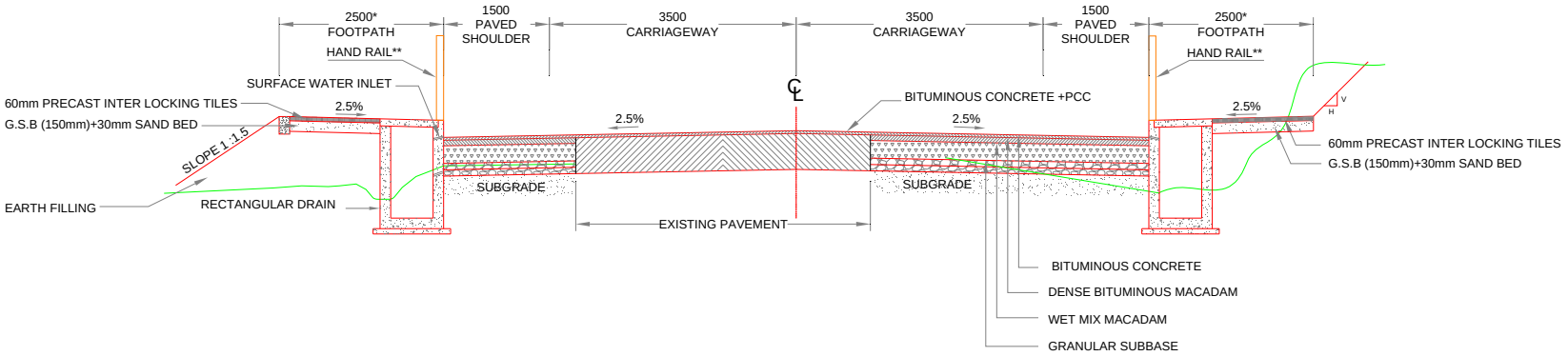
Annexures

Annexure 1.1. Roads Undertaken In Kerala State Transport Project - I

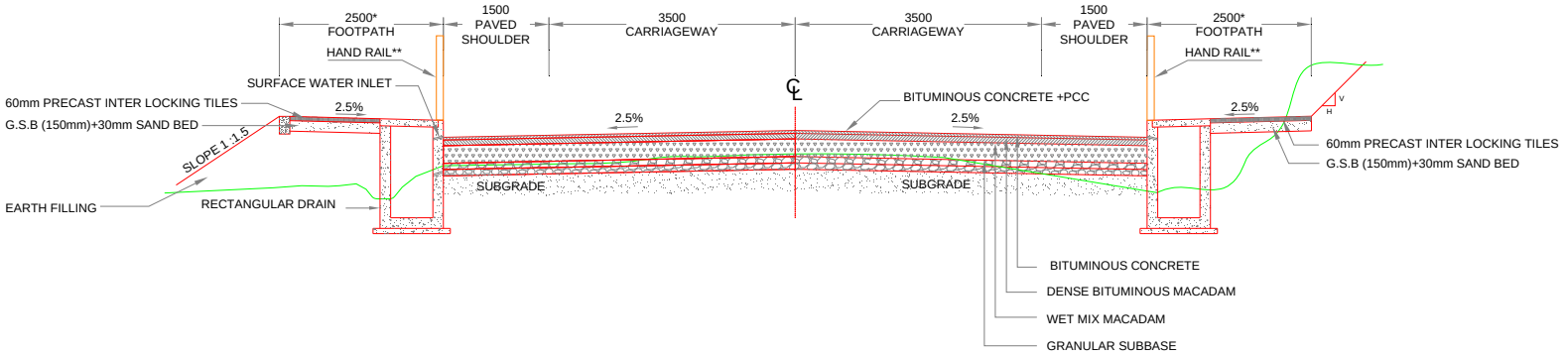
Sl. No.	Link No.	Road Name	Length km	Existing Average Carriageway (CW) Width (m)	Proposed CW Width (m) [1] (Total improvement is up to 15 m)
1	1	Taikkod-Kottarakkara	46.02	7.10	10
2	2	Kottarakkara-Adoor	20.85	6.70	7
3	3	Adoor-Chengannur	23.58	7.10	7
4	6	Muvattupuzha-Angamaly	31.40	7.33	10
5	40	Thrissur-Kuttipuram	33.08	6.76	10
6	50.1	Palakkad-Shornur	45.30	7.17	7
7	70	Muvattupuzha-Thodupuzha	17.83	5.51	7
8	72	Taikkod-NH47	12.60	4.20	10
9	73	Alappuzha-Changanaserry	24.14	7.00	7
Total			**254.80**		

[1] Refer proposed total improvement in Chapter 2

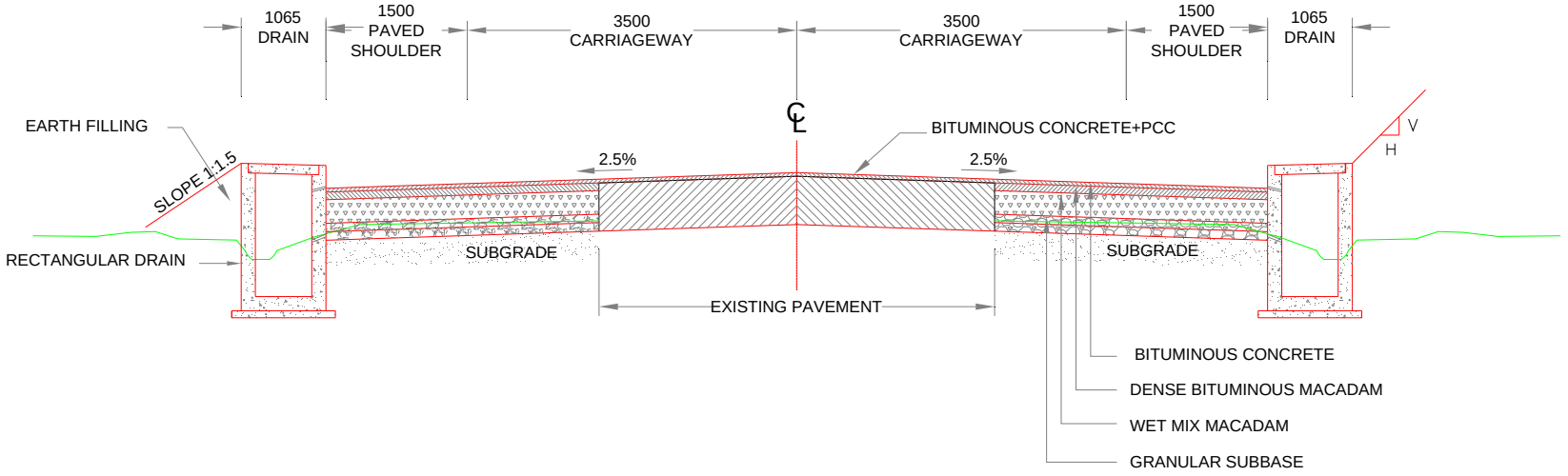
Annexure 2.1. Typical Design Cross Sections



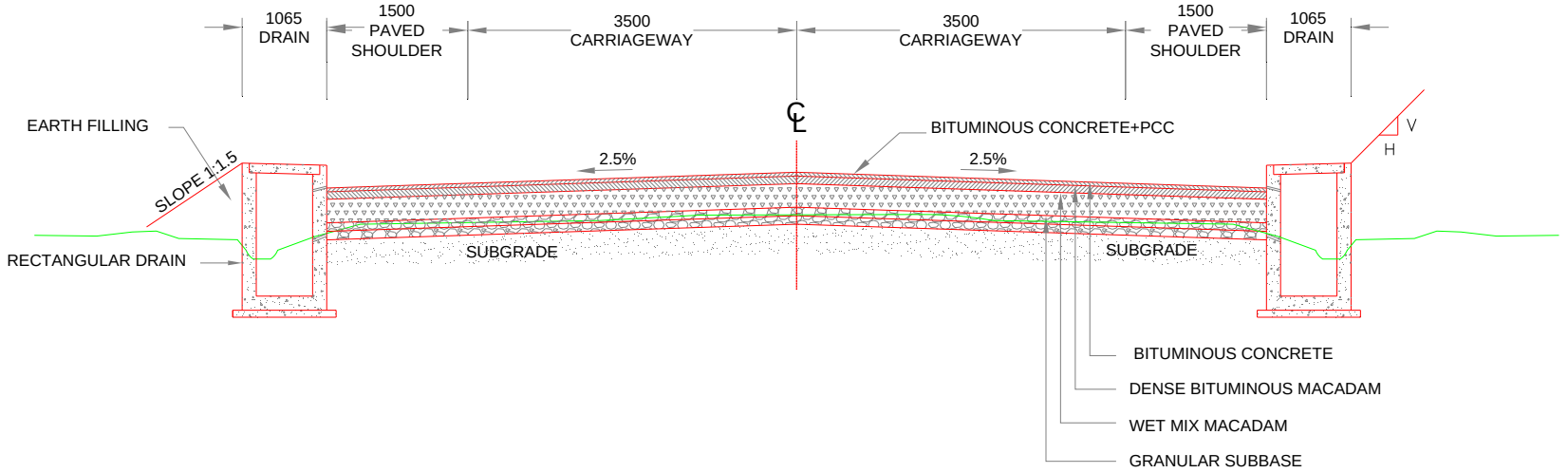
TYPICAL CROSS SECTION- TYPE-1



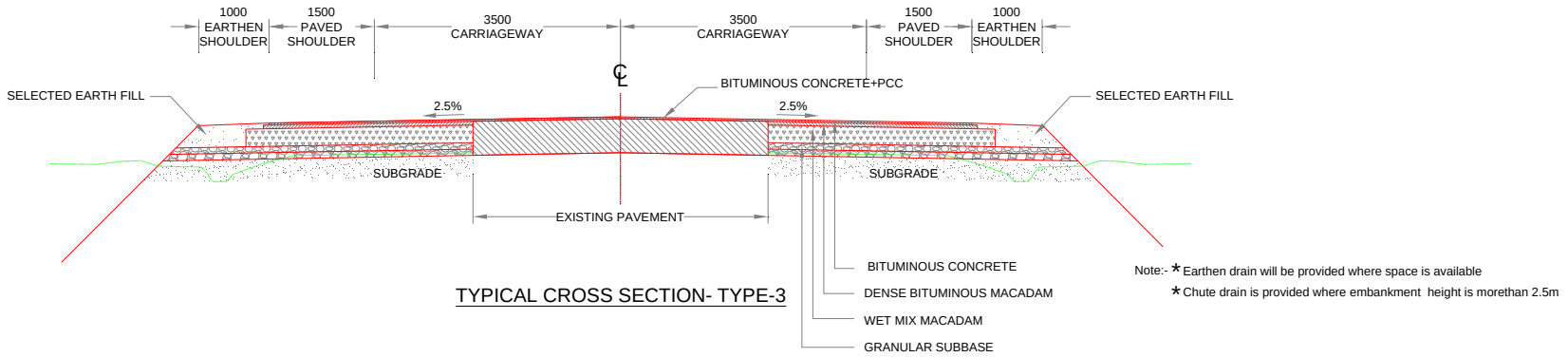
TYPICAL CROSS SECTION TYPE-1A



TYPICAL CROSS SECTION- TYPE-2



TYPICAL CROSS SECTION TYPE -2A

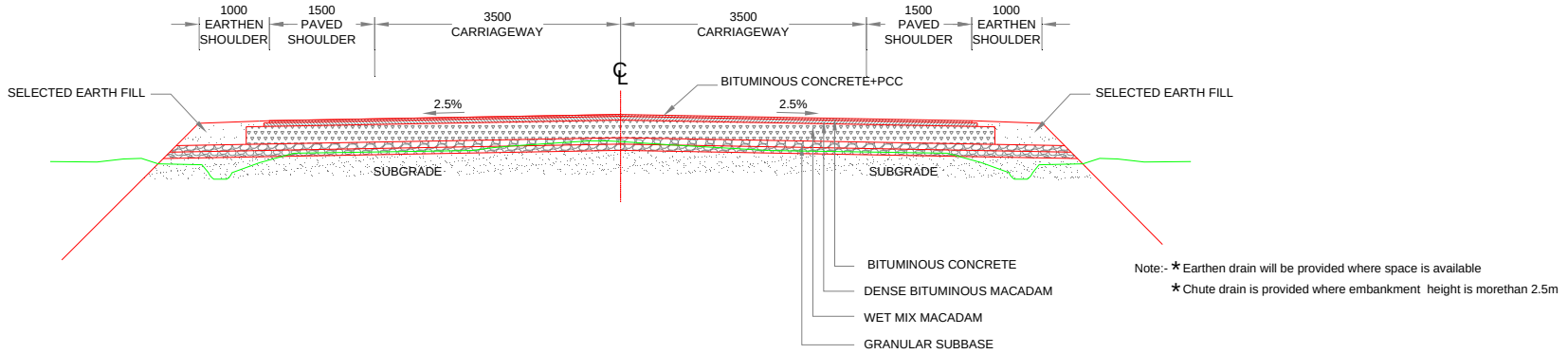


TYPICAL CROSS SECTION- TYPE-3

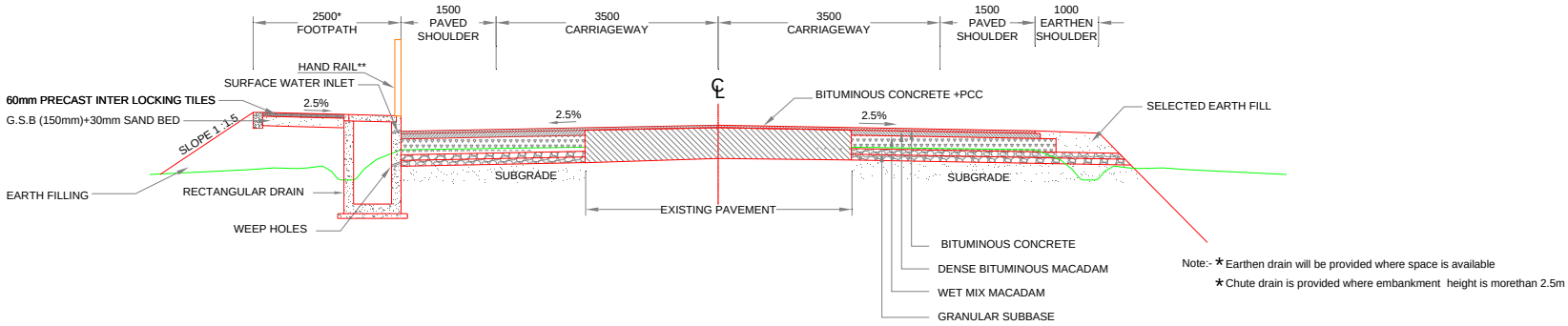
Note:- * Earthen drain will be provided where space is available

* Chute drain is provided where embankment height is morethan 2.5m

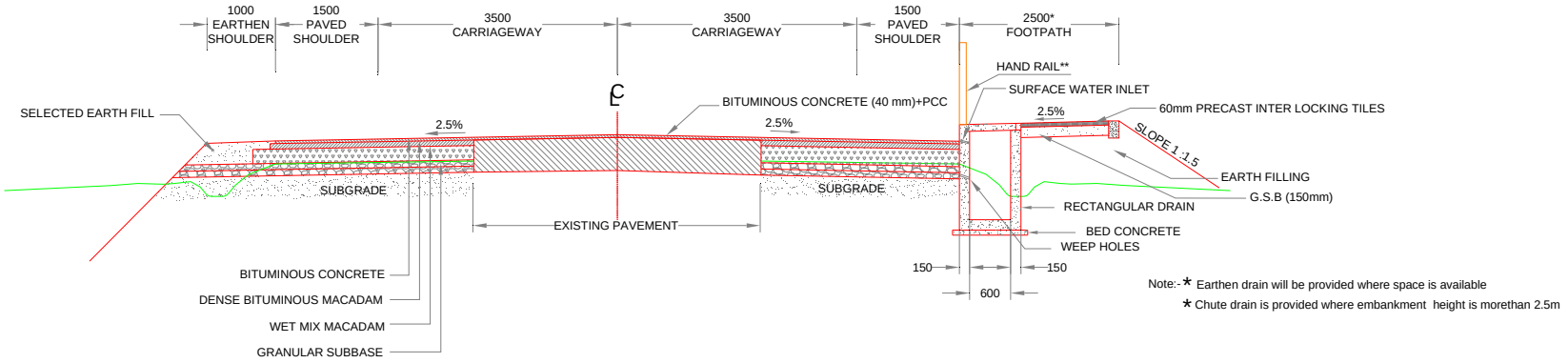
TYPICAL CROSS SECTION- TYPE-3



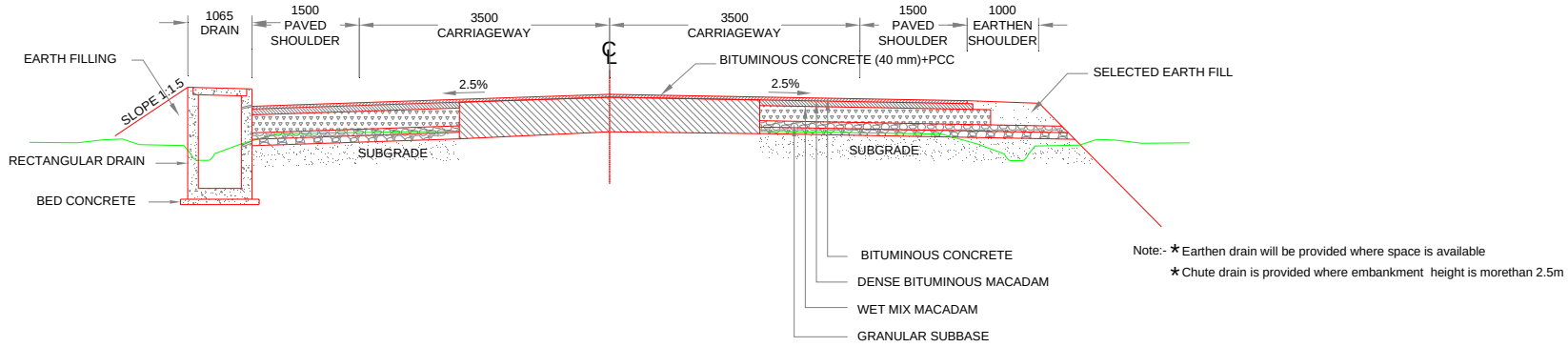
TYPICAL CROSS SECTION- TYPE-3A



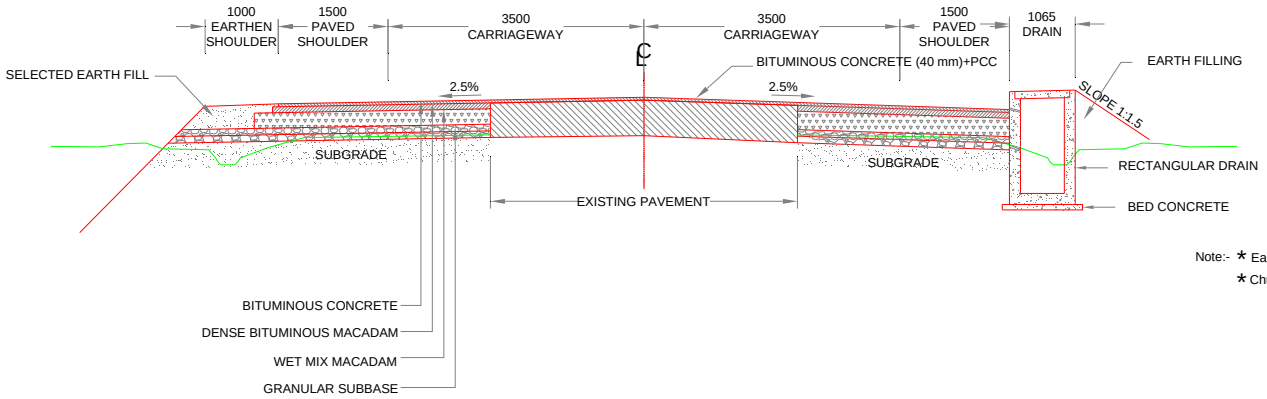
TYPICAL CROSS SECTION- TYPE-4



TYPICAL CROSS SECTION- TYPE-5



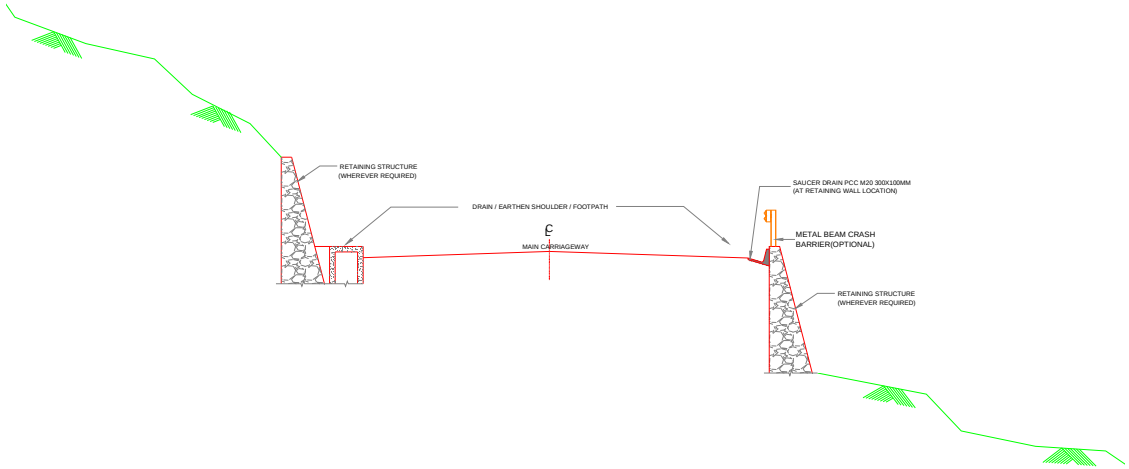
TYPICAL CROSS SECTION- TYPE-6



Note:- * Earthen drain will be provided where space is available

* Chute drain is provided where embankment height is morethan 2.5m

TYPICAL CROSS SECTION- TYPE-7



TREATMENT FOR HILL AND VALLEY SECTION

Note:-DRAIN / EARTHEN SHOULDER / FOOTPATH,MAIN CARRIAGEWAY AS PER TYPICAL CROSS SECTION

***VARIES DURING CONSTRUCTION**

**** HAND RAILS PROVIDE AT MAJOR INTERSECTIONS**

*****PARKING AREA AVAILABLE IS ENHANCED AND RETAINED WITH PHYSICAL BARRIER OF MOUNTABLE AND UNMOUNTABLE KERBS**

Annexure 2.2. Design Cross Sections Applied along the Corridor 4 & 5

Sl.No.	Design Chainage		Length (m)	TCS Type	Remarks
	From	To			
1	0+000	0+550	550	Type-1	
2	0+550	0+570	20	Type-0	RUB
3	0+570	0+650	80	Type-2	
4	0+650	0+736	86	Type-3	
5	0+736	0+764	28	Type-0	
6	0+764	1+240	476	Type-2	Mundankavu
7	1+240	1+498	258	Type-3	
8	1+498	1+615	117	Type-0	Major Bridge
9	1+615	1+740	125	Type-3	
10	1+740	2+320	580	Type-2	Kallissery
11	2+320	2+497	177	Type-3	
12	2+497	2+504	7	Type-0	
13	2+504	2+700	196	Type-3	
14	2+700	3+790	1090	Type-2	
15	3+790	3+983	193	Type-3	
16	3+983	4+033	50	Type-0	
17	4+033	5+050	1017	Type-2	Kuttoor
18	5+050	5+159	109	Type-3	
19	5+159	5+267	108	Type-0	Major Bridge
20	5+267	5+480	213	Type-3	
21	5+480	5+637	157	Type-2	
22	5+637	5+800	163	Type-6	
23	5+800	7+500	1700	Type-2	Thirumoolapuram
24	7+500	7+520	20	Only overlay treatment	Thiruvalla town
25	7+520	7+660	140		
26	7+520	9+400	1880		
27	9+400	9+800	400	Type-1	
28	9+800	11+100	1300	Type-2	Muthoor
29	11+100	11+226	126	Type-3	
30	11+226	11+244	18	Type-0	
31	11+244	11+360	116	Type-3	
32	11+360	12+800	1440	Type-2	
33	12+800	13+210	410	Type-3	
34	13+210	14+690	1480	Type-2	
35	14+690	14+840	150	Type-3	
36	14+840	14+860	20	Type-0	
37	14+860	15+000	140	Type-3	
38	15+000	15+800	800	Type-2	
39	15+800	18+000	2200	Type-1	Changanacherry
40	18+000	19+400	1400	Type-2	
41	19+400	20+011	611	Type-2	
42	20+011	20+025	14	Type-0	
43	20+025	20+170	145	Type-3	
44	20+170	23+130	2960	Type-2	
45	23+130	23+685	555	Type-1	Kurichy

Sl.No.	Design Chainage		Length (m)	TCS Type	Remarks
	From	To			
46	23+685	23+880	195	Type-3	
47	23+880	24+960	1080	Type-2	
48	24+960	24+970	10	Type-0	
49	24+970	25+900	930	Type-2	
50	25+900	26+600	700	Type-1	Chingavanam
51	26+600	27+740	1140	Type-2	
52	27+740	28+050	310	Type-3A	Realignment
53	28+050	28+660	610	Type-2	
54	28+660	30+190	1530	Type-2	
55	30+190	30+400	210	Type-2	
56	30+400	31+050	650	Type-2	
57	31+050	31+200	150	Type-7	
58	31+200	31+316	116	Type 3	
59	31+316	31+900	584	Type 3	
60	31+900	31+935	35	Type 3	
61	31+935	32+335	400	Type 3	
62	32+335	32+360	25	Type 3	
63	32+360	33+065	705	Type 3	
64	33+065	33+350	285	Type 3	
65	33+350	33+515	165	Type 3	
66	33+515	33+580	65	Type 3	
67	33+580	33+680	100	Type 3	
68	33+680	34+100	420	Type 3	
69	34+100	35+900	1800	Type-1	
70	35+900	36+120	220	Type-2	
71	36+120	36+129	9	Type-0	
72	36+129	36+450*	321	Type-1	
73	36+450*	36+490*	40	Type-0	Nagambadom ROB
74	36+490*	36+615*	125	Type-1	
75	36+615	36+720	105	Type-0	Major Bridge
76	36+720	39+687	2967	Type-2	Chavittuvari
77	39+687	39+735	48	Type-0	
78	39+735	40+420	685	Type-2	
79	40+420	40+648	228	Type-2	Samkranthy
80	40+648	41+208	560	Type-2	
81	41+208	41+850	642	Type-2	
82	41+850	44+100	2250	Type-2	
83	44+100	45+500	1400	Type-2	
84	45+500	46+600	1100	Type-1	Ettumanur
85	46+600	47+700	1100	Type-2	
			47840		
Ettumanoor- Muvattupuzha Road					
1	0+000	0+400	0+400	Type-2	
2	0+400	1+200	0+800	Type-7	(Hilly Terrain)
3	1+200	1+500	0+300	Type-2	Retnagiri
4	1+500	3+700	2+200	Type-6	On RHS Embankment 5

Sl.No.	Design Chainage		Length (m)	TCS Type	Remarks
	From	To			
					to 8m
5	3+700	3+990	0+290	Type-2	
6	3+990	3+990	0+000	Type-0	Bridge
7	3+990	4+844	0+854	Type-2	
8	4+844	5+420	0+576	Type-7	On LHS Paddy
9	5+420	5+660	0+240	Type-2	
10	5+660	6+000	0+340	Type-7	
11	6+000	8+400	2+400	Type-2	
12	8+400	9+400	1+000	Type-1	Kuravilangadu
13	9+400	10+000	0+600	Type-2	
14	10+000	10+300	0+300	Type-3	Paddy on both sides
15	10+300	11+500	1+200	Type-2	
16	11+500	13+000	1+500	Type-7	
17	13+000	13+200	0+200	Type-2	
18	13+200	13+800	0+600	Type-6	
19	13+800	14+380	0+580	Type-7	
20	14+380	14+415	0+035	Type-0	Bridge
21	14+415	15+400	0+985	Type-6	
22	15+400	16+100	0+700	Type-2	
23	16+100	17+100	1+000	Type-7	On RHS cutting 3 to 5 m, on LHS Embankment 2 to 3m
24	17+100	20+719	3+619	Type-6	
25	20+719	21+005	0+286	Type-2	
26	21+005	21+550	0+545	Type-6	
27	21+550	21+775	0+225	Type-7	
28	22+060	22+250	0+190	Type-2	
29	22+250	22+275	0+025	Type-0	Bridge
30	22+275	23+000	0+725	Type-2	
31	23+000	23+700	0+700	Type-6	
32	23+700	24+100	0+400	Type-2	
33	24+100	24+585	0+485	Type-1	Koothattukulam
34	24+585	24+595	0+010	Type-0	Bridge
35	24+595	25+200	0+605	Type-1	Koothattukulam
36	25+200	25+800	0+600	Type-2	
37	25+800	26+585	0+785	Type-6	
38	26+585	27+355	0+770	Type-2	
39	27+355	27+740	0+385	Type-7	
40	27+740	28+170	0+430	Type-2	
41	28+170	28+458	0+288	Type-7	
42	28+458	28+465	0+007	Type-0	Bridge
43	28+465	28+750	0+285	Type-2	
44	28+750	29+700	0+950	Type-7	
45	29+700	30+000	0+300	Type-6	
46	29+920	30+500	0+580	Type-2	
47	30+500	30+700	0+200	Type-4	

Sl.No.	Design Chainage		Length (m)	TCS Type	Remarks
	From	To			
48	30+700	31+275	0+575	Type-7	
49	31+275	31+305	0+030	Type-0	Bridge
50	31+305	31+635	0+330	Type-3	
51	31+635	33+410	1+775	Type-7	On LHS embankment of 10 m
52	33+410	34+260	0+850	Type-6	
53	34+260	35+000	0+740	Type-2	
54	35+000	35+300	0+300	Type-6	
55	35+300	36+300	1+000	Type-2	
56	36+300	36+619	0+319	Type-6	On RHS embankment of 5 to 10 m
57	36+619	36+765	0+146	Type-3	
58	36+765	38+200	1+435	Type-2	
59	38+200	38+785	0+585	Type-7	
60	38+785	39+625	0+840	Type-6	On RHS embankment of 6 to 10 m
61	39+625	40+400	0+775	Type-2	
62	40+400	40+920	0+520	Type-1	Muvattupuzha

Annexure 2.3. Codes of Practice of Indian Road Congress (IRC) in terms of Environment

Sl. No.	IRC Code	Description
1	IRC:34-2011	Recommendations for Road Construction in Areas Affected by Water Logging, Flooding and/or Salts Infestation (First Revision)
2	IRC:56-2011	Recommended Practices for Treatment of Embankment and Roadside Slopes for Erosion Control (First Revision)
3	IRC:90-2010	Guidelines of Selection, Operation and Maintenance of Bituminous Hot Mix Plant (First Revision)
4	IRC:103-1988	Guidelines for Pedestrian Facilities
5	IRC:104-1988	Guidelines for Environmental Impact Assessment of Highway Projects
6	IRC:SP:21-2009	Guidelines on Landscaping and Tree Plantation
7	IRC: SP: 42 – 1994	Guidelines on Road Drainage
8	IRC: SP: 44 – 1996	Highway Safety Code
9	IRC: SP: 48 – 1998	Hill Road Manual
10	IRC: SP: 88 - 2010	Road Safety Audit Manual

Annexure 3.1. Institutional Aspects of Environmental Management

1. GOI -INSTITUTIONAL SETTING FOR ENVIRONMENTAL ANALYSIS

1.1.1 MINISTRY OF ENVIRONMENT AND FOREST (MOEF)

The Ministry of Environment and Forests (MOEF) is the organisation responsible for environmental matters in India. exhibit 3.1 indicates the organisational structure of India's Environmental Management System. The current framework has evolved largely since the creation of the MOEF in 1985. Many States already had State Pollution Control Boards (SPCBs) located in the Departments of Public Health to perform functions as outlined in India's Water and Air Acts.

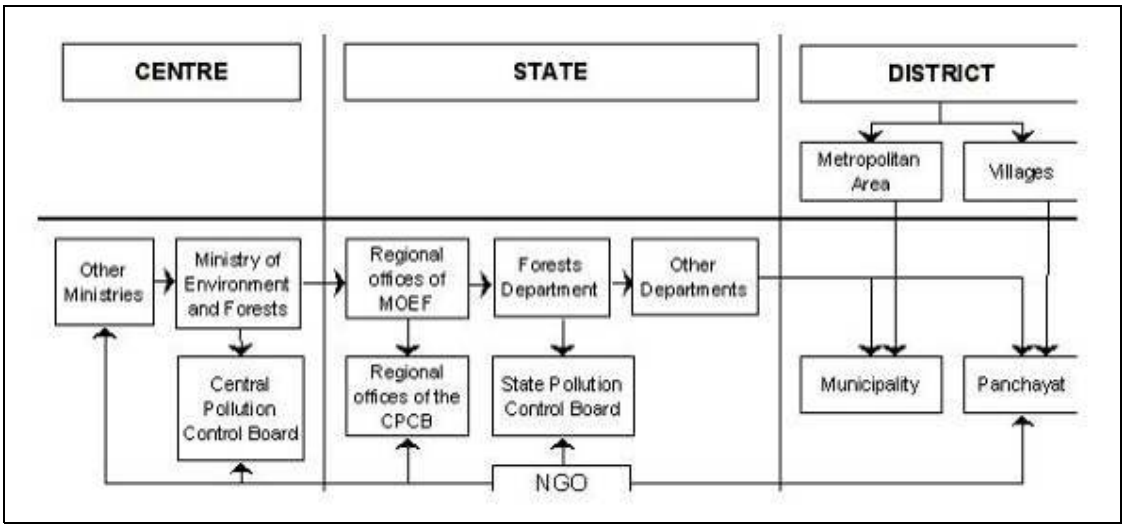


FIGURE 1 : GOI ENVIRONMENTAL MANAGEMENT ORGANISATION

Source: Adapted from World Bank Report T-6910-IN, December 3,1996

The MOEF is the agency primarily responsible for the review and approval of EIAs pursuant to GOI legislation. As a part of its EIA review procedures, MOEF requires the submission of an application, the EIA and accompanying Resettlement Action Plan (RAP) for review by an Environmental Appraisal Committee. Before approval can be granted, a No Objection Certificate (NOC) from the State Pollution Control Board (PCB) and State Forest Department (both discussed below) must also be obtained. A summary of applicable GOI policies and regulations are provided in chapter3.

1.1.2 CENTRAL POLLUTION CONTROL BOARD (CPCB)

The CPCB is a statutory authority attached to the MOEF and located in New Delhi. It was constituted in 1974 (and thus predates MOEF). Its major functions are to:

- Advise the Central Government with regard to water and air pollution matters;
- Plan and implement water and air pollution programmes;
- Co-ordinate activities of the State Pollution Control Boards;
- Organise popular air and water campaigns;
- Increase Public awareness;
- Compile air and water data and provide guidelines;
- Set air and water standards.

1.1.3 MOEF REGIONAL OFFICE

Kerala is located in the Southern Region (Bangalore MOEF office), which includes Kerala, Tamil Nadir and Karnataka. The Southern Region office is responsible for:

- Evaluation of proposals for diversion of forestlands;
- Assist in the preparation of the National Forestry Action Plan (NFAP);
- Assist Paryavaran Vahinis[2];
- Provide technical and scientific consultations on biological diversity;
- Monitoring of conditions following environmental clearance;
- Pursuing pollution control measures by industries and local bodies;
- Collecting and furnishing information in relation to Environmental Impact Assessment of projects, pollution control measures, methodology and status, legal and enforcement measures, environmental protection in special conservation areas such as wetlands, mangroves and biological reserves; and
- Co-ordination functions.

1.1.4 MUNICIPALITIES AND PANCHAYATH

Municipalities and panchayats are expected to play an increasing role in Environmental Management at the District level and States may delegate functions. Under certain amendments municipalities may be involved in:

- Urban and town planning;
- Water supplies;
- Solid waste management and sanitation;
- Urban forestry;
- Protection of the environment; and
- Promotion of the ecological aspects of urban development.

1.1.5 OTHER ENTITIES WITH ENVIRONMENTAL RESPONSIBILITIES

Other entities and their environmental tasks include the following.

Ministry of Agriculture

- Prevention and control of desertification
- Conservation and regeneration of watersheds
- Protection of irrigation command areas
- Conservation and regeneration of forest
- Prevention and control of pollution
- Ministry of Water Resources Prevention and control of floods

- Conservation and regeneration of wetlands
- Conservation and regeneration of coral reefs
- Protection of irrigation command areas
- Monitoring water quality

Ministry of Rural Development

- Conservation and management of land and soil
- Prevention and control of drought
- Conservation and regeneration of forest
- Prevention and control of pollution

Ministry of Power

- Prevention and control of pollution
- Recycling of resources
- Conservation and management of energy

Ministry of Petroleum

- Protection of mining and oil extraction areas
- Recycling of resources
- Prevention and control of pollution
- Conservation and management of energy

Department of Ocean development

- Conservation of coral reefs and coastal regions
- Conservation and relegation of island resources
- Prevention and control of pollution

2. WORLD BANK PROCEDURAL AND REGULATORY REQUIREMENTS.

2.1.1 ENVIRONMENTAL IMPACTS-REQUIREMENTS

Environmental requirements of the World Bank are specified in detail in its Operational Policy (OP) 4.01 and other related OPs. In instances in which the procedural and regulatory requirements differ, the more stringent applies. The procedural and regulatory aspects of those requirements and those of the Ministry of Environment and Forests (MOEF), Ministry of Surface Transport (MOST) and the State Public Works Department (PWD) can be summarized as follows: The World Bank environmental requirements are based on a three-part classification system

Category A - requires a full Environmental Assessment (EA)
Category B - projects require a lesser level of environmental investigation.
Category C - projects require no environmental analysis

The Bank classifies the KSTP as Category A, largely it is understood, based on the large number of project-affected people and the biodiversity of Kerala. In other words, the Bank classification is based on the anticipated cumulative social and environmental impacts due to the construction and operation of the Project.

Further if sensitive areas are within the potentially affected environment of a project or sub-project (as in the case of Kasaragod -Kanhangad project road under discussion), if significant socio-economic impacts are anticipated or if otherwise warranted, Category A environmental documentation is required at the project-level. Clearance for the overall Programme is obtained, provided that:

- The SEA is found to conform to the cited guidelines. (Box 3.1)
- The SEA is accompanied or followed by detailed design and project-level environmental

documentation when necessary and provides assurance that the environmental issues will be properly addressed in the subsequent phases of the Programme. And

- All other feasibility, design, mitigation plans and financial responsibility requirements are acceptable.

The World Bank determined that the KSTP required an SEA to "develop simple, standard and practical recommendations to be included in the design and construction of the project" including:

- Proper use of existing borrow areas and quarries;
- Landscaping of borrow areas and spoil tips;
- Development of proper storage areas specifically for diesel fuel and bitumen;
- Rehabilitation of the ROWs through replanting;
- Minimizing soil erosion;
- Protection, enhancement and proper management of sensitive habitats;
- Establishment of an Environmental Management Unit within the PWD.

BOX 3.1 Importance of Sectoral approach

In recognition of the needs of large, multi-year lending programmes likely to involve a number of projects or sub-projects such as the KSTP, the Bank's procedures also provide for the preparation of a Sectoral Environmental Assessment (SEA) as that term is defined by its OP 4.01- 07 dated October 1991. A SEA is designed to accommodate a number of circumstances, particularly *"the Bank's increasing use of programmatic, sector-oriented and time-slice investment programs (which) have served to build up a demand for a Sectoral EA approach*".[3]

Within this approach, the sections of road upgrading projects not involving significant additional ROW acquisition or affecting sensitive areas or large numbers of PAPs are generally considered Category B projects, provided that the potential environmental concerns are addressed within the SEA and that the mitigation actions incorporated in the SEA (if applicable) are implemented. The SEA can hasten environmental clearance of projects or sub-projects in that, they do not warrant such intensive investigation. It can therefore simplify and expedite the implementation process and reduce potential risks and uncertainties.

The required SEA for the Project has been formally submitted to the PIU together with all other Project documents. In addition to the documentation and commitments in the SEA, World Bank approval is also contingent upon the completion of detailed designs for 25 percent of the total Project, the securing of all necessary environmental approvals for these actions from MOEF and other GOI agencies and the completion of project-level EAs where warranted. There are six road links in the Phase II construction activities.

2.1.2 SOCIAL IMPACTS-REQUIREMENTS

The World Bank has set out certain mandatory social impact mitigation requirements for loan projects. The Operational Policy 4.30[4] describes the Bank's policy and procedures for projects that involve involuntary resettlement. *This policy aims to improve, or at a minimum, sustain the same*

[3] The World Bank Environmental Assessment Source book
[4] Involuntary Resettlement, The World Bank Operational Policy 4.30,June 1990

standard of living of the people who will be displaced because of a development project. The policy also requires that projects minimize the need for involuntary resettlement. Where displacement is unavoidable, resettlement plans should pay particular attention to the vulnerable groups. In addition, the World Bank has special guidelines for addressing impacts upon the indigenous communities due to infrastructure projects. This document specifically requires the project authorities to include consultation with and informed participation of the tribal population. However, the reconnaissance survey has indicated that there are no tribal habitations along the corridor.

3. GOI AND GOK POLICIES, LEGAL AND ADMINISTRATIVE FRAME WORK

3.1.1 ENVIRONMENTAL REGULATIONS

Indian National Framework: The major elements of the Indian legal framework for environmental management are:

The Constitution - provides for the protection and improvement of the environment and states that it shall be the duty of every citizen of India to protect and improve the national environment, including forest, lakes, rivers, and wildlife and to have compassion for living creatures. Primary responsibility for administration and implementation of the GOI policy with respect to conservation, ecologically sustainable development and pollution control rests with the MOEF and the regulations established pursuant to the National Conservation Strategy, National Forest Policy, the Policy for Abatement of Pollution (1992), and the Indian Environmental Protection Act 1986 (29 of 1986) revised in 1997.

The following key legislations pertain: -

Water (Prevention and Control of Pollution) Act of 1974 and Cess Act of 1977. This act has resulted in the establishment of the central and State level pollution control boards whose responsibilities include managing water quality and effluent standards as well as monitoring water quality, prosecuting offenders and issuing licences for construction and operation of certain facilities in the industrial sector.

Air (Prevention and Control of Pollution) Act of 1981. The SPCB is empowered to set air quality standards and monitor and prosecute offenders under this act.

Environment (Protection) Act of 1986 - enacted in the wake of the Bhopal gas tragedy, the Act is an umbrella legislation that provides a framework for Central and State Authorities established under previous laws. It provides a single focus for the protection of the environment and sought to "plug" several loopholes.

Forest (Conservation) Act 1980 as amended. Under this law the PWD must obtain administrative approval from the Forest Department to clear over 20 hectares of designated forestland and in 1986 when the MOEF enacted the Environmental Protection Act, the entire linear stretches of road side plantations along the State highways were declared as protected forests (refer Box 3.2 for more details). According to this although the land is under the control of State Government, due to its protected Status, approval of Central, Regional or State Government for using the land for widening and rehabilitation must be granted.

At the State level, Government was empowered to declare reserves and protected forest and was also given the authority to acquire land for extension and preservation of forests. In December 1996, a Supreme Court judgement further defined the types of forests to be protected. Depending on the size of the tract to be cleared, clearances are required from the following levels of Government.

- If the forest exceeds 20 hectares then prior permission of Central Government is

required.

- If the forest is between 5 to 20 hectares the regional Office of Chief conservator is empowered;
- If the forest is below or equal to five hectares the State Government may give permission; and,
- If the construction area is more than 40 % forest, permission to undertake any work is required from the Central Government, irrespective of the size of the area.

Box 3.2 Applicability of Forest conservation act to Roadside strip Plantations

The 18 February 1998 MOEF circular on linear plantations on roadsides, Canal and railway lines modified the applicability of provisions of Forest (Conservation) Act, 1980 to linear plantations. The new modification recognises that the spirit behind the Forest (Conservation) Act was conservation of natural forests and not strip plantations. In the case of the "notified to be protected" roadside plantations, the clearance may be given by the concerned regional office of the MOEF, irrespective of the area of plantation lost. While issuing the approval, in place of normal provisions for compensatory afforestation, the regional offices will stipulate a condition that for every tree removed at least two trees should be planted. If the concerned Regional office does not issue the decision within thirty days of the receipt of fully completed application, the project proponent may proceed with widening/expansion under intimation to the State Forest Department, and the MOEF.

In the case of Kerala, the entire State cover green vegetation and this makes the strip and linear plantations less significant for a development project like the KSTP.

Wildlife (Protection) Act of 1972. This Act has allowed the Government to establish a number of National Parks and Sanctuaries over the past 25 years. This Act prohibits an activity within National Park and Sanctuary areas.

The EA identifies National Park and Sanctuary areas within the project study area. The EA confirms that permission from the Chief Wildlife Warden will be sought for:

Undertaking activity in a National Park or Sanctuary area.; and labourers and contractors entering a National Park or Sanctuary area. Document identifies the extent of habitat destruction, including number of trees removed. The EA document describes mitigation measures to minimise habitat destruction.

Policy Statement on Abatement of Pollution of 1992. Affirmed the Government's intention to integrate environmental and economic aspects in development planning with an emphasis on the preventive aspects of pollution and the "polluter pays" principle.

The Public Liability Insurance Act of 1991. Under the heading of land use, the following are also noted to be of potential relevance to the Project:

- The Urban Land (Ceiling and Regulation) Act of 1976.
- The Model Regional and Town Planning and Development Law of 1985.
- Provisions in State Acts on Town and Country Planning.
- The Industries (Development and Regulation) Act and Amendment of 1951 and 1987.
- The Mines & Minerals (Regulation & Development) Act and Amendments of 1957 and 1984.
- The Coal Mines (Conservation and Development) Amendment Act of 1985

4. ROAD DEVELOPMENT POLICY

The draft Road Development Policy for Kerala (1999) prepared by the Government of Kerala, (GoK) underlines capacity expansion of its primary road network as the key priority and an

integral element of the State's economic development strategy. The policy's overall objective is to promote *"a sustainable road network providing connection to all cities, towns and villages, and allowing safe and efficient travel between them."*

The Government seeks to address the following key road sector issues:

(a) Addressing network deficiencies and improving road sector financing:

The draft road policy outlines Government's strategic approach to improve the network capacity. GoK aims to rehabilitate existing high- and medium-density corridors in a phased and timely manner and upgrade the network to comply with modern highway design standards. Greater emphasis will be placed on road maintenance. PWD will be encouraged to contract out maintenance and operations to private contractors on a pilot basis and use more modern technology for road pavement and treatments. The Government aims to provide adequate funds to meet the growth demand, simultaneously exploring avenues of private sector participation in the transport sector. Since budget allocations alone are not expected to meet the road sector's growing requirements, the State intends to supplement its road sector resource allocation by instituting a wider base of road user charges. The Government recently legislated the establishment of a State Road Fund that will seek to generate user charges through road tolls and dedicated fuel levies. The Roads and Bridges Development Corporation of Kerala (RBDCK), recently established by the GoK, will seek to raise funds through loans, shares and grants from financial institutions in order to construct and maintain identified roads and bridges. RBDCK recently awarded contracts to build railway over-bridges in the state and several NH bypasses will be built as BOT schemes in the near future.

(b) Enhancing institutional capacities:

The Government has committed itself to improve the performance of the road sector. In particular, steps are being taken to modernise and improve the PWD's performance, covering all its activities so that it keeps pace with new developments and requirements. With this in view, a consultant was engaged to undertake an Institutional Development Strategy (IDS) study to help establish a strategy for developing the PWD's technical, managerial and financial capabilities to effectively manage the State road transport network and to be responsive to road users' demands. Based on the study's recommendations, an Institutional Strengthening Action Plan (ISAP) listing the institutional development activities that are to be implemented during the next five years and beyond was developed and debated. The Government has formally endorsed the ISAP. Based on the ISAP, the PWD is developing a programme for:

- Human resource development strategy
- Improving pwd's financial management capacities
- Capacity building for planning and policy functions
- A management information system
- Strengthening environmental and social impact monitoring
- Improving procurement procedures
- Strengthening road safety engineering capacities

The state PWD has started implementation of some of the above. These measures are expected to reform PWD into a modern agency that will serve as a knowledge provider, while sourcing private sector capacities. ISAP implementation activities will be supported by IDS technical assistance consultants and three PWD staff working groups to seek institution-wide feedback on the ISAP. The institutional development consultants, who will serve as external experts to assist PWD in refining and implementing the ISAP, will work closely with the staff working groups that oversee,

- Organisational restructuring and institutional strengthening
- Management and quality systems
- Information technology and management information systems

(c) Reducing accident rates and mitigating environmental and social impacts:

Kerala's high accident rates have prompted the Government to address road safety problems by introducing road safety audits for new road projects and analysing accident blackspot locations. PWD has developed, as part of project preparation, a draft comprehensive and integrated State Road Safety Action Plan, which includes recommendations for the following road safety sub-sectors:

- Coordination and management of road safety,
- Accident data systems,
- Safety publicity campaign,
- Safety engineering,
- Safety education for children,
- Traffic legislation and enforcement,
- Driver training and testing,
- Vehicle safety standards,
- Emergency aid to road accident victims, and
- Safety research.

The plan also recommends establishing a PWD Road Safety Unit. As for environmental and social impact issues, the GoK's approach is to identify potential impacts early in the planning process and programme accordingly so as to avoid or mitigate adverse effects of road development. The policy is to prepare and implement Environmental Management Plans (EMP) whenever required, and to develop codes for environmental practice related to State road construction and maintenance.

Annexure 3.2. National Ambient Air Quality Standards by CPCB

"[SCHEDULE VII]
[See rule 3(3B)]
NATIONAL AMBIENT AIR QUALITY STANDARDS

S.No	Pollutants	Time-weighted average	Concentration in ambient air		Method of measurement
			Industrial Residential, Rural & other Areas	Ecologically Sensitive Area (Notified by Central Government)	
1	Sulphur Dioxide (SO_2) $\mu g/m^3$	Annual*	50	20	-Improved West and Geake
		24 hours**	80	80	-Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2) $\mu g/m^3$	Annual*	40	30	-Modified Jacob & Hochheiser
		24 hours**	80	80	(Na-Arsenite) -Chemiluminescence
3	Particulate Matter (Size less than 10 μm) or PM_{10} $\mu g/m^3$	Annual*	60	60	-Gravimetric -TOEM
		24 hours**	100	100	-Beta attenuation
4	Particulate Matter (Size less than 2.5 μm) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	-Gravimetric -TOEM
		24 hours**	60	60	-Beta attenuation
5	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	- Non Dispersive Infra Red (NDIR)
		1 hour**	04	04	Spectroscopy

* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Annexure 3.3. National Ambient Air Quality Standards for Noise by CPCB

Sl. No.	Area	Leq dB (A)	
		Day Time*	Night Time**
1	Industrial Area	75	70
2	Commercial Area	65	55
3	Residential Area	55	45
4	Silent Zone***	50	40

Notes :

* Day Time -- 0600 hour to 2100 hour (15 hours)

** Night time --2100 hour to 0600 hour (09 hours)

*** Areas upto 100 metres around certain premises like hospitals, educational institutions and courts may be declared as silence zones by the competent authority ;

Annexure 3.4. National Standards for Drinking Water (IS:10500)

Sl. No	Substance or Characteristic	Requirement (Desirable Limit)	Permissible Limit in the absence of Alternate source
Essential characteristics			
1	Colour, (Hazen units, Max)	5	25
2	Odour	Unobjectonable	Unobjectionable
3	Taste	Agreeable	Agreeable
4	Turbidity (NTU, Max)	5	10
5	pH Value	6.5 to 8.5	No Relaxation
6	Total Hardness (as $CaCo_3$) mg/lit., Max	300	600
7	Iron (as Fe) mg/lit, Max	0.3	1
8	Chlorides (as Cl) mg/lit, Max.	250	1000
9	Residual free chlorine, mg/lit, Min	0.2	--
Desirable Characteristics			
10	Dissolved solids mg/lit, Max	500	2000
11	Calcium (as Ca) mg/lit, Max	75	200
12	Copper (as Cu) mg/lit, Max	0.05	1.5
13	Manganese (as Mn)mg/lit, Max	0.1	0.3
14	Sulfate (as SO_4) mg/lit, Max	200	400
15	Nitrate (as NO_3) mg/lit, Max	45	100
16	Fluoride (as F) mg/lit, Max	1.9	1.5
17	Phenolic Compounds (as C_6H_5OH) mg/lit, Max.	0.001	0.002
18	Mercury (as Hg)mg/lit, Max	0.001	No relaxation
19	Cadmium (as Cd)mg/lit, Max	0.01	No relaxation
20	Selenium (as Se)mg/lit, Max	0.01	No relaxation
21	Arsenic (as As) mg/lit, Max	0.05	No relaxation
22	Cyanide (as CN) mg/lit, Max	0.05	No relaxation
23	Lead (as Pb) mg/lit, Max	0.05	No relaxation
24	Zinc (as Zn) mg/lit, Max	5	15
25	Anionic detergents (as MBAS) mg/lit, Max	0.2	1
26	Chromium (as Cr^{6+}) mg/lit, Max	0.05	No relaxation
27	Polynuclear aromatic hydro carbons (as PAH) g/lit, Max	--	--
28	Mineral Oil mg/lit, Max	0.01	0.03
29	Pesticides mg/l, Max	Absent	0.001
30	Radioactive Materials		
	i. Alpha emitters Bq/l, Max	--	0.1
	ii. Beta emitters pci/l, Max	--	1
31	Alkalinity mg/lit, Max	200	600
32	Aluminium (as Al) mg/l, Max	0.03	0.2
33	Boron mg/lit, Max	1	5
Bacteriological Parameters			
a) For water entering a distribution system Coliform count in any sample of 100 ml should be zero(0). b) For water in a distribution system (i) E Coli count in 100 ml of any sample must be zero (0). (ii) Coliform organisms should not be more than 10 per 100 ml in any sample. (iii) Coliform organisms should not be present in 100 ml of any two consecutive samples or more than 5% of the samples collected for the year.			

Annexure 3.5. National Standards for Inland Surface Waters Subject to Pollution (IS:2296)

Class C – Drinking water with conventional treatment followed by disinfection.

Sl No.	Parameter and Unit	Class C
1	Taste	--
2	Odour	--
3	Colour (True) (Hazen unit), Max	300
4	pH (Min and Max)	6.5 - 8.5
5	Conductivity (25^{o}C) μS/cm, Max	--
6	DO (mg/L), Min	4
7	BOD (3 Days 27^{o}C) (mg/L), Max	3
8	Total Coliforms (MPN/100 mL), Max	5000
9	TDS (mg/L), Max	1500
10	Oil and Grease (mg/L), Max	0.1
11	Mineral oil (mg/L), Max	--
12	Total Hardness as $CaCO_3$ (mg/L), Max	--
13	Chlorides as Cl (mg/L), Max	600
14	Sulfates as SO_4 (mg/L), Max	400
15	Nitrates as NO_3 (mg/L), Max	50
16	Free CO_2 (mg/L), Max	--
17	Free NH_3 as N (mg/L), Max	--
18	Fluorides as F (mg/L), Max	1.5
19	Calcium as Ca (mg/L), Max	--
20	Magnesium as Mg (mg/L), Max	--
21	Copper as Cu (mg/L), Max	1.5
22	Iron as Fe(mg/L), Max	50
23	Manganese as Mn (mg/L), Max	--
24	Zinc as Zn (mg/L), Max	15
25	Boron as B (mg/L), Max	--
26	Barium as Ba (mg/L), Max	--
27	Silver as Ag (mg/L), Max	--
28	Arsenic as As (mg/L), Max	0.2
29	Mercury as Hg (mg/L), Max	--
30	Lead as Pb (mg/L), Max	0.1
31	Cadmium as Cd (mg/L), Max	0.01
32	Chromium as Cr^{6+} (mg/L), Max	0.05
33	Selenium as Se (mg/L), Max	0.05
34	Cyanide as CN (mg/L), Max	0.05
35	Phenols as C_2H_5OH (mg/L), Max	0.005
36	Anionic detergents as MBAS (mg/L), Max	1
37	PAH (mg/L), Max	--
38	Pesticides (μg/L), Max	--
39	Insecticides (μg/L), Max	0
40	Alpha emitters (μC/mL), Max	10^{-9}
41	Beta emitters (μC/mL), Max	10^{-8}

Sl No.	Parameter and Unit	Class C
42	Percent Sodium (%),Max	--
43	Sodium Absorption Ratio, Max	--

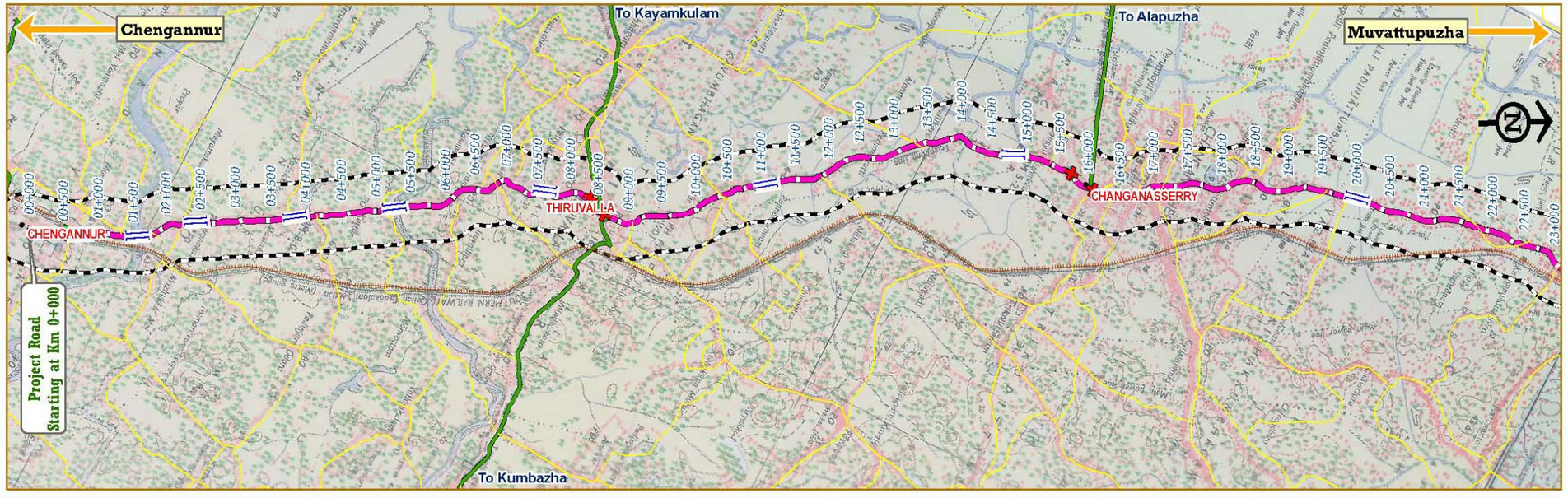
Annexure 3.6. National Standards for Discharge of Effluents

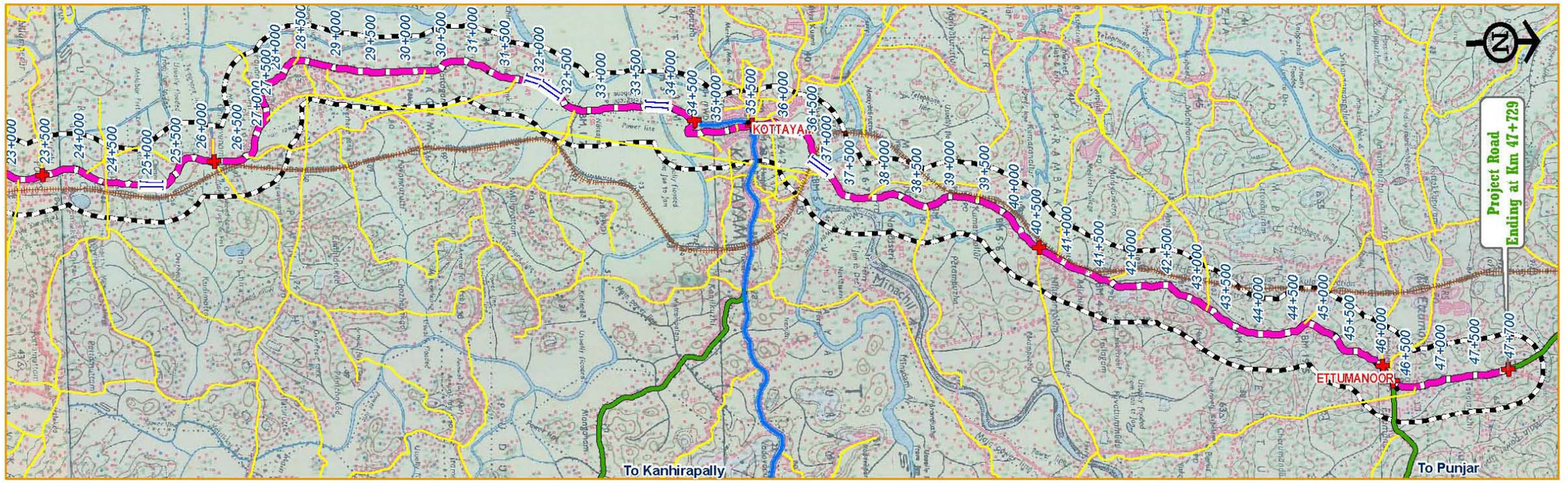
S. No.	Parameter	Inland surface water	Public sewers	Land for irrigation	Marine/coastalar eas
.	2		3	.	.
.	.	(a)	(b)	(c)	(d)
1	Colour and odour	All efforts should be made to remove colour and unpleasant odour as far as practicable		All efforts should be made to remove colour and unpleasant odour as far as practicable	All efforts should be made to remove colour and unpleasant odour as far as practicable
2	Suspended solids mg/l, max.	100	600	200	(a) For process waste water (b) For cooling water effluent 10 per cent above total suspended matter of influent.
3	Particle size of suspended solids	shall pass 850 micron IS Sieve	-	-	(a) Floatable solids, solidsmax. 3 mm (b) Settleable solids, max 856 microns
4	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
5	Temperature	shall not exceed 5^{oC} above the receiving water temperature			shall not exceed 5^{oC} above the receiving water temperature
6	Oil and grease, mg/l max,	10	20	10	20
7	Total residual chlorine, mg/l max	1.0	-	-	1.0
8	Ammonical nitrogen (as N),mg/l, max.	50	50	-	50
9	Total kjeldahl nitrogen (as N);mg/l, max. mg/l, max.	100	-	-	100
10	Free ammonia (as NH3), mg/l,max.	5.0	-	-	5.0
11	Biochemical oxygen demand (3 days at 27oC), mg/l, max.	30	350	100	100
12	Chemical oxygen demand, mg/l, max.	250	-	-	250
13	Arsenic(as As).	0.2	0.2	0.2	0.2
14	Mercury (As Hg), mg/l, max.	0.01	0.01	-	0.01

S. No.	Parameter	Inland surface water	Public sewers	Land for irrigation	Marine/coastalar eas
.	2		3	.	.
.	.	(a)	(b)	(c)	(d)
15	Lead (as Pb) mg/l, max	0.1	1.0	-	2.0
16	Cadmium (as Cd) mg/l, max	2.0	1.0	-	2.0
17	Hexavalent chro-mium (as Cr + 6),mg/l, max.	0.1	2.0	-	1.0
18	Total chromium (as Cr) mg/l, max.	2.0	2.0	-	2.0
19	Copper (as Cu)mg/l, max.	3.0	3.0	-	3.0
20	Zinc (as Zn) mg/l, max.	5.0	15	-	15
21	Selenium (as Se)	0.05	0.05	-	0.05
22	Nickel (as Ni) mg/l, max.	3.0	3.0	-	5.0
23	Cyanide (as CN) mg/l, max.	0.2	2.0	0.2	0.2
24	Fluoride (as F) mg/l, max.	2.0	15	-	15
25	Dissolved phos-phates (as P),mg/l, max.	5.0	-	-	-
26	Sulphide (as S) mg/l, max.	2.0	-	-	5.0
27	Phenolic compounds (as C6H50H)mg/l, max.	1.0	5.0	-	5.0
28	Radioactive materials: (a) Alpha emitters micro curie mg/l, max. (b)Beta emitters micro curie mg/l	10-7 10-6	10-7 10-6	10-8 10-7	10-7 10-6
29	Bio-assay test	90% suivival of fish after 96 hours in 100% effluent	90% suivival of fish after 96 hours in 100% effluen	90% suivival of fish after 96 hours in 100% effluen	90% suivival of fish after 96 hours in 100% effluen
30	Manganese	2 mg/l	2 mg/l	-	2 mg/l
31	Iron (as Fe)	3mg/l	3mg/l	-	3mg/l
32	Vanadium (as V)	0.2mg/l	0.2mg/l	-	0.2mg/l
33	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l

* These standards shall be applicable for industries, operations or processes other than those industries, operations or process for which standards have been specified in Schedule of the Environment Protection Rules, 1989.

Annexure 4.1a.Strip Plan of the Project Road with 500 m width on either side of the Project Road (Chenganur - Ettumanur)





Project Road (SH 01) | Major District Road
ROB | National Highway
bridge | State Highway
major junction | Buffer Zone : 500 m
Railway line | 22+800 Design Chainage

Client Public Works Department, Government of Kerala, India

Consultant Wilbur Smith Associates Pvt Ltd, Bangalore In Association With CRISIL Infrastructure Advisory

0 0.5 1 2 km

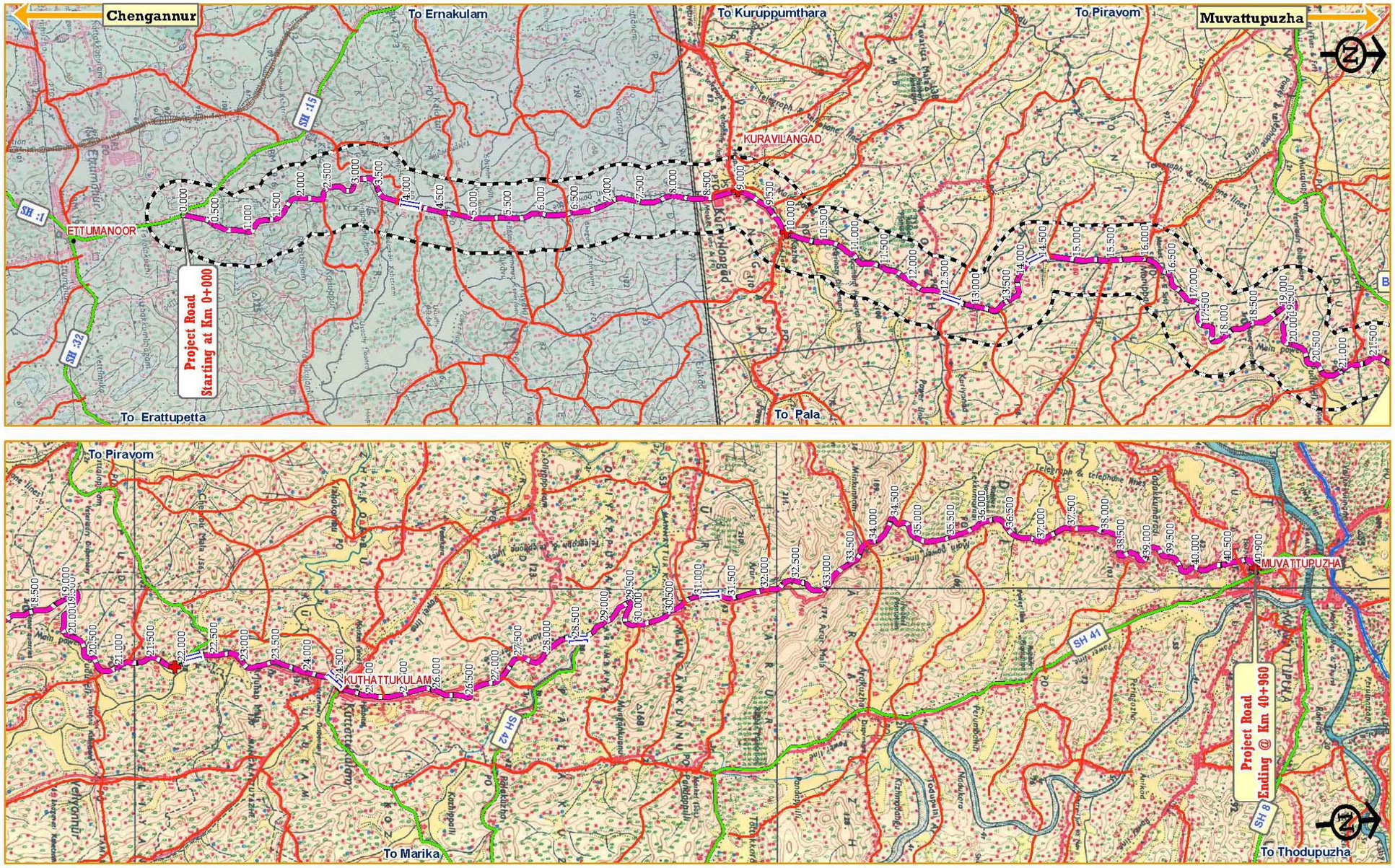
1:55,000

Project Kerala State Transport Project Phase II Consultancy Services for Updating Detailed Engineering Designs and Financing Option Study

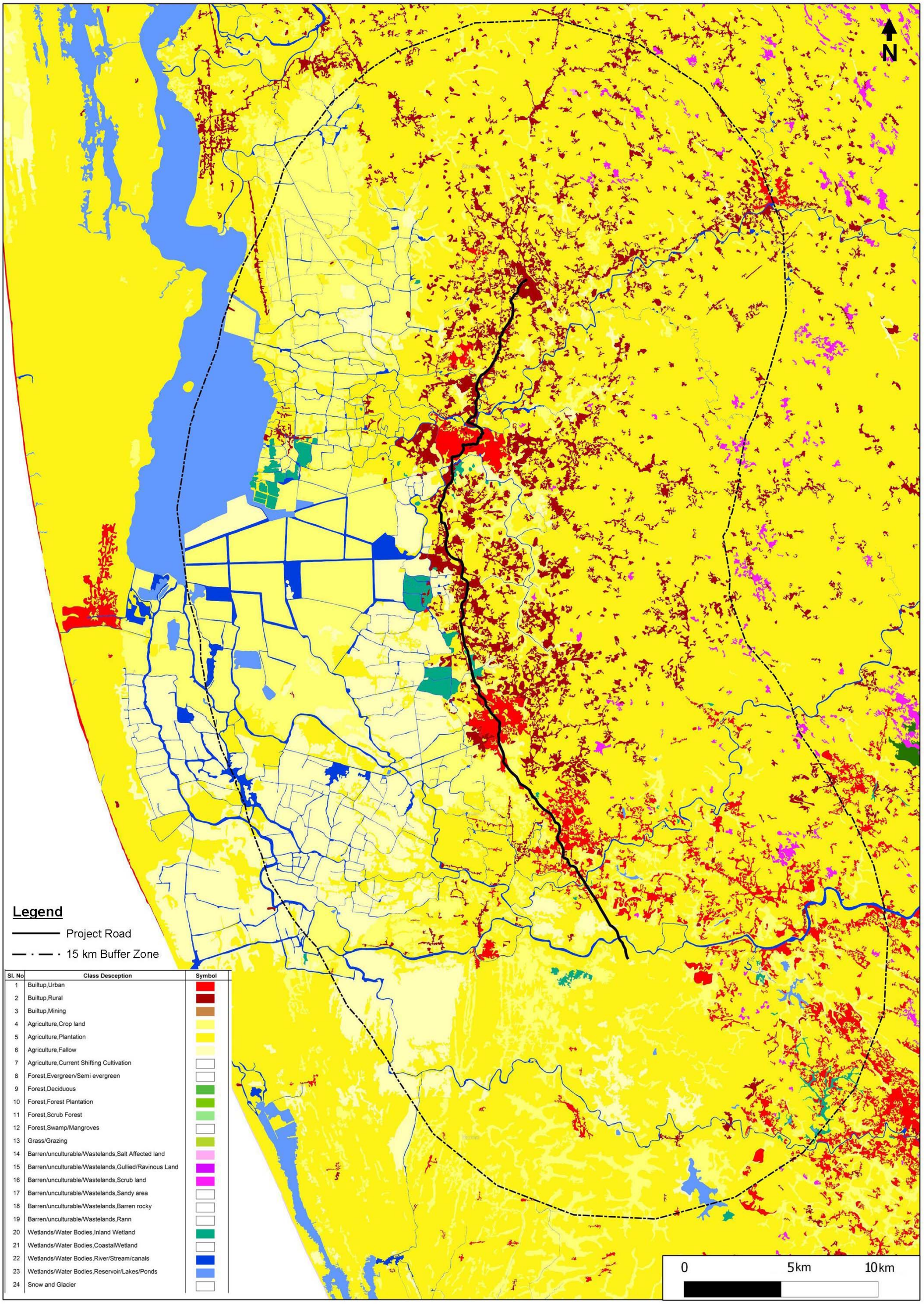
Drawing Title Keyplan of the Project Road

Date: January 2013 | Drawing No : CE-1D-11-002 | Sheet No : 1 of 1

Annexure 4.1b.Strip Plan of the Project Road with 500 m width on either side of the Project Road (Ettumanur - Muvattupuzha)

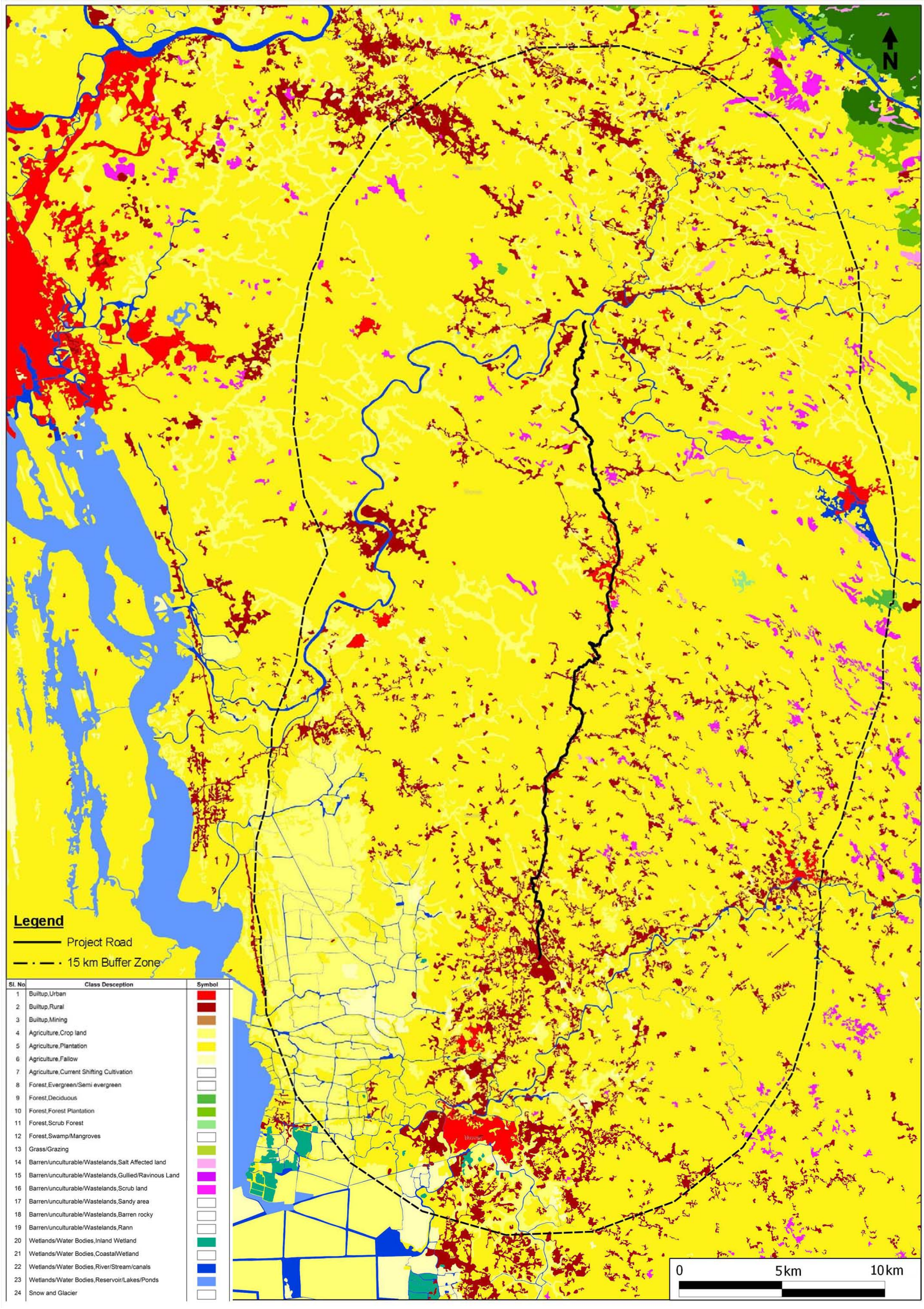


Annexure 4.2a. Strip Plan of the Project Road with 15 km width on either side of the Project Road (Chenganur - Ettumanur)



Sl. No	Class Desception	Symbol
1	Builtup,Urban	
2	Builtup,Rural	
3	Builtup,Mining	
4	Agriculture,Crop land	
5	Agriculture,Plantation	
6	Agriculture,Fallow	
7	Agriculture,Current Shifting Cultivation	
8	Forest,Evergreen/Semi evergreen	
9	Forest,Deciduous	
10	Forest,Forest Plantation	
11	Forest,Scrub Forest	
12	Forest,Swamp/Mangroves	
13	Grass/Grazing	
14	Barren/unculturable/Wastelands,Salt Affected land	
15	Barren/unculturable/Wastelands,Gullied/Ravinous Land	
16	Barren/unculturable/Wastelands,Scrub land	
17	Barren/unculturable/Wastelands,Sandy area	
18	Barren/unculturable/Wastelands,Barren rocky	
19	Barren/unculturable/Wastelands,Rann	
20	Wetlands/Water Bodies,Inland Wetland	
21	Wetlands/Water Bodies,CoastalWetland	
22	Wetlands/Water Bodies,River/Stream/canals	
23	Wetlands/Water Bodies,Reservoir/Lakes/Ponds	
24	Snow and Glacier	

Annexure 4.2b.Strip Plan of the Project Road with 15 km width on either side of the Project Road (Ettumanur - Muvattupuzha)



Sl. No	Class Desception	Symbol
1	Builtup,Urban	
2	Builtup,Rural	
3	Builtup,Mining	
4	Agriculture,Crop land	
5	Agriculture,Plantation	
6	Agriculture,Fallow	
7	Agriculture,Current Shifting Cultivation	
8	Forest,Evergreen/Semi evergreen	
9	Forest,Deciduous	
10	Forest,Forest Plantation	
11	Forest,Scrub Forest	
12	Forest,Swamp/Mangroves	
13	Grass/Grazing	
14	Barren/unculturable/Wastelands,Salt Affected land	
15	Barren/unculturable/Wastelands,Gullied/Ravinous Land	
16	Barren/unculturable/Wastelands,Scrub land	
17	Barren/unculturable/Wastelands,Sandy area	
18	Barren/unculturable/Wastelands,Barren rocky	
19	Barren/unculturable/Wastelands,Rann	
20	Wetlands/Water Bodies,Inland Wetland	
21	Wetlands/Water Bodies,CoastalWetland	
22	Wetlands/Water Bodies,River/Stream/canals	
23	Wetlands/Water Bodies,Reservoir/Lakes/Ponds	
24	Snow and Glacier	

Annexure 6.1. Minutes of Public Consultation Held at Thiruvalla

Location: Thiruvalla
Venue : PWD Rest House

Date, Time: December 16, 2002, 10.30 a.m.

Participants KSTP PMT/PCC:

Mr. Sreekanadan Nair Environmental Engineer, Project Management Team (PMT)

Mr. Sundara Rajan C.V., Environmental Specialist, PCC

Dr Biswanath Debnath, Social Expert, PCC

Mr BGP Reddy, Highway Design Engineer PCC

List of Participants is enclosed as appendix 6.1a.

The meeting was held as a part of the community consultation for Chengannur -Ettumanoor (Link 4) and Ettumanoor - Muvattupuzha (Link 5) Phase II up gradation component of the KSTP. The meeting was chaired by the local MLA Mr Maman Mathai who has shown lot of interest in the development of the Thiruvalla region. A separate meeting was held to explain the various aspects of the project with the Thiruvalla chapter of Lions group (NGO).

1. The local MLA Mr. Maman Mathai welcomed all participants for a discussion on the Link 4 & 5 (Chengannur - Muvattupuzha) of Phase II project including the Thiruvalla bypass. Later PCC Environmentalist explained the various aspects of the KSTP with emphasis on the Phase II up-gradation part of the project highlighting the environmental and social components of the project, implementation of RAP and the role of NGOs in the project.

2. The various groups like Lion's club and other local groups and individuals stated that the final alignment selected is the best, with minimum environmental and social impacts and therefore the project needs to be implemented at the earliest.

3. There was a minority group against the need for such a bypass alignment with social impacts when the existing alignment has scope for widening and improvement. They stated that the accident at Thiruvalla town area has been considerably reduced after the latest traffic arrangements. However there were very few takers to this argument in the meeting with practically majority of the people opposing this small group of people.

4. There was a compliant from a Project Affected Person (Mr KT George) who alleged that there were some adjustments at this location to save somebody's property as evidenced by the localised chainage in the alignment at this location. As a result of these adjustments a vulnerable person (handicapped) is affected.

5. Response to Paragraph 4: The PCC team explained that during design stage a number alignments were considered in order to arrive at a best alignment with minimum social and environmental impacts. In the whole process, there is nothing unusual as alleged by the PAP. If any complaints still exist, the team will look in to this. The team also requested the PAP to write to the Project Management Team. Further the team has explained the RAP provisions for compensation package especially for the vulnerable.

6. A number of PAP complaints were received during the meeting from Link 4 & 5 for which the meeting was held.

7. One of the suggestions is to lengthen the small flyover to avoid crossing of a busy road. During Sabarimala Pilgrim season, it was informed that this particular road would be very busy most of the time especially during pilgrim season such that the traffic along the bypass will be seriously affected.

8. Mr KD Geroge, Vyapari Vyavasai Ekopana Samaithy (Merchants Association) stated that in case the existing alignment along the MC road is widened rehabilitation of all affected merchants will be required and requested the project authorities to include this aspect in the implementation plan. Later PMT informed that now the implementation of the bypass alignment is almost confirmed hence the question does not arise.

9. The Ettumanoor Panchayath president Ms Rema Viswanathan while submitting a memorandum for Ettumanoor bypass (not included in the project) stated the need for a traffic improvement measure along the project road near Ettumanoor is very essential.

During the discussion the Project Affected Persons (PAPs) approached the team to refer the land schedules prepared as a part of the Resettlement Action Plan (RAP). This has made them familiarise the Thiruvall bypass alignment. All design drawings were exhibited to the extent possible.

The meeting was closed at 13.30 p.m.

Appendix.6.1a

Road Name....Thiruvalla Bypass.....

Venue....PWD Rest house, Thiruvalla.....

Date..16/12/02... Time..10:30 am

Sl.No	Name	Designation/ADDRESS	Signature
1.	V. C. Thomas (V.P. Lions Club Tiruvalla)	Valuparampil, T.K Road, Thekkanam Tiruvalla - 689101	
2.	B. DEBNATH	Sociologist, The Louis Berger Group.	
3	C.V. SUNDARA RAJAN	Environmentalist Louis Berger Group	
4.	BGP Reddy.	Highway Engineer LBG	
5.	George C. Varghese	AEE, (R), Thiruvalla.	
6.	Philip. I	AE (R), Thiruvalla	
7.	Adv. Varghese Mammen	ADVOCATE. Tiruvalla	
8.	C. A. Paul	Engineer.	
9	Kurien John.	President- YMCA. Tiruvalla	
10	SAM EAPPEN	President Pennigalam Panchayat	
11	D. A. C. Rajan Kunju	President Travancore Clubs Thiruvalla	
24.12.	Mathai Cyriac Berly Cyriac Benny Cyriac	Mellavelil House Tiruvalla. (Affected party)	

Road Name.....

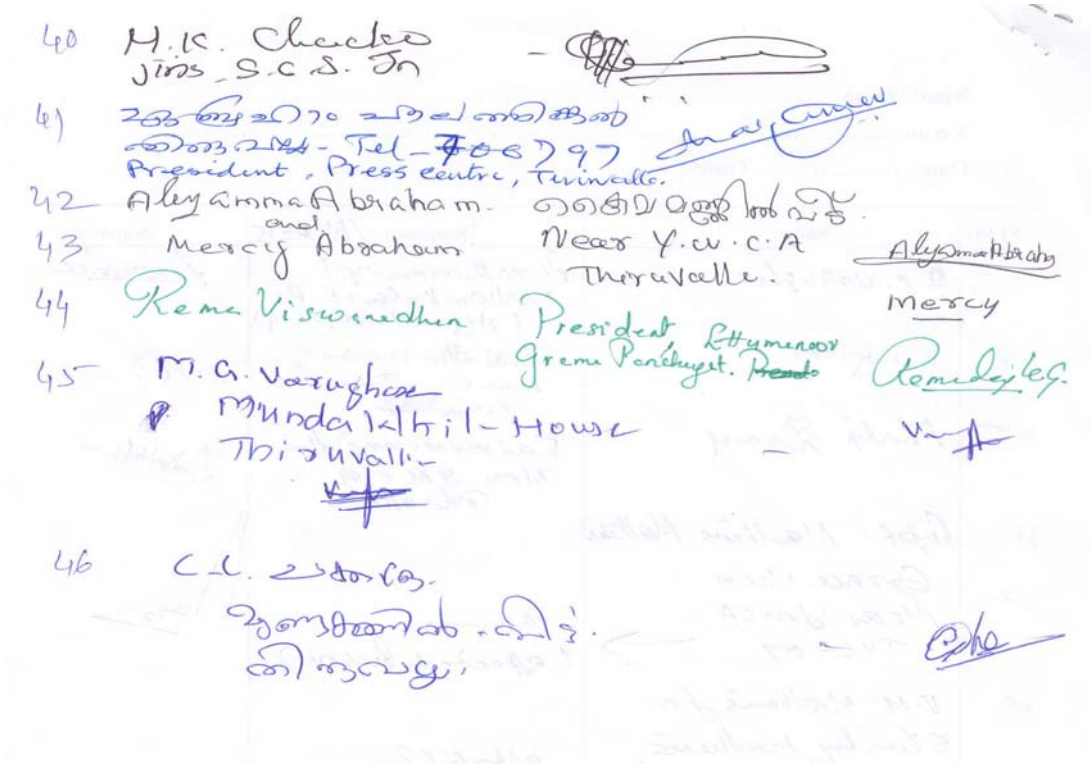
Venue.....

Date..... Time.....

Sl.No	Name	Designation/ADRESS	Signature
13	Varughese John	Chairman	
14	K. P Varghese		
15	P. A. Jacob	Thevarkattil	
16	Molly x Molly		Molly x
17	P. D Joseph	President Kerala – Vyapari Vyavasayi Ekopana samithi Kottayam District Level	
18	R. V. Varghese	Chartered Engr, Technocrats, Kuttappuzha Arunella	
19	Jacob George (affected parties)	Kodiattu house Near Y.W.C.A Thiruvalla	
20	GEORGE THOMAS	Kodiattu house Near Y.W.C.A Thiruvalla	
21	Zacheriah George (affected parties)	Kodiattu House Near Y.W.C.A Thiruvalla	Zacheriah
22			

Sl.No	Name	Designation/ADDRESS	Signature
23	A. P. Mathew	Plathottam, Rly. Stn. Road. Tiruvalla-1	
24	T. P. Pankajakshan Nair	Chennallil, Mathilbhagom Thiruvalla.	
25	[illegible]	[illegible]	
26	K. V. GEORGE	[illegible]	
27	ROCKIE GEORGE	PHOTOGRAPHER MALAYALA MANORAMA TIRUVALLA.	
28	M. S. Anoop	Reporter, Malayala Manorama Tiruvalla.	
29	Koshy Thams	Councillor	
30	Varghese Varkey	Kurisimoottil Near Y. W. C. A Tiruvalla	
31	Mathai Chacko		
32	Mariamma Thomas	Kaimamannil House Near Y. W. C. A Thiruvalla	

Sl.No	Name	Designation/ADDRESS	Signature
23	A. P. Mathew	Plathottam, Rly. Stn. Road. Tiruvalla-1	
24	T. P. Pankajakshan Nair	Chennallil, Mathilbhagom Thiruvalla.	
25	Illegible	Illegible	
26	K. V. GEORGE	Illegible	
27	ROCKIE GEORGE	PHOTOGRAPHER MALAYALA MANORAMA TIRUVALLA.	Rockie
28	M. S. Anoop	Reporter, Malayala Manorama Tiruvalla.	
29	Koshy Thamo	Councillor	
30	Vasanthas Varkey	Illegible Near Y. W. C. A Tvla	
31	Mathai Chacko		
32	Mariamma Thomas	Kaimamannil House Near Y. W. C. A Thiruvalla	


40 M.K. Chacko
41 President, Press centre, Tvinadle.
42 Aleyamma Abraham.
43 Mercy Abraham
and
Near Y.M.C.A
Thiruvalla.
Aleyamma Abraham
Mercy
44 Rema Viswanadhan
President Ettumanoor
Grama Panchayat.
Remadevi.G.
45 M.G. Varughese
Mundakathil-House
Thiruvalla-
46 C.C.

Annexure 6.2. Kerala State Transport Project

SCOPING WORKSHOP - 1
THIRUVANANTHAPURAM, 18TH JANUARY, 2000

MINUTES

An environmental and social scoping workshop was held on the 18th January in the PWD Rest House at Thycaud, Thiruvananthapuram. This was the first of the three that were proposed to help identify priority environmental and social issues, covering the districts of Thiruvananthapuram, Kollam, and Parthanamthitta. Mr. Karrappuni, Chief Engineer, Roads and Bridges Department of the PWD opened the workshop with a keynote address. Mr. David Wood, Team Leader of the PCC, made a welcome speech. Mr. Dushyantha Kumar, Director of the Project Implementation Unit, was Chairman.

Apart from the organizers, the various NGOs and officials who attended the workshop included:
K. Viswanath, Director, Mitraniketan.
M.P. Muraleedharan, Geological Survey of India, Kerala Unit, Trivandrum.
K.M. Ravindran, Special Officer, Roads and Bridges Development Corporation.
Shiju Cherian, Kodumon Grama Vikasana Samithy, Pathanamthitta.
C. Christu Das, Director, The Dale View, Punalal P.O., Poovachal (via), Trivandrum.
Dr. S.P. Thampi, Director, Marine Archeology, Govt. of Kerala, Trivandrum.
K. Thomas Paulose, Vice President, Friends of the Trees, Trivandrum.
S. Chandra Mohan, Asst. Director, Kerala State Land Use Board, Trivandrum.
Sudheer Babu, S., Environmental Engineer, Kerala State Pollution Control Board.
Abdul Samad, Specialist (Soil Conservation), Kerala State Land Use Board.
C.K. Karunakaran, Secretary, Friends of Trees, Trivandrum.
Anil Kumar, P.V., Rajiv Gandhi Cultural Study Centre, Venganoor, Trivandrum.
Edwin George, The Salvation Army, Kawdiar, Trivandrum.
Mr. Sunder, Project Coordinator, Rajiv Gandhi Centre, Trivandrum.
Tommy Cyriac, Consultant, Finance Department, Govt. of Kerala.
Jacob Mohan George, Asst. Executive Engineer, Trivandrum.
Ms Sonia Kapoor, Environmental Specialist, The World Bank, New Delhi.

Mr. Karrappuni mentioned that the aim of the project is to rehabilitate and improve the existing roads with minimal acquisition of land and minimum dislocation of people and maximum benefit to the population at large. The objective of the workshop is to gather inputs and concerns from the public, NGOs, and experts for the scoping of the environmental and social aspects of the project.

After the welcome address, the various experts addressed the audience with their assigned topics for discussion. Mr. Andrew Blelloch, Environmental Specialist, talked on the environmental and social assessment process for the highways. Bill Cummings, Social Impact Specialist, talked on the environmental and social assessment process for the waterways. Mr. Sundara Rajan, Environment Impact Coordinator, talked on the environmental concerns in highways and waterways, and Dr. Biswanath Debnath, Social Impact Coordinator, discussed social concerns relating to highways.

The participants joined the discussion with their presentation. Mr. M.P. Muralidharan of the Geological Survey of India talked about the physical environment. He mentioned that the road alignments and widths in Kerala are unscientific, which may be made better with the use of satellite survey information. Moreover, water logging on roads recurs during monsoons due to

inappropriate design for the soil conditions. He suggested that the design of north-south roads and the east-west roads should be different.

Mr. Abdul Samad of the Kerala Land Use Board mentioned that there is a land degradation problem in Kerala due to the varying terrain and the fact that approximately 40% of the landmass of the State is prone to landslides and slope instability. He also mentioned that consideration should be given to a proper water management system, minimizing disturbance to the paddy fields, and the biotic issues during the execution of the project.

Mr. Sudheer Babu of the Kerala State Pollution Control Board mentioned that the PWD has to submit an application for conducting public hearing with the prescribed fees and 20 copies of the executive summary of the project for clearance by the KSPCB. The KSPCB will convene a panel for conducting the public hearing and subsequently make recommendations to the MoEF.

Mr. Christu Das, Director of Dale View, mentioned the apparent absence of coordination between the PWD and other line departments. He criticized the inadequate traffic signals, signboards and milestones and the frequent digging within the highways.

Mr. Ravindran, Special Officer, Roads and Bridges, described the difficulties involved in land acquisition for the roads. He mentioned that the effective width of the roads is reduced due to inadequate provisions for the pedestrians using the roads and also due to the existence of the utility poles.

Mr. Thomas Paulos, Vice President of Friends of the Tress and a retired town planner, also mentioned the difficulties involved in land acquisition for the roads. He mentioned that strict laws and regulations should facilitate land acquisition.

Mr. Karunakaran, Secretary of Friends of Trees mentioned that a committee should examine the environmental aspects and ensure that the guidelines are being followed. He maintained that the biological aspects of environment should be given more importance in this project. Various mitigation measures and safeguards should be ensured to protect the bio-diversity of the State.

Dr. Thampi of the Dept. of Archeology dealt at length with the importance of heritage tourism and the need for creating a cultural awareness in Kerala.

Ms Sonia Kapoor of the World Bank discussed the importance of the NGO involvement in this project and explained that the mitigation measures for various impacts can be formulated by conducting talks with stakeholders like NGOs, local people, etc. She also mentioned that the environmental and social impacts cannot be solved by the PWD alone. Hence, we should be realistic and pragmatic in dealing with these problems.

Mr. Anil Kumar of the Rajiv Gandhi Cultural Study Centre urged that coordination of various agencies should facilitate the rehabilitation programme, undertaking awareness classes for the pedestrians, and creating road management committees at the panchayat level. The workshop closed with thanks to the various attendees by the Chairman.

highways and waterways, and Dr. Biswanath Debnath, Social Impact Coordinator, discussed social concerns relating to highways.

The participants joined the discussion with their presentation. Dr. Komala Vally Amma briefly described the Kerala waterways and made a comparison of the relative maintenance costs of the railways, the highways and the waterways and mentioned the cost per km in the waterways is Rs. 1000/- while it is Rs. 5000/- in the two other modes.

Mr. K K. Abdul Gafoor of KSINCO described at length certain waterways related facts of the cargo transport in Kerala. He mentioned that IWT carry both passengers and cargo. Industrial raw materials are being transported by IWT in Ernakulam area. Many parts of Inland Waterways

have insufficient infrastructure facilities. Another problem faced by IWT sector in Kerala is insufficient loading and unloading, facilities. Only 75% capacity of the boats and barges is being used. Optimum size capacity of the barge is 500 MT but now only 150 MT vessels operate. The width and depth of Inland Water ways are not sufficient for this purpose. There is a future for Water Transport in Kerala for tourism as well as Cargo transport. The roads and railways have already reached a stratum point. Main problem associated is the hanging of power lines. There is a proposal for a joint venture high-speed catamaran service through the coastal area from Ernakulam to Thiruvanathapuram with private participation. Valiyathura in Thiruvananthapuram is easily accessible by the Harbor Engineering Department. Mr. Kumar suggested that their facts be put forwarded to the W.B officials when they reach Kochi.

Mr Raveendran of Kerala Shastra Sahithya Parishath mentioned the bad condition of National water way -3. He is of the opinion that National Waterways are not developed properly. He further talked about two facts first is about the optimum use of present roads and the second one is the construction companies building new roads.

Mr. Regi G Nair – Asst. Engineer Irrigation Department, Kollam talked on the optimization of the containerization.

Dr. Shankar- Kerala Forest Research Institute, Peechi – Scientist in-charge, Agro forestry cum publicity. He compared Kerala to an Oceanic island. The principles of island biology should be taken into account. The climate of Kerala is also important. Statistically speaking Kerala receives 90% of its annual rainfall, in about 10 hrs. Tree cover of Kerala has decreased considerably. He clarified the following data of decreasing trend of forest coverage in the year 1900 –70% forested area, 1950 – 50% forested area. 2000 – 25% forested area. He presented a case study of Forest related EIA the Thenmala eco-tourism project for the participants. He explained the methodology followed to arrive at reasonable conclusions.. The EIA also focused on attitudes and approaches of people. Landslides usually occur in Erattupetta, Kulathupuzha region. Placing project components makes matrices. The eco tourism project is a registrered charitable society. Mr. Mohanlal of the Indian Forest Service is the Secretary of the Thenmala ecotourism Society.

To a question from Mr Joseph J Karoor Friends of Periyar, Thekkady consultants stated that approaximately 300 km length of roads out of 2800 km passes through ecologically sensitive areas. Consultants also explained the selection and screening process of roads. They indicated that economic interest and environmental aspects are prime concerns. Ecologically sensitive roads will not be deleted but will be subjected to detailed Environmental investigations to prepare an EIA in order to obtain MOEF for clearance in case these are included for further investigations. The consultants mentioned that a large percentage of accidents are taking place in rural areas.

A resident of Kuttanad area (Professor at CUSAT) where the three proposed waterways are planned explained the reasons for negligence of IWT. One of the main reasons is due to the faster mode of Road and Rail Transport. There are some private operators of boats. His impression is that through water ways only Cargo transport is possible and it is not profitable also. There are many country boats plying in Kuttanad area, which serves as a means of transport for the local people.

Dr. Komalavalli Amma mentioned that at present waterways are neglected and there is ample scope if it is properly developed.

Annexure 6.3. Official Consultations

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
1	Mr Abdu Sammad Soil Conservation Specialist Kerala State Land Use Board Vikas Bhavan	Phone:442231 (O) 447830 (O) 475147 (R)	10 May 1999	Soil Conservation Data and Resource base available at Land Use Board.	No Published data .No books on Sale
2	Mr. Haridas P Nair Systems Manager, (On deputation from ISRO) Kerala State Remote Sensing and Environment Centre, Vikas Bhavan	360982 (R) Office: 440624, 447830 & 442231 kerrsec@400.nicgw.nic.in	10 May 1999	Remote sensing and GIS facilities available at this Office	No Published data .No books on Sale
3	Mr.M. Boominathan National Transportation Planning and Research Center (NATPAC) ,PRS Road,Thycaud, TVM 695 014	Phone:322624, 322581, 322681 Fax 91-0471-329414	6 May 1999	Various Activities of NATPAC especially R&R and Environmental aspects	No in-house Staff for R&R and Environmental Aspects.
4	Dr M Baba Director in Charge /Land use Commissioner Kerala State Land Use Board	442231(O) Fax:441167	Consulted	Consulted mainly about waterways With Mr. Malhotra of PCC. Some informal discussion about the CRZ Management Plan for Kerala was also discussed.	Received the Environmental Management plan after two days.
5	Mr. PKV Nair , Survey Of India (SOI) CGO Complex,Poomkulam (PO) TVM PIN 695522	Phone:481852(O)	16 April 1999	For Restricted and unrestricted SOI maps	PIU (PWD) submitted Application and later we received the SOI sheets

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
6	Mr. KK Thankappan State Editor,KERLA GAZATIERS	322618(O) 340823(R)	Consulted	With Mr William Cumming of PCC.	All useful gazetteers purchased.
7	Mr. VK Sinha, Chief Conservator of Forests (Wild Life) Forest Department	Phone:322217(O) 363958(R)	Consulted	No time for him to devote for this project and asked us to give it in writing.	Later we submitted our requirements never replied.
8	Mr. PK Surendranathan Asari, Principal Chief Conservator of Forests(Development &Project),	Phone:321610 321374(R) Fax	No formal consultation required till date.	Invited for Scoping Workshop through a formal letter.	Did not attend the scooping workshop.
9	Mr. K Sasidharan Nair, Principal Chief Conservator of Forests (General) Forest Department	Phone:321798 (O) 325584 (R)	Consulted	He indicated that unlike other States here forest conservation measures are active and successful ,land taking will have adhered Forest conservation rules (GOI & GOK)	He directed me to the Forest information office at social forestry division
10	Mr. Bhaskaran Census Department Deputy Director Operations CGO Complex,Poomkulam (PO),TVM,PIN 695522	Phone: 481860 Fax Email:	Consulted	For Restricted and unrestricted SOI maps	PIU (PWD) submitted Application and later we received the SOI sheets
11	Dr. Basak Executive Director, CWRDM,Kunnamangalam (MBR),Kozhikode, Pin 679573	Phone:0495355864 & 356242 Fax: Email:	Consulted formally and Informally	On sediment and water testing and Analysis and also on Scoping workshop	Consulted on advice from Prof. M. Jaya Kumar of State Committee on Science Technology And Environment.
12	Prof. M Jayakumar State Committee of Science &		Consulted with	Mainly CRZ and Waterways project. Need for Sediment testing	CRZ related to Kuttanad area

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
	Technology & Environment Thycaud, Thiruvananthapuram		environmental team of the project	water quality testing etc. Mr Kumar recommended CWRDM for sediment sampling and Analysis.	
13	Mr Vijaya Bhas Environmental Engineer, Kerala State Pollution Control Board (KSPCB), Pilamood	Phone: 318153 to 55 (3 nos) Fax No:	Consulted	Nothing specific has come out from the discussion	Purchased a book titled Environmental standards published by the SPCB
14	Survey Society Michel Gomas /Shanmugam/KM Soman, Additional Director, Director of land Survey and Records Opposite to Sri Mulam Club,	Phone: 325492	Consulted	Cadastral maps availability for the project Work. Resurvey work is in Progress.	Resurvey maps are also Available. Also received few district wise maps prepared by the department
15	Friends of Trees-Thiruvananthapuram Branch (FOT) Mr Thomas Poulose,B-8 Jawahar Nagar Thiruvananthapuram	Phone320954	Contacted	Project Environmentalist did a consultation with Mr Thomas Paulos as the contact person of the Organization	NGO
16	Er.Sathish Kumar, PWD City Road Section 3, Public Works Department, PMG	Phone: 364659 (R)	Consulted	No strip Plans are available for Kerala road network.	
17	Mr. R Radhakrishna, Ex, President, Kerala Shasthra Sahithy Parishath (KSSP),- Vanjiyoor Mathrubhoomi road TVM	525427(O) 752210(R)	Consulted on 30/04/1999	Land Acquisition, Road accidents and Road safety maintenance concern. They have promised their help.	NGO

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
18	Mr Bijoy Alex Director WWF Kerala State Office, Rupa,A-10 Tagore Nagar TC 15/989 Vazhuthakkad, TVM-695014,Kerala	Phone:0471-325183 323568 (R) 0471-436499 Fax: Email	Consulted on 17/09/1999	Dr Bijoy Alex, three personnel whom Should be included as resource persons.	KN Changappa, Sr Manager, Tata Tea limited, HRW & EPA. Mohan Alember, DFO Munnar. Mr Jim Sacharia, Research range officer, Periyar.
19	Dr Roy George Education Officer World Wide Fund For Nature-India Thiruvananthapuram	325183	Consulted on 4/06/99	Forest wildlife aspects related to KSHP Their publications: The Natural resources of Kerala-WWF India, Kerala State Office. Land use control on Paddy fields Coastal zone Management Plan.	Dr Roy George education officer, recommended some other resource persons of the state for consultation. Prof Nandakumar Department of Geography, University College TVM, Prof. Kunjikrishnan.He also promised me some recommendations at a later stage.
20	Friends of Periyar Mr Joseph Karoor President Periyar wild Life Reserve Po Thekkady Idukki,Pin 685 536	Phone:04863-22169(R)	Consulted 04/99	Their main concerns are The forest and wild Life Protection Landslides are also a concern. He also pointed out the complication due to the arrival of settlers in the high ranges.	NGO. He later attended scooping workshop.
21	Contacted: Mr Jalaludheen Indian Meteorological Department Meteo centre Thiruvananthapuram - -695033	Phone:322471(P) 322894(())	Consulted on 14 May 1999	Number of stations in Kerala & Type of data available.	Data available for eight centers spread across Kerala. Data on Temp, Pressure, Rainfall, Humidity and wind data are available on cost basis.

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
22	Mr Nanda Kumar D Sr Lecturer Geography Dept University College	Phone:474490 After 8 PM 327413(R)	24/0699	His main concerns are that no good Road maps are available. He develops the map, which is now available, and this is the map given in the CES Resource Atlas. He is happy that people are actually working on the ground to collect basic data.	Very shortly he is leaving India for Higher education (PhD).
23	KG Mohanan Pillai, Director, Forest Information Bureau (FIB) PTP Nagar, Thiruvananthapuram.	360965(O)	17/09/99	Forest and wild life sanctuary maps. Forest and wildlife published data. Forestry publications and brochures.	Collection Procedures
24	Dr Shankar Scientist band Head EIA group Kerala Forest Research Institute (KFRI). Thrissor-680 653	0487-282064 E-Mail- libkfri@md2vsnlnet.in	26/1/00 during Scoping Workshop	He offered his help on any forestry studies. Presented a case study on Eco-tourism project in Kerala.	Indicated about anew sanctuary coming up.
25	Prof: E .Kunji Krishnan Department of Zoology University College Thiruvanathapuram	442853(R)	21/06/99	His main concern is whether the fund will be utilized properly. He wants a working accounting procedure within the PWD setup. Who can guaranty a honest setup where the funds are timely and properly utilized	He pointed out instances where the gross mis-utilisation of funds from world Bank and ADB had taken place.

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
26	Dr PKK Nair Director Environmental Resources Research Center PBNo1230, Peroorkada Thiruvanathapuram 695005 Kerala	0471-432159 0471-435115 0471-433159(R)	Consulted 23/06/99	Bio-diversity issues, Natural conservation measures, a complete EIA is necessary for any Road widening Project. Development of Parks along the Road. Medicinal Plants Etc Parking Places especially for the Sabarimala Pilgrim center.	Planting on both sides with trees or bushes especially in those places where there are paddy fields.
27	Mr Sivakumar Warblers and Waders NGO, Thiruvanathapuram.	431300	Consulted 1/3/2000	Endangered flora and Fauna	They are only working on endangered avifauna.
28	Dr. Khandoori, Chief Conservator of Forests (Special Afforestation) and Nodal Officer, Thiruvananthapuram	328347 (O) 357005 (R)	Consulted 13/10/2000	Rock blasting inside forest is banned. According to Kerala Preservation of Trees act (KPT act), permission from DFO is needed for cutting certain species of trees. According to Supreme court direction regarding avenue trees, no tree can be felled without a management plan. If forestland is acquired for any purpose, afforestation at a rate of 2500 plants per hectre is to be carried out.. Book on rates of afforestation is available.	The tree species of Sandalwood, Teak, Rosewood, Irul, Thempavu, Kambakam, Chembakam, Chidachi, Chandanavembu and Cheemi are included in KPT act.
29	Mr. K. Suresh Menon Divisional ManagerKerala Forest Development		24/10/2000	Felling of road side trees is to be carried out by forest department.	

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
	Corporation, Kottayam				
SL NO	**NAME & ADDRESS**	**FAX AND PHONE NUMBER**	**DATE OF CONSULTATION**	**SUBJECT DISCUSSED**	**REMARKS**
30	Dr. J.K. Sharma Director, Kerala Forest Research Institute, Peechi	0487-282064 E-Mail- libkfri@md2vsnlnet.in	21/10/2000	KFRI is providing only research data to forest department for preparation of Sanctuary management plan. List of flora and fauna for each district has been prepared under the peoples plan compaign. Not much research has been carried out on mangroves.	Some publication of KFRI were obtained.
31	Mr. James Zacharia, Mr. Sivadas, Mr. Kumaran Assistant Conservators of Forest Project Tiger Nattassery, Kottayam	0481 – 565940	24/10/2000	Elephant migration routes are intercepted by roads. Elephants will not be able to cross fills. For rock blasting along Idukki – Puliyanmala road. Permission from KSEB will be required since dam is situated very close to the road.	For information in elephant crossing points on the road, contact Dr. Easa of KFRI. They are interested in attending any workshops to be held in future.
32	Mr. N. Sasidharan Divisional Forest Officer, Collectorate, Kottayam		24/10/2000	For cutting trees on road side, apply to Assistant Conservator (Social Forestry) having jurisdiction over the area.	KPT act is applicable to private land only.

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
33	Mr. N. Sasidharan, Divisional Forest Officer, Collectorate, Kottayam		24/10/2000	Forest land along Idukki – Puliyanmala road. From Cheruthoni to Idukki, both sides of the road are handed over to Idukki Development Authority (IDA). Land is to be purchased from them. Encroachers will have to be rehabilitated. After Idukki, the land belongs to Cardamom hills RF. It has a dual status. It is revenue land, but the trees are owned by the Forest Department. For cutting trees on roadside, apply to Assistant Conservator (Social Forestry) having jurisdiction over the area.	KPT act is applicable to private land only.
34	Mr. P.K. Surendranathan Asari, Principal Chief Conservator of Forests, Thiruvananthapuram		15/12/2000	Rock blasting along Idukki – Puliyanmala road is not permitted since it is situated very close to the wild life sanctuary. However, concealed blasting can be done. No emission or noise is permitted. For Punalur – Thodupuzha road, forest clearance is not needed..	
35	Dr. D.S. Rao, Chief Conservator of Forests (Development)		15/12/2000	Forest department is not conducting any study on mangroves now. A project report on development of mangroves at Kumarakom was prepared 2-3	Agricultural University is conducting a study on mangroves. Another study is being carried out by Dr. Mohanan of CESS.

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
				years ago.	
36	Mr. P. John Samuel, Additional Director, Department of Mining and Geology, Government of Kerala	0471 – 447429, 0471 – 556939 Fax: 0471 - 447429	3/1/2000	Controlled blasting near sanctuary areas to break hard and massive rocks	Suggested concealed blasting using a chemical called ECONAX or AQUANAX. Series of small drill holes, fill it with the chemical tightly, seal it and keep it for 24 hours. Rock will develop cracks.
37	Mr Rajendran Thampi – World bank Project Chief Conservator of Forests	328347 (O)	5/2/2001	The World bank Forestry project is being carried out by the various officials as part of their routine work. No Separate machinery for the Project.	The project activities include pulp wood plantation steak plantations, natural forest management, Sectoral management etc
38	Dr. Khanduori Chief Conservator of Forests (Special Aforestation) and Nodal Officer, Thiruvananthapuram	328347 (O)	5/2/2001	Road side tree planting, forest nurseries and official rates, Forestry Clearance and application procedures	
39	Mr Balakrishnan, Forest Range Officer	0498-205696(O) 0498 –204451®	9/6/2002	Mangrove Plantation Programme	
40	Mr. Krishnan,Deputy Superintendent, ASI, Bakel		12/02/2001	Excavation of residential areas and royal enclosures is in progress within Bakel Fort	
41	Local Member of Legislative Assembly (MLA)		9/5/2002	Foot over Bridge mainly for school children	This will cover both railway line and project road

SL NO	NAME & ADDRESS	FAX AND PHONE NUMBER	DATE OF CONSULTATION	SUBJECT DISCUSSED	REMARKS
42	Dr P.N Unni Scientist CWRDM,Kozhikode, Kerala	0495-200675	30/4/2002	Coastal Ecosystems in Kannur and Kasaragod districts	A copy of recently published Paper on Mangroves In Valapattanam river Basin provided
43	Mr Mohan & Mr Verma Scientist , CESS Thiruvananthapuram	0471-442231&441167	22-/3/2002	Various literature references obtained from CESS Web site on mangroves and coastal Ecosystems	
44	Mr Varghese Nodal Officer Kerala Forest Department	0471-328347	9/7/2002	Phase II Forestry and CRZ Clearances. Requested for the proceedings of a workshop conducted by Forest Department at Kannur	Shared a Proceedings of the workshop on Mangroves
45	Dr Kamalkshan Kookat State Science Technology and Environment	0471-543701 to 705	11/7/2002	CRZ related Environmental clearance for the Three phase II roads	
46	Dr. Thomas (head of Dept) Dr. Kurian (Scientist) Dept of Marine Science, CESS	0471-442231&441167	12/7/2002	Preparation of Status Report for coastal zone Management Committee clearance	Requested to send formal letter to the Director, CESS

Annexure 6.4. List of People Consulted as Part of Recent FGD(October- 2012)

Consultancy Engineering Services for Detailed Engineering Designs and Financing Option Study for KSTP II — ***Public Consultation***

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	[illegible]		
Date :	4/10/2012	Time	3:15 pm

40.9

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	[illegible]	9526275245	
2	[illegible]	9495559978	
3	[illegible]	9744139439	
4	[illegible]	9388501910	
5	[illegible]	9048034703	
6	[illegible]	9995506811	

Wilbur Smith Associates Pvt. Ltd. 1 Kerala State Transport Project

Consultancy Engineering Services for Detailed Engineering Designs and Financing Option Study for KSTP II

Public Consultation

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	ക്ഷേത്രം		
Date :	4/10/12	Time	3:45 pm

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1.	Roby Cherayan Kandathil Kuzhiyil Meen Kunnam P.O	9946893141	
2.	[illegible] [illegible] [illegible]	9847146337	
3	[illegible] [illegible] [illegible]	9539311047	
4	[illegible] [illegible] [illegible] ക്ഷേത്രം	9745466287	
5	[illegible] [illegible] [illegible] ക്ഷേത്രം.	9495247982	

Wilbur Smith Associates Pvt. Ltd. 1 Kerala State Transport Project

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	[illegible]		
Date :	4/10/12	Time	4.40 PM

24.650

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	[illegible]	9446803274	
2	[illegible]	9847222521	
3	[illegible]	—	
4	[illegible] V.K.	-	
5	[illegible]	9656928470	
6	[illegible]	9947380159	

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	[illegible]		
Date :	4/10/12	Time	5.20 PM

15:800
~~21.800~~

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	[illegible]	242700	[signature]
2.	[illegible] (Jeevan Studio) [illegible]	9387610101	[signature]
3.	[illegible] Joseph - Nirmala Footwear [illegible]	9447456702	[signature]
4	M.M. [illegible]	242918.	[signature]
5	[illegible] (Auto Driver) [illegible]	9496222641	[signature]
6.	[illegible]	9995148693	[signature]

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	[illegible]		
Date :	4/10/12	Time	6:00pm

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	V. R. [illegible]	04822-232220	
2	K. N. [illegible]	04822-230199	
3	[illegible]	9447810014	
4	N. D. [illegible]	04822-230154	
5	[illegible]	9495129305	
6	[illegible]	9961166562	

Consultancy Engineering Services for Detailed Engineering Designs and Financing Option Study for KSTP II — *Public Consultation*

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:	[illegible]		47.100
Venue:	[illegible]		
Date :	5/10/2012	Time	9 : 50 am

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	[illegible]		
2	[illegible]	9497818197	
3.	[illegible]	9400[illegible]3808	
4	K.N. [illegible]		
5.	P.M. [illegible]	2534302	
6.	[illegible]		

Wilbur Smith Associates Pvt. Ltd. 1 Kerala State Transport Project

Consultancy Engineering Services for Detailed Engineering Designs and Financing Option Study for KSTP II

Public Consultation

Sl. No	Name & Address	Phone Number	Signature
	[illegible]	9495684072	
	[illegible]	2535012	

Wilbur Smith Associates Pvt. Ltd. 3 Kerala State Transport Project

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	[illegible]		
Date :	5/10/12	Time	10:30 am

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1.	[illegible]	9495380732	
2	[illegible]	9495052869	
3	[illegible]	-	
4	[illegible]	9288024590	
5	[illegible]	11	
6	[illegible]	9847730310	

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	ചിങ്ങവനം		
Date :	5/10/2012.	Time	11:10 am

26.300

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	[illegible] 2430952	2430952	
2	[illegible] ചിങ്ങവനം P.O.	9349503472	
3	[illegible] ചിങ്ങവനം	3267501	
4	[illegible] ചിങ്ങവനം	3266457	
5	[illegible]	9605891019 49	
6	[illegible]	0481-2430820	

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	ചങ്ങനാശ്ശേരി		
Date :	5/10/12	Time	11:30

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1	മനോജ് . V. S മലയിൽ വീട്ടിൽ ചങ്ങനാശ്ശേരി	9744209894	
2	ദേവീദാസ് തയ്യൽക്കട Deepak Tailoring Kavala, ചങ്ങനാശ്ശേരി	9656871183	
3	ചങ്ങനാശ്ശേരി ടൗൺ ട്രേഡേഴ്സ് അസോ ചങ്ങനാശ്ശേരി	—	
4	നാസിത് S.M. Silks & Sarees ചങ്ങനാശ്ശേരി	9961680075	
5	ഹൈദർ S.M. Silks ചങ്ങനാശ്ശേരി	〃	
6	ബഷീർ ചെറിയാൻ K.S. Foodarea Kavala, ചങ്ങനാശ്ശേരി	9947843523	

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	തിരുവല്ല		
Date :	5/10/12	Time	12.30 pm

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1.	[illegible] തിരുവല്ല.	9947408163	
2	Siby Abraham Vengathu kuttoor, തിരുവല്ല	9605021674	
3.	Rajan Varghese Kochuparambil Thiruvalla	9447018045	
4	Dy. N.H. തൊട്ടുതാഴത്ത് പൊടിയാടി തിരുവല്ല	8606333602	
5	ഫർണിച്ചർ പാലസ് ഉടമ, തിരുവല്ല	9249232577	
6	T. M. Varghese തൊടിയിൽ തുണ്ടിയിൽ തിരുവല്ല.	9847197428	

Kerala State Transport Project (Phase – II)

Public Consultation Details

Project Area:	Chengannur – Ettumanoor- Moovattupuzha		
Link No.:			
Local place name:			
Venue:	ചെങ്ങന്നൂർ		
Date :		Time	

Registration Form

Sl. No	Name & Address	Phone Number	Signature
1.	[illegible]	0479-2428501	
2	[illegible]	9846226219	
3	[illegible]	2426106	
4	[illegible]	9614088	
5	[illegible]	9847904452	
6	[illegible]	9447695317	

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