

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, SOUTHERN
ZONE AT CHENNAI**

O.A. No. 74 of 2023

Padma Kumar, Kerala

... Applicant

Vs

The State of Kerala,
Through its Chief Secretary and Ors

... Respondents

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Dated at Chennai this 10th Day of March 2026



Counsel for Respondent 6

**BEFORE THE HONOURABLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI**

Original Application No 74 of 2023

In the Matter of:

Padma Kumar, Kerala : Applicant

Vs.

The State of Kerala,
Through its Chief Secretary
and others : Respondents

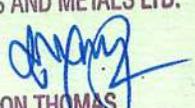
**STATUS REPORT FILED BY THE KERALA MINERALS AND
METALS LIMITED**

I, Jaison Thomas, aged 51 years, S/o. V.L.Thomas, residing at Jojes, Vadakkumthala P.O., Karunagappally, Kollam-690 536, the Company Secretary and Head Legal, Kerala Minerals and Metals Limited, Chavara, Kollam, Kerala, do hereby solemnly affirm and state as follows:

1. I am the Company Secretary and Head Legal of the 6th respondent, the Kerala Minerals and Metals Limited. I am conversant with the facts of the case and I am authorized and competent to swear to this affidavit on behalf of the Kerala Minerals and Metals Limited.
2. The present affidavit is filed, to bring to the notice of this Honourable Tribunal, the progress with respect to the measures to be undertaken by the 6th respondent.
3. It is submitted that, this Honourable Tribunal, vide order dated 31/08/2017 in O.A. No. 142 of 2013 and other connected applications, based on the report of the NEERI had identified by the following as part of the Environmental Management Plan:

- Control of seepage/ overflow from sludge ponds.
- Solid Waste Management.
- Remediation of contaminated areas in and around M/s. KMML



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4. In respect of the control of seepage/ overflow from sludge ponds, in order to mitigate the impact on the environment, the following plausible remedy has been suggested.

- *Effective control of seepage discharges from both old and new ETP and iron oxide sludge ponds is recommended through provision of garland drains along the periphery of the ponds. The seepages are to be collected in seepage collection sumps of adequate capacity.*
- *Management of sludge ponds seepage collected in collection sump through garland drains must be pumped either to the existing ETP for neutralization or to the site identified for implementation of a new chemical treatment system for neutralization followed by sludge separation. The neutralized supernatant will be pumped for disposal into sea and dewatered sludge to be transferred to sludge ponds.*
- *In addition, the leachate collection system of the new ETP sludge and iron oxide sludge ponds are non functional resulting in poor sludge dewatering, and therefore these systems need to be made optimally functional for effective collection of seepage and leachate from these ponds.*

5. In so far as it relates to the Environment Management Plan for solid waste, the following measures given by NEERI has been adopted by this Tribunal.

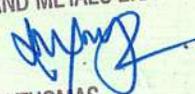
- **Short Term Measure:** Environmental Sound Management of the old sludge ponds containing iron oxide and ETP sludge.
- **Long Term Measure:** Process modifications/ technological intervention for reducing chloride contents in iron oxide sludge for making it suitable as a resource for Steel Industry.

6. The action taken by this respondent, pursuant to the above directions is elaborated in the following paragraphs.

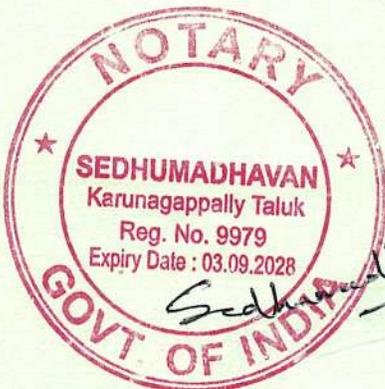
Garland Drains:

7. It is brought to the notice of this Honourable Tribunal that this respondent has completed the construction of the garland drains around the new ETP and the old ETP and Iron Oxide Ponds. The following is the chronological time-line and the present status viz a viz the garland drains around the new ETP and Iron Oxide Ponds:



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- KMML engaged M/s. KITCO Ltd, Kochi, for the preparation of a detailed project report (DPR) for the construction of Garland drains around old and new ponds in KMML on 21.03.2018.
- The Kerala State Pollution Control Board (KSPCB) approved the submitted DPR on 07.01.2019.
- The 239th Board meeting of KMML held on 12.03.2019, had approved the proposal for the construction of Garland drains around the old IOP/ETP and new ponds at an estimated cost of Rs.570.74 Lakhs and completion period of 2 years.
- KMML invited an e- tender on 4th of July 2019, for the “Construction of garland drains around elevated IOP and ETP” (New ETP). The technical bid was opened on 29.07.2019 & there were 3 participants in the tender.
- Subsequent to the invitation of e-tender and further evaluation of bids, the work was awarded to the L1 party Mr. P Ravikumar on 10.10.2019 vide work order No: TP/WO/PROJ/0282/2019-2020 dated 08.10.2019. The completion time was 6 Months as per work order & from the date of acceptance of work order.
- The Covid-19 and connected restrictions imposed by district/local administration had badly affected the site works for a period from 21.03.2020 to 11.08.2020.
- The Second wave covid restriction declared for the State since 08.05.2021 also aggravated the situation. (from 08.05.2021 to 16.06.2021) This added with few site constraints had made the construction delayed from the original schedule.
- The silty clay soil condition coupled with water logging; poor load bearing capacity of the soil lead to much difficulty in work execution which in turn resulted in area development by filling the low-lying area & kutcha road making. The dilapidated school building adjacent to the pond & intercepting



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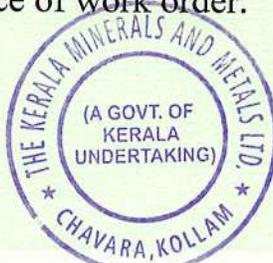

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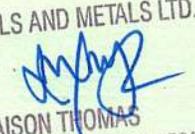
the alignment of garland has been dismantled for the smooth commencement of the job.

- Garland drain around the new ETP was constructed by October-2023. Minor portions of the drain around the new ETP was completed on 16/01/2025. Hence the work of garland drain around the new ETP pond is fully completed.
- As there was an iron oxide shifting process going on there was constraint in providing site clearance. As of now, site clearance has been provided for the construction of garland drain around new IOP on a chainage basis.
- The letter of Intent got placed on M/s. Anup Kareem dated 11.11.2024 and subsequently a work order was also placed on 22.11.2024.
- The civil construction work of the balance portion of the garland drain around the new IOP was completed on 23/05/2025. Hence the civil work of garland around the new IOP has been fully completed.
- Additionally, Cables, pumps etc have been purchased and Purchase orders have been placed for FRP pipes and the installation of the pipes will be done. The Targeted date of completion is May 2026

8. The following is the chronological time-line and the present status viz a viz the garland drains around the Old ETP/Iron Oxide Ponds:

- The e-tender for the work was published vide tender no: KMML/TP/PROJ/C/T/04/2020 Dated 28.10.2020.
- Techno – Commercial bid opening was on 17.11.2020 and KMML received two offers.
- After detailed evaluation of the offers, the work was awarded to the L1 party viz M/s. Biohomes Projects Pvt Ltd, Kollam, on 08.04.2021 (Work order No: TP/WO/PROJ/0003/2021-2022 dated 08.04.2021). The completion time as per work order was 6 months from the date of acceptance of work order.



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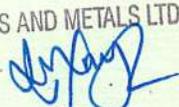
- There were various issues during the course of the work like nCovid-19, silty soil, local labour issues etc. and the contractor had to overcome such obstacles for the execution of works.
- Garland drain around OLD ETP /IOP has been completed by May-2024, in line with the gradient of the pond to catch proper collection of overflows to the collection pit.
- The capped area of the pond which is in the east and south side were not constructed with garland since effectively as per site conditions, the same seems technically not required in such areas being capped and runoff/seepage/ overflow will not come through those areas. Even then the construction in the said area is in progress.
- The construction of the garland drains on the North, west sides of the old IOP/ETP pond have been completed to the extent of 870 metres. On the southern side, the planned 460 meters were completed on 22/09/2025.
- Installation of the pump in the collection pit around the garland has been completed, the pit is provided with a lime neutralization system and the seepage/ overflow collected in the pit getting neutralized for pumping back.
- The work for connecting the discharge line to the ENP is in progress and the targeted date of completion is March 2026.

Remediation of affected land in and around KMML:

9. It is brought to the notice of this Honourable Tribunal that CSIR-NEERI, Nagpur, had prepared a report "*Monitoring & Assessment of Environmental Status in and around the Industrial Site of The Kerala Minerals and Metals Limited and Delineation of Environmental Management Plan*", in the year 2015 where it identified affected areas in & around KMML and recommended for the remediation of contaminated area.

10. KMML invited KITCO Ltd, Kochi, for the Preparation of a Detailed Project Report (DPR) for the Remediation of Contaminated Area in &



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around KMML. In response to this, KITCO submitted their offer dated 7th February, 2018.

11. Subsequently, KITCO has been selected as the Consultant and the work titled, '*Preparation of Detailed Project Report for Remediation of Contaminated Area in and around KMML*' was awarded to KITCO dated 21st March 2018. KITCO prepared a DPR & scheme and KMML submitted the same to the Chairman, KSPCB, for approval. KSPCB approved the submitted DPR on 07.01.2019.
12. It is submitted that in order to quantify the performance of the remediation units, one remediation unit (1R) needs to be implemented on a trial basis. After assessing the performance of 1 remediation unit (1R)/pilot model inside KMML premises, remaining remediation units have to be done in & around KMML with the consent from KSPCB and other statutory bodies.
13. The following is the chronological time-line and the present status viz a viz the soil remediation:
 - E-tender floated (Tender id: 2019_KMML_285536_1 dt.09.07.2019) for the appointment of structural /civil consultant for the test patch area land remediation in KMML and which was published on 09.07.2019 with due date 05.08.2019. No offers received for the same.
 - KMML invited limited tender vide tender no. KMML/TP/TS/ENV/Remediation/Supervision/2019 dt 10.10.2019, to appoint Project Management Consultancy/ Supervision for the test patch area remediation in KMML premises, from 11 parties with due date 25.10.2019. Two offers received. i.e. from M/s FEDO and M/s Indaf.
 - M/s Indaf had not qualified since they have not submitted the details as required for qualification with reference to the tender.
 - M/s FEDO qualified techno commercially, but had quoted Rs: 21,00,400/- (including GST), which was high. So,



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KMML invited M/s FEDO for a techno commercial discussion and negotiation.

- M/s FEDO did not offer any further reduction however being a statutory requirement, M/s FEDO was awarded with the work order for the project management consultancy & supervision work for the test patch area remediation in KMML premises.
- Work order (Work order No: TP/WO/PTS/0369/2019-2020 dt 05.12.2019) was issued to M/s FEDO on 05.12.2019 for project management consultancy and supervision of the test patch area for land remediation in KMML premises.
- M/s FEDO have submitted an execution report with schematic drawing and lay out of the contaminated land remediation work.
- Tendering for a test patch was done on three occasions but failed. The tender notification 25.02.2020 did not fructify, as there was only one offset, forcing this respondent to re-tender the work. The re-tender, through notification dated 24.06.2020 failed as there were no bidders. A further notification dated 19.08.2020 was also issued, but the same also failed as there were no bidders.
- Due to the non-receipt of offers, it was decided to initiate action for undertaking the activity, internally.
- Due to the Covid 19 pandemic restrictions, further tendering processes were delayed.
- For the finished part viz. project report with schematic drawing and layout of the contaminated land remediation, KMML paid M/s FEDO Rs.7,49,300 inclusive of GST as part payment.
- Internal approval note forwarded for inviting open e-tender for Remediation of the Test Patch Area viz. 1 remediation unit (1R) of size 75 meter × 50 meter inside KMML by reengaging M/s FEDO, on 13.01.2023.



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- Action initiated to re-engage M/s FEDO for consultancy and supervision of the test patch area for contaminated land in KMML premises 02.02.2023.

Land Preparation for facilitating Test Patch area inside KMML:

- E-tender (2022_KMML_485923_1 dt 11.04.2022) was invited on 11.04.2022 with a due date as 22.04.2022, for land preparation to facilitate test patch remediation trials in KMML.
- Three offers received. But the offer from M/s P T Jayapal was found technically acceptable. Work order was issued to M/s Jayapal on 10.6.2022 for the Land preparations.
- Land preparation for the Test Patch unit completed on 24.08.2022.

Remediation of test patch area:

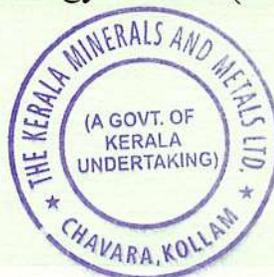
- Reengaged M/s FEDO, Kochi, for the trial test patch in the contaminated land in KMML premises, on 06.11.2023.
- Work order TP/WO/PTS/0283/2023-2024 dt 06.11.2023 issued to M/s FEDO.
- E-tender ID: 2024_KMML_64337_1 dt 15.01.2024 invited again for Land remediation of test patch area (1R) and corrigendum done for date submission extended up to 12.02.2024. No parties quoted the tender.
- Again E-tendering was done (E-tender ID: 2024_KMML_664889_1 dt 29.02.2024) with modified PQ and payment terms, for better participation.
- Three parties quoted for the E-tender.
- E-tender evaluation was completed & work order issued to M/s P T Jayapal.
- Execution of the work started by the first week of April 2024 and installation completed.
- First set of remediation trial runs with lime solutions are progressing at site under the supervision of PMC M/s. FEDO,



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Kochi. Status of the work & procedure following got informed to KSPCB.

- As of now, sprinkling of lime solution in the test patch area has been completed by August 2024 and leachate collection is started at site. The quantity of leachate that could be sucked out was very less compared to the sprinkled quantity of lime solution, purely due to site conditions and only 128 KL of leachate could only be extracted from 6 no.s of bore wells.
- Daily lab analysis of the samples was done. KMML observed that the pH of Leachate pumped out from the bore wells for neutralization indicated acidic nature and there was no promising improvement in pH of ground water after the lime solution treatment to the soil.
- M/s FEDO, Kochi (Project Management Consultants), submitted a test patch trial report on 12.11.2024. In the report they summarized that *"The remediation method did not improve the pH of groundwater. As the pH of water did not improve, it can be deduced the soil pH also did not improve. Hence the proposed methodology of land remediation is not to be applied extensively without further study"*.
- To adopt remediation activities using specific technologies from the global front and as part of further study on the way forward action to remediate the land, KMML has taken actions to invite a global expression of interest (EOI) to identify suitable & competent bidders who can support their latest technology in the field.
- KMML invited a "Global Expression of Interest (EOI) for the identification of competent bidders to implement remediation of contaminated land with acidity" on 03.12.2024. The last date for submission of EOI is 17.01.2025.
- We have received no offers for the EOI. Hence alternatives are being explored. Initially, KMML had discussions with Indian Institute of Technology Madras (IITM), Chennai but they could



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not provide any solution and had informed that they have no expertise in the said area.

- Meanwhile, KMML has contacted IIT, Roorkee for further study as suggested in the report of the FEDO during the test patch execution. Documents pertaining to the above have been forwarded to IIT Roorkee as requested. The experts from IIT Roorkee visited the site on 29/12/2025 and 30/12/2025. A video conference with IIT Roorkee Civil Department faculty was conducted on 17/02/2026 for discussion on the submission of proposal. The proposal from IIT Roorkee is awaited. The detailed tentative milestone targets is as follows:

SL. No	Item/Milestone	Time frame
1	Identification of a suitable Agency	30.11.2025
2	Preparation of an updated study report	31.05.2026
3	Tendering	15.08.2026
4	Tender evaluation, ordering, etc	15.11.2026
5	Execution at Site- Test Patch	15.05.2027

Bioremediation:

- KMML also explored the possibility of remediating the test patch area by Bioremediation process. In this regard explored the services of M/s State Horticulture Society. Sampling was analysis done on 05.05.2023.
- Two locations have been for doing the test process, one inside the KMML compound wall and the other outside the compound wall. Soil and water samples were taken from both the sites for testing. M/s State Horticulture Society based on sampling analysis forwarded a proposal to KMML.
- KMML had invited the party for a technical discussion on 29th September, 2023. M/s State Agri Horticultural Society has tested the mud contents and a proposal for converting the lands to a cultivable one. The Technology is provided by **Bactreat**



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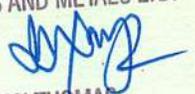
Environmental Solutions, Birla Institute of Technology, Goa which is under technical scrutiny.

- Detailed EOI on bio-remediation could be invited only after finalizing a suitable technology in in-situ bioremediation. However, more detailing is required due to the unique characteristics of the contaminated land.

Solid Waste Management through Geo-tubes

14. CSIR-NEERI, Nagpur, had prepared a report "Monitoring & Assessment of Environmental Status in & around the Industrial site of the KMML and Delineation of Environmental Management Plan", in the year 2015 where it recommended an environmental management plan with short term and long-term mitigation measures for sludge management which delineates disposal of Iron oxide sludge and ETP sludge from the old ponds in a secure containment system by in-situ and ex-situ methods.
15. Under this background, KMML invited KITCO Ltd for the preparation of Detailed Project Report (DPR) for solid Waste Management in KMML. In response to this, KITCO submitted their offer dated 07.02.2018. Subsequently, KITCO has been selected as the consultant and the work on "Preparation of Detailed Project Report for Solid Waste Management in KMML was awarded to KITCO Ltd. dt.21.03.2018.
16. The DPR was submitted to KSPCB. The process of in-situ/ ex-situ was burdensome and constraints are there due to limited space availability near the pond area. This respondent had identified a new alternative technology viz. Geotube filling of iron oxide and proposed the same in lieu of in-situ/ ex-situ to KSPCB and they approved it in principle in the meeting held at KSPCB on 10.12.2018. Subsequently, KMML explored the availability of suitable bidders on the global level.
17. Global Expression of interest (EOI) was also invited for identifying potential bidders in the month of June-2021. The received offers were evaluated, and specifications made for tendering.



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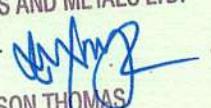
18. It is submitted that in comparison with the in-situ-ex-situ containment system, the Geo-tube has the following advantage:

- De-watered iron oxide can be later used for value addition.
- De-watered iron oxide can be disposed of off-site, if required.
- Embankment can be done in the new footprint and vegetation can be done in a sustainable manner to reclaim the land.
- Geotube fillings were envisaged for managing the level of iron oxide pond with alternate effective options when compared to the construction of the insitu-exsitu containment system, which incurs heavy capital investment.

19. The following is the chronological time-line and the present status viz a viz the solid waste management using geo tubes:

- KMML invited a global e-tender (Tender id: 2021_KMML_443727_1 dt.11.10.2021) on 11.10.2021 and the due date was 14.12.2021. The techno commercial part of the bid was opened on 15.12.2021 and found that no parties quoted.
- Meanwhile, KMML had contacted probable vendors for their participation, and they intimated that tender calls for environmental clearance from KSPCB under their scope and they were not ready to take up the same and asked KMML to gather the same.
- Accordingly, KMML had retendered the item on 25.04.2022 (e-tender id: 2022_KMML_487534_1 dt.25.04.2022) with due date as 17.06.2022. Subsequently, the techno commercial offer was opened on 20.06.2022. Two parties, M/s Geometry Construction company, Thiruvananthapuram & M/s Re-sustainability Ltd, Hyderabad (Ramky Enviro Services) submitted their offers.



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- The bidders are offering M/s Tencate (OEM) make Geotubes with 8 months as the completion period for the job. Both the parties were qualified techno-commercially and price bids were opened on 28.07.2022. The project status was updated to the 253rd Board meeting of the company held on 31.10.2022.
- The new technology of Geotubes involves dewatering and storage of iron oxide using Geotubes from the new iron oxide pond. The trial quantity proposed was 9200 m³.
- Letter TP/TS/ENV dated 18.03.2024 was forwarded by KMML to 'The Principal Secretary to Government of Kerala (Industries), seeking support to KMML by intervening with CPCB in getting approval/authorization for the proposed Geotubes installation.
- A letter dated 11.07.2024 has been sent by KMML to CPCB for an appointment to discuss the matter of approval. The reply of CPCB is awaited. Reminder e-mail sent to CPCB on 12.07.2024
- A further email was sent to CPCB on 12.09.2024 intimating the directive of Hon'ble NGT court hearing dated 16.08.2024 and requested CPCB to allow approval as there is need to complete the activities in a time bound manner.
- It is submitted that KMML was closely following up the matter with CPCB (Follow up letter also forwarded on 06.12.24) and a reply from CPCB awaited. Online applications as suggested by CPCB in the previous hearing are kept under hold due to following reasons.
- It is to be noted that we have placed a letter of intent for a Design, Build, Finance, Own & Operate (DBFOO) type plant for the value addition of stockpiled iron oxide & ETP in the storage ponds. This project is expected to be implemented in another 18 months of time, and which would make it possible to consume all the stockpiled



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masses of sludges stored in the pond and the load will be removed. Hence the proposal for geotube filling would become redundant. Therefore, in the light of the above, the proposal for using Geo Tubes is kept on hold.

Solid Waste Management - Sale of ETP Sludge:

20. As an alternative means of waste management, this respondent had implemented the sale of ETP sludge to buyers. The chronology and the present status of the above activity is as follows:

- E-tender (Tender id: 2020_KMML_340155 dt 04.02.2020) was invited by KMML to shift 10,000 MT of ETP sludge from ETP pond, on 04.02.2020, and subsequently the quantity enhanced from 10000 MT to 50000 MT on 17.02.2020.
- Sales order was issued to M/s Miracle sands and Chemicals on 09.06.2020 for 10,000 MT. A new sales order was also issued to M/s Miracle sands and Chemicals for 40,000 MT on 08.04.2022.
- M/s Miracle Sand has completed the shifting of 10000 MT of ETP sludge from KMML on 06.01.2023 and started the shifting of ETP sludge of 40000 MT as per the new sales order dated 08.04.2022.
- Permission granted to M/s Miracle Sands & Chemicals from KSPCB for the collection and transportation of ETP sludge from KMML valid up to 31.03.2025.
- M/s Miracle sands and Chemicals erected a SKID model pumping system for the evacuation of ETP sludge on 19.07.2023, so as to increase the collection of quantities from the pond.
- KMML has also invited e-tender for sale of 20,000 MT of ETP sludge and the offers received pursuant thereto were evaluated. After evaluation, Sales order No:TP/ENV/ETP SLUDGE/SALES/2025 dated 01.04.2025. issued to M/s



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Miracle sands and Chemicals Pvt Ltd (Same party as earlier).

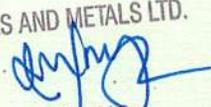
- So far Miracle Sands and Chemicals Pvt Ltd have completed the shifting of approx. 38985.37 MT of ETP sludge as on 26.02.2026.

Solid Waste Management - Sale of Iron Oxide Residue:

21. As an alternative means of waste management, this respondent had implemented the sale of Iron Oxide Residue to buyers. The chronology and the present status of the above activity is as follows:

- KMML invited e-tender (tender id: 2019_KMML_330630_1) for the sales of iron oxide residue for further process/value addition at the end user, on 19.12.2019. Only one party viz. M/s Miracle sands and Chemicals, Tuticorin, quoted. But the tender cancelled and retendered(e-tender id: 2020_KMML_340158_1 dated 04.02.2020.) due to deviation statement put up by the party.
- The tender corrigendum dt 17.02.2020 was also published to enhance quantity of iron oxide sludge to 50000 MT from 10000 MT for iron oxide residue subject to the performance of the tenderer/capability of lifting the material from KMML.
- Again M/s Miracle Sands and Chemicals, Tuticorin, only quoted and the party furnished few deviations statement from the tender conditions. KMML invited the party for a techno-commercial discussion for the above deviations. Techno commercial discussion meeting was held on 02.03.2020.
- Tender evaluated, price bid opened and Sales order (TP/TS/IRON OXIDE RESIDUE/SALE/2020 dt. 09.06.2020) was issued to the party on 09.06.2020, for shifting 10,000 MT to the end user end. As per the tender conditions, the remaining 40000 MT quantity sales order

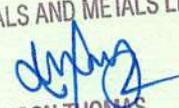


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only get issued after assessing the performance of the tenderer.

- Sales order of iron oxide sludge was extended for obtaining statutory approvals from TNPCB and KSPCB.
- In the meeting held on 19.09.2022 at KSPCB head office Thiruvananthapuram, KMML requested KSPCB sanction to shift 10,000 MT of iron oxide to carry out trial runs as per Hazardous Waste Management and Transboundary Movement Rules 2016 Chapter II, Section 9(2).
- KSPCB informed KMML that a letter has been forwarded to CPCB on 24.09.2022 seeking their advice on conducting a trial.
- M/s Miracle sands and Chemicals, Tuticorin has already submitted a detailed project proposal for manufacturing Iron oxide concrete bricks along with the consent order from TNPCB valid up to March 2025.
- KMML officials visited CPCB on 28.11.2022 and made follow up for obtaining authorization for trial production of Iron Oxide bricks by M/s Miracle Sands and Chemicals, Tuticorin.
- CPCB officials informed that authorization request from KMML will be included in the upcoming committee meeting supposed to be held in January 2023. But the matter was pending for approval.
- M/s. Miracle Sands and Chemicals forwarded a copy of the MOM of 33rd CPCB technical committee meeting held at M/s CPCB New Delhi for the submitted application of Iron oxide residue. CPCB concurrence to transfer trial quantity is in progress.
- The matter has been taken up by the party for concurrence from CPCB proceedings are going on at their end for approval.

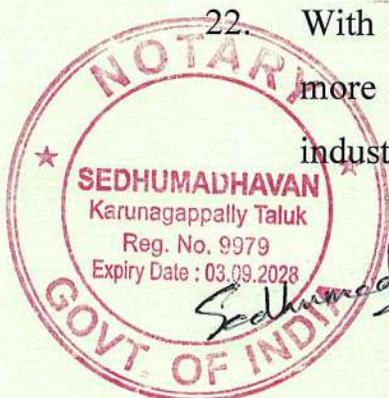


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- Letter dtd 11.07.2024 has been sent to CPCB for an appointment to discuss matter of approval. E-mail sent to CPCB on 12.09.2024 intimating the directive of this Hon'ble Tribunal hearing dated 16.08.2024 and requested CPCB to allow approval as there is need to complete the activities in a time bound manner.
- The matter was under follow up with CPCB by M/s Miracle Sands and Chemicals, Tuticorin, also. M/s Miracle sands and Chemicals, Tuticorin, is also under the process of exploring another technological use of iron oxide and they intimated that actions in this regard are progressing to develop operating procedures.
- Online applications as suggested by CPCB in the previous NGT hearing are also done by M/s Miracle sands and Chemicals, Tuticorin, in January 2025, with their scheme. The matter is being followed up.
- M/s Miracle Sands and Chemicals has done an online technical presentation at the 42nd meeting of the Technical Expert Committee (TEC) of the CPCB on 17/02/2025.
- It is also understood that the CPCB has permitted the trail run using 42 MT and M/s Miracle Sand was exploring the same.
- Meanwhile, the consent obtained for Iron oxide transfer from the Tamil Nadu Pollution Control Board by M/s Miracle Sands and Chemicals had expired on 31/03/2025. The application for renewal has been submitted to the TNPCB by M/s Miracle Sand and the process is progressing.

Solid Waste Management - Value addition of stockpile of Iron Oxide:

22. With an intention to give value addition to the stockpiled iron oxide, more specifically for using this iron oxide as raw material for the iron industry, an in-house development of technology is underway. Internal



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R&D studies have proved that it can be converted to iron sinters (Sponge Iron), which is expected to be used as feed material for the Iron TMT industry.

23. For the purpose of technological development, this respondent has conducted few & further trials for the production of Sponge iron from iron oxide with the existing facilities of the Company and small-scale production units. The produced sponge iron is under validation process at the utilizing industries. Two sets of plant trials were conducted initially and showed promising developments on technical aspects. The next set of trial production of around 50MT Iron Sponge is being planned and is to be done with the availability of plant and equipment on spare basis. In this regard, the internal lab trials are progressing.
24. The chronology and the present status of the R&D activity is shown in the table below:

Date	Activity
20.10.2022	Laboratory trial studies conducted for sponge iron production
23.11.2022	First plant trial conducted with 10 MT of Iron Oxide to produce Iron Sponge
13.12.2022	Visit to TMT manufacturers in Kanjikode for initial discussion on utilization as raw material in TMT manufacturing
29.12.2022	1.5 Mt iron sponge to M/s Kalliyath TMT, Palakkad and M/s Minar TMT, Palakkad for trial studies
30.12.2022	Trial studies at M/s Minar and M/s Kalliyath on utilization of iron sponge as raw material.
31.12.2022	Visit to M/s Sree Rangaraj Steel Perundurai, Erode for familiarization of iron sponge production technology
02.02.2023	Visit to M/s KIOCL Manglore for the familiarization of pelletization and production of green iron oxide pellet
10.05.2023	2 nd plant trial conducted with 30 Mt of iron oxide to produce iron sponge
01.07.2023	5.0 Mt of iron sponge to M/s Kalliyath for further trial studies
08.08.2023	studies at M/s Kalliyath with Iron sponge as raw material for making billet and TMT
28.09.2023	Visit to M/s Fe Techno Engineering, Bangalore for discussion on feasibility and development scheme
12.07.2024	3 rd plant trial conducted with 50 Mt of iron oxide to produce iron sponge



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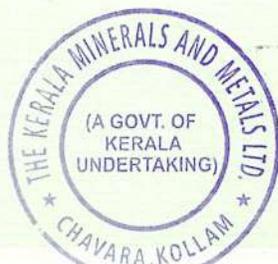
23.08.2024	4.0 MT of iron sponge to M/s Kalliyath TMT, Palakkad, for trial studies.
18.11.2024	Another TMT making industry, M/s Peekay Steels, Nallalam, Kozhikode was also identified as and per the agreement, 3.0 MT of Iron Sponge was given for parallel studies. Their trial results are being inferred.
31.12.2024	M/s Peekay Steels conducted trials with the iron sponge provided by KMML. Inferences obtained.
28.02.2025	Approval obtained for conducting forth plant trail (50 MT) for producing iron sponge from Iron oxide. The process would be started in accordance with the availability of klin in the plant.
	Further trials for the processing of 50 MT iron oxide to produce sponge iron is being planned shortly with the availability of existing plant equipments. In this regard, the internal lab trials are completed and the plant trial planning is in progress.

25. The following is a tentative timeline for setting up a commercial production unit:

Sl No	Item/Milestone	Time frame
i.	Technology freezing/DPR Preparation	6 months
ii.	Statutory Clearance	6 months from the finalization of the DPR and Administrative Approval
iii.	Tendering activities	6 months from obtaining Administrative Approval
iv.	Plant installation	18 months from issuing work – order.
v.	Plant Trial run	6 months

Solid Waste Management - Value Addition/Disposal of Iron Oxide (Stockpile) and ETP Sludge (Stockpile & present generated) on DBFOO basis.

26. It is submitted that in KMML, ETP sludge is generated at an average rate of 60TPD (dry basis) and iron oxide sludge at an average rate of 75 TPD (dry basis). Presently these materials are stored in over-the-ground seven liner ponds as per CPCB guidelines. Though these ponds are presently effective, they are getting filled fast. Currently KMML have a stockpiled quantity of more than 3,00,000 MT each Iron oxide residue and ETP



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sludge approximately. In order to cater to this, alternative methods are resorted to by this respondent.

27. It is submitted that there was no known commercially proven technology to value add the ETP sludge and Iron Oxide Sludge. In this regard, an Expression of interest was invited to explore the various technology options for value addition of stockpiled iron oxide sludge and ETP sludge, to convert them to marketable byproducts/suitable for other industrial applications on total responsibility basis as Design, Built, Finance, own & operate type plant (DBFOO). The following is the chronological account of the action taken by this respondent.

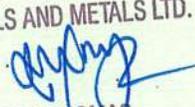
- EOI's were published on 01.01.2022 with the closing date as 15.02.2022. The closing date was extended up to 20.03.2022, on request from the potential parties.
- Internal approval was received for engaging competent third party for the evaluation of the EOI offer. – 09.03.2023.
- Once the submission window for the EOI offers expired, KMML had received 10 EOI offers. Five each for IOP and ETP solids value addition. The bidder list is as shown below.

SI No	BIDDERS FOR IOP SOLIDS	BIDDERS FOR ETP SOLIDS
1	M/s Enviro Pro Engineering, Pune	M/s Enviro Pro Engineering, Pune
2	M/s Tetrabic India, Hyderabad	M/s Tetrabic India, Hyderabad
3	M/s Elint Labs, Bangalore	M/s Elint Labs, Bangalore
4	M/s NK Coat Chem, Kolkata	M/s Astron, Hong Kong
5	M/s Renuka, Nagpur	M/s Miracle Sands and Chemicals, Tuticorin

- M/s CSIR- NIIST, Trivandrum, was issued the work order on 26.04.2022, for the evaluation of EOI offers based on the competitive offers received.

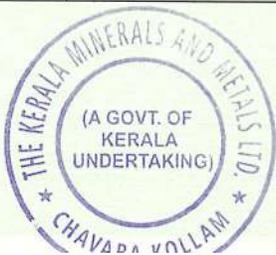
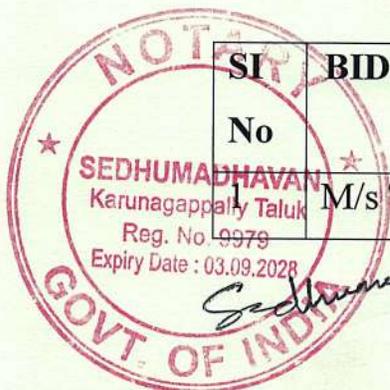
- In the report of CSIR- NIIST, following are the major conclusions.



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- Regarding Iron Oxide solids value addition - it is recommended as follows: “.....it is recommended that since no readymade technologies are available for value addition, equal opportunity may be given to the firms for firm proposals”.
- Regarding ETP solids value addition – in the report they had mentioned as follows: “Based on the above observations, it is recommended that since no readymade technologies are available for value addition, equal opportunity may be given to the above firms to prove the feasibility of process for value addition to ETP sludge on mutually agreed terms before proceeding further (as firm proposals)”.
- The 252nd meeting of the Board of Directors held on 25.07.2022 accorded its approval to invite firm terms and conditions from the above parties and further carry out the evaluation process giving priority to quality cum cost basis and place the same before Board meeting for review and approval.
- KMML had invited separate limited e-tenders for value addition of IOP residue and ETP solids on 11.08.2022, among the parties who had submitted EOI offers. The Weightages of offer evaluation was detailed in the tender specifications. Bid submission due date for both tenders were 12.09.2022, However the due date was extended for IOP solids tender till 03.10.2022 and ETP solids tender till 12.10.2022 up on request from potential bidders.
- This respondent had received two offers for IOP residue value addition and four offers for the ETP solids value addition. As per the weightages given in the tender, rankings were given to the bidders as follows.

Sl. No	BIDDERS FOR IOP SOLIDS	BIDDERS FOR ETP SOLIDS
	M/s Tetrabic India, Hyderabad	M/s Tetrabic India, Hyderabad



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2	M/s Elint Labs, Bangalore	M/s Miracle Sands and Chemicals, Tuticorin
3	NA	M/s Astron, Hong Kong
4	NA	M/s Elint Labs, Bangalore

- Since M/s Tetrabic India, Hyderabad, ranked first in both IOP and ETP solids value addition proposals, KMML had put up the matter before the Board of Directors' for sanction.
- The 253rd board meeting of the company held on 31.10.2022 had accorded its approval to seek final sanction from the Government of Kerala for the following.
- For entering agreement with M/s Tetrabic India, Hyderabad, for iron oxide sludge procession and ETP solids processing plant on DFBOO basis and as per the mentioned terms and conditions.
- Lease out an acre of land to M/s Tetrabic India, Hyderabad for setting up the iron oxide sludge processing facility, for a period of about 30 years or till close of iron oxide sludge processing up on its exhaustion, whichever is applicable; 4 acres of KMML land to M/s Tetrabic India, Hyderabad for setting up the ETP sludge processing facility, for a period of say 30 years.
- The Board approval decision was forwarded to the Government of Kerala for final sanctions vide letter dtd 11.11.2022.
- Further to the above the Government, vide letter IND-H3/281/2022-IND dated 04.02.2023 enquired the following.
- Instead of paying upfront cost as commitment fee (5% of total capital), issuing bank guarantee (BG) as a token of commitment may be explored by KMML.
- Whether proposals to mitigate the issue of filled up ponds need to be proceeded simultaneously.



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- On correspondence with the party, they agreed for BG as a token of commitment. The same was conveyed to the Board of Directors meeting.
- The 254th meeting of Board of Directors on 15.02.2023 accorded its approval to intimate the following to the Government.
- BG as commitment fee to be issued by KMML as a token of commitment (later on this is waived off by M/s. Tetrabic India, Hyderabad).
- To proceed with M/s. Tetrabic India, Hyderabad, proposal.
- To hold the proposal for the construction of new sludge pond.
- KMML had forwarded the Board resolution to the Government vide letter dated 02.03.2023. It was also suggested to proceed simultaneously with the proposals to free up the pond.
- The Board meeting of the Company held on 23.08.2023, had discussed the urgency to place order as the same is an environmental compliance, coming within the purview of this Honourable Tribunal. The Board suggested to give permissive sanction for setting up lab & pilot scale and then commercial plant with successful piloting and land lease can be given later with the approval from the Government.
- Circular resolution of the KMML Board dated 25.09.2023 gave approval for the following, subject to the approval of the Government.
- Enter agreement with M/s. Tetrabic India, Hyderabad, for ETP value addition without land lease up on receiving Government sanctions.
- Enter land lease agreement for ETP value addition up on Government sanctions, later.
- Regarding the value addition of iron oxide, to put up a concrete proposal by weighing the technical and cost benefit analysis of M/s. Tetrabic India, Hyderabad, proposal and inhouse DRI proposal suggested by KMML R&D team. It was decided to intimate the Government of Kerala to hold the file for IO value



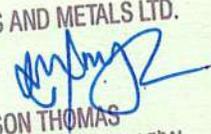
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addition proposed by M/s. Tetrabic India, Hyderabad, for TEFR assessment of internal R &D process.

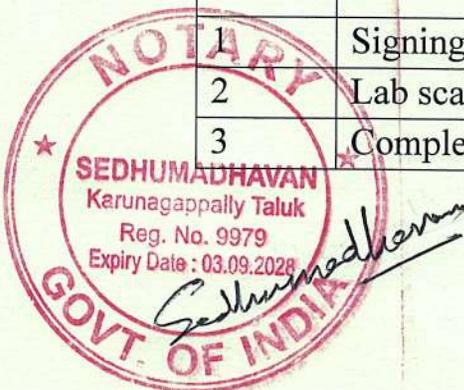
- KMML vide letter dated 06.10.2023 had shared the above information with the Government for final sanctions.
- Circular resolution of the Board dated 28.11.2023, had decided the following.
- To proceed with M/s. Tetrabic India, Hyderabad, proposal by limiting the issue for a quantity of 3 Lakh MT of iron oxide. Remnant and future quantities of IO to be utilized for the DRI process (in-house R&D proposal) if found techno-economically feasible.
- To enter land lease agreement for IO value addition, later with Government approval.
- To conclude techno economic feasibility and process optimization of R&D proposal for DRI plant.
- KMML issue a letter dated 16.12.2023 to Government providing details regarding the approval of the Board in their circular resolution dated 28.11.2023 and requested the Government for final approvals for IO residue and ETP solids value addition/ processing by M/s. Tetrabic India, Hyderabad.
- The Government, vide letter H3/281/2022/ID dated 20.12.2022 invited KMML for a meeting on 27.02.2024 to discuss the proposal in detail.
- In the meeting, chaired by Hon'ble Minister for Industries held on 27.02.2024 directions were issued for the verification of the land earmarked for the proposed plant and asked KMML to submit a comprehensive report on the ownership of the land with relevant documents.
- Subsequently, the Government vide letter H3/281/2022/ID dated 20.03.2024 raised the following queries:
- Whether the commitment fee was included in the tender, if not how it got included in the proposal submitted to GoK.



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- To ask M/s Tetrabic to consider land lease for 10 years at a lease rent 5% of market value, which is to be revised every 3 years.
- Whether proposed firm has obtained permission from CPCB as opined by KSPCB for the technology for processing IOP and ETP solids, as per the protocol of CPCB is to be evaluated by standing committee on technology for waste management constituted vide office memorandum OM No- B-17011/7upcII/WM/2021 dated 21.05.2021.
- KMML replied to the queries after getting confirmation from the party vide letter No TP/PROJ/SWD/01 dated 28.03.2024
- The Public Enterprises Board (PEB) meeting, held online, chaired by the Chief Secretary on 31.07.2024 decided to recommend the proposal to the Government for final sanctions.
- Final Government sanctions have been obtained. Government Order to engage in land lease agreement and sludge off take agreement with M/s Tetrabic India was received on 09.11.2024.
- The letter of intent has been issued to M/s Tetrabic India Pvt Ltd. The land lease agreement forwarded for Government vetting on 11.06.2025. The same is awaited. The sludge take off agreement has been finalised and signed on 07.08.2025. The target date for completion is 18 months from the date of signing the agreement.
- With the implementation of this project, the entire stock piled masses of ETP & iron oxide sludge from the old and new ponds would be consumed & converted into value added products.
The tentative project schedule is as follows:

TENTATIVE PROJECT SCHEDULE		
SLNO	ACTIVITY	TARGET DATE
1	Signing of Contract	0 months
2	Lab scale testing	4.5 months
3	Completion of engineering	5.5 months



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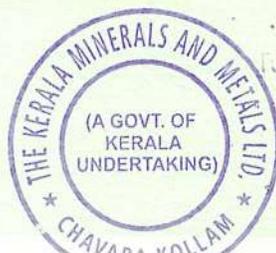
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4	Equipment receipt at site	14 months
5	Equipment erection and commissioning	16 months
6	Performance testing and start of operations	18 months

Solid Waste Management - Iron oxide brick plant.

28. It is submitted that in order to take advantage of the construction activities in the state, this respondent has ventured into Iron Oxide Brick Manufacturing, as an additional means for disposing of the Iron Oxide sludge. The following is the chronology and the basis status of the above activity.

- As part of NH-66 widening work, about 8 lakhs quantity of bricks are required for KMML boundary wall construction.
- E-tender invited (2023_KMML_ 573915_ 1 dt. 01.05.2023), for the setup of Iron Oxide brick manufacturing as done in the earlier days of KMML. The last date for e-tender submission date was 18.05.2023.
- During pre-bid meeting held on 10.05.2023, the parties submitted a request letter addressing many queries related to the tender and also requested to extend the tender bid submission date for making necessary arrangements for finding/ selecting the brick making machineries.
- Corrigendum was published on 17.05.2023 to extend the bid submission end date to 09.06.2023.
- Only single party M/s C Ashokan quoted. But the party has failed to support the documents as per the PQ criteria.
- Due to the same the tender cancelled and retendered with modified PQ criteria.
- E-tender invited (2023_KMML_ 586898_ 1 dt. 12.07.2023), for the setting up of Iron Oxide brick manufacturing as done in the earlier days of KMML.
- Out of Three parties quoted only M/s C Ashokan was techno commercially qualified party.



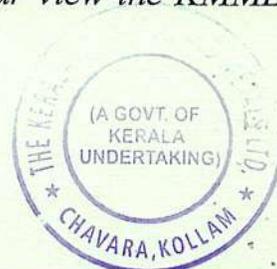
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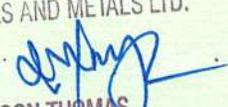
- After opening the bid and further negotiations the work was awarded to M/s C Ashokan for an amount of 88 Lakh + GST for the production of 8 Lakh number of bricks.
- The sample bricks tests values found acceptable and Work order (TP/ WO/PTS/ 0354/2023-2024 dt. 26.12.2023 was issued to M/s C Ashokan for the production of 8,00,000 nos of iron oxide brick for the in-home use of KMML.
- The contractor raised concern regarding the unevenness of the area planned for brick making plant in KMML through his letter dated 27.12.2023.
- Intimation letter already forwarded to KSPCB vide letter (TP/TS/ENV dt. 01.02.2024) for iron oxide brick manufacturing in KMML.
- KMML invited an enquiry for clearing/ levelling the area allocated and clearance given to M/s Asokan on 22.02.2024.
- On 01.03.2024, Brick making machine and accessories reached KMML.
- The plant building construction completed & equipments installed by 10.07.2024.
- The trial production started on 12.07.2024.
- The work order quantity amended for additional 75,000 nos of Iron Oxide bricks on 15/01/2026, increasing the total quantity to 8,75,000 bricks for internal use.
- The period of contract for making 8 lakhs Iron Oxide bricks is 180 days.
- The total number of bricks produced till 26.02.2026 is 8.60 lakhs. Work is ongoing at site.

Process Modification - Long term measure:

29. This Honourable Tribunal directed the long term measures in the following words:

"In addition to the above recommendation of NEERI regarding ex-situ secure containment system, in our view the KMML should also take



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steps to dewater the sludge while preparing to dispose of the same. In so far as it relates to long term measure, regarding Environmental Management Plan for solid wastes, the NEERI has suggested process modifications/technologically intervention for reducing the chlorine contents in iron oxide sludge for making it suitable as a resource for Steel Industry. It was found that during the inspection and field visit that the iron oxide sludge generated by KMML even though rich in iron content cannot be used as a resource for steel making or similar industry due to excessive concentration of chloride content in the waste sludge. The possible solution recommended in long term measure is:

- i) Proper design of spray roasting system
- ii) Increasing the operating temperature to 700 ° C
- iii) Efficient separation of roaster gases (HCl and water vapour)

Since the recovery plant is quite old, it is suggested that KMML should consult the technology providers for modernization of existing HCl recovery plant and that will minimize the iron oxide sludge and promote utilization as a source for other industries."

ARP revamping/modification to generate saleable form of Iron Oxide:

30. The scope of ARP modification, involves Revamping/ modifications of the existing 2 x 12.5 M³/Hr streams of ARP plant by implementing latest technological developments & advancements in the process technology to ensure that the iron oxide is produced in a saleable form which can find applications in Industries like Ferrite/Steel/Coatings etc., supply & installation of the improvements by doing residual and detailed Engineering. The scope also covers installation of modern bagging machine for jumbo bagging dry Iron Oxide powder with allied accessories at the spray roaster bottom of each stream by converting the existing slurring scheme. Civil works are in KMML scope. This includes the following major activities:

- Iron Oxide handling, Storage and Bagging system for ARP streams
- Revamping of existing ARP technology to produce environment friendly & saleable form of Iron Oxide



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31. The scope of works includes modification of the ARP technology of operations primarily at

- Bottom of the spray roaster for collection of dry iron oxide followed by bagging. This covers addition of equipments like lump breaker, rotary valves, pneumatic conveying, silos, bagging machine etc.
- Pre purification of spent acid using the technology to heat the liquor, neutralize, de-sludge the liquor etc. for ARP feed.
- Changes in the spraying boom system of the spray roasters of the plant and replacing existing oil burners with gas fired burners. Operating parameters of the spray roaster will also be revised to suit the requirements.
- Process tuning of the plant for revised operation for lower chloride dry iron oxide operations.

32. The modification enables ARP to generate the dry saleable iron oxide in bags and thereby eliminates the need for ponding & stockpiling the material.

33. CSIR-NEERI, Nagpur, as part of their comprehensive environmental study of KMML had recommended revamp/ modify the ARP plant technology as a long-term measure and as part of mitigating the issues faced with the generation of acidic iron oxide from the plant. As per CSIR-NEERI, Nagpur study, they have identified ISSI, USA as the only potential party for the technology modification of the existing plant. The following depicts the chronological action taken by KMML to execute the Project:

- Proposal was put up to the 234th Board meeting of the Company held on 04.04.2018, suggesting the modifications of the existing two streams of ARP for generating enviro-friendly & saleable form of iron oxide and by engaging M/s. ISSI, USA (the party identified by CSIR- NEERI as the potential agency). Board meeting accorded its sanction to seek final Government approval. Subsequently, the matter was put up to Govt. vide letter no. F-10240 dated 02/05/2018.



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- Public Enterprises Board (PEB) meeting held on 10.05.2018 had opined that instead of directly engaging M/s. ISSI, USA, it would be better to go for open tender procedure clearly laying down KMML's specific requirement in the pre-qualification criteria.
- Govt. vide letter no. H3/134/18/ID dated 14.09.2018 has accorded its approval to proceed with the open tendering activities and advised to bring the offer after following the tender procedures.
- KMML had sought approval from its Board for manual tendering, pointing out the technical limitation of e-tender portal restricting foreign bidders to quote in their currency, payment of EMD and tender fee in INR, requirement of Digital signature from India, etc. The 238th Board meeting accorded its approval to seek final sanction from Government of Kerala for manual tendering instead of e-tendering and was forwarded for Government's approval, TP/PROJ/ARP/01 dt 07/01/2019.
- The 240th Board meeting of the Company held on 29/05/2019, had accorded its approval for going ahead with the e-tendering activities since approval for manual tendering was still pending approval of the Government. The initial estimates for the project was Rs. 25 Crores.
- E tender with ID: 2019_285292_1 was floated on 12/07/2019 (global E-tender) with bid submission due date on 26/08/2019, which was extended till 04/09/2019 up on request from IGPL. Techno commercial bid(s) was opened on 05/09/2019 and it was found out that the only bidder was M/s. Indrox Global Private Ltd (IGPL), sister concern of M/s. ISSI, USA. In view of the single offer, it was decided to re-tender the work.
- E tender with ID: 2019_303549_1 was floated on 30.09.2019 (global E-tender). Single offer received, after techno commercial evaluation, price bid was opened and forwarded



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for Board meeting approval. The bidder was M/s. Indrox Global Private Ltd (IGPL), New Delhi.

- The 243rd Board meeting of the Company held 21.05.2020 had accorded approval for the proposal and sanctioned to seek final Government approval to place order on M/s. Indrox Global Private Ltd (IGPL), New Delhi. The rate quoted was Rs. 33.5 Crores plus GST for supply, installation, testing and commissioning. O&M charges of Rs. 40,69,958/- per month and say for a period of one year.
- Later, the Government of Kerala, directed KMML to go ahead with the tender again after the model code of conduct imposed by the election commission was lifted. (Vide GoK letter H3/134/2018/ID dated 13/04/2021).
- E-tender with ID 2021_KMML_423639_1 was floated on 05.06.2021 (global E-tender). The revised estimates for the supply, installation, testing, and commissioning part were Rs. 33 Crores plus GST.
- The Techno commercial bid was opened on 07.08.2021. Two offers received (M/s. IGPL and M/s. Samrox). The offer from M/s. Samrox, Haryana, was not in line with the floated tender and rejected. KMML engaged M/s. CSIR- NIIST, Thiruvananthapuram, for the technical evaluation of the offers.
- Techno commercial evaluation of the above offers was done, and report was submitted by M/s. CSIR- NIIST, Thiruvananthapuram in December 2021.
- The e-Price bid was opened during December 2021 and price negotiations were done. The rate quoted was Rs. 38.34 Crores plus GST for supply, installation, testing and commissioning part. O &M charges of Rs. 40,00,000/- + GST per month and say for a period of one year.
- The 250th Board meeting of the Company held on 15.01.2022 had accorded its approval to seek final Government sanction to place order. Letter dated 21.01.2022, was sent to the



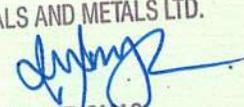
TO THE KERALA MINERALS AND METALS LTD.

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Government, requesting sanction for placing supply/ work order.

- Subsequently, Meeting chaired by Hon'ble Minister for Industries, Coir & Law on 09.06.2022 had directed to check and justify the cost reasonableness by deploying a competent Government agency.
- In the above context, M/s. FACT Engineering and Design Organization (FEDO), Kochi was issued a work order on 22.07.2022, to carry out the cost reasonableness study.
- FEDO submitted their report on 29.08.2022. As per the report, M/s. FEDO had concluded that the offer can be proceeded though the amount quoted is 4.95% higher than the estimated escalated price
- Chief Technical Examiner, Government of Kerala (CTE) was also appraised by M/s. FEDO and M/s. KMML during a meeting held at KMML on 27.10.2022, regarding the necessity, urgency and sanctioning of the project.
- On 15.02.2023, Government of Kerala had asked to furnish a report on the possibility of the reasonableness of cost being ascertained through actual prices. KMML replied to the same on 23.02.2023. It was reported that the actual price couldn't be ascertained as there is only a single offer each time tendered.
- Vide letter no. H3/134/2018/ID dated 25.10.2023, the Government had enquired KMML regarding which plan to proceed with among two projects moved simultaneously viz. ARP technology modification or Iron oxide value addition plant from the stockpiled iron oxide at pond.
- KMML replied via letter dated 02.11.2023 that ARP modification enables generation & collection of dry saleable iron oxide in bags with lower chloride content instead of transferring the same to ponds in slurry form with acidity. KMML also mentioned that the ARP modification shall be an immediate action and value addition of iron oxide (utilizing the



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internal R&D process for the conversion of stockpiled iron oxide to direct reduction iron- DRI) shall be done after finalization of TEFR with necessary approvals.

- Subsequently, it was decided to allow 3 lakh MT of stockpiled Iron oxide to be processed by M/s. Tetrabic India, Hyderabad, as DBFOO plant (Which was another Proposal to utilize the stockpiled Iron oxide to value added products) currently under pending Government approval and remnant quantity & future quantity to be utilized as per the TEFR for internal DRI process by KMML.
- The Government of Kerala, vide letter H3/134/2018/ID dated 14.12.2023 called for a meeting on 27.12.2023 in the presence of Hon'ble Minister of Industries, coir & Law.
- Vide GO (Ms.) No. 27/2024/ID dated 26.05.2024, the Government had accorded administrative sanction for the project of technology revamping/modification of existing Acid regeneration plant (ARP) including O&M assistance for 3 months at a total cost of INR 39.54 crores + GST. Pursuant thereto, a Letter of Intent was issued to IGPL on 04.06.2024 to start the work.
- IGPL requested to forego the need for the security deposits (5% of contract value as per tender) via their mail dated 11.06.2024, 14.06.2024, 20.06.2024, 25.06.2024, 04.07.2024,15.07.2024 and during their visit to KMML on 02.07.2024, mentioning the prices quoted were older and they cannot start the work with negative cash flow. (As per mutually agreed payments terms during negotiation held in January-2022, KMML was supposed to release 5% of supply value as advance on receipt of 5% of contract amount as SD and an ABG valuing 5% of supply value).
- KMML had intimated constraints on their demand mentioning the amendments will be time consuming and to stick to mutually agreed terms & conditions. However, the party was



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reluctant to sign the LOI which was issued on them without amendments.

- In order to complete the work at the earliest, KMML had put up file for amending the payment terms for approval of the Board of Directors (without SD waiver but with payment terms amendment suggested by the party), after getting concurrence from the party.
- The 259th Board meeting of the company held on 06.08.2024 approved the amendment of payment terms and subsequently a revised LOI was issued to the party on 07.08.2024. Party accepted the LOI and reverted on 19.08.2024 with acceptance letter. The party visited KMML on 13.08.2024 and 14.08.2024 and kick-off meeting of the project was held at KMML on those dates.
- Work order was issued to M/s. IGPL, New Delhi, on 18.09.2024 and the party didn't accept the same and asked for zero date amendment (which was supposed to be from the date of acceptance of LOI).
- After the KMML Board meeting approval, a revised work order was issued to the party on 18.11.2024 and the party accepted the work order on 21.11.2024. The targeted time-line for completion is May 2026.
- On receipt of Advance Bank Guarantee, advance payment has been released to the party.
- The billing schedule submitted by IGPL approved on 15.01.2025. M/s IGPL has submitted the civil drawings for ARP modification. The drawings have been reviewed and approved by KMML on 23/01/2025.
- Pursuant thereto, the tender document for civil work has been prepared for the civil work and the tender was notified. Pursuant to the tender, work order was placed for Oxide bin, purification plant and Warehouse Civil works.



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- The construction of oxide bin, purification plant and warehouse has started on 21/04/2025, 06/06/2025 and 02/06/2025 respectively. The civil work for the oxide bin area is in its final stage and will be completed by 30/09/2025 and the site will be handed over for structural erection.
- The work related to purification plant and warehouse are under progress and work is expected to be completed by March 2026.
- Parallely, regarding the erection of the equipment, the detailed engineering drawing has been submitted by the party. M/s INDROX has started erection of Oxide bin in January 2026.
- Target completion is May 2026.
- The expected schedule of the project is as follows:

SL No	ACTIVITY	TARGET DATE
1	LOI acceptance date	19.08.2024
2	Work order Issue	18.09.2024
3	Revised Work Order Issue	18.11.2024
4	Revised Work Order acceptance date	21.11.2024
5	Basic Engineering	15.01.2025
6	Detailed Engineering	15.06.2025
7	Material Supply	15.11.2025
8	Equipment Erection	15.04.2026
9	Testin commissioning and PG run	31.05.2026

Status Of Action Taken On The Recommendations Of The Joint Committee.

Apart from the above, this respondent has been implementing the recommendations of the joint committee appointed by this Honourable Court in the above case. The following are the details:



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1.	The remedial measures both short term and long term already proposed by M/s KMML shall be implemented within the committed time limit.
Complied	
Time lined status of short term and long-term measures mentioned items covered in the previous pages.	

2.	The existing effluent treatment system shall be upgraded to ensure compliance to the effluent discharge norms prescribed under the consent conditions – within one year.
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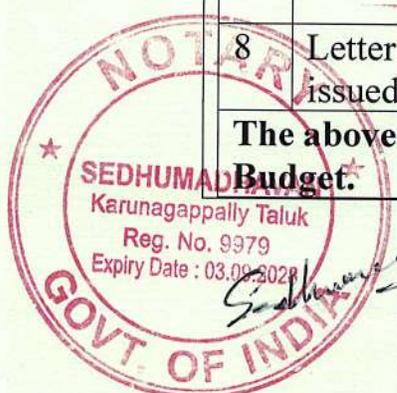
The upgradation of the existing ETP is completed and actions for the new ETP Plant is in progress

I) New Tertiary Tank in U 200-Addition to improve the existing effluent treatment system.

A) Civil work

Sl No	Action	Note/ Reference No	Date
1	Work intimation note from PM(U 200)	Note No: - U200/F 5127 Dtd 04.11.2022	04.11.2022
2	Invited quotation for Consultancy for geotechnical investigation	Quotation No:- TP/M/C/899/2022 Dtd 05.12.2022	05.12.2022
3	Invited quotation for Consultancy for Structural design	Quotation No:- TP/M/C/952/2022 Dtd 15.12.2022	15.12.2022
4	Geotechnical investigation final Report Submission	Report No:- ML/GT/1940/153/22	19.01.2023
5	Structural design final report Submission	Report No:- ULCCS/KMML/T/2023/01	11.03.2023
6	Estimate Approval	TP/M/C/1298/2022 Dtd 10.03.2023	17.03.2023
7	Work published in e-Tender website	Tender Number:- KMML/TP/M/C/T/24/2022 Dtd 14.03.2023 Tender id:- 2023 KMML 566157 1	01.04.2023
8	Letter of intent issued	LOI No.TP/M/C/LOI/04/2023 Dtd 16.05.2023	22.05.2023

The above Budget: LOI issued for the work was cancelled due to unavailability



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9	New Budget was obtained from DPM(U200) (C-N-200-GEN-0001)		03.10.2023
10	Approval Note for Cancel the LOI and refloat tender with new budget code	Approval No.TP/M/C/608/2023 09.10.2023	Note Dtd 09.10.2023
11	Refloated Tender in E-tender website	Tender Number:- EAF/CIV/0273/2023-2024 07.10.2023 Tender id:- 2023 KMML 616120 1	Dtd 01.12.2023
12	Allotted revised budget code C-N-ENV-GEN-0010		22.12.2023
13	Site clearance obtained to start work from U 200		22.03.2024
14	Work order issued	Work order No:- TP/WO/CIV/0480/2023-2024 Dtd 19.03.2024	30.03.2024
15	Civil Work completion		07.06.2024

B) Mechanical work

1. Procurement of Agitator motor assembly (Purchase order TP/67/3166/3630/2023-2024 dt 27.02.2024). Delivery expected by **February 2025.**
2. TNT fabrication work completed on 19.02.2024.
3. Tank positioned on 10.07.2024.
4. Additional Nozzles provided as per the suggestion from PTS/ PM (U200). Work completed on 10.09.2024.
5. Procurement action for first isolation valves (VALVE PLUG PTFE LINED FD 150#250 MM) is in progress (TP/IC/1736/2024-25 dt. 29.09.2024).
6. Tank Rubber lining work was completed on 25.11.2024.
7. Structural contract work for stairs and working platform was completed on 26.04.2025.
8. New agitator was received at central store and was installed in the tank on 06.05.2025.



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9. Frame, Pump and motor assembly was installed on 08.05.2025.

10. Commissioning of Tertiary Neutralization tank including the erection of pump and agitator work completed on 07.07.2025

II) ETP revamping/ Modernization

- **Work order issued on M/s SBA Enviro system, Delhi for DPR preparation.**
- **The final DPR submitted by the party for construction of 6 MLD Effluent Treatment plant got submitted to KSPCB on 26.06.2024 for technical concurrence.**
- KSPCB is planning an online VC shortly to have a detailed presentation by the consultants preparing the DPR. KMML is in touch with KSPCB for allotting a suitable date and time for technical presentation.
- An official Letter No. TP/ENV/PCB was also forwarded to KSPCB on 28.01.2025 for conducting a technical presentation through video conference. The KSPCB has directed KMML to have the video conference on 12.03.2025.
- Technical concurrence VC meeting conducted on 12.03.2025 and follow up email forwarded to KSPCB, regional office Thiruvananthapuram on 30.05.2025 for official technical concurrence approval.
- The officials of KMML had discussed with the Chairperson on 15.07.2025 for obtaining technical concurrence for 6 MLD and further action are in progress.
- The KSPCB has required KMMML to apply for the Consent to Establish.
- The matter requires the approval of the Board and the Government of Kerala.
- The actions for obtaining administrative approval is in progress.

Tentative time of Completion– March 2028.



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3.	Integrated consent to operate issued to KMML by KSPCB shall be amended suitably with the necessary effluent discharge norms and hazardous waste management according to The Environment (Protection) Rules 1986 within a month.
Complied.	
<ul style="list-style-type: none"> ▪ A pH and flow meter already installed locally at the outlet of discharge pump and pH is displayed in the ETP MCC room. ▪ The pH details are daily recorded by KMML. Now a new OCEMS also installed. 	
4.	Place proper sign boards should be placed at all suitable places to avoid human/ animal contact with the polluted stagnant water bodies in the vicinity of the human habitation - within a month.
Complied.	
Sign board installed at site on 28.10.2023.	

5.	Permanent capping of existing storage ponds or temporary capping using LDPE liners and also suitable chemical dosage to neutralize runoff before next monsoon or by May 2023.			
Partially Completed and Work in Progress				
<ul style="list-style-type: none"> ▪ Almost fifty percentage of the old ponds area are capped. 				
a) <u>Completed works</u>				
Si. No	E-tender id	Title	Work order No	Contractor
1	2018_KMML_253349_1dt.09.12.2018	Iron oxide slurry Pond 1 capping with soil/suitable materials (2 nd portion)	TP/WO/PTS/05 40/2018-2019 dt.05.03.2019 (Work Completed on 24.03.2019)	M/s C Ashokan
2	2018_KMML_262192_1dt.28.01.2019	Iron oxide slurry Pond 1 capping with soil/suitable materials (2 nd portion)	TP/WO/PTS/05 45/2018-2019 dt.13.03.2019 (Work Completed on 28.03.2019)	M/s P T Jayapal
3	2022_KMML_539212_1 dt.15.12.2022	Settling pond I capping with HDPE sheets/ suitable materials in KMML	TP/WO/PTS/05 30/2022-2023 dt.08.03.2023	M/s Friends Motors



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			(Work Completed on 30.03.2023)	
4	2023_KMML_620598_1 dt.10.11.2023	Iron oxide pond II capping with LDPE sheets/ suitable materials in KMML.	TP/WO/PTS/03 82/2023-2024 dt.20.01.2024 (Work Completed on 03.02.2024)	M/s Abdul Shukkoor
5	2024_KMML_671177_1 dt.21.03.2024	Settling pond 1 capping with LDPE sheets/suitable material in KMML-Phase I	TP/WO/PTS/00 50/2024-2025 dt.07.05.2024 (Work Completed on 21.01.2025)	M/s C Ashokan
6	2025_KMML_726004_1 dt.15.01.2025	Settling pond 1 capping with LDPE sheets/suitable material in KMML-Phase II	Work order No: TP/WO/PTS/00 01/2025-2026. Dated 02.04.2025. Work completed on 23.09.2025	M/s Abdul Shukkoor

- Procurement of another set of 10,000 M² LDPE film has been completed and as per the site conditions, preparatory work prior to capping has been started. An extra 10,000 M² LDPE film is also intended for procurement, to complete the next stage of work.
- Time of completion –September- 2026 (depending on the availability of dry spell)

6. Not to discharge untreated effluent into any drain or natural drain. Construct Garland drain all along the industry premises within 9 months and along the periphery of old iron oxide ponds by March 2023. Also the runoff should be neutralized if required and ensured if required suitable and proper treatment before its discharge.

Complied

Storm water cleaning

- Cleaning of the storm water drains being done periodically.

Storm Water Drain Neutralization

- The storm water drain is neutralizing continuously using lime solution at a point near the railway gate exit.



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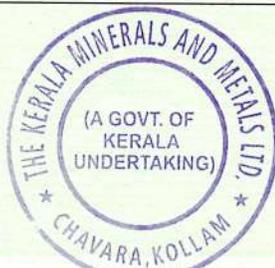
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7.	Among the process changes, feasibility of inclusion of waste water option for recovery of acid and neutralization of iron oxide sludge using suitable chemicals prior to the disposal of iron oxide sludge into storage tank within 3 months.
Complied.	
<ul style="list-style-type: none"> ▪ KMML already have the feasibility of recycling wash water and reusing in plant itself to the possible extent. ▪ The iron oxide slurry is neutralized at source before pumping to the new pond. The iron oxide is deposited in the new IOP and clear liquor is recycled to the slurry preparation tank. 	

8.	Among the process changes, feasibility of inclusion of waste water option for recovery of acid and neutralization of iron oxide sludge using suitable chemicals prior to the disposal of iron oxide sludge into storage tank within 3 months.
Complied.	
<ul style="list-style-type: none"> ▪ Lime treatment in the existing dump yards as temporary measures being done continuously. ▪ In addition, lime spreading have done prior to capping of old ponds 	

9.	Regular water supply and periodical health camp- ongoing.
Complied.	
<ul style="list-style-type: none"> ▪ KMML is continuously supplying about 7 to 8 lakhs liters per day of drinking water of potable quality to the surrounding local residences. ▪ Potable water is getting supplied through pipeline around 65 kms for local residence and also through tankers. ▪ Conducting regular medical camps once in a month and providing medicines, medical aid to ailing patients/ palliative care. 	

10.	As the iron oxide pond capacity exhausted, take immediate action for temporary storage and safe disposal with immediate effect.
Complied.	



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- As the storage space in Iron oxide pond has exhausted, temporary storage area for safe disposal of iron oxide is done in accordance with the Hazardous and Other Waste (Management and transboundary Movement) Rules.
- Iron Oxide Brick Making
Work order dated. 26.12.2023 was issued to M/s C Ashokan for iron oxide brick making plant and for making 8 lakh no's of bricks for in- home use of KMML. The plant building and construction completed. Brick making machine Equipment's installation works are also completed. The manufacturing activity is in progress. The period of completion is 180 days. Now approximately 8.60 lakhs bricks have been produced. Time lined status shared in previous pages.
- The value addition of iron oxide with the support of M/s Tetrabic Private Limited, iron oxide brick production, production of iron oxide sinters, etc. will utilize a portion of iron oxide generated/stored in the premises in secured ponds.
- Online generation quantity from ARP is getting disposed to CTDSF, Kochi and no iron oxide is getting accumulated in the ponds as part of current plant operations.

11.	Utilization of iron oxide sludge for recovery of iron within 3 months and also explore the option of red oxide from iron oxide sludge within 3 months.
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Work in Progress

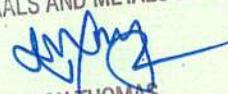
In-house Value addition of Iron oxide

- Since there is no readily available technology for producing iron sinter from KMML iron oxide sludge, KMML has developed an in-house technique for value addition of iron oxide by converting it to iron sinters (sponge iron).
- However, KMML have to further develop and fine tune the technology for iron sinter commercialization. Trials are ongoing. Timeline status covered in previous pages.
- Time of completion - **42 months.**

12.	Detailed assessment of affected areas and implement remedial measures in contaminated site as well as ground water, and feasibility of acquisition of affected land
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Complied and work in progress



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- Based on the CSIR – NEERI, Nagpur study report, KMML started remediation of contaminated sites on a trial basis. The current methodology (as per DPR prepared by KITCO) is found not suitable as per M/s FEDO(PMC) report. KMML invited a new Global EOI for the identification of competent bidders to implement remediation of contaminated land with acidity” on 03.12.2024. The last date for submission of EOI was 17.01.2025. However, no offer was received. Alternatives in this regard are being explored for way forward by checking with IIT Roorkee. The matter was referred to the Civil Wing of IITM and they replied that they have no expertise in giving a solution for land remediation of contaminated land. Later KMML had contacted IIT Roorkee for providing further study as requested in the report of M/s FEDO during the test patch execution. Documents pertaining to the above have been forwarded to IIT Roorkee as per their request. The experts from IIT Roorkee visited the site on 29/12/2025 and 30/12/2025. A video conference was conducted with the faculty of Civil Engineering Department of the IIT Roorkee on 17/02/2026 and discussions were held regarding the submission of proposal. Presently KMML is awaiting the proposal from IIT Roorkee.
- Feasibility of acquisition of affected land is under the consideration of the Government.

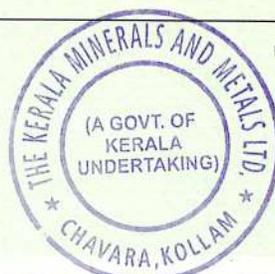
- 13.** M/s. KMML also ensure compliance to CPCB directions issued under section 5 of the environment sound management of Hazardous and Other waste (management and Trans boundary Movements) Rules, 2016 as amended. KMML submit Action taken report to CPCB directions issued under section 5 of the environment sound management of Hazardous and Other waste (management and Trans boundary Movements) Rules, 2016 as amended.

Complied.

- Action taken report is being submitted to CPCB Chairman once in two months.
- Latest Bi-monthly report submitted on 03.03.2026.

- 14.** All tube wells located within the industry premises shall be connected with tamper proof flow meter to record total water consumption of natural resources within 3 months and submit report to KSPCB on quarterly basis.

Complied.



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- Monthly water consumption report is being submitted to KSPCB.
- Quarterly report of total water consumption submitted to KSPCB on 03.12.2025.

15.	Install OCEMS (Online continuous effluent monitoring system) and a flow meter at effluent outlet discharge into sea to assess compliance to the effluent discharge norms prescribed by KSPCB and displayed at the entrance of the industry for the information to Public within 5 months.
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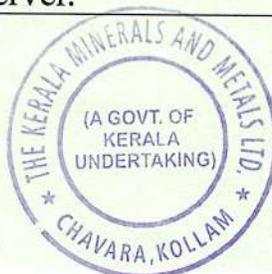
Complied

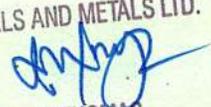
A pH and flow meter already installed locally at the outlet of discharge pump and pH is displayed in the ETP MCC room. The pH details are daily recorded by water treatment plant of KMML.

- E-tendering done for OCEMS (E-tender id 2024_KMML_671528_1 dt. 15.04.2024) on 15.04.2024. Due date was on 06.05.2024.
- Two offers received viz. from M/s Aaxis Nano Technologies Pvt Ltd. and M/s Analyzer Instrument Co Pvt Ltd.
- Work awarded to L1 party M/s Aaxis Nano Technologies Pvt Ltd.
- LOI placed on the party on 15.07.2024.
- Work order TP/WO/PTS/0234/2024-2025 dt 07.09.2024 was issued to M/s Aaxis Nano Technologies Pvt Ltd and the party accepted the same on 27.09.2024.

The installation and commissioning work of OCEMS are listed below in chronological order

Sl.No.	Date	Activity
1	14.10.2024	<ul style="list-style-type: none"> • Civil work started on 14.10.2024 • Concrete platform and shelter work began.
2	16.10.2024	<ul style="list-style-type: none"> • Civil work and shelter work completed.
3	17.10.2024	<ul style="list-style-type: none"> • Sensor tank fixed in the pond.
4	18.10.2024	<ul style="list-style-type: none"> • Piping works completed
5	21.10.2024	<ul style="list-style-type: none"> • Installation work started. Con::Cube fixed in the panel • Compressor installed. • UPS installed in panel.
6	22.10.2024	<ul style="list-style-type: none"> • Sensor fixed in the sensor tank. • System powered up, configured the con::cube and the sensors. • Sample taken for calibration.
7	23.10.2024	<ul style="list-style-type: none"> • Flow meter output connected to the con::cube. • Con::cube connected to the TELEPRO server.



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		<ul style="list-style-type: none"> Data is uploading to server.
8	24.10.2024	<ul style="list-style-type: none"> Sensors calibrated according to the Lab results. KSPCB connectivity done. Desktop system for local monitoring installed in KMML. Completed the work.
9	06.12.2024	<ul style="list-style-type: none"> KPSCB Online portal registration process requested for implementation letter No : TP/ENV/PCB forwarded to KSPCB on 06.12.2024.

- OCEMS (Online continuous effluent monitoring system) installation completed on 24.10.2024.
- KSPCB online portal registration process requested for implementation Letter No: TP/ENV/PCB forwarded to KSPCB on 06.12.2024.
- KSPCB central server registration completed on 13.12.2024.

The above report is submitted for the kind consideration of this Honourable Tribunal

Dated this the 10th day of March, 2026



FOR: THE KERALA MINERALS AND METALS LTD.

Jaison Thomas
JAISON THOMAS
COMPANY SECRETARY & HEAD LEGAL

Deponent

VERIFICATION

I, Jaison Thomas, aged 51 years, S/o. V.L.Thomas, residing at Jojes, Vadakkumthala P.O., Karunagappally, Kollam-690 536, the Company Secretary and Head Legal, Kerala Minerals and Metals Limited, Chavara, Kollam, Kerala, do hereby submit that the contents of the tables above are true to the best of my knowledge and belief derived from the relevant files and records. I have not suppressed any material facts.

Date: 10.03.2026

Place: Kollam

Solemnly affirmed and signed before me
by the deponent on this the 10th day of
March 2026
in my office at Chavara, Karunagappally.



FOR: THE KERALA MINERALS AND METALS LTD.

Jaison Thomas
JAISON THOMAS
COMPANY SECRETARY & HEAD LEGAL

6th Respondent

Sedhumadhavan
SEDHUMADHAVAN M.A., LL.M
ADVOCATE & NOTARY
KARUNAGAPPALLY
KERALA, INDIA

NOTARIAL REGISTER	
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**BEFORE THE HON'BLE NATIONAL GREEN
TRIBUNAL AT CHENNAI
(Southern Zone)**

O.A. No. 74 of 2023

Padma Kumar, Kerala

... Applicant

Vs

The State of Kerala,
Through its Chief Secretary and Ors

... Respondents

STATUS REPORT FILED BY
RESPONDENT 6

B. DEEPAK NARAYANAN

COUNSEL FOR RESPONDENT 6

(For Kerala Minerals and Metals Limited)

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