Pond no-3                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |             |                             |   |           |       |   |           |       |   |           |       |

  
**Samir Ranjan Pattnaik**  
 Sr. Manager (Geology)-Environment  
 Panchpatmali Bauxite Mine  
 NALCO, Damanodi-753008

| xiv    | Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre-monsoon (April-May), monsoon (August), Post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to the Ministry of Environment and Forest and its Regional Office, Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity, necessary corrective measures shall be carried out. | <p>The ground water level was monitored by M/s RAMKY (in Yr 2010) by construction of borewells. It was found that the ground water table exists at a great depth i.e. below 80 mtr. from the plateau top.</p> <p>The ground water quality monitoring is done during April, August, November and January every year. The monitoring locations are (15 nos) Metingi Village, Chhatamba Village, Jharhiapadar Village, Tentulipadar Village, Ichhapur Village, Mundagarhati Village, Bijaghati Village, Putraghati Village, Putraghati Village, Chararha Village, Kapsiput Village, Jambagurha Village, Shriguda Village, Kakiriguma Village, and Sorisha padar Village. The parameters being monitored are as per IS 10500:2012 specified for drinking water. For 25-26, the results are given at <b>annexure-III</b>.</p> <p>One no of piezometer has been constructed for monitoring of ground water level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |            |                             |   |           |       |   |           |       |   |           |       |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|-----------------------------|---|-----------|-------|---|-----------|-------|---|-----------|-------|
| xv     | Appropriate mitigative measures shall be taken to prevent pollution of the Indravati River, the Vagabvalli river, Banadehar River and Kerandi River in consultation with the State Pollution Control Board.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Appropriate mitigative measures have been taken to prevent pollution of rivers in consultation with SPCB, Odisha. They have specified conditions in CTO to treat the waste water streams and not to discharge runoff from mining area into water bodies.</p> <p>The actions taken- (1) There is no mine drainage water generated at Mines (2) rain water (with sediment) is also not allowed to go out of Mining areas because of the insitu- peripheral barrier existing all around the mining pit. 21 check dams have been constructed to retain the washouts if any from the mining area going downhill and contaminating water bodies. (3) The rain water around stockpiles are diverted to sedimentation basins where solid particle settle down and water percolates into the ground. (4) Effluent from toilets are treated in septic tanks. (5) The mine being a zero discharge mine, has got adequate facility to treat wash water from Workshop &amp; Canteen &amp; the treated water is completely reused for dust suppression and plantation purpose and no waste water is discharged outside. As already explained, Further the perennial streams emanating from the Panchpatmali hill slopes are being monitored regularly and all parameters are within prescribed norms. As such in no way the mining operation affects the river basins which are any way situated at least 30 KM away..</p> |        |            |                             |   |           |       |   |           |       |   |           |       |
| xvi    | The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) required for the project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Permission for drawal of surface water from Jholaguda streams upto 0.5MGD is available vide letter No. 15986, dtd.13-6-2018.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |                             |   |           |       |   |           |       |   |           |       |
| xvii   | Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>At present, 3 no. of rain water harvesting reservoirs have been developed atop the mines. The capacity of the three nos of ponds are as follows.</p> <table border="1"> <thead> <tr> <th>Sl No.</th><th>Decription</th><th>Capacity of storage in cum.</th></tr> </thead> <tbody> <tr> <td>1</td><td>Pond no-1</td><td>19800</td></tr> <tr> <td>2</td><td>Pond no-2</td><td>23625</td></tr> <tr> <td>3</td><td>Pond no-3</td><td>10000</td></tr> </tbody> </table> <p>Also, rooftop rainwater harvesting structures for the Administration Building, Mine Manager's Building and MVT centre has been completed by 2014 to augment ground water recharging.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Sl No. | Decription | Capacity of storage in cum. | 1 | Pond no-1 | 19800 | 2 | Pond no-2 | 23625 | 3 | Pond no-3 | 10000 |
| Sl No. | Decription                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Capacity of storage in cum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |            |                             |   |           |       |   |           |       |   |           |       |
| 1      | Pond no-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 19800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |            |                             |   |           |       |   |           |       |   |           |       |
| 2      | Pond no-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 23625                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |            |                             |   |           |       |   |           |       |   |           |       |
| 3      | Pond no-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |            |                             |   |           |       |   |           |       |   |           |       |

  
 Samir Tarjan Pattnaik  
 Sr. Manager (Geology)-Environment  
 Panchpatmali Bauxite Mine  
 NALCO, Damanikud-763008

|       |                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                                                                                                                                                                                                                                                                                                                                                                                          | <p>Further, the method of Mining &amp; the peripheral barrier all around does not allow the storm water from within the mining area to go outside valley areas. The water thus trapped, percolates down &amp; recharges the ground water.</p> <p>Further as per advice of CGWB, Bhubaneswar , a suitable agency (M/s Geovitech Research &amp; Services Pvt Ltd , Bhubaneswar ) was appointed for carrying out a hydro-geological study for suggesting measures for rain water harvesting and augmentation of ground water resources. The recommendations are implemented.</p>                                                                                                                                                                                                               |
| xviii | <p>Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral within the lease up to the stockyard. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded</p> | <p>Monitoring of exhaust emission of all the vehicles operating at mine is conducted once in six months through an outside agency authorized by SPCB, Odisha.</p> <p>Bauxite ore is transported in the mine area in an environmentally safe manner by limiting the speed limit of transporting equipment and also by maintaining proper road conditions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                |
| xix   | <p>No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.</p>                                                                                                                  | <p>Blasting has been stopped since April 2022. Whenever it will be done in future , it will be done during shift change over between 1.15PM to 2PM .No blasting will be done beyond day light hours .Further, controlled blasting will be practiced with use of NONELs for sequential blasting to reduce fly rocks, boulders &amp; ground vibration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| xx    | <p>Drills shall either be operated with dust extractors or equipped with water injection system</p>                                                                                                                                                                                                                                                                                                      | <p>All drills are operated with vacuum dust extraction system with provision of water injection for dust suppression.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| xxi   | <p>Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.</p>                                                                                                                     | <p>All transfer points in crushing &amp; Conveying system are provided with efficient dry fog system to suppress dust at source.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| xii   | <p>Consent to operate shall be obtained from the State Pollution Control Board, Orissa prior to start of enhanced production from the mine.</p>                                                                                                                                                                                                                                                          | <p>At present Mine is operating with consent to operate for 6.825 MTPA production capacity vide order No. 5061/Ind-I-Con-92, Dtd. 04-04-2024/CONSENT ORDER NO.58, which is valid upto 31.3.2026.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| xxiii | <p>Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation</p>                                                                                                                                                                                                                                        | <p>The Mine &amp; Refinery combined township exists 20KM away at Damanjodi where sewerage treatment plant is provided whereas The mine is operating a zero discharge system for effluents where all the waste water is treated, analyzed and reused for sprinkling on the haul road for dust suppression and plantation. Effluents from the Mechanical Workshop area is being channelized through well-designed oil-water separation tank where oil is collected and the clear water is collected in zero discharge sump. There is a canteen waste water disposal system (biological treatment unit) designed, constructed and maintained to treat the canteen waste water. All the treated waste water from canteen and HEMM workshop is used for horticulture &amp; dust suppression.</p> |
| xxiv  | <p>Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and following accordingly.</p>                                                                                                                                 | <p>For all eligible employees of Central &amp; North Block, periodical medical examinations are done &amp; records thereof maintained. During April 2025- Sep 2025, 225 nos of employees have undergone periodical medical testing. No occupational diseases have been detected so far.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

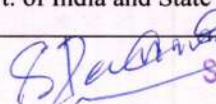
  
 Samir Ranjan Pattnaik  
 Sr. Manager (Geology)-Environment  
 Panchpatmali Bauxite Mine  
 NALCO, Damanjodi-763008

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|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| xxv    | Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. the housing may be in the form of temporary structures to be removed after the completion of the project.                                                                                                                                                                                                                                                                                                                                                                                                            | No labour camp exists on plateau top. All construction laborers /workers come from Damanjodi & surrounding villages at the foothill of Panchpatmali hill.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| xxvi   | The project proponent shall take all precautionary measure during mining operation for conservation and protection of endangered flora and fauna found in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the fund so allocated shall be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forest and its Regional Office, Bhubaneswar. | <p>A Site Specific Wildlife Management plan as prepared by NALCO has been approved by PCCF(Wildlife), Odisha, Bhubaneswar vide Memo No. 4011/1 WL(C) SSP-397/2013 Dt. 19<sup>th</sup> May 2014, On the basis of the above stated approval, DFO, Koraput had raised a demand note No.1838 Dt. 26-05-2014 for payment of Rs. 2011.50 lakhs. With reference to the above stated demand note, NALCO has made a payment of Rs. 2011.50 lakhs in Orissa CAMPA account in Corporation Bank, Lodhi Road, New Delhi through RTGS on Dt.04-06-2014.</p> <p>Besides the above, a total amount of Rs 7, 62, 85,312/- have been deposited in different phases as per demand letters of DFO,Koraput in Orissa CAMPA by NALCO towards Regional Wildlife Management Fund for implementation by State Forest Department. The conservation measures suggested are under process of implementation.</p> <p>The copy of action plan has been submitted to MoEF&amp;CC vide letter No- NAL/MIN/GM(Mines)2017/677, Dtd. on 12-10-2017. The status of implementation of conservation measures are given in <b>Annexure-IV</b>.</p> |
| xxvii  | Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A digital land-use map (shape file) as on 31.3.2024 has been submitted to MoEF&CC, Bhubaneswar on 18 <sup>th</sup> Nov 2024 vide mail.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| xxviii | A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure of approval.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Final mine closure plan shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|        | <b>GENERAL CONDITIONS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| i      | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The user agency (NALCO) undertakes that there shall be no change in technology and scope of work without prior approval from MoEF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ii     | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The user agency (NALCO) undertakes that there shall be no change in calendar plan including excavation, quantum of Bauxite, Waste/OB generation of work without prior approval from competent authority.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| iii    | At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO <sub>2</sub> & NO <sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecological sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.                                                                                                                                                                                                                                                                                                        | <p>At present 10 air quality monitoring stations are established in and around Mines based on the mentioned factors and measurements are being done once in every month for parameters as per the latest MOEF notification of September 2009. The location of monitoring stations has been fixed in consultation with SPCB, Odisha.</p> <p><i>[Signature]</i><br/> <b>Samir Ranjan Pattnaik</b><br/>         Sr. Manager (Geology)-Environment<br/>         Panchpatmali Bauxite Mine<br/>         NALCO, Damanjodi-763008</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

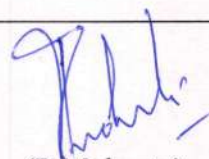
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|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| iv   | Data on ambient air quality (RSPM, SPM, and SO <sub>2</sub> & NO <sub>x</sub> ) should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six month.                                                                    | Data on air quality is being collected once in every month. Records submitted to statutory authorities once in six months.<br><br>The AAQ quality monitoring is done every month. The monitoring locations are A1(Baiguda village) , A2(Bitiarguda Village), A3(Goudguda village), A4(Kakriguma village), A5(Upper Meeting village), A6(Near Main Haul Road Area), A7(Near Crusher HouseA8(Roof of the HEMM main building), A9(Roof of Panchpatmali Bhavan), A10(Near SMCP North Block). ambient air analysis for the period April 2025 to Sep 2025 are given at <b>Annexure-I</b> .                                                                                                                                                                                                                                                                                                                                                                    |
| v    | Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.                                                                                                                                                             | Water spraying on haul road is carried out both with fixed (4.5 km long) and mobile sprinklers (6 nos) . Loading points of crusher house is provided with dry fog system. One no of fog cannon has also been deployed in the stock pile area to suppress dust.<br><br>Transportation of Bauxite ore is carried out through a cable belt conveyor of 14.6KM long, provided with hood all along.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| vi   | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs                                                                                                                                                                                            | Noise monitoring in work zone is taken up once in every quarter. Equipment selection is done keeping noise reduction features in view. Workers are provided with ear plugs /muffs. Besides ambient noise level is being monitored at 10 locations in and around the mine. Noise level monitoring for the period April 2025 to Sep 2025 is available at <b>annexure-V</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| vii  | Industrial waste water (workshop and waste water from the mine ) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.                  | The mine is operating a zero discharge system for effluents where all the waste water is treated, analyzed and reused for sprinkling on the haul road for dust suppression and plantation. Effluents from the Mechanical Workshop area is being channelized through well-designed oil-water separation tank where oil is collected and the clear water is collected in zero discharge sump. There is a canteen waste water disposal system (biological treatment unit) designed, constructed and maintained to treat the canteen waste water. All the treated waste water from canteen and HEMM workshop is used for horticulture & dust suppression. The treated waste water from canteen and HEMM workshop area are analysed before being reused.<br><br>The parameters are analysed every month. The analysis results for 2025-26 are available at <b>Annexure-VI</b> .<br>The above treated water is completely reused without discharging outside. |
| viii | Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects<br>Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed | All employees and contract workers are provided with protective devices. Regular training programmes are held in MVT center on health and safety aspects for contract workers as well as employees.<br><br>For all eligible employees of Central & North Block, periodical medical examinations are done & records thereof maintained. During April 2025-Sep 2025, 225 nos of employees have undergone periodical medical testing. No occupational diseases have been detected so far.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ix   | A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report                                                                                                                                                                                                                        | A Separate Environmental Management Cell, being headed by Sr.Mgr(Geo)-Env. who is reporting directly to CGM (Mines), exists for management of environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

*[Signature]*  
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|       | directly to the Head of the Organization.                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
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| x     | The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar          | <p>Being a public sector, the system does not allow for creating a separate account for environmental protection measures. However adequate fund is provided under the budget of executing departments for installation and maintaining various pollution control measures. The fund earmarked for environmental protection measures is never diverted for any other purpose. Adequate fund is always allocated to meet the capital &amp; recurring expenses to implement the environmental control measures inclusive of plantation. Many expenditures for Central and North Block and South Block on environment are carried out through common contracts. Hence the total expenditure will be reported jointly. The capital expenditure till date and the recurring expenditure for protection of environment at Panchpatmali (Central &amp; North Block) Bauxite Mine for the last three years are as follows:</p> <p>a. Capital Cost for Environmental Pollution control incurred during 2025-26 as on 30.09.2025 - Rs. 22 Crore</p> <p>b. Recurring cost</p> <table><tr><th>S. No</th><th>Activity</th><th>2023-24 (Rs)</th><th>2024-25 (Rs)</th><th>2025-26 (Rs)</th></tr><tr><td>1.</td><td>Backfilling and land reclamation*</td><td>62,960,586.87</td><td>59,788,134.00</td><td>22,211,322.00</td></tr><tr><td>2.</td><td>Environmental Pollution Control</td><td>65,81,220.00</td><td>70,40,589.00</td><td>7,415,404.00</td></tr><tr><td>3.</td><td>Plantation and Horticulture</td><td>87,44,999.00</td><td>12,397,646.00</td><td>7,488,544.00</td></tr><tr><td>4</td><td>Operation and maintenance of Water Sprinkling system &amp; zero discharge system</td><td>9,62,991.00</td><td>31,92,809.00</td><td>2,735,694.00</td></tr><tr><td></td><td>Total</td><td>7,92,49,796.44</td><td>82,419,179.00</td><td>39,850,965.00</td></tr></table> <p>Note- Backfilling and land reclamation cost is calculated based on the proportionate cost for diesel incurred in handling of overburden material as compared to the total excavation.</p> | S. No         | Activity      | 2023-24 (Rs) | 2024-25 (Rs) | 2025-26 (Rs) | 1. | Backfilling and land reclamation* | 62,960,586.87 | 59,788,134.00 | 22,211,322.00 | 2. | Environmental Pollution Control | 65,81,220.00 | 70,40,589.00 | 7,415,404.00 | 3. | Plantation and Horticulture | 87,44,999.00 | 12,397,646.00 | 7,488,544.00 | 4 | Operation and maintenance of Water Sprinkling system & zero discharge system | 9,62,991.00 | 31,92,809.00 | 2,735,694.00 |  | Total | 7,92,49,796.44 | 82,419,179.00 | 39,850,965.00 |
| S. No | Activity                                                                                                                                                                                                                                                                               | 2023-24 (Rs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2024-25 (Rs)  | 2025-26 (Rs)  |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| 1.    | Backfilling and land reclamation*                                                                                                                                                                                                                                                      | 62,960,586.87                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 59,788,134.00 | 22,211,322.00 |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| 2.    | Environmental Pollution Control                                                                                                                                                                                                                                                        | 65,81,220.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 70,40,589.00  | 7,415,404.00  |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| 3.    | Plantation and Horticulture                                                                                                                                                                                                                                                            | 87,44,999.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 12,397,646.00 | 7,488,544.00  |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| 4     | Operation and maintenance of Water Sprinkling system & zero discharge system                                                                                                                                                                                                           | 9,62,991.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 31,92,809.00  | 2,735,694.00  |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
|       | Total                                                                                                                                                                                                                                                                                  | 7,92,49,796.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 82,419,179.00 | 39,850,965.00 |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| xi    | The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work                                                 | The MoEF Regional Office shall be kept informed as required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |               |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| xii   | The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extnd full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports | NALCO undertakes that all co-operations will be extended to the officers of the Regional Office of the Ministry located at Bhubaneswar by furnishing requisite data, information/ monitoring reports.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |
| xiii  | The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the                                                                                                                                            | Six monthly report on the status of the implementation of the stipulated environmental safeguards is being submitted to MoEF, Govt. of India and State Pollution Control Board regularly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |               |              |              |              |    |                                   |               |               |               |    |                                 |              |              |              |    |                             |              |               |              |   |                                                                              |             |              |              |  |       |                |               |               |

  
 Samir Ranjan Pattnaik  
 Sr. Manager (Geology)-Environment  
 Panchpatmali Bauxite Mine  
 NALCO, Damanjodi-763008

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                           |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Ministry of Environment and Forests, its Regional Office Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions on their website and update the same periodically.                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                           |
| xiv  | A copy of clearance letter shall be marked to concerned Panchyat /local NGO, if any, from whom suggestion / representation has been received while processing the proposal                                                                                                                                                                                                                                                                                                                                                                                                                                                  | No such suggestions / representation has been received from the Panchayat / local NGO, while processing the clearance proposal.                                                           |
| xv   | The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office / Tahsildar's Office for 30 days                                                                                                                                                                                                                                                                                                                                                                                                                                | The clearance letter has been displayed at the required places.                                                                                                                           |
| xvi  | The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forest at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of the Ministry located at Bhubaneswar. | The accordance of Environmental clearance has been advertised in two local newspapers.                                                                                                    |
| xvii | Plantation of saplings shall be carried out in the earmarked 33% greenbelt area as a part of the tree plantation campaign "Ek Ped Maa Ke Naam" and the details of the same shall be uploaded in the MeriLiFE Portal ( <a href="https://merilife.nic.in">https://merilife.nic.in</a> )                                                                                                                                                                                                                                                                                                                                       | Nalco has been registered under National Meri Life portal and the Tree plantation status has been uploaded along with Observation of World Environment day as Mission life action report. |



(P Mohanta)

Chief General Manager(Mines)

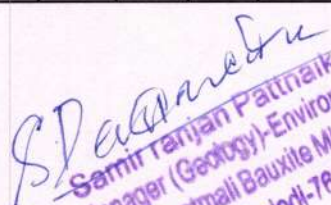
PURUSOTTAM MOHANTA  
Chief General Manager (Mines)  
Panchpatmali Bauxite Mines  
NALCO, Damanjodi-763008

**ANNEXURE-I**  
**AMBIENT AIR QUALITY ANALYSIS AT PANCHPATMALI CENTRAL & NORTH BLOCK BAUXITE MINE**  
**NALCO (2025-26)**

| Sl. No. | Monitoring station            | Parameter                                         | Norm | Apr'25 | May'25 | Jun'25 | Jul'25 | Aug'25 | Sep'25 | Oct'25 | Nov'25 | Dec'25 | Jan'26 | Feb'26 | Mar'26 | Avg    |
|---------|-------------------------------|---------------------------------------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1       | A1 (Baiguda village)          | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 26.3   | 25.75  | 25.75  | 25.98  | 21.89  | 27.9   |        |        |        |        |        |        | 25.60  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 47.5   | 50.79  | 48.9   | 53.28  | 40.86  | 48.96  |        |        |        |        |        |        | 48.38  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 51.8   | 38.86  | 32.6   | 35.52  | 34.79  | 32.6   |        |        |        |        |        |        | 37.70  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 99.3   | 84.64  | 81.51  | 88.79  | 75.65  | 81.56  |        |        |        |        |        |        | 85.24  |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 8.6    | 6.13   | 6.13   | 6.18   | 6.13   | 5.72   |        |        |        |        |        |        | 6.48   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 15.4   | 11.24  | 11.24  | 11.33  | 9.63   | 9.23   |        |        |        |        |        |        | 11.35  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.43   | 0.5    | 0.48   | 0.53   | 0.4    | 0.48   |        |        |        |        |        |        | 0.47   |
| 2       | A2 (Bitiarguda Village)       | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 27.1   | 29.79  | 30.05  | 30.05  | 22.56  | 28.94  |        |        |        |        |        |        | 28.08  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 49.5   | 51.34  | 53.85  | 51.78  | 40.73  | 50.35  |        |        |        |        |        |        | 49.59  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 53.4   | 29.63  | 31.08  | 29.89  | 34.55  | 29.63  |        |        |        |        |        |        | 34.70  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 102.9  | 80.97  | 84.93  | 81.67  | 75.28  | 79.98  |        |        |        |        |        |        | 84.29  |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 9.4    | 6.89   | 6.89   | 6.95   | 5.67   | 6.08   |        |        |        |        |        |        | 6.98   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 17.2   | 11.94  | 12.04  | 12.04  | 9.95   | 9.15   |        |        |        |        |        |        | 12.05  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.51   | 0.51   | 0.53   | 0.51   | 0.41   | 0.5    |        |        |        |        |        |        | 0.50   |
| 3       | A3 (Goudguda village)         | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 24.3   | 25.75  | 26.67  | 25.54  | 22.32  | 27.04  |        |        |        |        |        |        | 25.27  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 45.8   | 47.67  | 45.57  | 47.26  | 46.63  | 49.95  |        |        |        |        |        |        | 47.15  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 49.1   | 43.07  | 41.17  | 42.7   | 38.71  | 35.61  |        |        |        |        |        |        | 41.73  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 94.9   | 90.74  | 86.75  | 89.97  | 85.34  | 85.56  |        |        |        |        |        |        | 88.88  |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 8.4    | 7.33   | 7.33   | 7.29   | 6.95   | 5.31   |        |        |        |        |        |        | 7.10   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 14.6   | 12.04  | 12.47  | 11.94  | 9.63   | 9.63   |        |        |        |        |        |        | 11.72  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.42   | 0.47   | 0.47   | 0.47   | 0.42   | 0.49   |        |        |        |        |        |        | 0.46   |
| 4       | A4 (Kakriguma village)        | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 28.7   | 30.05  | 31.26  | 30.05  | 23.18  | 30.48  |        |        |        |        |        |        | 28.95  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 50.4   | 67.81  | 73.25  | 53.73  | 45.82  | 52.82  |        |        |        |        |        |        | 57.31  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 54.2   | 50.87  | 54.95  | 54.94  | 21.39  | 20.53  |        |        |        |        |        |        | 42.81  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 104.6  | 118.68 | 128.21 | 108.67 | 67.2   | 73.35  |        |        |        |        |        |        | 100.12 |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 10.2   | 6.13   | 6.13   | 6.13   | 5.72   | 8.17   |        |        |        |        |        |        | 7.08   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 17.3   | 12.44  | 12.94  | 12.44  | 10.03  | 10.03  |        |        |        |        |        |        | 12.53  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.52   | 0.67   | 0.67   | 0.53   | 0.45   | 0.52   |        |        |        |        |        |        | 0.56   |
| 5       | A5 (Upper Meeting village)    | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 30.1   | 30.05  | 27.92  | 25.75  | 21.89  | 26.18  |        |        |        |        |        |        | 26.98  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 51.9   | 60.38  | 63.36  | 51.44  | 42.62  | 47.25  |        |        |        |        |        |        | 52.83  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 55.6   | 54.31  | 56.09  | 45.53  | 40.48  | 35.78  |        |        |        |        |        |        | 47.97  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 107.5  | 114.7  | 119.45 | 96.97  | 83.1   | 83.04  |        |        |        |        |        |        | 100.79 |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 11.7   | 8.99   | 8.99   | 5.31   | 6.13   | 5.31   |        |        |        |        |        |        | 7.74   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 18.4   | 14.04  | 13.05  | 12.04  | 9.63   | 9.23   |        |        |        |        |        |        | 12.73  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.63   | 0.6    | 0.6    | 0.51   | 0.42   | 0.47   |        |        |        |        |        |        | 0.54   |
| 6       | A6 (Near Main Haul Road Area) | RPM ( $\mu\text{g} / \text{m}^3$ )                |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                               | PM 2.5( $60\mu\text{g} / \text{m}^3$ )            | 60   | 38.2   | 25.75  | 29.79  | 30.05  | 25.75  | 30.91  |        |        |        |        |        |        | 30.08  |
|         |                               | PM10( $100\mu\text{g} / \text{m}^3$ )             | 100  | 58.4   | 51.44  | 59.87  | 54.87  | 52.8   | 53.16  |        |        |        |        |        |        | 55.09  |
|         |                               | NRPM ( $\mu\text{g} / \text{m}^3$ )               |      | 64.3   | 45.53  | 53.85  | 54.31  | 49.26  | 46.04  |        |        |        |        |        |        | 52.22  |
|         |                               | SPM( $\mu\text{g} / \text{m}^3$ )                 |      | 122.7  | 96.97  | 113.72 | 109.18 | 102.07 | 99.2   |        |        |        |        |        |        | 107.31 |
|         |                               | SO <sub>2</sub> ( $80 \mu\text{g} / \text{m}^3$ ) | 80   | 13.2   | 5.31   | 5.31   | 8.99   | 5.31   | 5.31   |        |        |        |        |        |        | 7.24   |
|         |                               | NO <sub>x</sub> ( $80\mu\text{g} / \text{m}^3$ )  | 80   | 21.5   | 12.04  | 13.92  | 14.04  | 10.03  | 11.24  |        |        |        |        |        |        | 13.80  |
|         |                               | CO (2 mg /m <sup>3</sup> )                        | 2    | 0.79   | 0.51   | 0.59   | 0.54   | 0.52   | 0.53   |        |        |        |        |        |        | 0.58   |

*S. Pattnaik*  
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Sr. Manager (Geology)-Environment  
Panchpatmali Bauxite Mine  
NALCO, Damaniodi-763008

| Sl. No. | Monitoring station                  | Parameter                                        | Norm | Apr'25 | May'25 | Jun'25 | Jul'25 | Aug'25 | Sep'25 | Oct'25 | Nov'25 | Dec'25 | Jan'26 | Feb'26 | Mar'26 | Avg    |
|---------|-------------------------------------|--------------------------------------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 7       | A7 (Near Crusher House)             | RPM ( $\mu\text{g} / \text{m}^3$ )               |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                                     | PM 2.5( $60\mu\text{g} / \text{m}^3$ )           | 60   | 39.4   | 34.05  | 34.64  | 33.48  | 27.66  | 34.47  |        |        |        |        |        |        | 33.95  |
|         |                                     | PM10( $100\mu\text{g} / \text{m}^3$ )            | 100  | 59.6   | 68.45  | 67.06  | 61.65  | 63.53  | 62.31  |        |        |        |        |        |        | 63.77  |
|         |                                     | NRPM ( $\mu\text{g} / \text{m}^3$ )              |      | 65.2   | 78.4   | 76.81  | 85.66  | 69     | 61.24  |        |        |        |        |        |        | 72.72  |
|         |                                     | SPM( $\mu\text{g} / \text{m}^3$ )                |      | 124.8  | 146.85 | 143.86 | 147.31 | 132.54 | 123.55 |        |        |        |        |        |        | 136.49 |
|         |                                     | SO <sub>2</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 13.7   | 8.51   | 8.51   | 8.58   | 6.48   | 8.1    |        |        |        |        |        |        | 8.98   |
|         |                                     | NO <sub>x</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 20.3   | 15.91  | 16.19  | 13.24  | 10.34  | 11.94  |        |        |        |        |        |        | 14.65  |
|         |                                     | CO (2 mg /m3)                                    | 2    | 0.76   | 0.68   | 0.67   | 0.61   | 0.63   | 0.62   |        |        |        |        |        |        | 0.66   |
| 8       | A8 (Roof of the HEMM main building) | RPM ( $\mu\text{g} / \text{m}^3$ )               |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                                     | PM 2.5( $60\mu\text{g} / \text{m}^3$ )           | 60   | 32.4   | 30.05  | 30.57  | 29.79  | 26.18  | 26.61  |        |        |        |        |        |        | 29.27  |
|         |                                     | PM10( $100\mu\text{g} / \text{m}^3$ )            | 100  | 54.1   | 57.11  | 53.64  | 50.33  | 49.09  | 47.25  |        |        |        |        |        |        | 51.92  |
|         |                                     | NRPM ( $\mu\text{g} / \text{m}^3$ )              |      | 58.7   | 61.17  | 57.45  | 53.91  | 47.25  | 47.25  |        |        |        |        |        |        | 54.29  |
|         |                                     | SPM( $\mu\text{g} / \text{m}^3$ )                |      | 112.8  | 118.28 | 111.09 | 104.24 | 96.34  | 94.51  |        |        |        |        |        |        | 106.21 |
|         |                                     | SO <sub>2</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 12.8   | 9.4    | 9.4    | 9.32   | 5.72   | 7.35   |        |        |        |        |        |        | 9.00   |
|         |                                     | NO <sub>x</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 18.3   | 13.24  | 13.47  | 13.13  | 10.83  | 9.63   |        |        |        |        |        |        | 13.10  |
|         |                                     | CO (2 mg /m3)                                    | 2    | 0.62   | 0.57   | 0.53   | 0.5    | 0.49   | 0.47   |        |        |        |        |        |        | 0.53   |
| 9       | A9 (Roof of Panchpatmali Bhavan)    | RPM ( $\mu\text{g} / \text{m}^3$ )               |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                                     | PM 2.5( $60\mu\text{g} / \text{m}^3$ )           | 60   | 31.9   | 34.34  | 34.19  | 32.19  | 23.18  | 29.19  |        |        |        |        |        |        | 30.83  |
|         |                                     | PM10( $100\mu\text{g} / \text{m}^3$ )            | 100  | 53.4   | 60.56  | 54.7   | 54.94  | 57.23  | 52.99  |        |        |        |        |        |        | 55.64  |
|         |                                     | NRPM ( $\mu\text{g} / \text{m}^3$ )              |      | 56.2   | 59.53  | 55.62  | 55.86  | 46.24  | 44.39  |        |        |        |        |        |        | 52.97  |
|         |                                     | SPM( $\mu\text{g} / \text{m}^3$ )                |      | 109.6  | 120.09 | 110.32 | 110.8  | 103.46 | 97.38  |        |        |        |        |        |        | 108.61 |
|         |                                     | SO <sub>2</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 12.3   | 8.58   | 8.58   | 7.35   | 6.13   | 8.17   |        |        |        |        |        |        | 8.52   |
|         |                                     | NO <sub>x</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 17.2   | 15.25  | 16.38  | 14.04  | 11.24  | 10.03  |        |        |        |        |        |        | 14.02  |
|         |                                     | CO (2 mg /m3)                                    | 2    | 0.68   | 0.6    | 0.54   | 0.54   | 0.57   | 0.44   |        |        |        |        |        |        | 0.56   |
| 10      | A10 (Near SMCP North Block)         | RPM ( $\mu\text{g} / \text{m}^3$ )               |      |        |        |        |        |        |        |        |        |        |        |        |        |        |
|         |                                     | PM 2.5( $60\mu\text{g} / \text{m}^3$ )           | 60   | 28.4   | 34.34  | 34.49  | 31.76  | 24.47  | 27.24  |        |        |        |        |        |        | 30.12  |
|         |                                     | PM10( $100\mu\text{g} / \text{m}^3$ )            | 100  | 51.3   | 50.87  | 60.82  | 52.23  | 52.72  | 48.22  |        |        |        |        |        |        | 52.69  |
|         |                                     | NRPM ( $\mu\text{g} / \text{m}^3$ )              |      | 53.4   | 51.72  | 59.78  | 57.24  | 51.72  | 51.28  |        |        |        |        |        |        | 54.19  |
|         |                                     | SPM( $\mu\text{g} / \text{m}^3$ )                |      | 104.7  | 102.59 | 120.6  | 115.47 | 104.44 | 99.5   |        |        |        |        |        |        | 107.88 |
|         |                                     | SO <sub>2</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 10.2   | 7.35   | 7.35   | 8.58   | 5.72   | 6.08   |        |        |        |        |        |        | 7.55   |
|         |                                     | NO <sub>x</sub> (80 $\mu\text{g} / \text{m}^3$ ) | 80   | 18.5   | 16.43  | 15.31  | 15.25  | 10.83  | 9.55   |        |        |        |        |        |        | 14.31  |
|         |                                     | CO (2 mg /m3)                                    | 2    | 0.66   | 0.5    | 0.5    | 0.52   | 0.52   | 0.48   |        |        |        |        |        |        | 0.53   |

  
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**ANNEXURE-II**  
**FLOW RATES OF SPRINGS AROUND PANCHPATMALI CENTRAL & NORTH BLOCK**  
**BAUXITE MINE (2025-26)**

Stream water Quality Analysis April 2025

| SL. NO | Parameters                                                      | Sampling Station Code |           |                  |           |          |           |            |           |              |          |              |        |             |           |           |           |         |
|--------|-----------------------------------------------------------------|-----------------------|-----------|------------------|-----------|----------|-----------|------------|-----------|--------------|----------|--------------|--------|-------------|-----------|-----------|-----------|---------|
|        |                                                                 | G-1                   | G-2       | G-3              | G-4       | G-5      | G-6       | G-7        | G-8       | G-9          | G-10     | G-11         | G-12   | G-13        | G-14      | G-15      | G-16      | G-17    |
|        |                                                                 | Litiguda              | Jholaguda | Bhitara Bhejaput | Barigurha | Kapsiput | Litaputta | Mordagurha | Gowraguda | Tenguligurha | Kakirgum | Tentulipadar | Keler  | Kusumagurha | Kirajhola | Rangapani | Pansaputa | Bahpeta |
| 1      | Temp (°C)                                                       | 33°C                  | 32°C      | 32°C             | 33°C      | 34°C     | 34°C      | 32°C       | 33°C      | 34°C         | 34°C     | 32°C         | 32°C   | 34°C        | 34°C      | 33°C      | 33°C      | 32°C    |
| 2      | pH Value                                                        | 6.8                   | 6.8       | 6.8              | 6.8       | 6.8      | 6.9       | 6.9        | 6.8       | 6.8          | 6.9      | 6.9          | 6.9    | 6.8         | 6.8       | 6.8       | 6.8       | 6.9     |
| 3      | Dissolve Oxygen, mg/l                                           | 4                     | 4         | 4                | 4.2       | 4.1      | 4         | 4          | 3.8       | 4            | 4        | 4            | 4.1    | 4.2         | 4.1       | 4.1       | 4         | 4       |
| 4      | Total Dissolved Solids, mg/l                                    | 3                     | 3         | 3.4              | 3         | 3        | 3.2       | 3.2        | 3.2       | 3.3          | 3        | 3.1          | 3.2    | 3.2         | 3.2       | 3.2       | 3.2       | 3.2     |
| 5      | Total Hardness, (as CaCO <sub>3</sub> ), mg/l                   | 20                    | 20        | 28               | 28        | 24       | 28        | 20         | 16        | 20           | 24       | 24           | 20     | 24          | 20        | 20        | 24        | 24      |
| 6      | Suspended solids mg/l                                           | <1.0                  | <1.0      | <1.0             | <1.0      | <1.0     | <1.0      | <1.0       | <1.0      | <1.0         | <1.0     | <1.0         | <1.0   | <1.0        | <1.0      | <1.0      | <1.0      | <1.0    |
| 7      | B.O.D mg/l 3 days at 27°C                                       | <3.0                  | <3.0      | <3.0             | <3.0      | <3.0     | <3.0      | <3.0       | <3.0      | <3.0         | <3.0     | <3.0         | <3.0   | <3.0        | <3.0      | <3.0      | <3.0      | <3.0    |
| 8      | Nitrate (as NO <sub>3</sub> ), mg/l                             | <1.0                  | <1.0      | <1.0             | <1.0      | <1.0     | <1.0      | <1.0       | <1.0      | <1.0         | <1.0     | <1.0         | <1.0   | <1.0        | <1.0      | <1.0      | <1.0      | <1.0    |
| 9      | Chloride as Cl - mg/l                                           | 4                     | 4         | 4                | 4         | 4        | 4         | 4          | 4         | 4            | 4        | 4            | 4      | 4           | 4         | 4         | 4         | 4       |
| 10     | Sulphate (as SO <sub>4</sub> ), mg/l                            | <1.0                  | <1.0      | <1.0             | <1.0      | <1.0     | <1.0      | <1.0       | <1.0      | <1.0         | <1.0     | <1.0         | <1.0   | <1.0        | <1.0      | <1.0      | <1.0      | <1.0    |
| 11     | Calcium (as Ca), mg/l                                           | 6                     | 6         | 6                | 5         | 5        | 6         | 6          | 6         | 6            | 8        | 8            | 8      | 6           | 6         | 6         | 6         | 10      |
| 12     | Magnesium (as Mg), mg/l                                         | 1.3                   | 1.2       | 3.1              | 1.9       | 2.6      | 3.1       | 1.2        | <0.243    | 1.2          | 0.972    | 0.972        | <0.243 | 2.1         | 1.2       | 1.2       | 1.9       | <0.243  |
| 13     | Turbidity (N.T.U.)                                              | 2                     | 4         | 6.5              | 5         | 2.6      | 2.2       | 2.1        | 2.4       | 2.2          | 6        | 5.5          | 5.9    | 4           | 6.1       | 6.5       | 2         | 8.4     |
| 14     | Fluoride as F, mg/l                                             | <0.1                  | <0.1      | <0.1             | <0.0      | <0.1     | <0.1      | <0.1       | <0.1      | <0.1         | <0.1     | <0.1         | <0.0   | <0.1        | <0.1      | <0.1      | <0.1      | <0.1    |
| 15     | Phenolic Compounds, (as C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.001                | <0.001    | <0.001           | <0.001    | <0.001   | <0.001    | <0.001     | <0.001    | <0.001       | <0.001   | <0.001       | <0.001 | <0.001      | <0.001    | <0.001    | <0.001    | <0.001  |
| 16     | Arsenic (as As), mg/l                                           | <0.05                 | <0.05     | <0.05            | <0.05     | <0.05    | <0.05     | <0.05      | <0.05     | <0.05        | <0.05    | <0.05        | <0.05  | <0.05       | <0.05     | <0.05     | <0.05     | <0.05   |
| 17     | Mercury (as Hg), mg/l                                           | <0.01                 | <0.01     | <0.01            | <0.01     | <0.01    | <0.01     | <0.01      | <0.01     | <0.01        | <0.01    | <0.01        | <0.01  | <0.01       | <0.01     | <0.01     | <0.01     | <0.01   |
| 18     | Lead (as Pb), mg/l                                              | <0.01                 | <0.01     | <0.01            | <0.01     | <0.01    | <0.01     | <0.01      | <0.01     | <0.01        | <0.01    | <0.01        | <0.01  | <0.01       | <0.01     | <0.01     | <0.01     | <0.01   |
| 19     | Cadmium (as Cd), mg/l                                           | <0.01                 | <0.01     | <0.01            | <0.01     | <0.01    | <0.01     | <0.01      | <0.01     | <0.01        | <0.01    | <0.01        | <0.01  | <0.01       | <0.01     | <0.01     | <0.01     | <0.01   |
| 20     | Chromium (as Cr <sup>+3</sup> ), mg/l                           | <0.05                 | <0.05     | <0.05            | <0.05     | <0.05    | <0.05     | <0.05      | <0.05     | <0.05        | <0.05    | <0.05        | <0.05  | <0.05       | <0.05     | <0.05     | <0.05     | <0.05   |
| 21     | Copper (as Cu), mg/l                                            | <0.05                 | <0.05     | <0.05            | <0.05     | <0.05    | <0.05     | <0.05      | <0.05     | <0.05        | <0.05    | <0.05        | <0.05  | <0.05       | <0.05     | <0.05     | <0.05     | <0.05   |
| 22     | Zinc (as Zn) mg/l                                               | <0.05                 | <0.05     | <0.05            | <0.05     | <0.05    | <0.05     | <0.05      | <0.05     | <0.05        | <0.05    | <0.05        | <0.05  | <0.05       | <0.05     | <0.05     | <0.05     | <0.05   |
| 23     | Iron (as Fe), mg/l                                              | <0.1                  | <0.1      | <0.1             | <0.1      | <0.1     | <0.1      | <0.1       | <0.1      | <0.1         | <0.1     | <0.1         | <0.1   | <0.1        | <0.1      | <0.1      | <0.1      | <0.1    |
| 24     | STREAM FLOW RATE (m <sup>3</sup> /sec)                          | 3.752                 | 1.161     | 0.557            | 0.887     | 1.199    | 0.787     | 1.657      | 1.68      | 0.592        | 1.188    | 0.369        | 1.076  | 0.584       | 0.71      | 0.799     | 0.448     | 0.288   |

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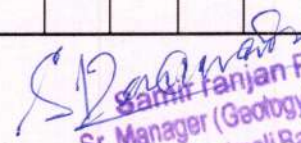
# Stream water Quality Analysis May 2025

| SL. |                                                                 | Sampling Station Code |           |                     |          |          |           |            |           |             |           |             |         |            |           |           |           |          |
|-----|-----------------------------------------------------------------|-----------------------|-----------|---------------------|----------|----------|-----------|------------|-----------|-------------|-----------|-------------|---------|------------|-----------|-----------|-----------|----------|
| NO  | Parameters                                                      | G-1                   | G-2       | G-3                 | G-4      | G-5      | G-6       | G-7        | G-8       | G-9         | G-10      | G-11        | G-12    | G-13       | G-14      | G-15      | G-16      | G-17     |
|     |                                                                 | Litiguda              | Jholaguda | Bhitara<br>Bhejaput | Bariguda | Kapsiput | Litapotta | Murdagurha | Gauraguda | Tenguliguda | Kakirguda | Tentulipada | Kaler   | Kusumaguda | Kirajhola | Rangapani | Pansaputa | Balipeta |
| 1   | Temp (°C)                                                       | 24.4                  | 24.1      | 25                  | 25.2     | 24.8     | 24.1      | 24.6       | 25.3      | 25.1        | 25.1      | 24.8        | 24.7    | 24.9       | 25.1      | 25.3      | 24.6      | 24.2     |
| 2   | pH Value                                                        | 6.5                   | 6.63      | 6.62                | 6.72     | 6.62     | 6.78      | 6.7        | 6.81      | 6.63        | 6.63      | 6.67        | 6.72    | 6.8        | 6.74      | 6.7       | 6.81      | 6.69     |
| 3   | Dissolve Oxygen, mg/l                                           | 6.8                   | 6.7       | 6.7                 | 6.7      | 6.6      | 6.8       | 6.3        | 6.7       | 6.7         | 6.7       | 6.9         | 6.8     | 6.7        | 6.5       | 6.4       | 6.3       | 6.7      |
| 4   | Total Dissolved Solids, mg/l                                    | 28                    | 28        | 20                  | 24       | 34       | 30        | 26         | 34        | 42          | 42        | 40          | 30      | 34         | 26        | 22        | 24        | 40       |
| 5   | Total Hardness, (as CaCO <sub>3</sub> ), mg/l                   | 22                    | 20        | 11                  | 22       | 32       | 29        | 11         | 22        | 36          | 36        | 29          | 29      | 22         | 7         | 4         | 11        | 25       |
| 6   | Suspended solids mg/l                                           | 4                     | 4         | 4                   | <2.5     | 3.2      | <2.5      | <2.25      | 4         | 6           | 6         | <2.5        | 6       | 4          | <2.5      | 4         | <2.5      | <2.5     |
| 7   | B.O.D mg/l 3 days at 27°C                                       | 3                     | <1.0      | <1.0                | <1.0     | <1.0     | <1.0      | <1.0       | <1.0      | <1.0        | <1.0      | <1.0        | <1.0    | <1.0       | <1.0      | <1.0      | <1.0      | <1.0     |
| 8   | Nitrate (as NO <sub>3</sub> ), mg/l                             | 0.259                 | <0.05     | 0.574               | <0.05    | 1.07     | <0.05     | 0.62       | <0.05     | <0.05       | <0.05     | <0.05       | <0.05   | <0.05      | <0.05     | <0.05     | <0.05     | <0.05    |
| 9   | Chloride as Cl - mg/l                                           | 6                     | 8         | 6                   | 4        | 4        | 6         | 4          | 4         | 6           | 4         | 6           | 4       | 4          | 6         | 6         | 6         | 4        |
| 10  | Sulphate (as SO <sub>4</sub> ), mg/l                            | 1.3                   | 1.4       | 1                   | 1.4      | 3.6      | 2.4       | 1.1        | 3.3       | <1.0        | 1.6       | 3.9         | 3.4     | 1.2        | 2.8       | 3.3       | 6.5       | 3.7      |
| 11  | Calcium (as Ca), mg/l                                           | 4.3                   | 4.3       | 2.8                 | 4.3      | 4.3      | 5.7       | 2.8        | 4.3       | 7.2         | 7.2       | 5.7         | 8.6     | 5.7        | <1.0      | <1.0      | 1.4       | 4.3      |
| 12  | Magnesium (as Mg), mg/l                                         | 2.72                  | 2.72      | <1.0                | 2.72     | 5.15     | 3.54      | <1.0       | 2.72      | 4.37        | 4.37      | 3.54        | 1.79    | 1.84       | 1.7       | <1.0      | 1.79      | 3.45     |
| 13  | Turbidity, (N.T.U.)                                             | 1                     | 0.6       | 4.2                 | 3        | 1        | 0.9       | 2.2        | 2         | 2.8         | 2.8       | 1.6         | 0.8     | 1.4        | 3.3       | 1.5       | 0.8       | 3.8      |
| 14  | Fluoride as F, mg/l                                             | 0.1                   | 0.13      | <0.1                | <0.1     | <0.1     | <0.1      | 0.11       | 0.5       | 0.16        | 0.16      | <0.1        | 0.8     | <0.1       | 0.3       | 0.6       | <0.1      | 0.12     |
| 15  | Phenolic Compounds, (as C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.001                | <0.001    | <0.001              | <0.001   | <0.001   | <0.001    | <0.001     | <0.001    | <0.001      | <0.001    | <0.001      | <0.001  | <0.001     | <0.001    | <0.001    | <0.001    | <0.001   |
| 16  | Arsenic (as As), mg/l                                           | <0.001                | <0.001    | <0.001              | <0.001   | <0.001   | <0.001    | <0.001     | <0.001    | <0.001      | <0.001    | <0.001      | <0.001  | <0.001     | <0.001    | <0.001    | <0.001    | <0.001   |
| 17  | Mercury (as Hg), mg/l                                           | <0.0005               | <0.0005   | <0.0005             | <0.0005  | <0.0005  | <0.0005   | <0.0005    | <0.0005   | <0.0005     | <0.0005   | <0.0005     | <0.0005 | <0.0005    | <0.0005   | <0.0005   | <0.0005   | <0.0005  |
| 18  | Lead (as Pb), mg/l                                              | 2.54                  | <0.005    | <0.005              | <0.005   | <0.005   | <0.005    | <0.005     | <0.005    | <0.005      | <0.005    | <0.005      | <0.005  | <0.005     | <0.005    | <0.005    | <0.005    | <0.005   |
| 19  | Cadmium (as Cd), mg/l                                           | <0.001                | <0.001    | <0.001              | <0.001   | <0.001   | <0.001    | <0.001     | <0.001    | <0.001      | <0.001    | <0.001      | <0.001  | <0.001     | <0.001    | <0.001    | <0.001    | <0.001   |
| 20  | Chromium (as Cr <sup>+6</sup> ), mg/l                           | <0.01                 | <0.02     | <0.02               | <0.02    | <0.02    | <0.02     | <0.02      | <0.02     | <0.2        | <0.02     | <0.02       | <0.02   | <0.02      | <0.02     | <0.02     | <0.02     | <0.02    |
| 21  | Copper (as Cu), mg/l                                            | <0.02                 | <0.02     | <0.02               | <0.02    | <0.02    | <0.02     | <0.02      | <0.02     | <0.02       | <0.02     | <0.02       | <0.02   | <0.02      | <0.02     | <0.02     | <0.02     | <0.02    |
| 22  | Zinc (as Zn) mg/l                                               | <0.05                 | <0.05     | <0.05               | <0.05    | <0.05    | <0.05     | <0.05      | <0.05     | <2.5        | <0.05     | <0.05       | <0.05   | <0.05      | <0.05     | <0.05     | <0.05     | <0.05    |
| 23  | Iron (as Fe), mg/l                                              | 0.5                   | 0.4       | 0.75                | 0.7      | 0.5      | 0.4       | 0.21       | 0.63      | 0.72        | 0.72      | 0.66        | 0.52    | 0.7        | 0.72      | 0.39      | 0.64      | 0.71     |
| 24  | STREAM FLOW RATE (m <sup>3</sup> /sec)                          | 3.804                 | 1.198     | 0.555               | 0.882    | 1.446    | 0.833     | 1.602      | 1.59      | 0.644       | 1.235     | 0.364       | 0.721   | 0.636      | 0.765     | 0.824     | 0.287     | 0.824    |

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# Stream water Quality Analysis June 2025

| SL. |                                                                       | Sampling Station Code |           |                     |           |          |           |            |               |                |              |                  |         |                 |           |           |           |          |
|-----|-----------------------------------------------------------------------|-----------------------|-----------|---------------------|-----------|----------|-----------|------------|---------------|----------------|--------------|------------------|---------|-----------------|-----------|-----------|-----------|----------|
| NO  | Parameters                                                            | G-1                   | G-2       | G-3                 | G-4       | G-5      | G-6       | G-7        | G-8           | G-9            | G-10         | G-11             | G-12    | G-13            | G-14      | G-15      | G-16      | G-17     |
|     |                                                                       | Litigoda              | Jholagoda | Bhitara<br>Bhejaput | Barigurha | Kapsiput | Litaputta | Murdagurha | Gaurahad<br>a | Tengulig<br>ha | Kakirum<br>a | Tentulipad<br>ar | Keler   | Kusumagur<br>ha | Kirajhola | Rangapani | Pansaputa | Balipeta |
| 1   | Temp (°C)                                                             | 24.1                  | 24.2      | 24.4                | 25        | 24.8     | 24.6      | 24.8       | 25            | 25.1           | 25           | 25               | 24.8    | 24.9            | 24.9      | 24.2      | 25        | 25.1     |
| 2   | pH Value                                                              | 6.9                   | 6.8       | 6.9                 | 6.9       | 6.71     | 6.69      | 6.81       | 6.9           | 6.8            | 6.8          | 6.9              | 6.71    | 6.7             | 6.7       | 6.28      | 6.7       | 6.71     |
| 3   | Dissolve Oxygen,<br>mg/l                                              | 6.6                   | 6.8       | 6.4                 | 6.7       | 6.7      | 6.8       | 6.8        | 6.7           | 6.4            | 6.4          | 6.5              | 6.4     | 6.7             | 6.9       | 6.9       | 6.7       | 6.7      |
| 4   | Total Dissolved<br>Solids, mg/l                                       | 26                    | 32        | 20                  | 32        | 40       | 44        | 30         | 36            | 26             | 20           | 24               | 42      | 32              | 32        | 28        | 36        | 50       |
| 5   | Total Hardness, (as<br>CaCO <sub>3</sub> ), mg/l                      | 24                    | 28        | 12                  | 24        | 36       | 28        | 28         | 20            | 8              | 40           | 12               | 28      | 24              | 24        | 16        | 36        | 40       |
| 6   | Suspended solids<br>mg/l                                              | 4                     | <2.5      | <2.5                | 4         | 4        | <2.5      | 4.4        | 4             | <2.5           | 4            | <2.5             | 4       | 1.4             | 1.4       | 1         | 4.4       | 1.9      |
| 7   | B.O.D mg/l 3 days<br>at 27°C                                          | <1.0                  | <1.0      | <1.0                | <1.0      | <1.0     | <1.0      | <1.0       | <1.0          | <1.0           | <1.0         | <1.0             | <1.0    | <1.0            | <1.0      | <1.0      | <1.0      | <1.0     |
| 8   | Nitrate (as NO <sub>3</sub> ),<br>mg/l                                | <0.05                 | <0.05     | 0.574               | <0.05     | 1.07     | <0.05     | 0.62       | <0.05         | <0.05          | <0.05        | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 9   | Chloride as Cl -<br>mg/l                                              | 8                     | 6         | 4.6                 | 4         | 6        | 6         | 4          | 4             | 6              | 6            | 6                | 4       | 6               | 6         | 6         | 12.01     | 8        |
| 10  | Sulphate (as SO <sub>4</sub> ),<br>mg/l                               | 1.3                   | 3.2       | 1                   | 3.6       | <1.0     | 4.1       | 4.2        | 1.4           | 2.4            | 3.8          | 6.4              | 4       | 1.4             | 1.4       | 1         | 4.4       | 1.9      |
| 11  | Calcium (as Ca),<br>mg/l                                              | 6.4                   | 4.8       | 2.8                 | 4.8       | 6.4      | 6.4       | 8          | 6.4           | <1.0           | <1.0         | 3.2              | 4.8     | 4.8             | 4.8       | 4.8       | 4.8       | 8        |
| 12  | Magnesium (as Mg),<br>mg/l                                            | 1.94                  | 3.88      | <1.0                | 2.72      | 5.15     | 3.54      | <1.0       | 2.72          | 1.94           | <1.0         | <1.0             | 3.88    | 2.91            | 2.91      | <1.0      | 5.83      | 4.86     |
| 13  | Turbidity (N.T.U.)                                                    | 0.42                  | <0.1      | 2                   | 2         | 2        | 1         | 0.9        | 1             | 3              | 1            | 0.8              | 3       | 1               | 1         | 4         | 1         | 3        |
| 14  | Fluoride as F, mg/l                                                   | 0.12                  | <0.1      | 0.11                | 0.49      | 0.18     | <0.1      | 0.82       | <0.1          | 0.3            | 0.49         | <0.1             | 0.14    | 0.1             | 0.2       | <0.1      | <0.1      | 0.2      |
| 15  | Phenolic<br>Compounds, (as<br>C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.5                  | <0.5      | <0.5                | <0.5      | <0.5     | <0.5      | <0.5       | <0.5          | <0.001         | <0.001       | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 16  | Arsenic (as As),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001        | <0.001         | <0.001       | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 17  | Mercury (as Hg),<br>mg/l                                              | <0.0005               | <0.0005   | <0.0005             | <0.0005   | <0.0005  | <0.0005   | <0.0005    | <0.0005       | <0.0005        | <0.0005      | <0.0005          | <0.0005 | <0.0005         | <0.0005   | <0.0005   | <0.0005   | <0.0005  |
| 18  | Lead (as Pb), mg/l                                                    | 2.54                  | <0.005    | <0.005              | <0.005    | <0.005   | <0.005    | <0.005     | <0.005        | <0.005         | <0.005       | <0.005           | <0.005  | <0.005          | <0.005    | <0.005    | <0.005    | <0.005   |
| 19  | Cadmium (as Cd),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001        | <0.001         | <0.001       | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 20  | Chromium (as<br>Cr <sup>+6</sup> ), mg/l                              | <0.01                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02      | <0.02         | <0.2           | <0.02        | <0.02            | <0.02   | <0.02           | <0.02     | <0.02     | <0.02     | <0.02    |
| 21  | Copper (as Cu),<br>mg/l                                               | <0.02                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02      | <0.02         | <0.02          | <0.02        | <0.02            | <0.02   | <0.02           | <0.02     | <0.02     | <0.02     | <0.02    |
| 22  | Zinc (as Zn) mg/l                                                     | <0.05                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | <0.05      | <0.05         | <2.5           | <0.05        | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 23  | Iron (as Fe), mg/l                                                    | 0.38                  | 0.4       | 0.21                | 0.61      | 0.7      | 0.6       | 0.51       | 0.7           | 0.62           | 0.39         | 0.64             | 0.69    | 0.49            | 0.49      | 0.75      | 0.49      | 0.8      |
| 24  | STREAM FLOW<br>RATE (m <sup>3</sup> /sec)                             | 3.789                 | 1.895     | 0.568               | 0.892     | 1.448    | 0.843     | 1.598      | 1.594         | 0.648          | 1.238        | 0.372            | 0.721   | 0.639           | 0.768     | 0.829     | 0.281     | 0.827    |

  
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# Stream water Quality Analysis July 2025

| SL. |                                                                       | Sampling Station Code |           |                     |           |          |           |                |                |                  |               |                  |         |                 |           |           |           |          |
|-----|-----------------------------------------------------------------------|-----------------------|-----------|---------------------|-----------|----------|-----------|----------------|----------------|------------------|---------------|------------------|---------|-----------------|-----------|-----------|-----------|----------|
| NO  | Parameters                                                            | G-1                   | G-2       | G-3                 | G-4       | G-5      | G-6       | G-7            | G-8            | G-9              | G-10          | G-11             | G-12    | G-13            | G-14      | G-15      | G-16      | G-17     |
|     |                                                                       | Litiguda              | Jholaguda | Bhitara<br>Bhejaput | Barigurha | Kapripot | Litapotta | Mordagurh<br>a | Gaurhagud<br>a | Tenguligur<br>ha | Kakirgum<br>a | Tentulipad<br>ar | Kaler   | Kusumagur<br>ha | Kirajhola | Rangapani | Pansapota | Balipeta |
| 1   | Temp (°C)                                                             | 24.4                  | 25.1      | 25.2                | 24.8      | 25.18    | 24.1      | 24.1           | 24.8           | 25.3             | 25.1          | 24.8             | 24.7    | 24.9            | 25.1      | 25.3      | 24.6      | 24.2     |
| 2   | pH Value                                                              | 6.72                  | 6.62      | 6.72                | 6.72      | 6.63     | 6.63      | 6.78           | 6.76           | 6.81             | 6.72          | 6.67             | 6.72    | 6.85            | 6.74      | 6.71      | 6.81      | 6.69     |
| 3   | Dissolve Oxygen,<br>mg/l                                              | 6.8                   | 6.8       | 6.7                 | 6.7       | 6.7      | 6.7       | 6.8            | 6.6            | 6.7              | 6.7           | 6.9              | 6.8     | 6.7             | 6.5       | 6.4       | 6.3       | 6.7      |
| 4   | Total Dissolved<br>Solids, mg/l                                       | 50                    | 50        | 24                  | 34        | 42       | 28        | 34             | 26             | 34               | 42            | 42               | 30      | 34              | 26        | 26        | 24        | 40       |
| 5   | Total Hardness, (as<br>CaCO <sub>3</sub> ), mg/l                      | 48                    | 40        | 24                  | 32        | 32       | 20        | 32             | 12             | 22               | 36            | 32               | 28      | 20              | 8         | 20        | 12        | 24       |
| 6   | Suspended solids<br>mg/l                                              | 4                     | 6         | <2.5                | <2.5      | 6        | <2.5      | <2.25          | <2.5           | 4                | 6             | <2.5             | 6       | 4               | <2.5      | 4         | <2.5      | <2.5     |
| 7   | B.O.D mg/l 3 days<br>at 27°C                                          | <1.0                  | <1.0      | <1.0                | <1.0      | <1.0     | <1.0      | <1.0           | <1.0           | <1.0             | <1.0          | <1.0             | <1.0    | <1.0            | <1.0      | <1.0      | <1.0      | <1.0     |
| 8   | Nitrate (as NO <sub>3</sub> ),<br>mg/l                                | 0.259                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | <0.05          | <0.05          | <0.05            | <0.05         | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 9   | Chloride as Cl -<br>mg/l                                              | 18.01                 | 16.01     | 12.01               | 10.01     | 10.01    | 10.01     | 8              | 6              | 6                | 6             | 6                | 6       | 6               | 6         | 10.01     | 6         | 4        |
| 10  | Sulphate (as SO <sub>4</sub> ),<br>mg/l                               | 2.9                   | 6.5       | 2.3                 | 5.3       | 1.8      | 1.68      | 3.2            | 1.65           | 3.6              | <1.0          | 3.9              | 3.4     | 1.23            | 2.8       | 3.3       | 6.52      | 3.7      |
| 11  | Calcium (as Ca),<br>mg/l                                              | 12.8                  | 12.8      | 4.8                 | 4.8       | 8        | 4.8       | 6.4            | 4.8            | 4.8              | 8             | 6.4              | 9.6     | 6.4             | <1.0      | <1.0      | 3.2       | 4.8      |
| 12  | Magnesium (as Mg),<br>mg/l                                            | 3.88                  | 1.94      | <1.0                | 4.86      | 2.91     | 1.94      | <1.0           | 2.72           | 2.43             | 3.88          | 3.88             | <1.0    | 1.45            | 1.94      | <1.0      | <1.0      | 2.91     |
| 13  | Turbidity, (N.T.U.)                                                   | 1                     | 0.6       | 3                   | 1         | 2.8      | 0.6       | 0.9            | 1              | 2                | 2             | 1.6              | 0.8     | 1.4             | 3.3       | 1.5       | 0.8       | 3.8      |
| 14  | Fluoride as F, mg/l                                                   | <0.1                  | <0.1      | <0.1                | <0.1      | <0.1     | <0.1      | 0.11           | 0.5            | 0.35             | 0.16          | <0.1             | 0.8     | <0.1            | 0.3       | 0.6       | <0.1      | 0.12     |
| 15  | Phenolic<br>Compounds, (as<br>C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001         | <0.001         | <0.001           | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 16  | Arsenic (as As),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001         | <0.001         | <0.001           | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 17  | Mercury (as Hg),<br>mg/l                                              | <0.0005               | <0.0005   | <0.0005             | <0.0005   | <0.0005  | <0.0005   | <0.0005        | <0.0005        | <0.0005          | <0.0005       | <0.0005          | <0.0005 | <0.0005         | <0.0005   | <0.0005   | <0.0005   | <0.0005  |
| 18  | Lead (as Pb), mg/l                                                    | 2.54                  | <0.005    | <0.005              | <0.005    | <0.005   | <0.005    | <0.005         | <0.005         | <0.005           | <0.005        | <0.005           | <0.005  | <0.005          | <0.005    | <0.005    | <0.005    | <0.005   |
| 19  | Cadmium (as Cd),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001         | <0.001         | <0.001           | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 20  | Chromium (as<br>Cr <sup>+3</sup> ), mg/l                              | <0.01                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02          | <0.02          | <0.2             | <0.02         | <0.02            | <0.02   | <0.02           | <0.02     | <0.02     | <0.02     | <0.02    |
| 21  | Copper (as Cu),<br>mg/l                                               | <0.02                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02          | <0.02          | <0.02            | <0.02         | <0.02            | <0.02   | <0.02           | <0.02     | <0.02     | <0.02     | <0.02    |
| 22  | Zinc (as Zn) mg/l                                                     | <0.05                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | <0.05          | <0.05          | <2.5             | <0.05         | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 23  | Iron (as Fe), mg/l                                                    | 0.5                   | 0.4       | 0.75                | 0.7       | 0.72     | 0.4       | 0.41           | 0.21           | 0.52             | 0.65          | 0.66             | 0.52    | 0.62            | 0.72      | 0.31      | 0.64      | 0.62     |
| 24  | STREAM FLOW<br>RATE (m <sup>3</sup> /sec)                             | 3.804                 | 1.198     | 0.555               | 0.882     | 1.446    | 0.833     | 1.602          | 1.59           | 0.644            | 1.235         | 0.364            | 0.721   | 0.636           | 0.765     | 0.824     | 0.287     | 0.824    |

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# Stream water Quality Analysis August 2025

| SL. |                                                                       | Sampling Station Code |           |                     |           |          |           |            |             |              |          |            |         |             |           |           |           |          |
|-----|-----------------------------------------------------------------------|-----------------------|-----------|---------------------|-----------|----------|-----------|------------|-------------|--------------|----------|------------|---------|-------------|-----------|-----------|-----------|----------|
| NO  | Parameters                                                            | G-1                   | G-2       | G-3                 | G-4       | G-5      | G-6       | G-7        | G-8         | G-9          | G-10     | G-11       | G-12    | G-13        | G-14      | G-15      | G-16      | G-17     |
|     |                                                                       | Litiguda              | Jholaguda | Bhitara<br>Bhejaput | Barigurha | Kapsiput | Litaputta | Mordagurha | Gauchagurha | Tenguligurha | Kakirgum | Tentulipad | Kaler   | Kusumagurha | Kirajhola | Rangapani | Pansaputa | Balipeta |
| 1   | Temp (°C)                                                             | 24.9                  | 24.9      | 24.8                | 24.8      | 24.8     | 25.1      | 25         | 24.8        | 25.5         | 24.9     | 25         | 24.9    | 24.8        | 25.1      | 24.8      | 24.9      | 24.8     |
| 2   | pH Value                                                              | 6.81                  | 6.42      | 6.38                | 6.19      | 6.41     | 8.13      | 6.64       | 7.45        | 8.01         | 6.76     | 6.76       | 6.7     | 6.9         | 6.8       | 6.8       | 6.7       | 6.8      |
| 3   | Dissolve Oxygen,<br>mg/l                                              | 6.7                   | 6.6       | 6.9                 | 6.4       | 6.8      | 6.8       | 6.7        | 6.8         | 6.9          | 6.8      | 6.2        | 6.4     | 6.7         | 6.8       | 6.9       | 6.4       | 6.7      |
| 4   | Total Dissolved<br>Solids, mg/l                                       | 48                    | 30        | 24                  | 24        | 16       | 34        | 30         | 36          | 40           | 20       | 20         | 32      | 36          | 30        | 30        | 40        | 20       |
| 5   | Total Hardness, (as<br>CaCO <sub>3</sub> ), mg/l                      | 40                    | 28        | 12                  | 16        | 12       | 28        | 8          | 28          | 32           | 12       | 12         | 28      | 24          | 12        | 24        | 16        | 12       |
| 6   | Suspended solids<br>mg/l                                              | <2.5                  | <2.5      | 6                   | <2.5      | <2.5     | <2.5      | <2.5       | <2.5        | 4            | <2.5     | <2.5       | 6       | 4           | 3.6       | 4         | 4.2       | <2.5     |
| 7   | B.O.D mg/l 3 days<br>at 27°C                                          | <1.0                  | <1.0      | <1.0                | <1.0      | <1.0     | <1.0      | <1.0       | <1.0        | <1.0         | <1.0     | <1.0       | <1.0    | <1.0        | <1.0      | <1.0      | <1.0      | <1.0     |
| 8   | Nitrate (as NO <sub>3</sub> ),<br>mg/l                                | <0.05                 | <0.05     | 0.48                | <0.05     | <0.05    | <0.05     | 0.41       | <0.05       | <0.05        | <0.05    | <0.05      | <0.05   | <0.05       | <0.05     | <0.05     | <0.05     | <0.05    |
| 9   | Chloride as Cl -<br>mg/l                                              | 6                     | 4         | 2                   | 4         | 4        | 2         | 2          | 2           | 2            | 4        | 2          | 4       | 6           | 6         | 10.01     | 4         | 6        |
| 10  | Sulphate (as SO <sub>4</sub> ),<br>mg/l                               | 1.9                   | 1.71      | <1.0                | 2.1       | <1.0     | 3.4       | 2.64       | 2.4         | <1.0         | 1.9      | <1.0       | 3.2     | 1.24        | 1.9       | 3.2       | 4.1       | 6.52     |
| 11  | Calcium (as Ca),<br>mg/l                                              | 3.2                   | 4.8       | 3.2                 | 4.8       | 3.2      | 6.4       | 1.6        | 8           | 9.6          | 1.6      | 1.6        | 11.2    | 4.8         | <1.0      | 6.4       | 3.2       | 3.2      |
| 12  | Magnesium (as Mg),<br>mg/l                                            | 1.94                  | 2.91      | <1.0                | <1.0      | <1.0     | 2.91      | <1.0       | 1.94        | 1.94         | 1.94     | 1.94       | <1.0    | 2.91        | 2.91      | 1.94      | 1.94      | 2.13     |
| 13  | Turbidity, (N.T.U.)                                                   | 0.5                   | 0.7       | 5                   | 2         | 1        | 1         | 1          | 2           | 2            | 2.8      | <0.1       | 0.7     | 1.5         | 3         | 1         | 3         | 0.7      |
| 14  | Fluoride as F, mg/l                                                   | <0.1                  | <0.1      | <0.1                | <0.1      | <0.1     | <0.1      | <0.1       | <0.1        | <0.1         | <0.1     | <0.1       | 0.6     | <0.1        | 0.28      | 0.48      | 0.12      | <0.1     |
| 15  | Phenolic<br>Compounds, (as<br>C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001      | <0.001       | <0.001   | <0.001     | <0.001  | <0.001      | <0.001    | <0.001    | <0.001    | <0.001   |
| 16  | Arsenic (as As),<br>mg/l                                              | <0.001                | 0.001     | <0.001              | 0.003     | 0.002    | 0.005     | 0.003      | 0.001       | 0.001        | 0.004    | 0.003      | <0.001  | <0.001      | <0.001    | <0.001    | <0.001    | <0.001   |
| 17  | Mercury (as Hg),<br>mg/l                                              | <0.0005               | <0.0005   | <0.0005             | <0.0005   | <0.0005  | <0.0005   | <0.0005    | <0.0005     | <0.0005      | <0.0005  | <0.0005    | <0.0005 | <0.0005     | <0.0005   | <0.0005   | <0.0005   | <0.0005  |
| 18  | Lead (as Pb), mg/l                                                    | <0.005                | 0.007     | <0.005              | <0.005    | 0.001    | <0.005    | <0.005     | <0.005      | <0.005       | <0.005   | <0.005     | <0.005  | <0.005      | <0.005    | <0.005    | <0.005    | <0.005   |
| 19  | Cadmium (as Cd),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001      | <0.001       | <0.001   | <0.001     | <0.001  | <0.001      | <0.001    | <0.001    | <0.001    | <0.001   |
| 20  | Chromium (as<br>Cr <sup>+6</sup> ), mg/l                              | <0.01                 | <0.01     | <0.01               | <0.01     | <0.01    | <0.01     | <0.01      | <0.01       | <0.01        | <0.01    | <0.01      | <0.01   | <0.01       | <0.02     | <0.01     | <0.01     | <0.01    |
| 21  | Copper (as Cu),<br>mg/l                                               | <0.02                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02      | <0.02       | <0.02        | <0.02    | <0.02      | <0.02   | <0.02       | <0.02     | <0.02     | <0.02     | <0.02    |
| 22  | Zinc (as Zn) mg/l                                                     | <0.05                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | <0.05      | <0.05       | 0.17         | <0.05    | 0.08       | <0.05   | <0.05       | <0.05     | <0.05     | <0.05     | <0.05    |
| 23  | Iron (as Fe), mg/l                                                    | 1                     | 1.4       | 0.12                | 0.9       | 0.5      | 0.2       | 0.5        | 0.5         | 0.6          | 0.3      | 0.61       | 0.5     | 0.62        | 0.5       | 0.62      | 0.62      | 0.32     |
| 24  | STREAM FLOW<br>RATE (m <sup>3</sup> /sec)                             | 3.802                 | 1.196     | 0.841               | 0.882     | 1.441    | 0.846     | 1.601      | 1.59        | 8.01         | 6.76     | 6.76       | 6.7     | 6.9         | 6.8       | 6.8       | 6.7       | 6.8      |

*Specimen*  
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# Stream water Quality Analysis September 2025

| SL. |                                                                       | Sampling Station Code |           |                     |           |          |           |            |               |                |               |                  |         |                 |           |           |           |          |
|-----|-----------------------------------------------------------------------|-----------------------|-----------|---------------------|-----------|----------|-----------|------------|---------------|----------------|---------------|------------------|---------|-----------------|-----------|-----------|-----------|----------|
| NO  | Parameters                                                            | G-1                   | G-2       | G-3                 | G-4       | G-5      | G-6       | G-7        | G-8           | G-9            | G-10          | G-11             | G-12    | G-13            | G-14      | G-15      | G-16      | G-17     |
|     |                                                                       | Litiguda              | Jholaguda | Bhitara<br>Bhejaput | Barigurha | Kapsiput | Litaputta | Murdagurha | Gaurahad<br>a | Tengulig<br>ha | Kakirgum<br>a | Tentulipad<br>ar | Kaler   | Kusumagur<br>ha | Kirajhola | Rangapani | Pansaputa | Balipeta |
| 1   | Temp (°C)                                                             | 25.1                  | 24.9      | 25                  | 25.2      | 24.7     | 24.9      | 25.2       | 25            | 24.8           | 25            | 25               | 24.9    | 24.9            | 24.9      | 24.8      | 24.9      | 24.8     |
| 2   | pH Value                                                              | 6.88                  | 6.51      | 6.51                | 6.22      | 6.4      | 8.16      | 6.7        | 7.5           | 8.11           | 6.81          | 6.8              | 6.8     | 6.72            | 6.78      | 6.81      | 6.7       | 6.72     |
| 3   | Dissolve Oxygen,<br>mg/l                                              | 6.7                   | 6.5       | 6.8                 | 6.5       | 6.7      | 6.8       | 6.8        | 6.7           | 6.9            | 6.8           | 6.4              | 6.4     | 6.8             | 6.8       | 6.7       | 6.5       | 6.8      |
| 4   | Total Dissolved<br>Solids, mg/l                                       | 50                    | 32        | 24                  | 26        | 18       | 36        | 32         | 36            | 34             | 22            | 22               | 32      | 36              | 30        | 32        | 42        | 28       |
| 5   | Total Hardness, (as<br>CaCO <sub>3</sub> ), mg/l                      | 36                    | 32        | 12                  | 20        | 12       | 32        | 12         | 24            | 32             | 16            | 16               | 24      | 24              | 12        | 24        | 20        | 12       |
| 6   | Suspended solids<br>mg/l                                              | <2.5                  | <2.5      | 6                   | <2.5      | <2.5     | <2.5      | <2.5       | <2.5          | 4              | <2.5          | <2.5             | 6       | 4.2             | 3.6       | 4         | 4.2       | <2.5     |
| 7   | B.O.D mg/l 3 days<br>at 27°C                                          | <1.0                  | <1.0      | <1.0                | <1.0      | <1.0     | <1.0      | <1.0       | <1.0          | <1.0           | <1.0          | <1.0             | <1.0    | <1.0            | <1.0      | <1.0      | <1.0      | <1.0     |
| 8   | Nitrate (as NO <sub>3</sub> ),<br>mg/l                                | <0.05                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | 0.37       | <0.05         | <0.05          | <0.05         | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 9   | Chloride as Cl -<br>mg/l                                              | 4                     | 6         | 4                   | 4         | 6        | 4         | 2          | 2             | 2              | 2             | 2                | 4       | 6               | 6         | 12.01     | 4         | 6        |
| 10  | Sulphate (as SO <sub>4</sub> ),<br>mg/l                               | 2.2                   | 1.9       | <1.0                | 2.6       | <1.0     | 4.1       | 3          | 2.64          | <1.0           | 1.1           | 1.2              | 3       | 1.23            | 1.9       | 3.4       | 4.4       | 7.1      |
| 11  | Calcium (as Ca),<br>mg/l                                              | 6.4                   | 6.4       | 1.6                 | 3.2       | 3.2      | 6.4       | 3.2        | 6.4           | 11.2           | 3.2           | 3.2              | 8       | 6.4             | 1.6       | 6.4       | 4.8       | 3.2      |
| 12  | Magnesium (as Mg),<br>mg/l                                            | 4.86                  | 3.88      | 1.94                | 2.91      | <1.0     | 3.88      | <1.0       | 1.94          | <1.0           | 1.94          | 1.94             | <1.0    | 1.94            | 1.94      | 1.94      | 1.94      | 2.13     |
| 13  | Turbidity, (N.T.U.)                                                   | 0.4                   | 0.7       | 5.4                 | 2.2       | 1.2      | 1         | 1.4        | 2             | 2              | 3             | <0.1             | 0.7     | 1.6             | 3         | 1         | 3         | <0.1     |
| 14  | Fluoride as F, mg/l                                                   | <0.1                  | <0.1      | <0.1                | <0.1      | <0.1     | <0.1      | <0.1       | <0.1          | <0.1           | <0.1          | <0.1             | 0.28    | <0.1            | 0.21      | 0.51      | 0.14      | <0.1     |
| 15  | Phenolic<br>Compounds, (as<br>C <sub>6</sub> H <sub>5</sub> OH), mg/l | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001        | <0.001         | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 16  | Arsenic (as As),<br>mg/l                                              | <0.001                | 0.001     | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001        | <0.001         | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 17  | Mercury (as Hg),<br>mg/l                                              | <0.0005               | <0.0005   | <0.0005             | <0.0005   | <0.0005  | <0.0005   | <0.0005    | <0.0005       | <0.0005        | <0.0005       | <0.0005          | <0.0005 | <0.0005         | <0.0005   | <0.0005   | <0.0005   | <0.0005  |
| 18  | Lead (as Pb), mg/l                                                    | <0.005                | <0.005    | <0.005              | <0.005    | <0.005   | <0.005    | <0.005     | <0.005        | <0.005         | <0.005        | <0.005           | <0.005  | <0.005          | <0.005    | <0.005    | <0.005    | <0.005   |
| 19  | Cadmium (as Cd),<br>mg/l                                              | <0.001                | <0.001    | <0.001              | <0.001    | <0.001   | <0.001    | <0.001     | <0.001        | <0.001         | <0.001        | <0.001           | <0.001  | <0.001          | <0.001    | <0.001    | <0.001    | <0.001   |
| 20  | Chromium (as<br>Cr <sup>+3</sup> ), mg/l                              | <0.01                 | <0.01     | <0.01               | <0.01     | <0.01    | <0.01     | <0.01      | <0.01         | <0.01          | <0.01         | <0.01            | <0.01   | <0.01           | <0.02     | <0.01     | <0.01     | <0.01    |
| 21  | Copper (as Cu),<br>mg/l                                               | <0.02                 | <0.02     | <0.02               | <0.02     | <0.02    | <0.02     | <0.02      | <0.02         | <0.02          | <0.02         | <0.02            | <0.02   | <0.02           | <0.02     | <0.02     | <0.02     | <0.02    |
| 22  | Zinc (as Zn) mg/l                                                     | <0.05                 | <0.05     | <0.05               | <0.05     | <0.05    | <0.05     | <0.05      | <0.05         | <0.05          | <0.05         | <0.05            | <0.05   | <0.05           | <0.05     | <0.05     | <0.05     | <0.05    |
| 23  | Iron (as Fe), mg/l                                                    | 0.9                   | 1.3       | 0.16                | 0.9       | 0.5      | 0.22      | 0.5        | 0.7           | 0.84           | 0.4           | 0.72             | 0.52    | 0.64            | 0.53      | 0.71      | 0.74      | 0.44     |
| 24  | STREAM FLOW<br>RATE (m <sup>3</sup> /sec)                             | 3.805                 | 1.189     | 0.821               | 0.885     | 1.409    | 0.849     | 1.601      | 1.59          | 1.12           | 1.234         | 0.394            | 0.782   | 0.648           | 0.772     | 0.882     | 0.848     | 0.388    |

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**ANNEXURE-III**  
**GROUND WATER QUALITY ANALYSIS AROUND PANCHPATMALI CENTRAL & NORTH BLOCK BAUXITE MINE (2025-26)**

| For April 2025 |                                                               |                    |                         |                           |                   |                     |                      |                  |                     |                           |                            |                           |                           |                             |                           |                             |                               |
|----------------|---------------------------------------------------------------|--------------------|-------------------------|---------------------------|-------------------|---------------------|----------------------|------------------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------------|
| Sl. No         | Name of Tests                                                 | Permissible Limits | GW-1<br>Metingi Village | GW-2<br>Chhatamba Village | GW-3<br>Panasapur | GW-4<br>Jhariapadar | GW-5<br>Tentulipadar | GW-6<br>Ichhapur | GW-7<br>Mundagadati | GW-8<br>Bijaghati Village | GW-9<br>Putraghati Village | GW-10<br>Chararha Village | GW-11<br>Kapsiput Village | GW-12<br>Jambagurha Village | GW-13<br>Shriguda Village | GW-14<br>Kakiriguma Village | GW-15<br>Sorishapadar Village |
| 1              | pH at 30°C                                                    | 6.5-8.5            | 6.9                     | 6.9                       | 6.8               | 6.8                 | 6.8                  | 6.8              | 6.9                 | 6.8                       | 6.8                        | 6.8                       | 6.9                       | 6.9                         | 6.9                       | 6.8                         | 6.8                           |
| 2              | D.O. (mg/l)                                                   | -                  | 3.5                     | 3.6                       | 3.7               | 3.8                 | 3.7                  | 3.8              | 3.5                 | 3.6                       | 3.8                        | 3.8                       | 3.9                       | 3.9                         | 3.5                       | 3.6                         | 3.5                           |
| 3              | T.D.S (mg/l)                                                  | 2000               | 2.98                    | 6.9                       | 9.4               | 6.55                | 8.2                  | 9.12             | 3.73                | 7.93                      | 9.14                       | 7.45                      | 8.22                      | 7.7                         | 1.89                      | 6                           | 1.85                          |
| 4              | Total Hardness. as CaCO <sub>3</sub>                          | 600                | 84                      | 38                        | 48                | 11                  | 48                   | 44               | 120                 | 128                       | 40                         | 40                        | 48                        | 36                          | 88                        | 60                          | 88                            |
| 5              | Total Alkalinity (as CaCO <sub>3</sub> ) (mg/l)               | 600                | 40                      | 52                        | 44                | 44                  | 64                   | 60               | 84                  | 32                        | 56                         | 56                        | 56                        | 36                          | 68                        | 56                          | 20                            |
| 6              | B.O.D.                                                        | 30                 | < 3.0                   | < 3.0                     | < 3.0             | < 3.0               | < 3.0                | < 3.0            | < 3.0               | < 3.0                     | < 3.0                      | < 3.0                     | < 3.0                     | < 3.0                       | < 3.0                     | < 3.0                       | < 3.0                         |
| 7              | Nitrate as NO <sub>3</sub> (mg/l)                             | 45                 | 3.2                     | 2.6                       | 2.5               | 53.9                | 4.8                  | 4.2              | 2.5                 | 2.8                       | 0.96                       | 0.54                      | 9.6                       | 16.8                        | 2.5                       | 2.8                         | 4.6                           |
| 8              | Chlorides as Cl (mg/l)                                        | 1000               | 44                      | 12                        | 16                | 84                  | 12                   | 4                | 92                  | 108                       | 4                          | 4                         | 4                         | 4                           | 56                        | 4                           | 60                            |
| 9              | Sulphate as SO <sub>4</sub> (mg/l)                            | 400                | 15                      | 3                         | 2                 | 40                  | <1.0                 | 3                | 27                  | 30                        | <1.0                       | <1.0                      | <1.0                      | <1.0                        | 2                         | 1                           | 2                             |
| 10             | Calcium as Ca (mg/l)                                          | 200                | 22                      | 14                        | 1                 | 32                  | 18                   | 14               | 30                  | 40                        | 14                         | 14                        | 14                        | 11                          | 29                        | 11                          | 27                            |
| 11             | Magnesium as Mg (mg/l)                                        | 100                | 7                       | 6                         | 9                 | 8                   | 7                    | 2                | 17                  | 7                         | 6                          | 1                         | 8                         | 2                           | 14                        | 8                           | 5                             |
| 12             | Turbidity (NTU)                                               | 10                 | <1.0                    | <1.0                      | <1.0              | <1.0                | <1.0                 | <1.0             | <1.0                | <1.0                      | 2.2                        | 15                        | <1.0                      | <1.0                        | <0.1                      | <0.1                        | <0.1                          |
| 13             | Fluoride as F (mg/l)                                          | 1.5                | 0.132                   | 0.08                      | 0.144             | 0.116               | 0.106                | 0.06             | 0.09                | 0.08                      | 0.157                      | 0.116                     | 0.184                     | 0.172                       | 0.09                      | 0.105                       | 0.113                         |
| 14             | Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH (mg/l) | 0.002              | < 0.002                 | < 0.002                   | < 0.002           | < 0.002             | < 0.002              | < 0.002          | < 0.002             | < 0.002                   | < 0.002                    | < 0.002                   | < 0.002                   | < 0.002                     | < 0.002                   | < 0.002                     | < 0.002                       |
| 15             | Arsenic as As (mg/l)                                          | 0.01               | < 0.05                  | < 0.05                    | < 0.05            | < 0.05              | < 0.05               | < 0.05           | < 0.05              | < 0.05                    | < 0.05                     | < 0.05                    | < 0.05                    | < 0.05                      | < 0.05                    | < 0.05                      | < 0.05                        |
| 16             | Mercury as Hg (mg/l)                                          | 0.001              | < 0.001                 | < 0.001                   | < 0.001           | < 0.001             | < 0.001              | < 0.001          | < 0.001             | < 0.001                   | < 0.001                    | < 0.001                   | < 0.001                   | < 0.001                     | < 0.001                   | < 0.001                     | < 0.001                       |
| 17             | Lead as Pb (mg/l)                                             | 0.05               | < 0.01                  | < 0.01                    | < 0.01            | < 0.01              | < 0.01               | < 0.01           | < 0.01              | < 0.01                    | < 0.01                     | < 0.01                    | < 0.01                    | < 0.01                      | < 0.01                    | < 0.01                      | < 0.01                        |
| 18             | Cadmium as Cd (mg/l)                                          | 0.01               | < 0.003                 | < 0.003                   | < 0.003           | < 0.003             | < 0.003              | < 0.003          | < 0.003             | < 0.003                   | < 0.003                    | < 0.003                   | < 0.003                   | < 0.003                     | < 0.003                   | < 0.003                     | < 0.003                       |
| 19             | Chromium Cr <sup>6+</sup> (mg/l)                              | 0.05               | < 0.05                  | < 0.05                    | < 0.05            | < 0.05              | < 0.05               | < 0.05           | < 0.05              | < 0.05                    | < 0.05                     | < 0.05                    | < 0.05                    | < 0.05                      | < 0.05                    | < 0.05                      | < 0.05                        |
| 20             | Copper as Cu (mg/l)                                           | 1.5                | < 0.05                  | < 0.05                    | < 0.05            | < 0.05              | < 0.05               | < 0.05           | < 0.05              | < 0.05                    | < 0.05                     | < 0.05                    | < 0.05                    | < 0.05                      | < 0.05                    | < 0.05                      | < 0.05                        |
| 21             | Zinc as Zn (mg/l)                                             | 15                 | < 0.05                  | < 0.05                    | < 0.05            | < 0.05              | < 0.05               | < 0.05           | < 0.05              | < 0.05                    | < 0.05                     | < 0.05                    | < 0.05                    | < 0.05                      | < 0.05                    | < 0.05                      | < 0.05                        |
| 22             | Iron as Fe (mg/l)                                             | 1                  | 0.243                   | 0.226                     | 0.293             | 0.302               | 0.358                | 0.367            | 0.552               | 0.326                     | 0.262                      | 0.842                     | 0.282                     | 0.386                       | 0.422                     | 0.23                        | 0.305                         |
| 23             | Temperature in °C                                             | -                  | 33°C                    | 33°C                      | 34°C              | 34°C                | 32°C                 | 32°C             | 34°C                | 34°C                      | 34°C                       | 33°C                      | 30°C                      | 30°C                        | 32°C                      | 32°C                        | 32°C                          |
| 24             | Coliform (MPN)                                                | ND in 100ml        | Absent                  | Absent                    | Absent            | Absent              | Absent               | Absent           | Absent              | Absent                    | Absent                     | Absent                    | Absent                    | Absent                      | Absent                    | Absent                      | Absent                        |

Norm as per IS 10500:2012

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For August 2025

| Sl. No | Name of Tests                                                 | Permissible Limits | GW-1<br>Metingi Village | GW-2<br>Chhatamba Village | GW-3<br>Panasaput | GW-4<br>Jhariapadar | GW-5<br>Tentulipadar | GW-6<br>Ichhapur | GW-7<br>Mundagadati | GW-8<br>Bijaghati Village | GW-9<br>Putraghati Village | GW-10<br>Chararha Village | GW-11<br>Kapsiput Village | GW-12<br>Jambagurha Village | GW-13<br>Shriguda Village | GW-14<br>Kakiriguma Village | GW-15<br>Sorishapadar Village |
|--------|---------------------------------------------------------------|--------------------|-------------------------|---------------------------|-------------------|---------------------|----------------------|------------------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------------|
| 1      | pH at 30°C                                                    | 6.5-8.5            | 7.25                    | 6.83                      | 6.75              | 6.74                | 8.23                 | 7.13             | 6.99                | 7.01                      | 6.95                       | 5.96                      | 6.96                      | 6.74                        | 7.04                      | 6.9                         | 6.91                          |
| 2      | D.O. (mg/l)                                                   | -                  | 4                       | 4.2                       | 4.3               | 4.2                 | 4.3                  | 4.4              | 4                   | 4.2                       | 3.6                        | 4.4                       | 4.6                       | 4.1                         | 4.3                       | 4.2                         | 4.6                           |
| 3      | T.D.S (mg/l)                                                  | 2000               | 60                      | 172                       | 162               | 166                 | 20                   | 154              | 166                 | 156                       | 204                        | 216                       | 120                       | 140                         | 98                        | 140                         | 280                           |
| 4      | Total Hardness. as CaCO <sub>3</sub>                          | 600                | 52                      | 124                       | 128               | 120                 | 16                   | 92               | 104                 | 104                       | 104                        | 108                       | 48                        | 44                          | 28                        | 112                         | 128                           |
| 5      | Total Alkalinity (as CaCO <sub>3</sub> ) (mg/l)               | 600                | 33                      | 110                       | 103.4             | 107.8               | 11                   | 94.6             | 94.6                | 103.4                     | 24.2                       | 35.2                      | 52                        | 26.4                        | 48                        | 84                          | 81                            |
| 6      | B.O.D.                                                        | 30                 | <1.0                    | <1.0                      | <1.0              | <1.0                | <1.0                 | <1.0             | <1.0                | <1.0                      | <1.0                       | <1.0                      | <1.0                      | <1.0                        | <1.0                      | <1.0                        | <1.0                          |
| 7      | Nitrate as NO <sub>3</sub> (mg/l)                             | 45                 | 0.34                    | 0.09                      | 0.2               | <0.05               | <0.05                | 0.27             | 0.39                | 0.09                      | 44.5                       | 43.8                      | 0.21                      | 0.7                         | 0.9                       | 0.41                        | 0.42                          |
| 8      | Chlorides as Cl (mg/l)                                        | 1000               | 4                       | 6                         | 8                 | 4                   | 4                    | 10.01            | 12.01               | 8                         | 54.05                      | 54.05                     | 16.01                     | 24.02                       | 32.03                     | 8                           | 10.01                         |
| 9      | Sulphate as SO <sub>4</sub> (mg/l)                            | 400                | 19.4                    | 4.2                       | 2.4               | 4.4                 | <1.0                 | 12.4             | 10.9                | 12.4                      | 18.4                       | 8.1                       | 10.9                      | 2.4                         | 4.4                       | 2.4                         | 2.8                           |
| 10     | Calcium as Ca (mg/l)                                          | 200                | 9.6                     | 27.2                      | 20.8              | 22.4                | 3.2                  | 20.8             | 17.6                | 16                        | 17.6                       | 19.2                      | 12.8                      | 9.6                         | 8                         | 17.6                        | 20.8                          |
| 11     | Magnesium as Mg (mg/l)                                        | 100                | 6.8                     | 13.6                      | 18.4              | 15.5                | 1.9                  | 0.8              | 14.5                | 15.5                      | 14.5                       | 14.5                      | 3.88                      | 4.86                        | 1.94                      | 16.52                       | 18.46                         |
| 12     | Turbidity (NTU)                                               | 10                 | <0.1                    | <0.1                      | <0.1              | <0.1                | <0.1                 | 0.8              | <0.1                | 0.4                       | 0.9                        | 5                         | <0.1                      | 1.8                         | <0.1                      | 3                           | 3                             |
| 13     | Fluoride as F (mg/l)                                          | 1.5                | 0.1                     | 0.14                      | 0.12              | 0.1                 | <0.1                 | 0.2              | <0.1                | <0.1                      | <0.1                       | <0.1                      | <0.1                      | <0.1                        | <0.1                      | <0.1                        | <0.1                          |
| 14     | Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH (mg/l) | 0.002              | <0.001                  | <0.001                    | <0.001            | <0.001              | <0.001               | <0.001           | <0.001              | <0.001                    | <0.001                     | <0.001                    | <0.001                    | <0.001                      | <0.001                    | <0.001                      | <0.001                        |
| 15     | Arsenic as As (mg/l)                                          | 0.01               | 0.001                   | 0.002                     | 0.004             | 0.001               | 0.003                | 0.006            | 0.002               | 0.005                     | 0.005                      | 0.006                     | <0.001                    | <0.001                      | <0.001                    | <0.001                      | <0.001                        |
| 16     | Mercury as Hg (mg/l)                                          | 0.001              | <0.0005                 | <0.0005                   | <0.0005           | <0.0005             | <0.0005              | <0.0005          | <0.0005             | <0.0005                   | <0.0005                    | <0.0005                   | <0.0005                   | <0.0005                     | <0.0005                   | <0.0005                     | <0.0005                       |
| 17     | Lead as Pb (mg/l)                                             | 0.05               | <0.005                  | <0.005                    | <0.005            | 0.005               | <0.005               | <0.005           | 0.006               | <0.005                    | <0.005                     | 0.009                     | <0.005                    | <0.005                      | <0.005                    | <0.005                      | <0.005                        |
| 18     | Cadmium as Cd (mg/l)                                          | 0.01               | <0.001                  | <0.001                    | <0.001            | <0.001              | <0.001               | <0.001           | <0.001              | <0.001                    | <0.001                     | <0.001                    | <0.001                    | <0.001                      | <0.001                    | <0.001                      | <0.001                        |
| 19     | Chromium Cr <sup>+6</sup> (mg/l)                              | 0.05               | <0.01                   | <0.01                     | <0.01             | <0.01               | <0.01                | <0.01            | <0.01               | <0.01                     | <0.01                      | <0.01                     | <0.01                     | <0.01                       | <0.01                     | <0.01                       | <0.01                         |
| 20     | Copper as Cu (mg/l)                                           | 1.5                | <0.02                   | 0.048                     | <0.02             | <0.02               | <0.02                | <0.02            | <0.02               | <0.02                     | <0.02                      | <0.02                     | <0.02                     | <0.02                       | <0.02                     | <0.02                       | <0.02                         |
| 21     | Zinc as Zn (mg/l)                                             | 15                 | 0.377                   | 0.24                      | <0.05             | 0.38                | <0.05                | 0.18             | 0.21                | 0.34                      | 1.06                       | 1.03                      | <0.05                     | <0.05                       | <0.05                     | <0.05                       | <0.05                         |
| 22     | Iron as Fe (mg/l)                                             | 1                  | 0.07                    | 0.12                      | 0.24              | <0.05               | <0.05                | 0.17             | 0.98                | 0.9                       | 0.3                        | 0.17                      | 0.24                      | <0.05                       | 0.9                       | 0.6                         | 0.58                          |
| 23     | Temperature in 0°C                                            | -                  | 24.8                    | 24.8                      | 24.2              | 24.2                | 24.2                 | 24.8             | 24.8                | 24.6                      | 24.2                       | 24.8                      | 24.8                      | 24.8                        | 24.8                      | 24.8                        | 23.8                          |
| 24     | Coliform (MPN)                                                | ND in 100ml        | Absent                  | Absent                    | Absent            | Absent              | Absent               | Absent           | Absent              | Absent                    | Absent                     | Absent                    | Absent                    | Absent                      | Absent                    | Absent                      | Absent                        |

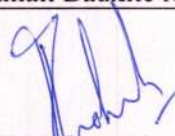
Norm as per IS 10500:2012

*SD*  
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**ANNEXURE-IV**

**STATUS OF COMPLIANCE OF MEASURES TO BE TAKEN UP BY NALCO WITHIN THE PROJECT AREA OF PANCHPATMALI BAUXITE MINE ( CENTRAL & NORTH BLOCK ML) AS PER APPROVED WILD LIFE MANAGEMENT PLAN**

| Sl.No. | Para ref.        | Item of Work                                                                                                                                                      | Status as on 30.09.2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | 3. b)<br>i) 1.   | Soil and moisture conservation in the ML area                                                                                                                     | Top soil excavated is used in concurrent reclamation of mined out area and is 100% utilised. All the rainfall in mined out area percolates into the ground without being discharged outside due to presence of in-situ barrier all around the mine. Besides rich growth of plantation and grass in the mined out area helps the soil to retain optimum moisture.                                                                                                                                                   |
| 2      | 3. b)<br>i) 2.   | Grass seeding in hill slopes one year prior to plantation                                                                                                         | Every year grass turfing with local grass is done in slopes in ML area. Grass turfing carried out during 2025-26 is 4000 sqr.mtr.                                                                                                                                                                                                                                                                                                                                                                                  |
| 3      | 3. b)<br>i) 3.   | Water harvesting structure in the Central Location of the lease where normally stray cattle congregate 40 m length x 30 m width x 3 m depth at the central point. | Three Nos of water harvesting structures do exist over Panchpatmali Bauxite Mine to take care of the need of stray cattle and other wildlife.                                                                                                                                                                                                                                                                                                                                                                      |
| 4      | 3. b)<br>i) 4.   | Fire line inside already reclaimed areas prior to commencement of the season (January to June ) 20 km                                                             | Every year around 1,45,000 sq.mtr area of fire line inside the reclaimed area as total area clearance to prevent spread of fire                                                                                                                                                                                                                                                                                                                                                                                    |
| 5      | 3.b)<br>i) 5.    | Watch and ward (10 nos) to prevent spread of fire will be looked after by NALCO                                                                                   | Watch and ward @12 nos per day are being deployed to prevent spread of fire.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6      | 3. b)<br>i) 6.   | Signage depicting messages to workers to protect the planted species / their vernacular name and usages and their medicinal value.                                | Signage board on plantation & Environmental issues have been provided.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 7      | 3 b)<br>i) 7     | Awareness campaign amongst the workers regarding the ecological / ethnic values of forest                                                                         | Every year awareness campaign is being organized to spread awareness among Employees/Workers regarding the ecological / ethnic values of forest through World Environment Day, Vana Mahotsav Week, EMAP program, MEMC Week, etc.<br>Besides villagers in the surrounding area are being distributed fruit bearing trees every year to create awareness about importance of tree plantation and they are also explained about having compassion towards wildlife for maintaining a healthy ecosystem in the region. |
| 8      | 3.<br>b)i)<br>8. | Solar Fencing around Red Mud Pond over 3.0 Kms.                                                                                                                   | The red mud pond is located beyond the buffer zone of Panchpatmali Bauxite Mine. Further no elephant habitat exists in the core or buffer zone of Panchpatmali Bauxite Mine.                                                                                                                                                                                                                                                                                                                                       |

  
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**ANNEXURE-V**  
**AMBIENT NOISE LEVEL MEASUREMENT IN AND AROUND**  
**PANCHPATMALI CENTRAL & NORTH BLOCK BAUXITE MINE FOR 2025-26**

| Sl. | Monitoring station code & its direction | Category of area/Zone | Date     | Noise level dB(A) |       | Date     | Noise level dB(A) |       | Date | Noise level dB(A) |       | Date | Noise level dB(A) |       |
|-----|-----------------------------------------|-----------------------|----------|-------------------|-------|----------|-------------------|-------|------|-------------------|-------|------|-------------------|-------|
|     |                                         |                       |          | Day               | Night |          | Day               | Night |      | Day               | Night |      | Day               | Night |
| 1   | N1 Baiguda Village- SW                  | C                     | 21.04.25 | 40.2              | 49.2  | 06.08.25 | 49.8              | 41.3  |      |                   |       |      |                   |       |
| 2   | N2 Bitiarguda Village- W                | C                     | 21.04.25 | 45.2              | 35.2  | 06.08.25 | 42.48             | 36.5  |      |                   |       |      |                   |       |
| 3   | N3 Goudguda Village- NW                 | C                     | 21.04.25 | 45.1              | 41.8  | 06.08.25 | 45.1              | 41.8  |      |                   |       |      |                   |       |
| 4   | N4 Kakinguma Village- N                 | C                     | 21.04.25 | 42.6              | 46.6  | 06.08.25 | 48                | 44.21 |      |                   |       |      |                   |       |
| 5   | N5 Upper Meeting Village- NE            | C                     | 21.04.25 | 51.8              | 52.2  | 06.08.25 | 52.4              | 43.1  |      |                   |       |      |                   |       |
| 6   | N6 Near Main Haul Road- E               | A                     | 21.04.25 | 40                | 51.8  | 06.08.25 | 51.4              | 45.48 |      |                   |       |      |                   |       |
| 7   | N7 Near Crusher House- SE               | A                     | 21.04.25 | 52.6              | 38.1  | 06.08.25 | 71.3              | 67.5  |      |                   |       |      |                   |       |
| 8   | N8 Near HEMM Main Building- SW          | A                     | 21.04.25 | 56.8              | 41.6  | 06.08.25 | 59                | 51.51 |      |                   |       |      |                   |       |
| 9   | N9 Roof Of Panchpatmali Bhawan- S       | A                     | 21.04.25 | 53.1              | 43.1  | 06.08.25 | 52.9              | 43.2  |      |                   |       |      |                   |       |
| 10  | N10 Near SMCP North Block-NE            | A                     | 21.04.25 | 55.3              | 45.1  | 06.08.25 | 55.6              | 45.8  |      |                   |       |      |                   |       |

|                       |                  |                     |            |
|-----------------------|------------------|---------------------|------------|
| Norm                  |                  |                     |            |
| Category of area/zone |                  | Limits in dB(A) Leq |            |
|                       |                  | Day time            | Night time |
| (A)                   | Industrial area  | 75                  | 70         |
| (B)                   | Commercial area  | 65                  | 55         |
| (C)                   | Residential area | 55                  | 45         |
| (D)                   | Silence zone     | 50                  | 40         |

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**ANNEXURE-VI**  
**WASTE WATER ANALYSIS AT PANCHPATMALI CENTRAL & NORTH BLOCK BAUXITE MINE**  
**(2025-26)**

| Sl. No. | Parameter                                    | NORM    | WW1    |         |         |         |         |         |        |        |        |        |        |        | WW2    |         |         |         |         |         |        |        |        |        |        |        | Average |        |
|---------|----------------------------------------------|---------|--------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|---------|--------|
|         |                                              |         | Apr-25 | May-25  | Jun-25  | Jul-25  | Aug-25  | Sep-25  | Oct-25 | Nov-25 | Dec-25 | Jan-26 | Feb-26 | Mar-26 | Apr-25 | May-25  | Jun-25  | Jul-25  | Aug-25  | Sep-25  | Oct-25 | Nov-25 | Dec-25 | Jan-26 | Feb-26 | Mar-26 | WW1     | WW2    |
| 1       | Temperature (°C)                             | -       | 32     | 24.2    | 24.2    | 24.3    | 24.9    | 24.8    |        |        |        |        |        |        | 32     | 24.2    | 24.1    | 24.2    | 24.9    | 24.9    |        |        |        |        |        |        | 25.733  | 25.717 |
| 2       | pH Value                                     | 5.5-9.0 | 7      | 5.02    | 5.6     | 5.62    | 5.62    | 5.7     |        |        |        |        |        |        | 7      | 6.26    | 6.3     | 6.7     | 7       | 7       |        |        |        |        |        |        | 5.760   | 6.710  |
| 3       | Dissolve Oxygen, mg/l                        | -       | 4      | 6.6     | 5.8     | 6.6     | 6.6     | 6.6     |        |        |        |        |        |        | 3.8    | 6.6     | 6.6     | 6.7     | 6.4     | 6.4     |        |        |        |        |        |        | 6.033   | 6.083  |
| 4       | Total Dissolved Solids, mg/l                 | -       | 143    | 68      | 80      | 68      | 90      | 110     |        |        |        |        |        |        | 114    | 90      | 94      | 90      | 84      | 68      |        |        |        |        |        |        | 93.167  | 90.000 |
| 5       | Total Hardness (as CaCO <sub>3</sub> ), mg/l | -       | 64     | 25      | 52      | 25      | 34      | 16      |        |        |        |        |        |        | 56     | 43      | 44      | 45      | 28      | 28      |        |        |        |        |        |        | 36.000  | 40.667 |
| 6       | Suspended Solids mg/l                        | 100     | <1.0   | 8       | <2.5    | 8       | 10      | 12      |        |        |        |        |        |        | <1.0   | 8       | 6.2     | 8.5     | 8.4     | 10      |        |        |        |        |        |        | 9.500   | 8.220  |
| 7       | B.O.D mg/l 3 days at 27°C                    | 30      | 28     | 15      | 12      | 15      | 12      | 18      |        |        |        |        |        |        | <3.0   | <1.0    | <1.0    | <1.0    | 4       | 5       |        |        |        |        |        |        | 16.667  | 4.5    |
| 8       | C.O.D mg/l                                   | 250     | 154    | 61      | 52      | 61      | 72      | 57.6    |        |        |        |        |        |        | 13     | <5.0    | <5.0    | <5.0    | 9.6     | 14.6    |        |        |        |        |        |        | 76.267  | 12.400 |
| 9       | Nitrate (as NO <sub>3</sub> ), mg/l          | -       | 2.13   | 4.27    | 5.2     | 4.27    | 2.2     | 2.4     |        |        |        |        |        |        | 0.96   | 5.85    | 6.2     | 5.6     | 0.8     | 0.21    |        |        |        |        |        |        | 3.412   | 3.270  |
| 10      | Chloride as Cl - mg/l                        | -       | 40     | 18.01   | 18      | 18      | 1.1     | 22      |        |        |        |        |        |        | 36     | 14.01   | 14      | 14      | <1.0    | 8       |        |        |        |        |        |        | 19.522  | 17.210 |
| 11      | Sulphate (as SO <sub>4</sub> ), mg/l         | -       | 4      | 8       | 8.2     | 8.8     | 3.2     | 1.8     |        |        |        |        |        |        | 1      | 19      | 18      | 19      | 4.8     | <1.0    |        |        |        |        |        |        | 5.667   | 12.360 |
| 12      | Calcium (as Ca), mg/l                        | -       | 18     | 4.3     | 12.8    | 4.5     | 1.94    | 3.2     |        |        |        |        |        |        | 16     | 14.4    | 12.8    | 14.4    | 2.91    | 4.8     |        |        |        |        |        |        | 7.457   | 10.885 |
| 13      | Magnesium (as Mg), mg/l                      | -       | 5      | 3.45    | 4.86    | 3.55    | 0.21    | 1.94    |        |        |        |        |        |        | 4      | 1.7     | 2.91    | 1.7     | <0.1    | 3.88    |        |        |        |        |        |        | 3.168   | 2.838  |
| 14      | Fluoride as F, mg/l                          | 2       | 0.37   | <0.1    | <0.1    | <0.1    | <0.5    | 0.22    |        |        |        |        |        |        | 0.244  | 0.140   | 0.2     | 0.14    | <0.5    | <0.1    |        |        |        |        |        |        | 0.296   | 0.181  |
| 15      | Phenolic Compounds,                          | 1       | <0.01  | <0.5    | <0.5    | <0.5    | 0.004   | <0.5    |        |        |        |        |        |        | <0.01  | <0.5    | <0.5    | <0.5    | 0.01    | <0.5    |        |        |        |        |        |        | 0.004   | 0.007  |
| 16      | Arsenic (as As), mg/l                        | 0.2     | <0.05  | <0.001  | <0.001  | <0.001  | <0.0005 | <0.001  |        |        |        |        |        |        | <0.05  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |        |        |        |        |        |        | 0.009   | 0.009  |
| 17      | Mercury (as Hg), mg/l                        | 0.01    | <0.01  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |        |        |        |        |        |        | <0.01  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |        |        |        |        |        |        | 0.003   | 0.003  |
| 18      | Lead (as Pb), mg/l                           | 0.1     | <0.01  | <0.0005 | <0.0005 | <0.0005 | <0.0001 | <0.0005 |        |        |        |        |        |        | <0.01  | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |        |        |        |        |        |        | 0.005   | 0.005  |
| 19      | Cadmium (as Cd), mg/l                        | 2       | <0.01  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |        |        |        |        |        |        | <0.01  | <0.001  | <0.001  | <0.001  | <0.001  | <0.001  |        |        |        |        |        |        | 0.004   | 0.004  |
| 20      | Chromium (as Cr <sup>6+</sup> ), mg/l        | 0.1     | <0.05  | <0.01   | <0.01   | <0.01   | <0.02   | <0.01   |        |        |        |        |        |        | <0.05  | <0.01   | <0.01   | <0.01   | <0.02   | <0.01   |        |        |        |        |        |        | 0.018   | 0.018  |
| 21      | Copper (as Cu), mg/l                         | 3       | <0.05  | <0.02   | <0.02   | <0.02   | 0.06    | <0.02   |        |        |        |        |        |        | <0.05  | <0.02   | <0.02   | <0.02   | 0.06    | <0.02   |        |        |        |        |        |        | 0.03    | 0.03   |
| 22      | Zinc (as Zn), mg/l                           | 5       | <0.05  | <0.05   | <0.05   | <0.05   | 0.71    | <0.05   |        |        |        |        |        |        | <0.05  | <0.05   | <0.05   | <0.05   | 5.71    | <0.05   |        |        |        |        |        |        | 0.15    | 0.98   |
| 23      | Iron (as Fe), mg/l                           | 3       | 0.46   | 0.9     | 0.9     | 0.9     | <1.0    | 0.8     |        |        |        |        |        |        | 0.385  | 0.6     | 0.6     | 0.6     | <1.0    | 5.82    |        |        |        |        |        |        | 0.7924  | 1.601  |
| 24      | Oil and grease                               | 10      | 0.9    | <1.0    | <1.0    | <1.0    | 5.62    | <1.0    |        |        |        |        |        |        | 1.000  | <1.0    | <1.0    | <1.0    | 7       | <1.0    |        |        |        |        |        |        | 1.75    | 2.000  |

WW1-treated water from Canteen

WW2-treated water from HEMM area

HEM  
M  
area

\* Parameters are within permissible norms

NT- Not traceable

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