MINUTES OF THE 181th MEETING OF THE STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC), KERALA MEETING HELD ON 01st MARCH 2025, IN THE ONLINE MODE

The meeting commenced at 10.00 AM on 01st March 2025. Dr. R. Ajayakumar Varma, Chairman, SEAC Kerala chaired the meeting. The Committee discussed the agenda items in detail and took the following decisions:

PHYSICAL FILES

Item No. 181.01 **Noting the Minutes of 180th SEAC meeting held on 25th February 2025.**

PARIVESH (Ver-2)
PART-1

Item No.01 **Environmental clearance Construction of Twin Tube Unidirectional Tunnel Road (2+2 Lane) with Four Lane Approach (from existing roads) for providing direct connectivity between Anakkampoyil-Kalladi -Meppadi in Kozhikode and Wayanad.**
(SIA/KL/INFRA1/458848/2024)

Kerala Public Works Department, Office of the Executive Engineer, Roads Division, Kozhikode - 673020 submitted an application for Environmental clearance for the Construction of Twin Tube Unidirectional Tunnel Road (2+2 Lane) with Four Lane Approach (from existing roads) for providing direct connectivity between Anakkampoyil-Kalladi-Meppadi in Kozhikode and Wayanad Districts. The proposal was considered in the 158th, 162nd, 163rd, 166th, 170th, 173rd, 177th and 179th meetings of the SEAC. The SEAC carried out evaluation of the project and made observations pertaining to the project characteristics, possible environmental and ecological implications and other shortcomings. The Committee heard the Project Proponent and the EIA Consultant (M/s. KITCO Ltd.) to understand the project in detail, appraise the environmental characteristics of the project area, assess the anticipated environmental impacts and evaluate the proposed environmental management plan. The total project cost is Rs. 2043.74 Crore which is not found inclusive of the cost required for the implementation of EMP. The proposed length of the tunnel is 8.753 km. The proposed project obtained Stage-1 Forest clearance for the diversion of 17.263 ha of forest land**.** The cost estimate for EMP including environmental monitoring is 1.02 Cr. The Committee also observed that the tunnel alignment passes through highly fragile terrain prone to landslides where massive destructive landslide occurred during 2019 and 2024, thereby necessitating precautions during the construction stage to avert vibration induced landslips. The area also reports endangered bird species such as Banasura Chilappan and Nilgiri Sholakili, five bird species are under threatened categories as per the IUCN Red List, three

vulnerable species, fourteen species are endemic to Western Ghats and 29 species are under Schedule-1 and 155 species under Schedule-II of WLP Act, 1972. The project area is known for its rich biological diversity. Part of Nilgiri Biosphere Reserve falls within the 10 km radii of the project alignment. There are also four Tribal Colonies located within the 500 to 1.5 km to the proposed tunnel road in the Northern side. A tribal settlement, Aranamala Kattunaikka Colony in Wayanad with 27 families are identified as PAFs. 32 tribal population in Mammikkunnu, Kuppachi, Kalladi and Aranamala colony in Wayanad falls close to the proposed tunnel road. The Committee noted that there is every possibility of aggressive human-wild life conflict. The Committee discussed the field inspection report prepared by its sub committee

The project area falls in the Villages categorized as Ecologically Sensitive Area (ESA). Thiruvambady Village in Kozhikode and Vellarimala Village in Wayanad are ESA Villages. A stretch of 5.76 km of the tunnel passes through forestland and 17.263Ha of forest land is to be utilized for the project, out of which 16.269 Ha is for underground usage and 0.994 Ha is for over ground usage. Compensatory afforestation in 17.53 Ha of non-tribal private land in Wayanad South Forest Division under Kannur Circle is proposed; 1.27 Ha in Manaluvayal; 1.8 Ha in Kollivayal; 10.03 Ha in Madaparambu and 4.43 Ha in Chullikkal.

The Report by the Rock Excavation Engineering Division of CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad recommends stage wise approach utilizing controlled blasting techniques to ensure safe excavation of the proposed tunnel with complete control on ground vibrations. A detailed blast design parameter, firing patterns and other pertinent design considerations have been recommended. The threshold safe vibration values as per the DGMS standard, comes to 2 mm/s for sensitive structures and 5 mm/s for residential structures expecting the frequency of vibration waves generated from blasting less than 8 Hz. The magnitude of ground vibration (PPV) capable of triggering a landslide varies based on several factors and there are no fixed values. Extreme Seepage and Subsidence / Rock Failure are to be anticipated and precaution taken in such a type of project. Presence of fracture controlled deep aquifer configuration has not been determined through seismic refraction or deep resistivity surveys due to the practical limitations such as altitude and presence of wild life. The depth of cover (overburden) between the crown level of the proposed tunnel and the ground surface is varying widely from the south portal to the north portal. Near the south portal, the overburden varies between 49 - 195 m; 195 - 500 m; more than 500 m up to 1090m, gradual decrease to north portal from 483 - 232 m, 161-105 m. and finally reaches to its lowest value of 24 m.

Based on the evaluation of the documents submitted along with the application and the discussion on the field inspection report, the Committee directed the Proponent to submit 28 additional documents for further appraisal of the application. The Committee evaluated the additional documents submitted and sought clarifications from the proponent and the consultant regarding some of the points/aspects detailed in the additional documents submitted The Committee pointed out that the project area falls in an environmentally fragile region, high landslide hazard zone and ESA villages. The area recorded landslides in the past

with high fatalities and experienced an extremely severe landslide disaster with very high death toll, loss of properties and adverse land modifications in the recent past. Therefore, it is necessary that all the anticipated impacts due to various activities envisaged under the project during the construction and operation phases have to be evaluated with adequate scientific inputs and considering up to date scientific literature available on such development projects elsewhere and their impacts. The Committee also observed that the additional documents does not provide explanation on the vibration and overpressure impact of blasting at various distances and also on the nearby built structures. It is also necessary to examine in detail the possibility of accentuating landslide incidents in the area based on detailed evaluation of the causative factors and impacts of the severe landslide experienced in the area recently. It is also required to suggest the long-term mitigation measures for the anticipated impact on the endangered, endemic and range restricted wildlife fauna of the region along with assessment of Carbon credit potential of the Project. The impact of extraction of huge requirement of material for the construction of tunnel and effective management of muck generated during the tunnelling process need to be addressed specifically. Further, it is understood that the DPR of the project is finalized without incorporating the cost required for implementation of the EMP and clarification is needed as to how the EMP will be implemented without incorporation of the cost in the DPR. The Project Proponent and Consultants agreed to the suggestions and subsequently submitted a report containing the details sought.

The proponent agreed that the proposed project area falls in an environmentally fragile region, high landslide hazard zone and ESA villages. The report evaluated the causative factors of the Puthumala, Chooralmala and Mundakay landslide in detail, the processes and situations that triggered the disaster and highlighted the fragility of the terrain. The report provided analysis on the landslide hazard, debris flow mechanism, the rock characteristics, seismicity of the region, seismic events in and around the area during the period 2000 to 2016, the land use and landscape alteration of the area, drainage characteristics, ground water seepages, material creep/landslip in areas above the tunnel, ground vibration from tunnel blasting, overburden characteristics, tunnel stability rate, unanticipated water ingress during the tunnelling process, air environment and noise level, vibration impact with respect to structures and thickness of overburden, ventilation system, fire & safety aspect, tunnelling process and stages, blast design details, provision for shifting tunnelling methods, carbon emission reduction due to the possible traffic diversion, ecological impacts, particularly elephant movement and human-wildlife interaction, impacts on avian and herpetofauna, Corporate Environmental Responsibility, issues experienced during the construction of 5 tunnels in India and the mitigation adopted etc. The Proponent also stated that the tunnelling will be done by a careful drilling and controlled blasting methodology using heading and benching method with limited depth of 2 -2.5m. The Proponent also suggested the adoption of New Austrian Tunneling Method (NATM) or Tunnel Boring Machine (TBM) as per the ground condition.

The Committee examined the structural geological aspects of the area, the ground vibration characteristics in response to the tunnelling process and requirements for addressing certain ecological conservation aspects pertinent to the proposed site. Based on the detailed

evaluation of the report submitted by the Proponent and literature available on various environmental aspects pertaining to the proposed site and project activities proposed, the Committee inferred the following:

1. There are no major fault lineaments intersecting the proposed project area except two minor lineaments cutting across the proposed twin tunnel corridor as per the details extracted from the Lineament and Fault map of South India prepared by the Geological Survey of India under the Project Vasundhara and overlaid on AWIFS imagery of ResourceSAT.
2. The longitudinal section of the proposed twin tunnel portion shows a wide variation in the depth of the overburden. Near the South portal area, OB is 49-195m between Ch. 600-1000 m, 195-500m between chainages 1000-1350 m, >500m up to Ch. 5400, 483-232m between 5500 to 6500m and is 161-105m at 6600-8200m. Near the North portal, specifically at Ch. 8540 m, the overburden thickness is 24 m.
3. The vibration study report by the Rock Excavation Engineering Division of the CSIR-Central Institute of Mining & Fuel Research, Dhanbad submitted by the Proponent provides safe values of maximum charge per delay for different distance and type of structures. It indicated that the maximum charge per delay of 1.26 Kg can generate ground vibration with Peak Particle Velocity (PPV) of 2 mm/s (permissible value for sensitive structures) at a distance of 25m with the frequency of vibration waves generated from blasting less than 8 Hz.
4. The literature on the construction of underground tunnels from India and elsewhere highlighted the significance of monitoring the ground vibrations, selection of appropriate tunnelling process, anticipating confrontation with high geo-stress and high hydraulic pressure that may induce rock burst, large deformation of the surrounding rock masses, landslides, and even water and mud inrush etc. Many of the studies pointed out that the ground vibration energy is usually attenuated at the structure/ground interface. Consequently, the vibration levels measured at these locations are lower than those in the adjacent natural ground. There are also possibilities of applying non-conventional rock fragmentation technology, such as the plasma blasting method for breaking the hard rock, that could reduce the blasting induced vibration.
5. The formation and preservation of elephant corridors are vital components of broader conservation strategies, contributing to the sustainable coexistence of elephants and human communities and for safeguarding the ecological integrity of the Elephant Reserve. Therefore, it is necessary to facilitate their movement towards more extensive forested landscape of Nilambur North, Nilambur South and also Gudalur in TN by expanding the bottle neck corridor at Appankappu (18.6 km from tunnel) with a tenuous forest connection of a few hundred meters. It requires the usage of some extent of private agricultural land so that the corridor width is increased to the generally accepted width of 1 km. This will also help in significantly reducing the human-animal conflict, a situation advantageous the project affected population.
6. There are four Tribal Colonies located within the 500 to 1.5 km to the proposed tunnel road in the Northern side. A tribal settlement, Aranamala Kattunaikka Colony in Wayanad with 27 families are identified as PAFs. 32 tribal population in

Mammikkunnu, Kuppachi, Kalladi and Aranamala colony in Wayanad falls close to the proposed tunnel road. The Committee noted that there is every possibility of aggressive human-wild life conflict.

7. Precaution for the management of impacts on endemic and endangered bird *Banasura Chilappan* is extremely important as the bird was observed in one of the transects in the highest point (800-1000m) along the proposed alignment and that the elevation of the southern and northern end of the tunnel are 679 m above MSL and 852 m above MSL. It is anticipated in the project that the range restricted species will not have any threat from the tunnel construction project with its habitat at the high-altitude area, located very high from the proposed tunnel. However, the longer project duration of the tunnel construction, increased activity at both ends of the tunnel during the construction phase, large scale vehicular movements after completion of the tunnel etc necessitates anticipation of huge impacts on the surrounding landscape and soundscape.
8. Detailed environmental monitoring plan has been drawn and results of extensive additional studies have been given in the EIA report. The environmental cost-benefit ratio worked out in the EIA report is 23.7, which is appreciable. Though the environmental and social management plan suggests elaborate measures, the cost earmarked in the EIA report is only Rs.1.02 Crore, which is highly inadequate.
9. The projected project cost is Rs. 2043.74 Cr which does not include the cost required for implementation of Environmental Management Plan (EMP). The additional report submitted by M/s. Konkan Railway Corporation Ltd., on behalf of the Proponent provided an EMP cost sheet indicating that the amount earmarked is Rs. 15.04 Cr out of which Rs. 7.90 Cr. is earmarked for the Forest Department. This amount does not seem to be adequate as many precautionary measures other than routine mitigation measures may become necessary as the project implementation progresses.
10. As part of Corporate Environment Responsibility. six activities are proposed for the southern side around Anakkampoil and seven activities are proposed for the northern side around Meppadi region. However, no budget estimate for the proposed activities are worked out and no financial allocation is found earmarked for its implementation.
11. Investigations of tunnel collapse with respect to some of the tunnels in India points out wrong alignment, bad condition of rock, unexpected hydraulic pressure and water ingress, lack of adoption of adequate safeguards etc as reasons for the accidents.

Based on the evaluation of the EIA report, additional documents submitted, report filed in response to the queries raised in the discussion meeting of the Committee with the Proponent and Consultant, reports of the sub-committees of SEAC, secondary information gathered by the Committee from the published literature on the terrain and ecological significance of the proposed project area and literature from India and elsewhere on the construction of tunnels and their impacts, the Committee decided to recommend environmental clearance to the project subject to the following specific conditions in addition to the general conditions for construction projects. The specific conditions are suggested to mitigate the adverse impacts of the project.

1. All the project activities should be implemented by adopting the most appropriate safeguards and in agreement to the spirit of Precautionary Principle as the proposed project area is known for its terrain fragility and categorized as Environmentally Sensitive Area (ESA).
2. Micro-scale mapping of landslide vulnerable zones should be carried out to delineate critical areas where regular monitoring should be undertaken to prevent any actions that aggravate land fragility. The task of mapping should be entrusted with experienced institutions and subjected to the approval of Disaster Management Authority. The task of regular monitoring of critical areas should be entrusted with the Environmental Management Committee (EMC) constituted by the Proponent and the observations of the EMC should be submitted to the respective Grama Panchayat and District Disaster Management Authority. The map should be uploaded in the project website and should be accessible to public.
3. Automated weather stations along with telemetry data transmission should be installed in the northern and southern node of the tunnel road to provide warning signals regarding extreme rainfall events and stoppage of tunnelling activities.
4. Four Ground Vibration Monitoring Stations with automated data monitoring and telemetry data transmission should be established, one each at the South Portal, Ch-1000m, Ch-6500m and at the North portal of the proposed tunnel. The management of the system and interpretation of the data should be the responsibility of the Project EMC and the findings should be shared with District Disaster Management Authority and the Grama Panchayat on a regular basis. The data should be uploaded in the project website and should be accessible to public.
5. The method for tunnelling selected should be such that it will not lead to ground vibration at the surface monitored in terms of Peak Particle Velocity (PPV). Considering this, the tunnelling methodology should be selected from (i) careful drilling and controlled blasting methodology using heading and benching method with limited depth of 2 -2.5m; (ii) New Austrian Tunnelling Method (NATM); (iii) application of Tunnel Boring Machine (TBM); (iv) non-conventional rock fragmentation technology, such as the plasma blasting method etc. subject to location characteristics, particularly, the thickness of overburden.
6. The Proponent should co-opt four experts nominated by the District Collector as Members in the EMC. The experts should be from the field of geology, disaster management, environment management and social work, preferably from the project area or the project district or from the nearby districts.
7. Government should establish the Appankappu Elephant Corridor, preferably by direct acquisition of 6 plots of land adding up to 3.0579 ha as these plots have forest on either side and acquisition or prescribing compatible land use would effectively increase the existing tenuous linkage to about 1km. It facilitates movement of elephants from Camel Hump mountains (lying in South Wynad, Kozhikkod and Nilambur North Forest Divisions) towards the larger forested landscape of Nilambur South Division, Karimpuzha Sanctuary and Silent Valley National Park.
8. A detailed monitoring should be commissioned on the small population of endemic and endangered bird *Banasura Chilappan* in the Sky Islands above the proposed

tunnel. The monitoring should look at the genetic vulnerability of the species due to the disturbances caused by tunnel, if any. The monitoring may be carried out by entrusting institutions like Salim Ali Centre for Ornithology and Natural History-SACON (South India Centre of Wildlife Institute of India, MoEFCC, Government of India).

9. All the mitigation measures proposed in the EIA Report, Additional Documents Submitted and the Comprehensive Report should be implemented meticulously.
10. All the stipulated regulations pertaining to the ESA villages should be observed during the implementation of the project activities.
11. A revised EMP with revised budgetary provision should be submitted for the appraisal of SEAC and approval of SEIAA for facilitating the implementation of all the mitigation measures, monitoring requirements, specific conditions as stipulated above and the CER within three months from the date of issuance of EC. The CER should be revised after incorporating the measures to address the socio-economic vulnerability of the tribal population. The EC will be modified accordingly and the failure of the same will lead to the cancellation of EC.
12. Adequate safety gadgets and instruments should be provided to the people engaged in solid and liquid waste management.
13. The Project Proponent should make provision for the housing of construction labour with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. as per the Building & Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. The housing may be in the form of temporary structures to be removed after the completion of the project (Circular No.J-11013/41/2006-IA.II (I) of GoI, MoEF dt.22.09.2008).
14. All vehicles, including the ones carrying construction material of any kind, should be cleaned and wheels washed.
15. All vehicles carrying construction materials should be fully covered and protected.
16. All construction material of any kind should not be dumped on public roads or pavements or near the existing facilities outside the project site.
17. Grinding & cutting of building materials should not be done in open areas. Water jets should be used in grinding and stone cutting.
18. Occupational health safety measures for the workers should be taken during the construction.
19. All vehicles during the construction phase should carry PUC certificate.
20. D.G. set should be provided with adequate stack height and acoustic enclosure and regular maintenance should be carried out periodically
21. The stream water quality of nearby stream where the seepage water reaching shall be continuously monitoring and should be included in the HYCR
22. Prevent the reaching of vehicle and machinery oils/lubricants into natural waters along with seepage/runoff
23. Temporary access facility across the Iravanjipuzha at southern side should not block the natural flow of the river

24. Air quality in the tunnel should be monitored continuously using high quality equipment and displayed at both portals during the operational phase
25. Review of the compliance of EC conditions should be carried out by the SEAC every six months and the report submitted to the SEIAA.

PARIVESH (Ver-2)
PART-2

Item No. 01 **Environmental Clearance for The Steel Making and Rolling Mill Manufacturing Unit by M/s. Yesemm Steel Products (Kanjikkodu) Pvt. Ltd. Unit II for an area of 11.24 ha at Sy. Nos. 310/1,2, 316/2, 317/1, 318/1-9, 319/1 -12, 320/1-12, 321/1, 325/1,9, 326/1,2,3, 327/1, 328/1-7, Industrial Development Area, Pudussery Central village, Palakkad Taluk and District.**
(SIA/KL/IND1/489874/2024)

The Committee examined the proposal and discussed the field inspection report conducted on 20.01.2025. As per the application, the project cost is Rs. 46.90 crores. Walayar river is located adjacent to the northern boundary and the Koraiyar river is located at 0.64 km from the proposed site. The land area is given as 11.24 ha (27.78 acres). The annual production is 0.1122 million MT. The total production capacity of MS Billets is 1,12,200 and the TMT bars is 99,000 TPA. The total water requirement is 79.5 KLD. Based on the field inspection report, the Committee observed the following:

1. Project site is situated inside New Industrial Development area (NIDA) of DIC, Palakkad, and is surrounded by other Major/Minor Industrial units, Residential units, Commercial buildings.
2. The Proposed site was belonging to M/s Chaya Industries Ltd since 1996, and was purchased by the Proponent in public auction held on 30-06-2021 in execution of Recovery certificate No 1900 in OA No.0l/2001 issued by the Hon'ble presiding orficer, Debts Recovery Tribunal, Ernakulam, under the provisions of the Recovery of Debts and Bankruptcy Act-I993, for recovery of debts due from M/s Chaya Industries Ltd & others.
3. Consolidation of boundary with 7 feet wall
4. Existing building and structures available inside the project area
5. The site has a relief of 23-24 m
6. Walayar river is sharing boundary on Northern side
7. Vacant areas, suitable for belt plantation, are available inside the project area all along the boundaries

Based on discussion, the Committee decided to direct the Proponent to submit the following clarification/additional documents for further appraisal of the application.

1. Revised CER as per OM and based on the guidelines of SEIAA
2. Plan for Renewable energy utilization (3MW)

3. Plan for developing thick (High density planting) green belt for a width of 7m all along the boundary
4. Plan for RWH pond with location
5. Plan for maintaining the river bank sharing northern boundary devoid of debris and with suitable vegetation
6. Plan for Utilization/Reconstruction/Demolition of existing Buildings/Structures
7. Revised EMP incorporating all the above

The meeting concluded at 1.00 pm with a vote of thanks to the Chair.

Sd/-
Suneel Pamidi, IFS
Member Secretary, SEAC

Sd/-
Dr. R. Ajayakumar Varma
Chairman, SEAC

LIST OF PARTICIPANTS:

Sl.No.	**Name**	**01.03.2025**
1.	Dr. R. Ajayakumar Varma (**Chairman**)	√
2.	Sri. S. Sheik Hyder Hussain	√
3.	Dr. A. Bijukumar.	X
4.	Dr. A.N. Manoharan	√
5.	Shri. M. Dileepkumar	X
6.	Dr. C.C. Harilal	√
7.	Dr.K.VasudevanPillai	√
8.	Dr. Mahesh Mohan	√
9.	Dr. K.N. Krishna kumar	X
10.	Sri. V. Gopinathan	√
11.	Dr. A.V. Raghu	√
12.	Dr. N. Ajithkumar	√
13.	Suneel Pamidi **(Secretary)**	√