



File No: 10/10/2025-IA.III
Government of India
Ministry of Environment, Forest and Climate Change
IA Division



Date 17/06/2025



To,

Hashim VK
EXECUTIVE ENGINEER KERALA PUBLIC WORKS DEPARTMENT ROADS DIVISION,
KOZHIKODE
Office of the Executive Engineer, PWD Roads Division, Kozhikode, Kozhikode, KERALA, Civil
Station, 673020
eerbkiifbkkd@gmail.com

Subject: The proposal is for 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 of Kerala State by M/s Kerala Public Works Department Roads Division, Kozhikode-Environmental Clearance regarding.

Sir/Madam,

This is in reference to your application submitted to MoEF&CC vide proposal number IA/KL/INFRA1/458848/2024 dated 16/01/2024 for grant of prior Environmental Clearance (EC) to the proposed project under the provision of the EIA Notification 2006 and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	
(ii) File No.	10/10/2025-IA.III
(iii) Clearance Type	Fresh EC
(iv) Category	B1
(v) Project/Activity Included Schedule No.	7(f) Road
(vi) Sector	INFRA-1
(vii) Name of Project	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 of Kerala State
(viii) Name of Company/Organization	EXECUTIVE ENGINEER KERALA PUBLIC WORKS DEPARTMENT ROADS DIVISION, KOZHIKODE

(ix) Location of Project (District, State)	WAYANAD, KERALA
(x) Issuing Authority	MoEF&CC
(xi) Applicability of General Conditions as per EIA Notification, 2006	No

3. The proposal is 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 of Kerala State, comprising total design length 8.735 Km by M/s Executive Engineer Kerala Public Works Department Roads Division'.

4. The proposed 8.735 km long 4-lane Unidirectional Twin-Tube Tunnel Road including approaches with tunnel length 8.110 Km starts at (South end location) Anakkampoyil (Kozhikode District) on Anakkampoyil-Muthappanpuzha-Marippuzha Road (MDR) (Elevation=678m above MSL) and ends at (North end location) Meenakshi River Bridge (Wayanad District) on Meppadi-Kalladi-Chooralmala Road (SH-59) (Elevation=851m above MSL) in the state of Kerala. Geographically, the project road/tunnel runs from south-west to north-east between latitudes of 11°27'2.04" N and 11°31'20.67" N and longitudes of 76°6'5.61" E and 76°8'1.38" E. The Government of Kerala (GoK) has approved the recommended Alt-2 vide its letter No. G1/71/2020-PWD dated 06/05/2021.

5. The proposed project activity is listed at schedule S.No.7(f) Highways under Category- 'B', of the schedule of the EIA Notification, 2006. The proposal is considered at the central level due to absence of SEIAA/SEAC, Kerala. The Total Capital Cost of the project is Rs. 2,134.50 Cr.

6. Terms of Reference (TOR) Details: The ToR proposal was considered in the 115th meeting of SEIAA held on 30th June 2022 and 128th meeting of SEIAA held on 23rd-24th May 2022. The authority recommended the standard terms of reference published by MoEFCC, GoI in April 2025 as recommended by SEAC. The SEIAA, Kerala has prescribed the ToR vide letter no. SIA/KL/MIS/76817/2022.1992/EC2/2022/SEIAA dated 23.07.2022, subsequently granted the amendment in ToR vide letter of even no dated 02.12.2023.

7. Public Hearing Details: The public hearing was conducted in the Wayanad and Kozhikode Districts of Kerala state on 11-12-2023 and 13-12-2023, respectively. The details of the public hearing are as follows:

Date	Venue	District and State	Chairman
11-12-2023	A. P. J. Abdul Kalam Auditorium, Meppadi	Wayanad District, Kerala	District Collector, Wayanad District
13-12-2023	Collectorate Conference Hall, Kozhikode	Kozhikode District, Kerala	District Collector, Kozhikode District

8. The proposed Right of Way (RoW): ROW is 60m throughout the tunnel alignment, and it varies in approach of the tunnel portals.

9. Land use/ Land cover of the project site: The details of the land use are as follows:

Sl.No.	Land use/Land cover	Area (ha)	Percentage (%)	Remarks
1	Private (Non-Forest Land)	19.61	53.18	-
2	Forest Land	17.263	46.82	Actual use is 0.994 Ha only
Total		36.873	100	-

10. Terrain and Topographical Features: The project area falls in hilly/mountainous, undulating terrain with a number of scattered hillocks, numerous ridges, moderately sloping spurs, and intervening valleys. This project road is located at an average altitude ranging from 700 to 2061 metres above sea level. The proposed Twin Tube Tunnel alignment is 8.11 km long, connecting Meppadi and Anakkampoyil under high hills. The tunnel passes through Charnockite and its variants in the major portion of the tunnel alignment.

11. Details of water bodies, impact on drainage: The project alignment crosses the Iruvanjipuzha/Iruvazhanjipuzha near the starting location (Ch. Km 0+320). Further, Kalladi river and a stream flows over the project tunnel alignment (approx.

Ch. Km 6+660 and Km 0+950) and road ends near the Meenakshi River (Ch. Km 8+735). As the proposed alignment crosses the Iruvanzhipuzzha River, a tributary of Chaliyar River, through the major bridge and will not have any impact on drainage. The proposed tunnel also goes under the Kalladi River, without any adverse impact on drainage pattern. There are Rivers-03 and Streams-1 No. falling along the alignment. The proposed road will have Major Bridges (2 on Iruvajipuzha), Minor Bridges/ Culverts (3), and Vehicular underpass (VUP) (1). Furthermore, provisions for cross-drainage for natural drains to ensure that flow is not affected.

12. Water requirements: Water requirement is estimated to be approximately 238.84 ML will be used over a period of 4 years of construction out of which 47.86 ML for road preparation, 8 ML for dust suppression, 166.98 ML for drinking, and 16 ML for other purposes. Source of water will be Iruvanjipuzzha and Kalladipuzzha. Water will be extracted after obtaining the necessary permissions from the competent authority.

13. Diversion of forestland: The proposed length of the tunnel is 8.753 km out of which a stretch of 5.76 km of the tunnel passes through forestland of Kozhikode and Wayanad South forest divisions. The Stage-1 Forest clearance for the diversion of 17.263 ha of forest land was obtained by the MoEF&CC vide letter no.F.No.4-KLC1368/2022-BAN/111 dated 31-03-2023. 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.

14. The project road passes through the Western Ghats. The impact zone lies in the Nilgiri Biosphere Reserve, falling within the 10 km radius of the project alignment. As per the MoEFCC notification dated 31-07-2024 Kodancheri, Nellippoyil, and Thiruvambadi villages of Thamarassery Taluk in Kozhikode district and Vellarimala village of Vythiri Taluk in Wayanad district fall under ESA villages. 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. Monitoring of endangered bird Banasura Chilappan, Salim Ali Centre for Ornithology and Natural History-SACON (South India Centre of Wildlife Institute of India, MoEFCC, Government of India) has been prepared technical proposal received.

15. Geological And Geomorphological features of the proposed Anakampoyil-Meppadi Tunnel alignment and the Impact Area' study was conducted by Dr.K.Soman, retired Scientist, Centre for Earth Science Studies, Trivandrum. Konkan Railway on behalf of Project Proponent had communicated the requirements with Geological Survey of India (GSI) under Ministry of Mines, Govt. of India, an experienced institution and also a nodal organization to carry out studies on landslide, geology and geotechnical aspects. In consultation with Indian Meteorological Department (IMD), provided the detailed specification of AWS and further correspondence were made with service provider suggested by the IMD and quotations were received.

16. Perceived geological impacts from tunneling activities during construction include vibration from methods like blasting, which can lead to landslips if uncontrolled. To manage this, a vibration monitoring plan shall be implemented before tunnelling starts, including demarcating impact areas and regulating blasting charges as advised by CSIR-CIMFR. During the operational stage, regulating speed can help mitigate adverse vibration impacts. Additionally, ground settlement and potential subsidence in fracture zones necessitate documenting the tunnel's overburden architecture early in the process to guide precautionary measures. Other impacts include groundwater seepage through fractures, which can be evaluated through horizontal boreholes during tunnelling, guiding measures like selecting appropriate tunnelling methods. Monitoring for material creep and landslips near steep slopes should involve installing landslide sensors and vibration monitors. Dust management shall be handled with conventional suppression methods like water spraying. Noise levels during construction, primarily from blasting and muck transportation, will be significantly reduced during tunnelling, as underground activities limit sound propagation, especially with noise-reducing equipment, thus minimizing disruption to nearby communities and wildlife.

17. 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.

18. Waste Management: An estimated 140000 TPA of Municipal Solid Waste (Food and domestic waste) from the site shall be collected & disposed of suitably in the compost pit and/or transported in covered trucks to approved municipal disposal sites through contractors. Plastic Waste estimated to be 27000 TPA shall be disposed of through contractors as per the Plastic Waste Management Rules, 2016. Construction debris and excavated material estimated to be 500000 TPA will be utilized in the construction of the road. Wastewater: Sanitary toilets shall be provided with soak pits and tanks in the labour camps.

19. Details of Tree Cutting and Green Belt Development: The project development involves cutting and removal of a total number of 177 trees, including 103 trees from forest land of the Anakkampoyil region and 74 trees from private lands (44 at Anakkampoyil and 30 in Meppadi). Compensatory afforestation is proposed in 17.263 Ha in the Sulthanbathery Taluk of Wayanad district and an area of 17.53ha is proposed to be develop greenbelt.

20. Raw Materials: Materials requirements are approximate (in Tonnes), Blue Metal-6,57,415 T, Bricks-180 T, Sand-2,88,922.60 T, Cement-1,24,247.61 T, Steel (HYSD/Mild)-7,998.93 T, Steel (Structural)-3,955.67 T, Bitumen-161.42 T, Water-47.86 ML.

21. The proposed project site is not located in proximity to the Critically Polluted area as identified by the CPCB.

22. Rainwater Harvesting: Two nos. of water tanks of 2 lakh litres capacity at each portal of the tunnel will be constructed in the ground for the collection of surface runoff rain water, and accordingly, it will be utilized for the construction and operation phase.

23. Energy conservation measures with estimated saving: 1.5 MW of solar power panel installation is proposed on each portal which will save approx. 35% of total power requirement for the operation phase. Solar panel will be installed on 10 Ha of land acquired for muck disposal area and the same will be implemented by the Government of Kerala.

24. Employment Potential: The proposed project will generate the employment of around 940 people during the construction phase, and 60 people will be employed during the operational phase. Both skilled and unskilled labourers shall be employed during the construction stage of the project.

25. Land acquisition and R&R issues involved: The total land acquisition for the proposed project is 36.873 Ha, including 19.61 Ha of non-forest/private land (8.35 Ha in Wayanad and 11.26 Ha in Kozhikode), and 17.263 Ha of forest land. The land will be acquired as per the procedure laid down in the RFCTLARR Act, 2013. The proposed project affects 27 property holders (10 in the south side and 17 in the north side) directly considering both the north and south ends of the tunnel and approach roads as well.

26. Benefits of the project: The project road will give better connectivity for Kozhikode and Wayanad districts, and this will lead to an increase in the export of agricultural products like spices, fruits, and vegetables. It will also help the Wayanad population to avail the better health facilities in Kozhikode, a long-time demand of the Wayanad population. It is expected that overall, the proposed Kochi-Bengaluru Industrial Corridor will reduce the travel time between the two economic hubs. The seamless connectivity will provide better access to vehicles as a link to the existing NH 766 (which connects Kozhikode in Kerala with Kollegal in Karnataka via Mysore) and SH-59 (Meppadi-Kalladi-Chooramala on the north side of the tunnel road). A significant economic benefit of the improvement project is the generation of employment opportunities during the construction activities, which will be available to the people, including the affected community. Besides, they will also draw benefits from the economic activities as a result of increased traffic flow and movement of vehicles. In the long term, the project road will help in the economic development of the entire region.

27. Details of Court cases: There are few cases filed against the project before the Hon'ble High Court of Kerala details are as following. WP(C) NO. 12255 of 2022, WP(C) NO. 31739 of 2023, WP(C) NO. 33400 of 2023, WP(C) NO. 36729 of 2023, Petition letter No. D1-5/55710/2020 dated 11.10.2021. Petitions were filed in the Hon'ble High Court of Kerala by the land owners of the muck disposal area in Kozhikode district, which is approximately 3.5 km away from the proposed alignment, citing the revaluation of their land and taking of additional leftover land. Accordingly, Govt. of Kerala issued an order meeting the demands of the landowners for acquiring additional leftover land. Hon'ble High Court of Kerala directed District Collector Kozhikode to re-evaluate the compensation of acquired land, the same is in progress.

28. The EAC, considering the fact that the proposal was already recommended by the SEAC of Kerala state and was forwarded to the EAC in the absence of SEIAA and based on the information submitted and clarifications provided by the project proponent and detailed discussions held on all the issues during 397th meeting of EAC during 04th April 2025 and 401st meeting during 14th-15th May 2025 recommended the project for grant of environmental clearance with stipulated specific conditions along with other Standard EC Conditions.

29. The Ministry of Environment, Forest and Climate Change has considered the proposal based on the recommendations of the Expert Appraisal Committee (Infrastructure, CRZ and other Miscellaneous projects) and hereby decided to grant Environmental Clearance for ‘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 of Kerala State by M/s Kerala Public Works Department Roads Division, Kozhikode’ under the EIA Notification, 2006 as amended, subject to strict compliance of the following specific conditions, in addition to all standard conditions applicable for such projects.

30. This issues with the approval of the Competent Authority.

Copy To

1. The Principal Secretary, Environment Department, Government of Kerala, Government Secretariat, Thiruvananthapuram-695 001, Kerala.
2. The Deputy Director General of Forests (Central), Ministry of Environment, Forest and Climate Change (MoEF&CC), Integrated Regional Office Bangalore, Kendriya Sadan, 4th Floor, E&F Wings, 17th Main Road, Koramangala II Block, Bangalore-560 034, Karnataka.
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi – 32.
4. The Member Secretary, Kerala State Pollution Control Board (KSPCB), Pattom PO, Thiruvananthapuram-695 004, Kerala.
5. Compliance and Monitoring Division, Ministry of Environment, Forest and Climate Change (MoEF&CC), Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110 003.
6. Parivesh Portal.
7. Guard File/ Monitoring File/ Record File.

Annexure 1

Specific EC Conditions for (Road)

1. Specific Conditions

S. No	EC Conditions
1.1	Span of the bridge proposed tentatively between Chainage 300+000 to 500+000 shall be increased to at least 180 meter so as to avoid possible earth cutting for maintaining the gradient of road and to avoid the possibility of soil erosion and landslide.
1.2	All the recommendations made by the assessment of possible impacts due to blasting on various surface structures and surroundings during excavation of road tunnel proposed between Anakkampoyil-Kalladi-Meppadi in Kozhikode and Wayanad Districts of Kerala by the CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR) shall be implemented and the status of compliance report shall be submitted along with the six monthly report. Compliance report shall specify the compliance for individual recommendations made in CSIR-CMFIR study report and shall be submitted along with the six monthly report.

S. No	EC Conditions
1.3	All the recommendations made in the report of Impact of Train Traffic Movement performed by CSIR-CIMFR (Report Annexed) shall be implemented in letter and spirit and the status of compliance report shall be submitted along with the six monthly report. Compliance report shall specify the compliances for individual recommendations made in CSIR-CMFIR study report.
1.4	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 is 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. The same recommendations shall be followed as prescribed by CIMFR.
1.5	All the recommendations made in the report of Geological and Geomorphological Features of the Proposed Anakampoyil-Meppadi Tunnel alignment and the Impact Area shall be implemented in letter and spirit and the status of compliance report shall be submitted along with the six monthly report. Compliance report shall specify the compliance for individual recommendations made in report.
1.6	All the recommendations made in the report of Study on Risk Assessment due to flood in the proposed tunnel alignment from Anakampoyil-Meppadi prepared by the M/s Konkan Railway Corporation Limited shall be implemented and the status of compliance report shall be submitted along with the six monthly report. Compliance report shall specify the compliances for individual recommendations made in study report.
1.7	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.
1.8	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.
1.9	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.
1.10	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

S. No	EC Conditions
	management and social work, preferably from the project area or the project district or from the nearby districts.
1.11	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.
1.12	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). The commissioning order for monitoring shall be submitted to IRO of MoEFCC along with its first 6 monthly compliance reports. Progress of the monitoring shall be submitted to the IRO in subsequent 6 monthly compliance reports.
1.13	Subsidence movement on the surface; over and around the working area shall be monitored regularly by CSIR-CIMFR during the construction operation. Further, monitoring of the impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings should also be continued till movement ceases completely. Appropriate effective corrective measures shall be taken in case of observation of any high rate of subsidence movement, to avoid loss of life and materials. Cracks should be effectively plugged with ballast and clay soil/suitable materials.
1.14	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.
1.15	PP shall pay more attention for the locations of BH-05 at (CH- 0+510), BH-06 at (CH- 0+555), BH-07, and between Ch. 8.49km and 8.62km continuous monitoring shall be carried by the CSIR-CIMFER.
1.16	In general, fresh air to be supplied to all underground work areas in sufficient amounts to prevent any dangerous or harmful accumulation of dusts, fumes, mists, vapours, or gases. A minimum of 200 cubic feet of fresh air per minute to be supplied for each employee underground. Mechanical ventilation, with reversible airflow, to be provided in all of these work areas, except where natural ventilation is demonstrably sufficient.
1.17	Where blasting or drilling is performed or other types of work operations that may cause harmful amounts of dust, fumes, vapours, etc., the velocity of airflow must be maintained as per the guidelines.

S. No	EC Conditions
1.18	For gaseous—or potentially gaseous operations, ventilation systems must meet additional requirements.
1.19	Adequate lighting shall be provided at the face and at any other point where work is in progress, at equipment installations, such as pumps, fans and transformers.
1.20	Where workers are liable to be injured by falling or sliding material from the roof, face or wall of the tunnel, suitable measures (as per design) such as shotcreting, rock bolting or other appropriate measures should be taken to ensure the safety of the workers.
1.21	All supports including steel supports, lagging, backfill concrete, shotcreting, rock bolts etc. should be designed and installed appropriately to ensure the stability of the excavated areas.
1.22	If water is anticipated, exploratory probing or drilling ahead of the face should be carried out to confirm the quantity, the quality and the pressure. Measures shall be put in place for the evacuation of workers in case of sudden flooding.
1.23	To avoid flooding, especially in downward sloping tunnels, pumps with adequate reserve capacity should be provided and so arranged that if flooding occurs they will not be put out of action.
1.24	Water should be removed from the working area either by open drains or by pumps and pipes. Intermediate holding tanks and pumping stations should be set up where water has to be pumped over large distances.
1.25	Contingency planning should ensure that essential equipment and personnel for major emergencies (for example rescue equipment, firefighting equipment, suitable breathing apparatus, stretchers, temporary lighting etc.) shall be placed on site.
1.26	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.
1.27	Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.
1.28	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.
1.29	The user agency shall construct the elephant underpasses at two locations EUP1 at Appankappu (18.6 km from tunnel). The Underpass for the elephants shall have a minimum 10m height from

S. No	EC Conditions
	ground level for easy movement for elephants and other wildlife as per the guidelines issued by the WII, along with the guiding barriers.
1.30	Besides elephant, underpasses/overpasses, shall be provided for smaller animals and other wildlife movement. The culverts/Underpasses/Overpasses shall developed as per the guidelines issued by the WII, along with the guiding barriers in consultation with the State Forest Department feels it necessary for management, it can develop some points on the elevated road as animal watch points/towers, or if any specific mitigation measures are recommended by the Forest Department. The biodiversity assessment and conservation/mitigation plan shall be submitted to the Concern IRO, MoEFCC, to monitor the execution of the plan.
1.31	All the mitigation measures proposed in the EIA Report, Additional Documents Submitted and the Comprehensive Report should be implemented meticulously.
1.32	All the stipulated regulations pertaining to the ESA villages should be observed during the implementation of the project activities.
1.33	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.
1.34	The proponent shall keep the finish road level sufficiently elevated from ground level with the provision of railing on both sides to restrict animal crossing to avoid the possibility of wildlife injury/death. Animal underpasses, watch towers, water holes, and other proposed mitigation measures shall be constructed under the supervision of the forest department.
1.35	No tree can be felled/transplant unless exigencies demand. Where absolutely necessary, tree felling shall be with prior permission from the concern Authority. Old, large and heritage value trees should be retained based on girth and age regulations as may be prescribed by the Forest Department. Where the trees need to be cut/transplanted with prior permission from the concerned local Authority, compensatory plantation in the ratio of 1:10 (i.e. planting of 10 trees for every 1 tree that is cut/ non-survival of any transplanted tree) shall be done and maintained. Plantations to be ensured species (cut) to species (planted). All the plantation will be done by state forest department as deposit work and not by private contractors.
1.36	Green belt development (tree plantation) in lieu of the trees being felled in non-forest land should be carried out by the State forest department as deposit work and not by the private contractor. Green belt must be developed using exclusively native species including significant number of ficus trees. No exotic species to be used for the same. A comprehensive plan for plantation shall be prepared in consultation with state forest department (executing agency) including the costs involved. Such compensatory plantation will be over and above the compensatory afforestation to be carried in lieu of the diversion of forest land, if any.
1.37	Project Proponent shall strive to enhance the Green Belt beyond 33% and that the trees planted in this regard would be planted under the campaign "एक-पेड़-मैं-के-नाम", and the details of the trees planted would be uploaded on the portal https://merilife.nic.in .

S. No	EC Conditions
1.38	No groundwater shall be extracted and used. Approval/permission of the concerned authority shall be obtained before drawing surface water from the canal or any other sources.
1.39	In borrow pits, the depth of the pit shall be regulated such that the sides of the excavation will have a slope not steeper than 1:2, from the edge of the final section of the bank. Soil erosion checking measures shall be carried out. Details for the borrow area operation and rehabilitation given in the EIA report shall be followed.
1.40	Quarry areas shall be barricaded during mining operations. The abandoned quarry shall be developed as water reservoirs with proper fencing around the quarry area.
1.41	In all the construction sites within 150 m of the nearest habitation, noisy construction work such as crushing, concrete mixing will be stopped during the night time between 10.00 pm to 6.00 am. No noisy construction activities will be permitted around educational institutions/health centers (silence zones) up to a distance of 100 m from the sensitive receptors. All plants and equipment used in construction shall strictly conform to the CPCB/SPCB noise standards.
1.42	Traffic Control Devices/Road Safety Devices/Roadside Furniture including various types of cautionary, informatory, regulatory as mandatory signboards, road markers, studs, night track cameras etc. shall be provided at appropriate locations all along the project stretch in accordance with the specifications laid down in Manual of Specifications and Standards for Expressways (IRC: SP:99-2013) and IRC:8, IRC:25, IRC:26, IRC:35, IRC:67, IRC:79, IRC:103 and Section 800 of MORTH Specifications.
1.43	Low-lying areas should be developed as water bodies and plantations shall be done accordingly.
1.44	Temporary access facility across the Iravanjipuzha at southern side should not block the natural flow of the river.
1.45	Mitigation measures like noise/sound barriers to be provided along the roads, close to the villages/habitations and sensitive areas like Schools etc. to avoid disruption to the public. Further, FOB/crossings shall be provided for safer access to the public.
1.46	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).
1.47	All vehicles, including the ones carrying construction material of any kind, should be cleaned and wheels washed.
1.48	All vehicles carrying construction materials should be fully covered and protected.
1.49	All construction material of any kind should not be dumped on public roads or pavements or near the existing facilities outside the project site.
1.50	Grinding & cutting of building materials should not be done in open areas. Water jets should be used in grinding and stone cutting.

S. No	EC Conditions
1.51	Occupational health safety measures for the workers should be taken during the construction.
1.52	All vehicles during the construction phase should carry PUC certificate.
1.53	D.G. set should be provided with adequate stack height and acoustic enclosure and regular maintenance should be carried out periodically.
1.54	The stream water quality of nearby stream where the seepage water reaching shall be continuously monitoring and should be included in the HYCR.
1.55	Prevent the reaching of vehicle and machinery oils/lubricants into natural waters along with seepage/runoff.
1.56	Temporary access facility across the Iravanjipuzha at southern side should not block the natural flow of the river.
1.57	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.
1.58	All the recommendations of the EMP shall be complied with in letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to RO, MoEF&CC along with half yearly compliance report.
1.59	As per the Ministry's Office Memorandum F.No.22-65/2017-IA.III dated 30th September, 2020, the project proponent shall abide by all the commitments made by them to address the concerns raised during the public consultation. The project proponent shall initiate the activities proposed by them, based on the commitment made in the public hearing, and incorporate in the Environmental Management Plan and submit to the Ministry along with 6 monthly compliance report.
1.60	All other activities including pollution control, environmental protection and conservation, R&R, wildlife and forest conservation/protection measures including the NPV, Compensatory Afforestation etc., either proposed by the project proponent based on the social impact assessment and R&R action plan carried out during the preparation of EIA report or prescribed by EAC, shall also be implemented and become part of EMP.

Standard EC Conditions for (Road)

1.

S. No	EC Conditions
1.1	Cut and fill works shall be carried out strictly in accordance with the design drawings proposed at the time of appraisal of the project.
1.2	Sidewalk shall be provided along the bridges.

S. No	EC Conditions
1.3	The drain shall be at least 1m away from the toe of the embankment of the road adopting IRC guidelines. Longitudinal drains shall be provided all along the project road to ensure proper drainage of the area. In addition, adequate number of under passes and culverts to act as cross drainage structures shall also be provided.
1.4	Blasting shall be carried out during fixed hours (preferably during mid-day) or as permitted by the concerned authority. The timing shall be made known to all the people within 1000m (200m for pre-splitting) from the blasting site in all directions.
1.5	Rain water harvesting including oil and grease trap shall be provided as prescribed by CGWB guidelines. Water harvesting structures shall be located at every 500m along the road. Vertical drain type rainwater harvesting structures shall be set up to minimize surface runoff losses of rainwater.
1.6	The embankments/slopes and the slopes left after cutting shall be provided with vegetative growth to avoid soil erosion.
1.7	Construction spoils including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump sites for such materials must be secured so that they shall not leach into the ground water. The non-usable bitumen spoils shall be disposed off in a deep trench providing clay lining at the bottom and filled with soil at the top (for at least 0.5m)
1.8	Construction camps shall be proposed 500 m away from the nearest settlements to avoid conflicts and stress over the infrastructure facilities with the local community. Location for stockyards for construction materials shall be identified at least 1000m from water sources. Garbage tanks and sanitation facilities will be provided at camps.

2. Compliance Reporting

S. No	EC Conditions
2.1	The project proponent shall submit online six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change and also upload the same, including results of monitored data, on their company website.
2.2	For compliance of conditions during operation phase, PP shall either itself undertake the responsibility of compliance or ensure setting up institutional mechanism for compliance of conditions under intimation on the website of the Ministry of Environment, Forest and Climate Change.
2.3	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
2.4	The Ministry reserves the right to stipulate additional conditions, if found necessary.
2.5	Beside fulfilling obligations under Corporate Social Responsibilities as per Company's Act, 2013, the proponent has to adhere to the followings Environment Responsibilities: i.The Company shall have a well laid down Environment Policy approved by the Board of Directors. ii.The Environment Policy shall prescribe for standard operating process/ procedures to bring into focus any

S. No	EC Conditions
	infringements/ deviation/violation of the environmental or forest norms/ conditions. iii.The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished. iv.To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/ violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

3. Note

S. No	EC Conditions
3.1	The above conditions shall be enforced in a time bound manner
3.2	The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
3.3	The PP is under obligation to implement commitments made in the to the issues raised during public hearing Conceptual Plan/ Environment Management Plan, which forms the part of this EC.
3.4	Further attention of project proponent is drawn towards the following Acts/ Regulations/ Statutes/ Guidelines issued from time to time: (a)All the Indian Road Congress (IRC) guidelines wherever applicable may be followed. (b)Provisions related to tree cutting as contained in the Forest (Conservation) Act, 1980 and related rules of the respective state. (c)Dust Mitigation Measures stipulated for Construction and Demolition Activities as provided in the amendment Notification GSR 94(E) dated 25.01.2018 of MoEF&CC. (d)Provisions for use of Fly ash as building material in the construction as per stipulated under Fly Ash Notification of September, 1999 and amended as on 27th August, 2003 and 25th January, 2016. (e)Provisions for management of construction and demolition activities related thereto as contained in Construction and Demolition Waste Management Rules, 2016.

4. General Instructions (Part A)

S. No	EC Conditions
4.1	Approval/permission of concerned authority shall be obtained before drawing surface water from canal or any other sources.
4.2	The proponent shall obtain permission from the competent authorities for tree felling along the proposed alignment.
4.3	As per MoEF&CC's circular no. J-11013/41/2006-IA.II (I) dated 22.09.2008, provision shall be made for supply of kerosene or cooking gas and pressure cooker to the labourers, mobile toilets, mobile STP, safe drinking water, medical health care, Crèche and temporary structures for living during construction phase.
4.4	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to MoEF&CC and

S. No	EC Conditions
	its concerned Regional Office.

5. General Instructions (Part B)

S. No	EC Conditions
5.1	The project proponent shall prominently advertise it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days indicating that the project has been accorded environment clearance and the details of MoEF&CC/SEIAA website where it is displayed.
5.2	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
5.3	The project proponent shall have a well laid down environmental policy duly approved by the Board of Directors (in case of Company) or competent authority, duly prescribing standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions.
5.4	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the project proponent (during construction phase) and authorized entity mandated with compliance of conditions (during operational phase) shall be prepared. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Six monthly progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six-Monthly Compliance Report.
5.5	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
5.6	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

6. Specific Conditions

S. No	EC Conditions
6.1	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. In case of the treated effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet.