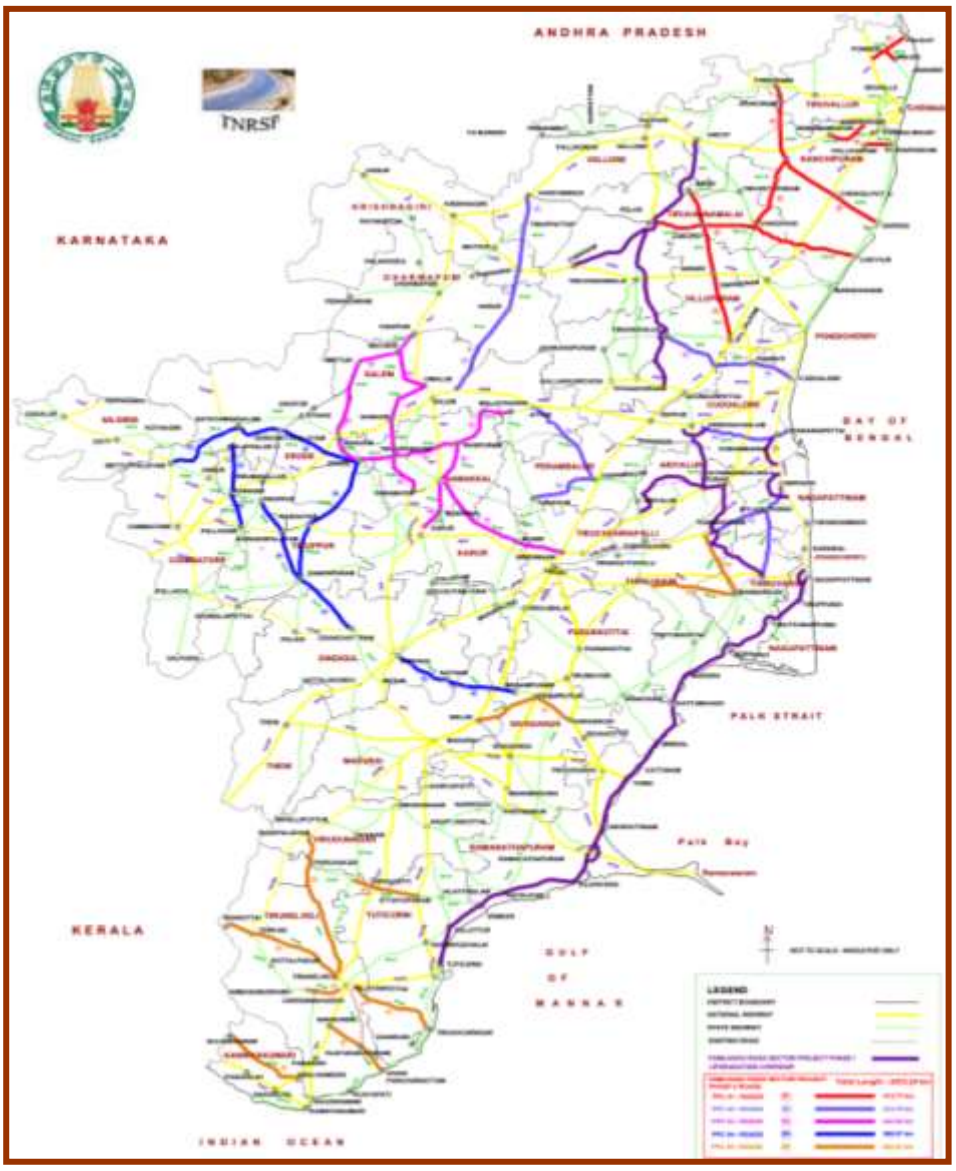
Executive Summary

Environment and Social Impact Assessment



Second Tamil Nadu Road Sector Project

(Highways Department)

(Government of Tamil Nadu)

Executive Summary of Environment and Social Assessment

1.0 Environmental Assessment

1.1 Background

The Government of Tamil Nadu (GoTN) through the Highways Department has taken up the up-gradation, maintenance and improvement of identified core road network in the length of approx. 2079 km in the state. The GoTN has proposed to take up upgrading of about 575 km with financial assistance from the World Bank. In line with the prioritization exercise, total fourteen corridors have been selected, aggregating to about 575 km length under TNRSP- II, where there is no sensitive environmental issue involved. The improvement of roads under TNRSP –II involves the strengthening and upgrading of non-standard two-lane roads to 2-lane-with-paved-shoulders/4 lanes. Annex 1 provides the list of roads. The Environmental Management Framework for the Project has been prepared and disclosed. The Environmental Screening, Environmental Assessment (EA) and Environmental Management plans (EMP) for roads under Phase I of TNRSP-II (i.e. a total road length of about 430 km) have been prepared and disclose. The full volumes of EMF, EAs, and EMPs have been disclosed respectively at www.tnrsp.com and http://documents.worldbank.org by the borrower and the Bank.

Proposed Improvements

The up-gradation (strengthening and widening) proposals are designed by considering the requirements of projected traffic. The proposed improvements provide appropriate designs to accommodate urban and rural settings. The proposed improvements were aimed at meeting the projected traffic requirements with necessary care to minimize impacts. The efforts included: (i) minimizing additional land acquisition, (ii) optimizing designs to minimize avenue tree felling, (iii) provision of safety interventions, and (iv) minimizing corridor of impacts and thereby reducing environmental degradation to the surroundings.

1.2 Approach to Environmental Assessment

Considering the multiplicity of road corridors to be improved under the project, an Environmental Management Framework (EMF) approach has been adopted to address the EA requirements of the project. The EMF for the project defines the EA process to be followed, complying with the in country environmental legislations as well as Bank's environmental safeguards policies. The EMF defines the four key process steps to be followed for corridor level EAs with relevant illustrations. These include: (i) Environmental Screening and Scoping; (ii) Environmental Assessment; (iii) Environmental Management Plan; and (iv) integration of EMPs in to actionable mechanisms including road construction contracts. The EMF also defines the public consultations which shall form part of the process steps (i) to (iii), cumulative impact assessment requirements, and the institutional management framework. Prior to finalizing the draft, the proposed EMF has been tested for Phase-I roads with necessary changes and also subjected to extensive public consultations. Based on the application of EMF, generic environmental management measures which would be applicable for all the corridors have been derived. The generic measures shall necessarily form part of implementation of each project corridor, in addition to corridor specific EMPs. The EMF is disclosed by the project is available at
http://www.tnrsp.com/document/Draft%20Environmental%20Management%20Framework.pdf

1.3 Summary of Impacts and Mitigation Measures

Each of the project roads under Phase I of TNRSP - II has followed EA approach defined in the EMF. The corridor level EAs have followed four key principles – analysis of alternatives with a view to optimize road alignments to avoiding and/or minimizing direct, indirect and cumulative impacts; integrating the mitigation measures in to designs, and carry out extensive public consultations to address community concerns and also to identify environmental enhancement measures. The corridor specific EMPs provides generic and specific measures to mitigate and or minimize residual impacts which are appropriately integrated in to construction contracts. The EMPs also identified monitoring and reporting requirements, and the relevant arrangements to address such requirements. The following provides summary of EAs and EMPs. The full EAs and EMPs are available at www.tnrsp.com. The EAs for the Phase-II of the project will be carried out subsequently by following the agreed principles and process set forth in the EMF.

Summary Impacts and Mitigation Measures

(a) ***Environmental Regulatory clearance Requirements***: Based on thorough environmental screening, it is concluded that none of the road corridors requires state or central level environmental clearance. However, construction stage clearances are required for all the corridors. The clearance requirements to be complied are listed in the table below. As part of the corridor level EMPs, these requirements have been adequately integrated in to the construction contract documents.

S.N	Clearances	Acts	Approving Agency	Time Frame	Responsibility	
					Execution	Supervision
1.	Consent to Establish and Operate Hot mix plant, Crushers, Batching Plant and Labour Camps	Water (Prevention and Control of Pollution) Act 1974 Air (Prevention and Control of Pollution) Act. 1981	Tamil Nadu Pollution Control Board	3 months	Contractor	PIU/ Engineer
2.	Authorisation for Disposal of Hazardous Wastes	Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.	Tamil Nadu Pollution Control Board	2 months	Contractor	PIU/ Engineer
3.	Permission for Sand Mining from River bed	Mines and Minerals (Development and Regulation) Act, 1957 Environmental (Protection) Act 1986 Water (P& CP) Act 1974 and Air (P& CP) Act 1981	Commissioner of Geology and Mining, GoTN Environmental Clearance from SEIAA, Go TN CTE/CTO from TNPCB	2 months	Contractor	PIU/ Engineer
4.	Permission for Opening of New Quarry	Mines and Minerals (Development and Regulation) Act, 1957 Environmental	Commissioner of Geology and Mining, GoTN Environmental Clearance from	2 – 6 months	Contractor	PIU/ Engineer

		(Protection) Act 1986 Water (P& CP) Act 1974 and Air (P& CP) Act 1981	SEIAA, Go TN CTE/CTO from TNPCB			
5.	Storage of Hazardous Chemicals (Fuel Oils) and Explosives	Manufacturing Storage and Import of Hazardous Chemicals Rules 1989	Chief Controller of Explosive, Chennai	3 months	Contractor	PIU/ Engineer
6.	Permission for Withdrawal of Ground Water	Environmental (Protection) Act, 1986	Central/State Ground Water Board	3months	Contractor	PIU/ Engineer
7.	Pollution Under Control Certificate	Central Motor Vehicles Act 1988	Transport Department (GoTN)	1 Month	Contractor	PIU/ Engineer
8.	Employing Labour	The Building And Other Construction Workers. (Regulation of Employment and Conditions of Service) Act, 1996	Labour& Empl. Dept. GoTN	1 Week	Contractor	PIU/ Engineer
9.	Registration of Workers	Labour Welfare Acts.	Labour& Empl. Dept., GoTN	1 Month	Contractor	PIU/ Engineer

(b) ***Impacts on Forests and Wildlife***: None of the corridors pass through Natural Habitats and/or areas of wildlife importance. *Sadras-Chengalpattu Road* corridor pass adjacent to a reserved forest for about 340 meters. Originally, the upgrading requirements for this road envisaged to divert about 1Ha. Based on design optimization, the forest diversion is minimized to 0.5 Ha. The field studies carried out at this area confirmed absence of wildlife and wildlife corridors. Also, the survey findings have concluded that the nature forest land to be diverted is mostly scrub jungle dotted with 144 non-timber grade trees of girth size less than 30cm. The mitigation process to forest diversion has been initiated by identifying the 1 Ha. revenue land contiguous to existing reserve forest in the district to offset loss of forest. Currently, the identified patch of land is examined by the forest department. In terms of next steps, double the forest land to be diverted has been identified (in the same administrative block) for compensating the forest diversion. Further, compensatory afforestation proposals are also underway.

(c) ***Impact on Avenue Plantation***: The proposed road improvements including upgradation and widening for 591.7km of Phase-I roads with possible impacts on avenue plantations alongside the road corridors. Based on design optimization such as concentric/one side widening depending on location of trees, adjusting the vertical profile, providing side walls, etc. However, on an average, about 44 trees of varying girth size need to cut per kilometre of road improvements. The tree inventory has been carried out as part of the project preparation. Further, the project is in advanced stage of securing tree felling permission. The tree felling permissions mandates 1:10 compensatory tree plantation. The EMP has provided necessary landscaping, budgetary provisions, and implementation arrangements. The landscaping locations include project roads, public/government spaces, schools, and community owned lands.

(d) ***Sensitive Receptors***: There are several sensitive receptors along the project corridors including, schools/collages, hospitals, places of religious importance. During the

construction and post-project scenarios, these locations would be impacted due to air and noise pollution and traffic hazards. Considering the possible impacts, each of the sensitive receptor locations are inventoried and location specific impact assessments have been carried out. Based on this, site specific measures have been designed and most of the measures have been integrated in to construction contracts in the form of environmental management specifications. Some of the typical measures include the following:

- Appropriate traffic management at each of the location during construction phase and exclusion of construction facilities within 500m radius,
- Provision of compound walls for the schools/sensitive public spaces and channelizing the pedestrian movement,
- Combination of noise barberries and landscape measures,
- Extensive road safety measures at all the sensitive locations, etc.

(e) ***Cultural Properties and Heritage Sites***: While there are no heritage sites along the project corridors, the project corridors pass adjacent to several cultural properties such as temples, mosques, and churches in urban and rural settlements. These places could be either physically impacted or could be vulnerable to traffic hazards. Given this, all such places have been surveyed and utmost care was taken in designing horizontal alignment in such places to minimise the impact. However, the impacts are non-mitigable in some places due to design constraints. In all such locations, a consensus was drawn with the stakeholders for either relocation and/or adequate enhancement measures. All such measures have been costed and necessary implementation provisions have been integrated in the R&R plans. Further, necessary measures have been built in to technical specifications to safeguard the cultural properties from traffic hazards, including access.

(f) ***Water Bodies***: Water bodies comprising of open wells, ponds and lakes have been observed along the corridors. While post project impacts of on these water bodies would be negligible since they are mostly located away from the road edge, with few exceptions where the village ponds are adjacent to the corridors. In all such cases there could be considerable impact especially during construction stage. Specific EMP measures have been designed for such locations which include physical cordoning, exclusion of location of construction facilities, prevention of water extraction for construction purposes. In addition, baseline monitoring has been carried out in all such locations to monitor impacts.

(g) ***Drainage***: The road corridor is characterized by several small streams and three seasonal rivers. Appropriate drainage management measures have been built in to the corridor designs. In addition, baseline monitoring was carried out to establish water quality such that construction stage impacts can be effectively managed. In terms of EMP measures, locations of construction facilities have been excluded for at least 500m. radius.

(h) ***Environmental Enhancement Measures***: The project could lead to several impacts relating to community and common property resources such as community severance, access issues, crossings, etc. While all such impacts are adequately addressed through design measures, the most important aspect that need to be addressed is creating positive impact along the project corridors. In this regard, several environmental enhancement measures are integrated in to project implementation and such measures include:

- Enhancement of road side village ponds including protection of banks and fencing, construction of steps, desilting, etc.,
- Water harvesting structures in water scares areas along the project corridors,
- Provision of solar street lights at sensitive receptors and places of cultural importance,
- Cleaning of feeder channels to minor irrigation tanks,

- Landscaping of ox-bow areas created after road geometric corrections, etc.

(i) ***Construction Stage Impacts***: The impact assessment has identified range of construction stage impacts. Although these impacts are temporary in nature, could lead to considerable environmental degradation. Given this, elaborate environmental management measures have been designed with necessary care to integrate such measures in to construction contracts. The following table provides summary of impacts/activities causing impacts and summary of EMP measures / approach to mitigation:

S. No	Impact / Activities causing Impact	Summary of EMP Measures / Approach to Mitigation
1.	Crushers, hot-mix plants and Batching plants location on site	• Exclusion criteria defined for location of crushers, hot mix plants and batching plants • Inventory of all equipment / machinery to be used by the contractor along with their PUC certificates, specifications to be submitted to PIU (CFE, CFO clearances in place) • Additional measures required for compiling with the existing legislations pertaining to control of emissions, Consent to Build / Operate, NOC etc • Location facility planning and design considerations.
2.	Air and Noise pollution due to Other Construction Vehicles, Equipment and Machinery	• Inventory of all equipments / machinery to be used by the contractor along with their PUC certificates, specifications • Clearance from concerned Depts. and PIU for operating specific equipments and machinery • Additional measures required for compiling with the existing legislations pertaining to control of emissions, discharge standards
3.	Borrow Areas operations	• Identification of borrow areas with consent of the Environmental Expert confirming to the quality standards • Volume of material excavated • Consent to operate after signing of formal agreement • All logistical arrangements for transport, storage and application • Measures to rehabilitate the borrow areas
4.	Quarry operations	• Extraction of materials from designated quarries after consent of Department of Mining and District Administration • Consent to operate under existing rules and regulations • Quarry Redevelopment Plan as applicable
5.	Construction Water availability	• Pre-identification of adequate water supply and its source with formal consents • Steps for minimization of water wastage during construction.
6.	Construction Camp Locations – Selection, Design and Lay-out	• Siting of construction camps away from forests/protected areas / settlements – pre-defined exclusion criteria • Pre-defined facilities/amenities to be provided on-site for laborers • Provision of waste disposal and sewerage systems for labour camps • Conformance to applicable rules and regulations • Approval of Environment Expert for setting up of camp facility.
7.	Temporary Land Requirements	• Written consent with individual land owners for temporary use of land for setting up of hot mix plants / batching plants / camp sites /borrow areas etc • Restoration of land to its near original status before handing over site to its owners by contractor.
8.	Generation of Debris from dismantling structures and road surface	• Conformance to pre-defined reuse options for debris generated due to dismantling • Site clearance prior to disposal of unutilized debris and disposal protocols • Provisions for transportation, storage of debris on site • Provisions for control of soil erosion and water pollution due to waste disposal
9.	Other Construction Wastes Disposal	• Preparation of a comprehensive solid waste management plan by contractor based on the EMP guidelines integrated in the bid documents. • Identification of disposal sites based on waste characteristics
10.	Stripping, Stocking and Preservation of top soil	• Stripping & storage for reuse of topsoil from all areas to be covered. • Estimated quantity of topsoil to be stored and reuse options including landscaping. • Preservation of topsoil during storage, transportation and reapplication. • Erosion control measures to preserve top soil for unnecessary trafficking
11.	Drainage and Flood	• Measures to prevent blockage to natural drainage pattern due to stacking of

	Control on site	construction materials. • Additional measures to prevent temporary flooding of the site during construction. • Monitoring Plans for effective implementation of drainage & flood control measures
12.	Slope Protection and Control of Soil Erosion on site	• Provision of adequate slope protection measures along drainage channels to control soil erosion and sedimentation • Application of low cost bio engineering techniques for slope stabilization at places identified and specified in the contract documents. • Monitoring of construction waste disposal sites for potential erosion prone areas.
13.	Water Pollution issues during construction stage	• Measures to be adopted to control flow of waste water/oil and grease flows/ lubricants into natural streams • Mitigation measures in conformance with the state pollution control board norms and regulations. • Waste disposal plan implementation highlighting the quantity of waste for disposal, type of waste, location of dump sites, consent to
14.	Dust Pollution issues during construction stage	• Measures to reduce the level of dust from crushers/hot mix plants, and construction sites involving earthwork. • Siting of the various plant facilities considering location and wind direction.

Institutional Arrangements for Environmental Management

A Project Implementation Unit (PIU) headed by a Project Director (PD) has been established for the project. Consultants were appointed to assist the PIU and the GoTN in the project preparation and implementation. During the implementation of the project, a Supervision Consultant (SC) procured through International Competitive Bidding will assist the PIU to ensure adoption of good construction practices and the implementation of the EMP provisions. The PIU has built in certain organizational and institutional capacity, by the creation of an Environmental Cell (EC) and a Social Development Unit (SDU) to ensure the implementation of the EMP/RAP provisions. These are already functional and will continue for the project duration.

The Environmental Cell comprises of a Superintending Engineer, an Assistant Divisional Engineer, 2 Assistant Engineers (HO) and 6 Assistant Engineers (Field Offices – 1 in each of the six field divisions). The Additional Divisional Engineer and the 6 Assistant Engineers will have full responsibility for ensuring EMP implementation, whereas the Superintending Engineer and the 2 Assistant Engineers (HO) will have part responsibilities. One Environment Specialist, deputed from Pollution Control Board has been inducted to provide support to the Environmental Cell. The forest wing of the Environmental Cell comprises apart from one Assistant Conservator of Forests, two Rangers and field staff. The forester will supervise and coordinate compensatory plantation, which has been built in to the construction contracts for each corridor under the project.

Monitoring and Post Auditing

Construction monitoring, including field inspection and survey requirements have been adequately identified. These activities will be coordinated by the Environmental Specialist to ensure that environmental protection requirements are being met. The monitoring and reporting protocols are pre-defined, budgeted and will be integrated in to contracts and supervision consultants. the is be in line with the reporting system developed for the project..

The application and implementation of EMPs will be closely monitored (using parameters that would be prescribed in the EMPs) by qualified and experienced specialists (including those on the Construction Supervision Consultant) who will report on a regular basis. A comprehensive assessment report on environmental performance will be prepared by TNRSP at mid-term and end-term. In order to ensure that the proposed mitigation measures have the intended results and comply with GoI/State and World Bank requirements, environmental performance monitoring program will be developed by the project.

2.0 Social Impact Assessment

Land Acquisition and Resettlement Impacts

2.1 This project is being executed in two phases comprising about 575 km consisting of 427 km under Phase-I as EPC procurement and the remaining 145 km in phase-II under DBFOMT concessions. The improvements proposed under Phase-I road projects involve upgrading and strengthening of 11-road stretches for a length of 427 km and in phase-II , 3 roads under DBFOMT concessions for a length of 145 km. These roads cover 12 Districts and 24 Taluks in the state. The improvement works include strengthening of some existing two-lane roads to two-lane with paved shoulder, widening of some existing two-lane roads to four-lane with pavement strengthening and with/without paved shoulders, drainage facility, road furniture and accessories.

2.2 Land Acquisition: The Project will involve acquisition of about 150 hectares of private land and transfer of 15 hectares of Government land and will cause impacts to about 9000 households. Out of this major impacts will be limited to about 1400 households, which lose their houses or livelihoods. The remaining people will loss only part of their structures and a narrow strip of land. The joint verification of LPS, encroachments and squatting, is being carried out by the Implementing agency to determine the final number of affected households.

2.3 Magnitude of Impacts. The major impacts include about 1400 displaced families. Minor impacted households consist of 7056 partial impact to structure and land, and not requiring relocation or rehabilitation. The land acquisition and resettlement impacts are summarised for phase-I and phase-II roads.

No	Impacts	11 EPC Roads (Phase-I)	3 PPP roads (Phase-II)	Total*
1	Length (in km)	427	145	572
2	Private Land Acquisition (in Hectares)	56	94	150
3	Government Land Transfer (in Hectares)	12	3	15
4	Major Impacted households	831	569	1400
5	Minor Impacted households	4352	2704	7056

*Subject to change.

2.4 Social Impact Assessment. A social impact assessment was carried out through census, socio-economic surveys and consultations to determine the potential impacts and hear

stakeholder's views and concerns. The census and socio economic surveys for the 14 road stretches were undertaken between May and July 2014 based on detailed design drawings.
The key baseline characteristics include (a) the average family size is 4.1 and (b) 1.5 persons/family is earners. About ten percent of project affected households are headed by women and the remaining households are headed by men. The average income reported is INR 11,641 (USD 195). While 26 % are indebted and 40% engage in small businesses, a quarter of Project Affected Persons (PAP) is residing in permanent houses, 50% have separate kitchens, and 27% have toilets and 80% houses are electrified. In terms of assets, only 5% use washing machines, 30% have motor cycles, 21% have refrigerators and 80% own a television. 20 consultations were held along the project roads. Participants' views and concerns about the project were discussed in these consultations and the key outcomes were integrated into the design and mitigation plans. Further consultations were held at 11 locations as part of disclosure of the draft RAP among the PAPs in December, 2014. In all 1689 people including 386 women (23%) participated in these consultations. The participants included largely PAPs and the meetings were chaired by local body representatives.

2.5 Consultations. As part of census and socio-economic surveys, consultations were held with the displaced households and other stakeholders along the road-projects of phase-I roads. Similar consultations are being held in phase-II roads also. The discussions were initiated by presenting an overview of the project features to the participants, the justification for undertaking the project, its benefits and likely impacts. Participants' views and concerns about the project were discussed and key outcomes were integrated in the design and mitigation plans. The key outcome of consultations includes: safety concerns due to increased speed and accidents, impacts to trees, avoiding impacts to drinking water pipelines, impacts to graveyards, suggestion for bypasses and realignments, loss of livelihoods due to impact sot business establishments, loss of irrigated lands, suggestion for reduction of corridor of impact width to avoid physical displacements, etc. These concerns are incorporated in the designs and RAP to the extent possible.

2.6 Impact on Tribal Population. The tribal population of Tamil Nadu is only about 0.8 million and constitutes just 1 percent of the total population and is scattered across the State. Further, during social impact assessment and consultations, it was not observed the presence of people in the project area who exhibited characteristics such as those distinct from others, speak separate language from dominate population, having separate institutions and close attachment to the forest, etc. Therefore the policy on Indigenous people is not triggered.

2.7 Resettlement Policy Framework (RPF). Since the impacts of all proposed roads will not be available by appraisal of the project, a RPF has been prepared confirming to National / State laws and the World Bank involuntary resettlement policy and will be applicable for all the phases of roads funded by World Bank and implemented by TNRSP-II. The policy framework describes the principles and approach in avoiding, minimizing and mitigating adverse social impacts that may arise in improving the proposed road network under Tamil Nadu Road Sector Project (TNRSP-II).The frameworks provide an overview of screening of the road-projects for social impacts, process for social impact assessment, preparation of land plan schedules, entitlements for different impact categories including non–title holders, institutional arrangements, disclosure, grievance redress mechanisms, consultations as well as preparation and implementation of Resettlement Plan (RP). This provisions and processes described in this RPF will be the basis for preparing Resettlement Action Plans (RAPs). The provisions of compensation determination and R&R assistance as per the provisions of

India's new land acquisition and R&R Act, 2013 (RFCTLARR Act, 2013) are suitably incorporated in the draft RPF. The entitlements and grievance redress process will be disseminated through consultation meetings and distribution of brochures, leaflets, or booklets, in a local language. The details of entitlements for different types of impacts is presented in draft RPF available at www.tnrsp.com.The draft RPF will undergo updating as some of the provisions of RFCTLARR Act such as multiplying factor for land compensation, annuity payment for displaced families, etc. are under consideration by Government of Tamil Nadu. The draft has been disclosed inviting suggestions and objections from the public.

2.8 Land Acquisition Process. Land will be acquired in accordance with the provisions of Tamil Nadu Highway Act, 2001 and the compensation will be determined in accordance with India's new Land Acquisition and Rehabilitation and Resettlement Act, (RFCTLARR Act, 2013). The replacement value of houses, buildings and other immovable properties will be determined on the basis of latest Public works Department's Standard Schedule of Rates (SSR) as on date without depreciation. Compensation for trees will be based on their market value.

2.9 Resettlement Action Plan (RAP). A RAP describing the land acquisition and resettlement impacts and proposed mitigation measures for 11 roads to be undertaken in phase-I though EPC contacts has been prepared and disclosed. Another RAP for 3 PPP roads to be implementation in Phase-II roads is under preparation and will take some more time to finalise it. The objective of the RAP is to assist the affected people in their efforts to improve their living standards or at least regain their living standards to their pre-displacement levels. In terms of impacts, 3 PPP roads need about 94 hectares of private land, while 11 EPC roads need about 56 hectares of private land. The RAP for phase II will be prepared prior to issue of bids for civil works.

2.10 Institutional and Implementation Arrangements. To expedite land acquisition and implement RAPs, three regional-level Land Acquisition Rehabilitation and Resettlement Units (LARRU) have been constituted. These units headed by Special District Revenue Officers (Special DRO) are supported by Resettlement Officers (RO) for RAP implementation support and Tahsildar(s) for support in land acquisition. A separate Government Order has been issued nominating Special DRO as competent authority under TNH Act for land acquisition and award pronouncement. The Chief Engineer, under the Project Director, TNRSP supported by domain experts in land acquisition and resettlement will be overall in charge of land acquisition and R&R implementation and will coordinate with the three Special DROs in RP implementation and Land acquisition. These units will be entrusted with responsibilities of implementation of the RP involving: (i) acquisition of land and assets; (ii) payment of compensation for land and assets; (iii) disbursement of resettlement assistances including development of resettlement sites. The LARRU in each region will be supported with support staff including clerical staff. The implementation of the R&R provisions will be carried out by NGOs with experience in similar development projects and will be monitoring by concurrent by External Monitoring consultants. Grievance Redressal Committee (GRC) will be established at two-levels to receive, evaluate and facilitate the resolution of displaced persons concerns, complaints and grievances.

2.11 The budget estimates for the RP implementation including the compensation for land and assets and R&R assistances is INR. 2.21 billion (USD 36.8 million) for 11-road stretches proposed under phase-I roads and additional budget for phase-II roads will be provided by

GoTN as needed. The preliminary budget estimate for 3 PPP roads to be implemented din phase-II will be INR 4.12 billion (USD 68 million). This amount will be met out of counterpart funding. The government will provide adequate budget for all land acquisition compensation, R&R assistances and RP implementation costs from the counterpart funding. The compensation and R&R assistance will be paid to the affected people prior to taking over of their land and assets. The NGO experienced in this type of work will be engaged to assist the Government and external consultants will be engaged to undertake concurrent monitoring. Impact evaluation will be undertaken at the end of implementation to assess how the compensation and R&R assistance has helped the people to improve or regain their pre-impacted living standards.

2.12 The full version of RPF and RAP is available at www.tnrsp.com

Annex 1: Corridors Proposed for Implementation under Phase – I

S.No.	Road name	Length (km)
Road Upgradation works under EPC contracts		
1	Upgrading Kanchipuram - Vandavasi Road (SH116) Km 14/500-Km 36/900	22.30
2	Upgrading Sadras - Chengalpattu - Kancheepuram - Arakkonam - Thiruthani Road (SH58) Km 0/000 to Km 26/800	26.100
3	Upgrading Arcot - Villupuram Road (SH4) Km 29/800 to Km 110/200 and Km 113/200 to Km 114/600	82.40
4	Upgrading Cuddalore - Chittoor Road (SH9) Km 41/700 to Km 44/000 and Km 45/000 to Km 66+190 and construction of a new link road between SH9 and SH137 (Km 66+190 to Km 71+147)	28.45
5	Upgrading Vridhachalam - Parangipettai Road (SH70) Km 0/000 to Km 35/800	35.80
6	Upgrading Omalur - Sankari - Thiruchengode - Paramathy road (SH86) Km 54/800 to Km 81/000	26.20
7	Upgrading Malliyakarai - Rasipuram - Trichengode - Erode Road (SH79) Km 0/000 to Km 30/600 and Km 51/400 to Km 71/300	50.50
8	Upgrading Mohanur – Namakkal – Senthamangalam - Rasipuram Road (SH95) Km 0/000 to Km 13/100	13.10
9	Upgrading Paruvakudi - Kovilpatti - Ettayapuram -Vilathikulam - Vembar Road (SH44) Km 22/500 to Km 38/750 and Km 41/300 to Km 56/700	31.65
10	Upgrading Nanguneri - Bharatavaram - Ovari Road (SH89) upto ECR junction Km 0/000 to Km 35/200	35.20
11	Upgrading Rajapalayam - Sankarankoil - Tirunelveli Road (SH41) Km 1/800 to Km 28/000 and Km 33/800 to Km 82/800	75.20
	Total	**426.900**
II	**Road Upgradation works under PPP contracts**	
1	Four laning and strengthening of Mettupalayam - Sathy - Gobi - Erode road (SH15) Km 123/000 to Km 153/400	30.40
2	Four laning and strengthening of Oddanchatram - Dharapuram - Tiruppur road (SH37) Km 37/400 to Km 106/300	68.90
3	Strengthening and widening of Tirunelveli – Sengottai – Kollam road (SH39) Km 5/000 to Km 50/600	45.60
	Total	**145**
	Grand Total	**572**